



Data Products Definition Document

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| 1 | 10D | 2016-11-08 | B9 | Update of MPS_PRE_VisitConstrains #11967 | RRO |
| 1 | 10D | 2016-11-04 | A3 | New parameters in MPS_PRE_StarMapParameters #11944, #11958 | RRO |
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| 1 | 10D | 2016-10-19 | A8 9,10 | New data field of the Programme: PI_UID New data fields in the Observation Request: Proprietary_Period_First_Visit and Proprietary_Period_Last_Visit Change Version number in file name from 3 to 4 digits. | RRO |
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| 1 | 10D | 2016-08-09 | A | Restructure the description of the XML data structures. | RRO |
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| 1 | 10D | 2016-03-09 | A | The Data Blocks of data structures EXT_APP_Programmes and EXT_APP_ObservationsRequests are restructured | RRO |
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Applicable documents

| | |
|------|--|
| AD-1 | CHEOPS SOC Requirement Document, CHEOPS-UGE-SOC-RS-002, issue 2.23 |
| AD-2 | SOC Glossary CHEOPS-UGE-SOC-SP-001, issue 1.8 |
| AD-3 | IFSW-SOC Interface Control Document, CHEOPS-UVIE-ICD-003, issue 3.1 |
| AD-4 | StarMap Interface Control Document, CHEOPS-UVIE-ICD-004, issue 3.0 |
| AD-5 | VCMA, VMCB, VMCC, VMCD, VMCE, VMCF Implementation Details, CHEOPS-UBE-INST-TN-92, Issue 1.2 |
| AD-6 | CHEOPS Instrument Flight SW – Command Sequences- , CHEOPS-PNP-INST-MAN-002, Revision 3.0 |
| AD-7 | MOC-SOC-ICD, CHEOPS-GMV-MOC-ICD-002, version 4.0 |
| AD-8 | Motorola S-record format definition http://sites.fas.harvard.edu/~cscie287/spring2016/srecord.html |
| AD-9 | SCOS-2000 Database Import ICD, EGOS-MCS-S2K-ICD-0001 v6.9 |

Reference documents

| | |
|------|---|
| RD-1 | The FITS Standard, http://fits.gsfc.nasa.gov/standard30/fits_standard30aa.pdf |
| RD-2 | MOC-SOC-ICD, CHEOPS-GMV-MOC-ICD-002, version 3.1 Document moved to an applicable document |
| RD-3 | Ground Segment File Format Standard, PE-TN-ESA-GS-0001, issue 1.4 |
| RD-4 | External schema: https://svn.isdc.unige.ch/svn-cheops/05_infrastructure/software/xml_schema/tags/r_13.1/external_interfaces/resources/ |
| RD-5 | Internal schema: https://svn.isdc.unige.ch/svn-cheops/05_infrastructure/software/xml_schema/tags/r_13.1/internal_interfaces/resources/ |
| RD-6 | CHEOPS Instrument Flight SW – Configuration File -, CHEOPS-PNP-INST-ICD-002, revision 8.0 |
| RD-7 | CHEOPS Instrument Flight SW – TM/TC ICD - , CHEOPS-PNP-INST-ICD- |

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|-------|---|
| | 001, revision 8.0 |
| RD-8 | StarMap Interface Control Document, CHEOPS-UVIE-IGD-004, issue 2 Document moved to an applicable document |
| RD-9 | SOC Management and Development Plan, CHEOPS-UGE-SOC-PI-001, version 1.11. |
| RD-10 | SOC External ICD, CHEOPS-UGE-SOC-ICD-002, issue 2.8 |
| RD-11 | On-Board Data Processing Steps, CHEOPS-UVIE-INST-TN-001, issue 2.0 |

1 Introduction

1.1 Objectives

This document provides descriptions of all data structures that are used in the CHEOPS SOC software system. At a later state data structures not used to store data for the scientific community may be moved to another document to provide to the scientific community a document with information only relevant for their data analysis.

2 Data access

Data can be accessed via the web – interface of the distributions system of the archive. The URL will be provided before launch.

2.1 Test data

Publicly available test data sets simulated with CHEOPSim can be downloaded via ftp from ftp://obsftp.unige.ch/pub/cheops/test_data.

3 Data products

This section describes the structure and the naming conventions of data products or provides references for their description. The data product repository, the data levels and the globally used enum names are defined in this section as well.

Data products are

- XML files
- FITS extensions
- Reports
- Log files
- Binary TM / TC files
- Instrument on-board software
- Operational DB

3.1 XML Data structure definitions

With the exception of orbit files all XML data structures follow the Earth Explorer Format [RD-3].

These XML files are structured in a header section, which is divided in a fixed header and a variable header, followed by a data block section. The fixed header has always the same format.

Following data structures are defined in the MOC-SOC ICD [AD-7]

- ActivitiConversionReport

- ActivityPlan
- Algorithms
- GSAvailability
- HKTMPParameters
- OBTUTC
- PlatformRequest
- PredictedOrbit
- RefOrbit
- RestitutedOrbit
- TCDefinitionFile
- TCReport

The details of all other XML data structures are defined in Appendix A.

3.2 FITS Data structure definitions

The FITS files of the CHEOPS data follow strictly the FITS standard [RD-01]. Variable bin-size columns and the long naming convention of keywords are not used. Names of header keywords follow the convention of the HST.

All FITS data products adhere to a *data structure definition*. This is a formal description of a data product's internal structure, which defines

- the name, the data type and optionally the unit and the comment of the keywords in the FITS header
- in the case of an image extension, its data type and dimensions
- in the case of a table extension, its columns with their names, their data types, their bin sizes, and optionally their NULL value, their units and their comments.

FITS files containing data products always contain at least one extension. The primary array is never used to store CHEOPS data, neither in its header nor in its image.

The EXTNAME header keyword of a data product gives the name of its data structure definition.

The details of all FITS data structures are defined in Appendix B.

3.3 Reports

Reports are provided in pdf format. Similar as FITS extensions meta-data are provided in header keywords inside of the pdf file.

These meta data are described in Appendix C.

3.4 Log files

Log files are ASCII files created by the programs of the processing chains. There is one log file per execution of a program.

Log records in a log file have the following fields, separated by a single blank character:

[Date] [Node name] [Process name] [Process version] [PID]: [Level] [Message text]

| Field | Description |
|-----------------|---|
| Date | Formatted as yyyy-MM-ddThh:mm:ss.nnnnnn (26 characters). |
| Node name | The name retrieved through the <i>hostname</i> system call. |
| Process name | A string identifying the process. |
| Process version | The process' version. |
| PID | The process ID, formatted as [nnnnnnnnnn] (12 characters, including the square brackets). |
| Level | The log level, formatted as [L] where L indicates the first letter of the log level. |
| Message text | Variable length string. |

The Level and the Message text are defined by the programs writing these log files.

3.5 Binary TM / TC

The RawHKTM and the ScienceTM files are defined in the MOC-SOC ICD [AD-7].

The StarMap TC file is defined in the StarMap Interface Control Document [AD-4].

3.6 Instrument On-Board Software

The Instrument on-board software patches are store in the CHEOPS archive. The content of

the files are not processes and verified at SOC. The filename follow this naming convention:

IFSW_<<version.release>>_<<YYYY-MM-DD>>

for example: IFSW_3.2_2020-04-24

The format of the SW patches is SREC [AD-8]

3.7 Operational DB

The operational DB is used by SOC to create the FITS data structure definitions of the preliminary raw (*_PRW_*) and the raw (*_RAW_*) HK FITS extensions. Furthermore the reference files of HK conversion are generated from the operational DB.

The format are MIB tables as described in the SCOS-2000 Database Import ICD [AD-9]

3.8 Data structure names

The names of data structure definitions of the FITS extension, log files and the XML files, which are defined in Appendix A, have three components, separated by an underscore (_):

source_processing_description

Source defines the origin of the data. It is one of the following:

- **SCI** – science and housekeeping data from the payload and platform
- **AUX** - auxiliary data from MOC
- **MPS** - data generated by the mission planning system
- **PIP** - other data generated during the pipeline processes, for example the data of the reports.
- **REF** - reference data, obtained from ground based calibrations and the monitoring and characterization programme.
- **EXT** - external delivery, for example catalogues or proposals
- **SIM** – simulator specific data, generated by CHEOPSim
- **SOC** – manually created data structure at SOC

Processing defines the applied processing step:

- **PRW** - preliminary raw data, as received from MOC, without any processing
- **RAW** - raw data, output of preprocessing
- **CAL** - calibrated data, intermediate step of data reduction
- **COR** - corrected data, output of data reduction
- **REP** - report data, used to generate the reports
- **PRE** - predicted data
- **RES** - restituted data
- **APP** - approved external or SOC internal data
- **TRU** – truth information provided by CHEOPSim
- **ANA** – the result of an analysis of CHEOPSim

Description is a short description of the data type or the program name that created the log

file. For example:

- **FullArray** - an image of the full CCD (1024 X 1024 pixels)
- **SubArray** - an image of a fraction of the CCD (for example 200 X 200 pixels)
- **ImageMetadata** - a table describing meta data of the images
- **Lightcurve** - a light curve (a data level 2 product)
- **Hk*** - housekeeping data either from the payload or the platform
- **Visits** - attributes of a planned visit
- **VisitConstraints** – constraints during a visit, for example SAA, angles to moon and sun
- **Programmes** - attributes of programmes and their observations
- **Text** - text data, used for the report generation

3.9 File names

The file name of a FITS file, a log file and the XML files, that are defined in Appendix A, consists of multiple components linked together by an underscore (_):

CH_PRppnnnn_TGooooonn_PSyymmhhdd_TUyyyy-mm-ddThh-mm-ss_DataStructureDefinition-DataName_Vnnnn.fits

The components are defined as follows:

| Name | Description |
|-------------------------|--|
| CH | Abbreviation of CHEOPS. |
| PRppnnnn | A programme ID consisting of a two digit identified of the type of program (Programme_Type) followed by a four-digit arbitrary number (Programme_ID), starting with 0000. This component is skipped in the file name if the data do not belong to a specific programme, like auxiliary data or reference data. |
| TGooooonn | The visit of the target. It consists of four digits defining the observation request ID and two digits counting the visits of the target of that observation request. The programme ID together with the visit of the target defines the visit ID. This component is skipped in the file name if the data do not belong to a specific programme, like auxiliary data or reference data. |
| PSyymmhhdd | The pass id, defined by the time (year, month, day and hour) when the manifest file for the TM data of a pass arrived at SOC. This component is skipped in the file name if the data do not belong to a specific pass, like auxiliary data or reference data. |
| TUyyyy-mm-ddThh-mm-ss | A timestamp. It is the time of the first data in the FITS / XML file expressed in UTC. For reference data with no data time, it is the start time of validity. |
| DataStructureDefinition | The name of the main data structure definition in the product. This is typically the name of the first extension but has to be |

| | |
|----------|--|
| | defined case by case. For log files it is the program that created the log file. |
| DataName | The name of the data to distinguish data for the same time period in the same DataStructureDefinition. This is an optional field. |
| Vnnnn | The first two digits of this version defines the archive revision while the last two digits define the processing number in case the same data have to be processed more than once. The last two digits define for a Reference file the version if it was delivered with the same start time more than once. |

Example of a file name:

CH_PR001111_TG002004_PS15012009_TU2010-01-03T16-32-27_SCI_RAW_SubArray_V0000.fits

3.10 Repository

Data products are contained within a repository. This is a single directory containing all files corresponding to a user’s query into the data archive.

3.11 Data Levels

The data received at SOC or processed at SOC belong to a data level. Most of the data are stored in FITS files. The data level is defined in the FITS header keyword DATA_LVL.

Following data levels are defined:

- **Level 0:** Data, as they were received from MOC at SOC. They contain the science data, as well as the housekeeping data and auxiliary data. All Level 0 data received at SOC are directly archived and used as inputs for the data processing chains. The format of the data is either TM packets as downlinked from the spacecraft or XML files or plain ASCII files as produces by MOC for the auxiliary data.
- **Level 0.5:** Data, which results from the Preprocessing step at SOC. The telemetry data, science and housekeeping data, are converted into FITS files and sorted by Visits to serve as input for Data Reduction or by Visits and Pass to serve as input for Quick Look. Housekeeping data are converted into physical values. The data are time tagged with UTC and MJD.
- **Level QL:** The Quick Look processing of Level 0.5 data produces quality reports in pdf format. The data are time tagged with UTC, MJD and BJD.
- **Level 1:** The Data Reduction processing of Level 0.5 data produces calibrated and corrected science images, full-array images as well as sub-array images. Engineering meta-data are associated to the science data. The data are time tagged with UTC, MJD and BJD.

- **Level 2:** Data, which result from the processing of the Level 1 images. They consist of photometric time series (light curves) and associated meta-data. These are the CHEOPS final science products, which are expected to be used as input to the science analysis by scientists.
- **AUX:** Auxiliary data converted from the auxiliary data of level 0 into FITS files. Sorting and merging data from several deliveries from MOC can be implemented, depending on the type of the auxiliary data.
- **MPS:** Planning data, generated by the mission planning system. These are the activity plan, sent to MOC as well as the planning data used by Preprocessing to assign the data, receive by MOC, to a planned visit.
- **REF:** Reference data, obtained from on-ground calibrations and in-orbit monitoring and characterisation programmes. These data are not generated by SOC, but received from the Instrument and Science team. They are used in various steps of the data processing at SOC.
- **EXT:** External delivered data like catalogues or the contour map of the SAA.
- **SIM:** Most of the data created by CHEOPSim are data of Level 0.5. In additions the CHEOPSim produces some so called “truth data” and a noise curve for test purposes. These are simulator specific data and therefore labelled as data of level SIM.

3.12 Enum Names

Following enum names are defined to be used in the CHEOPS data:

Observation Categories:

- time critical
- non time critical
- flat field
- dark
- straylight (used also for dead and dark pixel map M&C observation)
- psf monitoring
- flux sensitivity
- reference transit

Readout Mode:

- faint
- bright
- ultrabright

- full frame
- faint fast

Margin Mode of a visit:

- image
- reduced
- total collapsed
- none
- undefined

Margin Mode per CCD margin

- image
- row collapsed
- col collapsed
- total collapsed
- none

Collapsed Data Type:

- mean
- stdev
- median
- mad

These names are used in the MRG_DTYx header keywords of the CCD Margin data structures.

CROPPING of Imagettes

- static window
- moving window

Shape of Images and Imagettes

- rectangular
- circular

Stacking:

- coadd
- mean
- gmean (used for imagettes)
- gcoadd (used for imagettes)
- none

The on-board processing of each stacking mode is defined in Technical Note : On-Board Data Processing Steps [RD-11]

Window Type

- full frame
- window

Used Hardware

- main
- redundant

Processing Chains:

- tm
- predicted orbit
- restituted orbit
- obtutc
- visit_preparation
- visit timeout
- trend analysis
- quick look
- data reduction
- dark monitoring

Data Reduction processing steps:

- N/A
- completed
- skipped
- warning

Type of out of limit parameters:

- upper
- lower

Level of out of limit parameters:

- hard
- soft

Appendix A Detailed descriptions of XML data structures

This section contains the description of the XML data structures of the CHEOPS SOC system that are used as data interfaces. Further data structures are defined in the MOC-SOC-ICD [AD-07]

A.1 Earth Explorer Format

All XML data structures, defined in this chapter, follow the Earth Explorer Format [RD-3].

These XML files are structured in a header section, which is divided in a fixed header and a variable header, followed by a data block section. The fixed header has always the same format, which is described hereafter. The variable header and the data section are defined in the chapters of the individual data structures.

Table A-1 Fixed Header

| Tag Name | Type | Description | Format | Units |
|-------------------------|--------|---|--------|-------|
| File_name | Text | File name without extension | %s | |
| File_Description | Text | A 1-line description of the file type | %s | |
| Notes | Text | Multi-lines free text | %s | |
| Mission | Text | Always: "CHEOPS" | %6s | |
| File_Class | Text | Either OPER or TEST | %s | |
| File_Type | Text | A fixed name, defining the data structure name. | %s | |
| Validity_Period | Tag | See Table A-2 Validity Period | | |
| File_Version | Number | Version of the file for the same validity period, must start with 0 | %04d | |
| Source | Tag | See Table A-3 Source | | |

Table A-2 Validity Period

| Tag Name | Type | Description | Format | Units |
|-----------------------|------|---|--------|-------|
| Validity_Start | Text | Start of validity of data in this file. | %23s | UTC |

| Tag Name | Type | Description | Format | Units |
|----------------------|------|---|--------|-------|
| | | UTC=yyyy-mm-ddThh:mm:ss | | |
| Validity_Stop | Text | Stop of validity of data in this file. UTC=yyyy-mm-ddThh:mm:ss | %23s | UTC |

Table A-3 Source

| Tag Name | Type | Description | Format | Units |
|------------------------|------|--|--------|-------|
| System | Text | Name of the software system creating this file | %s | |
| Creator | Text | Name of the program / tool creating this file | %s | |
| Creator_Version | Text | Version of the creator. The semantic of the version is defined in [RD-9] | %03d | |
| Creation_Date | Text | Creation time of this file UTC=yyyy-mm-ddThh:mm:ss | %23s | UTC |

A.2 EXT_APP_PHT1Programmes

Brief: This file is used for the ESA -> PSO interface to provide the accepted AO proposals to PSO.

Description: All parameters of accepted GO programmes and DDT programmes that have to be passed from the PHT1 to the PHT2 are stored in an EXT_APP_PHTProgrammes file.

Schema: EXT_APP_PHT1Programmes_schema.xsd [RD-4]

Variable Header:

The variable header defines exactly one value:

- **Programme_Type:** Possible values are:
 - **20 to 29** for GO programmes
 - **40 to 49** for DDT programmes

Data Block:

The data block consists of a list of Programmes. Each Programme defines following parameters:

- Programme_ID: has to be in the range from 0 to 9999
- Title
- PI_Name
- PI_AccountName: account name of the PI at UGE
- PI_Affiliation
- PI_Email
- Co-I: see below
- Proposal_Abstract: maximum length of 3000 characters
- List_of_Targets see below
- Total_Number_of_Orbits: accepted observation time in units of orbits.

Co-I:

It is an optional field. Either one Co-I is defined or none.

Following parameters have to be defined:

- Co-I_Name
- Co-I_AccountName: account name of the Co-I at UGE
- Co-I_Affiliation
- Co-I_Email

List_of_Targets:

There must be at least one target defined. There is no restriction on the number of provided targets.

For each target following parameters have to be defined:

- Target_Name
- Target_Magnitude
- Right_Ascension: has to be provided in the range 0 to 360 deg.
- Declination has to be provided in the range -90 to 90 deg.
- Approved_Number_of_Orbits: accepted observation time for this target in units of orbits
- Priority assigned priority to this target. Can be 1, 2, or 3. 1 being highest priority.

- Observation_Category: has to be either
 - “time critical” or
 - “non time critical”

A.3 EXP_APP_PST

Brief: Defines the parameters of the Point Source Transmittance Function.

Description: SOC receives an ASCII file with the PST parameters [RD-10]. This will be re-formatted in this XML file and then used by the MPS.

Schema: EXT_APP_PST_schema.xsd [RD-5]

Variable Header: empty field.

Data Block:

The data block consists of a list of PST_pair.

Each PST_pair consist of two values:

- Angle, unit = deg
- PST_value

A.4 MPS_PRE_StarMapParameters

Brief: Defines the parameters to create a StarMap TC and the Star Catalogue for one visit.

Description: The MPS creates for each visit a StarMapParameters file. It is used by the StarMap generation tool to create the data of a StarMap TC. The Star Catalogue extraction tool uses these data as input to extract the star catalogue for one visit.

Basic information is derived from the StarMap Interface Control Document [AD-4]

Schema: MPS_PRE_StarMapParameters_schema.xsd [RD-5]

Variable Header: empty field.

Data Block:

The data block consists of 1 section. Its parameters are:

- **General**

Parameters of the General section:

- **OBSID:** Unique identifier of the visit, defined by MPS.
- **PI_Name:** Full name of the PI of the proposal.
- **Programme_Type:** Type of the programme.
- **Programme_ID:** Id of the programme.
- **Observation_Request_ID:** Id of the observation request.
- **Visit_Counter:** Set always to “0”.
- **Observation_Category:** Observation category of the request.
- **Proprietary_Period_First_Visit:** Proprietary period, depending on first visit.
Default 1.5 years
- **Proprietary_Period_Last_Visit:** Proprietary period, depending on last visit.
Default 1 years
- **Algorithm_ID:** See Table 4 in [AD-4] (value defined in SOC_APP_MPSPDefaults)
- **Distance_Threshold:** See Table 4 in [AD-4] (value defined in SOC_APP_MPSPDefaults)
- **Iterations:** See Table 4 in [AD-4] (value defined in SOC_APP_MPSPDefaults)
- **Target_locationX:** See Table 4 in [AD-4]
- **Target_locationY:** See Table 4 in [AD-4]
- **Pointing_Uncertainty:** See Table 4 in [AD-4] (value defined in SOC_APP_MPSPDefaults)
- **Exposure_Time_Acquisition:** Exposure Time of acquisition full frame in ms
- **Exposure Time:** Exposure time of a raw, un-stacked, image in ms.
- **PI_UID:** UID of the PI at UGE.
- **Target_Name:** Name of the target star, as defined by the PI.
- **Gaia_ID:** Gaia Id of the target star, as defined by the PI, optional.
- **PITL:** true if the Payload In The Loop is used for the visit.
- **Target_Magnitude:** Brightness of the target in the Gaia Band, as provided by the PI, optional.

- Target_Magnitude_Error: Error of brightness of the target in the Gaia Band, as provided by the PI, optional.
- Target_RA_Obs: RA of the target at the epoch of the observation.
- Target_DEC_Obs: DEC of the target at the epoch of the observation.
- Target_RA_J2000: RA of the target at the epoch J2000, as defined by the PI of the programme.
- Target_DEC_J2000: DEC of the target at the epoch J2000, as defined by the PI of the programme.
- Obs_Epoch: Epoch of the observation in year and fraction of year.
- RA_Proper_Motion: RA proper motion of the target star, as defined by the Pi of the programme, optional.
- DEC_Proper_Motion: DEC proper motion of the target, as defined by the Pi of the programme, optional.
- Parallax: Parallax of the target, as defined by the Pi of the programme, optional.
- T_Eff: Teff of the target, as defined by the Pi of the programme, optional.
- Extinction: Extinction of the target, as defined by the Pi of the programme, optional.
- Star_Catalogue_Filename: The filename of the star catalogue that the star catalogue extraction tool creates.
- Star_Map_Filename: The filename of the StarMap TC that the StarMap generation tool creates.

A.5 EXT_APP_DefaultObsReqParameters

Brief: Defines some default parameters of an observation request.

Description: The purpose of this interface is to define some default values that are used by MPS to generate the schedule and the activity plan. The values given in such a file are observation category dependent. Note: depending on the observation category some of these values can be overwritten by the values provided in the EXT_APP_ObservationRequests. The Instrument Team provides data of this data structure for the IOC phase and the PSO for the nominal Science Phase. At SOC these data are merged with the EXT_APP_DefaultTCPParameters to the SOC_APP_MPSPDefaults data.

Schema: EXT_APP_DefaultObsReqParameters_schema.xsd [RD-4]

Variable Header: empty field.

Data Block:

The data block defines following Observation_Category_Parameters:

- **Window_Offset_X** : Offset in pixels of the window frame on the illuminated CCD. A value of 0 would mean the window is attached to the left side of the 1024 pixel size of the illuminated image section of the CCD.
- **Window_Offset_Y** : Offset in pixels of the window frame on the illuminated CCD. A value of 0 would mean the window is attached to the bottom of the 1024 pixel size of the illuminated image section of the CCD.
- **Window_Size_X**: Size of the window frame in pixels or diameter for circular shaped windows.
- **Window_Size_Y**: Size of the window frame in pixels.
- **Window_Shape**: can be either “rectangular” or “circular”.
- **Imagettes_Size_X**: Size of the imagettes in pixels or diameter for circular shaped imagettes.
- **Imagettes_Size_Y**: Size of the imagettes in pixels.
- **Imagettes_Shape**: can be either “rectangular” or “circular”.
- **Imagettes_Extraction_Strategy**: can be either “0” (= STATIC) or “1” (MOVING)
- **Margin_Mode** : On-board processing mode of the CCD margins. Can be either “image”, “reduced”, “total collapsed” or “none”.
- **Margin_Dark_Left_Mask**: Defines a bit mask of 16 bits. Each bit defines whether the corresponding column of the left dark margin area should be used to calculate the mean, median and std on board.
- **Margin_Dark_Right_Mask**: Defines a bit mask of 16 bits. Each bit defines whether the corresponding column of the right dark margin area should be used to calculate the mean, median and std on board.

A.6 EXT_APP_DefaultTCPParameters

Brief: Defines some the fixed parameters of the TCs

Description: The purpose of this interface is to define the TC parameter that are fixed and do not change from visit to visit. They are used by MPS to generate the activity plan. The Instrument Team provides data of this data structure for the whole mission. At SOC these

data are merged with the EXT_APP_DefaultObsReqParameters to the SOC_APP_MPSPDefaults data.

Basic information is derived from the IFSW-SOC Interface Control Document [AD-3] and the CHEOPS Instrument Flight SW – Command Sequences- document [AD-6].

Schema: EXT_APP_DefaultTCPParameters_schema.xsd [RD-4]

Variable Header: empty field.

Data Block:

The data block consists of following sections:

- **Instrument_Parameters**
- **Star_Map_Parameters**
- **Activities**

Instrument_Parameters

This section defines the values of some instrument parameters that are used to either for the planning of the visits or for the generation of the Activity Plans.

- **Instrument_Parameters_type:** Default recording rate of Instrument HK data.
- **Multi_Full_Repetition_Period :** The repetition time has to be larger if more than 1 calibration image is taken to have enough time to send them to ground. This variable defines this larger repetition time.
- **Full_Repetition_Limit:** If the ExpTimeAcq/ExpTimeCal1 is less than this value the ImageRepAcq/ImageRepCal1 is the exposure time plus the ReadoutTime - Rep_Margin. If the ExpTimeAcq/ExpTimeCal1 is equal or greater than this value the ImageRepAcq/ImageRepCal1 is the same as the exposure time.
- **Repetition_Margin :** Margin to ensure that the ImageRepAcy, ImageRepCal1 and ImageRepSci are equal or less than the smallest possible repetition time.
- **FBF_First :** first logical address of FBF that can be used by MPS to store images.
- **FBF_Last :** last logical address of FBF that can be used by MPS to store images.
- **FBF_Size :** Size of one FBF in byte.
- **FBF_Max_WriteOperations :** Warning level of the maximum number of write operations to any FBF memory block.
- **FBF_Max_Transfer :** Maximum number of FBFs that can continuously be transferred

between flash memory of the instrument and S/C on-board memory.

- **FBF_Transfer_Suspend** : Minimum time between two consecutive transfers of FBF data from flash memory of the instrument to S/C on-board memory.
- **FBF_Transfer_Time** : Transfer time of one FBF file from flash memory of the instrument to S/C on-board memory.
- **T_flush** : Time to flush the last data either to ground or to FBF.
- **acqFullDropT1** : Time 1 in Acquire Full Drop Procedure.
- **acqFullDropT2** : Time 2 in Acquire Full Drop Procedure.
- **Max_Num_Image_Acq** : Maximum number of images, which are required to acquire the target star.
- **calFullSnapT1** : Time 1 in Calibration Full Snap Procedure.
- **calFullSnapT2** : Time 2 in Calibration Full Snap Procedure.
- **sciWinStackT1** : Time 1 in Science Window Stack Procedure.
- **sciWinStackT2** : Time 2 in Science Window Stack Procedure.
- **CE_Overhead** : Overhead of a CE beside the image itself.
- **Imagettes_Limit** : Maximum number of imagettes that can be downlinked per stacket image.
- **Move_Time_First** : Time the AOCS system needs to move the CHEOPS rotation axis from any point on the CCD to any other point on the CCD.
- **Move_Time_Following** : Time the AOCS system needs to move the CHEOPS rotation axis from one sub-frame center to the next sub-frame center of psf monitoring and flat filed observations.
- **Move_Time_Dark_Off** : Time the AOCS system needs to move the CHEOPS rotation axis from one Visit_Offset position to the next of dark observations.

Star_Map_Parameters

This section defines 4 parameters that have to be copied into the StarMapParameters file

- **Algorithm_ID** : which algorithm is to be selected for the Target Acquisition.
- **Distance_Threshold** : Absolute distance between measured position and Target_Locatin under which we switch from acquisition to centroiding.
- **Iterations** : Maximum number of iterations 0=inf
- **Pointing_Uncertainty** : Star tracker induced pointing uncertainty in pixel.

Visit_Configuration_Dynamic:

For all observations categories the parameters that have to be send by TC(211,1) are described. For each parameter following items have to be defined:

- **Description:** Name of the parameters as defined in the Data Pool [RD-06]
- **Name:** Name of the data pool parameter in the ODB. It is the value of the ParameterID of an VISIT_CONFIGURATION_DYNAMIC activity.
- **Type:** Data type of the parameter
- **Array_Element:** Index of the parameter in its array or 0 if it is not an array parameter.
- **Value:** Value of the parameter

The list of parameters for a specific observation request can be empty if no parameters have to be sent by TC(211,1) for that observation request.

Activities:

In this section the parameters of following Activities are defined:

- **VISIT_ACQUISITION**
- **VISIT_CONFIGURATION_DYNAMIC**
- **START_DATA_DOWNLINK**
- **STOP_DATA_DOWNLINK**
- **TRANSFER_FBF_TO_GROUND**

A.7 SOC_APP_MPSPDefaults

Brief: Defines some default values used by MPS.

Description: The purpose of this interface is to define some default values that are used by MPS to generate the schedule and the activity plan. At SOC the data of such a data structure are merged from data of a EXT_APP_DefaultObsReqParameters file and data of a EXT_APP_DefaultTCParameters file plus some manually defined values.

Schema: SOC_APP_MPSPDefaults_schema.xsd [RD-5]

Variable Header: empty field.

Data Block:

The data block consist of following sections:

- **MPS_Properties** , see below
- **Corrupted_FBFs**, see below.
- **Observation_Caterory_Parameters**, the data are identical as the Observation_Category_Parameters data of the EXT_APP_DefaultObsReqParameters data structure.
- **Instrument_Parameters**, the data are identical as the Instrument_Parameters data of the EXT_APP_DefaultTCParameters data structure.
- **Star_Map_Parameters**, the data are identical as the Star_Map_Parameters data of the EXT_APP_DefaultTCParameters data structure.
- **Activities**, the data are identical as the Activitis data of the EXT_APP_DefaultTCParameters data structure.

MPS_Properties:

- **Programme_Time_Allocation_Period** : Defines the start and end time of a time allocation period for which the Programme_Time_Allocation shall be fulfilled with the accepted Programme_Time_Allocation_Slack.
- **Max_Stray_Light_Flux** : Defines the maximum stray-light as photons / pixel / sec, depending on the brightness of the target star in the Gaia band. For a concrete brightness the values shall be linear interpolated / extrapolated. The initial values are defined in redmine ticket #13047.
- **Max_Stray_Light_Flux_MC** : Defines the maximum stray-light as photons / pixel / sec, for M&C observations that do not have a target star. If a value for a specific M&C observation is defined then it supersedes the Max_Stray_Light_Flux for that M&C observation.
- **Earth_Limb_Altitude** : The altitude of the Earth limb above the surface of Earth to be taken into account when calculating the angle between the line of sight and the Earth limb.
- **Min_Moon_Angle** : The applicable minimum angle between the CHEOPS S/C to target direction and the CHEOPS S/C to Moon direction.
- **SAA_Data_Suspend_Offset** : Defines the offset in seconds between the start and end of the stop writing to the FBFs during SAA (activity SAA_EXIT) and the start and end of sending data to ground during SAA (activities START_SCIENCE_DATA_SUSPEND and STOP_SCIENCE_DATA_SUSPEND). From the SAA-map (EXT_APP_SAAMap) the start and end time to stop writing to the FBFs during SAA (activity SAA_EXIT) can

be calculated. A positive `Data_Suspend_Offset` increases the total time no data should be sent to ground during SAA. The start time is `Data_Suspend_Offset` seconds earlier and the end time is `Data_Suspend_Offset` later than the start and end time of the "FBF-time", respectively. Note: `Data_Suspend_Offset` can be negative.

Corrupted_FBFs:

Lists the logical addresses of corrupted FBFs that should not be used by MPS to store the M&C images.

A.8 EXT_APP_Programmes

Brief: File of accepted and approved programmes.

Description: The purpose of this interface is to define one or several programmes. Four types of programmes are foreseen:

- 1) The guaranteed time programme, defined by the CHEOPS Science Team
- 2) Guest observers programme, defined by guest observers and approved by ESA
- 3) Monitoring and Characterisation programme requests, defined by the CHEOPS Instrument Team during IOC and the PSO during the nominal science phase.
- 4) Discretionary programme, defined by ESA,

One file contains always programmes of exactly one type.

Schema: `EXT_APP_Programmes_schema.xsd` [RD-4]

Variable Header:

The variable header defines exactly one value:

- **Programme_Type:** Possible values are:
 - "10" to "19": guaranteed time programme
 - "20" to "29": guest observer programme
 - "30" to "39": monitoring and characterization programme
 - "40" to "49": discretionary programme

The second digit (0..9) defines the AO number.

Data Block

The parameters for one or several programmes are defined in the data block. Following parameters have to be defined per programme:

- **Programme_ID:** Programme ID (shall be a unique identifier per programme type)
- **Title:** Title of the programme.
- **PI_Name:** Full name of the PI (Programme editor for GTO and M&C) of the proposal.
- **PI_UID:** UID of the PI (Programme editor for GTO and M&C) at UGE, used to access the proprietary data in the CHEOPS archive.
- **User_Affiliation:** Group, University, Company, etc... to which the user belongs to.
- **PI_Email:** User contact email.
- **Additional_Contact:** Optional field: Name of an additional contact person.
- **Additional_Contact_Email:** Optional field: E-mail address of the additional contact person.
- **Proposal_Abstract:** Optional field: The abstract of the proposal.

A.9 EXT_APP_ObservationRequests

Brief: File of accepted and approved observation requests.

Description: The purpose of this interface is to define one or several observation requests. One file contains always observation requests of exactly one programme type.

Basic information is derived from the IFSW-SOC Interface Control Document [AD-3] and the VCMA, VMCB, VMCC, VMCD, VMCE, VMCF Implementation Details document [AD-5].

Schema: EXT_APP_ObservationRequests_schema.xsd [RD-4]

Variable Header:

The variable header defines exactly one value:

- **Programme_Type:** Possible values are:

- “10” to “19”: guaranteed time programme
- “20” to “29”: guest observer programme
- “30” to “39”: monitoring and characterization programme
- “40” to “49”: discretionary programme

The second digit (0..9) defines the AO number.

Data Block

Note 1)

“non time critical” observations will be started at any time between Earliest_Start and (Latest_End – Visit_Duration). If Earliest Start and Latest_End are not defined the observation can be scheduled at any time.

The table on the next pages define the parameters that can or must be defined depending on the observation category.

| Parameter | short description | Format | Unit | Nominal transit | Nominal non-transit | M&C Flat Field | M&C Dark maps, Dark current monitoring | M&C Dead/Dark pixel map, Stray light monitoring all angles | M&C PSF monitoring | M&C Flux sensitivity | M&C Reference transit | requested for Feasibility Check | |
|--------------------------------|--|------------|-------------|---|---|----------------|---|--|--------------------|----------------------|-----------------------|---------------------------------|---|
| Observation_Category | defined in Variable Header | %02s | | time critical | non time critical | flat field | dark | straylight | psf monitoring | flux sensitivity | reference transit | | ? Pending agreement on the Observation_Category (related to the e-mail thread on "Names of the observation categories" - should be performed after clarifying the issues below. |
| Programme_Type | Programme ID this observation request belongs to | %4d | | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | X | |
| Programme_ID | shall be a unique identifier per programme | %4d | | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | 0 - 9999 | X | |
| Observation_Request_ID | Proprietary period, depending on first visit. Default: 1.5 years | %d | days | default=548 | default=548 | default = 1826 | default = 1826 | default = 1826 | default = 1826 | default = 1826 | default = 1826 | | |
| Proprietary_Period_First_Visit | Proprietary period, depending on last visit. Default: 1 year | %d | days | default=365 | default=365 | default = 1826 | default = 1826 | default = 1826 | default = 1826 | default = 1826 | default = 1826 | | |
| Proprietary_Period_Last_Visit | Name of the target or sky region as provided by the proposal | %s | | X | X | X | X | X | X | X | X | optional | |
| Target_Name | Gaia ID, provided by the PI | %s | | optional | optional | N/A | N/A | N/A | optional | optional | optional | | |
| Gaia_ID | spectral type of the target star | %s | | X | X | N/A | N/A | N/A | X | X | X | | |
| Spectral_Type | Brightness of the target in the Gaia Band | %6.3f | mag | X | X | N/A | N/A | N/A | X | X | X | | |
| Target_Magnitude | Error of brightness of the target in the Gaia Band | %6.3f | mag | X | X | N/A | N/A | N/A | X | X | X | | see ticket #12578 |
| Target_Magnitude_Error | Can be "faint", "bright", "ultrabright", or "faint fast" | enum | | X | calculated by PHT2 | X | 2 values for 2 visits default: ultrabright, faint | 1 value per visit | X | X | X | | |
| Readout_Mode | Right Ascension of target request in J2000 reference frame (0 - 360) | %+11.6f | deg | X | X | X | X | 1 value per visit | X | X | X | X | |
| Right_Ascension | Declination of target request in J2000 reference frame (-90 - +90) | %10.5f | deg | X | X | X | X | 1 value per visit | X | X | X | X | |
| Declination | proper motion of the target star | %8.2f | mas/year | X | X | N/A | N/A | N/A | X | X | X | | |
| RA_Proper_Motion | proper motion of the target star | %8.2f | mas/year | X | X | N/A | N/A | N/A | X | X | X | | |
| DEC_Proper_Motion | parallax of the target star | %8.2f | mas | X | X | N/A | N/A | N/A | X | X | X | | |
| Parallax | Tell of the target star | %d | Kelvin | X | X | N/A | N/A | N/A | optional | X | X | | |
| T_Eff | Extinction of the target star | %4.2f | mag | optional | optional | N/A | N/A | N/A | optional | optional | optional | | |
| Extinction | First visit shall not start before this time | %013.6f | BJD (in TT) | optional | optional | optional | X | X | optional | optional | optional | optional | |
| Earliest_Start | Last visit shall not end after this time | %013.6f | BJD (in TT) | optional | optional | optional | X | X | optional | optional | optional | optional | |
| Latest_End | exposure time of unstacked image | %08.3f | sec | X | X | default = 1 | 2 values for 2 visits default: 0.001-90 | 1 value per visit | X | X | X | | |
| Exposure_Time | repetition period of unstacked images | %08.3f | sec | optional user shall not be able to set it | optional user shall not be able to set it | optional | optional 2 values, i.e. 1 | optional 1 value per visit | optional | optional | optional | | |
| Repetition_Period | number of raw images that shall be stacked on board | %d | | X | X | 1 | 1 | 1 | 1 | X | X | | |
| Number_Stacked_Images | number of raw imagettes that shall be stacked on board | %d = 0 | | X | X | 0 | 0 | 0 | 0 | X | X | | |
| Number_Stacked_Imagettes | Central time of the next expected transit | %013.6f | BJD (in TT) | X | N/A | N/A | X | N/A | N/A | N/A | X | optional | |
| Transit_Time | Time between two consecutive transits | %+11.6f | days | X | N/A | N/A | X | N/A | N/A | N/A | X | optional | |
| Transit_Period | Time interval to be considered for one visit. To use the VISIT_CONFIGURATION_DYNAMIC unit the VISIT_ACQUISITION activities. | %07.0f | sec | X | X | N/A | N/A | N/A | N/A | X | X | optional | |
| Visit_Duration | Number of visits to be scheduled for this target | %2d | | X | X | default = 25 | 2 | X | X | X | X | optional | |
| Number_of_Visits | All visits of one observation request shall be scheduled continuously | boolean | | always no | always no | always yes | always yes | always yes | always yes | always no | always no | | |
| Continuous_Visits | Number of stacked images taken during one visit | %2d | | N/A | N/A | default = 150 | 2 values for 2 visits, default 10, 10 | default = 1 | default = 10 | N/A | N/A | | |
| Number_of_Images | Priority Level for this target | 1, 2, or 3 | | GO-TAC, GTO-X | GO-TAC, GTO-X | default = 2 | default = 2 | default = 2 | default = 2 | default = 2 | default = 2 | | |
| Priority | Minimum data acquisition time to be considered for every CHEOPS visit of this request as a fraction of "Visit_Duration" | %03d | per cent | X | X | N/A | N/A | N/A | N/A | X | X | X | |
| Minimum_Effective_Duration | Defines as phase of the planetary orbit the earliest time when the observation may start | %7.5f | phase | 0 - 1.0 | N/A | N/A | X | N/A | N/A | N/A | X | optional | |
| Earliest_Observation_Start | Defines as phase of the planetary orbit the latest time when the observation may start | %7.5f | phase | 0 - 1.0 | N/A | N/A | X | N/A | N/A | N/A | X | optional | |
| Latest_Observation_Start | Start time, end time and minimum of data acquisition time | optional | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | optional | optional | |
| List_of_Phase_Ranges | Start of a phase, defined as phase of the planetary orbit | %7.5f | phase | optional | N/A | N/A | N/A | N/A | N/A | N/A | optional | optional | |
| Start | End of a phase, defined as phase of the planetary orbit | %7.5f | phase | optional | N/A | N/A | N/A | N/A | N/A | N/A | optional | optional | |
| End | Minimum data acquisition time during the phase in per cent of phase duration. Minimum effective duration within the phase range | %03d | per cent | optional | N/A | N/A | N/A | N/A | N/A | N/A | optional | optional | |
| Minimum_Phase_Duration | All (true) or at least one (false) phase range requests have to be fulfilled in every visit. If not defined and List_of_Phase_Range s > 1 it is taken as true. | boolean | | optional | N/A | N/A | N/A | N/A | N/A | N/A | optional | | |
| Fullfill_all_Phase_Ranges | | | | | | | | | | | | | |

| Parameter | short description | Format | Unit | Nominal transit | Nominal non-transit | M&C Flat Field | M&C Dark maps, Dark current monitoring | M&C Dead/Dark pixel map, Stray light monitoring all angles | M&C PSF monitoring | M&C Flux sensitivity | M&C Reference transit | requested for Feasibility Check |
|---|--|---------|-------|--|--|-----------------------------|---|---|--------------------|--|--|---------------------------------|
| Window_Type | either full frame or window | enum | | N/A, always "Calibration sequence" + Window Frames | N/A, always "Calibration sequence" + Window Frames | Window | default: Window | default: Window | Window | N/A, always "Calibration sequence" + Window Frames | N/A, always "Calibration sequence" + Window Frames | |
| Window_Size_X | size of window in pixels >= 1 | %04d | pixel | Defined in the MPS defaults file | Defined in the MPS defaults file | default = 130 (TBC) | # Window_Type == window: default 200 # Window_Type == full_frame: N/A | # Window_Type == window: default 200 # Window_Type == full_frame: N/A | default = 200 | default = 200 | default = 200 | |
| Window_Size_Y | size of window in pixels >= 1 | %04d | pixel | Defined in the MPS defaults file | Defined in the MPS defaults file | default = 130 (TBC) | # Window_Type == window: default 200 # Window_Type == full_frame: N/A | # Window_Type == window: default 200 # Window_Type == full_frame: N/A | default = 200 | default = 200 | default = 200 | |
| Window_Offset_X | Offset of the window frame from the left edge of the illuminated CCD area. Value must be between -1 and (1023 - Window_Size_X) | %04d | pixel | Defined in the MPS defaults file | Defined in the MPS defaults file | N/A | # Window_Type == window: default 412 # Window_Type == full_frame: N/A | # Window_Type == window: default 412 # Window_Type == full_frame: N/A | N/A | X | X | |
| Window_Offset_Y | Offset of the window frame from the bottom edge of the illuminated CCD area. Value must be between -1 and (1023 - Window_Size_Y) | %04d | pixel | Defined in the MPS defaults file | Defined in the MPS defaults file | N/A | # Window_Type == window: default 412 # Window_Type == full_frame: N/A | # Window_Type == window: default 412 # Window_Type == full_frame: N/A | N/A | X | X | |
| Margin_Mode | On-board processing mode of the CCD margins. Can be "image", "reduced", "total collapsed" or "none" | enum | | Defined in the MPS defaults file | Defined in the MPS defaults file | none | image | Window_Type == window: image, reduced or total collapsed # Window_Type == full_frame: N/A | X | Note: "none" is not available | Note: "none" is not available | |
| List_of_Visit_Offsets | Defines the offset of RA/DEC on the CCD in pixels for the consecutive visits | | | N/A | N/A | X | 2 list for 2 visits | N/A | X | N/A | N/A | |
| Visit_Offset_X | 1 value per visit. Value must be between 1 and (1023 - Window_Size_X) | %04d | pixel | N/A | N/A | 1 value per visit | 1 value per exposure | N/A | 1 value per visit | N/A | N/A | |
| Visit_Offset_Y | 1 value per visit. Value must be between 1 and (1023 - Window_Size_Y) | %04d | pixel | N/A | N/A | 1 value per visit | 1 value per exposure | N/A | 1 value per visit | N/A | N/A | |
| PTL | | boolean | | default = yes | default = yes | always no | always no | always no | always no | default = yes | default = yes | |
| Send_Data_Taking_During_SAA | Window frames taken during SAA shall be sent (yes) / not sent (no) to ground | boolean | | default = no | default = no | User of PHT2 cannot edit it | User of PHT2 cannot edit it | N/A | N/A | default = no | default = no | |
| Avoid_Earth_Occultation | Schedule all visits outside the earth occultation. See also #1496 | | | N/A | N/A | N/A | N/A | X | N/A | N/A | N/A | |
| Send_Data_Taking_During_Earth_Constraints | Images taken when the line-of-sight is within the stray light avoidance zone or the earth limb shall be sent / not send to ground | boolean | | default = no | default = no | User of PHT2 cannot edit it | User of PHT2 cannot edit it | N/A | N/A | always yes | N/A | default = no |
| Respect_Moon_Exclusion_Angle | The moon exclusion angle has to be respected. This angle is defined in SOC_APP_MPSDefault | boolean | | N/A | N/A | N/A | N/A | X | N/A | N/A | N/A | |
| Not used any more: | | | | | | | | | | | | |
| Time_Between_Visits | Time between the start of two consecutive visits | %d | sec | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | |
| Target_Star | | boolean | | default = yes | default = yes | always no | always no | always yes | always yes | default = yes | default = yes | |
| Suspend_During_SAA | Suspend visit (image taken) during SAA | | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | |
| Stop_Taking_Full_Frames_During_SAA | Full Frame images must not be stored in flash memory during SAA crossing. Therefore the measurements of FULL Frame images must be suspended during SAA | boolean | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | |
| Store_Images_in_FBF | Will be defined as fixed parameter for the VISIT_ACQUISITION activity | | | N/A (always no) | N/A (always no) | always yes | yes if Window_Type == Full Frame, else no | yes if Window_Type == Full Frame, else no | always no | always no | always no | |
| Avoid_SAA | Schedule all visits outside the SAA, will be defined in SOC_APP_MPSDefault | | | N/A | N/A | always yes | always yes | always yes | always yes | N/A | N/A | |
| Target_CHEOPSmagnitude | Brightness of the target in the CHEOPS Band | %4.1f | mag | Calculated by PHT2 | Calculated by PHT2 | N/A | N/A | optional | Calculated by PHT2 | Calculated by PHT2 | Calculated by PHT2 | see ticket #12578 |
| Target_CHEOPSmagnitude_Err | Error of brightness of the target in the CHEOPS Band | %4.1f | mag | Calculated by PHT2 | Calculated by PHT2 | N/A | N/A | optional | Calculated by PHT2 | Calculated by PHT2 | Calculated by PHT2 | see ticket #12578 |

Appendix B Detailed descriptions of FITS data structures

This section contains the complete definitions of all the FITS data structures of the CHEOPS SOC system.

Beside the listed header keywords every FITS extension has to have the following keywords:

| Name of Keyword | Description |
|-----------------|--|
| EXTNAME | Defines the extension name, which is identical to the data structure name. |
| SCHEMA | Filename of the schema defining the data structure |
| DATE | Creation time of the HDU |
| STAMP | Program and its version creating the HDU |
| SVN_REV | svn revision of the software creating the HDU |
| DATASUM | Checksum of the data of the HDU |
| CHECKSUM | Checksum of the full HDU |

Format of a UTC string

The format of a UTC sting in a FITS header as well as in a FITS column is always

yyyy-MM-ddThh:mm:ss.ffffff

For example

2018-12-04T18:43:23.835300

Reference time standard of “UTC” columns and header keywords

The reference time standard for columns and header keywords that express the time in the UTC time format as defined above is UTC.

Note: for the other time column and header keywords the reference time standard is defined by the header keyword TIMESYS.

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AUX_PRE_Orbit

Brief: Predicted Orbit Data

Description: Orbit data copied from the predicted orbit XML file, which is provided by MOC. Each row defines for one time (EPOCH) a state vector with the position and velocity of the spacecraft.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|----------|-----------|-------------|--------|---|
| EXT_VER | 4.0 | string | | | version of the data structure |
| DATA_LVL | AUX | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| OEM Metadata | | | | | |
| CNT_NAME | EARTH | string | | | Origin of reference frame |
| REF_FRAM | EME2000 | string | | | Name of the reference frame |
| TIME_SYS | UTC | string | | | Time system |
| USE_STTM | | UTC | TIMESYS=UTC | | Start of useable time |
| USE_ENTM | | UTC | TIMESYS=UTC | | End of useable time |
| INTERPOL | Lagrange | string | | | Recommended interpolation method |
| DEG_INRT | | integer | | | Recommended interpolation degree |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------|-----------|-------------|----------|------|--------------------------------------|
| EPOCH | UTC | TIMESYS=UTC | | | TIMESYS=UTC time of the state vector |
| X | double | km | | | x component of position |
| Y | double | km | | | y component of position |
| Z | double | km | | | z component of position |
| X_DOT | double | km/s | | | x component of velocity |
| Y_DOT | double | km/s | | | y component of velocity |
| Z_DOT | double | km/s | | | z component of velocity |

AUX_REF_Orbit

Brief: Reference Orbit Data

Description: It is used only by CHEOPSim

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|----------|-----------|-------------|--------|---|
| EXT_VER | 5.3 | string | | | version of the data structure |
| DATA_LVL | AUX | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| OEM Metadata | | | | | |
| CNT_NAME | EARTH | string | | | Origin of reference frame |
| REF_FRAM | EME2000 | string | | | Name of the reference frame |
| TIME_SYS | UTC | string | | | Time system |
| USE_STTM | | UTC | TIMESYS=UTC | | Start of useable time |
| USE_ENTM | | UTC | TIMESYS=UTC | | End of useable time |
| INTERPOL | Lagrange | string | | | Recommended interpolation method |
| DEG_INRT | | integer | | | Recommended interpolation degree |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|-------------|----------|------|------------------------------|
| EPOCH | UTC | TIMESYS=UTC | | | UTC time of the state vector |
| X | double | km | | | x component of position |
| Y | double | km | | | y component of position |
| Z | double | km | | | z component of position |
| X_DOT | double | km/s | | | x component of velocity |
| Y_DOT | double | km/s | | | y component of velocity |
| Z_DOT | double | km/s | | | z component of velocity |
| LATITUDE | double | deg | | | latitude of spacecraft |
| LONGITUDE | double | deg | | | longitude of spacecraft |

AUX_RES_ObtUtcCorrelation

Brief: Pairs of UTC_N and OBT_N times

Description: The pairs of UTC_N and OBT_N define the correlation between these two time units. Correlations at times between two pairs have to be interpolated: $UTC = OFFSET + TC_OFFSET + UTC_N + GRADIENT * (OBT - OBT_N)$. According to MOC-SOC IDC the TC_OFFSET and GRADIENT are valid from this data point (UTC_TIMESTAMP) until the next data point (UTC_TIMESTAMP), which defines the next the TC_OFFSET and GRADIENT. There will be one OBT-UTC Correlation file per pass. About 5 to 10 time correlation records are expected per pass.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 10.1 | string | | | version of the data structure |
| DATA_LVL | AUX | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------|-----------|-------------|----------|------|---|
| UTC_TIMESTAMP | UTC | TIMESYS=UTC | | | UTC of the record creation time. The time correlation is valid until next time-stamp. |
| UTC_N | double | sec | | | number of elapsed TAI seconds since 1.1.2000 |
| OBT_N | double | sec | | | number of elapsed OBT seconds since 1.1.2000 |
| UTC | UTC | TIMESYS=UTC | | | same as UTC_N, but as UTC |
| OBT | OBT | | | | same as OBT_N, but in OBT ticks |
| GRADIENT | double | | | | slope of UTC / OBT starting at this data point |
| OFFSET | double | sec | | | constant OFFSET, depending on 0-base of UTC_N and OBT_N |
| TC_OFFSET | double | sec | | | variable OFFSET |

AUX_RES_Orbit

Brief: Restituted Orbit Data

Description: Orbit data copied from the restituted orbit XML file, which is provided by MOC. Each row defines for one time (EPOCH) a state vector with the position and velocity of the spacecraft.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|----------|-----------|-------------|--------|---|
| EXT_VER | 5.3 | string | | | version of the data structure |
| DATA_LVL | AUX | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| OEM Metadata | | | | | |
| CNT_NAME | EARTH | string | | | Origin of reference frame |
| REF_FRAM | EME2000 | string | | | Name of the reference frame |
| TIME_SYS | UTC | string | | | Time system |
| USE_STTM | | UTC | TIMESYS=UTC | | Start of useable time |
| USE_ENTM | | UTC | TIMESYS=UTC | | End of useable time |
| INTERPOL | Lagrange | string | | | Recommended interpolation method |
| DEG_INRT | | integer | | | Recommended interpolation degree |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|-------------|----------|------|------------------------------|
| EPOCH | UTC | TIMESYS=UTC | | | UTC time of the state vector |
| X | double | km | | | x component of position |
| Y | double | km | | | y component of position |
| Z | double | km | | | z component of position |
| X_DOT | double | km/s | | | x component of velocity |
| Y_DOT | double | km/s | | | x component of velocity |
| Z_DOT | double | km/s | | | x component of velocity |
| LATITUDE | double | deg | | | latitude of spacecraft |
| LONGITUDE | double | deg | | | longitude of spacecraft |

AUX_RES_VisitConstraints

Brief: Table of visit constraints, calculated from restituted orbit information.

Description: There will be one table per visit. The table will have one row per available orbit record in the AUX_RES_Orbit data structure, which is foreseen to have a sampling rate of 5 minutes.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|-------------|----------|------|-------------------------------------|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| LOS_TO_SUN_ANGLE | double | deg | | | Angle between target and Sun |
| LOS_TO_MOON_ANGLE | double | deg | | | Angle between target and Moon |
| LOS_TO_EARTH_ANGLE | double | deg | | | Angle between target and Earth limb |
| LATITUDE | float | deg | | | Geodetic latitude |
| LONGITUDE | float | deg | | | Geodetic longitude |
| EARTH_OCCULTATION | bool | | | | true=Target occulted by the earth |
| SAA_FLAG | bool | | | | true=inside the SAA zone |

CHEOPS Data Products Definition Document

EXT_APP_DE1

Brief: First extension of the JPL Planetary Ephemeris DE200/LE200 file

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | EXT | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------|-----------|------|----------|------|---------------------|
| Cname | string | | 6 | | Names of constants |
| Cvalue | double | | | | Values of constants |

Associated HDUs

| Name | Type | Optional |
|-------------|-------|----------|
| EXT_APP_DE2 | table | no |
| EXT_APP_DE3 | table | no |

CHEOPS Data Products Definition Document

EXT_APP_DE2

Brief: First extension of the JPL Planetary Ephemeris DE200/LE200 file

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 6.2 | string | | | version of the data structure |
| DATA_LVL | EXT | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---|
| Object | string | | 22 | | Solar system object |
| Pointer | int16 | | | | Pointer for object's coefficients in record |
| NumCoeff | int16 | | | | Number of Chebyshev coefficients for object |
| NumSubIntv | int16 | | | | Number of time sub-intervals for object |

CHEOPS Data Products Definition Document

EXT_APP_DE3

Brief: First extension of the JPL Planetary Ephemeris DE200/LE200 file

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 6.2 | string | | | version of the data structure |
| TSTART | | real | | | Start time of ephemeris |
| TSTOP | | real | | | Stop time of ephemeris |
| TIMEDEL | | real | | | Ephemeris interval |
| TIMEUNIT | d | string | | | Time is in days |
| JDREF | 0.0 | real | | | Time is in JD |
| DATA_LVL | EXT | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|----------------------------------|
| ChebCoeffs | double | | 826 | | Record of Chebyshev coefficients |

CHEOPS Data Products Definition Document

EXT_APP_SAAMap

Brief: Describing the SAA at a specific altitude.

Description: The purpose of this table is to define the SAA. Each row of the table defines for a point on a latitude / longitude - net if it inside the SAA (SAA_FLAG == true) or if it is outside the SAA (SAA_FLAG == false).

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | EXT | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| SAA Parameters | | | | | |
| ALTITUDE | | real | km | | altitude of the provided SAA |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|------|----------|------|---|
| LATITUDE | int16 | deg | | | Geodetic latitude |
| LONGITUDE | int16 | deg | | | Geodetic longitude |
| SAA_FLAG | bool | | | | true if coordinates define a point inside the SAA |

CHEOPS Data Products Definition Document

EXT_DRFT_StarCatalogue

Brief: CHEOPS Star Catalogue

Description: One table list the target star and the background stars of one visit. It is derived from CHEOPS Star Catalogue. First the EXT_DRFT_StarCatalogue is created by the star_catalogueExtraction tool. visit_combination then creates the EXT_PRE_StarCatalogu and sets the VISITCTR.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this star catalogue |
| DATA_LVL | EXT | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|--------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Target Star | | | | | |
| EXTINCT | | real | | | Extinction for the target star |
| Catalogue attributes | | | | | |
| OBSEPOCH | | real | year | | Position of stars are at this observation epoch |
| CENT_RA | | real | deg | | Center of field RA (OBSEPOCH) |
| CENT_DEC | | real | deg | | Center of field DEC (OBSEPOCH) |
| GAIN | | real | ADU/e | | Gain used to estimate the CCD_ADU |
| FOV | | real | arcsec | | Radius of field of view |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|--------|----------|------|--|
| ID | string | | 20 | | Gaia ID of the star |
| TARGET | bool | | | | true if star is the target star |
| RA | double | deg | | | Right ascension of star at the epoch of the visit (OBSEPOCH) |
| RA_ERR | double | deg | | | Error of the right ascension |
| DEC | double | deg | | | Declination of star at the epoch of the visit (OBSEPOCH) |
| DEC_ERR | double | deg | | | Error of the declination |
| DISTANCE | float | arcsec | | | angular distance to the target star |
| MAG_GAIA | double | mag | | | Brightness of the star in Gaia band |
| MAG_GAIA_ERR | double | mag | | | Error of the brightness of the star in Gaia band |
| T_EFF | double | Kelvin | | | Effective temperature of the star |
| T_EFF_ERR | double | Kelvin | | | Error of effective temperature |

CHEOPS Data Products Definition Document

EXT_PRE_StarCatalogue

Brief: CHEOPS Star Catalogue

Description: One table list the target star and the background stars of one visit. It is derived from CHEOPS Star Catalogue. First the EXT_DRFT_StarCatalogue is created by the star_catalogueExtraction tool. visit_combination then creates the EXT_PRE_StarCatalogue and sets the VISITCTR.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this star catalogue |
| DATA_LVL | EXT | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|--------|------|---|
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Target Star | | | | | |
| EXTINCT | | real | | | Extinction for the target star |
| Catalogue attributes | | | | | |
| OBSEPOCH | | real | year | | Position of stars are at this observation epoch |
| CENT_RA | | real | deg | | Center of field RA (OBSEPOCH) |
| CENT_DEC | | real | deg | | Center of field DEC (OBSEPOCH) |
| GAIN | | real | ADU/e | | Gain used to estimate the CCD_ADU |
| FOV | | real | arcsec | | Radius of field of view |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|--------|----------|------|--|
| ID | string | | 20 | | Gaia ID of the star |
| TARGET | bool | | | | true if star is the target star |
| RA | double | deg | | | Right ascension of star at the epoch of the visit (OBSEPOCH) |
| RA_ERR | double | deg | | | Error of the right ascension |
| DEC | double | deg | | | Declination of star at the epoch of the visit (OBSEPOCH) |
| DEC_ERR | double | deg | | | Error of the declination |
| DISTANCE | float | arcsec | | | angular distance to the target star |
| MAG_GAIA | double | mag | | | Brightness of the star in Gaia band |
| MAG_GAIA_ERR | double | mag | | | Error of the brightness of the star in Gaia band |
| T_EFF | double | Kelvin | | | Effective temperature of the star |
| T_EFF_ERR | double | Kelvin | | | Error of effective temperature |

CHEOPS Data Products Definition Document

MCO_REP_BadPixelMapFullArray

Brief: Bad Pixel Map of a Full-Array

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapFullArray is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMap. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map. Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data provenance | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------|---------|-----------|------|----|---|
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Bad Pixel Map attributes | | | | | |
| METHOD | | string | | | applied method to detect bad pixels |
| METH_LIM | | real | | | limit to detect bad pixels by the METHOD |
| Used reference files | | | | | |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| FF_RF | N/A | string | | | name of flat field reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| MCO_REP_BadPixelMapLeft | image | no |
| MCO_REP_BadPixelMapRight | image | no |
| MCO_REP_BadPixelMapTop | image | no |

MCO_REP_BadPixelMapLeft

Brief: Bad Pixel Map of the CCD margin area left dark

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapLeft, MCO_REP_BadPixelRight is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMapLeft, REF_APP_BadPixelMapRight. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

CHEOPS Data Products Definition Document

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

MCO_REP_BadPixelMapRight

Brief: Bad Pixel Map of the CCD margin area right dark

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapLeft, MCO_REP_BadPixelRight is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMapLeft, REF_APP_BadPixelMapRight. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

CHEOPS Data Products Definition Document

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

CHEOPS Data Products Definition Document

MCO_REP_BadPixelMapSubArray

Brief: Bad Pixel Map of a Sub-Array

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapSubArray is created. After an inspection by PSO / Instrument Team the REF_APP_BadPixelMap will be updated. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------|---------|-----------|-------|----|--|
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Bad Pixel Map attributes | | | | | |
| METHOD | | string | | | applied method to detect bad pixels |
| METH_LIM | | real | | | limit to detect bad pixels by the METHOD |
| Used reference files | | | | | |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| FF_RF | N/A | string | | | name of flat field reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 0 | | X axis |
| axis2 | 0 | | Y axis |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| MCO_REP_BadPixelMapLeft | image | no |
| MCO_REP_BadPixelMapRight | image | no |
| MCO_REP_BadPixelMapTop | image | no |

MCO_REP_BadPixelMapTop

Brief: Bad Pixel Map of the CCD margin area top dark

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapTop is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMapTop. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

CHEOPS Data Products Definition Document

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 0 | | X axis |
| axis2 | 3 | | Y axis |

CHEOPS Data Products Definition Document

MCO_REP_DarkFrameFullArray

Brief: Dark Frame FullArray

Description: The Frame is a result of dark M and C observations. It can be used to update the REF_APP_DarkFrame The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|---|
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Used reference files | | | | | |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| CCDLN_RF | N/A | string | | | name of CCD Linearisation reference file |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 2 | | data type |

Associated HDUs

| Name | Type | Optional |
|------------------------|-------|----------|
| MCO_REP_DarkFrameLeft | image | no |
| MCO_REP_DarkFrameRight | image | no |
| MCO_REP_DarkFrameTop | image | no |

CHEOPS Data Products Definition Document

MCO_REP_DarkFrameLeft

Brief: Dark Frame of the left CCD margin area

Description: The Frame is a result of dark M and C observations. It can be used to update the REF_APP_DarkFrameLeft The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|---------|---------|-----------|------|----|---|
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |
| axis3 | 2 | | data type |

CHEOPS Data Products Definition Document

MCO_REP_DarkFrameRight

Brief: Dark Frame of the right CCD margin area

Description: The Frame is a result of dark M and C observations. It can be used to update the REF_APP_DarkFrameRight The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|---------|---------|-----------|------|----|---|
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |
| axis3 | 2 | | data type |

CHEOPS Data Products Definition Document

MCO_REP_DarkFrameSubArray

Brief: Dark Frame SubArray

Description: The Frame is a result of dark M and C observations. It can be used to update the REF_APP_DarkFrame The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|---------|-----------|-------|------|--|
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Used reference files | | | | | |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| CCDLN_RF | N/A | string | | | name of CCD Linearisation reference file |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 0 | | X axis |
| axis2 | 0 | | Y axis |
| axis3 | 2 | | data type |

Associated HDUs

| Name | Type | Optional |
|------------------------|-------|----------|
| MCO_REP_DarkFrameLeft | image | no |
| MCO_REP_DarkFrameRight | image | no |
| MCO_REP_DarkFrameTop | image | no |

CHEOPS Data Products Definition Document

MCO_REP_DarkFrameTop

Brief: Dark Frame of the top CCD margin area

Description: The Frame is a result of dark M and C observations. It can be used to update the REF_APP_DarkFrameTop. The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|--------------|-------------|--------|---|
| EXT_VER | 13.0 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |

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| Name | Default | Data type | Unit | DB | Comment |
|---------|---------|-----------|------|----|---|
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 0 | | X axis |
| axis2 | 3 | | Y axis |
| axis3 | 2 | | data type |

MPS_PRE_VisitConstraints

Brief: Table of visit constraints, created by the mission planning system

Description: There shall be one FITS file with such a table as second extension per short term planning cycle, i.e. one per week . The first extension is always a MPS_PRE_Visit data structure of the same planning cycle. The parameters of one visit constraint at a given time are defined in one row of the table. There shall be one set of values per minute. The rows shall be ordered by increasing time.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 7.3 | string | | | version of the data structure |
| DATA_LVL | MPS | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|----------------|----------|------|---|
| PROGRAMME_TYPE | uint8 | | | | Type of the programme |
| PROGRAMME_ID | uint16 | | | | Programme Id of this type of programme |
| REQUEST_ID | uint16 | | | | Observation request Id of this programme |
| OBSID | uint32 | | | | OBSID per visit as defined by MPS |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| LOS_TO_SUN_ANGLE | double | deg | | | Angle between target and Sun |
| LOS_TO_MOON_ANGLE | double | deg | | | Angle between target and Moon |
| STRAY_LIGHT | double | Photons/px/sec | | | Expected stray light |
| EARTH_OCCULTATION | bool | | | | true=Target occulted by the earth |
| SAA_FLAG | bool | | | | true=inside the SAA zone, relevant for data suspend |

MPS_PRE_Visits

Brief: Table of planned visits, created by the mission planning system

Description: There shall be one FITS file with such a table as first extension per short term planning cycle, i.e. one per week. There is always a second extension of data type MPS_PRE_VisitConstraints. The parameters of one visit are defined in one row of the table. Time periods between visits are not described here. The rows shall be ordered by increasing time.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | MPS | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|--|
| PROGRAMME_TYPE | uint8 | | | | Type of the programme |
| PROGRAMME_ID | uint16 | | | | Programme Id of this type of programme |
| REQUEST_ID | uint16 | | | | Observation request Id of this programme |
| OBSID | uint32 | | | | OBSID per visit as defined by MPS |
| UTC_TIME_START | UTC | TIMESYS=UTC | | | start time of the visit |
| UTC_TIME_STOP | UTC | TIMESYS=UTC | | | end time of the visit |
| PI_NAME | string | | 36 | | Name of the PI of the observing program |
| PI_UID | uint32 | | | | Account ID of the PI at UGE |
| E_MAIL | string | | 128 | | E-mail of the PI |
| PROP_FIRST_VISIT | uint32 | days | | | Proprietary period, depending on first visit |
| PROP_LAST_VISIT | uint32 | days | | | Proprietary period, depending on last visit |
| TARGET_NAME | string | | 24 | | Name of the target as provided by the proposal |
| SPECTRAL_TYPE | string | | 15 | | Spectral type of target star |
| OBS_CATEGORY | string | | 24 | | Observation Category |
| READOUT_MODE | string | | 12 | | Requested readout mode: faint, bright or ultrabright |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|----------------|----------|------|---|
| MARGIN_MODE | string | | 16 | | On-board processing mode of the CCD margins |
| EXPTIME | float | sec | | | Exposure time of the individual exposures |
| NEXP | uint16 | | | | Number of measurements that shall be stacked. |
| NEXP_IMAGETTES | uint16 | | | | Number of imagettes that shall be stacked on-board. |
| N_FULLFRAME_EXP | uint16 | | | | Number of un-stacked FullFrame exposures |
| N_WINDOWFRAME_EXP | uint32 | | | | Number of un-stacked WindowFrame exposures. |
| MAG_TARG | double | mag | | | Brightness of the target in Gaia band |
| RA_TARG | double | deg | | | RA of the target at epoch of observation |
| DEC_TARG | double | deg | | | DEC of the target at epoch of observation |
| TRANSIT_TIME | BJD | BJD(TT) | | | Central time of a transit |
| TRANSIT_PERIOD | double | day | | | Time between two consecutive transits. |
| TARGET_LOCATION_X | float | pixel | | | Intended X location of the target on the Full Array CCD without margins. Center of first pixel = 0.50 |
| TARGET_LOCATION_Y | float | pixel | | | Intended Y location of the target on the Full Array CCD without margins. Center of first pixel = 0.50 |
| STRAY_LIGHT_THRESHOLD | double | Photons/px/sec | | | stray light threshold, used to discard images on-board |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| MPS_PRE_VisitConstraints | table | no |

PIP_CAL_FlatFieldError

Brief: Error of the Flat Field calculated by Data Reduction.

Description: This data structure is used to provide the calculated Flat Field to the report generation tool.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|---------------|
| naxis | 2 | | |
| axis1 | 1024 | pixel | X axis of CCD |
| axis2 | 1024 | pixel | Y axis of CCD |

PIP_CAL_FlatField

Brief: Flat Field calculated by Data Reduction.

Description: This data structure is used to provide the calculated Flat Field to the report generation tool.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|-----------|------|------|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|---------------|
| naxis | 2 | | |
| axis1 | 1024 | pixel | X axis of CCD |
| axis2 | 1024 | pixel | Y axis of CCD |

Associated HDUs

| Name | Type | Optional |
|------------------------|-------|----------|
| PIP_CAL_FlatFieldError | table | no |

PIP_COR_BkgSLImageMetadata

Brief: Meta data of the Background and Straylight images, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube. It stores meta data of that image.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| BKG_ERROR | double | | | | error introduced by the correction per pixel |
| CE_COUNTER | uint16 | | | | image counter per visit |

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PIP_COR_BkgSLSubArray

Brief: Applied Background and Straylight in the SCI_COR_SubArray

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_START_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 0 | pixel | Y axis of CCD |
| axis3 | 0 | #IMAGES | Image number in the sequence (should be N_IMAGES size) |

Associated HDUs

| Name | Type | Optional |
|----------------------------|-------|----------|
| PIP_COR_BkgSLImageMetadata | table | no |

PIP_COR_Centroid

Brief: Stores the centroid data as they were calculated by Data Reduction

Description: There is one row per sub-frame image.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|-------------|----------|------|--|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| IMAGE_INDEX | uint16 | | | | Index of the full or subframe this centroid belongs to |
| LOCATION_X | float | pixel | | | intended X position of target on CCD [SOC coordinate system] |
| LOCATION_Y | float | pixel | | | intended Y position of target on CCD [SOC coordinate system] |
| CENTROID_X | float | pixel | | | calculated X position of target on CCD [SOC coordinate system] |
| CENTROID_Y | float | pixel | | | calculated Y position of target on CCD [SOC coordinate system] |
| VALIDITY | uint8 | | | | 0: OK, other: not OK |

CHEOPS Data Products Definition Document

PIP_COR_PixelFlagMapSubArray

Brief: A Pixel Map of flags derived by Data Reduction

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|---------|--------------|-------|--------|--|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 0 | | X axis |
| axis2 | 0 | | Y axis |

CHEOPS Data Products Definition Document

PIP_REP_BadPixelMapFullArray

Brief: Bad Pixel Map of a Full-Array

Description: Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel, 3 = telegraphic pixel

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------|---------|--------------|------|--------|---|
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Bad Pixel Map attributes | | | | | |
| METHOD | | string | | | applied method to detect bad pixels |
| METH_LIM | | real | | | limit to detect bad pixels by the METHOD |
| Used reference files | | | | | |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| FF_RF | N/A | string | | | name of flat field reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| PIP_REP_BadPixelMapLeft | image | no |
| PIP_REP_BadPixelMapRight | image | no |
| PIP_REP_BadPixelMapTop | image | no |

CHEOPS Data Products Definition Document

PIP_REP_BadPixelMapLeft

Brief: Bad Pixel Map of the CCD margin area left dark

Description: Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel, 3 = telegraphic pixel

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

CHEOPS Data Products Definition Document

PIP_REP_BadPixelMapRight

Brief: Bad Pixel Map of the CCD margin area right dark

Description: Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

CHEOPS Data Products Definition Document

PIP_REP_BadPixelMapTop

Brief: Bad Pixel Map of the CCD margin area top dark

Description: Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel, 3 = telegraphic pixel

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 0 | | X axis |
| axis2 | 3 | | Y axis |

PIP_REP_DarkColumns

Brief: Defines the NEW detected corrupted dark columns of the CCD

Description: There is one row in this table. The value of column LEFT_DARK defines as a bit pattern the NEW columns of the left dark margin which are corrupted (corresponding bit = 1) compared to the columns defined in REF_AFF_DarkColumns. Similar the value in RIGHT_DARK defines the NEW corrupted columns of the right dark margin. The header keyword REF_DRKC specifies the filename of the REF_APP_DarkColumn reference file that was used as reference to detect new dark columns.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| DRKC_RF | N/A | string | | | name of the dark columns reference file |
| BIAS_RF | N/A | string | | | name of bias reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---|
| LEFT_DARK | uint16 | | | | defines the good columns of the left dark margin |
| RIGHT_DARK | uint16 | | | | defines the good columns of the right dark margin |

CHEOPS Data Products Definition Document

PIP_REP_DetectedCosmics

Brief: A table to store parameters of detected cosmic rays in a table useful for reports

Description: It can be used to store parameters per cosmic ray detected in the images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |
| Used reference files | | | | | |
| BIAS_RF | N/A | string | | | name of bias reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |
| FF_RF | N/A | string | | | name of flat field reference file |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| CE_COUNTER | uint16 | | | | image counter per visit |
| IMAGE_NUM | uint16 | | | | data belong to this image number in the cube, first image = 0 |
| RELATED_DATA | string | | 32 | | Structure name in which the cosmic ray was detected |
| X_CENT_POS | float | pixel | | | Centroid X coordinate |
| Y_CENT_POS | float | pixel | | | Centroid Y coordinate |
| ELLIPTICITY | float | | | | Detected ellipticity of the track of the cosmic ray |
| POS_ANGLE | float | deg | | | Position angle of ellipse |
| SIZE_SMAJOR_AXIS | float | pixel | | | Semimajor axis of ellipse |
| SIZE_SMINOR_AXIS | float | pixel | | | Semiminor axis of ellipse |
| NUM_PIXELS | uint16 | | | | Number of pixels affected by the cosmic ray |

PIP_REP_DetectedStars

Brief: A generic table to store parameters in a table useful for reports

Description: It can be used to store parameters per star detected in the images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |
| Used reference files | | | | | |
| BIAS_RF | N/A | string | | | name of bias reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |
| FF_RF | N/A | string | | | name of flat field reference file |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| CE_COUNTER | uint16 | | | | image counter per visit |
| IMAGE_NUM | uint16 | | | | data belong to this image number in the cube, first image = 0 |
| STAR_ID | uint16 | | | | ID of the detected star in the image |
| X_CENT_POS | float | pixel | | | Centroid X coordinate |
| Y_CENT_POS | float | pixel | | | Centroid Y coordinate |
| ELLIPTICITY | float | | | | Detected source ellipticity |
| POS_ANGLE | float | deg | | | Position angle of ellipse |
| SIZE_SMAJOR_AXIS | float | pixel | | | Semimajor axis of ellipse |
| SIZE_SMINOR_AXIS | float | pixel | | | Semiminor axis of ellipse |
| FLUX | float | ADU | | | Raw flux from pixels which are above detection threshold |

CHEOPS Data Products Definition Document

PIP_REP_Image

Brief: A general 3D - image.

Description: A general 3D image. Can be used by any pipeline program to provide an output image.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this intermediate image |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Used reference files | | | | | |
| BIAS_RF | N/A | string | | | name of bias reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |
| FF_RF | N/A | string | | | name of flat field reference file |

Image

| | |
|-------------------|--------|
| Data type | uint32 |
| Null value | 0 |

| Column | Value | Unit | Comment |
|--------|-------|---------|-------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Z axis |

PIP_REP_MultiParameters

Brief: A generic table to store parameters in a table useful for reports

Description: It can be used to store parameters per star detected in the images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |
| Used reference files | | | | | |
| LMTS_RF | N/A | string | | | name of Limits reference file |
| BIAS_RF | N/A | string | | | name of bias reference file |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |
| BP_RF | N/A | string | | | name of bad pixel reference file |
| BPM_RF | N/A | string | | | name of bad pixel map reference file |
| FF_RF | N/A | string | | | name of flat field reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| CE_COUNTER | uint16 | | | | image counter per visit |
| IMAGE_NUM | uint16 | | | | data belong to this image number in the cube, first image = 0 |
| RELATED_DATA | string | | 32 | | Structure name, the value was derived from. |
| STAR_ID | uint16 | | | | ID of the star on the image |
| NAME | string | | 32 | | the name of the QL parameter |
| VALUE | float | | | | value of the variable |
| UNIT | string | | 16 | | unit of the variable |

PIP_REP_OutOfLimit

Brief: List of parameters which have a value that is outside the accepted range

Description: The accepted range of a value is defined by the REF_APP_Limit data structure. A soft limit and a hard limit can be defined per parameter. This table is create by the limit_check program.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T Eff | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|--------------|------|--------|---|
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |
| Used reference files | | | | | |
| LMTS_RF1 | N/A | string | | | name of first Limits reference file |
| LMTS_RF2 | N/A | string | | | name of second Limits reference file |
| LMTS_RF3 | N/A | string | | | name of third Limits reference file |
| LMTS_RF4 | N/A | string | | | name of fourth Limits reference file |
| LMTS_RF5 | N/A | string | | | name of fifth Limits reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|-------------|----------|------|---|
| PARAM_NAME | string | | 32 | | Name of the parameter |
| STRUCT_NAME | string | | 32 | | Structure name, where the parameter is stored. |
| LEVEL | string | | 4 | | hard or soft |
| TYPE | string | | 5 | | upper or lower |
| UTC_TIME_START | UTC | TIMESYS=UTC | | | start time out of limit period |
| UTC_TIME_STOP | UTC | TIMESYS=UTC | | | stop time out of limit period |
| LIMIT_VAL | double | | | | The limit that was exceeded |
| PARAM_MEAN | double | | | | Average value of the parameter, while it is out of limit |
| PARAM_EXTREME | double | | | | Extreme (min or max) value of the parameter, while it is out of limit |
| UNIT | string | | 8 | | The unit of the parameter |

PIP_REP_Parameters

Brief: A generic table to store parameters in a table useful for reports

Description: It can be used to store parameters per star detected in the images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |
| Parameter Names | | | | | |
| N_PARA01 | | string | | | name of first parameter |
| U_PARA01 | | string | | | unit of first parameter |
| N_PARA02 | | string | | | name of second parameter |
| U_PARA02 | | string | | | unit of second parameter |
| N_PARA03 | | string | | | name of third parameter |
| U_PARA03 | | string | | | unit of third parameter |
| N_PARA04 | | string | | | name of fourth parameter |
| U_PARA04 | | string | | | unit of fourth parameter |
| N_PARA05 | | string | | | name of fifth parameter |
| U_PARA05 | | string | | | unit of fifth parameter |
| N_PARA06 | | string | | | name of sixth parameter |
| U_PARA06 | | string | | | unit of sixth parameter |
| N_PARA07 | | string | | | name of seventh parameter |
| U_PARA07 | | string | | | unit of seventh parameter |
| N_PARA08 | | string | | | name of eighth parameter |
| U_PARA08 | | string | | | unit of eighth parameter |
| N_PARA09 | | string | | | name of ninth parameter |
| U_PARA09 | | string | | | unit of ninth parameter |
| N_PARA10 | | string | | | name of tenth parameter |
| U_PARA10 | | string | | | unit of tenth parameter |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| IMAGE_NUM | uint16 | | | | date belong to this image number in the cube, first image = 0 |
| STAR_ID | uint16 | | | | ID of the star on the image |
| PARAM01 | float | | | | data of first parameter |
| PARAM02 | float | | | | data of second parameter |
| PARAM03 | float | | | | data of third parameter |

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| Name | Data type | Unit | Bin size | Null | Comment |
|---------|-----------|------|----------|------|---------------------------|
| PARAM04 | float | | | | data of fourth parameter |
| PARAM05 | float | | | | data of fifth parameter |
| PARAM06 | float | | | | data of sixth parameter |
| PARAM07 | float | | | | data of seventh parameter |
| PARAM08 | float | | | | data of eighth parameter |
| PARAM09 | float | | | | data of ninth parameter |
| PARAM10 | float | | | | data of tenth parameter |

PIP_REP_Plots

Brief: A generic table to store parameters in a table useful for reports

Description: It can be used to store parameters per images and used by the reports to generate plots.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |
| Parameter Names | | | | | |
| N_PARA01 | | string | | | name of first parameter |
| U_PARA01 | | string | | | unit of first parameter |
| N_PARA02 | | string | | | name of second parameter |
| U_PARA02 | | string | | | unit of second parameter |
| N_PARA03 | | string | | | name of third parameter |
| U_PARA03 | | string | | | unit of third parameter |
| N_PARA04 | | string | | | name of fourth parameter |
| U_PARA04 | | string | | | unit of fourth parameter |
| N_PARA05 | | string | | | name of fifth parameter |
| U_PARA05 | | string | | | unit of fifth parameter |
| N_PARA06 | | string | | | name of sixth parameter |
| U_PARA06 | | string | | | unit of sixth parameter |
| N_PARA07 | | string | | | name of seventh parameter |
| U_PARA07 | | string | | | unit of seventh parameter |
| N_PARA08 | | string | | | name of eighth parameter |
| U_PARA08 | | string | | | unit of eighth parameter |
| N_PARA09 | | string | | | name of ninth parameter |
| U_PARA09 | | string | | | unit of ninth parameter |
| N_PARA10 | | string | | | name of tenth parameter |
| U_PARA10 | | string | | | unit of tenth parameter |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| IMAGE_NUM | uint16 | | | | date belong to this image number in the cube, first image = 0 |
| PARAM01 | float | | | | data of first parameter |
| PARAM02 | float | | | | data of second parameter |
| PARAM03 | float | | | | data of third parameter |
| PARAM04 | float | | | | data of fourth parameter |

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| Name | Data type | Unit | Bin size | Null | Comment |
|---------|-----------|------|----------|------|---------------------------|
| PARAM05 | float | | | | data of fifth parameter |
| PARAM06 | float | | | | data of sixth parameter |
| PARAM07 | float | | | | data of seventh parameter |
| PARAM08 | float | | | | data of eighth parameter |
| PARAM09 | float | | | | data of ninth parameter |
| PARAM10 | float | | | | data of tenth parameter |

PIP_REP_Text

Brief: Input table for the report generation, defining the values of variables in the report template

Description: There has to be one row for each variable of the report template. The name of the variable as defined in the report template and its value are stored here. During the report generation the variable placeholder in the template will be replaced by its value.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------|---------|-----------|------|------|--|
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------|-----------|------|----------|------|---|
| NAME | string | | 32 | | the name of a variable in the report template |
| VALUE | string | | 128 | | value of the variable |
| UNIT | string | | 16 | | unit of the variable |

PIP_REP_TrendParameters

Brief: A generic table to store parameters in a table useful for trend reports.

Description: It can be used to store parameters per star detected in the images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 9.0 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this report |
| DATA_LVL | | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_START_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_START_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Report Classification | | | | | |
| REP_TYPE | | string | | | type of report |
| REP_WP | | string | | | work package creating the report |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|-------------|----------|------|--|
| UTC_START | UTC | TIMESYS=UTC | | | time of the first data entry considered for this parameter |
| MJD_START | MJD | day | | | time of the first data entry considered for this parameter |
| UTC_STOP | UTC | TIMESYS=UTC | | | time of the last data entry considered for this parameter |
| MJD_STOP | MJD | day | | | time of the last data entry considered for this parameter |
| NUM_DATA | uint16 | | | | number of data entries that was aggregated or used in this trend parameter |
| RELATED_DATA | string | | 32 | | Structure name, the value was derived from. |
| NAME | string | | 32 | | the name of the QL parameter |
| VALUE | float | | | | value of the variable |
| UNIT | string | | 16 | | unit of the variable |

PIP_REP_VisitStatus

Brief: Defines the status of data that belong to the same visit and the same pass.

Description: This table consist of exactly one row per stacked image, defining the status of the visit during the exposure time of the image.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | QL | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|---------|-----------|----------------|------|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Applied Limits | | | | | |
| ATT_LIM | | real | arcsec | | Limit to define the attitude as good |
| EXP_LIM | | real | msec | | Limit to define the exposure time as good |
| IMA_LIM | | integer | | | Limit to define the number of stacked images as good |
| STL_LIM | | real | Photons/px/sec | | stray light limit |
| Requested and Reported data | | | | | |
| RD_MODE | | string | | | Reported read out mode |
| REQ_EXPT | | real | sec | | Requested total exposure time of stacked images |
| REP_EXPT | | real | sec | | Reported total exposure time of stacked images by the instrument |
| REQ_NEXP | | integer | | | Requested number of co-added measurements |
| REP_NEXP | | integer | | | Reported number of co-added measurements by the instrument |
| REQ_RDMD | | string | | | Requested read out mode |
| Used reference files | | | | | |
| LMTS_RF | N/A | string | | | name of Limits reference file |
| DRKC_RF | N/A | string | | | name of the dark columns reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|----------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| SC_RA | float | | | | RA of the spacecraft |
| SC_DEC | float | | | | DEC of the spacecraft |
| SC_ROLL_ANGLE | float | | | | Roll angle of the spacecraft |
| ATTITUDE_ERROR | float | arcsec | | | Attitude error |
| EXP_TIME_ERROR | float | msec | | | Exposure time error |
| NUM_IMAGES_ERROR | int16 | | | | Error in the number of stacked images. |
| READ_OUT_MODE | string | | 12 | | Reported read out mode |
| READ_OUT_MODE_ERROR | bool | | | | Read out mode - error |
| CCD_MARGIN_ERROR | bool | | | | CCD Margin - error |
| HK_ERROR | bool | | | | A critical HK parameter exceeds its hard limit |
| MISSING_DR_DATA | bool | | | | Critical Data for Data Reduction is missing |
| STRAY_LIGHT | double | Photons/px/sec | | | stray light level of the image |
| STRAY_LIGHT_ERROR | bool | | | | stray light is too high |
| GOOD_TIME | bool | | | | true if all visit success criteria are fulfilled. |

REF_APP_BadPixelMap

Brief: Bad Pixel Map of a Full-Array

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapFullArray is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMap. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Bad Pixel Map attributes | | | | | |
| METHOD | | string | | | applied method to detect bad pixels |
| METH_LIM | | real | | | limit to detect bad pixels by the METHOD |
| Used reference files | | | | | |
| GAIN_RF | N/A | string | | | name of Gain Correction reference file |
| FF_RF | N/A | string | | | name of flat field reference file |
| DARK_RF | N/A | string | | | name of dark frame reference file |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

Associated HDUs

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| Name | Type | Optional |
|---------------------------|-------|----------|
| REF_APP_BadPixelMapLeft | image | no |
| REF_APP_BadPixelMapRight | image | no |
| REF_APP_BadPixelMapTop | image | no |
| REF_APP_PhotPixelMap | image | no |
| REF_APP_PhotPixelMapLeft | image | no |
| REF_APP_PhotPixelMapRight | image | no |
| REF_APP_PhotPixelMapTop | image | no |

REF_APP_BadPixelMapLeft

Brief: Bad Pixel Map of the CCD margin area left dark

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapLeft, MCO_REP_BadPixelRight is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMapLeft, REF_APP_BadPixelMapRight. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

REF_APP_BadPixelMapRight

Brief: Bad Pixel Map of the CCD margin area top right dark

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapLeft, MCO_REP_BadPixelRight is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMapLeft, REF_APP_BadPixelMapRight. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

REF_APP_BadPixelMapTop

Brief: Bad Pixel Map of the CCD margin area top dark

Description: The Bad Pixel Map is derived from the dark MandC observations. First the MCO_REP_BadPixelMapTop is created. After an inspection by PSO / Instrument Team it will be approved and copied to REF_APP_BadPixelMapTop. This approved data structure will be provided to the programs of the CHEOPS data processing. The ground calibration also provides an approved Pad Pixel Map Pixels can have following values: -2: totally dead pixel, -1 = partially dead pixel, 0 = good pixel, 1 = hot pixel, 2 = saturated pixel 3 = telegraphic pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | int16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 0 | | X axis |
| axis2 | 3 | | Y axis |

REF_APP_BiasBlankLeftFrame

Brief: Calibration Product: bias frame of the CCD margin area left blank

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 8 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasBlankRightFrame

Brief: Calibration Product: bias frame of the CCD margin area blank right

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 8 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasDarkLeftFrame

Brief: Calibration Product: bias frame of the CCD margin area dark left

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 16 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasDarkRightFrame

Brief: Calibration Product: bias frame of the CCD margin area dark right

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 16 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasDarkTopFrame

Brief: Calibration Product: bias frame of the CCD margin area dark top

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 3 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasFrame

Brief: Calibration product: bias frame

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 6 | | data type |

Associated HDUs

| Name | Type | Optional |
|----------------------------|-------|----------|
| REF_APP_BiasFrameMetadata | table | no |
| REF_APP_BiasDarkLeftFrame | image | no |
| REF_APP_BiasDarkRightFrame | image | no |
| REF_APP_BiasDarkTopFrame | image | no |

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| Name | Type | Optional |
|--------------------------------|-------|----------|
| REF_APP_BiasBlankLeftFrame | image | no |
| REF_APP_BiasBlankRightFrame | image | no |
| REF_APP_BiasOverscanRightFrame | image | yes |
| REF_APP_BiasOverscanLeftFrame | image | yes |
| REF_APP_BiasOverscanTopFrame | image | no |
| REF_APP_BiasOffset | table | no |

REF_APP_BiasFrameMetadata

Brief: Calibration Product : Meta data for the bias frames, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|------|----------|------|---|
| DATA_TYPE | string | | 10 | | type of data, either BIAS, BIAS ERROR, or RON |
| FEE_TEMP | float | degC | | | temperature of the FEE |
| CCD_TEMP | float | degC | | | temperature of the CCD |
| RO_FREQU | uint32 | Hz | | | CCD readout frequency |
| RO_HW | string | | 10 | | HW - channel: main or redundant |

REF_APP_BiasOffset

Brief: Calibration Product : Data for the bias offset and readout noise, stored in the same FITS file

Description: Bias offset and readout noise for different instrument configurations and temperature settings.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------|-----------|--------|----------|------|---|
| CCD_TEMP | float | degC | | | Temperature of the CCD |
| RO_FREQU | uint32 | Hz | | | CCD readout frequency |
| RO_HW | string | | 10 | | HW - channel: main or redundant |
| BIAS_OFFSET | float | ADU/px | | | Value of the bias offset in ADU |
| BIAS_OFFSET_ERR | float | ADU/px | | | Value of the error estimate of the bias offset in ADU |
| RON | float | ADU/px | | | Value of the readout noise in ADU |
| RON_ERR | float | ADU/px | | | Value of the error estimate of the readout noise in ADU |

REF_APP_BiasOverscanLeftFrame

Brief: Calibration Product: bias frame of the CCD margin area overscan left

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 4 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasOverscanRightFrame

Brief: Calibration Product: bias frame of the CCD margin area overscan right

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 4 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_BiasOverscanTopFrame

Brief: Calibration Product: bias frame of the CCD margin area overscan top

Description: The image cube consist of 6 images. The standard data are as describe here. The REF_APP_BiasFrameMetadata defined the actual data in the FITS file. 1 = bias frame in ADU, to be used for read-out frequency 230 kHz 2 = bias error frame in ADU, to be used for read-out frequency 230 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 230 kHz 1 = bias frame in ADU, to be used for read-out frequency 100 kHz 2 = bias error frame in ADU, to be used for read-out frequency 100 kHz 3 = RON (read-out noise) in ADU, to be used for read-out frequency 100 kHz

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 13.1.2 | string | | | version of the data structure |
| BUNIT | ADU | string | | | unit of the data in the image |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 3 | | Y axis |
| axis3 | 12 | | data type |

REF_APP_CCDLinearisation100

Brief: The boundaries and the coefficients of the cubic spline for read-out frequency of 100 kHz

Description: A spline function is used to correct for the non linearity of the CCD. The linearisation has to be applied on the e- values. The coefficients of a given row are valid from the e- value defined in the BOUNDARY column of that row up to the e- value (column BOUNDARY) defined in the next row. The e- of the last row is the highest number of electrons for which a correction can be applied.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|------|----------|------|---|
| BOUNDARY | double | | | | the coefficients are valid starting with number of e- |
| COEF_0 | double | | | | spline coefficient of order 0 |
| COEF_1 | double | | | | spline coefficient of order 1 |
| COEF_2 | double | | | | spline coefficient of order 2 |
| COEF_3 | double | | | | spline coefficient of order 3 |

REF_APP_CCDLinearisation230

Brief: The boundaries and the coefficients of the cubic spline for read-out frequency of 230 kHz

Description: A spline function is used to correct for the non linearity of the CCD. The linearisation has to be applied on the e- values. The coefficients of a given row are valid from the e- value defined in the BOUNDARY column of that row up to the e- value (column BOUNDARY) defined in the next row. The e- of the last row is the highest number of electrons for which a correction can be applied.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|------|----------|------|---|
| BOUNDARY | double | | | | the coefficients are valid starting with number of e- |
| COEF_0 | double | | | | spline coefficient of order 0 |
| COEF_1 | double | | | | spline coefficient of order 1 |
| COEF_2 | double | | | | spline coefficient of order 2 |
| COEF_3 | double | | | | spline coefficient of order 3 |

REF_APP_CCDLinearisationLUT100

Brief: a Look-Up-Table to correct for non-linearity of the CCD for read-out frequency of 100 kHz

Description: This LUT can be used to derive the for non-linearity corrected number of electrons.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---|
| NON_LINEAR | float | | | | not corrected number of electrons |
| CORRECTED | float | | | | for non-linearity corrected number of electrons |

Associated HDUs

| Name | Type | Optional |
|--------------------------------|-------|----------|
| REF_APP_CCDLinearisationLUT230 | table | no |
| REF_APP_CCDLinearisation100 | table | no |
| REF_APP_CCDLinearisation230 | table | no |

REF_APP_CCDLinearisationLUT230

Brief: a Look-Up-Table to correct for non-linearity of the CCD for read-out frequency of 230 kHz

Description: This LUT can be used to derive the for non-linearity corrected number of electrons.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---|
| NON_LINEAR | float | | | | not corrected number of electrons |
| CORRECTED | float | | | | for non-linearity corrected number of electrons |

CHEOPS Data Products Definition Document

REF_APP_ColouredPSF

Brief: Calibration product : approved PSF image data cube in 15 wavelengths

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| BANDWID | | real | nm | | band width of each wavelength bin |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------------------|
| naxis | 4 | | |
| axis1 | 200 | | PSF X axis |
| axis2 | 200 | | PSF Y axis |
| axis3 | 15 | | wavelength band |
| axis4 | 4 | | telescope temperature |

Associated HDUs

| Name | Type | Optional |
|-----------------------------|-------|----------|
| REF_APP_ColouredPSFMetadata | table | no |

REF_APP_ColouredPSFMetadata

Brief: Calibration Product : Meta data for the PSF, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 5.0 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|--------|----------|------|--|
| STATUS | int32 | | | | flags indicating the status of each PSF image (valid or invalid for various reasons) |
| WAVELENGTH | float | nm | | | centre of wavelength band |
| INDEX_WAVELENGTH | int32 | | | | index of wavelength axis |
| TEMP_TEL | float | Kelvin | | | telescope temperature |
| THERMAL_MAP | string | | 5 | | thermal map (fixed, cold, hot1, or hot2) |
| INDEX_TEMP | int32 | | | | index of temperature axis |

REF_APP_DarkColumns

Brief: Defines the not corrupted dark columns of the CCD

Description: There is one row in this table. The value of column LEFT_DARK defines as a bit pattern the columns of the left dark margin which are not corrupted (corresponding bit = 1). Similar the value in RIGHT_DARK defines the not corrupted columns of the right dark margin.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---|
| LEFT_DARK | uint16 | | | | defines the good columns of the left dark margin |
| RIGHT_DARK | uint16 | | | | defines the good columns of the right dark margin |

CHEOPS Data Products Definition Document

REF_APP_DarkFrame

Brief: Dark Frame FullArray

Description: The Frame is a result of ground based calibrations or IOC observations. It will be updated using the result of M and C observations The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_START_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 2 | | data type |

Associated HDUs

| Name | Type | Optional |
|------------------------|-------|----------|
| REF_APP_DarkFrameLeft | image | no |
| REF_APP_DarkFrameRight | image | no |
| REF_APP_DarkFrameTop | image | no |

CHEOPS Data Products Definition Document

REF_APP_DarkFrameLeft

Brief: Dark Frame of the left CCD margin area

Description: The Frame is a result of ground based calibrations or IOC observations. It will be updated using the result of M and C observations The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_START_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |
| axis3 | 2 | | data type |

CHEOPS Data Products Definition Document

REF_APP_DarkFrameRight

Brief: Dark Frame of the right CCD margin area

Description: The Frame is a result of ground based calibrations or IOC observations. It will be updated using the result of M and C observations. The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |
| axis3 | 2 | | data type |

CHEOPS Data Products Definition Document

REF_APP_DarkFrameTop

Brief: Dark Frame of the top CCD margin area

Description: The Frame is a result of ground based calibrations or IOC observations. It will be updated using the result of M and C observations. The bias value is already subtracted and it is corrected for non-linearity.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|--------------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| BUNIT | e-/s | string | | | Unit of the data in the image |
| IMAGE1 | dark current | string | | | description of image 1 |
| IMAGE2 | dark error | string | | | description of image 2 |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------|
| naxis | 3 | | |
| axis1 | 0 | | X axis |
| axis2 | 3 | | Y axis |
| axis3 | 2 | | data type |

REF_APP_EventEnumConversion

Brief: Conversion between enum numbers in HK TM data to text

Description: Most Event parameters are defined as enum numbers. This table shall be used to convert the enum number to a meaningful text. Each line defines a conversion from one enum number to its text for a specific calibration curve. There are always at least 2 rows, i. e. 2 conversions per calibration curve.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|--|
| CALIB_NAME | string | | 24 | | Name of the Calibration Curve |
| ENUM | uint16 | | | | enum number as stored in the TM packet |
| TEXT | string | | 30 | | Meaning of the enum number |

REF_APP_EventParamConversion

Brief: Defines the conversion curve that has to be applied for event parameters.

Description: Most Event parameters are defined as enum numbers. The conversion from the enum number to a meaningful text is defined the REF_APP_EventEnumConversion. This table defines the enum conversion by its CALIB_NAME that should be used for a specific Event parameter.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---|
| APID | uint16 | | | | APID of the event TM |
| SEVERITY | uint8 | | | | severity level of event, 1-4 |
| EVT_ID | uint16 | | | | ID of the event |
| EVT_NAME | string | | 24 | | Name of the event |
| PARAM_NAME | string | | 24 | | name of the event parameter |
| PARAM_TYPE | string | | 8 | | data type of event parameter: uint16, uint32, ... |
| CALIB_NAME | string | | 24 | | Name of the Calibration Curve |

REF_APP_FlatFieldFilter

Brief: Calibration product : Flat Field frames at different filter wavelengths

Description: There are two images per measured flat field. The first is the flat field itself, the second is an error map. The flat fields are normalised to their average value.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this Flat Field |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Flat Field attributes | | | | | |
| TEMP | | real | Kelvin | | temperature of the CCD at the time the flat field frames were taken |
| Used reference files | | | | | |
| FF_RF | N/A | string | | | name of flat field reference file |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|------------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |
| axis3 | 96 | | wavelength |

Associated HDUs

| Name | Type | Optional |
|---------------------------------|-------|----------|
| REF_APP_FlatFieldFilterMetadata | table | no |

REF_APP_FlatFieldFilterMetadata

Brief: Calibration Product : Meta data for the Flat Field, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this Flat Field |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|------|----------|------|---|
| DATA_TYPE | string | | 16 | | type of data, either FLAT FIELD or FLAT FIELD ERROR |
| FILTER | string | nm | 5 | | filer (U,B,V,R or I) or wavelength of Flat Field in current corresponding bin |
| BANDWIDTH | float | nm | | | bandwidth of the Flat Field in current wavelength bin |
| STATUS | int32 | | | | flags indicating the status of each Flat Field image (valid or invalid for various reasons) |

REF_APP_FlatFieldTeff

Brief: Calibration product : Calculated Flat Field frames for different Teff

Description: There are two images per calculated flat field. The first is the flat field itself, the second is an error map. In the data cube first all the Flat Fields are stored than their error maps. See also column DATA_TYPE in the attached REF_APP_FlatFieldTeffMetadata table. The flat fields are normalised to their average value. One pixel in the flat field correspond to one CCD pixel.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this Flat Field |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Flat Field attributes | | | | | |
| TEMP | | real | Kelvin | | temperature of the CCD at the time the flat field frames were taken |
| Used reference files | | | | | |
| FF_RF | N/A | string | | | name of flat field reference file |
| SED_T_RF | N/A | string | | | name of Teff-SED reference file |
| SED_F_RF | N/A | string | | | name of Filter-SED reference file |
| THRGH_RF | N/A | string | | | name of Throughput reference file |
| QE_RF | N/A | string | | | name of QE reference file |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 3 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

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| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| axis3 | 0 | | Teff |

Associated HDUs

| Name | Type | Optional |
|-------------------------------|-------|----------|
| REF_APP_FlatFieldTeffMetadata | table | no |

REF_APP_FlatFieldTeffMetadata

Brief: Calibration Product : Meta data for the Flat Field, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 10.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this Flat Field |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------|-----------|------|----------|------|---|
| DATA_TYPE | string | | 16 | | type of data, either FLAT FIELD or FLAT FIELD ERROR |
| T_EFF | float | K | | | Effective Temperature for which the corresponding Flat Field can be used. |
| STATUS | int32 | | | | flags indicating the status of each flat field image (valid or invalid for various reasons) |

REF_APP_FluxConversion

Brief: The file provides a set of parameters to convert ADUs, electrons, photons (flux) and magnitudes consistently.

Description: For details, see: https://redmine.astro.unige.ch/projects/cheops/wiki/Flux_Conversion

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| THR_AREV | | integer | | | Archive revision number of REF_APP_Throughput used to generate this file |
| THR_PNUM | | integer | | | Processing Number of REF_APP_Throughput used to generate this file |
| QE_AREV | | integer | | | Archive revision number of REF_APP_QE used to generate this file |
| QE_PNUM | | integer | | | Processing Number of REF_APP_QE used to generate this file |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Vega star | | | | | |
| F0_X | | real | electrons/s | | CHEOPS Flux of Vega star |
| X0 | | real | mag | | CHEOPS magnitude of Vega star |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------------|-----------|--------|----------|------|---|
| T_EFF | double | Kelvin | | | Effective temperature of the star |
| CHEOPSMAG_MINUS_GMAG | double | mag | | | CHEOPS magnitude - Gaia magnitude |
| ELECTRONS_PER_PHOTON | double | | | | $\text{integral}[\text{spectrum}(\text{Teff}) * \text{transmission} * \text{QE}] / \text{integral}[\text{spectrum}(\text{Teff}) * \text{transmission}]$ |

REF_APP_GainCorrection

Brief: A formula to correct the gain.

Description: The result of the formula specified in this table is the "System gain in ADU/e-". The formula has to be applied for every pixel of an image. The formula is a polynomial expression that depends on up to 5 parameters. These are HK_VOLT_FEE_VOD, HK_VOLT_FEE_VRD, HK_VOLT_FEE_VOS, HK_VOLT_FEE_VSS and HK_TEMP_FEE_CCD. The values of these parameters have to be read from the SCI_RAW_ImageMetadata table that is located in the same FITS file as the images that shall be corrected. That table has one column for each of these 5 parameters and one row for each of a 2-D image in the image-cube. The syntax of the formula is $GAIN_NOM * (1 + \sum_{n=1}^5 factor(n) * (HK_VOLT_FEE_VSS - VSS_offset)^{exp_VSS(n)} * (HK_VOLT_FEE_VOD - HK_VOLT_FEE_VSS - VOD_offset)^{exp_VOD(n)} * (HK_VOLT_FEE_VRD - HK_VOLT_FEE_VSS - VRG_offset)^{exp_VRD(n)} * (HK_VOLT_FEE_VOG - HK_VOLT_FEE_VSS - VOG_offset)^{exp_VOG(n)} * (HK_TEMP_FEE_CCD + TEMP_offset)^{exp_TEMP(n)})$. The values of the 5 constant parameters VSS_offset, VOD_offset, VRG_offset, VOG_offset and TEMP_offset are stored in 5 header keywords. The values of the 6 parameters factor(n), exp_VSS(n), exp_VOD(n), exp_VRG(n), exp_VOG(n) and exp_TEMP(n) are stored in the 6 columns of this FITS table. The typical values of the exp_* parameters are 0, 1, 2, or 3. For each (n) one row of the table is used.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| Voltage offsets | | | | | |
| VSS_OFF | | real | V | | Nominal VSS voltage |
| VOD_OFF | | real | V | | Nominal VOD voltage relative to VSS |
| VRD_OFF | | real | V | | Nominal VRD voltage relative to VSS |
| VOG_OFF | | real | V | | Nominal VOG voltage relative to VSS |
| TEMP_OFF | | real | degC | | Nominal CCD temperature |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Gain attributes | | | | | |
| RO_HW | | string | | | used for on-board HW: main or redundant |
| GAIN_NOM | | real | | | nominal gain |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|---------------------------------------|
| FACTOR | double | | | | constant factor of the nth polynomial |
| FACTOR_ERR | double | | | | error of factor |

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| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|------|----------|------|---|
| EXP_VSS | uint16 | | | | exponent of HK_VOLT_FEE_VSS of the nth polynomial |
| EXP_VOD | uint16 | | | | exponent of HK_VOLT_FEE_VOD of the nth polynomial |
| EXP_VRD | uint16 | | | | exponent of HK_VOLT_FEE_VRD of the nth polynomial |
| EXP_VOG | uint16 | | | | exponent of HK_VOLT_FEE_VOG of the nth polynomial |
| EXP_TEMP | uint16 | | | | exponent of HK_TEMP_FEE_CCD of the nth polynomial |

REF_APP_HkEnumConversion

Brief: Conversion between enum numbers in HK TM data to text

Description: Some HK parameters are defined as enum numbers. This table shall be used to convert the enum number to a meaningful text. Each line defines a conversion from one enum number to its text for a specific HK parameter. There are always at least 2 rows, i. e. 2 conversions per HK parameter.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|------|----------|------|--|
| CALIB_NAME | string | | 24 | | Name of the Calibration Curve |
| ENUM | uint16 | | | | enum number as stored in the TM packet |
| TEXT | string | | 30 | | Meaning of the enum number |

REF_APP_HkParamConversion

Brief: Defines the conversion curve that has to be applied for Hk parameters.

Description: Some HK parameters are defined as enum numbers. The conversion from the enum number to a meaningful text is defined the REF_APP_HkEnumConversion. This table defines the enum conversion by its CALIB_NAME that should be used for a specific Hk parameter.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|------|----------|------|--|
| STRUCT_NAME | string | | 24 | | RAW data structure name where the HK parameter is stored |
| HK_NAME | string | | 36 | | Name of the Hk Parameter |
| CALIB_NAME | string | | 24 | | Name of the Calibration Curve |

REF_APP_Jitter

Brief: Jitter time series

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------|-----------|------------|----------|------|--|
| TIME | int32 | seconds | | | elapsed time since start of jitter time series |
| VALID_AOCS | bool | | | | flag to indicate whether or not the payload is in the loop (Earth occultation, SAA) |
| VALID_SCIENCE | bool | | | | flag to indicate whether or not the payload is valid for science (>35 degrees from Earth limb) |
| ROLL | float | arcseconds | | | offset in roll angle (X APE) with respect to nominal roll angle |
| PITCH | float | arcseconds | | | offset in pitch (Y APE) with respect to nominal pointing direction |
| YAW | float | arcseconds | | | offset in yaw (Z APE) with respect to nominal pointing direction |

REF_APP_Limits

Brief: Hard and soft limits of HK parameters and derived parameters

Description: Stores the limits of HK parameters and derived parameters. Several of such tables can be valid at the same time. They are distinguished by their data name, see keyword DTA_NAME. They are used by the limit_check program.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this limit |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|------|----------|------|--|
| PARAM_NAME | string | | 32 | | Name of the parameter |
| STRUCT_NAME | string | | 32 | | Structure name, where the parameter is stored. |
| ACTIVE | bool | | | | Limits are applied if set to true |
| UPPER_LIMIT | double | | 2 | | Soft and hard upper limit |
| LOWER_LIMIT | double | | 2 | | Soft and hard lower limit |

REF_APP_ObtReset

Brief: Stores the OBT clock resets

Description: There will be a new instance of this reference file each time a OBT clock reset happens with a new row. The reset counter is valid from the time defined in the same row as the reset counter until the time of the next row. The last row defines the current clock reset counter

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|-------------|----------|------|---|
| OBT_RESET_COUNTER | uint16 | | | | OBT clock reset counter |
| RESET.UTC | UTC | TIMESYS=UTC | | | Time of the reset |
| OBT_DIFF | int64 | | | | (OBT after reset) - (OBT before the reset); without reset counter |
| FIRST_OBT | int64 | | | | first OBT value after the reset, without reset counter. |

REF_APP_OversampledColouredPSF

Brief: Calibration product : approved oversampled PSF image data cube in 15 wavelengths

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| PSF attributes | | | | | |
| BANDWID | | real | nm | | band width of each wavelength bin |
| OVERSAMP | 10 | integer | | | oversampling factor of the PSF |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|------------------------|
| naxis | 4 | | |
| axis1 | 2000 | | Oversampled PSF X axis |
| axis2 | 2000 | | Oversampled PSF Y axis |
| axis3 | 15 | | wavelength band |
| axis4 | 4 | | telescope temperature |

Associated HDUs

| Name | Type | Optional |
|-----------------------------|-------|----------|
| REF_APP_ColouredPSFMetadata | table | no |

REF_APP_OversampledWhitePSF

Brief: Calibration product : approved wavelength integrated oversampled PSF image data cube

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| PSF attributes | | | | | |
| OVERSAMP | 10 | integer | | | oversampling factor of the PSF |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|------------------------|
| naxis | 3 | | |
| axis1 | 2000 | | Oversampled PSF X axis |
| axis2 | 2000 | | Oversampled PSF Y axis |
| axis3 | 4 | | telescope temperature |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| REF_APP_WhitePSFMetadata | table | no |

REF_APP_PhotPixelMap

Brief: Pixel Map defining pixels that can be used for photometry

Description: A pixel value of 0 indicates that the pixel can be used for photometry. Pixels with value 1 should be used for photometry.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Image

| | |
|-------------------|-------|
| Data type | uint8 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

REF_APP_PhotPixelMapLeft

Brief: Pixel Map defining pixels that can be used for photometry of the CCD margin area left dark

Description: A pixel value of 0 indicates that the pixel can be used for photometry. Pixels with value 1 should be used for photometry.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 11.3 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | uint8 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

REF_APP_PhotPixelMapRight

Brief: Pixel Map defining pixels that can be used for photometry of the CCD margin area right dark

Description: A pixel value of 0 indicates that the pixel can be used for photometry. Pixels with value 1 should be used for photometry.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 11.3 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | uint8 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 16 | | X axis |
| axis2 | 0 | | Y axis |

REF_APP_PhotPixelMapTop

Brief: Pixel Map defining pixels that can be used for photometry of the CCD margin area top dark

Description: A pixel value of 0 indicates that the pixel can be used for photometry. Pixels with value 1 should be used for photometry.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 11.3 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Image

| | |
|-------------------|-------|
| Data type | uint8 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 0 | | X axis |
| axis2 | 3 | | Y axis |

REF_APP_PixelScale

Brief: Defines the pixel scale

Description: The only value in the table defines the scale of one CCD pixel in arcsec. Currently the pixel scale is a identical value for all pixels.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|--------|----------|------|-------------------------------|
| PIXEL_SCALE | double | arcsec | | | pixel scale of a single pixel |

REF_APP_QE

Brief: Quantum efficiency as a function of wavelength

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 12.1.6 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| QE attributes | | | | | |
| TEMP_CCD | | real | Kelvin | | temperature of the CCD at which QE measurements were performed |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|--------------|----------|------|---|
| WAVELENGTH | float | nm | | | wavelength |
| QE | float | fraction 0-1 | | | quantum efficiency |
| QE_ERROR | float | | | | error of quantum efficiency |
| QE_VS_TEMP_SLOPE | float | ppm/mK | | | rate of change of quantum efficiency vs temperature |

REF_APP_ReadOut

Brief: Defines the instrument parameters, depending on the read-out script and read-out mode

Description: The main key is the script ID but also the Read-Out Mode can be used to query for data of a specific read out mode.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|------|----------|------|--|
| RO_SCRIPT | uint16 | | | | Id of the CCD readout timing script |
| RD_MODE | string | | 12 | | Readout mode: faint, bright, ultrabright, full frame, faint fast or not assigned |
| RO_HW | string | | 10 | | HW - channel: main or redundant |
| RO_FREQU | uint32 | Hz | | | CCD readout frequency |
| CCD_INIT | double | msec | | | Time to initialise the complete CCD in rolling mode |
| CCD_CLEAR | double | msec | | | Time to clear the complete CCD |
| CCD_FAST_SHIFT | double | msec | | | Time to shift the exposed area of the CCD to the memory zone |
| CCD_READ_OUT | double | msec | | | Time to read the complete CCD |
| ROW_DUMP | double | msec | | | Time to dump 1 row of the CCD |
| ROW_DUMP_OFFSET | double | msec | | | Time offset to dump one group of contiguous rows |
| ROW_READ_OUT | double | msec | | | Time to read one row of the CCD |
| ROW_READ_OUT_OFFSET | double | msec | | | Time offset to read on group of contiguous rows |
| TOP_READ_OUT | double | msec | | | Time to read all 9 top margin rows |

REF_APP_SEDFilter

Brief: SEDs for filters of the Flat Fields

Description: Grid of SEDs (Spectra Energy Distribution). The interpolated SED is used to compute weights for the flat field computation.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|--------------------------|----------|------|---|
| WAVELENGTH | float | nm | 771 | | wavelength |
| FLUX | float | erg/s/cm ² /A | 771 | | flux |
| FILTER | string | nm | 5 | | filer (U,B,V,R or I) or center wavelength |

REF_APP_SEDTeff

Brief: SEDs for different Teff

Description: Grid of SEDs (Spectra Energy Distribution). The interpolated SED is used to compute weights for the flat field computation.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-------------|-----------|-------------|--------|--|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| SED attributes | | | | | |
| MODEL | log g = 4.5 | string | | | PHOENIX models using LTE (ACES-AGSS-COND-2011-HiRes2). log g was fixed to 4.5 (dwarf stars). |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|--------------------------|----------|------|------------|
| WAVELENGTH | float | nm | 951 | | wavelength |
| FLUX | float | erg/s/cm ² /A | 951 | | flux |
| TEMPERATUR | float | K | | | Teff |

REF_APP_StrayLight

Brief: Stray light flux as a function of time

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| LTAN | | string | | | Orbit Local Time of Ascending Node |
| ALTITUDE | | real | | | Orbit altitude |
| POINTRA | | real | | | pointing RA in radians |
| POINTDEC | | real | | | pointing declination in radians |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------|-----------|----------------------------|----------|------|------------------|
| TIME | float | minutes | | | time |
| FLUX | float | photons per second per cm2 | | | stray light flux |

REF_APP_Temperature

Brief: Temperature as a function of time

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|--------------------|----------|------|-------------|
| TIME | int32 | seconds | | | time |
| TEMPERATURE | float | Degrees centigrade | | | temperature |

REF_APP_Throughput

Brief: Telescope optical throughput as a function of wavelength

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|--------------|----------|------|------------------------------|
| WAVELENGTH | float | nm | | | wavelength |
| THROUGHPUT | float | fraction 0-1 | | | telescope optical throughput |

REF_APP_VisitConstraints

Brief: Minimum angels between sun, moon and earth limb to the target

Description: There will be one row, defining the three minimum angles. Soft (index 0) and Hard (index 1) limits can be stored. Not used limits are set to NULL (NaN)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| MIN_LOS_TO_SUN_ANGLE | double | deg | 2 | | Minimum angle between target and Sun |
| MIN_LOS_TO_MOON_ANGLE | double | deg | 2 | | Minimum angle between target and Moon |
| MIN_LOS_TO_EARTH_ANGLE | double | deg | 2 | | Minimum angle between target and Earth limb |

REF_APP_WhiteCCDLocationPSF

Brief: Calibration product : approved wavelength integrated PSF image data cube

Description: The different PSFs were measured at different location on the CCD. The associated Metadata Table defines the offset for each PSF image.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| PSF Attributes | | | | | |
| TEMP | | real | deg | | On-board temperature while the PSFs were measured |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|--------------|
| naxis | 3 | | |
| axis1 | 0 | | PSF X axis |
| axis2 | 0 | | PSF Y axis |
| axis3 | 0 | | CCD Location |

Associated HDUs

| Name | Type | Optional |
|-------------------------------------|-------|----------|
| REF_APP_WhiteCCDLocationPSFMetadata | table | no |

REF_APP_WhiteCCDLocationPSFMetadata

Brief: Calibration Product : Meta data for the wavelength integrated PSFs, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube. It defines the offset of the PSF image on the full CCD without margins. The offset is defined as the difference in pixels between the lower left pixel of the full CCD and the lower left pixel of the PSF image on the full CCD.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 8.0 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------|----------|------|--|
| X_OFF_FULL_ARRAY | uint16 | pixel | | | X offset of the PSF image relative to the Full Array image without margins |
| Y_OFF_FULL_ARRAY | uint16 | pixel | | | Y offset of the PSF image relative to the Full Array image without margins |

REF_APP_WhiteFlatField

Brief: Monitoring and Characterisation product : Flat field taken in-flight

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |
| Flat field attributes | | | | | |
| TEMP | | real | Kelvin | | temperature of the CCD at the time the flat field frames were taken |
| EXPTIME | | integer | seconds | | Exposure duration for each frame |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

CHEOPS Data Products Definition Document

REF_APP_WhitePSF

Brief: Calibration product : approved wavelength integrated PSF image data cube

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|------|-----------------------|
| naxis | 3 | | |
| axis1 | 200 | | PSF X axis |
| axis2 | 200 | | PSF Y axis |
| axis3 | 4 | | telescope temperature |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| REF_APP_WhitePSFMetadata | table | no |

REF_APP_WhitePSFMetadata

Brief: Calibration Product : Meta data for the wavelength integrated PSF, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|--|
| EXT_VER | 5.0 | string | | | version of the data structure |
| DATA_LVL | REF | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|--------|----------|------|--|
| STATUS | int32 | | | | flags indicating the status of each PSF image (valid or invalid for various reasons) |
| TEMP_TEL | float | Kelvin | | | telescope temperature |
| THERMAL_MAP | string | | 5 | | thermal map (fixed, cold, hot1, or hot2) |
| INDEX_TEMP | int32 | | | | index of temperature axis |

CHEOPS Data Products Definition Document

SCI_CAL_BlankLeft

Brief: Data of the blank CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per row (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the blank area |
| axis2 | 0 | pixel | Y axis of the blank area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_BlankRight

Brief: Data of the blank CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per row (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the blank area |
| axis2 | 0 | pixel | Y axis of the blank area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_DarkLeft

Brief: Data of the dark CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per row (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark dark (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_DarkRight

Brief: Data of the dark CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per row (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_DarkTop

Brief: Data of the dark CCD margin area at the top of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per column (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each row in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|---|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, col collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. row in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. row in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. row in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. row in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_FullArray

Brief: L1 product : full array image, calibrated

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_RON | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGSL_W | N/A | string | | | Identification of Background and stray light windows |
| BKGSL_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|-------------------------------------|
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|---------------|
| naxis | 2 | | |
| axis1 | 1024 | pixel | X axis of CCD |
| axis2 | 1024 | pixel | Y axis of CCD |

Associated HDUs

| Name | Type | Optional |
|-----------------------|-------|----------|
| SCI_CAL_ImageMetadata | table | no |
| SCI_CAL_DarkLeft | image | no |
| SCI_CAL_DarkRight | image | no |
| SCI_CAL_DarkTop | image | no |
| SCI_CAL_BlankLeft | image | no |
| SCI_CAL_BlankRight | image | no |
| SCI_CAL_OverscanLeft | image | yes |
| SCI_CAL_OverscanRight | image | yes |
| SCI_CAL_OverscanTop | image | no |

SCI_CAL_ImageMetadata

Brief: L1 product : Meta data of the calibrated images, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube. It stores meta data of that image. This data structure is used for subArrays as well as for images of the FullArray. In the later case there will be just one row in the table.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------------|---------|-----------|------|----|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Calculated Errors | | | | | |
| STD_SP_B | | real | | | Spatial standard deviation of the bias |
| STD_SP_D | | real | | | Spatial standard deviation of the dark |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| LOS_TO_SUN_ANGLE | double | deg | | | Angle between line-of-sight and Sun |
| LOS_TO_MOON_ANGLE | double | deg | | | Angle between line-of-sight and Moon |
| LOS_TO_EARTH_ANGLE | double | deg | | | Angle between line-of-sight and Earth limb |
| LATITUDE | float | deg | | | Geodetic latitude of the spacecraft |
| LONGITUDE | float | deg | | | Geodetic longitude of the spacecraft |
| CE_COUNTER | uint16 | | | | image counter per visit |
| CE_INTEGRITY | uint8 | | | | 1: a problem occurred during data processing |
| HK_VOLT_FEE_VOD | float | V | | | FEE voltage to CCD (DAC output) |
| HK_VOLT_FEE_VRD | float | V | | | FEE voltage to CCD (DAC output) |
| HK_VOLT_FEE_VOG | float | V | | | FEE voltage to CCD |
| HK_VOLT_FEE_VSS | float | V | | | FEE voltage to CCD (DAC output) |
| HK_TEMP_FEE_CCD | float | degC | | | FPA/CCD (two sensors for main and redundant channel) |
| HK_TEMP_FEE_ADC | float | degC | | | ADC/analog chain area (two sensors on one PCB for main and redundant channel) |
| HK_TEMP_FEE_BIAS | float | degC | | | BIAS voltage area (two sensors on one PCB for main and redundant channel) |
| ADC_N5V | float | V | | | Value from resistor measurement |
| ADC_TEMP1 | float | degC | | | Value from thermistor |
| thermAft_1 | float | degC | | | Temperature acquired from aft thermistor 1 |
| thermAft_2 | float | degC | | | Temperature acquired from aft thermistor 2 |
| thermAft_3 | float | degC | | | Temperature acquired from aft thermistor 3 |
| thermAft_4 | float | degC | | | Temperature acquired from aft thermistor 4 |
| thermFront_1 | float | degC | | | Temperature acquired from front thermistor 1 |
| thermFront_2 | float | degC | | | Temperature acquired from front thermistor 2 |
| thermFront_3 | float | degC | | | Temperature acquired from front thermistor 3 |
| thermFront_4 | float | degC | | | Temperature acquired from front thermistor 4 |
| BIAS | double | | | | measured bias |
| RON | double | | | | measured RON |

SCI_CAL_Imagette

Brief: L1 product : data cube of imagettes, calibrated

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_ROM | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGS_L_W | N/A | string | | | Identification of Background and stray light windows |
| BKGS_L_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|-------------------------------------|
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Imagette Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| CROPPING | | string | | | static window or moving window |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|---------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 0 | pixel | Y axis of CCD |

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| Column | Value | Unit | Comment |
|--------|-------|---------|----------------------------------|
| axis3 | 0 | #images | Imagette number in the sequence. |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| SCI_CAL_ImagetteMetadata | table | no |

SCI_CAL_ImagetteMetadata

Brief: L1 product : Meta data of the calibrated imagettes, stored in the same FITS file

Description: There is one row per two dimensional imagette in the associated image cube. It stores meta data of that imagette.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-------------------|---------|-----------|------|----|--|
| Calculated Errors | | | | | |
| STD_SP_B | | real | | | Spatial standard deviation of the bias |
| STD_SP_D | | real | | | Spatial standard deviation of the dark |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| CE_COUNTER | uint16 | | | | image counter per visit |
| ACQUISITION_ID | uint32 | | | | Data acquisition id, set by SEM |
| NEXP | uint16 | | | | Number of co-added measurements |
| X_OFF_FULL_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Full Array image without margins |
| Y_OFF_FULL_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Full Array image without margins |
| X_OFF_SUB_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Sub Array image |
| Y_OFF_SUB_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Sub Array image |

CHEOPS Data Products Definition Document

SCI_CAL_OverscanLeft

Brief: Data of the overscan CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per row (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive overscan area (sorted by date) |

SCI_CAL_OverscanRight

Brief: Data of the overscan CCD margin area on right side of the CCD.

Description: This data structure is used if the redundant hardware on board is used. Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per row (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive overscan area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_OverscanTop

Brief: Data of the overscan CCD margin area at the top of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image, 3 values per column (reduced) or just 4 values in total (total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each row in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|--------------|-------------|------|---|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, col collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. row in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. row in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. row in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. row in image |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive dark overscan (sorted by date) |

CHEOPS Data Products Definition Document

SCI_CAL_SubArray

Brief: L1 product : subarray image data cube, calibrated

Description: The image size may change if overscan pixels and dark regions are part of the image that was sent to ground

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_ROM | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|--|
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGSL_W | N/A | string | | | Identification of Background and stray light windows |
| BKGSL_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRIPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|------------------|--------|
| Data type | double |
|------------------|--------|

CHEOPS Data Products Definition Document

| | |
|-------------------|-----|
| Null value | N/A |
|-------------------|-----|

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 0 | pixel | Y axis of CCD |
| axis3 | 0 | #IMAGES | Image number in the sequence (should be N_IMAGES size) |

Associated HDUs

| Name | Type | Optional |
|-----------------------|-------|----------|
| SCI_CAL_ImageMetadata | table | no |
| SCI_CAL_DarkLeft | image | yes |
| SCI_CAL_DarkRight | image | yes |
| SCI_CAL_DarkTop | image | yes |
| SCI_CAL_BlankLeft | image | yes |
| SCI_CAL_BlankRight | image | yes |
| SCI_CAL_OverscanLeft | image | yes |
| SCI_CAL_OverscanRight | image | yes |
| SCI_CAL_OverscanTop | image | yes |

CHEOPS Data Products Definition Document

SCI_COR_FullArray

Brief: L1 product : full array image data cube, calibrated and corrected

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_ROM | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGS_L_W | N/A | string | | | Identification of Background and stray light windows |
| BKGS_L_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|-------------------------------------|
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRIPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|---------------|
| naxis | 2 | | |
| axis1 | 1024 | pixel | X axis of CCD |
| axis2 | 1024 | pixel | Y axis of CCD |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| PIP_COR_Centroid | table | no |
| SCI_COR_ImageMetadata | table | no |
| SCI_COR_SmearingRow | image | no |
| SCI_COR_SmearingRowError | image | no |

SCI_COR_ImageMetadata

Brief: L1 product : Meta data of the corrected images, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube. It stores meta data of that image. This data structure is used for subArrays as well as for images of the FullArray. In the later case there will be just one row in the table.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------------|---------|-----------|------|----|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Calculated Errors | | | | | |
| STD_SP_B | | real | | | Spatial standard deviation of the bias |
| STD_SP_D | | real | | | Spatial standard deviation of the dark |
| BAD_PX_E | | real | | | Bad pixel error |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| CTYPE1 | string | | 8 | | LONGPROJ where LONG can be RA, GLON, ELON |
| CRPIX1 | float | | | | Pixel at reference point |
| CRVAL1 | float | | | | LONG at the reference value |
| CUNIT1 | string | | 8 | | Physical units of axis 1 |
| CTYPE2 | string | | 8 | | TLAT-PROJ where LAT can be DEC, GLAT, ELAT |
| CRPIX2 | float | | | | Pixel at reference point |
| CRVAL2 | float | | | | LAT at the reference value |
| CUNIT2 | string | | 8 | | Physical units of axis 2 |
| CD1_1 | double | | | | Element (1,1) of coordinate transf. matrix |
| CD1_2 | double | | | | Element (1,2) of coordinate transf. matrix |
| CD2_1 | double | | | | Element (2,1) of coordinate transf. matrix |
| CD2_2 | double | | | | Element (2,2) of coordinate transf. matrix |
| LOS_TO_SUN_ANGLE | double | deg | | | Angle between line-of-sight and Sun |
| LOS_TO_MOON_ANGLE | double | deg | | | Angle between line-of-sight and Moon |
| LOS_TO_EARTH_ANGLE | double | deg | | | Angle between line-of-sight and Earth limb |
| LATITUDE | float | deg | | | Geodetic latitude of the spacecraft |
| LONGITUDE | float | deg | | | Geodetic longitude of the spacecraft |
| CE_COUNTER | uint16 | | | | image counter per visit |
| CE_INTEGRITY | uint8 | | | | 1: a problem occurred during data processing |
| HK_VOLT_FEE_VOD | float | V | | | FEE voltage to CCD (DAC output) |
| HK_VOLT_FEE_VRD | float | V | | | FEE voltage to CCD (DAC output) |
| HK_VOLT_FEE_VOG | float | V | | | FEE voltage to CCD |
| HK_VOLT_FEE_VSS | float | V | | | FEE voltage to CCD (DAC output) |
| HK_TEMP_FEE_CCD | float | degC | | | FPA/CCD (two sensors for main and redundant channel) |
| HK_TEMP_FEE_ADC | float | degC | | | ADC/analog chain area (two sensors on one PCB for main and redundant channel) |
| HK_TEMP_FEE_BIAS | float | degC | | | BIAS voltage area (two sensors on one PCB for main and redundant channel) |
| ADC_N5V | float | V | | | Value from resistor measurement |
| ADC_TEMP1 | float | degC | | | Value from thermistor |

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| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|------|----------|------|--|
| thermAft_1 | float | degC | | | Temperature acquired from aft thermistor 1 |
| thermAft_2 | float | degC | | | Temperature acquired from aft thermistor 2 |
| thermAft_3 | float | degC | | | Temperature acquired from aft thermistor 3 |
| thermAft_4 | float | degC | | | Temperature acquired from aft thermistor 4 |
| thermFront_1 | float | degC | | | Temperature acquired from front thermistor 1 |
| thermFront_2 | float | degC | | | Temperature acquired from front thermistor 2 |
| thermFront_3 | float | degC | | | Temperature acquired from front thermistor 3 |
| thermFront_4 | float | degC | | | Temperature acquired from front thermistor 4 |
| BIAS | double | | | | measured bias |
| RON | double | | | | measured RON |

SCI_COR_Imagette

Brief: L1 product : data cube of imagettes, calibrated and corrected

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_ROM | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGS_L_W | N/A | string | | | Identification of Background and stray light windows |
| BKGS_L_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|-------------------------------------|
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| CROPPING | | string | | | static window or moving window |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|---------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 0 | pixel | Y axis of CCD |

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| Column | Value | Unit | Comment |
|--------|-------|---------|----------------------------------|
| axis3 | 0 | #images | Imagette number in the sequence. |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| SCI_COR_ImagetteMetadata | table | no |

SCI_COR_ImagetteMetadata

Brief: L1 product : Meta data of the corrected images, stored in the same FITS file

Description: There is one row per two dimensional imagette in the associated image cube. It stores meta data of that imagette.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-------------------|---------|-----------|------|----|--|
| Calculated Errors | | | | | |
| STD_SP_B | | real | | | Spatial standard deviation of the bias |
| STD_SP_D | | real | | | Spatial standard deviation of the dark |
| BAD_PX_E | | real | | | Bad pixel error |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| CE_COUNTER | uint16 | | | | image counter per visit |
| ACQUISITION_ID | uint32 | | | | Data acquisition id, set by SEM |
| NEXP | uint16 | | | | Number of co-added measurements |
| X_OFF_FULL_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Full Array image without margins |
| Y_OFF_FULL_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Full Array image without margins |
| X_OFF_SUB_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Sub Array image |
| Y_OFF_SUB_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Sub Array image |

CHEOPS Data Products Definition Document

SCI_COR_Lightcurve

Brief: L2 product : Light curve

Description: Light curve derived from calibrated and corrected images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | true | data name of this light curve |
| DATA_LVL | L2 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|--------------|-------------|------|--|
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_RON | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGS_L_W | N/A | string | | | Identification of Background and stray light windows |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|-----------|----|---|
| BKGS_L_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Target angles | | | | | |
| B_SUN_A | | real | deg | | Angle between sun and target at beginning of visit |
| B_MOON_A | | real | deg | | Angle between moon and target at beginning of visit |
| B_EART_A | | real | deg | | Angle between earth limb and target at beginning of visit |
| E_SUN_A | | real | deg | | Angle between sun and target at end of visit |
| E_MOON_A | | real | deg | | Angle between moon and target at end of visit |
| E_EART_A | | real | deg | | Angle between earth limb and target at end of visit |
| Quality criteria | | | | | |
| ROBMEAN | | integer | photons/s | | robust mean of the light-curve |
| MEDIAN | | integer | photons/s | | median of the light-curve divided by robust mean in point per thousands |
| ROBSTD | | real | ppt | | median of the light-curve divided by robust mean in point per thousands |
| MAD | | real | ppt | | median absolute deviation of light-curve |

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| Name | Default | Data type | Unit | DB | Comment |
|------------------------|---------|-----------|------------|----|---|
| P2PSTD | | real | ppt | | point to point robust standard deviation of light-curve |
| CDPP2_5 | | real | ppm | | Quasi-Combined Differential Photometric Precision of the light-curve calculated over 2.5 hour windows |
| CDPP6_5 | | real | ppm | | Quasi-Combined Differential Photometric Precision of the light-curve calculated over 6.5 hour windows |
| VALIDPTS | | real | percentage | | percentage of valid photometric points in the light-curve |
| Light curve attributes | | | | | |
| AP_RADII | | real | pixel | | Aperture radius used on the photometry |
| AP_TYPE | | string | | | Description of the used aperture, for example optimal, weighted, r33 |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------|-----------|-----------------------|----------|------|---|
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| BJD_TIME | BJD | day | | | barycentric date, middle of measurements |
| FLUX | double | electrons | | | star flux measurement, corresponding to time measurements |
| FLUXERR | double | electrons | | | error on the star flux measurement, corresponding to time measurements |
| STATUS | int32 | | | | flags indicating the status of the measurements |
| EVENT | int32 | | | | flags indicating the possible events that might affect the measurement but might not invalidate |
| DARK | double | electrons | | | Dark light curve |
| BACKGROUND | double | electrons | | | Background light curve |
| CONTA_LC | double | Flux_cont/Flux_target | | | Contamination of the target, corresponding to time measurements |
| CONTA_LC_ERR | double | ratio | | | Contamination error for the target, corresponding to time measurements |
| SMEARING_LC | double | electrons | | | Smearing of the target, corresponding to time measurements |
| SMEARING_LC_ERR | double | ratio | | | Smearing error for the target, corresponding to time measurements |
| ROLL_ANGLE | double | deg | | | computed mean roll angle of the CCD (i.e. of the spacecraft) |
| LOCATION_X | float | pixel | | | intended X position of target on CCD [SOC coordinate system] |
| LOCATION_Y | float | pixel | | | intended Y position of target on CCD [SOC coordinate system] |
| CENTROID_X | float | pixel | | | calculated X position of target on CCD [SOC coordinate system] |
| CENTROID_Y | float | pixel | | | calculated Y position of target on CCD [SOC coordinate system] |

SCI_COR_SmearingRowError

Brief: Smearing error per column

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|----------|---------|-----------|------|----|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 1 | pixel | Y axis of CCD |
| axis3 | 0 | #IMAGES | Image number in the sequence (should be N_IMAGES size) |

SCI_COR_SmearingRow

Brief: Smearing per column

Description:

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|----------|---------|-----------|------|----|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 1 | pixel | Y axis of CCD |
| axis3 | 0 | #IMAGES | Image number in the sequence (should be N_IMAGES size) |

CHEOPS Data Products Definition Document

SCI_COR_SubArray

Brief: L1 product : subarray image data cube, calibrated and corrected

Description: The image size may change if overscan pixels and dark regions are part of the image that was sent to ground

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L1 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_ROM | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|--|
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGS_L_W | N/A | string | | | Identification of Background and stray light windows |
| BKGS_L_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRIPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQ | | integer | Hz | | CCD readout frequency |

Image

| | |
|------------------|--------|
| Data type | double |
|------------------|--------|

CHEOPS Data Products Definition Document

| | |
|-------------------|-----|
| Null value | N/A |
|-------------------|-----|

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of CCD |
| axis2 | 0 | pixel | Y axis of CCD |
| axis3 | 0 | #IMAGES | Image number in the sequence (should be N_IMAGES size) |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| PIP_COR_Centroid | table | no |
| SCI_COR_ImageMetadata | table | no |
| SCI_COR_SmearingRow | image | no |
| SCI_COR_SmearingRowError | image | no |

CHEOPS Data Products Definition Document

SCI_PRW_BlankLarge

Brief: Data of the blank CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|--|
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the blank area |
| axis2 | 0 | pixel | Y axis of the blank area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_PRW_BlankReduced

Brief: Data of the blank CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|--|
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the blank area |
| axis2 | 0 | pixel | Y axis of the blank area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

SCI_PRW_Centroid

Brief: Stores the centroid data as they were calculated on-board

Description: There is one row per exposure. The data are not re-calculated on ground.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 6.2 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|-------------|----------|------|---|
| OBT_START | OBT | OBT | | | Start time of the integration |
| OBT_STOP | OBT | OBT | | | End time of the integration |
| FULL_FRAME | bool | | | | Data were taken from a full frame image |
| CE_COUNTER | uint16 | | | | image counter per visit, this centroid belongs to |
| ACQUISITION_ID | uint32 | | | | Data acquisition id, set by SEM |
| OFFSET_X | int32 | centi-pixel | | | residual (measured - intended) in X |

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| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|-------------|----------|------|--|
| OFFSET_Y | int32 | centi-pixel | | | residual (measured - intended) in Y |
| LOCATION_X | uint32 | centi-pixel | | | Intended X position of target star on CCD [IFSW coordinate system] |
| LOCATION_Y | uint32 | centi-pixel | | | Intended Y position of target star on CCD [IFSW coordinate system] |
| DATA_CADENCE | uint16 | centi-sec | | | Duration between consecutive centroids |
| VALIDITY | uint8 | | | | 0: OK window mode, 1: OK full frame, other: not OK |

CHEOPS Data Products Definition Document

SCI_PRW_DarkLarge

Brief: Data of the dark CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|--|
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark dark (sorted by date) |

CHEOPS Data Products Definition Document

SCI_PRW_DarkReduced

Brief: Data of the dark CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|--|
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_PRW_DarkTop

Brief: Data of the dark CCD margin area at the top of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per column (MRG_PROC = col collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each row in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|---|
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, col collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. row in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. row in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. row in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. row in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

SCI_PRW_EventReport

Brief: Event Reports, provided by Service 5 TM

Description: There is one row per reported event. All types of every event IDs and of all severity levels are stored in this table.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.0.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Used reference files | | | | | |
| EV_PR_RF | N/A | string | | | name of event parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|------|----------|------------|------------------------------|
| OBT_TIME | OBT | OBT | | | On board time |
| SEVERITY | uint8 | | | | severity level of event, 1-4 |
| EVT_ID | uint16 | | | | ID of the event |
| PARAM_1 | uint32 | | | 4294967295 | value of parameter 1 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|------|----------|------------|-----------------------|
| PARAM_2 | uint32 | | | 4294967295 | value of parameter 2 |
| PARAM_3 | uint32 | | | 4294967295 | value of parameter 3 |
| PARAM_4 | uint32 | | | 4294967295 | value of parameter 4 |
| PARAM_5 | uint32 | | | 4294967295 | value of parameter 5 |
| PARAM_6 | uint32 | | | 4294967295 | value of parameter 6 |
| PARAM_7 | uint32 | | | 4294967295 | value of parameter 7 |
| PARAM_8 | uint32 | | | 4294967295 | value of parameter 8 |
| PARAM_9 | uint32 | | | 4294967295 | value of parameter 9 |
| PARAM_10 | uint32 | | | 4294967295 | value of parameter 10 |
| PARAM_11 | uint32 | | | 4294967295 | value of parameter 11 |
| PARAM_12 | uint32 | | | 4294967295 | value of parameter 12 |
| PARAM_13 | uint32 | | | 4294967295 | value of parameter 13 |

CHEOPS Data Products Definition Document

SCI_PRW_FullArray

Brief: L05 Product : raw full array image.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. Data received during one pass are stored in this data structure. The image size may change if overscan pixels and dark regions are part of the image that was sent to ground.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| MRG_MODE | undefined | string | | | On-board processing mode of the CCD margins |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_START_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_START_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|-------------------|
| naxis | 2 | | |
| axis1 | 1076 | pixel | X axis of the CCD |
| axis2 | 1033 | pixel | Y axis of the CCD |

Associated HDUs

| Name | Type | Optional |
|--------------------------------|-------|----------|
| SCI_PRW_ImageMetadata | table | no |
| SCI_PRW_UnstackedImageMetadata | table | no |

CHEOPS Data Products Definition Document

SCI_PRW_HkAsy30759

Brief: L0.5 product : DSE 1/64 Hz (SID = 58)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------------|-----------|--------|----------|------|---------------|
| OBT_TIME | | OBT | | | On board time |
| AOCS_current_OBT | | OBT | | | |
| IAE_state | | uint32 | | | |
| IAE_DSE_initialized | | uint8 | | | |
| DSE_computed_innov_valid | | uint32 | | | |
| DSE_nb_rejected_innov | | uint32 | | | |
| IAE_DSE_Estim_quat_x | | float | | | |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------------|-----------|------|----------|------|---------|
| IAE_DSE_Estim_quat_y | float | | | | |
| IAE_DSE_Estim_quat_z | float | | | | |
| IAE_DSE_Estim_quat_s | float | | | | |
| IAE_DSE_Estim_X_ang_rate | float | | | | |
| IAE_DSE_Estim_Y_ang_rate | float | | | | |
| IAE_DSE_Estim_Z_ang_rate | float | | | | |
| IAE_DSE_cmptd_innov_x | float | | | | |
| IAE_DSE_cmptd_innov_y | float | | | | |
| IAE_DSE_cmptd_innov_z | float | | | | |
| DSE_time_wo_correction | uint32 | | | | |
| AOCS_nmState | uint32 | | | | |
| AOCS_isNmAutomatic | uint32 | | | | |
| NM_isConverged | uint32 | | | | |
| AOCS_isGapBias | uint32 | | | | |
| AOCS_convTimer | float | | | | |
| PSE_quaternion_x | double | | | | |
| PSE_quaternion_y | double | | | | |
| PSE_quaternion_z | double | | | | |
| PSE_quaternion_scal | double | | | | |
| STRPL_bias_filtered_x | double | | | | |
| STRPL_bias_filtered_y | double | | | | |

CHEOPS Data Products Definition Document

SCI_PRW_HkAsy30767

Brief: L0.5 product : Q 1 Hz (SID = 66)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|------|----------|------|---------------|
| OBT_TIME | OBT | OBT | | | On board time |
| PSE_quaternion_x | double | | | | |
| PSE_quaternion_y | double | | | | |
| PSE_quaternion_z | double | | | | |
| PSE_quaternion_scal | double | | | | |

SCI_PRW_HkCentroid

Brief: L0.5 product : Centroid Packet, provided by Instrument for AOCs System

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------|-----------|-------------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| OFFSET_X | int24 | centi-pixel | | | residual (measured - intended) in X |
| OFFSET_Y | int24 | centi-pixel | | | residual (measured - intended) in Y |
| LOCATION_X | uint24 | centi-pixel | | | Intended X position of target star on CCD [IFSW coordinate system] |
| LOCATION_Y | uint24 | centi-pixel | | | Intended Y position of target star on CCD [IFSW coordinate system] |
| OBT_START | CUC | OBT | | | Start time of the integration |
| OBT_STOP | CUC | OBT | | | End time of the integration |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|-----------|----------|------|--|
| DATA_CADENCE | uint16 | centi-sec | | | Duration between consecutive centroids |
| VALIDITY | uint8 | | | | 0: OK window mode, 1: OK full frame, other: not OK |

SCI_PRW_HkDefault

Brief: L0.5 product : Default (SID = 6)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| STAT_MODE | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_FLAGS | uint16 | | | | The last seven bits correspond to parameters OBT_SYNC_FLAG, WATCHDOG, EEPROM_POWER, FPM_POWER, BUF_OVERFL and SCU_MAIN_RED in the SEM default housekeeping packet in RD-9 |
| STAT_LAST_SPW_ERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_LAST_ERR_ID | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|--|
| STAT_LAST_ERR_FREQ | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_NUM_CMD_RECEIVED | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_NUM_CMD_EXECUTED | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_NUM_DATA_SENT | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_PROC_DUTY_CL | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_NUM_AHB_ERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_NUM_AHB_CERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_NUM_LUP_ERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| TEMP_SEM_SCU | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| TEMP_SEM_PCU | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| VOLT_SCU_P3_4 | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| VOLT_SCU_P5 | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

SCI_PRW_HkExtended

Brief: L0.5 product : Extended (SID = 6)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| TEMP_FEE_CCD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_STRAP | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_ADC | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| TEMP_FEE_BIAS | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_DEB | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VOD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VRD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VOG | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VSS | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_CCD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_CLK | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_ANA_P5 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_ANA_N5 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_ANA_P3_3 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| CURR_FEE_CLK_BUF | float | | | | |
| VOLT_SCU_FPGA_P1_5 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| CURR_SCU_P3_4 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_CRE | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_ESC | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_DISC | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_PAR | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_WRSY | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_INVA | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_EOP | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_RXAH | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_TXAH | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_TXBL | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| STAT_NUM_SPW_ERR_TXLE | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SP_ERR_RX | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SP_ERR_TX | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FPA_CCD | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FEE_STR | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FEE_ANA | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_SPARE | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FLAGS | uint8 | | | | The last six bits correspond to parameters STAT_HEAT_POW_FPA_CCD, STAT_HEAT_POW_FPA_STRAP, STAT_HEAT_POW_FPA_ANACH, STAT_HEAT_POW_FPA_SPARE, STAT_CCD_TEMP_STABLE, STAT_FEE_TEMP_STABLE in the SEM extended housekeeping packet in RD-9 |
| STAT_OBTIME_SYNC_DELTA | uint16 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

SCI_PRW_HklaswDg

Brief: L0.5 product : Diagnostic IASW Telemetry (SID = 3)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| NofAllocatedInRep | uint8 | | | | Return value of CORDET framework function InFactoryGetNofAllocatedInRep |
| NofAllocatedInCmd | uint8 | | | | Return value of CORDET framework function InFactoryGetNofAllocatedInCmd |
| Sem_NofPendingInCmp | uint8 | | | | Return value of CORDET framework function InManagerGetNofPendingInCmp for the InManagerSem |
| Sem_NofLoadedInCmp | uint8 | | | | Return value of CORDET framework function InManagerGetNofLoadedInCmp for the InManagerSem |

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| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------------|-----------|------|----------|------|--|
| GrdObs_NoOfPendingInCmp | uint8 | | | | Return value of CORDET framework function InManagerGetNoOfPendingInCmp for the InManagerGrdObs |
| NOfAllocatedOutCmp | uint8 | | | | Return value of CORDET framework function OutFactoryGetNoOfAllocatedOutCmp |
| NOfInstanceId | uint16 | | | | Return value of CORDET framework function OutFactoryGetNofInstanceId |
| OutMg1_NoOfPendingOutCmp | uint8 | | | | Return value of CORDET framework function OutManagerGetNoOfPendingOutCmp for the OutManager1 |
| OutMg1_NoOfLoadedOutCmp | uint16 | | | | Return value of CORDET framework function OutManagerGetNoOfLoadedOutCmp for the OutManager1 |
| OutMg2_NoOfPendingOutCmp | uint8 | | | | Return value of CORDET framework function OutManagerGetNoOfPendingOutCmp for the OutManager2 |
| OutMg2_NoOfLoadedOutCmp | uint16 | | | | Return value of CORDET framework function OutManagerGetNoOfLoadedOutCmp for the OutManager2 |
| OutMg3_NoOfPendingOutCmp | uint8 | | | | Return value of CORDET framework function OutManagerGetNoOfPendingOutCmp for the OutManager3 |
| OutMg3_NoOfLoadedOutCmp | uint16 | | | | Return value of CORDET framework function OutManagerGetNoOfLoadedOutCmp for the OutManager3 |
| InSem_NoOfPendingPckts | uint16 | | | | Return value of CORDET framework function InStreamGetNoOfPendingPckts for the InStreamSem |
| InObs_NoOfPendingPckts | uint8 | | | | Return value of CORDET framework function InStreamGetNoOfPendingPckts for the InStreamObs |
| InGrd_NoOfPendingPckts | uint8 | | | | Return value of CORDET framework function InStreamGetNoOfPendingPckts for the InStreamGrd |
| OutSem_NoOfPendingPckts | uint8 | | | | Return value of CORDET framework function OutStreamSemGetNoOfPendingPckts for the OutStreamSem |
| OutObs_NoOfPendingPckts | uint8 | | | | Return value of CORDET framework function OutStreamGetNoOfPendingPckts for OutStreamObs |
| OutGrd_NoOfPendingPckts | uint8 | | | | Return value of CORDET framework function OutStreamGetNoOfPendingPckts for OutStreamGrd |
| sdbStateCnt | uint32 | | | | Number of cycles since current state of SDB State Machine was entered |
| lastPatchedAddr | uint32 | | | | Last start address to have been patched |
| lastDumpAddr | uint32 | | | | Last start address to have been dumped |
| sdu2BlockCnt | uint16 | | | | Block count for SDU2 State Machine |
| sdu4BlockCnt | uint16 | | | | Block count for SDU4 State Machine |
| FdCheckTTMIntEn | uint8 | | | | Internal enable status of TTM FdCheck |
| RpTTMIntEn | uint8 | | | | Internal enable status of TTM recovery procedure |
| FdCheckTTMCnt | uint16 | | | | Counter for TTM FdCheck |
| FdCheckTTMSpCnt | uint16 | | | | Spurious counter for TTM FdCheck |
| FdCheckSDSCIntEn | uint8 | | | | Internal enable status of SDSC FdCheck |
| RpSDSCIntEn | uint8 | | | | Internal enable status of SDSC recovery procedure |
| FdCheckSDSCCnt | uint16 | | | | Counter for SDSC FdCheck |
| FdCheckSDSCSpCnt | uint16 | | | | Spurious counter for SDSC FdCheck |
| FdCheckComErrIntEn | uint8 | | | | Internal enable status of SEM Communication Error FdCheck |
| RpComErrIntEn | uint8 | | | | Internal enable status of SEM Communication Error recovery procedure |
| FdCheckComErrCnt | uint16 | | | | Counter for SEM Communication Error FdCheck |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|--|
| FdCheckComErrSpCnt | uint16 | | | | Spurious counter for SEM Communication Error FdCheck |
| FdCheckTimeOutIntEn | uint8 | | | | Internal enable status of SEM Mode Time-Out FdCheck |
| RpTimeOutIntEn | uint8 | | | | Internal enable status of SEM Mode Time-Out recovery procedure |
| FdCheckTimeOutCnt | uint16 | | | | Counter for SEM Mode Time-Out FdCheck |
| FdCheckTimeOutSpCnt | uint16 | | | | Spurious counter for SEM Mode Time-Out FdCheck |
| FdCheckSafeModeIntEn | uint8 | | | | Internal enable status of SEM Safe Mode FdCheck |
| RpSafeModeIntEn | uint8 | | | | Internal enable status of SEM Safe Mode recovery procedure |
| FdCheckSafeModeCnt | uint16 | | | | Counter for SEM Safe Mode FdCheck |
| FdCheckSafeModeSpCnt | uint16 | | | | Spurious counter for SEM Safe Mode FdCheck |
| FdCheckAliveIntEn | uint8 | | | | Internal enable status of SEM Alive FdCheck |
| RpAliveIntEn | uint8 | | | | Internal enable status of SEM Alive recovery procedure |
| FdCheckAliveCnt | uint16 | | | | Counter for SEM Alive FdCheck |
| FdCheckAliveSpCnt | uint16 | | | | Spurious counter for SEM Alive FdCheck |
| FdCheckSemAnoEvtIntEn | uint8 | | | | Internal enable status of SEM Error Event 1 FdCheck |
| RpSemAnoEvtIntEn | uint8 | | | | Internal enable status of SEM Error Event 1 recovery procedure |
| FdCheckSemAnoEvtCnt | uint16 | | | | Counter for SEM Error Event 1 FdCheck |
| FdCheckSemAnoEvtSpCnt | uint16 | | | | Spurious counter for SEM Error Event 1 FdCheck |
| FdCheckSemLimitIntEn | uint8 | | | | Internal enable status of SEM Limit FdCheck |
| RpSemLimitIntEn | uint8 | | | | Internal enable status of SEM Limit recovery procedure |
| FdCheckSemLimitCnt | uint16 | | | | Counter for SEM Limit FdCheck |
| FdCheckSemLimitSpCnt | uint16 | | | | Spurious counter for SEM Limit FdCheck |
| FdCheckDpuHkIntEn | uint8 | | | | Internal enable status of DPU Housekeeping FdCheck |
| RpDpuHkIntEn | uint8 | | | | Internal enable status of DPU Housekeeping recovery procedure |
| FdCheckDpuHkCnt | uint16 | | | | Counter for DPU Housekeeping FdCheck |
| FdCheckDpuHkSpCnt | uint16 | | | | Spurious counter for DPU Housekeeping FdCheck |
| FdCheckCentConsIntEn | uint8 | | | | Internal enable status of Centroid Consistency FdCheck |
| RpCentConsIntEn | uint8 | | | | Internal enable status of Centroid Consistency recovery procedure |
| FdCheckCentConsCnt | uint16 | | | | Counter for Centroid Consistency FdCheck |
| FdCheckCentConsSpCnt | uint16 | | | | Spurious counter for Centroid Consistency FdCheck |
| FdCheckResIntEn | uint8 | | | | Internal enable status of Resource FdCheck |
| RpResIntEn | uint8 | | | | Internal enable status of Resource recovery procedure |
| FdCheckResCnt | uint16 | | | | Counter for Resource FdCheck |
| FdCheckResSpCnt | uint16 | | | | Spurious counter for Resource FdCheck |
| FdCheckSemConsIntEn | uint8 | | | | |
| RpSemConsIntEn | uint8 | | | | |
| FdCheckSemConsCnt | uint16 | | | | |
| FdCheckSemConsSpCnt | uint16 | | | | |
| semStateCnt | uint32 | | | | Cycles elapsed since entry into current state of SEM State Machine |
| semOperStateCnt | uint32 | | | | Cycles elapsed since entry into current state of SEM Operational State Machine |
| imageCycleCnt | uint32 | | | | Cycles elapsed since start of acquisition of current image |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|--|
| acqImageCnt | uint32 | | | | Number of images acquired since entry into science mode |
| LastSemPckt | uint8 | | | | |
| iaswStateCnt | uint32 | | | | Cycles elapsed since entry into current state of IASW State Machine |
| prepScienceCnt | uint32 | | | | Cycles elapsed since entry into current node of Prepare Science Procedure |
| controlledSwitchOffCnt | uint32 | | | | Cycles elapsed since entry into current node of Controlled Switch-Off Procedure |
| algoCent0Cnt | uint32 | | | | Cycles elapsed since entry into current state of Centroding 0 Algorithm State Machine |
| algoCent1Cnt | uint32 | | | | Cycles elapsed since entry into current state of Centroding 1 Algorithm State Machine |
| algoAcq1Cnt | uint32 | | | | Cycles elapsed since entry into current state of Acquisition 1 Algorithm State Machine |
| algoCcCnt | uint32 | | | | Cycles elapsed since entry into current state of Compression/Collection Algorithm State Machine |
| algoTTC1Cnt | uint32 | | | | Cycles elapsed since entry into current state of Telescope Temperature Control 1 Algorithm State Machine |
| ttc1AvTempAft | float | | | | Average temperature measurement made by TTC1 from aft thermistors |
| ttc1AvTempFrt | float | | | | Average temperature measurement made by TTC1 from front thermistors |
| algoTTC2Cnt | uint32 | | | | Cycles elapsed since entry into current state of Telescope Temperature Control 2 Algorithm State Machine |
| intTimeAft | float | | | | Integral of temperature from aft thermistors |
| onTimeAft | float | | | | On-time requested by TTC2 algorithm for aft heaters |
| intTimeFront | float | | | | Integral of temperature from front thermistors |
| onTimeFront | float | | | | On-time requested by TTC2 algorithm for front heaters |
| HbSem | uint8 | | | | |
| semEvtCounter | uint32 | | | | |
| pExpTime | uint32 | | | | Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| pImageRep | uint32 | | | | Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| pAcqNum | uint32 | | | | Parameter PAR_ACQUISITION_NUM of command (220,3) to the SEM |
| pDataOs | uint16 | | | | Parameter PAR_DATA_OVERSAMPLING of command (220,3) to the SEM |
| pCcdRdMode | uint16 | | | | Parameter PAR_CCD_READOUT_MODE command (220,3) to the SEM |
| pWinPosX | uint16 | | | | Parameter PAR_CCD_WINDOW_STAR_POS_X of command (220,11) to the SEM |
| pWinPosY | uint16 | | | | Parameter PAR_CCD_WINDOW_STAR_POS_Y of command (220,11) to the SEM |
| pWinSizeX | uint16 | | | | Parameter PAR_CCD_WINDOW_STAR_SIZE_X of command (220,11) to the SEM |
| pWinSizeY | uint16 | | | | Parameter PAR_CCD_WINDOW_STAR_SIZE_Y of command (220,11) to the SEM |
| pDtAcqSrc | uint16 | | | | Parameter PAR_DATA_ACQ_SRC of command (220,11) to the SEM |
| pTempCtrlTarget | uint16 | | | | Parameter PAR_TEMP_CONTROL_TARGET of command (220,4) to the SEM |
| pVoltFeeVod | float | | | | Parameter PAR_VOLT_FEE_VOD of command (220,11) to the SEM |
| pVoltFeeVrd | float | | | | Parameter PAR_VOLT_FEE_VRD of command (220,11) to the SEM |
| pVoltFeeVss | float | | | | Parameter PAR_VOLT_FEE_VSS of command (220,11) to the SEM |
| pHeatTempFpaCCd | float | | | | Parameter PAR_HEAT_TEMP_FPA_CCD of command (220,11) to the SEM |
| pHeatTempFeeStrap | float | | | | Parameter PAR_HEAT_TEMP_FEE_STRAP of command (220,11) to the SEM |
| pHeatTempFeeAnach | float | | | | Parameter PAR_HEAT_TEMP_FEE_ANACH of command (220,11) to the SEM |
| pHeatTempSpare | float | | | | Parameter PAR_HEAT_TEMP_SPARE of command (220,11) to the SEM |
| pStepEnDiagCcd | uint16 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| pStepEnDiagFee | uint16 | | | | |
| pStepEnDiagTemp | uint16 | | | | |
| pStepEnDiagAna | uint16 | | | | |
| pStepEnDiagExpos | uint16 | | | | |
| pStepDebDiagCcd | uint16 | | | | |
| pStepDebDiagFee | uint16 | | | | |
| pStepDebDiagTemp | uint16 | | | | |
| pStepDebDiagAna | uint16 | | | | |
| pStepDebDiagExpos | uint16 | | | | |
| saveImagesCnt | uint32 | | | | Cycles elapsed since entry into current node of Save Images Procedure |
| SaveImages_pSaveTarget | uint16 | | | | Procedure Parameter: The target of the save operation (either the ground or the flash memory) |
| SaveImages_pFbflnit | uint8 | | | | Procedure Parameter: Identifier of first FBF to which images are saved |
| SaveImages_pFbfEnd | uint8 | | | | Procedure Parameter: Identifier of last FBF to which images may be saved |
| acqFullDropCnt | uint32 | | | | Cycles elapsed since entry into current node of Acquire Full Drop Procedure |
| AcqFullDrop_pExpTime | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| AcqFullDrop_plmageRep | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| calFullSnapCnt | uint32 | | | | Cycles elapsed since entry into current node of Calibrate Full Snap Procedure |
| CalFullSnap_pExpTime | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| CalFullSnap_plmageRep | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| CalFullSnap_pNmbImages | uint32 | | | | Procedure Parameter: The number of images to be acquired |
| CalFullSnap_pCentSel | uint16 | | | | |
| SciWinCnt | uint32 | | | | Cycles elapsed since entry into current node of science Window Stack/Snap Procedure |
| SciWin_pNmbImages | uint32 | | | | Procedure Parameter: The number of images to be acquired |
| SciWin_pCcdRdMode | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_READOUT_MODE command (220,3) to the SEM |
| SciWin_pExpTime | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| SciWin_plmageRep | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| SciWin_pWinPosX | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_X of command (220,11) to the SEM |
| SciWin_pWinPosY | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_Y of command (220,11) to the SEM |
| SciWin_pWinSizeX | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_X of command (220,11) to the SEM |
| SciWin_pWinSizeY | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_Y of command (220,11) to the SEM |
| SciWin_pCentSel | uint16 | | | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|------|----------|------|---|
| fbfLoadCnt | uint32 | | | | Cycles elapsed since entry into current node of FBF Load Procedure |
| fbfSaveCnt | uint32 | | | | Cycles elapsed since entry into current node of FBF Save Procedure |
| FbfLoad_pFbflD | uint8 | | | | Procedure Parameter: The FBF Identifier |
| FbfLoad_pFbfNBlocks | uint8 | | | | Procedure Parameter: Number of blocks to be loaded from the FBF |
| FbfLoad_pFbfRamAreald | uint16 | | | | Procedure Parameter: Identifier of RAM Data Area where FBF blocks are loaded or zero if RAM Data Area is specified as a raw RAM Address through parameter texttt{pFbfRamAddr} |
| FbfLoad_pFbfRamAddr | uint32 | | | | Procedure Parameter: Address in RAM where the FBF blocks are loaded (or don't care if texttt{pFbfRamAreald} is not zero) |
| FbfSave_pFbflD | uint8 | | | | Procedure Parameter: The FBF identifier |
| FbfSave_pFbfNBlocks | uint8 | | | | Procedure Parameter: Number of blocks to be transferred to the FBF |
| FbfSave_pFbfRamAreald | uint16 | | | | Procedure Parameter: Identifier of RAM Data Area from where FBF blocks are saved or zero if RAM Data Area is specified as a raw RAM Address through parameter texttt{pFbfRamAddr} |
| FbfSave_pFbfRamAddr | uint32 | | | | Procedure Parameter: Address in RAM from which the FBF blocks are transferred (or don't care if texttt{pFbfRamAreald} is not zero) |
| fbfLoadBlockCounter | uint8 | | | | Number of blocks transferred to Target RAM Data Area by FBF Load Procedure since the procedure was last started |
| fbfSaveBlockCounter | uint8 | | | | Number of blocks transferred to Target FBF by FBF Save Procedure since the procedure was last started |
| transFbfToGrndCnt | uint32 | | | | Cycles elapsed since entry into current node of Transfer FBF To Ground Procedure |
| TransFbfToGrnd_pNmbFbf | uint8 | | | | Procedure Parameter: The number of FBFs to be transferred to ground |
| TransFbfToGrnd_pFbflnit | uint8 | | | | Procedure Parameter: Identifier of first FBF to be transferred to ground |
| TransFbfToGrnd_pFbfSize | uint8 | | | | Procedure Parameter: Size in number of blocks of the FBFs to be transferred to ground (same size for all FBFs) |
| nomSciCnt | uint32 | | | | Cycles elapsed since entry into current node of Nominal Science Procedure |
| NomSci_pAcqFlag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the initial target acquisition observation |
| NomSci_pCal1Flag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the calibration observation before the science observation |
| NomSci_pSciFlag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the science observation |
| NomSci_pCal2Flag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the calibration observation after the science observation |
| NomSci_pCibNFull | uint8 | | | | Procedure Parameter: The number of CIBs for Full CCD Images |
| NomSci_pCibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Full CCD Images |
| NomSci_pSibNFull | uint8 | | | | Procedure Parameter: The number of SIBs for Full CCD Images |
| NomSci_pSibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Full CCD Images |
| NomSci_pGibNFull | uint8 | | | | Procedure Parameter: The number of GIBs for Full CCD Images |
| NomSci_pGibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Full CCD Images |
| NomSci_pSibNWin | uint8 | | | | Procedure Parameter: The number of SIBs for Window CCD Images |
| NomSci_pSibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Window CCD Images |
| NomSci_pCibNWin | uint8 | | | | Procedure Parameter: The number of CIBs for Window CCD Images |
| NomSci_pCibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Window CCD Images |
| NomSci_pGibNWin | uint8 | | | | Procedure Parameter: The number of GIBs for Window CCD Images |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| NomSci_pGibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Window CCD Images |
| NomSci_pExpTimeAcq | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the acquisition observation |
| NomSci_pImageRepAcq | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the acquisition observation |
| NomSci_pExpTimeCal1 | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the first calibration observation |
| NomSci_pImageRepCal1 | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the first calibration observation |
| NomSci_pNmbImagesCal1 | uint32 | | | | Procedure Parameter: The number of images to be acquired during the first calibration observation |
| NomSci_pCentSelCal1 | uint16 | | | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated during the first calibration observation |
| NomSci_pNmbImagesSci | uint32 | | | | Procedure Parameter: The number of images to be acquired during the science observation |
| NomSci_pCcdRdModeSci | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_READOUT_MODE command (220,3) to the SEM during the science observation |
| NomSci_pExpTimeSci | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the science observation |
| NomSci_pImageRepSci | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the science observation |
| NomSci_pWinPosXSci | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_X of command (220,11) to the SEM during the science observation |
| NomSci_pWinPosYSci | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_Y of command (220,11) to the SEM during the science observation |
| NomSci_pWinSizeXSci | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_X of command (220,11) to the SEM during the science observation |
| NomSci_pWinSizeYSci | uint16 | | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_Y of command (220,11) to the SEM during the science observation |
| NomSci_pCentSelSci | uint16 | | | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated during the science observation |
| NomSci_pExpTimeCal2 | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the second calibration observation |
| NomSci_pImageRepCal2 | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the second calibration observation |
| NomSci_pNmbImagesCal2 | uint32 | | | | Procedure Parameter: The number of images to be acquired during the second calibration observation |
| NomSci_pCentSelCal2 | uint16 | | | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated during the second calibration observation |
| NomSci_pSaveTarget | uint16 | | | | Procedure Parameter: The target of the save operation (either the ground or the flash memory) |
| NomSci_pFbfInit | uint8 | | | | Procedure Parameter: Identifier of first FBF to which images are saved |
| NomSci_pFbfEnd | uint8 | | | | Procedure Parameter: Identifier of last FBF to which images may be saved |
| NomSci_pStckOrderCal1 | uint16 | | | | Procedure Parameter: Stacking order to be used in first calibration observation |
| NomSci_pStckOrderSci | uint16 | | | | Procedure Parameter: Stacking order to be used in the science observation |
| NomSci_pStckOrderCal2 | uint16 | | | | Procedure Parameter: Stacking order to be used in second calibration observation |
| ConfigSdb_pSdbCmd | uint16 | | | | Procedure Parameter: The reconfiguration command to the SDB |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| ConfigSdb_pCibNFull | uint8 | | | | Procedure Parameter: The number of CIBs for Full CCD Images |
| ConfigSdb_pCibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Full CCD Images |
| ConfigSdb_pSibNFull | uint8 | | | | Procedure Parameter: The number of SIBs for Full CCD Images |
| ConfigSdb_pSibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Full CCD Images |
| ConfigSdb_pGibNFull | uint8 | | | | Procedure Parameter: The number of GIBs for Full CCD Images |
| ConfigSdb_pGibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Full CCD Images |
| ConfigSdb_pSibNWin | uint8 | | | | Procedure Parameter: The number of SIBs for Window CCD Images |
| ConfigSdb_pSibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Window CCD Images |
| ConfigSdb_pCibNWin | uint8 | | | | Procedure Parameter: The number of CIBs for Window CCD Images |
| ConfigSdb_pCibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Window CCD Images |
| ConfigSdb_pGibNWin | uint8 | | | | Procedure Parameter: The number of GIBs for Window CCD Images |
| ConfigSdb_pGibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Window CCD Images |
| HbSemCounter | uint32 | | | | |

CHEOPS Data Products Definition Document

SCI_PRW_HklaswPar

Brief: L0.5 product : IASW Parameters (SID = 2)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| RdlEnabledList_0 | uint8 | | | | List of enable status of HK reports; the i-th element is the enable status of the i-th report in the RDL |
| RdlEnabledList_1 | uint8 | | | | |
| RdlEnabledList_2 | uint8 | | | | |
| RdlEnabledList_3 | uint8 | | | | |
| RdlEnabledList_4 | uint8 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|------|----------|------|--|
| RdlEnabledList_5 | uint8 | | | | |
| RdlEnabledList_6 | uint8 | | | | |
| RdlEnabledList_7 | uint8 | | | | |
| RdlEnabledList_8 | uint8 | | | | |
| RdlEnabledList_9 | uint8 | | | | |
| EVTFILTERDEF | uint8 | | | | Default value of evtEnabledList when an event type is enabled |
| evtEnabledList_0 | uint8 | | | | The i-th element is the maximum number of instances of the i-th event which may be generated in a cycle (a value of zero means that the event is disabled) |
| evtEnabledList_1 | uint8 | | | | |
| evtEnabledList_2 | uint8 | | | | |
| evtEnabledList_3 | uint8 | | | | |
| evtEnabledList_4 | uint8 | | | | |
| evtEnabledList_5 | uint8 | | | | |
| evtEnabledList_6 | uint8 | | | | |
| evtEnabledList_7 | uint8 | | | | |
| evtEnabledList_8 | uint8 | | | | |
| evtEnabledList_9 | uint8 | | | | |
| evtEnabledList_10 | uint8 | | | | |
| evtEnabledList_11 | uint8 | | | | |
| evtEnabledList_12 | uint8 | | | | |
| evtEnabledList_13 | uint8 | | | | |
| evtEnabledList_14 | uint8 | | | | |
| evtEnabledList_15 | uint8 | | | | |
| evtEnabledList_16 | uint8 | | | | |
| evtEnabledList_17 | uint8 | | | | |
| evtEnabledList_18 | uint8 | | | | |
| evtEnabledList_19 | uint8 | | | | |
| evtEnabledList_20 | uint8 | | | | |
| evtEnabledList_21 | uint8 | | | | |
| evtEnabledList_22 | uint8 | | | | |
| evtEnabledList_23 | uint8 | | | | |
| evtEnabledList_24 | uint8 | | | | |
| evtEnabledList_25 | uint8 | | | | |
| evtEnabledList_26 | uint8 | | | | |
| evtEnabledList_27 | uint8 | | | | |
| evtEnabledList_28 | uint8 | | | | |
| evtEnabledList_29 | uint8 | | | | |
| evtEnabledList_30 | uint8 | | | | |
| evtEnabledList_31 | uint8 | | | | |
| evtEnabledList_32 | uint8 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|------|----------|------|--|
| evtEnabledList_33 | uint8 | | | | |
| evtEnabledList_34 | uint8 | | | | |
| evtEnabledList_35 | uint8 | | | | |
| evtEnabledList_36 | uint8 | | | | |
| evtEnabledList_37 | uint8 | | | | |
| evtEnabledList_38 | uint8 | | | | |
| evtEnabledList_39 | uint8 | | | | |
| evtEnabledList_40 | uint8 | | | | |
| evtEnabledList_41 | uint8 | | | | |
| evtEnabledList_42 | uint8 | | | | |
| evtEnabledList_43 | uint8 | | | | |
| evtEnabledList_44 | uint8 | | | | |
| evtEnabledList_45 | uint8 | | | | |
| evtEnabledList_46 | uint8 | | | | |
| evtEnabledList_47 | uint8 | | | | |
| evtEnabledList_48 | uint8 | | | | |
| evtEnabledList_49 | uint8 | | | | |
| evtEnabledList_50 | uint8 | | | | |
| evtEnabledList_51 | uint8 | | | | |
| evtEnabledList_52 | uint8 | | | | |
| evtEnabledList_53 | uint8 | | | | |
| evtEnabledList_54 | uint8 | | | | |
| evtEnabledList_55 | uint8 | | | | |
| evtEnabledList_56 | uint8 | | | | |
| evtEnabledList_57 | uint8 | | | | |
| evtEnabledList_58 | uint8 | | | | |
| evtEnabledList_59 | uint8 | | | | |
| FdGlbEnable | uint8 | | | | Global enable flags for FdChecks |
| RpGlbEnable | uint8 | | | | Global enable flags for recovery procedures |
| FdCheckTTMExtEn | uint8 | | | | External enable status of TTM FdCheck |
| RpTTMExtEn | uint8 | | | | External enable status of TTM recovery procedure |
| FdCheckTTMCntThr | uint16 | | | | Counter threshold for TTM FdCheck |
| TTC_LL | float | | | | Lower limit for telescope temperature |
| TTC_UL | float | | | | Upper limit for telescope temperature |
| TTM_LIM | float | | | | Margin for telescope temperature monitoring |
| FdCheckSDSCEExtEn | uint8 | | | | External enable status of SDSC FdCheck |
| RpSDSCEExtEn | uint8 | | | | External enable status of SDSC recovery procedure |
| FdCheckSDSCCntThr | uint16 | | | | Counter threshold for SDSC FdCheck |
| FdCheckComErrExtEn | uint8 | | | | External enable status of SEM Communication Error FdCheck |
| RpComErrExtEn | uint8 | | | | External enable status of SEM Communication Error recovery procedure |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| FdCheckComErrCntThr | uint16 | | | | Counter threshold for SEM Communication Error FdCheck |
| FdCheckTimeOutExtEn | uint8 | | | | External enable status of SEM Mode Time-Out FdCheck |
| RpTimeOutExtEn | uint8 | | | | External enable status of SEM Mode Time-Out recovery procedure |
| FdCheckTimeOutCntThr | uint16 | | | | Counter threshold for SEM Mode Time-Out FdCheck |
| SEM_TO_POWERON | uint32 | | | | SEM mode transition time-out (power-on to STANDBY) |
| SEM_TO_SAFE | uint32 | | | | SEM mode transition time-out (entry into SAFE) |
| SEM_TO_STAB | uint32 | | | | SEM mode transition time-out (entry into STABILIZE) |
| SEM_TO_TEMP | uint32 | | | | SEM mode transition time-out (entry into STABILIZE with temperature stabilized) |
| SEM_TO_CCD | uint32 | | | | SEM mode transition time-out (entry into SCIENCE) |
| SEM_TO_DIAG | uint32 | | | | SEM mode transition time-out (entry into DIAGNOSTICS) |
| SEM_TO_STANDBY | uint32 | | | | SEM mode transition time-out (entry into STANDBY) |
| FdCheckSafeModeExtEn | uint8 | | | | External enable status of SEM Safe Mode FdCheck |
| RpSafeModeExtEn | uint8 | | | | External enable status of SEM Safe Mode recovery procedure |
| FdCheckSafeModeCntThr | uint16 | | | | Counter threshold for SEM Safe Mode FdCheck |
| FdCheckAliveExtEn | uint8 | | | | External enable status of SEM Alive FdCheck |
| RpAliveExtEn | uint8 | | | | External enable status of SEM Alive recovery procedure |
| FdCheckAliveCntThr | uint16 | | | | Counter threshold for SEM Alive FdCheck |
| SEM_HK_DEF_PER | uint16 | | | | Parameter of SEM Alive FdCheck |
| FdCheckSemAnoEvtExtEn | uint8 | | | | External enable status of SEM Error Event 1 FdCheck |
| RpSemAnoEvtExtEn | uint8 | | | | External enable status of SEM Error Event 1 recovery procedure |
| FdCheckSemAnoEvtCntThr | uint16 | | | | Counter threshold for SEM Error Event 1 FdCheck |
| semAnoEvtResp_1 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_SG |
| semAnoEvtResp_2 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_EX |
| semAnoEvtResp_3 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_AC |
| semAnoEvtResp_4 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_PC |
| semAnoEvtResp_5 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_AF |
| semAnoEvtResp_6 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_CF |
| semAnoEvtResp_7 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_TMP_NS |
| semAnoEvtResp_8 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_FPA_HI |
| semAnoEvtResp_9 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_WR_EXP |
| semAnoEvtResp_10 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_WR_RPE |
| semAnoEvtResp_11 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_WR |
| semAnoEvtResp_12 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_APS_BT |
| semAnoEvtResp_13 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_REBOOT |
| semAnoEvtResp_14 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_WATCHD |
| semAnoEvtResp_15 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SPW_RX |
| semAnoEvtResp_16 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_CP |
| semAnoEvtResp_17 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_CR |
| semAnoEvtResp_18 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_CS |
| semAnoEvtResp_19 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_REG_WR |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| semAnoEvtResp_20 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_CMD_BUF1 |
| semAnoEvtResp_21 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_CMD_BUF2 |
| semAnoEvtResp_22 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_DAT_DMA |
| semAnoEvtResp_23 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_PATTER |
| semAnoEvtResp_24 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event WAR_PACKWR |
| semAnoEvtResp_25 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_BIAS_SET |
| semAnoEvtResp_26 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SYNC |
| semAnoEvtResp_27 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SCRIPT |
| semAnoEvtResp_28 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_PWR |
| semAnoEvtResp_29 | uint16 | | | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SPW_TC |
| FdCheckSemLimitExtEn | uint8 | | | | External enable status of SEM Limit FdCheck |
| RpSemLimitExtEn | uint8 | | | | External enable status of SEM Limit recovery procedure |
| FdCheckSemLimitCntThr | uint16 | | | | Counter threshold for SEM Limit FdCheck |
| SEM_LIM_DEL_T | uint16 | | | | Length of time over which an out-of-limit situation must persist before the SEM Limit FdCheck declares an anomaly |
| FdCheckDpuHkExtEn | uint8 | | | | External enable status of DPU Housekeeping FdCheck |
| RpDpuHkExtEn | uint8 | | | | External enable status of DPU Housekeeping recovery procedure |
| FdCheckDpuHkCntThr | uint16 | | | | Counter threshold for DPU Housekeeping FdCheck |
| FdCheckCentConsExtEn | uint8 | | | | External enable status of Centroid Consistency FdCheck |
| RpCentConsExtEn | uint8 | | | | External enable status of Centroid Consistency recovery procedure |
| FdCheckCentConsCntThr | uint16 | | | | Counter threshold for Centroid Consistency FdCheck |
| FdCheckResExtEn | uint8 | | | | External enable status of Resource FdCheck |
| RpResExtEn | uint8 | | | | External enable status of Resource recovery procedure |
| FdCheckResCntThr | uint16 | | | | Counter threshold for Resource FdCheck |
| CPU1_USAGE_MAX | float | | | | Maximum fraction of DPU 1 core CPU which may be used |
| MEM_USAGE_MAX | float | | | | Maximum fraction of memory available for dynamical allocation which may be used |
| FdCheckSemConsExtEn | uint8 | | | | |
| RpSemConsExtEn | uint8 | | | | |
| FdCheckSemConsCntThr | uint16 | | | | |
| SEM_INIT_T1 | uint16 | | | | Time-out in SEM Initialization Procedure |
| SEM_INIT_T2 | uint16 | | | | Time-out in SEM Initialization Procedure |
| SEM_OPER_T1 | uint16 | | | | Time-out in SEM Operational State Machine (time-out for transition from TR_STABILIZE to STABILIZE) |
| SEM_SHUTDOWN_T1 | uint16 | | | | Time-out in SEM Shutdown Procedure |
| SEM_SHUTDOWN_T11 | uint16 | | | | |
| SEM_SHUTDOWN_T12 | uint16 | | | | |
| SEM_SHUTDOWN_T2 | uint16 | | | | Time-out in SEM Shutdown Procedure |
| CTRLD_SWITCH_OFF_T1 | uint16 | | | | Time-out in Controlled Switch-Off Procedure |
| algoCent0Enabled | uint8 | | | | Enabled status of Centroiding 0 Algorithm |
| algoCent1Enabled | uint8 | | | | Enabled status of Centroiding 1 Algorithm |

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| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|------|----------|------|--|
| CENT_EXEC_PHASE | uint32 | | | | Phase of Centroiding Algorithms |
| algoAcq1Enabled | uint8 | | | | Enabled status of Acquisition 1 Algorithm |
| algoCcEnabled | uint8 | | | | Enabled status of Compression/Collection Algorithm |
| STCK_ORDER | uint16 | | | | Image Stacking Order (number of images to be co-added) |
| algoTTC1Enabled | uint8 | | | | Enabled status of Telescope Temperature Control 1 Algorithm |
| TTC1_EXEC_PER | int32 | | | | Period of Telescope Temperature Control Algorithms |
| TTC1_LL_FRT | float | | | | Lower temperature limit for TTC1 algorithm for front heaters |
| TTC1_LL_AFT | float | | | | Lower temperature limit for TTC1 algorithm for aft heaters |
| TTC1_UL_FRT | float | | | | Upper temperature limit for TTC1 algorithm for front heaters |
| TTC1_UL_AFT | float | | | | Upper temperature limit for TTC1 algorithm for aft heaters |
| algoTTC2Enabled | uint8 | | | | Enabled status of Telescope Temperature Control 2 Algorithm |
| TTC2_EXEC_PER | int32 | | | | Period of Telescope Temperature Control Algorithms |
| TTC2_REF_TEMP | float | | | | Reference temperature for TTC2 algorithm |
| TTC2_OFFSETA | float | | | | |
| TTC2_OFFSETF | float | | | | |
| TTC2_PA | float | | | | Proportional term of TTC2 PID algorithm for aft heaters |
| TTC2_DA | float | | | | Derivative term of TTC2 PID algorithm for aft heaters |
| TTC2_IA | float | | | | Integral term of TTC2 PID algorithm for aft heaters |
| TTC2_PF | float | | | | Proportional term of TTC2 PID algorithm for front heaters |
| TTC2_DF | float | | | | Derivative term of TTC2 PID algorithm for front heaters |
| TTC2_IF | float | | | | Integral term of TTC2 PID algorithm for front heaters |
| SAA_EXEC_PHASE | uint32 | | | | Phase of SAA Evaluation Algorithm |
| SAA_EXEC_PER | int32 | | | | Period of SAA Evaluation Algorithm |
| SDS_EXEC_PHASE | uint32 | | | | Phase of SAA Evaluation Algorithm |
| SDS_EXEC_PER | int32 | | | | Period of SAA Evaluation Algorithm |
| SDS_FORCED | uint8 | | | | Flag set to true by the ground to force suspension of science data transfer to ground |
| SDS_INHIBITED | uint8 | | | | Flag set to true by the ground to inhibit suspension of science data transfer to ground |
| EARTH_OCCULT_ACTIVE | uint8 | | | | Flag set to true by the ground to indicate earth occultation |
| CENT_OFFSET_LIM | float | | | | Parameter used by Centroid Validity Procedure (maximum distance between measured and target position relative to FOV size) |
| CENT_FROZEN_LIM | float | | | | Parameter used by Centroid Validity Procedure (number of consecutive frozen centroid measurements to declare centroid invalid) |
| SEM_SERV1_1_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,1) |
| SEM_SERV1_2_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,2) |
| SEM_SERV1_7_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,7) |
| SEM_SERV1_8_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,8) |
| SEM_SERV3_1_FORWARD | uint8 | | | | Enable status for forwarding of SEM housekeeping reports with SID 1 (default SEM housekeeping) |
| SEM_SERV3_2_FORWARD | uint8 | | | | Enable status for forwarding of SEM housekeeping reports with SID 2 (extended SEM housekeeping) |
| TEMP_SEM_SCU_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_SEM_SCU |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| TEMP_SEM_PCU_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_LW | float | | | | Lower warning limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |
| CURR_FEE_CLK_BUF_LW | float | | | | |
| VOLT_SCU_FPGA_P1_5_LW | float | | | | Lower warning limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |
| CURR_SCU_P3_4_LW | float | | | | Lower warning limit for SEM HK parameter CURR_SCU_P3_4 |
| TEMP_SEM_SCU_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_UW | float | | | | Upper warning limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |
| CURR_FEE_CLK_BUF_UW | float | | | | |
| VOLT_SCU_FPGA_P1_5_UW | float | | | | Upper warning limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| CURR_SCU_P3_4_UW | float | | | | Upper warning limit for SEM HK parameter CURR_SCU_P3_4 |
| TEMP_SEM_SCU_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_LA | float | | | | Lower alarm limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |
| CURR_FEE_CLK_BUF_LA | float | | | | |
| VOLT_SCU_FPGA_P1_5_LA | float | | | | Lower alarm limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |
| CURR_SCU_P3_4_LA | float | | | | Lower alarm limit for SEM HK parameter CURR_SCU_P3_4 |
| TEMP_SEM_SCU_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_UA | float | | | | Upper alarm limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| CURR_FEE_CLK_BUF_UA | float | | | | |
| VOLT_SCU_FPGA_P1_5_UA | float | | | | Upper alarm limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |
| CURR_SCU_P3_4_UA | float | | | | Upper alarm limit for SEM HK parameter CURR_SCU_P3_4 |
| SEM_SERV5_1_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,1) |
| SEM_SERV5_2_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,2) |
| SEM_SERV5_3_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,3) |
| SEM_SERV5_4_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,4) |
| acqFullDropT1 | uint32 | | | | Timer in Acquire Full Drop Procedure |
| acqFullDropT2 | uint32 | | | | Timer in Acquire Full Drop Procedure |
| calFullSnapT1 | uint32 | | | | Timer in Calibrate Full Snap Procedure |
| calFullSnapT2 | uint32 | | | | Timer in Calibrate Full Snap Procedure |
| sciWinT1 | uint32 | | | | Timer in Science Window Stack Procedure |
| sciWinT2 | uint32 | | | | Timer in Science Window Stack Procedure |
| ADC_P3V3_U | float | | | | |
| ADC_P5V_U | float | | | | |
| ADC_P1V8_U | float | | | | |
| ADC_P2V5_U | float | | | | |
| ADC_N5V_L | float | | | | |
| ADC_PGND_U | float | | | | Upper limit for DPU housekeeping parameter ADC_PGND |
| ADC_PGND_L | float | | | | Lower limit for DPU housekeeping parameter ADC_PGND |
| ADC_TEMPOH1A_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH1A |
| ADC_TEMP1_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMP1 |
| ADC_TEMPOH2A_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH2A |
| ADC_TEMPOH1B_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH1B |
| ADC_TEMPOH3A_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH3A |
| ADC_TEMPOH2B_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH2B |
| ADC_TEMPOH4A_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH4A |
| ADC_TEMPOH3B_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH3B |
| ADC_TEMPOH4B_U | float | | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH4B |
| SEM_P15V_U | float | | | | |
| SEM_P30V_U | float | | | | |
| SEM_P5V0_U | float | | | | |
| SEM_P7V0_U | float | | | | |
| SEM_N5V0_L | float | | | | |
| HbSemPassword | uint16 | | | | |

CHEOPS Data Products Definition Document

SCI_PRW_HklbswDg

Brief: L0.5 product : Diagnostic IBSW Telemetry (SID = 4)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|------|----------|------|---------------|
| OBT_TIME | OBT | OBT | | | On board time |
| ADC_P3V3_RAW | int16 | | | | |
| ADC_P5V_RAW | int16 | | | | |
| ADC_P1V8_RAW | int16 | | | | |
| ADC_P2V5_RAW | int16 | | | | |
| ADC_N5V_RAW | int16 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|------|----------|------|---|
| ADC_PGND_RAW | int16 | | | | |
| ADC_TEMPOH1A_RAW | int16 | | | | |
| ADC_TEMP1_RAW | int16 | | | | |
| ADC_TEMPOH2A_RAW | int16 | | | | |
| ADC_TEMPOH1B_RAW | int16 | | | | |
| ADC_TEMPOH3A_RAW | int16 | | | | |
| ADC_TEMPOH2B_RAW | int16 | | | | |
| ADC_TEMPOH4A_RAW | int16 | | | | |
| ADC_TEMPOH3B_RAW | int16 | | | | |
| ADC_TEMPOH4B_RAW | int16 | | | | |
| SEM_P15V_RAW | int16 | | | | |
| SEM_P30V_RAW | int16 | | | | |
| SEM_P5V0_RAW | int16 | | | | |
| SEM_P7V0_RAW | int16 | | | | |
| SEM_N5V0_RAW | int16 | | | | |
| missedMsgCnt | int32 | | | | Counter of missed synchronization messages |
| missedPulseCnt | int32 | | | | Counter of missed synchronization pulses |
| isErrLogValid | uint8 | | | | Validity status of flash-based error log |
| wcet_1 | float | | | | Worst-case execution time of RT container 1 |
| wcet_2 | float | | | | Worst-case execution time of RT container 2 |
| wcet_3 | float | | | | Worst-case execution time of RT container 3 |
| wcet_4 | float | | | | Worst-case execution time of RT container 4 |
| wcet_5 | float | | | | Worst-case execution time of RT container 5 |
| wcetAver_1 | float | | | | Average WCET for RT Container 1 |
| wcetAver_2 | float | | | | Average WCET for RT Container 2 |
| wcetAver_3 | float | | | | Average WCET for RT Container 3 |
| wcetAver_4 | float | | | | Average WCET for RT Container 4 |
| wcetAver_5 | float | | | | Average WCET for RT Container 5 |
| wcetMax_1 | float | | | | Maximum WCET for RT Container 1 |
| wcetMax_2 | float | | | | Maximum WCET for RT Container 2 |
| wcetMax_3 | float | | | | Maximum WCET for RT Container 3 |
| wcetMax_4 | float | | | | Maximum WCET for RT Container 4 |
| wcetMax_5 | float | | | | Maximum WCET for RT Container 5 |
| nOfNotif_1 | uint32 | | | | Notification counter for RT Container 1 |
| nOfNotif_2 | uint32 | | | | Notification counter for RT Container 2 |
| nOfNotif_3 | uint32 | | | | Notification counter for RT Container 3 |
| nOfNotif_4 | uint32 | | | | Notification counter for RT Container 4 |
| nOfNotif_5 | uint32 | | | | Notification counter for RT Container 5 |
| nofFuncExec_1 | uint32 | | | | number of functional executions of RT Container 1 |
| nofFuncExec_2 | uint32 | | | | number of functional executions of RT Container 2 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| nofFuncExec_3 | uint32 | | | | number of functional executions of RT Container 3 |
| nofFuncExec_4 | uint32 | | | | number of functional executions of RT Container 4 |
| nofFuncExec_5 | uint32 | | | | number of functional executions of RT Container 5 |
| wcetTimeStampFine_1 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 1 |
| wcetTimeStampFine_2 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 2 |
| wcetTimeStampFine_3 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 3 |
| wcetTimeStampFine_4 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 4 |
| wcetTimeStampFine_5 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 5 |
| wcetTimeStampCoarse_1 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 1 |
| wcetTimeStampCoarse_2 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 2 |
| wcetTimeStampCoarse_3 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 3 |
| wcetTimeStampCoarse_4 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 4 |
| wcetTimeStampCoarse_5 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 5 |
| flashContStepCnt | uint32 | | | | |
| CyclicalActivitiesCtr | uint8 | | | | identifies the current IASW cycle |
| ObcInputBufferPackets | uint32 | | | | Nr of packets in OBC input buffer |
| GrndInputBufferPackets | uint32 | | | | Nr of packets in Ground input buffer |
| MilBusBytesIn | uint32 | | | | link stats |
| MilBusBytesOut | uint32 | | | | link stats |
| MilBusDroppedBytes | uint16 | | | | received MilBus bytes dropped due to full buffers |
| IRL1_AHBSTAT | uint8 | | | | AHB status interrupt |
| IRL1_GRGPIO_6 | uint8 | | | | sync pulse |
| IRL1_GRTIMER | uint8 | | | | long timer (uptime) |
| IRL1_GPTIMER_0 | uint8 | | | | reserved |
| IRL1_GPTIMER_1 | uint8 | | | | syncpulse guard |
| IRL1_GPTIMER_2 | uint8 | | | | notification timer |
| IRL1_GPTIMER_3 | uint8 | | | | watchdog |
| IRL1_IRQMP | uint8 | | | | multiprocessor/extended IRL |
| IRL1_B1553BRM | uint8 | | | | Milbus IRQ |
| IRL2_GRSPW2_0 | uint8 | | | | monitor link (routing mode) |
| IRL2_GRSPW2_1 | uint8 | | | | SEM link (routing mode) |
| Spw1TxDescAvail | uint8 | | | | link stats |
| Spw1RxPcktAvail | uint8 | | | | link stats |
| MilCucCoarseTime | uint32 | | | | coarse time from broadcast |
| MilCucFineTime | uint16 | | | | fine time from broadcast |
| CucCoarseTime | uint32 | | | | (current) coarse time |
| CucFineTime | uint16 | | | | (current) fine time |
| Sram1ScrCurrAddr | uint32 | | | | current address of memory scrubber for SRAM 1 |
| Sram2ScrCurrAddr | uint32 | | | | current address of memory scrubber for SRAM 2 |
| Sram1ScrLength | uint16 | | | | number of words to scrub per cycle for SRAM 1 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|------|----------|------|---|
| Sram2ScrlLength | uint16 | | | | number of words to scrub per cycle for SRAM 2 |
| EdacSingleRepaired | uint8 | | | | number of errors repaired in last cycle |
| EdacDoubleFaults | uint8 | | | | cumulative number of double faults |
| EdacDoubleFAddr | uint32 | | | | last double fault address |
| HEARTBEAT_ENABLED | uint8 | | | | |
| S1AllocDbs | uint32 | | | | usage of Dbs area heap |
| S1AllocSw | uint32 | | | | usage of lfsr heap |
| S1AllocHeap | uint32 | | | | usage of general purpose heap of SRAM1 |
| S1AllocFlash | uint32 | | | | usage of heap in FLASH RAM area |
| S1AllocAux | uint32 | | | | usage of auxiliary heap (centroiding) |
| S1AllocRes | uint32 | | | | usage of reserved heap |
| S1AllocSwap | uint32 | | | | usage of swap data heap |
| S2AllocSciHeap | uint32 | | | | usage of science data heap of SRAM2 |
| FPGA_Version | uint16 | | | | |
| FPGA_DPU_Status | uint16 | | | | |
| FPGA_DPU_Address | uint16 | | | | |
| FPGA_RESET_Status | uint16 | | | | |
| FPGA_SEM_Status | uint16 | | | | |
| FPGA_Oper_Heater_Status | uint16 | | | | |

CHEOPS Data Products Definition Document

SCI_PRW_HklbswPar

Brief: L0.5 product : IBSW Parameters (SID = 5)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------|-----------|------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| SEM_ON_CODE | uint8 | | | | Code to be applied to the DPU FPGA to switch on the SEM |
| SEM_OFF_CODE | uint8 | | | | Code to be applied to the DPU FPGA to switch off the SEM |
| ACQ_PH | uint16 | | | | Phase of acquisition algorithm notification within an image acquisition interval |
| milFrameDelay | uint32 | | | | |
| EL1_CHIP | uint16 | | | | Flash chip where the first error log block is stored |
| EL2_CHIP | uint16 | | | | Flash chip where the second error log block is stored |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|------|----------|------|--|
| EL1_ADDR | uint32 | | | | Address of first error log block within the chip EL1_CHIP |
| EL2_ADDR | uint32 | | | | Address of second error log block within the chip EL2_CHIP |
| ERR_LOG_ENB | uint8 | | | | Enable status of Error Log |
| FBF_BLK_WR_DUR | uint32 | | | | Maximum period with which FBF write operations may be done (in cycles) |
| FBF_BLK_RD_DUR | uint32 | | | | Maximum period with which FBF read operations may be done (in cycles) |
| THR_MA_A_1 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_2 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_3 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_4 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_5 | float | | | | Coefficient in formula for computation of average execution time |
| OTA_TM1A_NOM | float | | | | |
| OTA_TM1A_RED | float | | | | |
| OTA_TM1B_NOM | float | | | | |
| OTA_TM1B_RED | float | | | | |
| OTA_TM2A_NOM | float | | | | |
| OTA_TM2A_RED | float | | | | |
| OTA_TM2B_NOM | float | | | | |
| OTA_TM2B_RED | float | | | | |
| OTA_TM3A_NOM | float | | | | |
| OTA_TM3A_RED | float | | | | |
| OTA_TM3B_NOM | float | | | | |
| OTA_TM3B_RED | float | | | | |
| OTA_TM4A_NOM | float | | | | |
| OTA_TM4A_RED | float | | | | |
| OTA_TM4B_NOM | float | | | | |
| OTA_TM4B_RED | float | | | | |

CHEOPS Data Products Definition Document

SCI_PRW_HkIfsw

Brief: L0.5 product : General HK for IFSW (SID = 1)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------|-----------|------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| buildNumber | uint32 | | | | Build number of IBSW/IASW image |
| AppErrCode | uint8 | | | | Return value of CORDET framework function CrFwGetAppErrCode |
| sibNFull | uint16 | | | | Number of Single Image Buffers for Full images |
| cibNFull | uint16 | | | | Number of Combined Image Buffers for Full images |
| gibNFull | uint16 | | | | Number of Ground Image Buffers for Full images |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| sibNWin | uint16 | | | | Number of Single Image Buffers for Window images |
| cibNWin | uint16 | | | | Number of Combined Image Buffers for Window images |
| gibNWin | uint16 | | | | Number of Ground Image Buffers for Window images |
| sibSizeFull | uint16 | | | | Size in kBytes of one Single Image Buffer for Full Images |
| cibSizeFull | uint16 | | | | Size in kBytes of one Combined Image Buffer for Full Images |
| gibSizeFull | uint16 | | | | Size in kBytes of one Ground Image Buffer for Full Images |
| sibSizeWin | uint16 | | | | Size in kBytes of one Single Image Buffer for Window Images |
| cibSizeWin | uint16 | | | | Size in kBytes of one Combined Image Buffer for Window Images |
| gibSizeWin | uint16 | | | | Size in kBytes of one Ground Image Buffer for Window Images |
| sibIn | uint16 | | | | Pointer to SIB which is being filled with raw data from SEM |
| sibOut | uint16 | | | | Pointer to SIB which is being processed by science algorithms |
| cibIn | uint16 | | | | Pointer to CIB which is being filled with stacked image data |
| gibIn | uint16 | | | | Pointer to GIB which is being filled compressed science data |
| gibOut | uint16 | | | | Pointer to GIB which is being transferred to ground |
| sdbState | uint16 | | | | State of SDB State Machine |
| NOFtcAcc | uint16 | | | | Number of TC accepted for execution (return value of function CrFwInManagerGetNOFLoadedInCmp for InManagerGrdObc) |
| NOFaccFailedTc | uint16 | | | | Number of TC which failed their acceptance check |
| SeqCntLastAccTcFromObc | uint16 | | | | Sequence counter of last accepted TC from the OBC (return value of function CrFwInStreamGetSeqCnt for InStreamObc) |
| SeqCntLastAccTcFromGrd | uint16 | | | | Sequence counter of last accepted TC from the ground (return value of function CrFwInStreamGetSeqCnt for InStreamGrd) |
| SeqCntLastAccFailTc | uint16 | | | | Sequence counter of last TC to have failed its acceptance check |
| NOFstartFailedTc | uint16 | | | | Number of TC which failed their start check |
| SeqCntLastStartFailTc | uint16 | | | | Sequence counter of last TC which failed start check |
| NOFtcTerm | uint16 | | | | Number of TC which terminated execution |
| NOFtermFailedTc | uint16 | | | | Number of TC which failed their termination check |
| SeqCntLastTermFailTc | uint16 | | | | Sequence counter of last TC which failed termination check |
| sdu2State | uint16 | | | | State of SDU2 State Machine |
| sdu4State | uint16 | | | | State of SDU4 State Machine |
| sdsCounter | uint32 | | | | Number of images which have been discarded because their Science Data Suspend (SDS) Flag was true |
| FdCheckTTMState | uint16 | | | | State of Telescope Temperature Monitor FdCheck |
| FdCheckSDSCState | uint16 | | | | State of Incorrect Science Data Sequence Counter FdCheck |
| FdCheckComErrState | uint16 | | | | State of SEM Communication Error FdCheck |
| FdCheckTimeOutState | uint16 | | | | State of SEM Mode Time-Out FdCheck |
| FdCheckSafeModeState | uint16 | | | | State of SEM Safe Mode FdCheck |
| FdCheckAliveState | uint16 | | | | State of SEM Alive FdCheck |
| FdCheckSemAnoEvtState | uint16 | | | | State of SEM Anomaly Event FdCheck |
| FdCheckSemLimitState | uint16 | | | | State of SEM Limit FdCheck |
| FdCheckDpuHkState | uint16 | | | | State of DPU Housekeeping FdCheck |
| FdCheckCentConsState | uint16 | | | | State of Centroid Consistency FdCheck |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|------|----------|------|--|
| FdCheckResState | uint16 | | | | State of Resource FdCheck |
| FdCheckSemCons | uint16 | | | | |
| semState | uint16 | | | | State of SEM State Machine |
| semOperState | uint16 | | | | State of SEM Operational State Machine |
| sciSubMode | uint16 | | | | Science sub-mode |
| iaswState | uint16 | | | | State of the IASW State Machine |
| iaswCycleCnt | uint32 | | | | Cycle elapsed since the IASW State Machine was started (i.e. since the start of the IASW) |
| prepScienceNode | uint16 | | | | Current node of Prepare Science Procedure |
| controlledSwitchOffNode | uint16 | | | | Current node of Controlled Switch Off Procedure |
| algoCent0State | uint16 | | | | State of Centroiding 0 Algorithm (creates an invalid dummy centroid) |
| algoCent1State | uint16 | | | | State of Centroiding 1 Algorithm |
| algoAcq1State | uint16 | | | | State of Acquisition Algorithm 1 |
| algoCcState | uint16 | | | | State of Compression/Collection Algorithm |
| algoTTC1State | uint16 | | | | State of Telescope Temperature Control 1 Algorithm |
| algoTTC2State | uint16 | | | | State of Telescope Temperature Control 2 Algorithm |
| algoSaaEvalState | uint16 | | | | State of SAA Evaluation Algorithm |
| isSaaActive | uint8 | | | | Flag set to false when the spacecraft is outside the SAA |
| saaCounter | uint32 | | | | Counter holding the distance in time from the next entry into the SAA |
| algoSdsEvalState | uint16 | | | | State of Science Data Suspend (SDS) Evaluation Algorithm |
| isSdsActive | uint8 | | | | Flag set to true when transfer of science data to ground is suspended |
| observationId | uint32 | | | | Observation identifier as it was uploaded by the Star Map Command |
| centValProcOutput | int8 | | | | Output of Centroid Validity Procedure |
| savelImagesNode | uint16 | | | | Current node of Save Images Procedure |
| acqFullDropNode | uint16 | | | | Current node of Acquire Full Drop Procedure |
| calFullSnapNode | uint16 | | | | Current node of Calibrate Full Snap Procedure |
| SciWinNode | uint16 | | | | Current node of Science Window Stack/Snap Procedure |
| fbfLoadNode | uint16 | | | | Current node of FBF Load Procedure |
| fbfSaveNode | uint16 | | | | Current node of FBF Save Procedure |
| transFbfToGrndNode | uint16 | | | | Current node of Transfer FBF To Ground Procedure |
| nomSciNode | uint16 | | | | Current node of Nominal Science Procedure |
| ADC_P3V3 | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_P5V | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_P1V8 | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_P2V5 | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_N5V | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_PGND | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |

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| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|------|----------|------|--|
| ADC_TEMPOH1A | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMP1 | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH2A | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH1B | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH3A | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH2B | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH4A | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH3B | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH4B | float | | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P15V | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P30V | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P5V0 | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P7V0 | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_N5V0 | float | | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| isWatchdogEnabled | uint8 | | | | Enabled status of DPU watchdog |
| isSynchronized | uint8 | | | | Synchronization state of IBSW |
| nOfErrLogEntries | uint16 | | | | Total number of error log entries since the IBSW/IASW was last reset |
| Core0Load | uint8 | | | | CPU load of core 0 |
| Core1Load | uint8 | | | | CPU load of core 1 |
| InterruptRate | uint32 | | | | Interrupts / s |
| Uptime | uint32 | | | | IBSW uptime |
| IRL1 | uint16 | | | | total number of interrupts per second on line 1 |
| IRL2 | uint16 | | | | total number of interrupts per second on line 2 |
| SemRoute | uint16 | | | | fast routing enable flag (SpW0 to SpW1) |
| SpW1BytesIn | uint32 | | | | link stats |
| SpW1BytesOut | uint32 | | | | link stats |
| EdacSingleFaults | uint16 | | | | cumulative number of single faults |
| EdacLastSingleFail | uint32 | | | | last single fault address |
| Cpu2ProcStatus | uint16 | | | | processing status of CPU core 2 |
| CE_Counter | uint16 | | | | CE counter |
| CE_Version | uint16 | | | | IFSW build number / SW version |
| CE_Integrity | uint8 | | | | CE integrity |

SCI_PRW_HkOperationParameter

Brief: L0.5 product : filled with data of SES DAT_Operation_Parameter TM

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| EXPOSURE_TIME | uint32 | msec | | | reported exposure time |
| REPETITION_PERIOD | uint32 | msec | | | reported repetition period |
| ACQUISITION_NUM | uint32 | | | | reported number of raw images |
| OVERSAMPLING | uint8 | | | | oversampling mode |
| RD_MODE | uint8 | | | | Readout mode: faint=0, bright=1, ultrabright=2, full frame=3, auto=4, faint fast=5 |

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SCI_PRW_ImageMetadata

Brief: L05 Product : Meta data of the images, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube. It stores meta data of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the later case there will be just one row in the table. The MARGINS_* columns stores the data for the CCD margins in following order: 0 = dark left, 1 = dark right, 2 = dark top, 3 = blank left, 4 = blank right, 5 = overscan left, 6 = overscan top

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 9.3 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Compression Entity Header | | | | | |
| IFSW_VER | | integer | | | Version of the IFSW |
| ACQ_MODE | | integer | | | Acquisition mode 1: DUMP 2: DIGIT 3: FULL |
| RD_MODE | | integer | | | Readout mode 0=faint, 1=bright 2=ultrabright, 3=full frame, 5=faint fast |
| OVERSAMP | | boolean | | | Oversampling mode if true than averaging of several exposures is done |
| F_SOURCE | | integer | | | Frame source 0: CCD 1: PATTERN 2:SIMULATION |
| REPETIT | | integer | ms | | Commanded Repetition Period, actual Repetition Period can be longer |

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Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| OBT_CE_TIME | OBT | OBT | | | OBT when the compression entity was build |
| CE_COUNTER | uint16 | | | | image counter per visit |
| CE_SIZE | uint32 | | | | Size in byte of the compressed CE |
| CE_INTEGRITY | uint8 | | | | 1: a problem occurred during data processing |
| HEADER_CE_KEY | uint32 | | | | Product ID of compressed header |
| HEADER_ORG_SIZE | uint32 | Byte | | | Uncompressed size of compressed header |
| HEADER_COMP_SIZE | uint32 | Byte | | | Compressed size of compressed header |
| HEADER_CHECKSUM | uint16 | | | | Checksum of compressed header |
| STACKED_CE_KEY | uint32 | | | | Product ID of stacked frames |
| STACKED_ORG_SIZE | uint32 | Byte | | | Uncompressed size of stacked frames |
| STACKED_COMP_SIZE | uint32 | Byte | | | Compressed size of stacked frames |
| STACKED_CHECKSUM | uint16 | | | | Checksum of stacked frames |
| STACKED_DATATYPE | uint8 | Byte | | | Data type of pixel in TM 1: int8, 2: uint8, 3: int16, 4: uint16, 7: int32, 8: uint32 |
| MARGINS_CE_KEY | uint32 | | 7 | | Product ID of image margins |
| MARGINS_ORG_SIZE | uint32 | Byte | 7 | | Uncompressed size of image margins |
| MARGINS_COMP_SIZE | uint32 | Byte | 7 | | Compressed size of image margins |
| MARGINS_CHECKSUM | uint16 | | 7 | | Checksum of image margins |
| MARGINS_DARK_COL_MASK | uint16 | | 7 | | defines the selected/deselected dark columns |

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SCI_PRW_Imagette

Brief: L05 Product : raw imagette.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. Data received during one pass are stored in this data structure. The images in the cube are sorted by time, with no overlap between two consecutive products. Potential duplicated images are already removed.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Target Coordinates | | | | | |

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| Name | Default | Data type | Unit | DB | Comment |
|---------------------|---------|-----------|------|------|---|
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Imagette Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| CROPPING | | string | | | static window or moving window |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|--------|
| Data type | uint32 |
| Null value | 0 |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Scan successive imagettes (sorted by date) with no overlap between two consecutive L05 products |

Associated HDUs

| Name | Type | Optional |
|--------------------------|-------|----------|
| SCI_PRW_ImagetteMetadata | table | no |

SCI_PRW_ImagetteMetadata

Brief: L05 Product : Meta data of the imagettes, stored in the same FITS file

Description: There is one row per two dimensional imagette in the associated image cube. It stores meta data of that imagette.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.6 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| IMAGETTES_CE_KEY | uint32 | | | | Product ID of imagettes |
| IMAGETTES_ORG_SIZE | uint32 | Byte | | | Uncompressed size of imagettes |
| IMAGETTES_COMP_SIZE | uint32 | Byte | | | Compressed size of imagettes |
| IMAGETTES_CHECKSUM | uint16 | | | | Checksum of imagettes |
| CE_COUNTER | uint16 | | | | image counter per visit |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------|----------|------|---|
| NEXP | uint16 | | | | Number of co-added measurements |
| X_OFF_FULL_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Full Array image without margins |
| Y_OFF_FULL_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Full Array image without margins |
| X_OFF_SUB_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Sub Array image |
| Y_OFF_SUB_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Sub Array image |

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SCI_PRW_OverscanLarge

Brief: Data of the overscan CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|--|
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive overscan area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_PRW_OverscanTop

Brief: Data of the overscan CCD margin area at the top of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per column (MRG_PROC = col collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each row in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 10.4 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Sub - Array | | | | | |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|---------|-----------|-------|----|---|
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, col collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. row in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. row in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. row in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. row in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive dark overscan (sorted by date) |

CHEOPS Data Products Definition Document

SCI_PRW_SubArray

Brief: L05 Product : raw sub-array image.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. Data received during one pass are stored in this data structure. The images in the cube are sorted by time, with no overlap between two consecutive products. Potential duplicated images are already removed.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.0 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| MRG_MODE | undefined | string | | | On-board processing mode of the CCD margins |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | real | sec | | OBT of the first measurement |
| T_STOP_O | | real | sec | | OBT of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | integer | ms | | Exposure time of the individual exposures |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|---------|-----------|-------|------|--|
| TEXPTIME | | integer | ms | | Total exposure time of stacked images |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|-------------------|--------|
| Data type | uint32 |
| Null value | 0 |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Scan successive subarray images (sorted by date) with no overlap between two consecutive L05 products |

Associated HDUs

| Name | Type | Optional |
|--------------------------------|-------|----------|
| SCI_PRW_ImageMetadata | table | no |
| SCI_PRW_UnstackedImageMetadata | table | no |
| SCI_PRW_DarkLarge | image | yes |
| SCI_PRW_DarkReduced | image | yes |
| SCI_PRW_DarkTop | image | yes |
| SCI_PRW_BlankLarge | image | yes |
| SCI_PRW_BlankReduced | image | yes |
| SCI_PRW_OverscanLarge | image | yes |
| SCI_PRW_OverscanTop | image | yes |

CHEOPS Data Products Definition Document

SCI_PRW_UnstackedImageMetadata

Brief: L05 Product : Meta data of the images, stored in the same FITS file

Description: There is one row in this table per two dimensional unstacked image. It stores meta data of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the later case there will be just one row in the table. Note: the main readout electronic was used if CCD_TIMING_SCRIPT = 1 to 8. The redundant readout electronic was used if CCD_TIMING_SCRIPT = 9 to 16

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 11.3 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------|-----------|------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| CE_COUNTER | uint16 | | | | image counter per visit |
| ACQUISITION_ID | uint32 | | | | Data acquisition id, set by SEM |
| CE_VOLT_FEE_VOD | float | V | | | FEE voltage to CCD (DAC output) |
| CE_VOLT_FEE_VRD | float | V | | | FEE voltage to CCD (DAC output) |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|------|----------|------|---|
| CE_VOLT_FEE_VOG | float | V | | | FEE voltage to CCD |
| CE_VOLT_FEE_VSS | float | V | | | FEE voltage to CCD (DAC output) |
| CE_TEMP_FEE_CCD | float | degC | | | FPA/CCD (two sensors for main and redundant channel) |
| CE_TEMP_FEE_ADC | float | degC | | | ADC/analog chain area (two sensors on one PCB for main and redundant channel) |
| CE_TEMP_FEE_BIAS | float | degC | | | BIAS voltage area (two sensors on one PCB for main and redundant channel) |
| CE_ADC_N5V | float | V | | | Value from resistor measurement |
| CE_ADC_TEMP1 | float | degC | | | Value from thermistor |
| CE_thermAft_1 | float | degC | | | Temperature acquired from aft thermistor 1 |
| CE_thermAft_2 | float | degC | | | Temperature acquired from aft thermistor 2 |
| CE_thermAft_3 | float | degC | | | Temperature acquired from aft thermistor 3 |
| CE_thermAft_4 | float | degC | | | Temperature acquired from aft thermistor 4 |
| CE_thermFront_1 | float | degC | | | Temperature acquired from front thermistor 1 |
| CE_thermFront_2 | float | degC | | | Temperature acquired from front thermistor 2 |
| CE_thermFront_3 | float | degC | | | Temperature acquired from front thermistor 3 |
| CE_thermFront_4 | float | degC | | | Temperature acquired from front thermistor 4 |
| CCD_TIMING_SCRIPT | uint16 | | | | Identifier of the currently used CCD timing script |
| PIX_DATA_OFFSET | uint16 | ADU | | | Digital bias added by the SEM |
| PHOTOMETRY1 | float | ADU | | | quick aperture photometry of centre. |
| PHOTOMETRY2 | float | ADU | | | quick aperture photometry of inner annulus. |
| PHOTOMETRY3 | float | ADU | | | quick aperture photometry of outer annulus. |

SCI_RAW_Attitude

Brief: L0.5 product : Attitude provided by the AOCS of the S/C

Description: The data are calculated from the attitude quaternions, see SCI_PRW_HkAsy30759.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| SC_RA | float | | | | RA of the spacecraft at the epoch of the observation |
| SC_DEC | float | | | | DEC of the spacecraft at the epoch of the observation |
| SC_ROLL_ANGLE | float | | | | Roll angle of the spacecraft |

CHEOPS Data Products Definition Document

SCI_RAW_BlankLeft

Brief: Data of the blank CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|--|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the blank area |
| axis2 | 0 | pixel | Y axis of the blank area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_BlankRight

Brief: Data of the blank CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|--|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the blank area |
| axis2 | 0 | pixel | Y axis of the blank area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_Centroid

Brief: Stores the centroid data as they were calculated on-board

Description: There is one row per exposure. The data are not re-calculated on ground, just re-formatted from the values, read from the TM.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|-------------|----------|------|---|
| OBT_START | OBT | OBT | | | Start time of the integration |
| UTC_START | UTC | TIMESYS=UTC | | | Start time of the integration |
| MJD_START | MJD | day | | | Start time of the integration |
| OBT_STOP | OBT | OBT | | | End time of the integration |
| UTC_STOP | UTC | TIMESYS=UTC | | | End time of the integration |
| MJD_STOP | MJD | day | | | End time of the integration |
| FULL_FRAME | bool | | | | Data were taken from a full frame image |
| CE_COUNTER | uint16 | | | | image counter per visit, this centroid belongs to |
| ACQUISITION_ID | uint32 | | | | Data acquisition number, set by SEM |
| OFFSET_X | float | pixel | | | residual (measured - intended) in X |
| OFFSET_Y | float | pixel | | | residual (measured - intended) in Y |
| LOCATION_X | float | pixel | | | Intended X position of target star on CCD [SOC coordinate system] |
| LOCATION_Y | float | pixel | | | Intended Y position of target star on CCD [SOC coordinate system] |
| DATA_CADENCE | float | sec | | | Duration between consecutive centroids |
| VALIDITY | uint8 | | | | 0: OK window mode, 1: OK full frame, other: not OK |

CHEOPS Data Products Definition Document

SCI_RAW_DarkLeft

Brief: Data of the dark CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|--|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark dark (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_DarkRight

Brief: Data of the dark CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|--|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_DarkTop

Brief: Data of the dark CCD margin area at the top of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per column (MRG_PROC = col collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each row in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|---|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, col collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. row in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. row in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. row in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. row in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark area |
| axis2 | 0 | pixel | Y axis of the dark area |
| axis3 | 0 | #images | Successive dark area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_EventReport

Brief: Event Reports, provided by Service 5 TM

Description: There is one row per reported event. All types of every event IDs and of all severity levels are stored in this table.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| EV_EN_RF | N/A | string | | | name of event enum reference file |
| EV_PR_RF | N/A | string | | | name of event parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|-------------|----------|------------|---------------------------------|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| SEVERITY | uint8 | | | | severity level of event, 1-4 |
| EVT_ID | uint16 | | | | ID of the event |
| EVT_NAME | string | | 24 | | Name of the event |
| PARAM_1 | uint32 | | | 4294967295 | value of parameter 1 |
| PARAM_1_NAME | string | | 24 | | name of parameter 1 |
| PARAM_1_CAL | string | | 30 | | calibrated value of parameter 1 |
| PARAM_2 | uint32 | | | 4294967295 | value of parameter 2 |
| PARAM_2_NAME | string | | 24 | | name of parameter 2 |
| PARAM_2_CAL | string | | 30 | | calibrated value of parameter 2 |
| PARAM_3 | uint32 | | | 4294967295 | value of parameter 3 |
| PARAM_3_NAME | string | | 24 | | name of parameter 3 |
| PARAM_3_CAL | string | | 30 | | calibrated value of parameter 3 |
| PARAM_4 | uint32 | | | 4294967295 | value of parameter 4 |
| PARAM_4_NAME | string | | 24 | | name of parameter 4 |
| PARAM_4_CAL | string | | 30 | | calibrated value of parameter 4 |
| PARAM_5 | uint32 | | | 4294967295 | value of parameter 5 |
| PARAM_5_NAME | string | | 24 | | name of parameter 5 |
| PARAM_5_CAL | string | | 30 | | calibrated value of parameter 5 |
| PARAM_6 | uint32 | | | 4294967295 | value of parameter 6 |
| PARAM_6_NAME | string | | 24 | | name of parameter 6 |
| PARAM_6_CAL | string | | 30 | | calibrated value of parameter 6 |
| PARAM_7 | uint32 | | | 4294967295 | value of parameter 7 |
| PARAM_7_NAME | string | | 24 | | name of parameter 7 |
| PARAM_7_CAL | string | | 30 | | calibrated value of parameter 7 |
| PARAM_8 | uint32 | | | 4294967295 | value of parameter 8 |
| PARAM_8_NAME | string | | 24 | | name of parameter 8 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------|-----------|------|----------|------------|----------------------------------|
| PARAM_8_CAL | string | | 30 | | calibrated value of parameter 8 |
| PARAM_9 | uint32 | | | 4294967295 | value of parameter 9 |
| PARAM_9_NAME | string | | 24 | | name of parameter 9 |
| PARAM_9_CAL | string | | 30 | | calibrated value of parameter 9 |
| PARAM_10 | uint32 | | | 4294967295 | value of parameter 10 |
| PARAM_10_NAME | string | | 24 | | name of parameter 10 |
| PARAM_10_CAL | string | | 30 | | calibrated value of parameter 10 |
| PARAM_11 | uint32 | | | 4294967295 | value of parameter 11 |
| PARAM_11_NAME | string | | 24 | | name of parameter 11 |
| PARAM_11_CAL | string | | 30 | | calibrated value of parameter 11 |
| PARAM_12 | uint32 | | | 4294967295 | value of parameter 12 |
| PARAM_12_NAME | string | | 24 | | name of parameter 12 |
| PARAM_12_CAL | string | | 30 | | calibrated value of parameter 12 |
| PARAM_13 | uint32 | | | 4294967295 | value of parameter 13 |
| PARAM_13_NAME | string | | 24 | | name of parameter 13 |
| PARAM_13_CAL | string | | 30 | | calibrated value of parameter 13 |

CHEOPS Data Products Definition Document

SCI_RAW_FullArray

Brief: L05 Product : raw full array image, time in JD.

Description: There is no processing step on the raw pixel data applied. The pixel values are as they were received from the instrument. Only time conversion from on-board-time to JD is applied.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| MRG_MODE | undefined | string | | | On-board processing mode of the CCD margins |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|-----------|--------------|-------------|------|--|
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|-------|-------------------|
| naxis | 2 | | |
| axis1 | 1024 | pixel | X axis of the CCD |
| axis2 | 1024 | pixel | Y axis of the CCD |

Associated HDUs

| Name | Type | Optional |
|------|------|----------|
|------|------|----------|

CHEOPS Data Products Definition Document

| Name | Type | Optional |
|--------------------------------|-------|----------|
| SCI_RAW_ImageMetadata | table | no |
| SCI_RAW_UnstackedImageMetadata | table | no |
| SCI_RAW_DarkLeft | image | no |
| SCI_RAW_DarkRight | image | no |
| SCI_RAW_DarkTop | image | no |
| SCI_RAW_BlankLeft | image | no |
| SCI_RAW_BlankRight | image | no |
| SCI_RAW_OverscanLeft | image | yes |
| SCI_RAW_OverscanRight | image | yes |
| SCI_RAW_OverscanTop | image | no |

CHEOPS Data Products Definition Document

SCI_RAW_HkAsy30759

Brief: L0.5 product : DSE 1/64 Hz (SID = 58)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------------|-----------|-------------|----------|------|---------------------|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| AOCS_current_OBT | OBT | | | | |
| IAE_state | string | | 9 | | |
| IAE_DSE_initialized | string | | 5 | | |
| DSE_computed_innov_valid | string | | 5 | | |
| DSE_nb_rejected_innov | uint32 | | | | |
| IAE_DSE_Estim_quat_x | float | | | | |
| IAE_DSE_Estim_quat_y | float | | | | |
| IAE_DSE_Estim_quat_z | float | | | | |
| IAE_DSE_Estim_quat_s | float | | | | |
| IAE_DSE_Estim_X_ang_rate | float | rd/s | | | |
| IAE_DSE_Estim_Y_ang_rate | float | rd/s | | | |
| IAE_DSE_Estim_Z_ang_rate | float | rd/s | | | |
| IAE_DSE_cmptd_innov_x | float | rad | | | |
| IAE_DSE_cmptd_innov_y | float | rad | | | |
| IAE_DSE_cmptd_innov_z | float | rad | | | |
| DSE_time_wo_correction | uint32 | cy | | | |
| AOCS_nmState | string | | 7 | | |
| AOCS_isNmAutomatic | string | | 5 | | |
| NM_isConverged | string | | 5 | | |
| AOCS_isGapBias | string | | 5 | | |
| AOCS_convTimer | float | s | | | |
| PSE_quaternion_x | double | | | | |
| PSE_quaternion_y | double | | | | |
| PSE_quaternion_z | double | | | | |
| PSE_quaternion_scal | double | | | | |
| STRPL_bias_filtered_x | double | | | | |
| STRPL_bias_filtered_y | double | | | | |

CHEOPS Data Products Definition Document

SCI_RAW_HkAsy30767

Brief: L0.5 product : Q 1 Hz (SID = 66)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|-------------|----------|------|---------------------|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| PSE_quaternion_x | double | | | | |
| PSE_quaternion_y | double | | | | |
| PSE_quaternion_z | double | | | | |
| PSE_quaternion_scal | double | | | | |

CHEOPS Data Products Definition Document

SCI_RAW_HkCe

Brief: L0.5 product : HK data provided by the Compression Entity (CE)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATANAME | | string | | | defines the corresponding images, either FullArray or SubArray |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| CE_VOLT_FEE_VOD | float | V | | | FEE voltage to CCD (DAC output) |
| CE_VOLT_FEE_VRD | float | V | | | FEE voltage to CCD (DAC output) |
| CE_VOLT_FEE_VOG | float | V | | | FEE voltage to CCD |
| CE_VOLT_FEE_VSS | float | V | | | FEE voltage to CCD (DAC output) |
| CE_TEMP_FEE_CCD | float | degC | | | FPA/CCD (two sensors for main and redundant channel) |
| CE_TEMP_FEE_ADC | float | degC | | | ADC/analog chain area (two sensors on one PCB for main and redundant channel) |
| CE_TEMP_FEE_BIAS | float | degC | | | BIAS voltage area (two sensors on one PCB for main and redundant channel) |
| CE_ADC_N5V | float | V | | | Value from resistor measurement |
| CE_ADC_TEMP1 | float | degC | | | Value from thermistor |
| CE_thermAft_1 | float | degC | | | Temperature acquired from aft thermistor 1 |
| CE_thermAft_2 | float | degC | | | Temperature acquired from aft thermistor 2 |
| CE_thermAft_3 | float | degC | | | Temperature acquired from aft thermistor 3 |
| CE_thermAft_4 | float | degC | | | Temperature acquired from aft thermistor 4 |
| CE_thermFront_1 | float | degC | | | Temperature acquired from front thermistor 1 |
| CE_thermFront_2 | float | degC | | | Temperature acquired from front thermistor 2 |
| CE_thermFront_3 | float | degC | | | Temperature acquired from front thermistor 3 |
| CE_thermFront_4 | float | degC | | | Temperature acquired from front thermistor 4 |

SCI_RAW_HkCentroid

Brief: L0.5 product : Centroid Packet, provided by Instrument for AOCs System

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|-------------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| OFFSET_X | int32 | centi-pixel | | | residual (measured - intended) in X |
| OFFSET_Y | int32 | centi-pixel | | | residual (measured - intended) in Y |
| LOCATION_X | uint32 | centi-pixel | | | Intended X position of target star on CCD [IFSW coordinate system] |
| LOCATION_Y | uint32 | centi-pixel | | | Intended Y position of target star on CCD [IFSW coordinate system] |
| OBT_START | OBT | OBT | | | Start time of the integration |
| OBT_STOP | OBT | OBT | | | End time of the integration |
| DATA_CADENCE | uint16 | centi-sec | | | Duration between consecutive centroids |
| VALIDITY | uint8 | | | | 0: OK window mode, 1: OK full frame, other: not OK |

SCI_RAW_HkDefault

Brief: L0.5 product : Default (SID = 6)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| STAT_MODE | string | | 14 | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_FLAGS | uint16 | | | | The last seven bits correspond to parameters OBT_SYNC_FLAG, WATCHDOG, EEPROM_POWER, FPM_POWER, BUF_OVERFL and SCU_MAIN_RED in the SEM default housekeeping packet in RD-9 |
| STAT_LAST_SPW_ERR | string | | 11 | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_LAST_ERR_ID | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_LAST_ERR_FREQ | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_NUM_CMD_RECEIVED | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_NUM_CMD_EXECUTED | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_NUM_DATA_SENT | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_PROC_DUTY_CL | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_NUM_AHB_ERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_NUM_AHB_CERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| STAT_SCU_NUM_LUP_ERR | uint16 | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| TEMP_SEM_SCU | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| TEMP_SEM_PCU | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| VOLT_SCU_P3_4 | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |
| VOLT_SCU_P5 | float | | | | Copy of similarly named parameter from SEM default housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

SCI_RAW_HkExtended

Brief: L0.5 product : Extended (SID = 6)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| TEMP_FEE_CCD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_STRAP | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_ADC | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_BIAS | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| TEMP_FEE_DEB | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VOD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VRD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VOG | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_VSS | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_CCD | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_CLK | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_ANA_P5 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_ANA_N5 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| VOLT_FEE_ANA_P3_3 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| CURR_FEE_CLK_BUF | float | | | | |
| VOLT_SCU_FPGA_P1_5 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| CURR_SCU_P3_4 | float | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| STAT_NUM_SPW_ERR_CRE | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_ESC | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_DISC | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_PAR | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_WRSY | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_INVA | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_EOP | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_RXAH | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_TXAH | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_TXBL | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SPW_ERR_TXLE | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SP_ERR_RX | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_NUM_SP_ERR_TX | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FPA_CCD | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FEE_STR | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FEE_ANA | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_SPARE | uint8 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |
| STAT_HEAT_PWM_FLAGS | uint8 | | | | The last six bits correspond to parameters STAT_HEAT_POW_FPA_CCD, STAT_HEAT_POW_FPA_STRAP, STAT_HEAT_POW_FPA_ANACH, STAT_HEAT_POW_FPA_SPARE, STAT_CCD_TEMP_STABLE, STAT_FEE_TEMP_STABLE in the SEM extended housekeeping packet in RD-9 |
| STAT_OBTIME_SYNC_DELTA | uint16 | | | | Copy of similarly named parameter from SEM extended housekeeping packet; see RD-9 |

CHEOPS Data Products Definition Document

SCI_RAW_HklaswDg

Brief: L0.5 product : Diagnostic IASW Telemetry (SID = 3)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

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| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| NofAllocatedInRep | uint8 | | | | Return value of CORDET framework function InFactoryGetNofAllocatedInRep |
| NofAllocatedInCmd | uint8 | | | | Return value of CORDET framework function InFactoryGetNofAllocatedInCmd |
| Sem_NofPendingInCmp | uint8 | | | | Return value of CORDET framework function InManagerGetNofPendingInCmp for the InManagerSem |
| Sem_NofLoadedInCmp | uint8 | | | | Return value of CORDET framework function InManagerGetNofLoadedInCmp for the InManagerSem |
| GrdObc_NofPendingInCmp | uint8 | | | | Return value of CORDET framework function InManagerGetNofPendingInCmp for the InManagerGrdObc |
| NofAllocatedOutCmp | uint8 | | | | Return value of CORDET framework function OutFactoryGetNofAllocatedOutCmp |
| NofInstanceId | uint16 | | | | Return value of CORDET framework function OutFactoryGetNofInstanceId |
| OutMg1_NofPendingOutCmp | uint8 | | | | Return value of CORDET framework function OutManagerGetNofPendingOutCmp for the OutManager1 |
| OutMg1_NofLoadedOutCmp | uint16 | | | | Return value of CORDET framework function OutManagerGetNofLoadedOutCmp for the OutManager1 |
| OutMg2_NofPendingOutCmp | uint8 | | | | Return value of CORDET framework function OutManagerGetNofPendingOutCmp for the OutManager2 |
| OutMg2_NofLoadedOutCmp | uint16 | | | | Return value of CORDET framework function OutManagerGetNofLoadedOutCmp for the OutManager2 |
| OutMg3_NofPendingOutCmp | uint8 | | | | Return value of CORDET framework function OutManagerGetNofPendingOutCmp for the OutManager3 |
| OutMg3_NofLoadedOutCmp | uint16 | | | | Return value of CORDET framework function OutManagerGetNofLoadedOutCmp for the OutManager3 |
| InSem_NofPendingPckts | uint16 | | | | Return value of CORDET framework function InStreamGetNofPendingPckts for the InStreamSem |
| InObc_NofPendingPckts | uint8 | | | | Return value of CORDET framework function InStreamGetNofPendingPckts for the InStreamObc |
| InGrd_NofPendingPckts | uint8 | | | | Return value of CORDET framework function InStreamGetNofPendingPckts for the InStreamGrd |
| OutSem_NofPendingPckts | uint8 | | | | Return value of CORDET framework function OutStreamSemGetNofPendingPckts for the OutStreamSem |
| OutObc_NofPendingPckts | uint8 | | | | Return value of CORDET framework function OutStreamGetNofPendingPckts for OutStreamObc |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|--|
| OutGrd_NoFPendingPckts | uint8 | | | | Return value of CORDET framework function OutStreamGetNoFPendingPckts for OutStreamGrd |
| sdbStateCnt | uint32 | | | | Number of cycles since current state of SDB State Machine was entered |
| lastPatchedAddr | uint32 | | | | Last start address to have been patched |
| lastDumpAddr | uint32 | | | | Last start address to have been dumped |
| sdu2BlockCnt | uint16 | | | | Block count for SDU2 State Machine |
| sdu4BlockCnt | uint16 | | | | Block count for SDU4 State Machine |
| FdCheckTTMIntEn | uint8 | | | | Internal enable status of TTM FdCheck |
| RpTTMIntEn | uint8 | | | | Internal enable status of TTM recovery procedure |
| FdCheckTTMCnt | uint16 | | | | Counter for TTM FdCheck |
| FdCheckTTMSpCnt | uint16 | | | | Spurious counter for TTM FdCheck |
| FdCheckSDSCIntEn | uint8 | | | | Internal enable status of SDSC FdCheck |
| RpSDSCIntEn | uint8 | | | | Internal enable status of SDSC recovery procedure |
| FdCheckSDSCCnt | uint16 | | | | Counter for SDSC FdCheck |
| FdCheckSDSCSpCnt | uint16 | | | | Spurious counter for SDSC FdCheck |
| FdCheckComErrIntEn | uint8 | | | | Internal enable status of SEM Communication Error FdCheck |
| RpComErrIntEn | uint8 | | | | Internal enable status of SEM Communication Error recovery procedure |
| FdCheckComErrCnt | uint16 | | | | Counter for SEM Communication Error FdCheck |
| FdCheckComErrSpCnt | uint16 | | | | Spurious counter for SEM Communication Error FdCheck |
| FdCheckTimeOutIntEn | uint8 | | | | Internal enable status of SEM Mode Time-Out FdCheck |
| RpTimeOutIntEn | uint8 | | | | Internal enable status of SEM Mode Time-Out recovery procedure |
| FdCheckTimeOutCnt | uint16 | | | | Counter for SEM Mode Time-Out FdCheck |
| FdCheckTimeOutSpCnt | uint16 | | | | Spurious counter for SEM Mode Time-Out FdCheck |
| FdCheckSafeModeIntEn | uint8 | | | | Internal enable status of SEM Safe Mode FdCheck |
| RpSafeModeIntEn | uint8 | | | | Internal enable status of SEM Safe Mode recovery procedure |
| FdCheckSafeModeCnt | uint16 | | | | Counter for SEM Safe Mode FdCheck |
| FdCheckSafeModeSpCnt | uint16 | | | | Spurious counter for SEM Safe Mode FdCheck |
| FdCheckAliveIntEn | uint8 | | | | Internal enable status of SEM Alive FdCheck |
| RpAliveIntEn | uint8 | | | | Internal enable status of SEM Alive recovery procedure |
| FdCheckAliveCnt | uint16 | | | | Counter for SEM Alive FdCheck |
| FdCheckAliveSpCnt | uint16 | | | | Spurious counter for SEM Alive FdCheck |
| FdCheckSemAnoEvtIntEn | uint8 | | | | Internal enable status of SEM Error Event 1 FdCheck |
| RpSemAnoEvtIntEn | uint8 | | | | Internal enable status of SEM Error Event 1 recovery procedure |
| FdCheckSemAnoEvtCnt | uint16 | | | | Counter for SEM Error Event 1 FdCheck |
| FdCheckSemAnoEvtSpCnt | uint16 | | | | Spurious counter for SEM Error Event 1 FdCheck |
| FdCheckSemLimitIntEn | uint8 | | | | Internal enable status of SEM Limit FdCheck |
| RpSemLimitIntEn | uint8 | | | | Internal enable status of SEM Limit recovery procedure |
| FdCheckSemLimitCnt | uint16 | | | | Counter for SEM Limit FdCheck |
| FdCheckSemLimitSpCnt | uint16 | | | | Spurious counter for SEM Limit FdCheck |
| FdCheckDpuHkIntEn | uint8 | | | | Internal enable status of DPU Housekeeping FdCheck |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|--|
| RpDpuHkIntEn | uint8 | | | | Internal enable status of DPU Housekeeping recovery procedure |
| FdCheckDpuHkCnt | uint16 | | | | Counter for DPU Housekeeping FdCheck |
| FdCheckDpuHkSpCnt | uint16 | | | | Spurious counter for DPU Housekeeping FdCheck |
| FdCheckCentConsIntEn | uint8 | | | | Internal enable status of Centroid Consistency FdCheck |
| RpCentConsIntEn | uint8 | | | | Internal enable status of Centroid Consistency recovery procedure |
| FdCheckCentConsCnt | uint16 | | | | Counter for Centroid Consistency FdCheck |
| FdCheckCentConsSpCnt | uint16 | | | | Spurious counter for Centroid Consistency FdCheck |
| FdCheckResIntEn | uint8 | | | | Internal enable status of Resource FdCheck |
| RpResIntEn | uint8 | | | | Internal enable status of Resource recovery procedure |
| FdCheckResCnt | uint16 | | | | Counter for Resource FdCheck |
| FdCheckResSpCnt | uint16 | | | | Spurious counter for Resource FdCheck |
| FdCheckSemConsIntEn | uint8 | | | | |
| RpSemConsIntEn | uint8 | | | | |
| FdCheckSemConsCnt | uint16 | | | | |
| FdCheckSemConsSpCnt | uint16 | | | | |
| semStateCnt | uint32 | | | | Cycles elapsed since entry into current state of SEM State Machine |
| semOperStateCnt | uint32 | | | | Cycles elapsed since entry into current state of SEM Operational State Machine |
| imageCycleCnt | uint32 | | | | Cycles elapsed since start of acquisition of current image |
| acqImageCnt | uint32 | | | | Number of images acquired since entry into science mode |
| LastSemPckt | uint8 | | | | |
| iaswStateCnt | uint32 | | | | Cycles elapsed since entry into current state of IASW State Machine |
| prepScienceCnt | uint32 | | | | Cycles elapsed since entry into current node of Prepare Science Procedure |
| controlledSwitchOffCnt | uint32 | | | | Cycles elapsed since entry into current node of Controlled Switch-Off Procedure |
| algoCent0Cnt | uint32 | | | | Cycles elapsed since entry into current state of Centroiding 0 Algorithm State Machine |
| algoCent1Cnt | uint32 | | | | Cycles elapsed since entry into current state of Centroiding 1 Algorithm State Machine |
| algoAcq1Cnt | uint32 | | | | Cycles elapsed since entry into current state of Acquisition 1 Algorithm State Machine |
| algoCcCnt | uint32 | | | | Cycles elapsed since entry into current state of Compression/Collection Algorithm State Machine |
| algoTTC1Cnt | uint32 | | | | Cycles elapsed since entry into current state of Telescope Temperature Control 1 Algorithm State Machine |
| ttc1AvTempAft | float | degC | | | Average temperature measurement made by TTC1 from aft thermistors |
| ttc1AvTempFrt | float | degC | | | Average temperature measurement made by TTC1 from front thermistors |
| algoTTC2Cnt | uint32 | | | | Cycles elapsed since entry into current state of Telescope Temperature Control 2 Algorithm State Machine |
| intTimeAft | float | s*dC | | | Integral of temperature from aft thermistors |
| onTimeAft | float | sec | | | On-time requested by TTC2 algorithm for aft heaters |
| intTimeFront | float | s*dC | | | Integral of temperature from front thermistors |
| onTimeFront | float | sec | | | On-time requested by TTC2 algorithm for front heaters |
| HbSem | uint8 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| semEvtCounter | uint32 | | | | |
| pExpTime | uint32 | ms | | | Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| pImageRep | uint32 | ms | | | Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| pAcqNum | uint32 | | | | Parameter PAR_ACQUISITION_NUM of command (220,3) to the SEM |
| pDataOs | string | | 3 | | Parameter PAR_DATA_OVERSAMPLING of command (220,3) to the SEM |
| pCcdRdMode | string | | 14 | | Parameter PAR_CCD_READOUT_MODE command (220,3) to the SEM |
| pWinPosX | uint16 | pix | | | Parameter PAR_CCD_WINDOW_STAR_POS_X of command (220,11) to the SEM |
| pWinPosY | uint16 | pix | | | Parameter PAR_CCD_WINDOW_STAR_POS_Y of command (220,11) to the SEM |
| pWinSizeX | uint16 | pix | | | Parameter PAR_CCD_WINDOW_STAR_SIZE_X of command (220,11) to the SEM |
| pWinSizeY | uint16 | pix | | | Parameter PAR_CCD_WINDOW_STAR_SIZE_Y of command (220,11) to the SEM |
| pDtAcqSrc | string | | 10 | | Parameter PAR_DATA_ACQ_SRC of command (220,11) to the SEM |
| pTempCtrlTarget | string | | 7 | | Parameter PAR_TEMP_CONTROL_TARGET of command (220,4) to the SEM |
| pVoltFeeVod | float | | | | Parameter PAR_VOLT_FEE_VOD of command (220,11) to the SEM |
| pVoltFeeVrd | float | | | | Parameter PAR_VOLT_FEE_VRD of command (220,11) to the SEM |
| pVoltFeeVss | float | | | | Parameter PAR_VOLT_FEE_VSS of command (220,11) to the SEM |
| pHeatTempFpaCCd | float | | | | Parameter PAR_HEAT_TEMP_FPA_CCD of command (220,11) to the SEM |
| pHeatTempFeeStrap | float | | | | Parameter PAR_HEAT_TEMP_FEE_STRAP of command (220,11) to the SEM |
| pHeatTempFeeAnach | float | | | | Parameter PAR_HEAT_TEMP_FEE_ANACH of command (220,11) to the SEM |
| pHeatTempSpare | float | | | | Parameter PAR_HEAT_TEMP_SPARE of command (220,11) to the SEM |
| pStepEnDiagCcd | string | | 3 | | |
| pStepEnDiagFee | string | | 3 | | |
| pStepEnDiagTemp | string | | 3 | | |
| pStepEnDiagAna | string | | 3 | | |
| pStepEnDiagExpos | string | | 3 | | |
| pStepDebDiagCcd | string | | 6 | | |
| pStepDebDiagFee | string | | 6 | | |
| pStepDebDiagTemp | string | | 6 | | |
| pStepDebDiagAna | string | | 6 | | |
| pStepDebDiagExpos | string | | 6 | | |
| saveImagesCnt | uint32 | | | | Cycles elapsed since entry into current node of Save Images Procedure |
| SaveImages_pSaveTarget | string | | 6 | | Procedure Parameter: The target of the save operation (either the ground or the flash memory) |
| SaveImages_pFbfInit | uint8 | | | | Procedure Parameter: Identifier of first FBF to which images are saved |
| SaveImages_pFbfEnd | uint8 | | | | Procedure Parameter: Identifier of last FBF to which images may be saved |
| acqFullDropCnt | uint32 | | | | Cycles elapsed since entry into current node of Acquire Full Drop Procedure |
| AcqFullDrop_pExpTime | uint32 | ms | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| AcqFullDrop_pImageRep | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| calFullSnapCnt | uint32 | | | | Cycles elapsed since entry into current node of Calibrate Full Snap Procedure |
| CalFullSnap_pExpTime | uint32 | ms | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| CalFullSnap_pImageRep | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| CalFullSnap_pNmbImages | uint32 | | | | Procedure Parameter: The number of images to be acquired |
| CalFullSnap_pCentSel | string | | 8 | | |
| SciWinCnt | uint32 | | | | Cycles elapsed since entry into current node of science Window Stack/Snap Procedure |
| SciWin_pNmbImages | uint32 | | | | Procedure Parameter: The number of images to be acquired |
| SciWin_pCcdRdMode | string | | 14 | | Procedure Parameter: Parameter PAR_CCD_READOUT_MODE command (220,3) to the SEM |
| SciWin_pExpTime | uint32 | ms | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM |
| SciWin_pImageRep | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM |
| SciWin_pWinPosX | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_X of command (220,11) to the SEM |
| SciWin_pWinPosY | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_Y of command (220,11) to the SEM |
| SciWin_pWinSizeX | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_X of command (220,11) to the SEM |
| SciWin_pWinSizeY | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_Y of command (220,11) to the SEM |
| SciWin_pCentSel | string | | 8 | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated |
| fbfLoadCnt | uint32 | | | | Cycles elapsed since entry into current node of FBF Load Procedure |
| fbfSaveCnt | uint32 | | | | Cycles elapsed since entry into current node of FBF Save Procedure |
| FbfLoad_pFbfId | uint8 | | | | Procedure Parameter: The FBF Identifier |
| FbfLoad_pFbfNBlocks | uint8 | | | | Procedure Parameter: Number of blocks to be loaded from the FBF |
| FbfLoad_pFbfRamAreald | uint16 | | | | Procedure Parameter: Identifier of RAM Data Area where FBF blocks are loaded or zero if RAM Data Area is specified as a raw RAM Address through parameter texttt{pFbfRamAddr} |
| FbfLoad_pFbfRamAddr | uint32 | | | | Procedure Parameter: Address in RAM where the FBF blocks are loaded (or don't care if texttt{pFbfRamAreald} is not zero) |
| FbfSave_pFbfId | uint8 | | | | Procedure Parameter: The FBF identifier |
| FbfSave_pFbfNBlocks | uint8 | | | | Procedure Parameter: Number of blocks to be transferred to the FBF |
| FbfSave_pFbfRamAreald | uint16 | | | | Procedure Parameter: Identifier of RAM Data Area from where FBF blocks are saved or zero if RAM Data Area is specified as a raw RAM Address through parameter texttt{pFbfRamAddr} |
| FbfSave_pFbfRamAddr | uint32 | | | | Procedure Parameter: Address in RAM from which the FBF blocks are transferred (or don't care if texttt{pFbfRamAreald} is not zero) |
| fbfLoadBlockCounter | uint8 | | | | Number of blocks transferred to Target RAM Data Area by FBF Load Procedure since the procedure was last started |
| fbfSaveBlockCounter | uint8 | | | | Number of blocks transferred to Target FBF by FBF Save Procedure since the procedure was last started |
| transFbfToGrndCnt | uint32 | | | | Cycles elapsed since entry into current node of Transfer FBF To Ground Procedure |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|------|----------|------|--|
| TransFbfToGrnd_pNmbFbf | uint8 | | | | Procedure Parameter: The number of FBFs to be transferred to ground |
| TransFbfToGrnd_pFbflnit | uint8 | | | | Procedure Parameter: Identifier of first FBF to be transferred to ground |
| TransFbfToGrnd_pFbfSize | uint8 | | | | Procedure Parameter: Size in number of blocks of the FBFs to be transferred to ground (same size for all FBFs) |
| nomSciCnt | uint32 | | | | Cycles elapsed since entry into current node of Nominal Science Procedure |
| NomSci_pAcqFlag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the initial target acquisition observation |
| NomSci_pCal1Flag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the calibration observation before the science observation |
| NomSci_pSciFlag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the science observation |
| NomSci_pCal2Flag | uint8 | | | | Procedure Parameter: If flag is true, the procedure performs the calibration observation after the science observation |
| NomSci_pCibNFull | uint8 | | | | Procedure Parameter: The number of CIBs for Full CCD Images |
| NomSci_pCibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Full CCD Images |
| NomSci_pSibNFull | uint8 | | | | Procedure Parameter: The number of SIBs for Full CCD Images |
| NomSci_pSibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Full CCD Images |
| NomSci_pGibNFull | uint8 | | | | Procedure Parameter: The number of GIBs for Full CCD Images |
| NomSci_pGibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Full CCD Images |
| NomSci_pSibNWin | uint8 | | | | Procedure Parameter: The number of SIBs for Window CCD Images |
| NomSci_pSibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Window CCD Images |
| NomSci_pCibNWin | uint8 | | | | Procedure Parameter: The number of CIBs for Window CCD Images |
| NomSci_pCibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Window CCD Images |
| NomSci_pGibNWin | uint8 | | | | Procedure Parameter: The number of GIBs for Window CCD Images |
| NomSci_pGibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Window CCD Images |
| NomSci_pExpTimeAcq | uint32 | | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the acquisition observation |
| NomSci_pImageRepAcq | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the acquisition observation |
| NomSci_pExpTimeCal1 | uint32 | ms | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the first calibration observation |
| NomSci_pImageRepCal1 | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the first calibration observation |
| NomSci_pNmbImagesCal1 | uint32 | | | | Procedure Parameter: The number of images to be acquired during the first calibration observation |
| NomSci_pCentSelCal1 | string | | 8 | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated during the first calibration observation |
| NomSci_pNmbImagesSci | uint32 | | | | Procedure Parameter: The number of images to be acquired during the science observation |
| NomSci_pCcdRdModeSci | string | | 14 | | Procedure Parameter: Parameter PAR_CCD_READOUT_MODE command (220,3) to the SEM during the science observation |
| NomSci_pExpTimeSci | uint32 | ms | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the science observation |
| NomSci_pImageRepSci | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the science observation |
| NomSci_pWinPosXSci | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_X of command (220,11) to the SEM during the science observation |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| NomSci_pWinPosYSci | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_POS_Y of command (220,11) to the SEM during the science observation |
| NomSci_pWinSizeXSci | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_X of command (220,11) to the SEM during the science observation |
| NomSci_pWinSizeYSci | uint16 | pix | | | Procedure Parameter: Parameter PAR_CCD_WINDOW_STAR_SIZE_Y of command (220,11) to the SEM during the science observation |
| NomSci_pCentSelSci | string | | 8 | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated during the science observation |
| NomSci_pExpTimeCal2 | uint32 | ms | | | Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM during the second calibration observation |
| NomSci_pImageRepCal2 | uint32 | | | | Procedure Parameter: Parameter PAR_REPETITION_PERIOD of command (220,3) to the SEM during the second calibration observation |
| NomSci_pNmbImagesCal2 | uint32 | | | | Procedure Parameter: The number of images to be acquired during the second calibration observation |
| NomSci_pCentSelCal2 | string | | 8 | | Procedure Parameter: The centroid selection flag which determines whether and how a centroid is generated during the second calibration observation |
| NomSci_pSaveTarget | string | | 6 | | Procedure Parameter: The target of the save operation (either the ground or the flash memory) |
| NomSci_pFbfInit | uint8 | | | | Procedure Parameter: Identifier of first FBF to which images are saved |
| NomSci_pFbfEnd | uint8 | | | | Procedure Parameter: Identifier of last FBF to which images may be saved |
| NomSci_pStckOrderCal1 | uint16 | | | | Procedure Parameter: Stacking order to be used in first calibration observation |
| NomSci_pStckOrderSci | uint16 | | | | Procedure Parameter: Stacking order to be used in the science observation |
| NomSci_pStckOrderCal2 | uint16 | | | | Procedure Parameter: Stacking order to be used in second calibration observation |
| ConfigSdb_pSdbCmd | string | | 11 | | Procedure Parameter: The reconfiguration command to the SDB |
| ConfigSdb_pCibNFull | uint8 | | | | Procedure Parameter: The number of CIBs for Full CCD Images |
| ConfigSdb_pCibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Full CCD Images |
| ConfigSdb_pSibNFull | uint8 | | | | Procedure Parameter: The number of SIBs for Full CCD Images |
| ConfigSdb_pSibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Full CCD Images |
| ConfigSdb_pGibNFull | uint8 | | | | Procedure Parameter: The number of GIBs for Full CCD Images |
| ConfigSdb_pGibSizeFull | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Full CCD Images |
| ConfigSdb_pSibNWin | uint8 | | | | Procedure Parameter: The number of SIBs for Window CCD Images |
| ConfigSdb_pSibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the SIBs for Window CCD Images |
| ConfigSdb_pCibNWin | uint8 | | | | Procedure Parameter: The number of CIBs for Window CCD Images |
| ConfigSdb_pCibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the CIBs for Window CCD Images |
| ConfigSdb_pGibNWin | uint8 | | | | Procedure Parameter: The number of GIBs for Window CCD Images |
| ConfigSdb_pGibSizeWin | uint16 | | | | Procedure Parameter: The size in kBytes of the GIBs for Window CCD Images |
| HbSemCounter | uint32 | | | | |

SCI_RAW_HklaswPar

Brief: L0.5 product : IASW Parameters (SID = 2)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

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| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|-------------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| RdlEnabledList_0 | uint8 | | | | List of enable status of HK reports; the i-th element is the enable status of the i-th report in the RDL |
| RdlEnabledList_1 | uint8 | | | | |
| RdlEnabledList_2 | uint8 | | | | |
| RdlEnabledList_3 | uint8 | | | | |
| RdlEnabledList_4 | uint8 | | | | |
| RdlEnabledList_5 | uint8 | | | | |
| RdlEnabledList_6 | uint8 | | | | |
| RdlEnabledList_7 | uint8 | | | | |
| RdlEnabledList_8 | uint8 | | | | |
| RdlEnabledList_9 | uint8 | | | | |
| EVTFILTERDEF | uint8 | | | | Default value of evtEnabledList when an event type is enabled |
| evtEnabledList_0 | uint8 | | | | The i-th element is the maximum number of instances of the i-th event which may be generated in a cycle (a value of zero means that the event is disabled) |
| evtEnabledList_1 | uint8 | | | | |
| evtEnabledList_2 | uint8 | | | | |
| evtEnabledList_3 | uint8 | | | | |
| evtEnabledList_4 | uint8 | | | | |
| evtEnabledList_5 | uint8 | | | | |
| evtEnabledList_6 | uint8 | | | | |
| evtEnabledList_7 | uint8 | | | | |
| evtEnabledList_8 | uint8 | | | | |
| evtEnabledList_9 | uint8 | | | | |
| evtEnabledList_10 | uint8 | | | | |
| evtEnabledList_11 | uint8 | | | | |
| evtEnabledList_12 | uint8 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|------|----------|------|---------|
| evtEnabledList_13 | uint8 | | | | |
| evtEnabledList_14 | uint8 | | | | |
| evtEnabledList_15 | uint8 | | | | |
| evtEnabledList_16 | uint8 | | | | |
| evtEnabledList_17 | uint8 | | | | |
| evtEnabledList_18 | uint8 | | | | |
| evtEnabledList_19 | uint8 | | | | |
| evtEnabledList_20 | uint8 | | | | |
| evtEnabledList_21 | uint8 | | | | |
| evtEnabledList_22 | uint8 | | | | |
| evtEnabledList_23 | uint8 | | | | |
| evtEnabledList_24 | uint8 | | | | |
| evtEnabledList_25 | uint8 | | | | |
| evtEnabledList_26 | uint8 | | | | |
| evtEnabledList_27 | uint8 | | | | |
| evtEnabledList_28 | uint8 | | | | |
| evtEnabledList_29 | uint8 | | | | |
| evtEnabledList_30 | uint8 | | | | |
| evtEnabledList_31 | uint8 | | | | |
| evtEnabledList_32 | uint8 | | | | |
| evtEnabledList_33 | uint8 | | | | |
| evtEnabledList_34 | uint8 | | | | |
| evtEnabledList_35 | uint8 | | | | |
| evtEnabledList_36 | uint8 | | | | |
| evtEnabledList_37 | uint8 | | | | |
| evtEnabledList_38 | uint8 | | | | |
| evtEnabledList_39 | uint8 | | | | |
| evtEnabledList_40 | uint8 | | | | |
| evtEnabledList_41 | uint8 | | | | |
| evtEnabledList_42 | uint8 | | | | |
| evtEnabledList_43 | uint8 | | | | |
| evtEnabledList_44 | uint8 | | | | |
| evtEnabledList_45 | uint8 | | | | |
| evtEnabledList_46 | uint8 | | | | |
| evtEnabledList_47 | uint8 | | | | |
| evtEnabledList_48 | uint8 | | | | |
| evtEnabledList_49 | uint8 | | | | |
| evtEnabledList_50 | uint8 | | | | |
| evtEnabledList_51 | uint8 | | | | |
| evtEnabledList_52 | uint8 | | | | |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| evtEnabledList_53 | uint8 | | | | |
| evtEnabledList_54 | uint8 | | | | |
| evtEnabledList_55 | uint8 | | | | |
| evtEnabledList_56 | uint8 | | | | |
| evtEnabledList_57 | uint8 | | | | |
| evtEnabledList_58 | uint8 | | | | |
| evtEnabledList_59 | uint8 | | | | |
| FdGlbEnable | uint8 | | | | Global enable flags for FdChecks |
| RpGlbEnable | uint8 | | | | Global enable flags for recovery procedures |
| FdCheckTTMExtEn | uint8 | | | | External enable status of TTM FdCheck |
| RpTTMExtEn | uint8 | | | | External enable status of TTM recovery procedure |
| FdCheckTTMCntThr | uint16 | | | | Counter threshold for TTM FdCheck |
| TTC_LL | float | degC | | | Lower limit for telescope temperature |
| TTC_UL | float | degC | | | Upper limit for telescope temperature |
| TTM_LIM | float | degC | | | Margin for telescope temperature monitoring |
| FdCheckSDSCExtEn | uint8 | | | | External enable status of SDSC FdCheck |
| RpSDSCExtEn | uint8 | | | | External enable status of SDSC recovery procedure |
| FdCheckSDSCCntThr | uint16 | | | | Counter threshold for SDSC FdCheck |
| FdCheckComErrExtEn | uint8 | | | | External enable status of SEM Communication Error FdCheck |
| RpComErrExtEn | uint8 | | | | External enable status of SEM Communication Error recovery procedure |
| FdCheckComErrCntThr | uint16 | | | | Counter threshold for SEM Communication Error FdCheck |
| FdCheckTimeOutExtEn | uint8 | | | | External enable status of SEM Mode Time-Out FdCheck |
| RpTimeOutExtEn | uint8 | | | | External enable status of SEM Mode Time-Out recovery procedure |
| FdCheckTimeOutCntThr | uint16 | | | | Counter threshold for SEM Mode Time-Out FdCheck |
| SEM_TO_POWERON | uint32 | cyc | | | SEM mode transition time-out (power-on to STANDBY) |
| SEM_TO_SAFE | uint32 | cyc | | | SEM mode transition time-out (entry into SAFE) |
| SEM_TO_STAB | uint32 | cyc | | | SEM mode transition time-out (entry into STABILIZE) |
| SEM_TO_TEMP | uint32 | cyc | | | SEM mode transition time-out (entry into STABILIZE with temperature stabilized) |
| SEM_TO_CCD | uint32 | cyc | | | SEM mode transition time-out (entry into SCIENCE) |
| SEM_TO_DIAG | uint32 | cyc | | | SEM mode transition time-out (entry into DIAGNOSTICS) |
| SEM_TO_STANDBY | uint32 | cyc | | | SEM mode transition time-out (entry into STANDBY) |
| FdCheckSafeModeExtEn | uint8 | | | | External enable status of SEM Safe Mode FdCheck |
| RpSafeModeExtEn | uint8 | | | | External enable status of SEM Safe Mode recovery procedure |
| FdCheckSafeModeCntThr | uint16 | | | | Counter threshold for SEM Safe Mode FdCheck |
| FdCheckAliveExtEn | uint8 | | | | External enable status of SEM Alive FdCheck |
| RpAliveExtEn | uint8 | | | | External enable status of SEM Alive recovery procedure |
| FdCheckAliveCntThr | uint16 | | | | Counter threshold for SEM Alive FdCheck |
| SEM_HK_DEF_PER | uint16 | | | | Parameter of SEM Alive FdCheck |
| FdCheckSemAnoEvtExtEn | uint8 | | | | External enable status of SEM Error Event 1 FdCheck |

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| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| RpSemAnoEvtExtEn | uint8 | | | | External enable status of SEM Error Event 1 recovery procedure |
| FdCheckSemAnoEvtCntThr | uint16 | | | | Counter threshold for SEM Error Event 1 FdCheck |
| semAnoEvtResp_1 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_SG |
| semAnoEvtResp_2 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_EX |
| semAnoEvtResp_3 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_AC |
| semAnoEvtResp_4 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_PC |
| semAnoEvtResp_5 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_AF |
| semAnoEvtResp_6 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_EEP_CF |
| semAnoEvtResp_7 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_TMP_NS |
| semAnoEvtResp_8 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_FPA_HI |
| semAnoEvtResp_9 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_WR_EXP |
| semAnoEvtResp_10 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_WR_RPE |
| semAnoEvtResp_11 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_WR |
| semAnoEvtResp_12 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_APS_BT |
| semAnoEvtResp_13 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_REBOOT |
| semAnoEvtResp_14 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_WATCHD |
| semAnoEvtResp_15 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SPW_RX |
| semAnoEvtResp_16 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_CP |
| semAnoEvtResp_17 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_CR |
| semAnoEvtResp_18 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_EEP_CS |
| semAnoEvtResp_19 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_REG_WR |
| semAnoEvtResp_20 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_CMD_BUF1 |
| semAnoEvtResp_21 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_CMD_BUF2 |
| semAnoEvtResp_22 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_DAT_DMA |
| semAnoEvtResp_23 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_PATTER |
| semAnoEvtResp_24 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event WAR_PACKWR |
| semAnoEvtResp_25 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_BIAS_SET |
| semAnoEvtResp_26 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SYNC |
| semAnoEvtResp_27 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SCRIPT |
| semAnoEvtResp_28 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_PWR |
| semAnoEvtResp_29 | string | | 7 | | Response to SEM Anomaly Event FdCheck to SEM event ERR_SPW_TC |
| FdCheckSemLimitExtEn | uint8 | | | | External enable status of SEM Limit FdCheck |
| RpSemLimitExtEn | uint8 | | | | External enable status of SEM Limit recovery procedure |
| FdCheckSemLimitCntThr | uint16 | | | | Counter threshold for SEM Limit FdCheck |
| SEM_LIM_DEL_T | uint16 | | | | Length of time over which an out-of-limit situation must persist before the SEM Limit FdCheck declares an anomaly |
| FdCheckDpuHkExtEn | uint8 | | | | External enable status of DPU Housekeeping FdCheck |
| RpDpuHkExtEn | uint8 | | | | External enable status of DPU Housekeeping recovery procedure |
| FdCheckDpuHkCntThr | uint16 | | | | Counter threshold for DPU Housekeeping FdCheck |
| FdCheckCentConsExtEn | uint8 | | | | External enable status of Centroid Consistency FdCheck |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|-------------------|----------|------|--|
| RpCentConsExtEn | uint8 | | | | External enable status of Centroid Consistency recovery procedure |
| FdCheckCentConsCntThr | uint16 | | | | Counter threshold for Centroid Consistency FdCheck |
| FdCheckResExtEn | uint8 | | | | External enable status of Resource FdCheck |
| RpResExtEn | uint8 | | | | External enable status of Resource recovery procedure |
| FdCheckResCntThr | uint16 | | | | Counter threshold for Resource FdCheck |
| CPU1_USAGE_MAX | float | | | | Maximum fraction of DPU 1 core CPU which may be used |
| MEM_USAGE_MAX | float | | | | Maximum fraction of memory available for dynamical allocation which may be used |
| FdCheckSemConsExtEn | uint8 | | | | |
| RpSemConsExtEn | uint8 | | | | |
| FdCheckSemConsCntThr | uint16 | | | | |
| SEM_INIT_T1 | uint16 | | | | Time-out in SEM Initialization Procedure |
| SEM_INIT_T2 | uint16 | | | | Time-out in SEM Initialization Procedure |
| SEM_OPER_T1 | uint16 | | | | Time-out in SEM Operational State Machine (time-out for transition from TR_STABILIZE to STABILIZE) |
| SEM_SHUTDOWN_T1 | uint16 | | | | Time-out in SEM Shutdown Procedure |
| SEM_SHUTDOWN_T11 | uint16 | | | | |
| SEM_SHUTDOWN_T12 | uint16 | | | | |
| SEM_SHUTDOWN_T2 | uint16 | | | | Time-out in SEM Shutdown Procedure |
| CTRLD_SWITCH_OFF_T1 | uint16 | | | | Time-out in Controlled Switch-Off Procedure |
| algoCent0Enabled | uint8 | | | | Enabled status of Centroiding 0 Algorithm |
| algoCent1Enabled | uint8 | | | | Enabled status of Centroiding 1 Algorithm |
| CENT_EXEC_PHASE | uint32 | | | | Phase of Centroiding Algorithms |
| algoAcq1Enabled | uint8 | | | | Enabled status of Acquisition 1 Algorithm |
| algoCcEnabled | uint8 | | | | Enabled status of Compression/Collection Algorithm |
| STCK_ORDER | uint16 | | | | Image Stacking Order (number of images to be co-added) |
| algoTTC1Enabled | uint8 | | | | Enabled status of Telescope Temperature Control 1 Algorithm |
| TTC1_EXEC_PER | int32 | | | | Period of Telescope Temperature Control Algorithms |
| TTC1_LL_FRT | float | degC | | | Lower temperature limit for TTC1 algorithm for front heaters |
| TTC1_LL_AFT | float | degC | | | Lower temperature limit for TTC1 algorithm for aft heaters |
| TTC1_UL_FRT | float | degC | | | Upper temperature limit for TTC1 algorithm for front heaters |
| TTC1_UL_AFT | float | degC | | | Upper temperature limit for TTC1 algorithm for aft heaters |
| algoTTC2Enabled | uint8 | | | | Enabled status of Telescope Temperature Control 2 Algorithm |
| TTC2_EXEC_PER | int32 | | | | Period of Telescope Temperature Control Algorithms |
| TTC2_REF_TEMP | float | degC | | | Reference temperature for TTC2 algorithm |
| TTC2_OFFSETA | float | sec | | | |
| TTC2_OFFSETF | float | sec | | | |
| TTC2_PA | float | s/dC | | | Proportional term of TTC2 PID algorithm for aft heaters |
| TTC2_DA | float | s ² /d | | | Derivative term of TTC2 PID algorithm for aft heaters |
| TTC2_IA | float | 1/dC | | | Integral term of TTC2 PID algorithm for aft heaters |
| TTC2_PF | float | s/dC | | | Proportional term of TTC2 PID algorithm for front heaters |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|-------------------|----------|------|--|
| TTC2_DF | float | s ² /d | | | Derivative term of TTC2 PID algorithm for front heaters |
| TTC2_IF | float | 1/dC | | | Integral term of TTC2 PID algorithm for front heaters |
| SAA_EXEC_PHASE | uint32 | | | | Phase of SAA Evaluation Algorithm |
| SAA_EXEC_PER | int32 | | | | Period of SAA Evaluation Algorithm |
| SDS_EXEC_PHASE | uint32 | | | | Phase of SAA Evaluation Algorithm |
| SDS_EXEC_PER | int32 | | | | Period of SAA Evaluation Algorithm |
| SDS_FORCED | uint8 | | | | Flag set to true by the ground to force suspension of science data transfer to ground |
| SDS_INHIBITED | uint8 | | | | Flag set to true by the ground to inhibit suspension of science data transfer to ground |
| EARTH_OCCULT_ACTIVE | uint8 | | | | Flag set to true by the ground to indicate earth occultation |
| CENT_OFFSET_LIM | float | | | | Parameter used by Centroid Validity Procedure (maximum distance between measured and target position relative to FOV size) |
| CENT_FROZEN_LIM | float | | | | Parameter used by Centroid Validity Procedure (number of consecutive frozen centroid measurements to declare centroid invalid) |
| SEM_SERV1_1_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,1) |
| SEM_SERV1_2_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,2) |
| SEM_SERV1_7_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,7) |
| SEM_SERV1_8_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (1,8) |
| SEM_SERV3_1_FORWARD | uint8 | | | | Enable status for forwarding of SEM housekeeping reports with SID 1 (default SEM housekeeping) |
| SEM_SERV3_2_FORWARD | uint8 | | | | Enable status for forwarding of SEM housekeeping reports with SID 2 (extended SEM housekeeping) |
| TEMP_SEM_SCU_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_LW | float | degC | | | Lower warning limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |
| CURR_FEE_CLK_BUF_LW | float | mA | | | |
| VOLT_SCU_FPGA_P1_5_LW | float | V | | | Lower warning limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| CURR_SCU_P3_4_LW | float | mA | | | Lower warning limit for SEM HK parameter CURR_SCU_P3_4 |
| TEMP_SEM_SCU_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_UW | float | degC | | | Upper warning limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |
| CURR_FEE_CLK_BUF_UW | float | mA | | | |
| VOLT_SCU_FPGA_P1_5_UW | float | V | | | Upper warning limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |
| CURR_SCU_P3_4_UW | float | mA | | | Upper warning limit for SEM HK parameter CURR_SCU_P3_4 |
| TEMP_SEM_SCU_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_LA | float | degC | | | Lower alarm limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |

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| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| CURR_FEE_CLK_BUF_LA | float | mA | | | |
| VOLT_SCU_FPGA_P1_5_LA | float | V | | | Lower alarm limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |
| CURR_SCU_P3_4_LA | float | mA | | | Lower alarm limit for SEM HK parameter CURR_SCU_P3_4 |
| TEMP_SEM_SCU_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_SEM_SCU |
| TEMP_SEM_PCU_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_SEM_PCU |
| VOLT_SCU_P3_4_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_SCU_P3_4 |
| VOLT_SCU_P5_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_SCU_P5 |
| TEMP_FEE_CCD_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_FEE_CCD |
| TEMP_FEE_STRAP_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_FEE_STRAP |
| TEMP_FEE_ADC_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_FEE_ADC |
| TEMP_FEE_BIAS_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_FEE_BIAS |
| TEMP_FEE_DEB_UA | float | degC | | | Upper alarm limit for SEM HK parameter TEMP_FEE_DEB |
| VOLT_FEE_VOD_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VOD |
| VOLT_FEE_VRD_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VRD |
| VOLT_FEE_VOG_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VOG |
| VOLT_FEE_VSS_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_VSS |
| VOLT_FEE_CCD_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_CCD |
| VOLT_FEE_CLK_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_CLK |
| VOLT_FEE_ANA_P5_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_ANA_P5 |
| VOLT_FEE_ANA_N5_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_ANA_N5 |
| VOLT_FEE_ANA_P3_3_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_FEE_ANA_P3_3 |
| CURR_FEE_CLK_BUF_UA | float | mA | | | |
| VOLT_SCU_FPGA_P1_5_UA | float | V | | | Upper alarm limit for SEM HK parameter VOLT_SCU_FPGA_P1_5 |
| CURR_SCU_P3_4_UA | float | mA | | | Upper alarm limit for SEM HK parameter CURR_SCU_P3_4 |
| SEM_SERV5_1_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,1) |
| SEM_SERV5_2_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,2) |
| SEM_SERV5_3_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,3) |
| SEM_SERV5_4_FORWARD | uint8 | | | | Enable status for forwarding of SEM reports (5,4) |
| acqFullDropT1 | uint32 | cyc | | | Timer in Acquire Full Drop Procedure |
| acqFullDropT2 | uint32 | cyc | | | Timer in Acquire Full Drop Procedure |
| calFullSnapT1 | uint32 | cyc | | | Timer in Calibrate Full Snap Procedure |
| calFullSnapT2 | uint32 | cyc | | | Timer in Calibrate Full Snap Procedure |
| sciWinT1 | uint32 | cyc | | | Timer in Science Window Stack Procedure |
| sciWinT2 | uint32 | cyc | | | Timer in Science Window Stack Procedure |
| ADC_P3V3_U | float | V | | | |
| ADC_P5V_U | float | V | | | |
| ADC_P1V8_U | float | V | | | |
| ADC_P2V5_U | float | V | | | |
| ADC_N5V_L | float | V | | | |
| ADC_PGND_U | float | V | | | Upper limit for DPU housekeeping parameter ADC_PGND |

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| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|------|----------|------|---|
| ADC_PGND_L | float | V | | | Lower limit for DPU housekeeping parameter ADC_PGND |
| ADC_TEMPOH1A_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH1A |
| ADC_TEMP1_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMP1 |
| ADC_TEMPOH2A_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH2A |
| ADC_TEMPOH1B_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH1B |
| ADC_TEMPOH3A_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH3A |
| ADC_TEMPOH2B_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH2B |
| ADC_TEMPOH4A_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH4A |
| ADC_TEMPOH3B_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH3B |
| ADC_TEMPOH4B_U | float | degC | | | Upper limit for DPU housekeeping parameter ADC_TEMPOH4B |
| SEM_P15V_U | float | V | | | |
| SEM_P30V_U | float | V | | | |
| SEM_P5V0_U | float | V | | | |
| SEM_P7V0_U | float | V | | | |
| SEM_N5V0_L | float | V | | | |
| HbSemPassword | uint16 | | | | |

SCI_RAW_HkIbswDg

Brief: L0.5 product : Diagnostic IBSW Telemetry (SID = 4)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|--------------|------|--------|---|
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| ADC_P3V3_RAW | int16 | | | | |
| ADC_P5V_RAW | int16 | | | | |
| ADC_P1V8_RAW | int16 | | | | |
| ADC_P2V5_RAW | int16 | | | | |
| ADC_N5V_RAW | int16 | | | | |
| ADC_PGND_RAW | int16 | | | | |
| ADC_TEMPOH1A_RAW | int16 | | | | |
| ADC_TEMP1_RAW | int16 | | | | |
| ADC_TEMPOH2A_RAW | int16 | | | | |
| ADC_TEMPOH1B_RAW | int16 | | | | |
| ADC_TEMPOH3A_RAW | int16 | | | | |
| ADC_TEMPOH2B_RAW | int16 | | | | |
| ADC_TEMPOH4A_RAW | int16 | | | | |
| ADC_TEMPOH3B_RAW | int16 | | | | |
| ADC_TEMPOH4B_RAW | int16 | | | | |
| SEM_P15V_RAW | int16 | | | | |
| SEM_P30V_RAW | int16 | | | | |
| SEM_P5V0_RAW | int16 | | | | |
| SEM_P7V0_RAW | int16 | | | | |
| SEM_N5V0_RAW | int16 | | | | |
| missedMsgCnt | int32 | | | | Counter of missed synchronization messages |
| missedPulseCnt | int32 | | | | Counter of missed synchronization pulses |
| isErrLogValid | uint8 | | | | Validity status of flash-based error log |
| wcet_1 | float | sec | | | Worst-case execution time of RT container 1 |
| wcet_2 | float | sec | | | Worst-case execution time of RT container 2 |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------------|-----------|------|----------|------|---|
| wcet_3 | float | sec | | | Worst-case execution time of RT container 3 |
| wcet_4 | float | sec | | | Worst-case execution time of RT container 4 |
| wcet_5 | float | sec | | | Worst-case execution time of RT container 5 |
| wcetAver_1 | float | sec | | | Average WCET for RT Container 1 |
| wcetAver_2 | float | sec | | | Average WCET for RT Container 2 |
| wcetAver_3 | float | sec | | | Average WCET for RT Container 3 |
| wcetAver_4 | float | sec | | | Average WCET for RT Container 4 |
| wcetAver_5 | float | sec | | | Average WCET for RT Container 5 |
| wcetMax_1 | float | sec | | | Maximum WCET for RT Container 1 |
| wcetMax_2 | float | sec | | | Maximum WCET for RT Container 2 |
| wcetMax_3 | float | sec | | | Maximum WCET for RT Container 3 |
| wcetMax_4 | float | sec | | | Maximum WCET for RT Container 4 |
| wcetMax_5 | float | sec | | | Maximum WCET for RT Container 5 |
| nOfNotif_1 | uint32 | | | | Notification counter for RT Container 1 |
| nOfNotif_2 | uint32 | | | | Notification counter for RT Container 2 |
| nOfNotif_3 | uint32 | | | | Notification counter for RT Container 3 |
| nOfNotif_4 | uint32 | | | | Notification counter for RT Container 4 |
| nOfNotif_5 | uint32 | | | | Notification counter for RT Container 5 |
| nofFuncExec_1 | uint32 | | | | number of functional executions of RT Container 1 |
| nofFuncExec_2 | uint32 | | | | number of functional executions of RT Container 2 |
| nofFuncExec_3 | uint32 | | | | number of functional executions of RT Container 3 |
| nofFuncExec_4 | uint32 | | | | number of functional executions of RT Container 4 |
| nofFuncExec_5 | uint32 | | | | number of functional executions of RT Container 5 |
| wcetTimeStampFine_1 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 1 |
| wcetTimeStampFine_2 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 2 |
| wcetTimeStampFine_3 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 3 |
| wcetTimeStampFine_4 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 4 |
| wcetTimeStampFine_5 | uint16 | | | | Fine part of time when worst-case execution time is recorded for RT container 5 |
| wcetTimeStampCoarse_1 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 1 |
| wcetTimeStampCoarse_2 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 2 |
| wcetTimeStampCoarse_3 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 3 |
| wcetTimeStampCoarse_4 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 4 |
| wcetTimeStampCoarse_5 | uint32 | | | | Coarse part of time when worst-case execution time is recorded for RT container 5 |
| flashContStepCnt | uint32 | | | | |
| CyclicalActivitiesCtr | uint8 | | | | identifies the current IASW cycle |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|------|----------|------|---|
| ObcInputBufferPackets | uint32 | | | | Nr of packets in OBC input buffer |
| GrndInputBufferPackets | uint32 | | | | Nr of packets in Ground input buffer |
| MilBusBytesIn | uint32 | byte | | | link stats |
| MilBusBytesOut | uint32 | byte | | | link stats |
| MilBusDroppedBytes | uint16 | byte | | | received MilBus bytes dropped due to full buffers |
| IRL1_AHBSTAT | uint8 | 1/s | | | AHB status interrupt |
| IRL1_GRGPIO_6 | uint8 | 1/s | | | sync pulse |
| IRL1_GRTIMER | uint8 | 1/s | | | long timer (uptime) |
| IRL1_GPTIMER_0 | uint8 | 1/s | | | reserved |
| IRL1_GPTIMER_1 | uint8 | 1/s | | | syncpulse guard |
| IRL1_GPTIMER_2 | uint8 | 1/s | | | notification timer |
| IRL1_GPTIMER_3 | uint8 | 1/s | | | watchdog |
| IRL1_IRQMP | uint8 | 1/s | | | multiprocessor/extended IRL |
| IRL1_B1553BRM | uint8 | 1/s | | | Milbus IRQ |
| IRL2_GRSPW2_0 | uint8 | 1/s | | | monitor link (routing mode) |
| IRL2_GRSPW2_1 | uint8 | 1/s | | | SEM link (routing mode) |
| Spw1TxDescAvail | uint8 | | | | link stats |
| Spw1RxPcktAvail | uint8 | | | | link stats |
| MilCucCoarseTime | uint32 | sec | | | coarse time from broadcast |
| MilCucFineTime | uint16 | zcs | | | fine time from broadcast |
| CucCoarseTime | uint32 | sec | | | (current) coarse time |
| CucFineTime | uint16 | zcs | | | (current) fine time |
| Sram1ScrCurrAddr | uint32 | | | | current address of memory scrubber for SRAM 1 |
| Sram2ScrCurrAddr | uint32 | | | | current address of memory scrubber for SRAM 2 |
| Sram1ScrLength | uint16 | | | | number of words to scrub per cycle for SRAM 1 |
| Sram2ScrLength | uint16 | | | | number of words to scrub per cycle for SRAM 2 |
| EdacSingleRepaired | uint8 | | | | number of errors repaired in last cycle |
| EdacDoubleFaults | uint8 | | | | cumulative number of double faults |
| EdacDoubleFAddr | uint32 | | | | last double fault address |
| HEARTBEAT_ENABLED | uint8 | | | | |
| S1AllocDbs | uint32 | | | | usage of Dbs area heap |
| S1AllocSw | uint32 | | | | usage of lfsw heap |
| S1AllocHeap | uint32 | | | | usage of general purpose heap of SRAM1 |
| S1AllocFlash | uint32 | | | | usage of heap in FLASH RAM area |
| S1AllocAux | uint32 | | | | usage of auxiliary heap (centroiding) |
| S1AllocRes | uint32 | | | | usage of reserved heap |
| S1AllocSwap | uint32 | | | | usage of swap data heap |
| S2AllocSciHeap | uint32 | | | | usage of science data heap of SRAM2 |
| FPGA_Version | uint16 | | | | |
| FPGA_DPU_Status | uint16 | | | | |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|------|----------|------|---------|
| FPGA_DPU_Address | uint16 | | | | |
| FPGA_RESET_Status | uint16 | | | | |
| FPGA_SEM_Status | uint16 | | | | |
| FPGA_Oper_Heater_Status | uint16 | | | | |

CHEOPS Data Products Definition Document

SCI_RAW_HkIbswPar

Brief: L0.5 product : IBSW Parameters (SID = 5)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------|-----------|-------------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| SEM_ON_CODE | uint8 | | | | Code to be applied to the DPU FPGA to switch on the SEM |
| SEM_OFF_CODE | uint8 | | | | Code to be applied to the DPU FPGA to switch off the SEM |
| ACQ_PH | uint16 | | | | Phase of acquisition algorithm notification within an image acquisition interval |
| milFrameDelay | uint32 | | | | |
| EL1_CHIP | string | | 5 | | Flash chip where the first error log block is stored |
| EL2_CHIP | string | | 5 | | Flash chip where the second error log block is stored |
| EL1_ADDR | uint32 | | | | Address of first error log block within the chip EL1_CHIP |
| EL2_ADDR | uint32 | | | | Address of second error log block within the chip EL2_CHIP |
| ERR_LOG_ENB | uint8 | | | | Enable status of Error Log |
| FBF_BLK_WR_DUR | uint32 | | | | Maximum period with which FBF write operations may be done (in cycles) |
| FBF_BLK_RD_DUR | uint32 | | | | Maximum period with which FBF read operations may be done (in cycles) |
| THR_MA_A_1 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_2 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_3 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_4 | float | | | | Coefficient in formula for computation of average execution time |
| THR_MA_A_5 | float | | | | Coefficient in formula for computation of average execution time |
| OTA_TM1A_NOM | float | micA | | | |
| OTA_TM1A_RED | float | micA | | | |
| OTA_TM1B_NOM | float | micA | | | |
| OTA_TM1B_RED | float | micA | | | |
| OTA_TM2A_NOM | float | micA | | | |
| OTA_TM2A_RED | float | micA | | | |
| OTA_TM2B_NOM | float | micA | | | |
| OTA_TM2B_RED | float | micA | | | |
| OTA_TM3A_NOM | float | micA | | | |
| OTA_TM3A_RED | float | micA | | | |
| OTA_TM3B_NOM | float | micA | | | |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|------|----------|------|---------|
| OTA_TM3B_RED | float | micA | | | |
| OTA_TM4A_NOM | float | micA | | | |
| OTA_TM4A_RED | float | micA | | | |
| OTA_TM4B_NOM | float | micA | | | |
| OTA_TM4B_RED | float | micA | | | |

CHEOPS Data Products Definition Document

SCI_RAW_HkIfsw

Brief: L0.5 product : General HK for IFSW (SID = 1)

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| buildNumber | uint32 | | | | Build number of IBSW/IASW image |
| AppErrCode | uint8 | | | | Return value of CORDET framework function CrFwGetAppErrCode |
| sibNFull | uint16 | | | | Number of Single Image Buffers for Full images |
| cibNFull | uint16 | | | | Number of Combined Image Buffers for Full images |
| gibNFull | uint16 | | | | Number of Ground Image Buffers for Full images |
| sibNWin | uint16 | | | | Number of Single Image Buffers for Window images |
| cibNWin | uint16 | | | | Number of Combined Image Buffers for Window images |
| gibNWin | uint16 | | | | Number of Ground Image Buffers for Window images |
| sibSizeFull | uint16 | kByt | | | Size in kBytes of one Single Image Buffer for Full Images |
| cibSizeFull | uint16 | kByt | | | Size in kBytes of one Combined Image Buffer for Full Images |
| gibSizeFull | uint16 | kByt | | | Size in kBytes of one Ground Image Buffer for Full Images |
| sibSizeWin | uint16 | kByt | | | Size in kBytes of one Single Image Buffer for Window Images |
| cibSizeWin | uint16 | kByt | | | Size in kBytes of one Combined Image Buffer for Window Images |
| gibSizeWin | uint16 | kByt | | | Size in kBytes of one Ground Image Buffer for Window Images |
| sibIn | uint16 | | | | Pointer to SIB which is being filled with raw data from SEM |
| sibOut | uint16 | | | | Pointer to SIB which is being processed by science algorithms |
| cibIn | uint16 | | | | Pointer to CIB which is being filled with stacked image data |
| gibIn | uint16 | | | | Pointer to GIB which is being filled compressed science data |
| gibOut | uint16 | | | | Pointer to GIB which is being transferred to ground |
| sdbState | string | | 12 | | State of SDB State Machine |
| NOFTcAcc | uint16 | | | | Number of TC accepted for execution (return value of function CrFwInManagerGetNofLoadedInCmp for InManagerGrdObc) |
| NOfAccFailedTc | uint16 | | | | Number of TC which failed their acceptance check |
| SeqCntLastAccTcFromObc | uint16 | | | | Sequence counter of last accepted TC from the OBC (return value of function CrFwInStreamGetSeqCnt for InStreamObc) |
| SeqCntLastAccTcFromGrd | uint16 | | | | Sequence counter of last accepted TC from the ground (return value of function CrFwInStreamGetSeqCnt for InStreamGrd) |
| SeqCntLastAccFailTc | uint16 | | | | Sequence counter of last TC to have failed its acceptance check |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------------|-----------|------|----------|------|---|
| NOfStartFailedTc | uint16 | | | | Number of TC which failed their start check |
| SeqCntLastStartFailTc | uint16 | | | | Sequence counter of last TC which failed start check |
| NOfTcTerm | uint16 | | | | Number of TC which terminated execution |
| NOfTermFailedTc | uint16 | | | | Number of TC which failed their termination check |
| SeqCntLastTermFailTc | uint16 | | | | Sequence counter of last TC which failed termination check |
| sdu2State | string | | 13 | | State of SDU2 State Machine |
| sdu4State | string | | 13 | | State of SDU4 State Machine |
| sdsCounter | uint32 | | | | Number of images which have been discarded because their Science Data Suspend (SDS) Flag was true |
| FdCheckTTMState | string | | 9 | | State of Telescope Temperature Monitor FdCheck |
| FdCheckSDSCState | string | | 9 | | State of Incorrect Science Data Sequence Counter FdCheck |
| FdCheckComErrState | string | | 9 | | State of SEM Communication Error FdCheck |
| FdCheckTimeOutState | string | | 9 | | State of SEM Mode Time-Out FdCheck |
| FdCheckSafeModeState | string | | 9 | | State of SEM Safe Mode FdCheck |
| FdCheckAliveState | string | | 9 | | State of SEM Alive FdCheck |
| FdCheckSemAnoEvtState | string | | 9 | | State of SEM Anomaly Event FdCheck |
| FdCheckSemLimitState | string | | 9 | | State of SEM Limit FdCheck |
| FdCheckDpuHkState | string | | 9 | | State of DPU Housekeeping FdCheck |
| FdCheckCentConsState | string | | 9 | | State of Centroid Consistency FdCheck |
| FdCheckResState | string | | 9 | | State of Resource FdCheck |
| FdCheckSemCons | string | | 9 | | |
| semState | string | | 8 | | State of SEM State Machine |
| semOperState | string | | 13 | | State of SEM Operational State Machine |
| sciSubMode | string | | 14 | | Science sub-mode |
| iaswState | string | | 11 | | State of the IASW State Machine |
| iaswCycleCnt | uint32 | | | | Cycle elapsed since the IASW State Machine was started (i.e. since the start of the IASW) |
| prepScienceNode | string | | 7 | | Current node of Prepare Science Procedure |
| controlledSwitchOffNode | string | | 7 | | Current node of Controlled Switch Off Procedure |
| algoCent0State | string | | 9 | | State of Centroiding 0 Algorithm (creates an invalid dummy centroid) |
| algoCent1State | string | | 9 | | State of Centroiding 1 Algorithm |
| algoAcq1State | string | | 9 | | State of Acquisition Algorithm 1 |
| algoCcState | string | | 9 | | State of Compression/Collection Algorithm |
| algoTTC1State | string | | 9 | | State of Telescope Temperature Control 1 Algorithm |
| algoTTC2State | string | | 9 | | State of Telescope Temperature Control 2 Algorithm |
| algoSaaEvalState | string | | 9 | | State of SAA Evaluation Algorithm |
| isSaaActive | uint8 | | | | Flag set to false when the spacecraft is outside the SAA |
| saaCounter | uint32 | | | | Counter holding the distance in time from the next entry into the SAA |
| algoSdsEvalState | string | | 9 | | State of Science Data Suspend (SDS) Evaluation Algorithm |
| isSdsActive | uint8 | | | | Flag set to true when transfer of science data to ground is suspended |
| observationId | uint32 | | | | Observation identifier as it was uploaded by the Star Map Command |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|------|----------|------|--|
| centValProcOutput | int8 | | | | Output of Centroid Validity Procedure |
| saveImagesNode | string | | 7 | | Current node of Save Images Procedure |
| acqFullDropNode | string | | 7 | | Current node of Acquire Full Drop Procedure |
| calFullSnapNode | string | | 7 | | Current node of Calibrate Full Snap Procedure |
| SciWinNode | string | | 7 | | Current node of Science Window Stack/Snap Procedure |
| fbfLoadNode | string | | 7 | | Current node of FBF Load Procedure |
| fbfSaveNode | string | | 7 | | Current node of FBF Save Procedure |
| transFbfToGrndNode | string | | 7 | | Current node of Transfer FBF To Ground Procedure |
| nomSciNode | string | | 7 | | Current node of Nominal Science Procedure |
| ADC_P3V3 | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_P5V | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_P1V8 | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_P2V5 | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_N5V | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_PGND | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH1A | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMP1 | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH2A | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH1B | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH3A | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH2B | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH4A | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH3B | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| ADC_TEMPOH4B | float | degC | | | Engineering value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P15V | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P30V | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P5V0 | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_P7V0 | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| SEM_N5V0 | float | V | | | Raw value of DPU Housekeeping parameter (see section 3.6/4.6 of issue 1.0 of CHEOPS-IWF-INST-TN-057) |
| isWatchdogEnabled | uint8 | | | | Enabled status of DPU watchdog |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|------|----------|------|--|
| isSynchronized | uint8 | | | | Synchronization state of IBSW |
| nOfErrLogEntries | uint16 | | | | Total number of error log entries since the IBSW/IASW was last reset |
| Core0Load | uint8 | pc | | | CPU load of core 0 |
| Core1Load | uint8 | pc | | | CPU load of core 1 |
| InterruptRate | uint32 | 1/s | | | Interrupts / s |
| Uptime | uint32 | sec | | | IBSW uptime |
| IRL1 | uint16 | 1/s | | | total number of interrupts per second on line 1 |
| IRL2 | uint16 | 1/s | | | total number of interrupts per second on line 2 |
| SemRoute | string | | 8 | | fast routing enable flag (SpW0 to SpW1) |
| SpW1BytesIn | uint32 | byte | | | link stats |
| SpW1BytesOut | uint32 | byte | | | link stats |
| EdacSingleFaults | uint16 | | | | cumulative number of single faults |
| EdacLastSingleFail | uint32 | | | | last single fault address |
| Cpu2ProcStatus | string | | 11 | | processing status of CPU core 2 |
| CE_Counter | uint16 | | | | CE counter |
| CE_Version | uint16 | | | | IFSW build number / SW version |
| CE_Integrity | uint8 | | | | CE integrity |

SCI_RAW_HkOperationParameter

Brief: L0.5 product : filled with data of SES DAT_Operation_Parameter TM

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|------|---|
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Used reference files | | | | | |
| HK_EN_RF | N/A | string | | | name of HK enum reference file |
| HK_PR_RF | N/A | string | | | name of HK Parameter reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-------------------|-----------|-------------|----------|------|--|
| OBT_TIME | OBT | OBT | | | On board time |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time |
| MJD_TIME | MJD | day | | | Modified Julian Day |
| EXPOSURE_TIME | float | sec | | | reported exposure time |
| REPETITION_PERIOD | float | sec | | | reported repetition period |
| ACQUISITION_NUM | uint32 | | | | reported number of raw images |
| OVERSAMPLING | uint8 | | | | oversampling mode |
| RD_MODE | string | | 12 | | Readout mode: faint, bright, ultrabright, full frame, auto or faint fast |

CHEOPS Data Products Definition Document

SCI_RAW_ImageMetadata

Brief: L05 Product : Meta data of the images, stored in the same FITS file

Description: There is one row per two dimensional image in the associated image cube. It stores meta data of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the later case there will be just one row in the table. The time is converted in UTC and MJD. The MARGINS_COMPR stores the compression factor for the CCD margins in following order: 0 = dark left, 1 = dark right, 2 = dark top, 3 = blank left, 4 = blank right, 5 = overscan left, 6 = overscan top

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|---------------------------|-----------|-----------|------|------|---|
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Compression Entity Header | | | | | |
| IFSW_VER | | integer | | | Version of the IFSW |
| ACQ_MODE | | integer | | | Acquisition mode 1: DUMP 2: DIGIT 3: FULL |
| RD_MODE | | string | | | Readout mode: faint, bright ultrabright, full frame or faint fast |
| OVERSAMP | | boolean | | | Oversampling mode if true than averaging of several exposures is done |
| F_SOURCE | | integer | | | Frame source 0: CCD 1: PATTERN 2:SIMULATION |
| REPETIT | | real | sec | | Repetition Period see also REPT_TYP |
| REPT_TYP | commanded | string | | | Defines the type of REPETIT, either commanded or executed |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| LOS_TO_SUN_ANGLE | double | deg | | | Angle between line-of-sight and Sun |
| LOS_TO_MOON_ANGLE | double | deg | | | Angle between line-of-sight and Moon |
| LOS_TO_EARTH_ANGLE | double | deg | | | Angle between line-of-sight and Earth limb |
| LATITUDE | float | deg | | | Geodetic latitude of the spacecraft |
| LONGITUDE | float | deg | | | Geodetic longitude of the spacecraft |
| OBT_CE_TIME | OBT | OBT | | | OBT when the compression entity was build |
| UTC_CE_TIME | UTC | TIMESYS=UTC | | | UTC when the compression entity was build |
| CE_COUNTER | uint16 | | | | image counter per visit |
| CE_SIZE | uint32 | | | | Size in byte of the compressed CE |
| CE_INTEGRITY | uint8 | | | | 1: a problem occurred during data processing |
| CCD_TIMING_SCRIPT | uint16 | | | | Identifier of the currently used CCD timing script |
| PIX_DATA_OFFSET | uint16 | ADU | | | Digital bias added by the SEM |
| HK_SOURCE | string | | 5 | | HK data from HK TM packets (hk tm) or from CE in science tm (ce) |
| HK_VOLT_FEE_VOD | float | V | | | FEE voltage to CCD (DAC output) |
| HK_VOLT_FEE_VRD | float | V | | | FEE voltage to CCD (DAC output) |
| HK_VOLT_FEE_VOG | float | V | | | FEE voltage to CCD |
| HK_VOLT_FEE_VSS | float | V | | | FEE voltage to CCD (DAC output) |
| HK_TEMP_FEE_CCD | float | degC | | | FPA/CCD (two sensors for main and redundant channel) |
| HK_TEMP_FEE_ADC | float | degC | | | ADC/analog chain area (two sensors on one PCB for main and redundant channel) |
| HK_TEMP_FEE_BIAS | float | degC | | | BIAS voltage area (two sensors on one PCB for main and redundant channel) |
| ADC_N5V | float | V | | | Value from resistor measurement |
| ADC_TEMP1 | float | degC | | | Value from thermistor |

CHEOPS Data Products Definition Document

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|------|----------|------|--|
| thermAft_1 | float | degC | | | Temperature acquired from aft thermistor 1 |
| thermAft_2 | float | degC | | | Temperature acquired from aft thermistor 2 |
| thermAft_3 | float | degC | | | Temperature acquired from aft thermistor 3 |
| thermAft_4 | float | degC | | | Temperature acquired from aft thermistor 4 |
| thermFront_1 | float | degC | | | Temperature acquired from front thermistor 1 |
| thermFront_2 | float | degC | | | Temperature acquired from front thermistor 2 |
| thermFront_3 | float | degC | | | Temperature acquired from front thermistor 3 |
| thermFront_4 | float | degC | | | Temperature acquired from front thermistor 4 |
| HEADER_COMPR | float | | | | compression factor of header |
| STACKED_COMPR | float | | | | compression factor of stacked frame |
| MARGINS_COMPR | float | | 7 | | compression factor of margins |
| LEFT_DARK_COL_MASK | uint16 | | | | defines the selected/deselected left dark columns |
| RIGHT_DARK_COL_MASK | uint16 | | | | defines the selected/deselected right dark columns |

CHEOPS Data Products Definition Document

SCI_RAW_Imagette

Brief: L05 Product : raw imagette.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. The images in the cube are sorted by time, with no overlap between two consecutive products. There is no processing step of the raw pixel data applied. Only time conversion from on-board-time to JD is applied.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|---------------------|-----------|--------------|-------------|------|--|
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Imagette Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| CROPPING | | string | | | static window or moving window |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|--------|
| Data type | uint32 |
| Null value | 0 |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Scan successive imagettes (sorted by date) with no overlap between two consecutive L05 products |

Associated HDUs

CHEOPS Data Products Definition Document

| Name | Type | Optional |
|--------------------------|-------|----------|
| SCI_RAW_ImagetteMetadata | table | no |

SCI_RAW_ImagetteMetadata

Brief: L05 Product : Meta data of the imagettes, stored in the same FITS file

Description: There is one row per two dimensional imagette in the associated image cube. It stores meta data of that imagette.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|----------|---------|-----------|------|----|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|------------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| CE_COUNTER | uint16 | | | | image counter per visit |
| IMAGETTES_COMPR | float | | | | compression factor of imagettes |
| NEXP | uint16 | | | | Number of co-added measurements |
| X_OFF_FULL_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Full Array image without margins |
| Y_OFF_FULL_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Full Array image without margins |
| X_OFF_SUB_ARRAY | uint16 | pixel | | | X offset of the Imagette image relative to the Sub Array image |
| Y_OFF_SUB_ARRAY | uint16 | pixel | | | Y offset of the Imagette image relative to the Sub Array image |

CHEOPS Data Products Definition Document

SCI_RAW_OverscanLeft

Brief: Data of the overscan CCD margin area on left side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|--|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive overscan area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_OverscanRight

Brief: Data of the overscan CCD margin area on right side of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per row (MRG_PROC = row collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each column in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|--|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, row collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. column in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. column in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. column in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. column in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive overscan area (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_OverscanTop

Brief: Data of the overscan CCD margin area at the top of the CCD.

Description: Depending on the value of MRG_PROC the data can be either the complete margin image (MRG_PROC = image), 3 values per column (MRG_PROC = col collapsed) or just 4 values in total (MRG_PROC = total collapsed) In reduced and total collapsed mode the header keywords MRG_DTYx define for each row in the image the type of data. It can be "mean", "stdev", "median" or "mad".

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------------------|-----------|-----------|-------------|----|---|
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_START_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |
| Description of CCD Margin Data | | | | | |
| STACKING | | string | | | on-board stacking of image data |
| MRG_PROC | | string | | | on-board processing of CCD margin: image, col collapsed or total collapsed |
| MRG_DTY1 | N/A | string | | | Type of data in 1. row in image |
| MRG_DTY2 | N/A | string | | | Type of data in 2. row in image |
| MRG_DTY3 | N/A | string | | | Type of data in 3. row in image |
| MRG_DTY4 | N/A | string | | | Type of data in 4. row in image |
| Image Attributes | | | | | |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |

Image

| | |
|-------------------|-------|
| Data type | float |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan area |
| axis2 | 0 | pixel | Y axis of the overscan area |
| axis3 | 0 | #images | Successive dark overscan (sorted by date) |

CHEOPS Data Products Definition Document

SCI_RAW_SubArray

Brief: L05 Product : raw sub-array image.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. The images in the cube are sorted by time, with no overlap between two consecutive products. There is no processing step of the raw pixel data applied. Only time conversion from on-board-time to JD is applied.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| MRG_MODE | undefined | string | | | On-board processing mode of the CCD margins |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|-----------|--------------|-------------|------|--|
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |
| STACKING | | string | | | on-board stacking of image data |
| ROUNDING | | integer | | | number of bits that are rounded off |
| NLIN_COR | | boolean | | | on-board nonlinearity correction |
| RO_SCRPT | | integer | | | id of the CCD readout timing script |
| RO_HW | | string | | | used on-board hw: main or redundant |
| RO_FREQU | | integer | Hz | | CCD readout frequency |

Image

| | |
|-------------------|--------|
| Data type | uint32 |
| Null value | 0 |

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| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Scan successive subarray images (sorted by date) with no overlap between two consecutive L05 products |

Associated HDUs

| Name | Type | Optional |
|--------------------------------|-------|----------|
| SCI_RAW_ImageMetadata | table | no |
| SCI_RAW_UnstackedImageMetadata | table | no |
| SCI_RAW_DarkLeft | image | yes |
| SCI_RAW_DarkRight | image | yes |
| SCI_RAW_DarkTop | image | yes |
| SCI_RAW_BlankLeft | image | yes |
| SCI_RAW_BlankRight | image | yes |
| SCI_RAW_OverscanLeft | image | yes |
| SCI_RAW_OverscanRight | image | yes |
| SCI_RAW_OverscanTop | image | yes |

SCI_RAW_UnstackedImageMetadata

Brief: L05 Product : Meta data of the unstacked images, stored in the same FITS file

Description: There is one row per unstacked two dimensional image in the associated image cube. It stores meta data of that image.. This data structure is used for SubArrays as well as for images of the FullArray. In the later case there will be just one row in the table. The time is converted in UTC and MJD. The CE_COUNTER can be used to associate the unstacked image to a stacked image. All unstacked images that are stacked on board to one stacked image have the same CE_COUNTER.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |

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| Name | Default | Data type | Unit | DB | Comment |
|----------|---------|-----------|------|------|--|
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|-----------------|-----------|-------------|----------|------|---|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| CE_COUNTER | uint16 | | | | image counter per visit |
| GAIN_0 | float | | | | gain used to convert electrons to ADU after on-board NLC |
| BIAS_0 | float | ADU | | | bias used to convert electrons to ADU after on-board NLC |
| BIAS | float | ADU | | | bias used to convert ADU to electrons before on-board NLC |
| CE_VOLT_FEE_VOD | float | V | | | FEE voltage to CCD (DAC output) |
| CE_VOLT_FEE_VRD | float | V | | | FEE voltage to CCD (DAC output) |
| CE_VOLT_FEE_VOG | float | V | | | FEE voltage to CCD |
| CE_VOLT_FEE_VSS | float | V | | | FEE voltage to CCD (DAC output) |
| CE_TEMP_FEE_CCD | float | degC | | | FPA/CCD (two sensors for main and redundant channel) |
| PHOTOMETRY_1 | float | ADU | | | photometry of centre |
| PHOTOMETRY_2 | float | ADU | | | photometry of inner annulus |
| PHOTOMETRY_3 | float | ADU | | | photometry of outer annulus |

SIM_ANA_Noisecurve

Brief: Standard deviation of normalised light curve flux measurements as a function of the number of images that have been grouped together

Description: The standard deviation of all normalized fluxes (normalized to the mean value of all the images) provides a first estimation of the noise. It is expected that a combination (average) of the images will reduce the noise. A second estimation is made by generating a new set of images whose flux is characterized by the mean of the fluxes of a pair of images ($f1 = (f1+f2)/2$, $f2 = (f3+f4)/2$, etc.), and calculating the standard deviation of this new set. The process is repeated grouping by 3, 4, . . . n images. If the noise were white, we would expect a reduction in the noise proportional to $1/\sqrt{n}$, with n the number of combined images.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|--|-----------|-----------|-------------|------|--|
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| T_STRT_B | | BJD | day | | BJD of the first measurement |
| T_STOP_B | | BJD | day | | BJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | ses | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Data Reduction Steps: N/A, completed, skipped, warning | | | | | |
| BIAS_ROM | N/A | string | | | BIAS and RON estimation |
| ADU_CONV | N/A | string | | | ADU to photpn conversion |
| DARK | N/A | string | | | Dark current correction |
| FFIELD | N/A | string | | | Flat field correction |
| FLAGGING | N/A | string | | | Flagging |
| JITTER | N/A | string | | | Jitter estimate |
| WCS | N/A | string | | | Pixel to physical coordinates conversion |
| SMEARING | N/A | string | | | Smearing correction |
| BDPIX_D1 | N/A | string | | | Detection of hot pixels |
| BDPIX_D2 | N/A | string | | | Detection of dead pixels |
| BDPIX_D3 | N/A | string | | | Detection of cosmic ray hits |
| BDPIX_D4 | N/A | string | | | Detection of crazy pixels |
| BDPIX_C1 | N/A | string | | | Correction of hot pixels |
| BDPIX_C2 | N/A | string | | | Correction of dead pixels |
| BDPIX_C3 | N/A | string | | | Correction of cosmic ray hits |
| BDPIX_C4 | N/A | string | | | Correction of crazy pixels |
| BKGS_L_W | N/A | string | | | Identification of Background and stray light windows |
| BKGS_L_C | N/A | string | | | Background and stray light correction |
| METH_CFG | N/A | string | | | Method configuration module |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|----------------------|---------|-----------|------|----|-----------------------------------|
| APERTURE | N/A | string | | | Aperture photometry |
| CONTAMIN | N/A | string | | | Contaminations factor estimation |
| PSF_FIT | N/A | string | | | PSF fitting |
| LC_QUAL | N/A | string | | | Light curve quality analysis |
| LC_CFG | N/A | string | | | Light curve configuration modules |
| Used reference files | | | | | |
| RF_FIL1 | N/A | string | | | name of the reference file |
| RF_FIL2 | N/A | string | | | name of the reference file |
| RF_FIL3 | N/A | string | | | name of the reference file |
| RF_FIL4 | N/A | string | | | name of the reference file |
| RF_FIL5 | N/A | string | | | name of the reference file |
| RF_FIL6 | N/A | string | | | name of the reference file |
| RF_FIL7 | N/A | string | | | name of the reference file |
| RF_FIL8 | N/A | string | | | name of the reference file |
| RF_FIL9 | N/A | string | | | name of the reference file |
| RF_FIL10 | N/A | string | | | name of the reference file |
| RF_FIL11 | N/A | string | | | name of the reference file |
| RF_FIL12 | N/A | string | | | name of the reference file |
| RF_FIL13 | N/A | string | | | name of the reference file |
| RF_FIL14 | N/A | string | | | name of the reference file |
| RF_FIL15 | N/A | string | | | name of the reference file |
| RF_FIL16 | N/A | string | | | name of the reference file |
| RF_FIL17 | N/A | string | | | name of the reference file |
| RF_FIL18 | N/A | string | | | name of the reference file |
| RF_FIL19 | N/A | string | | | name of the reference file |
| RF_FIL20 | N/A | string | | | name of the reference file |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|------|----------|------|---|
| TIME_BIN | double | sec | | | Width of time bins used to define light curve |
| NOISE | double | ppm | | | Standard deviation of light curve flux measurements |

CHEOPS Data Products Definition Document

SIM_RAW_DoublePrecisionSubArray

Brief: L05 Product : raw sub-array image in double precision.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. The images in the cube are sorted by time, with no overlap between two consecutive products. There is no processing step of the raw pixel data applied. Only time conversion from on-board-time to JD is applied. The image size may change if overscan pixels and dark regions are part of the image that was sent to ground.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|-----------|--------------|-------------|------|--|
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |
| Image Attributes | | | | | |
| SHAPE | | string | | | rectangular or circular |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Scan successive subarray images (sorted by date) with no overlap between two consecutive L05 products |

Associated HDUs

CHEOPS Data Products Definition Document

| Name | Type | Optional |
|-----------------------|-------|----------|
| SCI_RAW_ImageMetadata | table | no |
| SCI_RAW_DarkLeft | image | no |
| SCI_RAW_DarkRight | image | no |
| SCI_RAW_DarkTop | image | no |
| SCI_RAW_BlankLeft | image | no |
| SCI_RAW_BlankRight | image | no |
| SCI_RAW_OverscanLeft | image | yes |
| SCI_RAW_OverscanRight | image | yes |
| SCI_RAW_OverscanTop | image | no |

CHEOPS Data Products Definition Document

SIM_RAW_UnstackedBlankLeftImage

Brief: Blank columns on left side of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|--|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 8 | pixel | X axis of the blank column |
| axis2 | 0 | pixel | Y axis of the blank column |
| axis3 | 0 | #images | Successive dark columns (sorted by date) |

SIM_RAW_UnstackedBlankRightImage

Brief: Blank columns on right side of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|--|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 8 | pixel | X axis of the blank column |
| axis2 | 0 | pixel | Y axis of the blank column |
| axis3 | 0 | #images | Successive dark columns (sorted by date) |

CHEOPS Data Products Definition Document

SIM_RAW_UnstackedDarkLeftImage

Brief: Dark Columns on left side of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|--|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 16 | pixel | Y axis of the dark column |
| axis2 | 0 | pixel | Y axis of the dark column |
| axis3 | 0 | #images | Successive dark columns (sorted by date) |

SIM_RAW_UnstackedDarkRightImage

Brief: Dark Columns on right side of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |

CHEOPS Data Products Definition Document

| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|--|
| T_START_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 16 | pixel | X axis of the dark column |
| axis2 | 0 | pixel | Y axis of the dark column |
| axis3 | 0 | #images | Successive dark columns (sorted by date) |

SIM_RAW_UnstackedDarkTopImage

Brief: Dark rows at the top of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|---|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---------------------------------------|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the dark row |
| axis2 | 3 | pixel | Y axis of the dark row |
| axis3 | 0 | #images | Successive dark rows (sorted by date) |

SIM_RAW_UnstackedOverscanLeftImage

Brief: Overscan columns on left side of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|--|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 4 | pixel | X axis of the overscan column |
| axis2 | 0 | pixel | Y axis of the overscan column |
| axis3 | 0 | #images | Successive overscan columns (sorted by date) |

SIM_RAW_UnstackedOverscanRightImage

Brief: Overscan columns on left side of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|--|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| Y_WINOFF | | integer | pixel | | Y offset of the margin image relative to the Full Array image |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|--|
| naxis | 3 | | |
| axis1 | 4 | pixel | X axis of the overscan column |
| axis2 | 0 | pixel | Y axis of the overscan column |
| axis3 | 0 | #images | Successive overscan columns (sorted by date) |

SIM_RAW_UnstackedOverscanTopImage

Brief: Overscan rows at the top of the CCD.

Description: There is no processing on ground yet applied. The values are as they were calculated on board.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 12.1.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------|-----------|-----------|-------|----|---|
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Sub - Array | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the margin image relative to the Full Array image without margins |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the overscan row |
| axis2 | 6 | pixel | Y axis of the overscan row |
| axis3 | 0 | #images | Successive overscan rows (sorted by date) |

CHEOPS Data Products Definition Document

SIM_RAW_UnstackedSubArray

Brief: L05 Product : raw unstacked sub-array image.

Description: There is no processing step applied. The pixel values are as they were received from the instrument. The images in the cube are sorted by time, with no overlap between two consecutive products. There is no processing step of the raw pixel data applied. Only time conversion from on-board-time to JD is applied. The image size may change if overscan pixels and dark regions are part of the image that was sent to ground.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|--|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |

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| Name | Default | Data type | Unit | DB | Comment |
|-----------------------------|-----------|--------------|-------------|------|--|
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Exposure | | | | | |
| T_STRT_O | | OBT | OBT | | OBT of the first measurement |
| T_STOP_O | | OBT | OBT | | OBT of the last measurement |
| T_STRT_U | | UTC | TIMESYS=UTC | | UTC of the first measurement |
| T_STOP_U | | UTC | TIMESYS=UTC | | UTC of the last measurement |
| T_STRT_M | | MJD | day | | MJD of the first measurement |
| T_STOP_M | | MJD | day | | MJD of the last measurement |
| NEXP | | integer | | | Number of co-added measurements |
| EXPTIME | | real | sec | | Exposure time of the individual exposures |
| TEXPTIME | | real | sec | | Total exposure time of stacked images |
| EXPT_TYP | commanded | string | | | Defines the type of EXPTIME and TEXPTIME, either commanded or executed |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| Sub - Array Location on CCD | | | | | |
| X_WINOFF | | integer | pixel | | X offset of the Sub Array image relative to the Full Array image without margins |
| Y_WINOFF | | integer | pixel | | Y offset of the Sub Array image relative to the Full Array image without margins |

Image

| | |
|-------------------|--------|
| Data type | uint16 |
| Null value | N/A |

| Column | Value | Unit | Comment |
|--------|-------|---------|---|
| naxis | 3 | | |
| axis1 | 0 | pixel | X axis of the CCD |
| axis2 | 0 | pixel | Y axis of the CCD |
| axis3 | 0 | #images | Scan successive unstacked subarray images (sorted by date) with no overlap between two consecutive L05 products |

Associated HDUs

| Name | Type | Optional |
|-----------------------|-------|----------|
| SCI_RAW_ImageMetadata | table | no |

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| Name | Type | Optional |
|-------------------------------------|-------|----------|
| SIM_RAW_UnstackedDarkLeftImage | image | no |
| SIM_RAW_UnstackedDarkRightImage | image | no |
| SIM_RAW_UnstackedDarkTopImage | image | no |
| SIM_RAW_UnstackedBlankLeftImage | image | no |
| SIM_RAW_UnstackedBlankRightImage | image | no |
| SIM_RAW_UnstackedOverscanLeftImage | image | yes |
| SIM_RAW_UnstackedOverscanRightImage | image | yes |
| SIM_RAW_UnstackedOverscanTopImage | image | no |

CHEOPS Data Products Definition Document

SIM_TRU_FlatField

Brief: Calibration product : Flat field frame combined over wavelengths according to target star spectrum

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 5.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Flat field attributes | | | | | |
| Teff | | real | Kelvin | | Effective temperature of the target star |
| FFref | | string | | | name of flat field reference file |
| FFscale | | real | | | scale factor applied to empirical FF, or sigma of Gauss FF |
| thrtref | | string | | | name of throughput reference file (OFF if throughput not applied) |
| qeref | | string | | | name of the QE reference file (OFF if QE not applied) |

Image

| | |
|-------------------|--------|
| Data type | double |
| Null value | N/A |

CHEOPS Data Products Definition Document

| Column | Value | Unit | Comment |
|--------|-------|------|---------|
| naxis | 2 | | |
| axis1 | 1024 | | X axis |
| axis2 | 1024 | | Y axis |

SIM_TRU_FullArray

Brief: Truth information for simulated full frame images

Description: Stores truth information corresponding to a full frame image. The time is converted in UT and JD

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

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Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|-------------|----------|-------------|--|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| VALID_AOCS | bool | | | | flag to indicate whether or not the payload is in the loop (Earth occultation, SAA) |
| VALID_SCIENCE | bool | | | | flag to indicate whether or not the payload is valid for science (>35 degrees from Earth limb) |
| FULL_WELL_SATURATED | bool | | | | flag to indicate whether or not the image contains one or more full well saturated pixels |
| ADC_SATURATED | bool | | | | flag to indicate whether or not the image contains one or more ADC saturated pixels |
| GLOBAL_THROUGHPUT | float | | | | Wavelength integral of Blackbody(target star) * Optical throughput * QE |
| GAIN | float | | | | ADC gain value at the CCD temperature corresponding to the image |
| ZODIACAL_LIGHT | float | | | | Zodiacal light flux in photons per pixel |
| STRAY_LIGHT | float | | | | Stray light flux in photons per pixel |
| ROLL_ANGLE | float | degrees | | | mean roll angle of the CCD w.r.t. celestial coordinate system |
| TARGET_PSF_X | float | pixels | 600 | | x positions of target star PSF (1s intervals) |
| TARGET_PSF_Y | float | pixels | 600 | | y positions of target star PSF (1s intervals) |
| PSF_MEAN_X | float | pixels | 500 | | mean x position of PSF for each star |
| PSF_MEAN_Y | float | pixels | 500 | | mean y position of PSF for each star |
| PSF_FLUX | float | photons | 500 | | integrated flux from star incident on CCD |
| COSMIC_XPIXEL | int32 | pixels | 2000 | -2147483648 | x position of pixel affected by cosmic |
| COSMIC_YPIXEL | int32 | pixels | 2000 | -2147483648 | y position of pixel affected by cosmic |
| COSMIC_NELECTRONS | int32 | electrons | 2000 | -2147483648 | number of electrons generated in pixel by cosmic |
| HOT_XPIXEL | int32 | pixels | 12500 | -2147483648 | x position of hot pixel |
| HOT_YPIXEL | int32 | pixels | 12500 | -2147483648 | y position of hot pixel |
| HOT_NELECTRONS | int32 | electrons | 12500 | -2147483648 | number of electrons generated in hot pixel |
| HOT_TYPE | int32 | | 12500 | -2147483648 | 0=hot, 1=warm, 2=telegraphic active, 3=telegraphic inactive |
| DEAD_XPIXEL | int32 | pixels | 5000 | -2147483648 | x position of dead pixel |
| DEAD_YPIXEL | int32 | pixels | 5000 | -2147483648 | y position of dead pixel |
| DEAD_QE | float | | 5000 | | quantum efficiency of dead pixel |
| SMEAR_ROW | float | | 1024 | | horizontal cross section through frame transfer smear trails |

SIM_TRU_SubArray

Brief: Truth information for simulated sub-frame images

Description: There is one row per two dimensional image in the associated image cube. It stores truth information for that image. The time is converted in UT and JD

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 13.1 | string | | | version of the data structure |
| DATA_LVL | SIM | string | | common | Level of this data product |
| BUNIT | ADU | string | | | Unit of image data |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |

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| Name | Default | Data type | Unit | DB | Comment |
|----------|---------|-----------|------|----|--|
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------------|-----------|-------------|----------|-------------|--|
| OBT_TIME | OBT | OBT | | | On board time, middle of the measurements |
| UTC_TIME | UTC | TIMESYS=UTC | | | UTC time, middle of the measurements |
| MJD_TIME | MJD | day | | | Modified Julian Day, middle of the measurements |
| VALID_AOCS | bool | | | | flag to indicate whether or not the payload is in the loop (Earth occultation, SAA) |
| VALID_SCIENCE | bool | | | | flag to indicate whether or not the payload is valid for science (>35 degrees from Earth limb) |
| FULL_WELL_SATURATED | bool | | | | flag to indicate whether or not the image contains one or more full well saturated pixels |
| ADC_SATURATED | bool | | | | flag to indicate whether or not the image contains one or more ADC saturated pixels |
| GLOBAL_THROUGHPUT | float | | | | Wavelength integral of Blackbody(target star) * Optical throughput * QE |
| GAIN | float | | | | ADC gain value at the CCD temperature corresponding to the image |
| ZODIACAL_LIGHT | float | | | | Zodiacal light flux in photons per pixel |
| STRAY_LIGHT | float | | | | Stray light flux in photons per pixel |
| ROLL_ANGLE | float | degrees | | | mean roll angle of the CCD w.r.t. celestial coordinate system |
| TARGET_PSF_X | float | pixels | 600 | | x positions of target star PSF (1s intervals) |
| TARGET_PSF_Y | float | pixels | 600 | | y positions of target star PSF (1s intervals) |
| PSF_MEAN_X | float | pixels | 500 | | mean x position of PSF for each star |
| PSF_MEAN_Y | float | pixels | 500 | | mean y position of PSF for each star |
| PSF_FLUX | float | photons | 500 | | integrated flux from star incident on CCD |
| COSMIC_XPIXEL | int32 | pixels | 300 | -2147483648 | x position of pixel affected by cosmic |
| COSMIC_YPIXEL | int32 | pixels | 300 | -2147483648 | y position of pixel affected by cosmic |
| COSMIC_NELECTRONS | int32 | electrons | 300 | -2147483648 | number of electrons generated in pixel by cosmic |
| HOT_XPIXEL | int32 | pixels | 500 | -2147483648 | x position of hot pixel |
| HOT_YPIXEL | int32 | pixels | 500 | -2147483648 | y position of hot pixel |
| HOT_NELECTRONS | int32 | electrons | 500 | -2147483648 | number of electrons generated in hot pixel |
| HOT_TYPE | int32 | | 500 | -2147483648 | 0=hot, 1=warm, 2=telegraphic active, 3=telegraphic inactive |
| DEAD_XPIXEL | int32 | pixels | 200 | -2147483648 | x position of dead pixel |
| DEAD_YPIXEL | int32 | pixels | 200 | -2147483648 | y position of dead pixel |
| DEAD_QE | float | | 200 | | quantum efficiency of dead pixel |
| SMEAR_ROW | float | | 200 | | horizontal cross section through frame transfer smear trails |

SOC_APP_DerivedParameters

Brief: Defines HK parameters for which to calculated derived parameters.

Description: Defines the name and data structure of HK parameters for which derived parameters, like mean and meadian, are calculated in Quick Look. Each line defines one HK parameter and the derived parameters to be calculated for it.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|---------------|-----------|------|----------|------|---|
| PARAM_NAME | string | | 32 | | Name of the parameter |
| STRUCT_NAME | string | | 32 | | Data structure containing the parameter. |
| DERIVE_MEAN | bool | | | | The arithmetic mean shall be calculated |
| DERIVE_MEDIAN | bool | | | | The median shall be calculated |
| DERIVE_SD | bool | | | | The standard deviation shall be calculated |
| DERIVE_P2P | bool | | | | The P2P variation shall be calculated |
| DERIVE_LSTSQ | bool | | | | The linear least square shall be calculated |

SOC_APP_LeapSeconds

Brief: Stores the leap seconds.

Description: This file shall be used to convert UTC to MJD and visa versa in the CHEOPS system.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------|-----------|-------------|----------|------|----------------------------------|
| UTC_TIME | UTC | TIMESYS=UTC | | | First second after a leap second |
| TAI_UTC | int16 | s | | | number of leap seconds |

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SOC_APP_QLReportParameters

Brief: Defines the parameters of QL Reports.

Description: Defines the parameters by their name and data structure, where they are stored, that shall be provided in Quick Look reports. Each line define for one parameter in which QL report it shall be provided. A parameter may be provided in only one report or several. To be able to provide a parameter in the Long Term Trend Report the Aggregated column has to be set to True as well.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|----------------------|-----------|------|----------|------|---|
| PARAM_NAME | string | | 32 | | Name of the parameter |
| STRUCT_NAME | string | | 32 | | Structure name, where the parameter is stored. |
| PASS_REP | bool | | | | parameter shall be provided in the pass report |
| SHORT_TERM_TREND_REP | bool | | | | parameter shall be provided in the short term trend report |
| AGGREGATED | bool | | | | parameter shall be aggregated to be usable in long term trend reports |
| LONG_TERM_TREND_REP | bool | | | | parameter shall be provided in the long term trend report |

SOC_APP_VisitDataTimeOut

Brief: Defines the Time Out of the Visit Data.

Description: The Time Out of Visit Data defines how long the processing of visit data shall be suspended to wait for missing data. The time out starts when the first TM data of a visit arrives as SOC. The Data Reduction procession shall start anyhow if the missing data are still not available at SOC after waiting for this time out period.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|---------|-----------|-------------|--------|---|
| EXT_VER | 12.1.5 | string | | | version of the data structure |
| DATA_LVL | | string | | common | Level of this data product |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| Data provenance | | | | | |
| PROVIDER | | string | | | where/by whom was this file generated? |
| DESCRIP | | string | | | what distinguishes this file from others? |

Table

| Name | Data type | Unit | Bin size | Null | Comment |
|--------------|-----------|------|----------|------|----------------------------------|
| OBS_CATEGORY | string | | 24 | | Observation Category |
| WINDOW_TYPE | string | | 12 | | either window, full frame or all |
| TIME_OUT | uint16 | hour | | | time out period |

Appendix C Detailed descriptions of report metadata definitions

This section contains the definitions of report metadata for all report types in the CHEOPS SOC system.

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RPT_COR_DataReduction

Brief: Defining the meta data of a Data Redcution report.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 4.4 | string | | | version of this rsd file. |
| RPT_TYPE | | string | | | value taken from job-order file |
| PRG_NAME | | string | | | program creating this report |
| PRG_VER | | string | | | version of program creating this report |
| DATE | | string | | | time when the report is created |
| DATA_LVL | L2 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |

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| Name | Default | Data type | Unit | DB | Comment |
|-------------------------------|---------|--------------|------|--------|---|
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates and Angles | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |
| SUNANGLE | | real | | | Angle between sun and target |
| MOONANGL | | real | | | Angle between moon and target |
| EARTTANG | | real | | | Angle between earth limb and target |

RPT_RAW_CHEOPSim

Brief: Defining the meta data of a CHEOPSim report.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 4.4 | string | | | version of this rsd file. |
| RPT_TYPE | | string | | | value taken from job-order file |
| PRG_NAME | | string | | | program creating this report |
| PRG_VER | | string | | | version of program creating this report |
| DATE | | string | | | time when the report is created |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

RPT_RAW_Pass

Brief: Defining the meta data of a Preprocessing pass report.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 4.4 | string | | | version of this rsd file. |
| RPT_TYPE | | string | | | value taken from job-order file |
| PRG_NAME | | string | | | program creating this report |
| PRG_VER | | string | | | version of program creating this report |
| DATE | | string | | | time when the report is created |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

RPT_RAW_QuickLook

Brief: Defining the meta data of a Quick Look report.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 4.4 | string | | | version of this rsd file. |
| RPT_TYPE | | string | | | value taken from job-order file |
| PRG_NAME | | string | | | program creating this report |
| PRG_VER | | string | | | version of program creating this report |
| DATE | | string | | | time when the report is created |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Pass and Visit | | | | | |
| PASS_ID | 00000000 | PassId | | common | PassId, when the data were received, 0 if non-applicable |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| REQ_ID | | integer | | common | Observation request Id of this program |
| VISITCTR | | integer | | common | Visit counter of this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RADESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |

RPT_RAW_Visit

Brief: Defining the meta data of a Preprocessing visit report.

Header keywords

| Name | Default | Data type | Unit | DB | Comment |
|----------------------------|-----------|--------------|-------------|--------|---|
| EXT_VER | 4.4 | string | | | version of this rsd file. |
| RPT_TYPE | | string | | | value taken from job-order file |
| PRG_NAME | | string | | | program creating this report |
| PRG_VER | | string | | | version of program creating this report |
| DATE | | string | | | time when the report is created |
| DATA_LVL | L0.5 | string | | common | Level of this data product |
| PROC_CHN | | string | | common | Processing chain creating this data structure |
| CHEOPS Data Structure | | | | | |
| TELESCOP | CHEOPS | string | | | Telescope's name |
| INSTRUME | CHEOPS | string | | | Instrument's name |
| ORIGIN | SOC | string | | | Processing site, creating this FITS file |
| ARCH_REV | | integer | | common | Archive revision number |
| PROC_NUM | | integer | | common | Processing Number |
| PIPE_VER | N/A | string | | | Pipeline version |
| TIMESYS | TT | string | | | Time frame system |
| Start and Stop of Validity | | | | | |
| V_STRT_U | | UTC | TIMESYS=UTC | common | Start of validity time in UTC |
| V_STOP_U | | UTC | TIMESYS=UTC | common | End of validity time in UTC |
| V_STRT_M | | MJD | day | | Start of validity time in MJD |
| V_STOP_M | | MJD | day | | End of validity time in MJD |
| Target | | | | | |
| TARGNAME | | string | | true | Name of the target as provided by the proposal |
| SPECTYPE | | string | | true | Spectral type of the target as provided by the proposal |
| T_EFF | | unsigned int | Kelvin | true | Effective temperature of the target as provided by the proposal |
| MAG_G | | real | mag | true | Brightness of the target in Gaia band |
| MAG_GERR | | real | mag | | Error of brightness of the target in Gaia band |
| MAG_CHPS | | real | mag | true | Brightness of the target in CHEOPS band |
| MAG_CERR | | real | mag | | Error of brightness of the target in CHEOPS band |
| Visit | | | | | |
| PI_NAME | | string | | common | Name of the PI of the observing program |
| PI_UID | | unsigned int | | common | ID of the PI |
| OBS_CAT | undefined | string | | common | Observation Category |
| PROGTYPE | | integer | | common | Type of the program |
| PROG_ID | | integer | | common | Program Id of this type of program |
| REQ_ID | | integer | | common | Observation request Id of this program |

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| Name | Default | Data type | Unit | DB | Comment |
|--------------------|---------|--------------|------|--------|---|
| VISITCTR | | integer | | common | Visit counter for this target |
| OBSID | | unsigned int | | common | Unique identifier of a visit, defined by MPS |
| PRP_VST1 | | unsigned int | days | common | Proprietary period, depending on first visit |
| PRP_VSTN | | unsigned int | days | common | Proprietary period, depending on last visit |
| Target Coordinates | | | | | |
| RA_TARG | | real | | true | RA of the target at epoch J2000 |
| DEC_TARG | | real | | true | DEC of the target at epoch J2000 |
| EQUINOX | 2000.0 | real | | | Equinox of celestial coord. system |
| RAESYS | ICRS | string | | | Coordinate reference frame for the RA and DEC |