Data Products Definition Document

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Approval Sheet

	Name	**Signature**	**Data**
Prepared by:	Anja Bekkelien, UGE		
Approved by:	Mathias Beck, UGE		

Document Change Record

Issue	Rev.	Date	Pages affected	Modifications	Initials
1	20	2022-11-09	Appendix B	FITS Data Products updated to common_sw 14.0	ABE
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			Appendix B	FITS Data Products updated to common_sw 13.1.2.	
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1	16D	2020-02-05	Appendix B	#20820 update the comment of Header Keyword REPETIT	RRO
1	15	2019-10-25	Appendix B	#19850 The reference time standard of "UTC" columns and header keywords is UTC	RRO
1	14	2019-02-15		Release for AO call	RRO
1	14D	2018-11-28	16	#17699 new Readout Mode: full frame	RRO
1	13	2018-11-09		Released version 1.13 for SOC Acceptance Test 2.5	RRO
1	13D	2018-11-09	Appendix B	FITS Data Products updated to common_sw 10.3	RRO
1	13D	2018-09-16	17	New enum names for Used Hardware	RRO
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Issue	Rev.	Date	Pages affected	Modifications	Initials
				reference documents	
1	13D	2018-07-20	16	Added the new visit margin mode enum 'undefined'	ABE
1	13D	2018-07-02	16	New enum names	RRO
1	13D	2018-06-22	16 B	Possible enum names for STACKING updated FITS data structures updated with common_sw 9.3	RRO
1	13D	2018-05-31	17	Added processing chain enum "dark monitoring".	ABE
1	13D	2018-05-18	A14	Note 2) removed. It is obsolete because Earliest_Observation_Start and Latest_Observation_Start are now mandatory parameters	RRO
1	12	2018-05-02	A3 – A12	Issued for GS-RR Updates following changes in the xml schema	RRO
1	12D	2017-12-18	17	Add enum name for the visit preparation processing chain.	ABE
1	12D	2017-12-15	16	Add enum names for the Collapsed Data Types	RRO
1	12D	2017-11-06	17	Add enum names for the type and level of out of limit parameters.	ABE
1	12D	2017-10-21	16 16 8 16	Add possible Readout Mode: auto, faint fast Merge the three starylight X – angle observation categories to one "straylight" observation category. New Reference Document: RD-11 Define possible enum names for Stacking.	RRO
1	12D	2017-08-29	A-11	Update description of PI_Name and PI_UID parameters of the EXT_APP_Programmes.	RRO / NBI
1	12D	2017-08-09	Table: Observation Request Parameters	#14391 The phases defined in the observations category have 5 decimal digits instead of 3.This affect following parameters: Earliest_Observation_Start, Latest_Observation_Start, List_of_Phase_Ranges.Start List_of_Phase_Ranges.End	RRO
1	12D	2017-07-17	16, A7	#14196 new CCD Margin_Mode: none	RRO
1	11	2017-06-27	12 A5, A6 A11, A12 9-12	New Data Level: QL Update of the MPS_PRE_StarMapParameters data structure Update the Programme_Type to include the AO number. Update of the description of the Data Products	RRO
1	10D	2017-04-13	7, A5, A8, A12	Describe the document from where the basic data of a data structure is derived from, and identify these documents as applicable documents.	RRO
1	10D	2017-04-12	A 4	New data structure: EXT_APP_PST	RRO
1	10D	2017-04-11	7-10	Implement Hector's comments: Better structure of the high level description of the XML and FITS data.	RRO
1	10D	2017-04-10		Prepare release for GS-IR	RRO

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			6 A*	Update versions of applicable and reference documents. Update following comments from Carlos	
1	10D	2017-04-07	11, 12 A4-A6	New chapter: 3.6 Enum Names Update of the MPS_PRE_StarMapParameters	RRO
1	10D	2017-03-30	A2-A4	New data structure: EXT_APP_PHT1Programmes	RRO
1	10D	2017-01-20	B17	Length of column SPECTRAL_TYPE in MPS_PRE_Visits is now 15 chars.	RRO
1	10D	2017-01-13	6	Document refers now to xml_schema version 6.2	RRO
1	10D	2017-01-06	B1 B17, B18 B17	Define format of UTC string in FITS header and FITS tables Rows in MPS_PRE_Visits and MPS_PRE_VisitConstrains shall be sorted by time. New column in MPS_PRE_VisitConstraints table: LOS_TO_EARTH_ANGLE	RRO
1	10D	2016-12-06	6 A9 6, A2	• Define version for every reference document • Specify the parameters in MPS_PRE_StarMap_Parameters that are derived from SOC_APP_MPSDefaults • Make reference to SOC Management and Development Plan for software versions	RRO
1	10D	2016-11-08	B9	Update of MPS_PRE_VisitConstraines #11967	RRO
1	10D	2016-11-04	A3	New parameters in MPS_PRE_StarMapParameters #11944, #11958	RRO
1	10D	2016-10-31	A3, A6, B	Data structures as defined in release 6.3 of common_sw and release 6.1 of xml_schema	RRO
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
1	10D	2016-09-20	B	FITS data structures of common_sw 6.2	RRO
1	10D	2016-08-09	A	Restructure the desscription of the XML data structures.	RRO
1	10D	2016-07-11	A-5	Add a Title field in the Data Block of the EXT_APP_Programmes data structure.	RRO
1	10D	2016-06-20	A	Update of following fields: File_Class and File_Version	RRO
1	10D	2016-06-17	A	Update of the EXT_APP_ObservationRequests remove Stop_Data_Taking_During_SAA and Stop_Data_Taking_During_Occultation from ext_app_mpsdefaults_schema.xsd	RRO

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1	10D	2016-06-06	A	New XML data structure: EXT_APP_MPSDefaults Update of the EXT_APP_ObservationRequests	RRO
1	10D	2016-04-19	B11	Update of the REF_APP_SAA data structure	RRO
1	10D	2016-04-06	5	Update of RD-4 and RD-5	RRO
1	10D	2016-03-27	A	Update of EXT_APP_Programmes and EXT_APP_ObservationsRequests, they are inline with xsd_schema release 5.0	RRO
1	10D	2016-03-09	A	The Data Blocks of data structures EXT_APP_Programmes and EXT_APP_ObservationsRequests are restructured	RRO
1	10D	2016-03-04	A8	See ticket #10337. Update time unit of Transit_Time, Earliest_Start and Latest_End	RRO
1	9	2015-12-11	A10	Correction of names: Visit_Time -> Visit_Duration and Latest_Start -> Latest_End	RRO
1	8	2015-11-10	A7	Implemented SOC internal RIDs: RID 5, RD 13: Missing target star spectral type RID 23: change field name Minimum_Visit_Duration to Minimum_Effective_Duration	RRO
1	7	2015-10-14	A1 – A10	Split programmes and observation request into two files. Added fields for the background stars.	RRO
1	6	2015-06-09	all	Implementing Carlos comments. Implementing Kates comments. Update of the definition of the data levels.	RRO
1	5	2015-05-15	A1 – A7	Update of the EXT_APP_PROGRAMMES data structure as discussed during a teleconf with UGE, DEIMOS and Kate.	RRO
1	4	2015-4-14	8, 9	Update file naming convention.	ABE
1	3	2015-02-23	5, 8, 9, Appendix B	Update of the file naming convention Describe Header of the EXT_APP_PROGRAMS data structure Implementation of the PDR RIDs: JBa-69: AD-01, RD-01 JBa-71: RD-3 JBa-72: 5.2 File names KGI-01: DATA_LVL keyword, 5.5 Data Levels JJZ-21: define WCS keywords as columns in the metadata table of the image cubes	RRO
1	2	2014-11-15	Appendix B	Corrected wrong page number, Removed not printable characters Issued for PDR	ABE, RRO
1	1	2014-11-10	A4-A9 deleted	RIDs of SOC internal review implemented	RRO
1	0	2014-10-22	7	Visit in filename consist of TargetId + VisitNumber	RRO

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			Appendix A	Description of XML interface structures	
D	1	2014-10-13	All	Everywhere	ABE, RRO
D	0	2014-05-21	All	New document	ABE

Table of Contents

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-

	001, revision 8.0
~~RD-8~~	~~StarMap Interface Control Document, CHEOPS-UVIE-ICD-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

- HKTMParameters

- 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-dare 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 *hostname* system call.
Process name	A string identifying the process.
Process version	The process' version.
PID	The process ID, formatted as [nnnnnnnnn] (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_TGoooonn_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.
TGoooonn	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 on 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: Proprriatary 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_MPSDefaults)
    - Distance_Threshold: See Table 4 in [AD-4] (value defined in SOC_APP_MPSDefaults)
    - Iterations: See Table 4 in [AD-4] (value defined in SOC_APP_MPSDefaults)
    - 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_MPSDefaults)
    - 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.

- o Target_Magnitude_Error: Error of brightness of the target in the Gaia Band, as provided by the PI, optional.

- o Target_RA_Obs: RA of the target at the epoch of the observation.

- o Target_DEC_Obs: DEC of the target at the epoch of the observation.

- o Target_RA_J2000: RA of the target at the epoch J2000, as defined by the PI of the programme.

- o Target_DEC_J2000: DEC of the target at the epoch J2000, as defined by the PI of the programme.

- o Obs_Epoch: Epoch of the observation in year and fraction of year.

- o RA_Proper_Motion: RA proper motion of the target star, as defined by the Pi of the programme, optional.

- o DEC_Proper_Motion: DEC proper motion of the target, as defined by the Pi of the programme, optional.

- o Parallax: Parallax of the target, as defined by the Pi of the programme, optional.

- o T_Eff: Teff of the target, as defined by the Pi of the programme, optional.

- o Extinction: Extinction of the target, as defined by the Pi of the programme, optional.

- o Star_Catalogue_Filename: The filename of the star catalogue that the star catalogue extraction tool creates.

- o 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 categoriy 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_DefaultTCParametes to the SOC_APP_MPSDefaults 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_DefaultTCParameters

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_DefaultObsReqParametes to the SOC_APP_MPSDefaults 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_DefaultTCParameters_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 tranfered

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_MPSDefaults

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_MPSDefaults_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 send 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:

- o "10" to "19": guaranteed time programme
- o "20" to "29": guest observer programme
- o "30" to "39": monitoring and characterization programme
- o "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 schedules 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		enum		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	defined in Variable Header	%02s		10-29, 40-49	10-29, 40-49	30 -39	30 -39	30 -39	30 -39	30 -39	30 -39	X	
Programme_ID	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	
Observation_Request_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		
Proprietary_Period_First_Visit	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_Last_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		
Target_Name	Name of the target or sky region as provided by the proposal	%s		X	X	X	X	X	X	X	X	optional	
Gaia_ID	Gaia ID, provided by the PI	%s		optional	optional	N/A	N/A	N/A	optional	optional	optional		
Spectral_Type	spectral type of the target star	%s		X	X	N/A	N/A	N/A	X	X	X		
Target_Magnitude	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	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
Readout_Mode	Can be "faint", "bright", "ultrabright", or "faint fast"	enum		X calculated by PHT2	X calculated by PHT2	X	2 values for 2 visits default: ultrabright, faint	1 value per visit	X	X	X		
Right_Ascension	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	
Declination	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	
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	proper motion of the target star	%8.2f	mas/year	X	X	N/A	N/A	N/A	X	X	X		
Parallax	parallax of the target star	%8.2f	mas	X	X	N/A	N/A	N/A	X	X	X		
T_Eff	Teff of the target star	%d	Kelvin	X	X	N/A	N/A	N/A	optional	X	X		
Extinction	Extinction of the target star	%4.2f	mag	optional	optional	N/A	N/A	N/A	optional	optional	optional		
Earliest_Start	First visit shall not start before this time.	%013.6f	BJD (in TT)	optional	optional	optional	X	X	optional	optional	optional	optional	
Latest_End	Last visit shall not end after this time	%013.6f	BJD (in TT)	optional	optional	optional	X	X	optional	optional	optional	optional	
Exposure_Time	exposure time of un-stacked image	%08.3f	sec	X	X	default = 1	2 values for 2 visits default: 0.001/60	1 value per visit	X	X	X		
Repetition_Period	repetitin period of un-stacked 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 per visit	optional 1 value per visit	optional	optional	optional		
Number_Stacked_Images	number of raw images that shall be stacked on board	%d		X	X	1	1	1	1	X	X		
Number_Stacked_Imagettes	number of raw imagettes that shall be stacked on board	%d >= 0		X	X	0	0	0	0	X	X		
Transit_Time	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_Period	Time between two consecutive transits	%+11.6f	days	X	N/A	N/A	X	N/A	N/A	N/A	X	optional	
Visit_Duration	Time interval to be considered for one visit.This includes the STAR_MAP, the VISIT_CONFIGURATION_DYNAMIC and the VISIT_ACQUISITION activities.	%07.0f	sec	X	X	N/A	N/A	N/A	N/A	X	X	optional	
Number_of_Visits	Number of visits to be scheduled for this target.	%2d		X	X	default = 25	2	X	X	X	X	optional	
Continuous_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		
Number_of_Images	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		
Priority	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		
Minimum_Effective_Duration	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	
Earliest_Observation_Start	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	
Latest_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	
List_of_Phase_Ranges	Start time, end time and minimum of data acquisition time			optional	N/A	N/A	N/A	N/A	N/A	N/A	optional	optional	
Start	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	
End	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	
Minimum_Phase_Duration	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	
Fulfil_all_Phase_Ranges	All (true) or at least one (false) phase range requests have to be fulfilled in every visit. If not defined and List_of_Phase_Ranges > 1 it is taken as true.	boolean		optional	N/A	N/A	N/A	N/A	N/A	N/A	optional		

09.11.2022

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)	if Window_Type == window: default 200 if Window_Type == full_frame: N/A	if Window_Type == window: default 200 if 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)	if Window_Type == window: default 200 if Window_Type == full_frame: N/A	if Window_Type == window: default 200 if 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 eluminated CCD area. Value must be between 0-1 and (1023 - Window_Size_X)	%04d	pixel	Defined in the MPS defaults file	Defined in the MPS defaults file	N/A	if Window_Type == window: default 412 if Window_Type == full_frame: N/A	if Window_Type == window: default 412 if Window_Type == full_frame: N/A	N/A	X	X	
Window_Offset_Y	Offset of the window frame from the bottom edge of the eluminated CCD area. Value must be between 0-1 and (1023 - Window_Size_Y)	%04d	pixel	Defined in the MPS defaults file	Defined in the MPS defaults file	N/A	if Window_Type == window: default 412 if Window_Type == full_frame: N/A	if Window_Type == window: default 412 if 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	if Window_Type == window: image, reduced or total collapsed if Window_Type == full_frame: N/A	X	default = reduced Note: "none" is not available	default = reduced 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	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	
PITL	payload in the loop	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 User of PHT2 cannot edit it	default = no User of PHT2 cannot edit it	N/A	N/A	N/A	N/A	default = no	default = no	
Avoid_Earth_Occultation	Schedule all visits outside the earth occultation. See also #14996			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 send / not send to ground	boolean		default = no User of PHT2 cannot edit it	default = no User of PHT2 cannot edit it	N/A	N/A	always yes	N/A	default = no	default = no	
Respect_Moon_Exclusion_Angle	The moon exclusion angle has to be respected. This angle is defined in SOC_APP_MPSDefaults	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_MPSDefaults			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_Error	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

09.11.2022

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.

Table of Contents

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			x component of velocity
Z_DOT	double	km/s			x 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			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_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

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

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

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

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

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

Page: B-15

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	14.1	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

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
GAIA_ID	N/A	string			Gaia ID of 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
PITL		boolean			Payload in the loop

Table

Name	Data type	Unit	Bin size	Null	Comment
ID	string		64		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

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_StarCatalogu and sets the VISITCTR.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	14.1	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					

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
GAIA_ID	N/A	string			Gaia ID of 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
PITL		boolean			Payload in the loop

Table

Name	Data type	Unit	Bin size	Null	Comment
ID	string		64		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

MCO_REP_BadPixelMapFullArray

Brief: Bad Pixel Map of a Full-Array.

Description: The Bad Pixel Map is derived from the dark M and C 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 Bad 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	13.2	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					

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 M and C 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 Bad 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	13.2	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

Page: B-22

Image

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 M and C 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 Bad 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	13.2	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

Page: B-24

Image

Data type	int16
Null value	N/A

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

MCO_REP_BadPixelMapSubArray

Brief: Bad Pixel Map of a Sub-Array.

Description: The Bad Pixel Map is derived from the dark M and C 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 Bad 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	13.2	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					

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 M and C 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 Bad 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	13.2	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

Page: B-28

Data type	int16
Null value	N/A

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

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	13.2	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

Page: B-30

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

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	13.2	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

Page: B-32

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

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	13.2	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

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

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	13.2	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					

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

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	13.2	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

Page: B-38

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 externsion 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

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

Page: B-43

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

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
MAG_CERR		real	mag		Error of brightness of the target in CHEOPS band

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

Associated HDUs

Name	Type	Optional
PIP_CAL_FlatFieldError	table	no

PIP_COR_BkgSLImageMetadata

Brief: Metadata 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 metadata of that image.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

PIP_COR_BkgSLSubArray

Brief: Applied Background and Straylight in the SCI_COR_SubArray.

Description: Currently not used.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	14.0	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

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
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	13.2	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

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

PIP_COR_PixelFlagMapSubArray

Brief: A Pixel Map of flags derived by Data Reduction.

Description: For each pixel in the subarray image cube, the pixel map holds a binary coded flag with details on the pixel behaviour during the visit. In the LSB-0 numbering scheme: bit 0 : not used, bit 1 : pixel classified as dead, bit 2 : pixel classified as hot, bit 3 : pixel classified as telegraphic, bit 4 : pixel classified as saturated, i.e. for more than 10% of the visit the pixel value exceeded the upper limit of the linear behaviour.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2.2	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

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

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	13.2	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

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

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	13.2	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

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

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	13.2	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

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

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	13.2	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

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. Similarly, the value in RIGHT_DARK defines the NEW currupted 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	13.2	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

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

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	13.2	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

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 comsic 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	13.2	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

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

PIP_REP_Image

Brief: A general 3D - image.

Description: A general 3D image. Can be used by any pieline 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

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	13.2	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

Page: B-72

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	13.2	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

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	13.2	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

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				data 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

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	13.2	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

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				data 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

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	13.2	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

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_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
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

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
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.

Page: B-87

REF_APP_Aperture

Brief: Reference file to define the details of the photometric mask for the lightcurve extraction, e.g. the radius.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	14.0	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
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
RADIUS	float	pixel			the aperture radius in pixels
FIXED_MASK	bool				flag to indicate whether or not the photometric mask follows the centroid
DATA_NAME	string		32		a string to be included in the name of LC files using this aperture
INFO	string		32		a description of the aperture

REF_APP_BadPixelMap

Brief: Bad Pixel Map of a Full-Array.

Description: The Bad Pixel Map is derived from the dark M and C 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 Bad 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	13.2	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
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
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 Bad 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	13.2	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

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 Bad 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	13.2	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

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 Bad 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	13.2	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

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

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

Page: B-103

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

Page: B-106

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

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 currupted 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

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	13.2	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
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

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	13.2	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

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	13.2	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

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	13.2	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

Page: B-120

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

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				integral[spectrum(Teff)*transmission*QE]/integral[spectrum(Teff)*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 locate 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 $GAIN\_NOM * (1 + sum$ over n ($factor(n) *$ (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_VOLD_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

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_HkDefaultPeriod

Brief: Default periodicities of S/C and CIS HK packets.

Description:

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.1.4	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?
Default period attributes					
DEF_PER		integer	seconds		Periodicity for undefined structures

Table

Name	Data type	Unit	Bin size	Null	Comment
STRUCT_NAME	string		32		Structure name
DEFAULT_PERIOD	int32	seconds			Default periodicity of the structure

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

<table>
<tr><td colspan="6" style="background:orange;text-align:center">REF_APP_Limits</td></tr>
</table>

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

Page: B-136

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 not be used for photometry.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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 not be used for photometry.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.1.6	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

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 not be used for photometry.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.1.6	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

Image

Data type	uint8
Null value	N/A

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

Page: B-139

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 not be used for photometry.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.1.6	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

Image

Data type	uint8
Null value	N/A

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

Page: B-140

REF_APP_PixelScale

Brief: Defines the pixel scale.

Description: The single value in the PIXEL_SCALE column defines the scale of one CCD pixel in arcsec. Currently the value of the calculated pixel scale is identical for all pixels. The single value in the AOCS_CORR column is an on-ground correction factor for the onboard conversion between arc-seconds and radians for the conversion of the attitude quaternions provided by the spacecraft to right ascension and declination.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2.1	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
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
AOCS_CORR	double				On-ground correction factor for the onboard conversion between arc-seconds and radians

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_SCRPT	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

Page: B-150

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

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

Page: B-153

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

SCI_CAL_BlankLeft

Brief: Data of the blank CCD margin area on the 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	13.2	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

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)

SCI_CAL_BlankRight

Brief: Data of the blank CCD margin area on the 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	13.2	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

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)

SCI_CAL_DarkLeft

Brief: Data of the dark CCD margin area on the 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	13.2	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

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)

SCI_CAL_DarkRight

Brief: Data of the dark CCD margin area on the 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	13.2	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

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)

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	13.2	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

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)

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

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

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 : Metadata 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 metadata of that image. This data structure is used for subArrays as well as for images of the FullArray. In the latter case there will be just one row in the table.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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

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

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

Page: B-178

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 : Metadata of the calibrated imagesttes, stored in the same FITS file.

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

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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

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	13.2	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

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	13.2	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

Page: B-185

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_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	13.2	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

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)

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	13.2	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

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_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

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_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	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

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

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

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
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 : Metadata 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 metadata of that image. This data structure is used for subArrays as well as for images of the FullArray. In the latter case there will be just one row in the table.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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

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

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

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

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 : Metadata 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 metadata of that imagette.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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
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

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

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
BKGSL_W	N/A	string			Identification of Background and stray light windows

Name	Default	Data type	Unit	DB	Comment
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
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

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_RADI		real	pixel		Aperture radius used for the photometry
AP_TYPE		string			Fixed with respect to the readout window or moving with the centroid
AP_CEN_X		real	pixel		For fixed apertures: X position of the aperture centre with respect to the lower left corner of the readout window. For moving apertures: 0
AP_CEN_Y		real	pixel		For fixed apertures: Y position of the aperture centre with respect to the lower left corner of the readout window. For moving apertures: 0

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. See the DRP report's appendix.
EVENT	int32				flags indicating the possible events that might affect the measurement but might not invalidate. See the DRP report's appendix.
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: Currently not used.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	14.0	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

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: Currently not used.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	14.0	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

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

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_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	13.2	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

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_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

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_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	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

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	13.2	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
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					

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_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	13.2	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
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					

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

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

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	13.2	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
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					

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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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)

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

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

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_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

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

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	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				

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				

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

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

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

<table>
<tr><td colspan="6" align="center">SCI_PRW_HkExtended</td></tr>
</table>

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

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

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

SCI_PRW_HkIaswDg

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

Name	Data type	Unit	Bin size	Null	Comment
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
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

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

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				

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_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				Procedure Parameter: Parameter PAR_EXPOSURE_TIME of command (220,3) to the SEM
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				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	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_pImageRep	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

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_pFbfId	uint8				Procedure Parameter: The FBF Identifier
FbfLoad_pFbfNBlocks	uint8				Procedure Parameter: Number of blocks to be loaded from the FBF
FbfLoad_pFbfRamAreaId	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{pFbfRamAreaId} is not zero)
FbfSave_pFbfId	uint8				Procedure Parameter: The FBF dentifier
FbfSave_pFbfNBlocks	uint8				Procedure Parameter: Number of blocks to be transferred to the FBF
FbfSave_pFbfRamAreaId	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{pFbfRamAreaId} 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 Targt 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_pFbfInit	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

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

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				

SCI_PRW_HkIaswPar

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				

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				

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
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

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

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

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 occulation
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

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

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

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				

SCI_PRW_HkIbswDg

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				

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

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

Name	Data type	Unit	Bin size	Null	Comment
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				
FPGA_DPU_Address	uint16				
FPGA_RESET_Status	uint16				
FPGA_SEM_Status	uint16				
FPGA_Oper_Heater_Status	uint16				

CHEOPS Data Products Definition Document

SCI_PRW_HkIbswPar

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 algorthm 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

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_BLCK_WR_DUR	uint32				Maximum period with which FBF write operations may be done (in cycles)
FBF_BLCK_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				

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

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 compresed 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

Name	Data type	Unit	Bin size	Null	Comment
FdCheckCentConsState	uint16				State of Centroid Consistency FdCheck
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
saveImagesNode	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)

Name	Data type	Unit	Bin size	Null	Comment
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)
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

Name	Data type	Unit	Bin size	Null	Comment
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

SCI_PRW_ImageMetadata

Brief: L05 Product : Metadata 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 metadata of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the latter 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	13.2	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
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

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

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

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
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 : Metadata 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 metadata of that imagette.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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_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

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

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	13.2	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
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					

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)

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	13.2	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
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					

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)

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
TEXPTIME		integer	ms		Total exposure time of stacked images

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
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

SCI_PRW_UnstackedImageMetadata

Brief: L05 Product : Metadata of the images, stored in the same FITS file.

Description: There is one row in this table per two dimensional unstacked image. It stores metadata of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the latter 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	13.2	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_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)

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

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

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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

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

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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

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

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

SCI_RAW_FullArray

Brief: L05 Product : raw full array image, time in JD.

Description: Beyond extraction from the science telemetry packets, there is no further processing applied to the raw pixel data. The pixel values are as they were received from the instrument. Only time conversion from on-board-time to JD is applied. More metadata on the images can be found in the SCI_RAW_ImageMetadata extension in the same FITS file.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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
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					

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
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
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

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

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
PRP_VSTN		unsigned int	days	common	Proprietary period, depending on last visit

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
PSE_quaternion_x	double				
PSE_quaternion_y	double				
PSE_quaternion_z	double				
PSE_quaternion_scal	double				

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

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

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
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
PRP_VSTN		unsigned int	days	common	Proprietary period, depending on last visit

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
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

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

Page: B-320

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

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

SCI_RAW_HkIaswDg

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

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

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

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 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	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				

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

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_pFbfRamAreaId	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{pFbfRamAreaId} is not zero)
FbfSave_pFbfId	uint8				Procedure Parameter: The FBF dentifier
FbfSave_pFbfNBlocks	uint8				Procedure Parameter: Number of blocks to be transferred to the FBF
FbfSave_pFbfRamAreaId	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{pFbfRamAreaId} 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 Targt 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

Name	Data type	Unit	Bin size	Null	Comment
TransFbfToGrnd_pNmbFbf	uint8				Procedure Parameter: The number of FBFs to be transferred to ground
TransFbfToGrnd_pFbfInit	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

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_HkIaswPar

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
PRP_VSTN		unsigned int	days	common	Proprietary period, depending on last visit

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
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				
evtEnabledList_13	uint8				

Name	Data type	Unit	Bin size	Null	Comment
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				
evtEnabledList_53	uint8				

Name	Data type	Unit	Bin size	Null	Comment
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
RpSemAnoEvtExtEn	uint8				External enable status of SEM Error Event 1 recovery procedure

Name	Data type	Unit	Bin size	Null	Comment
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
RpCentConsExtEn	uint8				External enable status of Centroid Consistency recovery procedure

Name	Data type	Unit	Bin size	Null	Comment
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	s2/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
TTC2_DF	float	s2/d			Derivative term of TTC2 PID algorithm for front heaters

Name	Data type	Unit	Bin size	Null	Comment
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 occulation
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
CURR_SCU_P3_4_LW	float	mA			Lower warning limit for SEM HK parameter CURR_SCU_P3_4

Name	Data type	Unit	Bin size	Null	Comment
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
CURR_FEE_CLK_BUF_LA	float	mA			

Name	Data type	Unit	Bin size	Null	Comment
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
ADC_PGND_L	float	V			Lower limit for DPU housekeeping parameter ADC_PGND

Name	Data type	Unit	Bin size	Null	Comment
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				

CHEOPS Data Products Definition Document

<table>
<tr><td colspan="6" style="background:orange;text-align:center">SCI_RAW_HkIbswDg</td></tr>
</table>

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

Page: B-341

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

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

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				

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				

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

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 algorthm 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_BLCK_WR_DUR	uint32				Maximum period with which FBF write operations may be done (in cycles)
FBF_BLCK_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			

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			

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

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 compresed 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

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

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

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

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
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

SCI_RAW_ImageMetadata

Brief: L05 Product : Metadata 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 metadata of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the latter 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	13.2	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
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

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

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

SCI_RAW_Imagette

Brief: L05 Product : raw imagette.

Description: Beyond extraction from the science telemetry packets, there is no further processing applied to the raw pixel data. The pixel values are as they were received from the instrument. Only time conversion from on-board-time to JD is applied. The images in the cube are sorted by time, with no overlap between two consecutive products. More metadata on the images can be found in the SCI_RAW_ImagetteMetadata extension in the same FITS file.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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
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

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

Name	Type	Optional
SCI_RAW_ImagetteMetadata	table	no

SCI_RAW_ImagetteMetadata

Brief: L05 Product : Metadata 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 metadata of that imagette.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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
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

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

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

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

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	13.2	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
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

Name	Default	Data type	Unit	DB	Comment
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
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)

SCI_RAW_SubArray

Brief: L05 Product : raw sub-array image.

Description: Beyond extraction from the science telemetry packets, there is no further processing applied to the raw pixel data. The pixel values are as they were received from the instrument. Only time conversion from on-board-time to JD is applied. The images in the cube are sorted by time, with no overlap between two consecutive products. More metadata on the images can be found in the SCI_RAW_ImageMetadata extension in the same FITS file.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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
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					

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

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 : Metadata 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 metadata of that image. This data structure is used for SubArrays as well as for images of the FullArray. In the latter 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	13.2	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
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

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

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

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

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

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

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

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

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

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_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

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
T_STRT_M		MJD	day		MJD of the first measurement

Page: B-387

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	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

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

Name	Default	Data type	Unit	DB	Comment
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
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

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

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)

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

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

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

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 aplied to empirical FF, or sigma of Gauss FF
thrptref		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

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

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

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 paremeters 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

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.

Table of Contents

RPT_COR_DataReduction

Brief: Defining the metadata of a Data Redcution report.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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 metadata of a CHEOPSim report.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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 metadata of a Preprocessing pass report.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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 metadata of a Quick Look report.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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 metadata of a Preprocessing visit report.

Header keywords

Name	Default	Data type	Unit	DB	Comment
EXT_VER	13.2	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

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
RADESYS	ICRS	string			Coordinate reference frame for the RA and DEC