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Aeronomy of Ice in the Mesosphere (AIM)

CDE Command & Telemetry Handbook

Document No. CDE-T-07107 Revision: B Date: February 22, 2007

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Revisions

Rev.	Description of Change	By	Date
A	Initial formal release.	D. Gathright	September 15, 2006
B	Final release. Updates from Observatory I&T.	D. Gathright	February 22, 2007

Contents

1

Introduction

1.1 Purpose

The purpose of this document is to capture detailed information on the command and telemetry interfaces for the Cosmic Dust Experiment (CDE), an instrument carried on the Aeronomy of Ice in the Mesosphere (AIM) spacecraft. It satisfies the requirements set forth for for command and telemetry documentation as documented in the *AIM Mission Software Development Plan*[1].

1.2 Scope

This document is written for the AIM Integration and Test and Mission Operations teams. While the command and telemetry definitions are very similar to those of the Student Dust Counter (SDC), an ancestor instrument on the New Horizons mission, there significant differences between the two definition sets. Thus, this document should not be used as a reference for SDC commands and telemetry.

1.3 Document Status and Schedule

This is the initial draft of this document. Any necessary updates to this document will be performed according to the standard LASP configuration management process.

1.4 Command and Telemetry Overview

Figure 1.1 on the following page shows a high level view of data flow on the AIM mission.

Due to differences between the AIM spacecraft design and CDE heritage hardware design, the LASP-built Cloud Imaging and Particle Size (CIPS) instrument serves as the command and telemetry interface for CDE. CDE and CIPS are connected via a two-channel redundant RS-422 data bus. The data connection between CIPS and the spacecraft bus is a dual-redundant Mil-Std-1553B bus. This also helps minimize CDE flight software changes needed to accommodate the AIM spacecraft bus. CDE's native packetization format is the Instrument Transfer Frame (ITF), and all data transferred between CDE and CIPS is in the ITF format. CIPS serves as the translator beteen ITF packets and CCSDS packets, which is what the spacecraft bus uses.

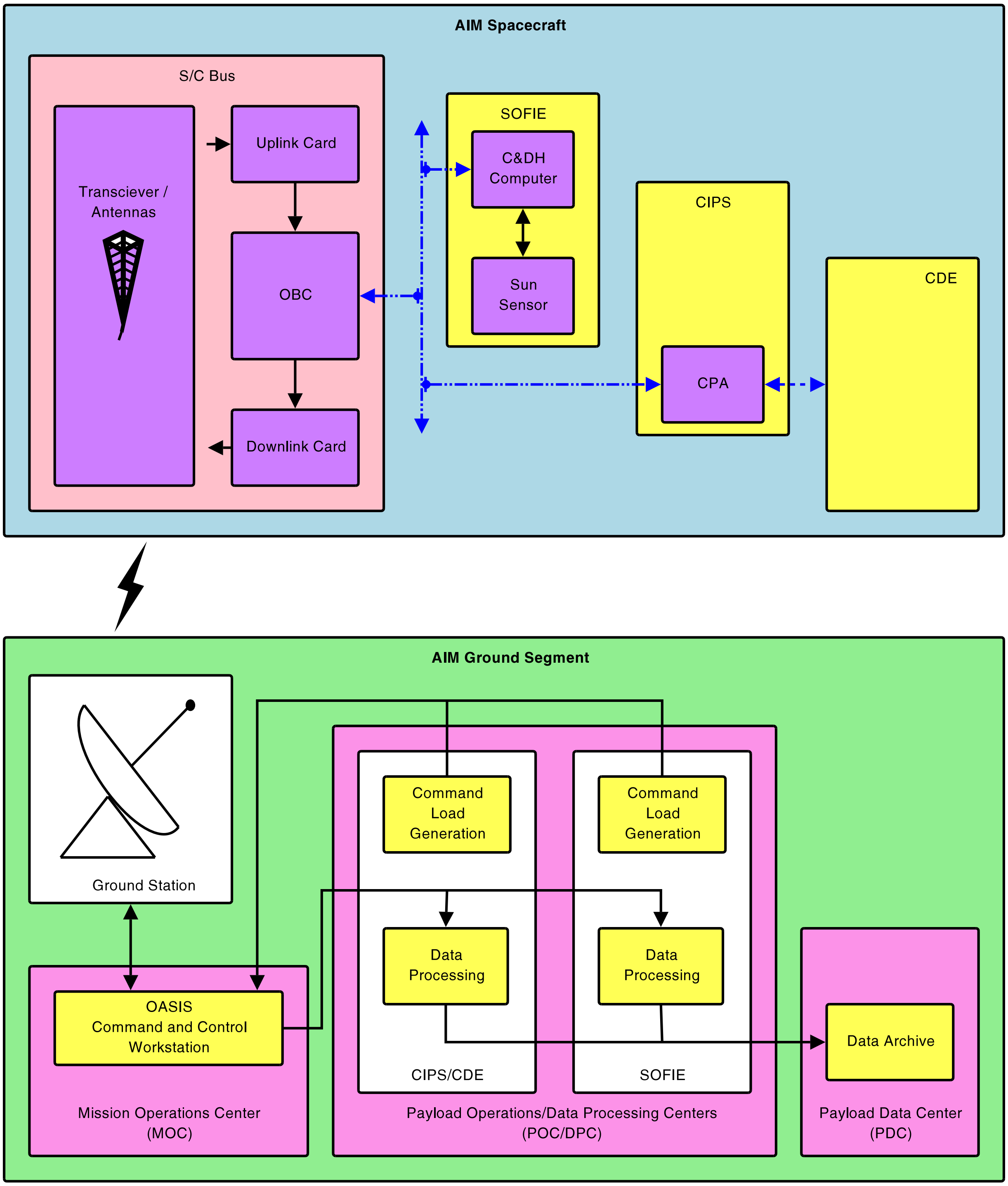

Figure 1.1: AIM Data Flow

All CDE commands are initially the form of CCSDS telecommand packets with only one command per packet. CDE commands are uniquely identified by the CCSDS telecommand packet Application Identifier (APID), which is either 0x170 or 0x171 (hex). CIPS translates these CCSDS telecommand packets into command ITF messages, which are immediately forwarded on to CDE. While it is possible for CIPS to receive and forward up to two CDE commands per second, CDE can only process one command ITF per second.

CDE generates telemetry ITF packets at a rate of one packet per second. Most of the time, these ITFs contain only basic instrument status data, including the CDE heartbeat. Depending on instrument configuration or commands received, CDE may also include inthis ITF packet a single, complete CCSDS telemetry packet containing more detailed instruemnt status data or science data. These CCSDS packets are extracted from the ITF packet by CIPS and are immediately forwarded to the spacecraft bus for downlink and/or addition to the virtual recorders. CIPS also stores the basic instrument status information contained in the ITF and will downlink this data at a programmable rate.

1.5 Document Format

The appendices contain the bulk of the information in this document and specify the bit-level command and telemetry formats. These appendices are actually reports from the AIM master command and telemetry database, which contains the single point definitions for all CDE commands and telemetry.

A glossary of abbreviations and terms used in this document starts on page 298, while a bibliography of referenced documents can be found on page 301.

This document is available as an electronic portable document file (PDF), or in hard copy. Electronic file is the preferred format, as this document contains embedded hyperlinks to other sections and to external web pages.

1.6 Numeric Conventions

1.6.1 Endianness

Unless otherwise specified, all bits and bytes are *big endian*, per CCSDS standards. In big endian storage, the most significant bit (MSb) is stored at the lowest (or starting) address, while the least significant bit (LSb) is stored at the highest (or ending) address. The same holds true for bytes: the most significant byte (MSB) is stored at the lowest (or starting) address, while the least significant byte (LSB) is stored at the highest (or ending) address.

1.6.2 Constant Formats

Unless otherwise specified, all constants are expressed as decimal values. Hexadecimal constants are expressed with a leading *0x*, and binary constants are expressed with a leading *0b*. Examples:

1234	decimal constant
0x89AB	hexadecimal constant
0xC000_0400	hexadecimal constant with 16 bit field separator
0b11011	binary constant

1.7 Typographical Conventions

When viewed as a portable document format (PDF) electronic document, hyperlinks appear as colored text.. There is a substantial number of hyperlinks contained in this document that are intended to show the relations between commands and telemetry.

Bibliographical citations appear as italicized text, followed by the citation index, for example, the *AIM Mission Software Development Plan*[1].

Specific command names, telemetry names, or packet names appear as bold text, followed by the item definition page number, as a hyperlink, for example the **instrument science**(90) telemetry packet would be defined on page 90.

2

Reference Documents

This document is written in accordance and in compliance with the guidelines and requirements outlined in the *AIM Mission Software Development Plan*[1].

External documents impacting instrument FSW command and telemetry interfaces include those listed below.

- *AIM Spacecraft - Instruments Communications ICD*[2]
- *New Horizons to SDC ICD*[3]

3

Command Interface

3.1 Command List Fields

Every CDE FSW command is detailed in Appendix B on page 29. Each command listing contains the following fields:

- the APID associated with that command;
- a brief description of the command's purpose;
- an optional discussion that elaborates on the command's execution;
- an optional description of the constraints on command execution;
- the command target (i.e. final processor of the command);
- the complete bit-wise definition of the command format;
- a listing of all command subfields, including the subfield's
  - summary description,
  - detailed discussion (if any),
  - units (if any),
  - state conversions (if any),
  - minimum and maximum permissible values, and
  - default value;
- whether or not the command is safe or hazardous;
- what telemetry item(s) can be used to verify command execution;
- a listing of any related commands;
- a listing of any related telemetry items; and
- a listing of any related telemetry packets.

3.2 Command Names

Command names follow the convention specified in the *OASIS-CC System Manager's Guide* [4]. All commands have the form

verb_phrase element [sub_element]

The *verb phrase* describes the action, the *element* identifies the receiving element that performs the action, and the optional *sub_element* may further define the target of the action.

The convention of this document is to specify command names in lower case letters, though OASIS-CC is case independent.

A complete listing of the verb names used in CDE commands appears in Appendix A on page 27.

The only element associated with CDE commands is *cde*. There are two separate telecommand APIDs reserved for CDE commands covering the range from 0x170 to 0x171. There is no difference in CIPS command processing for the commands sent in a packet with either of these APIDs–they are only there for possible future use or in case there is some issue with one of the APIDs.

3.2.1 Uniqueness

Command names will be globally unique. That is, there will not be multiple instances of a given command name. Portions of a command name taken by themselves may not be globally unique.

3.2.2 Subfields

All CDE commands have an allocation of 32 bits for command parameters, with the exception of the memory load and read commands.

3.3 Command Formats

Command names distinguish different commands in the OASIS ground software system, whereas 16-bit opcodes serve the same purpose in CDE FSW. Thus a unique 16-bit command opcode has been assigned to every command.

Since the ITF header has an odd byte length and the CIPS processor has no byte-level data access, it was decided that CDE command definitions in the AIM Master Command and Telemetry Database should contain the least significant byte of the ITF header, which happens to be the LSB of the ITF length field. For this reason, the opcodes shown in the appendix include 8 bits of ITF length, which is 0x0C for most commands. Doing this allows CIPS to simply strip off the CCSDS headers, prepend the remaining 6 bytes of ITF header to the command data, then forward the command ITF to CDE.

3.4 Packet Formats

The AIM command packet format is defined in the *AIM Spacecraft to Instruments Communications ICD*[2]. All command packets are CCSDS telecommand packets with a 16-bit secondary header containing 8 unused (by CDE FSW) bits followed by a checksum in the lower 8 bits of the secondary header. This checksum is a simple XOR of all bytes in the packet.

Packets are checked for corruption by CDE FSW through command ITF checksum validation.

3.5 Command Execution Verification

All properly formatted command packets received by CDE should result in either the *cde cmd_succ_ct* or *cde cmd_fail_ct* telemetry item incrementing.

3.6 Command Sequences

CDE has no on-board command sequence capability. However, both CIPS and the spacecraft bus do have this capability. Either may be used to store and send time-tagged commands to CDE.

3.7 Clock Synchronization

CIPS sends CDE a Time ITF packet once every second. Upon receipt of this ITF, instrument software will save the spacecraft time indicated in the packet. Then, upon receipt of a pulse-per-second (PPS) signal from CIPS, the current local clock will be updated to the saved spacecraft time from the preceding Time ITF. CDE uses its own internal clock for sub-second timing.

3.8 Hazardous Commands

There are only a handful of commands marked as ’hazardous’ in the CDE command set. These commands are marked as such to force operators to make a decision as to whether or not the command should really be sent. However, there are no commandable features of the fully assembled CDE instrument that are hazardous to people or the instrument itself.

4

Telemetry

4.1 Telemetry Measurement List Fields

Every CDE FSW telemetry measurement is detailed in Appendix E on page 59. Each listing contains the following fields:

- a brief description of the telemetry measurement,
- the measurement data format (type and size),
- the measurement's root source,
- any state conversions for the measurement's values,
- any analog conversions (linear, exponential, or polynomial expansions),
- any high, low, or delta values that cause cautionary alarms,
- an optional detailed discussion of the telemetry item,
- a listing of the packets which contain this measurement,
- a listing of any related commands,
- a listing of any related telemetry measurements, and
- a listing of any related telemetry packets.

4.2 Telemetry Packet List Fields

Every CDE FSW telemetry packet is detailed in Appendix F on page 277. Each listing contains the following fields:

- the packet's application identifier (APID),
- the OASIS stream name for the packet,
- a brief description of the telemetry packet,
- an optional detailed discussion of the packet,
- the packet's format (size and decommutation map),
- the format of any sub-packets the packet contains,

- a listing of any related commands,
- a listing of any related telemetry measurements, and
- a listing of any related telemetry packets.

4.3 Telemetry Names

Telemetry names follow the convention specified in the *OASIS-CC System Manager's Guide* [4]. All Telemetry names have the form

element telemetry_item

The convention of this document is to specify telemetry names in lower case letters, though OASIS-CC is case independent.

For all CDE telemetry, the element is *cips*. Telemetry item names have been chosen to represent as clearly as possible (within OASIS name length restrictions) the data represented by the telemetry value.

4.4 Packet Formats

The AIM telemetry packet format is defined in the AIM Spacecraft to Instruments Communications ICD[2]. All telemetry packets are CCSDS telemetry packets with a 64-bit secondary header containing a timestamp denoting when the packet was created. This timestamp consists of 32 bits of seconds followed by 32 bits of subseconds, identical to the CDE and spacecraft clocks. Telemetry packets can be up to 1024 bytes in length, including all header fields.

4.5 Packet Corruption

All telemetry ITF packets produced by CDE contain a checksum that can be used to validate the packet. Since this data is not part of the basic instrument status data nor the CCSDS telemetry packets that may be contained within the ITF, this data will not be included in telemetry downlink. It is up to CIPS to report telemetry ITF checksum errors through its own telemetry packets.

4.6 Memory Dumps

Memory dumps occur only on command, and only contiguous memory addresses may be dumped with a single command.

A

Command Verb Summary

verb phrase	*discrete*	*comment*
arm	yes	A prerequisite command for a potentially hazardous command.
close	yes	Mechanically close a device controlled by the command element. *close* works in conjunction with the *open* verb.
copy	no	Copy a specific data buffer from one region of memory to another.
disable	yes	Deactivate a capability or function. *disable* works in conjunction with the *enable* verb.
dump	no	Copy a specific data buffer of the command element to telemetry.
enable	yes	Activate a capability or function. *enable* works in conjunction with the *disable* verb.
inform	no	Inform an object of some current data.
inhibit	yes	Prevent the system from performing a specified action.
init	no	Begin a software function with an initial paramter. *init* works in conjunction with the *term* verb.
issue	yes	Send a telemetry packet.
move	no	Move a machanical object from one position to another.
noop	yes	Instruct the command element to perform **no op**eration or ’do nothing’. *noop* commands are typically used to verify a command path without disturbing configuration.

A. COMMAND VERB SUMMARY

verb phrase	*discrete*	*comment*
observe	no	Science observation sequencing command.
open	yes	Mechanically open a device controlled by the command element. *open* works in conjunction with the *close* verb.
pass	yes	Pass subfield data unmodified to a secondary hardware or software command receiver.
reset	yes	Restore a given system to its initial configuration.
safe	yes	Configure a device to a safe state. *safe* works in conjunction with the *wake* verb.
select	yes	Select one of multiple discrete positions or modes.
set	no	Vary a continuous range parameter.
stuff	no	Load a given data set into memory at a given location.
suspend	yes	Pause command interpretation until an event occurs.
term	yes	End a software function. *term* works in conjunction with the *init* verb.
turn off	yes	Remove power from, or deactivate a device. *turn off* works in conjunction with the *turn on* verb.
turn on	yes	Apply power to, or activate a device. *turn on* works in conjunction with the *turn off* verb.
wake	yes	Wake the hardware from a safe state. *wake* works in conjunction with the *safe* verb.

B

Command List

OASIS-CC/FSW database version TBD, Thu Feb 22 14:27:46 2007.

B.1 arm cde erase

Packet Target Application Identifier

cde, 0x170, (368)

Description

Allows an erase command to be sent

Discussion

Erases are hazardous and must be enabled before they can begin.

Constraints

The erase command corresponding to the area enabled must immediately follow this command, or the next command will be rejected and the enable state lost.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)					
	1970c000000f0000		0c004b		(unspecified)		area		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	175

Command size = 176 bits (22 bytes).

Subfield(s)

area: Specifies the area of flash for which to enable an erase

bits	type	eng units	min	max	state	value
8	discrete state				default	
					SCIENCE	1
					HK	2
					CAL	3
					CODE	4

Safety Level
SAFE

Telemetry Verification
cde hk_erase_ena (225), **cde sci_erase_ena** (268), **cde cal_erase_ena** (66), **cde code_erase_ena** (212)

B.2 disable cde cal_tst

Packet Target Application Identifier
cde, 0x170, (368)

Description
Stops the onboard calibration test

Discussion
This command stops a running calibration. No action is taken if no test is running.

Command Target
cde software

Format

	CCSDS Headers		opcode		subfield(s)	
	1970c000000f0000		0c0033		(unspecified)	
bit	0	64	65	88	89	175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level
SAFE

Telemetry Verification
cde itf_sci_mode_st (229), **cde sci_mode_st** (269)

B.3 dump cde mem

Packet Target Application Identifier
cde, 0x170, (368)

Description

Transmits a section of memory

Discussion

Four areas of memory can be dumped: PROM, SRAM, and two areas of flash. These areas are accessed via different addressing schemes. The code section can be dumped via a virtual address, while any other section can be accessed via a physical address.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)									
	1970c00000170000		140015		(unspecified)		address		length		type		(unspecified)	
bit	0	64	65	88	89	104	105	136	137	168	169	176	177	239

Command size = 240 bits (30 bytes).

Subfield(s)

address: Address from which to dump

bits	type	eng units	min	max	state	value
32	unsigned integer				default	

length: Number of bytes to dump

bits	type	eng units	min	max	state	value
32	unsigned integer				default	

type: Type of memory to dump

bits	type	eng units	min	max	state	value
8	discrete state				default	
					PROM	1
					SRAM	2
					FLASH_CODE	3
					FLASH_PHYS	4

Safety Level

SAFE

Telemetry Verification

cde mem_start_addr (235), **cde mem_ct** (234), **cde mem_type** (236)

B.4 enable cde cal_erase

Packet Target Application Identifier

cde, 0x170, (368)

Description

Erases the calibration section of flash

Discussion

This command erases the blocks in the flash in the calibration storage area. The erase will take 1 second to complete.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c0054	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

HAZARDOUS

Telemetry Verification

cde erase_area (216)

B.5 enable cde cal_tst

Packet Target Application Identifier

cde, 0x170, (368)

Description

Starts the onboard calibration test

Discussion

This command puts the software into calibration mode and begins the test. Once the test is complete, the software autonomously returns to science collection mode.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c0030	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde itf_sci_mode_st (229), **cde sci_mode_st** (269)

B.6 enable cde cod_erase

Packet Target Application Identifier
cde, 0x170, (368)

Description
Erases the code section of flash

Discussion
This command erases all blocks in the code storage area of flash. The erase takes 3 seconds to complete.

Command Target
cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c0057	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level
HAZARDOUS

Telemetry Verification
cde erase_area (216)

B.7 enable cde hk_erase

Packet Target Application Identifier
cde, 0x170, (368)

Description
Erases the housekeeping area of flash

Discussion
This command erases the blocks in the housekeeping area of flash. The erase takes 30 seconds to complete.

Command Target
cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c0051	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

HAZARDOUS

Telemetry Verification

cde erase_area (216), **cde erase_st** (217)

B.8 enable cde sci_erase

Packet Target Application Identifier

cde, 0x170, (368)

Description

Erases the science area of flash

Discussion

This command erases all blocks in the science area of flash. The erase takes 128 seconds to complete.

Constraints

Must be proceeded by the arm command.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c004e	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

HAZARDOUS

Telemetry Verification

cde erase_area (216), **cde erase_st** (217)

B.9 enable cde stim

Packet Target Application Identifier

cde, 0x170, (368)

Description

Send a stimulus signal through one detector channel.

Discussion

This command is for internal charge injection calibration. A stimulus signal is sent through one detector channel and appears as a science hit on the ground. The stimulus level is selectable, to one of the eight pre-programmed levels.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)							
	1970c000000f0000		0c0027		(unspecified)		channel_id		level		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	120	121	175

Command size = 176 bits (22 bytes).

Subfield(s)

channel_id: Channel to stimulate

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	14	default	1

level: Specifies which level of charge to inject

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	8	default	1

Safety Level

SAFE

Telemetry Verification

cde cmd_succ_ct (211), **cde cmd_fail_ct** (210)

B.10 issue cde

Packet Target Application Identifier

cde, 0x170, (368)

Description

Transmits a telemetry packet to the ground

Discussion

This command sends whatever packet is specified to the CIPS instrument for transmission to the ground.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)					
	1970c000000f0000		0c0009		(unspecified)		packet_type		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	175

Command size = 176 bits (22 bytes).

Subfield(s)

packet_type: Packet to transmit

bits	type	eng units	min	max	state	value
8	discrete state				default	
					SCIENCE	1
					CSD	2
					HISTORY	3
					CAL	4
					BLT	5
					NEW_SCI	6
					ALL	7

Subfield Discussion

Note that there is inconsistency between packet names and the state converions for the packet_type subfield.

csd = sys_data blt = flash new_sci = science all = science, history, sys_data, cal, and blt

Safety Level

SAFE

Telemetry Verification

cde cmd_succ_ct (211), **cde cmd_fail_ct** (210)

B.11 issue cde reserved_1

Packet Target Application Identifier

cde, 0x171, (369)

Description

CDE reserved command 1

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)	
	1971c000000f0000		0c0003		(unspecified)	
bit	0	64	65	88	89	175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

B.12 noop cde

Packet Target Application Identifier

cde, 0x170, (368)

Description

No operation, or do nothing command.

Discussion

This command performs no useful function other than to verify correct operation of the cde command distributor.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c0003	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde cmd_succ_ct (211), **cde cmd_succ_ct** (211), **cde cmd_fail_ct** (210), **cde cmd_fail_ct** (210)

B.13 reset cde fpga

Packet Target Application Identifier

cde, 0x170, (368)

Description

Resets the FPGA

Discussion

This command resets the digital board FPGA.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c005d	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde cmd_succ_ct (211), **cde cmd_fail_ct** (210)

B.14 reset cde watchdog

Packet Target Application Identifier

cde, 0x170, (368)

Description

Triggers a watchdog reset of the software

Discussion

Sending this command will reboot the software. It should only be used for I&T.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c0075	(unspecified)
bit	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

HAZARDOUS

Telemetry Verification

cde tot_rst_ct (274), **cde wtchdg_rst_ct** (275)

B.15 safe cde

Packet Target Application Identifier

cde, 0x170, (368)

Description

Prepares the instrument to be powered off

Discussion

To prevent possible flash corruption by powering off during a flash operation, this command is sent. It sends the instrument to power down mode, in which no flash operations take place.

Command Target

cde software

Format

bit	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c005a	(unspecified)
	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde itf_pwr_down_st (229)

B.16 select cde prom_boot

Packet Target Application Identifier

cde, 0x170, (368)

Description

Reboot software from PROM

Discussion

This command triggers a software reset from the PROM code. No action is taken if the software is already running from PROM

Command Target

cde software

Format

bit	CCSDS Headers	opcode	subfield(s)
	1970c000000f0000	0c002d	(unspecified)
	0 64	65 88	89 175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde run_location (266), **cde boot_sram_ena** (63), **cde version** (275)

B.17 select cde sram_boot

Packet Target Application Identifier

cde, 0x170, (368)

Description

Reboot the software from SRAM

Discussion

This command resets the software and runs from the SRAM code. No action is taken if the software is already running from SRAM.

Constraints

There must be valid code in the flash for the reboot to be succesful. If there is not, the software continues from PROM.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)	
	1970c000000f0000		0c002a		(unspecified)	
bit	0	64	65	88	89	175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde run_location (266), **cde boot_sram_ena** (63), **cde version** (275)

B.18 set cde autb_mode

Packet Target Application Identifier

cde, 0x170, (368)

Description

Turn autonomy B rules on or off

Discussion

While set B rules are off, the day hit histogram is not updated and no channels are put to sleep for violations.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)					
	1970c000000f0000		0c0042		(unspecified)		to		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	175

Command size = 176 bits (22 bytes).

Subfield(s)

to: Rules on or off

bits	type	eng units	min	max	state	value
8	discrete state				default	
					OFF	1
					ON	2

Safety Level

SAFE

Telemetry Verification

cde autonomy_ena (63)

B.19 set cde cal_queue

Packet Target Application Identifier

cde, 0x170, (368)

Description

Enables or disables an individual calibration test

Discussion

Any of the 5 individual tests can be run in one calibration. The onboard queue determines which are run. A disabled test will not be executed. The queue is represented in this command by a bit string. The whole queue is sent at once.

Each bit in the queue subfield represents a test with the most significant three bits being unused. Bit 0 is the first test, etc, and a 1 indicates that test should be run. For example, the bit string 0b00011011 indicates all tests except for number 3 should be run.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)					
	1970c000000f0000		0c0039		(unspecified)		queue		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	175

Command size = 176 bits (22 bytes).

Subfield(s)

queue: Queue value

bits	type	eng units	min	max	state	value
8	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde cal_tst1_ena (67), **cde cal_tst2_ena** (69), **cde cal_tst3_ena** (70), **cde cal_tst4_ena** (72), **cde cal_tst5_ena** (73)

B.20 set cde cal_thrsh

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the threshold for a calibration test

Discussion

Each individual calibration test has its own threshold value. Note that the format of this command is not like that for the 'set cde cal_queue' command–each test must be configured in a separate command.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)			
	1970c000000f0000	0c001e	(unspecified)	test	threshold	(unspecified)
bit	0 64	65 88	89 104	105 112	113 128	129 175

Command size = 176 bits (22 bytes).

Subfield(s)

test: Test to change

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	5	default	1

threshold: Threshold value

bits	type	eng units	min	max	state	value
16	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde cal_tst1_thrsh (68), **cde cal_tst2_thrsh** (70), **cde cal_tst3_thrsh** (71), **cde cal_tst4_thrsh** (73), **cde cal_tst5_thrsh** (74)

B.21 set cde cal_tst_tm

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the time for one of the 5 individual calibration tests

Discussion

Each calibration consists of 5 individual tests. This command sets the time duration for the specified test.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)							
	1970c000000f0000		0c0036		(unspecified)		test		time		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	128	129	175

Command size = 176 bits (22 bytes).

Subfield(s)

test: Test to change

bits	type	eng units	min	max	state	value
8	unsigned integer				default	

time: Time to set

bits	type	eng units	min	max	state	value
16	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde cal_tst1_sec (68), **cde cal_tst2_sec** (69), **cde cal_tst3_sec** (71), **cde cal_tst4_sec** (72), **cde cal_tst5_sec** (74)

B.22 set cde chnl_mode

Packet Target Application Identifier

cde, 0x170, (368)

Description

Turns individual channels on or off

Discussion

Each channel can be on or off. While off, a channel will not record any science data. It will still be used during calibration tests.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)							
	1970c000000f0000		0c003c		(unspecified)		channel_id		mode		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	120	121	175

Command size = 176 bits (22 bytes).

Subfield(s)

channel_id: Channel to modify

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	14	default	1

mode: Channel on or off

bits	type	eng units	min	max	state	value
8	discrete state				default	
					ON	1
					OFF	2

Safety Level

SAFE

Telemetry Verification

cde chnl1_ena (126), **cde chnl2_ena** (135), **cde chnl3_ena** (145), **cde chnl4_ena** (155), **cde chnl5_ena** (164), **cde chnl6_ena** (174), **cde chnl7_ena** (184), **cde chnl8_ena** (193), **cde chnl9_ena** (203), **cde chnl10_ena** (77), **cde chnl11_ena** (87), **cde chnl12_ena** (97), **cde chnl13_ena** (106), **cde chnl14_ena** (116)

B.23 set cde chnl_ovr

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the onboard channel override flag

Discussion

A channel can be overriden to off, or set to neutral control. A neutral channel can be turned on and off by the autonomy rules. An off channel will never be turned on.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)							
	1970c000000f0000		0c003f		(unspecified)		channel_id		mode		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	120	121	175

Command size = 176 bits (22 bytes).

Subfield(s)

channel_id: Channel to modify

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	14	default	1

mode: Override value

bits	type	eng units	min	max	state	value
8	discrete state				default	
					OFF	1
					NEUTRAL	2

Safety Level

SAFE

Telemetry Verification

cde chnl1_ovr (128), **cde chnl2_ovr** (137), **cde chnl3_ovr** (147), **cde chnl4_ovr** (157), **cde chnl5_ovr** (166), **cde chnl6_ovr** (176), **cde chnl7_ovr** (186), **cde chnl8_ovr** (195), **cde chnl9_ovr** (205), **cde chnl10_ovr** (79), **cde chnl11_ovr** (89), **cde chnl12_ovr** (99), **cde chnl13_ovr** (108), **cde chnl14_ovr** (118)

B.24 set cde code_chksm

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the expected checksum of a loaded code image

Discussion

Before running new code, a checksum is calculated over the image in SRAM. If the checksums do not match, the code is not executed.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)		
	1970c000000f0000	0c0060	(unspecified)	to	(unspecified)
bit	0 64	65 88	89 104	105 112	113 175

Command size = 176 bits (22 bytes).

Subfield(s)

to: Checksum value

bits	type	eng units	min	max	state	value
8	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde mem_chksm (234)

B.25 set cde flash_ovr

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the onboard flash override flag

Discussion

The flight software usually controls the flash chip autonomously, but this can be overriden by the ground to on or off. When off, the flash chip will never be used. While on, the flash chip will always be used, regardless of the internal status. If neutral, the software is allowed to determine the flash usage autonomously.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)		
	1970c000000f0000	0c0018	(unspecified)	to	(unspecified)
bit	0 64	65 88	89 104	105 112	113 175

Command size = 176 bits (22 bytes).

Subfield(s)

to: Override value

bits	type	eng units	min	max	state	value
8	discrete state				default	
					OFF	1
					ON	2
					NEUTRAL	3

Safety Level

SAFE

Telemetry Verification

cde flash_override (219)

B.26 set cde hk_pkt_rt

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the rate of the CSD packet

Discussion

The CSD packet is sent out during checkout and spacecraft only mode at whatever rate commanded.

The minimum rate that should ever be set is 3 seconds. The instrument will accept lower values but will have functioning issues if it is set below 3.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)		
	1970c000000f0000	0c000c	(unspecified)	to	(unspecified)
bit	0 64	65 88	89 104	105 120	121 175

Command size = 176 bits (22 bytes).

Subfield(s)

to: Rate at which to send packets

bits	type	eng units	min	max	state	value
16	unsigned integer	any	3	65535	default	

Safety Level

SAFE

Telemetry Verification

cde hsk_rate (226)

B.27 set cde length_day

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the length of the instrument day

Discussion

The length of the day controls how often housekeeping measurements are stored in flash, as well as the behavior of the autonomy set B rules.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)		
	1970c000000f0000	0c0070	(unspecified)	to	(unspecified)
bit	0 64	65 88	89 104	105 136	137 175

Command size = 176 bits (22 bytes).

Subfield(s)

to: New length of the instrument day

bits	type	eng units	min	max	state	value
32	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde length_day (232)

B.28 set cde max_hits

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the max hits for an autonomy rule

Discussion

Each autonomy rule reacts to a number of hits in a time period greater than the set maximum.

Constraints

For Rule Set A, the Value should generally be set at 3 and never be greater than 42. If more than 42 events (combining all channels' events) were to be allowed in a second, this could result in the software exceeding its allowable number of interrupts, causing the system to reboot. If only one channel is on, the value may be 42. If 2 channels are on, that number must be decreased to 21 (21*2=42), and so on to 14 channels where the number should be no more than 3 (3*14=42). If no channels are on the value may be set to any number.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)			
	1970c000000f0000	0c0045	(unspecified)	rule_set	value	(unspecified)
bit	0 64	65 88	89 104	105 112	113 120	121 175

Command size = 176 bits (22 bytes).

Subfield(s)

rule_set: Rule to change

bits	type	eng units	min	max	state	value
8	discrete state				default	
					B	1
					A	2

value: New maximum hits for that rule

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	0	255	default	1

Safety Level

SAFE

Telemetry Verification

cde autb_maxhits (62), **cde auta_maxhits** (61)

B.29 set cde op_mode

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the operating mode of the software

Discussion

This command changes the operating mode for the instrument, which controls what telemetry is transmitted and when.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)					
	1970c000000f0000		0c001b		(unspecified)		to		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	175

Command size = 176 bits (22 bytes).

Subfield(s)

to: Operating mode to enter

bits	type	eng units	min	max	state	value
8	discrete state				default	
					CRUISE	1
					CHECKOUT	2
					SC_ONLY	3

Safety Level

SAFE

Telemetry Verification

cde itf_op_mode_st (228), **cde op_mode_st** (240)

B.30 set cde sleep_tm

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the sleep time for an autonomy rule

Discussion

If a channel has violated an autonomy rule, it is put to sleep for a set amount of time.

Constraints

For rule_set A use a minimum of 2 on the value.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)							
	1970c000000f0000		0c0048		(unspecified)		rule_set		value		(unspecified)	
bit	0	64	65	88	89	104	105	112	113	128	129	175

Command size = 176 bits (22 bytes).

Subfield(s)

rule_set: Rule to change

bits	type	eng units	min	max	state	value
8	discrete state				default	
					B	1
					A	2

value: New sleep time

bits	type	eng units	min	max	state	value
16	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde auta_sleep (61), **cde autb_sleep** (62)

B.31 set cde thrsh_lvl

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the threshold level for a channel

Discussion

Each channel has three threshold levels.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)			
	1970c000000f0000	0c0024	(unspecified)	channel_id	level	(unspecified)
bit	0 64	65 88	89 104	105 112	113 120	121 175

Command size = 176 bits (22 bytes).

Subfield(s)

channel_id: Channel to modify

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	14	default	1

level: New threshold level

bits	type	eng units	min	max	state	value
8	discrete state				default	
					LOW	1
					MED	2
					HIGH	3

Safety Level

SAFE

Telemetry Verification

cde chnl1_thrsh_lvl (128), **cde chnl2_thrsh_lvl** (138), **cde chnl3_thrsh_lvl** (148), **cde chnl4_thrsh_lvl** (157), **cde chnl5_thrsh_lvl** (167), **cde chnl6_thrsh_lvl** (177), **cde chnl7_thrsh_lvl** (186), **cde chnl8_thrsh_lvl** (196), **cde chnl9_thrsh_lvl** (206), **cde chnl10_thrsh_lvl** (80), **cde chnl11_thrsh_lvl** (90), **cde chnl12_thrsh_lvl** (99), **cde chnl13_thrsh_lvl** (109), **cde chnl14_thrsh_lvl** (119)

B.32 set cde thrsh_value

Packet Target Application Identifier

cde, 0x170, (368)

Description

Sets the threshold value for a channel at the specified level

Discussion

The threshold value for a channel determines what size hits can be recorded by that channel. The threshold is of an inverted nature: the higher the threshold value, the more sensitive the detector. The smallest signals come in at a value of 65535 and the largest come in at a value of zero.

Command Target

cde software

Format

	CCSDS Headers	opcode	subfield(s)				
	1970c000000f0000	0c0021	(unspecified)	channel_id	level	threshold	(unspecified)
bit	0 64	65 88	89 104	105 112	113 120	121 136	137 175

Command size = 176 bits (22 bytes).

Subfield(s)

channel_id: Channel to modify

bits	type	eng units	min	max	state	value
8	unsigned integer	dn	1	14	default	1

level: Index into threshold table

bits	type	eng units	min	max	state	value
8	discrete state				default	
					LOW	1
					MED	2
					HIGH	3

threshold: New threshold value

bits	type	eng units	min	max	state	value
16	unsigned integer				default	

Safety Level

SAFE

Telemetry Verification

cde chnl1_lo_thrsh (127), **cde chnl2_lo_thrsh** (136), **cde chnl3_lo_thrsh** (146), **cde chnl4_lo_thrsh** (156), **cde chnl5_lo_thrsh** (165), **cde chnl6_lo_thrsh** (175), **cde chnl7_lo_thrsh** (185), **cde chnl8_lo_thrsh** (194), **cde chnl9_lo_thrsh** (204), **cde chnl10_lo_thrsh** (78), **cde chnl11_lo_thrsh** (88), **cde chnl12_lo_thrsh** (98), **cde chnl13_lo_thrsh** (107), **cde chnl14_lo_thrsh** (117), **cde chnl1_md_thrsh** (127), **cde chnl2_md_thrsh** (137), **cde chnl3_md_thrsh** (147), **cde chnl4_md_thrsh** (156), **cde chnl5_md_thrsh** (166), **cde chnl6_md_thrsh** (176), **cde chnl7_md_thrsh** (185), **cde chnl8_md_thrsh** (195), **cde chnl9_md_thrsh** (205), **cde chnl10_md_thrsh** (79), **cde chnl11_md_thrsh** (89), **cde chnl12_md_thrsh** (98), **cde chnl13_md_thrsh** (108), **cde chnl14_md_thrsh** (118), **cde chnl1_hi_thrsh** (126), **cde chnl2_hi_thrsh** (136), **cde chnl3_hi_thrsh** (146), **cde chnl4_hi_thrsh** (155), **cde chnl5_hi_thrsh** (165), **cde chnl6_hi_thrsh** (175), **cde chnl7_hi_thrsh** (184), **cde chnl8_hi_thrsh** (194), **cde chnl9_hi_thrsh** (204), **cde chnl10_hi_thrsh** (78), **cde chnl11_hi_thrsh** (88), **cde chnl12_hi_thrsh** (97), **cde chnl13_hi_thrsh** (107), **cde chnl14_hi_thrsh** (117)

B.33 wake cde

Packet Target Application Identifier

cde, 0x170, (368)

Description

Wakes the instrument from power down mode

Discussion

This command clears the condition induced by the safe command. It is not needed if a reboot follows the safe command instead.

Command Target

cde software

Format

	CCSDS Headers		opcode		subfield(s)	
	1970c000000f0000		0c0063		(unspecified)	
bit	0	64	65	88	89	175

Command size = 176 bits (22 bytes).

Subfield(s)

Safety Level

SAFE

Telemetry Verification

cde itf_pwr_down_st (229)

C

Command Opcode Summary

Command Opcode Summary

cmd ref.	apid ref.	apid (hex)	opcode (hex)	command
1	1	0x171	0x0c0003	**issue cde reserved_1** (36)
2	1	0x170	0x0c0003	**noop cde** (37)
3	2	0x170	0x0c0009	**issue cde** (35)
4	3	0x170	0x0c000c	**set cde hk_pkt_rt** (46)
5	4	0x170	0x0c0018	**set cde flash_ovr** (46)
6	5	0x170	0x0c001b	**set cde op_mode** (49)
7	6	0x170	0x0c001e	**set cde cal_thrsh** (42)
8	7	0x170	0x0c0021	**set cde thrsh_value** (51)
9	8	0x170	0x0c0024	**set cde thrsh_lvl** (50)
10	9	0x170	0x0c0027	**enable cde stim** (34)
11	10	0x170	0x0c002a	**select cde sram_boot** (40)
12	11	0x170	0x0c002d	**select cde prom_boot** (39)
13	12	0x170	0x0c0030	**enable cde cal_tst** (32)
14	13	0x170	0x0c0033	**disable cde cal_tst** (30)
15	14	0x170	0x0c0036	**set cde cal_tst_tm** (43)
16	15	0x170	0x0c0039	**set cde cal_queue** (41)
17	16	0x170	0x0c003c	**set cde chnl_mode** (43)
18	17	0x170	0x0c003f	**set cde chnl_ovr** (44)
19	18	0x170	0x0c0042	**set cde autb_mode** (40)
20	19	0x170	0x0c0045	**set cde max_hits** (48)
21	20	0x170	0x0c0048	**set cde sleep_tm** (50)
22	21	0x170	0x0c004b	**arm cde erase** (29)
23	22	0x170	0x0c004e	**enable cde sci_erase** (34)
24	23	0x170	0x0c0051	**enable cde hk_erase** (33)
25	24	0x170	0x0c0054	**enable cde cal_erase** (31)
26	25	0x170	0x0c0057	**enable cde cod_erase** (33)
27	26	0x170	0x0c005a	**safe cde** (38)
28	27	0x170	0x0c005d	**reset cde fpga** (37)
29	28	0x170	0x0c0060	**set cde code_chksm** (45)

Command Opcode Summary, cont'd

cmd ref.	apid ref.	apid (hex)	opcode (hex)	command
30	29	0x170	0x0c0063	**wake cde** (52)
31	30	0x170	0x0c0070	**set cde length_day** (47)
32	31	0x170	0x0c0075	**reset cde watchdog** (38)
33	32	0x170	0x140015	**dump cde mem** (30)

D

Command Packet Summary

Command Packet Summary

pkt no.	apid (hex)	packet
1	0x170	**cde**
2	0x171	**cde**

E

Telemetry Measurement List

OASIS-CC/FSW database version TBD, Thu Feb 22 14:27:48 2007.

E.1 cde ana_a_temp

Description

Temperature of the A thermistor on the analog board

Data Type

8 bits, unsigned integer, engineering units = C.

Measurement Source

analogboard

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	95.1193008422852
c1	-3.92510008811951
c2	0.0977684035897255
c3	-0.00153842999134213
c4	1.4401200132852e-05
c5	-7.8342900167172e-08
c6	2.28046997952092e-10
c7	-2.7453199761239e-13

Limits

alarm	limit
red high	52
yellow high	47
yellow low	-21
red low	-26
delta	*none*

Discussion

There are two thermistors on the analog board. The A thermistor is located on the edge of the board.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.2 cde ana_b_temp

Description

Temperature of the B thermistor on the analog board

Data Type

8 bits, unsigned integer, engineering units = C.

Measurement Source

analogboard

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	95.1193008422852
c1	-3.92510008811951
c2	0.0977684035897255
c3	-0.00153842999134213
c4	1.4401200132852e-05
c5	-7.8342900167172e-08
c6	2.28046997952092e-10
c7	-2.7453199761239e-13

Limits

alarm	limit
red high	55
yellow high	50
yellow low	-21
red low	-26
delta	*none*

Discussion

There are two thermistors on the analog board. The B thermistor is located in the middle of the board.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.3 cde auta_maxhits

Description

Maximum number of hits allowed by autonomy set A

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

The set A autonomy rules are concerned with the number of hits received by a channel during one second. This point is the maximum number of hits allowed before the rule kicks in.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde max_hits (48)	Sets the max hits for an autonomy rule

E.4 cde auta_sleep

Description

Sleep time for set A autonomy rules

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

The set A autonomy rules put a channel to sleep after it has received too many hits in one second. This point is the amount of time the channel sleeps before waking up. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde sleep_tm (50)	Sets the sleep time for an autonomy rule

E.5 cde autb_maxhits

Description

Maximum number of hits allowed by autonomy set B

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

The set B autonomy rules are concerned with the number of hits received by a channel during one day. This point is the maximum number of hits allowed before the rule kicks in. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde max_hits (48)	Sets the max hits for an autonomy rule

E.6 cde autb_sleep

Description

Sleep time for set B autonomy rules

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

The set B autonomy rules put a channel to sleep after it has received too many hits in one day on its highest threshold. This point is the number of days the channel sleeps before waking up. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde sleep_tm (50)	Sets the sleep time for an autonomy rule

E.7 cde autonomy_ena

Description

Status of autonomy B rules

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Autonomy set B can be disabled. If this is the case, the number of hits per day is not incremented and therefore no thresholds will be raised. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde autb_mode (40)	Turn autonomy B rules on or off

E.8 cde boot_sram_ena

Description

Flag indicating location of software execution

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

If new code is loaded, it will be run from SRAM. If this flag is true, it means the new code is successfully running, unless FLASH is dead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
select cde sram_boot (40)	Reboot the software from SRAM
select cde prom_boot (39)	Reboot software from PROM

E.9 cde cal_curtst_num

Description

Current calibration test executing

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Analog Conversions

Segment 1

type	UNSEGMENTED_5D
start	0
stop	0
c0	1
c1	1
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Discussion

This point indicates which of the 5 calibration tests is currently executing. This is valid only if the science mode is calibration.

Telemetry Source Packets

cde sys_data (289)

E.10 cde cal_curtst_time

Description

Current time of calibration test executing

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point indicates how much time has elapsed for the current test executing. This is valid only if the science mode is calibration.

Telemetry Source Packets
cde sys_data (289)

E.11 cde cal_data_tm

Description
CDE calibration data timestamp.

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde cal (278)

E.12 cde cal_endptr_blk

Description
End block of the calibration section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point indicates which block in the calibration area of FLASH the CDEFSW will write to when storing a new calibration result set. Stored in FLASH.

The expected range for this telemetry item is zero through one. When the maximum block is reached, the section is full.

Telemetry Source Packets

cde sys_data (289)

E.13 cde cal_endptr_page

Description

End page of the calibration section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point indicates which page in the calibration area of FLASH the CDEFSW will write to when storing a new calibration result set. Stored in FLASH.

Expected range for this telemetry item is zero through 15.

Telemetry Source Packets

cde sys_data (289)

E.14 cde cal_erase_ena

Description

Status of calibration erase enable flag

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Before the command to erase the calibration area can be sent, the erase must be first enabled. This point indicates the enable status. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
arm cde erase (29)	Allows an erase command to be sent

E.15 cde cal_subpkt

Description

cde calibration subpacket structure.

Data Type

0 bits, subpacket, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde cal (278)

E.16 cde cal_tst1_ena

Description

Flag indicating calibration test enable - Test 1

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Each calibration consists of 5 tests, but only those tests that are enabled will run when the calibration starts.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_queue (41)	Enables or disables an individual calibration test

E.17 cde cal_tst1_sec

Description

Max time for calibration test - Test 1

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific time limit for which it runs. This point contains the time limit for each test.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_tst_tm (43)	Sets the time for one of the 5 individual calibration tests

E.18 cde cal_tst1_thrsh

Description

Threshold for calibration test 1

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific threshold associated with it. During that test, all channels will be set to that threshold value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_thrsh (42)	Sets the threshold for a calibration test

E.19 cde cal_tst2_ena

Description

Flag indicating calibration test enable - Test 2

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Each calibration consists of 5 tests, but only those tests that are enabled will run when the calibration starts.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_queue (41)	Enables or disables an individual calibration test

E.20 cde cal_tst2_sec

Description

Max time for calibration test - Test 2

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific time limit for which it runs. This point contains the time limit for each test.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_tst_tm (43)	Sets the time for one of the 5 individual calibration tests

E.21 cde cal_tst2_thrsh

Description
Threshold for calibration test 2

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each of the 5 calibration tests has a specific threshold associated with it. During that test, all channels will be set to that threshold value. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
set cde cal_thrsh (42)	Sets the threshold for a calibration test

E.22 cde cal_tst3_ena

Description
Flag indicating calibration test enable - Test 3

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion
Each calibration consists of 5 tests, but only those tests that are enabled will run when the calibration starts.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
set cde cal_queue (41)	Enables or disables an individual calibration test

E.23 cde cal_tst3_sec

Description

Max time for calibration test - Test 3

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific time limit for which it runs. This point contains the time limit for each test.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_tst_tm (43)	Sets the time for one of the 5 individual calibration tests

E.24 cde cal_tst3_thrsh

Description

Threshold for calibration test 3

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific threshold associated with it. During that test, all channels will be set to that threshold value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_thrsh (42)	Sets the threshold for a calibration test

E.25 cde cal_tst4_ena

Description

Flag indicating calibration test enable - Test 4

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Each calibration consists of 5 tests, but only those tests that are enabled will run when the calibration starts.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_queue (41)	Enables or disables an individual calibration test

E.26 cde cal_tst4_sec

Description

Max time for calibration test - Test 4

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific time limit for which it runs. This point contains the time limit for each test.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_tst_tm (43)	Sets the time for one of the 5 individual calibration tests

E.27 cde cal_tst4_thrsh

Description

Threshold for calibration test 4

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific threshold associated with it. During that test, all channels will be set to that threshold value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_thrsh (42)	Sets the threshold for a calibration test

E.28 cde cal_tst5_ena

Description

Flag indicating calibration test enable - Test 5

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Each calibration consists of 5 tests, but only those tests that are enabled will run when the calibration starts.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_queue (41)	Enables or disables an individual calibration test

E.29 cde cal_tst5_sec

Description

Max time for calibration test - Test 5

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific time limit for which it runs. This point contains the time limit for each test.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_tst_tm (43)	Sets the time for one of the 5 individual calibration tests

E.30 cde cal_tst5_thrsh

Description

Threshold for calibration test 5

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each of the 5 calibration tests has a specific threshold associated with it. During that test, all channels will be set to that threshold value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde cal_thrsh (42)	Sets the threshold for a calibration test

E.31 cde chnl10_aut_res

Description

Resurrected status - Channel 10

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.32 cde chnl10_auta_ct

Description

Sleep counter for autonomy set A - Channel 10

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.33 cde chnl10_auta_st

Description
Status of autonomy set A violation - Channel 10

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion
Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.34 cde chnl10_autb_ct

Description
Sleep counter for autonomy set B - Channel 10

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.35 cde chnl10_autb_st

Description
Status of autonomy set B violation - Channel 10

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion
Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.36 cde chnl10_day_ct

Description
Count of hits received during current day - Channel 10

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.37 cde chnl10_ena

Description
Channel 10's on/off status

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.38 cde chnl10_hi_thrsh

Description

Channel 10's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.39 cde chnl10_lo_thrsh

Description

Channel 10's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.40 cde chnl10_md_thrsh

Description

Channel 10's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.41 cde chnl10_ovr

Description

Ground override status - Channel 10

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.42 cde chnl10_thrsh_lvl

Description

Channel 10's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.43 cde chnl10_tot_ct

Description

Total hits during the mission - Channel 10

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.44 cde chnl10_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.45 cde chnl10_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.46 cde chnl10_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.47 cde chnl10_tst2_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.48 cde chnl10_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.49 cde chnl10_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.50 cde chnl10_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.51 cde chnl10_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.52 cde chnl10_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.53 cde chnl10_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.54 cde chnl11_aut_res

Description
Resurrected status - Channel 11

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.55 cde chnl11_auta_ct

Description

Sleep counter for autonomy set A - Channel 11

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.56 cde chnl11_auta_st

Description

Status of autonomy set A violation - Channel 11

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.57 cde chnl11_autb_ct

Description

Sleep counter for autonomy set B - Channel 11

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.58 cde chnl11_autb_st

Description

Status of autonomy set B violation - Channel 11

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.59 cde chnl11_day_ct

Description
Count of hits received during current day - Channel 11

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.60 cde chnl11_ena

Description
Channel 11's on/off status

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion
Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.61 cde chnl11_hi_thrsh

Description

Channel 11's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.62 cde chnl11_lo_thrsh

Description

Channel 11's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.63 cde chnl11_md_thrsh

Description

Channel 11's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.64 cde chnl11_ovr

Description

Ground override status - Channel 11

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.65 cde chnl11_thrsh_lvl

Description

Channel 11's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.66 cde chnl11_tot_ct

Description

Total hits during the mission - Channel 11

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.67 cde chnl11_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.68 cde chnl11_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.69 cde chnl11_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.70 cde chnl11_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.71 cde chnl11_tst3_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.72 cde chnl11_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.73 cde chnl11_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.74 cde chnl11_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.75 cde chnl11_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.76 cde chnl11_tst5_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.77 cde chnl12_aut_res

Description

Resurrected status - Channel 12

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.78 cde chnl12_auta_ct

Description

Sleep counter for autonomy set A - Channel 12

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.79 cde chnl12_auta_st

Description

Status of autonomy set A violation - Channel 12

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.80 cde chnl12_autb_ct

Description

Sleep counter for autonomy set B - Channel 12

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.81 cde chnl12_autb_st

Description

Status of autonomy set B violation - Channel 12

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.82 cde chnl12_day_ct

Description

Count of hits received during current day - Channel 12

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.83 cde chnl12_ena

Description

Channel 12's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.84 cde chnl12_hi_thrsh

Description

Channel 12's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.85 cde chnl12_lo_thrsh

Description

Channel 12's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.86 cde chnl12_md_thrsh

Description

Channel 12's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.87 cde chnl12_ovr

Description

Ground override status - Channel 12

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.88 cde chnl12_thrsh_lvl

Description

Channel 12's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.89 cde chnl12_tot_ct

Description

Total hits during the mission - Channel 12

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.90 cde chnl12_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.91 cde chnl12_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.92 cde chnl12_tst2_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.93 cde chnl12_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets

cde cal (278)

E.94 cde chnl12_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.95 cde chnl12_tst3_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.96 cde chnl12_tst4_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.97 cde chnl12_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.98 cde chnl12_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.99 cde chnl12_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.100 cde chnl13_aut_res

Description

Resurrected status - Channel 13

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.101 cde chnl13_auta_ct

Description

Sleep counter for autonomy set A - Channel 13

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.102 cde chnl13_auta_st

Description
Status of autonomy set A violation - Channel 13

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion
Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.103 cde chnl13_autb_ct

Description
Sleep counter for autonomy set B - Channel 13

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.104 cde chnl13_autb_st

Description
Status of autonomy set B violation - Channel 13

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.105 cde chnl13_day_ct

Description

Count of hits received during current day - Channel 13

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.106 cde chnl13_ena

Description

Channel 13's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.107 cde chnl13_hi_thrsh

Description

Channel 13's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.108 cde chnl13_lo_thrsh

Description

Channel 13's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.109 cde chnl13_md_thrsh

Description

Channel 13's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.110 cde chnl13_ovr

Description

Ground override status - Channel 13

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.111 cde chnl13_thrsh_lvl

Description

Channel 13's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.112 cde chnl13_tot_ct

Description
Total hits during the mission - Channel 13

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.113 cde chnl13_tst1_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.114 cde chnl13_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.115 cde chnl13_tst2_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.116 cde chnl13_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.117 cde chnl13_tst3_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.118 cde chnl13_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.119 cde chnl13_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.120 cde chnl13_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.121 cde chnl13_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.122 cde chnl13_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.123 cde chnl14_aut_res

Description
Resurrected status - Channel 14

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.124 cde chnl14_auta_ct

Description

Sleep counter for autonomy set A - Channel 14

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.125 cde chnl14_auta_st

Description

Status of autonomy set A violation - Channel 14

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.126 cde chnl14_autb_ct

Description

Sleep counter for autonomy set B - Channel 14

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.127 cde chnl14_autb_st

Description

Status of autonomy set B violation - Channel 14

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.128 cde chnl14_day_ct

Description
Count of hits received during current day - Channel 14

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.129 cde chnl14_ena

Description
Channel 14's on/off status

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion
Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.130 cde chnl14_hi_thrsh

Description

Channel 14's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.131 cde chnl14_lo_thrsh

Description

Channel 14's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.132 cde chnl14_md_thrsh

Description

Channel 14's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.133 cde chnl14_ovr

Description

Ground override status - Channel 14

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.134 cde chnl14_thrsh_lvl

Description

Channel 14's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.135 cde chnl14_tot_ct

Description

Total hits during the mission - Channel 14

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.136 cde chnl14_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.137 cde chnl14_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.138 cde chnl14_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.139 cde chnl14_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.140 cde chnl14_tst3_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.141 cde chnl14_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets

cde cal (278)

E.142 cde chnl14_tst4_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.143 cde chnl14_tst4_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.144 cde chnl14_tst5_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.145 cde chnl14_tst5_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.146 cde chnl1_aut_res

Description

Resurrected status - Channel 1

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.147 cde chnl1_auta_ct

Description

Sleep counter for autonomy set A - Channel 1

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets
cde sys_data (289)

E.148 cde chnl1_auta_st

Description
Status of autonomy set A violation - Channel 1

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion
Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.149 cde chnl1_autb_ct

Description
Sleep counter for autonomy set B - Channel 1

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.150 cde chnl1_autb_st

Description

Status of autonomy set B violation - Channel 1

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.151 cde chnl1_day_ct

Description

Count of hits received during current day - Channel 1

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.152 cde chnl1_ena

Description

Channel 1's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.153 cde chnl1_hi_thrsh

Description

Channel 1's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.154 cde chnl1_lo_thrsh

Description

Channel 1's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.155 cde chnl1_md_thrsh

Description

Channel 1's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.156 cde chnl1_ovr

Description

Ground override status - Channel 1

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.157 cde chnl1_thrsh_lvl

Description

Channel 1's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.158 cde chnl1_tot_ct

Description

Total hits during the mission - Channel 1

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.159 cde chnl1_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.160 cde chnl1_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.161 cde chnl1_tst2_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.162 cde chnl1_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets

cde cal (278)

E.163 cde chnl1_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.164 cde chnl1_tst3_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.165 cde chnl1_tst4_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.166 cde chnl1_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.167 cde chnl1_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.168 cde chnl1_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.169 cde chnl2_aut_res

Description
Resurrected status - Channel 2

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion
Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.170 cde chnl2_auta_ct

Description
Sleep counter for autonomy set A - Channel 2

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets
cde sys_data (289)

E.171 cde chnl2_auta_st

Description

Status of autonomy set A violation - Channel 2

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.172 cde chnl2_autb_ct

Description

Sleep counter for autonomy set B - Channel 2

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.173 cde chnl2_autb_st

Description

Status of autonomy set B violation - Channel 2

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.174 cde chnl2_day_ct

Description

Count of hits received during current day - Channel 2

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.175 cde chnl2_ena

Description

Channel 2's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.176 cde chnl2_hi_thrsh

Description

Channel 2's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.177 cde chnl2_lo_thrsh

Description

Channel 2's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.178 cde chnl2_md_thrsh

Description

Channel 2's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.179 cde chnl2_ovr

Description

Ground override status - Channel 2

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.180 cde chnl2_thrsh_lvl

Description

Channel 2's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.181 cde chnl2_tot_ct

Description
Total hits during the mission - Channel 2

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.182 cde chnl2_tst1_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.183 cde chnl2_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets

cde cal (278)

E.184 cde chnl2_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.185 cde chnl2_tst2_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.186 cde chnl2_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.187 cde chnl2_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.188 cde chnl2_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.189 cde chnl2_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.190 cde chnl2_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.191 cde chnl2_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.192 cde chnl3_aut_res

Description
Resurrected status - Channel 3

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.193 cde chnl3_auta_ct

Description

Sleep counter for autonomy set A - Channel 3

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.194 cde chnl3_auta_st

Description

Status of autonomy set A violation - Channel 3

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.195 cde chnl3_autb_ct

Description

Sleep counter for autonomy set B - Channel 3

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.196 cde chnl3_autb_st

Description

Status of autonomy set B violation - Channel 3

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.197 cde chnl3_day_ct

Description

Count of hits received during current day - Channel 3

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.198 cde chnl3_ena

Description

Channel 3's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.199 cde chnl3_hi_thrsh

Description

Channel 3's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.200 cde chnl3_lo_thrsh

Description

Channel 3's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.201 cde chnl3_md_thrsh

Description

Channel 3's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.202 cde chnl3_ovr

Description

Ground override status - Channel 3

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.203 cde chnl3_thrsh_lvl

Description

Channel 3's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.204 cde chnl3_tot_ct

Description

Total hits during the mission - Channel 3

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.205 cde chnl3_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.206 cde chnl3_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.207 cde chnl3_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.208 cde chnl3_tst2_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.209 cde chnl3_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.210 cde chnl3_tst3_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets
cde cal (278)

E.211 cde chnl3_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.212 cde chnl3_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.213 cde chnl3_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.214 cde chnl3_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.215 cde chnl4_aut_res

Description
Resurrected status - Channel 4

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions
state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion
Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.216 cde chnl4_auta_ct

Description
Sleep counter for autonomy set A - Channel 4

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets
cde sys_data (289)

E.217 cde chnl4_auta_st

Description
Status of autonomy set A violation - Channel 4

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion
Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.218 cde chnl4_autb_ct

Description
Sleep counter for autonomy set B - Channel 4

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.219 cde chnl4_autb_st

Description

Status of autonomy set B violation - Channel 4

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.220 cde chnl4_day_ct

Description

Count of hits received during current day - Channel 4

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.221 cde chnl4_ena

Description

Channel 4's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.222 cde chnl4_hi_thrsh

Description

Channel 4's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.223 cde chnl4_lo_thrsh

Description

Channel 4's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.224 cde chnl4_md_thrsh

Description

Channel 4's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.225 cde chnl4_ovr

Description

Ground override status - Channel 4

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.226 cde chnl4_thrsh_lvl

Description

Channel 4's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.227 cde chnl4_tot_ct

Description

Total hits during the mission - Channel 4

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.228 cde chnl4_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.229 cde chnl4_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.230 cde chnl4_tst2_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.231 cde chnl4_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets

cde cal (278)

E.232 cde chnl4_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.233 cde chnl4_tst3_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.234 cde chnl4_tst4_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.235 cde chnl4_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.236 cde chnl4_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.237 cde chnl4_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.238 cde chnl5_aut_res

Description

Resurrected status - Channel 5

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.239 cde chnl5_auta_ct

Description

Sleep counter for autonomy set A - Channel 5

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.240 cde chnl5_auta_st

Description

Status of autonomy set A violation - Channel 5

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.241 cde chnl5_autb_ct

Description

Sleep counter for autonomy set B - Channel 5

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.242 cde chnl5_autb_st

Description

Status of autonomy set B violation - Channel 5

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.243 cde chnl5_day_ct

Description

Count of hits received during current day - Channel 5

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.244 cde chnl5_ena

Description

Channel 5's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.245 cde chnl5_hi_thrsh

Description

Channel 5's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.246 cde chnl5_lo_thrsh

Description

Channel 5's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.247 cde chnl5_md_thrsh

Description

Channel 5's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.248 cde chnl5_ovr

Description

Ground override status - Channel 5

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.249 cde chnl5_thrsh_lvl

Description

Channel 5's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.250 cde chnl5_tot_ct

Description

Total hits during the mission - Channel 5

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.251 cde chnl5_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.252 cde chnl5_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.253 cde chnl5_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.254 cde chnl5_tst2_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.255 cde chnl5_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.256 cde chnl5_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.257 cde chnl5_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.258 cde chnl5_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.259 cde chnl5_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.260 cde chnl5_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.261 cde chnl6_aut_res

Description
Resurrected status - Channel 6

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.262 cde chnl6_auta_ct

Description

Sleep counter for autonomy set A - Channel 6

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.263 cde chnl6_auta_st

Description

Status of autonomy set A violation - Channel 6

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.264 cde chnl6_autb_ct

Description

Sleep counter for autonomy set B - Channel 6

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.265 cde chnl6_autb_st

Description

Status of autonomy set B violation - Channel 6

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.266 cde chnl6_day_ct

Description

Count of hits received during current day - Channel 6

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.267 cde chnl6_ena

Description

Channel 6's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.268 cde chnl6_hi_thrsh

Description

Channel 6's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.269 cde chnl6_lo_thrsh

Description

Channel 6's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.270 cde chnl6_md_thrsh

Description

Channel 6's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.271 cde chnl6_ovr

Description

Ground override status - Channel 6

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.272 cde chnl6_thrsh_lvl

Description

Channel 6's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.273 cde chnl6_tot_ct

Description

Total hits during the mission - Channel 6

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.274 cde chnl6_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.275 cde chnl6_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.276 cde chnl6_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.277 cde chnl6_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.278 cde chnl6_tst3_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.279 cde chnl6_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.280 cde chnl6_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.281 cde chnl6_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.282 cde chnl6_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.283 cde chnl6_tst5_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.284 cde chnl7_aut_res

Description

Resurrected status - Channel 7

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.285 cde chnl7_auta_ct

Description

Sleep counter for autonomy set A - Channel 7

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.286 cde chnl7_auta_st

Description

Status of autonomy set A violation - Channel 7

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.287 cde chnl7_autb_ct

Description

Sleep counter for autonomy set B - Channel 7

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.288 cde chnl7_autb_st

Description

Status of autonomy set B violation - Channel 7

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.289 cde chnl7_day_ct

Description

Count of hits received during current day - Channel 7

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.290 cde chnl7_ena

Description

Channel 7's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.291 cde chnl7_hi_thrsh

Description

Channel 7's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.292 cde chnl7_lo_thrsh

Description

Channel 7's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.293 cde chnl7_md_thrsh

Description

Channel 7's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.294 cde chnl7_ovr

Description

Ground override status - Channel 7

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.295 cde chnl7_thrsh_lvl

Description

Channel 7's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.296 cde chnl7_tot_ct

Description

Total hits during the mission - Channel 7

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.297 cde chnl7_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.298 cde chnl7_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.299 cde chnl7_tst2_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.300 cde chnl7_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.301 cde chnl7_tst3_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.302 cde chnl7_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.303 cde chnl7_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.304 cde chnl7_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.305 cde chnl7_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.306 cde chnl7_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.307 cde chnl8_aut_res

Description

Resurrected status - Channel 8

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.308 cde chnl8_auta_ct

Description

Sleep counter for autonomy set A - Channel 8

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.309 cde chnl8_auta_st

Description

Status of autonomy set A violation - Channel 8

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.310 cde chnl8_autb_ct

Description

Sleep counter for autonomy set B - Channel 8

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.311 cde chnl8_autb_st

Description

Status of autonomy set B violation - Channel 8

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.312 cde chnl8_day_ct

Description

Count of hits received during current day - Channel 8

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.313 cde chnl8_ena

Description

Channel 8's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.314 cde chnl8_hi_thrsh

Description

Channel 8's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.315 cde chnl8_lo_thrsh

Description

Channel 8's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.316 cde chnl8_md_thrsh

Description

Channel 8's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.317 cde chnl8_ovr

Description

Ground override status - Channel 8

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.318 cde chnl8_thrsh_lvl

Description

Channel 8's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.319 cde chnl8_tot_ct

Description
Total hits during the mission - Channel 8

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

E.320 cde chnl8_tst1_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.321 cde chnl8_tst1_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets

cde cal (278)

E.322 cde chnl8_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.323 cde chnl8_tst2_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.324 cde chnl8_tst3_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.325 cde chnl8_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.326 cde chnl8_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.327 cde chnl8_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.328 cde chnl8_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.329 cde chnl8_tst5_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.330 cde chnl9_aut_res

Description
Resurrected status - Channel 9

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

Each channel has its own resurrected flag. If a channel goes to sleep by set B rules, it is only allowed to wake up once. This flag is set when the channel wakes up after sleeping. If it is set, and the channel goes to sleep by set B, it will not wake up until commanded by the ground. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.331 cde chnl9_auta_ct

Description

Sleep counter for autonomy set A - Channel 9

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set A, this counter will increment every second until the sleep time for that set has been reached, at which point the channel will awaken.

Telemetry Source Packets

cde sys_data (289)

E.332 cde chnl9_auta_st

Description

Status of autonomy set A violation - Channel 9

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set A rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.333 cde chnl9_autb_ct

Description

Sleep counter for autonomy set B - Channel 9

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own sleep counter. When a channel is sleeping by set B, this counter will increment every day until the sleep time for that set has been reached, at which point the channel will awaken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.334 cde chnl9_autb_st

Description

Status of autonomy set B violation - Channel 9

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AWAKE	0	GOOD
SLEEPING	1	GOOD
DEAD	2	CAUTION

Discussion

Each channel has its own sleep flag. This flag is set when a channel has violated autonomy set B rules. While a channel is sleeping, it will not record science hits. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.335 cde chnl9_day_ct

Description

Count of hits received during current day - Channel 9

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own day-hit histogram. This counter keeps track of all hits received during a day. When the instrument day rolls over, this counter is reset. It is used to determine if a channel has violated set B rules. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.336 cde chnl9_ena

Description

Channel 9's on/off status

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	GOOD
ON	1	GOOD

Discussion

Each channel has its own enable flag. If a channel is enabled, it will record science events. A channel can be turned off either by command or by violating an autonomy rule. OFF channels will still be turned on during the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_mode (43)	Turns individual channels on or off

E.337 cde chnl9_hi_thrsh

Description

Channel 9's high threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own HIGH threshold. If a channel violates set B rules, and its threshold is MED, the threshold in the FPGA will be changed to the HIGH value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.338 cde chnl9_lo_thrsh

Description

Channel 9's low threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own LOW threshold. This threshold is the nominal threshold for that channel. No hits will be recorded unless they are higher than the threshold. When a channel wakes up after sleeping by set B rules, its threshold will get set to this low value. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.339 cde chnl9_md_thrsh

Description

Channel 9's medium threshold value

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own MED threshold. If a channel violates set B rules, and its threshold is LOW, the threshold in the FPGA will be changed to this value instead. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_value (51)	Sets the threshold value for a channel at the specified level

E.340 cde chnl9_ovr

Description

Ground override status - Channel 9

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
NEUTRAL	2	GOOD

Discussion

Each channel has its own override flag. This point is only changeable by ground command. If a channel is set to NEUTRAL, it means it can be turned on and off by autonomy or by command. If the channel is OFF, it cannot be turned on again until commanded back to NEUTRAL. This includes being turned on by the calibration test. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde chnl_ovr (44)	Sets the onboard channel override flag

E.341 cde chnl9_thrsh_lvl

Description

Channel 9's threshold level

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
LOW	0	GOOD
MED	1	GOOD
HIGH	2	GOOD

Discussion

Each channel has its own level flag. This point indicates which threshold in the threshold table, low, medium, or high, is currently being used in the FPGA. As a channel violates autonomy B rules, its threshold increases from LOW to MED to HIGH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde thrsh_lvl (50)	Sets the threshold level for a channel

E.342 cde chnl9_tot_ct

Description

Total hits during the mission - Channel 9

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

Each channel has its own total count histogram. This point is a cumulative count of the number of hits received on a channel through the entire mission. The only way to reset the counter is to reinitialize the system variables from PROM. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.343 cde chnl9_tst1_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.344 cde chnl9_tst1_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.345 cde chnl9_tst2_hits

Description

CDE calibration test hit count

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.346 cde chnl9_tst2_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.347 cde chnl9_tst3_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.348 cde chnl9_tst3_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.349 cde chnl9_tst4_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.350 cde chnl9_tst4_time

Description
CDE calibration test time

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.351 cde chnl9_tst5_hits

Description
CDE calibration test hit count

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
cde software

Telemetry Source Packets
cde cal (278)

E.352 cde chnl9_tst5_time

Description

CDE calibration test time

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

cde software

Telemetry Source Packets

cde cal (278)

E.353 cde cmd_fail_ct

Description

Cumulative count of cde failed commands.

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Limits

alarm	limit
red high	-1
yellow high	-1
yellow low	-1
red low	-1
delta	0

Telemetry Source Packets

cde itf (285), **cde sys_data** (289)

Related Commands

command	*description*
issue cde (35)	Transmits a telemetry packet to the ground
noop cde (37)	No operation, or do nothing command.
reset cde fpga (37)	Resets the FPGA
enable cde stim (34)	Send a stimulus signal through one detector channel.

Related Telemetry

telemetry	*description*
cde cmd_succ_ct (211)	Cumulative count of cde successful commands.

E.354 cde cmd_succ_ct

Description

Cumulative count of cde successful commands.

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde itf (285), **cde sys_data** (289)

Related Commands

command	*description*
issue cde (35)	Transmits a telemetry packet to the ground
noop cde (37)	No operation, or do nothing command.
reset cde fpga (37)	Resets the FPGA
enable cde stim (34)	Send a stimulus signal through one detector channel.

Related Telemetry

telemetry	*description*
cde cmd_fail_ct (210)	Cumulative count of cde failed commands.

E.355 cde code_endptr_area

Description

End area of the code section of flash

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
AREA_A	0	GOOD
AREA_B	1	GOOD

Discussion

This point indicates which area in the code area of FLASH the CDEFSW will write to when storing a new chunk of uploaded code. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.356 cde code_endptr_blk

Description

End block of the code section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point indicates which block in the code area of FLASH the CDEFSW will write to when storing a new chunk of uploaded code. Stored in FLASH.

The expected range for this telemetry item is zero through two.

Telemetry Source Packets

cde sys_data (289)

E.357 cde code_endptr_page

Description

End page of the code section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point indicates which page in the code area of FLASH the CDEFSW will write to when storing a new chunk of uploaded code. Stored in FLASH.

Expected range for this telemetry item is zero through 15.

Telemetry Source Packets

cde sys_data (289)

E.358 cde code_erase_ena

Description

Status of code erase enable flag

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Before the code section of FLASH can be erased, it must first be enabled. This point indicates if the enable status. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
arm cde erase (29)	Allows an erase command to be sent

E.359 cde cold_rst_ct

Description

Number of cold resets

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Limits

alarm	limit
red high	-1
yellow high	-1
yellow low	-1
red low	-1
delta	0

Discussion

A cold reset means that power was removed from the instrument. This counter increments every time the software reboots due to a cold reset. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.360 cde dcdc_temp

Description

Temperature on DC/DC converter

Data Type

8 bits, unsigned integer, engineering units = C.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	92.909797668457
c1	-3.67675995826721
c2	0.087534099817276
c3	-0.00133016996551305
c4	1.20801996672526e-05
c5	-6.39871018393023e-08
c6	1.8185700167983e-10
c7	-2.14362002540908e-13

Limits

alarm	limit
red high	70
yellow high	65
yellow low	-21
red low	-26
delta	*none*

Discussion

There are two thermistors on the digital board. This one is located on the DC/DC converter.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.361 cde dump_addr

Description

CDE address of memory dump data contained in this packet.

Data Type

32 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

The dump address format varies depending on which section was dumped: PROM, SRAM, CODE, or PHYSICAL. For the latter three, its an offset from the start of the PROM.

Telemetry Source Packets

cde mem_dump (287)

E.362 cde dump_length

Description

CDE length of memory dump data contained in this packet.

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde mem_dump (287)

E.363 cde dump_type

Description

CDE memory dump data type.

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
PROM	1	GOOD
SRAM	2	GOOD
CODE	3	GOOD
PHYSICAL	4	GOOD

Telemetry Source Packets

cde mem_dump (287)

E.364 cde erase_area

Description

Area of flash being erased

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
SCIENCE	0	GOOD
HOUSEKEEPING	1	GOOD
CALIBRATION	2	GOOD
CODE	3	GOOD

Discussion

Four sections of FLASH can be erased. This point indicates the current section being erased.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
enable cde cod_erase (33)	Erases the code section of flash
enable cde cal_erase (31)	Erases the calibration section of flash
enable cde hk_erase (33)	Erases the housekeeping area of flash
enable cde sci_erase (34)	Erases the science area of flash

E.365 cde erase_block_id

Description

Value of block in flash being erased

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

When an erase is command for a section of FLASH, all blocks in that section are erased, one per second. This point indicates which block is currently being erased.

Telemetry Source Packets

cde sys_data (289)

E.366 cde erase_conf

Description

Flag indicating erase has been confirmed+J238

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion

This flag indicates an erase command was sent, accepted, and the erase can begin. It is reset in the next second, even if the erase continues. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.367 cde erase_st

Description

Flag indicating if erase is in progress

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
NOT_ERASING	0	GOOD
ERASING	1	GOOD

Discussion

Since all blocks in a FLASH section are erased at once, it can take multiple seconds to erase one section. This flag is true if an erase is currently in progress.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
enable cde hk_erase (33)	Erases the housekeeping area of flash
enable cde sci_erase (34)	Erases the science area of flash

E.368 cde flash_alive

Description

Status of the Flash chip

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	BAD
ON	1	GOOD

Discussion

The software has the ability to evaluate the FLASH health. If it detects a problem with itself, this flag will be OFF, and FLASH won't be used, unless overridden. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.369 cde flash_cycle_ct

Description

Count of write/erase cycles on system block in flash

Data Type

32 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This counter keeps track of the number of write/erase cycles to the system variables block in FLASH. A cell in a block can potentially fail after 1,000,000 write/erase cycles. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.370 cde flash_data

Description
CDE flash data

Data Type
1960 bits, fill, engineering units = any.

Measurement Source
software

Discussion

Telemetry Source Packets
cde flash (282)

E.371 cde flash_fail_st

Description
Reason for flash failure

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
NONE	0	GOOD
BLT_CORRUPT	1	BAD
CONTROLLER_DEAD	2	BAD
WTCHDG_EXCEED	3	BAD
SYS_VARS_CORRUPT	4	BAD

Discussion
If FLASH detects a problem with its health, this flag will indicate what the problem is. If all is working OK, the flag is NONE.

Telemetry Source Packets
cde sys_data (289)

E.372 cde flash_override

Description
Status of the flash ground override flag

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
OFF	0	CAUTION
ON	1	CAUTION
NEUTRAL	2	GOOD

Discussion

The FLASH autonomous health detection can be overridden by ground command. If this flag is NEUTRAL, FLASH is controlled autonomously by the CDEFSW, which determines if it should be used. If OFF, FLASH is not used, regardless of how it thinks it is doing, and if ON, FLASH is always used, even if the chip thinks it is broken. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde flash_ovr (46)	Sets the onboard flash override flag

E.373 cde flash_volt

Description

+5 Voltage on Flash chip

Data Type

8 bits, unsigned integer, engineering units = V.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_5D
start	-200
stop	200
c0	-6.65999984741211
c1	0.0520810000598431
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Limits

alarm	limit
red high	2
yellow high	1
yellow low	-1
red low	-2
delta	*none*

Discussion

The voltage of the FLASH chip should always be around 0V, because the chip is only turned on when reads or writes need to happen.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

Related Telemetry

telemetry	*description*

E.374 cde fpga_temp

Description

Temperature on FPGA

Data Type

8 bits, unsigned integer, engineering units = C.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	88.590202331543
c1	-3.45862007141113
c2	0.0833638980984688
c3	-0.00129172997549176
c4	1.19487003757968e-05
c5	-6.4291697299268e-08
c6	1.85109996775346e-10
c7	-2.20401997976134e-13

Limits

alarm	limit
red high	61
yellow high	56
yellow low	-21
red low	-26
delta	*none*

Discussion

There are two thermistors on the digital board. This one is located on the FPGA.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.375 cde heartbeat

Description

cde heartbeat bit.

Data Type

1 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde itf (285)

E.376 cde hist_hkpkt

Description

cde history houskeeping subpacket structure.

Data Type
0 bits, subpacket, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.377 cde hist_msgpkt

Description
cde history message subpacket structure.

Data Type
0 bits, subpacket, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.378 cde hist_stimpkt

Description
cde calibration sub-subpacket structure.

Data Type
0 bits, subpacket, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.379 cde hk_endptr_blk

Description
End block of the houskeeping section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point indicates which block in the housekeeping area of FLASH the CDEFSW will write to when storing a new housekeeping, message, or test signal packet. Stored in FLASH.

The expected range for this telemetry item is zero to 30.

Telemetry Source Packets

cde itf (285), **cde sys_data** (289)

E.380 cde hk_endptr_byte

Description

End byte of the houskeeping section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point indicates which byte in the housekeeping area of FLASH the CDEFSW will write to when storing a new housekeeping, message, or test signal packet. Stored in FLASH.

Expected range for this telemetry item is zero through 255.

Telemetry Source Packets

cde itf (285), **cde sys_data** (289)

E.381 cde hk_endptr_page

Description

End page of the houskeeping section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point indicates which page in the housekeeping area of FLASH the CDEFSW will write to when storing a new housekeeping, message, or test signal packet. Stored in FLASH.

Expected range for this telemetry item is zero through 15.

Telemetry Source Packets

cde itf (285), **cde sys_data** (289)

E.382 cde hk_erase_ena

Description

Status of housekeeping erase enable flag

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Before the housekeeping section of FLASH can be erased, it must first be enabled. This point indicates the enable status. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
arm cde erase (29)	Allows an erase command to be sent

E.383 cde hk_time

Description

Timestamp of housekeeping data.

Data Type

32 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde history (283)

E.384 cde hk_write_ct

Description

Number of times the current page in the hk section of flash has been written

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

There are only 10 writes to a page allowed by the FLASH chip. This counter keeps track of the number of writes so far to the current page. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.385 cde hsk_rate

Description

Rate at which the houskeeping packets are sent

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

If in CHECKOUT or SPACECRAFT_ONLY mode, CSD packets are sent at this rate. If in SPACECRAFT_ONLY mode, history log packets are also sent at this rate if there are any to send. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde hk_pkt_rt (46)	Sets the rate of the CSD packet

E.386 cde itf_flash_alive

Description

CDE calibration test timestamp.

Data Type
1 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions
state	value	desirability
FALSE	0	BAD
TRUE	1	GOOD

Telemetry Source Packets
cde itf (285)

E.387 cde itf_last_cmd_exe

Description
Last command CDE received.

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde itf (285)

Related Telemetry
telemetry	*description*

E.388 cde itf_met_ext

Description
Flag indicating the source of the current instrument time+J206

Data Type
1 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions
state	value	desirability
INTERNAL	0	CAUTION
EXTERNAL	1	GOOD

Discussion

If a timeITF is not received during a second, the instrument will use its internal timer to increment the MET.

Telemetry Source Packets

cde itf (285)

E.389 cde itf_onepps_st

Description

CDE calibration test hit count.

Data Type

1 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
INTERNAL	0	BAD
EXTERNAL	1	GOOD

Telemetry Source Packets

cde itf (285)

E.390 cde itf_op_mode_st

Description

CDE Current operating mode

Data Type

2 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
CRUISE	1	GOOD
CHECKOUT	2	GOOD
SC_ONLY	3	GOOD

Discussion

There are three operating modes: CRUISE, CHECKOUT, and SPACECRAFT_ONLY. During CRUISE, no telemetry except empty ITF headers is sent to the spacecraft and all science data is recorded in FLASH. In CHECKOUT, science data is sent to the spacecraft as it occurs, as well as housekeeping packets. The data is also stored in FLASH. In

SPACECRAFT_ONLY, the science data is sent to the spacecraft as it occurs, as well as housekeeping packets, but the data is not stored in FLASH. Stored in FLASH.

Telemetry Source Packets

cde itf (285)

Related Commands

command	*description*
set cde op_mode (49)	Sets the operating mode of the software

E.391 cde itf_pwr_down_st

Description

CDE calibration test timestamp.

Data Type

1 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Telemetry Source Packets

cde itf (285)

Related Commands

command	*description*
wake cde (52)	Wakes the instrument from power down mode
safe cde (38)	Prepares the instrument to be powered off

E.392 cde itf_sci_mode_st

Description

Science mode the instrument is currently in.

Data Type

1 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
NOM	0	GOOD
CAL	1	GOOD

Telemetry Source Packets

cde itf (285)

Related Commands

command	*description*
disable cde cal_tst (30)	Stops the onboard calibration test
enable cde cal_tst (32)	Starts the onboard calibration test

E.393 cde itf_tlm_side

Description

CDE calibration test hit count.

Data Type

1 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
A	0	GOOD
B	1	GOOD

Telemetry Source Packets

cde itf (285)

E.394 cde last1_cmd_exe

Description

Opcode of most recent command accepted

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

These telemetry points contain the opcodes of the last 5 commands executed by the CDEFSW.

Telemetry Source Packets

cde sys_data (289)

E.395 cde last2_cmd_exe

Description

Opcode of second most recent command accepted

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

These telemetry points contain the opcodes of the last 5 commands executed by the CDEFSW.

Telemetry Source Packets

cde sys_data (289)

E.396 cde last3_cmd_exe

Description

Opcode of third most recent command accepted

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

These telemetry points contain the opcodes of the last 5 commands executed by the CDEFSW.

Telemetry Source Packets

cde sys_data (289)

E.397 cde last4_cmd_exe

Description

Opcode of fourth most recent command accepted

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
These telemetry points contain the opcodes of the last 5 commands executed by the CDEFSW.

Telemetry Source Packets
cde sys_data (289)

E.398 cde last5_cmd_exe

Description
Opcode of fifth most recent command accepted

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
These telemetry points contain the opcodes of the last 5 commands executed by the CDEFSW.

Telemetry Source Packets
cde sys_data (289)

E.399 cde length_day

Description
Current length of the instrument day

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point is the current length of the instrument day. The length of the day determines the sleep time for the Set B rules, as well as the frequency at which voltages and temperatures are written to FLASH.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
set cde length_day (47)	Sets the length of the instrument day

E.400 cde m5_volt

Description

-5V monitor

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_5D
start	-200
stop	200
c0	-6.65999984741211
c1	0.0520999990403652
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Limits

alarm	limit
red high	-4.80000019073486
yellow high	-4.69999980926514
yellow low	-5.40000009536743
red low	-5.5
delta	*none*

Discussion

The voltage measurement on the -5V line for the analog board

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.401 cde md_pkt_dump_data

Description
cde memory dump packet dump data.

Data Type
2048 bits, fill, engineering units = any.

Measurement Source
software

Discussion
NOTE: This is a holding space for memory dump data.

Telemetry Source Packets
cde mem_dump (287)

E.402 cde mem_chksm

Description
Checksum of the code stored in flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
When new code is uploaded, the checksum for that code must also be uploaded. If the loaded checksum and the one calculated over the new image do not match, the new code will not be executed. Stored in FLASH.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
set cde code_chksm (45)	Sets the expected checksum of a loaded code image

E.403 cde mem_ct

Description
Number of bytes in current commanded memory load or dump

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
If a memory load or dump is commanded, this point will contain the number of bytes in that load or dump.

Telemetry Source Packets
cde sys_data (289)

Related Commands

command	*description*
dump cde mem (30)	Transmits a section of memory

E.404 cde mem_dmp_ena

Description
Flag indicating if spacecraft has enabled memory dumps

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
FALSE	0	GOOD
TRUE	1	GOOD

Discussion
The spacecraft can disable memory dumps at any time. This is communicated in the timeITF. This flag reflects what the spacecraft has indicated.

Telemetry Source Packets
cde sys_data (289)

E.405 cde mem_start_addr

Description
Start address of current memory load or memory dump

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

If a memory load or dump is commanded, this point is the start address of that load or dump.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
dump cde mem (30)	Transmits a section of memory

E.406 cde mem_type

Description

Type of current memory load or dump

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

If a memory load or dump is commanded, this point is the type of that load or dump.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
dump cde mem (30)	Transmits a section of memory

E.407 cde met_ext

Description

Flag indicating the source of the current instrument time+J206

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
INTERNAL	0	CAUTION
EXTERNAL	1	GOOD

Discussion

If a timeITF is not received during a second, the instrument will use its internal timer to increment the MET.

Telemetry Source Packets

cde sys_data (289)

E.408 cde msg_info

Description

cde message info field.

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde history (283)

E.409 cde msg_subpkt_id

Description

cde history message log sub-packet key field.

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

CDE

Telemetry Source Packets

cde history (283)

E.410 cde msg_subpkt_id_1

Description

cde history message log sub-packet key field.

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.411 cde msg_subpkt_id_2

Description
cde history message log sub-packet key field.

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.412 cde msg_time

Description
Time CDE history message was recorded.

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.413 cde msg_type

Description
cde message type field.

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde history (283)

E.414 cde nsci_endptr_blk

Description

End block of the new science section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point is the block in the science section of FLASH at which a request for new science data will begin reading. Stored in FLASH.

The expected range for this telemetry item is zero through 128. When the maximum block is reached, the section is full.

Telemetry Source Packets

cde sys_data (289)

E.415 cde nsci_endptr_byte

Description

End byte of the new science section of flash

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point is the byte in the science section of FLASH at which a request for new science data will begin reading. Stored in FLASH.

Expected range for this telemetry item is zero through 255.

Telemetry Source Packets

cde sys_data (289)

E.416 cde nsci_endptr_page

Description
End page of the new science section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point is the page in the science section of FLASH at which a request for new science data will begin reading. Stored in FLASH.

Expected range for this telemetry item is zero through 15.

Telemetry Source Packets
cde sys_data (289)

E.417 cde nsci_pg_mark

Description
End area of the new science section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point is the area in the science section of FLASH at which a request for new science data will begin reading. Stored in FLASH.

The expected value for this telemetry item is from zero to 15.

Telemetry Source Packets
cde sys_data (289)

E.418 cde op_mode_st

Description
Current operating mode

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
CRUISE	0	GOOD
CHECKOUT	1	GOOD
SC_ONLY	2	GOOD

Discussion

There are three operating modes: CRUISE, CHECKOUT, and SPACECRAFT_ONLY. During CRUISE, no telemetry except empty ITF headers is sent to the spacecraft and all science data is recorded in FLASH. In CHECKOUT, science data is sent to the spacecraft as it occurs, as well as housekeeping packets. The data is also stored in FLASH. In SPACECRAFT_ONLY, the science data is sent to the spacecraft as it occurs, as well as housekeeping packets, but the data is not stored in FLASH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
set cde op_mode (49)	Sets the operating mode of the software

E.419 cde p2_5_adc_volt

Description

+2.5 Voltage on ADC reference

Data Type

8 bits, unsigned integer, engineering units = V.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_5D
start	-200
stop	200
c0	-3.32999992370605
c1	0.0260400008410215
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Limits

alarm	limit
red high	2.70000004768372
yellow high	2.59999990463257
yellow low	2.29999995231628
red low	2.20000004768372
delta	*none*

Discussion

This is the voltage on the +2.5 line for the ADC.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.420 cde p2_5_fpga_volt

Description

+2.5 Voltage on FPGA

Data Type

8 bits, unsigned integer, engineering units = V.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_5D
start	-200
stop	200
c0	-3.32999992370605
c1	0.0260400008410215
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Limits

alarm	limit
red high	2.70000004768372
yellow high	2.59999990463257
yellow low	2.29999995231628
red low	2.20000004768372
delta	*none*

Discussion

This is the voltage measurement of +2.5 line for the FPGA.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

Related Telemetry

telemetry	*description*

E.421 cde p2_5_therm_volt

Description

+2.5 Voltage on thermistor reference

Data Type

8 bits, unsigned integer, engineering units = V.

Measurement Source

digitalboard

Analog Conversions

Segment 1

type	UNSEGMENTED_5D
start	-200
stop	200
c0	-3.32999992370605
c1	0.0260400008410215
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Limits

alarm	limit
red high	2.70000004768372
yellow high	2.59999990463257
yellow low	2.29999995231628
red low	2.20000004768372
delta	*none*

Discussion

This is the voltage measurement of +2.5 line for the thermistors.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.422 cde p368flg

Description

CDE science packet header, segment flags

Data Type

2 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde sci (288)

E.423 cde p368pid

Description

CDE science packet header, type and apid

Data Type
11 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sci (288)

E.424 cde p368pl

Description
CDE science packet, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sci (288)

E.425 cde p368sct

Description
CDE science packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sci (288)

E.426 cde p368shflg

Description
CDE science packet header, SH flag

Data Type
1 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde sci (288)

E.427 cde p368ts

Description

CDE memory dump packet header, timestamp

Data Type

32 bits, unsigned integer, engineering units = sec.

Measurement Source

CDE

Telemetry Source Packets

cde sci (288)

E.428 cde p368typ

Description

CDE science packet header, packet type

Data Type

1 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde sci (288)

E.429 cde p368ver

Description

CDE science packet header, version

Data Type

3 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets
cde sci (288)

E.430 cde p369flg

Description
CDE memory dump packet header, segment flags

Data Type
2 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.431 cde p369pid

Description
CDE memory dump packet header, type and apid

Data Type
11 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.432 cde p369pl

Description
CDE memory dump packet header, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.433 cde p369sct

Description
CDE memory dump packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.434 cde p369shflg

Description
CDE memory dump packet header, SH flag

Data Type
1 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.435 cde p369ts

Description
CDE memory dump packet header, timestamp

Data Type
32 bits, unsigned integer, engineering units = sec.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.436 cde p369typ

Description
CDE memory dump packet header, packet type

Data Type
1 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.437 cde p369ver

Description
CDE memory dump packet header, version

Data Type
3 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde mem_dump (287)

E.438 cde p370flg

Description
CDE system data packet header, segment flags

Data Type
2 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.439 cde p370pid

Description
CDE system data packet header, type and apid

Data Type
11 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.440 cde p370pl

Description
CDE system data packet header, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.441 cde p370sct

Description
CDE system data packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.442 cde p370shflg

Description
CDE system data packet header, SH flag

Data Type
1 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.443 cde p370ts

Description
CDE memory dump packet header, timestamp

Data Type
32 bits, unsigned integer, engineering units = sec.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.444 cde p370typ

Description
CDE system data packet header, packet type

Data Type
1 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.445 cde p370ver

Description
CDE system data packet header, version

Data Type
3 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde sys_data (289)

E.446 cde p371flg

Description
CDE history packet header, segment flags

Data Type
2 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.447 cde p371pid

Description
CDE history packet header, type and apid

Data Type
11 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.448 cde p371pl

Description
CDE history packet, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.449 cde p371sct

Description
CDE history packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.450 cde p371shflg

Description
CDE history packet header, SH flag

Data Type
1 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde history (283)

E.451 cde p371ts

Description

CDE memory dump packet header, timestamp

Data Type

32 bits, unsigned integer, engineering units = sec.

Measurement Source

CDE

Telemetry Source Packets

cde history (283)

E.452 cde p371typ

Description

CDE history packet header, packet type

Data Type

1 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde history (283)

E.453 cde p371ver

Description

CDE history packet header, version

Data Type

3 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde history (283)

E.454 cde p372flg

Description
CDE calibration packet header, segment flags

Data Type
2 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde cal (278)

E.455 cde p372pid

Description
CDE calibration packet header, type and apid

Data Type
11 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde cal (278)

E.456 cde p372pl

Description
CDE calibration packet header, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde cal (278)

E.457 cde p372sct

Description
CDE calibration packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde cal (278)

E.458 cde p372ts

Description
CDE memory dump packet header, timestamp

Data Type
32 bits, unsigned integer, engineering units = sec.

Measurement Source
CDE

Telemetry Source Packets
cde cal (278)

E.459 cde p373flg

Description
CDE flash memory packet header, segment flags

Data Type
2 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde flash (282)

E.460 cde p373pid

Description
CDE flash memory packet header, type and apid

Data Type
11 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde flash (282)

E.461 cde p373pl

Description
CDE flash memory packet header, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde flash (282)

E.462 cde p373sct

Description
CDE flash memory packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde flash (282)

E.463 cde p373shflg

Description

CDE flash memory packet header, SH flag

Data Type

1 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde flash (282)

E.464 cde p373ts

Description

CDE memory dump packet header, timestamp

Data Type

32 bits, unsigned integer, engineering units = sec.

Measurement Source

CDE

Telemetry Source Packets

cde flash (282)

E.465 cde p373typ

Description

CDE flash memory packet header, packet type

Data Type

1 bits, unsigned integer, engineering units = dn.

Measurement Source

CDE

Telemetry Source Packets

cde flash (282)

E.466 cde p373ver

Description
CDE flash memory packet header, version

Data Type
3 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde flash (282)

E.467 cde p374flg

Description
CDE itf packet header, segment flags

Data Type
2 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde itf (285)

E.468 cde p374pid

Description
CDE itf packet header, type and apid

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde itf (285)

E.469 cde p374pl

Description
CDE itf packet header, packet length

Data Type
16 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde itf (285)

E.470 cde p374sct

Description
CDE itf packet header, sequence counter

Data Type
14 bits, unsigned integer, engineering units = dn.

Measurement Source
CDE

Telemetry Source Packets
cde itf (285)

E.471 cde p374ts

Description
CDE memory dump packet header, timestamp

Data Type
32 bits, unsigned integer, engineering units = sec.

Measurement Source
CDE

Telemetry Source Packets
cde itf (285)

E.472 cde p5_volt

Description
+5V monitor.

Data Type
8 bits, unsigned integer, engineering units = V.

Measurement Source
software

Analog Conversions
Segment 1

type	UNSEGMENTED_5D
start	-200
stop	200
c0	-6.65999984741211
c1	0.0520810000598431
c2	0
c3	0
c4	0
c5	0
c6	0
c7	0

Limits

alarm	limit
red high	5.19999980926514
yellow high	5.09999990463257
yellow low	4.69999980926514
red low	4.59999990463257
delta	*none*

Telemetry Source Packets
cde history (283), **cde itf** (285), **cde sys_data** (289)

E.473 cde packet_id

Description
cde history log packet key field.

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
HK	1	GOOD
MSG	2	GOOD
STIM	3	GOOD

Telemetry Source Packets

cde history (283)

E.474 cde pnl_a_temp

Description

Temperature on panel A

Data Type

8 bits, unsigned integer, engineering units = C.

Measurement Source

detectorpanel

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	98.465202331543
c1	-4.14803981781006
c2	0.10147300362587
c3	-0.00151334004476666
c4	1.31537999550346e-05
c5	-6.55296972240649e-08
c6	1.73021000304807e-10
c7	-1.87686997020486e-13

Limits

alarm	limit
red high	75
yellow high	70
yellow low	-70
red low	-75
delta	*none*

Discussion

The panel has four thermistors on it. The A thermistor is located on the top of the panel next to detector 1.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.475 cde pnl_b_temp

Description
Temperature on panel B

Data Type
8 bits, unsigned integer, engineering units = C.

Measurement Source
detectorpanel

Analog Conversions
Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	98.465202331543
c1	-4.14803981781006
c2	0.10147300362587
c3	-0.00151334004476666
c4	1.31537999550346e-05
c5	-6.55296972240649e-08
c6	1.73021000304807e-10
c7	-1.87686997020486e-13

Limits

alarm	limit
red high	75
yellow high	70
yellow low	-70
red low	-75
delta	*none*

Discussion
The panel has four thermistors on it. The B thermistor is located on the top of the panel next to detector 8.

Telemetry Source Packets
cde history (283), **cde itf** (285), **cde sys_data** (289)

E.476 cde pnl_c_temp

Description
Temperature on panel C

Data Type
8 bits, unsigned integer, engineering units = C.

Measurement Source

detectorpanel

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	98.465202331543
c1	-4.14803981781006
c2	0.10147300362587
c3	-0.00151334004476666
c4	1.31537999550346e-05
c5	-6.55296972240649e-08
c6	1.73021000304807e-10
c7	-1.87686997020486e-13

Limits

alarm	limit
red high	75
yellow high	70
yellow low	-70
red low	-75
delta	*none*

Discussion

The panel has four thermistors on it. The C thermistor is located on the bottom of the panel next to detector 7.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.477 cde pnl_d_temp

Description

Temperature on panel D

Data Type

8 bits, unsigned integer, engineering units = C.

Measurement Source

detectorpanel

Analog Conversions

Segment 1

type	UNSEGMENTED_7D
start	-200
stop	200
c0	98.465202331543
c1	-4.14803981781006
c2	0.10147300362587
c3	-0.00151334004476666
c4	1.31537999550346e-05
c5	-6.55296972240649e-08
c6	1.73021000304807e-10
c7	-1.87686997020486e-13

Limits

alarm	limit
red high	75
yellow high	70
yellow low	-70
red low	-75
delta	*none*

Discussion

The panel has four thermistors on it. The D thermistor is located on the bottom of the panel next to detector 14.

Telemetry Source Packets

cde history (283), **cde itf** (285), **cde sys_data** (289)

E.478 cde reserved_bit

Description

Null (empty) bit. Ignore.

Data Type

1 bits, fill, engineering units = any.

Measurement Source

software

Discussion

Used to ’pad’ telemetry packets so that they are an even number of bytes long.

Telemetry Source Packets

This item is contained in many (virtually all) telemetry packets, but is of no real interest.

E.479 cde run_location

Description
cde operational mode.

Data Type
1 bits, discrete state, engineering units = any.

Measurement Source
software

State Conversions

state	value	desirability
PROM	0	GOOD
SRAM	1	GOOD

Telemetry Source Packets
cde itf (285)

Related Commands

command	*description*
select cde sram_boot (40)	Reboot the software from SRAM
select cde prom_boot (39)	Reboot software from PROM

E.480 cde sci_chnl_num

Description
CDE science event channel.

Data Type
4 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
The channel that registered the science hit, should always be in the range from one to 14.

Telemetry Source Packets
cde sci (288)

E.481 cde sci_data

Description
CDE science data signal.

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
The DN of the science hit received on a channel

Telemetry Source Packets
cde sci (288)

E.482 cde sci_data_tm

Description
CDE science event time.

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde sci (288)

E.483 cde sci_endptr_blk

Description
End block of the science section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point is the block in the science section of FLASH where a new science event will be written. Stored in FLASH.

The expected range for this telemetry item is zero through 128. When the maximum block is reached, the section is full.

Telemetry Source Packets
cde itf (285), **cde sys_data** (289)

E.484 cde sci_endptr_byte

Description
End byte of the science section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point is the byte in the science section of FLASH where a new science event will be written. Stored in FLASH.

Expected range for this telemetry item is zero through 255.

Telemetry Source Packets
cde itf (285), **cde sys_data** (289)

E.485 cde sci_endptr_page

Description
End page of the science section of flash

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Discussion
This point is the page in the science section of FLASH where a new science event will be written. Stored in FLASH.

Expected range for this telemetry item is zero through 15.

Telemetry Source Packets
cde itf (285), **cde sys_data** (289)

E.486 cde sci_erase_ena

Description
Status of science erase enable flag

Data Type
8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
DISABLED	0	GOOD
ENABLED	1	GOOD

Discussion

Before the science section of FLASH can be erased, it must first be enabled. This flag indicates the enable status. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
arm cde erase (29)	Allows an erase command to be sent

E.487 cde sci_mode_st

Description

Current science collection mode

Data Type

8 bits, discrete state, engineering units = any.

Measurement Source

software

State Conversions

state	value	desirability
NOM	0	GOOD
CAL	1	GOOD

Discussion

There are two science modes for the CDEFSW. In normal science mode, science events are recorded in FLASH and sent to the spacecraft if not in CRUISE mode. In calibration mode, science events are being counted for each channel and the results are stored in the special calibration packet. The hits are not recorded in the FLASH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
disable cde cal_tst (30)	Stops the onboard calibration test
enable cde cal_tst (32)	Starts the onboard calibration test

E.488 cde sci_subpkt

Description

cde science subpacket structure.

Data Type

0 bits, subpacket, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde sci (288)

E.489 cde sci_thrsh

Description

CDE signal threshold for this channel at time of event.

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Telemetry Source Packets

cde sci (288)

E.490 cde sci_write_ct

Description

Number of times the current page in the sci section of flash has been written.

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

There are only 10 writes per page allowed by the FLASH. This counters keeps track of the number of writes to the current page in the science section of FLASH. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

E.491 cde spare1

Description
Spare field

Data Type
8 bits, fill, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde sys_data (289)

E.492 cde spare2

Description
Spare field

Data Type
16 bits, fill, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde sys_data (289)

E.493 cde stim_15_volt

Description
Stimulus volt measurement - side B

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.494 cde stim_7_volt

Description
Stimulus volt measurement - side A

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.495 cde stim_chnl

Description
Stimulus channel

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.496 cde stim_data

Description
Stimulus data

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.497 cde stim_lvl

Description
Stimulus level

Data Type
8 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.498 cde stim_thrsh

Description
Stimulus threshold

Data Type
16 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.499 cde stim_time

Description
Stimulus time stamp

Data Type
32 bits, unsigned integer, engineering units = any.

Measurement Source
software

Telemetry Source Packets
cde history (283)

E.500 cde system_time

Description

CDE system time.

Data Type

32 bits, unsigned integer, engineering units = sec.

Measurement Source

software

Telemetry Source Packets

cde itf (285)

E.501 cde tot_rst_ct

Description

Count of total number of instrument resets+J248

Data Type

16 bits, unsigned integer, engineering units = any.

Measurement Source

software

Limits

alarm	limit
red high	-1
yellow high	-1
yellow low	-1
red low	-1
delta	0

Discussion

This counter is incremented every time the CDEFSW resets. Stored in FLASH.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
reset cde watchdog (38)	Triggers a watchdog reset of the software

E.502 cde version

Description

Current software version running

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Discussion

This point contains the current version number of the software. It is hard coded into the CDEFSW and cannot be changed unless new code is loaded and executed.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
select cde sram_boot (40)	Reboot the software from SRAM
select cde prom_boot (39)	Reboot software from PROM

E.503 cde wtchdg_rst_ct

Description

Number of watchdog resets

Data Type

8 bits, unsigned integer, engineering units = any.

Measurement Source

software

Limits

alarm	limit
red high	-1
yellow high	-1
yellow low	-1
red low	-1
delta	0

Discussion

This counter is incremented when the software resets and detects the reset was caused by a watchdog. It goes back to zero if it detects the reset was a cold reset. If the counter reaches 10 watchdog resets, the FLASH will no longer be used and the system variables will be initialized from PROM values. Also, the code will revert to running from the PROM code, if it was previously running from SRAM.

Telemetry Source Packets

cde sys_data (289)

Related Commands

command	*description*
reset cde watchdog (38)	Triggers a watchdog reset of the software

F

Telemetry Packet List

OASIS-CC/FSW database version TBD, Thu Feb 22 14:27:47 2007.

F.1 cde cal

Packet Source Application Identifier

0x174 (372)

OASIS Stream Name

cde372

Description

cde calibration packet.

Discussion

CDE calibration packet.

Default Packet Production Status:

Packets produced every 10 seconds.

Format

Packet **cde cal** Format

start bit	stop bit	size bits	field	control	method
0	10	11	**cde p372pid** (255)	–	–
11	12	2	**cde p372flg** (255)	–	–
13	26	14	**cde p372sct** (256)	–	–
27	42	16	**cde p372pl** (255)	–	–
43	74	32	**cde p372ts** (256)	–	–
75	74	0	**cde cal_subpkt** (67)	**cde p372pl** (255)	LENGTH_BYTES

Packet size = 75 bits (9.375 bytes) plus N*P, where N is the number of subpackets in the packet and P is the size of the subpacket (which, of course, may need to be calculated based on sub-subpacket size). .

Cal Subpkt Format

Cal Subpkt Format

start bit	stop bit	size bits	field	control	method
0	15	16	**cde chnl1_tst1_hits** (129)	–	–
16	31	16	**cde chnl1_tst2_hits** (130)	–	–
32	47	16	**cde chnl1_tst3_hits** (131)	–	–
48	63	16	**cde chnl1_tst4_hits** (131)	–	–
64	79	16	**cde chnl1_tst5_hits** (132)	–	–
80	95	16	**cde chnl1_tst1_time** (130)	–	–
96	111	16	**cde chnl1_tst2_time** (130)	–	–
112	127	16	**cde chnl1_tst3_time** (131)	–	–
128	143	16	**cde chnl1_tst4_time** (132)	–	–
144	159	16	**cde chnl1_tst5_time** (132)	–	–
160	175	16	**cde chnl2_tst1_hits** (139)	–	–
176	191	16	**cde chnl2_tst2_hits** (140)	–	–
192	207	16	**cde chnl2_tst3_hits** (140)	–	–

Cal Subpkt Format, cont'd

start bit	stop bit	size bits	field		
208	223	16	**cde chnl2_tst4_hits** (141)	–	–
224	239	16	**cde chnl2_tst5_hits** (142)	–	–
240	255	16	**cde chnl2_tst1_time** (139)	–	–
256	271	16	**cde chnl2_tst2_time** (140)	–	–
272	287	16	**cde chnl2_tst3_time** (141)	–	–
288	303	16	**cde chnl2_tst4_time** (141)	–	–
304	319	16	**cde chnl2_tst5_time** (142)	–	–
320	335	16	**cde chnl3_tst1_hits** (149)	–	–
336	351	16	**cde chnl3_tst2_hits** (149)	–	–
352	367	16	**cde chnl3_tst3_hits** (150)	–	–
368	383	16	**cde chnl3_tst4_hits** (151)	–	–
384	399	16	**cde chnl3_tst5_hits** (151)	–	–
400	415	16	**cde chnl3_tst1_time** (149)	–	–
416	431	16	**cde chnl3_tst2_time** (150)	–	–
432	447	16	**cde chnl3_tst3_time** (150)	–	–
448	463	16	**cde chnl3_tst4_time** (151)	–	–
464	479	16	**cde chnl3_tst5_time** (152)	–	–
480	495	16	**cde chnl4_tst1_hits** (158)	–	–
496	511	16	**cde chnl4_tst2_hits** (159)	–	–
512	527	16	**cde chnl4_tst3_hits** (160)	–	–
528	543	16	**cde chnl4_tst4_hits** (160)	–	–
544	559	16	**cde chnl4_tst5_hits** (161)	–	–
560	575	16	**cde chnl4_tst1_time** (159)	–	–
576	591	16	**cde chnl4_tst2_time** (159)	–	–
592	607	16	**cde chnl4_tst3_time** (160)	–	–
608	623	16	**cde chnl4_tst4_time** (161)	–	–
624	639	16	**cde chnl4_tst5_time** (161)	–	–
640	655	16	**cde chnl5_tst1_hits** (168)	–	–
656	671	16	**cde chnl5_tst2_hits** (169)	–	–
672	687	16	**cde chnl5_tst3_hits** (169)	–	–
688	703	16	**cde chnl5_tst4_hits** (170)	–	–
704	719	16	**cde chnl5_tst5_hits** (171)	–	–
720	735	16	**cde chnl5_tst1_time** (168)	–	–
736	751	16	**cde chnl5_tst2_time** (169)	–	–
752	767	16	**cde chnl5_tst3_time** (170)	–	–
768	783	16	**cde chnl5_tst4_time** (170)	–	–
784	799	16	**cde chnl5_tst5_time** (171)	–	–
800	815	16	**cde chnl6_tst1_hits** (178)	–	–
816	831	16	**cde chnl6_tst2_hits** (178)	–	–
832	847	16	**cde chnl6_tst3_hits** (179)	–	–
848	863	16	**cde chnl6_tst4_hits** (180)	–	–
864	879	16	**cde chnl6_tst5_hits** (180)	–	–
880	895	16	**cde chnl6_tst1_time** (178)	–	–
896	911	16	**cde chnl6_tst2_time** (179)	–	–
912	927	16	**cde chnl6_tst3_time** (179)	–	–
928	943	16	**cde chnl6_tst4_time** (180)	–	–
944	959	16	**cde chnl6_tst5_time** (181)	–	–

Cal Subpkt Format, cont'd

start bit	stop bit	size bits	field		
960	975	16	**cde chnl7_tst1_hits** (187)	–	–
976	991	16	**cde chnl7_tst2_hits** (188)	–	–
992	1007	16	**cde chnl7_tst3_hits** (189)	–	–
1008	1023	16	**cde chnl7_tst4_hits** (189)	–	–
1024	1039	16	**cde chnl7_tst5_hits** (190)	–	–
1040	1055	16	**cde chnl7_tst1_time** (188)	–	–
1056	1071	16	**cde chnl7_tst2_time** (188)	–	–
1072	1087	16	**cde chnl7_tst3_time** (189)	–	–
1088	1103	16	**cde chnl7_tst4_time** (190)	–	–
1104	1119	16	**cde chnl7_tst5_time** (190)	–	–
1120	1135	16	**cde chnl8_tst1_hits** (197)	–	–
1136	1151	16	**cde chnl8_tst2_hits** (198)	–	–
1152	1167	16	**cde chnl8_tst3_hits** (198)	–	–
1168	1183	16	**cde chnl8_tst4_hits** (199)	–	–
1184	1199	16	**cde chnl8_tst5_hits** (200)	–	–
1200	1215	16	**cde chnl8_tst1_time** (197)	–	–
1216	1231	16	**cde chnl8_tst2_time** (198)	–	–
1232	1247	16	**cde chnl8_tst3_time** (199)	–	–
1248	1263	16	**cde chnl8_tst4_time** (199)	–	–
1264	1279	16	**cde chnl8_tst5_time** (200)	–	–
1280	1295	16	**cde chnl9_tst1_hits** (207)	–	–
1296	1311	16	**cde chnl9_tst2_hits** (207)	–	–
1312	1327	16	**cde chnl9_tst3_hits** (208)	–	–
1328	1343	16	**cde chnl9_tst4_hits** (209)	–	–
1344	1359	16	**cde chnl9_tst5_hits** (209)	–	–
1360	1375	16	**cde chnl9_tst1_time** (207)	–	–
1376	1391	16	**cde chnl9_tst2_time** (208)	–	–
1392	1407	16	**cde chnl9_tst3_time** (208)	–	–
1408	1423	16	**cde chnl9_tst4_time** (209)	–	–
1424	1439	16	**cde chnl9_tst5_time** (210)	–	–
1440	1455	16	**cde chnl10_tst1_hits** (81)	–	–
1456	1471	16	**cde chnl10_tst2_hits** (82)	–	–
1472	1487	16	**cde chnl10_tst3_hits** (82)	–	–
1488	1503	16	**cde chnl10_tst4_hits** (83)	–	–
1504	1519	16	**cde chnl10_tst5_hits** (84)	–	–
1520	1535	16	**cde chnl10_tst1_time** (81)	–	–
1536	1551	16	**cde chnl10_tst2_time** (82)	–	–
1552	1567	16	**cde chnl10_tst3_time** (83)	–	–
1568	1583	16	**cde chnl10_tst4_time** (83)	–	–
1584	1599	16	**cde chnl10_tst5_time** (84)	–	–
1600	1615	16	**cde chnl11_tst1_hits** (91)	–	–
1616	1631	16	**cde chnl11_tst2_hits** (91)	–	–
1632	1647	16	**cde chnl11_tst3_hits** (92)	–	–
1648	1663	16	**cde chnl11_tst4_hits** (93)	–	–
1664	1679	16	**cde chnl11_tst5_hits** (93)	–	–
1680	1695	16	**cde chnl11_tst1_time** (91)	–	–
1696	1711	16	**cde chnl11_tst2_time** (92)	–	–

Cal Subpkt Format, cont'd

start bit	stop bit	size bits	field		
1712	1727	16	**cde chnl11_tst3_time** (92)	–	–
1728	1743	16	**cde chnl11_tst4_time** (93)	–	–
1744	1759	16	**cde chnl11_tst5_time** (94)	–	–
1760	1775	16	**cde chnl12_tst1_hits** (100)	–	–
1776	1791	16	**cde chnl12_tst2_hits** (101)	–	–
1792	1807	16	**cde chnl12_tst3_hits** (102)	–	–
1808	1823	16	**cde chnl12_tst4_hits** (102)	–	–
1824	1839	16	**cde chnl12_tst5_hits** (103)	–	–
1840	1855	16	**cde chnl12_tst1_time** (101)	–	–
1856	1871	16	**cde chnl12_tst2_time** (101)	–	–
1872	1887	16	**cde chnl12_tst3_time** (102)	–	–
1888	1903	16	**cde chnl12_tst4_time** (103)	–	–
1904	1919	16	**cde chnl12_tst5_time** (103)	–	–
1920	1935	16	**cde chnl13_tst1_hits** (110)	–	–
1936	1951	16	**cde chnl13_tst2_hits** (111)	–	–
1952	1967	16	**cde chnl13_tst3_hits** (111)	–	–
1968	1983	16	**cde chnl13_tst4_hits** (112)	–	–
1984	1999	16	**cde chnl13_tst5_hits** (113)	–	–
2000	2015	16	**cde chnl13_tst1_time** (110)	–	–
2016	2031	16	**cde chnl13_tst2_time** (111)	–	–
2032	2047	16	**cde chnl13_tst3_time** (112)	–	–
2048	2063	16	**cde chnl13_tst4_time** (112)	–	–
2064	2079	16	**cde chnl13_tst5_time** (113)	–	–
2080	2095	16	**cde chnl14_tst1_hits** (120)	–	–
2096	2111	16	**cde chnl14_tst2_hits** (120)	–	–
2112	2127	16	**cde chnl14_tst3_hits** (121)	–	–
2128	2143	16	**cde chnl14_tst4_hits** (122)	–	–
2144	2159	16	**cde chnl14_tst5_hits** (122)	–	–
2160	2175	16	**cde chnl14_tst1_time** (120)	–	–
2176	2191	16	**cde chnl14_tst2_time** (121)	–	–
2192	2207	16	**cde chnl14_tst3_time** (121)	–	–
2208	2223	16	**cde chnl14_tst4_time** (122)	–	–
2224	2239	16	**cde chnl14_tst5_time** (123)	–	–
2240	2271	32	**cde cal_data_tm** (65)	–	–

Maximum Subpacket size = 2272 bits (284 bytes)

F.2 cde flash

Packet Source Application Identifier

0x175 (373)

OASIS Stream Name

cde373

Description

CDE flash status packet.

Discussion

CDE flash status packet.

Default Packet Production Status:

Packets produced every TBS seconds.

Format

Packet **cde flash** Format

start bit	stop bit	size bits	field	control	method
0	2	3	**cde p373ver** (259)	–	–
3	3	1	**cde p373typ** (258)	–	–
4	4	1	**cde p373shflg** (258)	–	–
5	15	11	**cde p373pid** (257)	–	–
16	17	2	**cde p373flg** (256)	–	–
18	31	14	**cde p373sct** (257)	–	–
32	47	16	**cde p373pl** (257)	–	–
48	79	32	**cde p373ts** (258)	–	–
80	2039	1960	**cde flash_data** (219)	–	–

Packet size = 2040 bits (255 bytes) .

F.3 cde history

Packet Source Application Identifier

0x173 (371)

OASIS Stream Name

cde371

Description

cde history packet.

Discussion

CDE history packet.

Default Packet Production Status:

Packets produced every 10 seconds.

Format

Packet **cde history** Format

start bit	stop bit	size bits	field	control	method
0	2	3	**cde p371ver** (254)	–	–
3	3	1	**cde p371typ** (254)	–	–
4	4	1	**cde p371shflg** (253)	–	–
5	15	11	**cde p371pid** (252)	–	–
16	17	2	**cde p371flg** (252)	–	–
18	31	14	**cde p371sct** (253)	–	–
32	47	16	**cde p371pl** (253)	–	–
48	79	32	**cde p371ts** (254)	–	–
80	87	8	**cde packet_id** (261)	–	–
88	87	0	**cde hist_msgpkt** (223)	–	–
88	87	0	**cde hist_hkpkt** (222)	–	–
88	87	0	**cde hist_stimpkt** (223)	–	–

Packet size = 88 bits (11 bytes) .

Hist Msgpkt Format

Hist Msgpkt Format

start bit	stop bit	size bits	field	control	method
0	7	8	**cde msg_subpkt_id** (237)	–	–
8	15	8	**cde msg_type** (238)	–	–
16	31	16	**cde msg_info** (237)	–	–
32	63	32	**cde msg_time** (238)	–	–

Maximum Subpacket size = 64 bits (8 bytes)

Hist Hkpkt Format

Hist Hkpkt Format

start bit	stop bit	size bits	field	control	method
0	7	8	**cde msg_subpkt_id_1** (237)	–	–
8	15	8	**cde p5_volt** (261)	–	–
16	23	8	**cde flash_volt** (220)	–	–
24	31	8	**cde p2_5_fpga_volt** (242)	–	–
32	39	8	**cde m5_volt** (233)	–	–
40	47	8	**cde p2_5_adc_volt** (241)	–	–
48	55	8	**cde p2_5_therm_volt** (243)	–	–
56	63	8	**cde pnl_a_temp** (262)	–	–
64	71	8	**cde pnl_b_temp** (263)	–	–
72	79	8	**cde pnl_c_temp** (263)	–	–
80	87	8	**cde pnl_d_temp** (264)	–	–
88	95	8	**cde ana_a_temp** (59)	–	–
96	103	8	**cde ana_b_temp** (60)	–	–
104	111	8	**cde dcdc_temp** (214)	–	–
112	119	8	**cde fpga_temp** (221)	–	–
120	151	32	**cde hk_time** (225)	–	–

Maximum Subpacket size = 152 bits (19 bytes)

Hist Stimpkt Format

Hist Stimpkt Format

start bit	stop bit	size bits	field	control	method
0	7	8	**cde msg_subpkt_id_2** (238)	–	–
8	23	16	**cde stim_15_volt** (271)	–	–
24	39	16	**cde stim_7_volt** (272)	–	–
40	47	8	**cde stim_lvl** (273)	–	–
48	55	8	**cde stim_chnl** (272)	–	–
56	71	16	**cde stim_data** (272)	–	–
72	87	16	**cde stim_thrsh** (273)	–	–
88	119	32	**cde stim_time** (273)	–	–

Maximum Subpacket size = 120 bits (15 bytes)

F.4 cde itf

Packet Source Application Identifier

0x176 (374)

OASIS Stream Name

cde374

Description

cde itf data.

Discussion

CDE itf data: state, counters, etc.

Default Packet Production Status:

Packets produced every TBS seconds.

Format

Packet **cde itf** Format

start bit	stop bit	size bits	field	control	method
0	15	16	**cde p374pid** (259)	–	–
16	17	2	**cde p374flg** (259)	–	–
18	31	14	**cde p374sct** (260)	–	–
32	47	16	**cde p374pl** (260)	–	–
48	79	32	**cde p374ts** (260)	–	–
80	80	1	**cde reserved_bit** (265)	–	–
81	81	1	**cde reserved_bit** (265)	–	–
82	82	1	**cde reserved_bit** (265)	–	–
83	83	1	**cde reserved_bit** (265)	–	–
84	84	1	**cde reserved_bit** (265)	–	–
85	85	1	**cde reserved_bit** (265)	–	–
86	86	1	**cde reserved_bit** (265)	–	–
87	87	1	**cde reserved_bit** (265)	–	–
88	88	1	**cde heartbeat** (222)	–	–
89	89	1	**cde run_location** (266)	–	–
90	90	1	**cde reserved_bit** (265)	–	–
91	91	1	**cde reserved_bit** (265)	–	–
92	92	1	**cde reserved_bit** (265)	–	–
93	93	1	**cde reserved_bit** (265)	–	–
94	94	1	**cde reserved_bit** (265)	–	–
95	95	1	**cde reserved_bit** (265)	–	–
96	103	8	**cde cmd_succ_ct** (211)	–	–
104	111	8	**cde cmd_fail_ct** (210)	–	–
112	127	16	**cde itf_last_cmd_exe** (227)	–	–
128	135	8	**cde p5_volt** (261)	–	–
136	143	8	**cde flash_volt** (220)	–	–
144	151	8	**cde p2_5_fpga_volt** (242)	–	–
152	159	8	**cde m5_volt** (233)	–	–

Packet **cde itf** Format, cont'd

start bit	stop bit	size bits	field		
160	167	8	**cde p2_5_adc_volt** (241)	–	–
168	175	8	**cde p2_5_therm_volt** (243)	–	–
176	183	8	**cde pnl_a_temp** (262)	–	–
184	191	8	**cde pnl_b_temp** (263)	–	–
192	199	8	**cde pnl_c_temp** (263)	–	–
200	207	8	**cde pnl_d_temp** (264)	–	–
208	215	8	**cde ana_a_temp** (59)	–	–
216	223	8	**cde ana_b_temp** (60)	–	–
224	231	8	**cde dcdc_temp** (214)	–	–
232	239	8	**cde fpga_temp** (221)	–	–
240	241	2	**cde itf_op_mode_st** (228)	–	–
242	242	1	**cde itf_sci_mode_st** (229)	–	–
243	243	1	**cde itf_flash_alive** (226)	–	–
244	244	1	**cde itf_tlm_side** (230)	–	–
245	245	1	**cde itf_met_ext** (227)	–	–
246	246	1	**cde itf_onepps_st** (228)	–	–
247	247	1	**cde itf_pwr_down_st** (229)	–	–
248	255	8	**cde sci_endptr_byte** (268)	–	–
256	263	8	**cde sci_endptr_page** (268)	–	–
264	271	8	**cde sci_endptr_blk** (267)	–	–
272	279	8	**cde hk_endptr_byte** (224)	–	–
280	287	8	**cde hk_endptr_page** (224)	–	–
288	295	8	**cde hk_endptr_blk** (223)	–	–
296	327	32	**cde system_time** (274)	–	–
328	328	1	**cde reserved_bit** (265)	–	–
329	329	1	**cde reserved_bit** (265)	–	–
330	330	1	**cde reserved_bit** (265)	–	–
331	331	1	**cde reserved_bit** (265)	–	–
332	332	1	**cde reserved_bit** (265)	–	–
333	333	1	**cde reserved_bit** (265)	–	–
334	334	1	**cde reserved_bit** (265)	–	–
335	335	1	**cde reserved_bit** (265)	–	–

Packet size = 336 bits (42 bytes) .

F.5 cde mem_dump

Packet Source Application Identifier

0x171 (369)

OASIS Stream Name

cde369

Description

cde memory dump packet.

Discussion

CDE memory dump packet.

Default Packet Production Status:

Packets produced asynchronously on command.

Format

Packet **cde mem_dump** Format

start bit	stop bit	size bits	field	control	method
0	2	3	**cde p369ver** (249)	–	–
3	3	1	**cde p369typ** (249)	–	–
4	4	1	**cde p369shflg** (248)	–	–
5	15	11	**cde p369pid** (247)	–	–
16	17	2	**cde p369flg** (247)	–	–
18	31	14	**cde p369sct** (248)	–	–
32	47	16	**cde p369pl** (247)	–	–
48	79	32	**cde p369ts** (248)	–	–
80	111	32	**cde dump_addr** (214)	–	–
112	127	16	**cde dump_length** (215)	–	–
128	135	8	**cde dump_type** (215)	–	–
136	136	1	**cde reserved_bit** (265)	–	–
137	137	1	**cde reserved_bit** (265)	–	–
138	138	1	**cde reserved_bit** (265)	–	–
139	139	1	**cde reserved_bit** (265)	–	–
140	140	1	**cde reserved_bit** (265)	–	–
141	141	1	**cde reserved_bit** (265)	–	–
142	142	1	**cde reserved_bit** (265)	–	–
143	143	1	**cde reserved_bit** (265)	–	–
144	2191	2048	**cde md_pkt_dump_data** (234)	–	–

Packet size = 2192 bits (274 bytes) .

F.6 cde sci

Packet Source Application Identifier

0x170 (368)

OASIS Stream Name

cde368

Description

CDE science packet.

Discussion

Contains CDE science detector data and corresponding instrument configuration.

Default Packet Production Status:

Enabled and produced asynchronously upon event detection.

Format

Packet **cde sci** Format

start bit	stop bit	size bits	field	control	method
0	2	3	**cde p368ver** (246)	–	–
3	3	1	**cde p368typ** (246)	–	–
4	4	1	**cde p368shflg** (245)	–	–
5	15	11	**cde p368pid** (244)	–	–
16	17	2	**cde p368flg** (244)	–	–
18	31	14	**cde p368sct** (245)	–	–
32	47	16	**cde p368pl** (245)	–	–
48	79	32	**cde p368ts** (246)	–	–
80	79	0	**cde sci_subpkt** (270)	**cde p368pl** (245)	LENGTH_BYTES

Packet size = 80 bits (10 bytes) plus N*P, where N is the number of subpackets in the packet and P is the size of the subpacket (which, of course, may need to be calculated based on sub-subpacket size). .

Sci Subpkt Format

Sci Subpkt Format

start bit	stop bit	size bits	field	control	method
0	0	1	**cde reserved_bit** (265)	–	–
1	1	1	**cde reserved_bit** (265)	–	–
2	5	4	**cde sci_chnl_num** (266)	–	–
6	6	1	**cde reserved_bit** (265)	–	–
7	7	1	**cde reserved_bit** (265)	–	–
8	23	16	**cde sci_thrsh** (270)	–	–
24	39	16	**cde sci_data** (266)	–	–
40	71	32	**cde sci_data_tm** (267)	–	–

Maximum Subpacket size = 72 bits (9 bytes)

F.7 cde sys_data

Packet Source Application Identifier

0x172 (370)

OASIS Stream Name

cde370

Description

cde system data packet.

Discussion

CDE system data packet.

Default Packet Production Status:

Packets produced every 10 seconds.

Format

Packet **cde sys_data** Format

start bit	stop bit	size bits	field	control	method
0	2	3	**cde p370ver** (252)	–	–
3	3	1	**cde p370typ** (251)	–	–
4	4	1	**cde p370shflg** (251)	–	–
5	15	11	**cde p370pid** (250)	–	–
16	17	2	**cde p370flg** (249)	–	–
18	31	14	**cde p370sct** (250)	–	–
32	47	16	**cde p370pl** (250)	–	–
48	79	32	**cde p370ts** (251)	–	–
80	87	8	**cde op_mode_st** (240)	–	–
88	95	8	**cde flash_override** (219)	–	–
96	103	8	**cde sci_mode_st** (269)	–	–
104	111	8	**cde boot_sram_ena** (63)	–	–
112	119	8	**cde mem_chksm** (234)	–	–
120	127	8	**cde cmd_fail_ct** (210)	–	–
128	135	8	**cde cmd_succ_ct** (211)	–	–
136	143	8	**cde autonomy_ena** (63)	–	–
144	151	8	**cde autb_maxhits** (62)	–	–
152	159	8	**cde sci_endptr_byte** (268)	–	–
160	167	8	**cde sci_endptr_page** (268)	–	–
168	175	8	**cde sci_endptr_blk** (267)	–	–
176	183	8	**cde hk_endptr_byte** (224)	–	–
184	191	8	**cde hk_endptr_page** (224)	–	–
192	199	8	**cde hk_endptr_blk** (223)	–	–
200	207	8	**cde cal_endptr_page** (66)	–	–
208	215	8	**cde cal_endptr_blk** (65)	–	–
216	223	8	**cde code_endptr_page** (212)	–	–
224	231	8	**cde code_endptr_blk** (212)	–	–
232	239	8	**cde code_endptr_area** (211)	–	–

Packet **cde sys_data** Format, cont'd

start bit	stop bit	size bits	field		
240	247	8	**cde flash_alive** (218)	–	–
248	255	8	**cde sci_write_ct** (270)	–	–
256	263	8	**cde hk_write_ct** (226)	–	–
264	271	8	**cde erase_conf** (217)	–	–
272	287	16	**cde auta_sleep** (61)	–	–
288	295	8	**cde autb_sleep** (62)	–	–
296	311	16	**cde hsk_rate** (226)	–	–
312	343	32	**cde flash_cycle_ct** (218)	–	–
344	351	8	**cde chnl1_autb_st** (125)	–	–
352	359	8	**cde chnl2_autb_st** (134)	–	–
360	367	8	**cde chnl3_autb_st** (144)	–	–
368	375	8	**cde chnl4_autb_st** (154)	–	–
376	383	8	**cde chnl5_autb_st** (163)	–	–
384	391	8	**cde chnl6_autb_st** (173)	–	–
392	399	8	**cde chnl7_autb_st** (183)	–	–
400	407	8	**cde chnl8_autb_st** (192)	–	–
408	415	8	**cde chnl9_autb_st** (202)	–	–
416	423	8	**cde chnl10_autb_st** (76)	–	–
424	431	8	**cde chnl11_autb_st** (86)	–	–
432	439	8	**cde chnl12_autb_st** (96)	–	–
440	447	8	**cde chnl13_autb_st** (105)	–	–
448	455	8	**cde chnl14_autb_st** (115)	–	–
456	463	8	**cde chnl1_auta_st** (124)	–	–
464	471	8	**cde chnl2_auta_st** (134)	–	–
472	479	8	**cde chnl3_auta_st** (143)	–	–
480	487	8	**cde chnl4_auta_st** (153)	–	–
488	495	8	**cde chnl5_auta_st** (163)	–	–
496	503	8	**cde chnl6_auta_st** (172)	–	–
504	511	8	**cde chnl7_auta_st** (182)	–	–
512	519	8	**cde chnl8_auta_st** (192)	–	–
520	527	8	**cde chnl9_auta_st** (201)	–	–
528	535	8	**cde chnl10_auta_st** (76)	–	–
536	543	8	**cde chnl11_auta_st** (85)	–	–
544	551	8	**cde chnl12_auta_st** (95)	–	–
552	559	8	**cde chnl13_auta_st** (105)	–	–
560	567	8	**cde chnl14_auta_st** (114)	–	–
568	575	8	**cde chnl1_aut_res** (123)	–	–
576	583	8	**cde chnl2_aut_res** (133)	–	–
584	591	8	**cde chnl3_aut_res** (142)	–	–
592	599	8	**cde chnl4_aut_res** (152)	–	–
600	607	8	**cde chnl5_aut_res** (162)	–	–
608	615	8	**cde chnl6_aut_res** (171)	–	–
616	623	8	**cde chnl7_aut_res** (181)	–	–
624	631	8	**cde chnl8_aut_res** (191)	–	–
632	639	8	**cde chnl9_aut_res** (200)	–	–
640	647	8	**cde chnl10_aut_res** (75)	–	–
648	655	8	**cde chnl11_aut_res** (84)	–	–

Packet **cde sys_data** Format, cont'd

start bit	stop bit	size bits	field		
656	663	8	**cde chnl12_aut_res** (94)	–	–
664	671	8	**cde chnl13_aut_res** (104)	–	–
672	679	8	**cde chnl14_aut_res** (113)	–	–
680	687	8	**cde chnl1_thrsh_lvl** (128)	–	–
688	695	8	**cde chnl2_thrsh_lvl** (138)	–	–
696	703	8	**cde chnl3_thrsh_lvl** (148)	–	–
704	711	8	**cde chnl4_thrsh_lvl** (157)	–	–
712	719	8	**cde chnl5_thrsh_lvl** (167)	–	–
720	727	8	**cde chnl6_thrsh_lvl** (177)	–	–
728	735	8	**cde chnl7_thrsh_lvl** (186)	–	–
736	743	8	**cde chnl8_thrsh_lvl** (196)	–	–
744	751	8	**cde chnl9_thrsh_lvl** (206)	–	–
752	759	8	**cde chnl10_thrsh_lvl** (80)	–	–
760	767	8	**cde chnl11_thrsh_lvl** (90)	–	–
768	775	8	**cde chnl12_thrsh_lvl** (99)	–	–
776	783	8	**cde chnl13_thrsh_lvl** (109)	–	–
784	791	8	**cde chnl14_thrsh_lvl** (119)	–	–
792	799	8	**cde chnl1_ena** (126)	–	–
800	807	8	**cde chnl2_ena** (135)	–	–
808	815	8	**cde chnl3_ena** (145)	–	–
816	823	8	**cde chnl4_ena** (155)	–	–
824	831	8	**cde chnl5_ena** (164)	–	–
832	839	8	**cde chnl6_ena** (174)	–	–
840	847	8	**cde chnl7_ena** (184)	–	–
848	855	8	**cde chnl8_ena** (193)	–	–
856	863	8	**cde chnl9_ena** (203)	–	–
864	871	8	**cde chnl10_ena** (77)	–	–
872	879	8	**cde chnl11_ena** (87)	–	–
880	887	8	**cde chnl12_ena** (97)	–	–
888	895	8	**cde chnl13_ena** (106)	–	–
896	903	8	**cde chnl14_ena** (116)	–	–
904	911	8	**cde chnl1_ovr** (128)	–	–
912	919	8	**cde chnl2_ovr** (137)	–	–
920	927	8	**cde chnl3_ovr** (147)	–	–
928	935	8	**cde chnl4_ovr** (157)	–	–
936	943	8	**cde chnl5_ovr** (166)	–	–
944	951	8	**cde chnl6_ovr** (176)	–	–
952	959	8	**cde chnl7_ovr** (186)	–	–
960	967	8	**cde chnl8_ovr** (195)	–	–
968	975	8	**cde chnl9_ovr** (205)	–	–
976	983	8	**cde chnl10_ovr** (79)	–	–
984	991	8	**cde chnl11_ovr** (89)	–	–
992	999	8	**cde chnl12_ovr** (99)	–	–
1000	1007	8	**cde chnl13_ovr** (108)	–	–
1008	1015	8	**cde chnl14_ovr** (118)	–	–
1016	1023	8	**cde chnl1_day_ct** (125)	–	–
1024	1031	8	**cde chnl2_day_ct** (135)	–	–

Packet **cde sys_data** Format, cont'd

start bit	stop bit	size bits	field		
1032	1039	8	**cde chnl3_day_ct** (145)	–	–
1040	1047	8	**cde chnl4_day_ct** (154)	–	–
1048	1055	8	**cde chnl5_day_ct** (164)	–	–
1056	1063	8	**cde chnl6_day_ct** (174)	–	–
1064	1071	8	**cde chnl7_day_ct** (183)	–	–
1072	1079	8	**cde chnl8_day_ct** (193)	–	–
1080	1087	8	**cde chnl9_day_ct** (203)	–	–
1088	1095	8	**cde chnl10_day_ct** (77)	–	–
1096	1103	8	**cde chnl11_day_ct** (87)	–	–
1104	1111	8	**cde chnl12_day_ct** (96)	–	–
1112	1119	8	**cde chnl13_day_ct** (106)	–	–
1120	1127	8	**cde chnl14_day_ct** (116)	–	–
1128	1143	16	**cde chnl1_tot_ct** (129)	–	–
1144	1159	16	**cde chnl2_tot_ct** (139)	–	–
1160	1175	16	**cde chnl3_tot_ct** (148)	–	–
1176	1191	16	**cde chnl4_tot_ct** (158)	–	–
1192	1207	16	**cde chnl5_tot_ct** (168)	–	–
1208	1223	16	**cde chnl6_tot_ct** (177)	–	–
1224	1239	16	**cde chnl7_tot_ct** (187)	–	–
1240	1255	16	**cde chnl8_tot_ct** (197)	–	–
1256	1271	16	**cde chnl9_tot_ct** (206)	–	–
1272	1287	16	**cde chnl10_tot_ct** (81)	–	–
1288	1303	16	**cde chnl11_tot_ct** (90)	–	–
1304	1319	16	**cde chnl12_tot_ct** (100)	–	–
1320	1335	16	**cde chnl13_tot_ct** (110)	–	–
1336	1351	16	**cde chnl14_tot_ct** (119)	–	–
1352	1359	8	**cde chnl1_autb_ct** (124)	–	–
1360	1367	8	**cde chnl2_autb_ct** (134)	–	–
1368	1375	8	**cde chnl3_autb_ct** (144)	–	–
1376	1383	8	**cde chnl4_autb_ct** (153)	–	–
1384	1391	8	**cde chnl5_autb_ct** (163)	–	–
1392	1399	8	**cde chnl6_autb_ct** (173)	–	–
1400	1407	8	**cde chnl7_autb_ct** (182)	–	–
1408	1415	8	**cde chnl8_autb_ct** (192)	–	–
1416	1423	8	**cde chnl9_autb_ct** (202)	–	–
1424	1431	8	**cde chnl10_autb_ct** (76)	–	–
1432	1439	8	**cde chnl11_autb_ct** (86)	–	–
1440	1447	8	**cde chnl12_autb_ct** (95)	–	–
1448	1455	8	**cde chnl13_autb_ct** (105)	–	–
1456	1463	8	**cde chnl14_autb_ct** (115)	–	–
1464	1479	16	**cde cal_tst1_thrsh** (68)	–	–
1480	1495	16	**cde cal_tst2_thrsh** (70)	–	–
1496	1511	16	**cde cal_tst3_thrsh** (71)	–	–
1512	1527	16	**cde cal_tst4_thrsh** (73)	–	–
1528	1543	16	**cde cal_tst5_thrsh** (74)	–	–
1544	1559	16	**cde chnl1_lo_thrsh** (127)	–	–
1560	1575	16	**cde chnl2_lo_thrsh** (136)	–	–

Packet **cde sys_data** Format, cont'd

start bit	stop bit	size bits	field		
1576	1591	16	**cde chnl3_lo_thrsh** (146)	–	–
1592	1607	16	**cde chnl4_lo_thrsh** (156)	–	–
1608	1623	16	**cde chnl5_lo_thrsh** (165)	–	–
1624	1639	16	**cde chnl6_lo_thrsh** (175)	–	–
1640	1655	16	**cde chnl7_lo_thrsh** (185)	–	–
1656	1671	16	**cde chnl8_lo_thrsh** (194)	–	–
1672	1687	16	**cde chnl9_lo_thrsh** (204)	–	–
1688	1703	16	**cde chnl10_lo_thrsh** (78)	–	–
1704	1719	16	**cde chnl11_lo_thrsh** (88)	–	–
1720	1735	16	**cde chnl12_lo_thrsh** (98)	–	–
1736	1751	16	**cde chnl13_lo_thrsh** (107)	–	–
1752	1767	16	**cde chnl14_lo_thrsh** (117)	–	–
1768	1783	16	**cde chnl1_md_thrsh** (127)	–	–
1784	1799	16	**cde chnl2_md_thrsh** (137)	–	–
1800	1815	16	**cde chnl3_md_thrsh** (147)	–	–
1816	1831	16	**cde chnl4_md_thrsh** (156)	–	–
1832	1847	16	**cde chnl5_md_thrsh** (166)	–	–
1848	1863	16	**cde chnl6_md_thrsh** (176)	–	–
1864	1879	16	**cde chnl7_md_thrsh** (185)	–	–
1880	1895	16	**cde chnl8_md_thrsh** (195)	–	–
1896	1911	16	**cde chnl9_md_thrsh** (205)	–	–
1912	1927	16	**cde chnl10_md_thrsh** (79)	–	–
1928	1943	16	**cde chnl11_md_thrsh** (89)	–	–
1944	1959	16	**cde chnl12_md_thrsh** (98)	–	–
1960	1975	16	**cde chnl13_md_thrsh** (108)	–	–
1976	1991	16	**cde chnl14_md_thrsh** (118)	–	–
1992	2007	16	**cde chnl1_hi_thrsh** (126)	–	–
2008	2023	16	**cde chnl2_hi_thrsh** (136)	–	–
2024	2039	16	**cde chnl3_hi_thrsh** (146)	–	–
2040	2055	16	**cde chnl4_hi_thrsh** (155)	–	–
2056	2071	16	**cde chnl5_hi_thrsh** (165)	–	–
2072	2087	16	**cde chnl6_hi_thrsh** (175)	–	–
2088	2103	16	**cde chnl7_hi_thrsh** (184)	–	–
2104	2119	16	**cde chnl8_hi_thrsh** (194)	–	–
2120	2135	16	**cde chnl9_hi_thrsh** (204)	–	–
2136	2151	16	**cde chnl10_hi_thrsh** (78)	–	–
2152	2167	16	**cde chnl11_hi_thrsh** (88)	–	–
2168	2183	16	**cde chnl12_hi_thrsh** (97)	–	–
2184	2199	16	**cde chnl13_hi_thrsh** (107)	–	–
2200	2215	16	**cde chnl14_hi_thrsh** (117)	–	–
2216	2231	16	**cde cold_rst_ct** (213)	–	–
2232	2239	8	**cde nsci_endptr_byte** (239)	–	–
2240	2247	8	**cde nsci_endptr_page** (240)	–	–
2248	2255	8	**cde nsci_endptr_blk** (239)	–	–
2256	2263	8	**cde nsci_pg_mark** (240)	–	–
2264	2279	16	**cde tot_rst_ct** (274)	–	–
2280	2287	8	**cde spare1** (271)	–	–

Packet **cde sys_data** Format, cont'd

start bit	stop bit	size bits	field		
2288	2295	8	**cde mem_dmp_ena** (235)	–	–
2296	2327	32	**cde mem_start_addr** (235)	–	–
2328	2359	32	**cde mem_ct** (234)	–	–
2360	2375	16	**cde last1_cmd_exe** (230)	–	–
2376	2391	16	**cde last2_cmd_exe** (231)	–	–
2392	2407	16	**cde last3_cmd_exe** (231)	–	–
2408	2423	16	**cde last4_cmd_exe** (231)	–	–
2424	2439	16	**cde last5_cmd_exe** (232)	–	–
2440	2455	16	**cde cal_tst1_sec** (68)	–	–
2456	2471	16	**cde cal_tst2_sec** (69)	–	–
2472	2487	16	**cde cal_tst3_sec** (71)	–	–
2488	2503	16	**cde cal_tst4_sec** (72)	–	–
2504	2519	16	**cde cal_tst5_sec** (74)	–	–
2520	2535	16	**cde erase_block_id** (216)	–	–
2536	2551	16	**cde cal_curtst_time** (64)	–	–
2552	2567	16	**cde cal_curtst_num** (64)	–	–
2568	2583	16	**cde chnl1_auta_ct** (123)	–	–
2584	2599	16	**cde chnl2_auta_ct** (133)	–	–
2600	2615	16	**cde chnl3_auta_ct** (143)	–	–
2616	2631	16	**cde chnl4_auta_ct** (152)	–	–
2632	2647	16	**cde chnl5_auta_ct** (162)	–	–
2648	2663	16	**cde chnl6_auta_ct** (172)	–	–
2664	2679	16	**cde chnl7_auta_ct** (181)	–	–
2680	2695	16	**cde chnl8_auta_ct** (191)	–	–
2696	2711	16	**cde chnl9_auta_ct** (201)	–	–
2712	2727	16	**cde chnl10_auta_ct** (75)	–	–
2728	2743	16	**cde chnl11_auta_ct** (85)	–	–
2744	2759	16	**cde chnl12_auta_ct** (94)	–	–
2760	2775	16	**cde chnl13_auta_ct** (104)	–	–
2776	2791	16	**cde chnl14_auta_ct** (114)	–	–
2792	2799	8	**cde auta_maxhits** (61)	–	–
2800	2807	8	**cde cal_tst1_ena** (67)	–	–
2808	2815	8	**cde cal_tst2_ena** (69)	–	–
2816	2823	8	**cde cal_tst3_ena** (70)	–	–
2824	2831	8	**cde cal_tst4_ena** (72)	–	–
2832	2839	8	**cde cal_tst5_ena** (73)	–	–
2840	2847	8	**cde met_ext** (236)	–	–
2848	2855	8	**cde version** (275)	–	–
2856	2863	8	**cde hk_erase_ena** (225)	–	–
2864	2871	8	**cde sci_erase_ena** (268)	–	–
2872	2879	8	**cde cal_erase_ena** (66)	–	–
2880	2887	8	**cde code_erase_ena** (212)	–	–
2888	2895	8	**cde erase_area** (216)	–	–
2896	2903	8	**cde mem_type** (236)	–	–
2904	2911	8	**cde erase_st** (217)	–	–
2912	2919	8	**cde flash_fail_st** (219)	–	–
2920	2951	32	**cde length_day** (232)	–	–

Packet **cde sys_data** Format, cont'd

start bit	stop bit	size bits	field		
2952	2967	16	**cde spare2** (271)	–	–
2968	2975	8	**cde p5_volt** (261)	–	–
2976	2983	8	**cde flash_volt** (220)	–	–
2984	2991	8	**cde p2_5_fpga_volt** (242)	–	–
2992	2999	8	**cde m5_volt** (233)	–	–
3000	3007	8	**cde p2_5_adc_volt** (241)	–	–
3008	3015	8	**cde p2_5_therm_volt** (243)	–	–
3016	3023	8	**cde pnl_a_temp** (262)	–	–
3024	3031	8	**cde pnl_b_temp** (263)	–	–
3032	3039	8	**cde pnl_c_temp** (263)	–	–
3040	3047	8	**cde pnl_d_temp** (264)	–	–
3048	3055	8	**cde ana_a_temp** (59)	–	–
3056	3063	8	**cde ana_b_temp** (60)	–	–
3064	3071	8	**cde dcdc_temp** (214)	–	–
3072	3079	8	**cde fpga_temp** (221)	–	–
3080	3087	8	**cde wtchdg_rst_ct** (275)	–	–

Packet size = 3088 bits (386 bytes) .

G

Telemetry Packet Summary

Telemetry Packet Summary

pkt no.	apid (hex)	packet
1	0x170 (368)	**cde sci** (288)
2	0x171 (369)	**cde mem_dump** (287)
3	0x172 (370)	**cde sys_data** (289)
4	0x173 (371)	**cde history** (283)
5	0x174 (372)	**cde cal** (278)
6	0x175 (373)	**cde flash** (282)
7	0x176 (374)	**cde itf** (285)

H

Glossary

ACS *Attitude Control Subsytem* Spacecraft subsystem reponsible for spacecraft and instrument pointing.

ADC *analog/digital converter*

Aeronomy of Ice in the Mesosphere NASA mission to study the formation, morphology, and life cycle of polar mesospheric clouds (PMCs). These clouds are also called noctiluscent due to their tendency to 'glow' during the polar winter months. These clouds are so high in the atmosphere that their under sides (sides facing the earth) are illumniated by sunshine passing accross the pole through the atmosphere from the daylit side of the Earth.

B *byte* See byte

b *bit* See bit.

bit Basic unit of information storage.

BOS *bright object sensor* Hardware for sensing presence of bright objects (such as the sun).

byte 8 bits of storage. CCSDS uses the term *octet* instead.

CCSDS *Consultative Committee for Space Data Systems* An international organization of space agencies interested in mutually developing standard data handling techniques.

CDE *Cosmic Dust Experiment* One of the instruments comprising the AIM observatory, the CDE instrument helps scientists determine the amount of particles entering the atmosphere. This in turn helps them determine the impact of cosmic dust on PMC formation.

C&DH *command and data handling* Spacecraft subsystem that receives and processes commands, and produces telemetry. Typically the CDH also contains the flight computer.

CIPS *Cloud Imaging and Particle Size* One of the insruments comprising the AIM observatory, the CIPS instrument uses six CCDs to capture greyscale images of PMCs. These images will help scientists determine how these clouds are created, how they change over time, and what constitutes them.

CM *configuration management* Process of controlling access, identifying and archiving designated releases of software and documentation. CM is complementary to a version control system. See CVS.

command An instruction from a user (or script) to a spacecraft system to perform a specific action.

FSW *flight software* Embedded software that controls flight hardware.

glossary This is it.

high level command An instrument command that implements functionality of more than one low level command. High level commands are more efficient than low level commands for specifying complex instrument behavior.

HVPS *high voltage power supply* Device designed to provide unusually high voltages to electronics. Such devices are not only a safety hazard, but also can be hazardous to other hardware, should they arc, which is only a danger at low ambient pressures.

I/O *input output*

KB *kilobyte* 2^{10} = 1024 bytes.

Kb *kilobit* 2^{10} = 1024 bits.

LASP *Laboratory for Atmospheric and Space Physics* Institute at the University of Colorado, Boulder, researching atmospheric, space and planetary physics.

low level command An instrument command that implements a single basic hardware or software function.

MB *megabyte* 2^{20} = 1,048,576 bytes.

Mb *megabit* 2^{20} = 1,048,576 bits.

ms *milliseconds*

MIL-STD-1553 Military standard for flight serial data bus.

octet CCSDS term for an 8-bit unit of storage. See byte.

PDF *portable document format* Binary document format with self contained fonts that can be viewed or printed from most any platform via Adobe Acrobat and other PDF viewers. Advanced PDF viewers can navigate hyperlinks to other locations within and external to the document.

POR *power on reset* Hardware reset due to power cycle (transition from off to on). Hardware and software return to their POR states after a POR.

SSI *Standard Serial Interface* Interface electronics used for loading, monitoring, and debugging FSW.

TC *telecommand* CCSDS term for command. See CCSDS.

telemetry Data produced by a spacecraft application.

UT69R See UT69R000.

UT69R000 A radiation-hardened 16-bit RISC microcontroller created by UTMC. The 69R000 is the microconttroller host for FSW on all AIM instruments.

End of glossary.

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