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# **Telemetry Handbook**

**For the CFS COSMOS Project**



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# Telemetry Packets

## CFS CFE\_ES\_HKPACKET

Executive Services Housekeeping Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2048</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	The ES Application Command Counter.	96	8	UINT	
ERRCOUNTER	The ES Application Command Error Counter.	104	8	UINT	
CFECORECHECKSUM	Checksum of cFE Core Code.	112	16	UINT	
CFEMAJORVERSION	Major Version Number of cFE.	128	8	UINT	
CFEMINORVERSION	Minor Version Number of cFE.	136	8	UINT	
CFEREVISION	Sub-Minor Version Number of cFE.	144	8	UINT	
CFEMISSIONREVISION	Mission Version Number of cFE.	152	8	UINT	
OSALMAJORVERSION	OS Abstraction Layer Major Version Number.	160	8	UINT	
OSALMINORVERSION	OS Abstraction Layer Minor Version Number.	168	8	UINT	
OSALREVISION	OS Abstraction Layer Revision Number.	176	8	UINT	
OSALMISSIONREVISION	OS Abstraction Layer MissionRevision Number.	184	8	UINT	
SYSLOGBYTESUSED	Total number of bytes used in system log.	192	32	UINT	
SYSLOGSIZE	Total size of the system log.	224	32	UINT	
SYSLOGENTRIES	Number of entries in the system log.	256	32	UINT	
SYSLOGMODE	Write/Overwrite Mode.	288	32	UINT	
ERLOGINDEX	Current index of the ER Log (wraps around).	320	32	UINT	
ERLOGENTRIES	Number of entries made in the ER Log since the power on.	352	32	UINT	
REGISTEREDCOREAPPS	Number of Applications registered with ES.	384	32	UINT	
REGISTEREDEXTERNALAPPS	Number of Applications registered with ES.	416	32	UINT	
REGISTEREDTASKS	Number of Tasks ( main AND child tasks ) registered with ES.	448	32	UINT	
REGISTEREDLIBS	Number of Libraries registered with ES.	480	32	UINT	
RESETTYPE	Reset type ( PROCESSOR or POWERON ).	512	32	UINT	
RESETSUBTYPE	Reset Sub Type.	544	32	UINT	
PROCESSORRESETS	Number of processor resets since last power on.	576	32	UINT	
MAXPROCESSORRESETS	Max processor resets before a power on is done.	608	32	UINT	



BOOTSOURCE	Boot source ( as provided from BSP ).	640	32	UINT
PERFSTATE	Current state of Performance Analyzer.	672	32	UINT
PERFMODE	Current mode of Performance Analyzer.	704	32	UINT
PERFTRIGGERCOUNT	Number of Times Perfomance Analyzer has Triggered.	736	32	UINT
PERFFILTERMASK	Current Setting of Performance Analyzer Filter Masks.  Array Bit Size: 128	768	32	UINT
PERFTRIGGERMASK	Current Setting of Performance Analyzer Trigger Masks.  Array Bit Size: 128	896	32	UINT
PERFDATASTART	Identifies First Stored Entry in Performance Analyzer Log.	1024	32	UINT
PERFDATAEND	Identifies Last Stored Entry in Performance Analyzer Log.	1056	32	UINT
PERFDATACOUNT	Number of Entries Put Into the Performance Analyzer Log.	1088	32	UINT
PERFDATATOWRITE	Number of Performance Analyzer Log Entries Left to be Written to Log Dump File.	1120	32	UINT
HEAPBYTESFREE	Number of free bytes remaining in the OS heap.	1152	32	UINT
HEAPBLOCKSFREE	Number of free blocks remaining in the OS heap.	1184	32	UINT
HEAPMAXBLOCKSIZE	Number of bytes in the largest free block.	1216	32	UINT

## CFS CFE\_ES\_ONEAPPTLM

Single Application Information Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)  Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)  Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count  Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2059</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
APPINFO_APPID	Application ID for this Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	96	32	UINT	
APPINFO_TYPE	The type of App: CORE or EXTERNAL. (Parent: For more information, see CFE_ES_AppInfo_t.)	128	32	UINT	
APPINFO_NAME	The Registered Name of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	160	160	STRING	
APPINFO_ENTRYPOINT	The Entry Point label for the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	320	160	STRING	



APPINFO_FILENAME	The Filename of the file containing the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	480	512	STRING
APPINFO_STACKSIZE	The Stack Size of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	992	32	UINT
APPINFO_MODULEID	The ID of the Loadable Module for the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	1024	32	UINT
APPINFO_ADDRESSESAREVALID	Indicates that the Code, Data, and BSS addresses/sizes are valid. (Parent: For more information, see CFE_ES_AppInfo_t.)	1056	32	UINT
APPINFO_CODEADDRESS	The Address of the Application Code Segment. (Parent: For more information, see CFE_ES_AppInfo_t.)	1088	32	UINT
APPINFO_CODESIZE	The Code Size of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	1120	32	UINT
APPINFO_DATAADDRESS	The Address of the Application Data Segment. (Parent: For more information, see CFE_ES_AppInfo_t.)	1152	32	UINT
APPINFO_DATASIZE	The Data Size of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	1184	32	UINT
APPINFO_BSSADDRESS	The Address of the Application BSS Segment. (Parent: For more information, see CFE_ES_AppInfo_t.)	1216	32	UINT
APPINFO_BSSSIZE	The BSS Size of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	1248	32	UINT
APPINFO_STARTADDRESS	The Start Address of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	1280	32	UINT
APPINFO_EXCEPTIONACTION	What should occur if Application has an exception (Restart Application OR Restart Processor). (Parent: For more information, see CFE_ES_AppInfo_t.)	1312	16	UINT
APPINFO_PRIORITY	The Priority of the Application. (Parent: For more information, see CFE_ES_AppInfo_t.)	1328	16	UINT
APPINFO_MAINTASKID	The Application's Main Task ID. (Parent: For more information, see CFE_ES_AppInfo_t.)	1344	32	UINT
APPINFO_EXECUTIONCOUNTER	The Application's Main Task Execution Counter. (Parent: For more information, see CFE_ES_AppInfo_t.)	1376	32	UINT
APPINFO_MAINTASKNAME	The Application's Main Task ID. (Parent: For more information, see CFE_ES_AppInfo_t.)	1408	160	STRING
APPINFO_NUMOFCHILDTASKS	Number of Child tasks for an App. (Parent: For more information, see CFE_ES_AppInfo_t.)	1568	32	UINT

## CFS CFE\_ES\_POOLSTATSLM

Memory Pool Statistics Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion COSMOS packet received count	0	0	DERIVED	



RECEIVED_COUNT	Read Conversion: ReceivedCountConversion	0	0	DERIVED
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2064</b>	0	16	UINT
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
POOLHANDLE	Handle of memory pool whose stats are being telemetered.	96	32	UINT
POOLSTATS_POOLSIZE	Size of Memory Pool (in bytes). (Parent: For more info, see CFE_ES_MemPoolStats_t.)	128	32	UINT
POOLSTATS_NUMBLOCKSREQUESTED	Number of times a memory block has been allocated. (Parent: For more info, see CFE_ES_MemPoolStats_t.)	160	32	UINT
POOLSTATS_CHECKERRCTR	Number of errors detected when freeing a memory block. (Parent: For more info, see CFE_ES_MemPoolStats_t.)	192	32	UINT
POOLSTATS_NUMFREEBYTES	Number of bytes never allocated to a block. (Parent: For more info, see CFE_ES_MemPoolStats_t.)	224	32	UINT
POOLSTATS_BLOCKSTATS	Contains stats on each block size. (Parent: For more info, see CFE_ES_MemPoolStats_t.)	256	96	UINT
	Array Bit Size: 1632			

## CFS CFE\_ES\_SHELLPACKET

OS Shell Output Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2063</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
SHELLOUTPUT	ASCII text string containing output from OS Shell that was received in response to an OS Shell Command.	96	8	UINT	
	Array Bit Size: 512				



## CFS CFE\_EVS\_PACKET

Event Message Telemetry Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2056</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
PACKETID_APPNAME	Application name. (Parent: Event packet information.)	96	160	STRING	
PACKETID_EVENTID	Numerical event identifier. (Parent: Event packet information.)	256	16	UINT	
PACKETID_EVENTTYPE	Numerical event type identifier. (Parent: Event packet information.)	272	16	UINT	
PACKETID_SPACERCRAFTID	Spacecraft identifier. (Parent: Event packet information.)	288	32	UINT	
PACKETID_PROCESSORID	Numerical processor identifier. (Parent: Event packet information.)	320	32	UINT	
MESSAGE	Event message string.	352	976	STRING	
SPARE1	Structure padding.	1328	8	UINT	
SPARE2	Structure padding.	1336	8	UINT	

## CFS CFE\_EVS\_TLMPKT

Event Services Housekeeping Telemetry Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2049</b>	0	16	UINT	



CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
COMMANDCOUNTER	EVS Command Counter.	96	8	UINT
COMMANDERRCOUNTER	EVS Command Error Counter.	104	8	UINT
MESSAGEFORMATMODE	Event message format mode (short/long).	112	8	UINT
MESSAGETRUNCCOUNTER	Event message truncation counter.	120	8	UINT
UNREGISTEREDAPPCOUNTER	Unregistered application message send counter.	128	8	UINT
OUTPUTPORT	Output port mask.	136	8	UINT
LOGFULLFLAG	Local event log full flag.	144	8	UINT
LOGMODE	Local event logging mode (overwrite/discard).	152	8	UINT
MESSAGESEND COUNTER	Event message send counter.	160	16	UINT
LOGOVERFLOW COUNTER	Local event log overflow counter.	176	16	UINT
LOGENABLED	Current event log enable/disable state.	192	8	UINT
SPARE1	Padding for 32 bit boundary.	200	8	UINT
SPARE2	Padding for 32 bit boundary.	208	8	UINT
SPARE3	Padding for 32 bit boundary.	216	8	UINT
APPDATA	Array of registered application table data.	224	64	UINT
	Array Bit Size: 2048			

## CFS CFE\_SB\_HKMSG

Software Bus task housekeeping Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2051</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
COMMANDCNT	Count of valid commands received.	96	8	UINT	
CMDERRCNT	Count of invalid commands received.	104	8	UINT	
NOSUBSCRIBERSCNT	Count pkts sent with no subscribers.	112	8	UINT	
MSGSENDERRCNT	Count of message send errors.	120	8	UINT	
MSGRECEIVEERRCNT	Count of message receive errors.	128	8	UINT	
INTERNALERRCNT	Count of queue read or write errors.	136	8	UINT	
CREATEPIPEERRCNT	Count of errors in create pipe API.	144	8	UINT	
SUBSCRIBEERRCNT	Count of errors in subscribe API.	152	8	UINT	



SPARE	Spare Byte.	160	8	UINT
DUPSUBSCRIPTIONSCNT	Count of duplicate subscriptions.	168	8	UINT
SPARE2ALIGN	Spare bytes to ensure alignment.	176	8	UINT
PIPEOVERFLOWERRCNT	Count of pipe overflow errors.	192	16	UINT
MSGLIMERRCNT	Count of msg id to pipe errors.	208	16	UINT
MEMPOOLHANDLE	Handle to SB's Memory Pool.	224	32	UINT
MEMINUSE	Memory in use.	256	32	UINT
UNMARKEDMEM	cfg param CFE_SB_BUF_MEMORY_BYTES minus Peak Memory in use	288	32	UINT

## CFS CFE\_SB\_PREVSUBMSG

SB Previous Subscriptions Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2061</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
PKTSEGMENT	Pkt number(starts at 1) in the series.	96	32	UINT	
TOTALSEGMENTS	Total number of pkts needed to complete the request.	128	32	UINT	
ENTRIES	Number of entries in the pkt.	160	32	UINT	
ENTRY	Array of CFE_SB_SubEntries_t entries. Array Bit Size: 800	192	40	UINT	

## CFS CFE\_SB\_STATMSG

SB Statistics Telemetry Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED	



	Read Conversion: ReceivedTimeFormattedConversion				
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED	
	Read Conversion: ReceivedCountConversion				
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2058</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
MSGIDSINUSE	Current number of MsgIds with a destination.	96	32	UINT	
PEAKMSGIDSINUSE	Peak number of MsgIds with a destination.	128	32	UINT	
MAXMSGIDSALLOWED	cFE Cfg Param CFE_SB_MAX_MSG_IDS	160	32	UINT	
PIPESINUSE	Number of pipes currently in use.	192	32	UINT	
PEAKPIPESINUSE	Peak number of pipes since last reboot.	224	32	UINT	
MAXPIPESALLOWED	cFE Cfg Param CFE_SB_MAX_PIPES	256	32	UINT	
MEMINUSE	Memory bytes currently in use for SB msg transfers.	288	32	UINT	
PEAKMEMINUSE	Peak memory bytes in use for SB msg transfers.	320	32	UINT	
MAXMEMALLOWED	cFE Cfg Param CFE_SB_BUF_MEMORY_BYTES	352	32	UINT	
SUBSCRIPTIONSINUSE	Number of current subscriptions.	384	32	UINT	
PEAKSUBSCRIPTIONSINUSE	Peak number of subscriptions.	416	32	UINT	
MAXSUBSCRIPTIONSALLOWED	product of CFE_SB_MAX_MSG_IDS and CFE_SB_MAX_DEST_PER_PKT	448	32	UINT	
SBBUFFERSINUSE	Number of SB message buffers currently in use.	480	32	UINT	
PEAKSBBUFFERSINUSE	Max number of SB message buffers in use.	512	32	UINT	
MAXPIPEDEPTHALLOWED	cFE Cfg Param CFE_SB_MAX_PIPE_DEPTH	544	32	UINT	
PIPEDEPTHSTATS	Pipe Depth Statistics CFE_SB_PipeDepthStats_t.	576	64	UINT	
	Array Bit Size: 192				

## CFS CFE\_SB\_SUBRPTMSG

SB Subscription Report Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED	%0.6f
	Read Conversion: ReceivedTimeSecondsConversion				
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED	
	Read Conversion: ReceivedTimeFormattedConversion				
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED	
	Read Conversion: ReceivedCountConversion				
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2062</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	



CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
SUBTYPE	Subscription or Unsubscription.	96	8	UINT
MSGID	MsgId subscribed or unsubscribe to.	104	16	UINT
QOS_PRIORITY	Specify high(1) or low(0) message priority for off-board routing, currently unused. (Parent: Quality of Service, used only for interprocessor communication.)	120	8	UINT
QOS_RELIABILITY	Specify high(1) or low(0) message transfer reliability for off-board routing, currently unused. (Parent: Quality of Service, used only for interprocessor communication.)	128	8	UINT
PIPE	Destination pipe id to send above msg id.	136	8	UINT

## CFS CFE\_TBL\_HKPACKET

Table Services Housekeeping Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2052</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	Count of valid commands received.	96	8	UINT	
ERRCOUNTER	Count of invalid commands received.	104	8	UINT	
NUMTABLES	Number of Tables Registered.	112	16	UINT	
NUMLOADPENDING	Number of Tables pending on Applications for their update.	128	16	UINT	
VALIDATIONCTR	Number of completed table validations.	144	16	UINT	
LASTVALCRC	Data Integrity Value computed for last table validated.	160	32	UINT	
LASTVALSTATUS	Returned status from validation function for last table validated.	192	32	INT	
ACTIVEBUFFER	Indicator of whether table buffer validated was 0=Inactive, 1=Active.	224	8	UINT	
LASTVALTABLENAME	Name of last table validated.	232	304	STRING	
SUCCESSVALCTR	Total number of successful table validations.	536	8	UINT	
FAILEDVALCTR	Total number of unsuccessful table validations.	544	8	UINT	
NUMVALREQUESTS	Number of times Table Services has requested validations from Apps.	552	8	UINT	
NUMFREESHAREDBUFS	Number of free Shared Working Buffers.	560	8	UINT	
BYTEALIGNPAD1	Spare byte to ensure longword alignment.	568	8	UINT	



MEMPOOLHANDLE	Handle to TBL's memory pool.	576	32	UINT
LASTUPDATETIME_SECONDS	Number of seconds since epoch. (Parent: Time of last table update.)	608	32	UINT
LASTUPDATETIME_SUBSECONDS	Number of subseconds since epoch (LSB = 2^(-32) seconds). (Parent: Time of last table update.)	640	32	UINT
LASTUPDATEDTBL	Name of the last table updated.	672	304	STRING
LASTFILELOADED	Path and Name of last table image file loaded.	976	512	STRING
LASTFILEDUMPED	Path and Name of last file dumped to.	1488	512	STRING
LASTTABLELOADED	Name of the last table loaded.	2000	304	STRING

## CFS CFE\_TBL\_TBLREGPACKET

Table Registry Info Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2060</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
SIZE	Size, in bytes, of Table.	96	32	UINT	
CRC	Most recently calculated CRC of Table.	128	32	UINT	
ACTIVEBUFFERADDR	Address of Active Buffer.	160	32	UINT	
INACTIVEBUFFERADDR	Address of Inactive Buffer.	192	32	UINT	
VALIDATIONFUNCPTR	Ptr to Owner App's function that validates tbl contents.	224	32	UINT	
TIMEOFLASTUPDATE_SECONDS	Number of seconds since epoch. (Parent: Time when Table was last updated.)	256	32	UINT	
TIMEOFLASTUPDATE_SUBSECONDS	Number of subseconds since epoch (LSB = 2^(-32) seconds). (Parent: Time when Table was last updated.)	288	32	UINT	
FILECREATETIMESECS	File creation time from last file loaded into table.	320	32	UINT	
FILECREATETIMESUBSECS	File creation time from last file loaded into table.	352	32	UINT	
TABLELOADEDONCE	Flag indicating whether table has been loaded once or not.	384	8	UINT	
LOADPENDING	Flag indicating an inactive buffer is ready to be copied.	392	8	UINT	
DUMPONLY	Flag indicating Table is NOT to be loaded.	400	8	UINT	
DBLBUFFERED	Flag indicating Table has a dedicated inactive buffer.	408	8	UINT	
NAME	Processor specific table name.	416	304	STRING	
LASTFILELOADED	Filename of last file loaded into table.	720	512	STRING	



OWNERAPPNAME	Name of owning application.	1232	160	STRING
CRITICAL	Indicates whether table is Critical or not.	1392	8	UINT
BYTEALIGN4	Spare byte to maintain byte alignment.	1400	8	UINT

## CFS CFE\_TIME\_DIAGPACKET

Time Services Diagnostics Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2054</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
ATTONEMET_SECONDS	Number of seconds since epoch. (Parent: MET at time of tone.)	96	32	UINT	
ATTONEMET_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: MET at time of tone.)	128	32	UINT	
ATTONESTCF_SECONDS	Number of seconds since epoch. (Parent: STCF at time of tone.)	160	32	UINT	
ATTONESTCF_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: STCF at time of tone.)	192	32	UINT	
ATTONEDELAY_SECONDS	Number of seconds since epoch. (Parent: Adjustment for slow tone detection.)	224	32	UINT	
ATTONEDELAY_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Adjustment for slow tone detection.)	256	32	UINT	
ATTONELATCH_SECONDS	Number of seconds since epoch. (Parent: Local clock latched at time of tone.)	288	32	UINT	
ATTONELATCH_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Local clock latched at time of tone.)	320	32	UINT	
ATTONELEAPS	Leap Seconds at time of tone.	352	16	INT	
CLOCKSTATEAPI	Clock state as per API.	368	16	INT	
TIMESINCTONE_SECONDS	Number of seconds since epoch. (Parent: Time elapsed since the tone.)	384	32	UINT	
TIMESINCTONE_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Time elapsed since the tone.)	416	32	UINT	
CURRENTLATCH_SECONDS	Number of seconds since epoch. (Parent: Local clock latched just 'now'.)	448	32	UINT	
CURRENTLATCH_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Local clock latched just 'now'.)	480	32	UINT	



CURRENTMET_SECONDS	Number of seconds since epoch. (Parent: MET at this instant.)	512	32	UINT
CURRENTMET_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: MET at this instant.)	544	32	UINT
CURRENTTAI_SECONDS	Number of seconds since epoch. (Parent: TAI at this instant.)	576	32	UINT
CURRENTTAI_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: TAI at this instant.)	608	32	UINT
CURRENTUTC_SECONDS	Number of seconds since epoch. (Parent: UTC at this instant.)	640	32	UINT
CURRENTUTC_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: UTC at this instant.)	672	32	UINT
CLOCKSETSTATE	Time has been 'set'.	704	16	INT
CLOCKFLYSTATE	Current fly-wheel state.	720	16	INT
CLOCKSOURCE	Internal vs external, etc.	736	16	INT
CLOCKSIGNAL	Primary vs redundant, etc.	752	16	INT
SERVERFLYSTATE	Used by clients only.	768	16	INT
FORCED2FLY	Commanded into fly-wheel.	784	16	INT
CLOCKSTATEFLAGS	Clock State Flags.	800	16	UINT
ONETIMEADJUSTMENT	One time STCF adjustment direction (Add = 1, Sub = 2).	816	16	INT
ONEHZDIRECTION	1Hz STCF adjustment direction	832	16	INT
DELAYDIRECTION	Client latency adjustment direction.	848	16	INT
ONETIMEADJUST_SECONDS	Number of seconds since epoch. (Parent: Previous one-time STCF adjustment.)	864	32	UINT
ONETIMEADJUST_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Previous one-time STCF adjustment.)	896	32	UINT
ONEHZADJUST_SECONDS	Number of seconds since epoch. (Parent: Current 1Hz STCF adjustment.)	928	32	UINT
ONEHZADJUST_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Current 1Hz STCF adjustment.)	960	32	UINT
TONESIGNALATCH_SECONDS	Number of seconds since epoch. (Parent: Local Clock latched at most recent tone signal.)	992	32	UINT
TONESIGNALATCH_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Local Clock latched at most recent tone signal.)	1024	32	UINT
TONEDATALATCH_SECONDS	Number of seconds since epoch. (Parent: Local Clock latched at arrival of tone data.)	1056	32	UINT
TONEDATALATCH_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Local Clock latched at arrival of tone data.)	1088	32	UINT
TONEMATCHCOUNT	Tone signal / data verification count.	1120	32	UINT
TONEMATCHERRORS	Tone signal / data verification error count.	1152	32	UINT
TONESIGNALCOUNT	Tone signal detected SB message count.	1184	32	UINT
TONEDATACOUNT	Time at the tone data SB message count.	1216	32	UINT
TONEINTCOUNT	Tone signal ISR execution count.	1248	32	UINT
TONEINTERRORS	Tone signal ISR error count.	1280	32	UINT
TONETASKCOUNT	Tone task execution count.	1312	32	UINT
VERSIONCOUNT	Count of mods to time at tone reference data (version).	1344	32	UINT
LOCALINTCOUNT	Local 1Hz ISR execution count.	1376	32	UINT
LOCALTASKCOUNT	Local 1Hz task execution count.	1408	32	UINT
VIRTUALMET	Software MET.	1440	32	UINT
MINELAPSED	Min tone signal / data pkt arrival window (Sub-seconds).	1472	32	UINT



MAXELAPSED	Max tone signal / data pkt arrival window (Sub-seconds).	1504	32	UINT
MAXLOCALCLOCK_SECONDS	Number of seconds since epoch. (Parent: Max local clock value before rollover.)	1536	32	UINT
MAXLOCALCLOCK_SUBSECONDS	Number of subseconds since epoch (LSB = $2^{(-32)}$ seconds). (Parent: Max local clock value before rollover.)	1568	32	UINT
TONEOVERLIMIT	Max between tone signal interrupts.	1600	32	UINT
TONEUNDERLIMIT	Min between tone signal interrupts.	1632	32	UINT
DATASTORESTATUS	Data Store status (preserved across processor reset).	1664	32	UINT

## CFS CFE\_TIME\_HKPACKET

Time Services Housekeeping Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2053</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	Time Command Execution Counter.	96	8	UINT	
ERRCOUNTER	Time Command Error Counter.	104	8	UINT	
CLOCKSTATEFLAGS	State Flags.	112	16	UINT	
CLOCKSTATEAPI	API State.	128	16	INT	
LEAPSECONDS	Current Leaps Seconds.	144	16	INT	
SECONDSMET	Current MET (seconds).	160	32	UINT	
SUBSECSMET	Current MET (sub-seconds).	192	32	UINT	
SECONDSSTCF	Current STCF (seconds).	224	32	UINT	
SUBSECSSTCF	Current STCF (sub-seconds).	256	32	UINT	
SECONDS1HZADJ	Current 1 Hz SCTF adjustment (seconds).	288	32	UINT	
SUBSECS1HZADJ	Current 1 Hz SCTF adjustment (sub-seconds).	320	32	UINT	
SECONDSDELAY	Current 1 Hz SCTF Delay (seconds).	352	32	UINT	
SUBSECSDELAY	Current 1 Hz SCTF Delay (sub-seconds).	384	32	UINT	

## CFS CF\_HKPACKET

CF Application housekeeping Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
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RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2224</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	Count of valid commands received.	96	16	UINT	
ERRCOUNTER	Count of invalid commands received.	112	16	UINT	
APP_WAKEUPFORFILEPROC	(Parent: )	128	32	UINT	
APP_ENGINECYCLEDOWNLOADCOUNT	(Parent: )	160	32	UINT	
APP_MEMINUSE	(Parent: )	192	32	UINT	
APP_PEAKMEMINUSE	(Parent: )	224	32	UINT	
APP_LOWMEMORYMARK	(Parent: )	256	32	UINT	
APP_MAXMEMNEEDED	(Parent: )	288	32	UINT	
APP_MEMALLOCATED	(Parent: )	320	32	UINT	
APP_BUFFERPOOLHANDLE	(Parent: )	352	32	UINT	
APP_QNODESALLOCATED	(Parent: )	384	32	UINT	
APP_QNODESDEALLOCATED	(Parent: )	416	32	UINT	
APP_PDUSRECEIVED	(Parent: )	448	32	UINT	
APP_PDUSREJECTED	(Parent: )	480	32	UINT	
APP_TOTALINPROGTRANS	(Parent: )	512	32	UINT	
APP_TOTALFAILEDTRANS	(Parent: )	544	32	UINT	
APP_TOTALABANDONTRANS	(Parent: )	576	32	UINT	
APP_TOTALSUCCESSTRANS	(Parent: )	608	32	UINT	
APP_TOTALCOMPLETEDTRANS	(Parent: )	640	32	UINT	
APP_LASTFAILEDTRANS	(Parent: )	672	160	STRING	
AUTOSUSPEND_ENFLAG	(Parent: )	832	32	UINT	
AUTOSUSPEND_LOWFREEMARK	(Parent: )	864	32	UINT	
COND_POSACKNUM	(Parent: )	896	8	UINT	
COND_FILESTOREREJNUM	(Parent: )	904	8	UINT	
COND_FILECHECKSUMNUM	(Parent: )	912	8	UINT	
COND_FILESIZENUM	(Parent: )	920	8	UINT	
COND_NAKLIMITNUM	(Parent: )	928	8	UINT	
COND_INACTIVENUM	(Parent: )	936	8	UINT	
COND_SUSPENDNUM	(Parent: )	944	8	UINT	
COND_CANCELNUM	(Parent: )	952	8	UINT	
ENG_FLIGHTEENGINEENTITYID	(Parent: )	960	128	STRING	
ENG_FLAGS	(Parent: )	1088	32	UINT	
ENG_MACHINESALLOCATED	(Parent: )	1120	32	UINT	
ENG_MACHINESDEALLOCATED	(Parent: )	1152	32	UINT	
ENG_SPARE	Array Bit Size: 24	1184	8	UINT	



UP_METACOUNT	(Parent: )	1208	32	UINT
UP_UPLINKACTIVEQFILECNT	(Parent: )	1240	32	UINT
UP_SUCCESSCOUNTER	(Parent: )	1272	32	UINT
UP_FAILEDCOUNTER	(Parent: )	1304	32	UINT
UP_LASTFILEUPLINKED	(Parent: )	1336	512	STRING
CHAN	Array Bit Size: 832	1848	416	UINT

## CFS CF\_TRANSPACKET

CF Application Single Transaction Status Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2225</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
ENG_TRANSLEN	(Parent: )	96	8	UINT	
ENG_TRANSVAL	(Parent: )	104	8	UINT	
ENG_NAKS	(Parent: )	112	8	UINT	
ENG_PARTLEN	(Parent: )	120	8	UINT	
ENG_PARTVAL	(Parent: )	128	8	UINT	
ENG_PHASE	(Parent: )	136	8	UINT	
ENG_SPARE1	(Parent: )	144	8	UINT	
ENG_SPARE2	(Parent: )	152	8	UINT	
ENG_FLAGS	(Parent: )	160	32	UINT	
ENG_TRANSNUM	(Parent: )	192	32	UINT	
ENG_ATTEMPTS	(Parent: )	224	32	UINT	
ENG_CONDCODE	(Parent: )	256	32	UINT	
ENG_DELICODE	(Parent: )	288	32	UINT	
ENG_FDOFFSET	(Parent: )	320	32	UINT	
ENG_FDLENGTH	(Parent: )	352	32	UINT	
ENG_CHECKSUM	(Parent: )	384	32	UINT	
ENG_FINALSTAT	(Parent: )	416	32	UINT	
ENG_FILESIZE	(Parent: )	448	32	UINT	
ENG_RCVDFILESIZE	(Parent: )	480	32	UINT	
ENG_ROLE	(Parent: )	512	32	UINT	
ENG_STATE	(Parent: )	544	32	UINT	
ENG_STARTTIME	(Parent: )	576	32	UINT	



ENG_SRCFILE	(Parent: )	608	512	STRING
ENG_DSTFILE	(Parent: )	1120	512	STRING
ENG_TMPFILE	(Parent: )	1632	512	STRING
APP_STATUS	(Parent: )	2144	32	UINT
APP_CONDCODE	(Parent: )	2176	32	UINT
APP_PRIORITY	(Parent: )	2208	32	UINT
APP_CLASS	(Parent: )	2240	32	UINT
APP_CHANNUM	(Parent: )	2272	32	UINT
APP_SOURCE	(Parent: )	2304	32	UINT
APP_NODETYPE	(Parent: )	2336	32	UINT
APP_TRANSNUM	(Parent: )	2368	32	UINT
APP_SRCENTITYID	(Parent: )	2400	128	STRING
APP_SRCFILE	(Parent: )	2528	512	STRING
APP_DSTFILE	(Parent: )	3040	512	STRING

## CFS CS\_HKPACKET

Housekeeping Packet Structure

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2212</b>	0	16	UINT		
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT		
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT		
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT		
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT		
CMDCOUNTER	CS Application Command Counter.	96	8	UINT		
CMDERRCOUNTER	CS Application Command Error Counter.	104	8	UINT		
CHECKSUMSTATE	CS Application global checksum state.	112	8	UINT		
EEPROMCSSTATE	CS Eeprom table checksum stat e.	120	8	UINT		
MEMORYCSSTATE	CS Memory table checksum state.	128	8	UINT		
APPCSSTATE	CS App table checksum state.	136	8	UINT		
TABLESCSSTATE	CS Tables table checksum stat e.	144	8	UINT		
OSCSSTATE	OS code segment checksum state.	152	8	UINT		
CFECORECSSTATE	cFE Core code segment checksum stat e	160	8	UINT		
RECOMPUTEINPROGRESS	CS 'Recompute In Progress' flag.	168	8	UINT		
ONESHOTINPROGRESS	CS 'OneShot In Progress' flag.	176	8	UINT		
FILLER8	8 bit padding	184	8	UINT		
EEPROMCSERRCOUNTER	Eeprom miscompare counte r.	192	16	UINT		
MEMORYCSERRCOUNTER	Memory miscompare counter.	208	16	UINT		
APPCSERRCOUNTER	App miscompare counter.	224	16	UINT		
TABLESCSERRCOUNTER	Tables miscompare counter.	240	16	UINT		



CFECORECSERRCOUNTER	cFE core miscompare counter	256	16	UINT
OSCSERRCOUNTER	OS code segment miscopmare counter.	272	16	UINT
CURRENTCSTABLE	Current table being checksummed.	288	16	UINT
CURRENTENTRYINTABLE	Current entry ID in the table being checksummed.	304	16	UINT
EPPROMBASELINE	Baseline checksum for all of Eeprom.	320	32	UINT
OSBASELINE	Baseline checksum for the OS code segment.	352	32	UINT
CFECOREBASELINE	Basline checksum for the cFE core.	384	32	UINT
LASTONESHOTADDRESS	Address used in last one shot checksum command.	416	32	UINT
LASTONESHOTSIZE	Size used in the last one shot checksum command.	448	32	UINT
LASTONESHOTMAXBYTESPERCYCLE	Max bytes per cycle for last one shot checksum command.	480	32	UINT
LASTONESHOTCHECKSUM	Checksum of the last one shot checksum command.	512	32	UINT
PASSCOUNTER	Number of times CS has passed through all of its tables.	544	32	UINT

## CFS DS\_FILEINFOPKT

DS application file info packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2233</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
FILEINFO	Current state of destination files. Array Bit Size: 2688	96	168	UINT	

## CFS DS\_HKPACKET

DS application housekeeping packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f



RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED
	Read Conversion: ReceivedTimeFormattedConversion			
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED
	Read Conversion: ReceivedCountConversion			
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2232</b>	0	16	UINT
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
CMDACCEPTEDCOUNTER	Count of valid commands received.	96	8	UINT
CMDREJECTEDCOUNTER	Count of invalid commands received.	104	8	UINT
DESTTBLOADCOUNTER	Count of destination file table loads.	112	8	UINT
DESTTBERRCOUNTER	Count of failed attempts to get table data pointer.	120	8	UINT
FILTERTBLOADCOUNTER	Count of packet filter table loads.	128	8	UINT
FILTERTBERRCOUNTER	Count of failed attempts to get table data pointer.	136	8	UINT
APPENABLESTATE	Application enable/disable state.	144	8	UINT
SPARE8	Structure alignment padding.	152	8	UINT
FILEWRITECOUNTER	Count of good destination file writes.	160	16	UINT
FILEWRITEERRCOUNTER	Count of bad destination file writes.	176	16	UINT
FILEUPDATECOUNTER	Count of good updates to secondary header.	192	16	UINT
FILEUPDATEERRCOUNTER	Count of bad updates to secondary header.	208	16	UINT
DISABLEDPKT COUNTER	Count of packets discarded (DS was disabled).	224	32	UINT
IGNOREDPKT COUNTER	Count of packets discarded. Incoming packets will be discarded when:	256	32	UINT
FILTEREDPKTCOUNTER	Count of packets discarded (failed filter test).	288	32	UINT
PASSEDPKT COUNTER	Count of packets that passed filter test.	320	32	UINT
FILTERNBLFILENAME	Name of filter table file.	352	512	STRING

## CFS FM\_DIRLISTPKT

Get Directory Listing telemetry packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED	%0.6f
	Read Conversion: ReceivedTimeSecondsConversion				
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED	
	Read Conversion: ReceivedTimeFormattedConversion				
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED	
	Read Conversion: ReceivedCountConversion				
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2188</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	



CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
DIRNAME	Directory Name.	96	512	STRING
TOTALFILES	Number of files in the directory.	608	32	UINT
PACKETFILES	Number of files in this packet.	640	32	UINT
FIRSTFILE	Index into directory files of first packet file.	672	32	UINT
FILELIST	Directory listing file data. Array Bit Size: 2080	704	104	UINT

## CFS FM\_FILEINFOPKT

Get File Info telemetry packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)  Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)  Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count  Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2187</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
FILESTATUS	Status indicating whether the file is open or closed.	96	8	UINT	
SPARE	Structure padding. Array Bit Size: 16	104	8	UINT	
CRC	CRC value if computed.	120	32	UINT	
FILESIZE	File Size.	152	32	UINT	
LASTMODIFIEDTIME	Last Modification Time of File.	184	32	UINT	
MODE	Mode of the file (Permissions).	216	32	UINT	
FILENAME	Name of File.	248	512	STRING	

## CFS FM\_FREESPACEPKT

Get Free Space telemetry packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)  Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
	COSMOS Received Time (Local time zone, Formatted string)				



RECEIVED_TIMEFORMATTED	Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2190</b>	0	16	UINT
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
FILESYS	Array of file system free space entries. Array Bit Size: 576	96	72	UINT

## CFS FM\_HOUSEKEEPINGPKT

Housekeeping telemetry packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2186</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
COMMANDCOUNTER	Application command counter.	96	8	UINT	
COMMANDERRCOUNTER	Application command error counter.	104	8	UINT	
SPARE	Placeholder for unused command warning counter.	112	8	UINT	
NUMOPENFILES	Number of open files in the system.	120	8	UINT	
CHILDCMDCOUNTER	Child task command counter.	128	8	UINT	
CHILDCMDERRCOUNTER	Child task command error counter.	136	8	UINT	
CHILDCMDWARNCOUNTER	Child task command warning counter.	144	8	UINT	
CHILDQUEUECOUNT	Number of pending commands in queue.	152	8	UINT	
CHILDCURRENTCC	Command code currently executing.	160	8	UINT	
CHILDPREVIOUSCC	Command code previously executed.	168	8	UINT	

## CFS FM\_OPENFILESPKT

Get Open Files telemetry packet



Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2189</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
NUMOPENFILES	Number of files opened via cFE.	96	32	UINT	
OPENFILESLIST	List of files opened via cFE. Array Bit Size: 800	128	16	UINT	

## CFS HK\_HKPACKET

HK Application housekeeping Packet

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2203</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	Count of valid commands received.	96	8	UINT	
ERRCOUNTER	Count of invalid commands received.	104	8	UINT	
PADDING	Padding to force 32 bit alignment.	112	16	UINT	
COMBINEDPACKETSSENT	Count of combined tlm pkts sent.	128	16	UINT	
MISSINGDATACTR	Number of times missing data was detected.	144	16	UINT	
MEMPOOLHANDLE	Memory pool handle used to get mempool diags.	160	32	UINT	



## CFS HS\_HKPACKET

Housekeeping Packet Structure

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2221</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNT	HS Application Command Counter.	96	8	UINT	
CMDERRCOUNT	HS Application Command Error Counter.	104	8	UINT	
CURRENTAPPMONSTATE	Status of HS Application Monitor.	112	8	UINT	
CURRENTEVENTMONSTATE	Status of HS Event Monitor.	120	8	UINT	
CURRENTALIVENESSSTATE	Status of HS Aliveness Indicator.	128	8	UINT	
CURRENTCPUHOGSTATE	Status of HS Hogging Indicator.	136	8	UINT	
STATUSFLAGS	Internal HS Error States.	144	8	UINT	
SPAREBYTES	Alignment Spares.	152	8	UINT	
RESETSPERFORMED	HS Performed Processor Reset Count.	160	16	UINT	
MAXRESETS	HS Maximum Processor Reset Count.	176	16	UINT	
EVENTSMONITOREDCOUNT	Total count of Event Messages Monitored by the Events Monitor.	192	32	UINT	
INVALIDEVENTMONCOUNT	Total count of Invalid Event Monitors Monitored by the Events Monitor.	224	32	UINT	
APPMONENABLES	Enable states of App Monitor Entries. Array Bit Size: 64	256	32	UINT	
MSGACTEXEC	Number of Software Bus Message Actions Executed.	320	32	UINT	
UTILCPUAVG	Current CPU Utilization Average.	352	32	UINT	
UTILCPUPEAK	Current CPU Utilization Peak.	384	32	UINT	

## CFS LC\_HKPACKET

Housekeeping Packet Structure

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f



RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2215</b>	0	16	UINT
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
CMDCOUNT	LC Application Command Counter.	96	8	UINT
CMDERRCOUNT	LC Application Command Error Counter.	104	8	UINT
CURRENTLCSTATE	Current LC application operating state.	112	8	UINT
PAD8		120	8	UINT
WPRESULTS	Packed watchpoint results data, 2 bits per watchpoint. Array Bit Size: 384	128	8	UINT
APRESULTS	Packed actionpoint results data, 4 bits per actionpoint. Array Bit Size: 736	512	8	UINT
PASSIVERTSEXECOUNT	Total count of RTS sequences not initiated because the LC state is set to LC_STATE_PASSIVE.	1248	16	UINT
WPSINUSE	How many watchpoints are currently in effect.	1264	16	UINT
ACTIVEAPS	How many actionpoints are currently active.	1280	16	UINT
PAD16		1296	16	UINT
APSAMPLECOUNT	Total count of Actionpoints sampled.	1312	32	UINT
MONITOREDMSGCOUNT	Total count of messages monitored for watchpoints.	1344	32	UINT
RTSEXECOUNT	Total count of RTS sequences initiated.	1376	32	UINT

## CFS MD\_DWELLPKT

Memory Dwell Telemetry Packet format

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2193</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	



CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
TABLEID	TableId from 1 to MD_NUM_DWELL_TABLES.	96	8	UINT
ADDRCOUNT	Number of addresses being sent - 1..MD_DWELL_TABLE_SIZE valid.	104	8	UINT
BYTECOUNT	Number of bytes of dwell data contained in packet.	112	16	UINT
RATE	Number of counts between packet sends.	128	32	UINT
DATA	Dwell data ( number of bytes varies up to MD_DWELL_TABLE_SIZE *4).	160	8	UINT
	Array Bit Size: 800			

## CFS MD\_HKTL

Memory Dwell HK Telemetry format

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2192</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
INVALIDCMDCNTR	Count of invalid commands received.	96	8	UINT	
VALIDCMDCNTR	Count of valid commands received.	104	8	UINT	
DWELLENABLEDMASK	Each bit in bit mask enables a table 0x0001=TBL1 enable bit,0x0002=TBL2 enable bit, 0x0004=TBL3 enable bit,0x0008=TBL4 enable bit, etc.	112	16	UINT	
DWELLTBLADDRCOUNT	Number of dwell addresses in table. Array Bit Size: 64	128	16	UINT	
NUMWAITSPERPKT	Number of delay counts in table. Array Bit Size: 64	192	16	UINT	
BYTECOUNT	Number of bytes of data specified by table. Array Bit Size: 64	256	16	UINT	
DWELLPKTOFFSET	Current write offset within dwell pkt data region. Array Bit Size: 64	320	16	UINT	
	Next dwell table entry to be processed.				




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DWELLTBLENTRY	Array Bit Size: 64	384	16	UINT
COUNTDOWN	Current value of countdown timer. Array Bit Size: 64	448	16	UINT

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## CFS MM\_HKPACKET

Housekeeping Packet Structure

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)  Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)  Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count  Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2183</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	MM Application Command Counter.	96	8	UINT	
ERRCOUNTER	MM Application Command Error Counter.	104	8	UINT	
LASTACTION	Last command action executed.	112	8	UINT	
MEMTYPE	Memory type for last command.	120	8	UINT	
ADDRESS	Fully resolved address used for last command.	128	32	UINT	
DATAVALUE	Last command data value -- may be fill pattern or peek/poke value.	160	32	UINT	
BYTESPROCESSED	Bytes processed for last command.	192	32	UINT	
FILENAME	Name of the data file used for last command, where applicable.	224	512	STRING	

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## CFS SCH\_DIAGPACKET

Scheduler Diagnostic Telemetry format

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)  Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)  Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	



RECEIVED_COUNT	Read Conversion: ReceivedCountConversion	0	0	DERIVED
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2200</b>	0	16	UINT
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT
ENTRYSTATES	States of each Schedule Entry. Array Bit Size: 1024	96	16	UINT
MSGIDS	Message ID of msg associated with each entry. Array Bit Size: 8000	1120	16	UINT

## CFS SCH\_HKPACKET

Scheduler HK Telemetry format

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2199</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
CMDCOUNTER	Command Counter.	96	8	UINT	
ERRCOUNTER	Command Error Counter.	104	8	UINT	
SYNCTOMET	Status indicating whether slots are synched to MET.	112	8	UINT	
MAJORFRAMESOURCE	Major Frame Signal source identifier.	120	8	UINT	
SCHEDULEACTIVITYSUCCESSCOUNT	Number of successfully performed activities.	128	32	UINT	
SCHEDULEACTIVITYFAILURECOUNT	Number of unsuccessful activities attempted.	160	32	UINT	
SLOTPROCESSEDCOUNT	Total # of Schedule Slots (Minor Frames) Processed.	192	32	UINT	
SKIPPEDSLOTSCOUNT	Number of times that slots were skipped.	224	16	UINT	
MULTIPLESLOTSCOUNT	Number of times that multiple slots processed.	240	16	UINT	
SAMESLOTCOUNT	# of times SCH woke up in the same slot as last time	256	16	UINT	
BADTABLEDATACOUNT	# of times corrupted table entries were processed	272	16	UINT	
TABLEVERIFYSUCCESSCOUNT	# of times table loads successfully verified	288	16	UINT	
TABLEVERIFYFAILURECOUNT	# of times table loads unsuccessfully verified	304	16	UINT	
TABLEPASSCOUNT	# of times Schedule Table has been processed	320	32	UINT	



VALIDMAJORFRAMECOUNT	# of valid Major Frame tones received	352	32	UINT
MISSEDMAJORFRAMECOUNT	# of missing Major Frame tones	384	32	UINT
UNEXPECTEDMAJORFRAMECOUNT	# of unexpected Major Frame tones	416	32	UINT
MINORFRAMESINCETONE	# of Minor Frames since last Major Frame tone	448	16	UINT
NEXTSLOTNUMBER	Next Minor Frame to be processed.	464	16	UINT
LASTSYNCMETSLot	Slot number where Time Sync last occurred.	480	16	UINT
IGNOREMAJORFRAME	Major Frame too noisy to trust.	496	8	UINT
UNEXPECTEDMAJORFRAME	Most Recent Major Frame signal was unexpected.	504	8	UINT

## CFS SC\_HKTLM

Housekeeping Packet Structure

Item Name	Description	Bit Offset	Bit Size	Data Type	Units Format
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
CCSDS_STREAMID	CCSDS Packet Identification <b>Id Value: 2218</b>	0	16	UINT	
CCSDS_SEQUENCE	CCSDS Packet Sequence Control	16	16	UINT	
CCSDS_LENGTH	CCSDS Packet Data Length	32	16	UINT	
CCSDS_SECONDS	CCSDS Telemetry Secondary Header (seconds)	48	32	UINT	
CCSDS_SUBSECS	CCSDS Telemetry Secondary Header (subseconds)	80	16	UINT	
ATSNRNUMBER	current ATS number 1 = ATS A, 2 = ATS B	96	8	UINT	
ATPSTATE	current ATP state valid values are: 2 = IDLE, 5 = EXECUTING	104	8	UINT	
CONTINUEATSONFAILUREFLAG	In the event of ATS execution failure (ats command fails checksum), the ATS execution will continue if this flag is set to TRUE and will stop if this flag is set to FALSE.	112	8	UINT	
CMDERRCTR	Counts Request Errors.	120	8	UINT	
CMDCTR	Counts Ground Requests.	128	8	UINT	
PADDING8		136	8	UINT	
SWITCHPENDFLAG	is an ats switch pending? 0 = NO, 1 = YES This means that the ATS switch is waiting until a safe time	144	16	UINT	
NUMRTSACTIVE	number of RTSs currently active	160	16	UINT	
RTSNUMBER	next RTS number	176	16	UINT	
RTSACTIVECTR	Increments when an RTS is started without error.	192	16	UINT	
RTSACTIVEERRCTR	Increments when an attempt to start an RTS fails.	208	16	UINT	
ATSCMDCTR	Total ATS cmd cnter counts commands sent by the ATS.	224	16	UINT	
ATSCMDERRCTR	Total ATS cmd Error ctr command errors in the ATS.	240	16	UINT	
RTSCMDCTR	Counts TOTAL rts cmds that were sent out from ALL active RTSs.	256	16	UINT	



RTSCMDERRCTR	Counts TOTAL number of errs from ALL RTSs that are active.	272	16	UINT
LASTATSERRSEQ	Last ATS Errant Sequence Num Values: 1 or 2.	288	16	UINT
LASTATSERRCMD	Last ATS Errant Command Num.	304	16	UINT
LASTRTSERRSEQ	Last RTS Errant Sequence Num.	320	16	UINT
LASTRTSERRCMD	The OFFSET in the RTS buffer of the command that had an error It will be a WORD value i.e. 1st command had an error, this value would be 0, if the 2nd command started at int8 10 in the buffer, this value would be 5.	336	16	UINT
APPENDCMDARG	ATS selection argument from most recent Append ATS command.	352	16	UINT
APPENDENTRYCOUNT	Number of cmd entries in current Append ATS table.	368	16	UINT
APPENDBYTECOUNT	Size of cmd entries in current Append ATS table.	384	16	UINT
APPENDLOADCOUNT	Total number of Append ATS table loads.	400	16	UINT
ATPCMDNUMBER	current command number	416	32	UINT
ATPFREEBYTES	Free Bytes in each ATS.	448	32	UINT
NEXTRTSTIME	Array Bit Size: 64 next RTS cmd Absolute Time	512	32	UINT
NEXTATSTIME	Next ATS Command Time (seconds).	544	32	UINT
RTSEXECUTINGSTATUS	RTS executing status bit map where each uint16 represents 16 RTS numbers. Note: array index numbers and bit numbers use base zero indexing, but RTS numbers use base one indexing. Thus, the LSB (bit zero) of uint16 array index zero represents RTS number 1, and bit one of uint16 array index zero represents RTS number 2, etc. If an RTS is IDLE, then the corresponding bit is zero. If an RTS is EXECUTING, then the corresponding bit is one.  Array Bit Size: 80	576	16	UINT
RTSDISABLEDSTATUS	RTS disabled status bit map where each uint16 represents 16 RTS numbers. Note: array index numbers and bit numbers use base zero indexing, but RTS numbers use base one indexing. Thus, the LSB (bit zero) of uint16 array index zero represents RTS number 1, and bit one of uint16 array index zero represents RTS number 2, etc. If an RTS is ENABLED, then the corresponding bit is zero. If an RTS is DISABLED, then the corresponding bit is one.  Array Bit Size: 80	656	16	UINT