Title: EarthCARE Products Definitions
Volume 3a - BBR L0 Products Definitions

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Change Record

Issue	Date	ISP Version	Sheet	Description of Change
1	10.07.2009	-	All	First Issue
2	04.12.2009	-	All	Document restructured as described in EC.MN.ASD.SY.00233
3	10.06.2010	3.9	All	Modified after ECGP Pre-TEB
4	21.10.2010	3.13	All	Update for ECGP KO

Table of Contents

3.1 BroadBand Radiometer - Level 0

This specification arises in the frame of the ESSS and ECGP. The purpose of this document is to specify the format and content of the Instrument Source Packets as well as of the L0 products for the BBR Instrument.

The current ISP format version is 3.13.

TBDs/TBCs/TBWs mark specifications that are yet to be completed. Currently, this document includes the following TBDs/TBCs/TBWs.

TBD

The BBR Instrument generates the following products.

Table 3.1-1: Products Summary Table

Instrument Mode	Product Id	Description	Record Size (Byte)	Granularity	Product Size	Coverage	Geometric Information	Radiometric Information
Nominal	BBR_NOM_0_	Level-0 product.	3512	4,35 s^{-1}	85 MB / orbit TBC	TBD	TBD	TBD

3.1.1 Level-0 Products

3.1.1.1 BBR_NOM_0_

3.1.1.1.1 Description

There is a single L0 Product for the BBR Instrument, whose specification is given hereafter.

3.1.1.1.2 Input data

The BBR Level-0 data is a reorganisation and collation of the Processed ISPs (see Section 3.1.1.1.4.4.6).

Quality flags are computed as needed and stored in the L0 Specific Product Header.

3.1.1.1.3 Auxiliary Data

No auxiliary data is needed apart from time correlation information in the case of invalid time stamps in the ISPs.

3.1.1.1.4 Product Structure

Table 3.1-2: Product Overview

Fixed Product Header
BBRNOM_L0_MainProductHeader
L0 Specific Product Header
Instrument Source Packets

3.1.1.1.4.1 Fixed Product Header

See Products Definitions Volume 1.

3.1.1.1.4.2 BBRNOM_L0_MainProductHeader

This is the Main Product Header for the BBR L0 Products. It is identical to the Main Product Header in Vol. 1 but has some predefined values specific to the BBR L0 product.

#	Field name	Units	NetCDF C-Types	Size of each element	Number of elements	Total size	Value
1	productName	unitless	NC_BYTE	55	1	55	
2	missionID	unitless	NC_BYTE	2	1	2	EC
3	fileClass	unitless	NC_BYTE	4	1	4	
4	fileCategory	unitless	NC_BYTE	4	1	4	BBR_
5	productType	unitless	NC_BYTE	3	1	3	
6	latency	unitless	NC_BYTE	1	1	1	
7	productLevel	unitless	NC_BYTE	2	1	2	0_
8	sensingStart	unitless	NC_BYTE	23	1	23	
9	sensingStop	unitless	NC_BYTE	23	1	23	
10	productVersion	unitless	NC_BYTE	4	1	4	

11	degradedProductQualityFlag	unitless	NC_SHORT	2	1	2	
12	processingMode	unitless	NC_BYTE	1	1	1	
13	dispositionMode	unitless	NC_BYTE	1	1	1	
14	description	unitless	NC_BYTE	1024	1	1024	
15	processorName	unitless	NC_BYTE	1024	1	1024	
16	processorMajorVersion	unitless	NC_SHORT	2	1	2	
17	processorMinorVersion	unitless	NC_SHORT	2	1	2	
18	formatVersion	unitless	NC_BYTE	26	1	26	
19	subsettedProduct	unitless	ECBool	1	1	1	
20	dataBlockSize	unitless	NC_UINT64	8	1	8	
21	productDuration	unitless	NC_UINT	4	1	4	
22	acquisitionStation	unitless	NC_BYTE	10	1	10	
23	processingCentre	unitless	NC_BYTE	4	1	4	
24	processingStart	unitless	NC_BYTE	23	1	23	
25	processingStop	unitless	NC_BYTE	23	1	23	
26	orbitStart	unitless	NC_USHORT	2	1	2	
27	orbitStop	unitless	NC_USHORT	2	1	2	
28	ANXTime	unitless	NC_BYTE	26	1	26	
29	ANXLongitude	unitless	NC_DOUBLE	8	1	8	
30	stateVectorSource	unitless	NC_BYTE	15	1	15	
31	stateVectorTimeStamp	unitless	NC_BYTE	26	1	26	
32	xPosition	unitless	NC_DOUBLE	8	1	8	
33	yPosition	unitless	NC_DOUBLE	8	1	8	
34	zPosition	unitless	NC_DOUBLE	8	1	8	
35	xVelocity	unitless	NC_DOUBLE	8	1	8	
36	yVelocity	unitless	NC_DOUBLE	8	1	8	
37	zVelocity	unitless	NC_DOUBLE	8	1	8	
38	subsatellitePointStart	unitless	GeographicCoordinates	45	1	45	
39	subsatellitePointStop	unitless	GeographicCoordinates	45	1	45	
TOTAL:						Size depends on XML format	

3.1.1.1.4.3 L0 Specific Product Header

See Products Definitions Volume 1.

3.1.1.1.4.4 Instrument Source Packets

The BBR Instrument generates ISP in a single format in a single nominal instrument mode (Processed ISPs).

There is also an instrument source packet produced when the instrument is in RAW mode. This contains the raw data from one detector – that is, the values digitised from the detector ROIC as well as the corresponding processed data and HK. This data is not intended for archiving, only to be able to characterise the detector response and so is not considered a Product. When presented with RAW+PROCESSED packets at the corresponding higher rate, the L0/L1 Instrument Processor synthetically reconstructs a PROCESSED ISP prior to extracting a level 0 product.

The BBR Instrument generates ISPs with fixed values in the Packet Header and the PUS Data Field Header fields.

3.1.1.1.4.4.1 BBR_RAW_PacketHeader Bit Vector Table

These are the actual values of the Packet Header for the BBR RAW ISP.

Parameter	MSB	Description	Value
Version_Number	b0 - b2	CCSDS Version Number	000b
Type	b3	Packet type	0b
Data_Field_Header_Flag	b4	Indicates the presence of a secondary (data field) header (when set to 1).	0x01
Application_Process_ID__PID	b5 - b11	Process ID (part of the APID)	0x48
Application_Process_ID__PCAT	b12 - b15	Packet category	13
Segmentation_Flags	b16 - b17	Indicates the grouping (segmentation) of TM source packets.	11b
Source_Sequence_Count	b18 - b31	Wrap around counter used to count each TM packet. For the ESSS in contrast to the PUS, only one counter for all APIDs is maintained.	source packet count value modulo 2^14 (0 - 16383)
Packet_Length	b32 - b47	Number of bytes contained in the packet data field minus 1.	number of octets in packed data field - 1

3.1.1.1.4.4.2 BBR_RAW_PUSDataFieldHeader Bit Vector Table

These are the actual values of the PUS Data Field Header described in Vol. 1 for the BBR RAW ISP.

Parameter	MSB	Description	Value
Spare_1	b0	Not used.	Must be set to 0 for all TM source packets.
TM_Source_Packet_PUS_Version_Number	b1 - b3	Not used.	(0 was used for ESA PUS version) 1 for ECSS PUS
Spare_2	b4 - b7	Filler to complete the byte.	Must be set to 0 for all TM source packets
Service_Type	b8 - b15	Indicates the service to which the packet relates.	230
Service_Subtype	b16 - b23	Indicates the service subtype to which the packet relates.	1
Destination_ID	b24 - b31	Indicates the destination of the packet (May be omitted if only one destination exists).	0
Time	b32 - b87	Onboard time (OBT).	Coarse time: LSB = 1 sec Fine time: LSB = 1/16777215 sec
Time_Quality	b88 - b95	This shall give the status of the time reporting sub-service, i.e. current PPS source and whether synchronization is enabled.	Bit3 (Time type): 0 = Elapsed Time (ET); 1 = OBT Bit 4 (Sync. Source): 0 = internal; 1 = external Bit 5 (Ext. Sync. Source Detail): 0 = 1Hz Pulse; 1 = MIL-BUS Bit 6 (Sync. Status): 0 = NoSync; 1 = InSync Bit 7 (Sync. Enabled/Disabled): 0 = Disabled; 1 = Enabled

3.1.1.1.4.4.3 BBRRawISP

This is the Instrument Data Field for the BBR RAW ISPs.

#	Field name	Description	Units	NetCDF C-Types	Size of each element	Number of elements	Total size	Value
1	stateVectorQuality	Contains details about the S/C state vector quality information as received from the S/C	unitless	NC_UINT	4	1	4	
2	ISPFormatVersion	Stores the version number of the ICD where the ISP format definition is specified. The most significant byte shall store the major version and the least significant byte shall store the minor version.	unitless	NC_USHORT	2	1	2	
3	DELIMITER_0	Encoded as 0xAAANh, where N=1-8 representing the correct chopper packet	unitless	NC_USHORT	2	1	2	
4	TIME_ACQ_N_TELE_1	This is the time at which the aft telescope is ordered to start this acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
5	TIME_ACQ_N_TELE_2	This is the time at which the nadir telescope is ordered to start this acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
6	TIME_ACQ_N_TELE_3	This is the time at which the fore telescope is ordered to start this acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
7	CAL_DRUM_POSITION_ACQ_N	This the value of the cal drum positional encoder value at the time of the aft telescope acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
8	DELIMITER_1	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0xAA55h
9	RAW_1	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 1	BU	NC_USHORT	2	24	48	
10	RAW_2	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 2	BU	NC_USHORT	2	24	48	
11	RAW_3	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x	BU	NC_USHORT	2	24	48	

		16 bit values. They are taken in chronological order, this is subsample 3						
12	RAW_4	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 4	BU	NC_USHORT	2	24	48	
13	RAW_5	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 5	BU	NC_USHORT	2	24	48	
14	RAW_6	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 6	BU	NC_USHORT	2	24	48	
15	RAW_7	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 7	BU	NC_USHORT	2	24	48	
16	RAW_8	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 8	BU	NC_USHORT	2	24	48	
17	RAW_9	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 9	BU	NC_USHORT	2	24	48	
18	RAW_10	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 10	BU	NC_USHORT	2	24	48	
19	RAW_11	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 11	BU	NC_USHORT	2	24	48	
20	RAW_12	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 12	BU	NC_USHORT	2	24	48	
21	RAW_13	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is	BU	NC_USHORT	2	24	48	

		subsample 13						
22	RAW_14	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 14	BU	NC_USHORT	2	24	48	
23	RAW_15	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 15	BU	NC_USHORT	2	24	48	
24	RAW_16	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 16	BU	NC_USHORT	2	24	48	
25	RAW_17	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 17	BU	NC_USHORT	2	24	48	
26	RAW_18	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 18	BU	NC_USHORT	2	24	48	
27	RAW_19	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 19	BU	NC_USHORT	2	24	48	
28	RAW_20	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 20	BU	NC_USHORT	2	24	48	
29	RAW_21	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 21	BU	NC_USHORT	2	24	48	
30	RAW_22	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 22	BU	NC_USHORT	2	24	48	
31	RAW_23	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 23	BU	NC_USHORT	2	24	48	
32	RAW_24	This is the raw subsampled	BU	NC_USHOR	2	24	48	

		detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 24		T				
33	RAW_25	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 25	BU	NC_USHORT	2	24	48	
34	RAW_26	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 26	BU	NC_USHORT	2	24	48	
35	RAW_27	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 27	BU	NC_USHORT	2	24	48	
36	RAW_28	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 28	BU	NC_USHORT	2	24	48	
37	RAW_29	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 29	BU	NC_USHORT	2	24	48	
38	RAW_30	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 30	BU	NC_USHORT	2	24	48	
39	RAW_31	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 31	BU	NC_USHORT	2	24	48	
40	RAW_32	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 32	BU	NC_USHORT	2	24	48	
41	RAW_33	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 33	BU	NC_USHORT	2	24	48	
42	RAW_34	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x	BU	NC_USHORT	2	24	48	

		16 bit values. They are taken in chronological order, this is subsample 34						
43	RAW_35	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 35	BU	NC_USHORT	2	24	48	
44	RAW_36	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 36	BU	NC_USHORT	2	24	48	
45	RAW_37	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 37	BU	NC_USHORT	2	24	48	
46	RAW_38	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 38	BU	NC_USHORT	2	24	48	
47	RAW_39	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 39	BU	NC_USHORT	2	24	48	
48	RAW_40	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 40	BU	NC_USHORT	2	24	48	
49	RAW_41	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 41	BU	NC_USHORT	2	24	48	
50	RAW_42	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 42	BU	NC_USHORT	2	24	48	
51	RAW_43	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 43	BU	NC_USHORT	2	24	48	
52	RAW_44	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is	BU	NC_USHORT	2	24	48	

		subsample 44						
53	RAW_45	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 45	BU	NC_USHORT	2	24	48	
54	RAW_46	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 46	BU	NC_USHORT	2	24	48	
55	RAW_47	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 47	BU	NC_USHORT	2	24	48	
56	RAW_48	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 48	BU	NC_USHORT	2	24	48	
57	RAW_49	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 49	BU	NC_USHORT	2	24	48	
58	RAW_50	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 50	BU	NC_USHORT	2	24	48	
59	RAW_51	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 51	BU	NC_USHORT	2	24	48	
60	RAW_52	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 52	BU	NC_USHORT	2	24	48	
61	RAW_53	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 53	BU	NC_USHORT	2	24	48	
62	RAW_54	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 54	BU	NC_USHORT	2	24	48	
63	RAW_55	This is the raw subsampled	BU	NC_USHOR	2	24	48	

		detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 55		T				
64	RAW_56	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 56	BU	NC_USHORT	2	24	48	
65	RAW_57	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 57	BU	NC_USHORT	2	24	48	
66	RAW_58	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 58	BU	NC_USHORT	2	24	48	
67	RAW_59	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 59	BU	NC_USHORT	2	24	48	
68	RAW_60	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 60	BU	NC_USHORT	2	24	48	
69	RAW_61	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 61	BU	NC_USHORT	2	24	48	
70	RAW_62	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 62	BU	NC_USHORT	2	24	48	
71	RAW_63	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 63	BU	NC_USHORT	2	24	48	
72	RAW_64	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 64	BU	NC_USHORT	2	24	48	
73	RAW_65	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x	BU	NC_USHORT	2	24	48	

		16 bit values. They are taken in chronological order, this is subsample 65						
74	RAW_66	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 66	BU	NC_USHORT	2	24	48	
75	RAW_67	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 67	BU	NC_USHORT	2	24	48	
76	RAW_68	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 68	BU	NC_USHORT	2	24	48	
77	RAW_69	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 69	BU	NC_USHORT	2	24	48	
78	RAW_70	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 70	BU	NC_USHORT	2	24	48	
79	RAW_71	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 71	BU	NC_USHORT	2	24	48	
80	RAW_72	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 72	BU	NC_USHORT	2	24	48	
81	RAW_73	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 73	BU	NC_USHORT	2	24	48	
82	RAW_74	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 74	BU	NC_USHORT	2	24	48	
83	RAW_75	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is	BU	NC_USHORT	2	24	48	

		subsample 75						
84	RAW_76	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 76	BU	NC_USHORT	2	24	48	
85	RAW_77	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 77	BU	NC_USHORT	2	24	48	
86	RAW_78	This is the raw subsampled detector voltage, captured as 32 x 12 bit values and packed as 24 x 16 bit values. They are taken in chronological order, this is subsample 78	BU	NC_USHORT	2	24	48	
87	I1_ACQ_N_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from this acquisition.	BU	NC_USHORT	2	30	60	
88	I2_ACQ_N_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the first half of the 76 detector subsamples, from the first acquisition.	BU	NC_USHORT	2	30	60	
89	I1_ACQ_N_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from this acquisition.	BU	NC_USHORT	2	30	60	
90	I2_ACQ_N_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the first half of the 76 detector subsamples, from this acquisition.	BU	NC_USHORT	2	30	60	
91	I1_ACQ_N_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from this acquisition.	BU	NC_USHORT	2	30	60	
92	I2_ACQ_N_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the first half of the 76 detector subsamples, from this acquisition.	BU	NC_USHORT	2	30	60	
93	MPD_ACQ_N_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from this acquisition.	BU	NC_USHORT	2	1	2	
94	MPD_ACQ_N_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
95	MPD_ACQ_N_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
96	MPD_ACQ_N_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	

97	MPD_ACQ_N_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
98	MPD_ACQ_N_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
99	MPD_ACQ_N_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
100	MPD_ACQ_N_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
101	MPD_ACQ_N_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
102	MPD_ACQ_N_CAL_R	This is the signal output of the cal drum mounted Red photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
103	MPD_ACQ_N_CAL_G	This is the signal output of the cal drum mounted green photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
104	MPD_ACQ_N_CAL_B	This is the signal output of the cal drum mounted blue photodiode, from this acquisition.	BU	NC_USHORT	2	1	2	
105	DELIMITER_2	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0x55AAh
106	BB_1_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 1	BU	NC_USHORT	2	1	2	
107	BB_1_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 1	BU	NC_USHORT	2	1	2	
108	BB_2_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 2	BU	NC_USHORT	2	1	2	
109	BB_2_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 2	BU	NC_USHORT	2	1	2	
110	BB_3_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 3	BU	NC_USHORT	2	1	2	
111	BB_3_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 3	BU	NC_USHORT	2	1	2	
112	BB_4_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 4	BU	NC_USHORT	2	1	2	
113	BB_4_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 4	BU	NC_USHORT	2	1	2	
114	TELE_1_PRT_A	Signal output (temperature) for the 'A' PRT mounted on the baseplate of the aft telescope	BU	NC_USHORT	2	1	2	
115	TELE_1_PRT_B	Signal output (temperature) for the 'A' PRT mounted on the baseplate of the nadir telescope	BU	NC_USHORT	2	1	2	
116	TELE_2_PRT_A	Signal output (temperature) for the 'A' PRT mounted on the baseplate of the fore telescope	BU	NC_USHORT	2	1	2	

117	TELE_2_PRT_B	Signal output (temperature) for the 'B' PRT mounted on the baseplate of the aft telescope	BU	NC_USHORT	2	1	2	
118	TELE_3_PRT_A	Signal output (temperature) for the 'B' PRT mounted on the baseplate of the nadir telescope	BU	NC_USHORT	2	1	2	
119	TELE_3_PRT_B	Signal output (temperature) for the 'B' PRT mounted on the baseplate of the fore telescope	BU	NC_USHORT	2	1	2	
120	VMON_TA_P_12	The output from the voltage monitor monitoring the +12V rail.	BU	NC_USHORT	2	1	2	
121	VMON_TA_M_12	The output from the voltage monitor monitoring the -12V rail.	BU	NC_USHORT	2	1	2	
122	VMON_TA_P_5	The output from the voltage monitor monitoring the +5V rail.	BU	NC_USHORT	2	1	2	
123	VMON_TA_P_3_3	The output from the voltage monitor monitoring the +3.3V rail.	BU	NC_USHORT	2	1	2	
124	VMON_TA_P_1_5	The output from the voltage monitor monitoring the +1.5V rail.	BU	NC_USHORT	2	1	2	
125	THERM_TA_SCE	Spare monitoring channel	BU	NC_USHORT	2	1	2	
126	VMON_DET_1_VREF	Monitor of voltage supply to the DAC 1 on the aft telescope	BU	NC_USHORT	2	1	2	
127	VMON_DET_1_VBOLO	Monitor of voltage supply to the DAC 2 on the aft telescope	BU	NC_USHORT	2	1	2	
128	VMON_DET_1_VSHUNT	Monitor of voltage supply to the DAC 3 on the aft telescope	BU	NC_USHORT	2	1	2	
129	VMON_DET_1_VTHERMO	Monitor of voltage supply to the DAC 4 on the aft telescope	BU	NC_USHORT	2	1	2	
130	VMON_DET_2_VREF	Monitor of voltage supply to the DAC 1 on the nadir telescope	BU	NC_USHORT	2	1	2	
131	VMON_DET_2_VBOLO	Monitor of voltage supply to the DAC 2 on the nadir telescope	BU	NC_USHORT	2	1	2	
132	VMON_DET_2_VSHUNT	Monitor of voltage supply to the DAC 3 on the nadir telescope	BU	NC_USHORT	2	1	2	
133	VMON_DET_2_VTHERMO	Monitor of voltage supply to the DAC 4 on the nadir telescope	BU	NC_USHORT	2	1	2	
134	VMON_DET_3_VREF	Monitor of voltage supply to the DAC 1 on the fore telescope	BU	NC_USHORT	2	1	2	
135	VMON_DET_3_VBOLO	Monitor of voltage supply to the DAC 2 on the fore telescope	BU	NC_USHORT	2	1	2	
136	VMON_DET_3_VSHUNT	Monitor of voltage supply to the DAC 3 on the fore telescope	BU	NC_USHORT	2	1	2	
137	VMON_DET_3_VTHERMO	Monitor of voltage supply to the DAC 4 on the fore telescope	BU	NC_USHORT	2	1	2	
138	TELE_1_PIX_30	Temperature as read by the unreleased pixel #30 on the FPA of the aft telescope	BU	NC_USHORT	2	1	2	
139	TELE_1_PIX_31	Temperature as read by the unreleased pixel #31 on the FPA of the aft telescope	BU	NC_USHORT	2	1	2	
140	TELE_2_PIX_30	Temperature as read by the unreleased pixel #30 on the FPA of the nadir telescope	BU	NC_USHORT	2	1	2	
141	TELE_2_PIX_31	Temperature as read by the unreleased pixel #31 on the FPA of the nadir telescope	BU	NC_USHORT	2	1	2	
142	TELE_3_PIX_30	Temperature as read by the	BU	NC_USHOR	2	1	2	

		unreleased pixel #30 on the FPA of the fore telescope		T				
143	TELE_3_PIX_31	Temperature as read by the unreleased pixel #31 on the FPA of the fore telescope	BU	NC_USHORT	2	1	2	
144	IMON_TELE_PRT	Current monitor for telescope PRTs	BU	NC_USHORT	2	1	2	
145	IMON_BB_PRT	Current monitor for Black body PRTs	BU	NC_USHORT	2	1	2	
146	SPARE_HK_52	Spare	BU	NC_USHORT	2	1	2	
147	SPARE_HK_53	Spare	BU	NC_USHORT	2	1	2	
148	SPARE_HK_54	Spare	BU	NC_USHORT	2	1	2	
149	SPARE_HK_55	Spare	BU	NC_USHORT	2	1	2	
150	COMMAND_COUNTER	Spare	BU	NC_USHORT	2	1	2	
151	TEST_ID	Spare	BU	NC_USHORT	2	1	2	
152	FLAG_ADC_ROIC_LATCHUP	Number of OU ADC and ROIC latch up flags (one current limiter per detector)	BU	NC_USHORT	2	1	2	
153	FLAG_FPGA_ERROR	FPGA error flags	BU	NC_USHORT	2	1	2	
154	FPGA_SAMPLING	Samples per integration : 0-127 samples per full integration; 0-127 samples per part integration	BU	NC_USHORT	2	1	2	
155	FPGA_CONFIGURATION	ROIC gain/FPGA mode/Raw source; encoding as per EC-RS-RAL-BBR-0002, namely: MS = ROIC gain (0 = 0.1pf, 1 = 1pF, 2 = 8pF, 3 = 16pF); LS as YYZZ, where YY = SCE Mode (0 = WAIT, 1 = RUN, 2 = SIMULATED DATA); ZZ = Telescope that is in raw mode (0 = none, 1 = aft, 2 = nadir, 3 = fore)	BU	NC_USHORT	2	1	2	
156	LUT_VERSION_NUMBER	Version number of LUT used by DSP algorithm	BU	NC_USHORT	2	1	2	
157	FPGA_VERSION_NUMBER	Build version of FPGA	BU	NC_USHORT	2	1	2	
158	DELIMITER_3	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0x5555h
159	THERM_MA1_CDM_WINDING	Temperature of the CDM winding	BU	NC_USHORT	2	1	2	
160	THERM_MA2_CTM_WINDING	Temperature of the CTM winding	BU	NC_USHORT	2	1	2	
161	THERM_MA3_CTM_ENCODER	Temperature of the CTM encoder	BU	NC_USHORT	2	1	2	
162	THERM_MA4_MA_RADIATOR	Temperature of the MA radiator	BU	NC_USHORT	2	1	2	
163	THERM_MA5_MA_TSTATS	Temperature of the MA thermostates	BU	NC_USHORT	2	1	2	
164	THERM_MA6_CDM_ENCODER	Temperature of the CDM encoder	BU	NC_USHORT	2	1	2	
165	THERM_TA1_FORE_TSCOPE	Temperature of the Fore telescope baseplate	BU	NC_USHORT	2	1	2	

166	THERM_TA2_NADIR_TSCOPE	Temperature of the Nadir telescope baseplate	BU	NC_USHORT	2	1	2	
167	THERM_TA3_AFT_TSCOPE	Temperature of the Aft telescope baseplate	BU	NC_USHORT	2	1	2	
168	THERM_TA4_FOA_BASEPLATE	Temperature of the Fixed Optics Assembly baseplate	BU	NC_USHORT	2	1	2	
169	THERM_TA5_AFT_BAFFLE	Temperature of the Aft telescope foreoptics baffle	BU	NC_USHORT	2	1	2	
170	THERM_TA6_CALDRUM_1	Temperature of the Calibration drum (position 1)	BU	NC_USHORT	2	1	2	
171	THERM_TA7_CALDRUM_2	Temperature of the Calibration drum (position 2)	BU	NC_USHORT	2	1	2	
172	THERM_TA8_VISCAL_1	Temperature of the VisCal (position 1)	BU	NC_USHORT	2	1	2	
173	THERM_TA9_VISCAL_2	Temperature of the VisCal (position 2)	BU	NC_USHORT	2	1	2	
174	THERM_TA10_RADIATOR_1	Temperature of the main radiator (position 1)	BU	NC_USHORT	2	1	2	
175	THERM_TA11_RADIATOR_2	Temperature of the main radiator (position 2)	BU	NC_USHORT	2	1	2	
176	THERM_TA12_MX_PANEL	Temperature of the -X panel internal	BU	NC_USHORT	2	1	2	
177	THERM_TA13_PY_PANEL	Temperature of the +Y panel internal	BU	NC_USHORT	2	1	2	
178	THERM_TA14_MY_PANEL	Temperature of the -Y panel internal	BU	NC_USHORT	2	1	2	
179	THERM_TA15_PZ_PANEL	Temperature of the +Z panel internal	BU	NC_USHORT	2	1	2	
180	THERM_TA16_DECON_PLATE	Temperature of the chopper decontamination plate	BU	NC_USHORT	2	1	2	
181	THERM_ICU_AAM	Temperature of the ICU analog acquisitions module	BU	NC_USHORT	2	1	2	
182	THERM_ICU_ICP	Temperature of the ICU processor module	BU	NC_USHORT	2	1	2	
183	THERM_ICU_CHASSIS	Temperature of the ICU chassis	BU	NC_USHORT	2	1	2	
184	THERM_ICU_PDM_1	Temperature of the ICU power and drive module (position 1)	BU	NC_USHORT	2	1	2	
185	THERM_ICU_PDM_2	Temperature of the ICU power and drive module (position 2)	BU	NC_USHORT	2	1	2	
186	THERM_ICU_PDM_3	Temperature of the ICU power and drive module (position 3)	BU	NC_USHORT	2	1	2	
187	THERM_ICU_SPARE_1	Spare temperature slot	BU	NC_USHORT	2	1	2	
188	THERM_ICU_SPARE_2	Spare temperature slot	BU	NC_USHORT	2	1	2	
189	THERM_ICU_SPARE_3	Spare temperature slot	BU	NC_USHORT	2	1	2	
190	THERM_ICU_SPARE_4	Spare temperature slot	BU	NC_USHORT	2	1	2	
191	VMON_ICU_P_12	Voltage monitor for the +12V supply	BU	NC_USHORT	2	1	2	
192	VMON_ICU_P_5	Voltage monitor for the +5V supply	BU	NC_USHORT	2	1	2	
193	VMON_M_12	Voltage monitor for the -12V supply	BU	NC_USHORT	2	1	2	
194	VMON_P_3_3	Voltage monitor for the +3.3V	BU	NC_USHOR	2	1	2	

		supply		T				
195	VMON_ICU_SPARE	Spare voltage monitor	BU	NC_USHORT	2	1	2	
196	VMON_ICU_REF_1	Voltage monitor for the ADC reference 1	BU	NC_USHORT	2	1	2	
197	VMON_ICU_REF_2	Voltage monitor for the ADC reference 2	BU	NC_USHORT	2	1	2	
198	IMON_CTM	Current monitor for the CTM motor	BU	NC_USHORT	2	1	2	
199	IMON_CDM	Current monitor for the CDM motor	BU	NC_USHORT	2	1	2	
200	IMON_HTR	Current monitor for the heaters	BU	NC_USHORT	2	1	2	
201	VMON_ENC_CDM	Voltage monitor for the CDM encoder	BU	NC_USHORT	2	1	2	
202	VMON_ENC_CTM	Voltage monitor for the CTM encoder	BU	NC_USHORT	2	1	2	
203	VMON_ICU_P_24	Voltage monitor for the 24V motor supply rail	BU	NC_USHORT	2	1	2	
204	VMON_ICU_P_20	Voltage monitor for the 20V heater supply rail	BU	NC_USHORT	2	1	2	
205	BP_SPARE_ADC1	Spare	BU	NC_USHORT	2	1	2	
206	BP_SPARE_ADC2	Spare	BU	NC_USHORT	2	1	2	
207	BP_SPARE_ADC3	Spare	BU	NC_USHORT	2	1	2	
208	BP_SPARE_ADC4	Spare	BU	NC_USHORT	2	1	2	
209	BP_SPARE_ADC5	Spare	BU	NC_USHORT	2	1	2	
210	BP_SPARE_ADC6	Spare	BU	NC_USHORT	2	1	2	
211	BP_SPARE_ADC7	Spare	BU	NC_USHORT	2	1	2	
212	BP_SPARE_ADC8	Spare	BU	NC_USHORT	2	1	2	
213	BP_SPARE_ADC9	Spare	BU	NC_USHORT	2	1	2	
214	BP_SPARE_ADC10	Spare	BU	NC_USHORT	2	1	2	
215	SPARE_ICU_1	Spare	BU	NC_USHORT	2	1	2	
216	SPARE_ICU_2	Spare	BU	NC_USHORT	2	1	2	
217	SPARE_ICU_3	Spare	BU	NC_USHORT	2	1	2	
218	SPARE_ICU_4	Spare	BU	NC_USHORT	2	1	2	
219	SPARE_ICU_5	Spare	BU	NC_USHORT	2	1	2	
220	SPARE_ICU_6	Spare	BU	NC_USHORT	2	1	2	
221	SPARE_ICU_7	Spare	BU	NC_USHORT	2	1	2	
222	SPARE_ICU_8	Spare	BU	NC_USHORT	2	1	2	

223	PRT_AVERAGE_VALUE	This is the average PRT value being used for the telescope thermal control algorithm	BU	NC_USHORT	2	1	2	
224	PRT_STATUS	Encoded representation of PRT used: Bits 0-5 state which PRT (of each pair) is actually being used, bits 8-13 include the reported PRT validity table	BU	NC_USHORT	2	1	2	
225	BB1_PWM	This is the voltage setpoint of the heater for Black body 1	BU	NC_CHAR	1	1	1	
226	BB2_PWM	This is the voltage setpoint of the heater for Black body 2	BU	NC_CHAR	1	1	1	
227	BB3_PWM	This is the voltage setpoint of the heater for Black body 3	BU	NC_CHAR	1	1	1	
228	BB4_PWM	This is the voltage setpoint of the heater for Black body 4	BU	NC_CHAR	1	1	1	
229	SW_HK_1	Software defined HK	BU	NC_USHORT	2	1	2	
230	SW_HK_2	Software defined HK	BU	NC_USHORT	2	1	2	
231	SW_HK_3	Software defined HK	BU	NC_USHORT	2	1	2	
232	SW_HK_4	Software defined HK	BU	NC_USHORT	2	1	2	
233	SW_HK_5	Software defined HK	BU	NC_USHORT	2	1	2	
234	SW_HK_6	Software defined HK	BU	NC_USHORT	2	1	2	
235	SW_HK_7	Software defined HK	BU	NC_USHORT	2	1	2	
236	SW_HK_8	Software defined HK	BU	NC_USHORT	2	1	2	
237	SW_HK_9	Software defined HK	BU	NC_USHORT	2	1	2	
238	SW_HK_10	Software defined HK	BU	NC_USHORT	2	1	2	
239	SW_HK_11	Software defined HK	BU	NC_USHORT	2	1	2	
240	SW_HK_12	Software defined HK	BU	NC_USHORT	2	1	2	
241	AppendedCRC			AppendedCRC	2	1	2	
TOTAL:							4428	

3.1.1.1.4.4.4 BBR_Processed_PacketHeader Bit Vector Table

These are the actual values of the Packet Header for the BBR Processed ISP.

Parameter	MSB	Description	Value
Version_Number	b0 - b2	CCSDS Version Number	000b
Type	b3	Packet type	0b
Data_Field_Header_Flag	b4	Indicates the presence of a secondary (data field) header (when set to 1).	0x01
Application_Process_ID__PID	b5 - b11	Process ID (part of the APID)	0x48
Application_Process_ID__PCAT	b12 - b15	Packet category	12
Segmentation_Flags	b16 - b17	Indicates the grouping (segmentation) of TM source packets.	11b
Source_Sequence_Count	b18 - b31	Wrap around counter used to count each TM packet. For the ESSS in contrast to the PUS, only one counter for all APIDs is maintained.	source packet count value modulo 2^14 (0 - 16383)
Packet_Length	b32 - b47	Number of bytes contained in the packet data field minus 1.	number of octets in packed data field - 1

3.1.1.1.4.4.5 BBR_Processed_PUSDataFieldHeader Bit Vector Table

These are the actual values of the PUS Data Field Header described in Vol. 1 for the BBR Processed ISP.

Parameter	MSB	Description	Value
Spare_1	b0	Not used.	Must be set to 0 for all TM source packets.
TM_Source_Packet_PUS_Version_Number	b1 - b3	Not used.	(0 was used for ESA PUS version) 1 for ECSS PUS
Spare_2	b4 - b7	Filler to complete the byte.	Must be set to 0 for all TM source packets
Service_Type	b8 - b15	Indicates the service to which the packet relates.	230
Service_Subtype	b16 - b23	Indicates the service subtype to which the packet relates.	1
Destination_ID	b24 - b31	Indicates the destination of the packet (May be omitted if only one destination exists).	0
Time	b32 - b87	Onboard time (OBT).	Coarse time: LSB = 1 sec Fine time: LSB = 1/16777215 sec
Time_Quality	b88 - b95	This shall give the status of the time reporting sub-service, i.e. current PPS source and whether synchronization is enabled.	Bit3 (Time type): 0 = Elapsed Time (ET); 1 = OBT Bit 4 (Sync. Source): 0 = internal; 1 = external Bit 5 (Ext. Sync. Source Detail): 0 = 1Hz Pulse; 1 = MIL-BUS Bit 6 (Sync. Status): 0 = NoSync; 1 = InSync Bit 7 (Sync. Enabled/Disabled): 0 = Disabled; 1 = Enabled

3.1.1.1.4.4.6 BBRProcessedISP

This is the Instrument Data Field for the BBR Processed ISPs.

#	Field name	Description	Units	NetCDF C-Types	Size of each element	Number of elements	Total size	Value
1	stateVectorQuality	Contains details about the S/C state vector quality information as received from the S/C	unitless	NC_UINT	4	1	4	
2	ISPFormatVersion	Stores the version number of the ICD where the ISP format definition is specified. The most significant byte shall store the major version and the least significant byte shall store the minor version.	unitless	NC_USHORT	2	1	2	
3	DELIMITER_0	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0xAAAAh
4	TIME_ACQ_1_TELE_1	This is the time at which the aft telescope is ordered to start its first acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
5	TIME_ACQ_1_TELE_2	This is the time at which the nadir telescope is ordered to start its first acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
6	TIME_ACQ_1_TELE_3	This is the time at which the fore telescope is ordered to start its first acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
7	CAL_DRUM_POSITION_ACQ_1	This the value of the cal drum positional encoder value at the time of the aft telescope first acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
8	TIME_ACQ_2_TELE_1	This is the time at which the aft telescope is ordered to start its second acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
9	TIME_ACQ_2_TELE_2	This is the time at which the nadir telescope is ordered to start its second acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
10	TIME_ACQ_2_TELE_3	This is the time at which the fore telescope is ordered to start its second acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	

11	CAL_DRUM_POSITION_ACQ_2	This the value of the cal drum positional encoder value at the time of the aft telescope second acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
12	TIME_ACQ_3_TELE_1	This is the time at which the aft telescope is ordered to start its third acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
13	TIME_ACQ_3_TELE_2	This is the time at which the nadir telescope is ordered to start its third acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
14	TIME_ACQ_3_TELE_3	This is the time at which the fore telescope is ordered to start its third acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
15	CAL_DRUM_POSITION_ACQ_3	This the value of the cal drum positional encoder value at the time of the aft telescope third acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
16	TIME_ACQ_4_TELE_1	This is the time at which the aft telescope is ordered to start its fourth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
17	TIME_ACQ_4_TELE_2	This is the time at which the nadir telescope is ordered to start its fourth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
18	TIME_ACQ_4_TELE_3	This is the time at which the fore telescope is ordered to start its fourth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
19	CAL_DRUM_POSITION_ACQ_4	This the value of the cal drum positional encoder value at the time of the aft telescope fourth acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
20	TIME_ACQ_5_TELE_1	This is the time at which the aft telescope is ordered to start its fifth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time	s	AcquisitionTime	6	1	6	

		(i.e. 16us accuracy).						
21	TIME_ACQ_5_TELE_2	This is the time at which the nadir telescope is ordered to start its fifth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
22	TIME_ACQ_5_TELE_3	This is the time at which the fore telescope is ordered to start its fifth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
23	CAL_DRUM_POSITION_ACQ_5	This the value of the cal drum positional encoder value at the time of the aft telescope fifth acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
24	TIME_ACQ_6_TELE_1	This is the time at which the aft telescope is ordered to start its sixth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
25	TIME_ACQ_6_TELE_2	This is the time at which the nadir telescope is ordered to start its sixth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
26	TIME_ACQ_6_TELE_3	This is the time at which the fore telescope is ordered to start its sixth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
27	CAL_DRUM_POSITION_ACQ_6	This the value of the cal drum positional encoder value at the time of the aft telescope sixth acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
28	TIME_ACQ_7_TELE_1	This is the time at which the aft telescope is ordered to start its seventh acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
29	TIME_ACQ_7_TELE_2	This is the time at which the nadir telescope is ordered to start its seventh acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
30	TIME_ACQ_7_TELE_3	This is the time at which the fore telescope is ordered to start its seventh acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine	s	AcquisitionTime	6	1	6	

		time (i.e. 16us accuracy).						
31	CAL_DRUM_POSITION_ACQ_7	This the value of the cal drum positional encoder value at the time of the aft telescope seventh acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
32	TIME_ACQ_8_TELE_1	This is the time at which the aft telescope is ordered to start its eighth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
33	TIME_ACQ_8_TELE_2	This is the time at which the nadir telescope is ordered to start its eighth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
34	TIME_ACQ_8_TELE_3	This is the time at which the fore telescope is ordered to start its eighth acquisition, represented as 48 bits of time, encoded as 32 bits of coarse time, and 16 bits of fine time (i.e. 16us accuracy).	s	AcquisitionTime	6	1	6	
35	CAL_DRUM_POSITION_ACQ_8	This the value of the cal drum positional encoder value at the time of the aft telescope eighth acquisition. The encoder value is used to determine the calibration drum position, and hence what the telescopes are looking at.	unitless	NC_USHORT	2	1	2	
36	DELIMITER_1	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0xAA55h
37	I1_ACQ_1_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the first acquisition.	BU	NC_USHORT	2	30	60	
38	I2_ACQ_1_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the first half of the 76 detector subsamples, from the first acquisition.	BU	NC_USHORT	2	30	60	
39	I1_ACQ_1_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the first acquisition.	BU	NC_USHORT	2	30	60	
40	I2_ACQ_1_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the first half of the 76 detector subsamples, from the first acquisition.	BU	NC_USHORT	2	30	60	
41	I1_ACQ_1_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the first acquisition.	BU	NC_USHORT	2	30	60	
42	I2_ACQ_1_TELE_	This is the asymptotic detector	BU	NC_USHOR	2	30	60	

	3_PIXELS	voltage value for the fore telescope, integrated over the first half of the 76 detector subsamples, from the first acquisition.		T				
43	MPD_ACQ_1_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the first acquisition.	BU	NC_USHORT	2	1	2	
44	MPD_ACQ_1_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
45	MPD_ACQ_1_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
46	MPD_ACQ_1_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
47	MPD_ACQ_1_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
48	MPD_ACQ_1_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
49	MPD_ACQ_1_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
50	MPD_ACQ_1_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
51	MPD_ACQ_1_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the first acquisition.	BU	NC_USHORT	2	1	2	
52	SPARE_ACQ_1_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
53	SPARE_ACQ_1_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
54	SPARE_ACQ_1_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
55	I1_ACQ_2_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the second acquisition.	BU	NC_USHORT	2	30	60	
56	I2_ACQ_2_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the second half of the 76 detector subsamples, from the second acquisition.	BU	NC_USHORT	2	30	60	
57	I1_ACQ_2_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the second acquisition.	BU	NC_USHORT	2	30	60	
58	I2_ACQ_2_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the second half of the 76 detector subsamples, from the second acquisition.	BU	NC_USHORT	2	30	60	
59	I1_ACQ_2_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope,	BU	NC_USHORT	2	30	60	

		integrated over the whole 76 detector subsamples, from the second acquisition.						
60	I2_ACQ_2_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the second half of the 76 detector subsamples, from the second acquisition.	BU	NC_USHORT	2	30	60	
61	MPD_ACQ_2_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the second acquisition.	BU	NC_USHORT	2	1	2	
62	MPD_ACQ_2_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
63	MPD_ACQ_2_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
64	MPD_ACQ_2_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
65	MPD_ACQ_2_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
66	MPD_ACQ_2_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
67	MPD_ACQ_2_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
68	MPD_ACQ_2_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
69	MPD_ACQ_2_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the second acquisition.	BU	NC_USHORT	2	1	2	
70	SPARE_ACQ_2_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
71	SPARE_ACQ_2_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
72	SPARE_ACQ_2_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
73	I1_ACQ_3_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the third acquisition.	BU	NC_USHORT	2	30	60	
74	I2_ACQ_3_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the third half of the 76 detector subsamples, from the third acquisition.	BU	NC_USHORT	2	30	60	
75	I1_ACQ_3_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the third acquisition.	BU	NC_USHORT	2	30	60	
76	I2_ACQ_3_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the third half of the 76 detector subsamples,	BU	NC_USHORT	2	30	60	

		from the third acquisition.						
77	I1_ACQ_3_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the third acquisition.	BU	NC_USHORT	2	30	60	
78	I2_ACQ_3_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the third half of the 76 detector subsamples, from the third acquisition.	BU	NC_USHORT	2	30	60	
79	MPD_ACQ_3_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the third acquisition.	BU	NC_USHORT	2	1	2	
80	MPD_ACQ_3_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
81	MPD_ACQ_3_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
82	MPD_ACQ_3_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
83	MPD_ACQ_3_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
84	MPD_ACQ_3_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
85	MPD_ACQ_3_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
86	MPD_ACQ_3_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
87	MPD_ACQ_3_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the third acquisition.	BU	NC_USHORT	2	1	2	
88	SPARE_ACQ_3_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
89	SPARE_ACQ_3_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
90	SPARE_ACQ_3_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
91	I1_ACQ_4_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the fourth acquisition.	BU	NC_USHORT	2	30	60	
92	I2_ACQ_4_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the fourth half of the 76 detector subsamples, from the fourth acquisition.	BU	NC_USHORT	2	30	60	
93	I1_ACQ_4_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the fourth acquisition.	BU	NC_USHORT	2	30	60	
94	I2_ACQ_4_TELE_	This is the asymptotic detector	BU	NC_USHOR	2	30	60	

	2_PIXELS	voltage value for the nadir telescope, integrated over the fourth half of the 76 detector subsamples, from the fourth acquisition.		T				
95	I1_ACQ_4_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the fourth acquisition.	BU	NC_USHORT	2	30	60	
96	I2_ACQ_4_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the fourth half of the 76 detector subsamples, from the fourth acquisition.	BU	NC_USHORT	2	30	60	
97	MPD_ACQ_4_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the fourth acquisition.	BU	NC_USHORT	2	1	2	
98	MPD_ACQ_4_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
99	MPD_ACQ_4_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
100	MPD_ACQ_4_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
101	MPD_ACQ_4_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
102	MPD_ACQ_4_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
103	MPD_ACQ_4_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
104	MPD_ACQ_4_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
105	MPD_ACQ_4_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the fourth acquisition.	BU	NC_USHORT	2	1	2	
106	SPARE_ACQ_4_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
107	SPARE_ACQ_4_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
108	SPARE_ACQ_4_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
109	I1_ACQ_5_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the fifth acquisition.	BU	NC_USHORT	2	30	60	
110	I2_ACQ_5_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the fifth half of the 76 detector subsamples, from the fifth acquisition.	BU	NC_USHORT	2	30	60	
111	I1_ACQ_5_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir	BU	NC_USHORT	2	30	60	

		telescope, integrated over the whole 76 detector subsamples, from the fifth acquisition.						
112	I2_ACQ_5_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the fifth half of the 76 detector subsamples, from the fifth acquisition.	BU	NC_USHORT	2	30	60	
113	I1_ACQ_5_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the fifth acquisition.	BU	NC_USHORT	2	30	60	
114	I2_ACQ_5_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the fifth half of the 76 detector subsamples, from the fifth acquisition.	BU	NC_USHORT	2	30	60	
115	MPD_ACQ_5_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the fifth acquisition.	BU	NC_USHORT	2	1	2	
116	MPD_ACQ_5_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
117	MPD_ACQ_5_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
118	MPD_ACQ_5_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
119	MPD_ACQ_5_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
120	MPD_ACQ_5_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
121	MPD_ACQ_5_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
122	MPD_ACQ_5_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
123	MPD_ACQ_5_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the fifth acquisition.	BU	NC_USHORT	2	1	2	
124	SPARE_ACQ_5_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
125	SPARE_ACQ_5_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
126	SPARE_ACQ_5_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
127	I1_ACQ_6_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the sixth acquisition.	BU	NC_USHORT	2	30	60	
128	I2_ACQ_6_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the sixth half of the 76 detector subsamples, from the	BU	NC_USHORT	2	30	60	

		sixth acquisition.						
129	I1_ACQ_6_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the sixth acquisition.	BU	NC_USHORT	2	30	60	
130	I2_ACQ_6_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the sixth half of the 76 detector subsamples, from the sixth acquisition.	BU	NC_USHORT	2	30	60	
131	I1_ACQ_6_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the sixth acquisition.	BU	NC_USHORT	2	30	60	
132	I2_ACQ_6_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the sixth half of the 76 detector subsamples, from the sixth acquisition.	BU	NC_USHORT	2	30	60	
133	MPD_ACQ_6_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the sixth acquisition.	BU	NC_USHORT	2	1	2	
134	MPD_ACQ_6_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
135	MPD_ACQ_6_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
136	MPD_ACQ_6_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
137	MPD_ACQ_6_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
138	MPD_ACQ_6_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
139	MPD_ACQ_6_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
140	MPD_ACQ_6_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
141	MPD_ACQ_6_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the sixth acquisition.	BU	NC_USHORT	2	1	2	
142	SPARE_ACQ_6_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
143	SPARE_ACQ_6_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
144	SPARE_ACQ_6_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
145	I1_ACQ_7_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the whole 76 detector subsamples, from the seventh acquisition.	BU	NC_USHORT	2	30	60	
146	I2_ACQ_7_TELE_	This is the asymptotic detector	BU	NC_USHOR	2	30	60	

	1_PIXELS	voltage value for the aft telescope, integrated over the seventh half of the 76 detector subsamples, from the seventh acquisition.		T				
147	I1_ACQ_7_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the seventh acquisition.	BU	NC_USHORT	2	30	60	
148	I2_ACQ_7_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the seventh half of the 76 detector subsamples, from the seventh acquisition.	BU	NC_USHORT	2	30	60	
149	I1_ACQ_7_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the seventh acquisition.	BU	NC_USHORT	2	30	60	
150	I2_ACQ_7_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the seventh half of the 76 detector subsamples, from the seventh acquisition.	BU	NC_USHORT	2	30	60	
151	MPD_ACQ_7_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the seventh acquisition.	BU	NC_USHORT	2	1	2	
152	MPD_ACQ_7_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
153	MPD_ACQ_7_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
154	MPD_ACQ_7_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
155	MPD_ACQ_7_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
156	MPD_ACQ_7_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
157	MPD_ACQ_7_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
158	MPD_ACQ_7_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
159	MPD_ACQ_7_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the seventh acquisition.	BU	NC_USHORT	2	1	2	
160	SPARE_ACQ_7_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
161	SPARE_ACQ_7_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
162	SPARE_ACQ_7_B	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
163	I1_ACQ_8_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope,	BU	NC_USHORT	2	30	60	

		integrated over the whole 76 detector subsamples, from the eigth acquisition.						
164	I2_ACQ_8_TELE_1_PIXELS	This is the asymptotic detector voltage value for the aft telescope, integrated over the eigth half of the 76 detector subsamples, from the eigth acquisition.	BU	NC_USHORT	2	30	60	
165	I1_ACQ_8_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the whole 76 detector subsamples, from the eigth acquisition.	BU	NC_USHORT	2	30	60	
166	I2_ACQ_8_TELE_2_PIXELS	This is the asymptotic detector voltage value for the nadir telescope, integrated over the eigth half of the 76 detector subsamples, from the eigth acquisition.	BU	NC_USHORT	2	30	60	
167	I1_ACQ_8_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the whole 76 detector subsamples, from the eigth acquisition.	BU	NC_USHORT	2	30	60	
168	I2_ACQ_8_TELE_3_PIXELS	This is the asymptotic detector voltage value for the fore telescope, integrated over the eigth half of the 76 detector subsamples, from the eigth acquisition.	BU	NC_USHORT	2	30	60	
169	MPD_ACQ_8_TELE_1_R	This is the signal output of the aft telescopes Red photodiode , from the eigth acquisition.	BU	NC_USHORT	2	1	2	
170	MPD_ACQ_8_TELE_1_G	This is the signal output of the aft telescopes green photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
171	MPD_ACQ_8_TELE_1_B	This is the signal output of the aft telescopes blue photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
172	MPD_ACQ_8_TELE_2_R	This is the signal output of the nadir telescopes Red photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
173	MPD_ACQ_8_TELE_2_G	This is the signal output of the nadir telescopes green photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
174	MPD_ACQ_8_TELE_2_B	This is the signal output of the nadir telescopes blue photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
175	MPD_ACQ_8_TELE_3_R	This is the signal output of the fore telescopes Red photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
176	MPD_ACQ_8_TELE_3_G	This is the signal output of the fore telescopes green photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
177	MPD_ACQ_8_TELE_3_B	This is the signal output of the fore telescopes blue photodiode, from the eigth acquisition.	BU	NC_USHORT	2	1	2	
178	SPARE_ACQ_8_R	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
179	SPARE_ACQ_8_G	This is now spare (since these photodiodes don't exist)	BU	NC_USHORT	2	1	2	
180	SPARE_ACQ_8_	This is now spare (since these	BU	NC_USHOR	2	1	2	

	B	photodiodes don't exist)		T				
181	DELIMITER_2	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0x55AAh
182	BB_1_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 1	BU	NC_USHORT	2	1	2	
183	BB_1_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 1	BU	NC_USHORT	2	1	2	
184	BB_2_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 2	BU	NC_USHORT	2	1	2	
185	BB_2_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 2	BU	NC_USHORT	2	1	2	
186	BB_3_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 3	BU	NC_USHORT	2	1	2	
187	BB_3_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 3	BU	NC_USHORT	2	1	2	
188	BB_4_PRT_BASE	Signal output (temperature) for the PRT mounted in the base of BlackBody 4	BU	NC_USHORT	2	1	2	
189	BB_4_PRT_SIDE	Signal output (temperature) for the PRT mounted in the sidewall of BlackBody 4	BU	NC_USHORT	2	1	2	
190	TELE_1_PRT_A	Signal output (temperature) for the 'A' PRT mounted on the baseplate of the aft telescope	BU	NC_USHORT	2	1	2	
191	TELE_1_PRT_B	Signal output (temperature) for the 'A' PRT mounted on the baseplate of the nadir telescope	BU	NC_USHORT	2	1	2	
192	TELE_2_PRT_A	Signal output (temperature) for the 'A' PRT mounted on the baseplate of the fore telescope	BU	NC_USHORT	2	1	2	
193	TELE_2_PRT_B	Signal output (temperature) for the 'B' PRT mounted on the baseplate of the aft telescope	BU	NC_USHORT	2	1	2	
194	TELE_3_PRT_A	Signal output (temperature) for the 'B' PRT mounted on the baseplate of the nadir telescope	BU	NC_USHORT	2	1	2	
195	TELE_3_PRT_B	Signal output (temperature) for the 'B' PRT mounted on the baseplate of the fore telescope	BU	NC_USHORT	2	1	2	
196	VMON_TA_P_12	The output from the voltage monitor monitoring the +12V rail.	BU	NC_USHORT	2	1	2	
197	VMON_TA_M_12	The output from the voltage monitor monitoring the -12V rail.	BU	NC_USHORT	2	1	2	
198	VMON_TA_P_5	The output from the voltage monitor monitoring the +5V rail.	BU	NC_USHORT	2	1	2	
199	VMON_TA_P_3_3	The output from the voltage monitor monitoring the +3.3V rail.	BU	NC_USHORT	2	1	2	
200	VMON_TA_P_1_5	The output from the voltage monitor monitoring the +1.5V rail.	BU	NC_USHORT	2	1	2	
201	THERM_TA_SCE	The processor board temperature	BU	NC_USHORT	2	1	2	
202	VMON_DET_1_VREF	Monitor of voltage supply to the DAC 0 on the aft telescope	BU	NC_USHORT	2	1	2	

203	VMON_DET_1_VBOLO	Monitor of voltage supply to the DAC 1 on the aft telescope	BU	NC_USHORT	2	1	2	
204	VMON_DET_1_VSHUNT	Monitor of voltage supply to the DAC 2 on the aft telescope	BU	NC_USHORT	2	1	2	
205	VMON_DET_1_VTHERMO	Monitor of voltage supply to the DAC 3 on the aft telescope	BU	NC_USHORT	2	1	2	
206	VMON_DET_2_VREF	Monitor of voltage supply to the DAC 0 on the nadir telescope	BU	NC_USHORT	2	1	2	
207	VMON_DET_2_VBOLO	Monitor of voltage supply to the DAC 1 on the nadir telescope	BU	NC_USHORT	2	1	2	
208	VMON_DET_2_VSHUNT	Monitor of voltage supply to the DAC 2 on the nadir telescope	BU	NC_USHORT	2	1	2	
209	VMON_DET_2_VTHERMO	Monitor of voltage supply to the DAC 3 on the nadir telescope	BU	NC_USHORT	2	1	2	
210	VMON_DET_3_VREF	Monitor of voltage supply to the DAC 0 on the fore telescope	BU	NC_USHORT	2	1	2	
211	VMON_DET_3_VBOLO	Monitor of voltage supply to the DAC 1 on the fore telescope	BU	NC_USHORT	2	1	2	
212	VMON_DET_3_VSHUNT	Monitor of voltage supply to the DAC 2 on the fore telescope	BU	NC_USHORT	2	1	2	
213	VMON_DET_3_VTHERMO	Monitor of voltage supply to the DAC 3 on the fore telescope	BU	NC_USHORT	2	1	2	
214	TELE_1_PIX_30	Temperature as read by the unreleased pixel #30 on the FPA of the aft telescope	BU	NC_USHORT	2	1	2	
215	TELE_1_PIX_31	Temperature as read by the unreleased pixel #31 on the FPA of the aft telescope	BU	NC_USHORT	2	1	2	
216	TELE_2_PIX_30	Temperature as read by the unreleased pixel #30 on the FPA of the nadir telescope	BU	NC_USHORT	2	1	2	
217	TELE_2_PIX_31	Temperature as read by the unreleased pixel #31 on the FPA of the nadir telescope	BU	NC_USHORT	2	1	2	
218	TELE_3_PIX_30	Temperature as read by the unreleased pixel #30 on the FPA of the fore telescope	BU	NC_USHORT	2	1	2	
219	TELE_3_PIX_31	Temperature as read by the unreleased pixel #31 on the FPA of the fore telescope	BU	NC_USHORT	2	1	2	
220	IMON_TELE_PRT	Current monitor for telescope PRTs	BU	NC_USHORT	2	1	2	
221	IMON_BB_PRT	Current monitor for Black body PRTs	BU	NC_USHORT	2	1	2	
222	SPARE_HK_52	Spare	BU	NC_USHORT	2	1	2	
223	SPARE_HK_53	Spare	BU	NC_USHORT	2	1	2	
224	SPARE_HK_54	Spare	BU	NC_USHORT	2	1	2	
225	SPARE_HK_55	Spare	BU	NC_USHORT	2	1	2	
226	COMMAND_COUNTER	Count of FPGA Commands	BU	NC_USHORT	2	1	2	
227	TEST_ID	Test ID	BU	NC_USHORT	2	1	2	
228	FLAG_ADC_ROIC_LATCHUP	Number of OU ADC and ROIC latch up flags (one current limiter	BU	NC_USHORT	2	1	2	

		per detector)						
229	FLAG_FPGA_ERROR	FPGA error flags	BU	NC_USHORT	2	1	2	
230	FPGA_SAMPLING	Samples per integration : MS : 0-127 samples per full integration; LS : 0-127 samples per part integration	BU	NC_USHORT	2	1	2	
231	FPGA_CONFIGURATION	ROIC gain/FPGA mode/Raw source; encoding as per EC-RS-RAL-BBR-0002, namely: MS = ROIC gain (0 = 0.1pf, 1 = 1pF, 2 = 8pF, 3 = 16pF); LS as YYZZ, where YY = SCE Mode (0 = WAIT, 1 = RUN, 2 = SIMULATED DATA); ZZ = Telescope that is in raw mode (0 = none, 1 = aft, 2 = nadir, 3 = fore)	BU	NC_USHORT	2	1	2	
232	LUT_VERSION_NUMBER	Version number of LUT used by DSP algorithm	BU	NC_USHORT	2	1	2	
233	FPGA_VERSION_NUMBER	Build version of FPGA	BU	NC_USHORT	2	1	2	
234	DELIMITER_3	A fixed field DELIMITER	unitless	NC_USHORT	2	1	2	0x5555h
235	THERM_MA1_CDM_WINDING	Temperature of the CDM winding	BU	NC_USHORT	2	1	2	
236	THERM_MA2_CTM_WINDING	Temperature of the CTM winding	BU	NC_USHORT	2	1	2	
237	THERM_MA3_CTM_ENCODER	Temperature of the CTM encoder	BU	NC_USHORT	2	1	2	
238	THERM_MA4_MA_RADIATOR	Temperature of the MA radiator	BU	NC_USHORT	2	1	2	
239	THERM_MA5_MA_TSTATS	Temperature of the MA thermostates	BU	NC_USHORT	2	1	2	
240	THERM_MA6_CDM_ENCODER	Temperature of the CDM encoder	BU	NC_USHORT	2	1	2	
241	THERM_TA1_FORE_TSCOPE	Temperature of the Fore telescope baseplate	BU	NC_USHORT	2	1	2	
242	THERM_TA2_NADIR_TSCOPE	Temperature of the Nadir telescope baseplate	BU	NC_USHORT	2	1	2	
243	THERM_TA3_AFT_TSCOPE	Temperature of the Aft telescope baseplate	BU	NC_USHORT	2	1	2	
244	THERM_TA4_FOA_BASEPLATE	Temperature of the Fixed Optics Assembly baseplate	BU	NC_USHORT	2	1	2	
245	THERM_TA5_AFT_BAFFLE	Temperature of the Aft telescope foreoptics baffle	BU	NC_USHORT	2	1	2	
246	THERM_TA6_CALDRUM_1	Temperature of the Calibration drum (position 1)	BU	NC_USHORT	2	1	2	
247	THERM_TA7_CALDRUM_2	Temperature of the Calibration drum (position 2)	BU	NC_USHORT	2	1	2	
248	THERM_TA8_VISCAL_1	Temperature of the VisCal (position 1)	BU	NC_USHORT	2	1	2	
249	THERM_TA9_VISCAL_2	Temperature of the VisCal (position 2)	BU	NC_USHORT	2	1	2	
250	THERM_TA10_RADIATOR_1	Temperature of the main radiator (position 1)	BU	NC_USHORT	2	1	2	
251	THERM_TA11_RADIATOR_2	Temperature of the main radiator (position 2)	BU	NC_USHORT	2	1	2	
252	THERM_TA12_MX_PANEL	Temperature of the -X panel internal	BU	NC_USHORT	2	1	2	
253	THERM_TA13_P	Temperature of the +Y panel	BU	NC_USHOR	2	1	2	

	Y_PANEL	internal		T				
254	THERM_TA14_MY_PANEL	Temperature of the -Y panel internal	BU	NC_USHORT	2	1	2	
255	THERM_TA15_PZ_PANEL	Temperature of the +Z panel internal	BU	NC_USHORT	2	1	2	
256	THERM_TA16_DECON_PLATE	Temperature of the chopper decontamination plate	BU	NC_USHORT	2	1	2	
257	THERM_ICU_AAM	Temperature of the ICU analog acquisitions module	BU	NC_USHORT	2	1	2	
258	THERM_ICU_ICP	Temperature of the ICU processor module	BU	NC_USHORT	2	1	2	
259	THERM_ICU_CHASSIS	Temperature of the ICU chassis	BU	NC_USHORT	2	1	2	
260	THERM_ICU_PDM_1	Temperature of the ICU power and drive module (position 1)	BU	NC_USHORT	2	1	2	
261	THERM_ICU_PDM_2	Temperature of the ICU power and drive module (position 2)	BU	NC_USHORT	2	1	2	
262	THERM_ICU_PDM_3	Temperature of the ICU power and drive module (position 3)	BU	NC_USHORT	2	1	2	
263	THERM_ICU_SPARE_1	Spare temperature slot	BU	NC_USHORT	2	1	2	
264	THERM_ICU_SPARE_2	Spare temperature slot	BU	NC_USHORT	2	1	2	
265	THERM_ICU_SPARE_3	Spare temperature slot	BU	NC_USHORT	2	1	2	
266	THERM_ICU_SPARE_4	Spare temperature slot	BU	NC_USHORT	2	1	2	
267	VMON_ICU_P_12	Voltage monitor for the +12V supply	BU	NC_USHORT	2	1	2	
268	VMON_ICU_P_5	Voltage monitor for the +5V supply	BU	NC_USHORT	2	1	2	
269	VMON_M_12	Voltage monitor for the -12V supply	BU	NC_USHORT	2	1	2	
270	VMON_P_3_3	Voltage monitor for the +3.3V supply	BU	NC_USHORT	2	1	2	
271	VMON_ICU_SPARE	Spare voltage monitor	BU	NC_USHORT	2	1	2	
272	VMON_ICU_REF_1	Voltage monitor for the ADC reference 1	BU	NC_USHORT	2	1	2	
273	VMON_ICU_REF_2	Voltage monitor for the ADC reference 2	BU	NC_USHORT	2	1	2	
274	IMON_CTM	Current monitor for the CTM motor	BU	NC_USHORT	2	1	2	
275	IMON_CDM	Current monitor for the CDM motor	BU	NC_USHORT	2	1	2	
276	IMON_HTR	Current monitor for the heaters	BU	NC_USHORT	2	1	2	
277	VMON_ENC_CDM	Voltage monitor for the CDM encoder	BU	NC_USHORT	2	1	2	
278	VMON_ENC_CTM	Voltage monitor for the CTM encoder	BU	NC_USHORT	2	1	2	
279	VMON_ICU_P_24	Voltage monitor for the 24V motor supply rail	BU	NC_USHORT	2	1	2	
280	VMON_ICU_P_20	Voltage monitor for the 20V heater supply rail	BU	NC_USHORT	2	1	2	
281	BP_SPARE_ADC1	Spare	BU	NC_USHORT	2	1	2	

282	BP_SPARE_ADC 2	Spare	BU	NC_USHORT	2	1	2	
283	BP_SPARE_ADC 3	Spare	BU	NC_USHORT	2	1	2	
284	BP_SPARE_ADC 4	Spare	BU	NC_USHORT	2	1	2	
285	BP_SPARE_ADC 5	Spare	BU	NC_USHORT	2	1	2	
286	BP_SPARE_ADC 6	Spare	BU	NC_USHORT	2	1	2	
287	BP_SPARE_ADC 7	Spare	BU	NC_USHORT	2	1	2	
288	BP_SPARE_ADC 8	Spare	BU	NC_USHORT	2	1	2	
289	BP_SPARE_ADC 9	Spare	BU	NC_USHORT	2	1	2	
290	BP_SPARE_ADC 10	Spare	BU	NC_USHORT	2	1	2	
291	SPARE_ICU_1	Spare	BU	NC_USHORT	2	1	2	
292	SPARE_ICU_2	Spare	BU	NC_USHORT	2	1	2	
293	SPARE_ICU_3	Spare	BU	NC_USHORT	2	1	2	
294	SPARE_ICU_4	Spare	BU	NC_USHORT	2	1	2	
295	SPARE_ICU_5	Spare	BU	NC_USHORT	2	1	2	
296	SPARE_ICU_6	Spare	BU	NC_USHORT	2	1	2	
297	SPARE_ICU_7	Spare	BU	NC_USHORT	2	1	2	
298	SPARE_ICU_8	Spare	BU	NC_USHORT	2	1	2	
299	PRT_AVERAGE_VALUE	This is the average PRT value being used for the telescope thermal control algorithm	BU	NC_USHORT	2	1	2	
300	PRT_STATUS	Encoded representation of PRT used: Bits 0-5 state which PRT (of each pair) is actually being used, bits 8-13 include the reported PRT validity table	BU	NC_USHORT	2	1	2	
301	BB1_PWM	This is the voltage setpoint of the heater for Black body 1	BU	NC_CHAR	1	1	1	
302	BB2_PWM	This is the voltage setpoint of the heater for Black body 2	BU	NC_CHAR	1	1	1	
303	BB3_PWM	This is the voltage setpoint of the heater for Black body 3	BU	NC_CHAR	1	1	1	
304	BB4_PWM	This is the voltage setpoint of the heater for Black body 4	BU	NC_CHAR	1	1	1	
305	SW_HK_1	Software defined HK	BU	NC_USHORT	2	1	2	
306	SW_HK_2	Software defined HK	BU	NC_USHORT	2	1	2	
307	SW_HK_3	Software defined HK	BU	NC_USHORT	2	1	2	
308	SW_HK_4	Software defined HK	BU	NC_USHORT	2	1	2	

309	SW_HK_5	Software defined HK	BU	NC_USHORT	2	1	2	
310	SW_HK_6	Software defined HK	BU	NC_USHORT	2	1	2	
311	SW_HK_7	Software defined HK	BU	NC_USHORT	2	1	2	
312	SW_HK_8	Software defined HK	BU	NC_USHORT	2	1	2	
313	SW_HK_9	Software defined HK	BU	NC_USHORT	2	1	2	
314	SW_HK_10	Software defined HK	BU	NC_USHORT	2	1	2	
315	SW_HK_11	Software defined HK	BU	NC_USHORT	2	1	2	
316	SW_HK_12	Software defined HK	BU	NC_USHORT	2	1	2	
317	AppendedCRC			AppendedCRC	2	1	2	
TOTAL:							3512	

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