

WEC INSTRUMENT USER MANUAL

CHAPTER 2

HOUSEKEEPING TELEMETRY

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Document Control

Document	Document number	Version /Date	Author	Comments
DWP Kernel Operation	CL-DWP-KO-0003	v1.1 26-9-91	CMD	First complete document describing HK and commands for EM
WEC Operator manual	CL-DWP-WO-001	v1.0 21-5-92	CMD	Based on DWP kernel operation, reformatted and more material added, including references to AIT. Supplied with EM ADP.
CLUSTER WEC housekeeping parameter definition	CL-WEC-DB-002	1-10-92	KY	First complete document describing AIT database parameters
WEC Operator manual Part 1 - Commands	CL-WEC-WO-002	4-11-92	CMD	Updated with new command for FM and corrections
WEC Operator manual Part 2 - HK	CL-WEC-WO-003	11-8-92	CMD	Updated with new HK for FM and expanded parameter descriptions. Limited circulation within WEC.
WEC Instrument User Manual - Chapter 2	CL-WEC-WO-005	27-4-93	CMD	Combines CLUSTER WEC housekeeping parameter defn document and latest AIT database parameters with latest WEC operator manual. DRAFT for circulation within WEC only.
WEC Instrument User Manual - Chapter 2	CL-WEC-WO-007	v 1.0, 4-6-93	CMD	As above, updated with input from WEC teams, corrections, first issue for general distribution

Acronyms

See chapter 1.

Introduction

This chapter describes the content of the WEC HK. Section 2.1 shows how the WEC instruments report their status to DWP which is responsible for outputting the housekeeping to the spacecraft. Section 2.2 gives an overview of the structure of the WEC HK block and orders the parameters by location. This provides the context for the HK parameter reference guide. Section 2.3 describes the different types of DWP parameter initialisation and gives tables showing the initial parameter values. Section 2.4 is the HK parameter reference guide which orders the parameters by unit and gives a detailed description of each parameter, including an index. Below is a list of references to other WEC documents for further reading.

References

- [1] "WEC Internal EID Part 1 - Interface Hardware", version 3.3, 16 October 1992, CL-DWP-EID-0008, University of Sheffield, England.
- [2] "WEC Internal EID Part 4 - Interface Software Protocols", version 1.1, 26 September 1991, CL-DWP-EID-0005, University of Sheffield, England.
- [3] "WEC Internal EID Part 5 - DWP Applications Software", version 1.0, 19 November 1992, CL-DWP-EID-0009, University of Sheffield, England.
- [4] WEC EID B, issue 1, date 01-02-93, document CL-EST-RS-0451/EID B, Cluster Project Office, ESA.

2.1 Monitoring Philosophy

The Digital Wave Processor instrument, DWP, is connected to all the WEC instruments, and is at the centre of a star configuration as shown in. Figure 2.1.1. DWP and WBD are the only WEC instruments connected to the spacecraft OBDH and DWP is the primary route for all WEC telemetry and commands.

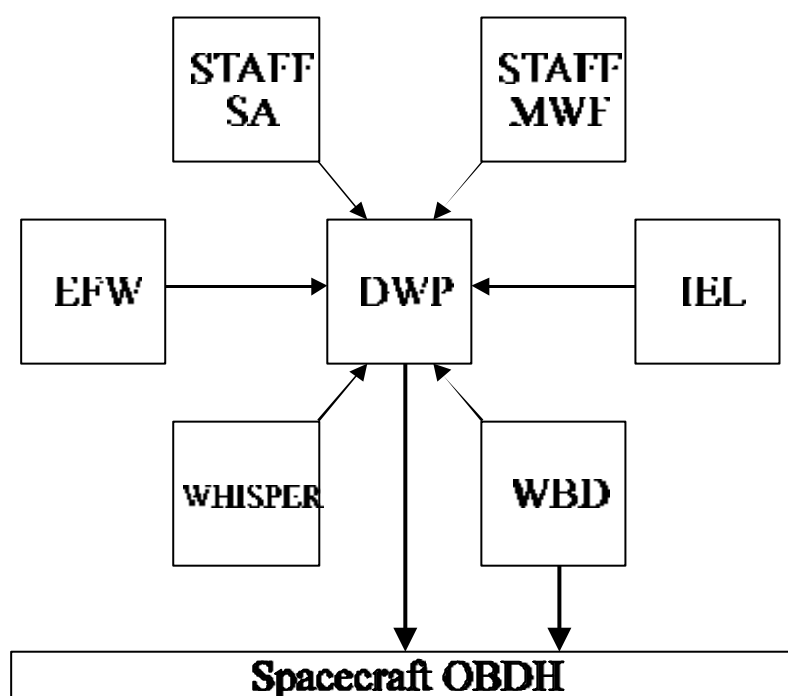


Figure 2.1.1- WEC instrument telemetry connections

The link between each WEC instrument and DWP consists in most cases of a serial command interface from DWP, and a parallel or serial data link to DWP. The description of the DWP electrical interfaces to the WEC is given in [1], and the description of the telemetry interfaces between DWP and the WEC is given in [2].

DWP is responsible for maintaining the HK block. Areas of the HK allocated to a specific WEC instrument are set by a combination of raw or modified values that have been read from that instrument's interface and by DWP monitoring the performance of that instrument and generating appropriate HK values.

2.2 WEC Housekeeping Telemetry OVERVIEW

2.2.1 Introduction

This section shows the structure of the WEC HK block, and describes the usage of each byte in order of location within the HK block. The housekeeping parameters defined for each location are listed.

In general the most detailed description of a HK location will be found by referencing the HK parameters defined for that location in section 2.4. An exception is that some material from the EFW, WBD and WHISPER experimenter documentation is included in this section; this material describes HK locations that are not necessarily defined by parameters in the database.

DWP will maintain at all times during the operation of the WEC a housekeeping block within the kernel processor memory. The housekeeping block is continuously updated by DWP, and a housekeeping snapshot taken within 1 millisecond after an OBDH reset pulse. The contents of the housekeeping snapshot are acquired under the control of the spacecraft OBDH sometime before the next OBDH reset pulse.

The spacecraft RTU Serial Digital Telemetry (SDT) interface to DWP is configured to be 16 bits.

It should be noted that the spacecraft OBDH may continue to acquire housekeeping (and science) telemetry from WEC even when WEC is powered off, or DWP is not working for some other reason. Therefore, all HK parameters described in this document are valid only when DWP is working. This may be determined using the DWP Model Tag parameter (EW5MOTAG) which has a fixed value whenever DWP is working.

2.2.2 Overview of housekeeping block format

The following sections briefly outline the content of each area of the WEC housekeeping block.

The DWP instrument is controlled by a 16 bit processor, so in general housekeeping entries are grouped into pairs of bytes viewed as words by DWP.

Location of parameters is specified as a zero-based byte offset from the start of the housekeeping block. Even number bytes are the most significant bytes in a pair of bytes comprising a 16 bit word.

The WEC has an allocation of 192 bytes of housekeeping.

In general, the first part of the housekeeping up to the end of the **kernel memory dump** is general purpose. The second part is partitioned amongst the WEC instruments.

Location (byte)	Size (bytes)	Description
0	10	HK header
10	44	Checksummed memory
54	32	Memory load echo / kernel memory dump
86	16	Analogue monitors
102	4	EFW HK (part 1)
106	26	STAFF HK
132	18	WHISPER HK / WBD gain
150	4	WBD HK
154	14	EFW HK (part 2)
168	2	FGM vector count
170	16	Instrument command registers
186	2	DWP command assembly status
188	4	Macro execution status

Table 2.2.2.1 - Top level view of DWP housekeeping

2.2.3 HK header

Location (byte)	Size (bytes)	HK parameters
0	2	DWP model tag
2	2	OBDR reset count
4	2	WEC sampling offset
6	2	Telecommand extension invalid Telecommand invalid DWP lost events DWP DMA channel fault OBDR TLM request not expected
8	2	DWP telemetry buffer overflow DWP application buffer overflow Telecommand illegal whilst macro exec Telecommand when instrument not ready DWP no processor for application task Conflict with WBD Conflict with WHISPER

Table 2.2.3.1 - Decoding of HK header

The **DWP model tag** provides a unique identifier for each DWP model which is a fixed value. This provides a known value at the start of every DWP housekeeping block.

The **OBDH reset count** is a count of the number of OBDH reset pulses received since the last DWP reset. The first housekeeping frame received after any DWP reset will have a reset count of 1, incrementing by 1 each subsequent housekeeping frame.

A very simple health check for the DWP instrument is to turn it on and check the **DWP model tag** and the **OBDH reset count** have the correct values during DWP operations.

The **WEC sampling offset** provides some timing information required to decode the sample times of WEC data packets to an accuracy better than 1.1 ms. (See Chapter 1 section 1.4.5.14 Time Tagging of Wec data)

Finally the last two words of the header are error words. Both are zero when the experiments are running smoothly. Bits are set to indicate errors that may affect any or all of the WEC instruments, so non-zero values here are fairly serious.

2.2.4 Checksummed memory

This area of the housekeeping is filled by copying words from DWP checksummed memory. This memory holds critical control parameters for control of DWP and the WEC, and the effects of an unnoticed corruption of one of these words could be very serious for WEC operations. Therefore a checksum is computed over the whole of checksummed memory every time it is modified and at regular intervals, and if at any time the stored checksum does not match the computed checksum, then an SEU or maybe a DWP problem has corrupted the memory. In this event, a watchdog reset is forced, the effect of which is that the contents of checksummed memory are restored from a redundant copy that is frequently updated.

After a DWP watchdog reset DWP checks the validity of checksummed memory. If the checksum is valid, WEC operations continue as before the reset, otherwise the WEC instruments are powered off. The recovery of checksummed memory values after a reset is described in section 2.3.

DWP only has volatile memory which loses its contents when DWP is powered off.

In general, there is one telecommand per word of checksummed memory that controls the value of that word.

Location (byte)	Size (bytes)	HK parameters
10	2	WEC macro executing WEC macro loading WEC macro slot WEC macro offset
12	2	DWP kernel processor module DWP processor 0 configuration DWP processor 1 configuration DWP processor 2 configuration
14	2	DWP processor 0 status
16	2	DWP processor 1 status
18	2	DWP processor 2 status

Table 2.2.4.1 - Checksummed memory (cont in Table 2.2.4.2)

The **WEC macro** parameters define whether a DWP macro is either loading or executing. DWP macros are used to control WEC modes (ref. section 3.5).

The **DWP processor n configuration** parameters show the state of the three DWP processors (no power, half power or full power).

The **DWP processor n status** parameters give health information for each DWP processor (which links to other processors are working for example).

DWP software revision parameters give the last compilation date of the DWP software. The DWP and WEC clock parameters give the WEC sampling frequency and some health information on the DWP generated sampling clock.

The OBDH parameters give the current OBDH acquisition mode DWP is using to package WEC telemetry for the OBDH, and information on which of the OBDH channels is in use or has failed.

The power status and relay cycle parameters are defined for each WEC instrument and define whether the instrument is ON or OFF, and the number of relay actuations in the WEC PWR unit for that experiment.

The processing control parameters define the DWP processing required for each instruments data to compress or reduce the data rate to fit the WEC bit rate allocation.

The **correlator control** parameter defines the operation of the particle auto-correlator in DWP.

DWP memory read address pointer defines from which address in the kernel processors memory the contents of the **kernel memory dump** are taken. The **DWP memory write address**

pointer is used to show at which address in the kernel processor memory a code patch is to be loaded.

The PEACE parameters describe the mode of the PEACE instrument, as set by the **FlagExtExpStatus** telecommand. This is used to adjust the DWP auto-correlator parameters.

Location (byte)	Size (bytes)	HK parameters
20	2	DWP software revision year DWP software revision month DWP software revision day DWP master clock status WEC sample clock frequency DWP master clock generation
22	2	OBDH active channel OBDH active reset channel OBDH redundant channel failure OBDH nominal channel failure OBDH redundant reset channel failure OBDH nominal reset channel failure OBDH acquisition mode
24	2	Staff SA power status Staff SA relay cycles EFW power status EFW relay cycles
26	2	Whisper power status Whisper relay cycles Staff MWF power status Staff MWF relay cycles
28	2	Whisper TX power status Whisper TX relay cycles Wideband power status Wideband relay cycles
30	2	Whisper sounding first transmission time
32	2	Whisper sounding last transmission time
34	2	Staff MWF processing control
36	2	Whisper processing control
38	2	Wideband processing control
40	2	Correlator control
42	2	DWP memory read address pointer
44	2	DWP memory write address pointer
46	2	Peace flybacks per spin Peace SRP offset
48	2	DWP last configuration telecommand
50	2	WEC current limit
52	2	Whisper latchup monitor control Staff SA latchup monitor control Staff MWF latchup monitor control EFW instrument disabled Staff SA instrument disabled Staff MWF instrument disabled Whisper instrument disabled Wideband instrument disabled

Table 2.2.4.2 - Checksummed memory (cont from Table 2.2.4.1))

The **DWP last configuration command** parameter echoes the last **DWPCfg** command received (this is not echoed in the **memory load echo** as other commands are as it usually causes a DWP reset).

The **WEC current limit** parameter gives the level of the WEC current at which DWP will power off all WEC instruments.

Finally, the latchup monitor control and instrument disabled parameters are non-zero if serious problems have been observed with an experiment, and indicate that either some DWP checks on that experiment have to be cancelled, or that DWP will no longer allow the experiment to be operated because of catastrophic failure of that instrument. The parameters are only set by telecommand.

2.2.5 Telecommand echo / kernel memory dump

The first word of this entry defines the number of memory loads (**n**) received between the last two OBDH resets. The next **n** words up to a limit of 15 words show these memory loads in the order that they were received. The last 15-**n** words are assigned to kernel memory dump.

Location (byte)	Number of words	Description
54	1	Number of memory loads received (n)
56	w = n if (n ≤15) w = 15 if (n >15)	Memory loads received (up to 15)
56 + (w x 2)	15 - w	Kernel memory dump

Table 2.2.5.1 - Format of telecommand echo / kernel memory dump

The purpose of **telecommand echo** is to confirm that the memory loads transmitted to DWP between the last two OBDH resets have been received correctly.

The kernel memory dump words show the contents of kernel memory, starting at the address specified by **DWP memory read address pointer**. The purpose of the memory dump is to allow the contents of DWP RAM to be verified against the ROM and any code patches that have been uploaded.

2.2.6 Analogue monitors

This part of the housekeeping allocates one byte to represent values read by the DWP 8-bit ADC.

Location (byte)	HK parameter
86	Staff MWF voltage monitor 1
87	Staff MWF voltage monitor 0
88	Staff MWF voltage monitor 3
89	Staff MWF voltage monitor 2
90	Wideband voltage monitor
91	WEC current sense
92	Staff SA voltage monitor 1
93	Staff SA voltage monitor 0
94	DWP voltage monitor
95	Staff SA voltage monitor 2
96	Staff MWF temperature monitor 1
97	Staff MWF temperature monitor 0
98	WHISPER temperature monitor
99	WBD temperature monitor
100	DWP temperature monitor
101	STAFF SA temperature monitor

Table 2.2.6.1 - Analogue monitor HK

2.2.7 EFW HK (part 1)

EFW HK holds information specific to the EFW experiment. EFW also has a second area of housekeeping described later.

Location (byte)	Size (bytes)	HK parameters
102	2	EFW test sequence number EFW data with bad header EFW no telemetry received EFW bad tape mode command EFW unexpected telemetry
104	2	EFW spacecraft potential status EFW spacecraft potential

Table 2.2.7.1 - Format of EFW HK (part 1)

2.2.8 STAFF HK

STAFF HK holds information specific to the STAFF MWF and STAFF SA experiments.

Location (byte)	Size (bytes)	HK parameters
106	1	Staff MWF latchup count
107	1	Staff SA latchup count
108	2	Staff SA error word Staff SA not working
110	2	Staff MWF error word Staff MWF not working
112	1	Staff MWF calibration mode Staff SA whisper transmitter was active Staff MWF bandwidth Staff SA analysis mode
113	1	Staff MWF calibration step
114	2	Staff MWF Bx max - min
116	2	Staff MWF By max - min
118	2	Staff MWF Bz max - min
120	2	Staff SA number of zeroes
122	10	Staff SA AGC averaged values

Table 2.2.8.1 - Format of STAFF HK

2.2.9 WHISPER HK / WBD gain

The first byte of this housekeeping indicates whether the rest is allocated to WHISPER, or to WBD gain information. WBD gain information is only generated when WBD is on and outputting data through DWP (not its nominal mode). Hardware constraints within DWP prevent WHISPER from being powered on at the same time.

The WHISPER/WBD HK flag at location 132 is set to 1 when the command to route WBD through DWP is received.

If WHISPER is ON, the flag is not set and an error flagged.

Location (byte)	Size (bytes)	Description (WHISPER)	Description (WBD)
132	1	0 = WHISPER	1 = WIDEBAND
133	1	0	number of items of WBD gain read
134	16	WHISPER HK	WBD gain information (compressed)

Table 2.2.9.1 - Format of WHISPER HK / WBD gain

When Wideband is on and outputting data through DWP, locations 134 to 149 are filled with gain information read from the Wideband status interface by DWP. This information has to be compressed as up to 51 4-bit gain values may need to be stored in this HK. The number of gain

values read, determined by the frequency of the Wideband gain update clock, is given in location 133. The details of the decompression required on this HK is given under the description of the **Wideband gain information** parameters (EW4GAIN1 to EW4GAIN8).

When WHISPER is on, locations 134 to 149 are filled by copying words from the last packet of data read from the WHISPER telemetry interface. The description of these words, taken from the WHISPER internal EID are given below.

Location (byte)	Size (bytes)	HK parameters
132	1	Whisper HK flag
134	2	Whisper command word error Whisper latchup detection Whisper latchup count Whisper not working
136	2	Whisper VSP scale factor
138	2	Whisper actual mode
140	2	Whisper repetition and line rows Whisper watch-dog result
142	2	Whisper command mode words 0 and 1 echo
144	2	Whisper command mode words 2 and 3 echo
146	2	Whisper data main words

Table 2.2.9.2 - Subset of WHISPER HK defined by parameters

2.2.9.1 General

Basically, WHISPER output data are the result of a FFT computation. Data are stored in a dual port memory and are read by the DWP every basic sequence of 13.33 ms in sounding and tracking modes, and at the end of each averaged natural wave mode.

In science modes (N, S, T, C), the length of the data to be read is related to the FFT size set in the WCMW0 (bit 2 and 3).


```

.....
:  FFT size  :  nb of memory  :
:  output    :  words to be   :
:  bins      :  read by the DWP :
:.....:.....:
:    64      :    64          :
:    128     :    128         :
:    256     :    256         :
:    512     :    512         :
:.....:.....:

```

Each data bin is a modulus number coded as a 16-bit word.

Output data are stored in the natural bin order.

The first eight 16 bit words output, corresponding to the data of the first bins, which are meaningless, are overwritten by several status words related to the pending operation. These status words are updated at the rate of the WHISPER basic sequence ($40/3 = 13.33$ ms).

The first four words are the WHISPER Actual Mode Words (WAMW). They describe the operating mode actually running.

The following words receive a copy of the WHISPER Command Mode Word (WCMW).

```

:location      :   CONTENT
: (byte)       :
:              :
:              :
:.....       :.....
.              :
: 134          :   WAMW0
:              :
: 136          :   WAMW1
:              :
: 138          :   WAMW2
:              :
: 140          :   WAMW3
:              :
: 142          :   WAMW4      }   WHISPER Command Mode
: 144          :              }   Words echo
:              :   WAMW5
:              :
: 146          :   WAMW6      }   WHISPER Data Main
: 148          :              }   Words
:              :   WAMW7
:              :
:.....       :.....
.              :

```

The WAMW and WCMW are described in detail in the WHISPER internal EID and in section 1.3.3.d, 2.2.9.3 and 2.2.9.4.

The last two words contain the integrated value of the first 128 sampled data.

NOTE : These 8 words will be available in the output data frame and will be updated after each WHISPER basic sequence.

In the Troubleshooting (D mode), each block of 64 word frames starts with 6 status words including the "W" identifier, and then continues with 58 words of data.

The pattern of these status words are described later.

2.2.9.2 Housekeeping Data

The WHISPER housekeeping data are built by the DWP by copying the 8 status words, or the 6 status plus 2 data words, quoted above.

In addition these 8 (16 bit) words of housekeeping will allow the WHISPER EGSE to control the operation during all the AFT (Abbreviated Functional Tests), and to demonstrate the integrity of WHISPER.

The WHISPER HK data are located in the WEC HK frame in a shared area. The content of this area of HK is dependent on the current WEC mode.

In all WEC modes, except for the WBD Burst Data mode, these words hold the WHISPER HK. In the WDB Burst mode, when the WHISPER instrument must be powered off, these words hold the WBD Gain state information.

The WHISPER/WBD HK area has a most significant byte identifier. A value of 0 means that the next 8 words contain WHISPER HK.

In addition the "W" identifier placed in the WHISPER data frame is overwritten by the DWP with a WHISPER interface status word, defined by the parameters **Whisper command word error, Whisper latchup, Whisper latchup count, Whisper not working.**

The top level view of WHISPER HK is given in table 2.2.9.(b) above.

2.2.9.3 WHISPER Actual Mode Words (WAMW) 0 to 3 status

Each Whisper output data frame starts with the WAMW 8 words (16 bit) for the normal operation.

Status word 0 (identifier step_row)

The byte 1 always contains an identifier for WHISPER corresponding to the ASCII values of the letter "W".

The byte 0 is set with the decremented number of the step within a sequence :

- in sounding mode (mode 2) it starts with the number of sounding frequencies and is decremented to 1 at the last sounding frequency point.

```

Status Word 0

MSB   byte 1  LSB MSB   byte 0   LSB
---          --- ---          ---
+-----+ +-----+
| 7 6 5 4 3 2 1 0 | | 7 6 5 4 3 2 1 0 |
+-----+ +-----+
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | x x x x x x x x   step_row (decremented) (C,S,T)
| | | | | | | | | |
| | | | | | | | | |

0 1 0 1 0 1 1 1   WHISPER identifier
57h 87d "W"

```

Status Word 1 (vsp_scale)

This 16-bit word contains the scale factors given by the VSP after performing an FFT. It echoes if the delayed listening mode is executed. It gives also the position (slice) of the frequency table (fst) set in an active mode ; this could help to identify the running fst.

DWP put a copy of the bit 0 to 4 of byte 1 in the Whisper header for sounding modes. Status word 1

```

Status Word 1

MSB   byte 1  LSB MSB   byte 0   LSB
---          --- ---          ---
+-----+ +-----+
| 7 6 5 4 3 2 1 0 | | 7 6 5 4 3 2 1 0 |
+-----+ +-----+

```

```

+-----+ | | | | +-----+ (C,N,S,T)
| | | | | +-----+ VSP scale factor A+B
| | | | | E_Signal (N,S,Dacq)
| | | | 0 Receiver connected on Ez
| | | | 1 Receiver Connected on Ey
| | | | delay (S)
| | | 0 First listen not delayed
| | | 1 First listen delayed
| | | slice (S)
| 0 0 First slice fst 0 to 31
| 0 1 Second Slice fst 32 to 63
| 1 0 Third slice fst 64 to 95
| 1 1 Fourth slice fst 96 to 127
|
|
+-----+ VSP scale factor A

```

Note : the separate scale factor A and B(not given) are related to the internal process of the FFT and are given for technical information only.

Status Word 2 (overf2 - gainmode2)

This 16-bit word contains the number of overflows detected by the related acquisition, this value is an information about the quality of the acquisition. The remaining right bit are related to the instrument operating mode, the receiver gain value, the level of the transmitted pulse, and the calibration level.

Status word 2

MSB	byte 1	LSB	MSB	byte 0	LSB		
---		---	---		---		
+	-----+		+	-----+			
	7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0			
+	-----+		+	-----+			
+	-----+						Modes description (mode)
							0 0 0 - Contingency 1 (Nat. Waves) (N) 0
							0 0 1 - Tracking (T) 1
							0 1 0 - Sounding (S) 2
							0 1 1 - Calibration 2 (Sounding) (C) 3
							1 0 0 - Natural waves (N) 4
							1 0 1 - Calibration 1 (Quiet) (C) 5
							1 1 0 - Dump_troubleshooting (D) 6
							1 1 1 - Contingency 2 (Sounding) (S) 7
							Emission / Cal level (S, T, C)
							(level)
							0 0 ----- no emission 0
							0 1 ----- 50Vpp --- low level 1
							1 0 ----- 100Vpp --- medium level 2
							1 1 ----- 200Vpp --- high level 3
							Gain (C,Dacq,N,S,T) (gain)
							0 0 ----- Gain 12 dB 0
							0 1 ----- Gain 24 dB 1
							1 0 ----- Gain 36 dB 2

	1 1	----- Gain 36 dB	3
		Pulse duration calculated	
			(pulse_cal)
	0	----- 1.024 ms	0
	1	----- 0.512 ms	1
x		----- Number of Overflow	(0 - 255)
		during acquisition	

Of 1024 samples (N,S,T,C,Dacq)

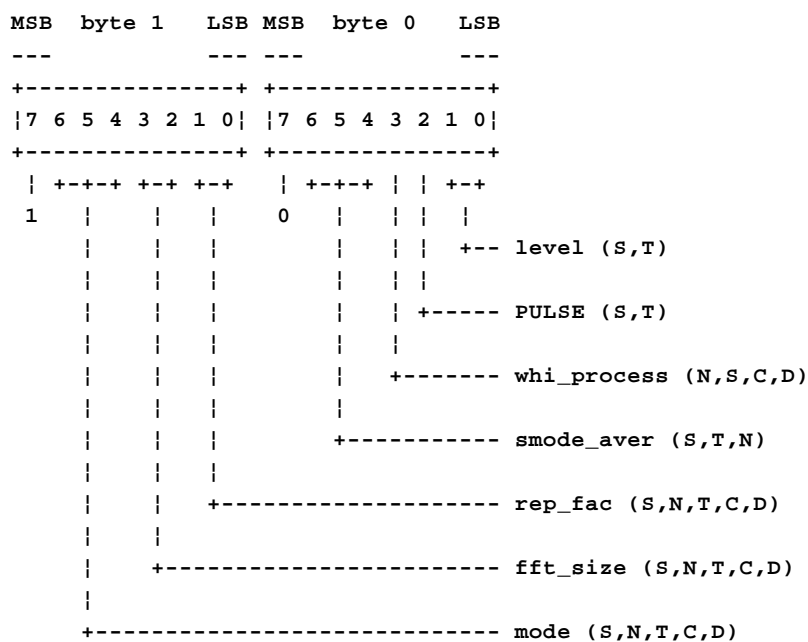
Status Word 3 (wd2_rec2_row2)

point (WCMW byte 3) which is set to the current working frequency in calibration and sounding modes. In these cases, the working frequency is coded in a similar way as for the tracking mode when sending the WCMW.

Status Word 4 (WCMW0-WCMW1)

This 16-bit word contains the copy of the WCMW byte 0 and byte 1

Status word 4

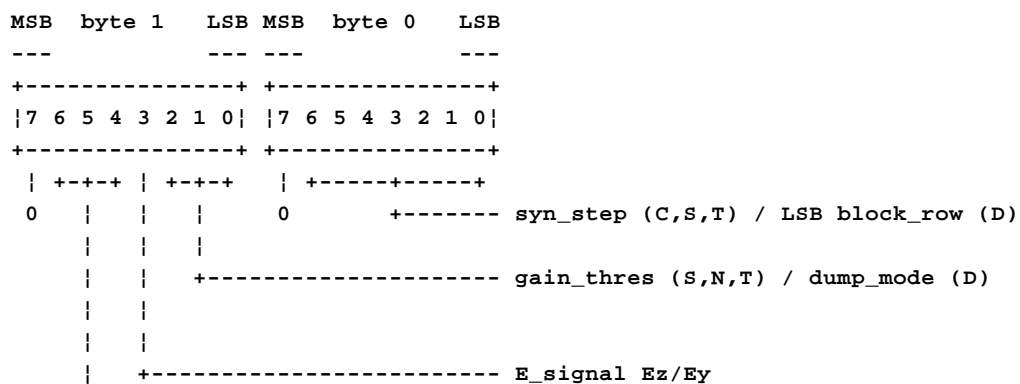


Status word 5 (WCMW2-frequency2)

This 16 bit word contains :

- the copy of the WCMW byte 2 (word 5 byte 1) or MSB block row + mode (D)
- the frequency row number of the calibrating, sounding or tracking step (word 5 byte 0).Or LSB block row (D).

Status word 5



```
|  
|  
+----- gain_cmd +12/+24/+36 dB (N,S,T,D_acq)  
          / MSB block row (D_prog))
```

Modes definition (mode)

Status word 4										Status word 5														
MSB	byte 0				LSB	MSB	byte 1				LSB	MSB	byte 2				LSB	MSB	byte 3				LSB	
...					
:7 6 5 4 3 2 1 0:					:7 6 5 4 3 2 1 0:					:7 6 5 4 3 2 1 0:					:7 6 5 4 3 2 1 0:					:7 6 5 4 3 2 1 0:				
: : : : : : : :					: : : : : : : :					: : : : : : : :					: : : : : : : :					: : : : : : : :				
1	:	:	:	:	:	0	:	:	:	:	:	0	:	:	:	:	:	0	:	:	:	:	:	
: : :					: : :					: : :					: : :					: : :				
: : :					(mode)					Modes description														
0	0	0				0						- Contingency 1 (Natural Waves)					(N)							
0	0	1				1						- Tracking					(T)							
0	1	0				2						- Sounding					(S)							
0	1	1				3						- Calibration 2 (Sounding)					(C)							
1	0	0				4						- Natural waves					(N)							
1	0	1				5						- Calibration 1 (Quiet)					(C)							
1	1	0				6						- Dump_Troubleshooting					(D)							
1	1	1				7						- Contingency 2 (Sounding)					(S)							

FFT size (fft_size)

Status word 4																Status word 5																																															
MSB	byte 1								LSB	MSB	byte 0								LSB	MSB	byte 0								LSB	MSB	byte 0								LSB																								
..																																		
:7 6 5 4 3 2 1 0:																:7 6 5 4 3 2 1 0:																:7 6 5 4 3 2 1 0:																:7 6 5 4 3 2 1 0:															
: : : : : : : :																: : : : : : : :																: : : : : : : :																: : : : : : : :															
1		:	:	:	:	:	:	:	0	:	:	:	:	:	:	0	:	:	:	:	:	0	:	:	:	:	:	:																																			
		:	:																	:	:																	:	:																								
fft_size		:	:	FFT size (0 to 83.170 kHz)														Data block size																																													
		:	:	(0 to 3) for S, N and T modes														(0 only) for D mode																																													
		:	:	(0 only) for C modes														(0 only) for C (WHI_pro)																																													
0	0	0	-----								64 bins								-----								64 words (16)																																				
1	0	1	-----								128 bins																																																				
2	1	0	-----								256 bins																																																				
3	1	1	-----								512 bins																																																				

The FFT is applied to the range 0 to 83.170 kHz (fixed sampling frequency, 166.66 kHz). Its size, M, defines the frequency resolution lower limit, 83.170/M in kHz. The final resolution may be larger, after processing inside DWP. In a S mode, M will generally be set to 512.

Repetition factor (rep_fac)

[illegible]

The repetition factor corresponds to the number of time the instrument works in the same configuration. It is one way to limit the sounder operations in case of a mistake or failure in the TC stream. It will also be of use in the definition of duty cycles.

Step duration (smode_aver)

```

Status word 4                                Status word 5

MSB  byte 1  LSB MSB  byte 0  LSB MSB  byte 1  LSB MSB  byte 0  LSB
---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
+-----+ +-----+ +-----+ +-----+ +-----+
|7 6 5 4 3 2 1 0| |7 6 5 4 3 2 1 0| |7 6 5 4 3 2 1 0| |7 6 5 4 3 2 1 0|
+-----+ +-----+ +-----+ +-----+ +-----+
| +-+-+ +-+ +-+ | | | | | +-+ | +-+-+ | +-+-+ | +-+-+ +-+-+
1 | | | | 0 | | | | | 0 | | | | 0 | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
+-----+ +-----+
| | | | | | | | | | | | | | |
+-----+ +-----+
Emission/Reception Rate | | | Number of averaged spectra (N mode)
S mode and T mode | | | Duration :
| | |

(smode_aver) 0
1 E 1 R (13.33ms) ----- 0 0 0 --- 32 spectra (426.66ms)

(smode_aver) 1
1 E 2 R (26.66ms) ----- 0 0 1 --- 16 spectra (213.33ms)

(smode_aver) 2
1 E 3 R (40ms) ----- 0 1 0 --- 16 spectra (213.33ms)

(smode_aver) 3
1 E 5 R (66.66ms) ----- 0 1 1 --- 8 spectra (106.66ms)

(smode_aver) 4
1 E 8 R (106.66ms) ----- 1 0 0 --- 4 spectra (53.33ms)

(smode_aver) 5 (T mode overwritten with smode_aver = 0)
Gliding mode ----- 1 0 1 --- 2 spectra (26.66ms)
2.125 Spin (8.5s)
40 x (1E 1R) (533.33ms) | | |
+ A (waiting) (2106.66ms) | | |
+ 256 x 1R (3413.33ms) | | |
+ B (waiting) (2446.66ms adj)| | |
455 WHSS requested
296 frames issued

(smode_aver) 6
SYNC A Spin/32 (125ms) ----- 1 1 0 --- 64 spectra (853.33ms)
(1E 5R) (80ms)
+ B (waiting) (45ms adj.) | | |
6 WHSS requested
5 frames issued

```

```
(smode_aver) 7
SYNC B Spin/16 (250ms) ----- 1 1 1 --- 1 spectrum (13.33ms)
      (1E 13) (186.66ms)
+ B (Waiting) (63.34ms adj.)
14 WHSS requested
13 frames issued
```


This status bit (word 4 byte 1 bit 6) can be taken into account when interpreting the frequency scan mode bit.

Emission level (level)

Status word 4										Status word 5																						
MSB	byte 1				LSB	MSB	byte 0				LSB	MSB	byte 1				LSB	MSB	byte 0				LSB									
---					---	---	---					---	---					---	---					---								
+-----+					+	+-----+					+	+-----+					+	+-----+					+									
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	
+-----+					+	+-----+					+	+-----+					+	+-----+					+									
	+	-	+	+	+	+	+		+	-	+	+					+	+	+	+		+	+	+	+	+	+	+	+	+	+	
1							0							0							0											
										(level) *										Sounding level (S,T)												
										0										0 0 ----- No emission												
										1										0 1 ----- Sounding at 50 Vpp												
										2										1 0 ----- Sounding at 100 Vpp												
										3										1 1 ----- Sounding at 200 Vpp												

* may be updated in tracking mode

Receiver gain (Gain_cmd)

Status word 4										Status word 5																													
MSB	byte 1							LSB	MSB	byte 0							LSB	MSB	byte 1							LSB	MSB	byte 0							LSB				
---										---										---										---									
+-----+ +-----+ +-----+ +-----+										+-----+ +-----+ +-----+ +-----+										+-----+ +-----+ +-----+ +-----+										+-----+ +-----+ +-----+ +-----+									
7 6 5 4 3 2 1 0										7 6 5 4 3 2 1 0										7 6 5 4 3 2 1 0										7 6 5 4 3 2 1 0									
+-----+ +-----+ +-----+ +-----+										+-----+ +-----+ +-----+ +-----+										+-----+ +-----+ +-----+ +-----+										+-----+ +-----+ +-----+ +-----+									
+-+ +-+ +-+										+-+ +-+										+-+										+---+ +---+ +---+ +---+									
1										0										0										0									
										(Gain_cmd)										Gain Command (S,N,T,D acq)																			
										0										0 0 0 --- Fixed Gain + 12 dB																			
										1										0 0 1 --- Fixed Gain + 24 dB																			
										2										0 1 0 --- Fixed Gain + 36 dB																			
										3										0 1 1 --- Fixed Gain + 36 dB																			
										4										1 0 0 --- Auto Gain + 24 / + 12 dB																			
										5										1 0 1 --- Auto Gain + 24 / + 12 dB																			
										6										1 1 0 --- Auto Gain + 36 / + 24 dB																			
										7										1 1 1 --- Auto Gain + 36 / + 24 dB																			

In acq_dump mode, bit 6 is ignored, thus only fixed gain is set.

Receiver Connection (E_Signal)

MSB	WCMW0	LSB	MSB	WCMW1	LSB	MSB	WCMW2	LSB	MSB	WCMW3	LSB
---		---	---		---	---		---	---		---
+-----+		+-----+		+-----+		+-----+		+-----+		+-----+	
7 6 5 4 3 2 1 0		7 6 5 4 3 2 1 0		7 6 5 4 3 2 1 0		7 6 5 4 3 2 1 0		7 6 5 4 3 2 1 0		7 6 5 4 3 2 1 0	
+-----+		+-----+		+-----+		+-----+		+-----+		+-----+	
1 +-+ +-+ +-+		0 +-+ +-+		0 +-+		0 +---+ 0 +-----+					
				(E_Signal)				Receiver Connection (S,N,T,D acq)			
				0				0 --- Connected on Ez			
				1				1 --- Connected on Ey			

Automatic Gain Threshold (gain_thres)

Status word 4												Status word 5																			
MSB byte 1 LSB								MSB byte 0 LSB								MSB byte 1 LSB								MSB byte 0 LSB							
---								---								---								---							
+-----+								+-----+								+-----+								+-----+							
7 6 5 4 3 2 1 0								7 6 5 4 3 2 1 0								7 6 5 4 3 2 1 0								7 6 5 4 3 2 1 0							
+-----+								+-----+								+-----+								+-----+							
+-+ +-+ +-+								+-+ +-+								+-+								+-----+							
1								0								0								0							
																(gain_thres)								Gain Threshold (S,N,T)							
																								(Number of overflows							
																								during Gain control)							
								0								0 0 0								----- 0 (use of internal							
																								default value)							
																								(2 overflows for FM's)							
								1								0 0 1								----- from 3							
								7								1 1 1								----- to 15 (step 2)							

Frequency point/Dump block (fst)

This word gives the frequency point effectively generated in Sounding, Tracking, Calibration and Active Contingency modes.

In natural modes this word is zeroed.

In upload, protect and unprotect mode, this word echoes the WCMW3.

Status word 4												Status word 5																																			
MSB		byte 1								LSB		MSB		byte 0								LSB		MSB		byte 1								LSB		MSB		byte 0								LSB	
---										---		---										---		---										---		---										---	
+		+								+		+		+								+		+		+								+		+		+								+	
	7	6	5	4	3	2	1	0			7	6	5	4	3	2	1	0			7	6	5	4	3	2	1	0			7	6	5	4	3	2	1	0									
+		+								+		+		+								+		+		+								+		+		+								+	
		+	+	+	+	+	+	+			+	+	+	+	+	+	+	+			+	+	+	+	+	+	+	+			+	+	+	+	+	+											
1										0												0												0													
												Frequency point (N = syn_step)																																			
not used												from N = 0												0 0 0 0 0 0 0																							
												to N = 3												0 0 0 0 0 1 1																							
F = N x 976.5625 Hz												from N = 4 (3906.3 Hz)												0 0 0 0 1 0 0																							
(C,S,T)												to N = 83 (81054.7 Hz)												1 0 1 0 0 1 1																							

```

C 1 (quiet)      | from N = 84 ----- 1 0 1 0 1 0 0
mode only       | to   N = 127 ----- 1 1 1 1 1 1 1

Dump block LSB (D) | from   0 ----- 0 0 0 0 0 0 0
                  | to   127 ----- 0 1 1 1 1 1 1

Natural modes ----- 0 0 0 0 0 0 0

Upload, Protect and Unprotect ----- x x x x x x x
                                         WCMW3

```

2.2.9.5 WHISPER Data Main Words (WDMW)

These 16-bit words contain, during the sounding and natural waves operations, the quadratic sum of the first 128 data samples collected during an acquisition.

According to the `fft_size`, 2, 4, 8, 16 words are set with the energy value corresponding respectively to the 1, 2, 4, 8 blocks of 128 samples.

Each pair of words is coded as an unsigned integer of 32 bits

For the `fft_size` 64, this 32 bit word is the energy value, for the other values of `fft_size`, the DWP (application task) will sum 2, 4 or 8 energy (32 bit) to give the corresponding energy value.

Status word 6																Status word 7																							
MSB byte 1								LSB MSB byte 0								LSB MSB byte 1								LSB MSB byte 0								LSB							
...														
:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:							
:.....:								:.....:								:.....:								:.....:								:.....:							
msb								lsb msb								lsb																							
LSW																MSW																							

(energy) value coded as an unsigned integer of 32 bit

NOTE : LSW (Least Significant Word) is before MSW

- During the calibration modes, without WHISPER Post-Processing, these two words are set in two different ways :
 - When no frequency is generated : energy value coded as above.
 - When a frequency pulse is generated :
- the words 6 (MSW) and 7 (LSW) contain the amplitude of the bin related to the frequency. The amplitude = raw FFT result X 2exp(scale factor).

Status word 6																Status word 7																							
MSB byte 1								LSB MSB byte 0								LSB MSB byte 1								LSB MSB byte 0								LSB							
...														
:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:								:7 6 5 4 3 2 1 0:							
:.....:								:.....:								:.....:								:.....:								:.....:							
msb								lsb msb								lsb																							
MSW																LSW																							

amplitude of the bin coded as an unsigned integer of 32 bit

2.2.9.6 WHISPER Uploading EEPROM and protect/unprotect Status

Output format for Uploading WHISPER EEPROM (in mode 1).

One 64 words frame is issued at the end of the upload procedure

Status word 0						Status word 1					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....::					
:7 6 5 4 3 2 1 0:						:7 6 5 4 3 2 1 0:					
:.....:						:.....:					
0 1 0 1 0 1 1 1						x x x x x x x x					
57h 87d "W"						EEPROM checksum result					
step row											

Status word 2						Status word 3					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....::					
:7 6 5 4 3 2 1 0:						:7 6 5 4 3 2 1 0:					
:.....:						:.....:					
x x x x x x x x						0 0 0 0 0 0 0 0					
EEPROM checksum result						mode					
0 0 0 0 0 0 0 1						0 0 0 0 0 0 0 0					

Status word 4						Status word 5					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....::					
:7 6 5 4 3 2 1 0:						:7 6 5 4 3 2 1 0:					
:.....:						:.....:					
1 0 0 1 0 0 0 0						0 0 0 0 0 0 0 0					
WCMW0						WCMW1					
0 0 0 0 1 0 0 0						0 1 1 1 1 1 1 1					
						WCMW2					
						WCMW3					

Status word 6						Status word 7					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....::					
:7 6 5 4 3 2 1 0:						:7 6 5 4 3 2 1 0:					
:.....:						:.....:					
0 0 0 0 0 0 0 0						0 0 0 0 0 0 0 0					
						0 0 0 0 0 0 0 0					
						0 0 0 0 0 0 0 0					

Output format for Protect/Unprotect WHISPER EEPROM (in mode 1)
 one 64 words frame is issued at the end of the upload procedure

Status word 0										Status word 1																													
MSB	byte 1							LSB	MSB	byte 0							LSB	MSB	byte 1							LSB	MSB	byte 0							LSB				
.....																		
:7 6 5 4 3 2 1 0:										:7 6 5 4 3 2 1 0:										:7 6 5 4 3 2 1 0:										:7 6 5 4 3 2 1 0:									
.....																		
0 1 0 1 0 1 1 1										0 0 0 0 0 0 0 0										x x x x x x x x										x x x x x x x x									
57h 87d "W"										step row										EEPROM checksum result																			

Status word 2										Status word 3																													
MSB	byte 1							LSB	MSB	byte 0							LSB	MSB	byte 1							LSB	MSB	byte 0							LSB				
.....																		
:7 6 5 4 3 2 1 0:										:7 6 5 4 3 2 1 0:										:7 6 5 4 3 2 1 0:										:7 6 5 4 3 2 1 0:									
.....																		
x x x x x x x x										0 0 0 0 0 0 0 1										x 0 0 0 0 0 0 0 0										0 0 0 0 0 0 0 0									
EEPROM checksum result										mode										WD																			

Status word 4						Status word 5					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
WCMW0			WCMW1			WCMW2			WCMW3		
Status word 6						Status word 7					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
0 0 0 0 0 0 0 0			0 0 0 0 0 0 0 0			0 0 0 0 0 0 0 0			0 0 0 0 0 0 0 0		
Status word 8						Status word 9					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
MODEL Identifier "F" "M"						software version number N n					
Status word 10						Status word 11					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
software time release hour, minute						protect status			software date		
						0x55 protected			release day		
						0x00 not protected					
Status word 12						Data word 0					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
software date release month, year						first data bin (meaningless data)					

2.2.9.7 WHISPER Processed Calibration Mode Words Status

During Calibration modes WHISPER processed, the output data is one frame containing 13 status words (16 bit) and 51 words(16 bit) of data.

No data processing is requested by the DWP.

The calibration modes WHISPER processed can be used as an automatic test for WHISPER.

Both passive and active calibration modes can be used with WHISPER processing.

The status words 0 to 5 will be set to the status of the last step of the sequence in case of success, or will hold the status values of the first step subject to an error.

The status word 6 and word 7 are dedicated as key words for this test.

In case of a successful sequence the words 6 and 7 will show : FFFF FFFF

In case of error during the sequence, the first byte of word 6 will be set according to the error type and the step row. The second byte of word 6, the first byte of word 7 and the second byte of word 7 will be set to the 2nd, 3rd and 4th error accordingly, if any.

For the automatic test the first byte of word 6 can be checked.

Coding of error :

Each step output is evaluated and compared to a built in reference table.

Two ranges are defined :

range 1 : the output is equal to the reference value + or - 3db

range 2 : the output is equal to the reference value + or - 6dB

key 0, 1, 2, or 3

```

.....
:7 6 5 4 3 2 1 0:
:.....:
: : : : : : :
NO ERROR      1 1 1 1 1 1 1 1
: : : : : : :
: : x x x x x x   step number of error
x x  TYPE of error
0 1    > range 2
1 1    > range 1, in range 2
1 0    < range 1, in range 2
0 0    < range 2

```

(See HK parameter Whisper calibration result EW3CALRL)

Output format for Calibration WHISPER processed modes

Status word 0						Status word 1					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
0 1 0 1 0 1 1 1			x x x x x x x x			x x x x x x x x			x x x x x x x x		
57h 87d "W"			step row			VSP-SCALE A & B			VSP-SCALE A + B		
Status word 2						Status word 3					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			0 x x x x x x x			x x x x x x x x			x x x x x x x x		
overflows			gain-level-mode			watch-dog listen row			repetition row		
Status word 4						Status word 5					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
WCMW0			WCMW1			WCMW2			cal step row		
Status word 6						Status word 7					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
key error 0			key error 1			key error 2			key error 3		
Status word 8						Status word 9					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			x x x x x x x x			x x x x x x x x		
MODEL Identifier "E" "M"						software version number N n					
Status word 10						Status word 11					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				
:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:			:7 6 5 4 3 2 1 0:		
.....				
x x x x x x x x			x x x x x x x x			0 0 0 0 0 0 0 0			x x x x x x x x		
software time release hour, minute						software date release day					
Status word 12						Data word 0					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
.....				

```

:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....: :.....: :.....:
x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x
software date release month, year first data bin

```

2.2.9.8 WHISPER Trouble shooting Mode Words (WTMW) Status

During trouble shooting modes, the output data frames contain six 16-bit status words and 116 8-bit data words. Data words are coded either as 8-bit or 16-bit unsigned integers. No data processing at all is performed on these data neither by WHISPER nor the DWP.

The first four words (words 0-3) describe the operating mode actually running.

They are the WHISPER Actual Mode status Words called WAMW. The first byte of the first status word is a fixed identifier which contains the ASCII value of the first letter "W" from WHISPER. These status are not the same as for science modes.

The words 4 and 5 byte 1 receive a copy of the WHISPER Command Mode Word (WCMW bytes 0,1 and 2). WCMW byte 2 may be partly overwritten.

Status words 4 and 5 form the WHISPER Command Mode status Words called WCMW.

The number of frames required to performe the dump of an internal memory is given below in the status definitions.

Acquisition Dump Mode Words

Status- status word 0 byte 1 contains a fix identifier which is the ASCII value of the first letter "W" from WHISPER,

- status word 0 byte 0 is zeroed.
- status word 1 byte 0 bit 0 is antenna connection other are zeroed.
- status word 2 byte 1 contains the number of overflow.
- status word 2 byte 0 contains the designation of the current dump operation.
- status word 3 is zeroed but byte 0 bit 8 which contains the Watch Dog status.
- status word 4 and 5 byte 1 contain a copy of the WCMW received by WHISPER.
- status word 5 byte 0 is the block row coded as a 8-bit unsigned integer.

Status word 0								Status word 1																																				
MSB	byte 1							LSB	MSB	byte 0							LSB	MSB	byte 1							LSB	MSB	byte 0							LSB									
---								---	---								---	---								---	---								---	---								---
+-----+								+-----+								+-----+								+-----+																				
7 6 5 4 3 2 1 0								7 6 5 4 3 2 1 0								7 6 5 4 3 2 1 0								7 6 5 4 3 2 1 0																				
+-----+								+-----+								+-----+								+-----+																				
0 1 0 1 0 1 1 1								0 0 0 0 0 0 0 0								0 0 0 0 0 0 0 0								0 0 0 0 0 0 0 0																				
57h 87d "W"								step row																																				

block row 0 to 18

Programme Dump Mode Words Status

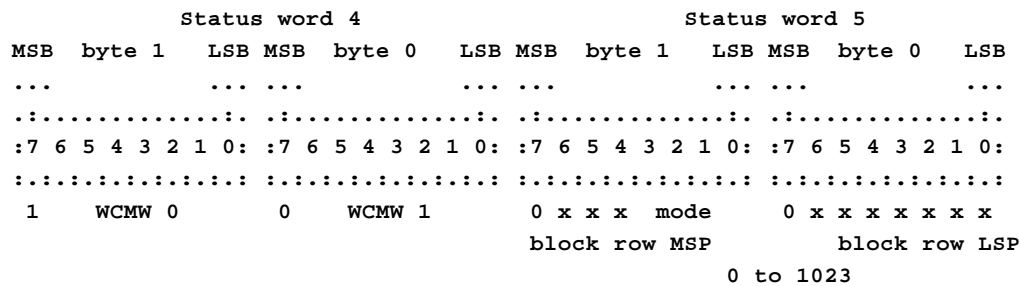
During Troubleshooting modes dedicated to the dump of program memories, the instrument performs additional memory check sums to verify the integrity of its program. Check sum values are included in the status words.

- status word 0 byte 1 contains a fix identifier which is the ASCII value of the first letter "W" from WHISPER;
- status word 0 byte 0 is zeroed.
- status words 1 and status word 2 byte 1 contain a numeric check sum value related to the memory under consideration according to status word 2 byte 0; It is the part result in the checksum calculation which is calculated by adding the checksums of the individual 58-words data block already dumped. It is a 3-bytes words coded as a 24-bit unsigned integer which represents the memory checksum when associated with the last data block.
- status word 2 byte 0 contains the current dump operation.
- status word 3 byte 0 and byte 1 bit 1 to 7 contains the numeric checksum value of the data block in the output memory, bit 8 contains the Watch Dog status.
- status word 4 and 5 byte 1 contain a copy of the WCMW received by WHISPER.
- status word 5 bit 4,5 and 6 are overwritten and contain the Most Significant Part of the block row
- status word 5 byte 0 is a the Least Significant Part of the block row. The block row is coded as a 10-bit unsigned integer.

Status word 0						Status word 1					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
...	
:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:	
0 1 0 1 0 1 1 1		0 0 0 0 0 0 0 0				x x x x x x x x		x x x x x x x x			
57h 87d "W"		step row				memory checksum calculation :					
						part result byte 2 and byte 1					

Status word 2						Status word 3					
MSB	byte 1	LSB	MSB	byte 0	LSB	MSB	byte 1	LSB	MSB	byte 0	LSB
...	
:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:		:7 6 5 4 3 2 1 0:	
x x x x x x x x		: : : : : : :		: : : : : : :		x x x x x x x x		x x x x x x x x			
memory checksum		: : : : : : :		: : : : : : :		WD checksum of the 116-bytes					
calculation :		: : : : : : :		: : : : : : :		data bloc in the output memory					
part result		: : : : : : :		: : : : : : :		byte 1		byte 0			
byte 0		: : : : : : :		: : : : : : :		Mode Designation					
		x x x x 0 1 1 0		-		Trouble shooting modes					
						definition is continuing below					
		0 0 0 1 0 1 1 0		-		M-C PROM Dump		18 frames of 58 words			

0 0 1 0 0 1 1 0 - M-C EEPROM Dump 283 frames of 58 words
0 1 0 0 0 1 1 0 - VSP PROM Dump 142 frames of 58 words
1 0 0 0 0 1 1 0 - WINDOW RAM Dump 18 frames of 58 words



2.2.10 WBD HK

WBD HK holds information specific to the WBD experiment.

Location (byte)	Size (bytes)	HK parameter
150	4	Wideband status bytes

Table 2.2.10.1 - Format of WBD HK

Location (byte)	Size (bytes)	HK parameters
150	1	Wideband converter freq Wideband lower AGC Wideband upper AGC
151	1	Wideband gain select Wideband gain setting Wideband OBDH interface
153	1	Wideband VCX0 lock status Wideband bandwidth Wideband selected antenna

Table 2.2.10.2 - Subset of WBD HK defined by parameters

Locations 150, 151 and 153 are filled by reading bytes from the WBD status interface. The description of these bytes, taken from the WIDEBAND internal EID is below.

{ The input from WBD will be included in the next draft of this document }

2.2.11 EFW HK (part 2)

EFW HK holds information specific to the EFW experiment. EFW also has another area of housekeeping which was described earlier.

Location (byte)	Size (bytes)	HK parameters
154	1	EFW playback indicator EFW burst int state EFW main/burst playback EFW whisper pulses EFW sweep status EFW cmd count status
155	1	EFW sampling mode EFW interferometer mode EFW DSC index
156	1	EFW sun angle
157	1	EFW status motor 4 EFW status motor 3 EFW status motor 2 EFW status motor 1 EFW E/D mode bits U4 EFW E/D mode bits U3 EFW E/D mode bits U2 EFW E/D mode bits U1
158	2	EFW sliding window position
160	8	EFW sliding window bytes

Table 2.2.11.1 - Format of EFW HK (part 2)

Locations 154 to 157 are filled by reading bytes from the fast digital monitor HK section of the last packet of data read from EFW. The description of these bytes, taken from the EFW internal EID is given below.

The sliding window can be positioned anywhere within the first telemetry packet read by DWP from EFW after an OSTB. Therefore its content can only be defined with reference to its current position and a description of the EFW telemetry format.

2.2.11.1 Fast digital monitor

The purpose of the Fast Digital Monitor (FDM) is to indicate relatively fast mode transitions and status of the telemetry stages. For example, playbacks of recorded data are indicated by a playback bit in the FDM. See figure and description below for the bit structure.

```
-----  
I pbbbxrwc I      LOC 154  
-----  
I ssqiiiiii I     LOC 155  
-----  
I aaaaaaaaa I     LOC 156  
-----  
I mmmmeeee I     LOC 157  
-----  
  
p      playback indicator  
      0 - off  
      1 - playback in progress  
  
bbb      burst internal state  
      000 - off  
      001 - compiling list  
      010 - turning on  
      011 - searching  
      100 - collecting  
      101 - closing the file  
      110 - playback wait  
      111 - playing back  
  
x      main/burst playback  
      0 - burst playback  
      1 - main playback  
  
r      whisper pulses present if set  
  
w      sweep in progress if set  
  
c      command counter mismatch if set  
  
ss      sampling mode  
      00 - NORMAL  
      01 - SPLIT  
      10 - HXONLY  
      11 - NULL  
  
q      interferometric mode if set  
  
iiiiii      digital subcom index  
  
aaaaaaaa      sun angle  
  
eeee      voltage/current mode for each probe {4,3,2,1}  
      0 - voltage mode
```

1 - current mode

mmmm motor on/off status for each boom unit {4,3,2,1}

0 - off

1 - on

2.2.12 FGM vector count

DWP maintains a count of the number of FGM vectors received between two OBDH reset pulses. This provides information on the status of FGM vector acquisition.

Location (byte)	Size (bytes)	HK parameter
169	1	FGM vector count

Table 2.2.12.1 - FGM vector count

2.2.13 Instrument command register HK

For the instruments that have command interfaces DWP uses a word to store each byte of the instruments command. The telecommands that update these command bytes will change the values of these registers. The WEC zero byte is a location that is guaranteed to contain the value zero when WEC is producing HK correctly. This is used to help define the validity of most other parameters.

Location (byte)	Size (bytes)	HK parameters
171	1	EFW cmd reg LSB
173	1	EFW cmd reg MSB
175	1	Whisper cmd reg 0
177	1	Whisper cmd reg 1
179	1	Whisper cmd reg 2
181	1	Whisper cmd reg 3
183	1	Wideband cmd reg LSB
184	1	WEC zero byte
185	1	Wideband cmd reg MSB

Table 2.2.13.1 - Format of instrument command register HK

2.2.14 Telecommand assembly status HK

For double word commands DWP requires two memory load commands. The first memory load of a double word command sequence is stored here.

Location (byte)	Size (bytes)	HK parameter
186	2	Telecommand assembly status

Table 2.2.14.1 - Format of telecommand assembly status HK

2.2.15 Macro execution status HK

This provides information about the status of an executing macro.

When a macro subroutine is executing the **WEC macro stack pointer** will be greater than zero.

The **WEC macro counter 0** value can be monitored with the macro counter 0 parameter. Macros which use counted loops will often use this counter 0 to provide the loop count.

Location (byte)	Size (bytes)	HK parameters
188	2	WEC macro stack pointer
190	2	WEC macro counter 0

Table 2.2.15.1 - Format of macro execution status HK

2.2.16 HK parameter validity

WEC HK parameters are not always valid. The design of the OBDH interface means that the spacecraft reads the state of the data line whether or not WEC was able to output valid data.

Clearly if WEC is not powered on then all parameters in the WEC HK block are invalid. Also there is a short delay after power on before valid HK telemetry is produced, and immediately after a re-configuration or watchdog reset HK will be invalid. For this reason most HK parameters are considered valid only when it is known that valid HK telemetry is being produced. This is determined using two locations that should always have constant values. Parameters specific to one instrument are usually only valid when that instrument is powered on. A list of the main condition parameters is given in the list below. The validity condition for each parameter follows the token PC_COND in the definition block.

ESOC name	AIT name	Description
G_B20	none	WEC LCL A or B on
G_B10	none	As G_B20 plus telemetry valid (DWP model tag MSB=205 and WEC zero=0)

G_021	EW0PWRST	As G_B10 plus EFW power on
G_028	EW1PWRST	As G_B10 plus STAFF SA power on
S_014	EW2PWRST	As G_B10 plus STAFF MWF power on
L_027	EW3PWRST	As G_B10 plus Whisper power on
W_021	EW4PWRST	As G_B10 plus Wideband power on
L_D01	EW3WHHK	As G_B10 plus Whisper HK valid

2.3 Parameter initialisation

2.3.1 Introduction

DWP may be reset for three different reasons:

- i/ Power on - DWP has just been powered on,
- ii/ **DWPConfig** command - a hardware command has been received which will reconfigure DWP,
- iii/ Watchdog reset - an SEU or software bug caused the watchdog timer to trigger approximately 100 ms after processor activity stopped, and to reset DWP.

In scenarios ii/ and iii/ it is desirable that DWP retain some memory of its state before reset initialisation in order to minimise commanding and/or changes in instrument modes or loss / degradation of data.

2.3.2 DWP reset action classification

The following terms are used to classify the different DWP reset actions:

- i/ Cold start
- ii/ Warm start
- iii/ Hot start
- iv/ Watchdog reset

Each parameter listed in the HK reference guide will specify how these different reset actions will affect the parameters initialisation or cause a change in its value.

2.3.2.1 DWP cold start

DWP is guaranteed to be in its default configuration.

Checksummed memory cannot be validated, vital parameters must be given default values. DWP executes the macro in slot 31 (all off), waits for telecommands and if after 24 OBDH reset pulses

none are received, executes the macro sequence in slot 0. All available macros will be the default macros copied from ROM. No code patches will be present.

2.3.2.2 DWP warm start

DWP may not be in its default configuration.

Checksummed memory cannot be validated, vital parameters must be given default values. DWP executes the macro in slot 31 (all off), waits for telecommands and if after 24 OBDH reset pulses none are received executes the macro sequence in slot 0. The available macros may be the default macros copied from ROM or modified macros depending on the validation of the macro checksummed memory. Any previously loaded code patches will be lost.

The three possible paths to a DWP warm start are:

- i/ A **DWPCfg** command that results in the kernel being allocated to a different transputer from the one that was running the kernel previous to the **DWPCfg**.
- ii/ A **DWPCfg** command that manually allocates the kernel to a transputer instead of using automatic placement. In the DWP FM checksummed memory is invalidated (but not the macro checksummed memory). If the kernel is allocated to the same transputer that was running the kernel previous to **DWPCfg**, then the macro checksummed memory should be valid (i.e. uploaded macro sequences will have been preserved). This allows DWP to perform a warm start without losing uploaded macros.
- iii/ after a watchdog reset when all checksum memory (nominal and redundant) has been corrupted.

2.3.2.3 DWP hot start

DWP may not be in its default configuration.

Checksummed memory validated, vital parameters retain their value, DWP does not attempt to continue previous WEC operations. DWP executes the macro in slot 31 (all off), waits for telecommands and if after 24 OBDH reset pulses none are received, executes the macro sequence in slot 0. Any code patches previously loaded should still be present if the guidelines and procedures for their preparation and use have been followed.

The only possible path to a DWP hot start is:

- i/ A **DWPConfig** command that specifies automatic allocation of the kernel to a transputer that results in the kernel being allocated to the same transputer as was in use before **DWPConfig**. This will always happen unless the DWP configuration has been changed by **DWPConfig**.

2.3.2.4 Watchdog reset

DWP may not be in its default configuration.

If the kernel software stops triggering the DWP watchdog circuit for a period greater than 100 ms then the watchdog circuit will assert DWP reset. The most likely reason for failure to trigger the watchdog is an SEU which corrupted the DWP code or a software bug.

Checksummed memory validated, vital parameters retain their value, DWP attempts to continue previous WEC operations including continuing execution of any macros in use at the time of the watchdog reset. Any code patches previously loaded should still be present if the guidelines and procedures for their preparation and use have been followed

2.3.2.5 Summary

Table 2.3.2.1 summarises the differences between the reset actions.

DWP reset	DWP configuration	Checksummed memory and code patches	Vital parameters	Available macros	Default action
Cold	Default	Invalidated	Assigned default values	ROM defaults	Execute slot 0 macro sequence
Warm	Any	Invalid	Assigned default values	ROM or any previously uploaded	Execute slot 0 macro sequence
Hot	Any	Valid	Previous values retained	Any previously uploaded	Execute slot 0 macro sequence
Watchdog	Any	Valid	Previous values retained	Any previously uploaded	Attempt to continue previous WEC operations

Table 2.3.2.1- Summary of differences between reset actions

2.3.3 DWP parameter initialisation

This section explains how DWP assigns default values to parameters after a DWP reset. For this purpose parameters can be divided into two categories, these are vital parameters and non-vital parameters. Vital parameters are those whose values before DWP reset will influence their new values during reset initialisation. Non-vital parameters will have values assigned that are not dependent on the parameter values before the DWP reset.

2.3.3.1 Vital parameters

Some vital parameters retain their values after a DWP warm start, hot start or watchdog reset. These parameters are summarised in Table 2.3.3.1, Table 2.3.3.2 and Table 2.3.3.3. Full details of initialisation for each parameter are given in the entry for that parameter in the HK reference section. These tables only summarise the information given in the HK reference section.

Parameter name	Cold/Warm start value	Hot start value	Watchdog reset value
WEC macro executing	0	0	r
WEC macro loading	0	0	r
WEC macro offset	0	0	r
WEC macro slot	0	0	r
DWP kernel processor module	2 notes 2,3	2 notes 2,3	r note 3
DWP processor 0 configuration	0x00 note 2	0x00 note 2	0x00 note 2
DWP processor 1 configuration	0x00 note 2	0x00 note 2	0x00 note 2
DWP processor 2 configuration	0x00 note 2	0x00 note 2	0x00 note 2
DWP processor 0 status	0x0?FF note 2	0x06FF note 2	0x0FFF note 2
DWP processor 1 status	0x0?FF note 2	0x06FF note 2	0x0FFF note 2
DWP processor 2 status	0x0?FF note 2	0x06FF note 2	0x0FFF note 2
DWP software revision year	? note 4	r	r
DWP software revision month	? note 4	r	r
DWP software revision day	? note 4	r	r
DWP master clock status	0 note 3	0 note 3	0 note 3
DWP master clock generation	0 note 3	0 note 3	0 note 3
WEC sample clock frequency	0	r	r
OBDR active channel	0	0 note 1	r
OBDR active reset channel	0	0 notes 1,5	0 note 5
OBDR redundant channel failure	0	r	r
OBDR nominal channel failure	0	r	r
OBDR redundant reset channel failure	0	r	r
OBDR nominal reset channel failure	0	r	r
OBDR acquisition mode	0x98	0x98	r

Table 2.3.3.1 - Vital parameters stored in HK checksummed memory

Notes:

- 1 Actual value will depend on OBDH channel used to transmit DWPCConfig**
- 2 Actual value will depend on DWPCConfig command options**
- 3 Actual value will depend on health checking results**
- 4 Value will depend on DWP model (F1, F2 etc.)**
- 5 Value will be same as OBDH active channel unless OBDH reset channel failures are flagged**

Parameter name	Cold/Warm start value	Hot start value	Watchdog reset value
Staff SA power status	0	0	r
Staff SA relay cycles	0	0	r
EFW power state	0	0	r
EFW relay cycles	0	0	r
Whisper power state	0	0	r
Whisper relay cycles	0	0	r
Staff MWF power state	0	0	r
Staff MWF relay cycles	0	0	r
Whisper TX power status	0	0	r
Whisper TX relay cycles	0	0	r
Wideband power status	0	0	r
Wideband relay cycles	0	0	r
SPARE (was EFW proc control)	0	0	r
SPARE (was Staff SA proc control)	0	0	r
Staff MWF processing control	0	0	r
Whisper processing control	0x4F	0x4F	r
Wideband processing control	0	0	r
Correlator control	0	0	r
DWP memory read address pointer	0x12	0x12	r
DWP memory write address pointer	0x12	0x12	r
Peace flybacks per spin	0	0	r
Peace SRP offset	0	0	r
DWP last configuration telecommand	note 1	note 1	r
WEC current limit	0xF0	r	r
Whisper latchup monitor control	0	r	r
Staff SA latchup monitor control	0	r	r
Staff MWF latchup monitor control	0	r	r
EFW instrument disabled	0	r	r
Staff SA instrument disabled	0	r	r
Staff MWF instrument disabled	0	r	r
Whisper instrument disabled	0	r	r
Wideband instrument disabled	0	r	r
Whisper transmitter disabled	0	r	r

Table 2.3.3.2 - Vital parameters stored in HK checksummed memory (cont)

Notes:**1 Value is that of last DWPCongig command or 0xAFC0 if cold start**

Parameter name	Cold, Warm or Hot start value	Hot start / Watchdog reset value
EFW cmd reg LSB	0	r
EFW cmd reg MSB	0	r
Whisper cmd reg 0	0xCB	r
Whisper cmd reg 1	0x13	r
Whisper cmd reg 2	0x60	r
Whisper cmd reg 3	0x70	r
Wideband cmd reg LSB	0	r
Wideband cmd reg MSB	0	r
Telecommand assembly status	0	r
WEC macro stack pointer	0	r
WEC macro counter 0	0	r
[WEC macro counter 1]	0	r
[WEC macro counter 2]	0	r
[WEC macro counter 3]	0	r
[EFW fast mode]	1	r
[Wideband burst mode]	0	r
[Kernel memory load status]	0	r
[Macro execution count down]	0	r
[EFW sliding window position]	84	r
[Instrument power transition complete]	0	r
[Instrument latched up]	0	r
[Buffer location of oldest memory load]	0	r
[Buffer location of last memory load]	0	r
[Count of memory loads in buffer]	0	r
[telcommand buffer, 16 words]	0	r
[macro subroutine return address stack, 4 words]	0	r

Table 2.3.3.3 - Vital parameters stored in other checksummed memory**2.3.3.2 Non-vital parameters**

All non-vital HK parameters are assigned values that do not depend on the state of DWP before the reset. The initial values for all parameters not listed in any of Table 2.3.3.1, Table 2.3.3.2 and Table 2.3.3.3 will be zero.

Parameter name	Cold/Warm start value	Hot start value	Watchdog reset value
DWP model tag	0xCD0? note 1	0xCD0? note 1	0xCD0? note 1
OBDH reset count	1	1	1
ANY PARAMETER NOT LISTED IN ANY OF THE TABLES 2.3.1	0	0	0

Table 2.3.3.4 - Non-vital parameter initialisation**Notes:****1 Value will depend on DWP model (F1, F2 etc.)**

After a watchdog reset DWP will attempt to resume WEC operations. By decoding the vital parameter values, some of the non-vital parameters will then be assigned values other than zero depending on the state of the WEC and DWP.

2.4 WEC Housekeeping Parameters Reference Guide

This section provides the definitive description of the purpose and effects of each of the defined WEC housekeeping parameters with a standard layout. An index to the parameters and the AIT database calibration and parameter names provided at the end of this chapter.

The *AIT database* section provides a summary of the information stored for this parameter in the AIT database. This includes parameter locations and masks, status texts, calibration curves, and condition parameters.

Warning: WHISPER condition parameters may not be as precise as necessary to describe the telemetry parameter as it should be according to the WHISPER internal EID. This is due to the size of the expression field within the condition parameter description in the AIT DB. It is too small for the purpose of some WHISPER parameter description.

The *Description* section provides the bulk of the detailed information for the command.

Related parameters lists other WEC housekeeping parameters that are have a similar function.

Related commands lists the WEC telecommands that can change the value of this parameter. This always includes the DWPCfg command although for conciseness this is not shown in the command list.

In this guide the parameters are ordered alphabetically by name. The name of each parameter starts with the WEC instrument name so this ordering also ensures that a WEC instruments parameters are grouped together.

At the end of the reference guide an index by AIT database name is provided.

All hexadecimal values are preceded by 0x, the convention used by the C programming language.

NB. To avoid confusion bit masks are used rather than bit numbers to describe a subset of the bits in a byte or word. However, where bit numbers are mentioned in this document bit 0 is the LEAST SIGNIFICANT BIT.

Listing of HK parameters and Index

See End of this Chapter

2.4.1 Conflict with WBD

AIT database:

PC_NAME:	EW5WPOWD	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5WPOWD
LOC1:	9	MASK:	0x02
PC_COND:	G_B10		
CPCF_NAME	D_081	PCF_DESCR	CONFLICT WITH WBD

TX_NAME:	ST5WPOWD		
TX_DESCR:	Conflict with WBD text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	CONF WITH WBD

Description:

Conflict with WBD is non-zero if a command has been received that would cause a conflict within DWP between the operation of WBD and another instrument.

This can only occur when WBD is on and outputting data through DWP (**WBD power status** and **WBD data path** both non-zero) and the command **SetInstrPower(ON,WHISPER)** is received.

Conflict with WBD is cleared to zero after each housekeeping snapshot.

Related parameters:

Conflict with WHISPER, Correlator disabled

Related commands:

SetInstrPower(ON,WHISPER) may set this parameter.

2.4.2 Conflict with WHISPER

AIT database:

PC_NAME:	EW5WDWPO	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5WDWPO
LOC1:	9	MASK:	0x01
PC_COND:	G_B10		
CPCF_NAME	D_073	PCF_DESCR	CONFLICT WITH WH

TX_NAME:	ST5WDWPO		
TX_DESCR:	Conflict with Whisper text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	CONF WITH WH

Description:

Conflict with WHISPER is non-zero if a command has been received that would cause a conflict within DWP between WHISPER operations and another instrument.

This can only occur when WHISPER and WBD are on (**WHISPER power status** and **WBD power status** non-zero) and the command **SetWBDDataPath(DWP)** is received.

Conflict with WHISPER is cleared to zero after each housekeeping snapshot.

Related parameters:

Conflict with WBD, Correlator disabled

Related commands:

SetWBDDataPath(DWP) may set this parameter.

2.4.3 Correlator control

AIT database:

PC_NAME:	EW5EAPOV	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5EAPOV
LOC1:	8	MASK:	0x40
PC_COND:	G_B10	PCF_NAME	APPL BUFF
CPCF_NAME	D_016		OVERFL

TX_NAME:	ST5EAPOV		
TX_DESCR:	Application overflow error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	APP_OVERFLOW

Description:

Science packets to be fed to a DWP application task [3] are held in a DWP application buffer if all application processors are busy. **DWP application buffer overflow** is non-zero if the DWP kernel has another science packet to route to the application, but the application buffer is full. In this case, the science packet that was in the application buffer is lost. This problem can be avoided either by increasing the number of application processors (from one active to two active), by increasing the processor speed of the application processor(s) or by decreasing the time taken by an application processor in processing a science packet. This could include reducing the data compression or disabling compression for some instruments.

DWP application buffer overflow is cleared to zero after each housekeeping snapshot.

Related parameters:

DWP processor 0 configuration, DWP processor 1 configuration, DWP processor 2 configuration, STAFF MWF processing control, WHISPER processing control, WBD processing control, Correlator control.

Related commands:

SetMWFDDataProc with a non-zero argument may set this parameter.

SetWHDataProc may set this parameter.

SetWHCom0Tx, SetWHCom1Tx, SetWHCom2Tx or SetWHCom3Tx if the WHISPER processing bit of the **WHCom1** parameter is zero.

SetWBDDDataProc with a non-zero argument may set this parameter.

SetCorrDataProc with a non-zero argument may set this parameter.

2.4.5 DWP DMA channel fault

AIT database:

PC_NAME:	EW5DMAFL	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5DMAFL
LOC1:	6	MASK:	0x04
PC_COND:	G_B10		
CPCF_NAME	D_015	PCF_DESCR	DMA CHN. FAULT

TX_NAME:	ST5DMAFL		
TX_DESCR:	DWP DMA channel fault text		
	STR_LO	STR_HI	STR_TXS
1	0	0	DWP DMA OK
2	1	1	DWP DMA FALT

Description:

DWP DMA channel fault is non-zero if the DWP kernel has detected two DMA EOPs less than 500 us apart on the same DMA channel. This is a fault condition. The action taken is to disable that DMA channel. The channel at fault can be deduced by examining the behaviour of the WEC.

- i/ If EFW data transfers stop, then the EFW channel is faulty
- ii/ If WHISPER/WBD data transfers stop then the WHISPER/WBD channel is faulty.
- iii/ If OBDH science data is all 0xFFFF or 0x0000 then the OBDH channel is faulty.

DWP DMA channel fault is cleared to zero after each housekeeping snapshot.

Related parameters:

None.

Related commands:

None.

2.4.6 DWP kernel processor module

AIT database:

PC_NAME:	EW5KPNUM	PC_UNIT:	DWP
PC_TYPE:	D		
LOC1:	12	MASK:	0x03
PC_COND:	G_B10		
CPCF_NAME	D_026	PCF_DESCR	KERNEL PROC MOD

Description:

DWP contains three processors. Only one of these processors is running the kernel software after a DWP reset. **DWP kernel processor module** contains the identifier of that processor (range 0 to 2). Processor 2 is on the top PCB of the DWP instrument, processor 0 is on the bottom PCB.

DWP kernel processor module has the same value throughout DWP operations, unless a **DWPConfig** command is received.

The value of **DWP kernel processor module** after a DWP reset is given under Section 2.3.3 DWP parameter initialisation.

Related parameters:

DWP processor 0 configuration, DWP processor 1 configuration, DWP processor 2 configuration, DWP processor 0 status, DWP processor 1 status, DWP processor 2 status.

Related commands:

None.

2.4.7 DWP last configuration telecommand

AIT database:

PC_NAME:	EW5LCTCM	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	48	MASK:	FF
LOC2:	49	MASK:	FF
PC_COND:	G_B10		
CPCF_NAME	D_027	PCF_DESCR	LAST DWP CNF CMD

Description:

DWP last configuration telecommand holds a copy of the last **DWPCConfig** memory load received by DWP.

DWPCConfig commands are not echoed in the **Telecommand echo** parameters as they cause a DWP reset. **DWP last configuration telecommand** allows the successful reception of the **DWPCConfig** to be confirmed in all HK blocks after DWP has initialised.

The value of **DWP kernel processor module** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

DWP processor 0 status, DWP processor 1 status, DWP processor 2 status, DWP processor 0 configuration, DWP processor 1 configuration, DWP processor 2 configuration, DWP kernel processor module.

Related commands:

DWPCConfig.

2.4.8 DWP lost events

AIT database:

PC_NAME:	EW5ELINT	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5ELINT
LOC1:	6	MASK:	0x08
PC_COND:	G_B10		
CPCF_NAME	D_019	PCF_DESCR	DWP LOST EVENTS

TX_NAME:		ST5ELINT	
TX_DESCR:		Lost interrupts error text	
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	LOST_INT_ERR

Description:

DWP lost events will be non-zero if the DWP kernel process has been unable to process one or more 'events' because the event buffer has overflowed. The effect may be lost data, incorrect control of an instrument, lost telecommands etc. This is a serious error which should never occur if all specified operational constraints are met.

If events are lost, then it is quite likely that the affect will be that the telemetry packaging performed by DWP will lose synchronisation with the OBDH acquisition. To prevent the telemetry packaging from becoming permanently desynchronised, DWP issues an internal OBDH buffer flush and resynchronisation when **DWP lost events** is flagged.

DWP lost events is cleared to zero after each housekeeping snapshot.

Related parameters:

None.

Related commands:

None.

2.4.9 DWP master clock generation

AIT database:

PC_NAME:	EW5MCSRC	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5MCSRC
LOC1:	21	MASK:	0x01
PC_COND:	G_B10	PCF_DESCR	DWP M-
CPCF_NAME	D_028		CLOCK SOUR

TX_NAME:		ST5MCSRC	
TX_DESCR:		DWP Master Clock Source text	
	STR_LO	STR_HI	STR_TXS
1	0	0	CRYSTAL
2	1	1	SOFTWARE

Description:

DWP master clock generation will be non-zero in the event that the DWP master clock is generated in software instead of using the crystal oscillator. This will usually only be the case if the DWP master clock crystal oscillator frequency was detected to be out of tolerance (+/- 10%) during DWP reset initialisation. However, the master clock frequency generation can be controlled with the **SetWECClock(DWP_MASTER_CLOCK_ORIGIN)** command.

The WEC sample clock which controls EFW, STAFF MWF and WHISPER sampling is derived from the DWP master clock. The DWP kernel software also uses the master clock to calculate some of the timing parameters for other interfaces (eg ADC sampling interval).

After any DWP reset the DWP master clock crystal oscillator frequency is tested and **DWP master clock status** is initialised. It remains constant thereafter. In the event of the test showing a failure, DWP automatically uses a software generated clock based on transputer timers to generate the master clock, and sets the **DWP master clock generation** parameter.

The nominal value of **DWP master clock status** after a DWP reset is given in Section 2.3.3 DWP parameter initialisation.

Related parameters:

DWP master clock status

Related commands:

SetWECClock(DWP_MASTER_CLOCK_ORIGIN) sets the value of this parameter.

2.4.10 DWP master clock status

AIT database:

PC_NAME:	EW5EMCST	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5EMCST
LOC1:	21	MASK:	0x04
PC_COND:	G_B10		
CPCF_NAME	D_020	PCF_DESCR	DWP M- CLOCK STAT

TX_NAME:	ST5EMCST		
TX_DESCR:	DWP master clock error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	M_CLK_ERROR

Description:

DWP master clock status will be non-zero in the event that the DWP master clock crystal oscillator frequency is out of tolerance (+/- 10%).

The WEC sample clock which controls EFW, STAFF MWF and WHISPER sampling is derived from the DWP master clock. The DWP kernel software also uses the master clock to calculate some of the timing parameters for other interfaces (eg ADC sampling interval).

After any DWP reset the DWP master clock crystal oscillator frequency is tested and **DWP master clock status** is initialised. It remains constant thereafter. In the event of the test showing a failure, DWP automatically uses a software generated clock based on transputer timers to generate the master clock, and sets the **DWP master clock generation** parameter.

In the event of failure of the DWP master clock crystal, the high frequency ADClock signal to EFW [1] can no longer be driven. There will also be a small amount of jitter on the WEC sample clock transitions (10 to 50 us, TBC).

Related parameters:

DWP master clock generation.

Related commands:

None.

2.4.11 DWP memory read address pointer

AIT database:

PC_NAME:	EW5MEMRD	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	42	MASK:	0xFF
LOC2:	43	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_029	PCF_DESCR	MEM READ POINT

Description:

DWP memory read address pointer is used to determine which words of memory will be used to set the **kernel memory dump** parameters for each HK block.

The value of **DWP memory read address pointer** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

After the housekeeping snapshot is taken **DWP memory read address pointer** is incremented by the number of words read out into **kernel memory dump**. If this increment causes the address to go beyond 0x3FFF then 0x3FEE is subtracted from it before it is stored as **DWP memory read address pointer**.

Related parameters:

DWP memory write address pointer.

Related commands:

SetDWPMemReadAddr sets the value of this parameter.

2.4.12 DWP memory write address pointer

AIT database:

PC_NAME:	EW5MEMWR	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	44	MASK:	0xFF
LOC2:	45	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_030	PCF_DESCR	MEM WRITE POINT

Description:

DWP memory write address pointer holds an address which will be used by the **LoadKernelMemory** command as the address of a start of a block of memory that will be altered by the memory patch. This address will always be in the range 0x0012 to 0x3FFF.

The value of **DWP memory write address pointer** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

The value of **DWP memory write address pointer** will generally increase whilst a memory load patch is being uploaded.

Related parameters:

DWP memory read address pointer.

Related commands:

SetDWPMemWriteAddr sets the value of this parameter.

The memory patch words following **LoadKernelMemory** will cause the value of this parameter to increase by 1 for every word.

2.4.13 DWP model tag

AIT database:

PC_NAME:	EW5MOTAG	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5MOTAG
LOC1:	0	MASK:	0xFF
LOC2:	1	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_047	PCF_DESCR	DWP MODEL TAG

LOC1:	0	MASK:	0xFF
PC_COND:	G_B20	PCF_DESCR	MODEL TAG MSB
CPCF_NAME	D_T47		
LOC1:	1	MASK:	0xFF
PC_COND:	G_B20	PCF_DESCR	MODEL TAG LSB
CPCF_NAME	D_T48		

TX_NAME:		ST5MOTAG	
TX_DESCR:		DWP Model Tags text set	
	STR_LO	STR_HI	STR_TXS
1	0xCD01	0xCD01	FM1
2	0xCD02	0xCD02	FM2
3	0xCD03	0xCD03	FM3
4	0xCD04	0xCD04	FM4
5	0xCD05	0xCD05	FM5
6	0xCD06	0xCD06	FM6
7	0xCD07	0xCD07	FM7
8	0xCD08	0xCD08	FM8
9	0xCD09	0xCD09	FM9
10	0xCD0A	0xCD0A	FM10
11	0xCD99	0xCD99	PEM
12	0xCD9A	0xCD9A	EM1
13	0xCD9B	0xCD9B	EM2

Description:

The DWP model tag provides a unique identifier for the DWP instrument within each of the four CLUSTER II spacecraft. It also provides a known constant value within every housekeeping block. If this parameter is out of limits, then DWP is not working correctly (maybe because it is not powered on) and all other WEC parameters are invalid. The MSB of the model tag (D_T47) may be used as a constant value which is equal to 205 (0xCD) for all models when HK telemetry is valid.

DWP Model	Model abbreviation	Identifier (hexadecimal)
Prototype Engineering	PEM	0xCD99
Engineering	EM	0xCD9A
Engineering Spare	EM2	0xCD9B
Flight 1	FM1	0xCD01
Flight 2	FM2	0xCD02
Flight 3	FM3	0xCD03
Flight 4	FM4	0xCD04
Flight Spare	FM5	0xCD05
Flight 6	FM6	0xCD06
Flight 7	FM7	0xCD07
Flight 8	FM8	0xCD08
Flight 9	FM9	0xCD09
Flight Spare	FM10	0xCD0A

Valid DWP model tags

The value of **DWP model tag** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation..

Related parameters:

None

Related commands:

None

2.4.14 DWP no processor for application task

AIT database:

PC_NAME:	EW5ATSNP	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5ATSNP
LOC1:	9	MASK:	0x08
PC_COND:	G_B10	PCF_DESCR	NO PROC FOR
CPCF_NAME	2D_013		APPL

TX_NAME:		ST5ATSNP	
TX_DESCR:		No processor for application text	
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	NO PRO F APP

Description:

DWP no processor for application task will be non-zero if either:

i/ a command is sent to route science packets to an application processor when no application processor was available. For STAFF MWF, WBD and the DWP correlator the **SetMWFDDataProc**, **SetWBDDDataProc** and **SetCorrDataProc** commands respectively are used to select whether application processing is required. For WHISPER a bit set by the **SetWHCom1** or **SetWHCom1Tx** commands is used to turn application processing on or off. The **SetWHDataProc** command only controls the type of application processing. STAFF SA and EFW have no application processing defined.

ii/ an attempt is made start the correlator (using the **SetCorrDataProc** command) with the DWP kernel processor at half speed or with no application processors available.

DWP no processor for application task is cleared to zero after each houskeeping snapshot.

Related parameters:

DWP processor 0 configuration, DWP processor 1 configuration, DWP processor 2 configuration, STAFF MWF processing control, WHISPER processing control, WBD processing control, DWP correlation control.

Related commands:

SetMWFDDataProc with a non-zero argument may set this parameter.

SetWHCom0Tx, SetWHCom1Tx, SetWHCom2Tx or SetWHCom3Tx if the WHISPER processing bit of the **WHCom1** parameter is zero.

SetWBDDDataProc with a non-zero argument may set this parameter.

SetCorrDataProc with a non-zero argument may set this parameter.

2.4.15 DWP processor N configuration ($N=0,1,2$)

AIT database:

PC_NAME:	EW5P0CFG	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5PNCFG
LOC1:	13	MASK:	0x08
LOC2:	13	MASK:	0x01
CPCF_NAME	D_092	PCF_DESCR	PROCESS 0 CONF
PC_NAME:	EW5P1CFG	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5PNCFG
LOC1:	13	MASK:	0x10
LOC2:	13	MASK:	0x02
CPCF_NAME	D_091	PCF_DESCR	PROCESS 1 CONF
PC_NAME:	EW5P2CFG	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5PNCFG
LOC1:	13	MASK:	0x20
LOC2:	13	MASK:	0x04
CPCF_NAME	D_090	PCF_DESCR	PROCESS 2 CONF

TX_NAME:	ST5PNCFG		
TX_DESCR:	Processor configuration text		
	STR_LO	STR_HI	STR_TXS
1	0	0	HALF_SPEED
2	1	1	OFF
3	2	2	FULL_SPEED
4	3	3	OFF

Description:

The value of **DWP processor n configuration** indicates the configuration of processor module 0 as shown in the table below.

Value	Description
0	Half speed
1	Off
2	Full speed
3	Off

DWP processor n configuration

After DWP power-on the value for **DWP processor n configuration** is zero. **DWP processor n configuration** will remain constant unless a **DWPCfg** command is received.

If a **DWPCConfig** command allocates the kernel to a different processor (ref **DWP kernel processor module**), the kernel assumes that **DWP processor n configuration** was zero (on at half speed, the default) before the **DWPCConfig** was received. If this was not the case, then the updated **DWP processor n configuration** would have a misleading value.

Example 1: processor 0 is on at full speed running the kernel software and a **DWPCConfig** is received that switches the kernel to board 1. **DWP processor 0 configuration** would be shown as zero (half speed).

Example 2: processor 0 is off and processor 1 is running the kernel software. A **DWPCConfig** command is received that tries to switch processor 0 to full speed and allocates the kernel to processor 2. **DWP processor 0 configuration** would be shown as on at full speed, when actually it is off.

The misunderstanding value of **DWP processor n configuration** only applies to the case where the kernel is moved to a different processor. This problem can be avoided by ensuring that DWP processors are in the default configuration before sending a **DWPCConfig** command that allocates the kernel to a different processor. **DWP processor n configuration** will always be correctly reported if this procedure is followed.

When determining the available processors for allocation of tasks, DWP uses the results of the inter-processor link tests (reported in **DWP processor n status**).

Related parameters:

DWP kernel processor module, DWP processor 0 status, DWP processor 1 status, DWP processor 2 status.

Related commands:

DWPCConfig.

2.4.16 DWP processor N status ($N=0,1,2$)

AIT database:

PC_NAME: EW5PMST0	PC_UNIT: DWP
PC_TYPE: R	FORMAT: 4x
LOC1: 14	MASK: 0xFF
LOC2: 15	MASK: 0xFF
PC_COND: G_B10	PCF_DESCR PROC MOD 0
CPCF_NAME D_055	STAT
PC_NAME: EW5PMST1	PC_UNIT: DWP
PC_TYPE: R	FORMAT: 4x
LOC1: 16	MASK: 0xFF
LOC2: 17	MASK: 0xFF
PC_COND: G_B10	PCF_DESCR PROC MOD 1
CPCF_NAME D_056	STAT
PC_NAME: EW5PMST2	PC_UNIT: DWP
PC_TYPE: R	FORMAT: 4x
LOC1: 18	MASK: 0xFF
LOC2: 19	MASK: 0xFF
PC_COND: G_B10	PCF_DESCR PROC MOD 2
CPCF_NAME D_057	STAT

Description:

There is a **DWP processor *n* status** parameter for each DWP processor module. All three parameters have the same format as shown below.

1 1 1 1 1 1 9 8 7 6 5 4 3 2 1 0	Description
5 4 3 2 1 0	
0 0 0 0	Always zero
x	Watchdog flag, 1=watchdog flag set
x	Checksummed memory, 1=valid, 0=invalid
x x	Reason for DWP reset
x x	Link 3 to processor n-1 status
x x	Link 2 to processor n-1 status
x x	Link 1 to processor n+1 status
x x	Link 0 to processor n+1 status

DWP processor *n* status

After a DWP reset, DWP tests the links to the other processors, determines the reason for the reset and tests the status of the checksummed memory. **DWP processor *n* status** is set according to the results of those tests. **DWP processor *n* status** will remain constant until a **DWPCfg** command is received or a watchdog reset occurs.

9	8	Reason for DWP reset
0	0	Unknown
0	1	DWP power on
1	0	DWPCConfig
1	1	Watchdog reset

Decoding of reason for DWP reset

The decision making algorithm for determining the reason for reset is shown below:

IF

 RedundantCommandReg = DWPCConfig

 ResetReason = DWPCConfig

 NominalCommandReg = DWPCConfig

 ResetReason = DWPCConfig

 WatchdogFlag = Set

 ResetReason = Watchdog

ELSE

 ResetReason = PowerOn

At DWP power on, the contents of the command registers are either all one or all zero, and the watchdog flag is clear.

The algorithm shows that it is possible for DWP to make an incorrect decision about the reason for reset in the scenario where a **DWPCConfig** is sent, no other commands follow and at a later time a watchdog reset occurs. However, only in rare cases will a **DWPCConfig** command be sent without other memory load commands immediately following.

If the reset reason is watchdog then the checksummed memory will always be valid. If the reset reason is power on, then the checksummed memory will always be invalid. If reset reason is a **DWPCConfig** command, then the checksummed memory status will depend on the **DWPCConfig** kernel allocation bits. If the **DWPCConfig** allocated the kernel to a different processor, checksummed memory will be invalid. If the **DWPCConfig** allocated the kernel to the same processor as before, then checksummed memory will be valid.

A processor has four bi-directional links. The table below shows how to decode the status of each link.

Bit n	Bit n-1	Description
0		Link input not working
1		Link input working
	0	Link output not working
	1	Link output working

Link *n* status

For DWP to be fully functional it must be possible to form a pipeline of three processors with all links making the pipeline connections working in both directions, and. the kernel must be allocated to the processor at the head of the pipeline.

Related parameters:

DWP kernel processor module, DWP processor 0 configuration, DWP processor 1 configuration, DWP processor 2 configuration.

Related commands:

DWPConfig.

2.4.17 DWP software revision year

AIT database:

PC_NAME:	EW5SR_YR_	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	1d
LOC1:	20	MASK:	0xE0
PC_COND:	G_B10		
CPCF_NAME	D_093	PCF_DESCR	S/W DATE
			YEAR

Description:

The software revision date is Year-1990 for models EM and FM1 through FM4. For FM5 through F9 the value is Year-1998

The table below shows the latest revisions of software for each DWP model.

Project	Model	day	month	year
Cluster	EM	15	7	1992
Cluster	FMS (Spare)	31	3	1993
Cluster	FM1	31	3	1993
Cluster	FM2	31	3	1993
Cluster	FM3	31	3	1993
Cluster	FM4	31	3	1993
Cluster II	FM5 (Spare)	18	5	1998
Cluster II	FM6	3	7	1998
Cluster II	FM7	3	7	1998
Cluster II	FM8	3	7	1998
Cluster II	FM9	3	7	1998

Revision dates of DWP software for each model

The value of **DWP software revision year** after a DWP reset is determined from Section 2.3.3 DWP parameter initialisation and the table of software revision dates shown above.

It is likely that if a code patch is uploaded then the software revision date will be updated to confirm the change and to identify the patch.

Related parameters:

DWP software revision month, DWP software revision day.

Related commands:

Code patches uploaded with **LoadKernelMemory** may modify this parameter.

2.4.18 DWP software revision month

AIT database:

PC_NAME:	EW5SRMON	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2d
LOC1:	20	MASK:	0x1E
PC_COND:	G_B10		
CPCF_NAME	D_094	PCF_DESCR	S/W DATE
			MONTH

Description:

The software revision date month (1 = Jan, 12 = Dec).

The value of **DWP software revision month** after a DWP reset is determined from Section 2.3.3 DWP parameter initialisation and the table of DWP software revision dates shown in the description of the **DWP software revision year**.

It is likely that if a code patch is uploaded then the software revision date will be updated to confirm the change and to indentify the patch.

Related parameters:

DWP software revision year, DWP software revision day.

Related commands:

Code patches uploaded with **LoadKernelMemory** may modify this parameter.

2.4.19 DWP software revision day

AIT database:

PC_NAME:	EW5SRDAY	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2d
LOC1:	20	MASK:	0x01
LOC2:	21	MASK:	0xF0
PC_COND:	G_B10		
CPCF_NAME	D_095	PCF_DESCR	S/W DATE DAY

Description:

The software revision date day of month (1-31).

The value of **DWP software revision day** after a DWP reset is determined from Section 2.3.3 DWP parameter initialisation and the table of DWP software revision dates shown in the description of the **DWP software revision year**.

It is likely that if a code patch is uploaded then the software revision date will be updated to confirm the change and to indentify the patch.

Related parameters:

DWP software revision year, DWP software revision month.

Related commands:

Code patches uploaded with **LoadKernelMemory** may modify this parameter.

2.4.20 DWP telemetry buffer overflow

AIT database:

PC_NAME:	EW5ETMOV	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5ETMOV
LOC1:	8	MASK:	0x80
PC_COND:	G_B10		
CPCF_NAME	D_023	PCF_DESCR	TM BUFFER OVERFL

TX_NAME:	ST5ETMOV		
TX_DESCR:	Telemetry overflow error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	TLM_OVERFLOW

Description:

DWP telemetry buffer overflow is non-zero if the WEC instruments are currently generating science packets at a rate higher than the allocated OBDH telemetry bandwidth for the WEC, and have overflowed the DWP telemetry buffer. In this case some science mini-packets will be missing (Eg the first and middle mini-packets of a sequence may be present, but the last mini-packet may be lost, ref section 1.4.5.11 Science Telemetry Description).

This error could occur if:

- i/ Insufficient compression of WEC data could not be achieved because not enough DWP processing power was available
- ii/ Commands executed by DWP selected inappropriate application processing or turned on too many instruments with high bitrates.
- iii/ A spacecraft OBDH acquisition mode with too low a data bandwidth has been chosen

DWP telemetry buffer overflow is cleared to zero after each housekeeping snapshot.

Related parameters:

OBDH acquisition mode, DWP processor 0 configuration, DWP processor 1 configuration, DWP processor 2 configuration, STAFF MWF processing control, WHISPER processing control, WBD processing control, DWP correlation control.

Related commands:

FlagOBDHAcqMode may set this parameter.

2.4.21 DWP temperature monitor

AIT database:

PC_NAME:	EW5TMON	PC_UNIT:	DWP
PCA_UNIT	CELC	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC5TMON
LOC1:	100	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_071	PCF_DESCR	DWP TEMP MONITOR

CA_NAME:	CC5TMON		
	DWP thermistor calibration		
CA_UNIT:	CELSIUS		
X01	39	Y01	70
X02	50	Y02	60
X03	65	Y03	50
X04	83	Y04	40
X05	106	Y05	30
X06	131	Y06	20
X07	158	Y07	10
X08	184	Y08	0
X09	207	Y09	-10
X10	226	Y10	-20
X11	239	Y11	-30
X12	248	Y12	-40

Description:

DWP temperature monitor provides an indication of the temperature of the DWP unit. The measurement point is inside the DWP instrument case and is made with a YSI 44907 thermistor.

The calibration assumes that DWP Vcc is 5.0 V. Adjustments must be applied to the thermistor readings if **DWP voltage monitor** shows a different DWP voltage.

The value of **DWP temperature monitor** after a DWP reset is determined by the value read from the ADC DWP thermistor channel. The DWP temperature is sampled by reading the ADC thermistor channel once per second and copying the result to **DWP temperature monitor**.

Related parameters:

DWP voltage monitor, STAFF MWF temperature monitor 0, STAFF MWF temperature monitor 1, WHISPER temperature monitor, WBD temperature monitor, DWP temperature monitor, STAFF SA temperature monitor.

Related commands:

None.

2.4.22 DWP voltage monitor

AIT database:

PC_NAME:	EW5VMON	PC_UNIT:	DWP
PCA_UNIT	VOLT	FORMAT:	1.3f
PC_TYPE:	A	CA_CURVE	CC5VMON
LOC1:	94	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_072	PCF_DESCR	DWP VOLT MONITOR

CA_NAME:	CC5VMON		
	DWP voltage calibration		
CA_UNIT:	VOLT		
X01	0	Y01	0.000
X02	255	Y02	6.125

Lower limit:	0x13	(4.684V)
Higher limit	0xD2	(5.236 V)

Description:

DWP voltage monitor provides an indication of the voltage on the power rails of the DWP unit. The nominal value is 5.0 volts. The measurement point is after the diodes on the 5.65 volt power lines from the WEC power supply (ref [1]).

The value of **DWP voltage monitor** after a DWP reset is determined by the value read from the ADC DWP voltage channel. The DWP voltage is sampled by reading the ADC DWP voltage channel once per second and copying the result to **DWP voltage monitor**.

The calibration and limits specified apply to all DWP units. The limits here are for off-line monitoring and error reporting only (section 4.6). Wider limits apply in the case of automatic switch off (section 4.2).

Related parameters:

WEC current sense, DWP temperature monitor.

Related commands:

None.

2.4.23 EFW bad tape mode command

AIT database:

PC_NAME:	EW0BDTMC	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	ST0BDTMC
LOC1:	103	MASK:	0x02
PC_COND:	G_021		
CPCF_NAME	G_002	PCF_DESCR	EFW BAD TAPE MOD

TX_NAME:	ST0BDTMC		
TX_DESCR:	Bad tape mode text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	BAD_DEF_TA_M

Description:

EFW bad tape mode command is non-zero if a **SetEFWTapeMode** command with an invalid EFW tape mode specified in the command data was executed. The command will be ignored.

EFW bad tape mode command is cleared to zero after each housekeeping snapshot.

Related parameters:

None.

Related commands:

SetEFWTapeMode may set this parameter.

2.4.24 EFW burst int state

AIT database:

PC_NAME:	EW0BINTS	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWBINTS
LOC1:	154	MASK:	0x70
PC_COND:	G_021		
CPCF_NAME	G_003	PCF_DESCR	BURST INT STATE

TX_NAME:	SEWBINTS		
TX_DESCR:	Burst internal state text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	COMPILG LIST
3	2	2	TURNING ON
4	3	3	SEARCHING
5	4	4	COLLECTING
6	5	5	CLOSING FILE
7	6	6	PLAYBCK WAIT
8	7	7	PLAYING BACK

Description:

Bits	Burst internal state.
000	off
001	compiling list
010	turning on
011	searching
100	collecting
101	closing the file
110	playback wait
111	playing back

Format of EFW burst int state

Related parameters:

EFW main/burst playback, EFW playback indicator

Related commands:

SetEFWLSBTx or **SetEFWMSBTx** when used to send BTRIG, BSTATE, BPLAY, BSTOP commands to EFW.

2.4.25 EFW cmd count status

AIT database:

PC_NAME:	EW0CNTMM	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWCNTMM
LOC1:	154	MASK:	0x01
PC_COND:	G_021	PCF_DESCR	CMD COUNT
CPCF_NAME	G_004		STATUS

TX_NAME:	SEWCNTMM		
TX_DESCR:	Command counter status		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	CMD CNT MISM

Description:

Indicates if the number of commands received corresponds to the expected number as set by the EFW instrument CMDS command.

The parameter is set zero when the number of commands received matches the expected number.

Related parameters:

None

Related commands:

SetEFWMSBTx or **SetEFWLSBTx** when used to send CMDS command to EFW.

2.4.26 EFW cmd reg LSB

AIT database:

PC_NAME:	EW0CREGL	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	171	MASK:	0xFF
CPCF_NAME	G_005	PCF_DESCR	EFW CMD REG
			LSB

Description:

The **SetEFWComLSB** and **SetEFWComLSBTx** commands set **EFW cmd reg LSB**.

The value of **EFW cmd reg LSB** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW cmd reg MSB.

Related commands:

SetEFWComLSB, SetEFWComLSBTx.

2.4.27 EFW cmd reg MSB

AIT database:

PC_NAME:	EW0CREGM	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	173	MASK:	0xFF
CPCF_NAME	G_006	PCF_DESCR	EFW CMD REG
			MSB

Description:

The **SetEFWComMSB** and **SetEFWComMSBTx** commands set **EFW cmd reg MSB**.

The value of **EFW cmd reg MSB** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW cmd reg LSB.

Related commands:

SetEFWComLSB, SetEFWComLSBTx.

2.4.28 EFW data with bad header

AIT database:

PC_NAME:	EW0BADHD	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	ST0BADHD
LOC1:	103	MASK:	0x08
PC_COND:	G_021		
CPCF_NAME	G_001	PCF_DESCR	EFW BAD HEADER

TX_NAME:	STOBADHD		
TX_DESCR:	Bad header error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	BAD_HEADER

Description:

EFW data with bad header is non-zero if the first byte of a telemetry packet read by DWP from the EFW interface was not the defined header byte (0xEB), ref [2]. This check is made after a complete packet has been read from EFW. EFW interface operation will continue as usual and the packet read will be output to the OBDH.

EFW data with bad header is cleared to zero after each housekeeping snapshot.

Related parameters:

EFW no telemetry received, EFW unexpected telemetry.

Related commands:

None.

2.4.29 EFW DSC index

AIT database:

PC_NAME:	EW0DSCIN	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	155	MASK:	0x1F
PC_COND:	G_021		
CPCF_NAME	G_007	PCF_DESCR	DSC_INDEX

Description:

Digital subcom index. The parameter increments by one for each second. Because the housekeeping is sampled once every 5.1 seconds, the parameter of no real use.

Related parameters:

None

Related commands:

None

2.4.30 EFW E/D mode bits U1

AIT database:

PC_NAME:	EW0EDMD1	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWEDMOD
LOC1:	157	MASK:	0x01
PC_COND:	G_021		
CPCF_NAME	G_008	PCF_DESCR	E/D MODE BITS U1

TX_NAME:	SEWEDMOD		
TX_DESCR:	E/D mode bits		
	STR_LO	STR_HI	STR_TXS
1	0	0	EFIELD
2	1	1	DENSITY

Description:

Boom unit 1 is in electric field mode if the value is set to zero and density mode if set to one.

Related parameters:

EFW E/D mode bits U2, EFW E/D mode bits U3, EFW E/D mode bits U4.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send the EFW commands EFIELD, DENSITY

2.4.31 EFW E/D mode bits U2

AIT database:

PC_NAME:	EW0EDMD2	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWEDMOD
LOC1:	157	MASK:	0x02
PC_COND:	G_021		
CPCF_NAME	G_009	PCF_DESCR	E/D MODE
			BITS U2

TX_NAME:	SEWEDMOD		
TX_DESCR:	E/D mode bits		
	STR_LO	STR_HI	STR_TXS
1	0	0	EFIELD
2	1	1	DENSITY

Description:

Boom unit 2 is in electric field mode if the value is set to zero and density mode if set to one.

Related parameters:

EFW E/D mode bits U1, EFW E/D mode bits U3, EFW E/D mode bits U4.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send the EFW commands EFIELD, DENSITY

2.4.32 EFW E/D mode bits U3

AIT database:

PC_NAME:	EW0EDMD3	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWEDMOD
LOC1:	157	MASK:	0x04
PC_COND:	G_021	PCF_DESCR	E/D MODE
CPCF_NAME	G_010		BITS U3

TX_NAME:	SEWEDMOD		
TX_DESCR:	E/D mode bits		
	STR_LO	STR_HI	STR_TXS
1	0	0	EFIELD
2	1	1	DENSITY

Description:

Boom unit 3 is in electric field mode if the value is set to zero and density mode if set to one.

Related parameters:

EFW E/D mode bits U1, EFW E/D mode bits U2, EFW E/D mode bits U4.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send the EFW commands EFIELD, DENSITY

2.4.33 EFW E/D mode bits U4

AIT database:

PC_NAME:	EW0EDMD4	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWEDMOD
LOC1:	157	MASK:	0x08
PC_COND:	G_021		
CPCF_NAME	G_011	PCF_DESCR	E/D MODE
			BITS U4

TX_NAME:	SEWEDMOD		
TX_DESCR:	E/D mode bits		
	STR_LO	STR_HI	STR_TXS
1	0	0	EFIELD
2	1	1	DENSITY

Description:

Boom unit 4 is in electric field mode if the value is set to zero and density mode if set to one.

Related parameters:

EFW E/D mode bits U1, EFW E/D mode bits U2, EFW E/D mode bits U3.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send the EFW commands EFIELD, DENSITY

2.4.34 EFW interferometer mode

AIT database:

PC_NAME:	EW0IFMOD	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWIFMOD
LOC1:	155	MASK:	0x20
PC_COND:	G_021		
CPCF_NAME	G_012	PCF_DESCR	INTERFEROM
			MODE

TX_NAME:	SEWIFMOD		
TX_DESCR:	Interferometric mode		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INTERFER MOD

Description:

Set to one when the instrument is run in the interferometric mode.

Related parameters:

None

Related commands:

SetEFWLSBTx or **SetEFWMSBTx** when used to send EFW command INFERO

2.4.35 EFW instrument disabled

AIT database:

PC_NAME:	EW0INSDS	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	STNINSDS
LOC1:	53	MASK:	0x01
PC_COND:	G_021		
CPCF_NAME	G_013	PCF_DESCR	EFW INSTRUM MONI

TX_NAME:	STNINSDS		
TX_DESCR:	Instrument disabled text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INS_DISABLED

Description:

EFW instrument disabled is non-zero when EFW instrument control and operation has been disabled by the **FlagInstrFail** telecommand. The instrument will only be disabled in the event of a problem that does not allow EFW to be operated correctly, e.g. a shortage of electrical power or a critical hardware failure.

When EFW instrument control is disabled the EFW instrument will be off and will not respond to any **SetInstrPower(EFW)** commands.

The value of **EFW instrument disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Staff SA instrument disabled, Staff MWF instrument disabled, Wideband instrument disabled, Whisper instrument disabled, Whisper transmitter disabled.

Related commands:

FlagInstrFail(DISABLE, EFW) will set this parameter.

FlagInstrFail(ENABLE, EFW) will clear this parameter.

2.4.36 EFW main/burst playback

AIT database:

PC_NAME:	EW0MABPB	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWMABPB
LOC1:	154	MASK:	0x08
PC_COND:	G_021		
CPCF_NAME	G_014	PCF_DESCR	MAIN/BURST PLBCK

TX_NAME:	SEWMABPB		
TX_DESCR:	Main/Burst Playback		
	STR_LO	STR_HI	STR_TXS
1	0	0	MAIN PLAYBCK
2	1	1	BURST PLAYBK

Description:

During a playback this parameter indicates the type of playback.

Bit	Description
0	burst playback
1	main playback (sweep result)

Decoding of EFW main/burst playback

Related parameters:

EFW burst int state, EFW playback indicator

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send the EFW commands BTRIG, BSTATE, BPLAY, BSTOP

2.4.37 EFW no telemetry received

AIT database:

PC_NAME:	EW0NOTLM	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	ST0NOTLM
LOC1:	103	MASK:	0x04
PC_COND:	G_021		
CPCF_NAME	G_019	PCF_DESCR	EFW NO TM RECV

TX_NAME:	ST0NOTLM		
TX_DESCR:	No telemetry error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	NO_TELEMETRY

Description:

EFW no telemetry received is non-zero if no complete telemetry packet was received from EFW when one was expected. This check is made at a one second timing boundary, OSTB, when all EFW packet transfers should be complete.

In the event of no telemetry being received, EFW interface operation will continue as usual.

EFW data with bad header is cleared to zero after each housekeeping snapshot.

Related parameters:

EFW data with bad header, EFW unexpected telemetry.

Related commands:

None.

2.4.38 EFW playback indicator

AIT database:

PC_NAME:	EW0PBIND	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWPBIND
LOC1:	154	MASK:	0x80
PC_COND:	G_021	PCF_DESCR	PLAYBACK
CPCF_NAME	G_020		INDICAT.

TX_NAME:	SEWPBIND		
TX_DESCR:	PLAYBACK INDICATORS		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	PLBK IN PROG

Description:

Set to one when a playback is in progress.

Related parameters:

EFW main/burst playback, EFW burst int state

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send EFW commands BTRIG, BSTATE, BPLAY, BSTOP

2.4.39 EFW power status

AIT database:

PC_NAME:	EW0PWRST	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	STNPWRST
LOC1:	25	MASK:	0x40
PC_COND:	G_B10	PCF_DESCR	EFW PWR
CPCF_NAME	G_021		STATUS

TX_NAME:	STNPWRST		
TX_DESCR:	Instrument power status text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

EFW power status indicates the power status of the EFW instrument. A value of zero means that EFW is powered (OFF), non-zero means that EFW is powered (ON).

When **SetInstrPower(ON, EFW)** is executed DWP will drive the EFW power ON relay in the WEC PWR supply, and **EFW power status** will be set to one. **EFW power status** will remain set until either:

- i/ a **SetInstrPower(OFF,EFW)** command is received, or
- ii/ a **DWPCfg** command is received.

Any of the above commands will cause DWP to drive the EFW power OFF relay in the WEC PWR unit.

The value of **EFW instrument disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Staff SA power status, Staff MWF power status, Whisper power status, Wideband power status, Whisper TX power status.

Related commands:

SetInstrPower(EFW), FlagInstrFail(EFW).

2.4.40 EFW relay cycles

AIT database:

PC_NAME:	EW0RLCYC	PC_UNIT:	EFW
PC_TYPE:	C	FORMAT:	6.3f
LOC1:	25	MASK:	0x3F
PC_COND:	G_021		
CPCF_NAME	G_022	PCF_DESCR	EFW RELAY CYCLES

Description:

EFW relay cycles indicates the number of times DWP has driven the EFW ON relay in the WEC PWR supply since the last DWP reset. This parameter can be used to confirm **SetInstrPower(ON,EFW)** commands have been executed successfully.

The maximum number of relay cycles that can be reported in this parameter is 63. Another EFW relay ON operation will cause the count to wrap around to 0.

The value of **EFW relay cycles** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW power status, Staff SA relay cycles, Staff MWF relay cycles, Whisper relay cycles, Whisper TX relay cycles, Wideband relay cycles.

Related commands:

SetInstrPower(ON,EFW).

2.4.41 EFW sampling mode

AIT database:

PC_NAME:	EW0SAMOD	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWSAMOD
LOC1:	155	MASK:	0xC0
PC_COND:	G_021		
CPCF_NAME	2G_023	PCF_DESCR	SAMPLING MODE

TX_NAME:	SEWSAMOD		
TX_DESCR:	Sampling Mode		
	STR_LO	STR_HI	STR_TXS
1	0	0	NORMAL
2	1	1	SPLIT
3	2	2	HXONLY
4	3	3	NULL

Description:

Indicates the sampling mode of the instrument.

Bits	Description
00	normal
01	split
10	HX only
11	null

Format of EFW sampling mode

Related parameters:

None

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send the EFW command SAMPLECTL

2.4.42 EFW sliding window bytes

AIT database:

PC_NAME:	EW0SLWB0	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	160	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_024	PCF_DESCR	EFW SL WINDOW B0

PC_NAME:	EW0SLWB1	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	161	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_025	PCF_DESCR	EFW SL WINDOW B1

PC_NAME:	EW0SLWB2	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	162	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_026	PCF_DESCR	EFW SL WINDOW B2

PC_NAME:	EW0SLWB3	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	163	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_027	PCF_DESCR	EFW SL WINDOW B3

PC_NAME:	EW0SLWB4	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	164	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_028	PCF_DESCR	EFW SL WINDOW B4

PC_NAME:	EW0SLWB5	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	165	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_029	PCF_DESCR	EFW SL WINDOW B5

PC_NAME:	EW0SLWB6	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	166	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_030	PCF_DESCR	EFW SL WINDOW B6

PC_NAME:	EW0SLWB7	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	2x
LOC1:	167	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_031	PCF_DESCR	EFW SL WINDOW B7

Description:

These eight **EFW sliding window byte *n*** parameters form a window that may be positioned anywhere within a EFW science telemetry data packet received by DWP, or within the EFW digital sub-com table. The packet that the bytes will be copied from is always the first packet received after a one second timing boundary, OSTB.

The values of these parameters after a DWP reset is zero. When EFW is transmitting telemetry to DWP the parameters are updated once per second.

The **EFW sliding window position** parameter gives the current position of the EFW sliding window parameters.

Related parameters:

EFW sliding window position.

Related commands:

SetEFWWinPos.

2.4.43 EFW sliding window position

AIT database:

PC_NAME:	EW0SLWP_	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	4x
LOC1:	158	MASK:	0xFF
LOC2:	159	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_032	PCF_DESCR	SLIDIG
			WINDOW POS

Description:

EFW sliding window position specifies the position of a block of 8 bytes that will be copied from an EFW telemetry packet read by DWP into the **EFW sliding window byte *n*** parameters. The position is relative to the first byte of the first packet received by DWP after a one second timing boundary, OSTB.

The value of **EFW sliding window position** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

If the least significant bit of the parameter is 0, then the window is positioned on a word boundary within the EFW telemetry packet. If the least significant bit is 1, then the window is positioned on an 8 byte boundary within the 256 byte EFW digital sub-com table (DSC), the position being determined by bits 3 through 7.

The values 8 and 84 have special significance. Position 8 is where the current DSC block is located, so the sliding window contains the DSC data. Parameter EW0DSCIN indicates which DSC block is present. Given enough time it is possible to build up the entire DSC table. Position 84 selects the EFW HX data. This is normally waveform data, but may be replaced by any parameters from the EFW memory by appropriate reprogramming of the EFW format table.

Related parameters:

EFW sliding window byte 0, EFW sliding window byte 1, EFW sliding window byte 2, EFW sliding window byte 3, EFW sliding window byte 4, EFW sliding window byte 5, EFW sliding window byte 6, EFW sliding window byte 7.

Related commands:

SetEFWWinPos set the value of this parameter.

2.4.44 EFW spacecraft potential

AIT database:

PC_NAME:	EW0SPPOT	PC_UNIT:	EFW
PCA_UNIT	VOLT	FORMAT:	6.2f
PC_TYPE:	A	CA_CURVE	CC0SPPOT
LOC1:	105	MASK:	0x0F
LOC2:	104	MASK:	0xFF
PC_COND:	G_021		
CPCF_NAME	G_032/G_D05	PCF_DESCR	EFW SC POTENTIAL

CA_NAME:	CC0SPOT		
	EFW spacecraft potential calib		
CA_UNIT:	VOLT		
X01	0	Y01	-69.56
X02	4096	Y02	69.56

Description:

EFW spacecraft potential has the value that was read by DWP from EFW at the beginning of the last telemetry packet. This value is updated once per second.

EFW spacecraft potential is output at least once per second on the IEL interfaces to ASPOC and CIS, ref section 3.? of [4].

The value of this parameter after a DWP reset is zero.

Related parameters:

EFW spacecraft potential status

Related commands:

None.

2.4.45 EFW spacecraft potential status

AIT database:

PC_NAME:	EW0SPSTS	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	1x
LOC1:	105	MASK:	0xF0
PC_COND:	G_021		
CPCF_NAME	G_034	PCF_DESCR	EFW S/C POT STAT

Description:

EFW spacecraft potential status has the value that was read by DWP from EFW at the beginning of the last telemetry packet. This value is updated once per second.

EFW spacecraft potential status has bits that show the validity and source of the potential measurement given by the **EFW spacecraft potential** parameter, as shown in the table below.

Bit	Description
3	Data Valid = 1 If zero, EFW cannot make the measurement
2	This bit is not used. Always Zero.
1	Burst in progress If one, EFW is collecting data in Burst memory
0	If zero, potential is calculated from $+(V1+V2) / 2$ If one, potential is calculated from $-(V1+V2) / 2$

Decoding of EFW spacecraft potential status

The value of this parameter after a DWP reset is zero.

Related parameters:

EFW spacecraft potential

Related commands:

None.

2.4.46 EFW status motor 1

AIT database:

PC_NAME:	EW0MOT1S	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWMOTST
LOC1:	157	MASK:	0x10
PC_COND:	G_021	PCF_DESCR	STATUS
CPCF_NAME	G_015		MOTOR 1

TX_NAME:	SEWMOTST		
TX_DESCR:	Motor status		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Set to one if the deployment motor in boom unit 1 is turned on.

Related parameters:

EFW status motor 2, EFW status motor 3, EFW status motor 4.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send EFW commands MOTOR, DEP_STOP, DEP_A, DEP_B, DEP_BOTH

2.4.47 EFW status motor 2

AIT database:

PC_NAME:	EW0MOT2S	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWMOTST
LOC1:	157	MASK:	0x20
PC_COND:	G_021		
CPCF_NAME	G_016	PCF_DESCR	STATUS
			MOTOR 2

TX_NAME:	SEWMOTST		
TX_DESCR:	Motor status		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Set to one if the deployment motor in boom unit 2 is turned on.

Related parameters:

EFW status motor 1, EFW status motor 3, EFW status motor 4.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send EFW commands MOTOR, DEP_STOP, DEP_A, DEP_B, DEP_BOTH

2.4.48 EFW status motor 3

AIT database:

PC_NAME:	EW0MOT3S	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWMOTST
LOC1:	157	MASK:	0x40
PC_COND:	G_021		
CPCF_NAME	G_017	PCF_DESCR	STATUS
			MOTOR 3

TX_NAME:	SEWMOTST		
TX_DESCR:	Motor status		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Set to one if the deployment motor in boom unit 3 is turned on.

Related parameters:

EFW status motor 1, EFW status motor 2, EFW status motor 4.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send EFW commands MOTOR, DEP_STOP, DEP_A, DEP_B, DEP_BOTH

2.4.49 EFW status motor 4

AIT database:

PC_NAME:	EW0MOT4S	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWMOTST
LOC1:	157	MASK:	0x80
PC_COND:	G_021		
CPCF_NAME	G_018	PCF_DESCR	STATUS MOTOR 4

TX_NAME:	SEWMOTST		
TX_DESCR:	Motor status		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Set to one if the deployment motor in boom unit 4 is turned on.

Related parameters:

EFW status motor 1, EFW status motor 2, EFW status motor 3.

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send EFW commands MOTOR, DEP_STOP, DEP_A, DEP_B, DEP_BOTH

2.4.50 EFW sun angle

AIT database:

PC_NAME:	EW0SUNAN	PC_UNIT:	EFW
PCA_UNIT	DEG	FORMAT:	5.1f
PC_TYPE:	A	CA_CURVE	CEWSUNAN
LOC1:	156	MASK:	0xFF
PC_COND:	G_021	PCF_DESCR	SUN ANGLE
CPCF_NAME	G_035		

CA_NAME:	CEWSUNAN		
	Sun angle at 0.002 sec samp per		
CA_UNIT:	DEG		
X01	0	Y01	0.0
X02	255	Y02	358.6

Description:

The sun angle is calculated by a phase locked loop routine which uses the period between successive sun pulses in order to determine the sun angle to 8 bit accuracy (1.41 degree).

The angle is zeroed when the sun pulse is found.

If a nonzero TEST command is issued this parameter will be set to a fixed number that can be used to label data in test sequences.

Related parameters:

None

Related commands:

SetEFWLSBTx and **SetEFWMSBTx** when used to send EFW command TEST

2.4.51 EFW sweep status

AIT database:

PC_NAME:	EW0SWEEP	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWSWEEP
LOC1:	154	MASK:	0x02
PC_COND:	G_021	PCF_DESCR	SWEEP
CPCF_NAME	G_036		STATUS

TX_NAME:	SEWSWEEP		
TX_DESCR:	Sweep Status		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	SWEEP IN PRG

Description:

Set to one if a sweep is in progress.

Related parameters:

None

Related commands:

None

2.4.52 EFW test sequence number

AIT database:

PC_NAME:	EW0TSEQN	PC_UNIT:	EFW
PC_TYPE:	R	FORMAT:	1d
LOC1:	103	MASK:	0x70
PC_COND:	G_021	PCF_DESCR	EFW TST SEQ
CPCF_NAME	G_037		NUMB

Description:

EFW test sequence number is a parameter whose value is only changed by the **SetEFWTestSeq** command. This is usually done during ground-based testing.

The value of this parameter has no affect on DWP or WEC operations. Its range of possible values is 0 to 7.

After a DWP reset **EFW test sequence number** is set to zero.

Related parameters:

None.

Related commands:

SetEFWTestSeq sets the value of this parameter.

2.4.53 EFW unexpected telemetry

AIT database:

PC_NAME:	EW0UXTLM	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	ST0UXTLM
LOC1:	103	MASK:	0x01
PC_COND:	G_021		
CPCF_NAME	G_038	PCF_DESCR	EFW UNEXP TLM FLG

TX_NAME:	ST0UXTLM		
TX_DESCR:	Unexpected telemetry text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	UX_TELEMETRY

Description:

EFW unexpected telemetry is non-zero if at a one second timing boundary, OSTB, a transfer of an EFW telemetry packet to DWP was still in progress. This would indicate that EFW and DWP were not correctly synchronised, and the action taken by DWP in the event of this error is to flush the EFW interface buffer of all characters in an attempt to resynchronise.

EFW unexpected telemetry is always set in the first housekeeping snapshot taken after powering on EFW from off with the **SetInstrPower(ON,EFW)** command. This is because when EFW is initially powered on it does not assume that synchronisation from DWP is working and outputs telemetry not synchronised to the OSTB, ref [2]. At the first OSTB after EFW power on synchronisation is made.

EFW unexpected telemetry is cleared to zero after each housekeeping snapshot.

Related parameters:

EFW data with bad header, EFW no telemetry received.

Related commands:

SetInstrPower(ON,EFW) may set this parameter.

2.4.54 EFW whisper pulses

AIT database:

PC_NAME:	EW0WHPUL	PC_UNIT:	EFW
PC_TYPE:	D	PCD_TEXT:	SEWWHPUL
LOC1:	154	MASK:	0x04
PC_COND:	G_021		
CPCF_NAME	G_039	PCF_DESCR	WHISPER
			PULSES

TX_NAME:	SEWWHPUL		
TX_DESCR:	Whisper Pulses		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	WH PULS PRES

Description:

Indicates that WHISPER is sounding when parameter is set to one.

Related parameters:

None

Related commands:

None

2.4.55 FGM vector count

AIT database:

PC_NAME:	EW5FGMCN	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2x
LOC1:	169	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_024	PCF_DESCR	FGM VECTOR COUNT

Description:

FGM vector count shows the number of FGM vectors read from the IEL interface to FGM. When FGM is operating, DWP should read 80 vectors per HK format across the interface. The count is zeroed after each HK snapshot so the nominal value of **FGM vector count** should be 80.

If the value of **FGM vector count** is zero then either:

- i/ DWP has just been reset
- ii/ FGM is not sending vectors to DWP
- iii/ the IEL connection between DWP and FGM has failed.

Related parameters:

None.

Related commands:

FlagExtExpStatus.

2.4.56 FGM vectors disabled

AIT database:

PC_NAME:	EW5FGMDS	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5FGMDS
LOC1:	46	MASK:	0x10
PC_COND:	G_B10		
CPCF_NAME	D_025	PCF_DESCR	FGM VECTORS STAT

TX_NAME:		ST5FGMDS	
TX_DESCR:		FGM vectors disabled	
	STR_LO	STR_HI	STR_TXS
1	0	0	FGM VECT EN
2	1	1	FGM VECT DIS

Description:

FGM vectors disabled shows whether the DWP forwarding of FGM vectors to EFW has been disabled. If non-zero, forwarding of vectors is disabled but vectors are still sampled across the DWP-FGM interface.

This parameter is controlled by the **FlagExtExpStatus** command.

Related parameters:

FGM vector count

Related commands:

FlagExtExpStatus.

2.4.57 OBDH acquisition mode

AIT database:

PC_NAME:		EW5ACQMD	PC_UNIT:		DWP
PC_TYPE:		D	PCD_TEXT:		ST5ACQMD
LOC1:		23	MASK:		0xFF
PC_COND:		G_B10			
CPCF_NAME		D_012	PCF_DESCR		OBDH ACQ MODE

TX_NAME:		ST5ACQMD	
TX_DESCR:		OBDH acquisition modes	
	STR_LO	STR_HI	STR_TXS
1	0x96	0x98	NORMAL MODE
2	0x99	0x99	BURST MODE 1
3	0x9A	0x9A	BURST MODE 2
4	0x9B	0x9B	BURST MODE 3

Description:

OBDH acquisition mode shows the OBDH acquisition mode that DWP requires from the spacecraft to successfully package the WEC telemetry into the OBDH telemetry. If **OBDH acquisition mode** does not match the spacecraft's acquisition mode then it will not be possible to successfully decommutate the WEC science telemetry and the **OBDH telemetry request not expected** parameter will be set.

The correspondance between the value of OBDH acquisition mode and the spacecraft acquisition mode name is shown in the table below.

Parameter value	OBDH acquisition mode
0x96	Normal mode 1
0x97	Normal mode 2
0x98	Normal mode 3
0x99	Burst mode 1
0x9A	Burst mode 2
0x9B	Burst mode 3

Mapping of OBDH acquisition mode value to mode name

The WEC and DWP do not distinguish between normal modes 1 to 3.

The value of **OBDH acquisition mode** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation..

Related parameters:

OBDH telemetry request not expected

Related commands:

SetOBDHAcqMode sets the value of this parameter.

2.4.58 OBDH active channel

AIT database:

PC_NAME:	EW50BDHC	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	STNOBDHC
LOC1:	22	MASK:	0x80
PC_COND:	G_B10	PCF_DESCR	OBDH ACT
CPCF_NAME	D_050		CHANNEL

TX_NAME:		ST5OBDHC	
TX_DESCR:		OBDH active channel text	
	STR_LO	STR_HI	STR_TXS
1	0	0	REDUNDANT
2	1	1	NOMINAL

Description:

OBDH active channel will be non-zero when the nominal OBDH channel is being used for receiving telecommands and AOCMS signals. If zero the redundant channel is in use.

Nominally the **OBDH active reset channel** and the **OBDH active channel** parameters have the same values. In the event of partial OBDH interface failure flagged by the OBDH channel failure parameters, **OBDH active reset channel** and **OBDH active channel** may have different values.

The value of **OBDH active channel** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

The selection of the active OBDH channel is made by transmitting any legal WEC command to DWP on the redundant or nominal OBDH interface.

Related parameters:

OBDH active reset channel, OBDH nominal channel failure, OBDH redundant channel failure, OBDH acquisition mode.

Related commands:

None.

2.4.59 OBDH active reset channel

AIT database:

PC_NAME:	EW5OBDHR	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	STNOBDHR
LOC1:	22	MASK:	0x40
PC_COND:	G_B10	PCF_DESCR	OBDH ACT
CPCF_NAME	D_051		RST CHA

TX_NAME:		STNOBDHR	
TX_DESCR:		OBDH active reset channel text	
	STR_LO	STR_HI	STR_TXS
1	0	0	REDUNDANT
2	1	1	NOMINAL

Description:

OBDH active reset channel will be non-zero when the nominal OBDH channel is being used for receiving reset pulses. If zero the redundant channel is in use.

Nominally the **OBDH active reset channel** and the **OBDH active channel** parameters have the same values. In the event of partial OBDH interface failure flagged by the OBDH channel failure parameters, **OBDH active reset channel** and **OBDH active channel** may have different values. The value of **OBDH active reset channel** after a DWP reset is shown in Section 2.3.3. DWP parameter initialisation

The selection of the active OBDH reset channel is made by transmitting any legal WEC command to DWP on the redundant or nominal OBDH interface.

Related parameters:

OBDH active channel, OBDH nominal channel reset failure, OBDH redundant channel reset failure, OBDH acquisition mode.

Related commands:

None.

2.4.60 OBDH nominal channel failure

AIT database:

PC_NAME:	EW5NFAIL	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5NFAIL
LOC1:	22	MASK:	0x10
PC_COND:	G_B10	PCF_DESCR	OBDH NM CHS
CPCF_NAME	D_048		FAIL

TX_NAME:		STNOFAIL	
TX_DESCR:		OBDH nominal channel failure text	
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	OBDH NM FAIL

Description:

OBDH nominal channel failure is non-zero if DWP has detected a failure in the OBDH nominal channel interface. A failure may be detected erroneously if two telecommands are received on the OBDH nominal command interface less than approximately 150 us apart.

When **OBDH nominal channel failure** is set, DWP will ignore all commands transmitted to it on the nominal channel of the OBDH interface. The redundant interface must be used instead. The value of **OBDH nominal channel failure** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

OBDH redundant channel failure, OBDH redundant channel reset failure, OBDH nominal channel reset failure.

Related comamnds:

None.

2.4.61 OBDH nominal reset channel failure

AIT database:

PC_NAME:	EW5NRFAI	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5NRFAI
LOC1:	22	MASK:	0x04
PC_COND:	G_B10		
CPCF_NAME	D_049	PCF_DESCR	OBDH NM RST FAIL

TX_NAME:		ST5NRFAI	
TX_DESCR:		OBDH nominal reset channel failure text	
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	OBDH NR FAIL

Description:

OBDH nominal reset channel failure is non-zero if DWP has detected a failure in the OBDH nominal reset channel interface. A failure may be detected if two reset pulses are received on the OBDH nominal reset channel interface less than approximately 150 us apart.

When **OBDH nominal channel reset failure** is set, DWP will ignore all reset pulses transmitted to it on the nominal reset channel of the OBDH interface. The redundant reset channel interface must be used instead.

The value of **OBDH nominal reset channel failure** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

OBDH nominal channel failure, OBDH redundant channel failure, OBDH redundant channel reset failure.

Related commands:

None.

2.4.62 OBDH redundant channel failure

AIT database:

PC_NAME:	EW5RFAIL	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5RFAIL
LOC1:	22	MASK:	0x20
PC_COND:	G_B10		
CPCF_NAME	D_061	PCF_DESCR	OBDH RD CHA FAIL

TX_NAME:	ST5RFAIL		
TX_DESCR:	OBDH redundant channel failure text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	OBDH RD FAIL

Description:

OBDH redundant channel failure is non-zero if DWP has detected a failure in the OBDH redundant channel interface. A failure may be detected erroneously if two telecommands are received on the OBDH redundant command interface less than approximately 150 us apart.

When **OBDH redundant channel failure** is set, DWP will ignore all commands transmitted to it on the redundant channel of the OBDH interface. The nominal interface must be used instead. The value of **OBDH redundant channel failure** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

OBDH nominal channel failure, OBDH redundant channel reset failure, OBDH nominal channel reset failure.

Related commands:

None.

2.4.63 OBDH redundant reset channel failure

AIT database:

PC_NAME:	EW5RRFAI	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5RRFAI
LOC1:	22	MASK:	0x08
PC_COND:	G_B10		
CPCF_NAME	D_062	PCF_DESCR	OBDH RD RST FAIL

TX_NAME:	ST5RRFAI		
TX_DESCR:	OBDH redundant reset channel failure text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	OBDH RRS FAI

Description:

OBDH redundant reset channel failure is non-zero if DWP has detected a failure in the OBDH redundant reset channel interface. A failure may be detected if two reset pulses are received on the OBDH redundant reset channel interface less than approximately 150 us apart.

When **OBDH redundant channel reset failure** is set, DWP will ignore all reset pulses transmitted to it on the redundant reset channel of the OBDH interface. The nominal reset channel interface must be used instead. The value of **OBDH redundant reset channel failure** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

OBDH nominal channel failure, OBDH redundant channel failure, OBDH redundant channel reset failure.

Related commands:

None.

2.4.64 OBDH reset count

AIT database:

PC_NAME:	EW5RSCNT	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	2	MASK:	0xFF
LOC2:	3	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_063	PCF_DESCR	OBDH RESET COUNT

Description:

OBDH reset count provides a sequence count for WEC HK frames and is also required to decode the acquisition time for WEC science data packets acquired between an OBDH reset pulse and the next OBDH reset pulse (ref section 1.4.5.14 Discussion of timing accuracy).

OBDH reset count is incremented by one after every OBDH reset pulse, before the housekeeping snapshot is taken. As housekeeping blocks are acquired once per OBDH reset pulse, **OBDH reset count** will increment by one between two consecutive housekeeping blocks.

After a DWP reset **OBDH reset count** is set to zero. Therefore, the first housekeeping block read after a DWP reset will have the value one.

Related parameters:

WEC sampling offset is used with **OBDH reset count** to accurately time tag WEC data (ref section 1.4.5.14 Discussion of timing accuracy).

Related commands:

None.

2.4.65 OBDH TLM request not expected

AIT database:

PC_NAME:	EW5ESTMR	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5ESTMR
LOC1:	7	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	D_022	PCF_DESCR	SPURIOUS TM REQU

TX_NAME:	ST5ESTMR		
TX_DESCR:	Spurious tlm request error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	SPUR_TLM_REQ

Description:

OBDH TLM request not expected is non-zero if an OBDH telemetry request was present at the VC0 (reset pulse) event.

During normal operations this parameter should not be set. However, after a DWP reset, there will be an outstanding OBDH telemetry request detected at the first OBDH reset pulse as DWP will not yet have processed any TLM requests.

Therefore the first housekeeping block acquired after a DWP reset will have **OBDH TLM request not expected** non-zero, all later housekeeping blocks should have zero values for this parameter.

If **OBDH TLM request not expected** is non-zero in every housekeeping block this probably indicates that DWP is using a different telemetry acquisition mode to the OBDH. The **FlagOBDHAcqMode** command is used to specify the current OBDH acquisition mode to DWP.

OBDH TLM request not expected is cleared to zero after each housekeeping snapshot.

Related parameters:

OBDH acquisition mode.

Related commands:

None.

2.4.66 Peace flybacks per spin

AIT database:

PC_NAME:	EW3PCFBS	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3PCFBS
LOC1:	46	MASK:	0xC0
PC_COND:	G_B10		
CPCF_NAME	L_024	PCF_DESCR	PEACE FLYB P/SPN

TX_NAME:	ST3PCFBS		
TX_DESCR:	Peace flybacks status text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	16
3	2	2	32
4	3	3	64

Description:

The PEACE instrument number of flybacks per spacecraft spin as known by DWP for controlling Whisper and the particle correlator.

The format of this parameter is the same as that of the bits masked by 0xC000 in the instrument function data field of the **FlagExtExpStatus** command.

Related parameters:

Peace SRP offset

Related commands:

FlagExtExpStatus.

2.4.67 Peace SRP offset

AIT database:

PC_NAME:	EW3SRPOF	PC_UNIT:	WHISPER
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	46	MASK:	0x0F
LOC1:	47	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	L_033	PCF_DESCR	PEACE SRP
			OFFSET

Description:

Peace SRP offset is the PEACE instrument sun reference pulse (SRP) offset specified to DWP with the **FlagExtExpStatus** command. This information is used by DWP to correctly synchronise Whisper sounding and the particle correlator with the particle experiments.

The format of this parameter is the same as that of the bits masked by 0x0FFF in the instrument function data field of the **FlagExtExpStatus** command.

Related parameters:

Peace flybacks per spin.

Related commands:

FlagExtExpStatus.

2.4.68 Staff MWF bandwidth

AIT database:

PC_NAME:	EW2BANDW	PC_UNIT:	ST_MWF
PC_TYPE:	D	PCD_TEXT:	ST2BANDW
LOC1:	112	MASK:	0x10
PC_COND:	S_014		
CPCF_NAME	S_001	PCF_DESCR	ST_MWF
			BANDWIDTH

TX_NAME:	ST2BANDW		
TX_DESCR:	Staff MWF bandwidth text		
	STR_LO	STR_HI	STR_TXS
1	0	0	10 HZ
2	1	1	180 HZ

Description:

Staff MWF filter bandwidth (0 = 10Hz, 1 = 180 Hz).

Related parameters:

WEC sample clock frequency **EW5SCFRQ**

EW2BANDW 10Hz --**EW5SCFRQ** 25Hz

EW2BANDW 180Hz--**EW5SCFRQ** 450Hz

Related commands:

SetWECClock

2.4.69 Staff MWF Bx max - min

AIT database:

PC_NAME:	EW2BXMAX	PC_UNIT:	ST_MWF
PCA_UNIT	Volt		
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	114	MASK:	0xFF
LOC2:	115	MASK:	0xFF
PC_COND:	S_014		
CPCF_NAME	S_002	PCF_DESCR	ST_MWF
			BXMAX-MIN

Description:

DWP will note the maxima and minima of Bx, By, Bz over a 5.1 second period, and insert the maxima/minima difference for each field component in Staff HK words. After outputting the WEC HK frame, these quantities are zeroed. Each value is an unsigned 16 bit quantity.

Bx max-min = No. * 1.526 e-4 in Volts.

Related parameters:

Related commands:

2.4.70 Staff MWF By max - min

AIT database:

PC_NAME:	EW2BYMAX	PC_UNIT:	ST_MWF
PCA_UNIT	Volt		
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	116	MASK:	0xFF
LOC2:	117	MASK:	0xFF
PC_COND:	S_014		
CPCF_NAME	S_003	PCF_DESCR	ST_MWF
			BYMAX-MIN

Description:

The maximum By value minus the minimum By value for Staff MWF over one VC0 period.

By max-min = No.* 1.526 e-4 in Volts.

Related parameters:

Related commands:

2.4.71 Staff MWF Bz max - min

AIT database:

PC_NAME:	EW2BZMAX	PC_UNIT:	ST_MWF
PCA_UNIT	Volt		
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	118	MASK:	0xFF
LOC2:	119	MASK:	0xFF
PC_COND:	S_014		
CPCF_NAME	S_004	PCF_DESCR	ST-MWF
			BZMAX-MIN

Description:

The maximum Bz value minus the minimum Bz value for Staff MWF over one VC0 period.

Bz max-min = No.* 1.526 e-4 in Volts.

Related parameters:

Related commands:

2.4.72 Staff MWF calibration mode

AIT database:

PC_NAME:	EW2CALMD	PC_UNIT:	ST_MWF
PC_TYPE:	D	PCD_TEXT:	ST2CALMD
LOC1:	112	MASK:	0x80
PC_COND:	S_014		
CPCF_NAME	S_005	PCF_DESCR	ST_MWF CAL MODE

TX_NAME:	ST2CALMD		
TX_DESCR:	Staff MWF cal mode text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	CAL MODE

Description:

If non-zero Staff MWF is in calibration mode.

Related parameters:

Staff MWF calibration step.

Related commands:

StartSTAFFCal (0x4000).

2.4.73 Staff MWF calibration step

AIT database:

PC_NAME:	EW2CALST	PC_UNIT:	ST_MWF
PC_TYPE:	R	FORMAT:	2d
LOC1:	113	MASK:	0x3F
PC_COND:	S_014		
CPCF_NAME	S_006	PCF_DESCR	ST_MWF CAL STEP

Description:

The step number of the Staff MWF calibration sequence in the range 1 to 23 (only valid when EW2CALMD is set to 1). Each calibration step has a 16sec duration in NBR and a 4sec duration in HBR. This parameter may also be set to any value when a calibration sequence is not in progress.

Calibration Mode

Low Bit Rate, 10 Hz bandwidth.

STEP	SC command	Calibration Mode	Attenuation
1	0x001F	CAL4	0 dB
2	0x001F	CAL4	0 dB
3	0x001F	CAL4	0 dB
4	0x001F	CAL4	0 dB
5	0x003F	CAL4	-13 dB
6	0x005F	CAL4	-26 dB
7	0x007F	CAL4	-39 dB
8	0x009F	CAL4	-52 dB
9	0x00BF	CAL4	-65 dB
10	0x00DF	CAL4	-78 dB
11	0x00FF	CAL4	Gnd
12	0x001B	CAL3	0 dB
13	0x005B	CAL3	-26 dB
14	0x0013	CAL1	0 dB
15	0x0017	CAL2	0 dB
16	0x0053	CAL1	-26 dB
17	0x0057	CAL2	-26 dB
18	0x0093	CAL1	-52 dB
19	0x0097	CAL2	-52 dB
20	0x00FF	CAL2	Gnd
21	0x0003	CAL OFF redundant	
22	0x0057	CAL2	-26 dB
23	0x0000	CAL Off/On Satellite	

Calibration Mode

HIGH Bit Rate, 180 Hz bandwidth.

STEP	SC command	Calibration Mode	Attenuation
1	0x011F	CAL4	0 dB
2	0x011F	CAL4	0 dB
3	0x011F	CAL4	0 dB
4	0x011F	CAL4	0 dB
5	0x013F	CAL4	-13 dB
6	0x015F	CAL4	-26 dB
7	0x017F	CAL4	-39 dB
8	0x019F	CAL4	-52 dB
9	0x01BF	CAL4	-65 dB
10	0x01DF	CAL4	-78 dB
11	0x01FF	CAL4	Gnd
12	0x011B	CAL3	0 dB
13	0x015B	CAL3	-26 dB
14	0x0113	CAL1	0 dB
15	0x0117	CAL2	0 dB
16	0x0153	CAL1	-26 dB
17	0x0157	CAL2	-26 dB
18	0x0193	CAL1	-52 dB
19	0x0197	CAL2	-52 dB
20	0x01FF	CAL2	Gnd
21	0x0103	CAL OFF redundant	
22	0x0157	CAL2	-26 dB
23	0x0100	CAL Off/On Satellite	

Related parameters:

Staff MWF calibration mode. (EW2CALMD).

Staff MWF bandwidth. (EW2BANDW).

Related commands:

SetWECClock. StartSTAFFCal.

2.4.74 Staff MWF error word

AIT database:

PC_NAME:	EW2EWORD	PC_UNIT:	ST_MWF
PC_TYPE:	D		
LOC1:	111	MASK:	0x1F
PC_COND:	S_006<>0x3F		
CPCF_NAME	S_008	PCF_DESCR	ST_MWF ERR WORD

Description:

This word is set to zero after transmission of every WEC Housekeeping block. A zero pattern indicates that no Staff MWF errors have occurred.

If during Staff Calibration the WECSS frequency is changed by telecommand, then the calibration will be aborted, and bit 0x10 of the MWF Error word set.

If voltage drops below $V_{nom}/4$ then bit 0x01 of the MWF Error word is set, and the Staff MWF latch up count incremented. DWP then immediately powers off MWF.

If the Staff MWF latch up count is 4 then DWP will set EW2ENWRK to indicate failure of MWF. It will not attempt to restart MWF.

Bit mask	Description of problem
0x10	Staff Calibration aborted
0x04 *	SC acquisitions out of sync with OSTB
0x02 *	timed out waiting for EOT after SOC
0x01	low voltage detected, SC power cycling reqd

Decoding of STAFF.MWF error word

Related parameters:

Related commands:

2.4.75 Staff MWF E_y mode

AIT database:

PC_NAME:	EW2EYMOD	PC_UNIT:	ST_MWF
PC_TYPE:	R		
LOC1:	113	MASK:	0x40
PC_COND:	S_014		
CPCF_NAME	S_046	PCF_DESCR	STAFF MWF EY MD

Description:

Indicates the EFW Y+ and/or Y- are/is in density or voltage mode. The bit set indicates that one or both of the EFW Y booms is in D mode.

Related parameters:

EFW E/D mode bits U1, EFW E/D mode bits U2, EFW E/D mode bits U3, EFW E/D mode bits U4.

Related commands:

2.4.76 Staff MWF E_z mode

AIT database:

PC_NAME:	EW2EZMOD	PC_UNIT:	ST_MWF
PC_TYPE:	R		
LOC1:	113	MASK:	0x80
PC_COND:	S_014		
CPCF_NAME	S_047	PCF_DESCR	STAFF MWF EZ MD

Description:

Indicates the EFW Z+ and/or Z- are/is in density or voltage mode. The bit set indicates that one or both of the EFW Z booms is in D mode.

Related parameters:

EFW E/D mode bits U1, EFW E/D mode bits U2, EFW E/D mode bits U3, EFW E/D mode bits U4.

Related commands:

2.4.77 Staff MWF latchup count

AIT database:

PC_NAME:	EW2LUCNT	PC_UNIT:	ST_MWF
PC_TYPE:	R	FORMAT:	2d
LOC1:	106	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	S_010	PCF_DESCR	ST_MWF L-UP CNT

Description:

This parameter is incremented by four each time a Staff MWF latch up (low voltage monitor) is been detected. See Staff SA latch up count (EW1LUDET) for more details.

After one latchup detection, DWP turns STAFF MWF OFF, and ON again after 20 seconds. If the latchup count reaches the value of 12, then STAFF MWF remains OFF until an ON command is sent **from the ground**.

Related parameters:

Staff MWF latchup monitor control. (EW2MONDS)

Staff MWF not working. (EW2ENWRK)

Related commands:

SetInstrPower (ZEWMS2FS, YEWMS2FS)

2.4.78 Staff MWF latchup monitor control

AIT database:

PC_NAME:	EW2MONDS	PC_UNIT:	ST_MWF
PC_TYPE:	D	PCD_TEXT:	STNMONDS
LOC1:	52	MASK:	0x08
PC_COND:	G_B10		
CPCF_NAME	S_012	PCF_DESCR	ST_MWF I-UP MONI

TX_NAME:	STNMONDS		
TX_DESCR:	Latchup monitor text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	L_UP_MON_DIS

Description:

If non-zero the Staff Magnetic Waveform latchup monitoring normally performed by DWP has been disabled by telecommand (FlagIntfFail; ZEWMS03S).

Related parameters:

Whisper latchup monitor control, Staff SA latchup monitor control, Staff MWF latchup monitor control, Wideband latchup monitor control

Related commands:

SetInstrPower :ZEWMS2FS,YEWMS2FS

2.4.79 Staff MWF instrument disabled

AIT database:

PC_NAME:	EW2INSDS	PC_UNIT:	ST_MWF
PC_TYPE:	D	PCD_TEXT:	STNINSDS
LOC1:	53	MASK:	0x04
PC_COND:	G_B10		
CPCF_NAME	S_009	PCF_DESCR	ST_MWF INSTR CON

TX_NAME:	STNINSDS		
TX_DESCR:	Instrument disabled text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INS_DISABLED

Description:

Staff MWF instrument disabled is non-zero when Staff MWF instrument control and operation has been disabled by the **FlagInstrFail** telecommand. The instrument will only be disabled in the event of a problem that does not allow Staff MWF to be operated correctly, e.g. a shortage of electrical power or a critical hardware failure.

When Staff MWF instrument control is disabled the Staff MWF instrument will not respond to any **SetInstrPower(STAFF_MWF)** commands.

The value of **Staff MWF instrument disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW instrument disabled, Staff MWF instrument disabled, Wideband instrument disabled, Whisper instrument disabled, Whisper transmitter disabled.

Related commands:

FlagInstrFail(DISABLE, STAFF_MWF) will set this parameter.

FlagInstrFail(ENABLE, STAFF_MWF) will clear this parameter.

2.4.80 Staff MWF not working

AIT database:

PC_NAME:	EW2ENWRK	PC_UNIT:	ST_MWF
PC_TYPE:	D	PCD_TEXT:	STNENWRK
LOC1:	110	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	S_007	PCF_DESCR	ST_MWF NO WORKIG

TX_NAME:	STNENWRK		
TX_DESCR:	Instrument not working text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INST_NOT_WRK

Description:

If non-zero the Staff MWF instrument is not working (repeated low voltage detected).

Related parameters:

Staff MWF latch up count.

Related commands:

SetInstrPower(STAFF_MWF), FlagInstrFail(STAFF_MWF).

2.4.81 Staff MWF power status

AIT database:

PC_NAME:	EW2PWRST	PC_UNIT:	ST_MWF
PC_TYPE:	D	PCD_TEXT:	STNPWRST
LOC1:	27	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	S_014	PCF_DESCR	STAFF MWF
			PWR ST

TX_NAME:	STNPWRST		
TX_DESCR:	Instrument power status text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Staff MWF power status indicates the power status of the Staff MWF instrument. A value of zero means that Staff MWF is not powered (OFF), non-zero means that Staff MWF is powered (ON).

When **SetInstrPower(ON, Staff MWF)** is executed DWP will drive the Staff MWF power ON relay in the WEC PWR supply, and **Staff MWF power status** will be set to one. **Staff MWF power status** will remain set until either:

- i/ a **SetInstrPower(OFF,Staff MWF)** command is received, or
- ii/ a **FlagInstrFail(DISABLE,Staff MWF)** command is received, or
- iii/ a **DWPConfig** command is received.

Any of the above commands will cause DWP to drive the Staff MWF power OFF relay in the WEC PWR unit.

The value of **Staff MWF power status** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW power status, Staff SA power status, Whisper power status, Wideband power status, Whisper TX power status, Staff MWF latchup count.

Related commands:

SetInstrPower(STAFF_MWF), FlagInstrFail(STAFF_MWF).

2.4.82 Staff MWF processing control

AIT database:

PC_NAME:	EW2PRCTL	PC_UNIT:	ST_MWF
PC_TYPE:	D	FORMAT:	
LOC1:	34	MASK:	0x00
LOC2:	35	MASK:	0x03
PC_COND:	S_014		
CPCF_NAME	S_013	PCF_NAME	ST_MWF
			PROC CONT

Description:

This parameter indicates what processing is applied to Staff magnetic waveform data within DWP. The format is the same as that of the function data of the **SetStaffMWFProc** command.

A non-zero value for **Staff MWF processing control** means that compression of STAFF data is required. This compression must execute on a DWP application transputer.

7	6	5	4	3	2	1	0	Description
x	x	x	x	x	x			Ignored
					0	0		No application processing
					x	1		Backup algorithm
					1	0		Nominal algorithm

Decoding of SetMacroOps command

Two algorithms are available, nominal and backup. Both algorithms are based on taking the differences between consecutive samples and compressing these rather than the field measurements themselves. Each algorithm outputs the same quantity of data but the backup algorithm uses a different encoding method that allows greater dynamic range in the data but slightly larger encoding errors, ref. [3].

Related parameters:

None.

Related commands:

SetStaffMWFProc.*2.4.83 Staff MWF relay cycles*

AIT database:

PC_NAME:	EW2RLCYC	PC_UNIT:	ST_MWF
PC_TYPE:	R	FORMAT:	2d
LOC1:	27	MASK:	0x3F
PC_COND:	S_014		
CPCF_NAME	S_015	PCF_DESCR	STAFF MWF CYCLES

Description:

Staff MWF relay cycles indicates the number of times DWP has driven the Staff MWF ON relay in the WEC PWR supply since the last DWP reset. This parameter can be used to confirm **SetInstrPower(ON,STAFF_MWF)** commands have been executed successfully.

The maximum number of relay cycles that can be reported in this parameter is 63. Another relay ON operation will cause the count to wrap around to 0.

The value of **Staff MWF relay cycles** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Staff MWF power status, EFW relay cycles, Staff SA relay cycles, Whisper relay cycles, Whisper TX relay cycles, Wideband relay cycles.

Related commands:

SetInstrPower(ON,STAFF_MWF).

2.4.84 Staff MWF temperature monitor 0

AIT database:

PC_NAME:	EW2TMON0	PC_UNIT:	ST_MWF
PCA_UNIT	CELC	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC2TMON0
LOC1:	97	MASK:	0xFF
PC_COND:	S_014	PCF_DESCR	ST_MWF TMP
CPCF_NAME	S_016		MON 0

CA_NAME:		CC2TMON0	
		Staff MWF temperature monitor 0	
CA_UNIT:		CELSIUS	
X01	0	Y01	150.00
X02	14	Y02	72.00
X03	38	Y03	37.00
X04	88	Y04	11.00
X05	255	Y05	-40.00

Description:

Temperature monitors for the Staff magnetic preamplifier (WEC 7) measured via the DWP analog to digital converter.

Related parameters:

None.

Related commands:

None.

2.4.85 Staff MWF temperature monitor 1

AIT database:

PC_NAME:	EW2TMON1	PC_UNIT:	ST_MWF
PCA_UNIT	CELC	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC2TMON1
LOC1:	96	MASK:	0xFF
PC_COND:	never	PCF_DESCR	ST_MWF TMP
CPCF_NAME	S_017		MON 1

CA_NAME:		CC2TMON1	
		Staff MWF temperature monitor 1	
CA_UNIT:		CELSIUS	
X01	0	Y01	0.000
X02	255	Y02	640.000

Description:

Temperature monitors for the Staff search coil (WEC 6) measured via the DWP analog to digital converter.

Note: Parameter has no meaning. (Transducer disconnected).

Related parameters:

None.

Related commands:

None.

2.4.86 Staff MWF voltage monitor 0

AIT database:

PC_NAME:	EW2VMON0	PC_UNIT:	ST_MWF
PCA_UNIT	VOLT	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC2VMON0
LOC1:	87	MASK:	0xFF
PC_COND:	S_014	PCF_DESCR	ST_MWF V-
CPCF_NAME	S_018		MONIT 0

CA_NAME:		CC2VMON0	
		Staff MWF voltage monitor 0	
CA_UNIT:		VOLT	
X01	0	Y01	-12.58
X02	255	Y02	1.97

Lower limit:	0x3C	(-9.156 V)
Higher limit	0x43	(-8.757 V)

Description:

Power supply voltage monitors for the Staff Magnetic Waveform instrument. Together with voltage monitor 2 this enables the calculation of the voltage $-V_b$ (nominally -9V). When EW2VMON0 has the value N_0 then

$$-V_b = (N_0 * 0.0570812) - (N_2 * 0.0434641 * 1.3983957) \text{ in Volts}$$

The calibration in the AIT and ESOC databases is approximate and assumes that N_2 has the nominal value.

Related parameters:

Staff MWF voltage monitor 2, EW2VMON2. (value N_2)

Related commands:

SetInstrPower(STAFF_MWF)

2.4.87 Staff MWF voltage monitor 1**AIT database:**

PC_NAME:	EW2VMON1	PC_UNIT:	ST_MWF
PCA_UNIT	VOLT	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC2VMON1
LOC1:	86	MASK:	0xFF
PC_COND:	S_014		
CPCF_NAME	S_019	PCF_DESCR	ST_MWF V-MONIT 1

CA_NAME:		CC2VMON1	
		Staff MWF voltage monitor 1	
CA_UNIT:		VOLT	
X01	0	Y01	-15.33
X02	255	Y02	4.960

Lower limit:	0x75	(-6.020 V)
Higher limit:	0x7C	(-5.463 V)

Description:

Power supply voltage monitors for the Staff Magnetic Waveform instrument. Together with voltage monitor 3 value this allows the calculation of $-V_a$ (nominally -5.75V). When EW2VMON1 has the value N_1 .

$$-V_a = (N_1 * 0.0798847) - (N_3 * 0.325458 * 2.68)$$

The calibration in the AIT and ESOC databases is approximate and assumes that N_3 has the nominal value.

Related parameters:

Staff MWF voltage monitor 3 . EW2VMON3 (value N_3).

Related commands:

SetInstrPower(STAFF_MWF)

*2.4.88 Staff MWF voltage monitor 2***AIT database:**

PC_NAME:	EW2VMON2	PC_UNIT:	ST_MWF
PCA_UNIT	VOLT	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC2VMON2
LOC1:	89	MASK:	0xFF
PC_COND:	S_014	PCF_DESCR	ST_MWF V-
CPCF_NAME	S_020		MONIT 2

CA_NAME:		CC2VMON2	
		Staff MWF voltage monitor 2	
CA_UNIT:		VOLT	
X01	0	Y01	0.000
X02	255	Y02	11.080

Lower limit: 0xCF (8.994 V)

Higher limit: 0xD6 (9.229 V)

Description:

Power supply voltage monitors for the Staff Magnetic Waveform instrument. This value is related to V_b (nominally +9V). When EW2VMON2 has the value N_2 then

$V_b = N_2 * 0.0434641$ in Volts.

Related parameters:

None.Related commands:

SetInstrPower(STAFF_MWF)

2.4.89 Staff MWF voltage monitor 3

AIT database:

PC_NAME:	EW2VMON3	PC_UNIT:	ST_MWF
PCA_UNIT	VOLT	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC2VMON3
LOC1:	88	MASK:	0xFF
PC_COND:	S_014	PCF_DESCR	ST_MWF V-
CPCF_NAME	S_021		MONIT 3

CA_NAME:		CC2VMON3	
		Staff MWF voltage monitor 3	
CA_UNIT:		VOLT	
X01	0	Y01	0.00
X02	255	Y02	8.300

Lower limit:	0xAD	(5.631 V)
Higher limit:	0xB4	(5.859 V)

Description:

Power supply voltage monitors for the Staff Magnetic Waveform instrument. This is related to +V_a (nominally +5.75V). When EW2VMON3 has the value N₃ then

$$+V_a = N_3 * 0.0325458 \text{ in Volts.}$$

Related parameters:

None.

Related commands:

SetInstrPower(STAFF_MWF)

2.4.90 Staff SA AGC averaged values

AIT database:

PC_NAME:	EW1AGC0_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	122	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_035	PCF_DESCR	SA AGC BYTE
			0

AIT database:

PC_NAME:	EW1AGC1_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	123	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_036	PCF_DESCR	SA AGC BYTE
			1

AIT database:

PC_NAME:	EW1AGC2_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	124	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_037	PCF_DESCR	SA AGC BYTE
			2

AIT database:

PC_NAME:	EW1AGC3_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	125	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_038	PCF_DESCR	SA AGC BYTE
			3

AIT database:

PC_NAME:	EW1AGC4_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	126	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_039	PCF_DESCR	SA AGC BYTE
			4

AIT database:

PC_NAME:	EW1AGC5_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	127	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_040	PCF_DESCR	SA AGC BYTE
			5

AIT database:

PC_NAME:	EW1AGC6_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	128	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_041	PCF_DESCR	SA AGC BYTE
			6

AIT database:

PC_NAME:	EW1AGC7_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	129	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_042	PCF_DESCR	SA AGC BYTE
			7

AIT database:

PC_NAME:	EW1AGC8_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	130	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_043	PCF_DESCR	SA AGC BYTE
			8

AIT database:

PC_NAME:	EW1AGC9_	PC_UNIT:	ST_SA
PC_TYPE:	A	FORMAT:	4.0f
LOC1:	131	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_044	PCF_DESCR	SA AGC BYTE
			9

Description:

For each of the correlation channels (up to nine), SA maintains an auto gain control mechanism. Bytes representing these AGC's are transmitted within SA science to DWP. DWP will extract these and average channel AGC's over the number of frames received within a 5.1 second interval. These bytes (up to 9, determined by SA mode) will be written into the 10 locations reserved for SA AGC averaged values, starting from the base of the area. Bytes not containing AGC values are undefined.

Antenna	Frequency Band
AGC0 Bvz	C
AGC1 Bx	C
AGC2 Bx	B
AGC3 Eyz	C
AGC4 Eyz	B
AGC5 Byz	B
AGC6 Byz	A
AGC7 Bx	A
AGC8 No meaning	No meaning
AGC9 Eyz	A

This table is ONLY TRUE IF STAFF IS IN NORMAL MODE.

It will be necessary to know the position of each AGC as a function of the mode. *(To be supplied by Staff later.)*

The AGC value is cleared to zero when STAFF_SA becomes passive, unless STAFF is in calibration mode when the last value is frozen.

Related parameters:

Staff SA power status, Staff SA instrument disabled, Staff SA not working.

Related commands:

2.4.91 Staff SA analysis mode

AIT database:

PC_NAME:	EW1AMODE	PC_UNIT:	ST_SA
PC_TYPE:	D	PCD_TEXT:	ST1AMODE
LOC1:	112	MASK:	0x0F
PC_COND:	S_028		
CPCF_NAME	S_022	PCF_DESCR	ST_SA ANALY MODE

TX_NAME:		STIAMODE	
TX_DESCR:		Staff SA analysis mode text	
	STR_LO	STR_HI	STR_TXS
1	0	0	NORM_1
2	1	1	NORM_2E
3	2	2	NORM_2B
4	3	3	ILLEGAL
5	4	4	EMERGENCY MD
6	5	5	SPECIAL MODE
7	6	6	NORM_1'E
8	7	7	NORM_1'B
9	8	8	FAST_1
10	9	9	FAST_3E
11	A	A	FAST_3B
12	B	B	ILLEGAL
13	C	C	FAST_2
14	D	D	ILLEGAL
15	E	E	ILLEGAL
15	F	F	PASSIVE

Description:

Indicates the Staff spectrum analyser analysis mode.

Related parameters:

Staff SA AGC averaged values

Related commands:

2.4.92 Staff SA despin mode

AIT database:

PC_NAME:	EWIDSPIN	PC_UNIT:	ST_SA
PC_TYPE:	D	PCD_TEXT:	ST1DSPIN
LOC1:	112	MASK:	0x20
PC_COND:	S_028		
CPCF_NAME	S_048	PCF_DESCR	ST_SA_DESPI
			N

TX_NAME:		ST1DSPIN	
TX_DESCR:		Staff SA despin mode text	
	STR_LO	STR_HI	STR_TXS
1	0	0	Despin On
2	1	1	Despin Off

Description

Related Parameters

Related Commands

2.4.93 Staff SA error word

AIT database:

PC_NAME:	EW1EWORD	PC_UNIT:	ST_SA
PC_TYPE:	R	FORMAT:	4x
LOC1:	108	MASK:	0x1F
LOC1:	109	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_024	PCF_DESCR	ST_SA ERROR WORD

Description:

This word is set to zero after transmission of every WEC Housekeeping block. A zero pattern indicates that no SA errors have occurred.

If bits within the error word marked with * are set to 1, then DWP will automatically reset the SA instrument and set EW1EREST to 1 to indicate it has done so.

If DWP receives a response tag with a non-zero error field, then bit 0x0002 will be set, and the error field of the response tag copied to bits 0x0F00.

If voltage drops below $V_{nom}/4$ then bit 0x0080 of the SA Error word is set, and the Staff SA Latchup Count (EW1LUDET) incremented by 4. DWP then immediately powers off SA.

If the Staff SA Latchup Count is 12 then DWP will set EW1ENWRK to indicate failure of SA. It will not attempt to restart SA.

Bit mask	Description: of problem
0x1000	Unexpected end of data detected
0x0F00	Last non-zero error field of reponse tag
0x0080	low voltage detected, power cycling required
0x0020 *	DWP has timed out waiting for SA response tag
0x0010 *	Command echo bits of response tag were wrong
0x0008 *	Packet size field of telemetry packet wrong
0x0004 *	Bad end of packet value (not #3D)
0x0002	If set, non-zero error field in response tag
0x0001 *	received telemetry from SA when none expected

Related parameters:

Staff SA latchup count, Staff SA not working.

Related commands:

SetInstrPower

2.4.94 Staff SA instrument disabled

AIT database:

PC_NAME:	EW1INSDS	PC_UNIT:	ST_SA
PC_TYPE:	D	PCD_TEXT:	STNINSDS
LOC1:	53	MASK:	0x02
PC_COND:	G_B10		
CPCF_NAME	S_025	PCF_DESCR	ST_SA INST CONF

TX_NAME:	STNINSDS		
TX_DESCR:	Instrument disabled text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INS_DISABLED

Description:

Staff SA instrument disabled is non-zero when Staff SA instrument control and operation has been disabled by the **FlagInstrFail** telecommand. The instrument will only be disabled in the event

of a problem that does not allow Staff SA to be operated correctly, e.g. a shortage of electrical power or a critical hardware failure.

When Staff SA instrument control is disabled the Staff SA instrument will be off and will not respond to any **SetInstrPower(Staff SA)** commands.

The value of **Staff SA instrument disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW instrument disabled, Staff MWF instrument disabled, Wideband instrument disabled, Whisper instrument disabled, Whisper transmitter disabled.

Related commands:

FlagInstrFail(DISABLE, STAFF_SA) will set this parameter.

FlagInstrFail(ENABLE, STAFF_SA) will clear this parameter.

2.4.95 Staff SA latchup count

AIT database:

PC_NAME:	EWILUCNT	PC_UNIT:	ST_SA
PC_TYPE:	R	FORMAT:	2x
LOC1:	107	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	S_026	PCF_DESCR	ST_SA L-UP COUNT

Description:

DWP provides monitoring of the digital voltage rails of the Staff instruments in order to detect latchup. This monitoring is performed once per second for each digital voltage rail in each instrument.

In the event of detecting low voltage (less than $V_{nom} / 4$), DWP turns off the power to the instrument. The latchup count for the instrument is incremented by 4. If this count less than 12, DWP turns on the power to the instrument 15-20 seconds later, and normal operations are resumed.

If the count is equal to 12, DWP will not turn the instrument back on again, unless a telecommand is received to tell it to do so.

If non-zero, the latchup count is decremented by 1 every VC0 while the instrument is on. In this way a number of Staff low voltage detections over a long period of time will not cause the Staff instruments to be powered off indefinitely.

Related parameters:

Staff SA not working (EW1ENWRK), Staff SA voltage monitor 0, Staff SA voltage monitor 1, Staff SA voltage monitor 2.

Related commands:

2.4.96 Staff SA latchup monitor control

AIT database:

PC_NAME:	EWIMONDS	PC_UNIT:	ST_SA
PC_TYPE:	D	PCD_TEXT:	STNMONDS
LOC1:	52	MASK:	0x10
PC_COND:	G_B10		
CPCF_NAME	S_027	PCF_DESCR	ST_SA L-UP MONIT

TX_NAME:	STNMONDS		
TX_DESCR:	Latchup monitor text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	L_UP_MON_DIS

Description:

If non-zero the Staff Spectrum Analyser latchup monitoring normally performed by DWP has been disabled by telecommand (FlagIntfFail; ZEWMs03S).

Related parameters:

Related commands:

FlagIntfFail

2.4.97 Staff SA not working

AIT database:

PC_NAME:	EW1ENWRK	PC_UNIT:	ST_SA
PC_TYPE:	D	PCD_TEXT:	STNENWRK
LOC1:	108	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	S_023	PCF_DESCR	ST_SA NO WORKING

TX_NAME:	STNENWRK		
TX_DESCR:	Instrument not working text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INST_NOT_WRK

Description:

If non-zero the Staff SA instrument is not working (repeated low voltage detected).

Related parameters:

Staff SA latch up count (EW1LUDET), Staff SA voltage monitor 0, Staff SA voltage monitor 1, Staff SA voltage monitor 2.

Related commands:

2.4.98 Staff SA number of zeros

AIT database:

PC_NAME:	EW1ZCNTR	PC_UNIT:	ST_SA
PC_TYPE:	R	FORMAT:	2x
LOC1:	120	MASK:	0xFF
LOC2:	121	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_034	PCF_DESCR	ST_SA NR OF ZERO

Description:

The number of zero values in the last Staff SA data frame.

In all SA modes, DWP will insert in the HK the number of zeros in the last packet received from SA. A large number of zeros would indicate a memory or ADC or analog amplifier failure.

Related parameters:

Staff SA AGC0,1, 9.

Related commands:

2.4.99 Staff SA power status

AIT database:

PC_NAME:	EW1PWRST	PC_UNIT:	S_SA
PC_TYPE:	D	PCD_TEXT:	STNPWRST
LOC1:	24	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	S_028	PCF_DESCR	ST_SA PWR STATUS

TX_NAME:	STNPWRST		
TX_DESCR:	Instrument power status text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Staff SA power status indicates the power status of the Staff SA instrument. A value of zero means that Staff SA is not powered (OFF), non-zero means that Staff SA is powered (ON).

When **SetInstrPower(ON, Staff SA)** is executed DWP will drive the Staff SA power ON relay in the WEC PWR supply, and **Staff SA power status** will be set to one. **Staff SA power status** will remain set until either:

- i/ a **SetInstrPower(OFF,STAFF_SA)** command is received, or
- ii/ a **FlagInstrFail(DISABLE,STAFF_SA)** command is received, or
- iii/ a **DWPConfig** command is received.

Any of the above commands will cause DWP to drive the Staff SA power OFF relay in the WEC PWR unit.

The value of **Staff SA power status** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW power status, Staff MWF power status, Whisper power status, Wideband power status, Whisper TX power status, Staff SA voltage monitor 0, Staff SA voltage monitor 1, Staff SA voltage monitor 2.

Related commands:

SetInstrPower(Staff SA), FlagInstrFail(Staff SA).

2.4.100 Staff SA relay cycles

AIT database:

PC_NAME:	EWIRLCYC	PC_UNIT:	S_SA
PC_TYPE:	R	FORMAT:	2x
LOC1:	24	MASK:	0x3F
PC_COND:	G_B10		
CPCF_NAME	S_029	PCF_DESCR	ST_SA REL CYCLES

Description:

Staff SA relay cycles indicates the number of times DWP has driven the Staff SA ON relay in the WEC PWR supply since the last DWP reset. This parameter can be used to confirm **SetInstrPower(ON,STAFF_SA)** commands have been executed successfully.

The maximum number of relay cycles that can be reported in this parameter is 63. Another Staff SA relay ON operation will cause the count to wrap around to 0.

The value of **Staff SA relay cycles** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Staff SA power status, EFW relay cycles, Staff MWF relay cycles, Whisper relay cycles, Whisper TX relay cycles, Wideband relay cycles.

Related commands:

SetInstrPower(ON,STAFF_SA).

2.4.101 Staff SA temperature monitor

AIT database:

PC_NAME:	EW1TMON	PC_UNIT:	ST_SA
PCA_UNIT	CELC	FORMAT:	6.2f
PC_TYPE:	A	CA_CURVE:	CC1TMON
LOC1:	101	MASK:	0xFF
PC_COND:	S_028		
CPCF_NAME	S_030	PCF_DESCR	ST_SA TEMP MONIT

CA_NAME:	CC1TMON		
	Staff SA thermistor calibration		
CA_UNIT:	CELSIUS		
X01	0	Y01	200
X02	11	Y02	100
X03	20	Y03	80
X04	37	Y04	60
X05	69	Y05	40
X06	116	Y06	20
X07	171	Y07	0
X08	213	Y08	-20
X09	132	Y09	-40
X10	241	Y10	-60
X11	255	Y11	-200

Description:

Temperature monitor for the Staff spectrum analyser instrument measured via the DWP analog to digital converter.

Related parameters:

Staff SA power status.

Related commands:

2.4.102 Staff SA voltage monitor 0

AIT database:

PC_NAME:	EW1VMON0	PC_UNIT:	ST_SA
PCA_UNIT	VOLT	FORMAT:	6.2f
PC_TYPE:	A	CA_CURVE:	CC1VMON0
LOC1:	93	MASK:	0xFF
PC_COND:	S_028	PCF_DESCR	ST_SA VOLT
CPCF_NAME	S_031		MON 0

CA_NAME:	CC1VMON0		
	Staff SA voltage monitor 0 cal		
CA_UNIT:	VOLT		
X01	0	Y01	0.00
X02	255	Y02	6.87

Lower limit:	0xDC	(5.927 V)
Higher limit	0xE6	(6.196 V)

Description:

Supply voltage monitors for the Staff spectrum analyser instrument.

Related parameters:

Staff SA power status, Staff SA voltage monitor 1, Staff SA voltage monitor 2.

Related commands:

2.4.103 Staff SA voltage monitor 1

AIT database:

PC_NAME:	EW1VMON1	PC_UNIT:	ST_SA
PCA_UNIT	VOLT	FORMAT:	6.2f
PC_TYPE:	A	CA_CURVE:	CC1VMON1
LOC1:	92	MASK:	0xFF
PC_COND:	S_028	PCF_DESCR	ST_SA VOLT
CPCF_NAME	S_032		MON 1

CA_NAME:	CC1VMON1		
	Staff SA voltage monitor 1 cal		
CA_UNIT:	VOLT		
X01	0	Y01	-7.310
X02	255	Y02	-1.670

Lower limit:	0x3A	(-6.027 V)
Higher limit	0x44	(-5.806 V)

Description:

Supply voltage monitors for the Staff spectrum analyser instrument.

Related parameters:

Staff SA power status, Staff SA voltage monitor 0, Staff SA voltage monitor 2.

Related commands:

2.4.104 Staff SA voltage monitor 2

AIT database:

PC_NAME:	EW1VMON2	PC_UNIT:	ST_SA
PCA_UNIT	VOLT	FORMAT:	6.2f
PC_TYPE:	A	CA_CURVE:	CC1VMON2
LOC1:	95	MASK:	0xFF
PC_COND:	S_028	PCF_DESCR	ST_SA VOLT
CPCF_NAME	S_033		MON 2

CA_NAME:		CC1VMON2	
		Staff SA voltage monitor 2 cal	
CA_UNIT:		VOLT	
X01	0	Y01	0.00
X12	255	Y12	6.38

Lower limit: 0xD7 (5.379 V)

Higher limit 0xE1 (5.629 V)

Description:

Supply voltage monitors for the Staff spectrum analyser instrument.

Related parameters:

Staff SA power status, Staff SA voltage monitor 0, Staff SA voltage monitor 1.

Related commands:

2.4.105 Staff SA whisper transmitter was active

AIT database:

PC_NAME:		EW1WHWSA	PC_UNIT:		ST_SA
PC_TYPE:		D	PCD_TEXT:		ST1WHWSA
LOC1:		112	MASK:		0x40
PC_COND:		S_028	PCF_DESCR		WH DURING
CPCF_NAME		S_045			SA

TX_NAME:		ST1WHWSA	
TX_DESCR:		Staff SA whisper transmitter was active text	
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	WH DURING SA

Description:

This parameter is set to 1 if the WHISPER transmitter was active during the current SA analysis, otherwise it is set to 0.

Related parameters:

STAFF SA Analysis mode (EW1AMODE).

Related commands:

2.4.106 Telecommand assembly status

AIT database:

PC_NAME:	EW5TCASS	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	187	MASK:	0xFF
LOC2:	186	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_069/D_D01	PCF_DESCR	DWP CMD ASS STAT

Description:

Telecommand assembly status is zero when only single word telecommands are being received by DWP.

When the first memory load of a double word telecommand is received by DWP, DWP copies the word into **telecommand assembly status**. The non-zero value of this parameter flags that the next memory load received by DWP must be the second word of the double word telecommand. After receiving this second word **telecommand assembly status** is set to zero. In practice this parameter will rarely be set because it is unlikely that HK will be sampled in the normally short interval between double word commands.

The value of **Telecommand assembly status** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Telecommand extension invalid.

Related commands:

Any double word commands, these are **DWPCmdCommand**, **MacroLoad**, **SetDWPMemReadAddr**, **SetDWPMemWriteAddr**, **LoadKernelMemory**, **FlagExtExpStatus**, **SetWECPwrLimit**.

2.4.107 Telecommand echo

AIT database:

PC_NAME:	EW5MLECC	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	54	MASK:	0xFF
LOC1:	55	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_046	PCF_DESCR	ML ECHO COUNT

PC_NAME:	EW5MLEC1	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	56	MASK:	0xFF
LOC2:	57	MASK:	0xFF
PC_COND:	D_046>=1		
CPCF_NAME	D_037	PCF_DESCR	ML ECHO WORD 1

PC_NAME:	EW5MLEC2	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	58	MASK:	0xFF
LOC2:	59	MASK:	0xFF
PC_COND:	D_046>=2		
CPCF_NAME	D_038	PCF_DESCR	ML ECHO WORD 2

PC_NAME:	EW5MLEC3	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	60	MASK:	0xFF
LOC2:	61	MASK:	0xFF
PC_COND:	D_046>=3		
CPCF_NAME	D_039	PCF_DESCR	ML ECHO WORD 3

PC_NAME:	EW5MLEC4	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	62	MASK:	0xFF
LOC2:	63	MASK:	0xFF
PC_COND:	D_046>=4		
CPCF_NAME	D_040	PCF_DESCR	ML ECHO WORD 4

PC_NAME:	EW5MLEC5	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	64	MASK:	0xFF
LOC2:	65	MASK:	0xFF
PC_COND:	D_046>=5		
CPCF_NAME	D_041	PCF_DESCR	ML ECHO WORD 5

PC_NAME:	EW5MLEC6	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	66	MASK:	0xFF
LOC2:	67	MASK:	0xFF
PC_COND:	D_046>=6		
CPCF_NAME	D_042	PCF_DESCR	ML ECHO WORD 6

PC_NAME:	EW5MLEC7	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	68	MASK:	0xFF
LOC2:	69	MASK:	0xFF
PC_COND:	D_046>=7		
CPCF_NAME	D_043	PCF_DESCR	ML ECHO WORD 7

PC_NAME:	EW5MLEC8	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	70	MASK:	0xFF
LOC2:	71	MASK:	0xFF
PC_COND:	D_046>=8		
CPCF_NAME	D_044	PCF_DESCR	ML ECHO WORD 8

PC_NAME:	EW5MLEC9	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	72	MASK:	0xFF
LOC2:	73	MASK:	0xFF
PC_COND:	D_046>=9		
CPCF_NAME	D_045	PCF_DESCR	ML ECHO
			WORD 9

PC_NAME:	EW5MLE10	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	74	MASK:	0xFF
LOC2:	75	MASK:	0xFF
PC_COND:	D_046>=10		
CPCF_NAME	D_031	PCF_DESCR	ML ECHO
			WORD 10

PC_NAME:	EW5MLE11	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	76	MASK:	0xFF
LOC2:	77	MASK:	0xFF
PC_COND:	D_046>=11		
CPCF_NAME	D_032	PCF_DESCR	ML ECHO
			WORD 11

PC_NAME:	EW5MLE12	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	78	MASK:	0xFF
LOC2:	79	MASK:	0xFF
PC_COND:	D_046>=12		
CPCF_NAME	D_033	PCF_DESCR	ML ECHO
			WORD 12

PC_NAME:	EW5MLE13	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	80	MASK:	0xFF
LOC2:	81	MASK:	0xFF
PC_COND:	D_046>=13		
CPCF_NAME	D_034	PCF_DESCR	ML ECHO
			WORD 13

PC_NAME:	EW5MLE14	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	82	MASK:	0xFF
LOC2:	83	MASK:	0xFF
PC_COND:	D_046>=14		
CPCF_NAME	D_035	PCF_DESCR	ML ECHO
			WORD 14

PC_NAME:	EW5MLE15	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	84	MASK:	0xFF
LOC2:	85	MASK:	0xFF
PC_COND:	D_046>=15		
CPCF_NAME	D_036	PCF_DESCR	ML ECHO
			WORD 15

Description

16 x 2 byte words of HK are allocated to (memory load) telecommand echo. The purpose of the telecommand echo buffer is to confirm that the telecommands transmitted to DWP between the last two reset pulses have been received correctly. The first word (EW5MLECC) holds a count of the number of telecommand echo words that the buffer holds. This number, n, has a value in the range 0 - 15. When n is greater than 0, then the next n words of the buffer contain the WEC Memory Load words in the order that they were received by DWP.

If more than 15 telecommands are received by DWP, only the first 15 are echoed in the telecommand echo buffer.

The other (15-n) words in the buffer contain DWP Kernel Memory Dump words. Therefore the number of Kernel Memory Dump words output in a HK frame varies according to the number of telecommands received between the last two OBDH reset pulses. After the Housekeeping Snapshot the DWP Memory Dump Read Address pointer is incremented by (15-n) and n reset to zero.

The Kernel Memory Dump words are taken from consecutive addresses of the Kernel Processor Module RAM starting at the DWP Memory Read Address Pointer.

By examination of the Kernel Memory Dump the functionality of the Kernel Processor Module RAM can be verified. Additionally, if Load Kernel Memory is used to upload a new code sequence, the integration in RAM of the new code with the old can be checked.

An exception to the echoing of telecommands occurs during the uploading of a sequence of transputer instruction words following a Load Kernel Memory command. The Load Kernel Memory command will be echoed but the following transputer instructions will not. The correct uploading of the instructions can be verified by use of the Set DWP Memory Read Address Pointer command and examination of the Kernel Memory Dump in the Housekeeping Block.

Related parameters:

Related commands:

2.4.108 Telecommand extension invalid

AIT database:

PC_NAME:	EW5EITEW	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5EITEW
LOC1:	6	MASK:	0x20
PC_COND:	G_B10		
CPCF_NAME	D_018	PCF_DESCR	INVALID TC EXTEN

TX_NAME:	ST5EITEW		
TX_DESCR:	Telecommand ext word error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	TCM_EXT_ERR

Description:

Telecommand extension invalid will be non-zero if the DWP kernel expected to read the second memory load of a double word command sequence, and the memory load command read was not a valid extension word. This will be the case if either the extension field bit of the memory load is zero, or the main function field bit pattern is not all ones. Both the previous memory load and the illegal extension memory load will then be ignored by DWP. DWP will re-initialise its command receiver so that it is no longer expecting an extension word.

This check applies to memory load commands that are either fetched from the OBDH or from a DWP macro sequence.

Telecommand extension invalid is cleared to zero after each housekeeping snapshot.

Related parameters:

Telecommand echo, Telecommand invalid, Telecommand illegal whilst macro exec, Telecommand when instrument not ready.

2.4.109 Telecommand illegal whilst macro exec

AIT database:

PC_NAME:	EW5TIWME	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	SEW5TIWM
LOC1:	8	MASK:	0x02
PC_COND:	G_B10		
CPCF_NAME	D_070	PCF_DESCR	TC WHILST MACRO

TX_NAME:	SEW5TIWM		
TX_DESCR:	Telecommand illegal whilst macro ext		
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	1	TCM WHIL MAC

Description:

Telecommand illegal whilst macro exec is non-zero if a telecommand that is illegal during macro execution has been received while a macro is executing. The command will be ignored.

Commands that are illegal whilst a macro is executing are:

i/ **SetMacroOps** with either the execute or load function selected

ii/ **MacroLoad**

Telecommand illegal whilst macro exec is cleared to zero after every housekeeping snapshot.

Related parameters:

WEC macro executing, Telecommand echo, Telecommand Invalid, Telecommand extension invalid, Telecommand when instrument not ready.

Related commands:

2.4.110 Telecommand invalid

AIT database:

PC_NAME:	EW5EITCM	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5EITCM
LOC1:	6	MASK:	0x10
PC_COND:	G_B10		
CPCF_NAME	D_017	PCF_DESCR	INVALID TC

TX_NAME:	ST5EITCM		
TX_DESCR:	Invalid telecommand error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	TCM_ERROR

Description:

Telecommand invalid will be non-zero if an attempt was made to execute an invalid telecommand.

An invalid telecommand is one of the following:

- i/ A single word command with all bits of the main function field set to 1
- ii/ A **FlagOBDAHAcqMode** command with an illegal value for the function data field
- iii/ A command that has a value for the sub-function field that does not match the command definitions in WEC[9].
- iv Either **MacroSetCounter**, **MacroTestCounter** or **MacroWaitOrLoop** when not executed from a DWP macro sequence.

Telecommand invalid is cleared to zero after each housekeeping snapshot.

Related parameters:

Telecommand echo, **Telecommand extension invalid**, **Telecommand illegal whilst macro exec**, **Telecommand when instrument not ready**.

Related commands:

2.4.111 Telecommand when instrument not ready

AIT database:

PC_NAME:	EW5ENRDY	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5ENRDY
LOC1:	8	MASK:	0x01
PC_COND:	G_B10		
CPCF_NAME	D_021	PCF_DESCR	INST NOT RDY
			ERR

TX_NAME:	ST5ENRDY		
TX_DESCR:	Instrument not ready error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INST_NOT_RDY

Description:

Telecommand when instrument not ready will be non-zero in either of the following cases:

i/ if a command from the table below is executed when the respective instrument is not powered (or is temporarily powered off for 20-25 seconds due to latchup)

SetEFWComLSBTx
SetEFWComMSBTx
SetSACom
SetWHCom0Tx
SetWHCom1Tx
SetWHCom2Tx
SetWHCom3Tx
SetWBDComLSBTx
SetWBDComMSBTx

Commands that may cause telecommand when instrument not ready error

ii/ if a **StartSTAFFCal** command was executed when **STAFF MWF power state** was zero

iii/ if a **StartSTAFFCal** command was executed when **STAFF SA power state** was non-zero and SA was busy handling analysis or other commands.

Telecommand when instrument not ready is cleared to zero after each housekeeping snapshot.

Related parameters:

EFW power state, STAFF MWF power state, STAFF SA power state, WHISPER power state, WBD power state.

Related commands:

2.4.112 WEC current limit

AIT database:

PC_NAME:	EW5PWRLT	PC_UNIT:	DWP
PCA_UNIT	AMPS	FORMAT:	5.3f
PC_TYPE:	A	PCA_CURVE	CC5WECCS
LOC1:	51	MASK:	0xFF
PC_COND:	G_B10	PCF_DESCR	DWP WEC
CPCF_NAME	D_060		CURR LIM

CA_NAME:	CC5WECCS		
	WEC current sense calibration		
CA_UNIT:	AMPS		
X01	0	Y01	0.000
X02	255	Y02	0.720

Description:

WEC current limit is set by the **SetWECPwrLimit** command. If the value of the **WEC current sense** parameter is greater than **WEC current limit** then DWP will immediately power off all WEC instruments.

The value of **WEC current limit** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

WEC current limit.

Related commands:

SetWECPwrLimit.

2.4.113 WEC current sense

AIT database:

PC_NAME:	EW5WECCS	PC_UNIT:	DWP
PCA_UNIT	AMPS	FORMAT:	6.3f
PC_TYPE:	A	PCA_CURVE	CC5WECCS
LOC1:	91	MASK:	0xFF
PC_COND:	G_B10	PCF_DESCR	WEC CURRENT
CPCF_NAME	D_075		SENS

CA_NAME:	CC5WECCS		
	WEC current sense calibration		
CA_UNIT:	AMPS		
X01	0	Y01	0.000
X02	255	Y02	0.720

Lower limit:	0x13	(0.054 A)
Higher limit	0xD2	(0.593 A)

Description:

WEC current sense measures the total current used by the WEC as measured by PWR and DWP.

If the current drawn is greater than **WEC current limit** then DWP turns off all WEC instruments.

Related parameters:

WEC current limit.

Related commands:

SetWECPwrLimit.

2.4.114 WEC macro counter 0

AIT database:

PC_NAME:	EW5WECC0	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2x
LOC1:	191	MASK	0x3F
PC_COND:	G_B10		
CPCF_NAME	D_074	PCF_DESCR	DWP WEC MAC CNT0

Description:

WEC macro counter 0 shows the current value of the macro counter 0. **WEC macro counter 0** is set with the **MacroSetCounter(COUNTER_0)** command and is decremented by the **MacroTestCounter(COUNTER_0)** command.

The value of **WEC macro counter 0** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

WEC macro executing.

Related commands:

MacroSetCounter(COUNTER_0), MacroTestCounter(COUNTER_0).

2.4.115 WEC macro executing

AIT database:

PC_NAME:	EW5WECMX	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	SEWWECMX
LOC1:	10	MASK:	0x80
PC_COND:	G_B10		
CPCF_NAME	D_079	PCF_DESCR	MACRO EXECUTING

TX_NAME:		SEWWECDMX	
TX_DESCR:		WEC macro executing text	
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	RUNNING

Description:

WEC macro executing will be non-zero if a WEC mode macro is executing.

WEC macro executing is cleared to zero after a DWP power-on or **DWPConfig** command. If no memory load commands are received within 25-30 seconds of the DWP reset then the default DWP macro (starts macro slot 0, offset 0) will begin to execute and **WEC macro executing** will be set non-zero.

After a DWP watchdog reset, **WEC macro executing** will retain the value it had before the reset.

The **SetMacroOps** EXECUTE command will set **WEC macro executing** to non-zero.

If an executing macro terminates or the **SetMacroOps** END command is received **WEC macro executing** is cleared to zero.

Related parameters:

WEC macro loading, WEC macro offset , WEC macro slot.

Related commands:

2.4.116 WEC macro loading

AIT database:

PC_NAME:	EW5WECML	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	SEW5WEWM
LOC1:	10	MASK:	0x40
PC_COND:	G_B10	PCF_DESCR	MACRO
CPCF_NAME	D_076		LOADING

TX_NAME:		SEW5WEWM	
TX_DESCR:		WEC macro loading text	
	STR_LO	STR_HI	STR_TXS
1	0	0	NO MACRO LOD
2	1	1	MACRO LOADING

Description:

WEC macro loading will be non-zero if a WEC mode macro is loading. Most memory load commands received when **WEC macro loading** is non-zero will not be executed, but will be copied to the macro buffer at the position specified by **WEC macro offset** and **WEC macro slot**.

WEC macro loading is cleared to zero after a DWP power-on, **DWPCConfig**, or **SetMacroOps** END, command.

After a DWP watchdog reset, **WEC macro loading** will retain the value it had before the reset.

WEC macro loading will stay set until the new macro sequence has been completely uploaded (ref **SetMacroOps** and **MacroLoad** in WEC[9]) when it will be cleared to zero.

The **SetMacroOps** LOAD or **MacroLoad** commands will set **WEC macro loading** to non-zero.

WEC macro executing, **WEC macro offset** , **WEC macro slot**.

2.4.117 WEC macro offset

AIT database:

PC_NAME:	EW5WECMO	PC_UNIT:	DWP
PC_TYPE:	D		
LOC1:	10	MASK:	0x03
LOC2:	11	MASK:	0xC0
PC_COND:	G_B10		
CPCF_NAME	D_077	PCF_DESCR	WEC MACRO OFFSET

Description:

When **WEC macro executing** is non-zero, **WEC macro offset** holds the offset of the next instruction to be executed from the current macro slot (range 0 to 7).

When **WEC macro loading** is non-zero, **WEC macro offset** holds the offset of the next instruction to be loaded in the current macro slot (range 0 to 7). Most memory load commands

received when **WEC macro loading** is non-zero will not be executed, but will be copied to the macro buffer at the position specified by **WEC macro offset** and **WEC macro slot**.

WEC macro offset is cleared to zero after a DWP power-on or **DWPCConfig** command.

After a DWP watchdog reset, **WEC macro offset** will retain the value it had before the reset.

Related parameters:

WEC macro executing, **WEC macro loading**, **WEC macro slot**.

Related commands:

2.4.118 WEC macro slot

AIT database:

PC_NAME:	EW5WECMS	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2x
LOC1:	11	MASK:	0x3F
PC_COND:	G_B10	PCF_DESC	WEC MACRO
CPCF_NAME	D_078		SLOT

Description:

When **WEC macro executing** is non-zero, **WEC macro slot** gives the number of the macro slot that holds the next instruction to be executed (range 0 to 31).

When **WEC macro loading** is non-zero, **WEC macro slot** gives the number of the macro slot that will store the next memory load command received (range 0 to 31). Most memory load commands received when **WEC macro loading** is non-zero are not executed, but are copied to the macro buffer at the position specified by **WEC macro offset** and **WEC macro slot**.

WEC macro slot is cleared to zero after a DWP power-on or **DWPCConfig** command.

After a DWP watchdog reset, **WEC macro slot** will retain the value it had before the reset.

Related parameters:

WEC macro executing, **WEC macro loading**, **WEC macro offset**.

Related commands:

2.4.119 WEC macro stack ptr

AIT database:

PC_NAME:	EW5WECSP	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2x
LOC1:	189	MASK	0x07
PC_COND:	G_B10		
CPCF_NAME	D_080	PCF_DESCR	DWP MAC STCK PTR

Description:

When **WEC macro stack ptr** is non-zero, it indicates that a macro subroutine call is in progress. A value of zero indicates that no macro subroutine call is executing.

The value of **WEC macro stack ptr** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

WEC macro executing

Related commands:

SetMacroOps(CALL), SetMacroOps(RETURN).

2.4.120 WEC sample clock frequency

AIT database:

PC_NAME:	EW5SCFRQ	PC_UNIT:	DWP
PC_TYPE:	D	PCD_TEXT:	ST5SCFRQ
LOC1:	21	MASK:	0x02
PC_COND:	G_B10		
CPCF_NAME	D_064	PCF_DESCR	WEC S-CLOCK FREQ

TX_NAME:		ST5CSFRQ	
TX_DESCR:		WEC sample clock frequency text	
	STR_LO	STR_HI	STR_TXS
1	0	0	25 HZ
2	1	1	450 HZ

Description:

WEC sample clock frequency is zero when the WEC sample clock frequency is 25 Hz, and one when the sample clock frequency is 450 Hz. The WEC sample clock which controls EFW, STAFF MWF and WHISPER sampling is derived from the DWP master clock.

At either DWP power on, **DWPConfig** or a watchdog reset the DWP master clock crystal oscillator frequency is tested and **DWP master clock status** is initialised. It remains constant thereafter. In the event of the test showing a failure, DWP automatically uses a software generated clock based on transputer timers to generate the master clock, and sets the **DWP master clock generation** parameter.

Related parameters:

DWP master clock status , DWP master clock generation.

Related commands:

2.4.121 WEC sampling offset

AIT database:

PC_NAME:	EW5SSOFF	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	4	MASK:	0x07
LOC2:	5	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	D_068	PCF_DESCR	SAMPLING OFFSET

Description:

The predicted interval of time between the OBDH reset pulse and first transition on the DWP master clock is calculated at the time of the OBDH reset pulse and is stored as **sampling offset**. If the last positive transition of the master clock occurred at time t_p and the OBDH reset pulse occurs at time t_r , then the sampling offset can be calculated as:

$$(t_p + 1.1 \text{ ms}) - t_r$$

The value stored in **sampling offset** measures the interval in microseconds. However, due to internal DWP interrupt latencies, this measurement is subject to errors.

The **sampling offset** is used in decoding the acquisition time for WEC science data packets acquired between the last OBDH reset pulse and the next OBDH reset pulse.

The housekeeping snapshot is taken less than 1 ms after an OBDH reset pulse.

Related parameters:

OBDH reset count is used with **sampling offset** to accurately time tag WEC data (ref section 1.4.5.14 Time tagging of Wec data).

Related commands:

2.4.122 WEC zero byte

AIT database:

PC_NAME:	EW5ZEROB	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	2x
LOC1:	184	MASK:	0xFF
PC_COND:	G_B20		
CPCF_NAME	G_B11	PCF_DESCR	

Description:

This parameter should always have the value zero. If not it may be assumed that the WEC HK telemetry is not valid. This parameter is used as a component of the condition parameter G_B10.

2.4.123 Whisper actual mode word 1

AIT database:

PC_NAME:	EW3WAMW1	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3WHHK		
LOC1:	136	MASK:	0xFF
LOC2:	137	MASK:	0xFF
CPCF_NAME	2L_043	PCF_DESCR	WH ACT STAT
			WD 1

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper actual mode word 1 is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper actual mode word 1 Whisper actual mode word 1 holds the VSP scale factor, the connected antennae, the delay for listen, the slice of fst in N,S, T and C modes. It is part of a checksum in T and U modes.

Related parameters:

Whisper VSP scale factor, Whisper EEPROM checksum.

Related commands:

SetWHCom(n), SetWHCom(n), (n)=0, 1, 2, or3.

2.4.124 Whisper actual mode word 2

AIT database:

PC_NAME:	EW3WAMW2	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3WHHK		
LOC1:	138	MASK:	0xFF
LOC2:	139	MASK:	0xFF
CPCF_NAME	L_044	PCF_DESCR	WH ACT STAT WD 2

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper actual mode word 2 is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper actual mode word 2 describes the operation mode actually run by WHISPER.

Related parameters:

Whisper receiver overflow number, Whisper TX pulse duration, Whisper receiver actual gain, Whisper emission level, Whisper primary mode.

Related commands:

SetWHCom(n), SetWHCom(n), (n)=0, 1, 2, or 3.

Related commands:

None

2.4.125 Whisper actual mode word 3

AIT database:

PC_NAME:	EW3WAMW	PC_UNIT:	WHISPER
	3		
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3WHHK		
LOC1:	140	MASK:	0xFF
LOC2:	141	MASK:	0xFF
CPCF_NAME	L_045	PCF_DESCR	WH ACT STAT
			WD 3

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper actual mode word 3 is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper actual mode word 3 gives the result of the watchdog test, and the repetition and line rows during a WHISPER mode sequence.

Related parameters:

Whisper watchdog test result, Whisper repetition+line row, Whisper LCA row number, Whisper repetition row number.

Related commands:

SetWHCom(n), SetWHCom(n), (n)=0, 1, 2, or 3.

Related commands:

None

2.4.126 Whisper actual mode word 4

AIT database:

PC_NAME:	EW3WAMW4	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3WHHK		
LOC1:	142	MASK:	0xFF
LOC2:	143	MASK:	0xFF
CPCF_NAME	L_046	PCF_DESCR	WH ACT STAT WD 4

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper actual mode word 4 is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper actual mode word 4 is the echo of WCMW0 and WCMW1.

Related parameters:

Whisper actual mode word 5, Whisper command register 0, 1.

Related commands:

SetWHCom0, SetWHCom0Tx, SetWHCom1, SetWHCom1Tx.

2.4.127 Whisper actual mode word 5

AIT database:

PC_NAME:	EW3WAMW5	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3WHHK		
LOC1:	144	MASK:	0xFF
LOC2:	145	MASK:	0xFF
CPCF_NAME	L_047	PCF_DESCR	WH ACT STAT WD 5

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper actual mode word 5 is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper actual mode word 5 is the echo of WCMW2 and contains the frequency point in sounding modes.

Related parameters:

Whisper actual mode word 4, Whisper command register 2, 3.

Related commands:

SetWHCom2, SetWHCom2Tx, SetWHCom3, SetWHCom3Tx.

2.4.128 Whisper bin amplitude

AIT database:

PC_NAME:	EW3BINAM	PC_UNIT:	WHISPER
PC_TYPE:	R		
PC_COND:	EW3BAFLG	FORMAT:	8x
LOC1:	146	MASK:	0xFF
LOC2:	147	MASK:	0xFF
LOC3:	148	MASK:	0xFF
LOC4:	149	MASK:	0xFF
CPCF_NAME	L_003	PCF_DESCR	WH CALIB BIN AMP

CD_NAME:	EW3BAFLG
CD_DESCR:	Whisper bin amplitude flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3BAQSR' = "BA_REQUEST")

Description:

Whisper bin amplitude gives the amplitude of FFT bin at calibration frequency, coded as an unsigned 32-bit integer.

Whisper bin amplitude is only defined in long calibrations (quiet or sounding) DWP transparent mode (WHI_process = 0).

Related parameters:

None.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.129 Whisper bin amplitude or quadratic sum request

AIT database:

PC_NAME:	EW3BAQSR	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3BAQSR
PC_COND:	EW3WHHK		
LOC1:	139	MASK:	0x07
LOC2:	143	MASK:	0x08
LOC3:	145	MASK:	0x7F
CPCF_NAME	L_D02	PCF_DESCR	

TX_NAME:		ST3BAQSR	
TX_DESCR:		Bin Amp or Q Sum display request	
	STR_LO	STR_HI	STR_TXS
1	0x000	0x300	QS_REQUEST
2	0x301	0x37F	BA_REQUEST
3	0x380	0x3FF	NO_REQUEST
4	0x400	0x500	QS_REQUEST
5	0x501	0x57F	BA_REQUEST
6	0x580	0x6FF	NO_REQUEST
7	0x700	0x7FF	QS_REQUEST
8	0x800	0xFF	NO_REQUEST

Text when out of limits: -

CD_NAME:		EW3WHHK
CD_DESCR:		Whisper HK flag
Expression:		'EW3NOHK' = "WHISPER HK"

Description:

Whisper bin amplitude or quadratic sum request is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper bin amplitude or quadratic sum request defines the condition for bin amplitude or quadratic sum display. This parameter is only used in condition expressions which are part of telemetry parameter definitions.

Related parameters:

Whisper primary mode, Whisper data processing, Whisper frequency point.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.130 Whisper calibration result

AIT database:

PC_NAME:	EW3CALRL	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3CALRL
PC_COND:	EW3CRREQ		
LOC1:	146	MASK:	0xFF
LOC2:	147	MASK:	0xFF
CPCF_NAME	L_004	PCF_DESC	WH CLIB RESULT

TX_NAME:	ST3CALRL		
TX_DESCR:	WHISPER calibration result		
	STR_LO	STR_HI	STR_TXS
1	0	0xFFFE	ERROR(S)
2	0xFFFF	0xFFFF	OK

CD_NAME:	EW3CRREQ
CD_DESCR:	Whisper calib. result request
Expression:	('EW3NOHK' = "WHISPER HK") AND (('EW3PMODE' = "CAL.2 SOUND") OR ('EW3PMODE' = "CAL.1 QUIET")) AND ('EW3DATPR' = "WHISPER")

Description:

Whisper calibration result is generated by WHISPER during calibration Whisper processed modes and is updated every time DWP reads a packet from WHISPER.

EW3CALRL = 0xFFFF \Rightarrow calibration OK ; otherwise the error table is given below.

Coding of errors: each step output is compared within WHISPER to a built in reference table. Two ranges are defined. In range 1, the output is at worst equal to the reference value + or - 3dB. In range 2, the output is at worst equal to the reference value + or - 6dB.

	> + 6dB of reference value	
+ 6 dB	-----	-----
	> + 3dB of reference value	↕ range 2
+ 3dB	-----	-----
		-
0dB	----- reference value.-----	range 1
		-
- 3dB	-----	-----
	< - 3dB of reference value	↕ range 2
- 6dB	-----	-----
	< - 6dB of reference value	

TM LOC 1 146 mask 3F mask C0 = 01 mask C0 = 11 mask C0 = 10 mask C0 = 00	step number of first error > + 6dB of reference value, out of range > + 3dB of reference value, in range 2 < - 3dB of reference value, in range 2 < - 6dB of reference value, out of range
TM LOC 2 147 mask 3F mask C0 = 01 mask C0 = 11 mask C0 = 10 mask C0 = 00	step number of second error > + 6dB of reference value, out of range > + 3dB of reference value in range 2 < - 3dB of reference value, in range 2 < - 6dB of reference value, out of range

Related parameters:

None.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.131 Whisper command mode

AIT database:

PC_NAME:	EW3MODE	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT	ST3MODE
PC_COND:	EW3WHHK		
LOC1:	142	MASK:	0x70
CPCF_NAME	L_019	PCF_DESCR	WHISPER CMD
			MODE

TX_NAME:	ST3MODE		
TX_DESCR:	Whisper actual running mode		
	STR_LO	STR_HI	STR_TXS
1	0	0	CONT.1 (N)
2	1	1	TRACKNG/UPLD
3	2	2	SOUNDING
4	3	3	CAL.2 SOUND
5	4	4	NATURAL WAVE
6	5	5	CAL.1 QUIET
7	6	6	TROUBLESHOOT
8	7	7	CONT.2 (S)

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

WHISPER command mode as defined in WCMW echo.

Related parameters:

Whisper actual mode word 4.

Related commands:

SetWHCom0, SetWHCom0Tx.

2.4.132 Whisper command register 0

AIT database:

PC_NAME:	EW3CREG0	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2x
LOC1:	175	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_005	PCF_DESCR	WH-DWP CMD REG 0

Description:

The **SetWHCom0** and **SetWHCom0Tx** commands set **Whisper command register 0.**

The value of **Whisper command register 0** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Whisper command register 1, Whisper command register 2, Whisper command register 3.

Related commands:

SetWHCom0, SetWHCom0Tx.

2.4.133 Whisper command register 1

AIT database:

PC_NAME:	EW3CREG1	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2x
LOC1:	177	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_006	PCF_DESCR	WH-DWP CMD REG 1

Description:

The **SetWHCom1** and **SetWHCom1Tx** commands set **Whisper command register 1**.

The value of **Whisper command register 1** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Whisper command register 0, Whisper command register 2, Whisper command register 3.

Related commands:

SetWHCom1, SetWHCom1Tx.

2.4.134 Whisper command register 2

AIT database:

PC_NAME:	EW3CREG2	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2x
LOC1:	179	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_007	PCF_DESCR	WH-DWP CMD REG 2

Description:

The **SetWHCom2** and **SetWHCom2Tx** commands set **Whisper command register 2**.

The value of **Whisper command register 2** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Whisper command register 0, Whisper command register 1, Whisper command register 3.

Related commands:

SetWHCom2, SetWHCom2Tx.

2.4.135 Whisper command register 3

AIT database:

PC_NAME:	EW3CREG3	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2x
LOC1:	181	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_008	PCF_DESCR	WH-DWP CMD REG 3

Description:

The **SetWHCom3** and **SetWHCom3Tx** commands set **Whisper command register 3**.

The value of **Whisper command register 3** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Whisper command register 0, Whisper command register 1, Whisper command register 2.

Related commands:

SetWHCom3, SetWHCom3Tx.**2.4.136 Whisper command word error**

AIT database:

PC_NAME:	EW3EWCW	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3EWCW
PC_COND:	EW3WHHK		
LOC1:	135	MASK:	0x03
CPCF_NAME	2L_012	PCF_DESCR	WH CMD
			WORD ERR

TX_NAME:	ST3EWCW		
TX_DESCR:	Whisper command word error text		
	STR_LO	STR_HI	STR_TXS
1	0	0	-
2	1	1	WCW BAD MSB
3	2	2	WCW BAD ECHO
4	3	3	WCW BAD ALL

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper command word error is generated by DWP.

Bits set represent errors relating to the **Whisper command word** transmission from DWP to WHISPER.

1. no error
2. a WCMW was received by DWP with an incorrect most significant bit.
3. WCMW echoed by WHISPER does not match the WCMW transmitted by DWP to WHISPER.
4. the 2 previous errors are detected.

Related parameters:

Whisper command register 0, 1, 2, 3.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.137 Whisper data processing

AIT database:

PC_NAME:	EW3DATPR	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3DATPR
PC_COND:	EW3WHHK		
LOC1:	143	MASK:	0x08
CPCF_NAME	2L_009	PCF_DESCR	WH DATA PROCESS

TX_NAME:	ST3DATPR		
TX_DESCR:	Whisper data processing		
	STR_LO	STR_HI	STR_TXS
1	0	0	DWP
2	1	1	WHISPER

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper data processing is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper data processing is 1 if the data are either processed internally by WHISPER for some dedicated modes or limited in order to fit into the allocated data flow.

Whisper data process is 0 if the data are processed by DWP according to the parameter **Whisper data processing control**.

Related parameters:

Whisper data processing control, Whisper actual mode word 4.

Related commands:

Echo of the command **SetWHCom1**, mask 0x08 or **SetWHCom1Tx**, mask 0x08.

2.4.138 Whisper data processing control

AIT database:

PC_NAME:	EW3WPW	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
LOC1:	36	MASK:	0xFF
LOC2:	37	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_049	PCF_DESCR	WH-DWP
			DATA PROC

Description:

The raw WHISPER data bitrate is far greater than the entire WEC allocation. Usually it is expected that DWP will apply a variety of scientific processing on this data to reduce the bitrate to a reasonable level. A bit in the WHISPER mode command word defines whether either DWP should perform the processing, or WHISPER itself should limit its data bitrate. The WHISPER mode command word is controlled by the **SetWHCom~~n~~** and **SetWHCom~~n~~Tx** commands.

When WHISPER limits the data bitrate itself, DWP does not reference the selected WHISPER processing but outputs all WHISPER data as read, to the OBDH. When DWP processing is selected, a copy of the latest **SetWHDataProc** command operand is transmitted with every data packet from WHISPER to the application processor. The processing performed by the application processor is controlled according to the table below.

Full details of the DWP processing strategies for WHISPER are given in [3].

WHISPER Processing Word (WPW) - "Natural Waves" modes (N)

MSB	MS byte	LSB	MSB	LS byte	LSB	
...		
.:.....:.						
:7	6	5	4	3	2	1 0:
:.....:						
:.....:						
:.....:						
0	0	0	0	0	0	0 0
:						: : : : :.... Averaged spectrum output rate
:						: : : : :..... Energy and overflow averaging
:						: : : : :..... Spare bit (set to 0)
:						: : : : :..... FFT data compression
:						: : : : :..... reserved (set to 0)


```
MSB  MS byte  LSB MSB  LS byte  LSB
...
.:.....: .:.....:
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
: :
0 0 0 0 0 0 0 0 : :
: :      dynamic range
: 0 ----- adjusted range
: 1 ----- fixed range
:      word size
0 ----- 8 bits
1 ----- 6 bits
```

WHISPER Processing Word (WPW) - "Sounding" modes (S)

```

MSB  MS byte  LSB MSB  LS byte  LSB
...
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
:.....: :.....:
:.....: :.....:
0 0 : : : : : : : Spare bit (set to 0)
: : : : : : :
: : : : : : : Reduced passive spectrum
: : : : : : : (valid for option A, B, D)
: : : : : : : Bin subset selection
: : : : : : : (valid for option A)
: : : : : : : Compression strategy
: : : : : : : FFT data compression
: : : : : : : reserved (set to 0)
: : : : : : : Averaged spectrum output rate
: : : : : : : (Gliding mode only)
: : : : : : : Number of averaged spectra
: : : : : : : (Gliding mode only)

```

FFT data compression

```

MSB  MS byte  LSB MSB  LS byte  LSB
...
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
:.....: :.....:
:.....: :.....:
0 0 0 0 0 0 0 0 : :
: : dynamic range
: 0 ----- adjusted range
: 1 ----- fixed range
: word size
0 ----- 8 bits
1 ----- 6 bits

```


Reduced passive spectrum (valid for option A,B,D of the compression strategy)

```

MSB  MS byte  LSB MSB  LS byte  LSB
...      ...   ...
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
:
0 0
0 ----- present
1 ----- absent

```

Bin subset selection (valid for option A of the compression strategy)

```

MSB  MS byte  LSB MSB  LS byte  LSB
...      ...   ...
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
:
0 0
0 ----- 2 bin subsets
1 ----- 4 bin subsets

```

Compression strategy

Averaged spectrum output rate

```

MSB  MS byte  LSB MSB  LS byte  LSB
...           ...
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
: : :
0 0
0 0 0 ----- output all averaged spectra
0 0 1 ----- output 2 out of 3 averaged spectra
0 1 0 ----- output 1 out of 2 averaged spectra
0 1 1 ----- output 1 out of 3 averaged spectra
1 0 0 ----- output 1 out of 4 averaged spectra
1 0 1 ----- output 1 out of 6 averaged spectra
1 1 0 ----- output 1 out of 8 averaged spectra
1 1 1 ----- output 1 out of 10 averaged spectra

```

Number of averaged passive spectra

```

MSB  MS byte  LSB MSB  LS byte  LSB
...           ...
:7 6 5 4 3 2 1 0: :7 6 5 4 3 2 1 0:
:.....: :.....:
: : :
0 0
0 0 0 --- 32 spectra (426.66 ms)
0 0 1 --- 16 spectra (213.33 ms)
0 1 0 --- 16 spectra (213.33 ms)
0 1 1 --- 8 spectra (106.66 ms)
1 0 0 --- 4 spectra (53.33 ms)
1 0 1 --- 2 spectra (26.66 ms)
1 1 0 --- 64 spectra (853.33 ms)
1 1 1 --- 1 spectrum (13.33 ms)

```

Related parameters:

None.

Related commands:

SetWHDDataProc

2.4.139 Whisper E/R rate

AIT database:

PC_NAME:	EW3ERATE	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3ERATE
PC_COND:	EW3STMDF		
LOC1:	143	MASK:	0x70
CPCF_NAME	L_011	PCF_DESCR	WHISPER E/R RATE

TX_NAME:	ST3ERATE		
TX_DESCR:	Whisper E/R rate		
	STR_LO	STR_HI	STR_TXS
1	0	0	1E1R
2	1	1	1E2R
3	2	2	1E3R
4	3	3	1E5R
5	4	4	1E8R
6	5	5	GLIDING
7	6	6	SYNC A
8	7	7	SYNC B

CD_NAME:	EW3STMDF
CD_DESCR:	Whisper S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND (('EW3PMODE' = "SOUNDING") OR ('EW3PMODE' = "TRACKNG/UPLD") OR ('EW3PMODE' = "CONT.2 (S)"))

Description:

Whisper E/R rate gives the WHISPER emission / reception rate during sounding modes, echo of the command **SetWHCom1** function data masked with 0x70 or the command **SetWHCom1Tx** function data masked with 0x70.

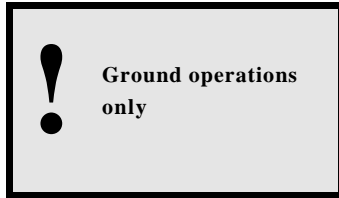
Related parameters:

Whisper actual mode word 4.

Related commands:

SetWHCom1, SetWHCom1Tx.

2.4.140 Whisper EEPROM checksum



AIT database:

PC_NAME:	EW3USUMM	PC_UNIT:	WHISPER
PC_TYPE:	R	PC_TEXT:	
PC_COND:	EW3UMODF	FORMAT:	6x
LOC1:	136	MASK:	0xFF
LOC2:	137	MASK:	0xFF
LOC3:	138	MASK:	0xFF
CPCF_NAME	L_041	PCF_DESCR	WH EEPROM CHKSU

CD_NAME:	EW3UMODF
CD_DESCR:	Whisper uploading mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3WAMW4' = 0x9008)

Description:

ONLY FOR GROUND OPERATIONS!

Whisper EEPROM checksum is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper EEPROM checksum gives the checksum of the WHISPER EEPROM after uploading a new program, locking or unlocking the EEPROM. It is coded as an unsigned 24-bit integer.

Related parameters:

Whisper actual mode word 1, 2.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.141 Whisper emission level

AIT database:

PC_NAME:	EW3TXLVL	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3TXLVL
PC_COND:	EW3CSTMF		
LOC1:	139	MASK:	0x18
CPCF_NAME	L_038	PCF_DESCR	WH EMISSION
			LEVEL

TX_NAME:	ST3TXLVL		
TX_DESCR:	Whisper emission level		
	STR_LO	STR_HI	STR_TXS
1	0	0	NO EMISSION
2	1	1	50 VPP
3	2	2	100 VPP
4	3	3	200 VPP

CD_NAME:	EW3CSTMF
CD_DESCR:	Whisper C, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK")
	AND ('EW3PMODE' <> "CONT.1 (N)")
	AND ('EW3PMODE' <> "NATURAL WAVE")
	AND ('EW3PMODE' <> "TROUBLESHOOT")

Description:

Whisper emission level gives the WHISPER actual emission level during sounding or calibration modes according to the table below:

1	0	Emission level
0	0	no emissiom
0	1	50 volt pp
1	0	100 volt pp
1	1	200 volt pp

Emission level

Whisper emission level is generated by WHISPER when these modes are running and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode 2, 4.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.142 Whisper frequency point

AIT database:

PC_NAME:	EW3FRQPT	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2x
PC_COND:	EW3CSTMF		
LOC1:	145	MASK:	0x7F
CPCF_NAME	L_013	PCF_DESCR	WH TX
			FREQUENCY

CD_NAME:	EW3CSTMF
CD_DESCR:	Whisper C, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3PMODE' <> "CONT.1 (N)") AND ('EW3PMODE' <> "NATURAL WAVE") AND ('EW3PMODE' <> "TROUBLESHOOT")

Description:

Whisper frequency point gives the WHISPER frequency point transmitted during a sounding or calibration mode; in the WHISPER processed sounding mode it shows the frequency point corresponding to the maximum bin detected.

Whisper frequency point is generated by WHISPER during these modes and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 5.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.143 Whisper HK flag

AIT database:

PC_NAME:	EW3NOHK	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3NOHK
LOC1:	132	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	L_021	PCF_DESCR	WHISPER HK FLAG

TX_NAME:	ST3NOHK		
TX_DESCR:	Whisper HK flag		
	STR_LO	STR_HI	STR_TXS
1	0	0	WHISPER HK
2	1	1	NO WHISPR HK

Description:

Whisper HK flag if zero indicates that bytes 134 to 149 of housekeeping are WHISPER HK.

The flag is set when the command to route WBD through DWP is received by BWP and WHISPER is OFF.

Related parameters:

Conflict with Whisper, Conflict with WBD.

Related commands:

SetWBDDataPath

2.4.144 Whisper instrument disabled

AIT database:

PC_NAME:	EW3INSDS	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	STNINSDS
LOC1:	53	MASK:	0x08
PC_COND:	G_B10		
CPCF_NAME	L_016	PCF_DESCR	WH INST STATUS

TX_NAME:		STNINSDS	
TX_DESCR:		Instrument disabled text	
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INS_DISABLED

Description:

Whisper instrument disabled is non-zero when Whisper instrument control and operation has been disabled by the **FlagInstrFail** telecommand. The instrument will only be disabled in the event of a problem that does not allow Whisper to be operated correctly, e.g. a shortage of electrical power or a critical hardware failure.

When Whisper instrument control is disabled the Whisper instrument will not respond to any **SetInstrPower(WHISPER)** commands.

The value of **Whisper instrument disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW instrument disabled, Staff SA instrument disabled, Staff MWF instrument disabled, Wideband instrument disabled, Whisper transmitter disabled.

Related commands:

FlagInstrFail(DISABLE, WHISPER) will set this parameter.

FlagInstrFail(ENABLE, WHISPER) will clear this parameter.

2.4.145 Whisper interface status

AIT database:

PC_NAME:	EW3IFST	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3IFST
PC_COND:	EW3WHHK		
LOC1:	134	MASK:	0xFF
LOC2:	135	MASK:	0x02
CPCF_NAME	D_096	PCF_DESC	WH I/F STAT
			RAW

TX_NAME:	ST3IFST		
TX_DESCR:	Whisper interface status		
	STR_LO	STR_HI	STR_TXS
1	0	0	OK
2	1	0xFFFF	FAILURE

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper interface status if non-zero indicates a WHISPER interface failure.

Related parameters:

None.

Related commands:

None.

2.4.146 Whisper latchup count

AIT database:

PC_NAME:	EW3LUCNT	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2u
PC_COND:	EW3WHHK		
LOC1:	134	MASK:	0x0F
CPCF_NAME	L_017	PCF_DESCR	WH LATCHUP COUNT

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

The number of times Whisper latch up (alarm signal) has been detected.

DWP provides monitoring of the WHAlarm signal to detect latchup in the Whisper instrument. This monitoring is performed once per 1.1 ms. In the event of detecting the WHAlarm active level,

DWP turns off the power to WHISPER. The count of the number of latchup detections for Whisper is incremented by 4. If this count is less than 12, DWP turns on the power to Whisper 15-20 seconds later, and normal operations are resumed.

If the count is equal to 12, DWP will not turn Whisper back on again, unless a telecommand is received to tell it to do so.

If non-zero, the latchup count is decremented by one each VCO whilst Whisper power is on. In this way Whisper latchup detections over a long period of time will not cause Whisper to be powered off indefinitely.

Related parameters:

Whisper latchup detection, Whisper latchup monitor control, Whisper not working.

Related commands:

None.

2.4.147 Whisper latchup detection

AIT database:

PC_NAME:	EW3LUDET	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3LUDET
PC_COND:	EW3WHHK		
LOC1:	134	MASK:	0x10
CPCF_NAME	L_018	PCF_DESCR	WH LATCHUP FLAG

TX_NAME:	ST3LUDET		
TX_DESCR:	Whisper latchup detection		
	STR_LO	STR_HI	STR_TXS
1	0	0	NO LATCHUP
2	1	1	LATCHUP

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Set to 1 if Whisper latchup detected, power cycling required.

Related parameters:

Whisper latchup count, Whisper latchup monitor control, Whisper not working.

Related commands:

None.

2.4.148 *Whisper latchup monitor control*

AIT database:

PC_NAME:	EW3MONDS	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	STNMONDS
LOC1:	52	MASK:	0x80
PC_COND:	G_B10		
CPCF_NAME	L_020	PCF_DESCR	WH LATCHUP MONIT

TX_NAME:	STNMONDS		
TX_DESCR:	Latchup monitor text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	L_UP_MON_DIS

Description:

Whisper latchup monitor control is non-zero if the WHISPER latchup monitoring normally performed by DWP has been disabled by the **FlagIntfFail**.

Related parameters:

None.

Related commands:

FlagIntfFail.

2.4.149 Whisper LCA row number

AIT database:

PC_NAME:	EW3STROW	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	3u
PC_COND:	EW3SCMDF		
LOC1:	140	MASK:	0x7F
CPCF_NAME	L_034	PCF_DESC	WH:LCA ROW NUMB

CD_NAME:	EW3SCTMF
CD_DESCR:	Whisper C, N, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3PMODE' <> "TROUBLESHOOT") AND ('EW3WAMW4' <> 0x9008)

Description:

Whisper LCA row number is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper LCA row number gives the WHISPER instrument listen, calibration or average row decrementing down to 1 according to the operation mode running.

Related parameters:

Whisper actual mode word 3, Whisper repetition + line row.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.150 Whisper not working

AIT database:

PC_NAME:	EW3ENWRK	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	STNENWRK
PC_COND:	EW3WHHK		
LOC1:	134	MASK:	0x20
CPCF_NAME	L_010	PCF_DESCR	WH NOT WORKING

TX_NAME:	STNENWRK		
TX_DESCR:	Instrument not working text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INST_NOT_WRK

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper not working is non-zero if the WHISPER instrument is not working (repeated latchup detected).

Related parameters:

Whisper latchup detection, Whisper latchup count, Whisper latchup monitor control.

Related commands:

None.

2.4.151 Whisper power status

AIT database:

PC_NAME:	EW3PWRST	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	STNPWRST
LOC1:	26	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	L_027	PCF_DESCR	WHISPER PWR STAT

TX_NAME:		STNPWRST	
TX_DESCR:		Instrument power status text	
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Whisper power status indicates the power status of the Whisper instrument. A value of zero means that Whisper is not powered (OFF), non-zero means that Whisper is powered (ON).

When **SetInstrPower(ON, WHISPER)** is executed DWP will drive the Whisper power ON relay in the WEC PWR supply, and **Whisper power status** will be set to one. **Whisper power status** will remain set until either:

- i/ a **SetInstrPower(OFF,Whisper)** command is received, or
- ii/ a **DWPCfg** command is received.

Any of the above commands will cause DWP to drive the Whisper power OFF relay in the WEC PWR unit.

The value of **Whisper power status** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW power status, Staff SA power status, Staff MWF power status, Wideband power status, Whisper TX power status.

Related commands:

SetInstrPower(WHISPER), FlagInstrFail(WHISPER).

2.4.152 *Whisper primary mode*

AIT database:

PC_NAME:	EW3PMODE	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3MODE
PC_COND:	EW3WHHK		
LOC1:	139	MASK:	0x07
CPCF_NAME	L_025	PCF_DESCR	WH ACTUAL MODE

TX_NAME:	ST3MODE		
TX_DESCR:	Whisper actual running mode		
	STR_LO	STR_HI	STR_TXS
1	0	0	CONT.1 (N)
2	1	1	TRACKNG/UPLD
3	2	2	SOUNDING
4	3	3	CAL.2 SOUND
5	4	4	NATURAL WAVE
6	5	5	CAL.1 QUIET
7	6	6	TROUBLESHOOT
8	7	7	CONT.2 (S)

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper primary mode is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper primary mode gives the primary WHISPER mode currently running as shown by the table below:

Value	Mode description
0	contingency 1 (natural waves)
1	tracking or uploading (ground ops only)
2	sounding
3	calibration 2 (sounding)
4	natural waves
5	calibration 1 (quiet)
6	troubleshooting (dump)
7	contingency 2 (sounding)

Related parameters:

Whisper actual mode word 2.

Related commands:

SetWHCom0, SetWHCom0Tx.

2.4.153 Whisper quadratic sum

AIT database:

PC_NAME:	EW3QSUM	PC_UNIT:	WHISPER
PC_TYPE:	R	PCD_TEXT:	
PC_COND:	EW3QSFLG	FORMAT:	8x
LOC1:	148	MASK:	0xFF
LOC2:	149	MASK:	0xFF
LOC3:	146	MASK:	0xFF
LOC4:	147	MASK:	0xFF
CPCF_NAME	L_028/L_D03	PCF_DESCR	WH
			QUADRATIC
			SUM

CD_NAME:	EW3QSFLG
CD_DESCR:	Whisper quadratic sum request
Expression:	('EW3NOHK' = "WHISPER HK")
	AND ('EW3BAQSR' = "QS_REQUEST")
	AND ('EW3WAMW4' < > 0x9008)

Description:

Whisper quadratic sum is the quadratic sum of the first 128 sampled data coded as an unsigned 32-bit integer, for sounding, natural and calibration modes.

Whisper quadratic sum is generated by WHISPER and is updated every time DWP reads a packet during these modes.

Related parameters:

None.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.154 Whisper receiver actual gain

AIT database:

PC_NAME:	EW3GAIN	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3GAIN
PC_COND:	EW3SCMDF		
LOC1:	139	MASK:	0x60
CPCF_NAME	L_014	PCF_DESCR	WH ACTUAL GAIN

TX_NAME:	ST3GAIN		
TX_DESCR:	Whisper actual gain		
	STR_LO	STR_HI	STR_TXS
1	0	0	+ 12 DB
2	1	1	+24 DB
3	2	2	+36 DB
4	3	3	+36 DB

CD_NAME:	EW3SCMDF
CD_DESCR:	Whisper C, N, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3PMODE' <> "TROUBLESHOOT") AND ('EW3WAMW4' <> 0x9008)

Description:

Whisper receiver actual gain gives the value of the WHISPER receiver gain during sounding, natural or calibration modes according to the following bit pattern.

1	0	Gain
0	0	gain +12 dB
0	1	gain +24 dB
1	0	gain +36 dB
1	1	gain +36 dB

Value of WHISPER receiver actual gain

Whisper receiver actual gain is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 2, 4.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.155 Whisper reciever connected antennae (Ez, or Ey)

AIT database:

PC_NAME:	EW3ANTEN	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3ANTEN
LOC1:	136	MASK:	0x01
PC_COND:	EW3WHHK	PCF_DESCR	WH RX
CPCF_NAME	L_050		ANTENNAE

TX_NAME:	ST3ANTEN		
TX_DESCR:	Whisper reciever connected antennae (Ez, or Ey)		
	STR_LO	STR_HI	STR_TXS
1	0	0	Ez
2	1	1	Ey

Description

Whisper RX antennae indicates the pair of antennae (Ez or Ey) which is connected to Whisper receiver. 0 indicates Ez, 1 indicates Ey.

Related Parameters

Whisper actual mode word 1.

Related Commands

SetWHCom2,SetWHCom2Tx.

2.4.156 Whisper receiver overflow number

AIT database:

PC_NAME:	EW3OVFLW	PC_UNIT:	WHISPER
PC_TYPE:	R	PCD_TEXT:	
PC_COND:	EW3SCMDF	FORMAT:	3u
LOC1:	138	MASK:	0xFF
CPCF_NAME	L_023	PCF_DESCR	WH RX
			OVFLOW NB

CD_NAME:	EW3SCMDF
CD_DESCR:	Whisper C, N, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3PMODE' <> "TROUBLESHOOT") AND ('EW3WAMW4' <> 0x9008)

Description:

Whisper receiver overflow number gives the number of the WHISPER receiver overflows detected during an acquisition in natural, sounding or calibration modes.

Whisper receiver overflow number is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 2.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (*n*) = 0, 1, or 3.

2.4.157 Whisper relay cycles

AIT database:

PC_NAME:	EW3RLCYC	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2u
LOC1:	26	MASK:	0x3F
PC_COND:	G_B10		
CPCF_NAME	L_029	PCF_DESCR	WH RELAY CYCLES

Description:

Whisper relay cycles indicates the number of times DWP has driven the Whisper ON relay in the WEC PWR supply since the last DWP reset. This parameter can be used to confirm **SetInstrPower(ON,WHISPER)** commands have been executed successfully.

The maximum number of relay cycles that can be reported in this parameter is 63. Another Whisper relay ON operation will cause the count to wrap around to 0.

The value of **Whisper relay cycles** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

Whisper power status, EFW relay cycles, Staff SA relay cycles, Staff MWF relay cycles, Whisper TX relay cycles, Wideband relay cycles.

Related commands:

SetInstrPower(ON,WHISPER).

2.4.158 *Whisper repetition factor, natural modes*

AIT database:

PC_NAME:	EW3NRFAC	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3NRFAC
PC_COND:	EW3NMODF		
LOC1:	142	MASK:	0x03
CPCF_NAME	L_022	PCF_DESCR	WH REP FACTOR(N)

TX_NAME:	ST3NRFAC		
TX_DESCR:	Whisper repetition factor (N mode)		
	STR_LO	STR_HI	STR_TXS
1	0	0	1
2	1	1	8
3	2	2	232
4	3	3	116

CD_NAME:	EW3NMODF
CD_DESCR:	Whisper N mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND (('EW3PMODE' = "CONT.1 (N)") OR ('EW3PMODE' = "NATURAL WAVE"))

Description:

Whisper repetition factor during natural modes, echo of the function data of the command **SetWHCom0** masked with 0x03 or the function data of command **SetWHCom0Tx** masked with 0x03.

Whisper repetition factor, natural modes is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 4.

Related commands:

SetWHCom0, SetWHCom0Tx.

2.4.159 Whisper repetition factor, sounding modes

AIT database:

PC_NAME:	EW3SRFAC	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3SRFAC
PC_COND:	EW3STMDF		
LOC1:	142	MASK:	0x03
CPCF_NAME	L_032	PCF_DESCR	WH REP FACT (ST)

TX_NAME:		ST3SRFAC	
TX_DESCR:		Whisper repetition factor (S & T modes)	
	STR_LO	STR_HI	STR_TXS
1	0	0	1
2	1	1	2
3	2	2	32
4	3	3	128

Description:

Whisper repetition factor during sounding modes, echo of the function data of the command **SetWHCom0** masked with 0x03 or the function data of command **SetWHCom0Tx** masked with 0x03.

Whisper repetition factor, sounding modes is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 4.

Related commands:

SetWHCom0, SetWHCom0Tx.

2.4.160 Whisper repetition + line row

AIT database:

PC_NAME:	EW3RPTLR	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3WHHK		
LOC1:	140	MASK:	0x7F
LOC2:	141	MASK:	0xFF
CPCF_NAME	L_031	PCF_DESCR	WH REP+LI ROW NB

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper repetition + line row is a combination of the average, listen or calibration row and the repetition row.

Whisper repetition + line row is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 3, Whisper repetition row number, Whisper LCA row number.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.161 Whisper repetition row number

AIT database:

PC_NAME:	EW3RPROW	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	3u
PC_COND:	EW3SCMDF		
LOC1:	141	MASK:	0xFF
CPCF_NAME	L_030	PCF_DESCR	WH REPT ROW NUMB

CD_NAME:	EW3SCMDF
CD_DESCR:	Whisper C, N, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3PMODE' <> "TROUBLESHOOT") AND ('EW3WAMW4' <> 0x9008)

Description:

Whisper repetition row number is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper repetition row number gives the Whisper repetition row number, decrementing down to 1, according to the repetition factor commanded for sounding or natural modes.

Related parameters:

Whisper actual mode word 3, Whisper repetition + line row.

Related commands:

SetWHCom0, SetWHCom0Tx.

2.4.162 *Whisper slice of the frequency table set in active mode*

AIT database:

PC_NAME:	EW3SLICE	PC_UNIT:	WHISPER
PC_TYPE:	Register	PCD_TEXT:	
LOC1:	136	MASK:	0x0C
PC_COND:	EW3WHHK		
CPCF_NAME	L_051	PCF_DESCR	WH FST SLICE

Description

Whisper fst slice indicates the group of frequency scan tables to which belongs the current selected frequency scan table (fst).

0 indicates a fst between 0 and 31.

1 indicates a fst between 32 and 63.

2 indicates a fst between 64 and 95.

3 indicates a fst between 96 and 127.

It allows in DWP processed sounding mode to find back the current selected fst with the help of information in the Whisper status words and in the calibration files on ground.

Related Parameters

Whisper actual mode word 1.

Related Commands

SetWHCom(n),SetWHCom(n)Tx (n) = 0, or 3.

2.4.163 Whisper sounding first transmission time

AIT database:

PC_NAME:	EW3FRSTX	PC_UNIT:	WHISPER
PC_TYPE:	Register	PCD_TEXT:	
LOC1:	30	MASK:	0xFF
LOC2:	31	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_052	PCF_DESCR	WH FIRST TX TIME

Description

Whisper first TX time gives the DWP Master Clock count related to the first blanking pulse signal (BPS) in the current HK interval. The BPS is synchronised with the 900 Hz DWP Master Clock (MC), and lasts 3 periods of DWP MC. BPS are sent in Whisper sounding mode. The actual Whisper transmission pulse, a high voltage sine wave on Ey braids, starts (when Whisper decides to make use of the BPS) 1.11ms after the BPS leading edge. Whisper first TX time will normally indicate a time 1.11ms before the actual first transmission.

DWP Master Clock count is reset to zero after an OBDH reset pulse interrupt at the beginning of a HK interval. Valid value for Whisper first TX time should be in the range 0 to 4637, or the value 0xAAAA to indicate no BPS.

Related Parameters

Whisper primary mode, Whisper E/R rate, Whisper data processing, Whisper actual mode word 4, Whisper last TX time.

Related Commands

SetWHCom(n),SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.164 Whisper sounding last transmission time

AIT database:

PC_NAME:	EW3LASTX	PC_UNIT:	WHISPER
PC_TYPE:	Register	PCD_TEXT:	
LOC1:	32	MASK:	0xFF
LOC2:	33	MASK:	0xFF
PC_COND:	L_027		
CPCF_NAME	L_053	PCF_DESCR	WH LAST TX TIME

Description

Whisper last TX time gives the DWP Master Clock count related to the last blanking pulse signal (BPS) in the current HK interval. The BPS is synchronised with the 900 Hz DWP Master Clock (MC), and lasts 3 periods of DWP MC. BPS are sent in Whisper sounding mode. The actual Whisper transmission pulse, a high voltage sine wave on Ey braids (1.024ms or 0.512ms duration), ends (when Whisper decides to make use of the BPS) at Whisper last TX time (or 0.5ms before). Whisper last TX time will normally indicate the time 1.11ms after the start of the last actual transmission.

DWP Master Clock count is reset to zero after an OBDH reset pulse interrupt at the beginning of a HK interval. Valid value for Whisper last TX time should be in the range 0 to 4637, or the value 0xAAAA to indicate no BPS.

Related Parameters

Whisper primary mode, Whisper E/R rate, Whisper data processing, Whisper actual mode word 4, Whisper first TX time.

Related Commands

SetWHCom(n),SetWHCom(n)Tx (n) = 0, 1, 2 or 3.

2.4.165 Whisper spectra averaging

AIT database:

PC_NAME:	EW3AVERG	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3AVERG
PC_COND:	EW3NMODF		
LOC1:	143	MASK:	0x70
CPCF_NAME	L_001	PCF_DESCR	AVER
			SPECTRA (N)

TX_NAME:	ST3AVERG		
TX_DESCR:	Whisper spectra averaging text		
	STR_LO	STR_HI	STR_TXS
1	0	0	32
2	1	1	16
3	2	2	16
4	3	3	8
5	4	4	4
6	5	5	2
7	6	6	64
8	7	7	1

CD_NAME:	EW3NMODF
CD_DESCR:	Whisper N mode flag
Expression:	('EW3NOHK' = "WHISPER HK")
	AND (('EW3PMODE' = "CONT.1 (N)")
	OR ('EW3PMODE' = "NATURAL WAVE"))

Description:

Whisper spectra averaging gives the number of spectra to be averaged in natural modes.

Parameter is generated by WHISPER. It is the echo of the command SetWHCom1 function data masked with 0x70 or the command SetWHCom1Tx function data masked with 0x70.

Parameter is updated every time DWP reads a packet from WHISPER.

Related parameters:

Whisper actual mode word 4.

Related commands:

SetWHCom1, SetWHCom1Tx.

2.4.166 Whisper temperature monitor

AIT database:

PC_NAME:	EW3TMON	PC_UNIT:	WHISPER
PCA_UNIT	CELC	FORMAT:	4.0f
PC_TYPE:	A	CA_CURVE:	CC3TMON
LOC1:	98	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	L_035	PCF_DESCR	WH TEMP MONIT

CA_NAME:	CC3TMON		
	Whisper temperature monitor		
CA_UNIT:	CELC		
X01	0	Y01	70.000
X02	39	Y02	70.000
X03	50	Y03	60.000
X04	65	Y04	50.00
X05	83	Y05	40.000
X06	106	Y06	30.000
X07	131	Y07	20.000
X08	158	Y08	10.000
X09	184	Y09	0.000
X10	207	Y10	-10.000
X11	226	Y11	-20.000
X12	239	Y12	-30.00
X13	248	Y13	-40.000
X14	255	Y14	-40.000

Description:

Temperature monitor for the Whisper instrument measured via the DWP analog to digital converter. Uses the same calibration curve as the DWP thermistor as the same circuit is used.

Related parameters:

None.

Related commands:

None.

2.4.167 Whisper transmitter disabled

AIT database:

PC_NAME:	EW3TXDIS	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	STNINSDS
LOC1:	53	MASK:	0x20
PC_COND:	G_B10		
CPCF_NAME	L_037	PCF_DESCR	WHISP TX STATUS

TX_NAME:	STNINSDS		
TX_DESCR:	Instrument disabled text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INS_DISABLED

Description:

Whisper transmitter disabled is non-zero when Whisper transmitter control and operation has been disabled by the **FlagInstrFail** telecommand. The transmitter will only be disabled in the event of a problem that does not allow Whisper to be operated correctly, e.g. a shortage of electrical power or a critical hardware failure.

When Whisper transmitter control is disabled the Whisper transmitter will be off and will not respond to any **SetInstrPower(WHISPER_TX)** commands.

The value of **Whisper transmitter disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW instrument disabled, Staff SA instrument disabled, Staff MWF instrument disabled, Whisper instrument disabled, Wideband instrument disabled.

Related commands:

FlagInstrFail(DISABLE, WHISPER_TX) will set this parameter.

FlagInstrFail(ENABLE, WHISPER_TX) will clear this parameter.

2.4.168 *Whisper TX power status*

AIT database:

PC_NAME:	EW3TXPST	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	STNPWRST
LOC1:	28	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	L_039	PCF_DESCR	WH TX PWR STATE

TX_NAME:	STNPWRST		
TX_DESCR:	Instrument power status text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Whisper TX power status indicates the power status of the Whisper transmitter. A value of zero means that the transmitter is not powered (OFF), non-zero means that the transmitter is powered (ON).

When **SetInstrPower(ON, WHISPER_TX)** is executed DWP will drive the Whisper transmitter power ON relay in the WEC PWR supply, and **Whisper TX power status** will be set to one. **Whisper TX power status** will remain set until either:

- i/ a **SetInstrPower(OFF,WH_TX)** command is received, or
- ii/ a **DWPCfg** command is received.

Any of the above commands will cause DWP to drive the Whisper TX power OFF relay in the WEC PWR unit.

The value of **Whisper TX power status** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW power status, Staff SA power status, Staff MWF power status, Whisper power status, Wideband power status.

Related commands:

SetInstrPower(WHISPER_TX), FlagInstrFail(WHISPER_TX).

2.4.169 Whisper TX pulse duration

AIT database:

PC_NAME:	EW3PULSE	PC_UNIT:	WHISPER
PC_TYPE:	D	PCD_TEXT:	ST3PULSE
PC_COND:	EW3STMDF		
LOC1:	139	MASK:	0x80
CPCF_NAME	L_026	PCF_DESCR	WH TX PULSE

TX_NAME:	ST3PULSE		
TX_DESCR:	Whisper TX pulse duration		
	STR_LO	STR_HI	STR_TXS
1	0	0	1.024 MS
2	1	1	0.512 MS

CD_NAME:	EW3STMDF
CD_DESCR:	Whisper S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND (('EW3PMODE' = "SOUNDING") OR ('EW3PMODE' = "TRACKNG/UPLD") OR ('EW3PMODE' = "CONT.2 (S)"))

Description:

Whisper TX pulse duration gives the actual duration of the transmitted pulse; if zero, duration 1.024 mSec, if one, duration 0.512 mSec.

Whisper TX pulse duration is generated by WHISPER and is updated every time DWP reads a packet from DWP.

Related parameters:

Whisper actual mode word 2, 4.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) =0, 1, 2 or 3.

2.4.170 Whisper TX relay cycles

AIT database:

PC_NAME:	EW3TRCYC	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	2u
LOC1:	28	MASK:	0x3F
PC_COND:	G_B10		
CPCF_NAME	L_036	PCF_DESCR	WH TX RELAY CYCS

Description:

Whisper Tx relay cycles indicates the number of times DWP has driven the Whisper Tx ON relay in the WEC PWR supply since the last DWP reset. This parameter can be used to confirm **SetInstrPower(ON,WH_TX)** commands have been executed successfully.

The maximum number of relay cycles that can be reported in this parameter is 63. Another Whisper TX relay ON operation will cause the count to wrap around to 0.

The value of **Whisper TX relay cycles** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

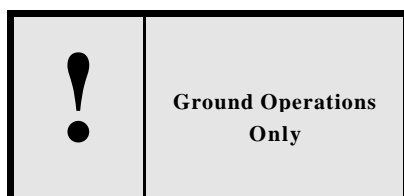
Related parameters:

Whisper TX power status, EFW TX relay cycles, Staff SA relay cycles, Staff MWF relay cycles, Whisper relay cycles, Wideband relay cycles.

Related commands:

SetInstrPower(ON,WH_TX).

2.4.171 Whisper uploading mode



AIT database:

PC_NAME:	EW3UMODE	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3UMODE
PC_COND:	EW3UMODF		
LOC1:	144	MASK:	0xFF
LOC2:	145	MASK:	0xFF
CPCF_NAME	L_040	PCF_DESCR	WH UPLOAD MODE

TX_NAME:	ST3UMODE		
TX_DESCR:	Whisper uploading mode		
	STR_LO	STR_HI	STR_TXS
1	007F	007F	UPLOADING
2	0080	4F54	-
3	4F55	4F55	EPROM LOCK
4	4F56	4F6E	-
5	4F6F	4F6F	EPROM UNLOCK

Text when out of limits:-

CD_NAME:	EW3UMODF
CD_DESCR:	Whisper uploading mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3WAMW4' = 0x9008)

Description:

ONLY FOR GROUND OPERATIONS!

Whisper uploading mode is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

If **Whisper uploading mode** = 0x007F a new program is being uploaded into the WHISPER EPROM.

Related parameters:

Whisper actual mode word 5.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) =0, 1, 2 or 3.

2.4.172 Whisper VSP scale factor

AIT database:

PC_NAME:	EW3VSPSC	PC_UNIT:	WHISPER
PC_TYPE:	R	FORMAT:	4x
PC_COND:	EW3SCMDF		
LOC1:	136	MASK:	0xFF
LOC2:	137	MASK:	0xFF
CPCF_NAME	L_042	PCF_DESCR	WHISP VSP S-FACT

CD_NAME:	EW3SCMDF
CD_DESCR:	Whisper C, N, S or T mode flag
Expression:	('EW3NOHK' = "WHISPER HK") AND ('EW3PMODE' <> "TROUBLESHOOT") AND ('EW3WAMW4' <> 0x9008)

Description:

Whisper VSP scale factor is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper VSP scale factor holds the vsp scale factor generated by the vsp processor during the current FFT for sounding, natural or calibration modes. It holds also the connected antennae, the delay for listen and the slice of fst.

Related parameters:

Whisper actual mode word 1.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n) =0, 1, 2 or 3.

2.4.173 Whisper watch dog test result

AIT database:

PC_NAME:	EW3WDTST	PC_UNIT:	WHISPER
PC_TYPE:	D	PC_TEXT:	ST3WDTST
PC_COND:	EW3WHHK		
LOC1:	140	MASK:	0x80
CPCF_NAME	L_048	PCF_DESCR	WH WATCHD RESULT

TX_NAME:	ST3WDTST		
TX_DESCR:	Whisper watch dog test result		
	STR_LO	STR_HI	STR_TXS
1	0	0	FAILURE
2	1	1	OK

CD_NAME:	EW3WHHK
CD_DESCR:	Whisper HK flag
Expression:	('EW3NOHK' = "WHISPER HK")

Description:

Whisper watch dog test result is generated by WHISPER and is updated every time DWP reads a packet from WHISPER.

Whisper watch dog test result gives the watch dog test result for sounding, natural and calibration modes. If non-zero test OK, failure otherwise.

Related parameters:

Whisper actual mode word 3.

Related commands:

SetWHCom(n), SetWHCom(n)Tx (n)=0, 1, 2 or 3.

2.4.174 Wideband bandwidth

AIT database:

PC_NAME:	EW4BANDW	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4BAND
LOC1:	153	MASK:	0x1C
PC_COND:	W_021		
CPCF_NAME	W_002	PCF_DESCR	BANDWIDTH

TX_NAME:	SEW4BAND		
TX_DESCR:	Bandwidth		
	STR_LO	STR_HI	STR_TXS
1	0	0	9.5KHZ 8-BIT
2	1	1	9.5KHZ 8-BIT
3	2	2	19 KHZ 4-BIT
4	3	3	19 KHZ 8-BIT
5	4	4	77 KHZ 8-BIT
6	5	5	77 KHZ 1-BIT
7	6	6	77 KHZ 4-BIT
8	7	7	77 KHZ 8-BIT

Description:

Related parameters:

Related commands:

2.4.175 Wideband cmd reg LSB

AIT database:

PC_NAME:	EW4CREGL	PC_UNIT:	WBD
PC_TYPE:	R	FORMAT:	2x
LOC1:	183	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	W_004	PCF_DESCR	WBD CMD REG LSB

Description:

The **SetWBDComLSB** and **SetWBDComLSBTx** commands set **WBD cmd reg LSB**.

The value of **WBD cmd reg LSB** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

WBD cmd reg MSB.

Related commands:

SetWBDComLSB, SetWBDComLSBTx.

2.4.176 Wideband cmd reg MSB

AIT database:

PC_NAME:	EW4CREGM	PC_UNIT:	WBD
PC_TYPE:	R	FORMAT:	2x
LOC1:	185	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	W_005	PCF_DESCR	WBD CMD REG MSB

Description:

The **SetWBDComMSB** and **SetWBDComMSBTx** commands set **WBD cmd reg MSB**.

The value of **WBD cmd reg MSB** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

WBD cmd reg LSB.

Related commands:

SetWBDComLSB, SetWBDComLSBTx.

2.4.177 Wideband converter freq

AIT database:

PC_NAME:	EW4CONFQ	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4CONF
LOC1:	150	MASK:	0x30
PC_COND:	W_021		
CPCF_NAME	W_003	PCF_DESCR	CONVERTER FREQ

TX_NAME:		SEW4CONF	
TX_DESCR:		Converter frequency	
	STR_LO	STR_HI	STR_TXS
1	0	0	0 HZ
2	1	1	125 KHZ
3	2	2	250 KHZ
4	3	3	500 KHZ

Description:

Related parameters:

Related commands:

2.4.178 Wideband data via DWP

AIT database:

PC_NAME:	EW4WBDHK	PC_UNIT:	WBD
PC_TYPE:	R	FORMAT:	2x
LOC1:	132	MASK:	0xFF
PC_COND:	W_021	PCF_DESCR	WIDEB DATA
CPCF_NAME	W_031		V DWP

Description:

If non-zero Wideband data is routed through DWP. In this case locations 134 to 149 contain Wideband gain information and the Whisper housekeeping is invalid.

Related parameters:

Related commands:

2.4.179 Wideband gain information

PC_NAME:	EW4GAIN1	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	134	MASK:	0xFF
LOC2:	135	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_007	PCF_DESCR	WBD GAIN INFO 1

PC_NAME:	EW4GAIN2	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	136	MASK:	0xFF
LOC2:	137	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_008	PCF_DESCR	WBD GAIN INFO 2

PC_NAME:	EW4GAIN3	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	138	MASK:	0xFF
LOC2:	139	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_009	PCF_DESCR	WBD GAIN INFO 3

PC_NAME:	EW4GAIN4	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	140	MASK:	0xFF
LOC2:	141	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_010	PCF_DESCR	WBD GAIN INFO 4

PC_NAME:	EW4GAIN5	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	142	MASK:	0xFF
LOC2:	143	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_011	PCF_DESCR	WBD GAIN INFO 5

PC_NAME:	EW4GAIN6	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	144	MASK:	0xFF
LOC2:	145	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_012	PCF_DESCR	WBD GAIN INFO 6

PC_NAME:	EW4GAIN7	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	146	MASK:	0xFF
LOC2:	147	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_013	PCF_DESCR	WBD GAIN INFO 7

PC_NAME:	EW4GAIN8	PC_UNIT:	DWP
PC_TYPE:	R	FORMAT:	4x
LOC1:	148	MASK:	0xFF
LOC2:	149	MASK:	0xFF
PC_COND:	W_D01		
CPCF_NAME	W_014	PCF_DESCR	WBD GAIN INFO 8

Description:

When Wideband data is sent via DWP (EW4WBDHK non-zero) this area contains WBD gain information.

DWP extracts 4 bits of gain information from each WBD status acquisition. At the nominal Gain Update clock rate this results in 51 4-bit values. Compression is then applied to fit the data into the HK. For each 7 samples, the first 4-bit sample is retained, and the remaining 6 samples are in sequence compared to the first. A determination is thereby made as to whether the gain was increased by one step, decreased by one step, or remained unchanged, and this information is stored in two bits. This approach is possible because the WBD design does not allow changes of more than a single gain step during a gain update clock cycle. This means that a WBD Gain State Word would hold 4 gain bits representing an absolute value in the LSB bits, and 6 state changes (each 2 bits) in the remaining bits of the word.

Related parameters:

Related commands:

2.4.180 Wideband gain select

AIT database:

PC_NAME:	EW4GNSEL	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4GNSE
LOC1:	151	MASK:	0x20
PC_COND:	W_021	PCF_DESCR	GAIN SELECT
CPCF_NAME	W_015		

TX_NAME:	SEW4GNSE		
TX_DESCR:	Gain Select		
	STR_LO	STR_HI	STR_TXS
1	0	0	AUTO
2	1	1	MANUAL

Description:

Related parameters:

Related commands:

2.4.181 Wideband gain setting

AIT database:

PC_NAME:	EW4GNSET	PC_UNIT:	WBD
PCA_UNIT:	db	FORMAT:	4.1f
PC_TYPE:	A	CA_CURVE:	CEW4GNSE
LOC1:	151	MASK:	0x1E
PC_COND:	W_021	PCF_DESCR	GAIN SETTING
CPCF_NAME	W_016		

CA_NAME:	CEW4GNSE		
	Wideband gain setting		
CA_UNIT:	db		
X01	0	Y01	0.0
X02	15	Y02	75.0

Description:

Related parameters:

Related commands:

2.4.182 Wideband instrument disabled

AIT database:

PC_NAME:	EW4INSDS	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	STNINSDS
LOC1:	53	MASK:	0x10
PC_COND:	G_B10		
CPCF_NAME	W_017	PCF_DESCR	WIDEB INSTR CONT

TX_NAME:	STNINSDS		
TX_DESCR:	Instrument disabled text		
	STR_LO	STR_HI	STR_TXS
1	0	0	
2	1	1	INS_DISABLED

Description:

Wideband instrument disabled is non-zero when WBD instrument control and operation has been disabled by the **FlagInstrFail** telecommand. The instrument will only be disabled in the event of a problem that does not allow WBD to be operated correctly, e.g. a shortage of electrical power or a critical hardware failure.

When WBD instrument control is disabled the WBD instrument will be off and will not respond to any **SetInstrPower(WBD)** commands.

The value of **Wideband instrument disabled** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW instrument disabled, Staff SA instrument disabled, Staff MWF instrument disabled, Whisper instrument disabled, Whisper transmitter disabled.

Related commands:

FlagInstrFail(DISABLE, WBD) will set this parameter.

FlagInstrFail(ENABLE, WBD) will clear this parameter.

2.4.183 Wideband lower AGC

AIT database:

PC_NAME:	EW4LRAGE	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4LRAG
LOC1:	150	MASK:	0x0C
PC_COND:	W_021		
CPCF_NAME	W_018	PCF_DESCR	LOWER AGC

TX_NAME:	SEW4LRAG		
TX_DESCR:	Lower agc		
	STR_LO	STR_HI	STR_TXS
1	0	0	LV0
2	1	1	LV1
3	2	2	LV2
4	3	3	LV3

Description:

Related parameters:

Related commands:

2.4.184 Wideband OBDH interface

AIT database:

PC_NAME:	EW4OBDHI	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4OBDH
LOC1:	151	MASK:	0x01
PC_COND:	W_021		
CPCF_NAME	W_019	PCF_DESCR	OBDH INTERFACE

TX_NAME:	SEW4OBDH		
TX_DESCR:	OBDH interface		
	STR_LO	STR_HI	STR_TXS
1	0	0	PRIMARY
2	1	1	REDUNDANT

Description:

Indicates which interface is being used between **Wideband** and the spacecraft OBDH. The default interface is the **Primary (A) interface**. A command must be sent to switch to the **Redundant (B) interface**.

Related parameters:

Related commands:

2.4.185 Wideband power status

AIT database:

PC_NAME:	EW4PWRST	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	STNPWRST
LOC1:	29	MASK:	0x40
PC_COND:	G_B10		
CPCF_NAME	W_021	PCF_DESCR	WIDEBAND PWR STA

TX_NAME:	STNPWRST		
TX_DESCR:	Instrument power status text		
	STR_LO	STR_HI	STR_TXS
1	0	0	OFF
2	1	1	ON

Description:

Wideband power status indicates the power status of the WBD instrument. A value of zero means that WBD is not powered (OFF), non-zero means that WBD is powered (ON).

When **SetInstrPower(ON, Wideband)** is executed DWP will drive the WBD power ON relay in the WEC PWR supply, and **Wideband power status** will be set to one. **Wideband power status** will remain set until either:

- i/ a **SetInstrPower(OFF,WBD)** command is received, or
- ii/ a **DWPCConfig** command is received.

Any of the above commands will cause DWP to drive the WBD power OFF relay in the WEC PWR unit.

The value of **Wideband power status** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

EFW power status, Staff SA power status, Staff MWF power status, Whisper power status, Whisper TX power status.

Related commands:

SetInstrPower(WBD), FlagInstrFail(WBD).

2.4.186 Wideband processing control

AIT database:

PC_NAME:	EW4PRCTL	PC_UNIT:	WBD
PC_TYPE:	R	FORMAT:	6.3f
LOC1:	38	MASK:	0xFF
LOC2:	39	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	W_020	PCF_DESCR	WBD D-PROC CONTR

Description:

Wideband processing control indicates what processing is applied to Wideband data within DWP. The format is the same as that of the function data field of the **SetWBDDDataProc** command.

The raw bitrate from WIDEBAND is much greater than that available on the OBDH interface. **Wideband processing control** shows the selection of one of two options to reduce this bitrate according to the table below.

Function data	DWP processing of WBD data
0	Emergency mode, 1 in 3 packets selected by kernel software for output
not 0	Digital filtering and output of all WBD data using two full speed application processors

Wideband processing control

The option that should be used whenever two full speed application processors are available is the digital filter to reduce the data rate by a factor of three. Otherwise, the DWP kernel processor will

simply throw away two out of the three packets it receives from WIDEBAND, and output one in three of the raw packets to the OBDH.

Related parameters:

Related commands:

2.4.187 Wideband relay cycles

AIT database:

PC_NAME:	EW4RLCYC	PC_UNIT:	WBD
PC_TYPE:	R	FORMAT:	2u
LOC1:	29	MASK:	0x3F
PC_COND:	G_B10		
CPCF_NAME	W_022	PCF_DESCR	WBD RELAY CYCLES

Description:

Wideband relay cycles indicates the number of times DWP has driven the WBD ON relay in the WEC PWR supply since the last DWP reset. This parameter can be used to confirm **SetInstrPower(ON,WBD)** commands have been executed successfully.

The maximum number of relay cycles that can be reported in this parameter is 63. Another WBD relay ON operation will cause the count to wrap around to 0.

The value of **WBD relay cycles** after a DWP reset is shown in Section 2.3.3 DWP parameter initialisation.

Related parameters:

WBD power status, EFW relay cycles, Staff SA relay cycles, Staff MWF relay cycles, Whisper relay cycles, Whisper TX relay cycles.

Related commands:

SetInstrPower(ON,WBD).

2.4.188 Wideband selected antenna

AIT database:

PC_NAME:	EW4ANTNA	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4ANTN
LOC1:	153	MASK:	0x03
PC_COND:	W_021		
CPCF_NAME	W_001	PCF_DESCR	SELECTED ANTENNA

TX_NAME:	SEW4ANTN		
TX_DESCR:	Selected antenna		
	STR_LO	STR_HI	STR_TXS
1	0	0	EZ
2	1	1	BY
3	2	2	BX
4	3	3	EY

Description:

Related parameters:

Related commands:

2.4.189 Wideband status bytes

AIT database:

PC_NAME:	EW4STAT0	PC_UNIT:	WBD
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	151	MASK:	0xFF
PC_COND:	W_021		
CPCF_NAME	W_023	PCF_DESCR	WBD STAT- BYTE 0

PC_NAME:	EW4STAT1	PC_UNIT:	WBD
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	150	MASK:	0xFF
PC_COND:	W_021		
CPCF_NAME	W_024	PCF_DESCR	WBD STAT- BYTE 1

PC_NAME:	EW4STAT2	PC_UNIT:	WBD
PC_TYPE:	A	FORMAT:	6.3f
LOC1:	153	MASK:	0xFF
PC_COND:	W_021		
CPCF_NAME	W_025	PCF_DESCR	WBD STAT- BYTE 2

Description:

In all WEC modes where WBD is powered on, DWP will poll the WBD status on the VC0 boundary (OBDH Reset pulse). It will copy the three status bytes read into the WBD HK.

Related parameters:

Related commands:

2.4.190 Wideband status count

AIT database:

PC_NAME:	EW4STSCN	PC_UNIT:	WBD
PC_TYPE:	R	FORMAT:	2x
LOC1:	133	MASK:	0x7F
PC_COND:	W_021		
CPCF_NAME	W_026	PCF_DESCR	WBD STATUS COUNT

Description:

When Wideband data is sent via DWP (EW4WBDHK non-zero), this parameter holds the number of WBD status interrogations performed by DWP since the last VC0 boundary.

DWP obtains status information across the DWP-WBD status interface at the same rate as the DWP drives the WBD Gain Update clock signal. This word will nominally contain the value 51 when WBD is in burst mode (representing the nominal Gain Update Clock frequency of 10 Hz).

The Gain Update clock is programmable to lower frequencies, Eg 2.5 Hz. This word would then have the value 13 or 14.

Related parameters:

Related commands:

2.4.191 Wideband temperature monitor

AIT database:

PC_NAME:	EW4TMON	PC_UNIT:	WBD
PCA_UNIT	CELC	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC4TMON
LOC1:	99	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	W_027	PCF_DESCR	WIDEB TMP MONIT

CA_NAME:	CC4TMON		
	Wideband thermistor calibration		
CA_UNIT:	CELSIUS		
X01	0	Y01	70
X02	39	Y02	70
X03	50	Y03	60
X04	65	Y04	50
X05	83	Y05	40
X06	106	Y06	30
X07	131	Y07	20
X08	158	Y08	10
X09	184	Y09	0
X10	207	Y10	-10
X11	226	Y11	-20

Description:

Temperature monitor for the Wideband instrument measured via the DWP analog to digital converter. Uses the same calibration curve as the DWP thermistor as the same circuit is used.

Related parameters:

Related commands:

2.4.192 Wideband upper AGC

AIT database:

PC_NAME:	EW4URAGE	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4URAG
LOC1:	150	MASK:	0x03
PC_COND:	W_021		
CPCF_NAME	W_028	PCF_DESCR	UPPER AGC

TX_NAME:	SEW4URAG		
TX_DESCR:	Upper agc		
	STR_LO	STR_HI	STR_TXS
1	0	0	UV0
2	1	1	UV1
3	2	2	UV2
4	3	3	UV3

Description:

Related parameters:

Related commands:

2.4.193 Wideband VCXO lock status

AIT database:

PC_NAME:	EW4VCXOL	PC_UNIT:	WBD
PC_TYPE:	D	PCD_TEXT:	SEW4VCXO
LOC1:	153	MASK:	0x80
PC_COND:	W_021		
CPCF_NAME	W_029	PCF_DESCR	VCXO LOCK STATUS

TX_NAME:	SEW4VCXO		
TX_DESCR:	Lock Status		
	STR_LO	STR_HI	STR_TXS
1	0	0	VCX0 LOCKED
2	1	1	VCX0 NOT LCK

Description:

Related parameters:

Related commands:

2.4.194 Wideband voltage monitor

AIT database:

PC_NAME:	EW4VMON0	PC_UNIT:	WBD
PCA_UNIT	VOLT	FORMAT:	6.3f
PC_TYPE:	A	CA_CURVE:	CC4VMON0
LOC1:	90	MASK:	0xFF
PC_COND:	G_B10		
CPCF_NAME	W_030	PCF_DESCR	WIDEB VOLT MONIT

CA_NAME:	CC4VMON0		
	Wideband voltage monitor		
CA_UNIT:	VOLT		
X01	0	Y01	0.000
X02	255	Y02	7.840

Lower limit:	0xB9	(5.688 V)
Higher limit	0xCA	(6.211 V)

Description:

Supply voltage monitor for the Wideband instrument (6V nominal).

Related parameters:

Related commands:

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