Doc No. :PT-HMOC-OPS-FOP-6001-OPS-OAH

Fop Issue : 3.0 Issue Date: 13/04/10

Remote terminal synchronization with bus controller

File: H\_FCP\_DHS\_3019.xls Author: S. Manganelli





# Procedure Summary

#### Objectives

This procedure describes the steps needed to synchronize the ACC (remote terminal) with the CDMU (bus controller).

#### Summary of Constraints

The ACC is the only Herschel remote terminal that can be synchronized with the CDMU through Service type 9. Although TCs exist in DB for PACS, SPIRE and HIFI, these should not be used. See info sheet at end of procedure.

### Spacecraft Configuration

#### Start of Procedure

CDMU in default configuration, that is:

- PM A or B ON (nominally A)

- TM Encoder/OBT A or B active (nominally A)

- RM A and B enabled

- MM A and B ON

#### End of Procedure

CDMU in default configuration, that is:

- PM A or B ON (nominally A)

- TM Encoder/OBT A or B active (nominally A)  $\,$ 

- RM A and B enabled

- MM A and B ON

### Reference File(s)

Input Command Sequences

Output Command Sequences

HFD3019

### Referenced Displays

ANDs GRDs SLDs

(None)

# Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
16/11/07		1	Created	cmevi-hp	
19/12/07		2	Call to other FCP introduced.	cmevi-hp	
16/01/08	1	3	Batch update of TC flags	S. Manganelli	
02/01/09	2	4	Comments added, sequence renamed	S. Manganelli	
22/03/09	2.2	5	Added check on smooth sync for ACC	S. Manganelli	

: Version 5 - Unchanged Status

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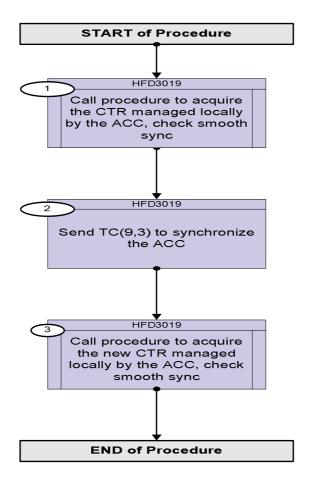
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# Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HFD3019 (ACC RT time sync)		
		TimeTax Three. N		
		TimeTag Type: N Sub Schedule ID:		
				Next Step:
1		Call procedure to acquire the CTR managed locally by the ACC, check smooth sync		2
		Verify Telemetry BSW_ObtSmoothEr AEGZ0050	> 1500	(None)
		The parameter above represents the difference detected by the OBT algorithm between the Central Reference Time distributed by the CDMU and the OBT counter of the active PM of the ACC. The data are encoded as a signed integer with the LSB corresponding to 2^(-24) seconds (this approximately equals 60 nanoseconds). The value 1500 specified for the verification criterion corresponds to about 90 microseconds and is just below the threshold used by the BSW to declare loss of synchronisation with the CDMU.		
		Call sequence HFD3020A		
2		Send TC(9,3) to synchronize the ACC		Next Step:
		At the reception of this TC, the CDMU will send autonomously a TC(9,4) ("enable time synchronisation") to the ACC.		
		Execute Telecommand  TimeSynchroAcms  TC Control Flags:  GBM IL DSE Y  Subsch. ID: 10  Det. descr.: Time: Synchronise Acms TC(9,3)	DC31F170	
3		Call procedure to acquire the new CTR managed locally by the ACC, check smooth sync		Next Step: END
		Verify Telemetry BSW_ObtSmoothEr AEGZ0050	<= 1500	(None)
		Call sequence HFD3020A		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch			
	End of Procedure						

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# Info

HERSCHEL	CDMS	<cdms_tc_apid></cdms_tc_apid>	NO NO	NO	The CDMS is the master of the CTR.  Synchronisation of the CDMS is performed via the "Synchronise CTR" Telecommand	
	ACMS	<acms_tc_apid></acms_tc_apid>	YES		The synchronisation of the ACMS is performed via the CTR broadcasted cyclically (1Hz) on S/C 1553B bus. In case of interruption or missed	
			YES	NO	reception of broadcasted CTR, it enters "free running" mode and re-synchronises on request via its specific Time Synchronisation Procedure.	
	HIFI	<hifi_tc_apid></hifi_tc_apid>	NO NO	NO	The synchronisation of the Herschel Instruments is performed via the CTR broadcasted cyclically	
	PACS	<pacs_tc_apid></pacs_tc_apid>	NO NO	NO	(1Hz) on S/C 1553B bus. In case of interruption or missed reception of broadcasted CTR, the instruments enter "free running" mode and re- synchronise autonomously after recovery of	
	SPIRE	<spire_tc_apid></spire_tc_apid>	NO		broadcasted CTR.	
			NO	NO		

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