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Subject: Connectors on Instrument

You are aware that there is a running action on all instruments to define the position of connectors on your unit boxes, in order to initiate the design of the harness in the SVM and PLM s.

Our SVM contractor has compiled a list of required information necessary to start the design of the harness (Both for Herschel (sheet 1), and Planck (sheet 2)). We assume that the constraints on cable length are all described in chapter 5.3 of IID-B's, otherwise not applicable.

Can you have a look to this, and provide the missing information.

(See attached file: reqharness.xls)

The IDS format sent to you some time ago, and attached below could be used to answer.

(See attached file: ICD\_Instrument\_1.dot)

Best regards,

Bernard

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ALCATEL SPACE INDUSTRIES

HERSCHEL	HIFI	FHFCU	FHLCU	FHLSU	FHHRI	FHHRH	FHHRV	FHWEV	FHWEH	FHWOV	FHICU	FHWOH	PACS	FPDEC 1+FPDEC	FPMEC 1+FPMEC	FPBOLC	FPDPU	FPSPU	SPIRE	HSDPCU	HSDPU	CCU
	Harness Interconnecting diagram	M												M						M		
Connector side location		A	A	M	A	A	A	A	A	M	A	M		M	M	M	M	M		M	M	M
Connector position		M	P	M	M	M	M	P	P	M	P	M		M	M	M	M	M		M	M	M
Connector type		M	P	M	M	M	M	P	P	M	P	M		A	A	A	A	A		M	M	M
Connector quantity		A	A	M	M	M	M	A	A	M	A	M		M	M	M	M	M		M	M	M
Typology of connector backshell		M	M	M	M	M	M	M	M	M	M	M		M	M	M	M	M		M	M	M
Bundle diameter (each connector)		M	M	M	M	M	M	M	M	M	M	M		M	M	M	M	M		M	M	M
Block diagram	P												A						P			M
Length constraints	TO BE SPECIFIED FOR UNITS WITH INTERCONNECTION																					
Bend radius	IF REQUIRED																					
Legend																						
A = available in IIDB issue2																						
M = missing in IIDB issue 2																						
P = Present but not readable																						

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	
SubSystem :	Unit Code :	Page 1/20

Doc n°:	Issue: Rev:	Date 08/11/01:
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**Herschel / Planck Project**

<p><b>(Name of Box)</b> <b>INTERFACE CONTROL DOCUMENT</b></p>
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<i>Prepared</i>	<i>Responsibility-Office-Company</i>	<i>Date</i>	<i>Signature</i>
<i>Checked</i>			
<i>Approved</i>			

**Emitted by :**

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	
SubSystem :	Unit Code :	Page 1/20

Doc n°:	Issue: Rev:	Date 08/11/01:
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***CHANGE RECORDS***

ISSUE	DATE	§ CHANGE RECORD	AUTHOR

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	
SubSystem :	Unit Code :	Page 2/20

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

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**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	
SubSystem :	Unit Code :	Page 3/20

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**TABLE OF CONTENTS**

<b>1. SCOPE:</b> .....	<b>5</b>
<b>2. DOCUMENTS</b> .....	<b>5</b>
2.1 APPLICABLE DOCUMENTS .....	5
2.2 REFERENCE DOCUMENTS .....	5
<b>3. EQUIPMENT INTERFACE CHARACTERISTICS</b> .....	<b>6</b>
<b>4. SKETCH (MECHANICAL)</b> .....	<b>7</b>
<b>5. ELECTRICAL POWER DEMAND (AVERAGE)</b> .....	<b>8</b>
<b>6. ELECTRICAL POWER DEMAND (PEAK)</b> .....	<b>9</b>
<b>7. PIN ALLOCATION</b> .....	<b>10</b>
<b>8. TM INTERFACE (CIRCUITRY DIAGRAM)</b> .....	<b>12</b>
<b>9. TC INTERFACE (CIRCUITRY DIAGRAM)</b> .....	<b>14</b>
<b>10. POWER INTERFACE</b> .....	<b>15</b>
<b>11. GROUNDING SCHEME</b> .....	<b>16</b>



# HERSCHEL PLANCK INSTRUMENTS INTERFACE CONTROL DOCUMENT

Satellite:	Instrument	Page 5/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

## 1. SCOPE:

This documents describes the Interface data sheet of the [XXX] unit from the [YYY] Instrument of the [ZZZ satellite]

## 2. DOCUMENTS

### 2.1 APPLICABLE DOCUMENTS

ref. 1: **Herschel / Planck IID Part B.**

Doc

ref. 2: **Herschel / Planck IID Part A.**

Doc. SCI-PT-IIDA-04624

### 2.2 REFERENCE DOCUMENTS



**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 6/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**3. EQUIPMENT INTERFACE CHARACTERISTICS**

UNIT DESIGNATION :			
TOTAL NUMBER :	...	IN OPERATION :	...
		IN REDUNDANCY :	...

**MECHANICAL CHARACTERISTICS PER UNIT**

<b><u>DIMENSIONS</u></b> <sup>(1)</sup> (Baseplate=Length x Width)			
Length :	....mm	Width :	....mm
		Diameter :	....mm
Height :	....mm		
<b>MASS :</b>	....kg	+/-	.... kg
<b><u>CoG. LOCATION</u></b> <sup>(1)</sup> (mm) (wrt reference hole R) :			
<b>X :</b>	....	+/-	....
		<b>Y :</b>	.... +/-
			<b>Z :</b> .... +/-
			....
<b><u>INERTIA</u></b> (m <sup>2</sup> .kg) (wrt CoG)			
<b>Ixx :</b>	+/-	<b>Iyy :</b>	+/-
		<b>Izz :</b>	+/-
<b><u>MATERIAL OF HOUSING AND SURFACE FINISH :</u></b>			
<b>TOTAL CONTACT AREA :</b>	cm <sup>2</sup> =	% of baseplate area	
<b>ROUGHNESS OF CONTACT AREA :</b>	MICRONS RMS		
<b>EIGENFREQUENCY :</b>	Hz (if below 140Hz)	<b>TIGHTENING THICKNESS :</b>	mm

**THERMAL CHARACTERISTICS PER UNIT**

<b><u>BASEPLATE MATERIAL AND THICKNESS</u></b> (mm):	
<b><u>SURFACE PROPERTIES :</u></b>	
EMISSIONITY :	ABSORPTIVITY <sup>(2)</sup> :
<b><u>SPECIFIC AREAS</u></b> <sup>(1)</sup> :	
<b><u>SPECIFIC HEAT</u></b> (J/kg/°K) :	

**QUALIFICATION TEMPERATURE LIMITS (°C)**

GROUND STORAGE & TRANSPORT		OPERATING MODE		NON OPERATING MODE		START UP
MIN	MAX	MIN	MAX	MIN	MAX	MIN

**HEAT DISSIPATION (W) (give % of incertitude)**

MODE <sup>(4)</sup>	AVERAGE	MINI <sup>(3)</sup>	MAXI <sup>(3)</sup>

**OBSERVATIONS**

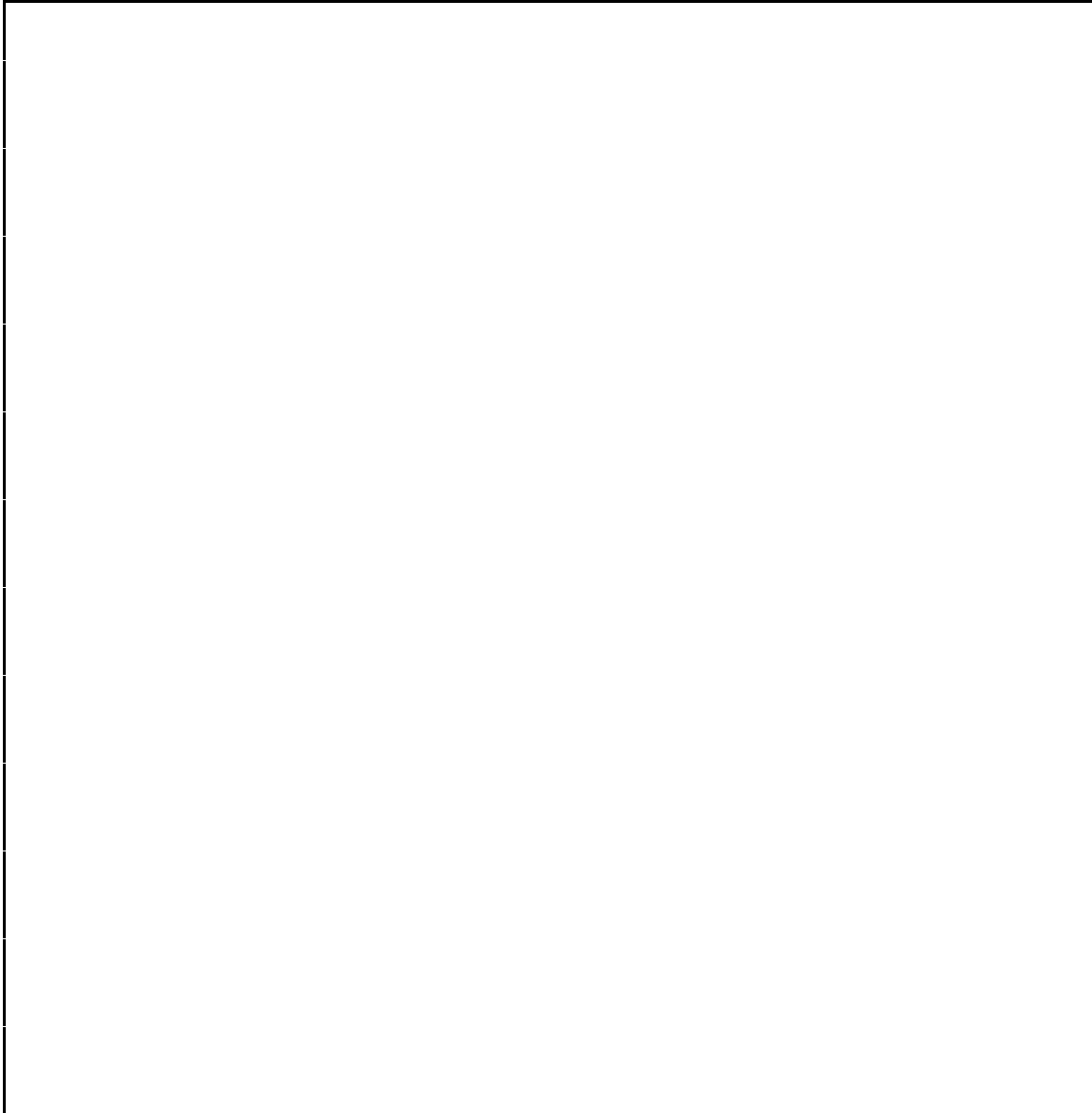
- (1) Precise with a sketch on separated sheet (Page 2) specific areas in case of various thermal coating (if any)
- (2) Solar Absorptance only for locations outside of the satellite (which could be seen by the sun)
- (3) Give diagram on separated sheet  $W = f(t)$  for each typical phase
- (4) Complete with special modes if any : state precisely relevant events

# HERSCHEL PLANCK INSTRUMENTS INTERFACE CONTROL DOCUMENT

Satellite:	Instrument	Page 7/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

## 4. SKETCH (MECHANICAL)



On this sketch, indicate dimensions, inertia axes OX, OY, OZ, footprint, location of CG, mounting points, diametric tolerance, centre to centre distance, position tolerance (guide pins or holes), location type orientation, reference of connectors, necessary access after integration for calibration or test, bonding strap location and length and so on

If additional pages are necessary, add the number after 2

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	
SubSystem :	Unit Code :	Page 8/20

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**5. ELECTRICAL POWER DEMAND (AVERAGE)**

<p>MAXIMUM AVERAGE DEMAND (W)</p> <p>(maximum of the integrated average power demand in any period of 5 minutes excluding peak power)</p> <p>(detail Total Power, and Power per LCL)</p>
--

PHASE (1)	MODE (2)	POWER REQUESTED PER UNIT	NUMBER OF WORKING UNITS	TOTAL POWER DEMAND

REMARKS :
-----------

- (1) Operation Phase (Launch, ...)
- (2) Instrument Operation mode Complete with mode details for phase, if necessary, and with special modes if any, stating precisely when they occur





**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	
SubSystem :	Unit Code :	Page 11/20

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**8. PIN ALLOCATION**

(use one sheet per connector as connector)

CONNECTOR REF (1) :	CONNECTOR TYPE <sup>1</sup> :
---------------------	-------------------------------

PIN REF	FUNCTION	TYPE OF LINE	INTERFACE CABLING REQ. <sup>2</sup>	REMARKS

(1) Complete connector manufacturer designation

(2) If there is S/S requirement enter

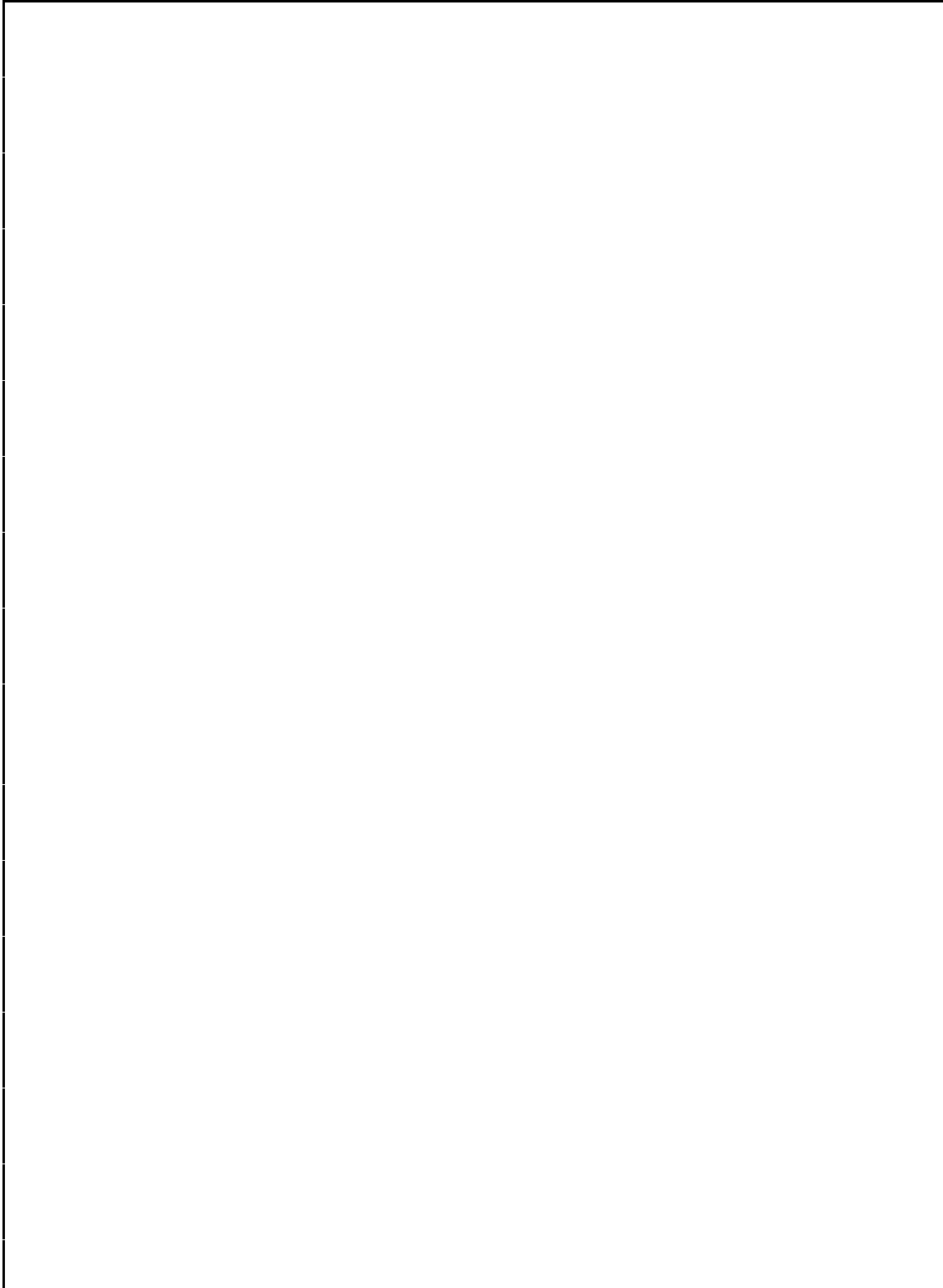
TW	: Twisted
BL	: Bundled
SH	: Shielded

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 12/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**9. TM INTERFACE (CIRCUITRY DIAGRAM)**



**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 13/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

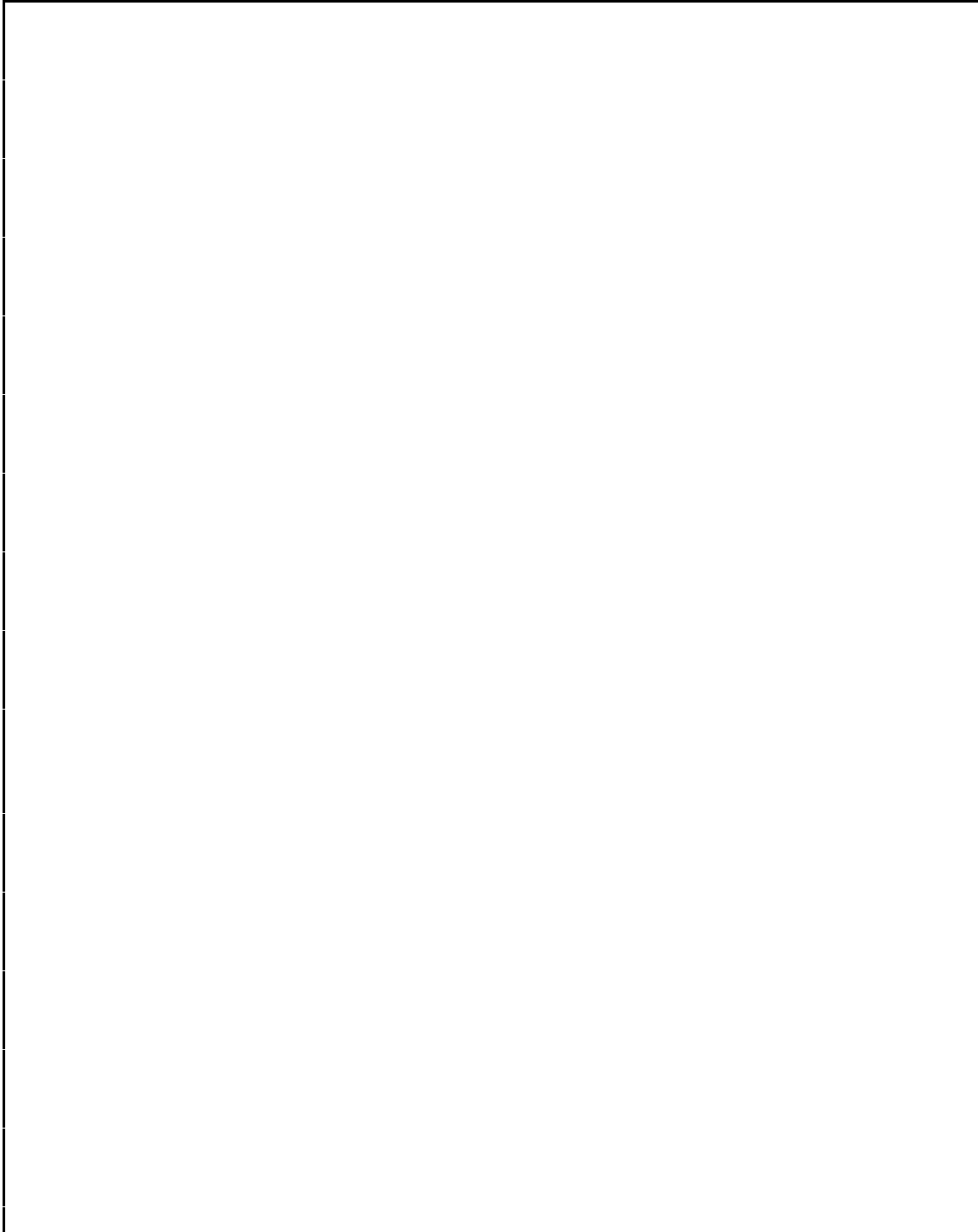


**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 14/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**10. TC INTERFACE (CIRCUITRY DIAGRAM)**

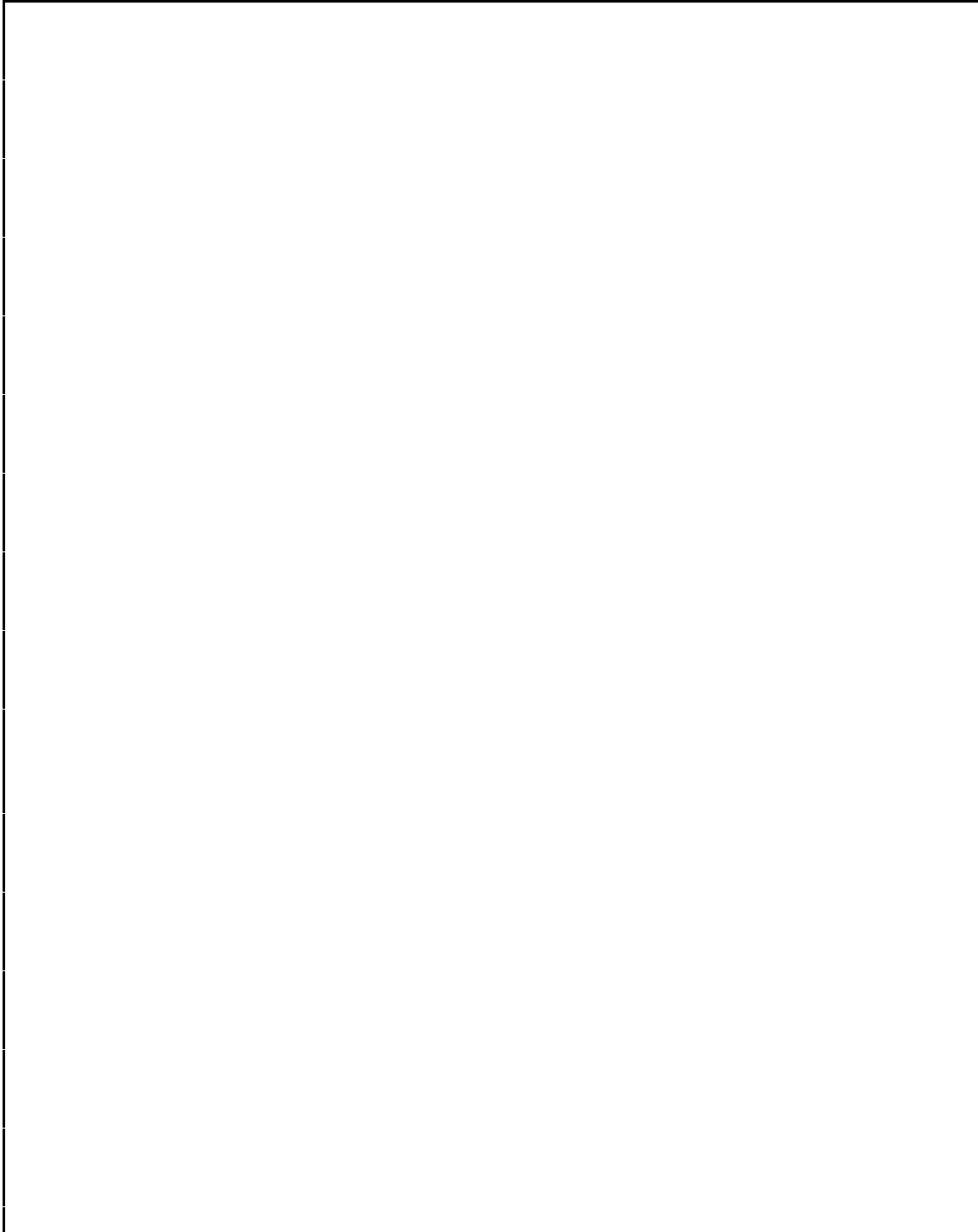


**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 15/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**11. POWER INTERFACE**

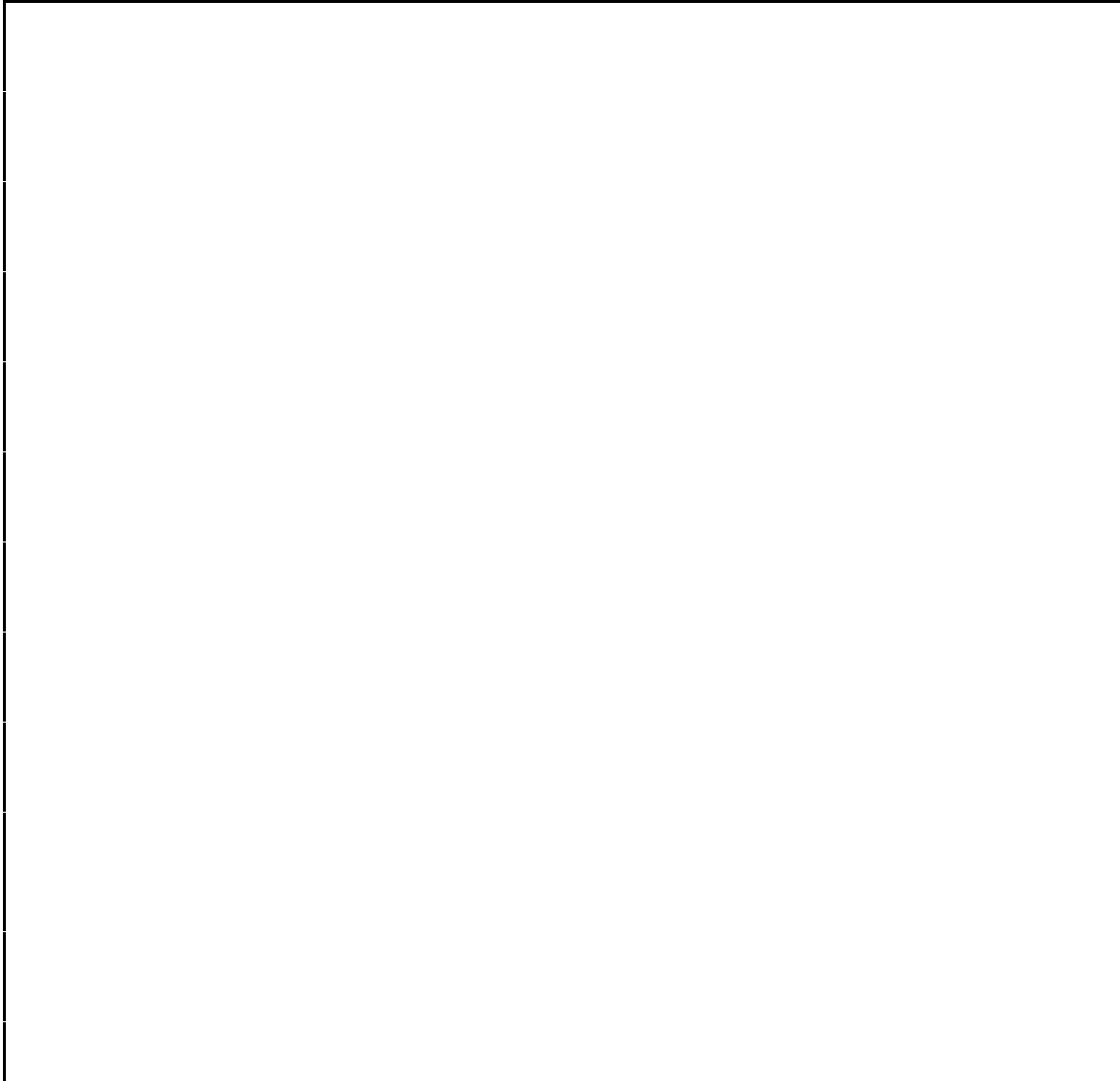


**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 16/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**12. GROUNDING SCHEME**



# HERSCHEL PLANCK INSTRUMENTS INTERFACE CONTROL DOCUMENT

Satellite:	Instrument	Page 17/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

## 13. INSTRUMENTS SURVEILLANCE

The instruments are requested to express their requirements in term of parameters monitoring by the spacecraft.

The spacecraft offers services in compliance with the Operational Interface Requirement Document, and therefore, the monitoring may apply to :

- housekeeping parameters acquired by the spacecraft as part of its routine health surveillance,
- instruments parameters, part of their dedicated housekeeping packets

For each of the needed monitoring, the instrument shall identify :

1. the type (status, analog, temperature, word, byte, ...) and description of the parameter,
2. the source of the parameter : spacecraft or instrument,
3. the monitoring limit (eg. : parameter shall be below TBD mV) expressed in engineering units
4. the periodicity of the monitoring
5. the transfer function, if applicable, for the instruments HK parameters, between the parameter as reported in the HK packet, and the surveillance criterion
6. the action to be performed associated to the surveillance status
7. the time requested for the action to take place
8. the instrument status at the end of the monitoring action

Instruments needs shall be formalised through the Interface Data Sheet xxxx « Instruments Surveillance ». Note that, depending on the type of requested monitoring, some fields are optional.

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:	Instrument	Page 18/20
SubSystem :	Unit Code :	

Doc n°:	Issue:	Date 08/11/01:
	Rev:	

**Instruments Surveillance**

Type and description of parameter	Source of parameter	Monitoring limit (in eng. Unit)	periodicity	Instrument HK parameter transfer function	Action	Action Timing	Final status

**HERSCHEL PLANCK INSTRUMENTS  
INTERFACE CONTROL DOCUMENT**

Satellite:  
SubSystem :

Instrument  
Unit Code :

Page 19/20

Doc n°:

Issue:  
Rev:

Date 08/11/01:

***END OF DOCUMENT***