

SSTD Outgoing Inspection Report

Spacecraft/Project **HERSCHELL/SPIRE**

Document Number **SPIRE-RAL-REP- 002862**

Issue **1.0**

Sub System **FPU**

Date **29-Mar-07**

Model **PFM**

OUTGOING INSPECTION REPORT

FROM
<p>Project Rutherford Appleton Laboratory Space Science and Technology Department Chilton DIDCOT OXON OX11 0QX</p>

TO
<p>EADS-F Astrium GmbH. Projekt Herschel. Anlieferstelle : Halle 6052/Aloys Weber. Claude-Dornier- Strasse. D-88090 Immenstaad. Germany</p>

Applicable sections	
Containers	Yes
External Visual Inspection	Yes
External Connector	Yes
Documentation	Yes
Verification of Interfaccs	Yes
Extra Comments Sheets	Yes

Drawings / Documents Attached
Photos And NCR 171

INSPECTION CONDUCTED BY

WITNESS BY

NAME
Dion Dawson (PA)

DATE
29/03/2007

NAME
Jan Rautakoski

DATE
29/03/2007

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CONTAINER INSPECTION

TRANSPORT CONTAINERS EXTERNAL CONDITION	REMARKS	Status
Mechanical damage to container fasteners, locks, clips or handling provisions		None
Security / Locking Fitted		Checked
Markings for destination and description		Checked
Warning labels relating to handling lifting and stacking limits		Checked
Any additional Comments		

TRANSPORT CONTAINERS INTERNAL CONDITION	REMARKS	Status
Check Mounting fixtures fitted internal packaging		Checked
Internal padding / packaging required		N/A
Mounting provisions secure		Checked
Any additional Comments		

ENVIROMENTAL MONITORS								
Temp Monitors		Humidity Monitors		Shock Sensors Triggerd Information				
Fitted:	<input type="text" value="No"/>	Fitted:	<input type="text" value="Yes"/>	5g	10g	15g	25g	50g
Condition:	<input type="text" value="N/A"/>	Condition:	<input type="text" value="Satisfactory"/>					
				X Axis				
				Y Axis				
				Z Axis				

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INSTRUMENT VISUAL INSPECTION

CHECK LIST	REMARKS	RESULTS
Contents against shipping list		Correct
All closure procedures		Correct
Instrument label		Correct
Note status of external contamination	Minor dust contamination removed by wipes and IPA	See Remarks
Degradation of paintwork or Coating?	Some scratching on case seen	See Remarks
Fasteners correctly locked?		Correct
Check protective covers are correctly labelled and fitted?		Correct
Double bagged?		Correct
Additional Comments	Unit is double Bagged, mounted on a Transit Plate which is then bagged, a metal cover is fitted then the outer transit cover	See Remarks

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INSPECTION OF ALL CONNECTORS

CHECK LIST	REMARKS (LIST CONNECTOR NUMBERS)	RESULTS
Pin Alignment		Pass
Damaged Sockets	NCR raised to cover cracking, number HR-SP-RAL-NCR-171	See remark
Internal Debris		None
Connector Covers fitted	Covers removed and replaced after inspection	See remark
Connector Savers Fitted	Savers fitted to connectors not listed in comments section	See remark
EMC Covers Fitted		N/A
RED Tag Item / Green Tag Items fitted		N/A
Additional Comments		None

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DOCUMENTATION CHECK LIST

Check	REMARKS	RESULTS
End Item Data Pack	FPU EIDP issue 2 plus the Subsystem (internal or attached to SPIRE Subsystem EIDPs included)	Yes
Transportaion Documents		Yes
Packing un- Packing instructions		Yes
Additional Comments		

Verification of Interfaces

Mechanical interface: dimensions specified in the interface control documents such as mass, flatness of surfaces, location of fixing holes and overall dimensions should be measured accurately and recorded. Record Test Report Number, or confirm that measurement result is included in delivery documentation, (EIDP).

INSPECTION / TEST REPORT NUMBER	To be preformed at integration	CHECKED	No
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Electrical interfaces: verifying the location and types of connectors against interface control document is normally carried as part of mechanical verification, confirm this has been done. Functional testing: final functional test report number should be noted.

INSPECTION / TEST REPORT NUMBER	To be preformed at integration	CHECKED	No
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Model	PFM
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EXTRA COMMENT SHEET

Oxidation seen on copper strap surfaces. The interface plate are gold plated. Harnesses and cables are OK.

Bolts in the case and on straps are K-locking type and not staked.

Many small scratches observed on the side of the case, Caused during insertion and extraction from the cryostat for cold tests.

Connectors, J27 to J30 - shorting plugs,
Order of connectors
J,28,J27,J30,J29,J22,J21,J26,J25,J30,J19,J24,J23

J24,J22,J25, J20-crack seen on blue area inside connectors, alignment of pins OK.

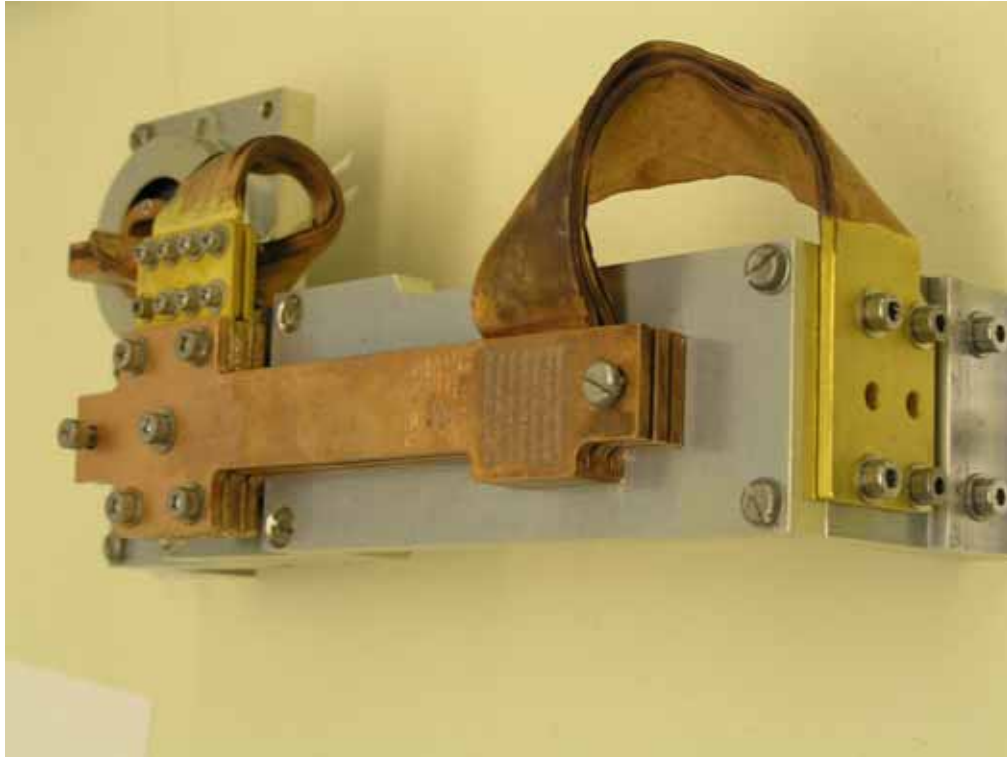
NCR raised to cover cracking number HR-SP-RAL-NCR-171

Connector covers on the other connectors were not removed because of savers. Inspection of these areas will be required at a later date.

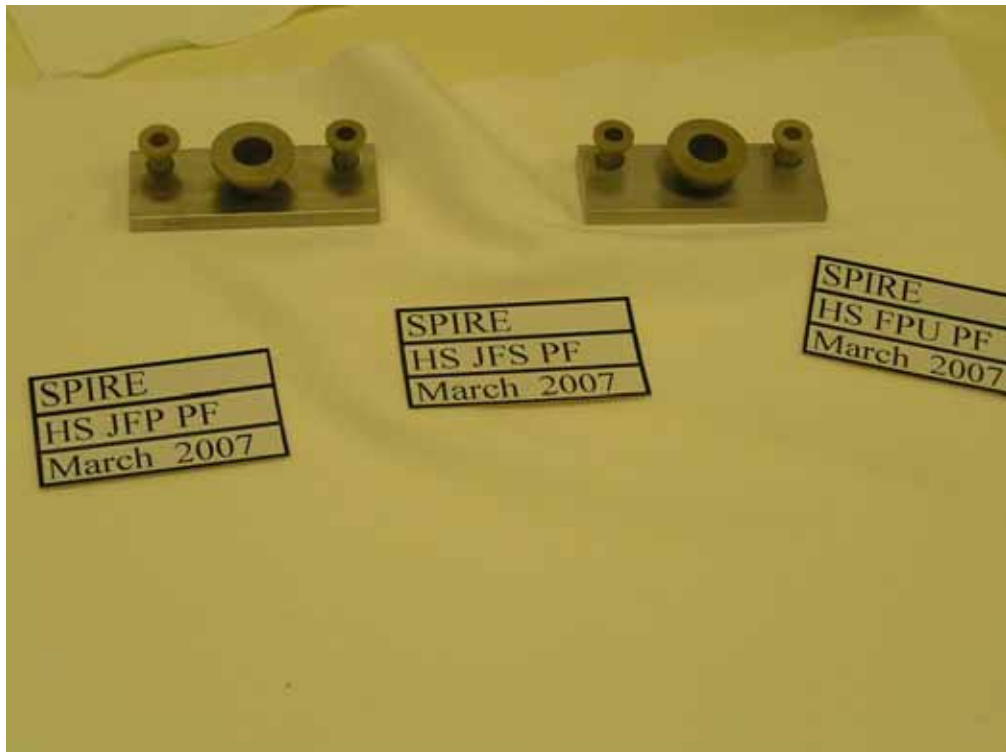
Slight creases and small holes seen in the braiding on connectors to JFPT

Electrical checks have been made and report added to section 1 of EIDP

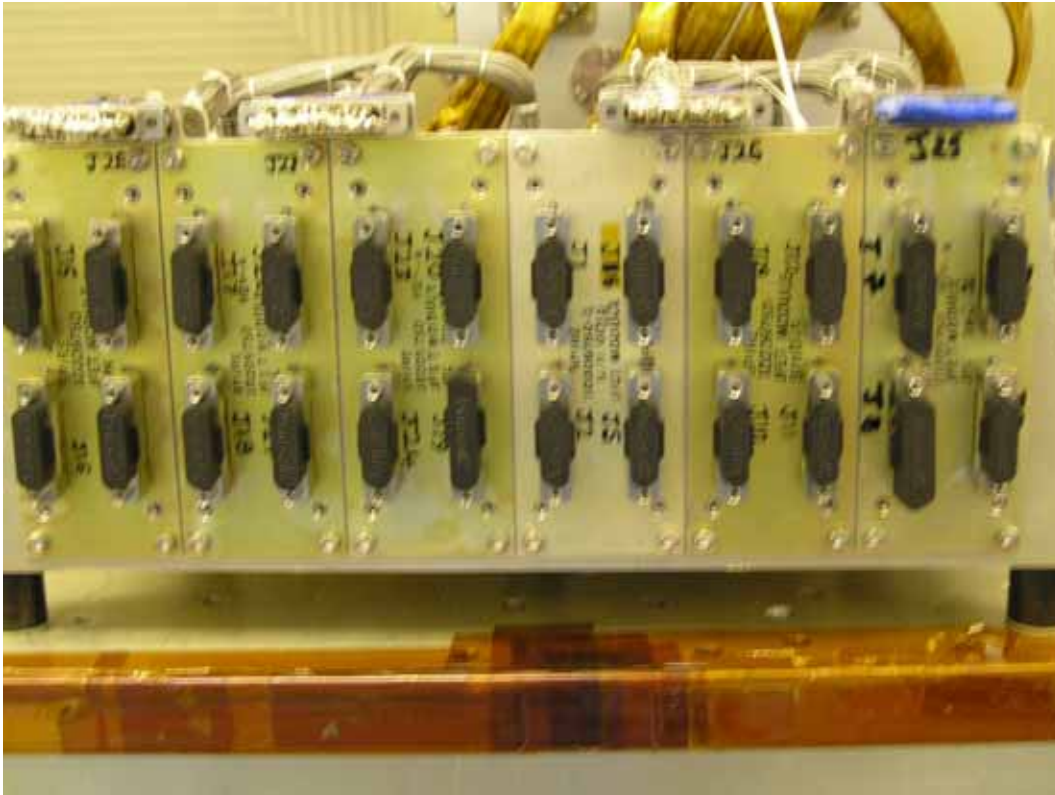
View of level 0 copper strap with gold plated interface plates to be fitted at integration



ID Labels ready for attachment to the instrument



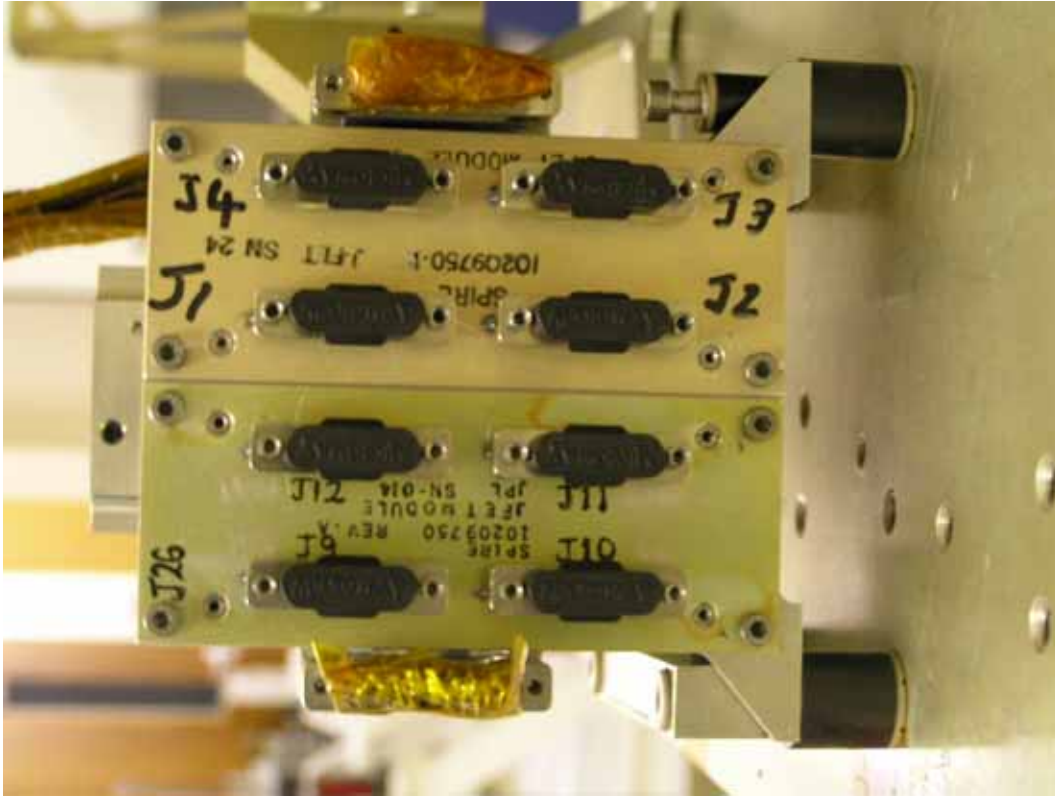
**JFET Connectors with covers and savers
(not removed during this inspection)**



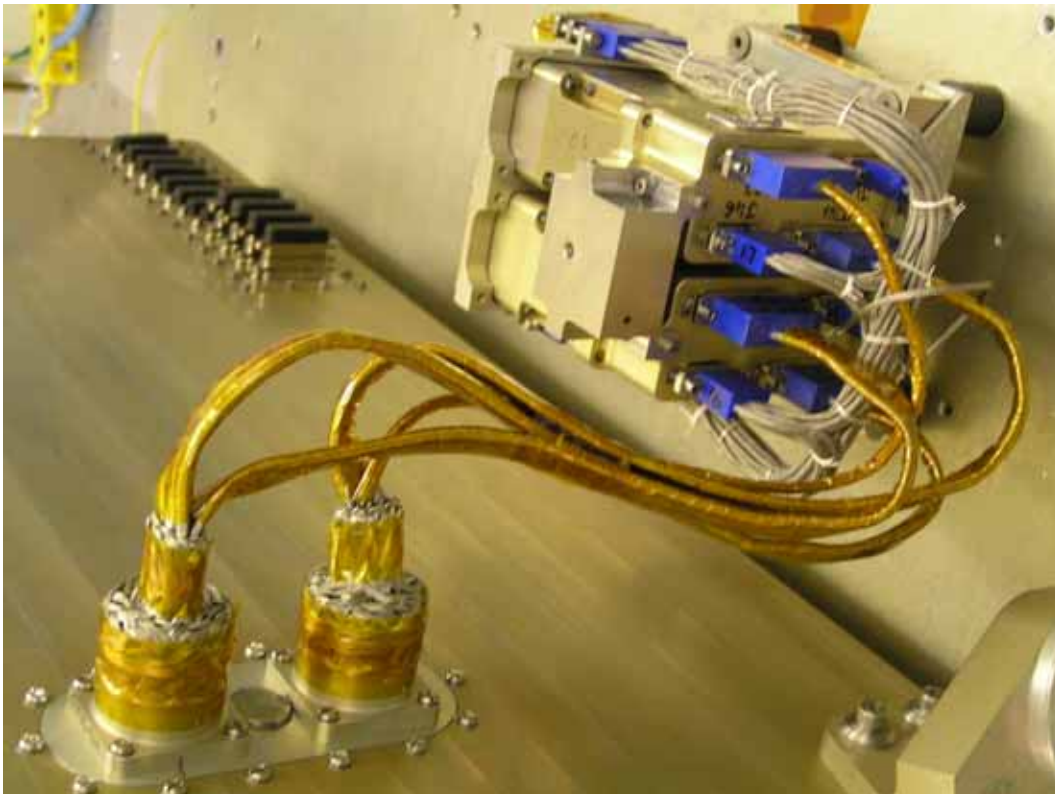
Cables between JFET's and FPU



Connectors with savers and covers (not removed)



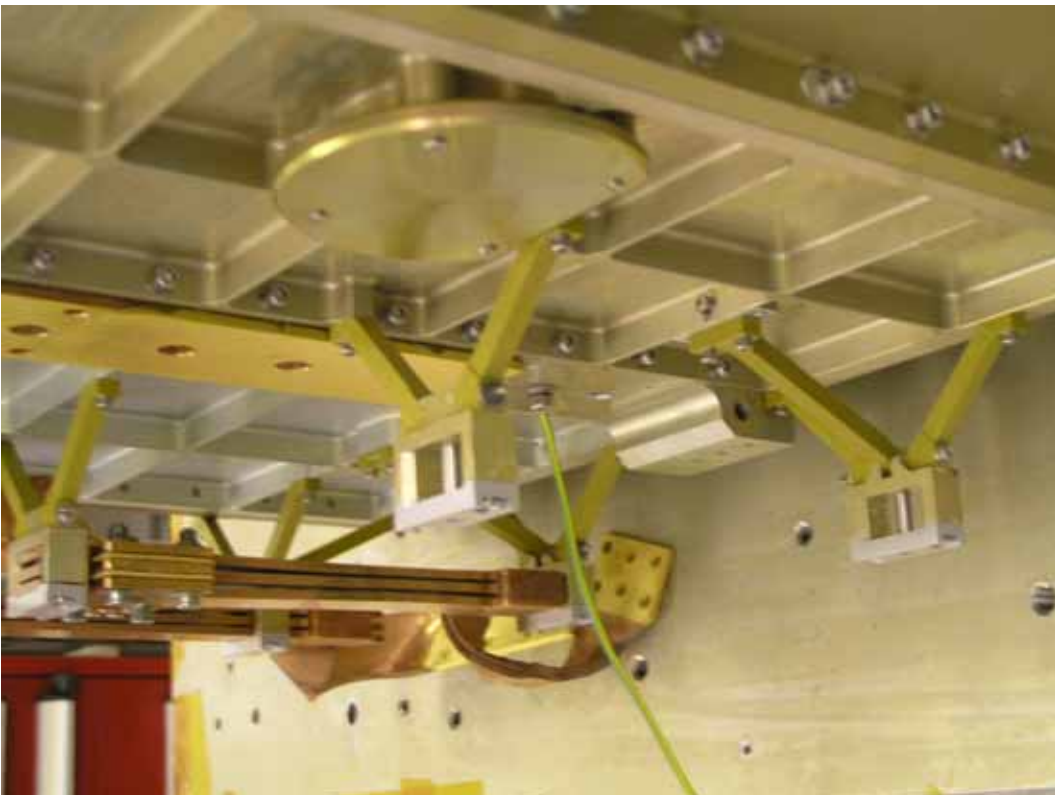
Cables between JFET's and FPU



Tarnishing of the copper on L0 straps can be seen, interface plates are gold plated



View of grounding point and mounts on the main FPU



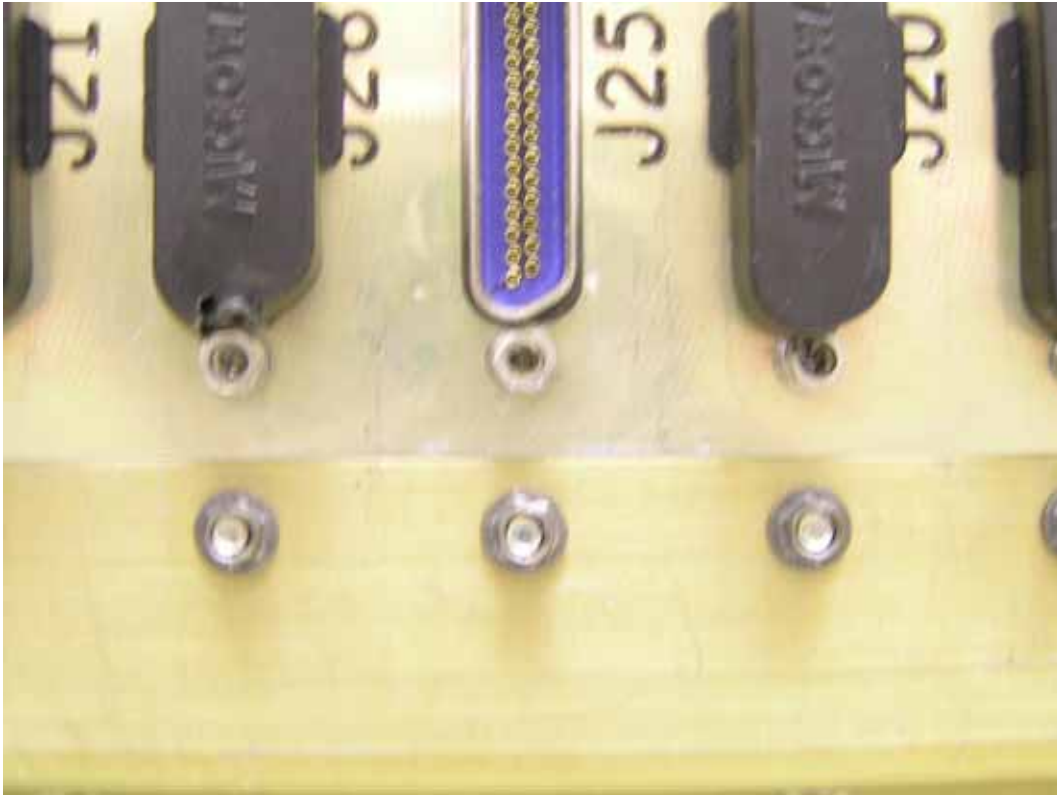
Connectors with ESD covers in place, before removal for inspection



Covers removed for inspection of connectors,
(J27 to J30 – savers not removed)



Connector with crack in the blue gasket between bottom pin and case
Ref HR-SP-RAL-NCR-171



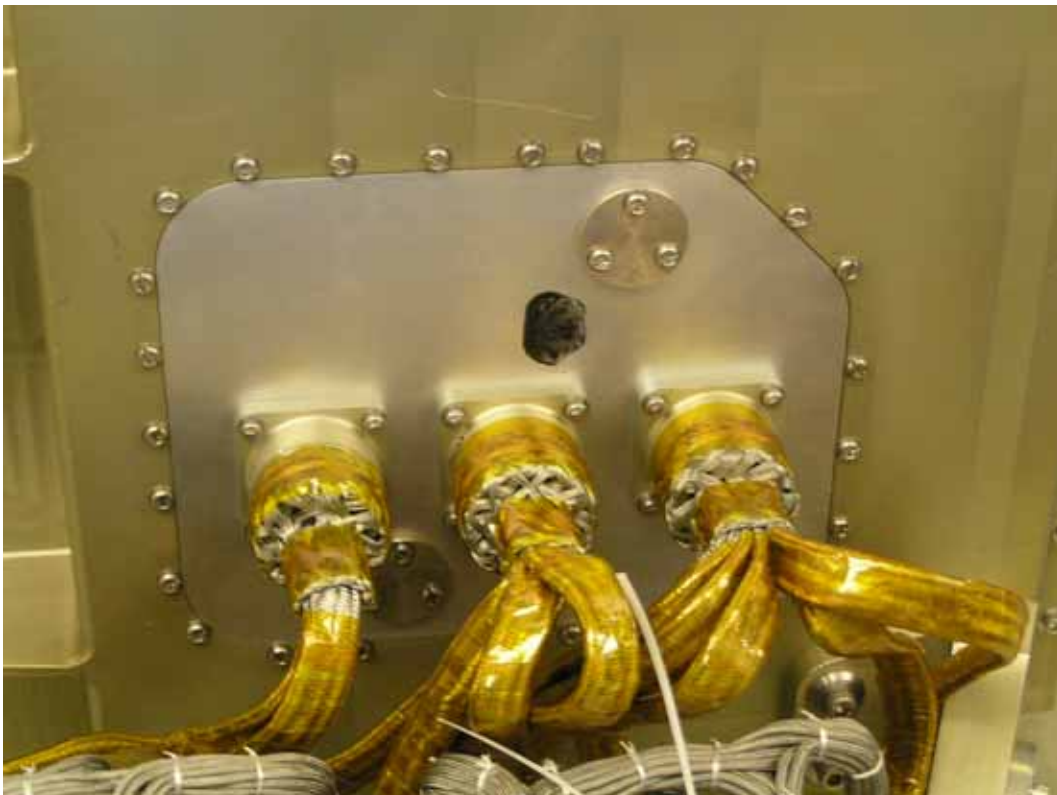
Side of FPU to show scratch marks on the case



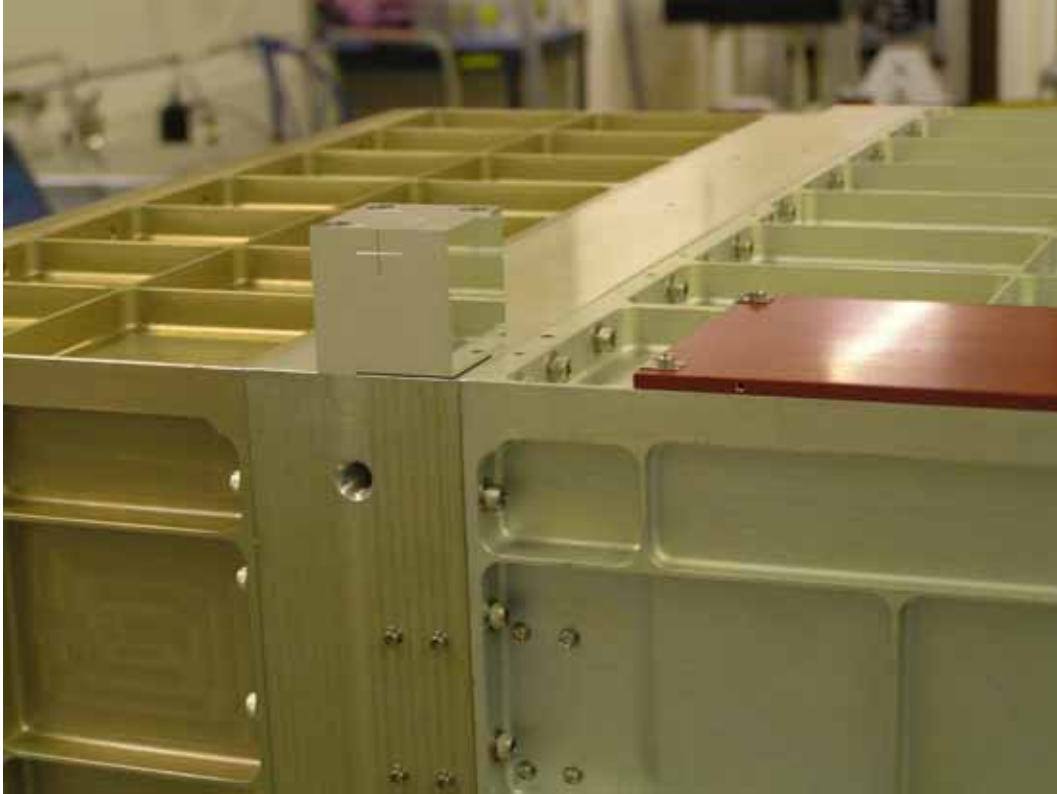
Inspection of the FPU in progress by ESA observer



View of cable, black mark from removal of temperature sensor and scratch on case



Optical alignment cube at the top of the FPU case



FPU with grounding to workbench inside clean-room



View of ID Label Fitted on side of JFET unit



Top of instruments, with ID label and alignment cube



Base of transportation case



Top of transportation case



Sock absorbing springs under platform inside transportation case base



Transportation case View 1



Transportation case View 2



NOTE

Due to time constraints photos of FPU mounted on the Transit plate and of the inner case are not included in this EIDP but are available if required.

NCR Number: **HR-SP-RAL-NCR-171**

Spacecraft / Project	Herschel / SPIRE	Originator's Name	Dion Dawson
Experiment / Model	FPU/PFM	Signature	
Sub-System	connectors	Date	29 March 2007
Assembly		Level (Highlight if applicable)	Major Minor
Sub-Assembly			
Item	FPU connectors	NRB Reference	Recorded on this NCR
Serial Number			

NCR Occurred During (Highlight if applicable)	Manufacture	Inspection	Test	Integration	Other
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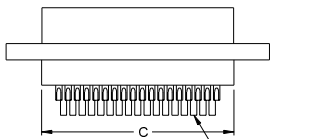
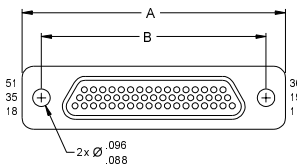
NCR Title	Cracking between pins on blue gasket material - outgoing inspection
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NCR Description	
<p>Cracking was seen in the pin support between pins on FPU flight unit. Connectors numbers J24,J22, J25, J20-cracks seen on blue area inside connectors, alignment of pins OK. Not all connectors were checked as savers were in place. The gasket is not critical to connector operation and not part of the structure of the connector. Therefore the integrity of the connector is not compromised. Mating and de-mating is not expected to cause further degradation as this problem occurs at cryogenic temperatures.</p>	
Cause of NCR	
<p>Probable caused by multiple low temperature cycling during testing. This type of connector is now known to have cracking issues, but this was not known at time of fitting. The cracking was not observed at previous inspection,(two cryocycles ago).</p>	
Disposition / Corrective Action	
<p>Actions discussed at NRB and recorded on this NCR</p> <p>1) As there are two more planned mating for these connectors, one for electrical testing and one for final mating Further inspection is required before and after each mating. 2) Connectors with savers should be checked when savers are removed after delivery. 3) As it is now recommended to use as is - subject to no further degradation of connectors before final mating.</p>	
Document or Drawing Affected (Title, Number & Issue)	Estimated COST OF NCR (cost of : correction, Materials, Resource, and delay to Project etc.)

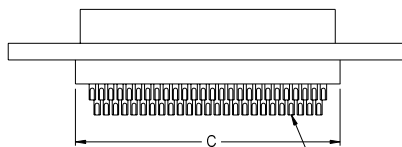
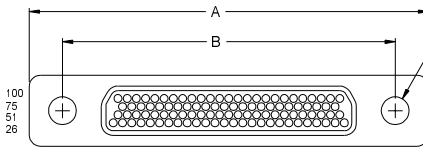
NCR CLOSED	Name	Sign & Date	
		Approved	Rejected
Project Manager:	Eric Sawyer		
Product Assurance:	Eric Clark / Dion Dawson		
CCB-Chairman:			
Principle Investigator			
Product Assurance:	Jan Rautakoski		
Co-Investigator			
Prime Contractor			
ESA Project Office			

1.1 MICRO CONNECTORS / M83513 MICRO D

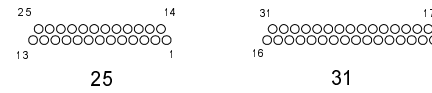
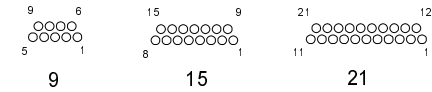
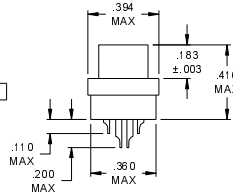
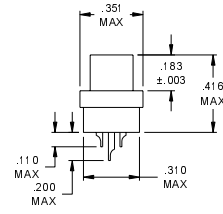
NO. OF CONTACTS	A MAX	B	C MAX
9	.785	.565	.400
15	.935	.715	.550
21	1.085	.865	.700
25	1.185	.965	.800
31	1.335	1.115	.950
37	1.485	1.265	1.100
51	1.435	1.215	1.050
100	2.170	1.800	1.442



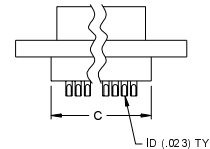
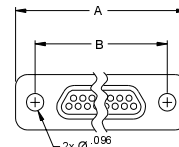
51 CONTACTS



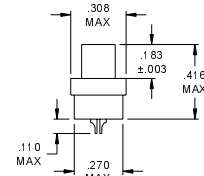
100 CONTACTS



MATING FACE



9-37 CONTACTS



CIM 01 - # #

CRISTEK'S P/N EQUIVALENT TO M83513 MIL SPEC.

PLUG, CLASS M, SOLDER CUP PIN CONTACTS

NUMBER OF CONTACTS

A = 9 D = 25 G = 51
 B = 15 E = 31 H = 100
 C = 21 F = 37

SHELL FINISH
 C = CADMIUM
 N = NICKEL

1. MATERIALS:

SHELL - ALUMINUM PER QQ-A-200/8, QQ-A-250/11, OR QQ-A-591
 INSULATOR - DIALLYL PHTHALATE PER MIL-M-14, TYPE SDG-F
 PIN CONTACT - BERYLLIUM COPPER

2. FINISH:

SHELL - CADMIUM PER QQ-P-416, TYPE II, CLASS 3 OVER
 ELECTROLESS NICKEL PER AMS 2404
 OR ELECTROLESS NICKEL PER AMS 2404
 CONTACT - GOLD PER MIL-G-45204, TYPE II, GRADE C,
 CLASS I OVER NICKEL PER QQ-N-290.

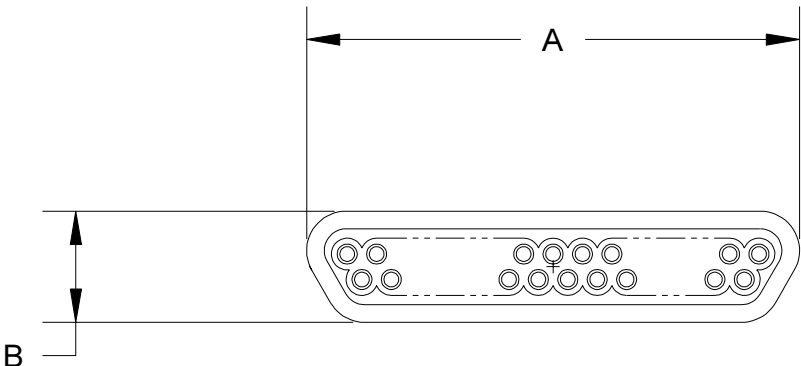
3. SPECIFICATIONS:

CURRENT RATING ----- 3 AMPS MAX
 TEMPERATURE RATING ----- -55° C TO +125° C
 INSULATION RESISTANCE ----- 5000 MEGOHMS MIN
 DWV AT SEA LEVEL ----- 600 VAC
 DWV AT 70,000 FT ALTITUDE --- 150 VAC
 CONTACT RESISTANCE ----- 8 MILLIOHMS MAX AT 2.5 AMPS
 LOW LEVEL CONTACT ----- 10 MILLIOHMS MAX
 RESISTANCE
 CONTACT RETENTION ----- 5 lb MINIMUM AXIAL LOAD
 ENGAGEMENT FORCE ----- 6 oz MAX
 SEPARATION FORCE ----- 0.5 oz MIN

4. ADDITIONAL INFORMATION:

FOR CROSS-REFERENCING CRISTEK PART NUMBERS TO M83513, SEE CROSS REFERENCE INFORMATION IN THE FRONT OF THIS SECTION. FOR MOUNTING HARDWARE OPTIONS, SEE THE HARDWARE PAGES AT THE END OF THIS SECTION

CRISTEK INTERCONNECTS, INC. www.cristek.com 1301 S. Lewis St. Anaheim, CA 92805 Phone: (714) 618-2000 FAX: (714) 535-4897	TITLE MICROMINIATURE D METAL SHELL PLUG, SOLDER CUP	DWG. NO. M83513/01		
	FILENAME ADS-CIM01-1	CODE IDENT N.O. 67720	SHT 1 OF 1	REV D
TOLERANCE: .XXX ±.005 .XX ±.01 ANGLE ±1°				



ORDERING INFORMATION 2

PART NUMBER	SHELL SIZE	A REF	B REF
C90-00021-01	9	.33	.18
C90-00021-02	15	.48	.18
C90-00021-03	21	.63	.18
C90-00021-04	25	.73	.18
C90-00021-05	31	.88	.18
C90-00021-06	37	1.03	.18
C90-00021-07	51	.98	.23
C90-00021-08	69	1.28	.23
C90-00021-09	100	1.3	.27

1. MATERIAL:
35-45 SHORE FLUROSILICONE PER MIL-R-25988.

2 ALL MICRO-D METAL SHELL RECEPTACLE CONNECTORS ARE SHIPPED WITH THIS ITEM INSTALLED. INFORMATION PROVIDED HERE IS ONLY FOR PURCHASING THIS ITEM SEPARATELY.

CRISTEK INTERCONNECTS, INC. www.cristek.com 1301 S. Lewis St. Anaheim, CA 92805 Phone: (714) 618-2000 FAX: (714) 535-4897	TITLE MICRO-D INTERFACIAL SEAL	DWG. NO. MDIS	
	FILENAME ADS-MDIS-1	CODE IDENT N.O. 67720	SHT 1 OF 1
TOLERANCE: .XXX ±.005 .XX ±.01 ANGLE ±1°			