ALCATEL SPACE	HERSCHEL/PLANCK	REF. : H-P-ASP-MN-3485	
		DATE : 28/07/03	PAGE : 1/
COMPTE RENDU DE REUNION / *MINUTES OF MEETING*		LIEU / *PLACE* : teleconf	

OBJET / *PURPOSE* :

CLASSIFICATION :

Review of WIH comments (Instruments + ASED)
in order to release routing final definition

PARTICIPANTS *ATTENDEES*	SOCIETE *FIRM*	SIGNATURE *SIGNATURE*	PARTICIPANTS *ATTENDEES*	SOCIETE *FIRM*	SIGNATURE *SIGNATURE*
Pletinckx K.	NXH				
Dassy S.	NXH				
Bottaro G.	ALS				
Marchand B.	ASP				
REDACTEUR / *WRITTEN BY* : Marchand B.					

CONCLUSION :

HERSCHEL :

- Finalisation of harness routing can start where no interference is detected.
- Comments from Intruments to take into account
- interference with CryoH. to be solved before ending final routing in concerned areas.

PLANCK :

- finalisation of harness routing can start
- REU-PAU harness study to be carried out by NXH (basing on ASP concept)
- LFI BEU still unknown

NXH feedback on schedule is expected (delivery of final routing)

DISTRIBUTION : PARTICIPANTS / *ATTENDEES*		
	POUR ACTION : *FOR FURTHER ACTION*	ALS (Bottaro G.) / ASED (Lang J.+ Fehringer A.) / NXH (Pletinckx K.) / ASP (Marchand B.) HIFI / SPIRE
	POUR INFORMATION : *FOR INFORMATION*	PACS / HFI / LFI / SCS ASP : B.C/JPC/GD/GL/OF/PhC/PR/JJJ

APPROUVE PAR / *APPROVED BY*				
NOM / *NAME*				
SIGNATURE / *SIGNATURE*				

SUITE / *CONTINUED* :

ACTION

General Point :

A database common to ASED/ALS/NXH shall be managed by ASP to group following documents :
- Warm Units mechanical ICDs
- WU electrical ICDs + all relevant documents
- WU CAD models in line with the list
- SVM CAD models
- CAD models of harness routing

A list will be created, maintained and distributed by ASP to all parts at each update. The info will be available on the ftp server.
Official CRs shall then follow the updates.

The list of the WU MICD is given in annex 1 of the present MoM.

Access to the server has to be given to Nexans. — AI#1 ASP 31/08/03

Review of ASED comments

(refer to mail sent on 28/07/03 and given in annex 2 and also to MoM H-P-ASP-MN-3422).

PACS panel

1) Agreed by Nexans who will assess it and reduce the place taken by WIH+SVMH. — AI#2 NXH 31/08/03

2) Information to be cross-checked basing on own document and with next database — AI#3 ASED / NXH / ASP 05/09/03

Additional :
- DECMEC : to avoid interference between WIH and CryoH. on top side of DECMEC, NXH will route the bundles via the other sides (same for internal H.). When not possible, H. volume taken shall be minimised and routed as close as possible to the units (fixed to it)
- BOLC : H. other than Cryo running on the unit stay as is (fixed on left side of the unit and minimised volume). Cryo to be updated by ASED taking this constraint into account.

SPIRE panel

1) agreed by NXH, will be updated accordingly — AI#4 NXH 31/08/03

2) OBDH routing has been updated and is shown in Annex 3. ASED shall shift upward their supports to avoid interference with this H.. OBDH cannot be routed lower because it is not compatible with Pwr H. (red) – different EMC class-. Eventually, ASED can add a support in-between Pwr H. (red) and Signal H. (blue) — AI#5 ASED 31/08/03

3) Agreed in the principle by NXH, occupied volume will be minimised (alternate tie-bases, to reduce inter-bundles distance, and bring harnesses closer to the unit may save 20 mm) — AI#6 NXH 31/08/03

Additional :
- major interference between CCH and SVM H. in CCU lower left corner area. The routing here is under assessment by ASED and feedback is expected, NXH does not need to modify its design for the moment. — AI#7 ASED 31/08/03

HIFI –Y-Z panel

1) ALS and ASED feedback expected before updating / finalising of the routing in FCU/Up-converter area by NXH.

HIFI –Y

1) Due to EMC class separation, Signal H. above LSU cannot be brought closer to the unit (presence of PWR H.). NXH proposes to route FHLCU Signal H. on the lateral panel toward left side, through the 2 cut-outs in left shear web. This has to be first checked with ASED.
PWR H. already runs close to LSU and LCU, if still possible, volume occupied will be minimised. — AI#8 ASP/ASED 01/08/03

2) Information to be cross-checked basing on own document and with next database — AI#9 ASED / NXH / ASP 05/09/03

3) See 1)

Star Trackers H. routing

Star Trackers H. routing will be studied once the final accommodation has been reached.

Telescope harness

CAD model giving new location for this bracket to be sent to NXH by ALS — AI#10 ALS 01/08/03

Review of instruments comments
(refer to mail sent on 22/07/03 and given in annex 4)

HERSCHEL

HIFI Instruments

1) In principle, EMC class separation has been taken into account, to be checked when finalising routing. — AI#11 NXH 31/08/03

   Following example has been given : "One example are the IF semi-rigid cables, which run from left to right over the HIFI -Y panel and in the same area also cables with other EMC classes are routed. »

   HIFI shall clarify and identify all areas that do not respect the criterion. If not, Industry cannot guarantee that all constraints have been understood nor taken into account. — AI#12 ASP/HIFI 01/08/03

2) This comment applies to WEV-WOV and WEH-WOH harness routing

3) 4) OK, will be implemented for final routing

5) the new backshells (see Annex 4 bis) impacts strongly the definition of the routing in WOH/V and WEH/V areas (interference with other bundles routing near units like semi-rigid cables). This will be assessed during final routing. — AI#13 NXH 31/08/03

   Remark : if problematic, semi-rigid cables could be heightened / panel by using of shims.

SPIRE

1) Comment not understood, please clarify.
All Tie-bases implemented are TC-105 ones supporting elementary bundles each. Sometimes bundles are running in parallel. — AI#14 ASP/SPIRE 01/08/03

PACS

1) backshells type is of NXH responsibility.

2) Comment not understood because FHFPU is not in SVM

PLANCK

HFI 4K subsystem

1) on 4K CDE, J9 (15 way connector) connects to one of the "unused" D Connnectors on the compressors (Specifically C137P). This carries the AD590 temperature sensors on the compressors (Compressor A & B temperatures and PPO A & B temperatures).

2) The small connector on 4K CAU does not connect to the CDE (previously J9) but runs along the pipe up to the disconnection box (see picture in Annex 4 ter).

3) Information shown in Annex 4 quarterio extracted from document SEA/02/TN/3683 IC-PHDC-000064-SEA Issue 1 draft A dated from January 03 which has been sent to ALS/NXH already.

Additional :
An issue of the REU-PAU harness study made by ASP is that REU has to be lowered of 20 to 25 mm on the lateral panel. The bundles routing between 4K CDE and REU shall then be grouped to form a single bundle either routing still on the panel or fixed to the 4K or REU lateral side.

Routing can be finalised.

HFI 0.1 K subsystem

No point

Routing can be finalised.

HFI DPU

No point.
NXH indicates that DPU nom and redundant are identified. Nevertheless this has no impact as it is only a writing play, so NXH can stay with its assumption (DPU nom on left side of panel). TBC ASP

AI#15 ASP 05/09/03

Routing can be finalised.

HFI REU-PAU harness

ASP will transmit the CAD models by mail to ALS/NXH giving the configuration retained for the routing.

A dedicated discussion shall be held between ASP/NXH/ALS after review of the CAD model CW#31.

Harness AIT description :

1) harness is first set on the subplatform, then connected to PAU. It is also preliminary set in SVM running through upper closure panel cut-out (along subplatform), then on cone over pipes.
2) REU is integrated on the lateral panel (horizontal position) with other units and cabling of all units on panel is in place (certainly prior to units setting).
3) Lateral panel starts being tilted with its MGSE up to a angle of 50°/60° wrt horizontal (limit angle allowing accessibility to REU connectors).
4) Connectors are mounted on REU.
5) Lateral panel is tilted vertically, harness is finally set on rest of the cone and on shear web up to REU.

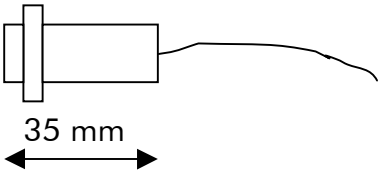
NXH is expected to support ASP globally but mainly for point 1) –design of cut-out- in upper closure panel-, point 3) –checking of the panel tilting and for REU position adjustment.

NXH will finalise the routing and update LFI routing (BEU/DAE & BEU/REBA) to match with it.

The constraints are :

- 12 cables of ∅15 mm splitting in 2 bundles of ∅9 mm on PAU side and on 7 bundles of ∅6 mm on REU side.
- Maximum length end-to-end of 5 m
- No interruption

- Identical lengths (end-to-end) for each cable, or at maximum 3 different lengths (to minimise harnesses spare numbers)
- PAU backshells : DC37 : DC 8949 405 1NM – IDS is shown in Annex 5-
- On REU side : 6 MWDM9 connectors and 1 MWDM25 connector, no backshell, they are molded. The distance from connecting plane to harness is 35 mm



- bundles shall be grounded every 200 mm as far as possible. A bonding strap (ribbon+pod) will go out of the bundle and grounded to the structure (max. length of the ribbon : 50 mm)

There is an error in REU ICD :

p. 30 :
PHCBC12-J06 becomes PHCBC12-J07 : REU PROC Module 12 Power +28V
PHCBC12-J07 becomes PHCBC12-J06 : High Speed Link with DPU-DP N

p. 31:
PHCBC13-J06 becomes PHCBC13-J07 : REU PROC Module 13 Power +28V
PHCBC13-J07 becomes PHCBC13-J06 : High Speed Link with DPU-DP R

LFI

No comment received except bundles characteristics shown in Annex 6 and transmitted by mail (file "Cables_Balax_1.xls")

BEU unit is still under development, and no design can be given at this moment. DAE and REBA are not expected to change so ***routing can be finalised in these areas***.

SCS

No comment has been received.
ASP to request for possibility to attach harness around SCCs connecting plate truss.

AI#16 ASP 01/08/03

Routing can be finalised.

	ACTION			**DATE**
INITIATOR Firm / person	N°	DESCRIPTION	ACTIONEE Firm / person	DUE
NXH	1	Access to server and common database	ASP / BM	31/08/03
ASED	2	Reduce place taken by WIH/SVMH	NXH/KP	31/08/03
ASED/NXH/ASP	3	DECMEC connectors interference between CryoH and WIH	ASED/NXH/ASP	05/09/03
ASED	4	Enlarge free-space area at FCU left	NXH/KP	31/08/03
NXH	5	Shift CryoH. support upward and implement one in-between PWR/Signal	ASED/JL	31/08/03
ASED	6	Reduce place taken by WIH/SVMH	NXH/KP	31/08/03
NXH	7	CCH to be re-designed in CCU lower left corner	ASED/JL	31/08/03
NXH	8	Check possibility to route LCU Signal through shear web cut-outs	ASP/ASED	31/08/03
ASED/NXH/ASP	9	DECMEC connectors interference between CryoH and WIH	ASED/NXH/ASP	05/09/03
NXH	10	CAD model of Cone bracket for Telescope Heaters to be sent	ALS	01/08/03
ASP	11	Check segregation of all different bundles	NXH	31/08/03
NXH	12	Identify problematic areas	HIFI/ASP	01/08/03
ASP	13	Check backshells implementation	NXH	31/08/03
NXH	14	Clarify comment	SPIRE/ASP	01/08/03
NXH	15	Clarify which DPU is nominal and redundant	ASP	05/09/03
NXH	16	Ask for possibility to attach harness on SCC connecting plate	JPL/ASP	01/08/03

ANNEX 1 : list of applicable WU MICD

Source : CR H-P-ASP-CR-0469 sent to ALS by ASP on 22/07/03

Update of following interface drawings
For Herschel:
- FH3DH and FH3DV: DR-521-001, Iss 1, dated 04/07/03
- FHFCU: 324-E-5000, Iss b, 07/07/03
- FHLCU: SRC/LCU/SP/2001-012, Iss 8, 12/06/03
- FPBOLC: PACS-MX-2000 000 D, Iss D, Sep 02
- FHSPU: FPL-ID-SPU-00002-CRS, Iss 3, 02/04/03
- CCU: HP-2-PANT-ID-0035, Iss 1, 27/02/03

For Planck
- 4K CAU: PLS114FS002SA, Indice A, 22/07/03
- 4K CRU: CDE-ID-1275-00002-CRS, Iss 1 dr, 13/05/03
- REBA: FPL-ID-REB-0002-CRS, Iss 3, 02/04/03

Corresponding lists of applicable drawings for Herschel and Planck are given in following tables

Instrument Warm Units reference table (Herschel SVM)

INSTR.	ACRONYM	PRJ CODE	LATEST APPLICABLE DOCUMENT (FOR ALS)	REFERENCE DWG		
				NUMBER	ISS.	DATE
HIFI	FH3DH (1)		CR 469	DR 521-001	1	04-07-03
	FH3DV (1)		CR 469	DR 521-001	1	04-07-03
	FHFCU		CR 469	324-E-5000	b	07-07-03
	FHHRH		CR 311	CESR-HRS-MD-3151-103	3.4	08-11-02
	FHHRV		CR 311	CESR-HRS-MD-3151-103	3.4	08-11-02
	FHICU		AD 4	HER H004/02		10-02-02
	FHLCU		CR 469	SRC/LCU/SP/2001-012	8	12-06-03
	FHLSU		CR 422	ICD-HIF-157704	P1	19-02-03
	FHWEH		CR 308	WBE/DR/2000	B rev 6	04-11-02
	FHWEV		CR 308	WBE/DR/2000	B rev 6	04-11-02
	FHWOH		CR 309 Issue 2	UC 00.00	4	24-03-03
	FHWOV		CR 309 Issue 2	UC 00.00	4	24-03-03
PACS	FPBOLC		AD 5 + CR 469	PACS-MX-2000 000 D	D	XX-09-02
	FPDPU		AD 5	HER 005/02		02-05-02
	FPMEC-DEC		CR 394	ME.HES.114P.S.001SA ind A (date 07-04-03)		13-12-02
	FPSPU		AD 5 + CR 469	FPL-ID-SPU-00002-CRS	3	02-04-03
SPIRE	HSDCU	FSDCU	CR 425	SPIR-MX-5100 000 D	D	XX-10-02
	HSDPU	FSDPU	CR 425	HER S005/03	4	23-02-03
	HSFCU	FSFCU	CR 425	SPIR-MX-5200 000 F	F	XX-10-02

Latest applicable IID-B:

INSTRUMENT	A.D.	ISSUE	REV.	DATE
HIFI	4	2	2	26-06-02
PACS	5	2	1	01-07-02
SPIRE	6	2	2	01-07-02

Interface to the Cryostat Control Unit (Herschel only)

Cryostat Control Unit reference table (Herschel SVM)

ACRONYM	REFERENCE DOC			REFERENCE DWG		
	NUMBER	ISSUE	DATE	NUMBER	ISSUE	DATE
CCU	HP-2-PANT-ID-23808.0			HP-2-PANT-ID-0035	1	27-02-03

Instrument Warm Units reference table (Planck SVM)

INSTR.	ACRONYM	PRJ CODE	LATEST APPLICABLE DOCUMENT	REFERENCE DWG		
				NUMBER	ISS.	DATE
HFI	4CAU	PHDB	AD 7 + CR 387 + CR 469	PLS.114F.S.002SA	A	22/07/03
	4CCU	PHDA	AD 7 + ICD-PLANCK4K-AST-012 Issue 2	CD65720 SHEET 1/2 & 2/2	01	08-03-02
	4CRU	PHDJ	AD 7 + CR 469	CDE-ID-1275-00002-CRS	1 draft	13/05/03
	HeTANK	PHEAA/B	AD 7	F4060A RSKTO51A1006	AD	15-01-98
	4KCDE	PHDC	AD 7 + IC-PHDC-000009-SEA Issue 2 draft A +CR 387	O-KE-0151-001-E	E	11/09/02
	DCCU	PHEC	AD 7+CR 387	H0201C006 H0201C009	A A	30-03-03 30-03-03
	DPU	PHBA-N/R	AD 7+CR 387	I592EB003	B	02/12/02
	PAU	PHCBA	AD 7 +CR 337 Issue 2	7137-QD0-000	A	13-05-03
	REU	PHCBC	AD 7 +CR 344	REU ICD IF- PHCBC282-200050-CESR+updated drawing	V2	30/01/03
LFI	BEU	PLBEU	AD 8	Draft sheet 1/2 & 2/2	DRAFT	12-06-02
	DAE-PB	PLAEF	AD 8	Draft sheet 1/2 & 2/2	DRAFT	22-03-02
	REBA	PLREN/R	AD 8+ CR 469	FPL-ID-REB-0002-CRS	3	02-04-03
SCS	SCC	PSM3/R3	AD 8 +CR 338	10203010 4 sheets	X20	21/02/02 (erroneous)
	SCE	PSM4/R4	AD 8	941000 941001		18/01/02 09/04/02

Latest applicable IID-B:

INSTRUMENT	A.D.	ISSUE	REV.	DATE
HFI	7	2	1	01-07-02
LFI	8	2	1	01-07-02
SCS	8	2	1	01-07-02

Interfaces to the Customer Furnished Equipment (SREM, VMC)

Customer Furnished Equipment reference table (Herschel/Planck SVM)

ACRONYM	REFERENCE DOC			REFERENCE DWG		
	NUMBER	ISSUE	DATE	NUMBER	ISSUE	DATE
SREM	SREM-DI-CSAG-003	1.2	15-12-00	CR 207 374 AZ C	AC	27-01-99
VMC						
FOG				DT0051932	01 rev 00	

XXX = HES for Herschel or PLS for Planck

ANNEX 2 : sum up of ASED comments (mail from 28/07/03)

Pour : ken.pletinckx@nexans.com
Cc : gbottaro@to.alespazio.it
stephane.dassy@nexans.com
ofratacci@to.alespazio.it
Objet : Sum up of splinter with ASED

Hello everybody,
in order to support the telecon this afternoon, here is the list of the outcomes of splinter session on Cryo-harness in SVM with Astrium (ASED) :

General :

1) A common database giving WU ICDs (M+E) and CAD models shall be managed by ASP on a ftp server accessible to all parties involved.

The following comments are to be considered as looking to the lateral panel from SVM center. They are based on the preliminary CryoH. routing CAD models delivered by ASED during the QPM. The models have been transmitted to ALS.

PACS panel :

1) ASED needs more space between DECMEC & BOLC to route CryoH, the power H. supplying DECMEC shall then be routed on DECMEC's small lateral side. Signal H. shall be put also as close as possible to the DECMEC.
Nota : segragation of harness class to be assessed

2) DECMEC J17 and redundant J117 connectors appear to be simultaneously connected to CryoH. and WIH. To be checked.

SPIRE panel :

1) the area at the left of the FSFCU shall be enlarged, leading to grouping of thermal ctrl/analog H.

2) OBDH H. loop currently located in the middle of the shear webs shall be shifted close to the left web as much as possible. If the antenna is blocking, the loop shall be shifted to the right web.
The centered area of the shear webs is dedicated to CCU H. routing

3) WIH on top of FSDCU unit shall be routed closer to the unit in order to free space for CryoH. routing and connection.

HIFI -Y-Z panel :

1) FHFCU area : additional space needed for CryoH. accommodation but pending on following actions

* FCU connectors changing => re-routing to be assessed by ASED
* Up-converter : accommodation to be assessed by ALS
* CryoH. routing update in FCU left area, ASED
* WIH to be updated accordingly in this area

HIFI -Y panel :

1) WIH on top of FHLCU and FHLSU shall be routed closer to units in order to increase the space for the CryoH. routing

2) FHLCU J03 and J23 connectors are connected simultaneously to CryoH. and WIH. To be checked.

3) Routing on top of FHLSU : due to possible new IF for LOU WG, the routing of WIH / SVM H./ all non CryoH. shall be restricted to the minimum on top of FHLSU.

4) The LOU WG IF is on-going, as soon as information is available, this will be passed to ALS/Nexans

Star Trackers routing

ASED requests the routing of Star Trackers to ALS in order to check the compatibility with CryoH.

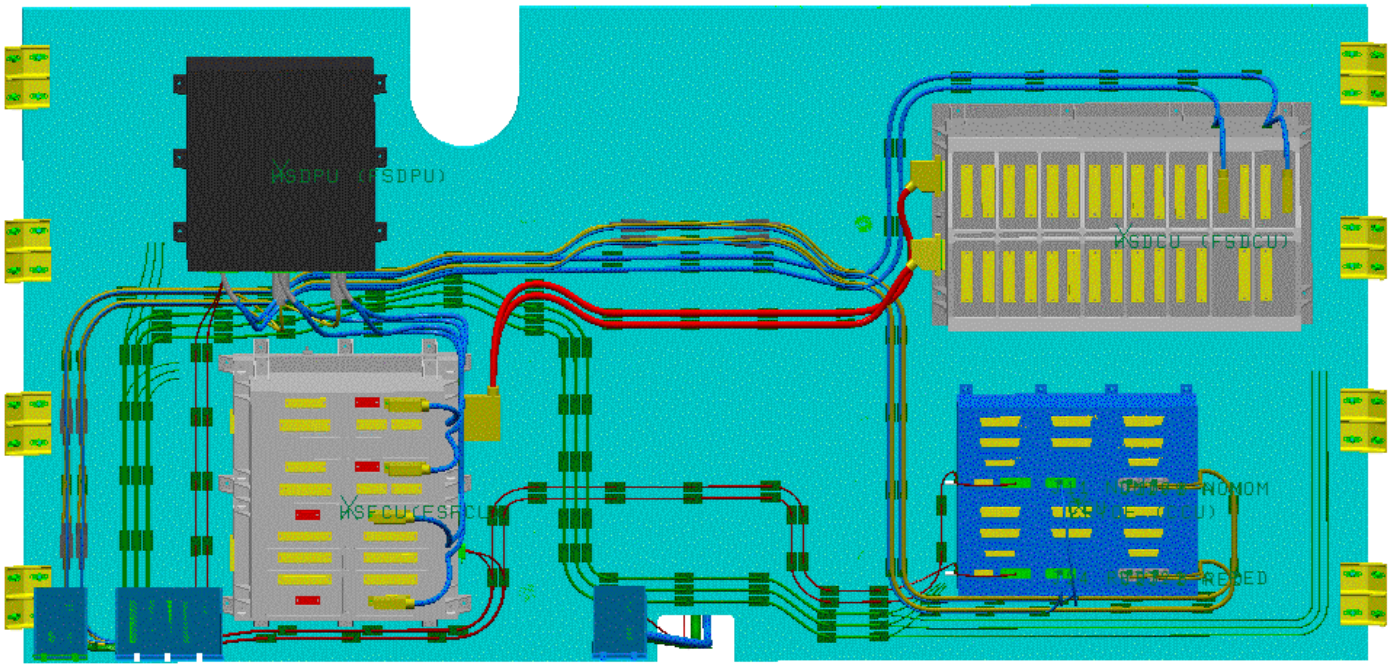
Cone Telescope H. bracket relocation

ASED has agreed the new location of the bracket proposed by ALS

Best regards.

Baptiste Marchand.

ANNEX 3 : SPIRE panel latest configuration



ANNEX 4 : Instruments comments (mail from 22/07/03)

Pour : ken.pletinckx@nexans.com

stephane.dassy@nexans.com
cc : gbottaro@to.alespazio.it
ofratacci@to.alespazio.it
Bernard Collaudin/ALCATEL-SPACE@ALCATEL-SPACE
Objet : comments from Instruments

Dear all,
in order to support the discussion for tomorrow,
we have received the following comments from Instruments up to now :
(Astrium comments for Herschel Cryohrn are not included and will be reviewed tomorrow)

HERSCHEL

HIFI :

1) Bundles of different EMC classes are running close together. This should be avoided or metalic barriers should be used.

2) For EMC reasons the RF cabling and analog signal cables between these
units should be routed close together and close to the baseplate. For the analog signal harness specific connectors are used to make this possible.

3) The backshells foreseen for HIFI are the following Glenair types:
550T039M1R9H0-03B, size E, TOP entry
550E039M1R9J0-03B, size E, END entry
and the equivalent types for size A, B and C.

4) The receptacles for all coaxial (not only semi-rigid) cables, located on the connectors brackets, are:
Type: ESCC 340200304B101, Manufacturer: Radiall/France

5) the pictures of the special connectors (for the WEH-WOH and WEV-WOV harness) are attached to this
mail.
As shown the cabling can route directly below these conectors on the base plates.

I requested also a drawing of these connectors, which will be sent as soon as possible, but to get an impression of the dimension you need to
know that the grid on these pictures is 5x5mm.

<<P7101322.JPG>>
<<P7101321.JPG>>
<<P7101320.JPG>>

HIFI conn views.zip

SPIRE :

1) Please specify the details of the 4 harness wide clamp base shown bottom
right in VueF of drg HP-NXH-DR-XXXX.

J-L of CEA points out that it needs to fit with margin on the flat surface shown, not
overhang over the power supply base's joint.

PACS :

1) the back shell information as well finalized WEU drawings are missing.
These information was requested very often from our partner institutes but
it is not yet available.

2) in the Herschel - PACS table the identifier FPFPU P09 is missing.

PLANCK

HFI 4K

1) J9 on the 4K CDE goes to the Ancillary unit and not on the Compressor. J9 is the 15 way connector with Compressor A & B temperatures and PPO A & B temperatures.

2) The small connector on the ancillary unit does not connect to the CDE but runs along the connecting pipework to the
disconnection box.

Harness Routing to Disconnection Box.jpg

3) The information you need for the HFI 4KCDE harnesses can be found in table 2 of the attached document (backshell).

IC PHDC 000064 SEA issue 1 Harness Design.doc

HFI 0.1 K

1) We are also somewhat discovering accommodation changes (such as redondant
DPU now sitting on the same panel as the Nominal one), possible new splitting of the harnesses linking the DPUs to the DCE (which may imply new
connectors, different geometry of covers,...), we lack a drawing showing the
routing between these units,...

LFI

1) we send in annex the list of the BEU harness with indication about bundle characteristics.

Cables_Balax_1.xls

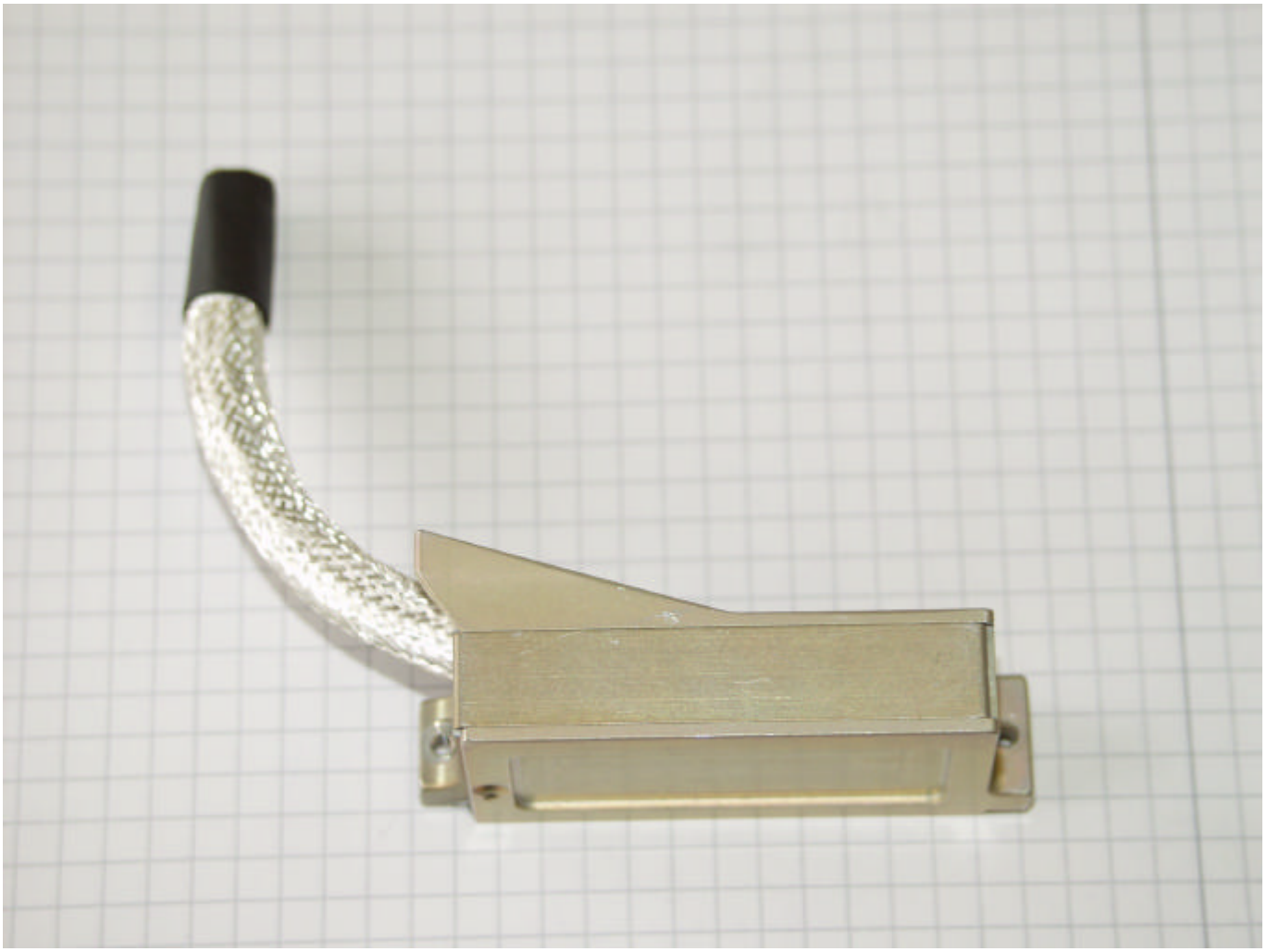
Best regards.

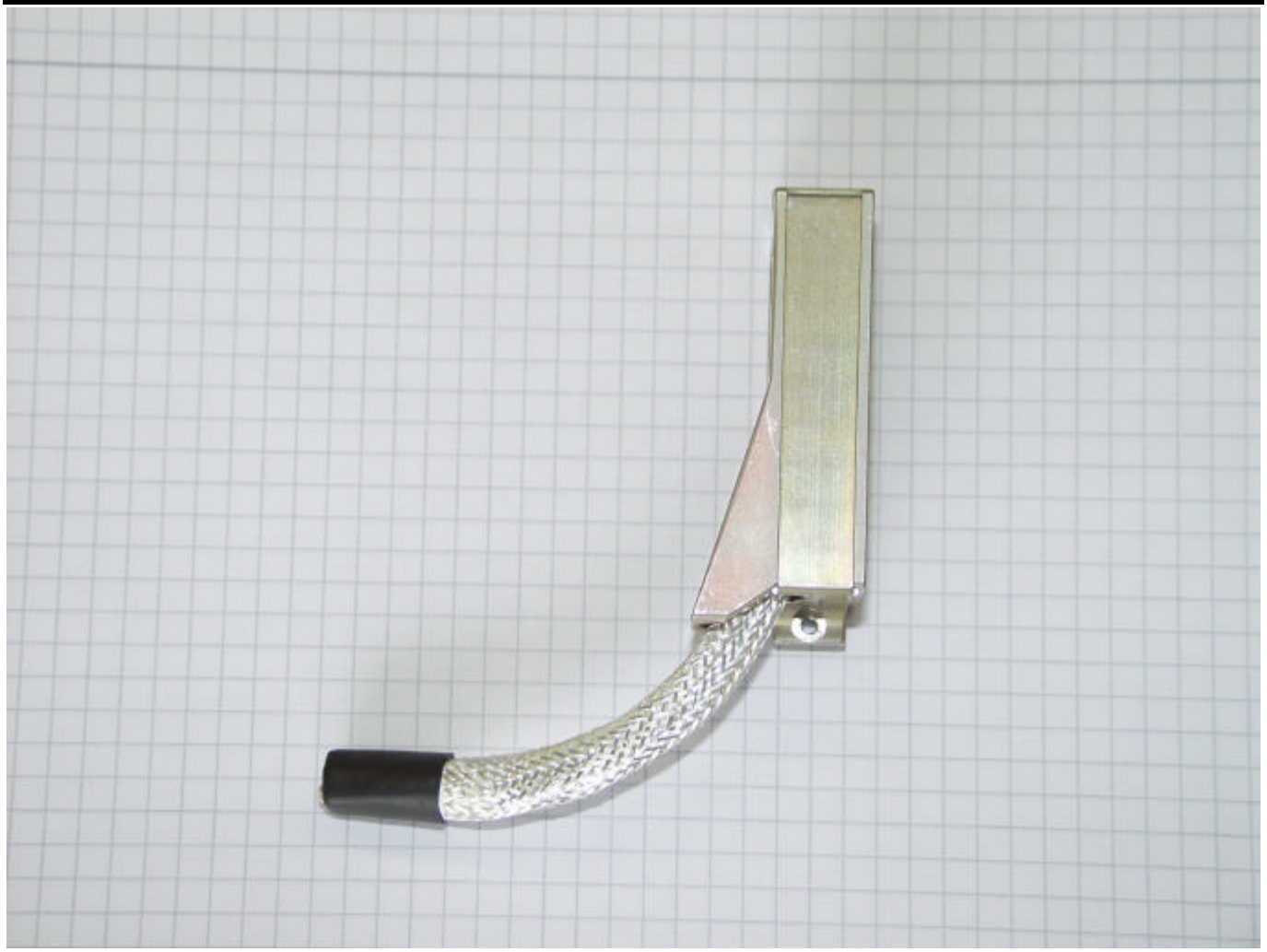
Baptiste Marchand.

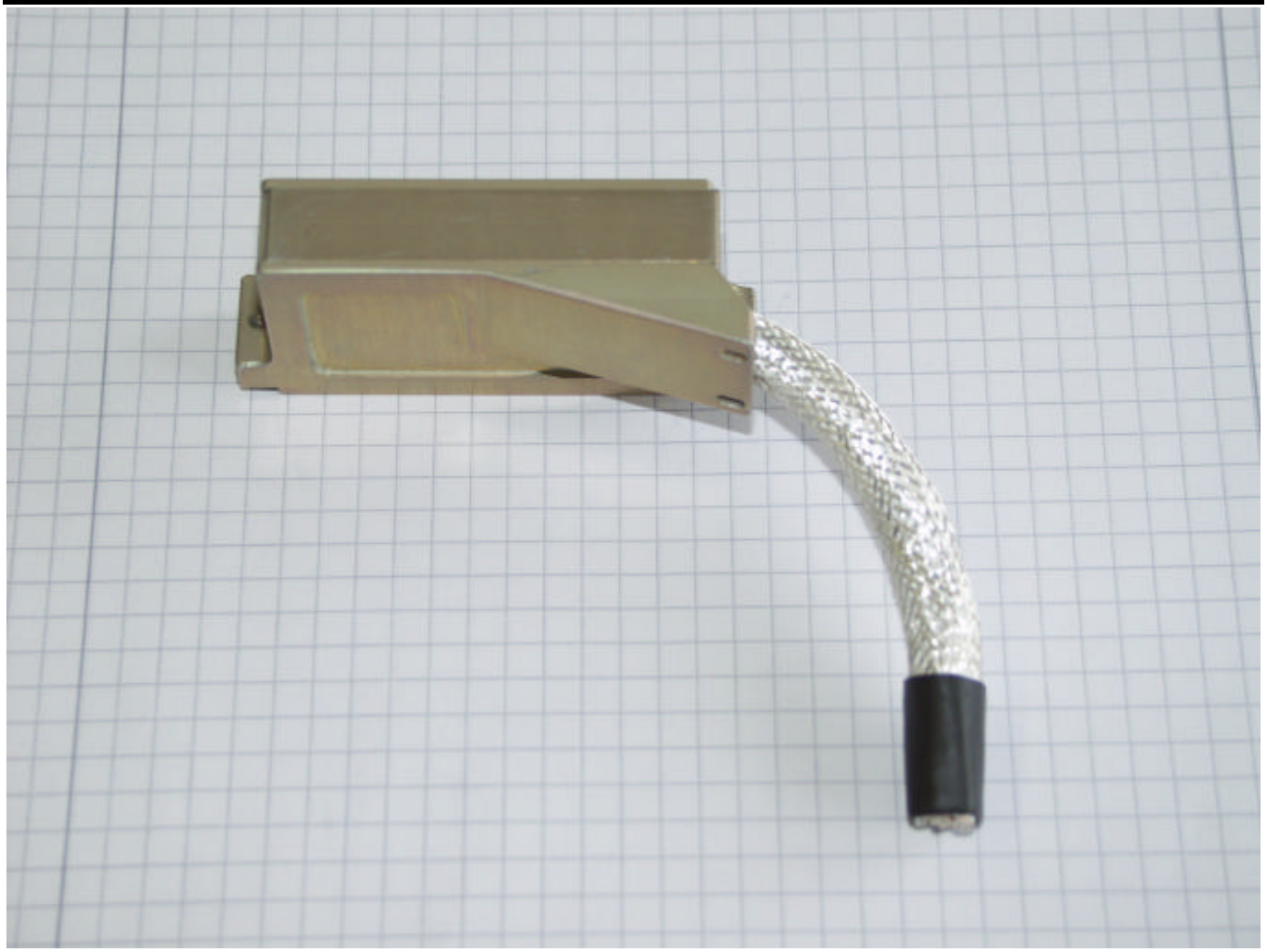
ANNEX 4 bis

Content of HIFI conn views.zip :

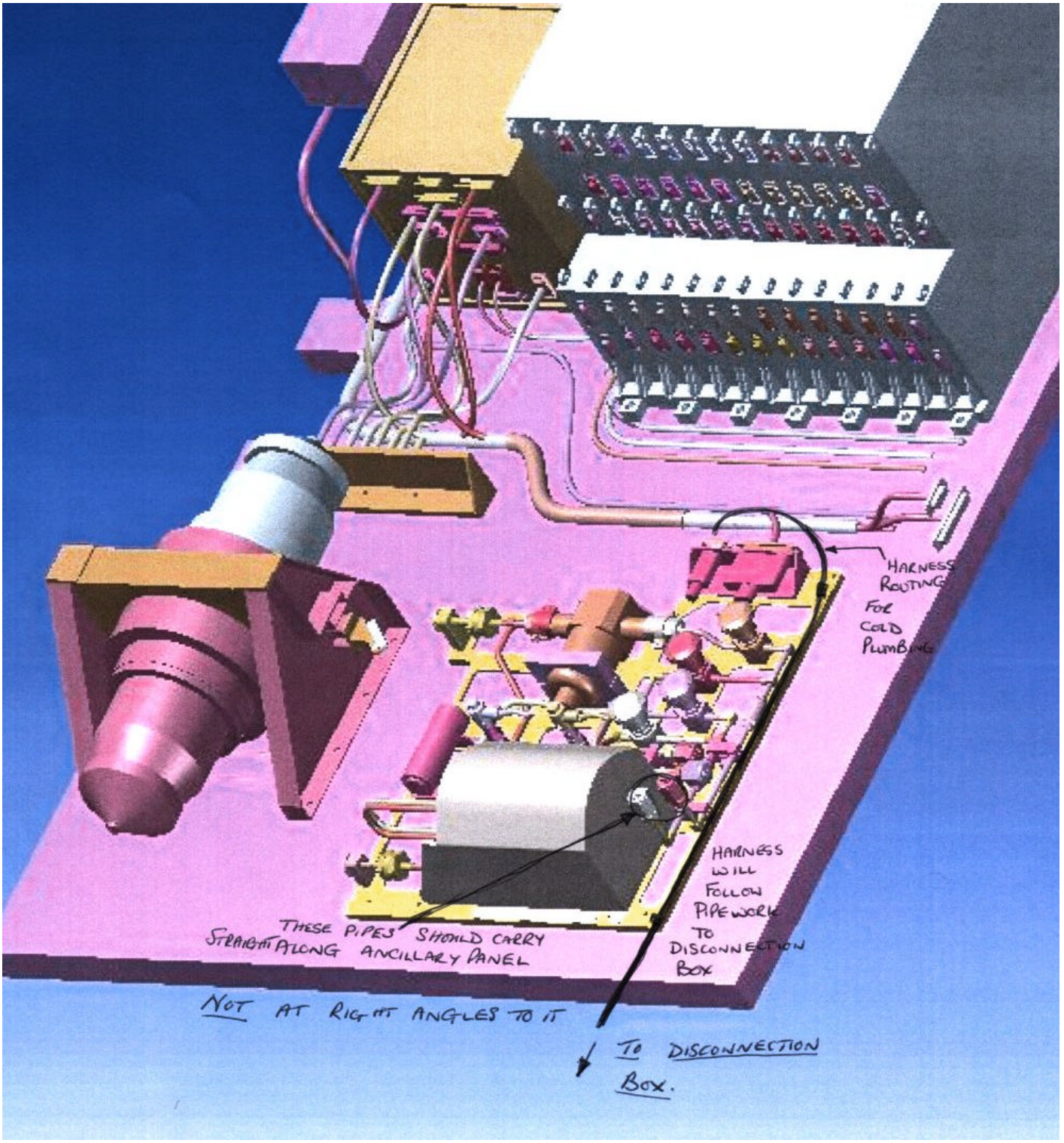
Backshells for WEH/V and WOH/V.
Nota : dimensions of the grid on the pictures is 5x5 mm







ANNEX 4 ter : 4K CAU connection



ANNEX 4 quarterio

Connector	Connector Type	Backshell	Function
PHDC-P3A	340100201B DEMA9SNMBFO	100P1574-09-1-C Polamco Ltd.	Compressor A Drive Outputs
PHDC-P3B	340100201B DEMA9SNMBFO	100P1574-09-1-C Polamco Ltd.	Compressor B Drive Outputs
PHDC-P4A	340100201B DEMA9PNMBFO	100P1574-09-1-C Polamco Ltd.	Position Pick-off (PPO) A
PHDC-P4B	340100201B DEMA9PNMBFO	100P1574-09-1-C Polamco Ltd.	Position Pick-off (PPO) B
PHDC-P5	SCBM5W5M0000G	100P1574-15-1-C Polamco Ltd.	Force Inputs
PHDC-P6	340100202B DCM62PNMBFO	100P1574-37-1-C Polamco Ltd.	Ancillary Inputs
PHDC-P8	340100201B DAM15PNMBFO	N/A	Transport Link
PHDC-P9	340100201B DAM15PNMBFO	100P1574-15-1-C Polamco Ltd.	Compressor Temperatures
PHDD-P120	340100201B DEMA9PNMBFO	100P1574-09-1-C Polamco Ltd.	Compressor A Drive Outputs
PHDD-P121	340100201B DEMA9PNMBFO	100P1574-09-1-C Polamco Ltd.	Compressor B Drive Outputs
PHDD-P122	340100201B DEMA9SNMBFO	100P1574-09-1-C Polamco Ltd.	Position Pick-off (PPO) A
PHDD-P123	340100201B DEMA9SNMBFO	100P1574-09-1-C Polamco Ltd.	Position Pick-off (PPO) B
PHDD-P124a	340200801B301	N/A	Force Input a
PHDD-P124b	340200801B301	N/A	Force Input b
PHDD-P124c	340200801B301	N/A	Force Input c
PHDD-P124d	340200801B301	N/A	Force Input d
PHDD-Pxxx	340100202B DCMA62SNMBFO	100P1574-37-1-C Polamco Ltd.	Ancillary Inputs
PHDD-Pyyy	340100201B DEMA9SNMBFO	100P1574-15-1-C Polamco Ltd.	Compressor Temperatures

ANNEX 5 PAU backshell IDS

Non magnetic D-Sub backshells

EMI/RMI Shielded backshells
Straight & Low profile outlet banded clamp termination

Accessories	D	E	8949	405	K	1	NM	J

Shell size
E - A - B - C - D

Cable outlet option

Straight outlet	405
Low profile outlet	401

Cable outlet type (only for low profile outlet) (see below ★)

Height code

Front mount	Rear mount	mm	inch
1	-	7,74	0.305
-	2	6,32	0.249
-	3	5,53	0.218
-	4	4,74	0.187
-	5	3,93	0.155

Non magnetic

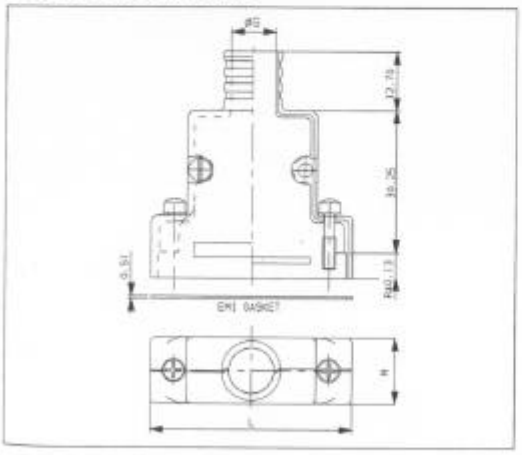
Finish code

Blank	0,8 µm gold
J	12,7 µm nickel (per MIL-C-26074 grade B)

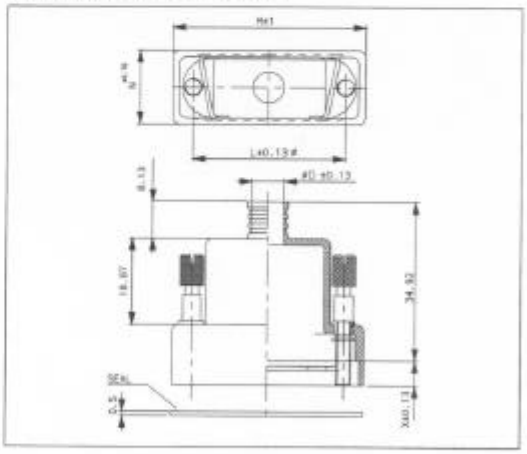
Characteristics

- Split, solid fully machined aluminium alloy
- Cable outlet for banded clamp termination system
- For front or rear mount with EMI gasket
- Non magnetic D-Sub backshells

Straight cable outlet : 405



Low profile cable outlet : 401



Shell size	M	L	Ø G	Shell size	M	N	L	Ø D	★ Outlet type	Ø D	★ Outlet type
E	15,98 .629	35,03 1.379	6,73 .265	E	34,69 1.366	16,25 .640	24,99 .984	4,83 .190	B	5,59 .220	C
A	15,98 .629	43,36 1.707	9,9 .390	A	43,03 1.694	16,25 .640	33,32 1.312	4,83 .190	B	6,98 .275	E
B	15,98 .629	57,25 2.254	10,54 .415	B	56,92 2.241	16,25 .640	47,04 1.852	6,6 .260	D	7,24 .285	F
C	15,98 .629	73,53 2.896	10,54 .415	C	73,2 2.882	16,25 .640	63,5 2.500	6,6 .260	D	8,89 .350	G
D	18,79 .740	71,14 2.801	13,33 .525	D	70,56 2.778	19,05 .750	61,11 2.406	8,89 .350	G	12,45 .490	H

ANNEX 6 – LFI bundles characteristics

BEU Cables - Baseline July 2003
Outer Space Side
from BEU to Pwr Box

	Cable Name	FROM Conn. ID	Type	Backshell	TO Conn. ID	Type	Backshell	Cable diam. mm	Bend. Fact.	Bending Radius mm	Content
1A	Left FEM Bias Tray - BIAS PWR	J11	DD DAMA15S	3401-022-35B				5	5	25	3 x TT AWG 24
1B	Left FEM Bias Tray - PHSW PWR	J13	DD DAMA15S	3401-022-35B	J05	DD DBMA25P	3401-022-36B	5	5	25	2 x TT AWG 24
2	Left BEM Tray Pwr	J23	DD DEMA9S	3401-022-34B	J07	DD DEMA9P	3401-022-34B	5	5	25	2 x TT AWG 24
3	PWR BOX CMD Link	J48	HD DAMA26S	3401-022-35B	J47	HD DAMA26P	3401-022-35B	8,5	5	42,5	4 x TP + 1 x TSP + 8 S AWG 26
4	DAE-BEU Pwr	J50	DD DEMA9S	3401-022-34B	J49	DD DEMA9P	3401-022-34B	6	5	30	1 x TT + 2 x TP AWG 22
5	Right BEM Tray Pwr	J24	DD DEMA9S	3401-022-34B	J08	DD DEMA9P	3401-022-34B	5	5	25	2 x TT AWG 24
6A	Right FEM Bias Tray - PHSW PWR	J14	DD DAMA15S	3401-022-35B				5	5	25	2 x TT AWG 24
6B	Right FEM Bias Tray - BIAS PWR	J12	DD DAMA15S	3401-022-35B	J05	DD DBMA25P	3401-022-36B	5	5	25	3 x TT AWG 24
from DAE BEU to Lateral Trays											
7	Left FEM Bias b. CMD Link	J19	HD DBMA44P	GLN 550-S-102-M-3-R3-H	J15	HD DBMA44S	GLN 550-S-102-M-3-R3-H	12		50	
8	Left FEM Bias b. CMD Link	J21	HD DBMA44P	GLN 550-S-102-M-3-R3-H	J17	HD DBMA44S	GLN 550-S-102-M-3-R3-H	12		50	
9	Right FEM Bias b. CMD Link	J20	HD DBMA44P	GLN 550-S-102-M-3-R3-H	J16	HD DBMA44S	GLN 550-S-102-M-3-R3-H	12		50	
10	Right FEM Bias b. CMD Link	J22	HD DBMA44P	GLN 550-S-102-M-3-R3-H	J18	HD DBMA44S	GLN 550-S-102-M-3-R3-H	12		50	
S/C Centre Side											
from Lateral Trays to DAE-BEU											
11	Left BEM A Science Signals	J25	HD DBMA44P	GLN 550-E-102-M-3-R3-H	J29	HD DBMA44S	GLN 550-E-102-M-3-R3-H	14,6		75	12 x TSP + 1 TP AWG 26
12	Left BEM B Science Signals	J27	HD DBMA44P	GLN 550-E-102-M-3-R3-H	J31	HD DBMA44S	GLN 550-E-102-M-3-R3-H	14,6		75	12 x TSP + 1 TP AWG 26
13	Right BEM A Science Signals	J26	HD DBMA44P	GLN 550-E-102-M-3-R3-H	J30	HD DBMA44S	GLN 550-E-102-M-3-R3-H	14,6		75	12 x TSP + 1 TP AWG 26
14	Right BEM B Science Signals	J28	HD DBMA44P	GLN 550-E-102-M-3-R3-H	J32	HD DBMA44S	GLN 550-E-102-M-3-R3-H	14,6		75	12 x TSP + 1 TP AWG 26
from DAE BEU to REBA											
15	Data Link Nom. REBA	J09	HD DCMA62S	3401-022-37B	J13	DD DAMA15S	3401-022-35B	15		75	5 x TP 26 AWG 26
					J22	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
					J23	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
					J32	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
					J33	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
											bundle
16	Data Link Red. REBA	J09	HD DCMA62S	3401-022-37B	J13	DD DAMA15S	3401-022-35B	15		75	5 x TP 26 AWG 26
					J22	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
					J23	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
					J32	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
					J33	MWDM-5L-9PSM	GLN 507-146-M09H				4 x TP AWG 26
											bundle
from S/C to DAE BEU											
	Nom S/C CLK	N/A	DD DEMA9P	N/A	J03	DD DEMA9S	N/A				
	Red S/C CLK	N/A	DD DEMA9P	N/A	J03	DD DEMA9S	N/A				