SPIRE-AST-NOT-001883

Title: **Herschel CRYO-Harness Inputs to Thermal Analysis**

CI-No: 121430

Prepared by:	W. Hund	Date:	21.01.2005
Checked by:	A. Knoblauch		27.1.2005
Product Assurance:	for R. Stritter		27.1.2005
Project Management:	W. Wietbrock		27.1.05
Project Management:	W. Rühe		27.01.05

Distribution: See Distribution List

Copying of this document, and giving it to others and the use or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design.

Issue	Date	Sheet	Description of Change	Release
Draft	27.09.01	-all-	First issue	
1	14.02.02	-all-	New issue, Document update based on IIDB's issue 2 and further clarifications concerning instrument nominal current , duty-cycles and incorporation of harness branch length.	
	18.03.02	16	add remark for column "R_cable Ohm/m at 300 K	
		22	add remark for column "R_cable Ohm/m at 300 K	
		28	add remark for column "R_cable Ohm/m at 300 K	
		31	cable_ID I10 line 1, 6, 7, change duty-cycle	
		32	cable_ID I12 line 1, 6, 7, change duty-cycle	
		33	cable_ID C3 line 3 change I_nominal(A)	
		34	cable_ID C10 line 1 change duty-cycle	
		35	cable_ID C12 line 2 change duty-cycle	
1.1	08.05.02	18	Implementation of red-lined document. Ref.: HI-FI I/F Meeting HP-2-ASED-MN-0114	
		30	Implementation of red-lined document. Ref.: PACS I/F Meeting HP-2-ASED-MN-0111	
		37	Implementation of red-lined document. Ref.: SPIRE I/F Meeting HP-2-ASED-MN-0112	

Issue	Date	Sheet	Description of Change	Release
2.0	20.10.03	10-26	Add new Interconnection Diagram for CCH Harness Update of Cryo-Harness tables for CCH	
		27-42	Add new Interconnection Diagram for HIFI Harness Update of Cryo-Harness tables for HIFI SIH	
		43-56	Add new Interconnection Diagram for PACS Harness Update of Cryo-Harness tables for PACS SIH	
		57-67	Add new Interconnection Diagram for SPIRE Harness Update of Cryo-Harness tables for SPIRE SIH	
3.0	06.02.04	10-25	Annex 1: Cryo Control Harness CCH Update of Cryo Harness Interconnection Diagram HP-2-ASED-ID-0088-01-0C; HP-2-ASED-ID-0088-02-0C and new issue HP-2-ASED-ID-0088-03-0C. update of Cryo-Harness tables for CCH	
		26-39	Annex 2: HIFI Instrument Harness SIH New issue for Cryo Harness Interconnection Diagram: HP-2-ASED-ID-0088-01-0C; update of Cryo-Harness tables for HIFI SIH	
		40-51	Annex 3: PACS Instrument Harness SIH update of Cryo-Harness tables for PACS SIH	
		52-62	Annex 4: SPIRE Instrument Harness SIH update of Cryo-Harness tables for SPIRE SIH	
3.1	19.03.04	08-23	Annex 1: Cryo Control Harness CCH Internal CCH: Length data in column "Harness SFW-CB to end Item conn. " deleted for items without I/F on SFW-CB	
		23-38	Annex 2: HIFI Instrument Harness SIH Update acc. to SCI-PT-IIDB/HIFI-02125 iss.3.1 / 13-01-04 HIFI internal: Missing columns (dissipation) completed	

Issue	Date	Sheet	Description of Change	Release
		38-51	Annex 3: PACS Instrument Harness SIH Update acc. to SCI-PT-IIDB/PACS-02126 iss.3.1 / 20-01-04 Duty cycle of cable ID 97 corrected acc. to IIDB. Current of Cable ID 97 set to 50 mA acc. to email from Marquet Benoit (CSL), dated 18.03.04 Current of CRE DC supplies corrected acc. to IIDB	
		51-62	Annex 4: SPIRE Instrument Harness SIH Update acc. to SCI-PT-IIDB/SPIRE-02124 iss.3.11 / 07-01-04 Implementation of clarified inconsistencies noted in HP-ASED FX-0096-04, dated 13.02.04 Amount of cables for sorption pump heater corrected.	
		63	Added: § 8 Annex 5: HERSCHEL Cryo Harness wire and cables	
3.2	21.01.05	38-50	Annex 3: PACS Instrument Harness SIH Implementation of capacity values for the PACS SIH harness	
		51	Annex 4: SPIRE Instrument Harness SIH Implementation of capacity and inductance values for the SPIRE SIH harness	
		66	Annex 6: Measured wire and cable datas	

Table of Content

1 INTRODUCTION 3

2 DOCUMENTS 4

2.1 Applicable Documents 4

2.2 Reference Documents 4

3 GENERAL REMARKS 5

3.1 Instrument Harness Tables 5

3.2 Cryo Control Harness (CCH) Tables 6

3.3 Harness Interface Connector-Brackets (I/F-CB`s) 6

3.4 Harness Wire and cable types 7

3.5 Harness Length 7

4 ANNEX 1: CRYO CONTROL HARNESS CCH 08

Overall Harness Lay-out CCH 09

5 ANNEX 2: HIFI INSTRUMENT HARNESS SIH 23

Preliminary HIFI Harness Lay-out 24

6 ANNEX 3: PACS INSTRUMENT HARNESS SIH 38

Preliminary PACS Harness Lay-out 39

7 ANNEX 4: SPIRE INSTRUMENT HARNESS (EXT. AND INT.) SIH 51

Preliminary SPIRE Harness Lay-out 52

8 ANNEX 5: HERSCHEL CRYO HARNESS WIRE AND CABLES 62

9 ANNEX 6: HERSCHEL MEASURED WIRE AND CABLE DATAS.....66

1 Introduction

The Herschel instruments harness and cryo control harness data summarized within this document have been established as input to the thermal analysis.

The metallic amount of wire cores, served wire shield cable shields and harness branch overall shield strands have been calculated upon advanced data available or taken in similarity to the former ISO harness data. In addition the amount of wire and cable isolation materials as PTFE and Polyimid plastics of each single wire and cable configuration have been calculated.

With SVM and PLM harness lay-outs a harness routing design have been established upon currently available schematics and structural CATIA 3D drawings. The design description as given in the instrument scientific instrument IIDBs wiring lists and of the cryo control harness have been collected and summarized to get data as input for thermal analysis.

Based on the instrument IIDBs, agreed changes, dedicated instrument harness interface meetings, ICDs and current data available from cryo control harness, harness interconnecting diagrams have been established to support the harness lay-out as described herein.

Harness overall shields have been calculated for the harness branches in between the warm unit and the CVV external feed-through plug connectors.

Accordance to CR HP-2-ASPI-CR-0265 CVV internal SPIRE harness shall also have " Overallshield " in form of double shielded cables.

2 Documents

2.1 Applicable Documents

The following documents from a part of this document to the extent specified herein.

Unless an issue is quoted for a document, the current issue is deemed to apply.

When an issue is quoted, that issue and no other must be used.

AD-1 Herschel/Planck Instrument Interface Document – Part B, SCI-PT-IIDB/SPIRE-02124, issue 3.3 dated 21.06.04

AD-2 Herschel/Planck Instrument Interface Document – Part B, SCI-PT-IIDB/PACS-02126, issue 3.2 dated 02.03.04

AD-3 Herschel/Planck Instrument Interface Document – Part B, SCI-PT-IIDB/HIFI-02125, issue 3.2 dated 05.03.04

AD-4 PFM Cryo-Harness Electrical Interface Document HP-2-ASED-IC-0001, issue 4.1 (will be in the H-EPLM CDR Data Package)

2.2 Reference Documents

RD-1 Herschel Cryo Harness Wire and Cable Configuration, HP-2-ASED-DS-0001 (in progress)

RD-2 SCC3901 / 019 Poliimid Wire and Cables (SPL)

RD-3 Fax: HP-ASED-FX-0091-04 dd.: 13-02-04

RD-4 Description of the EPLM-FM Cryo Control Instrumentation HP-2-ASED-TN-0048

RD 5 Electrical Interface of Herschel Cryogenic Components to Harness HP-2-ASED-TN-0063

RD 6 PFM Cryo Harness Branch Characteristics HP-2-ASED-TN-0085

RD-7 Fax: HP-ASED-FX-0553-03 dd.: 27-06-03

RD-8 Thermal Test on H-EPLM components and samples, HP-2-ASED-RP-0095

3 General Remarks

3.1 Instrument Harness Tables

Harness cable data from program ISO have been used to calculate the amount of stainless steel and plastics within the various cable configurations.

Cable types specified in AD- 1 to AD-3 , have been taken into account. The number of conductors identified, have been calculated properly without additional spares, to get the current amount of SST, Brass and plastics within all instrument harness branches.

Electrical and duty cycle data as required in AD-1 to AD-3 have been incorporated d accordingly. Data taken from different sources are identified for tracebility. The former maximum currents specified in AD-1 to AD -3 for the harness wire and cable design have been updated in accordance to latest data provided by the instruments. To calculate harness dissipations nominal current and correlated duty cycle data have been implemented.

For the LOU harness dissipation calculation the electrical resistance at operational temperature has been used (RD-7)

The dissipation of the scientific harness outside the CVV is calculated using the specified electrical resistance at room temperature (293 K)

Inside the CVV dissipation is reduced by factor corresponding to the ratio of the electrical resistance at 77K to 293K. According to test results (RD-8) the factor is 0.65 for brass wires and 0.81 for stainless steel wires.

3.2 Cryo Control Harness (CCH) Tables

Data of the Herschel Cryo control harness have been calculated in accordance to RD-4 about the amount of Cryo control components (CCC`s) identified and harness cables in heritage to the program ISO. The current available data of the Cryo instrumentations have been implemeted in accordance to RD-5.

3.3 Harness Interface Connector-Brackets (I/F-CB`s)

The Cryo Harness design for SIH and CCH is based on the following harness segments as they are:

Warm unit output plugs-connectors	to	SVM I/F-CB plugs-connectors
SVM I/F-CB receptacles	to	CVV external plug-connectors
CVV internal vacuum feed-throughs	to	OB unit plug-connectors

There will be no OB I/F-CB on the optical bench (OB)

Individual connector-brackets of small size will be used in case of harness wire splices which can be placed on the OB only. (not yet identified).

3.4 Harness Wire and cable types

All wire and cable types specified within AD-1 to AD-3 have been correlated and summarised in § 8 Annex 5

3.5 Harness Length

For harness length calculations, determinations performed on the CATIA model have been taken into account.

All harness lengths are calculated CATIA length with an additional cable length of 0,3 m.

The cable lengths data are in accordance to RD-6

4 Annex 1: Cryo Control Harness CCH

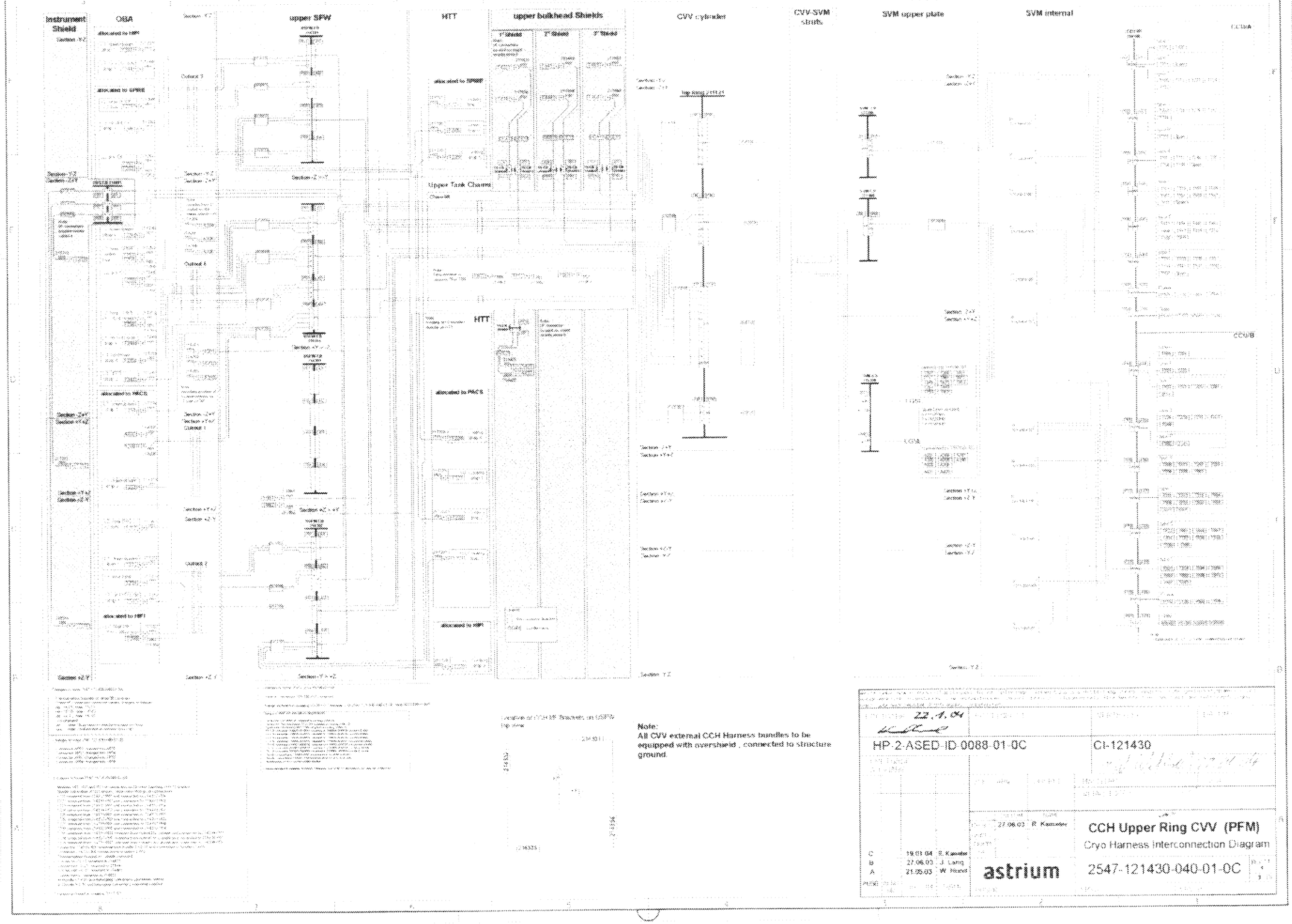
Overall Harness Lay-out CCH

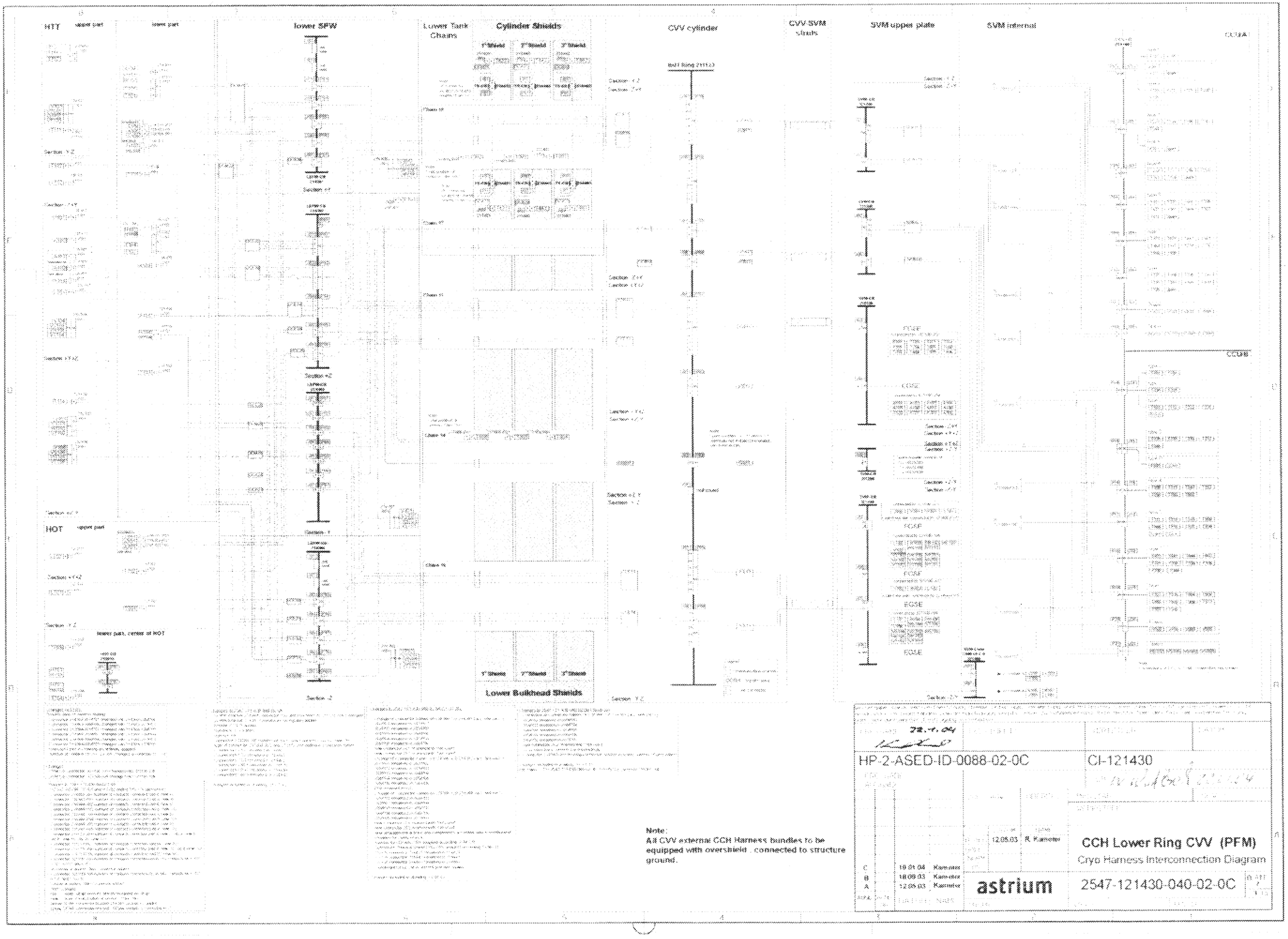
The Overall Layout between the SVM warm units and the cryo control components is defined in the Herschel drawings

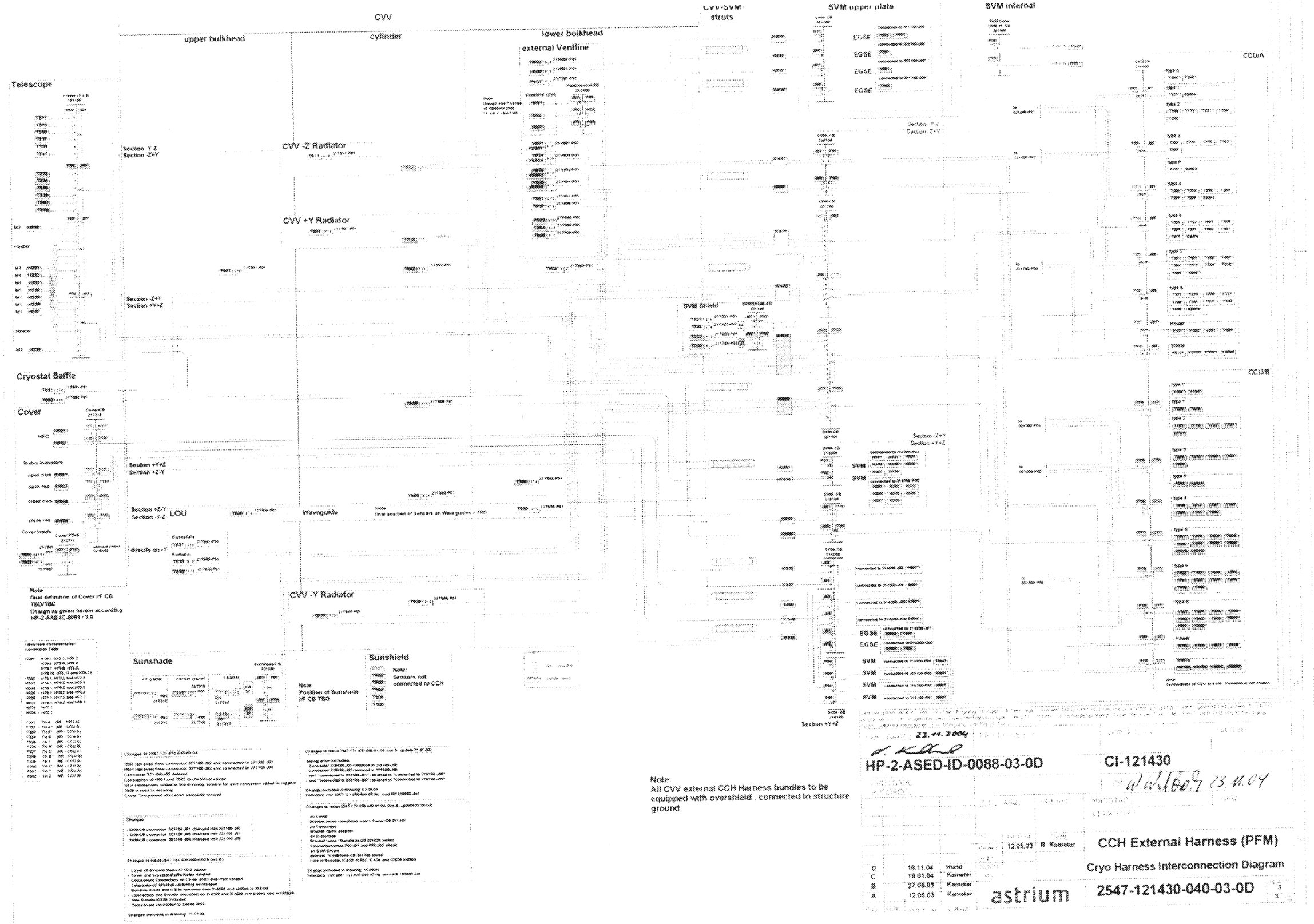
HP-2-ASED-ID-0088-01-0C CCH Upper Ring CVV

HP-2-ASED-ID-0088-02-0C CCH Lower Ring CVV

HP-2-ASED-ID-0088-03-0D CCH External Harness


Instrument Shield
OSA
upper SFW
HTT
upper bulkhead Shields
CVV cylinder
CVV-SVM struts
SVM upper plate
SVM internal
Upper Tank Chassis
Note:
All CVV external CCH Harness bundles to be equipped with overshield , connected to structure ground.
HP-2-ASED-ID 0088-01-0C
CI-121430
CCH Upper Ring CVV (PFM)
Cryo Harness Interconnection Diagram
2547-121430-040-01-0C
astrium


HTT
lower part
lower SFW
Lower Tank Chains
Cylinder Shields
1" Shield
2" Shield
3" Shield
CVV cylinder
CVV SVM studs
SVM upper plate
SVM internal
CCU/A
CCU/B
HOT
upper part
lower part, center of HOT
Lower Bulkhead Shields
Note:
All CVV external CCH Harness bundles to be equipped with overshield , connected to structure ground.
22.7.04
HP-2-ASED-ID-0088-02-0C
CI-121430
12.05.03
R. Kamoter
CCH Lower Ring CVV (PFM)
Cryo Harness Interconnection Diagram
C 19.01.04 Kamoter
B 18.09.03 Kamoter
A 12.05.03 Kamoter
astrium
2547-121430-040-02-0C


CVV
upper bulkhead
cylinder
lower bulkhead
external Ventline
CVV-SVM struts
SVM upper plate
SVM internal
Telescope
Section -Y-Z
Section -Z+Y
CVV -Z Radiator
CVV +Y Radiator
Section -Z+Y
Section +Y+Z
SVM Shield
EGSE
EGSE
EGSE
EGSE
Section -Y-Z
Section -Z+Y
CCUA
CCUB
Cryostat Baffle
Cover
Section +Y+Z
Section +Z-Y
Section +Z-Y
Section -Y-Z
LOU
directly on -Y
Waveguide
CVV -Y Radiator
Sunshade
Sunshield
Note:
Sensors not connected to CCH
Note
Position of Sunshade
HP CB TBD
SVM
SVM
SVM
SVM
EGSE
EGSE
SVM
SVM
SVM
SVM
Section +Y+Z
Note
TBD/TBC
Design as given herein according
HP-2-ASE-IC-0001 / 1.0
Note:
All CVV external CCH Harness bundles to be equipped with overshield , connected to structure ground.
23.11.2004
HP-2-ASED-ID-0088-03-0D
CI-121430
12.05.03 R Kamleiter
CCH External Harness (PFM)
Cryo Harness Interconnection Diagram
D 18.11.04 Hurst
C 18.01.04 Kamleiter
B 27.08.03 Kamleiter
A 12.05.03 Kamleiter
astrium
2547-121430-040-03-0D

Designation								Cable										Harness CVV-CB to SFW-CB		Harness SFW-CB to end item conn.		Total Harness CVV-CB (int.) to end item connector	
Cable_n	Component Name	Location	Harness Bundle	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	R_cable Ohm/m at 300 K	CU mm²	SST mm²	Brass mm²	Insulation mm²	Harness lth (mm)	R_max (Ohm) at 300 K	Harness lth (mm)	R_max (Ohm) at 300 K	Harness lth (mm)	R_max (Ohm) at 300 K
	T202	OB	CCH-CCA10	4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2499	283,89	1531	173,92	4030	457,81
42	T212	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1527	173,47	1365	155,06	2892	328,53
44	T221	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2365	268,66	1774	201,53	4139	470,19
46	T223	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2365	268,66	2232	253,56	4597	522,22
	T227	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2365	268,66	2666	302,86	5031	571,52
	T228	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2365	268,66	1742	197,89	4107	466,56
50	T232	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2499	283,89	1624	184,49	4123	468,37
	T234	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1073	121,89	1972	224,02	3045	345,91
	T236	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1073	121,89	1777	201,87	2850	323,76
53	T242	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2499	283,89	1766	200,62	4265	484,50
	T244	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1626	184,71	2034	231,06	3660	415,78
	T246	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1626	184,71	804	91,33	2430	276,05
	T250	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1073	121,89	1029	116,89	2102	238,79
58	T254	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1073	121,89	1414	160,63	2487	282,52
62	T258	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1626	184,71	1392	158,13	3018	342,84
75	T423	1st Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	705	80,09	1956	222,20	2661	302,29
88	T464	3rd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	591	67,14	2166	246,06	2757	313,20
	T862	Upper spatial framework	CCH-CCB10	4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2302	261,51
	T237	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1642	186,53	1986	225,61	3628	412,14
56	T252	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1642	186,53	1304	148,13	2946	334,67
82	T444	2nd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	633	71,91	2162	238,79	2735	310,70
43	T213	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1810	205,62	1624	184,49	3434	390,10
	T235	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1201	136,43	1855	210,73	3056	347,16
	T247	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1201	136,43	1090	123,82	2291	260,26
	T248	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1201	136,43	1839	208,91	3040	345,34
60	T256	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1201	136,43	1112	126,32	2313	262,76
	T208	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2516	285,82	1075	122,12	3591	407,94
45	T222	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1599	181,65	2709	307,74	4308	489,39
47	T224	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1599	181,65	2362	268,32	3961	449,97
48	T225	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1599	181,65	1624	184,49	3223	366,13
	T226	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1599	181,65	1463	166,20	3062	347,84
49	T231	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2516	285,82	2044	232,20	4560	518,62
51	T233	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1201	136,43	2767	314,33	3968	450,76
	T207	OB	CCH-CCE10	4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	2555	290,26	1080	122,69	3635	412,94
41	T211	OB		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1901	215,95	2399	272,53	4300	488,48
	T249	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1376	156,31	1271	144,39	2647	300,70
55	T251	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1376	156,31	2223	252,53	3599	408,85
57	T253	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1376	156,31	1680	190,85	3056	347,16
59	T255	SPIRE FPU		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1376	156,31	1549	175,97	2925	332,28
75	T423	1st Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	828	94,06	1144	129,96	1972	224,02
81	T443	2nd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	763	86,68	1270	144,27	2033	230,95
111	T851	Upper chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					tbd	
112	T852	Upper chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					tbd	
113	T853	Upper chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					tbd	
	T861	Upper spatial framework		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2650	301,04
87	T463	3rd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	723	82,13	1368	155,40	2091	237,54
10	A201	OB	CCE20	2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1509	171,42	836	94,97	2345	266,39
11	A202	OB		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1509	171,42	737	83,72	2246	255,15
12	A203	OB		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1509	171,42	597	67,82	2106	239,24
13	A204	OB		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1739	197,55	1353	153,70	3092	351,25
14	A205	OB		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1739	197,55	1294	147,06	3033	344,55

Designation								Cable									Harness CVV-CB to SFW-CB		Harness SFW-CB to end item conn.		Total Harness CVV-CB (int.) to end item connector	
Cable_n	Component Name	Location	Harness Bundle	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	R_cable Ohm/m at 300 K	CU mm²	SST mm²	Brass mm²	Insulation mm²	Harness lth (mm)	R_max (Ohm) at 300 K	Harness lth (mm)	R_max (Ohm) at 300 K	Harness lth (mm)	R_max (Ohm) at 300 K
	A206	OB	CCH-C	2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1739	197,55	1016	115,42	2755	312,97
	A207	OB		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1509	171,42	2438	276,96	3947	448,38
	A208	OB		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1509	171,42	2510	285,14	4019	452,36
15	A421	1st Shield		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1472	167,22	1386	157,45	2858	324,67
16	A422	1st Shield		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1472	167,22	1401	159,15	2873	326,37
	Sum upper chain												**0**	**2,352**	**0**	**21,33**						
	P701	HOT	CCH-CCA11	4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2124	241,29
35	T102	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1392	158,13	1125	127,80	2517	285,93
36	T105	HTT		4	0			2	H02038	SST	113,6	454,4		0,064	0	0,344	1354	153,81	2541	288,66	3895	442,47
	HS 101	HTT		2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1354	12,86	2541	24,14	3895	37,00
37	T106	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1392	158,13	1326	150,63	2718	308,76
39	T111	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1354	153,81	3546	402,83	4900	556,64
73	T421	1st Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	612	69,52	982	111,56	1594	181,08
80	T442	2nd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	623	70,77	945	107,35	1568	178,12
85	T461	3rd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	534	60,66	1135	128,94	1669	189,60
32	T101	HTT	CCH-CCB11	4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1503	170,74	2442	277,41	3945	448,15
35	T104	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1545	175,51	1046	119,05	2593	294,56
	HS 102	HTT		2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1545	14,68	1046	9,96	2593	24,63
38	T107	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1545	175,51	2635	299,34	4180	474,85
74	T422	1st Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	754	85,65	1027	116,67	1781	202,32
79	T441	2nd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	614	69,75	1055	119,85	1669	189,60
86	T462	3rd Shield		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	600	68,16	951	108,03	1551	176,19
100	T701	HOT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1601	181,87	1181	134,16	2782	316,04
102	T703	HOT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1601	181,87	1341	152,34	2942	334,21
40	T112	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1503	170,74	3455	392,49	4958	563,23
17	H101	HTT	CCH-CCA12	4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	2241	3,14	1146	1,60	3387	4,74
136	V103	HTT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	2417	3,38	2829	3,96	5246	7,34
154	VS103	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148	2417	274,57	2829	321,37	5246	595,95
18	H102	HTT	CCH-CCB12	4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1290	1,81	1790	2,51	3080	4,31
139	V106	HTT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	2271	3,18	2357	3,30	4628	6,48
157	VS106	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148	2271	257,99	2357	267,76	4628	525,74
29	P101	HTT	CCH-CCE11	4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1429	162,33	2809	319,10	4238	481,44
34	T103	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1429	162,33	1062	120,64	2491	282,98
	T113	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1429	162,33	3879	440,65	5308	602,99
	T114	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1429	162,33	3211	364,77	4640	527,10
101	T702	HOT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1564	177,67	1094	124,28	2658	301,95
	T704	HOT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1564	177,67	1169	132,80	2733	310,47
103	T801	Lower chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2380	270,37
104	T802	Lower chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2355	267,53
105	T803	Lower chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2335	265,26
106	T804	Lower chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2431	276,16
107	T805	Lower chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2406	273,32
108	T806	Lower chain		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2383	270,71
1	A101	HTT	H-CCE12	2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1416	160,86	2495	283,43	3911	444,29
2	A102	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1416	160,86	2491	282,98	3907	443,84
3	A103	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1416	160,86	2539	288,43	3955	449,29
4	A104	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1483	168,47	2062	234,24	3545	402,71
5	A105	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1483	168,47	2060	234,02	3543	402,48
6	A106	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1483	168,47	2125	241,40	3608	409,87
7	A107	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1416	160,86	3164	359,43	4580	520,29

Designation								Cable									Harness CVV-CB to SFW-CB		Harness SFW-CB to end item conn.		Total Harness CVV-CB (int.) to end item connector	
Cable_n	Component Name	Location	Harness Bundle	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	R_cable Ohm/m at 300 K	CU mm²	SST mm²	Brass mm²	Insulation mm²	Harness lth (mm)	R_max (Ohm) at 300 K	Harness lth (mm)	R_max (Ohm) at 300 K	Harness lth (mm)	R_max (Ohm) at 300 K
8	A108	HTT	C	2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1483	168,47	974	110,65	2457	279,12
9	A109	HTT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1416	160,86	1676	190,39	3092	351,25
	A701	HOT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1565	177,78	772	87,70	2337	265,48
	A702	HOT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1565	177,78	773	87,81	2338	265,60
	A703	HOT		2	1			1	H02138	SST	113,6	227,2		0,088	0	0,771	1565	177,78	731	83,04	2296	260,83
138	V105	HTT	CCH-CCE13	4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716					2241	3,14
147	VH105	HTT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448					2241	21,29
156	VS105	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148					2241	254,58
151	VT105	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					2241	254,58
144	V701	HOT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716					1819	2,55
148	VH701	HOT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448					1819	17,28
162	VS701	HOT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148					1819	206,64
152	VT701	HOT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					1819	206,64
19	H103	HTT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1314	1,84	1080	1,51	2394	3,35
	HS103	HTT		2	0		0	1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1314	12,48	1080	10,26	2394	22,74
23	H701	HOT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1391	1,95	1077	1,51	2468	3,46
	HS701	HTT		2	0		0	1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1391	13,21	1077	10,23	2468	23,45
26	L102	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,086	1484	168,58	2541	288,66	4025	457,24
26	L102	HTT		2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1484	14,10	2541	24,14	4025	38,24
27	L701	HOT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,086	1391	158,02	1013	115,08	2404	273,09
27	L701	HOT		2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1391	13,21	1013	9,62	2404	22,84
135	V102	HTT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1484	2,08	2429	3,40	3913	5,48
145	VH102	HTT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448	1484	14,10	2429	23,08	3913	37,17
	VH103	HTT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448	1503	14,28	2793	26,53	4296	40,81
153	VS102	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148	1484	168,58	2429	275,93	3913	444,52
149	VT102	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1484	168,58	2429	275,93	3913	444,52
	VT103	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1503	170,74	2793	317,28	4296	488,03
144	V702	HOT	CCH-CCE14	4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716					1470	2,06
	VH106	HTT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448	1506	14,31	2306	21,91	3812	36,21
	VH702	HOT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448					1470	13,97
	VS702	HOT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148					1470	166,99
	VT106	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1506	171,08	2306	261,96	3812	433,04
	VT702	HOT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296					1470	166,99
20	H104	HTT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1626	2,28	1862	2,61	3488	4,88
	HS104	HTT		2	0		0	1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1626	15,45	1862	17,69	3488	33,14
24	H702	HOT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1527	2,14	1109	1,55	2636	3,69
	HS702	HTT		2	0		0	1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1527	14,51	1109	10,54	2636	25,04
25	L101	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,086	1626	184,71	2926	332,39	4552	517,11
25	L101	HTT		2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1626	15,45	2926	27,80	4552	43,24
28	L702	HOT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,086	1527	173,47	1718	195,16	3245	368,63
28	L702	HOT		2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1527	14,51	1718	16,32	3245	30,83
137	V104	HTT		4	0			2	H02030	BRASS	1,4	5,6		0	0,204	0,716	1677	2,35	3272	4,58	4949	6,93
146	VH104	HTT		4	0			2	H02038	BRASS	9,5	38,0		0	0,032	0,448	1677	15,93	3272	31,08	4949	47,02
155	VS104	HTT		2	0			1	H02038	SST	113,6	227,2		0,016	0	0,148	1677	190,51	3272	371,70	4949	562,21
150	VT104	HTT		4	0			2	H02038	SST	113,6	454,4		0,032	0	0,296	1677	190,51	3272	371,70	4949	562,21
	SPARE		CCH-CCS11	20	0			10	H02038	SST	113,6	2272,0		0,16	0	0,86	1800	204,48			1800	204,48
	SPARE			2	0			1	H02038	BRASS	9,5	19,0		0	0,016	0,224	1800	17,10			1800	17,10
	SPARE			2	0			1	H02030	BRASS	1,4	2,8		0	0,016	0,086	1800	2,52			1800	2,52
	Sum lower chain												0	**2,576**	**3,068**	**37,19**						
	Total												0	**4,928**	**3,068**	**58,516**						
	Sum HOT													**0,552**	**0,912**	**9,061**						
	Sum HTT													**1,48**	**2,124**	**23,407**						

Designation										Cable									Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)	Harness length (mm)	R_max (Ohm) at 300 K	
	T202	OB	CCH-ICA10	Cvv upper ring P35	41	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,498	0,296	2492	283,09	
42	T212	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
44	T221	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
46	T223	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T227	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T228	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
50	T232	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T234	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T236	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
53	T242	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T244	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T246	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
	T250	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
58	T254	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
62	T258	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
75	T423	1st Shield (innermost)				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
88	T464	3rd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2492	283,09	
		Sum ICA10												**0,0**	**0,544**	**0**	**0,498**	**5,032**			
	T862	Upper spatial framework	CCH-ICB10	Cvv upper ring P36	42	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,498	0,296	2354	267,41	
	T237	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
56	T252	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
82	T444	2nd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
43	T213	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
	T235	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
	T247	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
	T248	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
60	T256	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
	T208	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
45	T222	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
47	T224	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
48	T225	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
	T226	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
49	T231	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
51	T233	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2354	267,41	
		Sum ICB10												**0**	**0,512**	**0**	**0,498**	**4,736**			
	T207	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
41	T211	OB				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
	T249	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
55	T251	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	

Designation										Cable									Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)	Harness length (mm)	R_max (Ohm) at 300 K	
57	T253	SPIRE FPU	CCH-ICE10	Cvv upper ring P37	43	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,498	0,296	2056	233,56	
59	T255	SPIRE FPU				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
75	T423	1st Shield (innermost)				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
81	T443	2nd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
111	T851	Upper chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
112	T852	Upper chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
113	T853	Upper chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
	T861	Upper spatial framework				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
67	T463	3rd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2056	233,56	
		Sum ICE10												**0**	**0,416**	**0**	**0,498**	**3,848**			
10	A201	OB	CCH-ICE20	Cvv upper ring P38	43	2	1			1	H02138	SST	113,6	0,0	0,088	0	0,498	0,771	2073	235,49	
11	A202	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
12	A203	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
13	A204	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
14	A205	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
	A206	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
	A207	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
	A208	OB				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
15	A421	1st Shield (innermost)				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
16	A422	1st Shield (innermost)				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2073	235,49	
		Sum ICE20												**0**	**0,88**	**0**	**0,498**	**7,71**			
		Sum CVV upper ring												**0,0**	**2,4**	**0,0**	**2,0**	**21,3**			
	P701	HOT	CCH-ICA11	CVV lower ring P09	41	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,498	0,296	1734	196,98	
35	T102	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1734	196,98	
36	T105	HTT				4	0			1	H04038	SST	113,6	0,0	0,032	0		0,172	1734	196,98	
	HS 101	HTT				2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224	1734	16,47	
37	T106	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1734	196,98	
39	T111	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1734	196,98	
73	T421	1st Shield (innermost)				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1734	196,98	
80	T442	2nd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1734	196,98	
85	T461	3rd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1734	196,98	
		Sum ICA11												**0**	**0,256**	**0,016**	**0,498**	**2,468**			
32	T101	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	

Designation										Cable										Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)	Harness length (mm)	R_max (Ohm) at 300 K	
35	T104	HTT	CCH-ICB11	CVV lower ring P10	42	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,498	0,296	1591	180,74	
	HS 102	HTT				2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224	1591	15,11	
38	T107	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
74	T422	1st Shield (innermost)				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
79	T441	2nd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
86	T462	3rd Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
100	T701	HOT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
102	T703	HOT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
40	T112	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1591	180,74	
		Sum ICB11												**0**	**0,288**	**0,016**	**0,498**	**2,888**			
17	H101	HTT	CCH-ICA12	CVV lower ring P07	41	4	0			2	H02030	BRASS	1,4	0,0	0	0,204	0,498	0,716	1837	2,57	
136	V103	HTT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	1837	2,57	
154	VS103	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	1837	208,68	
		Sum ICA12												**0**	**0,016**	**0,408**	**0,498**	**1,58**			
18	H102	HTT	CCH-ICB12	CVV lower ring P08	42	4	0			2	H02030	BRASS	1,4	0,0	0	0,204	0,498	0,716	1795	2,51	
139	V106	HTT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	1795	2,51	
157	VS106	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	1795	203,91	
		Sum ICB12												**0**	**0,016**	**0,408**	**0,498**	**1,58**			
29	P101	HTT	CCH-ICE11	CVV lower ring P01	44	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,498	0,296	1799	204,37	
34	T103	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
	T113	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
	T114	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
101	T702	HOT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
	T704	HOT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
103	T801	Lower chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
104	T802	Lower chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
105	T803	Lower chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
106	T804	Lower chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
107	T805	Lower chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
108	T806	Lower chain				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	1799	204,37	
		Sum ICE11												**0**	**0,384**	**0**	**0,498**	**3,552**			
1	A101	HTT	ICE12	r ring P02	44	2	1			1	H02138	SST	113,6	0,0	0,088	0	0,864	0,771	2089	237,31	
2	A102	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
3	A103	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
4	A104	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
5	A105	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
6	A106	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	

Designation										Cable									Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)	Harness length (mm)	R_max (Ohm) at 300 K	
7	A107	HTT	CCH	CVV lowe		2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
8	A108	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
9	A109	HTT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
	A701	HOT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
	A702	HOT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
	A703	HOT				2	1			1	H02138	SST	113,6	0,0	0,088	0		0,771	2089	237,31	
		Sum ICE12												**0**	**1,056**	**0**	**0,864**	**9,252**			
138	V105	HTT	CCH-ICE13	CVV lower ring P05	36	4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	2088	2,92	
144	V701	HOT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	2088	2,92	
23	H701	HOT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204	0,498	0,716	2088	2,92	
27	L701	HOT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2088	237,20	
27	L701	HOT				2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224	2088	19,84	
147	VH105	HTT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448	2088	19,84	
156	VS105	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2088	237,20	
151	VT105	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2088	237,20	
148	VH701	HOT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448	2088	19,84	
162	VS701	HOT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2088	237,20	
152	VT701	HOT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2088	237,20	
19	H103	HTT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	2088	2,92	
	HS103	HTT				2	0		0	1	H02038	BRASS	9,5	0,0	0	0,016		0,224	2088	19,84	
	HS701	HTT				2	0		0	1	H02038	BRASS	9,5	0,0	0	0,016	0,496	0,224	2088	19,84	
26	L102	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2088	237,20	
26	L102	HTT				2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224	2088	19,84	
135	V102	HTT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	2088	2,92	
145	VH102	HTT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448	2088	19,84	
	VH103	HTT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448	2088	19,84	
153	VS102	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2088	237,20	
149	VT102	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2088	237,20	
	VT103	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2088	237,20	
		Sum ICE13												**0**	**0,208**	**1,212**	**0,996**	**8,192**			
144	V702	HOT	CCH-ICE-14	CVV lower ring P06	36	4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	2276	3,19	
24	H702	HOT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204	0,498	0,716	2276	3,19	
28	L702	HOT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2276	256,55	
28	L702	HOT				2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224	2276	21,62	
	VH106	HTT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448	2276	21,62	
	VH702	HOT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448	2276	21,62	
	VS702	HOT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148	2276	258,55	
	VT106	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2276	258,55	
	VT702	HOT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296	2276	258,55	
20	H104	HTT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716	2276	3,19	
25	L101	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0	0,498	0,148	2276	258,55	
25	L101	HTT				2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224	2276	21,62	

Designation										Cable										Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)		Harness length (mm)	R_max (Ohm) at 300 K	
137	V104	HTT				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716		2276	3,19	
146	VH104	HTT				4	0			2	H02038	BRASS	9,5	0,0	0	0,032		0,448		2276	21,62	
155	VS104	HTT				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148		2276	258,55	
150	VT104	HTT				4	0			2	H02038	SST	113,6	0,0	0,032	0		0,296		2276	258,55	
		Sum ICE14												**0,0**	**0,16**	**0,944**	**0,996**	**6,136**				
	SPARE		CCH-ICS11	CVV lower ring P03		20	0			10	H02038	SST	113,6	0,0	0,16	0	0,498	1,48		tbd		N/A for Thermal Analysis
	SPARE					2	0			1	H02038	BRASS	9,5	0,0	0	0,016		0,224		tbd		
	SPARE					2	0			1	H02030	BRASS	1,4	0,0	0	0,016		0,148		tbd		
		Sum CVV lower ring												**0,0**	**2,5**	**3,0**	**5,8**	**37,5**				
22	H502	GHe S/S external Ventline	CCH-ICE31		36	4	0			2	H02030	BRASS	1,4	0,0	0	0,204	0,162	0,716		1386		
	H503	GHe S/S external Ventline				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716		1386		
21	H501	GHe S/S external Ventline	CCH-ICE33		36	8	0			2	T04CC20	CU	0,037	**2,4**	0	0	0,864	1,512		1365		
30	P501	GHe S/S external Ventline	CCH-ICE32		36	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296		1343		
91	T502	GHe S/S external Ventline	CCH-ICE34		36	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296		1343		
140	V501	GHe S/S external Ventline	CCH-ICA31		37	4	0			2	H02030	BRASS	2,2	0,0	0	0,204	0,162	0,716		1332		
158	VS501	GHe S/S external Ventline				2	0			1	H02038	SST	140	0,0	0,016	0		0,148		1332		
142	V504	GHe S/S external Ventline				4	0			2	H02030	BRASS	2,2	0,0	0	0,204	0,162	0,716		1332		
160	VS504	GHe S/S external Ventline				2	0			1	H02038	SST	140	0,0	0,016	0		0,148		1332		
141	V503	GHe S/S external Ventline	CCH-ICB31		37	4	0			2	H02030	BRASS	2,2	0,0	0	0,204	0,162	0,716		1355		
159	VS503	GHe S/S external Ventline				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148		1355		
143	V505	GHe S/S external Ventline				4	0			2	H02030	BRASS	2,2	0,0	0	0,204	0,162	0,716		1355		
161	VS505	GHe S/S external Ventline				2	0			1	H02038	SST	113,6	0,0	0,016	0		0,148		1355		
		Sum GHe Ventline												**2,4**	**0,128**	**1,224**	**1,998**	**6,992**				
	T321	SVM Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296		500 to SVM Shield		

Designation										Cable									Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)	Harness length (mm)	R_max (Ohm) at 300 K	
	T323	SVM Shield	CCH-ICA32	SVM Shield	41	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296	500 to SVM Shield		
	Grounding	SVM Shield									AWG20	Cu		**0,6**					300 to SVM Shield		
91	T501	GHe S/S external Ventline				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T505	GHe S/S external Ventline				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
97	T651	Cryosat Baffle				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
119	T901	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
121	T903	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
125	T907	CVV -Y Radiator				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
129	T911	CVV -Z Radiator				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
70	T312	Sunshade	CCH-ICA33		41	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
72	T314	Sunshade				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T316	Sunshade				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
123	T905	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
127	T909	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T931	LOU				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T933	LOU				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T935	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T322	SVM Shield	CCH-ICB32		42	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296	500 to SVM Shield		
	T324	SVM Shield				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296	500 to SVM Shield		
92	T507	GHe S/S external Ventline				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T504	GHe S/S external Ventline				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T506	GHe S/S external Ventline				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
120	T902	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
126	T908	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
130	T912	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
97	T652	Cryosat Baffle				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
31	P502	GHe S/S external Ventline				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
69	T311	Sunshade	CCH-ICB33		42	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
71	T313	Sunshade				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T315	Sunshade				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
122	T904	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
124	T906	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
128	T910	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T932	LOU				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T934	CVV				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
		Sum SVM Shield												**0,6**	**0,128**	**0**	**0,648**	**1,184**			
		Sum CVV		CVV										**0,0**	**0,992**	**0**	**5,022**	**9,176**			

Designation										Cable									Harness SVM-CB to CVV I/F-CB resp. CVV Structure		Remark
Cable_n	Component Name	Location	Harness Bundle	Location / Connector	CVV-SVM Strut No.	no_of_wires	no_of_shd's	I-mA not applicable	DutyCycle not applicable	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	CU mm²	SST (mm²)	Brass (mm²)	Manganin (mm²)	Insulation (mm²)	Harness length (mm)	R_max (Ohm) at 300 K	
	H331	Telescope	CCH-ICS31		23	2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H332	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H333	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H334	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H335	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H336	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H337	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	H339	Telescope				2	0			2	T-02CC24	CU	0,111	1,0	0	0	0,162	0,952			
	T331	Telescope	CCH-ICA34		44	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T333	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T335	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T337	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T339	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T341	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T332	Telescope	CCH-ICB34		44	4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T334	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T336	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T338	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T340	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T342	Telescope				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
		Sum Telescope												**8**	**0,384**	**0**	**3,240**	**11,168**			
	N601	CryoCover NED	CCH-ICS32		21	24	0			6	H04030	BRASS	1,4	0,0	0	1,224	0,498	3,072			
	N601	CryoCover NED				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716			
	N602	CryoCover NED				24	0			6	H04030	BRASS	1,4	0,0	0	1,224	0,498	3,072			
	N602	CryoCover NED				4	0			2	H02030	BRASS	1,4	0,0	0	0,204		0,716			
	SI601	CryoCover Stat. Ind.	CCH-ICS33		21	2	0			1	H02038	SST	113,6	0,0	0,016	0	0,162	0,148			
	SI602	CryoCover Stat. Ind.				2	0			1	H02038	SST	113,6	0,0	0,016	0	0,162	0,148			
	SI603	CryoCover Stat. Ind.	CCH-ICS35		21	2	0			1	H02038	SST	113,6	0,0	0,016	0	0,162	0,148			
	SI604	CryoCover Stat. Ind.				2	0			1	H02038	SST	113,6	0,0	0,016	0	0,162	0,148			
	T601	CryoCover Inside				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
	T602	CryoCover Inside				4	0			2	H02038	SST	113,6	0,0	0,032	0	0,162	0,296			
		Sum CryoCover												**0**	**0,128**	**2,856**	**1,968**	**8,76**			

5 Annex 2: HIFI Instrument Harness SIH

HIFI Harness Lay-out

The Overall Layout between the warm and cold units is defined in the Herschel drawings

HP-2-ASED-ID-0090-01-0D HIFI

HERSCHEL

Cryostat Outside

Cryostat Inside

Optical Bench (10K)

OB Cutout

Upper Spatial Framework (10K)

Upper Chains

Cylinder (85-80K)

Struts (85-80K)

SVM (300K)

optical path

HHFCU

HHFCU

HHLCU

HHLCU

HH3DH

HH3DH

HH3DV

HH3DV

Designation										Cable								CVV int. Harness CVV I/F-CB to OBA Cold Units		Harness total (CVV int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-CH-xx	Upper chain	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P ei, avg [mW/m] at 77 K	P ei, On [mW/m] at 77 K
1	Mixer 1-VM-H / IM-H	FHFPUP11	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,825	207,32	7,153	483,99	516,01	1,31E-08	
1	Mixer 1-B-H	FHFPUP11	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,825	207,32	7,153	483,99	516,01	5,48E-04	
2	Mixer 2-VM-H / IM-H	FHFPUP12	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,875	213	7,203	489,67	510,33	1,31E-08	
2	Mixer 2-B-H	FHFPUP12	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,875	213	7,203	489,67	510,33	5,48E-04	
3	Mixer 3-VM-H / IM-H	FHFPUP13	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,925	218,68	7,253	495,35	504,65	1,31E-08	
3	Mixer 3-B-H	FHFPUP13	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,925	218,68	7,253	495,35	504,65	5,48E-04	
4	Mixer 4-VM-H / IM-H	FHFPUP14	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,975	224,36	7,303	501,03	498,97	1,31E-08	
4	Mixer 4-B-H	FHFPUP14	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,975	224,36	7,303	501,03	498,97	5,48E-04	
5	Mixer 5-VM-H / IM-H	FHFPUP15	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	2,026	230,1536	7,354	506,82	493,18	1,31E-08	
5	Mixer 5-B-H	FHFPUP15	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	2,026	230,1536	7,354	506,82	493,18	5,48E-04	
6	Mixer 6-VM-H / IM-H	FHFPUP16	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	2,076	235,8336	7,404	512,50	487,50	1,31E-08	
6	Mixer 6-B-H	FHFPUP16	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	2,076	235,8336	7,404	512,50	487,50	5,48E-04	
7	Mixer 7-VM-H / IM-H	FHFPUP17	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	2,126	241,5136	7,454	518,18	481,82	1,31E-08	
7	Mixer 7-B-H	FHFPUP17	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	2,126	241,5136	7,454	518,18	481,82	5,48E-04	
15	FIF-G1-H / G2-H	FHFPUP39	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	1,853	210,5008	7,181	487,17	512,83	9,20E-08	
15	FIF1-D1-H / D2-H	FHFPUP39	2	1			25	1,0E-02	0,050	1	H04130(2)	BRASS		0,124	0,102	1,511	1,4	1,853	2,5942	7,181	6,73	18,27	9,10E-03	
15	FIF-TST1-H	FHFPUP39	1				25	1,0E-03	0,333		H04130(1)	BRASS		0	0,051	0,128	1,4	1,853	2,5942	7,181	6,73	18,27	3,03E-04	
15	FIF-RTN-H	FHFPUP39	1				25	2,0E-02	0,050		H04130(1)	BRASS		0	0,051	0,128	1,4	1,853	2,5942	7,181	6,73	18,27	1,82E-02	
15	FIF-G1-H / G2-H	FHFPUP40	3	1	01	04	1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	1,903	216,1808	7,231	492,85	507,15	9,20E-08	
15	FIF2-D1-H / D2-H	FHFPUP40	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	1,903	2,6642	7,231	6,80	18,20	9,10E-03	
15	FIF-RTN-H	FHFPUP40	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	1,903	2,6642	7,231	6,80	18,20	1,82E-02	
15	FIF-G1-H / G2-H	FHFPUP41	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	1,953	221,8608	7,281	498,53	501,47	9,20E-08	
15	FIF3-D1-H / D2-H	FHFPUP41	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	1,953	2,7342	7,281	6,87	18,13	9,10E-03	
15	FIF-RTN-H	FHFPUP41	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	1,953	2,7342	7,281	6,87	18,13	1,82E-02	
15	FIF-G1-H / G2-H	FHFPUP42	3	1			1000	1,0E-06	0,300	1	H03138	SST		0,1	0,000	0,856	113,6	2,003	227,5408	7,331	504,21	495,79	8,28E-08	
15	FIF4-D1-H / D2-H	FHFPUP42	2	1			25	1,0E-02	0,050	1	H04130(2)	BRASS		0,124	0,102	1,511	1,4	2,003	2,8042	7,331	6,94	18,06	9,10E-03	
15	FIF-TST2-H	FHFPUP42	1				25	1,0E-03	0,333		H04130(1)	BRASS		0	0,051	0,128	1,4	2,003	2,8042	7,331	6,94	18,06	3,03E-04	
15	FIF-RTN-H	FHFPUP42	1				25	2,0E-02	0,050		H04130(1)	BRASS		0	0,051	0,128	1,4	2,003	2,8042	7,331	6,94	18,06	1,82E-02	
15	FIF-G1-H / G2-H	FHFPUP43	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,054	233,3344	7,382	510,00	490,00	9,20E-08	
15	FIF5-D1-H / D2-H	FHFPUP43	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,054	2,8756	7,382	7,01	17,99	9,10E-03	
15	FIF-RTN-H	FHFPUP43	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,054	2,8756	7,382	7,01	17,99	1,82E-02	
15	FIF-G1-H / G2-H	FHFPUP44	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,104	239,0144	7,432	515,68	484,32	9,20E-08	
15	FIF6-D1-H / D2-H	FHFPUP44	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,104	2,9456	7,432	7,08	17,92	9,10E-03	
15	FIF-RTN-H	FHFPUP44	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,104	2,9456	7,432	7,08	17,92	1,82E-02	
15	FIF-G1-H / G2-H	FHFPUP45	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,154	244,6944	7,482	521,36	478,64	9,20E-08	
15	FIF7-D1-H / D2-H	FHFPUP45	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,154	3,0156	7,482	7,15	17,85	9,10E-03	
15	FIF-RTN-H	FHFPUP45	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,154	3,0156	7,482	7,15	17,85	1,82E-02	
	Sum Bundle 01													**2,404**	**1,173**	**24,821**							**1,96E-01**	**5,87E-01**
8	MG1-H	FHFPUP25	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	1,87	16,83	7,331	39,15	60,85	1,25E-01	
8	HT1-H	FHFPUP25	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	1,87	16,83	7,331	39,15	60,85	5,57E-04	
9	MG2-H	FHFPUP26	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	1,92	17,28	7,381	39,60	60,40	1,25E-01	
9	HT2-H	FHFPUP26	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	1,92	17,28	7,381	39,60	60,40	5,57E-04	
10	MG3-H	FHFPUP27	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	1,97	17,73	7,431	40,05	59,95	1,25E-01	
10	HT3-H	FHFPUP27	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	1,97	17,73	7,431	40,05	59,95	5,57E-04	
11	MG4-H	FHFPUP28	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,02	18,18	7,481	40,50	59,50	1,25E-01	
11	HT4-H	FHFPUP28	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,02	18,18	7,481	40,50	59,50	5,57E-04	
12	MG5-H	FHFPUP29	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,071	18,639	7,532	40,96	59,04	1,25E-01	
12	HT5-H	FHFPUP29	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,071	18,639	7,532	40,96	59,04	5,57E-04	
22	SFI 1-3 / D1-H	FHFPUP53	3	1			25	1,0E-02	0,048	1	H05130(3)	BRASS		0,134	0,153	1,946	1,4	3,002	4,2028	8,463	8,33	16,67	1,30E-02	
22	SIF-RTN1-H	FHFPUP53	1				25	1,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,002	4,2028	8,463	8,33	16,67	3,03E-02	
22	SIF-TST1-H	FHFPUP53	1				25	1,0E-03	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,002	4,2028	8,463	8,33	16,67	3,03E-04	
22	SFI 4-7 / D1-H	FHFPUP53	4	1			25	1,0E-02	0,048	1	H05130(4)	BRASS		0,128	0,204	1,81	1,4	3,002	4,2028	8,463	8,33	16,67	1,73E-02	
22	SIF-RTN1-H	FHFPUP53	1		02	04	25	2,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,079	1,4	3,002	4,2028	8,463	8,33	16,67	1,21E-01	

Designation										Cable								CVV int. Harness CVV I/F-CB to OBA Cold Units		Harness total (CVV int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-CH-xx	Upper chain	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 77 K	P el. On [mW/m] at 77 K
22	SIF-G1A-H / G1B-H	FHFPUP53	4	1			1000	1,0E-06	0,333	1	H04138	SST		0,107		0,962	113,6	3,002	341,0272	8,463	613,76	386,24	1,23E-07	
23	SFI 1-3 / D2-H	FHFPUP54	3	1			25	1,0E-02	0,048	1	H05130(3)	BRASS		0,134	0,153	1,946	1,4	3,021	4,2294	8,482	8,36	16,64	1,30E-02	
23	SIF-RTN2-H	FHFPUP54	1				25	1,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,021	4,2294	8,482	8,36	16,64	3,03E-02	
23	SIF-TST2-H	FHFPUP54	1				25	1,0E-03	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,021	4,2294	8,482	8,36	16,64	3,03E-04	
23	SFI 4-7 / D2-H	FHFPUP54	4	1			25	1,0E-02	0,048	1	H05130(4)	BRASS		0,134	0,204	2,074	1,4	3,021	4,2294	8,482	8,36	16,64	1,73E-02	
23	SIF-RTN2-H	FHFPUP54	1				25	2,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,021	4,2294	8,482	8,36	16,64	1,21E-01	
23	SIF-G2A-H / G2B-H	FHFPUP54	4	1			1000	1,0E-06	0,333	1	H04138	SST		0,107		0,962	113,6	3,021	343,1856	8,482	615,92	384,08	1,23E-07	
24	SFI 1-3 / D3-H	FHFPUP55	3	1			25	1,0E-02	0,048	1	H05130(3)	BRASS		0,134	0,153	1,946	1,4	3,064	4,2896	8,525	8,42	16,58	1,30E-02	
24	SIF-RTN3-H	FHFPUP55	1				25	1,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,064	4,2896	8,525	8,42	16,58	3,03E-02	
24	SIF-TST3-H	FHFPUP55	1				25	1,0E-03	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,064	4,2896	8,525	8,42	16,58	3,03E-04	
24	SFI 4-7 / D3-H	FHFPUP55	4	1			25	1,0E-02	0,048	1	H05130(4)	BRASS		0,134	0,204	2,074	1,4	3,064	4,2896	8,525	8,42	16,58	1,73E-02	
24	SIF-RTN3-H	FHFPUP55	1				25	2,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,064	4,2896	8,525	8,42	16,58	1,21E-01	
24	SIF-G3A-H / G3B-H	FHFPUP55	4	1			1000	1,0E-06	0,333	1	H04138	SST		0,107		0,962	113,6	3,064	348,0704	8,525	620,80	379,20	1,23E-07	
	Sum Bundle 02													**1,569**	**1,69**	**21,985**							**1,18E+00**	**3,53E+00**
1	Mixer 1-VM-V / IM-V	FHFPUP18	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,876	213,1136	7,025	474,77	525,23	1,31E-08	
1	Mixer 1-B-V	FHFPUP18	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,876	213,1136	7,025	474,77	525,23	5,48E-04	
2	Mixer 2-VM-V / IM-V	FHFPUP19	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,881	213,6816	7,03	475,34	524,66	1,31E-08	
2	Mixer 2-B-V	FHFPUP19	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,881	213,6816	7,03	475,34	524,66	5,48E-04	
3	Mixer 3-VM-V / IM-V	FHFPUP20	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,922	218,3392	7,071	480,00	520,00	1,31E-08	
3	Mixer 3-B-V	FHFPUP20	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,922	218,3392	7,071	480,00	520,00	5,48E-04	
4	Mixer 4-VM-V / IM-V	FHFPUP21	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,927	218,9072	7,076	480,57	519,43	1,31E-08	
4	Mixer 4-B-V	FHFPUP21	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,927	218,9072	7,076	480,57	519,43	5,48E-04	
5	Mixer 5-VM-V / IM-V	FHFPUP22	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,974	224,2464	7,123	485,91	514,09	1,31E-08	
5	Mixer 5-B-V	FHFPUP22	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,974	224,2464	7,123	485,91	514,09	5,48E-04	
6	Mixer 6-VM-V / IM-V	FHFPUP23	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	1,977	224,5872	7,126	486,25	513,75	1,31E-08	
6	Mixer 6-B-V	FHFPUP23	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	1,977	224,5872	7,126	486,25	513,75	5,48E-04	
7	Mixer 7-VM-V / IM-V	FHFPUP24	3	1			1000	1,0E-06	0,048	1	H05138(3)	SST		0,112		1,004	113,6	2,024	229,9264	7,173	491,59	508,41	1,31E-08	
7	Mixer 7-B-V	FHFPUP24	2				1000	2,5E-04	0,048		H05138(2)	SST		0,016		0,086	113,6	2,024	229,9264	7,173	491,59	508,41	5,48E-04	
15	FIF-G1-V / G2-V	FHFPUP46	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,028	230,3808	7,177	492,04	507,96	9,20E-08	
15	FIF1-D1-V / D2-V	FHFPUP46	2	1			25	1,0E-02	0,050	1	H04130(2)	BRASS		0,124	0,102	1,511	1,4	2,028	2,8392	7,177	6,78	18,22	9,10E-03	
15	FIF-TST1-V	FHFPUP46	1				25	1,0E-03	0,333		H04130(1)	BRASS		0	0,051	0,128	1,4	2,028	2,8392	7,177	6,78	18,22	3,03E-04	
15	FIF-RTN-V	FHFPUP46	1				25	2,0E-02	0,050		H04130(1)	BRASS		0	0,051	0,128	1,4	2,028	2,8392	7,177	6,78	18,22	1,82E-02	
16	FIF-G1-V / G2-V	FHFPUP47	3	1	03	04	1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,075	235,72	7,224	497,38	502,62	9,20E-08	
16	FIF2-D1-V / D2-V	FHFPUP47	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,075	2,905	7,224	6,84	18,16	9,10E-03	
16	FIF-RTN-V	FHFPUP47	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,075	2,905	7,224	6,84	18,16	1,82E-02	
17	FIF-G1-V / G2-V	FHFPUP48	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,078	236,0608	7,227	497,72	502,28	9,20E-08	
17	FIF3-D1-V / D2-V	FHFPUP48	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,078	2,9092	7,227	6,85	18,15	9,10E-03	
17	FIF-RTN-V	FHFPUP48	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,078	2,9092	7,227	6,85	18,15	1,82E-02	
18	FIF-G1-V / G2-V	FHFPUP49	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,123	241,1728	7,272	502,83	497,17	9,20E-08	
18	FIF4-D1-V / D2-V	FHFPUP49	2	1			25	1,0E-02	0,050	1	H04130(2)	BRASS		0,124	0,102	1,511	1,4	2,123	2,9722	7,272	6,91	18,09	9,10E-03	
18	FIF-TST2-V	FHFPUP49	1				25	1,0E-03	0,333		H04130(1)	BRASS		0	0,051	0,128	1,4	2,123	2,9722	7,272	6,91	18,09	3,03E-04	
18	FIF-RTN-V	FHFPUP49	1				25	2,0E-02	0,050		H04130(1)	BRASS		0	0,051	0,128	1,4	2,123	2,9722	7,272	6,91	18,09	1,82E-02	
19	FIF-G1-V / G2-V	FHFPUP50	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,128	241,7408	7,277	503,40	496,60	9,20E-08	
19	FIF5-D1-V / D2-V	FHFPUP50	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,128	2,9792	7,277	6,92	18,08	9,10E-03	
19	FIF-RTN-V	FHFPUP50	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,128	2,9792	7,277	6,92	18,08	1,82E-02	
20	FIF-G1-V / G2-V	FHFPUP51	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,162	245,6032	7,311	507,26	492,74	9,20E-08	
20	FIF6-D1-V / D2-V	FHFPUP51	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,405	1,4	2,162	3,0268	7,311	6,96	18,04	9,10E-03	

Designation							Cable								CVV int. Harness CVV I/F-CB to OBA Cold Units		Harness total (CVV int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-CH-xx	Upper chain	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 77 K	P el, On [mW/m] at 77 K
20	FIF-RTN-V	FHFPUP51	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,162	3,0268	7,311	6,96	18,04	1,82E-02	
21	FIF-G1-V / G2-V	FHFPUP52	3	1			1000	1,0E-06	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,172	246,7392	7,321	508,40	491,60	9,20E-08	
21	FIF7-D1-V / D2-V	FHFPUP52	2	1			25	1,0E-02	0,050	1	H03130(2)	BRASS		0,112	0,102	1,465	1,4	2,172	3,0408	7,321	6,98	18,02	9,10E-03	
21	FIF-RTN-V	FHFPUP52	1				25	2,0E-02	0,050		H03130(1)	BRASS		0	0,051	0,128	1,4	2,172	3,0408	7,321	6,98	18,02	1,82E-02	
	Sum Bundle 03													**2,404**	**1,173**	**24,821**							**1,96E-01**	**5,87E-01**
8	MG1-V	FHFPUP32	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,007	18,063	7,197	39,21	60,79	1,25E-01	
8	VT1-V	FHFPUP32	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,007	18,063	7,197	39,21	60,79	5,57E-04	
9	MG2-V	FHFPUP33	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,049	18,441	7,239	39,59	60,41	1,25E-01	
9	VT2-V	FHFPUP33	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,049	18,441	7,239	39,59	60,41	5,57E-04	
10	MG3-V	FHFPUP34	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,098	18,882	7,288	40,03	59,97	1,25E-01	
10	VT3-V	FHFPUP34	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,098	18,882	7,288	40,03	59,97	5,57E-04	
11	MG4-V	FHFPUP35	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,148	19,332	7,338	40,48	59,52	1,25E-01	
11	VT4-V	FHFPUP35	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,148	19,332	7,338	40,48	59,52	5,57E-04	
12	MG5-V	FHFPUP36	2	1			100	1,5E-02	0,048	1	H04138(2)	BRASS		0,09	0,016	1,154	9	2,199	19,791	7,389	40,94	59,06	1,25E-01	
12	VT5-V	FHFPUP36	2				100	1,0E-02	0,000		H04138(2)	BRASS		0	0,016	0,086	9	2,199	19,791	7,389	40,94	59,06	5,57E-04	
22	SFI 1-3 / D1-V	FHFPUP56	3	1			25	1,0E-02	0,048	1	H05130(3)	BRASS		0,134	0,153	1,946	1,4	3,077	4,3078	8,267	8,22	16,78	1,30E-02	
22	SIF-RTN1-V	FHFPUP56	1				25	1,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,077	4,3078	8,267	8,22	16,78	3,03E-02	
22	SIF-TST1-V	FHFPUP56	1				25	1,0E-03	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,077	4,3078	8,267	8,22	16,78	3,03E-04	
22	SFI 4-7 / D1-V	FHFPUP56	4	1			25	1,0E-02	0,048	1	H05130(4)	BRASS		0,126	0,204	1,81	1,4	3,077	4,3078	8,267	8,22	16,78	1,73E-02	
22	SIF-RTN1-V	FHFPUP56	1		04	04	25	2,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,079	1,4	3,077	4,3078	8,267	8,22	16,78	1,21E-01	
22	SIF-G1A-V / G1B-V	FHFPUP56	4	1			1000	1,0E-06	0,333	1	H04138	SST		0,107		0,962	113,6	3,077	349,5472	8,267	607,93	392,07	1,23E-07	
23	SFI 1-3 / D2-V	FHFPUP57	3	1			25	1,0E-02	0,048	1	H05130(3)	BRASS		0,134	0,153	1,946	1,4	3,041	4,2574	8,231	8,17	16,83	1,30E-02	
23	SIF-RTN2-V	FHFPUP57	1				25	1,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,041	4,2574	8,231	8,17	16,83	3,03E-02	
23	SIF-TST2-V	FHFPUP57	1				25	1,0E-03	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,041	4,2574	8,231	8,17	16,83	3,03E-04	
23	SFI 4-7 / D2-V	FHFPUP57	4	1			25	1,0E-02	0,048	1	H05130(4)	BRASS		0,126	0,204	1,81	1,4	3,041	4,2574	8,231	8,17	16,83	1,73E-02	
23	SIF-RTN2-V	FHFPUP57	1				25	2,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,079	1,4	3,041	4,2574	8,231	8,17	16,83	1,21E-01	
23	SIF-G2A-V / G2B-V	FHFPUP57	4	1			1000	1,0E-06	0,333	1	H04138	SST		0,107		0,962	113,6	3,041	345,4576	8,231	603,84	396,16	1,23E-07	
24	SFI 1-3 / D3-V	FHFPUP58	3	1			25	1,0E-02	0,048	1	H05130(3)	BRASS		0,134	0,153	1,946	1,4	3,012	4,2168	8,202	8,13	16,87	1,30E-02	

Designation							Cable									CVV int. Harness CVV I/F-CB to OBA Cold Units		Harness total (CVV int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-CH-xx	Upper chain	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 77 K	P el, On [mW/m] at 77 K
24	SIF-RTN3-V	FHFPUP58	1				25	1,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,012	4,2168	8,202	8,13	16,87	3,03E-02	
24	SIF-TST3-V	FHFPUP58	1				25	1,0E-03	0,333		H05130(1)	BRASS		0	0,051	0,128	1,4	3,012	4,2168	8,202	8,13	16,87	3,03E-04	
24	SFI 4-7 / D3-V	FHFPUP58	4	1			25	1,0E-02	0,048	1	H05130(4)	BRASS		0,128	0,204	1,81	1,4	3,012	4,2168	8,202	8,13	16,87	1,73E-02	
24	SIF-RTN3-V	FHFPUP58	1				25	2,0E-02	0,333		H05130(1)	BRASS		0	0,051	0,079	1,4	3,012	4,2168	8,202	8,13	16,87	1,21E-01	
24	SIF-G3A-V / G3B-V	FHFPUP58	4	1			1000	1,0E-06	0,333	1	H04138	SST		0,107		0,962	113,6	3,012	342,1632	8,202	600,55	399,45	1,23E-07	
	Sum Bundle 04													**1,557**	**1,69**	**21,359**							**1,18E+00**	**3,53E+00**
25	SIF-TS-I-P / TS-V-P	FHFPUP59	4	1			1000	1,0E-05	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	2,801	318,1936	8,147	596,23	403,77	7,36E-08	
25	SIF-TS-I-R / TS-V-R	FHFPUP60	4	1			1000	0,0E+00	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	2,808	318,9888	8,154	597,02	402,98	0,00E+00	
26	CP-LT-PY-P	FHFPUP61	2	1			100	5,0E-03	0,333	1	H02138	BRASS		0,08	0,016	0,981	9	2,154	19,386	7,5	42,09	57,91	9,75E-02	
26	CP-ACA-P / ACB-P	FHFPUP61	4	1			100	1,0E-02	0,333	1	H04138	BRASS		0,09	0,032	1,24	9	2,154	19,386	7,5	42,09	57,91	7,80E-01	
26	CP-LT-SYA-P / SYB-P	FHFPUP61	3	1			1000	2,0E-05	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,154	244,6944	7,5	522,73	477,27	3,68E-05	
27	CP-LT-RY-R	FHFPUP62	2	1			100	0,0E+00	0,333	1	H02138	BRASS		0,08	0,016	0,981	9	2,148	19,332	7,494	42,04	57,96	0,00E+00	
27	CP-ACA-R / ACB-R	FHFPUP62	4	1			100	1,0E-02	0,333	1	H04138	BRASS		0,09	0,032	1,24	9	2,148	19,332	7,494	42,04	57,96	7,80E-01	
27	CP-LT-SYA-R / SYB-R	FHFPUP62	3	1			1000	0,0E+00	0,333	1	H03138	SST		0,1	0,000	0,856	113,6	2,148	244,0128	7,494	522,05	477,95	0,00E+00	
28	S04K-TS-V-P / TS-I-P	FHFPUP63	4	1			1000	0,0E+00	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	1,381	156,8816	6,727	434,91	565,09	0,00E+00	
28	S04K-TS-V-P / TS-I-P	FHFPUP63	4	1			1000	0,0E+00	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	1,381	156,8816	6,727	434,91	565,09	0,00E+00	
29	S02K-TS-V-R / TS-I-R	FHFPUP64	4	1			1000	3,0E-03	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	1,366	155,1776	6,712	433,21	566,79	6,63E-03	
29	S04K-TS-V-R / TS-I-R	FHFPUP64	4	1			1000	3,0E-03	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	1,366	155,1776	6,712	433,21	566,79	6,63E-03	
29	S10K-TS-V-R / TS-I-R	FHFPUP64	4	1			1000	1,0E-05	0,030	1	H04138	SST		0,114	0,000	0,962	113,6	1,366	155,1776	6,712	433,21	566,79	1,10E-06	
30	CS-HT-P	FHFPUP65	2	1			200	1,0E-05	0,030	1	H02138	BRASS		0,08	0,016	0,981	9	2,376	21,384	7,722	44,09	155,91	3,51E-08	
30	CS-HR-TS-I-P	FHFPUP65	2	1	05	04	1000	1,0E-05	0,002	1	H02138	SST		0,086	0,000	0,771	113,6	2,376	269,9136	7,722	547,95	452,05	3,68E-08	
30	CS-HR-TS-V-P / CR-TS-I-P	FHFPUP65	4	1			1000	1,0E-05	0,002	1	H04138	SST		0,107	0,000	0,962	113,6	2,376	269,9136	7,722	547,95	452,05	7,36E-08	
30	CS-CR-TS-V-P	FHFPUP65	2	1			1000	0,0E+00	0,333	1	H02138	SST		0,086	0,000	0,771	113,6	2,376	269,9136	7,722	547,95	452,05	0,00E+00	
31	CS-HT-R	FHFPUP66	2	1			200	0,0E+00	0,002	1	H02138	BRASS		0,08	0,016	0,981	9	2,376	21,384	7,722	44,09	155,91	0,00E+00	
31	CS-HR-TS-I-R	FHFPUP66	2	1			1000	0,0E+00	0,002	1	H02138	SST		0,086	0,000	0,771	113,6	2,376	269,9136	7,722	547,95	452,05	0,00E+00	
31	CS-HR-TS-V-R	FHFPUP66	2	1			1000	0,0E+00	0,333	1	H02138	SST		0,086	0,000	0,771	113,6	2,376	269,9136	7,722	547,95	452,05	0,00E+00	
32	DP3-AC-H	FHFPUP67	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,468	13,212	6,814	35,92	64,08	1,39E-02	
32	DP4-AC-H	FHFPUP67	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,468	13,212	6,814	35,92	64,08	1,39E-02	
32	DP5-AC-H	FHFPUP67	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,468	13,212	6,814	35,92	64,08	1,39E-02	
32	DP6-AC-H	FHFPUP67	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,468	13,212	6,814	35,92	64,08	1,39E-02	
32	DP7-AC-H	FHFPUP67	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,468	13,212	6,814	35,92	64,08	1,39E-02	
33	DP3-AC-V	FHFPUP68	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,43	12,87	6,776	35,57	64,43	1,39E-02	
33	DP4-AC-V	FHFPUP68	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,43	12,87	6,776	35,57	64,43	1,39E-02	
33	DP5-AC-V	FHFPUP68	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,43	12,87	6,776	35,57	64,43	1,39E-02	
33	DP6-AC-V	FHFPUP68	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,43	12,87	6,776	35,57	64,43	1,39E-02	
33	DP7-AC-V	FHFPUP68	2	1			100	5,0E-03	0,048	1	H02138	BRASS		0,08	0,016	0,981	9	1,43	12,87	6,776	35,57	64,43	1,39E-02	
34	CS-CR-TS-I-P/TS-V-P	FHFPUP69	4	1			1000	1,0E-05	0,002	1	H04138	SST		0,114	0,000	0,962	113,6	2,37	269,232	7,716	547,26	452,74	7,36E-08	
	Sum Bundle 05													**2,871**	**0,288**	**29,668**							**1,81E+00**	**5,43E+00**
1	IF1-H		1	1						1	COAX	SST	5,256	5,0										
1	IF2-H		1	1						1	COAX	SST	5,256	5,0										
1	IF1-V		1	1						1	COAX	SST	5,256	5,0										
1	IF2-V		1	1						1	COAX	SST	5,256	5,0										
	Sum COAX												**21,024**	**20**	**0**	**0**								
	Sum Bundles 01-05 & COAX												**21,02**	**30,805**	**6,014**	**122,7**							**4,55**	**13,66**

Designation										Cable									CVV ext. Harness SVM CB to CVV I/F-CB		Harness total (cvv int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Manganin mm²	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P el, On [mW/m] at 300 K
1	Mixer 1-VM-H / IM-H	FHFPUP11	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,153	483,99	516,01	1,6E-08	
1	Mixer 1-B-H	FHFPUP11	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,153	483,99	516,01	6,8E-04	
2	Mixer 2-VM-H / IM-H	FHFPUP12	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,203	489,67	510,33	1,6E-08	
2	Mixer 2-B-H	FHFPUP12	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,203	489,67	510,33	6,8E-04	
3	Mixer 3-VM-H / IM-H	FHFPUP13	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,253	495,35	504,65	1,6E-08	
3	Mixer 3-B-H	FHFPUP13	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,253	495,35	504,65	6,8E-04	
4	Mixer 4-VM-H / IM-H	FHFPUP14	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,303	501,03	498,97	1,6E-08	
4	Mixer 4-B-H	FHFPUP14	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,303	501,03	498,97	6,8E-04	
5	Mixer 5-VM-H / IM-H	FHFPUP15	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,354	506,82	493,18	1,6E-08	
5	Mixer 5-B-H	FHFPUP15	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,354	506,82	493,18	6,8E-04	
6	Mixer 6-VM-H / IM-H	FHFPUP16	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,404	512,50	487,50	1,6E-08	
6	Mixer 6-B-H	FHFPUP16	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,404	512,50	487,50	6,8E-04	
7	Mixer 7-VM-H / IM-H	FHFPUP17	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,429	275,93	7,454	518,18	481,82	1,6E-08	
7	Mixer 7-B-H	FHFPUP17	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,429	275,93	7,454	518,18	481,82	6,8E-04	
15	FIF-G1-H / G2-H	FHFPUP39	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,181	487,17	512,83	1,1E-07	
15	FIF1-D1-H / D2-H	FHFPUP39	2	1				25	1,0E-02	0,050	1	H04130(2)	BRASS			0,124	0,102	1,511	1,4	2,429	3,40	7,181	6,73	18,27	1,4E-02	
15	FIF-TST1-H	FHFPUP39	1					25	1,0E-03	0,300		H04130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,181	6,73	18,27	4,2E-04	
15	FIF-RTN-H	FHFPUP39	1					25	2,0E-02	0,050		H04130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,181	6,73	18,27	2,8E-02	
15	FIF-G1-H / G2-H	FHFPUP40	3	1	01	3132	32	1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,231	492,85	507,15	1,1E-07	
15	FIF2-D1-H / D2-H	FHFPUP40	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,429	3,40	7,231	6,80	18,20	1,4E-02	
15	FIF-RTN-H	FHFPUP40	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,231	6,80	18,20	2,8E-02	
15	FIF-G1-H / G2-H	FHFPUP41	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,281	498,53	501,47	1,1E-07	
15	FIF3-D1-H / D2-H	FHFPUP41	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,429	3,40	7,281	6,87	18,13	1,4E-02	
15	FIF-RTN-H	FHFPUP41	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,281	6,87	18,13	2,8E-02	
15	FIF-G1-H / G2-H	FHFPUP42	3	1				1000	1,0E-06	0,300	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,331	504,21	495,79	1,0E-07	
15	FIF4-D1-H / D2-H	FHFPUP42	2	1				25	1,0E-02	0,050	1	H04130(2)	BRASS			0,124	0,102	1,511	1,4	2,429	3,40	7,331	6,94	18,06	1,4E-02	
15	FIF-TST2-H	FHFPUP42	1					25	1,0E-03	0,333		H04130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,331	6,94	18,06	4,7E-04	
15	FIF-RTN-H	FHFPUP42	1					25	2,0E-02	0,050		H04130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,331	6,94	18,06	2,8E-02	
15	FIF-G1-H / G2-H	FHFPUP43	3	1				1000	1,0E-06	0,300	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,382	510,00	490,00	1,0E-07	
15	FIF5-D1-H / D2-H	FHFPUP43	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,429	3,40	7,382	7,01	17,99	1,4E-02	
15	FIF-RTN-H	FHFPUP43	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,382	7,01	17,99	2,8E-02	
15	FIF-G1-H / G2-H	FHFPUP44	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,432	515,68	484,32	1,1E-07	
15	FIF6-D1-H / D2-H	FHFPUP44	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,429	3,40	7,432	7,08	17,92	1,4E-02	
15	FIF-RTN-H	FHFPUP44	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,432	7,08	17,92	2,8E-02	
15	FIF-G1-H / G2-H	FHFPUP45	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,429	275,93	7,482	521,36	478,64	1,1E-07	
15	FIF7-D1-H / D2-H	FHFPUP45	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,429	3,40	7,482	7,15	17,85	1,4E-02	
15	FIF-RTN-H	FHFPUP45	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,429	3,40	7,482	7,15	17,85	2,8E-02	
			79	21																						
	Sum Bundle 01															**2,404**	**1,173**	**24,821**							**3,0E-01**	**8,99E-01**
8	MG1-H	FHFPUP25	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,394	21,55	7,331	39,15	60,85	1,9E-01	
8	HT1-H	FHFPUP25	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,394	21,55	7,331	39,15	60,85	8,6E-04	
9	MG2-H	FHFPUP26	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,394	21,55	7,381	39,60	60,40	1,9E-01	
9	HT2-H	FHFPUP26	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,394	21,55	7,381	39,60	60,40	8,6E-04	
10	MG3-H	FHFPUP27	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,394	21,55	7,431	40,05	59,95	1,9E-01	
10	HT3-H	FHFPUP27	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,394	21,55	7,431	40,05	59,95	8,6E-04	

Designation										Cable								CVV ext. Harness SVM CB to CVV I/F-CB		Harness total (cvv int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Manganin mm²	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P el, On [mW/m] at 300 K
11	MG4-H	FHFPUP28	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,394	21,55	7,481	40,50	59,50	1,9E-01	
11	HT4-H	FHFPUP28	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,394	21,55	7,481	40,50	59,50	8,6E-04	
12	MG5-H	FHFPUP29	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,394	21,55	7,532	40,96	59,04	1,9E-01	
12	HT5-H	FHFPUP29	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,394	21,55	7,532	40,96	59,04	8,6E-04	
22	SFI 1-3 / D1-H	FHFPUP53	3	1				25	1,0E-02	0,048	1	H05130(3)	BRASS			0,134	0,153	1,946	1,4	2,394	3,35	8,463	8,33	16,67	2,0E-02	
22	SIF-RTN1-H	FHFPUP53	1					25	1,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,463	8,33	16,67	4,7E-02	
22	SIF-TST1-H	FHFPUP53	1					25	1,0E-03	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,463	8,33	16,67	4,7E-04	
22	SFI 4-7 / D1-H	FHFPUP53	4	1				25	1,0E-02	0,048	1	H05130(4)	BRASS			0,128	0,204	1,81	1,4	2,394	3,35	8,463	8,33	16,67	2,7E-02	
22	SIF-RTN1-H	FHFPUP53	1		02	2900	29	25	2,0E-02	0,333		H05130(1)	BRASS				0,051	0,079	1,4	2,394	3,35	8,463	8,33	16,67	1,9E-01	
22	SIF-G1A-H / G1B-H	FHFPUP53	4	1				1000	1,0E-06	0,333	1	H04138	SST			0,114		0,962	113,6	2,394	271,96	8,463	613,76	386,24	1,5E-07	
23	SFI 1-3 / D2-H	FHFPUP54	3	1				25	1,0E-02	0,048	1	H05130(3)	BRASS			0,134	0,153	1,946	1,4	2,394	3,35	8,482	8,36	16,64	2,0E-02	
23	SIF-RTN2-H	FHFPUP54	1					25	1,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,482	8,36	16,64	4,7E-02	
23	SIF-TST2-H	FHFPUP54	1					25	1,0E-03	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,482	8,36	16,64	4,7E-04	
23	SFI 4-7 / D2-H	FHFPUP54	4	1				25	1,0E-02	0,048	1	H05130(4)	BRASS			0,134	0,204	2,074	1,4	2,394	3,35	8,482	8,36	16,64	2,7E-02	
23	SIF-RTN2-H	FHFPUP54	1					25	2,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,482	8,36	16,64	1,9E-01	
23	SIF-G2A-H / G2B-H	FHFPUP54	4	1				1000	1,0E-06	0,333	1	H04138	SST			0,114		0,962	113,6	2,394	271,96	8,482	615,92	384,08	1,5E-07	
24	SFI 1-3 / D3-H	FHFPUP55	3	1				25	1,0E-02	0,048	1	H05130(3)	BRASS			0,134	0,153	1,946	1,4	2,394	3,35	8,525	8,42	16,58	2,0E-02	
24	SIF-RTN3-H	FHFPUP55	1					25	1,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,525	8,42	16,58	4,7E-02	
24	SIF-TST3-H	FHFPUP55	1					25	1,0E-03	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,525	8,42	16,58	4,7E-04	
24	SFI 4-7 / D3-H	FHFPUP55	4	1				25	1,0E-02	0,048	1	H05130(4)	BRASS			0,134	0,204	2,074	1,4	2,394	3,35	8,525	8,42	16,58	2,7E-02	
24	SIF-RTN3-H	FHFPUP55	1					25	2,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,394	3,35	8,525	8,42	16,58	1,9E-01	
24	SIF-G3A-H / G3B-H	FHFPUP55	4	1				1000	1,0E-06	0,333	1	H04138	SST			0,114		0,962	113,6	2,394	271,96	8,525	620,80	379,20	1,5E-07	
			62	14																						
	Sum Bundle 02															**1,59**	**1,69**	**21,985**							**1,8E+00**	**5,43E+00**
1	Mixer 1-VM-V / IM-V	FHFPUP18	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,025	474,77	525,23	1,6E-08	
1	Mixer 1-B-V	FHFPUP18	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,025	474,77	525,23	6,8E-04	
2	Mixer 2-VM-V / IM-V	FHFPUP19	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,03	475,34	524,66	1,6E-08	
2	Mixer 2-B-V	FHFPUP19	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,03	475,34	524,66	6,8E-04	
3	Mixer 3-VM-V / IM-V	FHFPUP20	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,071	480,00	520,00	1,6E-08	
3	Mixer 3-B-V	FHFPUP20	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,071	480,00	520,00	6,8E-04	
4	Mixer 4-VM-V / IM-V	FHFPUP21	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,076	480,57	519,43	1,6E-08	
4	Mixer 4-B-V	FHFPUP21	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,076	480,57	519,43	6,8E-04	
5	Mixer 5-VM-V / IM-V	FHFPUP22	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,123	485,91	514,09	1,6E-08	
5	Mixer 5-B-V	FHFPUP22	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,123	485,91	514,09	6,8E-04	
6	Mixer 6-VM-V / IM-V	FHFPUP23	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,126	486,25	513,75	1,6E-08	
6	Mixer 6-B-V	FHFPUP23	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,126	486,25	513,75	6,8E-04	
7	Mixer 7-VM-V / IM-V	FHFPUP24	3	1				1000	1,0E-06	0,048	1	H05138(3)	SST			0,112		1,004	113,6	2,297	260,94	7,173	491,59	508,41	1,6E-08	
7	Mixer 7-B-V	FHFPUP24	2					1000	2,5E-04	0,048		H05138(2)	SST			0,016		0,086	113,6	2,297	260,94	7,173	491,59	508,41	6,8E-04	
15	FIF-G1-V / G2-V	FHFPUP46	3	1				1000	1,0E-06	0,300	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,177	492,04	507,96	1,0E-07	
15	FIF1-D1-V / D2-V	FHFPUP46	2	1				25	1,0E-02	0,050	1	H04130(2)	BRASS			0,124	0,102	1,511	1,4	2,297	3,22	7,177	6,78	18,22	1,4E-02	
15	FIF-TST1-V	FHFPUP46	1					25	1,0E-03	0,300		H04130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,177	6,78	18,22	4,2E-04	

Designation										Cable									CVV ext. Harness SVM CB to CVV I/F-CB		Harness total (cvv int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Manganin mm²	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P el, On [mW/m] at 300 K
15	FIF-RTN-V	FHFPUP46	1		03	3132	32	25	2,0E-02	0,050		H04130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,177	6,78	18,22	2,8E-02	
16	FIF-G1-V / G2-V	FHFPUP47	3	1				1000	1,0E-06	0,300	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,224	497,38	502,62	1,0E-07	
16	FIF2-D1-V / D2-V	FHFPUP47	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,297	3,22	7,224	6,84	18,16	1,4E-02	
16	FIF-RTN-V	FHFPUP47	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,224	6,84	18,16	2,8E-02	
17	FIF-G1-V / G2-V	FHFPUP48	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,227	497,72	502,28	1,1E-07	
17	FIF3-D1-V / D2-V	FHFPUP48	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,297	3,22	7,227	6,85	18,15	1,4E-02	
17	FIF-RTN-V	FHFPUP48	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,227	6,85	18,15	2,8E-02	
18	FIF-G1-V / G2-V	FHFPUP49	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,272	502,83	497,17	1,1E-07	
18	FIF4-D1-V / D2-V	FHFPUP49	2	1				25	1,0E-02	0,050	1	H04130(2)	BRASS			0,124	0,102	1,511	1,4	2,297	3,22	7,272	6,91	18,09	1,4E-02	
18	FIF-TST2-V	FHFPUP49	1					25	1,0E-03	0,333		H04130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,272	6,91	18,09	4,7E-04	
18	FIF-RTN-V	FHFPUP49	1					25	2,0E-02	0,050		H04130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,272	6,91	18,09	2,8E-02	
19	FIF-G1-V / G2-V	FHFPUP50	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,277	503,40	496,60	1,1E-07	
19	FIF5-D1-V / D2-V	FHFPUP50	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,297	3,22	7,277	6,92	18,08	1,4E-02	
19	FIF-RTN-V	FHFPUP50	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,277	6,92	18,08	2,8E-02	
20	FIF-G1-V / G2-V	FHFPUP51	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,311	507,26	492,74	1,1E-07	
20	FIF6-D1-V / D2-V	FHFPUP51	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,297	3,22	7,311	6,96	18,04	1,4E-02	
20	FIF-RTN-V	FHFPUP51	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,311	6,96	18,04	2,8E-02	
21	FIF-G1-V / G2-V	FHFPUP52	3	1				1000	1,0E-06	0,333	1	H03138	SST			0,1		0,856	113,6	2,297	260,94	7,321	508,40	491,60	1,1E-07	
21	FIF7-D1-V / D2-V	FHFPUP52	2	1				25	1,0E-02	0,050	1	H03130(2)	BRASS			0,112	0,102	1,405	1,4	2,297	3,22	7,321	6,98	18,02	1,4E-02	
21	FIF-RTN-V	FHFPUP52	1					25	2,0E-02	0,050		H03130(1)	BRASS				0,051	0,128	1,4	2,297	3,22	7,321	6,98	18,02	2,8E-02	
			79	21																						
	Sum Bundle 03															**2,404**	**1,173**	**24,821**						**3,0E-01**	**8,99E-01**
8	MG1-V	FHFPUP32	2	1	04	3132	32	100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,268	20,41	7,197	39,21	60,79	1,9E-01	
8	VT1-V	FHFPUP32	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,268	20,41	7,197	39,21	60,79	8,6E-04	
9	MG2-V	FHFPUP33	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,268	20,41	7,239	39,59	60,41	1,9E-01	
9	VT2-V	FHFPUP33	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,268	20,41	7,239	39,59	60,41	8,6E-04	
10	MG3-V	FHFPUP34	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,268	20,41	7,288	40,03	59,97	1,9E-01	
10	VT3-V	FHFPUP34	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,268	20,41	7,288	40,03	59,97	8,6E-04	
11	MG4-V	FHFPUP35	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,268	20,41	7,338	40,48	59,52	1,9E-01	
11	VT4-V	FHFPUP35	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,268	20,41	7,338	40,48	59,52	8,6E-04	
12	MG5-V	FHFPUP36	2	1				100	1,5E-02	0,048	1	H04138(2)	BRASS			0,09	0,016	1,154	9	2,268	20,41	7,389	40,94	59,06	1,9E-01	
12	VT5-V	FHFPUP36	2					100	1,0E-02	0,000		H04138(2)	BRASS				0,016	0,086	9	2,268	20,41	7,389	40,94	59,06	8,6E-04	
22	SFI 1-3 / D1-V	FHFPUP56	3	1				25	1,0E-02	0,048	1	H05130(3)	BRASS			0,134	0,153	1,946	1,4	2,268	3,18	8,267	8,22	16,78	2,0E-02	
22	SIF-RTN1-V	FHFPUP56	1					25	1,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,268	3,18	8,267	8,22	16,78	4,7E-02	
22	SIF-TST1-V	FHFPUP56	1					25	1,0E-03	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,268	3,18	8,267	8,22	16,78	4,7E-04	
22	SFI 4-7 / D1-V	FHFPUP56	4	1				25	1,0E-02	0,048	1	H05130(4)	BRASS			0,128	0,204	1,81	1,4	2,268	3,18	8,267	8,22	16,78	2,7E-02	
22	SIF-RTN1-V	FHFPUP56	1					25	2,0E-02	0,333		H05130(1)	BRASS				0,051	0,079	1,4	2,268	3,18	8,267	8,22	16,78	1,9E-01	
22	SIF-G1A-V / G1B-V	FHFPUP56	4	1				1000	1,0E-06	0,300	1	H04138	SST			0,114		0,962	113,6	2,268	257,64	8,267	607,93	392,07	1,4E-07	
23	SFI 1-3 / D2-V	FHFPUP57	3	1				25	1,0E-02	0,048	1	H05130(3)	BRASS			0,134	0,153	1,946	1,4	2,268	3,18	8,231	8,17	16,83	2,0E-02	
23	SIF-RTN2-V	FHFPUP57	1					25	1,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,268	3,18	8,231	8,17	16,83	4,7E-02	

Designation										Cable								CVV ext. Harness SVM CB to CVV I/F-CB		Harness total (cvv int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Manganin mm²	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P el, On [mW/m] at 300 K
23	SIF-TST2-V	FHFPUP57	1					25	1,0E-03	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,268	3,18	8,231	8,17	16,83	4,7E-04	
23	SFI 4-7 / D2-V	FHFPUP57	4	1				25	1,0E-02	0,048	1	H05130(4)	BRASS			0,128	0,204	1,81	1,4	2,268	3,18	8,231	8,17	16,83	2,7E-02	
23	SIF-RTN2-V	FHFPUP57	1					25	2,0E-02	0,333		H05130(1)	BRASS				0,051	0,079	1,4	2,268	3,18	8,231	8,17	16,83	1,9E-01	
23	SIF-G2A-V / G2B-V	FHFPUP57	4	1				1000	1,0E-06	0,333	1	H04138	SST			0,114		0,962	113,6	2,268	257,64	8,231	603,84	396,16	1,5E-07	
24	SFI 1-3 / D3-V	FHFPUP58	3	1				25	1,0E-02	0,048	1	H05130(3)	BRASS			0,134	0,153	1,946	1,4	2,268	3,18	8,202	8,13	16,87	2,0E-02	
24	SIF-RTN3-V	FHFPUP58	1					25	1,0E-02	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,268	3,18	8,202	8,13	16,87	4,7E-02	
24	SIF-TST3-V	FHFPUP58	1					25	1,0E-03	0,333		H05130(1)	BRASS				0,051	0,128	1,4	2,268	3,18	8,202	8,13	16,87	4,7E-04	
24	SFI 4-7 / D3-V	FHFPUP58	4	1				25	1,0E-02	0,048	1	H05130(4)	BRASS			0,128	0,204	1,81	1,4	2,268	3,18	8,202	8,13	16,87	2,7E-02	
24	SIF-RTN3-V	FHFPUP58	1					25	2,0E-02	0,333		H05130(1)	BRASS				0,051	0,079	1,4	2,268	3,18	8,202	8,13	16,87	1,9E-01	
24	SIF-G3A-V / G3B-V	FHFPUP58	4	1				1000	1,0E-06	0,333	1	H04138	SST			0,114		0,962	113,6	2,268	257,64	8,202	600,55	399,45	1,5E-07	
			62	14																						
	Sum Bundle 04															**1,578**	**1,69**	**21,359**							**1,8E+00**	**5,43E+00**
25	SIF-TS-I-P / TS-V-P	FHFPUP59	4	1				1000	1,0E-05	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	8,147	596,23	403,77	9,1E-08	
25	SIF-TS-I-R / TS-V-R	FHFPUP60	4	1				1000	0,0E+00	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	8,154	597,02	402,98	0,0E+00	
26	CP-LT-PY-P	FHFPUP61	2	1				100	5,0E-03	0,333	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	7,5	42,09	57,91	1,5E-01	
26	CP-ACA-P / ACB-P	FHFPUP61	4	1				100	1,0E-02	0,333	1	H04138	BRASS			0,09	0,032	1,24	9	2,441	21,97	7,5	42,09	57,91	1,2E+00	
26	CP-LT-SYA-P / SYB-P	FHFPUP61	3	1				1000	2,0E-05	0,333	1	H03138	SST			0,1		0,856	113,6	2,441	277,30	7,5	522,73	477,27	4,5E-05	
27	CP-LT-RY-R	FHFPUP62	2	1				100	0,0E+00	0,333	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	7,494	42,04	57,96	0,0E+00	
27	CP-ACA-R / ACB-R	FHFPUP62	4	1				100	1,0E-02	0,333	1	H04138	BRASS			0,09	0,032	1,24	9	2,441	21,97	7,494	42,04	57,96	1,2E+00	
27	CP-LT-SYA-R / SYB-R	FHFPUP62	3	1				1000	0,0E+00	0,333	1	H03136	SST			0,1		0,856	113,6	2,441	277,30	7,494	522,05	477,95	0,0E+00	
28	S04K-TS-V-P / TS-I-P	FHFPUP63	4	1				1000	0,0E+00	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	6,727	434,91	565,09	0,0E+00	
28	S04K-TS-V-P / TS-I-P	FHFPUP63	4	1				1000	0,0E+00	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	6,727	434,91	565,09	0,0E+00	
29	S04K-TS-V-R / TS-I-R	FHFPUP64	4	1				1000	3,0E-03	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	6,712	433,21	566,79	8,2E-03	
29	S04K-TS-V-R / TS-I-R	FHFPUP64	4	1				1000	3,0E-03	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	6,712	433,21	566,79	8,2E-03	
29	S10K-TS-V-R / TS-I-R	FHFPUP64	4	1				1000	1,0E-05	0,030	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	6,712	433,21	566,79	1,4E-06	
30	CS-HT-P	FHFPUP65	2	1				200	1,0E-05	0,030	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	7,722	44,09	155,91	5,4E-08	
30	CS-HR-TS-I-P/TS-V-P	FHFPUP65	4	1	05	2900	29	1000	1,0E-05	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	7,722	547,95	452,05	9,1E-08	
30	CS-HR-TS-V-P / CR-TS-I-P	FHFPUP65	4	1				1000	1,0E-05	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	7,722	547,95	452,05	9,1E-08	
31	CS-HT-R	FHFPUP66	2	1				200	0,0E+00	0,002	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	7,722	44,09	155,91	0,0E+00	
31	CS-HR-TS-I-R/TS-V-R	FHFPUP66	4	1				1000	0,0E+00	0,002	1	H04138	SST			0,114		0,962	113,6	2,441	277,30	7,722	547,95	452,05	0,0E+00	
32	DP3-AC-H	FHFPUP67	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,814	35,92	64,08	2,1E-02	
32	DP4-AC-H	FHFPUP67	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,814	35,92	64,08	2,1E-02	
32	DP5-AC-H	FHFPUP67	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,814	35,92	64,08	2,1E-02	
32	DP6-AC-H	FHFPUP67	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,814	35,92	64,08	2,1E-02	
32	DP7-AC-H	FHFPUP67	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,814	35,92	64,08	2,1E-02	
33	DP3-AC-V	FHFPUP68	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,776	35,57	64,43	2,1E-02	
33	DP4-AC-V	FHFPUP68	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,776	35,57	64,43	2,1E-02	
33	DP5-AC-V	FHFPUP68	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,776	35,57	64,43	2,1E-02	
33	DP6-AC-V	FHFPUP68	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,776	35,57	64,43	2,1E-02	
33	DP7-AC-V	FHFPUP68	2	1				100	5,0E-03	0,048	1	H02138	BRASS			0,08	0,016	0,981	9	2,441	21,97	6,776	35,57	64,43	2,1E-02	

Designation											Cable									CVV ext. Harness SVM CB to CVV I/F-CB		Harness total (cvv int. & ext.)				
Cable_n	Description	Unit / Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Manganin mm²	SiO2 mm²	SST mm²	Brass mm²	Insulation mm²	R_core Ohm/m at 300 K	Harness lth (m)	R_max (Ohm) at 300 K	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P el, On [mW/m] at 300 K
34	CS-CR-TS-I-P/TS-V-P	FHFPUP69	4	1				1000	1,0E-05	0,002	1	H04138	SST			0,114	0,000	0,962	113,6	2,441	277,30	7,716	547,26	452,74	9,1E-08	
			82	28																						
	Sum Bundle 05															**2,754**	**0,288**	**28,508**							**2,8E+00**	**8,34E+00**
1	IF1-H		1	1							1	COAX (3.61mm)	SST		5,256	5,0				3,2						
1	IF2-H		1	1							1	COAX (3.61mm)	SST		5,256	5,0				3,2						
1	IF1-V		1	1							1	COAX (3.61mm)	SST		5,256	5,0				3,2						
1	IF2-V		1	1							1	COAX (3.61mm)	SST		5,256	5,0				3,2						
	Sum COAX														**21,024**	**20**		**0**								
1	Overall shield on harness bundles (Manganin-Braid)										1	braided shield 10 mm diam.	Mng	1,512						2,429						
2	Overall shield on harness bundles (Manganin-Braid)										1	braided shield 10 mm diam.	Mng	1,512						2,394						
3	Overall shield on harness bundles (Manganin-Braid)										1	braided shield 15 mm diam.	Mng	1,872						2,297						
4	Overall shield on harness bundles (Manganin-Braid)										1	braided shield 15 mm diam.	Mng	1,872						2,268						
5	Overall shield on harness bundles (Manganin-Braid)										1	braided shield 15 mm diam.	Mng	1,872						2,441						
	Sum Shields													**8,64**												
	Sum Bundles 01-05 & COAX & Shields													**8,64**	**21,02**	**30,73**	**6,014**	**121**							**7,00E+00**	**2,10E+01**

16*2,5	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (LOU)	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	R_core Ohm/m at Op. Temp.	CU mm²	SST mm²	Brass mm²	Manganin mm²	Insulation mm²	ext.Harness Ith (m) from SVM-CB to LOU	ext.Harness R_(Ohm) at 300 K from SVM-CB to LOU	LOU Harness Rmax_(Ohm) at 300 K from LCU to LOU	delta R (Ohm)	P_el LOU on (mW/m) at Op. Temperature
	LOA-1A-D1/D2	LOU	P01	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	**4,800**			1,234	0,896	2,364				4,75E+00
	LOA-1A-G1/G2	LOU	P01	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,364	0,598092	0,92	0,083	2,53E-01
	LOA-1A-D1S/D2S-G1S/G2S	LOU	P01	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,364	330,96	331,28	68,721	2,80E-08
	LOA-1A-TVP/TVN	LOU	P01	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,364	330,96	331,28	68,721	1,96E-08
	LOA-1A-TIP/TIN	LOU	P01	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,364	330,96	331,28	68,721	1,96E-02
	LOA-1A-PL	LOU	P01	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,364	0,598092	0,92	0,083	7,91E-01
	LOA-1A-1M/2M	LOU	P01	4	1		50	1,0E-02	0,025	1	H04138	BRASS	12	12		0,09	0,09		1,24	2,364	28,368	28,69	21,313	1,20E-01
	LOA-1A-1MS/2MS	LOU	P01	4	1		400	1,0E-05	0,025	1	H04138	SST	140	140		0,114			0,962	2,364	330,96	331,28	68,721	1,40E-06
				38		06																		
	LOA-2A-D1/D2	LOU	P03	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,385		0,00	0,050	4,75E+00
	LOA-2A-G1/G2	LOU	P03	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,385	0,603405	0,92	0,078	2,53E-01
	LOA-2A-D1S/D2S-G1S/G2S	LOU	P03	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,385	333,9	334,22	65,781	2,80E-08
	LOA-2A-TVP/TVN	LOU	P03	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,385	333,9	334,22	65,781	1,96E-08
	LOA-2A-TIP/TIN	LOU	P03	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,385	333,9	334,22	65,781	1,96E-02
	LOA-2A-PL	LOU	P03	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,385	0,603405	0,92	0,078	7,91E-01
	LOA-2A-1M/2M	LOU	P03	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,385	28,62	28,94	21,061	1,80E-01
	LOA-2A-1MS/2MS	LOU	P03	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,385	333,9	334,22	65,781	2,10E-06
				42																				
	LOA-3A-D1/D2	LOU	P05	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,394			0,050	4,75E+00
	LOA-3A-G1/G2	LOU	P05	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,394	0,605682	0,93	0,065	2,53E-01
	LOA-3A-D1S/D2S-G1S/G2S	LOU	P05	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,394	335,16	335,49	64,511	2,80E-08
	LOA-3A-TVP/TVN	LOU	P05	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,394	335,16	335,49	64,511	1,96E-08
	LOA-3A-TIP/TIN	LOU	P05	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,394	335,16	335,49	64,511	1,96E-02
	LOA-3A-PL	LOU	P05	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,394	0,605682	0,93	0,065	7,91E-01
	LOA-3A-1M/2M	LOU	P05	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,394	28,728	29,06	20,943	1,80E-01
	LOA-3A-1MS/2MS/3MS	LOU	P05	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,394	335,16	335,49	64,511	2,10E-06
						07																		
	LOA-4A-D1/D2	LOU	P07	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,428			0,050	4,75E+00
	LOA-4A-G1/G2	LOU	P07	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,428	0,614284	0,94	0,057	2,53E-01
	LOA-4A-D1S/D2S-G1S/G2S	LOU	P07	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,428	339,92	340,25	59,751	2,80E-08
	LOA-4A-TVP/TVN	LOU	P07	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,428	339,92	340,25	59,751	1,96E-08
	LOA-4A-TIP/TIN	LOU	P07	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,428	339,92	340,25	59,751	1,96E-02
	LOA-4A-PL	LOU	P07	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,428	0,614284	0,94	0,057	7,91E-01
	LOA-4A-1M/2M	LOU	P07	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,428	29,136	29,46	20,535	1,80E-01
	LOA-4A-1MS/2MS/3MS	LOU	P07	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,428	339,92	340,25	59,751	2,10E-06
	LOA-5A-D1/D2	LOU	P09	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,154			0,050	4,75E+00
	LOA-5A-G1/G2	LOU	P09	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,154	0,544962	1,06	-0,062	2,53E-01
	LOA-5A-D1S/D2S-G1S/G2S	LOU	P09	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,154	301,56	302,08	97,923	2,80E-08
	LOA-5A-TVP/TVN	LOU	P09	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,154	301,56	302,08	97,923	1,96E-08
	LOA-5A-TIP/TIN	LOU	P09	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,154	301,56	302,08	97,923	1,96E-02
	LOA-5A-PL	LOU	P09	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,154	0,544962	1,06	-0,062	7,91E-01
	LOA-5A-1M/2M	LOU	P09	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,154	25,848	26,37	23,635	1,80E-01
	LOA-5A-1MS/2MS/3MS	LOU	P09	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,154	301,56	302,08	97,923	2,10E-06
	LOA-6A-D1/D2	LOU	P11	12	2	08	0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,133			0,050	4,75E+00
	LOA-6A-G1/G2	LOU	P11	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,133	0,539649	1,06	-0,057	2,53E-01
	LOA-6A-D1S/D2S-G1S/G2S	LOU	P11	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,133	298,62	299,14	100,863	2,80E-08
	LOA-6A-TVP/TVN	LOU	P11	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,133	298,62	299,14	100,863	1,96E-08
	LOA-6A-TIP/TIN	LOU	P11	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,133	298,62	299,14	100,863	1,96E-02
	LOA-6A-PL	LOU	P11	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,133	0,539649	1,06	-0,057	7,91E-01
	LOA-6A-1M/2M	LOU	P11	10	1		50	1,0E-02	0,025	1	H11138	BRASS	12	12		0,13	0,09		1,898	2,133	25,596	26,11	23,887	3,00E-01
	LOA-6A-1MS-5MS	LOU	P11	10	1		400	1,0E-05	0,025	1	H11138	SST	140	140		0,218			1,898	2,133	298,62	299,14	100,863	3,50E-06
	HEAT - M	LOU	P15	2	1		1	1,5E-01	1,000	1	TS-2CC28	CU	0,253	0,141	0,18			0,225	0,375	2,436	0,343476	0,61	0,386	6,35E+00
	LOA-6C-D1/D2	LOU	P13	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,094			0,050	4,75E+00
	LOA-6C-G1/G2	LOU	P13	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,094	0,529782	1,03	-0,027	2,53E-01

16*2,5	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (LOU)	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	R_core Ohm/m at Op. Temp.	CU mm²	SST mm²	Brass mm²	Manganin mm²	Insulation mm²	ext.Harness lth (m) from SVM-CB to LOU	ext.Harness R_(Ohm) at 300 K from SVM-CB to LOU	LOU Harness Rmax_(Ohm) at 300 K from LCU to LOU	delta R (Ohm)	P,el LOU on (mW/m) at Op. Temperature
	LOA-6C-D1S/D2S-G1S/G2S	LOU	P13	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,094	293,16	293,66	106,343	2,80E-08
	LOA-6C-TVP/TVN	LOU	P13	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,094	293,16	293,66	106,343	1,96E-08
	LOA-6C-TIP/TIN	LOU	P13	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,094	293,16	293,66	106,343	1,96E-02
	LOA-6C-PL	LOU	P13	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,094	0,529782	1,03	-0,027	7,91E-01
	LOA-6C-1M/2M	LOU	P13	10	1		50	1,0E-02	0,025	1	H11138	BRASS	12	12		0,13	0,09		1,898	2,094	25,128	25,62	24,375	3,00E-01
	LOA-6C-1MS/2MS/3MS	LOU	P13	10	1		400	1,0E-05	0,025	1	H11138	SST	140	140		0,218			1,898	2,094	293,16	293,66	106,343	3,50E-06
						09																		
	LOA-6D-D1/D2	LOU	P14	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,096			0,050	4,75E+00
	LOA-6D-G1/G2	LOU	P14	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,096	0,530288	1,03	-0,027	2,53E-01
	LOA-6D-D1S/D2S-G1S/G2S	LOU	P14	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,096	293,44	293,94	106,063	2,80E-08
	LOA-6D-TVP/TVN	LOU	P14	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,096	293,44	293,94	106,063	1,96E-08
	LOA-6D-TIP/TIN	LOU	P14	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,096	293,44	293,94	106,063	1,96E-02
	LOA-6D-PL	LOU	P14	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,096	0,530288	1,03	-0,027	7,91E-01
	LOA-6D-1M/2M	LOU	P14	10	1		50	1,0E-02	0,025	1	H11138	BRASS	12	12		0,13	0,09		1,898	2,096	25,152	25,65	24,351	3,00E-01
	LOA-6D-1MS-5MS	LOU	P14	10	1		400	1,0E-05	0,025	1	H11138	SST	140	140		0,218			1,898	2,096	293,44	293,94	106,063	3,50E-06
	LOA-1B-D1/D2	LOU	P02	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,338			0,050	4,75E+00
	LOA-1B-G1/G2	LOU	P02	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,338	0,591514	0,96	0,038	2,53E-01
	LOA-1B-D1S/D2S-G1S/G2S	LOU	P02	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,338	327,32	327,69	72,309	2,80E-08
	LOA-1B-TVP/TVN	LOU	P02	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,338	327,32	327,69	72,309	1,96E-08
	LOA-1B-TIP/TIN	LOU	P02	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,338	327,32	327,69	72,309	1,96E-02
	LOA-1B-PL	LOU	P02	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,338	0,591514	0,96	0,038	7,91E-01
	LOA-1B-1M/2M	LOU	P02	4	1		50	1,0E-02	0,025	1	H04138	BRASS	12	12		0,13	0,09		1,898	2,338	28,056	28,43	21,573	1,20E-01
	LOA-1B-1MS/2MS	LOU	P02				400	1,0E-05	0,025	1	H04138	SST	140	140		0,218			1,898	2,338	327,32	327,69	72,309	0,00E+00
						10																		
	LOA-2B-D1/D2	LOU	P04	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,355			0,050	4,75E+00
	LOA-2B-G1/G2	LOU	P04	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,355	0,595815	0,97	0,033	2,53E-01
	LOA-2B-D1S/D2S-G1S/G2S	LOU	P04	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,355	329,7	330,07	69,929	2,80E-08
	LOA-2B-TVP/TVN	LOU	P04	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,355	329,7	330,07	69,929	1,96E-08
	LOA-2B-TIP/TIN	LOU	P04	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,355	329,7	330,07	69,929	1,96E-02
	LOA-2B-PL	LOU	P04	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,355	0,595815	0,97	0,033	7,91E-01
	LOA-2B-1M/2M/3M	LOU	P04	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,355	28,26	28,63	21,369	1,80E-01
	LOA-2B-1MS/2MS/3MS	LOU	P04	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,355	329,7	330,07	69,929	2,10E-06
	LOA-3B-D1/D2	LOU	P06	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,384			0,050	4,75E+00
	LOA-3B-G1/G2	LOU	P06	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,384	0,603152	0,97	0,027	2,53E-01
	LOA-3B-D1S/D2S-G1S/G2S	LOU	P06	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,384	333,76	334,13	65,870	2,80E-08
	LOA-3B-TVP/TVN	LOU	P06	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,384	333,76	334,13	65,870	1,96E-08
	LOA-3B-TIP/TIN	LOU	P06	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,384	333,76	334,13	65,870	1,96E-02
	LOA-3B-PL	LOU	P06	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,384	0,603152	0,97	0,027	7,91E-01
	LOA-3B-1M/2M/3M	LOU	P06	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,384	28,608	28,98	21,022	1,80E-01
	LOA-3B-1MS/2MS/3MS	LOU	P06	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,384	333,76	334,13	65,870	2,10E-06
						11																		
	LOA-4B-D1/D2	LOU	P08	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,415			0,050	4,75E+00
	LOA-4B-G1/G2	LOU	P08	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36				0,952	2,415	0,610995	0,98	0,019	2,53E-01
	LOA-4B-D1S/D2S-G1S/G2S	LOU	P08	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,415	338,1	338,47	61,530	2,80E-08
	LOA-4B-TVP/TVN	LOU	P08	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,415	338,1	338,47	61,530	1,96E-08
	LOA-4B-TIP/TIN	LOU	P08	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,415	338,1	338,47	61,530	1,96E-02
	LOA-4B-PL	LOU	P08	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,415	0,610995	0,98	0,019	7,91E-01
	LOA-4B-1M/2M/3M	LOU	P08	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,415	28,98	29,35	20,650	1,80E-01
	LOA-4B-1MS/2MS/3MS	LOU	P08	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,415	338,1	338,47	61,530	2,10E-06

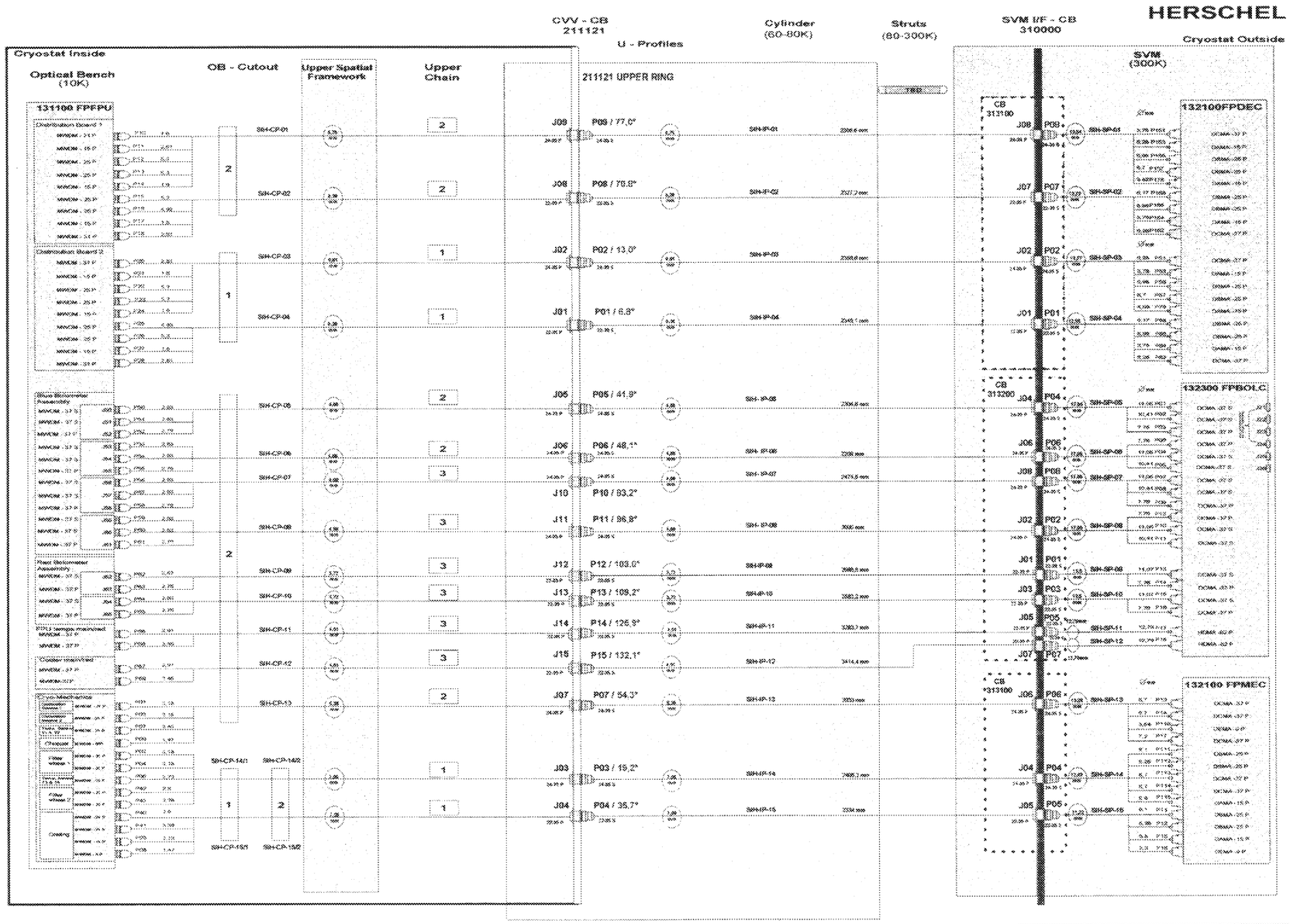
16*2,5	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No._SIH-IH-xx	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (LOU)	no_of_cables	cable_type	condu.	R_core Ohm/m at 300 K	R_core Ohm/m at Op. Temp.	CU mm²	SST mm²	Brass mm²	Manganin mm²	Insulation mm²	ext.Harness lth (m) from SVM-CB to LOU	ext.Harness R_(Ohm) at 300 K from SVM-CB to LOU	LOU Harness Rmax_(Ohm) at 300 K from LCU to LOU	delta R (Ohm)	P,el LOU on (mW/m) at Op. Temperature
	LOA-5B-D1/D2	LOU	P10	12	2		0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,152			0,050	4,75E+00
	LOA-5B-G1/G2	LOU	P10	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,152	0,544456	1,04	-0,036	2,53E-01
	LOA-5B-D1S/D2S-G1S/G2S	LOU	P10	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,152	301,28	301,77	98,228	2,80E-08
	LOA-5B-TVP/TVN	LOU	P10	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,152	301,28	301,77	98,228	1,96E-08
	LOA-5B-TIP/TIN	LOU	P10	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,152	301,28	301,77	98,228	1,96E-02
	LOA-5B-PL	LOU	P10	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,152	0,544456	1,04	-0,036	7,91E-01
	LOA-5B-1M/2M	LOU	P10	6	1		50	1,0E-02	0,025	1	H06138	BRASS	12	12		0,088	0,05		1,422	2,152	25,824	26,32	23,684	1,80E-01
	LOA-5B-1MS/2MS/3MS	LOU	P10	6	1		400	1,0E-05	0,025	1	H06138	SST	140	140		0,144			1,224	2,152	301,28	301,77	98,228	2,10E-06
	LOA-6B-D1/D2	LOU	P12	12	2	12	0,05	1,2E+00	0,025	2	TS-06CC22	CU	0,016	0,011	4,800			1,234	0,896	2,129			0,050	
	LOA-6B-G1/G2	LOU	P12	4	1		1	1,0E-01	0,025	1	TS-04CC28	CU	0,253	0,253	0,36			0,264	0,952	2,129	0,538637	1,03	-0,030	2,53E-01
	LOA-6B-D1S/D2S-G1S/G2S	LOU	P12	8	1		400	1,0E-06	0,025	1	H08138	SST	140	140		0,166			1,323	2,129	298,06	298,55	101,448	2,80E-08
	LOA-6B-TVP/TVN	LOU	P12	2	1		400	1,0E-06	0,070	1	H04138(2)	SST	140	140		0,016			0,086	2,129	298,06	298,55	101,448	1,96E-08
	LOA-6B-TIP/TIN	LOU	P12	2			400	1,0E-03	0,070		H04138(2)	SST	140	140		0,098			0,876	2,129	298,06	298,55	101,448	1,96E-02
	LOA-6B-PL	LOU	P12	2	1		1	2,5E-01	0,025	1	TS-2CC28	CU	0,253	0,253	0,18			0,225	0,375	2,129	0,538637	1,03	-0,030	7,91E-01
	LOA-6B-1M/2M	LOU	P12	10	1		50	1,0E-02	0,025	1	H11138	BRASS	12	12		0,13	0,09		1,898	2,129	25,548	26,04	23,960	3,00E-01
	LOA-6B-1MS-5MS	LOU	P12	10	1		400	1,0E-05	0,025	1	H11138	SST	140	140		0,218			1,898	2,129	298,06	298,55	101,448	3,50E-06
	HEAT - R	LOU	P16	2	1		1	1,5E-01	0,000	1	TS-2CC28	CU	0,253	0,141	0,18			0,225	0,375	2,491	0,351231	0,62	0,380	0,00E+00
	Sum:														**75,120**	**7,720**	**0,914**	**24,308**	**106,212**					**85,89**

6 Annex 3: PACS Instrument Harness SIH

PACS Harness Lay-out

The Overall Layout between the warm and cold units is defined in the Herschel drawings

HP-2-ASED-ID-0089-01-0B PACS



Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.

FREIGABE: SE 14.11.03 J. Lang	FESTIGKEIT:	VERTEILER:	DATUM:
HP-2-ASED-0089-01-0B			
FREIGABE AUSGABE:		CM: W. Wittbach 14.11.03	
	ZUL. ABW.:	OBERFL.:	MASSTAB: / GEW.:
			WERKSTOFF:

	DATUM	NAME
Bearb.	21.05.03	W. Hund
gepr.	20.1.03	J. Lang
NORM		
PS		

PACS (PFM)

Cryo Harness Interconection Diagram

AUSG.	AEND. NR.	DATUM	NAME
B		18.09.03	W. Hund
A		21.05.03	W. Hund

astrium

2547-121430-020-01-0B

BLATT 1 / 1 BL

URSPR.: ERS.F.: ERS.D.:

| Designation | | | | | | | | | | | | | Cable | | | | | | | Harness total | | | | | | | | | | | | |

Designation												Cable							Harness total															
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-CP-...	Upper chain	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	C_max core / inner Shd (pF/m)	C_max inner Shd / outer Shd (pF/m)	C_max core / outer Shd (pF/m)	no_of_cables	cable_type	condu	Pmax_W [P_m x Rmax]	Pd-cycle=[Pm x(tx T)]	SST mm²	Brass mm²	Insulation mm²	Harness lth (m) total	R_max (Ohm) total at 300 K	C_max core / inner Shd (pF) total	C_max core / core (pF) total	C_max inner Shd / outer Shd (pF) total	C_max core / outer Shd (pF) total	delta C core / inner Shd (pF)	delta C core / core (pF)	delta C inner Shd / outer Shd (pF)	delta C_ core / outer Shd (pF) total	Jacket (Ohm)	P el, avg [mW/m] at 300 K	P.el Spec on (mW/m) at 300 K	P.el Phot on (mW/m) at 300 K	P el, avg [mW/m] at 77 K	P.el Spec on (mW/m) at 77 K	P.el Phot on (mW/m) at 77 K	REMARKS
071	Triax cable, CRE-Out line grougot out_24_4	FPFPU	P25	1	2			800	5.00E-06	0.1300	800	2000	50	1	H01238	SST	2.00E-08		0.231	0	2.506	6.647	434.1	387.015	0	2064.88	295.878	413	800	-85	-245.88			3.69E-07	2.22E-06		2.96E-07	1.79E-06		
072	Triax cable, CRE-Out line grougot out_25_4	FPFPU	P25	1	2			800	5.00E-06	0.1300	800	2000	50	1	H01238	SST	2.00E-08		0.231	0	2.506	6.647	434.1	387.015	0	2064.88	295.878	413	800	-85	-245.88			3.69E-07	2.22E-06		2.96E-07	1.79E-06		
073	Shielded cable, Synch_3	FPFPU	P25	2	1			400	2.50E-04	0.6300	1500			1	H02138	SST	3.20E-07		0.088	0	0.771	6.647	229.816	556.996	322.827	0	0	943	1177	0	0			1.44E-06	8.64E-06		1.17E-06	7.00E-06		2 lines in parallel
074	Shielded cable, Clock_4	FPFPU	P25	2	1			400	2.50E-04	0.1000	1500			1	H02138	SST	5.00E-05		0.088	0	0.771	6.647	229.816	556.996	322.827	0	0	943	1177	0	0			7.50E-04	4.50E-03		6.08E-04	3.65E-03		2 lines in parallel
016b	Shielded cable, Outreth_4	FPFPU	P25	1	2			800	1.00E-04	0.1667	800	2000	50	1	H01238	SST	8.00E-06		0.231	0	2.506	6.647	434.1	387.015	0	2064.88	295.878	413	800	-85	-245.88			1.69E-04	1.14E-03		1.53E-04	9.20E-04		
610	Shielded cable, CRE DC supply 4	FPFPU	P27	8	1			400	3.00E-05	0.1667	2000			1	H11138(2)	SST			0.016	0	0.086	6.676	231.356	558.632	304.576	8	0	1442	1695	0	0			1.80E-05	1.08E-04		1.46E-05	8.75E-05		2 lines in parallel
010	Shielded cable, CRE DC supply 4	FPFPU	P27	8	1			800	1.00E-05	0.1667	2000			1	H11138(6)	SST			0.202	0	1.812	6.676	437.356	496.573	267.782	0	0	1508	1702	0	0			1.51E-05	9.09E-05		1.23E-05	7.36E-05		
011	Shielded cable, CRE DC supply 4	FPFPU	P28	8	1			400	3.00E-04	0.1667	2000			1	H24138(6)	SST	2.16E-04		0.048	0	0.258	6.615	227.876	540.453	298.265	0	0	1460	1702	0	0			5.40E-03	3.24E-02		4.37E-03	2.62E-02		2 lines in parallel
011	Shielded cable, CRE DC supply 4	FPFPU	P28	16	1			800	1.00E-05	0.1667	2000			1	H24138(16)	SST	1.29E-06		0.116	0	0.599	6.615	430.906	540.453	298.265	0	0	1460	1702	0	0			3.03E-05	1.82E-04		2.46E-05	1.47E-04		
012	Shielded cable, Det Bias supply 4	FPFPU	P28	8	1			800	1.00E-05	0.1667	2000			1	H06138	SST	4.80E-07		0.144	0	1.224	6.615	430.906	599.062	250.552	0	0	1401	1749	0	0			1.14E-05	6.82E-05		9.20E-06	5.52E-05		
	Sum Bundle 04																		**4.136**	**8**	**42.605**													**6.61E-03**	**3.97E-02**		**5.35E-03**	**3.21E-02**		
603b	8 tw pairs shielded, SST_B1, Out+T_sens	FPFPU	P52	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.369	591.182	763.462	351.686	0	0	237	648	0	0			1.21E-04			9.82E-05			
603c	8 tw pairs shielded, SST_B1, Out+T_sens	FPFPU	P52	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.369	591.182	763.462	351.686	0	0	237	648	0	0			1.21E-04			9.82E-05			
602b	8 tw pairs shielded, SST_B1, Out+T_sens	FPFPU	P51	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.345	588.455	761.782	351.135	0	0	236	649	0	0			1.21E-04			9.82E-05			
602c	8 tw pairs shielded, SST_B1, Out+T_sens	FPFPU	P51	16	1	05	08	800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.345	588.455	761.782	351.135	0	0	236	649	0	0			1.21E-04			9.82E-05			
603	Shielded cable, SST_bias Bol B_1	FPFPU	P52	16	1			800	1.00E-05	0.1667	1000			1	H19138	SST	1.44E-06		0.298	0	2.145	8.331	586.865	640.758	335.467	0	0	355	665	0	0			3.41E-05			2.05E-04	2.76E-05		1.66E-04
604	Shielded cable, SST_Clocks low level Bol B_1	FPFPU	P52	3	1			800	5.00E-05	0.1667	1000			1	H03138	SST	6.00E-06		0.064	0	0.856	8.331	586.865	653.356	343.716	0	0	347	656	0	0			1.42E-04			8.52E-04	1.15E-04		6.90E-04
605	Shielded cable, SST_Clocks high level Bol	FPFPU	P52	10	1			800	5.00E-05	0.1667	1000			1	H11138	SST	2.00E-05		0.218	0	1.898	8.331	586.865	665.74	365.364	0	0	334	635	0	0			4.73E-04			2.84E-03	3.83E-04		2.30E-03
603b	Shielded cable, Brass_bias, Bol B1	FPFPU	P52	4	1		02	80	3.00E-04	0.3333	1000			1	H02138	Brass	1.44E-05		0.106	0.102	1.34	8.331	8.025121	839.793	486.403	0	0	160	514	0	0			8.40E-05			5.04E-04	5.46E-05		3.28E-04
	Sum Bundle 05																		**1.876**	**0.182**	**15.715**													**1.22E-03**	**0.00E+00**		**7.31E-03**	**9.73E-04**	**0.00E+00**	**5.84E-03**	
606b	8 tw pairs shielded, SST_B2, Out+T_sens	FPFPU	P53	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.354	581.883	798.164	354.655	0	0	234	645	0	0			1.21E-04			9.82E-05			5.89E-04
606c	8 tw pairs shielded, SST_B2, Out+T_sens	FPFPU	P53	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.354	581.883	798.164	354.655	0	0	234	645	0	0			1.21E-04			9.82E-05			5.89E-04
607b	8 tw pairs shielded, SST_B2, Out+T_sens	FPFPU	P54	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.327	578.816	764.274	354.026	0	0	236	646	0	0			1.21E-04			9.82E-05			5.89E-04
607c	8 tw pairs shielded, SST_B2, Out+T_sens	FPFPU	P54	16	1	06	02	800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.327	578.816	764.274	354.026	0	0	236	646	0	0			1.21E-04			9.82E-05			5.89E-04
608	Shielded cable, SST_bias Bol B_2	FPFPU	P55	16	1			800	1.00E-05	0.1667	1000			1	H19138	SST	1.44E-06		0.298	0	2.145	8.313	577.226	643.392	336.648	0	0	357	663	0	0			3.41E-05			2.05E-04	2.76E-05		1.66E-04
609	Shielded cable, SST_Clocks low level Bol B_2	FPFPU	P55	3	1			800	5.00E-05	0.1667	1000			1	H03138	SST	6.00E-06		0.064	0	0.856	8.313	577.226	658.372	346.289	0	0	340	654	0	0			1.42E-04			8.52E-04	1.15E-04		6.90E-04
610	Shielded cable, SST_Clocks high level Bol	FPFPU	P55	10	1			800	5.00E-05	0.1667	1000			1	H11138	SST	2.00E-05		0.218	0	1.898	8.313	577.226	670.55	367.593	0	0	329	632	0	0			4.73E-04			2.84E-03	3.83E-04		2.30E-03
608b	Shielded cable, Brass_bias, Bol B2	FPFPU	P55	4	1			80	3.00E-04	0.3333	1000			1	H02138	Brass	1.44E-05		0.106	0.102	1.34	8.313	7.92307	841.878	487.406	0	0	158	513	0	0			8.40E-05			5.04E-04	5.46E-05		3.28E-04
	Sum Bundle 06																		**1.878**	**0.182**	**15.715**													**1.22E-03**	**0.00E+00**		**7.31E-03**	**9.73E-04**	**0.00E+00**	**5.84E-03**	
611b	8 tw pairs shielded, SST_B3, Out+T_sens	FPFPU	P56	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	7.784	552.269	708.904	326.06	0	0	291	674	0	0			1.21E-04			9.82E-05			5.89E-04
611c	8 tw pairs shielded, SST_B3, Out+T_sens	FPFPU	P56	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	7.784	552.269	708.904	326.06	0	0	291	674	0	0			1.21E-04			9.82E-05			5.89E-04
612b	8 tw pairs shielded, SST_B3, Out+T_sens	FPFPU	P57	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	7.799	553.973	709.954	326.409	0	0	290	674	0	0			1.21E-04			9.82E-05			5.89E-04
612c	8 tw pairs shielded, SST_B3, Out+T_sens	FPFPU	P57	16	1	07	03	800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	7.799	553.973	709.954	326.409	0	0	290	674	0	0			1.21E-04			9.82E-05			5.89E-04
613	Shielded cable, SST_bias Bol B_3	FPFPU	P58	16	1			800	1.00E-05	0.1667	1000			1	H19138	SST	1.44E-06		0.298	0	2.145	7.822	556.586	598.934	313.75	0	0	461	686	0	0			3.41E-05			2.05E-04	2.76E-05		1.66E-04
614	Shielded cable, SST_Clocks low level Bol B_3	FPFPU	P58	3	1			800	5.00E-05	0.1667	1000			1	H03138	SST	6.00E-06		0.1	0	0.856	7.822	556.586	609.16	320.512	0	0	391	679	0	0			1.42E-04			8.52E-04	1.15E-04		6.90E-04
615	Shielded cable, SST_Clocks high level Bol	FPFPU	P58	10	1			800	5.00E-05	0.1667	1000			1	H11138	SST	2.00E-05		0.218	0	1.898	7.822	556.586	626.903	341.062	0	0	379	659	0	0			4.73E-04			2.84E-03	3.83E-04		2.30E-03
613b	Shielded cable, Brass_bias, Bol B3	FPFPU	P58	4	1			80	3.00E-04	0.3333	1000			1	H02138	Brass	1.44E-05		0.106	0.102	1.34	7.822	7.59124	788.867	455.318	0	0	214	545	0	0			8.40E-05			5.04E-04	5.46E-05		3.28E-04
	Sum Bundle 07																		**1.902**	**0.182**	**15.715**													**1.22E-03**	**0.00E+00**		**7.31E-03**	**9.73E-04**	**0.00E+00**	**5.84E-03**	
616b	8 tw pairs shielded, SST_B4, Out+T_sens	FPFPU	P59	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.285	576.312	760.214	352.089	0	0	240	648	0	0			1.21E-04			9.82E-05			5.89E-04
616c	8 tw pairs shielded, SST_B4, Out+T_sens	FPFPU	P59	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.285	576.312	760.214	352.089	0	0	240	648	0	0			1.21E-04			9.82E-05			5.89E-04
617b	8 tw pairs shielded, SST_B4, Out+T_sens	FPFPU	P60	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.261	573.586	758.534	351.5	0	0	241	649	0	0			1.21E-04			9.82E-05			5.89E-04
617c	8 tw pairs shielded, SST_B4, Out+T_sens	FPFPU	P60	16	1	08	03	800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.261	573.586	758.534	351.5	0	0	241	649	0	0			1.21E-04			9.82E-05			5.89E-04
618	Shielded cable, SST_bias Bol B_4	FPFPU	P61	16	1			800	1.00E-05	0.1667	1000			1	H19138	SST	1.44E-06		0.298	0	2.145	8.244	571.054	638.406	334.029	0	0	352	666	0	0			3.41E-05			2.05E-04	2.76E-05		1.66E-04
619	Shielded cable, SST_Clocks low level Bol B_4	FPFPU	P61	3	1			800	5.00E-05	0.1667	1000			1	H03138	SST	6.00E-06		0.1	0	0.856	8.244	571.054	653.506	343.716	0	0	346	656	0	0			1.42E-04			8.52E-04	1.15E-04		6.90E-04
620	Shielded cable, SST_Clocks high level Bol	FPFPU	P61	10	1			800	5.00E-05	0.1667	1000			1	H11138	SST	2.00E-05		0.218	0	1.898	8.244	571.054	666.566	364.821	0	0	334	635	0	0			4.73E-04			2.84E-03	3.83E-04		2.30E-03
618b	Shielded cable, Brass_bias, Bol B4	FPFPU	P61	4	1			80	3.00E-04	0.3333	1000			1	H02138	Brass	1.44E-05		0.106	0.102	1.34	8.244	7.84941	836.254	483.551	0	0	165	516	0	0			8.40E-05			5.04E-04	5.46E-05		3.28E-04
	Sum Bundle 08																		**1.902**	**0.182**	**15.715**													**1.22E-03**	**0.00E+00**		**7.31E-03**	**9.73E-04**	**0.00E+00**	**5.84E-03**	
621b	8 tw pairs shielded, SST_R1, Out+T_sens	FPFPU	P62	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.259	559.072	762.83	356.224	0	0	237	644	0	0			1.21E-04			9.82E-05			5.89E-04
621c	8 tw pairs shielded, SST_R1, Out+T_sens	FPFPU	P62	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.259	559.072	762.83	356.224	0	0	237	644	0	0			1.21E-04			9.82E-05			5.89E-04
622	Shielded cable, SST_bias	FPFPU	P63	16	1	09	03	800	1.00E-05	0.1667	1000			1	H19138	SST	1.44E-06		0.298	0	2.145	8.224	557.368	643.069	336.109	0	0	357	664	0	0			3.41E-05			2.05E-04	2.76E-05		1.66E-04
623	Shielded cable, SST_Clocks low level Bol R1	FPFPU	P63	3	1			800	5.00E-05	0.1667	1000			1	H03138	SST	6.00E-06		0.1	0	0.856	8.224	557.368	661.822	347.961	0	0	336	652	0	0			1.42E-04			8.52E-04	1.15E-04		6.90E-04
624	Shielded cable, SST_Clocks high level Bol R1	FPFPU	P63	10	1			800	5.00E-05	0.1667	1000			1	H11138	SST	2.00E-05		0.218	0	1.898	8.224	557.368	673.58	369.657	0	0	326	631	0	0			4.73E-04			2.84E-03	3.83E-04		2.30E-03
622b	Shielded cable, Brass_bias, Bol R1	FPFPU	P63	2	1			80	3.00E-04	0.3333	1000			1	H02138	Brass	1.44E-05		0.106	0.102	1.34	8.224	7.69983	839.237	488.542	0	0	161	514	0	0			8.40E-05			5.04E-04	5.46E-05		3.28E-04
	Sum Bundle 09																		**1.306**	**0.182**	**10.977**													**9.76E-04**	**0.00E+00**		**5.86E-03**	**7.77E-04**	**0.00E+00**	**4.66E-03**	
625b	8 tw pairs shielded, SST_R2, Out+T_sens	FPFPU	P64	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.086	540.784	752.668	353.054	0	0	247	647	0	0			1.21E-04			9.82E-05			5.89E-04
625c	8 tw pairs shielded, SST_R2, Out+T_sens	FPFPU	P64	16	1			800	2.00E-05	0.1667	1000			1	H08-02138	SST	5.12E-06		0.298	0	2.369	8.086	540.784	752.668	353.054	0	0	247	647	0	0			1.21E-04			9.82E-05			5.89E-04
626	Shielded cable, SST_bias	FPFPU	P65	16	1	10	3	800	1.00E-05	0.1667	1000			1	H19138	SST	1.44E-06		0.298	0	2.145	8.11	543.51	637.097	332.624	0	0	363	667	0	0			3.41E-05			2.05E-04	2.76E-05		1.66E-04
627	Shielded cable, SST_Clocks low level Bol R2	FPFPU	P65	3	1			800	5.00E-05	0.1667	1000			1	H03138	SST	6.00E-06		0.1	0	0.856	8.11	543.51	657.354	345.88	0	0	343	654	0	0			1.42E-04			8.52E-04	1.15E-04		6.90E-04
628	Shielded cable, SST_Clocks high level Bol R2	FPFPU	P65	10	1			800	5.00E-05	0.1667	1000			1	H11138	SST	2.00E-05		0.218	0	1.898	8.11	543.51	668.619	365.644	0	0	331	634	0	0			4.73E-04			2.84E-03	3.83E-04		2.30E-03
626b	Shielded cable, Brass_bias, Bol R2	FPFPU	P65	2	1			80	3.00E-04	0.3333	1000			1	H02138	Brass	1.44E-05		0.106	0.102	1.34	8.11	7.59105	830.455	481.315	0	0	170	521	0	0			8.40E-05			5.04E-04	5.46E-05		3.28E-04
	Sum Bundle 10																		**1.386**	**0.182**	**10.977**													**9.76E-04**	**0.00E+00**		**5.86E-03**	**7.77E-04**	**0.00E+00**	**4.66E-03**	
629	2 tw pairs, shielded, SST_Bol SP_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.504	585.662	494.444	279.756	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
630	2 tw pairs, shielded, SST_Bol EV_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.504	585.662	494.444	279.756	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
631	2 tw pairs, shielded, SST_Bol HSP_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.504	585.662	494.444	279.756	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
632	2 tw pairs, shielded, SST_Bol HSE_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.504	585.662	494.444	279.756	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
633	2 tw pairs, shielded, SST_Bol SHUNT_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.504	585.662	494.444	279.756	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
634	6 tw pairs, shielded, Brass_Cooler TsHeater	FPFPU	P66	12	1	11	3	800	2.50E-02	0.6170	2000			1	H06-02130	BRASS			0.274	0.612	5.024	8.504	8.05627	728.427	279.756	0	0	1472	1720	0	0			1.79E-01			1.07E+00	1.15E-01		6.90E-01
641	2 tw pairs, shielded, SST_Bol 300mK_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.502	585.435	494.345	279.693	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
642	2 tw pairs, shielded, SST_Bol 300mK_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.502	585.435	494.345	279.693	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
643	2 tw pairs, shielded, SST_Bol FPU_Temp	FPFPU	P66	4	1			800	1.00E-06	0.6300	1000			1	H02-02138	SST	3.20E-09		0.141	0	1.299	8.502	585.435	494.345	279.693	0	0	506	720	0	0			1.96E-08			8.19E-08	1.10E-08		6.63E-08
644	2 tw pairs, shielded, SST_Bol FPU_heater	FPFPU	P66	4	1			8	2.00E-05	0.1667	2000			1	H02-02130	BRASS	1.28E-06		0.172	0.204	2.236	8.502	8.05347	528.309	279.693	0	0	1472	1720	0	0			3.73E-07			2.24E-06	2.43E-07		1.46E-06
	Sum Bundle 11																		**1.574**	**0.816**	**17.652**													**1.79E-01**	**0.00E+00**		**1.07E+00**	**1.15E-01**	**0.00E+00**	**6.90E-01**	

Designation													Cable							Harness total															
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-CP-...	Upper chain	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle [T * t]	C_max core / inner Shd (pF/m)	C_max inner Shd / outer Shd (pF/m)	C_max core / outer Shd (pF/m)	no_of_cables	cable_type	condu.	Pmax_W [P² _m x Rmax]	Pd-cycles=[Pm x(ts*t)]	SST mm²	Brass mm²	Insulation mm²	Harness tth (m) total	R_max (Ohm) total at 300 K	C_max core / inner Shd (pF) total	C_max core / core (pF) total	C_max inner Shd / outer Shd (pF) total	C_max core / outer Shd (pF) total	delta C core / inner Shd (pF)	delta C core / core (pF)	delta C inner Shd / outer Shd (pF)	delta C_ core / outer Shd (pF) total	delta R (Ohm)	P el, avg [mW/m] at 300 K	P.el Spec on (mW/m) at 300 K	P.el Phot on (mW/m) at 300 K	P el, avg [mW/m] at 77 K	P.el Spec on (mW/m) at 77 K	P.el Phot on (mW/m) at 77 K	REMARKS
635	2 tw pairs, shielded, SST_Bol SP_Temp	FPFPU	P69	4	1	12	3	800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.596	603.141	497.641	282.359	0	0	502	718	0	0	0.00	0.00E+00							Redundant to P68
636	2 tw pairs, shielded, SST_Bol BV_Temp	FPFPU	P69	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.596	603.141	497.641	282.359	0	0	502	718	0	0	0.00	0.00E+00							Redundant to P68
637	2 tw pairs, shielded, SST_Bol HSP_Temp	FPFPU	P69	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.596	603.141	497.641	282.359	0	0	502	718	0	0	0.00	0.00E+00							Redundant to P68
638	2 tw pairs, shielded, SST_Bol HSE_Temp	FPFPU	P69	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.596	603.141	497.641	282.359	0	0	502	718	0	0	0.00	0.00E+00							Redundant to P68
639	2 tw pairs, shielded, SST_Bol SHUNT_Temp	FPFPU	P69	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.596	603.141	497.641	282.359	0	0	502	718	0	0	0.00	0.00E+00							Redundant to P68
640	6 tw pairs, shielded, Brass_Cooler Ts/Heater	FPFPU	P69	12	1			8	0.00E+00	0.0170	2000			1	H06-02139	BRASS			0.274	0.612	5.024	8.596	8.256151	532.834	282.359	0	0	1467	1716	0	0	0.00	0.00E+00							Redundant to P68
645	2 tw pairs, shielded, SST_Bol 300mk_Temp	FPFPU	P67	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.602	603.822	497.936	282.547	0	0	502	717	0	0	0.00	0.00E+00							Redundant to P66
646	2 tw pairs, shielded, SST_Bol 300mk_Temp	FPFPU	P67	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.602	603.822	497.936	282.547	0	0	502	717	0	0	0.00	0.00E+00							Redundant to P66
647	2 tw pairs, shielded, SST_Bol FPU_Temp	FPFPU	P67	4	1			800	0.00E+00	0.0000	1000			1	H02-02138	SST	0.00E+00		0.141	0	1.299	8.602	603.822	497.936	282.547	0	0	502	717	0	0	0.00	0.00E+00							Redundant to P66
648	2 tw pairs, shielded, SST_Bol FPU_heater	FPFPU	P67	4	1			8	0.00E+00	0.0000	2000			1	H02-02130	BRASS			0.172	0.204	2.236	8.602	8.264456	532.97	282.547	0	0	1467	1717	0	0	0.00	0.00E+00							Redundant to P66
	Sum Bundle 12																		**1,574**	**0,816**	**17,652**														**0.00E+00**	**0,00E+00**	**0.00E+00**	**0,00E+00**			
077	Shielded cable, Brass, Fwheel1 drive	FPFPU	P01	4	1	13	2	8	2.50E-01	0.0030	2000			1	H02-02130	BRASS			0.172	0.204	2.236	8.323	7.62967	545.139	295.467	0	0	1455	1705	0	0	0.00	1.05E+00	6.30E+00		6.83E-01	4.10E+00			
078	Shielded cable, SST FW1 Hall Sens1	FPFPU	P01	4	1			800	1.00E-03	0.0030	1000			1	H04138	SST	3.20E-03		0.114	0	0.962	8.323	547.985	678.829	396.549	0	0	321	603	0	0	0.00	1.36E-03	8.18E-03		1.10E-03	6.63E-03			
079	Shielded cable, SST FW1 Hall Sens2	FPFPU	P01	4	1			800	1.00E-03	0.0030	1000			1	H04138	SST	3.20E-03		0.114	0	0.962	8.323	547.985	678.829	396.549	0	0	321	603	0	0	0.00	1.36E-03	8.18E-03		1.10E-03	6.63E-03			
080	Shielded cable, SST FW1 Pos Sens	FPFPU	P01	8	1			800	2.00E-03	0.0030	1000			1	H08138	SST	2.56E-02		0.166	0	1.323	8.323	547.985	665.344	384.509	0	0	335	615	0	0	0.00	1.09E-02	6.54E-02		8.83E-03	5.30E-02			
081	Shielded cable, SST FW1 Temp Sens	FPFPU	P01	4	1			800	1.00E-04	0.0300	1000			1	H04138	SST	3.20E-05		0.114	0	0.962	8.323	547.985	675.829	396.549	0	0	321	603	0	0	0.00	1.36E-04	8.18E-04		1.10E-04	6.63E-04			
087	Shielded cable, Brass, Fwheel2 drive	FPFPU	P03	4	1			8	2.50E-01	0.0030	2000			1	H02-02130	BRASS			0.172	0.204	2.236	8.711	8.17147	583.823	309.206	0	0	1431	1691	0	0	0.00	1.05E-00		6.30E-00	6.83E-01	4.10E+00			
088	Shielded cable, SST FW2 Hall Sens1	FPFPU	P03	4	1			800	1.00E-03	0.0030	1000			1	H04138	SST	3.20E-03		0.114	0	0.962	8.71	591.945	697.87	407.927	0	0	302	592	0	0	0.00	1.36E-03		8.18E-03	1.10E-03	6.63E-03			
089	Shielded cable, SST FW2 Hall Sens2	FPFPU	P03	4	1			800	1.00E-03	0.0030	1000			1	H04138	SST	3.20E-03		0.114	0	0.962	8.71	591.945	697.87	407.927	0	0	302	592	0	0	0.00	1.36E-03		8.18E-03	1.10E-03	6.63E-03			
090	Shielded cable, SST FW2 Pos Sens	FPFPU	P03	8	1			800	2.00E-03	0.0030	1000			1	H08138	SST	2.56E-02		0.166	0	1.323	8.71	591.945	683.301	394.92	0	0	317	606	0	0	0.00	1.09E-02		6.54E-02	8.83E-03	5.30E-02			
091	Shielded cable, SST FW2 Temp Sens	FPFPU	P03	4	1			800	1.00E-04	0.0300	1000			1	H04138	SST	3.20E-05		0.114	0	0.962	8.71	591.945	697.87	407.927	0	0	302	592	0	0	0.00	1.36E-04		8.18E-04	1.10E-04	6.63E-04			
124	Shielded cable, SST_2 FPU T Sensors ret	FPFPU	P69	8	1			1000	0.00E+00	0.0000	1000			1	H08138	SST	0.00E+00		0.166	0	1.323	8.374	563.776	667.711	385.981	0	0	332	614	0	0	0.00	0.00E+00		0.00E+00	0.00E+00	0.00E+00			
113	Shielded cable, SST_Chp Pos Sens1	FPFPU	P67	4	1			400	5.00E-04	0.3333	1000			1	H08138(4)	SST	4.00E-04		0.134	0	1.151	8.671	584.727	622.844	332.514	0	0	377	667	0	0	0.00	2.00E-02	6.00E-02		1.62E-02	4.86E-02	4.86E-02		2 lines in parallel
113	Shielded cable, SST_Chp Pos Sens1	FPFPU	P67	4	1			800	1.00E-06	0.3333	1000			1	H08138(4)	SST	3.20E-07		0	0	0	8.671	576.156	622.844	332.514	0	0	377	667	0	0	0.00	1.51E-05	4.54E-05		4.54E-05	1.23E-05	3.68E-05		
114	Shielded cable, SST_Chp Pos Sens2	FPFPU	P67	4	1			400	5.00E-04	0.0000	1000			1	H08138(4)	SST	4.00E-04		0.134	0	1.151	8.671	584.727	622.844	332.514	0	0	377	667	0	0	0.00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00		2 lines in parallel
114	Shielded cable, SST_Chp Pos Sens2	FPFPU	P67	4	1			800	1.00E-06	0.0000	1000			1	H08138(4)	SST	3.20E-07		0	0	0	8.671	576.156	622.844	332.514	0	0	377	667	0	0	0.00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00		
115	Shielded cable, SST_Chp TSensor	FPFPU	P67	4	1			800	1.00E-06	0.0300	1000			1	H04138	SST	3.20E-07		0.114	0	0.962	8.671	576.156	691.031	403.541	0	0	309	596	0	0	0.00	1.36E-06		8.18E-06	1.10E-06	6.63E-06			
116	Shielded cable, Brass, Chopper drive	FPFPU	P67	4	1			8	1.20E-02	0.3333	2000			1	H02-02130	BRASS			0.172	0.204	2.236	8.671	7.97687	560.317	304.271	0	0	1440	1696	0	0	0.00	2.69E-01	8.06E-01		1.75E-01	5.24E-01	5.24E-01		
116a	Shielded cable, Brass, Chopper drive	FPFPU	P67	4	1			8	1.20E-02	0.3333	2000			1	H02-02130	BRASS			0.172	0.204	2.236	8.671	7.97687	560.317	304.271	0	0	1440	1696	0	0	0.00	2.69E-01	8.06E-01		1.75E-01	5.24E-01	5.24E-01		
	Sum Bundle 13																		**2,252**	**0,816**	**21,949**														**2.69E+00**	**8,06E+00**	**8.06E+00**	**1,75E+00**	**5,26E+00**	**5.26E+06**	
082	Shielded cable, Brass, Fwheel drive	FPFPU	P02	4	1	14	1	8	0.00E+00	0.0030	2000			1	H02-02130	BRASS			0.172	0.204	2.236	7.727	7.511	502.299	274.309	0	0	1488	1726	0	0	0.00	0.00E+00							Redundant to P01
083	Shielded cable, SST FW1 Hall Sens	FPFPU	P02	4	1			800	0.00E+00	0.0030	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	7.727	551.008	601.583	352.006	0	0	386	648	0	0	0.00	0.00E+00							Redundant to P01
084	Shielded cable, SST FW1 Hall Sens	FPFPU	P02	4	1			800	0.00E+00	0.0030	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	7.727	551.008	601.583	352.006	0	0	386	648	0	0	0.00	0.00E+00							Redundant to P01
085	Shielded cable, SST FW1 Pos Sens	FPFPU	P02	8	1			800	0.00E+00	0.0030	1000			1	H08138	SST	0.00E+00		0.166	0	1.323	7.727	551.008	584.02	339.896	0	0	412	660	0	0	0.00	0.00E+00							Redundant to P01
086	Shielded cable, SST FW1 Temp Sens	FPFPU	P02	4	1			800	0.00E+00	0.0300	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	7.727	551.008	601.583	352.006	0	0	386	648	0	0	0.00	0.00E+00							Redundant to P01
092	Shielded cable, Brass, Fwheel drive	FPFPU	P04	4	1			8	0.00E+00	0.0030	1000			1	H02-02130	BRASS			0.172	0.204	2.236	8.268	8.26842	535.408	293.514	0	0	465	706	0	0	0.00	0.00E+00							Redundant to P03
093	Shielded cable, SST FW2 Hall Sens1	FPFPU	P04	4	1			800	0.00E+00	0.0030	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	8.268	612.465	628.2	367.913	0	0	372	632	0	0	0.00	0.00E+00							Redundant to P03
094	Shielded cable, SST FW2 Hall Sens2	FPFPU	P04	4	1			800	0.00E+00	0.0030	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	8.268	612.465	628.2	367.913	0	0	372	632	0	0	0.00	0.00E+00							Redundant to P03
095	Shielded cable, SST FW2 Pos Sens	FPFPU	P04	8	1			800	0.00E+00	0.0030	1000			1	H08138	SST	0.00E+00		0.166	0	1.323	8.268	612.465	613.122	354.451	0	0	367	646	0	0	0.00	0.00E+00							Redundant to P03
096	Shielded cable, SST FW2 Temp Sens	FPFPU	P04	4	1			800	0.00E+00	0.0300	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	8.268	612.465	628.2	367.913	0	0	372	632	0	0	0.00	0.00E+00							Redundant to P03
120	Shielded cable, Brass, CalS1 red drive	FPFPU	P06	4	1			8	2.50E-03	0.0000	2000			1	H02-02130	BRASS			0.172	0.204	2.236	7.742	7.5415	504.91	274.841	0	0	1466	1725	0	0	0.00	0.00E+00		0.00E+00					Redundant to P06
121	Shielded cable, Brass, CalS1 red drive	FPFPU	P06	4	1			8	2.50E-03	0.0000	2000			1	H02-02130	BRASS			0.172	0.204	2.236	7.742	7.5415	504.91	274.841	0	0	1466	1725	0	0	0.00	0.00E+00		0.00E+00					Redundant to P06
122	Shielded cable, SST_CalS1 T Sensor	FPFPU	P06	4	1			800	1.00E-05	0.0000	1000			1	H04138	SST	3.20E-07		0.114	0	0.962	7.742	533.906	618.07	389.637	0	0	385	646	0	0	0.00	1.36E-06		4.09E-06	1.10E-06		3.31E-06		
105	Shielded cable, Brass, Grating drive, LL	FPFPU	P42	8	1			8	0.00E+00	0.1667	2000			1	H03-02130	BRASS			0.186	0.306	2.618	6.319	5.5398	538.31	347.383	0	0	1462	1652	0	0	0.00	0.00E+00							Redundant to P40
106	Shielded cable, SST_Grating switches	FPFPU	P42	8	1			800	0.00E+00	0.1667	1000			1	H08138	SST	0.00E+00		0.166	0	1.323	6.319	391.059	522.686	302.022	0	0	477	696	0	0	0.00	0.00E+00							Redundant to P40
107	Shielded cable, Brass, Grat. sens. drv	FPFPU	P42	2	1			8	0.00E+00	0.1667	2000			1	H02130	BRASS			0.106	0.102	1.34	6.319	5.5398	662.186	382.196	0	0	1338	1618	0	0	0.00	0.00E+00							Redundant to P40
108	Shielded cable, SST_Grav Hall Sens1	FPFPU	P43	4	1			800	0.00E+00	0.1667	1000			1	H06138(4)	SST	0.00E+00		0.128	0	1.158	6.334	391.059	622.676	293.433	0	0	377	707	0	0	0.00	0.00E+00							Redundant to P41
108	Shielded cable, SST_Grav Hall Sens1	FPFPU	P43	2				400	0.00E+00	0.1667	1000			1	H06138(2)	SST	0.00E+00		0.086	0	0.886	6.334	392.763	623.809	293.799	0	0	376	706	0	0	0.00	0.00E+00							Redundant to P41
109	Shielded cable, SST_Grav Hall Sens1	FPFPU	P43	4	1			800	0.00E+00	0.1667	1000			1	H06138(4)	SST	0.00E+00		0.128	0	1.158	6.334	392.763	623.809	293.799	0	0	376	706	0	0	0.00	0.00E+00							Redundant to P41
109	Shielded cable, SST_Grav Hall Sens1	FPFPU	P43	2				400	0.00E+00	0.1667	1000			1	H06138(2)	SST	0.00E+00		0.086	0	0.886	6.334	392.763	623.809	293.799	0	0	376	706	0	0	0.00	0.00E+00							Redundant to P41
110	Shielded cable, SST_Grav Sensor str.	FPFPU	P43	2	1			800	0.00E+00	0.1667	1000			1	H02138	SST	0.00E+00		0.088	0	0.771	6.334	392.763	546.732	316.306	0	0	453	694	0	0	0.00	0.00E+00							Redundant to P41
111	Shielded cable, SST_Grav Sensor cos	FPFPU	P43	2	1			800	0.00E+00	0.1667	1000			1	H02138	SST	0.00E+00		0.088	0	0.771	6.334	392.763	546.732	316.306	0	0	453	694	0	0	0.00	0.00E+00							Redundant to P41
112	Shielded cable, SST_Grav TSensor	FPFPU	P43	4	1			800	0.00E+00	0.1667	1000			1	H04138	SST	0.00E+00		0.114	0	0.962	6.334	392.763	533.047	311.054	0	0	467	688	0	0	0.00	0.00E+00							Redundant to P41
	Sum Bundle 14																		**2,854**	**1,224**	**28,597**														**1,38E-06**	**0,00E+00**	**4,09E-06**	**1,10E-06**		**3,31E-06**	
117	Shielded cable, Brass, CalS1 nom drive	FPFPU	P05	4	1	15	1	8	2.50E-03	0.3333	2000			1	H02-02130	BRASS			0.172	0.204	2.236	9.201	7.9642	533.001	291.136	0	0	1467	1709	0	0	0.00	1.17E-02		3.50E-02	7.58E-03		2.27E-02		
118	Shielded cable, Brass, CalS1 nom drive	FPFPU	P05	4	1			8	2.50E-03	0.3333	2000			1	H02-02130	BRASS			0.172	0.204	2.236	9.201	7.9642	533.001	291.136	0	0	1467	1709	0	0	0.00	1.17E-02		3.50E-02	7.58E-03		2.27E-02		
119	Shielded cable, SST_CalS1 T Sensor	FPFPU	P05	4	1			800	1.00E-05	0.3333	1000			1	H04138	SST	3.20E-07		0.114	0	0.962	9.201	586.039	637.652	373.131	0	0	362	627	0	0	0.00	1.36E-06		4.09E-06	1.10E-06		3.31E-06		
123	Shielded cable, SST_2 FPU T Sensors nom	FPFPU	P05	8	1			800	1.00E-05	0.0300	1000			1	H08138	SST	6.40E-07		0.166	0	1.323	9.201	586.039	623.227	360.251	0	0	377	640	0	0	0.00	2.73E-06		8.19E-06	2.21E-06		6.63E-06		
097	Shielded cable, Brass, Grating drive, LL	FPFPU	P40	8	1			8.5	5.00E-02	0.1667	2000			1	H03-02130	BRASS			0.186	0.306	2.618	8.745	5.94585	573.264	365.292	0	0	1427	1635	0	0	0.00	3.50E+00	2.10E+03		2.28E+00	1.37E+01			
098	Shielded cable, SST_Grating switches	FPFPU	P40	8	1			800	1.00E-04	0.1667	1000			1	H08138	SST	6.40E-05		0.166	0	1.323	8.745	420.637	555.668	321.085	0	0	444	679	0	0	0.00	1.51E-03	9.06E-03		1.23E-03	7.39E-03			
099	Shielded cable, Brass, Grat. sens. drv	FPFPU	P40	2	1			8	1.50E-02	0.1667	2000			1	H02130	BRASS			0.106	0.102	1.34	8.745	5.94585	705.336	407.173	0	0	1298	1580	0	0	0.00	1.05E-01	6.30E-01		8.83E-02	4.10E-01			
100	Shielded cable, SST_Grav Hall Sens1	FPFPU	P41	4	1			400	1.00E-03	0.1667	1000			1	H06138(4)	SST	1.60E-03		0.128	0	1.158	6.76	223.431	664.355	311.84	0	0	336	686	0	0	0.00	4.00E-02	2.40E-01		3.24E-02	1.94E-01			2 lines in parallel
100	Shielded cable, SST_Grav Hall Sens1	FPFPU	P41	2				800	1.00E-06	0.1667	1000			1	H06138(2)	SST	1.60E-07		0.086	0	0.886	6.76	422.341	664.355	311.84	0	0	336	686	0	0	0.00	3.79E-06	2.27E-05		3.07E-06	1.84E-05			
101	Shielded cable, SST_Grav Hall Sens1	FPFPU	P41	4	1			400	1.00E-03	0.1667	1000			1	H06138(4)	SST	1.60E-03		0.12	0	1.138	6.76	223.671	664.355	311.84	0	0	336	686	0	0	0.00	4.00E-02	2.40E-01		3.24E-02	1.94E-01			2 lines in parallel
101	Shielded cable, SST_Grav Hall Sens1	FPFPU	P41	2				800	1.00E-06	0.1667	1000			1	H06138(2)	SST	1.60E-07		0.086	0	0.886	6.76	422.341	664.355	311.84	0	0	336	686	0	0	0.00	3.79E-06	2.27E-05		3.07E-06	1.84E-05			
102	Shielded cable, SST_Grav Sensor str.	FPFPU	P41	2	1			800	2.00E-05	0.1667	1000			1	H02138	SST	6.40E-07		0.088	0	0.771	6.76	369.924	561.087	336.266	0	0	419	664	0	0	0.00	1.51E-05	9.06E-05		1.23E-05	7.39E-05			
103	Shielded cable, SST_Grav Sensor cos	FPFPU	P41	2	1			800	2.00E-05	0.1667	1000			1	H02138	SST	6.40E-07		0.088	0	0.771	6.76	422.341	561.087	336.266	0	0	419	664	0	0	0.00	1.51E-05	9.06E-05		1.23E-05	7.39E-05			
104	Shielded cable, SST_Grav TSensor	FPFPU	P41	4	1			800	1.00E-06	0.1667	1000			1	H04138	SST	3.20E-07		0.114	0	0.962	6.76	422.341	556.756	330.795	0	0	433	668	0	0	0.00	7.57E-06	4.54E-05		6.14E-06	3.68E-05			
	Sum Bundle 15																		**1,682**	**0,816**	**17,91**														**3.71E+00**	**2,21E+01**	**7,09E-02**	**2,42E+00**	**1,45E+01**	**4.55E-02**	
	Sum Bundles 01 - 15																		**37,594**	**5,1**	**367,249**														**6,61E+00**	**3,03E+01**	**9,24E+00**	**4,32E+00**	**1,99E+01**	**6,03E+00**	

Left blank

Left blank

Designation											Cable								CVV ext. Harness SVM-CB to CVV I/F-CB			Harness total						
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-IP-...	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Pmax_W [I² _m x Rmax]	Manganin mm²	SST mm²	Brass mm²	Insulation mm²	R_core (Ohm/m) at 300 K	Harness lth (m)	R_max (Ohm)	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P,el Spec on (mW/m) at 300 K	P,el Phot on (mW/m) at 300 K	REMARKS
001	Shielded cable, CRE DC/logic supply 1	FPFPU	P11	2					400	3,00E-05	0,1667		H11138(2)	SST			0,016	0	0,086	60	2,312	138,72	7,9	290,4	109,60	1,80E-05	1,08E-04		2 lines in parallel
001	Shielded cable, CRE DC/logic supply 1	FPFPU	P11	8	1				800	1,00E-05	0,1667	1	H11138(8)	SST			0,202	0	1,812	113,6	2,312	262,64	7,9	549,12	250,88	1,51E-05	9,09E-05		
002	Shielded cable, CRE DC supply 1	FPFPU	P10	6					400	3,00E-04	0,1667		H24138(6)	SST	2,16E-04		0,048	0	0,258	60	2,312	138,72	7,909	290,94	109,06	5,40E-03	3,24E-02		2 lines in parallel
002	Shielded cable, CRE DC supply 1	FPFPU	P10	16	1				800	1,00E-05	0,1667	1	H24138(16)	SST	1,28E-06		0,316	0	2,599	113,6	2,312	262,64	7,909	550,15	249,85	3,03E-05	1,82E-04		
003	Shielded cable, Det. Bias supply 1	FPFPU	P10	8	1				800	1,00E-05	0,1667	1	H06138	SST	4,80E-07		0,144	0	1,224	113,6	2,312	262,64	7,909	550,15	249,85	1,14E-05	6,82E-05		
017	Triax cable, CRE-Out line group1 out_1_1	FPFPU	P12	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,892	548,22	251,78	3,69E-07	2,22E-06		
018	Triax cable, CRE-Out line group1 out_2_1	FPFPU	P12	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
019	Triax cable, CRE-Out line group1 out_3_1	FPFPU	P12	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
020	Triax cable, CRE-Out line group1 out_4_1	FPFPU	P12	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
021	Triax cable, CRE-Out line group1 out_5_1	FPFPU	P12	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
022	Triax cable, CRE-Out line group1 out_6_1	FPFPU	P12	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
023	Triax cable, CRE-Out line group1 out_7_1	FPFPU	P12	1	2	01	2526	24	800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
013a	Shielded cable, Outrefa_1	FPFPU	P12	1	2				800	1,00E-04	0,1667	1	H01238	BRASS	8,00E-06		0,223	0,008	2,506	12	2,312	27,74	7,771	299,57	500,43	2,00E-05	1,20E-04		
024	Triax cable, CRE-Out line group1 out_8_1	FPFPU	P13	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,898	548,9	251,10	3,69E-07	2,22E-06		
025	Triax cable, CRE-Out line group1 out_9_1	FPFPU	P13	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
026	Triax cable, CRE-Out line group1 out_10_1	FPFPU	P13	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
027	Triax cable, CRE-Out line group1 out_11_1	FPFPU	P13	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
028	Triax cable, CRE-Out line group1 out_12_1	FPFPU	P13	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
029	Triax cable, CRE-Out line group1 out_13_1	FPFPU	P13	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,312	262,64	7,771	534,47	265,53	3,69E-07	2,22E-06		
030	Shielded cable, Synch_1	FPFPU	P13	2	1				400	2,00E-05	0,0300	1	H02138	SST	3,20E-07		0,088	0	0,771	60	2,312	138,72	7,771	282,66	117,34	1,44E-06	8,64E-06		
031	Shielded cable, Clock_1	FPFPU	P13	2	1				400	2,50E-04	0,1000	1	H02138	SST	5,00E-05		0,088	0	0,771	60	2,312	138,72	7,771	282,66	117,34	7,50E-04	4,50E-03		
013b	Shielded cable, Outrefb_1	FPFPU	P13	1	2				800	1,00E-04	0,1667	1	H01238	BRASS	8,00E-06		0,223	0,008	2,506	12	2,312	27,74	7,771	299,57	500,43	2,00E-05	1,20E-04		
075	Shielded cable, Temp sens Tsens1/2	FPFPU	P14	11	1				800	1,00E-05	0,0300	1	H11138	SST	5,80E-07		0,218	0	1,896	113,6	2,312	262,64	7,897	548,78	251,22	3,75E-06	2,25E-05		
	Sum Bundle 01																**4,569**	**0,016**	**47,009**							**6,28E-03**	**3,77E-02**		
004	Shielded cable, CRE DC/logic supply 2	FPFPU	P17	2					400	3,00E-05	0,1667		H11138(2)	SST			0,016	0	0,086	60	2,656	159,36	8,255	306,44	93,56	1,80E-05	1,08E-04		2 lines in parallel
004	Shielded cable, CRE DC/logic supply 2	FPFPU	P17	8	1				800	1,00E-05	0,1667	1	H11138(8)	SST			0,202	0	1,812	113,6	2,656	301,72	8,255	579,48	220,52	1,51E-05	9,09E-05		
005	Shielded cable, CRE DC supply 1	FPFPU	P18	6					400	3,00E-04	0,1667		H24138(6)	SST	2,16E-04		0,048	0	0,258	60	2,656	159,36	8,228	304,82	95,18	5,40E-03	3,24E-02		2 lines in parallel
005	Shielded cable, CRE DC supply 1	FPFPU	P18	16	1				800	1,00E-05	0,1667	1	H24138(16)	SST	1,28E-06		0,316	0	2,599	113,6	2,656	301,72	8,228	576,41	223,59	3,03E-05	1,82E-04		
006	Shielded cable, Det. Bias supply 1	FPFPU	P18	8	1				800	1,00E-05	0,1667	1	H06138	SST	4,80E-07		0,144	0	1,224	113,6	2,656	301,72	8,228	576,41	223,59	1,14E-05	6,82E-05		
032	Triax cable, CRE-Out line group2 out_14_2	FPFPU	P16	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,256	579,59	220,41	3,69E-07	2,22E-06		
033	Triax cable, CRE-Out line group2 out_15_2	FPFPU	P16	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,256	579,59	220,41	3,69E-07	2,22E-06		
034	Triax cable, CRE-Out line group2 out_16_2	FPFPU	P16	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,256	579,59	220,41	3,69E-07	2,22E-06		
035	Triax cable, CRE-Out line group2 out_17_2	FPFPU	P16	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,256	579,59	220,41	3,69E-07	2,22E-06		
036	Triax cable, CRE-Out line group2 out_18_2	FPFPU	P16	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,256	579,59	220,41	3,69E-07	2,22E-06		
037	Triax cable, CRE-Out line group2 out_19_2	FPFPU	P16	1	2	02	2526	24	800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,256	579,59	220,41	3,69E-07	2,22E-06		
014a	Shielded cable, Outrefa_2	FPFPU	P16	1	2				800	1,00E-04	0,1667	1	H01238	BRASS	8,00E-06		0,223	0,008	2,506	12	2,656	31,87	8,256	309,74	490,26	2,00E-05	1,20E-04		
038	Triax cable, CRE-Out line group2 out_20_2	FPFPU	P15	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,253	579,25	220,75	3,69E-07	2,22E-06		
039	Triax cable, CRE-Out line group2 out_21_2	FPFPU	P15	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,253	579,25	220,75	3,69E-07	2,22E-06		
040	Triax cable, CRE-Out line group2 out_22_2	FPFPU	P15	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,253	579,25	220,75	3,69E-07	2,22E-06		
041	Triax cable, CRE-Out line group2 out_23_2	FPFPU	P15	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,253	579,25	220,75	3,69E-07	2,22E-06		
042	Triax cable, CRE-Out line group2 out_24_2	FPFPU	P15	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,253	579,25	220,75	3,69E-07	2,22E-06		
043	Triax cable, CRE-Out line group2 out_25_2	FPFPU	P15	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,656	301,72	8,253	579,25	220,75	3,69E-07	2,22E-06		
044	Shielded cable, Synch_2	FPFPU	P15	2	1				400	2,00E-05	0,0300	1	H02138	SST	3,20E-07		0,088	0	0,771	60	2,656	159,36	8,253	306,32	93,68	1,44E-06	8,64E-06		
045	Shielded cable, Clock_2	FPFPU	P15	2	1				400	2,50E-04	0,1000	1	H02138	SST	5,00E-05		0,088	0	0,771	60	2,656	159,36	8,253	306,32	93,68	7,50E-04	4,50E-03		
014b	Shielded cable, Outrefb_2	FPFPU	P15	1	2				800	1,00E-04	0,1667	1	H01238	BRASS	8,00E-06		0,223	0,008	2,506	12	2,656	31,87	8,253	309,4	490,60	2,00E-05	1,20E-04		
	Sum Bundle 02																**4,12**	**0,016**	**42,605**							**6,27E-03**	**3,76E-02**		
007	Shielded cable, CRE DC supply 3	FPFPU	P21	2					400	3,00E-05	0,1667		H11138(2)	SST			0,016	0	0,086	60	2,188	131,28	6,74	233,05	166,95	1,80E-05	1,08E-04		2 lines in parallel
007	Shielded cable, CRE DC supply 3	FPFPU	P21	8	1				800	1,00E-05	0,1667	1	H11138(8)	SST			0,202	0	1,812	113,6	2,188	248,56	6,74	440,58	359,42	1,51E-05	9,09E-05		
008	Shielded cable, CRE DC supply 3	FPFPU	P20	6					400	3,00E-04	0,1667		H24138(6)	SST	2,16E-04		0,048	0	0,258	60	2,185	131,28	6,685	229,75	170,25	5,40E-03	3,24E-02		2 lines in parallel
008	Shielded cable, CRE DC supply 3	FPFPU	P20	16	1				800	1,00E-05	0,1667	1	H24138(16)	SST	1,28E-06		0,316	0	2,599	113,6	2,188	248,56	6,685	434,34	365,66	3,03E-05	1,82E-04		
009	Shielded cable, Det. Bias supply 3	FPFPU	P20	8	1				800	1,00E-05	0,1667	1	H06138	SST	4,80E-07		0,144	0	1,224	113,6	2,188	248,56	6,685	434,34	365,66	1,14E-05	6,82E-05		
046	Triax cable, CRE-Out line group3 out_1_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
047	Triax cable, CRE-Out line group3 out_2_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
048	Triax cable, CRE-Out line group3 out_3_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
049	Triax cable, CRE-Out line group3 out_4_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
050	Triax cable, CRE-Out line group3 out_5_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
051	Triax cable, CRE-Out line group3 out_6_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
052	Triax cable, CRE-Out line group3 out_7_3	FPFPU	P22	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	365,32	3,69E-07	2,22E-06		
015a	Shielded cable, Outrefa_3	FPFPU	P22	1	2	03	2122	22	400	1,00E-04	0,1667	1	H01238	SST	4,00E-06		0,231	0	2,506	113,6	2,188	248,56	6,688	434,68	-34,68	1,39E-04	1,14E-03		
053	Triax cable, CRE-Out line group3 out_8_3	FPFPU	P23	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	3,69E-07	2,22E-06		

Designation											Cable								CVV ext. Harness SVM-CB to CVV I/F-CB			Harness total						
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-IP-...	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Pmax_W [I²_m x Rmax]	Manganin mm²	SST mm²	Brass mm²	Insulation mm²	R_core (Ohm/m) at 300 K	Harness lth (m)	R_max (Ohm)	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el. avg [mW/m] at 300 K	P_el Spec on (mW/m) at 300 K	P_el Phot on (mW/m) at 300 K	REMARKS
054	Triax cable, CRE-Out line group3 out_9_3	FPFPU	P23	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	3,69E-07	2,22E-06		
055	Triax cable, CRE-Out line group3 out_10_3	FPFPU	P23	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	3,69E-07	2,22E-06		
056	Triax cable, CRE-Out line group3 out_11_3	FPFPU	P23	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	3,69E-07	2,22E-06		
057	Triax cable, CRE-Out line group3 out_12_3	FPFPU	P23	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	3,69E-07	2,22E-06		
058	Triax cable, CRE-Out line group3 out_13_3	FPFPU	P23	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	3,69E-07	2,22E-06		
059	Shielded cable, Synch_3	FPFPU	P23	2	1				400	2,00E-05	0,0300	1	H02138	SST	3,20E-07		0,088	0	0,771	60	2,188	131,28	6,695	230,35	169,65	1,44E-06	8,64E-06		2 lines in parallel
060	Shielded cable, Clock_3	FPFPU	P23	2	1				400	2,50E-04	0,1000	1	H02138	SST	5,00E-05		0,088	0	0,771	60	2,188	131,28	6,695	230,35	169,65	7,50E-04	4,50E-03		2 lines in parallel
015b	Shielded cable, Outrefb_3	FPFPU	P23	1	2				800	1,00E-04	0,1667	1	H01238	SST	8,00E-06		0,231	0	2,506	113,6	2,188	248,56	6,695	435,47	364,53	1,89E-04	1,14E-03		
076	Shielded cable, Temp.sens, Heaters Tsens 3/4	FPFPU	P24	11	1				800	1,00E-05	0,1667	1	H19138(10)	SST	8,80E-07		0,232	0	1,901	113,6	2,188	248,56	6,718	438,09	361,91	2,08E-05	1,25E-04		
076	Shielded cable, Temp.sens, Heaters Tsens 3/4	FPFPU	P24	8					400	1,00E-04	0,1667	1	H19138(8)	SST	3,20E-05		0,064		0,344	60	2,188	131,28	6,718	231,73	168,27	8,00E-04	4,80E-03		2 lines in parallel
	Sum Bundle 03																**4,663**	**0**	**47,356**							**7,43E-03**	**4,46E-02**		
061	Triax cable, CRE-Out line group4 out_14_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
062	Triax cable, CRE-Out line group4 out_15_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
063	Triax cable, CRE-Out line group4 out_16_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
064	Triax cable, CRE-Out line group4 out_17_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
065	Triax cable, CRE-Out line group4 out_18_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
066	Triax cable, CRE-Out line group4 out_19_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
067	Triax cable, CRE-Out line group4 out_20_4	FPFPU	P26	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	3,69E-07	2,22E-06		
016a	Shielded cable, Outrefa_4	FPFPU	P26	1	2				800	1,00E-04	0,1667	1	H01238	SST	8,00E-06		0,231	0	2,506	113,6	2,112	239,92	6,659	435,46	364,54	1,89E-04	1,14E-03		
068	Triax cable, CRE-Out line group4 out_21_4	FPFPU	P25	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,647	434,1	365,90	3,69E-07	2,22E-06		
069	Triax cable, CRE-Out line group4 out_22_4	FPFPU	P25	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,647	434,1	365,90	3,69E-07	2,22E-06		
070	Triax cable, CRE-Out line group4 out_23_4	FPFPU	P25	1	2	04	2122	22	800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,647	434,1	365,90	3,69E-07	2,22E-06		
071	Triax cable, CRE-Out line group4 out_24_4	FPFPU	P25	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,647	434,1	365,90	3,69E-07	2,22E-06		
072	Triax cable, CRE-Out line group4 out_25_4	FPFPU	P25	1	2				800	5,00E-06	0,1300	1	H01238	SST	2,00E-08		0,231	0	2,506	113,6	2,112	239,92	6,647	434,1	365,90	3,69E-07	2,22E-06		
073	Shielded cable, Synch_4	FPFPU	P25	2	1				400	2,00E-05	0,0300	1	H02138	SST	3,20E-07		0,088	0	0,771	60	2,112	126,72	6,647	229,62	170,38	1,44E-06	8,64E-06		2 lines in parallel
074	Shielded cable, Clock_4	FPFPU	P25	2	1				400	2,50E-04	0,1000	1	H02138	SST	5,00E-05		0,088	0	0,771	60	2,112	126,72	6,647	229,62	170,38	7,50E-04	4,50E-03		2 lines in parallel
016b	Shielded cable, Outrefb_4	FPFPU	P25	1	2				800	1,00E-04	0,1667	1	H01238	SST	8,00E-06		0,231	0	2,506	113,6	2,112	239,92	6,647	434,1	365,90	1,89E-04	1,14E-03		
010	Shielded cable, CRE DC supply 4	FPFPU	P27	2					400	3,00E-05	0,1667		H11138(2)	SST			0,016	0	0,086	60	2,112	126,72	6,676	231,36	168,64	1,80E-05	1,08E-04		2 lines in parallel
010	Shielded cable, CRE DC supply 4	FPFPU	P27	8	1				800	1,00E-05	0,1667	1	H11138(8)	SST			0,202	0	1,812	113,6	2,112	239,92	6,676	437,39	362,61	1,51E-05	9,09E-05		
011	Shielded cable, CRE DC supply 4	FPFPU	P28	6					400	3,00E-04	0,1667		H24138(6)	SST	2,16E-04		0,048	0	0,258	60	2,112	126,72	6,618	227,88	172,12	5,40E-03	3,24E-02		2 lines in parallel
011	Shielded cable, CRE DC supply 4	FPFPU	P28	16	1				800	1,00E-05	0,1667	1	H24138(16)	SST	1,28E-06		0,316	0	2,599	113,6	2,112	239,92	6,618	430,81	369,19	3,03E-05	1,82E-04		
012	Shielded cable, Det Bias supply 4	FPFPU	P28	6	1				800	1,00E-05	0,1667	1	H06138	SST	4,80E-07		0,144	0	1,224	113,6	2,112	239,92	6,618	430,81	369,19	1,14E-05	6,82E-05		
	Sum Bundle 04																**4,136**	**0**	**42,605**							**6,61E-03**	**3,97E-02**		
601b	8 tw pairs shielded, SST, B1, Out+T_sens	FPFPU	P50	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,705	307,29	8,369	591,18	208,82	1,21E-04		7,27E-04	
601c	8 tw pairs shielded, SST, B1, Out+T_sens	FPFPU	P50	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,705	307,29	8,369	591,18	208,82	1,21E-04		7,27E-04	
602b	8 tw pairs shielded, SST, B1, Out+T_sens	FPFPU	P51	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,705	307,29	8,345	588,46	211,54	1,21E-04		7,27E-04	
602c	8 tw pairs shielded, SST, B1, Out+T_sens	FPFPU	P51	16	1	05	2400	24	800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,705	307,29	8,345	588,46	211,54	1,21E-04		7,27E-04	
603	Shielded cable, SST, bias Bol B_1	FPFPU	P52	16	1				800	1,00E-05	0,1667	1	H19138	SST	1,44E-06		0,296	0	2,145	113,6	2,705	307,29	8,331	586,86	213,14	3,41E-05		2,05E-04	
604	Shielded cable, SST, Clocks low level Bol B_1	FPFPU	P52	3	1				800	5,00E-05	0,1667	1	H03138	SST	6,00E-06		0,064	0	0,856	113,6	2,705	307,29	8,331	586,86	213,14	1,42E-04		8,52E-04	
605	Shielded cable, SST, Clocks high level Bol	FPFPU	P52	10	1				800	5,00E-05	0,1667	1	H11138	SST	2,00E-05		0,218	0	1,898	113,6	2,705	307,29	8,331	586,86	213,14	4,73E-04		2,84E-03	
603b	Shielded cable, Brass, bias, Bol B1	FPFPU	P52	2	1				80	3,00E-04	0,3333	1	H02130BS	Brass	1,44E-05		0,106	0,102	1,34	1,4	2,705	3,79	8,331	8,9251	71,97	8,40E-05		5,04E-04	
	Sum Bundle 05																**1,876**	**0,102**	**15,715**							**1,22E-03**	**0,00E+00**	**7,31E-03**	
606b	8 tw pairs shielded, SST, B2, Out+T_sens	FPFPU	P53	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,726	309,67	8,354	581,88	218,12	1,21E-04		7,27E-04	
606c	8 tw pairs shielded, SST, B2, Out+T_sens	FPFPU	P53	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,726	309,67	8,354	581,88	218,12	1,21E-04		7,27E-04	
607b	8 tw pairs shielded, SST, B2, Out+T_sens	FPFPU	P54	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,726	309,67	8,327	578,82	221,18	1,21E-04		7,27E-04	
607c	8 tw pairs shielded, SST, B2, Out+T_sens	FPFPU	P54	16	1	06	2400	24	800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	2,726	309,67	8,327	578,82	221,18	1,21E-04		7,27E-04	
608	Shielded cable, SST, bias Bol B_2	FPFPU	P55	16	1				800	1,00E-05	0,1667	1	H19138	SST	1,44E-06		0,296	0	2,145	113,6	2,726	309,67	8,313	577,23	222,77	3,41E-05		2,05E-04	
609	Shielded cable, SST, Clocks low level Bol B_2	FPFPU	P55	3	1				800	5,00E-05	0,1667	1	H03138	SST	6,00E-06		0,064	0	0,856	113,6	2,726	309,67	8,313	577,23	222,77	1,42E-04		8,52E-04	
610	Shielded cable, SST, Clocks high level Bol	FPFPU	P55	10	1				800	5,00E-05	0,1667	1	H11138	SST	2,00E-05		0,218	0	1,898	113,6	2,726	309,67	8,313	577,23	222,77	4,73E-04		2,84E-03	
608b	Shielded cable, Brass, bias, Bol B2	FPFPU	P55	2	1				80	3,00E-04	0,3333	1	H02130BS	Brass	1,44E-05		0,106	0,102	1,34	1,4	2,726	3,82	8,313	7,9231	72,08	8,40E-05		5,04E-04	
	Sum Bundle 06																**1,876**	**0,102**	**15,715**							**1,22E-03**	**0,00E+00**	**7,31E-03**	
611b	8 tw pairs shielded, SST, B3, Out+T_sens	FPFPU	P56	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,011	342,05	7,784	552,27	247,73	1,21E-04		7,27E-04	
611c	8 tw pairs shielded, SST, B3, Out+T_sens	FPFPU	P56	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,011	342,05	7,784	552,27	247,73	1,21E-04		7,27E-04	
612b	8 tw pairs shielded, SST, B3, Out+T_sens	FPFPU	P57	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,011	342,05	7,799	553,97	246,03	1,21E-04		7,27E-04	
612c	8 tw pairs shielded, SST, B3, Out+T_sens	FPFPU	P57	16	1	07	2526	24	800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,011	342,05	7,799	553,97	246,03	1,21E-04		7,27E-04	
613	Shielded cable, SST, bias Bol B_3	FPFPU	P58	18	1				800	1,00E-05	0,1667	1	H19138	SST	1,44E-06		0,286	0	2,145	113,6	3,011	342,05	7,822	556,59	243,41	3,41E-05		2,05E-04	

Designation											Cable								CVV ext. Harness SVM-CB to CVV I/F-CB			Harness total						
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-IP-...	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Pmax_W [I^2_m x Rmax]	Manganin mm²	SST mm²	Brass mm²	Insulation mm²	R_core (Ohm/m) at 300 K	Harness lth (m)	R_max (Ohm)	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P.el Spec on (mW/m) at 300 K	P.el Phot on (mW/m) at 300 K	REMARKS
614	Shielded cable, SST, Clocks low level Bol B_3	FPFPU	P58	3	1				800	5,00E-05	0,1667	1	H03138	SST	6,00E-06		0,1	0	0,856	113,6	3,011	342,05	7,822	556,59	243,41	1,42E-04		8,52E-04	
615	Shielded cable, SST, Clocks high level Bol	FPFPU	P58	10	1				800	5,00E-05	0,1667	1	H11138	SST	2,00E-05		0,218	0	1,898	113,6	3,011	342,05	7,822	556,59	243,41	4,73E-04		2,84E-03	
615b	Shielded cable, Brass, bias, Bol B3	FPFPU	P58	2	1				80	3,00E-04	0,3333	1	H02130	Brass	1,44E-05		0,106	0,102	1,34	1,4	3,011	4,22	7,822	7,5912	72,41	8,40E-05		5,04E-04	
	Sum Bundle 07																**1,902**	**0,102**	**15,715**							**1,22E-03**	**0,00E+00**	**7,31E-03**	
616b	8 tw pairs shielded, SST, B4, Out+T_sens	FPFPU	P59	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,392	385,33	8,285	576,31	223,69	1,21E-04		7,27E-04	
616c	8 tw pairs shielded, SST, B4, Out+T_sens	FPFPU	P59	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,392	385,33	8,285	576,31	223,69	1,21E-04		7,27E-04	
617b	8 tw pairs shielded, SST, B4, Out+T_sens	FPFPU	P60	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,392	385,33	8,261	573,59	226,41	1,21E-04		7,27E-04	
617c	8 tw pairs shielded, SST, B4, Out+T_sens	FPFPU	P60	16	1	08	2728	24	800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,392	385,33	8,261	573,59	226,41	1,21E-04		7,27E-04	
618	Shielded cable, SST, bias Bol B_4	FPFPU	P61	18	1				800	1,00E-05	0,1667	1	H19138	SST	1,44E-06		0,286	0	2,145	113,6	3,392	385,33	8,244	571,65	228,35	3,41E-05		2,05E-04	
619	Shielded cable, SST, Clocks low level Bol B_4	FPFPU	P61	3	1				800	5,00E-05	0,1667	1	H03138	SST	6,00E-06		0,1	0	0,856	113,6	3,392	385,33	8,244	571,65	228,35	1,42E-04		8,52E-04	
620	Shielded cable, SST, Clocks high level Bol	FPFPU	P61	10	1				800	5,00E-05	0,1667	1	H11138	SST	2,00E-05		0,218	0	1,898	113,6	3,392	385,33	8,244	571,65	228,35	4,73E-04		2,84E-03	
618b	Shielded cable, Brass, bias, Bol B4	FPFPU	P61	2	1				80	3,00E-04	0,3333	1	H02130	Brass	1,44E-05		0,106	0,102	1,34	1,4	3,392	4,75	8,244	7,8494	72,15	8,40E-05		5,04E-04	
	Sum Bundle 08																**1,902**	**0,102**	**15,715**							**1,22E-03**	**0,00E+00**	**7,31E-03**	
621b	8 tw pairs shielded, SST, R1, Out+T_sens	FPFPU	P62	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,349	380,45	8,239	559,07	240,93	1,21E-04		7,27E-04	
621c	8 tw pairs shielded, SST, R1, Out+T_sens	FPFPU	P62	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,349	380,45	8,239	559,07	240,93	1,21E-04		7,27E-04	
622	Shielded cable, SST, bias	FPFPU	P63	18	1	09	27	28	800	1,00E-05	0,1667	1	H19138	SST	1,44E-06		0,286	0	2,145	113,6	3,349	380,45	8,224	557,37	242,63	3,41E-05		2,05E-04	
623	Shielded cable, SST, Clocks low level Bol R1	FPFPU	P63	3	1				800	5,00E-05	0,1667	1	H03138	SST	6,00E-06		0,1	0	0,856	113,6	3,349	380,45	8,224	557,37	242,63	1,42E-04		8,52E-04	
624	Shielded cable, SST, Clocks high level Bol R1	FPFPU	P63	10	1				800	5,00E-05	0,1667	1	H11138	SST	2,00E-05		0,218	0	1,898	113,6	3,349	380,45	8,224	557,37	242,63	4,73E-04		2,84E-03	
622b	Shielded cable, Brass, bias, Bol R1	FPFPU	P63	2	1				80	3,00E-04	0,3333	1	H02130	Brass	1,44E-05		0,106	0,102	1,34	1,4	3,349	4,69	8,224	7,6998	72,30	8,40E-05		5,04E-04	
	Sum Bundle 09																**1,306**	**0,102**	**10,977**							**9,76E-04**	**0,00E+00**	**5,86E-03**	
625b	8 tw pairs shielded, SST, R2, Out+T_sens	FPFPU	P64	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,299	374,77	8,086	540,78	259,22	1,21E-04		7,27E-04	
625c	8 tw pairs shielded, SST, R2, Out+T_sens	FPFPU	P64	16	1				800	2,00E-05	0,1667	1	H08-02138	SST	5,12E-06		0,298	0	2,369	113,6	3,299	374,77	8,086	540,78	259,22	1,21E-04		7,27E-04	
626	Shielded cable, SST, bias	FPFPU	P65	18	1	10	2728	24	800	1,00E-05	0,1667	1	H19138	SST	1,44E-06		0,286	0	2,145	113,6	3,299	374,77	8,11	543,51	256,49	3,41E-05		2,05E-04	
627	Shielded cable, SST, Clocks low level Bol R2	FPFPU	P65	3	1				800	5,00E-05	0,1667	1	H03138	SST	6,00E-06		0,1	0	0,856	113,6	3,299	374,77	8,11	543,51	256,49	1,42E-04		8,52E-04	
628	Shielded cable, SST, Clocks high level Bol R2	FPFPU	P65	10	1				800	5,00E-05	0,1667	1	H11138	SST	2,00E-05		0,218	0	1,898	113,6	3,299	374,77	8,11	543,51	256,49	4,73E-04		2,84E-03	
626b	Shielded cable, Brass, bias, Bol R2	FPFPU	P65	2	1				80	3,00E-04	0,3333	1	H02130	Brass	1,44E-05		0,106	0,102	1,34	1,4	3,299	4,62	8,11	7,531	72,47	8,40E-05		5,04E-04	
	Sum Bundle 10																**1,306**	**0,102**	**10,977**							**9,76E-04**	**0,00E+00**	**5,86E-03**	
629	2 tw pairs, shielded, SST, Bol SP_Temp	FPFPU	P68	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,504	585,66	214,34	1,36E-08		8,18E-08	
630	2 tw pairs, shielded, SST, Bol EV_Temp	FPFPU	P68	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,504	585,66	214,34	1,36E-08		8,18E-08	
631	2 tw pairs, shielded, SST, Bol HSP_Temp	FPFPU	P68	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,504	585,66	214,34	1,36E-08		8,18E-08	
632	2 tw pairs, shielded, SST, Bol HSE_Temp	FPFPU	P68	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,504	585,66	214,34	1,36E-08		8,18E-08	
633	2 tw pairs, shielded, SST, Bol SHUNT_Temp	FPFPU	P68	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,504	585,66	214,34	1,36E-08		8,18E-08	
634	6 tw pairs, shielded, Brass, Cooler Ts/Heater	FPFPU	P68	12	1	11	2728	24	8	2,50E-02	0,0170	1	H06-02130	BRASS			0,274	0,612	5,024	1,4	3,734	5,23	8,504	6,0767	1,92	1,79E-01		1,07E+00	
641	2 tw pairs, shielded, SST, Bol 300mk_Temp	FPFPU	P66	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,502	585,43	214,57	1,36E-08		8,18E-08	
642	2 tw pairs, shielded, SST, Bol 300mk_Temp	FPFPU	P66	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,502	585,43	214,57	1,36E-08		8,18E-08	
643	2 tw pairs, shielded, SST, Bol FPU_Temp	FPFPU	P66	4	1				800	1,00E-06	0,0300	1	H02-02138	SST	3,20E-09		0,141	0	1,299	113,6	3,734	424,18	8,502	585,43	214,57	1,36E-08		8,18E-08	
644	2 tw pairs, shielded, SST, Bol FPU_heater	FPFPU	P66	4	1				8	2,00E-05	0,1667	1	H06-02130	BRASS	1,28E-08		0,172	0,204	2,236	1,4	3,734	5,23	8,502	8,0535	-0,05	3,73E-07		2,24E-06	
	Sum Bundle 11																**1,574**	**0,816**	**17,652**							**1,79E-01**	**0,00E+00**	**1,07E+00**	
635	2 tw pairs, shielded, SST, Bol SP_Temp	FPFPU	P69	4	1				800	0,00E+00	0,0030	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,596	603,14	196,86				Redundant to P68
636	2 tw pairs, shielded, SST, Bol EV_Temp	FPFPU	P69	4	1				800	0,00E+00	0,0300	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,596	603,14	196,86				Redundant to P68
637	2 tw pairs, shielded, SST, Bol HSP_Temp	FPFPU	P69	4	1				800	0,00E+00	0,0300	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,596	603,14	196,86				Redundant to P68
638	2 tw pairs, shielded, SST, Bol HSE_Temp	FPFPU	P69	4	1				800	0,00E+00	0,0300	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,596	603,14	196,86				Redundant to P68
639	2 tw pairs, shielded, SST, Bol SHUNT_Temp	FPFPU	P69	4	1				800	0,00E+00	0,0300	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,596	603,14	196,86				Redundant to P68
640	6 tw pairs, shielded, Brass, Cooler Ts/Heater	FPFPU	P69	12	1	12	2728	24	8	0,00E+00	0,0170	1	H06-02130	BRASS			0,274	0,612	5,024	1,4	3,899	5,46	8,596	8,2562	-0,26				Redundant to P68
645	2 tw pairs, shielded, SST, Bol 300mk_Temp	FPFPU	P67	4	1				800	0,00E+00	0,0000	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,602	603,82	196,18				Redundant to P66
646	2 tw pairs, shielded, SST, Bol 300mk_Temp	FPFPU	P67	4	1				800	0,00E+00	0,0000	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,602	603,82	196,18				Redundant to P66
647	2 tw pairs, shielded, SST, Bol FPU_Temp	FPFPU	P67	4	1				800	0,00E+00	0,0000	1	H02-02138	SST	0,00E+00		0,141	0	1,299	113,6	3,899	442,93	8,602	603,82	196,18				Redundant to P66
648	2 tw pairs, shielded, SST, Bol FPU_heater	FPFPU	P67	4	1				8	0,00E+00	0,0000	1	H06-02130	BRASS			0,172	0,204	2,236	1,4	3,899	5,46	8,602	8,2646	-0,26				Redundant to P66
	Sum Bundle 12																**1,574**	**0,816**	**17,652**							**0,00E+00**	**0,00E+00**	**0,00E+00**	
077	Shielded cable, Brass, Fwheel1 drive	FPFPU	P01	4	1				8	2,50E-01	0,0030	1	H04130	BRASS			0,172	0,204	2,236	1,4	2,398	3,36	8,323	7,6297	0,37	1,05E+00	6,30E+00		
078	Shielded cable, SST,FW1 Hall Sens1	FPFPU	P01	4	1				800	1,00E-03	0,0030	1	H04138	SST	3,20E-03		0,114	0	0,962	113,6	2,398	272,41	8,323	547,98	252,02	1,36E-03	8,18E-03		
079	Shielded cable, SST,FW1 Hall Sens2	FPFPU	P01	4	1				800	1,00E-03	0,0030	1	H04138	SST	3,20E-03		0,114	0	0,962	113,6	2,398	272,41	8,323	547,98	252,02	1,36E-03	8,18E-03		

Designation											Cable								CVV ext. Harness SVM-CB to CVV I/F-CB			Harness total						
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-IP-...	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Pmax_W [I² _m x Rmax]	Manganin mm²	SST mm²	Brass mm²	Insulation mm²	R_core (Ohm/m) at 300 K	Harness lth (m)	R_max (Ohm)	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P_el Spec on (mW/m) at 300 K	P_el Phot on (mW/m) at 300 K	REMARKS
080	Shielded cable, SST,FW1 Pos Sens	FPFPU	P01	8	1				800	2,00E-03	0,0030	1	H08138	SST	2,56E-02		0,166	0	1,323	113,6	2,398	272,41	8,323	547,98	252,02	1,09E-02	6,54E-02		
081	Shielded cable, SST,FW1 Temp Sens	FPFPU	P01	4	1				800	1,00E-04	0,0300	1	H04138	SST	3,20E-05		0,114	0	0,962	113,6	2,398	272,41	8,323	547,98	252,02	1,36E-04	8,18E-04		
087	Shielded cable, Brass, Fwhee21 drive	FPFPU	P03	4	1				8	2,50E-01	0,0030	1	H04130	BRASS			0,172	0,204	2,236	1,4	2,398	3,36	8,71	8,1715	-0,17	1,09E+00		6,30E+00	2 lines in parallel
088	Shielded cable, SST,FW2 Hall Sens1	FPFPU	P03	4	1				800	1,00E-03	0,0030	1	H04138	SST	3,20E-03		0,114	0	0,962	113,6	2,398	272,41	8,71	591,95	208,05	1,36E-03		8,18E-03	
089	Shielded cable, SST,FW2 Hall Sens2	FPFPU	P03	4	1				800	1,00E-03	0,0030	1	H04138	SST	3,20E-03		0,114	0	0,962	113,6	2,398	272,41	8,71	591,95	208,05	1,36E-03		8,18E-03	
090	Shielded cable, SST,FW2 Pos Sens	FPFPU	P03	8	1	13	2400	24	800	2,00E-03	0,0030	1	H08138	SST	2,56E-02		0,166	0	1,323	113,6	2,398	272,41	8,71	591,95	208,05	1,09E-02		6,54E-02	
091	Shielded cable, SST,FW2 Temp Sens	FPFPU	P03	4	1				800	1,00E-04	0,0300	1	H04138	SST	3,20E-05		0,114	0	0,962	113,6	2,398	272,41	8,71	591,95	208,05	1,36E-04		8,18E-04	
124	Shielded cable, SST, 2 FPU T Sensors red.	FPFPU	P09	8	1				1000	0,00E+00	0,0000	1	H08138	SST	0,00E+00		0,166	0	1,323	113,6	2,398	272,41	8,374	553,78	446,22	0,00E+00		0,00E+00	
113	Shielded cable, SST, Chp Pos Sens1	FPFPU	P07	4	1				400	5,00E-04	0,3333	1	H08138(4)	SST	4,00E-04		0,134	0	1,151	60	2,398	143,88	8,571	304,73	95,27	2,00E-02	6,00E-02	6,00E-02	2 lines in parallel
113	Shielded cable, SST, Chp Pos Sens1	FPFPU	P07	4					800	1,00E-05	0,3333	1	H08138(4)	SST	3,20E-07		0,032	0	0,172	113,6	2,398	272,41	8,571	576,16	223,84	1,51E-05	4,54E-05	4,54E-05	
114	Shielded cable, SST, Chp Pos Sens2	FPFPU	P07	4	1				400	5,00E-04	0,0000	1	H08138(4)	SST	4,00E-04		0,134	0	1,151	60	2,398	143,88	8,571	304,73	95,27	0,00E+00	0,00E+00	0,00E+00	2 lines in parallel
114	Shielded cable, SST, Chp Pos Sens2	FPFPU	P07	4					800	1,00E-05	0,0000	1	H08138(4)	SST	3,20E-07		0,032	0	0,172	113,6	2,398	272,41	8,571	576,16	223,84	0,00E+00	0,00E+00	0,00E+00	
115	Shielded cable, SST, Chp TSensor	FPFPU	P07	4	1				800	1,00E-05	0,0300	1	H04138	SST	3,20E-07		0,114	0	0,962	113,6	2,398	272,41	8,571	576,16	223,84	1,36E-06		8,18E-06	
116	Shielded cable, Brass, Chopper drive	FPFPU	P07	4	1				8	1,20E-02	0,3333	1	H04130	BRASS			0,172	0,204	2,236	1,4	2,398	3,36	8,571	7,9769	0,02	2,69E-01	8,06E-01	8,06E-01	
116a	Shielded cable, Brass, Chopper drive	FPFPU	P07	4	1				8	1,20E-02	0,3333	1	H04130	BRASS			0,172	0,204	2,236	1,4	2,398	3,36	8,571	7,9769	0,02	2,69E-01	8,06E-01	8,06E-01	
	Sum Bundle 13																**2,316**	**0,816**	**22,293**							**2,69E+00**	**8,06E+00**	**8,06E+00**	
082	Shielded cable, Brass, Fwheel1 drive	FPFPU	P02	4	1				8	0,00E+00	0,0030	1	H02-02130	BRASS			0,172	0,204	2,236	1,4	2,256	3,16	7,727	7,511	0,49	0,00E+00			Redundant to P01
083	Shielded cable, SST,FW1 Hall Sens	FPFPU	P02	4	1				800	0,00E+00	0,0030	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	7,727	551,01	248,99	0,00E+00			Redundant to P01
084	Shielded cable, SST,FW1 Hall Sens	FPFPU	P02	4	1				800	0,00E+00	0,0030	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	7,727	551,01	248,99	0,00E+00			Redundant to P01
085	Shielded cable, SST,FW1 Pos Sens	FPFPU	P02	8	1				800	0,00E+00	0,0030	1	H08138	SST	0,00E+00		0,166	0	1,323	113,6	2,256	256,28	7,727	551,01	248,99	0,00E+00			Redundant to P01
086	Shielded cable, SST,FW1 Temp Sens	FPFPU	P02	4	1				800	0,00E+00	0,0300	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	7,727	551,01	248,99	0,00E+00			Redundant to P01
092	Shielded cable, Brass, Fwhee2 drive	FPFPU	P04	4	1				8	0,00E+00	0,0030	1	H02-02130	BRASS			0,172	0,204	2,236	1,4	2,256	3,16	8,268	8,2684	-0,27	0,00E+00			Redundant to P03
093	Shielded cable, SST,FW2 Hall Sens1	FPFPU	P04	4	1				800	0,00E+00	0,0030	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	8,268	612,47	187,53	0,00E+00			Redundant to P03
094	Shielded cable, SST,FW2 Hall Sens2	FPFPU	P04	4	1				800	0,00E+00	0,0030	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	8,268	612,47	187,53	0,00E+00			Redundant to P03
095	Shielded cable, SST,FW2 Pos Sens	FPFPU	P04	8	1				800	0,00E+00	0,0030	1	H08138	SST	0,00E+00		0,166	0	1,323	113,6	2,256	256,28	8,268	612,47	187,53	0,00E+00			Redundant to P03
096	Shielded cable, SST,FW2 Temp Sens	FPFPU	P04	4	1				800	0,00E+00	0,0300	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	8,268	612,47	187,53	0,00E+00			Redundant to P03
120	Shielded cable, Brass, CalS1 red drive	FPFPU	P06	4	1				8	2,50E-03	0,0000	1	H02-02130	BRASS			0,172	0,204	2,236	1,4	2,256	3,16	7,742	7,3416	0,66	0,00E+00			Redundant to P05
121	Shielded cable, Brass, CalS1 red drive	FPFPU	P06	4	1	14	2122	22	8	2,50E-03	0,0000	1	H02-02130	BRASS			0,172	0,204	2,236	1,4	2,256	3,16	7,742	7,3416	0,66	0,00E+00			Redundant to P05
122	Shielded cable, SST, CalS1 T Sensor	FPFPU	P06	4	1				800	1,00E-05	0,0300	1	H04138	SST	3,20E-07		0,114	0	0,962	113,6	2,256	256,28	7,742	533,9	266,10	1,36E-06		4,09E-06	
105	Shielded cable, Brass, Grating drive, LL	FPFPU	P42	6	1				8	0,00E+00	0,1667	1	H03-02130	BRASS			0,186	0,306	2,618	1,4	2,256	3,16	6,319	5,5398	2,46	0,00E+00			Redundant to P40
106	Shielded cable, SST, Grating switches	FPFPU	P42	8	1				800	0,00E+00	0,1667	1	H08138	SST	0,00E+00		0,166	0	1,323	113,6	2,256	256,28	6,319	391,06	408,94	0,00E+00			Redundant to P40
107	Shielded cable, Brass, Grat. sens. drv	FPFPU	P42	2	1				8	0,00E+00	0,1667	1	H02130	BRASS			0,106	0,102	1,34	1,4	2,256	3,16	6,319	5,5398	2,46	0,00E+00			Redundant to P40
108	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P43	4	1				400	0,00E+00	0,1667	1	H06138(4)	SST	0,00E+00		0,128	0	1,158	113,6	2,256	256,28	6,334	392,76	7,24	0,00E+00			Redundant to P41
108	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P43	2					800	0,00E+00	0,1667	1	H06138(2)	SST	0,00E+00		0,016	0	0,086	113,6	2,256	256,28	6,334	392,76	407,24	0,00E+00			Redundant to P41
109	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P43	4	1				400	0,00E+00	0,1667	1	H06138(4)	SST	0,00E+00		0,128	0	1,158	113,6	2,256	256,28	6,334	392,76	7,24	0,00E+00			Redundant to P41
109	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P43	2					800	0,00E+00	0,1667	1	H06138(2)	SST	0,00E+00		0,016	0	0,086	113,6	2,256	256,28	6,334	392,76	407,24	0,00E+00			Redundant to P41
110	Shielded cable, SST, Gdrv Sensor sin	FPFPU	P43	2	1				800	0,00E+00	0,1667	1	H02138	SST	0,00E+00		0,088	0	0,771	113,6	2,256	256,28	6,334	392,76	407,24	0,00E+00			Redundant to P41
111	Shielded cable, SST, Gdrv Sensor cos	FPFPU	P43	2	1				800	0,00E+00	0,1667	1	H02138	SST	0,00E+00		0,088	0	0,771	113,6	2,256	256,28	6,334	392,76	407,24	0,00E+00			Redundant to P41
112	Shielded cable, SST, Gdrv TSensor	FPFPU	P43	4	1				800	0,00E+00	0,1667	1	H04138	SST	0,00E+00		0,114	0	0,962	113,6	2,256	256,28	6,334	392,76	407,24	0,00E+00			Redundant to P41
	Sum Bundle 14																**2,854**	**1,224**	**28,597**							**1,36E-06**	**0,00E+00**	**4,09E-06**	
117	Shielded cable, Brass, CalS1 nom drive	FPFPU	P05	4	1				8	2,50E-03	0,3333	1	H02-02130	BRASS			0,172	0,204	2,236	1,4	2,715	3,80	8,201	7,9842	0,02	1,17E-02		3,50E-02	
118	Shielded cable, Brass, CalS1 nom drive	FPFPU	P05	4	1				8	2,50E-03	0,3333	1	H02-02130	BRASS			0,172	0,204	2,236	1,4	2,715	3,80	8,201	7,9842	0,02	1,17E-02		3,50E-02	
119	Shielded cable, SST, CalS1 T Sensor	FPFPU	P05	4	1				800	1,00E-05	0,0300	1	H04138	SST	3,20E-07		0,114	0	0,962	113,6	2,715	308,42	8,201	586,04	213,96	1,36E-06		4,09E-06	
123	Shielded cable, SST, 2 FPU T Sensors nom.	FPFPU	P08	8	1				1000	1,00E-05	0,0300	1	H08138	SST	8,00E-07		0,166	0	1,323	113,6	2,715	308,42	8,134	578,43	421,57	2,73E-06	1,64E-05		
097	Shielded cable, Brass, Grating drive, LL	FPFPU	P40	6	1				8	5,00E-02	0,1667	1	H03-02130	BRASS			0,186	0,306	2,618	1,4	2,715	3,80	6,745	5,9458	2,05	3,50E+00	2,10E+01		
098	Shielded cable, SST, Grating switches	FPFPU	P40	8	1				800	1,00E-04	0,1667	1	H08138	SST	6,40E-05		0,166	0	1,323	113,6	2,715	308,42	6,745	420,64	379,36	1,51E-03	9,09E-03		
099	Shielded cable, Brass, Grat. sens. drv	FPFPU	P40	2	1				8	1,60E-02	0,1667	1	H02130	BRASS			0,016	0,102	0,086	1,4	2,715	3,80	6,745	5,9458	2,05	1,05E-01	6,30E-01		
100	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P41	4	1	15	2400	24	400	1,00E-03	0,1667	1	H06138(4)	SST	1,60E-03		0,128	0	1,158	60	2,715	162,90	6,76	223,67	176,33	4,00E-02	2,40E-01		2 lines in parallel
100	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P41	2					800	1,00E-05	0,1667	1	H06138(2)	SST	1,60E-07		0,016	0	0,086	113,6	2,715	308,42	6,76	422,34	377,66	3,79E-06	2,27E-05		
101	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P41	4	1				400	1,00E-03	0,1667	1	H06138(4)	SST	1,60E-03		0,12	0	1,138	60	2,715	162,90	6,76	223,67	176,33	4,00E-02	2,40E-01		2 lines in parallel
101	Shielded cable, SST, Gdrv Hall Sens1	FPFPU	P41	2					800	1,00E-05	0,1667	1	H06138(2)	SST	1,60E-07		0,016	0	0,951	113,6	2,715	308,42	6,76	422,34	377,66	3,79E-06	2,27E-05		
102	Shielded cable, SST, Gdrv Sensor sin	FPFPU	P41	2	1				800	2,00E-05	0,1667	1	H02138	SST	6,40E-07		0,088	0	0,771	113,6	2,715	308,42	6,76	422,34	377,66	1,51E-05	9,09E-05		
103	Shielded cable, SST, Gdrv Sensor cos	FPFPU	P41	2	1				800	2,00E-05	0,1667	1	H02138	SST	6,40E-07		0,088	0	0,771	113,6	2,715	308,42	6,76	422,34	377,66	1,51E-05			
104	Shielded cable, SST, Gdrv TSensor	FPFPU	P41	4	1				800	1,00E-05	0,1667	1	H04138	SST	3,20E-07		0,114	0	0,962	113,6	2,715	308,42	6,76	422,34	377,66	7,57E-06			
	Sum Bundle 15																**1,562**	**0,816**	**16,621**							**3,71E+00**	**2,21E+01**	**7,00E-02**	
1	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,31								
2	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,66								
3	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,19								

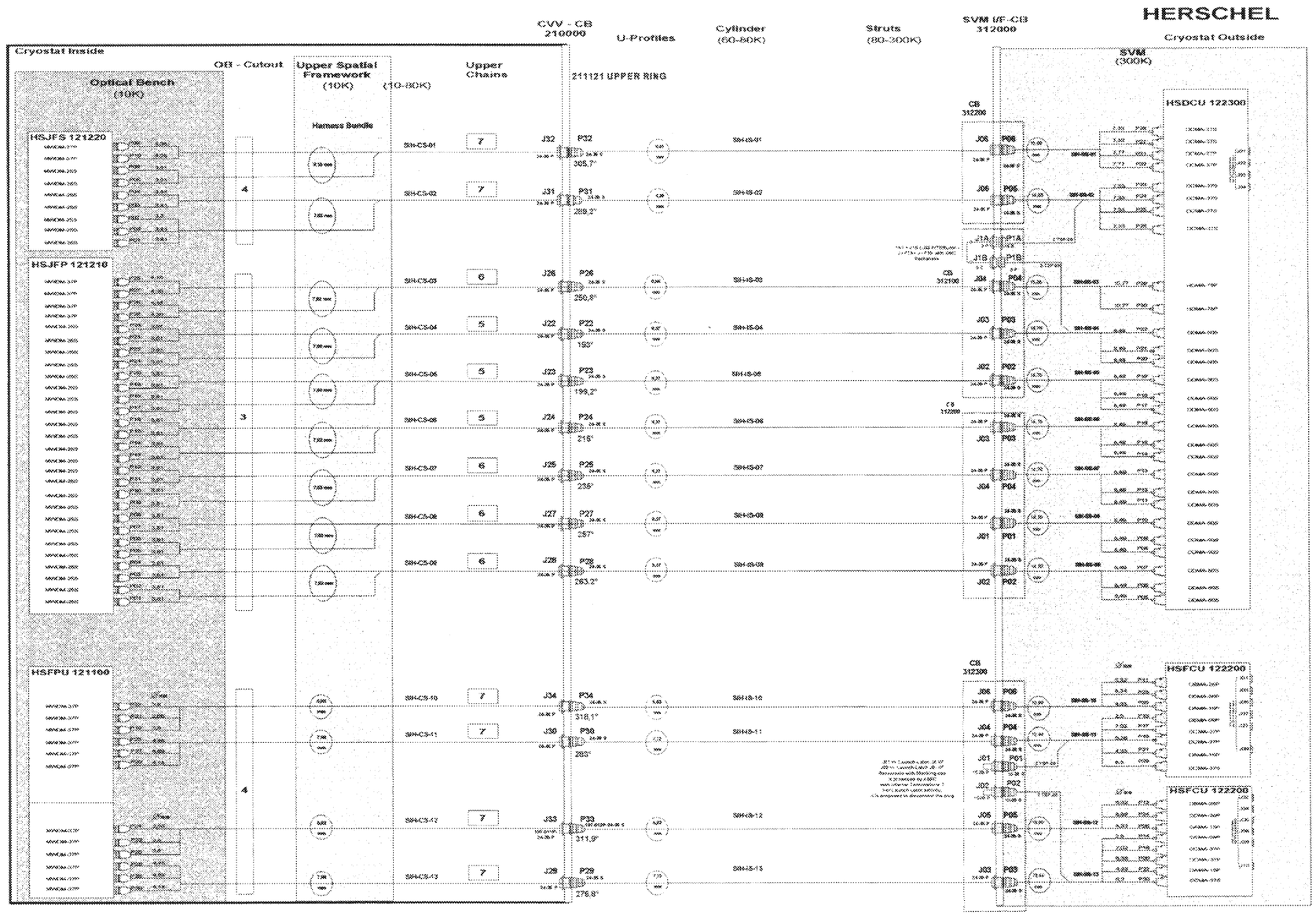
Designation											Cable								CVV ext. Harness SVM-CB to CVV I/F-CB			Harness total						
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-IP-....	U-Profile-No.	Strut-No.	R_max_core (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	no_of_cables	cable_type	condu.	Pmax_W [l*_m x Rmax]	Manganin mm²	SST mm²	Brass mm²	Insulation mm²	R_core (Ohm/m) at 300 K	Harness lth (m)	R_max (Ohm)	Harness lth (m) total	R_max (Ohm) total at 300 K	delta R (Ohm)	P el, avg [mW/m] at 300 K	P.el Spec on (mW/m) at 300 K	P.el Phot on (mW/m) at 300 K	REMARKS
4	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,11								
5	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					2,71								
6	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					2,73								
7	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					3,01								
8	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					3,39								
9	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					3,35								
10	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					3,30								
11	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					3,73								
12	Overall shield on harness bundles (Manganin)											1	5 mm diam.	Mng		0,864					3,90								
13	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,40								
14	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,26								
15	Overall shield on harness bundles (Manganin)											1	10 mm diam.	Mng		1,515					2,72								
	Sum Shield															17,517													
	Sum Bundles 01-15 & Shield															**17,517**	**37,536**	**5,132**	**367,204**							**2,90E+00**	**8,21E+00**	**9,17E+00**	

7 Annex 4: SPIRE Instrument Harness

SPIRE Harness Lay-out

The Overall Layout between the warm and cold units is defined in the Herschel drawings

HP-2-ASED-ID-0091-01-0B SPIRE



Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patentertheilung oder Gebrauchsmuster-Eintragung vorbehalten.

FREIGABE: SE 14.11.03 J. Fang	FESTIGKEIT:	VERTEILER:	DATUM:
HP-2-ASED-ID-0091-01-0B			
FREIGABE AUSGABE		CM: W. Wittbrodt 14.11.03	
	ZUL. ABW.:	OBERFL.:	MASSTAB: / GEW.:
			WERKSTOFF:

	DATUM	NAME
Bearb.	22.05.03	W. Hund
Gepr.	30.6.03	J. Fang
NORM		
PS		

AUSG.	ÄNDG. NR.	DATUM	NAME
B		18.09.03	W. Hund
A		22.05.03	W. Hund

SPIRE (PFM)

Cryo Harness Interconnection Diagram

astrium

2547-121430-030-01-0B

BLATT 1 / 1 BL.

URSPR.: ERS. F.: ERS. D.:

Designation									Cable			CVV int.Harness						CVV-I/F-CB to OBA Cold Units									
Cable_n	Description	Bundle_no. SIH-CS-xx	Upper chain	R_max_(Ohm) at 300 K	I_nominal (A)	Duty_Cycle	C_max core / inner Shd (pF)	Hmax_core µH)	no_of_cable	cable_types	condu.	R_core Ohm/m at 300 K	C_core / core (pF/m)	C_core / inner Shd (pF/m)	H_core µH/m)	Harness lth (mm)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core µH/m)	delta C_core / core (pF)	delta C_core / inner Shd (pF)	delta H_core µH)	R_max (Ohm)	delta R (Ohm)	P,el avg.(mW/m) at 77 K	P,el Spec on (mW/m) at 77 K	P,el Phot on (mW/m) at 77 K	Remarks
C01	Bolometer signals from JFS (SLW 1-12)	01	07	500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,446	33,5	58,3	2,00	966	942	-1,92	164,3	335,7	9,20E-14	5,52E-13		
C01	Anti-cross talk ground wires.			500	0,00E+00	0,0000	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,446	33,5	58,3	2,00	966	942	-1,92	164,3	335,7	0,00E+00	0,00E+00		
C01	Bolometer signals from JFS (SLW 13-24)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,451	33,6	58,5	2,00	966	942	-1,92	164,8	335,2	9,20E-14	5,52E-13		
C01	Anti-cross talk ground wires.			500	0,00E+00	0,0000	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,451	33,6	58,5	2,00	966	942	-1,92	164,8	335,2	0,00E+00	0,00E+00		
C01	300-mK TC Bias			200	8,00E-09	0,1667	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	187,2	1,25E-13	7,49E-13		
C01	300-mK Ground wire			50	0	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,418	0,0	0,0	0,00	1000	1000	0,08	2,0	48,0	0,00E+00	0,00E+00		
C01	300-mK JFET Bias			100	2,00E-04	0,1667	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	87,2	7,80E-05	4,68E-04		
C01	SLW Bolometer Bias			200	2,40E-08	0,1667	1000	0,08	2	H02238	SST	113,6	37,8	58,1	3,60	1,418	53,6	82,4	5,10	946	918	-5,02	161,1	38,9	3,53E-11	2,12E-10		
C01	SLW JFET Bias			100	6,00E-04	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	87,2	1,40E-03	8,43E-03		
C01	SLW Ground wire			50	0	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,418	0,0	0,0	0,00	1000	1000	0,08	2,0	48,0	0,00E+00	0,00E+00		
C01	SSW Bolometer Bias			200	4,80E-08	0,1667	1000	0,08	2	H02238	SST	113,6	37,8	58,1	3,60	1,418	53,6	82,4	5,10	946	918	-5,02	161,1	38,9	1,41E-10	8,48E-10		
C01	SSW JFET Bias			100	1,20E-03	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	87,2	5,62E-03	3,37E-02		
C01	SSW Ground Wire			50	0	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,418	0,0	0,0	0,00	1000	1000	0,08	2,0	48,0	0,00E+00	0,00E+00		
C01	300-mK TC JFET Heater			200	4,80E-04	0,0006	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	187,2	1,56E-06	9,38E-06		
C01	SLW JFET Heater			200	8,30E-04	0,0006	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	187,2	4,67E-06	2,80E-05		
C01	SSW JFET Heater			200	1,70E-03	0,0006	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,418	45,5	77,1	2,52	954	923	-2,44	12,8	187,2	1,96E-05	1,18E-04		
C01	300-mK TC Bias			200	0,00E+00	0,1667	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	186,9	0,00E+00	0,00E+00		
C01	300-mK Ground wire			50	0,00E+00	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,457	0,0	0,0	0,00	1000	1000	0,08	2,0	48,0	0,00E+00	0,00E+00		
C01	300-mK JFET Bias			100	0,00E+00	0,1667	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	86,9	0,00E+00	0,00E+00		
C01	SLW Bolometer Bias			200	0,00E+00	0,1667	1000	0,08	2	H02238	SST	113,6	37,8	58,1	3,60	1,457	55,1	84,7	5,25	945	915	-5,17	165,5	34,5	0,00E+00	0,00E+00		
C01	SLW JFET Bias			100	0,00E+00	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	86,9	0,00E+00	0,00E+00		
C01	SLW Ground wire			50	0,00E+00	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,457	0,0	0,0	0,00	1000	1000	0,08	2,0	48,0	0,00E+00	0,00E+00		
C01	SSW Bolometer Bias			200	0,00E+00	0,1667	1000	0,08	2	H02238	SST	113,6	37,8	58,1	3,60	1,457	55,1	84,7	5,25	945	915	-5,17	165,5	34,5	0,00E+00	0,00E+00		
C01	SSW JFET Bias			100	0,00E+00	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	86,9	0,00E+00	0,00E+00		
C01	SSW Ground Wire			50	0,00E+00	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,457	0,0	0,0	0,00	1000	1000	0,08	2,0	48,0	0,00E+00	0,00E+00		
C01	300-mK TC JFET Heater			200	0,00E+00	0,0006	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	186,9	0,00E+00	0,00E+00		
C01	SLW JFET Heater			200	0,00E+00	0,0006	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	186,9	0,00E+00	0,00E+00		
C01	SSW JFET Heater			200	0,00E+00	0,0006	1000	0,08	1	H02238	BRASS	9,0	32,1	54,4	1,78	1,457	46,8	79,3	2,59	953	921	-2,51	13,1	186,9	0,00E+00	0,00E+00		
	Sum Bundle 01																								**0,00712527**	**0,0427516**		
C02	Bolometer signals from JFS (300mK TC 1-3)	02	07	500	5,00E-10	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,483	34,4	59,8	2,05	966	940	-1,97	168,5	331,5	3,07E-14	1,84E-13		
C02	Anti-cross talk ground wires.			500	0,00E+00	0,1667	1000	0,08	0	H12-4032	SST	113,6	23,2	40,3	1,38	1,483	34,4	59,8	2,05	966	940	-1,97	168,5	331,5	0,00E+00	0,00E+00		
C02	Bolometer signals from JFS (SSW 1-8)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,463	33,9	59,0	2,02	966	941	-1,94	166,2	333,8	6,14E-14	3,68E-13		
C02	Anti-cross talk ground wires.			500	0,00E+00	0,1667	1000	0,08	0	H12-4032	SST	113,6	23,2	40,3	1,38	1,463	33,9	59,0	2,02	966	941	-1,94	166,2	333,8	0,00E+00	0,00E+00		
C02	Bolometer signals from JFS (SSW 9-20)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,472	34,1	59,3	2,03	966	941	-1,95	167,2	332,8	9,20E-14	5,52E-13		
C02	Anti-cross talk ground wires.			500	0,00E+00	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,472	34,1	59,3	2,03	966	941	-1,95	167,2	332,8	0,00E+00	0,00E+00		
C02	Bolometer signals from JFS (SSW 21-32)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,465	34,0	59,0	2,02	966	941	-1,94	166,4	333,6	9,20E-14	5,52E-13		
C02	Anti-cross talk ground wires.			500	0,00E+00	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,465	34,0	59,0	2,02	966	941	-1,94	166,4	333,6	0,00E+00	0,00E+00		
C02	Bolometer signals from JFS (SSW 33-44)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,454	33,7	58,6	2,01	966	941	-1,93	165,2	334,8	9,20E-14	5,52E-13		
C02	Anti-cross talk ground wires.			500	0,00E+00	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,454	33,7	58,6	2,01	966	941	-1,93	165,2	334,8	0,00E+00	0,00E+00		
	Sum Bundle 02																								**0,000**	**0,000**		
C03	PSW JFET Bias	03	06	100	1,20E-03	0,1667	1000	0,08	6	H02238	BRASS	9,0	32,1	54,4	1,78	1,297	41,6	70,6	2,31	958	929	-2,23	11,7	88,3	1,69E-02		1,01E-01	
C03	PSW Ground			50	0	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,297	0,0	0,0	0,00	1000	1000	0,08	1,8	48,2	0,00E+00		0,00E+00	
C03	PSW Bolometer Bias			200	9,60E-08	0,1667	1000	0,08	3	H02138	SST	113,6	28,5	46,9	3,60	1,297	37,0	60,8	4,67	963	939	-4,59	147,3	52,7	8,48E-10		5,09E-09	
C03	PSW Heater			200	9,60E-04	0,0006	1000	0,08	3	H02238	BRASS	9,0	32,1	54,4	1,78	1,297	41,6	70,6	2,31	958	929	-2,23	11,7	188,3	1,88E-05		1,13E-04	
C03	PMW JFET Bias			100	1,20E-03	0,1667	1000	0,08	4	H02238	BRASS	9,0	32,1	54,4	1,78	1,322	42,4	71,9	2,35	958	928	-2,27	11,9	88,1	1,12E-02		6,74E-02	
C03	PMW Bolometer Bias			200	9,60E-08	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,322	42,4	71,9	2,35	958	928	-2,27	11,9	188,1	4,48E-11		2,69E-10	
C03	PMW Ground			50	0	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,322	0,0	0,0	0,00	1000	1000	0,08	1,9	48,1	0,00E+00		0,00E+00	
C03	PMW JFET Heater			200	9,60E-04	0,0006	1000	0,08	2	H02138	SST	113,6	28,5	46,9	3,60	1,322	37,7	62,0	4,76	962	938	-4,68	150,2	49,8	1,58E-04		9,47E-04	
C03	PLW JFET Heater			200	9,60E-04	0,0006	1000	0,08	1	H02138	SST	113,6	28,5	46,9	3,60	1,322	37,7	62,0	4,76	962	938	-4,68	150,2	49,8	7,89E-05		4,74E-04	
C03	PLW JFET Bias			100	1,20E-03	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,322	42,4	71,9	2,35	958	928	-2,27	11,9	88,1	5,62E-03		3,37E-02	
C03	PLW Bolometer Bias			200	4,80E-08	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,322	42,4	71,9	2,35	958	928	-2,27	11,9	188,1	1,12E-11		6,72E-11	
C03	PLW Ground			50	0	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,322	0,0	0,0	0,00	1000	1000	0,08	1,9	48,1	0,00E+00		0,00E+00	
C03	PSW JFET Bias			100	0,00E+00	0,1667	1000	0,08	6	H02238	BRASS	9,0	32,1	54,4	1,78	1,278	41,0	69,5	2,27	959	930	-2,19	11,5	88,5	0,00E+00		0,00E+00	
C03	PSW Ground			50	0,00E+00	0,1667	1000	0,08	1	H01030	BRASS	9,0	32,1	54,4	1,78	1,278	41,0	69,5	2,27	959	930	-2,19	11,5	38,5	0,00E+00		0,00E+00	
C03	PSW Bolometer Bias			200	0,00E+00	0,1667	1000	0,08	3	H02138	SST	113,6	28,5	46,9	3,60	1,278	36,4	59,9	4,60	964	940	-4,52	145,2	54,8	0,00E+00		0,00E+00	
C03	PSW Heater			200	0,00E+00	0,0006	1000	0,08	3	H02138	BRASS	9,0	32,1	54,4	1,78	1,278	41,0	69,5	2,27	959	930	-2,19	11,5	188,5	0,00E+00		0,00E+00	
C03	PMW JFET Bias			100	0,00E+00	0,1667	1000	0,08	4	H02238	BRASS	9,0	32,1	54,4	1,78	1,366	43,8	74,3	2,43	956	926	-2,35	12,3	87,7	0,00E+00		0,00E+00	
C03	PMW Bolometer Bias			200	0,00E+00	0,1667	1000	0,08	2	H02238	BRASS	9,0	32,1	54,4	1,78	1,366	43,8	74,3	2,43	956	926	-2,35	12,3	187,7	0,00E+00		0,00E+00	
C03	PMW Ground			50	0,00E+00	0,1667	1000	0,08	1	H01030	BRASS	1,4				1,366	0,0	0,0	0,00	1000	1000	0,08	1,9	48,1	0,00E+00		0,00E+00	
C03	PMW JFET Heater			200	0,00E+00	0,0006	1000	0,08	2	H02138	SST	113,6	28,5	46,9	3,60	1,366	38,9	64,1	4,92	961	936	-4,84	155,2	44,8	0,00E+00		0,00E+00	

| Designation | | | | | | | | | Cable | | | CVV int.Harness | | | | | | | | | | | | CVV-I/F-CB to OBA Cold Units | | | | | | | | | | | |

Designation								Cable			CVV int.Harness										CVV-I/F-CB to OBA Cold Units							
Cable_n	Description	Bundle_no. SIH-CS-xx	Upper chain	R_max_(Ohm) at 300 K	I_nominal (A)	Duty_Cycle	C_max core / inner Shd (pF)	Hmax_core µH)	no_of_cable	cable_types	condu.	R_core Ohm/m at 300 K	C_core / core (pF/m)	C_core / inner Shd (pF/m)	H_core µH/m)	Harness lth (mm)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core µH/m)	delta C_core / core (pF)	delta C_core / inner Shd (pF)	delta H_core µH)	R_max (Ohm)	delta R (Ohm)	P,el avg.(mW/m) at 77 K	P,el Spec on (mW/m) at 77 K	P,el Phot on (mW/m) at 77 K	Remarks
C09	Bolometer signals from JFP (PSW 109-120)	09	06	500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,378	32,0	55,5	1,90	968	944	-1,82	156,5	343,5	9,20E-14		5,52E-13	
C09	Anti-cross talk ground wires			500	0,00E+00	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,378	32,0	55,5	1,90	968	944	-1,82	156,5	343,5	0,00E+00		0,00E+00	
C09	Bolometer signals from JFP (PSW 121-132)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,332	30,9	53,7	1,84	969	946	-1,76	151,3	348,7	9,20E-14		5,52E-13	
C09	Anti-cross talk ground wires			500	0,00E+00	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,332	30,9	53,7	1,84	969	946	-1,76	151,3	348,7	0,00E+00		0,00E+00	
C09	Bolometer signals from JFP (PSW 133-144)			500	5,00E-10	0,1667	1000	0,08	2	H12-4032	SST	113,6	23,2	40,3	1,38	1,34	31,1	54,0	1,85	969	946	-1,77	152,2	347,8	9,20E-14		5,52E-13	
C09	Anti-cross talk ground wires			500	0,00E+00	0,1667	1000	0,08	1	H12-4032	SST	113,6	23,2	40,3	1,38	1,34	31,1	54,0	1,85	969	946	-1,77	152,2	347,8	0,00E+00		0,00E+00	
	Sum Bundle 09																								**3,68138E-13**	**0**	**2,20883E-12**	
C10	Sorption Pump Heater	10	07	10	6,30E-03	0,0100			1	H04030	BRASS	1,4				1,799	0,0	0,0	0,00	0	0	0,00	2,5	7,5	1,44E-03	8,67E-03	8,67E-03	
C10	Evaporator HS heater			50	3,80E-04	0,0100			1	H04030	BRASS	1,4				1,799	0,0	0,0	0,00	0	0	0,00	2,5	47,5	5,26E-06	3,15E-05	3,15E-05	
C10	Sorption Pump HS heater			50	3,80E-04	0,0100			1	H04030	BRASS	1,4				1,799	0,0	0,0	0,00	0	0	0,00	2,5	47,5	5,26E-06	3,15E-05	3,15E-05	
C10	Various cooler thermistors			1000	1,00E-06	0,3333			5	H04138	SST	113,6				1,799	0,0	0,0	0,00	0	0	0,00	204,4	795,6	6,13E-07	3,68E-06	3,68E-06	
C10	Spectrometer Stimulus Thermistors			1000	1,00E-06	0,3333			3	H04138	SST	113,6				1,782	0,0	0,0	0,00	0	0	0,00	202,4	797,6	3,68E-07	2,21E-06	2,21E-06	
C10	Spectrometer Stimulus Heater 4%			30	2,30E-03	0,1667			1	H04030	BRASS	1,4				1,782	0,0	0,0	0,00	0	0	0,00	2,5	27,5	3,21E-03	1,93E-02		
C10	Spectrometer Stimulus Heater 2%			30	1,80E-03	0,1667			1	H04030	BRASS	1,4				1,782	0,0	0,0	0,00	0	0	0,00	2,5	27,5	1,97E-03	1,18E-02		
C10	FPU Thermometry			1000	1,00E-06	0,3333			6	H04138	SST	113,6				1,816	0,0	0,0	0,00	0	0	0,00	206,3	793,7	7,36E-07	4,42E-06	4,42E-06	
C10	300mK Thermal Control Heater			30	5,00E-04	0,1667			1	H04130	BRASS	1,4				1,816	0,0	0,0	0,00	0	0	0,00	2,5	27,5	1,52E-04	9,10E-04		
C10	Vane Position Sensor			1000	0,0E+00	0,0000			1	H02138	SST	113,6				1,816	0,0	0,0	0,00	0	0	0,00	206,3	793,7	0,00E+00			
	Sum Bundle 10																								**0,006784545**	**0,0407073**	**0,008741676**	
C11	BSM Chopper Sensors	11	07	1000	1,00E-06	0,1300			1	H03138	SST	113,6				1,81	0,0	0,0	0,00	0	0	0,00	205,6	794,4	3,59E-08	2,15E-07	2,15E-07	
C11	BSM Chopper Sensors			1000	1,00E-06	0,1300			1	H02138	SST	113,6				1,81	0,0	0,0	0,00	0	0	0,00	205,6	794,4	2,39E-08	1,44E-07	1,44E-07	
C11	BSM Jiggle Sensors			1000	1,00E-06	0,1300			1	H03138	SST	113,6				1,81	0,0	0,0	0,00	0	0	0,00	205,6	794,4	3,59E-08	2,15E-07	2,15E-07	
C11	BSM Jiggle Sensors			1000	1,00E-06	0,1300			1	H02138	SST	113,6				1,81	0,0	0,0	0,00	0	0	0,00	205,6	794,4	2,39E-08	1,44E-07	1,44E-07	
C11	BSM Temperature			1000	1,00E-06	0,3333			1	H04138	SST	113,6				1,81	0,0	0,0	0,00	0	0	0,00	205,6	794,4	1,23E-07	7,36E-07	7,36E-07	
C11	Photometer Stimulus Heater			10	1,80E-03	0,0200			1	H04130	BRASS	1,4				1,81	0,0	0,0	0,00	0	0	0,00	2,5	7,5	2,36E-04	1,42E-03	1,42E-03	
C11	BSM Launch latch sense			1000	0	0,0000			1	H02138	SST	113,6				1,81	0,0	0,0	0,00	0	0	0,00	205,6	794,4	0,00E+00	0,00E+00	0,00E+00	
C11	BSM Launch latch solenoid			10	0	0,0000			1	H02130	BRASS	1,4				1,81	0,0	0,0	0,00	0	0	0,00	2,5	7,5	0,00E+00	0,00E+00	0,00E+00	
C11	BSM Chop motor drive			10	2,00E-02	0,1300			1	H04130	BRASS	1,4				1,81	0,0	0,0	0,00	0	0	0,00	2,5	7,5	1,89E-01	1,14E+00	1,14E+00	
C11	BSM Jiggle motor drive			10	5,00E-03	0,1300			1	H04130	BRASS	1,4				1,81	0,0	0,0	0,00	0	0	0,00	2,5	7,5	1,18E-02	7,10E-02	7,10E-02	
C11	SMEC Thermometry			1000	1,00E-06	0,3333			2	H04138	SST	113,6				1,794	0,0	0,0	0,00	0	0	0,00	203,8	796,2	2,45E-07	1,47E-06	1,47E-06	
C11	SMEC LVDT Primary			5	3,54E-03	0,1667			1	H02130	BRASS	1,4				1,794	0,0	0,0	0,00	0	0	0,00	2,5	2,5	3,80E-03	2,28E-02		
C11	SMEC LVDT Secondaries			50	5,00E-05	0,1667			2	H02130	BRASS	1,4				1,794	0,0	0,0	0,00	0	0	0,00	2,5	47,5	1,52E-06	9,10E-06		
C11	SMEC Launch Latch 1+2			5	0,00E+00	0,0000			2	H02130	BRASS	1,4				1,794	0,0	0,0	0,00	0	0	0,00	2,5	2,5	0,00E+00	0,00E+00		
C11	SMEC Launch Latch 1+2 (Rob.)			5	0,00E+00	0,0000			2	H02130	BRASS	1,4				1,794	0,0	0,0	0,00	0	0	0,00	2,5	2,5	0,00E+00	0,00E+00		
C11	SMEC Launch Latch 1+2 Sense			5	0,00E+00	0,0000			2	H02130	BRASS	1,4				1,794	0,0	0,0	0,00	0	0	0,00	2,5	2,5	0,00E+00	0,00E+00		
C11	SMEC Drive Coil			5	4,00E-02	0,1667			1	H02130	BRASS	1,4				1,795	0,0	0,0	0,00	0	0	0,00	2,5	2,5	4,85E-01	2,91E+00		
C11	SMEC Drive (Rob.)			5	4,00E-02	0,1667			1	H02130	BRASS	1,4				1,795	0,0	0,0	0,00	0	0	0,00	2,5	2,5	4,85E-01	2,91E+00		
C11	SMEC Drive coil voltage sensor			500	1,00E-05	0,1667			1	H02138	BRASS	9,0				1,795	0,0	0,0	0,00	0	0	0,00	16,2	483,8	1,95E-07	1,17E-06		
C11	SMEC Position sensor supplies			100	1,00E-03	0,1667			1	H02138	BRASS	9,0				1,795	0,0	0,0	0,00	0	0	0,00	16,2	83,8	1,95E-03	1,17E-02		
C11	SMEC LED Power			100	8,00E-04	0,1667			1	H02138	BRASS	9,0				1,795	0,0	0,0	0,00	0	0	0,00	16,2	83,8	1,25E-03	7,49E-03		
C11	SMEC Position sensor photodiodes			1000	2,00E-05	0,1667			3	H02138	SST	113,6				1,795	0,0	0,0	0,00	0	0	0,00	203,9	796,1	3,68E-05	2,21E-04		
C11	SMEC Position sensor photodiodes FB			1000	1,00E-05	0,1667			3	H02138	SST	113,6				1,795	0,0	0,0	0,00	0	0	0,00	203,9	796,1	9,20E-06	5,52E-05		
	Sum Bundle 11																								**1,179255541**	**7,0755332**	**1,208078158**	
C12	Sorption Pump Heater	12	07	10	0,00E+00	0,0100			1	H04030	BRASS	1,4				1,671	0,0	0,0	0,00	0	0	0,00	2,3	7,7				Redundant to C10
C12	Evaporator HS heater			50	0,00E+00	0,0100			1	H04030	BRASS	1,4				1,671	0,0	0,0	0,00	0	0	0,00	2,3	47,7				Redundant to C10
C12	Sorption Pump HS heater			50	0,00E+00	0,0100			1	H04030	BRASS	1,4				1,671	0,0	0,0	0,00	0	0	0,00	2,3	47,7				Redundant to C10
C12	Various cooler thermistors			1000	0,00E+00	0,3333			5	H04138	SST	113,6				1,671	0,0	0,0	0,00	0	0	0,00	189,8	810,2				Redundant to C10
C12	Spectrometer Stimulus Thermistors			1000	0,00E+00	0,3333			3	H04138	SST	113,6				1,654	0,0	0,0	0,00	0	0	0,00	187,9	812,1				Redundant to C10
C12	Spectrometer Stimulus Heater 4%			30	0,00E+00	0,1667			1	H04030	BRASS	1,4				1,654	0,0	0,0	0,00	0	0	0,00	2,3	27,7				Redundant to C10
C12	Spectrometer Stimulus Heater 2%			30	0,00E+00	0,1667			1	H04030	BRASS	1,4				1,654	0,0	0,0	0,00	0	0	0,00	2,3	27,7				Redundant to C10
C12	FPU Thermometry			1000	0,00E+00	0,3333			6	H04138	SST	113,6				1,687	0,0	0,0	0,00	0	0	0,00	191,6	808,4				Redundant to C10
C12	300mK Thermal Control Heater			30	0,00E+00	0,1667			1	H04130	BRASS	1,4				1,687	0,0	0,0	0,00	0	0	0,00	2,4	27,6				Redundant to C10
C12	Vane Position Sensor			1000	0,00E+00	0,0000			1	H02138	SST	113,6				1,687	0,0	0,0	0,00	0	0	0,00	191,6	808,4				Redundant to C10
	Sum Bundle 12																								**0**			
C13	BSM Chopper Sensors			1000	0,00E+00	0,1300			1	H03138	SST	113,6				1,895	0,0	0,0	0,00	0	0	0,00	215,3	784,7				Redundant to C11
C13	BSM Chopper Sensors			1000	0,00E+00	0,1300			1	H02138	SST	113,6				1,895	0,0	0,0	0,00	0	0	0,00	215,3	784,7				Redundant to C11
C13	BSM Jiggle Sensors			1000	0,00E+00	0,1300			1	H03138	SST	113,6				1,895	0,0	0,0	0,00	0	0	0,00	215,3	784,7				Redundant to C11

| Designation | | | | | | | | | Cable | | | CVV int.Harness | | | | | | | | | | | CVV-I/F-CB to OBA Cold Units | | | | | | | | | | |

| Designation | | | | | | | | | | | | Cable | | | | | | | | | | | | CVV ext.Harness CVV-I/F-CB to SVM-CB | | | | | | | | | SVM Harness SVM-CB to WEU's | | | | | | | | CVV ext.Harness and SVM Harnesss total | | | | | | | | | | | |

Designation												Cable										CVV ext.Harness CVV-I/F-CB to SVM-CB										SVM Harness SVM-CB to WEU's										CVV ext.Harness and SVM Harnesss total											
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-I/F- xx	U-Profile-No.	Strut-No.	R_max (Ohm) at 300 K	I_nominal (A)	Duty_Cycle (T * t)	C_max core / inner Shd (pF)	Hmax_core (µH)	no_of_cables	cable_type	conductor	R_core Ohm/m at 300 K	Manganin [mm²]	SST [mm²]	Brass [mm²]	Insulation [mm²]	SST [mm²]	Brass [mm²]	Insulation [mm²]	R_core Ohm/m at 300 K	C_core / core (pF/m)	C_core / inner Shd (pF/m)	H_core (µH/m)	Harness lth (m)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core (µH)	R_max (Ohm)	R_core Ohm/m at 300 K	C_core / core (pF/m)	C_core / inner Shd (pF/m)	H_core (µH/m)	Harness lth (m)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core (µH)	R_max (Ohm)	C_max core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core (µH)	R_max (Ohm)	delta C_core / core (pF)	delta C_core / inner Shd (pF)	delta H_core (µH)	delta R (Ohm)	P_el avg.(mW/m) at 300 K	P_el Spec on (mW/m) at 300 K	P_el Phot on (mW/m) at 300 K	Remarks
vSC01	PLM JFET Bias	DCU	P30	4	2				100	1.20E-08	0.0017	1500	0.08	2	H02138	BRASS	0.5		0.12	0.032	5.382	0.088	0.016	0.691	0.5	28	46.6	2.71	2.436	60.9	116.3	6.60	23.13	0.25	75.6	133.5	1.53	1.649	117.0	206.7	2.4	0.392	177.9	325.0	9.0	23.5	1322.1	1176.8	-8.89	76.5	9.30E-06		5.58E-04	
vSC02	PLW Bolometer Bias	DCU	P30	4	2				100	4.80E-08	0.0017	1500	0.08	2	H02138	BRASS	0.5		0.12	0.032	1.962	0.088	0.016	0.691	0.5	28	46.6	2.71	2.436	60.9	116.3	6.60	23.13	0.25	75.6	133.5	1.53	1.649	117.0	206.7	2.4	0.392	177.9	325.0	9.0	23.5	1322.1	1176.8	-8.89	76.5	1.49E-13		8.93E-13	
vSC03	PMW Ground	DCU	P30	1	0				50	0.00E+00	0.0017	1500	0.08	1	H01030	BRASS	1.4		0	0.051	0.128		0.051	0.128	1.4				2.436	0.0	0.0	0.00	0.41	0.25				1.649	0.0	0.0	0.0	0.392	0.0	0.0	0.0	3.8	1650.0	1650.0	0.08	46.2	0.00E+00		0.00E+00	
				106	52																																														
	Sum Bundle 03																		**3,52**	**1,106**	**42,858**																										**5,67E-02**	**0,00E+00**	**3,40E-01**	
vSC04	16 ch. PMW (1-16)	DCU	P20	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.622	100.4	165.2	9.86	400.10	0.25	75.6	133.5	1.53	1.649	124.7	220.1	2.5	0.417	225.0	385.3	###	400.5	1275.0	1114.7	-12.30	99.5	1.54E-13		9.27E-13	
vSB04	Ground Wire	DCU	P20	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.522	0.0	0.0	0.00	4.93	0.25				1.649	0.0	0.0	0.0	0.417	0.0	0.0	0.0	5.3	1650.0	1650.0	0.08	44.7	0.00E+00		0.00E+00	
vSC04	16 ch. PMW (17-32)	DCU	P21	32	16	04	3334	33	500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.622	100.4	165.2	9.86	400.10	0.25	75.6	133.5	1.53	1.649	124.7	220.1	2.5	0.417	225.0	385.3	###	400.5	1275.0	1114.7	-12.30	99.5	1.54E-13		9.27E-13	
vSB04	Ground Wire	DCU	P21	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.522	0.0	0.0	0.00	4.93	0.25				1.649	0.0	0.0	0.0	0.417	0.0	0.0	0.0	5.3	1650.0	1650.0	0.08	44.7	0.00E+00		0.00E+00	
vSC04	16 ch. PMW (33-48)	DCU	P22	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.622	100.4	165.2	9.86	400.10	0.25	75.6	133.5	1.53	1.649	124.7	220.1	2.5	0.417	225.0	385.3	###	400.5	1275.0	1114.7	-12.30	99.5	1.54E-13		9.27E-13	
vSC04	Ground Wire	DCU	P22	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.522	0.0	0.0	0.00	4.93	0.25				1.649	0.0	0.0	0.0	0.417	0.0	0.0	0.0	5.3	1650.0	1650.0	0.08	44.7	0.00E+00		0.00E+00	
				102	48																																														
	Sum Bundle 04																		**4,224**	**0,306**	**37,776**																										**4,63488E-13**		**0**	**2,78093E-12**	
vSC04	16 ch. PMW (49-64)	DCU	P17	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.613	103.0	168.4	#####	410.44	0.25	75.6	133.5	1.53	1.728	130.6	230.7	2.6	0.437	233.6	400.1	###	410.9	1266.4	1099.9	-12.68	89.1	1.54E-13		9.27E-13	
vSB05	Ground Wire	DCU	P17	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.613	0.0	0.0	0.00	5.06	0.25				1.728	0.0	0.0	0.0	0.437	0.0	0.0	0.0	5.5	1650.0	1650.0	0.08	44.5	0.00E+00		0.00E+00	
vSC05	16 ch. PMW (65-80)	DCU	P18	32	16	05	3334	33	500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.613	103.0	168.4	#####	410.44	0.25	75.6	133.5	1.53	1.728	130.6	230.7	2.6	0.437	233.6	400.1	###	410.9	1266.4	1099.9	-12.68	89.1	1.54E-13		9.27E-13	
vSB05	Ground Wire	DCU	P18	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.613	0.0	0.0	0.00	5.06	0.25				1.728	0.0	0.0	0.0	0.437	0.0	0.0	0.0	5.5	1650.0	1650.0	0.08	44.5	0.00E+00		0.00E+00	
vSC05	16 ch. PMW (81-96)	DCU	P19	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.613	103.0	168.4	#####	410.44	0.25	75.6	133.5	1.53	1.728	130.6	230.7	2.6	0.437	233.6	400.1	###	410.9	1266.4	1099.9	-12.68	89.1	1.54E-13		9.27E-13	
vSB05	Ground Wire	DCU	P19	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.613	0.0	0.0	0.00	5.06	0.25				1.728	0.0	0.0	0.0	0.437	0.0	0.0	0.0	5.5	1650.0	1650.0	0.08	44.5	0.00E+00		0.00E+00	
	Sum Bundle 05																		**4,224**	**0,306**	**37,776**																										**4,63488E-13**		**0**	**2,78093E-12**	
vSC06	16 ch. PLW (1-16)	DCU	P14	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.119	88.9	146.3	8.73	354.32	0.25	75.6	133.5	1.53	1.266	95.7	169.0	1.9	0.320	184.6	315.3	###	354.6	1315.4	1184.7	-10.59	145.4	1.54E-13		9.27E-13	
vSB06	Ground Wire	DCU	P14	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.119	0.0	0.0	0.00	4.37	0.25				1.266	0.0	0.0	0.0	0.320	0.0	0.0	0.0	4.7	1650.0	1650.0	0.08	45.3	0.00E+00		0.00E+00	
vSC06	16 ch. PLW (17-32)	DCU	P15	32	16	06	3800	38	500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.119	88.9	146.3	8.73	354.32	0.25	75.6	133.5	1.53	1.266	95.7	169.0	1.9	0.320	184.6	315.3	###	354.6	1315.4	1184.7	-10.59	145.4	1.54E-13		9.27E-13	
vSB06	Ground Wire	DCU	P15	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.119	0.0	0.0	0.00	4.37	0.25				1.266	0.0	0.0	0.0	0.320	0.0	0.0	0.0	4.7	1650.0	1650.0	0.08	45.3	0.00E+00		0.00E+00	
vSC06	16 ch. PLW (33-48)	DCU	P16	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	3.119	88.9	146.3	8.73	354.32	0.25	75.6	133.5	1.53	1.266	95.7	169.0	1.9	0.320	184.6	315.3	###	354.6	1315.4	1184.7	-10.59	145.4	1.54E-13		9.27E-13	
vSB06	Ground Wire	DCU	P16	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				3.119	0.0	0.0	0.00	4.37	0.25				1.266	0.0	0.0	0.0	0.320	0.0	0.0	0.0	4.7	1650.0	1650.0	0.08	45.3	0.00E+00		0.00E+00	
	Sum Bundle 06																		**4,224**	**0,306**	**37,776**																										**4,63488E-13**		**0**	**2,78093E-12**	
vSC07	16 ch. PSW (1-16)	DCU	P11	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.698	76.9	126.5	7.55	306.49	0.25	75.6	133.5	1.53	1.242	93.9	165.8	1.9	0.314	170.8	292.3	9.5	306.8	1329.2	1287.7	-9.37	193.2	1.54E-13		9.27E-13	
vSB07	Ground Wire	DCU	P11	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.698	0.0	0.0	0.00	3.78	0.25				1.242	0.0	0.0	0.0	0.314	0.0	0.0	0.0	4.1	1650.0	1650.0	0.08	45.9	0.00E+00		0.00E+00	
vSC07	16 ch. PSW (17-32)	DCU	P12	32	16	07	3800	38	500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.698	76.9	126.5	7.55	306.49	0.25	75.6	133.5	1.53	1.242	93.9	165.8	1.9	0.314	170.8	292.3	9.5	306.8	1329.2	1287.7	-9.37	193.2	1.54E-13		9.27E-13	
vSB07	Ground Wire	DCU	P12	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.698	0.0	0.0	0.00	3.78	0.25				1.242	0.0	0.0	0.0	0.314	0.0	0.0	0.0	4.1	1650.0	1650.0	0.08	45.9	0.00E+00		0.00E+00	
vSC07	16 ch. PSW (33-48)	DCU	P13	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.698	76.9	126.5	7.55	306.49	0.25	75.6	133.5	1.53	1.242	93.9	165.8	1.9	0.314	170.8	292.3	9.5	306.8	1329.2	1287.7	-9.37	193.2	1.54E-13		9.27E-13	
vSB07	Ground Wire	DCU	P13	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.698	0.0	0.0	0.00	3.78	0.25				1.242	0.0	0.0	0.0	0.314	0.0	0.0	0.0	4.1	1650.0	1650.0	0.08	45.9	0.00E+00		0.00E+00	
	Sum Bundle 07																		**4,224**	**0,306**	**37,776**																										**4,63488E-13**		**0**	**2,78093E-12**	
vSC08	16 ch. PSW (49-64)	DCU	P08	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.226	63.5	104.5	6.24	253.10	0.25	75.6	133.5	1.53	1.372	103.7	183.2	2.1	0.347	167.2	287.7	8.3	253.4	1332.8	1212.3	-8.26	246.6	1.54E-13		9.27E-13	
vSB08	Ground Wire	DCU	P08	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.226	0.0	0.0	0.00	3.12	0.25				1.372	0.0	0.0	0.0	0.347	0.0	0.0	0.0	3.5	1650.0	1650.0	0.08	46.5	0.00E+00		0.00E+00	
vSC08	16 ch. PSW (65-80)	DCU	P09	32	16	08	3800	38	500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.226	63.5	104.5	6.24	253.10	0.25	75.6	133.5	1.53	1.372	103.7	183.2	2.1	0.347	167.2	287.7	8.3	253.4	1332.8	1212.3	-8.26	246.6	1.54E-13		9.27E-13	
vSB08	Ground Wire	DCU	P09	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.226	0.0	0.0	0.00	3.12	0.25				1.372	0.0	0.0	0.0	0.347	0.0	0.0	0.0	3.5	1650.0	1650.0	0.08	46.5	0.00E+00		0.00E+00	
vSC08	16 ch. PSW (81-96)	DCU	P10	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.226	63.5	104.5	6.24	253.10	0.25	75.6	133.5	1.53	1.372	103.7	183.2	2.1	0.347	167.2	287.7	8.3	253.4	1332.8	1212.3	-8.26	246.6	1.54E-13		9.27E-13	
vSB08	Ground Wire	DCU	P10	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.226	0.0	0.0	0.00	3.12	0.25				1.372	0.0	0.0	0.0	0.347	0.0	0.0	0.0	3.5	1650.0	1650.0	0.08	46.5	0.00E+00		0.00E+00	
	Sum Bundle 08																		**4,224**	**0,306**	**37,776**																										**4,63488E-13**		**0**	**2,78093E-12**	
vSC09	16 ch. PMW (97-112)	DCU	P05	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.153	60.8	100.0	5.97	242.31	0.25	75.6	133.5	1.53	1.345	101.7	179.6	2.1	0.340	162.5	279.6	8.0	242.6	1337.5	1220.4	-7.86	257.4	1.54E-13		9.27E-13	
vSB09	Ground Wire	DCU	P05	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.153	0.0	0.0	0.00	2.99	0.25				1.345	0.0	0.0	0.0	0.340	0.0	0.0	0.0	3.3	1650.0	1650.0	0.08	46.7	0.00E+00		0.00E+00	
vSC09	16 ch. PMW (113-128)	DCU	P06	32	16	09	3800	38	500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.153	60.8	100.0	5.97	242.31	0.25	75.6	133.5	1.53	1.345	101.7	179.6	2.1	0.340	162.5	279.6	8.0	242.6	1337.5	1220.4	-7.86	257.4	1.54E-13		9.27E-13	
vSB09	Ground Wire	DCU	P06	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.153	0.0	0.0	0.00	2.99	0.25				1.345	0.0	0.0	0.0	0.340	0.0	0.0	0.0	3.3	1650.0	1650.0	0.08	46.7	0.00E+00		0.00E+00	
vSC09	16 ch. PMW (129-144)	DCU	P07	32	16				500	5.00E-10	0.1700	1500	0.08	16	H02138	SST	113.6		1,408		12,336	0.088		0.771	113.6	28.5	46.9	2.80	2.153	60.8	100.0	5.97	242.31	0.25	75.6	133.5	1.53	1.345	101.7	179.6	2.1	0.340	162.5	279.6	8.0	242.6	1337.5	1220.4	-7.86	257.4	1.54E-13		9.27E-13	
vSB09	Ground Wire	DCU	P07	2	0				50	0.00E+00	0.1700	1500	0.08	2	H01030	BRASS	1.4		0	0.102	0.256		0.051	0.128	1.4				2.153	0.0	0.0	0.00	2.99	0.25				1.345	0.0	0.0	0.0	0.340	0.0	0.0	0.0	3.3	1650.0	1650.0	0.08	46.7	0.00E+00		0.00E+00	
	Sum Bundle 09																		**4,224**	**0,306**	**37,776**																										**4,63488E-13**		**0**	**2,78093E-12**	
vSS10	Sorption Pump Heater	PCU	P11	4	0				10	6.25E-03	0.0100			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.275	0.0	0.0	0.00	3.19	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	3.7	0.0	0.0	0.00	46.3	2.19E-03	1.31E-02	1.31E-02	
vSS10	Evaporator HS Heater	PCU	P11	4	0				50	3.75E-04	0.0100			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.275	0.0	0.0	0.00	3.19	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	3.7	0.0	0.0	0.00	46.3	7.88E-06	4.73E-05	4.73E-05	
vSS10	Evaporator at MP HS Heater	PCU	P11	4	0				50	3.75E-04	0.0100			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.275	0.0	0.0	0.00	3.19	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	3.7	0.0	0.0	0.00	46.3	7.88E-06	4.73E-05	4.73E-05	

Designation													Cable										CVV ext.Harness CVV-I/F-CB to SVM-CB									SVM Harness SVM-CB to WEU's								CVV ext.Harness and SVM Harnesss total											
Cable_ID	Description	Unit	Connector	no_of_wires	no_of_shd's	Bundle_No. SIH-IS. xx	U-Profile-No.	Strut-No.	R_max_(Ohm) at 300 K	I_nominal [A]	Duty_Cycle [T*]	C_max core / inner Shd (pF)	Hmax_core (µH)	no_of_cables	cable_type	conductor	R_core Ohm/m at 300 K	Manganin [mm²]	SST [mm²]	Brass [mm²]	Insulation [mm²]	SST [mm²]	Brass [mm²]	Insulation [mm²]	R_core Ohm/m at 300 K	C_core / core (pF/m)	C_core / inner Shd (pF/m)	H_core (µH/m)	Harness lth (m)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core (µH)	R_max (Ohm)	R_core Ohm/m at 300 K	C_core / core (pF/m)	C_core / inner Shd (pF/m)	H_core (µH/m)	Harness lth (m)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core (µH)	R_max (Ohm)	Cmax_core / core (pF)	Cmax_core / inner Shd (pF)	Hmax_core (µH)	R_max (Ohm)	delta C_core / core (pF)	delta C_core / inner Shd (pF)	delta H_core (µH)	delta R (Ohm)	P.el avg.(mW/m) at 300 K	P.el Spec on (mW/m) at 300 K	P.el Phot on (mW/m) at 300 K	Remarks
KS10	300mK Thermal Control Heater	FCU	P11	4	1	10	4041	40	100	5.00E-04	0.1700			1	H04138	BRASS	113.6		0.00	0.032	1.24	0.00	0.032	1.24	113.6				2.276	0.0	0.0	0.00	258.53	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	259.0	0.0	0.0	0.00	159.0	1.93E-02	1.16E-01	1.16E-01	
KS10	Spectrometer Stimulus Heater 4%	FCU	P11	4	0				30	2.26E-03	0.1667			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.276	0.0	0.0	0.00	3.19	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	3.7	0.0	0.0	0.00	26.3	4.73E-03	2.84E-02		
KS10	Spectrometer Stimulus Heater 2%	FCU	P11	4	0				30	1.75E-03	0.1700			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.276	0.0	0.0	0.00	3.19	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	3.7	0.0	0.0	0.00	26.3	2.92E-03	1.75E-02		
KS10	FPU Thermometry A	FCU	P11	44	11				1000	1.00E-06	0.3300			11	H04138	SST	113.6		1.177	0	10.582	0.107		0.962	113.6				2.276	0.0	0.0	0.00	258.53	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	259.0	0.0	0.0	0.00	741.0	1.65E-06	9.90E-06	9.90E-06	
KS10	FPU Thermometry B	FCU	P23	12	3				1000	1.00E-06	0.3300			3	H04138	SST	113.6		0.321	0	2.886	0.107		0.962	113.6				2.276	0.0	0.0	0.00	258.55	0.25				1.876	0.0	0.0	0.0	0.475	0.0	0.0	0.0	259.0	0.0	0.0	0.00	741.0	2.50E-07	2.70E-06		
				80	15																																													
	Sum Bundle 10																		**1.588**	**1.052**	**17.268**																									**2.92E-02**	**1.75E-01**		
KS11	FPU Thermometry C	FCU	P21	12	3				1000	1.00E-06	0.3300			3	H04138	SST	113.6		0.342	0	2.886	0.114		0.962	113.6				2.311	0.0	0.0	0.00	262.53	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	263.0	0.0	0.0	0.00	737.0	4.50E-07	2.70E-06	2.70E-06	
KS11	BSM Chop/Jiggle Sensors	FCU	P19	4	2				1000	1.00E-06	0.3300			2	H02138	SST	113.6		0.176	0	1.542	0.088		0.771	113.6				2.311	0.0	0.0	0.00	262.53	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	263.0	0.0	0.0	0.00	737.0	1.50E-07	9.00E-07	9.00E-07	
KS11	BSM Chop/Jiggle Sensors	FCU	P19	6	2				1000	1.00E-06	0.3300			2	H03138	BRASS	9.5		0.168	0.048	2.202	0.084	0.024	1.101	9.5				2.311	0.0	0.0	0.00	21.95	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	22.5	0.0	0.0	0.00	977.5	1.88E-08	1.13E-07	1.13E-07	
KS11	BSM Launch latch sense	FCU	P19	2	1				1000	0.00E+00	0.0000			1	H02138	SST	113.6		0.088	0	0.771	0.088		0.771	113.6				2.311	0.0	0.0	0.00	262.53	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	263.0	0.0	0.0	0.00	737.0	0.00E+00	0.00E+00	0.00E+00	
KS11	BSM Launch latch solenoid	FCU	P19	2	1				10	0.00E+00	0.0000			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	6.3	0.00E+00	0.00E+00	0.00E+00	
KS11	BSM Chop motor drive	FCU	P19	4	1				10	2.50E-02	0.1700			1	H04130	BRASS	1.4		0.124	0.204	1.767	0.124	0.204	1.767	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	6.3	3.61E-01	2.28E+00	2.28E+00	
KS11	BSM Jiggle motor drive	FCU	P19	4	1				10	5.00E-03	0.1700			1	H04130	BRASS	1.4		0.124	0.204	1.767	0.124	0.204	1.767	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	6.3	2.38E-02	1.43E-01	1.43E-01	
KS11	SMEC LVDT Primary	FCU	P29	2	1				5	2.50E-03	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	2.98E-03	1.79E-02		
KS11	SMEC LVDT Secondary	FCU	P29	4	2				50	5.00E-05	0.1700			2	H02130	BRASS	1.4		0.212	0.204	2.68	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	46.3	2.38E-06	1.43E-05		
KS11	SMEC Launch Latch1	FCU	P29	4	2	11	3900	38	5	0.00E+00	0.0000			2	H02130	BRASS	1.4		0.212	0.204	2.68	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	0.00E+00	0.00E+00		
KS11	SMEC Launch Latch1 Confirm	FCU	P29	2	1				5	0.00E+00	0.0000			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	0.00E+00	0.00E+00		
KS11	SMEC Launch Latch2	FCU	P29	4	2				5	0.00E+00	0.0000			2	H02130	BRASS	1.4		0.212	0.204	2.68	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	0.00E+00	0.00E+00		
KS11	SMEC Launch Latch2 Confirm	FCU	P29	2	1				5	0.00E+00	0.0000			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	0.00E+00	0.00E+00		
KS11	SMEC Drive Coil	FCU	P17	2	1				5	4.00E-02	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	7.62E-01	4.57E+00		
KS11	SMEC Drive Coil (Red.)	FCU	P17	2	1				5	4.00E-02	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	1.3	1.62E-01	4.57E+00		
KS11	SMEC Drive coil voltage sensor	FCU	P17	2	1				500	0.00E+00	0.0000			1	H02138	BRASS	113.6		0.08	0.016	0.961	0.08	0.016	0.961	113.6				2.311	0.0	0.0	0.00	262.53	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	263.0	0.0	0.0	0.00	237.0	0.00E+00	0.00E+00		
KS11	SMEC Position sensor supplies	FCU	P17	4	2				100	0.00E+00	0.1700			2	H02138	BRASS	9.5		0.16	0.032	1.962	0.08	0.016	0.981	9.5				2.311	0.0	0.0	0.00	21.95	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	22.5	0.0	0.0	0.00	77.5	0.00E+00	0.00E+00		
KS11	SMEC Position sensor photodiodes	FCU	P17	6	3				1000	0.00E+00	0.1700			3	H02138	SST	113.6		0.264	0	2.313	0.088		0.771	113.6				2.311	0.0	0.0	0.00	262.53	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	263.0	0.0	0.0	0.00	737.0	0.00E+00	0.00E+00		
KS11	SMEC Position sensor photodiodes FB	FCU	P17	6	3				1000	0.00E+00	0.1700			3	H02138	SST	113.6		0.264	0	2.313	0.088		0.771	113.6				2.311	0.0	0.0	0.00	262.53	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	263.0	0.0	0.0	0.00	737.0	0.00E+00	0.00E+00		
KS11	P-Cal Heater	FCU	P13	4	1				10	1.75E-03	0.0200			1	H04130	BRASS	1.4		0.124	0.204	1.767	0.124	0.204	1.767	1.4				2.311	0.0	0.0	0.00	3.24	0.25				2.021	0.0	0.0	0.0	0.511	0.0	0.0	0.0	3.7	0.0	0.0	0.00	6.3	3.43E-04	2.06E-03	2.06E-03	
				78	32																																													
	Sum Bundle 11																		**3.186**	**1.932**	**36.351**																									**1.93E+00**	**1.16E+01**	**2.43E+00**	
KS12	Sorption Pump Heater	FCU	P12	4	0				10	0.00E+00	0.0100			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.088	0.0	0.0	0.00	2.92	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	3.4	0.0	0.0	0.00	6.6	0.00E+00			Redundant to C10
KS12	Heat switch heaters	FCU	P12	8	0				50	0.00E+00	0.0100			2	H04030	BRASS	1.4		0	0.408	1.024		0.204	0.512	1.4				2.088	0.0	0.0	0.00	2.92	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	3.4	0.0	0.0	0.00	46.6	0.00E+00			Redundant to C10
KS12	300mK Thermal Control Heater	FCU	P12	2	1				100	0.00E+00	0.1700			1	H04138	BRASS	9.5		0.09	0.032	1.24	0.09	0.032	1.24	9.5				2.088	0.0	0.0	0.00	19.64	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	20.3	0.0	0.0	0.00	79.7	0.00E+00			Redundant to C10
KS12	Spectrometer Stimulus Heater 4%	FCU	P12	4	0	12	4041	40	30	0.00E+00	0.1667			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.088	0.0	0.0	0.00	2.92	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	3.4	0.0	0.0	0.00	26.6	0.00E+00			Redundant to C10
KS12	Spectrometer Stimulus Heater 2%	FCU	P12	4	0				30	0.00E+00	0.1700			1	H04030	BRASS	1.4		0	0.204	0.512		0.204	0.512	1.4				2.088	0.0	0.0	0.00	2.92	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	3.4	0.0	0.0	0.00	26.6	0.00E+00			Redundant to C10
KS12	FPU Thermometry A	FCU	P12	44	11				1000	0.00E+00	0.3300			11	H04138	SST	113.6		1.254	0	10.582	0.114		0.962	113.6				2.088	0.0	0.0	0.00	237.20	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	237.7	0.0	0.0	0.00	762.3	0.00E+00			Redundant to C10
KS12	FPU Faraday Shield Link	FCU	P24	1	0				50	0.00E+00	0.0000			1	H01030	BRASS	1.4		0	0.051	0.128		0.051	0.128	1.4				2.088	0.0	0.0	0.00	2.92	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	3.4	0.0	0.0	0.00	46.6	0.00E+00			Redundant to C10
KS12	FPU Thermometry B	FCU	P24	12	3				1000	0.00E+00	0.3300			3	H04138	SST	113.6		0.342	0	2.886	0.114		0.962	113.6				2.088	0.0	0.0	0.00	237.20	0.25				1.799	0.0	0.0	0.0	0.455	0.0	0.0	0.0	237.7	0.0	0.0	0.00	762.3	0.00E+00			Redundant to C10
				81	15																																													
	Sum Bundle 12																		**1.686**	**1.103**	**17.396**																									**0.00E+00**			
KS13	FPU Thermometry C	FCU	P22	12	3				1000	0.00E+00	0.3300			3	H04138	SST	113.6		0.342	0	2.886	0.114		0.962	113.6				2.183	0.0	0.0	0.00	247.99	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	248.5	0.0	0.0	0.00	751.5	0.00E+00			Redundant to C11
KS13	BSM Chop/Jiggle Sensors	FCU	P26	4	2				1000	0.00E+00	0.3300			2	H02138	SST	113.6		0.176	0	1.542	0.088		0.771	113.6				2.183	0.0	0.0	0.00	247.99	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	248.5	0.0	0.0	0.00	751.5	0.00E+00			Redundant to C11
KS13	BSM Chop/Jiggle Sensors	FCU	P26	6	2				1000	0.00E+00	0.3300			2	H03138	BRASS	9.5		0.168	0.048	2.202	0.084	0.024	1.101	9.5				2.183	0.0	0.0	0.00	20.74	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	21.3	0.0	0.0	0.00	978.7	0.00E+00			Redundant to C11
KS13	BSM Launch latch sense	FCU	P26	2	1				1000	0.00E+00	0.0000			1	H02138	SST	113.6		0.088	0	0.771	0.088		0.771	113.6				2.183	0.0	0.0	0.00	247.99	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	248.5	0.0	0.0	0.00	751.5	0.00E+00			Redundant to C11
KS13	BSM Launch latch solenoid	FCU	P26	2	1				10	0.00E+00	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	6.4	0.00E+00			Redundant to C11
KS13	BSM Chop motor drive	FCU	P26	4	1				10	0.00E+00	0.1700			1	H04130	BRASS	1.4		0.124	0.204	1.767	0.124	0.204	1.767	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	6.4	0.00E+00			Redundant to C11
KS13	BSM Jiggle motor drive	FCU	P26	4	1				10	0.00E+00	0.1700			1	H04130	BRASS	1.4		0.124	0.204	1.767	0.124	0.204	1.767	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	6.4	0.00E+00			Redundant to C11
KS13	SMEC LVDT Primary	FCU	P30	2	1				5	0.00E+00	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC LVDT Secondary	FCU	P29	4	2				50	0.00E+00	0.1700			2	H02130	BRASS	1.4		0.212	0.204	2.68	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	46.4	0.00E+00			Redundant to C11
KS13	SMEC Launch Latch1	FCU	P29	4	2	13	3900	38	5	0.00E+00	0.0000			2	H02130	BRASS	1.4		0.212	0.204	2.68	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC Launch Latch1 Confirm	FCU	P29	2	1				5	0.00E+00	0.0000			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC Launch Latch2	FCU	P29	4	2				5	0.00E+00	0.0000			2	H02130	BRASS	1.4		0.212	0.204	2.68	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC Launch Latch2 Confirm	FCU	P30	2	1				5	0.00E+00	0.0000			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC Drive Coil	FCU	P18	2	1				5	0.00E+00	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC Drive Coil (Red.)	FCU	P18	2	1				5	0.00E+00	0.1700			1	H02130	BRASS	1.4		0.106	0.102	1.34	0.106	0.102	1.34	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	1.4	0.00E+00			Redundant to C11
KS13	SMEC Drive coil voltage sensor	FCU	P18	2	1				500	0.00E+00	0.0000			1	H02138	BRASS	113.6		0.08	0.016	0.961	0.08	0.016	0.961	113.6				2.183	0.0	0.0	0.00	247.99	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	248.5	0.0	0.0	0.00	751.5	0.00E+00			Redundant to C11
KS13	SMEC Position sensor supplies	FCU	P18	4	2				100	0.00E+00	0.1700			2	H02138	BRASS	9.5		0.16	0.032	1.962	0.08	0.016	0.981	9.5				2.183	0.0	0.0	0.00	20.74	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	21.3	0.0	0.0	0.00	78.7	0.00E+00			Redundant to C11
KS13	SMEC Position sensor photodiodes	FCU	P18	6	3				1000	0.00E+00	0.1700			3	H02138	SST	113.6		0.264	0	2.313	0.088		0.771	113.6				2.183	0.0	0.0	0.00	247.99	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	248.5	0.0	0.0	0.00	751.5	0.00E+00			Redundant to C11
KS13	SMEC Position sensor photodiodes FB	FCU	P18	6	3				1000	0.00E+00	0.1700			3	H02138	SST	113.6		0.264	0	2.313	0.088		0.771	113.6				2.183	0.0	0.0	0.00	247.99	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	248.5	0.0	0.0	0.00	751.5	0.00E+00			Redundant to C11
KS13	P-Cal Heater	FCU	P14	4	1				10	0.00E+00	0.0200			1	H04130	BRASS	1.4		0.124	0.204	1.767	0.124	0.204	1.767	1.4				2.183	0.0	0.0	0.00	3.06	0.25				2.081	0.0	0.0	0.0	0.526	0.0	0.0	0.0	3.6	0.0	0.0	0.00	6.4	0.00E+00			Redundant to C11
				78	32																																													

| Designation | | | | | | | | | | | | Cable | | | | | | | | | | | |

8 Annex 5: HERSCHEL Cryo Harness wire and cables

(Data received from GORE)

HERSCHEL CRYO HARNESS WIRE AND CABLES

Ident. No.	Herschel Ident. No.	Conductor resistance (Ohm/m max.)	Electrical resistance shield (Ohm/m max.)	Capacitance cond.-cond. (pF/m max.)	Capacitance cond./shield (pF/m max.)	Weigth Cable (g/m max.)	Electrical resistance outside shield (triax cable) (Ohm/m max.)
GSC 05-82208-00 Rev.A	HO1038BO	7,71	----	----	----	0,24	----
GSC 05-82207-00 Rev.A	HO1030BO	1,4	----	----	----	0,71	----
GSC 05-82212-00 Rev.A	HO2038BO	8,4	----	36,4	----	0,49	----
GSC 05-82347-00 Rev.A	HO2038SO	109,2	----	29,7	----	0,4	----
GSC 05-82348-00 Rev.A	HO2030BO	1,37	----	42	----	1,43	----
GSC 05-82266-00	HO1238SS	107,5	7,5	shield/shield 159,3	66,3	7,1	6,7
GSC 05-82215-00	HO2130BS	1,4	7,7	53	84,7	3,5	----
GSC 05-82216-00	HO2138BS	7,91	10,1	28,7	51,2	2,04	----
GSC 05-82209-00	HO1038BS	108,4	----	----	----	0,2	----
GSC 05-82217-00	HO2138SS	110,2	11	33,6	53	1,74	----
GSC 05-82218-00	HO3138BS	7,5	9,5	27,4	47,7	2,48	----
GSC 05-82219-00	HO3138SS	108,8	10,9	22	38,2	2,15	----
GSC 05-82349-00	HO3130BS	1,4	7,2	46,7	74,9	4,3	----
GSC 05-82220-00	HO4030BO	1,37	----	43,6	----	2,77	----
GSC 05-82222-00	HO4038SO	113,6	----	30,8	----	0,8	----
GSC 05-82223-00	HO4138BS	7,53	8,87	28	45,4	2,78	----
GSC 05-82224-00	HO4138SS	109,8	9,77	30,3	50	2,3	----
GSC 05-82350-00	HO4130BS	1,4	6,5	46,5	71,7	5,5	----
GSC 05-82351-00	HO5138BS	7,6	8,1	30,7	49,2	3,2	----
GSC 05-82353-00	HO5130BS	1,35	6,13	46,9	72,9	6,18	----
GSC 05-82225-00	HO6130BS	1,4	5,5	46,9	71,1	7,6	----
GSC 05-82226-00	HO6138SS	109,7	8,47	25,5	44,2	3,28	----
GSC 05-82231-00 Rev.A	HO8138SS	110,8	7,9	30,4	48,1	3,7	----
GSC 05-82233-00	H11138SS	111,5	6,4	31,7	49,4	5,1	----
GSC 05-82238-00	H19138SS	109,8	5,7	32,7	54,4	6,48	----
GSC 05-82240-00	H24138SS	108,8	4,9	27	45,2	8,8	----
GSC 05-82250-00	H12-4031SS	110,8	5,3	31,1	39,9	6,57	----
GSC 05-82276-00	HO2-02138SS	110,2	7,4	26,9	43,7	2,7	----
GSC 05-82356-00	HO4-02138SS	109,8	6,3	28,6	47	3,6	----
GSC 05-82357-00	HO6-02138SS	110,3	4,92	34,2	47,6	5,32	----
GSC 05-82275-00	HO8-02138SS	111,9	4,95	33,9	47,6	6,14	----

HERSCHEL CRYO HARNESS WIRE AND CABLES

Ident. No.	Herschel Ident. No.	Conductor resistance (Ohm/m max.)	Electrical resistance shield (Ohm/m max.)	Capacitance cond.-cond. (pF/m max.)	Capacitance cond./shield (pF/m max.)	Weigth Cable (g/m max.)	Electrical resistance outside shield (triax cable) (Ohm/m max.)
GSC 05-82272-00	HO2-02130BS	1,4	4,7	43,2	64,7	5,9	----
GSC 05-82271-00	HO3-02130BS	1,4	4,5	44,2	65,8	7,8	----
GSC 05-82358-00	HO4-02130BS	1,37	4,1	46,7	67,9	9,25	----
GSC 05-82274-00	HO6-02130BS	1,4	3,3	44,1	59,6	14,4	----
GSC 05-82345-00	HO1226CC	0,1329	----	----	50	22,4	----
GSC 05-82360-00 Rev.A	HO2-020128	0,2088	----	----	----	14,7	----
GSC 05-82361-00	HO3-020128	----	----	----	----	----	----
SPL 10-26-N Rev.A	----	0,1417	----	----	----	1,76	----
SPL 20-24-N Rev.A	----	0,100	----	----	----	4,75	----
SPL 20-28-N Rev.A	----	0,1465	----	----	----	2,7	----
SPL 40-28-N	----	0,2083	----	----	----	5,37	----
SPL 11-28-N	----	0,2035	----	----	----	3,08	----
SPL 21-28-N Rev.A	----	0,21	----	----	----	5,48	----
SPL 31-28-N	----	0,2075	----	----	----	7,6	----
SPL 41-28-N Rev.A	----	0,2058	----	----	----	9,23	----
SPL 51-28-N Rev.A	----	0,2046	----	----	----	12,1	----
SPL 61-28-N	----	0,2102	----	----	----	13,5	----
SPL 71-28-N	----	0,2009	----	----	----	14,7	----
GSC 05-82227-00	HO6138BS	7,7	7,7	32,1	50,9	3,7	----
GSC 05-82352-00 Rev.B	H05138SS	109,6	9,22	24,4	42,3	3,14	----
GSC 05-82354-00	H11138BS	7,75	6,14	29,7	45,2	6,14	----
GSC 05-82355-00 triax cable	H01238BS	7,52	7,75	shield/shield 176,8	73,1	6,94	7,02
GSC 05-82625-00 Rev.A	H02238SS	110	11,4	37,5	55,5	3,5	7,86
GSC 05-82683-00 Rev.A	H02238BS	7,68	10,3	32,3	55	4,0	7,34
GSC 05-82597-00	--------	0,2142	--------	--------	-------	4,55	----
GSC 05-82598-00	--------	0,1126	--------	--------	-------	7,53	----
GSC 05-82599-00	--------	0,524	--------	--------	-------	26,8	----
GSC 05-82630-00	H12-4032SS	109,2	5,4	27	36,8	10,2	4,29

9 Annex 6: HERSCHEL Measured wire and cables data

(Data received from CASA)

MEASUREMENT EQUIPMENT HEWLETT PACKARD 4263A (LCR METER) Valid Calibration: 06-07-2005									
		max. Ohmic resist. (ohm/m)		Capacitance max. (pf/m)				Inductance max. (uH/m)	
REF. GORE	REF.W.L.	cable core (GORE DATA)	Result	cond. to cond. (GORE DATA)	Result	cond. to sh. (GORE DATA)	Result	Cond. to cond. (GORE DATA)	Result
GSC-05-82207-00	HO1038SO	1.4							
GSC-05-82208-00	HO1038SO	7.71							
GSC-05-82209-00	HO1038BS	108.4							
GSC-05-82212-00	HO2038SO	8.4		36.4					
GSC-05-82215-00	HO2138BS	1.4	1.347	53	47.8	84.7	80.7		2.1
GSC-05-82216-00	HO2138BS	7.91	7.86	28.7	24.98	51.2	48.55		2.71
GSC-05-82217-00	HO2138SS	110.2	107.8	33.6	28.47	53	46.9		2.8
GSC-05-82218-00	HO3138BS	7.5	1.36	27.4	26.08	47.7	45.39		2.3
GSC-05-82219-00	HO3138SS	108.8	108.7	22	24.22	38.2	45.32		2.95
GSC-05-82220-00	HO4038SO	1.37	.	43.6		70			
GSC-05-82222-00	HO4038SO	113.6		30.8					
GSC-05-82223-00	HO4138BS	7.53	7.52	28	24.54	45.4	44.08		2.23
GSC-05-82224-00	HO4138SS	109.8	107.66	30.3	29.4	50	49.2		2.7
GSC-05-82225-00	HO6138BS	1.4	1.351	46.9	32.6	71.1	64.87		2
GSC-05-82226-00	HO6138SS	109.7	107.54	25.5	24.34	44.2	75.55		2.37
GSC-05-82227-00	HO6138BS	7.7		32.1		50.9			
GSC-05-82231-00	HO8138SS	110.8	107.66	30.4	26.94	48.1	46.41		2.41
GSC-05-82233-00	H11138SS	111.5	107.97	31.7	28.4	49.4	47.67		2.07
GSC-05-82236-00	H16138SS	109.8	107.08	32.7	30.62	54.4	56.19		1.82
GSC-05-82240-00	H24138SS	108.8	109.01	27	24.37	45.2	48.52		2.67
GSC-05-82250-00	H12-4031S	110.8	109.01	31.1	21.54	39.9	48.92		2.07
GSC-05-82266-00	HO1238SS	107.5	106.32	shield/shield 159.3	shield/shield 146.6	66.3	cond/1st shield 84.7 cond/2nd shield 44.3		5.07
GSC-05-82271-00	HO3-0213SS	1.4	1.362	44.2	51.38	65.6	63.72		2.49
GSC-05-82272-00	HO2-0213SS	1.4	1.372	43.2	35.53	64.7	61.19		1.91
GSC-05-82274-00	HO4-0213SS	1.4	1.35	44.1	31.18	59.6	56.1		1.65
GSC-05-82275-00	HO4-0213BS	111.9	100.34	33.9	23.28	47.6	70.03		1.7
GSC-05-82276-00	HO2-0213BS	110.2	108.02	26.9	31.23	45.7	49.5		3.79
GSC-05-82345-00	HO12266C0	132.9 mOhm/m	140 mOhm/m		1st shield/2nd shield 538.7	80	cond/1st shield 49.5 cond/2nd shield 44.8		1.47
GSC-05-82347-00	HO2038SO	109.2		29.7					
GSC-05-82348-00	HO2038SO	1.37		42					
GSC-05-82349-00	HO-3138BS	1.4	1.348	46.7	43.37	74.9	71.8		2.62
GSC-05-82350-00	HO4138BS	1.4	1.348	46.5	41.03	71.7	68.95		2.26
GSC-05-82351-00	HO5138BS	7.5	7.43	30.7	28	49.2	44.6		2.46
GSC-05-82352-00	H05138SS	109.6	109.06	24.4	24.03	42.3	49.98		2.61
GSC-05-82353-00	HO5138BS	1.35	1.348	46.9	42.4	72.9	67.43		2.21
GSC-05-82354-00	H11138BS	7.75		29.7		45.2			
GSC 05-82355-00 tmax cable	H01238BS	7.52		shield/shield 176.8		73.1			
GSC-05-82356-00	HO4-0213BS	109.8	108.45	28.6	24.75	47	46.96		2.44
GSC-05-82357-00	HO4-0213BS	110.3	109.06	34.2	28.8	47.6	54.14		2.92
GSC-05-82358-00	HO4-0213BS	1.37	1.37	46.7	35.6	67.9	62.01		1.64
GSC-05-82360-00	HO2-020128	206.9 mOhm/m	208.3 mOhm/m	42.6	35.5	70.5	71.4		1.7
GSC-05-82361-00	HO3-020128		213 mOhm/m	75.5	57.5	126.2	110.8		1.98
GSC 05-82597-00		214.2 mOhm/m		89		159.1			
GSC 05-82598-00		112.6 mOhm/m		86.5		159.7			
GSC 05-82599-00		52.4 mOhm/m		123.7		208.6			
GSC-05-82625-00	H02238SS	110	108	37.5	37.78	55.5	58.12		3.6
					shield/shield 219.18				
GSC-05-82630-00	H12-4032SS	109.2	105.3	27		36.8			1.38
GSC-05-82639-00			110		24.19		40.32		
					shield/shield 409.89		2 shields/cab 46.98		
GSC-05-82663-00	H02238BS	7.68	7.56	32.5	32.1	55	54.44		1.76
					shield/shield 227.98				
SPL 10-26-N Rev A		141.7 mOhm/m							
SPL 11-28-N		203.5 mOhm/m	204.18 mOhm/m			194.5	195.9		1.55
SPL 20-24-N Rev. A		100 mOhm/m		47.6					
SPL 20-28-N		222.7 mOhm/m	210	38.4					1.51
SPL 21-28-N		210 mOhm/m	209.17 mOhm/m	83.6	75.6	150.1	133.5		1.53
SPL 31-28-N		207.5 mOhm/m	210.41 mOhm/m	83.3	69	149.8	132.3		1.64
SPL 40-20-N			32.2 mOhm/m						1.33
SPL 40-28-N		208.3 mOhm/m	213 mOhm/m	38.4					1.44
SPL 41-28-N		205.8 mOhm/m	205 mOhm/m	79.2	72.7	143.6	126		1.6
SPL 51-28-N		204.6 mOhm/m	206.8 mOhm/m	85.9	54.1	123.8	121.6		1.62
SPL 61-28-N		210.2 mOhm/m	210.3 mOhm/m	69.7	56	123.6	110.6		1.58
SPL 71-28-N		200.9 mOhm/m	208.6 mOhm/m	69.5	47	121.3	110		1.56

END OF DOCUMENT

	Name	Dep./Comp.
	Alberti von Mathias Dr	SM 34
	Alo Hakan	OTN/LP 45
	Barlage Bernhard	ED 11
	Bayer Thomas	ED 541
	Faas Horst	EA 65
	Fehringer Alexander	SM 33
	Frey Albrecht	ED 422
	Gemer Willi	ED 11
	Grasl Andreas	OTN/EN 64
	Grasshoff Brigitte	ED 521
X	Hauser Armin	SM 31
	Hinger Jurgen	SM 31
	Hohn Rüdiger	ED 541
	Huber Johann	ED 543
X	Hund Walter	SE 76
X	Idler Siegmund	ED 432
	Iványi von András	ACE 32
X	Jahn Gerd Dr.	SM 31
	Kalde Clemens	ED 532
X	Kameter Rudolf	OTN/EN 64
	Kersting Stefan	OTN/EN 63
	Kettner Bernhard	SM 34
X	Knoblauch August	ED 531
	Koelle Markus	ED 523
X	Kroeker Jurgen	ED 65
	Kunz Oliver Dr.	SM 31
	Lamprecht Ernst	OTN/SM 222
X	Lang Jurgen	SE 76
	Langfermann Michael	ED 541
	Mack Paul	OTN/EN 64
	Muhl Eckhard	OTN/EN 64
X	Pastorino Michel	ASPI Resid.
	Peitzker Helmut	ED 65
	Peltz Heinz-Willi	SM 33
	Pietroboni Karin	ED 65
	Platzer Wilhelm	ED 23
	Puttlitz Joachim	OTN/EN 64
	Rebholz Reinhold	ED 541
	Reuß Friedheim	ED 62
X	Rühe Wolfgang	ED 65
	Runge Axel	OTN/EN 64
	Sachsse Bernt	ED 21
X	Schink Dietmar	ED 422
	Schlosser Christian	OTN/EN 64
	Schmidt Rudolf	ACE 32
	Schweickert Gunn	SM 34
	Stauss Oliver	SM 33
X	Steininger Eric	ED 422

	Name	Dep./Comp.
X	Stritter Rene	ED 11
	Tenhaeff Dieter	SM 34
	Thörmer Klaus-Horst Dr.	OTN/ED 65
X	Wagner Klaus	SM 31
X	Wietbrock, Walter	ED 521
	Wöhler Hans	SM 34
X	Alcatel	ASP
	ESA/ESTEC	ESA
	Instruments:	
	MPE (PACS)	MPE
	RAL (SPIRE)	RAL
	SRON (HIFI)	SRON
	Subcontractors:	
	Air Liquide, Space Department	AIR
	Air Liquide, Space Department	AIRS
	Air Liquide, Orbital System	AIRT
	Alcatel Bell Space	ABSP
	Astrium Sub-Subsyst. & Equipment	ASSE
	Austrian Aerospace	AAE
	Austrian Aerospace	AAEM
	APCO Technologies S. A.	APCO
	Bieri Engineering B. V.	BIER
	BOC Edwards	BOCE
	Dutch Space Solar Arrays	DSSA
X	EADS CASA Espacio	CASA
	EADS CASA Espacio	ECAS
	EADS Space Transportation	ASIP
	Eurocopter	ECD
	HTS AG Zurich	HTSZ
	Linde	LIND
	Patria New Technologies Oy	PANT
	Phoenix, Volkmarsen	PHOE
	Prototech AS	PROT
	QMC Instruments Ltd.	QMC
	Rembe, Brilon	REMB
	SENER Ingeniena SA	SEN
	Stöhr, Königsbrunn	STOE
	Rosemount Aerospace GmbH	ROSE
	RYMSA, Radiación y Microondas S.A.	RYM