

DOCUMENT COMPOSITION

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Doc. Reference	: H-P-4-NXH-RP-0022 A1
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TITLE

# H-P WU SPIRE Harness

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## 1 Scope

The purpose of this document is to provide a description of the SPIRE WU harness of the Herschel S/C.

## 2 Introduction

The WU belonging to the SPIRE Experiment (DPU, FCU and DCU) are located on the -Z panel SPIRE. Also the CCU is located on this panel.

The SPIRE Panel harness is configured taking into account the different interconnection requirements of the experiment and harness design responsibility. The harness is split into 3 different main groups:

1. SVM Harness
2. Instrument WU Harness
3. Cryo Harness

The routing accommodation foreseen to have separate routing paths for each of the above harnesses as well as for main and redundant functions.

The instrument WU Harness is defined taking into account the harness data provided by Instruments as well as SVM and CRYO Harness Design in order to verify the relevant accommodation in the SVM configuration.

Additional details/drawings on the harness accommodation are reported in this document.

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### 3 Applicable Documents

#### 3.1 Applicable documents

<b>Number</b>	<b>Issue</b>	<b>Title</b>
H-P-1-ASPI-SP-0027	4.2	General Design Interface Requirement Specification
H-P-1-ASPI-SP-0042	4.0	SVM Interface Specification
H-P-RP-AI-0025	1.0	SVM Harness Configuration and Design Description

#### 3.2 ALS Baseline Documents

<b>Number</b>	<b>Issue</b>	<b>Title</b>
H-P-IC-AI-0001	04	Herschel/Planck SVM MICD
H-P-LI-AI-0022	05	List of HP SVM 3D CAD models
SPIRE-RAL-PRJ-000608	01	Herschel Spire Harness Definition
Sap-SPIRE-Cca-0106-03	0.1	DRCU Warm Harness Description

#### 3.3 CATIA Harness Directory Status : SPIRE

<b>ALS Part Nr.</b>	<b>Rev.</b>	<b>Description</b>	<b>Resp.</b>	<b>Date</b>
HP-112301-22-1	A	-Z LATERAL PANEL HRN ELT ASSY (SPIRE)	HRN_	07.11.03
HP-112302-22-1	N/A	-Z LATERAL PANEL HRN MECH ASSY (SPIRE)	HRN_	N/A
HP-392001-22-1	E	-Z LATERAL PANEL HRN ELT ASSY (SPIRE)	HRN_	02.04.04
HP-392002-22-1	N/A	-Z LATERAL PANEL HRN MECH ASSY (SPIRE)	HRN_	N/A

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## 4 Document Organisation

### 4.1 General Information : Drawings

Every Drawing contains all relevant information with reference to the H-P SPIRE Harness derived from the MICD (Mech. Interface Control Doc.) and the and other data provided by instruments, such as :

Power, Signal and Sensitive Routing  
Nominal & Redundant routing  
Mil Bus lay-out  
WIU Harness lay-out  
Mechanical Items lay-out  
Mechanical Items identification

Colour codes used are

<b>Colour</b>	<b>Class</b>	<b>Comment</b>
Colour 30 (Dark Red)	1-/POWER	SVM Primary Power
Colour 04 (Light Blue)	2-/SIGNAL	SVM Signal
Colour 45 (Dark Green)	4-/SENS	SVM Sensitive Harness
Colour 75 (Dark Yellow)	2-/Signal	Mil Bus Harness
Colour 02 (Light Red)	1-/PWR	WIH Secondary Power
Colour 120 (Dark Blue)	2-/Signal	WIH Secondary Signal
Colour 111 (Dark Green)	N/A	Tie-base
Colour 05 (Yellow)	N/A	For Information Only

### 4.2 2D Drawing Numbering System

Each 2D Drawing is identified by H-P-NXH-DW-XXXX

<b>Part</b>	<b>Field</b>
H-P	Herschel-Planck
NXH	Nexans Harnesses
DW	Drawing
X (first of XXXX)	1 for Herschel 2 for Planck
X (second of XXXX)	0 for General Panel Information 1 for Power (Nom and Red) 2 for Signal (Nom and Red) 4 for Sensitive (Nom/Red/Red2) 9 for MIL BUS (DMS/ACMS-NOM/RED)
XX (last two of XXXX)	00 General Structure XX Panel number in ref. with H-P-LI-AI-0022 iss.5

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### 4.3 2D JIG Numbering System

Each 2D JIG Drawing is identified by H-P-NXH-DR-XXXX

<b>Part</b>	<b>Field</b>
H-P	Herschel-Planck
NXH	Nexans Harnesses
DR	Drawing
X (first of XXXX)	1 for Herschel 2 for Planck
X (second of XXXX)	0 for General Panel Information 1 for Power (Nom and Red) 2 for Signal (Nom and Red) 4 for Sensitive (Nom/Red/Red2) 9 for MIL BUS (DMS/ACMS-NOM/RED)
XX (last two of XXXX)	00 General Structure XX Panel number in ref. with H-P-LI-AI-0022 iss.5

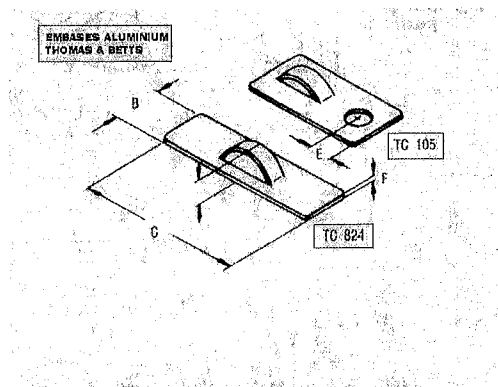


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## 5 Harness Fixing

### 5.1 Tie-bases

The position of the tie-bases has been designed to meet the requirement to fix the harness bundles on the structure every 100mm maximum. Tiebase type used is TC-105 (Thomas & Betts). Tie-wraps sizes used, are function of bundle diameter and in accordance to the applicable process list.



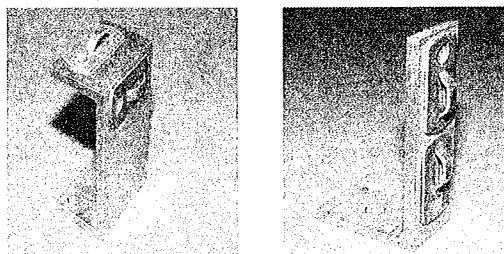
Tie-bases will be glued on the spacecraft structure and will assure harness fixation as well as electrical bonding.

### 5.2 Stand-off's

To maintain wire-bundles routing and minimize mechanical stress in harness, specific stand-off have been designed, which will be glued on the spacecraft structure.

The stand off designs are well approved at Kayser-Threde and will be modified to the purpose of the SVM Harness. (Pictures below)

Tie-bases will be glued to the stand-off's to allow cable fixation by using fasteners tie-wraps.



We assume 2 types of stand off will be necessary.

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## 6 2D Drawing Listing

### 6.1 SPIRE 2D Drawing Listing

<i>Document Ref.</i>	<i>Document Title</i>	<i>Date</i>	<i>Issue</i>
H-P-NXH-DW-1022	SPIRE Instrument Panel Assy	30-03-04	A1

### 6.2 SPIRE JIG Drawing Listing

<i>Document Ref.</i>	<i>Document Title</i>	<i>Date</i>	<i>Issue</i>
H-P-NXH-DR-1022	SPIRE Instrument Panel Assy	24-03-04	A1

### 6.3 SPIRE 2D Drawings

See Annex

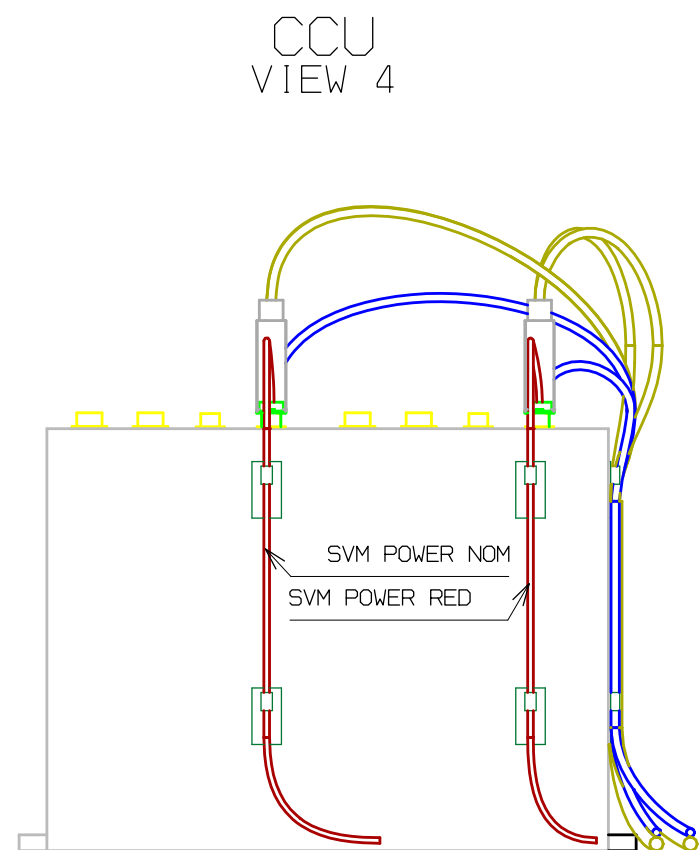
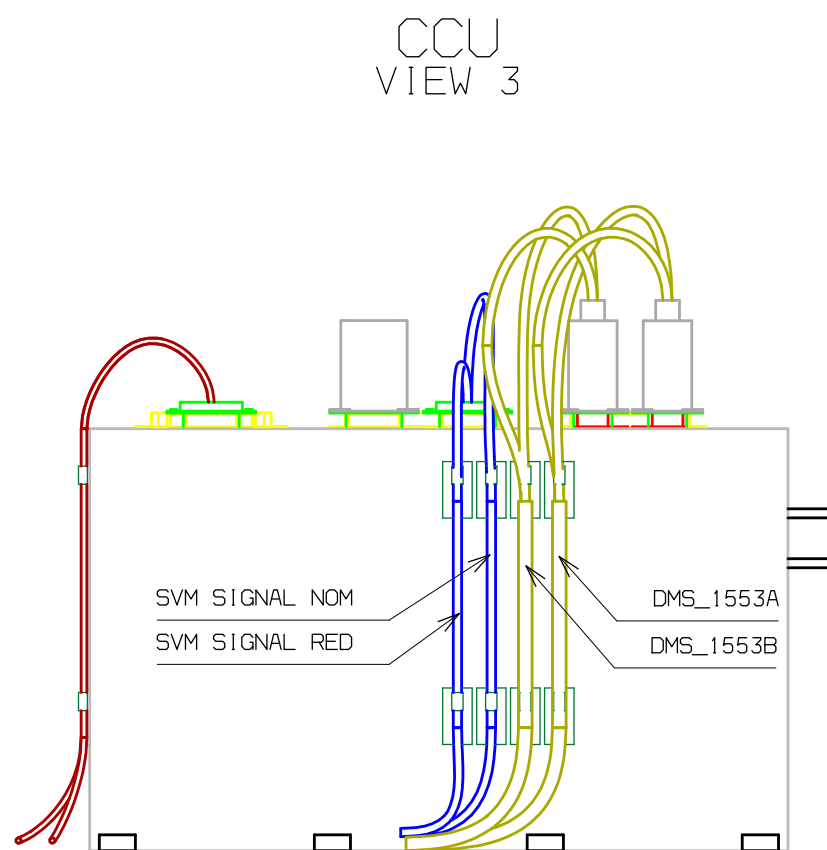
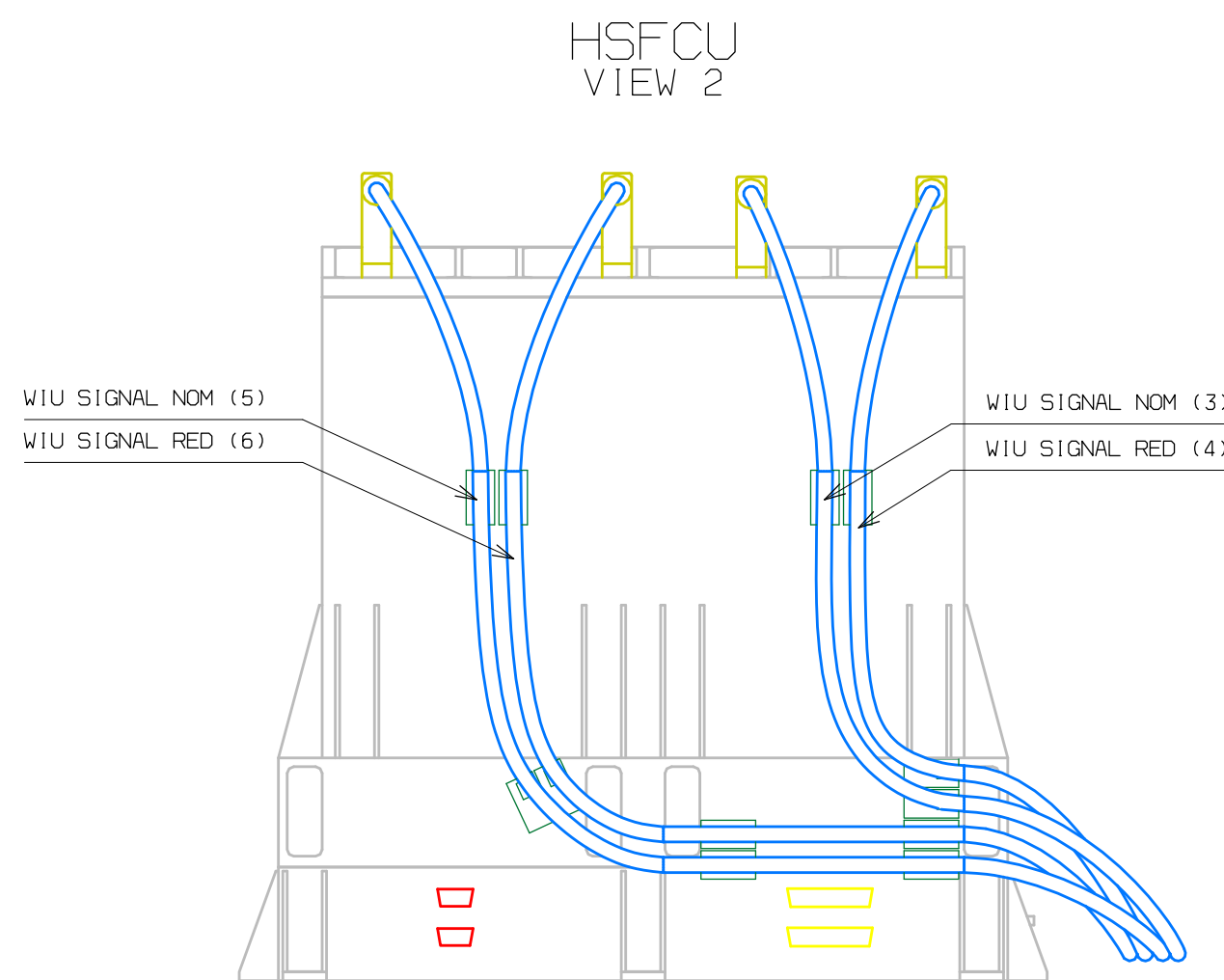
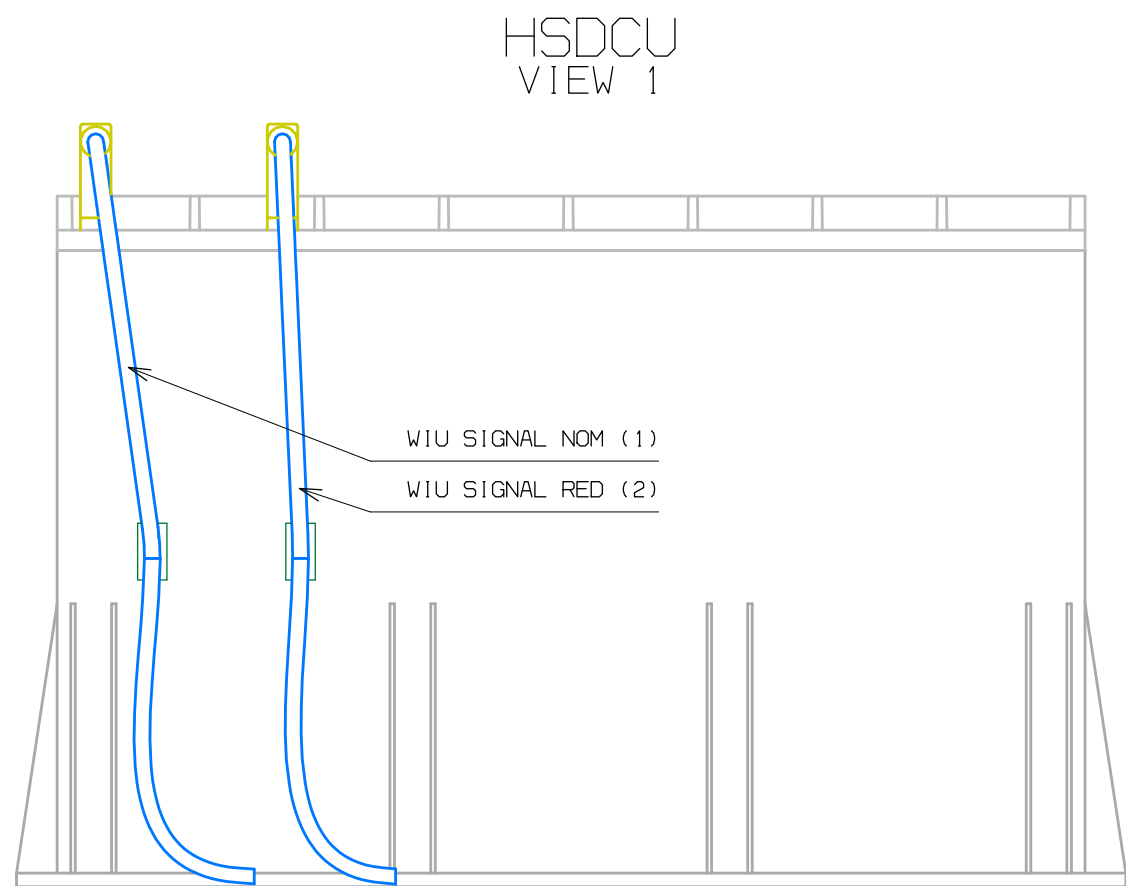
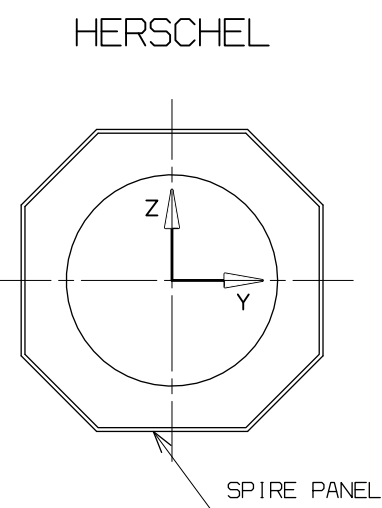
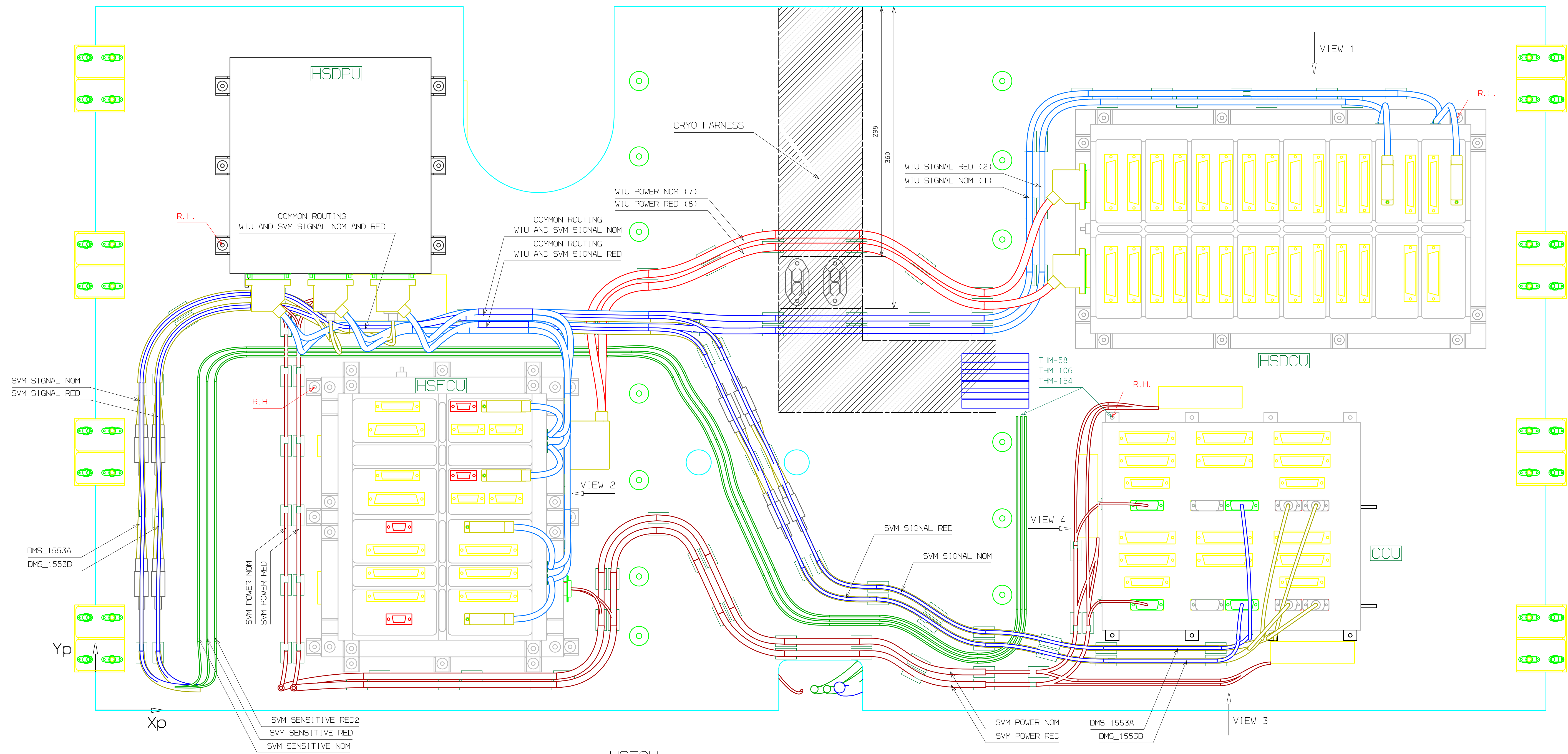
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## 7 SPIRE Extracted Lengths

Bundle		From Connector		To Connector		Bundle									Sq. (*3)
Identification	Identification	Con Type	Bck Type	Identification	Con Type	Bck Type	Nom / Red	Category	Diam. (mm)	Bending Radius	Mass BNL (g/m)	Conn.+Bck (g)	L Max (mm)	L (mm)	
W1	HSDCU P01	DBMA 25P	557-E-113	HSDPU P07	DBMA 25S	557-102 (*1)	Nominal	2	6	30	34,2		2000	2120	2
W2	HSDCU P02	DBMA 25P	557-E-113	HSDPU P10	DBMA 25S	557-103 (*1)	Redundant	2	6	30	34,2		2000	2093	2
W3	HSFCU P03	DBMA 25P	557-E-113	HSDPU P09	DBMA 25S	557-102 (*1)	Nominal	2	6	30	34,2		2000	817	2
W4	HSFCU P04	DBMA 25P	557-E-113	HSDPU P12	DBMA 25S	557-103 (*1)	Redondant	2	6	30	34,2		2000	806	2
W5	HSFCU P01	DBMA 25P	557-E-113	HSDPU P08	DBMA 25S	557-102 (*1)	Nominal	2	6	30	34,2		2000	1037	2
W6	HSFCU P02	DBMA 25P	557-E-113	HSDPU P11	DBMA 25S	557-103 (*1)	Redundant	2	6	30	34,2		2000	1028	2
W7	HSDCU P03	DBMA 25S	557-102 (*2)	HSFCU P07	DBMA 25P	550-E-039	Nominal	1	8	40	136,29		2000	913	1
W8	HSDCU P04	DBMA 25S	557-102 (*2)	HSFCU P08	DBMA 25P	550-E-039	Redundant	1	8	40	136,29		2000	825	1

Note : These lengths are CATIA extracted and therefore theoretical values. It is recommended to perform harness production activities on JIG.  
Lengths are measured from connector front face to connector front face.  
(\*1) In CATIA model bck type 557-B-113 is represented which is interchangeable with both bck types 557-102 and 557-103.  
(\*2) In contradiction with document SPIRE-RAL-PRJ-000608 iss.: 1.0 we have chosen to use 557-102 (\*1) (45° entry bck) instead of 557-E-039 (end entry bck) for routing reasons.  
(\*3) This table indicates the sequence in which the different cables must be integrated.

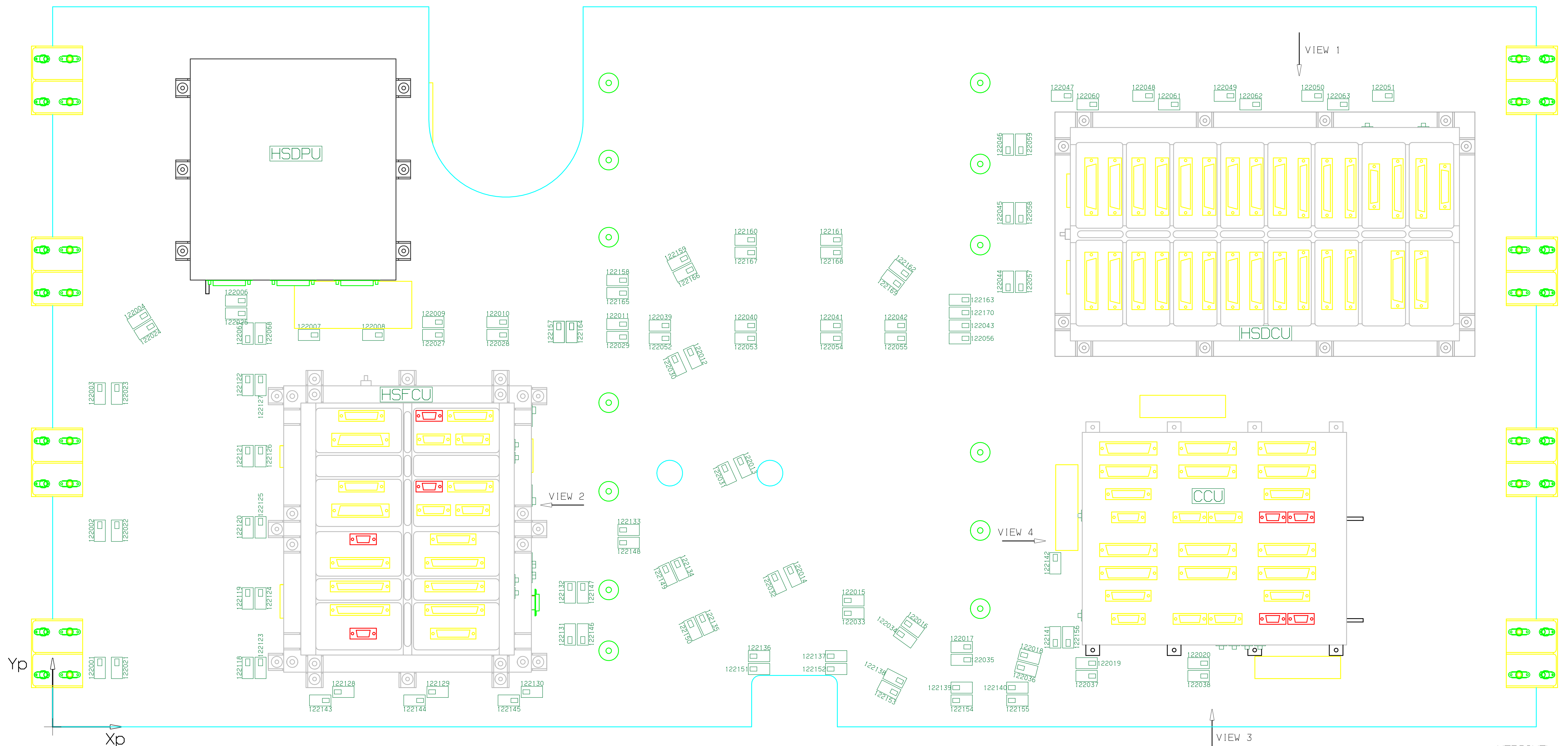
ORTHOGNAL VIEW FROM INSIDE S/C



NOTE: (1) Bundle id: W1 \*  
(2) Bundle id: W2 \*  
(3) Bundle id: W3 \*  
(4) Bundle id: W4 \*  
(5) Bundle id: W5 \*  
(6) Bundle id: W6 \*  
(7) Bundle id: W7 \*  
(8) Bundle id: W8 \*  
\* In reference with H-P-4-NXH-RP-0022 iss. A0

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DWG N°				
HP-NXH-DW-1022				

ORTHOGNAL VIEW FROM INSIDE S/C

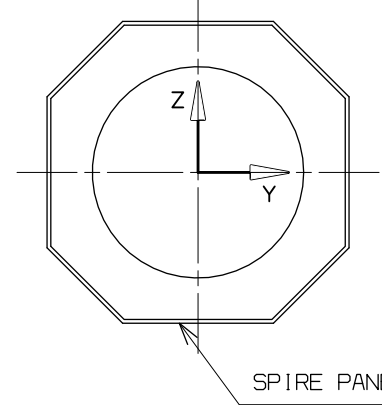
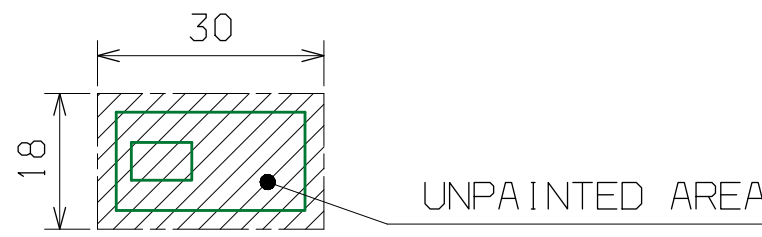


HSDCU  
VIEW 1

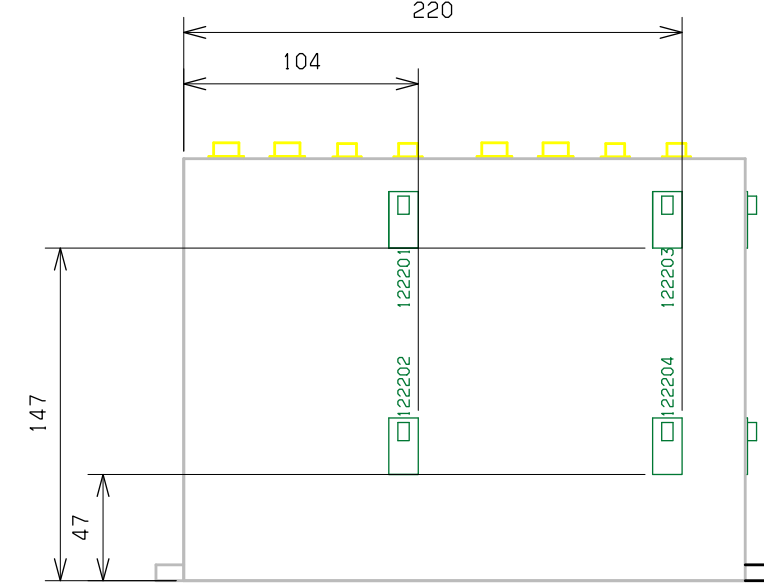
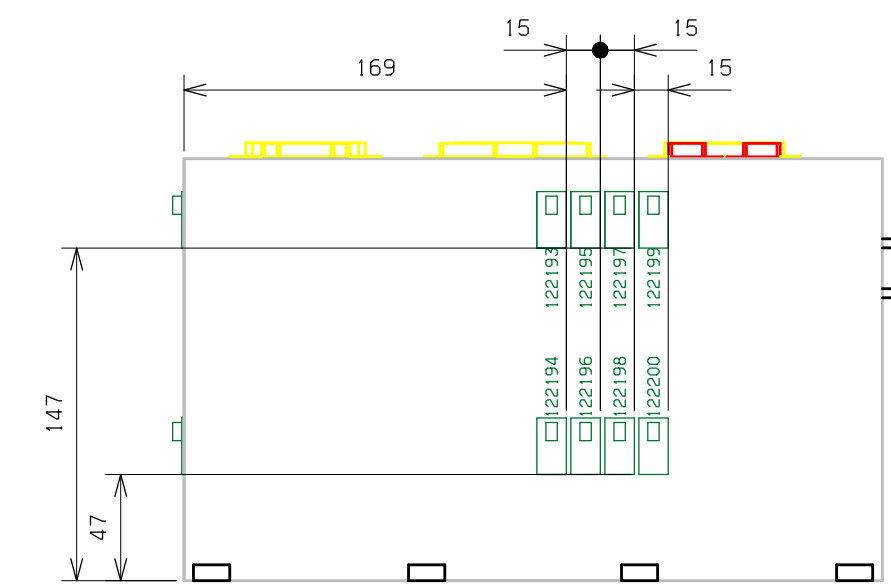
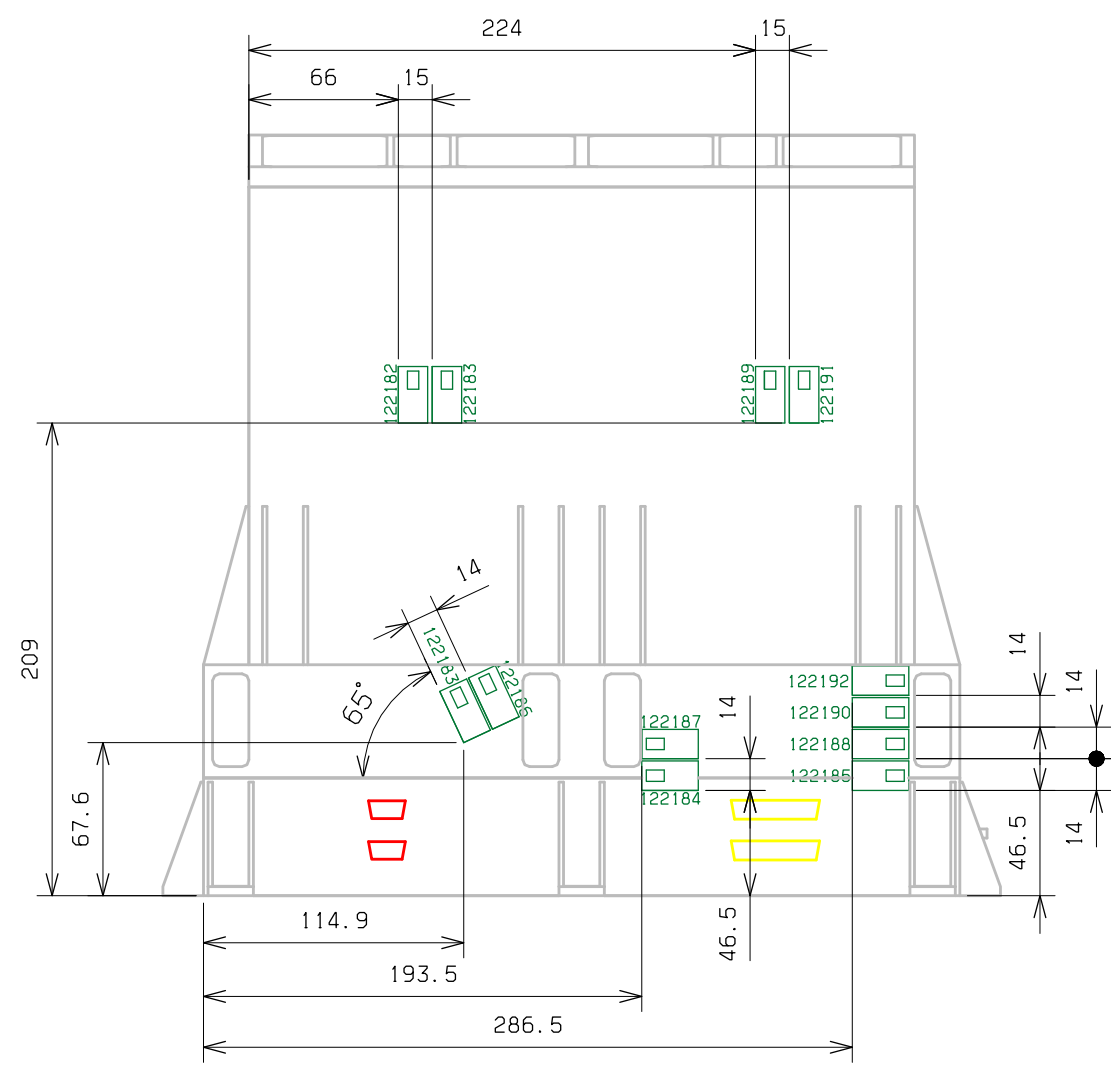
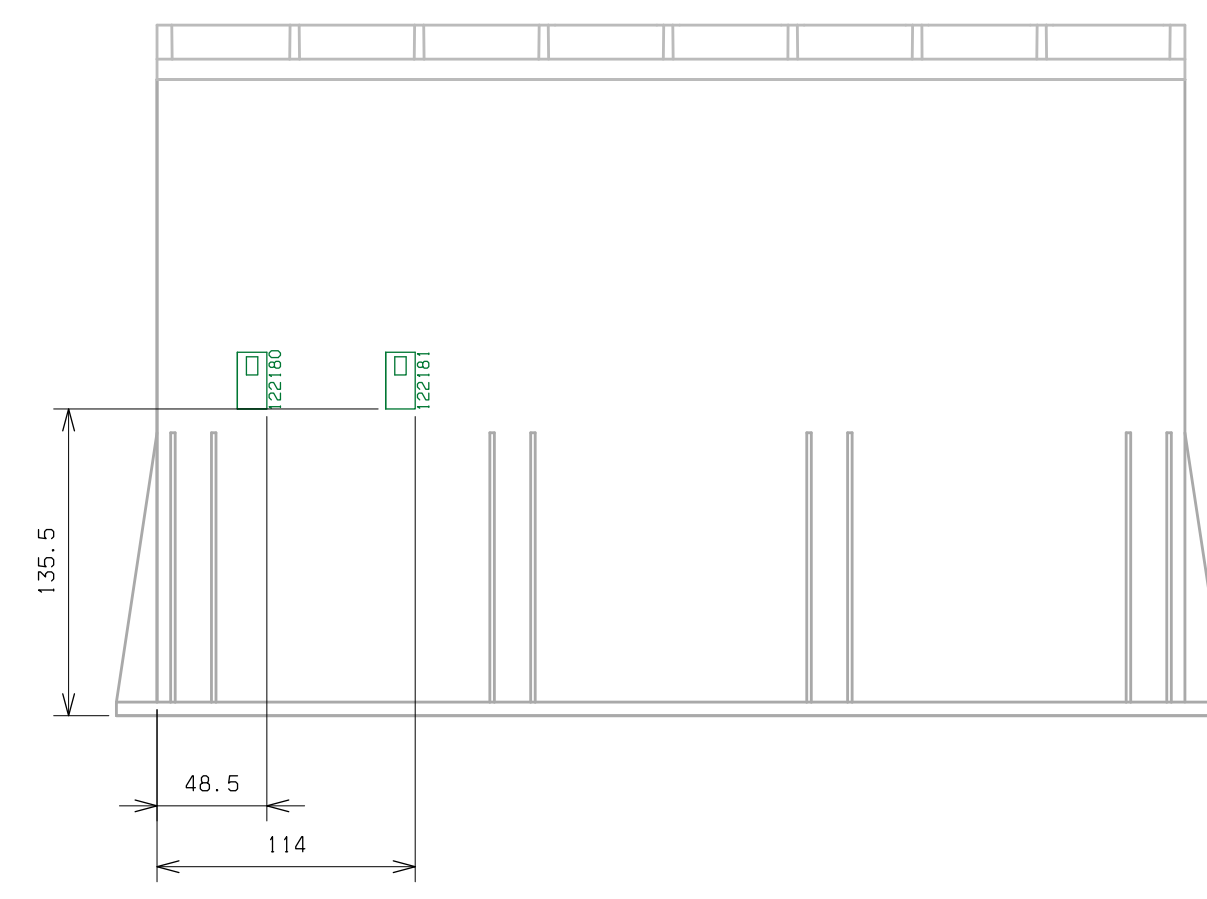
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VIEW 2

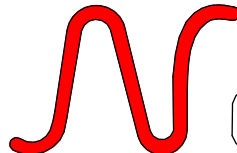
CCU  
VIEW 3

CCU  
VIEW 4



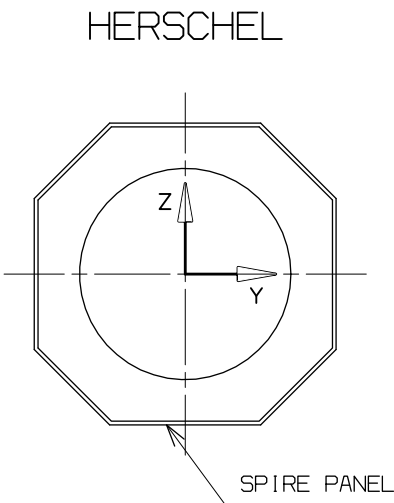
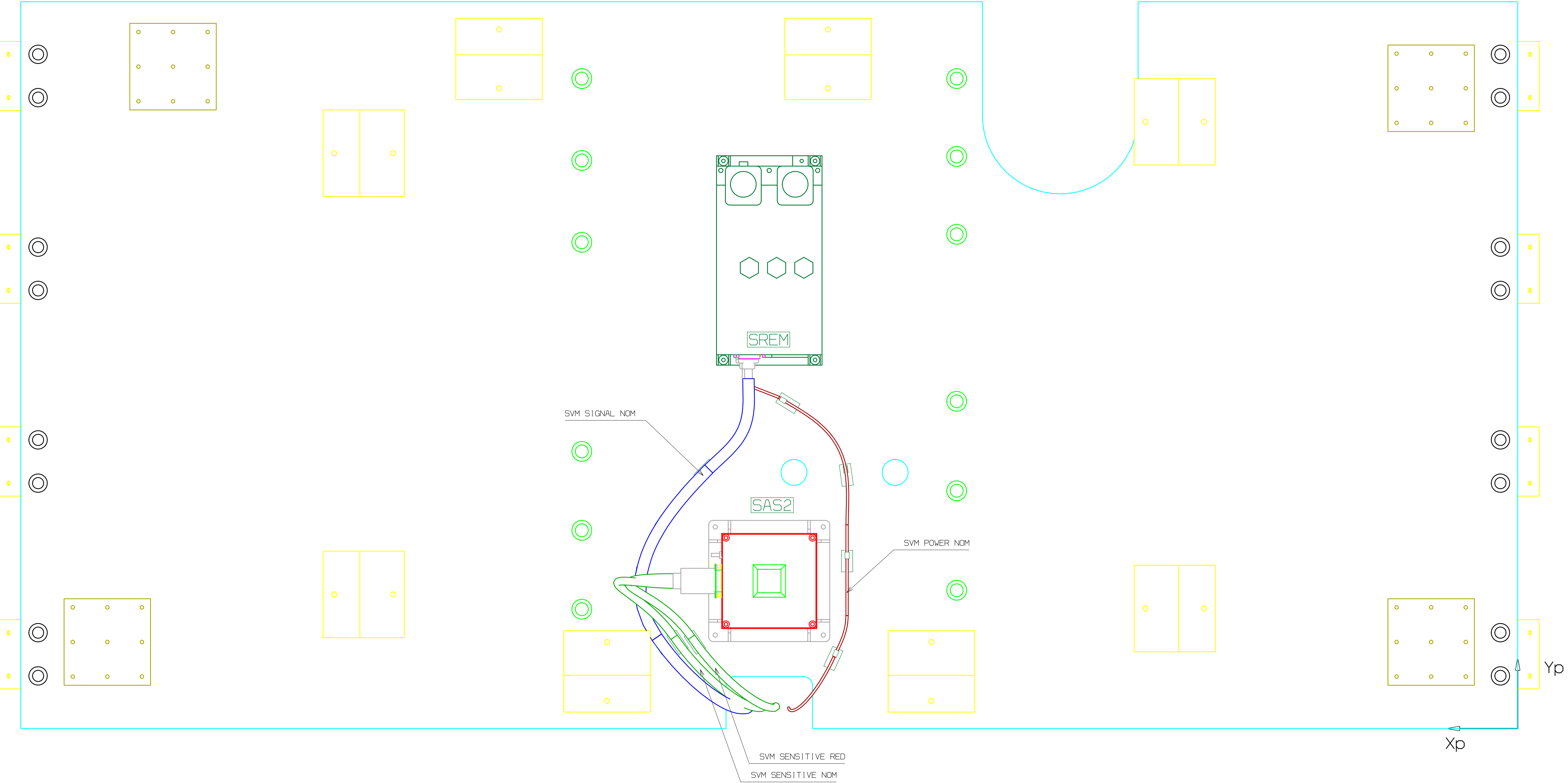
HERSCHEL




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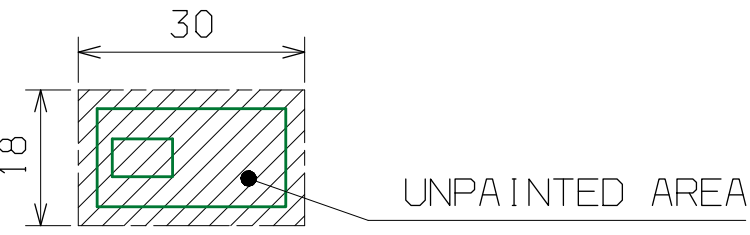
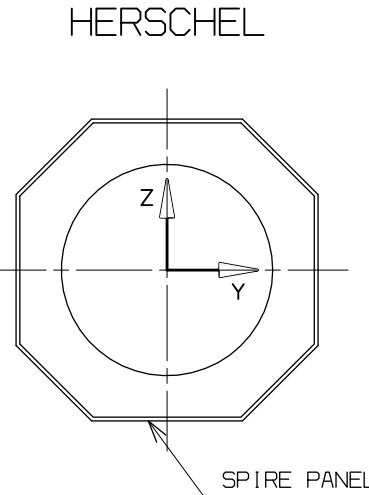
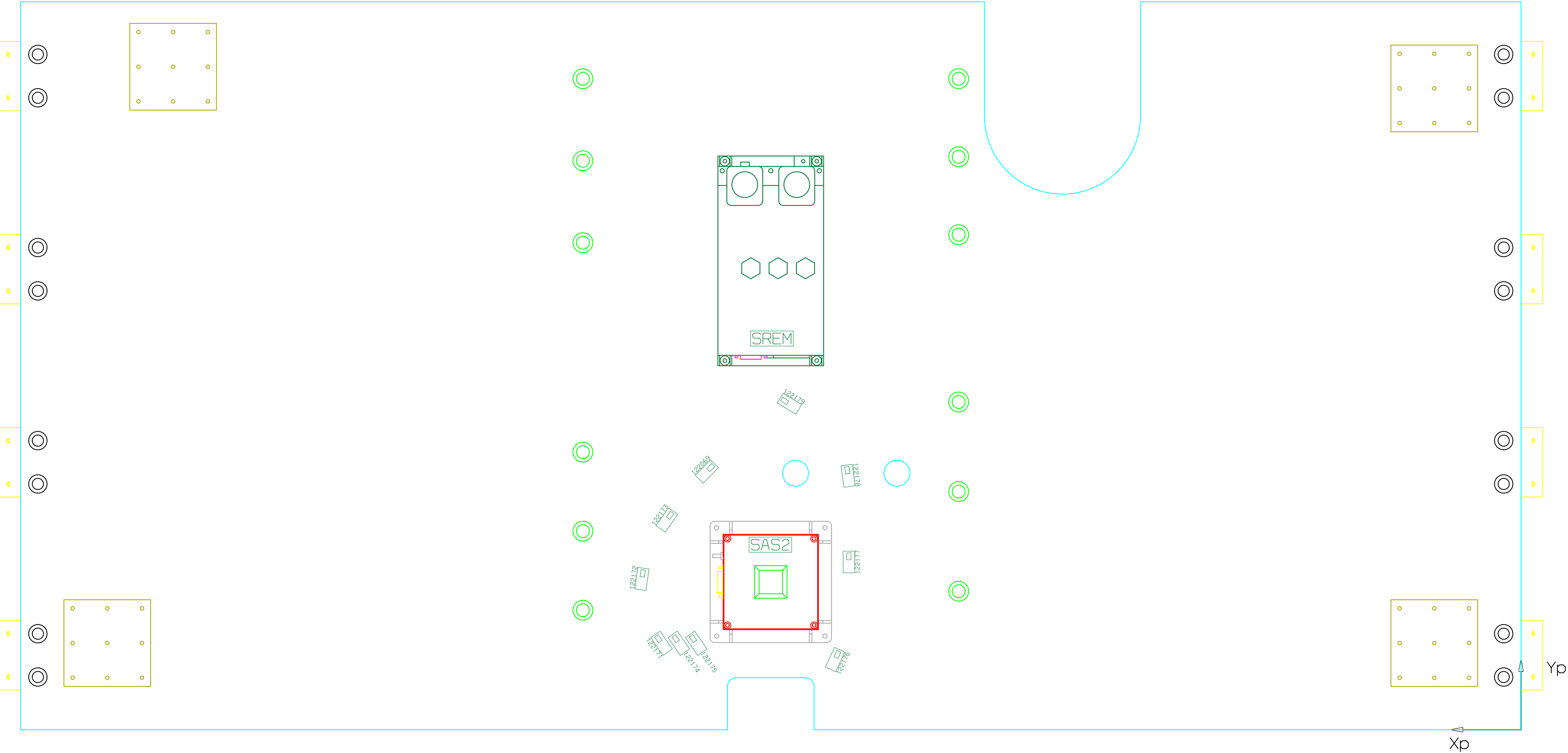



ORTHOGNAL VIEW FROM OUTSIDE S/C

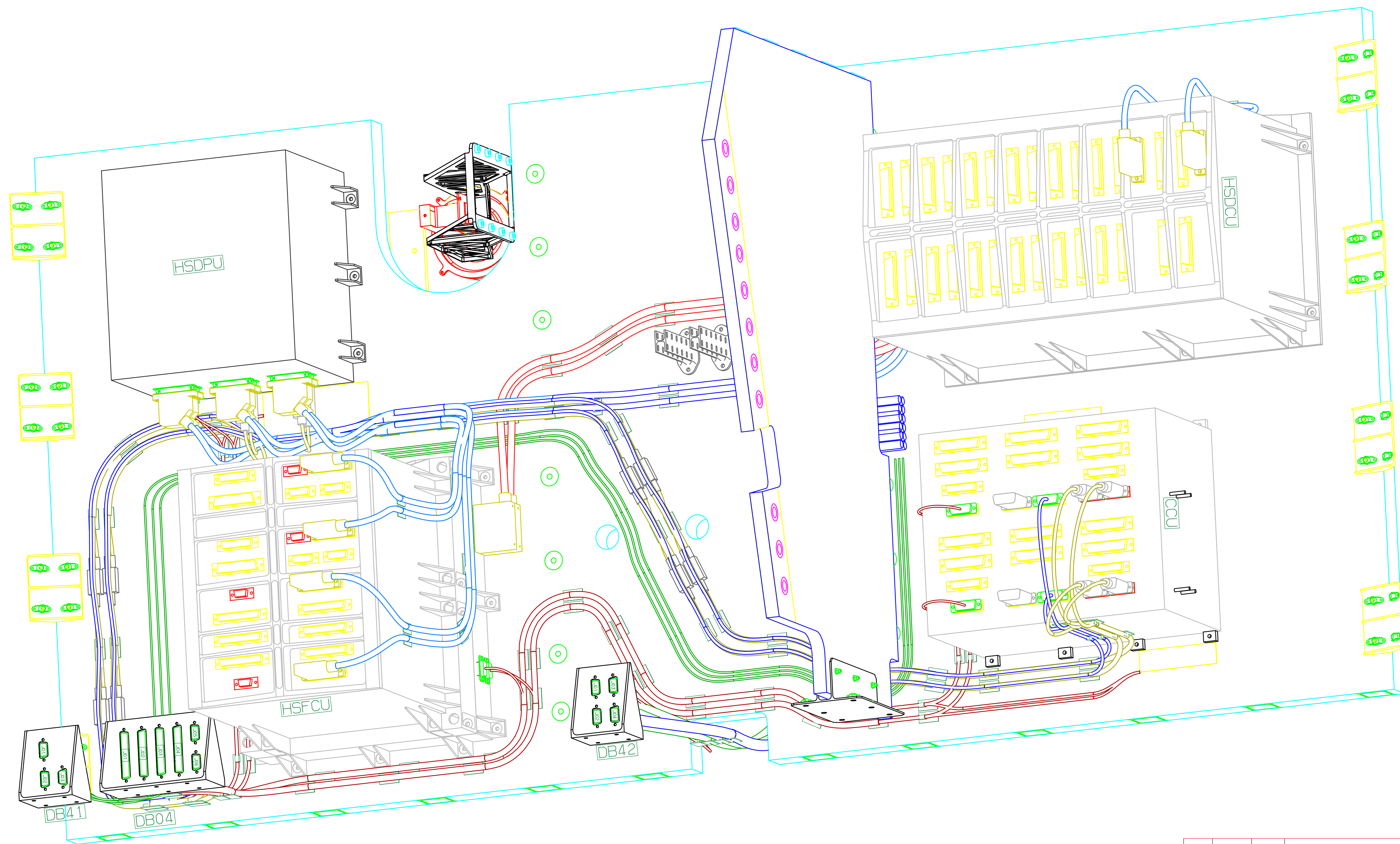



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			DWG N° HP-NXH-DW-1022			

ORTHOGNAL VIEW FROM OUTSIDE S/C



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