

STEREO *IMPACT*

Harness Specification

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Version D – 2001-Sep-26

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Document Revision Record

Rev.	Date	Description of Change	Approved By
A	2001-Mar-16	Preliminary Draft	-
B	2001-Mar-20	<ul style="list-style-type: none"> • Add harness responsibilities • Add details of spacecraft harness • Minor fixes 	-
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D	2001-Sep-26	<ul style="list-style-type: none"> • Move SEPT and SIT actuator connector from SEP Central • Change IDPU-J2 to two twinax • Split STE into STE-U, STE-D • Add SEP mating connector info in sections 3.5 to 3.10 • Add SEP subsystem connector pinouts in sections 4.5.2 to 4.10.1 • Change SEP S/C thermal con. type/size 	
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1. Introduction

This specification describes the harnesses between the various parts of the IMPACT instrument suite, as well as the interface connectors to the spacecraft. The spec covers the connector types and pinouts as well as the harness wiring details.

1.1. *Document Conventions*

In this document, **TBD** (To Be Determined) means that no data currently exists. A value followed by **TBR** (To Be Resolved) means that this value is preliminary. In either case, the value is typically followed by a code such as UCB indicating who is responsible for providing the data, and a unique reference number.

1.2. *Applicable Documents*

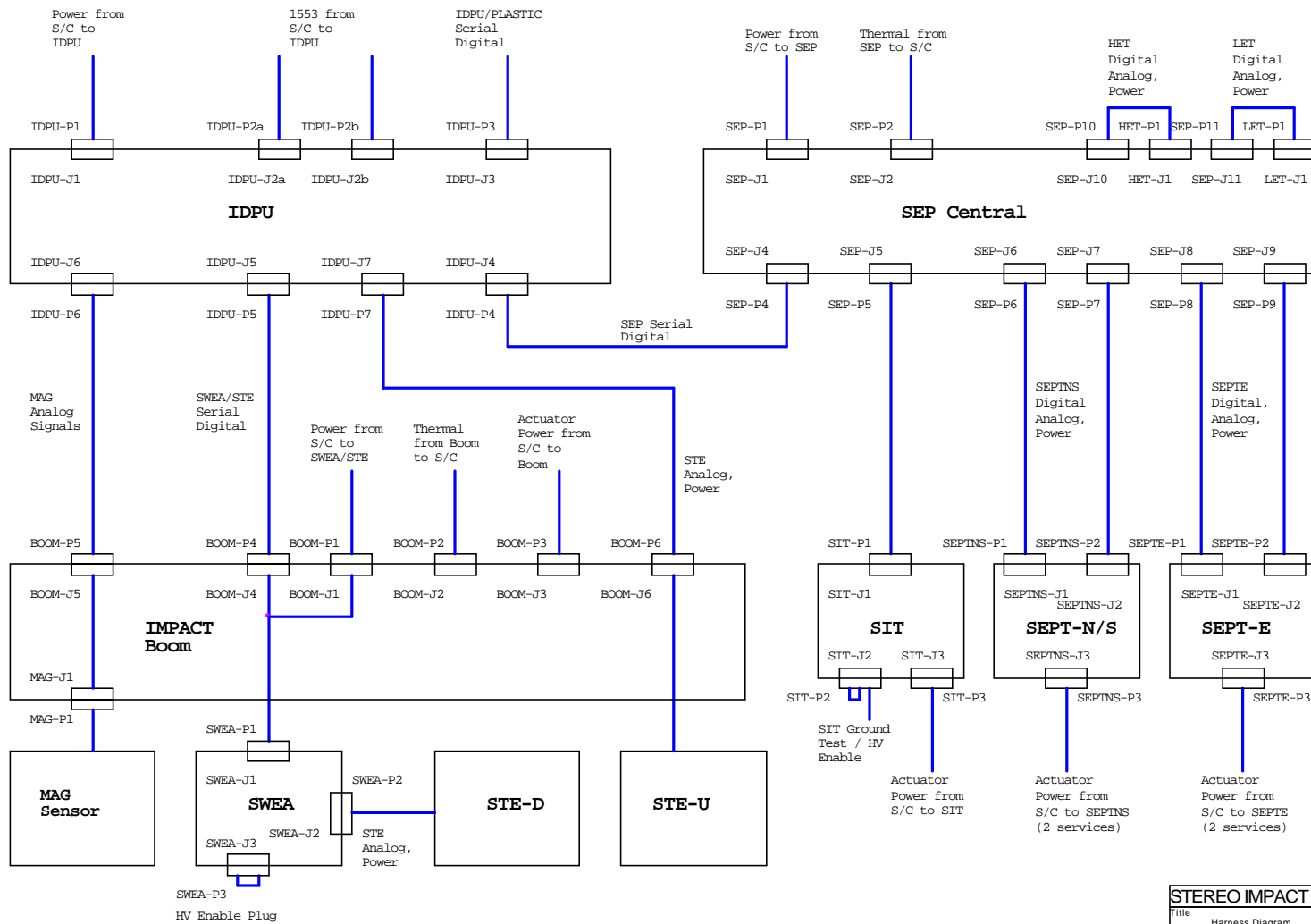
The following documents include drawings and STEREO Project policies. All documents and drawings can be found on the Berkeley STEREO/IMPACT FTP site:

<http://sprg.ssl.berkeley.edu/impact/dwc/>

1. ICD/**TBD-UCB-000** (IMPACT/Spacecraft ICD)
2. ICD/Impact Serial Interface

2. Harness Figure

Figure 2-1 is a schematic of the STEREO IMPACT harness indicating the connector designations, where they are, and what they connect to.



STEREO IMPACT		University of California Space Science Lab
Title: Harness Diagram		
Size: B	Document Number: IMPACT_HARNESS	Rev: D
Date: Monday, September 24, 2001 Sheet 1 of 1		

Figure 2-1 - IMPACT Harness Schematic

3. Connector Types

The instrument harness connectors are described below. "D" connectors are standard density, "HD" are High Density D-type Connectors. "MDM" are MDM D connectors. Note that these are the HARNESS connectors, not the box connectors. Harness connectors are designated by the box they attach to (such as IPC), followed by -Pn (where n is the connector number on that box), while box connectors designators are identical except they are followed by -Jn.

3.1. IDPU Connectors

Name	Use	Type	Part Number	Mating Connector
IDPU-P1	IDPU Power from Spacecraft	D15S	TBD-APL001	Positronic SND15M1000G
IDPU-P2a	1553 A Interface from Spacecraft	Twinax	TBD-APL001	Sabritec 015100-5001
IDPU-P2b	1553 B Interface from Spacecraft	Twinax	TBD-APL001	Sabritec 015100-5001
IDPU-P3	IDPU to PLASTIC Interface	HD15S	Positronic SDD15F1000G	Positronic SDD15M1000G
IDPU-P4	IDPU to SEP Interface	HD15S	Positronic SDD15F1000G	Positronic SDD15M1000G
IDPU-P5	IDPU to SWEA/STE Interface	HD15S	Positronic SDD15F1000G	Positronic SDD15M1000G
IDPU-P6	IDPU to MAG Interface	HD15P	Positronic SDD15M1000G	TBD-MAG-001
IDPU-P7	IDPU to STE-U Interface	HD26P	Positronic SDD26M1000G	Positronic SDD26F1000G

3.2. Boom Connectors

Name	Use	Type	Part Number	Mating Connector
BOOM-P1	SWEA/STE Power from Spacecraft	D15S	TBD-APL001	Positronic SND15M1000G
BOOM-P2	Temp Sensor Interface to Spacecraft	D9P	TBD-APL001	Positronic SND9F1000G
BOOM-P3	Boom Actuator Power from Spacecraft	D9S	TBD-APL001	Positronic SND9M1000G
BOOM-P4	IDPU to SWEA/STE Interface	HD15P	Positronic SDD15M1000G	Positronic SDD15F1000G
BOOM-P5	IDPU to MAG Interface	HD15S	Positronic SDD15F1000G	Positronic SDD15M1000G
BOOM-P6	IDPU to STE-U Interface	HD26S	Positronic SDD26F1000G	Positronic SDD26M1000G

3.3. SWEA Connectors

Name	Use	Type	Part Number	Mating Connector
SWEA-P1	SWEA/STE Interface (Signal+Power+Temp)	HD15S	Positronic SDD15F1000G	Positronic SDD15M1000G
SWEA-P2	SWEA to STE Interface (pigtail on STE)	HD26P	Positronic SDD26M1000G	Positronic SDD26F1000G
SWEA-P3	Enable Plug	HD15P	Positronic SDD15M1000G	Positronic SDD15F1000G

3.4. MAG Connector

Name	Use	Type	Part Number	Mating Connector
MAG-P1	MAG Sensor Pigtail Connector	HD15P	TBD-MAG001	TBD-UCB001

3.5. SEP Connectors

Name	Use	Type	Part Number	Mating Connector
SEP-P1	SEP Power from Spacecraft	D15S	TBD-APL001	TBD-SEP001
SEP-P2	SEP Temp Sensor Interface to Spacecraft	HD15S	TBD-APL001	TBD-SEP001
SEP-P4	IDPU to SEP Interface	HD15P	Positronic SDD15M1000G	TBD-SEP-001
SEP-P5	SEP to SIT Interface	MDM51P	TBD-SEP-001	MDM-51SCBRP- A30
SEP-P6	SEP to SEPT-NS Bias Interface	SSMC	TBD-SEP-001	TBD-SEP-001
SEP-P7	SEP to SEPT-NS Dig/Ana/Pwr Interface	MDM25P	TBD-SEP-001	MDM-25SCBRP- A30
SEP-P8	SEP to SEPT-E Bias Interface	SSMC	TBD-SEP-001	TBD-SEP-001
SEP-P9	SEP to SEPT-E Dig/Ana/Pwr Interface	MDM25P	TBD-SEP-001	MDM-25SCBRP- A30
SEP-P10	SEP to HET Interface	MDM37P	TBD-SEP-001	MDM-37SCBRP- A30
SEP-P11	SEP to LET Interface	MDM37P	TBD-SEP-001	MDM-37SCBRP- A30

3.6. SEPT-E Connectors

Name	Use	Type	Part Number	Mating Connector
SEPT-E-P1	SEP to SEPT-E Bias Interface	SSMC	TBD-SEP-001	SSMC
SEPT-E-P2	SEP to SEPT-E Dig/Ana/Pwr Interface	MDM25S	TBD-SEP-001	MDM-25PCBRP-A30
SEPT-E-P3	Spacecraft to SEPT-E Actuator Power	D9S	TBD-APL-001	TBD-SEPT-001

3.7. SEPT-NS Connectors

Name	Use	Type	Part Number	Mating Connector
SEPT-NS-P1	SEP to SEPT-NS Bias Interface	SSMC	TBD-SEP-001	SSMC
SEPT-NS-P2	SEP to SEPT-NS Dig/Ana/Pwr Interface	MDM25S	TBD-SEP-001	MDM-25PCBRP-A30
SEPT-NS-P3	Spacecraft to SEPT-NS Actuator Power	D9S	TBD-APL-001	TBD-SEP-001

3.8. SIT Connectors

Name	Use	Type	Part Number	Mating Connector
SIT-P1	SEP to SIT Interface	MDM51S	TBD-SEP-001	MDM-51PCBRP-A30
SIT-P2	SIT HV Disable Plug / Test Interface	TBD-SIT-002	TBD-SEP-001	TBD-SEP-001
SIT-P3	Spacecraft to SIT Actuator Power	D9S	TBD-APL-001	TBD-SEP-001

3.9. HET Connector

Name	Use	Type	Part Number	Mating Connector
HET-P1	SEP to HET Interface	MDM37S	TBD-SEP-001	MDM-37PCBRP-A30

3.10. LET Connector

Name	Use	Type	Part Number	Mating Connector
LET-P1	SEP to LET Interface	MDM37S	TBD-SEP-001	MDM-37PCBRP-A30

4. Connector Pinouts

In the following tables:

- TSPN is a twisted-shielded pair with shield not connected (at this end).
- TSPS is a twisted shielded pair with shield terminated on the connector backshell.
- **TSP is a twisted shielded pair with the shield connected to a pin.**
- TP is a twisted pair, no shield or jacket (just two wires twisted together).
- **TT is a twisted triple**
- **T5 is a twisted 5-wire group**
- TSQ is a twisted shielded quad (shield terminated at backshell)
- Coax is an RG178 (**TBR-UCB-002**) coax
- TA is 77 ohm twinax used for the 1553 harness, type M17/176-00002

All harnesses will have a common over-shield connected to chassis ground at both ends except where otherwise noted.

4.1. IDPU Connectors

4.1.1. IDPU-P1 (IDPU Power)

Pin	Signal	Destination	Harness
1	Spare		
2	+28V Primary	Spacecraft	#22 TSQ w/3,10,11
3	+28V Redundant	Spacecraft	#22 TSQ w/2,10,11
4	Spare		
5	+28V Heater Primary	Spacecraft	#22 TSQ w/6,13,14
6	+28V Heater Redundant	Spacecraft	#22 TSQ w/5,13,14
7	Spare		
8	Chassis (connected in IDPU to IDPU chassis)	Spacecraft	Overshield
9	Spare		
10	+28V Return Primary	Spacecraft	#22 TSQ w/2,3,11
11	+28V Return Redundant	Spacecraft	#22 TSQ w/2,3,10
12	Spare		
13	+28V Heater Return Primary	Spacecraft	#22 TSQ w/5,6,14
14	+28V Heater Return Redundant	Spacecraft	#22 TSQ w/5,6,13
15	Spare		

4.1.2. IDPU-J2 (1553 Interface to Spacecraft)

IDPU-J2a

Pin	Signal	Destination	Harness
1	1553_A_P	Spacecraft	TA-blue
2	1553_A_N (Inner shield)	Spacecraft	TA-white
3	Outer Shield	Spacecraft	TA-Shield

IDPU-J2b

Pin	Signal	Destination	Harness
1	1553_B_P	Spacecraft	TA-blue
2	1553_B_N (Inner shield)	Spacecraft	TA-white
3	Outer Shield	Spacecraft	TA-Shield

4.1.3. IDPU-P3 (IDPU to PLASTIC)

Pin	Signal	Destination	Harness
1	CLK	TBD-UNH-002	Coax w/2
2	CLK-RET	TBD-UNH-002	Coax Shield w/1
3	Spare		
4	Spare		
5	Spare		
6	CMD	TBD-UNH-002	Coax w/7
7	CMD-RET	TBD-UNH-002	Coax Shield w/6
8	Spare		
9	Spare		
10	Spare		
11	TLM	TBD-UNH-002	Coax w/12
12	TLM-RET	TBD-UNH-002	Coax Shield w/11
13	Spare		
14	Spare		
15	Chassis (connected in IDPU to IDPU chassis)	TBD-UNH-002	Overshield & Backshell

4.1.4. IDPU-P4 (IDPU to SEP)

Pin	Signal	Destination	Harness
1	CLK	SEP-P4 pin 1	Coax w/2
2	CLK-RET	SEP-P4 pin 2	Coax Shield w/1
3	Spare		
4	Spare		
5	Spare		
6	CMD	SEP-P4 pin 6	Coax w/7
7	CMD-RET	SEP-P4 pin 7	Coax Shield w/6
8	Spare		
9	Spare		
10	Spare		
11	TLM	SEP-P4 pin 11	Coax w/12
12	TLM-RET	SEP-P4 pin 12	Coax Shield w/11
13	Spare		
14	Spare		
15	Chassis (connected in IDPU to IDPU chassis)	SEP-P4 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.1.5. IDPU-P5 (IDPU to SWEA/STE)

Pin	Signal	Destination	Harness
1	CLK	BOOM-P4 pin 1	Coax w/2
2	CLK-RET	BOOM-P4 pin 2	Coax Shield w/1
3	Spare		
4	Spare		
5	Spare		
6	CMD	BOOM-P4 pin 6	Coax w/7
7	CMD-RET	BOOM-P4 pin 7	Coax Shield w/6
8	Spare		
9	Spare		
10	Spare		
11	TLM	BOOM-P4 pin 11	Coax w/12
12	TLM-RET	BOOM-P4 pin 12	Coax Shield w/11
13	Spare		
14	Spare		
15	Chassis (connected in IDPU to IDPU chassis)	BOOM-P4 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.1.6. IDPU-P6 (IDPU to MAG)

Pin	Signal	Destination	Harness
1	XYZ Drive	BOOM-P5 pin 1	Coax w/6
2	X Sensor Sig	BOOM-P5 pin 2	Coax w/7
3	Y Sensor Sig	BOOM-P5 pin 3	Coax w/8
4	Z Sensor Sig	BOOM-P5 pin 4	Coax w/9
5	MAG Temp Sensor	BOOM-P5 pin 5	Coax w/10
6	XYZ Drive RET	BOOM-P5 pin 6	Coax Shield w/1
7	X Sensor Sig RET	BOOM-P5 pin 7	Coax Shield w/2
8	Y Sensor Sig RET	BOOM-P5 pin 8	Coax Shield w/3
9	Z Sensor Sig RET	BOOM-P5 pin 9	Coax Shield w/4
10	MAG Temp Sensor RET	BOOM-P5 pin 10	Coax Shield w/5
11	MAG Heater	BOOM-P5 pin 11	#26 TSP w/12
12	MAG Heater RET	BOOM-P5 pin 12	#26 TSP w/11
13	MAG Heater Shield	BOOM-P5 pin 13	#26 TSP Shield
14	Spare		
15	Chassis (connected in IDPU to IDPU chassis)	BOOM-P5 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.1.7. IDPU-P7 (IDPU to STE-U)

Pin	Signal	Destination	Harness
1	OUTPUT1	BOOM-P6 pin 1	Coax w/2
2	OUTPUT RET	BOOM-P6 pin 2	Coax Shield w/1
3	OUTPUT2	BOOM-P6 pin 3	Coax w/4
4	OUTPUT RET	BOOM-P6 pin 4	Coax Shield w/3
5	OUTPUT3	BOOM-P6 pin 5	Coax w/6
6	OUTPUT RET	BOOM-P6 pin 6	Coax Shield w/5
7	OUTPUT4	BOOM-P6 pin 7	Coax w/8
8	OUTPUT RET	BOOM-P6 pin 8	Coax Shield w/7
9	Spare		
10	Test RET	BOOM-P6 pin 10	Coax Shield w/11
11	Test	BOOM-P6 pin 11	Coax w/10
12	Ground	BOOM-P6 pin 12	#26 TT w/13,14
13	+5V	BOOM-P6 pin 13	#26 TT w/12,14
14	-5V	BOOM-P6 pin 14	#26 TT w/12,13
15	Bias	BOOM-P6 pin 15	#26
16	-12V (TBR-UCB-004)	BOOM-P6 pin 16	#26
17	Spare		
18	Spare		
19	Door Close Act.	BOOM-P6 pin 19	#26 TT w/20,21
20	Door Open Act.	BOOM-P6 pin 20	#26 TT w/19,21
21	Door Act. RET	BOOM-P6 pin 21	#26 TT w/19,20
22	+28V Heater	BOOM-P6 pin 22	#26 TP w/23
23	+28V Heater RET	BOOM-P6 pin 23	#26 TP w/22
24	STE Temp	BOOM-P6 pin 24	#26 TP w/25
25	STE Temp RET	BOOM-P6 pin 25	#26 TP w/24
26	Chassis (connected in IDPU to IDPU chassis)	BOOM-P6 pin 26	Overshield & Backshell

(Note: This is a 1:1 harness)

4.2. Boom Connectors

4.2.1. BOOM-P1 (SWEA/STE Power)

Pin	Signal	Destination	Harness
1	Spare		
2	+28V Primary	Spacecraft	#22 TSQ w/3,10,11
3	+28V Redundant	Spacecraft	#22 TSQ w/2,10,11
4	Spare		
5	+28V Heater Primary	Spacecraft	#22 TSQ w/6,13,14
6	+28V Heater Redundant	Spacecraft	#22 TSQ w/5,13,14
7	Spare		
8	Chassis (connected in BOOM to BOOM chassis)	Spacecraft	Overshield
9	Spare		
10	+28V Return Primary	Spacecraft	#22 TSQ w/2,3,11
11	+28V Return Redundant	Spacecraft	#22 TSQ w/2,3,10
12	Spare		
13	+28V Heater Return Primary	Spacecraft	#22 TSQ w/5,6,14
14	+28V Heater Return Redundant	Spacecraft	#22 TSQ w/5,6,13
15	Spare		

4.2.2. BOOM-P2 (SWEA S/C Temp Sensor)

Pin	Signal	Destination	Harness
1	SWEA Temp Sensor	Spacecraft	
2	BOOM Temp Sensor	Spacecraft	
3	STE-U Temp Sensor	Spacecraft	
4	Spare		
5	Spare		
6	SWEA Temp Sensor RET	Spacecraft	
7	BOOM Temp Sensor RET	Spacecraft	
8	STE-U Temp Sensor RET	Spacecraft	
9	Chassis (connected in BOOM to BOOM chassis)	Spacecraft	Overshield & Backshell

4.2.3. BOOM-P3 (Boom Actuator Power)

Pin	Signal	Destination	Harness
1	BOOM Release	Spacecraft	#22 TSQ
2	BOOM Release	Spacecraft	#22 TSQ
3	Spare		
4	Spare		
5	Spare		
6	BOOM Release RET	Spacecraft	#22 TSQ
7	BOOM Release RET	Spacecraft	#22 TSQ
8	Spare		
9	Shield Ground (Connected in BOOM to BOOM chassis)	Spacecraft	#22 TSQ-Shield

4.2.4. BOOM-P4 (SWEA/STE to IDPU)

Pin	Signal	Destination	Harness
1	CLK	IDPU-P5 pin 1	Coax w/2
2	CLK-RET	IDPU-P5 pin 2	Coax Shield w/1
3	Spare		
4	Spare		
5	Spare		
6	CMD	IDPU-P5 pin 6	Coax w/7
7	CMD-RET	IDPU-P5 pin 7	Coax Shield w/6
8	Spare		
9	Spare		
10	Spare		
11	TLM	IDPU-P5 pin 11	Coax w/12
12	TLM-RET	IDPU-P5 pin 12	Coax Shield w/11
13	Spare		
14	Spare		
15	Chassis (connected in BOOM to BOOM chassis)	IDPU-P5 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.2.5. BOOM-P5 (IDPU to MAG)

Pin	Signal	Destination	Harness
1	XYZ Drive	IDPU-P6 pin 1	Coax w/6
2	X Sensor Sig	IDPU-P6 pin 2	Coax w/7
3	Y Sensor Sig	IDPU-P6 pin 3	Coax w/8
4	Z Sensor Sig	IDPU-P6 pin 4	Coax w/9
5	MAG Temp Sensor	IDPU-P6 pin 5	Coax w/10
6	XYZ Drive RET	IDPU-P6 pin 6	Coax Shield w/1
7	X Sensor Sig RET	IDPU-P6 pin 7	Coax Shield w/2
8	Y Sensor Sig RET	IDPU-P6 pin 8	Coax Shield w/3
9	Z Sensor Sig RET	IDPU-P6 pin 9	Coax Shield w/4
10	MAG Temp Sensor RET	IDPU-P6 pin 10	Coax Shield w/5
11	MAG Heater	IDPU-P6 pin 11	#26 TSP w/12
12	MAG Heater RET	IDPU-P6 pin 12	#26 TSP w/11
13	MAG Heater Shield	IDPU-P6 pin 13	#26 TSP Shield
14	Spare		
15	Chassis (connected in BOOM to BOOM chassis)	IDPU-P6 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.2.6. BOOM-P6 (IDPU to STE-U)

Pin	Signal	Destination	Harness
1	OUTPUT1	IDPU-P7 pin 1	Coax w/2
2	OUTPUT RET	IDPU-P7 pin 2	Coax Shield w/1
3	OUTPUT2	IDPU-P7 pin 3	Coax w/4
4	OUTPUT RET	IDPU-P7 pin 4	Coax Shield w/3
5	OUTPUT3	IDPU-P7 pin 5	Coax w/6
6	OUTPUT RET	IDPU-P7 pin 6	Coax Shield w/5
7	OUTPUT4	IDPU-P7 pin 7	Coax w/8
8	OUTPUT RET	IDPU-P7 pin 8	Coax Shield w/7
9	Spare		
10	Test RET	IDPU-P7 pin 10	Coax Shield w/11
11	Test	IDPU-P7 pin 11	Coax w/10
12	Ground	IDPU-P7 pin 12	#26 TT w/13,14
13	+5V	IDPU-P7 pin 13	#26 TT w/12,14
14	-5V	IDPU-P7 pin 14	#26 TT w/12,13
15	Bias	IDPU-P7 pin 15	#26
16	-12V (TBR-UCB-004)	IDPU-P7 pin 16	#26
17	Spare		
18	Spare		
19	Door Close Act.	IDPU-P7 pin 19	#26 TT w/20,21
20	Door Open Act.	IDPU-P7 pin 20	#26 TT w/19,21
21	Door Act. RET	IDPU-P7 pin 21	#26 TT w/19,20
22	+28V Heater	IDPU-P7 pin 22	#26 TP w/23
23	+28V Heater RET	IDPU-P7 pin 23	#26 TP w/22
24	STE Temp	IDPU-P7 pin 24	#26 TP w/25
25	STE Temp RET	IDPU-P7 pin 25	#26 TP w/24
26	Chassis (connected in IDPU to IDPU chassis)	IDPU-P7 pin 26	Overshield & Backshell

(Note: This is a 1:1 harness)

4.3. Internal Boom Harness

4.3.1. BOOM-J1 (SWEA/STE Power)

Pin	Signal	Destination	Harness
1	Spare		
2	+28V Primary	SWEA-P1 pin 9	#26 TP w/5
3	+28V Redundant	SWEA-P1 pin 9	#26 TP w/5
4	Spare		
5	+28V Heater Primary	SWEA-P1 pin 10	#26 TP w/2
6	+28V Heater Redundant	SWEA-P1 pin 10	#26 TP w/2
7	Spare		
8	Chassis (connected in BOOM to BOOM chassis)		Overshield
9	Spare		
10	+28V Return Primary	SWEA-P1 pin 13	#26 TP w/13
11	+28V Return Redundant	SWEA-P1 pin 13	#26 TP w/13
12	Spare		
13	+28V Heater Return Primary	SWEA-P1 pin 14	#26 TP w/10
14	+28V Heater Return Redundant	SWEA-P1 pin 14	#26 TP w/10
15	Spare		

Note primary and redundant power connected at BOOM-J1, with a single TP up the boom

4.3.2. BOOM-J2 (SWEA S/C Temp Sensor)

Pin	Signal	Destination	Harness
1	SWEA Temp Sensor	SWEA-P1 pin 4	#26 TP w/6
2	BOOM Temp Sensor	Boom	#26 TP w/7
3	STE-U Temp Sensor	STE-U	#26 TP w/8
4	Spare		
5	Spare		
6	SWEA Temp Sensor RET	SWEA-P1 pin 5	#26 TP w/1
7	BOOM Temp Sensor RET	Boom	#26 TP w/2
8	STE-U Temp Sensor	STE-U	#26 TP w/3
9	Chassis (connected in BOOM to BOOM chassis)	Boom Chassis	Overshield

4.3.3. BOOM-J4 (SWEA/STE to IDPU)

Pin	Signal	Destination	Harness
1	CLK	SWEA-P1 pin 1	Coax w/2
2	CLK-RET	SWEA-P1 pin 2	Coax Shield w/1
3	Spare		
4	Spare		
5	Spare		
6	CMD	SWEA-P1 pin 6	Coax w/7
7	CMD-RET	SWEA-P1 pin 7	Coax Shield w/6
8	Spare		
9	Spare		
10	Spare		
11	TLM	SWEA-P1 pin 11	Coax w/12
12	TLM-RET	SWEA-P1 pin 12	Coax Shield w/11
13	Spare		
14	Spare		
15	Chassis (connected in BOOM to BOOM chassis)	SWEA-P1 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.3.4. BOOM-J5 (IDPU to MAG)

Pin	Signal	Destination	Harness
1	XYZ Drive	MAG-J1 pin 1	Coax w/6
2	X Sensor Sig	MAG-J1 pin 2	Coax w/7
3	Y Sensor Sig	MAG-J1 pin 3	Coax w/8
4	Z Sensor Sig	MAG-J1 pin 4	Coax w/9
5	MAG Temp Sensor	MAG-J1 pin 5	Coax w/10
6	XYZ Drive RET	MAG-J1 pin 6	Coax Shield w/1
7	X Sensor Sig RET	MAG-J1 pin 7	Coax Shield w/2
8	Y Sensor Sig RET	MAG-J1 pin 8	Coax Shield w/3
9	Z Sensor Sig RET	MAG-J1 pin 9	Coax Shield w/4
10	MAG Temp Sensor RET	MAG-J1 pin 10	Coax Shield w/5
11	MAG Heater	MAG-J1 pin 11	#26 TSP w/12
12	MAG Heater RET	MAG-J1 pin 12	#26 TSP w/11
13	MAG Heater Shield	MAG-J1 pin 13	#26 TSP Shield
14	Spare		
15	Chassis (connected in BOOM to BOOM chassis)	MAG-J1 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.3.5. BOOM-J6 (IDPU to STE-U)

Pin	Signal	Destination	Harness
1	OUTPUT1	STE-U	Coax w/2
2	OUTPUT RET	STE-U	Coax Shield w/1
3	OUTPUT2	STE-U	Coax w/4
4	OUTPUT RET	STE-U	Coax Shield w/3
5	OUTPUT3		Coax w/6
6	OUTPUT RET		Coax Shield w/5
7	OUTPUT4		Coax w/8
8	OUTPUT RET		Coax Shield w/7
9	Spare	STE-U	
10	Test RET	STE-U	Coax Shield w/11
11	Test		Coax w/10
12	Ground	STE-U	#26 TT w/13,14
13	+5V	STE-U	#26 TT w/12,14
14	-5V	STE-U	#26 TT w/12,13
15	Bias	STE-U	#26
16	-12V (TBR-UCB-004)	STE-U	#26
17	Spare	STE-U	
18	Spare	STE-U	
19	Door Close Act.	STE-U	#26 TT w/20,21
20	Door Open Act.	STE-U	#26 TT w/19,21
21	Door Act. RET	STE-U	#26 TT w/19,20
22	+28V Heater	STE-U	#26 TP w/23
23	+28V Heater RET	STE-U	#26 TP w/22
24	STE Temp	STE-U	#26 TP w/25
25	STE Temp RET	STE-U	#26 TP w/24
26	Chassis (connected in IDPU to IDPU chassis)	STE-U	Overshield & Backshell

Note: BOOM-J6 is connected to the STE-U pig-tail.

4.3.6. SWEA-P1 (IDPU to SWEA)

Pin	Signal	Destination	Harness
1	CLK	BOOM-J4 pin 1	Coax w/2
2	CLK-RET	BOOM-J4 pin 2	Coax Shield w/1
3	Spare		
4	SWEA Temp.	BOOM-J2 pin 1	#26 TP w/5
5	SWEA Temp. RET	BOOM-J2 pin 6	#26 TP w/4
6	CMD	BOOM-J4 pin 6	Coax w/7
7	CMD-RET	BOOM-J4 pin 7	Coax Shield w/6
8	Spare		
9	+28V	BOOM-J1 pin 2	#26 TP w/13
10	+28V Heater	BOOM-J1 pin 5	#26 TP w/14
11	TLM	BOOM-J4 pin 11	Coax w/12
12	TLM-RET	BOOM-J4 pin 12	Coax Shield w/11
13	+28V RET	BOOM-J1 pin 10	#26 TP w/9
14	+28V Heater RET	BOOM-J1 pin 13	#26 TP w/10
15	Chassis (connected in SWEA to SWEA chassis)	SWEA-P1 pin 15	Overshield & Backshell

4.3.7. MAG-J1 (IDPU to MAG)

Pin	Signal	Destination	Harness
1	XYZ Drive	BOOM-J5 pin 1	Coax w/6
2	X Sensor Sig	BOOM-J5 pin 2	Coax w/7
3	Y Sensor Sig	BOOM-J5 pin 3	Coax w/8
4	Z Sensor Sig	BOOM-J5 pin 4	Coax w/9
5	MAG Temp Sensor	BOOM-J5 pin 5	TP w/10
6	XYZ Drive RET	BOOM-J5 pin 6	Coax Shield w/1
7	X Sensor Sig RET	BOOM-J5 pin 7	Coax Shield w/2
8	Y Sensor Sig RET	BOOM-J5 pin 8	Coax Shield w/3
9	Z Sensor Sig RET	BOOM-J5 pin 9	Coax Shield w/4
10	MAG Temp Sensor RET	BOOM-J5 pin 10	TP w/5
11	MAG Heater	BOOM-J5 pin 11	#26 TSP w/12
12	MAG Heater RET	BOOM-J5 pin 12	#26 TSP w/11
13	MAG Heater Shield	BOOM-J5 pin 13	#26 TSP Shield
14	Spare		
15	Chassis (Connect to thermal blanket ground at MAG)	BOOM-J5 pin 15	Overshield & Backshell

The wire bundle up the boom consists of the wires to MAG-J1 and SWEA-P1. This includes 7 coaxes, 4 twisted pairs, and a twisted shielded pair. A common over-shield shall be tied to chassis ground at both ends (the bottom of the boom and SWEA; MAG thermal blankets should also be connected to over-shield ground).

4.4. SWEA Connectors

4.4.1. SWEA-P1 (IDPU to SWEA)

See section 4.3.6

4.4.2. SWEA-P2 (STE)

Pin	Signal	Destination	Harness
1	OUTPUT1	STE-D	Coax w/2
2	OUTPUT RET	STE-D	Coax Shield w/1
3	OUTPUT2	STE-D	Coax w/4
4	OUTPUT RET	STE-D	Coax Shield w/3
5	OUTPUT3		Coax w/6
6	OUTPUT RET		Coax Shield w/5
7	OUTPUT4		Coax w/8
8	OUTPUT RET		Coax Shield w/7
9	Spare	STE-D	
10	Test RET	STE-D	Coax Shield w/11
11	Test		Coax w/10
12	Ground	STE-D	#26 TT w/13,14
13	+5V	STE-D	#26 TT w/12,14
14	-5V	STE-D	#26 TT w/12,13
15	Bias	STE-D	#26
16	-12V (TBR-UCB-004)	STE-D	#26
17	Spare	STE-D	
18	Spare	STE-D	
19	Door Close Act.	STE-D	#26 TT w/20,21
20	Door Open Act.	STE-D	#26 TT w/19,21
21	Door Act. RET	STE-D	#26 TT w/19,20
22	+28V Heater	STE-D	#26 TP w/23
23	+28V Heater RET	STE-D	#26 TP w/22
24	STE Temp	STE-D	#26 TP w/25
25	STE Temp RET	STE-D	#26 TP w/24
26	Chassis (connected in IDPU to IDPU chassis)	STE-D	Overshield & Backshell

Note: SWEA-P2 is connected to the STE-D pig-tail.

4.4.3. SWEA-P3 (HV/Actuator Enable)

Pin	Signal	Destination	Harness
1	28V Supply	SWEA-P3 pin 6	
2	28V Supply	SWEA-P3 pin 7	
3	SWEA Cover Act. Supply	SWEA-P3 pin 8	
4	STE Cover Open Act. Supply	SWEA-P3 pin 9	
5	STE Cover Close Act. Supply	SWEA-P3 pin 10	
6	28V MCP HV	SWEA-P3 pin 1	
7	28V NC HV	SWEA-P3 pin 2	
8	SWEA Cover Act.	SWEA P3-pin 3	
9	STE Cover Open Act.	SWEA-P3 pin 4	
10	STE Cover Close Act.	SWEA-P3 pin 5	
11	28V Supply RET		
12	28V Supply RET		
13	Actuator RET		
14	Actuator RET		
15	Actuator RET		

Note: The RET signals are for test purposes (a dummy load/indicator can be installed between the supply and RET signals to verify operation)

4.5. SEP Connectors

4.5.1. SEP-P1 (SEP Power)

Pin	Signal	Destination	Harness
1	Spare		
2	+28V Primary	Spacecraft	#22 TP w/10
3	+28V Redundant	Spacecraft	#22 TP w/11
4	Spare		
5	+28V Heater Primary	Spacecraft	#22 TP w/13
6	+28V Heater Redundant	Spacecraft	#22 TP w/14
7	Spare		
8	Chassis (connected in SEP to SEP chassis)	Spacecraft	Overshield
9	Spare		
10	+28V Return Primary	Spacecraft	#22 TP w/2
11	+28V Return Redundant	Spacecraft	#22 TP w/3
12	Spare		
13	+28V Heater Return Primary	Spacecraft	#22 TP w/5
14	+28V Heater Return Redundant	Spacecraft	#22 TP w/6
15	Spare		

4.5.2. SEP-P2 (SEP S/C Temp. Sensors)

Pin	Signal	Destination	Harness
1	SEP Temp Sensor	Spacecraft	
2	SEPT-NS Temp Sensor	Spacecraft	
3	SIT S/C TEMP	Spacecraft	
4	SEPT-E S/C TEMP	Spacecraft	
5	HET S/C TEMP	Spacecraft	
6	LET S/C TEMP	Spacecraft	
7	Spare		
8	Spare		
9	SEP Temp Sensor RTN	Spacecraft	
10	SEPT-NS S/C TEMP RTN	Spacecraft	
11	SIT S/C TEMP RTN	Spacecraft	
12	SEPT-E S/C TEMP RTN	Spacecraft	
13	HET S/C TEMP RTN	Spacecraft	
14	LET S/C TEMP RTN	Spacecraft	
15	Chassis (connected in SEP to SEP chassis)	Spacecraft	Overshield

4.5.3. SEP-P3 (SIT & SEPT Cover Actuators)

(Reconfigured, see 4.6.3; 4.7.3 and 4.8.3)

4.5.4. SEP-P4 (SEP to IDPU)

Pin	Signal	Destination	Harness
1	CLK	IDPU-P4 pin 1	Coax w/2
2	CLK-RET	IDPU-P4 pin 2	Coax Shield w/1
3	Spare		
4	Spare		
5	Spare		
6	CMD	IDPU-P4 pin 6	Coax w/7
7	CMD-RET	IDPU-P4 pin 7	Coax Shield w/6
8	Spare		
9	Spare		
10	Spare		
11	TLM	IDPU-P4 pin 11	Coax w/12
12	TLM-RET	IDPU-P4 pin 12	Coax Shield w/11
13	Spare		
14	Spare		
15	Chassis (connected in SEP to SEP chassis)	IDPU-P4 pin 15	Overshield & Backshell

(Note: This is a 1:1 harness)

4.5.5. SEP-P5 (SEP to SIT)

Pin	Signal	Destination	Harness
1	PWR RTN	SIT-P1 pin 1	#26
2	PWR RTN	SIT-P1 pin 2	#26 T5 w/10,12,34,36
3	PWR RTN	SIT-P1 pin 3	#26 T5 w/11,13,35,37
4	+5V ANA	SIT-P1 pin 4	#26 T5 w/6,42,44,46
5	+5V ANA	SIT-P1 pin 5	#26 T5 w/7,43,45,47
6	-5V REF	SIT-P1 pin 6	#26 T5 w/4,42,44,46
7	-5V REF	SIT-P1 pin 7	#26 T5 w/5,43,45,47
8	Spare		
9	Spare		
10	+2.5V DIG	SIT-P1 pin 10	#26 T5 w/2,12,34,36
11	+2.5V DIG	SIT-P1 pin 11	#26 T5 w/3,13,35,37
12	+3.3V DIG	SIT-P1 pin 12	#26 T5 w/2, 10, 34, 36
13	+3.3V DIG	SIT-P1 pin 13	#26 T5 w/3,11,35,37
14	SIT RESET	SIT-P1 pin 14	#26 TSP w/16, 18
15	SIT RESET	SIT-P1 pin 15	#26 TSP w/17, 19
16	SIT CMD IN	SIT-P1 pin 16	#26 TSP w/14, 18
17	SIT CMD IN	SIT-P1 pin 17	#26 TSP w/15, 19
18	SIT MSTR SGNL RTN	SIT-P1 pin 18	TSP Shld w/14,16
19	SIT MSTR SGNL RTN	SIT-P1 pin 19	TSP Shld w/15,17
20	SIT CMD OUT	SIT-P1 pin 20	#26 TSP w/22, 24
21	SIT CMD OUT	SIT-P1 pin 21	#26 TSP w/23,25
22	SIT DATA OUT	SIT-P1 pin 22	#26 TSP w/20, 24
23	SIT DATA OUT	SIT-P1 pin 23	#26 TSP w/21, 25
24	SIT SUB SGNL RTN	SIT-P1 pin 24	TSP Shld w/20,22
25	SIT SUB SGNL RTN	SIT-P1 pin 25	TSP Shld w/21,23
26	SIT INT TEMP1	SIT-P1 pin 26	#26 TT w/27,28
27	SIT INT TEMP2	SIT-P1 pin 27	#26 TT w/26,28
28	SIT INT TEMP RTN	SIT-P1 pin 28	#26 TT w/26,27
29	Spare		
30	SIT BIAS (150-200V)	SIT-P1 pin 30	#26
31	SIT BIAS (150-200V)	SIT-P1 pin 31	#26
32	Spare		
33	Spare		
34	-5.2V DIG	SIT-P1 pin 34	#26 T5 w/2,10,12,36
35	-5.2V DIG	SIT-P1 pin 35	#26 T5 w/3,11,13,37
36	+5V DIG	SIT-P1 pin 36	#26 T5 w/2,10,12,34
37	+5V DIG	SIT-P1 pin 37	#26 T5 w/3,11,13,35
38	SIT HV MON	SIT-P1 pin 38	#26 TP w/39

39	SIT HV MON RTN	SIT-P1 pin 39	#26 TP w/38
40	Spare		
41	Spare		
42	+13V ANA	SIT-P1 pin 42	#26 T5 w/4,6,44,46
43	+13V ANA	SIT-P1 pin 43	#26 T5 w/5,7,45,47
44	PWR RTN	SIT-P1 pin 44	#26 T5 w/4,6,42,46
45	PWR RTN	SIT-P1 pin 45	#26 T5 w/5,7,43,47
46	-13V ANA	SIT-P1 pin 46	#26 T5 w/4,6,42,44
47	-13V ANA	SIT-P1 pin 47	#26 T5 w/5,7,43,45
48	SIT S/C TEMP	SIT-P1 pin 48	#26 TP w/49
49	SIT S/C TEMP RTN	SIT-P1 pin 49	#26 TP w/48
50	Spare		
51	Chassis (connected in SIT to SIT chassis)	SIT-P1 pin 51	Overshield & Backshell

(Note: This is a 1:1 harness)

4.5.6. SEP-P6 (SEP to SEPT-NS)

Pin	Signal	Destination	Harness
1	SEPT-NS BIAS (-80V)	SEPTNS-P1 pin 1	Coax
2	SEPT-NS BIAS RTN	SEPTNS-P1 pin 2	Coax Shield

4.5.7. SEP-P7 (SEP to SEPT-NS)

Pin	Signal	Destination	Harness
1	PWR RTN	SEPTNS-P2 pin 1	#26
2	PWR RTN	SEPTNS-P2 pin 2	#26 T5 w/4,5,6,7
		SEPTNS-P2 pin 3	#26 T5
3	PWR RTN		w/8,9,10,11
4	+5V ANA	SEPTNS-P2 pin 4	#26 T5 w/2,5,6,7
5	+5V ANA	SEPTNS-P2 pin 5	#26 T5 w/2,4,6,7
6	-5V ANA	SEPTNS-P2 pin 6	#26 T5 w/2,4,5,7
7	-5V ANA	SEPTNS-P2 pin 7	#26 T5 w/2,4,5,6
		SEPTNS-P2 pin 8	#26 T5
8	+2.5V DIG		w/3,9,10,11
		SEPTNS-P2 pin 9	#26 T5
9	+2.5V DIG		w/3,8,10,11
		SEPTNS-P2 pin 10	#26 T5
10	+5V DIG		w/3,8,9,11
		SEPTNS-P2 pin 11	#26 T5
11	+5V DIG		w/3,8,9,10
12	SEPT-NS RESET	SEPTNS-P2 pin 12	#26 TSP w/13,14
13	SEPT-NS CMD IN	SEPTNS-P2 pin 13	#26 TSP w/12,14
	SEPT-NS MSTR SGNL	SEPTNS-P2 pin 14	TSP Shld w/12,13
14	RTN		
15	SEPT-NS CMD OUT	SEPTNS-P2 pin 15	#26 TSP w/16,18
16	SEPT-NS DATA OUT	SEPTNS-P2 pin 16	#26 TSP w/15,18
17	SEPT-NS LATCHUP	SEPTNS-P2 pin 17	#26
18	SEPT-NS SUB SGNL RTN	SEPTNS-P2 pin 18	TSP Shld w/15,16
19	Spare		
20	Spare		
21	SEPT-NS S/C TEMP	SEPTNS-P2 pin 21	#26 TP w/22
22	SEPT-NS S/C TEMP RTN	SEPTNS-P2 pin 22	#26 TP w/21
23	Spare		
24	Spare		
25	Chassis (con. in SEPT-NS to SEPT-NS chassis)	SEPTNS-P2 pin 25	Overshield & Backshell

4.5.8. SEP-P8 (SEP to SEPT-E)

Pin	Signal	Destination	Harness
1	SEPT-E BIAS (-80V)	SEPT-E-P1 pin 1	Coax
2	SEPT-E BIAS RTN	SEPT-E-P1 pin 2	Coax Shield

4.5.9. SEP-P9 (SEP to SEPT-E)

Pin	Signal	Destination	Harness
1	PWR RTN	SEPTE-P2 pin 1	#26
2	PWR RTN	SEPTE-P2 pin 2	#26 T5 w/4,5,6,7
3	PWR RTN	SEPTE-P2 pin 3	#26 T5 w/8,9,10,11
4	+5V ANA	SEPTE-P2 pin 4	#26 T5 w/2,5,6,7
5	+5V ANA	SEPTE-P2 pin 5	#26 T5 w/2,4,6,7
6	-5V ANA	SEPTE-P2 pin 6	#26 T5 w/2,4,5,7
7	-5V ANA	SEPTE-P2 pin 7	#26 T5 w/2,4,5,6
8	+2.5V DIG	SEPTE-P2 pin 8	#26 T5 w/3,9,10,11
9	+2.5V DIG	SEPTE-P2 pin 9	#26 T5 w/3,8,10,11
10	+5V DIG	SEPTE-P2 pin 10	#26 T5 w/3,8,9,11
11	+5V DIG	SEPTE-P2 pin 11	#26 T5 w/3,8,9,10
12	SEPT-E RESET	SEPTE-P2 pin 12	#26 TSP w/13,14
13	SEPT-E CMD IN	SEPTE-P2 pin 13	#26 TSP w/12,14
14	SEPT-E MSTR SGNL RTN	SEPTE-P2 pin 14	TSP Shld w/12,13
15	SEPT-E CMD OUT	SEPTE-P2 pin 15	#26 TSP w/16,18
16	SEPT-E DATA OUT	SEPTE-P2 pin 16	#26 TSP w/15,18
17	SEPT-E LATCHUP	SEPTE-P2 pin 17	#26
18	SEPT-E SUB SGNL RTN	SEPTE-P2 pin 18	TSP Shld w/15,16
19	Spare		
20	Spare		
21	SEPT-E S/C TEMP	SEPTE-P2 pin 21	#26 TP w/22
22	SEPT-E S/C TEMP RTN	SEPTE-P2 pin 22	#26 TP w/21
23	Spare		
24	Spare		
25	Chassis (con. in SEPT-E to SEPT-E chassis)	SEPTE-P2 pin 25	Overshield & Backshell

4.5.10. SEP-P10 (SEP to HET)

Pin	Signal	Destination	Harness
1	PWR RTN	HET-P1 pin 1	#26
2	PWR RTN	HET-P1 pin 2	#26
3	PWR RTN	HET-P1 pin 3	#26
4	+5V ANA	HET-P1 pin 4	#26
5	+5V ANA	HET-P1 pin 5	#26
6	-5V REF	HET-P1 pin 6	#26
7	-5V REF	HET-P1 pin 7	#26
8	-5V ANA	HET-P1 pin 8	#26
9	-5V ANA	HET-P1 pin 9	#26
10	+2.5V DIG	HET-P1 pin 10	#26
11	+2.5V DIG	HET-P1 pin 11	#26
12	+3.3V DIG	HET-P1 pin 12	#26
13	+3.3V DIG	HET-P1 pin 13	#26
14	HET RESET	HET-P1 pin 14	#26
15	HET RESET	HET-P1 pin 15	#26
16	HET CMD IN	HET-P1 pin 16	#26
17	HET CMD IN	HET-P1 pin 17	#26
18	HET MSTR SGNL RTN	HET-P1 pin 18	#26
19	HET MSTR SGNL RTN	HET-P1 pin 19	#26
20	HET CMD OUT	HET-P1 pin 20	#26
21	HET CMD OUT	HET-P1 pin 21	#26
22	HET DATA OUT	HET-P1 pin 22	#26
23	HET DATA OUT	HET-P1 pin 23	#26
24	HET SUB SGNL RTN	HET-P1 pin 24	#26
25	HET SUB SGNL RTN	HET-P1 pin 25	#26
26	Spare		
27	Spare		
28	Spare		
29	Spare		
30	HET BIAS (50 - 250V)	HET-P1 pin 30	#26
31	HET BIAS (50 - 250V)	HET-P1 pin 31	#26
32	Spare		
33	Spare		
34	HET S/C TEMP	HET-P1 pin 34	#26
35	HET S/C TEMP RTN	HET-P1 pin 35	#26
36	+5V DIG	HET-P1 pin 36	#26
37	+5V DIG	HET-P1 pin 37	#26

(Note: This is a 1:1 harness)

4.5.11. SEP-P11 (SEP to LET)

Pin	Signal	Destination	Harness
1	PWR RTN	LET-P1 pin 1	#26
2	PWR RTN	LET-P1 pin 2	#26
3	PWR RTN	LET-P1 pin 3	#26
4	+5V ANA	LET-P1 pin 4	#26
5	+5V ANA	LET-P1 pin 5	#26
6	-5V REF	LET-P1 pin 6	#26
7	-5V REF	LET-P1 pin 7	#26
8	-5V ANA	LET-P1 pin 8	#26
9	-5V ANA	LET-P1 pin 9	#26
10	+2.5V DIG	LET-P1 pin 10	#26
11	+2.5V DIG	LET-P1 pin 11	#26
12	+3.3V DIG	LET-P1 pin 12	#26
13	+3.3V DIG	LET-P1 pin 13	#26
14	LET RESET	LET-P1 pin 14	#26
15	LET RESET	LET-P1 pin 15	#26
16	LET CMD IN	LET-P1 pin 16	#26
17	LET CMD IN	LET-P1 pin 17	#26
18	LET MSTR SGNL RTN	LET-P1 pin 18	#26
19	LET MSTR SGNL RTN	LET-P1 pin 19	#26
20	LET CMD OUT	LET-P1 pin 20	#26
21	LET CMD OUT	LET-P1 pin 21	#26
22	LET DATA OUT	LET-P1 pin 22	#26
23	LET DATA OUT	LET-P1 pin 23	#26
24	LET SUB SGNL RTN	LET-P1 pin 24	#26
25	LET SUB SGNL RTN	LET-P1 pin 25	#26
26	Spare		
27	Spare		
28	L1 BIAS (2 - 30V)	LET-P1 pin 28	#26
29	L1 BIAS (2 - 30V)	LET-P1 pin 29	#26
30	L2 BIAS (5 - 50V)	LET-P1 pin 30	#26
31	L2 BIAS (5 - 50V)	LET-P1 pin 31	#26
32	L3 BIAS (50 - 250V)	LET-P1 pin 32	#26
33	L3 BIAS (50 - 250V)	LET-P1 pin 33	#26
34	LET S/C TEMP	LET-P1 pin 34	#26
35	LET S/C TEMP RTN	LET-P1 pin 35	#26
36	+5V DIG	LET-P1 pin 36	#26
37	+5V DIG	LET-P1 pin 37	#26

(Note: This is a 1:1 harness)

4.6. **SEPT-E Connectors**

4.6.1. SEPT-E-P1 (SEP to SEPT-E)

Pin	Signal	Destination	Harness
1	SEPT-E BIAS (-80V)	SEP-P8 pin 1	Coax
2	SEPT-E BIAS RTN	SEP-P8 pin 2	Coax Shield

4.6.2. SEPT-E-P2 (SEP to SEPT-E)

Pin	Signal	Destination	Harness
1	PWR RTN	SEP-P9 pin 1	#26
2	PWR RTN	SEP-P9 pin 2	#26 T5 w/4,5,6,7
		SEP-P9 pin 3	#26 T5
3	PWR RTN		w/8,9,10,11
4	+5V ANA	SEP-P9 pin 4	#26 T5 w/2,5,6,7
5	+5V ANA	SEP-P9 pin 5	#26 T5 w/2,4,6,7
6	-5V ANA	SEP-P9 pin 6	#26 T5 w/2,4,5,7
7	-5V ANA	SEP-P9 pin 7	#26 T5 w/2,4,5,6
		SEP-P9 pin 8	#26 T5
8	+2.5V DIG		w/3,9,10,11
		SEP-P9 pin 9	#26 T5
9	+2.5V DIG		w/3,8,10,11
		SEP-P9 pin 10	#26 T5
10	+5V DIG		w/3,8,9,11
		SEP-P9 pin 11	#26 T5
11	+5V DIG		w/3,8,9,10
12	SEPT-E RESET	SEP-P9 pin 12	#26 TSP w/13,14
13	SEPT-E CMD IN	SEP-P9 pin 13	#26 TSP w/12,14
14	SEPT-E MSTR SGNL RTN	SEP-P9 pin 14	TSP Shld w/12,13
15	SEPT-E CMD OUT	SEP-P9 pin 15	#26 TSP w/16,18
16	SEPT-E DATA OUT	SEP-P9 pin 16	#26 TSP w/15,18
17	SEPT-E LATCHUP	SEP-P9 pin 17	#26
18	SEPT-E SUB SGNL RTN	SEP-P9 pin 18	TSP Shld w/15,16
19	Spare		
20	Spare		
21	SEPT-E S/C TEMP	SEP-P9 pin 21	#26 TP w/22
22	SEPT-E S/C TEMP RTN	SEP-P9 pin 22	#26 TP w/21
23	Spare		
24	Spare		
25	Chassis (con. in SEPT-E to SEPT-E chassis)	SEP-P9 pin 25	Overshield & Backshell

4.6.3. SEPT-E-P3 (S/C to SEPT-E)

Pin	Signal	Destination	Harness
1	SEPT-E ACT1	Spacecraft	#22 TSQ w/2,3,4
2	SEPT-E ACT1	Spacecraft	#22 TSQ w/1,3,4
3	SEPT-E ACT1 RTN	Spacecraft	#22 TSQ w/1,2,4
4	SEPT-E ACT1 RTN	Spacecraft	#22 TSQ w/1,2,3
5	SEPT-E ACT2	Spacecraft	#22 TSQ w/6,7,8
6	SEPT-E ACT2	Spacecraft	#22 TSQ w/5,7,8
7	SEPT-E ACT2 RTN	Spacecraft	#22 TSQ w/5,6,8
8	SEPT-E ACT2 RTN	Spacecraft	#22 TSQ w/5,6,7
9	Chassis (con. in SEPT-NS to SEPT-NS chassis)	Spacecraft	Overshield & Backshell

4.7. SEPT-NS Connectors

4.7.1. SEPTNS-P1 (SEP to SEPT-NS)

Pin	Signal	Destination	Harness
1	SEPT-NS BIAS (-80V)	SEP-P6 pin 1	Coax
2	SEPT-NS BIAS RTN	SEP-P6 pin 2	Coax Shield

4.7.2. SEPTNS-P2 (SEP to SEPT-NS)

Pin	Signal	Destination	Harness
1	PWR RTN	SEP-P7 pin 1	#26
2	PWR RTN	SEP-P7 pin 2	#26 T5 w/4,5,6,7
		SEP-P7 pin 3	#26 T5
3	PWR RTN		w/8,9,10,11
4	+5V ANA	SEP-P7 pin 4	#26 T5 w/2,5,6,7
5	+5V ANA	SEP-P7 pin 5	#26 T5 w/2,4,6,7
6	-5V ANA	SEP-P7 pin 6	#26 T5 w/2,4,5,7
7	-5V ANA	SEP-P7 pin 7	#26 T5 w/2,4,5,6
		SEP-P7 pin 8	#26 T5
8	+2.5V DIG		w/3,9,10,11
		SEP-P7 pin 9	#26 T5
9	+2.5V DIG		w/3,8,10,11
		SEP-P7 pin 10	#26 T5
10	+5V DIG		w/3,8,9,11
		SEP-P7 pin 11	#26 T5
11	+5V DIG		w/3,8,9,10
12	SEPT-NS RESET	SEP-P7 pin 12	#26 TSP w/13,14
13	SEPT-NS CMD IN	SEP-P7 pin 13	#26 TSP w/12,14
14	SEPT-NS MSTR SGNL RTN	SEP-P7 pin 14	TSP Shld w/12,13
15	SEPT-NS CMD OUT	SEP-P7 pin 15	#26 TSP w/16,18
16	SEPT-NS DATA OUT	SEP-P7 pin 16	#26 TSP w/15,18
17	SEPT-NS LATCHUP	SEP-P7 pin 17	#26
18	SEPT-NS SUB SGNL RTN	SEP-P7 pin 18	TSP Shld w/15,16
19	Spare		
20	Spare		
21	SEPT-NS S/C TEMP	SEP-P7 pin 21	#26 TP w/22
22	SEPT-NS S/C TEMP RTN	SEP-P7 pin 22	#26 TP w/21
23	Spare		
24	Spare		
25	Chassis (con. in SEPT-NS to SEPT-NS chassis)	SEP-P7 pin 25	Overshield & Backshell

4.7.3. SEPTNS-P3 (S/C to SEPT-NS)

Pin	Signal	Destination	Harness
1	SEPT-NS ACT1	Spacecraft	#22 TSQ w/2,3,4
2	SEPT-NS ACT1	Spacecraft	#22 TSQ w/1,3,4
3	SEPT-NS ACT1 RTN	Spacecraft	#22 TSQ w/1,2,4
4	SEPT-NS ACT1 RTN	Spacecraft	#22 TSQ w/1,2,3
5	SEPT-NS ACT2	Spacecraft	#22 TSQ w/6,7,8
6	SEPT-NS ACT2	Spacecraft	#22 TSQ w/5,7,8
7	SEPT-NS ACT2 RTN	Spacecraft	#22 TSQ w/5,6,8
8	SEPT-NS ACT2 RTN	Spacecraft	#22 TSQ w/5,6,7
9	Chassis (con. in SEPT-NS to SEPT-NS chassis)	Spacecraft	Overshield & Backshell

4.8. **SIT Connectors**

4.8.1. SIT-P1 (SEP to SIT)

Pin	Signal	Destination	Harness
1	PWR RTN	SEP-P5 pin 1	#26
2	PWR RTN	SEP-P5 pin 2	#26 T5 w/10,12,34,36
3	PWR RTN	SEP-P5 pin 3	#26 T5 w/11,13,35,37
4	+5V ANA	SEP-P5 pin 4	#26 T5 w/6,42,44,46
5	+5V ANA	SEP-P5 pin 5	#26 T5 w/7,43,45,47
6	-5V REF	SEP-P5 pin 6	#26 T5 w/4,42,44,46
7	-5V REF	SEP-P5 pin 7	#26 T5 w/5,43,45,47
8	Spare		
9	Spare		
10	+2.5V DIG	SEP-P5 pin 10	#26 T5 w/2,12,34,36
11	+2.5V DIG	SEP-P5 pin 11	#26 T5 w/3,13,35,37
12	+3.3V DIG	SEP-P5 pin 12	#26 T5 w/2, 10, 34, 36
13	+3.3V DIG	SEP-P5 pin 13	#26 T5 w/3,11,35,37
14	SIT RESET	SEP-P5 pin 14	#26 TSP w/16, 18
15	SIT RESET	SEP-P5 pin 15	#26 TSP w/17, 19
16	SIT CMD IN	SEP-P5 pin 16	#26 TSP w/14, 18
17	SIT CMD IN	SEP-P5 pin 17	#26 TSP w/15, 19
18	SIT MSTR SGNL RTN	SEP-P5 pin 18	TSP Shld w/14,16
19	SIT MSTR SGNL RTN	SEP-P5 pin 19	TSP Shld w/15,17
20	SIT CMD OUT	SEP-P5 pin 20	#26 TSP w/22, 24
21	SIT CMD OUT	SEP-P5 pin 21	#26 TSP w/23,25
22	SIT DATA OUT	SEP-P5 pin 22	#26 TSP w/20, 24
23	SIT DATA OUT	SEP-P5 pin 23	#26 TSP w/21, 25
24	SIT SUB SGNL RTN	SEP-P5 pin 24	TSP Shld w/20,22
25	SIT SUB SGNL RTN	SEP-P5 pin 25	TSP Shld w/21,23
26	SIT INT TEMP1	SEP-P5 pin 26	#26 TT w/27,28
27	SIT INT TEMP2	SEP-P5 pin 27	#26 TT w/26,28
28	SIT INT TEMP RTN	SEP-P5 pin 28	#26 TT w/26,27
29	Spare		
30	SIT BIAS (150-200V)	SEP-P5 pin 30	#26
31	SIT BIAS (150-200V)	SEP-P5 pin 31	#26
32	Spare		
33	Spare		
34	-5.2V DIG	SEP-P5 pin 34	#26 T5 w/2,10,12,36
35	-5.2V DIG	SEP-P5 pin 35	#26 T5 w/3,11,13,37
36	+5V DIG	SEP-P5 pin 36	#26 T5 w/2,10,12,34
37	+5V DIG	SEP-P5 pin 37	#26 T5 w/3,11,13,35
38	SIT HV MON	SEP-P5 pin 38	#26 TP w/39
39	SIT HV MON RTN	SEP-P5 pin 39	#26 TP w/38

40	Spare		
41	Spare		
42	+13V ANA	SEP-P5 pin 42	#26 T5 w/4,6,44,46
43	+13V ANA	SEP-P5 pin 43	#26 T5 w/5,7,45,47
44	PWR RTN	SEP-P5 pin 44	#26 T5 w/4,6,42,46
45	PWR RTN	SEP-P5 pin 45	#26 T5 w/5,7,43,47
46	-13V ANA	SEP-P5 pin 46	#26 T5 w/4,6,42,44
47	-13V ANA	SEP-P5 pin 47	#26 T5 w/5,7,43,45
48	SIT S/C TEMP	SEP-P5 pin 48	#26 TP w/49
49	SIT S/C TEMP RTN	SEP-P5 pin 49	#26 TP w/48
50	Spare		
51	Chassis (connected in SIT to SIT chassis)	SEP-P5 pin 51	Overshield & Backshell

(Note: This is a 1:1 harness)

4.8.2. SIT-P2 (SIT HV Disable/Test)

TBD-SIT-004

4.8.3. SIT-P3 (S/C to SIT)

Pin	Signal	Destination	Harness
1	SIT ACT	Spacecraft	#22 TSQ
2	SIT ACT	Spacecraft	#22 TSQ
3	Spare		
4	Spare		
5	Spare		
6	SIT ACT RTN	Spacecraft	#22 TSQ
7	SIT ACT RTN	Spacecraft	#22 TSQ
8	Spare		
9	Spare	Spacecraft	#22 TSQ-Shield

4.9. HET Connectors

4.9.1. HET-P1 (SEP to HET)

Pin	Signal	Destination	Harness
1	PWR RTN	SEP-P10 pin 1	#26
2	PWR RTN	SEP-P10 pin 2	#26
3	PWR RTN	SEP-P10 pin 3	#26
4	+5V ANA	SEP-P10 pin 4	#26
5	+5V ANA	SEP-P10 pin 5	#26
6	-5V REF	SEP-P10 pin 6	#26
7	-5V REF	SEP-P10 pin 7	#26
8	-5V ANA	SEP-P10 pin 8	#26
9	-5V ANA	SEP-P10 pin 9	#26
10	+2.5V DIG	SEP-P10 pin 10	#26
11	+2.5V DIG	SEP-P10 pin 11	#26
12	+3.3V DIG	SEP-P10 pin 12	#26
13	+3.3V DIG	SEP-P10 pin 13	#26
14	HET RESET	SEP-P10 pin 14	#26
15	HET RESET	SEP-P10 pin 15	#26
16	HET CMD IN	SEP-P10 pin 16	#26
17	HET CMD IN	SEP-P10 pin 17	#26
18	HET MSTR SGNL RTN	SEP-P10 pin 18	#26
19	HET MSTR SGNL RTN	SEP-P10 pin 19	#26
20	HET CMD OUT	SEP-P10 pin 20	#26
21	HET CMD OUT	SEP-P10 pin 21	#26
22	HET DATA OUT	SEP-P10 pin 22	#26
23	HET DATA OUT	SEP-P10 pin 23	#26
24	HET SUB SGNL RTN	SEP-P10 pin 24	#26
25	HET SUB SGNL RTN	SEP-P10 pin 25	#26
26	Spare		
27	Spare		
28	Spare		
29	Spare		
30	HET BIAS (50 - 250V)	SEP-P10 pin 30	#26
31	HET BIAS (50 - 250V)	SEP-P10 pin 31	#26
32	Spare		
33	Spare		
34	HET S/C TEMP	SEP-P10 pin 34	#26
35	HET S/C TEMP RTN	SEP-P10 pin 35	#26
36	+5V DIG	SEP-P10 pin 36	#26
37	+5V DIG	SEP-P10 pin 37	#26

(Note: This is a 1:1 harness)

4.10. **LET Connectors**

4.10.1. LET-P1 (SEP to LET)

Pin	Signal	Destination	Harness
1	PWR RTN	SEP-P11 pin 1	#26
2	PWR RTN	SEP-P11 pin 2	#26
3	PWR RTN	SEP-P11 pin 3	#26
4	+5V ANA	SEP-P11 pin 4	#26
5	+5V ANA	SEP-P11 pin 5	#26
6	-5V REF	SEP-P11 pin 6	#26
7	-5V REF	SEP-P11 pin 7	#26
8	-5V ANA	SEP-P11 pin 8	#26
9	-5V ANA	SEP-P11 pin 9	#26
10	+2.5V DIG	SEP-P11 pin 10	#26
11	+2.5V DIG	SEP-P11 pin 11	#26
12	+3.3V DIG	SEP-P11 pin 12	#26
13	+3.3V DIG	SEP-P11 pin 13	#26
14	LET RESET	SEP-P11 pin 14	#26
15	LET RESET	SEP-P11 pin 15	#26
16	LET CMD IN	SEP-P11 pin 16	#26
17	LET CMD IN	SEP-P11 pin 17	#26
18	LET MSTR SGNL RTN	SEP-P11 pin 18	#26
19	LET MSTR SGNL RTN	SEP-P11 pin 19	#26
20	LET CMD OUT	SEP-P11 pin 20	#26
21	LET CMD OUT	SEP-P11 pin 21	#26
22	LET DATA OUT	SEP-P11 pin 22	#26
23	LET DATA OUT	SEP-P11 pin 23	#26
24	LET SUB SGNL RTN	SEP-P11 pin 24	#26
25	LET SUB SGNL RTN	SEP-P11 pin 25	#26
26	Spare		
27	Spare		
28	L1 BIAS (2 - 30V)	SEP-P11 pin 28	#26
29	L1 BIAS (2 - 30V)	SEP-P11 pin 29	#26
30	L2 BIAS (5 - 50V)	SEP-P11 pin 30	#26
31	L2 BIAS (5 - 50V)	SEP-P11 pin 31	#26
32	L3 BIAS (50 - 250V)	SEP-P11 pin 32	#26
33	L3 BIAS (50 - 250V)	SEP-P11 pin 33	#26
34	LET S/C TEMP	SEP-P11 pin 34	#26
35	LET S/C TEMP RTN	SEP-P11 pin 35	#26
36	+5V DIG	SEP-P11 pin 36	#26
37	+5V DIG	SEP-P11 pin 37	#26

(Note: This is a 1:1 harness)

5. Harness Responsibilities

APL is responsible for the harness between the spacecraft systems and IMPACT, including the harnesses to:

- IDPU-P1
- IDPU-P2
- BOOM-P1
- BOOM-P2
- BOOM-P3
- SEP-P1
- SEP-P2
- **SIT-P3**
- **SEPTE-P3**
- **SEPTNS-P3**

PLASTIC is responsible for the harness between PLASTIC and IDPU-P3

UCB is responsible for the following harnesses:

- IDPU-P4 to SEP-P4
- IDPU-P5 to BOOM-P4
- IDPU-P6 to BOOM-P5
- **IDPU-P7 to BOOM-P6**
- STE-U to **BOOM-J7 (pigtail)**
- Boom Harness:
 - BOOM-J5 to MAG-J1,
 - BOOM-J1, J2, J4 to SWEA-P1
- STE-D to SWEA-P2 (**pigtail**)
- SWEA-P3 enable plug(s)

GSFC/Acuna is responsible for the pig-tail on MAG to MAG-P1

Caltech (?) is responsible for:

- SEPTNS-P1 to SEP-P6
- SEPTNS-P2 to SEP-P7
- SEPTE-P1 to SEP-P8
- SEPTE-P2 to SEP-P9
- SEP-P5 to SIT-P1
- SEP-P10 to HET-P1
- SEP-P11 to LET-P1

UMd is responsible for the SIT-P2 disable plug/test access harness