



 THE AEROSPACE
CORPORATION

GUVI

Global Ultraviolet Imager
Critical Design Review



Electrical Design

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Electrical Design Outline

- Power Flow
- Power Profile
- Grounding
- Signal Flow
- Harness



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Power Flow Description

- Main power conditioned by DC/DC converter modules in ECU
- SIS/ECU Power Board
 - ECU circuitry: +5V and $\pm 15V$
 - SIS: +5V and +20V
- Detector Power Board
 - HVPS #1: +28V
 - FPE #1: $\pm 6V$
 - HVPS #2: +28V
 - FPE #2: $\pm 6V$
- Heater power connects to heater circuits on SIS optics housing

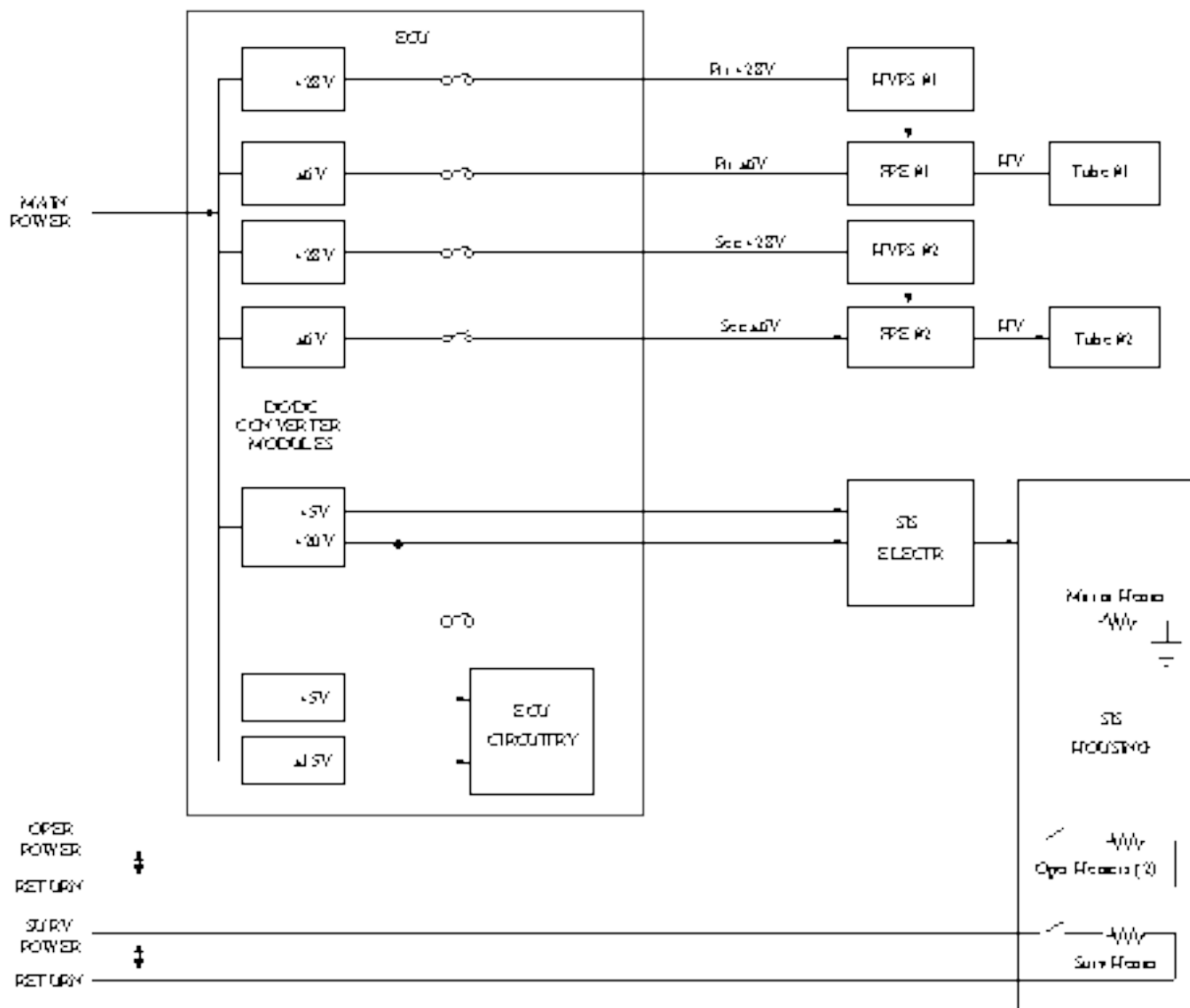


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Power Flow Diagram





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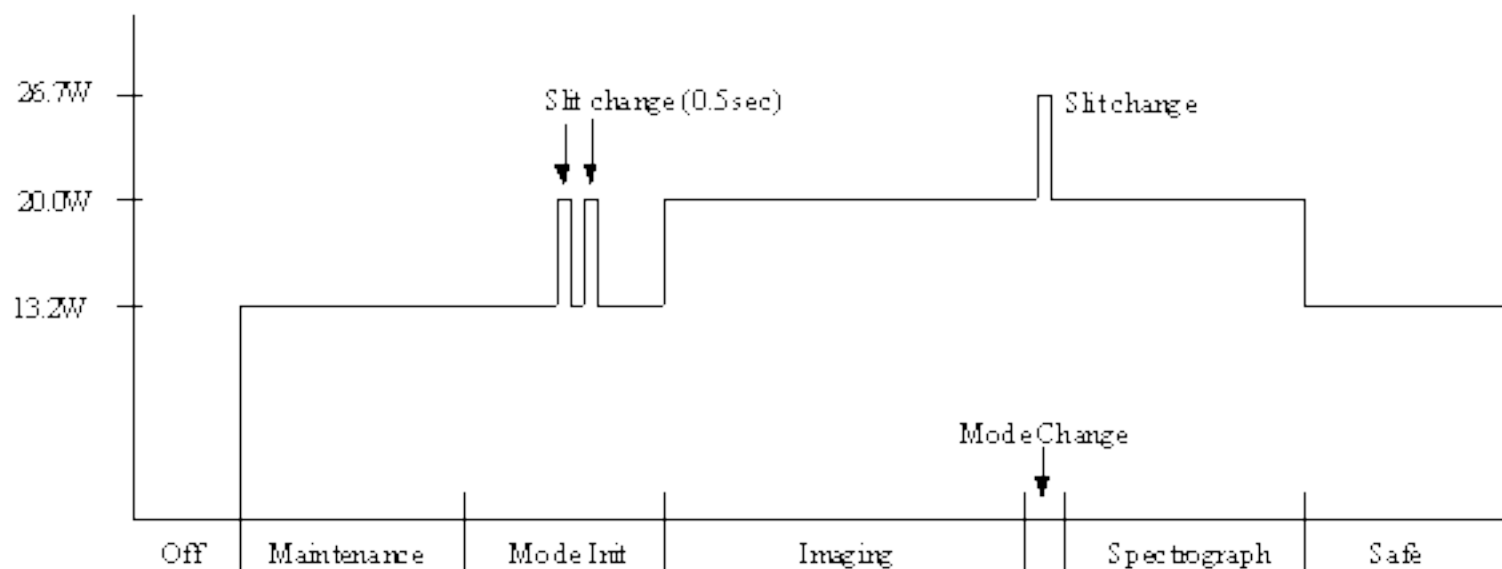
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Power Profile

Main Power Dissipation vs Time
(Does not include operational heater power)



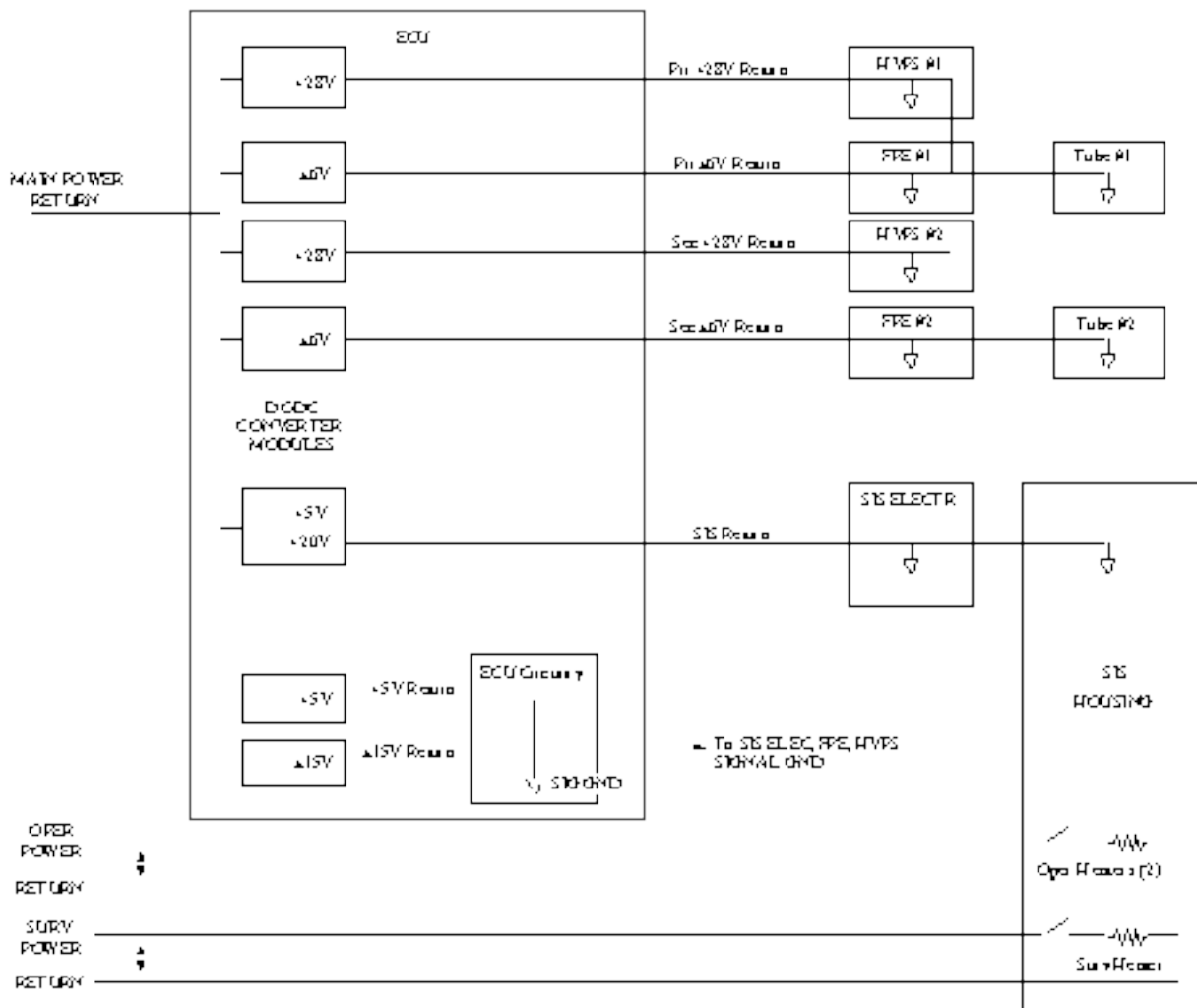


Grounding

- Main power return isolated from GUVI chassis and signal grounds by DC/DC converter modules in ECU
- Each secondary power bus connected to only one GUVI electronics package
- Secondary returns to packages external to ECU are isolated from ECU chassis
- ECU circuitry secondary returns tied to signal ground and ECU chassis
- Signal ground tied to chassis ground in FPE, HVPS, and SIS electronics packages
- Operational heater return isolated from GUVI chassis and signal grounds
- Survival heater return isolated from GUVI chassis and signal grounds



Grounding Diagram





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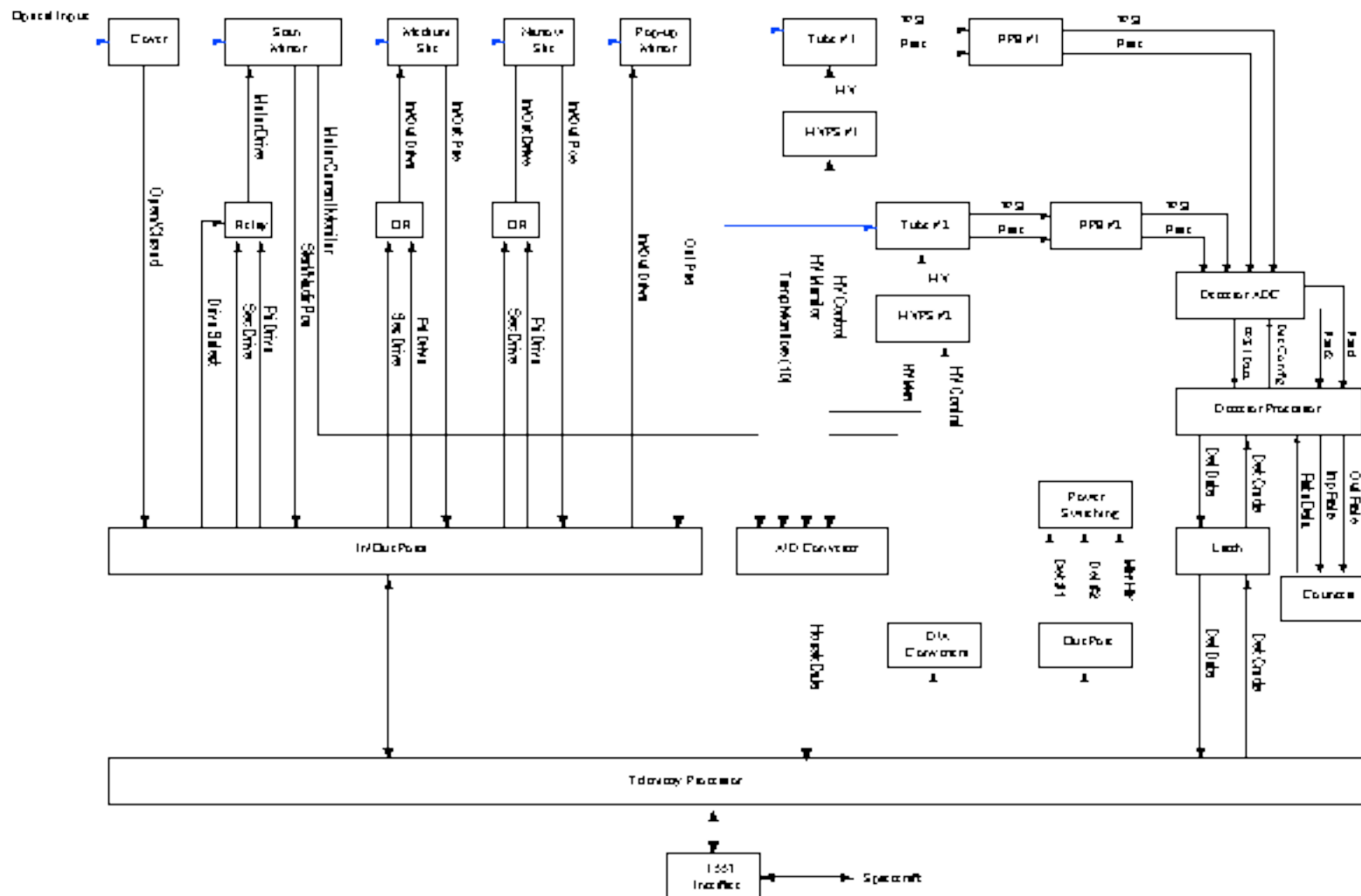


Signal Flow

- **Detector Signal Flow**
 - Tube charge level signals to FPE
 - FPE shaped analog signals to ECU Detector ADC board
 - ADC board digital pulse heights to Detector Processor board
 - Detector Processor focal plane data to Telemetry Processor
- **Control Signal Flow**
 - Telemetry processor to SIS mechanisms and HVPS
 - Detector processor to Detector ADC board
- **Housekeeping Data Flow**
 - All housekeeping data from SIS, FPE, HVPS, and ECU to Telemetry Processor



Signal Flow Diagram





Harness (1)

- **Long harnesses from ECU to SIS/Detector packages**
 - **ECU to SIS Electronics**
 - **Shielded bundle consisting of twisted pairs and single ended wires**
 - **ECU to FPE/HVPS #1**
 - **Shielded bundle consisting of twisted pairs**
 - **ECU to FPE/HVPS #2**
 - **Shielded bundle consisting of twisted pairs**
 - **ECU to FPE #1 and #2**
 - **Four coax cables to each FPE**



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Harness (2)

- **Detector Cables**
 - **Tube to FPE Cables**
 - Three coax cables from each tube to FPE
 - Three HV cables from each tube to FPE
 - **HVPS to FPE Cable**
 - One HV cable from each HVPS to FPE
- **SIS housing to SIS electronics harness provided by SSG**



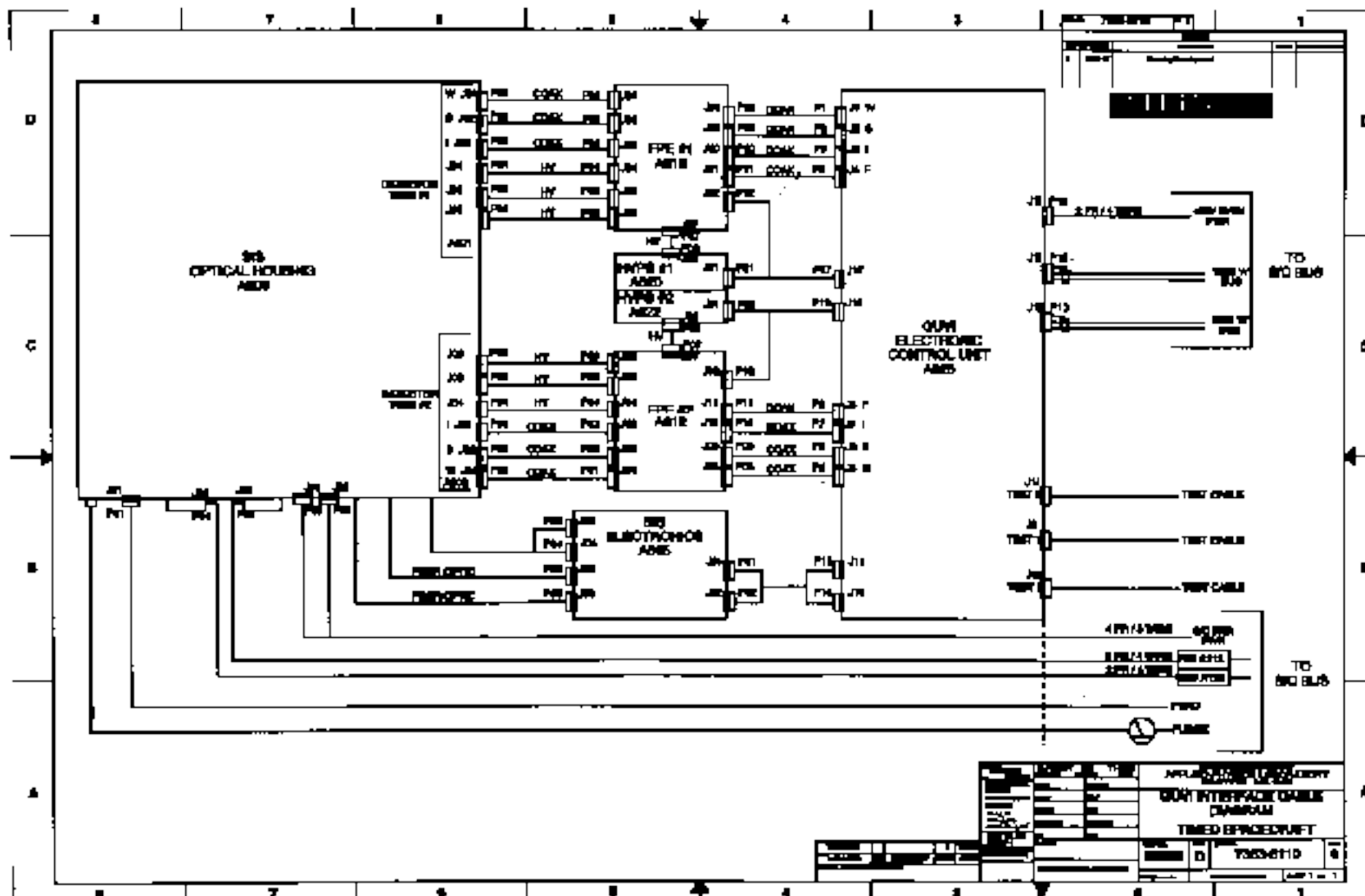
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GUM Harness Diagram





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Interface Connectors

<u>Connector</u>	<u>Name</u>	<u>Type</u>
A625-J15	Main Power	9 Pin D Male
A625-J12	1553 'A' Bus	9 Pin D Female
A625-J13	1553 'B' Bus	9 Pin D Female
A600-J01	SIS Pyro	9 Pin D Male
A600-J02	Survival Heater Power	JF2P-2S-AB
A600-J03	SIS Housing Temperature	JF2P-2S-AB
A600-J04	SIS Scan Motor Temperature	JF2P-2S-AB
A600-J05	Operational Heater Power	JF2P-2S-AB