TIMED

Thermosphere • Ionosphere • Mesosphere • Energetics and Dynamics

Remote Interface Units (RIUs)

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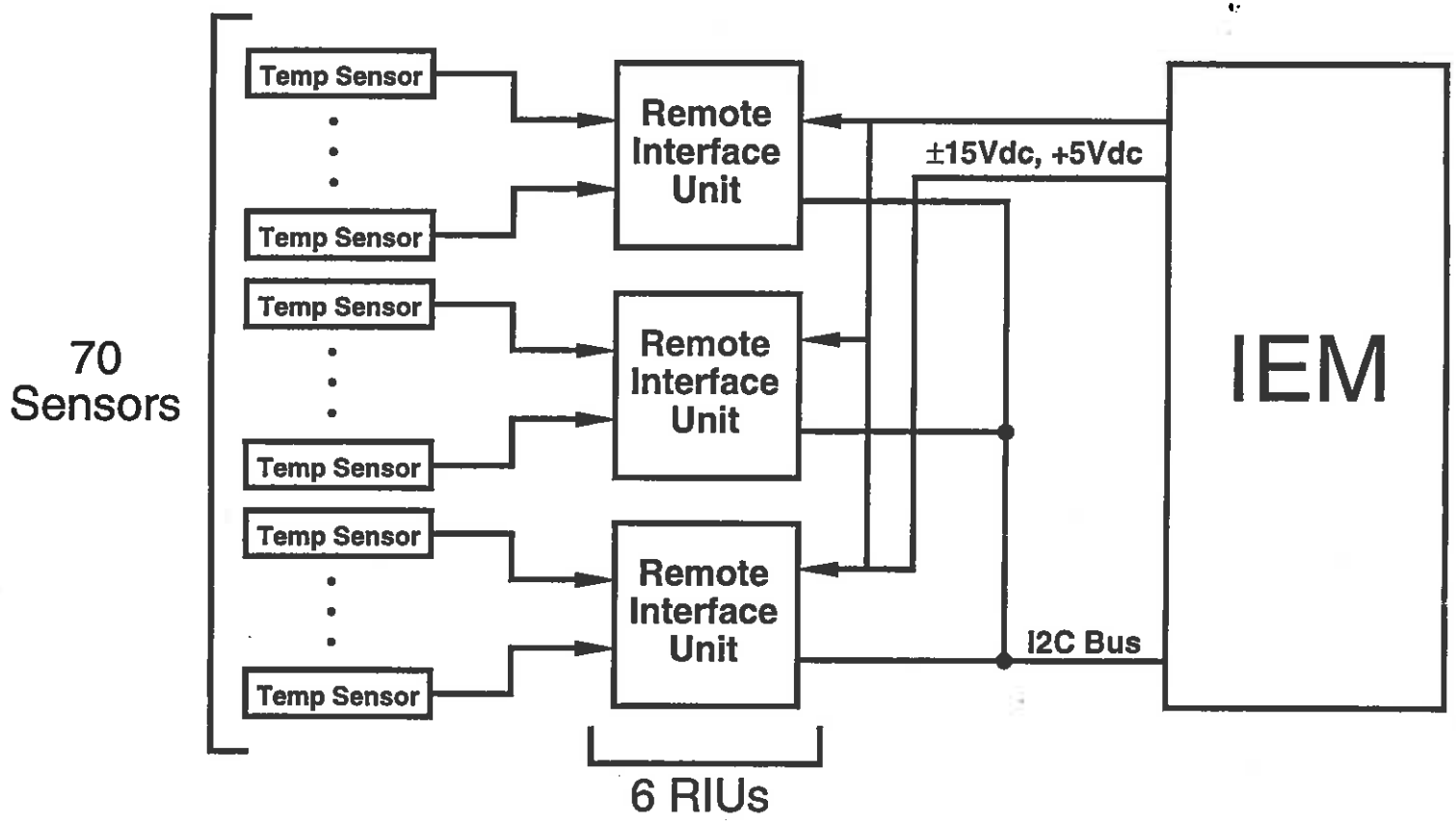
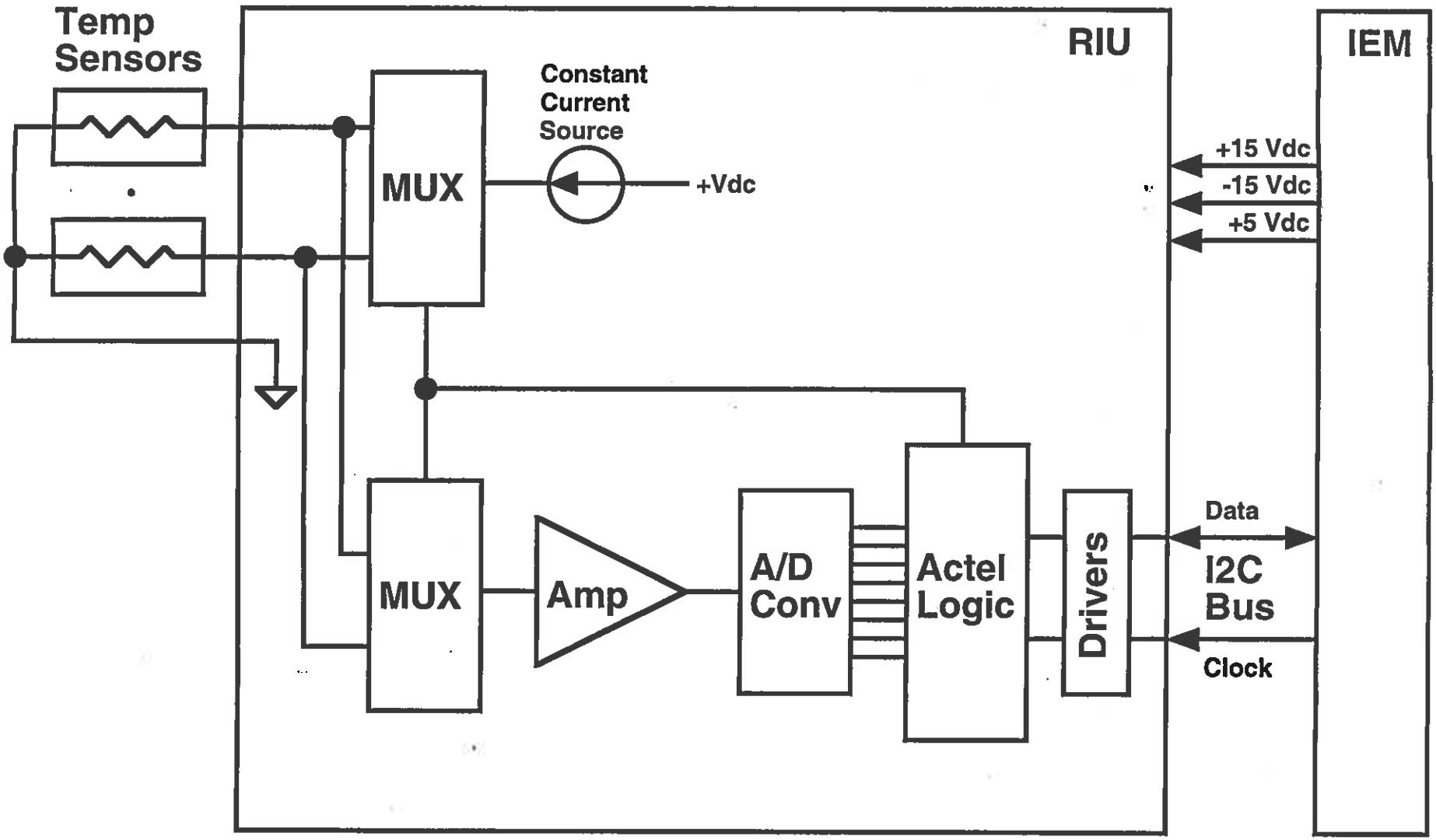
RIU Requirements

- Measure 70 S/C temperatures and send to the C&DH System
- Utilize standard temperature sensors for all measurements
- Provide necessary biasing and sampling electronics
- Report temperatures to an accuracy of ± 2°C
- Utilize the I2C bus for reporting to the C&DH System
- Provide identical systems for each of the 2 IEM chassis

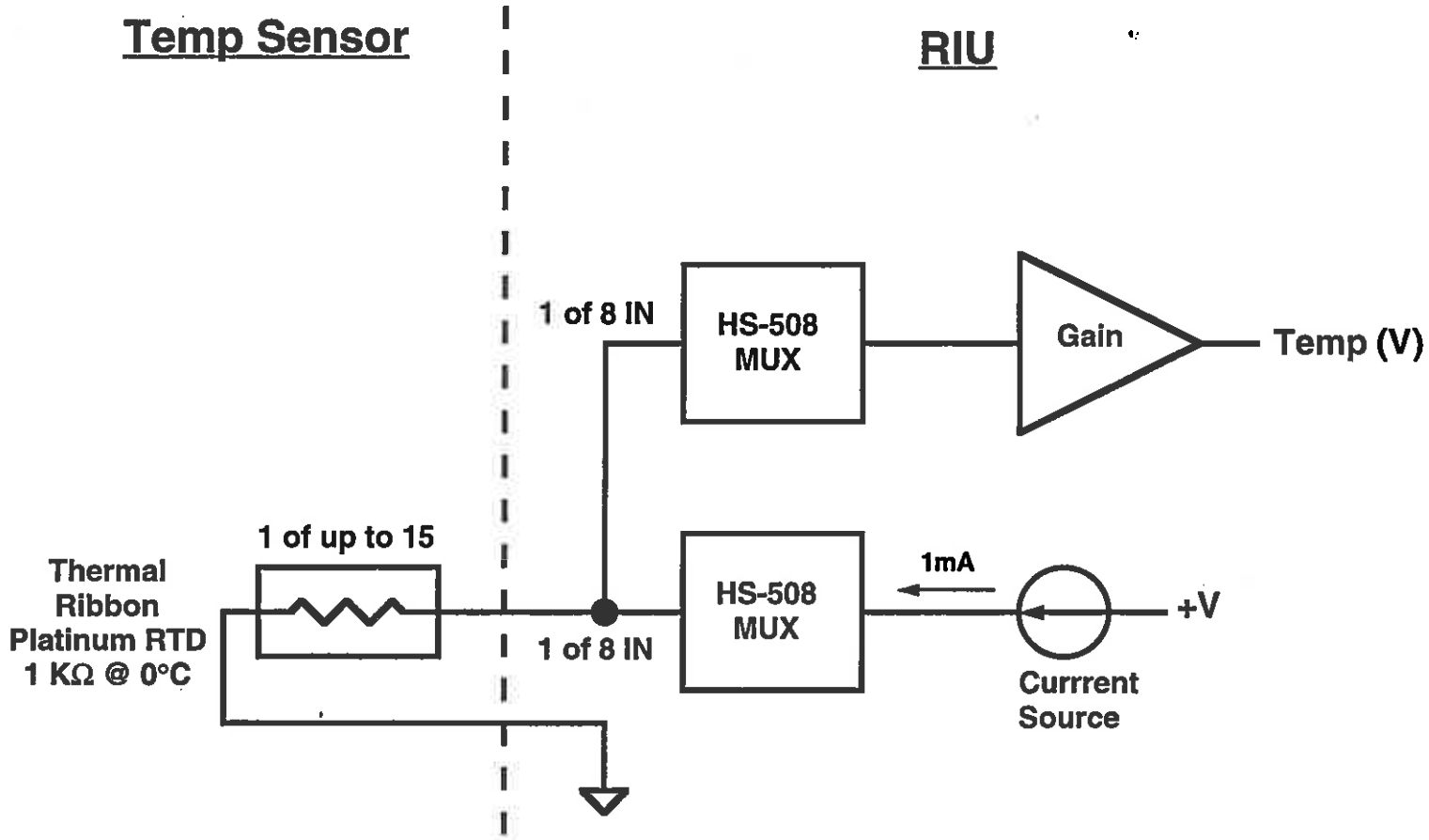
Simplified Top Level Block Diagram



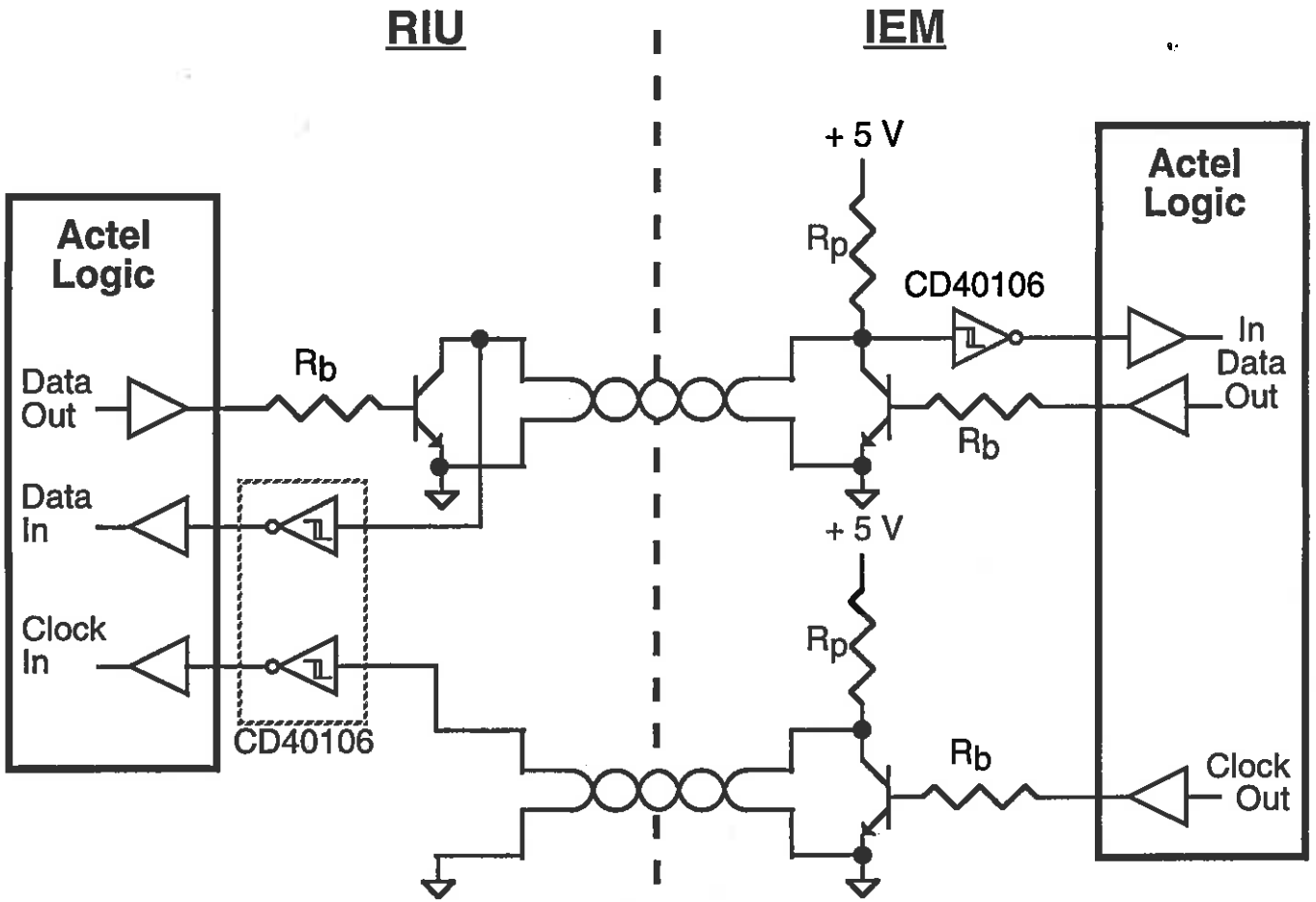
RIU Simplified Functional Block Diagram



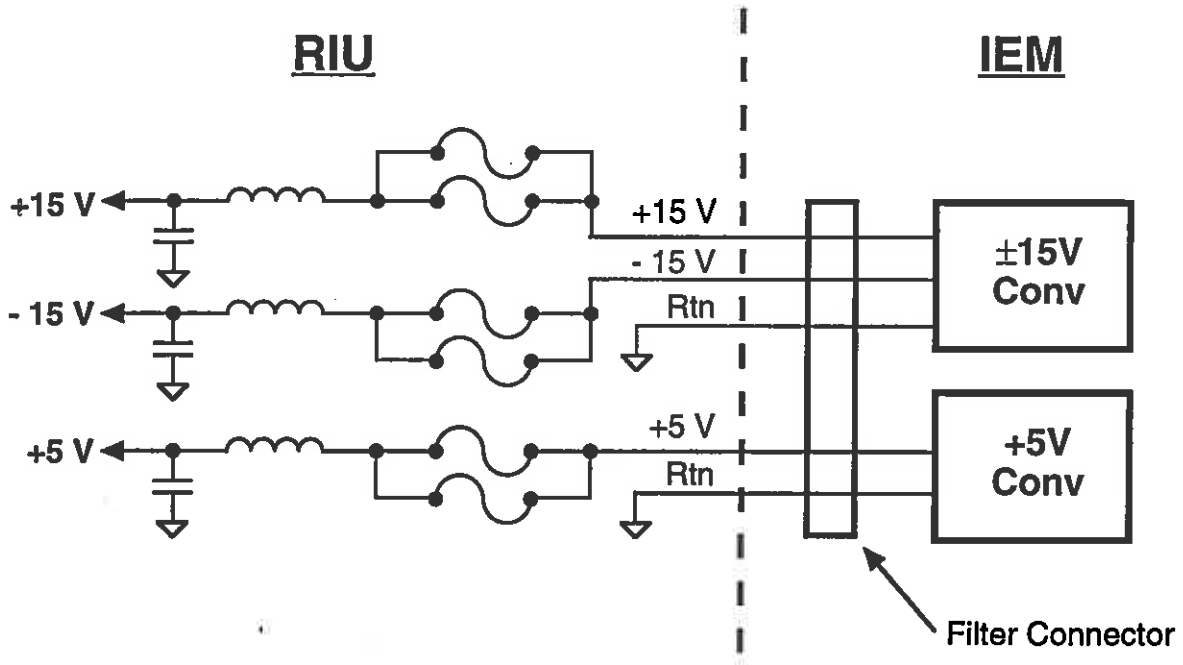
Temp Sensor Interface



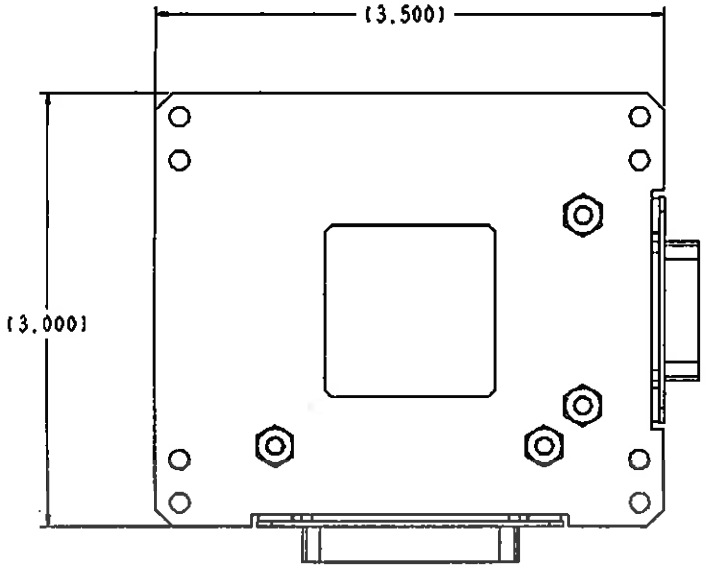
C&T Interface

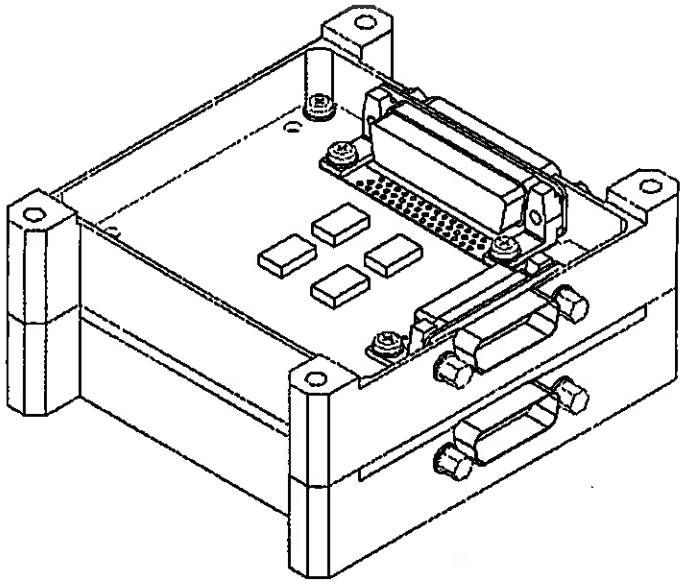


DC/DC Converter Interface

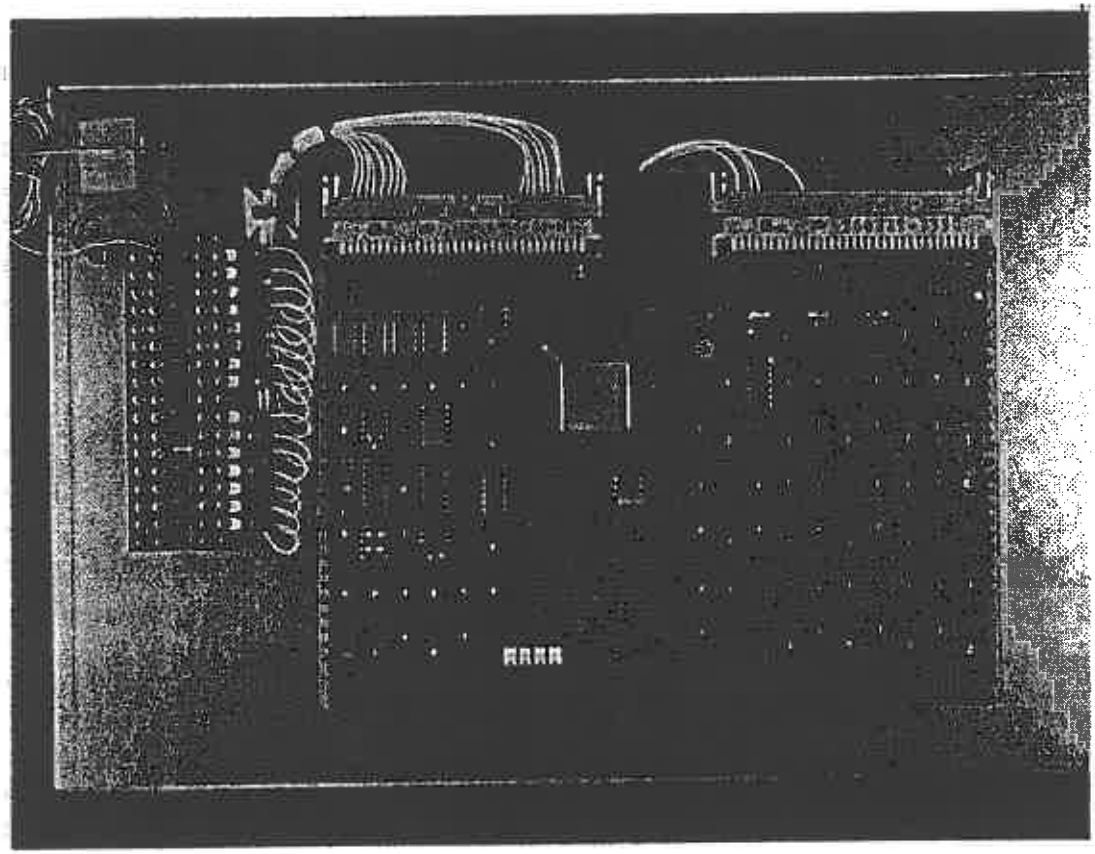


RIU Layout/ Packaging





RIU Breadboard/Test Fixture



RIU Breadboard Displayed Results

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I2C TEMPERATURES


SLAVE 1    0F 03 0C 1D 35 4E 6D 73 8A 9A AE C3 EA FF FF 84
SLAVE 2    FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
SLAVE 3    FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
SLAVE 4    FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
SLAVE 5    FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
SLAVE 6    FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
SLAVE ACK ERRORS . . .
SLAVE 1   ACK BYTE   1 2 3
SLAVE 2   ACK BYTE   1 2 3
SLAVE 3   ACK BYTE   1 2 3
SLAVE 4   ACK BYTE   1 2 3
SLAVE 5   ACK BYTE   1 2 3
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RIU PDR Action Item Results

Action Item 13

a) Consider devoting one temperature channel on each RIU to providing a calibration point, using a precision resistor.

b) Consider providing RIU address strapping externally at the connector so the address can be set without re-opening a qualified RIU.

Results (from memo SRI-97-041, dated 5 June 1997)

a) The sixteenth temperature channel of each RIU corresponds to a fixed 1.0KΩ resistor which corresponds to 0 °C. It will act as a calibration point for all readings within each RIU.

b) Each RIU address is determined by jumper wires on connector J1.