Functional Characteristics

Input Organization: Eight differential, input signal pairs.

Addressing Scheme: This board is addressed as 16 contiguous, 16-bit registers, located on any 16-bit word boundary within the short supervisory or short nonprivileged I/O space.

Compliance: This product complies with the VMEbus specification Rev. C.1 with the following mnemonics:

A16, D16, D08 (EO):29, 2D: Slave
6U form factor

Board Address Selection: The base address of the board is selected by 11 on-board jumpers. This board may be operated in any slot except slot one.

VMEbus Address Modifier: Address modifier lines are decoded to support either I/O access stated above. A single jumper is provided to support this feature, and is factory configured for short supervisory access.

Board Identification: This board provides a Board Identification Register (BIR) that contains the 16-bit identification code.

Electrical Specification at 25°C

Number of Channels: Eight voltage, RTD or strain bridge input channels

Analog Input Range: ±30 or ±100mV full scale, program-selectable

Channel Scan Rate: 1,700 channels/s minimum

Channel Settling Time: 1.6 ms to 0.01%, with no Hz input filter

Gain Error: ±0.03% maximum

Input Offset: ±50mV ±0.015% FSR

Offset Temperature Coefficient: ±3.5mV/°C maximum

Common-Mode Rejection: 70dB minimum; Rs=100Ω at 60Hz

Common-Mode Voltage: ±10V

Normal-Mode Protection: $130V_{RMS}$ continuous Line-to-line ($90V_{RMS}$ line-to-common)

Input Resistance: 10MΩ minimum with power applied, 70 kΩ with power removed

Input Bias Current: 8nA maximum

Strain Bridge Inputs

Bridge Configurations: Full-, half-, or quarter-bridges; provision for on-board bridge completion. Jumper selected individually for each channel.

Strain Bridge Excitation: +5.0 or +10.0V at 190mA. Remote sensing, fold back current limiting. (0.05Ω measured at remote sense lines) ±2%

RTD Inputs

Temperature Range: -200 to 850°C (100 W platinum RTD)

Processing Resolution: 0.15°C at 0°C

Processing Accuracy: ±0.25°C at 0°C

Resistance at 0°C: Standard as 100Ω platinum

Temperature Response (Program-Selectable):

0.00392 Ω/Ω/°C (American)
0.00385 Ω/Ω/°C (European)

Excitation: 0.4mA, ±1 percent each channel

Board Control and Status Register (CSR)

Mode Control: CSR bits 3, 2, and 1 establish the board operating mode as:

Continuous channel scanning
Single scan
Channel offset calibration
Channel range calibration

Sequence Initiation: Single scan and calibration sequences are initiated by setting CSR bit 0 to one, or by an external TTL trigger at P3 if CSR bit 4 is set to one. Bit 0 is cleared automatically at the end of each sequence.

Software Reset: The on-board processor is forced to the reset state if CSR bit 5 is set to one.

Fail Indicator: The front panel Fail indicator is OFF if CSR bit 7 is set to one, and ON if bit 7 is set to zero.

Self-Test: An on-board Self-Test is executed directly after a reset operation occurs. CSR bit 6 is set to a logic one if the test fails, and is cleared to logic zero if the Self-Test is successful. Self-Test verifies the correct operation of:

- Analog multiplexer
- Analog-to-Digital Converter
- Processor and memory
- Processor control and status ports

Channel Control Register (CCR)

Channel Mask: CCR bits 7 through 0 constitute an 8-bit channel enable mask with each bit controlling the corresponding channel number. A channel is enabled if the control bit is a logic one, and disabled (not processed) if the control bit is a logic zero. The default value is FF hexadecimal (all channels enabled). The remaining CCR bits control the converted data's resolution (LSB weight), engineering units, and data coding.

Temperature Units: °K, °C, °R, or °F; with LSB weight of 0.1, 1.0, or 10 degrees

Millivolt Units: Millivolts, with LSB weight of 0.01, 0.1, or 1.0mV

Data Coding: Binary, two's complement, complemented binary or complemented two's complement

Data Registers

Measurement Data: A 16-bit Data Register is provided for each of the eight input channels.

Channel Calibration: In the calibration mode, the on-board processor adjusts the appropriate parameter (offset or gain) to produce an output equal to the value loaded by the host. The final value of the calibration parameter is stored in nonvolatile memory. To prevent accidental alteration of calibration parameters, an on-board switch must be in the CAL-ENABLE position in order for the calibration sequence to be executed. This switch is accessible through the front panel along with an amber LED to alert the user when the board is in CAL mode.

Physical/Environmental

Temperature: Operating: 0 to +65°C (Standard VME slot), Storage: -20 to +85°C

Relative Humidity: 5 to 95% relative, noncondensing

Altitude: Operation to 10,000ft (3,048m)

Cooling: Convection

Weight (Mass): 0.7kg

Dimensions: Double height Eurocard (6U), 160mm x 233.35mm

Input Connector (P3): 32-pin DIN 41 612, VG and IEC connectors. Connectors interface with 22 to 14 AWG wire utilizing binding screw terminals.

Electrical Power: 2.5A (typical) at +5.0VDC (+0.25/-0.125VDC), 3.8A (maximum)

Related Products and Applications

GE Fanuc offers a broad range of Analog Input/Output (AIO) products for VME systems, and supports these products with comprehensive applications information. Contact GE Fanuc for a description of current products and a list of application guides.

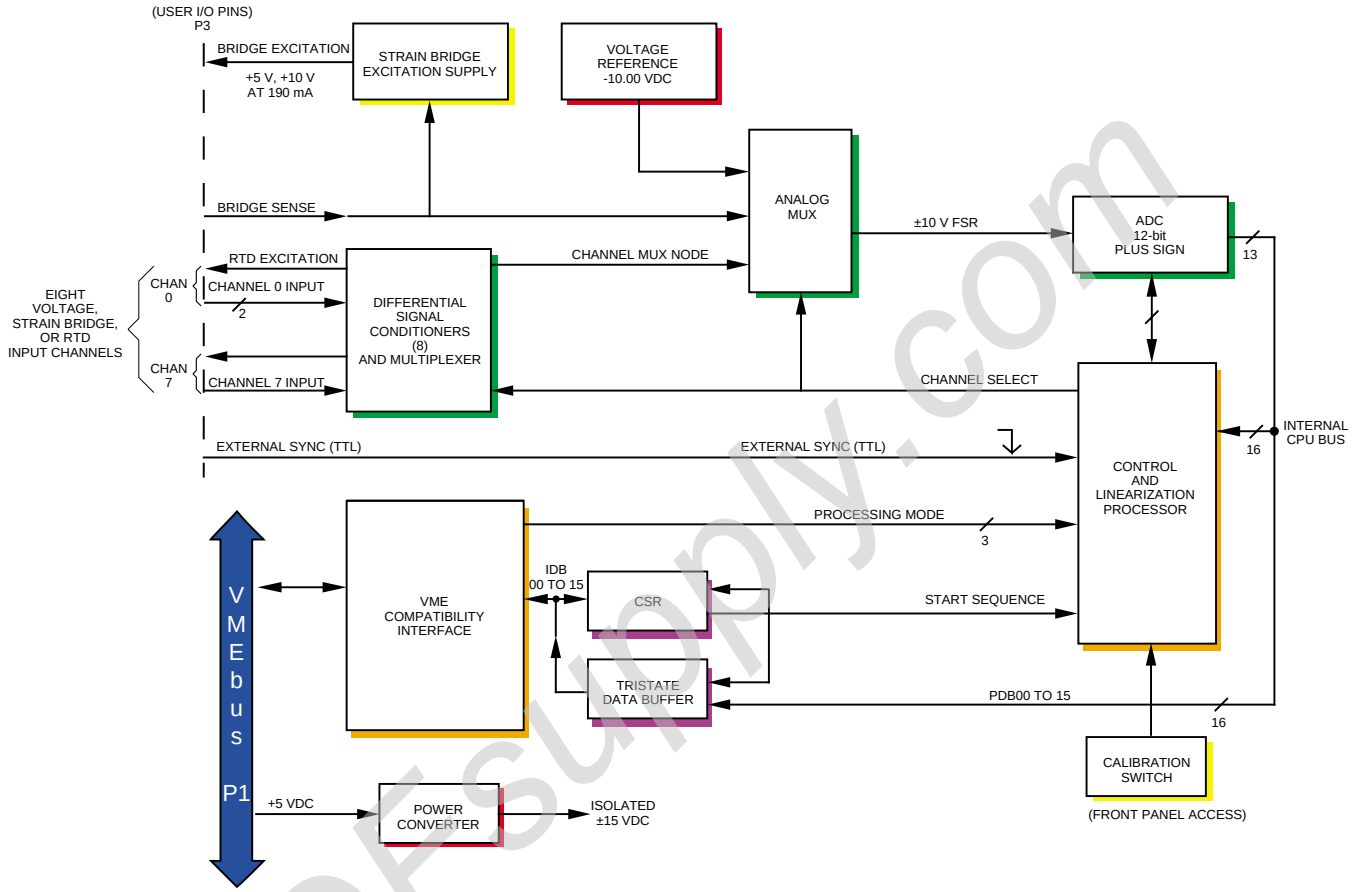

Figure 1. 8-Channel Analog Voltage Input Board Block Diagram