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Find the *Abaco Systems / VMIC VMIVME-3417-200* at our website: ***Click HERE***

VMIVME-3417A

16-Channel Isolated Signal Conditioning Board with Optional Current Loop Termination

- 16 isolated differential low-level analog input channels
- Channel-to-channel and channel-to-VMEbus isolation to 700 VRMS, 1,000 VDC
- Optional current loop termination input resistors
- Buffered high-level analog outputs
- Input ranges selectable from ±5 mV to ±10 V
- Optional low pass input filters, 2-pole; 4, 40, or 400 Hz
- Open-input detection for thermocouple inputs
- Outputs compatible with VMIC's 64-channel scanning A/D converter boards
- Supports system calibration and Built-in-Test (BIT)

APPLICATIONS

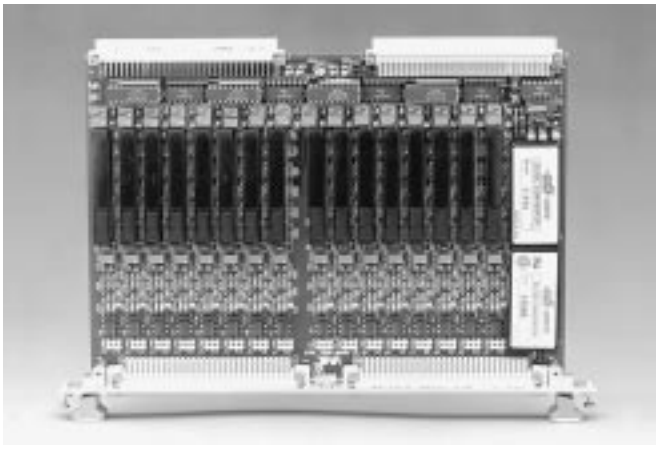
- System analog input isolation
- Temperature monitoring
- Transducer input conditioning
- Low-level voltage measurements
- Analog current loop inputs
- Pressure monitoring

DESCRIPTION — The VMIVME-3417A Board (Figure 1) is a 16-channel isolated signal conditioning board which is designed to accept low-level differential inputs directly from temperature and pressure transducers, or from any other low-level analog signal source. All 16-channel inputs are isolated from each other and from the VMEbus. Although the VMIVME-3417A Board can be used with any high-level analog input board, it is designed specifically as a companion to VMIC's 64-channel Scanning A/D Converter Boards, such as VMIVME-3113A, -3122.

When used in conjunction with 64-channel A/D boards, the VMIVME-3417A provides full-scale input ranges from ±5 mV to ±10 V. Two-pole low pass input filters are available with cutoff frequencies of 4, 40, or 400 Hz. Optional current loop termination input resistors are available, and replace the input filter.

Open thermocouple inputs at a gain of x100 and x1,000 are detected by forcing the open channel offscale in the negative direction. An input bias current of approximately 40 nA is provided for this function, and will force the channel output offscale within 3 seconds at a gain of x1,000. Open thermocouple inputs at a gain of x1 and x10 are detected by forcing the open channel within the negative voltage range.

For total cable compatibility with the 64-Channel A/D Converter Boards, the 16 outputs can be jumper designated either as Channels 0 to 15 or as Channels 16 to 31, if installed at P3 and as Channels 32 to 47 or as Channels 48 to 63, if installed at P4. This feature permits two VMIVME-3417A Boards to be connected to either of the 32-channel input connectors on the A/D Converter



Board, with a single 96-wire multidrop ribbon cable as shown in Figure 2.

Built-in-Test (BIT) is supported by connecting the output buffers to an externally supplied reference voltage from the P2 connector. BIT is controlled by a TTL P2 input. The VMIVME-4125 is designed to control BIT and provide a calibration reference.

The VMIVME-4125 can produce a reference voltage of zero (cal. zero) and a variety of positive and negative reference voltages that approach full scale for most ADC applications, (cal. span).

ORDERING INFORMATION

Dec. 19, 1996 800-103417-000 B		A	B	C	-	D	E	F
VMIVME-3417A	-		0	0	-			

A = Input Filter and Termination Options

0 = No Filters or Termination Resistors (see Note 1)
1 = 4 Hz Filters
2 = 40 Hz Filters
3 = 400 Hz Filters
4 = 125 Ω 0.01 Percent Resistors
5 = 250 Ω 0.01 Percent Resistors

BC = 00 (Options reserved for future use)

EXAMPLE

Part number VMIVME-3417A-200 specifies a VMIVME-3417A Board with 40 Hz input filters.

NOTE

The "No Filter" ordering option implements a first-order low pass filter with a cutoff frequency between 600 Hz to 1,600 Hz depending on the gain settings. The isolation amplifier's small signal frequency response will typically be limited to 1,000 Hz (200 Hz full signal bandwidth).

For Ordering Information, Call:
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FUNCTIONAL CHARACTERISTICS

Compliance: 6U double height form factor. The VMIVME-3417A Board uses the VMEbus J1 and J2 backplane for +5 VDC electrical power and BIT only, and has no VMEbus communications functions.

ELECTRICAL CHARACTERISTICS

(At 25 °C, with rated power supply.)

Number of Channels: Sixteen

CHANNEL INPUT CHARACTERISTICS

Absolute Maximum Input: ±25 V continuous, ±40 V instantaneous, power ON or OFF (voltage input options, -000, -100, -200, and -300)
±40 mA continuous with 250 Ω termination (-500), ±60 mA with 125 Ω termination (-400)

Configuration: Differential, isolated

Input Ranges, Full Scale: Field-selectable as ±10 mV, ±100 mV, ±1 V, or ±10 V full scale, for ±10 V output range, ±5 mV is obtained by setting ADC Board to ±5 V full-scale input.

Input Offset Voltage (Adjustable to Zero):

±10 mV Range:	±30 µV maximum
±100 mV Range:	±100 µV
±1 V Range:	±400 µV
±10 V Range:	±10 mV

Input Offset Voltage Drift:

±10 mV Range:	±2.0 µV/°C maximum
±100 mV Range:	±3.0 µV/°C
±1 V Range:	±10 µV/°C
±10 V Range:	±60 µV/°C

Input Noise, 10 Hz to 1,000 Hz; 3 σ (Note 1):

	4 Hz Filters	No Filters
10 mV Range:	5 µVp-p	30 µVp-p
100 mV Range:	20 µVp-p	250 µVp-p
1 V Range:	0.3 mVp-p	2.5 mVp-p
10 V Range:	3 mVp-p	20 mVp-p

Input Impedance: 10 MΩ ±10 percent

Input Bias Current: 40 nA maximum

Common-Mode Voltage (CMV): Maximum of ±1,000 VDC, or 700 Vrms, referenced to the VMEbus power supply return

GAIN	FILTER OPTION			
	4 Hz	40 Hz	400 Hz	NONE
x1	96 dB	82 dB	78 dB	77 dB
x10	135 dB	121 dB	117 dB	116 dB
x100	130 dB	115 dB	111 dB	110 dB
x1,000	130 dB	115 dB	111 dB	110 dB

Common-Mode Rejection Ratio (CMRR): DC-to-60 Hz, 350 Ω source unbalance, referenced to the VMEbus power supply return.

Low Pass Filters: Two-pole passive filters (no switching noise), available with a cutoff frequency of 4, 40, or 400 Hz. See the Ordering Information.

Current Loop Termination (Optional Input Configuration): 125 or 250 Ω, 0.01 percent resistor; replaces the input filter.

Open Input Detection: Off-scale negative for thermocouple inputs at gains of x100 and x1,000

Open Input Delay: Maximum delay (-10 V Swing) at channel output:

Delay (Seconds at Filter Frequency)

Gain	4 Hz	40 Hz	400 Hz
x1,000	3	1	0.3
x100	25	5	1

x1, x10 (x1 and x10 gain settings not applicable for low-level sensors)

TRANSFER CHARACTERISTICS

Channel Gain: Field selectable as x1, x10, x100, or x1,000

Gain Accuracy: Adjustable to ±0.025 percent on all ranges

Gain Drift: 35 PPM/°C maximum, all ranges

Nonlinearity: ±0.022 percent

Interchannel Crosstalk: DC-to-1,000 Hz

GAIN	FILTER OPTION			
	4 Hz	40 Hz	400 Hz	NONE
x1	121 dB	104 dB	85 dB	78 dB
x10	130 dB	115 dB	98 dB	95 dB
x100	135 dB	120 dB	103 dB	100 dB
x1,000	140 dB	130 dB	113 dB	110 dB

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OUTPUT CHARACTERISTICS

Output Voltage Range: ±10 V maximum full scale output range

Output Resistance: 25 Ω maximum

Output Loading: ±2 mA over ±10 V output range

BUILT-IN-TEST (BIT) INPUTS

BIT Reference Input: ±5 VDC full scale. Signal, signal return, and shield pins provided on P2.

Reference Loading: 6 µA maximum at ±10 VDC input

Bit Control Inputs: BIT control signals are TTL levels, 0.5 mA maximum at low level, 10 µA at high level

ELECTRICAL CONNECTIONS

Power	P1;	96-pin DIN connector
Inputs	P3;	96-pin DIN connector
Outputs	P4;	96-pin DIN connector
BIT Control	P2;	96-pin DIN connector
and Power		14 user-defined pins

PHYSICAL/ENVIRONMENTAL

Temperature: 0 to +65 °C, operating
-20 to +85 °C, storage

Humidity: 10 to 80 percent, relative noncondensing

Cooling: Forced air convection

Altitude: Operational to 10,000 ft

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

Power: 2.0 A (maximum), 1.5 A (typical at +5 VDC)

1. Three standard deviations (3 σ) include 99.7 percent of all noise in a normal distribution.

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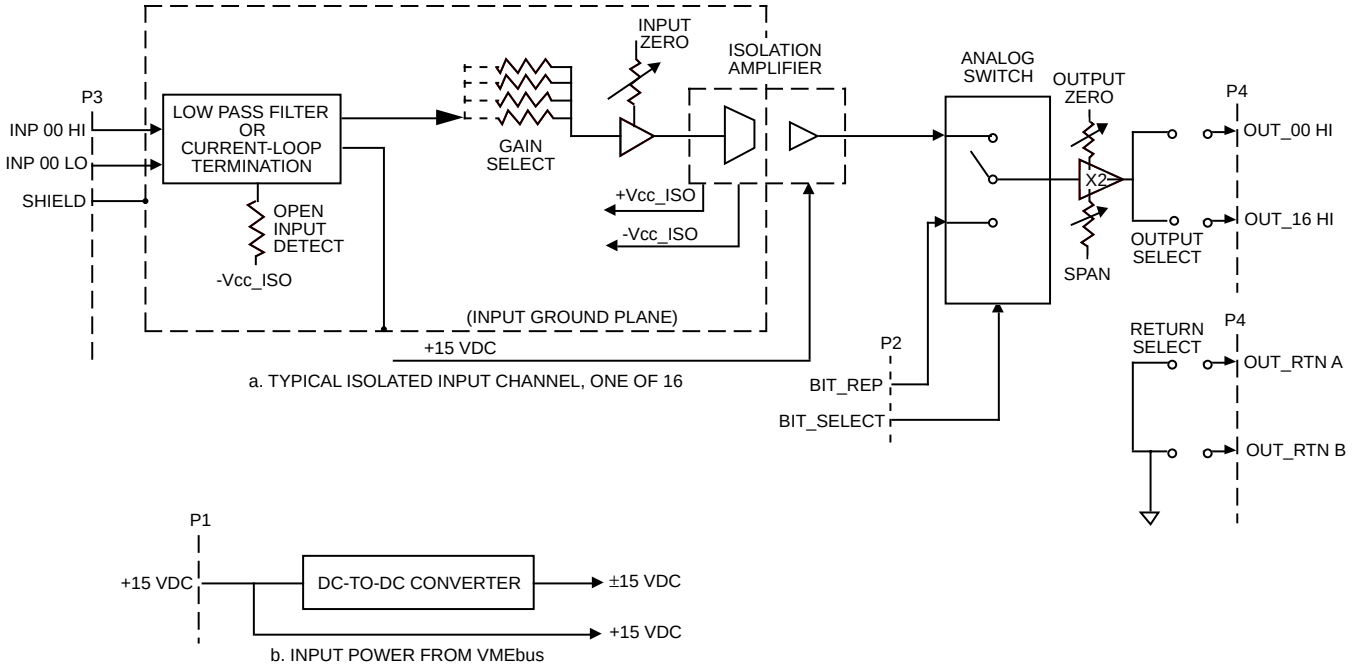
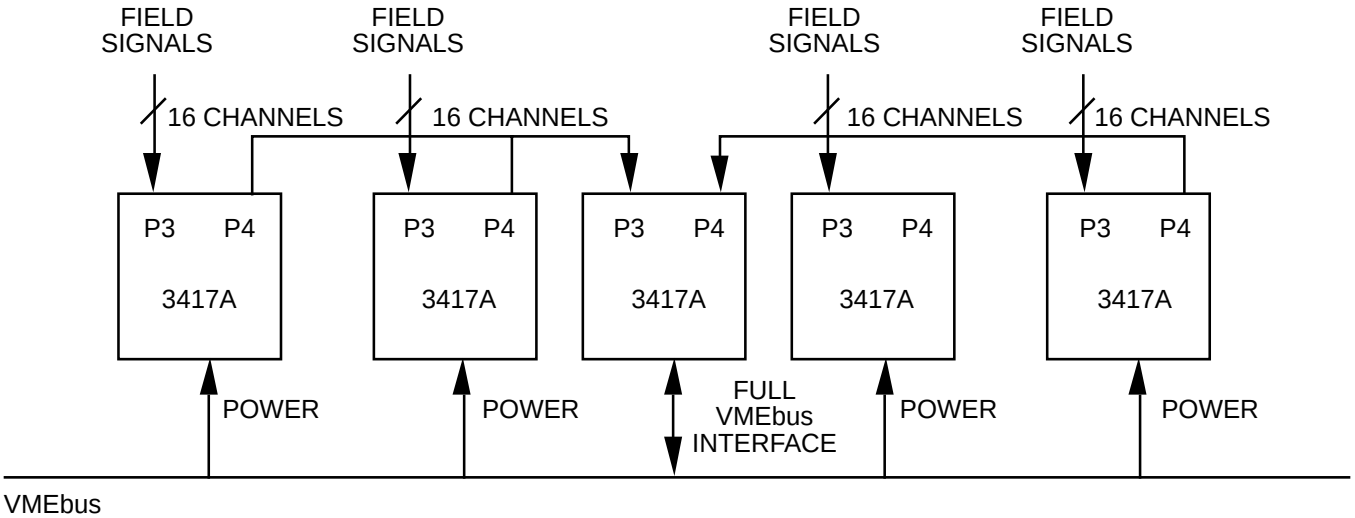


Figure 1. VMIVME-3417A Block Diagram



Note: The ADC Board may be any VMIC 64-Channel Scanning A/D Board.

Figure 2. System Implementation of VMIVME-3417A

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