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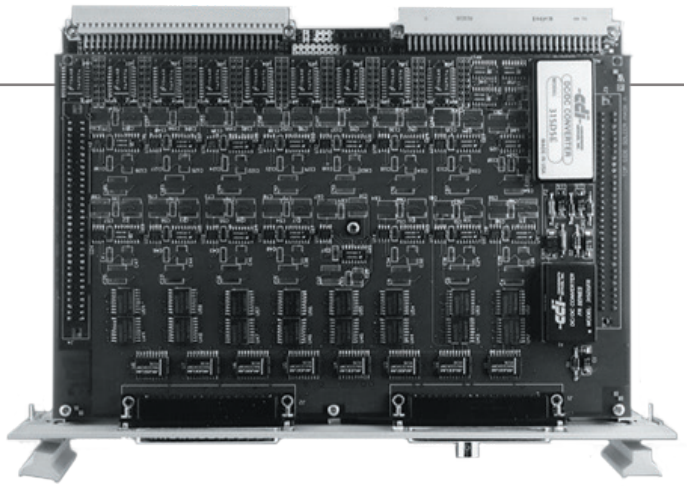
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Find the *Abaco Systems / VMIC VMIVME-3119-021* at our website: ***Click HERE***



VMIVME-3119 Specifications

16-bit Scanning Analog Input Board with Programmable Gain, Filter Cutoff, and Autocalibration Per Channel

Features:

- 16 differential analog input channels
- Software-programmable gain per channel (x1, x10, x100, x1,000)
- Input signal range from ±10mV to ±10V
- Software-programmable fourth-order low pass filter (1Hz, 10Hz, 100Hz, 1kHz) factory option of Bessel or Butterworth response
- Autocalibration per channel utilizing DSP technology
- 16-bit analog-to digital (A/D) converter; high accuracy
- Software-programmable sample rate from 305Hz to 100kHz aggregate
- Software-programmable scan table
- Large data buffer retains up to 4 million data samples
- Overvoltage input protection
- Flexible triggering: internal, external, or multiboard synchronous
- VME interrupts at mid scan or end scan
- Two-slot configuration
- UIOC® capability
- Self-test
  - Extensive onboard diagnostic testing capability
  - Implements precision internal reference voltages
  - Independent of field connections

Applications:

- Precision voltage monitoring
- Data acquisition systems
- Laboratory instrumentation
- Process control
- Automatic test equipment

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VMIVME-3119 Specifications *16-bit Scanning Analog Input Board with Programmable Gain, Filter Cutoff, and Autocalibration Per Channel*

Ordering Options				
June 21, 2007 800-003119-000 D		A	B	C
VMIVME-3119	–	0		

A = 0 (Option reserved for future use)
B = Filter Type Option
0 = No Filter
1 = Bessel Filter
2 = Butterworth Filter
C = Number of Channels
0 = 16 Channels, 4M Samples
1 = 16 Channels, 2M Samples
2 = 8 Channels, 4M Samples
3 = 8 Channels, 2M Samples

Example
A part number VMIVME-3119-013 specifies an 8-channel VMIVME-3119 board with a 2 megasample data buffer and Bessel low pass filters.

I/O Connector Data	
Compatible Cable Connector	Standard subminiature D 37-pin male connector

For Ordering Information, Call:
1-800-322-3616 or 1-256-880-0444 • FAX (256) 882-0859
Email: info.embeddedsystems@gefanuc.com
Web Address: www.gefanucembedded.com
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Functional Characteristics

Introduction: The VMIVME-3119 analog input board provides 16 high accuracy differential analog input channels with high throughput 16-bit A/D conversion. Each input is equipped with a dedicated programmable-gain amplifier (PGA), software selectable, fourth-order low pass filter, and autocalibration.

The onboard autocalibration corrects for offset and gain errors in real-time. Calibration correction values are determined at user-controlled calibration intervals without removing the board from the system. Individual channel correction is accomplished by DSP technology in real-time for every A/D conversion. Calibration can be verified at any time by implementing the self-test feature. Self-test uses internal precision voltages, which are applied to all channels simultaneously to verify signal path integrity.

The VMIVME-3119 can be jumper configured for either standard or extended address space, and can be jumper configured to occupy 16, 8, 4, 2, 1MB or 512, 256, or 128KB.

The VMIVME-3119 has a software-configurable sample buffer which begins at the base address of the Data RAM (address P) (see Figure 1). The size of the sample buffer determines the number of samples to be stored per scan. The sample buffer size can be configured in any power-of-2 from 1 sample to 4M samples.

A functional block diagram is provided in Figure 2.

Compliance: This product complies with the VMEbus specification ANSI/IEEE STD 1014-1987 IEC 821 and 297 with the following mnemonics:

Addressing:	A32, A24 supervisory or nonprivileged data access
Data Access:	D32, D16, D8(EO), D32:BLT, D16:BLT, D8(EO):BLT
Interrupts:	I(1 to 7) ROAK, D08(EO) vector
Form Factor:	6U, dual slot

VME Interrupt: An interrupt can be issued on any level, and a single byte vector will be placed on the bus when acknowledged. There is one ROAK interrupt for the board and it can be generated when the data buffer is 50 percent (mid scan) or 100 percent (end scan) filled.

Data-Ready Flag: A data-ready flag is set when the data buffer is at end scan or mid scan.

Self-Test: Precision internal voltage references are substituted for field inputs on all channels simultaneously. Field cables may be left connected.

System Reset: A reset automatically establishes the following default conditions:

Continuous scan of channels 0 to 15
20kHz aggregate sample rate
Buffer size = 32 bytes (16 samples)
Channel Gain = x1 (input voltage is ±10V full scale)
Channel Filter Frequency = 1kHz (filter option)
Channel Filter Frequency = 10kHz (no-filter option)

PGA: Channel gains of x1, x10, x100, x1,000 are selected through a PGA. The gain of each channel can be independently selected.

Calibration: The VMIVME-3119 uses DSP technology to determine and store gain and offset coefficients for all A/D channels. This feature eliminates the need for gain and offset trim potentiometers and allows user-initiated calibration. The DSP routes a precision voltage to each channel, reads the response from the 16-bit ADC, and then calculates the offset and gain coefficients for the gain setting selected by software. The calibration coefficients are stored in EEPROM. During normal operation, the A/D data for a particular channel is multiplied by the gain coefficient and added to the offset coefficient. This corrected data is then written to the memory. Note: After powerup, the DSP initializes the board by recalling calibration coefficients from EEPROM for each channel at the x1 gain setting (±10V input).

Front Panel LED: The LED indicates progression/status of certain DSP operations, such as power-on, self-test, and calibration. The LED can also be software controlled.

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Board Identification: A Board Identification Register (BIR) contains the VMIVME-3119 identification code.

Data Buffer: 8MB (4 Megasamples), maximum. (See the Ordering Options.)

Scan Table: 1 to 1,024 byte scan table which, when enabled, defines the scanning sequence of the VMIVME-3119.

Sample Rate: The internal sample clock is software programmable from 305 to 100,000 SPS (samples per second). The sample rate can be controlled from zero to 100,000 SPS by the external triggering sources. This sample rate is defined as the aggregate sample rate for all active channels.

Scan Modes

The VMIVME-3119 supports the following scan modes:

Continuous Scan: When a scan is triggered, the selected channels are scanned continuously until the scan is aborted.

Single Scan: When a scan is triggered, the selected channels are scanned until the sample buffer is filled.

Advance Scan on Trigger: On each trigger event, the scan is advanced to the next active channel. This scan mode allows a VMIVME-3119 to be synchronized to a master or to be controlled by an external sample command/clock.

Trigger Modes

The VMIVME-3119 supports the following trigger modes:

Single Board, Software: The configured scan is triggered by a software trigger command.

Single Board, Single-Ended External: The configured scan is triggered by a high-to-low TTL logic-level change on the single-ended external trigger input.

Multiboard Master, Software: The configured scan is triggered by a software trigger command. The differential trigger output can be used to synchronize multiple boards to this software trigger.

Multiboard Master, Single-Ended External: The configured scan is triggered by a high-to-low TTL logic-level change on the single-ended external trigger input. The differential trigger output can be used to synchronize multiple boards to this single-ended external trigger.

Multiboard Slave, Differential External: The configured scan is triggered by a differential external trigger.

Analog Inputs

(Specified at +25˚C and rated supplies, unless otherwise noted.)

Input Configuration: Sixteen differential input channels with selectable gain, filter cutoff, and autocalibration. An 8-channel option is available; see the Ordering Options.

A/D Converter: 16-bit A/D converter

Input Voltage Ranges: Software selectable as ±10mV, ±100mV, ±1V, ±10V

Bias Current: ±5nA, ±10pA/˚C

Common-Mode Voltage: $\left(VCM + \frac{(V_{DIFF}/2)}{Gain}\right)$, ±10V, 0V input signal

Common-Mode Rejection Ratio (CMRR): DC to 60Hz with 350W source imbalance. Units in dB.

Gain	Minimum	Typical
1	85	100
10	100	120
100	120	140
1,000	120	140

Input Noise: Typical and maximum input noise is shown in Table 1. In this table, inputs Hi and Lo are shorted to AGND at front panel connector. Noise units are µV RMS.

Table 1. Noise in µV RMS as a Function of Filter Setting and Input Range

Typical				
Range	1kHz	100Hz	10Hz	1Hz
±10V	290	275	275	260
±1V	28	28	28	28
±100mV	2.9	2.5	2.5	2.5
±10mV	0.56	0.3	0.25	0.25
Maximum				
±10V	465	420	400	400
±1V	40	40	40	40
±100mV	4.5	4.0	3.8	3.8
±10mV	0.7	0.6	0.4	0.3

Overvoltage: Protected to ±40V sustained, ±100V for one second

Crosstalk: DC to 1kHz, 100SPS sample rate
Adjacent Channel: 75dB
Other Channels: -90dB

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Transfer Characteristics

(Specified at +25˚C and rated supplies, unless otherwise noted.)

Gain Accuracy: ±0.005 percent, ±5PPM/˚C, ±0.005 percent/year after calibration to internal references

Integral Nonlinearity: ±0.0025 percent, maximum from best straight line

Sampling Rate: 100k SPS (thousand samples per second) maximum aggregate rate. The sample period can be programmed from 10µs to 3.277ms with 50ns resolution.

Full Power Bandwidth[1]**:** 11.1 kHz, typical

Bandwidth: DC to selected filter frequency, or
48kHz (-3dB) at G = 10
10kHz (-3dB) at G = 100
1kHz (-3 B) at G = 1,000

Low Pass Input Filters: Fourth-order low pass filters with software-programmable cutoff frequencies of 1, 10, or 100Hz, or 1kHz. Factory options of Bessel or Butterworth filter types available. Also available without these programmable filters. See the Ordering Options.

Physical/Environmental

Dimensions: Standard VME 6U double height board (160 x 233.5mm); dual slot

Temperature Range: 0 to +65˚ C, operating
-25 to +85˚ C, storage

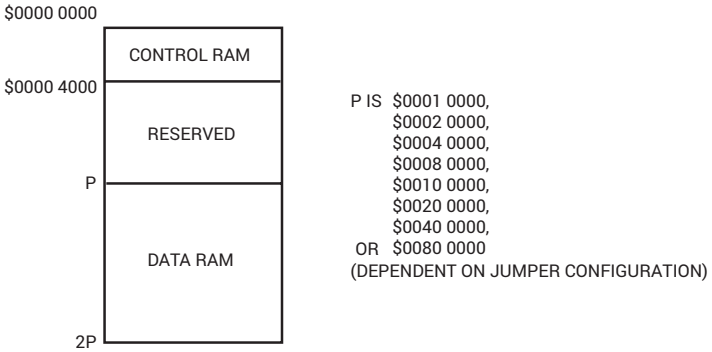


Figure 1. Memory Map

Relative Humidity: 20 to 80 percent, noncondensing

Cooling: Normal VME chassis forced air circulation

Power Requirements: 4.3A typical at 5VDC, 5.0A maximum

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

Trademarks

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1 Full power calculated from slew rate: FPBW = SR/2p Vp, where Vp = 10, SR = .7V/ms

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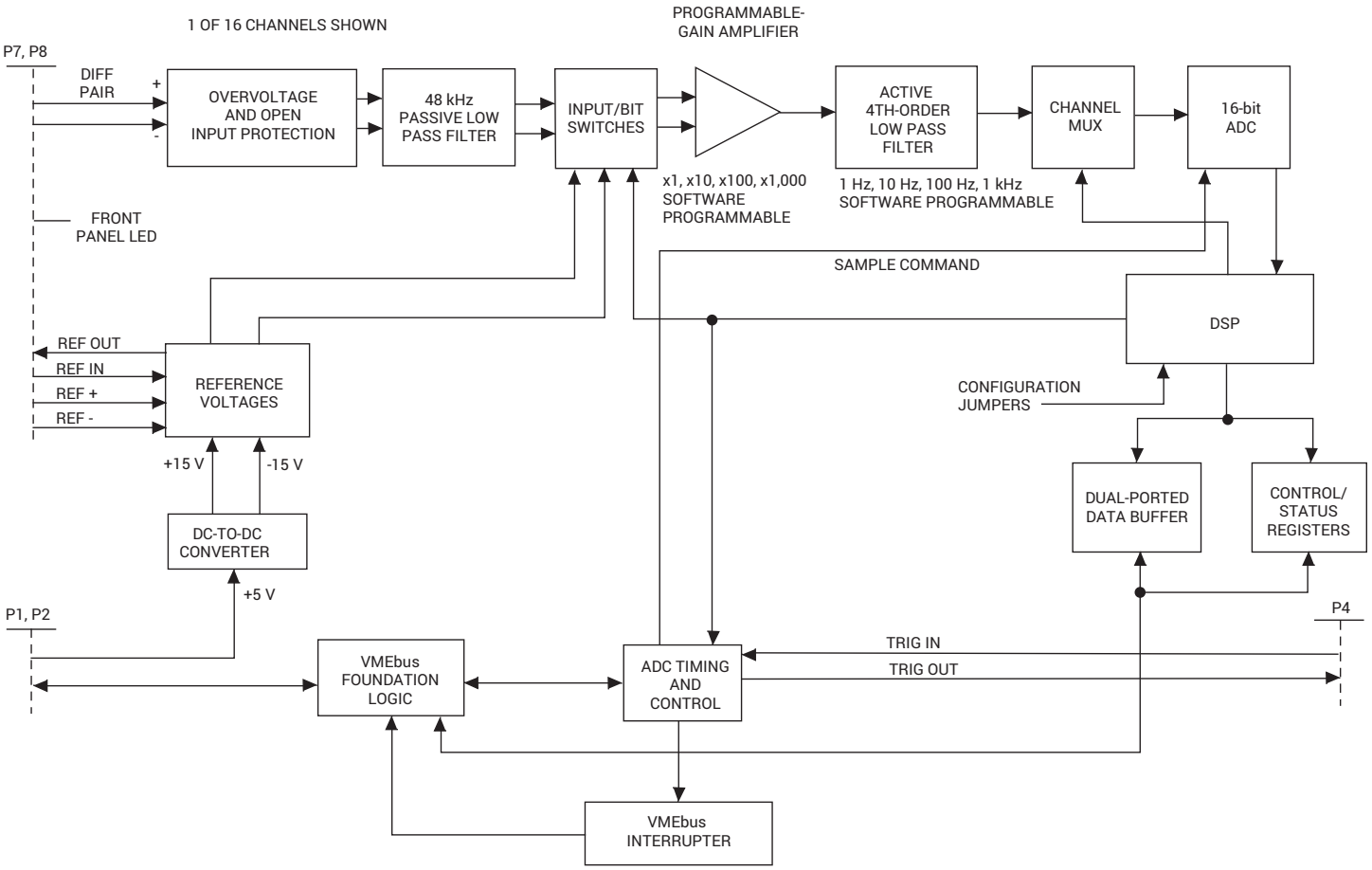


Figure 2. VMIVME-3119 Functional Block Diagram

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