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Find the *Abaco Systems / VMIC VMIVME-4512-300* at our website: ***Click HERE***

VMIVME-4512
16-Channel Analog I/O Board with Built-in-Test On-Board

- 16 analog input channels
  — On-board 12-bit A/D converter 16 differential or 16 single-ended channels
  — Unipolar (0 to +10 V, 0 to +5 V) or bipolar (±2.5 V, ±5 V, ±10 V)
  — Throughputs to 33 kHz
  — Optional low pass filters
  — Overvoltage protected
  — Fail-safe with power off
- P2 I/O connection
- Built-in-test on-board
  — Tests 100 percent of active components
  — Semiconductor output switches (0.1 Ω output impedance) do not compromise accuracy
- Analog output 16 channels
  — 12-bit D/A converter
  — 16 sample-and-hold outputs
  — Output short circuit protected
  — Unipolar (0 to +10 V, 0 to +5 V) or bipolar (±2.5 V, ±5 V, ±10 V)
  — Program-selectable scan rates provide improved response for complex output functions
  — 10 mA outputs
- On-board ±15 V DC-to-DC converter
- Front panel Fail LED

INTRODUCTION — The VMIVME-4512 analog I/O board provides 16 high-quality analog output channels, which can be programmed with on-board jumpers to operate in a variety of voltage ranges. All outputs have 12-bit resolution, and can source or sink 10 mA at ±10 V. For offline testing, the analog outputs can be disconnected from the I/O connector.

In addition to the output features, the VMIVME-4512 will accept analog inputs as 16 differential or pseudo-differential channels. To achieve maximum system throughput, digitizing of the analog inputs is performed on-board with a multirange 12-bit A/D converter. The converter is also used to test the 16 analog outputs.

FUNCTIONAL CHARACTERISTICS

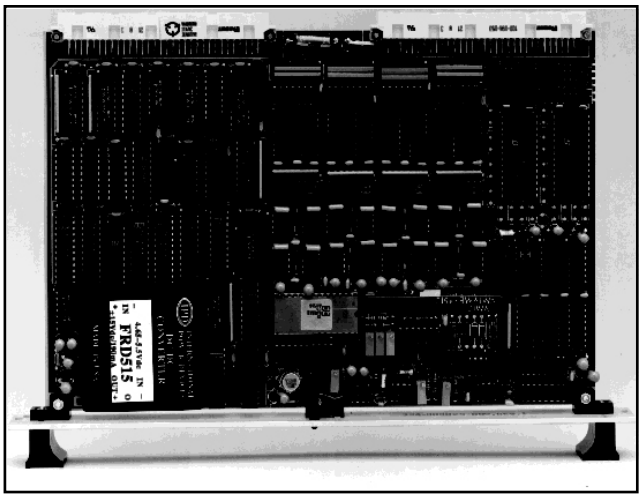
Compatibility: The analog I/O board is a standard, double-height, printed-circuit board which is compatible with the VMEbus specification (Rev. C.1).

Board Address: The physical address for the board may be selected by on-board jumpers. VMEbus address lines A06 through A15 are decoded for board selection.

VMEbus Access: Address modifier bits are jumper selected and decoded to support both nonprivileged short I/O, supervisory short I/O, or both. The board is factory configured for supervisory short I/O.

Data Transfer Bus: A16:D16, D08 (EO)

Output Data Transfer: Data for each analog output channel is written directly into on-board RAM location dedicated to a specific channel. The data is then periodically retrieved from the RAM, and converted to an analog voltage which is transferred to one of 16 output sample-and-hold buffers.



Analog Input Format: Analog inputs are first digitized, then the 12-bit digital values (D11 to D00) are read at a single memory word location. The upper four bits (D15, D14, D13, and D12) are read as the sign extension of the 12-bit digital value.

Analog I/O Test Mode: Built-in-Test multiplexer logic provides the user with the capability to test all of the active components on the board, including the output switches. This test scheme utilizes the on-board A/D converter multiplexers, as shown in Figure 1.

Memory Test: This product is designed with dual-port on-board memory that may be tested by executing a memory diagnostic for additional operational verification.

Ordering Options

August 17, 1993 800-004512-000 F	A	B	C	–	D	E	F
VMIVME-4512	–		0	0	–			

A = Input Filter Options
0 = No Filter
1 = 6 Hz
2 = 9 Hz
3 = 36 Hz

BC = 00 (Options reserved for future use)

I/O Connector Data

Connecting Component	**Panduit**
Mating Cable Connector	No. 120-964-435E
Strain Relief	No. 100-000-032
Board I/O Connector	No. 120-964-003A

For Ordering Information, Call:
1-800-322-3616 or 1-256-880-0444 • FAX (256) 882-0859
E-mail: info@vmic.com Web Address: www.vmic.com
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System Reset: Application of the system reset signal via the VMEbus initializes the board into a state with all analog outputs disconnected from the output connector (P2).

Front Panel Fail LED: If an error condition occurs during diagnostics, a software-controlled LED may be illuminated to visually indicate a failure. The LED is illuminated by system reset at power-up and is extinguished upon successful diagnostic execution.

(Typical at +25 °C and rated power supplies unless otherwise stated.)

ANALOG INPUTS

No. of Input Channels: Thirty-two, including 16 which are used for loopback testing of 16 analog output channels. Sixteen undedicated differential (or pseudo-differential) analog inputs are available.

Input Type: Differential or single-ended

Analog Input Acquisition Time: 10 µs

Monotonicity: Monotonic over full temperature range

Common-Mode Range: ±11 V (maximum)

Common-Mode Rejection: 82 dB

Accuracy: 0.04 percent of range ±2 mV, may be calibrated to 0.02 percent ±0.5 mV

Input Impedance: 10 MΩ (minimum)

Input Filter Options: Single pole 6, 9, or 36 Hz

Full-Scale Input Ranges: ±2.5 V, ±5 V, ±10 V, 0 to +5 V, or 0 to +10 V

Resolution: 12 bits

Input Overvoltage Protection: ±40 V, maximum

Data Transfer Type: D16

ANALOG OUTPUTS

Number of Output Channels: 16

Full-Scale Analog Output: (Jumper selectable)

Unipolar: 0 to +10 V, 0 to + 5
Bipolar: ±2.5 V, ±5.0 V, ±10.0 V

Resolution: 12 bits

Analog Output Code: The 12-bit D/A converter accepts digital codes in straight binary and offset binary, right-justified in a 16-bit word.

Data Transfer Type: D16

Output Load Current: 10 mA, maximum at full accuracy

Output Impedance: 0.1 Ω

Total Error: ±0.05 percent of FSR (full-scale range)

Maximum Settling Time to 1 LSB: 1.7 ms

Refresh Update Rate: 550 Hz (default); 1,600 Hz (FAST REFRESH). The FAST REFRESH rate provides a filtered output for complex functions; whereas, the 550 Hz rate provides settling to 0.01 percent for stepped outputs at each update. The 1,600 Hz rate provides settling to 0.2 dB (2.3 percent). Both rates provide settling to 0.01 percent in 1.7 m.

Output Short Circuit Protection: Indefinite short-to-common; momentary short to ±25 V

Monotonicity: Monotonic over the full temperature range

PHYSICAL SPECIFICATIONS

Dimensions: Standard VME double height board 160 x 233.5 mm

Temperature: 0 to 55 °C, operating
-25 to + 85 °C, storage

Relative Humidity: 20 to 80 percent, noncondensing

Cooling: Convection

Power Requirements: +5 VDC (±5 percent) at 2.4 A maximum

Output and Input Connector: Standard P2 user I/O

APPLICATION AND CONFIGURATION GUIDES — The following Application and Configuration Guides are available from VMIC to assist the user in the selection, specification, and implementation of systems based on VMIC's products.

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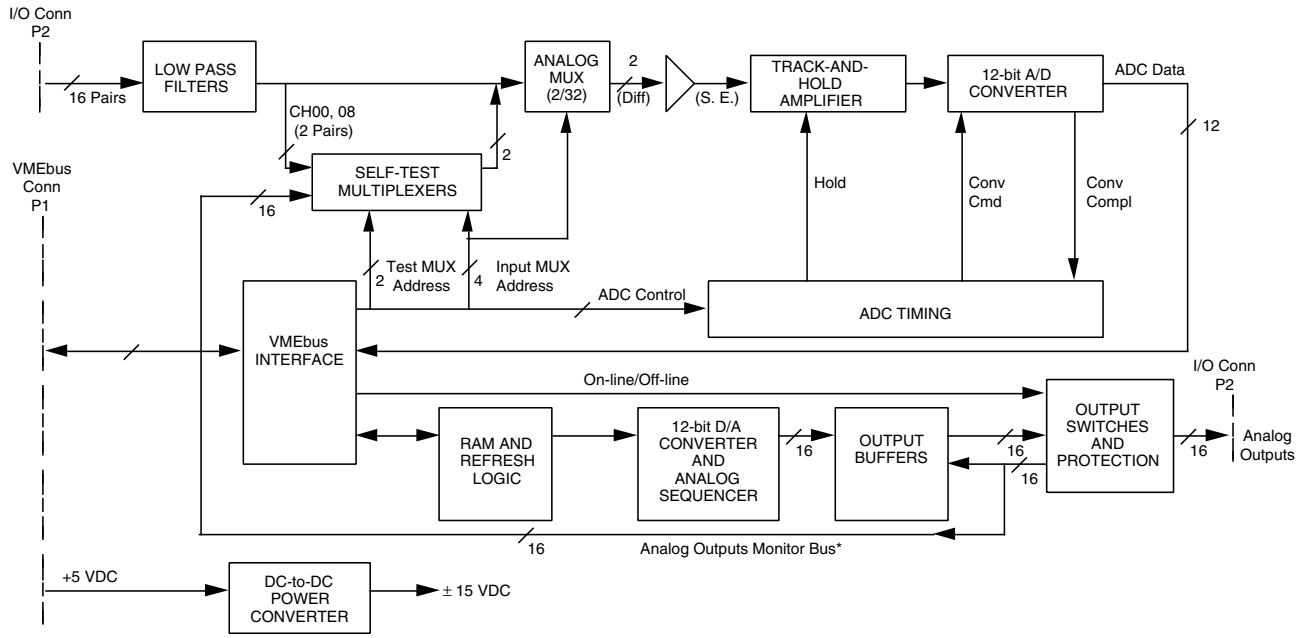
Title	Document No.
Digital Input Board Application Guide	825-000000-000
Change-of-State Board Application Guide	825-000000-002
Digital I/O (with Built-in-Test) Product Line Description	825-000000-003
Synchro/Resolver (Built-in-Test) Subsystem Configuration Guide	825-000000-004
Analog I/O Products (with Built-in-Test) Configuration Guide	825-000000-005
Connector and I/O Cable Application Guide	825-000000-006

INTERFACING TO VMIC'S 3V/5V SERIES SIGNAL CONDITIONERS — The 3V/5V Series Modular Signal Conditioners convert a wide variety of low-level voltages, thermocouples, RTDs, etc., to high-level voltages. In addition, many of the modules provide up to ±1,500 VRMs continuous isolation. Up to 16 of these modules may be installed in a signal conditioning backplane with an optional 19-inch rack mount kit. The high-level outputs are routed to a 26-pin connector, from which a ribbon-cable connects the signal conditioning backplane to the front panel of the VMIVME-4512 ADC board.

The 3V/5V series signal conditioning subsystem, in conjunction with the VMIVME-4512 AIO board, provides a complete solution enabling most any type of sensor data to be available to the VMEbus. The following input modules are available: low-level (mV), AC, thermocouple, RTD, current, frequency, strain gauge, LVDT, and high-level (V) inputs.

TRADEMARKS

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*Monitors board outputs in "online" mode; buffer outputs in "offline" mode.

Figure 1. VMIVME-4512 Functional Block Diagram

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