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Find the *Abaco Systems / VMIC VMIVME-4122-010* at our website: ***Click HERE***

VMIVME-4122
8-Channel 12-bit Analog Voltage Output Board with Built-in-Test

- Eight analog output channels, one 12-bit D/A converter (DAC) per output
- Voltage output ranges: ±10 mA maximum output current per channel (unipolar 0 to 2.5 V, 0 to 5 V, 0 to 10 V or bipolar ±2.5, ±5, or ±10 V)
- Program-controlled field wiring disconnect
- Low impedance 0.8 Ω voltage output
- Random channel update; simultaneous all channel update
- Built-in-Test on-line/off-line 12-bit ADC
- VMEbus 3U Eurocard size (6U front panel available)
- Discrete wire or mass-terminated cables
- Jumper-selectable ranges
- Outputs are short circuit and transient protected
- Zero volt output preset on power reset
- Front panel status LED
- Front panel analog output and reference voltage access
- External DAC update input (TTL)

APPLICATIONS

- Data acquisition systems
- Control systems
- Precision analog stimulus
- Automatic test equipment (ATE)

INTRODUCTION — The VMIVME-4122 analog output board provides eight analog output channels with 12-bit resolution. Each output has a dedicated D/A Converter (DAC), and can source or sink ±10 mA up to ±10 V.

FUNCTIONAL CHARACTERISTICS

VMEbus Compliance: This board complies with the VMEbus specification (ANSI/IEEE STD1014-1987 IEC 821 and 297) with the following mnemonics:

Addressing Mode	Responding Address Modifiers
A16:	$29 (Short nonprivileged I/O access) or $2D (Short supervisory I/O access)
Data Access:	D16, D08(EO)[1]

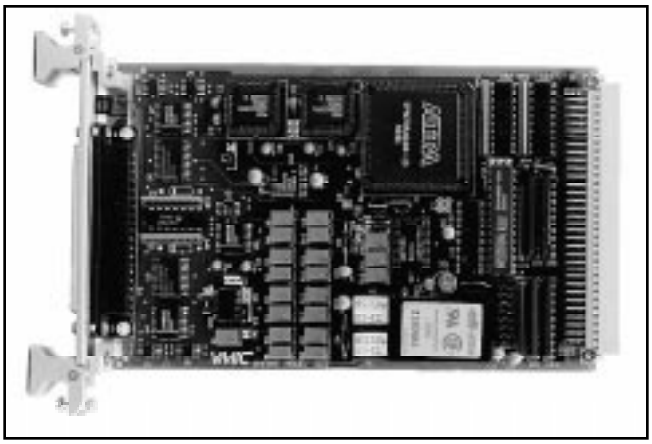
Board Address: The base VMEbus address is set by configuration of a jumper field. A jumper exists for each of the address bits A15 through A7; thus, the address space occupied by this board is 128 consecutive bytes.

VMEbus Access: Address modifier bits are jumper selected and decoded to support nonprivileged, supervisory, and either nonprivileged or supervisory board accesses.

Output Data Transfer: Output data is stored in eight 16-bit registers

On-Line/Off-Line Operation: In the software-controlled ON-LINE/OFF-LINE modes, on-board switches can be used to connect the analog outputs to the field connections (ON-LINE mode), or to disconnect the outputs from the field (OFF-LINE mode).

1. DAC Data Registers must be accessed as 16-bit words.



Built-in-Test: Each analog output can be monitored with a resident 12-bit ADC to verify channel integrity. The outputs can be monitored in both the ON-LINE and OFF-LINE operating modes with no degradation of accuracy. Also, each DAC output register can be read back from the VMEbus.

System Reset: After a system reset, all outputs are set to 0.0 VDC. All Control Registers are in their default state. The Field Wiring Disconnect is enabled. All outputs are disconnected from the output connector.

Front Panel Status LED: This indicator is illuminated after a system reset. The LED can also be turned ON and OFF under software control.

Ordering Options

July 10, 1995 800-004122-000 B	A	B	C	–	D	E	F
VMIVME-4122 –	0		0	–			

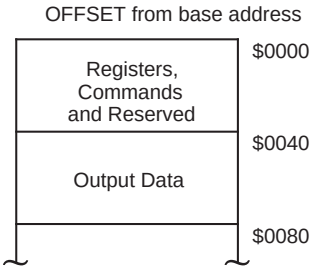
A = 0 (Option reserved for future use)
B = Front Panel Options
0 = 3U
1 = 6U
C = 0 (Option reserved for future use)

Compatible Cable Connector

Standard 37-pin subminiature **D** male connector.
Discrete Wiring: AMP 747916-2 with 206478-4 shell.
Ribbon Cable: AMP 747306-1.

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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Address Map:



ELECTRICAL CHARACTERISTICS

(At +25 °C and rated power supplies unless otherwise noted.)

Outputs: Eight single-ended: one DAC per channel

Voltage Output Option: ±10 V, ±5 V, ±2.5 V, 0 to +2.5 V, 0 to +5 V, or 0 to +10 V jumper-selectable

Output Code: Each 12-bit DAC accepts digital codes in offset binary and two's complement.

Resolution: 12 bits

Output Impedance: <0.8 Ω, on-line >10 MΩ, off-line

Output Current: ±10 mA, over the entire output voltage range

Output Protection: Indefinite short to common; transient overvoltage protected to ±25 V for one second

TRANSFER CHARACTERISTICS

Transfer Function:

$$E_{OUT} = E_{OUTMIN} + \left(\frac{N_{DATA}}{4{,}096} \times E_{SPAN} \right)$$

Where:

E_{OUT} = Channel output voltage
E_{OUTMIN} = Negative end of the range
N_{DATA} = Channel data from the VMEbus
E_{SPAN} = Positive end of the range minus the Negative end of the range

Example: for the ±5 V range:

$$E_{OUT} = -5\ V + \left(\frac{N_{DATA}}{4{,}096} \times 10 \right) V$$

Differential Nonlinearity: 0.025 percent maximum. Monotonic over the operating temperature range.

Integral Nonlinearity: 0.025 percent maximum

Accuracy, Initial [2]**:**

Gain Error	Offset Error
±0.03% of Setting	±0.025% of Span ±1.0 mV maximum

Example: for a setting of +2.000 V on the ±5 V range:

Accuracy = (±0.03% x 2.000 V) ±(0.025% x 10 V) ±1.0 mV
= ±0.6 mV ±2.5 mV ±1.0 mV
= ±4.1 mV

Accuracy Stability:

Temperature Effects: ±35 PPM of Setting ±25 PPM of Span ±30 mV, maximum drift per °C

Long-Term: ±45 PPM of Setting ±30 PPM of Span ±50 mV, maximum drift per 1,000 hr

Interchannel Crosstalk Rejection: 70 dB minimum

Output Noise [3]**:** 10 µVp-p maximum at 3 s, 0 to 10 kHz.

Transition Impulse: 5 µV - s, maximum spike during data transitions

BIT Switching Impulse: 1 µV - s, maximum spike during channel change

Settling Time: 20 µs to 0.01 percent

External Trigger Pulse Width: 250 ns minimum

PHYSICAL/ENVIRONMENTAL

Dimensions: Standard VME single height, 3U board (160 x 100 mm)

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

Output Connector: DB-37 D-sub female for voltage outputs

Relative Humidity: 20 to 80 percent, noncondensing

2. Initial Accuracy is established directly after reference calibaration
3. Output noise is specified at 3 σ standard deviations which includes 99.7 percent of all noise peaks for a normal distribution. Glitch (transition) and BIT-switching noise is not included.

Cooling: Normal VMEbus chassis forced air circulation

Power Requirements: +5 VDC at 3 A maximum

Altitude: Operation to 10,000 ft

TRADEMARKS

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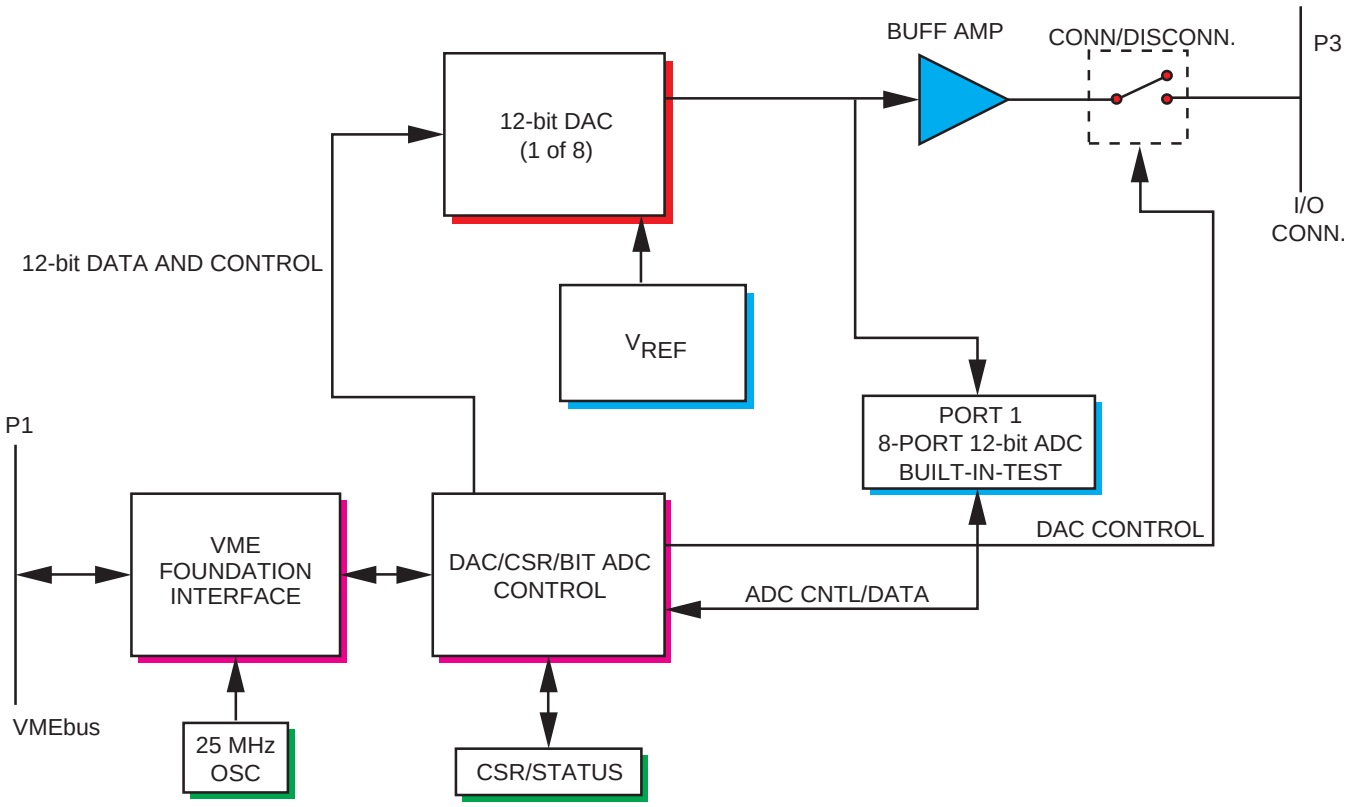


Figure 1. VMIVME-4122 Functional Block Diagram
8-Channel 12-bit Digital-to-Analog 3U VMEbus Card

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