

8 Channel VME Module

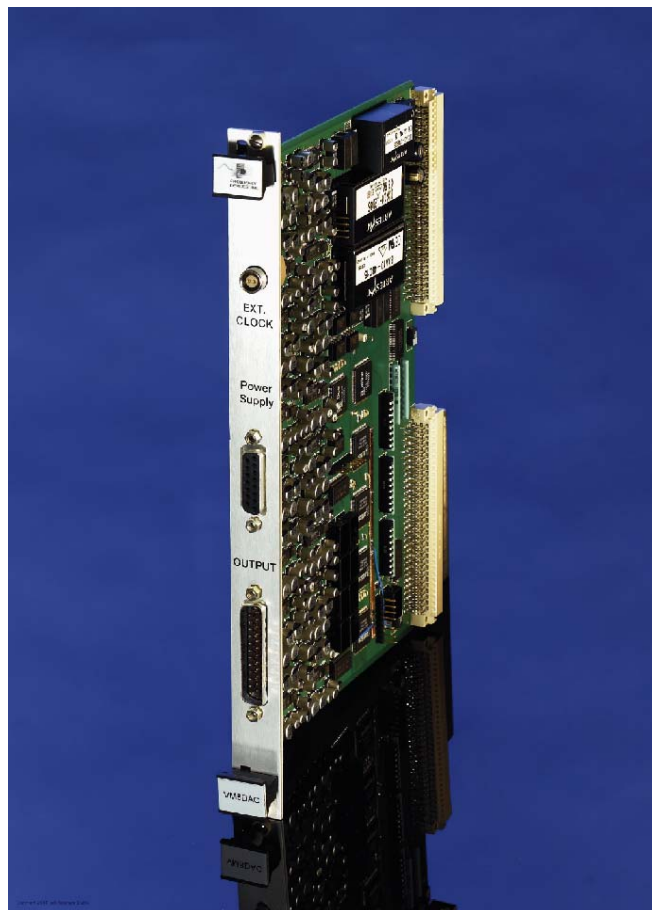
Low Noise Digital to Analog Converter

VM8DAC VMEbus digital to analog converter (DAC) boards from Frequency Devices Inc. offer eight channels of precision low distortion/low noise, digital to analog converters that operate with a sample clock frequency derived from a master external clock and a programmable time base divider. The boards are available in a single width B-size (6U) VME form factor that conforms to VMEbus Revision C.1 as an A32/D32 Data Transfer Bus Slave.

VM8DAC boards provide high (24-bit) and low (16-bit) resolution data access to on-board DAC's. The boards interpret the received parallel data from the VMEbus as binary-2's complement. This data is serialized and transferred to any selected DAC channel at a fixed master time base where it is converted to analog signals at a software programmable sampling rate. The DAC channels may be configured to 16,384, 8,192, 4,096, or 2,048 samples per second.

Features/Benefits

- Eight discrete channels with programmable sampling that provide a 24-bit DAC stage for each channel offers the user versatile and convenient digital to analog conversion.
- Outputs synchronized to the front panel external clock allow for multi-card synchronicity.
- Designed for Real Time Operating Systems (RTOS) to provide minimal pipeline delay (less than 5 microseconds). i.e. Linux or Vx Works.
- Interrupt free operation provides glitch energy of $<5\text{nV-sec}$ and extremely low noise density ($\leq 100\text{nV}/\sqrt{\text{Hz}}$).
- VME backplane is galvanically isolated from the analog section to reduce system integration problems.



VM8DAC Ordering Guide

To order, simply specify the part number below.

VM8DAC-8



Specifications
25°C and Rated Power Input

8 Channel Low Noise
Digital to Analog Converter

Module Size/Dimensions

1. Standard 6U VME, single slot module 9.17" X 6.3", (233mm X 160 mm)
2. Weight ~ 1 lb.

Connectors

3. Input clock connector Lemo EPG.OB.302.HLN
4. Analog output connector Male DB25
5. Matching output connector Female DB25

External Clock Input

6. Configuration Differential, TTL compatible
7. Isolation Transformer isolated
8. Frequency 2^{22} Hz (4.194305 MHz)

Analog Output

9. Number of channels per board 8
10. Analog output configuration Differential
11. Minimum output load 500 ohm
12. Maximum output voltage +/- 10V into 10 k Ω
13. Output amplifier 3 dB bandwidth >50KHz
14. Output impedance 50 Ω per leg
15. Anti-image filter None
16. Inter-channel crosstalk < -90dB (frequencies less than 50KHz)

DAC Specifications

17. Number of bits 24 bits
18. Binary number format Binary 2's complement
19. Sampling rate 16,384, 8192, 4096, 2048 samples per second
20. Bipolar zero error $\pm 2\%$ F.S. maximum
21. Bipolar zero error drift ± 5 ppm of FS/ °C
22. Glitch energy < 5nV-sec
23. Output-referred noise < 100nV/ $\sqrt{\text{Hz}}$ (40 Hz to 8192 Hz with FS 1000 Hz sine wave)
24. Amplitude match and accuracy ± 0.1 dB
25. Harmonic spikes < -100 dB (referred to a full scale output signal)
26. Output settling time to 1% < 5 microseconds (From output clock edge)

Power Requirements

27. From the + 5V VME backplane supply 1.0 A Max.
28. From the +/- 12V VME backplane supply 1.0 A

VME Interface

29. Interface configuration A32/D32 VME Data Transfer Bus (DTB) Slave
30. Address modifier lines decoding Full decode (0x09, 0x0A, 0x0D, and 0x0E valid)
31. Data word size Long word (Quad Byte) and aligned word (Double Byte)
32. Bus cycle compatibility AO, RMW, bus cycles address pipelining
33. Addressing modes A32 (Extended) addressing only

Environmental

34. Operating Temperature range 0°C to +70°C
35. Storage Temperature range -25°C to +85°C
36. Humidity 0-95% non-condensing

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