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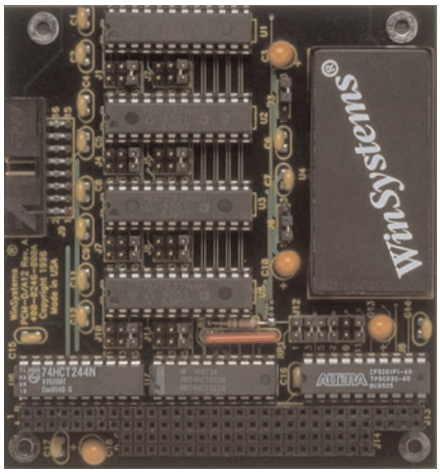
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WinSystems®
PC/104 MODULE

PCM-D/A12
Octal/Quad 12-Bit Digital-to-Analog Converter

FEATURES

- Eight independent analog voltage output channels
- 12-bit resolution
- No trimpots or adjustments required
- Output ranges: 0 to +5V, 0 to + 10V, or ±5V jumper selectable on any channel
- All outputs loaded simultaneously
- Programmable board I/O address
- Low power and low cost
- 8- or 16-bit PC/104 compatible
- Small size: 3.6" x 3.8" (90 mm x 96 mm)
- Extended operating temperature range: -40°C to +85°C
- Optional DC/DC converter for operation with single +5 volt supply
- Available with either 4 or 8 output channels



The PCM-D/A12 is a PC/104 compatible, 12-bit digital-to-analog converter for industrial applications with motion or position control, proportional valves, actuators and other industrial machine controls.

The board does not require any user adjustments. No onboard potentiometers to adjust means quick and easy setup of analog systems needing accurate digitally controlled voltages. This eliminates the need for a technician or engineer to readjust or recalibrate the unit which saves both time and money.

FUNCTIONAL CAPABILITY

PC/104 Interface - The PCM-D/A12 is I/O port mapped and requires 16 contiguous addresses. The module is jumper selectable within the I/O map on any even sixteen port boundary.

Data is transferred in 8-bit bytes to the individual converter channels. However, the board is available with either 8-bit or 16-bit PC/104 connectors installed to allow the board to mount anywhere within the stack.

Digital-to-Analog Converter - The PCM-D/A12 uses Analog Devices' AD7237 DAC. This device is a complete dual, 12-bit voltage mode digital-to-analog converter with output amplifiers plus an on-chip temperature compensated Zener voltage reference on a monolithic CMOS chip. No external trimpots are required to achieve full specified performance.

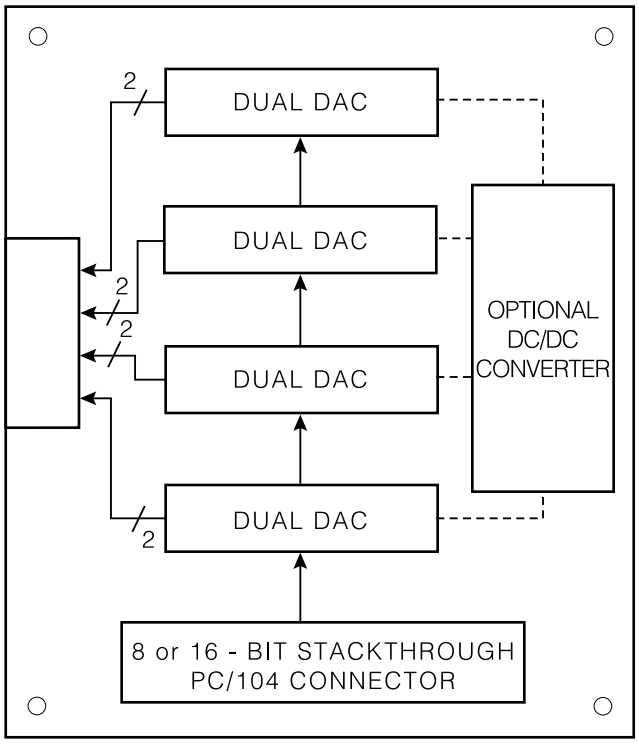
The AD7237 uses an 8 + 4 parallel data loading structure. It has a double buffered interface structure and an 8-bit wide data bus with data loaded to the respective latch in two Write operations. This allows the board to be used with either 8-bit, 16-bit or 32-bit microprocessors.

Four AD7237s provide 8 independent output channels. The PCM-D/A12 is available as a standard product populated with either 4 or 8 channels. Contact the factory for pricing and delivery if you have an OEM application that needs 2 or 6 channels.

Starting a Conversion - After the data is loaded into the device(s), the conversion is begun by reading a word from any of the 16 decoded port addresses. The latched output data is converted and updated simultaneously by all the DACs. This allows all 8 channels to be loaded with new values and updated at the same time. The voltage output settling time for a full scale change is approximately 10 microseconds.

Voltage Ranges - The output voltage ranges are: 0 to +5 volts, 0 to +10 volts, and ±5 volts. Each channel can be jumpered to select these ranges. The optional DC/DC converter is required for 0 to +10 volt operation.

DC/DC Power Supply - The PCM-D/A12 is offered with an optional DC/DC power supply installed. This allows the module to operate directly on the PC/104 bus' +5 volt supply. The DC/DC supply outputs ±15 volts for the analog circuitry and allows the voltage output range from the DACs to operate from 0 to +10 volts. If the analog supply voltages are present in the system and the 0 to +10 volt range is not required, the extra cost of the optional DC/DC converter is not required



PCM-D/A12 BLOCK DIAGRAM

The PCM-D/A12 with the on board DC/DC converter requires approximately 450 mA @5 volts compared to a lower value for a module requiring multiple voltages without the DC/DC installed.

Output Configuration - Each output channel is wired to a 10-pin right angle male connector, J1. Flat ribbon cables or discreet wires can be connected to it.

Extended Temperature Operation - A PCM-D/A12 will operate from -40° to +85° Centigrade for use in extended temperature industrial applications.

PCM-D/A12 Options - The PCM-D/A12 module can be ordered as a standard product with either 4 or 8 output channels, with 8-bit or 16-bit PC/104 stackthrough connectors, and with a DC/DC converter. These options add a suffix to the end of the base part number. For example, an 8 channel PCM-D/A12 module with a 16-bit PC/104 connector and DC/DC supply installed is designated PCM-D/A12-8-16-DC

SPECIFICATIONS

Electrical

PC/104 Bus: 8- or 16-bit stackthrough
D/A resolution: 12-bits
Full Scale Output Range:
±5V and 0 to +5 V selectable per channel (w/o DC/DC supply)
±5V, 0 to +5V, or 0 to +10V per channel (with DC/DC supply)
Coding: Natural binary (unipolar)
Offset binary (bipolar)
Monotonicity: No missing codes
Relative accuracy: ± 1 LSB max.
Unipolar offset error: ± 3 LSB max.
Bipolar zero error: ± 4 LSB max.
Zero Adjust: None required.
Gain Adjust: None required.
Power requirements:
Without DC/DC converter installed
+5V ±5% at 75 mA (typ.)
+12V ±5% at 35 mA (typ.)
-12V ±5% at 7 mA (typ.)
With DC/DC converter installed
+5V ±5% at 450 mA (typ.)

Mechanical

Dimensions: 3.6" x 3.8" (90mm x 96mm)

Connectors

Output: 16-pin dual on 0.100" grid

Environmental

Operational Temperature: -40°C to +85°C

ORDERING INFORMATION

PCM-D/A12-4-8	12-bit, 4 channel DAC with 8-bit PC/104 interface
PCM-D/A12-4-8-DC	12-bit, 4 channel DAC with 8-bit PC/104 interface & DC/DC supply
PCM-D/A12-4-16	12-bit, 4 channel DAC with 16-bit PC/104 interface
PCM-D/A12-4-16-DC	12-bit, 4 channel DAC with 16-bit PC/104 interface & DC/DC supply
PCM-D/A12-8-8	12-bit, 8 channel DAC with 8-bit PC/104 interface
PCM-D/A12-8-8-DC	12-bit, 8 channel DAC with 8-bit PC/104 interface & DC/DC supply
PCM-D/A12-8-16	12-bit, 8 channel DAC with 16-bit PC/104 interface
PCM-D/A12-8-16-DC	12-bit, 8 channel DAC with 16-bit PC/104 interface & DC/DC supply

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