OCTAGON SYSTEMS
• 6510 W. 91st Ave • Westminster CO 80031 • USA
• Embedded rugged computers
• –40° to 85° C
• Embedded operating systems
• COTS—high reliability
* PH: 303-430-1500 * FAX 303-412-2050

PC/104 DMM–AT 12–bit A/D D/A module

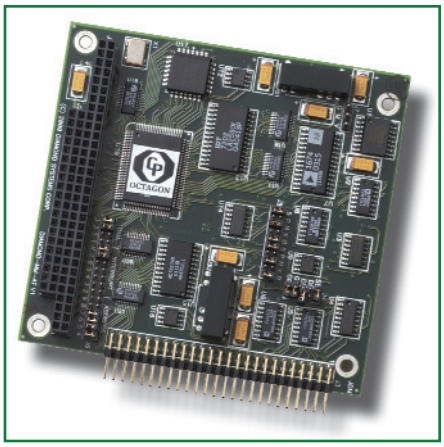
The DMM–AT is a PC/104 data acquisition board that offers 16 total analog inputs with 12–bit resolution and programmable input range; 100,000 samples per second maximum sampling rate with FIFO operation; two analog outputs with 12–bit resolution; user–selectable analog output ranges; 16 lines of digital I/O (eight lines input, eight lines output); one 32–bit counter/timer for A/D conversion and interrupt timing; and one 16–bit counter/timer for general purpose use.

The DMM–AT also provides autocalibration for both analog input and output channels. All calibration adjustments are performed using a TrimDAC. The optimum TrimDAC values for each input range are stored in an EEPROM and recalled automatically on power up.

The analog input channels on the DMM–AT feature programmable gains of 1, 2, 4, and 8, as well as programmable unipolar/bipolar range, for a total of nine different input ranges. The 512–sample FIFO enables the board to operate at full speed in Windows® operating systems using interrupts.

The two analog output channels have multiple unipolar and bipolar output ranges. The DACs feature simultaneous update capability. A programmable output range feature lets you set the output range via software anywhere between 0V to 10V in unipolar and –5V to +5V in bipolar modes.

A programmable gain amplifier, programmable unipolar/bipolar range, and programmable 5V/10V full–scale range combine to give the DMM–AT a total of nine different possible analog input ranges. The digital I/O lines are CMOS/TTL compatible. These lines will interface with logic devices, switch inputs, LEDs, and industry–standard opto module racks. Octagon has a variety of opto modules and termination boards for easy access for field wiring.



PC/104 cards plug into any system with a PC/104 interface. The Octagon family of PC/104 single board computers, expansion cards, and enclosures provides a complete solution for applications in transportation, security, military, communications, distributed control, point–of–sale, ticketing machines, weighing equipment, and other similar applications.

Certified Partner program

The DMM–AT is an Octagon Certified Partner product, which is guaranteed compatible with Octagon CPU cards. The DMM–AT will withstand high shock and vibration, and operates in temperature ranges from –40° to 85° C. This rugged expansion card will provide years of reliable service in the most challenging environments.

Features

Analog inputs:

- 16 input channels, may be configured as 16 single–ended or 8 differential
- 12–bit resolution
- Programmable gain, range, and polarity on inputs
- Input ranges:
  Bipolar: ±10V, ±5V, ±2.5V, ±1.25V
  Unipolar: 0–10V, 0–5V, 0–2.5V
- 100,000 samples per second maximum sampling rate
- 512–sample FIFO for reduced interrupt overhead
- Autocalibration of all input ranges under software control
- Input bias current 50 nA max
- Max. input voltage ±10V for linear operation
- Overvoltage protection ±35V on any analog input without damage
- Nonlinearity ±1 LSB, no missing codes
- Conversion trigger software command, internal pacer clock, or external TTL signal

Analog outputs:

- 2 analog output channels with 12–bit resolution
- D/A resolution 12 bits (1/4096 of full scale)
- Multiple fixed full–scale output ranges, including unipolar and bipolar ranges:
  Fixed unipolar: 0–5V or 0–10V
  Fixed bipolar: ±5V or ±10V
  Programmable: 0–10V or ±10V in .01V steps
- Autocalibration under software control
- Output current ±5 mA max per channel
- Settling time 4 µS max. to ±1/2 LSB
- Relative accuracy ±1 LSB
- Nonlinearity ±1 LSB, monotonic

Digital I/O:

- 8 dedicated digital outputs, 8 dedicated digital inputs, TTL compatible
- Input current ±1µA max
- Output current: logic 0: 64 mA max.; logic 1: –15 mA max.
- All lines have 10 KΩ pull–up resistors

Counter/timers & A/D triggering:

- 1 32–bit counter/timer (2 82C54 counters cascaded) for A/D pacer clock and interrupt operation timing
- 1 16–bit counter/timer for user counting and timing functions
- Pacer clock source: 10 MHz or 1 MHz on–board clock source
- General purpose 16–bit down counter (1 82C54 ctr)

Autocalibration:

- Circuits calibrated – A/D (all 8 input ranges) and D/A
- A/D error after calibration ±1 LSB (typical), ±2 LSB (max)
- D/A error after calibration ±1 LSB (typical), ±2 LSB (max)

Connectors:

- 50–pin connector for all I/O; connects to C–50–18 cable

Addressing & interrupts:

- Jumper–selectable base addresses from 220h to 3E0h.
- Interrupts selected via jumpers to indicate end of analog conversion. The board can also generate interrupts to transfer digital data into or out of the board, as well as at regular intervals according to a programmable timer on the board. Individual control bits are used to enable each type of interrupt.

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Environmental:

- –40° to 85° C operating
- 5% to 95%, RH, noncondensing

Size & power:

- 3.550 in. x 3.775 in., PC/104 form factor; compatible with 8–bit bus systems
- +5VDC ±10%, 220 mA typical
- I/O header ±15V, current ±10 mA max with DACs unloaded
- +5V output current limited by PC/104 power supply

Software drivers

- DOS, Linux 2.4, QNX, & Windows XP, NT, 98

Ordering information

#6627 DMM–AT 12–bit analog, 16–channel, I/O module

Accessories ordering information

#6742 C–50–18, 50–conductor 18" ribbon cable

#6747 STB 104, screw terminal board; mounts directly on PC/104 stack for easily–accessible wiring termination

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