

# 200 kHz 16-bit analog input, analog output and digital I/O module.

### **Analog Input**

- 16 channels
- 16-bit input resolution
- Single ended, high impedance inputs
- Electronic digital calibration
- Up to 200 K samples/second
- ±5V and ±10V input ranges
- On board timer for periodic readings
- Auto retrigger mode
- Auto Channel Increment Mode
- DMA support
- Compatible with industry standard 5B01 series signal conditioners

# **Analog Output**

- 2 channels
- 12-bit resolution
- Electronic digital calibration
- 0-5V and 0-10V output range
- 40 μS update time
- Short circuit proof, 5 ma output current

# Digital I/O

- Two 8-bit ports
- ±24 ma output drive
- Programmable read-only or read/write
- Opto 22 compatible
- EEPROM storage for user data





### **Description**

The VCM-DAS-2 module provides a combination of analog I/O, digital I/O, and non-volatile storage, which makes it ideal for data acquisition and control applications. All of its functions are provided on a single 3.8 x 3.6" PC/104 module.

The analog input section features 16 single-ended input channels with 16-bit resolution, fast  $5 \mu S$  conversion, and a  $\pm 5 V$  or  $\pm 10 V$  input range ( $153\mu V$  or  $305\mu V$  resolution). Throughput of up to 200 kHz may be realized with conversions on one channel and up to 100 kHz when scanning between channels. A variety of automatic channel scanning and triggering modes are available, including DMA support.

The analog output section includes two 12-bit analog output channels. Each may be jumpered independently for 0-5V or 0-10V output.

Both sections feature simplified calibration using programmable digital pots. In addition, the on-board EEPROM which is used to store the calibration values has free space available for user data. The digital pots power up and reset to mid-scale, and can be set to any calibration value during system initialization.





PC/104 Data Acquisition & Control Module

The digital I/O section provides 16 digital I/O lines which feature high current TTL drivers. The two 8-bit ports are byte configurable as inputs only or outputs with readback. The digital interface is plug compatible with Opto 22 type modular I/O racks.

## Software Support

Complete C Language source code drivers are included. Also includes DOS-based diagnostic and calibration routines.

### **Ordering Information**

## **Specifications**

Specifications are typical at  $25^{\circ}C$  with 5.0V and  $\pm 12.0V$  supplies unless otherwise noted.

#### **Board Size:**

3.8" x 3.6" (PC/104 standard)

0.6" component height

#### **Storage Temperature:**

− 40°C to 85°C

#### Free Air Operating Temperature:

 $0^{\circ}$ C to  $+60^{\circ}$ C

#### **Power Requirements:**

+5V @ 510 ma typical ±12V @ ±20 ma typical

#### **Analog Input:**

Channels: 16 channels

Resolution: 16 bits, no missing codes Accuracy:  $\pm 0.003\%$  ( $\pm 3$  LSBs)

Input Mode: Single ended

Range:  $\pm 5V \text{ or } \pm 10V \text{ (jumper selectable,}$ 

all channels the same)

Conversion Time: 5 µS

Settling Time: 5 µS (applies only when

switching channels)

Protection:  $\pm 35 \text{V}$  overvoltage protection

Impedance:  $>10^{10}\Omega$ , 20pF

Retrigger Timer: Programmable 20 µS, 50 µS,

 $100 \mu S$ ,  $250 \mu S$ ,  $500 \mu S$ , 1 mSInterrupt Channel: IRQ 10, 11, or 12 DMA Channel: DMA 5, 6, or 7

#### **Humidity:**

Less than 95%, noncondensing

#### Analog Output:

Channels: 2 channels

Range: 0 to 5V or 0 to 10V (jumper selectable, each channel independent)

Resolution: 12 bits Accuracy:  $\pm 1.5$  LSB Update/Settling Time: 40  $\mu$ S

Output Drive: 5 ma, 200 pF (each channel)

Access: Bitwise serial

#### Digital I/O:

Channels: 16 (non-inverting)
Input Threshold: TTL compatible
Output Drive (H): -24 ma @ 2.4V
Output Drive (L): +24 ma @ 0.55V

Signal Direction: Byte programmable as input or

output with readback

Short Protection: Short circuit to ground,

indefinite duration

I/O Interface: Occupies 16 ports on any 16-bit

boundary

#### **EEPROM:**

Organization: Sixty-four 16-bit words

Allocation: Two words used for digital pots, 62 words available for general purpose storage

Access: Bitwise serial

#### **External Connectors:**

Analog In/Out: 26-pin .1" header Opto 22: 34-pin .1" header

#### **Compatibility:**

PC/104: Full compliance, 16-bit data bus

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