DMM-32DX-AT
Analog I/O PC/104 Module
With Advanced Automatic-Autocalibration

Highly Advanced Analog I/O Board
The Diamond-MM-32DX-AT includes a comprehensive suite of analog and digital features to fit a wide variety of embedded application needs.

Unparalleled Analog Accuracy
Using patented automatic-autocalibration technology, DMM-32DX-AT provides accurate analog measurements across its entire rated operating temperature range, ensuring reliable performance for critical applications.

Rugged Design
Extended temperature operation of -40°C to +85°C is tested and guaranteed. The DMM-32DX-AT uses ceramic capacitors for durability in high altitudes or other harsh environments.

Shortened Development Time
Diamond’s advanced Universal Driver software is included free and provides a programming library that simplifies control of the board’s features and enables you to develop your application software quickly.

- 32 analog inputs, 16-bit resolution
- Patented auto-autocalibration for high accuracy
- 250KHz maximum sampling rate
- Interrupt based A/D data transfer with FIFO support
- 4 analog outputs, 16-bit resolution
- 24 programmable direction digital I/O lines
- Counter / timers for A/D control and general use
- Low noise design
- Extremely rugged -40°C to +85°C (-40°F to +185°F) operating temperature
- Free Universal Driver software
**DMM-32DX-AT: Analog I/O PC/104 Module**

### Specifications

#### ANALOG INPUTS

- **Number of inputs**: 32 single-ended or 16 differential, user selectable
- **A/D resolution**: 16 bits
- **Input ranges**: ±10V, ±5V, ±2.5V, ±1.25V, ±0.625V, 0-10V, 0-5V, 0-2.5V, 0-1.25V, 0-0.625V programmable
- **Max sample rate**: 250KHz
- **Protection**: ±35V on any analog input without damage
- **Nonlinearity**: ±3LSB, no missing codes
- **On-board FIFO**: 1024 samples, programmable threshold
- **A/D and D/A calibration**: Autocalibration with software support

#### ANALOG OUTPUTS

- **Number of outputs**: 4, 12-bit resolution
- **Output ranges**: ±2.5V, ±5V, ±10V, 0-5V, 0-10V
- **Output current**: ±5mA max per channel
- **Settling time**: 6µS max to 0.01%
- **Relative accuracy**: ±1 LSB
- **Nonlinearity**: ±1 LSB, monotonic

#### DIGITAL I/O

- **Number of I/O**: 24 lines
- **Input voltage**: Logic 0: 0.0V min, 0.8V max
  Logic 1: 2.0V min, 5.0V max
- **Input current**: ±1µA max
- **Output voltage**: Logic 0: 0.0V min, 0.33V max
  Logic 1: 2.4V min, 5.0V max
- **Output current**: Logic 0: 15mA max per line
  Logic 1: -84mA max per line

#### COUNTER / TIMERS

- **A/D Pacer clock**: 32-bit down counter
- **Clock source**: 10MHz on-board clock or external signal
- **General purpose**: 16-bit down counter

#### MISCELLANEOUS

- **Power supply**: +5VDC ±10% at 410mA
- **Operating temp**: -40°C to +85°C (-40°F to +185°F)
- **Weight**: 3.4oz (96g)
- **MTBF**: 58,574 hours
- **RoHS**: Compliant

### Key Features

The DMM-32DX-AT features 32 A/D input channels with high-accuracy 16-bit resolution, 250KHz maximum sampling rate, programmable input ranges, and user-selectable single-ended / differential configuration.

The four D/A 16-bit output channels feature user-selectable output ranges as well as a programmable waveform generator feature.

DMM-32DX-AT’s 24 digital I/O lines feature direction programmability in 8-bit ports as well as a buffers for enhanced output current of -15mA (Logic 1) / 64mA (Logic 0). All DIO lines feature jumper-selectable pull-up / pull-down resistors as well as ESD protection devices to help prevent field failures.

On-board programmable counter/timer circuitry includes a 32-bit counter/timer for A/D and D/A sample timing, as well as a 16-bit counter/timer for general counting, timing, and programmable interrupt functions.

#### Automatic-Autocalibration for Best Accuracy

Diamond’s top-performing automatic-autocalibration circuitry enables you to calibrate the analog circuits under software control at any time, maintaining best accuracy under all conditions. An on-board micro-controller manages the autocalibration operation automatically for extreme accuracy and ease of operation. Temperature- and time-dependent measurement drift is eliminated, as the board can be calibrated as often as desired in just a few seconds to ensure accurate reading in all environments.

#### Software Support

Diamond’s Universal Driver software provides a high-level programming library for all of Diamond’s data acquisition products. All data acquisition features are supported with easy-to-use function calls, resulting in a reduced learning curve and shortened application development time. Universal Driver works with Windows XP, CE, Linux, QNX and DOS. Application examples are included for each function and OS to provide a quick starting point for development.

#### Ordering Information

**DMM-32DX-AT** Analog I/O PC/104 Module with auto-autocalibration

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![Measurement Error vs. Temperature](image-url)