
Single Board Precision DVM with direct PC Interface

The ALD MB201 is a precision $\pm 5 \frac{1}{2}$ digit Digital Voltmeter (DVM) printed circuit board that contains the ALD500R/ALD521D A/D Converter chipset that directly plugs into the parallel printer port of a PC computer. It features calibrated analog input (w/scalable input ranges), and digital circuitry to communicate with PC or other microprocessors. It is designed to be used as a stand-alone, embedded system component in a variety of applications including digital panel meters, customized instrumentation displays, temperature monitoring, high resolution DVM's, weigh scales and others. Direct Full-scale analog input range is ± 2.00000 V DC with a linearity of 0.005%. ALD's 18-bit plus sign integrating dual-slope analog processor (ALD500) functions as the input device and the ALD521D microprocessor IC implements the digital conversion, control mode and I/O functions.

Two optional versions of the basic MB201, each populated with different components and configurations, are: Mode A version- calibrated reference and Mode B version – ratio-metric. Mode A is used primarily for measurements against a calibrated reference voltage typically required in precision voltmeter applications. Mode B is intended for measurements against a ratio-metric reference voltage such as those required in weigh scale applications. Standard Mode A version is available as MB201A. Mode B is a simple application specific adaptation of the MB201A.

The MB201 board has provision for PC interface, included DOS setup, operating and calibration software, Basic programming interface modules, and input resistor divider network for input scaling. DC Inputs are single ended or optionally fully differential, and features automatic zero and automatic input polarity detection. There is also optional socket/footprints for input pre-amplifier and 2-input differential input analog switch. A DB25 connector is provided on-board to conveniently interconnect the MB201 to a personal computer (PC) via the parallel printer port for operation, initial setup and calibration.

Features

- Directly plug into a PC parallel printer port and displays readings on the monitor.
- Measurement Range: ± 2.00000 VDC direct input.
(Other ranges are user configurable and scalable, using both hardware and software scaling)
- All solid-state construction.
- User selectable $\pm 3 \frac{1}{2}$ to $\pm 6 \frac{1}{2}$ digits.
- Differential analog inputs with auto-polarity and auto-zero.
- Includes DOS software for user operation, setup, and calibration.
- Includes embedded application software modules.
- Calibration for positive and/or negative inputs.
- Smart Input Filtering (Sample Averaging) selection for noise reduction and accurate displays.

Key Specifications

MB201A

- Direct Full Scale Analog Input Range: $\pm 2.00000\text{V}$
- Input Impedance: 1 G Ohm min, 100 G Ohm typical.
- Optional on-board input resistor divider/preamplifier network for wide input voltage ranges
- Resolution: ± 1 digit, ($\pm 10\text{ uV}$) @ $V_{in} = 1.00000\text{ V}$ (16x input averaging)
- Overvoltage Protection: Not available
- Conversion Sample Rate: 3-samples/sec (from 1 sample/min. to 10 samples/sec.)
- No external power source necessary, draws power directly from the PC printer port
- Optional external Power Supply: $+4.5$ to $+5.5\text{V}$ max @ 6mA max.
- Accuracy $\pm 0.02\%$ (After 2 hour warm-up)
- Linearity of $\pm 0.01\%$ full-scale (23°C , $\pm 1^{\circ}\text{C}$).
- Logic Compatibility: CMOS inputs and outputs.

MB201A20V

- Direct Full Scale Analog Input Range: $\pm 20.000\text{V}$
- Input Impedance: 10 MEG Ohm nominal
- Optional on-board input resistor divider/preamplifier network for wide input voltage ranges.
- Resolution: ± 1 digit, ($\pm 100\text{ uV}$) @ $V_{in} = 10.0000\text{ V}$ (16x input averaging)
- Overvoltage Protection: 200V DC
- Conversion Sample Rate: 3-samples/sec (from 1 sample/min. to 10 samples/sec)
- No external power source necessary, draws power directly from the PC printer port
- Optional external Power Supply: $+4.5$ to $+5.5\text{V}$ max @ 6mA max.
- Accuracy $\pm 0.02\%$ (After 2 hour warm-up)
- Linearity of $\pm 0.01\%$ full-scale (23°C , $\pm 1^{\circ}\text{C}$).
- Logic Compatibility: CMOS inputs and outputs.

Applications

Applications for the MB201 Board include embedded digital panel meters, customized instrumentation displays, temperature monitoring, high resolution DVM's, weigh scales, signal conditioners, laboratory data-logging, process monitors, portable/field troubleshooting and calibration.

Configuration & Outline Drawing

All MB201 boards include a DB25 pin connector that plugs directly into the parallel printer port of a desktop or laptop PC computer for operation, initial setup & calibration. The board outputs 24 bit serial data to the PC or other digital processors for further data processing.

ALD500/ALD521D Chipset

For complete technical information and operating specifications for the ALD chipset as well as other ALD products, you can download complete datasheets on-line.

Environmental

- Operating Temperature Range: 0 to 50 degrees C.
- Storage Temperature: -40 to +85 degrees C.
- Humidity: To 90% (no condensation).
- Protection: No shielding — open board construction.

Mechanical

- Outline Dimensions: 3.20 in. x 2.45 in. x 0.5 in.
- Mounting Holes: 0.125 in. diameter @ 0.125 in from 4 corners
- Weight: 1ounce (28 grams) Nominal

Ordering Information

- ALDMB201 (MODE A, DVM Mode)
- ALDMB201Tyyyy
where Tyyyy is a Custom Part Number designator
- ALDMB201A – xxV (Option)
where xx specifies the input voltage range,
e.g. xx=20 for +/- 20V input voltage range