



LAUREATE™ Digital Panel Meters

Unmatched Features, Speed & Accuracy

Standard Features

Choice of 5 signal conditioners:

- DC volts, amps, process, strain
- 6-wire load cell to 20 mV FS
- True RMS volts & amps
- Thermocouple
- RTD & Ohms

Exceptional accuracy

- 0.01% of FS for DC, load, process
- 0.1% of FS for AC RMS
- 0.3°C for thermocouples
- 0.1°C for RTDs

Scalable to engineering units

- 5 digits to $\pm 99,999$ or $\pm 99,990$
- All ranges factory calibrated
- Three scaling methods: scale & offset, two-point, or signal input

High-speed data collection

- 50 or 60 conversions/sec
- Adaptive digital noise filter
- Peak hold & auto-tare

Universal power

- 85-264 Vac and 90-300 Vdc

Isolated 5, 10 & 24 Vdc output

- Powers 4 load cells in parallel

Red or green LED display

Options

Relay outputs

- Dual/quad 8 A, 250 V contact relays
- Dual/quad AC/DC solid state relays

Isolated analog output

- 4-20 mA, 0-10 V or -10 to +10 V
- 16 bits, isolated & linearized

Isolated serial communications

- RS232
- USB2.0
- USB-to-RS485 converter
- RS485 with Laurel protocol
- RS485 with Modbus protocol

Isolated low-voltage power

- 10-48 Vdc or 12-32 Vac

Extended main board

- Custom curve linearization
- Rate from successive readings



Laureate™ digital panel meters are a cost-effective solution to a wide range of monitoring and control applications, offering performance and programmable features not found in other meters. Exceptional flexibility is provided by advanced software and isolated options for on/off control, analog output, and serial communications.

The meters are economical, fit in a standard 1/8 DIN panel cutout, and are sealed to NEMA-4X from the front.

Fast Response with High Accuracy

Accuracy is an exceptional 0.01% of FS for DC, process and load cell signals, and 0.1% of FS for AC RMS from 0% to 100% of FS. Measurements are taken at 60 readings per second (50 for 50 Hz operation) with 16-bit resolution for fast control, true peak and valley readings, and an analog output that accurately tracks the input. An adaptive digital filter can automatically select the best time constant for noise rejection, yet responds rapidly to actual changes in signal level.

The peak or valley value of the input can be displayed at the push of a button. Auto-tare can zero the display for any input signal.

Scalable to Five Full Digits

Input signals may be displayed as voltage or current, or be scaled to five digits from -99,999 to +99,999 for display in engineering units. Three calibration methods are selectable: scale and offset ($y = mx + b$), two-point method (x_1, y_1) (x_2, y_2), and calibration using actual transducer signals. All ranges are calibrated at the factory with calibration factors stored in EEPROM on the signal conditioner board, so that recalibration is not needed when changing ranges or boards.

Choice Signal Conditioners

Five signal conditioners accommodate most industrial DC, AC, strain, load cell,

temperature and resistance signals. Please see our website for counter/timer products.

Isolated Excitation Power

Isolated 5, 10, or 24 Vdc output power can drive 2-wire transmitters or up to four 350 ohm load cells in parallel, thereby eliminating an external power supply.

Isolated Dual-setpoint Options

Setpoint options for alarm and control: are dual or quad 8A Form C contact relays, and dual or quad optoisolated 130 mA AC/DC Form A solid state relays. The relays can be latching or nonlatching, operate in a hysteresis mode, or operate in a deviation mode with a passband around each setpoint.

Isolated Analog Output Option

An isolated 16-bit 4-20 mA, 0-10V, or -10 to +10V isolated analog output is available for transmission to other instruments or to a central control room. The output is linearized and scaled to the meter reading.

Isolated Communication Options

RS232, RS485 or USB serial interface boards allow Laureates to communicate with computers, PLCs or printers. The Modbus protocol (RTU or ASCII) is fully supported, as is the simpler Laurel ASCII protocol. Windows-based Instrument Setup software is standard.

Rate & Nonlinear Curve Fit Options

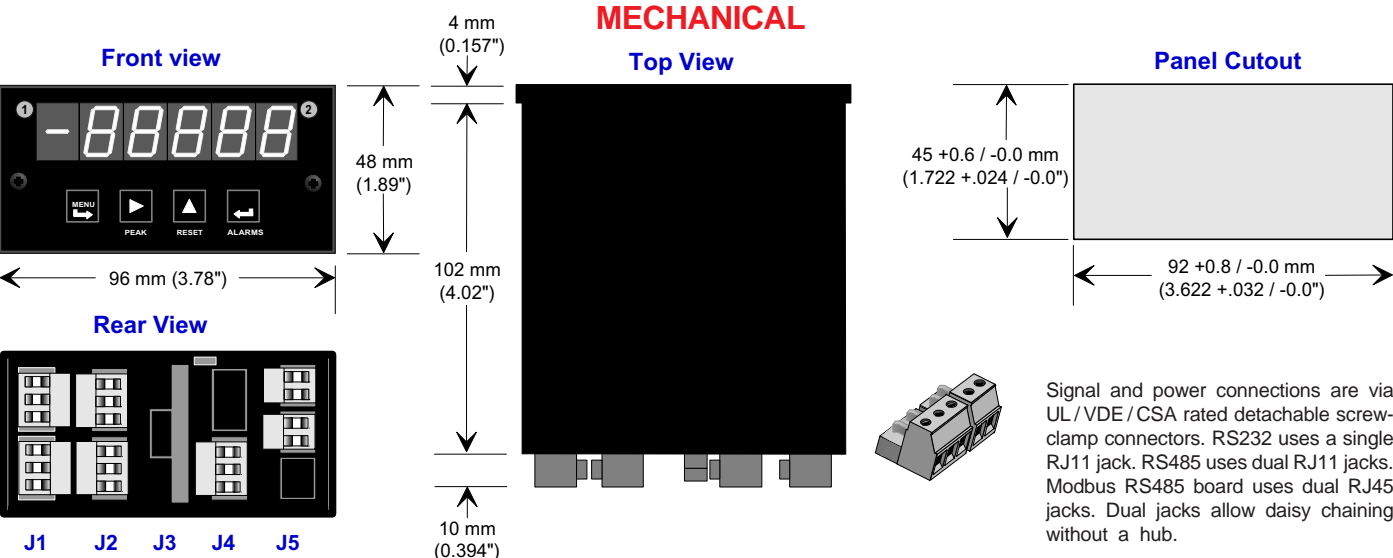
An Extended main board can display rate from successive readings and perform custom curve linearization, for example to extend the range of transducers.

Easy Setup

All Laureate meters can be programmed from the front panel or via Windows-based Instrument Setup Software on a PC.

SPECIFICATIONS

<p>Display Type Five 7-segment, 14.2 mm (.56") high LED LED digits plus 4 LED indicators Display color Red or green Display range -99999 to +99999 or -99990 to +99990</p> <p>A-to-D Conversion Technique Concurrent Slope™, Pat. 5,262,780 A to D rate 60/s at 60 Hz, 50/s at 50 Hz Output update rate 56/s at 60 Hz, 47/s at 50 Hz Display update rate 3.5/s at 60 Hz, 3/s at 50 Hz</p> <p>Accuracy at 25°C DC volts, DC amps, ratio 0.01% FS ± 2 counts Thermocouple 0.3°C max</p>	<p>RTD 0.1°C max True RMS (1 to 100%, 10 Hz to 10 kHz) 0.1% FS Load cell 0.01% FS ± 2 counts</p> <p>Temperature Stability Span tempco 0.003% of reading / °C Zero tempco 0.1 digits / °C TC ref. junction accuracy 1°C, 10-40°C ambient</p> <p>Noise Rejection CMV, DC to 60 Hz 250 Vac working, 2.3 kV rms for 1 minute test CMR, DC to 60 Hz 130 dB NMR to 50/60Hz line 90 dB with min filtering Additional filtering Digital, adaptive</p>	<p>Environmental Operating temperature 0°C to 60°C Storage temperature -40°C to 85°C Relative humidity 95% at 40°C, non-condensing Protection NEMA 4X when mounted in panel</p> <p>Operating Power Voltage (std) 85-264 Vac or 90-300 Vdc Voltage (opt) 12-32 Vac or 10-48 Vdc Power frequency DC or 47 Hz to 440 Hz</p> <p>Isolated Excitation Power Output Output levels 120 mA @ 10 Vdc 100 mA @ 5 Vdc, 50 mA @ 24 Vdc Isolation to power ground 50 Vp</p>
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ORDERING GUIDE

One entry required per box. Configure a model number in this format: **L10010DCV1**. Laurel Electronics reserves the right to change pricing at any time.

<p><input type="checkbox"/> Laurete Series L Laureate panel meter ... \$220 LW . Laureate weight meter .. \$250</p> <p><input type="checkbox"/> Main Board 1 DPM with green LEDs NC 2 DPM with red LEDs NC 3 Extended, green LEDs ... \$40 4 Extended, red LEDs \$40</p> <p><input type="checkbox"/> Power 0 85-264 Vac, 90- 300 Vdc NC 1 12-32 Vac, 10-48 Vdc ... \$30</p> <p><input type="checkbox"/> Setpoint Output 0 None NC 1 Two 8A contact relays ... \$80 2 Two solid state relays ... \$55 3 Four 8A contact relays \$100 4 Four solid state relays ... \$75</p> <p><input type="checkbox"/> Analog Output 0 None NC 1 4-20 mA, 0-20 mA, 0-10V \$90</p> <p><input type="checkbox"/> Digital Interface 0 None NC 1 RS232 \$60 2 RS485, ASCII protocol .. \$80 4 RS485, Modbus protocol. \$90 5 USB \$60 6 USB-to-RS485. \$100</p>	<p><input type="checkbox"/> Input Type</p> <p>DC Volts DCV1 ± 200.00 mV NC DCV2 ± 2.0000 V NC DCV3 ± 20.000 V NC DCV4 ± 200.00 V NC DCV5 ± 600.0 V NC</p> <p>DC Amperes DCA1 ± 2.0000 mA NC DCA2 ± 20.000 mA NC DCA3 ± 200.00 mA NC DCA4 ± 5.000 A NC</p> <p>RMS Volts RMV1 200.00 mV \$35 RMV2 2.0000 V \$35 RMV3 20.000 V \$35 RMV4 200.00 V \$35 RMV5 600.0 V \$35</p> <p>RMS Amperes RMA1 2.0000 mA \$35 RMA2 20.000 mA \$35 RMA3 200.00 mA \$35 RMA4 5.000 A \$35</p> <p>RTD Temperature, °C or °F P385 Pt 100, DIN alpha ... NC P392 Pt 100, ANSI alpha . NC</p>	<p>N672 Ni 120 NC C427 Cu 10 NC</p> <p>Ohms Input R1 0-20 ohms NC R2 0-200 ohms NC R3 0-2 kohms NC R4 0-20 kohms NC R5 0-200 kohms NC R6 0-2 Mohms \$25</p> <p>Thermocouples, °C or °F JC, JF ... Type J NC KC, KF . Type K NC TC, TF ... Type T NC EC, EF .. Type E NC NC, NF . Type N NC SC, SF .. Type S NC RC, RF . Type R NC</p>	<p>Process Signals (4-20 mA, etc.) P 4 to 20 mA =0 to 10000 .. NC P1 ... Custom Scaling \$10 <i>Specify min input, min reading; max input, max reading.</i></p> <p>Strain Gauge, Potentiometer (4-wire ratio, 200 mV to 20V FS) SG .. 0-200 mV = 0-20000 NC SG1 Custom Scaling \$10 <i>Specify min input, min reading; max input, max reading.</i></p> <p>Load Cells (6-wire ratio) (6-wire ratio, 20 mV to 500 mV FS) WM1 ... -99,999 to +99,999 \$55 <i>Specify min input, min reading; max input, max reading.</i></p>
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