



# LAUREATE™ Counter Series

## Instruments with Scalable Readout & Control

### Signal Conditioners

#### Dual-channel pulse input

- Contact closures, AC, NPN or PNP transistors, digital logic to 1 MHz.
- For frequency, period, rate, time interval, stopwatch, phase angle, square root, up/down total, ratio, draw, A+B, A-B, A\*B, A/B, A/B-1, batching, custom curves.

#### Process rate & total input

- 0-1 mA, 4-20 mA, 0-10 V analog.
- For rate, totalized rate, batch control, 1/rate, (time), custom curves.

#### Quadrature input

- Low-level differential or single-ended logic level. Count x1, x2 or x4 to 250 kHz plus zero channel.
- For position or speed.

### Standard Features

- Six scalable LED digits
- 85-264 Vac or 90-300 Vdc power
- Isolated sensor excitation
- NEMA-4X, 1/8 DIN front panel
- Screw-terminal connectors

### Options

#### Relay outputs

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

#### Isolated analog output

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

#### Isolated serial communications

- Ethernet
- Ethernet-to-RS485 converter
- USB 2.0
- USB-to-RS485 converter
- RS485, RS232
- Modbus or Laurel ASCII protocol

#### Isolated low-voltage power

- 10-48 Vdc or 12-32 Vac

#### Extended main board

- Custom curve linearization
- Rate from successive readings



Laureate™ counters are low-cost solutions to a wide range of monitoring and control applications related to frequency, rate, timing, pulse or analog totalizing, batch control, position or speed.

Exceptional flexibility is provided by a choice of assemblies for display, power, signal inputs, analog outputs, relay outputs, and communications. The electronics and software provide exceptional performance and programmable features not available in similarly low-priced instruments.

#### FR Version: Dual-channel Counter, Timer, Ratemeter

Two channels accept PNP or NPN outputs, TTL or CMOS logic signals, magnetic pickups, contact closures, low level outputs from turbine flow meters, or AC line inputs up to 250 Vac. Inverse period is used to calculate frequency or rate up to six places. The basic version can measure two rates or totals (up or down) simultaneously, and perform timing operations.

The Extended version is capable of the above plus simultaneous rate and total for one channel, rate of one channel and total of the other, up/down counting with external control for count direction, square root of rate and total, phase angle, duty cycle, two-channel arithmetic functions (A+B, A-B, A\*B, A/B, A/B-1), batch control, and linearization of nonlinear inputs.

#### VF Version: Process Totalizer

This version accepts 0-1 mA, 4-20 mA or 0-10 V analog inputs, which it can then totalize or display as rate. For example, the total in gallons or rate in gallons/minute may be displayed from a 4-20 mA flow meter signal. The Extended version adds batch control and custom curve linearization.

#### QD Version: Quadrature Input

Accurate position is displayed in engineering units from -999999 to +999999 by counting 1, 2 or 4 transitions from quadrature encoders at a combined rate to 250 kHz. Zero index error correction is standard. The Extended version can also display speed.

#### Isolated Excitation Power

An isolated 5, 10 or 24 Vdc output is standard and can eliminate the need for an external power supply.

#### Isolated Relay Output Options

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

#### Isolated Analog Output Option

Single or dual isolated 16-bit 4-20 mA, 0-10V, or  $\pm 10V$  isolated analog outputs are available for transmission to other instruments or to a central control room. The output are linearized and scaled to the meter reading or to an internally stored value.

#### Isolated Communication Options

Ethernet, USB 2.0, RS485 or RS232, 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.

#### Easy Setup

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

