

Laurel Programmable Counters

FUNCTIONS

- Rate, Frequency, Period
- Simultaneous Total & Rate
- Time Interval, Stopwatch
- Quadrature Position or Rate
- Ratio / Draw
- Batch Controller
- Analog Totalizer
- Phase Angle & Power Factor
- Duty Cycle

FEATURES

- ±999,999 Display Span
- Scaling in Engineering Units
- Crystal Time Base Error <0.001%
- Sensor Excitation Output
- 1/8 DIN, NEMA-4X Front Panel

OPTIONS

- Dual Relay Outputs
- Isolated Analog Outputs
- USB, RS-232 & RS-485 Data I/O
- Custom Curve Linearization
- Datalogging PC Software

Exceptional flexibility is provided by advanced programmable features and by modular architecture with a choice of main boards (basic or extended), signal conditioners (FR, VF or QD), power supplies, analog output, relay outputs, and serial data I/O.

The FR module provides two independently scalable frequency or pulse input channels. These channels can be combined arithmetically to display the sum or difference of two flows, the ratio of two rates, etc. As a counter, each channel may be independently set and scaled to count up to or down from a preset value. The displayed channel (A or B) is selected via front panel pushbutton. The totals are stored in non-volatile memory & retained in the absence of power.

SPECIFICATIONS

Display	Six 14.2 mm (.56") high LED digits
Conversion Technique	
Frequency measurement technique	1/period
Rate	Gate time + 30 ms + 0-2 input periods
Gate time	Selectable 0 to 199.99 sec
Scale Factor	±10 ⁻¹⁰ to ±10 ⁶
Isolation	250V RMS working, 2.3kV RMS test
FR Signal Conditioner (2 channels)	
Inputs	AC, pulses from NPN or PNP transistors, contact closures, magnetic pickups
Level	±12 mV min, 250 Vac max
Frequency	CH A: 0 Hz to 1 MHz; CH B: 0 Hz to 250 kHz
VF Signal Conditioner	
Inputs	0-10 V, 0-1 mA, 4-20 mA
Span error	< 0.015% of full scale ±1 count
Span tempco	< 0.003% of reading/°C
Zero tempco	< 0.001% of full scale/°C
QD Signal Conditioner	
Inputs	Quadrature encoders to 250 kHz
Polarity	Differential or single-ended
Error correction	Zero index (z-channel)
Transducer Excitation Output (std)	
Output	100 mA @ 5 V, 120 mA @ 10 V, 50 mA @ 24 V
Isolation	50 Vdc to meter ground
Data Communications (opt)	
Type	USB, RS-232, RS-485 (2- or 4-wire), Ethernet
Protocols	Modbus RTU, Modbus ASCII, Laurel ASCII, Modbus TCP
Operating Temperature	0°C to 55°C



ORDERING INFORMATION

Example: L50010FR

<input type="checkbox"/> L	Laureate™ with plug-in screw terminal connectors		
<input type="checkbox"/> Main Board			
5	Meter with green LEDs		
6	Meter with red LEDs		
7	Extended, green LEDs		
8	Extended, red LEDs		
<input type="checkbox"/> Power			
0	85-264 Vac/90-300 Vdc		
1	10-48 Vdc/12-30 Vac		
<input type="checkbox"/> Setpoint Output			
0	None		
1	Dual 8 A relays (250 Vac/24 Vdc)		
2	Dual 130mA solid state relays (140 Vac/180 Vdc)		
<input type="checkbox"/> Analog Output (isolated, 16 bit)			
0	None		
1	0-20 mA, 4-20 mA, 0-10 V, ±10 V		
<input type="checkbox"/> Digital Interface (isolated)			
0	None	5	USB
1	RS-232	6	USB to RS-485 Converter
2	RS-485 (dual RJ11)	7	Ethernet
4	RS-485 (dual RJ45)	8	Ethernet to RS-485 Converter
<input type="checkbox"/> Input Type (isolated)			
FR	Frequency		
With main boards 5 & 6: Scalable to ±999,999 for frequency, period/up/down total, interval, rate or square root of rate.			
With main boards 7 & 8: Above plus rate and total simultaneously, custom curve linearization, ratio, draw, arithmetic functions (A*B, A/B, A/B-1, A+B, A-B), phase angle, stopwatch, batch counting.			
VF1	4-20 mA		
VF2	0-1 mA		
VF3	0-10 V		
With main boards 5 & 6: V-to-F converter for rate or square root of rate from differential pressure or target type flow meters.			
With main boards 7 & 8: Above plus rate and total simultaneously, linearization of nonlinear inputs, batch counting, 1/rate (time).			
QD	Quadrature		
With main boards 5 & 6: Scalable to ±999,999 for position from encoders.			
QDR	Quadrature Rate		
With main boards 7 & 8: Scalable to ±999,999 for position or rate from encoders.			

ACCESSORIES

CBL01	RJ11 TO DB9 Cable to PC Com port
CBL02	USB to DB9 Adapter
CBL05	USB Cable to PC USB Port