Nidec

Measuring Quality

PC-FR Process Counter & Totalizer

The Series PC-FR 1/8 DIN Process Counter/ Totalizer is designed for process automation counting or totalizing applications. The PC-FR is a dual-channel frequency, rate and period counter or totalizer that accepts inputs from contact relays or proximity and magnetic sensors that produce one of the following outputs: PNP/NPN, TTL or CMOS logic, contact closure, or AC signals from 12 mV to 250 V ac. Each channel (A or B) may be independently set up and scaled to count up from zero or a set value to a preset limit, or down from a set value to zero or limit. Either channel can easily be displayed via a front panel pushbutton.

The PC-FR Counter/Totalizer comes with a versatile, decimal point adjustable 6 digit display capable of any value from +/-999,999 for frequencies ranging from 0.005 Hz to 1 MHz, rates in various engineering units and period (inverse of frequency). The scaling function allows direct readout in any engineering unit such as gallons or cubic feet sensed from a turbine flow meter, or the ability to show the total quantity of containers in cartons detected on a conveyor from an optical sensor. Totaled values are stored in non-volatile memory enabling retention in the absence of power.

Available extended models can provide rate and total simultaneously with one channel displaying total while the other displays process rate. This mode is ideal for flow applications when the same signal is applied to both channels. Included with extended models are several arithmetic functions such as A+B, A-B, AxB, A/B and A/B-1 (draw). For example, A+B allows two input flows to be summed for total flow, while A-B allows outflow to be subtracted from inflow for a net flow result. If transducers with a frequency output are used, AxB allows horsepower to be displayed based on measured torque and RPM or based on force and velocity. A/B can be used for the proper mixing of ingredients, while A/B-1 (draw) is used to compare rates for stretching or tensioning.

The PC-AN's offer Universal AC or DC power selections which enables flexibility with usage in various power situations. Optional 8 A contact or 120 mA solid state relay outputs, plus an analog process signal output with 4 user-selectable current or voltage ranges are available. To provide a higher level of communication and integration into a system's network, several communication protocols such as RS-232, RS-485 and even USB options are available. Units come standard with an isolated excitation output to power transducers, eliminating need for additional power supply.

The PC-FR Process Counter/Totalizer is ideal in various applications such as the display of AC line frequencies to 250 V ac, RPM monitoring, speed detection from proximity switches and flow rate from turbine meter inputs down to 12 mV.

Features

- *Bright, red (±999,999) 6-digit LED display with selection of rate, totalized rate (batch versions), batch total, grand total, number of batches (extended versions).*
- *Input frequencies from 0.005 Hz to 1 MHz*
- *Totals stored in non-volatile RAM*
- *Counts up from 0 to preset or down from preset to 0*
- *Isolated transducer power output of 5, 10 or 24 VDC, eliminates need for an additional power supply reducing installation costs*
- *Exceptional accuracy: ±0.01% of span ±1 count*
- *Field scalable for direct readout in engineering units*
- *Selectable "count by" of 10 or 100 with rounding*
- *Update rate selectable to 25/sec*
- *Peak or valley display*
- *Universal power range of 85-264 VAC / 90-300 VDC or 10-48 VDC / 12-32 VAC power eliminates need to purchase country specific models.*
- *When panel mounted, NEMA 4X (IP65) front cover protection keeps fluids out; enables installation in environments exposed to wash-downs.*
- *Timing and Stopwatch Mode selection; Duty Cycle, Power Factor and Phase Angle mode selection in extended models*
- *Optional Extended Counter: all capabilities of Standard counter, plus*
  - *Channel A total and Channel B rate simultaneously*
  - *Up/down counting on Ch A, using Ch B to control count direction*
  - *Counting on Ch A, using Ch B to inhibit counting*
  - *Arithmetic functions A+B, A-B, AxB, A/B, A/B-1 (draw)*

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PC-FR Specifications

Input Ranges	Types: AC, pulses from NPN/ PNP transistors, contact closures, magnetic pickups.; Channel A Frequency: 0.005 Hz to 1 MHz; Channel B Frequency: 0.005 Hz to 250 kHz; Minimum Signal: Nine ranges from (-12 to +12 mV) to (+1.25 to +2.1V; Maximum Signal: 250 V ac
Noise Filter	1 MHz, 30 kHz, 250 Hz (selectable)
Contact Debounce	0, 3, 50 ms (selectable)
Display Range	-999999 to 999999 ; Exponential notation beyond 999999 ; 12 digits transmitted with communication options
Accuracy @ 77°F (25°C)	0.01%, 0.005 Hz to 500 Hz, 0.1% at 5 kHz, 1% at 10 kHz
Update Rate	Freq. Technique: Inverse period; Conversion Time: Gate time +30 ms +0-2 signal periods; Gate Time: Selectable 10 ms to 199.99s; Time Before Zero Out: Selectable 10 ms to 199.99s
Scaling Function	6 digits with decimal point adjustment
Display Update Time	3.5/s at 60 Hz, 3/s at 50 Hz
Relay Output (Optional)	Mechanical Relays: 8 A @ 250 V ac or 24 V dc; SSR: 120 mA @ 140 V ac or 180 V dc
Analog Signal Output (Optional)	Jumper Selectable: 4-20 mA, 0-20 mA, 0-10 V, -10 V to 10 V
Communication (Optional)	RS-232, RS-485, USB
Power Requirement	85-264 V ac / 95-300 V dc; Optional 10-48 V dc / 12-34 V ac
Sensor Excitation (Isolated)	5 V dc ±5%, 100 mA; 10 V dc ±5%, 120 mA; or 24 V dc ±5%, 50 mA
Ambient Temperature	32-131°F (0-55°C)
Dimensions	1.89 x 3.78 x 4 in. (48 x 96 x 102 mm) 1/8 DIN. Panel Cutout: 1.77 x 3.62 in. (45 x 92 mm); Max. Panel Thickness: 0.18" (4.5 mm)
Product Weight	7.4 oz (210 g)
Package Weight	15.9 oz (450 g)
Approvals	CE & RoHS
Warranty	1 year

Ordering Details

Series	Input	Input Power	Relay Output	Analog Output	Comm.
PC	**-XXX**	**-X**	**X**	**X**	**CX**
	-FRB: 0 Hz to 1 MHz & 0 Hz to 250 kHz Min. Signal: Nine ranges from (-12 to +12 mV) to (+1.25 to +2.1 V) Max. Signal: 250 V ac **-FRE:** same as FRB with Extended Features	**0** = 85 - 264 V ac or 95 - 300 V dc **1** = 12 - 34 V ac or 10 - 48 V dc	**R** = Relay Output Two 8A Form C contact relays **S** = SSR Output Two 120 mA solid state relays **0** = No Output	**A** = 4-20 mA, 0-20 mA 0-10 V, -10 to +10 V **B** = Dual 4-20 mA, 0-20 mA 0-10 V, -10 to +10 V **0** = No Output	**C1** = RS-232 **C2** = RS-485 **C5** = USB **C0** = No Comm. Output

Ex: PC-FRB-0RAC1 Dual channel frequency input counter totalizer, standard high voltage power, relay contact outputs, analog output and RS-232 communication.