

HIGH-PERFORMANCE MULTI-FUNCTION COUNTERS

The CTR2000 Series Counters have been designed to handle a broad range of the toughest engineering applications. The series consists of five models: the CTR2000 Preset Totalizer, the CTR2001 Preset Rate Counter, the CTR2002 Preset Batch/Dual Counter, the CTR2003 Preset Rate/Totalizer, and the CTR2004 Frequency Counter.

Each model fits a 1/8 DIN cutout and is perfect for tight spaces, extending only 3.24" behind the front panel. A NEMA 4X/IP65 rated front panel with a sonic-welded window enables the counters to be used in harsh and wet environments. Plug-in I/O modules can be used for future increased capability. Models CTR2000, CTR2001, CTR2002 and CTR2003 have front-panel programming using a large-button, audible and tactile feedback keypad. The programming menu is designed to be easily used and understood, using a menu made of words, not hard-to-understand symbols or codes. Easy-to-read 6-digit, bright red 0.56" LED display provides high visibility and wide-angle viewing. The CTR2004 Frequency Counter has a 4-digit display with no keypads.

The counters are powered from 120 or 240 VAC and have a non-volatile EEPROM to retain all programming and count information when the power source is interrupted. All models accept pulses from different types of sensors including Quadrature, CMOS or TTL circuits, and PNP or NPN devices. The optional 12VDC (100mA) excitation output module can provide power for external sensors.

- The CTR2000 Preset Totalizer can be adapted to a wide variety of counting, measuring and controlling applications. It offers several counter operation modes: count/direction, add/add, add/subtract, subtract/subtract, quadrature and reverse quadrature. Optional relay outputs enhance the counter from a passive device to an integral control element for your application.
- The CTR2001 Preset Rate Counter is typically used in applications involving speed and is capable of counting in four different time modes: hours, minutes, seconds and milliseconds(msec). The msec rate mode increases the frequency resolution to 0.001Hz within a range of 1 to 999.999 Hz. Some examples are feet per minute, revolutions per minute, pulses per second, and gallons per minute.
- The CTR2002 Preset Batch/Dual Counter is a multi-function counter that can be easily configured to operate either in a dual mode or in a totalizing/batch mode. In both modes, each display has separate scaling and reset functions. When programmed to function in the dual mode, full direction control is maintained for totalizing and batch counts. In the totalizing/batch mode, the secondary value (batch count) is incremented only after the primary totalizing count has completed its cycle.
Example: one case = 24 cans.
- The CTR2003 Preset Rate/Totalizer is a multi-function counter that allows the user to track the rate (speed) of a product and continuously monitor the product quantity for a given process. The count and rate displays have separate programmable decimal point settings and scaling values. The CTR2003 supports two independent output channels with four modes of operation: disabled, timed, latched and boundary. Both channels can be reset simultaneously or independently of each other.
- The CTR2004 Frequency Counter offers a wide frequency range from 1Hz to 35KHz with four display ranges: 9.999Hz, 99.99Hz, 999.9Hz and 35KHz. It offers 12VDC, 100mA sensor excitation and requires no programming. Selecting the appropriate frequency range is the only set-up required.



FEATURES

- **Five Different Models**
Preset Totalizer, Rate, Batch/Dual, Rate/Totalizer, and Frequency
- **Easy to Configure**
Menu-driven from the front panel
- **Easy to Read**
6-digit, bright red 0.56" LED display
- **Easy to Use**
Large buttons with tactile and audible feedback
- **Rugged and Durable**
NEMA 4X/IP65 panel for harsh environments



CTR2000, CONTINUED

SPECIFICATIONS

GENERAL SPECIFICATIONS

INPUT RATINGS	Current Sinking: 10K, 5% Res. pull-up resistor to (9.0 - 16 VDC) $\pm 10\%$ Current Sourcing: 5.1K, 5% Res. pull-down resistor to common Minimum Pulse Width: $\approx 5\text{ms}$ Low Pass Filter: $\approx 200\text{Hz}$ Low Bias: VLT = $1.6\text{V} \pm 10\%$ VUT = $3.6\text{V} \pm 10\%$ High Bias: VLT = $5.0\text{V} \pm 10\%$ VUT = $7.0\text{V} \pm 10\%$ Count Rate: 20KHz (Pulse Max). 7.5KHz (Quadrature X4 Max) Maximum Voltage Input: A, B, and User – 30 VDC (Max)
INPUT	Standard Input: VLT = 0.2 VDC guaranteed low Quadrature Input: VLT ≤ 0.9 VUT $\geq 3.15\text{VDC}$ User Input: Display is frozen and input signal is ignored when User input is pulled low
REMOTE RESET	Resets the counter from the rear terminals VLT ≤ 0.2 VDC guaranteed low (Not available on CTR2004)
CONTROL OUTPUTS	Relays: Rated at 5A, 250 VAC or 30 VDC Output Response Time: Latched and Timed modes < 5ms. Boundary mode < 15ms (Not available on CTR2004)

DISPLAY	Type: 6-digit, 7-segment, red LED Height: 0.56 in. (14.2 mm) Decimal Point: User programmable Count Direction: "+" indication implied, "-" indication displayed Display Range: -99,999 to +999,999 Output Indicators: 1 and 2
COUNT INPUTS SUPPORTED	Types: Quadrature, switch, TTL, CMOS, NAMUR, TTL, PNP and NPN
EXCITATION	Excitation: Isolated 12 VDC @ 100mA Excitation Isolation: 1500V Voltage Regulation: $\pm 5\%$
POWER REQUIREMENTS	AC Voltages: 120, 240 VAC, $\pm 10\%$ Power Consumption: 3VA

OPERATING AND STORAGE CONDITIONS

OPERATING TEMPERATURE	32 to 131°F (0 to 55°C)
STORAGE TEMPERATURE	14 to 140°F (-10 to 60°C)
RELATIVE HUMIDITY	0-85% non-condensing
TEMPERATURE COEFFICIENT (PER °C)	± 100 ppm/°C

STRUCTURE

BEZEL	3.93 x 2.04 x 0.52 in. (99.8 x 51.8 x 13.2 mm)
DEPTH	3.24 in. (82 mm)
PANEL CUTOUT	3.62 x 1.77 in. (92 x 45mm) 1/8 DIN

CTR2000 ORDERING INFORMATION

C **T** **R** **2** **0** **0** **A** - **B** - **C** - **D** - **E**

To create a part number fill in the boxes above with the appropriate number and/or letter from the corresponding box below.

Box A: Basic Unit

0 = Preset Totalizer	\$ 169
1 = Preset Rate	169
2 = Preset Batch/Dual	199
3 = Preset Rate/Totalizer	199
4 = Frequency	135

Box B: Power Supply

1 = 120 VAC	N/C
2 = 220 VAC	N/C

Box C: Input Type

1 = Standard Input	N/C
2 = Quadrature Input	\$ 55

Box D: Output Type (Not available with CTR2004)

0 = None	N/C
1 = Single-Relay card	25
2 = Dual-Relay card	40

Box E: Excitation Output

0 = None	N/C
1 = 12 VDC	25

ACCESSORIES

CTR-12VDC	Excitation Module	\$ 25
CTR-RLY1	Single Relay card	25
CTR-RLY2	Dual Relay card	40