Introduction

Ratemeters are used in a variety of applications where it is necessary to monitor the speed of a process. Conveyors, baking ovens, material flow and motor speed are typical uses for ratemeters. Eaton/Durant models with alarm outputs can be used to detect high or low rates. Rate indicators are often included as a standard feature on totalizers and count controls.

Application Example

One of the most common ratemeter applications is a tachometer. A tachometer displays motor or shaft RPM. The inductive proximity sensor detects the key on the shaft and the meter calculates the rate at which the shaft is turning based on a user-defined scaling factor. Signals from encoders, mag pick-ups, Hall effect sensors, etc. may also be used as inputs.
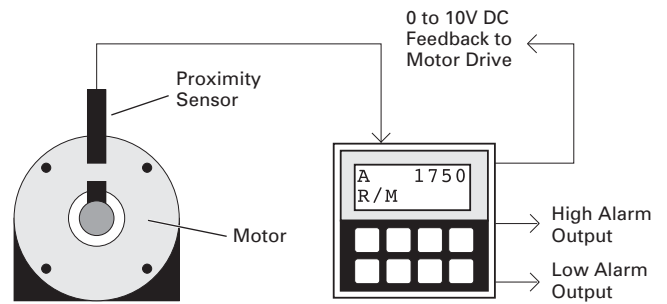
Application Example

Ratemeter Product Family Overview

Table 55. Product Family Overview

Product Family		Characteristics	Panel Cutout in Inches (mm)	Page Number
	E5-_24-E	■ Compact device with bright, LED display ■ Multiple functions available: count, time, rate, multifunction, double-function ■ 24V DC Power	0.870 x 1.772 (22 x 44)	**24**
	E5-148-C	■ Low cost, simple count control ■ Various power options: battery, AC, DC ■ Easy-to-change preset values ■ 2-line display: input and preset values	1.772 x 1.772 (45 x 45)	**37**
	E5-496-C	■ Economical, multifunction display ■ Large, LED characters ■ AC or DC power options	1.772 x 1.622 (45 x 92)	**27**
	Courier	■ Replaceable lithium battery ■ 8-digit, high-visibility LCD display ■ Optional backlighting ■ Various input options available	1.299 x 2.677 (33 x 68)	**52**
	Eclipse	■ 6-digit, super bright LED display ■ Multiple models available: totalizers, ratemeters, count controls, digital panel meters and flow controls	1.772 x 1.622 (45 x 92)	**53**
	Ambassador	■ 6-digit, high-visibility, 2-line LCD display ■ User-configurable control inputs ■ Highly flexible control/display	2.667 x 2.667 (68 x 68)	**55**
	President	■ Bright LED display w/14 mm characters ■ Simple configuration with 14-button tactile keypad ■ Many different versions fit almost any application	2.667 x 5.433 (68 x 138)	**30**
	Fusion	■ Integrated controller combines operator interface, ladder logic and high-speed counting	2.667 x 5.433 (68 x 138)	**79**

Courier Series — Durant®

Contents

Courier Series

Features

- 1/Tau ratemeter
- Scaling capabilities
- Remote reset terminal
- 0.43 inch (10.9 mm) display
- Front panel reset
- NEMA 4X

Standards and Certifications

- CE Marked

Technical Data and Specifications

Power
- Internal Battery: 3V, Lithium
- Life Expectancy: 5 years +
- Replacement Part: 35367-202

Backlight
- 10 – 30V DC @ 30 mA max.

Note: Derate operating temperature 1°C/Volt above 17V DC.
- Reverse polarity protected

Physical
- Operating Temperature —
  - Model 53300-404: 32 to 131°F (0 to 55°C)
  - Model 53301-404: -4 to 158°F (-20 to 70°C)
  - Model 53302-404: 32 to 131°F (0 to 55°C)
- Storage Temperature: -4 to 158°F (-20 to 70°C)

- Operating Humidity: 60% R.H. (non-condensing)
- Weight: 2.2 oz. (62 g) net
- Display Size: 0.43" (10.9 mm) high
- Front Panel Rating: NEMA 4X when mounted with gasket provided
- Case Material: Cycolac X-17

Rate Indicator
- Type: 1/Tau
- Digits: 4/5 (4 calculated, 5 displayed with fixed 0 in LSD)
- Scaler Range: 0.001 to 9999.
- Decimal Point: 5 positions, programmable
- Accuracy: ± 0.2%
- Update Time: 0.7 seconds
- Zero Time: 10 seconds

DC Common (Terminal 1) Rate Inputs
- Input B (Terminal 2) Low speed input designed for contact closures to DC common
  - Speed: 0 to 20 Hz
  - Min. Low Time: 10 mS
  - Min. High Time: 40 mS
  - Input Impedance: 101k Ohm

- Voltage Thresholds —
  Low: 0 – 0.4V DC
  High: 2.0 – 28V DC
  Max. High: 28V DC

- Input A (Terminal 3) High speed input requiring a voltage source such as a current sourcing sensor or a current sinking sensor used with the provided pull up resistors
  - Speed: 0 to 10 Hz
  - Min. Low Time: 80 mS
  - Min. High Time: 20 mS

Note: The above times are with a 0 – 5.0V swing.
  - Input Impedance: 2k Ohm above 5V DC
  - Voltage Thresholds —
    Low: 0 – 1.2V DC
    High: 2.0 – 28V DC
    Max. High: 28V DC

Programmable Enable Input (Terminal 5)
- Operation: Level sensitive (maintained)

Count Accuracy
- 100% when operated within

Product Selection

Table 56. Product Selection — LCD 1/Tau Ratemeter

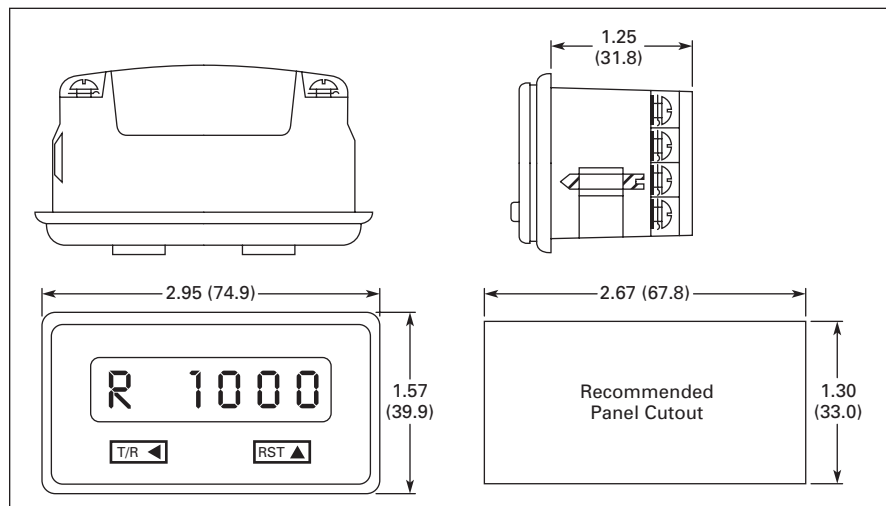| Description	Order Number	*
Battery Extended Temperature Range, Battery Backlight, Battery	**53300404** **53301404** **53302404**	

Note: For units with Rate and Total, see Totalizers.

Dimensions

Figure 51. Courier Series Ratemeter — Approximate Dimensions in Inches (mm)