

# Process Receiver Indicator/ Controller

1/8 DIN

Q2000-PE Series



Q2401-P  
Meter shown smaller  
than actual size.

- ✓ 10 or 15 Vdc Excitation Output (Q2/9000E)
- ✓  $\pm 1999$  or  $\pm 9999$  Count Display Span
- ✓ Selectable Current Ranges From  $\pm 1$  to  $\pm 50$  mA
- ✓ Selectable Voltage Ranges From  $\pm 0.5$  to  $\pm 20$  V
- ✓ Built-In Shunts and Attenuators
- ✓ Zero Adjustment to  $\pm 100\%$  of Readout
- ✓ Standard Signal Ranges of 4 to 20 mA, 10 to 50 mA, 1 to 5V or 0 to 10V
- ✓ Front-Panel Accessible Zero and Span Adjust
- ✓ 1 mV/Count Analog Output
- ✓ LED or LCD Display
- ✓ Automatic Polarity
- ✓ Display Hold and Test
- ✓ Screw-Terminal Barrier Strip

The Q2000/9000-P is a process receiver with extensive zero and span adjustment capability for readout in engineering units. The more popular process signals are 4 to 20 mA, 10 to 50 mA, 1 to 5V and 0 to 10V. The Q2000/9000-P can also be scaled for other signal levels. Full-scale input ranges are selectable from  $\pm 1$  to  $\pm 50$  mA (current signal) or  $\pm 0.5$  to  $\pm 20$  V (voltage signal). Zero is adjustable up to  $\pm 100\%$  of full-scale readout for every input range.

A universal 1/8 DIN case houses each meter. Choose any combination of display type (LED or LCD), operating power, input type and range, analog output, and digital or control outputs.

The Q2000/9000-E is an enhanced version of the Q2000/9000-P with an excitation output for powering transmitters and active transducers. In many cases, this output can eliminate the need for a more expensive external supply. The output shares the ground of the signal input. Two output levels are jumper-selectable: 10 Vdc at up to 50 mA and 15 Vdc at up to 25mA.

## Configuration and Calibration

The Q2000/9000-P and Q2000/9000-E includes configuration and calibration. Models can also be configured and scaled in the field. Full-scale signal, coarse-span and coarse-zero ranges are selected by plug-in jumpers. A complete set of internal shunts and attenuators are already on board. Fine-zero and fine-span potentiometers are accessible behind the lens to allow final calibration or field recalibration without removal of the panel meter.

## Specifications

### Conversion

**Technique:** Dual slope, average value  
Signal Integration Period: 100 ms, nominal

**Reading Rate:** 2.5/s, nominal

### Display

**LED:** Red, 14.2 mm (0.56"), 7-segment

**LCD:** 12.7 mm (0.50"), 7-segment

### Power

**AC Models:** 120, 240 or 24 Vac 10%/ -15%, 49 to 440 Hz

**DC Models:** 9 to 32 Vdc, isolated to 300 Vp; 26 to 56 Vdc, isolated to 300 Vp; 5 Vdc  $\pm 5\%$ , non-isolated

## Common Mode

**Voltage:** 1500 Vp test (354 Vp per IEC spacing)

**Rejection:** 120 dB

## Accuracy at 25°C

**Error, Maximum:** ±0.05% of reading ±1 count (Q2000); ±2 counts (Q9000)

**Span Tempco:** ±0.01% of reading/°C

**Zero Drift, Maximum:** ±0.01% of reading/°C

**Offset Drift, Maximum:** ±(0.01% offset V ±0.01% full scale V)/°C

**Step Response:** 1 s to 99.9% of span

## Warmup to Rated Accuracy:

10 minutes (Q2000);  
30 minutes (Q9000)

## Transmitter Excitation Supply (Q2/9000E)

**Output voltage:** 10 or 15 V dc, jumper-selectable

**Output current, max:** 50 mA at 10 V dc, 25 mA at 15 V dc, 50 mA for sum for all output currents, including control output and analog output

**Line regulation, max:** ±0.2% for 10% change of AC line power voltage

**Load regulation, max:** ±0.5% from zero to max load

**Ripple at 50/60 Hz:** ±0.01%

## Environmental

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Humidity:** 95% RH, non-condensing @ 40°C (104°F)

## Mechanical

**Bezel:** 96 W x 48 H x 8 mm D (3.78 x 1.89 x 0.31")

**Depth Behind Bezel:** 139.8 mm (5.50")

**Panel Cutout:** 92 W x 45 mm H (3.62 x 1.77")

**Weight:** 17 oz (480 g)

**Case Material:** 94V-0 UL-rated polycarbonate

## To Order Visit [newportUS.com/q2000p\\_e](http://newportUS.com/q2000p_e) for Pricing and Details

| Model No. |                          |   |   |       | Description   |
|-----------|--------------------------|---|---|-------|---|
| Q2        | 3½-Digit for ±1999 Count |   |   |       |   |
| Q9        | 4-Digit for ±9999 Count  |   |   |       |   |
|           | 0                        | 0 | 0 | -X    | <b>A. Power and Display</b>   |
|           | 0                        |   |   |       | LED; 120 Vac (50/60 Hz)   |
|           | 1                        |   |   |       | LCD; 120 Vac (50/60 Hz) (Q2000 only)  |
|           | 2                        |   |   |       | LED; 240 Vac (50/60 Hz)   |
|           | 3                        |   |   |       | LCD; 240 Vac (50/60 Hz) (Q2000 only)  |
|           | 4                        |   |   |       | LED; 9 to 32 Vdc, isolated  |
|           | 5                        |   |   |       | LCD; 9 to 32 Vdc, isolated (Q2000 only)   |
|           | 6                        |   |   |       | LED; 5 Vdc  |
|           | 7                        |   |   |       | LCD; 5 Vdc (Q2000 only)   |
|           | 8                        |   |   |       | LED; 24 Vac   |
|           | 9                        |   |   |       | LCD; 24 Vac (Q2000 only)  |
|           | A                        |   |   |       | LED; 26 to 56 Vdc, isolated   |
|           | B                        |   |   |       | LCD; 26 to 56 Vdc, isolated (Q2000 only)  |
|           |                          |   |   |       | <b>B. Analog Outputs</b>  |
|           |                          | 0 |   |       | 1 mV/count (Q2000) or 0.2 mV (Q9000) (supplied on all units)  |
|           |                          | 1 |   |       | 0 to 5 Vdc  |
|           |                          | 2 |   |       | 0 to 10 Vdc   |
|           |                          | 3 |   |       | 0 to 1 mA (internally driven)   |
|           |                          | 4 |   |       | 4 to 20 mA (internally driven)  |
|           |                          | 5 |   |       | 4 to 20 mA (externally driven)  |
|           |                          | 6 |   |       | 4 to 20 mA (isolated)   |
|           |                          |   |   |       | <b>C. Control Outputs</b>   |
|           |                          |   | 0 |       | None  |
|           |                          |   | 1 |       | Dual setpoint, 10 A relay (SPDT)  |
|           |                          |   | 2 |       | Proportional 4 to 20 mA   |
|           |                          |   | 3 |       | Proportional/time proportioning, 2 A relay  |
|           |                          |   | 4 |       | Parallel BCD, isolated  |
|           |                          |   | 5 |       | Single setpoint, 10 A relay (SPDT)  |
|           |                          |   |   |       | <b>D. Signal Conditioner Inputs</b>   |
|           |                          |   |   | -E(*) | Process signal with 15 Vdc excitation   |
|           |                          |   |   | -P(*) | Process signal  |
|           |                          |   |   |       | <b>Additional Options</b>   |
|           |                          |   |   | ,FS   | Custom Calibration for P and E. Specify in volts or mA: min/max display. For E specify excitation of 10 or 15 Vdc |
|           |                          |   |   | ,G    | Green LED display   |
|           |                          |   |   | ,BL   | Lens without Newport logo in lieu of standard lens  |

\* Refer to chart above for code options.

**Ordering Example:** Q2000-P4, 3½ digit process receiver, red LED, 120 Vac power, 1 to 5 V, and 8 to 230 counts/V.

Q2001-E4, 3½ digit process receiver with excitation, red LED, 120 Vac power, 1 to 5 V, with dual setpoint 10 A relay, and 8 to 230 counts/mV.