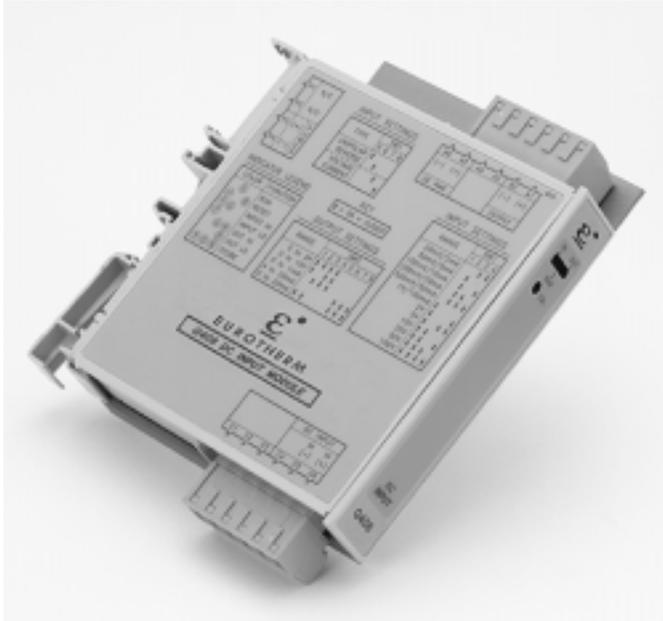




Bridge Input, Field Configurable Signal Conditioner Model Q448-0C00



Provides an Isolated DC Output in Proportion to a Bridge/Strain-Gauge Input

- Adjustable Bridge Excitation 1 to 10V with up to 120mA drive
- Eleven Field Configurable Input Ranges from 10mV to $\pm 200\text{mV}$ (0.5mV/V to $>50\text{mV/V}$)
- Five Field Configurable Output Ranges: 0-5V, 0-10V, 0-1mA, 0-20-mA and 4-20mA
- TouchCAL Technology for Easy Non-Interactive Zero and Span Adjustments
- SnapLoc™, Plug-IN Terminals for Low MTTR
- Flexible Power Supply Accepts 18 to 30VDC
- ASIC Technology for High Reliability
- Lifetime Warranty



DESCRIPTION

The model Q448 is a DIN rail mount, bridge or strain-gage input signal conditioner with 1800VDC isolation between input, output and power. The field configurable input and output offers flexible, wide ranging capability for bridge or strain-gage input applications from 0.5mV/V to over 50mV/V.

Low-cost microprocessor technology has enabled replacement of zero and span adjustment potentiometers with push-button, "TouchCAL™" technology. In essence, the thermal drift and mechanical variability of the potentiometers have been removed and replaced with a digitally stable circuit. Additionally, the inherent zero and span interactivity of potentiometer based analog amplifier circuitry is removed, providing 100% non-interactive adjustment.

The field configurable input of the Q448 can be set via DIP switches for any one of 11 voltage ranges from 10mV to $\pm 200\text{mV}$ (see Table 1). The field configurable output is linear to the input and can be set for either 0-5V, 0-10V, 0-1mA or 4-20mA.

TouchCAL technology enables precise calibration and provides more than 90% offset of the zero value and adjustment down to 10% of the full scale input span for most of the 11 switch selectable input ranges. For example, the DIP switch

configured 0-100mV input range could be calibrated via push button for 0-40mV (i.e. 60% span reduction) or offset to a range of 60-100mV (i.e. 60% offset and 60% span reduction). If the output was configured for 0-10V, then 60-100mV input would correspond to the 0-10V full scale output. Thus, an input range such as 90-100mV is possible using the 0-100mV range.

Advanced digital technology combined with exclusive ASIC technology allows the Q448 to be field configured for virtually any Bridge input to DC output within the limits specified. Calibration utilizes "TouchCAL" technology where the user simply configures the desired input excitation and millivolt range via switches, then applies the minimum and maximum input signals, touching a recessed button to store range values.

The Q448 will accept power between 18 and 30VDC; typically a 24VDC source is used.

TOUCHCAL™ TECHNOLOGY

The Q448 utilizes TouchCAL technology which greatly simplifies calibration. Once the unit is configured via DIP switches, the push-button is used to precisely calibrate the minimum and maximum levels.

To calibrate the input level within the DIP switch configured range, the user simply applies the high input signal and pushes

the CAL button. The low input signal is then applied and pushing the CAL button again stores the low input signal. Note, these steps are reversed for reverse mode operation.

The high and low input levels are stored in nonvolatile memory and correspond to the high and low output levels. These output levels are precisely adjusted using the input signal.

DIAGNOSTIC LEDS

The Q448 has three diagnostic LEDs. One green LED, labeled RUN, is used for diagnostics to indicate that power is on, and it will flash quickly if the input signal is above the configured range or slowly if the input signal is below range. The RUN LED is continuously on when the unit is functioning within the configured range.

The yellow IN LED is on while calibrating the input and the red OUT LED is on while calibrating the output.

This flexibility, combined with an adjustable (1 to 10VDC) bridge excitation source, provides the user a reliable, accurate instrument to isolate and condition virtually any bridge or strain-gage input.



EUROTHERM

Table 1: Input Range Selector-Switch Settings

	SW1				
	1	2	3	4	5
0 to 10mV	■			■	■
0 to 20mV	■	■			■
0 to 50mV	■	■	■		■
0 to 100mV	■				■
0 to 200mV	■			■	■
-5 to 5mV		■			
-10 to 10mV		■	■		■
-20 to 20mV		■	■	■	
-50 to 50mV		■	■	■	■
-100 to 100mV	■				■
-200 to 200mV	■				■

KEY ■ = ON

Table 2: Direct or Reverse Operation Setting

SW1	
DIRECT	6
REVERSE	■

Table 3: Bridge Excitation Selector-Switch Settings

SW1	
9.8 to 10.1V	7
4.8 to 5.2V	8
0 to 10V	■
0 to 2.5V	■

Table 4: Output Range Selector-Switch Settings

	SW 2							
	1	2	3	4	5	6	7	8
0 to 5V	■	■	■	■				
0 to 10V	■				■	■	■	
0 to 1mA			■	■	■			
4 to 20mA						■	■	■
0 to 20mA	■	■						■

KEY ■ = ON

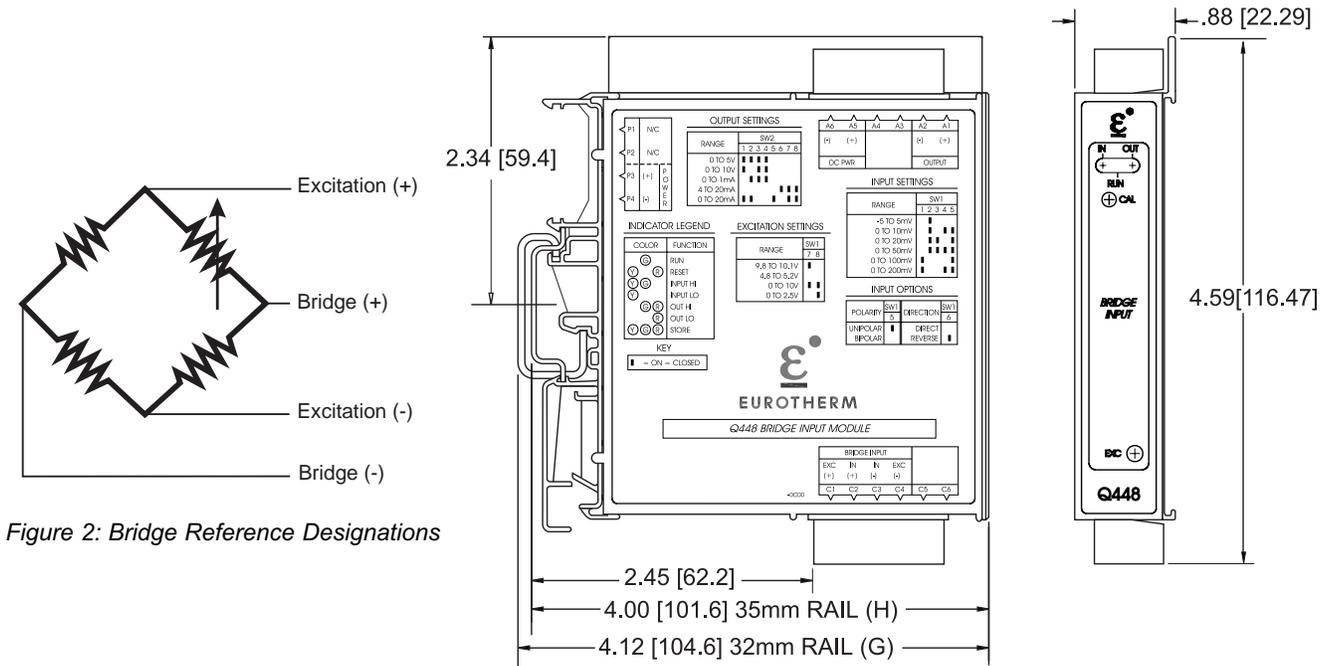


Figure 2: Bridge Reference Designations

Figure 3: Mechanical Dimensions for Q448

SPECIFICATIONS

Input

Voltage Input
Full Scale Range: 10mV to $\pm 200\text{mV}$ (Table 1).
Impedance: $>1\text{M}\Omega$
Overvoltage: intermittent 400V, max.; continuous 264V, max.
Common Mode (Input to Ground): 1800VDC, max.
Push-button Adjustment (inputs $>10\text{mV}$)
Effective zero offset: $>90\%$ (inputs $>10\text{mV}$)
Effective span turn down: $>90\%$
10mV & $\pm 5\text{mV}$ range: 50% is maximum zero offset and span turn down
Operation: direct or reverse acting

Output

Voltage Output
Output: 0-5V, 0-10V
Impedance: $<10\Omega$
Drive: 10mA, max.
(1K Ω , min. @ 10V)
Current Output
Output: 0-1mA, 0-20mA, 4-20mA
Impedance: $>100\text{K}\Omega$
Compliance:
0-1mA; 7.5V, max. (7.5K Ω , max.)
0-20mA; 12V, max. (600 Ω , max.)
4-20mA; 12V, max. (600 Ω , max.)

Bridge Excitation

1 to 10VDC, 120mA max.
Current drive decreases at 10mA/V below 5V (e.g. 4V, 110mA max.)

Accuracy (Including Linearity, Hysteresis)

$\pm 0.1\%$ typical, $\pm 0.2\%$ maximum of selected input range at 25°C.

Stability

$\pm 0.025\%/^{\circ}\text{C}$ typical, 0.05%/°C maximum, of selected full scale input range.

Output Noise (maximum)

0.1% of span, rms, or 10mV whichever is greater.

Response Time (10 to 90%)

$<200\text{mSec.}$, typical.

Common Mode Rejection

DC to 60Hz: 120dB, 100dB (0 -1mA, range)

Isolation

1800VDC between input, output and power.

EMC Compliance (CE Mark)

Emissions: EN50081-1
Immunity: EN50082-2
Safety: EN50178

LED Indication (green)

Input Range (approx.)
 $>110\%$ input: 8Hz flash
 $<0\%$ input: 4Hz flash

Humidity (Non-Condensing)

Operating: 15 to 95% (@ 45°C)
Soak: 90% for 24 hours (@ 65°C)

Temperature Range

Operating: 0 to 55°C (32 to 131°F)
Storage: -25 to 70°C (-13 to 158°F)

Power

Consumption: 2.7W typical (one 350 Ω bridge), 4W max. (four 350 Ω bridges).

Range: 18 to 30VDC

Shipping Weight

0.54 lbs.

Wire Terminations

Screw terminals for 12-22 AWG

Agency Approvals

CE Compliance per EMC directive 89/336/EEC and Low Voltage 73/23/EEC.

TERMINAL CONNECTIONS

A1: DC Input (+)
A2: DC Input (-)
A3: Not Used
A4: Not Used
A5: DC Power (+)
A6: DC Power (-)
C1: Bridge Excitation (+)
C2: Bridge Input (+)
C3: Bridge Input (-)
C4: Bridge Excitation (-)
C5: Not Internally Connected
C6: Not Internally Connected
P1: Not Used
P2: Not Used
P3: DC Power (+)
P4: DC Power (-)

ACCESSORIES

All Q448 modules mount on standard TS32 (model MD02) or TS35 (model MD03) DIN rail. In addition the following accessories are available:

MD02 TS32 DIN rail
MD03 TS35 x 7.5 DIN rail
IQRL-DC02 2 Position I/QRail & DIN rail
IQRL-DC04 4 Position I/QRail & DIN rail
IQRL-DC08 8 Position I/QRail & DIN rail
G905 24VDC Power Supply (0.5Amp)
H910 24VDC Power Supply (1Amp)
H915 24VDC Power Supply (2.1Amp)

ORDERING INFORMATION

Specify:

1. Model: **Q448-0C00**;
2. Specify optional I/QRail, type and quantity.
3. Optional Factory Custom Calibration, specify **C620** - with desired input and output ranges.
4. Accessories: (see Accessories)

All Prices and Specifications subject to change without notice.

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