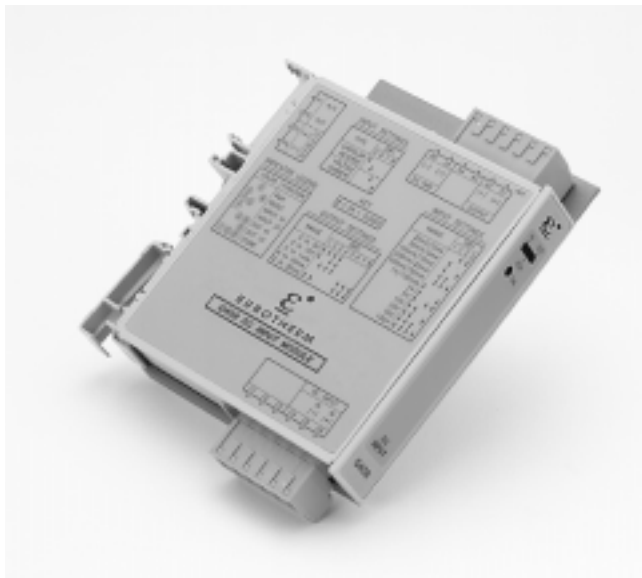


Potentiometer Input, Field Configurable Signal Conditioner

Model Q438-0C00



Provides a DC Output in Proportion to a Potentiometer Input

- Potentiometers from 100Ω to 100KΩ
- Wide Ranging Zero and Span with 80% Adjustability
- Five Field Configurable Output Ranges: 0-5V, 0-10V, 0-1mA, 0-20mA and 4-20mA
- SnapLoc Plug-In Terminal for Low MTTR
- Flexible Power Supply Accepts 9 to 30VDC
- ASIC Technology for High Reliability
- Lifetime Warranty



DESCRIPTION

The model Q438 is a DIN rail mount, potentiometer input signal conditioner with 1800VDC isolation between DC power and the input/output circuitry. The input provides a constant voltage and is designed to accept any three-wire potentiometer from 100Ω to 100KΩ. The field configurable output is switch selectable providing either 0-5V, 0-10V, 0-1mA, 0-20mA or 4-20mA DC signal.

Wide ranging, precision zero and span pots, used in conjunction with DIP switches, allow 80% adjustability of offset and gain to transmit a full scale output from any 20% portion of the potentiometer input.

APPLICATION

The Q438 field configurable, potentiometer input signal conditioner is useful in transmitting process control setpoints to remote PID controllers or interfacing position sensors to data acquisition and control systems.

The Q438's high density DIN rail mounting offers an extremely compact solution for saving valuable panel space.

CONFIGURATION

A major advantage of the Q438 is its wide ranging capabilities and ease of configuration.

For example, in a valve positioning application a potentiometer is sometimes used as a feedback signal. Quite often a wide open valve is only a 25% turn of the feedback potentiometer. In this case the Q438 can easily be adjusted with the zero and span to provide a full scale output signal (e.g. 4-20mA) representing 0-25% or even 50-75% of the potentiometer input.

Unless otherwise specified, the factory presets the Model Q438 as follows:

Input Range: 0 to 100%
Output: 4 to 20mA

The DC power input accepts any DC source between 9 and 30V; typically a 12V or 24VDC source is used (see Accessories).

For other output ranges, refer to Tables 1 and 2 to reconfigure switches SW1 and SW2 for the desired input and output ranges.

WARNING: Do not attempt to change any switch settings with power applied. Severe damage will result!

CALIBRATION

1. With power disconnected, set the output and input switch selectors (SW1 and SW2) to the desired ranges (Tables 1 and 2).

NOTE: An I/Q Rail is an optional accessory to deliver power to the module(s). A two, four or eight position rail is available. See ordering Information.

2. Connect the input to a potentiometer. Connect the output to the actual device load (or a load approximately equivalent to the actual device load value) and apply power.

NOTE: To maximize thermal stability, final calibration should be performed in the operating installation, allowing approximately 1 to 2 hours for warm up and thermal equilibrium of the system.

3. Set the input potentiometer to the desired minimum and adjust the zero potentiometer for the desired minimum output.
4. Set the input potentiometer to the desired maximum and adjust the span potentiometer for the desired maximum output.
5. Repeat steps 3 and 4, if necessary, for best accuracy.

FACTORY ASSISTANCE

For additional information on calibration, operation and installation please contact your local Eurotherm Company.

Table 1: Input Range Switch Selector (SW2)

Span	SW2*					
	1	2	3	4	5	6
20-100%						
45-100%	■					
85-100%		■				
Offset	1	2	3	4	5	6
0-20%						
20-45%				■		
45-65%				■	■	
65-80%				■	■	■

*SW2-5, 6 not used

Table 2: Output Range Switch Selector (SW1)

	SW1							
	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



EUROTHERM

SPECIFICATIONS

Potentiometer Input

Resistance (End to End):

100Ω up to 100KΩ

Input Impedance: >1MΩ

Input Excitation: 500mV, 5mA maximum drive.

Zero Turn-Up: 80% of full scale input

Span Turn-Down: 80% of full scale input (Table 1)

Common Mode Rejection:

1800VDC (input to power)

Output

Voltage Output

Output: 0-5V, 0-10V

Source Impedance: <10Ω

Drive: 10mA, max.

(1KΩ min. @ 10V)

Current Output

Output: 0-1mA, 0-20mA, 4-20mA

Source Impedance: >100KΩ

Compliance:

0-1mA; 7.5V, max. (7.5KΩ, max.)

0-20mA; 12V, max. (600Ω, max.)

4-20mA; 12V, max. (600Ω, max.)

Accuracy (Including Linearity, Hysteresis)

±0.1% maximum at 25°C.

Stability

Temperature: <±0.05%/°C maximum of full scale range.

Response Time (10 to 90%)

<200mSec., typical.

Common Mode Rejection

120dB @ DC, >100dB @ 60Hz

Isolation

1800VDC between line power and input, output

EMC Compliance (CE Mark)

Emissions: EN50081-1

Immunity: EN50082-2

Safety: EN50178

LED Indication (green)

Active DC power

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: 1.5W typical, 2.5W max

Range: 9 to 30VDC

Shipping Weight

0.48 lbs

Agency Approvals

CE Compliance per EMC directive

89/336 /EEC and Low Voltage73/23/EEC.

TERMINAL CONNECTIONS

A1 DC Output (+)

A2 DC Output (-)

A3 Not Used

A4 Not Used

A5 DC Power (+)

A6 DC Power (-)

C1 Not Used

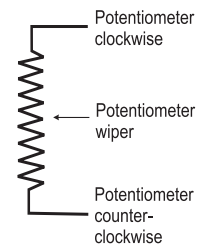
C2 Not Used

C3 Shield Ground

C4 Pot. Input (full counter clockwise)

C5 Pot. Input Wiper

C6 Pot. Input (full clockwise)



ACCESSORIES

All Q438 modules will 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:

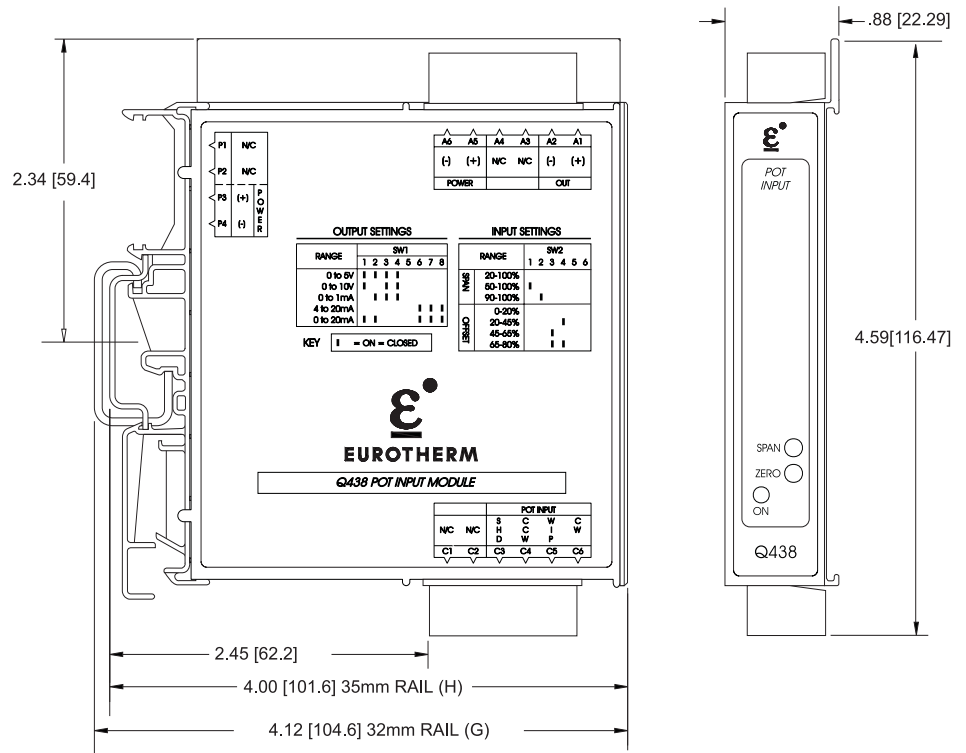
1. Model: **Q438-0C00**

2. Specify optional I/QRail, type and quantity.

3. Optional Custom Factory Calibration; specify **C620** with desired input and output range

4. Accessories: (see Accessories)

DIMENSIONS



All Prices and Specifications subject to change without notice.

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