



Q436-0000



AC Powered Potentiometer Input Signal Conditioner

Provides a DC Output in Proportion to a Potentiometer Input



- DIN Rail Mounting with IQRL
- Universal AC Power 85 to 265 VAC
- SnapLoc[™] Plug-in Terminals

 Accepts Potentiometers from 100 Ohms to 100k Ohms

- Wide Ranging Zero and Span
- ASIC Technology

Description

The Q436 is a DIN rail mount, potentiometer input signal conditioner with 1800VDC isolation between AC power and the input/output circuitry. The input provides a constant voltage and is designed to accept any 3-wire potentiometer from 100 ohms to 100k ohms. The field configurable output is switch selectable providing a 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% adjustablity of offset and gain to transmit a full scale output from any 20% portion of the potentiometer input.

Application

The Q436 is useful in transmitting process control setpoints to remote PID controllers or interfacing position or level sensors to data acquisition and control systems. The high density DIN rail mounting offers an extremely compact solution for saving valuable panel space.

Configuration

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. The Q436 can easily be adjusted with the zero and span to provide a fullscale 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 Q436 as follows:

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

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 change switch settings with power applied. Severe damage will result!

Calibration

Note: For best results, calibration should be performed with the intended output load, in the operating environment, mounted on a DIN rail, allowing at least one hour for thermal equilibrium of the system.

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

Note: An I/Q Rail is required to power the modules. 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 to the desired minimum and adjust the zero potentiometer for the desired minimum output.
- 4. Set the input to the desired maximum and adjust the span potentiometer for the desired maximum output.
- 5. Repeat steps 3 and 4, if necessary.

Table 1: Input Range Settings

Sman	Selector SW2					
Span	1	2	3	4	5	6
20 - 100%						
45 - 100%	-					
(default) 85 - 100%		•				
Offset	1	2	3	4	5	6
(default) 0 - 20%						
20 - 45%						
45 - 65%						
65 - 80%			•	•		
Key: ■ = 1 = ON or Closed						

Table 2: Output Range Settings

Output	Selector SW1							
Output	1	1 2 3 4	4	5	6	7	8	
0 to +5V	-	-						
0 to +10V	-			•				
0 to 1mA		-	-					
(default) 4 to 20mA						•		•
0 to 20mA	-	-				•		•
Key: ■ = 1 = ON or Closed								



Specifications

Potentiometer Input:

End-to-end Resistance: 100 ohms up to 100k ohms

Input Impedance: >1M ohms

Input Excitation: 500mV, 5mA maximum drive.

Zero Turn-Up: 80% of full scale input Span Turn-Down: 80% of full scale input

Common Mode Rejection: 1800VDC (input to power)

Output:

Voltage

Output: 0-5V, 0-10V

Source Impedance: <10 ohms

Drive: 10mA, max. (1k ohms min. @10V)

Current Output

Output: 0-1mA, 0-20mA, 4-20mA Source Impedance: >100k ohms

Compliance:

0-1mA: 7.5V, max. (7.5k ohms, max.) 0-20mA: 12V, max. (600 ohms, max.) 4-20mA: 12V, max. (600 ohms, 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:

800VDC between line power and input, output

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: 100 to 240VAC, ±10%, 50 to 400Hz

Weight:

0.48 lbs

Agency Approvals:

UL recognized per standard UL508 (File No. E99775). CSA certified per standard C22.2, No. 0-M91 and 142-M1987 (Cert. # 2500003630).

Terminal	Connection	Terminal	Connection		
A1	DC Output (+)	C3	Shield Ground		
A2	DC Output (-)	C4	Pot. Input (fully CCW)		
А3	Not Used	C5	Pot. Input Wiper		
A4	Not Used	C6	Pot. Input (fully CW)		
A5	Not Used	P1	AC Power (Hot)		
A6	Not Used	P2	Not Used		
C1	Not Used	P3	Not Used		
C2	Not Used	P4	AC Power (Neutral)		

Ordering Information

Models and Accessories Specify:

- 1. Model: **Q436-0000**
- 2. Specify I/QRail type and quantity (required)
- Optional Custom Factory Calibration; specify C620 with desired input and output range
- 4. Accessories: (see Accessories)

Accessories

ActionI/Q 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

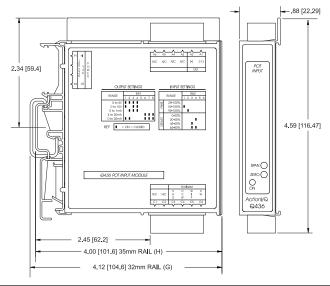
 IQRL-2002
 2 Position I/QRail & DIN rail

 IQRL-2004
 4 Position I/QRail & DIN rail

 IQRL-2008
 8 Position I/QRail & DIN rail

 C620
 Factory Calibration

Dimensions



Eurotherm®



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Factory Assistance

For additional information on calibration, operation and installation contact our Technical Services Group:

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