



# ACTIONI/Q®

## Q404-2/3/4

### DC Powered DC Input Multi-Channel Isolator

Q404-2 (2 inputs; 2 outputs)  
 Q404-3 (1 input; 1 output; 24V Exc)  
 Q404-4 (signal splitter: 1 input; 2 outputs)

Provides 1 or 2 Fully Isolated DC Output Signals  
 in Proportion to 1 or 2 DC Inputs



- Multi-Channel Design
- 2000VAC Isolation
- High Density DIN Rail Mounting

- Universal DC Power 10.8 to 26.4VDC
- SnapLoc™ Plug-in Terminals

#### Description

The model Q404 is a DIN rail mount, DC input signal conditioner, with 2000VAC isolation between input output and power. It is available as a single channel signal conditioner (1 input/1 output) or as a multi-channel signal conditioner (1 input/2 outputs or 2 inputs/2 outputs).

Factory configured input and output ranges support standard industrial control signals such as 4-20mA and 0-10V. Front accessed zero and span potentiometers allow 50% adjustment of offset and gain to compensate for sensor errors or signal losses.

All ActionI/Q modules feature SnapLoc plug-in screw terminals for easy installation. Two or more modules can slide together and interlock for solid, high density mounting (remove either the DIN rail foot or the adjacent unit's faceplate, for right side or left side mounting, respectively). The module to be attached will easily slide onto the side of the mounted unit.

#### Application

DC input four-wire transmitters are used to isolate and convert DC voltage or current signals into proportional, standard industrial control signals such as 4-20mA or 0-10V. Typically an industrial control system such as a DCS or PLC requires standard industrial control signals with full isolation to ensure reliable, strong signals.

In most industrial process control or data acquisition applications, several different input sources, including voltages and currents from various field instruments (e.g. level, flow, pressure and position sensors), are common. Four-wire transmitters accept these field inputs and provide the controller (DCS & PLC) with the standard industrial signal it requires. The four-wire transmitter will increase the signal drive to high impedance loads and may improve resolution of the process variable.

#### Operation

The ActionI/Q model Q404 operates as a four-wire transmitter; each channel derives its power from an independent, transformer isolated DC power source (10.8 to 26.4VDC).

The Q404 has fixed input and output ranges. The standard input and output ranges shown in Table 1 are calibrated to rated accuracy. One range per module; two channels per module, maximum.

#### 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) To check calibration, connect the input to a calibrated DC source. Connect the output to a DC voltage or current meter and the input power to a DC source (10.8 to 26.4VDC) capable of providing up to 0.5 Amps.
- 2) Set the calibrator to the specified minimum DC input value and adjust the zero potentiometer for minimum (e.g. 4mA) output.
- 3) Set the calibrator to the specified maximum DC input value and adjust the span potentiometer for maximum (e.g. 20mA) output.
- 4) Repeat steps 2 and 3 to validate calibration to the output load.

Standard Ranges		
Model	Input	Output
Q404-2L08	0 to 10 Volts	4 to 20 mA
Q404-2L08	0 to 10 Volts 0 to 10 Volts 0 to 10 Volts	0 to 5 Volts 1 to 5 Volts 0 to 10 Volts
Q404-2L28	-10/10 Volts	-5/5 Volts -10/10 Volts
Q404-3L00	-10/10 Volts	4 to 20mA
Q404-3L01	4 to 20mA	0 to 5 Volts 1 to 5 Volts 0 to 10 Volts
Q404-4L00	4 to 20mA	4 to 20mA

## Specifications

### Input:

Range: see Table 1

Impedance:

≥ 1M ohms (voltage inputs)

≤ 20 ohms (current inputs)

Protection:

withstands up to 24VDC (current input)

120VAC (voltage input) without damage

Common Mode: 2000VAC, input to ground

### Output:

Range: see Table 1

Voltage Output Drive: 10mA (1k ohms, min.)

Current Output Compliance: 15V (750 ohms, max.)

### LED Indication:

Green LED indicates power on

### Output Accuracy:

≤ ±0.1% of full-scale input typical

≤ ±0.2% maximum @ 23°C including linearity, repeatability and hysteresis

### Adjustability:

Front accessed 10 turn pot., ± 50% of range for zero and span

### Stability:

≤ 0.025%/C of full-scale maximum for full-scale and zero

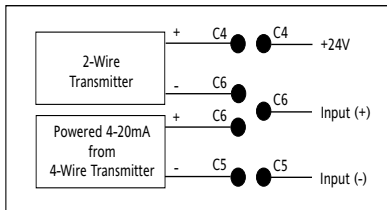


Figure 1. Connections for a Loop Powered 2-Wire Transmitter or a Powered 4-20mA Input

## EMC Compliance (CE Mark):

Emmissions: EN50081-1

Immunity: EN50082-2

Safety: EN50178

## Isolation:

≥ 2000VAC between input and output and channel to channel

## Response Time:

25mSec typical (10 to 90%)

## Power:

10.8 to 26.4VDC, 2W per channel max.

## Temperature:

Operating: -5 to 60°C (23 to 140°F)

Storage: -40 to 80°C (-40 to 176°F)

## Humidity (non-condensing):

Operating: 15 to 90% @45°C

Soak: 90% for 24 hours @60°C

## Wire Terminal:

Socketed screw terminals for 12-22 AWG

## Agency Approvals:

CSA certified per standard 22.2 (File No LR42272).

UL recognized per standard UL508 (File No E99775).

CE compliance per EMC directive 89/336/EEC and low voltage 73/23/EEC.

Terminal	Connection	Terminal	Connection
A1	Channel 1, Output (+)	C3	Channel 2, DC Input (+)
A2	Channel 1, Output (-)	C4	Voltage Supply (+24VDC)
A3	Not Connected	C5	Channel 1, DC Input (-)
A4	Channel 2, Output (+)	C6	Channel 1, DC Input (+)
A5	Channel 2, Output (-)	B1	Not Connected
A6	Not Connected	B2	Not Connected
C1	Not Connected	B3	DC Power (+)
C2	Channel 2, DC Input (-)	B4	DC Power (-)

## Ordering Information

Models & Accessories

### Specify:

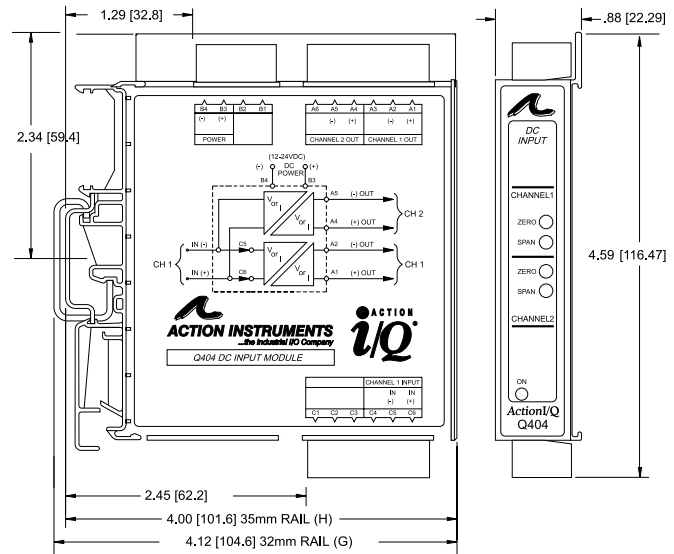
- Model: **Q404-2L08**: Two 0-10Vdc inputs, two 4-20mA outputs  
**Q404-2L09**: Two 0-10Vdc inputs, two 0-10Vdc outputs  
**Q404-2L28**: Two -10/+10Vdc inputs, two -10/+10Vdc outputs  
**Q404-3L00**: One 4-20mA input, one 4-20mA output, 24V Exc.  
**Q404-3L01**: One 4-20mA input, one 0-10Vdc output, 24V Exc.  
**Q404-4L00**: One 4-20mA input, two 4-20mA outputs
- Input Range: (see Table 1)
- Output Range: (see Table 1)
- Accessories: (see Accessories)

### Accessories

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

<b>MD02</b>	TS32 DIN rail
<b>MD03</b>	TS35 x 7.5 DIN rail
<b>WV905</b>	24VDC Power Supply (500mA)
<b>H910</b>	24VDC Power Supply (1 Amp)
<b>H915</b>	24VDC Power Supply (2.3 Amp)

## Dimensions



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## Factory Assistance

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

**703-669-1318**

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