Q403-1 (1 input; 1 output)
Q403-2 (2 inputs; 2 outputs)

ACTIONI/Q®
Q403
AC Powered DC Input Multi-Channel Isolator

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 AC Power 85 to 265 VAC
- SnapLoc™ Plug-in Terminals
- Fast Response

Description

The model Q403 is a fast response, 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 multi-channel signal conditioner (2 inputs/2 outputs).

Factory configured input and output ranges support bipolar voltage signals (±5 Volts and ±10 Volts) or unipolar ranges of 4-20mA, 0-5 Volts, 0-10 Volts and 1-5 Volts. Front accessed zero and span potentiometers allow 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 face plate, for right side or left side mounting, respectively). The module to be attached will easily slide on to 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 -5/5V or -10/10V. Typically an industrial control system such as a DCS or PLC requires standard industrial control signals and 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 signals it requires. The four-wire transmitter will increase the signal drive to high impedance loads and may improve resolution of the process variable.

The 2000VAC isolation capability of the Q403 prevents ground loops from causing errors in DC signals. Filtering and common mode rejection are included to reduce susceptibility to EMI and RFI. Isolation also provides protection from high voltages and current spikes which can damage expensive Supervisory Control and Data Acquisition (SCADA) equipment.

Operation

The Q403 operates as a four-wire transmitter; each channel derives its power from an independent, transformer isolated, AC to DC power source (85 to 265VAC).

The Q403 has fixed input/output ranges. The standard I/O ranges in Tables 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 an AC source (between 85 and 256 VAC) 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. -10V) output.

3. Set the calibrator to the specified maximum DC input value and adjust the span potentiometer for maximum (e.g. +10V) output.

4. Repeat steps 2 and 3 to validate calibration to the output load.

Table 1: Standard Ranges

Available Models		
Model	**Input**	**Output**
Q403-1L08	0 to 10 Volts	4 to 20 mA
Q403-1L09	0 to 10 Volt 0 to 10 Volts 0 to 10 Volts	0 to 5 Volts 1 to 5 Volts 0 to 10 Volts
Q403-1L28	-10/10 Volts -10/10 Volts	-5/5 Volts -10/10 Volts
Q403-2L00	4 to 20mA (both Channels)	4 to 20mA (both Channels)

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Specifications

Inputs:

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

Outputs:

Range: see Table 1

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

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

Output Accuracy:

≤ ±0.1% of full-scale input typical,

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

LED Indication:

Green LED indicates power on

Adjustability:

Front accessed 10 turn pot. for zero and span

Stability:

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

ESD Susceptibility:

Capable of meeting IEC 801-2 level 3 (8kV)

Isolation:

≥ 2000VAC between input, output, power and channel to channel

Response Time:

285 microSec, -3dB @ 3500Hz (bipolar)

25mSec (10 to 90%)(unipolar)

Power:

85 to 256VAC, 2.5W 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).

Ordering Information

Models & Accessories

Specify:

1. Model: **Q403-1:** One Input, one output
   Q403-2: Two inputs, two outputs
2. Input Range: (see Table 1)
3. Output Range: (see Table 1)
4. Accessories: (see Accessories)

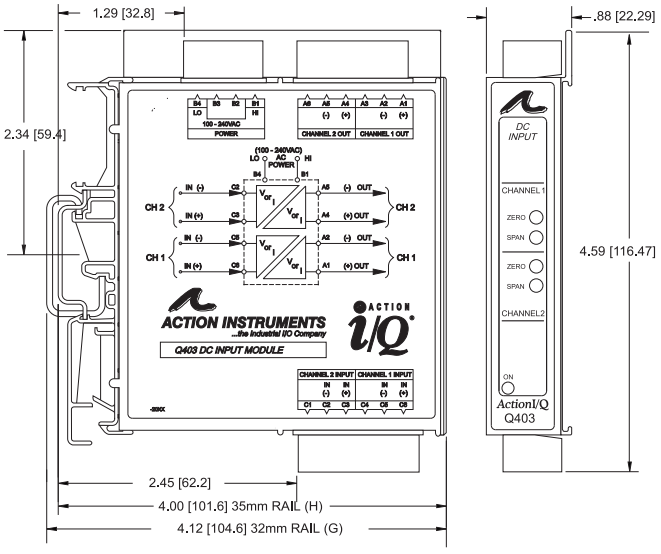
Accessories

*Action*I/Q modules mount on standard TS3(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

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

Dimensions



Eurotherm®
by Schneider Electric

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Schneider Electric Systems USA, Inc.
44621 Guilford Drive, Suite 100
Ashburn, VA 20147
703-724-7300
info.eurotherm.us@schneider-electric.com *www.eurotherm.com*

Factory Assistance

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

703-724-7314

US.Support@schneider-electric.com