

# ACTIONI/Q<sup>®</sup> Q500 MODEL



## Benefits

- Multi-Channel Design Provides One (1), Two(2) or Four(4) Loop Isolators in a Single Package
- Prevents Ground Loops and Protects Equipment with up to 1800V Isolation
- SnapLoc, Plug-In, Screw Terminals for Low MTTR
- Input Loop-Powered Design Provides up to 500Ω Output Drive (10V)
- High Density DIN Rail Mounting
- Three Year Warranty



## Multi-Channel, Loop-Powered Isolator

Provides up to 4 Isolated DC Current Output(s) in Proportion to the Input Current(s)

### DESCRIPTION

The ActionI/Q model Q500 is a DIN rail mount, loop-powered isolator, with single, dual or quad (4) channel capability. Each channel accepts a 0-20mA or 4-20mA input, provides up to 1800VDC of isolation and outputs a proportional 0(4)-20mA signal. The Q500 provides signal isolation from input to output and channel to channel.

All ActionI/Q modules feature SnapLoc, plug-in, screw terminals for easy installation and low Mean-Time-To-Repair (MTTR). If desired, two or more modules can slide together and interlock for solid, high density mounting. This is accomplished by removing either the foot, or the adjacent unit's face plate, for right-hand side or left-hand side mounting, respectively. The module to be attached will easily slide on to the side of the mounted unit.

### APPLICATION

Loop-powered isolators are used to isolate process signals transmitted between field instrumentation, Programmable Logic Controllers (PLC), Distributed Control Systems (DCS) and Data Acquisition Systems (DAS). Outputs from these systems can also drive one or more isolator channels of the Q500. Field devices such as flow, level or temperature transmitters may also drive a Q500 isolator channel.

The 1800VDC isolation capability of the Q500 prevents ground loops from causing errors in 4-20mA current signals and may reduce susceptibility to Radio Frequency Interference (RFI). Isolation also provides protection from high voltages and current spikes which may damage expensive Supervisory Control And Data Acquisition (SCADA) equipment, such as a PLC or DCS.



*Protecting the  
Integrity of  
Industrial  
Process Signals*



## OPERATION

The Action/I/Q model Q500 operates as a loop-powered isolator, with each channel deriving its power from the input loop current, 0(4)-20mA. The effective load of a Q500 isolator channel on a loop is 300Ω plus the output load resistance. For example, if the load on an output of the Q500 is 500Ω, then the current loop connected to the input of the Q500 would need to drive 300Ω plus 500Ω (i.e. 800Ω) at a maximum current of 20mA, or 800Ω x 20mA which equals 16.0V.

The Q500 is protected from reverse input polarity and output short circuit. A span pot is provided for each channel to calibrate the output to the load.

## CALIBRATION

1. Connect the input to a calibrated milliamp source. Connect the output to the actual device load or to a load (between 100 and 500Ω) equivalent to the actual device load value. Monitor the output current with a milliamp meter in series with the load or monitor the voltage across the load.

2. Set the calibrator to 20mA and adjust the span potentiometer for 20mA output.

3. Set the calibrator to 4mA and confirm that the output is 4mA.

## ASSISTANCE

For additional information on calibration, operation and installation please contact our Technical Services Group. Call toll-free:

**800-783-6664**

## SPECIFICATIONS

<b>Input</b>	Ranges: 0(4) to 20mA, 30VDC max, each channel Voltage Drop: 6V (300Ω), plus output load
<b>Output</b>	Range: 0 (4) to 20mA, Drive: 10V or 500Ω maximum @ 20mA, 100Ω minimum
<b>Output Accuracy</b>	Better than ±0.2% of full-scale, including linearity, hysteresis and repeatability, maximum
<b>Linearity</b>	0.1% of span typical, from 4 to 20mA at 250Ω load
<b>Stability</b>	±0.02%/°C of span maximum for full-scale and zero
<b>Load Regulation</b>	±0.1% of span, typical per 10Ω change
<b>Common Mode</b>	
<b>Rejection Ratio</b>	≥ 100dB (DC to 60Hz)
<b>Isolation</b>	1800V DC, input to output and channel to channel.

<b>ESD Susceptibility</b>	Capable of meeting IEC 801-2 level 3 (8kV)
<b>Response Time</b>	50mSec typical, 100mSec max 10 to 90% (each channel)
<b>Temperature</b>	Operating: -40 to 80°C (-40 to 176°F) Storage: -40 to 80°C (-40 to 176°F)
<b>Humidity</b>	(non-condensing) 25 to 95% (@40°C)
<b>Wire Terminal</b>	Socketed screw terminals for 12-22 AWG
<b>Weight</b>	0.34lbs
<b>Agency Approvals</b>	CSA certified per standard C22.2 (File No. LR42272). UL recognized per standard UL508 (File No.E99775). CE conformance per EMC directive 89/336/EEC and Low voltage 73/23/EEC.

## MODELS AND ACCESSORIES

### Accessories

All Action/I/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>G905</b>	24VDC Power Supply (500mA)
<b>H902</b>	24VDC Power Supply (200mA)
<b>H910</b>	24VDC Power Supply (1 Amp)
<b>H915</b>	24VDC Power Supply (2.3 Amp)

### Ordering Information

Specify:

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- Model: **Q500-1B00**, Single (1) Channel Loop-Powered Isolator, **Q500-2B00**, Dual (2) Channel Loop-Powered Isolator, or **Q500-4B00**, Quad (4) Channel Loop-Powered Isolator
- Accessories: (see Accessories)

### Terminal Connections

#### Four Channel Q500-4B00

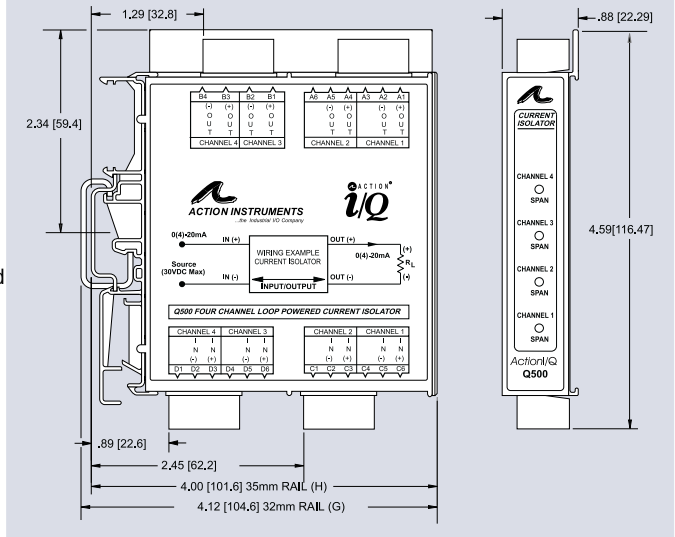
- Pin A1: Channel 1, Output (+)
- Pin A2: Channel 1, Output (-)
- Pin A3: Not Internally Connected
- Pin A4: Channel 2, Output (+)
- Pin A5: Channel 2, Output (-)
- Pin A6: Not Internally Connected
- Pin B1: Channel 3, Output (+)

- Pin B2: Channel 3, Output (-)
- Pin B3: Channel 4, Output (+)
- Pin B4: Channel 4, Output (-)
- Pin C1: Not Internally Connected
- Pin C2: Channel 2, Input (-)
- Pin C3: Channel 2, Input (+)
- Pin C4: Not Internally Connected
- Pin C5: Channel 1, Input (-)
- Pin C6: Channel 1, Input (+)
- Pin D1: Not Internally Connected
- Pin D2: Channel 4, Input (-)
- Pin D3: Channel 4, Input (+)
- Pin D4: Not Internally Connected
- Pin D5: Channel 3, Input (-)
- Pin D6: Channel 3, Input (+)

#### One Channel Q500-1B00

- Pin A1: Channel 1, Output (+)
- Pin A2: Channel 1, Output (-)
- Pin A3: Not Internally Connected
- Pin A4: Not Internally Connected
- Pin A5: Not Internally Connected
- Pin A6: Not Internally Connected
- Pin C1: Not Internally Connected
- Pin C2: Not Internally Connected
- Pin C3: Not Internally Connected
- Pin C4: Not Internally Connected
- Pin C5: Channel 1, Input (-)
- Pin C6: Channel 1, Input (+)

## DIMENSIONS



#### Two Channel Q500-2B00

- Pin A1: Channel 1, Output (+)
- Pin A2: Channel 1, Output (-)
- Pin A3: Not Internally Connected
- Pin A4: Channel 2, Output (+)
- Pin A5: Channel 2, Output (-)
- Pin A6: Not Internally Connected
- Pin C1: Not Internally Connected
- Pin C2: Channel 2, Input (-)
- Pin C3: Channel 2, Input (+)
- Pin C4: Not Internally Connected
- Pin C5: Channel 1, Input (-)
- Pin C6: Channel 1, Input (+)