

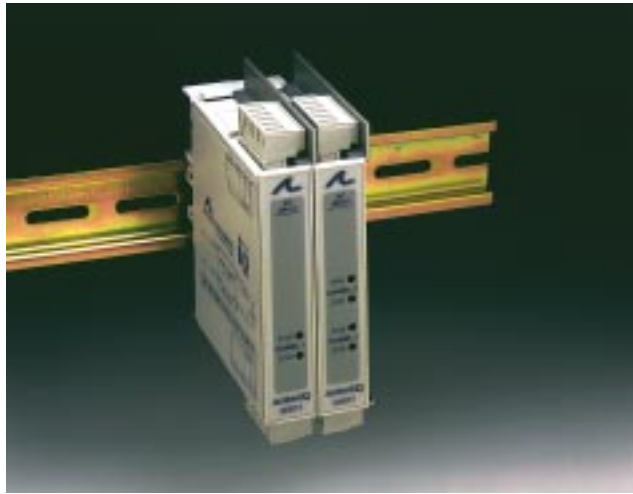
# ACTIONI/Q<sup>®</sup> Q520

## MODEL



## Benefits

- Multi-Channel Design Provides Two (2) Two-wire Transmitters in 1 Package
- High Density DIN Rail Mounting
- SnapLoc, Plug-In, Screw Terminals for Low MTTR
- Output Linear to T/C Millivolt Input
- Standard Input Ranges for the Most Popular Applications
- Output Loop Powered from 12 to 35VDC
- Three Year Warranty



## Multi-Channel, Thermocouple Input, Isolating Two-Wire Transmitter

Provides Two (2) Isolated 4-20mA Current Loops in Proportion to Two(2) Thermocouple Millivolt Inputs

### DESCRIPTION

The ActionI/Q model Q520 is a DIN rail mount, thermocouple input, dual (2) channel, two-wire transmitter. Each channel accepts a thermocouple input and provides an isolated, 4-20mA output signal, linear to the millivolt input. Cold junction compensation is provided and each channel is fully isolated (1800VDC) 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

Thermocouple input, two-wire transmitters are used to convert a specific temperature range into a regulated 4-20mA signal. Two-wire transmitters are primarily used in remote locations near the sensor since they reduce the probability of signal errors and save wiring costs by utilizing the two power wires to send the 4-20mA signal. The current signal is usually monitored by a control system or data recorder.

Typically, thermocouples are used to measure high temperatures such as in an oven or furnace. Thermocouple wires can be run a short distance to a panel, or farther with the use of shielded wire, without errors caused by noise or lead resistance in the wires. These sensor wires are usually terminated at the two-wire transmitter and converted into a 4-20mA signal which is highly immune to noise and not affected by lead resistance, both of which can cause significant errors (1mV @ 25°C) in voltage signals transmitted over long distances.

### OPERATION

The ActionI/Q model Q520 operates as a two-wire transmitter; each channel derives its power from a (12-35VDC) source connected in



*Protecting the  
Integrity of  
Industrial  
Process Signals*



series with the 4-20mA output loop. Typically a 24VDC source is used for power, allowing 12VDC (600Ω @ 20mA) for other devices connected in series, in the current loop. The outputs of the Q520 are isolated from the inputs and protected from reverse polarity. Zero and span pots are provided for each channel.

The Q520 provides a dual (2) channel, thermocouple to current, isolating, two-wire transmitter in one package. Standard input temperature ranges (see Table 1) are calibrated to rated accuracy. One range per module; two channels per module.

## CALIBRATION

1. Connect the input to a calibrated thermocouple simulator or millivolt source ( thermocouple wire corresponding to the input range may be required; check your calibrator's capabilities). Connect the output in series to a

voltage source capable of supplying at least 20mA and a milliamp current meter.

Note: The voltage source (Vs) connected to the output must be sufficient to accommodate all other device loads (RL) in the current loop.  
 $V_s \geq 12V + 0.02 \times RL$

2. Set the calibrator to the specified minimum temperature or equivalent millivolt value and adjust the zero potentiometer for 4mA output.

3. Set the calibrator to the specified maximum temperature or equivalent millivolt value and

adjust the span potentiometer for 20mA output.

4. Repeat steps 2 and 3, as necessary, to validate calibration. Output is linear to mV, not temperature.

## 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>	Types: Accepts two J, K or T Type thermocouples Ranges: see Table 1
<b>Burnout Detection</b>	Upscale standard; Downscale, option B
<b>Cold-Junction Compensation Error</b>	1°C typical, 0 to 80°C ambient; 3°C typical, -40 to 0°C ambient
<b>Output Range</b>	4-20mA
<b>Supply Voltage Range</b>	12 to 35VDC, each channel
<b>Output Accuracy</b>	≤ 0.1% of full-scale input (mV) typical, ≤ 0.2% maximum @23°C including linearity, repeatability and hysteresis (not including CJC error)
<b>Adjustability</b>	Front accessed 10 turn, ± 5% of span for zero and span
<b>Stability</b>	≤ 0.025%/°C of full-scale maximum for full-scale and zero

<b>ESD Susceptibility</b>	Capable of meeting IEC 801-2 level 2 (4kV)
<b>Isolation</b>	1800VDC or peak AC between input and output and channel to channel
<b>Response Time</b>	100mSec typical (10 to 90%)
<b>Temperature</b>	Operating: -40 to 80°C (-40 to 176°F) Storage: -40 to 80°C (-40 to 176°F)
<b>Humidity (non-condensing)</b>	Operating: 15 to 90% (@45°C)
<b>Wire Terminal</b>	Socketed screw terminals for 12-22 AWG
<b>Weight</b>	0.34 lbs
<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 (Input ≤75VDC).

## 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:

- MD02 TS32 DIN rail
- MD03 TS35 x 7.5 DIN rail
- G905 24VDC Power Supply (500mA)
- H902 24VDC Power Supply (200mA)
- H910 24VDC Power Supply (1 Amp)
- H915 24VDC Power Supply (2.3 A)

### Ordering Information

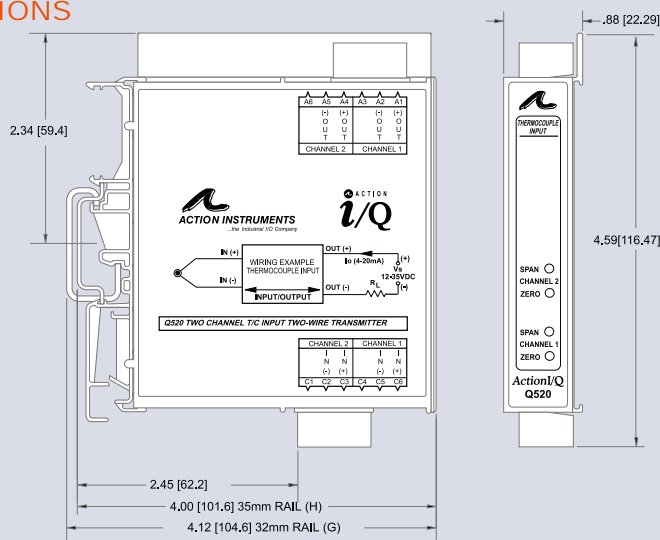
Specify:

1. Model: **Q520**
2. Option: B (down scale burnout detection), upscale standard
3. Input Range: (see Table 1)
4. Accessories: (see Accessories)

### Terminal Connections

Pin A1: Channel 1, Power & Output (+)  
 Pin A2: Channel 1, Power & Output (-)  
 Pin A3: Not Internally Connected

## DIMENSIONS



Pin A4: Channel 2, Power & Output (+)  
 Pin A5: Channel 2, Power & Output (-)  
 Pin A6: Not Internally Connected

Pin C1: Not Internally Connected  
 Pin C2: Channel 2, T/C Input (-)  
 Pin C3: Channel 2, T/C Input (+)

Pin C4: Not Internally Connected  
 Pin C5: Channel 1, T/C Input (-)  
 Pin C6: Channel 1, T/C Input (+)