

# ACTIONI/Q<sup>®</sup> Q424 & Q425 MODEL



*Protecting the  
Integrity of  
Industrial  
Process Signals*

## Multi-Channel, Thermo- couple Input, Three-Wire Transmitter

Provides Two DC Outputs in  
Proportion to Two Thermocouple  
Millivolt Inputs

### Benefits

- Multi-Channel Design Provides Two (2) Three-wire Transmitters in 1 Package
- Eliminates Ground Loops with 1800VDC Input-to-Output Isolation
- High Density DIN Rail Mounting
- SnapLoc, Plug-In Screw Terminals for Low MTTR
- I/QRail Power Bus Connector Saves Installation Time
- Output Linear to mV Input
- Standard Input Ranges for the Most Popular Applications
- Three Year Warranty

### DESCRIPTION

The ActionI/Q models Q424 and Q425 are DIN rail mount, thermocouple input, isolating, dual (2) channel three-wire transmitters. Each channel accepts a thermocouple input and is isolated from the DC output signal. The output is linear to the millivolt input (not linear to temperature). Cold junction compensation is provided. Each input channel is fully isolated (1800VDC) from the outputs which are common to the same power supply.

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 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, three-wire transmitters are used to convert a specific temperature range into a 4-20mA or 0-10VDC signal. Three-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 one of the two power wires as a common reference, sending either a 4-20mA or 0-10VDC signal. These signals are usually monitored by a control system or displayed for an operator.

### OPERATION

The ActionI/Q models Q424 and Q425 operate as three-wire transmitters allowing a voltage or current output signal from 24VDC power. The Q424 provides a dual channel 4-20mA output and the Q425 provides a dual channel 0-10VDC output. The power input of



the Q424 and Q425 are protected from reverse polarity. Zero and span pots are provided for each channel to calibrate the output to the input thermocouple (+/-5%).

The Q424 (4-20mA output) and Q425 (0-10VDC output) provide an isolated, dual (2) channel, thermocouple input, three-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. For other ranges contact the factory.

## OPTION

- B Downscale burnout detection (upscale standard).

## CALIBRATION

1. To check calibration, 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 power to a 24VDC source capable of supplying at least 200mA. Connect the output to the actual device load or to a load equivalent to the actual device load value and monitor the output with a voltage or milliamp meter.

*Note: To maximize thermal stability, final calibration should be performed in the operating installation, allowing at least one hour for warm up and thermal equilibrium of the system.*

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

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

**Table 1: Q424 and Q425 Input Type and Range\***

J, 0-500°F	J, 0-1000°F	J, 0-500°C	T, 0-500°F
K, 0-500°F	K, 0-2000°F	K, 0-1000°C	T, 0-250°C

\*Consult factory for other ranges

adjust the span potentiometer for maximum output.

4. Repeat steps 2 and 3, as necessary, to validate calibration.

## FACTORY ASSISTANCE

For additional information on calibration, operation and installation please contact Action's Technical Services Group. Call:

**703-669-1318**

## 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 55°C ambient;
<b>Output Drive</b>	4-20mA: 10V max., 500Ω max. load 0-10V: 10mA max., 1KΩ min. load (each channel)
<b>Supply Voltage</b>	Range: 18 to 30VDC Current: 60mA maximum per channel In Rush: 180mA max.
<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, typical

<b>Stability</b>	<0.025%/°C of full-scale maximum for full-scale and zero
<b>Isolation</b>	1800VDC or peak AC, input to output and input to input channel (output channels are common)
<b>ESD Susceptibility</b>	Capable of meeting IEC 801-2 level 2 (4kV)
<b>Response Time</b>	100mSec typical (10 to 90%)
<b>Temperature</b>	Operating: 0 to 55°C (32 to 131°F) Storage: -25 to 70°C (-13 to 158°F)
<b>Humidity(non-condensing)</b>	Operating: 15 to 90% (@45°C) Soak: 90% for 24 hours (@60°C)
<b>Wire Terminal</b>	Socketed screw terminals for 12-22AWG
<b>Weight</b>	0.34lbs
<b>Agency Approvals</b>	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:

<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 (2.1 Amp)
<b>IQRL</b>	I/Q Rail Power Distribution Bus

### Ordering Information

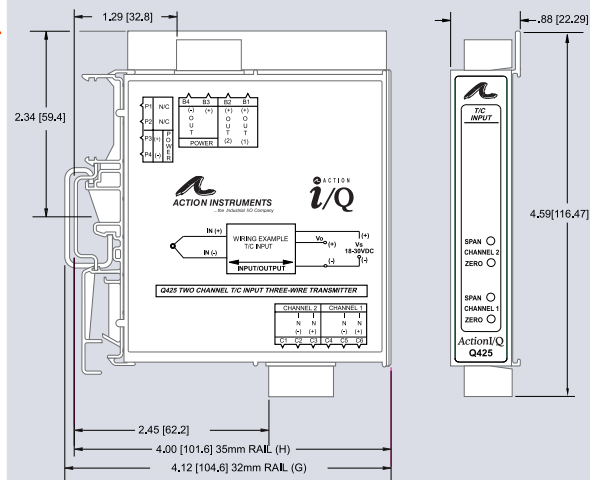
Specify:

1. Model: **Q424** (4-20mA output) or **Q425** (0-10VDC output)
2. Input Range: (see Table 1)
3. Option: (see Options)
4. Accessories: (see Accessories)

### Terminal Connections

- Pin B1: Channel 1, Output (+)  
Pin B2: Channel 2, Output (+)  
Pin B3: Power (+)  
Pin B4: Power & Output (-)  
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 (+)  
Pin P1: Not Internally Connected  
Pin P2: Not Internally Connected  
Pin P3: Power (+)  
Pin P4: Power (-)

### DIMENSIONS



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