Q520-2xxx (2 channel)

ACTIONI/Q®
Q520

Loop Powered Multi-Channel T/C Input Isolating, 2-Wire Transmitter

Provides 2 Isolated Current Loops in Proportion to 2 Thermocouple Millivolt Inputs

- Two 2-Wire Transmitters in a Single Package
- Output Linear to T/C Millivolt Input
- Standard Input Ranges
- High Density DIN Rail Mounting
- SnapLoc™ Plug-in Terminals
- Output Loop Powered from 12 to 35VDC

Description

The Q520 is a DIN rail mount, thermocouple input, dual 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). Two or more modules can slide together and interlock for solid, high density mounting (by removing either the foot, or the adjacent unit's faceplate, 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 in voltage signals transmitted over long distances.

Operation

Each channel derives its power from a (12-35VDC) source connected in series with the 4-20mA output loop. Typically a 24VDC source is used for power, allowing 12VDC (600 ohms @ 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. Standard input temperature ranges (see Table) are calibrated to the 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) connnected to the output must be sufficient to accommodate all other device loads (RL) in the current loop:

$$Vs \geq 12V + 0.02 \times RL$$

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. Note that the output is linear to mV (not temperature).

Q520 Ranges		
2 Channels	**Inputs**	**Outputs**
Q520-0B01	Type J; 0 to 500 ° F	4-20mA
Q520-0B02	Type J; 0 to 1000 ° F	4-20mA
Q520-0B03	Type J; 0 to 500 ° C	4-20mA
Q520-0B04	Type K; 0 to 500 ° F	4-20mA
Q520-0B05	Type K; 0 to 2000 ° F	4-20mA
Q520-0B06	Type K; 0 to 1000 ° C	4-20mA
Q520-0B07	Type T; 0 to 500 ° F	4-20mA
Q520-0B08	Type T; 0 to 250 ° C	4-20mA
Q520-0B09	Type K; 0 to 400 ° C	4-20mA
Q520-0B10	Type K; 0 to 500 ° C	4-20mA

Consult factory for non-standard ranges

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Specifications

Input:

Accepts two J, K or T Type thermocouples

Ranges: see Table

Burnout Detection:

Upscale standard; Downscale, option B

Cold-Junction Compensation Error

1°C typical, 0 to 80°C ambient;

3°C typical, -40 to 0°C ambient

Output Range:

4-20mA

Supply Voltage Range:

12 to 35VDC, each channel

Output Accuracy:

≤ 0.1% of full-scale input (mV) typical, ≤ 0.2% max. @23°C including linearity, repeatability and hysteresis (not including CJC error)

Adjustability:

Front accessed 10 turn pot., ± 5% of span for zero and span

Stability:

≤0.025%/°C of full-scale max. for full-scale and zero

ESD Susceptibility:

Meets IEC 801-2 level 2 (4kV)

Isolation:

1800VDC or peak AC between input and output and channel to channel

Response Time:

100mSec typical (10 to 90%)

Temperature:

Operating: -40 to 80°C (-40 to 176°F)

Storage: -40 to 80°C (-40 to 176°F)

Humidity (non-condensing):

Operating: 15 to 90% (@45°C)

Wire Terminals:

Socketed screw terminals for 12-22 AWG

Weight:

0.34 lbs

Agency Approvals:

CSA certified per standard C22.2 (File No. LR42272).

UL recognized per standard UL508 (File No. E99775).

Terminal	Connection	Terminal	Connection
A1	Channel 1 Power & Output (+)	C1	Not Connected
A2	Channel 1 Power & Output (-)	C2	Channel 2 T/C Input (-)
A3	Not Connected	C3	Channel 2 T/C Input (+)
A4	Channel 2 Power & Output (+)	C4	Not Connected
A5	Channel 2 Power & Output (-)	C5	Channel 1 T/C Input (-)
A6	Not Connected	C6	Channel 1 T/C Input (+)

Ordering Information

Models & Accessories

Specify:

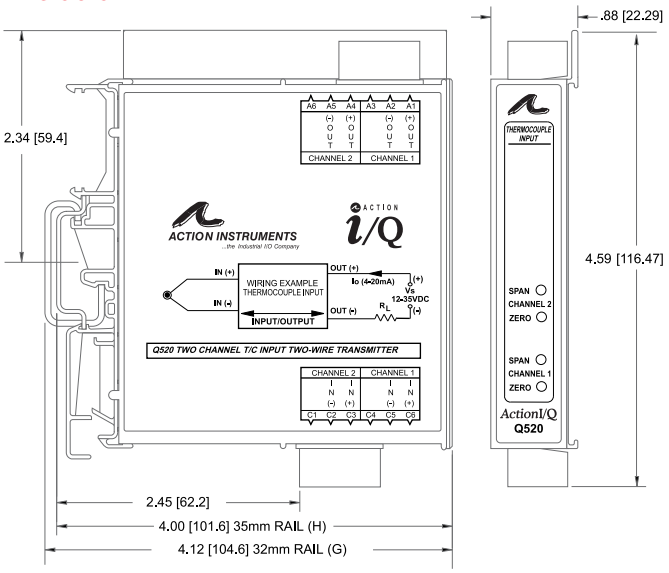
1. Model: **Q520 (see Table)**
2. Option: B (downscale burnout detection), upscale standard
3. Input Range: (see Table)
4. Accessories: (see Accessories)

Accessories

*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
WV905	24VDC Power Supply (500mA)
H910	24VDC Power Supply (1A)
H915	24VDC Power Supply (2.3A)

Dimensions



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