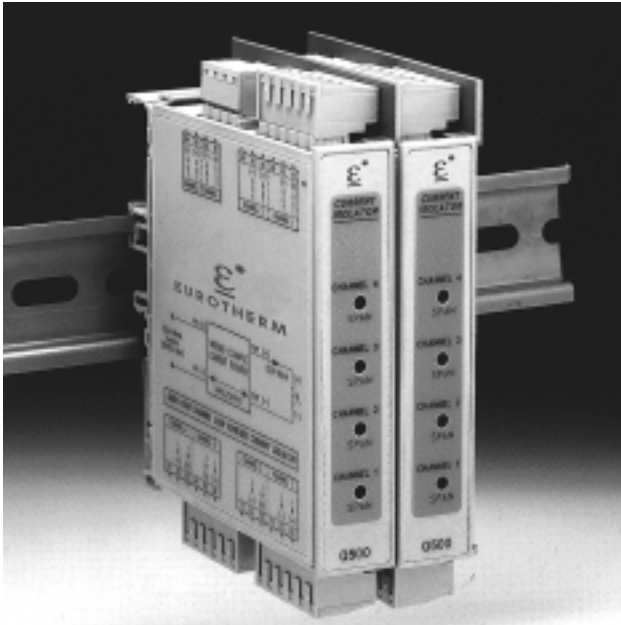


# MULTI-CHANNEL, LOOP-POWERED ISOLATOR

## Model Q500-XCXX



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

- 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 4000V Isolation
- SnapLoc, Plug-In, Screw Terminals for Low MTTR
- Input Loop-Powered Design Provides up to 500 $\Omega$  Output Drive (10V)
- High Density DIN Rail Mounting
- Three Year Warranty



### DESCRIPTION

The model Q500 is a DIN rail mount, loop-powered isolator, with single, dual or quad (4) channel capability. Each channel accepts an 0-20mA or 4-20mA input, provides up to 4000VDC of isolation and outputs a proportional 0(4)-20mA signal. The Q500 provides signal isolation from input to output and channel to channel.

All Q500 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 4000VDC 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.

### OPERATION

The 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 300 $\Omega$  plus the output load resistance. For example, if the load on an output of the Q500 is 500 $\Omega$ , then the current loop connected to the input of the Q500 would need to drive 300 $\Omega$  plus 500 $\Omega$  (i.e. 800 $\Omega$ ) at a maximum current of 20mA, or 800 $\Omega$  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 ( $\geq 100\Omega$ ) 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.

4) Repeat steps 2 and 3, as necessary, to validate calibration to the output load.

### FACTORY ASSISTANCE:

*For additional information on calibration, operation and installation please contact your local Eurotherm Company.*



**EUROTHERM**

## SPECIFICATIONS

### Input

Ranges: 0-20mA and 4-20mA, 30VDC max., each channel

Voltage Drop: 6V (300Ω), plus output load

### Output

Range: 0 (4) to 20mA,

Drive: 10V or 500Ω maximum @ 20mA, 100Ω minimum

### Output Accuracy

Better than ±0.2% of full-scale, including linearity, hysteresis and repeatability, maximum, when above 100μA.

### Linearity

0.1% of span typical, from 4 to 20mA at 250Ω load

### Stability

≤ 0.02%/°C of span maximum for full-scale and zero

### Load Regulation

≤ 0.1% of span, typical per 10Ω change

### Common Mode Rejection Ratio

≥ 100dB (DC to 60Hz)

### Isolation

Q500-1000/2000: 4000V DC, input to output and channel to channel.

Q500-4000: 4000V DC, input to output, 2000V DC channel (3#) to channel (#4).

### ESD Susceptibility

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

### Response Time

100mSec max. (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)

25 to 95% (@40°C)

### Wire Terminal

Socketed screw terminals for 12-22 AWG

### Weight

0.34lbs

### Agency Approvals

CE compliance per EMC directive 89/336/EEC and low voltage 73/23/EEC.

## ACCESSORIES

All Q500 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)

## ORDERING INFORMATION

Specify:

- Model: Q500-1C00, Single (1) Channel Loop-Powered Isolator, Q500-2C00, Dual (2) Channel Loop-Powered Isolator, or Q500-4C00, Quad (4) Channel Loop-Powered Isolator
- Accessories: (see Accessories)

## TERMINAL CONNECTIONS

### Four Channel Q500-4C00

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 (+)

### One Channel Q500-1C00

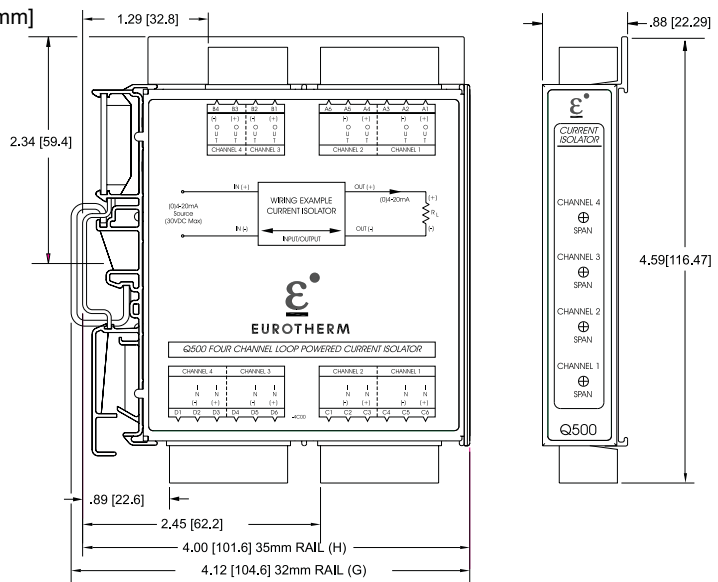
Pin A1: Channel 1, Output (+)  
 Pin A2: Channel 1, Output (-)  
 Pin A3: Not Internally Connected  
 Pin A4: Not Internally Connected  
 Pin A5: Not Internally Connected  
 Pin A6: Not Internally Connected  
 Pin C1: Not Internally Connected  
 Pin C2: Not Internally Connected  
 Pin C3: Not Internally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

### Two Channel Q500-2C00

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 (+)

## DIMENSIONS

Inches [mm]



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 (+)

All Prices and Specifications subject to change without notice

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IA261304/A May 99

