

MTL2441B 4/20mA REPEATER POWER SUPPLY



The MTL2441B provides a floating dc supply for energising a 2- or 3-wire transmitter in a hazardous area and repeats the transmitter current in another floating circuit to drive a safe-area load. The unit can be used with all 2-wire transmitters certified as suitable for operation with safety barriers having a safety description of 28V, 300Ω. Other applications include repeating the current flowing in an existing barrier-protected loop to provide a fully isolated output with a high load handling capability and passing measurement or control signals (when used with an MTL2442B isolating driver) through a hazardous area separating two safe areas. The MTL2441B supersedes the MTL2441 but is designed for 240/120V ac supplies only. For a dc powered model choose the MTL5042 or MTL5045.

SPECIFICATION

See also 'Common specification'

Number of channels

One, fully floating

Location of transmitter

Zone 0, IIC, T4–T6 hazardous area if suitably certified

Div 1, Group A hazardous location if suitably certified

Voltage available for transmitter and lines

2-wire transmitter: 17.5V at 20mA (terminal 3 or 4 and 5)

3-wire transmitter: 18V at 20mA (terminal 3 or 4, and 6)

Note: maximum open-circuit voltage 28V

Maximum permitted line resistance

2-wire transmitter: $50 \times (17.5V - \text{transmitter voltage requirement}) \Omega$

3-wire transmitter: dependent on transmitter characteristic

Input and output signal range

0 to 20mA

Input resistance (terminals 5 and 6)

$\leq 32\Omega$ (640mV at 20mA)

Safe-area circuit load resistance

1kΩ max

Safe area circuit output resistance

$> 1M\Omega$

Safe-area circuit ripple

$< 100\mu\text{A}$ peak-to-peak

Transfer accuracy at 20°C

Better than 20μA between 4 to 20mA

Temperature drift

$< 1\mu\text{A}/^\circ\text{C}$

Response time

Settles within 200μA of final value after 200ms

Power supply

240V ac nominal, 180–260V, 48–65Hz

120V ac nominal, 90–130V, 48–65Hz

Power consumption

5VA

Ambient temperature limits

–20 to +50°C close packed

–20 to +60°C at least 5mm apart

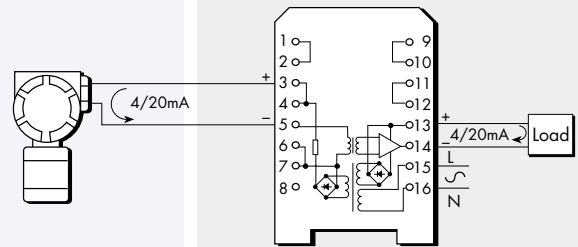
Safety description

Terminals 5 and 6 or 7

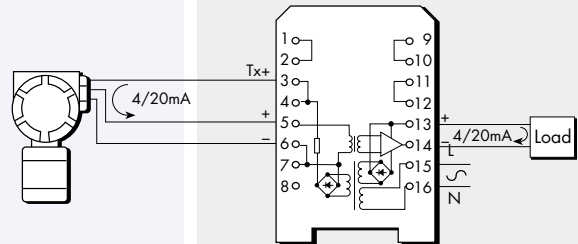
Non-energy storing allowing insertion into existing loops without further certification

Hazardous area

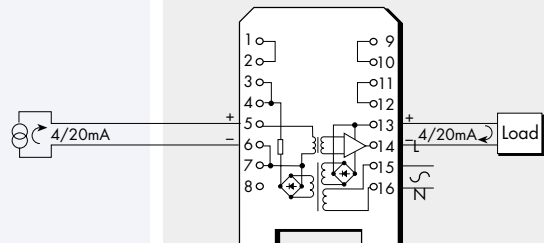
Safe area



Connections for 2-wire transmitter



Connections for 3-wire transmitter



Connections for current generator

FM maximum entity parameters

Terminals 3 or 4 to 5 and 6

28V, 300Ω, 93mA

Terminals 3 or 4 to 5

$V_{OC} = 25.8V$, $I_{SC} = 85.4mA$, $C_d = 0.17\mu\text{F}$, $L_d = 5.1mH$

Terminals 3 or 4 to 6

$V_{OC} = 24.8V$, $I_{SC} = 76.7mA$, $C_d = 0.19\mu\text{F}$, $L_d = 6.3mH$

Note: MTL5042 and MTL5045 are recommended for applications using 24V dc supplies

This unit may show degraded immunity performance under some EMC test conditions – refer to supplementary specification SUP2441B for further details.

See also MTL2000 approvals, maximum cable parameters, dimensions and ordering information



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