MTL MTL Series Service Manual

MTL3046B

1. Description

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3. Product Information

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The MTL3046B performs a similar function to the MTL3041, but is tailored for use with ‘smart’ transmitters whose digital communication signals are superimposed on a standard 4/20mA analogue signal. The unit provides a minimum of 15V at 20mA to energise the transmitter while at the same time repeating the current accurately in a separate circuit to drive a load in the safe area. The transmitter can be calibrated, interrogated or tested from the host computer, or by using a hand-held communicator connected in either the safe or hazardous area. The MTL3046B is a development of the MTL3046, which it replaces, and it is compatible with the majority of ‘smart’ transmitters available.

SPECIFICATION

See also 'Common specification'

Number of channels

One, fully floating

Location of transmitter

Zone 0, IIC, T4–6 hazardous area if suitably certified

Div 1, Group A, hazardous location

Voltage available for transmitter and lines

15V minimum at 20mA

Note: maximum open-circuit voltage is 28V

Maximum permitted line resistance

[(15 minus transmitter voltage requirement) x 50] Ω

Input and output signal range

4 to 20mA with superimposed digital signal

Digital signal bandwidth (safe area to hazardous area)

10Hz to 8kHz

Digital signal bandwidth (hazardous area to safe area)

dc to 10kHz

Input resistance (terminals 6 & 8)

≤30Ω (600mV at 20mA)

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Safe-area circuit load resistance

20 to 750Ω (250Ω ±10% for digital communications)

Safe-area circuit output resistance

>1MΩ

Safe-area circuit ripple

<160µA peak-to-peak

DC transfer accuracy at 20°C

Better than 20µA

Temperature drift

<1µA/°C

Response time

Settles to within 10% of final value after typically 40µs

Power requirement

85mA typically at 24V with 20mA signal

75mA at 35V to 125mA at 20V with 20mA signal

Power dissipation within unit

1.7W typical at 24V with 20mA signal

2.3W maximum at 35V with 20mA signal

Replaceable fuse

200mA, 5x20mm glass to DIN 41571 sht.2, semi-time-lag (M)

Safety description

Terminals 5 & 6

28V, 300Ω, 93mA, Um = 250V rms or dc

Terminals 6 & 8

Non-energy storing apparatus – ≤1.2V, ≤0.1A, ≤20µJ and ≤25mW. Can be connected without further certification into any IS loop with open-circuit voltage not more than 28V.

Note: Terminals 6 & 8 do not support bi-directional transmissions for

HART®devices.

FM max entity parameters

Terminals 5 & 6: Voc = 28V, Isc = 93mA, Ca = 0.13µF, La = 4.0mH

Terminals 6 & 8: Voc = 1.2V, Isc = 100mA, Ca = 1000µF, La = 3.75mH

Weight

170g

OTHER APPLICATIONS

Although designed for ‘smart’ transmitter applications, the MTL3046B operates with standard analogue 4/20mA transmitters, and therefore can be especially useful if upgrading later to ‘smart’ transmitters.

The MTL3046B can be used to repeat a current generated by hazardous-area equipment in an existing barrier-protected safe-area circuit, to provide a fully isolated output with a high load handling capability.

The MTL3046B operating with an MTL3045 can pass measurement and control signals through a hazardous area separating two safe areas (see MTL3045).

The frequency response of dc to 10kHz (hazardous to safe area) makes the MTL3046B ideal

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