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MTL3046B REPEATER POWER SUPPLY, 4/20mA

for 'smart' transmitters

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)

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

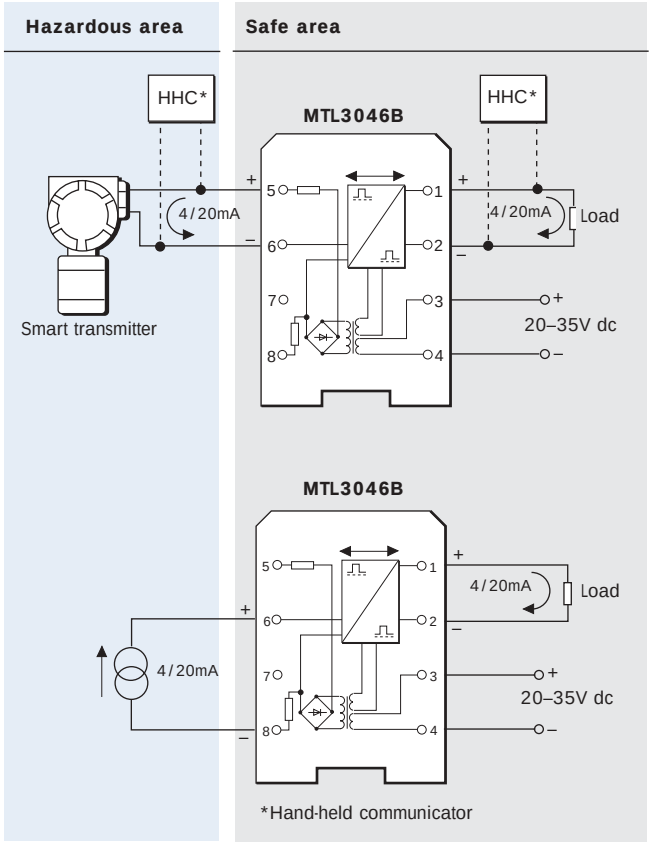
Power dissipation within unit
1.7W typical at 24V with 20mA signal
2.3W maximum at 35V with 20mA signal

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

Safety description

Terminals 5 & 6
28V, 300Ω, 93mA, U_m = 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: V_{oc} = 28V, I_{sc} = 93mA, C_a = 0.13µF, L_a = 4.0mH
Terminals 6 & 8: V_{oc} = 1.2V, I_{sc} = 100mA, C_a = 1000µF, L_a = 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 for some flowmeter applications such as vortex and turbine meters.

EUROPE (EMEA) Tel: +44 (0)1582 723633 Fax: +44 (0)1582 422283
AMERICAS Tel: +1 603 926 0090 Fax: +1 603 926 1899
ASIA PACIFIC Tel: +65 487 7887 Fax: +65 487 7997
E-mail: enquiry@mtl-inst.com **Web site: www.mtl-inst.com**

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