

MTL3071 TEMPERATURE CONVERTER

THC or emf input

The MTL3071 accepts a low-level dc signal from a temperature sensor in a hazardous area, and converts it into a 4/20mA loop current in the safe area proportional to millivolts (but not temperature). It can monitor any one of six types of thermocouple, or a millivolt signal from an emf source. Calibration is carried out by the user via controls located in the top and the side of the unit. This can be effected without the use of a thermocouple since the unit's built-in cold junction compensation (CJC) is zeroed at 0°C, and can be bypassed. Thermocouple type is switch-selectable, as is the optional safety drive which initiates either a high or low output in the event of thermocouple burnout or any cable breakage. Input zero and span are selected by switches (coarse adjustment) and potentiometers (fine adjustment).

SPECIFICATION

See also 'Common specification'

Number of channels

One, fully floating

Signal source (selected by switches)

Type E, J, K, N, R or T thermocouple to BS 4937 – terminals 5 & 6

EMF input – terminals 5 & 7

Location of signal source

Zone 0, IIC, T4 hazardous area if suitably certified

Div 1, Group A, hazardous location

Span (fully adjustable by switches and potentiometers)

4 to 60mV

Zero (fully adjustable by switches and potentiometers)

-12 to +60mV

Common-mode ac rejection

<0.1% error for 250V rms, 50Hz

Series-mode ac rejection

<0.1% error for 50Hz rms input equal to half of span

Loop supply voltage

15 to 35V dc

Output range

4 to 20mA

Maximum load resistance

50(Vs - 15) Ω

Response time

Settles to within 10% of final value after typically 350ms

Calibration accuracy at 20°C

(including non-linearity, hysteresis and repeatability)

Within 0.1% of span (emf input)

Within 0.1% of span ± 1°C (THC input)

Temperature drift (maximum)

Zero: the greater of the following:-

±0.01% of span/°C or ±1μV/°C (emf input)

as above, ±0.03°C/°C (THC input except type R)

as above, ±0.07°C/°C (THC type R input)

Span: ±0.005% of input span/°C

Suppression/elevation (E): ±0.01% of E/°C

Cold junction compensation (CJC)

Referenced to 0°C

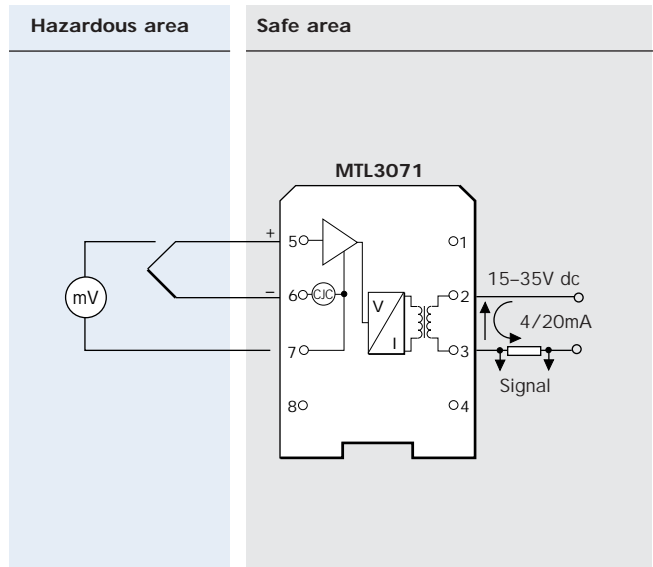
Safety drive on THC burnout (selected by switches)

Upscale or downscale, or off

Input current

<1nA (safety drive off)

<75nA (safety drive on)



Power dissipation within unit

0.46W maximum at 35V with 20mA signal

Replaceable fuse

50mA, 5 x 20mm glass to DIN 41571 sheet 2, semi-time-lag (M)

Safety description

11V, 3.79kΩ, 2.9mA, $C_{eq} = 0$, $L_{eq} = 2.2mH$,

$U_m = 250V$ rms or dc

FM max entity parameters

$V_{OC} = 11.0V$, $I_{SC} = 2.9mA$, $C_A = 1.9\mu F$, $L_A = 1000mH$

Weight

170g



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