

MTL4575 – MTL5575

TEMPERATURE CONVERTER

THC or RTD input + Alarm

The MTLx575 converts a low-level dc signal from a temperature sensor mounted in a hazardous area into a 4/20mA current for driving a safe-area load. Software selectable features include linearisation, ranging, monitoring, testing and tagging for all thermocouple types and 2-, 3- or 4-wire RTDs. (For thermocouple applications the HAZ-CJC plug on terminals 1–3 includes an integral CJC sensor). Configuration is carried out using a personal computer. A single alarm output is provided and may be configured for process alarm or to provide notice of early thermocouple failure.

SPECIFICATION

See also common specification

Number of channels

One

Signal source

THC types J, K, T, E, R, S, B or N to BS 60584 and XK
mV input
RTDs 2/3/4-wire platinum to BS 60751
Pt 100, Pt 500, Pt 1000
Cu-50 & Cu-53
Ni 100/500/1000 DIN 43760

Location of signal source

Zone 0, IIC, T4-6 hazardous area
Division 1, Group A, hazardous location

Input signal range

–75 to +75mV, or 0 to 400Ω (0 to 1000Ω Pt & Ni sensors)

Input signal span

3 to 150mV, or 10 to 400Ω (10 to 1000Ω Pt & Ni sensors)

RTD excitation current

200μA nominal

Cold junction compensation

Automatic or selectable

Cold junction compensation error

≤ 1.0°C

Common mode rejection

120dB for 240V at 50Hz or 60Hz (500ms response)

Series mode rejection

40dB for 50Hz or 60Hz

Calibration accuracy (at 20°C)

(includes hysteresis, non-linearity and repeatability)

Inputs: (500ms response)

mV/THC: ± 15μV or ± 0.05% of input value
(whichever is greater)

RTD: ± 80mΩ

Output: ± 11μA

Temperature drift (typical)

Inputs:

mV/THC: ± 0.003% of input value/°C

RTD: ± 7mΩ/°C

Output: ± 0.6μA/°C

Example of calibration accuracy and temperature drift

(RTD input - 500ms response)

Span:

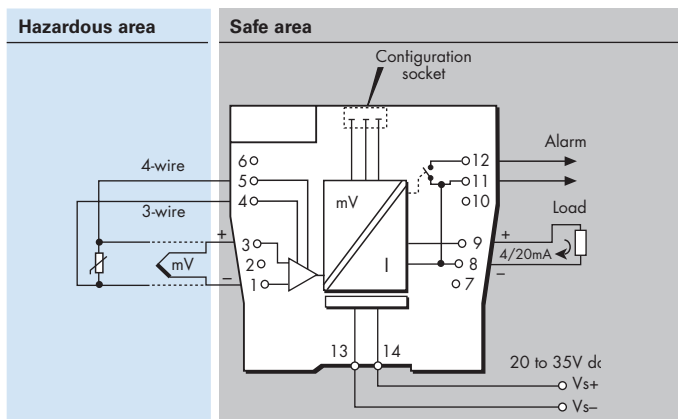
Accuracy: ± (0.08/250 + 11/16000) × 100%
= 0.1% of span

Temperature drift: ± (0.007/250 × 16000 + 0.6) μA/°C
= ±1.0μA/°C

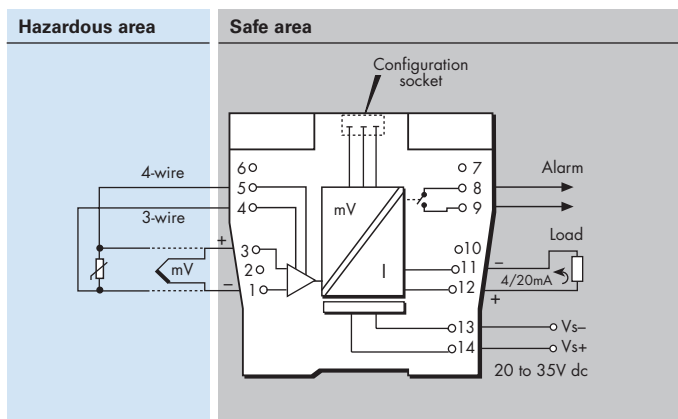
Safety drive on sensor failure

Upscale, downscale, or off

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Early burnout

Early burnout detection for thermocouples (when selected)
Alarm trips when loop resistance increase is > 50Ω

Output range

4 to 20mA nominal into 600Ω max.

Alarm output (configurable)

Relay ON in alarm, 250mA @ 35V max

Maximum lead resistance (THC)

600Ω

Response time

Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)

LED indicator

Green: power and status indication
Yellow: alarm indication, on when contacts are closed

Maximum current consumption (with 20mA signal)

50mA at 24V

Power dissipation within unit (with 20mA signal)

1.2W at 24V

Safety description

Refer to certificate for parameters. $U_m = 253V$ rms or dc

Configurator

A personal computer running MTL PCS45 software with a PCL45USB serial interface.



Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com

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Publication No.
EPSx575 Rev4 010916

EUROPE (EMEA):
+44 (0)1582 723633 mtlenquiry@eaton.com
THE AMERICAS:
+1 800 835 7075 mtl-us-info@eaton.com
ASIA-PACIFIC:
+65 6 645 9888 sales.mtlsing@eaton.com

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In the interest of further technical developments, we reserve the right to make design changes.