

# MTL5575

## TEMPERATURE CONVERTER

### THC or RTD input + Alarm

The MTL5575 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 thermocouples requiring cold-junction compensation, the HAZ-CJC plug can be ordered with the product and includes an integral CJC sensor). Configuration is carried out using a personal computer. A single alarm output is provided and may be configured for high or low process alarm or to provide notice of early thermocouple failure.

## SPECIFICATION

See also common specification

### Number of channels

One

### Signal source

Types J, K, T, E, R, S, B or N THCs to BS 60584 and XK  
EMF input  
Pt 100, Pt 500, Pt 1000  
2/3/4-wire platinum RTDs to BS 60751  
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 400 $\Omega$  (0 to 1000 $\Omega$  Pt & Ni sensors)

### Input signal span

3 to 150mV, or 10 to 400 $\Omega$  (10 to 1000 $\Omega$  Pt & Ni sensors)

### RTD excitation current

200 $\mu$ A nominal

### Cold junction compensation

Automatic or selectable

### Cold junction compensation error

$\leq 1.0^{\circ}\text{C}$

### Common mode rejection

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

### Series mode rejection

40dB for 50Hz or 60Hz

### Calibration accuracy (at 20 $^{\circ}\text{C}$ )

(includes hysteresis, non-linearity and repeatability)

#### Inputs: (500ms response)

mV/THC:  $\pm 15\mu\text{V}$  or  $\pm 0.05\%$  of input value  
(whichever is greater)

RTD:  $\pm 80\text{m}\Omega$

Output:  $\pm 11\mu\text{A}$

### Temperature drift (typical)

#### Inputs:

mV/THC:  $\pm 0.003\%$  of input value/ $^{\circ}\text{C}$

RTD:  $\pm 7\text{m}\Omega/^{\circ}\text{C}$

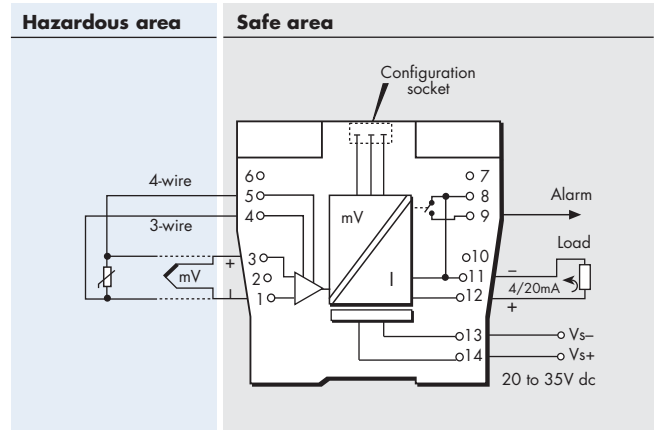
Output:  $\pm 0.6\mu\text{A}/^{\circ}\text{C}$

### Example of calibration accuracy and temperature drift (RTD input - 500ms response)

Span: 250 $\Omega$

Accuracy:  $\pm (0.08/250 + 11/16000) \times 100\%$   
= 0.1% of span

Temperature drift:  $\pm (0.007/250 \times 16000 + 0.6) \mu\text{A}/^{\circ}\text{C}$   
=  $\pm 1.0\mu\text{A}/^{\circ}\text{C}$



Terminal	Function
1	THC/EMF/RTD input -ve
3	THC/EMF/RTD input +ve
4	3-wire RTD input -ve
5	4-wire RTD input +ve
8	Output -ve/Alarm relay
9	Alarm relay
11	Output -ve
12	Output +ve
13	Supply -ve
14	Supply +ve

### Safety drive on sensor burnout

Upscale, downscale, or off

### Early burnout

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

### Output range

4 to 20mA nominal into 600 $\Omega$  max. (direct or reverse)

### Alarm output

Relay ON in alarm, 250mA @ 35V max

### Maximum lead resistance (THC)

600 $\Omega$

### 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 entity parameters.  $U_m = 253\text{V}$  rms or dc.s

### Configurator

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



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