MTL2314 THC trip amplifier

CE

The MTL2314 accepts a low-level dc signal from a thermocouple or other emf source in a hazardous area and can be used with earthed or insulated sensors. A safety drive can be set to initiate either a high or low alarm in the event of thermocouple burnout or cable breakage. On-site alarm setting can be carried out without using a thermometer since the built-in cold junction (CJ) compensation circuit is zeroed at 0°C and can be bypassed. All that is needed is a calibrated mV source to inject the emf of the thermocouple at the alarm temperature, for a CJ temperature of 0°C.

SPECIFICATION

See also 'Common specification'

Versions available
A: 1-alarm
B: 2-alarm

Signal source (factory-set)
PPR (type R) to BS 4937
CA (type K) to BS 4937
CC (type T) to BS 4937
IC (type J) to BS 4937
Pallaplat THC (terminals 1 & 2)
All units accept emf inputs (terminals 1 and 3)

Location of THC
Zone 0, IIC, T4 hazardous area
Div 1, Group A, hazardous location

CJ compensation
Referenced to 0°C

Input range (0mV=0°C) (factory-set)
–2 to +10mV
–5 to +25mV
–12 to +60mV
Hysteresis: nominally 1% of input range

Input current
<2nA (no safety drive)
<70nA (with safety drive)

Maximum source resistance
1kΩ for specified performance (safety drive off)

Power supply failure protection
Relay(s) de-energised if supply fails

Broken line protection
Upscale or downscale at >0.5mV/s, or off

Calibration accuracy
(CJ set at 20°C) ±1°C

Trip-point adjustment
Within 0.1% of input range over whole range (set by multi-turn potentiometer accessible through casing)

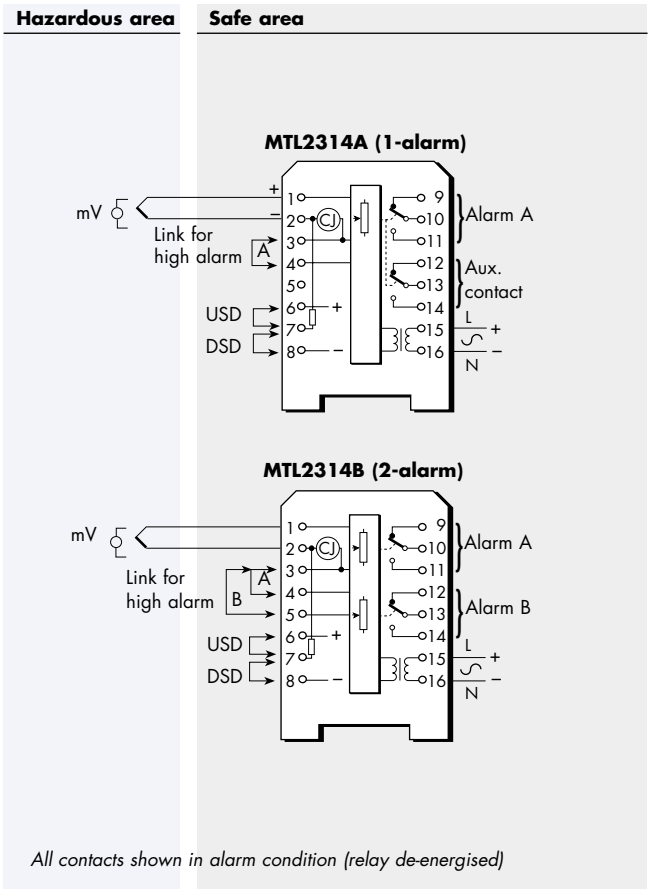
Supply voltage effect on trip point
<0.1% of input range for supply voltage change within the specified limits

Temperature effect on trip point (emf input)
Emf input: <0.015% of input range/°C
THC input: emf input ±0.03°C/°C average

Response time
500ms, nominal

Alarm function (selectable by link)
High alarm: relay energised when input signal <trip point
Low alarm: relay energised when input signal >trip point

Alarm relay contacts
1-pole changeover (2-alarm version)
2-pole changeover (1-alarm version)



All contacts shown in alarm condition (relay de-energised)

Contact rating
250V:5A:500VA (ac), resistive loads, reactive loads must be suppressed
250V:5A:250W (dc), resistive loads, reactive loads must be suppressed

Contact life expectancy
2-alarm versions: 3 x 10^5 operations at maximum load
1-alarm versions: 2 x 10^5 operations at maximum load

LED indicator
ON when relay energised

Series mode rejection
<0.1% error for 50Hz rms input equal to 50% of input span

Common mode rejection
<0.1% error for 250V rms, 50Hz

Consumption
1.7 to 2.5W (ac versions)
110mA (24V dc versions)

Ambient temperature limits
–20 to +50°C (ac versions, close packed)
–20 to +45°C (dc versions at 26V, close packed)
–20 to +60°C (all versions, at least 5mm apart)
–40 to +80°C (all versions, storage)

Safety description
8.9V, 168Ω, 53mA

FM max entity parameters
V_{oc} = 11.4V, I_{sc} = 2.92mA, C_a = 2.0μF, L_a = 1000mH

This unit may show degraded immunity performance under some EMC test conditions – refer to supplementary specification SUP2314 for further details.

See also MTL2000 approvals, maximum cable parameters, dimensions and ordering information

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