OMNITERM TTT Universal Trip & Transmitter

Models C2467B Universal Input Dual Alarm/Trip Module with Transmitter Output.

DATASHEET

- TC/mV/VC/RB universal input in one product
- Two Independent Alarm/Trip Relay Outputs
- 2A / 30Vdc contact rating
- 0-20mA / 0-±10V / 0-±10mA universal output
- Built-in “rate of change” alarm
- 24Vdc powered
- Three port isolation to 1500Vac
- Software configurable
- Output overload detection

Features

- **DIN Rail or surface mountable**
- **Narrow 45mm module width**
- **20 - 30V dc powered.**
- **1500Vac Isolation Input/Output/Power Supply**
- **Output overload Indicator**
- **User friendly configuration software**
- **Wide operating temperature range**
- **Linearised for all standard input types**
- **Special function options included as standard**
- **Designed to meet IEC 61508 SIL1 criteria.**

OVERVIEW

The OMNITERM TTT Universal Input Dual Trip Module with additional Transmitter Output is designed for the widest range of signal conditioning and alarm/trip applications in a single off-the-shelf product, using advanced state-of-the-art digital measurement techniques, combined with extremely user friendly software configurability.

The input will accommodate most thermocouple and resistance bulb types, as well as voltages and currents from 1mV minimum to 10Vdc maximum input span. (Extended ranges are available – see Order Codes)

This module has both Analogue transmitter output as well as two fully configurable alarm/trip relay contacts with “rate of change” alarms built in.

The analogue output can be configured for unipolar or bipolar outputs of current or voltage from ±1mA to ±10mA; 0-20mA; or ±1V to ±10V.

Full isolation (input/output/power supply) to 1500Vac ensures trouble-free accurate measurement.

This product provides extremely low life-cycle costs by reducing spares stock-holding requirements, and reducing specialist technical expertise required for field support, module replacement and field configuration. This new holistic approach to instrumentation asset management ensures reliable performance and minimal down-time.

Using advanced Sigma-Delta A/D technology combined with sophisticated digital filtering techniques, the TTT offers 16-bit measurement resolution with increased dynamic range, tailored for noisy plant environments.

CONFIGURATION MANAGEMENT

The powerful but intuitive configuration software ensures the maximum instrument flexibility with reliable configuration management to ensure all instruments on the plant are always correctly configured to the design requirements specification.

HIGH RELIABILITY

This product has been designed with high reliability applications in mind. The output stage has built in overload indication to detect overloaded output circuits – whether from a wire break or just excess resistance in the line.

This product has been designed to meet the criteria of IEC61508 for SIL1 applications.

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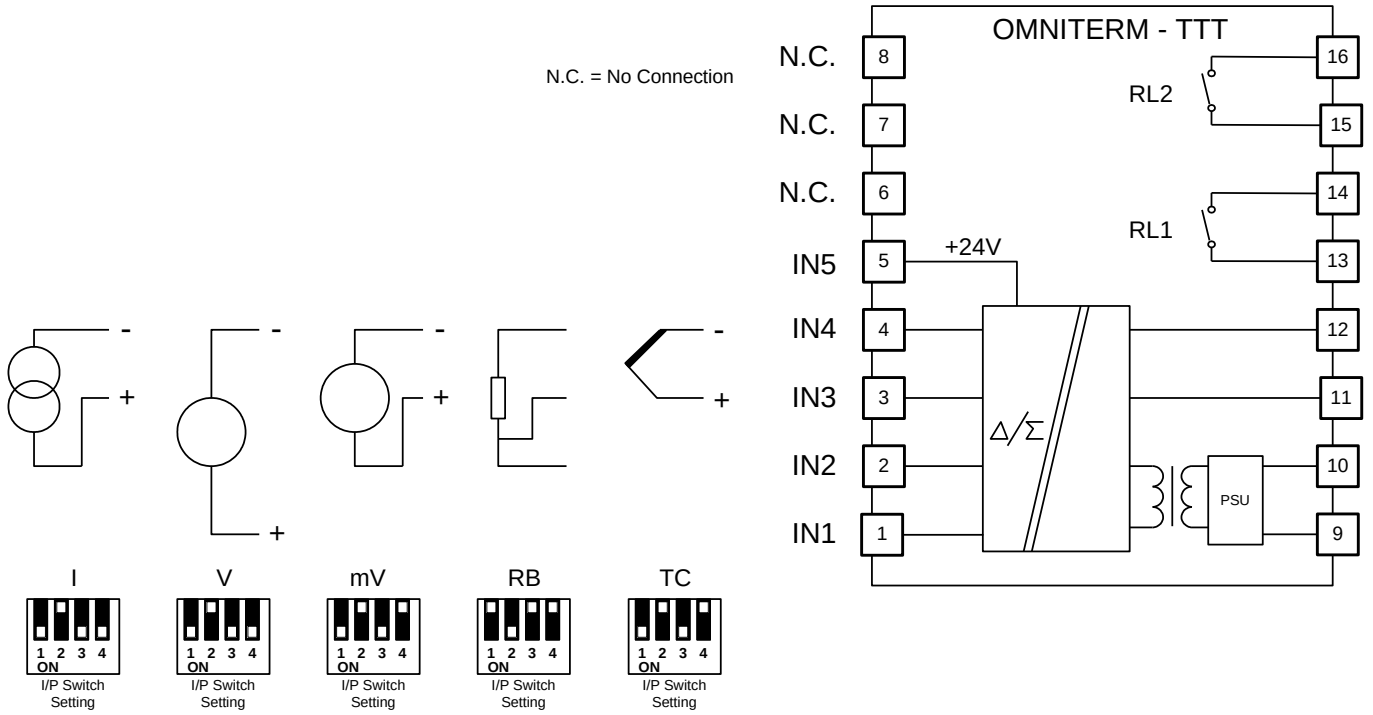
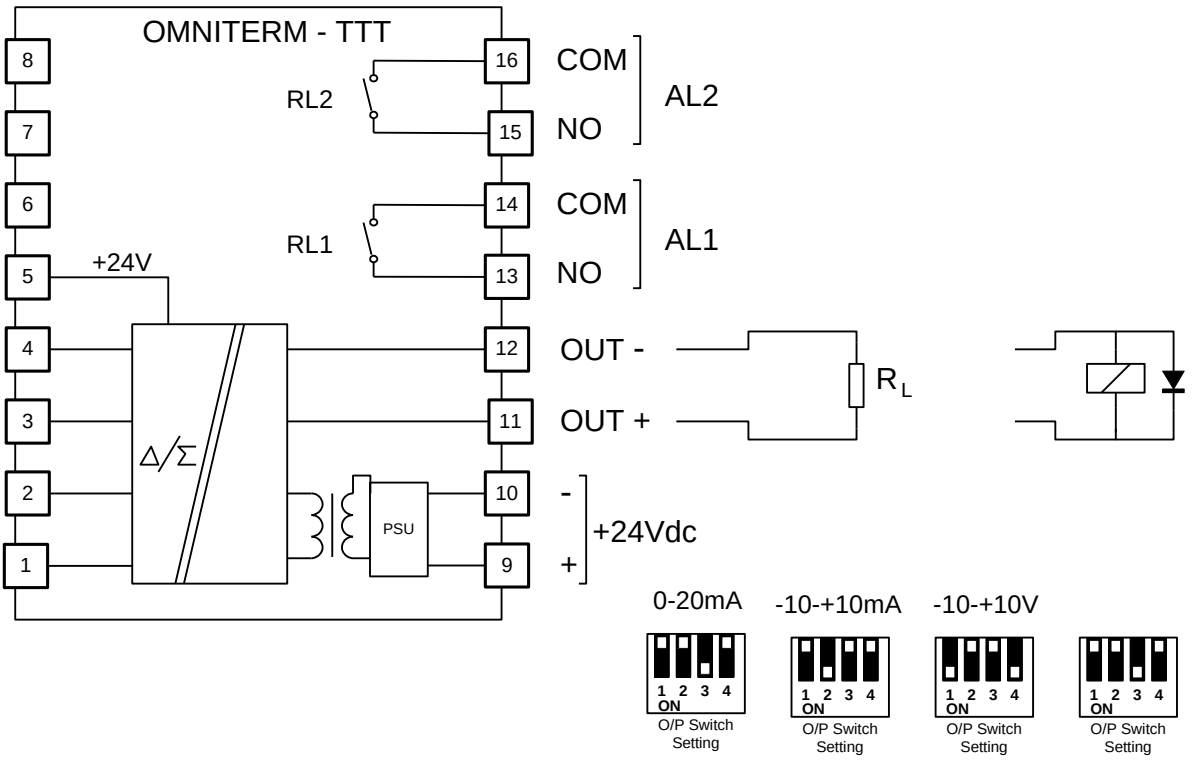
Electrical Connections



INPUT RANGE SELECTION AND CONNECTIONS



OUTPUT RANGE SELECTION AND CONNECTIONS

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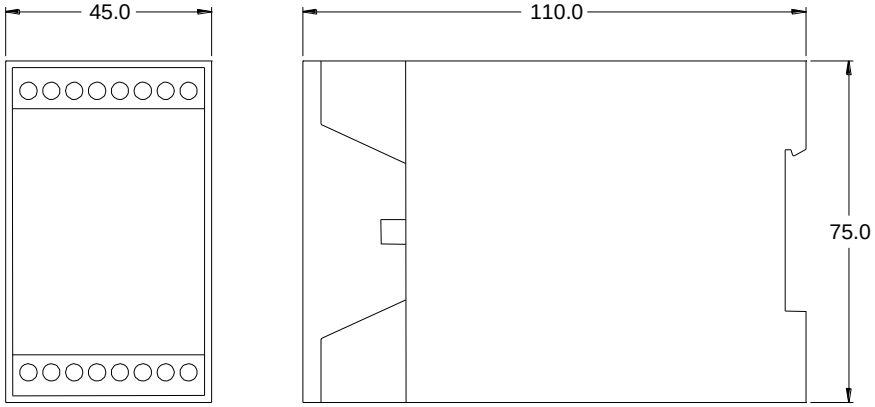
Mechanical Details



Specifications

Input

Measurement Types and Ranges

Unless otherwise stated, all specifications refer to Model C2467B-0

THERMOCOUPLES (TC Input Ranges covered)

Type B (Pt30Rh-Pt6Rh)	400 – 1820 °C (400 °C min. span*)
Type E (NiCr-CuNi)	-150 – 1000 °C (80 °C min. span*)
Type J (Fe-CuNi)	-210 – 1200 °C (100 °C min. span*)
Type K (NiCr-NiAl)	-270 – 1372 °C (100 °C min. span*)
Type N (NiCrSi-NiSiMg)	0 – 1300 °C (175 °C min. span*)
Type R (Pt13Rh-Pt)	-50 – 1767 °C (500 °C min. span*)
Type S (Pt10Rh-Pt)	-50 – 1767 °C (500 °C min. span*)
Type T (Cu-CuNi)	-270 – 400 °C (100 °C min. span*)
Type W ( )	1000 – 2500 °C(1000 °C min.span*)
Type W5 (Re/W26-Re)	0 – 2320 °C (300 °C min. span*)
Type W3 (Re/W25-Re)	0 – 2500 °C (300 °C min. span*)
*Minimum Span	May be lower but with reduced accuracy overall
Cold Junction Compensation	Internal
CJC Accuracy	< 0.5 °C over 0 – +40 °C <1 °C over –10 – +60 °C
TC Burnout Detection	Settable upscale or downscale

RESISTANCE THERMOMETERS (RB Input Ranges)

Model C2467B-0	2 or 3 wire connection
Model C2467B-1	True 4-wire connection
Measuring Current	200µA nominal 20µA for Model C2467B-3 1000µA for Model C2467B-4
Lead Resistance	≤ 100 ohms per lead
Pt100 (IEC60751/DIN43760)	-200 – 850 °C (50 °C min. span)
Ni100 (DIN43760)	-60 – 250 °C (50 °C min. span)
Ni120	-80 – 320°C (50°C min. span)
Pt500 (model C2467B-3)	-200 – 630°C (50°C min. span)
Pt1000 (model C2467B-3)	-200 – 630°C (50 °C min. span)
Cu10 (model C2467B-4)	-100 – 260°C (50 °C min. span)

VOLTS (V Input Ranges)

Model C2467B-0	-1 – +10V (min. span 0.1V)
Model C2467B-2	-1 – +60V (min. span 5V)
Input Impedance	> 1MΩ

MILLIVOLTS (mV Input Ranges)

Millivolts	-10 – 100mV (min. span 1mV)
Input Impedance	>10MΩ

CURRENT (I Input Range)

Current	0 – 25mA (0.2 mA min. span)
Current Input Burden	<5 ohms
Supply for two – wire transmitters	24V nom.

CUSTOM (Any Input Range)

Custom Sensor Ranging	Many additional ranges are User Configurable using the Configuration Software

Analogue Output

Output Types and Ranges

VOLTAGE

Output Voltage Max. Range	-10 – +10V max (min span 1V)
Load Resistance	≥1kohm

UNIPOLAR CURRENT

Output Current Max. Range	0 – 20 mA (min span 1mA)
Load Resistance	≤1kohm

BIPOLAR CURRENT

Output Current Max. Range	-10 – +10 mA (min span 1mA)
Load Resistance	≤1kohm

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PULSE	
Pulse Rates available	Low Range: 100-1000 pulses/hr (pulse output width 500ms) High Range: 1000-10000 pulses/hr (pulse output width 60ms)
Transistor switched output	20V min; 30V max. designed to operate with a 24V relay or equivalent.
Load Resistance	≥ 860 ohms

Accuracy

Initial Error	<0.1%
Non-linearity	<0.1%
Temperature Drift	< 150ppm/°C
TC linearisation error (types B, E, J, K, N, T)	<0.25 °C or 0.1% of reading (whichever is greater) <0.5 °C below –100 °C
TC linearisation error (types R, S, W3, W5)	<2.0 °C
TC linearisation error (type W)	<2.5 °C

Selectable Computation Functions

1. Signal Inversion
2. Square Root
3. Integration output pulses instead of analogue output

Alarm/Trip Relay contacts

Number of relays	2 (One per alarm/trip point)
High or Low setting	Configurable to be energised above or below the setpoint.
"Rate of Change" Alarms	Fast (per second) Slow (per minute)
Source	From AL1 & AL2 Alarm setpoints
Terminal/wire size	0.14 – 2.5mm^2 stranded
Contact type	SPST (Form A) per relay
Contact Rating	2A 30VDC ; 0.5A 250VAC
Contact Isolation Test/Operating Voltage	1500Vac Isolation 250Vac operating.
Response Time	<20ms for input change 10-90%

Alarm/Trip Setpoints

Number of setpoints	2 (One for each Relay)
Settable Range	Full span of the instrument
Repeatability	<0.1%
Deadband	Settable 0.1 to 100%

Indicator LED's

OK LED (Green)	
ON Steady	Unit is powered and operating correctly
Single Flash every second	Input Fault.
Double Flash every second	Analogue Output Fault
Triple Flash every second	Configuration Fault.
AL1 and AL2 Alarm/Trip indicator LED's (Red)	
AL1 ON Steady	ON when relay RL1 is energised.
AL2 ON Steady	ON when relay RL2 is energised.

Power Supply

Supply Voltage	24 Volts –15% / +25% (20-30Vdc)
Current Consumption	80mA max. plus output current

Configuration

Input Type	Field selectable via 4 way DIP switch (Accessed from top of module)
Output Type	Field selectable via 4 way DIP switch (Accessed from bottom of module)
Range	Field selectable via programming port on front of unit with the aid of a PC and configuration software package.

Environmental Conditions

Operating Temperature	-10°C – 60 °C (+14°F – 140°F)
Storage Temperature	-25°C – 85 °C (-13°F – 185°F)

Reliability Data

MTBF	35.7 years
PFD (TI = 2 years)	5.41 x 10^{-3}
SFF	81%

Compliance with Standards

Safety	EN 60950
Emissions	EN 55011 Group I, Class A
Immunity – ESD	IEC 61000-4-2
Immunity – RF Fields	IEC 61000-4-3
Immunity – Fast Transients	IEC 61000-4-4 2 kV – DC power port 1 kV – input/output lines
Insulation	Basic Insulation between isolated circuits per IEC950
Insulation Test Voltage	Input/Output/Supply 100% tested to 1500Vac

Mechanical

Dimensions(W x H x D)	45 x 75 x 100mm
Mounting	Snaps on to DIN rail EN50022-35 Or screws to vertical surface
Housing	Shock resistant ABS
Flammability	UL94-HB (Housing) ; UL94-V0 (Terminals)
Terminal/wire size	0.14 – 2.5mm^2 stranded

Weight

Unpacked	170gm approx.
Packed	210gm approx.

Ordering Information

ORDER CODE	**DESCRIPTION**
C2467B-0	Omniterm TTT Dual Trip & Transmitter (standard model).
C2467B-1	Omniterm TTT with 4 wire RTD input
C2467B -2	Omniterm TTT with Hi Voltage Input
C2467B -3	Omniterm TTT with low current excitation for Pt1000 etc.
C2467B -4	Omniterm TTT with high current excitation for Cu10 etc.
ACCESSORIES	
C1168	Omniflex Miniature Jack Programming Cable.

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