



OMNITERM TWT Universal Input Two Wire Transmitter

Model C2406C Universal Input two-wire transmitter.

DATASHEET

- TC/RB/mV/V/C universal input in one product
- Software ranging – no re-calibration required
- Powered from 4-20mA Loop
- Input Isolation to 2500Vac
- Wide operating voltage (9 – 33Volts)
- Sensor linearisation standard
- Internal 250Ω resistor for 1-5V output conversion



Features

- **DIN Rail or surface mountable**
- **Narrow 22.5mm module width**
- **4-20mA Loop powered.**
- **2500Vac Isolation Input to Output**
- **User friendly free configuration software**
- **Wide operating temperature range**
- **Linearised for all standard input types**
- **Designed to meet IEC 61508 SIL1 criteria.**

OVERVIEW

The OMNITERM TWT Universal two-wire transmitter is designed for the widest range of signal conditioning 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 (linearised to temperature), as well as voltages and currents (both linear and square root) from 1mV minimum to 10Vdc maximum input span.

The TWT module draws its power from the 4-20mA output loop.

Full input isolation to 2500Vac ensures trouble-free accurate measurement in the most demanding applications.

An internal 250 ohm precision resistor is available to optionally convert the 4-20mA output signal into 1-5Volts for compatibility with PLC's, RTU's etc.

Mount the TWT close to the point of measurement for most accurate operation.

Combined with the free **Omniset** configuration software package, this product provides extremely low life-cycle

costs by reducing spares stock-holding requirements, and reducing specialist technical expertise required for field support, on site 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 TWT 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. This product meets the criteria of IEC61508 for use in SIL1 safety loops.

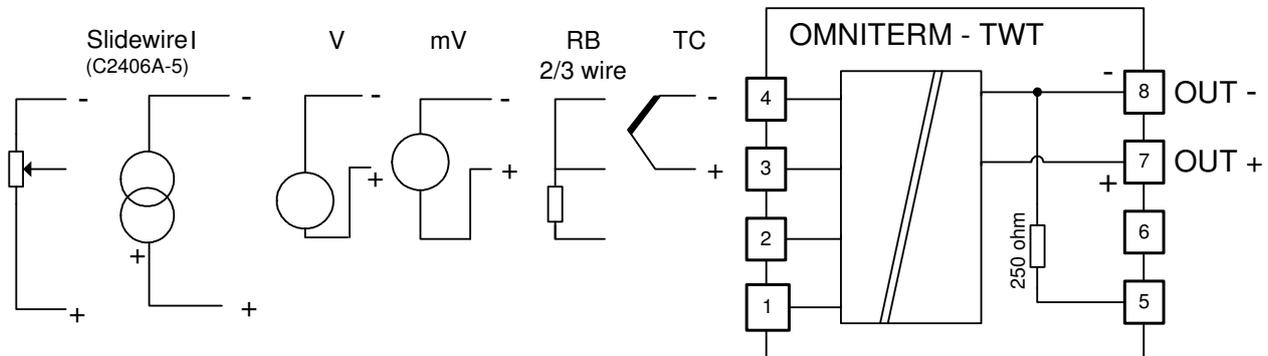




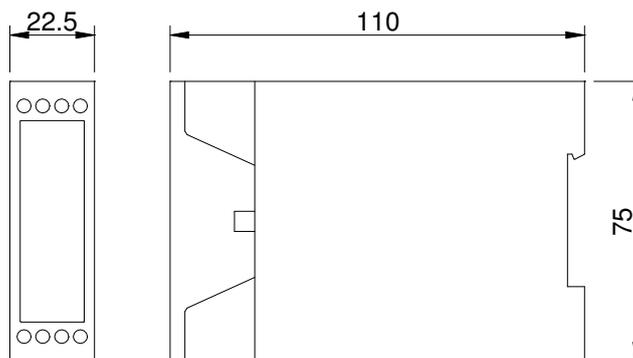
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Electrical Connection Details



Mechanical Details



Specifications

Input

Measurement Types and Ranges

Unless otherwise stated, all specifications refer to Model C2406C-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 (W/W26%Re)	1000 – 2500 °C (1000 °C min. span*)
Type W5 (W5%Re/W26%Re)	0 – 2320 °C (300 °C min. span*)
Type W3 (W3%Re/W25%Re)	0 – 2500 °C (300 °C min. span*)

*Minimum Span can be set lower but accuracy may be reduced

Cold Junction Compensation Internal

CJC Accuracy	< 0.5 °C over 0 – +40 °C < 1 °C over -10 – +60 °C
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TC Burnout Detection	User Configurable Error Output (according to NAMUR NE43)
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RESISTANCE THERMOMETERS (RB Input Ranges)

Model C2406C-0	2 or 3 wire connection
Measuring Current	100µA nominal 20µA for Model C2406C-3 (Pt1000) 300µA for Model C2406C-4 (Cu10)
Lead Resistance	≤ 100 ohms per lead ≤ 10 ohms per lead on C2406C-4
Pt100 (IEC60751/DIN43760)	-200 – 850 °C (50 °C min. span)
Pt500	-200 – 380 °C (50 °C min. span)
Pt500 (model C2406C-3)	-200 – 630 °C (50 °C min. span)
Pt1000 (model C2406C-3)	-200 – 630 °C (50 °C min. span)
Ni100 (DIN43760)	-60 – 250 °C (50 °C min. span)
Ni120	-80 – 320 °C (50 °C min. span)
Cu10 (model C2406C-4)	-100 – 260 °C (150 °C min. span)

POTENTIOMETER/SLIDEWIRE (Model C2406C-5)





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Model C2406C-5	3 wire connection
Excitation	50mV nominal
Potentiometer Resistance	500 ohms min; 10kOhms max
Minimum Span	10%
Maximum Zero	90%

VOLTS (V Input Ranges)

Model C2406C-0	-1 – +10V (min. span 0.1V)
Model C2406C-2	-10 – +60V (min. span 1V)

MILLIVOLTS (mV Input Ranges)

Millivolts	-10 – 100mV (min. span 1mV)
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CURRENT (I Input Ranges)

Current	-4 – 40mA (0.4mA min. span)
Input Impedance	30 ohms

Output

Output Current Range	3.5-23mA maximum
Minimum Supply Voltage	9Vdc across terminals 7 and 8
Maximum Supply Voltage	33Vdc across terminals 7 and 8
Recommended Maximum Load Resistance	100 ohms with 12Vdc supply min. 250 ohms with 15Vdc supply min. 500 ohms with 20Vdc supply min. 700 ohms with 24Vdc supply min. 1000 ohms with 30Vdc supply min.
Internal Precision Resistor	250 ohms 0.1% 50ppm/°C

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

Configuration

Input Type & Range	Field selectable via programming port on front of unit with the aid of a PC and free Omniset configuration software.
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Environmental Conditions

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

Mechanical

Width	22.5mm
Height	75mm
Depth	110mm
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

Compliance with Standards

Safety	EN 60950:1995
Emissions	EN 55011 EN50081-2:1994 Group I, Class A EN50082-2
Immunity – ESD	IEC 61000-4-2:1995, level 3
Immunity – RF Fields	IEC 61000-4-3:1995, level 3
Immunity – Fast Transients	IEC 61000-4-4:1995 1 kV – input/output lines
Insulation	Basic Insulation per IEC950
Insulation Test Voltage	Input/Output 100% tested to 2500Vac
Functional Safety to IEC61508	Suitable for use in SIL1 Applications. See Separate Reliability Datasheet RDC2406

Weight

Packed	160gm approx.
Unpacked	130gm approx.

Ordering Information

ORDER CODE	DESCRIPTION
C2406C-0	Omniterm TWT Universal Two-Wire Transmitter – Standard model
C2406C-2	Omniterm TWT Two-Wire Transmitter with Hi Voltage Input Range (-10 to 60Vdc)
C2406C-3	Omniterm TWT Two-Wire Transmitter with low current excitation for Pt1000 etc.
C2406C-4	Omniterm TWT Two-Wire Transmitter with high current excitation for Cu10 etc.
C2406C-5	Omniterm TWT Two-Wire Transmitter with 3 wire potentiometer/slide-wire input
ACCESSORIES	
C1168A	Omniflex Miniature Jack Programming Cable.





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Typical Application Circuits

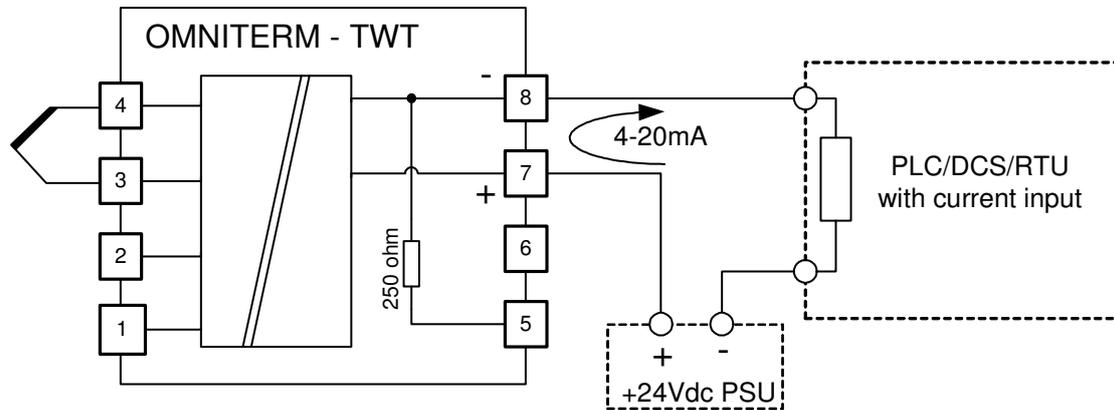


Figure 1: Omniterm TWT with 4-20mA current output

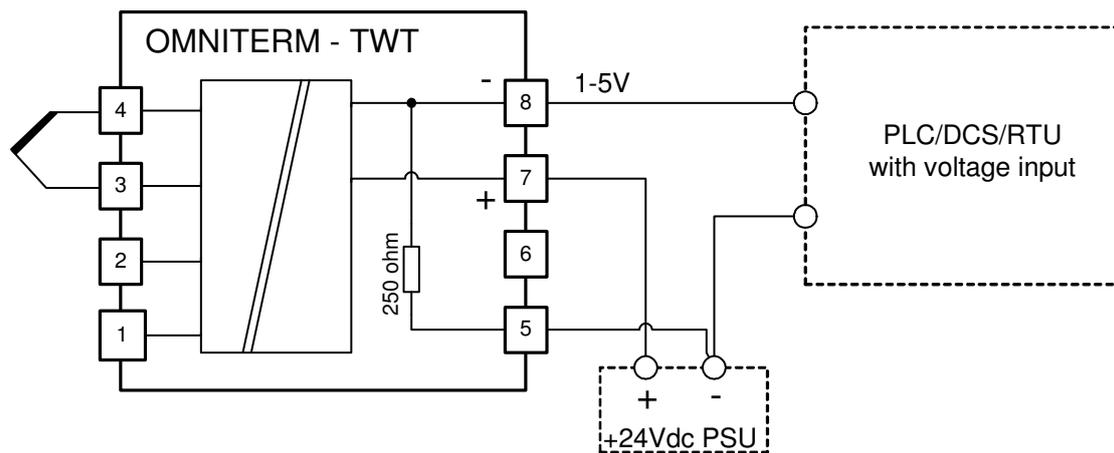


Figure 2: Omniterm TWT with 1-5Vdc output using integral precision 250ohm resistor