OMNITERM TWT Universal Input Two Wire Transmitter
Model C2406C Universal Input two-wire transmitter.

- 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.
OMNITERM TWT Universal Input Two Wire Transmitter

Model C2406C Universal Input two-wire transmitter.

Electrical Connection Details

![Electrical Connection Diagram]

Mechanical Details

![Mechanical Diagram]

Specifications

<table>
<thead>
<tr>
<th>Input</th>
<th>Measurement Types and Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unless otherwise stated, all specifications refer to Model C2406C-0</td>
</tr>
<tr>
<td></td>
<td>THERMOCOUPLES (TC Input Ranges covered)</td>
</tr>
<tr>
<td>Type B (Pt30Rh-Pt6Rh)</td>
<td>400 – 1820 °C (400 °C min. span*)</td>
</tr>
<tr>
<td>Type E (NiCr-CuNi)</td>
<td>-150 – 1000 °C (80 °C min. span*)</td>
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<tr>
<td>Type J (Fe-CuNi)</td>
<td>-210 – 1200 °C (100 °C min. span*)</td>
</tr>
<tr>
<td>Type K (NiCr-NiAl)</td>
<td>-270 – 1372 °C (100 °C min. span*)</td>
</tr>
<tr>
<td>Type N (NiCrSi-NiSiMg)</td>
<td>0 – 1300 °C (175 °C min. span*)</td>
</tr>
<tr>
<td>Type R (Pt13Rh-Pt)</td>
<td>-50 – 1787 °C (500 °C min. span*)</td>
</tr>
<tr>
<td>Type S (Pt10Rh-Pt)</td>
<td>-50 – 1787 °C (500 °C min. span*)</td>
</tr>
<tr>
<td>Type T (Cu-CuNi)</td>
<td>-270 – 400 °C (100 °C min. span*)</td>
</tr>
<tr>
<td>Type W (W26%Re)</td>
<td>1000 – 2500 °C (1000 °C min. span*)</td>
</tr>
<tr>
<td>Type W5 (W5%Re/W26%Re)</td>
<td>0 – 2320 °C (300 °C min. span*)</td>
</tr>
<tr>
<td>Type W3 (W3%Re/W25%Re)</td>
<td>0 – 2500 °C (300 °C min. span*)</td>
</tr>
</tbody>
</table>

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

Cold Junction Compensation: Internal

CJC Accuracy | < 0.5 °C over 0 – +40 °C
TC Burnout Detection | User Configurable Error Output (according to NAMUR NE43)

RESISTANCE THERMOMETERS (RB Input Ranges)

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

POTENTIOMETER/SIDEWIRE (Model C2406C-5)

http://www.omniflex.com
OMNITERM TWT Universal Input Two Wire Transmitter
Model C2406C Universal Input two-wire transmitter.

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)

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.

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 ENS0022-35
Or screws to vertical surface

Housing
Shock resistant ABS

Flammability
UL94-HB (Housing)
UL94-V0 (Terminals)

Terminal/wire size
0.14 – 2.5mm² 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
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.

http://www.omniflex.com
Typical Application Circuits

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

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