OMNITERM THZ Programmable Frequency Transmitter

Model C2403B 24Vdc powered four-wire fully isolated Frequency Transmitter.

DATASHEET

- Accept Pulses from contacts, NPN, PNP or 'N' type proximity Switch Inputs
- Universal 0-20mA / 0-±10V / 0-±10mA or pulse output
- 24Vdc powered
- Three port isolation to 1500Vac
- Fully Software configurable by the user
- Output overload detection

Features

- **DIN Rail or surface mountable**
- **Narrow 22.5mm module width**
- **20 - 30V dc powered.**
- **1500Vac Isolation Input/Output/Power Supply**
- **Output overload Indicator**
- **User friendly configuration software**
- **Wide operating temperature range**
- **Crystal controlled accuracy**
- **Special function options included as standard**
- **Designed to meet IEC 61508 SIL1 criteria.**

OVERVIEW

The OMNITERM THZ four-wire Frequency Transmitter accepts a periodic or pulse wave-form signal such as from a proximity detector used to detect rotational speed, and provides a analogue output signal relative to frequency. This module uses advanced state-of-the-art digital measurement techniques, combined with extremely user friendly software configurability for best ease of use without factory required setup when ordering.

The input will accommodate pulses from dry contacts, open collector transistor outputs (NPN or PNP) and Namur standard 'N' type proximity sensors.

The output can be configured for unipolar or bipolar outputs of current or voltage from ±1mA to ±10mA; 0-20mA; or ±1V to ±10V, as well as pulse outputs for totaliser and frequency translation applications.

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

MINIMISE STOCK HOLDING

The OMNITERM THZ 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 digital filtering techniques, the THZ offers up to one hundredth of a Hertz resolution combined with fast response to changing signal frequencies.

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 – eg. from a wire break or excess resistance when configured as a current loop, or too low a load resistance when configured as a voltage output.

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

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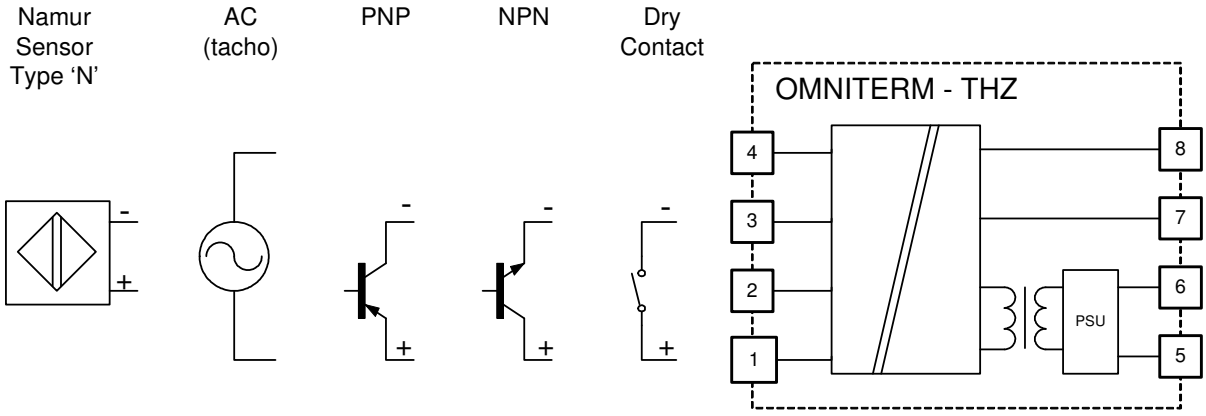
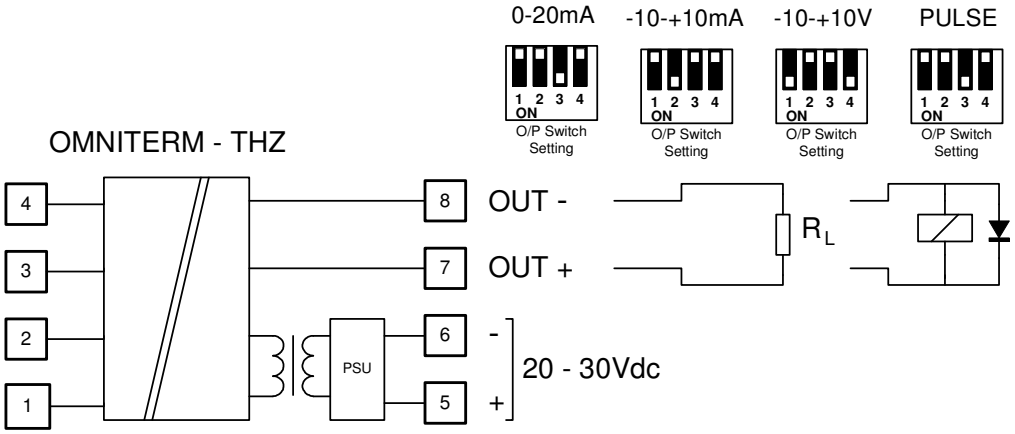
Electrical Connections

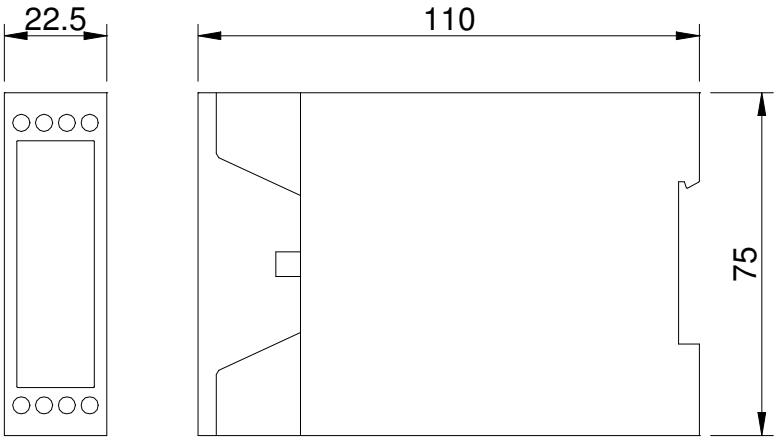


INPUT CONNECTIONS



OUTPUT CONNECTIONS AND RANGE SELECTION

Mechanical Details



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Specifications

Input

Number of Inputs	1
Frequency Range and resolution (Software Configurable)	**SLOW**: 0.00 – 320.00 Hz **MEDIUM**: 0.0 – 3,200.0 Hz **FAST**: 0 – 32,000 Hz
Contact Input (including NPN and PNP connections)	
Open Circuit Voltage	8 Volts typical
Short Circuit Current	1 mA typical
Input Impedance	10 kOhm nominal
AC Signal Input	
Input Impedance	5kOhms
Minimum Signal Level	0.5Vrms (1.4V pk-pk)
Maximum Signal Level	21Vrms (60Volts pk-pk)
Namur (Type 'N') Proximity Sensor Input	
Open Circuit Voltage	8 Volts typical
Short Circuit Current	8 mA typical
Input Impedance	1 kOhm nominal

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
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

Power Supply

Supply Voltage	24 Volts –15% / +25% (20-30Vdc)
Current Consumption	65mA max. plus output current
Programming Power	Alternate power via programming cable.

Selectable Computation Functions

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

Configuration

Input Type	Selected on input connections
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)

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 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

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

Weight

Unpacked	130gm approx.
Packed	160gm approx.

Ordering Information

ORDER CODE	DESCRIPTION
C2403B	Omniterm THZ Four-Wire Frequency Transmitter
ACCESSORIES	
C1168	Omniflex Miniature Jack Programming Cable.