

**Servicing North America:**

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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARRANTY/DISCLAIMER**

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

**RETURN REQUESTS / INQUIRIES**

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

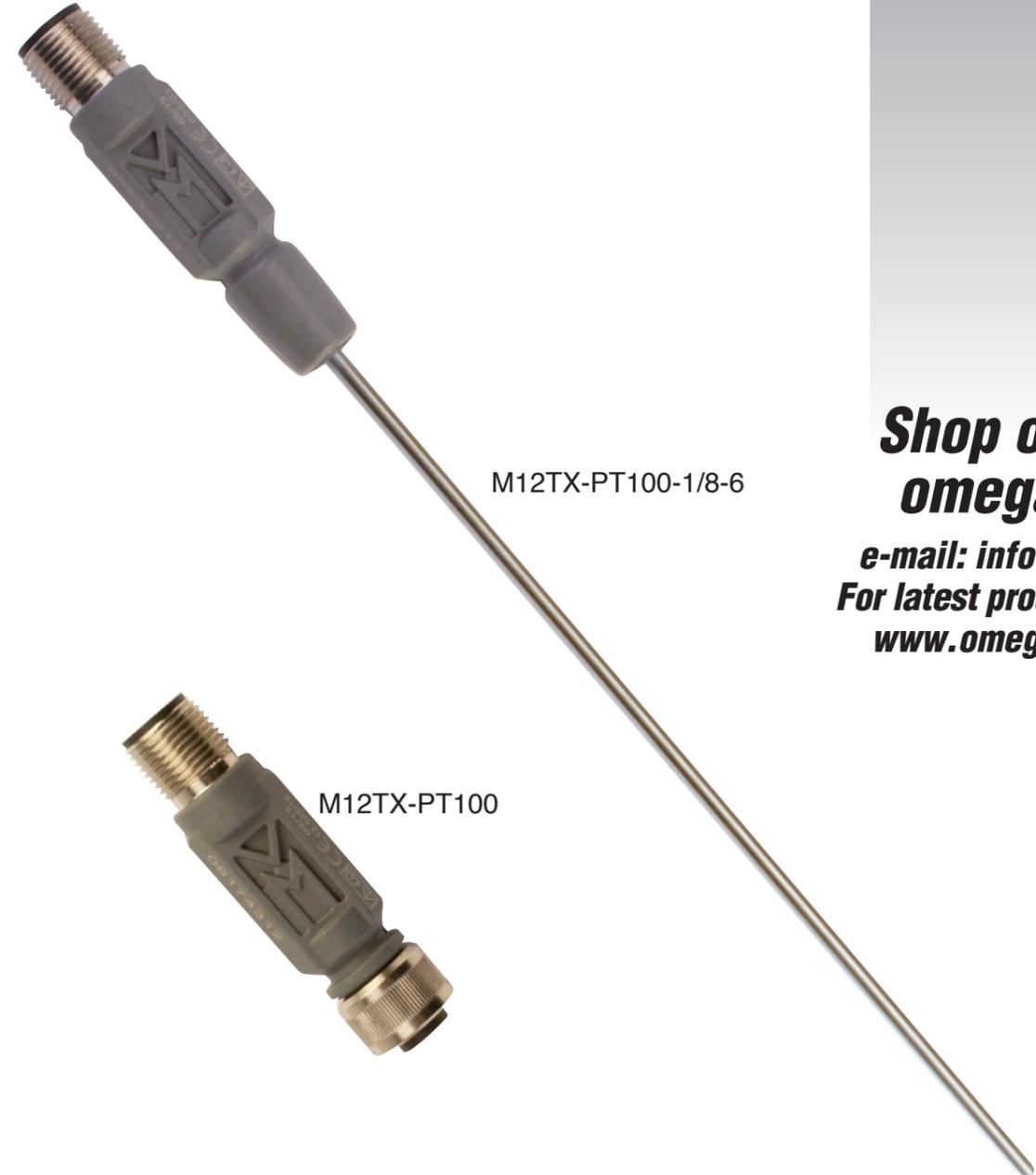
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**User's Guide**



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MADE IN ITALY

**M12TX SERIES**  
**Temperature Transmitter**  
**With 100Ω RTD**

# M12TX SERIES

## Analog PC-programmable 2-wire Transmitter

### USER'S MANUAL

**CAUTION:** for a corrected temperature transmitter functionality, scrupulously follow the indications reported on this manual.

Please check on the web site [www.omega.com](http://www.omega.com) (section «Products by type» / «Evolved sensor» / «4-20mA transmitter») if it is available an updated version of this manual.

- All rights of this User's manual belong to Omega. It is prohibited to use, duplicate and/or arrange a part or whole of this User's manual without the permission of Omega.
- Please follow the safety precautions carefully. We cannot guarantee nor are we responsible for safety if this product is used in any manner other than was intended.
- Omega accepts no responsibility for any malfunction of and / or trouble with this product that is caused by the improper handling of it and will deem such trouble or malfunction as falling outside the conditions for free repair.
- Figures and illustrations in this manual may be slightly simplified and may differ from the actual product.
- Omega accepts no responsibility for any damage or loss of income caused by the use of this product
- Specifications, design and other contents outlined in this manual are subject to change without notice.

### ! DANGER

Do not take apart, repair or modify the main unit. It may cause fire, electrocution or damage. For any problem ask to Omega.

Do not use the device in the place subject to flammable or explosive gas.

Please apply appropriate power source to device according to rated power show on the device body: a wrong power supply could damage the device and may cause short circuit or burn out.

If there is a danger of a serious which had incident to one breakdown or to a defect of this device, is necessary to equip the apparatus of a appropriate external protection.

### ! CAUTION

Omega is not responsible for any malfunction or trouble caused by the use of our product or by any problem caused by the malfunction of our unit. Please be fully aware of this before using product.

This product has been designed for industrial use only and it is not destined for use in situations where strict safety precautions are necessary such as in connection with medical equipment directly or indirectly.

The device can be damaged by static electricity (ESD); do not place fingers or any foreign object in the output connector. Before to remove the red plastic protection from the connector, discharge your body from ESD by touching metal around you (door knob, windows frame).

The safety normative require a power supply line switch to cut a device power supply. As ulterior security, insert a protection delayed fuse (100mA 250Vca).

The unit must be wired with appropriate cables with reference at the limited voltage and current values reported on this User's manual.

**Do not use or store the unit in places such as listed below. It may cause electrocution, fires or damages at the unit.**

- Areas exposed to organic solvents and corrosive gas.
- Areas exposed to strong magnetic fields.
- Areas exposed to static electricity.
- Areas exposed to fire or overheating.
- Areas exposed to excessive dust or smoke.

### General information

M12TX-CONFIG-SET is an analog PC-programmable 2-wire temperature transmitter for 3-wire Pt100 input; configuration is made in seconds with the user friendly software M12TX-CONFIG-SET and by USB interface. No external power supply is needed for the device configuration (power supply by USB interface). M12TX-CONFIG-SET is compatible with operating system Windows 10.0 or higher.

### Driver and software installation

Before the device's configuration you must following the below procedure: (for more information, please see the user's manual and the installation guide included in the M12TX-CONFIG-SET)

1. Install the USB interface drivers
2. Install the configuration software M12TX-CONFIG-SET
3. Connect the interface to a free USB port of your PC, and wait for the automatic hardware installation.

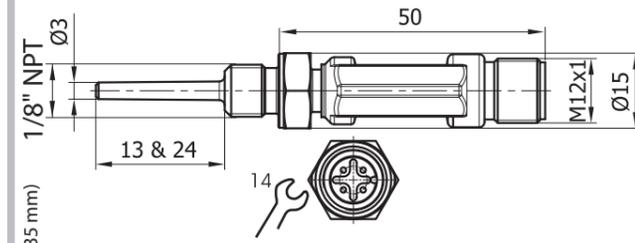
### Device configuration

For more information, please see the help file included in the M12TX-CONFIG-SET application (push the key F1 to open the help file). Following just an introductive guide:

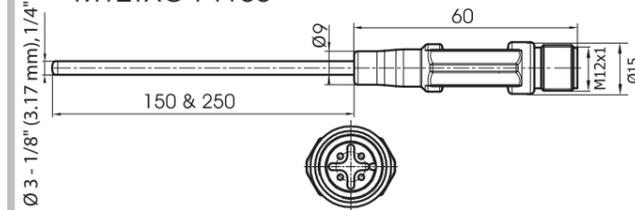
1. Connect the M12TX-CONFIG-SET to USB interface (no external power supply is needed for the device configuration).
2. In the M12TX-CONFIG-SET click on icon "Read from transmitter": the software will upload the device's configuration.
3. Set the measuring range, the sensor break indication and the tag if needed (16 alphanumeric chars for device's ID name).
4. The new configuration can be stored on the device's memory by a click on the icon "Transfer to transmitter".  
The device makes a restart when downloading is done.

### Dimensions

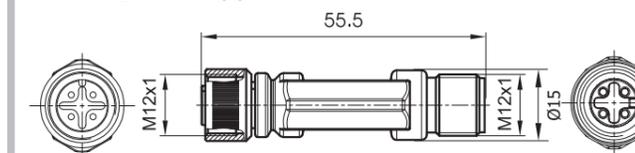
\*Measurements are in mm



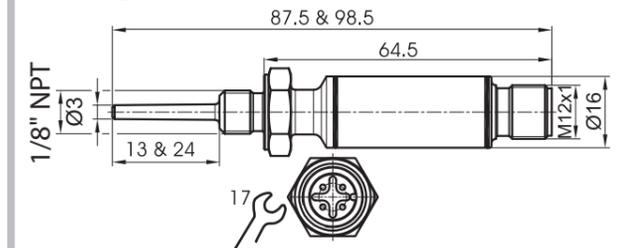
M12XC-PT100-\*



M12TX-PT100

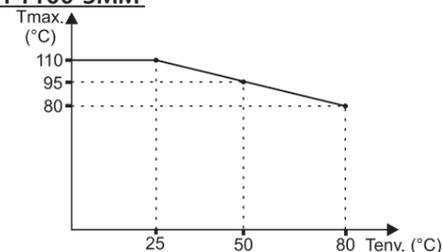


M12TXSS

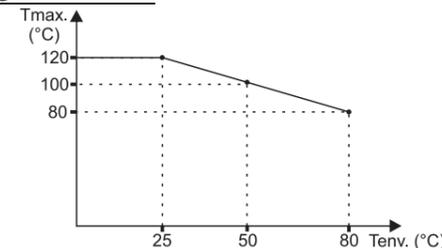


### Tmax. process/Tenv. graph

M12XC-PT100-3MM-\*



M12TXSS



### Technical data:

<b>Body:</b>	M12XC-PT100-3MM-*, M12TX-PT100-*, M12TX-PT100: thermoplastic material M12TXSS: AISI 316L
<b>Probe type:</b>	M12XC-PT100-3MM-*, M12TXSS: Thermowell AISI 316L M12TX-PT100-*: compact mineral insulated AISI 316L M12TX-PT100: compatible connection with PR-22 and RTD-M12 thermoresistance series
<b>Probe minimum bending radius:</b>	Only for the M12TX-PT100-*: three-times the outer diameter (except the sensing tip wich length is 30mm)
<b>Connector:</b>	M12 male in accord. to VDE0627 (output connector) M12 female in accord. VDE0627 (input connector [Pt100] only for the transmitter M12TX-PT100)
<b>Sensor:</b>	RTD Pt100 (α= 0,00385) 3-wire connection M12TX-PT100-* range: -50÷500°C M12XC-PT100-3MM-* range: -50÷110°C (see Tmax./Tenv.graph) M12TXSS: range: -50÷120°C (see Tmax. / Tenv. graph) M12TX-PT100: range: -50÷800°C <b>Note:</b> Tmax. electronic section: 80°C
<b>Sensor current:</b>	~ 0.5 mA
<b>Maximum sensor wire resistance:</b>	20 Ω / wire
<b>Sensor break monitoring:</b>	Selectable during configuration between: upscale (>21.0mA) or downscale (<3.6 mA) action
<b>Sensor short circuit:</b>	Fixed: Downscale (<3.6 mA) action
<b>Range configuration:</b>	It is possible set the input temperature range (span) between -50°C to 800°C by the M12TX-CONFIG-SET configuration kit (it is needed a PC with OS Windows). Zero adjustments: any value between -50°C to +50°C. Minimum Span: 50°C (if the zero value is set between one of these values: -40°C, -20°C, 0°C, 20°C, 40°C, the minimum span is 20°C rather than 50°C). Sensor error compensation: over 2 points (max 1% of span)
<b>Output:</b>	Signal: 4÷20mA Permissible load: 700Ω @24Vdc (R <sub>load</sub> (Ω) = (U - 8.5 )/0.022) Transmitter response time (90%): <50mS
<b>Isolation In-Out:</b>	Non-isolated
<b>Power supply:</b>	8,5 ÷ 32 Vdc (polarity protected)
<b>Environments conditions:</b>	Temperature: -40÷80°C (for electronic section) Relative humidity: 0÷100% EMC: in accordance to EN 61326 Vibrations (for M12TX-PT100): in accordance to IEC 68-2-6, Test Fc, 84-2000Hz, 10g
<b>Degree of protection:</b>	IP65 and IP67 in accordance to IEC60529
<b>Accuracy:</b>	Transmitter: Max. ±0,2°C o ±0,2% of span Pt100 sensor: class A up to 300°C in accord. to IEC751
<b>Temperature influence: (deviation from 20°C)</b>	Max. ±0,3°C / 25°C o ±0,3% of span / 25°C
<b>Sensor wire influence:</b>	Negligible with equal wire resistance
<b>Supply voltage influence:</b>	Negligible
<b>Response time:</b>	Test in water to IEC751- time for reaching 63,2% of thermal gap M12XC-PT100-3MM-* and M12TXSS: <3,5sec. M12XC-PT100-* diam. 3mm <3,5 sec., diam. 6mm <13sec.

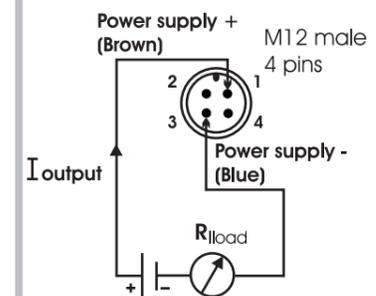
Factory default parameters: Range 0÷150°C (0÷100°C for the models M12XC-PT100-3MM-\* and M12TXSS), sensor break indication Upscale (>21 mA). For different configurations see the range printed over the device.

**! Important note for the models M12TX-CONFIG-SET, M12XC-PT100-3MM-\* and M12TXSS**

For a correct use of these devices, keep as reference the graphic Tmax. process / Tenviroment. Higher temperatures can damage the electronic section because of a temperature trasfer from process to device's body (Tmax. for electronic section 80°C).

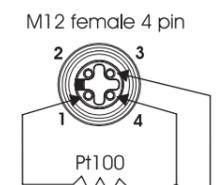
### Connections

#### Output



#### Input

**Note:**  
Only for M12TX-PT100



This product should not be mixed with other kind of scrap after usage. It should be handled as an electronic / electric device.