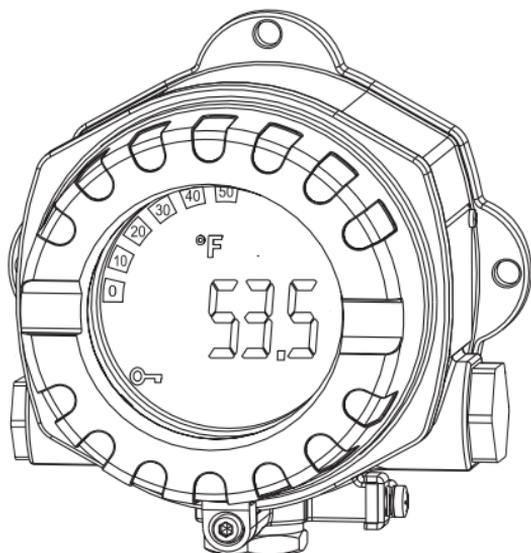


# Temperature Field Transmitter iTEMP<sup>®</sup> HART<sup>®</sup> TMT142

Brief operating instructions



## Measuring System

The TMT142 is a two-wire transmitter with an analog output, a measuring input for RTD 2-wire, 3-wire or 4-wire connection, thermocouples and voltage transmitters. The LC display shows the current measured value digitally and as a bar graph with an indicator for limit value violation. It can be operated via the HART<sup>®</sup> protocol using a handheld terminal (DXR375) or PC (FieldCare or ReadWin<sup>®</sup> 2000 operating software).

## Important Notice

This manual is a brief operating manual.

For detailed information read the operating manual (BA191r/24/ae) and other special documentation on the enclosed CD-ROM.

### **Electrical shock could cause death or serious injury.**

- Use extreme caution when making contact with the leads and terminals.  
If the sensor is installed in a high voltage environment and a fault or installation error occurs, high voltage may be present on the transmitter leads and terminals.

Safe and secure operation of the field transmitter can only be guaranteed if the operating instructions on the enclosed CD-ROM and all included safety notes are read, understood and followed.

### **Correct use**

- The unit is a universal, presettable temperature field transmitter for resistance temperature detectors (RTD), thermocouple (TC) as well as resistance and voltage sensors. The unit is constructed for mounting in field applications.
- The manufacturer cannot be held responsible for damage caused by misuse of the unit.
- Separate Ex documentation is part of this manual, for measurement systems in hazardous areas. The installation conditions and connection values indicated in these instructions must be followed!

### **Installation, commissioning and operation**

Installation, wiring and maintenance of the unit must only be done by trained, skilled personnel who are authorized to do so by the plant operator. This skilled staff must have read and understood these instructions and must follow them to the letter. The plant operator must make sure that the measurement system has been correctly wired to the connection schematics.

Make sure the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices before connecting a HART<sup>®</sup> communicator in an explosive atmosphere.

The transmitter electronics module is permanently sealed within the housing, resisting moisture and corrosive damage. Verify that the operating atmosphere of the transmitter is consistent with the appropriate hazardous locations certifications.



**Warning!**

Do not disconnect equipment unless power has been switched off or the area is not hazardous.

## Hazardous areas

When installing the unit in a hazardous area, the national safety requirements must be met. Make sure that all personnel are trained in these areas. Strict compliance with installation instructions and ratings as stated in this documentation is mandatory.

### Warning!

The unit must be powered by a 11 to 40 V DC power supply with a limited power according to NEC Class 02 (low voltage, low current) limited to 8 A and 150 VA in case of a short circuit.

## Returns

Please follow the Return Authorization Policy which is attached with this manual.

## Safety pictograms and symbols

### Note!

Notes draw attention to activities or procedures that can have a direct influence on operation or trigger an unforeseen device reaction if they are not carried out properly.

### Caution!

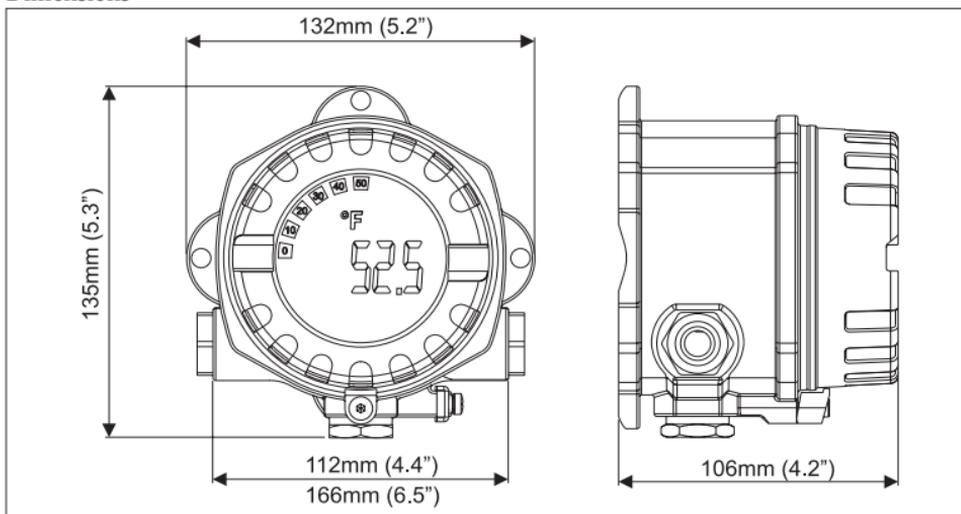
Cautions draw attention to activities or procedures that can lead to persons being injured or to incorrect device operation if they are not carried out properly.

### Warning!

Warnings draw attention to activities or procedures that can lead to persons being seriously injured, to safety risks or to the destruction of the device if they are not carried out properly.

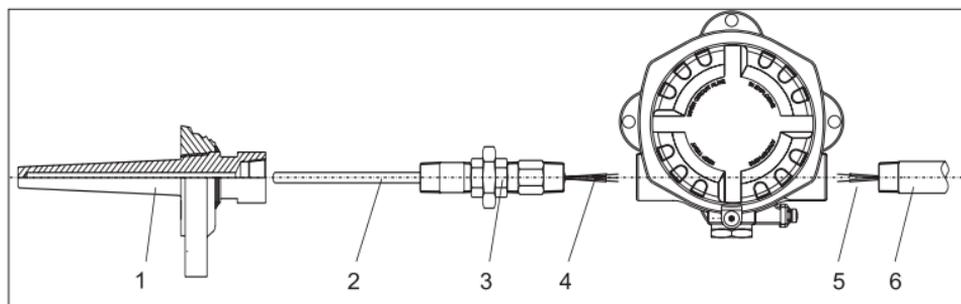
## Installation

### Dimensions



Installation directly to the sensor

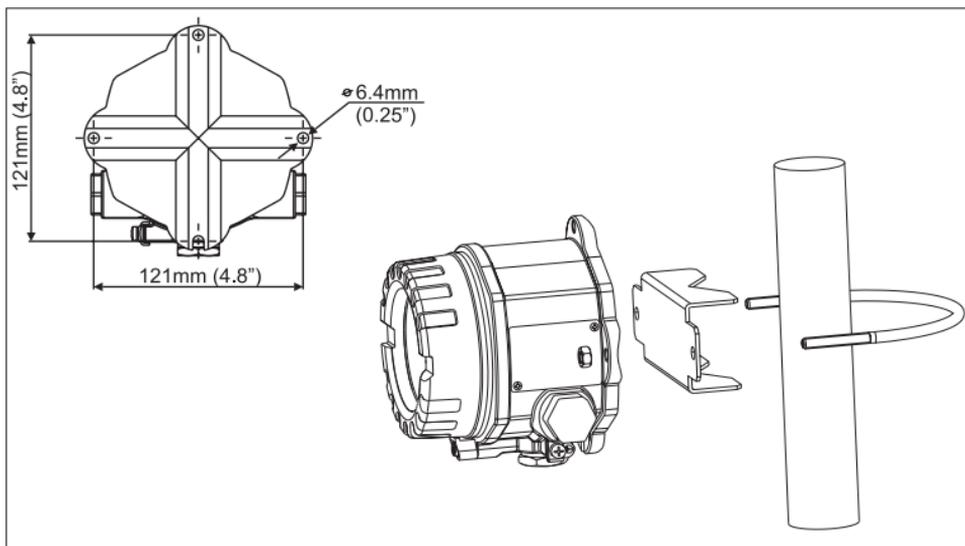
If the sensor is fixed the unit can be fitted directly to the sensor.



Proceed as follows:

1. Install and tighten thermowell (Pos. 1). Screw the measuring inset (Pos. 2) into the thermowell.
2. Attach necessary extension nipples and adapters (Pos. 3) to the thermowell. Seal the nipple and adapter threads with silicone tape.
3. Pull sensor leads (Pos. 4) through the extensions and adapters into the terminal side of the transmitter housing.
4. Install field wiring conduit (Pos. 6) to the remaining transmitter conduit entry.
5. Pull field wiring leads (Pos. 5) into the terminal side of the transmitter housing.
6. Attach and tighten both transmitter covers. Both transmitter covers must be fully engaged to meet explosion-proof requirements.

Remote installation using a pipe mounting kit (dimensions in mm/inches)



Direct wall mounting:

- Drill 2 holes.
- Attach the device to the wall with 2 screws (M6).

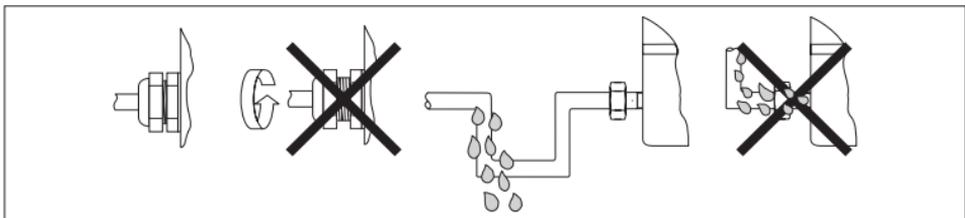
Installation with pipe mounting kit:

- Attache the mounting bracket to the pipe.
  - The additional mounting plate must be used for pipes with a diameter of 1.5 " to 2.2".
  - Fix the device to the mounting bracket with the two screws supplied.
- The mounting plate is not needed for pipes with a diameter of 2.2" - 3.3".

### Degree of protection

The device conforms to the requirements to IP67 (NEMA 4X) ingress protection. In order to fulfil an IP67 (NEMA 4X) degree of protection after installation or service, the following points must be taken into consideration:

- The housing seals must be clean and undamaged before installation.
- All housing screws and covers must be tightened (see figure below).
- Conduit entries not used are to be blanked off using the blanking plates provided.
- Loop the conduit lines before placing into the conduit entry (see figure below).

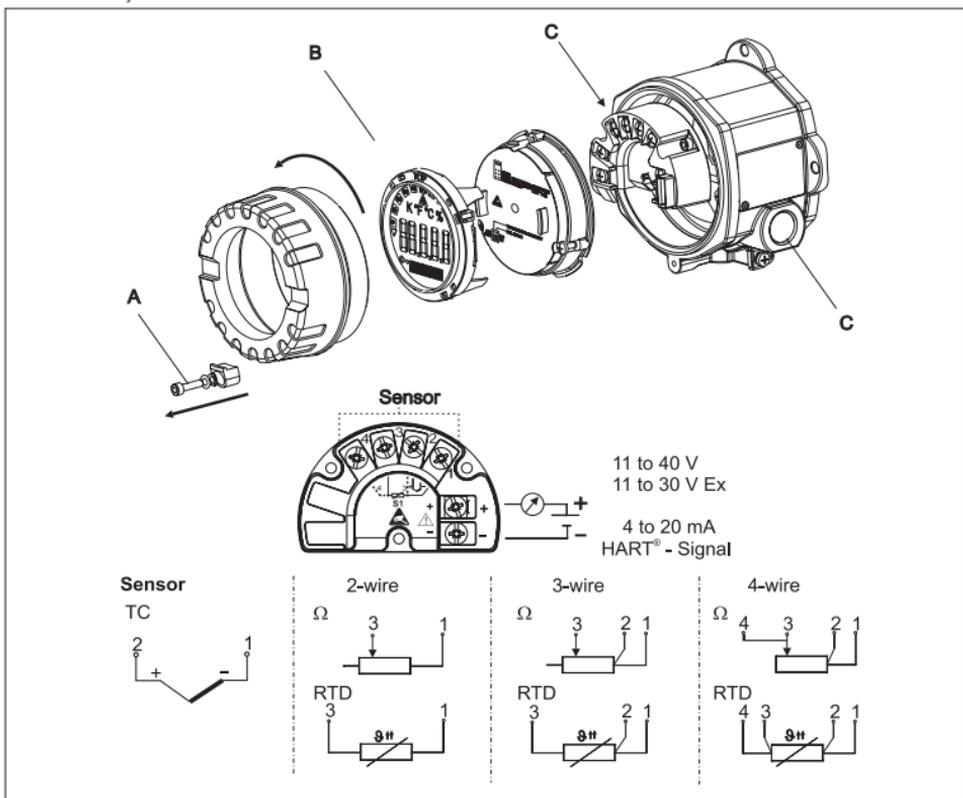


## Electrical connection-wiring diagram

 **Caution!**

Switch off power supply before installing or connecting the transmitter. Failure to observe this may result in destruction of parts of the electronics. If the unit has not been grounded as a result of the housing being installed, grounding it via one of the ground screws is recommended.

### Terminal layout



 **Note!**

Leads to max. 12 AWG (2.5 mm<sup>2</sup>) plus ferrule for terminals

Proceed as follows:

1. Depending on the way of installation, open conduit entry (sensor installation) or the NPT fittings (remote installation) of the transmitter.
2. Feed the leads through the opening (Pos. C) into the terminal side of the transmitter.
3. Open cover clamp (Pos. A), housing cover, display and the electronic unit by opening the 2 screws (Pos. B).
4. Connect leads as shown in the terminal layout.
5. Ensure the terminal screws are tight. Close the electronic unit (screws!), display and housing cover (Pos. B) and attach the cover clamp (Pos. A).
6. Attach and tighten conduit entry or NPT fittings.

## ⚠ Caution!

Protect the terminals from electrostatic discharge. Failure to observe this may result in destruction of parts of the electronics.

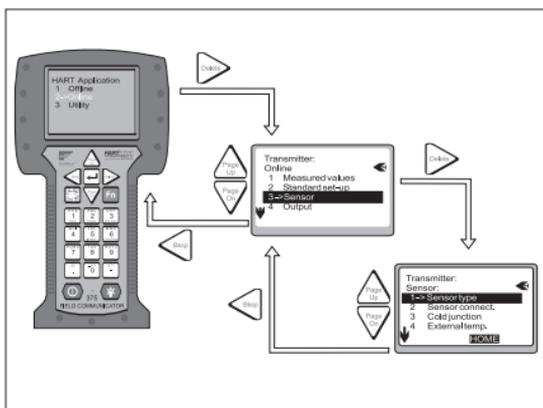
## Commissioning and display indication

Once the power supply has been connected, the field transmitter is operational. The transmitter shows the start display. Then it starts to display the measured values.

Pos.	Function
1	Bargraph display
2	Display 'Warning'
3	Engineering unit display K, °F, °C or %
4	Measured value display
5	Status and info display
6	Display 'communication'
7	Display 'configuration locked'

## Configuration

Programming available via HART® handheld or PC using a HART Modem, e. g. Commubox FXA191 and ReadWin® 2000 software.



For the handheld configuration proceed as follows:

1. Switch on the handheld module: Measuring device has to be already connected. The 1st menu level of the device function matrix appears directly (see Fig. left side). All the functions accessible under HART® are systematically arranged in this matrix.  
2. Select the function group (e.g. Sensor) and then the desired function, e.g. "Sensor type".

3. Enter type or change the setting. Then confirm with "ENTER" on the touchscreen.
4. Pressing "SEND" on the touchscreen transfers all the values entered with the handheld module to the device measuring system.
5. With "HOME" on the touchscreen, you return to the 1st menu level.

## 📎 Note!

Detailed information can be found in the HART® instruction manual that can be found in the handheld module transport pouch. If your HART® handheld requires an update please contact the Endress+Hauser, Inc. service department.

