Operating Instruction OI/TTH200-EN Rev. A

TTH200
Head-mount temperature transmitter

Measurement made easy

Short product description

Head-mount temperature transmitter for the measurement of the temperature of liquid and gaseous measuring media.

Further information

Additional documentation on TTH200 is available to download free of charge at www.abb.com/temperature.
Alternatively, scan this code:

Manufacturer
ABB Automation Products GmbH
Process Automation
Schillerstr. 72
32425 Minden
Germany
Tel: +49 571 830-0
Fax: +49 571 830-1806

Customer service center
Tel: +49 180 5 222 580
Mail: automation.service@de.abb.com

Contents

1 Safety

1.1 General information and instructions

These instructions are an important part of the product and must be retained for future reference.
Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly. The specialist personnel must have read and understood the manual and must comply with its instructions.
For additional information or if specific problems occur that are not discussed in these instructions, contact the manufacturer.
The content of these instructions is neither part of nor an amendment to any previous or existing agreement, promise or legal relationship.
Modifications and repairs to the product may only be performed if expressly permitted by these instructions.
Information and symbols on the product must be observed. These may not be removed and must be fully legible at all times.
The operating company must strictly observe the applicable national regulations relating to the installation, function testing, repair and maintenance of electrical products.

1.2 Warnings

The warnings in these instructions are structured as follows:

⚠ DANGER

The signal word "DANGER" indicates an imminent danger. Failure to observe this information will result in death or severe injury.

⚠ WARNING

The signal word "WARNING" indicates an imminent danger. Failure to observe this information may result in death or severe injury.

⚠ CAUTION

The signal word "CAUTION" indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

i NOTICE

The signal word "NOTICE" indicates useful or important information about the product.
The signal word "NOTICE" is not a signal word indicating a danger to personnel. The signal word "NOTICE" can also refer to material damage.

1.3 Intended use

This device is intended for the following uses:

— To measure the temperature of fluid, pulpy or pasty substances and gases or resistance/voltage values.

The device has been designed for use exclusively within the values stated on the name plate and within the technical limit values specified on the data sheets.

— The maximum and minimum operating temperature limits must not be exceeded or undershot.
— The permissible ambient temperature must not be exceeded.
— The housing's IP rating must be observed during operation.

1.4 Improper use

The following are considered to be instances of improper use of the device:

— Material application, e.g. by painting over the name plate or welding/soldering on parts.
— Material removal, e.g. by spot drilling the housing.

1.5 Warranty provisions

Using the device in a manner that does not fall within the scope of its intended use, disregarding this manual, using underqualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

2 Use in potentially explosive atmospheres according to ATEX and IECEx

NOTICE

- Further information on the approval of devices for use in potentially explosive atmospheres can be found in the explosion protection test certificates (at www.abb.com/temperature).
- Depending on the design, a specific marking in accordance with ATEX or IECEx applies.

2.1 Ex-marking

2.1.1 Transmitter

ATEX intrinsic safety

The device fulfills the requirements of Directive 2014/34/EU in case of corresponding purchase orders and is approved for use in Zone 0, 1 and 2.

Model TTH200-E1	
Type Examination Test Certificate:	PTB 05 ATEX 2017 X
II 1 G Ex ia IIC T6 Ga	
II 2 (1) G Ex [ia] ib IIC T6 Gb (Ga)	
II 2 G (1D) Ex [iaD] ib IIC T6 Gb (Da)	

ATEX Non-sparking

The device fulfills the requirements of Directive 2014/34/EU in case of corresponding purchase orders and is approved for use in Zone 2.

Model TTH200-E2	
Declaration of conformity	
II 3 G Ex nA IIC T1-T6 Gc	

IECEx intrinsic safety

Approved for use in Zone 0, 1, and 2.

Model TTH200-H1	
IECEx certificate of conformity	IECEx PTB 09.0014X
Ex ia IIC T6...T1 Ga	
Ex [ia] ib IIC T6...T1 Gb (Ga)	
Ex [ia IIIC Da] ib IIC T6...T1 Gb	

2.1.2 LCD indicators

ATEX intrinsic safety

The device fulfills the requirements of Directive 2014/34/EU in case of corresponding purchase orders and is approved for use in Zone 0, 1 and 2.

Type Examination Test Certificate:	PTB 05 ATEX 2079 X
II 1G Ex ia IIC T6 Ga	

ATEX Non-sparking

The device fulfills the requirements of Directive 2014/34/EU in case of corresponding purchase orders and is approved for use in Zone 2.

Declaration of conformity	
II 3 G Ex nA IIC T1-T6 Gc	

IECEx intrinsic safety

Approved for use in Zone 0, 1, and 2.

IECEx certificate of conformity	IECEx PTB 12.0028X
Ex ia IIC T6	

2.2 Temperature data

2.2.1 Transmitter

ATEX / IECEx intrinsic safety

Temperature class	Permissible ambient temperature range	
	Device category 1 use	Device category 2 / 3 use
T6	-40 … 44 °C (-40 … 111.2 °F)	-40 … 56 °C (-40 … 132.8 °F)
T5	-40 … 56 °C (-40 … 132.8 °F)	-40 … 71 °C (-40 … 159.8 °F)
T4-T1	-40 … 60 °C (-40 … 140.0 °F)	-40 … 85 °C (-40 … 185.0 °F)

ATEX Non-sparking

Temperature class	Device category 3 use
T6	-40 … 56 °C (-40 … 132.8 °F)
T5	-40 … 71 °C (-40 … 159.8 °F)
T4	-40 … 85 °C (-40 … 185.0 °F)

2.2.2 LCD indicators

ATEX / IECEx intrinsic safety

Temperature class	Permissible ambient temperature range	
	Device category 1 use	Device category 2 / 3 use
T6	-40 … 44 °C (-40 ... 111.2 °F)	-40 … 56 °C (-40 ... 132.8 °F)
T5	-40 … 56 °C (-40 ... 132.8 °F)	-40 … 71 °C (-40 ... 159.8 °F)
T4-T1	-40 … 60 °C (-40 ... 140 °F)	-40 … 85 °C (-40 ... 185 °F)

2.3 Electrical data

2.3.1 Transmitter

Intrinsic safety type of protection Ex ia IIC (part 1)

	Supply circuit
Max. voltage	U_i = 30 V
Short-circuit current	I_i = 130 mA
Max. power	P_i = 0.8 W
Internal inductance	L_i = 160 µH[1)]
Internal capacitance	C_i = 0.57 nF[2)]

1) From HW rev. 1.12, previously L_i = 0.5 mH.
2) From HW rev. 1.07, previously C_i = 5nF.

Intrinsic safety type of protection Ex ia IIC (part 2)
Thermocouples, voltages

	Measurement circuit: resistance thermometer, resistances	Measurement circuit: thermocouples, voltages
Max. voltage	U_o = 6.5 V	U_o = 1.2 V
Short-circuit current	I_o = 17.8 mA[1)]	I_o = 50 mA
Max. power	P_o = 29 mW[2)]	P_o = 60 mW
Internal inductance	L_i = 0 mH	L_i = 0 mH
Internal capacitance	C_i = 118 nF[3)]	C_i = 118 nF[3)]
Maximum permissible external inductance	L_o = 5 mH	L_o = 5 mH
Maximum permissible external capacitance	C_o = 1.55 µF	C_o = 1.05 µF

1) From HW rev. 1.12, previously I_o = 25 mA.
2) From HW rev. 1.12, previously P_o = 38 mW.
3) From HW rev. 1.12, previously C_i = 49 nF.

Intrinsic safety type of protection Ex ia IIC (part 3)

	LCD display interface
Max. voltage	U_o = 6.2 V
Short-circuit current	I_o = 65.2 mA
Max. power	P_o = 101 mW
Internal inductance	L_i = 0 mH
Internal capacitance	C_i = 0 nF
Maximum permissible external inductance	L_o = 5 mH
Maximum permissible external capacitance	C_o = 1.4 µF

2.3.2 LCD indicators

Intrinsic safety type of protection Ex ia IIC

Supply circuit	
Max. voltage	U_i = 9 V
Short-circuit current	I_i = 65.2 mA
Max. power	P_i = 101 mW
Internal inductance	L_i = 0 mH
Internal capacitance	C_i = 0 nF

2.4 Installation instructions

2.4.1 ATEX / IECEx

The installation, commissioning, maintenance and repair of devices in potentially explosive atmospheres must only be carried out by appropriately trained personnel. Works may be carried out only by persons, whose training has included instructions on different types of protection and installation techniques, concerned rules and regulations as well as general principles of zoning. The person must possess the relevant expertise for the type of works to be executed.
When operating with combustible dusts, EN 60079-31 must be complied with.
The safety instructions for electrical apparatus in potentially explosive areas must be complied with, in accordance with the directive 2014/34/EU (ATEX) and e.g. IEC 60079-14 (Installation of equipment in potentially explosive atmospheres).
To ensure safe operation, the respectively applicable requirements must be met for the protection of workers.

2.4.2 IP protection rating of housing

The temperature transmitter and LCD display type AS must be installed such that the IP rating of at least IP20 is achieved in accordance with IEC 60529.

2.4.3 Electrical connections

Grounding

If, for functional reasons, the intrinsically safe circuit needs to be grounded by means of a connection to the potential equalization, it may only be grounded at one point.

Intrinsic safety proof

If transmitters are operated in an intrinsically safe circuit, proof that the interconnection is intrinsically safe must be provided in accordance with IEC/EN 60079-14 as well as IEC/EN 60079-25.

The supply isolators / DCS inputs must feature intrinsically safe input protection circuits in order to eliminate hazards (spark formation).

In order to provide proof of intrinsic safety, the electrical limit value must be used as the basis for the EC-type examination certificates for the equipment (devices); this includes the capacitance and inductance values of the cables.

Proof of intrinsic safety is said to have been provided if the following conditions are fulfilled when a comparison is carried out in relation to the limit values of the equipment:

Transmitters (intrinsically safe equipment)		Supply isolator / DCS input (related equipment)
U_i	≥	U_o
I_i	≥	I_o
P_i	≥	P_o
$L_i + L_c$ (cable)	≤	L_o
$C_i + C_c$ (cable)	≤	C_o

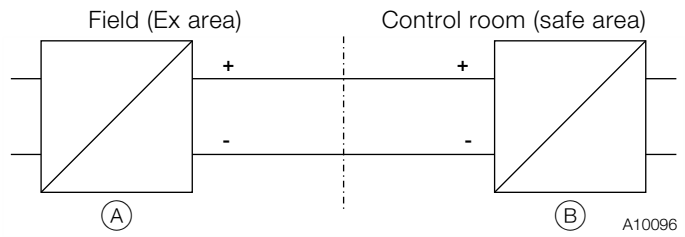


Fig. 1
Ⓐ **Transmitter** Ⓑ **Supply isolator / DCS input with supply / Segment coupler**

Installation in a potentially explosive atmosphere

Transmitters can be installed in all kinds of industrial sectors. Potentially explosive systems are divided into zones, meaning that a wide range of different instruments are also required. For this, pay attention to the country-specific guidelines and certificates!

NOTICE

Ex relevant specifications must be taken from the EC-type examination certificates and other relevant certificates that apply in each case.

ATEX - Zone 0

Marking: II 1 G Ex ia IIC T6 Ga

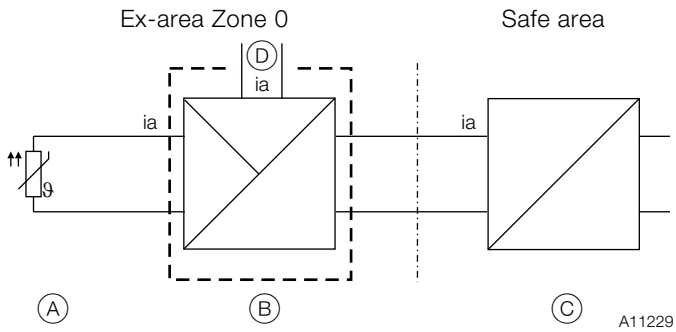


Fig. 2
Ⓐ **Sensor** Ⓑ **Transmitter in the housing with IP rating IP 20**
Ⓒ **Supply isolator [Ex ia]** Ⓓ **Interface for LCD display**

When using the transmitter in Zone 0, it must be installed in a suitable housing with IP -rating IP 20. The input for the supply isolator must have an [Ex ia] design.

When using the transmitter in Zone 0, you must ensure that impermissible electrostatic charging of the temperature transmitter is prevented (observe the warnings on the device). As the user, it is your responsibility to ensure that the sensor instrumentation meets the requirements of applicable explosion protection standards.

ATEX - Zone 1 (0)

Marking: II 2 (1) G Ex [ia] ib IIC T6 Gb (Ga)

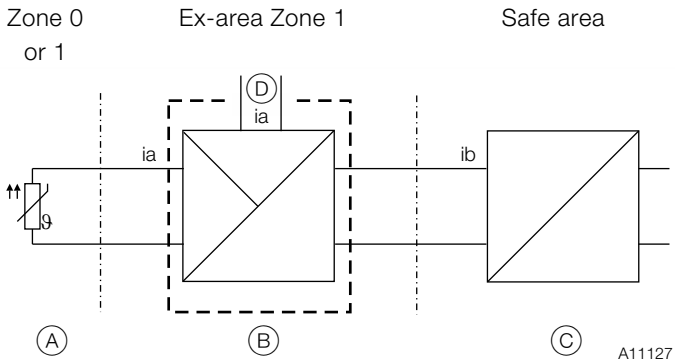


Fig. 3
Ⓐ **Sensor** Ⓑ **Transmitter in the housing with IP rating IP 20**
Ⓒ **Supply isolator [Ex ib]** Ⓓ **Interface for LCD display**

When using the transmitter in Zone 1, it must be installed in a suitable housing with IP rating IP20. The input for the supply isolator must have an [Ex ib] design.

When using the transmitter in Zone 1, you must ensure that impermissible electrostatic charging of the temperature transmitter is prevented (observe the warnings on the device). As the user, it is your responsibility to ensure that the sensor instrumentation meets the requirements of applicable explosion protection standards. The sensor can be installed in Zone 1 or Zone 0.

ATEX - Zone 1 (20)

Marking: II 2 G (1D) Ex [iaD] ib IIC T6 Gb (Da)

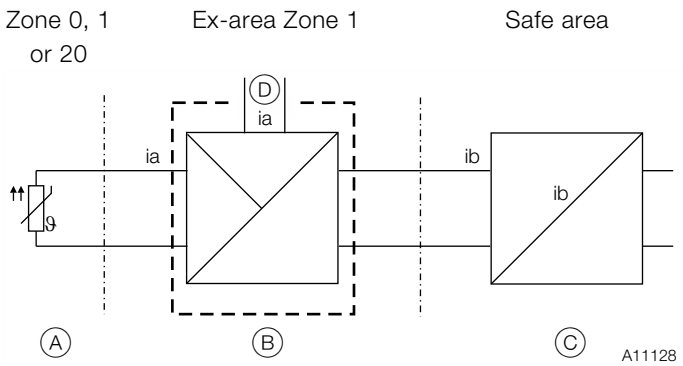


Fig. 4
(A) **Sensor** (B) **Transmitter in the housing with IP rating IP 20**
(C) **Supply isolator [Ex ib]** (D) **Interface for LCD display**

When using the transmitter in Zone 1, it must be installed in a suitable housing with IP rating IP20. The input for the supply isolator must have an [Ex ib] design.
When using the transmitter in Zone 1, you must ensure that impermissible electrostatic charging of the temperature transmitter is prevented (observe the warnings on the device).
As the user, it is your responsibility to ensure that the sensor instrumentation meets the requirements of applicable explosion protection standards. The sensor can be installed in Zone 0, Zone 1, or Zone 20.

ATEX - Zone 2

Marking: II 3 G Ex nA IIC T1-T6 Gc

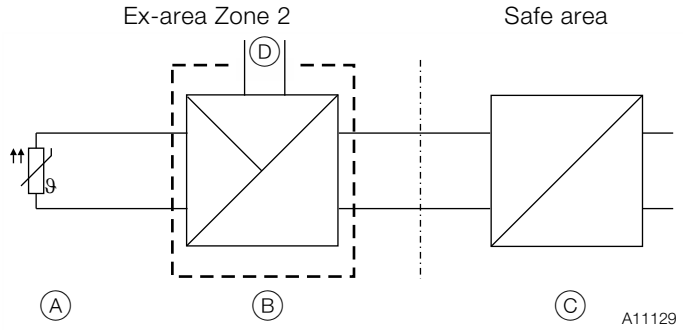


Fig. 5
(A) **Sensor** (B) **Transmitter in the housing with IP rating IP 54**
(C) **Supply isolator** (D) **Interface for LCD display**

When using the transmitter in Zone 2, observe the following:
- The temperature transmitter must be installed in its own housing. This housing must at least meet IP rating IP54 (in accordance with EN 60529) and the other requirements of the potentially explosive atmosphere (e. g. a certified housing).
- External measures must be made for the power supply circuit in order to prevent the rated voltage from being overshot by more than 40% in the event of transient disturbances.
- The electrical connections may only be opened or closed when there is no hazardous atmosphere.
- When using the transmitter in Zone 2, you must ensure that impermissible electrostatic charging of the temperature transmitter is prevented (observe the warnings on the device).

2.5 Commissioning

The commissioning and parameterization of the device may also be carried out in potentially explosive atmospheres using a handheld terminal that has been approved accordingly under consideration of an intrinsic safety installation check.
Alternatively, an Ex modem can be connected to the circuit outside the potentially explosive atmosphere.

2.6 Operating instructions

2.6.1 Protection against electrostatic discharges

The plastic parts inside the device can store electrostatic charges.
Make sure that no electrostatic charges can accumulate when handling the device.

3 Use in potentially explosive atmospheres in accordance with FM and CSA

NOTICE

- Further information on the approval of devices for use in potentially explosive atmospheres can be found in the explosion protection test certificates (at www.abb.com/temperature).
- Depending on the design, a specific marking in accordance with FM or CSA applies.

3.1 Ex-marking

3.1.1 Transmitter

FM Intrinsically Safe

Model TTH200-L1	
Control Drawing	TTH200-L1H (I.S.)
Class I, Div. 1 + 2, Groups A, B, C, D Class I, Zone 0, AEx ia IIC T6	

FM Non-Incendive

Model TTH200-L2	
Control Drawing	TTH200-L2H (N.I.)
Class I, Div. 2, Groups A, B, C, D	

CSA Intrinsically Safe

Model TTH200-R1	
Control Drawing	TTH200-R1H (I.S.)
Class I, Div. 1 + 2, Groups A, B, C, D Class I, Zone 0, Ex ia Group IIC T6	

CSA Non-Incendive

Model TTH200-R2	
Control Drawing	TTH200-R2H (1) (N.I.) TTH200-R2H (2, no conduit) (N.I.)
Class I, Div. 2, Groups A, B, C, D	

3.1.2 LCD indicators

FM Intrinsically Safe

Control Drawing	SAP_214 748
I.S. Class I Div 1 and Div 2, Group: A, B, C, D or I.S. Class I Zone 0 AEx ia IIC T[1)]	
U_i / V_{max} = 9 V, I_i / I_{max} < 65.2 mA, P_i = 101 mW, C_i = 0.4 µF, L_i = 0	

FM Non-Incendive

Control Drawing	SAP_214 751
N.I. Class I Div 2, Group: A, B, C, D or Ex nL IIC T[2)], Class I Zone 2	
U_i / V_{max} = 9 V, I_i / I_{max} < 65.2 mA, P_i = 101 mW, C_i = 0.4 µF, L_i = 0	

CSA Intrinsically Safe

Control Drawing	SAP_214 749
I.S. Class I Div 1 and Div 2; Group: A, B, C, D or I.S Zone 0 Ex ia IIC T[1)]	
U_i / V_{max} = 9 V, I_i / I_{max} < 65.2 mA, P_i = 101 mW, C_i < 0.4 µF, L_i = 0	

CSA Non-Incendive

Control Drawing	SAP_214 750
N.I. Class I Div 2, Group: A, B, C, D oder Ex nL IIC T[2)], Class I Zone 2	
U_i / V_{max} = 9 V, I_i / I_{max} < 65.2 mA, P_i = 101 mW, C_i < 0.4 µF, L_i = 0	

1) Temp. Ident: T6 T_{amb} 56 °C, T4 T_{amb} 85 °C
2) Temp. Ident: T6 T_{amb} 60 °C, T4 T_{amb} 85 °C

3.2 Installation instructions

3.2.1 FM / CSA

The installation, commissioning, maintenance and repair of devices in areas with explosion hazard must only be carried out by appropriately trained personnel.
The operator must strictly observe the applicable national regulations with regard to installation, function tests, repairs, and maintenance of electrical devices. (e.g. NEC, CEC).

3.2.2 IP protection rating of housing

The temperature transmitter and LCD indicator types A and AS must be installed such that the IP rating of at least IP20 is achieved in accordance with IEC 60529.

3.2.3 Electrical connections

Grounding

If, for functional reasons, the intrinsically safe circuit needs to be grounded by means of a connection to the potential equalization, it may only be grounded at one point.

Intrinsic safety proof

If transmitters are operated in an intrinsically safe circuit, proof that the interconnection is intrinsically safe must be provided in accordance with IEC/EN 60079-14 as well as IEC/EN 60079-25.
The supply isolators / DCS inputs must feature intrinsically safe input protection circuits in order to eliminate hazards (spark formation).
In order to provide proof of intrinsic safety, the electrical limit value must be used as the basis for the EC-type examination certificates for the equipment (devices); this includes the capacitance and inductance values of the cables.
Proof of intrinsic safety is said to have been provided if the following conditions are fulfilled when a comparison is carried out in relation to the limit values of the equipment:

Transmitters (intrinsically safe equipment)		Supply isolator / DCS input (related equipment)
U_i	≥	U_o
I_i	≥	I_o
P_i	≥	P_o
$L_i + L_c$ (cable)	≤	L_o
$C_i + C_c$ (cable)	≤	C_o

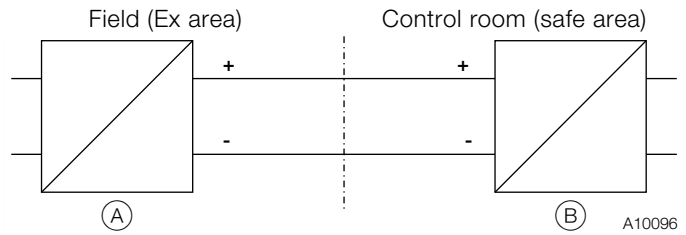


Fig. 6
Ⓐ **Transmitter** Ⓑ **Supply isolator / DCS input with supply / Segment coupler**

Installation in a potentially explosive atmosphere

Transmitters can be installed in all kinds of industrial sectors. Potentially explosive systems are divided into zones, meaning that a wide range of different instruments are also required. For this, pay attention to the country-specific guidelines and certificates!

NOTICE

Ex relevant specifications must be taken from the EC-type examination certificates and other relevant certificates that apply in each case.

3.3 Commissioning

The commissioning and parameterization of the device may also be carried out in potentially explosive atmospheres using a handheld terminal that has been approved accordingly under consideration of an intrinsic safety installation check. Alternatively, an Ex modem can be connected to the circuit outside the potentially explosive atmosphere.

3.4 Operating instructions

3.4.1 Protection against electrostatic discharges

The plastic parts inside the device can store electrostatic charges.
Make sure that no electrostatic charges can accumulate when handling the device.

4 Function and system design

4.1 General remarks

Digital transmitters are communication-ready devices with microprocessor-controlled electronics. They conform to the requirements of IP rating IP 20 and are suited for integration into DIN A and DIN B sensor heads.
With HART transmitters, an FSK signal is superimposed on the 4 … 20 mA output signal in accordance with the HART standard to facilitate bidirectional communication.
The transmitters can be configured, polled, and tested using a DTM or an EDD. Handheld terminals can also be used for communication purposes.
As an option, the transmitter can be fitted with a type AS LCD display. The LCD display is used exclusively for visualizing current process values. The electrical connection between the LCD display and transmitter is provided by a 6-pin flat ribbon cable with a plug connector. The LCD display can only be operated when connected to transmitters that have an LCD display interface.

NOTICE

The HMI type A LCD display with configuration function, used as an option with the TTH300, is not compatible with the TTH200.

5 Product identification

5.1 Name plate

NOTICE

Products that are marked with this symbol may not be disposed of through municipal garbage collection points.

NOTICE

The ambient temperature range on the name plate refers only to the transmitter itself and not to the measuring element used in the measuring inset.

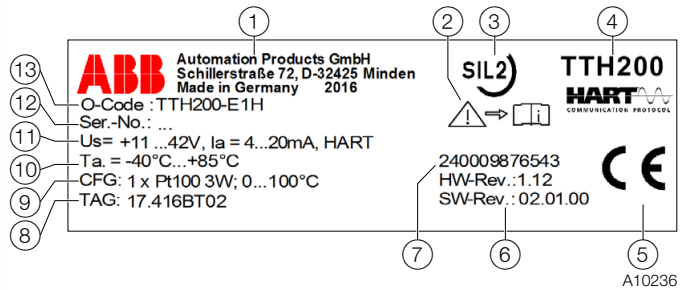


Fig. 7: Name plate (example)
(1) Manufacturer, manufacturer address, country of manufacture, production year (2) Observe product documentation (3) Safety integrity level (optional) (4) Model number (5) CE-symbols (EU conformity), if nothing is mentioned on the additional label (6) Hardware and Software Version (7) Order number (8) TAG -Number (optional) (9) Customer configuration (10) Ambient temperature range (11) Supply voltage range, typical current range, Log (12) Serial number (13) Ordering number

Devices with an explosion-proof design are marked with the following special data plate.

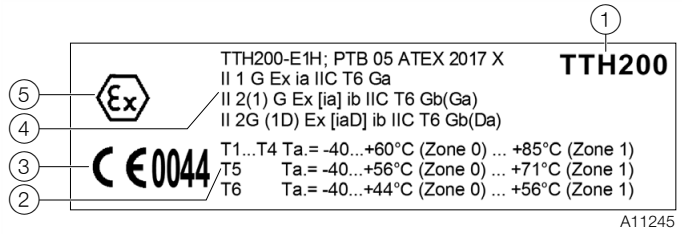


Fig. 8: Special data plate for explosion-protected devices (example)
(1) Model number (2) Temperature class explosion-proof design (3) CE-symbols (EU conformity) and specific designations of the quality assurance (4) Safety class explosion-proof design (5) Ex-marking

6 Transport and storage

6.1 Inspection

Check the devices immediately after unpacking for possible damage that may have occurred from improper transport. Details of any damage that has occurred in transit must be recorded on the transport documents.
All claims for damages must be submitted to the shipper without delay and before installation.

6.2 Transporting the device

Observe the following instructions:

- Do not expose the device to humidity during transport. Pack the device accordingly.
- Pack the device so that it is protected against vibrations during transport, e.g., by using air-cushioned packaging.

6.3 Storing the device

Bear the following points in mind when storing devices:

- Store the device in its original packaging in a dry and dust-free location.
- Observe the permitted ambient conditions for transport and storage.
- Avoid storing the device in direct sunlight.
- In principle, the devices may be stored for an unlimited period. However, the warranty conditions stipulated in the order confirmation of the supplier apply.

6.3.1 Ambient conditions

The ambient conditions for the transport and storage of the device correspond to the ambient conditions for operation of the device.
Adhere to the device data sheet!

6.4 Returning devices

For the return of devices, follow the instructions in the chapter "Repair" on page 24.

7 Installation

7.1 Installation options

There are three options for installing the transmitter:

— Installation in the cover of the connection head (without springs)
— Direct installation on the measuring inset (with springs)
— Installation on a top-hat rail

7.1.1 Installation in the cover of the connection head

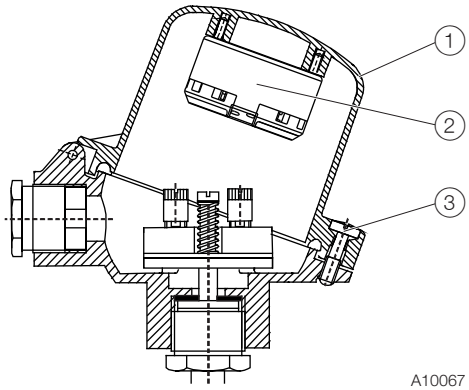


Fig. 9

1. Release the screw plug (3) for the cover of the connection head
2. Open the (1) cover.
3. Secure (2) the transmitter 2 at the proper position on the cover, using the captive screws found in the transmitter.

7.1.2 Installation on the measuring inset

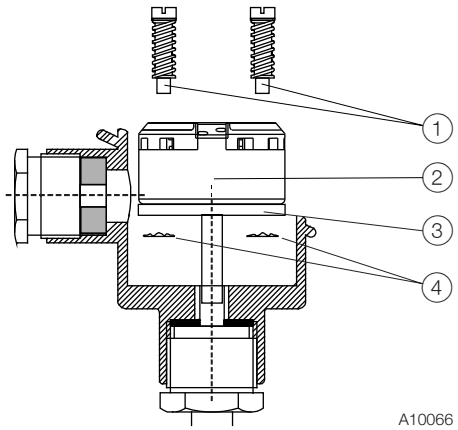


Fig. 10

NOTICE

Before mounting the transmitter on the measuring inset, remove the ceramic block on the measuring inset and the captive screws in the transmitter.
To install the transmitter on the measuring inset, cambered toothed discs and the corresponding mounting screws are required; these must be ordered as separate accessories:
Measuring inset installation set (2 fixing screws, 2 springs, 2 toothed discs) order number: 263750

1. Remove the ceramic block from the measuring inset (3).
2. Remove the screws from the (2) transmitter. Remove the sleeves from the screw holes and then remove the screws.
3. Insert new fixing screws (1) from above in the fixing holes of the transmitter.
4. Place the cambered toothed (4) discs with curve facing upward on the downward protruding screw thread.
5. Connect the power supply cable to the transmitter according to connection diagram.
6. Place the transmitter in the housing on the measuring inset and secure it.

NOTICE

The toothed discs between measuring inset and transmitter are straightened when the screws are tightened. This enables them to grip the mounting screws.

7.1.3 Installation on the top-hat rail

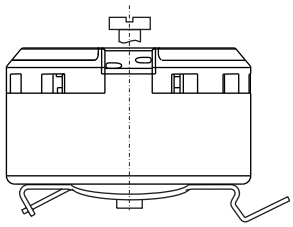


Fig. 11

When mounted on a top-hat rail, the transmitter can be placed at a distance from the sensor in a housing that is suitable for the ambient conditions.

7.2 Installing / removing the optional LCD indicator

Thanks to the LCD indicator interface, the TTH300 can be operated using the LCD indicator.

The indicator must be removed to enable connection of the sensor line or supply line:

— Carefully remove the LCD indicator from the transmitter inset. The LCD indicator is held firmly in place, meaning that you may have to use the tip of a screwdriver to pry it loose. Take care to avoid any mechanical damage.

No tools are required to insert the LCD indicator:

1. Carefully insert the guide pins for the LCD indicator in the guide holes of the transmitter inset. Make sure the black connection socket fits into the terminal on the transmitter inset.
2. Then press the LCD indicator in as far as it will go. Make sure that the guide pins and connection socket are fully inserted.

The position of the LCD indicator can be adjusted to suit the mounting position of the transmitter, to ensure that the display is as clearly legible as possible.

⚠ CAUTION

Make sure the flat ribbon cable does not get twisted or torn when rotating the LCD indicator.

There are twelve positions at increments of 30°.

1. Carefully turn the LCD indicator to the left to release it from its holder.
2. Carefully turn the LCD indicator until the required position is reached.
3. Insert the LCD indicator into its holder again and turn it to the right into the required position until it snaps into place.

7.3 Electrical connections

⚠ DANGER

Improper installation and commissioning of the device carries a risk of explosion.

For use in potentially explosive atmospheres, observe the information in chapter "Use in potentially explosive atmospheres according to ATEX and IECEx" on page 5 and "Use in potentially explosive atmospheres in accordance with FM and CSA" on page 9!

Observe the following information:

— The electrical connection may only be made by authorized specialist personnel and in accordance with the electrical circuit diagrams.
— The relevant regulations must be observed during electrical installation.
— The electrical connection information in the manual must be observed; otherwise, the type of electrical protection may be adversely affected.
— Safe isolation of electrical circuits which are dangerous if touched is only guaranteed if the connected devices satisfy the requirements of DIN EN 61140 (VDE 0140 Part 1) (basic requirements for safe isolation).
— To ensure safe isolation, install supply lines so that they are separate from electrical circuits which are dangerous if touched, or implement additional isolation measures for them.
— Connections must only be established in a dead-voltage state.
— The transmitter has no switch-off elements. Therefore, overcurrent protective devices, lightning protection, or voltage disconnection options must be provided at the plant.
— The power supply and signal are routed in the same line and must be implemented as a SELV or PELV circuit in accordance with the relevant standard (standard version). For the Ex version, the guidelines stipulated by the Ex standard must to be adhered to.
— You must check that the available supply power corresponds to the information on the name plate.

i NOTICE

The signal cable wires must be provided with wire end sleeves.
The slotted screws of the connection terminals are tightened with a size 1 screwdriver (3.5 or 4 mm).

7.3.1 Conductor material

i NOTICE

Damage to components!

The use of rigid conductor material may cause wire breaks.

Supply voltage

— Supply voltage cable: flexible standard cable material
— Maximum wire cross-section: 1.5 mm^2 (AWG 16)

Sensor connection

Depending on the sensor model, a variety of line materials can be used for sensor connections.
The integrated internal reference junction makes it possible to directly connect thermal compensating cables.

7.3.2 Pin configuration

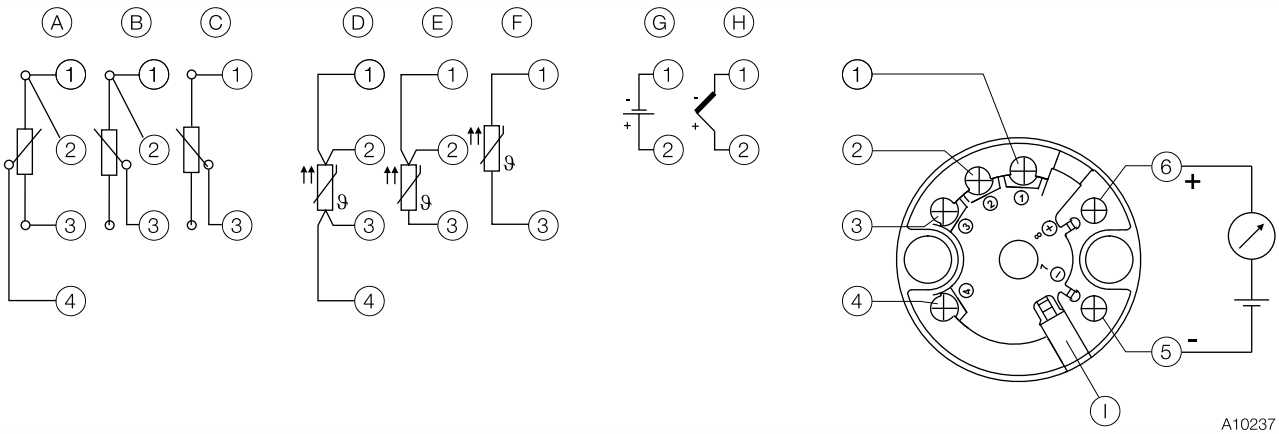


Fig. 12

(A) Potentiometer, four-wire circuit (B) Potentiometer, three-wire circuit (C) Potentiometer, two-wire circuit (D) RTD, four-wire circuit (E) RTD, three-wire circuit (F) RTD, two-wire circuit (G) Voltage measurement (H) Thermocouple (I) Interface for LCD display type AS (1) – (4) Sensor connection (from measuring inset) (5) – (6) 4 … 20 mA HART

7.3.3 Electrical data for inputs and outputs

Input - resistance thermometer / resistances

Resistance thermometer
- Pt100 according to IEC 60751, JIS C1604, MIL-T-24388
- Ni according to DIN 43760
- Cu according to recommendation OIML R 84

Resistance measurement
- 0 … 500 Ω
- 0 … 5000 Ω

Sensor connection type
- Two-, Three-, Four wire-circuits

Connection lead
- Maximum sensor line resistance:
  of 50 Ω per line in accordance with NE 89
- Three-wire circuit:
  Symmetrical sensor line resistances
- Two-wire circuit:
  Compensation up to 100 Ω total lead resistance

Measurement current < 300 µA

Sensor short circuit < 5 Ω (for resistance thermometers)

Sensor wire break
- Measuring range: 0 ... 500 Ω > 0.6 ... 10 kΩ
- Measuring range: 0 ... 5 kΩ > 5.3 ... 10 kΩ

Corrosion detection in accordance with NE 89
- Three-wire resistance measurement > 50 Ω
- Four-wire resistance measurement > 50 Ω

Sensor error signaling
- Resistance thermometer: Sensor short circuit and sensor wire breakage
- Linear resistance measurement: Sensor wire break

Input - thermocouples / voltages

Types
- B, E, J, K, N, R, S, T in accordance with IEC 60584
- U, L in accordance with DIN 43710
- C, D in accordance with ASTM E-988

Voltages
- -125 ... 125 mV
- -125 ... 1100 mV

Supply line
- Maximum sensor line resistance
  1.5 kΩ per wire, 3 kΩ in total

Sensor wire break monitoring in accordance with NE 89
- Pulsed with 1 µA outside measurement interval
- Thermocouple measurement 5.3 ... 10 kΩ
- Voltage measurement 5.3 ... 10 kΩ

Input resistance > 10 MΩ

Internal reference junction Pt1000, IEC 60751 Cl. B
(no additional jumpers necessary)

Sensor error signaling
- Thermocouple: wire break
- Linear voltage measurement: wire break

Output

Transmission behavior
- Temperature linear
- Resistance linear
- Voltage linear

Output signal
- Configurable 4 ... 20 mA (standard)
- Configurable 20 ... 4 mA
  (Dynamic range: 3.8 ... 20.5 mA in accordance with NE 43)

Simulation mode 3.5 ... 23.6 mA

Induced current consumption < 3.5 mA

Maximum output current 23.6 mA

Configurable error current signal
- Overrange 22 mA (20.0 … 23.6 mA)
- Underrange 3.6 mA (3.5 … 4.0 mA)

7.4 Power supply

Two-wire technology, polarity safe; power supply lines = signal lines

NOTICE

Following calculations apply for standard applications. This should be taken into consideration when working with a higher maximum current.

Input terminal voltage

- Non-Ex application:
  U_S = 11 ... 42 V DC
- Ex applications:
  U_S = 11 ... 30 V DC

Max. permissible residual ripple for input terminal voltage

- During communication in accordance with HART FSK "Physical Layer" specification.

Undervoltage detection on the transmitter

- If the terminal voltage on the transmitter falls below a value of 10 V, this may lead to an output current of $I_a \leq$ 3.6 mA.

Maximum load

- R_B = (supply voltage – 11 V) / 0.022 A

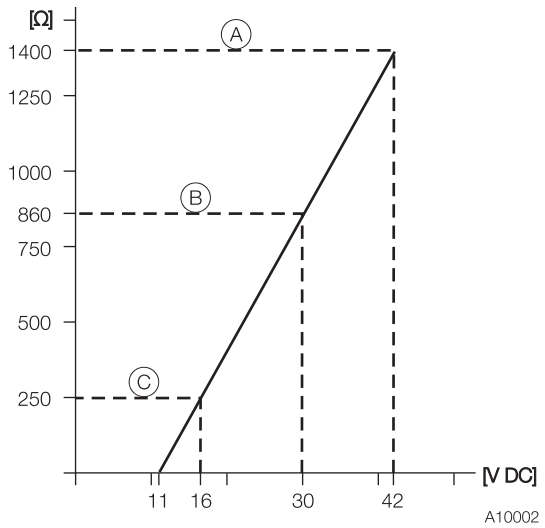


Fig. 13: Maximum load depending on input terminal voltage
(A) TTH200 (B) TTH200 in Ex ia design (C) HART communication resistance

Maximum power consumption

- P = U_s x 0.022 A
- e. g. U_s = 24 V → P_{max} = 0.528 W

Voltage drop on the signal line

When connecting the devices, note the voltage drop on the signal line. The minimum supply voltage on the transmitter must not be undershot.

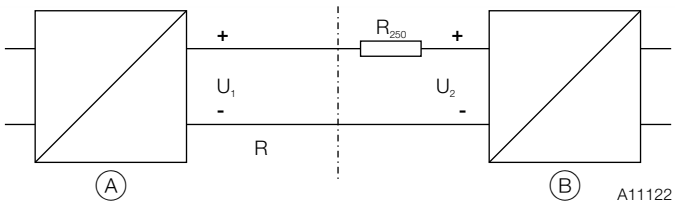


Fig. 14
(A) Transmitter (B) Supply isolator / PCS input with supply / Segment coupler

U_{1min}: Minimum supply voltage on the transmitter
U_{2min}: Minimum supply voltage of the supply isolator / DCS input
R: Line resistance between transmitter and supply isolator
R_{250}: Resistance (250 Ω) for HART functionality

Standard application with 4 ... 20 mA functionality

When connecting these components, observe the following condition:
$U_{1min} \leq U_{2min}$ - 22 mA x R

Standard application with HART functionality

Adding resistance R_{250} increases the minimum supply voltage:
U_{2min}:
$U_{1min} \leq U_{2min}$ - 22 mA x (R + R_{250})

For HART functionality, use supply isolators or DCS input cards with a HART marking. If this is not possible, a resistance of ≥ 250 Ω (< 1100 Ω) must be added to the interconnection. The signal line can be operated with or without grounding. When establishing a ground connection (minus side), make sure that only one side of the terminal is connected to the potential equalization.

8 Commissioning

8.1 General remarks

In case of corresponding order the transmitter is ready for operation after mounting and installation of the connections. The parameters are set at the factory.
The connected lines must be checked for firm seating. Only firmly seated lines ensure full functionality.

8.2 Checks prior to commissioning

The following points must be checked before commissioning the device:

- The wiring must have been completed as described in chapter "Electrical connections" on page 9.
- The ambient conditions must meet the requirements set out on the name plate and in the Datasheet.

8.3 Communication

Communication with the transmitter takes place using the HART protocol. The communication signal is modulated onto both wires of the signal line in accordance with the HART FSK "Physical Layer" specification.
The HART modem is connected at the signal line of the current output via which power is also supplied via the power supply unit.

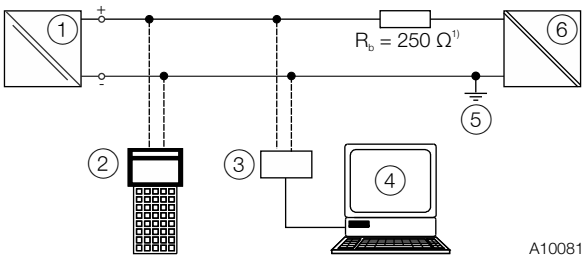


Fig. 15: HART connection (example), R_B Load
(1) Transmitter (2) Handheld Terminal (3) HART-Modem (4) PC with FDT / DTM, EDD (5) Grounding (optional) (6) Power supply unit (Process Interface)

1) if required

HART Communication	
Terminals	+ / -
Manufacturer ID	0x1A
Device ID	0x0A
Profile	HART 5.1
Configuration	DTM, EDD
Transmission signal	BELL Standard 202

Operating modes

- Point-to-point communication mode – standard (general address 0)
- Multidrop mode (addressing 1 ... 15)
- Burst mode

Diagnostic message

- Overrange / underrange in accordance with NE 43
- HART diagnosis

8.4 Parameterization of the device

NOTICE

The device does not have operating elements for parameterization on site.
Parameterization takes place via the HART interface.

Parameterization of the device takes place via standard HART tools. These include:

- ABB handheld HART communicator DHH805 (TTX200 EDD)
- ABB Asset Vision Basic (TTX200 DTM)
- ABB 800xA control system (TTX200 DTM)
- ABB Field Information Manager (FIM)
- Other tools supporting standard HART EDDs or DTMs (FDT1.2)

NOTICE

Not all tools and frame applications support DTMs or EDDs at the same level. In particular, optional or advanced EDD / DTM functions may not be available on all tools.
ABB provides frame applications supporting the full range of functions and performance.

8.4.1 Parameter descriptions

DTM menu path, parameters	Description
<Device> / <Extras>	
<Write Protection>	Activates write protection for the entire device — Yes: locked — No: unlocked — Enter password: 0110
<Device reset>	Configuration data is reset to factory settings (see "Factory settings" on page 19)
<Factory reset>	Configuration data is reset to factory settings (see "Factory settings" on page 19). The adjustment data Trim high / low and DAC adjustment values are also reset to factory settings. — Yes / OK
<Device> / <Configuration>	
<Sensor / Sensor type>	Selects sensor type: — Pt100 (IEC751) — Pt1000 (IEC751) — Thermocouple type K (IEC584) — Thermocouple type B (IEC584) — Thermocouple type C (ASTME988) — Thermocouple type D (ASTME988) — Thermocouple type E (IEC584) — Thermocouple type J (IEC584) — Thermocouple type N (IEC584) — Thermocouple type R (IEC584) — Thermocouple type S (IEC584) — Thermocouple type T (IEC584) — Thermocouple type L (DIN43710) — Thermocouple type U (DIN43710) — Thermovoltage –125 … 125mV — Thermovoltage –125 … 1100mV — Resistance 0 …. 500 Ω — Resistance 0 …. 5000 Ω — Pt10 (IEC751) — Pt50 (IEC751) — Pt200 (IEC751) — Pt500 (IEC751) — Pt10 (JIS1604) — Pt50 (JIS1604) — Pt100 (JIS1604) — Pt200 (JIS1604) — Pt10 (IMIL24388) — Pt50 (IMIL24388) — Pt100 (MIL24388) — Pt200 (MIL24388) — Pt1000 (MIL24388) — Ni50 (DIN43760) — Ni100 (DIN43760) — Ni120 (DIN43760) — Ni1000 (DIN43760) — Cu10 (OIML R 84), a=4270 — Cu100 (OIML R 84), a=4270
<Sensor / Connection>	Sensor connection type relevant for all Pt, Ni, Cu resistance thermometers — Two-wire: sensor connection type in two-wire technology — Three-wire: sensor connection type in three-wire technology — Four-wire: sensor connection type in four-wire technology
<Sensor / Line resistance>	Sensor line resistance relevant for all Pt, Ni, Cu resistance thermometers with a two-wire circuit Value range: 0 … 100 Ω

DTM menu path, parameters	Description
<Device> / <Configuration>	
<Sensor / Reference junction>	— Internal: use of the internal reference junction of the transmitter when using a thermocouple/compensating cable (relevant for all thermocouples except for type B) — External - fixed: transfer of thermal cable/compensating cable via copper material at constant thermostat temperature — Without: no cold junction
<Sensor / Reference junction temperature>	— Relevant for external reference junction, specification of constant external reference junction temperature Value range: -50 … 100 °C
<Device > / <Parameterize>	
<Measuring range of PV / unit>	Selects the physical unit for the sensor measuring signal Units: °C, °F, °R, K, mV, Ω, mA
<Measuring range of PV / lower range value>	Defines the value for 4 mA (adjustable)
<Measuring range of PV / upper range value>	Defines the value for 20 mA (adjustable)
<Current output / damping>	Configurable τ 63% output signal damping value Value range: 0 ... 100 s
<Current output / output upon error > (overrange)	Generates a high alarm signal in the event of a sensor or device error; can be configured 20 ... 23.6 mA. — Standard 22 mA
<Current output / output upon error > (underrange)	Generates a low alarm signal when sensor or device errors occur; can be configured from 3.5 … 4 mA
<Device> / <Maintenance>	
<Poll address / TAG> (HART TAG)	Defines the HART TAG name. — 8 characters, alphanumeric
<Poll address / TAG> (Address (Multidrop))	Specifies the communication type — Address = 0 conforms to HART operating mode: point-to-point communication, 4 ... 20 mA output signal — Address = 1 ... 15 conforms to HART multidrop operating mode output signal 3.6 mA, only the digital HART readings are available
<Adjustment> (Set lower range value)	Temperature correction for specified / simulated sensor LRV value to desired LRV temperature value — Set Trim low or lower range value > OK
<Adjustment> (Set upper range value)	Temperature correction for specified / simulated sensor URV value to desired URV temperature value — Set Trim high or upper range value > OK
<Adjustment /DAC adjustment fixed for zero at 4 mA>	Output signal correction for specified / simulated sensor LRV value to 4.000 mA set point — Analog current measurement value input min. 3.5 ... max. 4.5 mA
<Adjustment /DAC adjustment fixed for amplification at 20 mA>	Output signal correction for specified / simulated sensor URV value to 20.000 mA set point — Analog current measurement value input min. 19.5 ... max. 20.5 mA
<Device> <Simulation>	Output signal simulation corresponding to the value specified — Value range: 3.5 ... 23.6 mA

8.4.2 Factory settings

The transmitter is configured at the factory. The table below contains the relevant parameter values.

Menu	Designation	Parameter	Factory setting
Device Setup	Write protection	-	No
	Input	Sensor Type	Pt100 (IEC60751)
		R-Connection	Three-wire circuit
		Measured Range Begin	0
		Measured Range End	100
		Engineering Unit	Degrees C
		Damping	Off
Process Alarm		Fault signaling	Overrange 22 mA

8.5 Basic Setup

8.5.1 Sensor error adjustment (DTM Adjustment function)

Sensor error adjustment can be performed in the DTM by navigating to the menu path "Device / Maintenance / Adjustment / Trim low or Trim high".
For sensor error adjustment, the sensor connected to the transmitter must be brought to the lower range limit value temperature / Trim low using a water quench or oven. It is important to make sure the temperature is balanced and stable.

In the DTM, check that the proper adjustment temperature has been entered for the sensor before adjusting it. Based on the comparison of the adjustment temperature entered (setpoints) with the digital temperature measured by the transmitter, which is available after linearization in the form of HART temperature information, the transmitter calculates the temperature deviation resulting from the sensor error.

During single-point adjustment, the temperature deviation calculated results in an offset shift of the linear characteristic output by the linearization module; the values of this characteristic correspond to the HART signal or are sent to the current output.

Sensor error two-point adjustment results in a change to the offset and gradient due to the linear temperature value characteristic output by the linearization module.

A pure sensor offset error can be corrected via the function "Set lower range value" or the adjustment function "Trim low". By contrast, if the error is not a pure sensor offset error, it can only be corrected using two-point adjustment or two-point calibration.

8.5.2 D/A analog output adjustment (4 and 20 mA trim)

D/A analog output adjustment is used to compensate for errors in the current input of the higher-level system. D/A analog output adjustment for the transmitter can be used to modify the loop current so that the desired value is displayed in the higher-level system.
Error compensation for the higher-level system is possible at the lower range value with 4 mA and / or 20 mA (single-point error correction: offset or two-point error correction: offset + linear gradient).

The D/A analog output adjustment can be accessed in the DTM via the menu path "Device / Maintenance / Adjustment". Prior to analog adjustment, it is necessary to determine the loop current values based on iterative entry of current values in simulation mode; the higher-level I/O system displays exactly 4.000 mA or the lower range limit temperature, and 20.000 mA or the upper range limit temperature. The current loop values must be measured using an ammeter and recorded.

The lower range limit value or 4.000 mA +/- 16 µA must then be simulated in D/A analog output adjustment mode using sensor simulation. Following this, the iteratively calculated current value at which the higher-level system displays exactly 4.000 mA or the lower range limit value must be entered as an adjustment value. Proceed in a similar manner for the upper range value or 20.000 mA.

After this correction, the AD converter error of the higher-level system is corrected by the DA converter of the transmitter. For the higher-level system, the value of the analog 4 … 20 mA output signal and the digital HART signal now match.

The adjustment should be repeated when connecting the transmitter to another input of a higher-level system.

8.5.3 HART variables

The transmitter provides three HART variables. The HART variables are assigned the following values:

— Primary HART variable: process value
(The primary HART variable is assigned permanently to the analog output and, accordingly, to the 4 … 20 mA signal.)
— Secondary HART variable: electronic unit temperature
— Tertiary HART variable: electrical input

8.5.4 Communication / HART TAG / device addressing

For ease of identification, each HART device features a configurable 8-digit HART TAG. All devices are supplied with the HART TAG "TI XXX" as standard. (When storing HART tags with more than 8 digits in the device, use the "Report" parameter, which supports up to 32 characters.)

In addition to the HART TAG, each device has a HART address. This address is set to 0 by default, which means that the device operates in HART standard communication mode (point-to-point operation).

When an address in the range 1 to 15 is used, the device switches to the "HART Multidrop mode".
This operating mode enables users to connect up to 15 devices to a power supply unit in parallel.
In multidrop mode, an analog output signal that matches the process temperature is not available.
The output signal in multidrop mode is a constant 3.6 mA and is used exclusively for the power supply. In multidrop mode, sensor or process data information is available only as a HART signal.

9 Operation

9.1 Safety instructions

If there is a chance that safe operation is no longer possible, take the device out of operation and secure it against unintended startup.

9.2 Process display

NOTICE

The device does not have operating elements for parameterization on site.
Parameterization takes place via the HART interface.

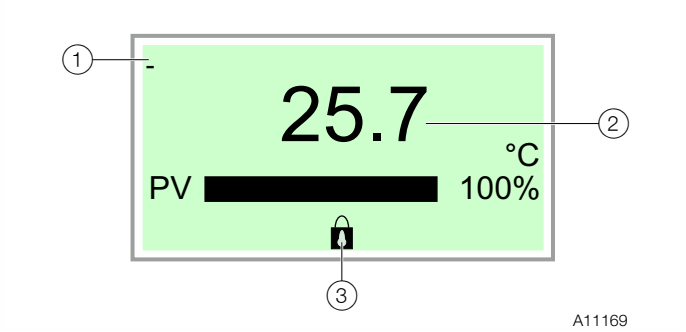
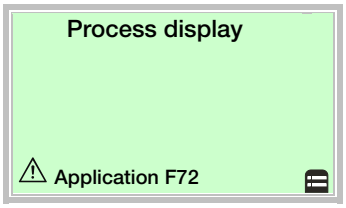


Fig. 16: Process display (example)
(1) Measuring point tagging (Device TAG) (2) Current process values
(3) "Parameterization protected" symbol

The process display appears on the LCD display when the device is powered on. It shows information about the device and current process values.

9.2.1 Error messages on the LCD display



The diagnostic messages are divided into the following groups in accordance with the NAMUR classification scheme:

Symbol - Letter	Description	
I	OK or Information	Device is functioning or information is available
C	Check Function	Device is undergoing maintenance (e. g. simulation)
S	Off Specification	Device or measuring point is being operated outside of the specifications
M	Maintenance Required	Request service to prevent the measuring point from failing
F	Failure	Error; measuring point has failed

Additionally, the diagnostic messages are divided into the following areas:

Range	Description
Electronics	Diagnosis for device hardware.
Sensor	Diagnosis for sensor elements and connection lines.
Installation / Configuration	Diagnosis for communication interface and parameterization / configuration.
Operating conditions	Diagnosis for ambient and process conditions.

NOTICE

For a detailed description of the errors and information on troubleshooting, see chapter "Diagnosis / error messages" on page 22.

10 Diagnosis / error messages

The transmitter signals messages and errors in different ways.

Messages via the HART interface

The transmitter signals changed configuration or parameter setting by setting the HART flag "Configuration-changed" (Configuration-changed).
The message can be acknowledged via the HART-DTM.

Error message on the LCD display

In the event of an error, a message appears at the bottom of the process display,
consisting of a symbol or letters
(Device Status) and a number (DIAG.NO.).
See chapter "Error messages on the LCD display" on page 22.

Error message on the current output

Sensor or device errors can be indicated by underranging or overranging of the current output.
Configuration takes place via the DTM parameter "<Current output / output upon error>".

10.1 Possible HART error messages

Range	Displays the device status	Displays the DIAG. NO.	Cause	Remedy
Electronics	F	1	Device defective	Replace the device
Electronics	S	2	Ambient temperature overshot / undershot	Check environment; reposition measuring point if required
Electronics	F	3	EEPROM defective	Replace the device
Electronics	M	4	Electronics overload	Factory reset
Electronics	F	5	Memory error	Factory reset
Electronics	I	7	LCD display connected	Status info; not an error
Installation / Configuration	I	8	Device write-protected	Status info; not an error
Electronics	I	9	EEPROM busy	Status info; not an error
Electronics	F	12	Sensor input defective (communication)	Replace the device
Electronics	F	13	Sensor input defective (error)	Replace the device
Electronics	F	14	Sensor input defective (ADC error)	Replace the device
Installation / Configuration	C	32	Diagnostics simulation mode	Not an error, diagnostic info, measurement OK
Sensor	F	34	Measuring error, sensor	Check sensor connection
Sensor	F	35	Short-circuit, sensor	Check sensor connection
Sensor	F	36	Wire break, sensor	Check sensor connection
Sensor	F	37	Range overshot, sensor	Check measuring limits
Sensor	F	38	Range undershot, sensor	Check measuring limits
Installation / Configuration	I	41	Single-point adjustment active, sensor	Status info; not an error
Installation / Configuration	I	42	Two-point adjustment active, sensor	Status info; not an error
Installation / Configuration	F	65	Configuration defective	Check configuration: A) Wrong device B) Span is too small C) Incorrect configuration data
Installation / Configuration	C	71	Reconfiguration is running	Status info; not an error
Operating conditions	F	72	Error in the application	Check configuration, connections; reset to factory settings
Installation / Configuration	I	74	Analog output adjustment active	Status info; not an error
Installation / Configuration	C	75	Analog output in simulation	Status info; not an error
Operating conditions	S	76	Values overshot	Check parameters: A) Sensor limits overshot B) Span is too small

NOTICE

If the remedial measures listed for the error message do not improve the status of the device, please consult ABB Service.

11 Maintenance

⚠ WARNING

Risk of explosion!

Faulty transmitters may not be placed into operation by the user.

Repairs must be performed from ABB service.

For transmitters that are used as intended under normal operation, no maintenance is required.
No on-site repair or replacement of electronic parts is planned.

11.1 Cleaning

When cleaning the exterior of meters, make sure that the cleaning agent used does not corrode the housing surface and the gaskets.

12 Repair

12.1 Returning devices

Use the original packaging or a secure transport container of an appropriate type if you need to return the device for repair or recalibration purposes. Fill out the return form (see the Appendix) and include this with the device.
According to the EU Directive governing hazardous materials, the owner of hazardous waste is responsible for its disposal or must observe the following regulations for shipping purposes:
All devices delivered to ABB must be free from any hazardous materials (acids, alkalis, solvents, etc.).

Please contact Customer Center Service acc. to page 2 for nearest service location.

13 Recycling and disposal

13.1 Disposal

NOTICE

Products that are marked with this symbol may not be disposed of through municipal garbage collection points.

This product and its packaging are manufactured from materials that can be recycled by specialist recycling companies.

Bear the following points in mind when disposing of them:

- This product is not subject to WEEE Directive 2002/96/EC or relevant national laws (e.g. ElektroG in Germany).
- The product must be surrendered to a specialist recycling company. Do not use municipal garbage collection points. According to WEEE Directive 2002/96/EC, only products used in private applications may be disposed of at municipal garbage collection points.
- If it is not possible to dispose of old equipment properly, ABB Service can take receipt of and dispose of returns for a fee.

13.2 Information on ROHS Directive 2011/65/EC

The products provided by ABB Automation Products GmbH do not fall within the current scope of regulations on hazardous substances with restricted uses or the directive on waste electrical and electronic equipment according to ElektroG.
If the necessary components are available on the market at the right time, in the future these substances will no longer be used in new product development.

14 Spare parts, consumables and accessories

Repair and maintenance activities may only be performed by authorized customer service personnel.
When replacing or repairing individual components, use original spare parts.

15 Specifications

NOTICE

The detailed device data sheet is available in the download area at www.abb.com/temperature.

16 Declaration of conformity

NOTICE

Declarations of conformity of the device are available in the download center of ABB at www.abb.com/temperature. They are additionally enclosed with the device for ATEX certified devices.

Trademarks

® HART is a registered trademark of FieldComm Group, Austin, Texas, USA

17 Appendix

17.1 Return form

Statement on the contamination of devices and components

Repair and / or maintenance work will only be performed on devices and components if a statement form has been completed and submitted.
Otherwise, the device / component returned may be rejected. This statement form may only be completed and signed by authorized specialist personnel employed by the operator.

Customer details:

Company:	
Address:	
Contact person:	Telephone:
Fax:	E-Mail:

Device details:

Typ:	Serial no.:
Reason for the return/description of the defect:	

Was this device used in conjunction with substances which pose a threat or risk to health?

☐ Yes ☐ No

If yes, which type of contamination (please place an X next to the applicable items)?

Biological	☐	Corrosive / irritating	☐	Combustible (highly / extremely combustible)	☐
Toxic	☐	Explosiv	☐	Other toxic substances	☐
Radioactive	☐				

Which substances have come into contact with the device?

1.
2.
3.

We hereby state that the devices / components shipped have been cleaned and are free from any dangerous or poisonous substances.

Town/city, date	Signature and company stamp

Notes

Contact us

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