Specifications according to WIKA data sheet

**TE 42.01**

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### 1 Models

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<td>EEx ib</td>
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### 2 Safety Warnings

When mounting, initiating and operating these transmitters it is important to observe the safety precautions and regulations (e.g.: IEC 60 364-6-61). Nonobservance of the applicable regulations may cause severe injury to persons or damage to equipment. Only staff with suitable qualification should work with these transmitters.

We draw your attention to the following which must be observed for transmitters with Ex protection:

- Observe the applicable regulations for the use of Ex-class instruments (e.g.: EN 50 014, EN 50 020, EN 50 021).
- Observe the notes for mounting and operating in hazardous area described in section 7.
- It is forbidden to use a transmitter that is damaged externally.
- Repairs are forbidden.

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### 3 Mounting

#### 3.1 Mounting on the Measuring Insert

The transmitters are designed to be mounted on a measuring insert in a DIN connection head, form B, with extended mounting space. The connection wires of the measuring insert must be approx. 40 mm long and insulated.

 mount example:

#### 3.2 Mounting in Connection Head

Insert the measuring insert with the mounted transmitter in the protective sheath and affix in the connecting head using screws in pressure springs.

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**WARNING**

Do not exceed the maximum permissible screw length!

The transmitter will be damaged if the screws are screwed further than 4 mm into the bottom of the transmitter.

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**Note**

Before initial operation check the suitability for the intended application. In particular, it is important to fulfill the ambient and operation conditions as specified in the WIKA data sheet TE 42.01 respectively.
4.1 Connect Pt 100 / Resistance-Sensor

4.1.0 General
It is possible to connect a Pt 100 resistance thermometer to DIN IEC 751 or any resistance sensor in a 2, 3 or 4 wire connection method.

Configure the input of the transmitter in accordance with the actual method of connection used. Otherwise you will not fully exploit the possibilities of connection lead compensation and, as a result, possibly cause additional measuring errors.

4.1.1 2 wire connection method
Configuration: Sensor connection 2 wire

4.1.2 3 wire connection method
Configuration: Sensor connection 3 wire

4.1.3 4 wire connection method
Configuration: Sensor connection 4 wire

4.2 Connect Thermocouple

4.2.0 General
Make sure that the thermocouple is connected with the correct polarity. Only use thermal or compensation cable in accordance with the connected type of thermocouple should the lead have to be lengthened between the thermocouple and transmitter.

Configure the input of the transmitter in accordance with the type of thermocouple and cold junction that is to be used. Otherwise false measurements will be given.

Cold junction compensation
Should the cold junction compensation be operated with an external resistance thermometer (2 wire connection method) connect this to terminals 2 and 3.

4.2.1 Connect Thermocouple
Cold junction comp. internal / none / Thermostat
Configuration: - type of thermocouple
- cold junction: internal / none / Thermostat

Shorting: terminals 2 and 3

Cold junction comp. external with Pt 100
Configuration: - type of thermocouple
- cold junction: external with Pt 100

4.3 Connect mV-Sensor
Make sure that the mV-sensor is connected with the correct polarity.

Configuration: mV-Sensor
Shorting: terminals 2 and 3

4.4 Connect PROFIBUS PA

The temperature transmitters described here are absolutely maintenance-free!
The electronics are completely encapsulated and incorporate no components which could be repaired or replaced.

Note
- maximum permissible terminal voltage
  without Ex protection: 32 V
  with Ex protection: 25 V, see section 7

5 Maintenance
The electrical connections are made through connection terminals. We recommend the use of crimped connector sleeves in the case of flexible leads.

The transmitter is supplied with a shorting jumper. This jumper is either functionless and mounted at the terminal or it is mounted at the terminals and for the purpose of shorting these terminals, see section 4.2.1 and 4.3.1.

4 Electrical Connections

4.0 General
The electrical connections are made through connection terminals. We recommend the use of crimped connector sleeves in the case of flexible leads.

The transmitter is supplied with a shorting jumper. This jumper is either functionless and mounted at the terminal or it is mounted at the terminals and for the purpose of shorting these terminals, see section 4.2.1 and 4.3.1.

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7 Notes for Mounting and Operating in Hazardous Area

7.1 Connect PROFIBUS PA

The electrical connections are made through the connection terminals ③ and ④. Connecting the transmitter to the bus there is no need to worry about the polarity as 4.4. Transmitters for use in hazardous area are supplied only with intrinsically safe apparatus that are approved for this hazardous area.

The transmitter Model T42.1*.**2 corresponds to ignition protection type intrinsically safe apparatus II 1G EEx ia IIB / IIC T4 / T5 / T6.

The transmitter Model T42.1*.**4 corresponds to ignition protection type intrinsically safe apparatus II 2G EEx ib IIB / IIC T4 / T5 / T6.

The EC Type Examination Certificate DMT 99 ATEX E 033 X can be obtained separately, if required.

The approval is stated on the rating plate. Example:

Model: T42.10.002
Ex protection class: II 1G EEx ia IIB / IIC T4 / T5 / T6
Approval No.: DMT 99 ATEX E 033 X
Symbol: ③

7.2 Connect Sensor

Connect the sensor according to section 4 to the connection terminals ① up to ④.

The connected sensor must not warm up inadmissibly according to the temperature class for the following values for voltage, current, and power:

- Model T42.**.**2 EEx ia / EEx ib
  - max. possible values:
    - \( U_o = 8.6 \text{ V} \)
    - \( I_o = 10 \text{ mA} \)
    - \( P_o = 22 \text{ mW} \)

- The sum of the values of the connected sensor and the connection line must not exceed the following values for the maximum permissible capacity and inductivity:
  - Model T42.**.**2 EEx ia
    - \( C_{\text{sensor}} + C_{\text{line}} < C_O \)
    - \( L_{\text{sensor}} + L_{\text{line}} < L_O \)
    - \( C_O = 40 \mu \text{F} \)
    - \( L_O = 10 \text{ mH} \)

  - Model T42.**.**2 EEx ib
    - \( C_{\text{sensor}} + C_{\text{line}} < C_O \)
    - \( L_{\text{sensor}} + L_{\text{line}} < L_O \)
    - \( C_O = 5 \mu \text{F} \)
    - \( L_O = 10 \text{ mH} \)

7.3 Special Conditions for Safe Use

7.3.1 Mounting in the Hazardous Area

Temperature Transmitter Model T42.1*.*** must be mounted in a case that must at least correspond to IP 20 ingress protection according to IEC 529 / EN 60 529.

7.3.2 Permissible Ambient Temperature \( T_{\text{amb}} \)

According to the temperature class, the transmitter may be used in the following ambient temperature ranges:

- Model T42.1*.**2 → Ex protection EEx ia
  - with temperature class T4: \(-50^\circ \text{C} \leq T_{\text{amb}} \leq +85^\circ \text{C}\)

- Model T42.1*.**4 → Ex protection EEx ib
  - with temperature class T5: \(-50^\circ \text{C} \leq T_{\text{amb}} \leq +70^\circ \text{C}\)

- Model T42.1*.**2 → Ex protection EEx ia
  - with temperature class T6: \(-50^\circ \text{C} \leq T_{\text{amb}} \leq +50^\circ \text{C}\)

Connection to the bus has to be done according to the PROFIBUS guidance (technical guidance PROFIBUS PA Installation Guideline, draft).

Bus cable must be used of cable type A or type B according DIN EN 61 158-2, section 11.7.2 (annex C). The bus must be provided with a terminating (terminating resistor).
We declare that the marked products 

Model: T42.10.002 EEx ia
T42.10.004 EEx ib

are in accordance with EC Type Examination Certificates DMT 99 ATEX E 033 X i.a.w. directive 94/9/EC

The devices have been tested according to the Explosion Protection Standards

EN 50 014: 1992
EN 50 020: 1994
prEN 50 284: 1997

by the notified body No. 0158:

DMT
Deutsche Montan Technologie GmbH
D 45307 Essen

The devices have been tested according to the EMC Directive 89/336/EEC, 92/31/EEC and 94/9/EC.

according to the actual data sheet

TE 42.01

fulfils the regulations of the EMC Directive 89/336/EEC, 92/31/EEC and 94/9/EC.

The GSD-File can be downloaded free of charge from the WIKA homepage www.wika.de / Service / Software / electrical Temperature Measurement / T42 PROFIBUS PA GSD-File