# HART® field temperature transmitter
# Models TIF50, TIF52

WIKA data sheet TE 62.01

for further approvals
see page 10

## Applications

- Plant construction
- Process engineering
- General industrial applications
- Oil and gas

## Special features

- Setting of units and measuring range possible on site (only model TIF52)
- Different hazardous area approvals
- The following settings are possible via external software:
  - Dual sensor, redundant measurement possible
  - Customer-specific characteristic curves programmable


**Field temperature transmitters models TIF50, TIF52**

## Description

The TIF series field temperature transmitters, consisting of a rugged field case, model T32 temperature transmitter and a model DIH display, have been designed for general use in process engineering.

They offer high accuracy, galvanic isolation and excellent protection against electromagnetic influences (EMI). Via HART® protocol, the TIFxx is configurable (interoperable) with a variety of open configuration tools.

In addition to the different sensor types, e.g. sensors in accordance with DIN EN 60751, JIS C1606, DIN 43760, IEC 60584 or DIN 43710, customer-specific sensor characteristics can also be defined, through the input of value pairs (user-defined linearisation). Through the configuration of a sensor with redundancy (dual sensor), on a sensor failure it will automatically change over to the working sensor.

Furthermore, there is the possibility to activate sensor drift detection. With this, an error signalling occurs when the magnitude of the temperature difference between sensor 1 and sensor 2 exceeds a user-selectable value.

The field temperature transmitter also has additional sophisticated supervisory functionality such as monitoring of the sensor lead resistance and sensor-break detection in accordance with NAMUR NE89 as well as monitoring of the measuring range. Moreover, these transmitters have comprehensive cyclic self-monitoring functionality.

Via the display it is possible to show range alarms as well as MIN and MAX values.

The field temperature transmitter is available in various field case variants. Stainless steel and aluminium can be specified.
It can be mounted directly on a wall. A pipe mounting kit is also available for fitting to pipes with a diameter of 1 ... 2".

The field temperature transmitters are delivered with a basic configuration or configured according to customer specifications.



Data sheets showing similar products:
Digital temperature transmitter, head- and rail-mounted version; models T32.1S, T32.3S; see data sheet TE 32.04
Field indicator for current loops with HART® communication; models DIH50, DIH52; see data sheet AC 80.10

## Specifications

| Field temperature transmitter input | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sensor type** | | **Max. configurable measuring range** [1] | **Standard** | **α values** | **Minimum measuring span** [14] | **Typical measuring deviation** [2] | **Temperature coefficient per °C typical** [3] |
| Resistance sensor | **Pt100** | -200 ... +850 °C | **IEC 60751**:2008 | **α = 0.00385** | 10 K or 3.8 Ω (greater value applies) | ≤ ±0.12 °C [5] | ≤ ±0.0094 °C [6) 7)] |
| | Pt(x) [4] 10 ... 1000 | -200 ... +850 °C | IEC 60751:2008 | α = 0.00385 | | ≤ ±0.12 °C [5] | ≤ ±0.0094 °C [6) 7)] |
| | JPt100 | -200 ... +500 °C | JIS C1606: 1989 | α = 0.003916 | | ≤ ±0.12 °C [5] | ≤ ±0.0094 °C [6) 7)] |
| | Ni100 | -60 ... +250 °C | DIN 43760: 1987 | α = 0.00618 | | ≤ ±0.12 °C [5] | ≤ ±0.0094 °C [6) 7)] |
| | *Resistance sensor* | *0 ... 8,370 Ω* | | | *4 Ω* | *≤ ±1.68 Ω* [8] | *≤ ±0.1584 Ω* [8] |
| | *Potentiometer* [9] | *0 ... 100 %* | | | *10 %* | *≤ 0.50 %* [10] | *≤ ±0.0100 %* [10] |
| Measuring current during measurement | | Max. 0.3 mA (Pt100) | | | | | |
| Connection methods | | 1 sensor 2-/4-/3-wire or 2 sensors 2-wire<br>(for further information, please refer to "Designation of connection terminals") | | | | | |
| Max. lead resistance | | 50 Ω each wire, 3-/4-wire | | | | | |
| Thermo-couple | Type J (Fe-CuNi) | -210 ... +1,200 °C | IEC 60584-1: 1995 | | 50 K or 2 mV (greater value applies) | ≤ ±0.91 °C [11] | ≤ ±0.0217 °C [7) 11)] |
| | Type K (NiCr-Ni) | -270 ... +1,300 °C | IEC 60584-1: 1995 | | | ≤ ±0.98 °C [11] | ≤ ±0.0238 °C [7) 11)] |
| | Type L (Fe-CuNi) | -200 ... +900 °C | DIN 43760: 1987 | | | ≤ ±0.91 °C [11] | ≤ ±0.0203 °C [7) 11)] |
| | Type E (NiCr-Cu) | -270 ... +1,000 °C | IEC 60584-1: 1995 | | | ≤ ±0.91 °C [11] | ≤ ±0.0224 °C [7) 11)] |
| | Type N (NiCrSi-NiSi) | -270 ... +1,300 °C | IEC 60584-1: 1995 | | | ≤ ±1.02 °C [11] | ≤ ±0.0238 °C [7) 11)] |
| | Type T (Cu-CuNi) | -270 ... +400 °C | IEC 60584-1: 1995 | | | ≤ ±0.92 °C [11] | ≤ ±0.0191 °C [7) 11)] |
| | Type U (Cu-CuNi) | -200 ... +600 °C | DIN 43710: 1985 | | | ≤ ±0.92 °C [11] | ≤ ±0.0191 °C [7) 11)] |
| | Type R (PtRh-Pt) | -50 ... +1,768 °C | IEC 60584-1: 1995 | | 150 K | ≤ ±1.66 °C [11] | ≤ ±0.0338 °C [7) 11)] |
| | Type S (PtRh-Pt) | -50 ... +1,768 °C | IEC 60584-1: 1995 | | 150 K | ≤ ±1.66 °C [11] | ≤ ±0.0338 °C [7) 11)] |
| | Type B (PtRh-Pt) | 0 ... +1,820 °C [15] | IEC 60584-1: 1995 | | 200 K | ≤ ±1.73 °C [11] | ≤ ±0.0500 °C [7) 12)] |
| | *mV sensor* | *-500 ... +1,800 mV* | | | *4 mV* | *≤ ±0.33 mV* [13] | *≤ ±0.0311 mV* [7) 13)] |
| Connection methods | | 1 sensor or 2 sensors<br>(for further information, please refer to "Designation of connection terminals") | | | | | |
| Max. lead resistance | | 5 kΩ each wire | | | | | |
| Cold junction compensation, configurable | | internal compensation or external with Pt100, with thermostat or off | | | | | |

1) Other units e.g. °F and K possible
2) Measuring deviations (input + output) at ambient temperature 23 °C ±3 K, without influence of lead resistances; for example calculations see page 5
3) Temperature coefficients (input + output) per °C
4) x configurable between 10 … 1,000
5) Based on 3-wire Pt100, Ni100, 150 °C MV
6) Based on 150 °C MV
7) In the ambient temperature range -40 … +85 °C
8) Based on a sensor with max. 5 kΩ
9) Rtotal: 10 ... 100 kΩ
10) Based on a potentiometer value of 50 %
11) Based on 400 °C MV with cold junction compensation error
12) Based on 1.000 °C MV with cold junction compensation error
13) Based on measuring range 0 ... 1 V, 400 mV MV
14) The transmitter can be configured below these limits, but this is not recommended due to loss of accuracy.
15) Specifications valid only for measuring range between 450 ... 1,820 °C

MV = measured value (temperature measured values in °C)

**Note:**
The transmitter can be configured below these limits, but this is not recommended due to loss of accuracy.

The selection of the sensor is only possible via the HART® software (e.g. WIKA_T32) or the HART® communicator (e.g. FC475, MFC4150).
WIKA configuration software WIKA_T32: Free download from www.wika.com

### User linearisation
Via software, customer-specific sensor characteristics can be stored in the transmitter, so that further sensor types can be used. Number of data points: Minimum 2; maximum 30

### Monitoring functionality with 2 sensors connected (dual sensor)

**Redundancy**
In the case of a sensor error (sensor break, lead resistance too high or outside the measuring range of the sensor) of one of the two sensors, the process value will be only based on the error-free sensor. Once the error is rectified, the process value will again be based on the two sensors or on sensor 1.

**Ageing control (sensor-drift monitoring)**
An error signal on the output is activated if the value of the temperature difference between sensor 1 and sensor 2 is higher than a set value, which can be selected by the user. This monitoring only generates a signal if two valid sensor values can be determined and the temperature difference is higher than the selected limit value.
(Cannot be selected for the “Difference” sensor function, since the output signal already indicates the difference value).

### Sensor functionality when 2 sensors have been connected (dual sensor)

**Sensor 1, sensor 2 redundant**
The 4 … 20 mA output signal delivers the process value of sensor 1. If sensor 1 fails, the process value of sensor 2 is output (sensor 2 is redundant).

**Mean value**
The 4 ... 20 mA output signal delivers the mean value of the two values from sensor 1 and sensor 2. If one sensor fails, the process value of the error-free sensor is output.

**Minimum value**
The 4 ... 20 mA output signal delivers the lower of the two values from sensor 1 and sensor 2. If one sensor fails, the process value of the error-free sensor is output.

**Maximum value**
The 4 ... 20 mA output signal delivers the higher of the two values from sensor 1 and sensor 2. If one sensor fails, the process value of the error-free sensor is output.

**Difference**
The 4 ... 20 mA output signal delivers the difference between sensor 1 and sensor 2. If one sensor fails, an error signalling will be activated.

| Display, operating unit | Model TIF50 | Model TIF52 |
|---|---|---|
| Display principle | LCD, rotatable in 10° steps | |
| Measured value of display | 7-segment LCD, 5-digit, character size 9 mm | |
| Bar graph | 20-segment LCD | |
| Info line | 14-segment LCD, 6-digit, character size 5.5 mm | |
| Status indicators | ♥ : HART® mode (signalling of HART® parameter adoption)<br>⊶ : Unit lock<br>⚠ : Warnings or error messages | |
| Indication range | -9999 ... 99999 | |
| Measuring rate | approx. 4/s | |
| Accuracy | ±0.1 % of measuring span | ±0.05 % of measuring span |
| Temperature coefficient | ±0.1 % of measuring span / 10 K | |
| HART® functionality | | |
| ■ Access control | - | Secondary master |
| ■ Automatically set parameters | | |
| ■ Available commands | - | Unit, measuring range start/end, format, zero point, span, damping, polling address |
| ■ Identified commands | Generic mode: 1, 15, 35, 44 | Generic mode: 0, 1, 6, 15, 34, 35, 36, 37, 44 |
| ■ Multidrop | Not supported | Measured values are automatically taken from the HART® digital data and displayed |

| Rise time, damping, measuring rate | |
|---|---|
| Rise time $t_{90}$ | Approx. 0.8 s |
| **Damping**, configurable | **Off**; configurable between 1 s and 60 s |
| Switch-on time (time to get the first measured value) | Max. 15 s |
| Measuring rate [1)] | Measured value update approx. 3/s |

**Bold: Basic configuration**
1) Valid only for RTD/single thermocouple sensor

## Analogue output, output limits, signalling, insulation resistance

| | | |
|---|---|---|
| **Analogue output**, configurable | **Linear to temperature per IEC 60751** / JIS C1606 / DIN 43760<br>(for resistance sensors) or<br>linear to temperature per IEC 584 / DIN 43710 (for thermocouples)<br>4 ... 20 mA or 20 ... 4 mA, 2-wire | |
| **Output limits**, configurable<br>**per NAMUR NE43**<br>customer-specifically adjustable | Lower limit<br>**3.8 mA**<br>3.6 ... 4.0 mA | upper limit<br>**20.5 mA**<br>20.0 ... 21.5 mA |
| **Current value for signalling,** configurable<br>**per NAMUR NE43**<br>Substitute value | **Downscale**<br>**< 3.6 mA (3.5 mA)**<br>3.5 ... 12.0 mA | upscale<br>> 21.0 mA (21.5 mA)<br>12.0 ... 23.0 mA |
| In simulation mode, independent from input signal, simulation value configurable from 3.5 ... 23.0 mA | | |
| Load $R_A$ (without HART®) | $R_A \leq (U_B$ - 13.5 V) / 0.023 A with $R_A$ in Ω and $U_B$ in V | |
| Load $R_A$ (with HART®) | $R_A \leq (U_B$ - 14.5 V) / 0.023 A with $R_A$ in Ω and $U_B$ in V | |
| Insulation voltage (input to analogue output) | AC 1,200 V (50 Hz / 60 Hz); 1 s | |
| Insulation specification to DIN EN 60664-1:2003 | Overvoltage category III | |

**Bold: Basic configuration**

## Explosion protection, power supply

| Model | Approvals | Permissible ambient/storage temperature (in accordance with the relevant temperature classes) | Safety-related maximum values | | Power supply $U_B$ (DC) |
|---|---|---|---|---|---|
| | | | Sensor (Connections 1 - 4) | Current loop (Connections ±) | |
| **TIF50-S, TIF52-S** | without | {-50} -40 ... +85 °C | - | - | 14.5 ... 42 V |
| **TIF50-F, TIF52-F** | Flameproof enclosure<br>BVS 10 ATEX E 158<br>IECEx BVS 10.0103<br>II 2G Ex db IIC T4/T5/T6 Gb<br>Ex db IIC T4/T5/T6 Gb | -40 ... +85 °C at T4<br>-40 ... +75 °C at T5<br>-40 ... +60 °C at T6 | - | $U_M$ = 30 V<br>$P_M$ = 2 W | 14.5 ... 30 V |
| **TIF50-F, TIF52-F** | Flameproof enclosure<br>TC RU C-DE.BH02.B.00466/20<br>1 Ex d IIC T6 ... T4 | -60 [2] / -40 ... +85 °C at T4<br>-60 [2] / -40 ... +75 °C at T5<br>-60 [2] / -40 ... +60 °C at T6 | - | $U_M$ = 30 V<br>$P_M$ = 2 W | 14.5 ... 30 V |
| **TIF50-I, TIF52-I** | Intrinsically safe equipment [1]<br>BVS 16 ATEX E 112 X<br>IECEx BVS 16.0075X | | see installation drawing in the operating instructions at www.wika.com | see installation drawing in the operating instructions at www.wika.com | 14.5 ... 29 V |
| | II (1)2G Ex ia [ia Ga] IIC T4/T5/T6 Gb<br>II 2G Ex ia IIC T4/T5/T6 Gb | -40 ... +85 °C bei T4<br>-40 ... +70 °C bei T5<br>-40 ... +55 °C bei T6 | | | |
| | II (1)2D Ex ia [ia Da] IIIC T135 °C Db<br>II 2D Ex ia IIIC T135 °C Db | -40 ... +40 °C ($P_i$ = 680 mW)<br>-40 ... +70 °C ($P_i$ = 650 mW) | | | |
| **TIF50-I, TIF52-I** | Intrinsically safe equipment [1]<br>TC RU C-DE.AЯ45.B.00918 | | see installation drawing in the operating instructions at www.wika.com | see installation drawing in the operating instructions at www.wika.com | 14.5 ... 29 V |
| | 0 Ex ia IIC T4/T5/T6<br>1 Ex ib [ia ] IIC T4/T5/T6 | -60 [2] / -40 ... +85 °C bei T4<br>-60 [2] / -40 ... +70 °C bei T5<br>-60 [2] / -40 ... +55 °C bei T6 | | | |
| | DIP A20 Ta 120 °C<br>DIP A21 Ta 120 °C | -60 [2] / -40 ... +40 °C ($P_i$ = 680 mW)<br>-60 [2] / -40 ... +70 °C ($P_i$ = 650 mW) | | | |

1) The installation conditions for the transmitters and displays must be considered for the final application.
2) Special version on request (only available with specific approvals)

| Measuring deviation, temperature coefficient, long-term stability | | | | |
|---|---|---|---|---|
| **Effect of load** | Not measurable | | | |
| **Power supply effect** | Not measurable | | | |
| **Warm-up time** | After approx. 5 minutes the instrument will function to the specifications (accuracy) | | | |
| **Input** | **Measuring deviation per DIN EN 60770, 23 °C ±3 K** | **Mean temperature coefficient (TC) for each 10 K change in ambient temperature in the range -40 ... +85 °C** | **Lead resistance effects** | **Long-term stability after 1 year** |
| ■ Resistance thermometer Pt100/JPt100/ Ni100 [1] | -200 °C ≤ MV ≤ 200 °C: ±0.10 K<br>MV > 200 °C:<br>±(0.1 K + 0.01 % \|MW-200 K\|) [2] | ±(0.06 K + 0.015 % MV) | 4-wire:<br>no effect<br>(0 to 50 Ω each wire)<br>3-wire:<br>±0.02 Ω / 10 Ω<br>(0 to 50 Ω each wire)<br>2-wire: Resistor of the connection lead [3] | ±60 mΩ or 0.05 % of MV, greater value applies |
| ■ Resistance sensor | ≤ 890 Ω: 0.053 Ω [4] or 0.015 % MV [5]<br>≤ 2,140 Ω: 0.128 Ω [4] or 0.015 % MV [5]<br>≤ 4,390 Ω: 0.263 Ω [4] or 0.015 % MV [5]<br>≤ 8,380 Ω: 0.503 Ω [4] or 0.015 % MV [5] | ±(0.01 Ω + 0.01 % MV) | | |
| ■ Potentiometer | $R_{part}/R_{total}$ is max. ±0.5 % | ±(0.1 % MV) | | ±20 µV or 0.05 % of MV, greater value applies |
| ■ Thermocouples Type E, J | -150 °C < MV < 0 °C:<br>±(0.3 K + 0.2 % \|MV\|)<br>MV > 0 °C:<br>±(0.3 K + 0.03 % MV) | Type E:<br>MV > -150 °C: ±(0.1 K + 0.015 % \|MV\|)<br>Type J:<br>MV > -150 °C: ±(0.07 K + 0.02 % \|MV\|) | 6 µV / 1,000 Ω [6] | |
| Type T, U | -150 °C < MV < 0 °C:<br>±(0.4 K + 0.2 % \|MV\|)<br>MV > 0 °C:<br>±(0.4 K + 0.01 % MV) | -150 °C < MV < 0 °C:<br>±(0.07 K + 0.04 % MV)<br>MV > 0 °C:<br>±(0.07 K + 0.01 % MV) | | |
| Type R, S | 50 °C < MV < 400 °C:<br>±(1.45 K + 0.12 % \|MV - 400 K\|)<br>400 °C < MV < 1,600 °C:<br>±(1.45 K + 0.01 % \|MV - 400 K\|) | Type R: 50 °C < MV < 1,600 °C:<br>±(0.3 K + 0.01 % \|MV - 400 K\|)<br>Type S: 50 °C < MV < 1,600 °C:<br>±(0.3 K + 0.015 % \|MV - 400 K\|) | | |
| Type B | 450 °C < MV < 1,000 °C:<br>±(1.7 K + 0.2 % \|MV - 1,000 K\|)<br>MV > 1,000 °C:<br>±1.7 K | 450 °C < MV < 1,000 °C:<br>±(0.4 K + 0.02 % \|MV - 1,000 K\|)<br>MV > 1,000 °C:<br>±(0.4 K + 0.005 % (MV - 1,000 K)) | | |
| Type K | -150 °C < MV < 0 °C:<br>±(0.4 K + 0.2 % \|MV\|)<br>0 °C < MV < 1,300 °C:<br>±(0.4 K + 0.04 % MV) | -150 °C < MV < 1,300 °C:<br>±(0.1 K + 0.02 % \|MV\|) | | |
| Type L | -150 °C < MV < 0 °C:<br>±(0.3 K + 0.1 % \|MV\|)<br>MV > 0 °C: ±(0.3 K + 0.03 % MV) | -150 °C < MV < 0 °C:<br>±(0.07 K + 0.02 % \|MV\|)<br>MV > 0 °C: ±(0.07 K + 0.015 % MV) | | |
| Type N | -150 °C < MV < 0 °C:<br>±(0.5 K + 0.2 % \|MV\|)<br>MV > 0 °C: ±(0.5 K + 0.03 % MV) | -150 °C < MV < 0 °C:<br>±(0.1 K + 0.05 % \|MV\|)<br>MV > 0 °C: ±(0.1 K + 0.02 % MV) | | |
| ■ mV sensor | ≤1,160 mV: 10 µV + 0.03 % \|MV\|<br>>1,160 mV: 15 µV + 0.07 % \|MV\| | 2 µV + 0.02 % \|MV\|<br>100 µV + 0.08 % \|MV\| | | |
| ■ Cold junction [7] | ±0.8 K | ±0.1 K | | ±0.2 K |
| **Output** | ±0.03 % of measuring span | ±0.03 % of measuring span | | ±0.05 % of span |

## Total measuring deviation

Addition: Input + output per DIN EN 60770, 23 °C ± 3 K

MV = measured value (temperature measured values in °C)
Measuring span = configured end of measuring range - configured start of measuring range

1) For sensor Ptx (x = 10 ... 1,000) applies:
for x ≥ 100: Permissible error, as for Pt100
for x < 100: Permissible error, as for Pt100 with a factor (100/x)
2) Additional error for resistance thermometers in a 3-wire configuration with zero-balanced cable: 0.05 K
3) The specified resistance value of the sensor wire can be subtracted from the calculated sensor resistance.
Dual sensor: Configurable for each sensor separately
4) Double value at 3-wire
5) Greater value applies
6) Within a range of 0 ... 10 kΩ lead resistance
7) Only for thermocouple

**Basic configuration:**
**Input signal: Pt100 in 3-wire connection, measuring range: 0 ... 150 °C**

### Example calculation

| Pt100 / 4-wire / measuring range 0 ... 150 °C / ambient temperature 33 °C | |
|---|---|
| Input Pt100, MV < 200 °C | ±0.100 K |
| Output ±(0.03 % of 150 K) | ±0.045 K |
| TC 10 K - input ±(0.06 K + 0.015 % of 150 K) | ±0.083 K |
| TC 10 K - output ±(0.03 % of 150 K) | ±0.045 K |
| **Measuring deviation (typical)**<br>$\sqrt{input^2 + output^2 + TC_{input}^2 + TC_{output}^2}$ | **±0.145 K** |
| **Measuring deviation (maximum)**<br>$(input + output + TC_{input} + TC_{output})$ | **±0.273 K** |

| Thermocouple type K / measuring range 0 ... 400 °C / internal compensation (cold junction) / ambient temperature 23 °C | |
|---|---|
| Input type K, 0 °C < MV < 1,300 °C<br>±(0.4 K + 0.04 % of 400 K) | ±0.56 K |
| Cold junction ±0.8 K | ±0.80 K |
| Output ±(0.03 % of 400 K) | ±0.12 K |
| **Measuring deviation (typical)**<br>$\sqrt{input^2 + cold\ junction^2 + output^2}$ | **±0.98 K** |
| **Measuring deviation (maximum)**<br>(input + cold junction + output) | **±1.48 K** |

| Monitoring | |
|---|---|
| **Test current for sensor monitoring** [1)] | Nom. 20 µA during test cycle, otherwise 0 µA |
| **Monitoring NAMUR NE89 (monitoring of input lead resistance)** | |
| ■ Resistance thermometer (Pt100, 4-wire) | $R_{L1} + R_{L4}$ > 100 Ω with hysteresis 5 Ω<br>$R_{L2} + R_{L3}$ > 100 Ω with hysteresis 5 Ω |
| ■ Thermocouple | $R_{L1} + R_{L4} + R_{thermocouple}$ > 10 kΩ with hysteresis 100 Ω |
| **Sensor break monitoring** | Always active |
| **Self-monitoring** | Active permanently, e.g. RAM/ROM test, logical program operating checks and validity check |
| **Measuring range monitoring** | Monitoring of the set measuring range for upper/lower deviations<br>Standard: Deactivated |
| **Monitoring of input lead resistance (3-wire)** | Monitoring of the resistance difference between lead 3 and 4; an error will be indicated if there is a difference of > 0.5 Ω between leads 3 and 4 |

1) Only for thermocouple

| Field case | | |
|---|---|---|
| **Material** | ■ Aluminium, window from polycarbonate<br>■ Stainless steel, window from polycarbonate | |
| **Colour** | Aluminium: Night blue, RAL 5022 | Stainless steel: Silver |
| **Cable bushings** | 3 x M20 x 1.5 or 3 x ½ NPT | |
| **Ingress protection** | IP66 | |
| **Weight** | Aluminium: approx. 1.5 kg | Stainless steel: approx. 3.7 kg |
| **Dimensions** | See drawing | |

| Ambient conditions | |
|---|---|
| **Ambient temperature** | -60 1) / -40 ... +85 °C |
| **Functional area of the display** | -20 2) ... +70 °C |
| **Climate class per IEC 654-1: 1993** | Cx (-20 ... +85 °C, 35 ... 85 % r. h., non-condensing) |
| **Maximum permissible humidity** | 93 % r. h. ±3 % |
| **Vibration resistance per IEC 60068-2-6:2007** | 3 g |
| **Shock resistance per IEC 68-2-27: 1987** | 30 g |
| **Electromagnetic compatibility (EMC)** | EN 61326 emission (group 1, class B) and interference immunity (industrial application), and also NAMUR NE21 |

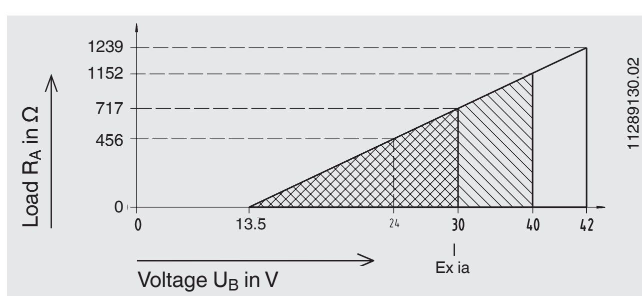
1) Special version on request (only available with specific approvals)
2) In previous ambient temperatures < -20 °C a delayed recovery of the indication function could be expected, especially in case of low loop current.

**Communication HART® protocol rev. 5 including burst mode and multidrop**
Interoperability (i.e. compatibility between components from different manufacturers) is a strict requirement of HART® instruments. The field transmitter is compatible with almost every open software and hardware tool; among other things with:
1. User-friendly WIKA configuration software, free-of-charge download via www.wika.com
2. HART® communicator FC375, FC475, MFC4150, MFC5150, Trex:
   T32 device description integrated
3. Asset Management Systems
   3.1 AMS: T32_DD completely integrated and upgradable with old versions
   3.2 Simatic PDM: T32_EDD completely integrated from version 5.1, upgradable with version 5.0.2
   3.3 Smart Vision: DTM upgradable per FDT standard from SV version 4
   3.4 PACTware: DTM completely integrated and upgradable as well as all supporting applications with FDT interface
   3.5 Field Mate: DTM upgradable

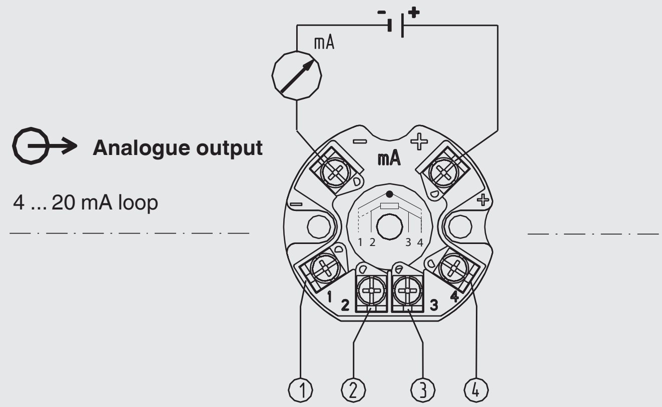
**Attention:**
For direct communication via the serial interface of a PC/notebook, a HART® modem is needed (see "Accessories").
As a general rule, parameters which are defined in the scope of the universal HART® commands (e.g. the measuring range) can, in principle, be edited with all HART® configuration tools.

**Load diagram**
The permissible load depends on the loop supply voltage.

Load $R_A \leq (UB - 13.5\ V) / 0.023\ A$ with $R_A$ in Ω and $U_B$ in V (without HART®)

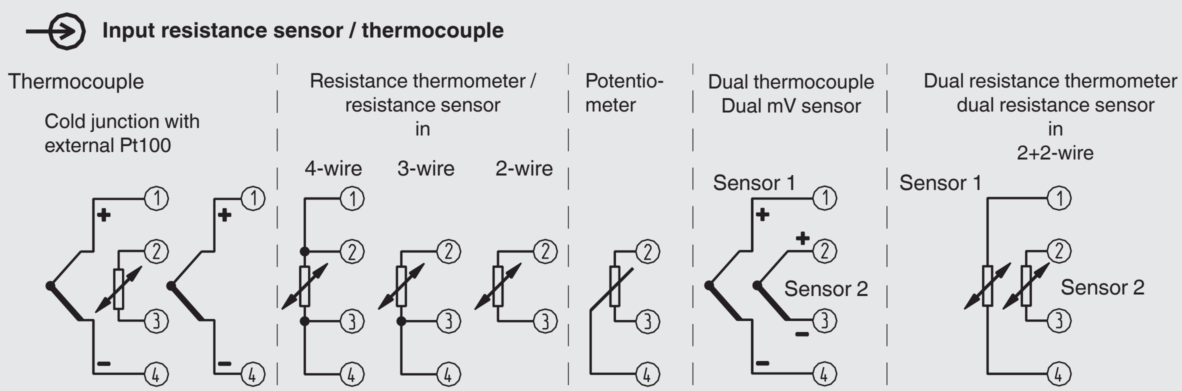


## Designation of connection terminals



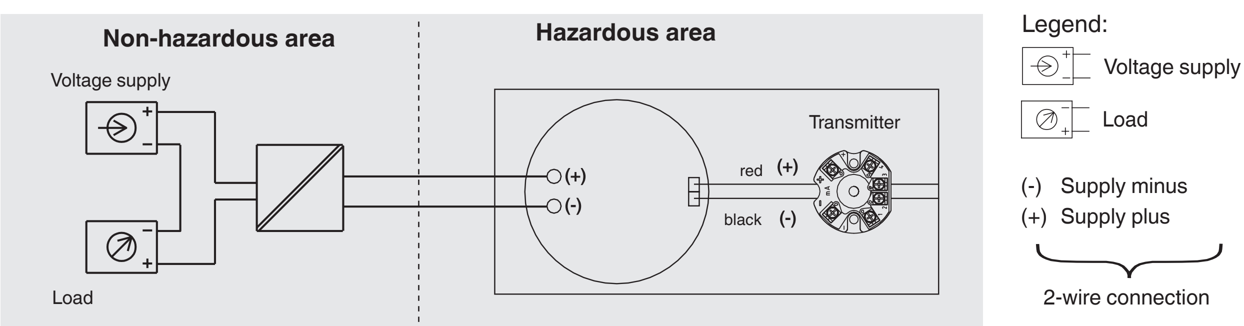

Identical dual sensors are supported for all sensor types, i. e. dual sensor combinations as for example Pt100/Pt100 or thermocouple type K/type K are possible.
A further rule is that both sensor values have the same unit and the same sensor range.

11234547.0X

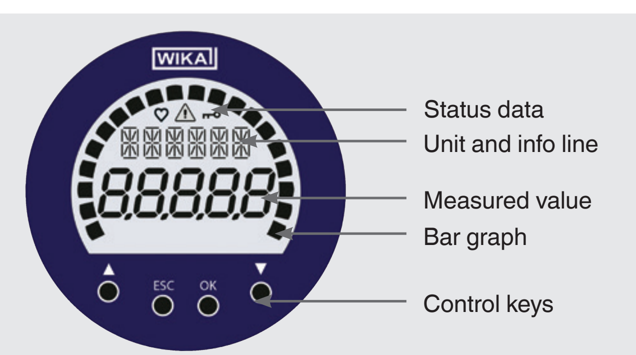



For the HART® modem, connection terminals are available for the head-mounted case and additional terminals are available for the rail-mounted case.

## Electrical connection

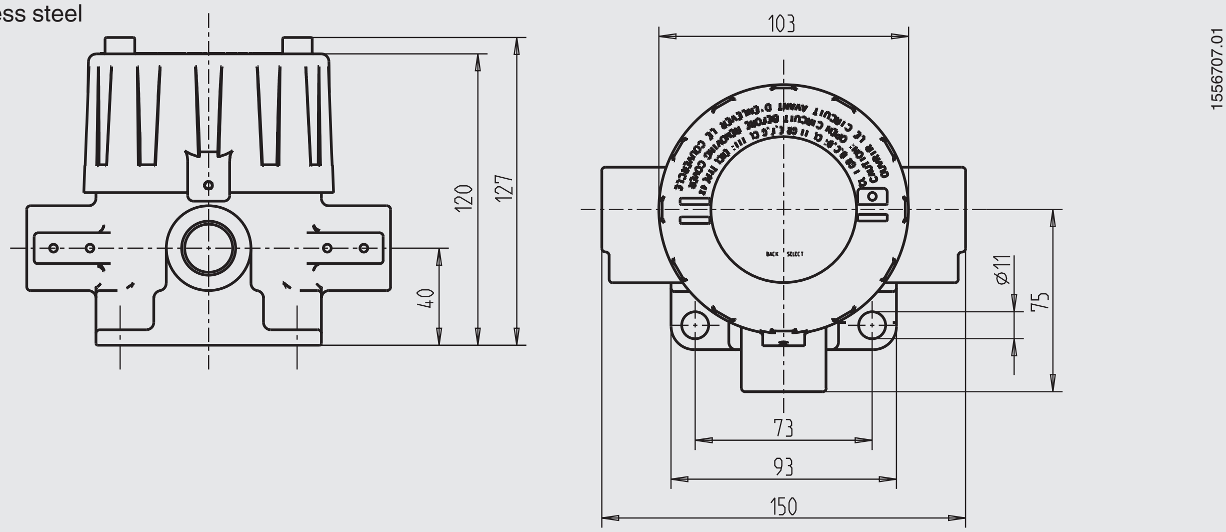



## User interface



## Dimensions in mm

Aluminium
Stainless steel




## Accessories

| Model | Description | Order number |
|---|---|---|
| **Programming unit, model PU-H** | | |
| VIATOR® HART® USB  | HART® modem for USB interface | 11025166 |
| VIATOR® HART® USB PowerXpress™  | HART® modem for USB interface | 14133234 |
| VIATOR® HART® RS-232  | HART® modem for RS-232 interface | 7957522 |
| VIATOR® HART® Bluetooth® Ex  | HART® modem for Bluetooth interface, Ex | 11364254 |
| **Magnetic quick connector magWIK**  | ■ Replacement for crocodile clips and HART® terminals<br>■ Fast, safe and tight electrical connection<br>■ For all configuration and calibration processes | 14026893 |

## Approvals

| Logo | Description | Region |
|---|---|---|
| CE | **EU declaration of conformity** | European Union |
| | EMC directive<br>EN 61326 emission (group 1, class B) and interference immunity (industrial application) | |
| | RoHS directive | |

### Optional approvals

| Logo | Description | Region |
|---|---|---|
| Ex | **EU declaration of conformity** | European Union |
| | ATEX directive<br>Hazardous areas | |
| IEC IECEx | **IECEx**<br>Hazardous areas | International |
| EAC Ex | **EAC** | Eurasian Economic Community |
| | EMC directive | |
| | Hazardous areas 1) | |
| | **PAC Russia**<br>Metrology, measurement technology | Russia |
| | **PAC Kazakhstan**<br>Metrology, measurement technology | Kazakhstan |
| - | **MChS**<br>Permission for commissioning | Kazakhstan |
| | **PAC Belarus**<br>Metrology, measurement technology | Belarus |
| | **PAC Ukraine**<br>Metrology, measurement technology | Ukraine |
| | **DNOP - MakNII** | Ukraine |
| | Mining | |
| | Hazardous areas | |
| - | **PESO**<br>Hazardous areas | India |

1) The installation conditions for the transmitters must be considered for the final application.

## Manufacturer‘s information and certifications

| Logo | Description |
|---|---|
| - | **China RoHS directive** |

## Certificates (option)

| Certificates | |
|---|---|
| **Certificates** | ■ 2.2 test report<br>■ 3.1 inspection certificate |
| **Calibration** | ■ DAkkS calibration certificate |

→ Approvals and certificates, see website

**Ordering information**

Model / Explosion protection / Case material / Transmitter / Cable bushings / Threaded connection for cable bushing / Certificates / Options





**WIKA Alexander Wiegand SE & Co. KG**
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de