

# Flexible sheath RTD/TC temperature sensors with optional version of cold junction

- Measuring range -200 to +1300 °C.
- 1×/2× RTD sensor Pt100 or TC sensor J, K, N.
- Accuracy class A, B (RTD) and 1, 2 (TC).
- Dimensional variability and optional version of cold junction.
- Sheath length up to 50 m and diameter 0,5 to 6 mm.
- Fast response to temperature changes.
- Intrinsically safe version.



## Application

Resistance and thermocouple temperature sensors FlexiTEMP® 60 without the protective fitting are intended for applications, where their advantages such as fast response to temperature changes, flexible stem, small dimensions and sheath resistance to corrosion become apparent.

High accuracy and stability of output signal are strong sides of resistance sensors. Thermoelectric sensors are very resistant to high pressure, usable in vacuum and have higher stability of output signal in comparison to wire thermocouples. Standard thermocouple sensors with isolated measuring end are due to its electromagnetic shielding suitable for working together with measuring centers and control systems.

Resistance and thermocouple sensors can be used with or without fastening elements as for example fixing shift pipe unions etc. Version of sensor with flange is suitable as a part of sensor without protective fitting, into thermowell and with thermowell (e.g. ModuTEMP® 70).

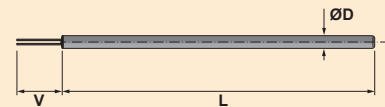
## Description

Flexible sheath resistance and thermocouple temperature sensors FlexiTEMP® 60 without protective tubes and thermowells are supplied in length from 100 mm up to several tens of meters with an outer diameter of the sheath 3 / 6 mm (Pt100) and 0.5 / 0.8 / 1 / 1.5 / 2 / 3 / 4.5 / 6 mm (TC "J", "K", "N"). These thermocouples are as standard supplied with the sheath made of stainless steel 1.4404 for resistance sensors, 1.4541 for thermocouple "J" or Inconel 600 (2.4816), Nicrobell/Pyrosil for thermocouple "K" and "N". Resistance sensors are supplied with single or double sensor Pt100.

Measuring ends of thermocouple sensors are manufactured in insulated single or dual sensor. After agreement the grounded or opened version or triple version can be supplied. Cold ends of sheath resistance sensors and thermocouples are supplied with flying leads, with connected connection wires (for or compensation wires for TC) with optional isolation material, with flat standard connector or mini connector (only for TC), small head MA (with or without connecting thread) or with 42 mm

## OPTIONAL VERSION OF COLD JUNCTION

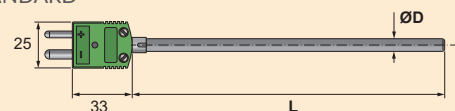
Flying leads  
code **VV**



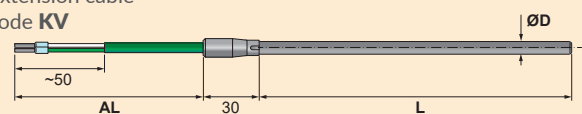
Connector MINI  
code **KM**



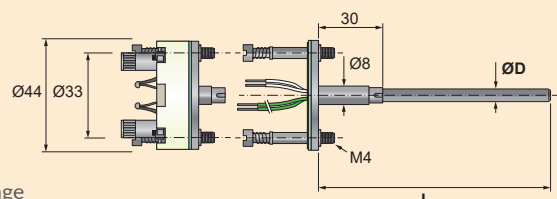
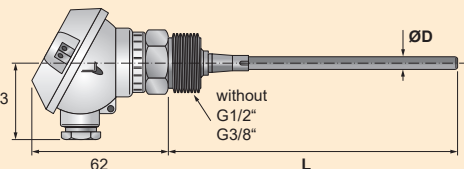
Connector STANDARD  
code **KS**



Extension cable  
code **KV**



Head MA  
with thread  
or without  
code **H1**



Flange  
with terminal block, codes **S1, S5**  
with transmitter, codes **S2, S4**

diameter flange with option to mount ceramic terminal block or transmitter (exchangeable measuring insert). Sheath resistance and thermocouple sensors with mineral isolation may be freely bent (resistance sensors cannot be bent in length 40 mm from measuring end) while observing the minimal radius of the bend (5× outer diameter of the sheath).

- **S1** Flange, diameter 42 mm with ceramic terminal block  
*only for stem diameter 6 mm*
- **S2** Flange, diameter 42 mm with set for mounting of transmitter on flange  
*only for stem diameter 3 to 6 mm*
- **S4** Flange, diameter 42 mm without terminal block, cable leads  
*only for stem diameter 3 to 6 mm*
- **S5** Flange, diameter 42 mm without terminal block, embedded pins (acc. to NAMUR)

○ **KL12** LEMO connector, diameter 12 mm (socket)  
\* Ambient temperature at the end of cable sheath (at flying leads outcome, connection of connection or compensation cables, connection of connector or sensor head) cannot exceed 100 °C (120 °C short-term).

\*\* Tolerance of stem length and connection or compensation cables length is equal to the greater value of ±2 % of length or ±20 mm; accuracy class for TC wires according to EN 60584-3.

\*\*\* Not for double RTD – code 07

## Ordering table

### TYPE

- **T1060** Sheath resistance temperature sensor
- **T1560** Sheath thermocouple temperature sensor

### TEMPERATURE SENSOR

Resistance (RTD) / sheath material / max. temperature of use

- **04** 1× Pt100 / 2wire / 1.4404 / to 500 °C
- **06** 1× Pt100 / 4wire / 1.4404 / to 600 °C
- **06HT** 1× Pt100 / 4wire / Inconel 600 / to 700 °C *only for code F7*
- **07** 2× Pt100 / 3wire / 1.4404 / to 600 °C
- **08** 2× Pt100 / 2wire / 1.4404 (17349) / to 500 °C
- **09** 2× Pt100 / 4wire / 1.4404 (17349) / to 600 °C
- **..VR** increased resistance to vibration and shock *only for code 06 F2*

Thermocouple (TC) / sheath material / max. temperature of use

- **20** 1× „T“ (Cu-CuNi) / 1.4541 / -40 (-200) to +350 °C
- **21** 1× „J“ (Fe-CuNi) / 1.4541 / -40 to +800 °C
- **61** 2× „K“ (Fe-CuNi) / 1.4541 / -40 to +800 °C
- **22** 1× „K“ (NiCr-NiAl) / Inconel 600 / -40 (-200) to 1100 °C
- **62** 2× „K“ (NiCr-NiAl) / Inconel 600 / -40 (-200) to 1100 °C
- **23** 1× „N“ (NiCrSi-NiSi) / Inconel 600 / -40 (-200) to 1100 °C
- **63** 2× „N“ (NiCrSi-NiSi) / Inconel 600 / -40 (-200) to 1100 °C
- **22HT** 1× „K“ (NiCr-NiAl) / Microbell/Pyrosil / -40 to 1300 °C
- **62HT** 2× „K“ (NiCr-NiAl) / Microbell/Pyrosil / -40 to 1300 °C
- **23HT** 1× „N“ (NiCrSi-NiSi) / Microbell/Pyrosil / -40 to 1300 °C
- **63HT** 2× „N“ (NiCrSi-NiSi) / Microbell/Pyrosil / -40 to 1300 °C
- **..U** grounded version of junction TC

Thermocouples have isolated lines, in number 2 the measuring connections are separated from each other.

### ACCURACY CLASS

Resistance (RTD) according to EN 60751 / Inside wiring material / Measuring range

- **F2** B / Cu / -70 to +500 °C *not for code 06HT*
- **F3** B / Ni / -200 to +600 °C *only for codes 06, 07, 09*
- **F7** B / Ni / -200 to +700 °C *only for codes 06HT*
- **F4** A / Cu / -30 to +300 °C *only for codes 06, 07, 09*
- **F5** A / Cu / -100 to +450 °C *only for codes 06, 07, 09*

Thermocouple (TC) according to EN 60584-1

- **T8** 3 in range -200 to +40 °C
- **T7** 2 in range from -40 to 350 °C („T“), to 800 °C („J“), to 1200 °C („K“, „N“)
- **T6** 1 in range from -40 to 350 °C („T“), to 750 °C („J“), to 1000 °C („K“, „N“) *not for TC „N“ with code KV*

Do not use inside Ni wiring for 2wire connection.

### OUTER DIAMETER OF STEM - D [MM]

- **S01** 0,5 mm *only for single TC*
- **S11** 0,8 mm *only for single TC*
- **S21** 1 mm *only for single TC*
- **S31** 1,5 mm *only for single TC*
- **S41** 2 mm *only for single TC*
- **S51** 3 mm
- **S61** 4,5 mm *only for TC*
- **S71** 6 mm

### NOMINAL LENGTH OF STEM - L [MM]

- **L...** fill length in mm (min. length 100 mm)

### COLD-END VERSION OF STEM \*

- **VV** Flying leads (standard length V=10 mm for stem diameter 1 to 2 mm and V=25 mm for stem diameter 3 to 6 mm)
- **KS1** Flat single connector (plug), standard version  
*only for TC with stem diameter 3 to 6 mm*
- **KS2** Flat double connector (plug), standard version  
*only for TC with stem diameter 3 to 6 mm*
- **KM** Flat single connector (plug), mini version  
*only for TC with stem diameter 1 to 3 mm*
- **KV** Connected connecting cable (for RTD) or compensating cable (for TC) \*\* *not for TC 2x"N"*
- **H1** Aluminium head type MA with ceramic terminal block, housing IP 64 \*\*\*
- **H1G3/8** Aluminium head type MA with ceramic terminal block, process connection G3/8", PN16, IP 64 \*\*\* *only for stem diameter 3 to 6 mm*
- **H1G1/2** Aluminium head type MA with ceramic terminal block, process connection G1/2", PN16, IP 64 \*\*\* *for stem diameter 3 to 6 mm*

### LENGTH OF CONNECTION OR COMPENSATION CABLE - AL [MM]

Compulsory for code KV, optional for codes KS, KM and H1 \*

- **200** 200
- **1000** 1000
- **2500** 2500
- **5000** 5000
- **...** Other – fill length (step 100 mm)

\* In option with code KS or KM, the beginning of compensation wires is with flat connector (female) of specified type, specified connector has to be added in ordering code (see optional accessories – code Z2, Z3 or Z4).

### CABLE INSULATION

Wire insulation / shield / outer insulation / braiding / ambient temperature of cable

- **I1010** silikon / - / silikon / - / -50 to +200 °C  
*only for TC (not for "N")*
- **I2010** FEP / - / silikon / - / -50 to +200 °C  
*only for RTD and TC 1x "N" acc. cl. 2*
- **I2C10** FEP / copper wire braiding / silikon / - / -50 to +200 °C  
*only for RTD*
- **I2C20** FEP / copper wire braiding / FEP / - / -50 to +200 °C  
*only for RTD*
- **I204N** FEP / - / glass fibres / stainless steel wire braiding / -50 to +200 °C  
*only for RTD 2- and 4-wire*
- **I3030** PFA / - / PFA / - / -200 to +260 °C *pouze pro TC*
- **I3C30** PFA / copper wire braiding / PFA / - / -200 to +260 °C  
*only for RTD 2- and 4-wire and TC "K"*
- **I404Z** ceramic fibres / - / ceramic fibres / galvanized steel wire braiding / -20 to +350 °C *only for TC (not for "N")*
- **I808N** ceramic fibres / - / ceramic fibres / stainless steel wire braiding / -20 to +800 °C *only for TC 1x "K"*

### WIRE TERMINATION

- **01** Insulated pressing tube according to DIN 46228
- **02** Flat connector standard (plug) for single sensor, up to 220 °C *only for TC*
- **03** Flat connector standard (plug) for double sensor, up to 220 °C *only for TC*
- **04** Flat connector mini (plug) for single sensor, up to 220 °C  
*only for TC*
- **22** Flat connector standard (plug) for single sensor, ceramic up to 650 °C *only for TC 1x "K"*
- **24** Flat connector mini (plug) for single sensor, ceramic up to 650 °C *only for TC 1x "K"*
- **12** LEMO connector, diameter 12 mm (socket)

### OPTIONAL VERSIONS AND ACCESSORIES

#### PROTECTION OF THE EXTENSION LINE WITH A METAL HOSE

- **D070 (x)** protection metal hose, outer diameter 7 mm, material SS410  
x – fill length in mm

#### VERSIONS FOR EXPLOSIVE ATMOSPHERE OF GASSES OR DUSTS

- **EI** Intrinsically safe version "Ex I"  
(Ex) II 1/2G Ex ia IIC T6...Tx°C Ga/Gb;  
(Ex) II 1/2D Ex ia IIIC T85°C...Tx°C Da/Db

#### CALIBRATION IN CUSTOMER DEFINED POINTS, INCLUDING CERTIFICATE OF CALIBRATION

- **KTE xy** temperature sensor calibration in -x- points and range -y-\*  
\* x – replace by number of calibration points; y – replace by code of range:  
ranges for RTD sensors: 1A ... 0 to 200 °C; 1B ... -40 to 660 °C; 1C ... -196 to 200 °C  
ranges for TC sensors: 2AA ... -40 to 660 °C; 2AB ... -40 to 1100 °C;  
2B ... 400 to 1553 °C; 2C ... -196 to 200 °C

#### CONNECTORS, FUSES OF CONNECTORS AND CABLES

#### FIXING SHIFT PIPE UNIONS, HOLDERS AND DISTANCE SLEEVE

Example of order:

**T1560 22 T7 S51 L100 KV 1000 I1010 02, KTE 3 2AB (-40, 500, 1000 °C)**