## RTD sensor with standard head and with resistive element with interchangeable mountings

TBEI 50 – TBEID 50

- Temperature sensor with or without compression fitting and stainless steel contact tip.
- Measuring range (According to reference) **From -80 °C to +400°C** (PT100 and PT1000).
  From -20 °C to +120°C (NTC).
- Mounting of wire: **single pair** (2,3 or 4 wires).
  multipair (4 or 6 wires).
- For other resistor type PT25, PT50, PT500, PT200 or NI, please contact us.

PART NUMBERS
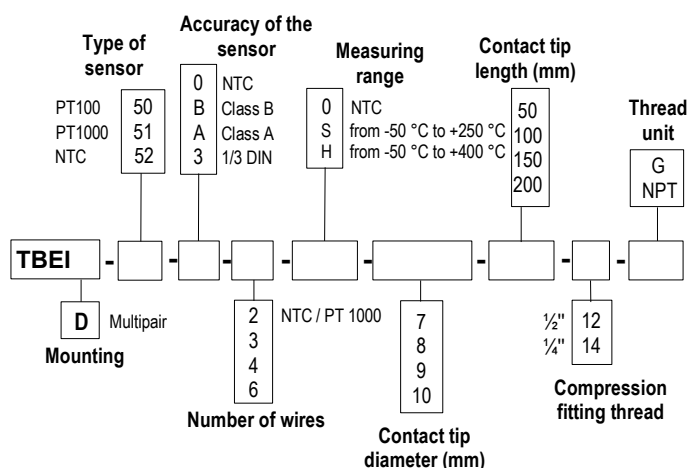
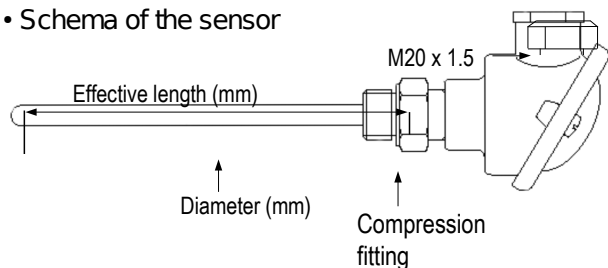

* Other dimensions on request

Example: TBEI-50-B-3-S-7-100-12G.
Model: PT 100 temperature sensor class B, with 3 wires in a sheath of 7 mm diameter and 100 mm length (including thread), with a ½ "G thread plug and with interchangeable element of 4 mm Ø and 140 mm length.
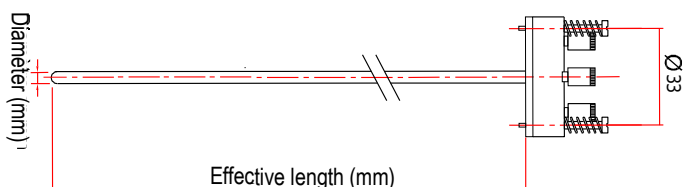Standard measuring range from -50 °C to 250 °C.

DIMENSIONS

- Schema of the sensor

- Internal interchangeable element schema

TECHNICAL FEATURES

Working temperature *(According to reference)*	From -80 °C to +400 °C (PT100 and PT1000) From -20 °C to +120 °C (NTC)
Accuracy	**PT100 or PT1000:** see "Tolerances" table **NTC:** see "Tolerances" table
Type of sensor	**PT100 or PT1000**: Class B, Class A, 1/3 DIN as per DIN IEC751 **NTC**: resistance at 25 °C, R_{25} = 10KΩ Nominal Beta B25/85 value = 3.695K ±1%
Storage temperature	From -20 °C to +80 °C
Contact tip	316 L stainless steel, no welding, 3/4 to 4/4 hard
Interchangeable element	316 L stainless steel *Diameter*: according to contact tip outer diameter

Interchangeable element Ø	Contact tip minimum Ø
4 mm	7 mm
5 mm	8 mm
6 mm	9 mm
7 mm	10 mm

LU length: contact tip length + 40 mm

Compression fitting	316 L stainless steel
Thread	With or without, 1/4, 1/2, male au pas Gas or NPT plug (other tread on request)
Electrical connection	With or without terminal block Transmitter 4/20mA 0/10V as option
Connection head	Aluminium alloy Cable gland: M20 x 1.5 IP65 protection
Adjustable mountings	Compression fitting welded further along the sheath, flange, clamp, replaceable probe insert, restricted end, ambient end. See data sheet.

⚠️ **Mounting of wire**
Single pair 2, 3 or 4 wires
For T>250 °C do not use 4 wires in a sheath of 6 mm Ø.
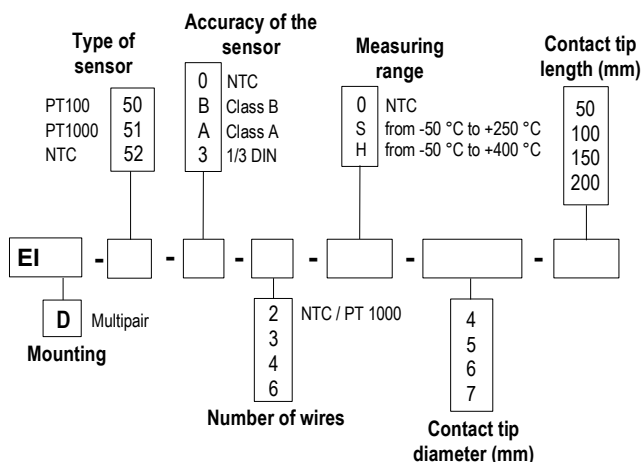**Multipair 4 or 6 wires**
For T>250 °C use sheath from 8 mm Ø.

Interchangeable element at resistive element

EI 50 – EID 50

- Measuring range (according to reference) **from -80 °C to +400 °C** (PT100 and PT1000).
  from -20 °C to +120 °C (NTC).
- Mounting of wire: **simple** (2,3 or 4 wires).
  duplex (4 or 6 wires).
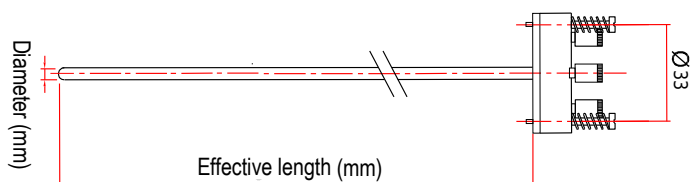- For other resistor type PT25, PT50, PT500, PT200 or NI, please contact us.

PART NUMBERS

		Accuracy of the sensor			Measuring range		Contact tip length (mm)
Type of sensor		0	NTC		0	NTC	50
PT100	50	B	Class B		S	from -50 °C to +250 °C	100
PT1000	51	A	Class A		H	from -50 °C to +400 °C	150
NTC	52	3	1/3 DIN				200

| **EI** | - | ☐ | - | ☐ | - | ☐ | - | ☐ | - | ☐ |

D	Multipair
Mounting	

2	NTC / PT 1000
3	
4	
6	
Number of wires	

4	
5	
6	
7	
Contact tip diameter (mm)	

* Other dimension on request

Length LU: contact tip length + 40 mm

Example: EI-50-B-3-S-7-100.
Model: Interchangeable element PT 100 class B, 3 wires diameter 7mm and thread length included of 100 mm.
Standard measuring range from -50 °C to 250 °C.

DIMENSIONS

Diameter (mm)

Effective length (mm)

Ø 33

TECHNICAL FEATURES

Working temperature *(According to reference)*	From -80 °C to +400 °C (PT100 and PT1000) From -20 °C to +120 °C (NTC)
Accuracy	**PT100 or PT1000:** see "Tolerances" table **NTC:** see "Tolerances" table
Type of sensor	**PT100 or PT1000**: Class B, Class A, 1/3 DIN as per DIN IEC751 **NTC:** resistance at 25 °C, R_{25} = 10KΩ Nominal Beta B25/85 value = 3.695K ±1%
Storage temperature	From -20 °C to +80 °C
Contact tip	316 L stainless steel, no welding, 3/4 to 4/4 hard
Interchangeable element	316 L stainless steel *Diameter* according to contact tip outer diameter

Interchangeable element Ø	Contact tip minimum Ø
4 mm	7 mm
5 mm	8 mm
6 mm	9 mm
7 mm	10 mm

LU length: contact tip length + 40 mm

| **Electrical connection**	With or without terminal block Transmitter 4/20mA 0/10V as option With or without terminal block put on DIN 42 mm Ø kit Pitch 33 mm.

> ⚠️ **Mounting of wire**
> **Single pair 2, 3 or 4 wires**
> *For T>250 °C do not use 4 wires in a sheath of 6 mm Ø.*
> **Multipair 4 or 6 wires**
> *For T>250 °C use sheath from 8 mm Ø.*

USEFUL INFORMATION ON THERMOMETRY WITH PLATINUM RESISTOR PT100, PT1000 OR NTC
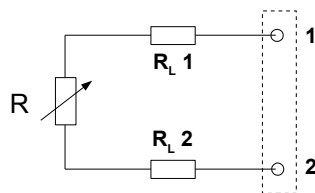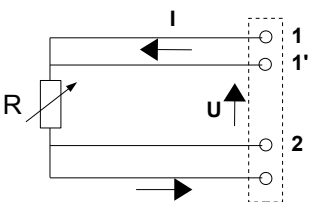
• 2-wire connection

This is the simplest way, but line resistors (RL1 and RL2) are connected to the sensor in a series circuit. The addition of RL1 + RL2, leads to an off-set between measured temperature and real temperature. This connection must be avoided.

• 3-wire connection
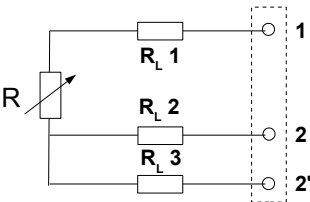
This connection involves identical line resistors (RL1-RL2-RL3), RL2 + RL3 allow you to measure the line resistance that will be subtracted from the measured resistance between 1 and 22' terminals. This is the most common connection.

• 4-wire connection

Regulated current is going through 11' and 22' terminals and the measurement is made at the sensor terminals, so none of the line resistors are taken into account. This is the most accurate connection.
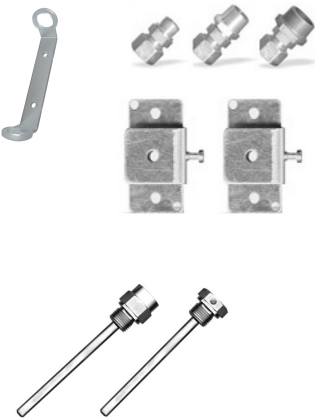
TOLERANCE* OF PT100 AND PT1000 PROBES

Norm as per IEC 751 (1993).

Temp °C	Tolerances					
	Class B		Class A		1/3 DIN	
	± °C	± Ohms	± °C	± Ohms	± °C	± Ohms
-100	0.8	0.32	0.35	0.14	0.27	0.11
-50	0.55	0.22	0.25	0.1	0.19	0.08
0	0.3	0.12	0.15	0.06	0.1	0.04
100	0.8	0.3	0.35	0.13	0.27	0.1
200	1.3	0.48	0.55	0.2	0.44	0.16
300	1.8	0.64	0.75	0.27	0.6	0.21
400	2.3	0.79	0.95	0.33	0.77	0.26

*Resistance values for PT1000 (Ω) must be multiplied by 10 for the same corresponding temperature value (°C). I.e: at 0 °C for Class B PT1000 ± 0.3 °C → ± 1.2 Ω

ACCESSORIES (SEE DATASHEET)

- Transmitter output 4/20 mA or 0/10 V
- Wall fixing support
- Stainless steel mounting brackets
- ¼ " or ½" Gas screw nut
- Stainless steel compression fitting
- PTFE or stainless steel ferrule for compression fittings
- Sleeve to weld for food industry
- Stainless steel union fitting
- ½" Gas or NPT thread cuff
- Thermo-conducting silicone grease
- Calibration certificate
- Thermowell