

Industrial thermocouple

WIRE & TRANSITION

TCZA-TCZB-TCZC-TCZD-TCZH
CONFIGURATIONS

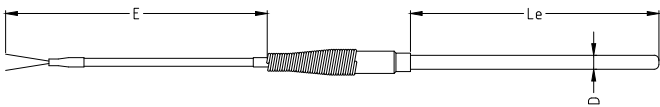
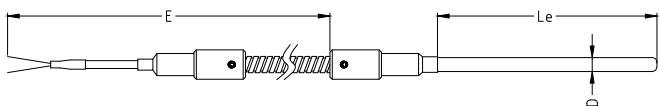
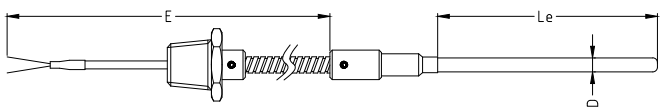
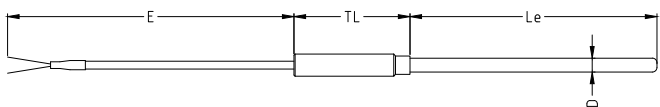
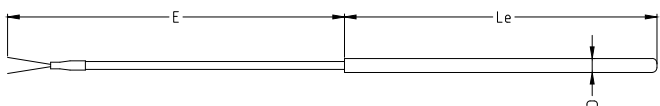
Ex c TC



RODAX^o
new temperature solutions

Product series TCWN

Table 1: Sensors main models

| | | |
|--------------------|---|--|
| <p>TCZA</p> | <p>Sensor with lead wire, (threaded) transition and wire relief spring (transition OD 6,35 or 9,53 mm)</p> |  |
| <p>TCZB</p> | <p>Sensor with lead wire, (threaded) transition and loose flexible metal hose (transition OD 6,35 or 9,53 mm)</p> |  |
| <p>TCZC</p> | <p>Sensor with lead wire, (threaded) transition and wire flexible metal hose for threaded 1/2" NPT attachment to connection head or cable gland (transition OD 6,35 or 9,53 mm)</p> |  |
| <p>TCZD</p> | <p>Sensor with lead wire and transition without relief spring (transition all dimension by request)</p> |  |
| <p>TCZH</p> | <p>Sensor with lead wire and transition same OD as sensor</p> |  |

Features assembly

High quality thermocouple element with MgO mineral insulated metal sheathed cable, providing excellent stability and reproducibility.

The unique properties make this basic element ideally suited for a wide variety of applications up to 1200 °C depending on thermocouple type and metal sheath.

The thermocouple element is fully bendable.

Table 2: Equipment for potentially explosive atmospheres

Certification

| | |
|----------|--------|
| A | ATEX |
| I | IECEX |
| G | GOST-R |

Explosive atmosphere

| | |
|----------|-----|
| G | Gas |
| | |
| | |

Table 3: Measuring inserts details

Details

- Thermocouple types: J/K/T/E/N/S/R/B
- Thermocouple standards: EN/IEC 60584 and/or ANSI MC96-1
- Minimum insulation resistance: 1000 MOhm at 500VDC, $T_{amb}=20\text{ °C}$
- Conductors: thermocouple material
- Metal sheath: see table

TC Type

| J | K | T | E | N |
|---|---|---|---|---|
| Fe – CuNi | NiCr – NiAl | Cu – CuNi | NiCr – CuNi | NiCrSi – NiSi |
| ±1.5 between -40 °C and 375 °C or ±0.004xT °C | ±1.5 between -40 °C and 375 °C or ±0.004xT °C | ±0.5 between -40 °C and 125 °C or ±0.004xT °C | ±1.5 between -40 °C and 375 °C or ±0.004xT °C | ±1.5 between -40 °C and 375 °C or ±0.004xT °C |

Colour code

| ANSI | IEC | Other |
|---------------|----------------|--------------|
| ANSI – MC96-1 | EN/IEC 60584-1 | |

TC element

| S | D | T |
|---------------------|-------------------|---------------------|
| Single thermocouple | Dual thermocouple | Triple thermocouple |

Diameter ØD

| D3 | D3,2 | D4,5 | D4,8 | D6 | D6,35 | D8 | D9,53 | D12,7 | Other diameters on request |
|-----------|-------------|-------------|-------------|-----------|--------------|-----------|--------------|--------------|-----------------------------------|
| 3,0 mm | 3,2 mm | 4,5 mm | 4,8 mm | 6,0 mm | 6,35 mm | 8,0 mm | 9,53 mm | 12,7 mm | |

Sheath material

| M2102 | M2107 | M2110 | M0601 | M0701 | M0704 | M0809 |
|-------|------------------------------|-------|----------------------------------|------------|-----------|-------------|
| SS304 | SS316 Standard for TC J/T | SS310 | Inconel 600 Standard for TC K | Alloy 800H | Alloy 825 | Hastelloy X |

Hot junction

| | | |
|-----------|-----------------------|--|
| I | Individually isolated | Hot junction electrically isolated from and shielded by the sheath. |
| CI | Commonly isolated | Multiple hot junctions joined to one hot junction electrically isolated from and shielded by the sheath. |
| DI | Dually isolated | Hot junction electrically isolated from and shielded by the sheath. For dual and triple: all circuits isolated from each other and from the sheath. |
| G | Grounded | Hot junction welded to the sheath. |

Transition OD

| D635 or D953 | DXXXLYYY | Other diameters on request |
|--|--|----------------------------|
| Sensor model TCZA, TCZB and TCZC | Sensor model TCZD | |
| Standard OD 6,35 or 9,53 mm. Standard length 30 mm | With XXX OD in mm and YYY length in mm | |

Temperature rating transition

| | | |
|------------|------------------|---------------|
| STD | Standard | Tmax = 120 °C |
| HT | High temperature | Tmax = 290 °C |

Table 4: Lead wires

Lead wire

Standard conductor wire gauge is AWG 24 (0,24 mm²). Other dimensions on request.

| | | | Lead wire | Lead wire + SS external SS braiding |
|-------------|---------------------------------------|-------------------|------------|--|
| Teflon® | Extruded FEP internal Cu/Ni shielding | -45 °C +200 °C | M01 | MS1 |
| Kapton® | Polyimide tape | -80 °C +360 °C | M02 | MS2 |
| Glass fiber | Resin impregnation | max. +480 °C | M03 | MS3 |
| Silicone | Polyvinyl | -45 °C +160 °C | M04 | |

Table 5: Certification possibilities

Certificates

Following tests and certificates are possible and are either done in-house or done by an external party.

| Code | Certificates |
|---------------|---|
| Q04210 | Functional test report sensor |
| Q04230 | Calibration report (measuring points to be indicated) E.g. 100/200 °C |
| Q05220 | Calibration report by accredited calibration lab retraceable (measuring points to be indicated) |
| Q05230 | Calibration report by accredited calibration lab ISO/IEC 17025 (BELAC) (measuring points to be indicated) |
| Q02040 | Test report EN10204-2.2 |
| Q04250 | Transmitter programming. Range and burn-out settings to be indicated |




Addenda

Thermal data related to product series TCWN

The maximum process temperature T_p (in °C) and the relation to the temperature class is as follows:

| | | | | | | | |
|--|----|-----|-----|-----|-----|-----|----------|
| Maximum process temperature T_p (°C) | 75 | 90 | 125 | 190 | 285 | 435 | >435 |
| Temperature class (°C) | T6 | T5 | T4 | T3 | T2 | T1 | T_p+10 |
| Maximum surface temperature T of the Assembly (°C) | 85 | 100 | 135 | 200 | 300 | 450 | T_p+10 |

Certificates for product series TCWN

| | | |
|------------------------|---|---|
| ATEX 2014/34/EU | ATEX EU-type examination certificate 18ATEX0060 X |  |
| IECEX 02 | IECEX DEK 18.0032 X |  |
| GOST-R | GOST EAC RU C-BE.ГБ05B.00211 |  |

HOW TO ORDER (example)

| Code | | Example | Your code |
|--------------------------------------|-------------|---------|-----------|
| Main model | See table 1 | KZA | |
| Certification | See table 2 | A | |
| Explosion atmosphere | See table 2 | G | |
| TC type | See table 3 | K | |
| Colour code | See table 3 | IEC | |
| TC element | See table 3 | S | |
| Diameter ØD | See table 3 | D6 | |
| Sheath material | See table 3 | M0601 | |
| Hot junction | See table 3 | I | |
| Transition OD | See table 3 | D953 | |
| Temperature rating transition | See table 3 | STD | |
| Lead wire | See table 4 | M01 | |
| Insertion length Le | In mm | Le400 | |
| Lead wire length E | In mm | E5000 | |
| Options (transmitters, etc.) | | | |

Ordering code example:

KZA A G K IEC S D6 M0601 I D953 STD M01 Le400 E5000

For all options: please contact Rodax

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new temperature solutions

TCZ-Exc-TC GB 201810