

Ø 100 - Ø 150 - Ø 160 mm

Derived from the **TXA** thermometers of nominal diameter 100, 150 and 160, of which they possess all the characteristics, the **T11, T12, T13** are instruments equipped with electrical contact blocks enabling all contact combinations.

The contact block is fastened to the dial. A reset knob with indicator is provided to set the trip points.

- **Contacts specifications are described on following pages.**
- **Explosion-proof case version.**
- **For the T13 series** and for use in explosive areas, the thermometer, with one or 2 inductive contacts, should be used with the amplifying relay RSI 1 or RSI 2. The complete assembly is intrinsically safe, conforming to standards : NF EN 50014 - NF EN 50020



Specifications (20°C)

Range:

from -200°C to +600°C
Possible overload of +30%.

Accuracy:

Contact : ± 2% of full scale.
Pointer : ± 1.6% of full scale.
1.6 class accuracy according to DIN 16085

Degree of protection:

IP65 according to NF EN 60529

Sensing element :

Low volume spiral having undergone a heat treatment.

Ambient temperature of the indicator:

-10°C to +50°C
Other ambient temperatures : consult us.

Case and bezelring:

304 stainless steel.
Bayonet type fastening.

Window:

Transparent polycarbonate convex cap with sealed index setting button.

Window gasket:

In PVC nitril elastomer. Ensures tightness between window and case.

Movement:

Stainless steel.



Dial:

Aluminium alloy.
Black graduations and figures on white background.
Graduation conforms to DIN 16 203 standard.

Pointer:

Aluminium alloy, balanced, black painted.

Mounting :

| | Type | |
|--|---|---|
| |  |  |
| Direct | D | F |
| Surface mounting by means of 3 back lugs fixing | A | E |
| Flush mounting with front flange welded on to case | C | B |

Blow out disc:

In elastomer. It is positioned at the top of thermometer and vents the inside of the case to the atmosphere.

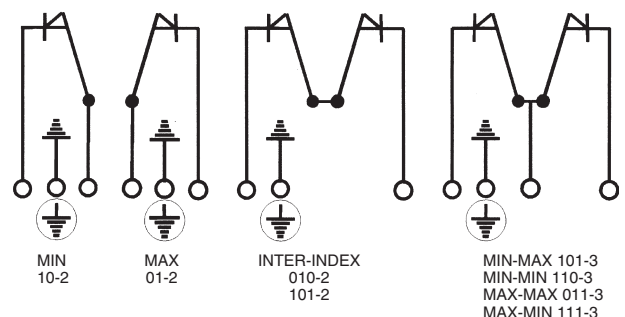
Zero setting:

After removing an elastomer plug, the zero setting screw enables to adjust the instrument.

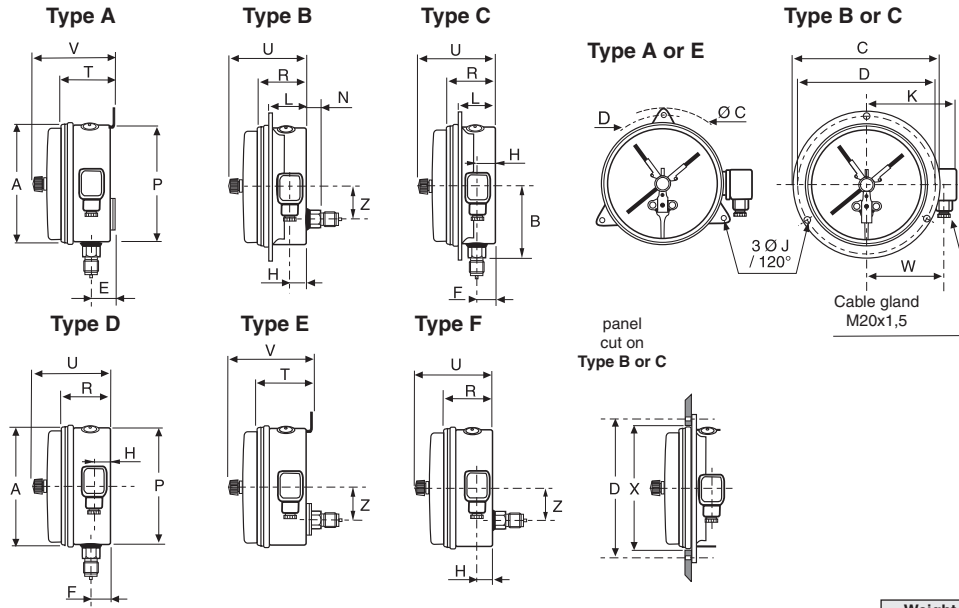
Electrical connection:

Terminal block. Cable gland M20x1.5. Cable 7 to 13mm

Blocks wiring diagram:



Dimensions (mm)



| Dimensions Ø mm | mm | | | | | | | | | | | | | | | | | | | Weight in kg type D |
|--------------------|-------|----|-----|-----|------|------|------|-----|-----|------|----|-----|------|------|-----|-------|-----|-----|------|------------------------|
| | A | B | C | D | E | F | H | J | K | L | N | P | R | T | U | V | W | X | Z | Dry (BH) |
| 100 | 106.2 | 63 | 130 | 118 | 25.5 | 23 | 19 | 5.5 | 89 | 39.3 | 17 | 98 | 54.5 | 57 | 105 | 110 | 74 | 107 | 31.5 | 0.605 kg |
| 150 | 150.2 | 85 | 180 | 168 | 25.5 | 23 | 19 | 5.5 | 111 | 39.3 | 17 | 142 | 54.5 | 57 | 105 | 110 | 96 | 151 | 31.5 | 0.930 kg |
| 160 | 160.2 | 99 | 196 | 178 | 23.7 | 21.7 | 19.5 | 5.5 | 116 | 38 | 19 | 152 | 55.5 | 57.5 | 106 | 110.5 | 101 | 161 | 54 | 0.980 kg |

Standard versions of **DIRECT THERMOMETERS** Ⓢ - Ø 8 mm dia bulb

| | | | | | | T11 - T12 - T13 (Ø 100 - Ø 150 - Ø 160) | | | | |
|--------|----------------|-------|--------|----------------|--------|---|-----|-----|-----|-----|
| Coding | Graduations °C | | Coding | Graduations °F | | S | P | | | |
| | | | | | | | 150 | 250 | 400 | 600 |
| 03 | -200 | + 50 | 03 | -300 | + 100 | 100 | ⊗ | ⊗ | ⊗ | ⊗ |
| 08 | -120 | + 40 | 06 | -200 | + 100 | 50 | | | | |
| 11 | -70 | + 40 | 10 | -100 | + 100 | 50 | | | | |
| 13 | -40 | + 60 | 15 | -40 | + 160 | 50 | | | | |
| 22 | -30 | + 50 | 32 | -20 | + 100 | 50 | | | | |
| 25 | -20 | + 40 | 40 | 0 | + 100 | 50 | | | | |
| 19 | -30 | + 170 | 21 | -30 | + 320 | 50 | | | | |
| 16 | -30 | + 270 | 26 | -30 | + 520 | 100 | ⊗ | ⊗ | ⊗ | ⊗ |
| 47 | 0 | + 60 | 49 | +20 | + 140 | 50 | | | | |
| 51 | 0 | + 100 | 52 | +20 | + 220 | 50 | | | | |
| 53 | 0 | + 120 | 56 | +20 | + 270 | 50 | | | | |
| 57 | 0 | + 160 | 60 | +20 | + 320 | 50 | | | | |
| 61 | 0 | + 200 | 65 | +20 | + 420 | 100 | ⊗ | ⊗ | ⊗ | ⊗ |
| 66 | 0 | + 250 | 70 | +20 | + 520 | 100 | ■ | ⊗ | ⊗ | ⊗ |
| 71 | 0 | + 300 | 80 | +30 | + 580 | 100 | ■ | ⊗ | ⊗ | ⊗ |
| 81 | 0 | + 400 | 90 | +30 | + 730 | 100 | ■ | ⊗ | ⊗ | ⊗ |
| 99 | 0 | + 600 | 99 | +30 | + 1130 | 100 | ■ | ⊗ | ⊗ | ⊗ |

□ Standard ⊗ Optional bulb S = 50 ■ Not possible

For P > 600, consult us

Options

Uncoded options

(have to be listed after the code number)

- 316 L stainless steel case and bezel ring
- Special scales
- Index setting by inviolable system

Coded options

- BH version (BH3 filling) for T12 and T13
- Explosion-proof housing version EEx d II C T6 (150 dia. only) conforming to standards : NF EN 50014 - NF EN 50018

CES - CESA - CEI - CEI+RSI

GENERAL

Electrical contacts can be fitted to our instruments with nominal diameters 100, 150, 160 mm.

They are adjustable over the whole scale (270° arc maximum).

The overall dimensions, mounting and switching arrangements, operating limits (pressure and temperature) are all given in the corresponding documentation for each series of equipment.

Various contact models :

- dry contact : **CES**
- dry contact with magnet : **CES A**
- inductive contact : **CEI**
- inductive contact + amplifier relay : **CEI+RSI**

Specifications

Contact material :

During their use, electrical contacts are subjected to a varying degree of wear, depending on their operating conditions, under the effect of mechanical stresses, the effect of electrical arc and heating.

The choice of material for contacts must allow for the specific operating conditions.





Standard material is a Ag 80-Ni 20 alloy. It has a high resistance to the electric arc effect (sparking).

Oil filled version :





When a gauge is to be oil filled, CESA contacts must be used. The gauge must be filled with silicon oil (BH3). The power breaking capacity is significantly reduced (< 1 mA). **It is then necessary to use a relay** : AYRA (RSI) or AREB (MSR).

CAUTION :

For use with OXYGEN, use filling fluid BH5.

| NF standard coding Standard nomenclature NF E 15-100 | | Contact block control function CES-CESA | |
|---|------------|---|--|
| Two wire supply | 1 contact | Min 10.2 |  Contact open above the set point |
| | | Max 01.2 |  Contact closed above the set point |
| | 2 contacts | Inter Index Closed 010.2 |  Contact closed inside area determined by the 2 set points open outside |
| | | Inter Index Opened 101.2 |  Contact open inside area determined by the 2 set points closed outside |

The last figure correspond to the number of terminal output
Example : 10-2 (2 terminal outputs)

| NF standard coding Standard nomenclature NF E 15-100 | | Contact block control function CES-CESA | |
|---|------------|---|--|
| Three wire supply | 2 contacts | Min Max 101.3 |  First contact open second contact closed above the set point |
| | | Min Min 110.3 |  First and second contacts open above the set point |
| | 2 contacts | Max Max 011.3 |  First and second contacts closed above the set point |
| | | Max Min 111.3 |  First contact closed second contact open above the set point |

very thick black sector : closed contact
very fine sector : open contact

Dry electrical contacts **CES**

APPLICATIONS :

These contacts are used when normal service conditions require a low switching power. This type of contacts requires **vibration-free installation** and cannot be used with liquid filled gauges. In aggressive environments and in areas where there is a risk of explosion, use CEI inductive contacts + RSI amplifier relay or explosion-proof enclosure versions.

Technical characteristics

Contacts can switch continuous or alternating voltages of up to 250 volts with a maximum rating of 10 W or 18 VA.

Table of maximal for standard electrical contacts :

| V | Resistive load | | Inductive load Cosφ > 0,8 |
|-----|----------------|--------|------------------------------|
| | DC | AC | |
| 220 | 40 mA | 45 mA | 25 mA |
| 110 | 80 mA | 90 mA | 45 mA |
| 48 | 120 mA | 170 mA | 70 mA |
| 24 | 200 mA | 350 mA | 100 mA |

NOTA : with 24 Vcc, minimum current 10 mA.

Dry electrical contacts with magnets **CES A**

APPLICATIONS :

These contacts are used in practically all service conditions. They are, **to a very great extent, insensitive to vibrations**. They can be used with liquid filled instruments. In areas where there is a risk of explosion, use CEI inductive contacts + RSI amplifier relay or explosion-proof enclosure versions.

Technical characteristics

Contacts can switch continuous or alternating current voltages of up to 250 volts with a maximum rating of 30W or 50 VA

Table of nominal values :

| V | Resistive load | | Inductive load Cosφ > 0,8 |
|-----|----------------|--------|------------------------------|
| | DC | AC | |
| 220 | 100 mA | 120 mA | 65 mA |
| 110 | 200 mA | 240 mA | 130 mA |
| 48 | 300 mA | 450 mA | 200 mA |
| 24 | 400 mA | 600 mA | 250 mA |

NOTA : values for non-liquid filled instruments.

Inductive electrical contacts **CEI**

APPLICATIONS :

CEI contacts are used in a highly vibrating environment. They are spark, overheating or wear proof. They must be used with an amplifier relay.

Inductive electrical contacts **CEI+RSI** amplifier relay

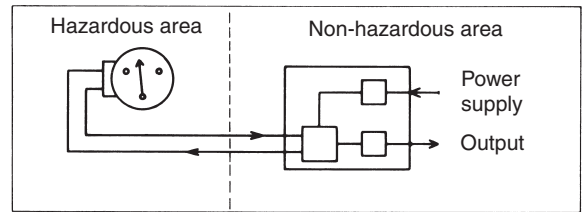
Officially approved, intrinsic safety :

- **CEI sensor, EEX ia IIc T6**
- **RSI amplifier, EEX ia IIc**

APPLICATIONS :

CEI contacts are used in explosive atmosphere and hazardous area. They are spark, overheating or wear proof.

They must be used with a RSI amplifier relay as follows :



Specifications

Case :

SE Noryl.
Overall dimensions - mounting : see below.
Weight : **RSI 1** - 0.220 kg
 : **RSI 2** - 0.420 kg

Power supply :

Standard : 220 Vac \pm 15%, 45-60 Hz
Options : 110 Vac \pm 15%, 40-60 Hz
 24 Vcc

Consumption : 1.5 VA.

Output :

Reversing contact relay; rupturing capacity 4A - 250 V - 500 VA

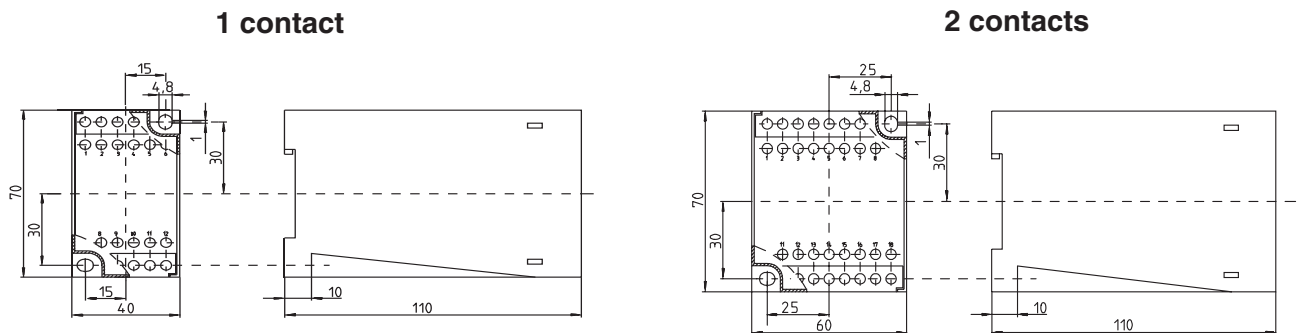
Operating temperature :

- 20° C to + 60° C
(-4° F to + 140° F)

Protection : IP 30.

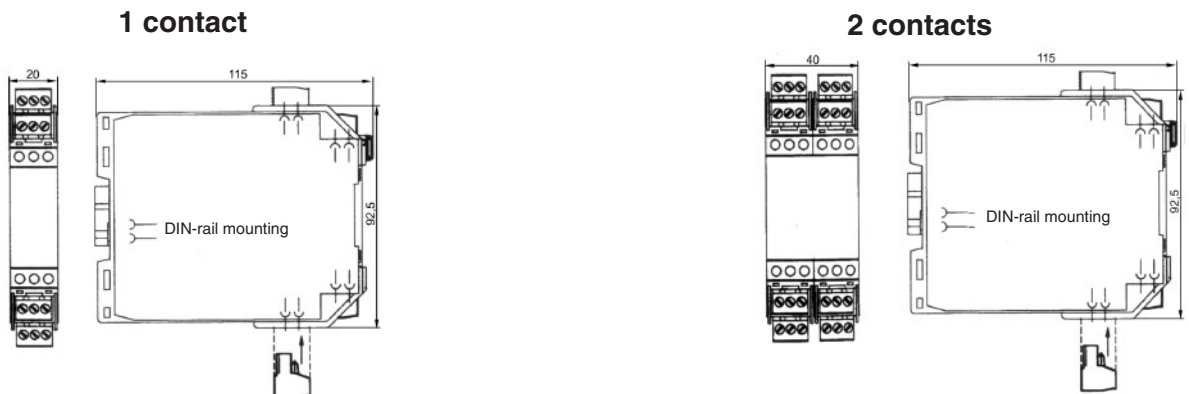
Max. **RSI** pressure gauge distance : 3000 m.
(Max. R in line 100 Ω).

Relay dimensions RSI (220 Vac-110 Vac)



Attachment : on rail DIN 50022 or by 2 screws

Relay dimensions RSI (24 Vcc)



Attachment : on rail DIN 50022

