# CTE7000 / CTU7000 Series
## Miniature pressure transmitters

### FEATURES

- **0...10 mbar to 0...7 bar, 0...0.15 to 0...100 psi gage[1] or absolute[10]**
- **0...5 V, 0...10 V, 0.5...4.5 V or 4...20 mA output**
- **Single supply**
- **Field interchangeable**
- **Rugged stainless steel housing**

### MEDIA COMPATIBILITY

Pressure inlet:
Non-corrosive, non-ionic media such as air, dry gases and the like compatible with stainless steel 1.4404 (316), nylon, silicon, silicone-sealant and epoxy[9]

Housing:
Stainless steel, protection class IP 64 (according to DIN EN 60529) respectively NEMA 4[1]

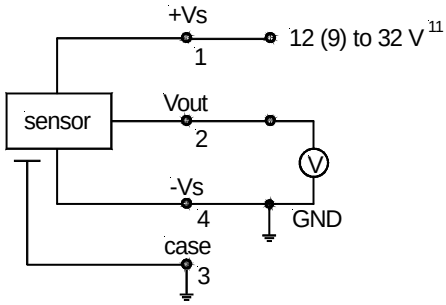
### SPECIFICATIONS[12,13]

**Maximum ratings**

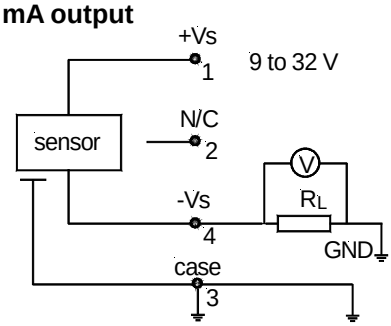
| | |
|---|---|
| Supply voltage (reverse polarity protection) | |
| CTE(M)/CTU7...0[11] | 12...32 V |
| CTE(M)/CTU7...6, ...7[11] | 9...32 V |
| CTE(M)/CTU7...4[2] | 9...32 V |
| Maximum load current (source) | |
| CTE(M)/CTU7...0, ...6, ...7 | 1 mA |
| Temperature limits | |
| Storage | -55...100°C |
| Operating | -40...85°C |
| Compensated | 0...50°C |
| Humidity limits | 0...98 %RH |
| Vibration (5 to 500 Hz) | 2 $g_{RMS}$ |
| Mechanical shock | 50 g |
| Proof pressure[3] | |
| CTE...010.../CTU...0x15... | 250 mbar / 3.6 psi |
| CTE...025.../CTU...0x3... | 350 mbar / 5 psi |
| CTE...070..., 350.../CTU...01..., 05... | 1 bar / 15 psi |
| CTE7007.../CTU7100... | 10 bar / 150 psi |
| all others | 2 x rated pressure |

### ELECTRICAL CONNECTION

**0...10 V, 0.5...4.5 V, 0...5 V output**




**4...20 mA output**



## COMMON PERFORMANCE CHARACTERISTICS

| Characteristics | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Thermal effects (0 to 50°C)[4] | Offset | CTEM70010..., CTEM7N010.../ CTU700x15..., CTU7N0x15... | | | ±0.08 | %FSO/°C |
| | | CTEM70025..., CTEM7N025.../ CTU700x3..., CTU7N0x3... | | | ±0.08 | |
| | | all others | | | ±0.04 | |
| | Span | | | | ±0.04 | |
| Thermal effects (-20 to 0°C, 50 to 70°C) | Offset<br>Span | | | ±0.03<br>±0.03 | | |
| Non-linearity (BSL) and hysteresis[5] | | | | ±0.2 | ±0.50 | %FS |
| Repeatability | | | | ±0.1 | | |
| Long term stability[6] | | | | ±0.5 | | |
| Output noise (0 < f < 1 kHz) | | | | ±0.04 | | |
| Response time (10 to 90 %) | | | | 1.0 | | ms |
| Power supply rejection | Offset | CTE(M)/CTU7...0, ...6, ...7<br>CTE(M)/CTU7...4 | | ±0.002<br>±0.05 | | %FSO/V |
| | Span | CTE(M)/CTU7...0, ...6, ...7<br>CTE(M)/CTU7...4 | | ±0.002<br>±0.08 | | |

## INDIVIDUAL PERFORMANCE CHARACTERISTICS

### 0...10 V output ($V_S$ = 15 V, $R_L$ > 100 kΩ, $t_{amb}$ = 25°C)

| Characteristics | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Zero pressure offset | CT...7N...<br>all others | 4.9<br>-0.1 | 5<br>0 | 5.1<br>0.1 | V |
| Full scale span[7] | CT...7N...<br>all others | 4.9<br>9.9 | 5<br>10 | 5.1<br>10.1 | |
| Output impedance | | | | 25 | Ω |
| Current consumption (no load) | | | 4 | 9.5 | mA |

### 0.5...4.5 V output ($V_S$ = 15 V, $R_L$ > 100 kΩ, $t_{amb}$ = 25°C)

| Characteristics | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Zero pressure offset | CT...7N...<br>all others | 2.450<br>0.450 | 2.5<br>0.5 | 2.550<br>0.550 | V |
| Full scale span[7] | CT...7N...<br>all others | 1.950<br>3.950 | 2<br>4 | 2.050<br>4.050 | |
| Output impedance | | | | 25 | Ω |
| Current consumption (no load) | | | 4 | 8.5 | mA |

## INDIVIDUAL PERFORMANCE CHARACTERISTICS (cont.)

**0...5 V output ($V_S$ = 15 V, $R_L$ > 100 kΩ, $t_{amb}$ = 25°C)**

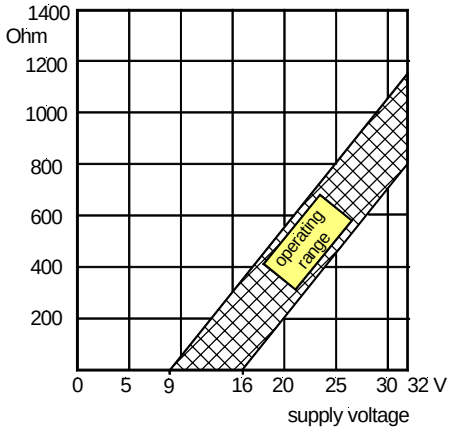
| Characteristics | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Zero pressure offset | CT...7N...<br>all others | 2.45<br>-0.05 | 2.5<br>0 | 2.55<br>0.05 | V |
| Full scale span[7] | CT...7N...<br>all others | 2.45<br>4.95 | 2.5<br>5.0 | 2.55<br>5.05 | |
| Output impedance | | | | 25 | Ω |
| Current consumption (no load) | | | 4 | 8.5 | mA |

**4...20 mA output ($V_S$ = 15 V, $R_L$ = 100 Ω, $t_{amb}$ = 25°C)**

| Characteristics | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Zero pressure offset | CT...7N...<br>all others | 11.8<br>3.8 | 12.0<br>4.0 | 12.2<br>4.2 | mA |
| Full scale span[7] | CT...7N...<br>all others | 7.8<br>15.8 | 8.0<br>16.0 | 8.2<br>16.2 | |
| Power consumption ($I_L$ = 20 mA) | | | 260 | | mW |

## LOAD LIMITATION

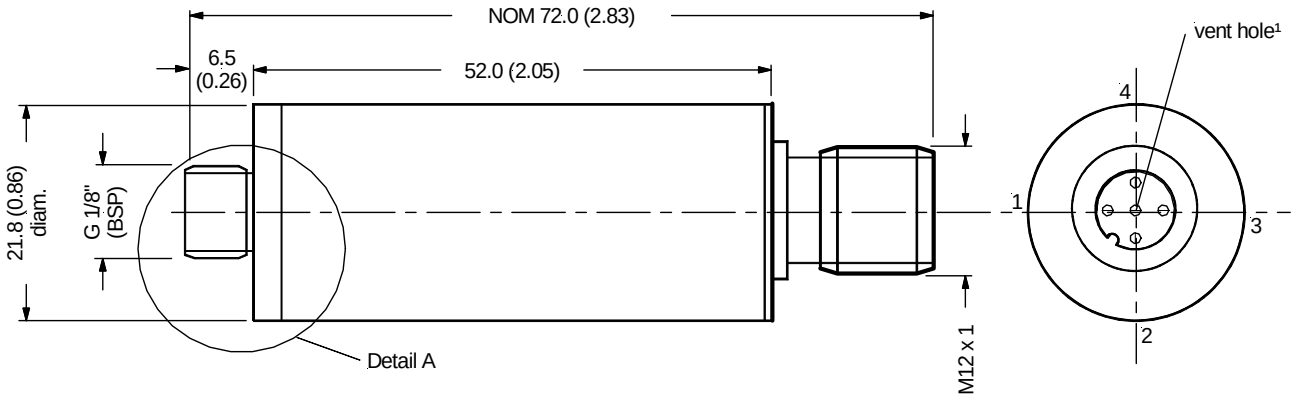
**4...20 mA output version**

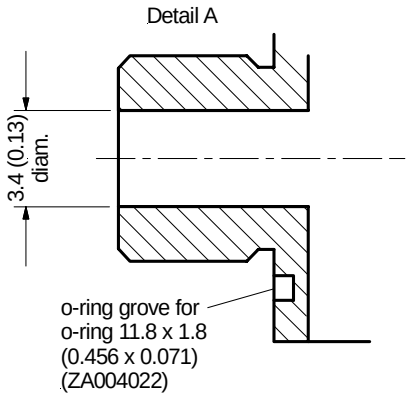


## ELECTROMAGNETIC CAPABILITY[8]

| | Test conditions | | Criterion | Interference |
|---|---|---|---|---|
| Radiated, radio frequency electromagnetic field immunity (RFI) | EN61000-4-3: | 10 V/m, 80 to 1000 MHz 80 % AMC (1 kHz) | A | <1 %FSO |
| Electrical fast transient / burst immunity (EFT) | EN61000-4-4: | ±2 kV | B | <1 %FSO |
| Electrostatic discharge immunity test (ESD) | EN61000-4-2: | ±4 kV, contact discharge ±8 kV, air discharge | B | <1 %FSO |
| Immunity to conducted disturbances induced by radio-frequency fields | EN61000-4-6: | 0.15 to 80 MHz 10 V, 80 % AMC (1 kHz) | A | <1 %FSO |

## OUTLINE DRAWING



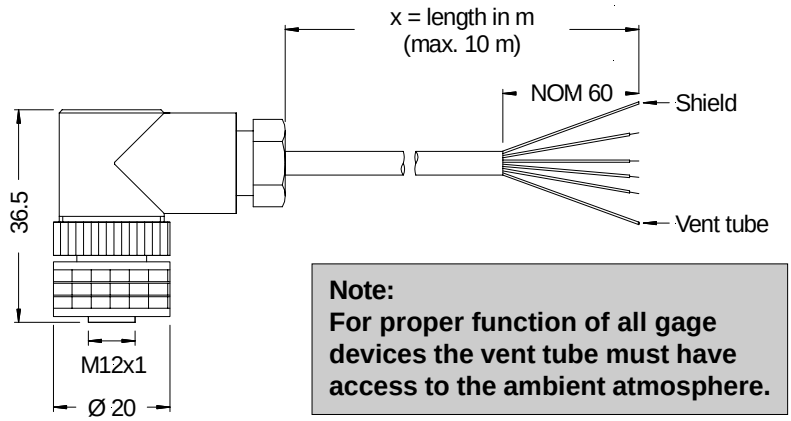

| Pin | Output | |
|---|---|---|
| | 0...10 V, 0.5...4.5 V, 0...5 V | 4...20 mA |
| 1 | +Vs | +Vs |
| 2 | Vout | N/C |
| 3 | Case | Case |
| 4 | -Vs | -Vs |

**mass:** 60 g

dimensions in mm (inches)

## RECOMMENDED ACCESSORY (not included in delivery)

**ZP000112-B:** **Mating Connector** (without cable)
**ZK000101-x:** **Connector/cable assembly** (x=cable lenghts in m, max. 10 m)



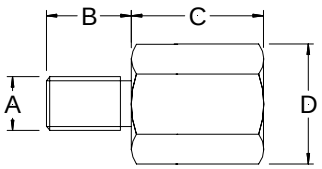

**Note:**
**For proper function of all gage devices the vent tube must have access to the ambient atmosphere.**

| PIN CONNECTION | |
|---|---|
| **Pin** | **Flying lead end** |
| 1 | Brown |
| 2 | Green |
| 3 | White and shield |
| 4 | Yellow |

dimensions in mm

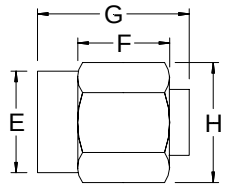
## OPTIONAL PRESSURE FITTINGS (brass, nickel plated)

**Male fittings**




| Dimensions in mm (inches) | | | |
|---|---|---|---|
| A | B | C | D (Hex.) |
| 1/8" BSPT | 8 (0.315) | 13 (0.512) | 14 (9/16") |
| 1/4" BSPT | 12 (0.472) | 5.5 (0.217) | 14 (9/18") |
| 3/8" BSPT | 11.5 (0.453) | 5 (0.197) | 17 (11/16") |
| 1/2" BSPT | 16 (0.630) | 7 (0.276) | 22 (7/8") |
| 1/8" BSP | 12.5 (0.492) | 11 (0.433) | 14 (9/16") |
| 1/4" BSP | 8.5 (0.335) | 5 (0.197) | 19 (3/4") |
| 3/8" BSP | 12.5 (0.492) | 7 (0.276) | 22 (7/8") |
| 1/8" NPT | 10 (0.394) | 13 (0.512) | 17 (11/16") |
| 1/4" NPT | 14 (0.551) | 6 (0.236) | 22 (7/8") |

**Female fittings**




| Dimensions in mm (inches) | | | |
|---|---|---|---|
| E | F | G | H (Hex.) |
| 1/8" BSP | 5 (0.197) | 15 (0.591) | 14 (9/16") |
| 1/4" BSP | 7 (0.276) | 20 (0.787) | 17 (11/16") |
| 3/8" BSP | 6 (0.236) | 20 (0.787) | 22 (7/8") |
| 1/2" BSP | 18 (0.707) | 23 (0.906) | 24 (15/16") |

**Specification notes:**

1. IP 64 protection is given when the connector is locked. For proper function the gage port is vented to the atmosphere through the connector/cable assembly. Thus the cable end must have access to the ambient pressure.
2. The minimum supply voltage is directly proportional to the load resistance seen by the transmitter. For more details see the load limitation diagram.
3. Proof pressure is the maximum pressure which may be applied without causing damage to the sensing element.
4. Thermal effects tested and guaranteed from 0 to 50°C relative to 25°C. All specifications shown are relative to 25°C.
5. Non-linearity refers to the **B**est **S**traight **L**ine fit measured for offset, full scale span and 1/2 full scale span.
6. Long term stability is the change in output after one year or 1 million pressure cycles.
7. Span is the arithmetic difference in transmitter output signal measured at zero pressure and the maximum operating pressure.
8. Tests are in accordance with EN 61000-6-2.
9. When using devices with optional nickel plated fittings, consider the media compatibility of the fittings also.
10. Available for pressure ranges from 1 bar (15 psi) absolute upwards only.
11. For sensors with max. operating pressure below 100 mbarg the max. supply voltage is 27 V.
12. CE-labelling is in accordance with 2004/108/EC.
13. The pressure transmitters must not be used as safety accessories according to article 1, 2.1.3 of the directive 97/23/EC.

## ORDERING INFORMATION

**CTx (M) 7xxxx x x x**

**Calibration**
E: bar calibration
U: psi calibration

**For mbar ranges only**

**Pressure range**

| CTE7000 series | | CTU7000 series | |
|---|---|---|---|
| 0010: | 0...10 mbar | 00x15: | 0...0.15 psi |
| N010: | -10...10 mbar | N0x15: | -0.15...0.15 psi |
| 0025: | 0...25 mbar | 00x3: | 0...0.3 psi |
| N025: | -25...25 mbar | N0x3: | -0.3...0.3 psi |
| 0070: | 0...70 mbar | 001: | 0...1 psi |
| N070: | -70...70 mbar | N01: | -1...1 psi |
| 0350: | 0...350 mbar | 005: | 0...5 psi |
| N350: | -350...350 mbar | N05: | -5...5 psi |
| 001: | 0...1 bar | 015: | 0...15 psi |
| N01: | -1...+1 bar | N15: | -15...15 psi |
| P01: | 0...-1 bar | P15: | 0...-15 psi |
| 002: | 0...2 bar | 030: | 0...30 psi |
| 005: | 0...5 bar | 100: | 0...100 psi |
| 007: | 0...7 bar | | |

**Pressure mode**
G: gage pressure[1]
A: absolute pressure
*(from 1 bar/15 psi only)*

**Output signal**
0: 0...10 V
4: 4...20 mA
6: 0.5...4.5 V
7: 0...5 V

**Pressure connection**
Standard thread
Y: G 1/8" (BSP) male, SS 1.4404 (316L)
Optional pressure fittings
D: 1/8" BSPT male, brass, nickel plated
E: 1/4" BSPT male, brass, nickel plated
F: 3/8" BSPT male, brass, nickel plated
G: 1/2" BSPT male, brass, nickel plated
K: 1/8" NPT male, brass
L: 1/4" NPT male, brass
M: 1/8" NPT male, SS 1.4305 (303)
N: 1/4" NPT male, SS 1.4305 (303)
P: G 1/8" (BSP) male, brass, nickel plated
Q: G 1/4" (BSP) male, brass, nickel plated
R: G 3/8" (BSP) male, brass, nickel plated
S: G 1/2" (BSP) male, brass, nickel plated
U: G 1/8" (BSP) female, brass, nickel plated
V: G 1/4" (BSP) female, brass, nickel plated
W: G 3/8" (BSP) female, brass, nickel plated
X: G 1/2" (BSP) female, brass, nickel plated

**Other pressure ranges and options are widely available. Please contact Sensortechnics.**