

CTE7000 / CTU7000 Series

Miniature pressure transmitters

FEATURES

- 0...10 mbar to 0...7 bar, 0...0.15 to 0...100 psi gage¹ or absolute¹⁰
- 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 epoxy⁹

Housing:

Stainless steel, protection class IP 64 (according to DIN EN 60529) respectively NEMA 4¹



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
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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

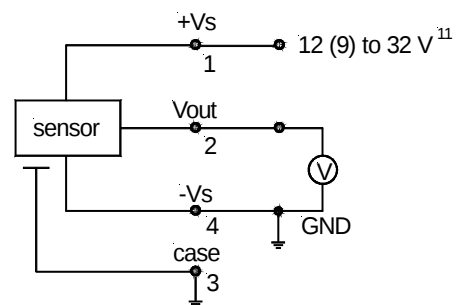
50 g

Proof pressure³

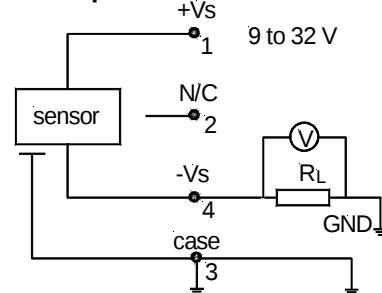
CTE...010.../CTU...0x15...	250 mbar / 3.6 psi
CTE...025.../CTU...0x3...	350 mbar / 5 psi
CTE...070..., 350.../CTU...01..., 05...	1 bar / 15 psi
CTE7007.../CTU7100...	10 bar / 150 psi
all others	2 x rated pressure

ELECTRICAL CONNECTION

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



4...20 mA output



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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			±0.03		%FS
	Span			±0.03		
Non-linearity (BSL) and hysteresis ⁵				±0.2	±0.50	
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 CTE(M)/CTU7...4		±0.002 ±0.05		%FSOV
		CTE(M)/CTU7...0, ...6, ...7 CTE(M)/CTU7...4		±0.002 ±0.08		

INDIVIDUAL PERFORMANCE CHARACTERISTICS

0...10 V output ($V_s = 15\text{ V}$, $R_L > 100\text{ k}\Omega$, $t_{\text{amb}} = 25^\circ\text{C}$)

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

0.5...4.5 V output ($V_s = 15\text{ V}$, $R_L > 100\text{ k}\Omega$, $t_{\text{amb}} = 25^\circ\text{C}$)

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

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INDIVIDUAL PERFORMANCE CHARACTERISTICS (cont.)

0...5 V output ($V_s = 15\text{ V}$, $R_L > 100\text{ k}\Omega$, $t_{amb} = 25^\circ\text{C}$)

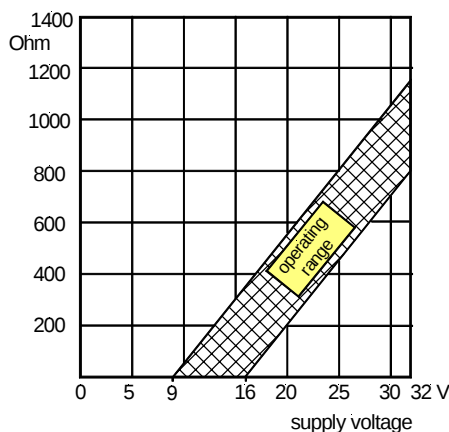
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N... all others	2.45 -0.05	2.5 0	2.55 0.05	V
Full scale span ⁷	CT...7N... all others	2.45 4.95	2.5 5.0	2.55 5.05	
Output impedance				25	Ω
Current consumption (no load)			4	8.5	mA

4...20 mA output ($V_s = 15\text{ V}$, $R_L = 100\text{ }\Omega$, $t_{amb} = 25^\circ\text{C}$)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N... all others	11.8 3.8	12.0 4.0	12.2 4.2	mA
Full scale span ⁷	CT...7N... all others	7.8 15.8	8.0 16.0	8.2 16.2	
Power consumption ($I_L = 20\text{ mA}$)			260		mW

LOAD LIMITATION

4...20 mA output version



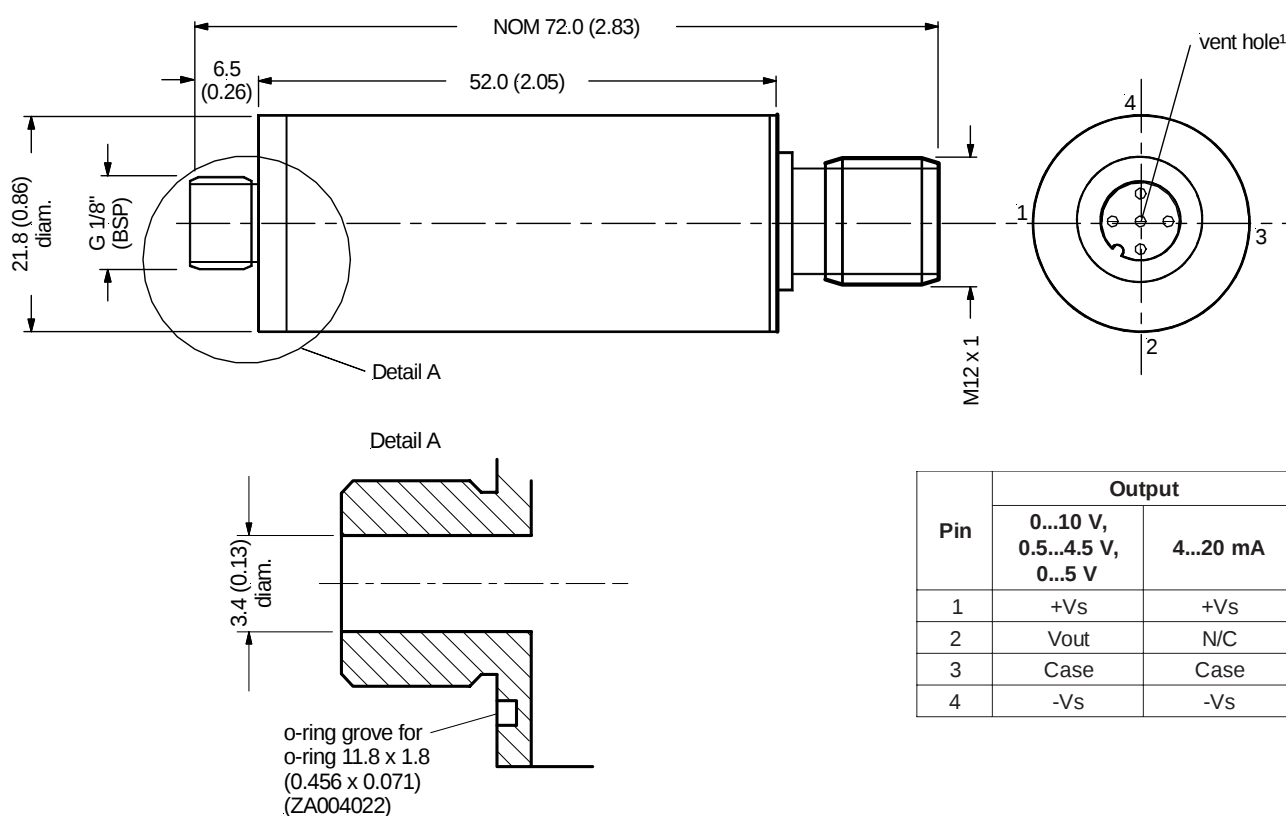
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ELECTROMAGNETIC CAPABILITY⁸

	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

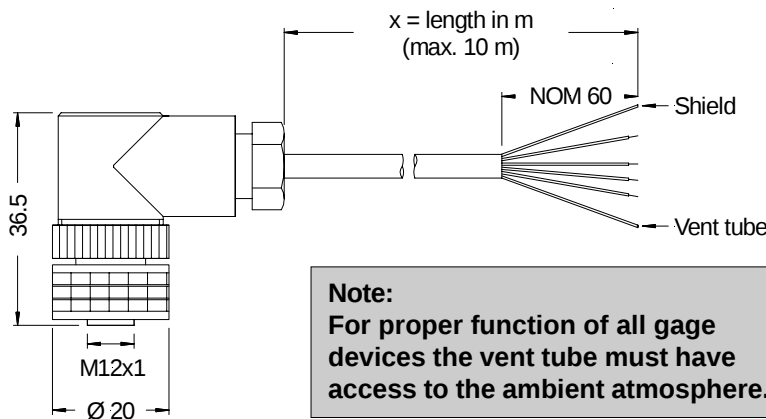


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RECOMMENDED ACCESSORY (not included in delivery)

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

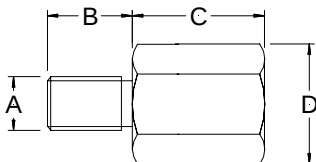


PIN CONNECTION	
Pin	Flying lead end
1	Brown
2	Green
3	White and shield
4	Yellow

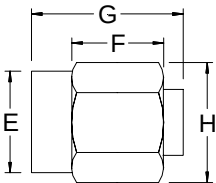
dimensions in mm

OPTIONAL PRESSURE FITTINGS (brass, nickel plated)

Male fittings



Female 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 (9/16")
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")

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")

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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 **Best Straight Line** 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		Output signal
E: bar calibration		0: 0...10 V
U: psi calibration		4: 4...20 mA
For mbar ranges only		6: 0.5...4.5 V
		7: 0...5 V
Pressure range		Pressure connection
<u>CTE7000 series</u>	<u>CTU7000 series</u>	<u>Standard thread</u>
0010: 0...10 mbar	00x15: 0...0.15 psi	Y: G 1/8" (BSP) male, SS 1.4404 (316L)
N010: -10...10 mbar	N0x15: -0.15...0.15 psi	<u>Optional pressure fittings</u>
0025: 0...25 mbar	00x3: 0...0.3 psi	D: 1/8" BSPT male, brass, nickel plated
N025: -25...25 mbar	N0x3: -0.3...0.3 psi	E: 1/4" BSPT male, brass, nickel plated
0070: 0...70 mbar	001: 0...1 psi	F: 3/8" BSPT male, brass, nickel plated
N070: -70...70 mbar	N01: -1...1 psi	G: 1/2" BSPT male, brass, nickel plated
0350: 0...350 mbar	005: 0...5 psi	K: 1/8" NPT male, brass
N350: -350...350 mbar	N05: -5...5 psi	L: 1/4" NPT male, brass
001: 0...1 bar	015: 0...15 psi	M: 1/8" NPT male, SS 1.4305 (303)
N01: -1...+1 bar	N15: -15...15 psi	N: 1/4" NPT male, SS 1.4305 (303)
P01: 0...-1 bar	P15: 0...-15 psi	P: G 1/8" (BSP) male, brass, nickel plated
002: 0...2 bar	030: 0...30 psi	Q: G 1/4" (BSP) male, brass, nickel plated
005: 0...5 bar	100: 0...100 psi	R: G 3/8" (BSP) male, brass, nickel plated
007: 0...7 bar		S: G 1/2" (BSP) male, brass, nickel plated
Pressure mode		U: G 1/8" (BSP) female, brass, nickel plated
G: gage pressure ¹		V: G 1/4" (BSP) female, brass, nickel plated
A: absolute pressure		W: G 3/8" (BSP) female, brass, nickel plated
(from 1 bar/15 psi only)		X: G 1/2" (BSP) female, brass, nickel plated

Other pressure ranges and options are widely available. Please contact Sensortekhnics.

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