

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

Wetted materials:
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

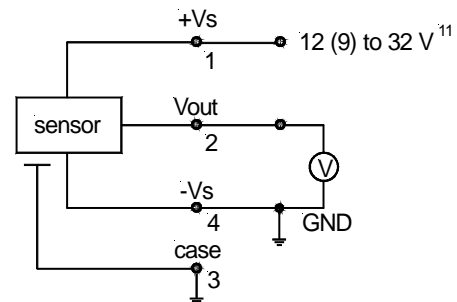
SPECIFICATIONS^{12,13}

Maximum ratings

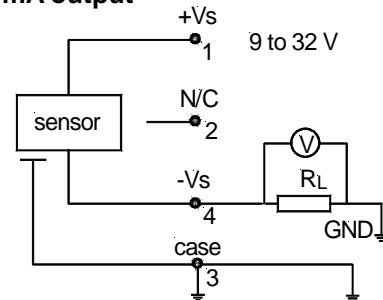
Supply voltage (reverse polarity protection)	
CTE(M)/CTU7...0 ¹¹	12...32 V
CTE(M)/CTU7...6, ...7 ¹¹	9...32 V
CTE(M)/CTU7...4 ²	9...32 V
Maximum load current (source)	
CTE(M)/CTU7...0, ...6, ...7	1 mA
Temperature limits	
Storage	-55 to 100°C
Operating	-40 to 85°C
Compensated	0 to 50°C
Humidity limits	0 - 98 %RH
Vibration (5 to 500 Hz)	2 g _{RMS}
Mechanical shock	50 g

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.	Proof ³	Unit
Operating pressure	CTEM70010...	0		10	250	mbar
	CTEM7N010...	-10		10	250	
	CTEM70025...	0		25	350	
	CTEM7N025...	-25		25	350	
	CTEM70070...	0		70	1000	
	CTEM7N070...	-70		70	1000	
	CTEM70350...	0		350	1000	
	CTEM7N350...	-350		350	1000	
	CTE7001...	0		1	2	bar
	CTE7N01...	-1		1	2	
	CTE7P01...	-1		0	2	
	CTE7002...	0		2	4	
	CTE7005...	0		5	10	
	CTE7007...	0		7	10	
	CTU700x15...	0		0.15	3.6	psi
	CTU7N0x15...	-0.15		0.15	3.6	
	CTU700x3...	0		0.3	5	
	CTU7N0x3...	-0.3		0.3	5	
	CTU7001...	0		1	15	
CTU7N01...	-1		1	15		
CTU7005...	0		5	15		
CTU7N05...	-5		5	15		
CTU7015...	0		15	30		
CTU7N15...	-15		15	30		
CTU7P15...	-15		0	30		
CTU7030...	0		30	60		
CTU7100...	0		100	150		
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			
	Span		0.03			
Non-linearity and hysteresis (BSL) 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 CTE(M)/CTU7...4		0.002 0.05		%FSO/V
		Span	CTE(M)/CTU7...0, ...6, ...7 CTE(M)/CTU7...4		0.002 0.08	

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INDIVIDUAL PERFORMANCE CHARACTERISTICS

0...10 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...	4.9	5	5.1	V
	all others	-0.1	0	0.1	
Full scale span ⁷	CT...7N...	4.9	5	5.1	V
	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 ($V_s = 15\text{ V}$, $R_L > 100\text{ k}\Omega$, $t_{amb} = 25^\circ\text{C}$)

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	V
	all others	3.950	4	4.050	
Output impedance				25	Ω
Current consumption (no load)			4	8.5	mA

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

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

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

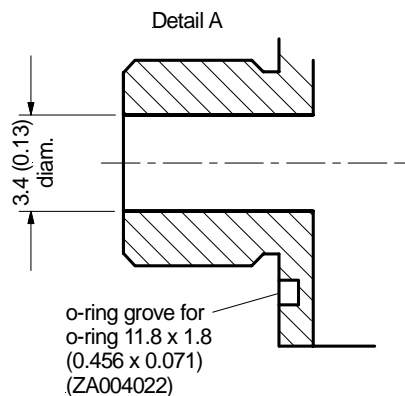
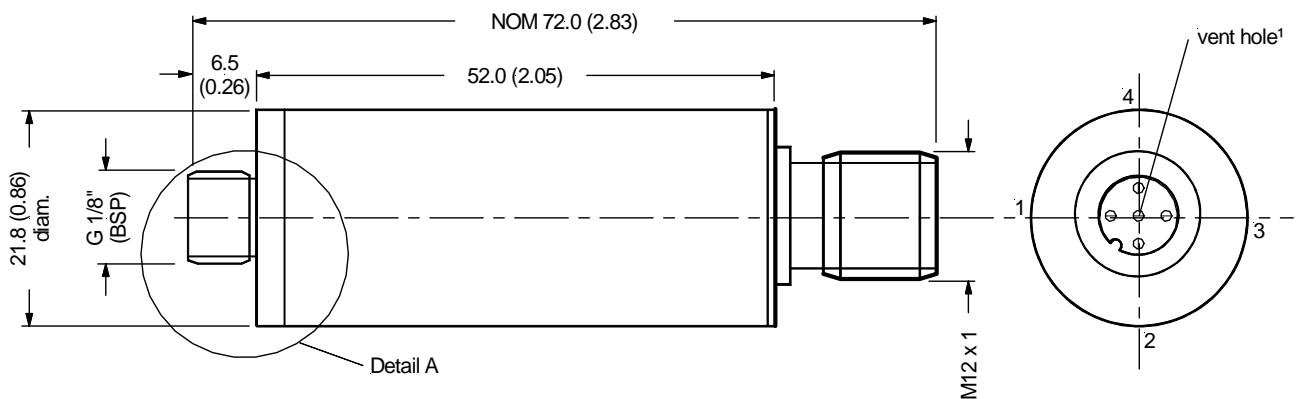
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Specification notes:

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 EN61000-6-2, April 1999.
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 89/336/EEC.
13. The pressure transmitters must not be used as safety accessories according to article 1, 2.1.3 of the directive 97/23/EC.

OUTLINE DRAWING



Pin	Output	
	0...10 V 0.5...4.5 V 0...5 V	4...20 mA
1	+V _s	+V _s
2	V _{out}	NC
3	case	case
4	-V _s	-V _s

mass: 60 g

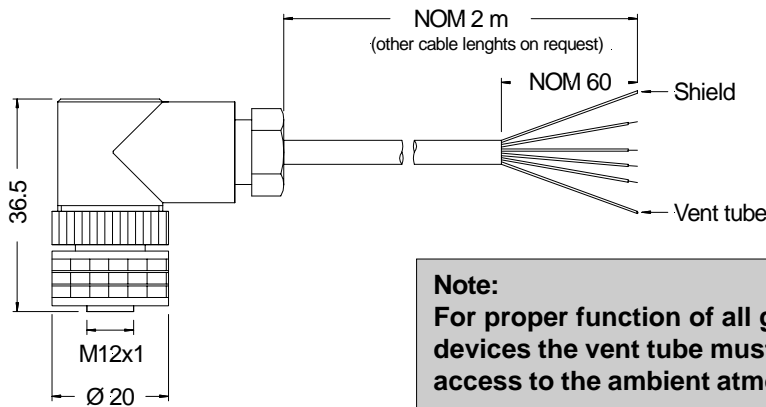
dimensions in mm (inches)

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RECOMMENDED ACCESSORY (not included in delivery)

- ZK000101: Connector/cable assembly (different cable lengths available)
 ZP000112-B: Mating Connector (without cable)



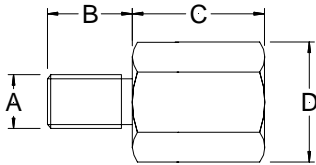
PIN CONNECTION	
Pin	Flying lead end
1	Brown
2	Green
3	White and shield
4	Yellow

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

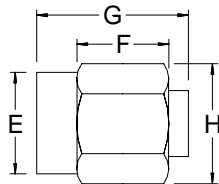
dimensions in mm

OPTIONAL PRESSURE FITTINGS (brass, nickel plated)

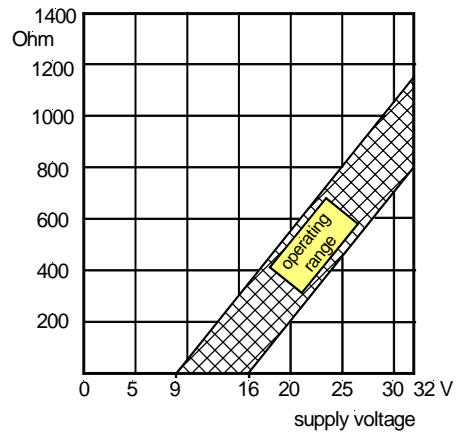
Male fittings



Female fittings



LOAD LIMITATION 4...20 mA output version



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")

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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ELECTROMAGNETIC CAPABILITY⁸

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

ORDERING INFORMATION

CTx M 7xxxx X X X

E: bar calibration
U: psi calibration

mbar-ranges (only)

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

Fitting size
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
Y: G 1/8" (BSP) male, SS 1.4404 (316)
no optional fitting

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

Pressure mode
G: gage pressure¹
A: absolute pressure
(available for pressure ranges from 1 bar /15 psi absolute upwards only)

Note: Other pressure ranges and options are widely available. Please contact your nearest Sensorteknics sales representative.

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