

CTE9000 / CTU9000 Series

OEM pressure transmitters for industrial media



FEATURES

- 0...0.35 to 0...35 bar, 0...5 to 0...500 psi gage¹ or absolute¹⁰
- 0...10 V, 0.5...4.5 V, 0...5 V, 1...6 V or 4...20 mA output
- Field interchangeable
- For industrial use
- All welded stainless steel diaphragm construction

MEDIA COMPATIBILITY

Wetted materials:
stainless steel 1.4404 (316)⁹

Housing:
stainless steel, protection class IP 64 (according to DIN EN 60529) respectively NEMA 4X¹



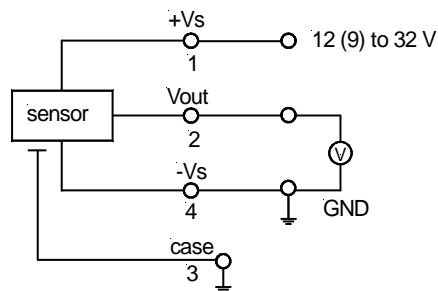
SPECIFICATIONS^{11,12}

Maximum ratings

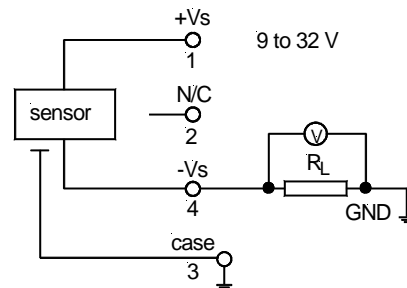
Supply voltage (reverse polarity protection)	
CTE(M)/CTU9...0	12...32 V
CTE(M)/CTU9...1, ...6, ...7	9...32 V
CTE(M)/CTU9...4 ²	9...32 V
Maximum load current (source)	
CTE(M)/CTU9...0, ...1, ...6, ...7	1 mA
Temperature limits	
Storage	-55 to 100°C
Operating	-40 to 100°C
Compensated	0 to 70°C
Humidity limits	0 - 98 %RH
Vibration (5 to 500 Hz)	10 g _{RMS}
Mechanical shock	50 g
Proof pressure ³	
CTEM9350...	1000 mbar
CTU9005...	15 psi
all others	2 x rated pressure

ELECTRICAL CONNECTION

0...10 V, 0.5...4.5 V, 0...5 V, 1...6 V output



4...20 mA output



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COMMON PERFORMANCE CHARACTERISTICS

Characteristics			Min.	Typ.	Max.	Unit
Operating pressure	CTEM9350...		0		0.35	bar
	CTE9001...		0		1	
	CTE9N01...		-1		1	
	CTE9P01...		-1		0	
	CTE9002...		0		2	
	CTE9003...		0		3	
	CTE9005...		0		5	
	CTE9010...		0		10	
	CTE9016...		0		16	
	CTE9020...		0		20	
	CTE9035...		0		35	
	CTU9005...		0		5	psi
	CTU9015...		0		15	
	CTU9N15...		-15		15	
	CTU9P15		-15		0	
CTU9030...		0		30		
CTU9050...		0		50		
CTU9100...		0		100		
CTU9300...		0		300		
CTU9500...		0		500		
Thermal effects (0 to 70°C) ⁴	Offset			±0.02	±0.05	%FSO/°C
	Span			±0.02	±0.05	
Thermal effects (-40 to 0°C, 70 to 100°C)	Offset			±0.03		%FSO/°C
	Span			±0.03		
Non-linearity and hysteresis (BSL) ⁵				±0.2	±0.5	%FSO
Repeatability				±0.1		
Long term stability ⁶				±0.1		
Output noise (0 < f < 1 kHz)				±0.04		
Response time (10 to 90 %)				1		ms
Power supply rejection	Offset	CTE(M)/CTU9...4 all others		±0.05 ±0.002		%FSO/V
	Span	CTE(M)/CTU9...4 all others		±0.08 ±0.002		

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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...9N...	4.9	5	5.1	V
	all others	-0.1	0	0.1	
Full scale span ⁷	CT...9N...	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 ($V_s = 15\text{ V}$, $R_L > 100\text{ k}\Omega$, $t_{amb} = 25^\circ\text{C}$)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...9N...	2.45	2.5	2.55	V
	all others	0.45	0.5	0.55	
Full scale span ⁷	CT...9N...	1.95	2	2.05	
	all others	3.95	4	4.05	
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...9N...	2.45	2.5	2.55	V
	all others	-0.05	0	0.05	
Full scale span ⁷	CT...9N...	2.45	2.5	2.55	
	all others	4.95	5.0	5.05	
Output impedance				25	Ω
Current consumption (no load)			4	8.5	mA

1...6 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...9N...	3.45	3.5	3.55	V
	all others	0.95	1	1.05	
Full scale span ⁷	CT...9N...	2.45	2.5	2.55	
	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...9N...	11.8	12.0	12.2	mA
	all others	3.8	4.0	4.2	
Full scale span ⁷	CT...9N...	7.8	8.0	8.2	
	all others	15.8	16.0	16.2	
Power consumption ($I_L = 20\text{ mA}$)			260		mW

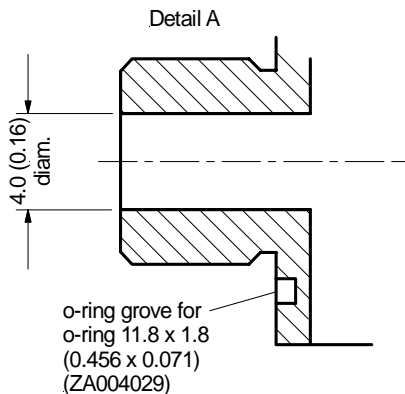
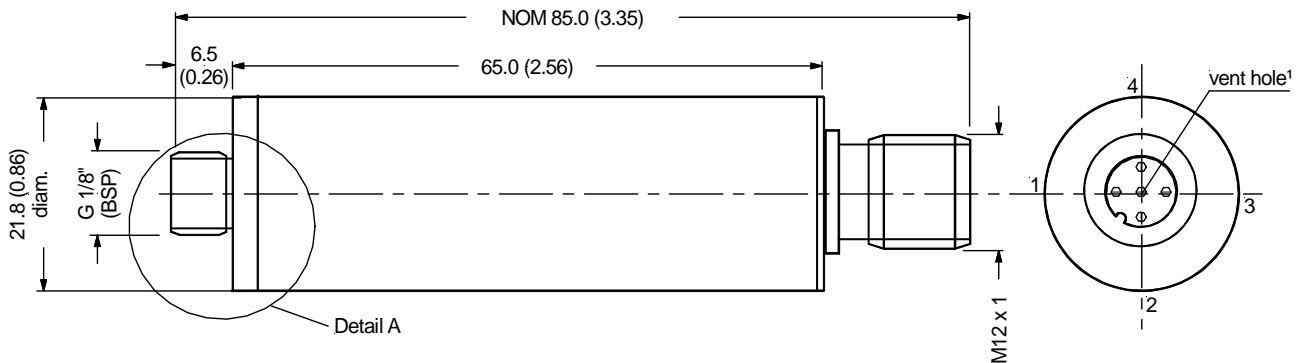
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Specification notes:

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 70°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. CE-labelling is in accordance with 89/336/EEC.
12. 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, 1...6 V	4...20 mA
1	+V _s	+V _s
2	V _{out}	NC
3	case	case
4	-V _s	-V _s

mass: 82 g

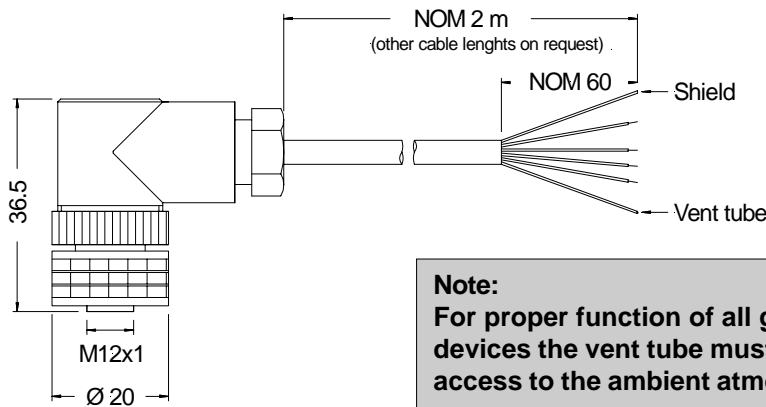
dimensions in mm (inches)

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RECOMMENDED ACCESSORY (not included in delivery)

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



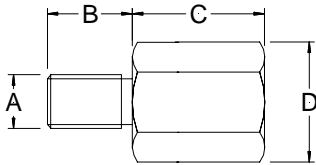
PIN CONNECTION	
Pin	Flying lead end
1	Brown
2	Green
3	White and shield
4	Yellow

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

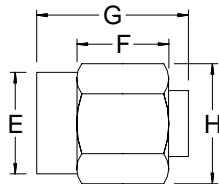
dimensions in mm

OPTIONAL PRESSURE FITTINGS (brass, nickel plated)

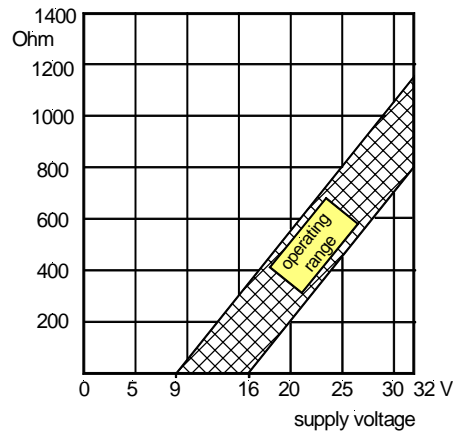
Male fittings



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 (9/16")
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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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	9xxx	x	x	x
E: bar calibration						Output signal
U: psi calibration						0: 0...10 V
						1: 1...6 V
mbar-ranges (only)						4: 4...20 mA
						6: 0.5...4.5 V
						7: 0...5 V
						Fitting size⁹
CTE9000 series	CTU9000 series					D: 1/8" BSPT male, brass, nickel plated
350: 0 to 350 mbar (<i>gage only</i>)	005: 0 to 5 psi (<i>gage only</i>)					E: 1/4" BSPT male, brass, nickel plated
001: 0 to 1 bar	015: 0 to 15 psi					F: 3/8" BSPT male, brass, nickel plated
N01: -1 to +1 bar (<i>gage only</i>)	N15: -15 to +15 psi (<i>gage only</i>)					G: 1/2" BSPT male, brass, nickel plated
P01: -1 to 0 bar (<i>gage only</i>)	P15: -15 to 0 psi (<i>gage only</i>)					K: 1/8" NPT male, brass
002: 0 to 2 bar	030: 0 to 30 psi					L: 1/4" NPT male, brass
003: 0 to 3 bar	050: 0 to 50 psi					M: 1/8" NPT male, SS 1.4305 (303)
005: 0 to 5 bar	100: 0 to 100 psi					N: 1/4" NPT male, SS 1.4305 (303)
010: 0 to 10 bar	300: 0 to 300 psi					P: G 1/8" (BSP) male, brass, nickel plated
016: 0 to 16 bar	500: 0 to 500 psi					Q: G 1/4" (BSP) male, brass, nickel plated
020: 0 to 20 bar						R: G 3/8" (BSP) male, brass, nickel plated
035: 0 to 35 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
<i>(available for pressure ranges from 1 bar /15 psi absolute upwards only)</i>						X: G 1/2" (BSP) female, brass, nickel plated
						Y: G 1/8" (BSP) male, SS 1.4404 (316) no optional fitting

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

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