

# CTE8000 / CTU8000 Series

## OEM pressure transmitters for industrial media



### FEATURES

- 0...-1 to 0...100 bar,  
0...-15 to 0...1500 psi  
gage<sup>1</sup> or absolute<sup>10</sup>
- For many industrial gases and liquids
- 0...10 V, 0.5...4.5 V, 0...5 V, 1...6 V or  
4...20 mA output
- Field interchangeable
- For industrial use

### MEDIA COMPATIBILITY

Wetted materials:  
stainless steel 1.4404 (316L), ceramic  $Al_2O_3$ , NBR<sup>9</sup>

Housing:  
stainless steel, protection class IP 64 (according to  
DIN EN 60529) respectively NEMA 4X<sup>1</sup>

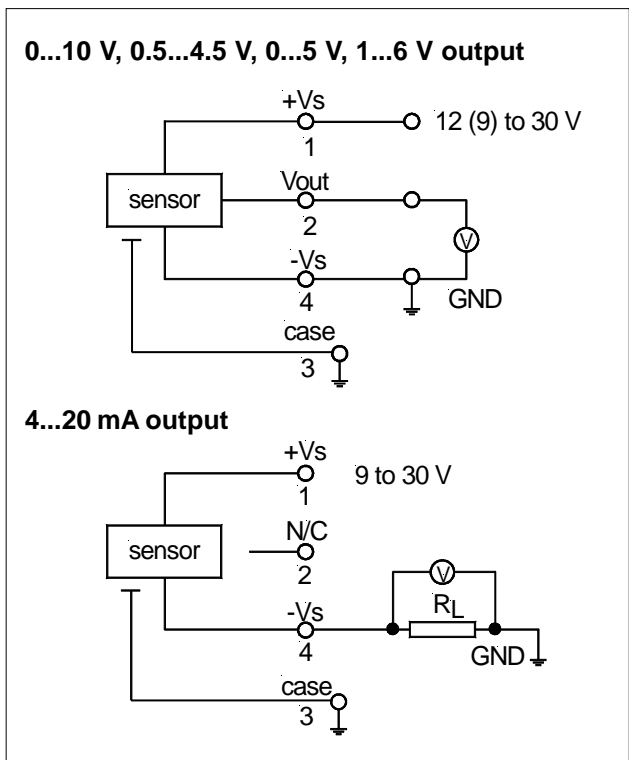


### SPECIFICATIONS<sup>11,12</sup>

#### Maximum ratings

Supply voltage (reverse polarity protection)	
CTx8...0	12...30 V
CTx8...1, ...6, ...7	9...30 V
CTx8...4 <sup>2</sup>	9...30 V
Maximum load current (source)	
CTx8...0, ...1, ...6, ...7	1 mA
Temperature limits	
Storage	-55 to 100°C
Operating <sup>8</sup>	-40 to 100°C
Compensated	0 to 70°C
Humidity limits	
	0 - 98 %RH
Vibration (5 to 500 Hz)	
	10 g <sub>RMS</sub>
Mechanical shock	
	50 g
Proof pressure <sup>3</sup>	
	2 x rated pressure

### ELECTRICAL CONNECTION



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### COMMON PERFORMANCE CHARACTERISTICS

Characteristics		Min.	Typ.	Max.	Unit	
Operating pressure	CTE8001...	0		1	bar	
	CTE8N01...	-1		+1		
	CTE8P01...	-1		0		
	CTE8002...	0		2		
	CTE8005...	0		5		
	CTE8010...	0		10		
	CTE8016...	0		16		
	CTE8020...	0		20		
	CTE8025...	0		25		
	CTE8035...	0		35		
	CTE8050...	0		50		
	CTE8070...	0		70		
	CTE8100...	0		100		
	CTU8015...	0		15		psi
	CTU8N15...	-15		+15		
	CTU8P15...	-15		0		
	CTU8030...	0		30		
	CTU8100...	0		100		
	CTU8200...	0		200		
CTU8300...	0		300			
CTU8500...	0		500			
CTU8700...	0		700			
CTU81K0...	0		1000			
CTU81K5...	0		1500			
Thermal effects <sup>s</sup> (0 to 70°C) <sup>4</sup>	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, hysteresis (BSL) and repeatability <sup>5</sup>			±0.1	±0.3	%FSO	
Long term stability <sup>6</sup>			±0.3			
Output noise (0 < f < 1 kHz)			±0.04			
Response time (10 to 90 %)			1	5	ms	
Power supply rejection	Offset	CTx8...4 all others	0.05 0.002		%FSO/V	
	Span	CTx8...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...8N...	4.9	5	5.1	V
	all others		0.03	0.1	
Full scale span <sup>7</sup>	CT...8N...	4.9	5	5.1	
	all others	9.9	10	10.1	
Output impedance				25	$\Omega$
Current consumption (no load)			3	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...8N...	2.45	2.5	2.55	V
	all others	0.45	0.5	0.55	
Full scale span <sup>7</sup>	CT...8N...	1.95	2	2.05	
	all others	3.95	4	4.05	
Output impedance				25	$\Omega$
Current consumption (no load)			3	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...8N...	2.45	2.5	2.55	V
	all others		0.03	0.08	
Full scale span <sup>7</sup>	CT...8N...	2.45	2.5	2.55	
	all others	4.95	5.0	5.05	
Output impedance				25	$\Omega$
Current consumption (no load)			3	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...8N...	3.45	3.5	3.55	V
	all others	0.95	1	1.05	
Full scale span <sup>7</sup>	CT...8N...	2.45	2.5	2.55	
	all others	4.95	5.0	5.05	
Output impedance				25	$\Omega$
Current consumption (no load)			3	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...8N...	11.9	12.0	12.1	mA
	all others	3.9	4.0	4.1	
Full scale span <sup>7</sup>	CT...8N...	7.9	8.0	8.1	
	all others	15.9	16.0	16.1	
Power consumption ( $I_L = 20\text{ mA}$ )			250		mW

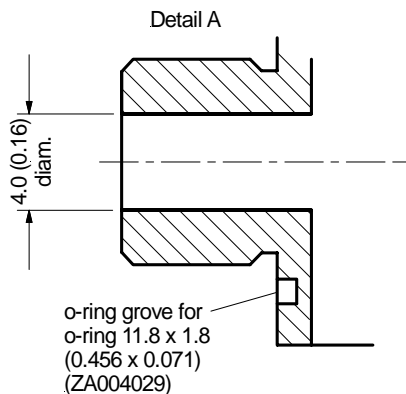
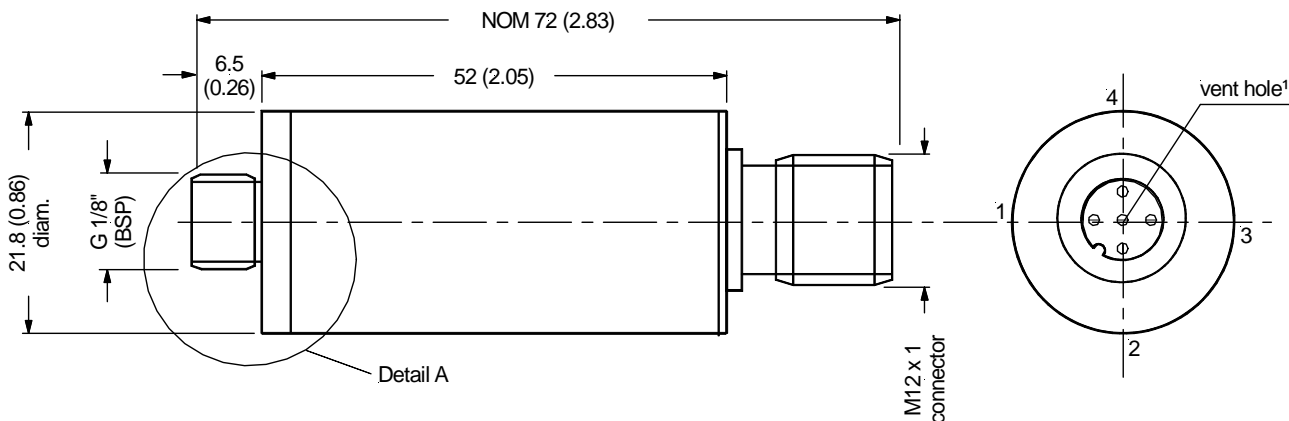
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### Specification notes:

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. Other material on special request. 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 <sub>s</sub>	+V <sub>s</sub>
2	V <sub>out</sub>	NC
3	case	case
4	-V <sub>s</sub>	-V <sub>s</sub>

mass: 72 g

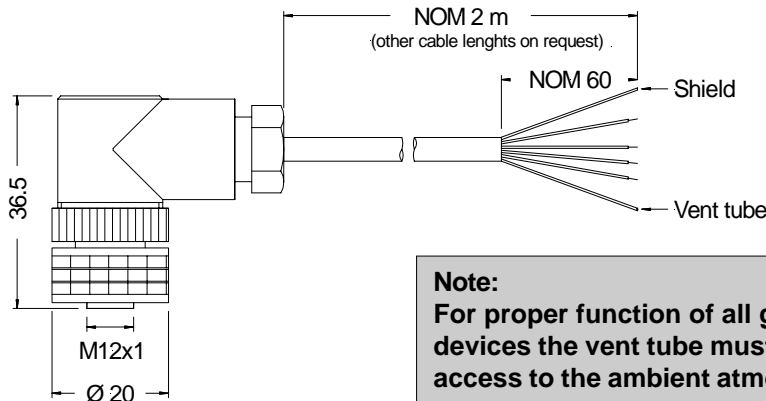
dimensions in mm (inches)

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### RECOMMENDED ACCESSORY (not included in delivery)

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



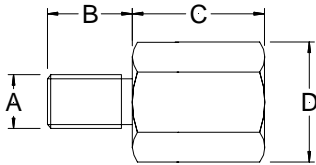
PIN CONNECTION	
Pin	Flying lead end
1	Brown
2	Green
3	White and shield
4	Yellow

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

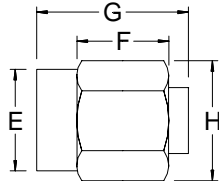
dimensions in mm

### OPTIONAL PRESSURE FITTINGS (brass, nickel plated)

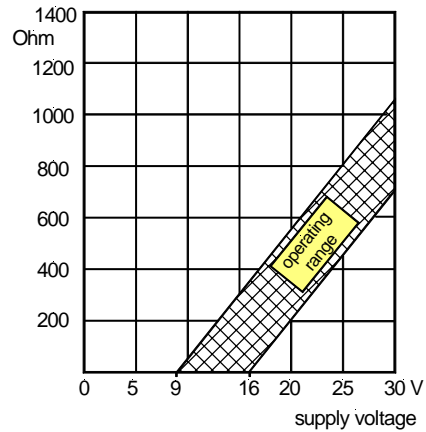
**Male fittings**



**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 CAPABILITY<sup>8</sup>

	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

	<b>CTx8</b>	<b>xxx</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<b>E:</b> bar calibration						<b>Output signal</b> 0: 0...10 V 1: 1...6 V 4: 4...20 mA 6: 0.5...4.5 V 7: 0...5 V
<b>U:</b> psi calibration						
<b>CTE8000 series</b>	<b>CTU8000 series</b>					<b>Fitting size</b> 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
001: 0 to 1 bar N01: -1 to +1 bar P01: 0 to -1 bar 002: 0 to 2 bar 005: 0 to 5 bar 010: 0 to 10 bar 016: 0 to 16 bar 020: 0 to 20 bar 025: 0 to 25 bar 035: 0 to 35 bar 050: 0 to 50 bar 070: 0 to 70 bar 100: 0 to 100 bar	015: 0 to 15 psi N15: -15 to +15 psi P15: 0 to -15 psi 030: 0 to 30 psi 100: 0 to 100 psi 200: 0 to 200 psi 300: 0 to 300 psi 500: 0 to 500 psi 700: 0 to 700 psi 1K0: 0 to 1000 psi 1K5: 0 to 1500 psi					
<b>Pressure mode</b>						
G: gage pressure <sup>1</sup>						
A: absolute pressure <sup>10</sup>						

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

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