

# CTE8000 / CTU8000 Series

## OEM pressure transmitters for industrial media

### FEATURES

- 250 mbar to 100 bar, 5 to 1500 psi gage<sup>1</sup> or absolute<sup>10</sup> pressure
- 0...5 V, 0...10 V, 0.5...4.5 V, 1...6 V or 4...20 mA output
- Field interchangeable
- For many industrial gases and liquids
- EMC according to EN 61326-1<sup>8</sup>

### MEDIA COMPATIBILITY

Wetted materials:

Stainless steel 1.4404 (316L)<sup>9</sup>, ceramic  $Al_2O_3$ , NBR (FKM)

Housing:

Stainless steel 1.4404 (316L), protection class IP 67 (according to DIN EN 60529, NEMA 6)<sup>1</sup>

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

#### Maximum ratings

Supply voltage (reverse polarity protection)

CTE(M)/CTU8...0	12...32 V
CTE(M)/CTU8...1	9...32 V
CTE(M)/CTU8...6, ...7	8...32 V
CTE(M)/CTU8...4 <sup>2</sup>	7...32 V

Maximum load current (source)

CTE(M)/CTU8...0, ...1, ...6, ...7	1 mA
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Proof pressure<sup>3</sup>

2 x rated pressure

#### Environmental

Temperature limits

Storage	-40...85 °C
Operating (media)	-25...85 °C
Electronic (ambient)	-25...85 °C
Compensated	0...70 °C

Vibration (5 to 2000 Hz)<sup>13</sup>

10 g<sub>RMS</sub>

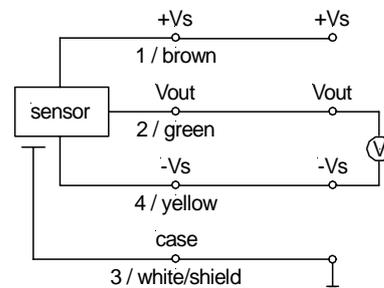
Mechanical shock<sup>14</sup>

50 g (11 ms)

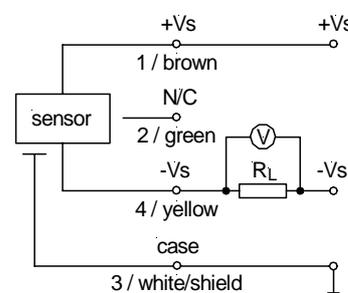


### ELECTRICAL CONNECTION

#### Voltage output device



#### Current output device



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### COMMON PERFORMANCE CHARACTERISTICS

( $V_s=15\text{ V} \pm 0.1\text{ V}$ ,  $T_A=25\text{ °C}$ , RH=50 %)

Characteristics		Min.	Typ.	Max.	Unit
Thermal effects (0...70 °C) <sup>4</sup>	Offset	devices up to 1 bar/15 psi	±0.03	±0.06	%FSO/°C
		all others	±0.02	±0.04	
	Span		±0.02	±0.04	
Thermal effects (-25...0 °C, 70...85 °C) <sup>4</sup>	Offset		±0.03		%FSO
	Span		±0.03		
Non-linearity (BSL), hysteresis and repeatability <sup>5</sup>	CT...8N...		±0.2	±0.5	%FSO
	all others		±0.1	±0.3	
Long term stability <sup>6</sup>			±0.1	±0.3	ms
Output noise (0 < f < 1 kHz)			±0.1		
Response time (10 to 90 %)	devices up to 350 mbar/5 psi		35		ms
	all others		5		
D/A resolution				11	bit
Power supply rejection	Offset		±0.01		%FSO/V
	Span		±0.02		

### INDIVIDUAL PERFORMANCE CHARACTERISTICS

( $V_s=15\text{ V} \pm 0.1\text{ V}$ ,  $T_A=25\text{ °C}$ , RH=50 %)

#### 0...10 V output ( $R_L > 100\text{ k}\Omega$ )

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...8N...		5		V
	all others		0	0.1	
Full scale span <sup>7</sup>		9.9	10	10.1	$\Omega$
Output impedance				25	
Current consumption (no load)			4		mA

#### 0.5...4.5 V output ( $R_L > 100\text{ k}\Omega$ )

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...8N...		2.5		V
	all others	0.45	0.5	0.55	
Full scale span <sup>7</sup>		3.95	4	4.05	$\Omega$
Output impedance				25	
Current consumption (no load)			4		mA

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### INDIVIDUAL PERFORMANCE CHARACTERISTICS (cont.)

( $T_A=25\text{ °C}$ ,  $RH=50\%$ ,  $V_S=15\text{ V} \pm 0.1\text{ V}$ )

#### 0...5 V output ( $R_L > 100\text{ k}\Omega$ )

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...8N...		2.50		V
	all others		0	0.05	
Full scale span <sup>7</sup>		4.95	5.00	5.05	
Output impedance				25	W
Current consumption (no load)			4		mA

#### 1...6 V output ( $R_L > 100\text{ k}\Omega$ )

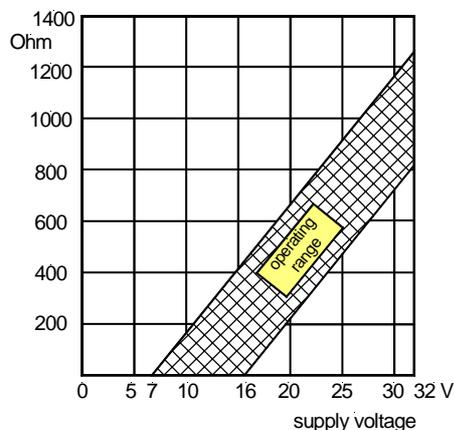
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...8N...		3.50		V
	all others	0.95	1.00	1.05	
Full scale span <sup>7</sup>		4.95	5.00	5.05	
Output impedance				25	$\Omega$
Current consumption (no load)			4		mA

#### 4...20 mA output ( $R_L = 100\ \Omega$ )

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...8N...		12.0		mA
	all others	3.9	4.0	4.1	
Full scale span <sup>7</sup>		15.9	16.0	16.1	
Power consumption ( $I_L = 20\text{ mA}$ )			250		mW

### LOAD LIMITATION

#### 4...20 mA output version

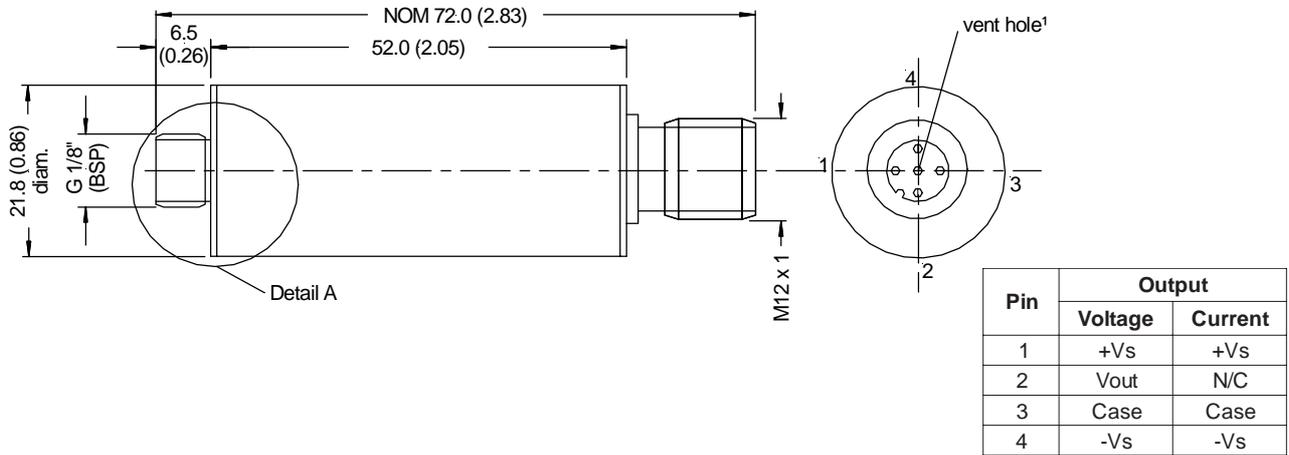


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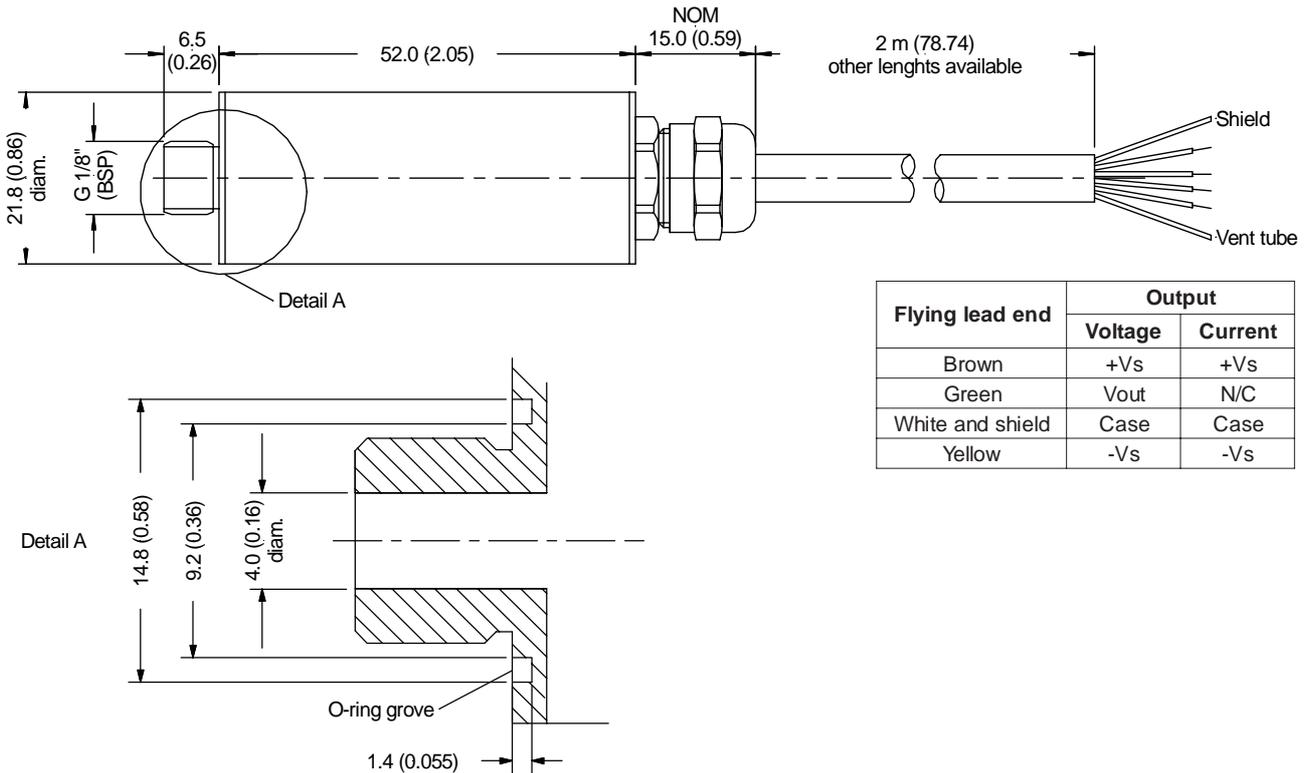
## OEM pressure transmitters for industrial media

### OUTLINE DRAWING

#### Connector version



#### Cable version



mass: approx. 70 g

**Note: O-ring included in delivery**

dimensions in mm (inches)

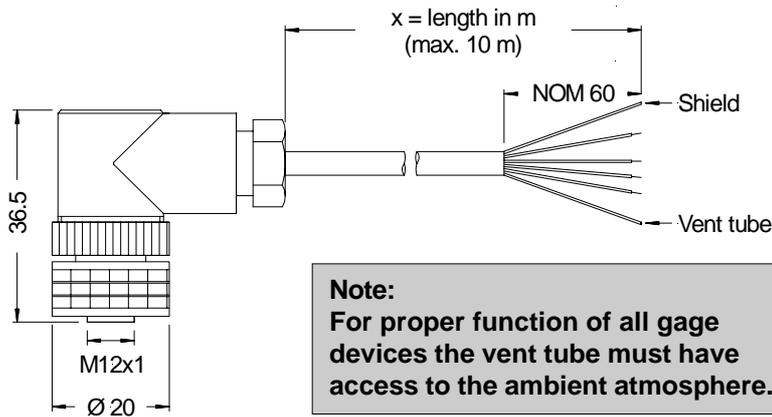
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## OEM pressure transmitters for industrial media

### 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)

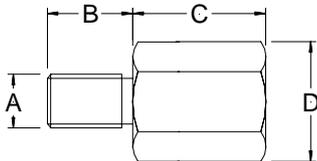


PIN CONNECTION	
Pin	Flying lead end
1	Brown
2	Green
3	White and shield
4	Yellow

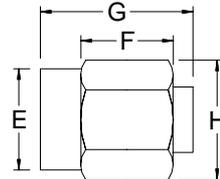
dimensions in mm

### 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 67 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 min. 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 are relative to 25 °C. Signal is clamped at 0 V.
5. Non-linearity refers to **Best Straight Line** fit. Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
6. Long term stability is the change in output after one year.
7. Span is the arithmetic difference in transmitter output signal measured at zero pressure and the maximum operating pressure.
8. Surge immunity according to EN 61000-4-5 on request for current output devices.
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 2004/108/EC.
12. The pressure transmitters must not be used as safety accessories according to article 1, 2.1.3 of the directive 97/23/EC.
13. According to IEC 60068-2-64.
14. According to IEC 60068-2-27.

### ORDERING INFORMATION

	<b>CTx (M) 8xxx x x x x (C x)</b>		
<b>Calibration</b>			<b>Cable length in m</b>
E: bar calibration			<b>Cable version (optional)</b>
U: psi calibration			
<b>For mbar ranges only</b>			<b>Sealing material</b>
			V: Viton (FKM)
			N: NBR
			<i>Note: Older part no. do not contain this digit. Without this digit NBR will be used.</i>
<b>Pressure range</b>			<b>Output signal</b>
<u>CTE8000 series</u>	<u>CTU8000 series</u>		0: 0...10 V
250: 0...250 mbar	005: 0...5 psi		1: 1...6 V
350: 0...350 mbar	010: 0...10 psi		4: 4...20 mA
500: 0...500 mbar	015: 0...15 psi		6: 0.5...4.5 V
001: 0...1 bar	N15: -15...+15 psi		7: 0...5 V
N01: -1...+1 bar	P15: 0...-15 psi		
P01: 0...-1 bar	030: 0...30 psi		<b>Pressure connection</b>
002: 0...2 bar	100: 0...100 psi		<u>Standard thread</u>
005: 0...5 bar	200: 0...200 psi		Y: G 1/8" (BSP) male, SS 1.4404 (316L)
010: 0...10 bar	300: 0...300 psi		<u>Optional pressure fittings</u>
016: 0...16 bar	500: 0...500 psi		D: 1/8" BSPT male, brass, nickel plated
020: 0...20 bar	700: 0...700 psi		E: 1/4" BSPT male, brass, nickel plated
025: 0...25 bar	1K0: 0...1000 psi		F: 3/8" BSPT male, brass, nickel plated
035: 0...35 bar	1K5: 0...1500 psi		G: 1/2" BSPT male, brass, nickel plated
050: 0...50 bar			K: 1/8" NPT male, brass
070: 0...70 bar			L: 1/4" NPT male, brass
100: 0...100 bar			M: 1/8" NPT male, SS 1.4404 (316L)
			N: 1/4" NPT male, SS 1.4404 (316L)
<b>Pressure mode</b>			P: G 1/8" (BSP) male, brass, nickel plated
G: gage pressure <sup>1</sup> (up to 50 bar/750 psi)			Q: G 1/4" (BSP) male, brass, nickel plated
S: sealed gage (above 50 bar/750 psi)			R: G 3/8" (BSP) male, brass, nickel plated
A: absolute pressure (from 1 bar/15 psi up to 50 bar/750 psi)			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 First Sensor.**

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