

# CTE9000 / CTU9000 Series

## OEM pressure transmitters for industrial media

### FEATURES

- 100 mbar to 35 bar, 1.5 to 500 psi gage<sup>1</sup> or absolute<sup>10</sup> pressure
- 0...10 V, 0.5...4.5 V, 0...5 V, 1...6 V or 4...20 mA output
- Field interchangeable
- All welded stainless steel diaphragm construction
- EMC according to EN 61326-1<sup>8</sup>

### MEDIA COMPATIBILITY

Wetted materials:

Stainless steel 1.4404 (316L)<sup>9</sup>

Housing:

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



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

#### Maximum ratings

Supply voltage (reverse polarity protection)

CTE(M)/CTU9...0	12...32 V
CTE(M)/CTU9...1	9...32 V
CTE(M)/CTU9...6, ...7	8...32 V
CTE(M)/CTU9...4 <sup>2</sup>	7...32 V

Maximum load current (source)

CTE(M)/CTU9...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)	-40...85 °C
Electronic (ambient)	-40...85 °C
Compensated	0...50 °C

Vibration (5 to 500 Hz)

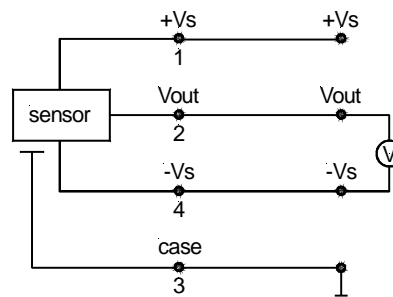
10 g<sub>RMS</sub>

Mechanical shock

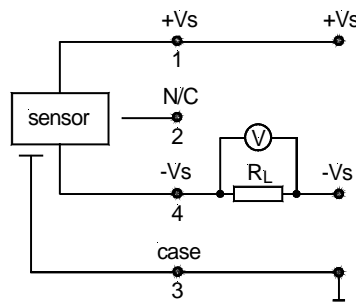
50 g

### ELECTRICAL CONNECTION

#### Voltage output device



#### Current output device



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### COMMON PERFORMANCE CHARACTERISTICS

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

Characteristics			Min.	Typ.	Max.	Unit
Thermal effects (0...50 °C) <sup>4</sup>	Offset	100 mbar/1.5 psi devices		±0.04	±0.08	%FSO/°C
		all others		±0.02	±0.05	
	Span	100 mbar/1.5 psi devices		±0.04	±0.08	
		all others		±0.02	±0.05	
Thermal effects (-20...0 °C, 50...70 °C) <sup>4</sup>	Offset	100 mbar/1.5 psi devices		±0.04		
		all others		±0.02		
	Span	100 mbar/1.5 psi devices		±0.04		
		all others		±0.02		
Non-linearity (BSL) and hysteresis <sup>5</sup>				±0.1	±0.3	%FSO
Repeatability				±0.1		
Long term stability <sup>6</sup>				±0.1		
Output noise (0 < f < 1 kHz)				±0.1		
Response time (10 to 90 %)				5		ms
D/A resolution					11	bit
Power supply rejection		Offset		±0.01		%FSO/V
		Span		±0.02		

### INDIVIDUAL PERFORMANCE CHARACTERISTICS

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

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

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...9N...	4.9	5	5.1	V
	all others		0	0.1	
Full scale span <sup>7</sup>	CT...9N...	4.9	5	5.1	
	all others	9.9	10	10.1	
Output impedance				25	$\Omega$
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...9N...	2.45	2.5	2.55	V
	all others	0.45	0.5	0.55	
Full scale span <sup>7</sup>	CT...9N...	1.95	2	2.05	
	all others	3.95	4	4.05	
Output impedance				25	$\Omega$
Current consumption (no load)			4		mA

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### INDIVIDUAL PERFORMANCE CHARACTERISTICS (cont.)

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

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

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...9N...	2.45	2.5	2.55	V
	all others		0	0.05	
Full scale span <sup>7</sup>	CT...9N...	2.45	2.5	2.55	
	all others	4.95	5.0	5.05	
Output impedance				25	$\Omega$
Current consumption (no load)			4		mA

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

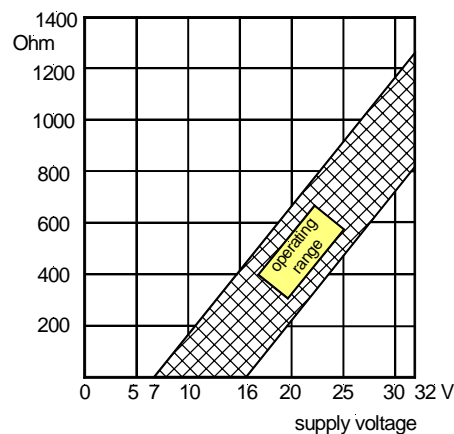
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...9N...	3.45	3.5	3.55	V
	all others	0.95	1	1.05	
Full scale span <sup>7</sup>	CT...9N...	2.45	2.5	2.55	
	all others	4.95	5.0	5.05	
Output impedance				25	$\Omega$
Current consumption (no load)			4		mA

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

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...9N...	11.8	12.0	12.2	mA
	all others	3.8	4.0	4.2	
Full scale span <sup>7</sup>	CT...9N...	7.8	8.0	8.2	
	all others	15.8	16.0	16.2	
Power consumption ( $I_L = 20 \text{ mA}$ )			250		mW

### LOAD LIMITATION

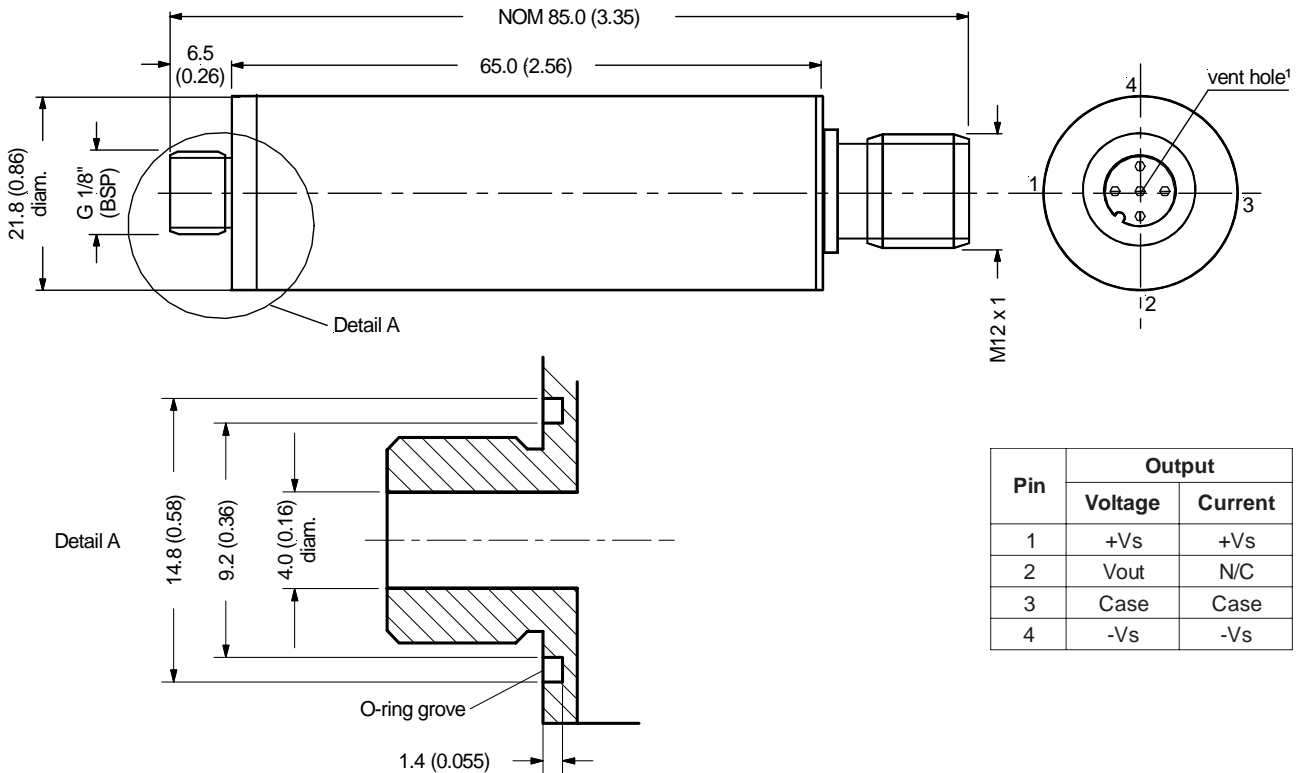
#### 4...20 mA output version



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### OUTLINE DRAWING



mass: 82 g

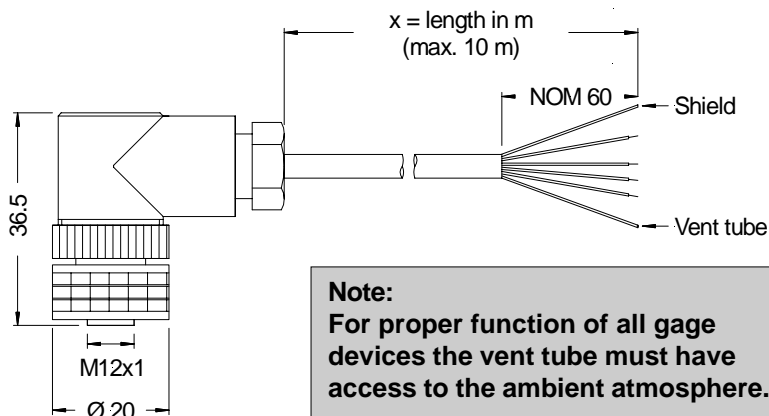
**Note: O-ring included in delivery**

dimensions in mm (inches)

### 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

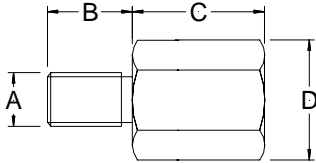
dimensions in mm

# CTE9000 / CTU9000 Series

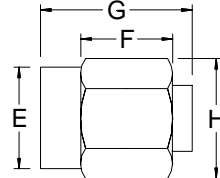
## OEM pressure transmitters for industrial media

### 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")

#### 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 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 over 1 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.

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### ORDERING INFORMATION

CTx	(M)	9xxx	x	x	x
<b>Calibration</b> E: bar calibration U: psi 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>For mbar ranges only</b>			<b>Pressure connection</b> <u>Standard thread</u> Y: G 1/8" (BSP) male, SS 1.4404 (316L) <u>Optional pressure fittings</u> 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		
<b>Pressure range</b> <u>CTE9000 series</u> 100: 0...100 mbar 200: 0...200 mbar 350: 0...350 mbar 001: 0...1 bar N01: -1...+1 bar P01: 0...-1 bar 002: 0...2 bar 003: 0...3 bar 005: 0...5 bar 010: 0...10 bar 016: 0...16 bar 020: 0...20 bar 035: 0...35 bar			<u>CTU9000 series</u> 1x5: 0...1.5 psi 003: 0...3 psi 005: 0...5 psi 015: 0...15 psi N15: -15...15 psi P15: 0...-15 psi 030: 0...30 psi 050: 0...50 psi 100: 0...100 psi 300: 0...300 psi 500: 0...500 psi		
<b>Pressure mode</b> G: gage pressure <sup>1</sup> A: absolute pressure (from 1 bar/15 psi only)					

Other pressure ranges and options are widely available. Please contact First Sensor.

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