

CTE7000 / CTU7000 Series

Miniature pressure transmitters

FEATURES

- 10 mbar to 1 bar, 0.15 to 15 psi gage¹ pressure
- 0...5 V, 0...10 V or 4...20 mA output
- Field interchangeable
- Rugged stainless steel housing
- EMC according to EN 61326-1⁹

MEDIA COMPATIBILITY

Pressure inlet:

To be used with non-corrosive, non-ionic working fluids such as clean dry air, dry gases and the like.¹⁰

Housing:

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

SPECIFICATIONS^{11,12}

Maximum ratings

Supply voltage (reverse polarity protection)

CTE(M)/CTU7...0	12...32 V
CTE(M)/CTU7...1	9...32 V
CTE(M)/CTU7...7	8...32 V
CTE(M)/CTU7...4 ²	7...32 V

Maximum load current (source)

CTE(M)/CTU7...0, ...1, ...7	1 mA
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Proof pressure³

CTE...010, 025/CTU...0x15, 0x3	100 mbar/1.5 psi
CTE...070, 350/CTU...01, 05	1.3 bar/20 psi
all others	2 x rated pressure

Environmental

Temperature limits

Storage	-40...85 °C
Operating (media)	-25...85 °C
Electronic (ambient)	-25...85 °C
Compensated	0...50 °C

Vibration (5 to 2000 Hz)¹⁴

10 g_{RMS}

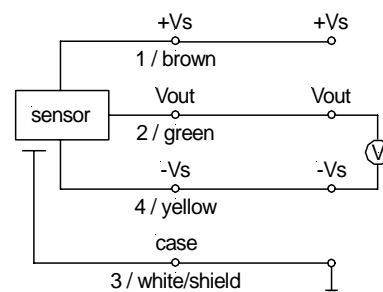
Mechanical shock¹⁵

50 g (11 ms)

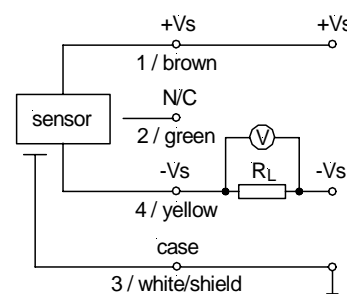


ELECTRICAL CONNECTION

Voltage output device



Current output device



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COMMON PERFORMANCE CHARACTERISTICS

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

Characteristics		Min.	Typ.	Max.	Unit
Thermal effects (0...50 °C) ⁴	Offset	devices up to 70 mbar/1 psi	±0.08	±0.13	%FSO/°C
		all others	±0.01	±0.05	
	Span		±0.02	±0.04	
Non-linearity (BSL) and hysteresis ⁵			±0.2	±0.5	%FSO
Repeatability ⁶			±0.2		
Long term stability ⁷			±0.5		
Output noise (0 < f < 1 kHz)			±0.1		
Response time (10 to 90 %)	devices up to 25 mbar/0.3 psi		35		ms
	all others		5		
D/A resolution				11	bit
Power supply rejection	Offset		±0.01		%FSO/V
	Span		±0.02		

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 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. Maximum difference in offset respectively maximum difference in span within the temperature range of 0...50 °C after:
 - a) 100 temperature cycles, 0...50 °C.
 - b) 1.0 million pressure cycles, 0 to full scale span.
7. Long term stability is the change in output after one year.
8. Span is the arithmetic difference in transmitter output signal measured at zero pressure and the maximum operating pressure.
9. Surge immunity according to EN 61000-4-5 on request for current output devices.
10. When using devices with optional nickel plated fittings, consider the media compatibility of the fittings also.
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. Devices <100 mbar are position sensitive regarding the zero pressure offset. A vertical mounting position with the pressure connection downward is recommended.
14. According to IEC 60068-2-64.
15. According to IEC 60068-2-27.

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INDIVIDUAL PERFORMANCE CHARACTERISTICS¹³ (cont.)

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

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

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N...	4.9	5	5.1	V
	all others		0	0.1	
Full scale span ⁸	CT...7N...	4.9	5	5.1	V
	all others	9.9	10	10.1	
Output impedance				25	Ω
Current consumption (no load)			4		mA

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

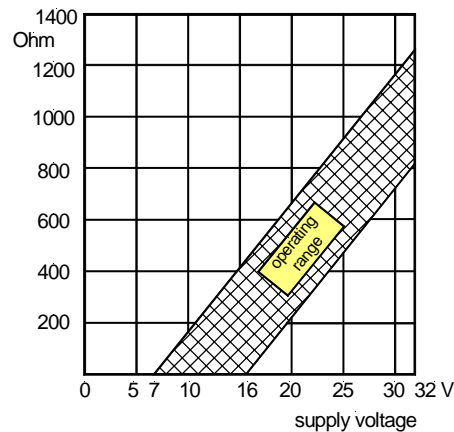
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N...	2.45	2.5	2.55	V
	all others		0	0.05	
Full scale span ⁸	CT...7N...	2.45	2.5	2.55	V
	all others	4.95	5.0	5.05	
Output impedance				25	Ω
Current consumption (no load)			4		mA

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

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 ⁸	CT...7N...	7.8	8.0	8.2	mA
	all others	15.8	16.0	16.2	
Power consumption ($I_L = 20 \text{ mA}$)			250		mW

LOAD LIMITATION

4...20 mA output version

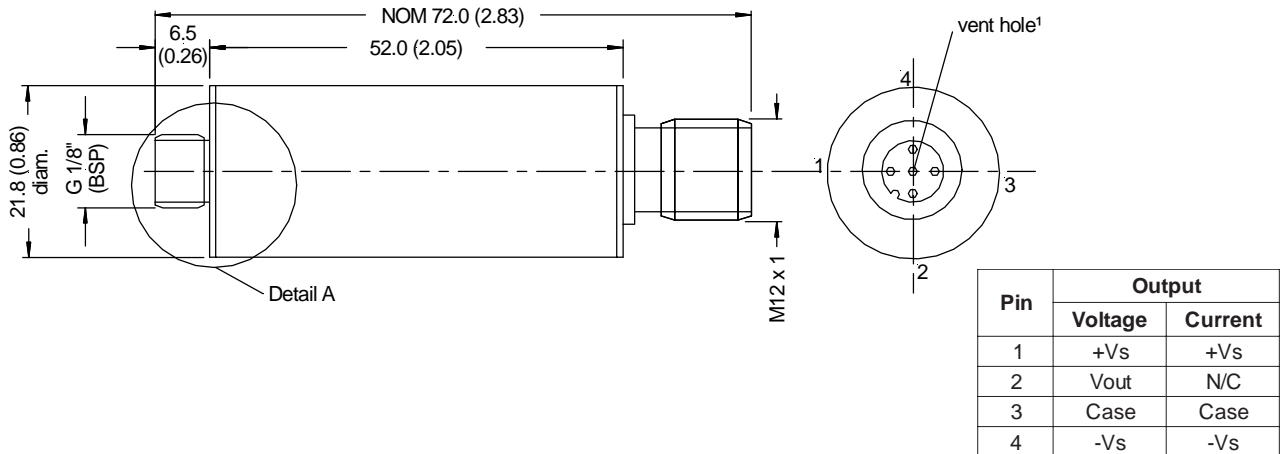


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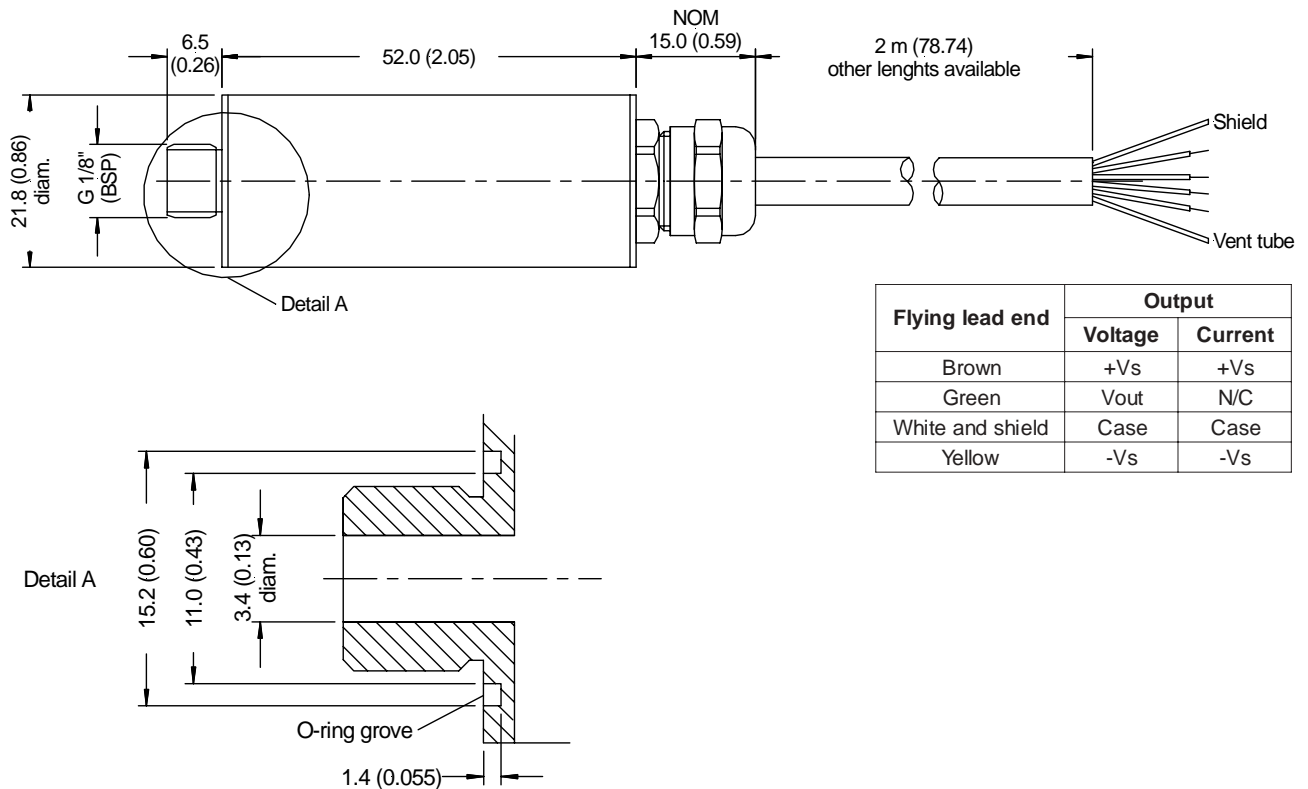
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OUTLINE DRAWING

Connector version



Cable version



mass: approx. 60 g

Note: O-ring included in delivery

dimensions in mm (inches)

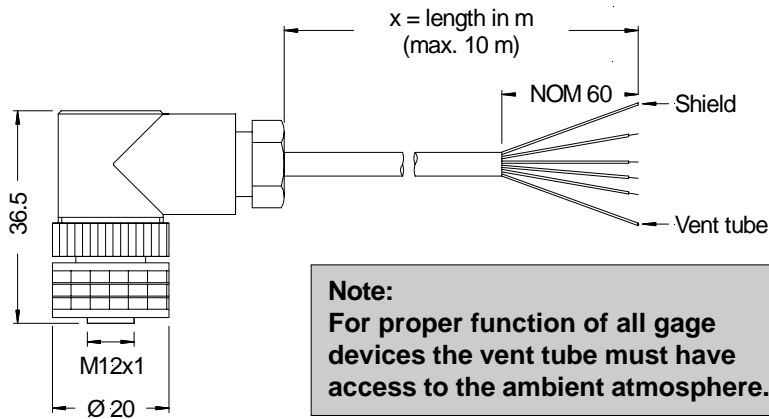
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RECOMMENDED ACCESSORY (not included in delivery)

ZP000112-B: Mating Connector (without cable)

ZK000101-x: Connector/cable assembly (x=cable lengths in m, max. 10 m)

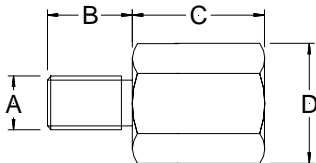


PIN CONNECTION	
Pin	Flying lead end
1	Brown
2	Green
3	White and shield
4	Yellow

dimensions in mm

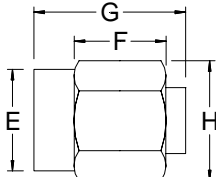
OPTIONAL PRESSURE FITTINGS

Male fittings



Fitting no.	Order no.	Dimensions in mm (inches)			
		A	B	C	D (Hex.)
E	1007282	1/4" BSPT	12 (0.472)	5.5 (0.217)	14 (9/16")
P	1007288	G 1/8"	6 (0.236)	10 (0.394)	14 (9/16")
Q	1007289	G 1/4"	8 (0.315)	5 (0.197)	17 (11/16")
R	1007291	G 3/8"	9 (0.354)	5 (0.197)	19 (3/4")
M	1007298	1/8" NPT	8 (0.315)	13 (0.512)	14 (9/16")
N	1007299	1/4" NPT	11.4 (0.449)	6.6 (0.260)	14 (9/16")

Female fittings



Fitting no.	Order no.	Dimensions in mm (inches)			
		E	F	G	H (Hex.)
U	1007294	G 1/8"	5 (0.197)	15 (0.591)	14 (9/16")
W	1007296	G 3/8"	6 (0.236)	20 (0.787)	22 (7/8")

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ORDERING INFORMATION

Series/Pressure range		Pressure mode		Pressure connection		Output signal		Cable (optional)	
CTEM70010	0...10 mbar	G	Gage ¹	Y	G 1/8" male, SS 1.4404 (316L)	0	0...10 V	Cx	x=length in m
CTEM7N010	-10...10 mbar			E	1/4" BSPT male, brass, nickel plated	4	4...20 mA		
CTEM70025	0...25 mbar			P	G 1/8" male, brass, nickel plated	7	0...5 V		
CTEM7N025	-25...25 mbar			Q	G 1/4" male, brass, nickel plated				
CTEM70070	0...70 mbar			R	G 3/8" male, brass, nickel plated				
CTEM7N070	-70...70 mbar			U	G 1/8" female, brass, nickel plated				
CTEM70100	0...100 mbar			W	G 3/8" female, brass, nickel plated				
CTEM70200	0...200 mbar			M	1/8" NPT male, SS 1.4404 (316L)				
CTEM70350	0...350 mbar			N	1/4" NPT male, SS 1.4404 (316L)				
CTEM7N350	-350...350 mbar								
CTE7001	0...1 bar								
CTE7N01	-1...1 bar								
CTE7P01	0...-1 bar								
CTU700x15	0...0.15 psi								
CTU7N0x15	-0.15...0.15 psi								
CTU700x3	0...0.3 psi								
CTU7N0x3	-0.3...0.3 psi								
CTU7001	0...1 psi								
CTU7N01	-1...1 psi								
CTU7005	0...5 psi								
CTU7N05	-5...5 psi								
CTU7015	0...15 psi								
CTU7N15	-15...15 psi								
CTU7P15	0...-15 psi								

Example: CTEM7N070GY4

Devices highlighted in grey are preferred items. For all other devices MOQ may apply.

Custom pressure ranges and other fittings are available on request. MOQ applies. Contact First Sensor.

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