CTE7000 / CTU7000 Series
Miniature pressure transmitters

CE

FEATURES

- **0...10 mbar to 0...7 bar, 0...0.15 to 0...100 psi gage[1] or absolute[10]**
- **0...5 V, 0...10 V, 0.5...4.5 V or 4...20 mA output**
- **Single supply**
- **Field interchangeable**
- **Rugged stainless steel housing**

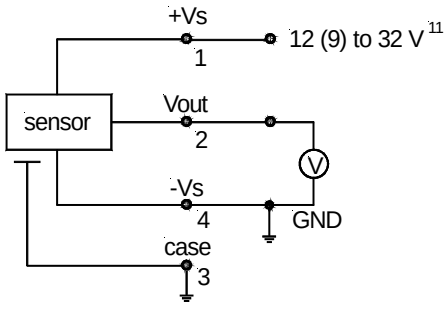
MEDIA COMPATIBILITY

Wetted materials:
stainless steel 1.4404 (316), nylon, silicon, silicone-sealant and epoxy[9]

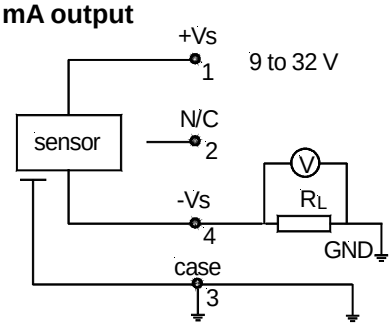
Housing:
stainless steel, protection class IP 64 (according to DIN EN 60529) respectively NEMA 4[1]

ELECTRICAL CONNECTION

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



4...20 mA output



SPECIFICATIONS[12,13]

Maximum ratings

Supply voltage (reverse polarity protection)	
CTE(M)/CTU7...0[11]	12...32 V
CTE(M)/CTU7...6, ...7[11]	9...32 V
CTE(M)/CTU7...4[2]	9...32 V
Maximum load current (source)	
CTE(M)/CTU7...0, ...6, ...7	1 mA
Temperature limits	
Storage	-55 to 100°C
Operating	-40 to 85°C
Compensated	0 to 50°C
Humidity limits	0 - 98 %RH
Vibration (5 to 500 Hz)	2 g_{RMS}
Mechanical shock	50 g

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COMMON PERFORMANCE CHARACTERISTICS

Characteristics			Min.	Typ.	Max.	Proof[3]	Unit
Operating pressure		CTEM70010... CTEM7N010...	0 -10		10 10	250 250	mbar
		CTEM70025... CTEM7N025...	0 -25		25 25	350 350	
		CTEM70070... CTEM7N070...	0 -70		70 70	1000 1000	
		CTEM70350... CTEM7N350...	0 -350		350 350	1000 1000	
		CTE7001... CTE7N01... CTE7P01...	0 -1 -1		1 1 0	2 2 2	bar
		CTE7002... CTE7005... CTE7007...	0 0 0		2 5 7	4 10 10	
		CTU700x15... CTU7N0x15...	0 -0.15		0.15 0.15	3.6 3.6	psi
		CTU700x3... CTU7N0x3...	0 -0.3		0.3 0.3	5 5	
		CTU7001... CTU7N01...	0 -1		1 1	15 15	
		CTU7005... CTU7N05...	0 -5		5 5	15 15	
		CTU7015... CTU7N15... CTU7P15...	0 -15 -15		15 15 0	30 30 30	
		CTU7030... CTU7100...	0 0		30 100	60 150	
Thermal effects (0 to 50°C)[4]	Offset	CTEM70010..., CTEM7N010.../ CTU700x15..., CTU7N0x15...			0.08		%FSO/°C
		CTEM70025..., CTEM7N025.../ CTU700x3..., CTU7N0x3...			0.08		
		all others			0.04		
	Span				0.04		
Thermal effects (-20 to 0°C, 50 to 70°C)	Offset Span			0.03 0.03			
Non-linearity and hysteresis (BSL)[5]				±0.2	±0.50		%FS
Repeatability				±0.1			
Long term stability[6]				±0.5			
Output noise (0 < f < 1 kHz)				±0.04			
Response time (10 to 90 %)				1.0			ms
Power supply rejection	Offset	CTE(M)/CTU7...0, ...6, ...7 CTE(M)/CTU7...4		0.002 0.05			%FSO/V
	Span	CTE(M)/CTU7...0, ...6, ...7 CTE(M)/CTU7...4		0.002 0.08			

INDIVIDUAL PERFORMANCE CHARACTERISTICS

0...10 V output (V_S = 15 V, R_L > 100 kΩ, t_{amb} = 25°C)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N... all others	4.9 -0.1	5 0	5.1 0.1	V
Full scale span[7]	CT...7N... all others	4.9 9.9	5 10	5.1 10.1	
Output impedance				25	Ω
Current consumption (no load)			4	9.5	mA

0.5...4.5 V output (V_S = 15 V, R_L > 100 kΩ, t_{amb} = 25°C)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N... all others	2.450 0.450	2.5 0.5	2.550 0.550	V
Full scale span[7]	CT...7N... all others	1.950 3.950	2 4	2.050 4.050	
Output impedance				25	Ω
Current consumption (no load)			4	8.5	mA

0...5 V output (V_S = 15 V, R_L > 100 kΩ, t_{amb} = 25°C)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N... all others	2.45 -0.05	2.5 0	2.55 0.05	V
Full scale span[7]	CT...7N... all others	2.45 4.95	2.5 5.0	2.55 5.05	
Output impedance				25	Ω
Current consumption (no load)			4	8.5	mA

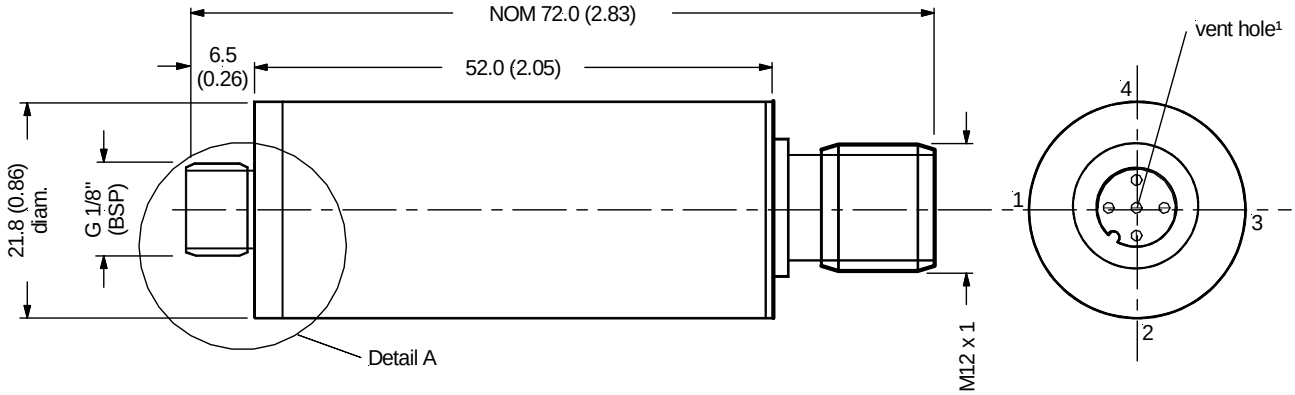
4...20 mA output (V_S = 15 V, R_L = 100 Ω, t_{amb} = 25°C)

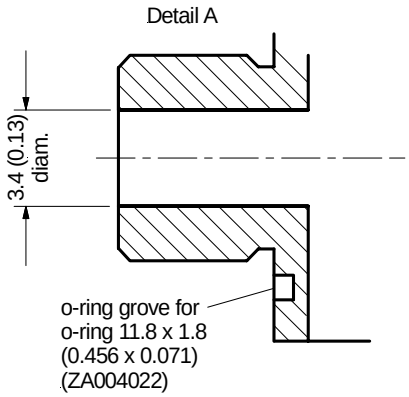
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	CT...7N... all others	11.8 3.8	12.0 4.0	12.2 4.2	mA
Full scale span[7]	CT...7N... all others	7.8 15.8	8.0 16.0	8.2 16.2	
Power consumption (I_L = 20 mA)			260		mW

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 50°C relative to 25°C. All specifications shown are relative to 25°C.
5. Non-linearity refers to the **B**est **S**traight **L**ine 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. For sensors with max. operating pressure below 100 mbarg the max. supply voltage is 27 V.
12. CE-labelling is in accordance with 89/336/EEC.
13. 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





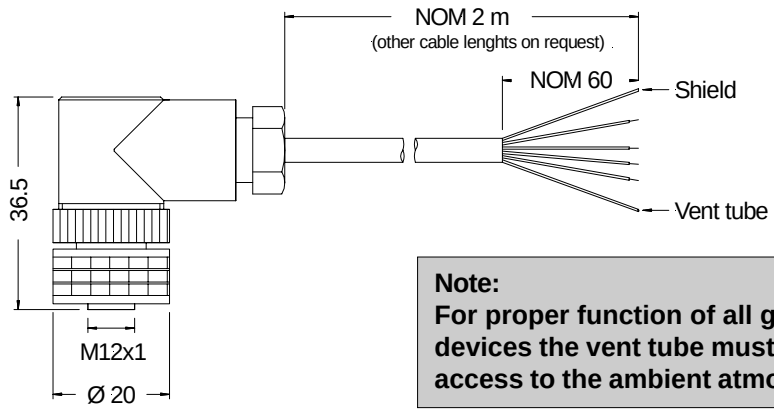
Pin	Output	
	0...10 V **0.5...4.5 V** **0...5 V**	**4...20 mA**
1	$+V_S$	$+V_S$
2	Vout	NC
3	case	case
4	-Vs	-Vs

mass: 60 g

dimensions in mm (inches)

RECOMMENDED ACCESSORY (not included in delivery)

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



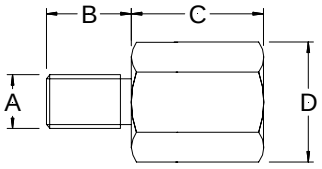
PIN CONNECTION	
Pin	**Flying lead end**
1	Brown
2	Green
3	White and shield
4	Yellow

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

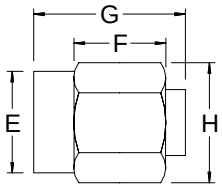
dimensions in mm

OPTIONAL PRESSURE FITTINGS (brass, nickel plated)

Male fittings



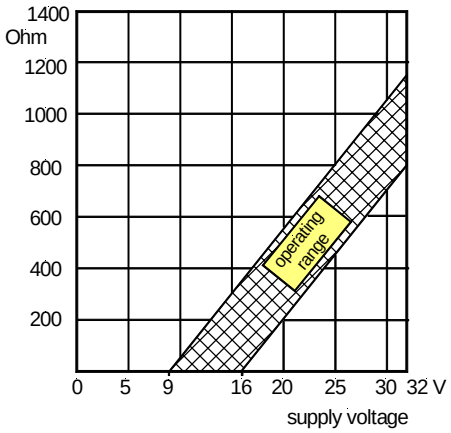
Female fittings



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")

LOAD LIMITATION

4...20 mA output version



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")

ELECTROMAGNETIC CAPABILITY[8]

	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 7xxxx x x x

E: bar calibration
U: psi calibration

mbar-ranges (only)

CTE7000 series

0010:	0 to 10 mbar
N010:	-10 to 10 mbar
0025:	0 to 25 mbar
N025:	-25 to 25 mbar
0070:	0 to 70 mbar
N070:	-70 to 70 mbar
0350:	0 to 350 mbar
N350:	-350 to 350 mbar
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
007:	0 to 7 bar

CTU7000 series

00x15:	0 to 0.15 psi
N0x15:	-0.15 to 0.15 psi
00x3:	0 to 0.3 psi
N0x3:	-0.3 to 0.3 psi
001:	0 to 1 psi
N01:	-1 to 1 psi
005:	0 to 5 psi
N05:	-5 to 5 psi
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

Pressure mode
G: gage pressure[1]
A: absolute pressure
(available for pressure ranges from 1 bar /15 psi absolute upwards only)

Output signal
0: 0...10 V
4: 4...20 mA
6: 0.5...4.5 V
7: 0...5 V

Fitting size
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

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