

BTE / PTU / BTW6000...CS Series

Submersible precision stainless steel transmitters

FEATURES

- 0...100 mbar to 0...10 bar, 0...2 to 0...150 psi, 0...1 to 0...100 mH₂O (1 mH₂O ≈ 3 ft) gage or absolute
- For corrosive media
- 0...10 V, 1...6 V, 0...20 mA or 4...20 mA output
- Field interchangeable
- For harsh environments

MEDIA COMPATIBILITY

Wetted materials:

Stainless steel 1.4404 (316L), NBR (FKM), POM, PUR (PE/FEP)

Protection class:

IP 68 (according to DIN EN 60529, NEMA 6P)¹

SPECIFICATIONS^{9,10}

Maximum ratings

Supply voltage (reverse polarity protection)

BT.../PTU...0..., ...1... 13...30 V

BT.../PTU...4..., ...5...² 12...36 V

Maximum load current

BT.../PTU...0..., ...1... 10 mA

Temperature limits

Storage -40...70°C

Operating -25...70°C

Compensated 0...70°C

Vibration (5 to 500 Hz)

10 g_{RMS}

Mechanical shock

50 g

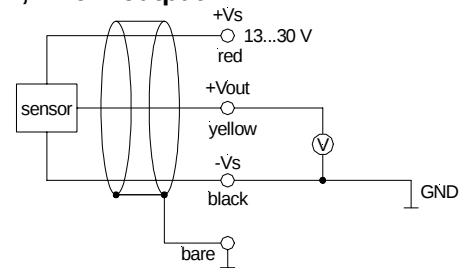
Proof pressure³

2 x rated pressure

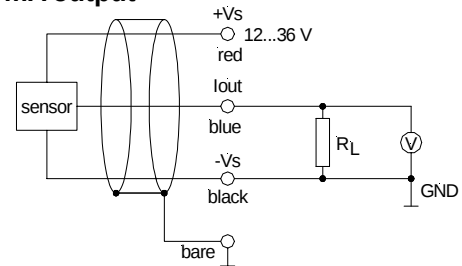


ELECTRICAL CONNECTION

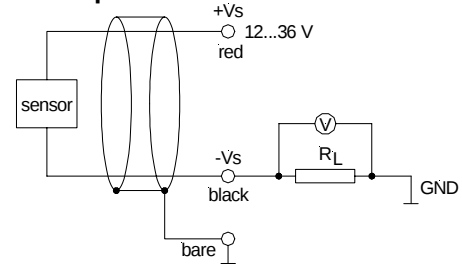
0...10 V, 1...6 V output



0...20 mA output



4...20 mA output



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PERFORMANCE CHARACTERISTICS ($V_S=15\text{ V}$, $t_{\text{amb}}=25\text{ °C}$)

Characteristics			Min.	Typ.	Max.	Unit
Thermal effects	(0...70 °C) ⁴	Offset		±0.02	±0.04	%FSO/ °C
		Span		±0.02	±0.04	
	(25...0 °C)	Offset		±0.03		
		Span		±0.03		
Non-linearity (BSL) ⁵ and hysteresis				±0.1	±0.25	%FSO
Repeatability				±0.1		
Long term stability ⁶				±0.2		
Output noise (0 < f < 1 kHz)				±0.04		
Response time (10 to 90 %)				1		ms
Power supply rejection	Offset			±0.05		%FSO/V
	Span			±0.05		

0...10 V output ($V_S=15\text{ V}$, $R_L>100\text{ k}\Omega$, $t_{\text{amb}}=25\text{ °C}$)

Characteristics	Min.	Typ.	Max.	Unit
Zero pressure offset	-0.15	0	0.15	V
Full scale span ⁷	9.9	10.0	10.1	
Output impedance			50	Ω
Power consumption (no load)		100		mW

1...6 V output ($V_S=15\text{ V}$, $R_L>100\text{ k}\Omega$, $t_{\text{amb}}=25\text{ °C}$)

Characteristics	Min.	Typ.	Max.	Unit
Zero pressure offset	0.85	1.0	1.15	V
Full scale span ⁷	4.9	5.0	5.1	
Full scale output		6.0		
Output impedance			50	Ω
Power consumption (no load)		100		mW

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

Characteristics	Min.	Typ.	Max.	Unit
Zero pressure offset	3.85	4.0	4.15	mA
Full scale span ⁷	15.9	16.0	16.1	
Output impedance		0.1		Ω
Power consumption ($I_L = 20\text{ mA}$)		260		mW

0...20 mA output ($V_S=15\text{ V}$, $R_L=100\text{ }\Omega$, $t_{\text{amb}}=25\text{ °C}$)

Characteristics	Min.	Typ.	Max.	Unit
Zero pressure offset	-0.15	0	0.15	mA
Full scale span ⁷	19.9	20.0	20.1	
Output impedance		0.1		Ω
Power consumption ($I_L = 20\text{ mA}$)		260		mW

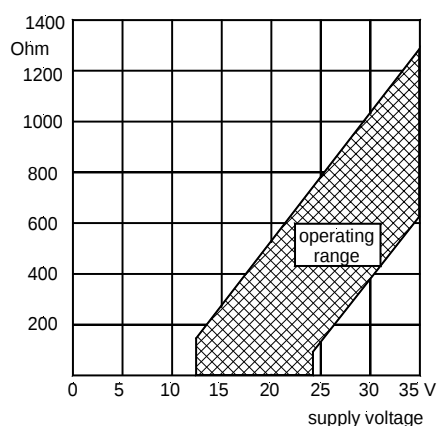
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ELECTROMAGNETIC CAPABILITY⁸

	Test conditions	Criterion	Interference
Radiated, radio frequency electromagnetic field immunity (RFI)	EN61000-4-3: 10 V/m, 80 to 1000 MHz 80 % AMC (1 kHz)	A	<1 % FSO
Electrical fast transient / burst immunity (EFT)	EN61000-4-4: ± 2 kV	B	<1 % FSO
Electrostatic discharge immunity test (ESD)	EN61000-4-2: ± 4 kV, contact discharge ± 8 kV, air discharge	B	<1 % FSO
Immunity to conducted disturbances induced by radio-frequency fields	EN61000-4-6: 0.15 to 80 MHz 10 V, 80 % AMC (1 kHz)	A	<1 % FSO
Surge immunity	EN61000-4-5: ± 0.5 kV, symmetric/asymmetric ± 1 kV, asymmetric	B	<1 % FSO

LOAD LIMITATION (current output versions)



ELECTRICAL CONNECTION (cont.)

WIRE CONNECTION			
Colour	0...10 V, 0...6 V	0...20 mA	4...20 mA
red	$+V_s$	$+V_s$	$+V_s$
black	$-V_s$	$-V_s$	$-V_s$
yellow	V_{out}	-	-
blue	-	I_{out}	-
bare	case/shield	case/shield	case/shield
transparent	vent tube ¹	vent tube ¹	vent tube ¹

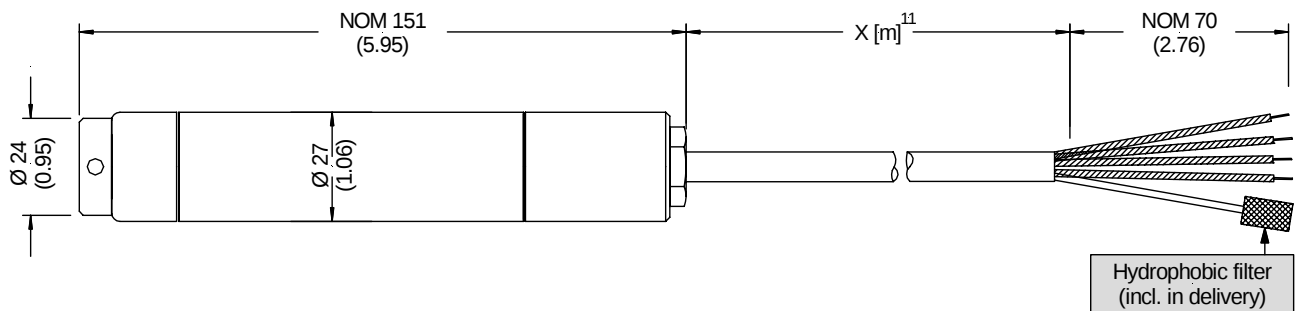
Specification notes:

1. The package is an all-sealed housing. For proper function the gage port is vented to the atmosphere through the connecting cable. Thus the vent tube of 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...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 EN 61000-6-2.
9. CE-labelling is in accordance with 2004/108/EC.
10. The pressure transmitters must not be used as safety accessories according to article 1, 2.1.3 of the directive 97/23/EC.
11. Cable length for 0...10 V versions is max. 10 m.

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OUTLINE DRAWING¹



mass: typ. 350 g (without cable)

dimensions in mm (inches)

ORDERING INFORMATION

BTE/PTU/BTW		M	6xxx	x	x	C	x	S	x	x
Calibration										Sealing material
BTE: calibration in bar										V: Viton (FKM)
PTU: calibration in psi										N: NBR
BTW: calibration in mH ₂ O (1 mH ₂ O ≈ 3 ft)										<i>Note: Older part no. do not contain this digit. Without this digit NBR will be used.</i>
for mbar ranges only										
Pressure range										Cable material
100: 0...100 mbar	002: 0...2 psi	001: 0...1 mH ₂ O								E: PE
250: 0...250 mbar	003: 0...3 psi	2x5: 0...2.5 mH ₂ O								U: PUR
350: 0...350 mbar	005: 0...5 psi	3x5: 0...3.5 mH ₂ O								F: FEP
500: 0...500 mbar	010: 0...10 psi	005: 0...5 mH ₂ O								<i>Note: Older part no. do not contain this digit. Without this digit PUR will be used.</i>
001: 0...1 bar	015: 0...15 psi	010: 0...10 mH ₂ O								
002: 0...2 bar	030: 0...30 psi	020: 0...20 mH ₂ O								
005: 0...5 bar	050: 0...50 psi	050: 0...50 mH ₂ O								
010: 0...10 bar	100: 0...100 psi	100: 0...100 mH ₂ O								
	150: 0...150 psi									
Pressure mode										Submersible
G: gage pressure ¹										
A: absolute pressure										Cable length in m¹¹
(available for pressure ranges from 1 bar/15 psi only)										Cable version
Output signal										
0: 0...10 V										
1: 1...6 V										
4: 4...20 mA										
5: 0...20 mA										

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

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