BTEL5000 / PTUL5000 Series

Precision very low differential pressure transmitters

FEATURES

- **1 to 10 mbar, 1 to 10 inH_2O differential pressure**
- **1...6 V or 4...20 mA output**
- **Precision temperature compensated and calibrated**
- **Rugged aluminium housing**
- **Female 1/8" BSP and 1/8" NPT fittings**

MEDIA COMPATIBILITY

Pressure inlet:
Non-corrosive, non-ionic working fluids such as air, dry gases and the like

Housing:
Aluminium, protection class IP 67 (according to DIN EN 60529, NEMA 6)[1]

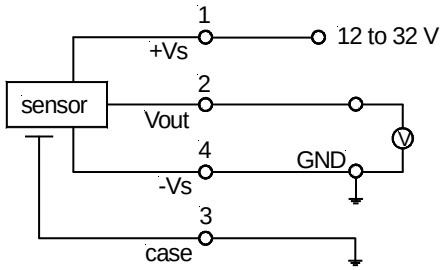
SPECIFICATIONS[12]

Maximum ratings

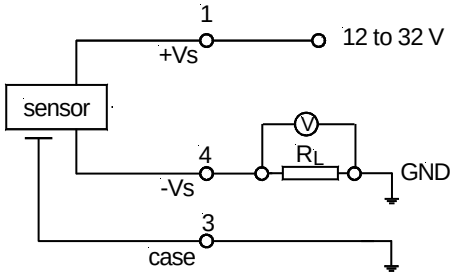
Supply voltage[11]	12...32 V
Output current	
BTEL/PTUL5...D1...	
Source	20 mA
Sink	10 mA
BTEL/PTUL5...D4...	30 mA
Temperature limits	
Storage	-40...85 °C
Operating	-25...85°C
Compensated	0...50°C
Proof pressure[2]	
devices up to 5 mbar/2 inH_2O	250 mbar/100 inH_2O
all others	500 mbar/200 inH_2O
Common mode pressure	700 mbar/280 inH_2O

ELECTRICAL CONNECTION

1...6 V output version



4...20 mA output version



COMMON PERFORMANCE CHARACTERISTICS[9]

Characteristics			Min.	Typ.	Max.	Unit
Position sensitivity				0.5		%FSO/g
Non-linearity and hysteresis[4]				±0.1	±0.25	%FSO
Output noise (0 < f < 1 kHz)				0.04		
Long term stability[5]				±0.5		
Thermal effects (0 to 50°C)[6]	Offset	devices up to 5 mbar/2 inH_2O		±0.04	±0.13	%FSO/°C
		all other devices		±0.02	±0.05	
		all others		±0.02	±0.06	
	Span	devices up to 5 mbar/2 inH_2O		±0.04	±0.10	
		all other devices		±0.02	±0.04	
Response time (10 to 90 %)				1		ms

INDIVIDUAL PERFORMANCE CHARACTERISTICS[9]

1...6 V output versions (V_S = 15 V, t_{amb} = 25°C, R_L > 100 kΩ, com. mode pressure = 0)

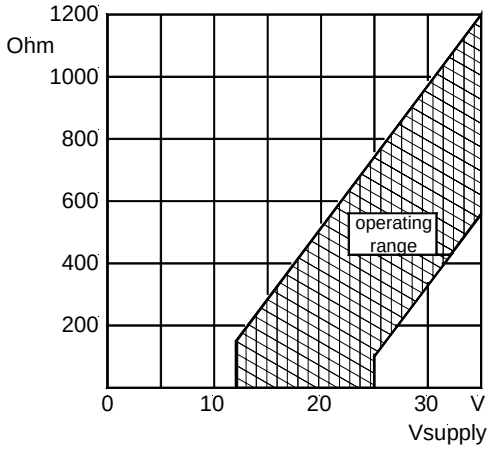
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset[7]	BTEL/PTUL50...D1...	0.95	1.0	1.05	V
	BTEL/PTUL5P...D1...	3.45	3.5	3.55	
Full scale span[8]	BTEL/PTUL50...D1...	4.95	5.0	5.05	
	BTEL/PTUL5P...D1...	2.45	2.5	2.55	
Full scale output			6.0		
Output impedance				50	Ω
Power supply rejection	Offset		0.05		%FSO/V
	Span		0.03		
Power consumption			60		mW

4...20 mA output versions (V_S = 15 V, t_{amb} = 25°C, R_L = 100 Ω, com. mode pressure = 0)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset[7]	BTEL/PTUL50...D4...	3.9	4.0	4.1	mA
	BTEL/PTUL5P...D4...	11.9	12.0	12.1	
Full scale span[8]	BTEL/PTUL50...D4...	15.9	16.0	16.1	
	BTEL/PTUL5P...D4...	7.9	8.0	8.1	
Full scale output			20.0		
Output impedance				0.1	Ω
Power supply rejection	Offset		0.05		%FSO/V
	Span		0.03		
Power consumption (I_L = 20 mA)			260		mW

LOAD LIMITATION

4...20 mA output version



ELECTROMAGNETIC CAPABILITY[10]

	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

Specification notes:

1. IP 67 protection for BTEL/PTUL5...**A** is given with locked connector only.
2. Proof pressure is the maximum pressure which may be applied without causing damage to the sensing element.
3. This is the highest pressure which can be applied to any port at any time. At the same time the differential pressure between the ports H and L must not exceed the maximum proof pressure.
4. Non-linearity refers to the **B**est **S**traight **L**ine fit measured for offset, full scale span and 1/2 full scale span.
5. Long term stability is the change in output after one year or 1 million pressure cycles.
6. Thermal effects tested and guaranteed from 0...50 °C relative to 25°. All specifications shown are relative to 25°C.
7. Calibrated after minimum 3 minutes warm-up time.
8. Full scale span is the algebraic difference between the positive full scale output and zero pressure offset.
9. Higher pressure applied to port H.
10. Test are in accordance with EN 61000-6-2.
11. The minimum supply voltage is directly proportional to the load resistance seen by the transmitter. For more details see the load limitation diagram.
12. CE-labelling is in accordance with 2004/108/EC.

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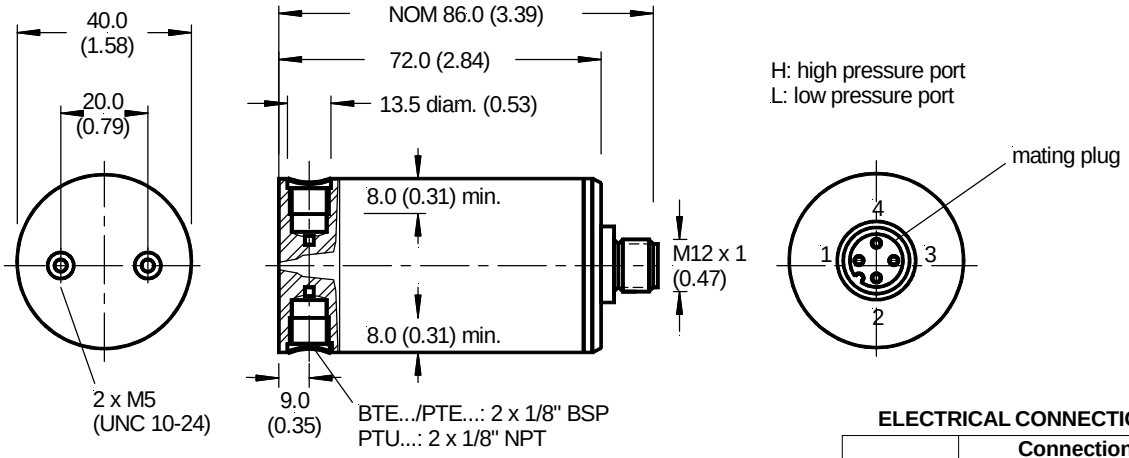
OUTLINE DRAWING

Connector version

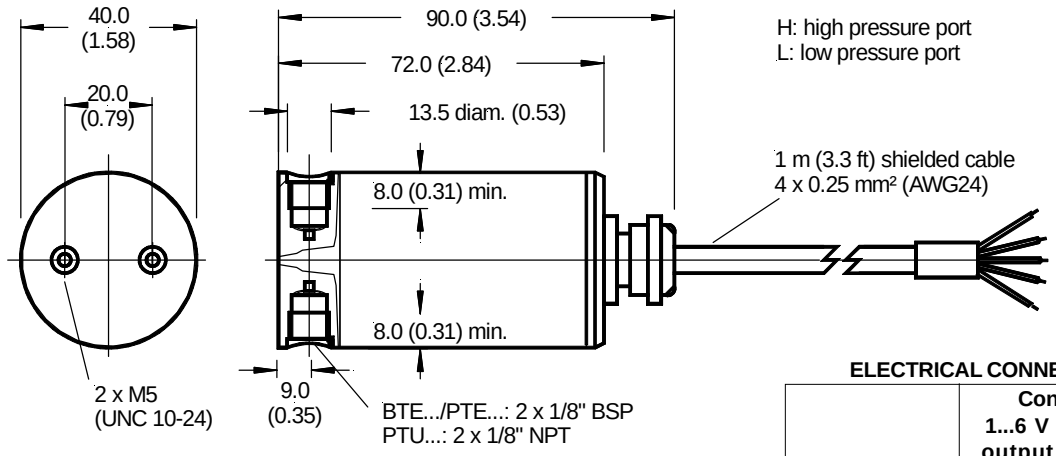


mass: typ. 170 g
dimensions in mm (inches)

ELECTRICAL CONNECTION

Pin	Connection 1...6 V output	Connection 4...20 mA output
1	+Vs	+Vs
2	Vout	NC
3	case	case
4	-Vs	-Vs

Cable version



mass: typ. 220 g
dimensions in mm (inches)

ELECTRICAL CONNECTION

	Connection 1...6 V output	Connection 4...20 mA output
bare	case/shield	case/shield
brown	+Vs	+Vs
white or orange	NC	NC
green	Vout	NC
yellow	-Vs	-Vs

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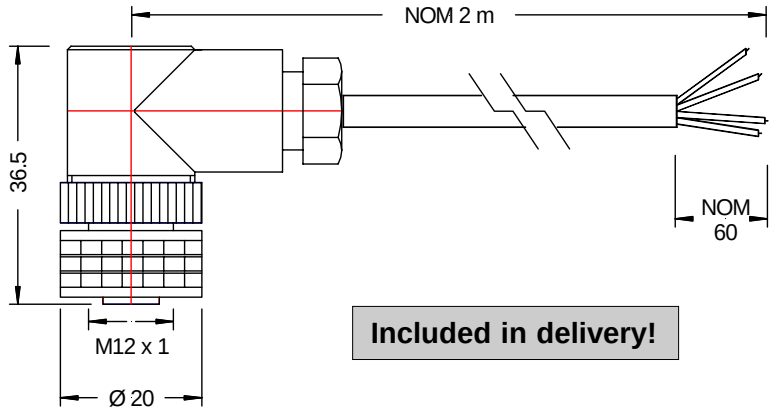
RECOMMENDED CABLE/CONNECTOR ACCESSORY

for connector version (Order number **ZK000104-2**, other cable lengths on special request)



Included in delivery!

PIN CONNECTION

Pin	Flying lead end
1	brown
2	green
3	orange + shield
4	yellow

dimensions in mm

ORDERING INFORMATION

Series/Pressure range		Pressure mode		Output signal		Electrical connection	
BTEL5001	0...1 mbar	**D**	Differential	**1**	1...6 V (not available for 0...1 mbar devices)	**A**	Connector version
BTEL5P01	-1...+1 mbar					**C**	Cable version
BTEL5002	0...2 mbar			**4**	4...20 mA		
BTEL5P02	-2...+2 mbar						
BTEL5005	0...5 mbar						
BTEL5P05	-5...+5 mbar						
BTEL5010	0...10 mbar						
BTEL5P10	-10...+10 mbar						
PTUL5001	0...1 inH_2O						
PTUL5P01	-1...+1 inH_2O						
PTUL5002	0...2 inH_2O						
PTUL5P02	-2...+2 inH_2O						
PTUL5005	0...5 inH_2O						
PTUL5P05	-5...+5 inH_2O						
PTUL5010	0...10 inH_2O						
PTUL5P10	-10...+10 inH_2O						

Example: BTEL5P01D4A

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

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

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