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]

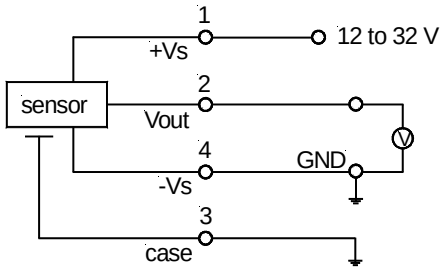
SPECIFICATIONS[12]

Maximum ratings

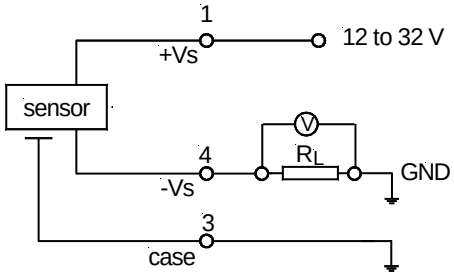
Supply voltage[11]	12...32 V
Output current	
BTEL/PTUL5...D1...	
Source	20 mA
Sink	10 mA
BTEL/PTUL5...D4...	30 mA
Temperature limits	
Storage	-40...100°C
Operating	-25...85°C
Compensated	0...50°C
Proof pressure[2]	
BTEL/PTUL5...01D...	250 mbar / 100 "H_2O
BTEL/PTUL5...02D...	250 mbar / 100 "H_2O
all others	350 mbar / 150 "H_2O
Pressure at any port[3]	
BTEL/PTUL5...01D...	500 mbar / 200 "H_2O
BTEL/PTUL5...02D...	500 mbar / 200 "H_2O
all others	750 mbar / 300 "H_2O

ELECTRICAL CONNECTION

1...6 V output version



4...20 mA output version



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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]		BTEL/PTUL5...01D...		±0.5		
		all others		±0.2		
Thermal effects (0 to 50°C)[6]	Offset	BTEL5...01D...		±0.08	±0.16	%FSO/°C
		BTEL5...02D.../ PTUL5...01D...		±0.04	±0.10	
		all others		±0.02	±0.06	
	Span			±0.04	±0.08	
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... BTEL/PTUL5P...D1...	0.9 3.4	1.0 3.5	1.1 3.6	V
Full scale span[8]	BTEL/PTUL50...D1... BTEL/PTUL5P...D1...	4.9 2.4	5.0 2.5	5.1 2.6	
Full scale output			6.0		
Output impedance				50	Ω
Power supply rejection	Offset Span		0.05 0.03		%FSO/V
Power consumption			60		mW

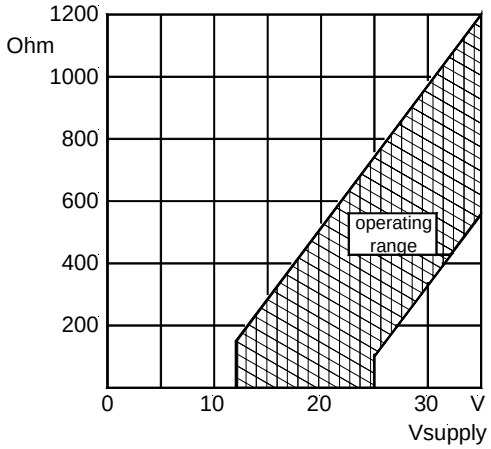
4...20 mA output versions (V_S = 15 V, t_{amb} = 25°C, R_L = 100 Ω, com. mode pressure = 0)

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

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LOAD LIMITATION

4...20 mA output version



ELECTROMAGNETIC CAPABILITY[10]

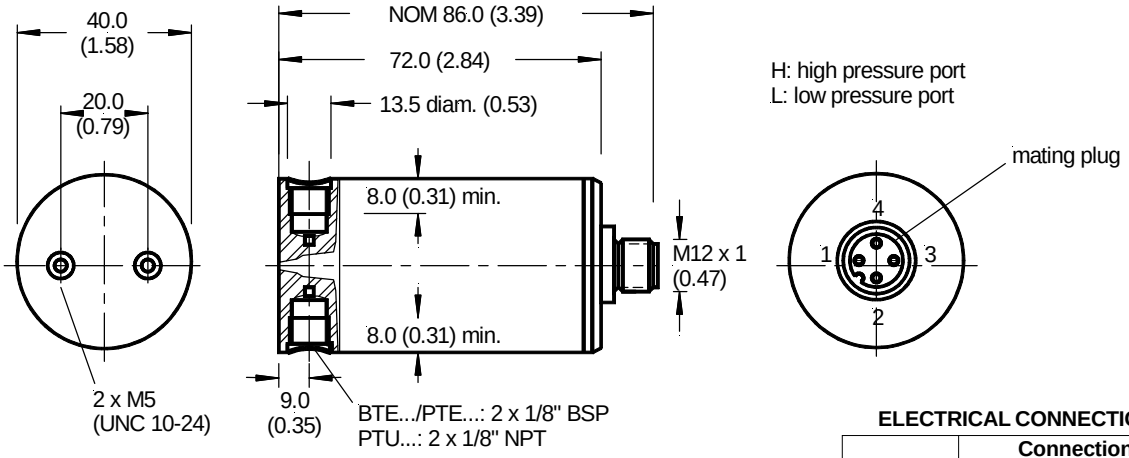
	Test conditions		Criterion	Interference
Radiated, radio frequency electromagnetic field immunity (RFI)	EN61000-4-3:	10 V/m, 80 to 1000 MHz 80 % AMC (1 kHz)	A	<1 %FSO
Electrical fast transient / burst immunity (EFT)	EN61000-4-4:	±2 kV	B	<1 %FSO
Electrostatic discharge immunity test (ESD)	EN61000-4-2:	±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.

OUTLINE DRAWING

Connector version

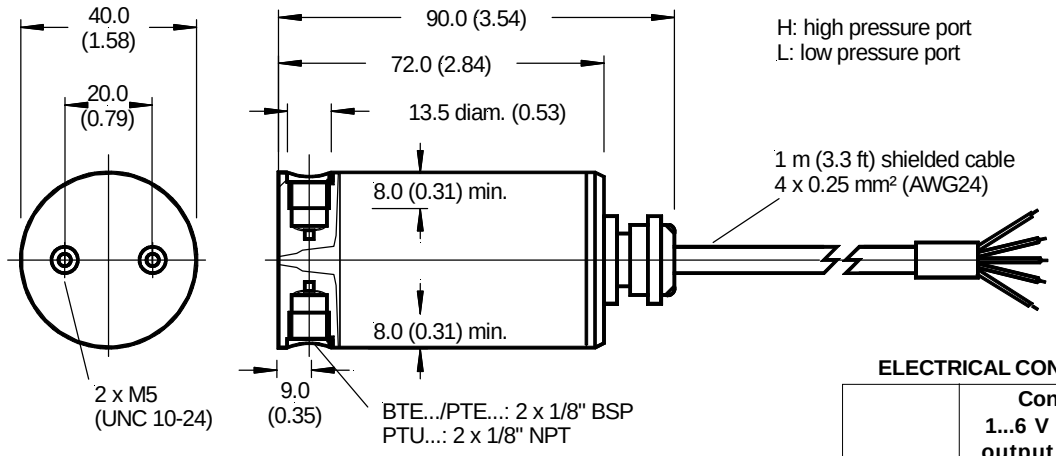


mass: typ. 170 g
dimensions in mm (inches)

ELECTRICAL CONNECTION

	Connection	
Pin	**1...6 V output**	**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)

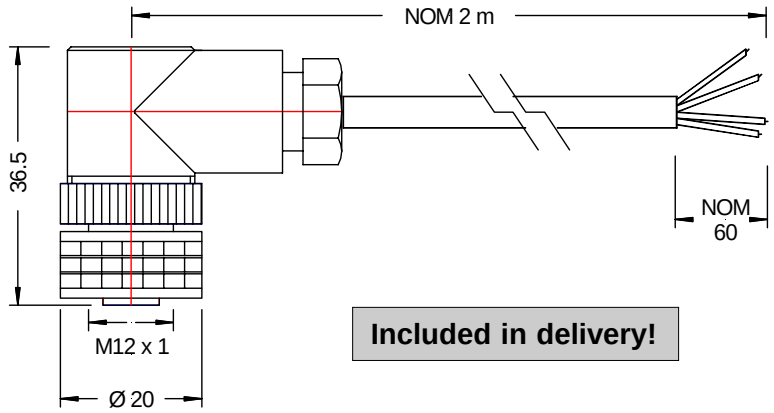
ELECTRICAL CONNECTION

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

RECOMMENDED CABLE/CONNECTOR ACCESSORY

for connector version

Order number **ZK000101**, other cable lengths on special request



Included in delivery!

PIN CONNECTION

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

dimensions in mm

ORDERING INFORMATION

BTEL/PTUL 5xxx D x x

Calibration

BTEL: calibration in mbar
PTUL: calibration in inH_2O

Pressure range

BTEL5000 series		PTUL5000 series	
001:	0...1 mbar	001:	0...1 inH_2O
P01:	-1...+1 mbar	P01:	-1...+1 inH_2O
002:	0...2 mbar	002:	0...2 inH_2O
P02:	-2...+2 mbar	P02:	-2...+2 inH_2O
005:	0...5 mbar	005:	0...5 inH_2O
P05:	-5...+5 mbar	P05:	-5...+5 inH_2O
010:	0...10 mbar	010:	0...10 inH_2O
P10:	-10...+10 mbar	P10:	-10...+10 inH_2O

Note: 0...1 mbar devices not available with 1...6 V output signal

Electrical connection

A: connector version
C: cable version

Output signal

1: 1...6 V
4: 4...20 mA

Differential pressure

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

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