BTEL5000 / PTUL5000 Series

Precision very low differential pressure transmitters

FEATURES

- **1 to 10 mbar, 1 to 10 "H_2O differential pressure**
- **High level output, 1...6 V or 4...20 mA (2-wire connection)**
- **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) respectively NEMA 6[1]

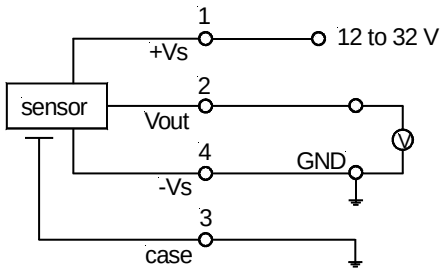
SPECIFICATIONS[12]

Maximum ratings

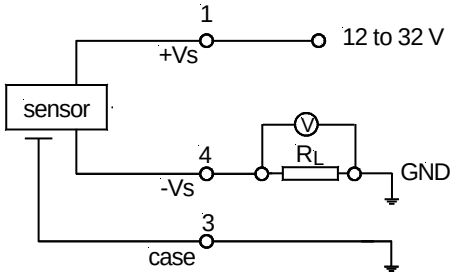
Supply voltage[11]	12 to 32 V
Output current	
BTEL/PTUL5...D1...	
Source	20 mA
Sink	10 mA
BTEL/PTUL5...D4...	30 mA
Temperature limits	
Storage	-40 to 100°C
Operating	-25 to 85°C
Compensated	0 to 50°C
Proof pressure[2]	
BTEL/PTUL5...01D...	250 mbar / 100 "H_2O
BTEL/PTUL5...02D...	250 mbar / 100 "H_2O
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



SENSORTECHNICS www.sensortechnics.com

COMMON PERFORMANCE CHARACTERISTICS[9]

Characteristics			Min.	Typ.	Max.	Unit
Operating pressure		BTEL5001...	0		1	mbar
		BTEL5P01...	-1		1	
		BTEL5002...	0		2	
		BTEL5P02...	-2		2	
		BTEL5005...	0		5	
		BTEL5P05...	-5		5	
		BTEL5010...	0		10	
		BTEL5P10...	-10		10	
		PTUL5001...	0		1	"H_2O
		PTUL5P01...	-1		1	
		PTUL5002...	0		2	
		PTUL5P02...	-2		2	
		PTUL5005...	0		5	
		PTUL5P05...	-5		5	
		PTUL5010...	0		10	
		PTUL5P10...	-10		10	
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

PERFORMANCE CHARACTERISTICS[9]

1...6 V output versions (unless otherwise noted 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 (unless otherwise noted 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

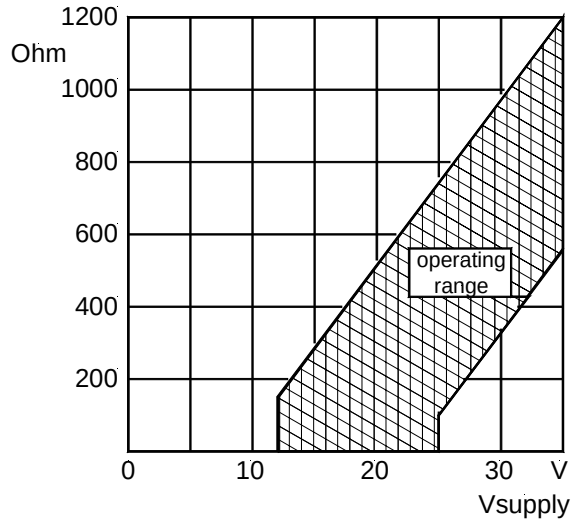
ELECTROMAGNETIC CAPABILITY[10]

	Test conditions		Criterion	Interference
Radiated, radio frequency electromagnetic field immunity (RFI)	EN61000-4-3:	Grade 3 10 V/m, 80 MHz 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

Specification notes:

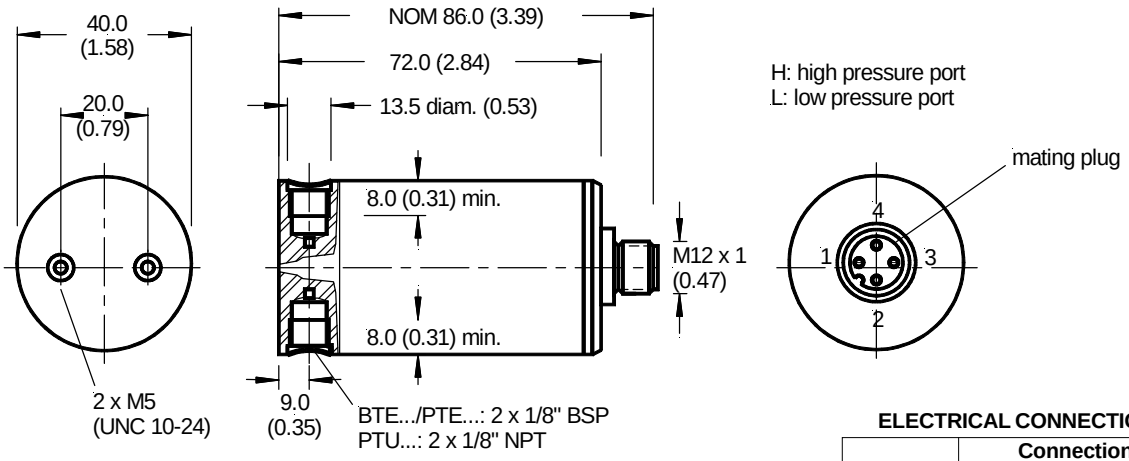
1. IP 67 protection for BTEL/PTUL5...**A** is given with locked connector only.
2. Proof pressure is the maximum pressure which may be applied without causing damage to the sensing element.
3. This is the highest pressure which can be applied to any port at any time. At the same time the differential 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 EN61000-6-2, April 1999.
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 89/336/EEC.

LOAD LIMITATION
4...20 mA output version



OUTLINE DRAWING

Connector version

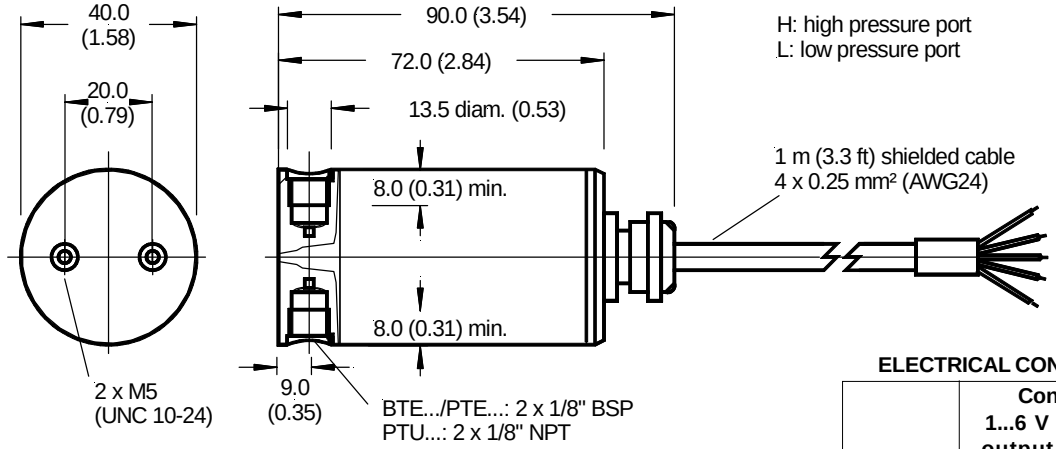


mass: typ. 170 g
dimensions in mm (inches)

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)

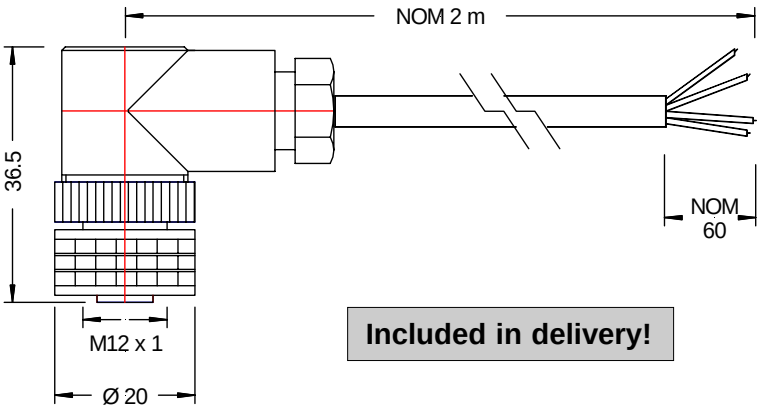
ELECTRICAL CONNECTION

	Connection 1...6 V output	Connection 4...20 mA output
bare	case/shield	case/shield
brown	+Vs	+Vs
white	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

BTEL5/PTUL5 x xx D x x

Calibration
BTEL: calibration in mbar
PTUL: calibration in "H_2O

Reading
0: unidirectional reading
P: bidirectional reading

Pressure range
01: 1 mbar / 1 "H_2O (*0...1 mbar not available for output signal 1...6 V)*
02: 2 mbar / 2 "H_2O
05: 5 mbar / 5 "H_2O
10: 10 mbar /10 "H_2O

Electrical connection
A: connector version
C: cable version

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

Differential pressure

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

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