

# BTE4000 / PTU4000 Series

## Pressure transmitters

### FEATURES

- 0...-1 to 0...10 bar absolute or gage<sup>1</sup>,  
0...-15 to 0...150 psi gage<sup>1</sup>
- 0...5 V, 0...10 V, 1...6 V, 4...20 mA output
- Field interchangeable
- Rugged aluminium housing

### MEDIA COMPATIBILITY

Wetted materials:  
aluminium, silicon, glass

Housing:  
Aluminium, protection class IP 65 (according to  
DIN EN 60529) respectively NEMA 4<sup>1</sup>



### SPECIFICATIONS<sup>9,10</sup>

#### Maximum ratings

Supply voltage (reverse polarity protection)<sup>2</sup>

BTE(M)/PTU4...0, ...1, ...7	13...30 V
BTE(M)/PTU4...4	12...36 V

Maximum load current

BTE(M)/PTU4...0, ...1, ...7	10 mA
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Temperature limits

Storage	-55 to 100°C
Operating	-40 to 100°C
Compensated	0 to 50°C

Humidity limits 0 - 100 %RH

Vibration (5 to 500 Hz) 2 g

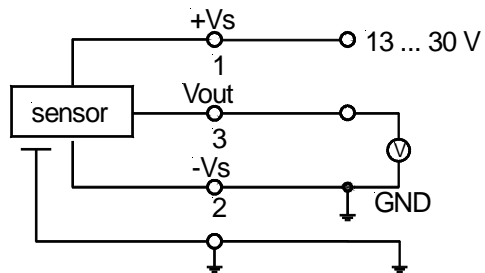
Mechanical shock 50 g

Proof pressure<sup>3</sup>

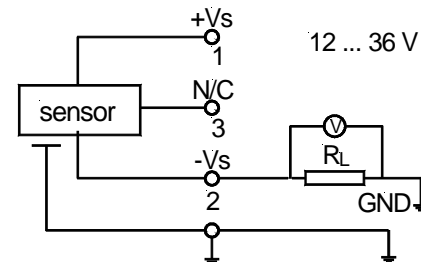
BTEM4.../PTU4x01..., 05...	1.4 bar / 20 psi
BTE4010.../PTU4150...	16 bar / 200 psi
all others	2 x rated pressure

### ELECTRICAL CONNECTION

#### 0...5 V, 0...10 V, 1...6 V output



#### 4...20 mA output



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### COMMON PERFORMANCE CHARACTERISTICS

( $V_s = 15\text{ V}$ ,  $t_{amb} = 25^\circ\text{C}$ )

Characteristics		Min.	Typ.	Max.	Unit	
Operating pressure	BTEM40070..	0		70	mbar	
	BTEM4P070..	-70		70		
	BTEM4N250..	-25		0		
	BTEM40350..	0		350		
	BTEM4N350..	-350		0		
	BTEM4P350..	-350		350		
	BTE4001..	0		1	bar	
	BTE4N01..	-1		0		
	BTE4P01..	-1		1		
	BTE4002..	0		2		
	BTE4005..	0		5		
	BTE4010..	0		10		
	PTU4001..	0		1	psig	
	PTU4P01..	-1		1		
PTU4005..	0		5			
PTU4P05..	-5		5			
PTU4015..	0		15			
PTU4P015..	-15		15			
PTU4030..	0		30			
PTU4100..	0		100			
PTU4150	0		150			
Thermal effects (0 to 50°C) <sup>5</sup>	Offset			0.04	%FSO/°C	
	Span			0.04		
	(-20 to 0°C, 50 to 70°C) <sup>5</sup>	Offset		0.02		
		Span		0.02		
Non-linearity and hysteresis (BSL) <sup>6</sup>			±0.2	±0.50	%FS	
Repeatability			±0.10			
Long term stability <sup>7</sup>			±0.5			
Output noise (0 - 1 kHz)			±0.04			
Response time (10 to 90 %)			1.0		ms	
Power supply rejection	Offset		0.05		%V	
	Span		0.03			

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### INDIVIDUAL PERFORMANCE CHARACTERISTICS<sup>1</sup>

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

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	BTE/PTU4N...	4.85	5.0	5.15	V
	all others	-0.15	0	0.15	
Full scale span <sup>4</sup>	BTE/PTU4N...	4.9	5.0	5.1	
	all others	9.9	10.0	10.1	
Output impedance			6.0	50	$\Omega$
Power consumption (no load)			100		mW

**0...5 V output** ( $V_s = 15\text{ V}$ ,  $R_L > 100\text{ k}\Omega$ ,  $t_{amb} = 25^\circ\text{C}$ )

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	BTE/PTU4N...	2.35	2.5	2.65	V
	all others	-0.15	0	0.15	
Full scale span <sup>4</sup>	BTE/PTU4N...	2.4	2.5	2.6	
	all others	4.9	5.0	5.1	
Output impedance			6.0	50	$\Omega$
Power consumption (no load)			100		mW

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

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	BTE/PTU4N...	3.35	3.5	3.65	V
	all others	0.85	1.0	1.15	
Full scale span <sup>4</sup>	BTE/PTU4N...	2.4	2.5	2.6	
	all others	4.9	5.0	5.1	
Output impedance			6.0	50	$\Omega$
Power consumption (no load)			100		mW

**4...20 mA output** ( $V_s = 15\text{ V}$ ,  $R_L = 100\ \Omega$ ,  $t_{amb} = 25^\circ\text{C}$ )

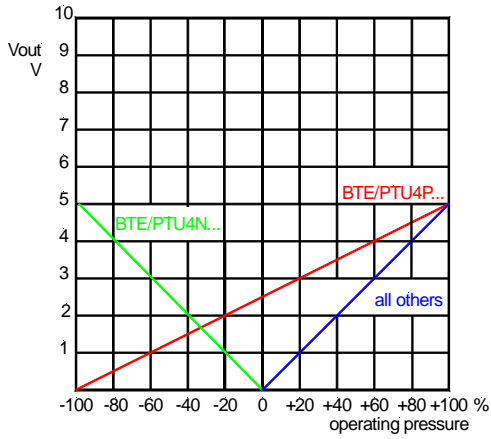
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	BTE/PTU4N...	11.8	12.0	12.2	mA
	all others	3.8	4.0	4.2	
Full scale span <sup>4</sup>	BTE/PTU4N...	7.9	8.0	8.1	
	all others	15.8	16.0	16.2	
Output impedance			0.1		$\Omega$
Power consumption ( $I_L = 20\text{ mA}$ )			260		mW

# BTE4000 / PTU4000 Series

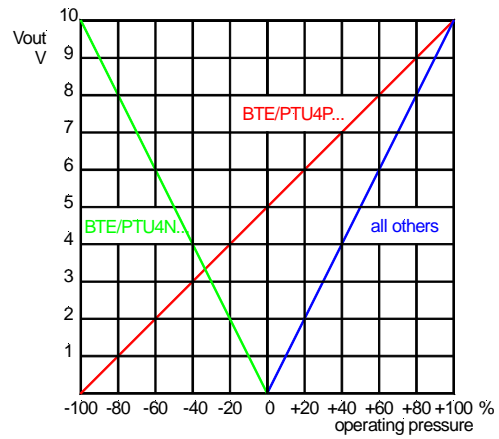
## Pressure transmitters

### OUTPUT CHARACTERISTICS

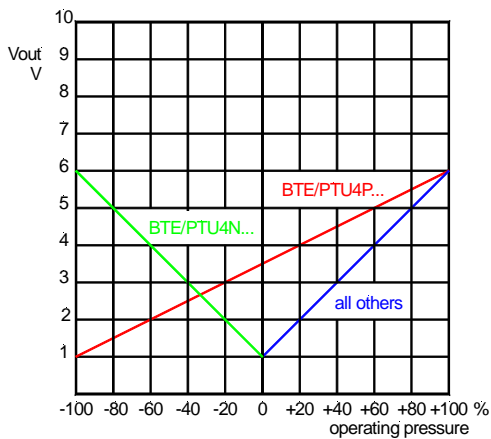
#### 0...5 V output version



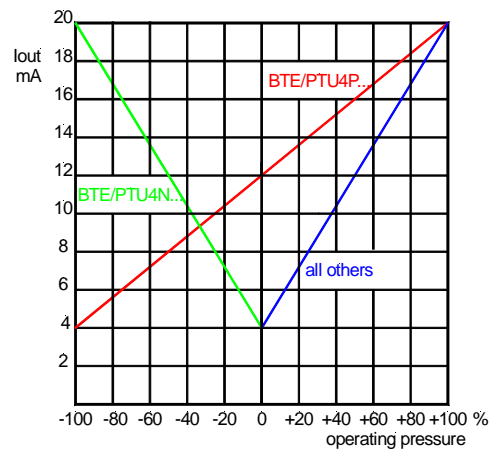
#### 0...10 V output version



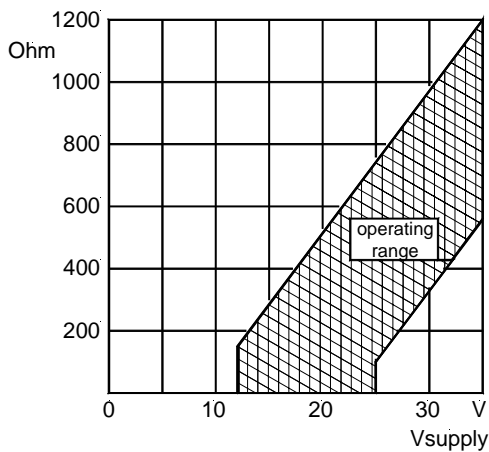
#### 1...6 V output version



#### 4...20 mA output version



### LOAD LIMITATION



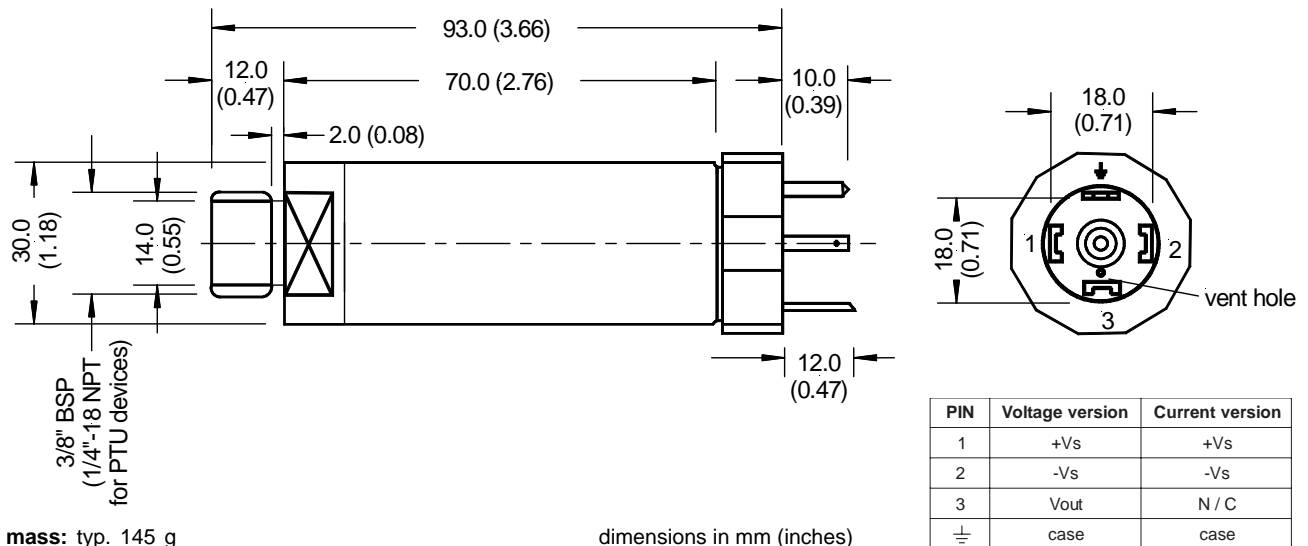
# BTE4000 / PTU4000 Series

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### ELECTROMAGNETIC CAPABILITY<sup>8</sup>

	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

### OUTLINE DRAWING



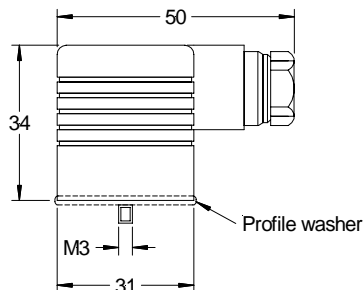
mass: typ. 145 g

dimensions in mm (inches)

### RECOMMENDED ACCESSORY

Plug **DIN EN 175301-803 A** and profile washer included in delivery.

For a complete connector/cable assembly use order no. **ZK000110-x** (x=cable lengths in m).



dimensions in mm

**Note: For proper function of all gage devices the gage port must be vented to the atmosphere through the connector/cable assembly.**

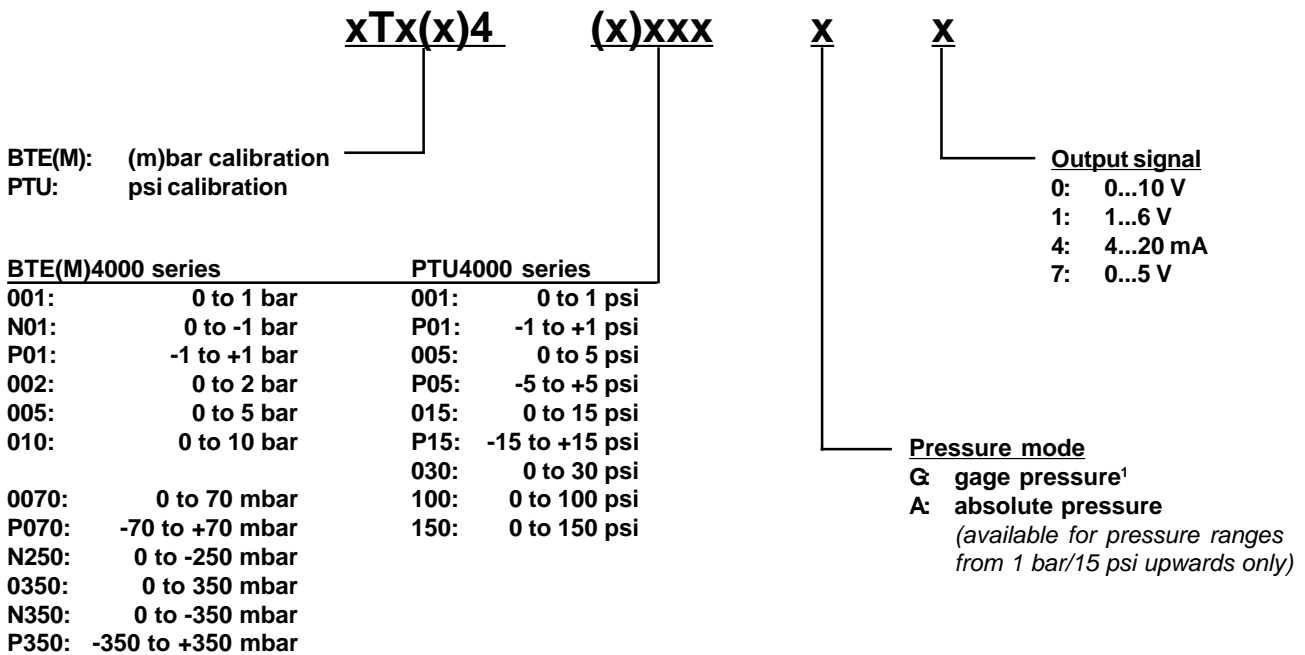
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### Specification notes:

1. IP 65 protection is given with locked connector only. The package is an all-sealed housing. For proper function, the gage port is vented to the atmosphere through the connecting cable. 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. Full scale span is the algebraic difference between the positive full scale output and offset.
5. Thermal effects tested and guaranteed from 0 to 50°C relative to 25°C. All specifications shown are relative to 25°C.
6. Linearity refers to the Best Straight Line fit measured for offset pressure, full scale pressure and 1/2 full scale pressure.
7. Long term stability is the change in output after one year or 1 million pressure cycles.
8. Test are in accordance with EN61000-6-2, April 1999.
9. CE-labelling is in accordance with 89/336/EEC.
10. The pressure transmitters must not be used as safety accessories according to article 1, 2.1.3 of the directive 97/23/EC.

### ORDERING INFORMATION



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

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