

# BARKSDALE BOT PRESSURE TRANSDUCER

Series BTX Transducer



# BOT: THE NEXT- GENERATION DIGITAL PRESSURE TRANSDUCER



## Configure Standard Options or Customize With Fully Engineered Solutions to Meet Your Unique Needs

Get the digital pressure transducers that match your exact monitoring and control requirements for gas delivery or mobile hydraulic equipment and vehicle applications right when you need them. That's the value of specifying the new BoT Series Pressure Transducer from Barksdale. Configure it from 55 available standard options. Or, leverage our proven design process to co-engineer bespoke solutions with short lead times. Original equipment manufacturers (OEMs) and their end-user customers benefit when they select the BoT Transducer by:



- **Increasing** system performance and reliability
- **Minimizing** the costs of manufacturing, commissioning, maintenance and service
- **Reducing** expenditures to modify equipment and systems due to the transducer shortage
- **Meeting** critical timelines with short lead time combined with high availability

## Industries and Applications

### Gas delivery

- Compressors and pumps
- CNG and hydrogen
- Gas metering
- HVAC
- Medical gas systems

### Industrial

- Compressors and pumps
- General equipment
- HVAC
- Pneumatic and hydraulic systems

### Mobile hydraulic equipment

- Aerial work platforms
- Buses
- Construction and mining vehicles
- Irrigation equipment systems
- Off-highway vehicles

### Mobile hydraulic equipment

- **Meet your contracted production timelines** and avoid critical assembly line shutdowns due to full inhouse production.
- **Avoid re-engineering costs** for existing equipment and systems by customizing Barksdale's BoT Transducer to meet "form, fit and function" replacement requirements.
- **Reduce the total cost of ownership (TCO)** for your end-user customers by working with Barksdale to eliminate the adapters and cables needed to commission off-the-shelf pressure controls while also reducing maintenance and service expenses.



## Enhanced Accuracy and Reliability With Rugged Construction

Barksdale engineered the BoT Transducer to address the following key needs of OEMs for gas delivery and mobile equipment applications:

- Fully customizable pressure ranges on mechanical or electrical connections
- Rugged, heavy-duty construction in a compact footprint that's 28% smaller than standard analog electronic products
- Long-term reliability proven over 10 million pressure cycles
- High accuracy (0.25%) and low offset error at zero pressure
- Protection against hammering and spikes up to 23 times the working pressure

Barksdale achieves some of the shortest lead times in the industry through modular design and automated calibration of the BoT Transducer.

## Choose How Barksdale Can Best Help You

Meet your requirements by either configuring standard options available with the BoT Transducer or specifying fully customized solutions only available by working with our industrial instrumentation and control specialists.

### 1. Configure Standard BoT Options to Match Your Requirements.

Off the shelf, the BoT Transducer meets industry standards for accuracy, process connections, pressure ranges and thermal performance in heavy-duty applications and extreme environments. When you have specific needs that can't be met with our standard options, the modular BoT Transducer design and our advanced software enable Barksdale to easily configure the BoT Transducer to match your requirements for connections, electrical output, materials, pressure and other requirements. Simply specify from among the standard options available.

### 2. Design With Us to Get the Exact Digital Transducer You Need.

When your application calls for special connections, materials, performance or sizes, Barksdale can match your unique requirements. Bespoke solutions can include physical modifications to the BoT Transducer in ways that are not available in our pre-configured standard options.

In addition, you can design with us when engineering design validation and/or new agency approvals may be required.



## Your Source for High-Performance Transducers

Partner with Barksdale to improve the overall system performance of OEM equipment. With more than 30 years of transducer manufacturing experience, our transducer experts are ready to consult with you on your next project. We share our proven engineering process and exceptional manufacturing capability to enable you to:

- Eliminate or reduce leak paths
- Meet industry certifications and regulatory standards (CE, NEMA, UL, REACH, RoHS)
- Detect and monitor against pressure spikes
- Provide high accuracy with precise measurement resolution
- Transmit custom electric output signals for programmable logic controller (PLC)/micro-controller integration

# Industrial Pressure Transducer

## BOT Series

### Features

- Heavy-duty, rugged construction with 316 and 17-4 stainless steel for superior corrosion resistance
- Up to 23X rating over-pressure protection to protect against pressure hammering and burst pressures
- Advanced digital electronics reduce the effects of EMI/EMC according to IEC 61000 standards and provide excellent longterm stability
- Thermally compensated sensors ensure high accuracy over wide temperature ranges to mitigate thermal errors on sensitive components
- Modular design platform to support fully customizable pressure ranges, mechanical or electrical connections, and other application-specific requirements



Exactly What OEMs Want...Without the Wait

### Applications

- General industrial equipment
- Pumps and compressors
- Mobil hydraulic equipment
- Off-highway vehicles
- Integration equipment systems
- Medical gas systems
- Hydrogen systems

### General Specifications

Sensor element	Ceramic sensor (-C) Piezoresistive sensor (-P) Welded stainless steel (-W)
Supply	BT2: 10 VDC BT3: 7 to 33 VDC BT4: 4.5 to 5.5 VDC ratiometric BT5: 8 to 33 VDC BT6: 12 to 33 VDC
Output	BT2: 100 mv/V BT3: 1 to 5 VDC BT4: 0.5 to 4.5 VDC ratiometric BT5: 4 to 20 mA BT6: 0 to 10 VDC
Pressure Range	0 to 400 bar (-C Class) 0 to 600 bar (-P Class) 0 to 200 bar (-W Class)
Operating Temperature	-40 to 100 °C (-40 to 212 °F)
Compensated Temperature Range	-P, -W Class: -18 to 74 °C (0 to 165 °F) -C Class: 25 to 85 °C (77 to 185 °F)
Accuracy (BFSL@25°C)	-P, -W Class: ± 0.25% FSO -C Class: ± 0.5% FSO
Proof Pressure	2X Pressure range
Zero Offset	± 1% FSO (PW) ± 2% FSO (C)
Span Offset	± 1% FSO
Lifecycle	10M pressure cycles
Long-Term Stability	± 0.2% FSO (per year, typical)
Response Time	1-5ms Typical
No-Load Supply Current	15 mA maximum consumed

### Environmental Specifications

Shock	50 g's, 11 ms, MIL-STD 202 Method 213, Cond. G
Vibration	15 g's, 10 to 2,000 Hz, MIL-STD 202
Storage Temperature	-40 to 125 °C (-40 to 257 °F)
Media Temperature	-40 to 125 °C (-40 to 257 °F)
Wetted Materials	17-4 PH SS, NBR (-P Class) 316 SS, ceramic, FKM (-C Class) 316 SS all welded construction (-W Class)
Ingress Protection	IP67 (-H3, -T4) IP65 (-H4, -T5, -T6, -D3, -D4)
Reverse Polarity and Miswiring Protection	Yes
Enclosure	NEMA 4X
Approvals	UL 508, UL 61010-1
Compliance	REACH, RoHS, CE
Weight	450 g (approximately)
EMC/ESD Compliance	IEC 61000-4-2: Electrostatic discharge (ESD) IEC 61000-4-3: Radiated immunity IEC 61000-4-4: Burst (fast transient) IEC 61000-4-5: Surge IEC 61000-4-6: Conducted RF IEC 61326-1: CISPR 16-1 and CISPR 16-2
Media Compatibility	Medical Medical gases* (O <sub>2</sub> , air, CO <sub>2</sub> , N <sub>2</sub> ), instrument air
	Pumps Water, hydraulic fluid
	Compressors Compressed air
	HVAC Refrigerants (R-410A)
	Transportation Coolants, diesel fuel, engine oil*
Hydrogen	requires welded option**

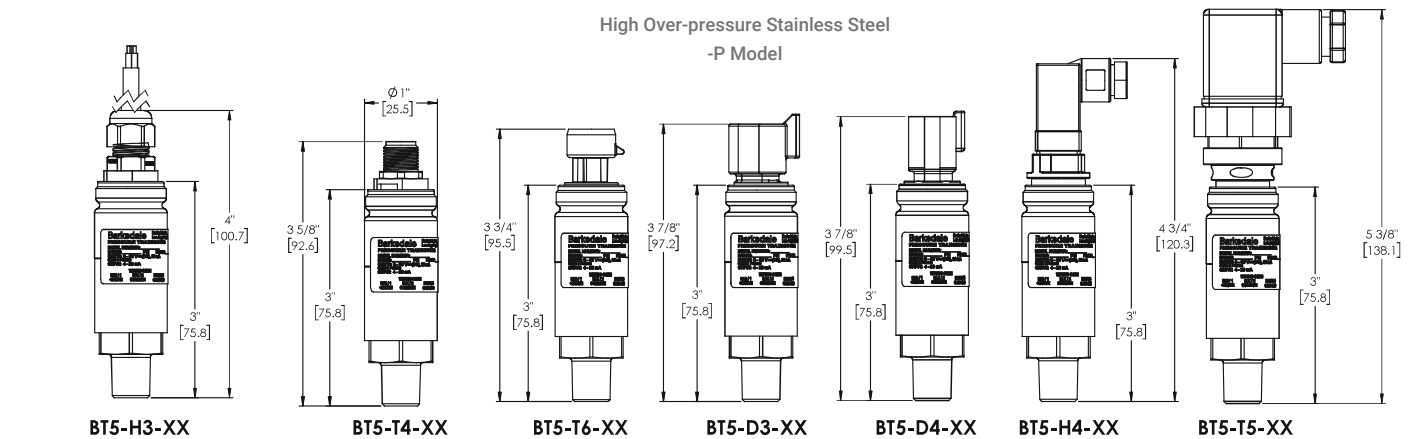
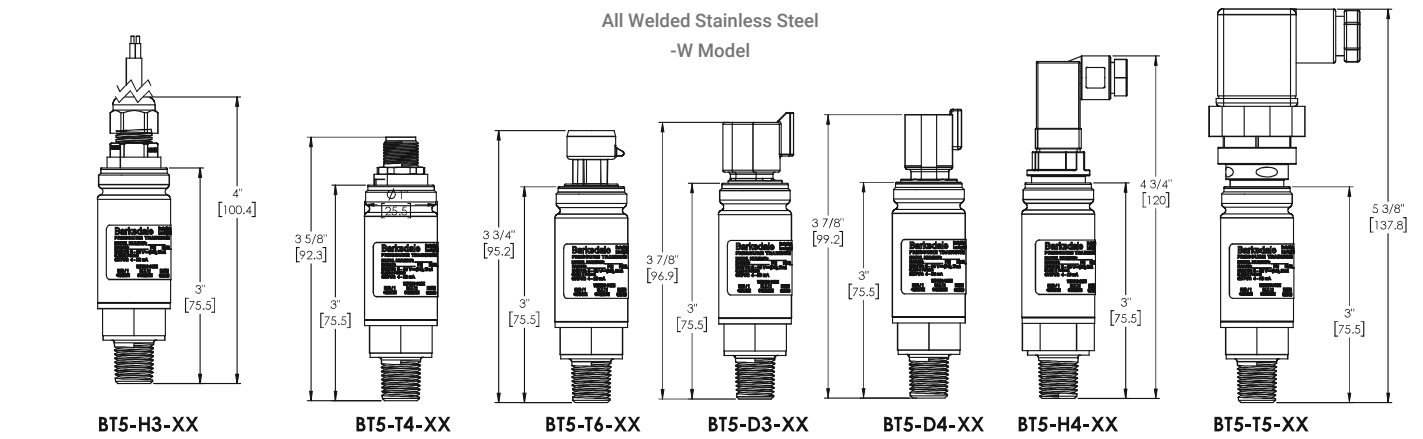
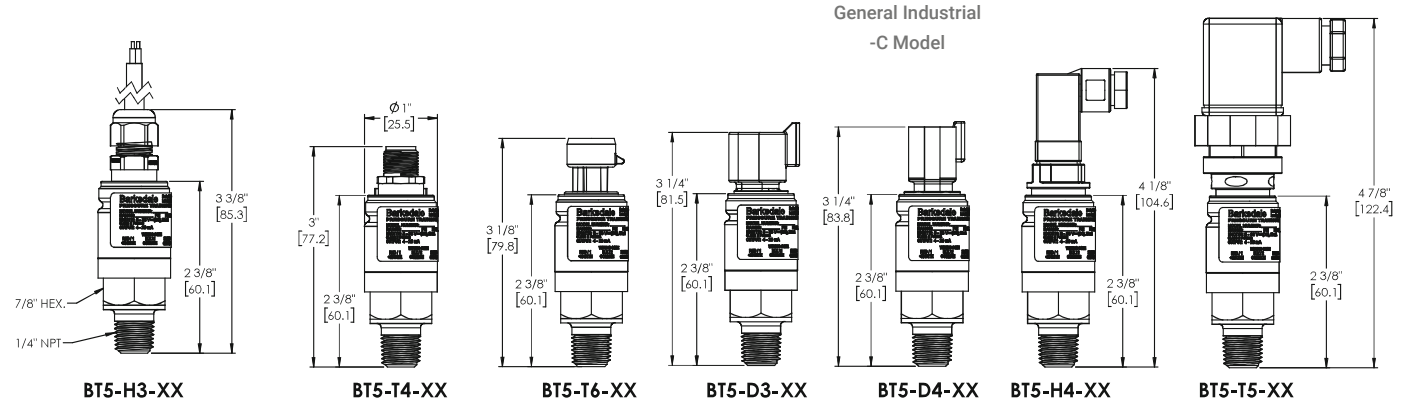
\* Requires Z1 Option

\*\* Contact us for more information

# Industrial Transducer

## BOT Series

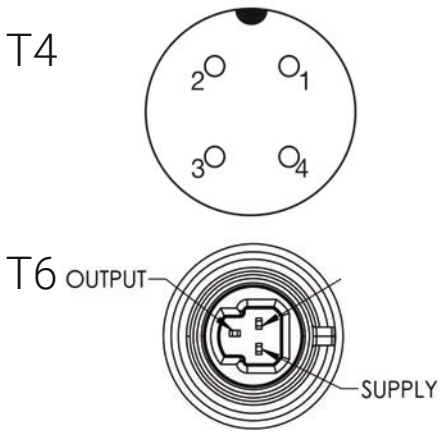
### Sizes and Dimensions



# Industrial Transducer

## BOT Series

### Pin Out Diagram



### Wiring Code

Connection	Voltage Output				
	H3	H4	T4	T5	Q50 (T4 European ASAM)
+ Excitation	Red (rot)	1	1	1	1
Common	Black (schwarz)	2	2	2	3
+ Output	White (weiß)	3	3	3	2
Case Ground	Drain	4	4	4	4

Connection	Current Output				
	H3	H4	T4	T5	Q50 (T4 European ASAM)
+ Excitation	Red (rot)	1	1	1	1
- Excitation	Black (schwarz)	2	2	2	3
Not Used	White (weiß)	3	3	3	2
Case Ground	Drain	4	4	4	4

Deutsch Connector PIN					
Connection	Voltage Output		Connection	Current Output	
	D3	D4		D3	D4
+ Excitation	PIN A/1	PIN A/1	+ Excitation	PIN A/1	PIN A/1
- Excitation	PIN B/2	PIN B/2	- Excitation	PIN B/2	PIN B/2
Voltage Output	PIN C/3	PIN C/3	Earth Ground	PIN C/3	PIN C/3
Earth Ground	N/A	PIN D/4	N/A	N/A	N/A

Order Code

Base Model	
BT2	100mV full scale output (10mV/V)
BT3	1-5 VDC analog output
BT4	0.5-4.5 VDC ratiometric analog output
BT5	4-20 mA analog output
BT6	0-10 VDC analog output

Electrical Connection	
-H3	PVC jacketed cable 24 AWG (1 meter)
-H4 <sup>1</sup>	Mini-DIN 43650 Type "C" [mating connector NOT included]
-T4 <sup>1</sup>	M12 circular connector
-T5 <sup>1</sup>	Standard DIN 43650 Type 'A' [mating connector NOT included]
-T6 <sup>1</sup>	Aptiv/Delphi Metripack 150 Series
-D3 <sup>1</sup>	3-Pin Deutsch Connector - DT04-3P
-D4 <sup>1</sup>	4-Pin Deutsch Connector - DT04-4P
Q50	M12 circular connector pinning acc. To European ASAM standard, [without UL approval; mating connector not included]

Pressure Range <sup>5</sup>		
-27 <sup>2</sup>	0-1 psi	0-0.1 BAR
-25 <sup>2</sup>	0-5 psi	0-0.3 BAR
-38 <sup>2</sup>	0-7 psi	0-0.5 BAR
-01	0-15 psi	0-1 BAR
-39	0-25 psi	0-1.6 BAR
-21	0-30 psi	0-2 BAR
-40	0-36 psi	0-2.5 BAR
-03	0-50 psi	0-3.5 BAR
-22	0-60 psi	0-4 BAR
-41	0-87 psi	0-6 BAR
-04	0-100 psi	0-7 BAR
-05	0-150 psi	0-10 BAR
-06	0-200 psi	0-14 BAR
-42	0-230 psi	0-16 BAR
-07	0-300 psi	0-20 BAR
-43	0-360 psi	0-25 BAR
-08	0-500 psi	0-34.5 BAR
-44	0-580 psi	0-40 BAR
-45	0-725 psi	0-50 BAR
-46	0-870 psi	0-60 BAR
-10	0-1000 psi	0-69 BAR
-11 <sup>3</sup>	0-1500 psi	0-100 BAR
-12 <sup>3</sup>	0-2000 psi	0-138 BAR
-47 <sup>3</sup>	0-2300 psi	0-160 BAR
-13 <sup>3</sup>	0-3000 psi	0-200 BAR
-48 <sup>3</sup>	0-3600 psi	0-250 BAR
-15 <sup>3</sup>	0-5000 psi	0-345 BAR
-16 <sup>3</sup>	0-6000 psi	0-400 BAR
-17 <sup>2,3</sup>	0-8700 psi	0-600 BAR

Pressure Unit and Type	
G	PSI - Sealed gauge pressure (standard)
A <sup>4</sup>	PSI - Absolute pressure (requires piezoresistive sensor / code P)
BG	Bar - Gauge pressure
BA <sup>4</sup>	Bar - Absolute pressure (requires piezoresistive sensor / code P)

Process Connection	
Blank	1/4" NPT male
-P3	7/16-20 UNF male (JIC 37°)
-P9	G1/4 male (gasket seal)
-P2	7/16-20 SAE #4 ORB
-P7	1/8" NPT male

Sensor	
C	±0.5% FSO
P	±0.25% FSO
W	±0.25% FSO

Options	
Blank	Standard
Z1	Cleaned for oxygen service
	Custom Voltage Output
01	1-6 VDC Output
02	0.5 to 4.5 VDC Output (Non-Ratiometric)
Z17	Larger pressure port orifice
A	+6 ft cable
B	+10 ft cable
C	+15 ft cable
SXXY	Special pressure ranges; consult factory
Q1-Q999	Custom and proprietary options; consult factory
U	UL Approved
Q50	M12 Wiring pinout per European ASAM standard – with UL needs to be in combination with T4 and suffix -U

**Example**  
BT5 -T5 -11 BG -P9 C

1. Mating connector not included
2. Only available with -P model accuracy
3. High pressure models includes built-in surge dampener with 0.03 in (0,76 mm) diameter orifice for pressure spike protections. Add -Z17 option for larger pressure orifice 0.125 in (3,1 mm) opening.
4. Only available on pressure ranges options from 15 psi (1 bar) to 300 psi (20 bar) pressure ports.

# BARKSDALE DEVELOPS SUSTAINABLE SOLUTIONS – FOR YOUR MARKET SEGMENT



#### **Barksdale GmbH**

*(Production Center)*  
Dorn-Assenheimer Str. 27  
61203 Reichelsheim  
Germany  
Tel.: +49 (0) 6035 949 – 0  
Fax: +49 (0) 6035 949 – 111  
info@barksdale.de  
www.barksdale.de

#### **Barksdale Inc.**

*(Production Center)*  
3211 Fruitland Avenue  
Los Angeles, CA 90058-0843  
USA  
Tel.: +1 (323) 589 – 6181  
Fax: +1 (323) 589 – 3463  
sales@barksdale.com  
www.barksdale.com

#### **Barksdale China**

*(Production Center)*  
33F Huaihai Plaza  
1045 Central Huaihai Road  
200031 Shanghai  
China  
Tel.: +86 2161 273 000  
Fax: +86 2164 733 298  
chinasales@barksdale.com  
www.barksdalechina.com

#### **Barksdale India**

*(Sales Center)*  
Crane Process Flow Technologies (India) Ltd  
Solitaire, 6th Floor, S. No. 131/1 + 2, ITI Road  
Aundh, Pune - 41107  
India  
Tel.: + 91 20 71207162  
Fax: + 91 20 71207177  
ssarkar@barksdale.de  
www.barksdale.de

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