

Electronic Pressure Switch

BPS3000

Use  **IO-Link**
Universal · Smart · Easy



**Switch to BPS3000 –
Now with IO-Link**

- ▶ **Industry 4.0 ready through IO-Link interface**
 - Continuous communication from the control room to the sensor
 - Bi-directional data transfer during operation
 - Plug & play ability
 - Automatic device identification
 - Remote parameter setting
- ▶ **High EMI protection**
- ▶ **IP65 & IP67 enclosure rating**
- ▶ **Different measuring ranges:**
–1 bar to 600 bar
- ▶ **Rotatable display and housing**

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Barksdale[®]
CONTROL PRODUCTS

CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

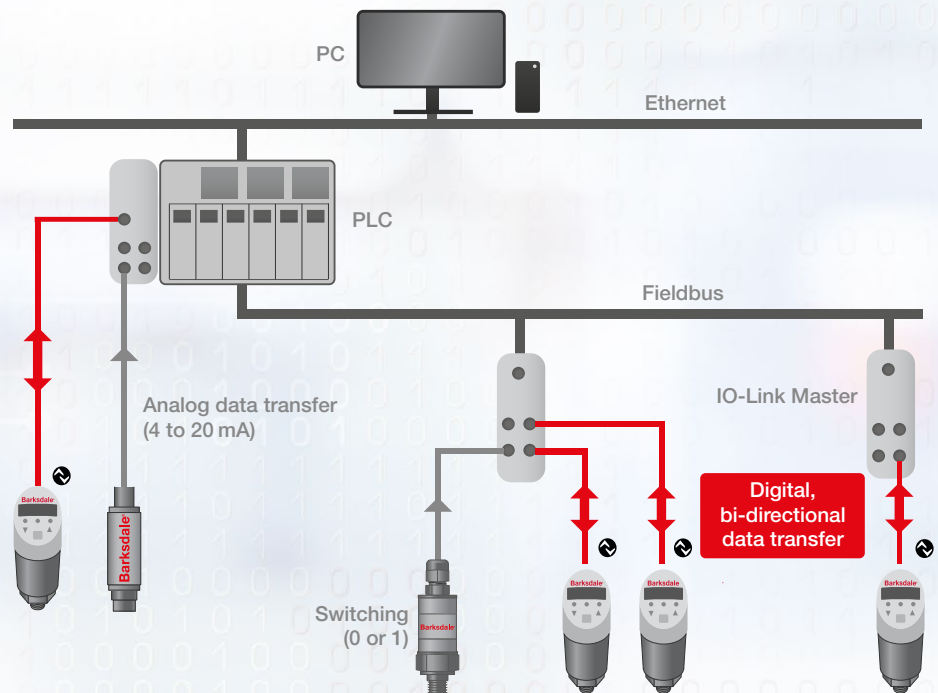
BPS3000 IO-Link



A new standard for digital communication

IO-Link is the final step that bridges digital communication down to the sensor level, and is integral to Industry 4.0. This allows bi-directional communication for sensors and actuators on all common fieldbus networks.

By providing user-friendly capabilities, such as remote parameterization and plug & play-ability into existing fieldbus networks, IO-Link opens up new possibilities in factory automation.



Cost reduction made easy

IO-link is essentially the USB interface for automated processes and operations. There are three main areas that help to reduce costs:

- ▶ wiring
- ▶ identification and parameterization
- ▶ diagnostic capability

The process values for IO-link have relatively low transmission speeds, but still have optimum refresh rates. This set up allows standard M12 cabling to be used while simultaneously reducing the likelihood of signal failure. Expensive shielded cables are not required for IO-link data transmission.

IO-link allows for sensors to be programmed and commissioned directly from the PLC and control room. This helps speed up commissioning and improves safety. Manual setting and corrections at the sensor are no longer required. Because important sensor settings are automatically saved in multiple

locations, quality, repeatability, and efficiency is improved. Direct transmission of vital sensor data helps to reduce machine down time and eliminate the possibility of faulty system operation.

IO-link provides important service data and real-time diagnostic information. This enables users to implement preventative maintenance strategies, helping avoid costly machine breakdowns. Sensor data can now be used to permanently optimize machine processes.

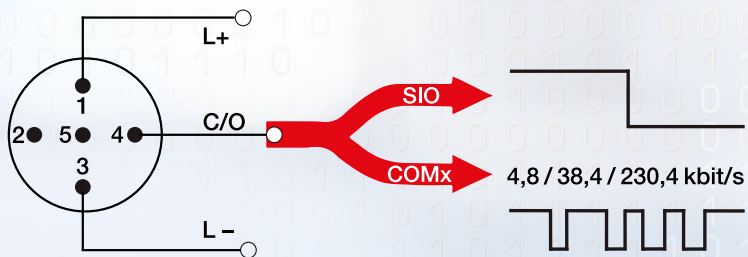


3/5 core unshielded cable is used for IO-link sensors and actuators. Because IO-link is a digital signal, it is nearly immune to EMI and RFI disturbance.

Backwards compatibility

IO-Link-capable sensors automatically detect the absence of a master and switch independently into the Standard Input Output mode – the device behaves like a

classic electronic switch. Likewise, non IO-link switches can use binary data to transmit switching functions to the field bus network.



Serial, bi-directional, point-to-point connection for signal transmission and 24 V power supply.

Reliable data transfer

The digital transmission from the sensor to the PLC prevents the loss of accuracy by multiple

AD/DA conversions and corrupted signals from EMI / RFI disturbance.

Analog data transfer



Digital data transfer



IODD files provide effective configuration and parameterization

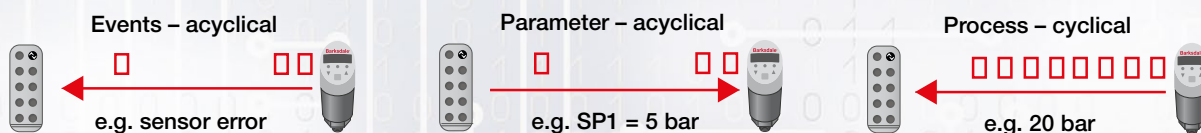
The use of the Input / Output Device Description (IODD) files allows for easy setup of devices in the IO-Link system. The availability of IODD files for each

device is guaranteed globally: Quick and easy to find www.io-link/IODDfinder

Data types

Different types of data can be sent to and from the master and sensor using the digital interface or PLC.

This includes cyclical process data and acyclical parameters and events.





The future is digital

In addition to the BPS3000, further product lines for **temperature** and **differential pressure** are in preparation with IO-Link technology.



Electr. Dual Pressure Switch

BPS3000

Features

- ▶ Measuring ranges: 0...0.2 bar to 0...600 bar gauge
- ▶ max. 2 switch points
- ▶ Analogue output 4 - 20 mA or 0 - 10 V
- ▶ Rotatable 320° display & electrical connection
- ▶ Menu navigation refers to VDMA standard
- ▶ IO-Link communication interface

Applications

- ▶ Pressure control for:
 - Hydraulics & Pneumatics
 - Lubrication system
 - Cooling



Technical Data

Sensor element:	Ceramic sensor optional: piezoresistive sensor
Materials: Wetted parts:	Stainless steel, mat. no. 1.4301, brass MS58*
Electronics housing: Seals:	Stainless steel, mat. no. V2A, PA / PC FKM, EPDM
Operating elements:	3 easy-response pushbuttons
System of protection:	IP65, IP67
Protection class:	III
Electrical connection:	Plug M12 x 1, 4-pin / 5-pin / 8-pin (depending on output code)
Process connection:	see order code
Dimensions:	110 x 41 mm (without plug connector)
Weight:	approx. 300 g
A/D converter: Resolution:	12 bit (4096 steps per measuring span)
Scanning rate:	1000 / s
Linearity error:	< ± 0.5 % v. f. s. at +25 °C
Temperature influence:	TC zero < ±0.2 % FSO / 10K TC span < ±0.3 % FSO / 10K
Compensation range:	-10 °C... +70 °C
Repeatability:	±0.1 % FSO
Temperature range: Medium: Electronics: Storage:	-25 °C... +100 °C -10 °C... +70 °C 1) -30 °C... +80 °C
Power supply:	15... 32 V DC, output code 6: 20... 32 V DC reversed polarity protected (SELV, PELV)
Digital display:	4-digit 14-segment LED display, red, digit height 9 mm
Error display:	LED red and alphanumeric display
Power consumption:	approx. 50 mA (without load) output code 6: approx. 80 mA
Relay output:	Rel. 1 normally closed, Rel. 2 normally open Load: max. 1A, max 60 V, max. 30 W
Analog output: Current output: Load:	4...20 mA max. RI = (Ub-12V) / 20 mA RI = 600 Ohm at Ub = 24 V DC
Scanning rate: Voltage output: Rating: Adjustment range:	2 ms 0...10 V DC max. 10 mA 25 %... 100 % f. s.
Transistor switching outputs PNP / IO-Link:	
Switching function:	Normally open/normally closed, standard / window mode and diagnosis function adjustable
Adjustment range for switching point and hysteresis:	0 %... 125 % f. s.

Switching frequency:	max. 100 Hz	
Load	max. 500 mA, short-circuit proof	
Delay	0.0 s ... 50 s adjustable	
Status display(s):	LED(s) red	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor, Process Data Variable; Device Identification, Device Diagnosis	
SIO modules	yes	
Required master port type	A	
Process data analogue	1	
Process data binary	2	
Min. process cycle time [ms]	2.3	
EMV	EN 61000-4-2 ESD	4 kV CD / 8 kV AD
	EN 61000-4-3 HF radiated	10 V/m
	EN 61000-4-4 Burst	2 kV
	EN 61000-4-5-Surge	1/2 kV
	EN 61000-4-6 HF conducted	10 V
Shock resistance	DIN EN 60028-2-27	50 g (11 ms)
Vibrations resistance	DIN EN 60028-2-26	20 g (10...2000 Hz)
Approvals:	BV-50018/A0, cULus 1) - E42816	

* In the pressure inlet a damping screw made of brass is mounted. This screw can be removed, if required, e.g. in case of soiled medium or material incompatibility, using a slotted screw driver (max. width 3 mm). The pressure switch is less resistant to pressure peaks when the damping screw has been removed.

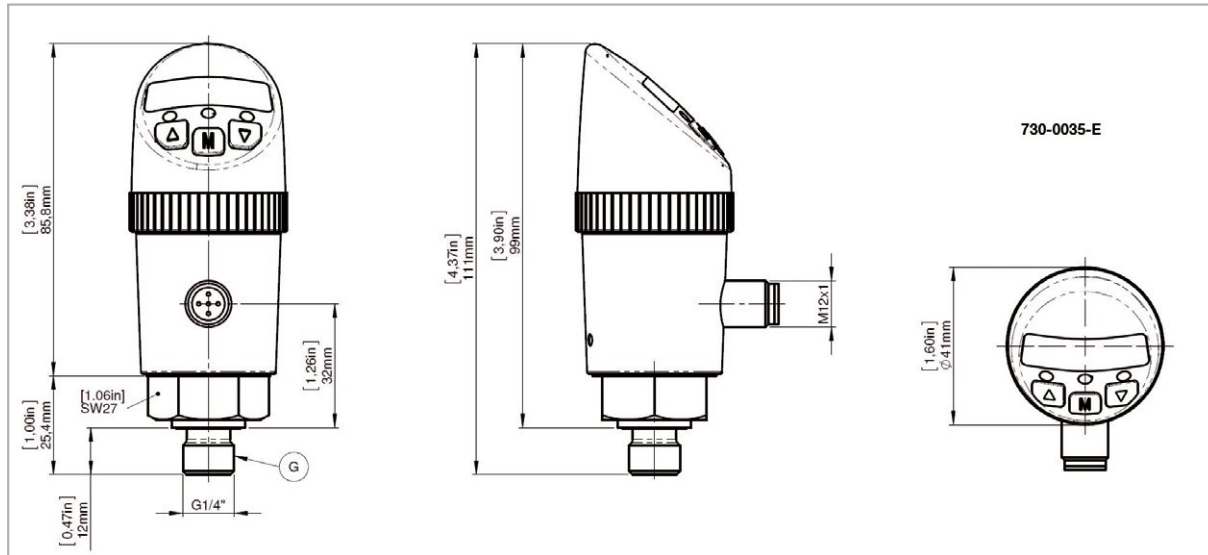
1) Conditions of use with cULus: 60 °C max. ambient, power supply max. 28 V DC.

Electr. Dual Pressure Switch

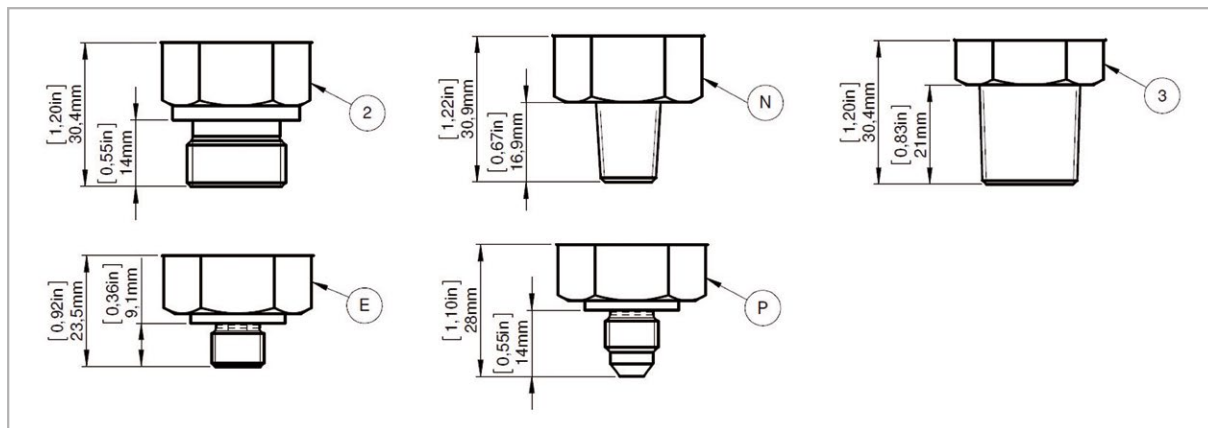
Accessories

Order Number	Description
907-0357	Plug connector M12 x 1, 4-pin, with screw terminals, angled (IP65)
907-0185	Plug connector M12 x 1, 5-pin, with screw terminals, angled (IP65)
908-0361	Plug connector M12 x 1, 5-pin, with moulded cable, (IP67), 2 m length
908-0544	Plug connector M12 x 1, 8-pin, with moulded cable (IP67), 2 m length

Dimensions (mm / inch)



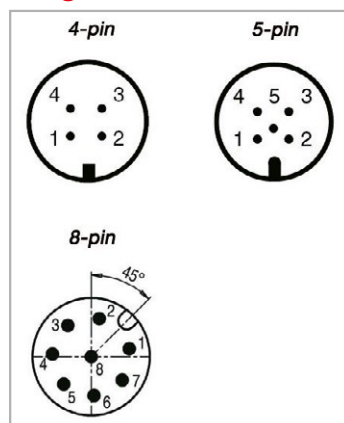
Process connection



Legend

G	G1/4" Ceramic
N	1/4" NPT Ceramic
2	G1/2" flush diaphragm
3	1/2" NPT flush diaphragm
E	7/16-20 UNF (SAE)
P	7/16-20 UNF (JIC)

Plug



Electrical Connection

Pin	Signal Output Code 1, 7	Signal Output Code 2, 3	Signal Output Code 4, 5, 8	Signal Output Code 6
1	+Ub	+Ub	+Ub	+Ub
2	SP2	Signal	Signal	SP1a
3	0V	0V	0V	SP1b
4	SP1 / IO-Link*	SP1	SP1 / IO-Link*	0V
5	-	-	SP2	SP2a
6	-	-	-	SP2b
7	-	-	-	-
8	-	-	-	Housing

* only code 7 and 8

Order Code

BPS3000	
BPS3	Base Model
Output	
1	2 switch points
2	4...20 mA - 1 switch point
3	0...10 V - 1 switch point
4	4...2 mA - 2 switch points
5	0...10 V - 2 switch points
6	2 relays switch points (1 x NO SPST / 1 x NC SPST)(requires piezo. sensor / code P)*, no UL
7	2 switch points / IO-Link (no UL, pending certification)
8	Analog Output / 2 switch points / IO-Link (no UL, pending certification)
Process Connection	
G	G1/4" ext. thread
2	G1/2" flush diaphr. (requires piezoresistive sensor / code P* /10-600 bar only)
N	1/4" NPT ext. thread
3	1/2" NPT flush diaphr. (requires piezoresistive sensor / code P* / 10-600 bar only)
1	40x40 Cetop/Manifold - on request
E	7/16-20 UNF (SAE4) ext. thread
P	7/16-20 UNF (37° JIC) ext. thread
Sealing	
V	FKM
E	EPDM
Electrical Connection	
M	M12
Range	
0 0 0 1 B A	0 - 1 bar absolute (requires piezoresistive sensor / code P)*
0 0 0 5 B A	0 - 5 bar absolute (requires piezoresistive sensor / code P)*
0 0 1 0 B A	0 - 10 bar absolute (requires piezoresistive sensor / code P)*
0 0 . 2 B	0 - 0.2 bar (requires piezoresistive sensor / code P)*
0 0 . 5 B	0 - 0.5 bar (requires piezoresistive sensor / code P)*
0 0 0 1 B	0 - 1 bar (requires piezoresistive sensor / code P)*
0 0 0 2 B	0 - 2 bar (requires piezoresistive sensor / code P)*
0 0 0 5 B	0 - 5 bar (requires piezoresistive sensor / code P)*
0 0 1 0 B	0 - 10 bar
0 0 5 0 B	0 - 50 bar
0 1 0 0 B	0 - 100 bar
0 2 0 0 B	0 - 200 bar
0 4 0 0 B	0 - 400 bar
0 6 0 0 B	0 - 600 bar (requires piezoresistive sensor / code P)*
	Others on request
Sensor	
Blank	Standard ceramic sensor
P	*Piezoresistive sensor

Example:

BPS3 4 G V M 0 2 0 0 B

Special designs on request

Barksdale develops sustainable solutions – for your market segment

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Specifications are subject to modification at any time
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