

Switch to Generation 3000

NEW Electronic Level



One Series for

- ▶ Pressure
- ▶ Temperature
- ▶ Level

Barksdale[®]
CONTROL PRODUCTS

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

Quality by design Generation 3000

BPS3000 / BTS3000 / BLS3000

Wide range of performance

Simple configuration allows customers to standardize on one series of switch for multiple functions. The BPS3000 operates from vacuum to 9000 psi, while the BTS3000 is designed for -22° F to 284° F. The BLS3000 offers various process connections and sensor lengths from 9.8 to 39.4 inches. Generation 3000 units are compatible with hydraulic fluid, varied chemicals, water, and gas media.

Compact and modern design

The new compact BPS3000 electronic pressure switch, BTS3000 electronic temperature switch, and the BLS3000 electronic level switch enable simple installation in confined spaces. The angled top displays of these units are aesthetically pleasing and functional, and their simple setup logic is a true functional benefit.

Rotatable 320° display and electrical connection

The rotatable 320° display and electrical connection on the Generation 3000 units makes the mounting and installation very versatile, accommodating a multitude of applications.

Flexible display

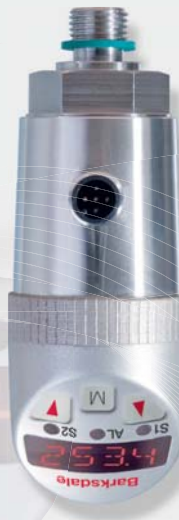
The 4-digit 14-segment LED display ensures perfect readability independent of the positioning: even when mounting upside down the indication can be viewed correctly as the software allows inversion of the display.

Flexible by design

Designed to meet your application needs

Switch to

Barksdale





High protection with Nema 6, IP67 and EMI resistance

Harsh environmental circumstances with dust or water being present are not a problem for the new Generation 3000 units. The sophisticated housing and sealed keypad provides simple programming and operation.

The high EMI protection of these units allows for installation where high power equipment or where walkie-talkies are in use, like in the steel and power industries.

Performance

With 0.5% accuracy and 0.1% repeatability across both pressure and temperature ranges and 1/5" (5 mm) resolution on the level switch, the new Generation 3000 units will meet most challenging application demands. The dual switch option with 0-10 VDC or 4-20 mA analog outputs will enable precise measurement and sensing every time.

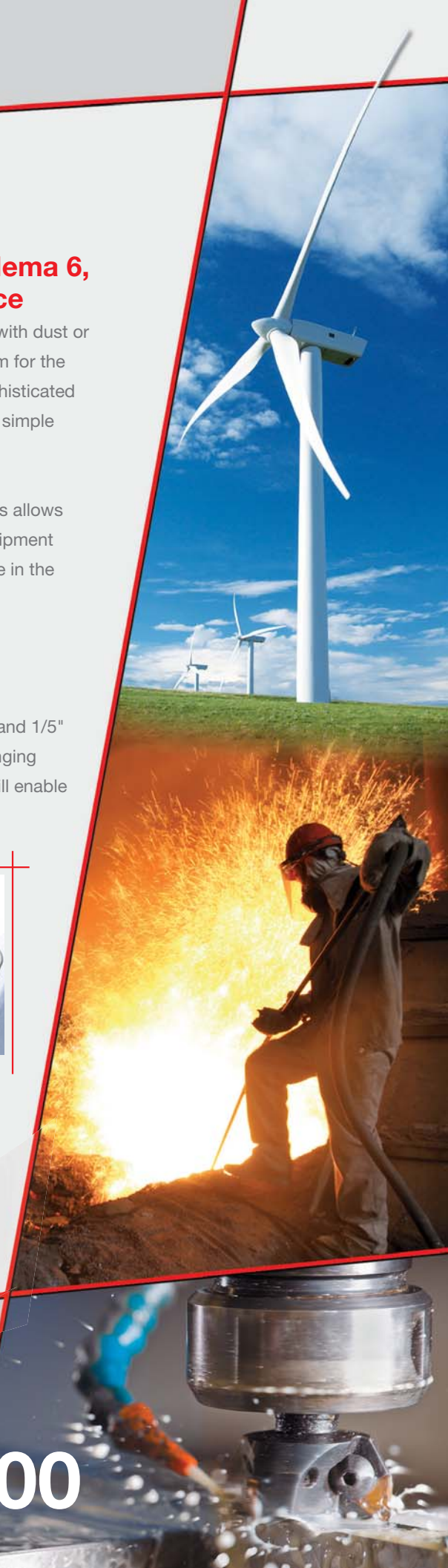
Easy operation

Our simple menu allows for easy navigation through the programming options, ascending and descending through the standardized menu with easy response push-buttons. The tamper proof settings can also help to prevent operational mistakes.



The new **Generation 3000 Series** combines all features of a modern electronic pressure / temperature switch / level switch, with its **flexibility**, **operational convenience**, **analog feedback** and **compact elegant design**.

Switch to
Generation 3000



BLS3000

Direct Measurement



Reed relays

Various applications

The new BLS3000 is part of the Barksdale Generation 3000 family. Due to its wide range of process connections and UL approval, the level switch can be used in various applications for level measurement like industrial cooling and lubrication systems, test benches, and high performance power packs.

Compact and robust design

With a float smaller than our competition and a panel height of 4.5 inches and diameter of 1.6 inches, the required space of a BLS3000 is compact. This makes the BLS3000 suitable for installation in tight and compact spaces.

Accurate level measurement

Integrated reed relays enable continuous level measurement and customized set point adjustment ensures accurate feedback for level measurement. Unlike capacitance technology, our float design is not at risk of false measurement with changes in viscosity or contaminants in the media due to environmental conditions.



Wide range of media compatibility

The BLS3000 is suitable for a wide range of media such as water, coolants, hydraulic oil, media with dirty contaminants, and fluids with foam, where capacitance, guided wave, and ultrasonic technology may fall short.

Reduced-sticking float technology

Compared to other level float products, our float design reduces the float from sticking on the stem caused by sticky media or adhesion.

3-Products in 1-compact package

The BLS3000 is three devices: level gauge, level switch, and level transmitter packaged into one, eliminating the need for multiple instruments. This provides the flexibility of 0-10 VDC or 4-20 mA output options with up to two switch points.

Technical data

- ▶ Measuring element: Reed switch
- ▶ Total length (L0) = max. 39.4" (1000 mm)
- ▶ Measuring length (LM) = max. 36.6" (930 mm)
- ▶ Process connections:
 - 1/2" NPT, 3/4" NPT, 1" NPT, & 1-1/4" NPT
 - SAE 10 & SAE 12
 - G1/2", G3/4", G1", & M20x1.5
- ▶ Enclosure rating: IP65/IP67
- ▶ cULus approved



Pressure

Electronic Dual Pressure Switch

BPS3000

Features

- ▶ Measuring range: gauge: 0 - 9000 psig, absolute: 0 - 150 psia
- ▶ One or two switch points
- ▶ Analog output 4 - 20 mA or 0 - 10 V
- ▶ Enclosure Rating: Type 4X (IP65) / Type 6 (IP67)
- ▶ Superior EMI protection
- ▶ Simple navigation menu
- ▶ Suitable for rapid cycling applications
- ▶ Display & electronic connection: rotatable by 320°
- ▶ IO-Link communication interface
- ▶ 0.50% accuracy

Applications

- ▶ Machine tool industry
- ▶ Factory Automation
- ▶ Injection molding machines
- ▶ Lubrication monitoring
- ▶ Pumps and compressors
- ▶ Hydraulic and pneumatic applications



General Specifications**

Sensor element:	Ceramic sensor (standard) Optional: piezoresistive sensor (For proper sensor selection see product configurator for more details.)	Analog output:	Current output: 4-20 mA Scanning rate: 2 ms Voltage output: 0 to 10 V DC Rating: max. 10 mA Adjustment range: 25% to 100% f. s.	
Materials: Wetted parts:	304 Stainless steel; brass (if surge dampener is required)	Transistor switching outputs:		
Enclosure:	304 Stainless steel, PBT	Switching function	Normally open / normally closed, standard /window mode and diagnosis function adjustable	
Seals:	FKM fluoroelastomer (standard) EPDM (optional)	Switching output:	PNP / NPN (field-selectable on IO-Link units)	
Operating elements:	3 easy-response push-buttons	Adjustment range for switching point and hysteresis:	0% to 125% f. s.	
Enclosure rating:	Type 4X (IP65) / Type 6 (IP67)	Switching frequency:	Max. 100 Hz	
Protection class:	III	Load:	Max. 500mA, short-circuit-proof IO-Link: Max. 250mA	
Electrical connection:	Plug M12 x 1, 4-pin / 5-pin / 8-pin (see product configurator)	Delay:	0.0 s to 50.0 s adjustable	
Process connection:	1/4" NPT, 1/2" NPT flush diaphragm, 7/16-20 (SAE), 7/16-20 (JIC 37°), G1/4" M, G1/2" flush diaphragm (only piezoresistive)	Status display(s):	LED(s) red	
Dimensions:	1.6 Ø x 4.4 inches (without plug connector)	IO-Link Communication Interface		
Weight:	Approx. 0.4 lb (200 g)	Transmission type:	COM2 (38.4 kBaud)	
Proof pressure:	1.5X rated pressure	IO-Link revision:	1.1	
A/D-Converter:		SDCI standard:	IEC 61131-9	
Resolution:	12 bit (4,096 steps per measure span)	Profiles:	Smart Sensor, Process Data Variable, Device Identification, Device Diagnosis	
Scanning rate:	1000/s	SIO modules:	Yes	
Linearity error:	< ±0.5 % f. s. at +25 °C	Required master port type:	A	
Temperature influence:	TC zero < ±0.2 % FSO / 10K TC span < ±0.3 % FSO / 10K	SIO output:	1 analog / 2 binary (switch points) [see product configurator]	
Compensation range:	14°F to 158°F (-10°C to +70°C)	Min. process cycle time [ms]:	2.5	
Repeatability:	±0.1% f. s.	Device ID:	0x011...	
Temperature range:		Approvals¹:	cULus ¹ E42816, BV-50018/A0 ²	
Media:	-13°F to 212°F (-25°C to +100°C)	EMI	EN 61000-4-2 ESD	4 kV CD / 8 kV AD
Electronics ¹ :	14°F to 158°F (-10°C to +70°C)		EN 61000-4-3 HF radiated	10 V/m
Storage:	-22°F to 176°F (-30°C to +80°C)		EN 61000-4-4 Burst	2 kV
Power supply¹:	15 to 32 V DC, reversed polarity protected (SELV, PELV), Class 2		EN 61000-4-5-Surge	1/2 kV
Power consumption:	Approx. 50 mA (without load) Approx. 80 mA (Output Code 6)		EN 61000-4-6 HF conducted	10 V
Digital display:	4-digit 14-segment LED red display, digit height .35 inches (9 mm)		Shock resistance	DIN EN 60028-2-27
Display rate:	20/s	Vibration resistance	DIN EN 60028-2-26	20 g (10 to 2000 Hz)
Error display:	LED RED and alphanumeric display			

** See product configurator for additional options.

¹ Condition of use with cULus: 140°F max. ambient; power supply: max. 28 V DC

² BV approval only with output code 1-5; for more details please see BV certification.

Electronic Dual Pressure Switch

BPS3000

Technical Drawings

Mating connector not included; see accessories for options

Process Connections "A"	Dimension "B"
1/4" NPT	.66" [16.9 mm]
1/2" NPT flush diaphragm seal	.83" [21 mm]
7/16-20 UNF (SAE 4)	.36" [9.1 mm]
7/16-20 UNF (JIC 37°)	.55" [14 mm]
G 1/4"	.47" [12 mm]
G 1/2"	.55" [14 mm]

Electrical Connection Chart

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

* IO-LINK ONLY FOR SIGNAL OUTPUT CODES 7 & 8

UL US Dimensions in inches [mm]

Product Configurator

Example **BPS3** **8** **N** **V** **M** **9000P** **P**

Series:

BPS3 Series BPS3000, electronic dual pressure switch

Output:

1	Dual switch point
2	Single switch point plus 4-20mA (0-10V field selectable)
3	Single switch point plus 0-10V (4-20mA field selectable)
4	Dual switch point plus 4-20mA (0-10V field selectable)
5	Dual switch plus 0-10V (4-20mA field selectable)
6	Dual switch points (1 x NO SPST / 1 x NC SPST), requires piezo. sensor, not UL approved
7	IO-Link / Dual switch point
8	IO-Link / Dual switch point plus 4-20mA (0-10V field selectable)

Process Connections*:

N	1/4" NPT male thread
3 ¹	1/2" NPT flush diaphragm seal
E	7/16-20 UNF (SAE 4)
P	7/16-20 UNF male thread (JIC 37°)
G	G1/4" male thread
2 ¹	G1/2" flush diaphragm seal

*Contact factory for a 40x40 Cetop/Manifold or G1/2 with Large Bore Diameter connection.

Electrical Connection:

M² M12

Sealing:

V	FKM fluoroelastomer (standard)
E	EPDM (EPR) (optional)

Sensor:

Blank	Standard ceramic sensor
P	Piezoresistive sensor

Pressure Ranges³

0015PA ^{4, 5, 7}	0 - 15 psia (absolute)
0075PA ^{4, 5, 7}	0 - 75 psia (absolute)
0150PA ^{4, 5, 7}	0 - 150 psia (absolute)
0003P ^{4, 5, 7}	0 - 3 psig
0015P ^{4, 5, 7}	0 - 15 psig
0050P ^{4, 5, 7}	0 - 50 psig
0075P ^{4, 5, 7}	0 - 75 psig
0150P ⁸	0 - 150 psig
0750P ⁸	0 - 750 psig
1500P ⁸	0 - 1500 psig
3000P ⁸	0 - 3000 psig
6000P ⁸	0 - 6000 psig
9000P ^{4, 8}	0 - 9000 psig

Accessories

Order Number	Description
239535-1M-R-S ⁶	4 Pin M12 Female Right Angle Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239535-1M-S ⁶	4 Pin M12 Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239537	4 Pin M12 Female Straight Connector
239236	4 Pin M12 Female Right Angle Connector
239546-1M-R-S ⁶	5 Pin M12 Female Right Angle Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239546-1M-S ⁶	5 Pin M12, Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239548-S	5 Pin M12 Female Straight Connector
239548-R	5 Pin M12 Female Right Angle Connector

Note:

1. Only available from (0-150 psig) range up to (0-9000 psig) range. Piezoresistive sensor only.
2. Mating connector not included with unit; mating connectors are available and can be ordered as an accessory.
3. Contact factory for ranges not listed including BAR.
4. Pressure range requires piezoresistive sensor.
5. Units are rated at IP65 only.
6. See Cable Connectors & Accessories for more options.
7. Not available with process connections 3 & 2
8. Includes .2 mm Ø removable brass orifice

Temperature

Electronic Dual Temperature Switch

BTS3000

Features

- ▶ Measuring range: -22° to +284°F (-30° to +140°C)
- ▶ One or two switch points
- ▶ Analog output 4 - 20 mA
- ▶ Display & electronic connection: rotatable by 320°
- ▶ Simple navigation menu
- ▶ Superior EMI protection
- ▶ 0.50% accuracy
- ▶ IO-Link communication interface
- ▶ Enclosure Rating: Type 4X (IP65) / Type 6 (IP67)

Applications

- ▶ Machine tool industry
- ▶ Hydraulic & pneumatic systems
- ▶ Injection molding machines
- ▶ Cooling monitoring / circuits
- ▶ Lubrication systems
- ▶ Construction machinery
- ▶ Automobile industry



General Specifications*

Sensor element:	PT100 Class A DIN/IEC 60751	
Materials:	304 Stainless steel	
Wetted parts:	304 Stainless steel / PBT, PA6.6 GF30	
Enclosure:	304 Stainless steel / PBT, PA6.6 GF30	
Seals:	FKM fluoroelastomer (standard) EPDM (optional)	
Operating elements:	3 easy-response push-buttons	
Enclosure rating:	Type 4X (IP65) / Type 6 (IP67)	
Protection class:	III	
Electrical connection:	Plug M12 x 1, 4-pin / 5-pin / 8-pin	
Process connection:	1/4" NPT Male, 1/2" NPT Male, 7/16-20 UNF (SAE-4) Male, G1/4" Male	
Dimensions Enclosure:	1.6 Ø x 4.4 inches (without plug connector and sensor)	
Weight:	Approx. 0.4 lb (200 g)	
Measuring ranges:	-22°F to +284°F (-30°C to +140°C)	
Max. pressure:	2,900 psi (200 bar)	
A/D-Converter:	12 bit (4,096 steps per measure span)	
Resolution:	1000/s	
Scanning rate:	Approx. 40 s	
Time Constant:	Approx. 40 s	
Accuracy:	< ±0.5 % f. s. at +25 °C	
Repeatability:	±0.1% f. s.	
Temperature range:	14°F to 140°F (-10°C to +60°C)	
Electronics:	-22°F to 176°F (-30°C to +80°C)	
Storage:		
Power supply:	15 to 28 V DC, reversed polarity protected (SELV, PELV) Class 2	
Digital display:	4-digit 14-segment LED red display, digit height .35 inches (9 mm)	
Display rate:	20/s	
Error display:	LED RED and alphanumeric display	
Power consumption:	Approx. 50 mA (without load) Approx. 80 mA (Output Code 6)	
Relay output (option 6):	Relay 1 NC Relay 2 NO Load: max. 1A, max. 60V, max. 30VA	
Analog output:	Current output:	4-20 mA
	Scanning rate:	2 ms
	Adjustment range:	25% to 100% f. s.
Transistor switching outputs:		
Switching function:	Normally open / normally closed, standard /window mode and diagnosis function adjustable	
Switching output:	PNP / (NPN field-selectable on IO-Link units)	
Adjustment range for switching point and hysteresis:	0% to 125% f. s.	
Switching frequency:	Max. 100 Hz	
Load:	Max. 500mA, short-circuit-proof IO-Link: Max. 250mA	
Delay:	0.0 s to 50.0 s adjustable	
Status display(s):	LED(s) red	
IO-Link Communication Interface:		
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	
SIO output:	1 analog / 2 binary (switch points) [see product configurator]	
Min. process cycle time [ms]:	2.5	
Device ID:	0x011...	
Approvals:	cULus*** - E302981	
EMI	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
	DIN EN 60028-2-27	50 g (11 ms)
	DIN EN 60028-2-26	20 g (10 to 2000 Hz)
Shock resistance**		
Vibration resistance**		

** At probe length over 100mm shock & vibration resistance can be

influenced by the application

*** 1 - 5 output options only

* See product configurator for additional options.

Electronic Dual Temperature Switch

BTS3000

Technical Drawings

Electrical Connection Chart

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	-	-	-	SP2a
6	-	-	-	SP2b
7	-	-	-	-
8	-	-	-	Housing

* IO-LINK ONLY FOR SIGNAL OUTPUT CODES 7 & 8

Length	1/4" NPT / 1/2" NPT / 7/16-20 UNF (SAE-4)	G1/4"
L0	.7" [17.78 mm]	0.67" [17 mm]
	2" [50.8 mm]	0.98" [25 mm]
	4" [101.6 mm]	1.97" [50 mm]
	6" [152.4 mm]	3.94" [100 mm]
	12" [304.8 mm]	11.80" [300 mm]
		25.59" [650 mm]

Connection diagram

UL
Dimensions inches [mm]

Product Configurator

Example **BTS3 8 E V M 2.00Z 1**

Series:

BTS3 Series BTS3000, electronic dual temperature switch

Output:

1	Dual switch point
2	Single switch point plus 4-20mA (0-10V field selectable)
3	Single switch point plus 0-10V (4-20mA field selectable)
4	Dual switch point plus 4-20mA (0-10V field selectable)
5	Dual switch point plus 0-10V (4-20mA field selectable)
6	Dual switch points (1 x NO SPST / 1 x NC SPST), not UL approved
7	IO-Link / Dual switch point, no UL
8	IO-Link / Dual switch point plus 4-20mA (0-10V field selectable), no UL

Process Connections:

N ⁹	1/4" NPT male thread
3 ^{1,9}	1/2" NPT male thread (Consult factory)
E	7/16-20 UNF (SAE 4)
G	G1/4" male thread
2	G1/2" male thread (Consult factory)

Electrical Connection:

M⁹ M12

Sealing:

V ²	FKM fluoroelastomer (standard)
E ²	EPDM (EPR) (optional)
X	No seal (Required for units with NPT thread)
F	FFKM (optional) (Consult factory)

Temperature Ranges:

1	0 to 100°C
2	-30 to 140°C
3	32 to 210°F
4	-22 to 280°F

Sensor Length⁴:

0017M ⁵	17 mm probe
0025M ⁵	25 mm probe
0050M ⁵	50 mm probe
0100M ⁵	100 mm probe
0300M ⁵	300 mm probe
0650M ^{5,6}	650 mm probe
0.70Z ^{1,7}	0.7" probe
2.00Z ^{1,7}	2" probe
4.00Z ^{1,7}	4" probe
6.00Z ^{1,7}	6" probe
12.0Z ^{6,7}	12" probe

Accessories

Order Number	Description
239535-1M-R-S ⁹	4 Pin M12 Female Right Angle Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239535-1M-S ⁹	4 Pin M12 Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239537	4 Pin M12 Female Straight Connector
239236	4 Pin M12 Female Right Angle Connector
239546-1M-R-S ⁹	5 Pin M12 Female Right Angle Molded Cable, 3.28 Feet (1 Meter), Shielded
239546-1M-S ⁹	5 Pin M12, Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239548-S	5 Pin M12 Female Straight Connector
239548-R	5 Pin M12 Female Right Angle Connector
208779 ¹	2" Probe - Brass Thermowell
208779-SS ¹	2" Probe - 316 Stainless Steel Thermowell
208780 ¹	4" Probe - Brass Thermowell
208780-SS ¹	4" Probe - 316 Stainless Steel Thermowell
208781 ¹	6" Probe - Brass Thermowell
208781-SS ¹	6" Probe - 316 Stainless Steel Thermowell

Note:

1. Thermowell option available for 1/2" NPTF only with 2", 4" and 6" probes only; consult factory for details.
2. Available only for G and UNF thread.
3. Mating connector not included with unit; mating connectors are available and can be ordered as an accessory.
4. Custom probe length available; minimum quantities may apply.
5. Available only for G1/4" or G1/2" thread.
6. At probe length over 11.8" (300 mm), the probe must be kept out of the direct path of the flowing media.
7. Available only for NPT and UNF thread.
8. See Cable Connectors & Accessories for more options.
9. Requires sealing code X

Electronic Dual Level Switch

BLS3000

Features

- ▶ Signal resolution: 1/5" (5 mm)
- ▶ Redundant measurement system ensures reliable output
- ▶ Total length (L0): 9.8"-39.4" (250 mm-1000 mm)
- ▶ One or two switch points
- ▶ Analog output: 4 - 20 mA or 0 - 10 V
- ▶ Rotatable 320° display & electrical connection
- ▶ Easy menu navigation

Applications

- ▶ Level control for:
 - Hydraulics
 - Lubrication system
 - Cooling



General Specifications*

Sensor element:	Reed switch
Materials: Wetted parts: Stem (Fitting, Tube): Float: Seals: Electronic housing:	Stainless steel 316Ti NBR (BUNA-N) foam FKM, EPDM or NBR (BUNA-N) Stainless steel 316Ti, PBT, elastomer
Operating elements:	3 easy-response push-buttons
Enclosure rating:	Type 1 / Type 4X (IP65) / Type 6 (IP67)
Protection class:	III
Electrical connection:	Plug M12 x 1, 4-pin / 5-pin / 8-pin (depending on Output selection)
Process connection:	See Product Configurator for process connection options (page 2)
Float BN17: Density medium: Depth of immersion:	min. 0.02 lb/in ³ (0.60 g/cm ³) 0.59" ± 0.07" (15 ± 2 mm) (water) 0.74" ± 0.07" (19 ± 2 mm) (oil 0.75) Ø0.70", height 0.98" (Ø17.8 mm, height 25 mm)
Dimensions enclosure:	1.6 Ø x 4.5 inches (41 x 110 mm) For 1/2" NPT (without M12 connector or probe). Contact factory for other sizes.
Weight:	Approx. 0.77 lb (350 g) (for G1/2" size and 250 mm L0, for exact weight, contact factory)
Total length (L0):	9.8" (250 mm), 14.6" (370 mm), 16.1" (410 mm), others on request up to 39.4" (1000 mm)
Accuracy:	± 1 digit (without turbulence) including temperature influence and repeatability
Resolution:	1/5" (5 mm)
Max. pressure:	43.5 psi (3 bar)
Temperature range: Medium: Ambient/Operating: Storage:	-13 °F to +176 °F (-25 °C... +80 °C) -4 °F to +158 °F (-20 °C... + 70 °C) -22 °F to +176 °F (-30 °C... + 80 °C)
Power supply:	15 to 28 V DC, reversed polarity protected (SELV, PELV)
Power consumption:	Approx. 50 mA (without load) Approx. 80 mA (Output Code 6)

Digital display:	4-digit 14-segment LED display, red, digit height 0.35 inches (9 mm)	
Error display:	LED RED and alphanumeric display	
Analog output: Current output: Load: Scanning rate: Voltage output: Rating: Adjustment range:	4-20 mA max. RI = (Ub-12V) / 20 mA RI = 600 Ohm at Ub = 24 V DC 2 ms 0 to 10 V DC max. 10 mA 25% to 100% f. s.	
Units: Distance: Volume:	%, mm, cm, m, inch, feet, liter, m ³ , gallon	
Transistor switching outputs:		
Switching function:	Normally open/normally closed, standard / window mode and adjustable functions	
Switching output:	PNP	
Adjustment range for switching point and hysteresis:	0 % to 125 % f. s.	
Switching frequency:	Max. 100 Hz	
Load	Max. 500 mA, short-circuit proof	
Delay	0.0 s to 50 s adjustable	
Status display(s):	LED(s) red	
EMI:	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:	cULus ¹	

1) Conditions of use: 140 °F (60 °C) max. ambient, power supply max. 28 V DC

* See product configurator for additional options.

Electronic Dual Level Switch

BLS3000

Technical Drawings

Electrical Connection Chart

Pin	Signal Output Code 1	Signal Output Code 2 & 3	Signal Output Code 4 & 5	Signal Output Code 6
1	+Ub	+Ub	+Ub	+Ub
2	SP2	Signal	Signal	SP1a
3	OV	OV	OV	SP1b
4	SP1	SP1	SP1	OV
5	-	-	SP2	SP2a
6	-	-	-	SP2b
7	-	-	-	-
8	-	-	-	Housing

UL US

Length	1/2" NPT, 3/4" NPT, 1" NPT, 1 1/4" NPT, 7/8- SAE 10, 1-1/16-12 SAE 12	G1/2", G 3/4", G1", M20X1.5
L0	9.8"	250 mm
	14.6"	370 mm
	16.1"	410 mm

Process Connection	Dead band	
	To (Top)	Tu (Bottom)
G1/2"	1.06 ± 0.12 [27 ± 3]	1.06 ± 0.12 [27 ± 3]
G3/4"	1.14 ± 0.12 [29 ± 3]	
G1"	1.22 ± 0.12 [31 ± 3]	
M20 x 1.5 mm	1.06 ± 0.12 [27 ± 3]	
1/2" NPT	0.51 ± 0.12 [13 ± 3]	
3/4" NPT		
1" NPT	1.01 ± 0.12 [25.7 ± 3]	
1 1/4" NPT		
7/8-14 UNF (SAE 10)	1.01 ± 0.12 [25.7 ± 3]	
1 1/16-2 UN (SAE 12)	1.1 ± 0.12 [28 ± 3]	

Process Connections*

Dimensions inches [mm]

Example BLS3 1 6 X M 14.6Z

Product Configurator

Series:

BLS3 Series BLS3000, electronic dual level switch

Output:

1	Dual switch point
2	Single switch point plus 4-20mA
3	Single switch point plus 0-10V
4	Dual switch point plus 4-20mA
5	Dual switch point plus 0-10V
6	Dual switch point (1x NO SPST / 1x NC SPST), non UL

Process Connections:

2	G1/2" male, with seal (seal code V, E or B)
3	1/2" NPT male, without seal (seal code X)
5	G3/4" male, with seal (seal code V, E or B)
6	3/4" NPT male, without seal (seal code X)
A	G1" male, with seal (seal code V, E or B)
B	1" NPT male, without seal (seal code X)
C	1 1/4" NPT male, without seal (seal code X)
H	M20 x 1.5 mm male, with seal (seal code V, E or B)
I'	7/8-14 UNF (SAE 10) male, (seal code V, E or B)
J'	1 1/16 -12 UN (SAE 12) male, (seal code V, E or B)

Seal Material:

X	No seal is required for NPT thread
V	FKM (fluoroelastomer)
E	EPDM (EPR)
B	NBR (BUNA-N)

Total Sensor Length L0³:

0250M ⁴	250 mm (process con. code 2, 5, A & H)
0370M ⁴	370 mm (process con. code 2, 5, A & H)
0410M ⁴	410 mm (process con. code 2, 5, A & H)
1000M ⁴	1000 mm (process con. code 2, 5, A and H)
09.8Z ⁵	9.8 inch (process con. code 3, 6, B, C, I, & J)
14.6Z ⁵	14.6 inch (process con. code 3, 6, B, C, I, & J)
16.1Z ⁵	16.1 inch (process con. code 3, 6, B, C, I, & J)
39.4Z ⁵	39.4 inch (process con. code 3, 6, B and C)

Electrical Connection:

M² M12 x 1 mm (4 or 5 pin)

Accessories

Order Number	Description
239535-1M-R-S ⁶	4 Pin M12 Female Right Angle Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239535-1M-S ⁶	4 Pin M12 Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239537	4 Pin M12 Female Straight Connector
239236	4 Pin M12 Female Right Angle Connector
239546-1M-R-S ⁶	5 Pin M12 Female Right Angle Molded Cable, 3.28 Feet (1 Meter), Shielded
239546-1M-S ⁶	5 Pin M12, Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239548-S	5 Pin M12 Female Straight Connector
239548-R	5 Pin M12 Female Right Angle Connector

Note: 1. Subject to minimum order quantity of 10 pieces; consult factory for lead time.
 2. Mating connector not included with unit; mating connectors are available and can be ordered as an accessory.
 3. Custom length available up to 39.4" (1000 mm); minimum quantities may apply.
 4. Available only for G & M thread.
 5. Available only for NPT, UNF & UN thread.
 6. See Cable Connectors & Accessories for more options.

Pressure

Electronic Dual Differential Pressure Switch

BDS3000

Features

- ▶ Measuring range: differential: 0 - 500 psid
- ▶ Enclosure Rating: Type 4X (IP65) / Type 6 (IP67)
- ▶ Two switch points
- ▶ 0.50% accuracy
- ▶ Analog output 4 - 20 mA or 0 - 10 V
- ▶ Superior EMI protection
- ▶ Display & electronic connection: rotatable by 320°
- ▶ Simple navigation menu
- ▶ IO-Link digital communication interface
- ▶ Hydraulic and pneumatic compatible

Applications

- ▶ Filtration
- ▶ Machine tool industry
- ▶ Factory Automation
- ▶ Lubrication monitoring
- ▶ Pumps and compressors



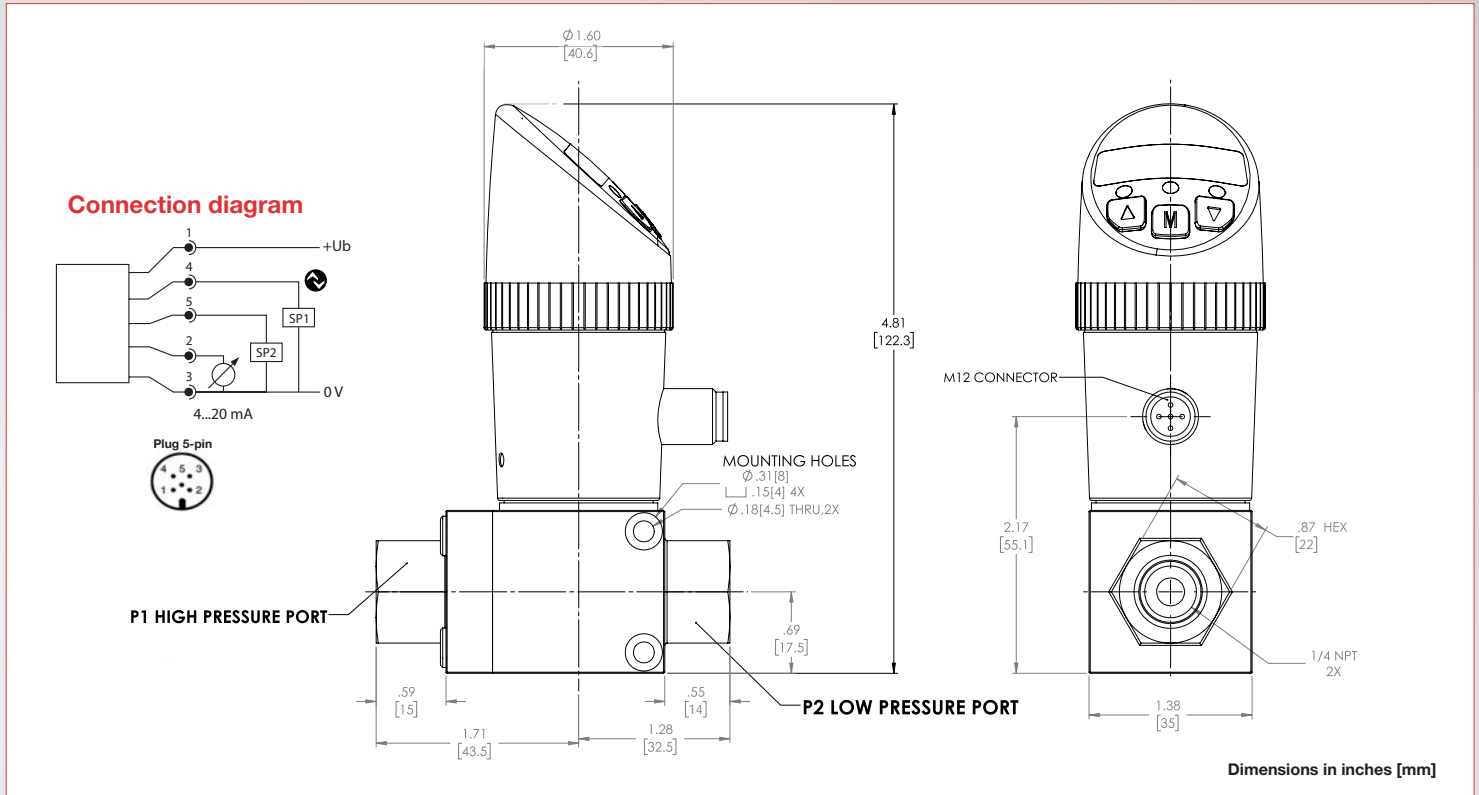
General Specifications

Sensor element:	Piezoresistive sensor	Analog output:	Current output: 4-20 mA Scanning rate: 2 ms Voltage output: 0 to 10 V DC Rating: max. 10 mA Adjustment range: 25% to 100% f. s.			
Materials: Wetted parts:	Stainless steel fittings 316L Stainless steel sensors	Transistor switching outputs:				
Enclosure:	304 Stainless steel, PBT	Switching function:	Normally open / normally closed, standard / window mode and diagnosis function adjustable			
Seals:	FKM fluoroelastomer	Switching output:	PNP / NPN (field selectable on IO-Link units)			
Operating elements:	3 easy-response push-buttons	Adjustment range for switching point and hysteresis:	0% to 125% f. s.			
Enclosure rating:	Type 4X (IP65) / Type 6 (IP67)	Switching frequency:	Max. 100 Hz			
Protection class:	III	Load:	Max. 500 mA (250 mA IO-Link units), short-circuit-proof			
Electrical connection:	Plug M12 x 1, 5-pin	Delay:	0.0 s to 50.0 s adjustable			
Process connection:	1/4" NPT female (low and high sides)	Status display(s):	LED(s) red			
Dimensions:	3.00 x 1.60 x 4.81 inches	IO-Link Communication Interface				
Weight:	Approx. 1.5 lb	Transmission type:	COM2 (38.4 kBaud)			
A/D-Converter:		IO-Link revision:	1.1			
Resolution:	12 bit (4,096 steps per measure span)	SDCI standard:	IEC 61131-9			
Scanning rate:	1000/s	Profiles:	Smart Sensor, Process Data Variable, Device Identification, Device Diagnosis			
Linearity error:	< ±0.5 % f. s. at +25 °C	SIO modules:	Yes			
Temperature influence:	TC zero < ±0.2 % FSO / 10K TC span < ±0.3 % FSO / 10K	Required master port type:	A			
Compensation range:	32°F to 122°F (0°C to +50°C)	SIO output:	1 analog / 2 binary (switch points) [see product configurator]			
Repeatability:	±0.1% f. s.	Min. process cycle time [ms]: Device ID:	2.5 0x071...			
Temperature range:	Media: -13°F to 212°F (-25°C to +100°C) Electronics: 14°F to 158°F (-10°C to +70°C) Storage: -22°F to 176°F (-30°C to +80°C)					
Power supply¹:	15 to 32 V DC, reversed polarity protected (SELV, PELV), Class 2					
Power consumption:	Approx. 50 mA (without load)					
Digital display:	4-digit 14-segment LED red display, digit height .35 inches (9 mm)					
Display rate:	20/s					
Error display:	LED RED and alphanumeric display					
		Pressure Ranges				
		Pressure Range Code	Differential Pressure	Proof Pressure	Proof Pressure	Common Pressure
			P1>P2 (PSID)	P1>P2 (PSID)	P2>P1 (PSID)	P1=P2 (PSI)
		0015P	0-15	30	15	2500
		0100P	0-100	200	100	2500
		0500P	0-500	1000	150	2500

Electronic Dual Differential Pressure Switch

BDS3000

Technical Drawings



Product Configurator

Example BDS3 4 F V M 0500P

Series:

BDS3 Series BDS3000, electronic dual differential pressure switch

Output:

4 Dual switch point plus 4-20mA (0-10V field selectable)
 8 IO-Link / Dual switch point plus 4-20mA (0-10 field selectable)

Electrical Connection:

M¹ M12

Pressure Ranges²

0015P	0 - 15 psid (differential)
0100P	0 - 100 psid (differential)
0500P	0 - 500 psid (differential)

Process Connections:

F 1/4" NPT female

Sealing:

V FKM fluoroelastomer

Accessories

Order Number	Description
239546-1M-R-S ³	5 Pin M12 Female Right Angle Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239546-1M-S ³	5 Pin M12, Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239548-S	5 Pin M12 Female Straight Connector
239548-R	5 Pin M12 Female Right Angle Connector

Note:

- Mating connector not included with unit; mating connectors are available and can be ordered as an accessory.
- Contact factory for ranges not listed including BAR.
- See Cable Connectors & Accessories for more options.

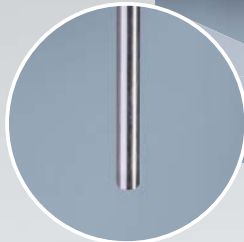
Switch to Generation 3000

BPS3000



Pressure Switch
Vacuum & 0-9000 psi
Dual switch & analog output

BTS3000



Temperature Switch
32 - 212°F, -22 - 284°F
0 - 100°C, -30 - 140°C

BLS3000



Level Switch
Probe lengths from 9.8" to 39.4"
(250 mm to 1000 mm)

Switch to Generation 3000 for performance you can trust.

BPS3000, BTS3000 & BLS3000 Custom Solutions

Our standard offering of options can be configured to meet your application needs. See our data sheet, or our eConfigurator, to select the product to meet your specific requirements.

If you need a fully customized solution, please contact us at 800-835-1060.

Barksdale – Innovative solutions with the highest quality.



Switch to Generation 3000

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