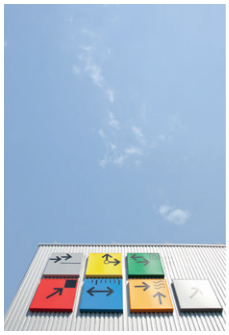
BALLUFF

sensors worldwide

BSP Pressure Sensors

Reliable solutions for the automation industry



As the leading sensor specialist and system provider with more than 90 years of company tradition, Balluff GmbH has been a recognized partner in factory automation for decades. With 56 locations, Balluff has a strong presence on every continent. The corporate headquarters in Neuhausen a.d.F. is located near Stuttgart.

Balluff masters the entire technological variety with various operating principles, including high-quality sensors and systems for position measurement and identification, as well as sensors for detecting objects and measuring fluids. The full-range assortment includes optimal network and connection technology and a comprehensive line of accessory products.

We offer innovative, first-class products tested in our own accredited laboratory, and maintain certified quality management in accordance with DIN EN 9001:2008. Our technology speaks for itself in international applications since it also meets regional standards.

Balluff stands for application-specific customer solutions, comprehensive services, individual consultation and prompt service. Our staff of more than 2450 employees is committed to providing outstanding service worldwide.

Advanced technology, individual solutions: high quality for greater efficiency.


CERTIFICATE

DQS Gmbh

Balluff GmbH

has implemented and maintains a Quality Management System

ISO 9001 : 2008

IO-Link

BSP pressure sensors from Balluff were designed for measuring the pressure of gases and liquids. By means of a rotatable housing and two buttons for programming, the sensors are flexible to install and easy to operate. The bright LED display makes it possible to read the current system pressure quickly at all times.


BALLUFF
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Reliability for Process Technology

BSP Pressure Sensors guarantee a consistently high product quality

Process technology is becoming increasingly more important in factory automation. Monitoring of process media such as cooling lubricants, hydraulic oils, and pneumatic systems has an important influence on the manufacturing quality.

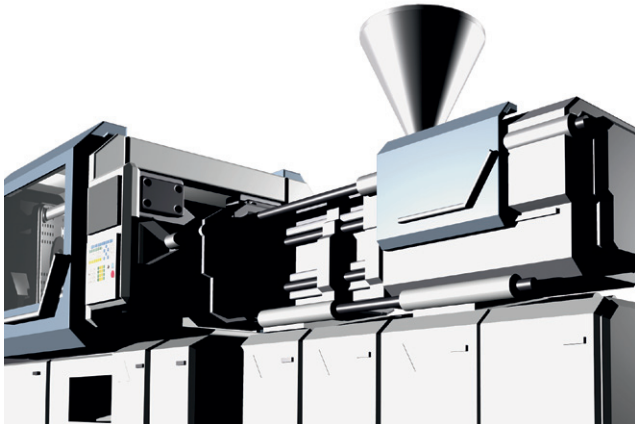
- Save space when positioning the versatile sensor – the exceptionally compact sensor has independently rotating display and connection housings.
- View the system pressure at a glance – Balluff pressure sensors have a large, bright illuminated LED display.
- Clear menu navigation for the quick and easy adjustment of pressure parameters – configure the sensor using two buttons in line with VDMA standards.
- Also suitable for harsh industrial applications – Balluff offers high-end versions in a high-quality, rugged stainless steel housing with IP 67 degree of protection.
- Reliable operation of your plants even under demanding conditions (pressure peaks) – reliable ceramic measuring cells with long-term stability guarantee a long service life.
- Simple installation with globally standardized screw fittings – process connection via a G¼" internal thread and adapter available in different sizes and versions.
- Find the right sensor for your application – Balluff offers versions with two switching points or with one switching point and one analog output.
- Secure interference-free operation for your plant – Balluff pressure sensors can be protected from unauthorized access by a password.

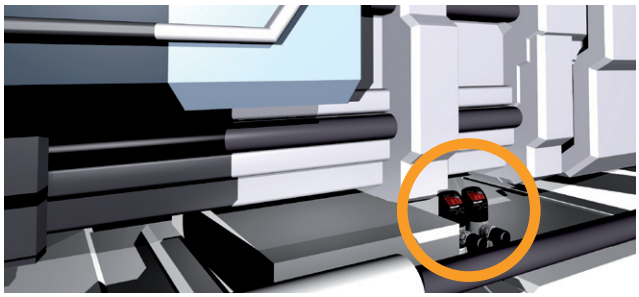
Version	Standard version	High-end version	Flush-mounted variants	Compact transmitter
From page	12	16	20	22
Housing material				
Plastic	■			
Stainless steel		■	■	■
Special properties				
Connection via IO-Link is possible	■	■		
Compact versions without a display				■
Standard temperature range –25...+85 °C	■			
Extended temperature range –40...+85 °C		■	■	■
Display housing rotates by 320°	■	■	■	
M12 connector rotates by 320°	■	■	■	
Detects pasty and sticky media			■	
Applications				
Hydraulics	■	■		■
Pneumatics	■	■		■
Machine tools	■	■	■	■
Plastics technology	■	■	■	■
Packaging machines	■	■	■	■
Wind power plants		■		■
Off-shore		■		■
Chemical industry	■		■	

For a Wide Variety of Applications

BSP pressure sensors combine the advantages of displays, measuring transducers and pressure switches

Holding pressure switchover on injection molding machines
Balluff BSP pressure sensors measure the hydraulic pressure of the screw drive in order to regulate the switchover point between the injection and holding pressure systems. Controlling this parameter with a high degree of precision is crucial to achieving the dimensional accuracy and quality of the products manufactured. A pressure sensor BSP with analog output monitors the available hydraulic pressure in order to control the process accurately while achieving a satisfactory degree of reproducibility.



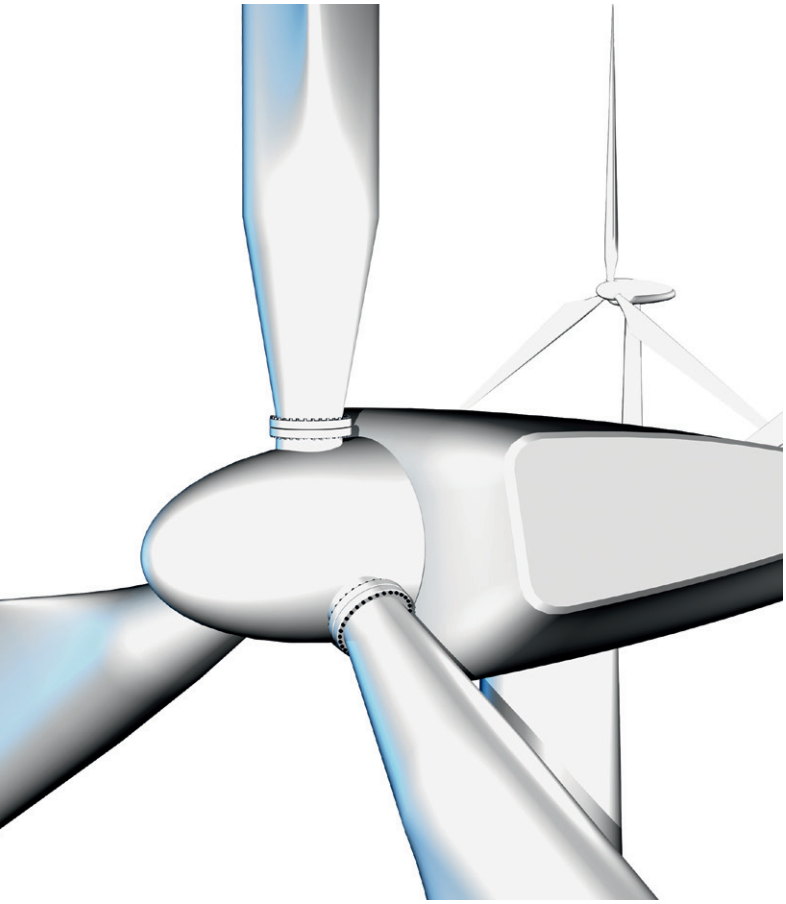


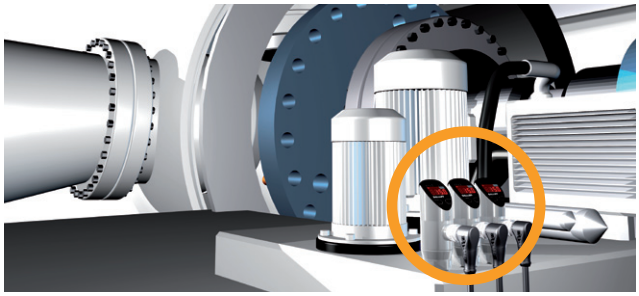
Benefits
- Switching point and analog output (0...10 V or 4...20 mA)
- IP 67 degree of protection
- Consistent quality of workpieces

Monitoring of cooling lubricant in machine tools
The pressure in the coolant supply system must be monitored continually to guarantee the consistently high surface quality of machined workpieces. BSP pressure sensors can monitor the pressure level and shut down the machine within a few milliseconds if the system pressure exceeds the defined limits.

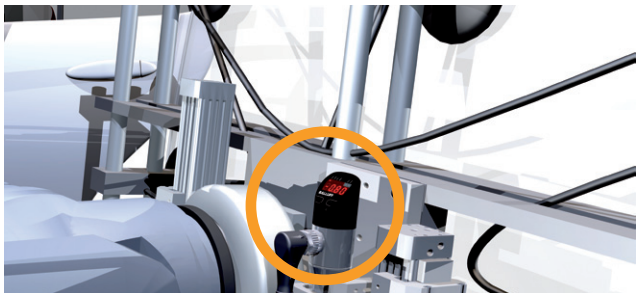
Benefits
- Ceramic measuring cells offer long term stability
- Display is easy to read
- Reliable machine operation

Central hydraulic unit in wind power plants
Many central systems in a wind power plant, such as the pitch control and braking system, are operated hydraulically. The high-end version of the BSP measures the actual system pressure reliably, even under harsh ambient conditions. The pump motor can be controlled directly via two programmable switching points to prevent the oil pressure from exceeding or falling below the optimum level.





Vacuum grippers in handling and conveyor systems
Vacuum grippers are used for a wide variety of material handling tasks. The grippers must be able to adapt to different materials and workpieces and operate continuously without error. BSP pressure sensors perform convincingly in the vacuum pressure range. They monitor the pressure of the vacuum suction cups and thereby ensure reliable gripping.



Benefits
- Compact design
- Simple startup
- Vacuum sensors up to –1 bar relative pressure

Benefits
- Extended temperature range down to –40 °C
- Two programmable switching points
- Increased system availability

Pressure Sensors with IO-Link – Right Where the Action Is

Pressure monitoring in production

Achieving the best results on a lathe requires a reliable grip on the workpiece and the tool. Pressure sensors for monitoring clamping pressure are used to ensure this function. They are also ideally suited for monitoring process media such as coolants, lubricants, hydraulic fluids and pneumatic components.

IO-Link pressure sensors continuously relay their measured values and data to the controller and let it provide precise readjustment when necessary. IO-Link pressure sensors ensure the highest machine availability. Replacing sensors is possible with simple plug-and-play, since the configuration of the replaced sensor is automatically taken from the IO-Link master.

A further benefit
The parameters for IO-Link pressure sensors can be configured using the controller, meaning that they can be installed right where the action is, even at hard-to-reach locations. In the best position for measurements and perfectly matched to the machine design. This ensures quick and precise results. And it saves on costs, since complex mechanical installations of hydraulic lines can be reduced to a minimum.

IO-Link pressure sensor


LINE 02

BSP Pressure Sensors

BSP Pressure Sensors

Balluff pressure sensors monitor pressures of gaseous and fluid media; they can also be used in a variety of ways in factory automation. For this reason, standard and complex applications can be easily solved with them. Moreover, they feature an especially high degree of user-friendliness and an impressive price/performance ratio.

BSP Pressure Sensors
Contents

Basic information and definitions can be found on **page 38.**

BSP Pressure Sensors
Standard sensors

Pressure sensors for standard applications offer an impressive price/performance ratio and are suitable for a wide variety of applications in factory automation. A large display and a simple operating concept in line with VDMA saves you time when configuring the sensors. Save space when installing the versatile pressure sensors. The display and electrical output can be rotated independently of the flange.

Additional advantages
- A compact housing design
- Local pressure display
- Binary switching outputs
- Analog output signals

Pressure sensors are found in many mechanical engineering applications. Different versions with switching points, an analog output and various pressure ranges mean you are guaranteed to find the right sensor for your application.

PNP pressure sensors

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
0...600 bar (0...8702 psi)	**Ordering code**	
	Part number	
Supply voltage U_B		
Output current max.		
No-load supply current I_0 max.		
Switching frequency f max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Display/function indicators		
Degree of protection per IEC 60529		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

NPN variants
All sensors are also available as NPN variants. Please contact our technical service department by **phone +49 7158 173-777** or e-mail: **tsm@balluff.de**

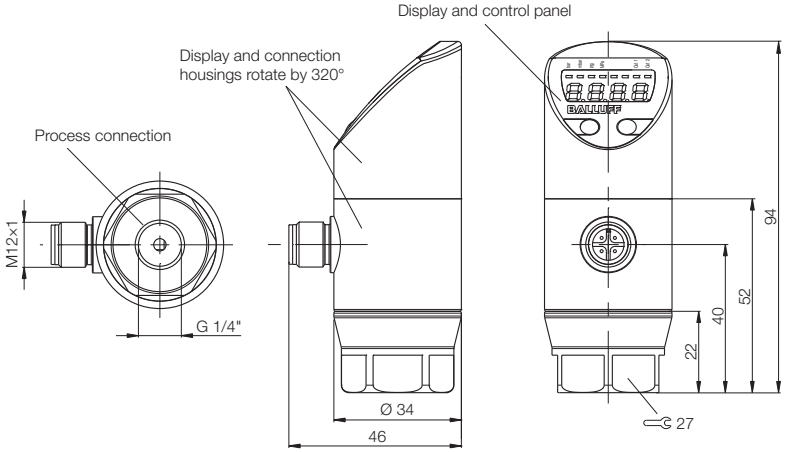
Design	Relative nominal pressure	Overload pressure	Burst pressure ≥	Permitted vacuum
–1...2 bar	2 bar	4 bar	10 bar	Vacuum-proof
–1...10 bar	10 bar	20 bar	35 bar	
0...2 bar	2 bar	4 bar	10 bar	
0...5 bar	5 bar	10 bar	15 bar	
0...10 bar	10 bar	20 bar	35 bar	
0...20 bar	20 bar	40 bar	75 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	250 bar	
0...250 bar	250 bar	400 bar	450 bar	
0...400 bar	400 bar	650 bar	700 bar	
0...600 bar	600 bar	750 bar	800 bar	

Two programmable switching points (NO or NC)

One programmable switching point and analog output 0...10 V DC

One programmable switching point and analog output 4...20 mA

	BSP004F	**BSP004J**	**BSP004L**
	BSP V002-EV002-D00A0B-S4	BSP V002-EV002-D00A0B-S4	BSP V002-EV002-D00A0B-S4
	BSP004H	**BSP004K**	**BSP004M**
	BSP V010-EV002-D00A0B-S4	BSP V010-EV002-A00A0B-S4	BSP V010-EV002-A02A0B-S4
	BSP000F	**BSP000T**	**BSP0014**
	BSP B002-EV002-D00A0B-S4	BSP B002-EV002-A00A0B-S4	BSP B002-EV002-D00A0B-S4
	BSP000H	**BSP000U**	**BSP0015**
	BSP B005-EV002-D00A0B-S4	BSP B005-EV002-D00A0B-S4	BSP B005-EV002-A02A0B-S4
	BSP000J	**BSP000W**	**BSP0016**
	BSP B010-EV002-D00A0B-S4	BSP B010-EV002-A00A0B-S4	BSP B010-EV002-A02A0B-S4
	BSP000K	**BSP000Y**	**BSP0017**
	BSP B020-EV002-D00A0B-S4	BSP B020-EV002-A00A0B-S4	BSP B020-EV002-D00A0B-S4
	BSP000L	**BSP000Z**	**BSP0018**
	BSP B050-EV002-D00A0B-S4	BSP B050-EV002-A00A0B-S4	BSP B050-EV002-A02A0B-S4
	BSP000M	**BSP0010**	**BSP0019**
	BSP B100-EV002-D00A0B-S4	BSP B100-EV002-A00A0B-S4	BSP B100-EV002-D00A0B-S4
	BSP000N	**BSP0011**	**BSP001A**
	BSP B250-EV002-D00A0B-S4	BSP B250-EV002-A00A0B-S4	BSP B250-EV002-A02A0B-S4
	BSP000P	**BSP0012**	**BSP001C**
	BSP B400-EV002-D00A0B-S4	BSP B400-EV002-A00A0B-S4	BSP B400-EV002-A02A0B-S4
	BSP000R	**BSP0013**	**BSP001E**
	BSP B600-EV002-D00A0B-S4	BSP B600-EV002-D00A0B-S4	BSP B600-EV002-A02A0B-S4
	18...36 V DC	18...36 V DC	18...36 V DC
	500 mA	500 mA	500 mA
	≤ 50 mA	≤ 50 mA	≤ 50 mA
	200 Hz	200 Hz	200 Hz
	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
	Yes/Yes	Yes/Yes	Yes/Yes
	–25…+85 °C/–25...+125 °C	–25…+85 °C/–25...+125 °C	–25…+85 °C/–25...+125 °C
	7-segment display/LED	7-segment display/LED	7-segment display/LED
	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
	PA 6.6 and stainless steel	PA 6.6 and stainless steel	PA 6.6 and stainless steel
	Ceramic	Ceramic	Ceramic
	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852



IO-Link

Standard pressure sensors with IO-Link can be positioned in the machine right where the action is from a process technology standpoint. That is because the accessibility of the sensors loses its significance through IO-Link. Process monitoring, configuration and error analysis of the IO-Link devices now take place in the controller and this way processes are optimized chronologically. Signal delays and distortions are eliminated reliably. Digital transmission of data also ensures high signal quality.

- Reduced downtimes:
  Simple sensor replacement with plug-and-play
- Maximum flexibility:
  System conversion during ongoing operation
- Simple commissioning:
  Complete parameter sets can be duplicated using IO-Link
- In-process diagnostics:
  Process data and errors are reported directly to the controller via IO-Link

PNP pressure sensors

CE

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
0...600 bar (0...8702 psi)	**Ordering code**	
	Part number	
Supply voltage U_B		
Output current max.		
No-load supply current I_0 max.		
Switching frequency f max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Display/function indicators		
Degree of protection per IEC 60529		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

NPN variants
All sensors are also available as NPN variants. Please contact our technical service department by **phone +49 7158 173-777** or e-mail: **tsm@balluff.de**

Design	Relative nominal pressure	Overload pressure	Burst pressure ≥	Permitted vacuum
–1...2 bar	2 bar	4 bar	10 bar	Vacuum-proof
–1...10 bar	10 bar	20 bar	35 bar	
0...2 bar	2 bar	4 bar	10 bar	
0...5 bar	5 bar	10 bar	15 bar	
0...10 bar	10 bar	20 bar	35 bar	
0...20 bar	20 bar	40 bar	75 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	250 bar	
0...250 bar	250 bar	400 bar	450 bar	
0...400 bar	400 bar	650 bar	700 bar	
0...600 bar	600 bar	750 bar	800 bar	

BSP Pressure Sensors
Standard sensors with IO-Link

IO-Link

Two programmable switching points (NO or NC)

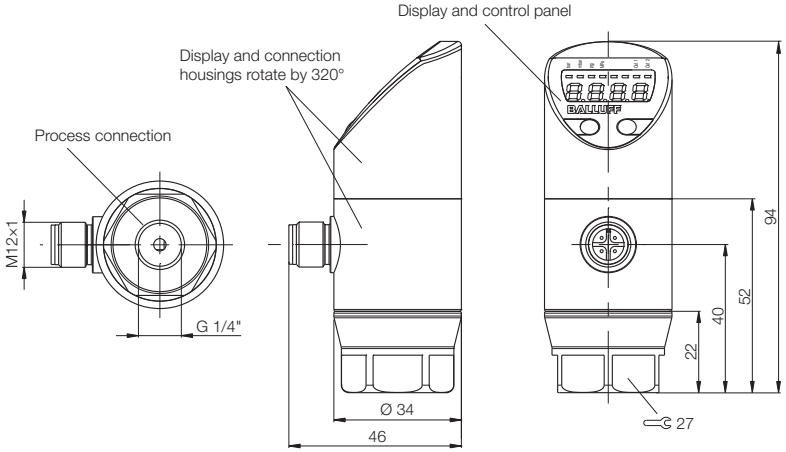
IO-Link

One programmable switching point and analog output 0...10 V DC

IO-Link

One programmable switching point and analog output 4...20 mA

	BSP0086	**BSP008L**	**BSP0091**
	BSP V002-EV002-D00S1B-S4	BSP V002-EV002-A00S1B-S4	BSP V002-EV002-A02S1B-S4
	BSP0087	**BSP008M**	**BSP0092**
	BSP V010-EV002-D00S1B-S4	BSP V010-EV002-A00S1B-S4	BSP V010-EV002-A02S1B-S4
	BSP0088	**BSP008N**	**BSP0093**
	BSP B002-EV002-D00S1B-S4	BSP B002-EV002-A00S1B-S4	BSP B002-EV002-A02S1B-S4
	BSP0089	**BSP008P**	**BSP0094**
	BSP B005-EV002-D00S1B-S4	BSP B005-EV002-A00S1B-S4	BSP B005-EV002-A02S1B-S4
	BSP008A	**BSP008R**	**BSP0095**
	BSP B010-EV002-D00S1B-S4	BSP B010-EV002-A00S1B-S4	BSP B010-EV002-A02S1B-S4
	BSP008C	**BSP008T**	**BSP0096**
	BSP B020-EV002-D00S1B-S4	BSP B020-EV002-A00S1B-S4	BSP B020-EV002-A02S1B-S4
	BSP008E	**BSP008U**	**BSP0097**
	BSP B050-EV002-D00S1B-S4	BSP B050-EV002-A00S1B-S4	BSP B050-EV002-A02S1B-S4
	BSP008F	**BSP008W**	**BSP0098**
	BSP B100-EV002-D00S1B-S4	BSP B100-EV002-A00S1B-S4	BSP B100-EV002-A02S1B-S4
	BSP008H	**BSP008Y**	**BSP0099**
	BSP B250-EV002-D00S1B-S4	BSP B250-EV002-A00S1B-S4	BSP B250-EV002-A02S1B-S4
	BSP008J	**BSP008Z**	**BSP009A**
	BSP B400-EV002-D00S1B-S4	BSP B400-EV002-A00S1B-S4	BSP B400-EV002-A02S1B-S4
	BSP008K	**BSP0090**	**BSP009C**
	BSP B600-EV002-D00S1B-S4	BSP B600-EV002-A00S1B-S4	BSP B600-EV002-A02S1B-S4
	18...36 V DC	18...36 V DC	18...36 V DC
	500 mA	500 mA	500 mA
	≤ 50 mA	≤ 50 mA	≤ 50 mA
	200 Hz	200 Hz	200 Hz
	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
	Yes/Yes	Yes/Yes	Yes/Yes
	–25…+85 °C/–25...+125 °C	–25…+85 °C/–25...+125 °C	–25…+85 °C/–25...+125 °C
	7-segment display/LED	7-segment display/LED	7-segment display/LED
	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
	PA 6.6 and stainless steel	PA 6.6 and stainless steel	PA 6.6 and stainless steel
	Ceramic	Ceramic	Ceramic
	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852



BSP Pressure Sensors
High-end sensors

Pressure sensors for harsh applications are designed for demanding requirements and extended temperature ranges. Therefore high-end pressure sensors are excellent for harsh environments. The compact housing is manufactured entirely from rugged stainless steel. Parameters are configured quickly and easily in line with VDMA standards.

Typical areas of application
- Wind power plants
- Off-shore
- Refrigeration and air-conditioning systems

The high-end version of the BSP pressure sensors is enclosed in a two-way rotary housing for easier installation. Position the cable outlet as shown in the machine layout and turn the display in your viewing direction.

PNP pressure sensors

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
0...600 bar (0...8702 psi)	**Ordering code**	
	Part number	
Supply voltage U_S		
Output current max.		
No-load supply current I_0 max.		
Switching frequency f max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Display/function indicators		
Degree of protection per IEC 60529		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

NPN variants
All sensors are also available as NPN variants. Please contact our technical service department by **phone +49 7158 173-777** or e-mail: **tsm@balluff.de**

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0...5 bar	5 bar	10 bar	15 bar	
0...10 bar	10 bar	20 bar	35 bar	
0...20 bar	20 bar	40 bar	75 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	250 bar	
0...250 bar	250 bar	400 bar	450 bar	
0...400 bar	400 bar	650 bar	700 bar	
0...600 bar	600 bar	750 bar	800 bar	

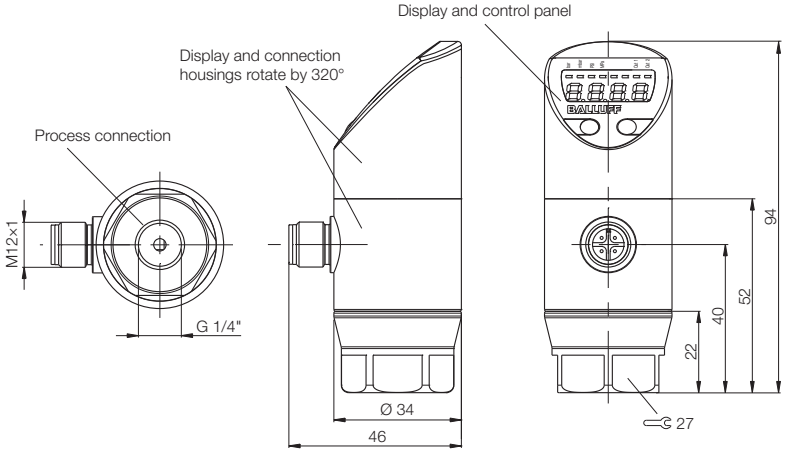
BSP Pressure Sensors
High-end sensors

Two programmable switching points (NO or NC)

One programmable switching point and analog output 0...10 V DC

One programmable switching point and analog output 4...20 mA

	BSP004Y	**BSP0050**	**BSP0052**
	BSP V002-EV003-D00A0B-S4	BSP V002-EV003-A00A0B-S4	BSP V002-EV003-A02A0B-S4
	BSP004Z	**BSP0051**	**BSP0053**
	BSP V010-EV003-D00A0B-S4	BSP V010-EV003-A00A0B-S4	BSP V010-EV003-A02A0B-S4
	BSP0021	**BSP002A**	**BSP002N**
	BSP B002-EV003-D00A0B-S4	BSP B002-EV003-A00A0B-S4	BSP B002-EV003-A02A0B-S4
	BSP0022	**BSP002C**	**BSP002P**
	BSP B005-EV003-D00A0B-S4	BSP B005-EV003-A00A0B-S4	BSP B005-EV003-A02A0B-S4
	BSP0023	**BSP002E**	**BSP002R**
	BSP B010-EV003-D00A0B-S4	BSP B010-EV003-A00A0B-S4	BSP B010-EV003-A02A0B-S4
	BSP0024	**BSP002F**	**BSP002T**
	BSP B020-EV003-D00A0B-S4	BSP B020-EV003-A00A0B-S4	BSP B020-EV003-A02A0B-S4
	BSP0025	**BSP002H**	**BSP002U**
	BSP B050-EV003-D00A0B-S4	BSP B050-EV003-A00A0B-S4	BSP B050-EV003-A02A0B-S4
	BSP0026	**BSP002J**	**BSP002W**
	BSP B100-EV003-D00A0B-S4	BSP B100-EV003-A00A0B-S4	BSP B100-EV003-A02A0B-S4
	BSP0027	**BSP002K**	**BSP002Y**
	BSP B250-EV003-D00A0B-S4	BSP B250-EV003-A00A0B-S4	BSP B250-EV003-A02A0B-S4
	BSP0028	**BSP002L**	**BSP002Z**
	BSP B400-EV003-D00A0B-S4	BSP B400-EV003-A00A0B-S4	BSP B400-EV003-A02A0B-S4
	BSP0029	**BSP002M**	**BSP0030**
	BSP B600-EV003-D00A0B-S4	BSP B600-EV003-A00A0B-S4	BSP B600-EV003-A02A0B-S4
	18...36 V DC	18...36 V DC	18...36 V DC
	500 mA	500 mA	500 mA
	≤ 50 mA	≤ 50 mA	≤ 50 mA
	200 Hz	200 Hz	200 Hz
	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
	Yes/Yes	Yes/Yes	Yes/Yes
	–40…+85 °C/–40...+125 °C	**–40…+85 °C/–40...+125 °C**	**–40…+85 °C/–40...+125 °C**
	7-segment display/LED	7-segment display/LED	7-segment display/LED
	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
	Stainless steel	Stainless steel	Stainless steel
	Ceramic	Ceramic	Ceramic
	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852



IO-Link

High-end pressure sensors with IO-Link monitor cooling lubricant, hydraulic fluids and pneumatic systems. Using IO-Link, you continuously relay your measured values and data to the controller. You initiate the exact readjustment and thereby provide for the highest machine availability. IO-Link pressure sensors enable quick, error-free sensor replacement and prompt commissioning. Downtimes are significantly reduced since the parameters of a replaced IO-Link sensor are automatically transmitted from the IO-Link master to the new sensor. Commissioning processes, format changes or recipe changes are processed centrally via the controller's functional components. This saves time and reduces the potential for errors to a minimum.

PNP pressure sensors

CE

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
0...600 bar (0...8702 psi)	**Ordering code**	
	Part number	
Supply voltage U_B		
Output current max.		
No-load supply current I_0 max.		
Switching frequency f max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Display/function indicators		
Degree of protection per IEC 60529		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

NPN variants
All sensors are also available as NPN variants. Please contact our technical service department by **phone +49 7158 173-777** or e-mail: **tsm@balluff.de**

Design	Relative nominal pressure	Overload pressure	Burst pressure ≥	Permitted vacuum
–1...2 bar	2 bar	4 bar	10 bar	Vacuum-proof
–1...10 bar	10 bar	20 bar	35 bar	
0...2 bar	2 bar	4 bar	10 bar	
0...5 bar	5 bar	10 bar	15 bar	
0...10 bar	10 bar	20 bar	35 bar	
0...20 bar	20 bar	40 bar	75 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	250 bar	
0...250 bar	250 bar	400 bar	450 bar	
0...400 bar	400 bar	650 bar	700 bar	
0...600 bar	600 bar	750 bar	800 bar	

BSP Pressure Sensors
High-end sensors with IO-Link

IO-Link

Two programmable switching points (NO or NC)

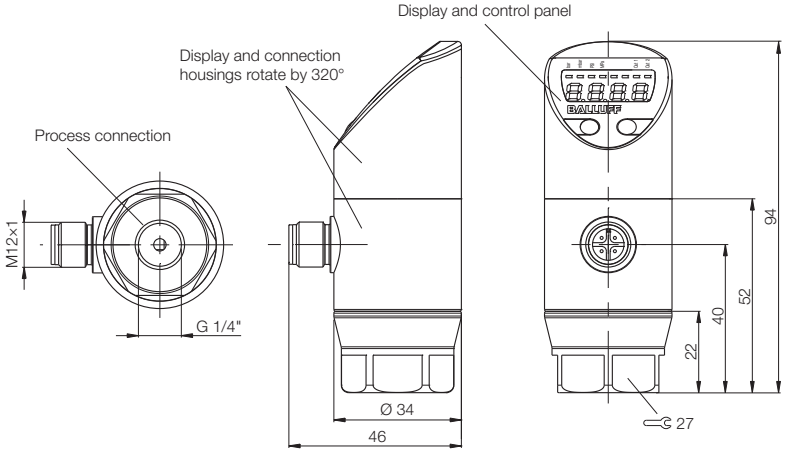
IO-Link

One programmable switching point and analog output 0...10 V DC

IO-Link

One programmable switching point and analog output 4...20 mA

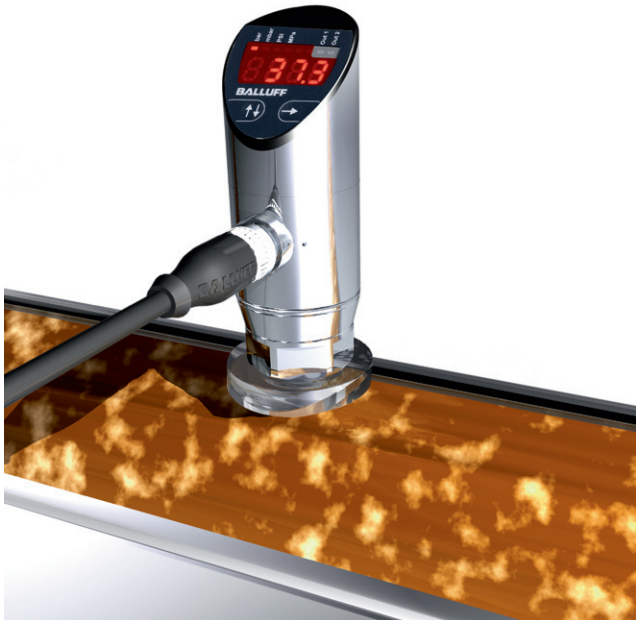
BSP00CF	**BSP00AM**	**BSP00A7**
BSP V002-EV003-D00S1B-S4	BSP V002-EV003-A00S1B-S4	BSP V002-EV003-A02S1B-S4
BSP00CH	**BSP00AN**	**BSP00A8**
BSP V010-EV003-D00S1B-S4	BSP V010-EV003-A00S1B-S4	BSP V010-EV003-A02S1B-S4
BSP00CJ	**BSP00AP**	**BSP00A9**
BSP B002-EV003-D00S1B-S4	BSP B002-EV003-A00S1B-S4	BSP B002-EV003-A02S1B-S4
BSP00CK	**BSP00AR**	**BSP00AA**
BSP B005-EV003-D00S1B-S4	BSP B005-EV003-A00S1B-S4	BSP B005-EV003-A02S1B-S4
BSP00CL	**BSP00AT**	**BSP00AC**
BSP B010-EV003-D00S1B-S4	BSP B010-EV003-A00S1B-S4	BSP B010-EV003-A02S1B-S4
BSP00CM	**BSP00AU**	**BSP00AE**
BSP B020-EV003-D00S1B-S4	BSP B020-EV003-A00S1B-S4	BSP B020-EV003-A02S1B-S4
BSP00CN	**BSP00AW**	**BSP00AF**
BSP B050-EV003-D00S1B-S4	BSP B050-EV003-A00S1B-S4	BSP B050-EV003-A02S1B-S4
BSP00CP	**BSP00AY**	**BSP00AH**
BSP B100-EV003-D00S1B-S4	BSP B100-EV003-A00S1B-S4	BSP B100-EV003-A02S1B-S4
BSP00CR	**BSP00AZ**	**BSP00AJ**
BSP B250-EV003-D00S1B-S4	BSP B250-EV003-A00S1B-S4	BSP B250-EV003-A02S1B-S4
BSP00CT	**BSP00C0**	**BSP00AK**
BSP B400-EV003-D00S1B-S4	BSP B400-EV003-A00S1B-S4	BSP B400-EV003-A02S1B-S4
BSP00CU	**BSP00C1**	**BSP00AL**
BSP B600-EV003-D00S1B-S4	BSP B600-EV003-A00S1B-S4	BSP B600-EV003-A02S1B-S4
18...36 V DC	18...36 V DC	18...36 V DC
500 mA	500 mA	500 mA
≤ 50 mA	≤ 50 mA	≤ 50 mA
200 Hz	200 Hz	200 Hz
≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
Yes/Yes	Yes/Yes	Yes/Yes
–40…+85 °C/–40...+125 °C	**–40…+85 °C/–40...+125 °C**	**–40…+85 °C/–40...+125 °C**
7-segment display/LED	7-segment display/LED	7-segment display/LED
IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
Stainless steel	Stainless steel	Stainless steel
Ceramic	Ceramic	Ceramic
Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852	Internal thread G¼" per DIN EN 3852



BSP Pressure Sensors
Flush-mounted high-end sensors

Flush-mounted BSP pressure sensors are ideally suited for pressure measurement in viscous, paste-like, crystallizing or solids-containing media. This makes them suitable for pressure measurement of adhesives, greases, sealants or often changing media. With their flush-mounted, welded stainless steel membrane, they have no dead spaces and can be easily cleaned.

Benefits
- Completely free of dead space
- No gaskets or offsets in the process
- Flush-mounted, welded stainless steel membrane
- No deposits on the sensor
- Easy to clean



The connection to your process is made via a G½" external thread in accordance with DIN EN 3852. Other process connections, such as TriClamp, Varivent, etc., are available on request.

PNP pressure sensors

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
Supply voltage U_B		
Output current max.		
No-load supply current I_0 max.		
Switching frequency f max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Display/function indicators		
Degree of protection per IEC 60529		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

NPN variants
All sensors are also available as NPN variants. Please contact our technical service department by **phone +49 7158 173-777** or e-mail: **tsm@balluff.de**

Design	Relative nominal pressure	Overload pressure	Burst pressure ≥	Permitted vacuum
–1...2 bar	2 bar	10 bar	15 bar	Vacuum-proof
–1...10 bar	10 bar	40 bar	50 bar	
0...2 bar	2 bar	10 bar	15 bar	
0...5 bar	5 bar	40 bar	50 bar	
0...10 bar	10 bar	40 bar	50 bar	
0...20 bar	20 bar	80 bar	120 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	300 bar	
0...250 bar	250 bar	400 bar	750 bar	
0...400 bar	400 bar	600 bar	1000 bar	

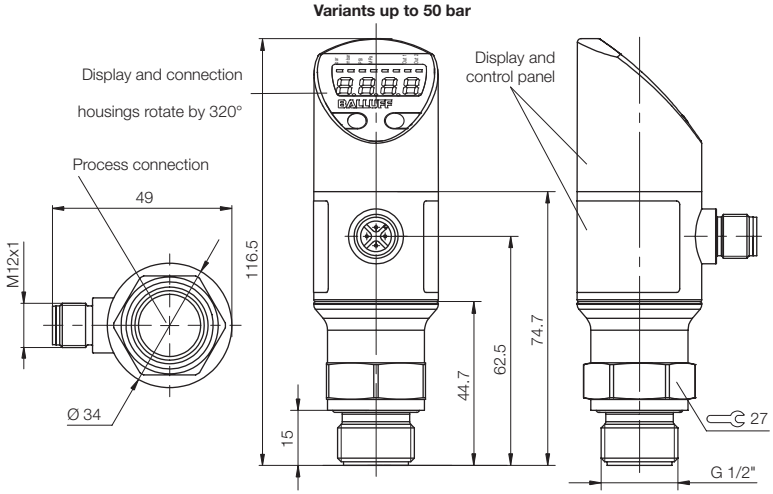
Two programmable switching points (NO or NC)

One programmable switching point and analog output 0...10 V DC

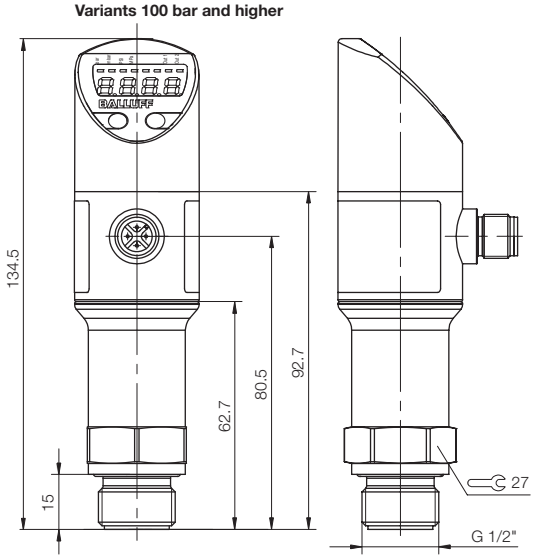
One programmable switching point and analog output 4...20 mA

	BSP005M	**BSP006F**	**BSP0062**
	BSP V002-IV003-D00A0B-S4	BSP V002-IV003-A00A0B-S4	BSP V002-IV003-A02A0B-S4
	BSP005N	**BSP006H**	**BSP0063**
	BSP V010-IV003-D00A0B-S4	BSP V010-IV003-A00A0B-S4	BSP V010-IV003-A02A0B-S4
	BSP005P	**BSP006J**	**BSP0064**
	BSP B002-IV003-D00A0B-S4	BSP B002-IV003-A00A0B-S4	BSP B002-IV003-A02A0B-S4
	BSP005R	**BSP006K**	**BSP0065**
	BSP B005-IV003-D00A0B-S4	BSP B005-IV003-A00A0B-S4	BSP B005-IV003-A02A0B-S4
	BSP005T	**BSP006L**	**BSP0066**
	BSP B010-IV003-D00A0B-S4	BSP B010-IV003-A00A0B-S4	BSP B010-IV003-A02A0B-S4
	BSP005U	**BSP006M**	**BSP0067**
	BSP B020-IV003-D00A0B-S4	BSP B020-IV003-A00A0B-S4	BSP B020-IV003-A02A0B-S4
	BSP005W	**BSP006N**	**BSP0068**
	BSP B050-IV003-D00A0B-S4	BSP B050-IV003-A00A0B-S4	BSP B050-IV003-A02A0B-S4
	BSP005Y	**BSP006P**	**BSP0069**
	BSP B100-IV003-D00A0B-S4	BSP B100-IV003-A00A0B-S4	BSP B100-IV003-A02A0B-S4
	BSP005Z	**BSP006R**	**BSP006A**
	BSP B250-IV003-D00A0B-S4	BSP B250-IV003-A00A0B-S4	BSP B250-IV003-A02A0B-S4
	BSP0060	**BSP006T**	**BSP006C**
	BSP B400-IV003-D00A0B-S4	BSP B400-IV003-A00A0B-S4	BSP B400-IV003-A02A0B-S4
	18...36 V DC	18...36 V DC	18...36 V DC
	500 mA	500 mA	500 mA
	≤ 50 mA	≤ 50 mA	≤ 50 mA
	200 Hz	200 Hz	200 Hz
	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
	Yes/Yes	Yes/Yes	Yes/Yes
	–40…+85 °C/–40...+125 °C	**–40…+85 °C/–40...+125 °C**	**–40…+85 °C/–40...+125 °C**
	7-segment display/LED	7-segment display/LED	7-segment display/LED
	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
	Stainless steel	Stainless steel	Stainless steel
	Ceramic	Ceramic	Ceramic
	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	G½" per DIN EN 3852	G½" per DIN EN 3852	G½" per DIN EN 3852

Variants up to 50 bar



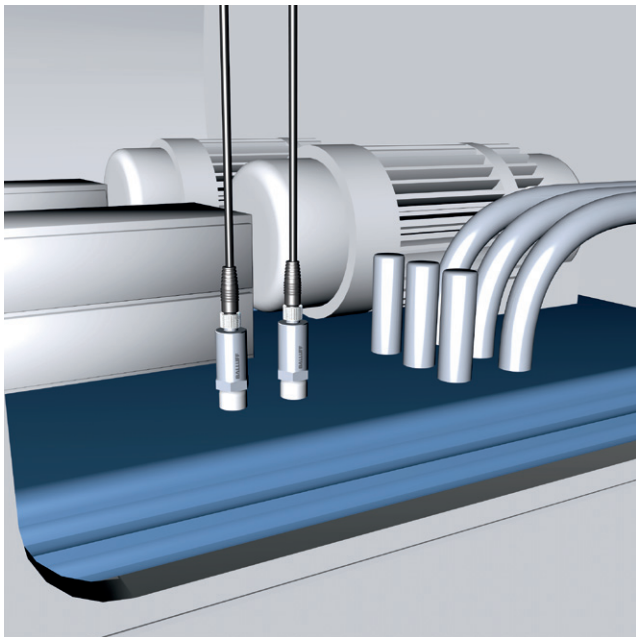
Variants 100 bar and higher



BSP Pressure Sensors
Pressure transmitters
Voltage variants 0...10 V DC

Compact pressure transmitters stand for continuously reliable pressure measurement. They are compact and installed right where the action is. Balluff pressure transmitters feature an impressive price/performance ratio and solve a wide variety of tasks in factory automation.

Applications
- Machine tools
- Hydraulics and pneumatics
- Pumps and compressors



Voltage variants 0...10 V DC

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
0...600 bar (0...8702 psi)	**Ordering code**	
	Part number	
Supply voltage U_B		
No-load supply current I_0 max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Degree of protection per IEC 60529		
Load cycles		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

Design	Relative nominal pressure	Overload pressure	Burst pressure ≥	Permitted vacuum
–1...2 bar	2 bar	4 bar	10 bar	Vacuum-proof
–1...10 bar	10 bar	20 bar	35 bar	
0...2 bar	2 bar	4 bar	10 bar	
0...5 bar	5 bar	10 bar	15 bar	
0...10 bar	10 bar	20 bar	35 bar	
0...20 bar	20 bar	40 bar	70 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	300 bar	
0...250 bar	250 bar	400 bar	750 bar	
0...400 bar	400 bar	1200 bar	1500 bar	
0...600 bar	600 bar	1200 bar	1500 bar	

BSP Pressure Sensors
Pressure transmitters
Voltage variants 0...10 V DC

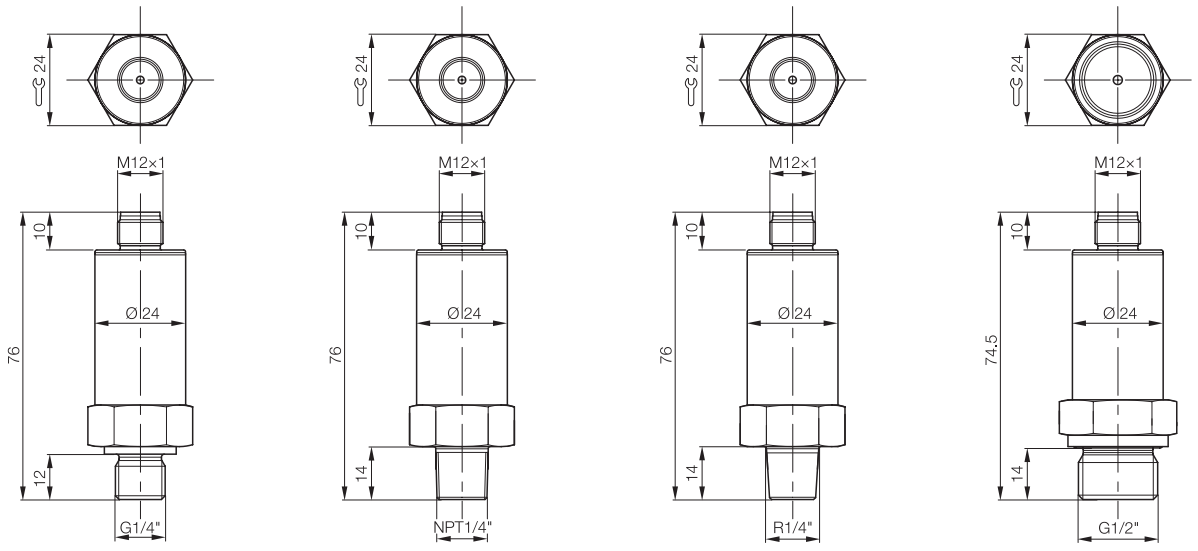
Process connection **G¼"**

Process connection **NPT¼"**

Process connection **R¼"**

Process connection **G½"**

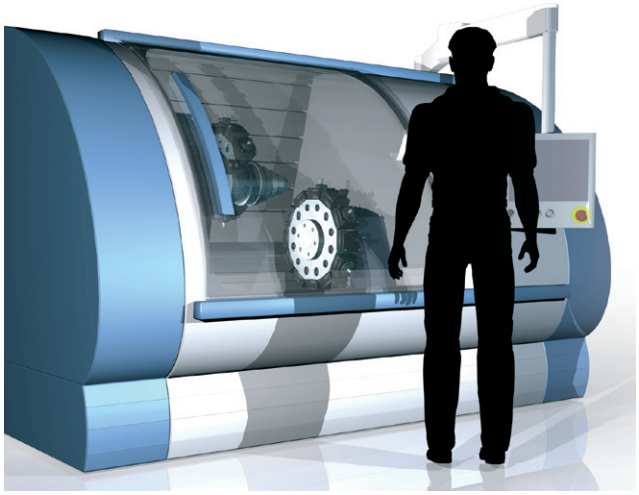
BSP00JE	**BSP00JU**	**BSP00K7**	**BSP00KM**
BSP V002-DV004-A04A1A-S4	BSP V002-FV004-A04A1A-S4	BSP V002-KV004-A04A1A-S4	BSP V002-HV004-A04A1A-S4
BSP00JF	**BSP00JW**	**BSP00K8**	**BSP00KN**
BSP V010-DV004-A04A1A-S4	BSP V010-FV004-A04A1A-S4	BSP V010-KV004-A04A1A-S4	BSP V010-HV004-A04A1A-S4
BSP00JH	**BSP00JY**	**BSP00K9**	**BSP00KP**
BSP B002-DV004-A04A1A-S4	BSP B002-FV004-A04A1A-S4	BSP B002-KV004-A04A1A-S4	BSP B002-HV004-A04A1A-S4
BSP00JJ	**BSP00JZ**	**BSP00KA**	**BSP00KR**
BSP B005-DV004-A04A1A-S4	BSP B005-FV004-A04A1A-S4	BSP B005-KV004-A04A1A-S4	BSP B005-HV004-A04A1A-S4
BSP00JK	**BSP00K0**	**BSP00KC**	**BSP00KT**
BSP B010-DV004-A04A1A-S4	BSP B010-FV004-A04A1A-S4	BSP B010-KV004-A04A1A-S4	BSP B010-HV004-A04A1A-S4
BSP00JL	**BSP00K1**	**BSP00KE**	**BSP00KU**
BSP B020-DV004-A04A1A-S4	BSP B020-FV004-A04A1A-S4	BSP B020-KV004-A04A1A-S4	BSP B020-HV004-A04A1A-S4
BSP00JM	**BSP00K2**	**BSP00KF**	**BSP00KW**
BSP B050-DV004-A04A1A-S4	BSP B050-FV004-A04A1A-S4	BSP B050-KV004-A04A1A-S4	BSP B050-HV004-A04A1A-S4
BSP00JN	**BSP00K3**	**BSP00KH**	**BSP00KY**
BSP B100-DV004-A04A1A-S4	BSP B100-FV004-A04A1A-S4	BSP B100-KV004-A04A1A-S4	BSP B100-HV004-A04A1A-S4
BSP00JP	**BSP00K4**	**BSP00KJ**	**BSP00KZ**
BSP B250-DV004-A04A1A-S4	BSP B250-FV004-A04A1A-S4	BSP B250-KV004-A04A1A-S4	BSP B250-HV004-A04A1A-S4
BSP00JR	**BSP00K5**	**BSP00KK**	**BSP00L0**
BSP B400-DV004-A04A1A-S4	BSP B400-FV004-A04A1A-S4	BSP B400-KV004-A04A1A-S4	BSP B400-HV004-A04A1A-S4
BSP00JT	**BSP00K6**	**BSP00KL**	**BSP00L1**
BSP B600-DV004-A04A1A-S4	BSP B600-FV004-A04A1A-S4	BSP B600-KV004-A04A1A-S4	BSP B600-HV004-A04A1A-S4
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
≤ ±0.5% FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
–40…+85 °C/–40...+125 °C	**–40…+85 °C/–40...+125 °C**	**–40…+85 °C/–40...+125 °C**	**–40…+85 °C/–40...+125 °C**
IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
> 100 mil.	> 100 mil.	> 100 mil.	> 100 mil.
Stainless steel	Stainless steel	Stainless steel	Stainless steel
Ceramic	Ceramic	Ceramic	Ceramic
Fluoroelastomer	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
G¼" per DIN EN 3852	NPT¼"	R¼"	G½" per DIN EN 3852

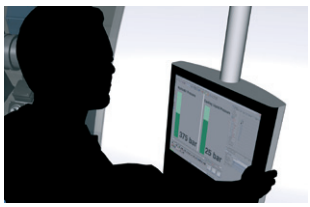


BSP Pressure Sensors
Pressure transmitters
Current variants 4...20 mA

BSP pressure transmitters provide a rugged stainless steel housing, reliable measurement technology and a large temperature range from –40 to 125 °C. This enables reliable operation and a long service life. Choose between eleven different pressure ranges, voltage or current output and various process connections for the appropriate sensor.

Benefits
- Extended temperature range
- Rugged metal housing
- Large product selection





Current variants 4...20 mA

–1...2 bar (–14.5...29 psi)	**Ordering code**	
	Part number	
–1...10 bar (–14.5...145 psi)	**Ordering code**	
	Part number	
0...2 bar (0...29 psi)	**Ordering code**	
	Part number	
0...5 bar (0...73 psi)	**Ordering code**	
	Part number	
0...10 bar (0...145 psi)	**Ordering code**	
	Part number	
0...20 bar (0...290 psi)	**Ordering code**	
	Part number	
0...50 bar (0...725 psi)	**Ordering code**	
	Part number	
0...100 bar (0...1450 psi)	**Ordering code**	
	Part number	
0...250 bar (0...3626 psi)	**Ordering code**	
	Part number	
0...400 bar (0...5802 psi)	**Ordering code**	
	Part number	
0...600 bar (0...8702 psi)	**Ordering code**	
	Part number	
Supply voltage U_B		
No-load supply current I_0 max.		
Accuracy		
Temperature error		
Polarity reversal protected/short-circuit protected		
Ambient/media temperature		
Degree of protection per IEC 60529		
Load cycles		
Material	Housing	
	Measuring cell	
	Seal	
Connection	Plug connector	
	Process connection	

Wiring diagrams see page 44.

Design	Relative nominal pressure	Overload pressure	Burst pressure ≥	Permitted vacuum
–1...2 bar	2 bar	4 bar	10 bar	Vacuum-proof
–1...10 bar	10 bar	20 bar	35 bar	
0...2 bar	2 bar	4 bar	10 bar	
0...5 bar	5 bar	10 bar	15 bar	
0...10 bar	10 bar	20 bar	35 bar	
0...20 bar	20 bar	40 bar	70 bar	
0...50 bar	50 bar	100 bar	150 bar	
0...100 bar	100 bar	200 bar	300 bar	
0...250 bar	250 bar	400 bar	750 bar	
0...400 bar	400 bar	1200 bar	1500 bar	
0...600 bar	600 bar	1200 bar	1500 bar	

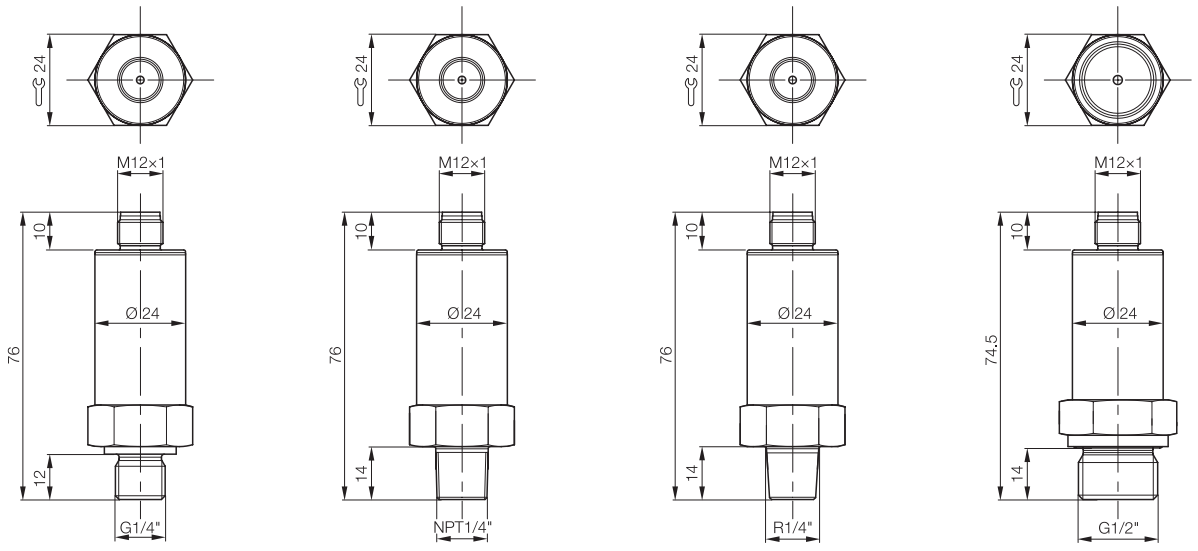
Process connection **G¼"**

Process connection **NPT¼"**

Process connection **R¼"**

Process connection **G½"**

	BSP00FW	**BSP00H7**	**BSP00HM**	**BSP00J2**
	BSP V002-DV004-A06A1A-S4	BSP V002-FV004-A06A1A-S4	BSP V002-KV004-A06A1A-S4	BSP V002-HV004-A06A1A-S4
	BSP00FY	**BSP00H8**	**BSP00HN**	**BSP00J3**
	BSP V010-DV004-A06A1A-S4	BSP V010-FV004-A06A1A-S4	BSP V010-KV004-A06A1A-S4	BSP V010-HV004-A06A1A-S4
	BSP00FZ	**BSP00H9**	**BSP00HP**	**BSP00J4**
	BSP B002-DV004-A06A1A-S4	BSP B002-FV004-A06A1A-S4	BSP B002-KV004-A06A1A-S4	BSP B002-HV004-A06A1A-S4
	BSP00H0	**BSP00HA**	**BSP00HR**	**BSP00J5**
	BSP B005-DV004-A06A1A-S4	BSP B005-FV004-A06A1A-S4	BSP B005-KV004-A06A1A-S4	BSP B005-HV004-A06A1A-S4
	BSP00H1	**BSP00HC**	**BSP00HT**	**BSP00J6**
	BSP B010-DV004-A06A1A-S4	BSP B010-FV004-A06A1A-S4	BSP B010-KV004-A06A1A-S4	BSP B010-HV004-A06A1A-S4
	BSP00H2	**BSP00HE**	**BSP00HU**	**BSP00J7**
	BSP B020-DV004-A06A1A-S4	BSP B020-FV004-A06A1A-S4	BSP B020-KV004-A06A1A-S4	BSP B020-HV004-A06A1A-S4
	BSP00H3	**BSP00HF**	**BSP00HW**	**BSP00J8**
	BSP B050-DV004-A06A1A-S4	BSP B050-FV004-A06A1A-S4	BSP B050-KV004-A06A1A-S4	BSP B050-HV004-A06A1A-S4
	BSP00H4	**BSP00HH**	**BSP00HY**	**BSP00FT**
	BSP B100-DV004-A06A1A-S4	BSP B100-FV004-A06A1A-S4	BSP B100-KV004-A06A1A-S4	BSP B100-HV004-A06A1A-S4
	BSP00H5	**BSP00HJ**	**BSP00HZ**	**BSP00J9**
	BSP B250-DV004-A06A1A-S4	BSP B250-FV004-A06A1A-S4	BSP B250-KV004-A06A1A-S4	BSP B250-HV004-A06A1A-S4
	BSP00F3	**BSP00HK**	**BSP00J0**	**BSP00JA**
	BSP B400-DV004-A06A1A-S4	BSP B400-FV004-A06A1A-S4	BSP B400-KV004-A06A1A-S4	BSP B400-HV004-A06A1A-S4
	BSP00H6	**BSP00HL**	**BSP00J1**	**BSP00JC**
	BSP B600-DV004-A06A1A-S4	BSP B600-FV004-A06A1A-S4	BSP B600-KV004-A06A1A-S4	BSP B600-HV004-A06A1A-S4
	8...32 V DC	8...32 V DC	8...32 V DC	8...32 V DC
	≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
	≤ ±0.5% FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	–40...+85 °C/–40...+125 °C	**–40...+85 °C/–40...+125 °C**	**–40...+85 °C/–40...+125 °C**	**–40...+85 °C/–40...+125 °C**
	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)	IP 67 (when screwed into place)
	> 100 mil.	> 100 mil.	> 100 mil.	> 100 mil.
	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	Ceramic	Ceramic	Ceramic	Ceramic
	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer	Fluoroelastomer
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	G¼" per DIN EN 3852	NPT¼"	R¼"	G½" per DIN EN 3852



Special Pressure Sensors
Individual, fully customized products

If desired, we will adapt catalog products individually to your requirements. Our spectrum ranges from preassembly to engineering services to simple housing modifications. We do this completely according to your specifications. This enables the best solutions for your application.

Benefits
- Quick and transparent feasibility check
- Solution for your application
- Customized products secure your competitive advantage
- Highest feasibility without compromises

Contact
To learn more about special designs, please contact our technical service department. You can use the TSM hotline: **+49 7158 173-777** or send an e-mail to **tsm@balluff.de**

Resistant to hydrochloric acid – an example from the real world
The standard version of BSP pressure sensors is ideally suited for use in a steel plant. For example, for monitoring the coolant in a rolling stand or the pressure in hydraulic drives. From –25 to 125 °C. With the wide variety of pressure ranges and output signals you can handle almost any task.

Ideal for the steel industry, the pressure sensors have an acid-resistant process connection made from PVDF and can reliably monitor cleaning processes during surface finishing.

Pressure ranges		**–1...50 bar**
Supply voltage U_B		18...36 V DC
Switching frequency f max.		200 Hz
Accuracy		≤ ±0.5 % FSO BFSL
Temperature error		≤ ±0.3 % FSO/10 K
Ambient/media temperature		**–25…+85 °C/–25...+125 °C**
Degree of protection per IEC 60529		IP 67 (when screwed into place)
Material	Housing	PA 6.6 and stainless steel
	Measuring cell	Ceramic
	Seal	Fluoroelastomer
	Process connection	PVDF
Connection	Plug connector	M12 connector, 4-pin
	Process connection	G½" per DIN EN 3852

With an acid-resistant process connection made from PVDF, the sensor can even be used in adverse conditions such as those experienced during surface finishing for steel production.

Calibration of pressure sensors

Send us your pressure sensors for inspection.
And build upon our manufacturing expertise.

Regular calibration of pressure sensors is becoming increasingly important for legal, technical and quality assurance-related reasons.

As a manufacturer, we offer professional support. For instance, we inspect and calibrate your pressure sensors directly at our plant. Once per year—to maintain quality standards.

You receive a bilingual certificate of the factory calibration for measuring ranges from –1 to 600 bar for your records. Take advantage of our manufacturing expertise and stay on the safe side.

Benefits

- Calibration directly at the manufacturer
- 6-point factory calibration
- Uniform, high process quality

Order with BSS CAL

Industrial Networking and Connectivity

Industrial Networking and Connectivity – A Selection

From our extensive product line we have put together a selection for you that covers the most important applications for pressure sensors.

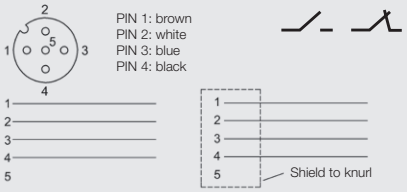
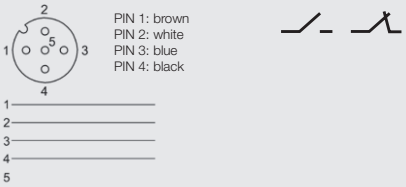
Industrial Networking and Connectivity – A Selection

Contents

You will find many additional products in our total product line: "Industrial Networking and Connectivity – System Technology", or online at: **www.balluff.com**

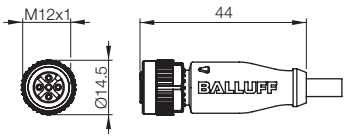
Basic information and definitions can be found on **page 38.**

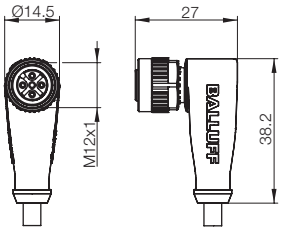
M12 female straight and right-angle, 4-pin

Connector diagram and wiring			
Max. supply voltage AC U_B		250 V AC	250 V AC
Max. supply voltage DC U_B		250 V DC	250 V DC
Cable		Molded	Molded
Number of wires × cross-section		4×0.34 mm²	4×0.34 mm²
Degree of protection per IEC 60529		IP 68	IP 68
Ambient temperature T_a	PUR	–40...+90 °C/–25...+90 °C (UL 80° C)	–40...+90 °C/–25...+90 °C (UL 80° C)
static/moving	PUR shielded	–40...+80 °C/–25...+80 °C	–40...+80 °C/–25...+80 °C
Use		Complementary (NO/NC)	Complementary (NO/NC)

Cable material	Color	Length	Ordering code Part number	Ordering code Part number
PUR	Black	2 m	**BCC032F** BCC M415-0000-1A-003-PX0434-020	**BCC032Y** BCC M425-0000-1A-003-PX0434-020
PUR	Black	5 m	**BCC032H** BCC M415-0000-1A-003-PX0434-050	**BCC032Z** BCC M425-0000-1A-003-PX0434-050
PUR	Black	10 m	**BCC032J** BCC M415-0000-1A-003-PX0434-100	**BCC0330** BCC M425-0000-1A-003-PX0434-100
PUR shielded	Black	2 m	**BCC032K** BCC M415-0000-1A-014-PS0434-020	**BCC0331** BCC M425-0000-1A-014-PS0434-020
PUR shielded	Black	5 m	**BCC032L** BCC M415-0000-1A-014-PS0434-050	**BCC0332** BCC M425-0000-1A-014-PS0434-050
PUR shielded	Black	10 m	**BCC032M** BCC M415-0000-1A-014-PS0434-100	**BCC0333** BCC M425-0000-1A-014-PS0434-100

Other cable materials, colors and lengths on request. Connectors without LED are suitable for PNP and NPN switching functions.
NPN versions on request.



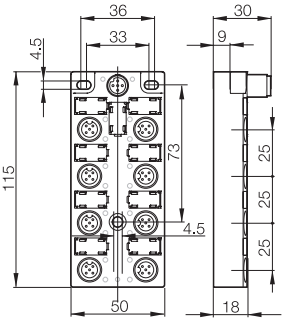


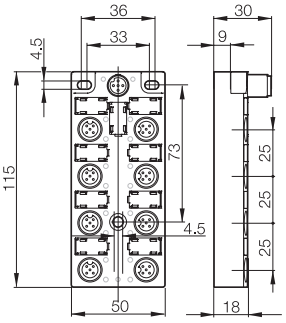
With the analog sensor hub, you can select from two additional variants with current and voltage interface, allowing you to connect non-IO-Link capable sensors with maximum reliability. Four existing analog channels can be used, which are supplemented by four additional dual-use standard input ports as per IEC 61131. The analog channels have a resolution of 10 bits.

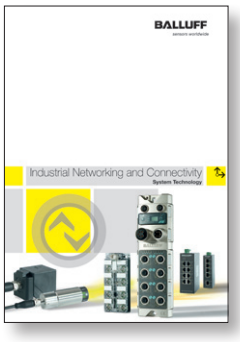
IO-Link CE

IO-Link	Device	Device
Version	4 AI, 0...10 V DC, 8× DI	4× AI, 4...20 mA, 8× DI
Ordering code	**BNI0008**	**BNI0007**
Part number	BNI IOL-710-000-K006	BNI IOL-709-000-K006
Supply voltage U_B	18...30 V DC	18...30 V DC
Function indicator IO-Link RUN	Green LED	Green LED
Power-on indicator	Green LED	Green LED
Connection: IO-Link	M12, A-coded, male	M12, A-coded, male
Connection: I/O ports	M12, A-coded, female	M12, A-coded, female
No. of I/O ports	8	8
Number of digital inputs	8 PNP	8 PNP
Configurable	NC/NO	NC/NO
Max. load current, sensors/channel	200 mA	200 mA
Port status indicator	Yellow LED	Yellow LED
Total current U_S	< 1.2 A	< 1.2 A
Degree of protection per IEC 60529	IP 67 (when screwed into place)	IP 67 (when screwed into place)
Operating temperature T_a	–5...+55 °C	–5...+55 °C
Storage temperature	–25...+85 °C	–25...+85 °C
Weight	Approx. 86 g	Approx. 86 g
Fastener	3 mounting holes	3 mounting holes
Dimensions (L×W×H)	115×50×31 mm	115×50×31 mm
Housing material	TROGAMID®	TROGAMID®
Analog ports		
Number of analog ports	4	4
Interface	0...10 V DC	4...20 mA
Resolution	10 bit	10 bit
Analog signal indicator	Green LED	Green LED
IO-Link		
No. of IO-Link ports	1× device	1× device
Operating mode	COM 2 (3-wire)	COM 2 (3-wire)
IO-Link process data length	10 input bytes	10 input bytes
Indicators Communication	Green LED	Green LED
Indicators Error	Red LED	Red LED
Max. load current	< 1.2 A	< 1.2 A
Parameters	NC/NO per input, 1 switching point per analog channel	NC/NO per input, 1 switching point per analog channel

All hubs include four screw plugs and a label set.







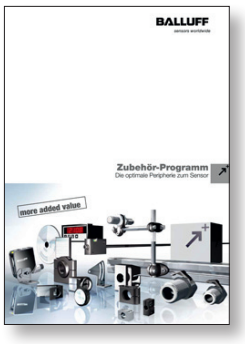
You will find many additional products in our total product line: "Industrial Networking and Connectivity – System Technology", or online at: **www.balluff.com**

Accessories

Accessories – A Selection

Fitting accessories are the optimal peripherals for sensors:
We provide reliable products for time and cost-saving integration into your automation system and for reliable operation. We have put together a selection for you from our comprehensive product line.

Accessories – A Selection
Contents

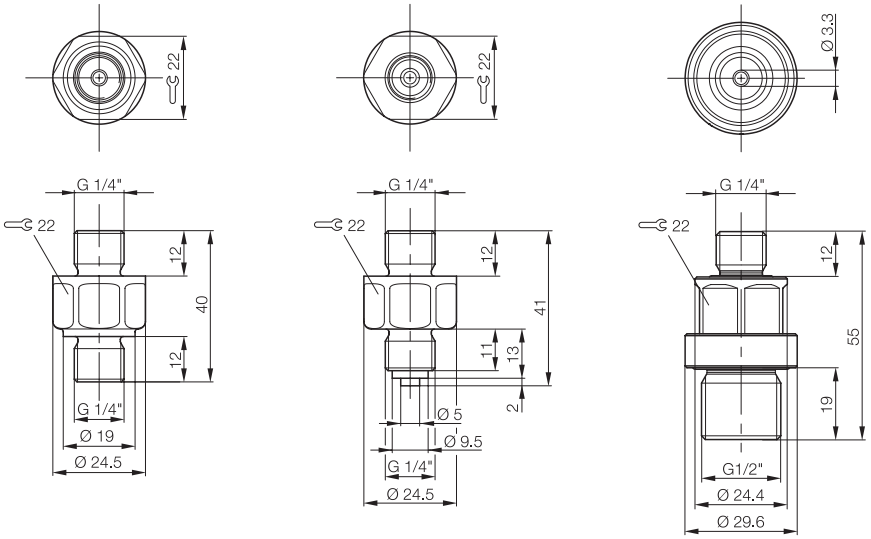


Many additional products can be found in our complete catalog:
"Accessories Product Line – The Optimum Peripherals for Sensors",
or on the Internet at: **www.balluff.com**

Basic information and definitions can be found on **page 38.**

Manometer screw connection per DIN EN 837

Description		Adapter G¼"	Adapter G¼"	Adapter G½"	
Ordering code		**BAM01KP**	**BAM01KR**	**BAM01UJ**	
Part number		BAM AD-SP-008-1G4/1G4-4	BAM AD-SP-008-1G4/1G4-4-EN837	BAM AD-SP-008-1G4/1G2-4	
Housing material		Stainless steel	Stainless steel	Stainless steel	
Connection	Sensor-side	G¼" per DIN EN 3852	G¼" per DIN EN 3852	G¼" per DIN EN 3852	
	Process-side	G¼" per DIN EN 3852	G¼" per DIN EN 837	G½" per DIN EN 3852	

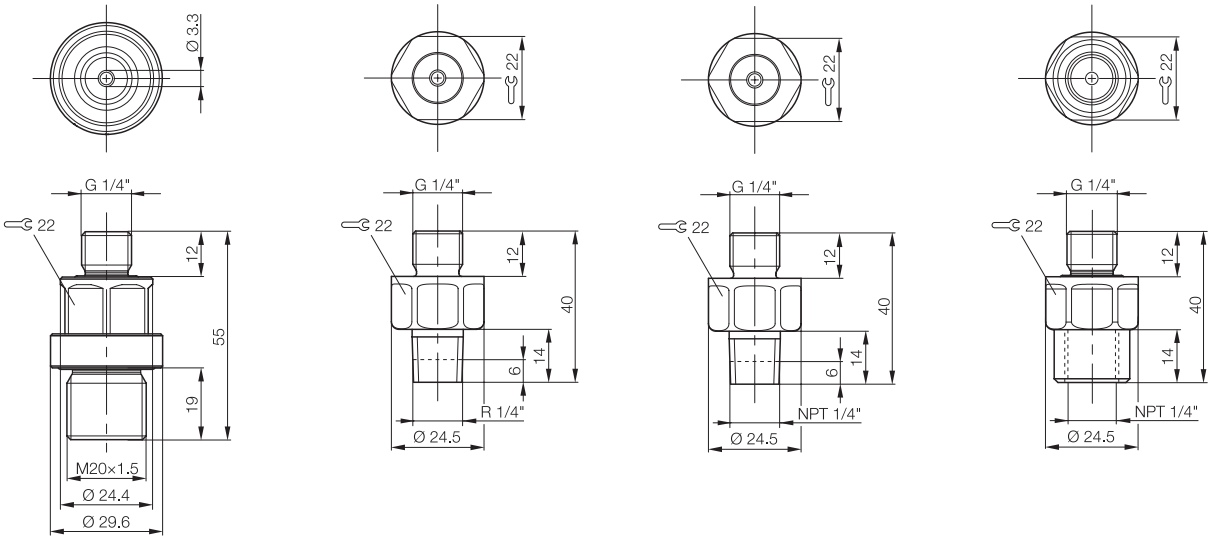


BSP pressure sensors can be adapted to different process connections using adapters. **Other adapters on request.**

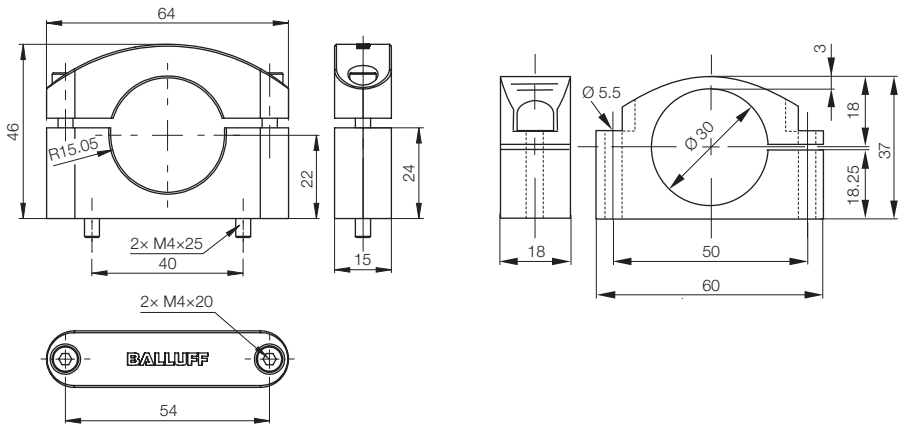



Internal thread

	Adapter M20×1.5	Adapter R¼"	Adapter NPT¼"	Adapter NPT¼"
	BAM0209	**BAM01RP**	**BAM01KT**	**BAM01TR**
	BAM AD-SP-008-1G4/M20X1.5-4	BAM AD-SP-008-1G4/1R4-4	BAM AD-SP-008-1G4/1N4-4	BAM AD-SP-011-1G4/1N4-4
	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	G¼" per DIN EN 3852	G¼" per DIN EN 3852	G¼" per DIN EN 3852	G¼" per DIN EN 3852
	M20×1.5	R¼"	NPT¼"	Internal thread NPT¼"



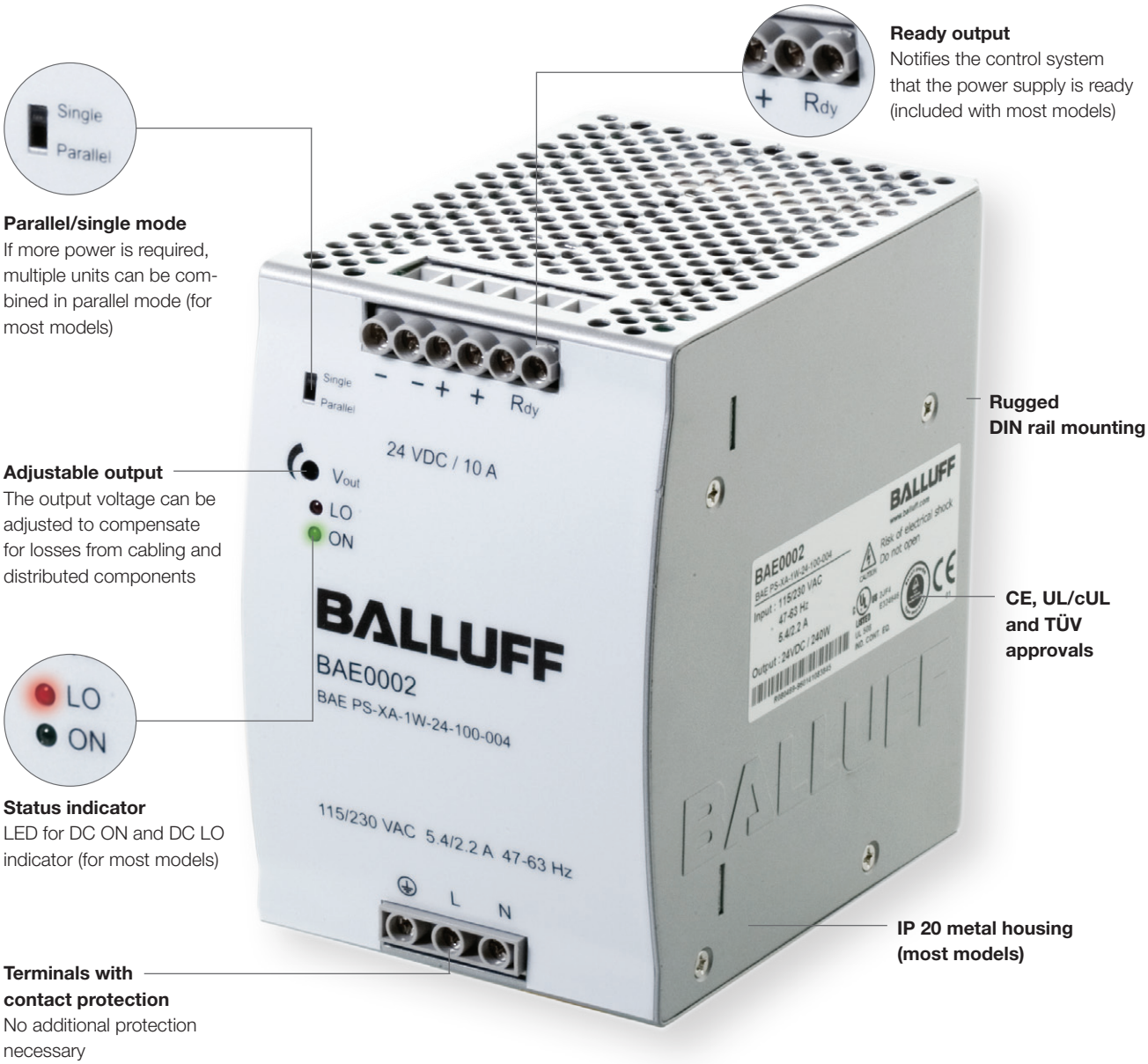

Description	Wall mount for BSP pressure sensors	Wall mount for BSP pressure sensors
Version	Two-piece retaining clip, metal	One-piece retaining clip, plastic
Ordering code	**BAM01U0**	**BAM0110**
Part number	BAM MC-XA-017-D30.0-1	BTL6-A-MF03-K-50
Housing material	Anodized aluminum	PA 6.6 (fiberglass reinforced)



Accessories – A Selection
Standard power supplies

Every industrial automation system needs a reliable, clean and controlled source of power without spikes. Only then can these systems deliver the expected performance. With the Balluff power supplies you get what you expect and more. They ensure reliable power even under demanding conditions. Thus they stand in the long Balluff tradition of reliable and high-quality performance products for industrial automation.

- **Ultra-reliable power supplies**
  for protecting sensitive control electronics
- **Protection against unforeseen events**
  Integrated overload and overvoltage protection
- **Wide selection of models**
  Whether stand-alone or an individual combination of various models, these solutions are perfect for your requirements
- **Clean, precise power supply for particularly complex systems**
  Load regulation at ±1 % for all models, ripple and noise for most models less than 50 mV
- **Long service life for less system downtime**
  MTBF (Mean Time Between Failure) up to 800,000 hours/ 91 years



Version	Output voltage	Output power: 0.75 A/18 W	1.25 A/30 W	1.5 A/18 W	2.5 A/30 W	2.5 A/60 W	2.5 A/120 W	3.8 A/91.20 W	5 A/60 W	5 A/120 W	5 A/240 W	10 A/120 W	10 A/240 W	10 A/480 W	20 A/480 W	40 A/960 W	Features: Input voltage	Housing material	Parallel mode	Ready output	Product information: Ordering code	Part number
Standard IP 20	12 V			■													Single-phase[1]	Plastic			**BAE0036**	BAE-PS-XA-1W-12-015-001
					■												Single-phase[1]	Plastic		■	**BAE0039**	BAE-PS-XA-1W-12-025-002
									■								Single-phase[1]	Metal		■	**BAE003E**	BAE-PS-XA-1W-12-050-002
												■					Single-phase[2]	Metal	■	■	**BAE003H**	BAE-PS-XA-1W-12-100-003
	24 V	■															Single-phase[1]	Plastic			**BAE0001**	BAE-PS-XA-1W-24-007-001
			■														Single-phase[1]	Plastic		■	**BAE0004**	BAE-PS-XA-1W-24-012-002
						■											Single-phase[1]	Plastic		■	**BAE0005**	BAE-PS-XA-1W-24-025-002
								■									Single-phase[2]	Metal	■	■	**BAE003J**	BAE-PS-XA-1W-24-038-003
										■							Single-phase[2]	Metal	■	■	**BAE0006**	BAE-PS-XA-1W-24-050-003
													■				Single-phase[2]	Metal	■	■	**BAE0002**	BAE-PS-XA-1W-24-100-004
														■			Single-phase[2]	Metal	■	■	**BAE0003**	BAE-PS-XA-1W-24-200-005
										■							3-phase[3]	Metal		■	**BAE0007**	BAE-PS-XA-3Y-24-050-009
													■				3-phase[3]	Metal	■	■	**BAE0008**	BAE-PS-XA-3Y-24-100-006
														■			3-phase[3]	Metal	■	■	**BAE0009**	BAE-PS-XA-3Y-24-200-007
																■	3-phase[3]	Metal	■	■	**BAE003R**	BAE-PS-XA-3Y-24-400-010
	48 V						■										Single-phase[2]	Plastic	■	■	**BAE003K**	BAE-PS-XA-1W-48-025-003
											■						Single-phase[2]	Metal	■	■	**BAE003L**	BAE-PS-XA-1W-48-050-004
														■			Single-phase[2]	Metal	■	■	**BAE003M**	BAE-PS-XA-1W-48-100-005

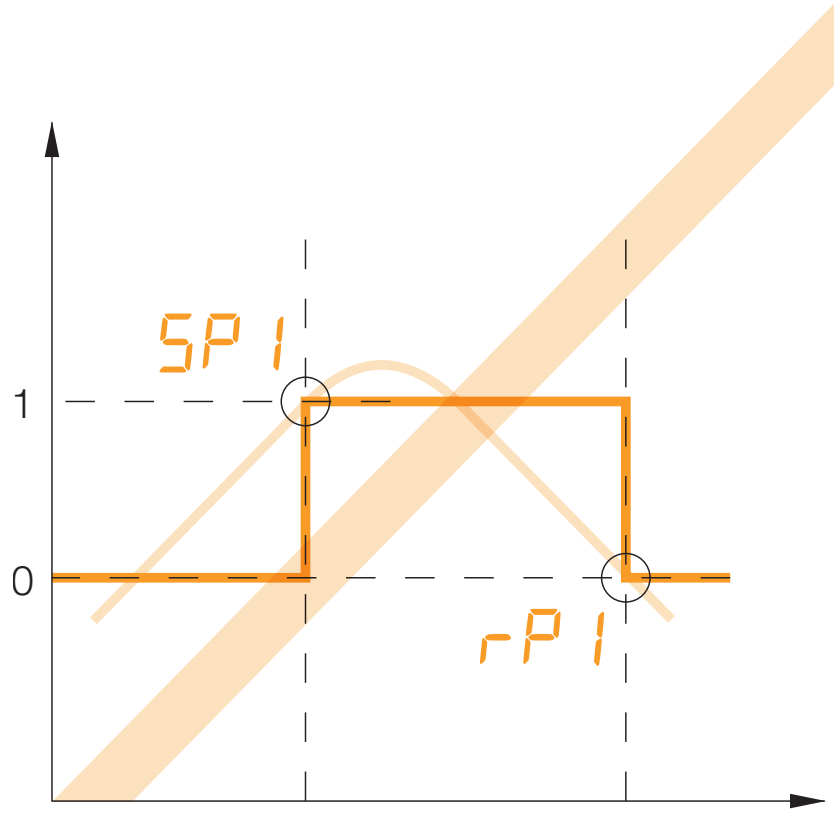
[1] = 100...240 V AC
[2] = 115/230 V AC (Auto-Select)
[3] = 340...575 V AC

Power for controllers and networks
Specially developed for controller units, Balluff power supplies can be perfectly integrated into your control package.

The PS series of ultra-reliable power supply units is available in a wide range of 12, 24, and 48 V DC models with single or 3-phase input. With a bandwidth of 18 W to 960 W, they truly leave nothing to be desired. For even greater power, multiple power supplies are interconnected (parallel switching mode). Do you need a different voltage? Please contact us.

Trouble-free installation
Reliable power has never been so simple to install. Starting with the convenient mounting of DIN rails using the integrated Balluff high-performance mounting system. The screw terminals are aligned to enable the integration of an AC input from below and a DC output from above. Connections with contact protection render additional safety equipment superfluous.

Basic Information and Definitions



Contents

Quality management system per DIN EN ISO 9001:2008

Balluff companies	
Balluff GmbH	Germany
Balluff SIE Sensorik GmbH	Germany
Balluff Controles Elétricos Ltda.	Brazil
Balluff Sensors (Chengdu) Co., Ltd.	China
Balluff Ltd.	Great Britain
Balluff Automation S.R.L.	Italy
Balluff Canada Inc.	Canada
Balluff de México S.A. de C.V.	Mexico
Balluff GmbH	Austria
Balluff Sp. z o.o.	Poland
Balluff Hy-Tech AG	Switzerland
Balluff Sensortechnik AG	Switzerland
Balluff S.L.	Spain
Balluff CZ, s.r.o	Czech Republic
Balluff Elektronika Kft.	Hungary
Balluff Inc.	USA

ZERTIFIZIERTES DIN EN ISO 9001 QUALITÄTSMANAGEMENTSYSTEM
Reg.Nr.: 19279-03

Environmental management system per DIN EN ISO 14001:2009

Balluff companies	
Balluff GmbH	Germany
Balluff Sensors (Chengdu) Co., Ltd.	China
Balluff Elektronika KFT	Hungary

Testing laboratory

The Balluff testing laboratory operates in accordance with ISO/IEC 17025 and is accredited by the German Accreditation Body (DAkks) for testing electromagnetic compatibility (EMC).

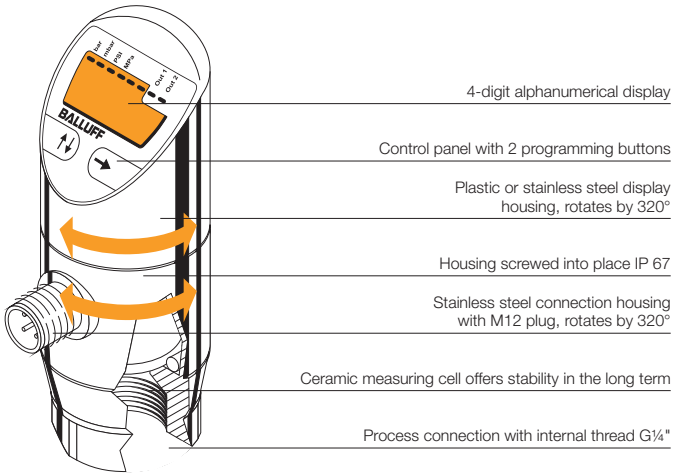
DAkkS Deutsche Akkreditierungsstelle D-PL-12017-01-01

Balluff products comply with EU directives

Products that require labeling are subject to a conformity evaluation process according to the EU directive and the product is labeled with the CE marking. Balluff products fall under the following EU directive:

2004/108/EC	EMC directive
2006/95/EC	Low Voltage Directive valid for products with supply voltage ≥ 75 V DC/≥ 50 V AC

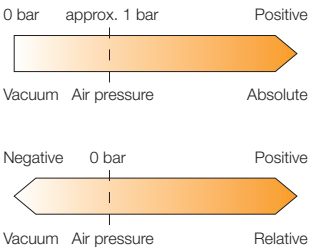
Sensor design



Function principle

Balluff pressure sensors convert the physical pressure variable (force per surface) into an electrical output variable that serves as a pressure indicator. This conversion is made with a ceramic membrane. The electrical signal is amplified and linearized and interfering factors such as temperature are compensated.

Pressure characteristics



Absolute pressure: The absolute pressure is the pressure in relation to zero pressure (vacuum). The value range of absolute pressure is always positive.

Relative pressure: Pressure is usually measured in relation to the actual atmospheric pressure. For pressures greater than the air pressure, positive values are obtained for the measurements. For pressures less than the air pressure, negative values.

Nominal pressure: This corresponds to the maximum design pressure.

Burst pressure: Minimum pressure that the pressure sensor must withstand without being destroyed. If this pressure is exceeded, expect pressurized components to crack, the device to leak, or internal mechanisms to be destroyed.

Pressure peaks: Pressure load pulses that can be several times the measured pressure.

Material characteristics

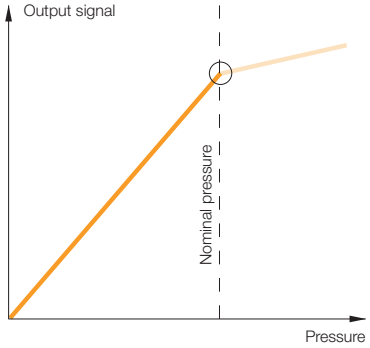
Incompressible material: Changes in the pressure of fluids such as water and hydraulic fluid do not initially have an effect on volume. These materials are classed as incompressible.

Compressible material: Typical compressible materials include gases, which decrease in volume when their pressure increases.

Material temperature: This indicates the permitted temperature range of the pressurized material.

Characteristic

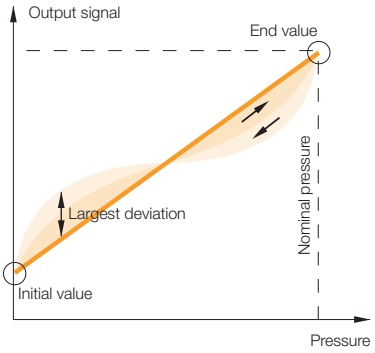
This describes the relationship between the measured and output variable. With pressure sensors, this indicates how dependent the output signal is on the pressure. In an ideal scenario, the characteristic should be a straight line.



Accuracy

The accuracy indicates how much the actual characteristic can deviate from the ideal characteristic (according to IEC 60770 nonlinearity, hysteresis and reproducibility). Accuracy specifications represent a percentage value of the measurement range (FSO) and never include dimensions.

Nominal pressure 50 bar
Accuracy 0.5 %
Max. deviation 0.25 bar



Measuring range

Working range with specific tolerances within which the measured deviation lies.

Full scale end value (FS)

Maximum measuring variable to which a device is adjusted, e.g. 20 mA.

Full scale output (FSO)

The range represents the difference between the upper and lower limit values of the display range. Example: A pressure sensor with a measuring range of 0...6 bar and a corresponding output signal of 4…20 mA has an FSO of 16 mA

Response time

The time between the change in pressure and the change in the switching output status.

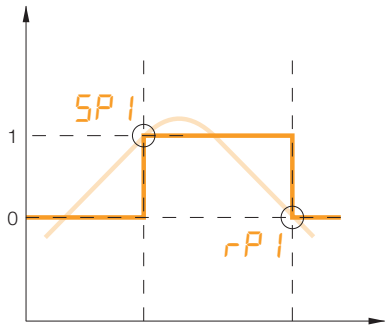
Reproducibility

Repeat accuracy of two measurements under standardized conditions.

Hysteresis, adjustable

The difference between the switching point (SP) and return point (rP) is known as hysteresis. On electronic pressure switches, any hysteresis can be selected within the measuring range.

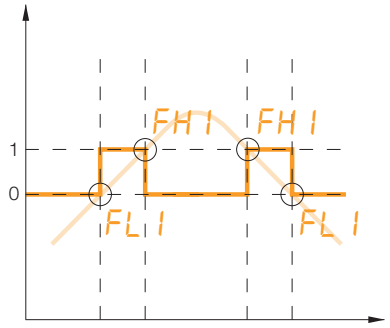
Hysteresis function: The hysteresis keeps the switching status of the outputs stable, even if the system pressure fluctuates around the setpoint value. The output is activated when the system pressure rises and the relevant switching point (SP) is reached. The output is deactivated when the pressure decreases again and the return point (rP) is reached.



Window, adjustable

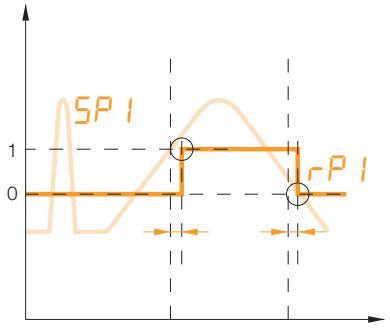
The output function is activated when the measured value falls between the preset switching and return point.

Window function: The range between a defined lower pressure limit and a defined upper limit is known as a window. A switching operation is initiated as soon as the upper or lower limit of the programmed pressure range is exceeded.



Delay times

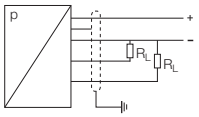
Delay times can reliably filter out undesired pressure peaks that occur momentarily. The status of the switching output does not change immediately after the switching event occurs, but only once a preselected delay time of 0...50 s has elapsed. If the switching event no longer exists by the time the delay has elapsed, the switching output does not change.



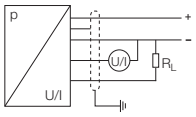
Electrical properties

Switching function

4-wire pressure sensors with switching output



4-wire pressure sensors with analog output



Pin assignments

Electrical connections	Pressure sensors with switching output	Pressure sensors with analog output
Supply +	1	1
Supply –	3	3
Signal +		2
Switching output 1	4	4
Switching output 2	2	
Shield	Connector housing	Connector housing

Supply voltage U_B

This is the voltage range in which flawless functioning of the sensor is assured. It includes all voltage tolerances and residual ripples.

Output current max.

This is the maximum current with which the output of the sensor may be loaded in continuous operation.

No-load supply current I_0 max.

This is the intrinsic current consumption of the sensor at maximum supply voltage U_S with no switched load.

Short-circuit protection and overload protection

All DC sensors feature this protection device. In the event of overload or short-circuit at the output, the output transistor is automatically switched off. As soon as the malfunction has been corrected, the output stage is reset to normal functioning.

Polarity reversal protection

The sensor electronics are protected against possible polarity reversal or interchanging of the connection wires.

Ambient temperature T_a

The device operates reliably within this temperature range. The ambient temperature of the device must remain within the range specified on the relevant data sheet and must not exceed the upper or lower range limits.

Temperature drift

Shift of the switching point caused by a change in the ambient temperature.

Switching frequency f max.

This is a succession of periodically repeating sensor switching cycles that occur during a specified time interval (1 second).

Materials

Material	Use and characteristics
Plastics	
PA 6.6 Polyamide	Good mechanical strength. Temperature resistance.
FKM Fluoroelastomer	Resistant to pressure deformation. Temperature resistance. Good chemical resistance.
PUR Polyurethane	Elastic, abrasion-resistant, impact-resistant. Good resistance to oils, greases, solvents (used for gaskets and cable jackets).
TROGAMID®	Very good strength and chemical resistance. UV-resistant and continuously transparent. High dynamic resistance.
Metal	
Stainless steel	Excellent corrosion resistance and strength. Quality 1.4301: Standard material for the foods industry.
Al Wrought aluminum alloy	Standard aluminum for cut shaping. Can be anodized. Used for housings and mounting components.
Other	
Ceramic	Very good strength and chemical resistance. Electrically insulating. Excellent temperature resistance.

Degree of protection

The degrees of protection are given according to IEC 60529. Code letters IP (International Protection) designate protection for electrical equipment against shock hazard, ingress of solid foreign bodies and water

First digit:

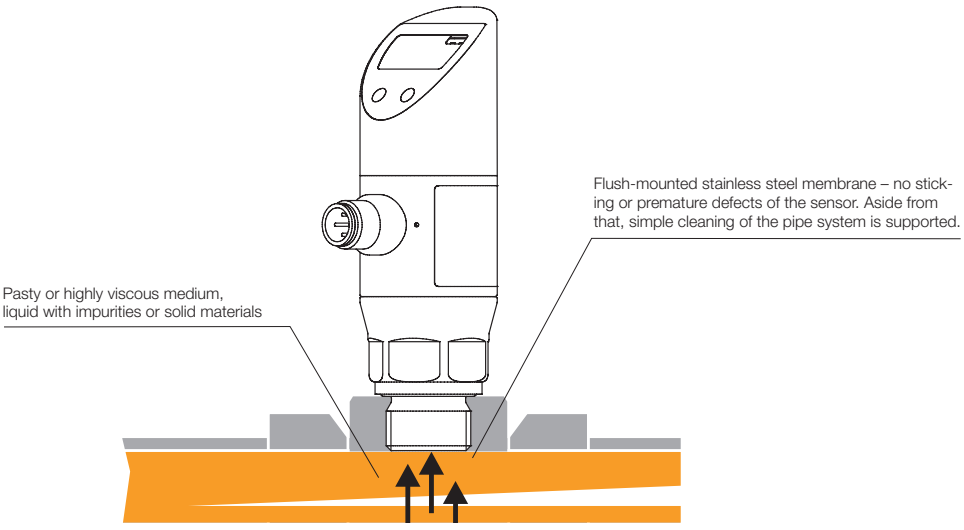
2 Protection against penetration of solid bodies larger than 12 mm, shielding from fingers and objects
4 Protection against penetration of solid bodies larger than 1 mm, shielding from tools and wires
5 Protection against harmful dust deposits, complete shock-hazard protection
6 Protection against penetration of dust, complete shock-hazard protection

Second digit:

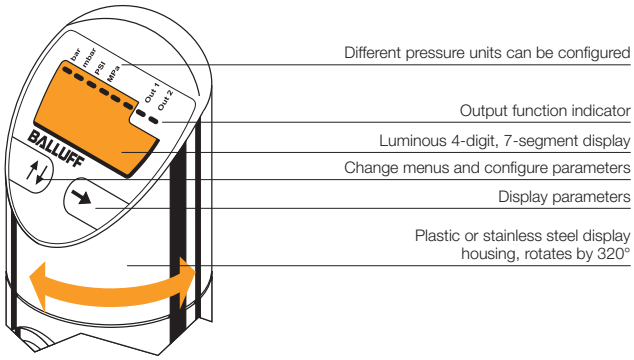
0 No special protection
4 Protection against water spraying from all directions against the equipment
5 Protection against a water jet from a nozzle striking the device from any direction
7 Protection against water when the device (housing) is temporarily immersed
8 Protection against water during prolonged immersion

Flush-mounted pressure sensors

With the flush-mounted, welded stainless steel membrane, the sensors have no dead spaces and are particularly easy to clean. They are ideally suited for pressure measurement in viscous, paste-like, crystallizing or solids-containing media. A G½" external thread according to DIN EN 3852 serves as process connection.



Display



	Description	ASCII		Description	ASCII
SP 1	Switching point (1)	SP1	Hnc	NC with hysteresis function	HNC
rP 1	Return point (1)	RP1	Fnc	NC with window function	HNC
SP 2	Switching point (2)	SP2	Un i	Unit selection	Uni
rP 2	Return point (2)	RP2	bAr	Unit bar	bar
FH 1	Pressure window, upper value (1)	FH1	¡PA	Unit MPa	MPa
FL 1	Pressure window, lower value (1)	FL1	PA	Unit Pa	Pa
FH 2	Pressure window, upper value (2)	FH2	PSi	Unit psi	psi
FL 2	Pressure window, lower value (2)	FL2	FL iP	Turn display	Flip
EF	Extended function	EF	Lo	Min. value	LO
rES	Reset	RES	Hi	Max. value	HI
dS 1	Switching delay time (1)	dS1	SEtO	Zero point adjustment	SETO
dS 2	Switching delay time (2)	dS2	dAP	Measured value damping	dAP
dr 1	Return delay time (1)	dR1	codE	Access protection	Code
dr 2	Return delay time (2)	dR2	d iA	Diagnostic function	DIA
oU 1	Output (1)	Ou1	Err	Error indicator	ERR
oU 2	Output (2)	Ou2	d iS	Display	DIS
Hno	NO with hysteresis function	HNO	YES	Yes	Yes
Fno	NO with window function	FNO	no	No	No

IO-Link

IO-Link is a worldwide standardized IO technology in accordance with IEC 61131-9 for communicating from the controller to the lowest level of the automation system. The interface can be used universally and is a fieldbus-independent point-to-point connection that operates using an unshielded industrial cable.

Benefits of the digital communications standard

- Easy to install
- Need-based maintenance
- Efficient operation
- Highest machine availability

SIO mode

Balluff pressure sensors with IO-Link support both SIO mode and IO-Link mode.

SIO mode (Standard IO mode):
In SIO mode, the sensor operates with the standard output signals. This way one digital output and one more digital output or an analog output are always available.

IO-Link mode (communication mode):
If the sensor operates subordinate to an IO-Link master, then the pressure sensor switches to IO-Link communication mode. The process data length of the pressure sensor is 16 bits. The switching statuses of the two switching outputs (BCD1 and BCD2) are transmitted in the process data, as well as the current measured value.

15 Bit	14...2	1	0
Signed bit	Measured value	BCD2/ Output 2	BCD1/ Output 1

Configuring and adjusting sensors

Balluff pressure sensors BSP are easy to configure in line with VDMA standards: **Change menus** – Press the button to switch to programming mode and modify the pressure sensor settings. **Display parameter** – Press the button to show the relevant parameter on the display. **Set parameter** – Press the button in any menu to select the relevant value.

Display mode
The current process pressure is displayed here. You can check this parameter directly on location at any time.

Switching point 1
Here you can select the switching point (pressure value) of output 1, which determines when the output status of the sensor changes. The switching point can be set to any value within the measuring range.

Return point 1
Return point 1 is used to select the pressure value that defines when output 1 switches back. The difference between SP 1 (9.05 bar here) and rP 1 (7.05 bar here) produces the hysteresis (2 bar here) of switching output 1.

Switching point 2
For setting output 2.
Proceed as described for switching point 1.

Return point 2
For setting output 2.
Proceed as described for return point 1.

Extended functions
Additional settings such as switching functions for outputs 1 and 2 can be configured in the "Extended functions" menu.

- Switch-on delay for SP 1 and SP 2
- Return point delay for rP 1 and rP 2
- Switching function for Out 1 and Out 2
- NO
- NC
- Window function
- Hysteresis function
- Unit selection
- Min./max. value
- Access protection
- Turn display
- Zero point adjustment
- Measured value damping

Sorted by part number

Part number	Ordering code	Page
BSP B050-EV003-A00S1B-S4	**BSP00AW**	19
BSP B050-EV003-A02S1B-S4	**BSP00AF**	19
BSP B050-EV003-D00A0B-S4	**BSP0025**	17
BSP B050-EV003-D00S1B-S4	**BSP00CN**	19
BSP B050-FV004-A04A1A-S4	**BSP00K2**	23
BSP B050-FV004-A06A1A-S4	**BSP00HF**	25
BSP B050-HV004-A04A1A-S4	**BSP00KW**	23
BSP B050-HV004-A06A1A-S4	**BSP00J8**	25
BSP B050-IV003-A00A0B-S4	**BSP006N**	21
BSP B050-IV003-A02A0B-S4	**BSP0068**	21
BSP B050-IV003-D00A0B-S4	**BSP005W**	21
BSP B050-KV004-A04A1A-S4	**BSP00KF**	23
BSP B050-KV004-A06A1A-S4	**BSP00HW**	25
BSP B100-DV004-A04A1A-S4	**BSP00JN**	23
BSP B100-DV004-A06A1A-S4	**BSP00H4**	25
BSP B100-EV002-A00A0B-S4	**BSP0010**	13
BSP B100-EV002-A00S1B-S4	**BSP008W**	15
BSP B100-EV002-D00A0B-S4	**BSP0019**	13
BSP B100-EV002-A02S1B-S4	**BSP0098**	15
BSP B100-EV002-D00A0B-S4	**BSP000M**	13
BSP B100-EV002-D00S1B-S4	**BSP008F**	15
BSP B100-EV003-A00A0B-S4	**BSP002J**	17
BSP B100-EV003-A00S1B-S4	**BSP00AY**	19
BSP B100-EV003-A02A0B-S4	**BSP002W**	17
BSP B100-EV003-A02S1B-S4	**BSP00AH**	19
BSP B100-EV003-D00A0B-S4	**BSP0026**	17
BSP B100-EV003-D00S1B-S4	**BSP00CP**	19
BSP B100-FV004-A04A1A-S4	**BSP00K3**	23
BSP B100-FV004-A06A1A-S4	**BSP00HH**	25
BSP B100-HV004-A04A1A-S4	**BSP00KY**	23
BSP B100-HV004-A06A1A-S4	**BSP00FT**	25
BSP B100-IV003-A00A0B-S4	**BSP006P**	21
BSP B100-IV003-A02A0B-S4	**BSP0069**	21
BSP B100-IV003-D00A0B-S4	**BSP005Y**	21
BSP B100-KV004-A04A1A-S4	**BSP00KH**	23
BSP B100-KV004-A06A1A-S4	**BSP00HY**	25
BSP B250-DV004-A04A1A-S4	**BSP00JP**	23
BSP B250-DV004-A06A1A-S4	**BSP00H5**	25
BSP B250-EV002-A00A0B-S4	**BSP0011**	13
BSP B250-EV002-A00S1B-S4	**BSP008Y**	15
BSP B250-EV002-A02A0B-S4	**BSP001A**	13
BSP B250-EV002-A02S1B-S4	**BSP0099**	15
BSP B250-EV002-D00A0B-S4	**BSP000N**	13
BSP B250-EV002-D00S1B-S4	**BSP008H**	15
BSP B250-EV003-A00A0B-S4	**BSP002K**	17
BSP B250-EV003-A00S1B-S4	**BSP00AZ**	19
BSP B250-EV003-A02A0B-S4	**BSP002Y**	17
BSP B250-EV003-A02S1B-S4	**BSP00AJ**	19
BSP B250-EV003-D00A0B-S4	**BSP0027**	17
BSP B250-EV003-D00S1B-S4	**BSP00CR**	19
BSP B250-FV004-A04A1A-S4	**BSP00K4**	23
BSP B250-FV004-A06A1A-S4	**BSP00HJ**	25
BSP B250-HV004-A04A1A-S4	**BSP00KZ**	23
BSP B250-HV004-A06A1A-S4	**BSP00J9**	25
BSP B250-IV003-A00A0B-S4	**BSP006R**	21
BSP B250-IV003-A02A0B-S4	**BSP006A**	21
BSP B250-IV003-D00A0B-S4	**BSP005Z**	21
BSP B250-KV004-A04A1A-S4	**BSP00KJ**	23
BSP B250-KV004-A06A1A-S4	**BSP00HZ**	25
BSP B400-DV004-A04A1A-S4	**BSP00JR**	23
BSP B400-DV004-A06A1A-S4	**BSP00F3**	25
BSP B400-EV002-A00A0B-S4	**BSP0012**	13
BSP B400-EV002-A00S1B-S4	**BSP008Z**	15
BSP B400-EV002-A02A0B-S4	**BSP001C**	13
BSP B400-EV002-A02S1B-S4	**BSP009A**	15
BSP B400-EV002-D00A0B-S4	**BSP000P**	13
BSP B400-EV002-D00S1B-S4	**BSP008J**	15
BSP B400-EV003-A00A0B-S4	**BSP002L**	17
BSP B400-EV003-A00S1B-S4	**BSP00C0**	19
BSP B400-EV003-A02A0B-S4	**BSP002Z**	17
BSP B400-EV003-A02S1B-S4	**BSP00AK**	19
BSP B400-EV003-D00A0B-S4	**BSP0028**	17
BSP B400-EV003-D00S1B-S4	**BSP00CT**	19
BSP B400-FV004-A04A1A-S4	**BSP00K5**	23
BSP B400-FV004-A06A1A-S4	**BSP00HK**	25
BSP B400-HV004-A04A1A-S4	**BSP00L0**	23
BSP B400-HV004-A06A1A-S4	**BSP00JA**	25
BSP B400-IV003-A00A0B-S4	**BSP006T**	21

Part number	Ordering code	Page
BSP B400-IV003-A02A0B-S4	**BSP006C**	21
BSP B400-IV003-D00A0B-S4	**BSP0060**	21
BSP B400-KV004-A04A1A-S4	**BSP00KK**	23
BSP B400-KV004-A06A1A-S4	**BSP00J0**	25
BSP B600-DV004-A04A1A-S4	**BSP00JT**	23
BSP B600-DV004-A06A1A-S4	**BSP00H6**	25
BSP B600-EV002-D00A0B-S4	**BSP0013**	13
BSP B600-EV002-A00S1B-S4	**BSP0090**	15
BSP B600-EV002-A02A0B-S4	**BSP001E**	13
BSP B600-EV002-A02S1B-S4	**BSP009C**	15
BSP B600-EV002-D00A0B-S4	**BSP000R**	13
BSP B600-EV002-D00S1B-S4	**BSP008K**	15
BSP B600-EV003-A00A0B-S4	**BSP002M**	17
BSP B600-EV003-A00S1B-S4	**BSP00C1**	19
BSP B600-EV003-A02A0B-S4	**BSP0030**	17
BSP B600-EV003-A02S1B-S4	**BSP00AL**	19
BSP B600-EV003-D00A0B-S4	**BSP0029**	17
BSP B600-EV003-D00S1B-S4	**BSP00CU**	19
BSP B600-FV004-A04A1A-S4	**BSP00K6**	23
BSP B600-FV004-A06A1A-S4	**BSP00HL**	25
BSP B600-HV004-A04A1A-S4	**BSP00L1**	23
BSP B600-HV004-A06A1A-S4	**BSP00JC**	25
BSP B600-KV004-A04A1A-S4	**BSP00KL**	23
BSP B600-KV004-A06A1A-S4	**BSP00J1**	25
BSP V002-DV004-A04A1A-S4	**BSP00JE**	23
BSP V002-DV004-A06A1A-S4	**BSP00FW**	25
BSP V002-EV002-D00A0B-S4	**BSP004J**	13
BSP V002-EV002-A00S1B-S4	**BSP008L**	15
BSP V002-EV002-D00A0B-S4	**BSP004L**	13
BSP V002-EV002-A02S1B-S4	**BSP0091**	15
BSP V002-EV002-D00A0B-S4	**BSP004F**	13
BSP V002-EV002-D00S1B-S4	**BSP0086**	15
BSP V002-EV003-A00A0B-S4	**BSP0050**	17
BSP V002-EV003-A00S1B-S4	**BSP00AM**	19
BSP V002-EV003-A02A0B-S4	**BSP0052**	17
BSP V002-EV003-A02S1B-S4	**BSP00A7**	19
BSP V002-EV003-D00A0B-S4	**BSP004Y**	17
BSP V002-EV003-D00S1B-S4	**BSP00CF**	19
BSP V002-FV004-A04A1A-S4	**BSP00JU**	23
BSP V002-FV004-A06A1A-S4	**BSP00H7**	25
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BSP V002-HV004-A06A1A-S4	**BSP00J2**	25
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BSP V010-DV004-A04A1A-S4	**BSP00JF**	23
BSP V010-DV004-A06A1A-S4	**BSP00FY**	25
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BSP V010-EV002-A02S1B-S4	**BSP0092**	15
BSP V010-EV002-D00A0B-S4	**BSP004H**	13
BSP V010-EV002-D00S1B-S4	**BSP0087**	15
BSP V010-EV003-A00A0B-S4	**BSP0051**	17
BSP V010-EV003-A00S1B-S4	**BSP00AN**	19
BSP V010-EV003-A02A0B-S4	**BSP0053**	17
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BSP V010-KV004-A06A1A-S4	**BSP00HN**	25
BTL		
BTL6-A-MF03-K-50	**BAM0110**	35

Sorted by ordering code

Ordering code	Part number	Page
BAE		
BAE0001	BAE-PS-XA-1W-24-007-001	37
BAE0002	BAE-PS-XA-1W-24-100-004	37
BAE0003	BAE-PS-XA-1W-24-200-005	37
BAE0004	BAE-PS-XA-1W-24-012-002	37
BAE0005	BAE-PS-XA-1W-24-025-002	37
BAE0006	BAE-PS-XA-1W-24-050-003	37
BAE0007	BAE-PS-XA-3Y-24-050-009	37
BAE0008	BAE-PS-XA-3Y-24-100-006	37
BAE0009	BAE-PS-XA-3Y-24-200-007	37
BAE0036	BAE-PS-XA-1W-12-015-001	37
BAE0039	BAE-PS-XA-1W-12-025-002	37
BAE003E	BAE-PS-XA-1W-12-050-002	37
BAE003H	BAE-PS-XA-1W-12-100-003	37
BAE003J	BAE-PS-XA-1W-24-038-003	37
BAE003K	BAE-PS-XA-1W-48-025-003	37
BAE003L	BAE-PS-XA-1W-48-050-004	37
BAE003M	BAE-PS-XA-1W-48-100-005	37
BAE003R	BAE-PS-XA-3Y-24-400-010	37
BAM		
BAM0110	BTL6-A-MF03-K-50	35
BAM01KP	BAM AD-SP-008-1G4/1G4-4	34
BAM01KR	BAM AD-SP-008-1G4/1G4-4-EN837	34
BAM01KT	BAM AD-SP-008-1G4/1N4-4	35
BAM01RP	BAM AD-SP-008-1G4/1R4-4	35
BAM01TR	BAM AD-SP-011-1G4/1N4-4	35
BAM01U0	BAM MC-XA-017-D30.0-1	35
BAM01UJ	BAM AD-SP-008-1G4/1G2-4	34
BAM0209	BAM AD-SP-008-1G4/M20X1.5-4	35
BCC		
BCC032F	BCC M415-0000-1A-003-PX0434-020	30
BCC032H	BCC M415-0000-1A-003-PX0434-050	30
BCC032J	BCC M415-0000-1A-003-PX0434-100	30
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BCC0332	BCC M425-0000-1A-014-PS0434-050	30
BCC0333	BCC M425-0000-1A-014-PS0434-100	30
BNI		
BNI0007	BNI IOL-709-000-K006	31
BNI0008	BNI IOL-710-000-K006	31
BSP		
BSP000F	BSP B002-EV002-D00A0B-S4	13
BSP000H	BSP B005-EV002-D00A0B-S4	13
BSP000J	BSP B010-EV002-D00A0B-S4	13
BSP000K	BSP B020-EV002-D00A0B-S4	13
BSP000L	BSP B050-EV002-D00A0B-S4	13
BSP000M	BSP B100-EV002-D00A0B-S4	13
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BSP0013	BSP B600-EV002-D00A0B-S4	13
BSP0014	BSP B002-EV002-D00A0B-S4	13
BSP0015	BSP B005-EV002-A02A0B-S4	13
BSP0016	BSP B010-EV002-A02A0B-S4	13
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BSP0026	BSP B100-EV003-D00A0B-S4	17
BSP0027	BSP B250-EV003-D00A0B-S4	17
BSP0028	BSP B400-EV003-D00A0B-S4	17
BSP0029	BSP B600-EV003-D00A0B-S4	17
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BSP0086	BSP V002-EV002-D00S1B-S4	15
BSP0087	BSP V010-EV002-D00S1B-S4	15
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BSP0089	BSP B005-EV002-D00S1B-S4	15
BSP008A	BSP B010-EV002-D00S1B-S4	15

Ordering code	Part number	Page
BSP008C	BSP B020-EV002-D00S1B-S4	15
BSP008E	BSP B050-EV002-D00S1B-S4	15
BSP008F	BSP B100-EV002-D00S1B-S4	15
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BSP009A	BSP B400-EV002-A02S1B-S4	15
BSP009C	BSP B600-EV002-A02S1B-S4	15
BSP00A7	BSP V002-EV003-A02S1B-S4	19
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BSP00HA	BSP B005-FV004-A06A1A-S4	25
BSP00HC	BSP B010-FV004-A06A1A-S4	25

Ordering code	Part number	Page
BSP00HE	BSP B020-FV004-A06A1A-S4	25
BSP00HF	BSP B050-FV004-A06A1A-S4	25
BSP00HH	BSP B100-FV004-A06A1A-S4	25
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BSP00J3	BSP V010-HV004-A06A1A-S4	25
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BSP00KH	BSP B100-KV004-A04A1A-S4	23
BSP00KJ	BSP B250-KV004-A04A1A-S4	23
BSP00KK	BSP B400-KV004-A04A1A-S4	23
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BSP00L0	BSP B400-HV004-A04A1A-S4	23
BSP00L1	BSP B600-HV004-A04A1A-S4	23

TecSupport – Your Added Value for Planning and Commissioning

Benefit from our manufacturing expertise

We support you during the project implementation, commissioning and integration

- Would you like to monitor and track production processes?
- Would you like to identify, check, monitor and optimize objects?
- Would you like to optimize and simplify your system wiring?

Our consultation for Balluff system components

- Vision sensors BVS for optical identification
- Industrial networking and connectivity for wiring and networking
- IO-Link – network technology for reliable data transfer and greater efficiency
- Industrial identification – RFID for transparency in material flow

We offer

- Decision guidance for selecting the correct product
- Diverse product and application advice
- Integration support
- Customer-specific product and commissioning training
- Intensive technical support during the entire phase of the project
- Taking over time-consuming project development

We are happy to help!

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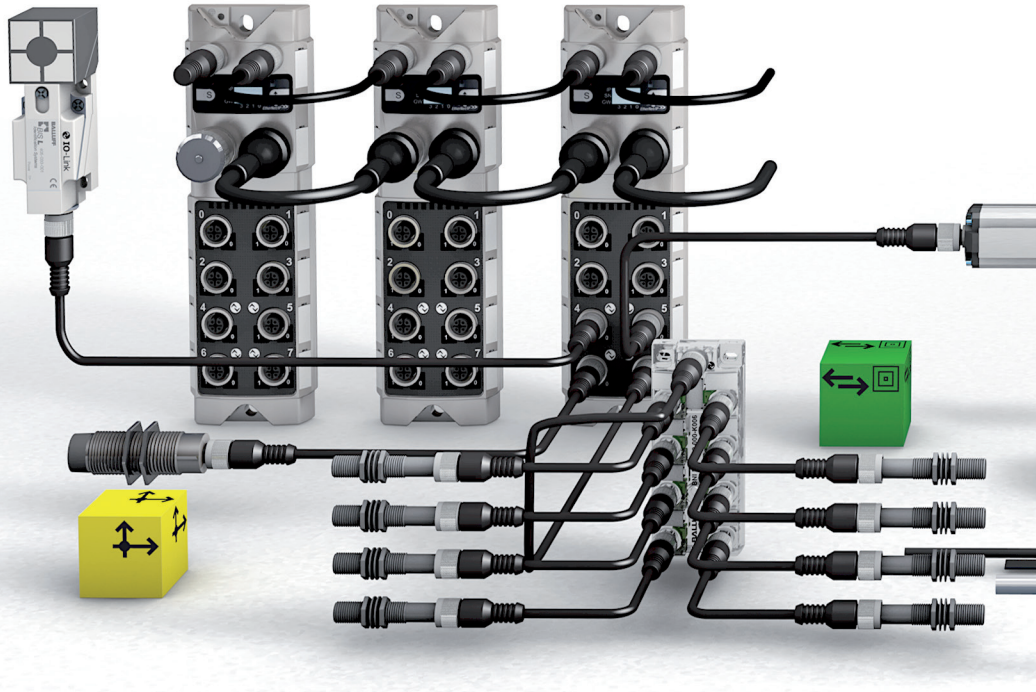


Selection
Integration
Training
Application
Industrial Identification
Project Support
Vision Sensors
IO-Link
Industrial Networking and Connectivity
Product
System Components
Decision Guidance

Services

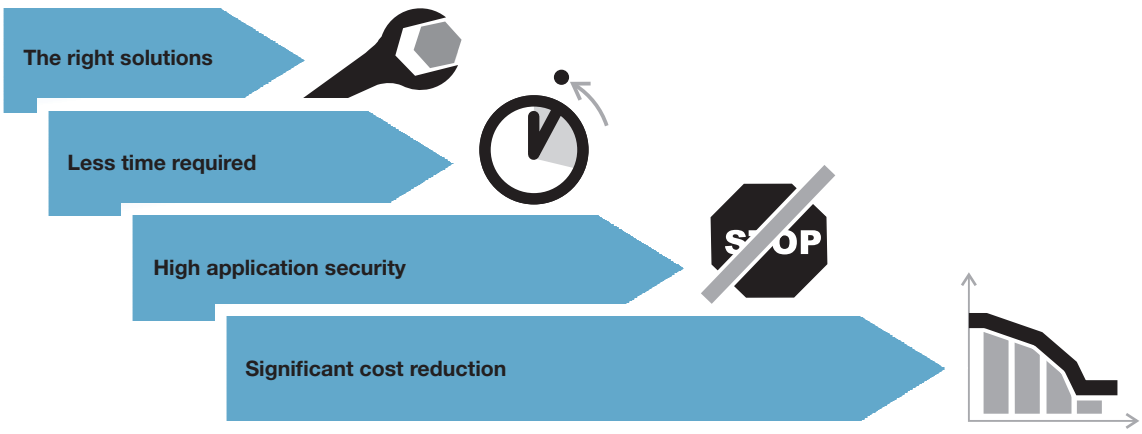
Customized. According to your specifications. In the best quality.

Balluff stands for highly efficient sensor technology, compact connection technology and an extensive range of accessories. We offer comprehensive services to support you, with customized solutions and individualized advice. We do this completely according to your specifications.

You receive our support over the entire life cycle of our products: Including the design and planning of your projects, testing and setup on site, and training and support. For an optimal implementation and significant planning security. This enables quick startup and an early start to production. This leads to maximum productivity and more cost-effectiveness. Learn about your options.

More information can be found in our Services brochure.

Application advice through our TecSupport Discuss your technical requirements. And take advantage of our expertise.	Real-world examples: ■ Selection of the correct identification procedure for an assembly line ■ IO-Link concept as a cost-effective alternative to conventional wiring ■ System consulting for radio frequency identification (RFID): identification of large steel pipes in adverse environments ■ Recognizing multiple containers on a pallet in goods receiving
Commissioning Faster start of production thanks to expert knowledge	Real-world examples: ■ Setting up an optical checkpoint with the vision sensor BVS ■ Consulting and support during the programming of RFID systems BIS ■ Installation and commissioning of a color detection application with the color sensor BFS
Fully customized products Specific versions according to your requirements: from preassembly to engineering services	Real-world examples: ■ Extending the housing of a high-pressure resistant inductive sensor BHS ■ Extra threads for the housing cover of a micropulse transducer BTL ■ Customer-specific holder for an RFID data carrier ■ Adaptation of the characteristics for analog sensors BAW
Training Make use of well-founded manufacturer knowledge. And benefit from application security.	■ **Professional sensor use:** Select operating principles, install sensors professionally and ensure the reliable operation of your application. ■ **Position and distance measurement:** This is how you make precise and wear-free measurements. ■ **RFID:** The right data at the right time at the right place. ■ **Vision sensor:** Using an image processing sensor, ensure manufacturing quality in three steps. ■ **Vision sensor identification:** Reliably identify data matrix codes with an image-processing sensor. ■ **Industrial networking with IO-Link:** Manage signals intelligently and cost-effectively.



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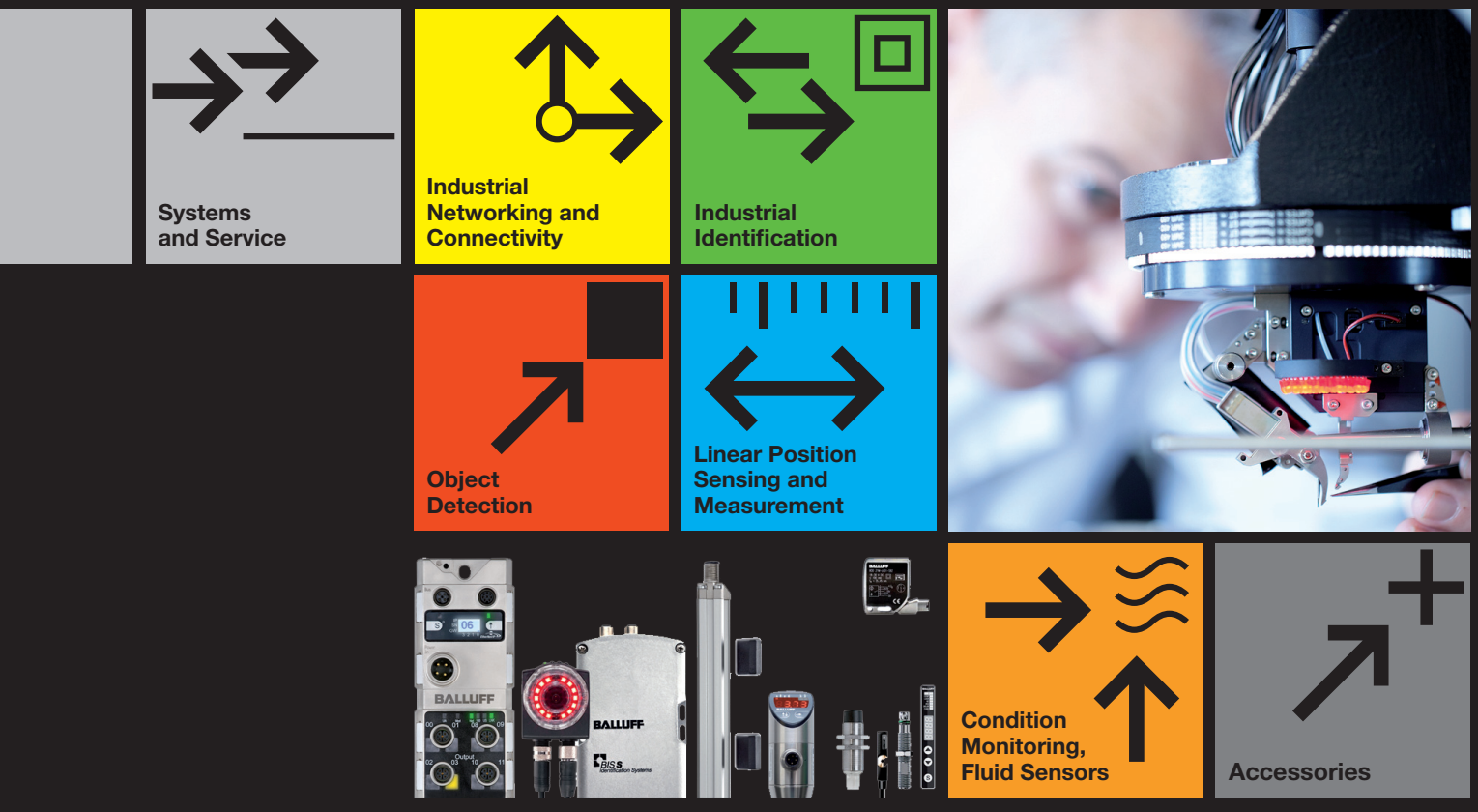

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