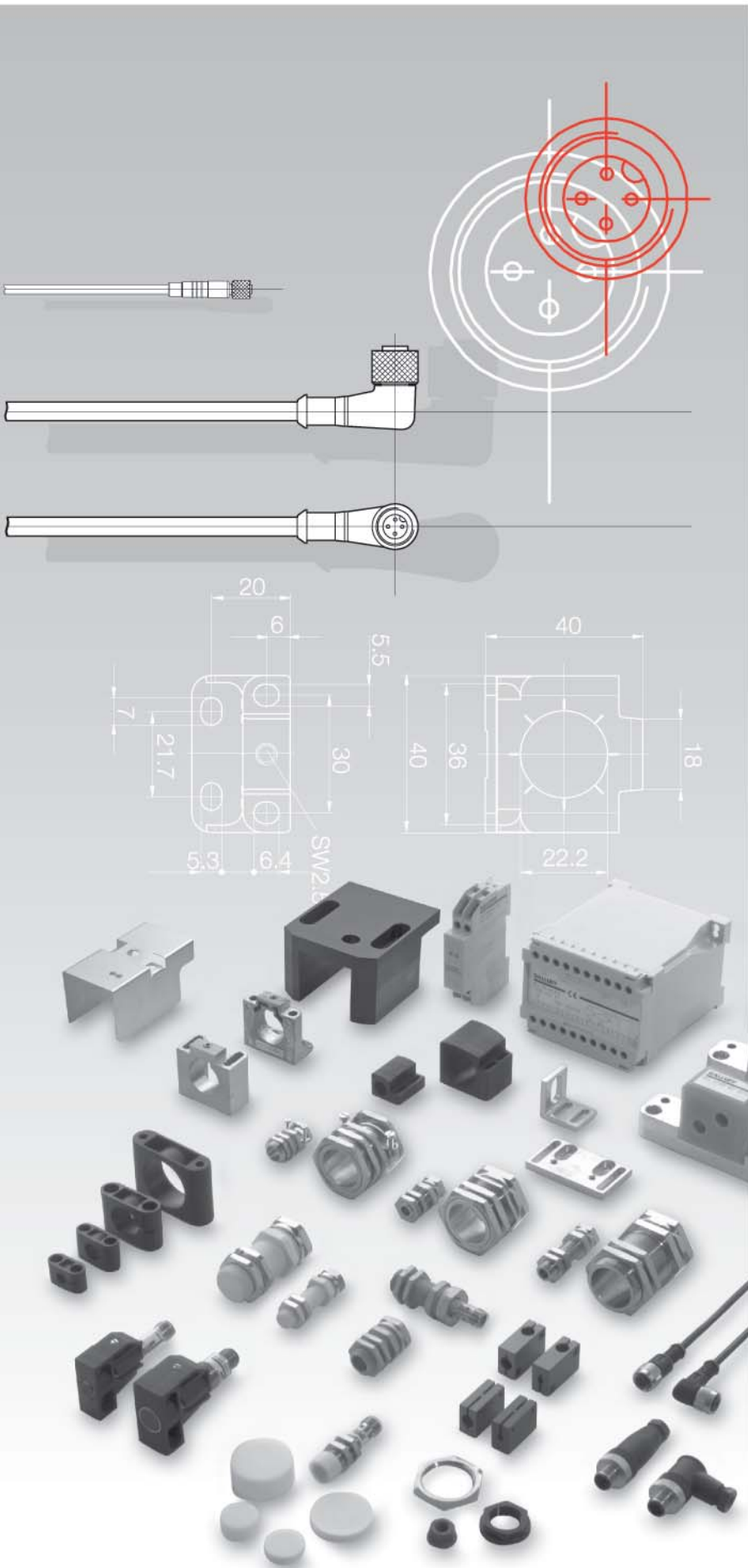


Accessories



- Connectors**
- 5.2 DC connectors
- 5.3 M5 connection (S26)
- 5.3 M8 connection (S49, S75)
- DC connection cable with M8 connector (S49, S75)
- 5.10 DC connection cables
- DC connectors MQ12 connection (S4)
- M12 connection (S4)
- 5.18 DC connectors for user assembly
- 5.22 AC/DC connectors M12 connection (S27)
- 5.23 DC-2-wire M12 connection (S220)

- Splitter boxes and accessories**
- 5.24 BSB splitter boxes M12, metal
- 5.26 BSB splitter boxes M12, plastic
- 5.29 BSB splitter boxes M8, plastic
- 5.30 Connectors
- 5.32 Screw plugs, Tee, adapters
- 5.34 BSB splitter boxes

- Electrical devices**
- 5.35 Pulse extender
- 5.36 Analog switching amplifiers
- 5.38 Power supplies
- 5.40 Testers
- 5.42 Signal adapter
- 5.45 Digital display

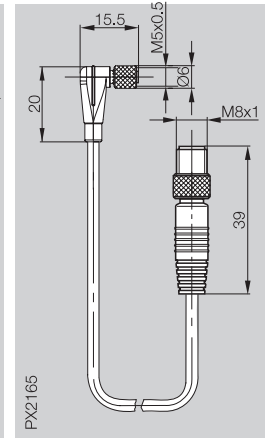
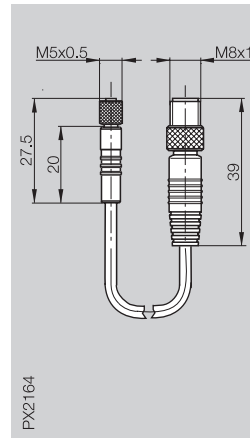
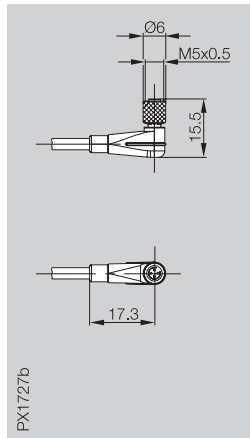
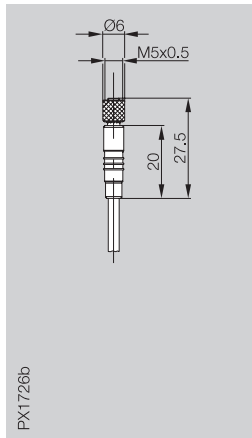
- Fasteners**
- 5.46 BMS Mounting System
- 5.58 Clamps, holders, mounting cuffs
- 5.65 Mounting brackets, reducing sleeve
- 5.66 Positive stops
- 5.67 Mounting clamps for row mounting of sensors
- 5.68 Mounting bracket, mounting socket and holding system for Unicomact
- 5.69 Weld protection and protective cover for Unicomact, mounting plate for Unisensor
- 5.70 Cover nuts, nuts, seal nut

- Tools**
- 5.74 BMF Hex Key, Important notes

5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Connector	BKS-B 25	BKS-B 26	BKS-B 25-_/GS49	BKS-B 26-_/GS49
Version	straight female	angle female	straight female/ straight male	angle female/ straight male
Application	Plug sensors S26	Plug sensors S26	Plug sensors S26	Plug sensors S26



no LED, NO	BKS-B 25-1-PU-03	BKS-B 26-1-PU-03	BKS-B 25-1/GS49-PU-01	BKS-B 26-1/GS49-PU-01
no LED, NC or NO				
no LED, complementary	BKS-B 25-3-PU-03	BKS-B 26-3-PU-03		
with LED, NC or NO PNP				
with LED, NC or NO NPN				

Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	3 m molded-on PUR	3 m molded-on PUR	1 m molded-on PUR	1 m molded-on PUR
No. of wires x cross-section	3x0.14 mm ² /4x0.14 mm ²	3x0.14 mm ² /4x0.14 mm ²	3x0.14 mm ²	3x0.14 mm ²
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature range T_a	-25...+85 °C	-25...+85 °C	-25...+85 °C	-40...+85 °C

View of female side				
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Other cable lengths and cable qualities on request.

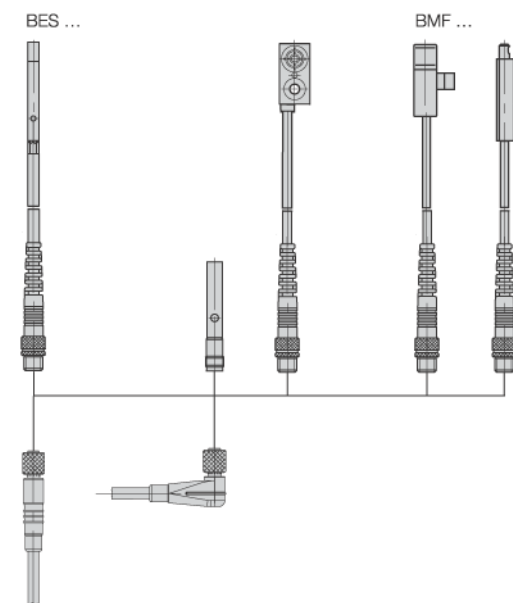
Ordering examples

PUR, Length 1 m = BKS-B 25-1/GS49-PU-01

PVC, Length 3 m = BKS-B 48-1-03

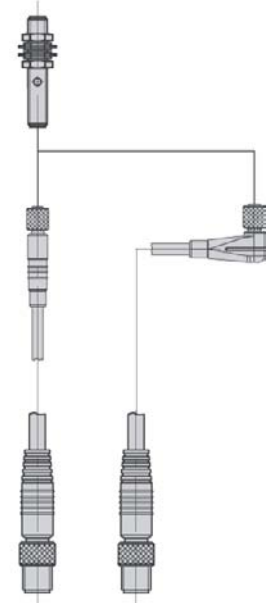
PUR, Length 3 m = BKS-B 48-1-PU-03

Sensors with connector
Ordering code endings S26



Connector with mounting thread
M5x0.5

Sensors with connector
Ordering code endings S25



Connection cable with mounting thread
M5x0.1/M8x1

BKS-B 25

BKS-B 26

BKS-B 25-1/GS49

BKS-B 26-1/GS49

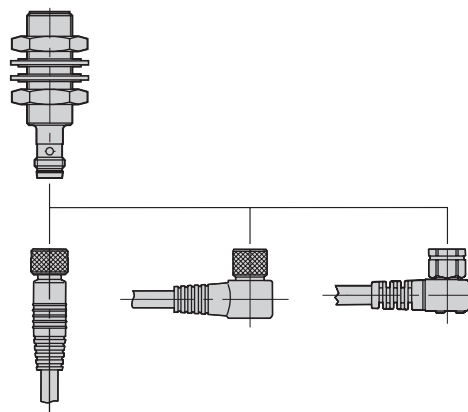
M8 Accessories

DC connectors
M8 connection (S49)

BKS-B 48 straight female	BKS-B 48 straight female	BKS-S 48 straight female	BKS-B 49 angle female	BKS-S 49 angle female
Plug sensors S49				
BKS-B 48-1-03		BKS-B 48-1-PU2-05		BKS-S 48-03
10...30 V DC 3 m molded-on PVC 3x0.25 mm ² IP 67 -20...+85 °C			10...30 V DC 5 m molded-on PUR 3x0.34 mm ² IP 67 -25...+120 °C	

Sensors with connector
Ordering code endings S49

Connector with mounting thread
M8x1



BKS-B 48/
BKS-S 48

BKS-B 49/
BKS-S 49

BKS-S 49E

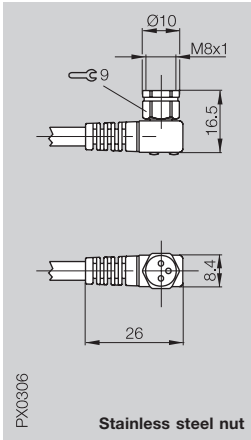
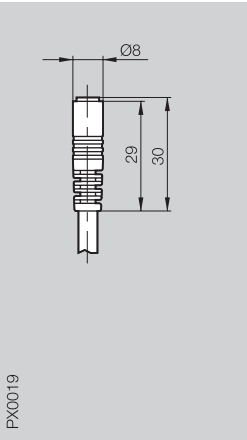
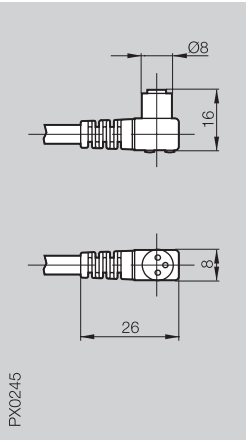
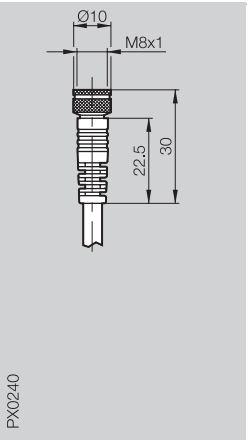
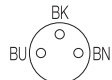
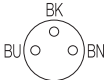
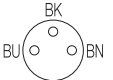

Function and color of the LED's

2 LED's: green = Power, yellow = Switching output status

5

Connectors

- Splitter boxes with accessories
- Electrical devices
- Fasteners
- Tools

Connector Version	BKS-S 49E angle female	BKS-S 41 straight female	BKS-S 40 angle female	BKS-S 74 straight female
Application	Plug sensors S49	Plug sensors S49	Plug sensors S49	Plug sensors S75
				
no LED, NC or NO		BKS-S 41-1-05	BKS-S 40-1-PU-03	
no LED, complementary				BKS-S 74-3-03
no LED, complementary shielded				
with LED, NC or NO PNP	BKS-S 49E-4-PU-03		BKS-S 40-4-PU-03	
with LED, NC or NO NPN			BKS-S 40-6-PU-03	
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	3 m molded-on PUR	5 m molded-on PVC	3 m molded-on PUR	3 m molded-on PVC
No. of wires x cross-section	3x0.34 mm ²	3x0.34 mm ²	3x0.34 mm ²	4x0.34 mm ²
Cable diameter min.				
Connection				
Degree of protection per IEC 60529	IP 67	IP 65	IP 65	IP 67
Ambient temperature range T_a	-25...+90 °C	-25...+90 °C	-25...+90 °C	-25...+90 °C
View of female/male side				

Other cable lengths and cable qualities on request.

Ordering examples

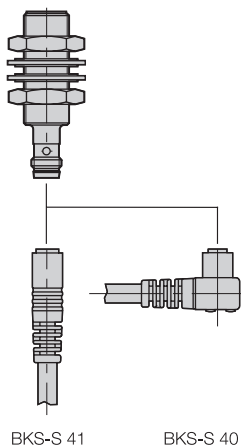
PVC, Length 3 m = BKS-S 41-1-03
PUR, Length 3 m = BKS-S 49E-4-PU-03

Function and color of the LED's

2 LED's: green = Power, yellow = Switching output status

Sensors with connector
Ordering code endings S49

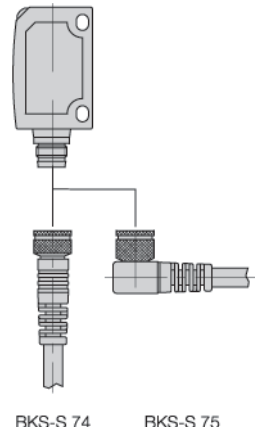
Connector with mounting thread M8x1



BKS-S 41 BKS-S 40

Sensors with connector
Ordering code endings S75

Connector with mounting thread M8x1



BKS-S 74 BKS-S 75

M8 Accessories

DC connectors, connectors for user assembly
M8 connection (S49, S75)

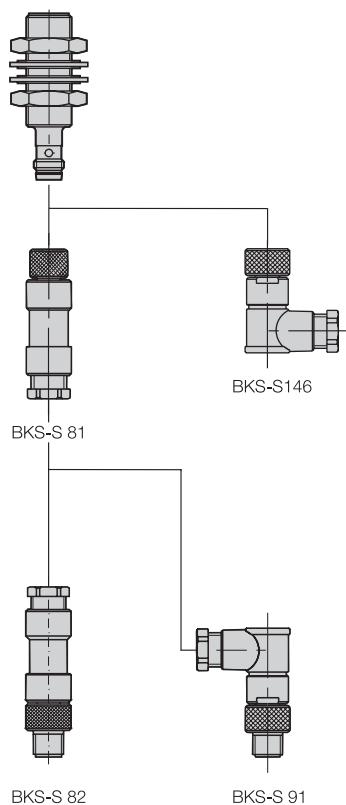
BKS-S 75 angle female	BKS-S 81-00 straight female	BKS-S146-00 angle female	BKS-S 82-00 straight male	BKS-S 91-00 angle male
Plug sensors S75	Plug sensors S49	Plug sensors S49	Female S49	Female S49
<p>PX0910</p>	<p>PX1234</p>	<p>PX1781</p>	<p>PX1233a</p>	<p>PX1608</p>
BKS-S 75-3-03 BKS-S 75-14-03*	BKS-S 81-00	BKS-S146-00	BKS-S 82-00	BKS-S 91-00
10...30 V DC 3 m molded-on PVC 4x0.34 mm ²	10...30 V DC for user assembly 3x max. 0.25 mm ² max. Ø 5 mm	10...30 V DC for user assembly 3x max. 0.25 mm ² max. Ø 5 mm	10...30 V DC for user assembly 3x max. 0.25 mm ² max. Ø 5 mm	10...30 V DC for user assembly 3x max. 0.25 mm ² max. Ø 5 mm
IP 67 -25...+90 °C	Solder IP 67 -40...+85 °C	Solder IP 67 -25...+100 °C**	Solder IP 67 -40...+85 °C	Solder IP 67 -40...+85 °C

*Shield up to the cable-connector body transition!

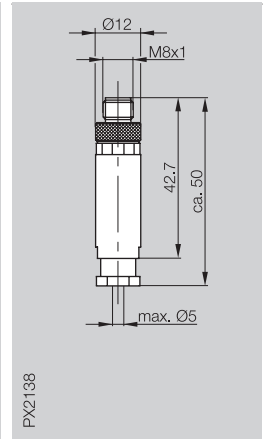
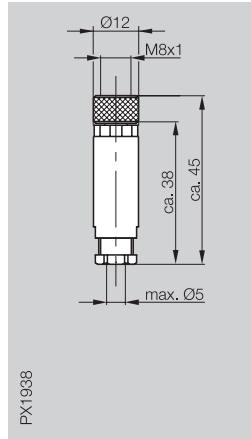
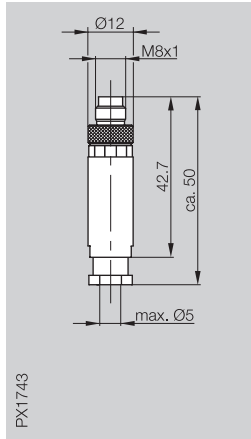
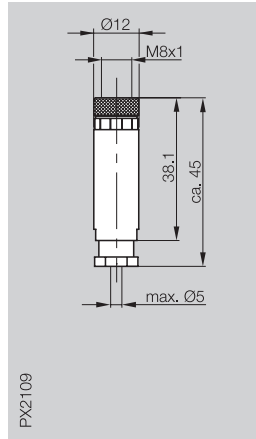
**120 °C (max. 100 h)

Sensors with connector
Ordering code endings S49

Connector for user assembly with thread M8x1



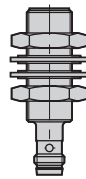
Connector	BKS-S142-00	BKS-S141-00	BKS-S149-00	BKS-S150-00
Version	straight female	straight male	straight female	straight male
Application	Plug sensors S49	Female S49	Plug sensors S75	Female S75



no LED, NC or NO	BKS-S142-00	BKS-S141-00	BKS-S149-00	BKS-S150-00
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	for user assembly	for user assembly	for user assembly	for user assembly
No. of wires × cross-section	3×0.14...0.5 mm ²	3×0.14...0.5 mm ²	4×0.14...0.5 mm ²	4×0.14...0.5 mm ²
Cable diameter min.	max. Ø 5 mm	max. Ø 5 mm	max. Ø 5 mm	max. Ø 5 mm
Connection	Screw terminal	Screw terminal	Screw terminal	Screw terminal
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature range T_a	-40...+85 °C	-40...+85 °C	-40...+85 °C	-40...+85 °C



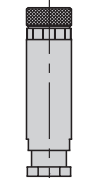
Sensors with connector
Ordering code endings S49



Sensors with connector
Ordering code endings S75



Connector for user assembly with thread M8×1

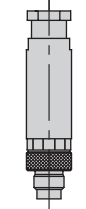


BKS-S142

Connector for user assembly with thread M8×1



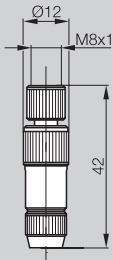
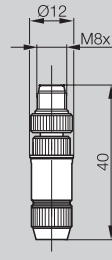
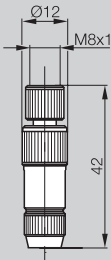
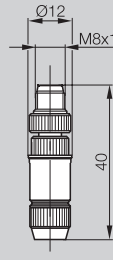




BKS-S149



BKS-S141

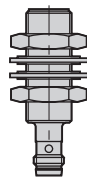


BKS-S150

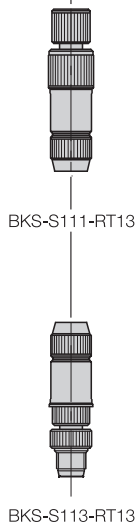
BKS-S111-RT13 straight female	BKS-S113-RT13 straight male	BKS-S216-RT14 straight female	BKS-S218-RT14 straight male
Plug sensors S49	Female S49	Plug sensor S75	Female S75
 <p>PX2093 Quick-connect system</p>	 <p>PX2094 Quick-connect system</p>	 <p>PX2093 Quick-connect system</p>	 <p>PX2094 Quick-connect system</p>
BKS-S111-RT13	BKS-S113-RT13	BKS-S216-RT14	BKS-S218-RT14
10...30 V DC for user assembly 3x0.14...0.34 mm ² Ø 3.2...5.4 mm Insulation displacement IDC IP 67 -25...+85 °C*	10...30 V DC for user assembly 3x0.14...0.34 mm ² Ø 3.2...5.4 mm Insulation displacement IDC IP 67 -25...+85 °C*	10...30 V DC for user assembly 4x0.14...0.34 mm ² Ø 3.2...5.4 mm Insulation displacement IDC IP 67 -25...+85 °C*	10...30 V DC for user assembly 4x0.14...0.34 mm ² Ø 3.2...5.4 mm Insulation displacement IDC IP 67 -25...+85 °C*
			

*Assembling the cable to the connector over temperature range -5...+50 °C

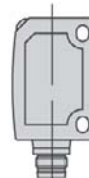
Sensors with connector
Ordering code endings S49



Connector for user assembly with thread M8x1



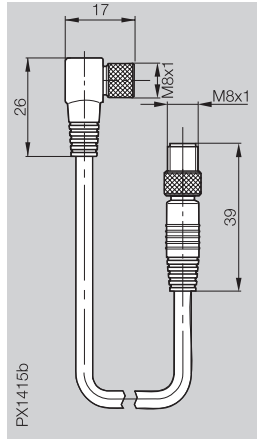
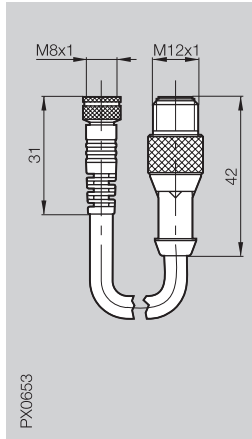
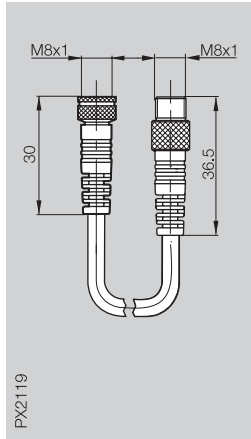
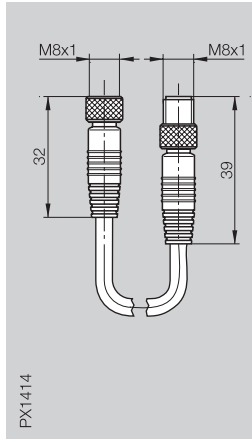
Sensors with connector
Ordering code endings S75



Connector for user assembly with thread M8x1

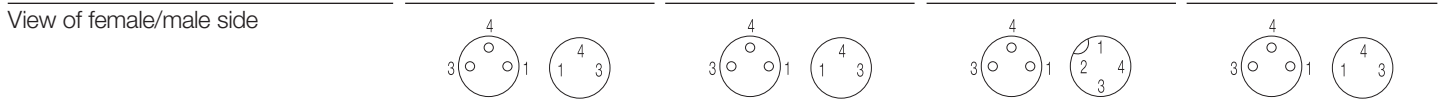


Connection cable	BKS-B 48-1/GS49	BKS-S 48-1/GS49	BKS-S 48-1/GS4	BKS-B 49-1/GS49
Version	straight female/ straight male	straight female/ straight male	straight female/ straight male	angle female/ straight male
Application	Plug sensors S49	Plug sensors S49	Plug sensors S49	Plug sensors S49



no LED, NO			BKS-S 48-1/GS4-PU-01	
no LED, NC or NO				
with LED, NO	PNP			
no LED, 3 pins				
no LED, 4 pins				

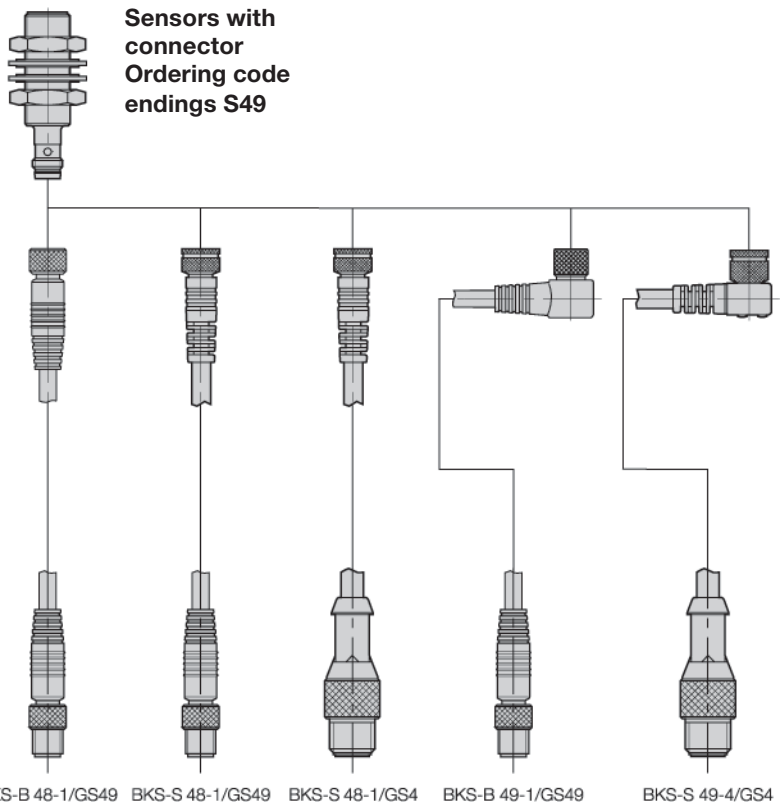
Supply voltage U _B	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	1 m molded-on PUR	1 m molded-on PUR	1 m molded-on PUR	1 m molded-on PUR
No. of wires x cross-section	3x0.25 mm ²	3x0.34 mm ²	3x0.34 mm ²	3x0.25 mm ²
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature range T _a	-25...+85 °C	-25...+80 °C	-25...+90 °C	-40...+85 °C



Other cable lengths and cable qualities on request.

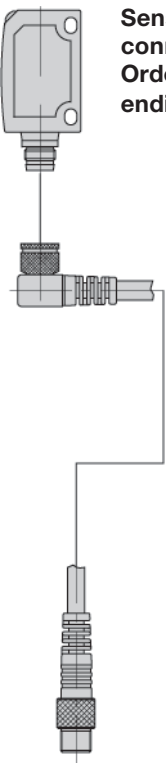
Ordering example

PUR, length 1 m = BKS-S 48-1/GS49-PU-01



BKS-S 49-4/GS49 angle female/ straight male Plug sensors S49	BKS-S 49-4/GS4 angle female/ straight male Plug sensors S49	BKS-S 75-1/GS49 angle female/ straight male Plug sensors S75	BKS-S 75-3/GS4 angle female/ straight male Plug sensors S75	BKS-S 74-1/GS49 straight female/ straight male Plug sensors S75
BKS-S 49-4/GS49-PU-01	BKS-S 49-4/GS4-PU-01	BKS-S 75-1/GS49-PU-00,1	BKS-S 75-3/GS4-PU-00,5	BKS-S 74-1/GS49-PU-01
10...30 V DC 1 m molded-on PUR 3x0.34 mm ² IP 67 -25...+80 °C	10...30 V DC 1 m molded-on PUR 3x0.34 mm ² IP 67 -25...+90 °C	10...30 V DC 0.1 m molded-on PUR 3x0.34 mm ² IP 67 -25...+80 °C	10...30 V DC 0.5m molded-on PUR 4x0.34 mm ² IP 67 -25...+80 °C	10...30 V DC 1 m molded-on PUR 4x0.34 mm ² IP 67 -25...+80 °C

Sensors with connector
Ordering code
endings S75



BKS-S 75-1/GS49

Function and color of the LED's

2 LED's: green = Power, yellow = Switching output status

The first quick-connect system requiring no changes on the sensor side!

There is a whole range of quick-connect systems for M12 connectors on the market, but they all have the same problem. To truly make use of the benefits of the system, you have to make changes to the mating piece. Different systems mean different mating pieces, since the systems are of course not compatible with each other. This makes things difficult for the customer and his applications.

The new MQ12 eliminates this problem completely. MQ12 can be used for any commonly available M12 sensor, no ifs, buts or maybes!

Simply plug it in and fix with a quarter turn – that's it! This means the system can be

directly inserted in existing applications and is a 1:1 replacement for today's standard cables. The MQ12 is advantageous especially in applications for warehousing, assembly and conveying, where large numbers of sensors are used.

By reducing the connection time by up to 80%, the time expenditure for the overall installation is drastically reduced.

Technical benefits

- High shock and vibration resistance
- Degree of protection IP 67
- Available for various cable materials (PUR, PVC)

Connector	
Version	
Application	

no LED,	NO	
no LED,	complementary	
with LED,	NO	
with LED,	complementary	

Supply voltage U_B	
Cable	
No. of wires x cross-section	
Degree of protection per IEC 60529	
Ambient temperature range T_a	

View of female side

Other cable lengths and cable qualities on request.

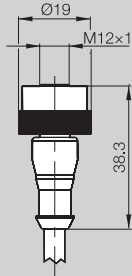
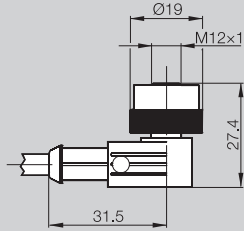
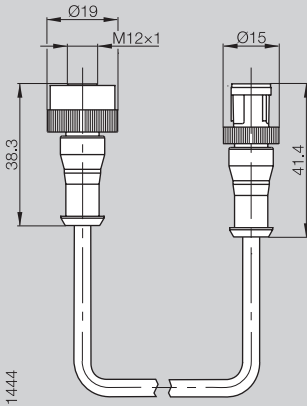
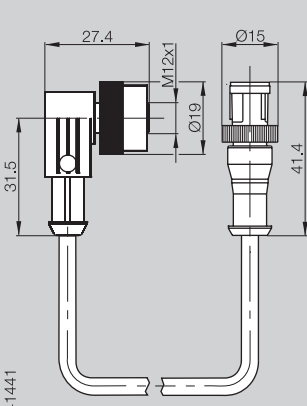
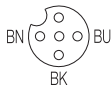
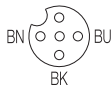
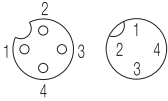
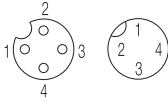
Ordering example

PUR, length 1 m = BKS-S212-1/S214-PU-01
PUR, length 2 m = BKS-S213-3-PU-02



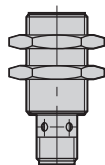
Quick-Connect System MQ12 Accessories

DC connectors,
DC connection cables
MQ12 connection (S4)

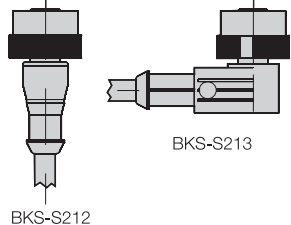
BKS-S212 straight female	BKS-S213 angle female	BKS-S212-_/S214 straight female/ straight male	BKS-S213-_/S214 angle female/ straight male
Plug sensors S4	Plug sensors S4	Plug sensors S4	Plug sensors S4
			
BKS-S212-1-PU-02 BKS-S212-3-PU-02	BKS-S213-1-PU-02 BKS-S213-3-PU-02	BKS-S212-1/S214-PU-01 BKS-S212-3/S214-PU-01	BKS-S213-3/S214-PU-01 BKS-S213-4/S214-PU-01 BKS-S213-8/S214-PU-01
max. 250 V AC/DC 2 m molded-on PUR 3x0.34 mm ² /4x0.25 mm ² IP 65/IP 67* -20...+80 °C	max. 250 V AC/DC 2 m molded-on PUR 3x0.34 mm ² /4x0.25 mm ² IP 65/IP 67* -20...+80 °C	10...30 V DC 1 m molded-on PUR 3x0.34 mm ² IP 65/IP 67* -20...+80 °C	10...30 V DC 1 m molded-on PUR 3x0.34 mm ² /4x0.25 mm ² IP 65/IP 67* -20...+80 °C
			

*when plugged together/locked

Sensors with connector
Ordering code endings S4



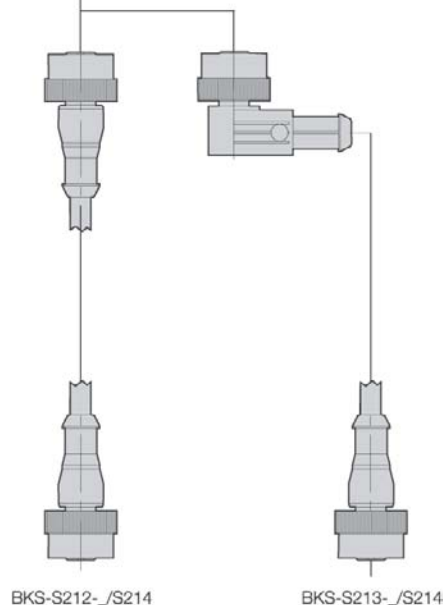
Connector with mounting thread
M12x1



Sensors with connector
Ordering code endings S4



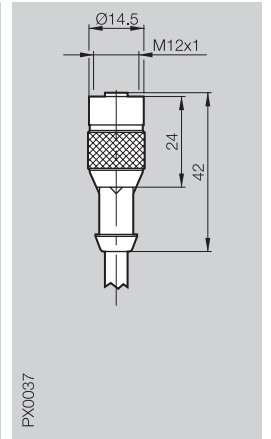
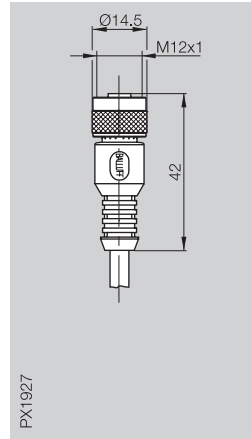
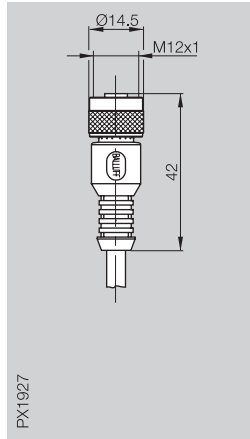
Connection cable with mounting thread
M12x1/M12x1



5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Connector	BKS-B 19	BKS-B 19	BKS-S 19
Version	straight female	straight female	straight female
Application	Plug sensors S4	Plug sensors S4	Plug sensors S4



no LED, NO	BKS-B 19-1-03	BKS-B 19-1-PU2-03	BKS-S 19-1-PU-03
no LED, NC			
no LED, complementary	BKS-B 19-3-05		BKS-S 19-3-PU-03
with 2 LED's, NO, PNP	BKS-B 19-4-05		BKS-S 19-4-PU-03
with 2 LED's, NC, PNP			
with 2 LED's, NO, NPN			
with 2 LED's, NC, NPN			
with 2 LED's, complementary PNP			BKS-S 19-8-PU-03
with 2 LED's, complementary NPN			BKS-S 19-9-PU-03
with 3 LED's, complementary PNP			
no LED, NO, 2-pin, non-polarized			BKS-S 19-11-PU-03
no LED, NC, 2-pin, polarized/non-polarized			BKS-S 19-12-PU-05
no LED, NO, 2 pins, polarized			BKS-S 19-13-PU-05
no LED, complementary shielded			BKS-S 19-14-PU-05*

Supply voltage U_B	10...30 V DC	10...55 V DC	10...30 V DC
Cable	3 m/5 m molded-on PVC	3 m molded-on PUR	3 m/5 m molded-on PUR
No. of wires × cross-section	3×0.34 mm ² /4×0.25 mm ²	3×0.34 mm ²	3×0.34 mm ² /4×0.34 mm ²
Degree of protection per IEC 60529	IP 67	IP 67	IP 68 per BWN Pr. 20
Ambient temperature range T_a	-25...+85 °C	-25...+120 °C	-25...+70 °C

View of female side			
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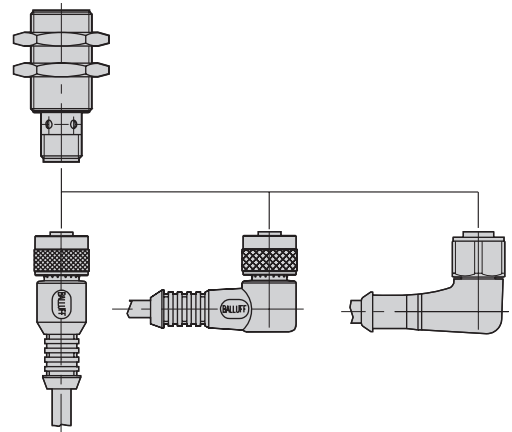
Other cable lengths and cable qualities on request.

Ordering examples

PVC, length 3 m = BKS-B 19-1-03
PUR, length 3 m = BKS-S 20-1-PU-03

Sensors with connector
Ordering code endings S4

Connector with mounting thread
M12×1



BKS-B 19/
BKS-S 19

BKS-B 20/
BKS-S 20

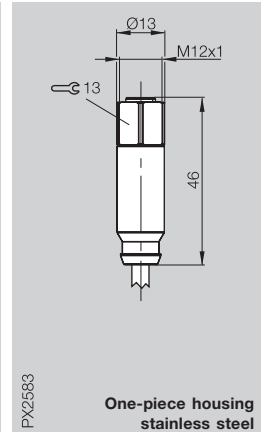
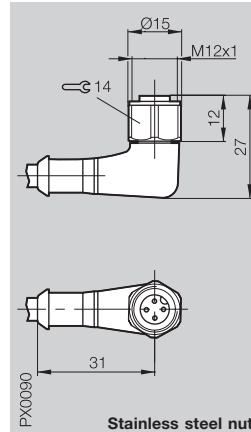
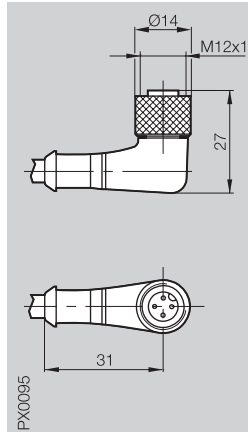
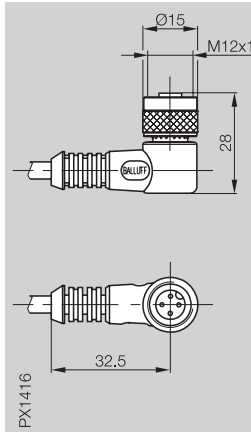
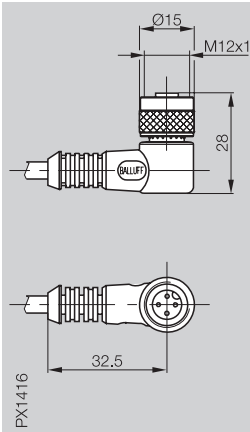
BKS-S 20E

*Shield through knurled ring!

M12 Accessories

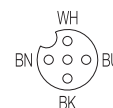
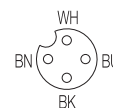
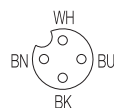
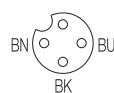
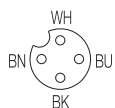
DC connectors
M12 connection (S4)

BKS-B 20 angle female	BKS-B 20 angle female	BKS-S 20 angle female	BKS-S 20E angle female	BKS-S260-3-02 straight female
Plug sensors S4	Plug sensors S4	Plug sensors S4	Plug sensors S4	Plug sensors S4



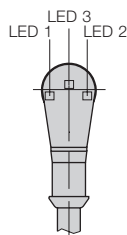
BKS-B 20-1-03	BKS-B 20-1-PU2-03	BKS-S 20-1-PU-03		
		BKS-S 20-2-PU-05		
		BKS-S 20-3-PU-03		BKS-S260-3-02
BKS-B 20-4-03		BKS-S 20-4-PU-03	BKS-S 20E-4-PU-03	
		BKS-S 20-5-PU-03		
		BKS-S 20-6-PU-03		
		BKS-S 20-7-PU-05		
BKS-B 20-8-PU-03		BKS-S 20-8-PU-03	BKS-S 20E-8-PU-03	
		BKS-S 20-9-PU-05		
		BKS-S 20-10-PU-05	BKS-S 20E-10-PU-03	
		BKS-S 20-11-PU-03		
		BKS-S 20-12-PU-05		
		BKS-S 20-13-PU-05		

10...30 V DC	10...55 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3 m molded-on PVC/PUR	3 m molded-on PUR	3 m/5 m molded-on PUR	3 m molded-on PUR	2 m molded-on PVC
3x0.34 mm ² /4x0.25 mm ²	3x0.34 mm ²	3x0.34 mm ² /4x0.34 mm ²	3x0.34 mm ² /4x0.34 mm ²	4x0.34 mm ²
IP 67	IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68/IP 69K*
-25...+85 °C	-25...+120 °C	-25...+70 °C	-25...+90 °C	-40...+85 °C**



*when plugged together/locked

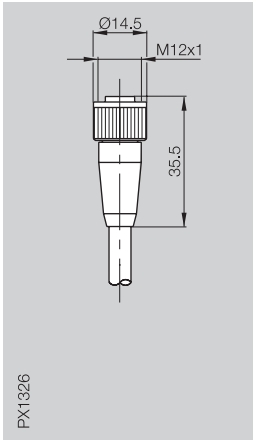
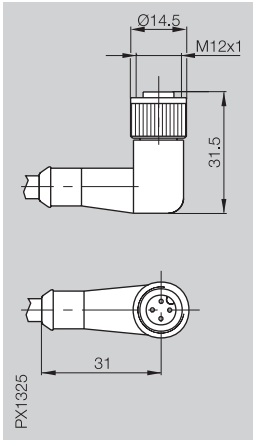
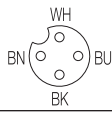
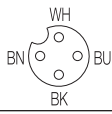
**short-time 105 °C



Function and color of the LED's

- LED 1: yellow (NO)
- LED 2: green (Power)
- LED 3: white (NC)

2 LED's: green = Power, yellow = Switching output status
3 LED's: green = Power,
2x yellow = switching output status (1x NC, 1x NO)

Connector Version	BKS-S 23 straight female	BKS-S 24 angle female			
Application	Plug sensors S4	Plug sensors S4			
					
no LED, NO	BKS-S 23-1-05				
no LED, complementary	BKS-S 23-3-05	BKS-S 24-3-03			
no LED, 5 pins					
no LED, 8-pin shielded					
Supply voltage U _B	10...30 V DC	10...30 V DC			
Cable	5 m molded-on PVC	3 m molded-on PVC			
No. of wires × cross-section	3×0.34 mm ² /4×0.25 mm ²	3×0.34 mm ² /4×0.25 mm ²			
Degree of protection per IEC 60529	IP 67	IP 67			
Ambient temperature range T _a	-40...+105 °C	-40...+105 °C			
View of female side					

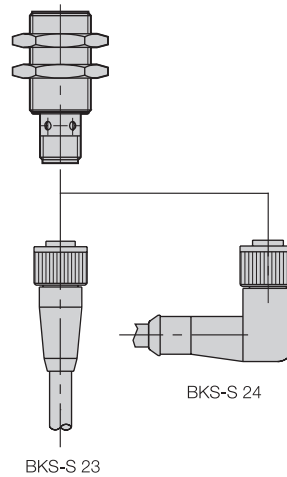
Other cable lengths and cable qualities on request.

Ordering examples

PVC, length 3 m = BKS-S 23-1-03
PUR, length 3 m = BKS-S139-PU-03

Sensors with connector
Ordering code endings S4

Connector with mounting thread
M12×1



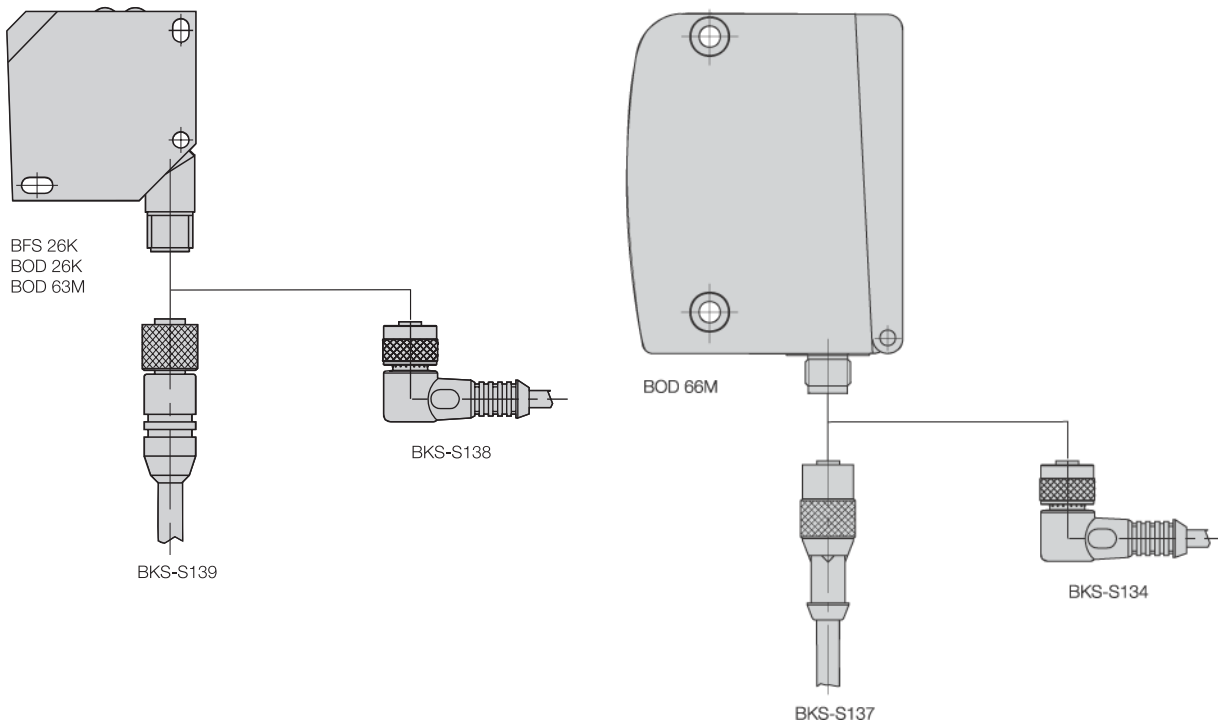
M12 Accessories

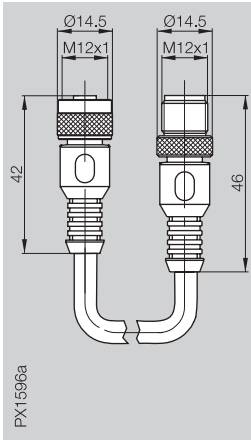
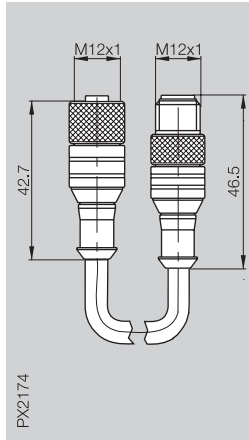
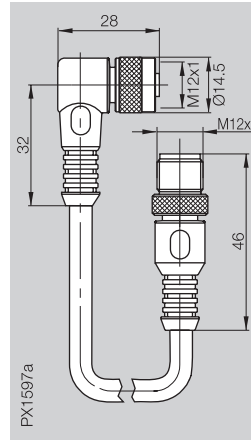
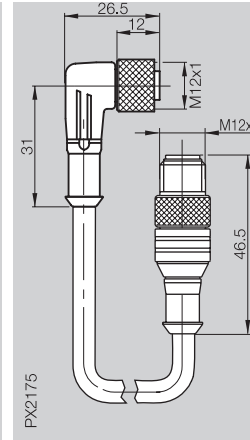
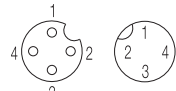
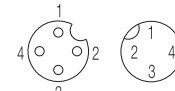
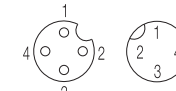
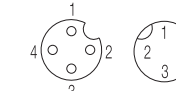
DC connectors
M12 connection

BKS-S134 angle female	BKS-S137 straight female	BKS-S139 straight female	BKS-S138 angle female
Plug sensors S92	Plug sensors S92	Plug sensors S115	Plug sensors S115
BKS-S134-17-05	BKS-S137-17-PU-05	BKS-S139-PU-05*	BKS-S138-PU-05**
10...30 V DC 5 m molded-on PVC 5x0.25 mm ² IP 67 -25...+85 °C	10...30 V DC 5 m molded-on PUR 5x0.25 mm ² IP 67 -25...+85 °C	10...30 V DC 5 m molded-on PUR 8x0.25 mm ² IP 67 -25...+90 °C	30 V AC/36 V DC 5 m molded-on PUR 8x0.25 mm ² IP 67 -25...+80 °C

*Shield through knurled ring!

**Shield up to the cable-connector body transition!



Connection cable	BKS-B 19-_/GS4	BKS-S 19-_/GS4	BKS-B 20-_/GS4	BKS-S 20-_/GS4
Version	straight female/ straight male	straight female/ straight male	right-angle female/ straight male	right-angle female/ straight male
Application	Plug sensors S4	Plug sensors S4	Plug sensors S4	Plug sensors S4
				
no LED, NO	BKS-B 19-1/GS4-PU-01	BKS-S 19-1/GS4-PU-01	BKS-B 20-3/GS4-PU-01	BKS-S 20-3/GS4-PU-01
no LED, complementary	BKS-B 19-3/GS4-PU-01	BKS-S 19-3/GS4-PU-01	BKS-B 20-4/GS4-PU-01	BKS-S 20-4/GS4-PU-01
with LED, NO, PNP				
Supply voltage U _B	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	1 m molded-on PUR	1 m molded-on PUR	1 m molded-on PUR	1 m molded-on PUR
No. of wires × cross-section	3×0.34 mm ² /4×0.25 mm ²	3×0.34 mm ² /4×0.25 mm ²	3×0.34 mm ² /4×0.25 mm ²	3×0.34 mm ² /4×0.25 mm ²
Degree of protection per IEC 60529	IP 67	IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20
Ambient temperature range T _a	-25...+85 °C	-25...+90 °C	-25...+85 °C	-25...+90 °C
View of female/male side				

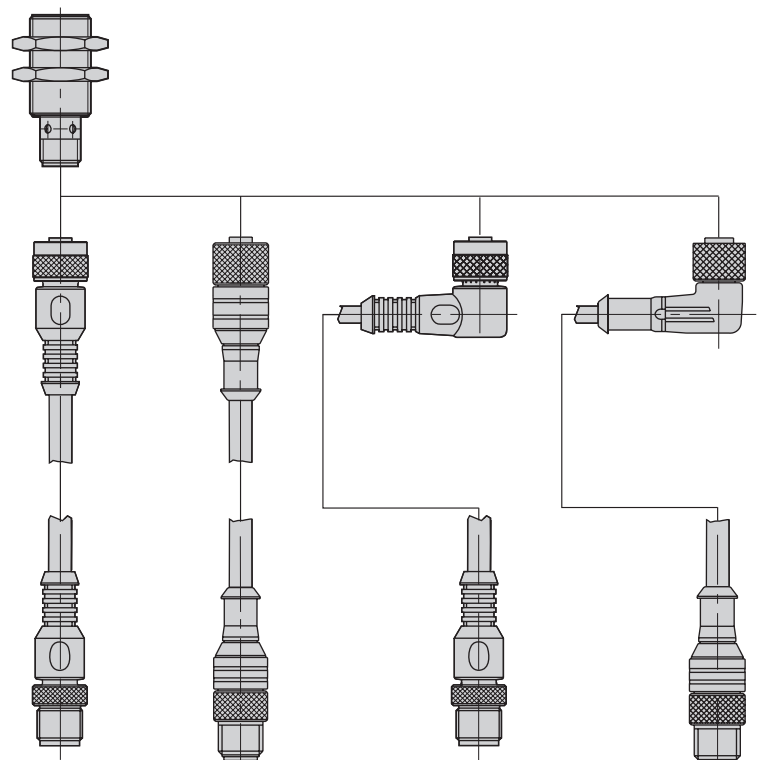
Other cable lengths and cable qualities on request.

Ordering example

PUR, length 1 m = BKS-S 20-3/GS4-PU-01

Sensors with connector
Ordering code endings S4

Connection cable with mounting thread
M12×1



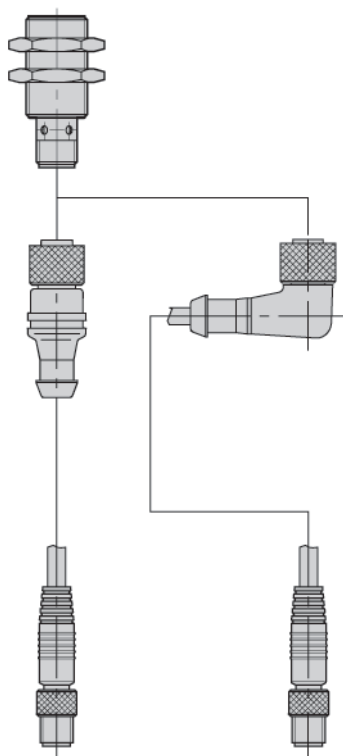
BKS-B 19-_/GS4

BKS-S 19-_/GS4

BKS-B 20-_/GS4

BKS-S 20-_/GS4

BKS-S 19-_/GS49 straight female/ straight male Plug sensors S4	BKS-S 20-_/GS49 right-angle female/ straight male Plug sensors S4			
BKS-S 19-4/GS49-PU-01	BKS-S 20-4/GS49-PU-01			
10...30 V DC 1 m molded-on PUR 3x0.34 mm ² IP 67 -25...+80 °C	10...30 V DC 1 m molded-on PUR 3x0.34 mm ² IP 67 -25...+80 °C			

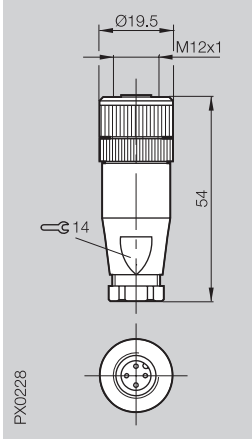
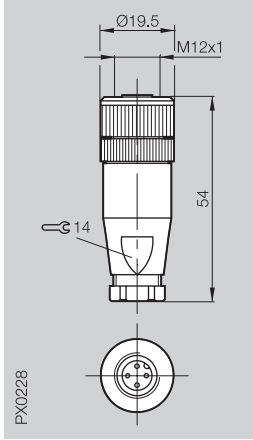
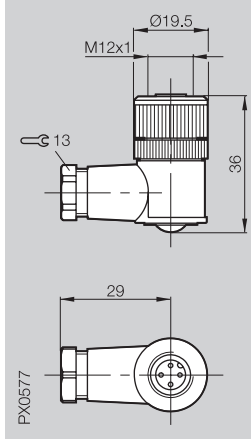
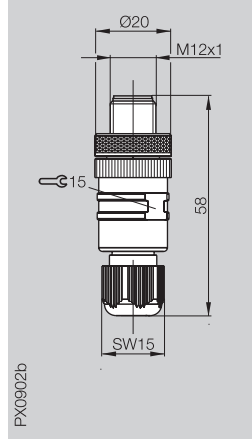
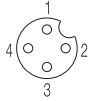
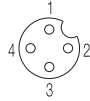
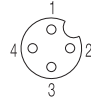



BKS-B 19-_/GS49

BKS-S 20-_/GS49

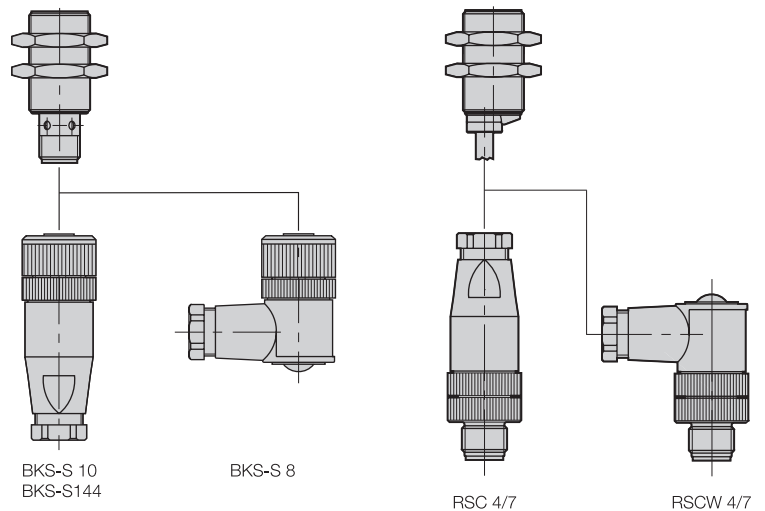
Function and color of the LED's

2 LED's: green = Power, yellow = Switching output status

Connector Version	BKS-S 10 straight female	BKS-S144-00 straight female	BKS-S 8 angle female	RSC 4/7 straight male
Application	Plug sensors S4	Plug sensors S4	Plug sensors S4	female S4
				
no LED, complementary	BKS-S 10-3	BKS-S144-00	BKS-S 8-3	RSC 4/7
with LED, NO, PNP	BKS-S 10-4		BKS-S 8-4	
with LED, NO, NPN	BKS-S 10-6		BKS-S 8-6	
Supply voltage U _B	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	for user assembly	for user assembly	for user assembly	for user assembly
No. of wires × cross-section	3/4× max. 0.75 mm ²	3/4× max. 0.75 mm ²	3/4× max. 0.75 mm ²	3/4× max. 0.75 mm ²
Cable diameter min.	Ø 4...6 mm	Ø 4...6 mm	Ø 4...6 mm	Ø 4...6 mm
Connection	Screw terminals	Screw terminals	Screw terminals	Screw terminals
Degree of protection per IEC 60529	IP 67	IP 68, 1 m, 30 days	IP 67	IP 67
Ambient temperature range T _a	-40...+85 °C	-25...+100 °C	-40...+85 °C	-25...+90 °C
View of female/male side				

Sensors with connector
Ordering code endings S4
or sensors with cable

Connector for user assembly
with connecting thread M12×1



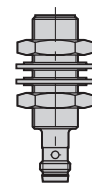
M12 Accessories

DC connectors
for user assembly
M12 connection (S4)

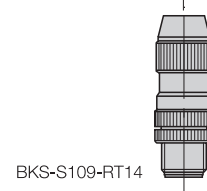
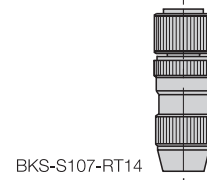
	RSCW 4/7 angle male	RSC 5/7 straight male	RSCW 5/7 angle male	BKS-S107-RT14 straight female	BKS-S109-RT14 straight male
	female S4	female S4	female S4	Plug sensors S4	female S4
	RSCW 4/7	RSC 5/7	RSCW 5/7	BKS-S107-RT14	BKS-S109-RT14
	10...30 V DC for user assembly 3/4× max. 0.75 mm ² Ø 4...6 mm Screw terminals IP 67 -25...+90 °C	10...30 V DC for user assembly 5× max. 0.75 mm ² Ø 3...6.5 mm Screw terminals IP 67 -25...+90 °C	10...30 V DC for user assembly 5× max. 0.75 mm ² Ø 3...6.5 mm Screw terminals IP 67 -25...+90 °C	10...30 V DC for user assembly 3/4× 0.14...0.34 mm ² Ø 4...5.1 mm Insulation displacement IDC IP 67 -25...+85 °C*	10...30 V DC for user assembly 3/4× 0.14...0.34 mm ² Ø 4...5.1 mm Insulation displacement IDC IP 67 -25...+85 °C*

*Assembling the cable to the connector over temperature range -5...+50 °C

Sensors with connector
Ordering code endings S4

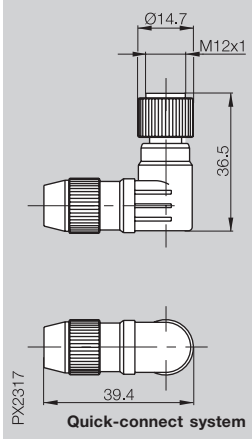
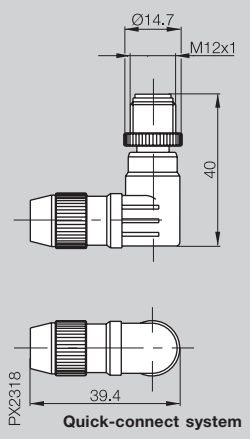
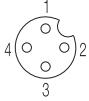



Connectors for user assembly with connecting thread M12×1



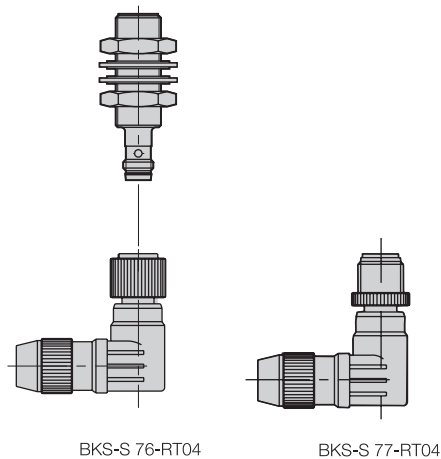
5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Connector	BKS-S 76-RT04	BKS-S 77-RT04			
Version	angle female	angle male			
Application	Plug sensors S4	Plug sensors S4			
					
no LED, complementary	BKS-S 76-RT04	BKS-S 77-RT04			
Supply voltage U _B	10...30 V DC	10...30 V DC			
Cable	for user assembly	for user assembly			
No. of wires × cross-section	3/4 × 0.25...0.5 mm ²	3/4 × 0.25...0.5 mm ²			
Cable diameter min.	Ø 4...5.1 mm	Ø 4...5.1 mm			
Connection	Insulation displacement	Insulation displacement			
Degree of protection per IEC 60529	IP 67	IP 67			
Ambient temperature range T _a	-25...+85 °C	-25...+85 °C			
View of female/male side					

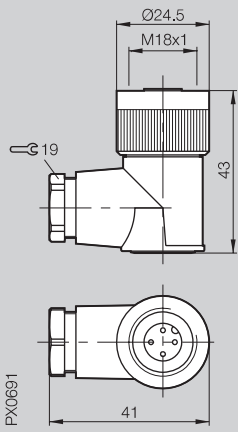
Sensors with connector
Ordering code endings S4

Connector for user assembly
with connecting thread M12×1



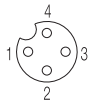
BKS-S 7-1
angle female

BES 516-300-S203

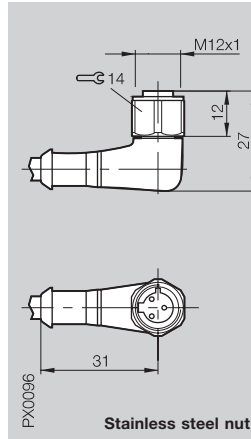
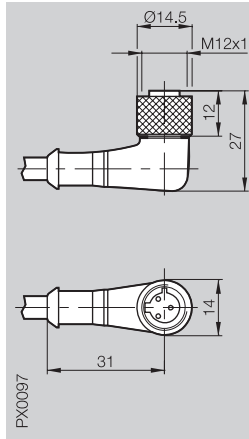
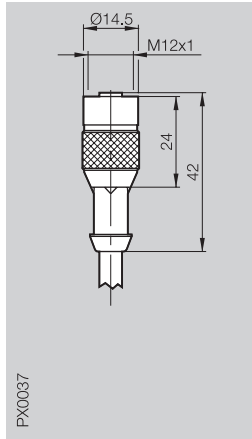


BKS-S 7-1

10...30 V DC
for user assembly
3/4 × 0.5...0.75 mm²
Ø 6.5...8 mm
Screw terminals
IP 65
-40...+85 °C



Connector	BKS-S 27	BKS-S 28	BKS-S 28E		
Version	straight female	angle female	angle female		
Application	Plug sensors S27	Plug sensors S27	Plug sensors S27		



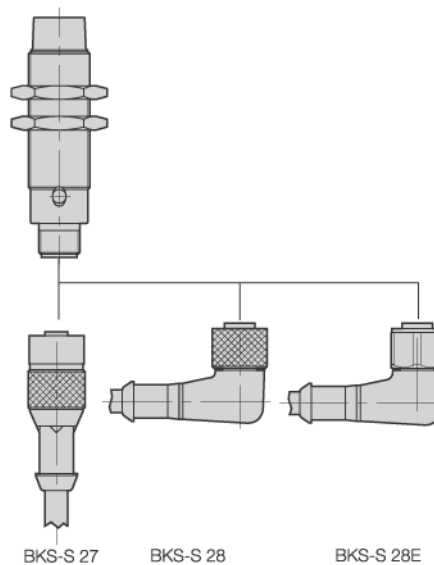
no LED, NC or NO	BKS-S 27-03	BKS-S 28-03	BKS-S 28E-03		
Supply voltage U_B	20...250 V AC/DC	300 V AC	300 V AC		
Cable	3 m molded-on PVC	3 m molded-on PVC	3 m molded-on PVC		
No. of wires × cross-section	3×0.5 mm ²	3×0.5 mm ²	3×0.5 mm ²		
Cable diameter					
Degree of protection per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20		
Ambient temperature range T_a	-25...+90 °C	-25...+90 °C	-25...+90 °C		
View of female side					

Other cable lengths and cable qualities on request.

Ordering example

PVC, length 3 m = BKS-S 27-03

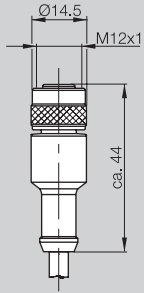
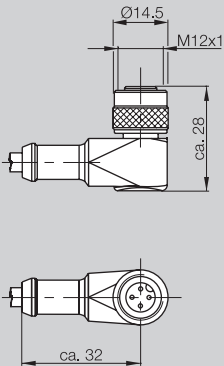
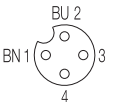
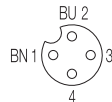
**Sensors with connector
Ordering code endings S27**

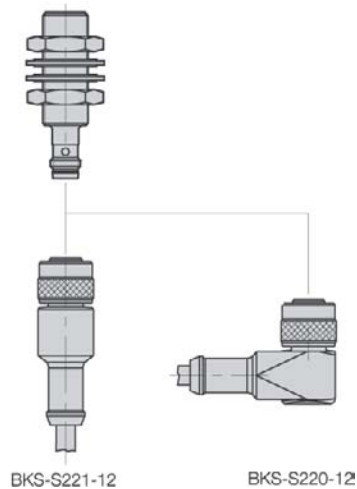


**Connectors with
M12×1 thread**

M12, DC 2-wire Accessories

DC connectors
M12 connection (S220)

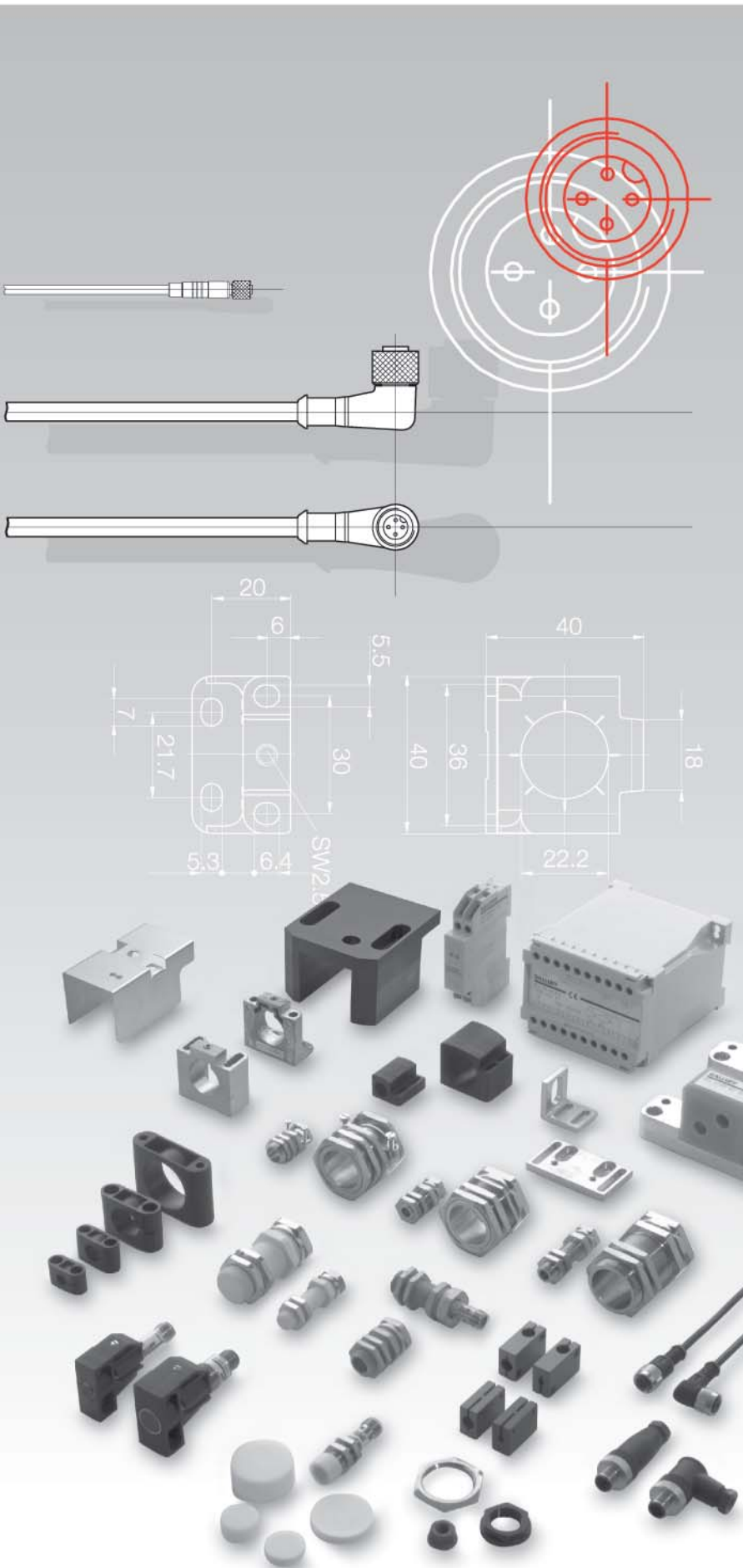
BKS-S220-12 straight female Namur sensors Pinout EN 60947-5-6	BKS-S221-12 angle female Namur sensors Pinout EN 60947-5-6			
				
BKS-S220-12-PB-02	BKS-S221-12-PB-02			
10...30 V DC 2 m molded-on PUR 2x0.34 mm ² Ø 4.5...±0.2 mm	10...30 V DC 2 m molded-on PUR 2x0.34 mm ² Ø 4.5...±0.2 mm			
IP 68 -25...+80 °C	IP 68 -25...+80 °C			
				
Cable color blue	Cable color blue			



5

Connectors
 Splitter boxes
 with
 accessories
 Electrical
 devices
 Fasteners
 Tools

Accessories



- Connectors**
- 5.2 DC connectors
- M5 connection (S26)
- 5.3 M8 connection (S49, S75)
- DC connection cable with M8 connector (S49, S75)
- 5.10 DC connection cables
- DC connectors MQ12 connection (S4)
- M12 connection (S4)
- 5.18 DC connectors for user assembly
- 5.22 AC/DC connectors M12 connection (S27)
- 5.23 DC-2-wire M12 connection (S220)

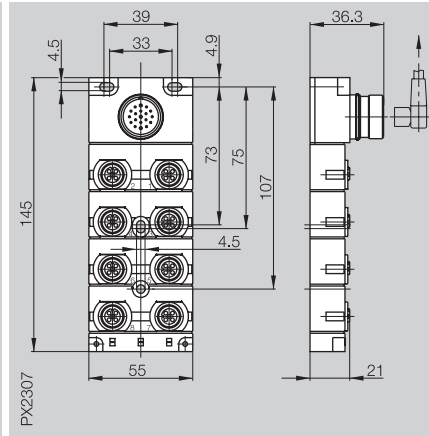
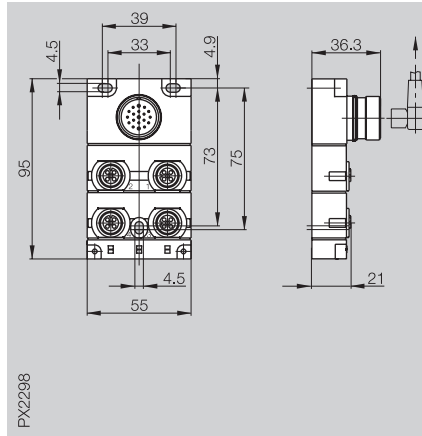
- Splitter boxes and accessories**
- 5.24 BSB splitter boxes M12, metal
- 5.26 BSB splitter boxes M12, plastic
- 5.29 BSB splitter boxes M8, plastic
- 5.30 Connectors
- 5.32 Screw plugs, Tee, adapters
- 5.34 BSB splitter boxes

- Electrical devices**
- 5.35 Pulse extender
- 5.36 Analog switching amplifiers
- 5.38 Power supplies
- 5.40 Testers
- 5.42 Signal adapter
- 5.45 Digital display

- Fasteners**
- 5.46 BMS Mounting System
- 5.58 Clamps, holders, mounting cuffs
- 5.65 Mounting brackets, reducing sleeve
- 5.66 Positive stops
- 5.67 Mounting clamps for row mounting of sensors
- 5.68 Mounting bracket, mounting socket and holding system for Unicomact
- 5.69 Weld protection and protective cover for Unicomact, mounting plate for Unisensor
- 5.70 Cover nuts, nuts, seal nut

- Tools**
- 5.74 BMF Hex Key, Important notes

Splitter Boxes	BSB-04-F01P/4-...	BSB-04-F01P/8-...
Version	4x connectors	8x connectors



Ordering code	BSB-04-F01P/4-M01M-2319	BSB-04-F01P/8-M01M-2319
Rated operational voltage U_o	24 V DC	24 V DC
Supply voltage U_B	18...30 V DC	18...30 V DC
Function indicator	LED yellow	LED yellow
Power-on indicator	LED green	LED green
Sensor connection	5-pole female, M12x1	5-pole female, M12x1
Control side connection	M23 connector, 19-pin	M23 connector, 19-pin
Number of connections	4	8
Current load capacity	max. 4 A per contact	max. 4 A per contact
Total current	max. 12 A at +60 °C	max. 12 A at +60 °C
Housing material	GD-Zn	GD-Zn
Degree of protection per IEC 60529	IP 67 (when connected)	IP 67 (when connected)
Ambient temperature range T_a	-25...+90 °C	-25...+90 °C
View of female/male side		

Other cable lengths and cable qualities on request.

→ Connector orientation



We offer a wide variety of passive actuator/sensor boxes. These allow the user to collect signals in the field and pass them centrally to a controller or to pass signals from the controller to the actuators.

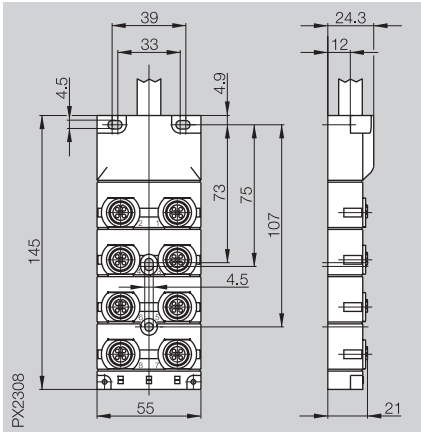
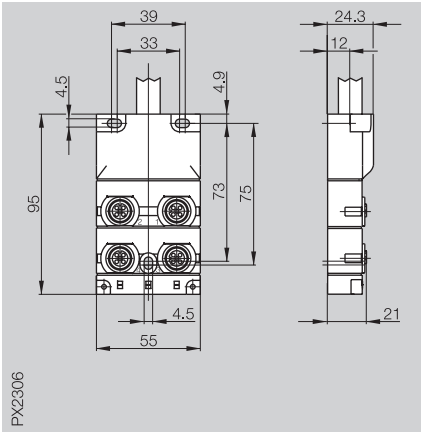
This enables organized and decentralized wiring of the peripherals. With their light, compact design, the M8 and M12 distribution boxes with up to 8 connections take up little room and are used in machines and systems where space is at a premium.

BSB-04-F01P/4-...

4x cable

BSB-04-F01P/8-...

8x cable



BSB-04-F01P/4-M02M-KP-05

24 V DC
18...30 V DC
LED yellow
LED green
5-pole female, M12x1
5 m molded-on PUR cable
8x0.5 mm² and 3x1 mm²
4
max. 4 A per contact
max. 12 A at +60 °C

GD-Zn
IP 67 (when connected)
-25...+90 °C



BSB-04-F01P/8-M02M-KP-05

24 V DC
18...30 V DC
LED yellow
LED green
5-pole female, M12x1
5 m molded-on PUR cable
16x0.5 mm² and 3x1 mm²
8
max. 4 A per contact
max. 12 A at +60 °C

GD-Zn
IP 67 (when connected)
-25...+90 °C



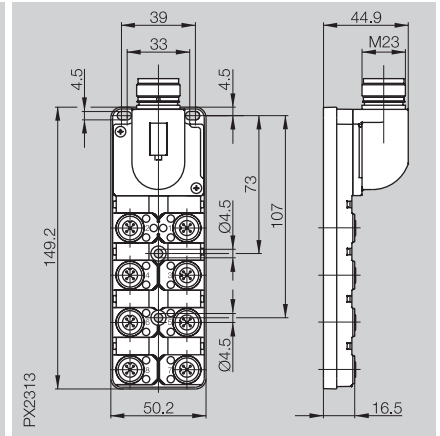
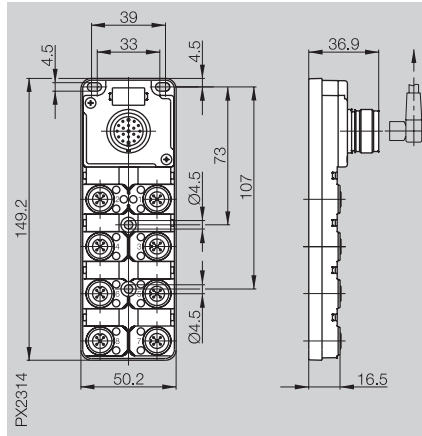
5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Splitter Boxes
Version

BSB-04-F02P/8-...
8x connectors

BSB-04-F02P/8-...
8x connectors



Ordering code

BSB-04-F02P/8-M01K-2319

BSB-04-F02P/8-M02K-2319

Rated operational voltage U_o

24 V DC

24 V DC

Supply voltage U_B

18...30 V DC

18...30 V DC

Function indicator

LED yellow

LED yellow

Power-on indicator

LED green

LED green

Sensor connection

5-pole female, M12x1

5-pole female, M12x1

Control side connection

M23 connector, 19-pin

M23 connector, 19-pin

Number of connections

8

8

Current load capacity

max. 4 A per contact

max. 4 A per contact

Total current

max. 16 A at +60 °C

max. 16 A at +60 °C

Potential isolation

Housing material

PA 66

PA 66

Degree of protection per IEC 60529

IP 67 (when connected)

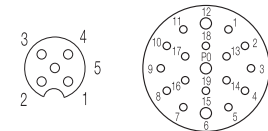
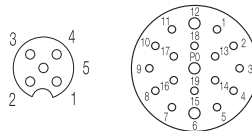
IP 67 (when connected)

Ambient temperature range T_a

-20...+80 °C

-20...+80 °C

View of female/male side



Other cable lengths and cable qualities on request.

Connector orientation

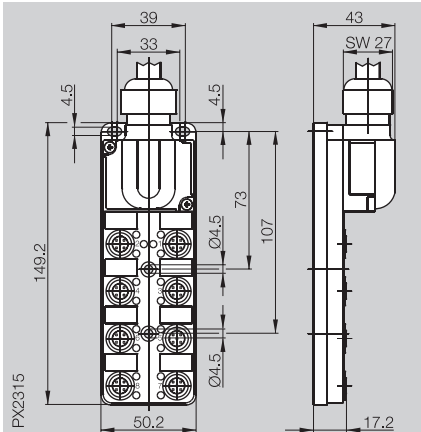
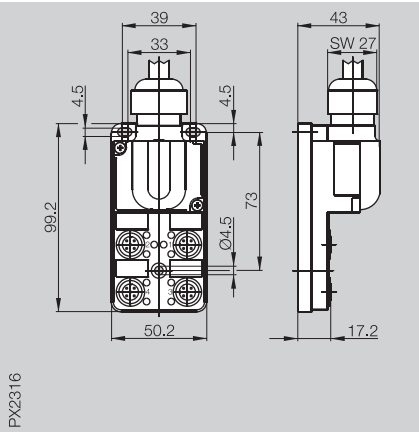


BSB-04-P01P/4-...

4x cable

BSB-04-P01P/8-...

8x cable



BSB-04-P01P/4-M02K-HKP-05

24 V DC
18...30 V DC
LED yellow
LED green
5-pole female, M12x1
5 m molded-on PUR cable
8x0.34 mm² and 5x0.75 mm²
4
max. 4 A per contact
max. 8 A with single power feed
max. 16 A with double power feed

Possible with removable jumper
PBT
IP 67 (when connected)
-20...+80 °C



BSB-04-P01P/8-M02K-HKP-05

24 V DC
18...30 V DC
LED yellow
LED green
5-pole female, M12x1
5 m molded-on PUR cable
16x0.34 mm² and 5x0.75 mm²
8
max. 4 A per contact
max. 8 A with single power feed
max. 16 A with double power feed

Possible with removable jumper
PBT
IP 67 (when connected)
-20...+80 °C



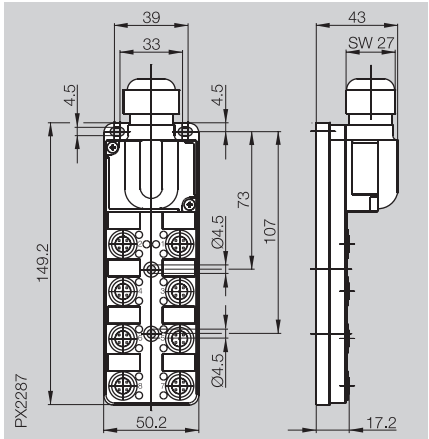
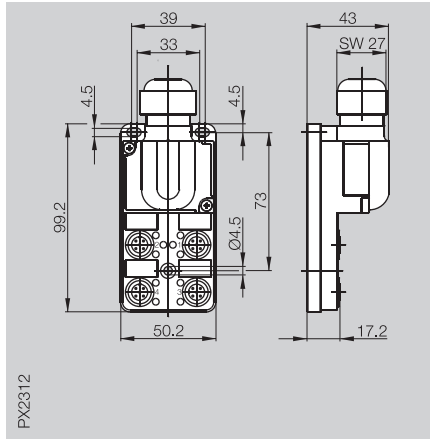
5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Splitter Boxes
Version

BSB-04-P01P/4-...
4x with cover (no connection)

BSB-04-P01P/8-...
3x with cover (no connection)



Ordering code

BSB-04-P01P/4-M02K-HTS

BSB-04-P01P/8-M02K-HTS

Rated operational voltage U_o

24 V DC

24 V DC

Supply voltage U_B

18...30 V DC

18...30 V DC

Function indicator

LED yellow

LED yellow

Power-on indicator

LED green

LED green

Sensor connection

5-pole female, M12x1

5-pole female, M12x1

Control side connection

Plug-in terminals

Plug-in terminals

Number of connections

4

8

Current load capacity

max. 4 A per contact

max. 4 A per contact

Total current

max. 8 A with single power feed
max. 16 A with double power feed

max. 8 A with single power feed
max. 16 A with double power feed

Potential isolation

Possible with removable jumper

Possible with removable jumper

Housing material

PBT

PBT

Degree of protection per IEC 60529

IP 67 (when connected)

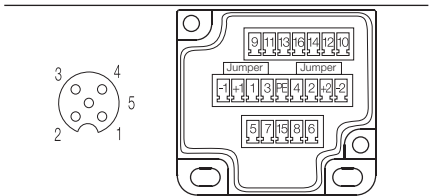
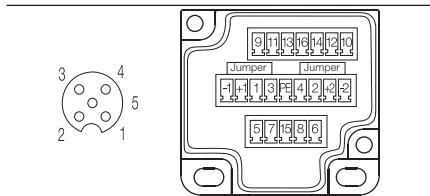
IP 67 (when connected)

Ambient temperature range T_a

-20...+80 °C

-20...+80 °C

View of female/male side



Other cable lengths and cable qualities on request.



M8 Compact and light Accessories

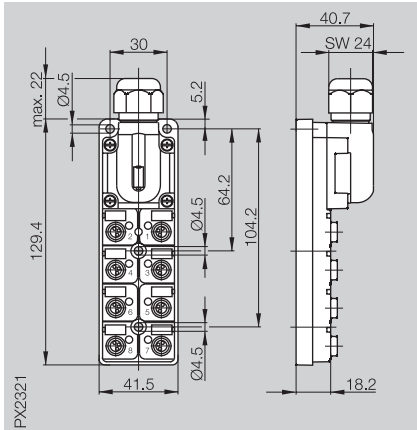
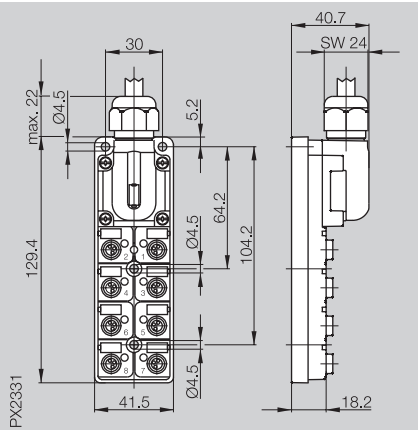
BSB Splitter Boxes
M8
Plastic

BSB-49-F01P/8-...

8x cable

BSB-49-F01P/8-...

8x with cover (no connection)



BSB-49-F01P/8-M02K-KP-05

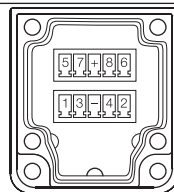
24 V DC
18...30 V DC
LED yellow
LED green
3-pole female, M8x1
5 m molded-on PUR cable
8x0.34 mm² and 2x0.75 mm²
8
max. 2 A per contact
max. 6 A

BSB-49-F01P/8-M02K-HTS

24 V DC
18...30 V DC
LED yellow
LED green
3-pole female, M8x1
Plug-in terminals
8
max. 2 A per contact
max. 6 A

PBT
IP 67 (when connected)
-25...+85 °C

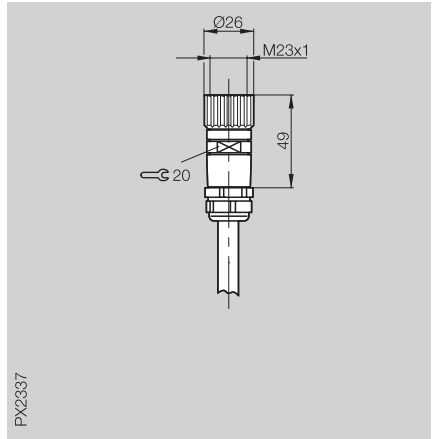
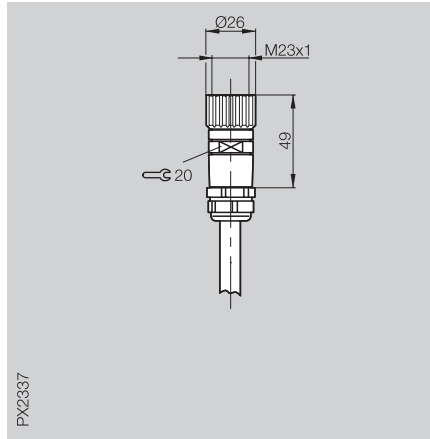
PBT
IP 67 (when connected)
-25...+85 °C



5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Connector	BKS-S196	BKS-S196
Version	straight female	straight female
Application	4x splitter box connection	8x splitter box connection



Ordering code	M23, 19-pin	BKS-S196-21-PU-05	BKS-S196-22-PU-05
Supply voltage U_B		18...30 V DC	18...30 V DC
Cable		5 m molded-on PUR	5 m molded-on PUR
No. of wires x cross-section		8x0.34 mm ² and 3x0.75 mm ²	16x0.34 mm ² and 3x0.75 mm ²
Degree of protection per IEC 60529		IP 67	IP 67
Ambient temperature range T_a		-20...+80 °C	-20...+80 °C
Housing material		CuZn	CuZn
View of female side			

Other cable lengths and cable qualities on request.

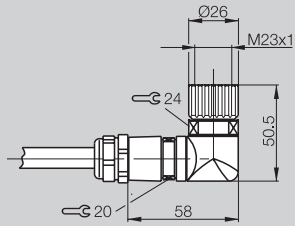
Ordering example

BKS-S196-21-PU-05 = PUR length 5 m



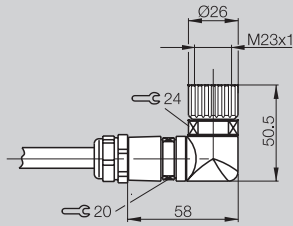
BKS-S197
right-angle female

4x splitter box connection



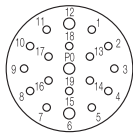
BKS-S197
right-angle female

8x splitter box connection



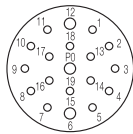
BKS-S197-21-PU-05

18...30 V DC
5 m molded-on PUR
8x0.34 mm² and 3x0.75 mm²
IP 67
-20...+80 °C
CuZn



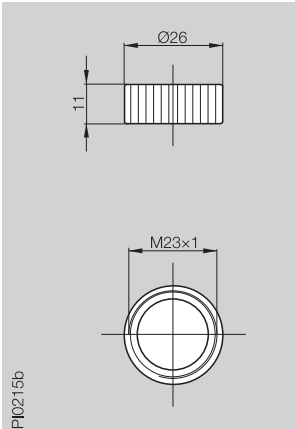
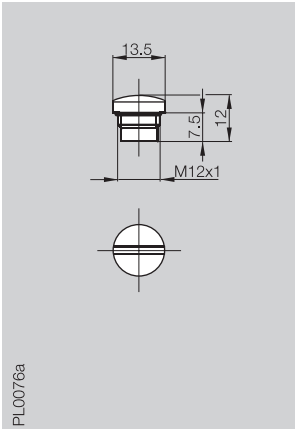
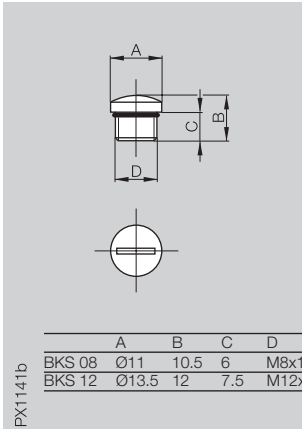
BKS-S197-22-PU-05

18...30 V DC
5 m molded-on PUR
16x0.34 mm² and 3x0.75 mm²
IP 67
-20...+80 °C
CuZn



5

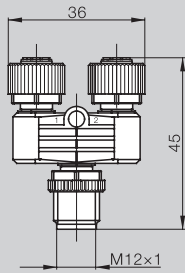
Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Description	Screw plug M23	Screw plug M12	Screw plug M8, M12																
Application	IP 65 screw plug for unused connectors in BSB Splitter Boxes	IP 65 screw plug for unused connectors in BSB Splitter Boxes	IP 65 screw plug for unused connectors in BSB Splitter Boxes																
	 <p style="font-size: small;">PI0215b</p>	 <p style="font-size: small;">PL0076a</p>	 <table border="1" style="font-size: x-small; margin-top: 10px;"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>BKS 08</td> <td>Ø11</td> <td>10.5</td> <td>6</td> <td>M8x1</td> </tr> <tr> <td>BKS 12</td> <td>Ø13.5</td> <td>12</td> <td>7.5</td> <td>M12x1</td> </tr> </tbody> </table> <p style="font-size: x-small;">PX1141b</p>		A	B	C	D	BKS 08	Ø11	10.5	6	M8x1	BKS 12	Ø13.5	12	7.5	M12x1	
	A	B	C	D															
BKS 08	Ø11	10.5	6	M8x1															
BKS 12	Ø13.5	12	7.5	M12x1															
Ordering code	BKS 23-CS-00	BKS 12-CS-01	BKS 08-CS-00 BKS 12-CS-00																
Supply voltage U_B																			
Rated operational current I_a																			
Degree of protection per IEC 60529																			
Ambient temperature range T_a	-20...+80 °C	-20...+80 °C	-20...+80 °C																
Housing material	CuZn coated	CuZn coated	PA/PBT																
View of female side																			



Tee

M12 male to M12 female 2x
2 signals to one port



PX2333

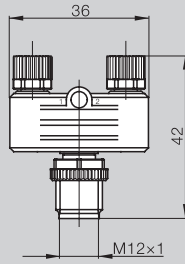
BKS-S4-TM1-01

max. 24 V DC
max. 4 A per contact
IP 67
-25...+90 °C
GD-Zn coated



Tee

M12 male to M8 female 2x
2 signals to one port



PX2395

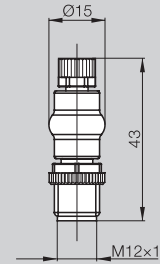
BKS-S49-TM1-02

max. 24 V DC
max. 4 A per contact
IP 67
-25...+90 °C
GD-Zn coated



Adapter

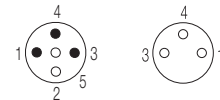
M12 male 3-pin to M8 female 3-pin

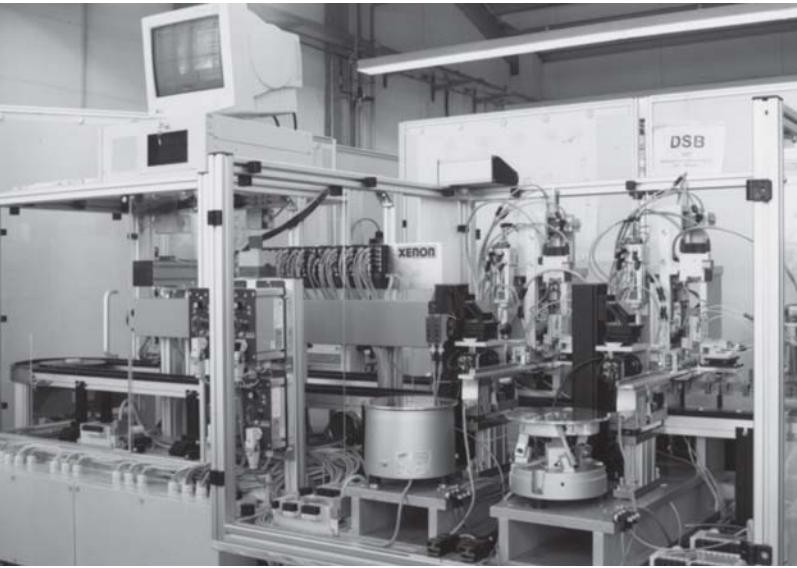


PX2334

BKS-S4-GM1-01/S49

max. 24 V DC
max. 4 A per contact
IP 67
-25...+85 °C
GD-Zn coated





BSB Plastic Splitter Boxes Features

Light and compact M8- and M12 plastic splitter boxes are used wherever space is at a premium or moving machine members are present. The plastic splitter boxes come either complete or in modular form.

- Customized, versatile and light, usable as M8 or M12 splitter boxes
- Quick assembly and disassembly for transport
- Potential isolation using jumpers

Typical applications for the plastic version

- Assembly and handling machinery
- Packaging
- Specialty machine building



BSB Metal Splitter Boxes Features

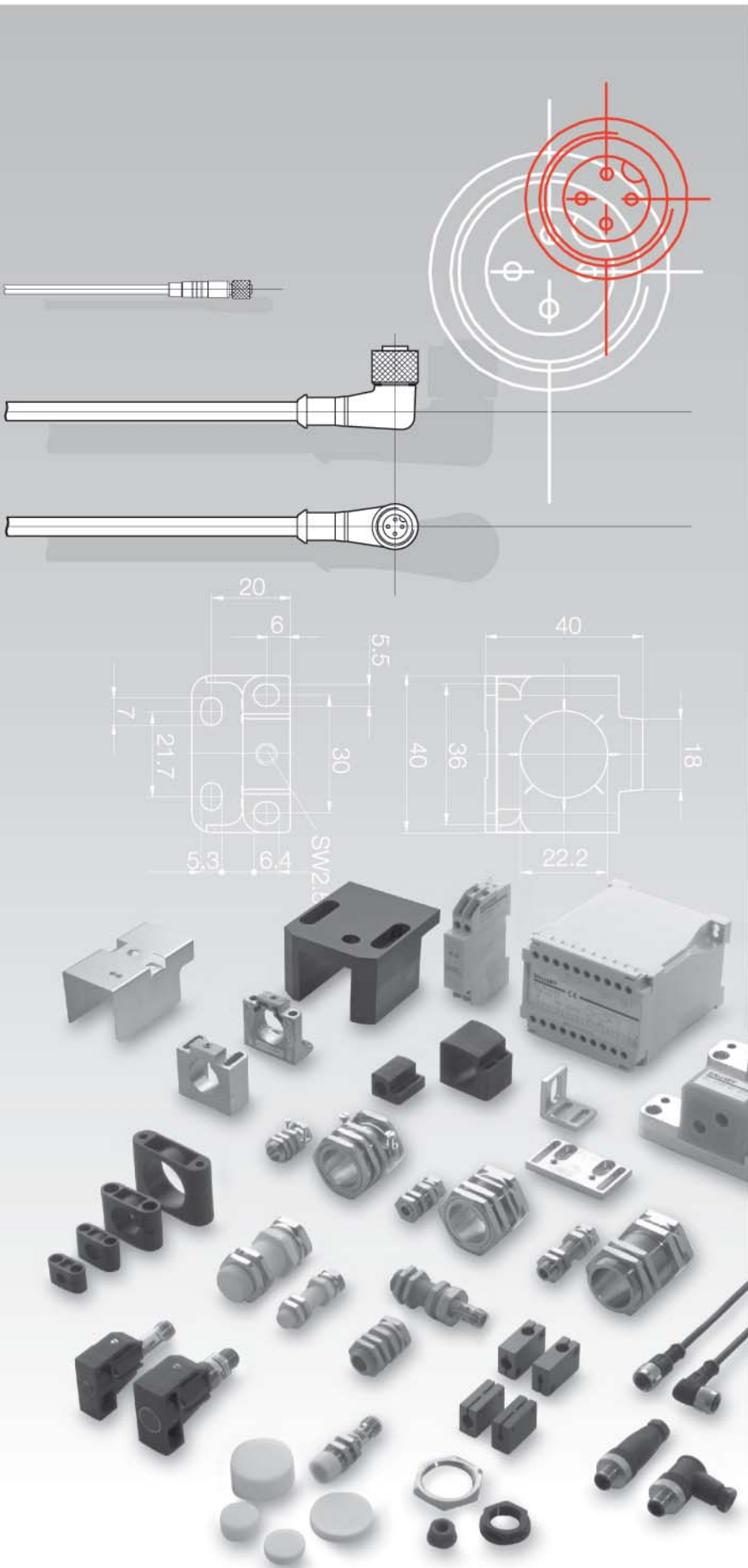
Fully potted metal splitter boxes offer maximum protection and security in harsh environments. These splitter boxes are especially tough, making them ideal for use in harsh conditions in machines and systems. Imperviousness, toughness and tight sealing are the requirements in such environments.

- Tough and tightly sealed for extreme conditions
- Resistant to common coolants and lubricants
- High shock rating up to 50 g, vibration-proof
- Temperature resistant from -25...+90 °C

Typical applications for the metal version

- Machine tools and machining centers
- Automobile industry
- Metal forming
- Foundries

Accessories



- Connectors**
- 5.2 DC connectors
- 5.3 M5 connection (S26)
- 5.3 M8 connection (S49, S75)
- DC connection cable with M8 connector (S49, S75)
- 5.10 DC connection cables
- DC connectors MQ12 connection (S4)
- M12 connection (S4)
- 5.18 DC connectors for user assembly
- 5.22 AC/DC connectors M12 connection (S27)
- 5.23 DC-2-wire M12 connection (S220)

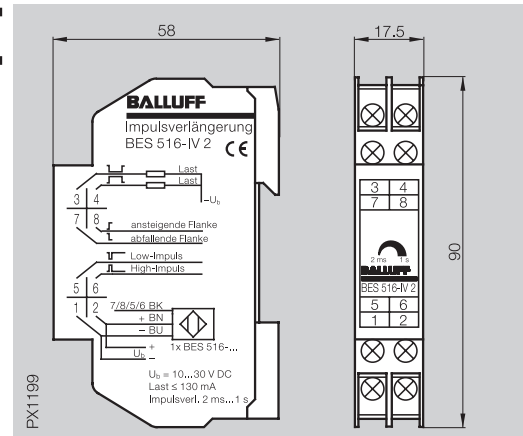
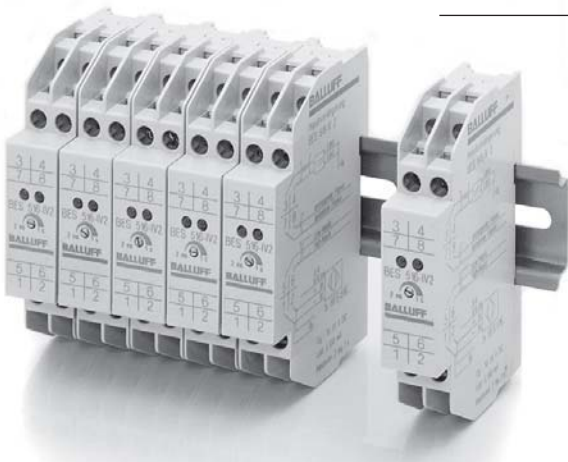
- Splitter boxes and accessories**
- 5.24 BSB splitter boxes M12, metal
- 5.26 BSB splitter boxes M12, plastic
- 5.29 BSB splitter boxes M8, plastic
- 5.30 Connectors
- 5.32 Screw plugs, Tee, adapters
- 5.34 BSB splitter boxes

- Electrical devices**
- 5.35 Pulse extender
- 5.36 Analog switching amplifiers
- 5.38 Power supplies
- 5.40 Testers
- 5.42 Signal adapter
- 5.45 Digital display

- Fasteners**
- 5.46 BMS Mounting System
- 5.58 Clamps, holders, mounting cuffs
- 5.65 Mounting brackets, reducing sleeve
- 5.66 Positive stops
- 5.67 Mounting clamps for row mounting of sensors
- 5.68 Mounting bracket, mounting socket and holding system for Unicomact
- 5.69 Weld protection and protective cover for Unicomact, mounting plate for Unisensor
- 5.70 Cover nuts, nuts, seal nut

- Tools**
- 5.74 BMF Hex Key, Important notes

Description	Pulse extender



Detecting fast motion

Sound like your problem?

Rapid motions on machines mean that the proximity switches are only actuated for a short time.

The length of the sensor output signal – whether inductive, capacitive or photoelectric – is then not on long enough to ensure reliable processing. The controller does not recognize the output signal due to the former's cycle time.

The result:

Important information in the controller sequence is lost. This can pose a risk to your machine!

The solution:

Balluff Pulse Extender BES 516-IV 2. Only the rising or falling edge of the output signal from a sensor is enough to drive this device. The extender creates a proper pulse that can be detected by your controller. The length is adjustable from 2 ms to 1 sec. Small and space-saving, the device can be installed on a rail in accordance with EN 50022-35.

Ordering code	BES 516-IV 2
Output (LED indicators)	Sourcing (PNP), complementary
Adjustable pulse extender	2 ms... 1 s
Set value	200 ms (+50 ms)
Input 7/8	referenced to the respective edge of the input signal
Input 5/6	referenced to the pulse end of the input signal
Repeatability	< 10 %
Input	1 PNP- or 1 NPN-NO or NC
min. input pulse length	1.5 ms
Supply voltage U _B	10...30 V DC (Input voltage = output voltage)
Ripple	≤ 15 %
No-load current	approx. 20 mA
Output current	≤ 130 mA
Permissible load capacitance	≤ 0.5 μF/24 V
Ambient temperature range T _a	0...60 °C
Housing attachment	DIN rail EN 50022-35
max. wire cross-section	2x2.5 mm ²
Degree of protection per IEC 60529	Housing IP 40/terminals IP 20
Output 3	Low-pulse, extended
4	High-pulse, extended
Input 7	falling edge
8	rising edge
5	Low-pulse
6	High-pulse
1	-U _B
2	+U _B
falling edge	Output signal is triggered by falling edge
rising edge	Output signal is triggered by rising edge
Low-pulse	PNP-NC/NPN-NO short damped PNP-NO/NPN-NC short undamped
High-pulse	PNP-NO/NPN-NC short damped PNP-NC/NPN-NO short undamped

Remarks

Protected against overload (by PTC), against reversal of plus and minus. All sensors (DC, 3-/4-wire) can be connected, either NO or NC. Either both or one of the outputs may be connected.

Analog switching amplifier for direct installation

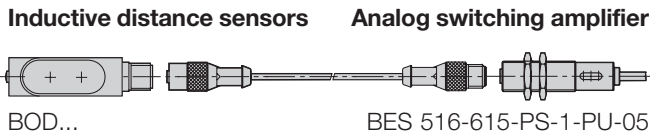
This switching amplifier allows you to easily program sensors having an analog output signal, such as the BOD family, with three switchpoints for direct programming.

The sensor connected to the switching amplifier is simply brought to the desired switching distance from the target. Then connecting the control line to the (+) side of the supply voltage enables

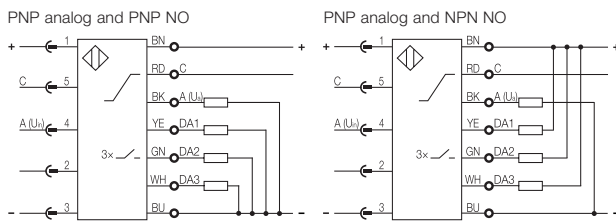
a "Teach-in" mode, whereby the set distance is assigned to the signal level present in the device. This procedure is assisted using LED's. During operation these LED's are available as switching state indicators.

For sensors with a temperature output the analog temperature signal is made available in unchanged form on the device output.

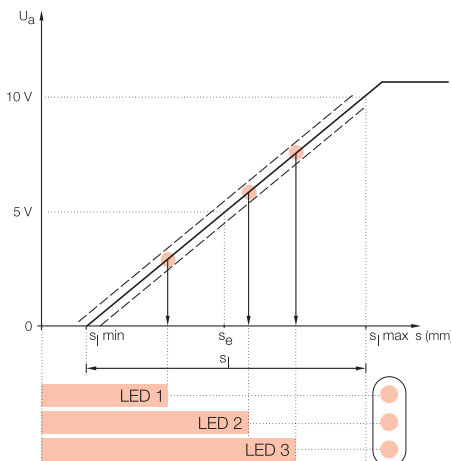
Wiring example



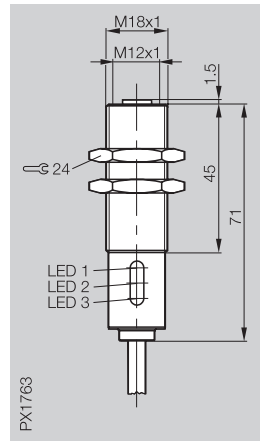
Wiring diagrams



Approach curve



Housing size	M18x1
Application	Analog sensors BOD



PNP analog and PNP NO	BES 516-615-PS-1-PU-05
PNP analog and NPN NO	BES 516-615-NS-1-PU-05
Rated operational voltage U_e	24 V DC
Supply voltage U_B	15...30 V DC
Ripple	$\leq 15\%$ of U_e
Rated insulation voltage U_i	75 V DC
Rated operational current I_e	100 mA
per output	
No-load supply current I_0 max.	≤ 20 mA
Off-state current I_r	≤ 10 μ A
Polarity reversal protected	only against \pm -reversal
Short circuit protected	yes
Ambient temperature range T_a	$-10...+70$ °C
Switching frequency f	2 kHz
Utilization category	DC 13
Function indicator for each output	yes
Analog input	
Input voltage U_{in}	0...10 V (brought out to output A)
Input impedance	4.2 k Ω
Switching outputs	
Freely programmable switching outputs	3
Hysteresis H	500 mV
Temperature drift	$\leq 2\%$ of U_{in} max.
Degree of protection per IEC 60529	IP 67
Housing material	CuZn coated
Connection input/output	Connector/ 5 m Cable PUR
No. of wires x cross-section	7x0.25 mm ²



Analog switching amplifier for control cabinet installation

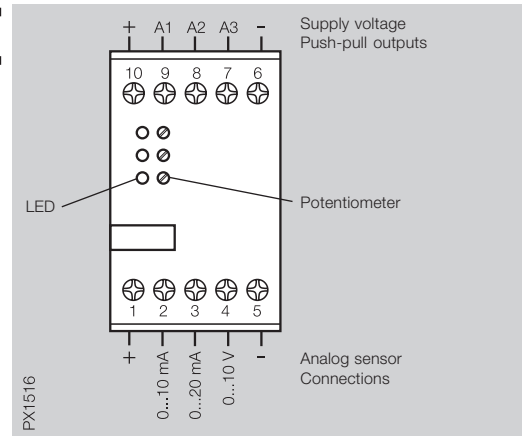
The analog switching amplifier is powered with 24 V and provides the supply voltage for analog sensors like the Balluff BOD. The device is driven directly by the current signals (2) or voltage signals (4).

From this signal, separate push-pull final stages (PNP/NPN) are used to create three switch points (A1...A3) which can be set independently using the potentiometer on the front side. The respective switching state is indicated by an associated LED. The operating direction (rising/falling) can be set using DIP switches inside the unit. This circuit allows width-adjustable "ranges" to be defined (cascading).

The voltage signal (4) proportional to the current can be used to drive additional switching amplifiers (expansion for additional switch points).

The signal inputs on the analog switching amplifier are protected against polarity reversal and the push-pull output stages against short circuit (internal fuses).

Description	Analog switching amplifier for analog current and voltage signals
Application	Analog sensors BOD



Ordering code	BES 516-611-A-1
Supply voltage U_B	24 V DC $\pm 10\%$
Ripple	$\leq 10\%$
Input circuit	
Current input terminal 2/terminal 3	0...10 mA/0...20 mA
Input impedance	308 Ω /154 Ω
Voltage input terminal 4	0...10 V
Input impedance	13 k Ω
Adjustment range	3...100 %
Hysteresis (referenced to set value)	3 %
Output current circuit	
Voltage drop PNP-Transistor	≤ 3.5 V
Voltage drop NPN-Transistor	≤ 2.5 V
Operating current per push-pull stage	≤ 200 mA
Housing material	PC (glass fiber reinforced)
Housing dimensions	74x45x120 mm
Connection	Screw terminals
max. wire cross-section	up to 2.5 mm ²
Housing attachment	Snap mount on rail
Ambient temperature range T_a	0...+50 °C
Degree of protection per IEC 60529	Terminals IP 20, housing IP 40



5

Connectors
Splitter boxes
with
accessories
**Electrical
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The relay output types are suitable for operating with NPN or PNP proximity switches.

For operating with PNP switches connect the terminals 5, 9 and 10 and with NPN switches the terminals 4, 9 and 10.

The power supplies are normally adjusted for an input voltage range of 220 V AC (terminals 1 and 3).

The switch to 110 V AC is made in the unit:
Remove the two connections from Terminal 2. Connect the free black connection to Terminal 1 and the white one to Terminal 3.

Description
Version



Ordering code

Input voltage
Output voltage
Ripple
Current consumption
Output current
Housing
Ambient temperature range T_a
Storage temperature
Connections
Housing attachment

Relay functions	switching voltage
	coil voltage
	switching current
	switching power

Power supply B-3

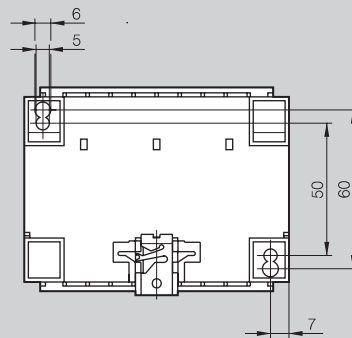
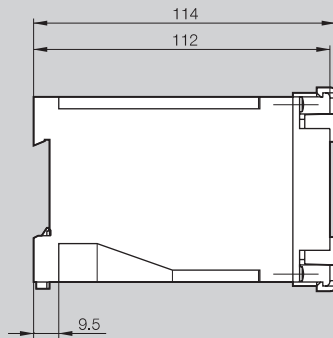
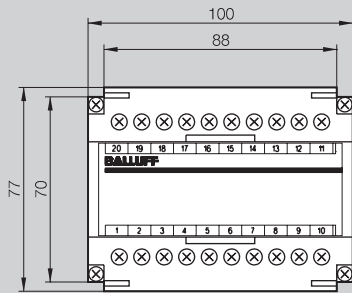
with 2 integrated output relays
723 Ω each

Power supply Z-3

with 2 integrated output relays each
723 Ω and positive opening contacts

Power supply A-3

no output relay



PX0877

BES 516-706-B-3

BES 516-706-Z-3

BES 516-706-A-3

110/220 V AC ±10 %, 50 Hz

24 V DC ±20 %

≤ 10 % per DIN 41755 1.2.2

max. 20 VA

max. 0.5 A

Gray thermoplastic, temperature resistant to +100 °C

-20...+60 °C

-20...+60 °C

20 connection terminals for 2x2.5 mm²

Screw or snap-rail mounting for attaching to 35 mm standard rail per DIN 46277

max. 250 V DC/max. 380 V AC

17.5...28.2 V DC

max. 5 A

max. 250 VA DC/max. 1100 VA AC

max. 250 V DC

17.5...28.2 V DC

max. 8 A

max. 250 VA DC/max. 1700 VA AC

max. 250 V DC/max. 380 V AC

17.5...28.2 V DC

max. 5 A

max. 250 VA DC/max. 1100 VA AC



5

Connectors
Splitter boxes
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accessories

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devices**

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**Tester
BES 516-3**

is an easy-to-use manual tester for PNP/NPN normally open and normally closed sensors.

- No current limitation
- Audible signal
- Automatic PNP/NPN detection
- LED and buzzer
- Power provided by 2x9 V batteries

**Tester/Programmer
BES 516-4**

This programming device provides an easy way to perform the following tests and calibration on sensors:

- Program the switching distance of analog sensors
- Sensors with teach-in switching points can also be programmed
- Testing a 3-wire BES switch
- Testing a 2-wire BES switch

**New sensor tester
BES 516-7**

Sensor tester with Balluff design and improved features

With the new BES 516-7 sensor tester you get a tester compatible with current Balluff design. Flatter, easier to use and visually attractive.

The tester is a simple manual testing unit for PNP/NPN, normally open and normally closed sensors with significantly improved features.

Advantages

- Built-in steel target for checking sensors
- Automatic shut-off after approx. 30 sec. of non-use
- Power provided by a single 9V battery
- Visual and acoustic signal

Note

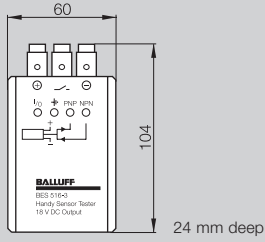
Sensor tester is not suitable for 2-wire and Desina sensors.



Description	
Application	

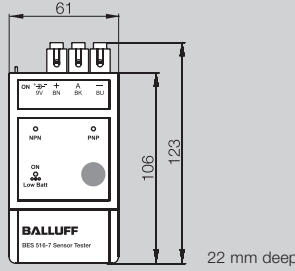
Ordering code	
Output voltage	
LED indicators	
Battery type	
Sensor connection	
Degree of protection per IEC 60529	
Housing material	

Tester
for 3-wire sensors DC PNP/NPN



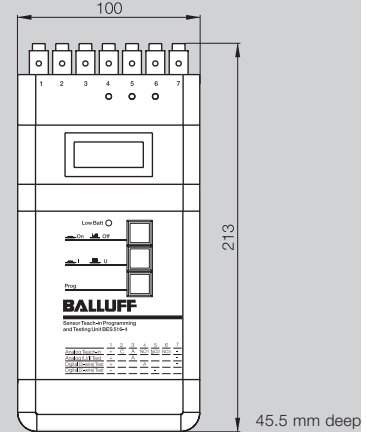
PX0849

Tester
for 3-wire sensors DC PNP/NPN



PX2427b

Tester/Programmer
for 2-/3-wire sensors DC PNP/NPN
and analog



PX1500

BES 516-3

18 V DC
1 power indicator
2x 9 V batteries

3 spring-loaded terminals
IP 21
Plastic

BES 516-7

18 V DC
1 power indicator
1x 9 V battery

3 spring-loaded terminals
IP 40
Plastic

Acoustic/visual signal,
built-in steel target

BES 516-4

18 V DC
3 function indicators, 1 battery indicator
2x 9 V batteries

7 spring-loaded terminals
IP 40
Plastic



Series **BOS S** signal adapters can be used to implement various additional functions for sensors. Output signals or counting and timing functions can be changed without additional installations. The signal adapter is simply plugged in between the standard M12 connections on the sensor and cable. Setting is simple using teach-in and a control line. Signal adapters can also be used as switching amplifiers and can be combined with each other.

The **BOS S-C** counts output pulses or pauses from a sensor and sends an output pulse when a pre-defined number is reached. The count range is from 1...65535 and can be freely set. It also includes an output inverter function (normally open/normally closed).

With the **BOS S-T** you can set a turn-on or turn-off delay from 1 ms to 65 sec. The factory default setting is for a turn-off delay of 100 ms.

The **BOS S-F** converts a connected PNP signal into an NPN signal. In addition, you can toggle the output function between NO and NC.

The **BOS S-M** is a freely configurable module for frequency monitoring. It is "active" when the set frequency is exceeded by 5 %.

Application

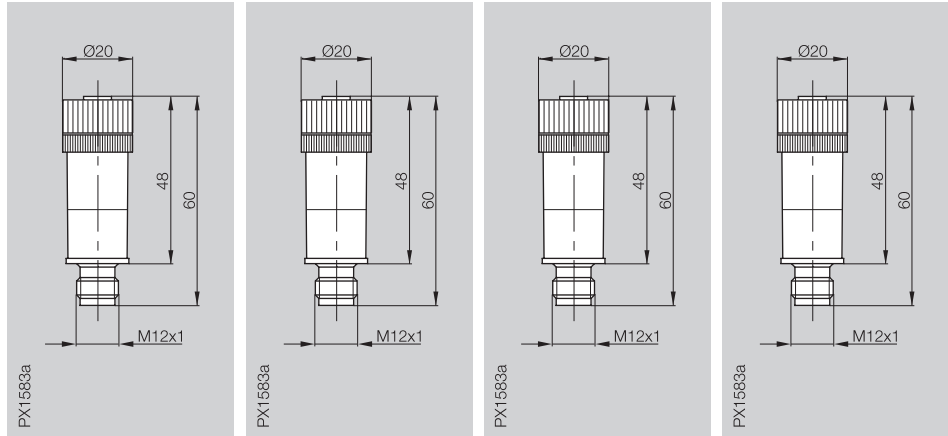
For **all sensors** having a corresponding plug connection and output signal.



Signal adapter selection guide

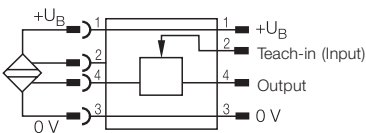
Function	Device	Setting
NC/NO inverter	BOS S- C01	Pause counter 1
Flip-Flop (touch on, off)	BOS S- C01	Pause counter 2
Divider (1 pulse per revolution)	BOS S- C01	Pulse counter n
Parts counter (count down)	BOS S- C01	Pulse counter n
Switching amplifier to 400 mA	BOS S- C01	Pulse counter 1
Off-delay	BOS S- T01	Off-delay n
Off-delay	BOS S- T01	Off-delay n
PNP-/NPN converter	BOS S- F01	Factory setting
PNP-/NPN converter and NC/NO switcher	BOS S- F01	NC/NO teach
Speed monitor	BOS S- M01	
Speed monitor	BOS S- M01	
Pile-up detector	BOS S- M01	

Series	BOS S	BOS S	BOS S	BOS S
Function	programmable pulse or interval counter, switching inverter	programmable timer for on- and off-delay	PNP-/NPN converter, adjustable NC/NO switchover	programmable frequency monitoring



Ordering code	PNP	BOS S-C01	BOS S-T01	BOS S-F01	BOS S-M01
	NPN	BOS S-C02	BOS S-T02	BOS S-F02	BOS S-M02
Supply voltage U_B	10...30 V DC				
Rated operational current I_e	< 400 mA				
No-load supply current I_0 max.	≤ 10 mA				
Polarity reversal protected	yes				
Short circuit protected	yes				
Input impedance	> 10 kΩ				
On-/off-delay	0.1 ms				
max. input frequency	10 kHz				
Input	PNP	NPN	PNP	NPN	PNP
Output	PNP	NPN	PNP	NPN	NPN
Smallest preset number	1				
Largest preset number	65535				
Shortest settable time					
Longest settable time	1 ms				
Monitoring frequency range	0.015 Hz...1 kHz				
Function indicator	LED red				
Ambient temperature range T_a	0...+60 °C				
Degree of protection per IEC 60529	IP 67				
Insulation class	□				
Housing material	PBT/PA 6.6				
Connection type input	M12 female 4-pin				
Connection type output	M12 male 4-pin				
Recommended connector	BKS- 19/BKS- 20				
Weight	15 g				

Wiring diagram



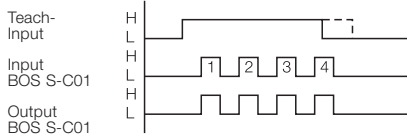
5

Connectors
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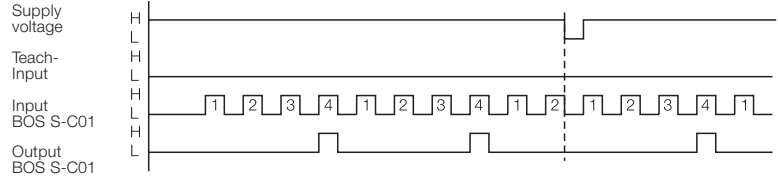
Signal Adapter BOS S-C

Programmable pulse or interval counter

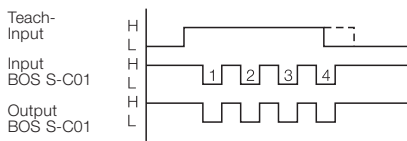
Pulse counter teaching



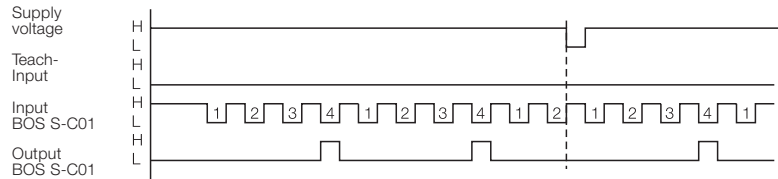
Use as a pulse counter



Interval counter teaching



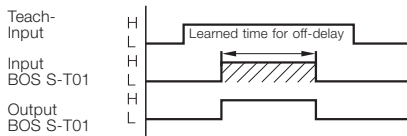
Use as an interval counter



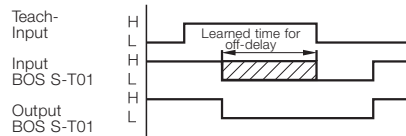
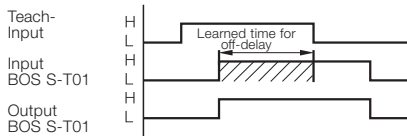
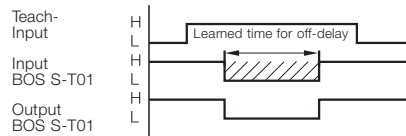
Signal Adapter BOS S-T

Programmable timer for turn-on or turn-off delay

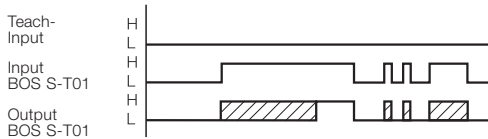
On-delay teaching



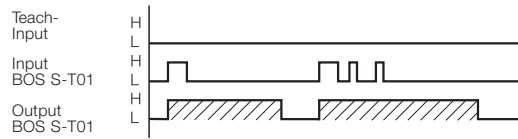
Teaching an off-delay



Operation with on-delay



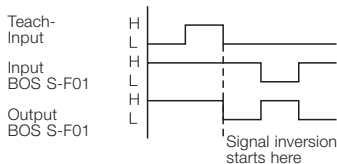
Use with off-delay



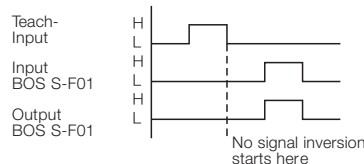
Signal Adapter BOS S-F

NPN-/PNP converter, configurable NO/NC toggle

Signal inversion teaching



Teaching without signal inversion



H = Input or Output active; L = Input or Output inactive

Digital Display for analog input signals

The model BDD-UM 3023 digital display is a universal device for acquiring the following analog measurement values.

- Voltage 0...10 V
- Current 0...20 mA/4...20 mA

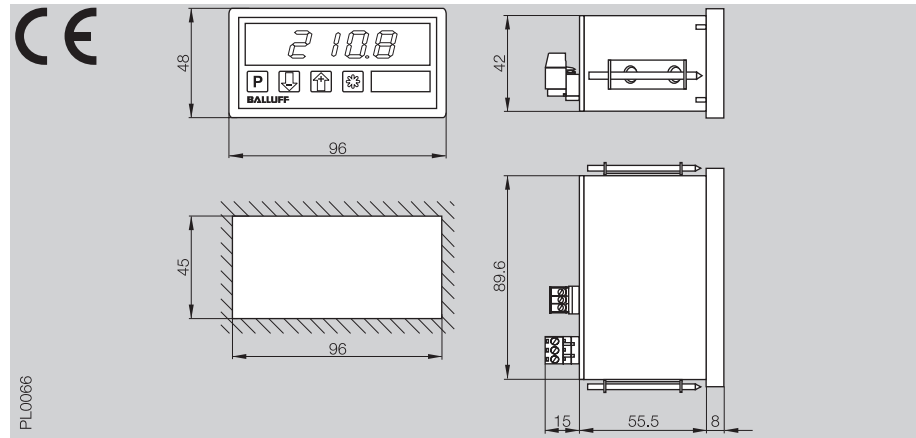
Standard hardware

- 4 function keys on the front panel

Standard software functions

- Scaling
- Tare
- Decimal point
- Display test

Description	Digital display
Application	for analog input signals e.g. BOD



Ordering code	BDD-UM 3023
---------------	--------------------

A/D converter	Resolution	12 bits
Measuring ranges	Voltage	0...10 V, ±0.05 %, ±1 digit
	Input impedance	≥ 50 kΩ
	Current	0/4...20 mA, ±0.05 %, ±1 digit
Input impedance		10 Ω
	Sampling rate	5 measurements/s
Display		4-digit, 14 mm, red
		Programmable decimal point
		Leading zero suppression
		Minus sign for negative values
Operation, keypad		Front keypad with short-stroke keys
Rated operating voltage		24 V, ±20 % DC (isolated)
Current draw		max. 65 mA
Housing	Dimensions	96×48×60 mm
	Installation depth	≤ 72 mm (incl. screw terminal)
	Housing front enclosure rating	IP 54
	Terminals enclosure rating	IP 20
Ambient temperature range		0...+60 °C
Storage temperature		-20...+70 °C
Relative humidity		≤ 80 %, non-condensing
Contamination class		2
Insulation class		□
Weight		approx. 200 g

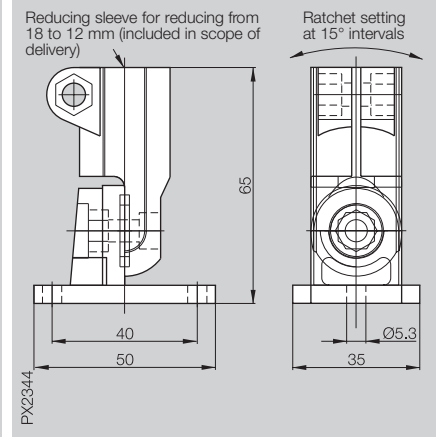
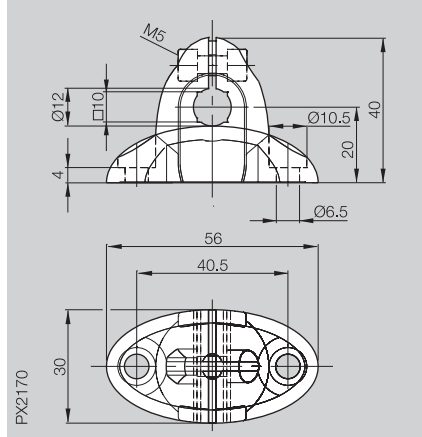


**BMS
Mounting System**

Whether sensors are used in machine tools, in assembly and handling machinery, packaging machines or specialty machines, one thing they all have in common, is that to work properly, they must be precisely positioned.

In demand are holding systems that can be used for a variety of widely disparate sensor applications. Balluff see themselves as a systems provider, and has not only sensors but also a correspondingly high-quality range of mounting accessories in their lineup for optimally positioning sensors in equipment and machines. The Balluff Mounting System can be attached on base plates and on all commonly used rails. The variable accessories kit enables virtually every required spatial angle to be covered. Compatible with tubular and block style sensors, additional accessories such as reflector holders or adapter plates round out the accessories kit.

Description	Base holder	Articulated base holder
Version	for 1 rod \varnothing 12 mm or 10x10 mm	for 1 rod \varnothing 12 mm
Application	for mounting on base plates or extrusions	for mounting on base plates or extrusions



Ordering code	BMS CU-P-D12-A040-00	BMS CUJ-P-D12-R040-00
Material	Plastic POM	Plastic POM

Screws (stainless steel) are included.

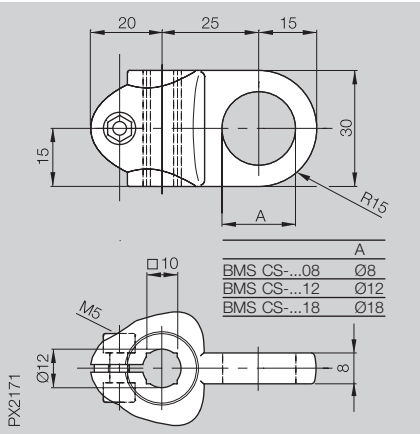


Mounting rods \varnothing 12 mm, anodized aluminum, see page 5.56



Sensor holder

for 1 rod \varnothing 12 mm or 10x10 mm
for tubular sensors M8, M12, M18

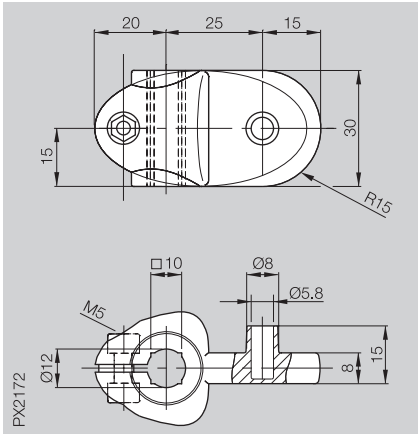


BMS CS-P-D12-AD08-00
BMS CS-P-D12-AD12-00
BMS CS-P-D12-AD18-00

Plastic POM

Reflector holder

for 1 rod \varnothing 12 mm or 10x10 mm
for all reflectors with \varnothing 20 mm (glue attachment) and BOS R-14 \varnothing 51 mm (plug-in)

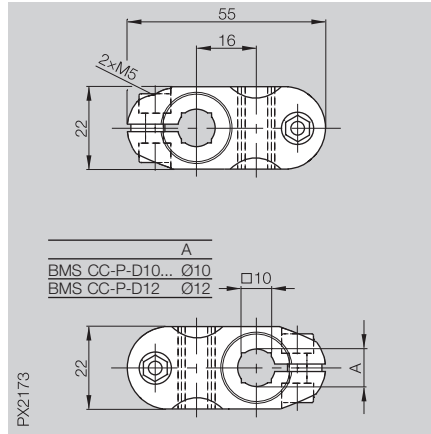


BMS CR-P-D12-AU-00

Plastic POM

Cross-connector

for 2 rods \varnothing 10/12 mm or 10x10 mm
Connecting element for 2 rods \varnothing 10/12 mm or 10x10 mm



BMS CC-P-D10-A-00
BMS CC-P-D12-A-00

Plastic POM

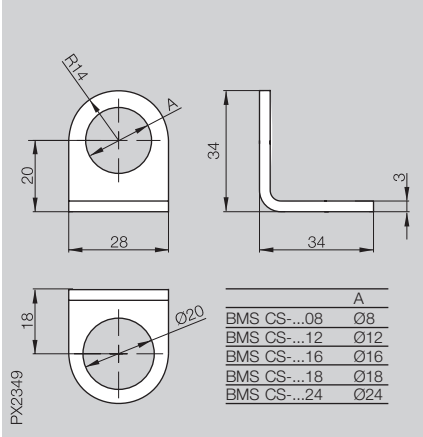


5

Connectors
Splitter boxes
with accessories
Electrical
devices
Fasteners
Tools

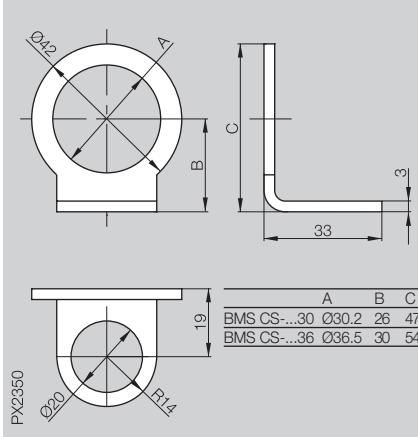
Sensor holder

for clamping cylinder
for M8, M12, M18 tubular sensors as well
as all M8...M18 clamps



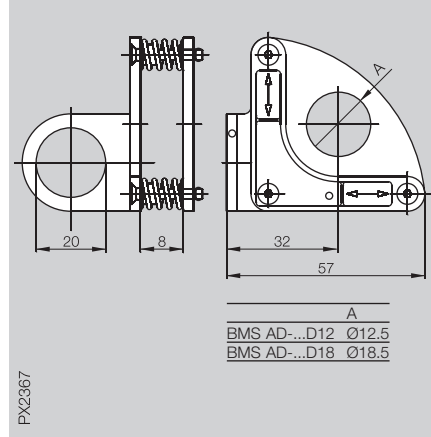
Sensor holder

for clamping cylinders
for M30, M36 tubular sensors as well
as all M36 clamps



Adjusting unit

for clamping cylinders
for adjusting M12 and M18 laser sensors



- BMS CS-M-D12-ID08-01
- BMS CS-M-D12-ID12-01
- BMS CS-M-D12-ID16-01
- BMS CS-M-D12-ID18-01
- BMS CS-M-D12-ID24-01

Stainless steel

- BMS CS-M-D12-ID30-01
- BMS CS-M-D12-ID36-01

Stainless steel

- BMS AD-M-002-D12/D12
- BMS AD-M-002-D12/D18

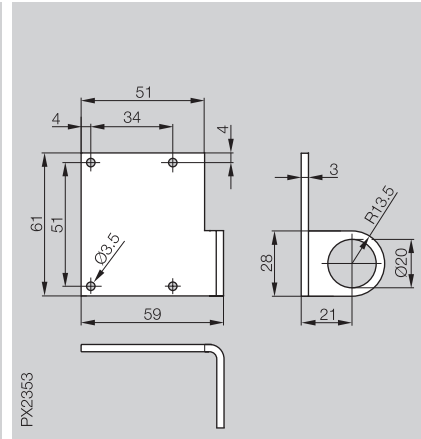
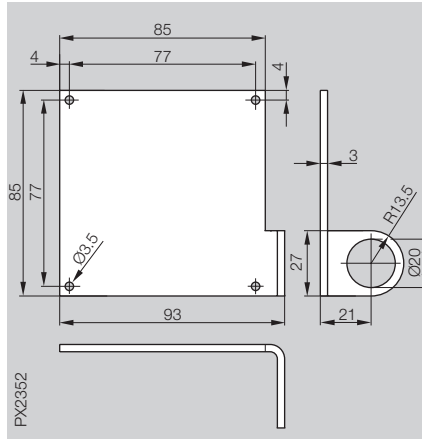
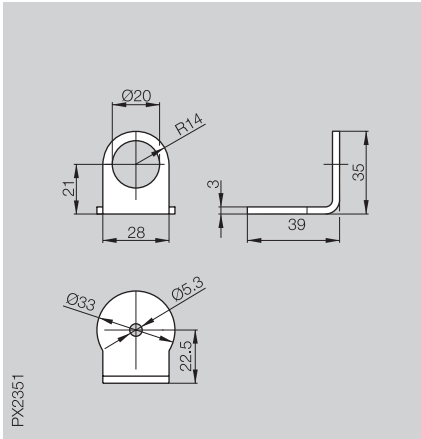
Stainless steel



5

- Connectors
- Splitter boxes with accessories
- Electrical devices
- Fasteners**
- Tools

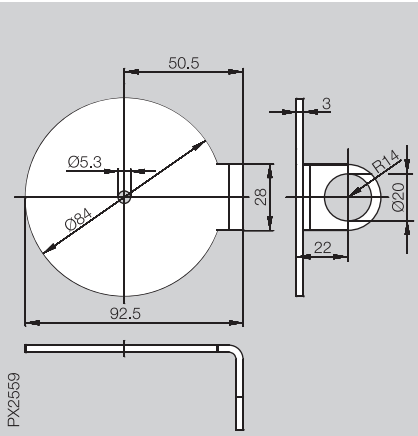
Description	Reflector holder	Reflector holder	Reflector holder
Version	for BOS R1 + R2 + R3	for BOS R11	for BOS R9
Application	for clamping cylinder	for clamping cylinder	for clamping cylinder



Ordering code	BMS CR-M-D12-IU-02	BMS CR-M-D12-IS-03	BMS CR-M-D12-IS-04
Material	Stainless steel	Stainless steel	Stainless steel



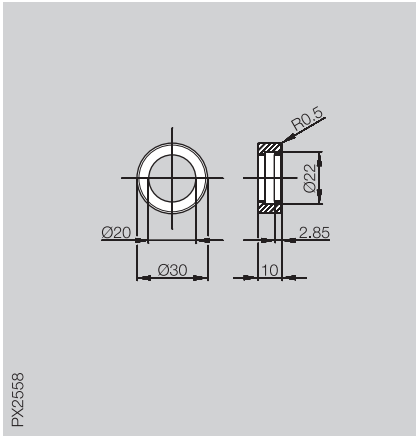
Reflector holder
for BOS R1
for clamping cylinder



BMS CR-M-D12-IU-05

Stainless steel

Adapter ring
for 2x BMS CS-M-D12-IZ
for clamping cylinder

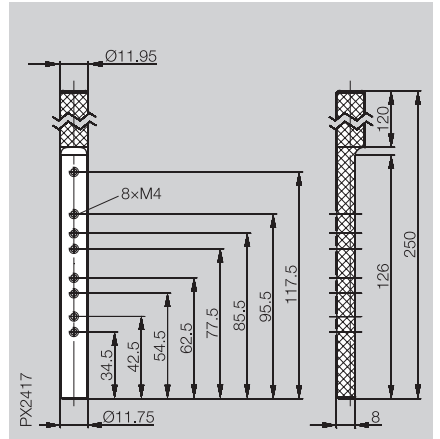
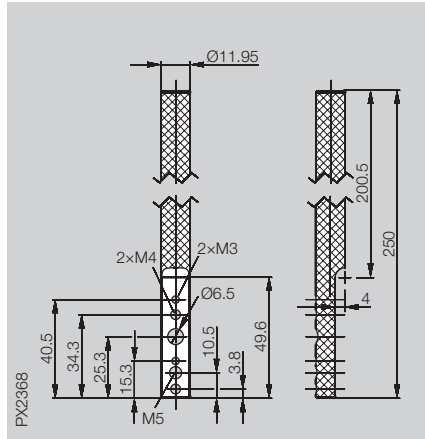
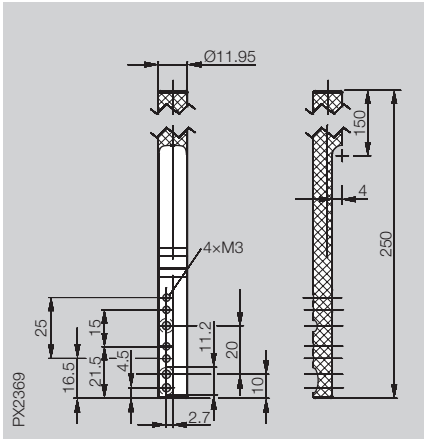


BMS AD-M-003-D12/IZ

Anodized Al



Description	Sensor holder	Reflector holder	Sensor holder
Version	for BOS 2K, BOS 5K, BOS 6K, BES/BOS Q08	for reflectors R1, R9, R14, R22, R26	for slot sensors BGL 5A, 10A, 20A, 30A, 50A, 80A
Application	for base holder Ø 12 mm	for base holder Ø 12 mm	for base holder with/without cross-connector

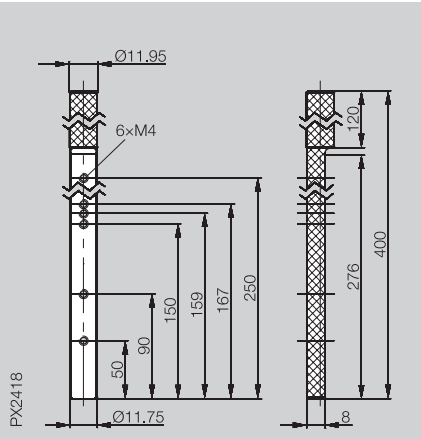


Ordering code	BMS BS-M-D12-0250-02	BMS BS-M-D12-0250-01	BMS BS-M-D12-0250-03
Material	Anodized aluminum	Anodized aluminum	Anodized Al



Sensor holder

for slot sensors BGL 80A, 120A, 180A, 220A
for base holder with/without
cross-connector

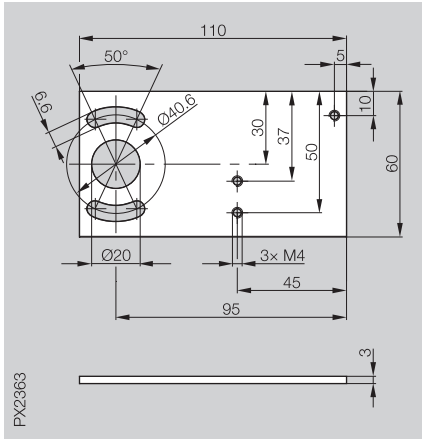


BMS BS-M-D12-0400-04

Anodized Al

Sensor adapter plate

for BOS 21/25/26
for base holder with hold spacing 40 mm
and clamping cylinders

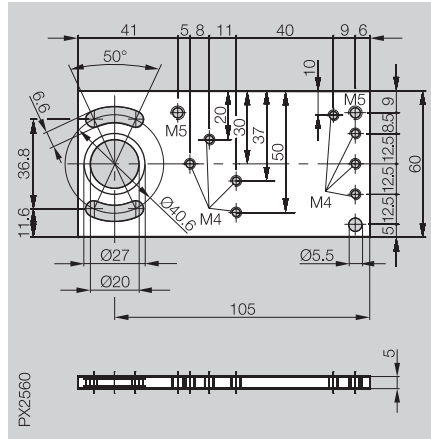


BMS CS-M-D12-BX01-01

Anodized aluminum

Sensor adapter plate

for BOS 21/25/26, BOD 63/66
for base holder with hole spacing 40 mm
and clamping cylinders



BMS CS-M-D12-BX05-02

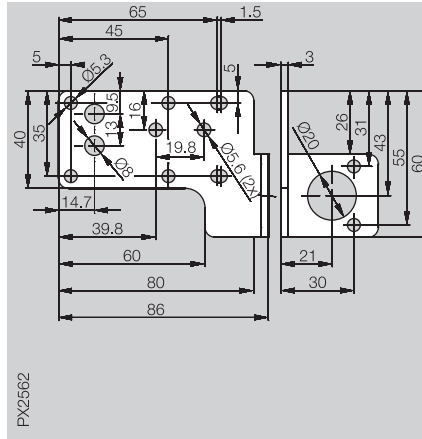
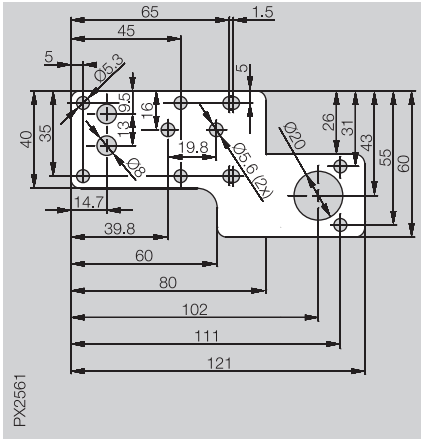
Anodized Al



5

- Connectors
- Splitter boxes with accessories
- Electrical devices
- Fasteners**
- Tools

Description	Sensor holder	Sensor holder	
Version	straight	angled	
Application	Sensor holder for Unicompat, Unisensor, BES IKU	Sensor holder for Unicompat, Unisensor, BES IKU	



Ordering code	BMS CS-M-D12-IQ40-03	BMS CS-M-D12-IQ40-02	
Material	Stainless steel	Stainless steel	



When installing sensors on machines and systems, quick solutions are often required for positioning the sensors. Installers need finished, compatible solutions for service work.

For such work, Balluff offers the BMS Kit-V1 an. From the base holder to rods and cross-connectors to the most commonly needed sensor holders, everything you need for establishing a secure sensor position is included in the Mounting Kit. Once parts have been used, an order form is included for simple reordering.

The tough aluminum case with additional, variable compartments is designed for tough industrial use.

Ordering code:
BMS Kit-V1

Item	Case contents Quantity	Description	Ordering code
1. 	20	Base holder	BMS CU-M-D12-A040-00
2. 	10	Cross-connector	BMS CC-M-D12-B-00
3. 	20	Clamping cylinder	BMS CS-M-D12-IZ
4. 	5	Sensor holder for M8	BMS CS-M-D12-ID08-01
5. 	10	Sensor holder for M12	BMS CS-M-D12-ID12-01
6. 	10	Sensor holder for M16	BMS CS-M-D12-ID16-01
7. 	10	Sensor holder for M18	BMS CS-M-D12-ID18-01
8. 	10	Sensor holder for M24	BMS CS-M-D12-ID24-01
9. 	5	Sensor holder for M30	BMS CS-M-D12-ID30-01
10. 	5	Sensor holder for Q40 straight	BMS CS-M-D12-IQ40-03
11. 	5	Sensor adapter plate for BOS 21/25/26	BMS CS-M-D12-BX01-01
12. 	5	Reflector holder for BOS R-9	BMS CR-M-D12-IS-04
13. 	5	Reflector holder for R1, R9, R14, R22, R26	BMS BS-M-D12-0250-01
14. 	5	Reflector BOS R-9	BOS R-9
15. 	10	Mounting rod 150 mm	BMS RS-M-D12-0150-00
16. 	10	Mounting rod 250 mm	BMS RS-M-D12-0250-00

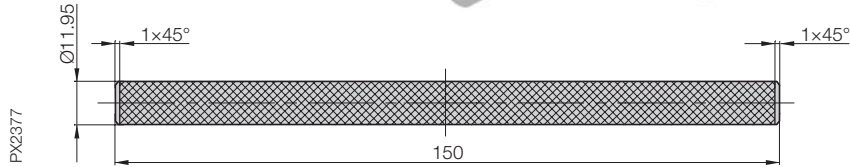


5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Mounting rods \varnothing 12 mm, anodized aluminum,

- BMS RS-M-D12-**0150**-00 = 150 mm
- BMS RS-M-D12-**0250**-00 = 250 mm
- BMS RS-M-D12-**1000**-00 = 1000 mm
(for user assembly)



The mounting rods are knurled full-length. This prevents any position change.



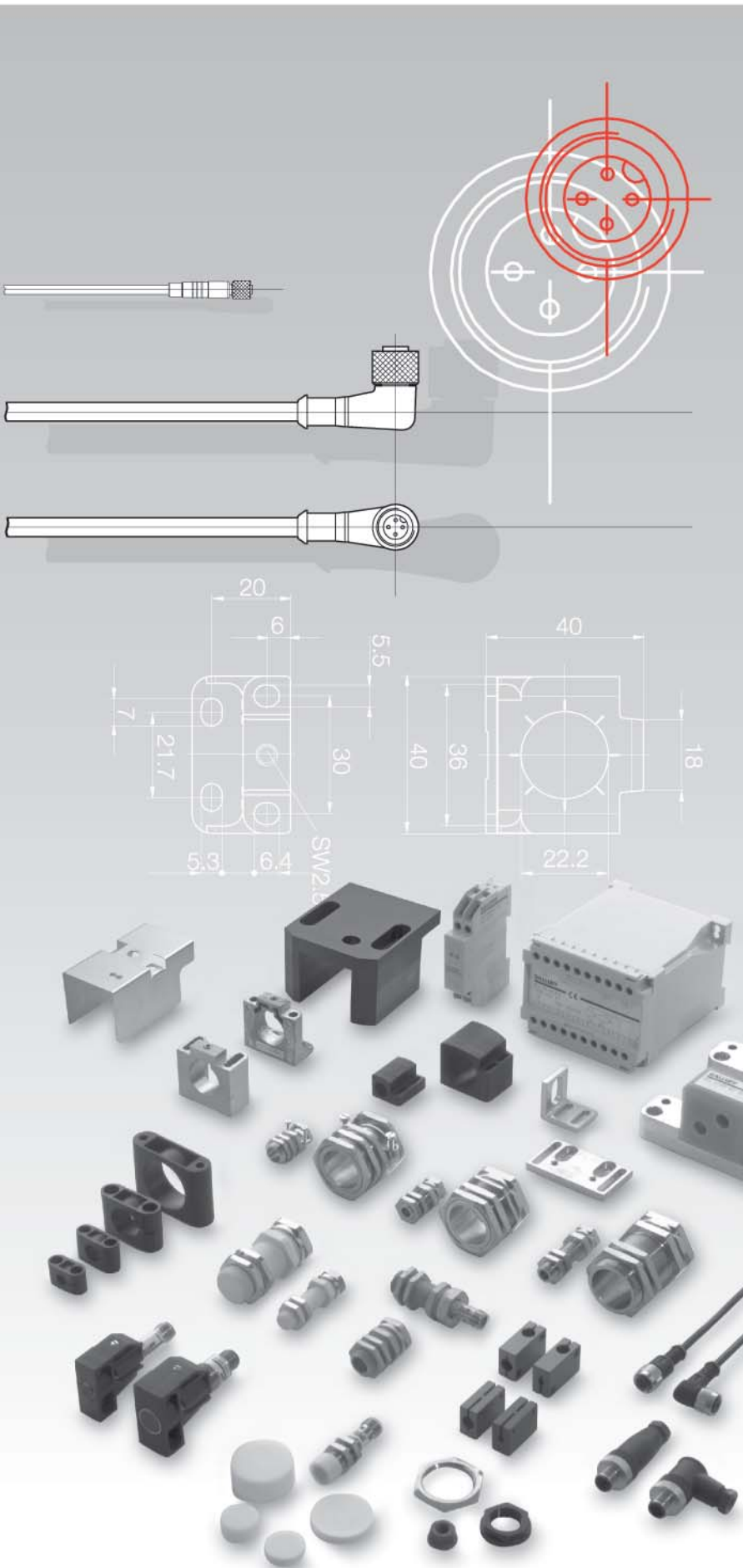


5

Connectors
Splitter boxes
with
accessories
Electrical
devices

Fasteners
Tools

Accessories



- Connectors**
- 5.2 DC connectors
- 5.3 M5 connection (S26)
- 5.3 M8 connection (S49, S75)
- DC connection cable with M8 connector (S49, S75)
- 5.10 DC connection cables
- DC connectors MQ12 connection (S4)
- M12 connection (S4)
- 5.18 DC connectors for user assembly
- 5.22 AC/DC connectors M12 connection (S27)
- 5.23 DC-2-wire M12 connection (S220)

- Splitter boxes and accessories**
- 5.24 BSB splitter boxes M12, metal
- 5.26 BSB splitter boxes M12, plastic
- 5.29 BSB splitter boxes M8, plastic
- 5.30 Connectors
- 5.32 Screw plugs, Tee, adapters
- 5.34 BSB splitter boxes

- Electrical devices**
- 5.35 Pulse extender
- 5.36 Analog switching amplifiers
- 5.38 Power supplies
- 5.40 Testers
- 5.42 Signal adapter
- 5.45 Digital display

- Fasteners**
- 5.46 BMS Mounting System
- 5.58 Clamps, holders, mounting cuffs
- 5.65 Mounting brackets, reducing sleeve
- 5.66 Positive stops
- 5.67 Mounting clamps for row mounting of sensors
- 5.68 Mounting bracket, mounting socket and holding system for Unicomact
- 5.69 Weld protection and protective cover for Unicomact, mounting plate for Unisensor
- 5.70 Cover nuts, nuts, seal nut

- Tools**
- 5.74 BMF Hex Key, Important notes



An old problem in installing proximity switches has now been solved. Balluff **clamps with positive stop** ensure the exact and correct position of the proximity switch.

Proximity switches can be quickly and easily changed even in difficult to access locations, and retain their sensing position without readjustment thanks to the positive stop.

Note for clamps with positive stop made of metal

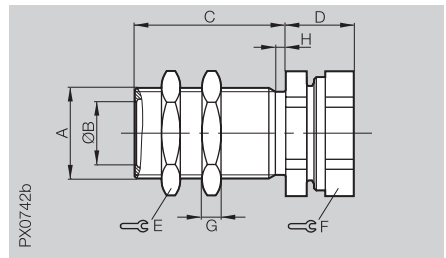
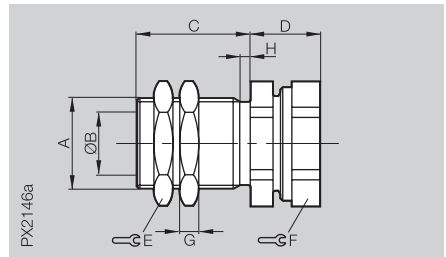
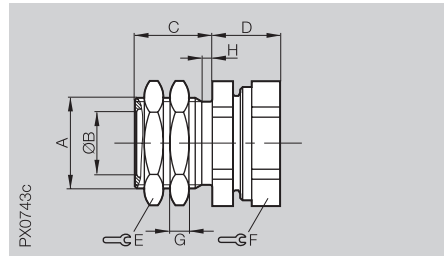
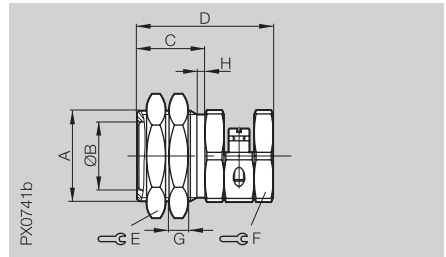
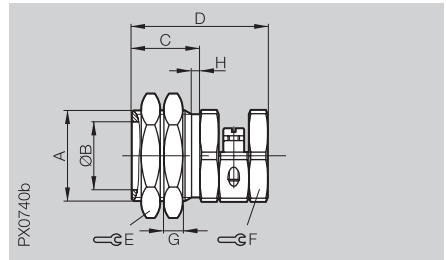
The switching distance of the proximity switch may be reduced by use of these brackets. Note this when using this clamping system.

Advantages

- Short downtimes
- Quickly replaced
- Once set, always in the right position
- No readjustment
- Easy to mount and replace proximity switches thanks to a positive stop
- Easy to attach the sensors using a pressure screw

Application

For all sensors with corresponding diameter.



Clamps without positive stop for sensors (material: CuZn coated)

	A	ØB	C	D	E	F	G	H
BES 12,0-KH-4	M16×1	12	16	30.5	SW22	SW17	3.9	2.1
BES 18,0-KH-4	M24×1.5	18	18	36	SW30	SW24	5.0	3.2
BES 30,0-KH-4	M36×1.5	30	18	40	SW41	SW41	5.9	3.2

Clamp with positive stop for sensors (material: CuZn coated)

	A	ØB	C	D	E	F	G	H
BES 08,0-KH-4-F	M12×1	8	15.4	30	SW17	SW17	3.8	2.1
BES 12,0-KH-4-F	M16×1	12	16	30.5	SW20	SW17	3.9	2.1
BES 18,0-KH-4-F	M24×1.5	18	18	36	SW30	SW24	5.0	3.2
BES 30,0-KH-4-F	M36×1.5	30	18	40	SW41	SW41	5.9	3.2

Clamp with positive stop for sensors with thread length ≥ 30 mm (material: CuZn coated)

	A	ØB	C	D max.	E	F	G	H
BES 05,0-KH-2S	M8×1	5	13	11	SW13	SW13	4	2.1
BES 08,0-KH-2S*	M12×1	8	17.5	14.5	SW17	SW17	4	2.1
BES 12,0-KH-2S*	M16×1	12	19.5	14.5	SW22	SW22	4	2.1
BES 18,0-KH-2S*	M24×1.5	18	20.5	15.5	SW30	SW30	5	3.2
BES 30,0-KH-2S*	M36×1.5	30	20.5	15.5	SW41	SW41	6	3.2

Clamp with positive stop for sensors with thread length ≥ 45 mm (material: CuZn coated)

	A	ØB	C	D max.	E	F	G	H
BES 18,0-KH-2M	M24×1.5	18	30	18.5	SW30	SW30	5	3.2

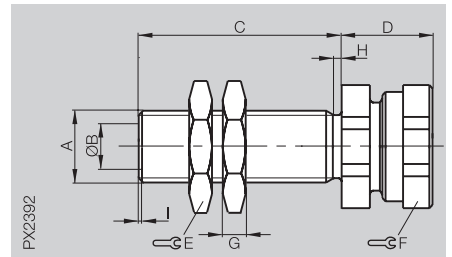
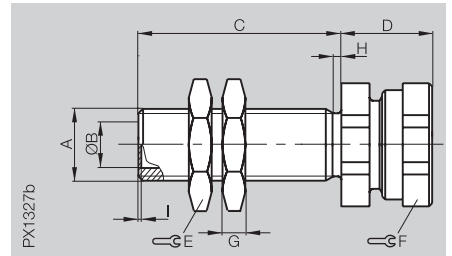
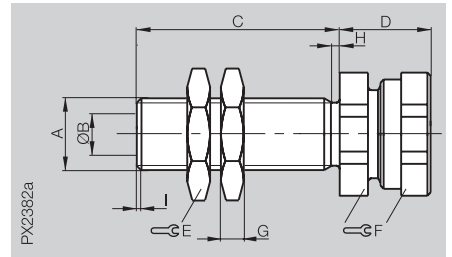
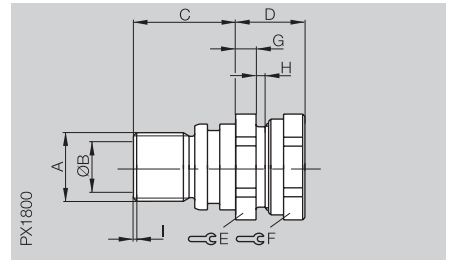
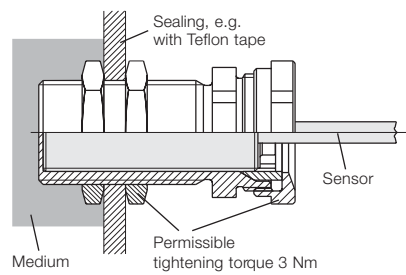
Clamp with positive stop for sensors with thread length ≥ L (material: CuZn coated)

	A	ØB	C	D max.	E	F	G	H
BES 08,0-KH-2L*	M12×1	8	34	14.5	SW17	SW17	4	2.1
BES 12,0-KH-2L*	M16×1	12	30	14.5	SW22	SW22	4	2.1
BES 18,0-KH-2L*	M24×1.5	18	40	18	SW30	SW30	5	3.2
BES 30,0-KH-2L*	M36×1.5	30	40	18	SW41	SW41	6	3.2

*Also available for welding machines (Teflon-coated).

Ordering example (weld-immune):
BES 12,0-KH-2L/W

Installation example
clamp BES ...-KH-3L
 particularly suitable
 for sensing in liquid media



Clamps with positive stop for sensors in sealed installation (material: PBT fiberglass reinforced)

	A	ØB	C	D	E	F	G	H	I
BES 12,0-KH-5F	M16x1	12	22,5	15.5	SW22	SW22	4	2.1	0.8

Clamps with positive stop for sensors in sealed installation (material: PBT fiberglass reinforced)

	A	ØB	C	D	E	F	G	H	I
BES 12,0-KH-3X	M12x1	8	15.4	30	SW17	SW17	3.8	2.1	1

Clamps with positive stop for sensors in sealed installation (material: PBT fiberglass reinforced)

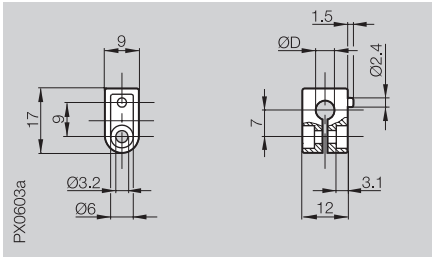
	A	ØB	C	D max.	E	F	G	H	I
BES 08,0-KH-3L	M12x1	8	34	14.5	SW17	SW17	4	2.1	0.5
BES 12,0-KH-3L	M16x1	12	30	14.5	SW22	SW22	4	2.1	1
BES 18,0-KH-3L	M24x1.5	18	40	19.5	SW30	SW30	5	3.2	1

Clamp with positive stop for sensors with thread length ≥ 30 mm (material: stainless steel)

	A	ØB	C	D max.	E	F	G	H
BES 08,0-KH-6L*	M12x1	8	34	14.5	SW17	SW17	4	2.1

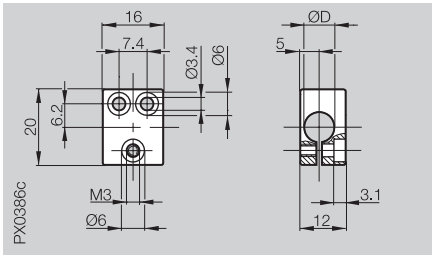
*Also available for welding machines (Teflon-coated).

Ordering example (weld-immune):
BES 08,0-KH-6L/**W**



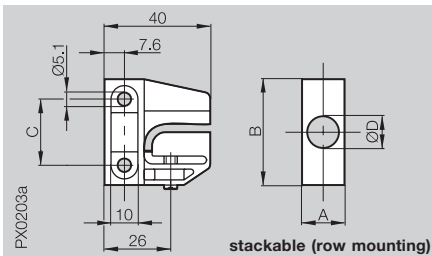
Mounting clamp for sensors \varnothing 4 mm, M5 or \varnothing 6.5 mm (material: PA 6)

	\varnothing D
BES 04,0-KB-1	4
BES 05,0-KB-1	5
BES 06,5-KB-1	6.5



Mounting clamp for sensors \varnothing 6.5 mm, \varnothing 8 mm or M8 (material: Al)

	\varnothing D
BES 06,5-KB-7	6.5
BES 08,0-KB-7	8

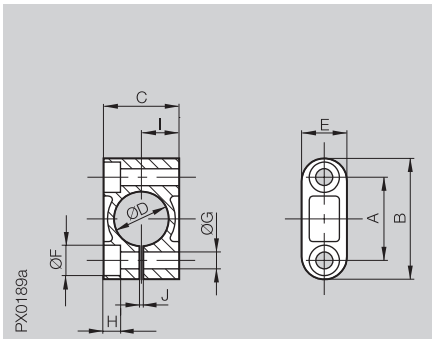


Mounting clamp for sensors M12 or M18 (material: PA 6)

	\varnothing D	A	B	C
BES 12,0-KB-2	12	16	40	25
BES 18,0-KB-2	18	22	45	30

Mounting clamp with positive stop for sensors M12 (material: PA 6)

	\varnothing D	A	B	C
BES 12,0-KB-2-F	12	16	40	25



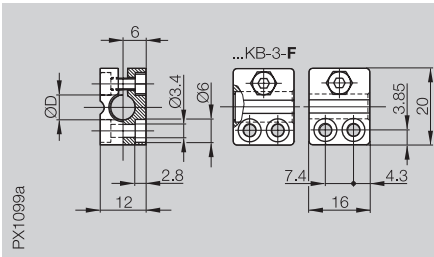
Mounting cuffs (material: PA 6)

	\varnothing D	A	B	C	E	\varnothing F	\varnothing G	H	I	J
BES 06,5-BS-1	6.4	17	27	16	12	8	4.5	4.5	8	1
BES 08,0-BS-1	7.9	17	27	16	12	8	4.5	4.5	8	1
BES 12,0-BS-1	11.9	22	32	20	12	8	4.5	4.5	10	1
BES 14.5-BS-1	14.5	22	32	20	12	8	4.5	4.5	10	1
BES 16,0-BS-1	16	26	36	26	12	8	4.5	4.5	13	1
BES 18,0-BS-1	17.9	26	36	26	12	8	4.5	4.5	13	1
BES 20,0-BS-1	20	32	45	30	15	10	5.5	5.5	15	2
BES 22,0-BS-1	21.9	32	45	30	15	10	5.5	5.5	15	2
BES 30,0-BS-1	30	42	55	38	18	10	5.5	5.5	19	1.5
BES 36,0-BS-1	35.9	48	61	44	18	10	5.5	5.5	22	1.5

Application

For all sensors with corresponding diameter.



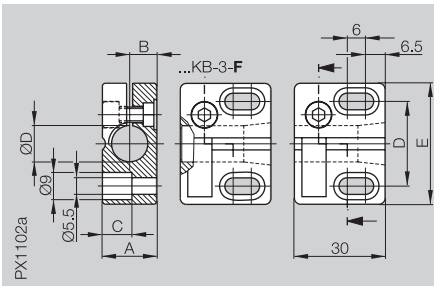


Mounting clamp without positive stop for sensors Ø 3 mm to M8

	Ø D				
BES 03,0-KB-3	3				
BES 04,0-KB-3	4				
BES 05,0-KB-3	5				
BES 06,5-KB-3	6.5				
BES 08,0-KB-3	8				

Mounting clamp with positive stop for sensors Ø 8 mm or M8

BES 08,0-KB-3-F	8				
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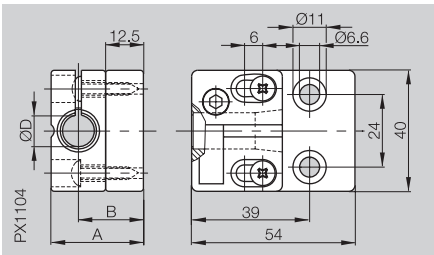


Mounting clamp without positive stop for sensors M12 or M18 non-flush

	Ø D	A	B	C	D	E
BES 12,0-KB-3	12	18	9	9.7	28	40
BES 18,0-KB-3	18	24	12	13.5	28	40

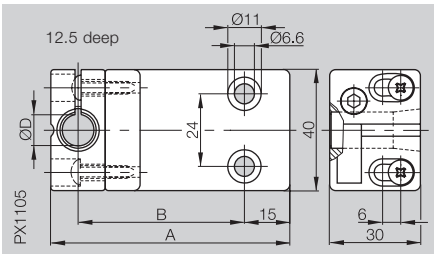
Mounting clamp with positive stop for sensors M12, M18 or M30 flush

BES 12,0-KB-3-F	12	18	9	9.7	28	40
BES 18,0-KB-3-F	18	24	12	13.5	28	40
BES 30,0-KB-3-F	30	36	18	19.5	42	54



Mounting clamp with positive stop for vertical insertion of sensors for M12 or M18 flush, with mounting plate

	Ø D	A	B
BES 12,0-KB-3-F-SA1	12	30.5	21.5
BES 18,0-KB-3-F-SA1	18	36.5	24.5



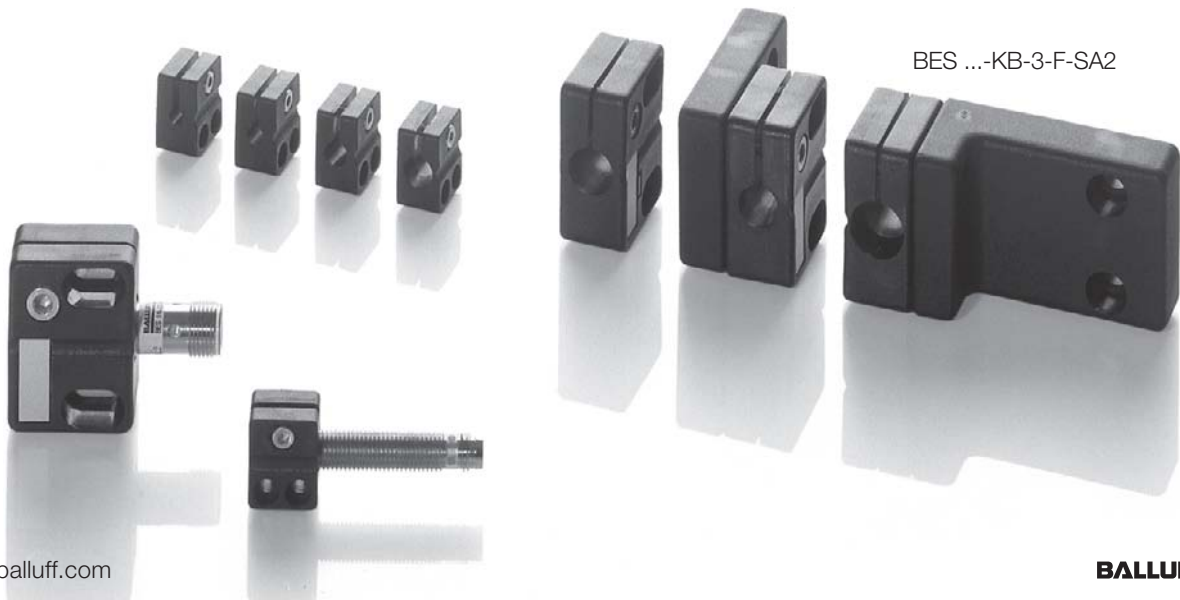
Mounting clamp with positive stop for horizontal insertion of sensors for M12 or M18 flush, with mounting plate

	Ø D	A	B
BES 12,0-KB-3-F-SA2	12	79	55
BES 18,0-KB-3-F-SA2	18	85	58

These mounting clamps made of PA 6 are ideal for on-location installation of sensors in the handling industry.

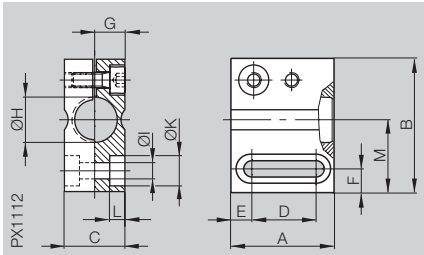
BES ...-KB-3-F-SA1

BES ...-KB-3-F-SA2



5

- Connectors
- Splitter boxes with accessories
- Electrical devices
- Fasteners**
- Tools

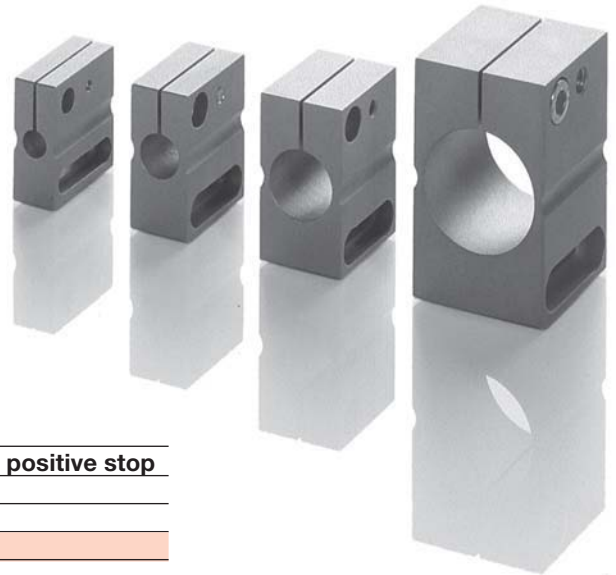


Mounting clamp with positive stop (material: Al)

	A	B	C	D	E	F	G	ØH	ØI	ØK	L	M
BES 08,0-KB-4-F	28	30	12	20	4	5	6	8	3.4	6	3.4	15
BES 12,0-KB-4-F	28	35	16	17	5.5	6	8	12	4.3	8	4	19
BES 18,0-KB-4-F	28	40	22	17	5.5	6	11	18	4.3	8	4	20
BES 30,0-KB-4-F	34	56	34	22	6	7	17	30	6.4	10	6	28

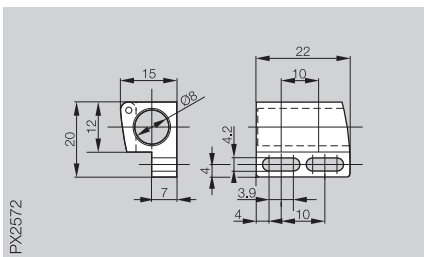
Note for aluminum mounting clamps with positive stop

The switching distance of the proximity switch may be reduced by using these clamps. Take note when using this clamping system.



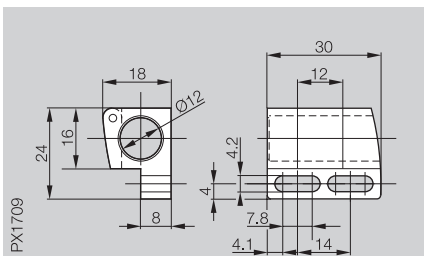
Application

For all sensors of corresponding diameter.



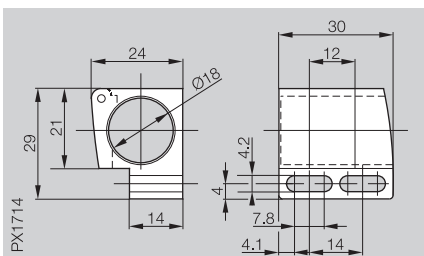
Mounting clamp with positive stop (material: PC plastic)

BES 08,0-KB-5-F



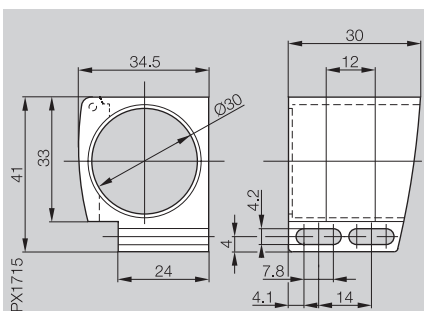
Mounting clamp with positive stop (material: PC plastic)

BES 12,0-KB-5-F



Mounting clamp with positive stop (material: PC plastic)

BES 18,0-KB-5-F

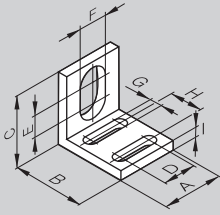


Mounting clamp with positive stop (material: PC plastic)

BES 30,0-KB-5-F



PX1090b



Mounting bracket (material: Al)

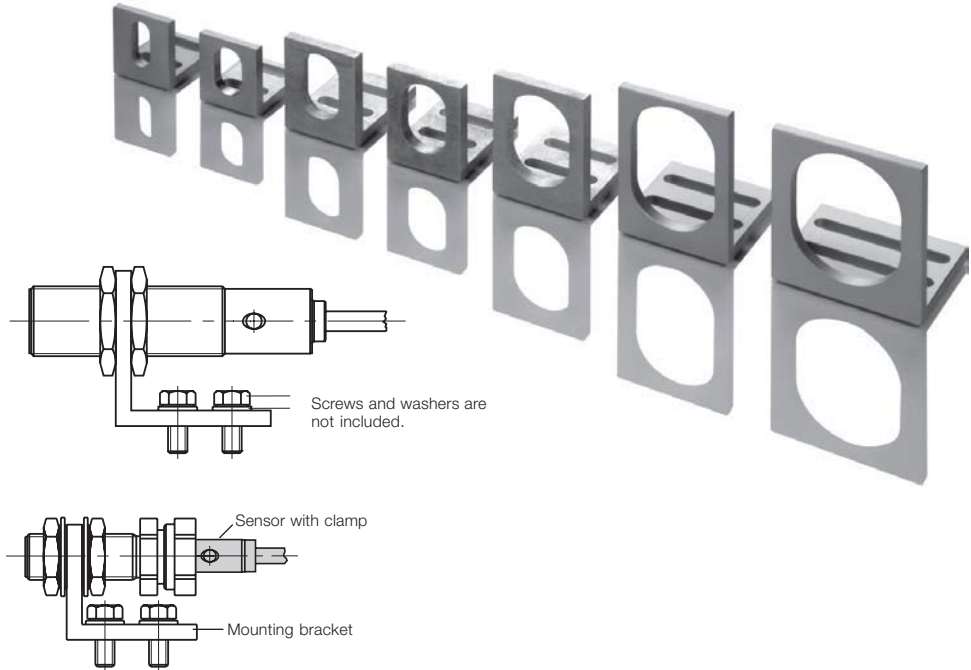
	A	B	C	D	E	F	G	H	I			
BES 08-HW-1	25	30	30	14	12	8.1	5.2	14	4			
BES 12-HW-1	25	30	30	14	9	12.1	5.2	14	4			
BES 16-HW-1	30	40	40	18	12	16.1	5.2	14	5			
BES 18-HW-1	30	40	40	18	11	18.1	5.2	14	5			
BES 24-HW-1	35	40	50	23	13	24.1	5.2	14	5			
BES 30-HW-1	40	40	60	30	19	30.1	5.2	14	5			
BES 36-HW-1	50	40	60	40	13	36.1	5.2	14	5			

These aluminum mounting brackets provide a way of easily and quickly attaching sensors to the machine.

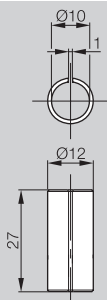
For tubular sensors, we recommend the additional use of clamps (see pages 5.58 and 5.61).

Application

For all sensors of corresponding diameter.



PX2166



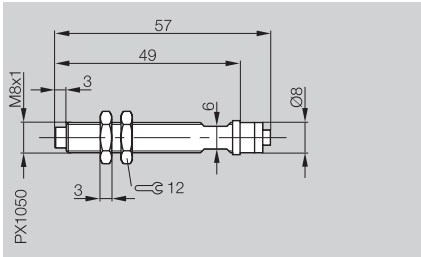
Reducing sleeve for reducing from 12 to 10 mm (material: PC)

BMS AD-P-001-12/10

Application

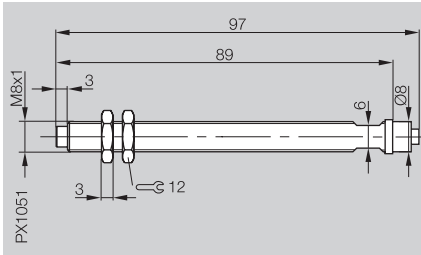
Reducing sleeve for sensors with Ø 10 mm for installing in clamps and holders with Ø 12 mm.





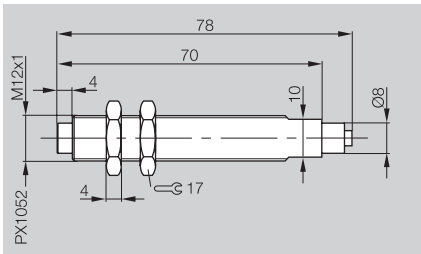
Positive stop

BES 08-FA-49
 Material: stainless steel
 Temperature range: -25...+100 °C
 Spring force: 3 N
 max. impact force $F_{max.}$: 100×F N
 Spring travel: 2 mm
 Permissible tightening torque: 15 Nm



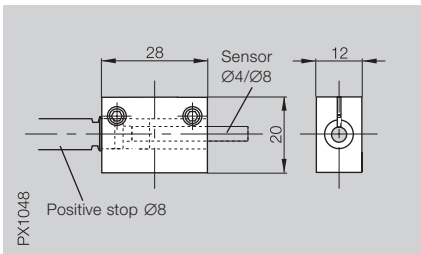
Positive stop

BES 08-FA-89
 Material: stainless steel
 Temperature range: -25...+100 °C
 Spring force: 3 N
 max. impact force $F_{max.}$: 100×F N
 Spring travel: 2 mm
 Permissible tightening torque: 15 Nm



Positive stop

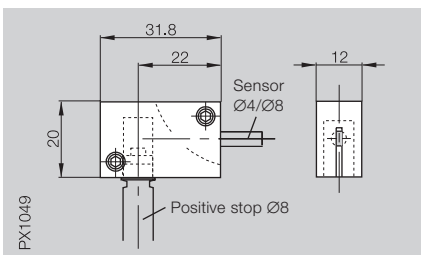
BES 12-FA-70
 Material: stainless steel
 Temperature range: -25...+100 °C
 Spring force: 4 N
 max. impact force $F_{max.}$: 100×F N
 Spring travel: 3 mm
 Permissible tightening torque: 25 Nm



Positive stop

**mounting cuff straight
 for sensors with Ø 4 mm or Ø 8 mm**

BES 08-FA-BS-4,0-G
BES 08-FA-BS-8,0-G
 Material: Al
 Temperature range: -25...+100 °C
 Permissible tightening torque: 15 Nm



Positive stop

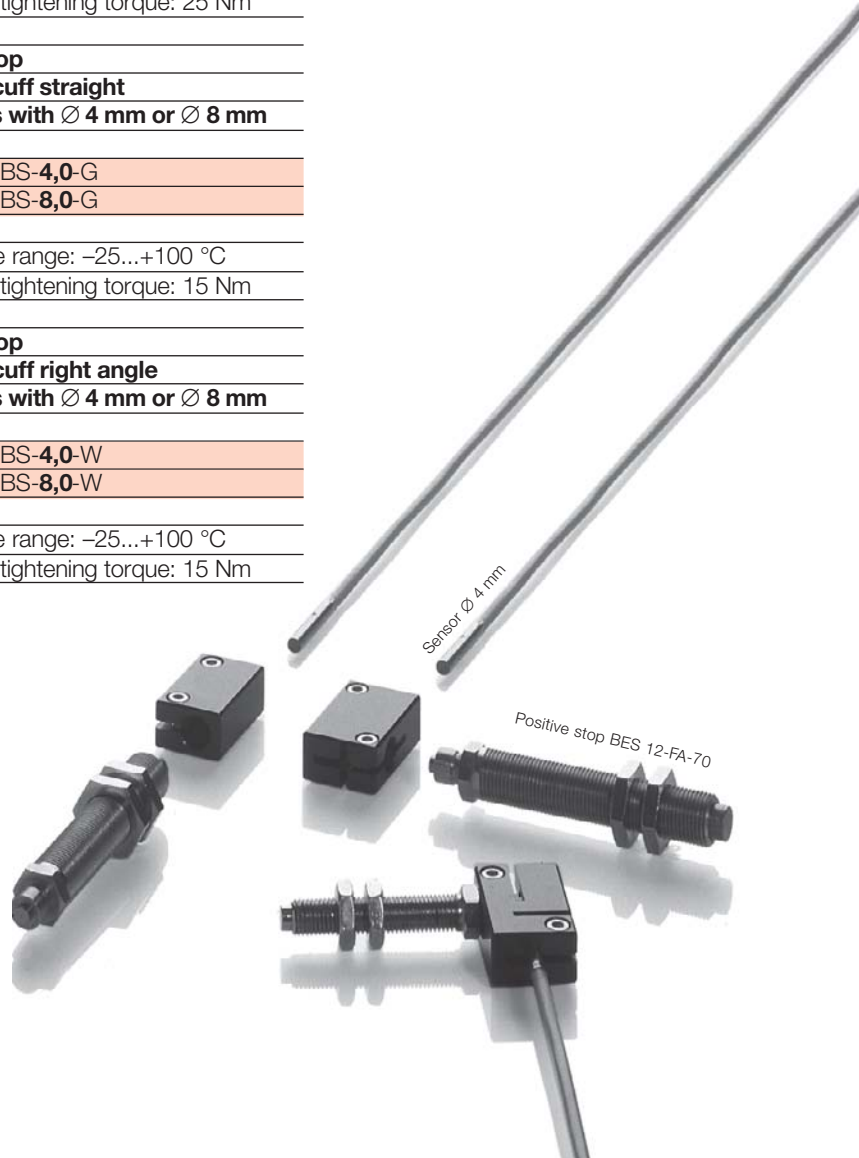
**mounting cuff right angle
 for sensors with Ø 4 mm or Ø 8 mm**

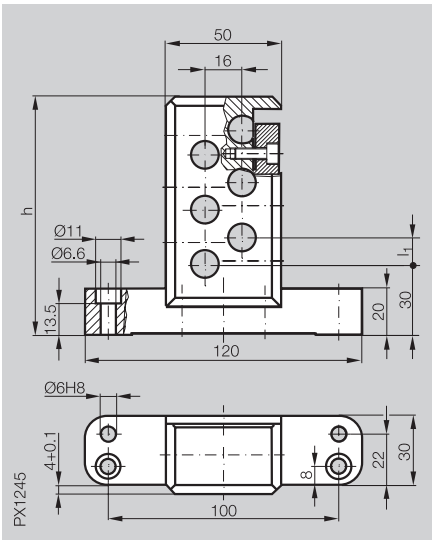
BES 08-FA-BS-4,0-W
BES 08-FA-BS-8,0-W
 Material: Al
 Temperature range: -25...+100 °C
 Permissible tightening torque: 15 Nm

**Positive stops
 for sensors with Ø 4 mm or
 Ø 8 mm housing**

A positive stop combined with the corresponding mounting cuff is used to hold inductive proximity switching with housing diameters of Ø 4 mm or Ø 8 mm.

The desired switching point between the proximity switch and the trigger pin can be set wherever needed.





**Mounting clamp for insertion of sensors M12
flush mountable with 12 or 16 mm spacing
for cam trays with 12 or 16 mm spacing**

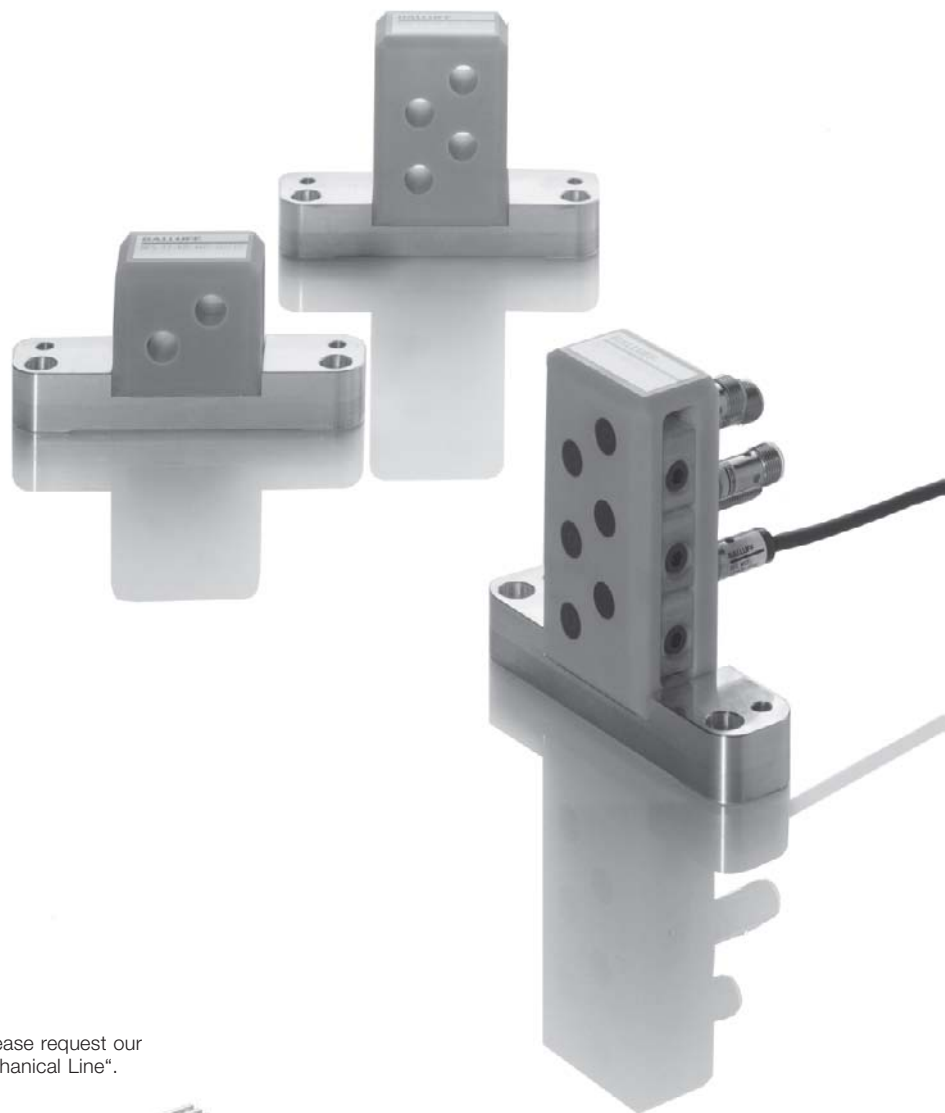
	spacing l ₁	switch positions	height h
BES 12,0-KB-602-02/12	12 mm	2	57 mm
BES 12,0-KB-602-04/12	12 mm	4	81 mm
BES 12,0-KB-602-06/12	12 mm	6	105 mm
BES 12,0-KB-602-06/16	16 mm	6	125 mm

Material	Mounting plate	Al
	Mounting clamp and fastening bracket	EP (Reinforced fiberglass)
Clamping	M5 screw, galvanized, DIN 912	
Ambient temperature range	-25...+70 °C	

These mounting clamps allow you to arrange switch inserts in a pattern to be used in conjunction with Balluff cam trays as switching indicators for controlling applications.

The configuration corresponds to the switch positions of our multiple position switches. The flange is constructed so that the entire mounting clamp is interchangeable with our multiple position switches in housing series 602 as per DIN 43697.

- Mounting clamp with positive stop for inductive proximity switches
- Accepts standard M12 proximity switches
- Use of connector-type proximity switches is recommended for ease of installation
- Mounting clamp made of fiberglass reinforced epoxy, making it resistant to most coolants and lubricants



For cam trays, please request our catalog „The Mechanical Line“.

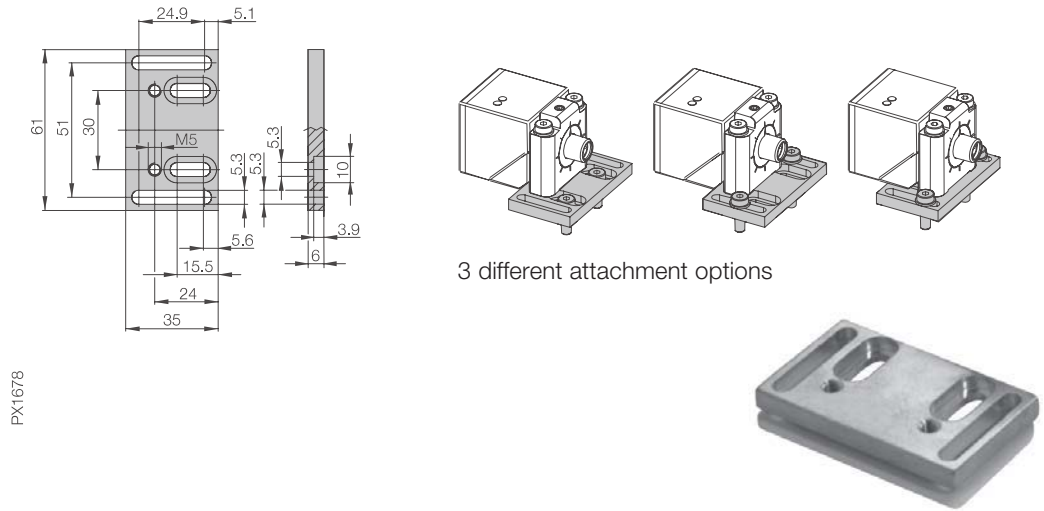


5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Description	Mounting bracket for Unicomcompact
Ordering code	BES Q40-HW-1

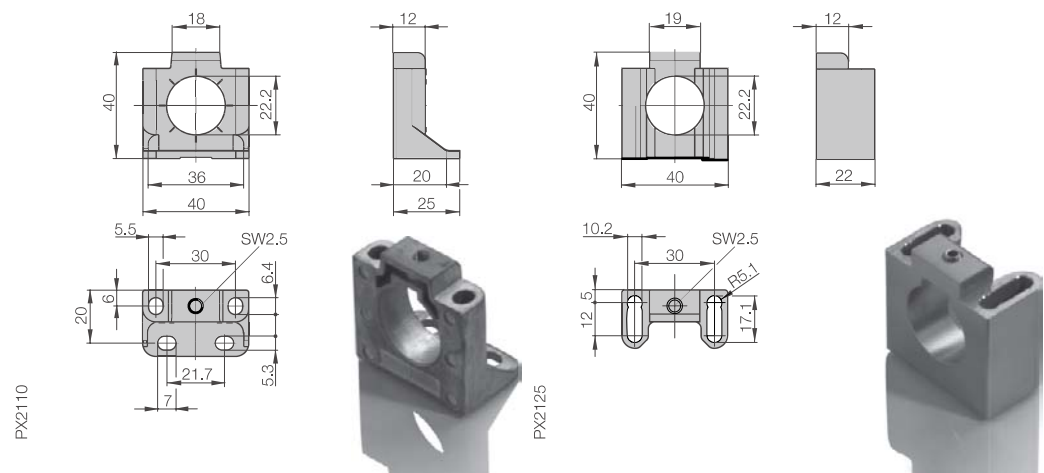
Material: Al



Description	Mounting socket for Unicomcompact (3-/4-wire)	Mounting socket for Unicomcompact (3-/4-wire)
Ordering code	BES Q40-HW-2	BES Q40-HW-3

Material: Al

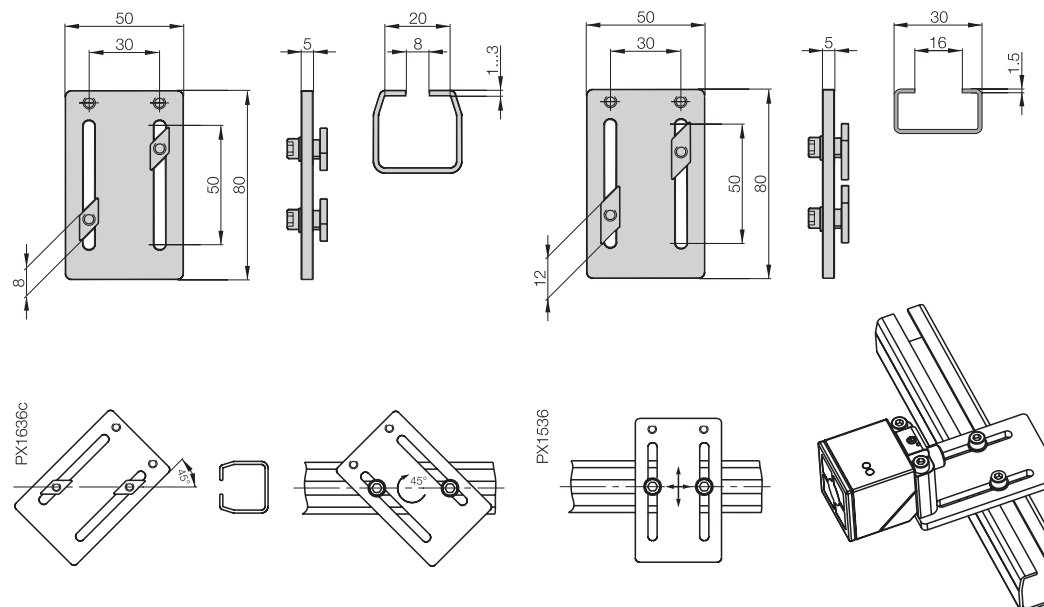
Please note permissible installation variants in section **1.1** and **1.5**!



Description	Holding system for Unicomcompact	Holding system for Unicomcompact
Ordering code	BES HS-01-P1-C8/Q40	BES HS-01-P1-C16/Q40

This holding system is used to attach Unicomcompact sensors to extruded rails.
Material: Al/CuZn.

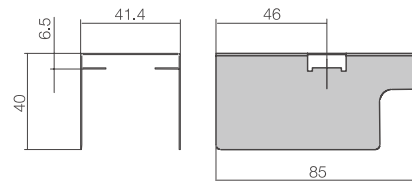
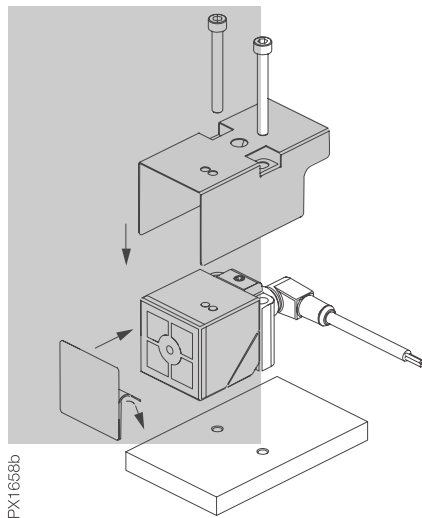
- The mounting set consists of:
- 1 mounting plate
 - 2 tenon blocks
 - 2 cheese head screws M5x10 DIN 912 Zinc plated
 - 2 washers Ø 5.3 DIN 533
 - 2 cheese head screws M5x40 ISO 4762



Description	Weld protection for Unicomact (3-/4-wire)
Ordering code	BES Q40-SH-1

Weld protection for magnetic field immune Unicomact sensors BES Q40KFU-...

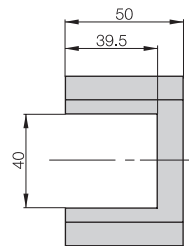
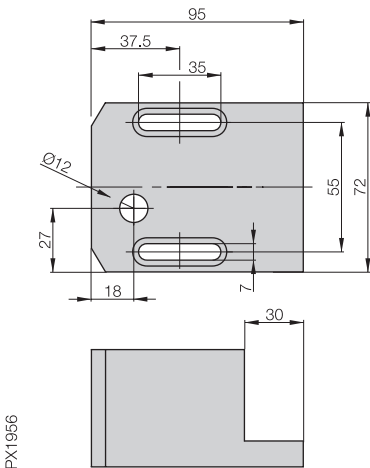
Consists of a protective cover and a self-adhering PTFE film for protecting the active surface. When replacing the sensor head it is not necessary to remove the weld protection.



Material: Al

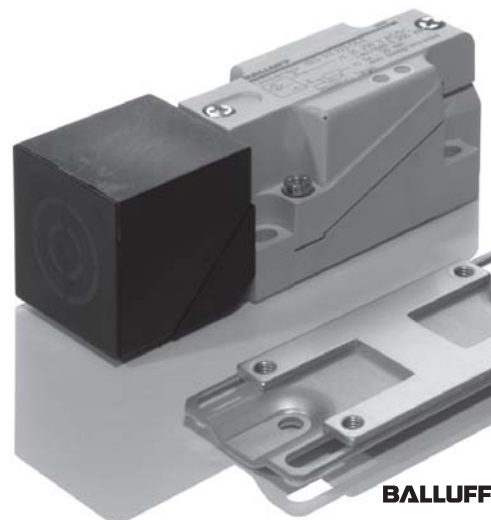
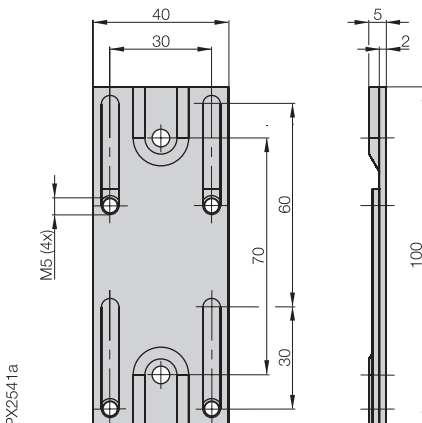
Description	Protective cover for Unicomact (3-/4-wire)
Ordering code	BES Q40-SH-2

Material: PA 6 black



Description	Mounting plate for Unisensor
Ordering code	Montageplatte B 4 - 2057

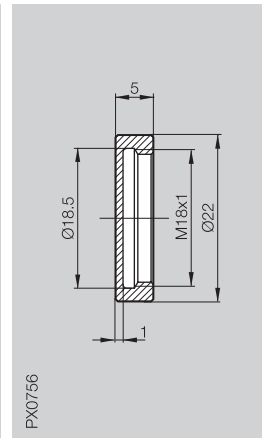
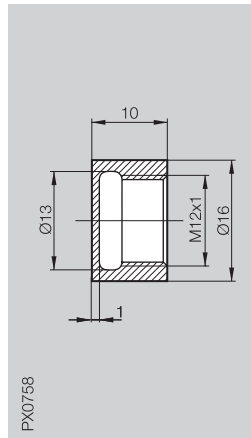
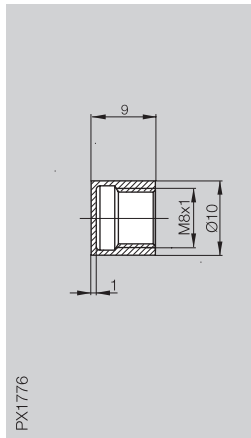
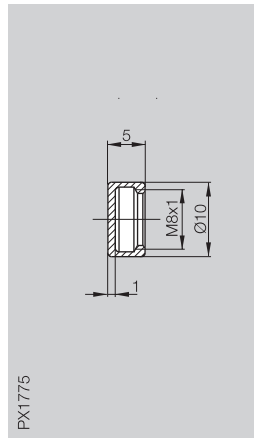
Unisensors can be adjusted up to 30 mm on this mounting plate while wired. Loosening the sensor mounting screws (M5x25; included in set) allows the Unisensor to be easily repositioned to the desired location. Tighten screws! The mounting plate is made of corrosion-resistant aluminum.



5

- Connectors
- Splitter boxes with accessories
- Electrical devices
- Fasteners**
- Tools

Description	Cover nut	Cover nut	Cover nut	Cover nut
-------------	-----------	-----------	-----------	-----------



Ordering code	BES 08-SM-1	BES 08-SM-1F	BES 12-SM-2	BES 18-SM-1
---------------	-------------	--------------	-------------	-------------

This cover nut is threaded on to a M8x1 housing. It is made of PTFE and protects the active surface from weld splatter.

This cover nut is threaded on to a M8x1 housing. It is made of PTFE and protects the active surface from weld splatter.

This cover nut is threaded on to a M12x1 housing. It is made of POM and can be used for high mechanical stress applications.

This cover nut is threaded on to a M18x1 housing. It is made of PTFE and protects the active surface from weld splatter. It is also applicable for high temperatures and especially resistant to chemical influences.

Please note!
The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.

Please note!
The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.

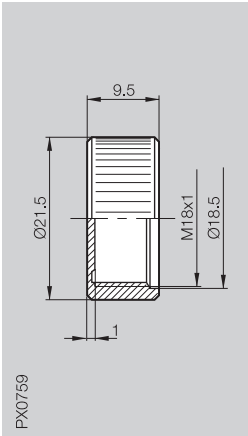
Please note!
The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.

Please note!
The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.

Cover nut

Cover nut

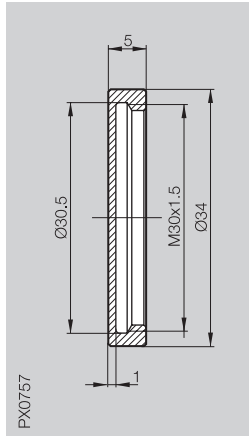
Cover nut



PX0759

BES 18-SM-2

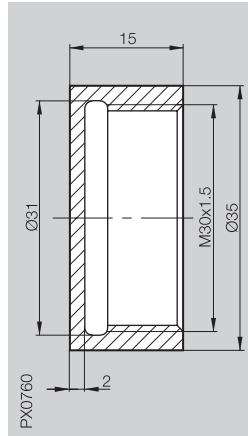
This cover nut is threaded on to a M18x1 housing. It is made of POM and can be used for high mechanical stress applications.



PX0757

BES 30-SM-1

This cover nut is threaded on to a M30x1.5 housing. It is made of PTFE and protects the active surface from weld splatter. It is also applicable in high temperatures and especially resistant to chemical influences.



PX0760

BES 30-SM-2

This cover nut is threaded on to a M30x1.5 housing. It is made of POM and can be used for high mechanical stress applications.

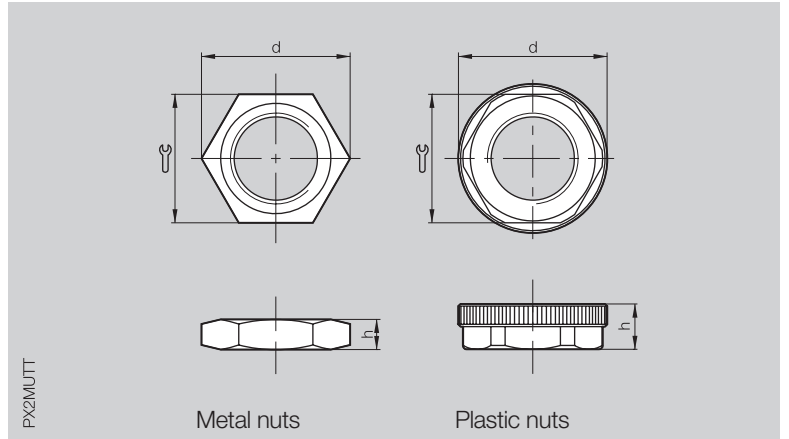
Please note!
The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.

Please note!
The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.

Please note!
The nominal switching distance of proximity switches is reduced by 2 mm when the cover nut is installed.



Description	Nuts	



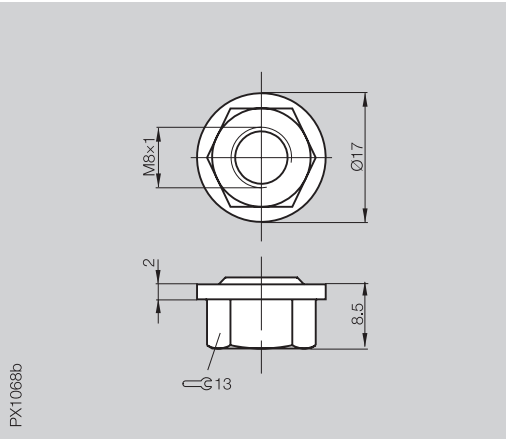
Ordering code	Ordering code = Part No.	
---------------	--------------------------	--

Metal nuts	Part no.	Material	d	Wrench	h
M8×1	500557	Steel galvanized	15	13	4
M12×1	500462	CuZn coated	20	17	4
M16×1	142060	CuZn coated	22	19	3
M16×1	500030	CuZn coated	25	22	4
M18×1	500152	CuZn coated	28	24	4
M30×1.5	500252	CuZn coated	42	36	5
Stainless steel nuts					
M5×0.5	605313	1.4305	8.9	7	2.7
M12×1	636981	1.4305	20	17	4
M18×1	636982	1.4301	28	24	4
M30×1.5	636983	1.4401	42	36	5
Plastic nuts					
M18×1	606841	PA 6.6	28	24	8
M30×1.5	610292	PA 6.6	40	36	8

Zinc-plated lockwasher for M5 sensors: Part No. 710256
 Zinc plated lockwasher for M18 sensors: Part No. 500558
 Zinc plated lockwasher for M12 sensors: Part No. 500552
 Zinc plated lockwasher for M18 sensors: Part No. 117684



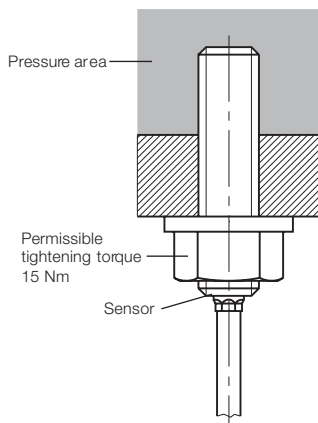
Seal nut



BES 08-DM-1

This is used to seal pressure rated proximity switches.
It seals against both liquids and gases. Suitable for pressure rated M8 sensors up to max. **100 bar** .

Please note!
Can be removed and tightened again up to five times.



Ordering code

BMF Hex Key Part No. 139870

Folding Allen key set, with additional blades, 8-piece

Tool set for all BMF sensors and BMF angle brackets as well as for sensors having a potentiometer, e.g. BOS, BCS ...



Material

Blade: Chrome vanadium steel, fully hardened, galvanically treated. Grip: Ergonomic, fiberglass reinforced housing, 55 mm long.

Application

Practical folding holder for Allen keys to prevent them from getting lost. Especially good for turning very small screws, .e.g. tightening down or precise setting of sensors.

Tough housing with release button for easily selecting the right blade. Eyelet with matching carabiner hook. Self-service packaging for Euro hole display.

			mm
0.7	_____	_____	
0.9	_____	_____	
1.3	_____	_____	
1.5	_____	_____	
2.0	_____	_____	
2.5	_____	_____	
		3.0	
	PH00		

Lanyard included.

Ordering code

6-Kt. Winkelsatz 0,7-2,0 Part No. 123264

Tool set for BMF sensors and BMF angle brackets



0.71
0.89
1.27
1.5
2.0

Personal safety

Unless otherwise noted, the products described in this catalog are not intended for applications in which the safety of persons depends on the function of the device (not considered a safety component according to EU directives).

AC/DC sensors are not permitted to be operated directly on a German EVU grid.

Test conditions

IP 67

IP 68 per BWN Pr. 20/27

IP 69K

As per the standard, normal tap water without additives is used as a medium for testing the enclosure rating. Tap water is similar in its conductivity and viscosity to many coolants and lubricants.

The chemical resistance properties, when used with other media, must be determined on a case-by-case basis due to the possible variations.

The specifications in this catalog are based on our current knowledge and experience. Because of the variety of possible influences when using our products, these specifications do not absolve the user of responsibility for performing his own tests and checks. This applies in particular to the use of aggressive media such as cleaning agents, coolants and lubricants as well as hydraulic fluids. No legally binding assurance of particular properties or suitability for a concrete application is implied by our specifications. Any protection rights and regulations are the responsibility of the recipient of our products.

For additional technical product specifications, see the respective data sheets at www.balluff.com.