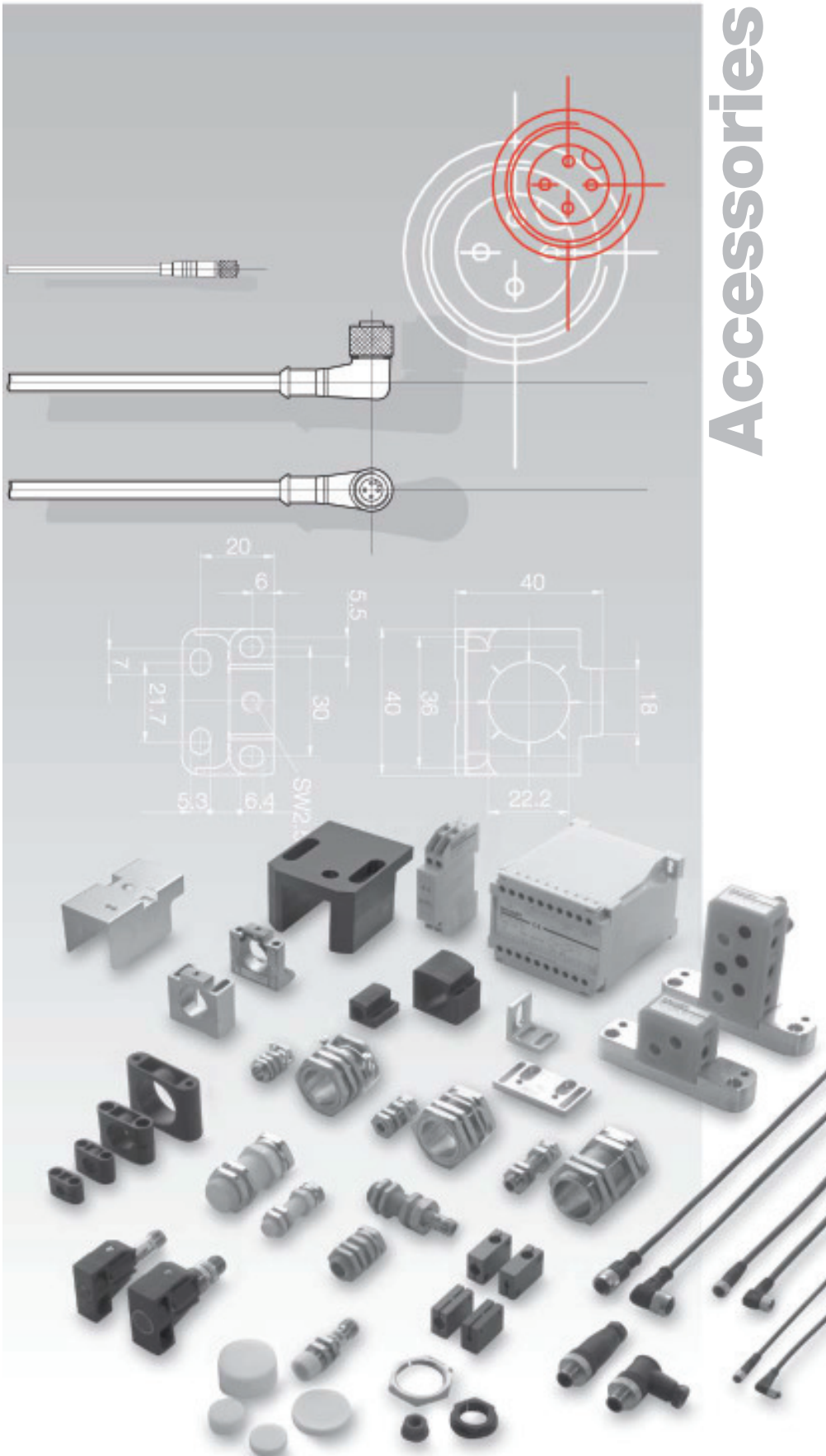


Accessories



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

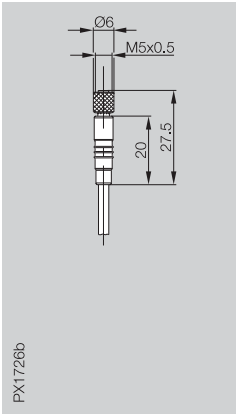
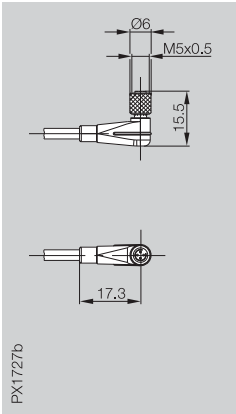
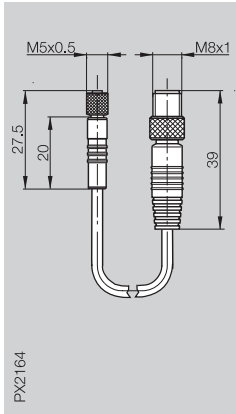
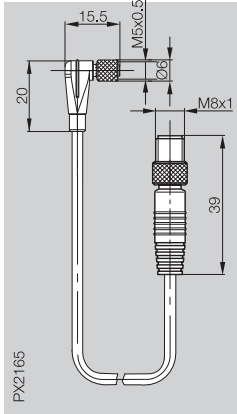
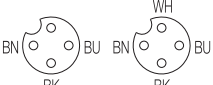
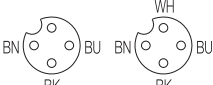
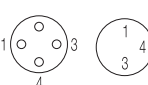
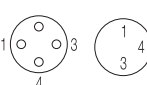
- 5.46 BMS Mounting System
- 5.58 Clamps, holders, mounting cuffs
- 5.65 Mounting brackets, reducing sleeve
- 5.66 Positive stops
- 5.67 Mounting clamps for row mounting of sensors
- 5.68 Mounting bracket, mounting socket and holding system for Unicomact
- 5.69 Weld protection and protective cover for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

Tools

- 5.74 BMF Hex Key, Important notes

5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Connector Version	BKS-B 25 straight female	BKS-B 26 angle female	BKS-B 25- /GS49 straight female/ straight male	BKS-B 26- /GS49 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 × cross-section	3×0.14 mm ² /4×0.14 mm ²	3×0.14 mm ² /4×0.14 mm ²	3×0.14 mm ²	3×0.14 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					

Other cable lengths and cable qualities on request.

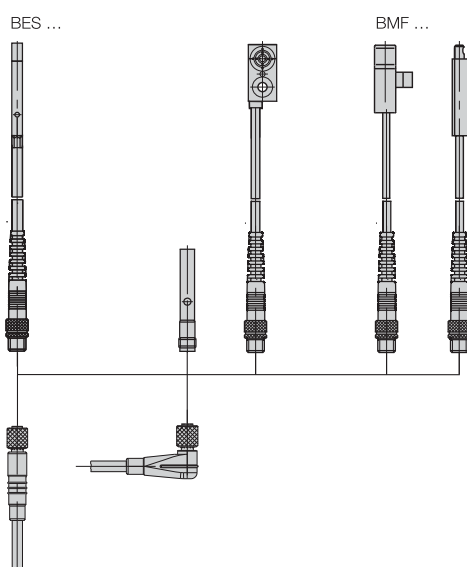
Ordering examples

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

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

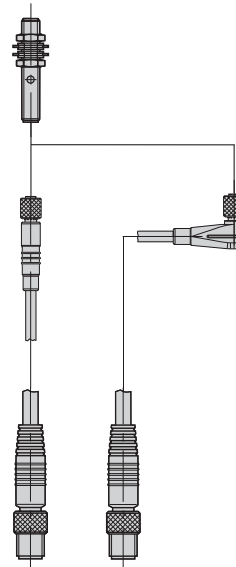
PUR, Length 3 m = BKS-B 48-1-PU-03

Sensors with connector Ordering code endings S26



Connector with
mounting thread
M5x0.5

Sensors with connector Ordering code endings S25



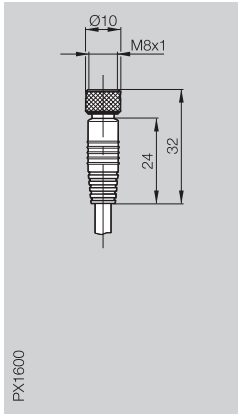
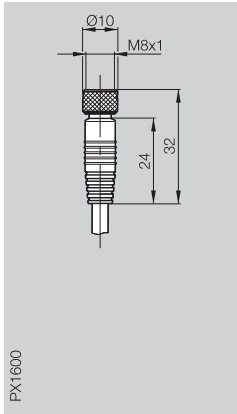
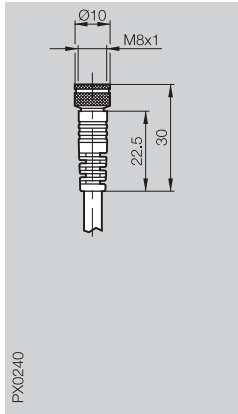
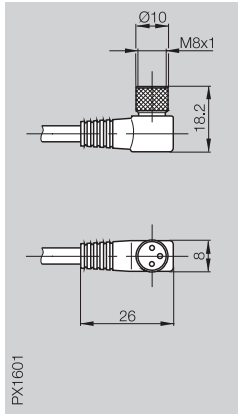
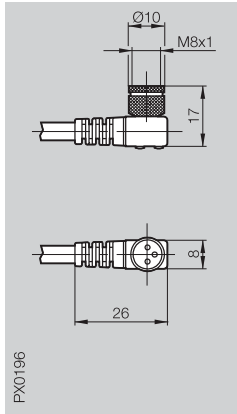
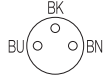
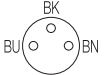
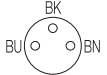
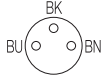
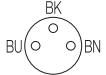
Connection cable
with mounting thread
M5x0.1/M8x1

BKS-B 25

BKS-B 26

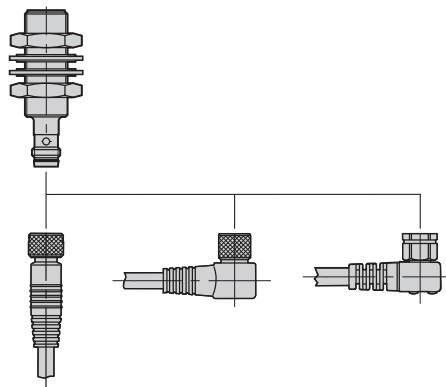
BKS-B 25-1/GS49

BKS-B 26-1/GS49

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	Plug sensors S49	Plug sensors S49	Plug sensors S49	Plug sensors S49
				
BKS-B 48-1-03	BKS-B 48-1-PU2-05	BKS-S 48-03	BKS-B 49-1-03	BKS-S 49-1-PU-03
			BKS-B 49-4-03	BKS-S 49-4-PU-03
				BKS-S 49-6-PU-05
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3 m molded-on PVC	5 m molded-on PUR	3 m molded-on PVC	3 m molded-on PVC	3 m/5 m molded-on PUR
3x0.25 mm ²	3x0.34 mm ²	3x0.34 mm ²	3x0.25 mm ²	3x0.34 mm ²
IP 67	IP 67	IP 67	IP 67	IP 67
-20...+85 °C	-25...+120 °C	-25...+90 °C	-20...+85 °C	-25...+90 °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

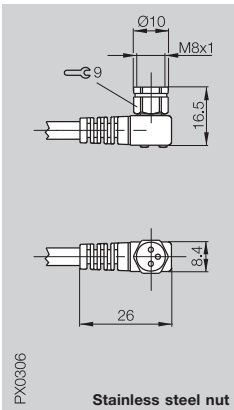
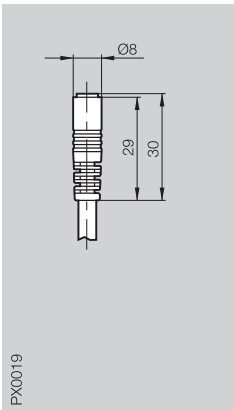
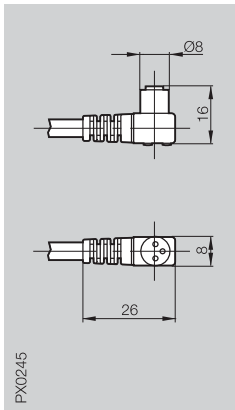
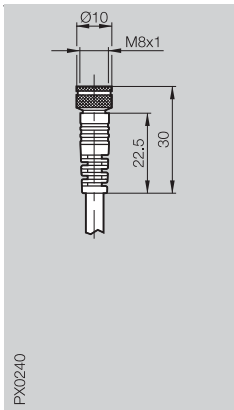
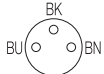
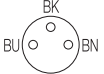
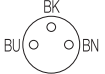

BKS-S 49E

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	BKS-S 74-3-03	
no LED, complementary					
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 × cross-section	3×0.34 mm ²	3×0.34 mm ²	3×0.34 mm ²	4×0.34 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

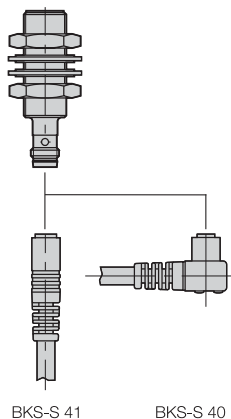
PUR, Length 3 m = BKS-S 49E-4-PU-03

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
M8×1**

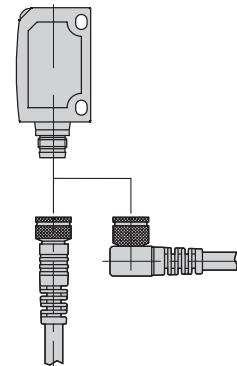


BKS-S 41

BKS-S 40

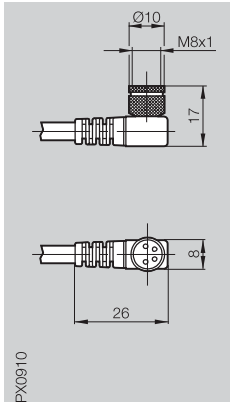
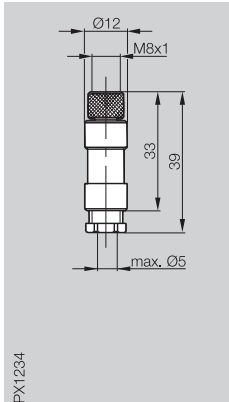
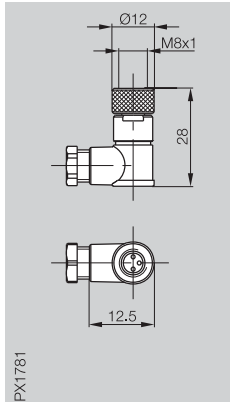
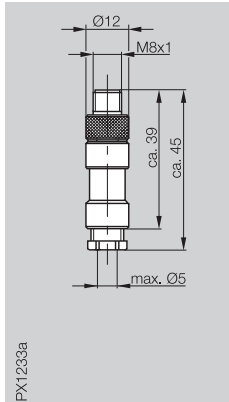
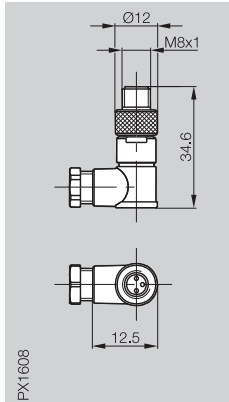





**Sensors with
connector
Ordering code
endings S75**

**Connector with
mounting thread
M8×1**



BKS-S 74

BKS-S 75

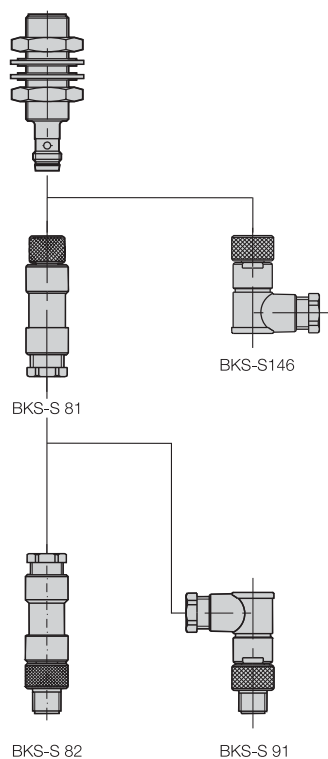
BKS-S 75 angle female	BKS-S 81-00 straight female	BKS-S146-00 angle female	BKS-S 82-00 straight male	BKS-S 91-00 angle male
Plug sensors S75	Plug sensors S49	Plug sensors S49	Female S49	Female S49
				
BKS-S 75-3-03 BKS-S 75-14-03*	BKS-S 81-00	BKS-S146-00	BKS-S 82-00	BKS-S 91-00
10...30 V DC 3 m molded-on 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	Solder IP 67	Solder IP 67	Solder IP 67	Solder IP 67
-25...+90 °C	-40...+85 °C	-25...+100 °C**	-40...+85 °C	-40...+85 °C
				

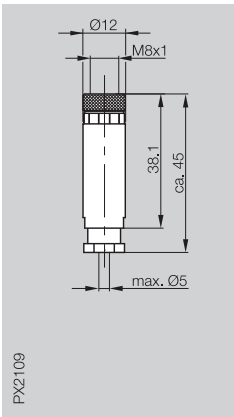
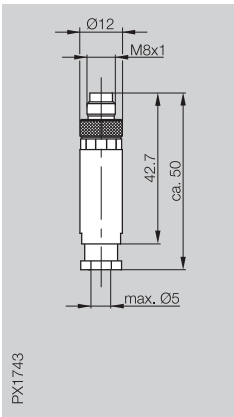
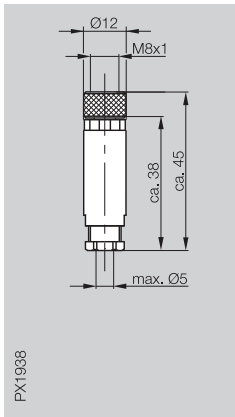
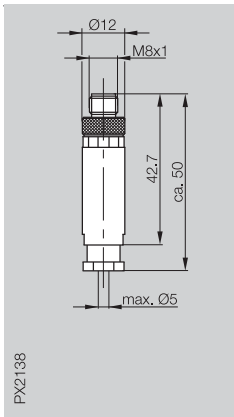




*Shield up to the
cable-connector body
transition!

**120 °C (max. 100 h)

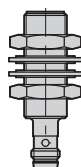
**Sensors with
connector
Ordering code
endings S49**

**Connector for
user assembly
with thread M8x1**

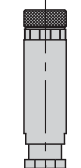


Connector Version	BKS-S142-00 straight female	BKS-S141-00 straight male	BKS-S149-00 straight female	BKS-S150-00 straight male	
Application	Plug sensors S49	Female S49	Plug sensors S75	Female S75	
					
no LED, NC or NO	BKS-S142-00	BKS-S141-00	BKS-S149-00	BKS-S150-00	
Supply voltage U _B	10...30 V DC	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	
View of female/male side					

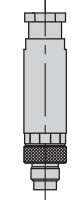
**Sensors with
connector
Ordering code
endings S49**



**Connector for
user assembly
with thread
M8×1**



BKS-S142

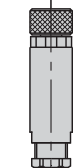


BKS-S141

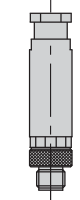
**Sensors with
connector
Ordering code
endings S75**



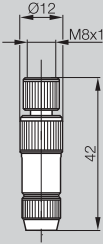
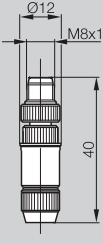
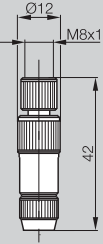
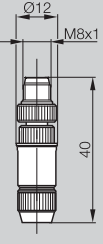




**Connector for
user assembly
with thread
M8×1**



BKS-S149

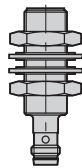


BKS-S150

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	
				
PX2093 Quick-connect system	PX2094 Quick-connect system	PX2093 Quick-connect system	PX2094 Quick-connect system	
BKS-S111-RT13	BKS-S113-RT13	BKS-S216-RT14	BKS-S218-RT14	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
for user assembly	for user assembly	for user assembly	for user assembly	
3x0.14...0.34 mm ²	3x0.14...0.34 mm ²	4x0.14...0.34 mm ²	4x0.14...0.34 mm ²	
Ø 3.2...5.4 mm	Ø 3.2...5.4 mm	Ø 3.2...5.4 mm	Ø 3.2...5.4 mm	
Insulation displacement	Insulation displacement	Insulation displacement	Insulation displacement	
IDC	IDC	IDC	IDC	
IP 67	IP 67	IP 67	IP 67	
-25...+85 °C*	-25...+85 °C*	-25...+85 °C*	-25...+85 °C*	
				

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

**Sensors with
connector
Ordering code
endings S49**



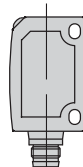
**Connector for
user assembly
with thread
M8x1**

BKS-S111-RT13



BKS-S113-RT13

**Sensors with
connector
Ordering code
endings S75**



**Connector for
user assembly
with thread
M8x1**

BKS-S216-RT14



BKS-S218-RT14

5

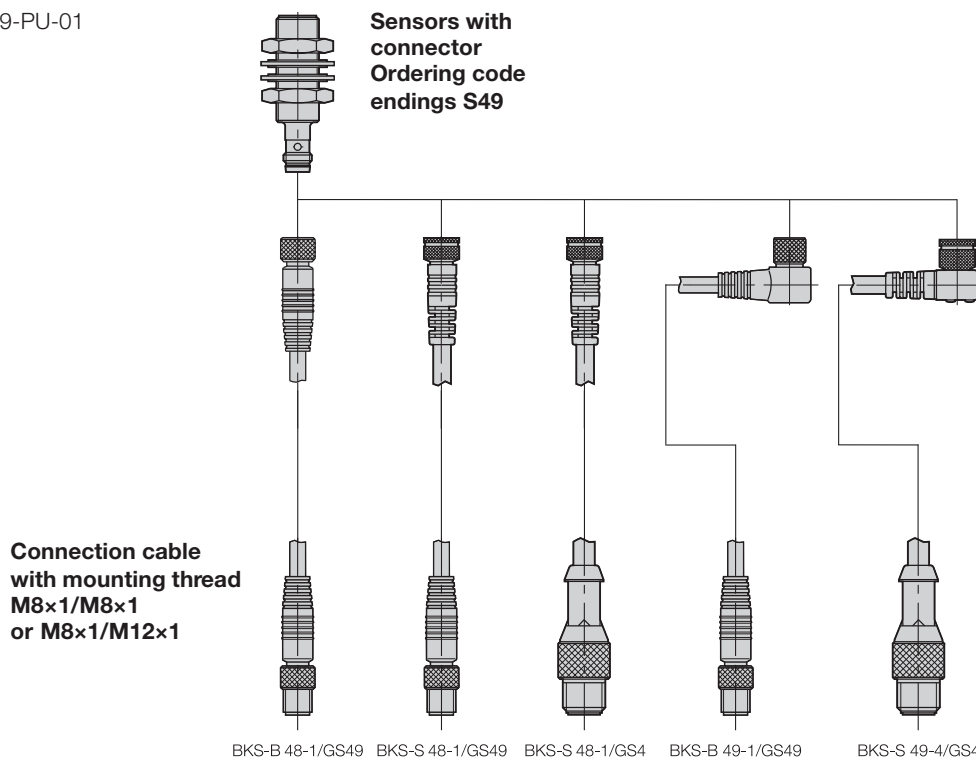
Connectors
Splitter boxes
with
accessories
Electrical
devices
Fasteners
Tools

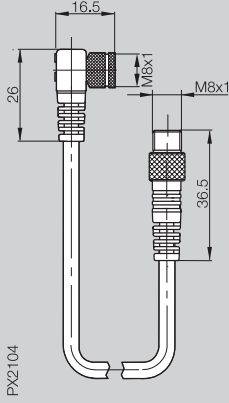
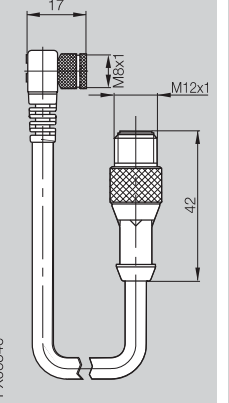
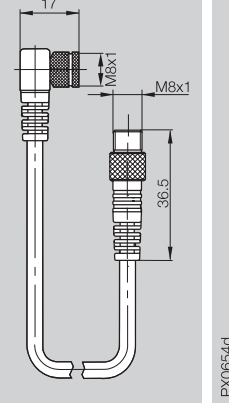
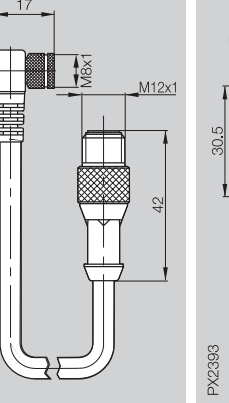
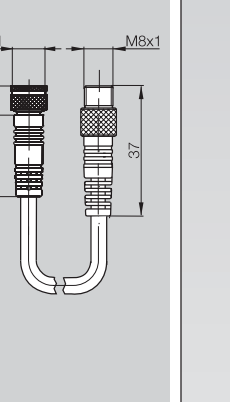
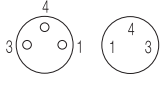
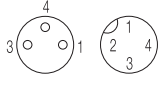
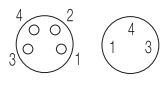
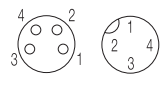
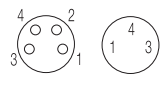
Connection cable	BKS-B 48-1/GS49	BKS-S 48-1/GS49	BKS-S 48-1/GS4	BKS-B 49-1/GS49	
Version	straight female/ straight male	straight female/ straight male	straight female/ straight male	angle female/ straight male	
Application	Plug sensors S49	Plug sensors S49	Plug sensors S49	Plug sensors S49	
no LED, NO			BKS-S 48-1/GS4-PU-01		
no LED, NC or NO	BKS-B 48-1/GS49-PU-01	BKS-S 48-1/GS49-PU-01		BKS-B 49-1/GS49-PU-01	
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 × cross-section	3×0.25 mm ²	3×0.34 mm ²	3×0.34 mm ²	3×0.25 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	
View of female/male side					

Other cable lengths and cable qualities on request.

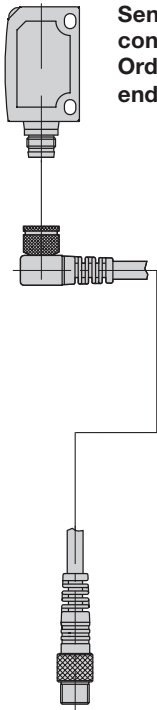
Ordering example

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



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

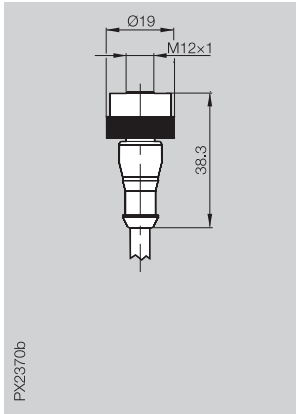
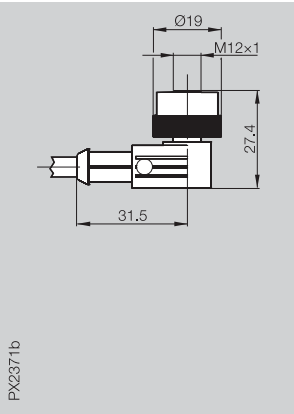
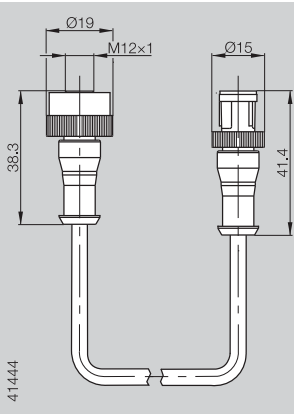
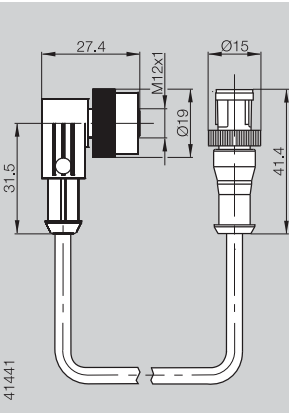

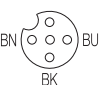
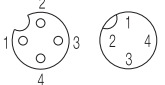
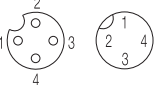
PUR, length 1 m = BKS-S212-1/S214-PU-01

PUR, length 2 m = BKS-S213-3-PU-02



Quick-Connect System MQ12 Accessories

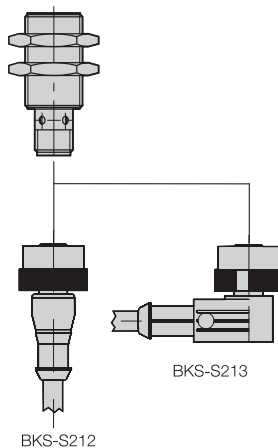
DC connectors,
DC connection cables
MQ12 connection (S4)

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 mm²/4x0.25 mm² IP 65/IP 67* -20...+80 °C	max. 250 V AC/DC 2 m molded-on PUR 3x0.34 mm²/4x0.25 mm² IP 65/IP 67* -20...+80 °C	10...30 V DC 1 m molded-on PUR 3x0.34 mm² IP 65/IP 67* -20...+80 °C	10...30 V DC 1 m molded-on PUR 3x0.34 mm²/4x0.25 mm² IP 65/IP 67* -20...+80 °C
			

*when plugged together/locked

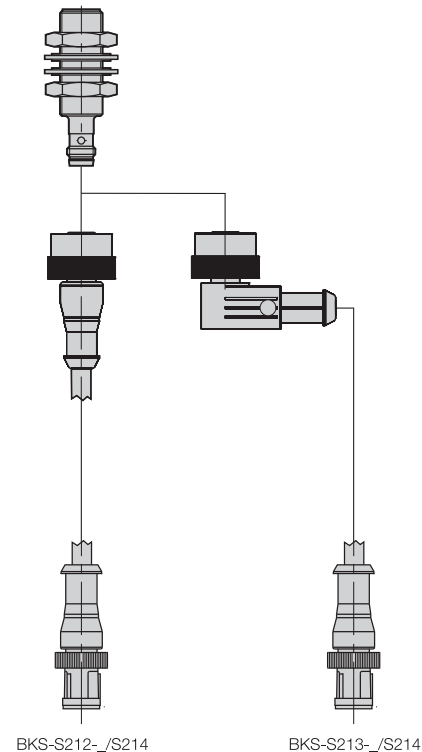
**Sensors with
connector
Ordering code
endings S4**

**Connector with
mounting thread
M12x1**



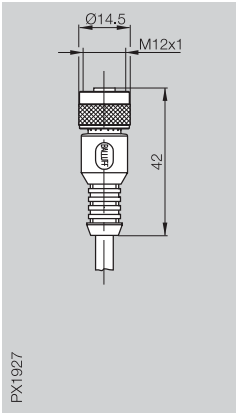
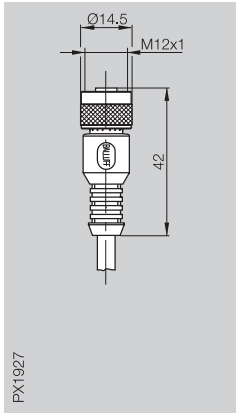
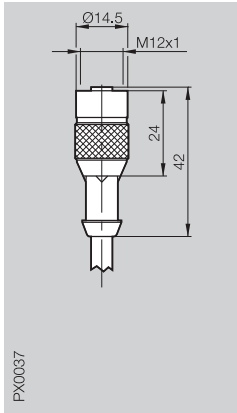
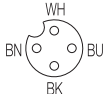
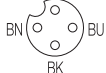
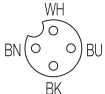
**Sensors with
connector
Ordering code
endings S4**

**Connection cable
with
mounting thread
M12x1/M12x1**



5

Connectors
Splitter boxes
with
accessories
Electrical
devices
Fasteners
Tools

Connector Version	BKS-B 19 straight female	BKS-B 19 straight female	BKS-S 19 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				

*Shield through knurled ring!

Other cable lengths and cable qualities on request.

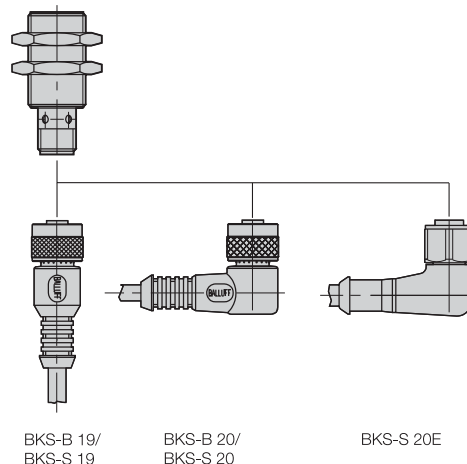
Ordering examples

PVC, length 3 m = BKS-B 19-1-03

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

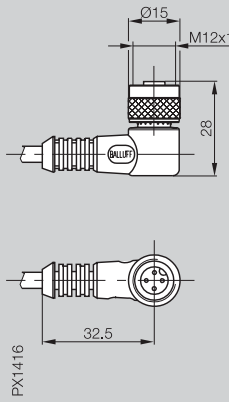
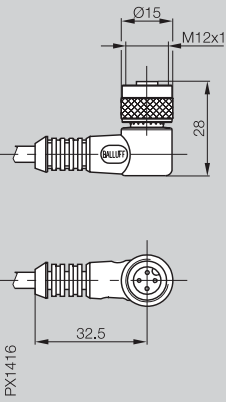
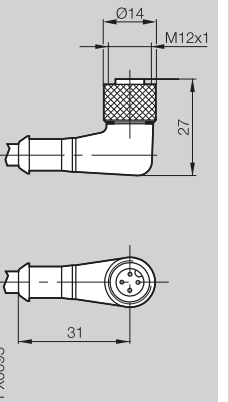
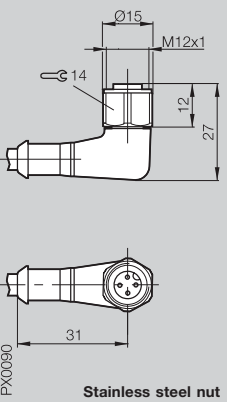
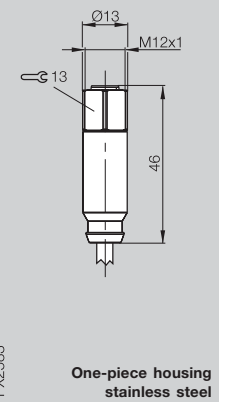
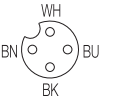
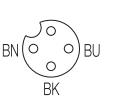
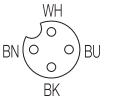
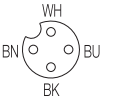
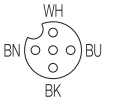
**Sensors with
connector
Ordering code
endings S4**

**Connector with
mounting thread
M12×1**



M12 Accessories

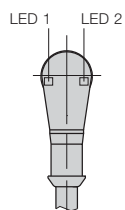
DC connectors
M12 connection (S4)

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

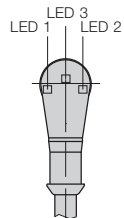
**short-time 105 °C

Connectors with 2 LED's



Color and function:
LED 1: yellow (NO)
LED 2: green (Power)

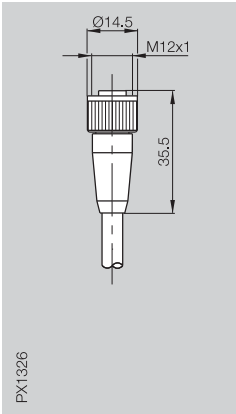
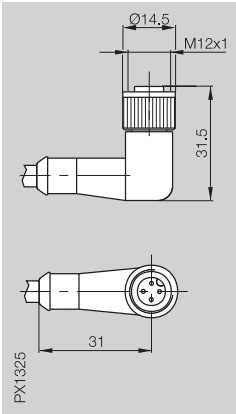
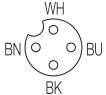
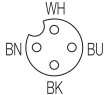
with 3 LED's



Color and function:
LED 1: yellow (NO)
LED 2: green (Power)
LED 3: white (NC)

5

Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

Connector	BKS-S 23	BKS-S 24			
Version	straight female	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.

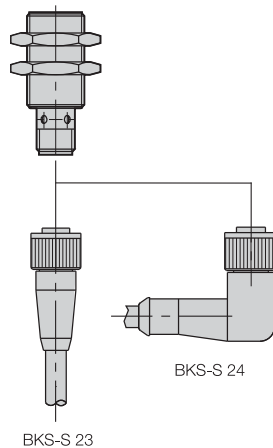
Ordering examples

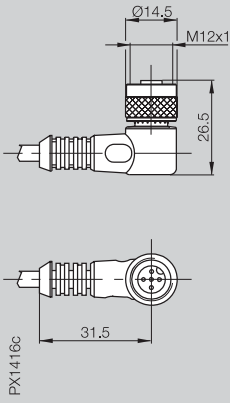
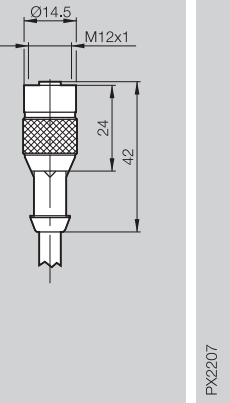
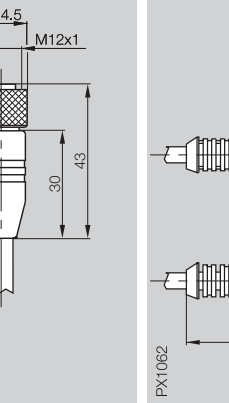
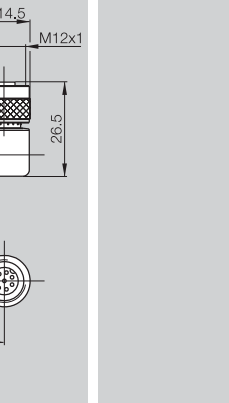




PVC, length 3 m = BKS-S 23-1-03

PUR, length 3 m = BKS-S139-PU-03

**Sensors with
connector
Ordering code
endings S4**

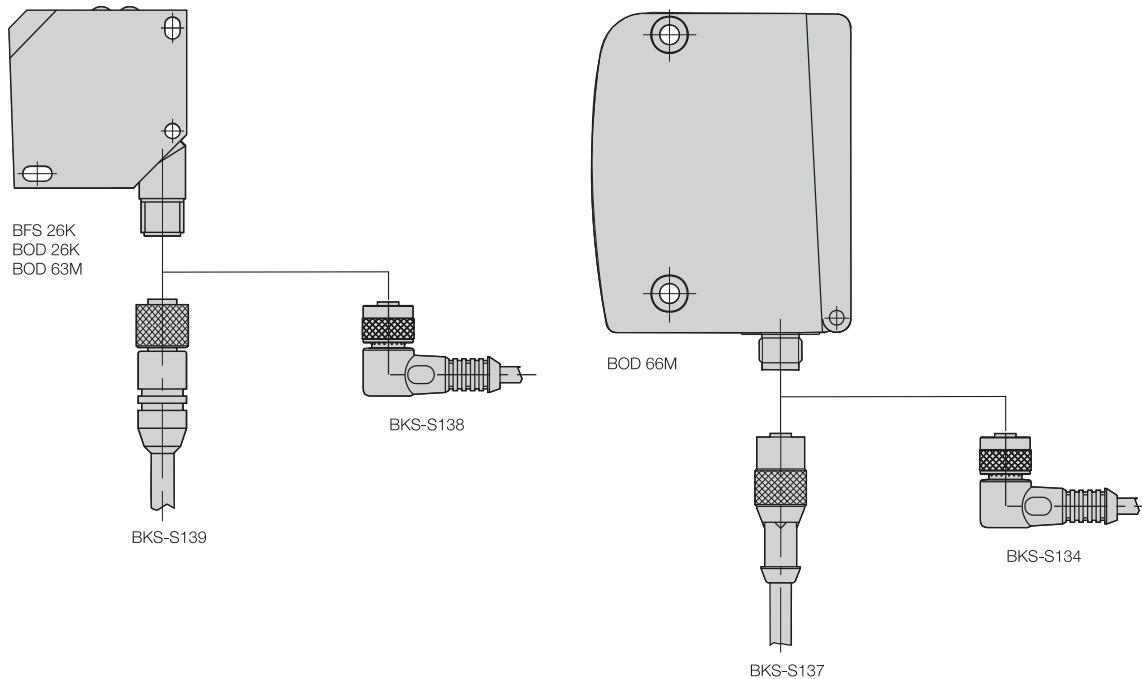
**Connector with
mounting thread
M12×1**



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	10...30 V DC	10...30 V DC	30 V AC/36 V DC	
5 m molded-on PVC	5 m molded-on PUR	5 m molded-on PUR	5 m molded-on PUR	
5x0.25 mm ²	5x0.25 mm ²	8x0.25 mm ²	8x0.25 mm ²	
IP 67	IP 67	IP 67	IP 67	
-25...+85 °C	-25...+85 °C	-25...+90 °C	-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			
no LED, complementary	BKS-B 19-3/GS4-PU-01	BKS-S 19-3/GS4-PU-01	BKS-B 20-3/GS4-PU-01	BKS-S 20-3/GS4-PU-01	
with LED, NO, PNP			BKS-B 20-4/GS4-PU-01	BKS-S 20-4/GS4-PU-01	
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...+80 °C	
View of female/male side					

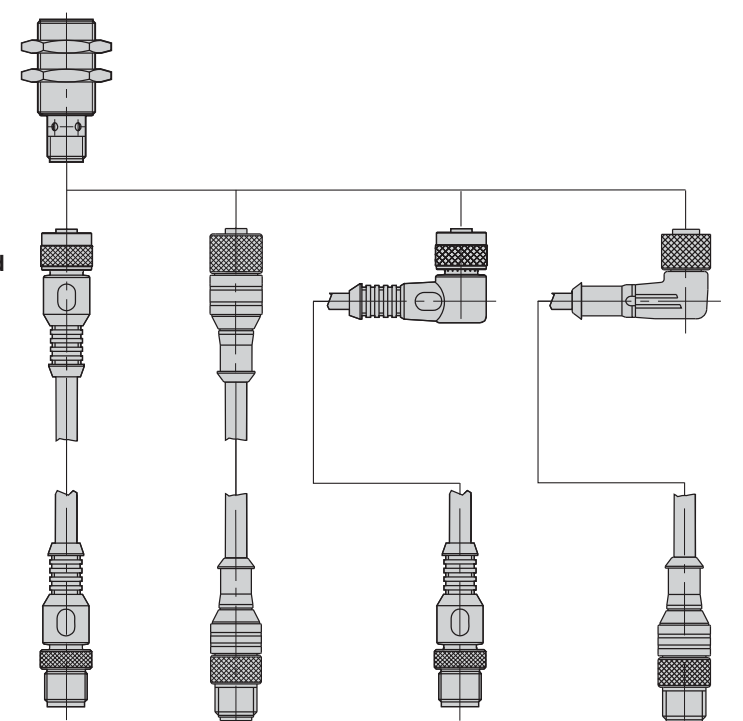
Other cable lengths and cable qualities on request.

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**

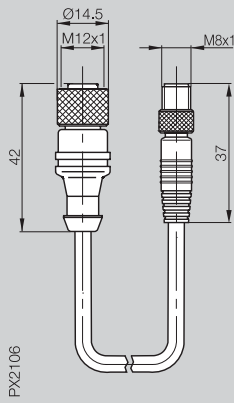
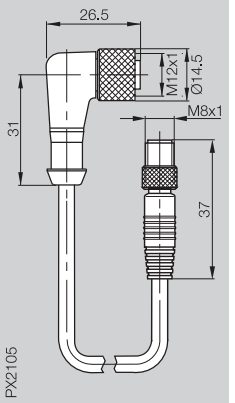
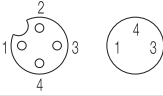
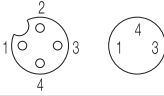


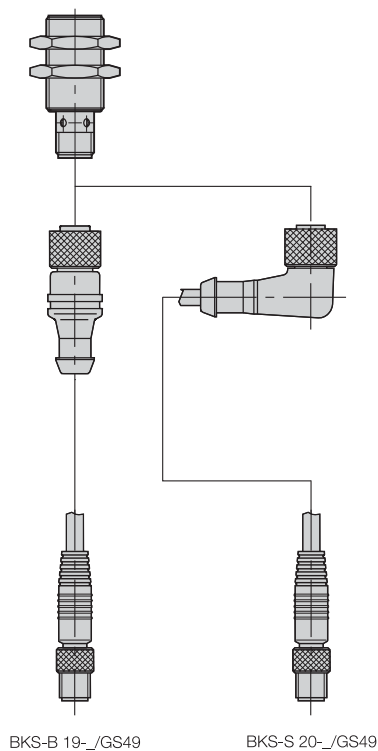
BKS-B 19-_/GS4

BKS-S 19-_/GS4

BKS-B 20-_/GS4

BKS-S 20-_/GS4

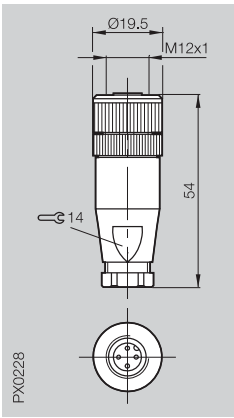
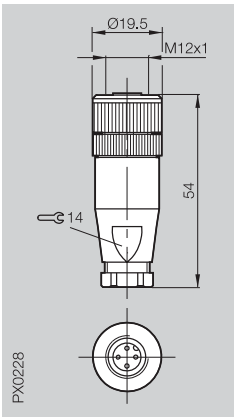
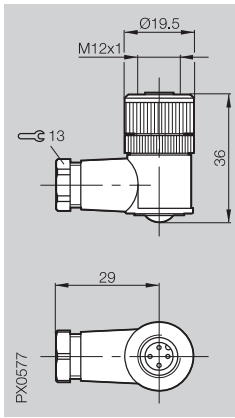
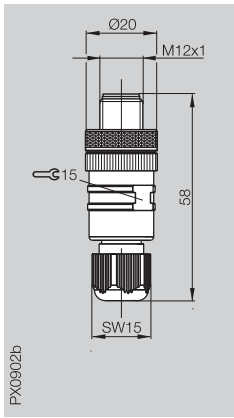




BKS-S 19-_/GS49		BKS-S 20-_/GS49			
straight female/ straight male		right-angle female/ straight male			
Plug sensors S4		Plug sensors S4			
					
BKS-S 19-4/GS49-PU-01		BKS-S 20-4/GS49-PU-01			
10...30 V DC		10...30 V DC			
1 m molded-on PUR		1 m molded-on PUR			
3x0.34 mm ²		3x0.34 mm ²			
IP 67		IP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



Function and color of the LED's
2 LED's: green = Power, yellow = Switching output status

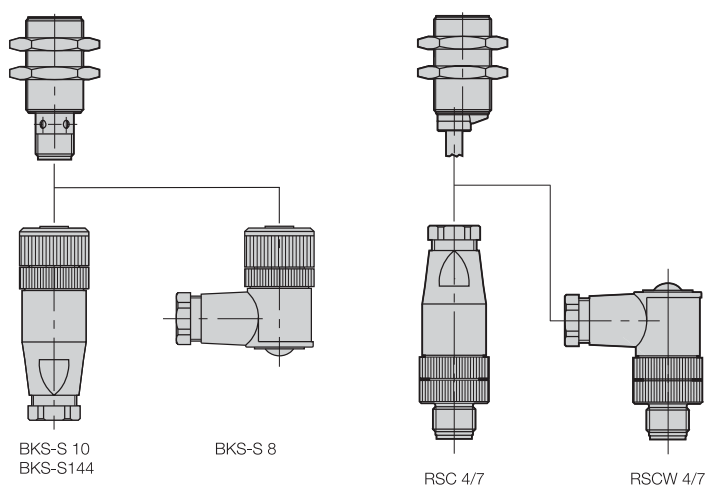
5

Connectors
Splitter boxes
with
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Electrical
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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					

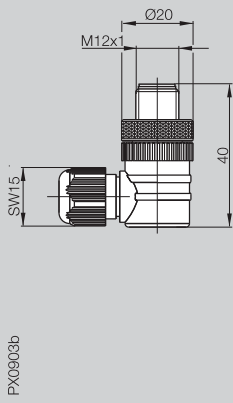
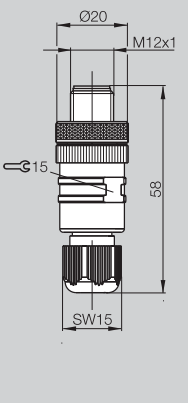
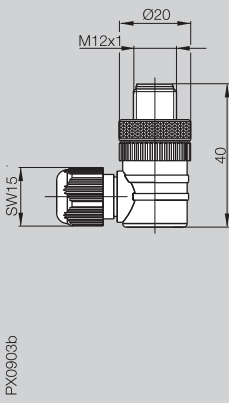
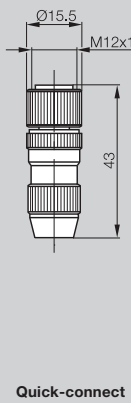
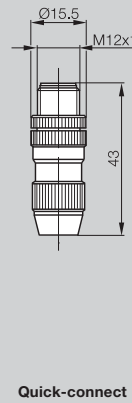





**Sensors with
connector
Ordering code
endings S4
or sensors with
cable**

**Connector for
user assembly
with connecting
thread M12×1**



M12 Accessories

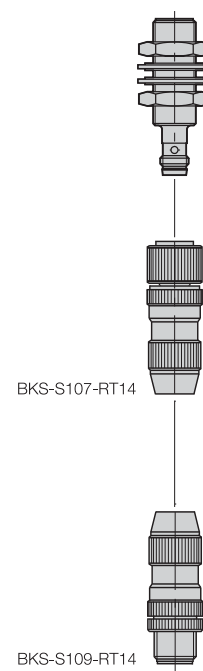
DC connectors
for user assembly
M12 connection (S4)

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
				
			Quick-connect system	Quick-connect system
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

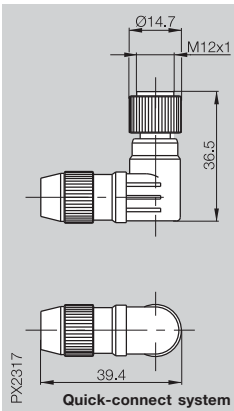
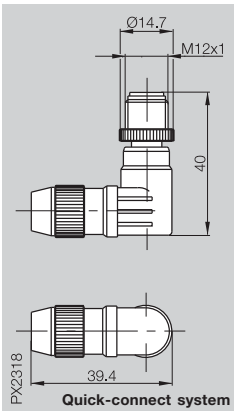


**Sensors with
connector
Ordering code
endings S4**

**Connectors for
user assembly
with connecting
thread M12×1**



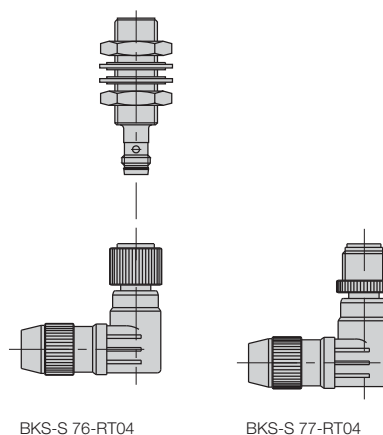
5

Connectors
Splitter boxes
with
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Connector Version	BKS-S 76-RT04 angle female	BKS-S 77-RT04 angle male			
Application	Plug sensors S4	female 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					

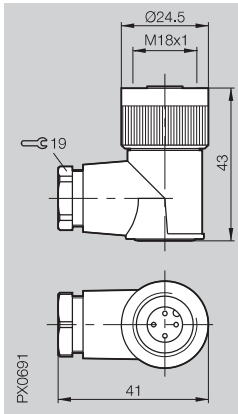

Sensors with
connector
Ordering code
endings S4

Connector for
user assembly
with connecting
thread M12×1

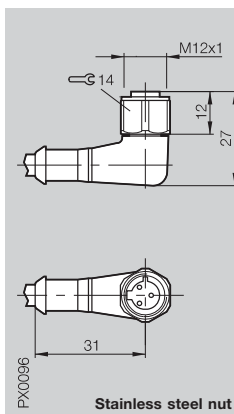
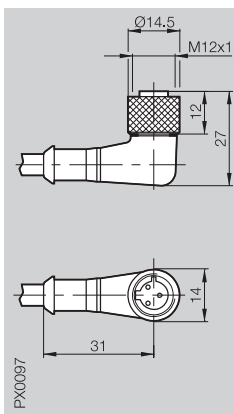
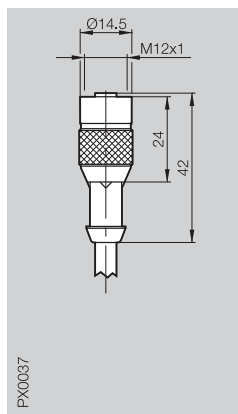


BKS-S 76-RT04

BKS-S 77-RT04

	BKS-S 7-1 angle female				
	BES 516-300-S203				
					
	BKS-S 7-1				
	10...30 V DC				
	for user assembly				
	3/4x 0.5...0.75 mm ²				
	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		



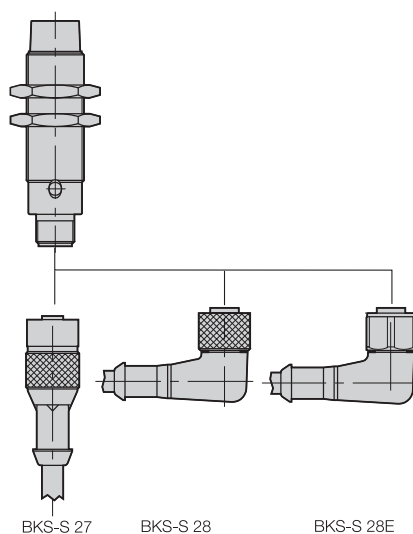
no LED, NC or NO	BKS-S 27-03	BKS-S 28-03	BKS-S 28E-03		
Supply voltage U_B	20...250 V AC/DC	300 V AC	300 V AC		
Cable	3 m molded-on PVC	3 m molded-on PVC	3 m molded-on PVC		
No. of wires × cross-section	3×0.5 mm ²	3×0.5 mm ²	3×0.5 mm ²		
Cable diameter					
Degree of protection per IEC 60529	IP 68 per 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

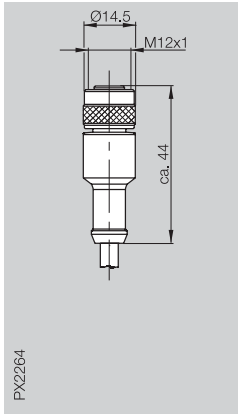
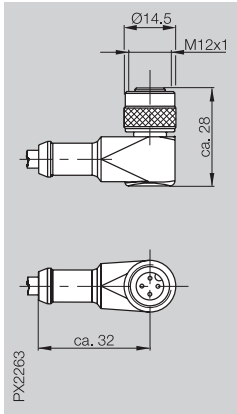
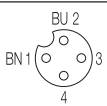
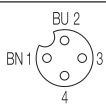
Sensors with connector Ordering code endings S27

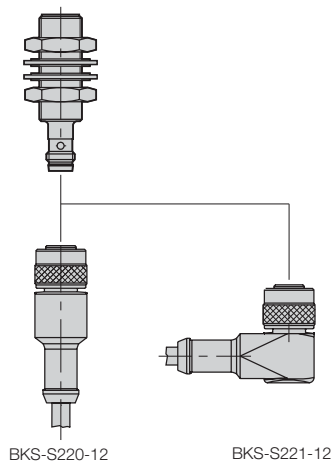


Connectors with M12×1 thread

M12, DC 2-wire Accessories

DC connectors
M12 connection (S220)

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



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Connectors
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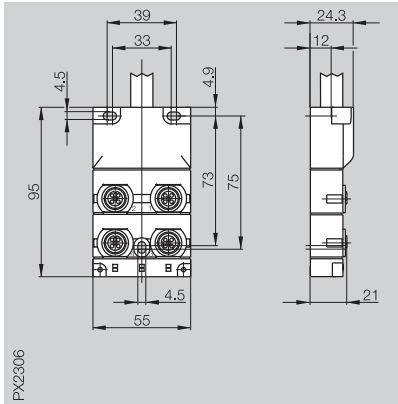
Other cable lengths and cable qualities on request.



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.

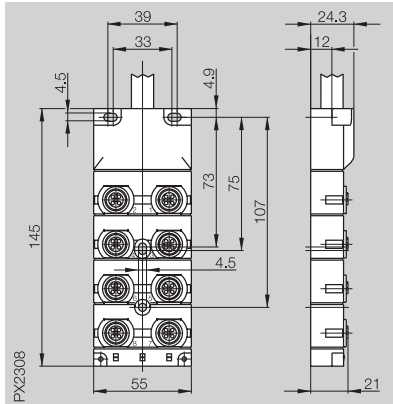
BSB-04-F01P/4-...

4× cable



BSB-04-F01P/8-...

8× cable



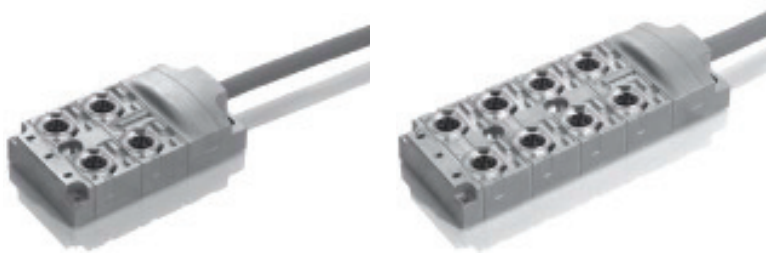
BSB-04-F01P/4-M02M-KP-05

24 V DC
18...30 V DC
LED yellow
LED green
5-pole female, M12×1
5 m molded-on PUR cable
8×0.5 mm² and 3×1 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, M12×1
5 m molded-on PUR cable
16×0.5 mm² and 3×1 mm²
8
max. 4 A per contact
max. 12 A at +60 °C
GD-Zn
IP 67 (when connected)
-25...+90 °C



5

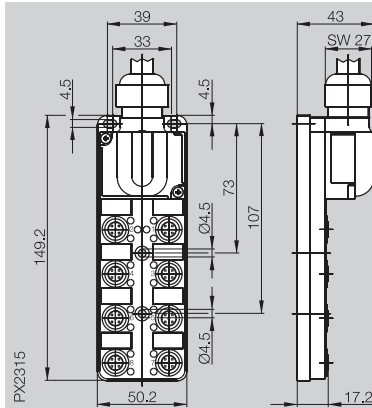
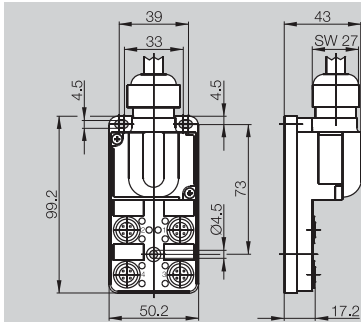
Connectors
**Splitter
boxes with
accessories**
Electrical
devices
Fasteners
Tools

BSB-04-P01P/4-...

4× cable

BSB-04-P01P/8-...

8× cable



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

24 V DC
18...30 V DC
LED yellow
LED green
5-pole female, M12×1
5 m molded-on PUR cable
8×0.34 mm² and 5×0.75 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, M12×1
5 m molded-on PUR cable
16×0.34 mm² and 5×0.75 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

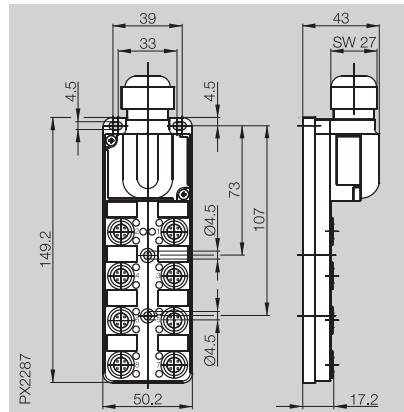
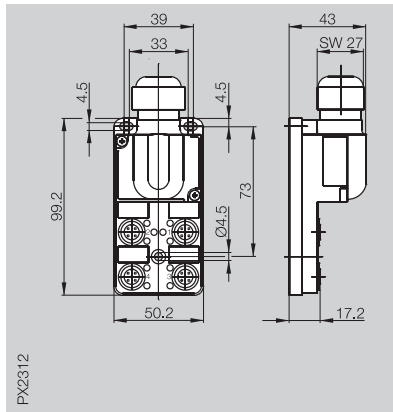
Connectors
Splitter boxes with accessories
Electrical devices
Fasteners
Tools

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_e

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, M12×1

5-pole female, M12×1

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 feedmax. 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)

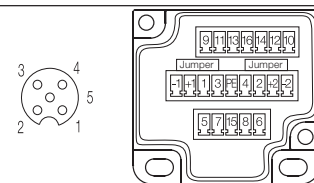
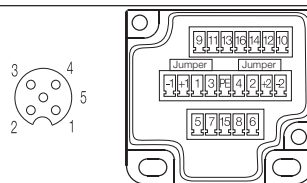
IP 67 (when connected)

Ambient temperature range T_a

-20...+80 °C

-20...+80 °C

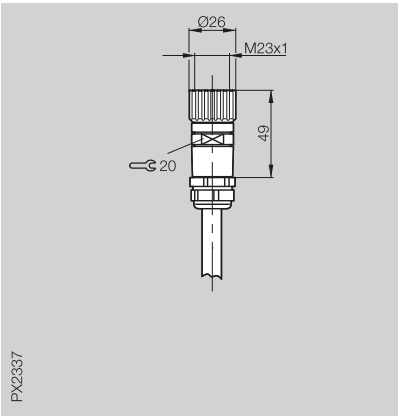
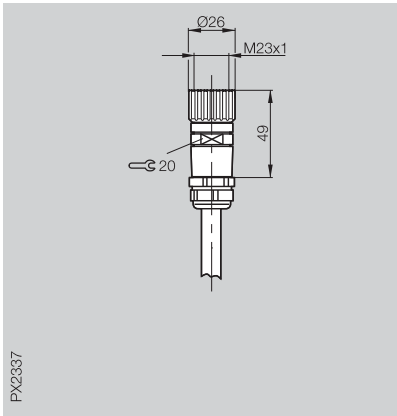
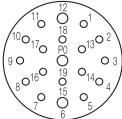
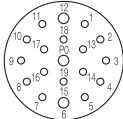
View of female/male side



Other cable lengths and cable qualities on request.



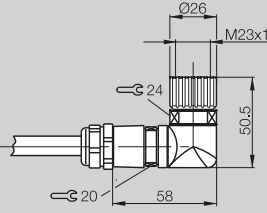
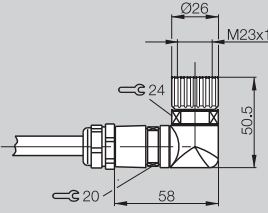
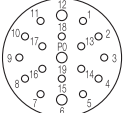
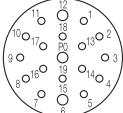


Connector	BKS-S196	
Version	straight female	
Application	4× splitter box connection	8× splitter box connection
<div>CE</div>	<div></div>	<div></div>
Ordering code	M23, 19-pin	
	BKS-S196-21-PU-05	BKS-S196-22-PU-05
Supply voltage U_B	18...30 V DC	18...30 V DC
Cable	5 m molded-on PUR	5 m molded-on PUR
No. of wires × cross-section	8×0.34 mm ² and 3×0.75 mm ²	16×0.34 mm ² and 3×0.75 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	<div></div>	<div></div>

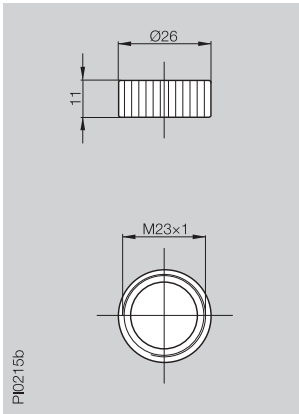
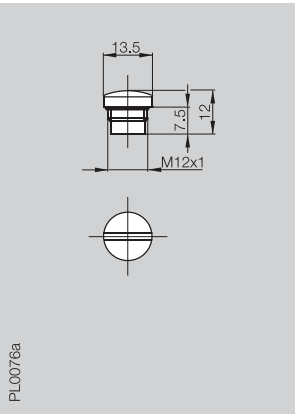
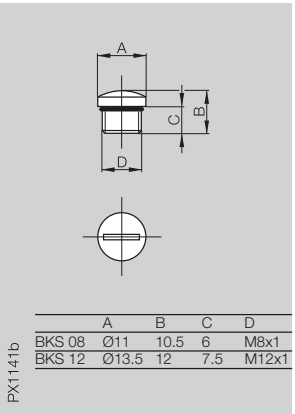
Other cable lengths and cable qualities on request.

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

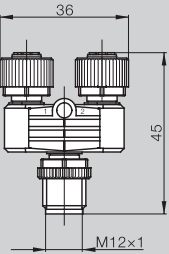
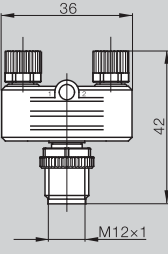
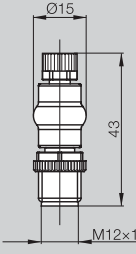


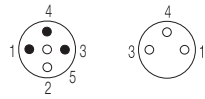


	BKS-S197 right-angle female 4× splitter box connection	BKS-S197 right-angle female 8× splitter box connection	
PX2336			
	BKS-S197-21-PU-05 18...30 V DC 5 m molded-on PUR 8×0.34 mm ² and 3×0.75 mm ² IP 67 -20...+80 °C CuZn	BKS-S197-22-PU-05 18...30 V DC 5 m molded-on PUR 16×0.34 mm ² and 3×0.75 mm ² IP 67 -20...+80 °C CuZn	
			

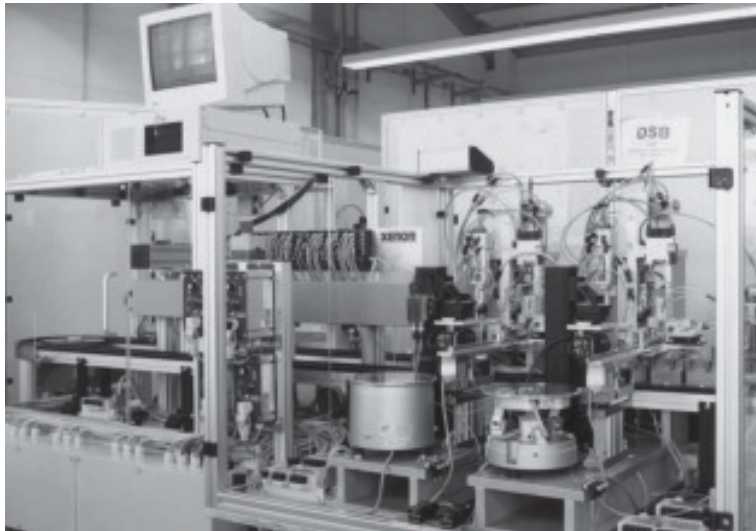


Description	Screw plug M23	Screw plug M12	Screw plug M8, M12																
Application	IP 65 screw plug for unused connectors in BSB Splitter Boxes	IP 65 screw plug for unused connectors in BSB Splitter Boxes	IP 65 screw plug for unused connectors in BSB Splitter Boxes																
	 <p>PL0215b</p>	 <p>PL0076a</p>	 <table border="1"> <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>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_e																			
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	Tee	Adapter
M12 male to M12 female 2x 2 signals to one port	M12 male to M8 female 2x 2 signals to one port	M12 male 3-pin to M8 female 3-pin
 <p>PX2333</p>	 <p>PX2395</p>	 <p>PX2334</p>
BKS-S4-TM1-01	BKS-S49-TM1-02	BKS-S4-GM1-01/S49
max. 24 V DC max. 4 A per contact IP 67 -25...+90 °C GD-Zn coated	max. 24 V DC max. 4 A per contact IP 67 -25...+90 °C GD-Zn coated	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



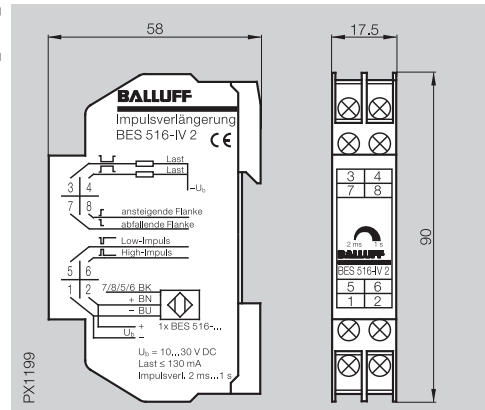
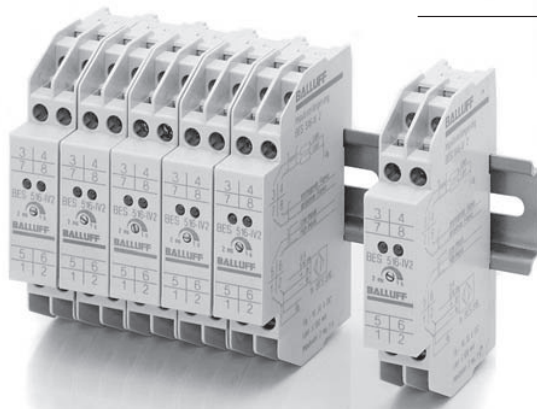
BSB Metal Splitter Boxes Features

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 $-25...+90^{\circ}\text{C}$

Typical applications for the metal version

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



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 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.

Description	Pulse extender

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	2×2.5 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.

5

Connectors
Distribution
boxes with
accessories
Electrical
devices
Fasteners
Tools

Analog switching amplifier for direct installation

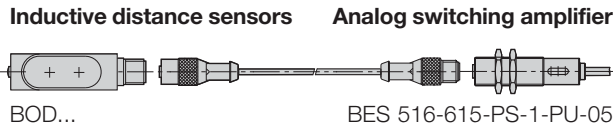
This switching amplifier allows you to easily program sensors having an analog output signal, such as the BOD family, with three switchpoints for direct programming.

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

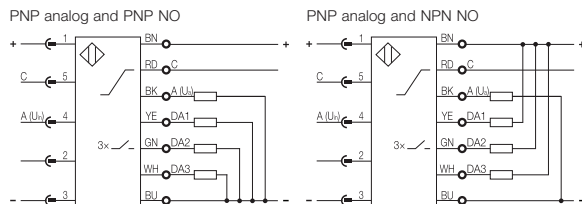
a "Teach-in" mode, whereby the set distance is assigned to the signal level present and this value is stored in the device. This procedure is assisted using LED's. During operation these LED's are available as switching state indicators.

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

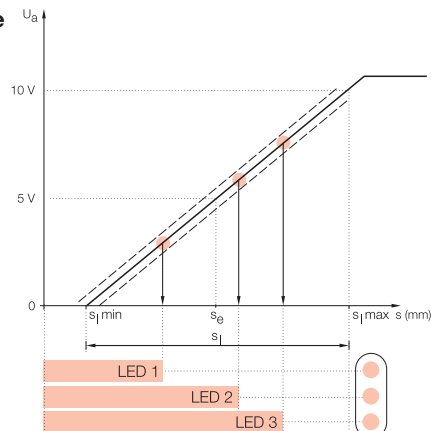
Wiring example



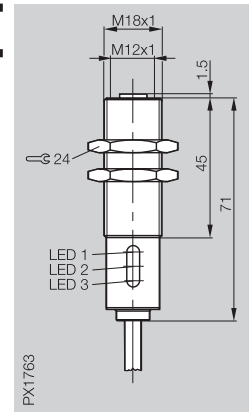
Wiring diagrams



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 per output	100 mA
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	$-10...+70$ $^{\circ}$ 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 \times cross-section	7 \times 0.25 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).

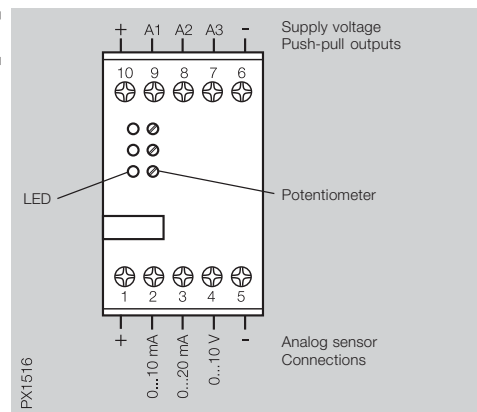
Description

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 mm²

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



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Connectors
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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	

CE

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

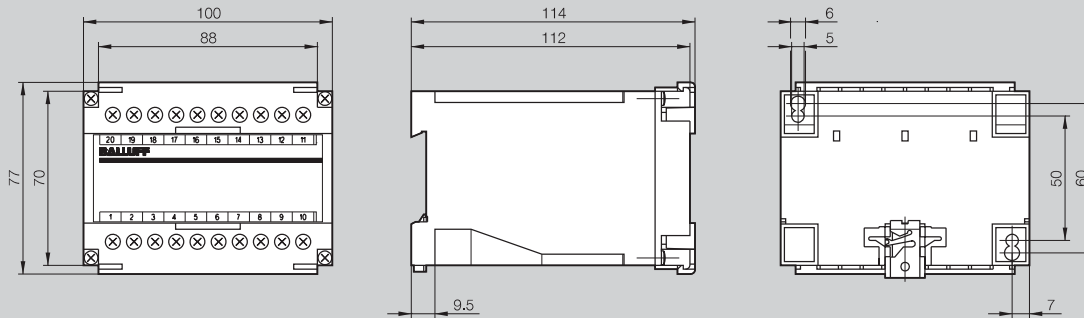
with 2 integrated output relays
723 Ω each

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 $\pm 10\%$, 50 Hz

24 V DC $\pm 20\%$

$\leq 10\%$ per DIN 41755 1.2.2

max. 20 VA

max. 0.5 A

Gray thermoplastic, temperature resistant to $+100^\circ\text{C}$

$-20\ldots+60^\circ\text{C}$

$-20\ldots+60^\circ\text{C}$

20 connection terminals for $2 \times 2.5\text{ mm}^2$

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

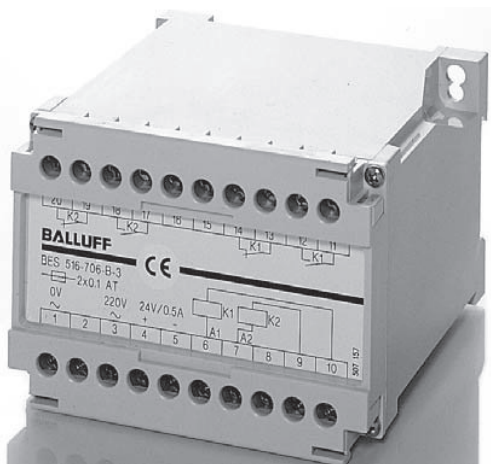
max. 250 VA DC/max. 1700 VA AC

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



**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

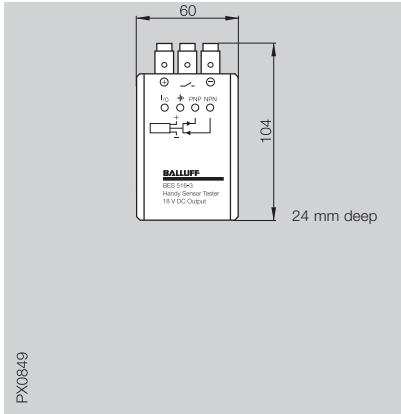
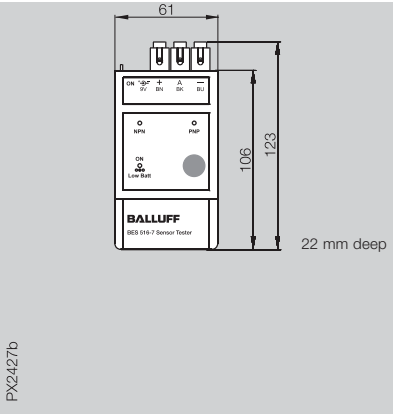
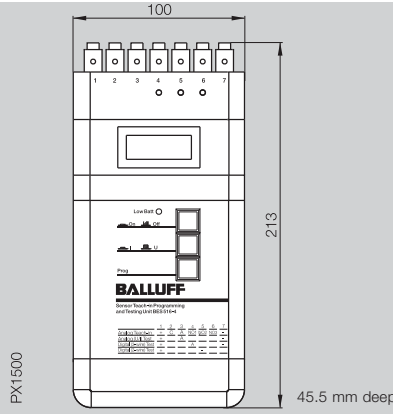
LED indicators

Battery type

Sensor connection

Degree of protection per IEC 60529

Housing material

Tester		Tester	Tester/Programmer
for 3-wire sensors DC PNP/NPN		for 3-wire sensors DC PNP/NPN	for 2-/3-wire sensors DC PNP/NPN and analog
			
PX0849		PX2427b	PX1500
BES 516-3		BES 516-7	BES 516-4
18 V DC		18 V DC	18 V DC
1 power indicator		1 power indicator	3 function indicators, 1 battery indicator
2× 9 V batteries		1× 9 V battery	2× 9 V batteries
3 spring-loaded terminals		3 spring-loaded terminals	7 spring-loaded terminals
IP 21		IP 40	IP 40
Plastic		Plastic	Plastic
		Acoustic/visual signal, built-in steel target	



5

Connectors
Splitter boxes
with
accessories

**Electrical
devices**

Fasteners
Tools

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.

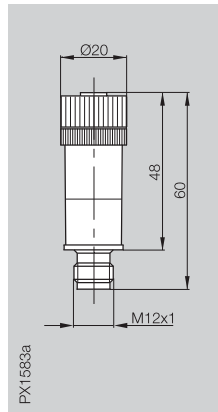
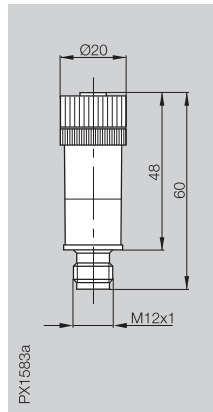
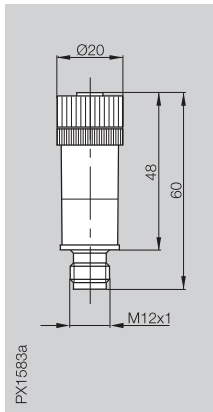
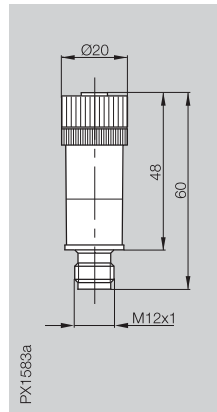


Signal adapter selection guide

Function	Device	Setting
NC/NO inverter	BOS S- C 01	Pause counter 1
Flip-Flop (touch on, off)	BOS S- C 01	Pause counter 2
Divider (1 pulse per revolution)	BOS S- C 01	Pulse counter n
Parts counter (count down)	BOS S- C 01	Pulse counter n
Switching amplifier to 400 mA	BOS S- C 01	Pulse counter 1
Off-delay	BOS S- T 01	Off-delay n
Off-delay	BOS S- T 01	Off-delay n
PNP-/NPN converter	BOS S- F 01	Factory setting
PNP-/NPN converter and NC/NO switcher	BOS S- F 01	NC/NO teach
Speed monitor	BOS S- M 01	
Speed monitor	BOS S- M 01	
Pile-up detector	BOS S- M 01	

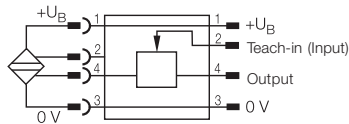
Series	BOS S	BOS S	BOS S	BOS S
Function	programmable pulse or interval counter, switching inverter	programmable timer for on- and off-delay	PNP-/NPN converter, adjustable NC/NO switchover	programmable frequency monitoring

CE



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	10...30 V DC	10...30 V DC	10...30 V DC
Rated operational current I_e		< 400 mA	< 400 mA	< 400 mA	< 400 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected		yes	yes	yes	yes
Short circuit protected		yes	yes	yes	yes
Input impedance		> 10 kΩ	> 10 kΩ	> 10 kΩ	> 10 kΩ
On-/off-delay		0.1 ms	0.1 ms	0.1 ms	0.1 ms
max. input frequency		10 kHz	10 kHz	10 kHz	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			1 ms		
Longest settable time			65535 ms		
Monitoring frequency range					0.015 Hz...1 kHz
Function indicator		LED red	LED red	LED red	LED red
Ambient temperature range T_a		0...+60 °C	0...+60 °C	0...+60 °C	0...+60 °C
Degree of protection per IEC 60529		IP 67	IP 67	IP 67	IP 67
Insulation class		□	□	□	□
Housing material		PBT/PA 6.6	PBT/PA 6.6	PBT/PA 6.6	PBT/PA 6.6
Connection type input		M12 female 4-pin	M12 female 4-pin	M12 female 4-pin	M12 female 4-pin
Connection type output		M12 male 4-pin	M12 male 4-pin	M12 male 4-pin	M12 male 4-pin
Recommended connector		BKS- 19/BKS- 20	BKS- 19/BKS- 20	BKS- 19/BKS- 20	BKS- 19/BKS- 20
Weight		15 g	15 g	15 g	15 g

Wiring diagram



5

Connectors
Splitter boxes
with
accessories

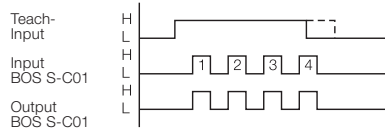
**Electrical
devices**

Fasteners
Tools

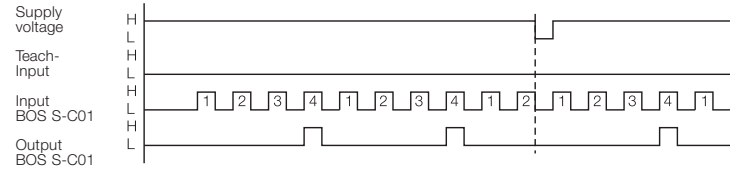
Signal Adapter BOS S-C

Programmable pulse or interval counter

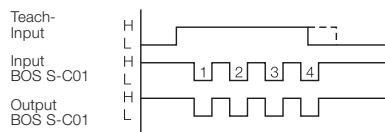
Pulse counter teaching



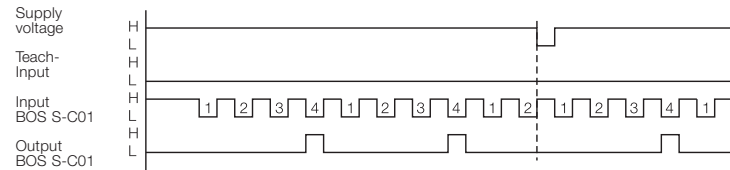
Use as a pulse counter



Interval counter teaching



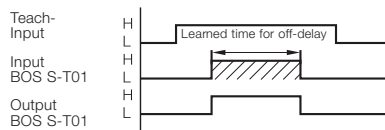
Use as an interval counter



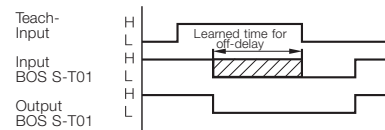
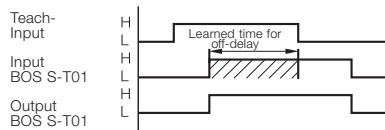
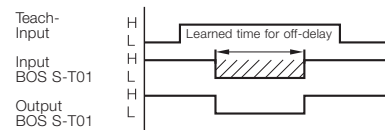
Signal Adapter BOS S-T

Programmable timer for turn-on or turn-off delay

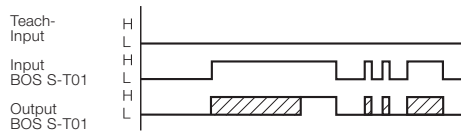
On-delay teaching



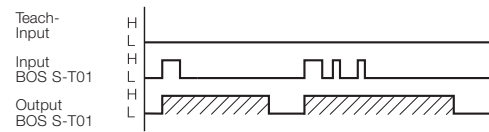
Teaching an off-delay



Operation with on-delay



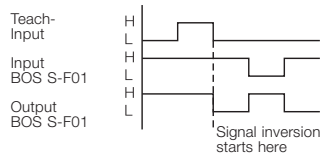
Use with off-delay



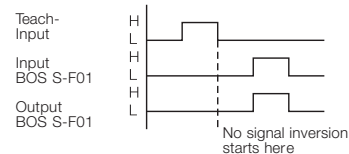
Signal Adapter BOS S-F

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

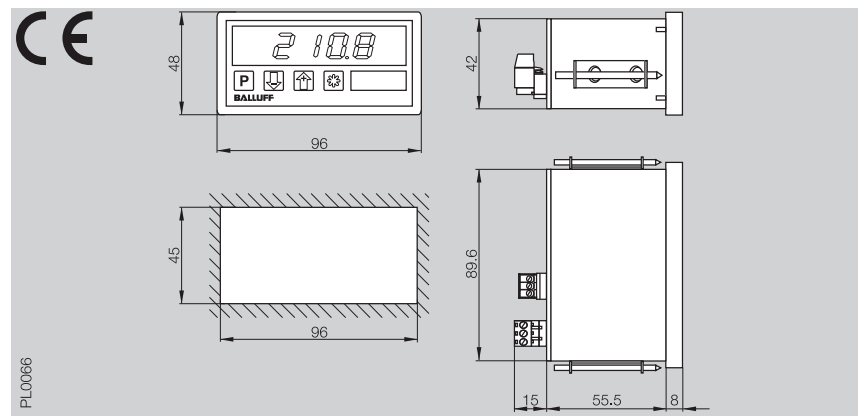
Standard hardware

- 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

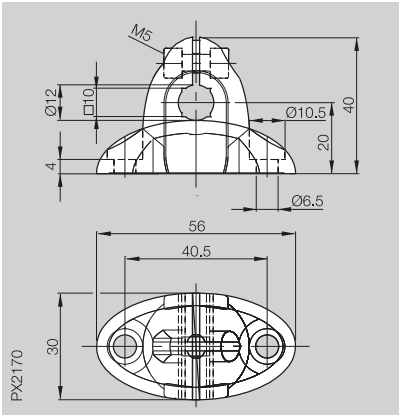
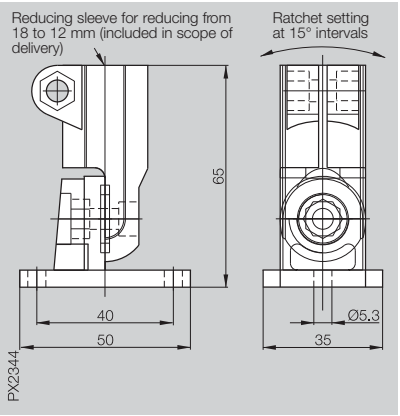


Ordering code	BDD-UM 3023
A/D converter	
Resolution	12 bits
Measuring ranges	
Voltage	0...10 V, $\pm 0.05\%$, ± 1 digit
Input impedance	$\geq 50\text{ k}\Omega$
Current	0/4...20 mA, $\pm 0.05\%$, ± 1 digit
Input impedance	$10\text{ }\Omega$
Sampling rate	5 measurements/s
Display	4-digit, 14 mm, red Programmable decimal point Leading zero suppression Minus sign for negative values
Operation, keypad	Front keypad with short-stroke keys
Rated operating voltage	24 V, $\pm 20\%$ DC (isolated)
Current draw	max. 65 mA
Housing	
Dimensions	96×48×60 mm
Installation depth	$\leq 72\text{ mm}$ (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	$\leq 80\%$, non-condensing
Contamination class	2
Insulation class	□
Weight	approx. 200 g



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 Ø 12 mm or 10×10 mm	for 1 rod Ø 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.

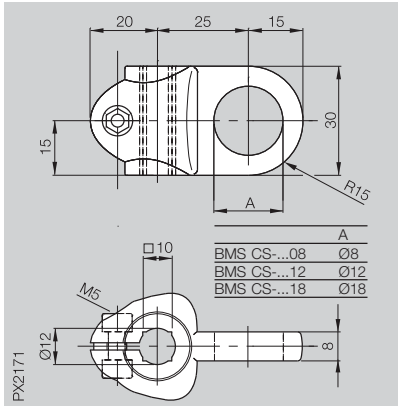


Mounting rods Ø 12 mm, anodized aluminum, see page 5.56



Sensor holder

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

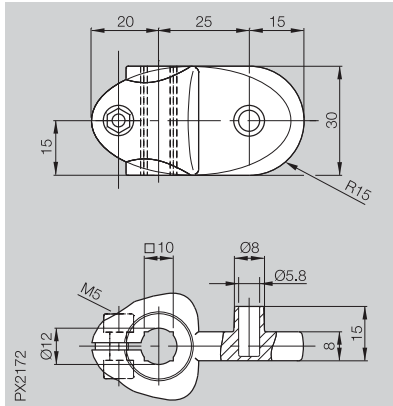


BMS CS-P-D12-AD08-00
BMS CS-P-D12-AD12-00
BMS CS-P-D12-AD18-00

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)

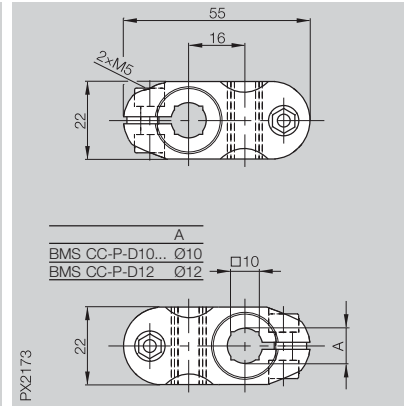


BMS CR-P-D12-AU-00

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

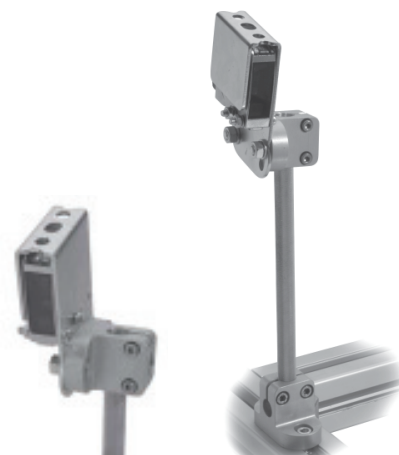
Connectors
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Description	Cross-connector	Base holder	Clamping cylinder
Version	for 2 rods Ø 12 mm	for 1 rod Ø 12 mm (vertical or horizontal)	
Application	Connecting element for 2 rods Ø 12 mm	for mounting on base plates or extrusions	Accommodates all holders, sensors and reflectors
Ordering code	BMS CC-M-D12-B-00*	BMS CU-M-D12-A040-00	BMS CS-M-D12-IZ
Material	Anodized aluminum	Anodized aluminum	GD-Zn

*Screws are included.

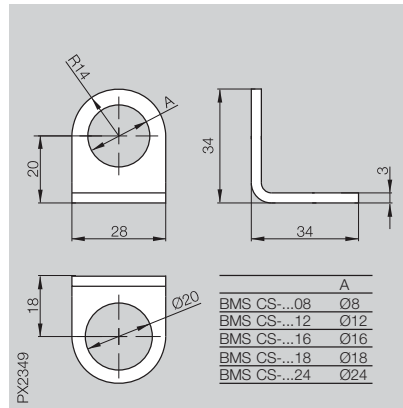


Mounting rods Ø 12 mm,
anodized aluminum, see page **5.56**



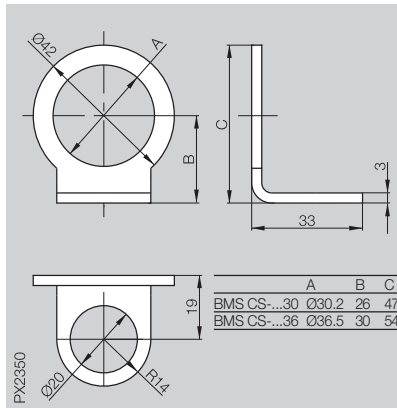
Sensor holder

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



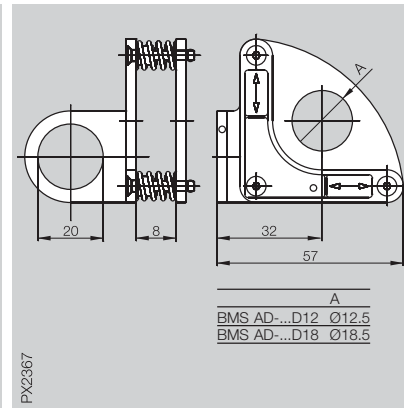
Sensor holder

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

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

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

Stainless steel

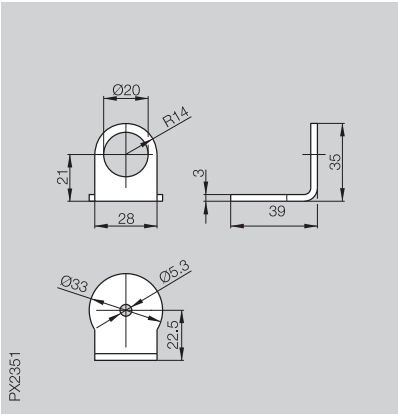
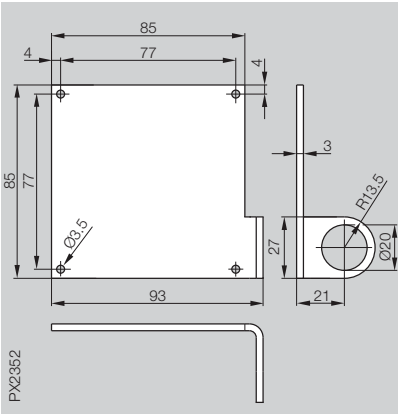
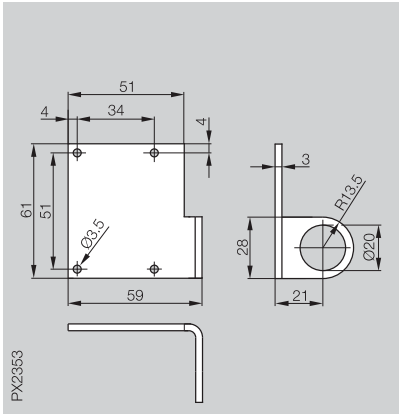
Stainless steel

Stainless steel



5

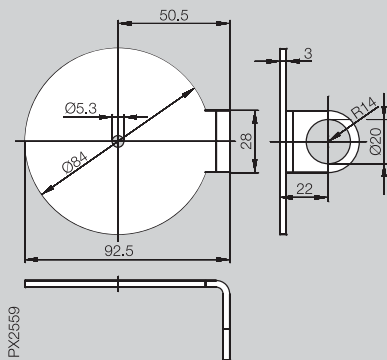
Connectors
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Description	Reflector holder for BOS R1 + R2 + R3 for clamping cylinder	Reflector holder for BOS R11 for clamping cylinder	Reflector holder for BOS R9 for clamping cylinder	
Version				
Application				
				
Ordering code	BMS CR-M-D12-IU-02	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

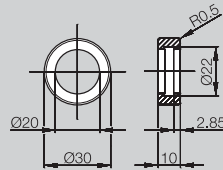


BMS CR-M-D12-IU-05

Stainless steel

Adapter ring

for 2× BMS CS-M-D12-IZ
for clamping cylinder



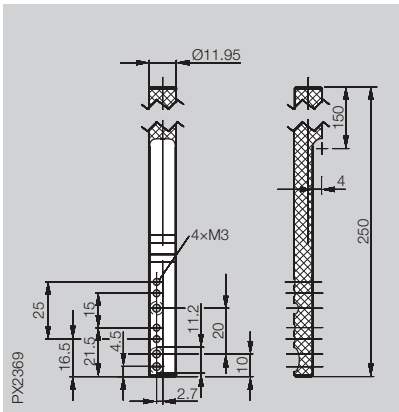
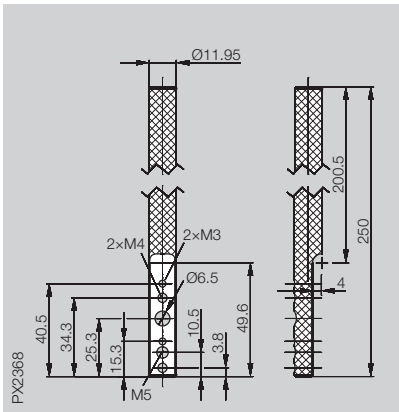
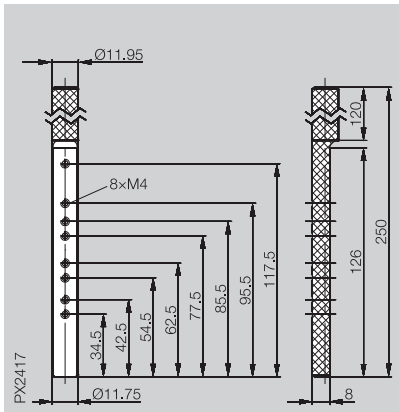
BMS AD-M-003-D12/IZ

Anodized Al



5

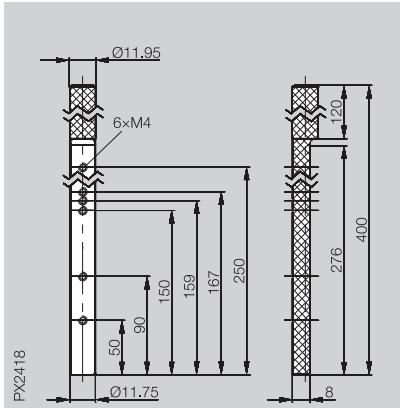
Connectors
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Description	Sensor holder	Reflector holder	Sensor holder	
Version	for BOS 2K, BOS 5K, BOS 6K, BES/BOS Q08	for reflectors R1, R9, R14, R22, R26	for slot sensors BGL 5A, 10A, 20A, 30A, 50A, 80A	
Application	for base holder Ø 12 mm	for base 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

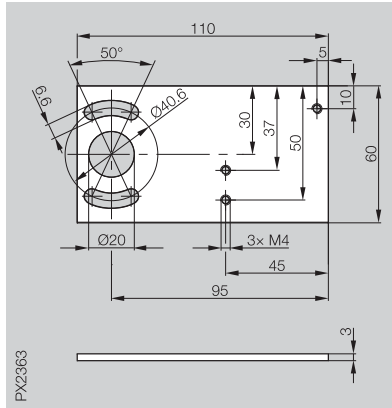


BMS BS-M-D12-0400-04

Anodized Al

Sensor adapter plate

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

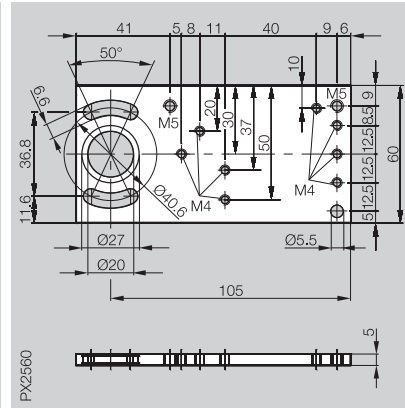


BMS CS-M-D12-BX01-01

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



Description	Sensor holder	Sensor holder	
Version	straight	angled	
Application	Sensor holder for Unicompat, Unisensor, BES IKU	Sensor holder for Unicompat, Unisensor, BES IKU	
	<p>PX2561</p>	<p>PX2562</p>	
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

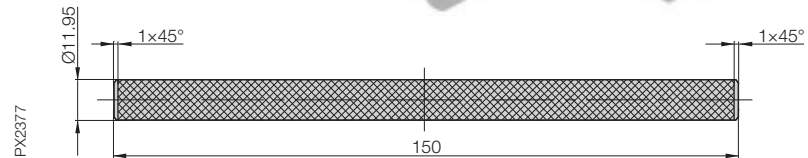


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Mounting rods Ø 12 mm, anodized aluminum,

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.





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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.

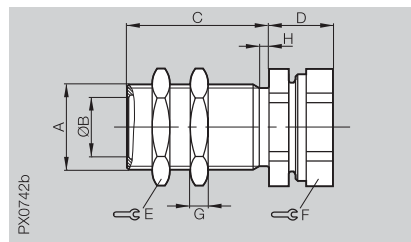
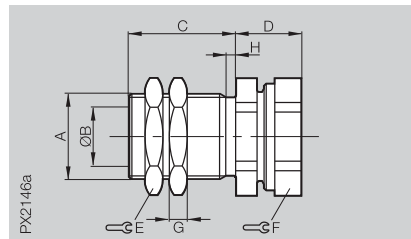
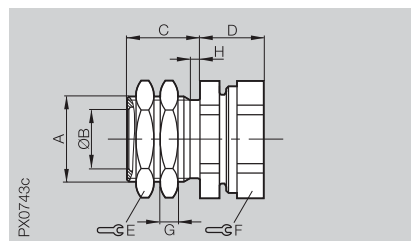
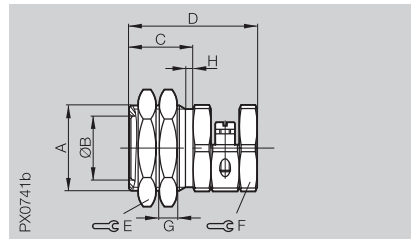
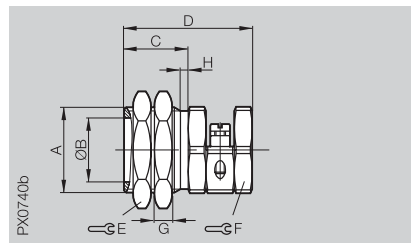
Note this when using this clamping system.

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	Ø B	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	Ø B	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	Ø B	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	Ø B	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	Ø B	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			

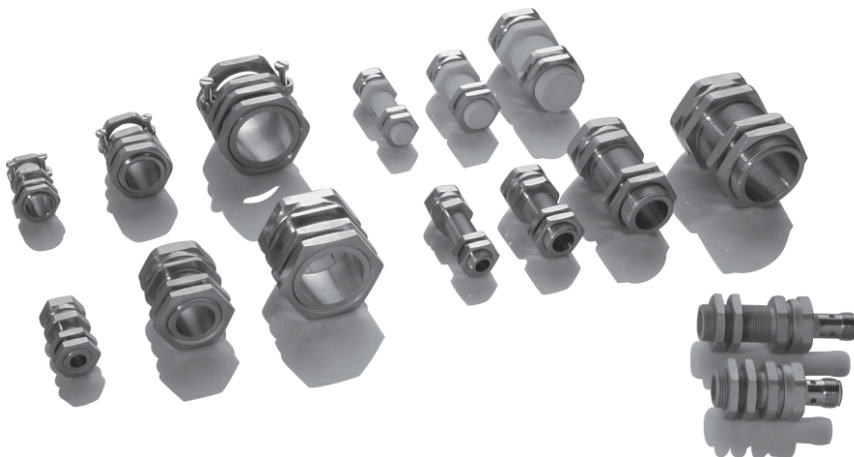
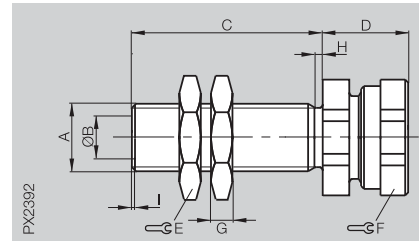
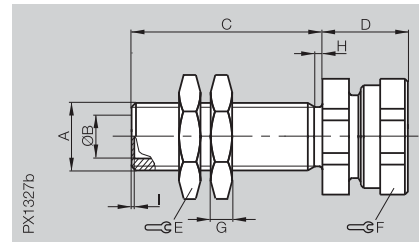
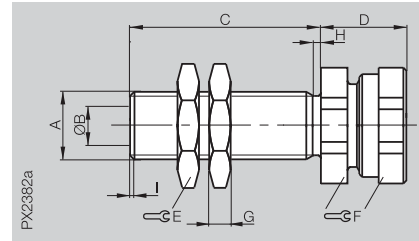
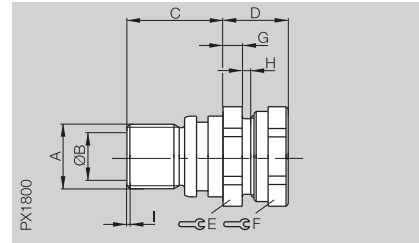
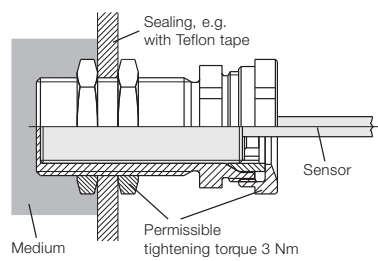
*Also available for welding machines (Teflon-coated).

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

5

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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	Ø B	C	D	E	F	G	H	I
BES 12,0-KH-5F	M16×1	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	Ø B	C	D	E	F	G	H	I
BES 12,0-KH-3X	M16×1	12	15.4	30	SW22	SW22	3.8	2.1	1

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

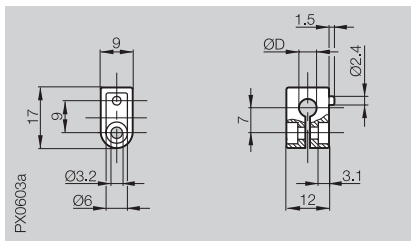
	A	Ø B	C	D max.	E	F	G	H	I
BES 08,0-KH-3L	M12×1	8	34	14.5	SW17	SW17	4	2.1	0.5
BES 12,0-KH-3L	M16×1	12	30	14.5	SW22	SW22	4	2.1	1
BES 18,0-KH-3L	M24×1.5	18	40	19.5	SW30	SW30	5	3.2	1

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

	A	Ø B	C	D max.	E	F	G	H
BES 08,0-KH-6L *	M12×1	8	34	14.5	SW17	SW17	4	2.1

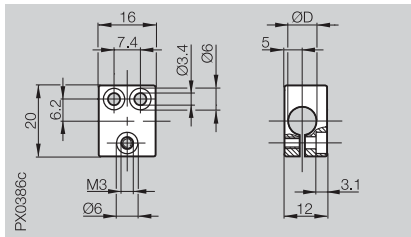
*Also available for welding machines
(Teflon-coated).

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



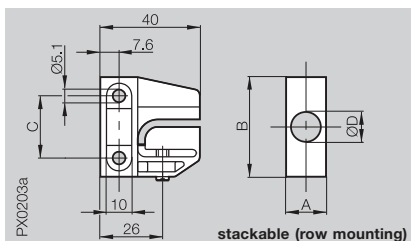
Mounting clamp for sensors Ø 4 mm, M5 or Ø 6.5 mm (material: PA 6)

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



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

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

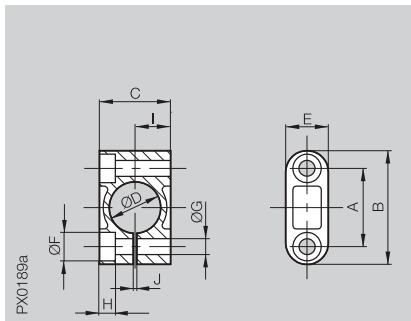


Mounting clamp for sensors M12 or M18 (material: PA 6)

	Ø 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)

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



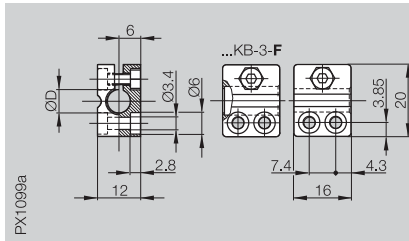
Mounting cuffs (material: PA 6)

	Ø D	A	B	C	E	Ø F	Ø 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.



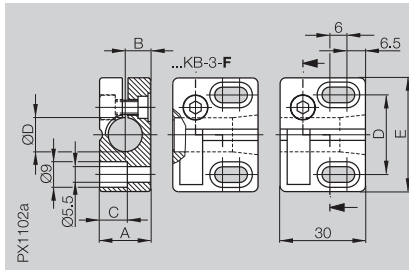


Mounting clamp without positive stop for sensors Ø 3 mm to M8

	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								
-----------------	---	--	--	--	--	--	--	--	--

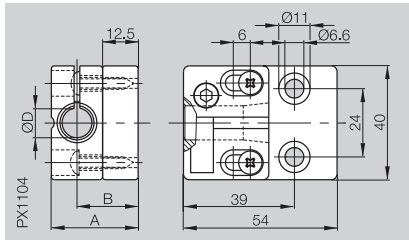


Mounting clamp without positive stop for sensors M12 or M18 non-flush

	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			

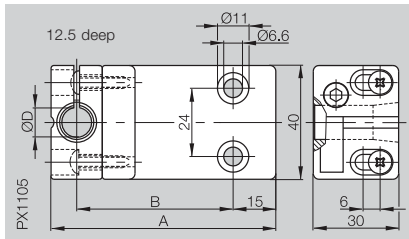
Mounting clamp with positive stop for sensors M12, M18 or M30 flush

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						



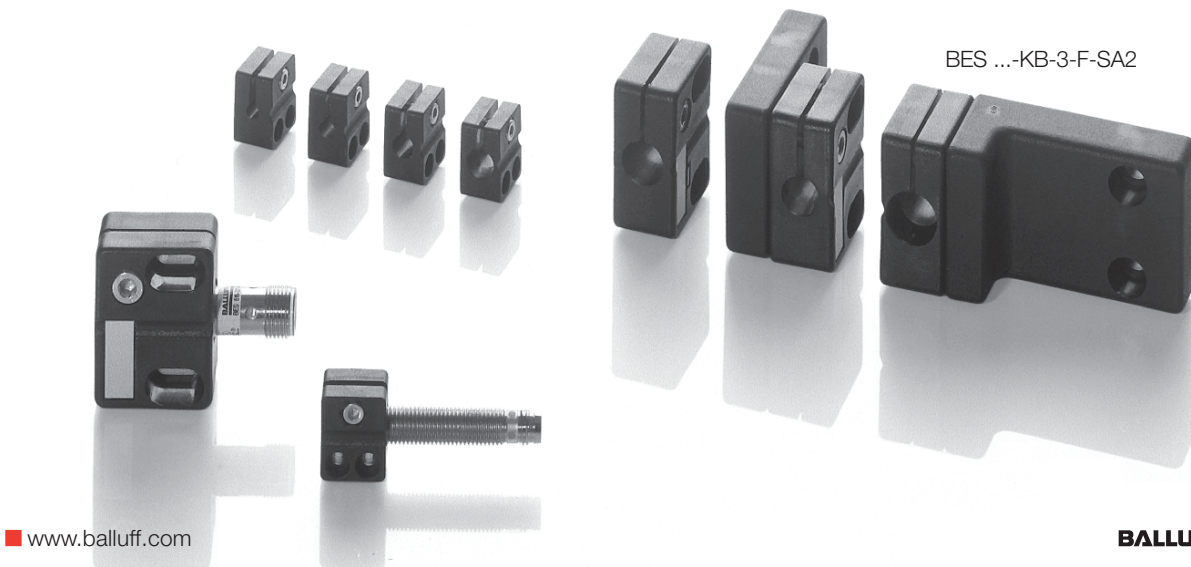
Mounting clamp with positive stop for horizontal insertion of sensors for M12 or M18 flush, with mounting plate

	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.

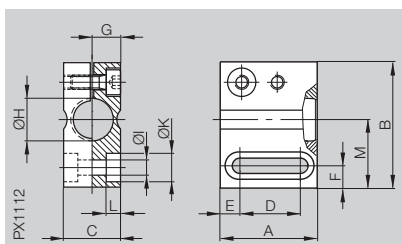
BES ...-KB-3-F-SA1

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



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Mounting clamp with positive stop (material: Al)

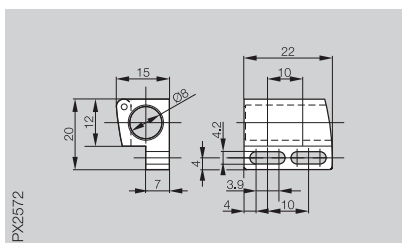
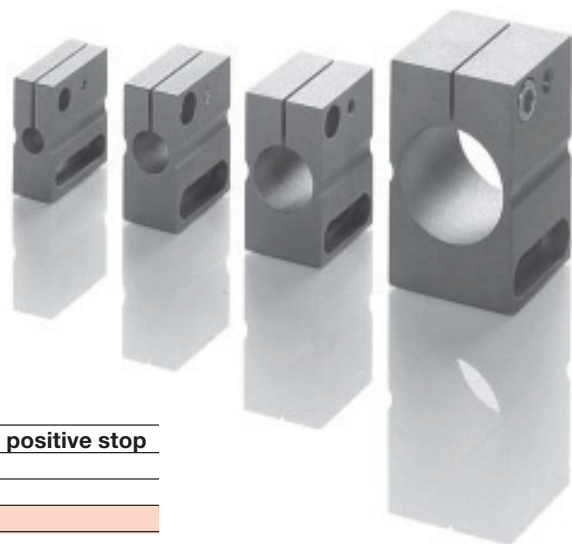
	A	B	C	D	E	F	G	ØH	ØI	ØK	L	M
BES 08,0-KB-4-F	28	30	12	20	4	5	6	8	3.4	6	3.4	15
BES 12,0-KB-4-F	28	35	16	17	5.5	6	8	12	4.3	8	4	19
BES 18,0-KB-4-F	28	40	22	17	5.5	6	11	18	4.3	8	4	20
BES 30,0-KB-4-F	34	56	34	22	6	7	17	30	6.4	10	6	28

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.

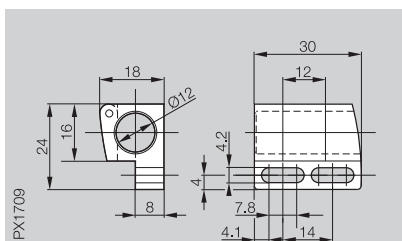
Application

For all sensors of corresponding diameter.



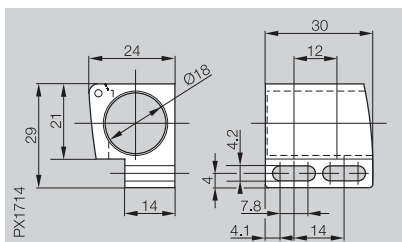
Mounting clamp with positive stop (material: PC plastic)

BES 08,0-KB-5-F



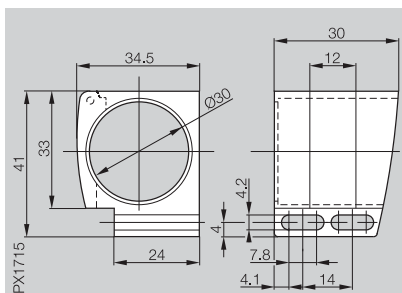
Mounting clamp with positive stop (material: PC plastic)

BES 12,0-KB-5-F



Mounting clamp with positive stop (material: PC plastic)

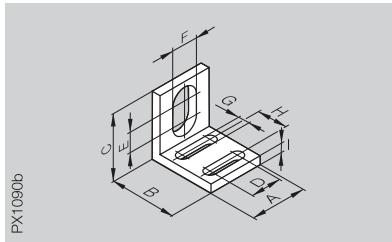
BES 18,0-KB-5-F



Mounting clamp with positive stop (material: PC plastic)

BES 30,0-KB-5-F





Mounting bracket (material: Al)

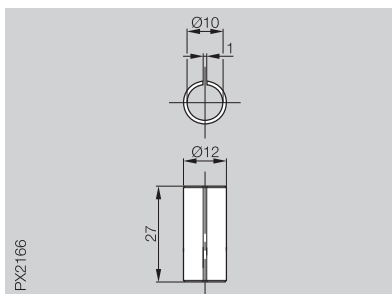
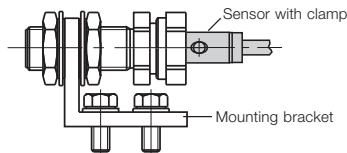
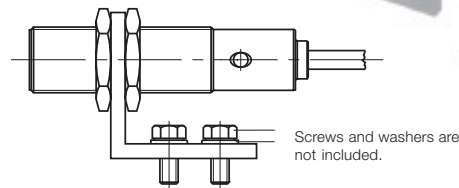
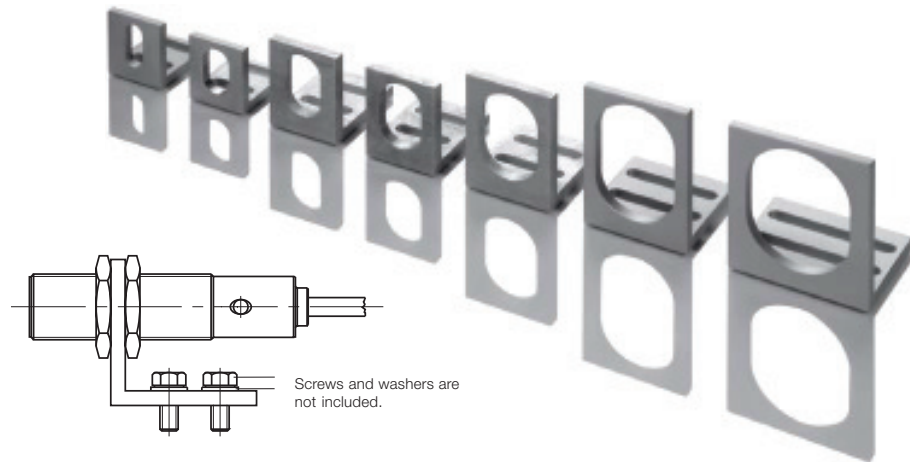
	A	B	C	D	E	F	G	H	I				
BES 08-HW-1	25	30	30	14	12	8.1	5.2	14	4				
BES 12-HW-1	25	30	30	14	9	12.1	5.2	14	4				
BES 16-HW-1	30	40	40	18	12	16.1	5.2	14	5				
BES 18-HW-1	30	40	40	18	11	18.1	5.2	14	5				
BES 24-HW-1	35	40	50	23	13	24.1	5.2	14	5				
BES 30-HW-1	40	40	60	30	19	30.1	5.2	14	5				
BES 36-HW-1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



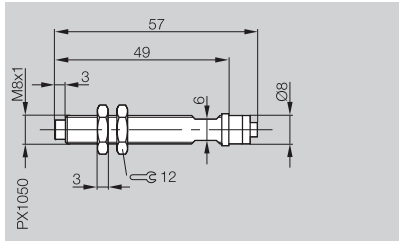
Reducing sleeve for reducing from 12 to 10 mm (material: PC)

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

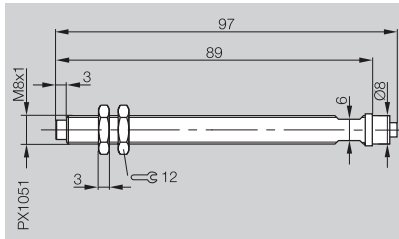
Temperature range: -25...+100 °C

Spring force: 3 N

max. impact force $F_{max.}$: 100×F

Spring travel: 2 mm

Permissible tightening torque: 15 Nm



Positive stop

BES 08-FA-89

Material: stainless steel

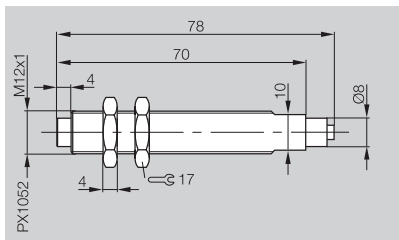
Temperature range: -25...+100 °C

Spring force: 3 N

max. impact force $F_{max.}$: 100×F

Spring travel: 2 mm

Permissible tightening torque: 15 Nm



Positive stop

BES 12-FA-70

Material: stainless steel

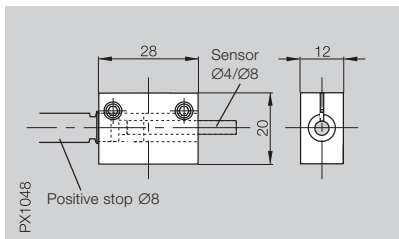
Temperature range: -25...+100 °C

Spring force: 4 N

max. impact force $F_{max.}$: 100×F

Spring travel: 3 mm

Permissible tightening torque: 25 Nm



Positive stop

mounting cuff straight

for sensors with Ø 4 mm or Ø 8 mm

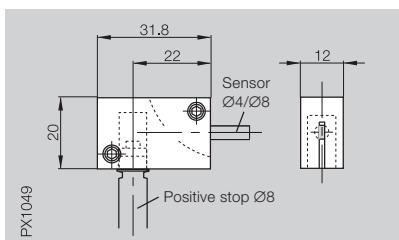
BES 08-FA-BS-4,0-G

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

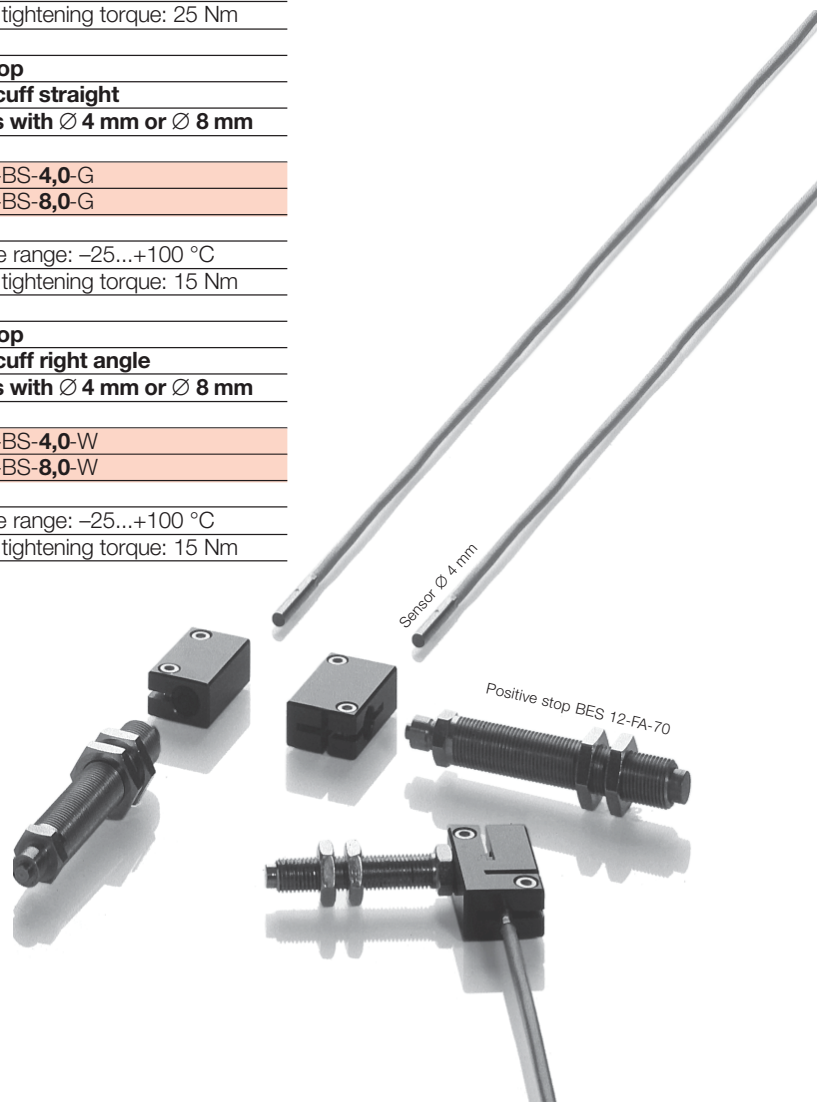
Temperature range: -25...+100 °C

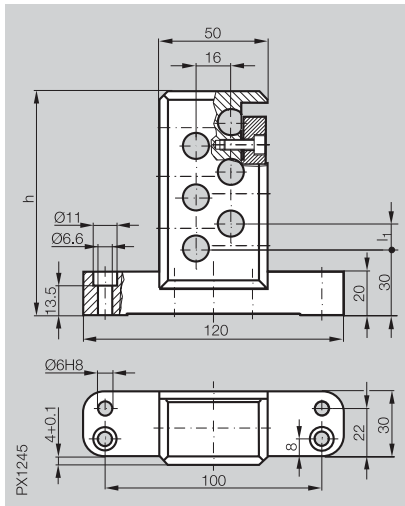
Permissible tightening torque: 15 Nm

**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

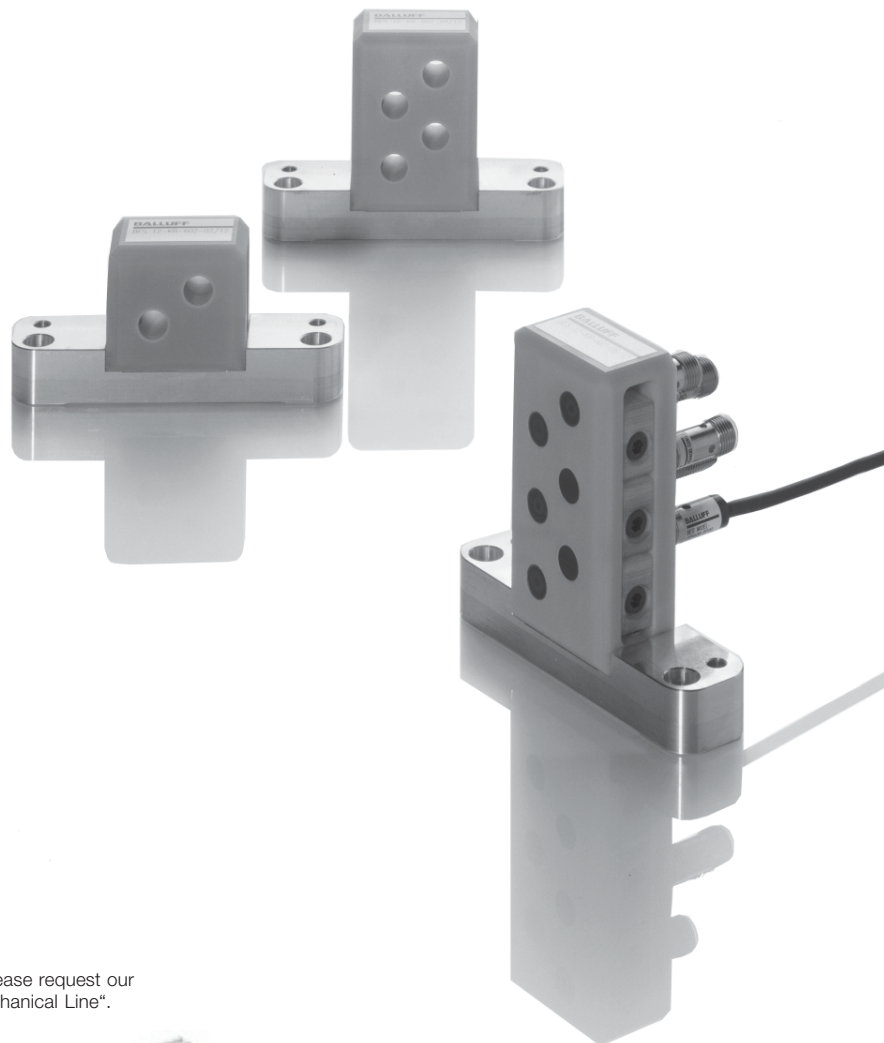
	spacing l ₁	switch positions	height h
BES 12,0-KB-602-02/12	12 mm	2	57 mm
BES 12,0-KB-602-04/12	12 mm	4	81 mm
BES 12,0-KB-602-06/12	12 mm	6	105 mm
BES 12,0-KB-602-06/16	16 mm	6	125 mm

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

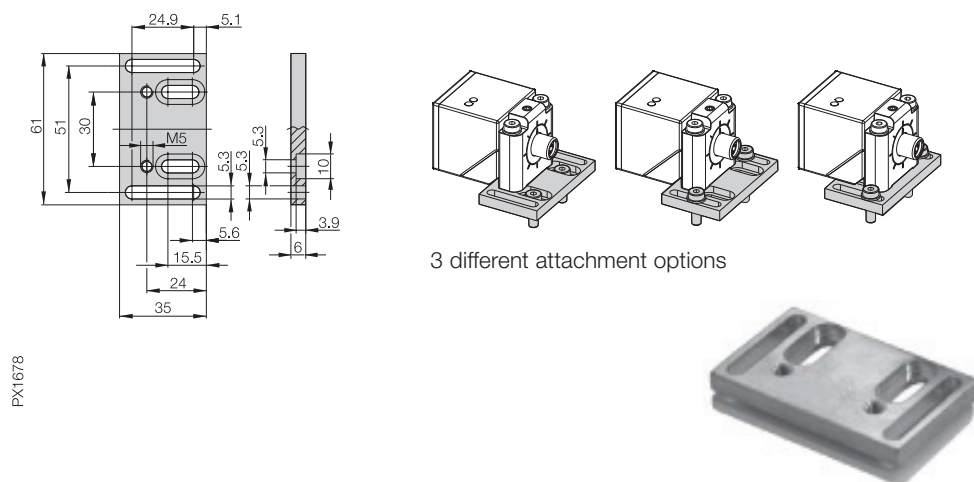


For cam trays, please request our catalog „The Mechanical Line“.



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

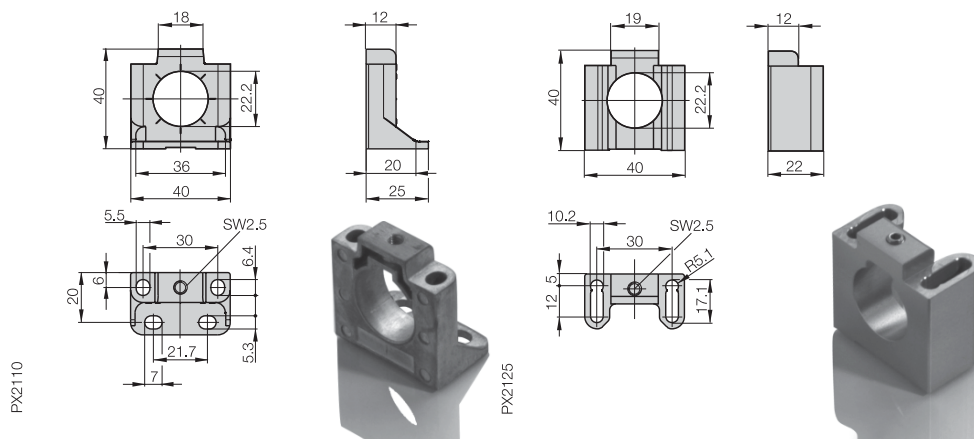
Material: Al



Description	Mounting socket for Unicomact (3-/4-wire)	Mounting socket for Unicomact (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!

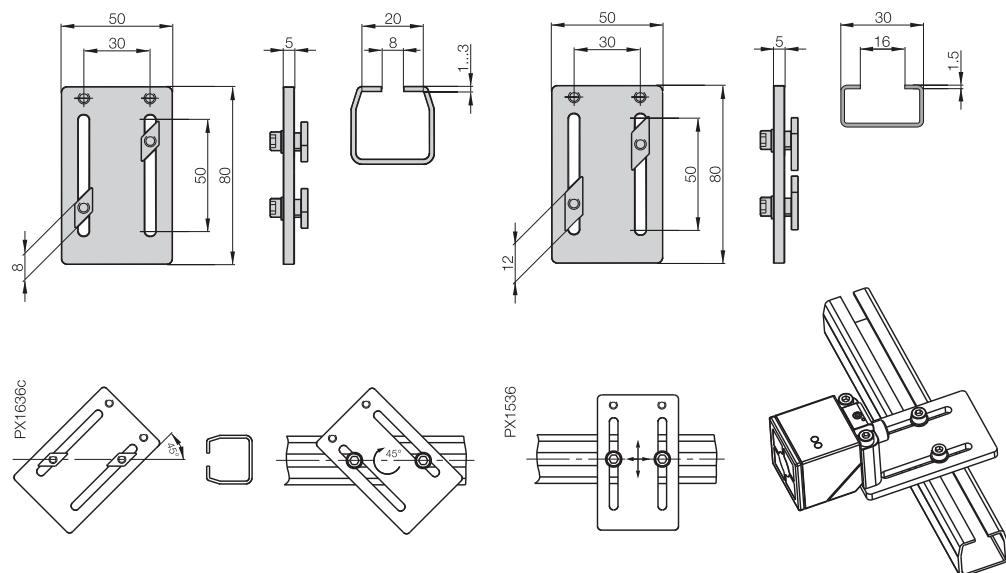


Description	Holding system for Unicomact	Holding system for Unicomact
Ordering code	BES HS-01-P1-C8/Q40	BES HS-01-P1-C16/Q40

This holding system is used to attach Unicomact 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

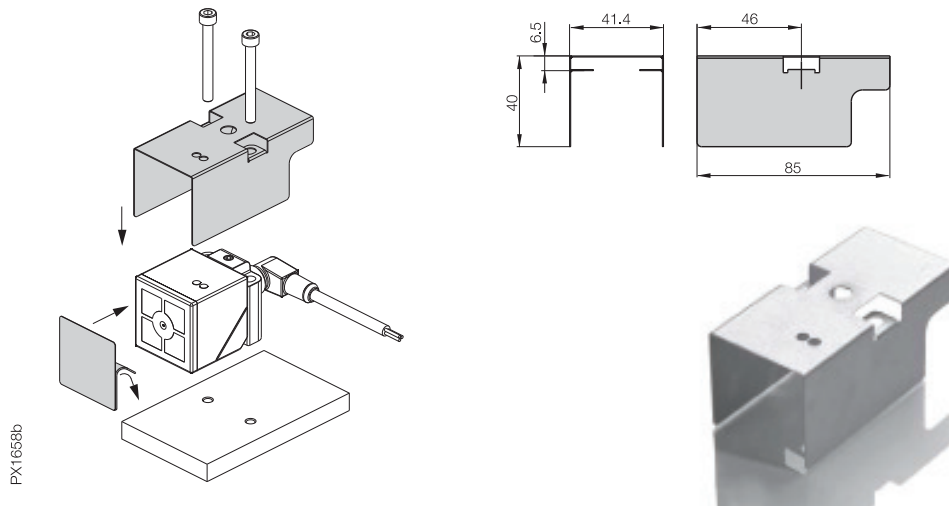


Description	Weld protection for Unicomact (3-/4-wire)
Ordering code	BES Q40-SH-1

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

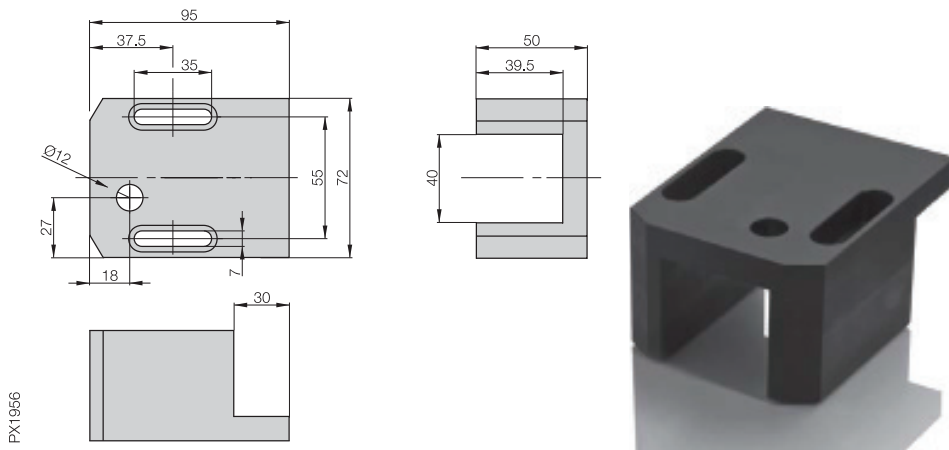
Consists of a protective cover and a self-adhering PTFE film for protecting the active surface. When replacing the sensor head it is not necessary to remove the weld protection.

Material: Al



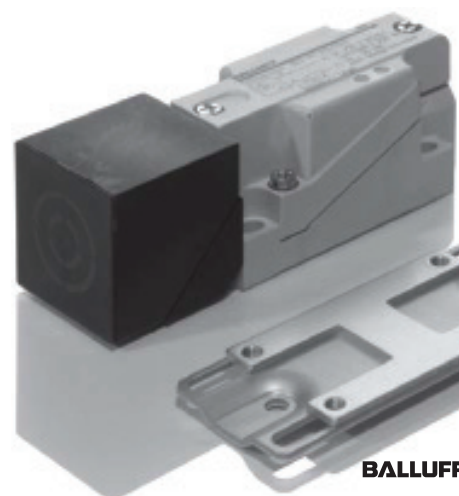
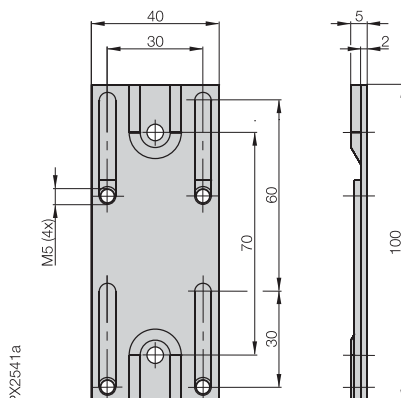
Description	Protective cover for Unicomact (3-/4-wire)
Ordering code	BES Q40-SH-2

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 (M5×25; 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.

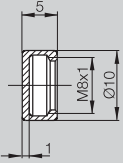
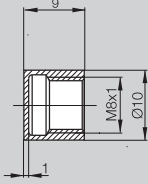
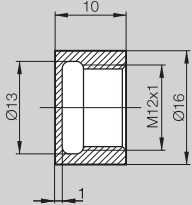
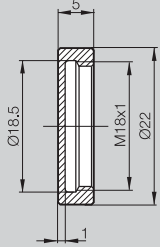


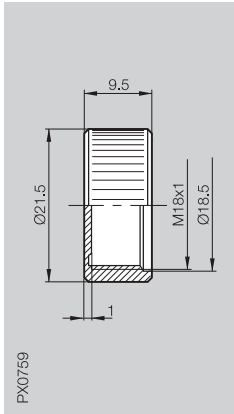
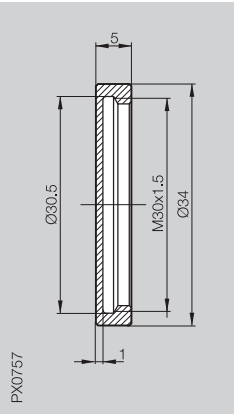
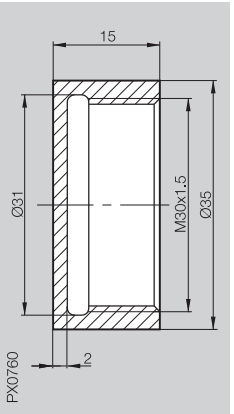
5

Connectors
Splitter boxes
with
accessories
Electrical
devices
Fasteners
Tools

Accessories

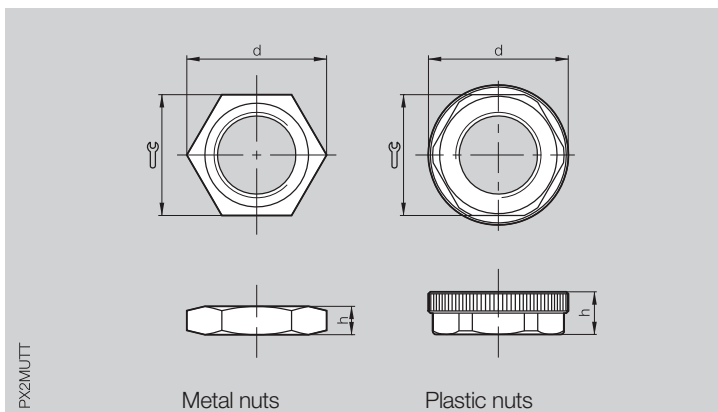
Cover nuts

Description	Cover nut	Cover nut	Cover nut	Cover nut	
	 <p>PX1775</p>	 <p>PX1776</p>	 <p>PX0758</p>	 <p>PX0756</p>	
Ordering code	BES 08-SM-1	BES 08-SM-1F	BES 12-SM-2	BES 18-SM-1	
	<p>This cover nut is threaded on to a M8×1 housing. It is made of PTFE and protects the active surface from weld splatter.</p>	<p>This cover nut is threaded on to a M8×1 housing. It is made of PTFE and protects the active surface from weld splatter.</p>	<p>This cover nut is threaded on to a M12×1 housing. It is made of POM and can be used for high mechanical stress applications.</p>	<p>This cover nut is threaded on to a M18×1 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.</p>	
	<p>Please note! The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.</p>	<p>Please note! The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.</p>	<p>Please note! The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.</p>	<p>Please note! The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.</p>	

Cover nut	Cover nut	Cover nut		
				
BES 18-SM-2	BES 30-SM-1	BES 30-SM-2		
<p>This cover nut is threaded on to a M18×1 housing. It is made of POM and can be used for high mechanical stress applications.</p>	<p>This cover nut is threaded on to a M30×1.5 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.</p>	<p>This cover nut is threaded on to a M30×1.5 housing. It is made of POM and can be used for high mechanical stress applications.</p>		
<p>Please note! The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.</p>	<p>Please note! The nominal switching distance of proximity switches is reduced by 1 mm when the cover nut is installed.</p>	<p>Please note! The nominal switching distance of proximity switches is reduced by 2 mm when the cover nut is installed.</p>		



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

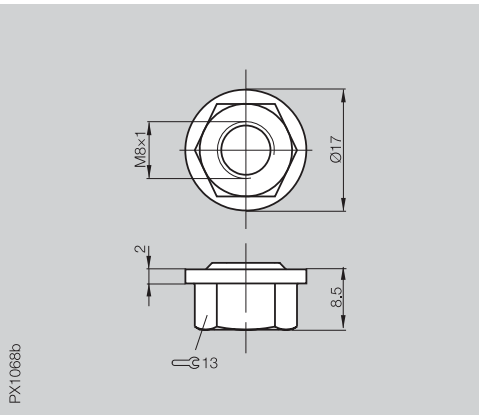
Zinc plated lockwasher for M18 sensors: Part No. 500558

Zinc plated lockwasher for M12 sensors: Part No. 500552

Zinc plated lockwasher for M18 sensors: Part No. 117684



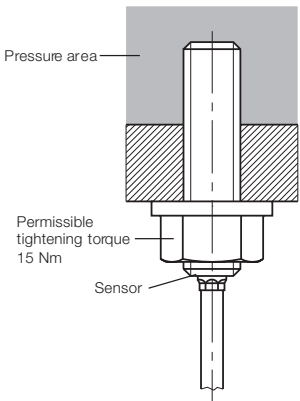
Seal nut



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.

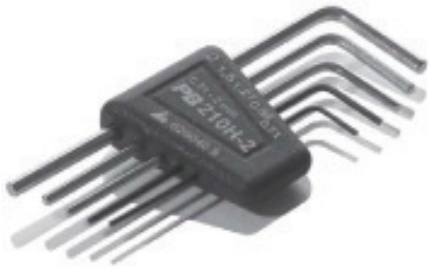
		
		mm
0.7		
0.9		
1.3		
1.5		
2.0		
2.5		
		3.0
	PH00	


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.

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Connectors
Splitter boxes
with
accessories
Electrical
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