

**BALLUFF**

Balluff products for Brose

# MANUFACTURER-SPECIFIC COMPONENT APPROVAL

 *innovating automation*

**brose**  
Excellence in Mechatronics

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# REVISION HISTORY

Edition	Date	Type of change	Page
	26.04.2011	First release	all
1.0	7/17/2012	BOS 6K-PU-1QC-S75-C replacement, New - pressure switch, New, double-ended cordsets	
1.1	01.01.2013	Replacement BOS 23K-PA-LH10-S4 for BOS 26K-PA-1LHC-S4-C Replacement BMF 243K-PS-C-2A-SA2-S49-00,3 for BMF 273K-PS-C-2A-SA2-S49-00,3 New Vision Sensors with daylight filter New inductive positioning system BIP AD2-B040-02-S4	
2.0	4/22/2014	new 10 - Networking IO-Link new 11 - Passive splitters new 12 - Power supplies and switches new 13 - Double-ended cordsets for BUS systems new 14 - Double-ended cordsets new 15 - Double-ended cordsets for welding  Various individual updates / changes in the existing product groups	
2.1	11/4/2014	Links update	
3.0	05.05.2015	New 14 - Safety cables New 17 - Valve connectors  Various individual updates / changes in the existing product groups	
3.1	9/7/2015	After consultation the following changes were made: 10 – Networking: Market introduction data for M8 metal sensor hubs was postponed. Instead the M8 plastic sensor hubs were added again from the previous V118 version.	
4.0	6/6/2016	Handheld barcode readers added M8 metal sensor hubs added Machine lights added Reflectors added New welding products for welding applications  Various individual updates / changes in the existing product groups	
5.0	5/15/2017	Expansion of optical miniature sensors (replacement for failure-prone fiber optics) Inductive measuring sensors with IO-Link interface added Expansion of inductive sensors with extended switching distance Compact IO-Link RFID M18 read head added IO-Link analog module added 16x input- and mixed modules added SmartLight program completed  Various individual updates / changes in the existing product groups	

Edition	Date	Type of change	Page
6.0	5/30/2018	Inductive safety sensors added 16x IO-Link master added Optosensor One Device, 4 principles plus additional condition monitoring functionality BOS026R Various fiber optics added Complete line of machine lights added Expansion of the welding portfolio, cable specifications for each application case  Various individual updates / changes in the existing product groups	
7.0	5/16/2019	SmartLight indicators added Profile A1 position sensor added Angle sensors added  Various individual updates / changes in the existing product groups	
7.1	8/14/2019	Update to contact persons	
8.0	6/25/2020	Expansion of safety products such as network module, emergency stop device and interlocks Magnetic encoders added Magnetic field positioning system added  Various individual updates / changes in the existing product groups  BAE003H, BAM0177, BAM00CT deleted  BAM022K replaces BAM022J BAM0246 replaces BAM0248 BES014A successor for BES0427 BSP00YH successor for BSP009A  BES00PT together with cover cap BAM00C2 replaces BES056R	
8.1	5/4/2021	Addition: BES04CL High Temperature BOD002M High definition  Replacement: BOD002N for BOD000T  Adjustment contact partners	
8.2	11/16/2021	New addition Brose preferred types: BES00J2, BES00JH, BES00H1, BES00HA, BES00H2, BES00HF, BES00CK, BES054N,, BES001J, BES05KJ, BES00EF, BES01PY, BES03UW, BES01U2	10 – 11

**Clicking on the order code takes you to the respective product detail on the Balluff website where you can retrieve additional product information and documents.**

**For better clarity and navigation within the document you can use the bookmarks.**

**To search for words or products you can use the key combination Ctr-F.**

Edition	Date	Type of change	Page
9.0	5/23/2022	<p>New addition: BES02WM, BES02WZ</p> <p>BOS012A replacement for BOS029M BOS012E replacement for BOS02A3 BMF00MF replacement for BMF00P0 BMF00HF replacement for BMF00P0</p> <p>Have been removed: BES0586, BES056M, BES056N, BES054M, BES03UY, SET01MM, BIL0002, BAM01Z8, BAM003P, BID0012, BID0012, BAM02HA, BID0008, BES0574, BES0577, BES013P, BES014A, BES00P7, BES054Z, BES04ZE, BES00PY, BES05KJ, BES05KK, BES00UY, BES05KF, BES05KH, BES02WR, BES01ZN</p> <p>Balluff Preferred Types: BES00J2, BES00JH, BES00H1, BES00H2, BES00CK, BES02WM, BES00EF, BES01PY, BES03UW, BES001J</p>	all

Clicking on the order code takes you to the respective product detail on the Balluff website where you can retrieve additional product information and documents.

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To search for words or products you can use the key combination Ctr-F.



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Sensors

# INDUCTIVE SENSORS

## BROSE PREFERRED TYPES

INDUCTIVE SENSORS – BROSE PREFERRED TYPES



BES03UW

BES01U2

BES00J2

BES00JH

Dimension	25 x 5 x 5 mm	59 x 8 x 8 mm	Ø 4 x 27 mm	Ø 4 x 27 mm
Style	5x5	8x8	D4.0	D4.0
Range	1.5 mm	2 mm	0.8 mm	1.5 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	for flush mounting	for flush mounting	for flush mounting	for flush mounting
Connection	Cable with connector, M8x1-Male, 3-pin, 0.30 m, PUR	Connector, M8x1-Male, 3-pin	Cable with connector, M8x1-Male, 3-pin, 0.20 m, PUR	Cable with connector, M8x1-Male, 3-pin, 0.20 m, PUR
Switching frequency 01	2000 Hz	3000 Hz	5000 Hz	5000 Hz
Operating voltage Ub	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	Stainless steel (1.4305)	Zinc, Die casting	Stainless steel	Stainless steel
Approval/Conformity	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	<b>Preferred type</b>		<b>Preferred type</b>	<b>Preferred type</b>

INDUCTIVE SENSORS – BROSE PREFERRED TYPES



BES00H1

BES00HA

BES00H2

BES00HF

Dimension	Ø 5 x 27 mm	Ø 5 x 27 mm	Ø 5 x 41 mm	Ø 5 x 41 mm
Style	M5x0.5	M5x0.5	M5x0.5	M5x0.5
Range	0.8 mm	1.5 mm	0.8 mm	1.5 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	for flush mounting	for flush mounting	for flush mounting	for flush mounting
Connection	Cable with connector, M8x1-Male, 3-pin, 0.30 m, PUR	Cable with connector, M8x1-Male, 3-pin, 0.20 m, PUR	Connector, M8x1-Male, 3-pin	Connector, M8x1-Male, 3-pin
Switching frequency 01	5000 Hz	5000 Hz	5000 Hz	5000 Hz
Operating voltage Ub	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Approval/Conformity	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	<b>Preferred type</b>		<b>Preferred type</b>	

INDUCTIVE  
SENSORS –  
BROSE PREFERRED  
TYPES

BES00CK



BES054N



BES001J



BES00EF

Dimension	Ø 8 x 40 mm	Ø 8 x 60 mm	Ø 8 x 60 mm	Ø 12 x 45 mm
Style	M8x1	M8x1	M8x1	M12x1
Range	2 mm	3 mm	4 mm	4 mm
Switching output	PNP normally open (NO)			
Installation	for flush mounting	for flush mounting	non-flush	for flush mounting
Connection	Connector, M8x1-Male, 3-pin	Connector, M8x1-Male, 3-pin	Connector, M8x1-Male, 3-pin	Connector, M12x1-Male, 4-pin
Switching frequency 01	5000 Hz	1200 Hz	4000 Hz	2500 Hz
Operating voltage Ub	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	Stainless steel	Brass, Nickel-free coated	Stainless steel	Brass, Nickel-free coated
Approval/Conformity	cULus, CE,EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	<b>Preferred type</b>			<b>Preferred type</b>

INDUCTIVE  
SENSORS –  
BROSE PREFERRED  
TYPES

BES01PY

Dimension	Ø 12 x 45 mm
Style	M12x1
Range	8 mm
Switching output	PNP normally open (NO)
Installation	non-flush
Connection	Connector, M12x1-Male, 4-pin
Switching frequency 01	1000 Hz
Operating voltage Ub	10...30 VDC
Housing material	Brass, Nickel-free coated
Approval/Conformity	CE, cULus, EAC, WEEE
Remarks	<b>Preferred type</b>

## Sensors

# INDUCTIVE SENSORS

## STANDARD - BLOCK-STYLE

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

The rugged and reliable inductive Global Sensors provide especially economical solutions. We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

STANDARD  
INDUCTIVE  
SENSORS

## BLOCK STYLE

	BES04FA	BES041N	BES01WP	BES01W3
Dimension	16 x 8 x 4.7 mm	20 x 8 x 8 mm	30 x 10 x 6 mm	32 x 20 x 8 mm
Style	block style	block style	block style	block style
Range	2 mm	2 mm	3 mm	7 mm
Connection	Cable with connector, 0.30 m, PUR	Cable with connector, 0.30 m, PUR	M8x1 male, 3-pin	Cable with connector, 0.50 m, PUR
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP NO/NC (NO/NC)
Installation	flush	flush	flush	flush
Housing material	Brass	Brass	PA, PA 6, GF30	Zinc, die-cast
Surrounding	narrow installation space	narrow installation space	narrow installation space	narrow installation space
ZIND number	2222399058	2222384627	2222345349	2222345988

STANDARD  
INDUCTIVE  
SENSORS

## BLOCK STYLE



	BES01Z7	BES01ZE	BES01U2	BES01U4
Dimension	40 x 12 x 26 mm	40 x 12 x 26 mm	59 x 8 x 8 mm	59 x 8 x 8 mm
Style	block style	block style	block style	block style
Range	2 mm	4 mm	2 mm	3 mm
Connection	M8x1 male, 3-pin	M8x1 male, 3-pin	M8x1 male, 3-pin	M8x1 male, 3-pin
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush	flush	flush
Housing material	PA, PA 12	PA, PA 12	Zinc, die-cast	Zinc, die-cast
Surrounding	narrow installation space	narrow installation space	narrow installation space	narrow installation space
Remarks			<b>Preferred type</b>	
ZIND number	2222353425	2222364823	2222329426	2222395698
Cross Reference			successor for IFM IL5004, Baumer IFFM 08P17A1/ O1S35L / 10157209	

## Sensors

# INDUCTIVE SENSORS

## STANDARD - TUBULAR

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions. The rugged and reliable inductive Global Sensors provide especially economical solutions. We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

STANDARD  
INDUCTIVE  
SENSORS

## TUBULAR STYLE

	BES0409	BES040R	BES00JJ	BES03P4
Dimension	Ø 3 x 22 mm	Ø 4 x 22 mm	Ø 4 x 27 mm	Ø 6.5 x 55 mm
Style	D3.0	M4x0.5	D4.0	D6.5
Range	1 mm	1 mm	1.5 mm	2 mm
Connection	Cable with connector, 0.30 m, PUR	Cable with connector, 0.30 m, PUR	Cable with connector, 0.30 m, PUR	Connector, M8x1 male, 3-pin
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush	flush	flush
Housing material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Surrounding	narrow installation space	narrow installation space	narrow installation space	narrow installation space
ZIND number	2222429909	2222402760	2222345220	

## Sensors

# INDUCTIVE SENSORS

## STANDARD - M05

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

The rugged and reliable inductive Global Sensors provide especially economical solutions. We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

### STANDARD INDUCTIVE SENSORS

### SIZE M05



BES00HA

BES00HF

	BES00HA	BES00HF
Dimension	Ø 5 x 27 mm	Ø 5 x 41 mm
Style	M5x0.5	M5x0.5
Range	1.5 mm	1.5 mm
Connection	Cable with connector, 0.20 m, PUR	M8x1 male, 3-pin
Switching output	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush
Housing material	Stainless steel	Stainless steel
Surrounding	narrow installation space	narrow installation space
ZIND number	2222311372	2222311371

## Sensors

# INDUCTIVE SENSORS

## STANDARD - M08

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

The rugged and reliable inductive Global Sensors provide especially economical solutions. We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

STANDARD  
INDUCTIVE  
SENSORS

## SIZE M8



	BES003P	BES054N	BES001J
Dimension	Ø 8 x 59 mm	Ø 8 x 60 mm	Ø 8 x 60 mm
Style	M8x1	M8x1	M8x1
Range	2 mm	3 mm	4 mm
Connection	M8x1 male, 3-pin	M8x1 male, 3-pin	PNP normally open (NO)
Switching output	PNP normally open (NO)	PNP normally open (NO)	non-flush
Installation	flush	flush	Connector, M08x1-S49
Housing material	Brass	Brass	Stainless steel
Surrounding	narrow installation space	narrow installation space	narrow installation space
Remarks	<b>Preferred type</b>	High switching distance of 3mm, flush mount, price advantage over Contrinex	<b>Preferred type</b>
ZIND number	2222321112	2222429376	2222364222
Cross Reference	Successor for Baumer Inductive Sensor / IFRM 08P17A4/S35L		Successor for IFM IE5329

**Always install with clamp**

## Sensors

# INDUCTIVE SENSORS

## STANDARD - M12

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

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STANDARD  
INDUCTIVE  
SENSORS

## SIZE M12



BES02WM

BES02WZ

BES004N

BES0068

Dimension	Ø 12 x 45 mm	Ø 12 x 60 mm	Ø 12 x 60 mm	Ø 12 x 65 mm
Style	M12x1	M12x1	M12x1	M12x1
Range	6 mm	6 mm	8 mm	4 mm
Connection	Connector, M12x1-Male, 3-pin	Connector, M12x1-Male, 3-pin	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin, A-coded
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	quasi-flush	quasi-flush	non-flush	flush
Housing material	Brass	Brass	Brass	Brass
Remarks			<b>Preferred type</b>	<b>Preferred type</b>
ZIND number			2222352932	2222315283
Cross Reference				successor for IFM IF5775

**Always install with clamp**

## Sensors

# INDUCTIVE SENSORS

## STANDARD - M18

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

The rugged and reliable inductive Global Sensors provide especially economical solutions. We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

### STANDARD INDUCTIVE SENSORS

#### SIZE M18



BES00EZ

BES05EY

	BES00EZ	BES05EY
Dimension	Ø 18 x 44.5 mm	Ø 18 x 66 mm
Style	M18x1	M18x1
Range	8 mm	20 mm
Connection	M12x1 male, 4-pin	M12x1 male, 3-pin
Switching output	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	non-flush
Housing material	Brass	Brass
Remarks	successor for BES030L	non-flush, 20mm switching distance replaces BES02Y7
ZIND number	2222396979	

**Always install with clamp**

## Sensortechnik

# INDUKTIVE SENSOREN

## HIGH TEMPERATURE RESISTANT

Our temperature-rated sensors are designed for temperatures up to 230 °C: both the housing design and the cable design are optimized for higher temperatures. The electronics are completely integrated. Some variants are also available as high pressure sensors, which makes using them even more flexible.

TEMPERATURE-  
RESISTANT  
INDUCTIVE SENSORS



BES04CL

Dimension	Ø 12 x 66 mm
Style	M12x1
Range	4 mm
Connection	Cable, 2.00 m, PTFE
Switching output	PNP Normally open (NO)
Installation	None flush
Housing material	PEEK
Environmental Temperature	-25...160 °C
Remarks	Use for high environmental temperature

## Sensors

# INDUCTIVE SENSORS

## HIGH-PRESSURE RESISTANT

Our pressure-rated inductive sensors withstand a pressure of up to 500 bar.

This makes them perfect for position monitoring of your hydraulics, such as for end position verification of hydraulic cylinders or monitoring valve position.

### HIGH-PRESSURE RESISTANT INDUCTIVE SENSORS



	BES02WE	BES02N6
Dimension	Ø 12 x 60 mm	Ø 12 x 65 mm
Style	M12x1	M12x1
Range	10 mm	2 mm
Connection	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin, A-coded
Switching output	PNP normally open (NO)	PNP normally open (NO)
Installation	non-flush	flush
Housing material	Stainless steel	Stainless steel
Surrounding	weld-spatter-resistant	weld-spatter-resistant
Pressure rating max.	80 bar	80 bar
Remarks	STEELFACE Sensor	STEELFACE Sensor
ZIND number	2222364310	2222413824

**Always install with clamp**



## Sensors

# INDUCTIVE SENSORS

## MAGNETIC-FIELD-RESISTANT

**Magnetic-field-resistant inductive sensors are insensitive to magnetic fields which are created around electric weld currents up to 25 kA.**

Our magnetic-field-resistant inductive sensors are ideal for use in areas with strong magnetic fields such as in welding and induction hardening installations. They are insensitive to magnetic fields arising from electric welding currents up to 25 kA.

### MAGNETIC-FIELD-RESISTANT INDUCTIVE SENSORS



	BES02YR	BES02JZ	BES05KP	BES02JW
Dimension	Ø 8 x 49 mm	Ø 12 x 50 mm	Ø 12 x 50 mm	Ø 12 x 50 mm
Style	M8x1	M12x1	M12x1	M12x1
Range	1.5 mm	3 mm	4 mm	8 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush	flush	non-flush
Connection	M8x1 male, 3-pin	M12x1 male, 4-pin	M12x1 male, 3-pin	M12x1 male, 4-pin
Switching frequency	2000 Hz	2000 Hz	2000 Hz	2000 Hz
Operating voltage UB	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	Stainless steel (1.4301)	Brass	Brass	Brass
Approval/Conformity	CE, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	weld-immune, Factor 1	weld-immune, Factor 1	weld-immune, Factor 1	weld-immune, Factor 1
ZIND number	2222335469	2222335470		2222363676

**Always install with clamp**

MAGNETIC-FIELD-  
RESISTANT  
INDUCTIVE SENSORS



	BES05KR	BES0567	BES05KT	BES02K5
Dimension	Ø 12 x 50 mm	Ø 12 x 65 mm	Ø 12 x 65 mm	Ø 12 x 65 mm
Style	M12x1	M12x1	M12x1	M12x1
Range	8 mm	4 mm	4 mm	8 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	non-flush	flush	flush	non-flush
Connection	Connector, M12x1 male, 3-pin	Connector, M12x1 male, 4-pin	Connector, M12x1 male, 3-pin	Connector, M12x1 male, 4-pin
Switching frequency	2000 Hz	80 Hz	2000 Hz	2000 Hz
Operating voltage UB	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	Brass	Stainless steel	Brass	Brass
Approval/Conformity	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	weld-immune, Factor 1	STEELFACE Sensor, weld-immune, Factor 1	weld-immune, Factor 1	weld-immune, Factor 1

MAGNETIC-FIELD-  
RESISTANT  
INDUCTIVE SENSORS



	BES05KW
Dimension	Ø 12 x 65 mm
Style	M12x1
Range	8 mm
Switching output	PNP normally open (NO)
Installation	non-flush
Connection	Connector, M12x1 male, 3-pin
Switching frequency	2000 Hz
Operating voltage UB	10...30 VDC
Housing material	Brass
Approval/Conformity	CE, cULus, EAC, WEEE
Remarks	weld-immune, Factor 1

Sensors

# INDUCTIVE SENSORS

## STANDARD - DISTANCE SENSORS

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

The rugged and reliable inductive Global Sensors provide especially economical solutions. We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

STANDARD  
INDUCTIVE  
SENSORS

DISTANCE  
SENSORS



	BAW004M	BAW0056	BAW004J	BAW0015
Dimension	Ø 12 x 65 mm	Ø 12 x 65 mm	Ø 12 x 45 mm	Ø 12 x 65 mm
Style	M12x1	M12x1	M12x1	M12x1
Range	0.2...3.5 mm	0.2...7 mm	0.2...7 mm	1...4 mm
Connection	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin, A-coded	Cable with connector, M12x1 male, 3-pin, 0.50 m, PUR
Switching output	PNP Analog	PNP Analog	PNP Analog	PNP Analog
Installation	flush	non-flush	non-flush	non-flush
Housing material	Brass	Brass	Brass	Brass
Remarks	Replaces BAW004C Interchangeable but IO-Link interface instead of voltage output (means stable digital measuring signal)	Replaces BAW004H Similar form factor (somewhat longer) but IO-Link interface instead of voltage output (means stable digital measuring signal)	Analog distance sensor 0-10V signal	Replaces BAW0014 Analog distance sensor Analog, voltage 0...10 V
ZIND number	2222435730			2222389617

Always install with clamp

STANDARD  
INDUCTIVE  
SENSORSDISTANCE  
SENSORS

	BAW002W	BAW002Y
Dimension	Ø 30 x 44.5 mm	Ø 30 x 57 mm
Style	M30x1.5	M30x1.5
Range	2...10 mm	3...15 mm
Connection	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin, A-coded
Switching output	PNP Analog	PNP Analog
Installation	flush	non-flush
Housing material	Brass	Brass
Remarks	Analog distance sensor 0-10V signal	Analog distance sensor 0-10V signal
ZIND number	2222346426	2222350618

Sensors

# INDUCTIVE SENSORS

## LINEAR POSITION SENSORS

Our sensors with the inductive positioning system detect the position of metallic objects. They ensure the continuous positioning of the objects over the whole measurement range. The most important features: flexibly adjustable measurement range, application-oriented repeatability and linearity, multifaceted design concept, analog and digital interfaces.

INDUCTIVE POSITION MEASURING SYSTEMS



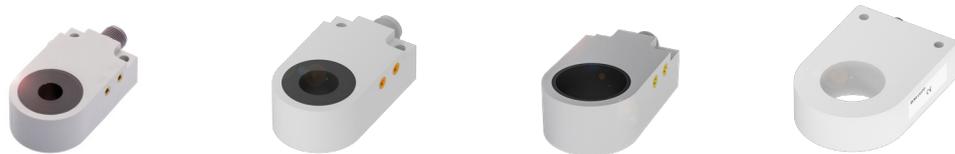
	BIP0002	BIP001J
Range	0...40 mm	0...48 mm
Housing material	PA	PBT
Surrounding	Extreme temperatures	
Connection	M12 connector	M08 connector
Operating voltage	15...30 V	18...30 VDC
Remarks	Compact distance sensor 0...10 V s	Replaces BIP0002 with 40mm measuring distance and 0-10V signal. In spite of the 8mm greater distance this type has a 6mm shorter housing and the IO-Link Interface
ZIND number	2222419903	

## Sensors

# INDUCTIVE SENSORS

## RING AND TUBE SENSORS

The inductive ring sensors with their simple installation (can be installed in rows and are universally attachable, stackable with > 20 mm spacing) and their reliability (inductive sensing principle) are ideal for applications such as small parts detection, detecting nails, screws, welding bolts, rivets etc., ejection control, parts counting, wire break sensing, nailing machines for pallet construction and feed control in assembly technology as well as jam reporting with feed tubes .



### RING AND TUBE SENSORS

	BES03JA	BES03JC	BES03JH	BES02TY
Dimension	60 x 35 x 20 mm	60 x 35 x 20 mm	60 x 35 x 20 mm	115 x 80 x 30 mm
Style	block style	block style	block style	block style
Switching output	PNP normally open (NO)			
Housing material	Plastic	Plastic	Plastic	Plastic
Ring diameter	10 mm	15 mm	25 mm	45 mm
Pulse lengthening	60 ms	60 ms	60 ms	115 ms
Minimum object size	2 mm	3 mm	4 mm	9 mm
Connection	Connector, M12x1-S04	Connector, M12x1-S04	Connector, M12x1-S04	Connector, M12x1-S04
Remarks	Ring sensor	Ring sensor	Ring sensor	Ring sensor
ZIND number	2222414434	2222407884	2222402112	2222404621

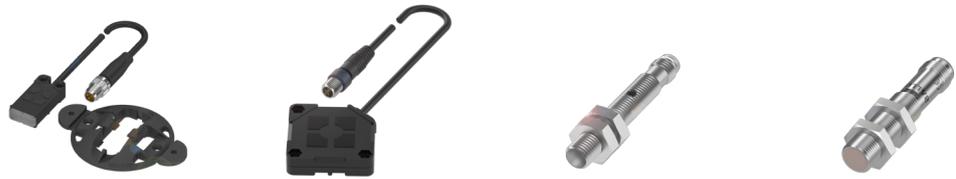
## Sensors

# CAPACITIVE SENSORS

## SENSORS FOR OBJECT DETECTION

Capacitive sensors for object detection feature a straight-line electrical field. They detect both solid bodies, such as wafers, PCBs, cartons, paper stacks, bottles, plastic blocks and plates, and liquids through container walls or glass or plastic tubes (thickness max. 4 mm).

### CAPACITIVE SENSORS FOR OBJECT DETECTION



	BCS012T	BCS00U6	BCS002A	BCS017M
Dimension	34 x 16 x 8 mm	40 x 40 x 10 mm	Ø 8 x 54 mm	Ø 12 x 60 mm
Style	block style	block style	M8x1	M12x1
Range	1...8 mm	1...20 mm	0.1...1.5 mm	0.5...5 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush	flush	flush
Connection	Cable with connector, 0.30 m, PUR	Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR	M8x1 male, 3-pin	M12x1 male, 4-pin
Operating voltage UB	12...30 VDC	10...30 VDC	11...30 VDC	18...30 VDC
Housing material	PP	PBT	Stainless steel (1.4301)	Stainless steel (1.4404)
Approval/Conformity	CE, cULus, WEEE	CE, cULus, WEEE	CE, cULus, WEEE	CE, cULus, EAC, WEEE, IO-Link
Remarks	Small capacitive sensor, installed in window regulators due to their generous switching distance	Level sensor	Capacitive	Capacitive
ZIND number		2222405016	2222354033	

CAPACITIVE  
SENSORS FOR  
OBJECT DETECTION

BCS0037

Dimension	Ø 12 x 60 mm
Style	M12x1
Range	1...4 mm
Switching output	PNP normally open (NO)
Installation	flush
Connection	M12x1 male, 4-pin
Operating voltage UB	12...35 VDC
Housing material	Stainless steel (1.4301)
Approval/Conformity	CE, cULus, WEEE
Remarks	Capacitive
ZIND number	2222362659

## Sensors

# CAPACITIVE SENSORS LEVEL SENSORS WITH MEDIA CONTACT

These capacitive sensors used for fill level detection detect the product, bulk material or liquids to be detected with their active surface in contact with the media. Their spherical electrical field effectively compensates for deposits on the sensing surface of the sensor.



CAPACITIVE LEVEL  
SENSORS WITH  
MEDIA CONTACT

BCS002M

Dimension	Ø 8 x 54 mm
Style	M8x1
Range	0.1...3 mm
Switching output	PNP normally open (NO)
Installation	non-flush
Connection	M8x1 male, 3-pin
Operating voltage UB	11...30 VDC
Housing material	Stainless steel (1.4301)
Approval/Conformity	CE, cULus, WEEE
ZIND number	2222365690

## Sensors

# PRESSURE SENSORS WITH DISPLAY

These pressure sensors are very convenient to use. Their display is bright and rotatable. They can be used for a pressure range of 0 to 600 bar and for gaseous, liquid and viscous media. They are equipped with IO-Link, analog outputs and switch points (PNP/NPN).

Stainless steel process connection: G1/4", G1/2", NPT1/4", R1/4", flush with the front surface in G1/2 (up to 400 bar). IP67.

Customer-specific modifications upon request.



## MIT DISPLAY

## BSP00YH

Measuring range	0...400 bar
Interface	IO-Link Analog, current PNP
Process connection material	Stainless steel
Process connection	G 1/4" (DIN 3852)
Connection	Connector, M12x1
Housing material	Stainless steel (1.4301) PE, high-density polyethylene
Media temperature	-40...125 °C
Ingress protection	IP67 when threaded in
Approval/Conformity	CE, cULus, WEEE
Remarks	successor for BSP009A

## Sensors

# MAGNETIC CODED SENSORS

## ABSOLUTE SYSTEM, LINEAR

The absolute linear BML magnetic encoders from Balluff provide for absolute position feedback in any position – ready to use and without a reference run. Even after a loss of operating voltage and restarting the system.



### ABSOLUTE SYSTEM, LINEAR

	BML06HE	BML06HC
Dimension	16 x 18.6 x 54 mm	16 x 18.6 x 54 mm
Interface	IO-Link 1.1	IO-Link 1.1; Analog Sin/Cos (1 Vpp)
Measuring range	8190 mm	8190 mm
Connection	M12x1 male, 4-pin	M12x1 male, 12-pin
Resolution	1 µm	1 µm
Housing material	Die-cast zinc	Die-cast zinc
Operating voltage UB	18...30 VDC	18...30 VDC
Approval/Conformity	CE, cURus, EAC, WEEE	CE, cURus, EAC, WEEE

## Sensors

# MAGNETOSTRICTIVE SENSORS

## GENERAL



Magnetostrictive sensors are used wherever high reliability and precision is demanded in position and speed measurement. Also over long stroke lengths. Our contact-free and absolute measuring systems are suitable for all industry-standard interfaces for a wide range of applications. Even under extreme surrounding conditions, they guarantee a high machine and system availability.

The most important benefits:

- precise, absolute measurement without homing
- non-contact, wear- and maintenance-free
- insensitive to shock, vibration and contamination
- hermetically sealed housing
- high-dynamic feedback applications with synchronized measuring data
- durable, long service life
- flexible in installation and handling

To select magnetostrictive sensors you can also use our Product Selector on the Homepage.

A selection is contained on the following pages.

## Sensors

# MAGNETOSTRICTIVE SENSORS POSITION MEASURING SYSTEMS IN PROFILE HOUSING

Linear position sensors with a profile design are contact-free and absolute measurement systems for the precise detection of one or more positions. They deliver convincing performance in harsh environments, for example in presses, injection molding machines or gantry robots, because they are made of a hermetically sealed IP67 aluminum housing. The magnets of the position encoder act on the measurement element through the wall of the profile.

For measuring applications as well  
Length and options on request  
Interfaces include analog or IO-Link

## POSITION MEASURING SYSTEMS IN PROFILE HOUSING

ANALOG, VOLTAGE



Part number	BTL7-A501-Mxxxx-P-S32	BTL6-A301-Mxxxx-A1-S115
for example	BTL1ELF	BTL005W
Interface	Analog 4-20mA Voltage	Analog, voltage 0...10 V Analog, voltage 10...0 V
Measuring length (xxxx)	50...7000 mm	50...4000 mm
Mounting	Mounting clamps	Mounting clamps
Housing material	Aluminum	Aluminum
Magnets, number max.	1	1
Connection	Connector, M12x1, 4-pin	Connector, M12x1, 8-pin
Remarks	Profile BTL, analog 4-20mA interface for measuring and positioning	For nutrunner controls with analog signal processing 0-10V, 2 magnets can be used

POSITION MEASURING  
SYSTEMS IN PROFILE  
HOUSING

## IO-LINK



Part number for example	BTL6-U101-Mxxxx-PF-SA426-S4 BTL287A	BTL6-U110-Mxxxx-PF-S4 BTL1HE7
Interface	IO-Link 1.1	IO-Link 1.1
Measuring length (xxxx)	150...2600 mm	50...4500 mm
Mounting	Mounting clamps	Mounting clamps
Housing material	Aluminum	Aluminum
Magnets, number max.	2	1
Connection	Connector, M12x1, 4-pin	Connector, M12x1, 4-pin
Remarks	Profile, flat design for nutrunner controllers for 2 magnets approved lengths 900, 1000, 1100, 1200, 1200, 1300, 1400 and 1500 mm	IO-Link Interface for measuring and positioning

POSITION MEASURING  
SYSTEMS IN PROFILE  
HOUSING

## A1 PROFILE



BTL6-A301-Mxxxx-A1-SA400-S115

Principle	Micropulse
Measuring range	50...7500 mm
Analog output	2x analog, voltage, 0...10 V
Mounting	Mounting clamps
Housing material	Aluminum
Magnets, number max.	2
Connection	M12x1, 8-pin
Remarks	Especially for nutrunner applications with 2 measurement values on one BTL measuring system

Sensors

# MAGNETOINDUCTIVE SENSORS

**not for measuring applications**

not linear, length and options on request



MAGNETOINDUCTIVE  
SENSORS

BIL0002

Connection	M8x1
Range	0...10 mm
Non-linearity max.	±0.3 mm
Repeat accuracy	0.5 %FS
Approval/Conformity	CE, cULus
ZIND number	2222338884

## Sensors

# PHOTOELECTRIC SENSORS

## MICROMOTE - OPTICAL SENSOR HEADS

The modular system of the Micromote sensors with innovative sensor elements meets your individual requirements: a variety of housing configurations ensure an especially high degree of design freedom; precise photoelectric modules ensure a high process precision with each application.

### MICROMOTE - OPTICAL SENSOR HEADS



BOH0024

BOH000U

BOH0013

BOH0008

Principle of optical operation	Through-beam sensor	Through-beam sensor	Through-beam sensor	Diffuse sensor, energetic
Dimension	75 x 10 x 15 mm	Ø 3 x 8.7 mm	Ø 5 x 12.5 mm	Ø 6 x 12 mm
Range	0...200 mm	0...500 mm	0...2 m	0...60 mm
Light type	Red light LED	microSPOT-LED red light	microSPOT-LED red light	microSPOT-LED red light
Connection	Cable with connector, M8x1 male, 1.00 m, PUR	Cable with connector, M8x1 male, 1.00 m, PUR	Cable with connector, M8x1 male, 1.00 m, PUR	Cable with connector, M8x1 male, 1.00 m, PUR
Interface	for analog amplifier	for switching amplifier	for switching amplifier	for switching amplifier
ZIND number	2222432090	2222405219		

Sensors

# PHOTOELECTRIC SENSORS

## MICROMOTE - AMPLIFIERS FOR OPTICAL SENSOR HEADS

The MicroMote system from Balluff is especially small and, therefore, can be very flexibly used. It combines an external processor unit (amplifier) with exceptionally small photoelectric sensor heads. As a result it is suitable even for extremely constricted spatial conditions and moving machine elements.

Optics: Model selection application-specific on request.

MICROMOTE -  
AMPLIFIER  
FOR OPTICAL  
SENSOR HEADS



BAE00NK

BAE00N7

	BAE00NK	BAE00N7
Principle of optical operation	depends on sensor head	depends on sensor head
Dimension	15 x 36 x 61 mm	15 x 36 x 61 mm
Connection	M8x1 male, 4-pin	M8x1 male, 4-pin
Switching output	PNP NO/NC (NO/NC)	PNP NO/NC (NO/NC)
Surrounding	narrow installation space	narrow installation space
Remarks	Replaces BFB0004 Similar optical sensors such as optical fibers can be connected to the amplifier, only with copper lines >> significantly less sensitive than optical fiber	Replaces BFB0006 Similar optical sensors such as optical fibers can be connected to the amplifier, only with copper lines >> significantly less sensitive than optical fiber; dynamic amplifier compensates for contamination buildup since it only switches with the signal changes (e.g. passthrough control)
ZIND number	2222442256	

## Sensors

# PHOTOELECTRIC SENSORS

## DISTANCE SENSORS



## DISTANCE SENSORS

BOD0020

BOD002N

BOD002M

Principle of optical operation	Light time-of-flight	Triangulation	Triangulation
Dimension	51 x 23 x 52.4 mm	15 x 42.5 x 50 mm	50 x 21 x 50 mm
Range	100...5000 mm	20...500 mm, adjustable	50...100 mm
Interface	IO-Link 1.1 PNP/NPN/Auto-Detect normally open/normally closed (NO/NC)	IO-Link 1.1 Analog, voltage/analog, current selectable 4...20 mA  0...10 V 2x PNP/NPN (NO/NC)	IO-Link 1.1 Analog, voltage/analog, current selectable 4...20 mA  0...10 V 2x PNP/NPN (NO/NC)
Light type	Laser red light	Laser red light	Laser red light
Light spot size	5.5 x 7 mm at 5 m	1 x 6 mm at 500 m	1 x 1 mm bei 100 mm
Connection	Connector, M12x1 male, 4-pin	Connector, M12x1 male, 5-pin	Connector, M12x1 male, 4-pin
Operating voltage UB	18...30 VDC	18...30 VDC	18...30 VDC
Housing material	ABS	Plastic	Plastic
Approval/Conformity	CE, cULus, EAC, WEEE, Ecolab	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	Extremely stable optical sensor for measuring and switching, economical	Display, high range, Replacement for BOD-21M BOD000T	High resolution, display
ZIND number		2222406367	

## Sensors

# PHOTOELECTRIC SENSORS

## CONTRAST SENSORS

Contrast sensors are high-resolution diffuse sensors that distinguish objects based on their gray values.

Balluff's rugged contrast sensors recognize even small differences in contrast, have a high switching frequency up to 30 kHz and are therefore particularly fast. They enable high positioning precision and are appropriate for a variety of applications, for example, in the printing and packaging industry.



CONTRAST SENSOR

BKT0010

Principle of optical operation	Diffuse sensor, focused
Dimension	12 x 41.5 x 21.6 mm
Range	1...250 mm
Light type	Laser red light
Connection	M8x1 male, 4-pin
Switching output	PNP NO/NC (NO/NC)
Surrounding	Hygiene and Washdown
Remarks	Contrast sensor, Laser Class 1
ZIND number	2222407545

## Sensors

# PHOTOELECTRIC SENSORS

## DIFFUSE SENSOR WITH BACKGROUND SUPPRESSION

Diffuse sensors with background suppression ensure reliable detection regardless of the surface, color and material. Their scanning response is virtually constant, even with different reflectance levels.

### DIFFUSE SENSOR WITH BACKGROUND SUPPRESSION



	BOS01UW	BOS021C	BOS020M	BOS0234
Principle of optical operation	Light time-of-flight	Diffuse sensor, HGA fixed	Diffuse sensor, HGA fixed	Diffuse sensor, triangulation
Dimension	23 x 51 x 52.4 mm	7.7 x 26.8 x 13.5 mm	7.7 x 26.8 x 13.5 mm	7.7 x 32.5 x 13.5 mm
Range	0...5 m	1...15 mm	1...30 mm	1...150 mm
Interface	PNP/NPN/Auto-Detect normally open/normally closed (NO/NC)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Light type	Laser red light	Red light LED	Red light LED	Red light LED
Light spot size	Ø 7 mm at 5 m	Ø 2 mm at 8 mm	Ø 3 mm at 15 mm	Ø 4.4 mm at 80 mm
Connection	Connector, M12x1, 5-pin	Cable with connector, M8x1 male, 3-pin, 0.20 m, PVC	Cable with connector, M8x1 male, 3-pin, 0.20 m, PVC	Cable with connector, M8x1 male, 4-pin, 0.20 m, PVC
Operating voltage UB	18...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	PC, ABS	ABS	ABS	ABS
Approval/Conformity	CE, cULus, EAC, WEEE, Ecolab	CE, cULus, WEEE	CE, cULus, WEEE	CE, cULus, WEEE
Remarks				Replaces BOS0217 Diffuse sensor with low gray value shift and good background suppression, red light, small form factor
ZIND number			2222414497	

DIFFUSE SENSOR  
WITH BACKGROUND  
SUPPRESSION



	BOS029M	BOS01JK	BOS01KW	BOS01L3
Principle of optical operation	Diffuse sensor, triangulation	Diffuse sensor, triangulation	Diffuse sensor, triangulation	Diffuse sensor, triangulation
Dimension	10.7 x 43.5 x 19.5 mm	10.8 x 43.5 x 19.5 mm	12 x 41.5 x 21.6 mm	12 x 41.5 x 21.6 mm
Range	20...350 mm	20...300 mm	1...200 mm	3...400 mm
Interface	PNP normally open/normally closed (NO/NC)	PNP normally open/normally closed (NO/NC)	PNP normally open/normally closed (NO/NC)	PNP normally open/normally closed (NO/NC)
Light type	Red light LED	Laser red light	Red light LED	Red light LED
Light spot size	Ø 4.5 mm at 60 mm	0.2 x 0.3 mm at the focus	5 x 5 mm at the focus	8 x 8 mm at the focus
Connection	M8x1 male, 4-pin	M8x1 male, 4-pin	M8x1 male, 3-pin	M8x1 male, 4-pin
Operating voltage UB	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	PBT, PC	PBT, PC	ABS	ABS
Approval/Conformity	cULus, CE, UKCA, EAC, WEEE	CE, cULus, CDRH, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	LED red light (with potentiometer)	Laser Class 1 (with potentiometer)	LED red light, very good background suppression, virtually color-independent	LED red light, good background suppression, virtually color-independent
ZIND number		2222421028	2222411891	2222409360

Cables BCC0CAH (30 cm), BCC0A77 (1 m) and BCC0A78 (1,5 m)...  
are ideal for 4-pin (M8) sensors to 3-pin females on sensor boxes  
[BCC M314-M313-30-300-PX0334-xxx](#)

DIFFUSE SENSOR  
WITH BACKGROUND  
SUPPRESSION

	BOS01LE	BOS01FR	BOS026R	BOS01ZR
Principle of optical operation	Diffuse sensor, triangulation	Diffuse sensor, triangulation	Diffuse sensor, energetic; Diffuse sensor with background suppression; Retroreflective sensor; Through-beam sensor (Emitter + Receiver) depends on setting	Diffuse sensor, triangulation
Dimension	12 x 41.5 x 21.6 mm	23 x 51 x 52.4 mm	15 x 51 x 42.5 mm	12 x 60 mm
Range	4...120 mm	5...800 mm	depends on setting	25...100 mm
Interface	PNP normally open/ normally closed (NO/NC)	PNP normally open (NO) PNP normally closed (NC)	2x PNP/NPN/push-pull NO/NC	PNP normally open (NO)
Light type	Laser red light	Laser red light	Red light LED	Red light LED
Light spot size	Ø 1.2 mm at 120 mm	2.2 x 2.2 mm at 800 m	Ø 50 mm at 1 m	Ø 6 mm at 100 mm
Connection	M8x1 male, 4-pin	M12x1 male, 4-pin	M12x1 male, 4-pin	M12x1 male, 4-pin
Operating voltage UB	10...30 VDC	12...30 VDC	10...30 VDC	10...30 VDC
Housing material	ABS	PC, ABS	Zinc, die-cast Aluminum, glass, PC	Brass
Approval/Conformity	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE, Ecolab	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
Remarks	Laser Class 1, very good background suppression, virtual color-independent	Laser Class 1 (reliable black parts detection)	Possible replacement for BOS00LK 4 opto-sensor principles in one unit, while using IO-Link for additional features such as counting, condition feedback etc. Supports condition monitoring while reducing inventory	Replaces BOS007T Greater range, better visible LEDs, better background suppression
ZIND number	2222404385	2222394165		

## Sensors

# PHOTOELECTRIC SENSORS

## RETROREFLECTIVE SENSORS

Our retroreflective sensor is especially easy to align thanks to generous mounting tolerances. You only need to mount one electrical device plus a reflector. Large reflectors guarantee high ranges. The light barriers detect objects regardless of their surface, color and material. A polarizing filter makes them suitable for detecting shiny objects as well.



## RETROREFLECTIVE SENSORS

	BOS020T	BOS01T9	BOS02A3	BOS01JW
Principle of optical operation	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor
Dimension	7.7 x 26.8 x 13.5 mm	8 x 44 x 8 mm	10.7 x 43.5 x 19.5 mm	10.8 x 43.5 x 19.5 mm
Range	0...3 m	0...1 m	0...5 m	0...10 m
Light type	Red light LED	Red light LED	Red light LED	Laser red light
Connection	M8x1 male, 3-pin	Cable with connector, 0.20 m, PUR	M8x1 male, 4-pin	M8x1 male, 4-pin
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open/ normally closed (NO/NC)	PNP normally open/ normally closed (NO/NC)
Surrounding	narrow installation space	narrow installation space	narrow installation space	narrow installation space
Remarks	Red light LED	Rugged form factor in metal housing, laser retroreflective sensor ideal for conveyor belts, box feeders	Red light retroreflective sensor enhances the BOS 5K series with the two diffuse types, technically upgraded, price-optimized, highly visible light spot	Red light retroreflective sensor enhances the BOS 5K series with the two diffuse types, technically upgraded, price-optimized
ZIND number	2222414498			2222405018

For suitable connectors see page 104.

RETROREFLECTIVE  
SENSORS

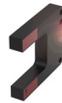
	BOS01M4	BOS01MJ	BOS021L	BOS00LM
Principle of optical operation	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor
Dimension	12 x 41.5 x 21.6 mm	12 x 41.5 x 21.6 mm	20 x 32 x 9 mm	Ø 18 x 93.5 mm
Range	0...4 m	0...6 m	1 m	0...9 m
Light type	Laser red light	Red light LED	Red light LED	Laser red light
Connection	M8x1 male, 4-pin	M8x1 male, 4-pin	M8x1 male, 3-pin	M12x1 male, 4-pin, A-coded
Switching output	PNP NO/NC (NO/NC)	PNP NO/NC (NO/NC)	PNP NO (NO)	PNP normally open (NO); PNP normally closed (NC)
Surrounding	narrow installation space Hygiene and Washdown	narrow installation space	narrow installation space Hygiene and Washdown	
Remarks	Laser Class 1, Autocollimation (scans through bore holes)	Red light LED	Rugged form factor in stainless steel, red light retroreflective sensor ideal for conveyor belts, box feeders	Laser Class 1
ZIND number	2222404386	2222402821		2222350164

## Sensors

# PHOTOELECTRIC SENSORS

## FORK SENSORS

Our fork sensors with transmitter and receiver in one housing are pre-adjusted. That reduces your effort, saves valuable time during start-up and supports reliable processes. When it comes to precision, Balluff's fork sensors are unrivaled. Our comprehensive portfolio provides reliable solutions. Also for special applications like transparency recognition, water detection and web edge control.



## FORK SENSORS

	BGL0003	BGL001C	BGL001P	BGL0027
Principle of optical operation	Through-beam sensor	Through-beam sensor	Through-beam sensor	Through-beam sensor
Fork opening	10 mm	30 mm	50 mm	80 mm
Dimension	10 x 30 x 54 mm	10 x 50 x 68 mm	10 x 70 x 88 mm	10 x 100 x 88 mm
Light type	Red light	Red light	Red light	Red light
Connection	M8x1 male, 3-pin	M8x1 male, 3-pin	M8x1 male, 3-pin	M8x1 male, 3-pin
Switching output	PNP NO/NC (NO/NC)	PNP NO/NC (NO/NC)	PNP NO/NC (NO/NC)	PNP NO/NC (NO/NC)
Remarks	0.3 mm resolution	0.3 mm resolution	0.5 mm resolution	0.5 mm resolution
ZIND number	2222412140	2222385055	2222390827	2222394796



## FORK SENSORS

BGL000C

Principle of optical operation	Through-beam sensor
Fork opening	120 mm
Dimension	10 x 140 x 93 mm
Light type	Red light
Connection	M8x1 male, 3-pin
Switching output	PNP NO/NC (NO/NC)
Remarks	0.5 mm resolution
ZIND number	2222390931

## Sensors

# PHOTOELECTRIC SENSORS

## ANGLE SENSORS

Angle sensors from Balluff are a logical development of Balluff's fork sensors for more demanding applications. Their custom housing design and beam geometry enable approach and recognition of objects from almost every direction. Installation is very simple, even with space constraints: the transmitter and receiver are firmly aligned with each other.



## ANGLE SENSORS

	BWL000F	BWL0019	BWL0005
Principle of optical operation	Through-beam sensor	Through-beam sensor	Through-beam sensor
Dimension	10 x 75 x 84 mm	12 x 125 x 134 mm	12 x 150 x 159 mm
Interface	PNP normally open/ normally closed (NO/NC)	PNP normally open/ normally closed (NO/NC)	PNP normally open/ normally closed (NO/NC)
Light type	Red light LED	Red light LED	Red light LED
Light spot size	Ø 1.7 mm light exit	Ø 2.5 mm light exit	Ø 2.5 mm light exit
Connection	Connector, M8x1 male, 3-pin	Connector, M8x1 male, 3-pin	Connector, M8x1 male, 3-pin
Operating voltage UB	10...30 VDC	10...30 VDC	10...30 VDC
Housing material	Zinc, die-cast	Zinc, die-cast	Zinc, die-cast
Approval/Conformity	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE	CE, cULus, EAC, WEEE
ZIND number	2222401121	2222389751	2222354001

## Sensors

# MAGNETIC FIELD SENSORS

# LINEAR POSITION SENSORS

BMP magnetic field positioning systems give you the ability to monitor running processes reliably and wear-free. Used for example in compact grippers, stamping equipment or tool changers, their intelligent linear feedback assists you in maintaining an overview of all the processes, ensuring simultaneous processing of objects while remaining energy-efficient. In this way our magnetic field positioning systems provide high process security and automation quality.



## MAGNETIC FIELD POSITIONING SENSORS

	BMP0007	BMP0005
Dimension	17.5 x 9.6 x 42 mm	17.5 x 9.6 x 74 mm
Application	Positioning	Positioning
Interface	IO-Link 1.1	IO-Link 1.1
Connection	Cable with connector, M8x1 connector, 4-pin, 0.5 m, PUR	Cable with connector, M8x1 connector, 4-pin, 0.5 m, PUR
Ambient temperature	-25...85 °C	-25...85 °C
Operating voltage UB	15...30 VDC	15...30 VDC
Housing material	Aluminum, PA 12	Aluminum, PA 12
Approval/Conformity	CE, cURus, IO-Link, WEEE	CE, cURus, IO-Link, WEEE

## Sensors

# MAGNETIC FIELD SENSORS

## C-SLOT (10-SLOT/ROUNDED SLOT)

Our magnetic cylinder sensors for C-slots distinguish themselves with their firm grip.

Features: can be mounted flush – suitable for space-critical applications; can be installed from above – also fit where the slot ends are closed; contact-free detection of the piston position through cylinder walls; can be used for cylinders and grippers with strong or weak magnets. Extremely short configurations are available.



C-SLOT  
(10/ROUND SLOT)

BMF0002

BMF00P0

	BMF0002	BMF00P0
Dimension	16.8 x 2.9 x 4.5 mm	24 x 2.9 x 3.6 mm
Application	Optimized Response range especially suited for short stroke cylinders.	Object detection
Mounting	can be laterally mounted in C-slot	Screw M2
Switching output	PNP normally open (NO)	PNP normally open (NO)
Connection	M8x1 male, 3-pin	M8x1-Male, 3-pin
Housing material	PA, PA 12	PA 12
Approval/Conformity	CE, cULus	CE, EAC, WEEE, cULus, UKCA
Surrounding	extreme temperatures	-25...85 °C
Remarks	lateral C-slot, (short form factor, secure seating)	
ZIND number	2222374015	

## Sensors

# MAGNETIC FIELD SENSORS

## T-SLOT

Our magnetic cylinder sensors for T-slots detect the piston position without contact through the cylinder wall.

Features: can be mounted directly into the slot, firm grip, can be mounted flush for space-critical applications, can be used for cylinders and grippers with strong or weak magnets, bright LEDs. Extremely short configurations as well as sensors with metal housings or magnetic field-sensitive electronics are available.



## T-SLOT

	BMF00C4	BMF00LA
Dimension	23.5 x 5 x 5.5 mm	23.5 x 6.2 x 5 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)
Connection	M8x1 male, 3-pin	M8x1 male, 4-pin
Housing material	PA, PA 12	PA 12
Approval/Conformity	CE, cULus	CE, IO-Link, cULus, DC, Code 81U2, EAC
Remarks	from above for T-slot, <b>Preferred type</b>	IO-Link 1.1
ZIND number	2222370351	2222441708
Cross Reference	successor for IFM MK5102	

## Safety

# SAFE I/O MODULES

## PROFISAFE OVER IO-LINK

Our I/O modules with their robust housings are suitable for use in a harsh industrial environment. The I/O hubs are based on M12 or M8 plug connections and are easy and economical to install and maintain.



PROFISAFE OVER  
IO-LINK

BNI0098

Interface	PROFIsafe over IO-Link 1.1
Number of safe inputs	12
Number of safe outputs	2
Connection slots	2x M12x1 female, 8-pin, A-coded 6x M12x1 female, 5-pin, A-coded
Housing material	Zinc, die-cast
Operating voltage UB	19.2...30 VDC
Approval/Conformity	CE, cULus, WEEE, TÜV, IO-Link



## RFID

# LF (70/455 KHZ) DATA CARRIERS

BIS C works with low frequency (LF) and uses two frequencies: 433 kHz for writing and 70 kHz for reading. The wide variety of passive data carriers with various dimensions, configurations, memory sizes, operating temperatures, materials, mounting options and ranges allows you to tackle nearly any technical task.

BIS C is established as the standard for tool identification.



LF (70/455 KHZ)  
DATA CARRIERS

BIS001A

Dimension	Ø 26 x 6 mm
Antenna type	round
Installation	with clear zone (in steel)
Memory capacity max., write	1023 Byte
Housing material	Epoxy-resin/fiberglass
Ambient temperature	-30...70 °C
Storage temperature	-30...85 °C
Approval/Conformity	CE, UL-FILE E227256, Vol.X1, BIS
Remarks	Data carriers
ZIND number	2222344536

RFID

# LF (70/455 KHZ)

## READ/WRITE HEADS AND ANTENNAS WITH INTEGRATED PROCESSOR UNIT

LF (70/455 KHZ)  
READ-/WRITE HEADS  
AND ANTENNAS WITH  
INTEGRATED  
PROCESSOR UNIT



BIS00H7

Dimension	Ø 30 x 95 mm
Interface	parallel
Installation	with clear zone (in steel)
Antenna type	round
Connection	11-pin
Operating voltage UB	19.2...26.4 VDC
Housing material	Brass
Ambient temperature	0...50 °C
Approval/Conformity	CE
Remarks	Read head
ZIND number	2222310809

## RFID

# HF (13.56 MHz) DATA CARRIERS

BIS M uses the high frequency (HF) 13.56 MHz and supports the standard according to DIN ISO 15693. The wide variety of passive data carriers with various dimensions, configurations, memory sizes, operating temperatures, materials, antenna technology, mounting options and ranges allows you to tackle nearly any technical task. BIS M is the most robust system with absolute data security.



HF (13.56 MHz)  
DATA CARRIERS

	BIS00NZ	BIS0048	BIS0044	BIS00YF
Dimension	24 x 21 x 24 mm	Ø 10 x 4.5 mm	Ø 20 x 2.8 mm	Ø 24.9 x 4.8 mm
Antenna type	rod	round	round	round
Installation	with clear zone (in steel)	flush (in steel)	with clear zone (in steel)	with clear zone (in steel)
Memory size, read	8 bytes	4 bytes	8 bytes	8 bytes
Memory size max., write	2000 bytes	752 bytes	2000 bytes	112 bytes
Housing material	PBT, PU potted	PA, PA 12	PA, PA 6	ABS
Ambient temperature	-25...70 °C	-25...70 °C	-25...85 °C	-20...85 °C
Storage temperature	-25...85 °C	-25...85 °C	-25...85 °C	-40...85 °C
Approval/Conformity	CE	CE	CE	CE
Remarks	Corner data carrier	Read/write head, Extremely small; Can be installed in metal	Data carriers for glue-in	Data carriers with bore hole
ZIND number	2222413810	2222436246	2222404169	



HF (13.56 MHz)  
DATA CARRIERS

BIS003Y

Dimension	Ø 30 x 1 mm
Antenna type	round
Installation	with clear zone (in steel)
Memory size, read	4 bytes
Memory size max., write	752 bytes
Housing material	Epoxy-resin/fiberglass, GF
Ambient temperature	-25...70 °C
Storage temperature	-25...85 °C
Approval/Conformity	CE
Remarks	Data carriers with bore hole
ZIND number	2222392906

## RFID

## HF (13.56 MHz)

## READ/WRITE HEADS WITH INTEGRATED PROCESSOR UNIT

BIS M uses the high frequency (HF) 13.56 MHz and supports the standard according to DIN ISO 15693. Read heads with an integrated processor unit can be connected directly to the higher-level control system via IO-Link, RS232, TCP/IP or via Serial Subnet 16 TM. The diverse configurations, dimensions, and variants with separate or integrated read heads allow you to meet most requirements.

HF (13.56 MHz)  
READ-/WRITE HEADS  
WITH INTEGRATED  
PROCESSOR UNIT



	BIS0155	BIS014K	BIS014J	BIS0179
Dimension	35 x 17 x 80 mm	40 x 15 x 105 mm	40 x 15 x 105 mm	80 x 35 x 119 mm
Interface	IO-Link	IO-Link	IO-Link	Profinet
Installation	with clear zone (in steel)	with clear zone (in steel)	with clear zone (in steel)	flush (in steel)
Antenna type	round	Rod	round	round
Connection	M12x1 male, 4-pin, A-coded	Male, 4-pin	Male, 4-pin	M12x1 male, 4-pin, A-coded
Operating voltage UB	18...30 VDC Supports only LPS/Class 2	18...30 VDC Supports only LPS/Class 2	18...30 VDC Supports only LPS/Class 2	24 V DC LPS Class 2
Housing material	ABS	Zinc, die-cast	Zinc, die-cast	Zinc, die-cast
Ambient temperature	0...70 °C	0...70 °C	0...70 °C	0...70 °C
Approval/Conformity	CE, UL-FILE E227256, Vol.X1, BIS	CE	CE	CE
Remarks	Read/write head	Read/write head; Data carrier with rod antenna for WT transfer systems	Read/write head; Data carrier with rod antenna for WT transfer systems	RFID BIS-M Profinet Singlehead, Used for example on rotary index tables or wherever only one read/write head is required
ZIND number	2222423634	2222426650	2222436316	

HF (13.56 MHz)  
READ-/WRITE HEADS  
WITH INTEGRATED  
PROCESSOR UNIT



	BIS00LK	BIS019T	BIS015R
Dimension	80 x 40 x 84.5 mm	Ø 12 x 65 mm	Ø 18 x 65 mm
Interface	IO-Link	IO-Link 1.1	IO-Link
Installation	with clear zone (in steel)	metal-free (clear zone) on metal flush in metal	flush (in steel)
Antenna type	round	round	round
Connection	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin	M12x1 male, 4-pin
Operating voltage UB	18...30 VDC Supports only LPS/Class 2	18...30 VDC Supports only LPS/Class 2	18...30 VDC Supports only LPS/Class 2
Housing material	PBT	Brass, brass nuts with white bronze	Brass, nickel-plated brass nuts
Ambient temperature	0...70 °C	0...70 °C	0...70 °C
Approval/Conformity	CE, UL-FILE E227256, Vol.X1, BIS	CE, cULus, WEEE, FCC Part 15, IC RSS-210	CE
Remarks	Read/write head Q80, very high distances	Very compact form factor, practical addition to RFID read heads. Can be used on any IO-Link master. recommended data carrier BIS004A	Replaces BIS00LW Significantly more compact since the detached electronics is no longer needed (compact unit)
ZIND number	2222393691		

Machine Vision and Optical Identification

# OPTICAL IDENTIFICATION CODE READER

Our code readers clearly identify your products. No matter whether they are labeled with 1D codes, 2D codes or stacked codes.

It makes no difference whether the codes are adhered with a label, printed on, lasered or directly marked.

Position deviations are not a problem.



CODE READER

BVS001E

Interface	Ethernet 10/100 Base T
Sensor type Vision	CMOS image sensor black-white
Light type	Infrared
Connection 1	M12x1 male, 8-pin, A-coded
Connection 2	M12x1 male, 4-pin, D-coded
Dimension	51.5 x 70 x 40 mm
Approval/Conformity	CE, cULus



## MONITOR

BAE00EH

Principle of operation	Vision Sensor Monitor
Dimension	96 x 104 x 42.5 mm
Mounting type	Clamp on front panel DIN-Rail 35 mm
Use	for BVS ...-E
Connection	Ethernet Tx+
Version	with color screen
Approval/Conformity	CE
Degree of protection in accordance with IEC60529	IP20
ZIND number	2222391300



## ACCESSORIES FOR VISION SENSORS

BAM01A8

BAM0206

BAM01YP

BAM01YT

	BAM01A8	BAM0206	BAM01YP	BAM01YT
Part number	Protective cover/ Protective housing	Sabotage protection	Holder	Holder
Principle of operation	Protective cover for optics	Holding System	Adapters in general	Holding System
Version	Protective hood		Quick-change plate	
Use	for Monitor BAE-PD-VS--001	Sabotage protection for vision sensors BVS Camera	Holder for vision sensors	Holder for vision sensors
Material	Anodized aluminum	Aluminum	Aluminum	Aluminum
Dimension	106 x 45 x 106 mm		55 x 7.5 x 60 mm	60 x 84 x 60 mm
Mounting	Clamp brackets	Screw M4	Screws	Screws
ZIND number		2222424574		

## Machine Vision and Optical Identification

# OPTICAL IDENTIFICATION

## HANDHELD CODE READER

Balluff handheld barcode readers of the series BVS HS-P quickly and reliably read all standard 2D, 1D and stacked barcodes. The readers are robust and combine maximum reading performance with user friendliness. We offer readers for harsh industrial use as well as for applications in storage and intralogistics.



HANDHELD  
CODE READER

	BVS0021	BVS001T	BVS001U
Interface	Bluetooth 3.0 (2.4 GHz)	RS232/USB	RS232/USB
Dimension	163 x 41 x 91 mm	212 x 74 x 110 mm	212 x 74 x 110 mm
Lighting	LED	LED	LED
Connection	wireless	Cable	Cable
Approval/Conformity	FCC Class B UL Listed CE EAC R&TTE	CE EAC FCC Class B UL Listed	FCC Class B UL Listed CE EAC
ZIND number			2222436648

The complementary power supplies can be found on page 71.

Matching double-ended cordsets for Handheld Code Reader:

CONNECTION  
CABLE FOR  
HANDHELD  
CODE READER



BAM02J5

Cable	PVC gray, 2.00 m
Connection 1	RJ50 male, 10-pin
Connection 2	D-Sub female, 9-pin
Connector configuration	straight 2x
Cable diameter D	5.25 mm
Remarks	for Handheld Barcode Reader BVS HS-Q
ZIND number	2222430086

## Industrial Networking

# NETWORK BLOCKS

## PROFIBUS

As a full-service provider, Balluff offers a wide range of components for optimum Profibus use.

The mature fieldbus technology has been reliably supporting modern production for many years.

Regardless of the controller manufacturer, you will find the optimum solution in our range of products.



PROFIBUS



BNI004N

Auxiliary interfaces	4x IO-Link
Interface	Profibus DP EN 50170
Principle of operation	Active splitter
Digital inputs	8x PNP, Type 2
Digital outputs	8x PNP
Housing material	Zinc, die-cast
Remarks	Profibus 4xIOL/ max. 8x DI/DO
ZIND number	2222409989

**GSD configuration files are stored in the download area for the articles on the homepage.**

## Industrial Networking

# NETWORK BLOCKS

## PROFINET

The fact that industrial automation has made a significant advancement with Profinet is understandable. This is because with Profinet, you directly link drives and safety technology to the network environment. This Ethernet-based system is significantly faster than Profibus, but can readily be combined with it.



## PROFINET

	BNI0092	BNI005H	BNI007M
Auxiliary interfaces	4x IO-Link	8x IO-Link	16x IO-Link
Interface	Profinet I/O	Profinet I/O	Profinet I/O
Principle of operation	Active splitter	Active splitter	Active splitter
Digital inputs	8x PNP, Type 2	16x PNP, Type 2	32x PNP, Type 3
Digital outputs	8x PNP	16x PNP	32x PNP
Housing material	Zinc, die-cast	Zinc, die-cast	Zinc, die-cast
Remarks	4-way Profinet master IO-Link, will for the time being replace the Profibus master BNI004N	Profinet 8xIOL/ max. 16x DI/DO	Profinet 16xIOL/ max. 32x DI/DO
ZIND number		2222395560	

GSD configuration files are stored in the download area for the articles on the homepage.

## Industrial Networking

# SWITCHES

## UNMANAGED

With our unmanaged switches, 5-port and 8-port Ethernet devices can be star-connected on a component. The unmanaged switches satisfy both protection classes IP67 and IP20 and support the 10 and 100 Mbit/s transfer rates. The transfer speed is set automatically via the auto negotiation function.



## UNMANAGED

	BNI005E	BNI0067	BNI000F
Principle of operation	Active splitter	Active splitter	Active splitter
Auxiliary interfaces	4x Ethernet TCP	4x Ethernet TCP	8x EtherNet/IP
Interface	Ethernet TCP/IP; 10Base-T/100Base-TX	Ethernet TCP/IP; 10Base-T/100Base-TX	Ethernet/IP; 10Base-T/100Base-TX
Connection slots	4x RJ45 female, 8-pin	8x RJ45 female, 8-pin	8x M12x1 male, 4-pin, D-coded
Operating voltage UB	12...48 VDC	12...48 VDC	18...30.2 VDC
Dimension	110 x 76.5 x 30 mm	135 x 115 x 50 mm	68 x 32.4 x 224 mm
Housing material	Plastic	Plastic	Zinc, die-cast
Remarks	5-Port Unmanaged Switch	8-Port Unmanaged Switch, redundant Power supply	9-Port Unmanaged Switch
ZIND number	2222428768	2222410405	2222412171

## Industrial Networking

# I/O MODULES

## UNIVERSAL I/O-LINK INTERFACES

All devices are open to IO-Link with up to 16 in/outputs via the universal IO-Link interfaces. In a process-related manner, pumps, signal lights, control panels, valve clusters, switch units, transfer units, and much more can be connected with the control level in the simplest way.



UNIVERSAL  
I/O-LINK  
INTERFACES

BNI005M

Principle of operation	Active splitter
Interface	IO-Link 1.1
Housing material	PA
Dimension	43.3 x 15 x 83.3 mm
Remarks	IO-Link cable module with 16DI/DO, many installed in Würzburg in switch panels and on robots
ZIND number	2222419720

**[IO-Link overview on the Homepage](#)**

## Industrial Networking

## I/O MODULES

## I/O-LINK SENSOR-/ACTUATOR HUBS

Our I/O modules with their robust housings are suitable for use in a harsh industrial environment.

The I/O hubs are based on M12 or M8 plug connections and are easy and economical to install and maintain.



I/O-LINK HUBS

	BNI00AJ	BNI0099	BNI0093	BNI00CM
Principle of operation	Active splitter	Active splitter	Active splitter	Active splitter
Digital inputs		8x PNP, Type 3	8x PNP, Type 3	16x PNP, Type 3
Digital outputs			8x PNP	16x PNP
Interface	IO-Link 1.1	IO-Link 1.1	IO-Link 1.1	IO-Link 1.1
Housing material	Zinc, die-cast	Zinc, die-cast	Zinc, die-cast	Zinc, die-cast
Dimension	68 x 31.8 x 181.5 mm	30 x 32.5 x 132 mm	30 x 32.5 x 132 mm	68 x 31.8 x 181.5 mm
Remarks	The module has 8 freely configurable analog ports. The ports can be configured independent of each other for the input of a current signal, voltage signal, Pt sensor or thermocouple. All the ports are matched, i.e. when you plug the analog sensor from Port 1 into Port 2 you get the same values	Sensor hub, metal, 8 ports, 3-pin cascable	Sensor hub, metal, 8 ports, 3-pin cascable, mixed module	
ZIND number		2222441975	2222436576	



## I/O-LINK HUBS

	BNI007Z	BNI00AY	BNI00AU
Principle of operation	Active splitter	Active splitter	Active splitter
Digital inputs	16x PNP, Type 3	16x PNP, Type 3	16x PNP, Type 3
Digital outputs	16x PNP		8x PNP
Interface	IO-Link 1.1	IO-Link 1.1	IO-Link 1.1
Housing material	PA	Zinc, die-cast	Zinc, die-cast
Dimension	50 x 31 x 115 mm	30 x 32.8 x 220 mm	30 x 32.8 x 220 mm
Remarks	Sensor/actuator hub, M12, 16DI/DO, max. 0.5A, cascable = 2 same modules in a row on one IO-Link port	IO-Link input module, 16x M8 3-pin cascable	IO-Link In-/output module, 16 x M8 3-pin cascable
ZIND number	2222429862	2222435640	2222441923



## I/O-LINK HUBS

	BNI000P	BNI000R	BNI004L
Principle of operation	Active splitter	Active splitter	Active splitter
Connection slots	4x M8x1	8x M8x1	Terminal strip
Digital inputs	4x PNP, Type 2	8x PNP, Type 2	
Digital outputs			16x PNP
Interface	IO-Link 1.0	IO-Link 1.0	IO-Link 1.0
Housing material	PBT, GF	PBT, GF	PVC, UL94-0
Dimension	30 x 24 x 85.5 mm	30 x 24 x 129.5 mm	
Remarks	Sensor hub, plastic - 3-pin, 4 DI	Sensor hub, plastic - 3-pin, 8 DI	Active splitter, 16 slots, enclosure rating per IEC 60529I IP20
ZIND number	2222404756	2222404754	2222411888

**IO-Link overview on the Homepage**

## Industrial Networking

# INDUCTIVE COUPLERS

## IO-LINK SIGNAL TRANSMISSION

With inductive couplers, power and data are transferred contactlessly across an air gap.

This renders mechanical plug-in contacts superfluous.

If our bidirectional coupling system is used with IO-Link, the data can also be transmitted in both directions.

### IO-LINK SIGNAL TRANSMISSION



	BIC007F	BIC007H	BIC007L	BIC007E
Component	Base	Remote	Base	Remote
Style	40 x 40 x 62 mm	40 x 40 x 62 mm	M30x1.5	M30x1.5
Function	IO-Link Version 1.1	IO-Link Version 1.1	IO-Link Version 1.1	IO-Link Version 1.1
Transmission Distance	0...5 mm	0...5 mm	0...10 mm	0...10 mm
Switching function	Receiver	Emitter	Receiver	Emitter
Connection	M12 connector	M12 connector	M12 connector	M12 connector
Remarks	replaces BIC0070	replaces BIC0071	replaces BIC000C	replaces BIC000E

[IO-Link overview on the Homepage](#)

## Industrial Networking

# INDUCTIVE COUPLERS

## SIGNAL TRANSMISSION

Our inductive coupler system is designed for up to eight sensor signals and eight actuator drive signals.

The system is bi-directional, which means it transmits signals in both directions.

Its remote unit can drive on an individual basis and operate clamping units.

From the base, up to eight signals are transferable, and four channels can be driven independent of each other.



### SIGNAL TRANSMISSION

	BIC0077	BIC0078
Component	Base	Remote
Style	M12x1	M12x1
Interface	PNP	
Installation	non-flush	non-flush
Connection type	Connector, 0.30 m, PUR	Connector, 0.30 m, PUR
Transmission Distance	0...2.5 mm	0...2.5 mm
Remarks	Inductive transmitter, M12, 2 signals	Inductive transmitter, M12, 2 signals
ZIND number	2222430107	2222429739

## Human Machine Interfaces

# SMARTLIGHT – LED STACK LIGHTS

With our signaling and display devices, you know at all times where things stand with production and exactly where a tool is located. You can reliably monitor the state of machines and systems and display the sensor output signals.

## SMARTLIGHT – LED STACK LIGHTS



	BNI007T	BNI007F	BNI0072
Interface	IO-Link 1.1	IO-Link 1.1	IO-Link 1.1
Dimension	60 x 60 x 117 mm	60 x 60 x 213 mm	60 x 60 x 309 mm
Function indicator	Runlight Mode Segment Mode Flexi-Mode	Runlight Mode Level Mode Segment Mode Flexi-Mode	Runlight Mode Level Mode Segment Mode Flexi-Mode
Segments, number max.	1	3	5
Colors, number	7	7	7
Connection	M12x1 male, 4-pin	M12x1 male, 4-pin	M12x1 male, 4-pin
Predefined colors	Yellow, white, green, blue, red, orange configurable	Yellow, white, green, blue, red, orange configurable	Yellow, white, green, blue, red, orange configurable
Buzzer function	No	No	No
Housing material	PC, transparent Die-cast zinc	PC, transparent Die-cast zinc	PC, transparent Die-cast zinc
Remarks	1x Smartlight, practical addition, price-optimized, when in- dicator is in field of view or individual states need to be shown on highly automated equipment in the machine, price-optimized	3x Smartlight, practical addition, since most often 3 indication levels are used	Freely parameterizable stack lights as traditional stoplight, runlight or level mode; 5 segments Matching holder: BAM0255 
ZIND number	2222440141	2222426652	2222392558



## SMARTLIGHT – LED STACK LIGHTS

	BNI00E0	BNI00CZ
Interface	IO-Link 1.1	IO-Link 1.1
Dimension	61.8 x 62.4 x 57.5 mm	61.8 x 62.4 x 57.5 mm
Function indicator	Runlight Mode Level Mode Segment Mode Color circle mode	Runlight Mode Level Mode Segment Mode Color circle mode
Segments, number max.	6	6
Colors, number	7	7
Connection	M12x1 male, 4-pin	M12x1 male, 4-pin
Predefined colors	Yellow, white, green, blue, red, orange configurable	Yellow, white, green, blue, red, orange configurable
Buzzer function	No	No
Housing material	PC, transparent, PPS	PC, transparent, PPS
Remarks	Indicator light with optical sensor and additional function Daisy chain (2x devices per IO-Link port)	Indicator light with addi- tional function Daisy chain (2x devices per IO-Link port)

## Human Machine Interfaces

# MONITORS

The Windows-based Balluff panel PC is ideal for automation solutions as a display or input system with all the necessary standard interfaces such as LAN, Wi-Fi, USB. The 12" monitor can be used to quickly and directly display the production status and configurations of our SmartCameras and other sensors, and the touch functionality can be used to change them if necessary.



## MONITORS

BAE00EH

Principle of operation	Vision Sensor Monitor
Dimension	96 x 104 x 42.5 mm
Mounting type	Clamp on front panel DIN-Rail 35 mm
Use	for BVS ...-E
Connection	Ethernet Tx+, Ethernet Tx-
Version	with color screen
Approval/Conformity	CE
Degree of protection in accordance with IEC60529	IP20
ZIND number	2222391300

## Power supply

# POWER SUPPLIES FOR AUTOMATION

Our short-circuit-proof, single-phase power supplies for automation are approved according to CE/TÜV and UL. Different voltages of 5 V, 12 V, 15 V and 24 V can be selected. The most important features: flange mounting, regulatable output voltage, output power of 20 to 160 W, protection class IP20.

## POWER SUPPLY UNITS FOR AUTOMATION



BAM02JJ

BAM02JM

Remarks	Power supply for Handheld Barcode Reader BVS HS-Q & BVS HS-P	Power supply for Handheld Barcode Reader BVS HS-Q & BVS HS-P
ZIND number	2222430087	

## Power Supply

# HEARTBEAT® POWER SUPPLIES WITH IO-LINK INTERFACE

Our short-circuit-proof, single-phase, extra narrow power supplies are approved according to CE/TÜV. The power supplies support predictive servicing for the purpose of Industry 4.0: the IO-Link interface allows the integration of all parameters into the overarching system diagnostics.

Features: top-hat rail assembly, regulatable output voltage of 24 V, output power 60 to 480 W, IP20, HEARTBEAT® - status display.

## HEARTBEAT® POWER SUPPLIES WITH IO-LINK INTERFACE



	BAE00T4	BAE00LJ	BAE00TK	BAE00TM
Dimension	38 x 127 x 120 mm	60 x 127 x 127 mm	85.4 x 72.6 x 139 mm	116 x 85 x 150 mm
Version	DIN rail	DIN rail	IP67	IP67
Output capacity max.	180 W	360 W	91.2 W	192 W
Connector design			M12x1	M12x1
Input voltage	115/230 V AC automatic selection	115/230 V AC automatic selection	100...240 V AC, 1-phase	100...240 V AC, 1-phase
Output voltage	24 VDC	24 VDC	24 VDC	24 VDC
Rated output current	5 A	10 A	3,8 A	8 A
IP rating per IEC 60529	IP20	IP20	IP67 with connector	IP67 with connector
Remarks	IO-Link Adapter for IP20 power supplies BAE00T4 and BAE00LJ; current, voltage output, remaining lifetime, stress level, temperature,...	Optional IO-Link using additional adapter	replaces BAE00TP	replaces BAE00TL
ZIND number	2222429861	2222432040		



Connectivity

# CABLES GENERAL

Using the product selector on our Homepage you can conveniently select the right connection cables.



## Connectivity

## CABLES

# CONNECTION CABLES AND DOUBLE-ENDED CORDSETS FOR PROFIBUS

Choose the right connection for reliable transmission of signals, data and power in your application.  
Various cable types and plug connectors are available.

## CONNECTION CABLES AND DOUBLE-ENDED CORDSETS FOR PROFIBUS



Part number for example	BCC M415-0000-1B-031-PS72N1-xxx BCC070Y	BCC M412-0000-2B-031-PS72N1-xxx BCC0A0Y
Cable	PUR, shield, violet, cable lengths: 2m / 5m / 10m - 020 / 050 / 100 Drag chain compatible	PUR, shield, violet, cable lengths: 2m / 5m / 10m - 020 / 050 / 100 Drag chain compatible
Connector configuration	straight	straight
Number of conductors	2	2
Cable temperature, fixed routing	-40...70 °C	-40...70 °C
Cable temperature, flexible routing	-20...60 °C	-20...60 °C
Number of poles	B-coded	B-coded
Remarks	M12 female / open end	M12 male / open end

A selection - additional types and form factors on the Homepage

## CONNECTION CABLES AND DOUBLE-ENDED CORDSETS FOR PROFIBUS



Part number BCC M415-M412-3B-329-PS72N1-xxx  
for example BCC0A14

Cable	PUR, shield, violet, cable lengths: 0.6m/1m/2m/5m/10m/15m/20m 006/010/020/050/100/150/200 Drag chain compatible
Connector configuration	straight/straight M12x1 female, 5-pin, B-coded / M12x1 male, 2-pin, B-coded
Number of conductors	2
Cable temperature, fixed routing	-20...70 °C
Cable temperature, flexible routing	-20...50 °C
Number of poles	B-coded
Remarks	M12 / M12
Cross Reference	successor for Murrelektronik M12 connector

**Profibus terminating resistors can be found on page 97**

## Connectivity

## CABLES

DOUBLE-ENDED CORDSETS FOR  
PROFINET 

Choose the right connection for reliable transmission of signals, data and power in your application. Various cable types and plug connectors are available.

DOUBLE-ENDED CORDSETS  
PROFINET

Part number for example	BCC M414-M414-6D-331-PS54N2-xxx BCC0JFC	BCC M414-E834-8G-668-PS54N2-xxx BCC0JF0
Cable	PUR, shield, green,, cable lengths: 0.6m/2m/5m/10m/15m/20m/30m - 006/020/050/100/150/200/300 Drag chain compatible	PUR, shield, green,, cable lengths: 0.6m/2m/5m/10m/15m/20m/30m - 006/020/050/100/150/200/300 Drag chain compatible
Connector configuration	straight/straight M12x1 male, 4-pin, D-coded / M12x1 male, 4-pin, D-coded	straight/straight M12x1 male, 4-pin, D-coded RJ45 male, 4-pin
Number of conductors	4	4
Cable temperature, fixed routing	-40...80 °C	-40...80 °C
Cable temperature, flexible routing	-20...60 °C	-20...60 °C
Number of poles	D-coded	D-coded
Remarks	M12 / M12	M12 - RJ45
ZIND number		
Cross Reference	replaces BCC04K1 - BCC M414-M414-6D-331-PS54T2-xxx	replaces BCC04K7 - BCC M414-E834-8G-668-PS54T2-xxx

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used.**  
**This overview can be used as a selection guide. Other types can be found on our Homepage.**

DOUBLE-ENDED CORDSETS  
PROFINET

Part number BCC E834-E834-90-334-PS54N2-xxx  
for example BCC0JWZ

Cable	PUR, shield, green,, cable lengths: 0.6m/2m/5m/10m/15m/20m/30m - 006/020/050/100/150/200/300 Drag chain compatible
Connector configuration	straight/straight RJ45 male, 4-pin / RJ45 male, 4-pin
Number of conductors	4
Cable temperature, fixed routing	-40...80 °C
Cable temperature, flexible routing	-20...60 °C
Number of poles	D-coded
Remarks	RJ45 - RJ45
ZIND number	2222440088
Cross Reference	replaces BCC04KF - BCC E834-E834-90-334-PS54T2-xxx

## Connectivity

## CABLES

# CONNECTION CABLES AND DOUBLE-ENDED CORDSETS 3/4-CONDUCTOR WITH LED

Choose the right connection for reliable transmission of signals, data and power in your application. Various cable types and plug connectors are available.



## CONNECTION CABLES AND DOUBLE-ENDED CORDSETS 3/4-PIN WITH LED

Part number for example	BCC M323-M313-30-602-PX0334-xxx BCC02RN	BCC M425-M413-3A-602-PX0334-xxx BCC037Z
Cable	PUR, black, cable lengths: 0.3m / 0.6m / 1m / 1.5m 003 / 006 / 010 / 015 Drag chain compatible	PUR, black, cable lengths: 0.3m / 0.6m / 1m / 1.5m 003 / 006 / 010 / 015 Drag chain compatible
Connector configuration	straight/right-angle M8x1 female, 3-pin, A-coded / M8x1 female, 3-pin, A-coded	straight/right-angle M8x1 female, 3-pin, A-coded / M8x1 male, 5-pin, A-coded
Number of conductors	3	3
Cable temperature, fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Remarks	right-angle/straight	right-angle/straight
ZIND number	2222364143	
Cross Reference	successor for Murrelektronik M8 connector	successor for Murrelektronik M12 connector

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used.**  
**This overview can be used as a selection guide. Other types can be found on our Homepage.**

CONNECTION CABLES AND  
DOUBLE-ENDED CORDSETS  
3/4-PIN WITH LED



Part number for example	BCC M313-M313-30-602-PX0334-xxx BCC0AZA	BCC M415-M414-3A-606-PX0434-xxx BCC03A1
Cable	PUR, black, cable lengths: 0.3m / 0.6m / 1m / 1.5m 003 / 006 / 010 / 015 Drag chain compatible	PUR, black, cable lengths: 0.3m / 0.6m / 1m / 1.5m 003 / 006 / 010 / 015 Drag chain compatible
Connector configuration	straight/straight M8x1 female, 3-pin, A-coded / M8x1 male, 3-pin, A-coded	straight/straight M12x1 female, 5-pin, A-coded / M12x1 male, 4-pin, A-coded
Number of conductors	3	3
Cable temperature, fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Remarks	straight/straight	straight/straight
ZIND number	2222388976	
Cross Reference		successor for Murrelektronik M12 connector

CONNECTION CABLES AND  
DOUBLE-ENDED CORDSETS  
3/4-PIN WITH LED



Part number for example	BCC M314-M313-30-300-PX0334-xxx BCC0A78	BCC M415-M313-3F-602-PX0334-xxx BCC050A
Cable	PUR, black, cable lengths: 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible	PUR, black, cable lengths: 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible
Connector configuration	straight/straight M8x1 female, 4-pin, A-coded / M8x1 male, 3-pin, A-coded	straight/straight M12x1 female, 5-pin, A-coded / M8x1 male, 3-pin, A-coded
Number of conductors	3 / 4	3
Cable temperature, fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Remarks	straight / straight 4-pin female / 3-pin male plug	straight / straight M12 to M8

CONNECTION CABLES AND  
DOUBLE-ENDED CORDSETS  
3/4-PIN WITH LED



Part number	BCC M415-0000-1A-004-PX0334-xxx	BCC M415-0000-1A-008-PX0434-xxx
for example	BCC030A	BCC0327
Cable	PUR, black, cable lengths 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible	PUR, black, cable lengths 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible
Connector configuration	straight M12	straight M12
Number of conductors	3	4
Cable temperature, fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Remarks	straight / open cable end	straight / open cable end

CONNECTION CABLES AND  
DOUBLE-ENDED CORDSETS  
3/4-PIN WITH LED



Part number	BCC M323-0000-10-004-PX0334-xxx	BCC M324-0000-10-008-PX0434-xxx
for example	BCC02MH	BCC02N8
Cable	PUR, black, cable lengths 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible	PUR, black, cable lengths 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible
Connector configuration	right-angle M8	right-angle M8
Number of conductors	3	4
Cable temperature, fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Remarks	right-angle/open cable end	right-angle/open cable end
Cross Reference	successor for Murrelektronik M8 female	

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used.  
This overview can be used as a selection guide. Other types can be found on our Homepage.**

CONNECTION CABLES AND  
DOUBLE-ENDED CORDSETS  
3/4-PIN WITH LED



Part number for example	BCC M425-0000-1A-004-PX0334-xxx BCC0311	BCC M425-0000-1A-010-PX0434-xxx BCC032T
Cable	PUR, black, cable lengths 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible	PUR, black, cable lengths 2 m / 3 m / 5 m / 10 m 020 / 030 / 050 / 100 Drag chain compatible
Connector configuration	right-angle M12	right-angle M12
Number of conductors	3	4
Cable temperature, fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Remarks	right-angle/open cable end	right-angle/open cable end
ZIND number	2222373268	2222436664
Cross Reference	successor for Murrelektronik M12 female	successor for Murrelektronik M12 female

Connectivity

# CABLES

## 7/8" PROFIBUS AND PROFINET POWER CONNECTION CABLES

With our robust double-ended cordsets, signals, data and power are transmitted continuously and securely. Choose the right connection for your application in your industry. Various cable types and plug connectors are available to you.



7/8" PROFIBUS AND PROFINET POWER CONNECTION CABLES

Part number	BCC A315-0000-10-063-PX05A5-xxx	BCC A325-0000-10-063-PX05A5-xxx
for example	BCC06HC	BCC06HH
Cable	PUR, black, cable lengths 2 m / 5 m / 10 m 020 / 050 / 100 Drag chain compatible	PUR, black, cable lengths 2 m / 5 m / 10 m 020 / 050 / 100 Drag chain compatible
Connector configuration	straight 7/8" PUR	straight 7/8" PUR
Number of conductors	5	5
Cable temperature, fixed routing	-50...80 °C	-50...80 °C
Cable temperature, flexible routing	-20...80 °C	-20...80 °C
Remarks	open end, straight female	open end, right-angle female
ZIND number	2222424155	
Cross Reference	successor for Murrelektronik 7/8" female	

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

7/8" PROFIBUS AND PROFINET  
POWER CONNECTION CABLES

Part number for example	BCC A315-A315-30-335-PX05A5-xxx BCC06FN	BCC A315-A315-30-335-PX05A5-xxx BCC06FW
Cable	PUR, black, cable lengths 0.6m/2m/5m/10m/15m - 006/020/050/100/150 Drag chain compatible	PUR, black, cable lengths 0.6m/2m/5m/10m/15m - 006/020/050/100/150 Drag chain compatible
Connector configuration	straight / straight 7/8" PUR 7/8" female, 5-pin / 7/8" male, 5-pin	straight / right-angle 7/8" PUR 7/8" female, 5-pin / 7/8" male, 5-pin
Number of conductors	5	5
Cable temperature, fixed routing	-50...80 °C	-50...80 °C
Cable temperature, flexible routing	-20...80 °C	-20...80 °C
Remarks	straight - straight	straight female - right-angle male
ZIND number	2222425374	

7/8" PROFIBUS AND PROFINET  
POWER CONNECTION CABLES

Part number for example	BCC A325-A315-30-335-PX05A5-xxx BCC06H2	BCC A325-A325-30-335-PX05A5-xxx BCC06H7
Cable	PUR, black, cable lengths 0.6m/2m/5m/10m/15m - 006/020/050/100/150 Drag chain compatible	PUR, black, cable lengths 0.6m/2m/5m/10m/15m - 006/020/050/100/150 Drag chain compatible
Connector configuration	straight / right-angle 7/8" PUR 7/8" female, 5-pin / 7/8" male, 5-pin	right-angle / right-angle 7/8" PUR 7/8" female, 5-pin / 7/8" male, 5-pin
Number of conductors	5	5
Cable temperature, fixed routing	-50...80 °C	-50...80 °C
Cable temperature, flexible routing	-20...80 °C	-20...80 °C
Remarks	right-angle female - straight male	right-angle - right-angle

7/8" PROFIBUS AND PROFINET  
POWER CONNECTION CABLES



Part number	BCC A313-0000-10-097-PX03A5-xxx	BCC A323-0000-10-097-PX03A5-xxx
for example	BCC0AHZ	BCC0AJ2
Cable	PUR, black, cable lengths 2m / 5m / 10m - 020 / 050 / 100 Drag chain compatible	PUR, black, cable lengths 2m / 5m / 10m - 020 / 050 / 100 Drag chain compatible
Connector configuration	straight 7/8"	right-angle 7/8"
Number of conductors	3	3
Cable temperature, fixed routing	-40...80 °C	-40...80 °C
Cable temperature, flexible routing	-20...80 °C	-20...80 °C
Remarks	straight	right-angle

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used.  
This overview can be used as a selection guide. Other types can be found on our Homepage.**



## Connectivity

# CABLES

## FIELD ATTACHABLES

Our field attachables ensure the secure transmission of signals, data and power. You can select exactly the product that fits your application from various configurations and housing materials. All plug connectors are extremely robust and industrial grade.

### FIELD ATTACHABLE CONNECTORS



	BCC06ZF	BCC06W9	BCC06YA
Connector configuration	straight	straight	straight
Connection	M12	M12	M12
Pin code			
Cable diameter D	4...6 mm	6...8 mm	4...6 mm
Remarks	5-pin female, cables 4...6mm	5-pin female, cables 6...8mm	5-pin male, cables 4...6mm
ZIND number	2222424316		2222433617

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

FIELD  
ATTACHABLE  
CONNECTORS



	BCC03WZ	BCC03Y1	BCC0714	BCC0715
Connector configuration	straight	straight	straight	straight
Connection	M12	M12	M12	M12
Pin code	D-coded	D-coded	D-coded	B-coded
Cable diameter D	5...8 mm	5...8 mm	5...8 mm	5...8 mm
Remarks	Male straight	Female straight	Male straight	Female straight
ZIND number	2222424893		2222372820	2222372940
Cross Reference	successor for Murr MOSA M12 straight, field wireable /7000-14521-0000000		successor for Murr M12 male straight, B-coded, shield, field wireable Sc / 7000-14001-0000000	successor for Murr M12 female straight, B-coded, shield, field wireableSc / 7000-14021-0000000

FIELD  
ATTACHABLE  
CONNECTORS



	BCC03Y0	BCC03Y2	BCC0716	BCC0717
Connector configuration	right-angle	right-angle	right-angle	right-angle
Connection	M12	M12	M12	M12
Pin code	D-coded	D-coded	B-coded	B-coded
Cable diameter D	5...8 mm	5...8 mm	5...8 mm	5...8 mm
Remarks	Male right-angle	Female right-angle	Male right-angle	Female right-angle
ZIND number	2222429729		2222372804	2222372807

FIELD ATTACHABLE  
CONNECTORS



	BCC06FH	BCC06YE
Connector configuration	straight	straight
Connection	RJ45	M12
Pin code	D-coded	A-coded
Cable diameter D	6.1...6.9 mm	6...8 mm
Remarks	RJ45 male	5-pin male, cables 6...8mm



Connectivity

# CABLES

## VALVE CONNECTORS

Choose the right connection for reliable transmission of signals, data and power in your application.

Various cable types and plug connectors are available.



VALVE CONNECTORS

	BCC04W0	BCC04W6	BCC03YC	BCC03YH
Cable	PUR black, 2.00 m, drag chain compatible	PUR black, 2.00 m, drag chain compatible	PUR black, 2.00 m, drag chain compatible	PUR black, 2.00 m, drag chain compatible
Connector configuration	right-angle	right-angle	right-angle	right-angle
Number of conductors	3	3	3	3
Cable temperature, Fixed routing	-50...80 °C	-50...80 °C	-50...80 °C	-50...80 °C
Cable temperature, flexible routing	-25...80 °C	-25...80 °C	-25...80 °C	-25...80 °C
Cable diameter D	4.60 mm ±0.20 mm	4.60 mm ±0.20 mm	4.60 mm ±0.20 mm	4.60 mm ±0.20 mm
Remarks	Style A, Suppressor Suppressor diode, DIN 18 mm, Cable passage 0°C / 180°C	Style A, DIN 18 mm, Cable passage 0°C / 180°C	Style B, Suppressor Suppressor diode, DIN 10 mm, cable passage 0°C	Style B, Suppressor Suppressor diode, DIN 10 mm, cable passage 180°C

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

VALVE  
CONNECTORS

	BCC03YL	BCC03YP	BCC04MZ	BCC04RF
Cable	PUR black, 2.00 m, drag chain compatible	PUR black, 2.00 m, drag chain compatible	PUR black, 2.00 m, drag chain compatible	PUR black, 2.00 m, drag chain compatible
Connector configuration	right-angle	right-angle	right-angle	right-angle
Number of conductors	3	3	3	3
Cable temperature, Fixed routing	-50...80 °C	-50...80 °C	-50...80 °C	-50...80 °C
Cable temperature, flexible routing	-25...80 °C	-25...80 °C	-25...80 °C	-25...80 °C
Cable diameter D	4.60 mm ±0.20 mm	4.60 mm ±0.20 mm	4.60 mm ±0.20 mm	4.60 mm ±0.20 mm
Remarks	Style B, Suppressor Suppressor diode, Industry standard 11 mm, cable passage 0°C	Style B, Suppressor Suppressor diode, Industry standard 11 mm, cable passage 180°C	Style C, Suppressor Suppressor diode, DIN 8 mm cable passage 0°C / 180°C	Style C, Suppressor Suppressor diode, Industry standard 9.4 mm, cable passage 0°C / 180°C

Connectivity

# CABLES

## SAFETY CABLES

Choose the right connection for reliable transmission of signals, data and power in your application. Various cable types and plug connectors are available.



### SAFETY CABLES

Part number for example	BCC M418-0000-1A-069-PX4825-xxx-C033 BCC0H8N	BCC M418-M418-3A-320-PX4825-xxx-C033 BCC0H26
Cable	PUR yellow, cable lengths: 5m / 10m / 15m 050 / 100 / 150 Drag chain compatible	PUR yellow, cable lengths: 0,6m/2m/5m/10m/20m 006/020/050/100/200 Drag chain compatible
Connector configuration	straight	straight/straight M12x1 female, 8-pin, A-coded / M12x1 female, 8-pin, A-coded
Number of conductors	8	8
Cable temperature, fixed routing	-50...80 °C	-50...80 °C
Cable temperature, flexible routing	-25...80 °C	-25...80 °C
Remarks	Female M12 straight, open end, PUR cable yellow	Female M12 straight to M12 straight male, PUR cable yellow

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**



## SAFETY CABLES

Part number for example	BCC M418-M428-3A-320-PX4825-xxx-C033 BCC0H2C	BCC M415-0000-1A-003-PX4434-xxx-C003 BCC0C1P
Cable	PUR yellow, cable lengths: 5m / 10m / 15m 050 / 100 / 150 Drag chain compatible	PUR yellow, cable lengths: 5m / 10m 050 / 100 Drag chain compatible
Connector configuration	straight / right-angle M12x1 female, 8-pin, A-coded / M12x1 female, 8-pin, A-coded	straight
Number of conductors	8	4
Cable temperature, fixed routing	-50...80 °C	-40...80 °C
Cable temperature, flexible routing	-25...80 °C	-25...80 °C
Remarks	Female M12 straight to M12 male right-angle, PUR cable yellow	M12 straight female a-coded, 0.34mm <sup>2</sup> , PUR yellow

## Connectivity

# JUNCTION BLOCKS

Junction blocks from Balluff connect sensors and actuators to the controller. They are especially well-suited for harsh conditions and are ideal if refrigerants and lubricants are used. Their fully encapsulated housing offers a high degree of protection and an outstanding resistance to shock and vibrations. Metal thread inserts guarantee accurate connector fit.



JUNCTION BLOCKS

	BPI00A7	BPI00AL	BPI009R	BPI0091
Style	M8 plastic	M8 plastic	M12 plastic	M12 plastic
Connection	M12 / M8	M12 / M8	M12 / M12	M12 / M12
Inputs	4	8	4	8
Remarks	Junction block M8 4-way, 3-pin, single-ended cordset straight 5m: BCC06K2 single-ended cordset right-angle 5m: BCC06K5	Junction block M8 8-way, 3-pin, single-ended cordset straight 5m: BCC06UL single-ended cordset right-angle 5m: BCC0942	Junction block M12, 4-pin, 4-way with 5 m cable	Junction block M12, 4-pin, 8-way with 5 m cable
ZIND number	2222432514	2222441736	2222433587	2222413776

## Connectivity

# TERMINATING RESISTORS

We offer terminating resistors for all standard commercial bus systems – Profibus, Devicenet and CC-Link. Standardized as well as custom connectivity components. With different designs and in injection-molded versions. The robust, interference-resistant and reliable terminating resistors are ideal for use in the industrial environment.



## TERMINATING RESISTORS

BCC0718

Connection	M12
Connector configuration	straight
Interface	Profibus
Remarks	Terminating resistor - Profibus
Cross Reference	successor Murr Terminating resistor M12 b-cod. / 7000-14041- 0000000 / 2222343580

Connectivity

# CONTROL CABINET FEED-THROUGHS

Our RJ45 and M12 plug connectors (A-, B- and D-coded) in various designs are exceptionally robust, resistant to shocks and vibration. High dust and water protection and high-quality materials distinguish the connectors. They ensure a reliable and rapid connection through the control cabinet wall or other housings.



BULKHEADS

	BCC06YP	BCC085F	BCC085H
Connection 1	M12x1 female, 4-pin	M12x1 female, 4-pin	M12x1 female, 4-pin
Connection 2	M12x1 female, 4-pin	RJ45 male, 8-pin	RJ45 male, 8-pin
Connector configuration	straight 2x	straight 2x	straight/right-angle
ZIND number	2222404498	2222404499	
Cross Reference	successor for Murr M12-bulkhead F/F 4-pin / 7000-44611-0000000		

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide.**

## Connectivity

## TEES

You can use tees to collect, connect and split two signals. They are distinguished by their small, narrow and compact design and are available in different physical forms. We offer tees with M8, M12 and 7/8" connections that are suitable for 3, 4 and 5-wire cables. Choose from different protective circuits and variants without, with one or with two mounting holes.



## TEES

	BCC0AA7	BCC0F5C	BCC09JC	BCC089P
Connection 1	7/8" female, 5-pin	M8x1 male, 4-pin	M12x1 male, 5-pin	M12x1 male, 5-pin, A-coded
Connection 2	7/8" plug, 5-pin	M8x1 female, 3-pin	M8x1 female, 3-pin	M12x1 female, 5-pin, A-coded
Connection 3	7/8" female, 5-pin	M8x1 female, 3-pin	M8x1 female, 3-pin	M12x1 female, 5-pin, A-coded
Remarks	7/8" splitter			
ZIND number	2222410004	2222430106	2222423880	2222430089
Cross Reference			successor for Murr Tee M12 straight M to M8 straight F / 2222346474	

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

## Connectivity

## Y-SPLITTERS

With our Y-splitters, you can collect, connect and split two signals in the field.  
Choose from different designs of robust and industry-grade splitters.  
For a fast and reliable connection.



## Y-SPLITTERS

Part number for example	BCC0CA9	BCC0AFL	BCC M415-M313-M313-U2042-xxx BCC0E84
Cable	PUR black, 0.04 m, drag chain compatible	PUR black, cable lengths: 0.3 m / 006 / 1m 003 / 0D6 010 Drag chain compatible	PUR black, cable lengths: 0.3m / 0.06m 003 / 0D6 Drag chain compatible
Connection 1	M8x1 female, 4-pin, A-coded	M8x1 male, 4-pin, A-coded	M12x1 female, 5-pin, A-coded
Connection 2	M8x1 male, 3-pin, A-coded	M8x1 female, 3-pin, A-coded	M8x1 male, 3-pin, A-coded
Connection 3	M8x1 male, 3-pin, A-coded	M8x1 female, 3-pin, A-coded	M8x1 male, 3-pin, A-coded
Connector configuration	straight 3x	straight 3x	straight 3x
Number of conductors	3/3	3/3	3/3
Cable temperature, Fixed routing	-50...90 °C	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C	-25...90 °C
Cable diameter D	4.30 mm ±0.20 mm	4.30 mm ±0.20 mm	4.30 mm ±0.20 mm
Remarks	for Schunk gripper 4-pin female to 2x 3-pin male	Tee	for Schunk gripper 4-pin female to 2x 3-pin male
ZIND number	2222390185		2222444638



## Y-SPLITTERS

Part number for example	BCC M414-M313-M313-U2026-xxx BCC0E7Z	BCC M414-M415-M415-U2028-xxx BCC0AUA
Cable	PUR black, cable lengths: 0.3m / 0.06m 003 / 0D6 Drag chain compatible	PUR black, 0.30 m, cable lengths: 0.3m / 0.6m / 1m / 2m / 3m 003 / 006 / 010 / 020 / 030 Drag chain compatible
Connection 1	M12x1 male, 4-pin, A-coded	M12x1 male, 4-pin, A-coded
Connection 2	M8x1 female, 3-pin, A-coded	M12x1 female, 5-pin, A-coded
Connection 3	M8x1 female, 3-pin, A-coded	M12x1 female, 5-pin, A-coded
Connector configuration	straight 3x	straight 3x
Number of conductors	3/3	3/3
Cable temperature, Fixed routing	-50...90 °C	-50...90 °C
Cable temperature, flexible routing	-25...90 °C	-25...90 °C
Cable diameter D	4.30 mm ±0.20 mm	4.30 mm ±0.20 mm
Remarks	Tee	Tee
ZIND number	2222429009	

## Accessories

# LIGHTS FOR VISION SYSTEMS AND MACHINES

## MACHINE LIGHTS

Our new, high-quality LED machine lights are especially versatile: use as machine lights or for workbenches, test stands and special applications. Their rugged IP69K construction makes them extremely efficient and durable. The space-saving light measures just Ø20 mm and weighs very little. With special fastening elements, a 4-pin M12 connection and available in three lengths, you can integrate the light into your system quickly and simply.

MACHINE  
LIGHTS

BAE00W8

BAE00W9

BAE00WA

Light type	LED white light	LED white light	LED white light
Connection	M12x1 male, A-coded	M12x1 male, A-coded	M12x1 male, A-coded
Dimension	Ø 20 x 250 mm	Ø 20 x 358 mm	Ø 20 x 432 mm
Housing material	Aluminum	Aluminum	Aluminum
Degree of protection in accordance with IEC60529	IP69K	IP69K	IP69K
Approvals/Conformity	CE, UL listed	CE, UL listed	CE, UL listed

MACHINE  
LIGHTS

BAE00Y4

BAE00Y5

BAE00Y6

Light type	LED white light	LED white light	LED white light
Connection	M12x1 male, A-coded	M12x1 male, A-coded	M12x1 male, A-coded
Dimension	Ø 20 x 610 mm	Ø 20 x 790 mm	Ø 20 x 1096 mm
Housing material	Aluminum, PMMA	Aluminum, PMMA	Aluminum, PMMA
Degree of protection in accordance with IEC60529	IP69K	IP69K	IP69K
Approvals/Conformity	CE, EAC, UL Listed	CE, EAC, UL Listed	CE, EAC, UL Listed
ZIND number		2222440086	

## Accessories

# REFLECTORS, FIBERS, OPTICS

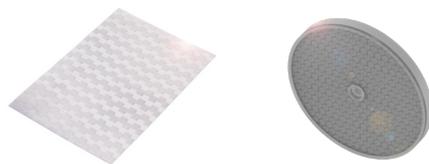
## REFLECTORS

The right reflector for any environment: our round and square reflectors and reflective foils are heat- and chemical-resistant. They are suitable for red light, white light, infrared and laser applications. Balluff reflectors can be used optimally for applications with BOS sensors. You can choose between different sizes and mounting options.



## REFLECTORS

	BAM00UM	BAM01H9	BAM01JP	BAM00WL
Dimension	14 x 23 x 4.9 mm	10 x 40 x 3.7 mm	40 x 60 x 7.5 mm	51 x 61 x 8 mm
Version	Cube corner 0.9 mm	Cube corner 1.2 mm	Cube corner 4 mm	Cube corner 4 mm
Principle of operation	Reflector BOS	Reflector BOS	Reflector BOS	Reflector BOS
Style	Square, 2 mounting holes	Square, 2 mounting holes	Square, 2 mounting holes	Square, 2 mounting holes
Remarks	for retroreflective sensor, laser	for retroreflective sensor, laser	for retroreflective sensor	for retroreflective sensor
ZIND number	2222332997	2222440085		2222346051



## REFLECTORS

	BAM01HF	BAM00UK
Dimension	200 x 300 x 0.5 mm	Ø 84 x 7.3 mm
Version	Reflective foil, micro-pyramids	Cube corner 4 mm
Principle of operation	Reflector BOS	Reflector BOS
Style	Foil section, rectangular	Cylinder, 1 mounting hole
Remarks	for retroreflective sensor, laser	for retroreflective sensor

Accessories

# MECHANICAL PROTECTION SABOTAGE PROTECTION



SABOTAGE  
PROTECTION

BAM0206

Principle of operation	Holding System
Use	for vision sensors BVS Camera
Material	Aluminum
Mounting	Screw M4
ZIND number	2222424574

## Accessories

# MECHANICAL PROTECTION COVER CAPS

Our robust protective caps for various Balluff sensors are easy to attach. They are distinguished by temperature and chemical resistance.



## COVER CAPS

BAM00A0

Principle of operation	Protective cover General
Version	Cover nut
Use	for M08 sensors
Dimension	Ø 10 x 9 mm
Mounting	Screws
Remarks	Cover nut for M8x1 sensors

Accessories

# MECHANICAL PROTECTION

## PROTECTIVE COVERS/ PROTECTIVE HOUSING

Our robust protective covers and protective housings for different Balluff sensors and devices are easy to assemble and to attach.  
Our sensor protection is distinguished by its temperature and chemical resistance.



PROTECTIVE  
COVERS/PROTECTIVE  
HOUSING

BAM01A8

Principle of operation	Protective cover for optics
Version	Protective hood
Use	for BAE PD-VS-001
Dimension	106 x 45 x 106 mm
Mounting	Clamp brackets
Remarks	Protective hood

## Accessories

# FASTENING TECHNOLOGY

## BRACKETS FOR VISION SENSORS, SMARTCAMERAS AND LIGHTS

Our sensor brackets can be combined with the BMS assembly system. The high-quality sensor holders are designed and tested for Balluff vision sensors, SmartCameras and lights. They are distinguished by precision and long service life.

### BRACKETS FOR VISION SENSORS, SMARTCAMERAS AND LIGHTS



	BAM01YP	BAM01YT	BAM02ML	BAM02J9
Principle of operation	Adapters in general	Holding System	Clamp bracket	Accessories for Handheld Barcode Readers
Version	Quick-change plate		Mounting block	Bracket for table/wall mounting
Use	for Vision sensor BVS	for Vision sensor BVS	for LED light	for vision sensors BVS HS-P
Material	Aluminum	Aluminum	Aluminum	ABS
Dimension	55 x 7.5 x 60 mm	60 x 84 x 60 mm	35 x 15 x 29 mm	
Mounting	Screws	Screws	Screw M6	Screws, adhesive
Remarks			Mounting block	for Handheld Barcode Reader BVS HS-P

## Accessories

# FASTENING TECHNOLOGY

## CLAMP BRACKET WITH POSITIVE STOP

Our clamp brackets with a positive stop provide secure protection, positioning and attachment all in one. They are distinguished by simple installation and robust construction. Sensor replacement is fast and easy – without readjustment. You can choose between various sizes and versions such as brass, stainless steel, even with PTFE coating.



CLAMP BRACKET WITH POSITIVE STOP

	BAM0099	BAM00AH	BAM00AK	BAM00AC
Use	Clamp bracket sensors Ø5 mm and M05	Clamp bracket sensors Ø8 mm and M8	Clamp bracket sensors Ø8 mm and M8	for mounting
Material	Stainless steel	Brass	Brass	Steel
Style	Ø 5 mm/M5	M8	M8	M12
Material	Nickel-plated CuZn	Nickel-plated CuZn	PTFE coated, weld immune	PTFE coated, weld immune
Remarks	for sensors Ø 5mm/M5 with thread length $\geq$ 30 mm	for sensors Ø 8mm/M8 with thread length $\geq$ 30 mm	for sensors Ø 8 mm/M8 with thread length $\geq$ 30 mm	Prox fastening for mounting
ZIND number	2222377945	2222363675	2222377943	2222433599

More stops, installation aids etc. can be found on the Homepage



### CLAMP BRACKET WITH POSITIVE STOP

	BAM00CY	BAM00CZ	BAM0247	BAM024E
Use	Clamp bracket M12 sensors	Clamp bracket M12 sensors	Quick-disconnect for M12 sensors	Quick-disconnect for M12 sensors
Material	Brass	Brass	Brass	Brass
Style	M12	M12	M12	M12
Material	PTFE coated, weld immune	PTFE coated, weld immune	PTFE coated, weld immune	PTFE coated, weld immune
Remarks	for sensors Ø 12 mm and M12 with thread length 34 mm	for sensors Ø 12mm and M12 with thread length 34 mm	Clamp bracket with positive stop, flush mount, Quick-disconnect for sensors Ø 12 mm and M12 with thread length 34 mm	Clamp bracket with positive stop, non-flush, Quick-disconnect for sensors Ø 12 mm and M12 with thread length 34 mm
ZIND number	2222366315	2222423099	2222436591	
Cross Reference				replaces BAM00EA and BAM00EH



### CLAMP BRACKET WITH POSITIVE STOP

	BAM024F	BAM0246	BAM00CW
Use	Quick-disconnect for M12 sensors	Quick-disconnect for M12 sensors	for mounting
Material	Brass	Brass	Steel
Style	M12	M12	M16
Material	PTFE coated, weld immune	PTFE coated, weld immune	PTFE coated, weld immune
Remarks	Clamp bracket with positive stop, non-flush, quick-disconnect for sensors Ø 12mm and M12 with thread length 44.5 mm	Replaces BAM0248 clamp with positive stop, flush mount, quick-discon- nect for sensors Ø12 mm, for sensors M12, 32 mm mounting length and greater	Prox fastening for mounting
ZIND number			2222433605

**More stops, installation aids etc. can be found on the Homepage**



CLAMP BRACKET  
WITH POSITIVE STOP

	BAM022F	BAM022K
Use	Clamp bracket sensors Ø18 mm and M18	Clamp bracket sensors Ø18 mm and M18
Material	Brass	Brass
Style	M18	M18
Material	PTFE coated, weld immune	PTFE coated, weld immune
Remarks	Replaces BAM00FL  clamp bracket with positive stop, flush, quick-disconnect sensors Ø 18mm and M18 with thread length 30 mm	Replaces BAM022J  clamp bracket with positive stop, flush mount, quick-disconnect for sensors Ø18 mm, for sensors M18, 40 mm mounting length and greater
ZIND number	2222436539	

## Accessories

# FASTENING TECHNOLOGY

## MOUNTING BLOCK

Our mounting blocks with and without positive stop provide positioning and attachment all in one. They are distinguished by simple installation and robust construction. You can choose between different sizes and versions such as aluminum and plastic.



## MOUNTING BLOCK

	BAM00A8	BAM00CH
Principle of operation	Clamp bracket	Clamp bracket
Version	Mounting block	Mounting block
Use	for sensors Ø8 mm and M8	for sensors Ø 12 mm and M12
Material	PC	PC
Dimension	22 x 15 x 20 mm	30 x 18 x 24 mm
Mounting	Clamp brackets	Clamp brackets
Remarks		Mounting block with positive stop

**More stops, installation aids etc. can be found on the Homepage**

Accessories

# FASTENING TECHNOLOGY

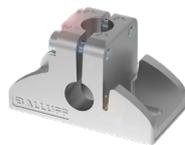
## FLEXIBLE MOUNTING SYSTEM

Our flexible mounting system consists of the components base holders, assembly rods, cross-connectors and joints. Balluff offers a wide selection of sensor holders and mounting bracket reflector. You can choose between different materials like POM, anodized Al, chrome-plated GD-Zn and stainless steel. The assembly system is flexible, robust and easy to install.



FLEXIBLE MOUNTING SYSTEM

BASE HOLDER



	BAM0275	BAM024P	BAM0044
Principle of operation	Base holder	Base holder	Base holder
Version	for 1 mounting rod Ø 12 mm	for 1 mounting rod Ø 12 mm (vertical or horizontal)	for clamping cylinder
Use	for mounting on bases plates or extrusions	for mounting on bases plates or extrusions	for mounting on base plates or extrusions with M8
Material	GD-Zn/chrome-plated	GD-Zn/chrome-plated	Stainless steel
Dimension	60 x 30 x 36 mm	64 x 30 x 36 mm	76.4 x 10 x 30 mm
Mounting	Screws, clamps	Screws, clamps	Ø20, base holder Screws
ZIND number		2222423087	

Additional mounting system products can be found on the Homepage

FLEXIBLE  
MOUNTING SYSTEMCLAMPING CYLINDERS  
CROSS-CONNECTORS  
JOINT PIECE

	BAM0031	BAM01CW	BAM002Z	BAM024R
Principle of operation	Clamping cylinder	Cross-connector	Cross-connector	Joint piece
Version	for 1 mounting rod Ø 12 mm	for 1 mounting rod Ø 12 mm	Holding rods Ø12 mm	for 2 mounting rods Ø 12 mm
Use	for holding all sensors and reflector holders	for BGL fork sensors for photoelectric sensors BOS 2K, 6K, BUS R06	for mounting rods	adjustable connector piece for Ø 12 mm mounting rods
Material	GD-Zn	Anodized aluminum	Anodized aluminum	GD-Zn/chrome-plated
Dimension	Ø 27 x 37 mm	37 x 20 x 30 mm	55 x 20 x 20 mm	45.5 x 36 x 30 mm
Mounting	Ø20		Screws, clamps	Screws, clamps
ZIND number	2222338565		2222338600	

FLEXIBLE  
MOUNTING SYSTEMADJUSTMENT UNITS  
ADAPTER RING  
AIR BLOW

	BAM003E	BAM0038	BAM003J	BAM0041
Principle of operation	Adjustment unit M12	Adjustment unit M18	Adapter ring	Air blow
Version	for clamping cylinder	for clamping cylinder	for 2× clamping cylinders BMS CS-M-D12-IZ	for clamping cylinder
Use	for adjusting M12 laser sensors	for adjusting M18 laser sensors	as connecting element for 2× clamping cylinders	for blowing clear the fronts of sensors and reflectors (minimum pressure 8 bar)
Material	Stainless steel	Stainless steel	Anodized aluminum	Anodized aluminum
Dimension	57 x 45 x 50 mm	57 x 45 x 50 mm	Ø 30 x 10 mm	
Mounting	adjusting	adjusting	Ø20	using clamping cylinder
ZIND number		2222338605		

FLEXIBLE MOUNTING SYSTEM

ASSEMBLY RODS



	BAM002R	BAM002T	BAM002U
Principle of operation	Mounting rod Ø 12 mm	Mounting rod Ø 12 mm	Mounting rod Ø 12 mm
Version	Knurled, for field assembly	Knurled, for field assembly	Knurled, for field assembly
Use	for mounting	for mounting	for mounting
Material	Anodized aluminum	Anodized aluminum	Anodized aluminum
Dimension	Ø 12 x 150 mm	Ø 12 x 250 mm	Ø 12 x 1000 mm
Mounting	Clamp brackets	Clamp brackets	Clamp brackets
ZIND number	2222338610	2222338611	2222338612

FLEXIBLE MOUNTING SYSTEM

REFLECTOR BRACKET



	BAM0034	BAM0042	BAM01AY
Principle of operation	Reflector bracket	Reflector bracket	Sensor and reflector holder
Version	for clamping cylinder	for clamping cylinder	for clamping cylinder
Use	for reflectors BOS R-1, R-2, R-3	for reflectors BOS R-9 and BOS 25K, 26K	for photoelectric sensors BOS 50K and reflectors BOS R-11
Material	Stainless steel	Stainless steel	Stainless steel
Dimension	Ø 33 x 35 mm	61.5 x 34 x 59 mm	93 x 34.5 x 85 mm
Mounting	Ø20, base holder	Ø20, base holder	Ø20, base holder
ZIND number	2222338602	2222338604	

FLEXIBLE  
MOUNTING SYSTEMSENSOR BRACKETS  
FOR FORK SENSORS

	BAM003F	BAM003H	BAM01F3
Principle of operation	Sensor bracket	Sensor bracket	Sensor bracket
Version	for base holder with/without cross-connector	for base holder with/without cross-connector	for clamping cylinder
Use	for fork sensors BGL 5A, 10A, 20A, 30A, 50A	for fork sensors BGL 80A, 120A, 180A, 220A	for photoelectric sensors BOS 5K Fork sensors BGL 30C, 50C Angle sensors BWL 40/40, 54/54
Material	Anodized aluminum	Anodized aluminum	Stainless steel
Dimension	Ø 12 x 250 mm	Ø 12 x 400 mm	61 x 34 x 36 mm
Mounting	Clamp brackets	Clamp brackets	Ø20, base holder
ZIND number	2222423685		

FLEXIBLE  
MOUNTING SYSTEMSENSOR BRACKET  
FOR INDUCTIVE  
SENSORS AND  
CLAMP BRACKETS

	BAM003R	BAM0036
Principle of operation	Sensor bracket	M8 sensor bracket
Version	for clamping cylinder	for clamping cylinder
Use	for inductive sensors 40x40 mm, Unicomact, Unisensor and BES IKU	for sensors and clamp brackets M8
Material	Stainless steel	Stainless steel
Dimension	121 x 3 x 60 mm	Ø 28 x 34 mm
Mounting	Ø20, base holder Screws	Ø20, base holder
ZIND number		2222338590

FLEXIBLE MOUNTING SYSTEM

SENSOR BRACKET FOR INDUCTIVE SENSORS AND CLAMP BRACKETS



	BAM0037	BAM003K	BAM0032	BAM0033
Principle of operation	Sensor bracket M12	Sensor bracket M16	Sensor bracket M18	Sensor bracket M30
Version	for clamping cylinder	for clamping cylinder	for clamping cylinder	for clamping cylinder
Use	for sensors and clamping brackets M12	for sensors and clamping brackets M16	for sensors and clamping brackets M18	for sensors and clamping brackets M30
Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Dimension	Ø 28 x 34 mm	Ø 33 x 33 mm	Ø 28 x 34 mm	Ø 42 x 33 mm
Mounting	Ø20, base holder	Ø20, base holder	Ø20, base holder	Ø20, base holder
ZIND number	2222338591		2222338593	2222338595

FLEXIBLE MOUNTING SYSTEM

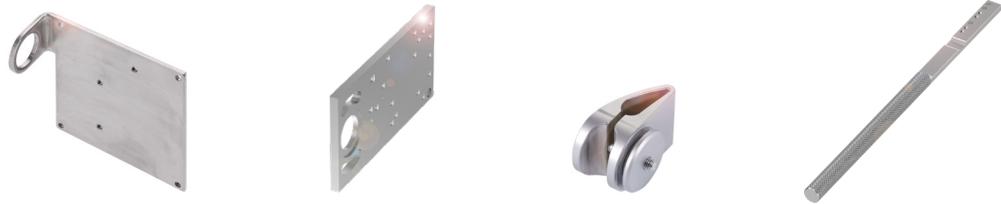
SENSOR BRACKET FOR PHOTOELECTRIC SENSORS



	BAM01F3	BAM0040	BAM0043	BAM01AW
Principle of operation	Sensor bracket	Sensor bracket	Sensor bracket	Sensor bracket
Version	for clamping cylinder	for clamping cylinder	for clamping cylinder	for clamping cylinder
Use	for photoelectric sensors BOS 5K Fork sensors BGL 30C, 50C Angle sensors BWL 40/40, 54/54	for photoelectric sensors BOS 2K, 5K, 6K and BUS R06	for photoelectric sensors BOS 21M	for photoelectric sensors BOS 23K, 26K
Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Dimension	61 x 34 x 36 mm	79 x 23 x 28 mm	88 x 20 x 56 mm	93 x 30 x 55 mm
Mounting	Ø20, base holder	Ø20, base holder	Ø20, base holder Screws	Ø20, base holder

FLEXIBLE MOUNTING SYSTEM

SENSOR BRACKET FOR SENSORS AND REFLECTORS



	BAM01AY	BAM003C	BAM024T	BAM0039
Principle of operation	Sensor- and Reflector bracket	Sensor bracket	Sensor bracket	Sensor bracket
Version	for clamping cylinder	for base holder or clamping cylinder	for 1 mounting rod Ø 12 mm	for base holder
Use	for photoelectric sensors BOS 50K and reflectors BOS R-11	for photoelectric sensors BOS 23K, 25K, 26K, 50K, BOS 21M, 63M, 66M for reflectors BOS R-9, R-22, R-34, R-36, R-44, R-46	for holding all sensors and reflector holders	for photoelectric sensors BOS 2K, 5K, 6K, Q08, inductive sensors BES Q08 and ultrasonic sensors BUS R06
Material	Stainless steel	Anodized aluminum	GD-Zn/chrome-plated	Anodized aluminum
Dimension	93 x 34.5 x 85 mm	120 x 5 x 60 mm	45.5 x 24 x 30 mm	Ø 12 x 250 mm
Mounting	Ø20, base holder	Ø20, base holder	Screws, clamps	Clamp brackets
ZIND number				2222338609

FLEXIBLE MOUNTING SYSTEM

REFLECTOR BRACKET



	BAM003N	BAM0035
Principle of operation	Reflector bracket	Reflector bracket
Version	for clamping cylinder	for clamping cylinder
Use	for BOS R-1 reflectors	for BOS R-11 reflectors
Material	Stainless steel	Stainless steel
Dimension	Ø 84 x 36 mm	93 x 34.5 x 85 mm
Mounting	Ø20, base holder	Ø20, base holder
ZIND number	2222420748	2222338603

Accessories

# COMMUNICATION ADAPTERS AND SIGNAL CONVERTERS

## COMMUNICATION ADAPTERS



COMMUNICATIONS  
ADAPTERS

BAE00TF

Connection type	Spring clamp terminals
Use	HEARTBEAT power supplies
Mounting	Snap fastener
Remarks	IO-Link Adapter for IP20 power supplies BAE00T4 and BAE00LJ ; current, voltage output, remaining lifetime, stress level, temperature,...

## Accessories

# MECHANICAL ACCESSORIES

## ADAPTERS



## ADAPTERS

	BCC0C0Y	BCC0C10
Connection 1	M12x1, 4-pin	Sub-D plug, 9-pin
Connection 2	M12x1, 5-pin	D-Sub female, 9-pin
Connection 3	SUB-D, 9-pin	
Connector configuration	straight 2x	straight
Interface	Profibus	Profibus
Remarks	Bus male with selectable terminating resistor	Bus male with selectable terminating resistor

Accessories

# MECHANICAL ACCESSORIES

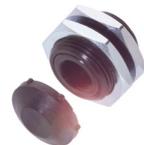
MECHANICAL ACCESSORIES



	BAM009N	BAM009L	BAM019Y	BAM01C0
Principle of operation	Mounting cuff straight for positive stop	Positive stop	Tube-Switch	Tube-Switch
Use	for sensors Ø 4 mm or M8	for inductive sensors for mechanical protection	for M5 sensors for mechanical protection	for Ø 4 mm sensors for mechanical protection
Dimension	28 x 12 x 20 mm	Ø 8 x 57 mm		
Mounting		Screws M8	Screws M12	Screws M8
Material	Aluminum	Stainless steel	Stainless steel	Stainless steel
Remarks	Mounting cuff - straight for positive stop	for inductive sensors	for M5 sensors	for Ø 4 mm sensors
ZIND number	2222353205	2222321040	2222437582	2222382905

More stops, installation aids etc. can be found on the Homepage

MECHANICAL  
ACCESSORIES



	BAM009R	BAM009T	BAM015U	BAM015W
Principle of operation	Mounting cuff straight for positive stop	Mounting cuff right-angle for positive stop	Collision Protection	Collision Protection
Use	for sensors Ø 4 mm or M8	for sensors Ø 4 mm or M8	for M8 sensors for mechanical protection	for M12 sensors for mechanical protection
Dimension	28 x 12 x 20 mm	31.8 x 12 x 20 mm	Ø 16 x 22.1 mm	Ø 22 x 21 mm
Mounting			Screws M16	Screws M22
Material	Aluminum	Aluminum	Anodized aluminum	Anodized aluminum
Remarks	Mounting cuff straight for positive stop	Mounting cuff right-angle for positive stop	for M8 sensors	for M12 sensors
ZIND number	2222363905	2222339612		

**Welding products for welding applications**



Welding products for welding applications

# INDUCTIVE SENSORS

## TECHNOLOGY INFO SENSORS

### General technical info - PTFE

PTFE is a thermoplastic polymer which when heated does not liquefy or melt but rather becomes rubbery soft. PTFE is extremely non-polar, making it anti-adhesive and hydrophobic.

Its temperature applicability range is very great.

The electrical insulating properties and its chemical and weathering resistance are outstanding. PTFE is virtually incombustible.

PTFE has low strength, stiffness and hardness, but good impact strength.

Its anti-adhesive behavior is outstanding, i.e. otherwise sticky materials do not adhere to its surface and is not wetted by liquids. PTFE has excellent antifriction properties.

Its wear resistance is therefore moderate, but can be improved through the use of fillers such as graphite or bronze powder.

It also tends to creep.

With a PTFE coating hot weld spatter adheres only slightly to the metal body of the sensor.

In areas where welding residues cannot be completely prevented the especially smooth PTFE coating makes removal of these residues easy without damaging the sensor.

### Description of 2-component coating

Acrylate-based 2-component coating.

The system is ceramic reinforced and demonstrates high scratch and weld spatter resistance.

Color: silver

The coating is highly resistant to adherence of weld beads

### Caps (sensing surface)

The caps are flat discs and inserted on "tubes" only for coating.



### Q8 Sensor

Fully and partially coated with 2-component coating



**TEST Q08 sensors (BES055A)**

The photo at left was made during installation into the laser welding system.  
After approx. 5 weeks of use at this contaminated location the photo below was taken.

**Conclusion:**

The sensors were fully functional after the test at the highly contaminated laser welding location.  
The welding residue was easy to remove from the 2-component coating.  
Beneath the black sections of the cable the cable was fully intact and there was no burning down to the conductors.

**TEST cylinder switch BMF 235 (BMF00J6)**

Shown at right is a new sensor.  
Below is a sensor after 11 months of operation on a MAG weld system.

**Conclusion:**

The sensor was still fully functional. There were two small penetration points down to the insulation, but there was no actual damage.  
Beneath the carbonized points the orange insulation reappeared in good condition after scraping off the carbonization.

**Data for Q08 sensor single-ended cordsets**

Cable overall

Stranding: 3 wires 0.14m<sup>2</sup> Z: 30 mm  
Material: TPE-U halogen-free and flame resistant Shore hardness D 55 ± 5

Mechanical Properties

For flexed use and for drag chain

Bending radius (fixed): 5 x outside diameter  
Bending radius (moving): 10 x outside diameter  
Torsion resistant ± 180° / m

Fire behavior

Flame resistant per UL 758/1581 horizontal flame test + FT2

Special

Halogen-free  
Weld bead resistant  
Jacket oil resistant  
RoHS/REACH conformal

## Sensors

# INDUCTIVE SENSORS

## MAGNETIC-FIELD-RESISTANT

Magnetic-field-resistant inductive sensors are insensitive to magnetic fields which are created around electric weld currents up to 25 kA.

Our magnetic-field-resistant inductive sensors are ideal for use in areas with strong magnetic fields such as in welding and induction hardening installations.

They are insensitive to magnetic fields arising from electric welding currents up to 25 kA.

### MAGNETIC-FIELD-RESISTANT



	BES02JW	BES02JZ	BES02K5	BES05AM
Dimension	Ø 12 x 50 mm	Ø 12 x 50 mm	Ø 12 x 65 mm	Ø 18 x 76 mm
Style	M12x1	M12x1	M12x1	M18x1
Range	8 mm	3 mm	8 mm	12 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	non-flush	flush	non-flush	non-flush
Housing material	Brass	Brass	Brass	Brass
Surrounding	Magnetic-field-resistant weld-spatter-resistant	Magnetic-field-resistant weld-spatter-resistant	Magnetic-field-resistant weld-spatter-resistant	Magnetic-field-resistant
Connection	M12 plug	M12 plug	M12 plug	M12 plug
Remarks	Standard sensor weld-immune PTFE coated incl. at the sensing surface	welding type in weld equipment, M12 sensor, 3mm switching distance flush mounted, PTFE coated with M12 plug, Short design	M12 sensor, 8mm switching distance non-flush, PTFE coated with M12 plug	replaces BES02KF M18 sensor, 12 mm switching distance non-flush, PTFE coated with M12 plug
ZIND number	2222363676	2222335470		

**Always install with clamp**

## Sensors

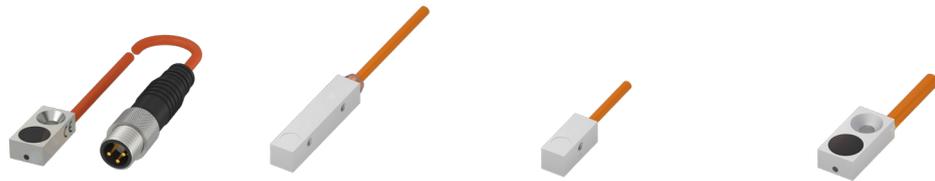
# INDUCTIVE SENSORS STANDARD (MODIFIED FOR WELDING)

Our standard inductive sensors are ideal for object detection in metal areas. They are short-circuit protected and operate without contact, making them wear-free and very resistant to dirt and contamination. The sensors are available in configurations from 3 mm Ø to 80 × 80 mm square dimensions.

The rugged and reliable inductive Global Sensors provide especially economical solutions.

We can also deliver the broad range of these over 500 preferred types worldwide in the shortest possible time.

## STANDARD INDUCTIVE SENSORS (WELDING MODIFIED)



	BES05P9	BES0587	BES0588	BES0584
Dimension	16 x 8 x 4.7 mm	40 x 8 x 8 mm	8 x 20 x 8 mm	16 x 8 x 4.7 mm
Style	block style	block style	block style	block style
Range	2 mm	3 mm	2 mm	2 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush	flush	flush
Housing material	Brass	Zinc, die-cast	Brass	Brass
Surrounding	narrow installation space	narrow installation space	narrow installation space	narrow installation space
Connection	30cm TPE cable with M8 plug	2m open leads TPE	2m open leads TPE	2m open leads TPE
Remarks	Ceramic sensing surface with 2-component coating weld-resistant, silver  M8 plug, 3-pin 30 cm weld bead resistant cable made of TPE	sensing surface and housing with 2-component coating  weld bead resistant, silver  2m weld bead resistant TPE cable	sensing surface and housing with 2-component coating  weld bead resistant, silver  2m weld bead resistant TPE cable	Ceramic sensing surface with 2-component coating weld-resistant, silver  2m weld bead resistant TPE cable
ZIND number		2222433598	2222440945	2222431116

**Always install with clamp (tubular sensors)**

STANDARD  
INDUCTIVE  
SENSORS  
(WELDING  
MODIFIED)

	BES0492	BES055A	BES0548	BES03P4
Dimension	32 x 20 x 8 mm	40 x 8 x 8 mm	Ø 5 x 27 mm	Ø 6.5 x 55 mm
Style	block style	block style	M5x0.5	D6.5
Range	7 mm	3 mm	1.5 mm	2 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	flush	flush	flush
Housing material	Zinc, die-cast	Zinc, die-cast	Stainless steel	Stainless steel
Surrounding	narrow installation space weld-spatter-resistant	narrow installation space	narrow installation space	narrow installation space
Connection	20cm TPE cable with M8 plug	30cm TPE cable with M8 plug	2m open leads TPE	M8 plug
Remarks	sensing surface Spatter-Guard coated M8 plug, 3-pin 30 cm weld bead resistant cable made of TPE  extended switching distance max. 7 mm	sensing surface and housing with 2-component coating  weld bead resistant, silver  M8 plug, 3-pin 30 cm weld bead resistant cable made of TPE	Ceramic sensing surface 2m weld bead resistant cable made of TPE  Housing with 2-component coating weld bead resistant, silver	welding type in welding equipment, smooth sensor 6.5mm 2mm switching distance flush with M8 plug
ZIND number	2222441360	2222421052		

STANDARD  
INDUCTIVE  
SENSORS  
(WELDING  
MODIFIED)

D6.5 / M5 / M8



Order Code	BES05PA	BES056P	BES0558	BES05P6
SET (sensor + accessories)		SET01ML	SET01MJ	
Dimension	Ø 5 x 27 mm	Ø 8 x 30 mm	Ø 8 x 40 mm	Ø 8 x 50 mm
Style	M5x0.5	M8x1	M8x1	M8x1
Range	1.5 mm	4 mm	2.5 mm	2 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	non-flush	flush	flush
Housing material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Surrounding	narrow installation space	narrow installation space	narrow installation space	narrow installation space
Connection	30cm TPE cable with M8 plug	M8 plug	M8 plug	M8 plug
Remarks	ceramic sensing surface weld-resistant  M8 plug, 3-pin 30 cm weld bead resistant cable made of TPE	sensing surface, with 2-component coating  weld bead resistant silver  recommended accessory PTFE cover cap BAM00A0 (SET01ML) 	sensing surface, with 2-component coating  weld bead resistant silver  switching distance max. 2.5 mm  recommended accessory PTFE cover cap BAM009Z (SET01MJ) 	sensing surface, with 2-component coating  weld bead resistant
ZIND number			2222422719	

**Always install with clamp**

STANDARD  
INDUCTIVE  
SENSORS  
(WELDING  
MODIFIED)

## M12

Order Code	BES00PT	BES02WK	BES02N6	BES0567
Dimension	Ø 12 x 33 mm	Ø 12 x 45 mm	Ø 12 x 65 mm	Ø 12 x 65 mm
Style	M12x1	M12x1	M12x1	M12x1
Range	4 mm	10 mm	2 mm	4 mm
Switching output	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)	PNP normally open (NO)
Installation	flush	non-flush	flush	flush
Housing material	Brass	Metal	Stainless steel	Stainless steel
Surrounding	narrow installation space	narrow installation space	weld-spatter-resistant	weld-spatter-resistant
Connection	Cable, 5.00 m, TPU	M12 plug	M12 plug	M12 plug
Remarks	sensing surface PBT, surface protection nickel-free coated  recommended accessory PTFE cover cap BAM00C2   replaces BES056R	PTFE coated incl. at the sensing surface  recommended accessory PTFE cover cap BAM00C3 	welding type in weld equipment, M8 sensor, 2mm switching distance, flush mounted, PTFE coated with M12 plug	welding type in weld equipment, M12 sensor, 4mm switching distance, flush, weld spatter resistant with M12 plug, long housing
ZIND number		2222346799	2222413824	

**Always install with clamp**

## Sensors

# FLOW SENSORS

## THERMAL FLOW CONTROLLERS

Flow sensors let you measure and monitor the flow of process media in a wide range of applications. For example the lubricant flow or reliable circulation of cooling water. Now you can detect a pump failure early and prevent an unplanned machine or even system stop. This is how flow sensors as well as pressure or temperature sensors contribute to process security.



THERMAL FLOW  
CONTROLLER

BFF000A

Dimension	70 × 140 mm
Working range	0.1...2 l/min water
Switching output	2x PNP, NO/NC contact (NO/NC)
Pressure rating max.	10 bar
Housing material	PBT
Connection	M12 male, 4-pin
Ambient temperature	0...60 °C
Remarks	Calorimetric flow sensor for use with deionized water, measuring range 100...2000 ml/min
ZIND number	2222441206

## Sensors

# MAGNETIC FIELD SENSORS

## C-SLOT

Our magnetic cylinder sensors for C-slots distinguish themselves with their firm grip.

Features: can be mounted flush – suitable for space-critical applications; can be installed from above – also fit where the slot ends are closed; contact-free detection of the piston position through cylinder walls; can be used for cylinders and grippers with strong or weak magnets. Extremely short configurations are available.



## C-SLOZ

BMF00P0

Dimension	24 x 2.9 x 3.6 mm
Application	Object detection
Mounting part	Screw M2
Switching output	PNP normally open (NO)
Connection	M8x1-Male, 3-pin
Housing material	PA 12
Approval/Conformity	CE, EAC, WEEE, cULus, UKCA
Ambient temperature	-25...85 °C

## Sensors

# MAGNETIC FIELD SENSORS

## T-SLOT

Our magnetic cylinder sensors for T-slots detect the piston position without contact through the cylinder wall.

Features: can be mounted directly into the slot, firm grip, can be mounted flush for space-critical applications, can be used for cylinders and grippers with strong or weak magnets, bright LEDs. Extremely short configurations as well as sensors with metal housings or magnetic field-sensitive electronics are available.



## T-SLOT

	BMF00J6	BMF00JC	BMF00KF
Dimension	23.5 x 5 x 5.5 mm	23.5 x 5 x 5.5 mm	23.5 x 5 x 5.5 mm
Connection	2m open leads TPE	30cm TPE cable with M8 plug	50cm TPE cable with M8 plug
Switching output	Normally open (NO)	Normally open (NO)	Normally open (NO)
Operating voltage	10...30 V DC	10...30 V DC	10...30 V DC
Approval/Conformity	CE, cULus	CE, cULus	CE, cULus
Remarks	M8 plug, 3-pin 2 m weld bead resistant cable made of TPE	M8 plug, 3-pin 30 cm weld bead resistant cable made of TPE	M8 plug, 3-pin 50 cm weld bead resistant cable made of TPE
ZIND number	2222411542	2222422717	2222411032



## Accessories

# FASTENING TECHNOLOGY

## CLAMP BRACKET WITH POSITIVE STOP

Our clamp brackets with a positive stop provide secure protection, positioning and attachment all in one. They are distinguished by simple installation and robust construction. Replacing a sensor is quick and easy – you can choose between various sizes and versions such as brass, stainless steel, even with PTFE coating.



CLAMP BRACKET WITH POSITIVE STOP

	BAM0099	BAM00AK	BAM00AC	BAM00CW
Style	Ø 5 mm/M5	M8	M8	M12
Material	Nickel-plated CuZn	CuZn PTFE coated, weld immune	PTFE coated, weld immune, Base material steel for <b>best switching distances</b> ; High-end!	PTFE coated, weld immune, Base material steel for <b>best switching distances</b> ; High-end!
Dimension	Ø 4.2 x 24 mm	Ø 8 x 32 mm	Ø 8 x 33 mm	Ø 12 x 37 mm
Mounting	Screws, clamps	Screws, clamps	Screws, clamps	Screws, clamps
Remarks	for sensors Ø 5mm/M5 with thread length ≥ 30 mm	for sensors Ø 8 mm/M8 with thread length ≥ 30 mm	for sensors Ø 8 mm/M8 with thread length ≥ 30 mm	for sensors Ø 12 mm/M12 with thread length ≥ 34 mm
ZIND number	2222377945	2222377943	2222433599	2222433605

**Inductive sensors - always install with clamp**



CLAMP BRACKET  
WITH POSITIVE STOP

	BAM0247	BAM024E	BAM024F
Style	M12	M12	M12
Material	CuZn PTFE coated, weld immune	CuZn PTFE coated, weld immune	CuZn PTFE coated, weld immune
Dimension	Ø 23 x 34 mm	Ø 23 x 38 mm	Ø 23 x 48.5 mm
Mounting	Screws, clamps	Screws, clamps	Screws, clamps
Remarks	Clamp bracket with positive stop, flush mount, Quick-disconnect for sensors Ø 12 mm and M12 with thread length 34 mm	Clamp bracket with positive stop, non-flush, Quick-disconnect for sensors Ø 12mm and M12 with thread length 34 mm	Clamp bracket with positive stop, flush mount, Quick-disconnect for sensors Ø 12 mm and M12 with thread length 44.5 mm
ZIND number	2222436591		



CLAMP BRACKET  
WITH POSITIVE STOP

	BAM022F
Style	M18
Material	CuZn PTFE coated, weld immune
Dimension	Ø 32 x 30 mm
Mounting	Screws, clamps
Remarks	Clamp bracket with positive stop, flush mount, Quick-disconnect for sensors Ø 18 mm and M18 with thread length 30 mm
ZIND number	2222436539

Accessories

# MECHANICAL PROTECTION COVER CAPS

Our robust protective caps for various Balluff sensors are easy to attach. They are distinguished by temperature and chemical resistance.



COVER CAPS

	BAM009Z	BAM00A0	BAM00C2	BAM00C3
Use	for M08 sensors	for M08 sensors	for M12 sensors	for M12 sensors
Version	Cover nut	Cover nut	Cover nut	Cover nut
Housing material	PTFE	PTFE	PTFE	PTFE
Remarks	Cover cap for BES0558 (SET01MJ) BES056M (SET01MH)	Cover cap for BES056P (SET01ML)	Cover cap for BES00PT	Cover cap for BES02WK
ZIND number	2222342970		2222342971	

## Technical info for TPE cable using example of BCC0F6W

<b>General attributes</b>		Cable jacket material	TPE
Area of application	Welding and temperature area	Cable length L [m]	2.00 m
Cable jacket color	gray	Conductor cross-section	0.34 mm <sup>2</sup>
Enclosure Type per IEC 60529	IP67 / IP67	Connector configuration	straight / straight
Function indicator (PIN 2)	No / No	Connector type	M08x1 / M08x1
Function indicator (PIN 4)	No / No	Connector type (Header I)	Female M8
Power indicator	No / No	Connector type (Header II)	Male M8
<b>Electrical attributes</b>		Contact material	CuSn / CuZn
Operating voltage UB max. AC [V]	60.0 V	Cover nut material	GD-Zn PTFE coated
Operating voltage UB max. DC [V]	60.0 V	Grip material	Special TPU
Rated current (40°C)	4.0 A	Number of conductors	3
Switching output	No	Number of female/male pins	3 / 3
<b>Mechanical attributes</b>		System	molded / molded
Ambient temp. max. (fixed)	130 °C	Tightening torque pigtail	0.4 Nm / 0.4 Nm
Ambient temp. max. (moving)	125 °C	<b>Additional text</b>	
Ambient temp. min. (fixed)	-50 °C	Enclosure type accord. to IEC 60529, when threaded together with the appropriate counterpart.	
Ambient temp. min. (moving)	-40 °C	Maximum temperature of the outer casing by welding spatter / beads AW 800°C.	
Bending radius fixed cable	min. 8 x D	Flame-Retardant	
Bending radius tensioned cable	min. 15 x D	Halogen-free	
Cable diameter D	4.4 +/- 0.20 mm		

## Technical info for FEP cable using example of BCC0FM3

<b>General attributes</b>		Cable jacket material	FEP
Area of application	Welding area	Cable length L [m]	2.00 m
Cable jacket color	black	Conductor cross-section	0.34 mm <sup>2</sup>
Enclosure Type per IEC 60529	IP67 / IP67	Connector configuration	straight / straight
Function indicator (PIN 2)	No / No	Connector type	M08x1 / M08x1
Function indicator (PIN 4)	No / No	Connector type (Header I)	Female M8
Power indicator	No / No	Connector type (Header II)	Male M8
<b>Electrical attributes</b>		Contact material	CuSn / CuZn
Operating voltage UB max. AC [V]	60.0 V	Cover nut material	GD-Zn PTFE coated
Operating voltage UB max. DC [V]	60.0 V	Grip material	Special TPU
Rated current (40°C)	4.0 A	Number of conductors	4
Switching output	No	Number of female/male pins	3 / 3
<b>Mechanical attributes</b>		System	molded / molded
Ambient temp. max. (fixed)	200 °C	Tightening torque pigtail	0.4 Nm / 0.4 Nm
Ambient temp. max. (moving)	200 °C	<b>Additional text</b>	
Ambient temp. min. (fixed)	-40 °C	Maximum temperature of the outer casing by welding spatter / beads AW 800°C.	
Ambient temp. min. (moving)	-40 °C	Halogen-free	
Bending radius fixed cable	min. 7.5 x D	Enclosure type accord. to IEC 60529, when threaded together with the appropriate counterpart.	
Bending radius tensioned cable	min. 15 x D	Cable structure according to UL-AWM Style 2749	
Cable diameter D	4.0 +/- 0.20 mm		

## Technical info for PUR cables (LED versions) using example of BCC0E4L

<b>General attributes</b>		Cable diameter D	4.3 +/- 0.20 mm
Cable jacket color	orange	Cable jacket material	PUR welding spark durable
Enclosure Type per IEC 60529	IP67	Cable length L [m]	5.00 m
Function indicator (PIN 2)	No	Conductor cross-section	0.34 mm <sup>2</sup>
Function indicator (PIN 4)	LED yellow	Connector configuration	90° angle
Power indicator	LED green	Connector type	M08x1
<b>Electrical attributes</b>		Connector type (Header I)	Female M8
Operating voltage UB max. DC [V]	30.0 V	Contact material	CuZn
Rated current (40°C)	4.0 A	Cover nut material	GD-Zn
Switching function	Normally open (NO)	Drag chain compatible	Yes
Switching output	PNP	Grip material	PUR
<b>Mechanical attributes</b>		Number of conductors	3
Acceleration max. (drag chain)	5 m/s <sup>2</sup>	Number of female/male pins	3
Ambient temp. max. (fixed)	80 °C	Permiss.horizon. traverse dist	at 5 m/sec <sup>2</sup> 5 m
Ambient temp. max. (moving)	80 °C	System	molded
Ambient temp. max.(drag chain)	60 °C	Tightening torque pigtail	0.4 Nm
Ambient temp. min. (fixed)	-25 °C	Traverse speed max(drag chain)	at 5 m horiz. travel 200 m/min
Ambient temp. min. (moving)	-25 °C	<b>Additional text</b>	
Ambient temp. min.(drag chain)	-25 °C	Enclosure type accord. to IEC 60529, when threaded together with the appropriate counterpart.	
Bending cycles	> 2 Mio.	Cable structure according to UL-AWM Style 20549	
Bending radius fixed cable	min. 5 x D	Flame resistant per IEC 60332-1-2	
Bending radius tensioned cable	min. 10 x D	Halogen-free per DIN VDE 0472 Part 815	

Connectivity

# SINGLE-ENDED CORDSETS TPE CABLES

Choose the right connection for reliable transmission of signals, data and power in your application. Various cable types and plug connectors are available.

**Weld spark immune TPE cable, gray, highly flexible, temperature rated to 125°C continuous, weld beads up to 800°C**

TPE CABLES

M8



Example order code	BCC0FF6	BCC0FFA	BCC0K9Z
Part number example	BCC W313-0000-10-001-BW8334-020	BCC W314-0000-10-003-BW8434-020	BCC W313-0000-10-004-BW8334-020
Part number	BCC W313-0000-10-001-BW8334-xxx	BCC W314-0000-10-003-BW8434-xxx	BCC W313-0000-10-004-BW8334-xxx

Cable	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	straight	straight	straight
Number of conductors	3	4	3
Cable temperature, Fixed routing	-50...130 °C	-50...130 °C	-50...130 °C
Connection	M8	M8	M8
Remarks	straight - open cable end	straight - open cable end	<b>with LED</b> , straight - open cable end

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

## TPE CABLES



## M12

Example order code	BCC0EFR	BCC0KC7	BCC0EFT	BCC0KCC
Part number example	BCC W415-0000-1A-003- BW8434-020	BCC W415-0000-1A-008-BW8434-020	BCC W425-0000-1A-003-BW8434-020	BCC W425-0000-1A-010-BW8434-020
Part number	BCC W415-0000-1A-003-BW8434-xxx	BCC W415-0000-1A-008-BW8434-xxx	BCC W425-0000-1A-003-BW8434-xxx	BCC W425-0000-1A-010-BW8434-xxx

Cable	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	straight	straight	right-angle	right-angle
Number of conductors	4	4	4	4
Cable temperature, Fixed routing	-50...130 °C	-50...130 °C	-50...130 °C	-50...130 °C
Connection	M12	M12	M12	M12
Remarks	straight - open cable end	<b>with LED</b> , straight - open cable end	right-angle - open cable end	<b>with LED</b> , right-angle - open cable end

## TPE CABLES



## M8

Example order code	BCC0FF8	BCC0FFE	BCC0KA1	BCC0KC3
Part number example	BCC W323-0000-10-001-BW8334-020	BCC W324-0000-10-003-BW8434-020	BCC W323-0000-10-004-BW8334-020	BCC W324-0000-10-008-BW8434-020
Part number	BCC W323-0000-10-001-BW8334-xxx	BCC W324-0000-10-003-BW8434-xxx	BCC W323-0000-10-004-BW8334-xxx	BCC W324-0000-10-008-BW8434-xxx

Cable	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)	TPE gray, welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	right-angle	right-angle	right-angle	right-angle
Number of conductors	3	4	3	4
Cable temperature, Fixed routing	-50...130 °C	-50...130 °C	-50...130 °C	-50...130 °C
Connection	M8	M8	M8	M8
Remarks	right-angle - open cable end	right-angle - open cable end	<b>with LED</b> , right-angle - open cable end	<b>with LED</b> , right-angle - open cable end

Connectivity

# SINGLE-ENDED CORDSETS

## FEP CABLES

Choose the right connection for reliable transmission of signals, data and power in your application. Various cable types and plug connectors are available.

**Weld spark immune FEP cable, black, highly flexible, temperature rated to 200°C continuous, weld beads up to 800°C**



FEP CABLES

M8

Example order code	BCC0FFH	BCC0FFM	BCC0KA3
Part number example	BCC W313-0000-10-001-TW0334-020	BCC W314-0000-10-003-TW0434-020	BCC W313-0000-10-004-TW0334-020
Part number	BCC W313-0000-10-001-TW0334-xxx	BCC W314-0000-10-003-TW0434-xxx	BCC W313-0000-10-004-TW0334-xxx

Cable	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	straight	straight	straight
Number of conductors	3	4	3
Cable temperature, Fixed routing	-100...200 °C	-100...200 °C	-100...200 °C
Connection	M8	M8	M8
Remarks	straight - open cable end	straight - open cable end	<b>with LED</b> , straight - open cable end

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

## FEP CABLES



## M12

Example order code	BCC0EFN	BCC0KC9	BCC0FFP	BCC0EFP
Part number example	BCC W415-0000-1A-003-TW0434-020	BCC W415-0000-1A-008-TW0434-020	BCC W324-0000-10-003-TW0434-020	BCC W425-0000-1A-003-TW0434-020
Part number	BCC W415-0000-1A-003-TW0434-xxx	BCC W415-0000-1A-008-TW0434-xxx	BCC W324-0000-10-003-TW0434-xxx	BCC W425-0000-1A-003-TW0434-xxx
Cable	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	straight	straight	right-angle	right-angle
Number of conductors	4	4	4	4
Cable temperature, Fixed routing	-100...200 °C	-100...200 °C	-100...200 °C	-100...200 °C
Connection	M12	M12	M12	M12
Remarks	straight - open cable end	<b>with LED</b> , straight - open cable end	right-angle - open cable end	right-angle - open cable end

## FEP CABLES



## M12/M8

Example order code	BCC0KCF	BCC0FFK	BCC0KA5	BCC0KC5
Part number example	BCC W425-0000-1A-010-TW0434-020	BCC W323-0000-10-001-TW0334-020	BCC W323-0000-10-004-TW0334-020	BCC W324-0000-10-008-TW0434-020
Part number	BCC W425-0000-1A-010-TW0434-xxx	BCC W323-0000-10-001-TW0334-xxx	BCC W323-0000-10-004-TW0334-xxx	BCC W324-0000-10-008-TW0434-xxx
Cable	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)	FEP, black, welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	right-angle	right-angle	right-angle	right-angle
Number of conductors	4	3	3	4
Cable temperature, Fixed routing	-100...200 °C	-100...200 °C	-100...200 °C	-100...200 °C
Connection	M12	M8	M8	M8
Remarks	<b>with LED</b> , right-angle - open cable end	right-angle - open cable end	<b>with LED</b> , right-angle - open cable end	<b>with LED</b> , right-angle - open cable end

## Connectivity

# SINGLE-ENDED CORDSETS

## PUR CABLES WITH LED

Choose the right connection for reliable transmission of signals, data and power in your application. Various cable types and plug connectors are available.

**Weld spark resistant PUR cable, orange, flexible up to 90°C (80°C UL) constant temperature. Especially approved by the German automobile industry for spot welding (by the time the weld beads reach the cable, the temperature is so low that the cable with its material composition can withstand it). Up to 5 mil. bending cycles in the drag chain (details in data sheet)**

**Only for applications with torsional movement**



### PUR CABLES WITH LED

Example order code	BCC0E67	BCC0EWC	BCC0CRN
Part number example	BCC M313-0000-10-004-PW3334-050	BCC M415-0000-1A-004-PW3334-050	BCC M415-0000-1A-010-PW3434-050
Part number	BCC M313-0000-10-004-PW3334-xxx	BCC M415-0000-1A-004-PW3334-xxx	BCC M415-0000-1A-010-PW3434-xxx

Cable	PUR, orange, drag chain compatible welding spark resistant Cable length: 2 m (020) - 5 m (050)	PUR, orange, drag chain compatible welding spark resistant Cable length: 2 m (020) - 5 m (050)	PUR, orange, drag chain compatible welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	straight	straight	straight
Number of conductors	3	3	4
Cable temperature, Fixed routing	-50...90 °C	-50...90 °C	-50...90 °C
Connection	M8	M12	M12
Remarks	straight - open cable end	straight - open cable end	straight - open cable end
ZIND number	2222433606		

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

PUR CABLES  
WITH LED

Example order code  
Part number example

BCC0E4L  
BCC M323-0000-  
10-004-PW3334-050

BCC0C7P  
BCC M425-0000-  
1A-004-PW3334-050

BCC0A0W  
BCC M425-0000-  
1A-010-PW3434-050

Part number

BCC M323-0000-  
10-004- PW3334-xxx

BCC M425-0000-  
1A-004-PW3334-xxx

BCC M425-0000-  
1A-010-PW3434-xxx

Cable	PUR, orange, drag chain compatible welding spark resistant Cable length: 2 m (020) - 5 m (050)	PUR, orange, drag chain compatible welding spark resistant Cable length: 2 m (020) - 5 m (050)	PUR, orange, drag chain compatible welding spark resistant Cable length: 2 m (020) - 5 m (050)
Connector configuration	right-angle	right-angle	right-angle
Number of conductors	3	3	4
Cable temperature, Fixed routing	-50...90 °C	-50...90 °C	-50...90 °C
Connection	M8	M12	M12
Remarks	right-angle - open cable end	right-angle - open cable end	right-angle - open cable end
ZIND number	2222433607		

## Connectivity

# DOUBLE-ENDED CORDSETS

## TPE

With our robust double-ended cordsets, signals, data and power are transmitted continuously and securely. Choose the right connection for your application in your industry. Various cable types and plug connectors are available to you.

**Weld spark immune TPE cable, gray, highly flexible, temperature rated to 125°C continuous, weld beads up to 800°C**



TPE DOUBLE-ENDED  
CORDSETS

Example order code	BCC0KAC	BCC0F6W
Part number example	BCC W323-W313-30-602-BW8334-020	BCC W313-W313-30-300-BW8334-020
Part number	BCC W323-W313-30-602-BW8334-xxx	BCC W313-W313-30-300-BW8334-xxx

Cable	TPE, black, welding spark resistant Cable length: 0.3m / 0.6m 003 / 006 1m / 1.5 m 010 / 015 2m / 5m 020 / 050	TPE, black, welding spark resistant Cable length: 0.3m / 0.6m 003 / 006 1m / 1.5 m 010 / 015 2m / 5m 020 / 050
Connector configuration	straight/straight	straight/straight
Number of conductors	3	3
Cable temperature, Fixed routing	-50...130 °C	-50...130 °C
Connection	M8 / M8	M8 / M8
Remarks	<b>with LED</b> , straight / straight	straight/straight

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

## Connectivity

# DOUBLE-ENDED CORDSETS

## FEP

With our robust double-ended cordsets, signals, data and power are transmitted continuously and securely. Choose the right connection for your application in your industry. Various cable types and plug connectors are available to you.

**Weld spark immune FEP cable, black, highly flexible, temperature rated to 200°C continuous, weld beads up to 800°C**

### FEP DOUBLE-ENDED CORDSETS



Example order code	BCC0KAK	BCC0FM3
Part number example	BCC W323-W313-30-602-TW0334-020	BCC W313-W313-30-300-TW0334-020
Part number	BCC W323-W313-30-602-TW0334-xxx	BCC W313-W313-30-300-TW0334-xxx

Cable	FEP, black, welding spark resistant Cable length: 0.3m / 0.6m 003 / 006 1m / 1.5 m 010 / 015 2m / 5m 020 / 050	FEP, black, welding spark resistant Cable length: 0.3m / 0.6m 003 / 006 1m / 1.5 m 010 / 015 2m / 5m 020 / 050
Connector configuration	straight/straight	straight/straight
Number of conductors	3	3
Cable temperature, Fixed routing	-100...200 °C	-100...200 °C
Connection	M8 / M8	M8 / M8
Remarks	<b>with LED</b> , straight / straight	straight/straight

**Balluff cables are approved by Brose. Other BCC variants with LED may also be used. This overview can be used as a selection guide. Other types can be found on our Homepage.**

# USEFUL LINKS

## WEBSITE

<http://www.balluff.com>

## PRODUCT OVERVIEW

<http://www.balluff.com/en/de/products/product-overview/>

## 2D AND 3D PRODUCT DATA

<http://balluff.partcommunity.com/3d-cad-models/balluff/?info=balluff>

## BROCHURES AND CATALOGUES

<http://www.balluff.com/en/de/downloads/brochures-and-catalogues/>

## SERVICE AND SUPPORT

<http://www.balluff.com/en/de/home/#/services/s2-4>

## BALLUFF WORLDWIDE

<https://www.balluff.com/en/de/home/#/company/s3-3>

## E-PLAN MAKROS

if available they can be found at the product links in the chapter product downloads.

## BROSE MANUFACTURER-SPECIFIC COMPONENT APPROVAL WELDING ON THE BALLUFF WEBSITE

<http://www.balluff.com/brose>

## APPROVAL LISTS

<http://www.balluff.com/en/de/downloads/approval-lists/#?data=category%3Dd0002>

This is only a selection of the Automotive Approval Lists. For more Approval Lists please contact your responsible contact person.

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HOW  
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