



POWERTRAIN

**Program Book / Guidelines for
Products by BALLUFF**

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Document Management Information

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			Renamed from Slot Sensor to UltraFrame Sensor NPN added L, W & R added	2.2.5	
			Pressure Sensors added	2.3	
			Handy Programmer removed Handheld Programming Unit for Offline Data collected added	2.6.10	
			Read/write heads adapter cable for handy programmer removed	2.6.11	
			Code tags for Tool and Pallet ID updated	2.7.8	
			Read/write head in combination with Profibus processor updated	2.6.5	
			Data Carriers added	2.7.9	
			Handy Programmer removed Handheld Programming Unit for offline data collection added	2.6.9	
			BIS M with IO-Link added	2.7.7	
			Valve Manifold Control added	2.10.5	
			IP 67 Power Supplies added	3.6	
			BLE 18M-PS-1P-E5-C-S4 obsolete replaced by BOS 18M-PA-IE20-S4 BLE 18M-PO-1P-E5-C-S4 obsolete - replaced by BOS 18M-PA-IE20-S4 BLS 18M-XX-1P-E5-L-S4 obsolete - replaced by BOS 18M-XT-IS20-S4	2.2.1	
			BOS 18M-PS-1RD-E5-C-S4 obsolete - replaced by BOS 18M-PA-IR20-S4 BOS 18M-PA-1QD-E5-C-S4 obsolete - replaced by BOS 18M-PA-PR20-S4	2.2.3	
			BIS C-306-10 obsolete - replaced by BIS C-306-PU1-10 BIS C-306-01 obsolete - replaced by BIS C-306-PU1-01 BIS C-300-10 obsolete - replaced by BIS C-300-PU1-10 BIS C-310-10 obsolete - replaced by BIS C-310-PU1-10	2.6.6	
			BIS S-108-32/L obsolete - replaced by BIS S-108-42/L	2.8.3	
			BIS S-501-PU1-25 obsolete - replaced by BIS Z-501-PU1-25/E	2.8.4	

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			BNI PBS-504-000-K008 obsolete - replaced by BNI PBS-504-001-K008 BNI PBS-506-000-Z011 obsolete - replaced by BNI PBS-507-001-Z011 BNI PBS-507-000-Z011 obsolete - replaced by BNI PBS-507-001-Z011	2.11.1	
			BNI PNT-104-000-Z002 obsolete - replaced by BNI PNT-104-001-Z002 BNI PNT-302-000-Z002 obsolete - replaced by BNI PNT-302-105-Z015 BNI PNT-206-000-Z002 obsolete - replaced by BNI PNT-206-001-Z002 BNI PNT-502-000-Z002 obsolete - replaced by BNI PNT-502-105-Z015	2.11.2	
			BOS 12,0-BS-1 obsolete - replaced by BOS 12,0-KB-1	3.2.2	
			BKS-S 99-00 obsolete - replaced by BCC A335-0000-10-000-61X5A5-000 BKS-S 98-00 obsolete - replaced by BCC A335-0000-20-000-61X5A5-000	3.7.2	
			BCC M414-E814-BG-RM003-000 obsolete - replaced by BCC M414-E814-BG-RM013-000 BCC M424-E814-BG-RM003-000 obsolete - replaced by BCC M414-E814-BG-RM013-000	3.7.3	
			RFID for EtherNet/IP added	2.8	
			EtherNet/IP added	2.11.4	
			BNI PBS-104-000-Z001 replaced by BNI PBS-104-101-Z001 BNI PBS-302-000-Z001 replaced by BNI PBS-302-101-Z001 BNI PBS-202-000-Z001 replaced by BNI PBS-202-101-Z001 BNI PBS-502-000-Z001 replaced by BNI PBS-502-101-Z001	2.11.1	
			BNI PNT-104-001-Z002 replaced by BNI PNT-104-105-Z015	2.11.2	
			BIS C-300-PU1-05 added	2.6.6	
			Read/Write Heads added	2.7.11	
			BCC M415-0000-1°-003-PX0434-100 added	3.5.1	
			BNI EIP-950-000-Z009 added	2.11.4.1	
2012-06-11	G1.3D	CL-E_Balluff_G1.3D	Pressure Sensors removed	2.4	
			BNI EIP-950-000-Z009 removed	2.11.4.1	
			BIS M-143-02/A-M8 updated to BIS M-143-02/A-T8-GY	2.6.9	
			Connectors removed	3.5	
			IP67 Power Supplies Removed	3.6	
			Accessories for ProfiNet removed	3.7.3	
			Accessories for EtherNet/IP – removed	3.7.4	
2012-07-23	G1.3	CL-E_Balluff_G1.3	Approval of draft items		
2013-11-26	G1.4D	CL-E_Balluff_G1.4D	BES M12ME-POC40B-S04G-003 added	2.1.5	
			BOS 18M-PUV-RE30-S4 added BOS 18M-X-RS30-S4 added BOS 18MR-PA-LE10-S4 added BOS 18MR-XT-LS10-S4 added	2.2.1	
			BGL 50°-007-S49 added	2.2.5.1	

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			Dimensions for BIS M-301-001-S115 corrected		
			Antenna type for BIS M-351-001-S115 corrected	2.6.7	
			BIS M-341-001-S115 added		
			Part number BIS M-107-03/L-H200 corrected	2.6.9	
			BNI EIP-307-100-Z014 added	2.10.4.1	
			Smart Light Added	2.10.5	

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1 Introduction

1.1 Scope Of Document

Balluff has worked closely with GM POWERTRAIN to develop this Program Book. The intent is that the contents of this book shall be used as a guideline for the proper selection and use of Balluff products. Equipment suppliers who are bidding on new GMPT engine programs are expected to use this book as a reference while preparing their quotations for General Motors.

1.2 Company Overview

Balluff is a global manufacturer of sensor components used extensively in the automotive assembly and machine tool industries. Balluff is dedicated To Our Customer's Success and provides the benefits of a Global manufacturer with the local presence of factory support personal in nearly every industrialized country in the world.

1.3 Content Explanation

The products listed are those which should be considered as long as they are applied properly for the application. If the products listed do not suit the needs of a special application, please contact the support personnel listed in section 1.6 of this document.

1.4 Further Technical Information

Complete and current data sheets as well as 2D and 3D drawings are available for components listed in this document. Proper application and use of these components is the responsibility of the user of this document.

EPLAN Macros are available on www.balluff.de/eplan

Application assistance is available by contacting the support personnel listed in Section 3 of this document, or by visiting the www.balluff.us website.

1.5 General Definition

Connector M12 is preferred by GMPT, M8 shall be used ONLY if, due to mechanical reasons, sensors with M12 connectors cannot be used.

Cables for Sensors with LED included do not need additional LEDs in the Cable connector

1.6 Balluff Worldwide

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2 Released Parts

2.1 Inductive Sensors

2.1.1 Cylindrical Inductive Sensors for grippers and clamping devices



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO
Protected against polarity reversal	Yes
Function indicator	LED

Balluff part number	Switching distance	Mounting	Housing size	Connection	
BES 516-3007-G-E4-C-S4-00,2	1,5 mm	flush	D4x27	Connector M12 with cable	
BES 516-371-G-E5-C-S49	2,0 mm	flush	D6,5x44	Connector M8	

2.1.2 Block style Inductive Sensors



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO / *NO/NC
Protected against polarity reversal	Yes
Function indicator	LED

Balluff part number	Switching distance	Mounting	Housing size	Connection	
BES Q08MG-PSC30B-S49G	3 mm	quasi flush	8x8x59	Connector M8	
BES 516-347-MO-C-S4-00,2	5 mm	flush	25x50x10	Connector M12 with cable	
BES R01ZC-PAC70B-BP00.5-GS04*	7 mm	flush	20x32x8	Connector M12 with cable	

2.1.3 Inductive Ring Sensor



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO
Short circuit protected	Yes
Function indicator	LED
Connection	Connector M12

Balluff part number	Ring inside diameter	Housing size	
BES IKVS-0__23-G-S4	Ø 10,1 / 15,1 / 25,1 mm	35x60x20	

2.1.4 M8 Cylindrical Inductive Sensors, standard



Supply voltage	10/12...30 V DC
Output circuits	PNP
Switching function	NO / *NC
Protected against polarity reversal	Yes
Function indicator	LED

Balluff part number	Switching distance	Mounting	Housing size	Connection	
BES M08EE-PSC15B-S04G-003	1,5 mm	flush	M8x1x43	Connector M12	
BES M08EE-PSC20B-S04G-003	2 mm	flush	M8x1x43	Connector M12	
BES M08MH1-PSC30B-S04G	3 mm	quasi flush	M8x1x66	Connector M12	
BES M08MI-PSC40B-S49G	4 mm	quasi flush	M8x1x59	Connector M8	
BES M08EH-POC15B-S04G*	1,5 mm	flush	M8x1x58	Connector M12	
BES M08MI-PSC40B-BP00,2-GS04	4 mm	quasi flush	M8x1x51,5	Connector M12 with 20cm cable	

2.1.5 M12 Cylindrical Inductive Sensors, standard



Supply voltage	10/12...30 V DC
Output circuits	PNP
Switching function	NO / *NC
Protected against polarity reversal	Yes
Function indicator	LED
Connection	M12

Balluff part number	Switching distance	Mounting	Housing size	
BES 516-370-S4-C*	2 mm	flush	M12x1x70	
BES M12ME-POC20B-S04G-003*	2 mm	flush	M12x1x45	
BES M12MI-PSC20B-S04G	2 mm	flush	M12x1x65	
BES M12ME-PSC20B-S04G-003	2 mm	flush	M12x1x45	
BES M12MI-PSC40B-S04G	4 mm	flush	M12x1x65	
BES M12ME-PSC40B-S04G-003	4 mm	flush	M12x1x45	
BES M12MG1-PSC60B-S04G	6 mm	quasi flush	M12x1x60	
BES M12MI-PSH80B-S04G	8 mm	quasi flush	M12x1x65	
BES M12MD-PSC80F-S04G	8 mm	non flush	M12x1x50	
BES M12ME-POC40B-S04G-003*	4mm	flush	M12x1x45	

2.1.6 M18 Cylindrical Inductive Sensors, standard



Supply voltage	10/12...30 V DC
Output circuits	PNP
Switching function	NO / *NC
Protected against polarity reversal	Yes
Function indicator	LED

Balluff part number	Switching distance	Mounting	Housing size	Connection	
BES M18MI-PSC50B-S04G	5 mm	flush	M18x1x65	Connector M12	
BES M18ME-PSC50B-S04G-003	5 mm	flush	M18x1x44,5	Connector M12	
BES M18MI-PSC80B-S04G	8 mm	flush	M18x1x65	Connector M12	
BES M18ME-PSC80B-S04G-003	8 mm	flush	M18x1x44,5	Connector M12	
BES M18MD1-PSC12B-S04G	12 mm	quasi flush	M18x1x48,5	Connector M12	
BES 516-367-S4-C*	5 mm	flush	M18x1x83	Connector M12	
BES M18ME-POC50B-S04G-003*	5 mm	flush	M18x1x44,5	Connector M12	

2.1.7 M30 Cylindrical Inductive Sensors, standard



Supply voltage	10/12...30 V DC
Output circuits	PNP
Switching function	NO / *NC
Protected against polarity reversal	Yes
Function indicator	LED

Balluff part number	Switching distance	Mounting	Housing size	Connection	
BES M30MI-PSC10B-S04G	10 mm	flush	M30x1,5x65	Connector M12	
BES M30ME-PSC10B-S04G-003	10 mm	flush	M30x1,5x44,5	Connector M12	
BES M30MI-PSC15B-S04G	15 mm	flush	M30x1,5x65	Connector M12	
BES M30ME-PSC15B-S04G-003	15 mm	flush	M30x1,5x44,5	Connector M12	
BES M30MI1-PSC22B-S04G	22 mm	quasi flush	M30x1,5x73,5	Connector M12	
BES 516-3028-S4-C*	10 mm	flush	M30x1,5x83	Connector M12	
BES M30ME-POC10B-S04G-003*	10 mm	flush	M30x1,5x44,5	Connector M12	

2.1.8 PROXINOX®, Inductive Tubular Sensor

Extreme & Harsh Wet Conditions –



Supply voltage	10...30 V DC
Output	PNP normally open
Temperature Range	-40°C to 85°C
Connection	M12 connector
IEC 529 Protection	IP 68

Balluff part number	Switching distance	Mounting	Housing size	Function indication	
BES 515-325-S4-C	2 mm	flush	M12x1x70	LED	
BES M12EE-PSC40B-S04G	4 mm	flush	M12x1x45	LED	
BES 515-326-S4-C	5 mm	flush	M18x1x83	LED	
BES 515-360-S4-C	8 mm	non-flush	M18x1x83	LED	
BES 515-327-S4-C	10 mm	flush	M30x1,5x83	LED	
BES 515-362-S4-C	15 mm	non-flush	M30x1.5x83	LED	

2.1.9 Tubular Inductive Sensors, Analog Output



Mounting	Flush
Connection	M12 connector

Balluff part number	Housing size	Output Signal	Sensing Range	
BAW M18ME-ICC50B-S04G	M18x1x44,5	Current 4...20 mA	1...5 mm	
BAW M08EI-UAD15B-BP0_-_-GS04	M8x1x51,5	Voltage 0...10 V	0,5...1,5 mm	
BAW MKZ-471.19-S4	PG36x82	Voltage 0...10 V	0...20 mm	

2.1.10 Cylindrical Inductive Sensors, “Steelface”



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO
Protected against polarity reversal	Yes
Connection	Connector M12
Function indicator	LED
Specials	Housing material and material of sensing range: Stainless steel

Balluff part number	Switching distance	Housing size	Target material	Mounting	
BES M12EG1-PSC20S-S04G-S	2 mm	M12x1x65	Ferrous	flush	
BES M12EG1-PSC20N-S04G-S	2 mm	M12x1x65	Nonferrous	flush	
BES M12EI-PSC40B-S04G-S	4 mm	M12x1x65		flush	
BES M12EG1-PSC60Z-S04G-S11	6 mm	M12x1x60		quasi flush	
BES M18EG1-PSC50S-S04G-S	5 mm	M18x1x62,5	Ferrous	flush	
BES M18EG1-PSC50N-S04G-S	5 mm	M18x1x62,5	Nonferrous	flush	
BES M18EG1-PSC10Z-S04G-S11	10 mm	M18x1x63,5		quasi flush	
BES M18EF1-PSC20F-S04G-S	20 mm	M18x1x63,5		non flush	
BES M30EG1-PSC80S-S04G-S	8 mm	M30x1,5x66	Ferrous	flush	
BES M30EG1-PSC80N-S04G-S	8 mm	M30x1,5x66	Nonferrous	flush	
BES M30EG1-PSC20Z-S04G-S11	20 mm	M30x1,5x63,5		flush	
BES M30EE1-PSC40F-S04G-S	40 mm	M30x1,5x63,5		non flush	

2.1.11 Inductive Sensors, quadraform housing, Serie MAXISENSOR



Supply voltage	10...55 V DC
Output circuits	PNP
Switching function	NO/NC
Short circuit protected	Yes
Function indicator	LED
Connection	Connector M12

Balluff part number	Switching distance	Mounting	Housing size	
BES Q80KA-PSH40B-S04Q	40 mm	flush	80x84x40	
BES Q80KA-PSH50F-S04Q	50 mm	Non flush	80x84x40	

2.1.12 Inductive Sensors, quadraform housing, Serie UNICOMPACT



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO/NC / *NO
Short circuit protected	Yes
Function indicator	LED
Connection	Connector M12

Balluff part number	Switching distance	Mounting	Housing size		
BES Q40KFU-PAC20A-S04G	20 mm	flush	40x40x62	Factor 1	
BES Q40KFU-PSC35Z-S04G-011*	35 mm	One side flush	40x40x62	Factor 1	
BES Q40KFU-PAC40E-S04G	40 mm	non flush	40x40x62	Factor 1	

2.2 OPTOELECTRONIC SENSORS

2.2.1 Thru-beam



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO / *NO/NC / **NC
Protected against polarity reversal	Yes
Connection	Connector M12
Function indicator	LED

Balluff part number	Sensing range	Housing size	Output function	Type	
BLE 12M-PA-1PD-S4-C	0...5 m	M12x1x70	Light on/dark on	Receiver	
BLS 12M-XX-1RD-S4-L	0...5 m	M12x1x70		Emitter	
BLE 6K-PU-1E-S49-C	0...6 m	32x21x12	Light on/dark on	Receiver	
BLS 6K-XX-1E-S49	0...6,5 m	32x21x12		Emitter	
BOS 18M-PA-IE20-S4	0...25 m	M18x1x75	Dark on	Receiver	
BOS 18M-XT-IS20-S4	0...25 m	M18x1x75	Infrared	Emitter	
BOS 21M-PA-IE10-S4*	0...20 m	42,5x50x15	Light on/dark on	Receiver	
BOS 21M-XT-IS11-S4	0...20 m	42,5x50x15		Emitter	
BOS 12M-PA-LE10-S4	0...30 m	M12x1x70	Light on/dark on	Receiver	
BOS 12M-XT-LS12-S4	0...30 m	M12x1x70	Laser red light	Emitter	
BOS 18M-PA-LE10-S4	0...60m	M12x1x81,5	Light on/dark on Laser red light	Receiver	
BOS 18M-XT-LS10-S4	0...60 m	M18x1x71,5	Laser red light	Emitter	
BOS 18M-PUV-RE30-S4*	0...20m	M18x1x75	LED, red light	Receiver	
BOS 18M-X-RS30-S4	0...20m	M18x1x75	LED, red light	Emitter	
BOS 18MR-PA-LE10-S4	0...50m	M18x1x79	Laser red light	Receiver	
BOS 18MR-XT-LS10-S4	0...50m	M18x1x83.5	Laser red light	Emitter	

2.2.2 Diffuse

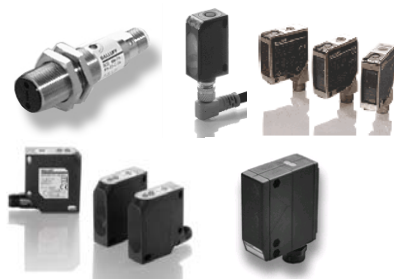


Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO / *NO/NC
Protected against polarity reversal	Yes
Connection	Connector M12
Function indicator	LED

Balluff part number	Sensing range	Housing size	Output function		
BOS 12M-PU-1HA-S4-C*	10...60 mm	M12x1x74	Light on/dark on	BGS	
BOS 12M-PS-1YA-S4-C	1...100 mm	M12x1x70	Light on		
BOS 6K-PU-1HA-S49-C*	25...100 mm	32x21x12	Light on/dark on	BGS	
BOS 21M-PUS-LH12-S4*	50...100 mm	42,5x50x15	Light on/dark on	BGS	
BOS 18M-PA-1HA-S4-C*	40...120 mm	M18x1x80	Light on/dark on	BGS	
BOS 26K-PA-1LHB-S4-C*	30...150 mm	50x50x17	Light on/dark on	BGS	
BOS 21M-PUS-RV13-S4*	70...200 mm	42,5x50x15	Light on/dark on	BGS&VGS	
BOS 18M-PA-RH22-S4*	30...300 mm	M18x1x75	Light on/dark on	BGS	
BOS 26K-PA-1HC-S4-C*	30...300 mm	50x50x17	Light on/dark on	BGS	
BOS 18M-PA-1PD-E5-C-S4*	0...400 mm	M18x1x69	Light on/dark on		
BOS 12M-PS-1PD-S4-C	1...400 mm	M12x1x70	Light on		
BOS 21M-PA-LD10-S4*	0...600 mm	42,5x50x15	Light on/dark on		
BOS 26K-PA-1IE-S4-C*	150...600 mm	50x50x17	Light on/dark on	BGS	
BOS 21M-PA-RD10-S4*	0,01...1 m	42,5x50x15	Light on/dark on		
BOS 65K-5-M110T-2P-S4*	0,2...1,1 m	85x73x32	Light and dark	BGS	
BOS 50K-PS-RH12-S4	200...2000 mm	78,4x60x28,5	Dark on	BGS	
BOS 21M-PA-ID10-S4*	0,05...2 m	42,5x50x15	Light on/dark on		

BGS = Background suppression

2.2.3 Retroreflective



Supply voltage	10...30 V DC
Output circuits	PNP
Switching function	NO / *NO/NC / **NC
Protected against polarity reversal	Yes
Connection	Connector M12
Function indicator	LED

Balluff part number	Sensing range	Housing size	Output function	
BOS 12M-PS-1QA-S4-C	0...1,5 m	M12x1x70	Dark on	
BOS 6K-PU-1QC-S49-C*	0,05...3 m	32x20x12	Light on/dark on	
BOS 18M-PA-IR20-S4	0...10 m	M18x1x75	Light on/dark on	
BOS 21M-PA-PK10-S4*	0...4 m	42,5x50x15	Light on/dark on	
BOS 18M-PA-PR20-S4	0...7 m	M18x1x75	Light on/dark on	
BOS 21M-PA-PR10-S4*	0,1...8 m	42,5x50x15	Light on/dark on	
BOS 18M-PA-LR10-S4*	0,1...16m	M18x1x72	Light on/dark on	
BOS 26K-PA-1LQP-S4-C*	0...20 m	50x50x17	Light on/dark on	
BOS 21M-PA-LR10-S4*	0,1....20 m	42,5x50x15	Light on/dark on	

2.2.4 Laser-Distance sensors



Supply voltage	18...30 V DC
Emitter type	Laser light red, Class 2
Short circuit protected	Yes
Connection	M12 connector

Balluff part number	Sensing range	Analog output	Housing size	
BOD 66M-LB04-S92-C	200...2000 mm	4...20 mA	73x90x30	
BOD 63M-LB04-S115	200...6000 mm	4...20 mA	70x90x35	
BOD 26K-LB04-S115-C	30....100 mm	4...20 mA	50x50x17	

2.2.5 UltraFrame™ Sensors

2.2.5.1 C-Frame



Supply voltage	10...30 V DC
Output function	Light-on/dark-on selectable
Light Source	Red Light
Short circuit protected	Yes
Connection	M8 connector

Balluff part number	Slot spacing	Housing size	Output	
BGL 10A-001-S49	10 mm	45x30x10	PNP	
BGL 80A-001-S49	80 mm	79x100x10	PNP	
BGL 220A-001-S49	120 mm	144x200x10	PNP	
BGL 10A-002-S49	10 mm	45x30x10	NPN	
BGL 80A-002-S49	80 mm	79x100x10	NPN	
BGL 220A-002-S49	120 mm	144x200x10	NPN	
BGL 50A-007-S49	50 mm	79x70x10	PNP	

2.2.5.2 L-Frame



Supply voltage	10...30 V DC
Output function	Light-on/dark-on selectable
Short circuit protected	Yes
Light Source	Red Light
Connection	M8 connector

Balluff part number	Beam H x W	Housing size	Output	
BWL 4040D-R011-S49	40x40 mm	75x75x10	PNP	
BWL 6868D-R011-S49	68x68 mm	105x105x10	PNP	
BWL 110110D-R011-S49	110x110 mm	150x150x10	PNP	
BWL 4040D-R012-S49	40x40 mm	75x75x10	NPN	
BWL 6868D-R012-S49	68x68 mm	105x105x10	NPN	
BWL 110110D-R012-S49	110x110 mm	150x150x10	NPN	

2.2.5.3 W-Frame



Supply voltage	10...30 V DC
Output function	Light-on/dark-on selectable
Short circuit protected	Yes
Light Source	Infrared
Connection	M8 connector

Balluff part number	Sensing Depth x Width	Housing size	Output	
BOW A-0408-PS-C-S49	40x80 mm	173x78x18	PNP	
BOW A-1608-PS-C-S49	160x80 mm	130x210x18	PNP	
BOW A-1616-PS-C-S49	160x160 mm	210x210x18	PNP	
BOW A-0408-NS-C-S49	40x80 mm	173x78x18	NPN	
BOW A-1608-NS-C-S49	160x80 mm	130x210x18	NPN	
BOW A-1616-NS-C-S49	160x160 mm	210x210x18	NPN	

2.2.5.4 R-Frame

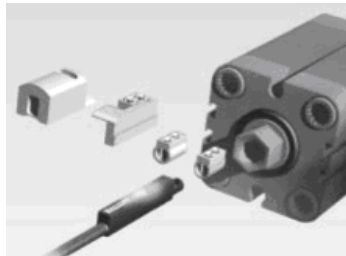


Supply voltage	10...30 V DC
Output function	Light-on/dark-on selectable
Short circuit protected	Yes
Light Source	Infrared
Connection	M12 connector

Balluff part number	Leg Length	Housing size	Output	
BWL 2222C-001-S4	22x22 mm	83.5x45.4	PNP	
BWL 4241A-001-S4	42x41 mm	110x66	PNP	
BWL 4260A-001-S4	42x60 mm	106x90	PNP	

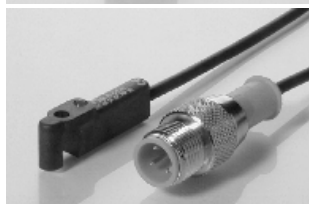
2.3 Magnetic Field Sensors

NOTE: engineering approval required



For PN Selection assistance, Visit [Balluff Pneumatic Cylinder Sensor Selector Center](#)

2.3.1 Magnetic Field Sensors for cylinders, Series 305



Series	BMF 305
Output circuit	PNP
Switching function	Normally-open

Mounting brackets are available for installing on virtually any cylinder size and type.

Balluff part number	Connection		
BMF 305M-PS-C-2-S4	Connector M12		
BMF 305M-PS-W-2-S4	Connector M12	Weld - immune	
BMF 305K-PS-C-2-S4-00,2	Cable 200 mm with M12 connector		
-Engineering Approval Required			

2.3.2 Magnetic Field Sensors for cylinders, Series 307



Series	BMF 307
Output circuit	PNP
Switching function	Normally-open

- Rock-solid" hold in the slot
- Fast, simple mounting and adjustment
- Flush mountable, the sensor disappears into the slot
- Mounting brackets are available

Balluff part number	Connection		
BMF 307K-PS-C-2-S4-00,2	Connector M12-Pigtail		
-Engineering Approval Required			

2.3.3 Magnetic Field Sensors for cylinders, V-twin Versions



Series	BMF 305, BMF 307
Output circuit	PNP
Switching function	Normally-open

- Reduces time and cost
- Just one slot for two sensors
- Flexibly detect multiple positions on pneumatic grippers and cylinders

Balluff part number	Connection		
BMF 305K-PS-C-2- SA95-S4-00,3	Y- Connector M12		
BMF 307K-PS-C-2-SA95-S4-00,3	Y- Connector M12		
-Engineering Approval Required			

2.3.4 Magnetic Field Sensor for cylinders, Series 32



Series	BMF 32
Output circuit	PNP
Switching function	Normally-open

Mounting brackets are available for installing on virtually any cylinder size and type.

Balluff part number	Connection	
BMF 32M-PS-C-2-S4	Connector M12	

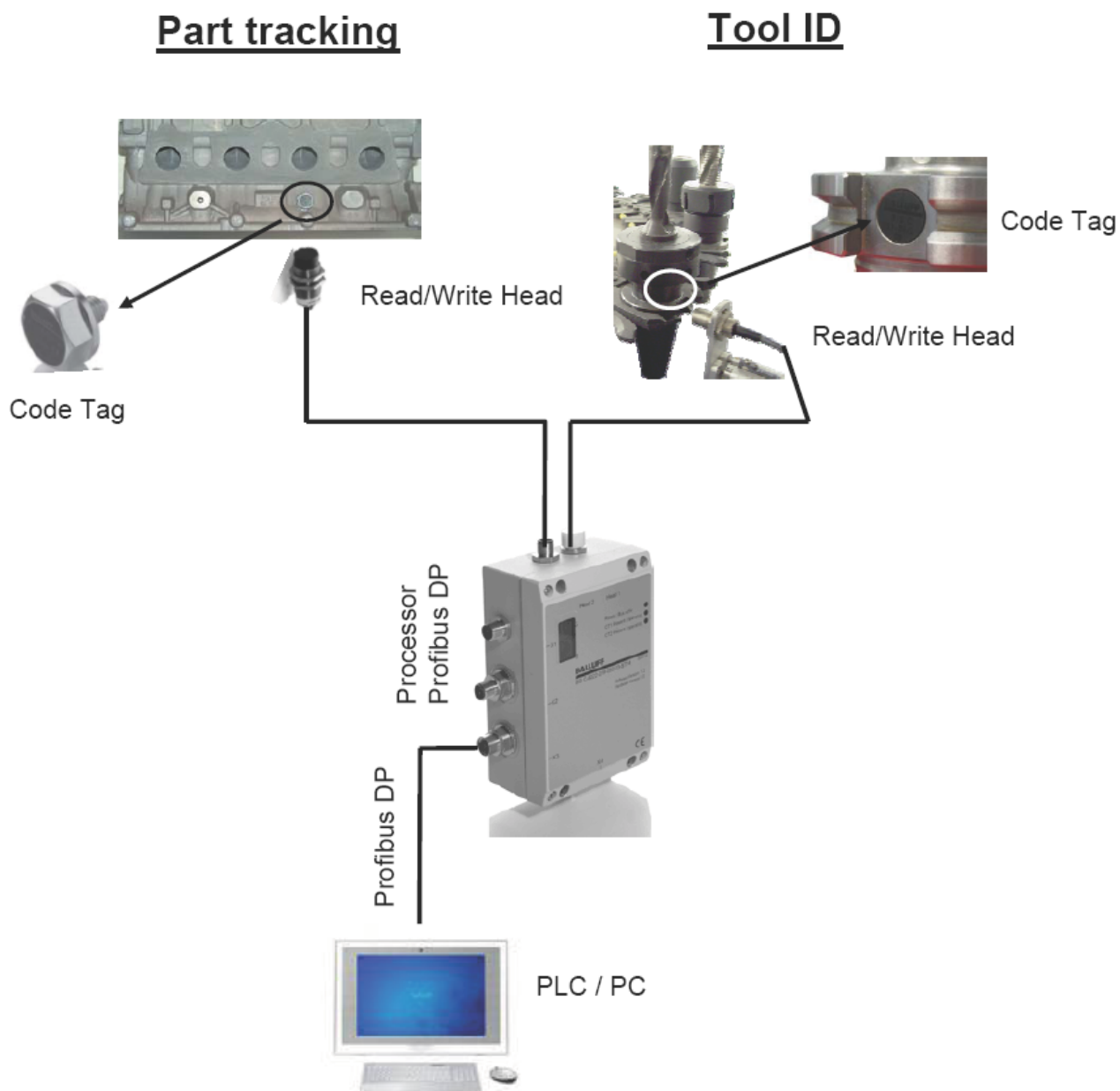
-Engineering Approval Required

2.4 RFID Identification Systems BIS C, M, S General Overview

Contact Balluff Support Contacts (Section 1.5) for Application Assistance on selection/installing of the correct RFID equipment and Balluff engineering sign-off.

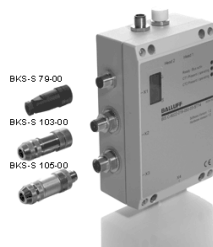
For detail information see www.balluff.us

Application: Part tracking & Tool ID



2.5 Balluff RFID – BIS C for Tool Id / Pallet Id and Part Tracking

2.5.1 Processor Simultaneous Mode; Metal housing – PROFIBUS –DP



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Metal

Balluff part number		
BIS C-6022-019-050-03-ST14	Profibus – DP	

2.5.2 Processor Simultaneous Mode; Plastic housing – PROFIBUS –DP



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Plastic

Balluff part number		
BIS C-6002-019-650-03-ST11	Profibus – DP	

2.5.3 Processor ; Plastic housing – Serial Interface RS232



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Plastic
GMPT Engineering Approval required	

Balluff part number		
BIS C-600-007-650-00-KL1	With terminals	

2.5.4 Processor Simultaneous Mode; Metal housing – PROFINET



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Metal

Balluff part number		
BIS C-6028-048-050-06-ST22	ProfiNet	

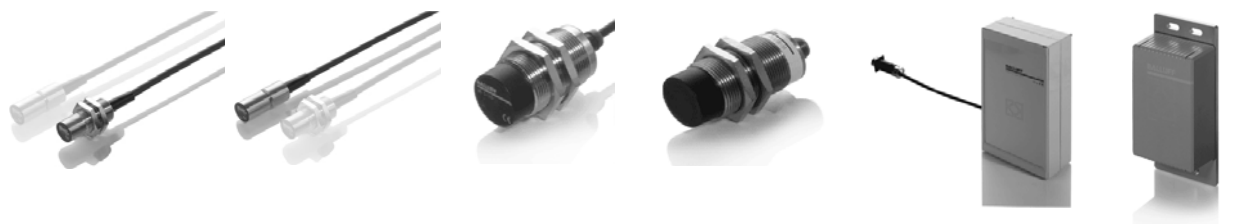
2.5.5 Processor Simultaneous Mode; Plastic housing – PROFINET



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Plastic

Balluff part number		
BIS C-6008-048-650-06-ST23	ProfiNet	

2.5.6 Read / Write Head



BIS C-306-PU-10

BIS C-300-10

BIS C-310-10

BIS C-323-/_ _S4

BIS C-350-00,3

BIS C-351-PU1-/_ _

Balluff part number	Dimension	Housing material	Antenna type	
BIS C-306-PU1-10	M16x1, 10 meter cable	CuZn nickel plated	round	
BIS C-306-PU1-01	M16x1; 1 meter cable	CuZn nickel plated	round	
BIS C-300-PU1-05	Ø14.5, 5 meter cable	CuZn nickel plated	round	
BIS C-300-PU1-10	Ø14.5, 10 meter cable	CuZn nickel plated	round	
BIS C-310-PU1-10	M30x1,5x70, 10 meter cable	CuZn nickel plated	round	
BIS C-323-/_ _S4	M30x1,5, M12 connector	X8CrNiS	round	
BIS C-350-00,3	240x120x60	PC	rod	
BIS C-351-PU1-/_ _	170x80x50	POM	rod	

2.5.7 Connector cable with Connectors for R/W Heads



Protection per IEC 60529

IP 67

Connection

M12 Connector on both sides

Cable length

10 m

Balluff part number	Type	
BIS C-505-PU-10; ...-PU-01	straight, 10 m or 1 m	
BIS C-505-PU1-10; ...-PU1-05	straight, 10 m or 5 m; drag chain compatible	
BIS C-506-PU-10; ...-PU-01	angle 10 m or 1 m	
BIS C-506-PU1-10; ...-PU1-05	straight, 10 m or 5 m; drag chain compatible	

2.5.8 Code tags for Tool ID and Pallet ID



BIS C-140-xx/L-M8



BIS C-122-xx/L for Tool ID



BIS C-150-xx/A

Balluff part number	Dimension	Housing material	Memory size	Antenna type	
BIS C-130-05/L	Ø 16x7	EP	1023 bytes	round	
BIS C-140-05/L-M8	Ø 22x21 M8 screw thread	42CrMoV	1023 bytes	round	
BIS C-140-11/L-M8	Ø 22x21 M8 screw thread	42CrMoV	2047 bytes	round	
BIS C-122-04/L *	Ø 10x4,5	EP	511 bytes	round	
BIS C-122-11/L	Ø 10x4,5	EP	2047 bytes	round	
BIS C-150-05/A	80x40x22	POM	1023 bytes	rod	
BIS C-150-11/A	80x40x22	POM	2047 bytes	rod	
BIS C-150-32/A	80x40x22	POM	8 kByte	rod	

* GM global standard for Tool ID

2.5.9 Connectors



BKS-S 79-00



BKS-S 84-00



BKS-S103-00



BKS-S105-00

Balluff part number	Type	
BKS-S 79-00	For connecting to BIS C-__ __ processors; 5 pin, female	
BKS-S 84-00	For connecting to BIS C-620; 9 pin, female	
BKS-S103-00	For connecting PROFIBUS-DP; 5 pin, female	
BKS-S105-00	For connecting PROFIBUS-DP; 5 pin, male	

2.5.10 Handheld Programming Units for Offline Data Collection

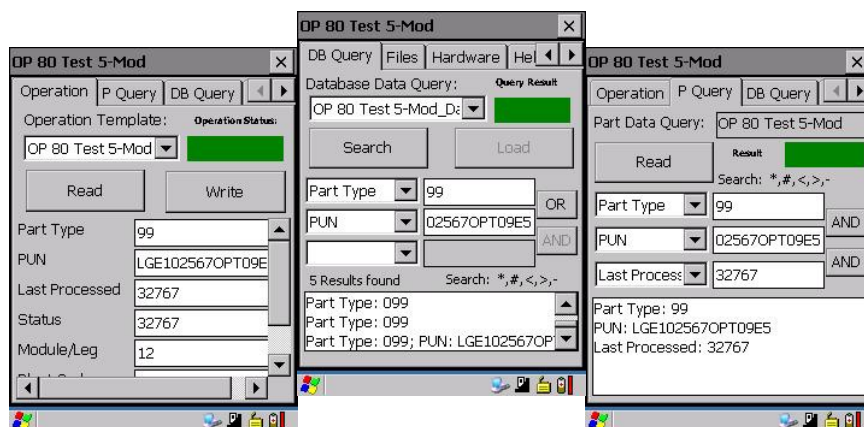


Dimensions 265x100x55mm

BIS Template Software



BISPortal Software



- Divide and format tag data on-screen
- Customize data row names on-screen
- Read and write using customized screen
- Multiple template access with barcode* support
- Custom Part and onboard database queries
- Auto-save tag read option

*Consult factory for Direct Part Mark applications

Programmer	Version	Software	
BIS C-873-1-008-X-000-3001	for BIS C tool tag series	with template software	
BIS C-873-1-008-X-000-3002	for BIS C tool tag series	with BISPortal software	
BIS C-870-1-008-X-000-3001	standard flat handheld	with template software	
BIS C-870-1-008-X-000-3002	standard flat handheld	with BISPortal software	

*Consult factory for specifications, software display options and hardware options.

2.6 Balluff RFID – BIS M for Pallet Id and Part Tracking

2.6.1 Processor; Metal housing – PROFIBUS -DP



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Metal
GMPT Engineering Approval required (to be common for tool id and pallet)	

Balluff part number		
BIS M-6022-019-050-03-ST14	Profibus – DP	

2.6.2 Processor; Plastic housing – PROFIBUS -DP



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Plastic ABS

Balluff part number		
BIS M-6002-019-050-03-ST11	Profibus – DP	

2.6.3 Processors Simultaneous Mode; Metal housing – PROFINET



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Housing material	Metal
Detail information about Industrial RFID you will find in the Balluff brochure “Industrial RFID Systems BIS M”	

Balluff part number		Function	
BIS M-6028-048-050-06-ST22	ProfiNet	read / write	

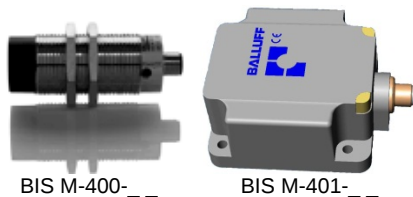
2.6.4 Ethernet TCP/IP Processor



Supply voltage	24 V DC
Protection per IEC 60529	IP 67
Function	read / write
Housing material	Al

Balluff part number		
BIS M-407-039-003-06-S115	Ethernet TCP/IP	

2.6.5 Processors with Integrated Read/Write Head, Serial RS 232



Supply voltage	24 V DC
Protection per IEC 60529	IP 67
Function	read / write

Balluff part number	Housing material	Dimension	
BIS M-400-007-001-00-S115	CuZn nickel plated	M30x1,5x83	
BIS M-401-007-001-00-S115	PBT	80x80x40	

2.6.6 Read / Write Head in combination with Profibus processor



BIS M-300-__



BIS M-301-__



BIS M351-__



BIS M-350-__

Balluff part number	Dimension	Housing material	Antenna type	Connection	
BIS M-300-001-S115	M30x1,5x83	CuZn nickel plated	round	M12 Connector	
BIS M-301-001-S115	80x84,5x40	PBT	round	M12 Connector	
BIS M-351-001-S115	80x84,5x40	PBT + ASA	rod	M12 Connector	
BIS M-350-001-S115	240x120x60	PC	rod	M12 Connector	
BIS M-340-001-S115	240x120x60	PC	high temp	8-pole Connector	
BIS M-341-001-S115	80x84,5x40	PBT	round	8-pole Connector	

2.6.7 BIS M with IO-Link



Balluff part number	Description	
BIS M-400-045-002-07-S4	Read/Write head, M30x1.5, CuZn nickel plated, round antenna	
BIS M-401-045-001-07-S4	Read/Write head, 80x80x40, PBT, round antenna	
BIS M-402-045-004-07-S4	Read/Write head, 25x50x10, AIM gSi 0.5/ABS-GF16, round antenna	
BIS M-402-045-002-07-S4	Read/Write head, M18x1, AIMgSiO.S/CuZn nickel plated, round antenna	
BIS M-451-045-001-07-S4	Read/Write head, 80x80x40, PBT, rod antenna	

2.6.8 Code tags for Tool and Pallet Identification



BIS M-101-__



BIS M102-__



BIS M-120-__



BIS M-150-__



BIS M-151-__

Balluff part number	Dimension	Housing material	Memory size	Antenna type	
BIS M-101-01/L	Ø 30x1,6	EP	752 bytes	round	
BIS M-102-01/L	Ø 50x1,6	EP	752 bytes	round	
BIS M-120-01/L	54x85,6x0,76	PVC	752 bytes	round	
BIS M-150-02/A	40x22x6,5	PPS GF40	2000 bytes	rod - horizontal	
BIS M-151-02/A	40x22x6,5	PPS GF40	2000 bytes	rod - vertikal	
BIS M-153-02/A	80x40x22	POM	2000 bytes	rod – long range	
BIS M-107-03/L-H200	40x22x6.5	PPS-GF40	112 bytes	high temp.	

2.6.9 Data Carriers



Balluff part number	Description	
BIS M-140-02/A-M6	High Mounted Insert w/ M6 Thread	
BIS M-140-02/A-M8	High Mounted Insert w/ M8 Thread	
BIS M-143-02/A-M6	Flush Mounted Insert w/M6 Thread	
BIS M-143-02/A-M8	Flush Mounted Insert w/M8 Thread	
BIS M-143-02/A-T6	Flush Mounted Insert w/M6 MAThread	
BIS M-143-02/A-T8-GY	Flush Mounted Insert w/M8 MAThread	

2.6.10 Connector cable with Connectors

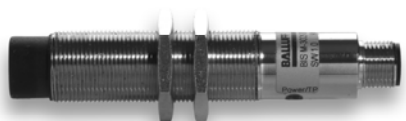


Protection per IEC 60529	IP 67
Connection	M12 Connector
Cable length	10 m

Balluff part number	Type	
BIS Z-501-PU1-10/E*	straight; 10 m; drag chain compatible	
BIS Z-502-PU1-10/E*	angle; 10 m; drag chain compatible	

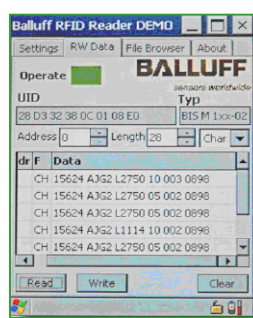
*Connector is enclosed

2.6.11 Read/Write Heads



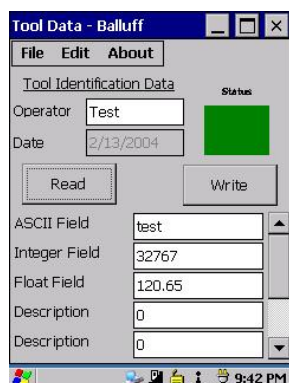
Balluff part number	Type	
BIS M-302-001-S115	Read/write head, M18x1, nickel plated brass, M12 connector	

2.6.12 Handheld Programming Units for Offline Data Collection

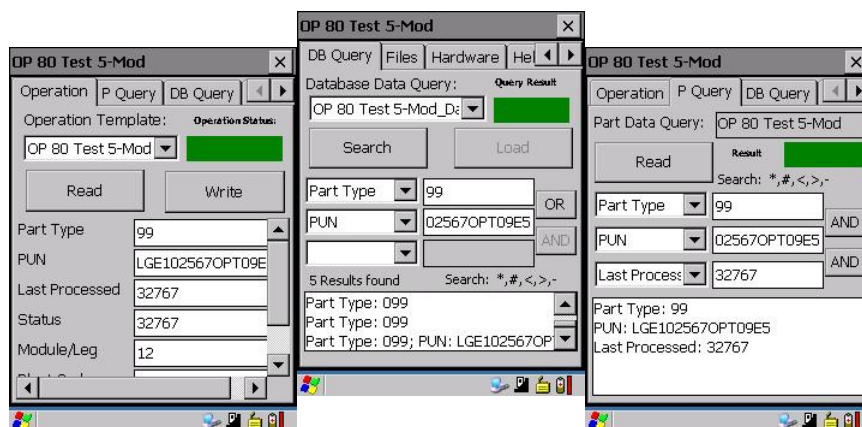


Dimensions 265x100x55mm

BIS Template Software



BISPortal Software



- Divide and format tag data on-screen
- Customize data row names on-screen
- Read and write using customized screen
- Multiple template access with barcode* support
- Custom Part and onboard database queries
- Auto-save tag read option

*Consult factory for Direct Part Mark applications

Programmer	Version	Software	
BIS M-873-1-008-X-000-3001	for BIS M tool tag series	with template software	
BIS M-873-1-008-X-000-3002	for BIS M tool tag series	with BISPortal software	
BIS M-873-1-008-X-005-3001	Tool ID Handheld+WLAN+2D Barcode Scanner	with template software	
BIS M-873-1-008-X-005-3002	Tool ID Handheld+WLAN+2D Barcode Scanner	with BISPortal software	

2.7 Balluff RFID – BIS S For Pallet ID

2.7.1 Processor; Plastic housing – PROFIBUS -DP



Supply voltage	24 V DC
Protection per IEC 60529	IP 65
Function	read / write
Housing material	Plastic ABS
Installation outside Assembly line GMPT Engineering Approval required	

Balluff part number		
BIS S-6002-019-050-03-ST11	ProfiBus DP Processor	
BIS S 403-00	ID Processor for Melsec Q series	

2.7.2 RFID Read / Write Head



BIS S-301-S115



BIS S-302-S115



BIS S-303-S115

Balluff part number	
BIS S-301-S115	80x80x40mm, top read, 50mm R/W dist., BIS S-150 tags only
BIS S-302-S115	40x40x138mm, end read, 20mm R/W dist., BIS S-108 tags only
BIS S-303-S115	40x40x138mm, top read, 20mm R/W dist., BIS S-108 tags only

2.7.3 RFID Memory Tag



BIS S-108-__/_L
Material: PBT



BIS S-150-__/_L
Material: POM

Balluff part number	
BIS S-108-42/L	52x32x11mm, 16k bytes
BIS S-150-32/A	80x40x22mm, 8k bytes
BIS S-150-42/A	80x40x22mm, 16k bytes

2.7.4 RFID Read /Write head cable



Connector Type	M12
Version	8-pin, female
Accessories included	BKS-S117-00

Balluff part number	
BIS Z-501-PU1-25/E	25 meter open-end cable, straight
BIS Z-502-PU1-25/E	25 meter open-end cable, right angle

2.7.5 RFID Read /Write connector



Connection type	M12
Version	8-pin, male

Balluff part number	
BKS-S117-00	Connector to attach cable to processor

2.7.6 Handy Programmer



BIS S-810-0-003



BIS S-850

Programmer	Dimension	Function
BIS S-850		Read / write
BIS S-810-0-003	97x232x55	Adapter cable

2.8 RFID for Ethernet IP

2.8.1 Processors Simultaneous Mode; Metal housing – EtherNet IP



Supply voltage	24 DC
Protection per IEC 60529	IP 65
Housing material	metal

Balluff Part Number		Function
BIS C-6026-034-050-06-ST19	EtherNet IP	read / write
BIS M-6026-034-050-06-ST19	EtherNet IP	read / write

2.8.2 Connectors for RFID



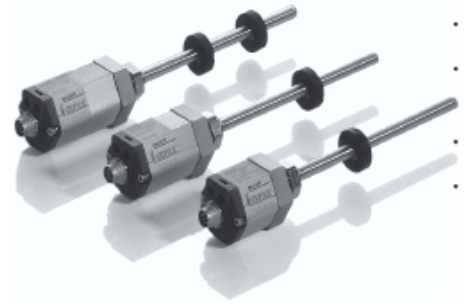
Balluff Part Number	Cable Material	Protection per IEC 60529
BIS C-526-PU-00,6	PUR	IP 40

2.9 Micropulse® Transducer



An absolute, non-contact displacement transducer system which can be used in all areas of industry including slide and servo hydraulic cylinder feed back applications

**Prior approval from GM
POWERTRAIN process
engineering Required**



2.10 Field I/O's

2.10.1 PROFIBUS – IP 67 hardened nodes



Field bus	PROFIBUS
Supply voltage	18...30 V DC
Degree of protection	IP 67
No. of I/O ports	8
Housing material	Nickel plated Gd-Zn

Balluff part number	Type
BNI PBS-104-101-Z001	16 inputs, with display
BNI PBS-302-101-Z001	16 inputs/16 outputs 2 A max <9 A, free configurable, with display
BNI PBS-202-101-Z001	8 outputs, 2 A max <9 A, with display
BNI PBS-206-000-Z001	16 outputs, 2 A max <9 A
BNI PBS-502-101-Z001	12 inputs / 12 outputs + 4x IO-Link interface, with display
BNI PBS-504-001-K008	4 inputs/ 4 outputs / 4 IO-Link interface, free configurable



Field bus	Profibus
Supply voltage	18...30 V DC
Degree of protection	IP 67
No. of I/O ports	4
Housing material	Nickel plated Gd-Zn

Balluff part number	Type
BNI PBS-507-001-Z011	Configurable, 8 inputs / outputs / 4 x IO-Link interface

Accessories / Cables for PROFIBUS see Page [55](#)

2.10.2 PROFINET – IP 67 hardened nodes



Field bus	PROFINET
Supply voltage	18...30 V DC
Degree of protection	IP 67
No. of I/O ports	8
Housing material	Nickel plated Gd-Zn, Hubs Plastic

Balluff part number	Type
BNI PNT-104-105-Z015	16 inputs, with display
BNI PNT-302-105-Z015	16 inputs / 16 outputs, 2 A max <9 A, free configurable
BNI PNT-206-001-Z002	16 outputs, 2 A max <9 A
BNI PNT-502-105-Z015	12 inputs / 12 outputs + 4x IO-Link interface, with display
BNI IOL-_0_-000-K006	IO-Link Sensorhub M12, 8I, 16I, 4AI-I/8I, 4 AI-U/8I

2.10.3 Passive Boxes – IP 67, M12 NO/NC, connector type M23 with LEDs

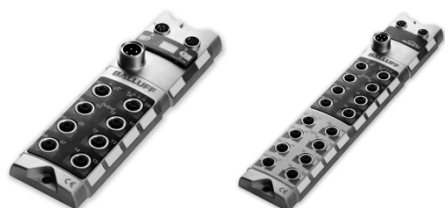


Field bus	M23 connector
Supply voltage	10...30 V DC
Degree of protection	IP 67
No. of I/O ports	4/8, PNP NO/NC
Housing material	Plastic with LED

Balluff part number	Type
BPI 4M4A5P-2k-00-SM6LT	4 M12 connectors
BPI 8M4A5P-2k-00-SM6LT	8 M12 connectors
BCC M61L-0000-10-022-PX0LP4-___	Connector M23, 19 pins, straight
BCC M62L-0000-10-022-PX0LP4-___	Connector M23, 19 pins, angle

2.10.4 EtherNet/IP

2.10.4.1 IP67 I/O Modules



Field bus

EtherNet/IP

Balluff part number	Type
BNI EIP-104-105-Z015	16 input, with internal switch
BNI EIP-202-105-Z015	8 output, with internal switch
BNI EIP-302-105-Z015	16 configurable, with internal switch
BNI EIP-104-100-Z016	16 input, with display
BNI EIP-202-100-Z016	8 output, with display
BNI EIP-206-100-Z016	16 output, with display
BNI EIP-302-100-Z016	16 configurable, with display
BNI EIP-305-100-Z016	8 input/8 output, with display
BNI EIP-105-100-Z010	32 input, with display
BNI EIP-306-100-Z010	16 input/16 output, with display
BNI EIP-502-105-Z015	4 IO-Link / 12 configurable – IO-Link master, with internal switch
BNI EIP-307-100-Z014	8 input/8 output, with display

2.10.5 Smart Light



Balluff part number	Type
BNI IOL-802-000-Z036	Smart Light, 309x60 mm, 1-hole screw mounting
BNI IOL-801-000-Z036	Smart Light, 213x60 mm, M18 mounting thread
BAV-BP-PH-00085-01	Mounting Kit – 150mm rod
BAV-BP-PH-00085-02	Mounting Kit – 250mm rod
BVS Z-MB-01	wall mount

2.10.6 Valve Manifold Control



Connection type	M26 IP27
Pin configuration	26 pole
Max current	1.6A
Max number of pistons	24 max
Valve models	SMC
For electrical pneumatic manifolds only	

Balluff part number	Type
BNI IOL-770-V06-A027	6 Byte with output master control, with open coil detection

- Applications Need GMPT Control Engineer's Approval

2.11 Electromechanical Multiple and Single Position Switches

2.11.1 Electromechanical Single Position Switches per DIN 43693, Series 60



Switch element	BSE 30,0; snap switch; silver – gold plated; dual changeover, one normally – open and one normally – close, galvanically isolated
Connection	Cable fitting M16x1,5

Balluff part number	Plunger type	
BNS 819-FD-60-101-FD	Chisel	
BNS 819-FL-60-101-FD	Roller bearing	

2.11.2 Electromechanical Multiple Position Switches per DIN 43697, Series 100



With function display	6...60 V DC
Switch element	BSE 30,0; snap switch; silver – gold plated; dual changeover, one normally – open and one normally – close, galvanically isolated
Plunger spacing	12 mm
Cable inlet	Metric thread

Balluff part number	Plunger type	No. of plunger	
BNS 819-D02-E12-100-10-FD	Anticrystallization plungers	2	
BNS 819-D03-E12-100-10-FD	Anticrystallization plungers	3	
BNS 819-D04-E12-100-10-FD	Anticrystallization plungers	4	
BNS 819-D06-E12-100-10-FD	Anticrystallization plungers	6	
BNS 819-D02-L12-100-10-FD	Roller bearing	2	
BNS 819-D03-L12-100-10-FD	Roller bearing	3	
BNS 819-D04-L12-100-10-FD	Roller bearing	4	
BNS 819-D06-L12-100-10-FD	Roller bearing	6	

2.11.3 Electromechanical Multiple Position Switches with quick-change plunger block per DIN 43697, Series 100



With function display	6...60 V DC
Ambient temperature range	-5...+80 °C
Plunger spacing	12 mm
Cable inlet	Metric thread

Balluff part number	Plunger type	Switch element	
BNS-823-D__-L12-100-12-22-__-FD	Roller bearing	BSE 85	
BNS 829-D__-L12-100-10-FD	Roller bearing	BSE 30	

3 Accessories

3.1 Accessories for Inductive Sensors

3.1.1 Clamps for Row Mounting of Sensors



Clamp for insertion of sensors M12
flush mountable with 12 spacing

Spacing 12 mm

Balluff part number	Switch positions
BES 12,0-KB-602-02/12	2
BES 12,0-KB-602-04/12	4
BES 12,0-KB-602-06/12	6

3.1.2 Brackets with positive stop for sensors



Inductive sensors can be quickly and easily changed even in difficult to access locations, and retain their sensing position without readjustment thanks to a positive stop

*Also available for welding machines (teflonized)
Ordering example (weld – immune):
BES 12,0-KH-2L/W

Balluff part number	For sensors with thread length	Sensor diameter	type
BES 08,0-KH-2S*	30 mm	M8x1	short
BES 12,0-KH-2S*	30 mm	M12x1	short
BES 18,0-KH-2S*	30 mm	M18x1	short
BES 30,0-KH-2S*	30 mm	M30x1,5	short
BES 08,0-KH-2L*	40 mm	M8x1	long
BES 12,0-KH-2L*	40 mm	M12x1	long
BES 18,0-KH-2L*	40 mm	M18x1	long
BES 30,0-KH-2L*	40 mm	M30x1,5	long

3.2 Accessories for Optoelectronic Sensors

3.2.1 Mounting Bracket for BOS 21M-...



Balluff part number	
BOS 21-HW-1	For BOS 21M...
BOS 21-HW-2	For BOS 21M...
BOS 21-HW-3	For BOS 21M...
BOS 26-HW-1	For BOS 26K...

3.2.2 Clamping Cuff, Mounting Clamps



Balluff part number	
BOS 12,0-KB-1	
BOS 18,0-KB-1	

3.3 Accessories for Inductive and Optoelectronic Sensors

3.3.1 Mounting System

Picture	Function	Balluff Part number
	Base holder, Cross connectors, Clamping cylinder, Adjusting unit, Reflector mount, Sensor mount, Mounting rods, ...	BMS ...

For further information see www.balluff.us



3.4 Accessories for Magnetic Field Sensors

3.4.1 Brackets for BMF 32



For pneumatic cylinder with different forms

Balluff part number	Cylinder slot		See info
BMF 32-HW-12	For pneumatic cylinder with trapezoidal rail (Rexroth – Mecman)		
BMF 32-HW-13	For pneumatic cylinder with tie rod		
BMF 32-HW-14	For pneumatic cylinder with trapezoidal rail (Bosch)		
BMF 32-HW-15	For pneumatic cylinder with tie rod and for integral tie rod		
BMF 32-HW-16	For pneumatic cylinder with tie rod pneumatic cylinder with DUO rail(Festo)		
BMF Tube cuff size	Ø 8, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80 mm		

-Engineering Approval Required

3.4.2 Brackets for BMF 305

-Engineering Approval Required

Advantages:

Can be inserted into slot from above. Anytime! Even later! Fast!
Time saving!

Adjust switchpoint in seconds! Turn screw one revolution,
adjust position, tighten.

Switchpoint can't be lost. Even if you replace the sensor, the
adjusted switchpoint is retained by the bracket.

Bracket	Balluff part number	Cylinder slot	
	BMF 305-HW-17	T-slot	
	BMF 305-HW-20	T-slot	
	BMF 305-HW-22	T-slot	
	BMF 305-HW-23	T-slot	
	BMF 305-HW-24	Without slot	
	BMF 305-HW-25	Trapeze slot 60°/90°	

Bracket	Balluff part number	Cylinder slot	
	BMF 305-HW-26	T-slot A or T-slot B	
	BMF 305-HW-27	Trapezoidal guide	
	BMF 305-HW-32	C-slot	
	BMF 305-HW-21 with BMF 21-HW-8	-	
	BMF 305-HW-21 with BMF 21-HW-10	-	

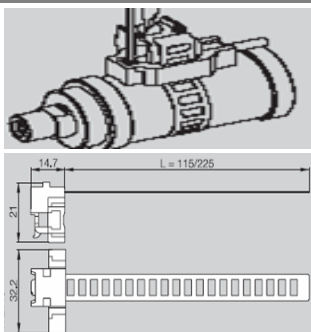
3.4.3 Brackets for BMF 307

-Engineering Approval Required

Advantages:

Adjust switchpoint in seconds! Turn screw one revolution, adjust position, tighten.

Switchpoint can't be lost. Even if you replace the sensor, the adjusted switchpoint is retained by the bracket.

Bracket	Balluff part number	Cylinder slot	
	BMF 307-HW-73-115/ BMF 307-HW-73-255	Without slot	

3.4.4 Field Attachable - Profibus



Insolation

Cable

Degree of protection

Ambient temperature range

250 V AC

For user assembly

IP 67

-25...80°C

Balluff part number	Type	Use	
BCC A335-0000-10-000-61X5A5-000	Standard 5 pin	Female	
BCC A335-0000-20-000-61X5A5-000	Standard 5 pin	Male	
BKS-S103-00*	B-coding 5 pin	Female	
BKS-S105-00*	B-coding 5 pin	Male	

*Shield connected extensively to housing