

Balluff Products
Division Colombia

BALLUFF

BASIC PORTFOLIO

MiCRO
automación

 *innovating automation*

Issue 03/2018 · Version 3.0

TABLE OF CONTENTS

CHANGE HISTORY	3
CONTACT PERSONS AT BALLUFF	3
USEFUL LINKS	4
EXCLUSION OF LIABILITY	5
BALLUFF SALES WORLDWIDE	6
Sensors	
INDUCTIVE SENSORS	
Standard	10
High-pressure resistant	12
CAPACITIVE SENSORS	
Level sensor without contact	13
Level sensor with contact	14
Sensors for object detection	15
PHOTOELECTRIC SENSORS	
Color sensors	16
Distance sensors	17
Contrast sensor	18
Diffuse sensor	19
Light switches and light barriers	20
Retroreflective sensor	21
Fork sensors	22
Fiber-based device	23
MAGNETOSTRICTIVE SENSORS	
Overview	24
Profile P	25
Profile PF	26
Profile A1	27
Rod B, A, Z, Y	28
Profile SF	29
MAGNETIC ENCODERS	
Overview	30
ULTRASONIC SENSORS	
Analog signal	32
Digital signal	33
PRESSURE SENSORS	
Overview	34
Industrial Networking	
NETWORK BLOCKS	
DeviceNet	40
Ethernet/IP	40
Profibus	41
I/O BLOCKS	
I/O-Link valve interface	41

Machine Vision And Optical Identification	
MACHINE VISION	
Vision sensors	42
Connectivity	
Single-ended cordsets	44
Field-attachables	45
Junction blocks	45
Accessories	
REFLECTORS, FIBERS, OPTICS	
Plastic fibers	46
Reflectors	46
MECHANICAL ACCESSORIES	
Magnets for magnetostrictive sensors	47
Position marker for magnetostrictive sensors	47
General Chapter	
APPLICATIONS	
General overview	48

CHANGE HISTORY

Version	Date	Type of Change	Site
1.0	2017-06-06	Creation of the Document	all
2.0	2018-02-19	Update of the Document	all
3.0	2018-03-28	Update of the Document	all

By clicking on the order code, you get to the respective product detail on the Balluff website and can thus get further product information and documents.

For better clarity and navigation within the document you can use the bookmark function.

You can use the key combination STRG-F to search for words or products.

CONTACT PERSONS

Responsibilities	Contact persons	Contacts
Regional Sales Management Micro Pneumatic S.A.S. Calle 19 No.70-63 Zona Industrial Bogotá	Gelkin Peinado Daniel García	Phone: +57 1 405 0016 Mobile: +57 313 853 8064 Email: gpeinado@micro.com.co Mobile: +57 314 820 7464 Email: electronica@micro.com.co
Application & Project Support Balluff Argentina S.R.L. Echeverría 1050, 1st UF 2 1604 Buenos Aires - Florida Oeste	Matías Chavanne	Phone: +54 11 4730-4544/3908 Mobile: +54 911 2465 1718 Email: matias.chavanne@balluff.com
Balluff Headquarters Balluff GmbH Gartenstraße 23-25 73765 Neuhausen	Roman Rosswag	Phone: +49 7158 173-8505 Mobile: +49 172 3696309 Email: roman.rosswag@balluff.de

USEFUL LINKS

WEBSITE

<http://www.balluff.com/en/de/home/>

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>

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.

EXCLUSION OF LIABILITY

The Balluff Group (hereinafter referred to as "Balluff") has created this Manual with the greatest possible care. Nevertheless Balluff assumes no liability for the correctness, completeness and currency of the data contained in this Manual. The data contained in this Manual represent the current state of knowledge available to Balluff. Excluded is any liability for damages directly or indirectly resulting from use of this Manual insofar as they are not the result of intent or gross negligence.

Any user of this Manual must verify for himself that the selected products are permitted for use. Any project-related approvals must also be taken into account. Before using the information in an actual project, the relevant data may be requested in writing from Balluff to the extent that this data has been made known to Balluff.

The Manual as such as well as all text, photographs, illustrations and their arrangement are subject to copyright and other protection laws. The Manual may not be copied, disseminated, modified or shared with third parties for commercial purposes; Balluff will prosecute such actions under civil and criminal law. The Manual may be used only for internal purposes within your company. The sole exception is where a third party requires information from the Manual in order to properly fulfill a contractual obligation with you. In such cases however only such information may be made accessible as is necessary for that purpose.

BALLUFF SALES WORLDWIDE

HEADQUARTER

Germany

Balluff GmbH
Schurwaldstraße 9
73765 Neuhausen a.d.F.
Phone: +49 7158 173-0
Fax: +49 7158 5010
balluff@balluff.de

SUBSIDIARIES AND REPRESENTATIVES

Argentina

Balluff Argentina S.R.L.
Echeverria 1050, 1° UF 2F
1602 Buenos Aires - Florida Oeste
Phone: +54 11 4730-4544
Fax: +54 11 4730-3908
balluff.ar@balluff.com

Australia

Balluff Pty. Ltd.
U25/18 Malvern Street, Bayswater
3153 Victoria
Phone: +61 397 382 677
Fax: +61 397 204 100
sales@balluff.com.au

Austria

Balluff GmbH
Sochorgasse 12-16
2512 Tribuswinkel
Phone: +43 57887-746
Fax: +43 57887-0
sensor@balluff.at

Bahrain

Represented through
Multiline Technical Co.
TCA, behind ADCB Bank
46530 Abu Dhabi
Phone: +971 26430 733
Fax: +971 26430 778
asif@multilinetech.com

Belarus

Automaticacentre OOO
Nezavisimosti Av. 185
Block 19, Office 3
220125 Minsk
Phone: +375 17 265 66 30
Fax: +375 17 265 66 32
info@automatica.by

Belgium

Balluff BVBA
Researchpark Haasrode 1820
Interleuvenlaan 62
3001 Leuven
Phone: +32 16397 800
Fax: +32 16397 809
info.be@balluff.be

Brazil

Balluff Controles Eletricos Ltda.
Rua Francisco Foga, 25
Distrito Industrial
CEP 13280.000
Vinhedo - Sao Paulo
Phone: +55 1938 7699 99
Fax: +55 1938 7699 90
balluff@balluff.com.br

Bulgaria

Belopitov AG
41, Nedelcho Bonchev St.
1528 Sofia
Phone: +359 2960 9875
Fax: +359 2960 9896
bps@bps.bg

Canada

Balluff Canada Inc.
2840 Argentia Road, Unit 2
Mississauga, Ontario L5N 8G4
Phone: +1 905 816-1494
Toll-free 1-800-927 9654
Fax: +1 905 816-1411
balluff.canada@balluff.ca

Chile

Microtec S/A
Salar Ascotan - Parque Enea Pud
1281
Santiago
Phone: +56 2259 54661
soledadrozaz@micro.cl

China

Balluff Automation (Shanghai) Co.,
Ltd
No. 800 Chengshan Rd
8F, Building A, Yunding International
Commercial Plaza
200125, Pudong, Shanghai
Phone: +86 215 089 9970
Fax: +86 215 089 9975
info@balluff.com.cn

Colombia

Micro Pneumatic S.A.S.
Calle 19, No. 70-63
Zona Industrial, Bogotá
Phone: +57 1 405 0016
ventas@micro.com.co

Croatia

HSTEC d.d.
Zagrebäcka 100
23000 Zadar
Phone: +385 23205 405
Fax: +385 23205 406
info@hstec.hr

Czech Republic

Balluff CZ, s.r.o
Peluškova 1400
198 00 Praha 9 - Kyjle
Phone: +420 281 000 666
Fax: +420 281 940 066
obchod@balluff.cz

Denmark

Balluff ApS
Åbogade 15
8200 Århus N
Phone: +45 70234 929
Fax: +45 70234 930
info.dk@balluff.dk

Ecuador

Carney S.A.
Vasco de contreras
y manosca N35-251
Quito, Pichincha - Ecuador Zip
Code 170521
Phone: +593 2245 6510
Fax: +593 2224 5241
jose.sampedro@elsystec.com.ec

Egypt

Egyptian for Engineering and
Commerce EGEC
Smouha-17 Vector Emanuel
12411 Alexandria
Phone: +20 10055 00782
Fax: +20 3/3013738
import.export@egecegypt.com

Estonia

Represented through
SIA Interautomatika
Brīvības gatve 410
1024 Rīga
Phone: +371 67522 010
Fax: +371 67522 007
info@interautomatika.lv

Finland

Murri OY
Koukkukatu 1
15700 Lahti
Phone: +358 3882 4000
Fax: +358 3882 4040
myynti@murri.fi

France

Balluff SAS
5 rue des Vieilles Vignes Bâtiment A
77183 Croissy Beaubourg
Phone: +33 164111 990
Fax: +33 164111 991
info.fr@balluff.fr

Greece

Mk engineering
Larisis 26 & Thetidos
40300 Farsala
Phone: +30 2491 025306
Fax: +30 2491 025306
moustakas@mkeng.gr

Hong Kong

Balluff (Hong Kong) Ltd.
Unit 1908, 19/F, Tower 2, Grand
Central Plaza
138 Shatin Rural Committee Road,
Shatin, N.T., Hong Kong
Phone: +852 3162 3430
Fax: +852 2694 0223
hongkong@balluff.com.cn

Hungary

Balluff Elektronika Kft.
Papai ut 55,
8200 Veszprem
Phone: +36 8842 1808
Fax: +36 8842 3439
saleshu@balluff.hu

Iceland

Smith & Norland
Nóatúni 4
105 Reykjavik
Phone: +354 520 3000
Fax: +354 520 3011
olaf@smnor.is

India

Balluff India
405, Raikar Chambers Deonar
Village Road
Govandi (E), Mumbai 400 088
Phone: +91 22 2556 8097
Fax: +91 22 2556 0871
balluff@balluff.co.in

Indonesia

Balluff Asia Pte Ltd
German Centre Building suite
6020, 6th floor,
Jl. Kapt subijanto, BSD city,
Tangerang 15321
Phone: +62 2153 76208
contact.ID@balluff.com.sg

Ireland

Balluff Ltd.
Block B, The Crescent Building
Northwood, Santry
Dublin 9
Phone: +353 1893 4188
Fax: +44 161 282 4701
sales.ie@balluff.com

Israel

Ancitech Ltd.
19, Hamashbir St.
Industrial Zone
58853 Holon
Phone: +972 3556 8351
Fax: +972 3556 9278
nissim@ancitech.com

Italy

Balluff Automation S.R.L.
Via Morandi 4
10095 Grugliasco, Torino
Phone: +39 11 3150 711
Fax: +39 11 3170 140
info.italy@balluff.it

Japan

Balluff Co., Ltd.
Aqua Hakusan Bldg. 9F
1-13-7 Hakusan, Bunkyo-ku
Tokyo 113-0001
Phone: +81 33830 0520
Fax: +81 33830 0519
info.jp@balluff.jp

Kazakhstan

ELCOS electric control systems
2A, Molodezhnaya Str. 3D
Block O., Offices 318-319
050061 Almaty
Phone: +7 7273 340 536
Fax: +7 7273 340 539
info@elcos.kz

Kuwait

Represented through
Multiline Technical Co.
TCA, behind ADCB Bank
46530 Abu Dhabi
Phone: +971 26430 733
Fax: +971 26430 778
asif@multilinetech.com

Latvia

SIA Interautomatika
Brivibas gatve 224
Riga, LV-1039
Phone: +371 67522 010
Fax: +371 67522 007
info@interautomatika.lv

Lithuania

UAB Interautomatika
Kęstučio 47
08124 Vilnius
Phone: +370 5 2607 810
Fax: +370 5 2411 464
info@interautomatica.lt

Malaysia

Represented through
Balluff Asia Pte Ltd
German Centre Building suite
6020, 6th floor,
Jl. Kapt subijanto, BSD city,
Tangerang 15321
Phone: +62 2153 76208
contact.ID@balluff.com.sg

Mexico

Balluff de México S.A. de C.V.
Anillo Vial II Fray Junipero Serra
No. 4416;
Colonia La Vista Residencial
CP 76232 Delegación Epigmenio
González, Querétaro
Phone: +52 442 2124 882
Fax: +52 442 2140 536
balluff.mexico@balluff.com

Morocco

TAK
Ilot 24B, Lot 24A-2
Tanger Free Zone
9000 Tanger
Phone: +212 06 6146 4946
Fax: +212 05 3939 3269
o.zerhouani@tak.ma

Netherlands

Balluff B.V.
Europalaan 6a
5232 BC'S-Hertogenbosch
Phone: +31 7365 79702
Fax: +31 7365 79786
info.nl@balluff.nl

New Zealand

Balluff Ltd.
Unit B (3A) 248 Marua Road
Mount Wellington
1051 Auckland
Phone: +649 250 1460
Fax: +649 250 1462
sales@balluff.co.nz

Norway

Primatec AS
Østerskogen 53
4879 Grimstad
Phone: +47 37258 700
Fax: +47 37258 710
post@primatec.no

Oman

Represented through
Multiline Technical Co.
TCA, behind ADCB Bank
46530 Abu Dhabi
Phone: +971 26430 733
Fax: +971 26430 778
asif@multilinetech.com

Philippines

Represented through
Balluff Asia Pte Ltd
German Centre Building suite
6020, 6th floor,
Jl. Kapt subijanto, BSD city,
Tangerang 15321
Phone: +62 2153 76208
contact.ID@balluff.com.sg

Poland

Balluff SP. z o.o.
Ul. Graniczna 21A
54-516 Wrocław
Phone: +48 71 382 09 00
Fax: +48 71 338 49 30
balluff@balluff.pl

Portugal

LA2P Lda.
Rua Teófilo Braga, 156 A
Escrit. F – Edifício S. Domingos
Cabeco Do Mouro
2785-122 S. Domingos De Rana
Phone: +351 21 444 7070
Fax: +351 21 444 7075
la2p@la2p.pt

Qatar

Represented through
Multiline Technical Co.
TCA, behind ADCB Bank
46530 Abu Dhabi
Phone: +971 26430 733
Fax: +971 26430 778
asif@multilinetech.com

Romania

Balluff Automation SRL
Strada Industriilor Nr. 56.
Bloc 1, Etaj 1
032901 Bucuresti Sector 3
Phone: +40 374 926 252
Fax: +40 374 097 423
office@balluff.com.ro

Russia

Balluff OOO
M. Kaluzhskaja Street 15
Building 17, Office 500
119071 Moscow
Phone: +7 4957 8071 96
Fax: +7 4957 8071 97
balluff@balluff.ru

Saudi Arabia

Represented through
Multiline Technical Co.
TCA, behind ADCB Bank
46530 Abu Dhabi
Phone: +971 26430 733
Fax: +971 26430 778
asif@multilinetech.com

Serbia

ENEL d.o.o.
Ul. Vasilja Pavlovica 10
14000 Valjevo
Phone: +381 1429 1161
Fax: +381 1424 4641
enelvaljevo@gmail.com

Singapore

Balluff Asia Pte Ltd
German Centre Building suite
6020, 6th floor,
Jl. Kapt subijanto, BSD city,
Tangerang 15321
Phone: +62 2153 76208
contact.ID@balluff.com.sg

Slovakia

Balluff Slovakia s.r.o.
Blagoevova 9
85104 Bratislava
Phone: +421 2672 00062
Fax: +421 2672 00060
info@balluff.sk

Slovenia

Balluff d.o.o.
Livadna ulica 1
2204 Miklavž na Dravskem polju
Phone: +386 2629 0300
Fax: +386 2629 0302
balluff@balluff-si.si

South Africa

Balluff SA (Pty) Ltd
90 Mangold Street Newton Park
6001 Port Elizabeth, South Africa
Phone: +27 87 004 08 00
Fax: +27 86 552 84 90
sales@balluffsa.co.za

South Korea

Balluff Korea Ltd.
1210, Gwanggyo Business Center,
156,
Gwanggyo-ro, Yeongtong-gu,
Suwon-si,
Gyeonggi-do, 16506, Korea
Phone: +82-31-8064-1757
Fax: +82-31-8064-1759
sales.kr@balluff.kr

Spain

Balluff S.L.
Edificio Forum SCV
Planta 5º, Oficina 4º
Carretera Sant Cugat a Rubi
Km01, 40-50
08190 Sant Cugat del Valles
Barcelona
Phone: +34 93544 1313
Fax: +34 93544 1312
info.es@balluff.es

Sweden

Balluff AB
Gamlestadsvägen 2
41502 Goteborg
Phone: +46 31340 8630
Fax: +46 31340 9431
info.se@balluff.se

Switzerland

Balluff AG
Keltenstrasse 49
2564 Bellmund
Phone: +41 (0) 32 366 66 77
Fax: +41 (0) 32 366 66 78
info.ch@balluff.ch

Taiwan

Balluff Taiwan Ltd.
Room G, 7F, No. 573, Sec 2
Taiwan Blvd., West Dist
40360 Taichung City
Phone: +886 4 2321 1628
Fax: +886 4 2321 1623
taiwan@balluff.com.cn

Thailand

Balluff (Thailand) Ltd.
2/51 Thodsapol Land Building 4,
11th Floor,
Soi Bangna Trat 25, Bangna
Bangkok 10260
Phone: +66 (0) 23618 519312
Fax: +66 (0) 2744 3177
sales.th@balluff.co.th

Turkey

Balluff Turkey Otomasyon Ticaret
Limited Şirketi
Kozyatagi Mah. Degirmen Sok.
AR Plaza A
Apt.No: 16/14 K:7, Ofis No: 71
34742 Kadiköy \ İstanbul
Phone: +90 216 265 12 00
Fax: +90 216 265 12 01
info.tr@balluff.com.tr

Ukraine

Micronlogistik Ltd.
Ul. Promyshlennaya 37
65031 Odessa
Phone: +380 48 7781 278
Fax: +380 48 2358 760
info@balluff-ua.com

United Arab Emirates

Multiline Technical Co.
TCA, behind ADCB Bank
46530 Abu Dhabi
Phone: +971 26430 733
Fax: +971 26430 778
asif@multilinetech.com

United Kingdom

Balluff Ltd.
20 Cheshire Business Park
Cheshire Avenue
Lostock Gralam
Northwich, CW9 7UA
Phone: +44 1606 812777
Fax: +44 1606 812778
sales@balluff.co.uk

USA

Balluff Inc.
8125 Holton Drive
Florence, KY 41042-0937
Phone: +1 859 727 2200
Toll-free: 1-800-543-8390
Fax: +1 859 727 4823
balluff@balluff.es

Venezuela

Micro Tecnologia Neumatica, C.A
Av. Henry Ford C.C.
Boulevard Industrial Local AC-2
Valencia Carabobo
Phone: +58 24186 41534
Fax: +58 24183 40057
iraida.marrero@micro.com.ve

Vietnam

Anh Nghi Son Service Trading
Co., Ltd.
D3 Mieu Noi Resident Area, Dinh
Tien Hoang St.
W3, Binh Thanh Dist
Ho Chi Minh City
Phone: +84 835170 401
Fax: +84 835170 403
ans.vina@gmail.com

INDUCTIVE SENSORS STANDARD

With this broad range of sensors from Ø 3 mm to 80x80 mm Balluff offers solutions for practically any application in the field of automation.

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 Ø 3 mm to 80 x 80 mm square dimensions.

STANDARD INDUCTIVE SENSORS

BLOCK STYLE



	BES0217	BES0225	BES020Y	BES020A
Dimension	40 x 40 x 62 mm	106 x 80 x 40 mm	120 x 40 x 40 mm	132.5 x 40 x 40 mm
Style	block style	block style	block style	block style
Range	20 mm	40 mm	15 mm	20 mm
Connection	Connector, M12x1-Male, 4-pole	Connector, M12x1-Male, 4-pole	Screw terminal	Connector, M12x1-Male, 4-pole
Switching output	PNP NO/NC	PNP NO/NC	NO/NC	PNP NO/NC
Installation	for flush mounting	for flush mounting	for flush mounting	for flush mounting
Housing material	PBT	PBT, GF30	PBT	PBT

STANDARD
INDUCTIVE
SENSORS

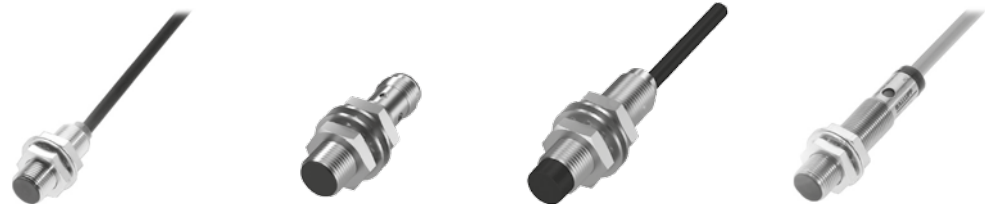
M5
M8



	BES00H3	BES003K	BES0017	BES0028
Dimension	Ø 5 x 27 mm	Ø 8 x 50 mm	Ø 8 x 50 mm	Ø 8 x 65 mm
Style	M5x0.5	M8x1	M8x1	M8x1
Range	1.5 mm	2 mm	4 mm	2 mm
Connection	Cable, 2.00 m, PUR	Cable, 2.00 m, PVC	Cable, 2.00 m, PVC	Connector, M12x1-Male, 4-pole
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	non-flush	for flush mounting
Housing material	Stainless steel	Brass	Stainless steel	Brass
Environment	Narrow installation space	Narrow installation space	Narrow installation space	Narrow installation space

STANDARD
INDUCTIVE
SENSORS

M12



	BES00E5	BES00EF	BES004L	BES027M
Dimension	Ø 12 x 33 mm	Ø 12 x 45 mm	Ø 12 x 48 mm	Ø 12 x 60 mm
Style	M12x1	M12x1	M12x1	M12x1
Range	4 mm	4 mm	8 mm	2 mm
Connection	Cable, 2.00 m, PUR	Connector, M12x1-Male, 4-pole	Cable, 2.00 m, TPU	Cable, 3.00 m, PVC
Switching output	PNP Normally open (NO)	PNP Normally open (NO)	PNP Normally open (NO)	Normally open (NO)
Installation	for flush mounting	for flush mounting	non-flush	for flush mounting
Housing material	Brass	Brass	Brass	Stainless steel

STANDARD
INDUCTIVE
SENSORS

M12
M18



	BES0068	BES00EP	BES00EZ	BES008F
Dimension	Ø 12 x 65 mm	Ø 18 x 36 mm	Ø 18 x 44.5 mm	Ø 18 x 56 mm
Style	M12x1	M18x1	M18x1	M18x1
Range	4 mm	8 mm	8 mm	8 mm
Connection	Connector, M12x1-Male, 3-pole	Cable, 2.00 m, PUR	Connector, M12x1-Male, 4-pole	Cable, 3.00 m, PVC
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
Housing material	Brass	Brass	Brass	Brass

STANDARD
INDUCTIVE
SENSORS

M18
M30



	BES006Y	BES028L	BES0087	BES00F4
Dimension	Ø 18 x 56 mm	Ø 18 x 61.5 mm	Ø 18 x 65 mm	Ø 30 x 36 mm
Style	M18x1	M18x1	M18x1	M30x1.5
Range	16 mm	5 mm	5 mm	15 mm
Connection	Cable, 2.00 m, PUR	Cable, 3.00 m, PVC	Connector, M12x1-Male, 4-pole	Cable, 2.00 m, PUR
Switching output	PNP Normally open (NO)	Normally open (NO)	PNP Normally open (NO)	PNP Normally open (NO)
Installation	non-flush	for flush mounting	for flush mounting	for flush mounting
Housing material	Brass	Brass	Brass	Brass

STANDARD
INDUCTIVE
SENSORS

M30



	BES00F9	BES00AA	BES029L	BES00AY
Dimension	Ø 30 x 44.5 mm	Ø 30 x 53 mm	Ø 30 x 61.5 mm	Ø 30 x 76.5 mm
Style	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Range	15 mm	15 mm	10 mm	30 mm
Connection	Connector, M12x1-Male, 4-pole	Cable, 2.00 m, PVC	Cable, 3.00 m, PVC	Cable, 2.00 m, PVC
Switching output	PNP Normally open (NO)	PNP Normally open (NO)	Normally open (NO)	PNP Normally open (NO)
Installation	for flush mounting	for flush mounting	for flush mounting	non-flush
Housing material	Brass	Brass	Brass	Brass

INDUCTIVE SENSORS HIGH-PRESSURE RESISTANT

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

They are, therefore, perfectly suited for position monitoring of your hydraulics, such as for end position verification of hydraulic cylinders or monitoring valve position.



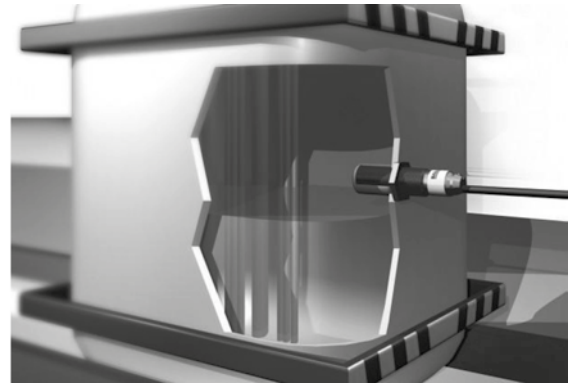
HIGH-PRESSURE RESISTANT



	BHS002Y	BHS0022	BHS004A
Dimension	Ø 12 x 56 mm	Ø 12 x 93 mm	Ø 18 x 55 mm
Style	M12x1	M12x1	M18x1
Range	1.5 mm	1.5 mm	1.5 mm
Connection	Connector, M12x1-Male, 4-pole	Connector, M12x1-Male, 4-pole	Connector,
Switching output	PNP Normally open (NO)	PNP Normally open (NO)	PNP Normally open (NO)
Installation	for flush mounting	for flush mounting	for flush mounting
Housing material	Stainless steel	Stainless steel	Stainless steel
Environment	Narrow installation space High pressure	Narrow installation space High pressure	Narrow installation space High pressure
Pressure rating max.	500 bar	500 bar	500 bar

CAPACITIVE SENSORS LEVEL SENSOR WITHOUT CONTACT

These capacitive sensors used for fill level detection detect the product, bulk material or liquids to be detected through glass and plastic walls with their active surface and without contact.



LEVEL SENSOR
WITHOUT CONTACT

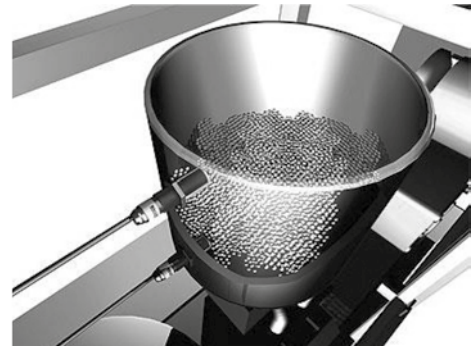


	BCS008M	BCS00TR
Dimension	34 x 16 x 8 mm	40 x 40 x 10 mm
Style	block style	block style
Range	0.5...8 mm	1...20 mm
Connection	Cable with connector, M8x1-Male, 3-pole, 0.20 m, PUR	Cable, 2.00 m, PUR
Installation	flush with container outer wall	for flush mounting
Housing material	PP	PBT
Environment	Narrow installation space	Narrow installation space

CAPACITIVE SENSORS LEVEL SENSOR WITH 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.



LEVEL SENSOR WITH CONTACT



	BCS008A	BCS00A6	BCS010M	BCS00LL
Dimension	Ø 18 x 73 mm	54.8 x 48.5 x 106 mm	Ø 11.9 x 62.5 mm	Ø 18 x 75.5 mm
Style	M18x1	block style	G1/4"	M18x1
Range				2...15 mm
Connection	Cable, 2.00 m, PTFE	Clamping terminal	Cable, 2.00 m, PUR	Cable, 2.00 m, PUR
Installation	non-flush	non-flush	non-flush	non-flush
Housing material	PTFE	Stainless steel	PEEK	PBT
Environment		Extreme temperatures High pressure		

LEVEL SENSOR WITH CONTACT



	BCS00LM	BCS00NT	BCS00NH
Dimension	Ø 18 x 88.5 mm	Ø 30 x 65.5 mm	Ø 30 x 78.5 mm
Style	M18x1	M30x1.5	M30x1.5
Range	2...15 mm	1...25 mm	1...25 mm
Connection	Connector, M12x1-Male, 4-pole	Cable, 2.00 m, PUR	Connector, M12x1-Male, 4-pole
Installation	non-flush	non-flush	non-flush
Housing material	PBT	PBT	PBT

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).



SENSORS FOR OBJECT DETECTION



	BCS00R4	BCS00PU	BCS00NZ
Dimension	Ø 12 x 61 mm	Ø 12 x 61 mm	Ø 18 x 75 mm
Style	M12x1	M12x1	M18x1
Range	1...4 mm	1...4 mm	1...8 mm
Connection	Cable, 2.00 m, PUR	Cable, 2.00 m, PUR	Cable, 2.00 m, PUR
Installation	for flush mounting	for flush mounting	for flush mounting
Housing material	Stainless steel	PBT	PBT
Environment	Extreme temperatures	Extreme temperatures	

SENSORS FOR OBJECT DETECTION



	BCS00LK	BCS00NM	BCS00N2
Dimension	Ø 18 x 75.5 mm	Ø 30 x 65.5 mm	Ø 30 x 65.5 mm
Style	M18x1	M30x1.5	M30x1.5
Range	1...8 mm	2...15 mm	2...15 mm
Connection	Cable, 2.00 m, PUR	Cable, 2.00 m, PUR	Cable, 2.00 m, PUR
Installation	for flush mounting	for flush mounting	for flush mounting
Housing material	Stainless steel (1.4305)	PBT	Stainless steel

PHOTOELECTRIC SENSORS COLOR SENSORS

Simplify and accelerate your automated processes with Balluff's versatile color sensors.

For recognition of color nuances in textiles, for example, of painted sheets as well as with colored markings on packaging or labels. Our color sensors sort out bad components and thus assure uniformly high product quality.

In this manner, they contribute to a reliable production process.

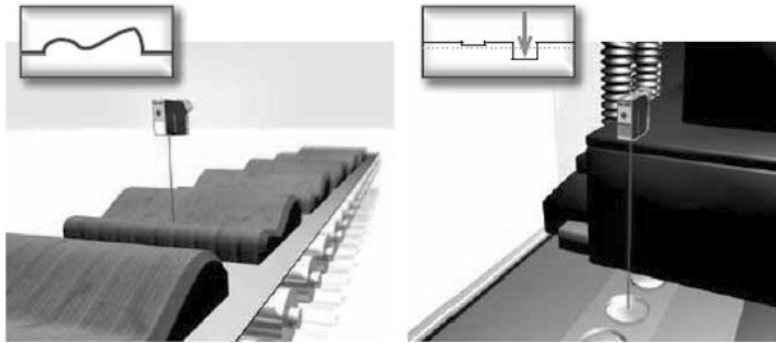
COLOR SENSORS



BFS0002

Principle of optical operation	Diffuse sensor, fixed focus
Dimension	17 x 50 x 50 mm
Range	15...30 mm
Light type	White light
Connection	Connector, M12x1-Male, 8-pole
Interface	PNP
Switching output	3x PNP Normally open (NO)

PHOTOELECTRIC SENSORS DISTANCE SENSORS



DISTANCE SENSORS

BOD0010

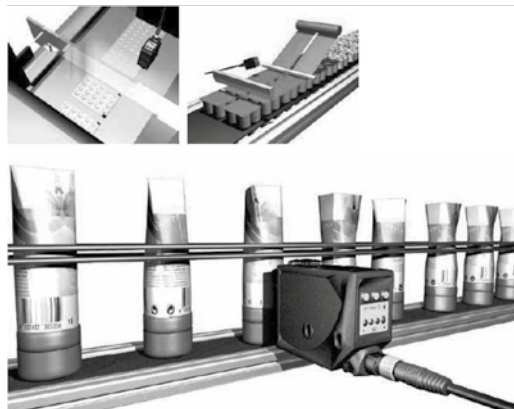
Principle of optical operation	Light time-of-flight
Dimension	35 x 70 x 90 mm
Range	200...2000 mm
Light type	Laser red light
Connection	Connector, M12x1-Male, 8-pole
Interface	Analog, current PNP
Switching output	2x PNP Normally open (NO)

PHOTOELECTRIC SENSORS CONTRAST SENSOR

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

Balluff's robust 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 therefore appropriate for a variety of applications, for example in the printing and packaging industry.



CONTRAST SENSOR

BKT0001

Principle of optical operation	Diffuse sensor, focused
Dimension	32 x 64 x 82 mm
Range	6...12 mm
Light type	blue light/green light/red light
Connection	Connector, M12x1-Male
Interface	Analog, voltage PNP/NPN
Switching output	PNP/NPN NO/NC

PHOTOELECTRIC SENSORS

DIFFUSE SENSOR

Energetic diffuse sensors are ideal for the detection of differences in contrast.

They detect objects depending on their surface, color and material.

They are inexpensive, easy to mount and align.

Diffuse sensors with background suppression ensure reliable detection regardless of the surface, color and material.

Their pulse width is almost constant, even with different reflectance.



DIFFUSE SENSOR



	BOS0123	BOS00K0	BOS00K1
Principle of optical operation	Diffuse sensor, energetic	Diffuse sensor, energetic	Diffuse sensor, energetic
Dimension	10.8 x 32.7 x 19.5 mm	Ø 18 x 77 mm	Ø 18 x 81.5 mm
Range	0...900 mm	0...700 mm	0...700 mm
Light type	Infrared	Infrared	Infrared
Connection	Cable, 2.00 m, PVC	Cable, 2.00 m, PVC	Connector, M12x1-Male, 4-pole
Interface	PNP	PNP	PNP
Switching output	PNP Normally open (NO)	PNP Normally closed (NC) PNP Normally open (NO)	PNP Normally closed (NC) PNP Normally open (NO) Pins 4-2
Environment	Narrow installation space		

PHOTOELECTRIC SENSORS LIGHT SWITCHES AND LIGHT BARRIERS

LIGHT SWITCHES AND LIGHT BARRIERS



	BOS0129	BOS00JL	BOS0125
Principle of optical operation	Diffuse sensor, Triangulation	Diffuse sensor, Triangulation	Through-beam sensor
Dimension	10.8 x 32.7 x 19.5 mm	Ø 18 x 91.5 mm	10.8 x 32.7 x 19.5 mm
Range	20...200 mm	50...100 mm	0...20 m
Light type	LED, red light	LED, red light	Infrared
Connection	Cable, 2.00 m, PVC	Cable, 2.00 m, PVC	Cable, 2.00 m, PVC
Interface	PNP	PNP	PNP
Switching output	PNP Normally open (NO)	2x PNP NO/NC	PNP Normally open (NO)
Environment	Narrow installation space		Narrow installation space

LIGHT SWITCHES AND LIGHT BARRIERS



	BOS00EN	BOS00CJ
Principle of optical operation	Through-beam sensor (emitter)	Through-beam sensor (receiver)
Dimension	Ø 18 x 67 mm	Ø 18 x 77 mm
Range	0...20 m	0...20 m
Light type	Infrared	Infrared
Connection	Cable, 2.00 m, PVC	Cable, 2.00 m, PVC
Interface		PNP
Switching output		PNP Normally closed (NC) PNP Normally open (NO) Pins 4-2

PHOTOELECTRIC SENSORS RETROREFLECTIVE SENSOR

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 pole filter makes them suitable for detecting shiny objects as well.



RETROREFLECTIVE SENSOR



	BOS012C	BOS01K3	BOS00K2	BOS00K3
Principle of optical operation	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor
Dimension	10.8 x 32.7 x 19.5 mm	25 x 69.7 x 100.4 mm	Ø 18 x 77 mm	Ø 18 x 81.5 mm
Range	0...4 m	0...10 m	0...4.5 m	0...4.5 m
Light type	LED, red light	LED, red light	LED, red light	LED, red light
Connection	Cable, 2.00 m, PVC	Screw terminal	Cable, 2.00 m, PVC	Connector
Interface	PNP	Relay	PNP	PNP
Switching output	PNP Normally open (NO)	Relay NO/NC change-over contact	PNP Normally closed (NC) PNP Normally open (NO)	PNP Normally closed (NC) PNP Normally open (NO) Pins 4-2
Environment	Narrow installation space			

PHOTOELECTRIC SENSORS FORK SENSORS

Our fork sensors with transmitter and receiver in one housing are easily adjusted.

That reduces your expense, 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



	BGL001J	BGL0023	BGL0007
Principle of optical operation	Through-beam sensor	Through-beam sensor	Through-beam sensor
Fork opening	50 mm	80 mm	120 mm
Dimension	10 x 70 x 88 mm	10 x 100 x 88 mm	10 x 140 x 93 mm
Light type	LED, red light	LED, red light	LED, red light
Connection	Connector, M8x1-Male, 3-pole	Connector, M8x1-Male, 3-pole	Connector, M8x1-Male, 3-pole
Interface	PNP	PNP	PNP
Switching output	PNP NO/NC	PNP NO/NC	PNP NO/NC

PHOTOELECTRIC SENSORS FIBER-BASED DEVICE

Balluff's light guide sensors are used if the usual optical sensor is too large or too rigid for the application.

Our light guide sensors are optionally combined with plastic or glass fiber optics for a complete sensor.

Thanks to their different properties, you have maximum flexibility depending upon the application.

FIBER-BASED DEVICE



BFB0004

Principle of optical operation	depends on fiber optics
Dimension	10.4 x 35.4 x 84 mm
Light type	LED, red light
Connection	Connector, M8x1-Male, 4-pole
Interface	PNP
Switching output	PNP NO/NC
Environment	Narrow installation space

MAGNETOSTRICTIVE SENSORS OVERVIEW



Series Profile style Profile style Profile AT Rod Filling Level Sensor

Design	P	PF	A1	B, A, Z, Y	SF
Installation version e.g. in hydraulic cylinders				■	
External fitting version e.g. on machine frames	■	■	■		
Position encoder	Floating/ captive	Floating/ captive	Floating	Free or floating	Floating
Multi-position encoder	■		■	■	
Interfaces					
Analog voltage 0...10 V, 10...0 V, -10 V...+10 V	■	■	■	■	■
Analog current 4...20 mA, 0...20 mA	■	■		■	■
SSI	■			■	
SSI-SYNC	■			■	
CANopen	■			■	
DeviceNet	■				
Profibus DP	■			■	
Start/stop pulse interface	■		■	■	
VARAN			■		
EtherCAT	■		■	■	
IO-Link		■			

The overview on the following pages is only a selection.
Check our complete BTL portfolio in the main catalogues.

MiCROPULSE®

MAGNETOSTRICTIVE SENSORS PROFILE P

- The universal standard series
- Measuring lengths up to 7,620 mm
- Multiple paths – one system, which measures position in many paths
- Programmable output signals – measuring range, inverting, configuring, documenting
- Floating and captive encoders
- Up to 15 mm distance between position encoder and system – truly contactless!
- Measures position and speed
- Differential and synchronized measurement
- Available with analog signals, digital interfaces and fieldbuses



Series	Profile P BTL7	Profile P BTL7
Output signal	Analog	Analog
Transducer interface	A	E
Position signal interface, customer device	Analog	Analog
Part number	BTL7- A501 -M_---P----	BTL7- E501 -M_---P----
Output signal factory setting	0...10 V and 10...0 V	4...20 mA and 20...4 mA
Output signal can be adjusted via configurable USB	-10...10 V and 10...-10 V	0...20 mA and 20...0 mA
Load current	Max. 5 mA	
Load resistance		≤ 500 Ω
System resolution	≤ 0.33 mV	≤ 0.66 μA
Current consumption at 24 V DC	≤ 150 mA	≤ 180 mA
Hysteresis	≤ 10 μm	≤ 5 μm
Repeat accuracy	System resolution/min. 2 μm	System resolution/min. 2 μm
Measurement rate, length-dependent	Max. 4 kHz	Max. 4 kHz
Max. linearity deviation	±50 μm to ≤ 500 mm rated length ±0.01% FS > 500...≤ 5500 mm rated length ±0.02% FS > 5500 mm rated length	±50 μm to ≤ 500 mm rated length ±0.01% FS > 500...≤ 5500 mm rated length ±0.02% FS > 5500 mm rated length
Temperature coefficient	≤ 30 ppm/K	≤ 30 ppm/K
Supply voltage	10...30 V DC	10...30 V DC
Polarity reversal protected	to 36 V	to 36 V
Overvoltage protection	to 36 V	to 36 V
Dielectric strength	500 V AC (GND to housing)	500 V AC (GND to housing)
Operating temperature	-40...+85 °C	-40...+85 °C

Ordering example:

BTL7 - 501 - M - P -

Output signal

A 0...10 V and 10...0 V
E 4...20 mA and 20...4 mA

Standard nominal strokes [mm]

0050...7620 mm
in 5-mm increments

Connection

S32 Connectors
S115 Connectors
KA02 PUR cable 2 m
KA05 PUR cable 5 m
KA10 PUR cable 10 m
KA15 PUR cable 15 m

MAGNETOSTRICTIVE SENSORS PROFILE PF

- Flat design, fits in every niche
- Easy to install
- Characteristic curve setting with LED support for quick commissioning
- High degree of protection, IP 67 standard
- Up to 15 mm distance between position encoder and system – truly contactless!
- Floating and captive ball joint arm position encoders
- Available with the entire series of analog signals



Series	Profile PF BTL6	Profile PF BTL6	Profile PF BTL6
Output signal	Analog	Analog	Analog
Transducer interface	A	E	C
Customer device interface	Analog	Analog	Analog
Part number	BTL6- A 500-M____-PF-S115	BTL6- E 500-M____-PF-S115	BTL6- C 500-M____-PF-S115
Output voltage	0...10 V		
Output current		4...20 mA	0.1...20 mA
Load current	Max. 5 mA		
Max. residual ripple	≤ 5 mV		
Load resistance (recommended)		≤ 500 Ω (500 Ω)	≤ 500 Ω (500 Ω)
System resolution	≤ 0.35 mV	≤ 0.7 μA	≤ 0.7 μA
Measurement rate	f _{max} = 2 kHz	f _{max} = 2 kHz	f _{max} = 2 kHz
Max. linearity deviation	±200 μm up to 500 mm rated length ±0.04% 500... max. rated length	±200 μm up to 500 mm rated length ±0.04% 500... max. rated length	±200 μm up to 500 mm rated length ±0.04% 500... max. rated length
Temperature coefficient	30 ppm at 500 mm	30 ppm at 500 mm	30 ppm at 500 mm
Supply voltage	10...30 V DC	10...30 V DC	10...30 V DC
Current consumption	≤ 150 mA	≤ 150 mA	≤ 150 mA
Operating temperature	-25...+70 °C	-25...+70 °C	-25...+70 °C
Storage temperature	-40...+100 °C	-40...+100 °C	-40...+100 °C

Ordering example:

BTL6 - 500 - M - PF - S115

Output signal

A 0...10 V
E 4...20 mA
C 0.1...20 mA
G -10...10 V

Standard nominal strokes [mm]

0050...4572 in 5-mm increments

MAGNETOSTRICTIVE SENSORS PROFILE A1

- In a robust 30-mm pipe housing for universal fastening
- The cost-effective, contactless position measuring solution
- Multiple paths – one system, which measures position in many paths
- With analog output signal and Real-Time Ethernet



Series	Profile A1 BTL6	Profile A1 BTL6
Output signal	Analog	Analog
Transducer interface	A	G
Customer device interface	Analog	Analog
Part number	BTL6-A110-M_ _ _ _-A1-S115	BTL6-G310-M_ _ _ _-A1-S115
Output voltage	0...10 V and 10...0 V	-10...10 V and 10...-10 V
Load current	Max. 5 mA	Max. 5 mA
Max. residual ripple	≤ 5 mV	≤ 5 mV
System resolution	≤ 10 μm	≤ 10 μm
Repeat accuracy	≤ 10 μm	≤ 10 μm
Reproducibility	≤ 20 μm	≤ 20 μm
Measurement rate	$f_{\text{STANDARD}} = 1 \text{ kHz}$	$f_{\text{STANDARD}} = 1 \text{ kHz}$
Linearity deviation	≤ ±200 μm up to 500 mm rated length typ. ±0.02%, max. ±0.04% 500...1500 mm rated length	≤ ±200 μm up to 500 mm rated length typ. ±0.02%, max. ±0.04% 500...1500 mm rated length
Supply voltage	20...28 V DC	20...28 V DC
Current consumption	≤ 70 mA	≤ 70 mA
Polarity reversal protected	yes	yes
Operating temperature	0...+70 °C	0...+70 °C
Storage temperature	-40...+100 °C	-40...+100 °C

Ordering example:

B T L 6 - 10 - M _ _ _ _ - A 1 - S 1 1 5

Output signal

A 0...10 V
10...0 V
G -10...10 V
-10...10 V

Characteristic

1 Non-floating*
3 Floating

Standard nominal strokes [mm]

0100	0130	0150	0160	0175	0200	0225
0250	0275	0300	0325	0350	0360	0375
0400	0425	0450	0475	0500	0550	0600
0650	0700	0750	0800	0850	0900	0950
1000	1100	1200	1250	1300	1400	1500

in 25-mm increments on request

*only for BTL6-A110-M_ _ _ _-A1-S115

MAGNETOSTRICTIVE SENSORS ROD B, A, Z, Y

Rod housings are mainly used in hydraulic drive applications. When installed in the pressure section of the hydraulic cylinder, the displacement sensor requires the same pressure rating as the actual hydraulic cylinder. In practice, the sensor must be able to withstand pressures up to 1000 bar. The electronics are integrated in an aluminum or stainless steel housing and the waveguide in a pressure-resistant tube made from nonmagnetic stainless steel that is sealed off at the front end with a welded plug.

An O-ring in the flange at the opposite end seals off the high-pressure section.

An encoder ring with magnets slides over the tube or rod with internal waveguide to mark the position prior to detection.



Series	Rod BTL7	Rod BTL7	Rod BTL7
Output signal	Analog	Analog	Analog
Transducer interface	A	G	E
Customer device interface	Analog	Analog	Analog
Part number	BTL7- A 110-M_-----	BTL7- G 110-M_-----	BTL7- E 1_0-M_-----
Output voltage	0...10 V and 10...0 V	-10...10 V and 10...-10 V	
Load current	Max. 5 mA	Max. 5 mA	
Max. residual ripple	≤ 5 mVpp	≤ 5 mVpp	
System resolution	≤ 0.33 mV	≤ 0.33 mV	≤ 0.66 µA
Hysteresis	≤ 5 µm	≤ 5 µm	≤ 5 µm
Repeat accuracy	System resolution/min. 2 µm	System resolution/min. 2 µm	System resolution/min. 2 µm
Measurement rate, length-dependent	Max. 4 kHz	Max. 4 kHz	Max. 4 kHz
Temperature coefficient	≤ 30 ppm/K	≤ 30 ppm/K	≤ 30 ppm/K
Supply voltage	20...28 V DC	20...28 V DC	20...28 V DC
Current consumption at 24 V DC	≤ 150 mA	≤ 150 mA	≤ 150 mA
Polarity reversal protected	yes	yes	yes
Overvoltage protection	yes	yes	yes
Dielectric strength	500 V AC (GND to housing)	500 V AC (GND to housing)	500 V AC (GND to housing)
Operating temperature	-40...+85 °C	-40...+85 °C	-40...+85 °C

Ordering example:

B T L 7 - **0-M**

Output signal	Operating voltage	Characteristic	Standard Rated length [mm]	Design	Connection
A 0...10 V and 10...0 V	1 24 V 5 10-30 V	1 rising and falling (with A and G)	0025...7620 in 1-mm increments	B Standard M18x1.5	S32 Connectors S115 Connectors
G -10...10 V and 10...-10 V		0 rising (at C and E)			KA02 PUR cable 2 m KA05 PUR cable 5 m
E 4...20 mA or 20...4 mA		7 falling (for C and E)			KA10 PUR cable 10 m KA15 PUR cable 15 m
C 0...20 mA or 20...0 mA					

MAGNETOSTRICTIVE SENSORS PROFILE SF

- Highly accurate filling level sensor
- Compensation for inaccuracies due to foam build-up
- With international approvals, such as 3-A Sanitary Standard, FDA and ECOLAB
- In stainless steel housing with Tri-Clamp fastener
- Safe for sterilization (SIP) and cleaning (CIP)



Series	Rod SF BTL5	Rod SF BTL5	Rod SF BTL5
Output signal	Analog	Analog	Analog
Transducer interface	A	E	C
Customer device interface	Analog	Analog	Analog
Part number	BTL5-A11-M____-SF-____	BTL5-E1-M____-SF-____	BTL5-C1-M____-SF-____
Output voltage	0...10 V and 10...0 V		
Output current		4...20 mA or 20...4 mA	0...20 mA or 20...0 mA
Load current	Max. 5 mA		
Max. residual ripple	≤ 5 mV		
Load resistance (recommended)		≤ 500 Ω (500 Ω)	≤ 500 Ω (500 Ω)
System resolution	≤ 0.1 mV	≤ 0.2 μA	≤ 0.2 μA
Hysteresis	≤ 4 μm	≤ 4 μm	≤ 4 μm
Repeat accuracy	System resolution/min. 2 μm	System resolution/min. 2 μm	System resolution/min. 2 μm
Measurement rate	f _{STANDARD} = 500 Hz	f _{STANDARD} = 500 Hz	f _{STANDARD} = 500 Hz
Max. linearity deviation	±100 μm up to 500 mm rated length ±0.02% 500... max. rated length	±100 μm up to 500 mm rated length ±0.02% 500... max. rated length	±100 μm up to 500 mm rated length ±0.02% 500... max. rated length
Temperature coefficient	≤ 40 ppm/K for rated length 500 mm, float at center of measuring range	≤ 40 ppm/K for rated length 500 mm, float at center of measuring range	≤ 40 ppm/K for rated length 500 mm, float at center of measuring range
Supply voltage	20...28 V DC	20...28 V DC	20...28 V DC
Current consumption	≤ 150 mA	≤ 150 mA	≤ 150 mA
Operating temperature	-40...+85 °C	-40...+85 °C	-40...+85 °C
Storage temperature	-20...+130 °C	-20...+130 °C	-20...+130 °C

Ordering example:

B T L 5 - 1 - M - SF -

Output signal

A Analog 0...10 V
C Analog 0...20 mA
E Analog 4...20 mA

characteristics curves

1 Rising and falling for A
0 Rising (for C and E)
7 Falling (for C and E)

Standard nominal strokes [mm]

50...2500 mm
in 1-mm increments

radial connection

F-radial design
F02 2 m Teflon cable
F05 5 m Teflon cable
F10 10 m Teflon cable
F15 15 m Teflon cable
F20 20 m Teflon cable

MAGNETIC ENCODERS OVERVIEW

A large range of position and angle measurement tasks or the dynamic, accurate detection of speed and rotational speeds of rotating shafts are solved in a wide variety of industries with magnetically coded systems.

A magnetic tape system consists of the sensor head, a tape for linear or rotary use, and accessories such as a counter display or guide system. The operating principle is non-contact and therefore wear-free.

The measured value is available as an incremental or absolute output signal.

The tapes, magnetized using the Permagnet process specially developed by Balluff, enable the highest accuracy.

High flexibility is offered by rolls of magnetic tape, with lengths available up to 48 m.

Customized, fabricated solutions as well as special codings achieve optimum results.

The real-time-capable BML position measurement systems make the position information available within microseconds and therefore are optimum feedback systems in electric drive shafts.

By means of its extremely small dimensions and contactless measurement technology, BML allows for integration even in tight spaces or extreme ambient conditions.

Expensive downtimes and service work are prevented from the outset by means of the wear-free operating principle; service-intensive encapsulation becomes unnecessary.

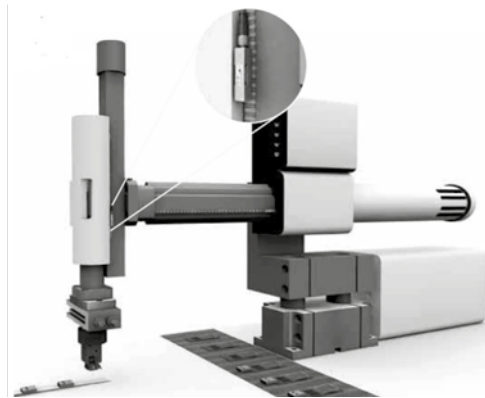
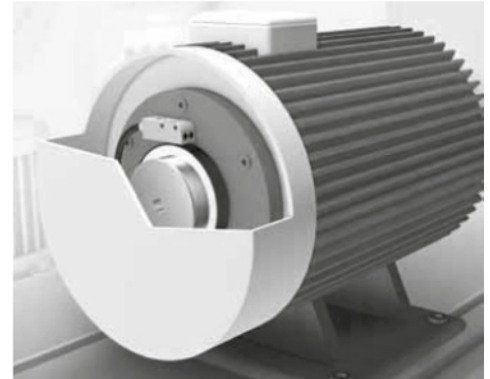
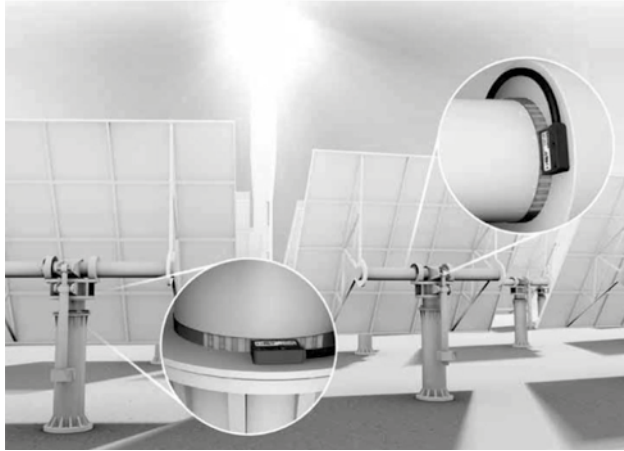
Moreover, the contactless technology enables extremely high measurement speeds.

The overview of the magnetic encoders is only a selection.

Check our complete portfolio on the [website](#) or in the [catalogue](#).



Series	BML-S1H_M3AA...	BML-S1H_M3CA...	BML-S1G0...	BML-S1F_Q
Resolution	< 1 µm	< 1 µm	1...10 µm	1...10 µm
System accuracy	±7 µm	±7 µm	±20 µm	±10 µm
Distance to tape	0.1...0.35 mm	0.1...0.35 mm	0.1...0.8 mm	0.1...0.35 mm
Linear tape	0...64 mm	0...256 mm	0...48 mm	0...48 mm
Rotary tape (magnet ring) Ø 30...300mm				■
Angle measurement with magnetic tape <360°	■	■		■
Interfaces				
Absolute SSI	■	■	■	
Absolute BiSS C	■	■	■	
Incremental digital RS422 (TTL)			■	■
Incremental digital HTL (as supply voltage 10...30 V)				
Incremental analog sin/cos (1V _{pp})	■	■	■	
Magnetic tape	BML-M02-A...-M0009-A	BML-M02-A...-M0028-C	BML-M02-A...-E	BML-M02-I3...
Pole pitch (fine interpolation track)	1 mm	1 mm	2 mm	1 mm



BML-S1F-A...



BML-S2B0-Q...



BML-S2E0-Q...



BML-S1C0-Q

up to 0.25 μm^*	5...50 μm	5...50 μm	100...2000 μm
$\pm 10 \mu\text{m}$	$\pm 50 \mu\text{m}$	$\pm 100 \mu\text{m}$	$\pm 100 \mu\text{m}$
0.1...0.35 mm	0.1...2 mm	0.1...2 mm	0.1...2 mm
0...48 mm	0...48 mm	0...48 mm	0...48 mm
■	■	■	■
■	■	■	■
	■	■	
	■	■	■
■			



BML-M02-I3...

1 mm



BML-M02-I4...

5 mm



BML-M02-I4...

5 mm



BML-M02-I4...

5 mm

ULTRASONIC SENSORS ANALOG SIGNAL

Position detection or object detection in solid, powdery and fluid media – they count and monitor the presence of objects without contact.

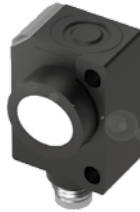
Universally applicable, they work independently of color and surface texture.

Fog, dust and impurities are not a problem for them.

Their high resolution and small blind spots guarantee the highest precision. Ultrasonic sensors distinguish themselves by means of their output signal.



ANALOG SIGNAL



	BUS005C	BUS004M	BUS003F
Range	120...1000 mm	120...1300 mm	200...2000 mm
Connection	Connector, M8x1-Male, 4-pole	Connector, M12x1-Male	Connector, M12x1-Male
Housing material	ABS	Brass PBT	Brass PBT, TPU
Analog output	Analog, current 4...20 m	A Analog, current 4...20 mA	

ANALOG SIGNAL



	BUS003T	BUS0041
Range	350...5000 mm	600...8000 mm
Connection	Connector, M12x1-Male	Connector, M12x1-Male
Housing material	Brass PBT, TPU	Brass PBT, TPU

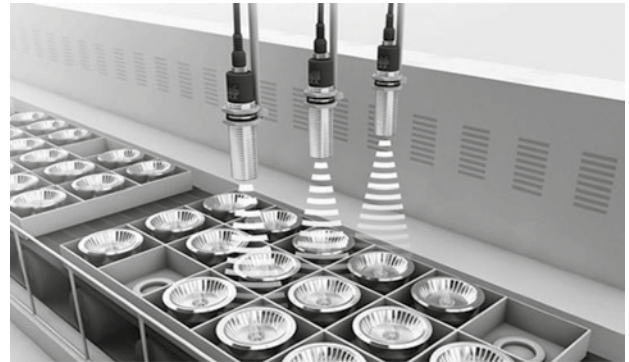
ULTRASONIC SENSORS DIGITAL SIGNAL

They measure fill levels, heights and sag without making contact.

Because they are universally applicable, they work independently of color and surface texture.

High resolution, high ranges and small blind spots guarantee the utmost precision.

The ultrasonic sensors are distinguished by their voltage or power output and variants with an additional switching output.



DIGITAL SIGNAL



	BUS0057	BUS004Z	BUS0039
Range	30...350 mm	65...600 mm	200...2000 mm
Switching function	Normally open/ Normally closed (NO/NC)	NO/NC	Normally open/ Normally closed (NO/NC)
Switching output	PNP NO/NC	PNP/NPN NO/NC push-pull	PNP NO/NC
Interface		IO-Link 1.0	
Connection	Connector, M8x1-Male, 4-pole	Connector, M12x1-Male	Connector, M12x1-Male
Housing material	ABS	Brass PBT	Brass PBT, TPU
Environment	Narrow installation space		

DIGITAL SIGNAL



	BUS003P	BUS0045
Range	350...5000 mm	600...8000 mm
Switching function	Normally open/ Normally closed (NO/NC)	Normally open/ Normally closed (NO/NC)
Switching output	PNP NO/NC	PNP NO/NC
Connection	Connector, M12x1-Male	Connector, M12x1-Male
Housing material	Brass PBT, TPU	Brass PBT, TPU

PRESSURE SENSORS OVERVIEW

PNP pressure sensors



Two programmable
switching points
(NO or NC)



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

-1...2 bar (-14.5...29 psi)	Ordering code	BSP004F	BSP004J
	Part number	BSP V002-EV002-D00A0B-S4	BSP V002-EV002-D00A0B-S4
-1...10 bar (-14.5...145 psi)	Ordering code	BSP004H	BSP004K
	Part number	BSP V010-EV002-D00A0B-S4	BSP V010-EV002-A00A0B-S4
0...2 bar (0...29 psi)	Ordering code	BSP000F	BSP000T
	Part number	BSP B002-EV002-D00A0B-S4	BSP B002-EV002-A00A0B-S4
0...5 bar (0...73 psi)	Ordering code	BSP000H	BSP000U
	Part number	BSP B005-EV002-D00A0B-S4	BSP B005-EV002-D00A0B-S4
0...10 bar (0...145 psi)	Ordering code	BSP000J	BSP000W
	Part number	BSP B010-EV002-D00A0B-S4	BSP B010-EV002-A00A0B-S4
0...20 bar (0...290 psi)	Ordering code	BSP000K	BSP000Y
	Part number	BSP B020-EV002-D00A0B-S4	BSP B020-EV002-A00A0B-S4
0...50 bar (0...725 psi)	Ordering code	BSP000L	BSP000Z
	Part number	BSP B050-EV002-D00A0B-S4	BSP B050-EV002-A00A0B-S4
0...100 bar (0...1450 psi)	Ordering code	BSP000M	BSP0010
	Part number	BSP B100-EV002-D00A0B-S4	BSP B100-EV002-A00A0B-S4
0...250 bar (0...3626 psi)	Ordering code	BSP000N	BSP0011
	Part number	BSP B250-EV002-D00A0B-S4	BSP B250-EV002-A00A0B-S4
0...400 bar (0...5802 psi)	Ordering code	BSP000P	BSP0012
	Part number	BSP B400-EV002-D00A0B-S4	BSP B400-EV002-A00A0B-S4
0...600 bar (0...8702 psi)	Ordering code	BSP000R	BSP0013
	Part number	BSP B600-EV002-D00A0B-S4	BSP B600-EV002-D00A0B-S4
Supply voltage U_B		18...36 V DC	18...36 V DC
Output current max.		500 mA	500 mA
No-load supply current I_0 max.		≤ 50 mA	≤ 50 mA
Switching frequency f max.		200 Hz	200 Hz
Accuracy		≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
Temperature error		≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
Polarity reversal protected/short-circuit protected		Yes/Yes	Yes/Yes
Ambient/media temperature		-25...+85 °C/-25...+125 °C	-25...+85 °C/-25...+125 °C
Display/function indicators		7-segment display/LED	7-segment display/LED
Degree of protection per IEC 60529		IP 67 (when screwed into place)	IP 67 (when screwed into place)
Material	Housing	PA 6.6 and stainless steel	PA 6.6 and stainless steel
	Measuring cell	Ceramic	Ceramic
	Seal	Fluoroelastomer	Fluoroelastomer
Connection	Plug connector	M12 connector, 4-pin	M12 connector, 4-pin
	Process connection	Internal thread G1/4" per DIN EN 3852	Internal thread G1/4" per DIN EN 3852

The overview of the pressure sensors is only a selection.
Check our complete portfolio on the [website](#) or in the [catalogue](#).



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

BSP004L

BSP V002-EV002-D00A0B-S4

BSP004M

BSP V010-EV002-A02A0B-S4

BSP0014

BSP B002-EV002-D00A0B-S4

BSP0015

BSP B005-EV002-A02A0B-S4

BSP0016

BSP B010-EV002-A02A0B-S4

BSP0017

BSP B020-EV002-D00A0B-S4

BSP0018

BSP B050-EV002-A02A0B-S4

BSP0019

BSP B100-EV002-D00A0B-S4

BSP001A

BSP B250-EV002-A02A0B-S4

BSP001C

BSP B400-EV002-A02A0B-S4

BSP001E

BSP B600-EV002-A02A0B-S4

18...36 V DC

500 mA

≤ 50 mA

200 Hz

≤ ±0.5 % FSO BFSL

≤ ±0.3 % FSO/10 K

Yes/Yes

-25...+85 °C/-25...+125 °C

7-segment display/LED

IP 67 (when screwed into place)

PA 6.6 and stainless steel

Ceramic

Fluoroelastomer

M12 connector, 4-pin

Internal thread G¼" per DIN EN 3852

Pressure sensors for standard applications offer an impressive price/performance ratio and are suitable for a wide variety of applications in factory automation.

A large display and a simple operating concept in line with VDMA saves you time when configuring the sensors.

Save space when installing the versatile pressure sensors.

The display and electrical output can be rotated independently of the flange.

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



Pressure sensors are found in many mechanical engineering applications.

Different versions with switching points, an analog output and various pressure ranges mean you are guaranteed to find the right sensor for your application.

PNP pressure sensors



Two programmable switching points (NO or NC)



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

-1...2 bar (-14.5...29 psi)	Ordering code	BSP005M	BSP006F
	Part number	BSP V002-IV003-D00A0B-S4	BSP V002-IV003-A00A0B-S4
-1...10 bar (-14.5...145 psi)	Ordering code	BSP005N	BSP006H
	Part number	BSP V010-IV003-D00A0B-S4	BSP V010-IV003-A00A0B-S4
0...2 bar (0...29 psi)	Ordering code	BSP005P	BSP006J
	Part number	BSP B002-IV003-D00A0B-S4	BSP B002-IV003-A00A0B-S4
0...5 bar (0...73 psi)	Ordering code	BSP005R	BSP006K
	Part number	BSP B005-IV003-D00A0B-S4	BSP B005-IV003-A00A0B-S4
0...10 bar (0...145 psi)	Ordering code	BSP005T	BSP006L
	Part number	BSP B010-IV003-D00A0B-S4	BSP B010-IV003-A00A0B-S4
0...20 bar (0...290 psi)	Ordering code	BSP005U	BSP006M
	Part number	BSP B020-IV003-D00A0B-S4	BSP B020-IV003-A00A0B-S4
0...50 bar (0...725 psi)	Ordering code	BSP005W	BSP006N
	Part number	BSP B050-IV003-D00A0B-S4	BSP B050-IV003-A00A0B-S4
0...100 bar (0...1450 psi)	Ordering code	BSP005Y	BSP006P
	Part number	BSP B100-IV003-D00A0B-S4	BSP B100-IV003-A00A0B-S4
0...250 bar (0...3626 psi)	Ordering code	BSP005Z	BSP006R
	Part number	BSP B250-IV003-D00A0B-S4	BSP B250-IV003-A00A0B-S4
0...400 bar (0...5802 psi)	Ordering code	BSP0060	BSP006T
	Part number	BSP B400-IV003-D00A0B-S4	BSP B400-IV003-A00A0B-S4
Supply voltage U_B		18...36 V DC	18...36 V DC
Output current max.		500 mA	500 mA
No-load supply current I_0 max.		≤ 50 mA	≤ 50 mA
Switching frequency f max.		200 Hz	200 Hz
Accuracy		≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
Temperature error		≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
Polarity reversal protected/short-circuit protected		Yes/Yes	Yes/Yes
Ambient/media temperature		-40...+85 °C/-40...+125 °C	-40...+85 °C/-40...+125 °C
Display/function indicators		7-segment display/LED	7-segment display/LED
Degree of protection per IEC 60529		IP 67 (when screwed into place)	IP 67 (when screwed into place)
Material	Housing	Stainless steel	Stainless steel
	Measuring cell	Ceramic	Ceramic
	Seal	Fluoroelastomer	Fluoroelastomer
Connection	Plug connector	M12 connector, 4-pin	M12 connector, 4-pin
	Process connection	G½" per DIN EN 3852	G½" per DIN EN 3852

The overview of the pressure sensors is only a selection.
Check our complete portfolio on the [website](#) or in the [catalogue](#).



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

BSP0062

BSP V002-IV003-A02A0B-S4

BSP0063

BSP V010-IV003-A02A0B-S4

BSP0064

BSP B002-IV003-A02A0B-S4

BSP0065

BSP B005-IV003-A02A0B-S4

BSP0066

BSP B010-IV003-A02A0B-S4

BSP0067

BSP B020-IV003-A02A0B-S4

BSP0068

BSP B050-IV003-A02A0B-S4

BSP0069

BSP B100-IV003-A02A0B-S4

BSP006A

BSP B250-IV003-A02A0B-S4

BSP006C

BSP B400-IV003-A02A0B-S4

18...36 V DC

500 mA

≤ 50 mA

200 Hz

≤ ±0.5 % FSO BFSL

≤ ±0.3 % FSO/10 K

Yes/Yes

-40...+85 °C/-40...+125 °C

7-segment display/LED

IP 67 (when screwed into place)

Stainless steel

Ceramic

Fluoroelastomer

M12 connector, 4-pin

G½" per DIN EN 3852

Flush-mounted BSP pressure sensors are ideally suited for pressure measurement in viscous, paste-like, crystallizing or solids-containing media.

This makes them suitable for pressure measurement of adhesives, greases, sealants or often changing media.

With their flush-mounted, welded stainless steel membrane, they have no dead spaces and can be easily cleaned.

Benefits

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



The connection to your process is made via a G½" external thread in accordance with DIN EN 3852.

Other process connections, such as TriClamp, Varivent, etc., are available on request.

Current variants 4...20 mA



Process connection
G 1/4"



Process connection
NPT 1/4"

-1...2 bar (-14.5...29 psi)	Ordering code	BSP00FW	BSP00H7
	Part number	BSP V002-DV004-A06A1A-S4	BSP V002-FV004-A06A1A-S4
-1...10 bar (-14.5...145 psi)	Ordering code	BSP00FY	BSP00H8
	Part number	BSP V010-DV004-A06A1A-S4	BSP V010-FV004-A06A1A-S4
0...2 bar (0...29 psi)	Ordering code	BSP00FZ	BSP00H9
	Part number	BSP B002-DV004-A06A1A-S4	BSP B002-FV004-A06A1A-S4
0...5 bar (0...73 psi)	Ordering code	BSP00H0	BSP00HA
	Part number	BSP B005-DV004-A06A1A-S4	BSP B005-FV004-A06A1A-S4
0...10 bar (0...145 psi)	Ordering code	BSP00H1	BSP00HC
	Part number	BSP B010-DV004-A06A1A-S4	BSP B010-FV004-A06A1A-S4
0...20 bar (0...290 psi)	Ordering code	BSP00H2	BSP00HE
	Part number	BSP B020-DV004-A06A1A-S4	BSP B020-FV004-A06A1A-S4
0...50 bar (0...725 psi)	Ordering code	BSP00H3	BSP00HF
	Part number	BSP B050-DV004-A06A1A-S4	BSP B050-FV004-A06A1A-S4
0...100 bar (0...1450 psi)	Ordering code	BSP00H4	BSP00HH
	Part number	BSP B100-DV004-A06A1A-S4	BSP B100-FV004-A06A1A-S4
0...250 bar (0...3626 psi)	Ordering code	BSP00H5	BSP00HJ
	Part number	BSP B250-DV004-A06A1A-S4	BSP B250-FV004-A06A1A-S4
0...400 bar (0...5802 psi)	Ordering code	BSP00F3	BSP00HK
	Part number	BSP B400-DV004-A06A1A-S4	BSP B400-FV004-A06A1A-S4
0...600 bar (0...8702 psi)	Ordering code	BSP00H6	BSP00HL
	Part number	BSP B600-DV004-A06A1A-S4	BSP B600-FV004-A06A1A-S4
Supply voltage U_B		8...32 V DC	8...32 V DC
No-load supply current I_0 max.		≤ 25 mA	≤ 25 mA
Accuracy		≤ ±0.5 % FSO BFSL	≤ ±0.5 % FSO BFSL
Temperature error		≤ ±0.5% FSO/10 K	≤ ±0.3 % FSO/10 K
Polarity reversal protected/short-circuit protected		Yes/Yes	Yes/Yes
Ambient/media temperature		-40...+85 °C/-40...+125 °C	-40...+85 °C/-40...+125 °C
Degree of protection per IEC 60529		IP 67 (when screwed into place)	IP 67 (when screwed into place)
Load cycles		> 100 mil.	> 100 mil.
Material	Housing	Stainless steel	Stainless steel
	Measuring cell	Ceramic	Ceramic
	Seal	Fluoroelastomer	Fluoroelastomer
Connection	Plug connector	M12 connector, 4-pin	M12 connector, 4-pin
	Process connection	G 1/4" per DIN EN 3852	NPT 1/4"

The overview of the pressure sensors is only a selection.
Check our complete portfolio on the [website](#) or in the [catalogue](#).



Process connection
R $\frac{1}{4}$ "



Process connection
G $\frac{1}{2}$ "

BSP00HM BSP V002-KV004-A06A1A-S4	BSP00J2 BSP V002-HV004-A06A1A-S4
BSP00HN BSP V010-KV004-A06A1A-S4	BSP00J3 BSP V010-HV004-A06A1A-S4
BSP00HP BSP B002-KV004-A06A1A-S4	BSP00J4 BSP B002-HV004-A06A1A-S4
BSP00HR BSP B005-KV004-A06A1A-S4	BSP00J5 BSP B005-HV004-A06A1A-S4
BSP00HT BSP B010-KV004-A06A1A-S4	BSP00J6 BSP B010-HV004-A06A1A-S4
BSP00HU BSP B020-KV004-A06A1A-S4	BSP00J7 BSP B020-HV004-A06A1A-S4
BSP00HW BSP B050-KV004-A06A1A-S4	BSP00J8 BSP B050-HV004-A06A1A-S4
BSP00HY BSP B100-KV004-A06A1A-S4	BSP00FT BSP B100-HV004-A06A1A-S4
BSP00HZ BSP B250-KV004-A06A1A-S4	BSP00J9 BSP B250-HV004-A06A1A-S4
BSP00J0 BSP B400-KV004-A06A1A-S4	BSP00JA BSP B400-HV004-A06A1A-S4
BSP00J1 BSP B600-KV004-A06A1A-S4	BSP00JC BSP B600-HV004-A06A1A-S4
8...32 V DC	8...32 V DC
≤ 25 mA	≤ 25 mA
≤ ±0.5 % FSO BFSL	±0.5 % FSO BFSL
≤ ±0.3 % FSO/10 K	≤ ±0.3 % FSO/10 K
Yes/Yes	Yes/Yes
-40...+85 °C/-40...+125 °C	-40...+85 °C/-40...+125 °C
IP 67 (when screwed into place)	IP 67 (when screwed into place)
> 100 mil.	> 100 mil.
Stainless steel	Stainless steel
Ceramic	Ceramic
Fluoroelastomer	Fluoroelastomer
M12 connector, 4-pin	M12 connector, 4-pin
R $\frac{1}{4}$ "	G $\frac{1}{2}$ " per DIN EN 3852

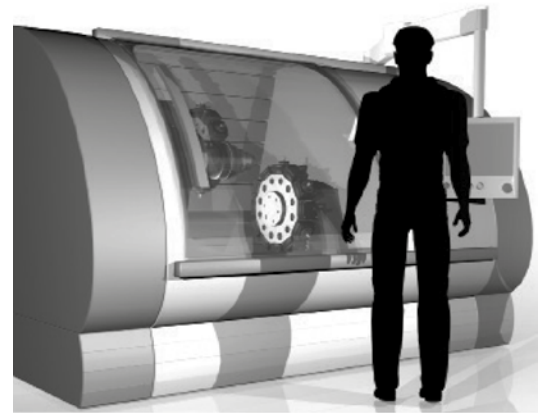
BSP pressure transmitters provide a rugged stainless steel housing, reliable measurement technology and a large temperature range from -40 to 125 °C.

This enables reliable operation and a long service life.

Choose between eleven different pressure ranges, voltage or current output and various process connections for the appropriate sensor.

Benefits

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



NETWORK BLOCKS DEVICENET

Balluff offers the entire spectrum of powerful network technology so that you can easily choose the network components that optimally meet your needs.

We can provide all modules required for efficient DeviceNet applications in the US.

DEVICENET



BNI0003

Interface	DeviceNet
Principle of operation	Active splitter
Digital inputs	16x PNP, Type2
Digital outputs	16x PNP
Housing material	Zinc, Die casting

NETWORK BLOCKS ETHERNET/IP

High efficiency is only feasible with an optimized network.

For your high-performance system, we offer a comprehensive Ethernet/IP program.

Ethernet/IP is a globally recognized standard for network technology. And has replaced DeviceNet in many areas.

The technology based on Ethernet is significantly faster and enables the integration of drive technology.

ETHERNET/IP



BNI004F



BNI006A

Auxiliary interfaces		8x IO-Link
Interface	EtherNet/IP	EtherNet/IP
Principle of operation	Active splitter	Active splitter
Digital inputs	16x PNP, Type2	16x PNP, Type2
Digital outputs	16x PNP	16x PNP
Housing material	Zinc, Die casting	Zinc, Die casting

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



BNI0047

Interface	Profibus Profibus DP EN 50170
Principle of operation	Active splitter
Digital inputs	16x PNP, Type2
Digital outputs	16x PNP
Housing material	Zinc, Die casting

I/O BLOCKS I/O-LINK VALVE INTERFACE

You can use the advantages of IO-Link even with our valve interfaces.

This is because decentrally installed valve terminals and the control level can easily be connected using these components.

I/O-LINK VALVE INTERFACE



BNI001E

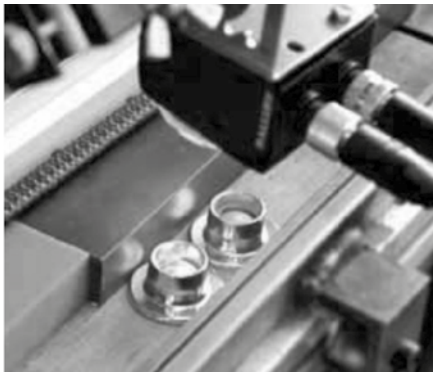
BNI001F

Principle of operation	Active splitter	Active splitter
Outputs 2A, number	16	24
Operating voltage U _b	18...30.2 VDC	18...30.2 VDC
Interface	IO-Link 1.0	IO-Link 1.0
Housing material	PA	PA
Dimension	53 x 60.8 x 12.5 mm	53 x 60.8 x 12.5 mm
IP rating per IEC 60529	IP40 plugged in	IP40 plugged in

MACHINE VISION VISION SENSORS

With our BVS-E vision sensors, you can realize reliable fault detection and exact quality control for parts and products.

They are extremely economical in doing so: multiple features can be checked at the same time and changeover times can be reduced to a minimum by simply changing the inspection task for changing lots.



Model	BVS E Identification	BVS E Standard	BVS E Advanced	BVS E Universal
Tools	6	8	9	14
Features per inspection	Up to 32	Up to 32	Up to 255	Up to 255
Typ. detection rate	Up to 40 Hz	Up to 15 Hz	Up to 40 Hz	Up to 40 Hz
Connection	Individually or networked via computer	Individually or networked via computer	Individually or networked via computer	Individually or networked via computer
Bus interface	Ethernet/RS232		Ethernet	Ethernet/RS232
Focal length	6 mm	■	■	■
	8 mm	■	■	■
	12 mm	■	■	■
	16 mm	■		■
Digital outputs	2 (+1 optional)	3 (+1 optional)	3 (+1 optional)	2 (+1 optional)

The overview of the vision sensors is only a selection. Check our complete portfolio on the [website](#) or in the [catalogue](#).

	BVS E identification	BVS E Standard	BVS E Advanced	BVS E Universal
 <p>Checking brightness</p> <ul style="list-style-type: none"> Identifying different types and parts Checking illumination brightness Detecting the operability of a display 		■	■	■
 <p>Comparing contrast</p> <ul style="list-style-type: none"> Monitoring the presence of labels Detecting a label Checking for completeness 		■	■	■
 <p>Counting edges</p> <ul style="list-style-type: none"> Monitoring the number of pins on ICs Checking threads for completeness Monitoring the quality of gear wheels 		■	■	■
 <p>Comparing width</p> <ul style="list-style-type: none"> Checking for presence (e.g. lids) Differentiating parts Monitoring location and orientation 		■	■	■
 <p>Detecting patterns</p> <ul style="list-style-type: none"> Checking parts quality Differentiating types 	■	■	■	■
 <p>Checking contours</p> <ul style="list-style-type: none"> Checking that punched parts are free of burrs Differentiating parts shapes Nominal/Actual comparison 		■	■	
 <p>Checking items</p> <ul style="list-style-type: none"> Monitoring level Positioning parts and products Positioning labels 		■	■	■
 <p>Checking 360° contours</p> <ul style="list-style-type: none"> Quality inspection of parts based on nominal/actual comparison Checking complete assembly Error detection for parts 				■
 <p>Counting 360° contours</p> <ul style="list-style-type: none"> Checking for the correct number of parts Checking the presence/absence of parts (e.g. screws) Checking for correct filling (blisters) 				■
 <p>Locating 360° contours</p> <ul style="list-style-type: none"> Fine positioning of the parts regardless of the reason Outputting part positions, e.g. for robot control system (via Ethernet interface) 				■
 <p>Comparing characters (OCV)</p> <ul style="list-style-type: none"> Checking labels Monitoring printing (e.g. ensuring correct dates for different lots) Checking logos 	■			■
 <p>360° position detection</p> <ul style="list-style-type: none"> Aligning parts Controlling robots (over an Ethernet interface) Inspection regardless of position 			■	■
 <p>Detecting and identifying barcodes, data matrix codes and QR codes</p> <ul style="list-style-type: none"> Code verification Documentation of parts used Verifying characters 	■			■

SINGLE-ENDED CORDSETS

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

Various cable types and plug connectors are available.

SINGLE-ENDED CORDSETS



	BCC02P6	BCC02NW	BCC036P	BCC0368
Connection	M8x1-Female, 3-pole, 5.00 m, PVC	M8x1-Female, 3-pole, 5.00 m, PVC	M12x1-Female, 5-pole, 5.00 m, PVC	M12x1-Female, 5-pole, 5.00 m, PVC
Connector configuration	angled	Straight	angled	Straight
Number of conductors	3	3	4	4
Cable diameter D	4.50 mm ±0.15 mm	4.50 mm ±0.15 mm	4.80 mm ±0.15 mm	4.80 mm ±0.15 mm
Operating voltage U _b	60 VDC / 60 VAC	60 VDC / 60 VAC	250 VDC / 250 VAC	250 VDC / 250 VAC
Cable temperature, fixed routing	-40...105 °C	-40...105 °C	-40...105 °C	-40...105 °C
IP rating per IEC 60529	IP67	IP67	IP68	IP68
Approval/Conformity	CE, cULus	CE, cULus	cULus	cULus

SINGLE-ENDED CORDSETS



	BCC00YF	BCC00UU	BCC00TY
Connection	M12x1-Female, 8-pole, 5.00 m, PUR	M16x0.75-Female, 8-pole, 5.00 m, PUR	M16x0.75-Female, 8-pole, 5.00 m, PUR
Connector configuration	Straight	angled	Straight
Number of conductors	8	8	8
Cable diameter D	6.00 mm ±0.15 mm	6.00 mm ±0.15 mm	6.00 mm ±0.15 mm
Operating voltage U _b	36 VDC / 30 VAC	60 VDC / 60 VAC	60 VDC / 60 VAC
Cable temperature, fixed routing	-50...80 °C	-50...80 °C	-50...80 °C
IP rating per IEC 60529	IP68	IP67	IP67
Approval/Conformity	CE	CE	CE

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-ATTACHABLES



	BCC06ZA	BCC06Z9	BCC06ZC	BCC06M4
Connection	M12x1-Female, 4-pole	M12x1-Female, 4-pole	M12x1-Male, 4-pole	M12x1-Male, 4-pole
Connector configuration	angled	Straight	angled	Straight
Connection cross-section	0.14...0.75 mm ²	0.14...0.75 mm ²	0.14...0.75 mm ²	0.14...0.75 mm ²
Cable diameter D	4...6 mm	4...6 mm	4...6 mm	4...6 mm
Operating voltage U _b	250 VDC / 250 VAC	250 VDC / 250 VAC	250 VDC / 250 VAC	250 VDC / 250 VAC
IP rating per IEC 60529	IP67	IP67	IP67	IP67
Ambient temperature	-40...85 °C	-25...85 °C	-25...85 °C	-25...85 °C

JUNCTION BLOCKS

Passive interfaces 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 screw inserts ensure the fitting precision of the plug connectors.

JUNCTION BLOCKS



	BPI0099
Connection slots	8x M12x1-Female, 5-pole
Cable	PUR black, 5.00 m, Drag chain compatible
Switching function 01	NO/NC
Signal type	PNP
Output current max.	4 A
IP rating per IEC 60529	IP67 when threaded in
Operating voltage U _b	10...30 VDC
Dimension	155 x 58 x 25 mm
Interface	PNP

REFLECTORS, FIBERS, OPTICS PLASTIC FIBERS

Our compact, highly flexible and robust plastic fiber solutions are distinguished by their precision and speed.

They are available as switch and through-beam versions with various end pieces.

The plastic fiber is temperature-resistant and chemical-resistant. You benefit from simple installation, even under tight installation conditions.

PLASTIC FIBERS



BFO005M

Dimension	Ø 4 x 20 mm
Version	M4, standard
Principle of operation	Optical fiber
Range	500 mm
Cable length	2.00 m
Ambient temperature	-40...70 °C

REFLECTORS, FIBERS, OPTICS REFLECTORS

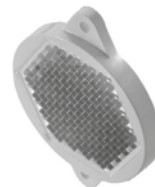
The right reflector for any environment: our round and square reflectors and reflective foils are heat- and chemical-resistant.

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



BAM0126

BAM00UK

Dimension	Ø 62 x 8.8 mm	Ø 84 x 7.3 mm
Version	Cube corner 4 mm	Cube corner 4 mm
Principle of operation	Reflector BOS	Reflector BOS
Use	for photoelectric retroreflective sensors	for photoelectric retroreflective sensors
Ambient temperature	-20...60 °C	-20...60 °C

MECHANICAL ACCESSORIES MAGNETS FOR MAGNETOSTRICTIVE SENSORS

MAGNETS FOR MAGNETOSTRICTIVE SENSORS



	BAM013J	BAM0146	BAM0149
Version	Ring Magnet Generation 7 Micropulse Profile and Rod-style Transducers	BTL magnet, float	BTL magnet, float
Dimension		Ø 44 x 49 mm	Ø 50.9 x 52 mm

POSITION MARKER FOR MAGNETOSTRICTIVE SENSORS

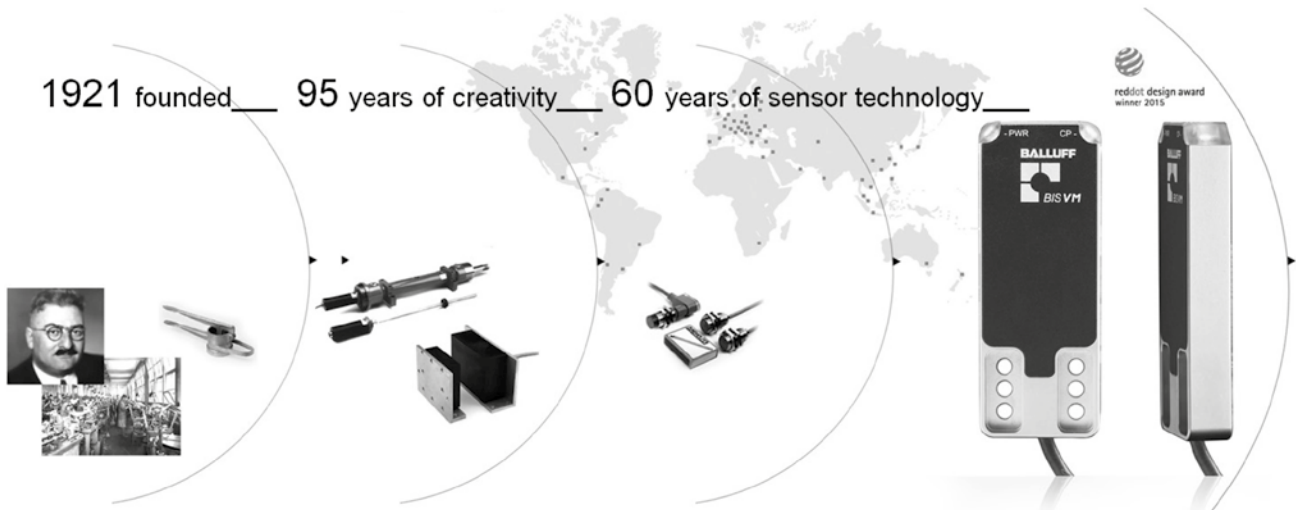


	BAM01FC	BAM014H	BAM014M
Principle of operation	BTL magnets, profile style	BTL magnets, profile style	BTL magnets, profile style
Dimension	28 x 16.5 x 40 mm	28 x 29.9 x 40 mm	37.6 x 14 x 20 mm
Fastening detail			Cylinder head screws M4x35

APPLICATIONS GENERAL OVERVIEW

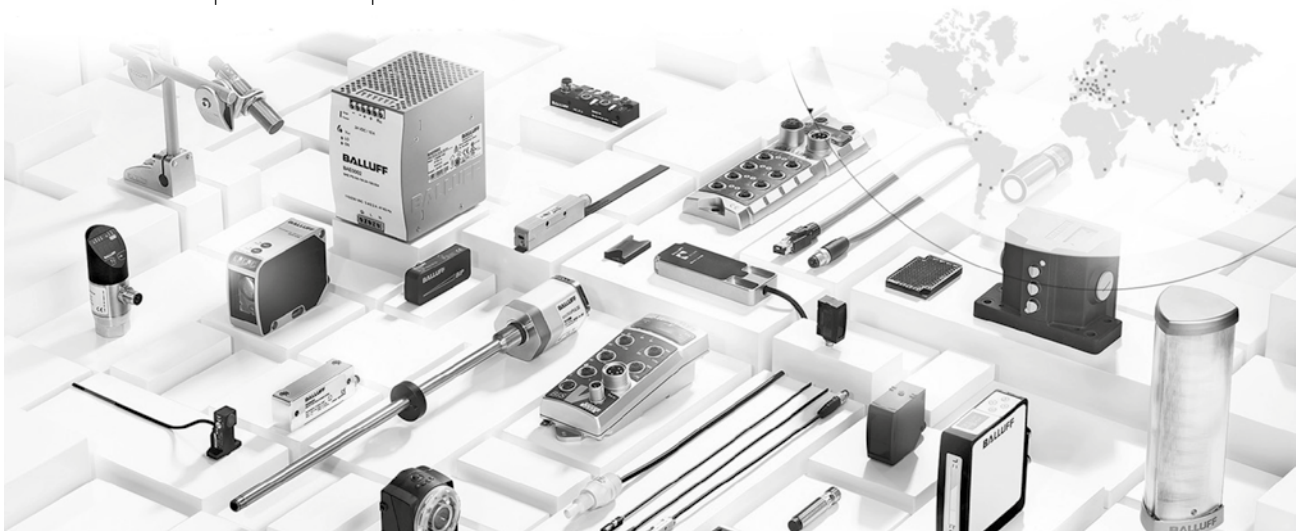
BALLUFF - A GLOBAL PROMISE

We are ensuring sustainability through innovation



BALLUFF - A GLOBAL PROMISE

We offer a comprehensive portfolio for industrial automation



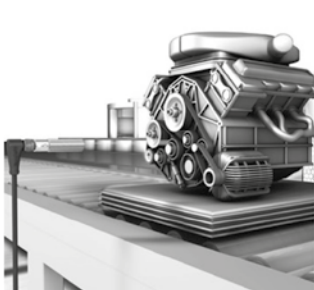
BALLUFF - A GLOBAL PROMISE

We develop individual industry solutions - focused and flexible

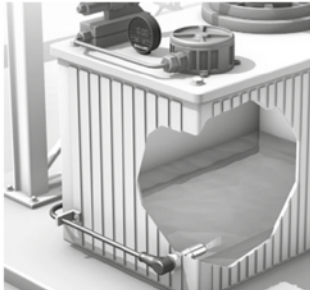


SENSORS

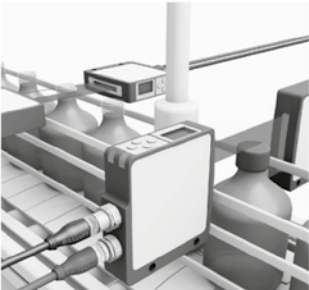
Need-based solutions with the highest level of reliability



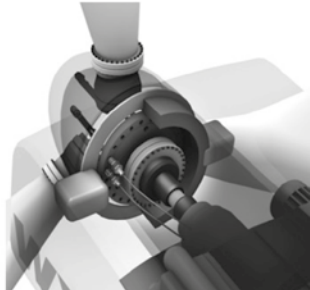
On the conveyor belt photoelectric sensors perform presence checking of engines.



Capacitive sensors monitor the level in an oil tank in machine building.



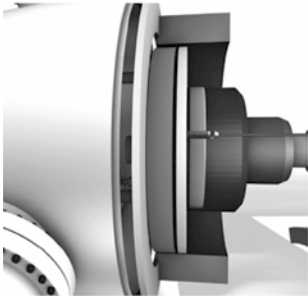
Photoelectric sensors are recommended for cap checking in a pharmaceutical filling system.



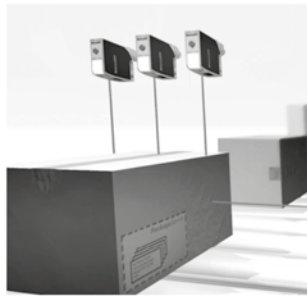
Inductive sensors detect rotor speed in power technology.

LINEAR POSITION SENSING AND MEASUREMENT

The right measuring principle for the maximum result



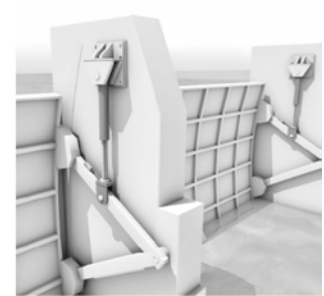
Inductive distance sensors precisely check the brake discs in wind power system.



Optical distance sensors continuously determine dimensions or contours of products on the conveyor.



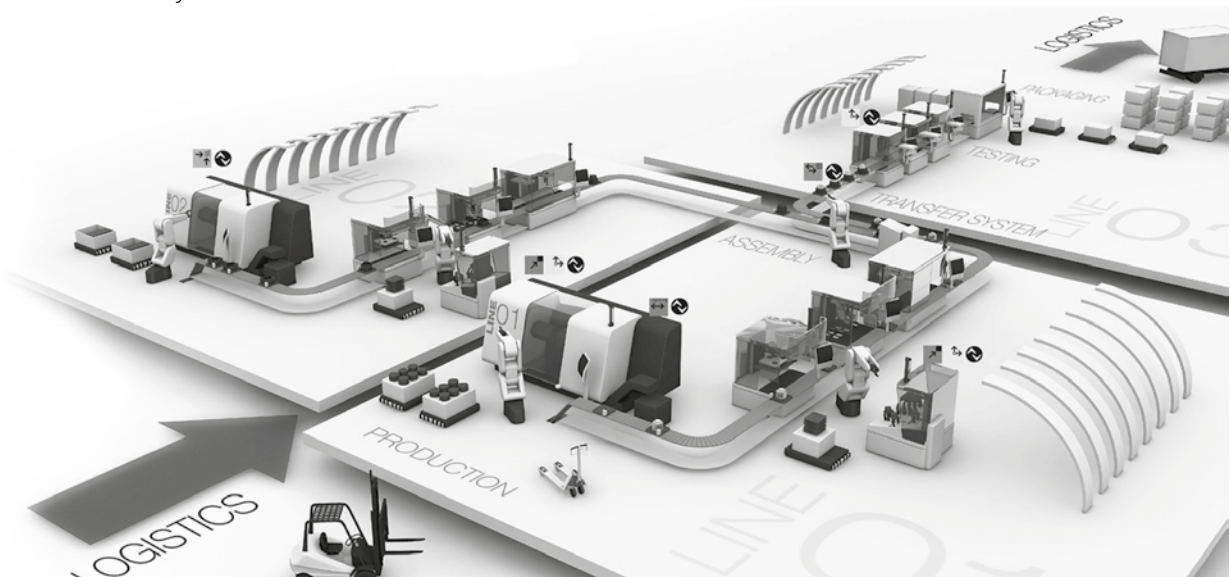
Ultrasonic sensors check the distance of transport boxes and detect whether they are full or not.



For fully automated control of the water level on weirs, inclination sensors detect all the intermediate positions.

INDUSTRIAL NETWORKING

Communication systems in industrial automation

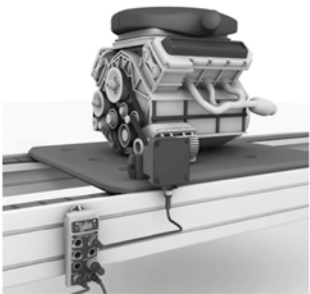


RFID

Industrial RFID and image processing systems ensure maximum quality



RFID supports process control: Are the parts being brought to the right production stage at the right time?



For engine assembly RFID ensures reliable parts traceability throughout all the production steps.



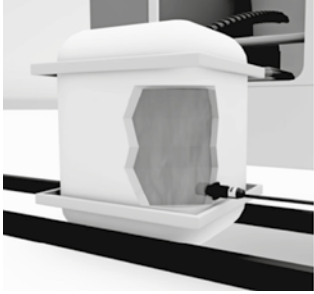
RFID ensures access control even through stainless steel.



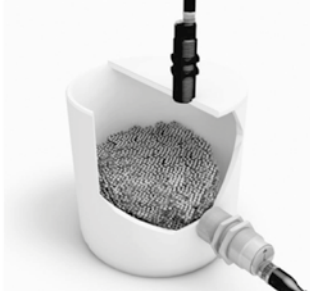
Just-in-time: RFID ensures the correct delivery of all materials in intralogistics.

PROCESS MONITORING IN FACTORY AUTOMATION

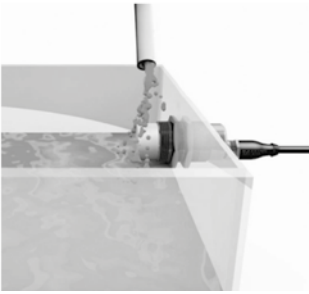
Different demands require different concepts



The capacitive SmartLevel principle ensures reliable signal detection.



Capacitive sensors can also be used for detecting solids.



Capacitive sensors measure levels of aggressive media.



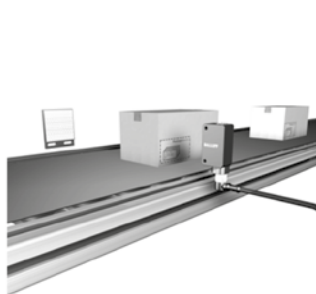
Fast filling processes are precisely monitored by Micropulse transducers.

ACCESSORIES

High quality accessories are part of a complete sensor package



The 3-D sensor holder enables flexible mounting of sensors and lights.



Our diverse range includes product-specific accessories such as reflectors for through-beam sensors.



Sensors are simple to position precisely using the flexible mounting system.



Intelligent power supplies are recommended for decentralized applications using IO-Link, with IP 67 protection.

Balluff GmbH
Schurwaldstraße 9
73765 Neuhausen a. d. F.
Deutschland
Phone +49 7158 173-0
Fax +49 7158 5010
balluff@balluff.de



HOW TO
CONTACT
US