

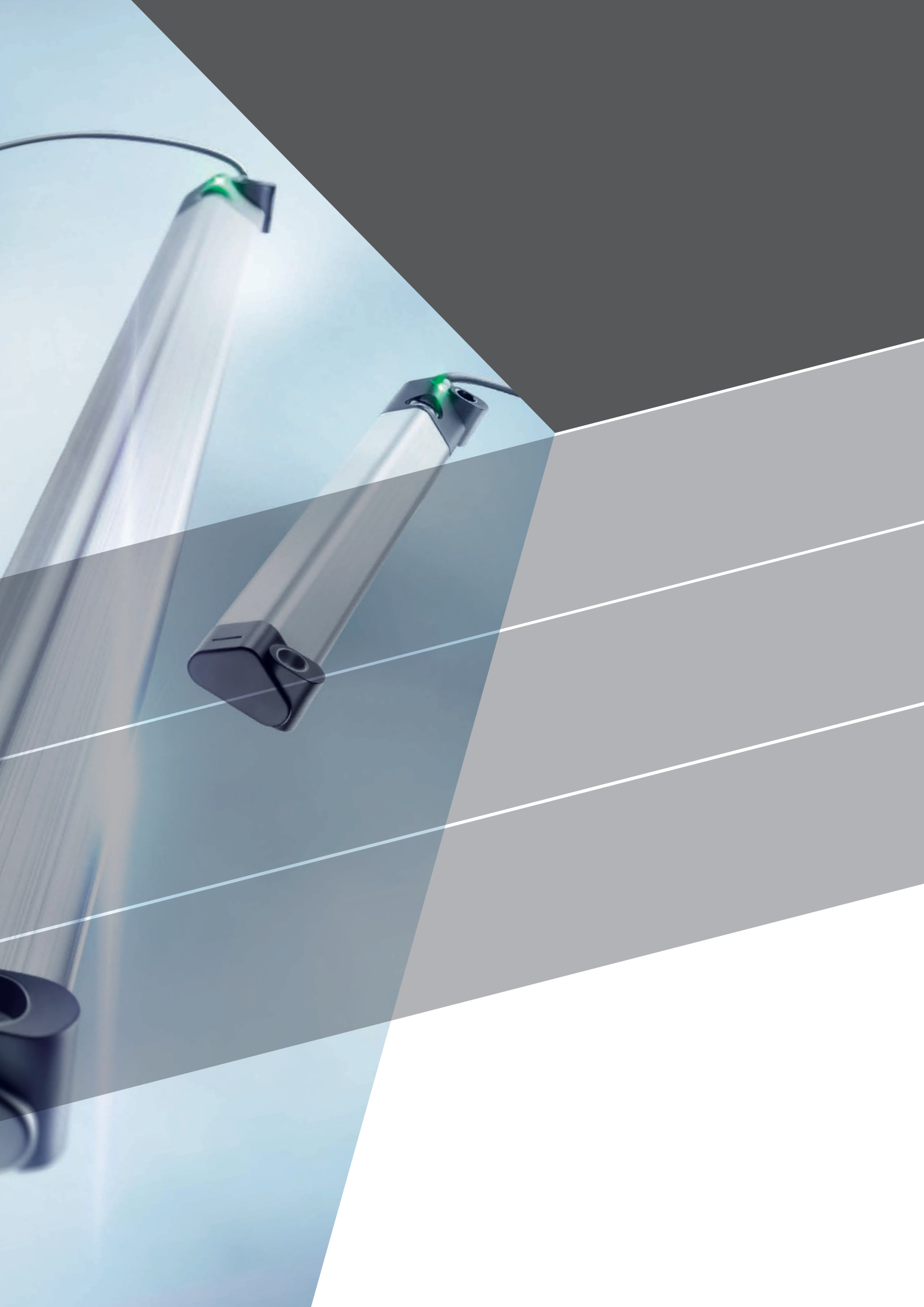
BALLUFF

For efficient
automation

PRODUCTS + NEWS



B *innovating automation*



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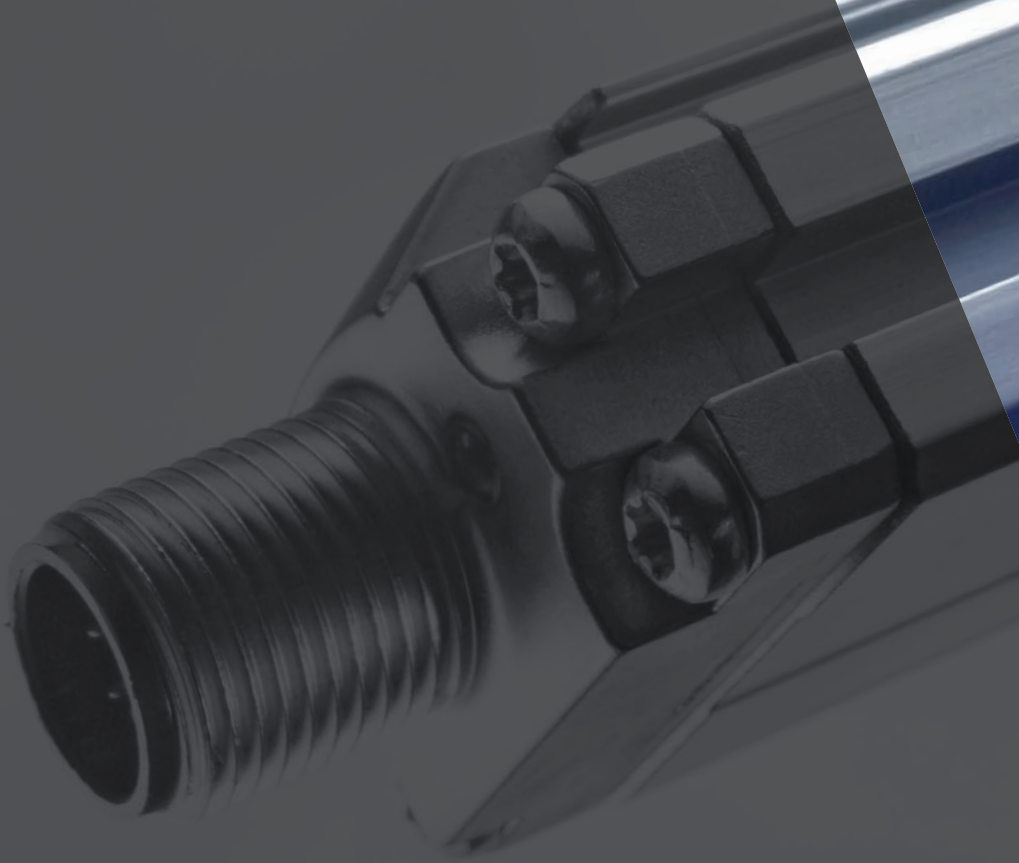


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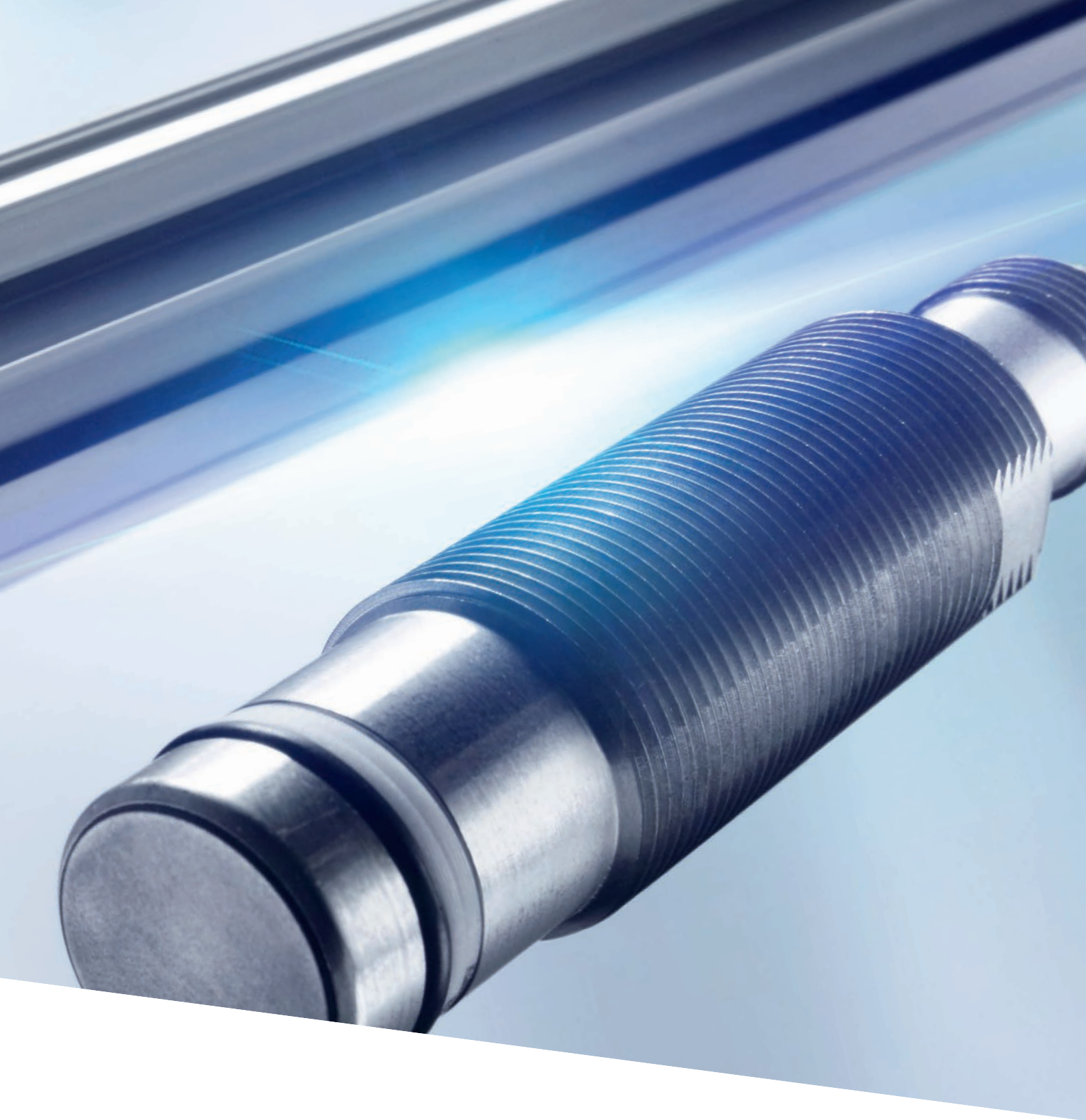


Comprehensive solutions for industrial automation

SENSORS



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In the field of sensor technology, Balluff handles the entire range of technological diversity with its various operating principles. We provide you with high-quality sensors for any application or requirement: from distance measurement to object detection and level, temperature and pressure monitoring for everyday industrial uses as well for tough applications in critical environments.

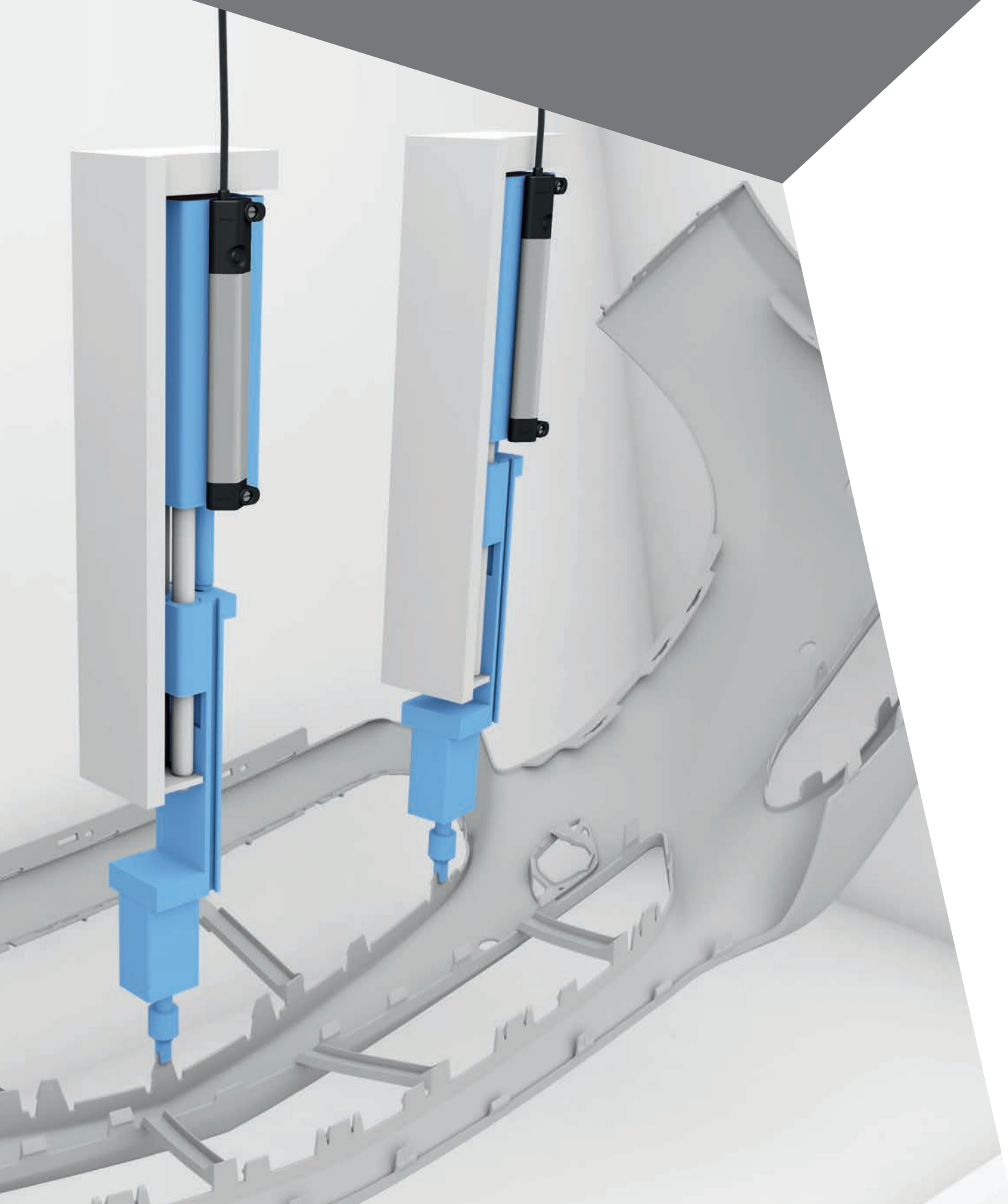
Our quality management regime is DIN EN ISO 9001:2015 certified. All Balluff sensors are tested in our in-house, accredited laboratory. They meet regional as well as international standards and are used throughout the world.

Your Balluff solutions

- Inductive sensors
- Photoelectric sensors
- Capacitive sensors
- Magnetic field sensors
- Ultrasonic sensors
- Cam switches
- Magnetostrictive sensors
- Magnetic encoders
- Radar sensors
- Inclination sensors
- Pressure transmitters
- Temperature sensors
- Flow sensors

Intelligent linear feedback –
measure positions continuously and without contact

MAGNETIC FIELD POSITIONING SYSTEM



The Smart Factory, with its complex production lines, affords high flexibility. It can be difficult to integrate the required process and product quality while demands and specifications are changing continuously.

Keeping a constant eye on the process becomes critical. Sensors in grippers, stamping machines and tool changers play a critical role in the process. They ensure the essential speed of action, precision and flexibility.

The new BMP magnetic field positioning system from Balluff lets you monitor continual work processes reliably and without wear. This helps you stay in control of various processes and ensures simultaneous processing of workpieces all while remaining energy-efficient. The result is high process reliability and automation quality that works in a variety of applications: whether you need to control assembly in the automobile industry, or quickly adapt to changing formats and process parameters in the packaging industry, the new magnetic field positioning system provides reliable, accurate results.

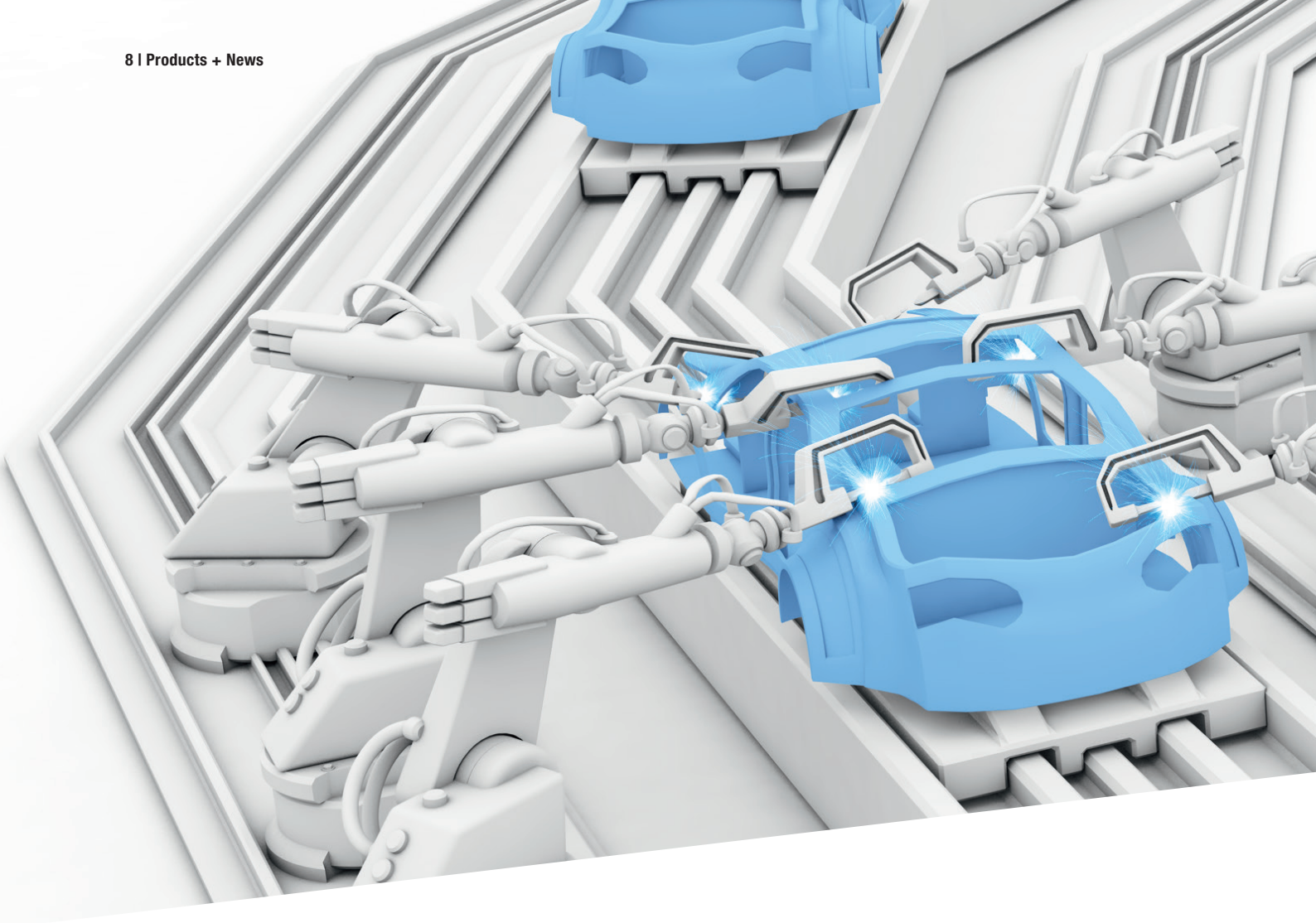
Features

- Modular concept for greater flexibility – measuring range up to 256 mm
- Wide transparency – continuous checking of piston position in tight spaces with analog voltage and current output as well as IO-Link interface
- Reliable results – application-relevant linearity and repeat accuracy
- High process security – low temperature drift and high quality electromagnetic compatibility
- Ideal for Industry 4.0 – format change, condition monitoring and predictive maintenance

MAGNETIC FIELD POSITIONING SYSTEM



	BMP000Y	BMP000Z	BMP0010
Measuring range	32 mm	128 mm	256 mm
Communication	IO-Link 1.1	IO-Link 1.1	IO-Link 1.1
Operating voltage	15...30 V DC	15...30 V DC	15...30 V DC
Resolution	≤ 1 µm	≤ 1 µm	≤ 1 µm
Non-linearity typ.	±250 µm	±250 µm	±250 µm
Temperature drift max. from end value	±0.3 %	±0.3 %	±0.3 %
Repeat accuracy	±100 µm	±100 µm	±100 µm
Dimension	17.5 × 9.6 × 42 mm	17.5 × 9.6 × 138 mm	17.5 × 9.6 × 266 mm
Approval/conformity	CE, cURus	CE, cURus	CE, cURus
Ambient temperature	-25...+85 °C	-25...+85 °C	-25...+85 °C
IP rating per IEC 60529	IP67	IP67	IP67
Housing material	PA12, aluminum	PA12, aluminum	PA12, aluminum
Connection type	0.5 m PUR cable with M12 connector, 4-pin	0.5 m PUR cable with M12 connector, 4-pin	0.5 m PUR cable with M12 connector, 4-pin



Detect objects at the same switching distance – regardless of material

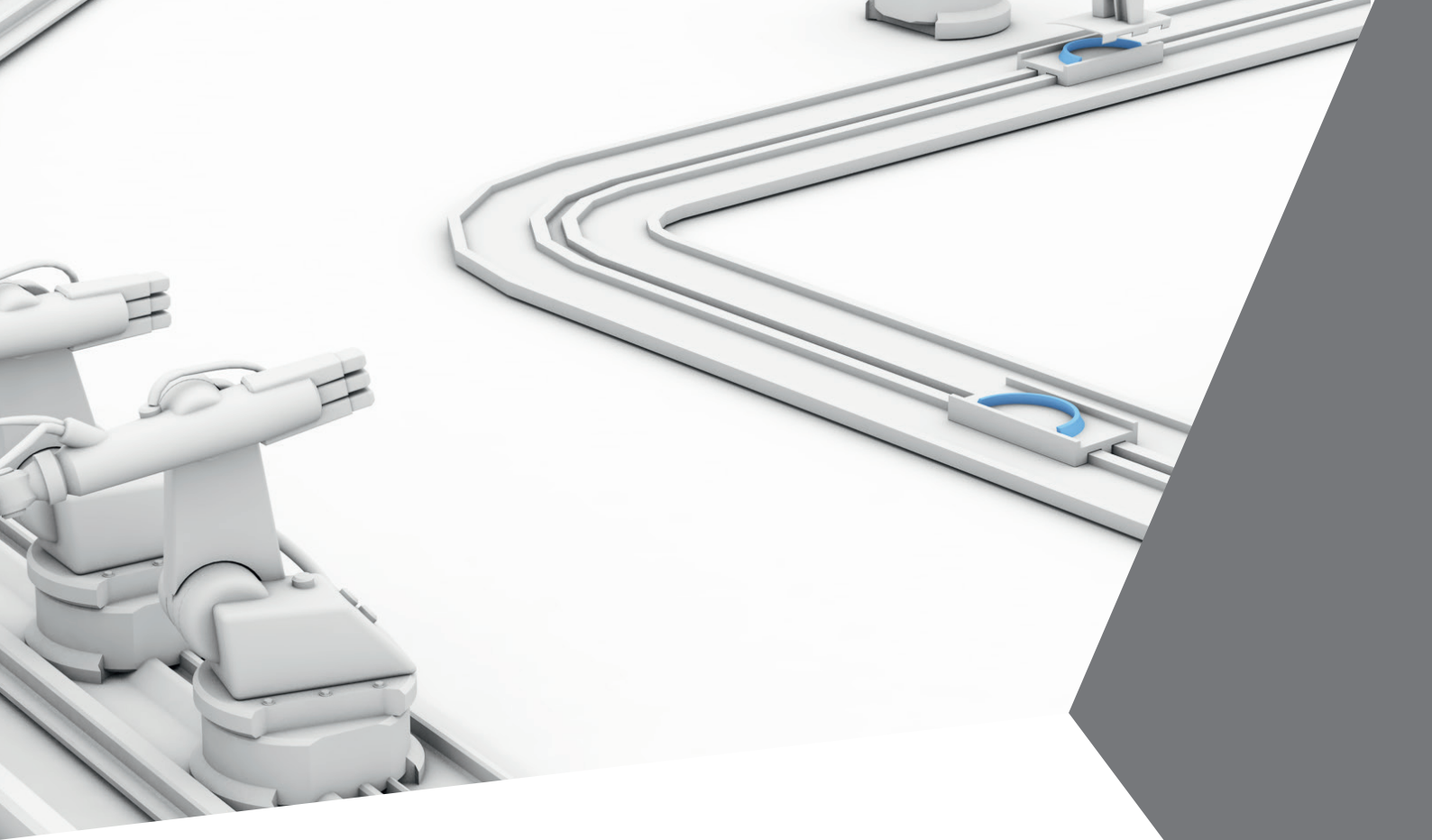
INDUCTIVE FACTOR 1 SENSORS

Factor 1 sensors detect all metals (i.e. steel, aluminum, brass) with the same switching distance, without any reduction factor. This feature offers advantages in applications where the material of the objects to be detected can vary or when non-ferrous metals must be detected with a high switching distance.

Factor 1 sensors are magnetic-field resistant so their function is not disturbed by strong electromagnetic fields, such as in induction hardening or welding systems.

Features

- High switching distance for ferrous and non-ferrous metals
- Magnetic-field resistant and PTFE coated – ideal for harsh environments
- IP68 rated with an extended temperature range from $-40...+85\text{ °C}$ – meets highest requirements
- Highly precise and flexible – can be used even with changing objects



INDUCTIVE
FACTOR 1
SENSORS



	BES05KT	BES05KW	BES05KP	BES05KR	BES05KU
Style	M12 × 1	M12 × 1	M12 × 1	M12 × 1	M12 × 1
Installation	Flush	Non-flush	Flush	Non-flush	Flush
Output	PNP NO	PNP NO	PNP NO	PNP NO	PNP NO
Range	4 mm	8 mm	4 mm	8 mm	4 mm
Operating voltage	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
Switching frequency	2000 Hz	2000 Hz	2000 Hz	2000 Hz	2000 Hz
IP rating	IP68	IP68	IP68	IP68	IP68
Approval/conformity	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Ambient temperature	-40...+85 °C	-40...+85 °C	-40...+85 °C	-40...+85 °C	-40...+85 °C
Housing material	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated
Sensing face material	PBT	PBT	PBT	PBT	PBT, ceramic coated

Expanded functionality – more than a switching signal

M12 CAPACITIVE SENSORS – NOW WITH IO-LINK

When you need to detect metallic and non-metallic objects or levels with direct media contact, Balluff's compact capacitive sensors will meet all of your needs. The flush mounting versions are ideal for object detection, while the non-flush versions are optimal for detecting levels.

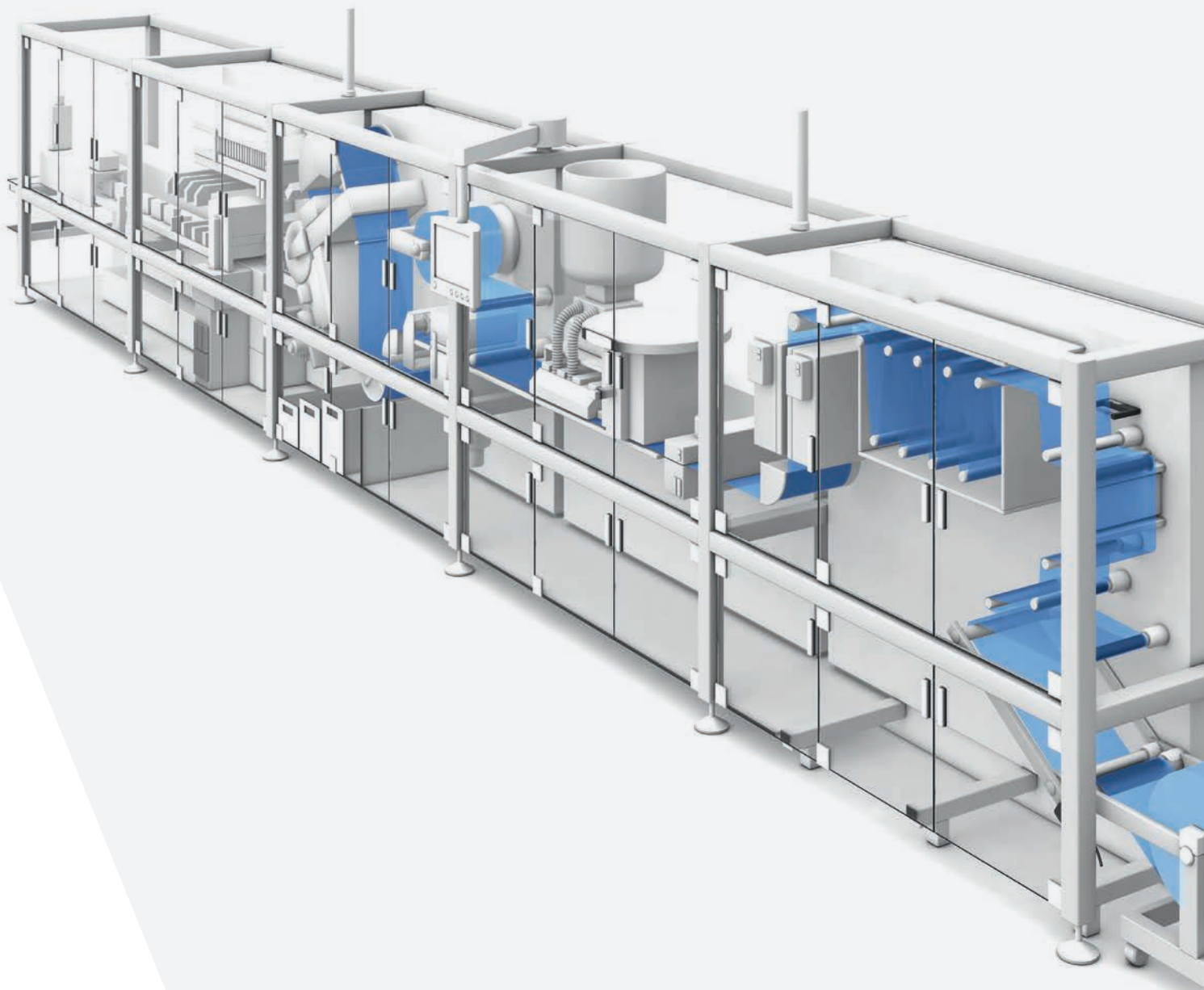
The newest generation in M12 housings also offer you optimized technical features. You can choose between versions with IO-Link interface and a conventional final stage, i.e. normally open or normally closed, each with a push-pull function. The teach wire allows you to adjust the sensitivity easily for the respective application.

The IO-Link versions give you a wide range of possibilities from a central location, such as configuration or diagnostics by monitoring the process values.

With our M12 capacitive sensors, you get greater security for your applications.

Features

- Easy adjustment via wire, especially advantageous in hard to access locations
- IO-Link for expanded functionality
- Rugged VA-1.4404 housing
- IP67 protection rating
- Power, status and switching function indicator
- Extended measuring range



CAPACITIVE
SENSORS
FOR OBJECT
DETECTION



	BCS017M	BCS017K	BCS017L	BCS017H	BCS017J
Dimension	Ø 12 x 60 mm	Ø 12 x 60 mm	Ø 12 x 60 mm	Ø 12 x 50 mm	Ø 12 x 50 mm
Installation	Flush	Flush	Flush	Flush	Flush
Connection	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	Cable, 4-wire	Cable, 4-wire
Switching output	PNP/NPN/ push-pull	PNP/NPN/ push-pull	PNP/NPN/ push-pull	PNP/NPN/ push-pull	PNP/NPN/ push-pull
Output function	Normally open/ normally closed (NO/NC)	Normally open/ normally closed (NO/NC)	Normally closed/ normally open (NC/NO)	Normally open/ normally closed (NO/NC)	Normally closed/ normally open (NC/NO)
Interface	IO-Link 1.1				
Switching frequency	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
Measuring range	0.5...5 mm	0.5...5 mm	0.5...5 mm	0.5...5 mm	0.5...5 mm
Housing material	Stainless steel 1.4404	Stainless steel 1.4404	Stainless steel 1.4404	Stainless steel 1.4404	Stainless steel 1.4404
Material sensing surface	PEEK	PEEK	PEEK	PEEK	PEEK
Ambient temperature	-10...80 °C	-10...80 °C	-10...80 °C	-10...80 °C	-10...80 °C
Operating voltage	18...30 V DC	12...30 V DC	12...30 V DC	12...30 V DC	12...30 V DC
Approval/conformity	CE, cULus, EAC	CE, cULus, EAC	CE, cULus, EAC	CE, cULus, EAC	CE, cULus, EAC
Protection degree	IP67	IP67	IP67	IP67	IP67

CAPACITIVE
LEVEL
SENSORS



	BCS017C	BCS0179	BCS017A	BCS0177	BCS0178
Dimension	Ø 12 × 60 mm	Ø 12 × 60 mm	Ø 12 × 60 mm	Ø 12 × 50 mm	Ø 12 × 50 mm
Installation	Non-flush	Non-flush	Non-flush	Non-flush	Non-flush
Connection	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	Cable, 4-wire	Cable, 4-wire
Switching output	PNP/NPN/ push-pull	PNP/NPN/ push-pull	PNP/NPN/ push-pull	PNP/NPN/ push-pull	PNP/NPN/ push-pull
Output function	Normally open/ normally closed (NO/NC)	Normally open/ normally closed (NO/NC)	Normally closed/ normally open (NC/NO)	Normally open/ normally closed (NO/NC)	Normally closed/ normally open (NC/NO)
Interface	IO-Link 1.1				
Switching frequency	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
Measuring range	0.5...8 mm	0.5...8 mm	0.5...8 mm	0.5...8 mm	0.5...8 mm
Housing material	Stainless steel 1.4404	Stainless steel 1.4404	Stainless steel 1.4404	Stainless steel 1.4404	Stainless steel 1.4404
Material sensing surface	PEEK	PEEK	PEEK	PEEK	PEEK
Ambient temperature	-10...80 °C	-10...80 °C	-10...80 °C	-10...80 °C	-10...80 °C
Operating voltage	18...30 V DC	12...30 V DC	12...30 V DC	12...30 V DC	12...30 V DC
Approval/conformity	CE, cULus, EAC	CE, cULus, EAC	CE, cULus, EAC	CE, cULus, EAC	CE, cULus, EAC
Protection degree	IP67	IP67	IP67	IP67	IP67

Automatic identification and tracking in production

RFID – RADIO FREQUENCY IDENTIFICATION



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Our BIS industrial RFID systems provide an overview in a modern production facility. Objects can be automatically identified and traced using RFID. To do this, a data carrier that functions as a memory is attached to the object to be identified. The data is transferred between data carrier and read/write head and via the processor unit to the controller.

Balluff offers a broad selection of innovative products for the low frequency (LF), high frequency (HF) and ultra-high frequency (UHF) range. With the BIS V frequency-independent processor unit, all systems can be flexibly combined with each other.

Your Balluff solutions

- RFID system HF (13.56 MHz) BIS M
- RFID system LF (70/455 kHz) BIS C
- RFID system LF (125 kHz) BIS L
- RFID system UHF (860/960 MHz) BIS U

Ideal for mobile identification tasks in UHF applications

UHF HANDHELD READER

The UHF handheld reader BIS U-890 is an ideal tool for advanced data collection. It offers great flexibility for RFID in close range or long-range applications. The reader is equipped with a powerful ARM processor. Together with Microsoft Windows Embedded Compact 7, it was designed specifically for fast, reliable reading of UHF tags.

The integrated UHF module with 1 W output power and the adaptive cross-dipole antenna enable detection of large populations of UHF tags in an extremely short time.

The factory installed RFID software ensures top performance and provides additional flexibility. It is simple to operate and offers comprehensive functions for any acquisition and detection requirement.

The UHF handheld reader BIS U-890 is certified for use in Europe, USA, Canada and China.

Features

- Fast data acquisition and processing with a GHz ARM processor
- Generous read range: > 4 m
- High-performance multi-tagging: > 200 tags/sec
- Adaptive UHF antenna for optimal tag acquisition
- Versatile RFID software already installed

PORTABLE
UHF READ/
WRITE UNITS
(860/960 MHz)



WLAN + 2D	BAE0100	BAE0101	BAE0102
Product group	UHF (860...960 MHz)	UHF (860...960 MHz)	UHF (860...960 MHz)
Radio license	Europe	USA, Canada	China
Dimension	91 × 196 × 135 mm	91 × 196 × 135 mm	91 × 196 × 135 mm
Antenna type	Cross dipole	Cross dipole	Cross dipole
Display	4.3" Touchscreen display (color): 800 × 480 VGA resolution 262,000 colors	4.3" Touchscreen display (color): 800 × 480 VGA resolution 262,000 colors	4.3" Touchscreen display (color): 800 × 480 VGA resolution 262,000 colors
Keypad	5 buttons	5 buttons	5 buttons
Storage temperature	-20...60 °C	-20...60 °C	-20...60 °C
Ambient temperature	-20...55 °C	-20...55 °C	-20...55 °C
IP rating	IP54	IP54	IP54
Approval/conformity	CE, ETSI EN 302 208	FCC, IC	CMIIT-Radio Transmiss. Equipm.

Product finder and more technical details:
www.balluff.com/go/UHF-BIS-U



BALLUFF
Advanced Inventory

Barcode	Part No.	Bin No.	Bin No.
123456789012	1000000001	1000000001	1000000001
123456789012	1000000002	1000000002	1000000002
123456789012	1000000003	1000000003	1000000003
123456789012	1000000004	1000000004	1000000004
123456789012	1000000005	1000000005	1000000005
123456789012	1000000006	1000000006	1000000006
123456789012	1000000007	1000000007	1000000007
123456789012	1000000008	1000000008	1000000008
123456789012	1000000009	1000000009	1000000009
123456789012	1000000010	1000000010	1000000010

OK Cancel

Reliable information exchange across all levels

INDUSTRIAL NETWORKING



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The demands on industrial networking continually increase: The rising quantities of data and ever more complex communication require high-performance components that can reliably transport the information across all production levels. This is especially true if high protection types, robustness, use at high temperatures or special interfaces and connections for maximum security are needed.

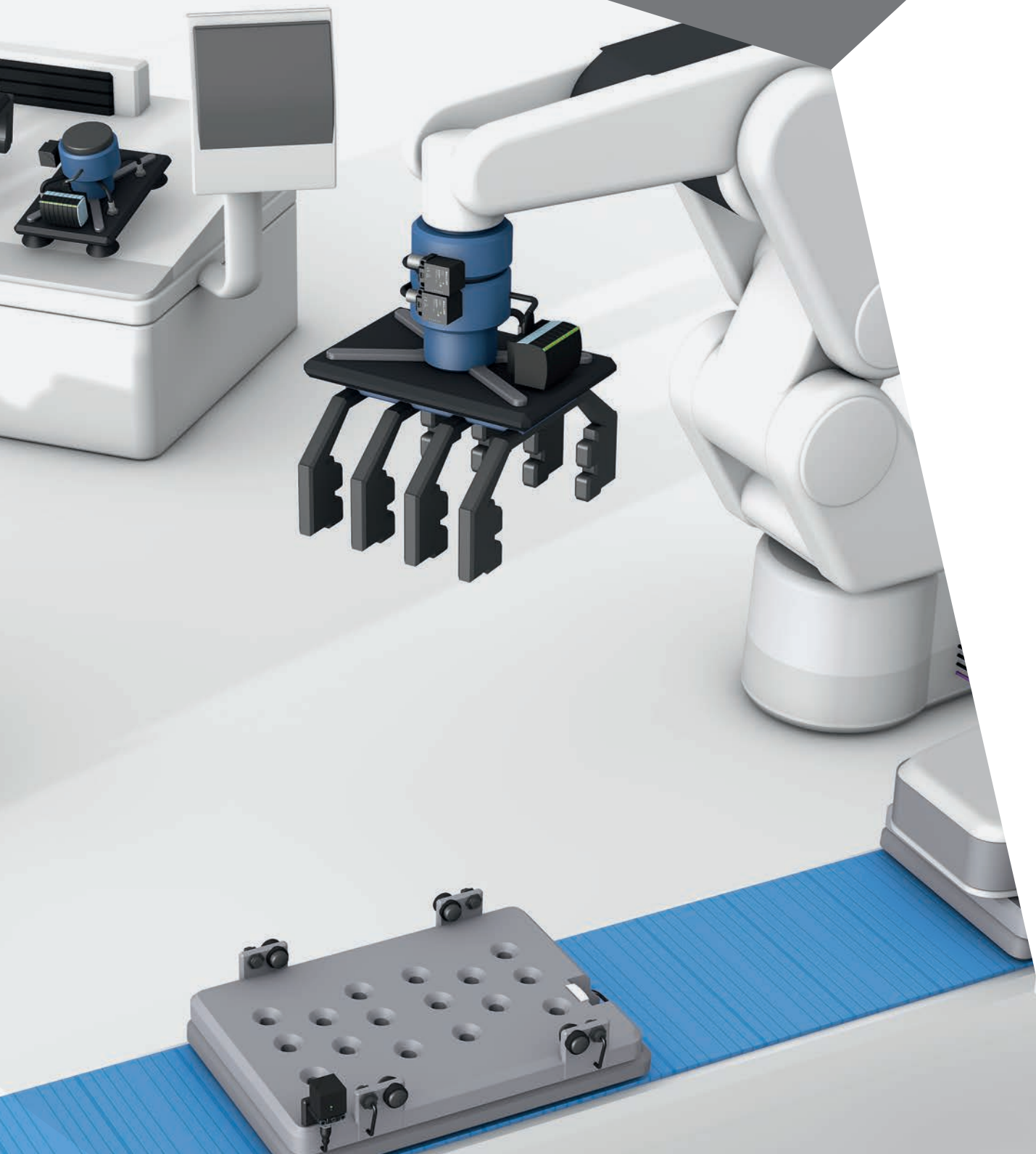
With the intelligent combination of high-performance industrial networking technology and the IO-Link communication standard, Balluff makes flexible and smooth communication in the most varied application scenarios possible.

Your Balluff solutions

- Network modules
- I/O modules
- Switches
- IO-Link memory modules
- Inductive couplers

Fast, non-contact data and power transmission

INDUCTIVE COUPLER WITH IO-LINK



Inductive coupler systems are now indispensable in many applications. With their non-contact transmission of data and power, they have replaced the once-popular plug-in contacts. The maximum transmittable coupler power plays a central role in many applications including the gripper control in robotics.

The new BIC Q40 inductive coupler from Balluff provides you with a system that leaves all the other inductive couplers far behind. It delivers up to 1.7 A continuous current for an output up to 40 W of power – that is three times that of common couplers on the market! Thanks to its IO-Link interface, the system assists in the smooth and fast exchange of events, parameter and process data between the IO-Link device and the IO-Link master. Data transmission is transparent, with no configuration of the IO-Link coupler necessary. By supporting COM3, the system also enables the fastest possible data exchange. Bi-directional communication means you can control actuators and valve terminals at the same time while also collecting signals. Our new BIC inductive coupler has the best available flexibility and performance level now.

Features


- Compact block style form factor
- Potential 180° turn angle of the plug insert (Base and Remote)
- 1.7 A continuous current: approx. 40 W power transfer
- Peak currents of up to 5 A possible
- Compatible with existing and future systems
- Supports COM2 and COM3 operating modes – fastest IO-Link standard
- Transmission distances between Base and Remote up to 12.5 mm

INDUCTIVE COUPLERS FOR IO-LINK SIGNAL TRANSMISSION



	BIC007F	BIC007H
Function	IO-Link signal transmission	IO-Link signal transmission
Signal type	Bi-directional	Bi-directional
Transmission distance	0...5 mm	0...5 mm
Component	Base	Remote
Interface	IO-Link 1.1	IO-Link 1.1
Connection	Connector, M12 connector, 4-pin	Connector, M12 connector, 5-pin
Rated operating voltage	24 V DC	24 V DC
Rated output current		5 A/1 ms
Housing material	PBTP	PBTP
Dimension	40 × 40 × 62 mm	40 × 40 × 60.8 mm
Approval/conformity	CE	CE
Ambient temperature	-5...55 °C	-5...55 °C
Protection degree	IP67	IP67
Transfer rate	COM2 (38.4 kBaud), COM3 (230.4 kBaud)	COM2 (38.4 kBaud), COM3 (230.4 kBaud)
Additive cycle time	Device + 2.8 ms	Device + 2.8 ms
Process data IN	0...32 byte	0...32 byte
Process data OUT	0...32 byte	0...32 byte
SIO mode	No	No



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Balluff

OPENING UP NEW PERSPECTIVES

Balluff is one of the leading suppliers of high-quality sensor, identification, network and software solutions for your automation requirements. Family-owned for more than 90 years, around 4000 employees worldwide in 37 wholly-owned subsidiaries for sales, production and development are dedicated to the highest quality.

We give our all to provide top services for innovative solutions that increase your competitive edge. Through years of experience we bring the competence of a manufacturer and high personal engagement.

We follow our motto "Innovating Automation" as pacemakers of automation, refiners and new developers, and technological trailblazers. In open exchange with associations, universities and research institutes, as well as in close contact with our customers, we create new industrial sector solutions for automation. With innovative Balluff solutions, you are well equipped for a successful future.

You can always count on us, our products and our scheduling and delivery reliability. In the spirit of a good partnership.

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