DEXYÍ®

BALLUFF

sensors worldwide

Industrial Identification

Identification systems for production, material flow and logistics

As the leading sensor specialist and system provider with more than 90 years of company tradition, Balluff GmbH has been a recognized partner in factory automation for decades. With 61 locations, Balluff has a strong presence on every continent. The corporate headquarters in Neuhausen a.d.F. is located near Stuttgart.

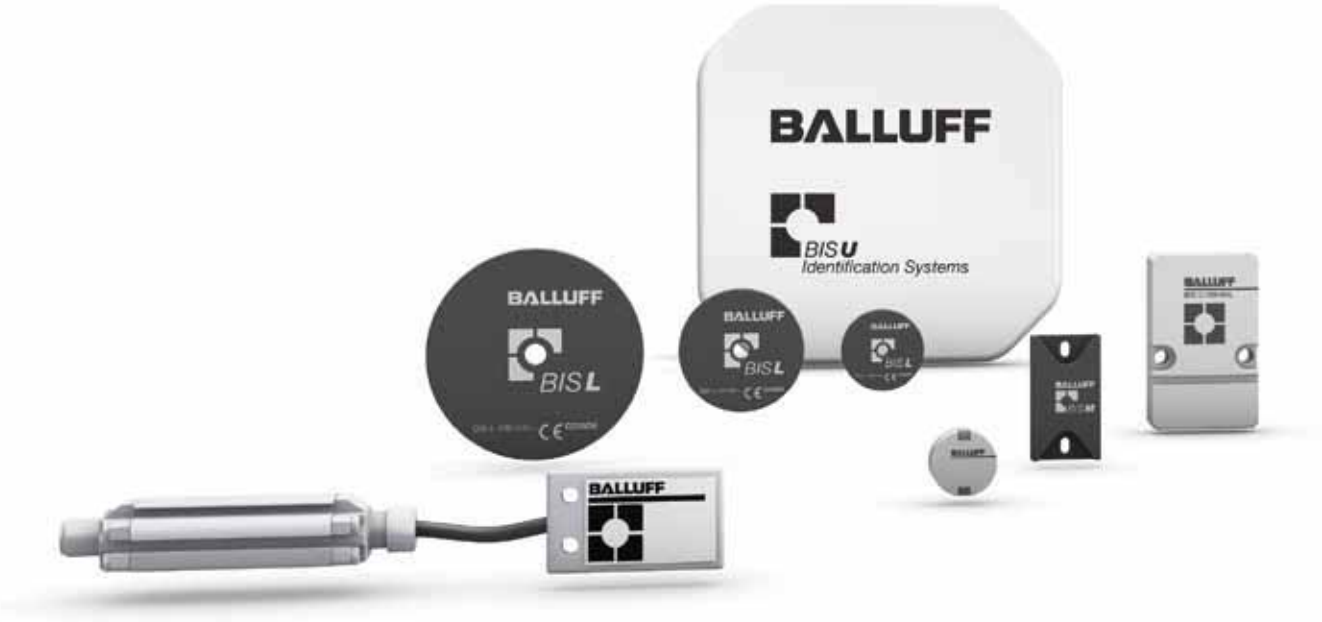
Balluff offers a wide array of products with varied operating principles taking advantage of the broad spectrum of technology available, including high-quality sensors and systems for position measurement and identification, as well as sensors for detecting objects and measuring fluids. The full-range assortment includes optimal network and connection technology and a comprehensive line of accessory products.

We offer innovative, first-class products tested in our own accredited laboratory, and maintain certified quality management in accordance with DIN EN ISO 9001:2008. Our technology speaks for itself in international applications since it also meets regional standards.

Balluff stands for application-specific customer solutions, comprehensive services, individual consultation and prompt service. Our staff of more than 2750 employees is committed to providing outstanding service worldwide.

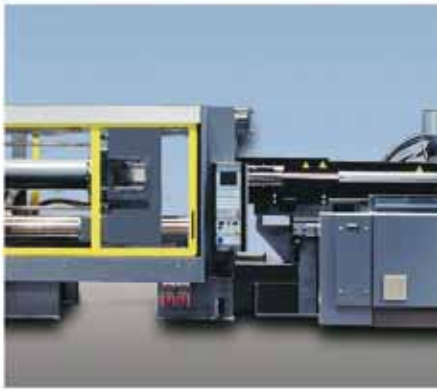
Balluff industrial identification is based on many years of experience and manufacturer expertise. Take advantage of our expertise.

c UL us LISTED



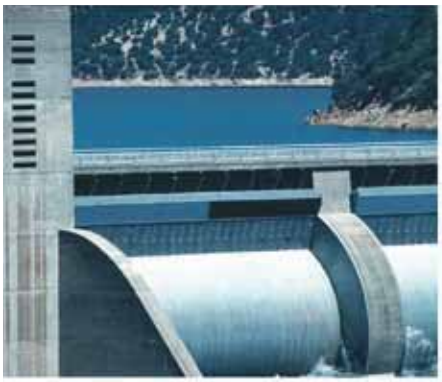
Sophisticated SensorTechnology for All Areas of Automation



Automotive industry: Factory automation, plant engineering, welding systems and reshaping technology
Mechanical and systems engineering: Steelworks, machine tools, and machines for making packaging, plastic and rubber
Energy: Conventional and renewable energies
Drive technology: Hydraulic and electric drive technology

Additional areas: Medical technology, semiconductor equipment, machines for processing wood, mining machines, printing machines, paper-making machines, and more

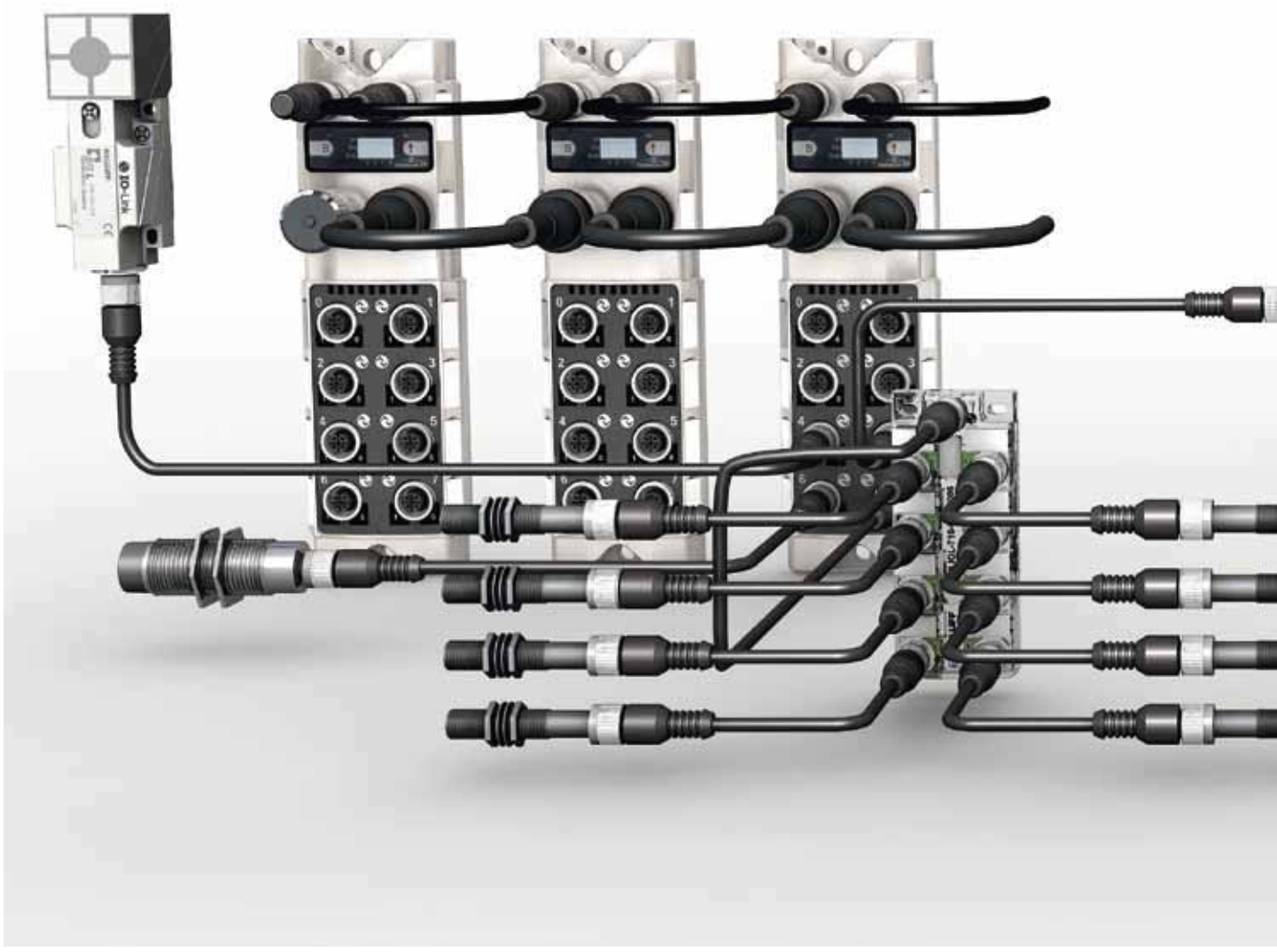


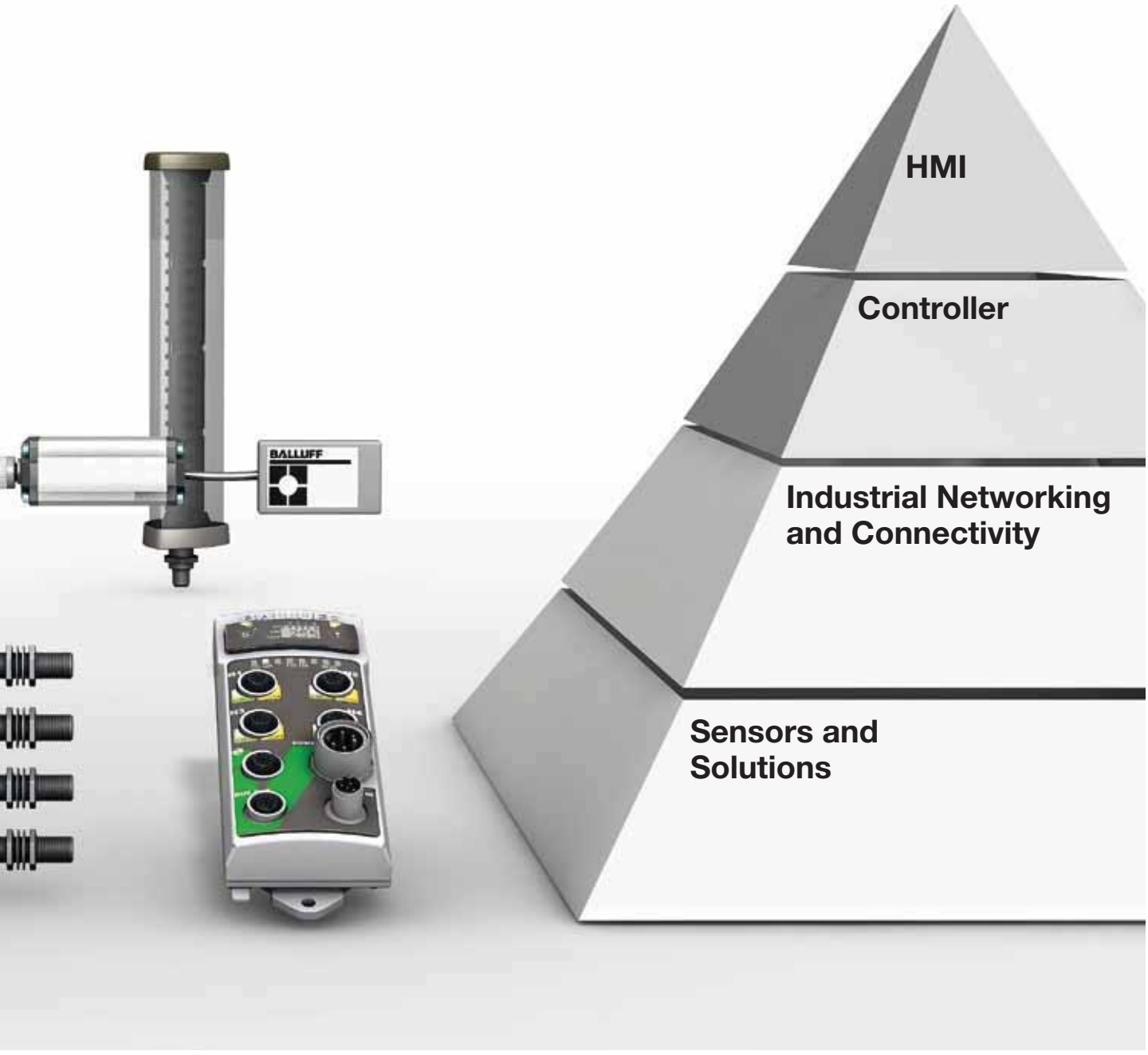



Customer-specific Services

Balluff stands for comprehensive systems from a single source

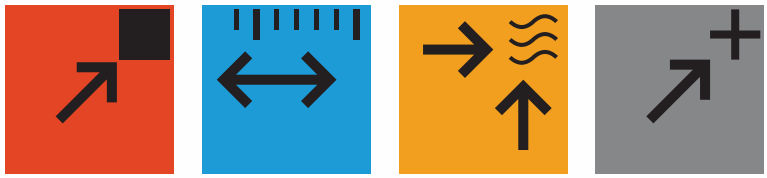
Systems and Service, Industrial Networking and Connectivity, Industrial Identification:
Industrial RFID systems, vision sensors, fieldbus modules, passive splitters, inductive couplers, IO-Link, connectors and connection cables

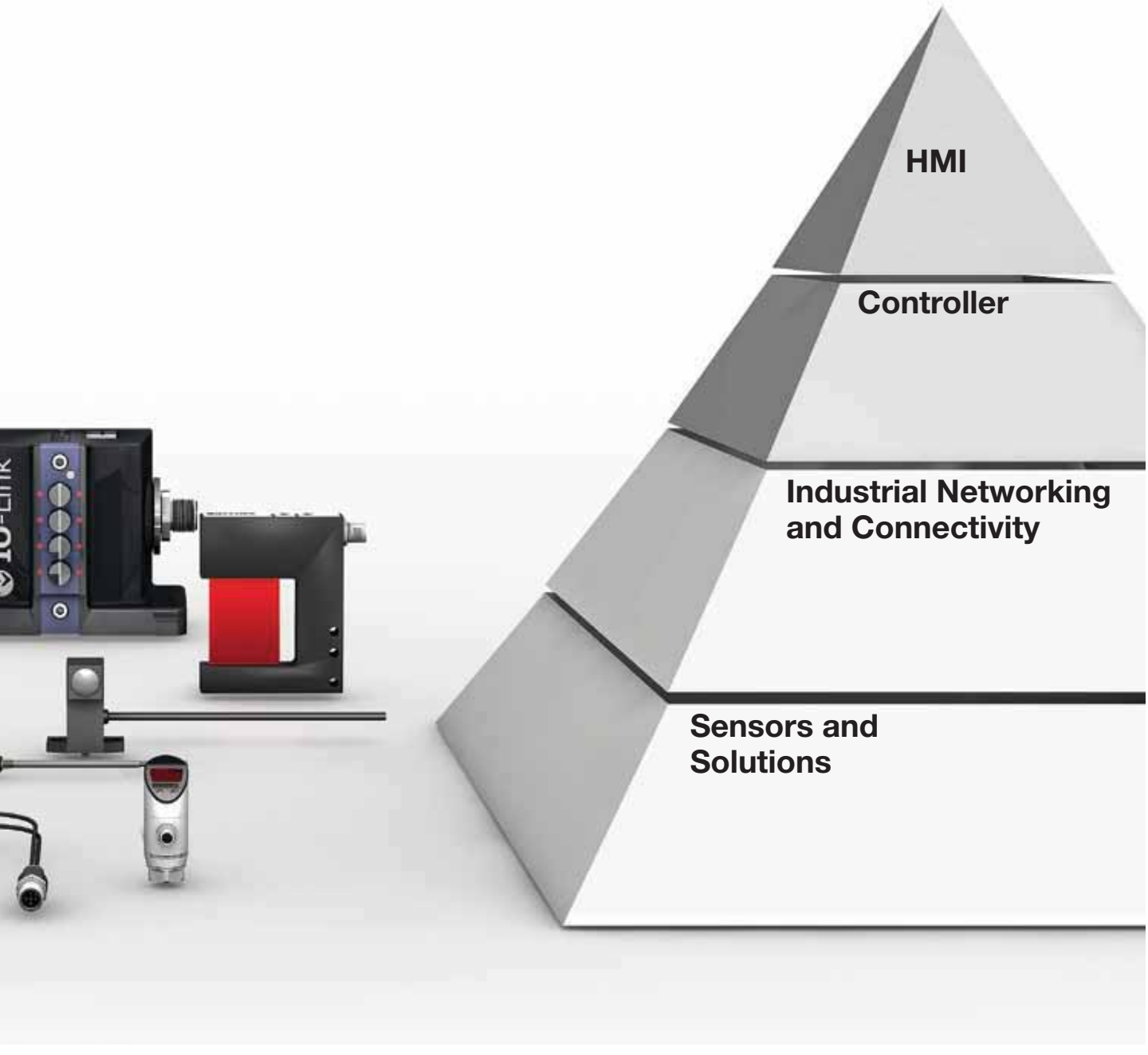



HMI
Controller
Industrial Networking
and Connectivity
Sensors and
Solutions
BALLUFF

Sensor Solutions
For every application

Object Detection, Linear Position Sensing and Measurement, Condition Monitoring and Fluid Sensors, Accessories:
Inductive sensors, capacitive sensors, magnetic sensors, photoelectric sensors, mechanical sensors, ultrasonic sensors, inductive distance sensors, magneto-inductive displacement sensors, micropulse transducers, photoelectric distance sensors, magnetically coded position and angle measurement systems, inductive positioning systems, inclination sensors, pressure sensors, mechanical accessories, electrical accessories




HMI
Controller
Industrial Networking
and Connectivity
Sensors and
Solutions

Up-to-date Data

Global online availability

■ Product overview

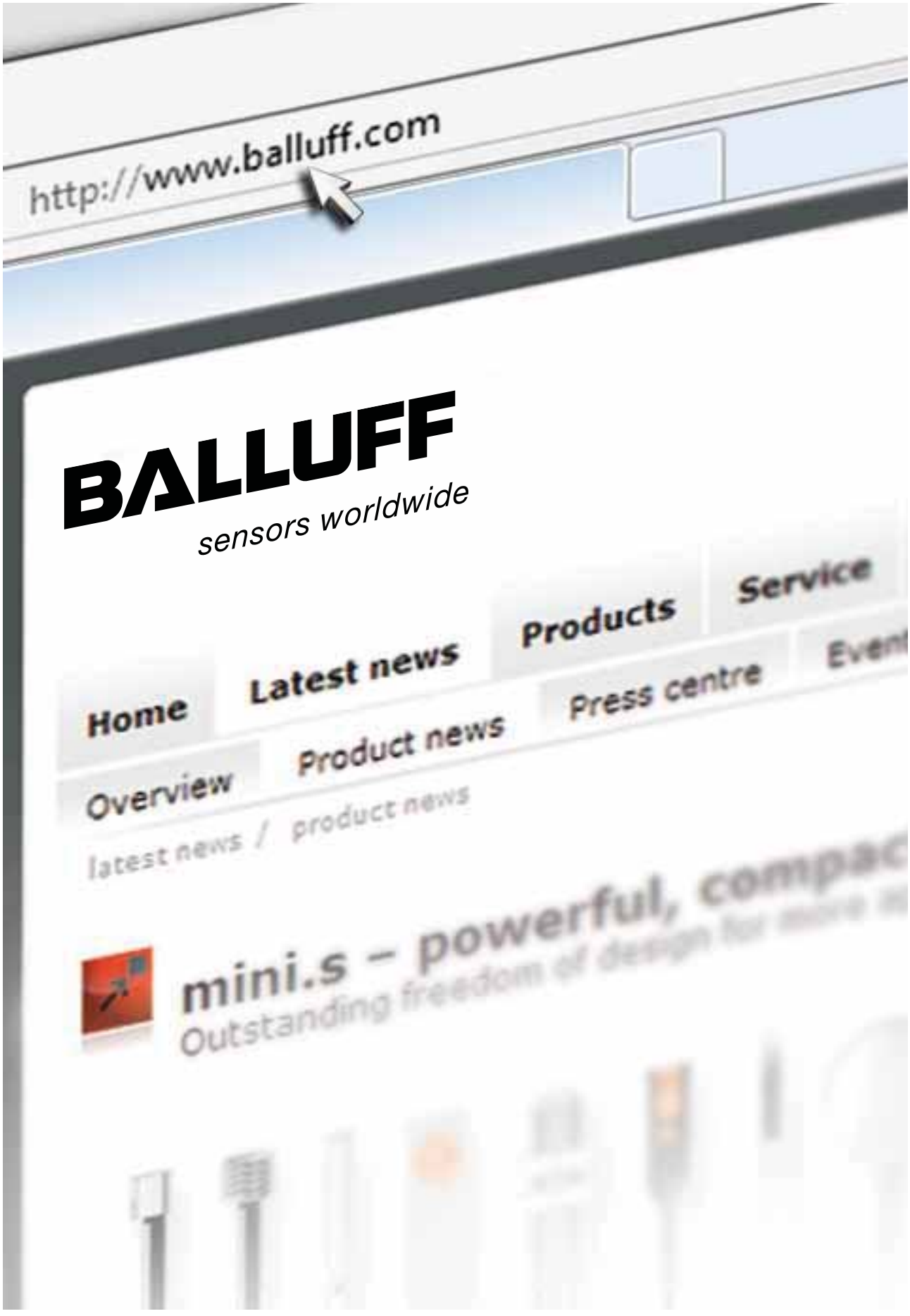
■ 2D and 3D product data

■ Current information at a glance

■ The company

■ Service and support

■ We are happy to help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Service
Overview
Product news
Press centre
latest news / product news
mini.s – powerful, compac
Outstanding freedom of design

Industrial Identification
For top quality and cost savings


Industrial identification means security
Industrial identification guarantees the secure traceability of production and quality data. Data and commodity flows are linked with one another, and the supply chain and in-house material flow are optimized. This prevents fluctuations in quality and reduces rework and no-charge replacement costs to a minimum. Fewer dropouts increase productivity and sales volume. Top quality leads to the greatest possible customer satisfaction and secures market share for users.

Our solution
Balluff industrial identification offers high-performance RFID systems and vision solutions from a single source. Industrial RFID systems are recommended for the clear and straightforward detection and assignment of the parts to be fabricated. For parts inspections with increasingly more flexible assembly processes, vision solutions provide a comprehensive approach.

Comprehensive expertise through years of experience
Balluff industrial identification is based on comprehensive manufacturer expertise gathered over more than 30 years. Today Balluff is one of the leading RFID providers in the low frequency (LF), high frequency (HF) and ultra-high frequency (UHF) range and for industrial image processing thanks to this expertise. Our experience and large variety allow us to offer solutions that have been proven in the field.

Auto ID technology for all control systems
Our technologies can be used in almost any application. We guarantee optimal, process-integrated solutions using a wide variety of different components with various combinations. For each control system and all levels of production. At a high technological level and individually customized to meet the needs of our customers. Balluff industrial identification guarantees customized solutions.

Areas of application for Balluff industrial identification
- Secure process control
- Optimized production
- Flexible quality control
- Reliable traceability with RFID or
- optical codes
- Inspecting different characteristics of an object simultaneously (with vision sensors BVS E)

Industrial RFID System BIS U
BIS U uses electromagnetic waves in the ultra-high frequency range (UHF) 865…928 MHz. Using passive data carriers, this system enables RFID solutions with typical ranges up to 6 m. BIS U is ideal for material flow control and asset tracking (track-and-trace) in logistic applications. Many data carriers can be detected simultaneously by an antenna (multi-tagging) for a completeness check.

From page 18

Industrial RFID systems BIS
Balluff RFID systems automatically record the entire production process in all batches. The manufacture of all parts and all materials and equipment used is documented together with the time, location and process. You have real-time access to this information, enabling you to make corrections even during the process. All data can be traced. Even many years later.

Balluff identification systems BIS provide the best security and high quality. They are industrial-grade. This means they perform well in any environment.

Vision solutions BVS
The vision solutions BVS meet the growing demands of state-of-the-art production systems for high productivity, flexibility and maximum quality. The vision sensors BVS E offer a large number of extremely efficient image processing functions. These functions can be flexibly combined for reliable fault detection and quality inspection, or for the secure reading and verification of codes. The vision sensor BVS E proves its reliability time after time..

Industrial RFID system BIS M
In combination with passive data carriers, BIS M provides support for medium ranges up to 400 mm. The system is recommended for close-range asset tracking. Data carriers for direct installation at the workpiece are available in a wide array of variants. Our high-speed, high-memory data carriers make it possible to process data volumes up to 128 kB at up to 212 kbps. Cycle times can be reduced and output rates increased.

From page 48

Industrial RFID system BIS C
BIS C is used with passive data carriers and is designed for short ranges up to 100 mm. The main system application is tool identification. BIS C has been successfully employing this function for 25 years. The different shapes of the data carriers enable a wide variety of system applications. In addition, the system provides outstanding solutions for applications in metal environments.

From page 166

Industrial RFID system BIS L
BIS L uses passive data carriers for short ranges up to 100 mm. It is ideal for applications primarily focused on identification and less on data processing. If only one ID is required, as is the case with tracking, the system also offers cost-effective solutions in read-only mode. Up to 16 identification points can be evaluated quickly and easily with our easy loop interface.

From page 240

Vision solutions BVS E
The vision sensor BVS E is the right choice for reliable fault and quality inspection if multiple product features need to scanned simultaneously. In order to support this scanning, the BVS E provides up to 20 test programs that can you can easily toggle through. This ensures short changeover times if different parts need to be inspected on the same production line. Throughput and efficiency increase. And the product quality and productivity improve.

From page 354

Industrial RFID Systems BIS

For secure, high-performance identification

Why RFID?
Identification systems with read and write functionality ensure that the data in each process segment is up to date, all without visual contact.

Balluff Industrial RFID systems BIS reliably process large volumes of data. The data carriers operate without contact, providing unlimited read/write cycles for flexible and fast communication, even in highly dynamic applications. This allows the wear-free systems to integrate into all controllers and into any industrial environment.

Fast return on investment
New product lines benefit from extremely short start-up times, regardless of whether alternating variants, minimum lot sizes or series products are manufactured.

Greatest flexibility
Various components in a variety of shapes such as discs, cylinders, cubes or the handy check card format guarantee reliable integration, even if space is limited. International approvals guarantee worldwide use.

Model	BIS U	
Storage device	EEPROM	
Data carrier/memory size	512 bits	
Write/read cycle	100.000	
Max. read/write distance	Up to 6 m (typical)	
Read/write time (64 bytes)	900/230 ms	
Operating frequency	860...960 MHz	
Dynamic read/write	Yes/Yes	
Data save time	10 years	
Degree of protection	IP 65	
Norms/standards	EPC Gen 2 Class1, ISO 18000-6C	

The information in the table is system-specific and does not apply to each individual product. You can find more detailed specifications in the corresponding chapter.




Balluff industrial identification offers variety
- Available in various designs, in plastic and metal
- Integration into all controllers
- Ideal for all conventional bus systems

System components
Balluff Industrial RFID systems consist of a data carrier (called a tag), a read or read/write head, and a processor unit.

The tag is used to read and store data. The data volume and read/write cycles depend upon the storage medium. Balluff data carriers receive their energy from the read/write device. No batteries are required. The electronics and antenna are integrated into the tag. Their power and frequency define the range.

Four systems, maximum flexibility
Balluff industrial RFID offers four different systems with various transmission frequencies and components for a wide range of applications.

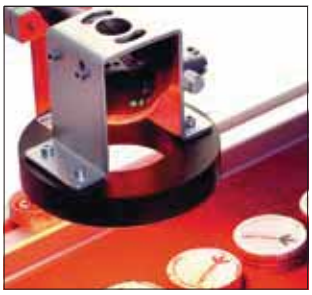
This provides the perfect solution for completely different requirements:
- **Counterfeit/copy protection**
- **Repair/maintenance**
- **Tool management**
- **Production control**
- **Access control**
- **Container management**
- **Shipment**
- **Storage management**
- **Goods tracking**
- **Goods receiving/goods issue**

Make your selection based on your own requirements. Your requirements determine the function and size of the system.

	BIS M			**BIS C**		**BIS L**
	ISO standard		High-speed			
	EEPROM	FRAM	FRAM	EEPROM	FRAM	EEPROM
	752 bytes	2000 bytes	131072 bytes	511...1023 bytes	8 kbytes	192 bytes
	100.000	Unlimited	Unlimited	1.000.000	Unlimited	100.000
	150 mm	400 mm	60 mm	90 mm	100 mm	100 mm
	130/60 ms	130/60 ms	30/14 ms	860/220 ms	860/220 ms	3530/1530 ms
	13.56 MHz	13.56 MHz	13.56 MHz	70 kHz/455 kHz	70 kHz/455 kHz	125 kHz
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/No
	10 years	10 years	10 years	10 years	10 years	10 years
	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
	ISO 14443	ISO 15693	ISO 15693	DIN 69873	DIN 69873	

Vision Solutions BVS

Vision sensors – for higher productivity, more efficiency, top quality and cost reduction



Why a vision sensor?
Using image processing, vision sensors ensure a reliable fault check and quality inspection. This allows a vision sensor to monitor multiple characteristics of a part using image-based visual inspection. The same sensor can also read barcodes and data matrix codes reliably. Prompt format changes can be carried out at any time. Even during an ongoing process. This guarantees maximum flexibility and the highest quality products for users.

Advantages of the vision sensor BVS E
- A vision sensor replaces many different sensors
- Flexible configuration
- Easy to use; PC software for all sensor types
- Robust and industrial-grade
- Easy and flexible installation
- Low costs and fast ROI

How does a vision sensor reduce costs?
Vision sensors monitor many different part characteristics or code types in one inspection step. During this process, a single sensor monitors up to 20 different inspection tasks. The result: Fewer sensors are in use. This reduces material and installation costs. Changeover times are also reduced because there is no need for a complex, time-consuming alignment. Instead, only a simple command is needed and the desired test program is enabled. The vision sensor can be configured
using the supplied, easy-to-use PC software. Learning a programming language is no longer necessary.

3D CAD models and suitable assembly materials support convenient product integration. In addition, external lighting equipment is available for optimum illumination of the work area.




Model		BVS E – Identification	BVS E – Standard	BVS E – Advanced	BVS E – Universal
Bus interfaces	TCP/IP	■		■	■
	RS232	■			■
Features	Basic tools for fault detection	■	■	■	■
	Reading barcodes	■			■
	Reading data matrix codes	■			■
	360° detection of codes	■			■
	360° detection of parts			■	■
Typical detection rate		Up to 40 Hz	15 Hz	Up to 40 Hz	Up to 40 Hz
Working distance	50...1000 mm	■	■	■	■
	180...1000 mm	■		■	■
Illumination	LED, red light	■	■	■	■
	LED, infrared	■	■	■	■
Degree of protection per IEC 60529		IP 54	IP 54	IP 54	IP 54
Ambient temperature T_a		–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C

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Industrial RFID System BIS U

RFID at 860...960 MHz (UHF)

The industrial RFID system BIS U emits electromagnetic waves in the ultra-high frequency range (UHF). Using passive data carriers, this system enables RFID solutions with typical ranges of up to 6 m. BIS U is ideal for material flow control and asset tracking (track-and-trace) in logistics applications.

The BIS U portfolio includes processor units for conventional industrial interfaces and data carriers for high temperatures and direct use on metal.

Contents

The Right Data in the Right Place at the Right Time

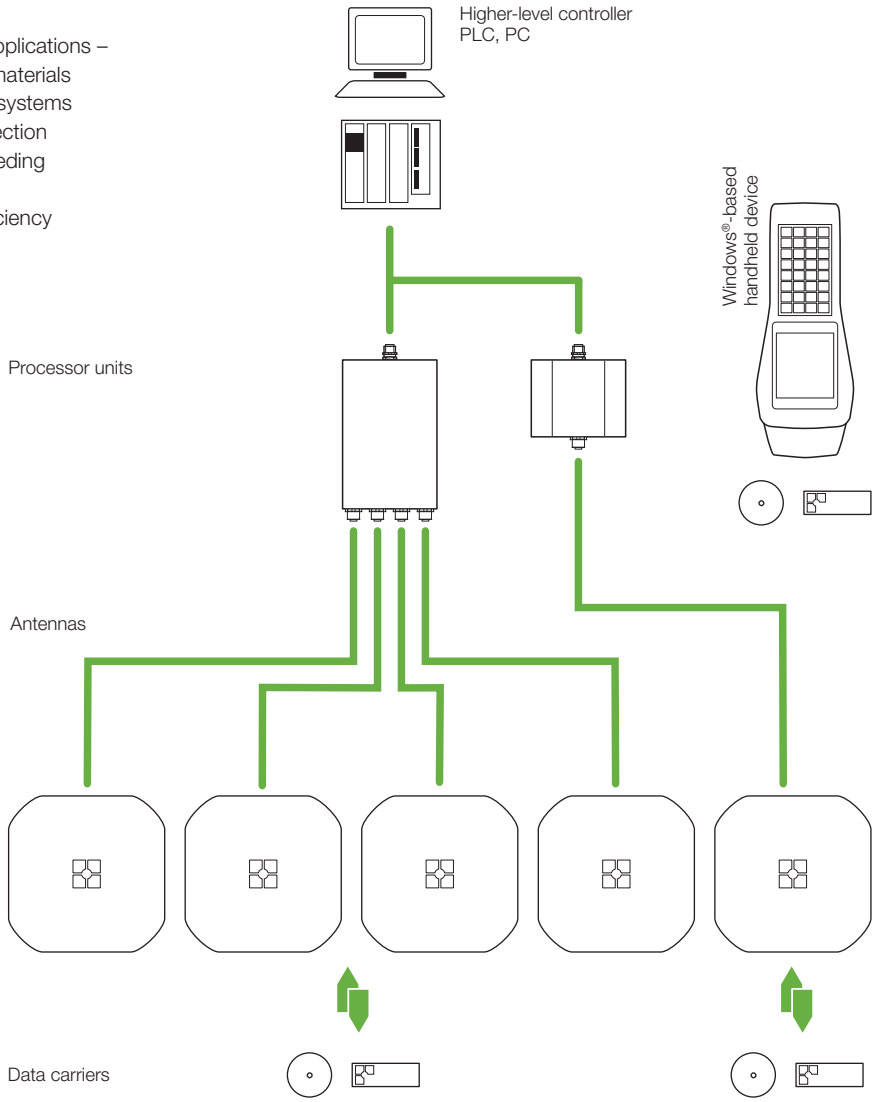


Features

- Supports standard EPC Gen 2 data carriers
- Supports interface options for various IT systems or controllers
- A processor unit has up to four antenna connections
- Without visual contact
- Passive data carriers – no batteries

Benefits

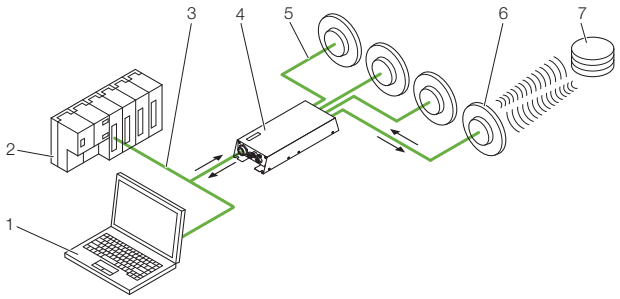
- Various data carriers for a wide range of applications – in different sizes and made from different materials
- Can be integrated into the most common systems
- Multiple antennas ensure reliable data detection
- Identification of all load carriers without needing to scan each article
- Cost-effective, passive tags guarantee efficiency
- No battery change is required



Function principle of the system

BIS U is a contact-free system with a write/read function. This not only allows it to convey information programmed permanently in the data carrier (tag). Current information is also collected and forwarded to interfaces for control or data acquisition systems.

Main components of BIS U
- Processor units
- Antennas
- Data carriers



1 Computer
2 PLC
3 Connection to the controlling system
4 Processor unit
5 Antenna cable
6 Antennas (max. 4)
7 Data carrier

Tracking economic assets

UHF technology identifies and documents the use of economic assets. Assets such as tools, production resources, medical devices, returnable transport bins, containers and skids.

Traceability in logistics

The traceability of goods and material flow is the key to reliable system operation and efficient manufacturing. UHF technology enables reliable data communication without a direct view. Load carriers or shipment information must be identified quickly and reliably.

Supply chain management

For the supply chain, RFID at UHF provides an extremely reliable and fast method for uniquely identifying incoming materials, goods and returnable transport containers such as skids or containers.

Production tracking

RFID is used in the production process to record individual production steps and to make the process transparent. UHF technology ensures that workpieces or load carriers are tracked over long distances. It also enables more freedom of action.

E-Kanban

Electronic Kanban (E-Kanban) is a system that uses various technologies to control the turnover of components and materials in the manufacturing process. E-Kanban replaces conventional Kanban instruments, such as cards, with RFID tags and barcodes. This enables a faster flow of information.

A variety of versions
Balluff offers a wide variety of UHF RFID tags for diverse applications. For example, tags mounted on metal for tool identification or tags for tracking vehicles. Robust data carriers for harsh environments or self-adhesive smart labels.

The task and the application conditions determine which data carrier is best suited for each application. We help you make your selection.

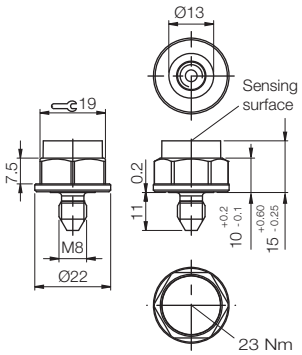
- Long range (in a metal-free environment or on metal with spacers)
- Rugged housing
- Available for high temperature applications
- Multi-tag capable

Dimensions		**Ø 22×26 mm**
Housing material		Steel-coated, PA 12 (fiberglass reinforced)
Weight		16 g
For Europe:	**Order code**	**BIS013P**
Frequency range 865...868 MHz	Part number	BIS U-142-06/CA-M8-GY
For America/Asia:	**Order code**	**BIS013R**
Frequency range 902...928 MHz	Part number	BIS U-142-07/CA-M8-GY
For worldwide application:	**Order code**	
Frequency range 860...960 MHz	Part number	
Assembly		▬
Memory type		EEPROM
Degree of protection per IEC 60529		IP68/x9K
Storage capacity	EPC	96...480 bits
read/write	User memory	512 bits
Number of read cycles		Unlimited
Number of write cycles		100,000 at ≤ 50 °C
Data retention time		≥ 50 years
Max. range (read-only)	For BIS U-602_	1 m
	For BIS U-62_	1 m
Standards		EPC Class 1 Gen 2, ISO 18000-6C
Operating temperature		–25...+85 °C
Storage temperature		–25...+95 °C

Please observe the Basic Information and Definitions during installation.

▬ Non-flush on steel

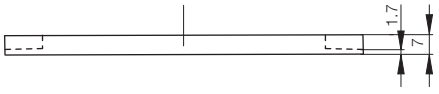
▬ Metal-free (on metal with spacer)

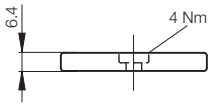


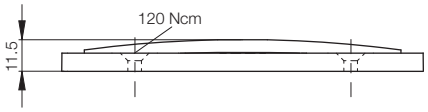
Industrial RFID System BIS U at 860...960 MHz (UHF)

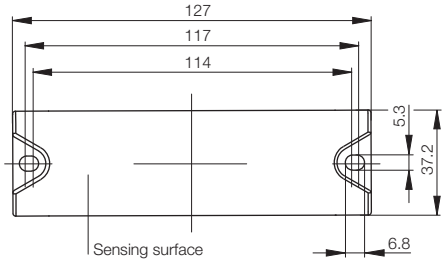
Passive UHF data carriers

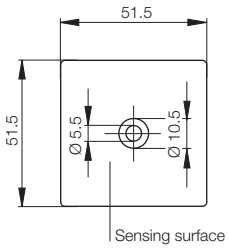
127×37.2×7 mm	**51.5×51.5×6.4 mm**	**128×52×11.5 mm**
PA 12 (fiberglass reinforced)	ABS	ABS
18 g	18 g	47 g
BIS00NL		
BIS U-100-01/CA		
BIS00RC		
BIS U-100-02/CA		
	BIS00WH	**BIS00WE**
	BIS U-101-04/CA	BIS U-102-05/CA
—	—	—
EEPROM	EEPROM	EEPROM
IP 67	IP 67	IP 67
96...480 bits	96...480 bits	96...480 bits
512 bits	512 bits	512 bits
Unlimited	Unlimited	Unlimited
100,000 at ≤ 25 °C	100,000 at ≤ 50 °C	100,000 at ≤ 50 °C
≥ 10 years	≥ 50 years	≥ 50 years
8 m	5 m	7 m
3 m	2 m	2 m
EPC Class 1 Gen 2, ISO 18000-6C	EPC Class 1 Gen 2, ISO 18000-6C	EPC Class 1 Gen 2, ISO 18000-6C
–40...+85 °C	–20...+85 °C	–20...+85 °C
–40...+85 °C	–40...+85 °C	–40...+85 °C

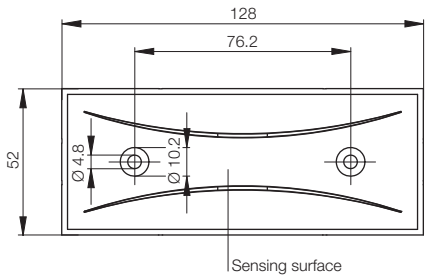












Mounting accessories for UHF data carriers
(please order separately)

Description	**Mounting set**	**Clamping holder**
Use	For data carrier BIS U-100	For data carriers BIS U-101-..., BIS M-134-... and BIS M-135-...
Order code	**BAM01LW**	**BAM0241**
Part number	BIS Z-SP-003	BIS Z-HW-006
Additional information	See page 42	See page 43

Industrial RFID System BIS U at 860...960 MHz (UHF)
Passive UHF data carriers

A variety of versions
Balluff offers a wide variety of UHF RFID tags for diverse applications. For example, tags mounted on metal for tool identification or tags for tracking vehicles. Robust data carriers for harsh environments or self-adhesive smart labels.

The task and the application conditions determine which data carrier is best suited for each application.
We help you make your selection.

- Long range
  (in a metal-free environment
  or on metal with spacers)
- Rugged housing
- Available for high temperature applications
- Multi-tag capable

Dimensions		
Housing material		
Weight		
For worldwide application:	**Order code**	
Frequency range 860...960 MHz	Part number	
Assembly		
Memory type		
Degree of protection per IEC 60529		
Storage capacity read/write	EPC	
	User memory	
Number of read cycles		
Number of write cycles		
Data retention time		
Max. range (read-only)	For BIS U-602_	
	For BIS U-62_	
Standards		
Operating temperature		
Storage temperature		

Please observe the Basic Information and Definitions during installation.

▬ Metal-free (on metal with spacer)

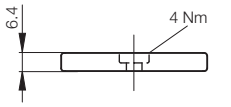
Industrial RFID System BIS U at 860...960 MHz (UHF)

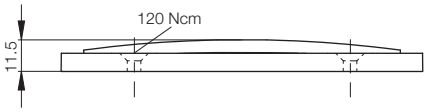
Passive UHF data carriers

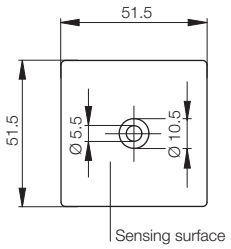
For high temperatures

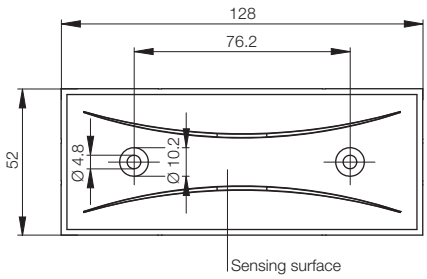
For high temperatures

	51.5×51.5×6.4 mm	**128×52×11.5 mm**
	PPS	PPS
	27 g	70 g
	BIS00WF	**BIS00WC**
	BIS U-101-04/CA-HT	BIS U-102-05/CA-HT
	EEPROM	EEPROM
	IP 68	IP 68
	96...480 bits	96...480 bits
	512 bits	512 bits
	Unlimited	Unlimited
	100,000 at ≤ 50 °C	100,000 at ≤ 50 °C
	≥ 50 years	≥ 50 years
	5 m	7 m
	2 m	2 m
	EPC Class 1 Gen 2, ISO 18000-6C	EPC Class 1 Gen 2, ISO 18000-6C
	–40...+85 °C	–40...+85 °C
	–40...+220 °C (1000 h)	–40...+220 °C (1000 h)







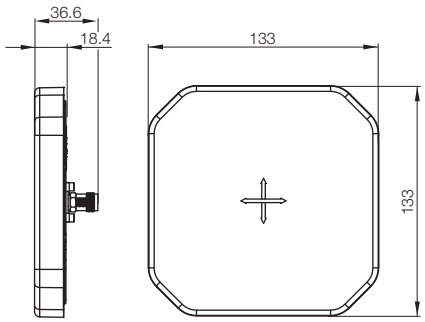


Mounting accessories for UHF data carriers
(please order separately)

Description	**Clamping holder**	**Mounting brackets**
Use	For data carriers BIS U-101-..., BIS M-134-... and BIS M-135-...	For data carriers BIS U-102-05/CA-HT and BIS M-136-03/L-HT
Order code	**BAM0241**	**BAM01YK**
Part number	BIS Z-HW-006	BIS Z-HW-005
Additional information	See page 43	See page 43

Dimensions		**133×133×18.4 mm**
Housing material		PC
Weight		365 g
For Europe:	**Order code**	**BIS00P0**
Frequency range 865...868 MHz	Part number	BIS U-301-C0-TNCB
For America and Asia:	**Order code**	
Frequency range 902...928 MHz	Part number	
Frequency range		865...868 MHz
Approved radiated power		< 0.5 W ERP ETSI EN 302208
Antenna gain		5.5 dBic
Antenna impedance		50 Ω
Connection type		1× TNC socket
Degree of protection per IEC 60529		IP 67 (with connector)
Operating temperature T_a		–30...+70 °C
Dispersion angle		100° vertical, 100° horizontal
Connection cables		See page 41

Please observe the Basic Information and Definitions during installation.



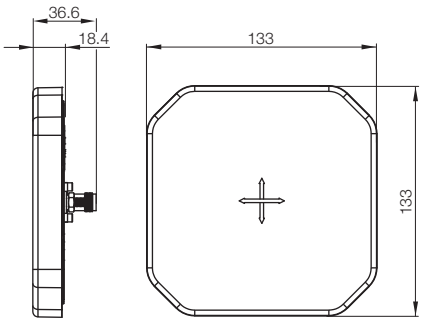
The frequency range for UHF systems in dependent on the region of use. Each respective country defines which frequencies are permitted. Therefore, country-specific versions of UHF antennas and processor units are available. The power at the antenna connection can be adjusted easily using the processor unit.

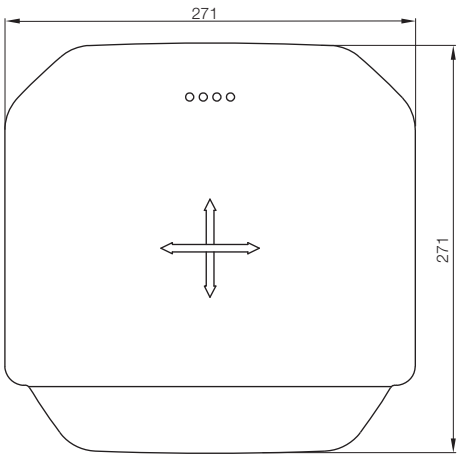
There are a wide variety of accessories for simple integration at all operation locations. If you install antennas near gates or include them in a conveyor area, the installation is easy.

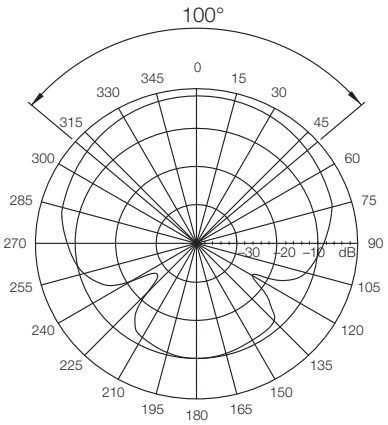
UHF Antennas
- Easy installation with standard accessories
- Robust metal plug for a secure connection
- Robust housing for harsh environments
- Available in different sizes

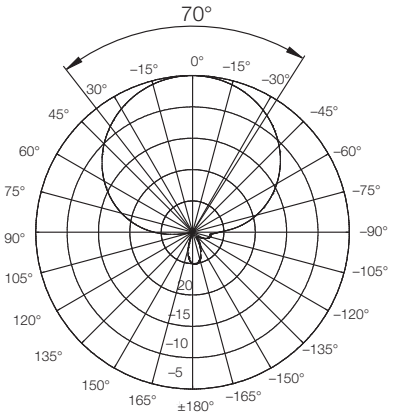
UHF antennas

133×133×18.4 mm	**271×271×42.5 mm**	**271×271×42.5 mm**
PC	Polymer mix	Polymer mix
365 g	1700 g	1700 g
	BIS00TZ	
	BIS U-302-C0-TNCB	
BIS00TY		**BIS00U0**
BIS U-301-C1-TNCB		BIS U-302-C1-TNCB
902...928 MHz	865...868 MHz	902...928 MHz
< 4 W EIRP FCC	< 2 W ERP ETSI EN 302208	< 4 W EIRP FCC CFR47
5.5 dBic	8.4 dBic	8.4 dBic
50 Ω	50 Ω	50 Ω
1× TNC socket	1× TNC socket	1× TNC socket
IP 67 (with connector)	IP 65	IP 65
–30...+70 °C	–25...+55 °C	–25...+55 °C
100° vertical, 100° horizontal	69° vertical, 69° horizontal	69° vertical, 69° horizontal
See page 41	See page 41	See page 41









Radiation pattern, horizontal

Industrial RFID System BIS U at 860...960 MHz (UHF)

Single-channel processor units

- Easy installation with standard accessories
- Metal plug for a secure connection
- Robust housing for harsh environments
- Easily visible status LEDs

Industrial RFID System BIS U at 860...960 MHz (UHF)

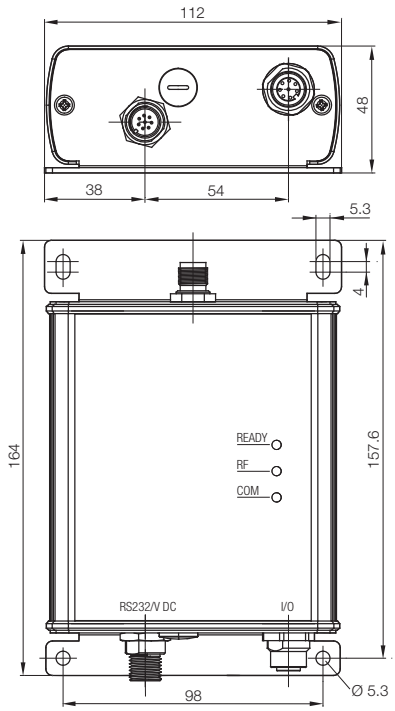
Single-channel processor units Serial RS232

Function		**Reading/writing**
Housing material		Aluminum
Weight		497 g
For Europe:	**Order code**	**BIS00Z4**
Frequency range 865...868 MHz	Part number	BIS U-620-068-101-00-ST29
For USA/Canada:	**Order code**	**BIS00Z2**
Frequency range 902...928 MHz	Part number	BIS U-620-068-111-00-ST29
Supply voltage		24 V DC (10...30 V DC)
Current consumption at 24 V DC		≤ 1 A
Degree of protection per IEC 60529		IP 65
Application interface		**Serial RS232**
Connection configuration	Antenna	1× R-TNC connector
	Power	1× M12 male, 8-pin
	Serial RS232	Integrated
	Controller inputs/outputs (1× DI, 2× DO)	1× M12 female, 8-pin

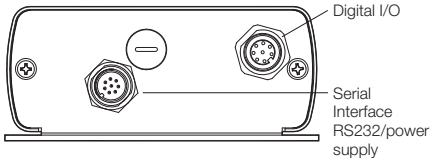
Accessories

Connection cables	Antenna	See page 41
	Power	See page 335

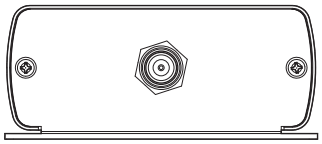
Please observe the Basic Information and Definitions during installation.



RS232 interface



1 upper antenna

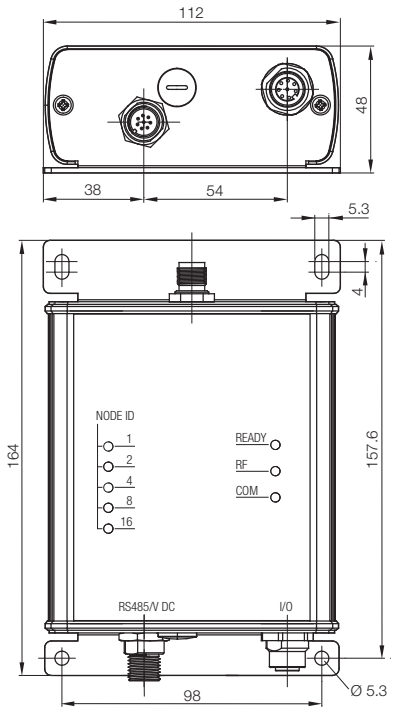


Function		**Reading/writing**
Housing material		Aluminum
Weight		497 g
For Europe:	**Order code**	**BIS00Z8**
Frequency range 865...868 MHz	Part number	BIS U-620-067-101-04-ST30
For USA/Canada:	**Order code**	**BIS00Z6**
Frequency range 902...928 MHz	Part number	BIS U-620-067-111-04-ST30
Supply voltage		24 V DC (10...30 V DC)
Current consumption at 24 V DC		≤ 1 A
Degree of protection per IEC 60529		IP 65
Application interface		**Serial RS485**
Connection configuration	Antenna	1× R-TNC-BIS00NA connector
	Power	1× M12 male, 5-pin
	Serial RS485	Integrated
	Controller inputs/outputs (1× DI, 2× DO)	1× M12 female, 8-pin

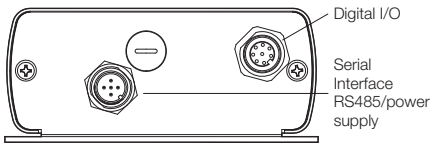
Accessories

Connection cables	Antenna	See page 41
	Power	See page 327

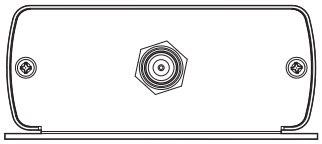
Please observe the Basic Information and Definitions during installation.



RS485 interface



1 upper antenna



Industrial RFID System BIS U at 860...960 MHz (UHF)

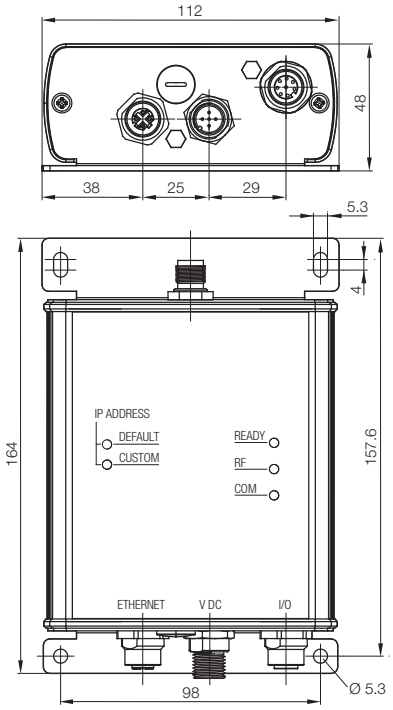
Single-channel processor units Industrial Ethernet

Function		**Reading/writing**
Housing material		Aluminum
Weight		497 g
For Europe:	**Order code**	**BIS00Z0**
Frequency range 865...868 MHz	Part number	BIS U-626-069-101-06-ST32
For USA/Canada:	**Order code**	**BIS00YY**
Frequency range 902...928 MHz	Part number	BIS U-626-069-111-06-ST32
Supply voltage		24 V DC (10...30 V DC)
Current consumption at 24 V DC		≤ 1 A
Degree of protection per IEC 60529		IP 65
Application interface		**Ethernet/IP, Ethernet TCP/IP, Modbus TCP**
Connection configuration	Antenna	1× R-TNC connector
	Power	1× M12 male, 5-pin
	Interface	1× M12 female, 4-pin, D-coded
	Controller inputs/outputs (1× DI, 2× DO)	1× M12 female, 8-pin

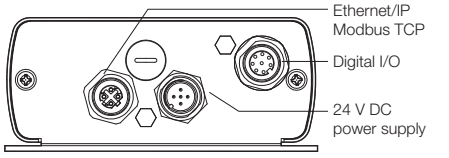
Accessories

Connection cables	Antenna	See page 41
	Power	See page 334
	Interface	See page 322...323

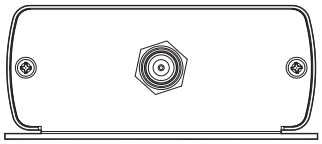
Please observe the Basic Information and Definitions during installation.



Ethernet interface



1 upper antenna



Industrial RFID System BIS U at 860...960 MHz (UHF)

Multi-channel processor units

- Easy installation with standard accessories
- Metal plug for a secure connection
- Robust housing for harsh environments
- Connect up to four antennas

Industrial RFID System BIS U at 860...960 MHz (UHF)

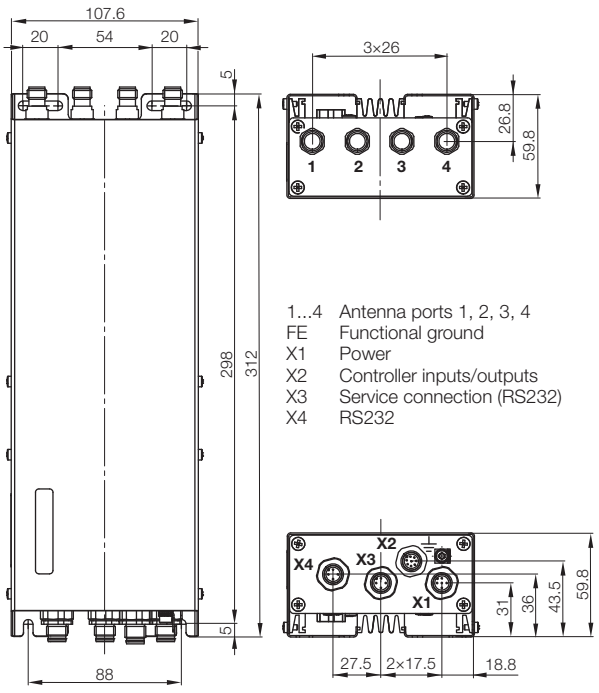
Multi-channel processor units Serial RS232

Function		**Reading/writing**
Housing material		Aluminum
Weight		2100 g
For Europe:	**Order code**	**BIS00M7**
Frequency range 865...868 MHz	Part number	BIS U-6020-053-104-00-ST26
For USA/Canada/Mexico:	**Order code**	**BIS00R2**
Frequency range 902...928 MHz	Part number	BIS U-6020-059-114-00-ST26
For Brazil:	**Order code**	**BIS00UM**
Frequency range 915...928 MHz	Part number	BIS U-6020-059-134-00-ST26
Supply voltage, ripple		24 V DC ±20%, ≤ 10%
Current consumption at 24 V DC		≤ 1 A
Application interface, service interface		RS232, RS232
Characteristic impedance of the antenna ports		50 Ω
Adjustable power at the antenna ports	Europe	17...33 dBm (50 mW...2 W)
	US, CA, MX, BR	17...30 dBm (50 mW...1 W)
Degree of protection per IEC 60529		IP 65
Connection configuration	Antennas 1...4	4× R-TNC connector
	X1: Power	1× M12 male, 5-pin
	X2: Controller inputs/outputs	1× M12 male, 8-pin
	X3: Service connection (RS232)	1× M12 male, 4-pin
	X4: RS232	1× M12 male, 4-pin

Accessories

Connection cables	Antennas 1...4	See page 41
	X1: Power	See page 337
	X2: Controller inputs/outputs	See page 318
	X3: Service connection (RS232)	See page 41
	X4: RS232	See page 41
Mounting accessories		See page 42 (mounting plate)
Power supply units		See page 352...353

Please observe the Basic Information and Definitions during installation.



DLL for integrating the protocol
(please order separately)

Use	For a computer-based controller
Order code	**BAE00F2**
Part number	BIS-Z-SW-UHF-DLL

Industrial RFID System BIS U at 860...960 MHz (UHF)

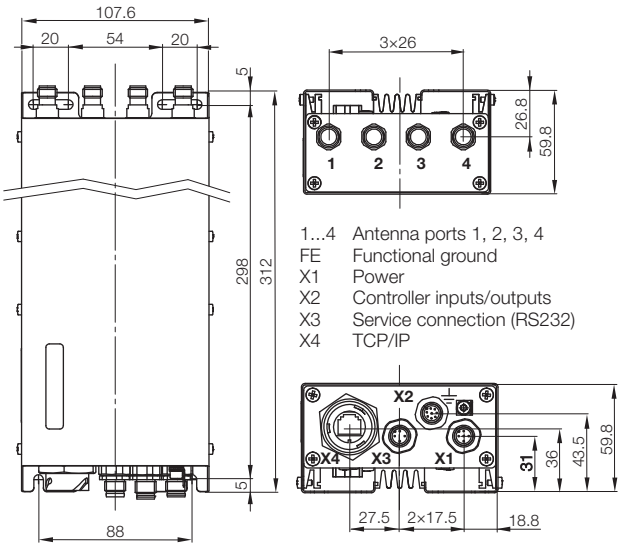
Multi-channel processor units Ethernet TCP/IP

Function		**Reading/writing**
Housing material		Aluminum
Weight		2100 g
For Europe:	**Order code**	**BIS00NA**
Frequency range 865...868 MHz	Part number	BIS U-6027-054-104-06-ST27
For USA/Canada/Mexico:	**Order code**	**BIS00R1**
Frequency range 902...928 MHz	Part number	BIS U-6027-060-114-06-ST27
For Brazil:	**Order code**	**BIS00UN**
Frequency range 915...928 MHz	Part number	BIS U-6027-060-134-06-ST27
For China:	**Order code**	**BIS012R**
Frequency range 920.5...924.5 MHz	Part number	BIS U-6027-060-124-06-ST27
For Japan:	**Order code**	**BIS012T**
Frequency range 916.8...920.4 MHz	Part number	BIS U-6027-060-154-06-ST27
For Australia:	**Order code**	**BIS014H**
Frequency range 920...926 MHz	Part number	BIS U-6027-060-174-06-ST27
Supply voltage, ripple		24 V DC ±20%, ≤ 10%
Current consumption at 24 V DC		≤ 1 A
Application interface, service interface		Ethernet TCP/IP, RS232
Characteristic impedance of the antenna ports		50 Ω
Adjustable power at the antenna ports	Europe	17...33 dBm (50 mW...2 W)
	US, CA, MX, BR, CN, JP, AU	17...30 dBm (50 mW...1 W)
Degree of protection per IEC 60529		IP 65
Connection configuration	Antennas 1...4	4× R-TNC connector
	X1: Power	1× M12 male, 5-pin
	X2: Controller inputs/outputs	1× M12 male, 8-pin
	X3: Service connection (RS232)	1× M12 male, 4-pin
	X4: TCP/IP	1× RJ45 bayonet connector

Accessories

Connection cables	Antennas 1...4	See page 41
	X1: Power	See page 337
	X2: Controller inputs/outputs	See page 318
	X3: Service connection	See page 41
	X4: TCP/IP	See page 377
Mounting accessories		See page 42 (mounting plate)
Power supply units		See page 352...353

Please observe the Basic Information and Definitions during installation.



1...4 Antenna ports 1, 2, 3, 4
FE Functional ground
X1 Power
X2 Controller inputs/outputs
X3 Service connection (RS232)
X4 TCP/IP

DLL for integrating the protocol

(please order separately)

Use	For a computer-based controller
Order code	**BAE00F2**
Part number	BIS-Z-SW-UHF-DLL

Industrial RFID System BIS U at 860...960 MHz (UHF)

Multi-channel processor units Ethernet/IP

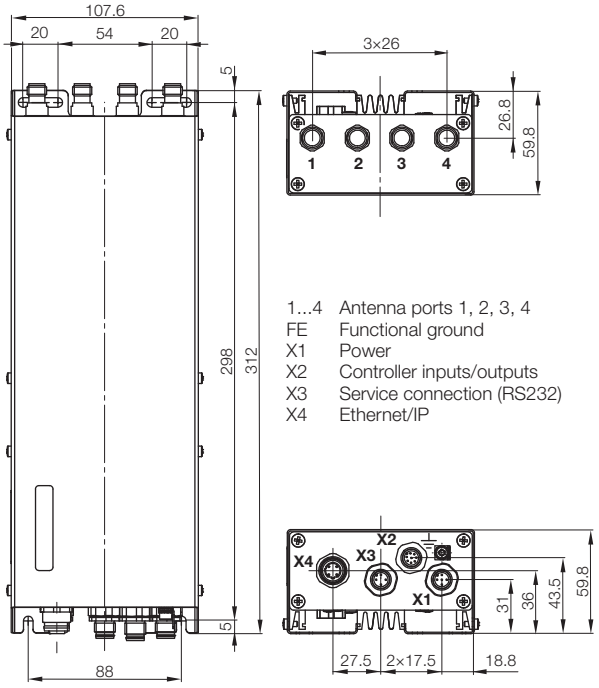
CE

Function		**Reading/writing**
Housing material		Aluminum
Weight		2100 g
For USA/Canada/Mexico:	**Order code**	**BIS013J**
Frequency range 902...928 MHz	Part number	BIS U-6026-034-114-06-ST35
Supply voltage, ripple		24 V DC ±20%, ≤ 10%
Current consumption at 24 V DC		≤ 1 A
Application interface, service interface		Ethernet/IP, RS232
Characteristic impedance of the antenna ports		50 Ω
Adjustable power at the antenna ports		17...30 dBm (50 mW...1 W)
Degree of protection per IEC 60529		IP 65
Connection configuration	Antennas 1...4	4× R-TNC connector
	X1: Power	1× M12 male, 5-pin
	X2: Controller inputs/outputs	1× M12 male, 8-pin
	X3: Service connection (RS232)	1× M12 male, 4-pin
	X4: Ethernet/IP	1× M12 male, 4-pin, D-coded

Accessories

Connection cables	Antennas 1...4	See page 41
	X1: Power	See page 337
	X2: Controller inputs/outputs	See page 318
	X3: Service connection (RS232)	See page 41
	X4: Ethernet/IP	See page 323 and 332
Mounting accessories		See page 42 (mounting plate)
Power supply units		See page 352...353

Please observe the Basic Information and Definitions during installation.



1...4 Antenna ports 1, 2, 3, 4
FE Functional ground
X1 Power
X2 Controller inputs/outputs
X3 Service connection (RS232)
X4 Ethernet/IP

DLL for integrating the protocol

(please order separately)

Use	For a computer-based controller
Order code	**BAE00F2**
Part number	BIS-Z-SW-UHF-DLL

Function		
Housing material		
Weight		
For Europe:	**Order code**	
Frequency range 865...868 MHz	Part number	
For USA/Canada/Mexico:	**Order code**	
Frequency range 902...928 MHz	Part number	
Supply voltage, ripple		
Current consumption at 24 V DC		
Application interface, service interface		
Characteristic impedance of the antenna ports		
Adjustable power at the antenna ports	Europe	
	US, CA, MX	
Degree of protection per IEC 60529		
Connection configuration	Antennas 1...4	
	X1: Power	
	X2: Profinet 2	
	X3: Profinet 1	
	X4: Service connection (RS232)	

Accessories

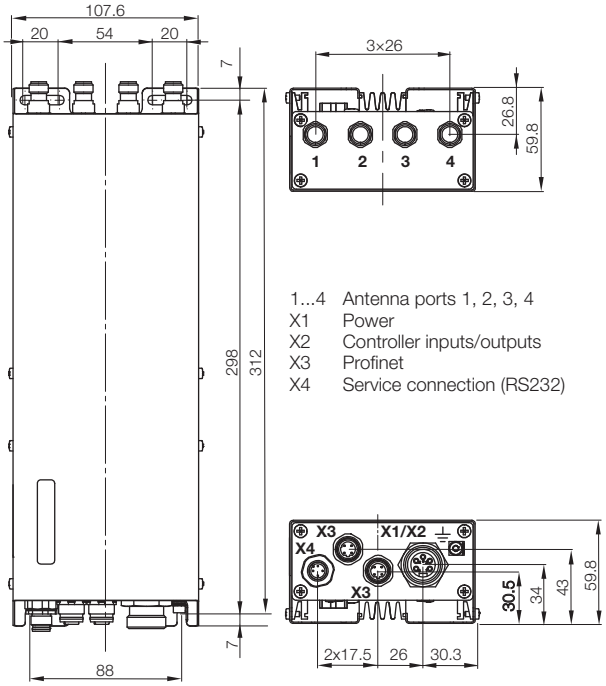
Connection cables	Antennas 1...4
	X1: Power
	X2, X3: Profinet
	X4: Service connection (RS232)
Mounting accessories	
Power supply units	

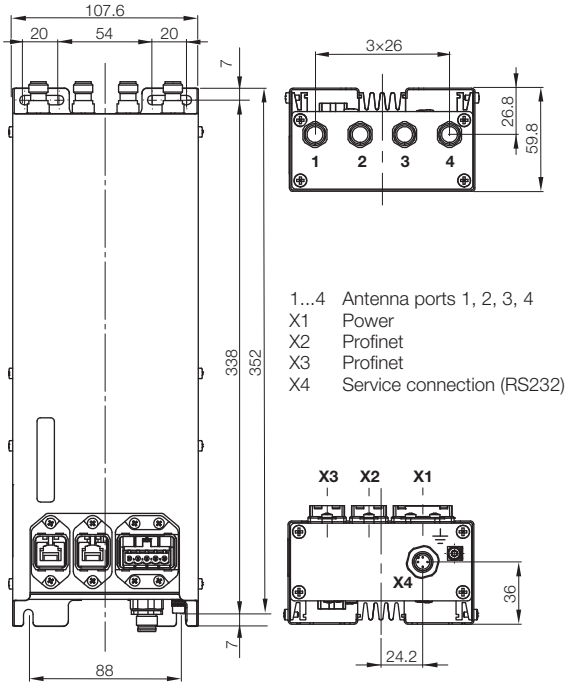
Please observe the Basic Information and Definitions during installation.

DLL for integrating the protocol
(please order separately)

Use	For a computer-based controller
Order code	**BAE00F2**
Part number	BIS-Z-SW-UHF-DLL

	Reading/writing	**Reading/writing**
	Aluminum	Aluminum
	2100 g	2100 g
	BIS00ZU	**BIS012Y**
	BIS U-6028-048-104-06-ST28	BIS U-6028-048-104-06-ST22
	BIS00ZW	
	BIS U-6028-048-114-06-ST28	
	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
	≤ 1 A	≤ 1 A
	Profinet, RS232	Profinet, RS232
	50 Ω	50 Ω
	17...33 dBm (50 mW...2 W)	17...33 dBm (50 mW...2 W)
	17...30 dBm (50 mW...1 W)	
	IP 65	IP 65
	4× R-TNC connector	4× R-TNC connector
	1× 7/8" male, 5-pin	1× male, 5-pin (push/pull, AIDA-compliant)
	1× M12 male, 4-pin, D-coded	1× RJ45 female, 8-pin (push/pull, AIDA-compliant)
	1× M12 male, 4-pin, D-coded	1× RJ45 female, 8-pin (push/pull, AIDA-compliant)
	1× M12 male, 4-pin	1× M12 male, 4-pin
	See page 41	See page 41
	See page 338...339	Cable selection on request
	See page 322...323	Cable selection on request
	See page 41	See page 41
	See page 42 (mounting plate)	See page 42 (mounting plate)
	See page 352...353	See page 352...353





The robust version for connection to ProfiNet with AIDA standard
(Automation Initiative of German Domestic Automobile Manufacturers)

Industrial RFID System BIS U at 860...960 MHz (UHF)
Handheld devices

For a high level of convenience
Allows portable writing and reading of BIS U data carriers.
Easy operation thanks to
- Touch screen with large Windows CE®color display
- Preinstalled Balluff software and keyboard or stylus

Handheld devices are ideal in poor lighting and harsh environments. Data is transmitted over optional Wi-Fi, Bluetooth or a wired USB connection. The handheld device can be expanded with modules.

PSION-based handheld device
- Windows CE®
- Touch screen
- Delivered with a software development kit (SDK)
- Includes a charger
- Bluetooth

Optional
- 1D/2D barcode reader
- Docking station
- Pistol grip for ergonomic work

Customer-specific software on request:
tecsupport@balluff.com

Handheld devices

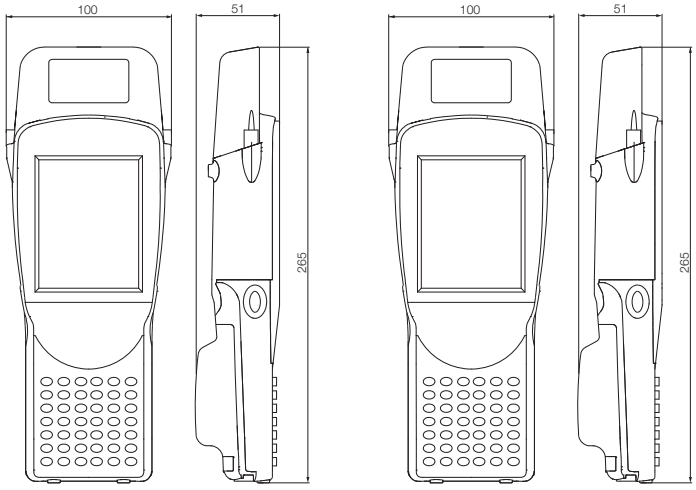
For Europe

For USA/Canada

Function		**UHF handheld device**	**UHF handheld device**
Housing material		ABS	ABS
Weight		585 g	585 g
Standard	**Order code**	**BAE00EE**	**BAE00JR**
	Part number	BIS U-870-1-008-X-000	BIS U-870-1-008-X-000-1
Standard + Wi-Fi	**Order code**	**BAE00J8**	
	Part number	BIS U-870-1-008-X-001	
Standard	**Order code**	**BAE00LK**	
+ 2D code reader + Wi-Fi	Part number	BIS U-870-1-008-X-005	
Display		TFT touchscreen display	TFT touchscreen display
Power supply		3.7 V rechargeable battery pack	3.7 V rechargeable battery pack
Capacity		4000 mA/h	4000 mA/h
Interface		Bluetooth/USB	Bluetooth/USB
Operating temperature		–10...+50 °C	–10...+50 °C
Degree of protection per IEC 60529		IP 65	IP 65

Accessories

Accessories included	Charger power supply and stylus	Charger power supply and stylus
Pistol grip	See below	See below
Docking station	See below	See below
Power supply	See below	See below
Carrying case	See below	See below



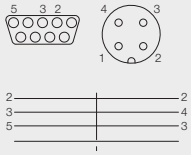
Accessories
(please order separately)

Description	Pistol grip	Docking station	Power supply	Carrying case
Order code	**BAM0281**	**BAM0282**	**BAE00TA**	**BAM021R**
Part number	BAM MD-XA-002-0001	BAM MD-XA-001-0001	BAE PS-XA-1W-05-030-702-CX-01	BAM PC-XA-016-001-A

Connector diagram and wiring		
Type		
Max. supply voltage AC U_S		
Max. supply voltage DC U_S		
Number of conductors × conductor cross-section		
Degree of protection per IEC 60529		
Ambient temperature T_a	FRPE	
Static/moving	PVC	
Use		

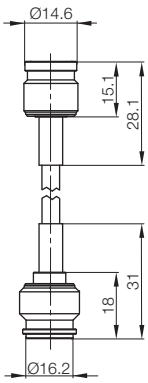
Cable material	Color	Length	
FRPE	Black	1 m	
FRPE	Black	2 m	
FRPE	Black	5 m	
FRPE	Black	10 m	
PVC	Gray	2 m	

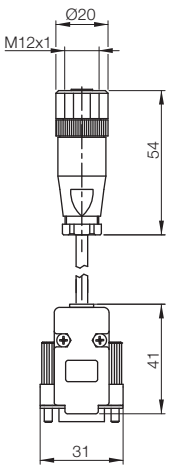
Other cable materials,
colors and lengths on request.



	7/16" TNC plug	Serial interface RS232 to PC
		60 V AC
		60 V DC
	0.94 mm	3×0.34 mm²
	IP 68	IP 67
	–40...+85 °C	
		–30...+80 °C/–5...+80 °C
	For connecting to a processor unit and antennas	For connecting to a processor unit BIS U-6020-053-104-00-ST26 BIS U-6027-054-104-06-ST27

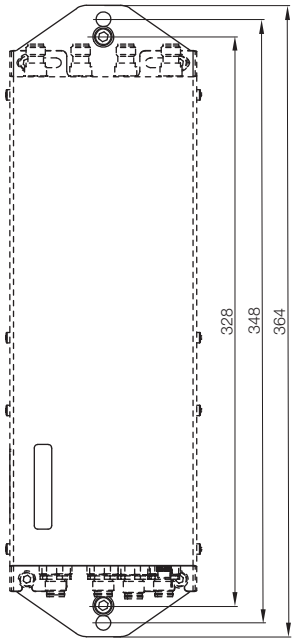
	Order code	
	Part number	
	BAM01HL	
	BIS U-500-EF-01	
	BAM01HM	
	BIS U-500-EF-02	
	BAM01HN	
	BIS U-500-EF-05	
	BAM01HP	
	BIS U-500-EF-10	
		BCC00PL
		BIS-C-522-PVC-02





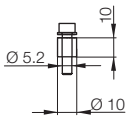
Mounting accessories

Description	**Mounting plate**	**Mounting set**	
Use	For processor units BIS U	For data carrier BIS U-100	
Order code	**BAM01KN**	**BAM01LW**	
Part number	BIS Z-HW-004	BIS Z-SP-003	



For mounting on profile rail,
steel screw connection.

Included for mounting are
2 Retaining plates BIS Z-HW-004
4 Hexagon socket head cap screws M5×10
DIN 912, A2, 8.8
2 Hexagon socket head cap screws M6×12
DIN 912, A2, 8.8
4 Washers 5 DIN 125, A2
2 Washers 6 DIN 125, A2

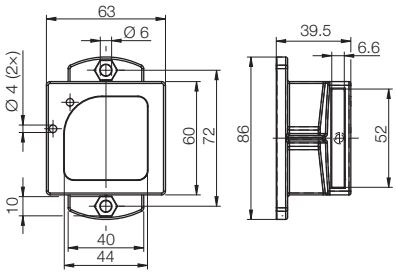


The mounting set consists of
2 Plastic distance rollers
2 Hexagon socket head cap screws,
ISO4762-M 5×22-8.8-A2B
2 Washers D 125-A 5.3-ST-A2P

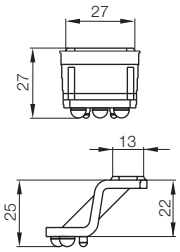
Clamping holder
For data carriers BIS U-101-...,
BIS M-134-... and BIS M-135-...
BAM0241
BIS Z-HW-006

Mounting brackets
For data carriers BIS U-102-05/CA-HT
and BIS M-136-03/L-HT
BAM01YK
BIS Z-HW-005

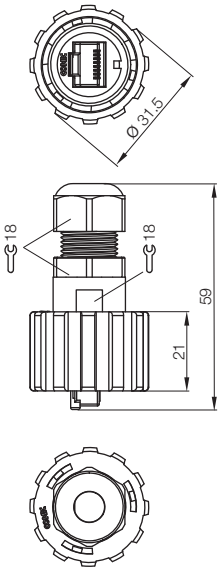
RJ45 coupling
for Ethernet TCP/IP
BCC09N2
BCC E878-0000-Z1-41X8T4



Included for mounting are
1 Clamps
2 Socket head cap screws M3, DIN 933 A2
2 Nuts M3, DIN 980 A2



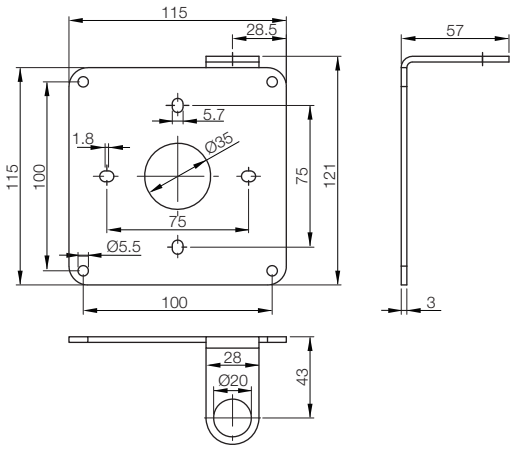
Included for mounting are
2 Mounting Brackets
4 Socket head cap screws
4 Nuts



Description	Crimping pliers for RJ45
Order code	**FHW0003**
Part number	11023834

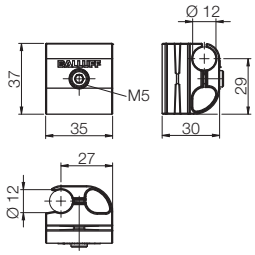
Mounting accessories

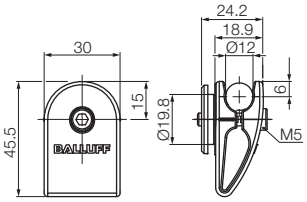
Description	**Antenna holder**
Design	For mounting on antennas BIS U-301... and BIS U-302...
Use	With sensor holder
Order code	**BAM01JK**
Part number	BIS Z-HW-003
Material	Stainless steel

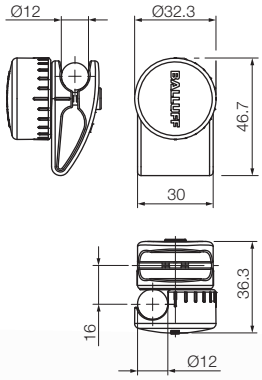




Description	**Cross-connector**	**Sensor holder**	**Joint**
Design	For 2 mounting rods Ø 12 mm	For 1 mounting rod Ø 12 mm	For 2 mounting rods Ø 12 mm
Use	Connection element for 2 mounting rods Ø 12 mm	For securing all sensor, reflector and antenna holders	Adjustable connecting piece for Ø 12 mm mounting rods
Order code	**BAM027F**	**BAM024T**	**BAM024R**
Part number	BMS CC-M-D12-B-02	BMS CS-M-D12-BZ	BMS CCJ-M-D12-B-01
Material	Anodized aluminum	Cast zinc, coated	Cast zinc, coated

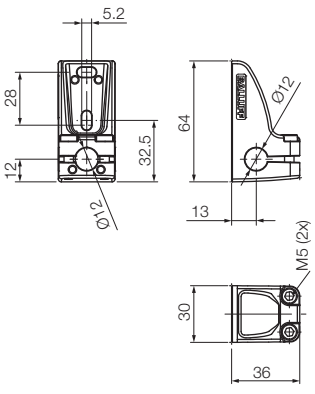


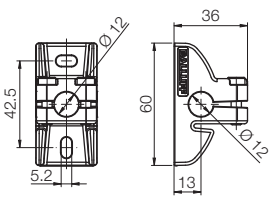


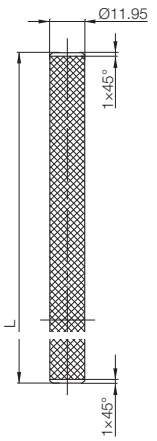




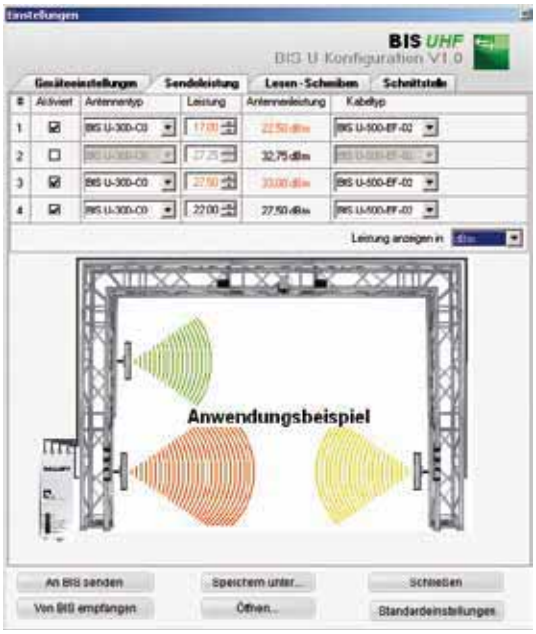
Description	**Base holder**	**Base holder**	**Mounting rod Ø 12 mm**
Design	For 1 mounting rod Ø 12 mm (vertical or horizontal)	For 1 mounting rod Ø 12 mm (vertical or horizontal)	Knurled through, Length 150 mm
Use	For mounting on base plates or profiles	For mounting on base plates or profiles	
Order code	**BAM024P**	**BAM0275**	**BAM002R**
Part number	BMS CU-M-D12-B028-00	BMS CU-M-D12-B040-00	BMS RS-M-D12-0150-00
Material	Cast zinc, coated	Cast zinc, coated	Anodized aluminum







The parameters are configured using the “BIS UHF Manager” software. One requirement is that the processor unit be connected to the controlling system. The parameter settings can be overwritten at any time. The parameters can be saved in an XML file. Then, they can be accessed at any time.



Setting the transmitting power, depending on the antenna being used

The processor unit BIS U-6027 and the controlling system communicate via Ethernet. Issuing a unique IP address assigns the processor unit to a network.

We offer extensive support to help you implement your RFID identification tasks. From conception and planning all the way to implementation, a personal contact person is always available. After an incoming analysis, this person creates a requirements profile based on your specifications, defines the cost framework and recommends a system configuration to you.

Once you have selected the system, we can install it, put it into operation, adapt it on-site and test it. As a result, we offer customized solutions that are tailored to meet your needs. This guarantees the most workable and efficient applications.

Step 1: Analysis
Determining the specific conditions on-site
- Mechanical installation
- Performance limits
- Ambient parameters
- Detection type
- Transponder types
- Stationary/mobile read/write devices

Step 2: Feasibility
- Problem description and definition of objectives
- Representation of the solution
- Selection of system components

Step 3: Recommended solution
- Preparation of samples and test scenarios
- Testing RFID technology in the actual environment
- Performance comparison of various applications

Step 4:Project coaching
- Control of system integrators
- Support in all launch phases
- Project documentation and knowledge integration
- User training

We are happy to help!
Phone: +49 7158 173-401
+49 7158 173-727
E-mail: TecSupport@balluff.de

Assembly

Flush in steel The sensing surface can be mounted on the surface of steel so that it is even with adjacent areas. See the product data sheet for more information.
Non-flush on steel The sensing surface must not be in contact or surrounded by steel. See the product data sheet for more information about the clear zone.
Non-metal The entire clear zone must remain free of any type of metal. See the product data sheet for more information about the clear zone.

Please contact TecSupport for additional metal mounting options.

Industrial RFID System BIS M

RFID at 13.56 MHz (HF)

BIS M enables extremely fast data transmission and has been proven in use in intralogistics, access control and in protection against copycats.

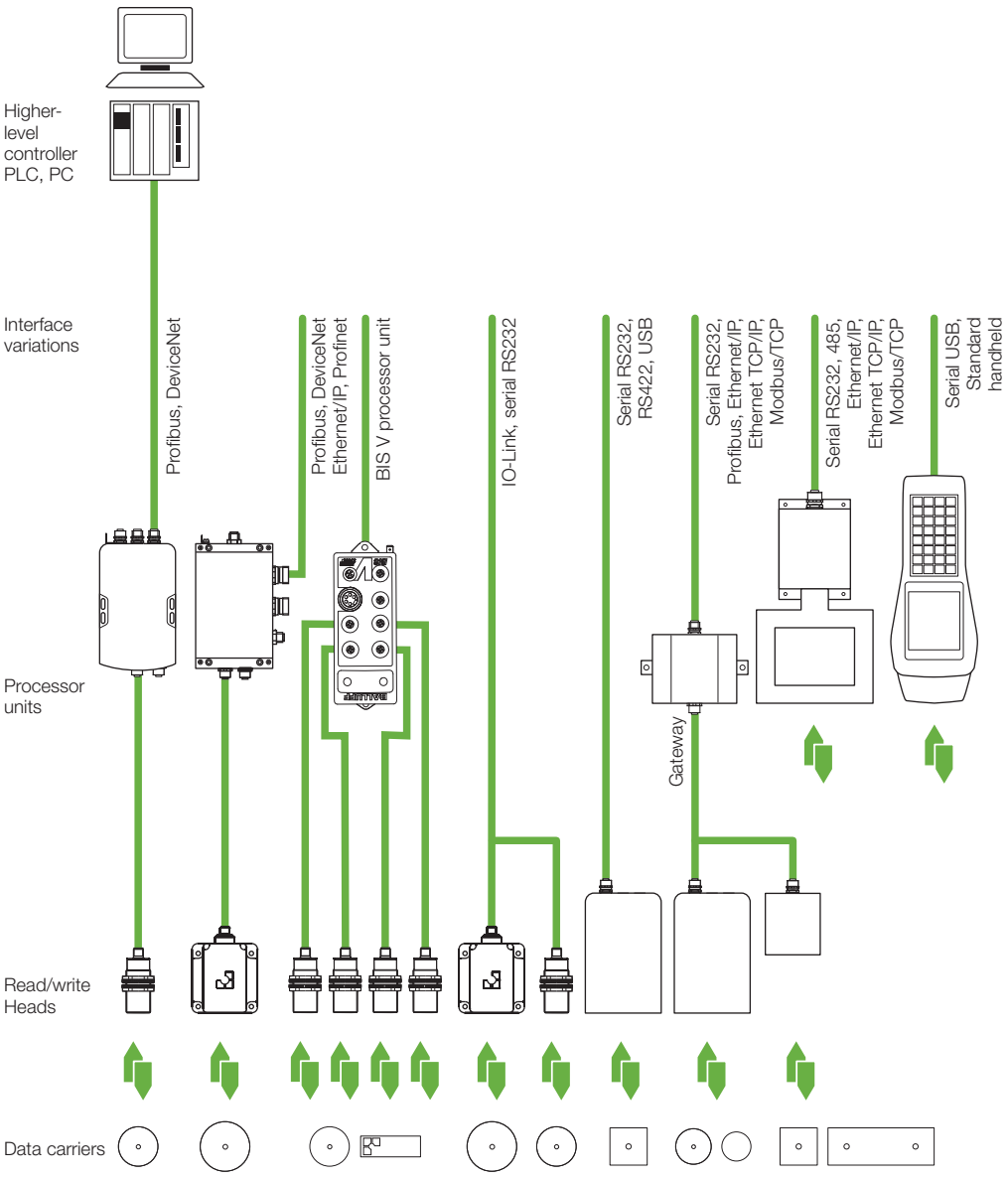
Contents

Product topology, range of applications

BIS M uses the 13.56 MHz high frequency (HF). In combination with passive data carriers, the system provides support for medium ranges up to 400 mm. Thus, BIS M is recommended for asset tracking in the close range, for semi-finished products or applications in production control such as when palletizing or recording on the workpiece or for tracking for quality management.

The system has data carriers for high temperatures and versions in the housing that can be mounted on metal. Cost-effective disposable tags are also available.

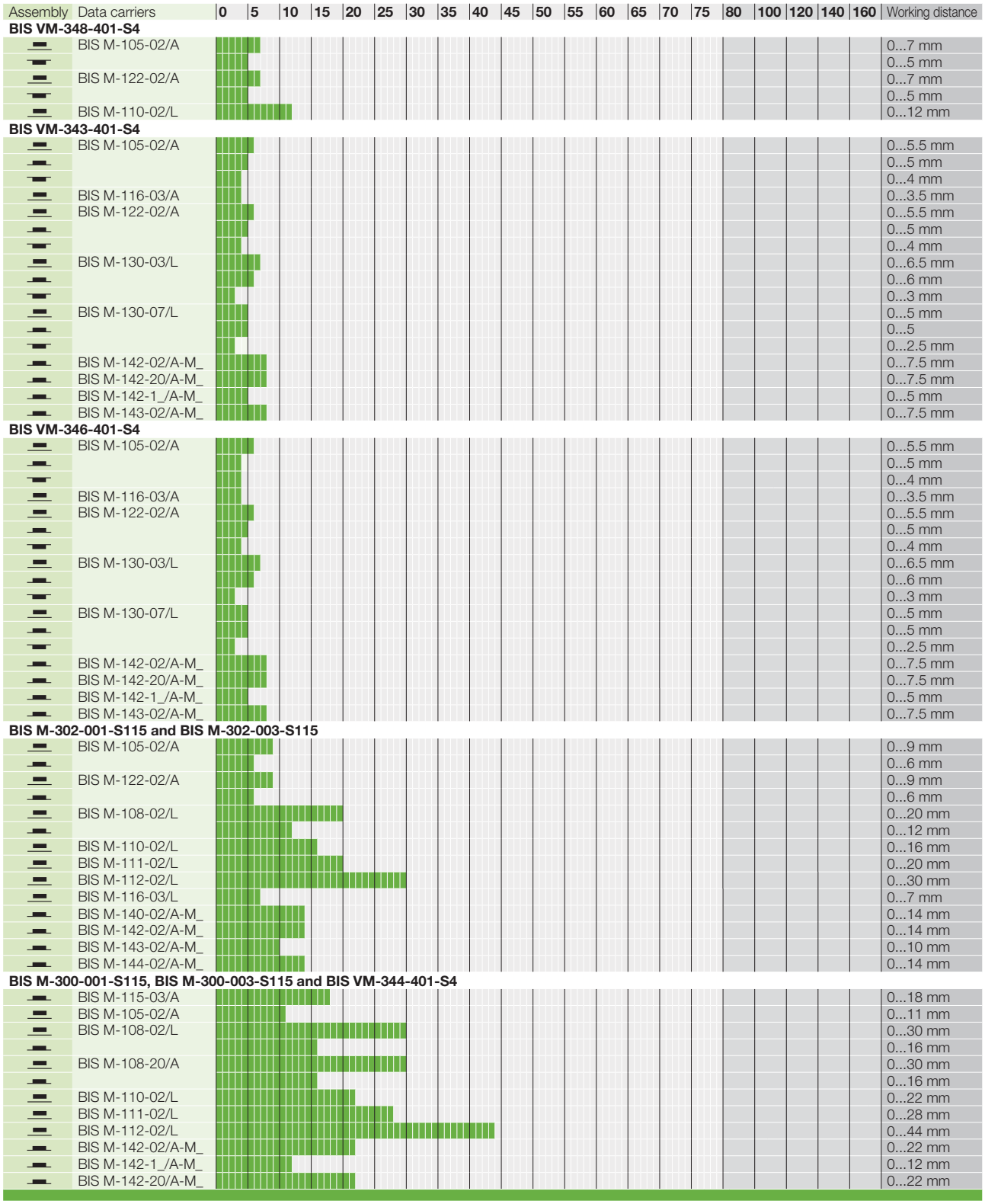
Select the most suitable BIS M system for your application from the table.



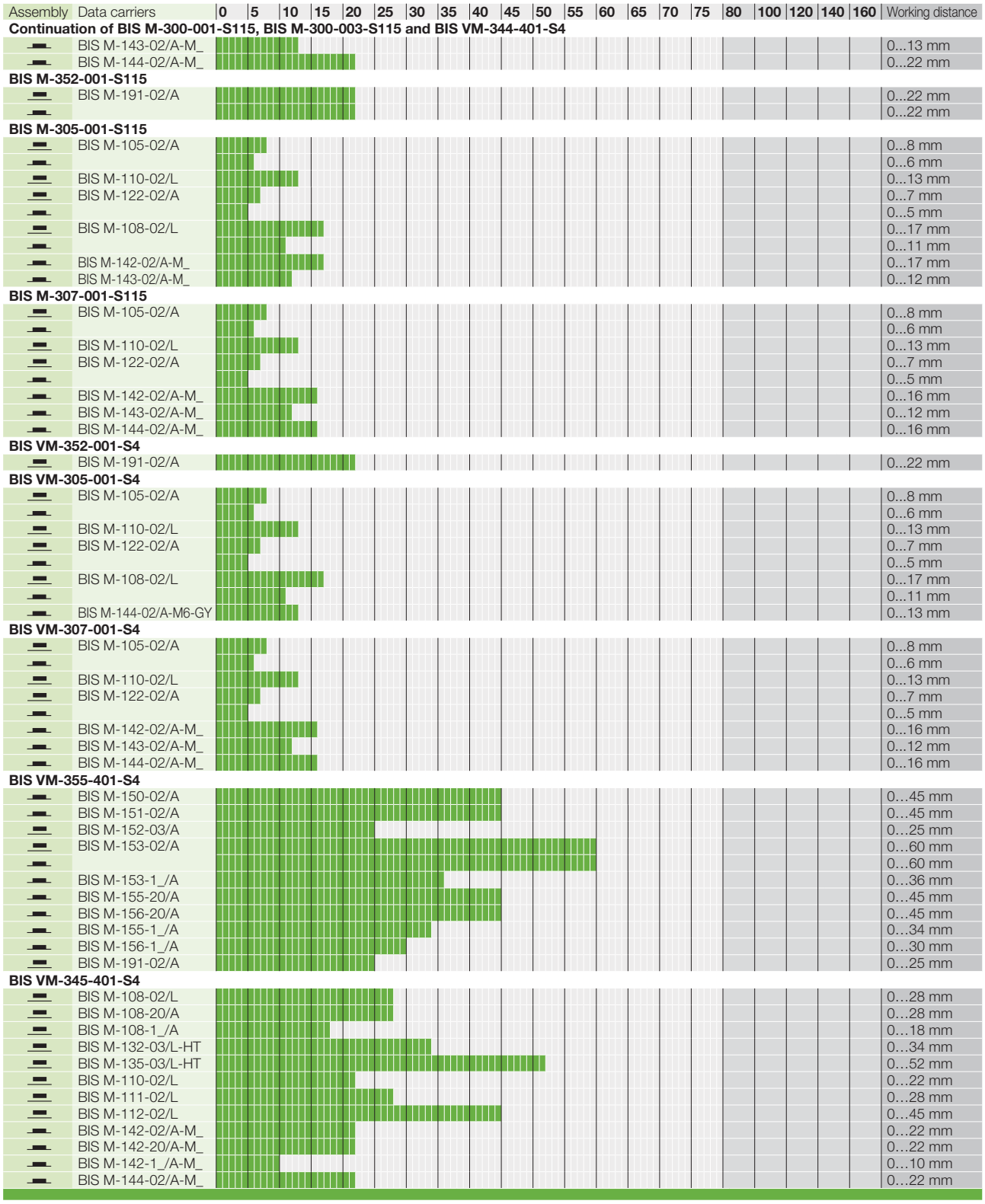
Data carriers		Page	Production				Intralogistics						Access and Object Control					Writing or reading	Dynamic or static	Installation in metal	For harsh ambient conditions	For high temperature ranges	Long distances (> 16 mm)	EEPROM	FRAM
			Tool and die management		Assembly conveyor systems		Closed-loop logistics		Storage and retrieval equipment Storage and tracking		Intelligent vehicles		Object detection		Access control											
			On tool	Dies	Pallets	On part	Retainer/Workpiece carrier	Pallets	Retainer/Workpiece carrier	Workpiece carrier Skid	Guiding, steering	Identification	In component	On component	Secure access control	Process access	PartID									
BIS0042	BIS M-105-02/A	59	■	■	■	■			■				■		■		■	■		■	■				■
BIS0043	BIS M-108-02/L	65	■	■	■		■		■	■				■			■	■	■		■				■
BIS011F	BIS M-108-11/L	65	■	■	■		■		■	■				■			■	■	■		■				■
BIS011E	BIS M-108-13/L	65	■	■	■		■		■	■				■			■	■	■		■				■
BIS011A	BIS M-108-14/L	65	■	■	■		■		■	■				■			■	■	■		■				■
BIS0139	BIS M-108-15/L	65	■	■	■		■		■	■				■			■	■	■		■				■
BIS0111	BIS M-108-20/A	65			■		■		■	■				■			■	■	■		■				■
BIS0044	BIS M-110-02/L	59			■		■	■	■						■	■		■	■		■				■
BIS0045	BIS M-111-02/L	60			■		■	■	■			■			■	■		■	■		■		■		■
BIS0046	BIS M-112-02/L	60			■		■	■				■				■		■	■		■		■		■
BIS00KM	BIS M-115-03/A	66		■		■	■	■	■	■								■	■				■	■	
BIS00UC	BIS M-116-03/A	58			■	■							■	■	■	■	■	■	■	■	■			■	
BIS004A	BIS M-122-02/A	59	■	■	■	■			■				■		■		■	■		■	■				■
BIS00YL	BIS M-130-03/L	58	■	■	■	■							■	■		■	■	■	■		■			■	
BIS00YK	BIS M-130-07/L	59	■	■	■	■							■	■		■	■	■	■		■			■	
BIS00YF	BIS M-132-03/L	60	■	■	■	■	■	■	■	■				■		■	■	■	■		■		■	■	
BIS00YE	BIS M-132-03/L-HT	72	■	■	■	■	■	■	■	■				■		■	■	■	■		■	■	■	■	
BIS00YA	BIS M-132-10/L-HT	72	■	■	■	■	■	■	■	■				■		■	■	■	■		■	■		■	
BIS00Y9	BIS M-133-02/A	69	■	■	■	■	■	■	■	■			■	■				■	■	■	■				■
BIS00Y7	BIS M-134-10/L-HT	73		■	■		■	■	■	■				■				■	■		■	■	■	■	
BIS00Y6	BIS M-135-02/L	64		■	■		■	■	■	■				■		■		■	■		■		■		■
BIS00Y5	BIS M-135-03/L	65		■	■		■	■	■	■				■		■		■	■		■		■	■	
BIS00Y4	BIS M-135-03/L-HT	73		■	■		■	■	■	■				■		■		■	■		■	■	■	■	
BIS00Y2	BIS M-135-07/L-HT	73		■	■		■	■	■	■				■		■		■	■		■	■	■	■	
BIS00W9	BIS M-136-03/L	66		■	■		■	■	■	■				■		■		■	■		■		■	■	
BIS00Y1	BIS M-136-03/L-HT	73		■	■		■	■	■	■				■		■		■	■		■	■	■	■	
	BIS M-142-_ _/A-M_-GY	62			■		■											■	■	■	■				■
	BIS M-143-02/A-M_	61			■		■											■	■	■	■				■
	BIS M-144-02/A-M_-GY	63			■		■											■	■	■	■				■
BIS004F	BIS M-150-02/A	69	■	■	■			■	■	■		■		■				■	■	■	■		■		■
BIS004H	BIS M-151-02/A	69	■	■	■			■	■	■		■		■				■	■	■	■		■		■
BIS00M2	BIS M-152-03/A	67	■	■		■							■	■	■		■	■	■	■	■			■	
BIS00P3	BIS M-153-02/A	71			■		■			■															■
BIS011W	BIS M-153-11/A	71			■		■			■															■
BIS011Y	BIS M-153-13/A	71			■		■			■															■
BIS011U	BIS M-153-14/A	71			■		■			■															■
BIS011E	BIS M-153-15/A	71			■		■			■															■
BIS010R	BIS M-153-20/A	71			■		■			■															■
BIS011M	BIS M-155-11/A	70	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS011Z	BIS M-155-13/A	70	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS011N	BIS M-155-14/A	70	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS013C	BIS M-155-15/A	70	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS0117	BIS M-155-20/A	70	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS012J	BIS M-156-11/A	71	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS012K	BIS M-156-13/A	71	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS012L	BIS M-156-14/A	71	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS012F	BIS M-156-15/A	71	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS0112	BIS M-156-20/A	71	■	■	■		■	■	■	■				■				■	■	■	■		■		■
BIS00NZ	BIS M-191-02/A	67			■													■	■	■	■				■

Industrial RFID System BIS M at 13.56 MHz (HF)

Overview of read/write distances

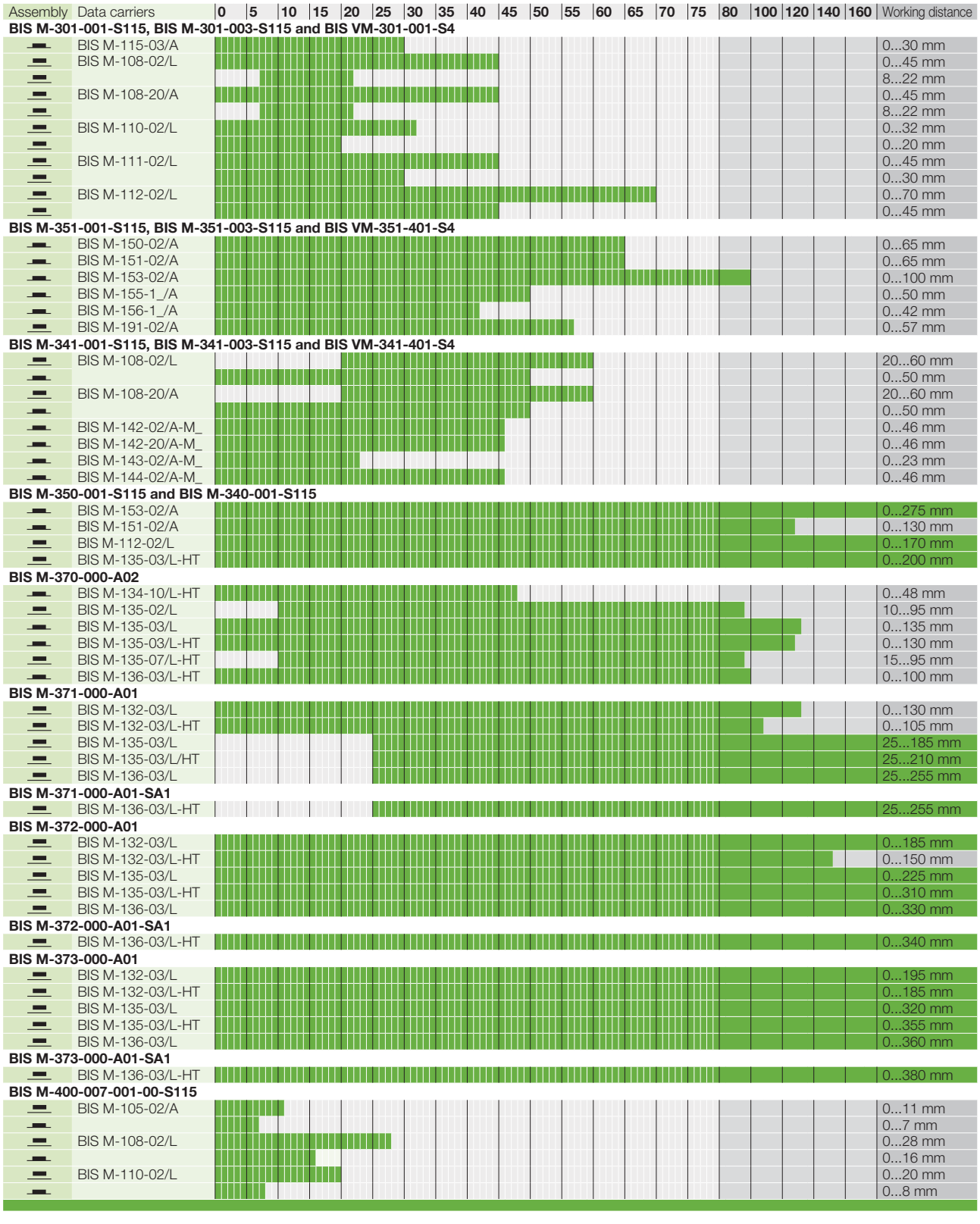


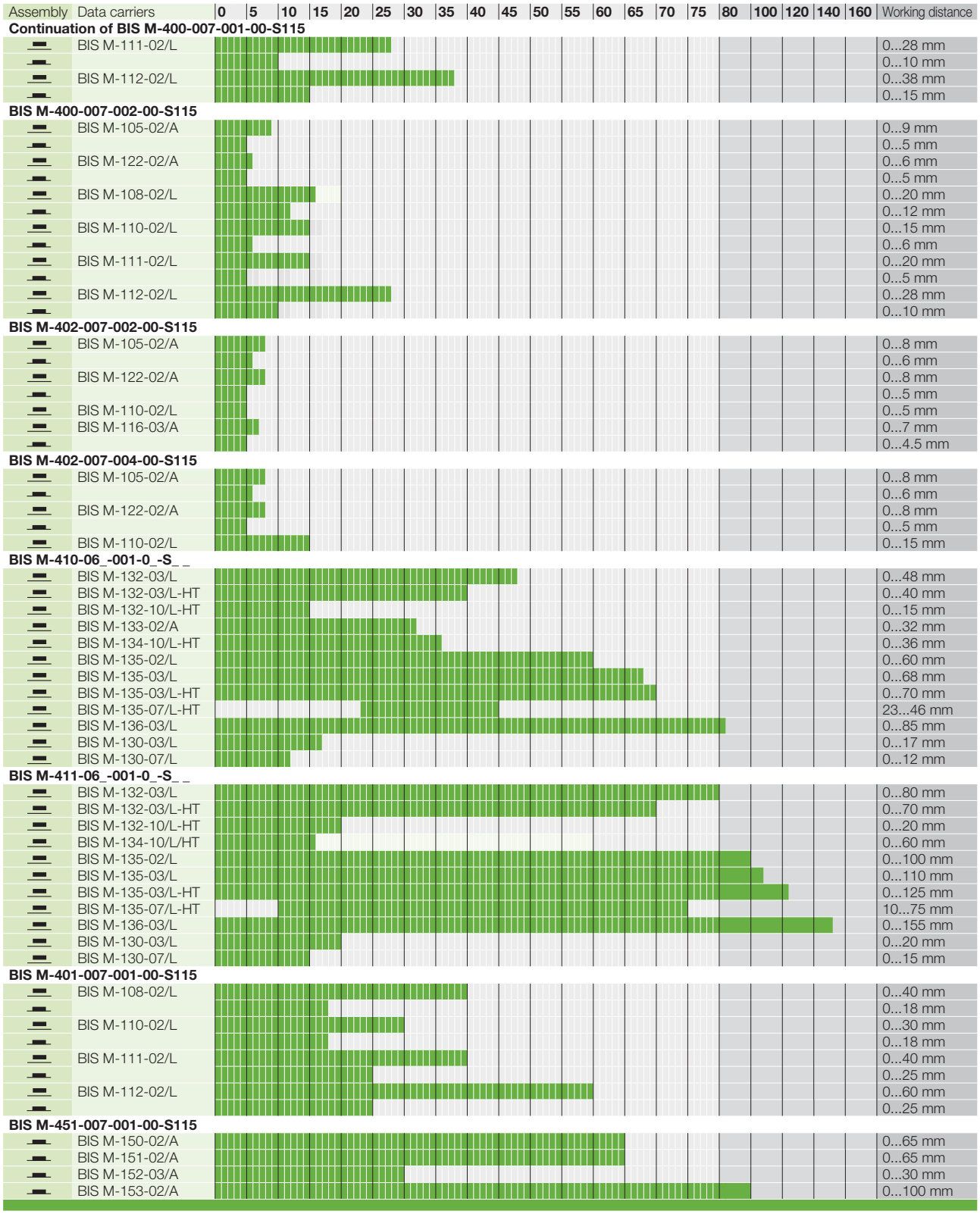
Overview of read/write distances



Industrial RFID System BIS M at 13.56 MHz (HF)

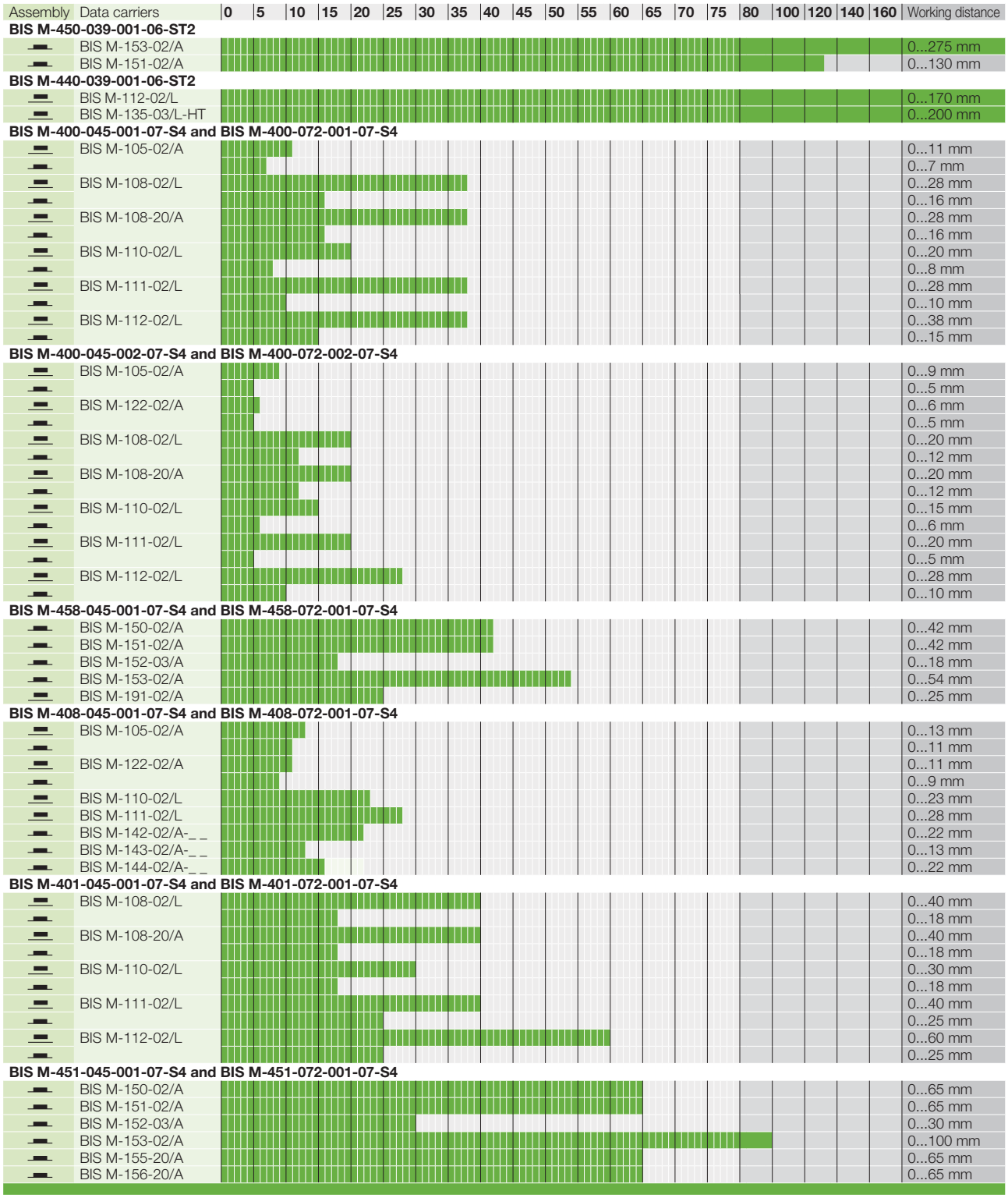
Overview of read/write distances

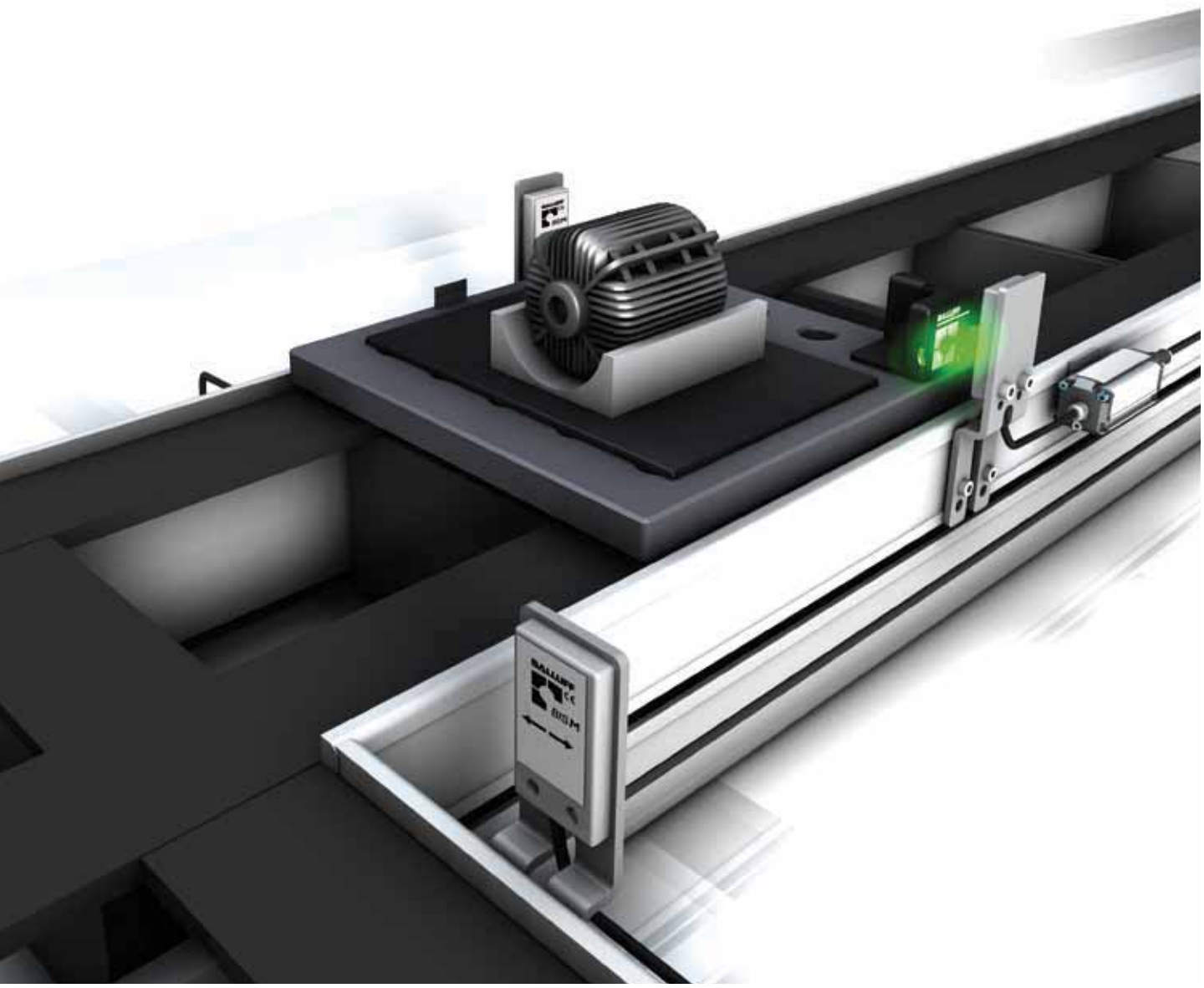




Industrial RFID System BIS M at 13.56 MHz (HF)

Overview of read/write distances





Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write data carriers, round housings

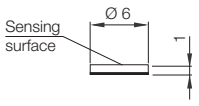
For reliable traceability and easy assembly
All data carriers have a 4 or 8 byte long unique ID.
This number is read-only. The data carriers are affixed.

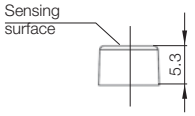
Dimension		**Ø 6×1 mm**	**Ø 8×5 mm**	
Housing material		EP	ABS	
Weight		0.6 g	0.5 g	
BIS M programmable				
112 bytes	**Order code**	**BIS00UC**	**BIS00YL**	
	Part number	BIS M-116-03/A	BIS M-130-03/L	
992 bytes	**Order code**			
	Part number			
2000 bytes	**Order code**			
	Part number			
Operating temperature		0...+50 °C	–20...+85 °C	
Storage temperature		–20...+90 °C	–40...+85 °C	
Degree of protection per IEC 60529		IP 67	IP 67	
Supported standard		ISO 15693	ISO 15693	

Suitable read/write head with max. read/write working distance

Assembly	▬	▬	▬	▬	▬	
BIS M-300, BIS VM-344						
BIS M-301						
BIS M-302		0...7 mm				
BIS M-305, BIS VM-305						
BIS M-307, BIS VM-307						
BIS M-340						
BIS M-400						
BIS M-401						
BIS M-402	0...4.5 mm	0...7 mm				
BIS M-408						
BIS M-410					0...17 mm	
BIS M-411					0...20 mm	
BIS VM-343-401		0...3.5 mm	0...3 mm	0...6 mm	0...6.5 mm	
BIS VM-345						
BIS VM-346-401		0...3.5 mm	0...3 mm	0...6 mm	0...6.5 mm	
BIS VM-348						

For assembly, observe the general information and installation notices on page 158.





Installation:

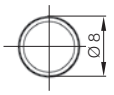
▬ Flush in steel

▬ Non-flush on steel

▬ Non-metal

Antenna type:

Round

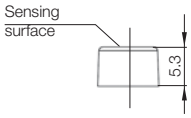


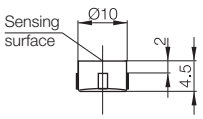
TOOL*ID*
For tool identification

TOOL*ID*
For tool identification

Ø 8×5 mm	**Ø 10×4.5 mm**	**Ø 12×6 mm**	**Ø 20×2.5 mm**
ABS	PA 12	EP	PA 6
0.5 g	< 1.5 g	< 1.5 g	< 1.3 g
BIS00YK			
BIS M-130-07/L			
	BIS004A	**BIS0042**	**BIS0044**
	BIS M-122-02/A	BIS M-105-02/A	BIS M-110-02/L
–20...+85 °C	0...+70 °C	–25...+70 °C	–25...+85 °C
–40...+85 °C	–25...+85 °C	–25...+85 °C	–40...+90 °C (100 h at 140 °C)
IP 67	IP 67	IP 67	IP 67
ISO 15693	ISO 15693 (data carrier with ISO 14443 on request)	ISO 15693 (data carrier with ISO 14443 on request)	ISO 15693

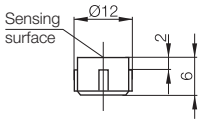
								0...11 mm	0...22 mm
									0...32 mm
				0...6 mm	0...9 mm		0...6 mm	0...9 mm	0...16 mm
				0...5 mm	0...7 mm		0...6 mm	0...8 mm	0...13 mm
				0...5 mm	0...7 mm		0...6 mm	0...8 mm	0...13 mm
									0...90 mm
				0...5 mm	0...11 mm			0...11 mm	0...20 mm
									0...30 mm
				0...5 mm	0...8 mm		0...6 mm	0...8 mm	0...15 mm
					0...11 mm			0...13 mm	0...23 mm
		0...12 mm							
		0...15 mm							
0...2.5 mm	0...5 mm	0...5 mm	0...4 mm	0...5 mm	0...5.5 mm	0...4 mm	0...5 mm	0...5.5 mm	
									0...22 mm
0...2.5 mm	0...5 mm	0...5 mm	0...4 mm	0...5 mm	0...5.5 mm	0...4 mm	0...5 mm	0...5.5 mm	
			0...5 mm		0...7 mm	0...5 mm		0...7 mm	0...12 mm



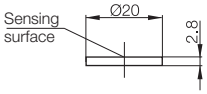


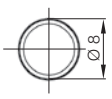
Glue into hole Ø 10 H11

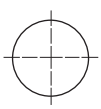
DIN 69873



Glue into hole Ø 12 H11







Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write data carriers, round housings

For reliable traceability and easy assembly

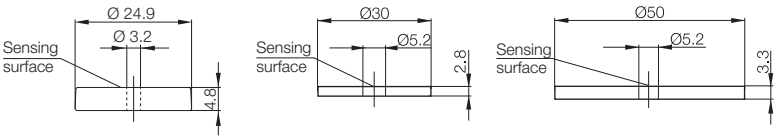
All data carriers have a 4 or 8 byte long unique ID. This number is read-only. The data carriers are mounted quickly with a screw, but can also be affixed.

Dimension		**Ø 25×5 mm**	**Ø 30×2.5 mm**	**50×3 mm**
Housing material		ABS	PA 6	PA 6
Weight		2 g	< 3 g	< 9.5 g
BIS M programmable				
112 bytes	**Order code**	**BIS00YF**		
	Part number	BIS M-132-03/L		
2000 bytes	**Order code**		**BIS0045**	**BIS0046**
	Part number		BIS M-111-02/L	BIS M-112-02/L
Operating temperature		–20...+85 °C	–25...+85 °C	–25...+85 °C
Storage temperature		–40...+85 °C	–40...+90 °C (100 h at 140 °C)	–40...+90 °C (100 h at 140 °C)
Degree of protection per IEC 60529		IP 68	IP 67	IP 67
Supported standard		ISO 15693	ISO 15693	ISO 15693

Suitable read/write head with max. read/write working distance

Assembly	▬	▬	▬
BIS M-300, BIS M-400, BIS VM-344		0...28 mm	0...44 mm
BIS M-301, BIS VM-301		0...45 mm	0...70 mm
BIS M-302		0...20 mm	0...30 mm
BIS M-340, BIS M-440		0...140 mm	0...170 mm
BIS M-371	0...130 mm		
BIS M-372	0...185 mm		
BIS M-373	0...195 mm		
BIS M-401		0...40 mm	0...60 mm
BIS M-408		0...28 mm	
BIS M-410	0...48 mm		
BIS M-411	0...80 mm		
BIS VM-341			0...100 mm
BIS VM-345		0...28 mm	0...45 mm

For assembly, observe the general information and installation notices on page 158.

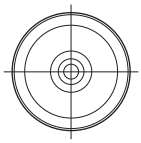


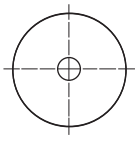
Installation:

▬ Non-metal

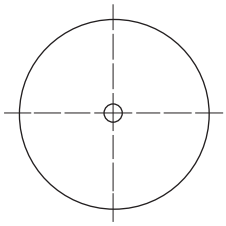
Antenna type:

Round





Tightening torque max. 1 Nm



Tightening torque max. 5.9 Nm

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write data carriers, data screws

For reliable traceability
All data carriers have a 4 or 8 byte long unique ID.
This number is read-only.

Dimension		**M6**	**M8**
Housing material		Steel-coated, PA 12 (fiberglass reinforced)	Steel-coated, PA 12 (fiberglass reinforced)
Weight		17 g	18 g

BIS M programmable

2000 bytes	**Order code**	**BIS00NU**	**BIS00NW**
	Part number	BIS M-143-02/A-M6	BIS M-143-02/A-M8
Operating temperature		–25...+70 °C	–25...+70 °C
Storage temperature		–25...+95 °C	–25...+95 °C
Degree of protection per IEC 60529/DIN 40050		IP 68/x9K	IP 68/x9K
Supported standard		ISO 15693	ISO 15693

Suitable read/write head with max. read/write working distance

Assembly	▬	▬
BIS M-300, BIS VM-344	0...13 mm	0...13 mm
BIS M-302	0...10 mm	0...10 mm
BIS M-305, BIS VM-305	0...12 mm	0...12 mm
BIS M-307, BIS VM-307	0...12 mm	0...12 mm
BIS M-341, BIS VM-341	0...23 mm	0...23 mm
BIS M-408	0...13 mm	0...13 mm
BIS VM-343-401	0...7.5 mm	0...7.5 mm
BIS VM-346-401	0...7.5 mm	0...7.5 mm

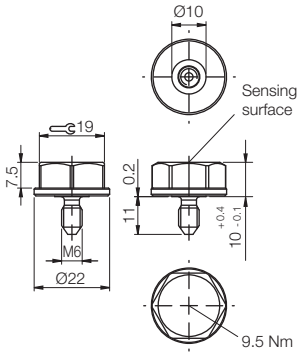
For assembly, observe the general information and installation notices on page 158.

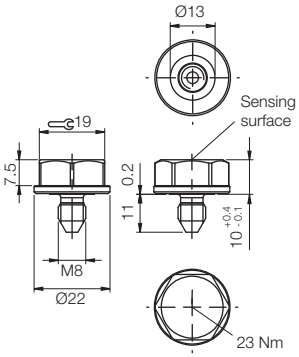
Installation:

▬ Non-flush on steel

Antenna type:

Round





For reliable traceability
All data carriers have a 4 or 8 byte long unique ID.
This number is read-only.

Dimension		**M6**	**M8**	
Housing material		Steel-coated, PA 12 (fiberglass reinforced)	Steel-coated, PA 12 (fiberglass reinforced)	
Weight		15 g	16 g	

BIS M programmable

2000 bytes	**Order code**	**BIS00PT**	**BIS00PU**	
	Part number	BIS M-142-02/A-M6-GY	BIS M-142-02/A-M8-GY	
8 kbytes	**Order code**		**BIS0119**	
	Part number		BIS M-142-20/A-M8-GY*	
32 kbytes	**Order code**			
	Part number			
64 kbytes	**Order code**			
	Part number			
128 kbytes	**Order code**			
	Part number			
Operating temperature		–25...+70 °C	–25...+70 °C	
Storage temperature		–25...+95 °C	–25...+95 °C	
Degree of protection per IEC 60529/DIN 40050		IP 68/x9K	IP 68/x9K	
Supported standard		ISO 15693	ISO 15693	

Suitable read/write head with max. read/write working distance

Assembly	▬	▬	
BIS M-300	0...22 mm	0...22 mm	
BIS M-302	0...14 mm	0...14 mm	
BIS M-305, BIS VM-305	0...17 mm	0...17 mm	
BIS M-408	0...22 mm	0...22 mm	
BIS VM-341-401	0...40 mm	0...40 mm	
BIS VM-343-401	0...7.5 mm	0...7.5 mm	
BIS VM-344-401	0...22 mm	0...22 mm	
BIS VM-345-401	0...22 mm	0...22 mm	
BIS VM-346-401	0...7.5 mm	0...7.5 mm	

For assembly, observe the general information and installation notices on page 158.

* Can only be used with read/write heads BIS VM-3_ _.

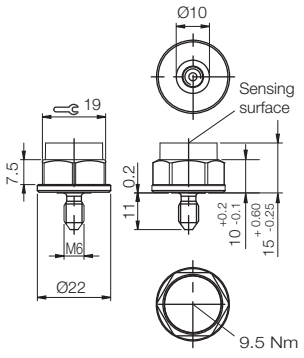
** Can only be used with read/write heads BIS VM-3_ _-**4**01.

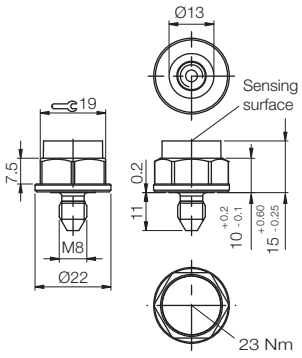
Installation:

▬ Non-flush on steel

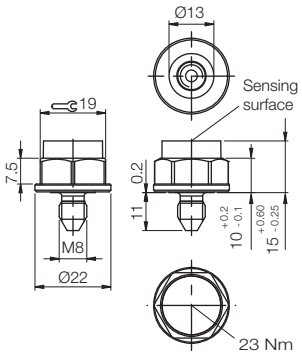
Antenna type:

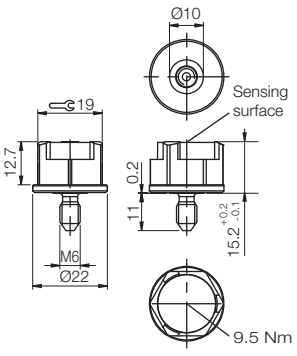
Round

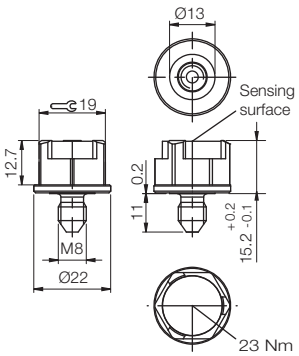




	M8	**M6**	**M8**
	Steel-coated, PA 12 (fiberglass reinforced)	Steel-coated, PA 12 (fiberglass reinforced)	Steel-coated, PA 12 (fiberglass reinforced)
	16 g	16 g	17 g
		BIS00R4	**BIS00R5**
		BIS M-144-02/A-M6-GY	BIS M-144-02/A-M8-GY
	BIS011H		
	BIS M-142-11/A-M8-GY**		
	BIS011K		
	BIS M-142-13/A-M8-GY**		
	BIS011J		
	BIS M-142-14/A-M8-GY**		
	BIS013A		
	BIS M-142-15/A-M8-GY**		
	–25...+70 °C	–25...+70 °C	–25...+70 °C
	–25...+95 °C	–25...+95 °C	–25...+95 °C
	IP 68/x9K	IP 68/x9K	IP 68/x9K
	ISO 15693	ISO 15693	ISO 15693
	▬	▬	▬
		0...22 mm	0...22 mm
		0...14 mm	0...14 mm
		0...17 mm	0...17 mm
		0...22 mm	0...22 mm
	0...20 mm	0...40 mm	0...40 mm
	0...5 mm		
	0...12 mm	0...22 mm	0...22 mm
	0...10 mm	0...22 mm	0...22 mm
	0...5 mm		







For reliable traceability
All data carriers have a 4 byte unique ID contained in the read/write memory. This number is read-only.

Dimension		**51.5×51.5×6.4 mm**	
Housing material		ABS	
Weight		18 g	

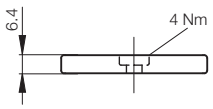
BIS M programmable

112 bytes	**Order code**		
	Part number		
2000 bytes	**Order code**	**BIS00Y6**	
	Part number	BIS M-135-02/L	
8 kbytes	**Order code**		
	Part number		
32 kbytes	**Order code**		
	Part number		
64 kbytes	**Order code**		
	Part number		
128 kbytes	**Order code**		
	Part number		
Operating temperature		–20...+85 °C	
Storage temperature		–40...+85 °C	
Degree of protection per IEC 60529		IP 67	
Supported standard		ISO 15693	

Suitable read/write head with max. read/write working distance

Assembly	▬	
BIS M-300, BIS VM-300		
BIS M-301, BIS VM-301		
BIS M-302		
BIS M-305, BIS VM-305		
BIS M-370	10…95 mm	
BIS M-371	35...175 mm	
BIS M-372	0...255 mm	
BIS M-373	0...295 mm	
BIS M-400		
BIS M-401		
BIS M-410	0...60 mm	
BIS M-411	0...100 mm	
BIS VM-341-401		
BIS VM-345		

For assembly, observe the general information and installation notices on page 158.



* Can only be used with read/write heads BIS VM-3_ _.

** Can only be used with read/write heads BIS VM-3_ _-**4**01.

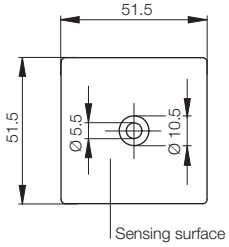
Installation:

▬ Non-flush on steel

▬ Non-metal

Antenna type:

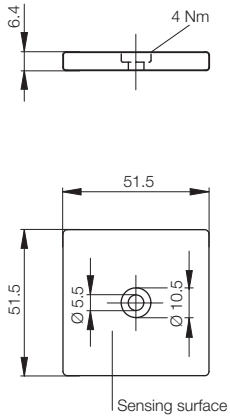
Round

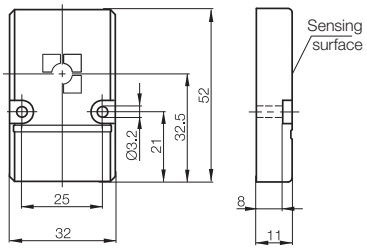


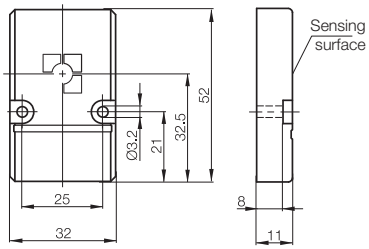
HIGH SPEED
HIGH MEMORY

	51.5×51.5×6.4 mm	**52×32×11 mm**	**52×32×11 mm**
	ABS	PBT	PBT
	25 g	< 27 g	< 27 g
	BIS00Y5		
	BIS M-135-03/L		
		BIS0043	
		BIS M-108-02/L	
		BIS0111	**BIS011F**
		BIS M-108-20/A*	BIS M-108-11/A**
			BIS011E
			BIS M-108-13/A**
			BIS011A
			BIS M-108-14/A**
			BIS0139
			BIS M-108-15/A**
	–20...+85 °C	–25...+70 °C	–25...+70 °C
	–40...+85 °C	–25...+85 °C	–25...+85 °C
	IP 67	IP 67	IP 67
	ISO 15693	ISO 15693	ISO 15693

		0...16 mm	0...30 mm		
			0...45 mm		
		0...12 mm	0...20 mm		
		0...11 mm	0...17 mm		
	0...135 mm				
	25...185 mm				
	65...225 mm				
	0...320 mm				
			0...28 mm		
			0...40 mm		
	0...70 mm				
	0...110 mm				
		0...36 mm	0...64 mm	0...30 mm	0...42 mm
			0...28 mm		0...18 mm







Self-adhesive

Dimension	**128×52×11 mm**	**65×25×3 mm**
Housing material	ABS	EP, PVC
Weight	46 g	7 g

BIS M programmable

112 bytes	**Order code**	**BIS00W9**	**BIS00KM**
	Part number	BIS M-136-03/L	BIS M-115-03/A
Operating temperature		–20...+85 °C	–25...+50 °C
Storage temperature		–40...+85 °C	–30...+60 °C
Degree of protection per IEC 60529		IP 67	IP 65
Supported standard		ISO 15693	ISO 15693

Suitable read/write head with max. read/write working distance

Assembly	▬	▬
BIS M-300, BIS VM-344		0...18 mm
BIS M-301, BIS VM-301-401		
BIS M-371	25...255 mm	
BIS M-372	0...330 mm	
BIS M-373	0...360 mm	
BIS M-410	0...85 mm	
BIS M-411	0...155 mm	

For assembly, observe the general information and installation notices on page 158.

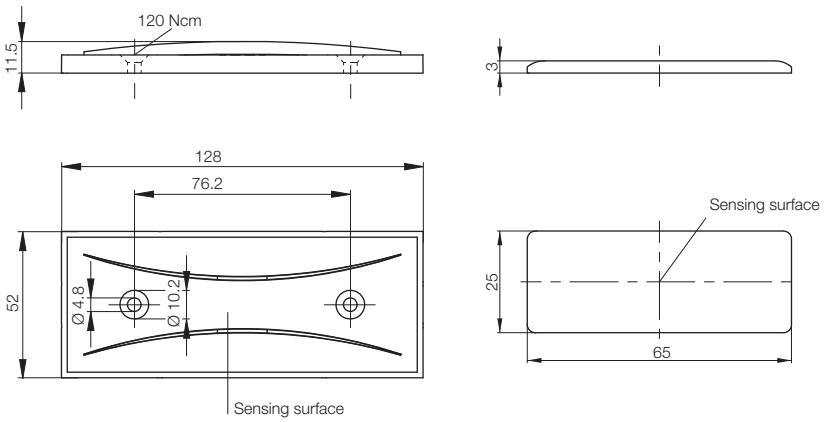
Installation:

▬ Non-flush on steel

▬ Non-metal

Antenna type:

Round



Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write data carriers, special housings

Dimension		**4×22 mm**	**24×24×21 mm**
Housing material		Glass	PBT
Weight		0.6 g	18 g

BIS M programmable

112 bytes	**Order code**	**BIS00M2**	
	Part number	BIS M-152-03/A	
2000 bytes	**Order code**		**BIS00NZ**
	Part number		BIS M-191-02/A
Operating temperature		–25...+85 °C	–25...+70 °C
Storage temperature		–25...+85 °C	–25...+85 °C
Degree of protection per IEC 60529		IP 68	IP 67
Supported standard		ISO 15693	ISO 15693

Suitable read/write head with max. read/write working distance

Assembly	▬	▬
BIS M-351, BIS M-451	0...30 mm	
BIS M-352, BIS VM-352		0...22 mm
BIS M-458	0...18 mm	0...28 mm
BIS VM-351-401		0...57 mm
BIS VM-355-401	0...25 mm	0...35 mm

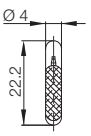
For assembly, observe the general information and installation notices on page 158.

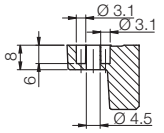
Installation:

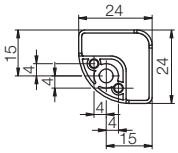
▬ Non-metal

Antenna type:

Rod







FERROIDENT DEXÍ®

For reliable traceability
All data carriers have a 4 byte long unique ID.
This number is read-only.

CE

Dimension	
Housing material	
Weight	

BIS M programmable

2000 bytes	**Order code**	
	Part number	
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529/DIN 40050		
Supported standard		

Suitable read/write head with max. read/write working distance

Assembly	
BIS M-350, BIS M-450	
BIS M-351, BIS M-451	
BIS M-371	
BIS M-372	
BIS M-410	
BIS M-458	
BIS VM-351-401	
BIS VM-355-401	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-flush on steel

Non-metal

Antenna type:

Rod

Round

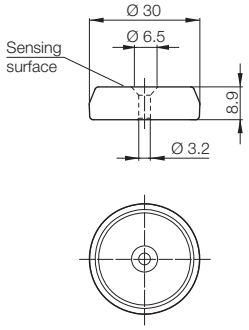
Metal mounting plate 40×22 mm
(please order separately)

Use	For BIS 150-... and BIS M 151-...
Packaging unit	10 pcs.
Order code	**BAM012M**
Part number	BIS Z-MP-001

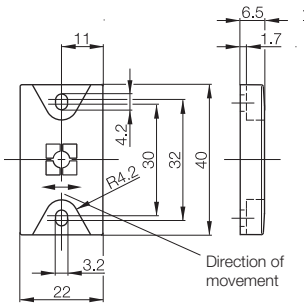
Required if no metal substrate is used.

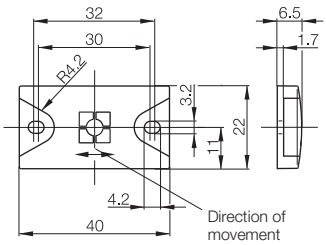
	Ø 30×10 mm	**40×22×6.5 mm**	**40×22×6.5 mm**
	PA	PPS (fiberglass reinforced)	PPS (fiberglass reinforced)
	10 g	8 g	8 g
	BIS00Y9	**BIS004F**	**BIS004H**
	BIS M-133-02/A	BIS M-150-02/A	BIS M-151-02/A
	–40...+85 °C	–25...+70 °C	–25...+70 °C
	–40...+130 °C	–25...+130 °C	–25...+130 °C
	IP 67	IP 67	IP 67
	ISO 15693	ISO 15693	ISO 15693

			0...130 mm	0...130 mm
			0...65 mm	0...65 mm
	0...90 mm	0...90 mm		
	0...120 mm	0...120 mm		
	0...32 mm	0...32 mm		
			0...42 mm	0...38 mm
			0...65 mm	0...65 mm
			0...45 mm	0...45 mm



Tightening torque max. 0.75 Nm





For reliable traceability
All data carriers have a 4 byte long unique ID.
This number is read-only.

Dimension		**40×22×9.5 mm**	**40×22×9.5 mm**	
Housing material		PPS (fiberglass reinforced)	PPS (fiberglass reinforced)	
Weight		9 g	9 g	
BIS M programmable				
2000 bytes	**Order code**			
	Part number			
8 kbytes	**Order code**	**BIS0117**	**BIS011M**	
	Part number	BIS M-155-20/A*	BIS M-155-11/A**	
32 kbytes	**Order code**		**BIS011Z**	
	Part number		BIS M-155-13/A**	
64 kbytes	**Order code**		**BIS011N**	
	Part number		BIS M-155-14/A**	
128 kbytes	**Order code**		**BIS013C**	
	Part number		BIS M-155-15/A**	
Operating temperature		–25...+70 °C	–25...+70 °C	
Storage temperature		–25...+130 °C	–25...+130 °C	
Degree of protection per IEC 60529/DIN 40050		IP 68/x9K	IP 68/x9K	
Supported standard		ISO 15693	ISO 15693	

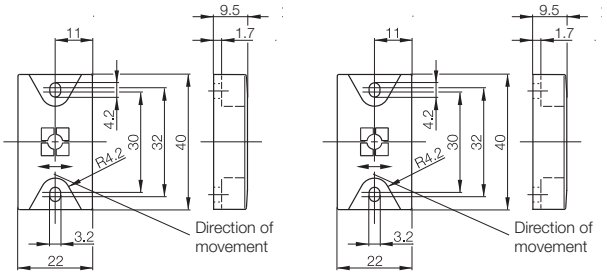
Suitable read/write head with max. read/write working distance

Assembly	▬	▬	
BIS M-350, BIS M-450			
BIS M-351, BIS M-451			
BIS M-458			
BIS VM-351-401	0...75 mm	0...50 mm	
BIS VM-355-401	0...45 mm	0...34 mm	

For assembly, observe the general information and installation notices on page 158.

* Can only be used with read/write heads BIS VM-3_ _.

** Can only be used with read/write heads BIS VM-3_ _-**4**01.



Installation:

▬ Non-flush on steel

▬ Non-metal

Antenna type:

Rod

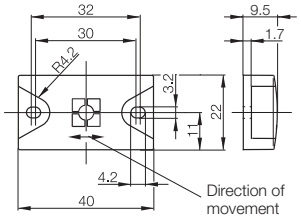
Metal mounting plate 40×22 mm
(please order separately)

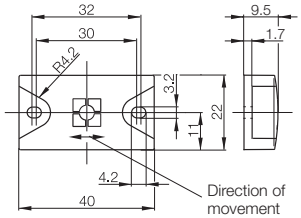
Use	For BIS 155-... and BIS M 156-...
Packaging unit	10 pcs.
Order code	**BAM012M**
Part number	BIS Z-MP-001

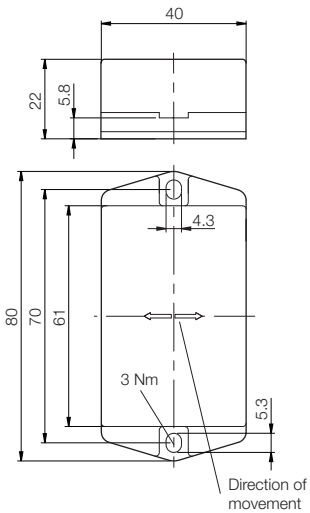
Required if no metal substrate is used.

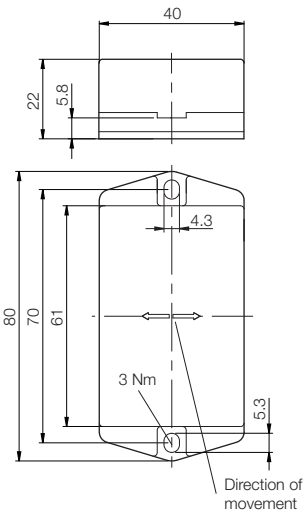
	40×22×9.5 mm	**40×22×9.5 mm**	**80×40×22 mm**	**80×40×22 mm**
	PPS (fiberglass reinforced)	PPS (fiberglass reinforced)	POM	POM
	9 g	9 g	95 g	95 g
			BIS00P3	
			BIS M-153-02/A	
	BIS0112	**BIS012J**	**BIS010R**	**BIS011W**
	BIS M-156-20/A*	BIS M-156-11/A**	BIS M-153-20/A*	BIS M-153-11/A**
		BIS012K		**BIS011Y**
		BIS M-156-13/A**		BIS M-153-13/A**
		BIS012L		**BIS011U**
		BIS M-156-14/A**		BIS M-153-14/A**
		BIS013F		**BIS013E**
		BIS M-156-15/A**		BIS M-153-15/A**
	–25...+70 °C	–25...+70 °C	–25...+85 °C	–25...+85 °C
	–25...+130 °C	–25...+85 °C	–25...+85 °C	–25...+85 °C
	IP 68/x9K	IP 68/x9K	IP 68/x9K	IP 68/x9K
	ISO 15693	ISO 15693	ISO 15693	ISO 15693

	▬	▬	▬	▬	▬	▬
			0...275 mm	0...275 mm		
			0...90 mm	0...100 mm		
				0...54 mm		
	0...70 mm	0...42 mm			0...60 mm	0...60 mm
	0...45 mm	0...30 mm	0...60 mm	0...60 mm	0...36 mm	0...36 mm









Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write data carriers, high-temperature resistant housings

For high temperatures

For reliable traceability
All data carriers have a 4 byte long unique ID.
This number is read-only.

Dimension		**Ø 25×5 mm**	**Ø 25×5 mm**	
Housing material		PPS	PPS	
Weight		4 g	4 g	

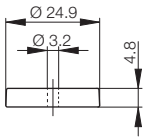
BIS M programmable

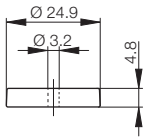
112 bytes	**Order code**	**BIS00YE**		
	Part number	BIS M-132-03/L-HT		
736 bytes	**Order code**		**BIS00YA**	
	Part number		BIS M-132-10/L-HT	
992 bytes	**Order code**			
	Part number			
Operating temperature		–40...+85 °C	–40...+85 °C	
Storage temperature		–40...+220 °C (tested at 1000 cycles of 1 hour each)	–40...+220 °C (tested at 1000 cycles of 1 hour each)	
Degree of protection per IEC 60529		IP 68	IP 68	
Supported standard		ISO 15693	ISO 14443	

Suitable read/write head with max. read/write working distance

Assembly	▬	▬	
BIS M-340			
BIS M-341			
BIS M-370			
BIS M-371	0...105 mm	0...45 mm	
BIS M-372	0...150 mm	0...40 mm	
BIS M-373	0...185 mm		
BIS M-401	0...50 mm		
BIS M-410	0...40 mm	0...15 mm	
BIS M-411	0...70 mm	0...20 mm	
BIS VM-341-401			
BIS VM-344-401	0...42 mm		
BIS VM-345-401	0...34 mm		

For assembly, observe the general information and installation notices on page 158.



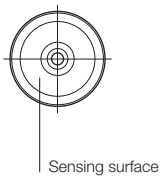


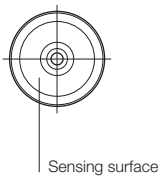
Installation:

▬ Non-metal

Antenna type:

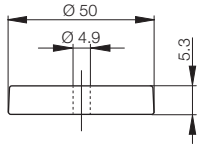
Round

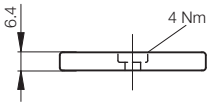


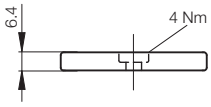


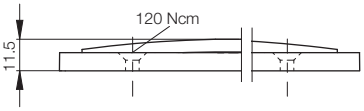


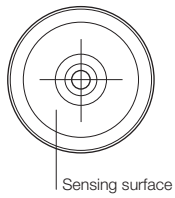

	Ø 50×5 mm	**51.5×51.5×6.5 mm**	**51.5×51.5×6.5 mm**	**128×52×11 mm**
	PPS	PPS	PPS	PPS
	17 g	25 g	25 g	68 g
		BIS00Y4		**BIS00Y1**
		BIS M-135-03/L-HT		BIS M-136-03/L-HT
	BIS00Y7			
	BIS M-134-10/L-HT			
			BIS00Y2	
			BIS M-135-07/L-HT	
	–40...+85 °C	–40...+85 °C	–40...+85 °C	–40...+85 °C
	–40...+220 °C (tested at 1000 cycles of 1 hour each)	–40...+220 °C (tested at 1000 cycles of 1 hour each)	–40...+220 °C (tested at 1000 cycles of 1 hour each)	–40...+220 °C (tested at 1000 cycles of 1 hour each)
	IP 68	IP 68	IP 68	IP 68
	ISO 14443	ISO 15693	ISO 15693	ISO 15693
	—	—	—	—
		0...200 mm		
			0...90 mm	
	0...48 mm	0...130 mm	15...95 mm	0...100 mm
	35...100 mm	25...210 mm	75...135 mm	25...255 mm*
	55...115 mm	0...310 mm	55...220 mm	0...340 mm*
	0...110 mm	0...355 mm		0...380 mm*
		0...75 mm		
	0...36 mm	0...70 mm	23...46 mm	0...85 mm
	0...60 mm	0...125 mm	10...75 mm	0...155 mm
		0...120 mm	0...112 mm	
			0...44 mm	
		0...52 mm		

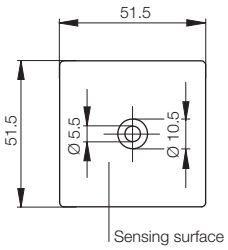


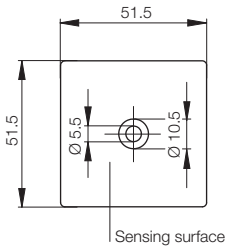


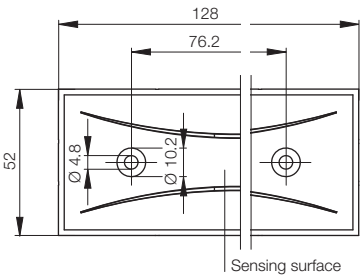












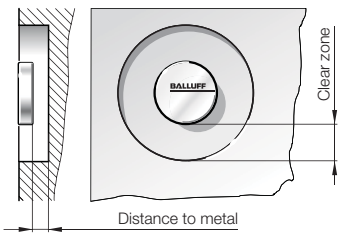
* with BIS M-371-000-A01-SA1

Industrial RFID System BIS M at 13.56 MHz (HF)
Read/write heads, M12×1

Small size – big performance
Read/write heads in various form factors offer wide application possibilities. Select according to your application.

Dimensions		
Housing material		
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	2 mm	
	4 mm	
	5.5 mm	
	6 mm	
	7.5 mm	
	8 mm	
	10 mm	
	12.5 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

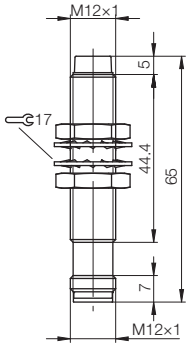
Non-metal

Antenna type:

Round

	M12×1
	Brass, coated
	BIS013H
	BIS VM-348-401-S4
	▬
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	M12 male, 4-pin
	Processor unit BIS V-...
	See page 304...309

BIS0042	BIS M-105-02/A	**BIS004A**	BIS M-122-02/A	**BIS0044**	BIS M-110-02/L
>10	>0	>10	>0	>25	
>24	>0	>24	>0	>30	
0...7	0...5	0...7	0...5	0...12	
0...7	0...5	0...7	0...5	0...12	
±5	±3	±4,5	±3	±7	
±5	±3	±4,5	±3	±7	
±4,5	±2,5	±4	±2,5	±7	
±4,5	±1	±4	±1	±6	
±4,5		±4		±6	
±2,5		±2		±6	
				±6	
				±3	
				±3	

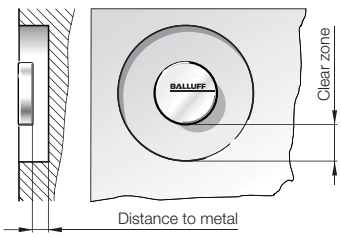


Industrial RFID System BIS M at 13.56 MHz (HF)
Read/write heads, Ø 14.5 mm

Small size – big performance
Read/write heads in various form factors offer wide application possibilities. Select according to your application.

Dimensions		
Housing material		
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	1 mm	
	2 mm	
	2.5 mm	
	3 mm	
	3.5 mm	
	4 mm	
	5 mm	
	5.5 mm	
	6.5 mm	
	7.5 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

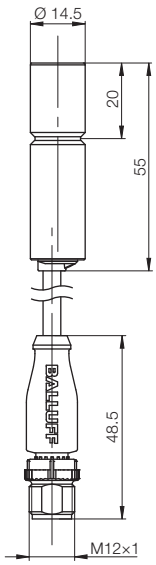
Flush in steel

Antenna type:

Round

Ø 14.5 mm	
Brass, coated	
BIS013Z	
BIS VM-343-401-S4	
0...+70 °C	
–20...+85 °C	
IP 67	
ISO 15693	
0.3 m PUR cable with M12 plug, 4-pin	
Processor unit BIS V-...	
See page 304...309	

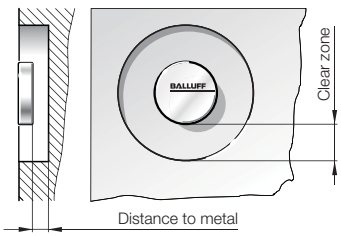
BIS0042	BIS M-105-02/A	**BIS00UC**	BIS M-116-03/A	**BIS004A**	BIS M-122-02/A	**BIS00YL**	BIS M-130-03/L	**BIS00YK**	BIS M-130-07/L	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-142-20/A-M_	**See data carrier**	BIS M-142-1_/A-M_	**See data carrier**	BIS M-143-02/A-M_
>10	>0	>5		>10	>0	>5	>0	>5	>0	>0		>0		>0		>0	
>24	>0	>20		>24	>0	>20	>0	>20	>0	>39		>39		>39		>39	
0...5,5	0...4	0...3,5		0...5,5	0...4	0...6,5	0...3	0...5	0...2,5	0...7,5		0...7,5		0...5		0...7,5	
0...5,5	0...4	0...3,5		0...5,5	0...4	0...6,5	0...3	0...5	0...2,5	0...7,5		0...7,5		0...5		0...7,5	
±3,5	±2,5	±3		±3,5	±2,5	±4	±3	±3	±2,5	±5		±5		±4		±5	
±3,5	±2,5	±3		±3,5	±2,5	±4	±3	±3	±2,5	±5		±5		±4		±5	
±3,5	±2,5	±3		±3,5	±2,5	±4	±2	±3	±2	±5		±5		±4		±5	
±3	±2	±2		±3	±2	±3	±1	±2,5	±1	±5		±5		±4		±5	
±3	±2	±2		±3	±2	±3	±1	±2,5		±5		±5		±4		±5	
±3	±1	±1		±3	±1	±3		±2,5		±5		±5		±4		±5	
±3	±1			±3	±1	±3		±2		±5		±5		±4		±4,5	
±2				±2		±3		±1		±4		±4		±2		±4	
±2				±2		±2				±4		±4				±4	
						±2				±4		±4				±4	
										±2,5		±2,5				±2,5	



Small size – big performance
Read/write heads in various form factors offer wide application possibilities. Select according to your application.

Dimensions		
Housing material		
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	1 mm	
	2 mm	
	2.5 mm	
	3 mm	
	3.5 mm	
	4 mm	
	5 mm	
	5.5 mm	
	6.5 mm	
	7.5 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

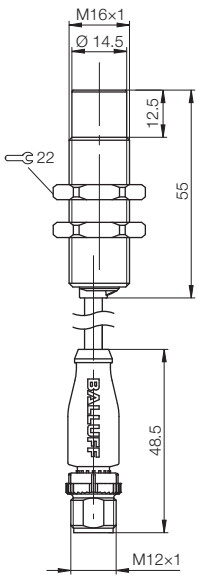
Flush in steel

Antenna type:

Round

	M16×1
	Brass, coated
	BIS0140
	BIS VM-346-401-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	0.3 m PUR cable with M12 plug, 4-pin
	Processor unit BIS V-...
	See page 304...309

BIS0042	BIS M-105-02/A	**BIS00UC**	BIS M-116-03/A	**BIS004A**	BIS M-122-02/A	**BIS00YL**	BIS M-130-03/L	**BIS00YK**	BIS M-130-07/L	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-142-20/A-M_	**See data carrier**	BIS M-142-1_/A-M_	**See data carrier**	BIS M-143-02/A-M_
>10	>0	>5		>10	>0	>5	>0	>5	>0	>0		>0		>0		>0	
>24	>0	>20		>24	>0	>20	>0	>20	>0	>39		>39		>39		>39	
0...5,5	0...4	0...3,5		0...5,5	0...4	0...6,5	0...3	0...5	0...2,5	0...7,5		0...7,5		0...5		0...7,5	
0...5,5	0...4	0...3,5		0...5,5	0...4	0...6,5	0...3	0...5	0...2,5	0...7,5		0...7,5		0...5		0...7,5	
±3,5	±2,5	±3		±3,5	±2,5	±4	±3	±3	±2,5	±5		±5		±4		±5	
±3,5	±2,5	±3		±3,5	±2,5	±4	±3	±3	±2,5	±5		±5		±4		±5	
±3,5	±2,5	±3		±3,5	±2,5	±4	±2	±3	±2	±5		±5		±4		±5	
±3	±2	±2		±3	±2	±3	±1	±2,5	±1	±5		±5		±4		±5	
±3	±2	±2		±3	±2	±3	±1	±2,5		±5		±5		±4		±5	
±3	±1	±1		±3	±1	±3		±2,5		±5		±5		±4		±5	
±3	±1			±3	±1	±3		±2		±5		±5		±4		±4,5	
±2				±2		±3		±1		±4		±4		±2		±4	
±2				±2		±2				±4		±4				±4	
						±2				±4		±4				±4	
										±2,5		±2,5				±2,5	

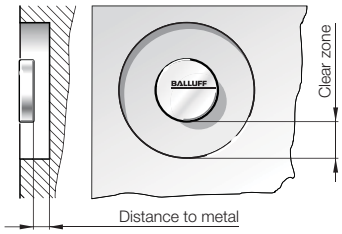


Industrial RFID System BIS M at 13.56 MHz (HF)
Read/write heads, M18×1

Small size – big performance
Read/write heads in various form factors offer wide application possibilities. Select according to your application.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Only for processor unit	**Order code**	
BIS M-407 (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm

For assembly, observe the general information and installation notices on page 158.

Installation:

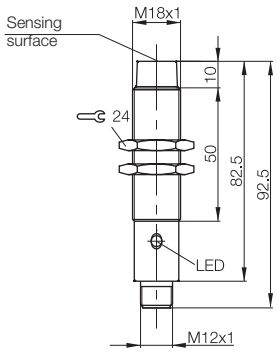
Non-metal

Antenna type:

Round

	M18×1
	Brass, coated
	BIS0057
	BIS M-302-001-S115
	BIS0059
	BIS M-302-003-S115
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693, ISO 14443
	M12 male, 8-pin
	Processor unit BIS M-...
	See page 310...311

BIS0042	BIS M-105-02/A	**BIS0043**	BIS M-108-02/L	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L	**BIS00UC**	BIS M-116-03/A	**BIS004A**	BIS M-122-02/A	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-143-02/A-M_	**See data carrier**	BIS M-144-02/A-M_
>10	>0	>25	>0	>25	>5	>25	>5	>50	>20	>5		>10	>0	>0		>0		>0	
>24	>0	>14	>0	>30	>15	>30	>15	>50	>10	>20		>25	>0	>39		>39		>39	
0...9	0...6	0...20	0...12	0...16	0...8	0...20	0...5	0...30	0...12	0...7		0...9	0...6	0...14		0...10		0...14	
0...9	0...6	0...20	0...12	0...16	0...8	0...20	0...5	0...30	0...12	0...7		0...9	0...6	0...14		0...10		0...14	
±5	±5	±14	±10	±8	±4	±12	±7	±20	±14	±4		±4	±3	±8		±5		±6	
±5	±3.5	±12	±8	±8	±4	±12	±4	±20	±14	±4		±3	±2	±8		±5		±6	
±3.5		±12	±6	±6		±10		±18	±10					±8		±3		±6	
		±10	±4	±4		±10		±18	±6					±8				±6	
		±10		±4		±10		±18											
		±7		±3		±5		±16											
		±7				±5		±16											
		±5				±5		±16											
								±12											
								±12											
								±8											

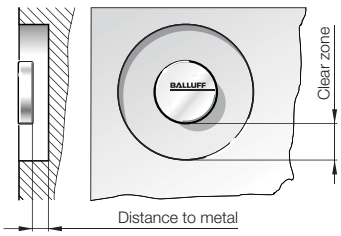


Industrial RFID System BIS M at 13.56 MHz (HF)
Read/write heads, M30×1.5

The large diameter of these tubular read/write heads enables generous distances to the object.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Only for processor unit	**Order code**	
BIS M-407 (up to 2 kbytes)	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly	At BIS M	
	At BIS VM	
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard	At BIS M	
	At BIS VM	
Connection	At BIS M	
	At BIS VM	
Connection to		
Connection cables	At BIS M	
	At BIS VM	

Installation note for data carriers



Installation:

Non-flush on steel

Non-metal

Antenna type:

Round

Appropriate data carrier		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	5 mm	
	9 mm	
	12 mm	
	15 mm	
	16 mm	
	18 mm	
	22 mm	
	25 mm	
	30 mm	
	32 mm	
	40 mm	
	43 mm	

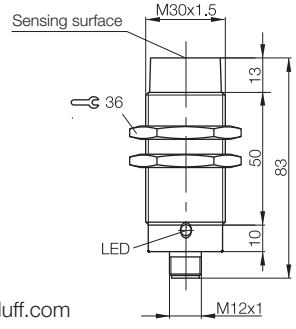
For assembly, observe the general information and installation notices on page 158.

* Can only be used with read/write heads BIS VM-3_ _.

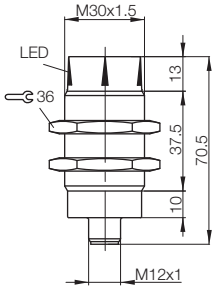
	M30×1.5
	Brass, coated
	BIS0053
	BIS M-300-001-S115
	BIS0054
	BIS M-300-003-S115
	BIS0132
	BIS VM-344-401-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693, ISO 14443
	ISO 15693
	M12 male, 8-pin
	M12 male, 4-pin
	Processor unit BIS M... or BIS V...
	See page 310...311
	See page 304...309

BIS00KM	BIS M-115-03/A	**BIS0042**	BIS M-105-02/A	**BIS0043**	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A*	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-142-1_/A-M_*	**BIS0119**	BIS M-142-20/A-M8	**See data carrier**	BIS M-143-02/A-M_	**See data carrier**	BIS M-144-02/A-M_
>0		>20	>5	>25	>0	>25	>0	>25	>5	>25	>5	>50	>10	>0		>0		>0		>0		>0	
>37		>44	>44	>24	>0	>24	>0	>40	>15	>35	>10	>50	>10	>39		>39		>39		>39		>39	
0...18		0...11	0...11	0...30	0...16	0...30	0...16	0...22	0...10	0...28	0...10	0...44	0...15	0...22		0...12		0...22		0...13		0...22	
0...18		0...11	0...11	0...30	0...16	0...30	0...16	0...22	0...10	0...28	0...10	0...44	0...15	0...22		0...12		0...22		0...13		0...22	
±14		±10	±7	±18	±10	±18	±10	±14	±7	±16	±7	±25	±15	±13		±10		±13		±10		±13	
±14		±8	±7	±18	±10	±18	±10	±14	±7	±16	±7	±25	±15	±13		±10		±13		±10		±13	
±14		±5	±3	±18	±8	±18	±8	±12	±2	±14	±2	±25	±12	±13		±8		±13		±9		±13	
±14				±16	±6	±16	±6	±12		±14		±24	±10	±13		±5		±13		±5		±13	
±14				±16	±6	±16	±6	±12		±14		±24	±8	±11				±11				±11	
±14				±16	±4	±16	±4	±10		±14		±24		±11				±11				±11	
±10				±16		±16		±10		±14		±24		±11				±11				±11	
				±14		±14		±6		±12		±22		±7				±7				±7	
				±14		±14				±12		±22											
												±22											
												±16											
												±16											
												±10											

BIS M-300



BIS VM-344



Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write Heads, 25×50×10 mm, M18×1

The robust RFID System BIS M provides absolute data integrity. The data carriers must be installed completely flush in steel.

- Fast data transmission from data carrier to controller via the processor unit
- Seamless integration in intralogistics applications thanks to the global ISO 15693/14443 standard
- Smallest possible antenna design sizes

The components are specially manufactured for use with transfer systems from Bosch Rexroth (TS1 and TS2). They are easy to mount.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Cable		
Connection		
Connection to		
Connection cables		

Installation note for data carriers

Appropriate data carrier		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance		
	0 mm	
	5 mm	
	9 mm	
	10 mm	
	11 mm	
	12 mm	
	15 mm	
	17 mm	
	20 mm	
	22 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

- Non-flush on steel
- Non-metal

Antenna type:

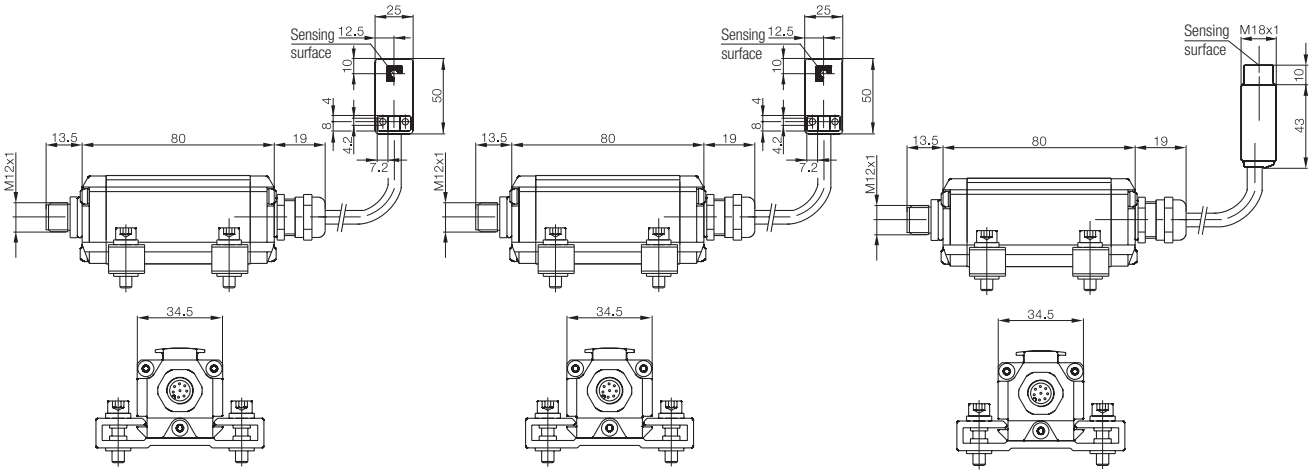
- Rod
- Round

Mounting bracket
(please order separately)

For use with	BIS M-352 and M-305
Order code	**BAM01MY**
Part number	BAM MB-XA-010-B07-4
Additional information	See page 346

	25×50×10 mm	**25×50×10 mm**	**M18×1**
	Aluminum, anodized and ABS, fiberglass reinforced	Aluminum, anodized and ABS, fiberglass reinforced	Aluminum, anodized and brass, coated
	BIS00NY	**BIS00NK**	**BIS00P2**
	BIS M-352-001-S115	BIS M-305-001-S115	BIS M-307-001-S115
	(only use with BAM01MY mounting bracket or mount on steel)		
	0...+70 °C	0...+70 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C	–20...+85 °C
	IP 67	IP 67	IP 67
	ISO 15693	ISO 15693, ISO 14443	ISO 15693, ISO 14443
	0.5 m PUR cable	0.5 m PUR cable	0.5 m PUR cable
	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
	Processor unit BIS M-...	Processor unit BIS M-...	Processor unit BIS M-...
	See page 310...311	See page 310...311	See page 310...311

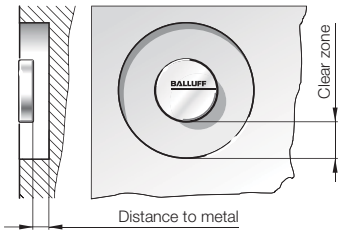
BIS00NZ	BIS M-191-02/A									**BIS0042**	BIS M-105-02/A	**BIS0044**	BIS M-110-02/L	**BIS004A**	BIS M-122-02/A	**BIS0043**	BIS M-108-02/L	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-143-02/A-M_	**BIS0042**	BIS M-105-02/A	**BIS0044**	BIS M-110-02/L	**BIS004A**	BIS M-122-02/A	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-143-02/A-M_	**See data carrier**	BIS M-144-02/A-M_
>27	>27									>10	>0	>25	>10	>0	>25	>0	>0	>0	>10	>0	>25	>10	>0	>0	>0	>0					
>27	>27									>24	>0	>30	>25	>0	> 24	>0	>39	>39	>30	>0	>80	>25	>0	>39	>39	>39					
0...22	0...22									0...8	0...6	0...13	0...7	0...5	0...17	0...11	0...17	0...12	0...8	0...6	0...13	0...7	0...5	0...16	0...12	0...16					
0...22	0...22									0...8	0...6	0...13	0...7	0...5	0...17	0...11	0...17	0...12	0...8	0...6	0...13	0...7	0...5	0...16	0...12	0...16					
X	Y																															
±25	±5									±4	±4	±6	±4	±3	±12	±8	±10	±7	±4	±4	±6	±4	±3	±9	±7	±9					
±25	±5									±4	±2	±6	±3	±2	±12	±8	±10	±7	±4	±2	±6	±3	±2	±9	±7	±9					
±25	±5											±4			±12	±6	±10	±6			±4			±9	±6	±9					
±25	±5											±4			±12	±6	±9	±6			±4			±8	±6	±8					
±25	±5											±4			±10	±4	±9	±3			±4			±8	±3	±8					
±25	±5											±2			±10		±4	±3			±2			±8	±3	±8					
±25	±5														±8		±4							±3		±3					
±25	±5														±4																
±15	±5																														
±15	±5																														



Read/write Heads, 25×50×10 mm, M18×1

Dimension		**25×50×10 mm**
Housing material		Aluminum, anodized and ABS, fiberglass reinforced
For processor units **BIS V-...**	**Order code**	**BIS00T6**
	Part number	BIS VM-352-001-S4
Assembly		(only use with BAM01MY mounting bracket or mount on steel)
Operating temperature		0...+70 °C
Storage temperature		–20...+85 °C
Degree of protection per IEC 60529		IP 67
Supported standard		ISO 15693
Cable		0.5 m PUR cable
Connection		M12 male, 4-pin
Connection to		Processor unit BIS V-...
Connection cables		See page 304...309

Installation note for data carriers



Appropriate data carrier		**BIS00NZ**	BIS M-191-02/A
Data carrier distance to metal in mm		>27	>27
Data carrier clear zone in mm		>27	>27
Working distance for writing in mm		0...22	0...22
Working distance for reading in mm		0...22	0...22
Offset in mm at distance		X	Y
	0 mm	±25	±5
	5 mm	±25	±5
	9 mm	±25	±5
	10 mm	±25	±5
	11 mm	±25	±5
	12 mm	±25	±5
	15 mm	±25	±5
	17 mm	±25	±5

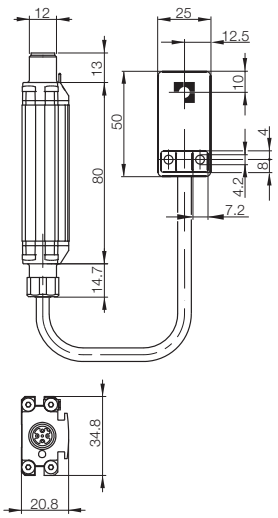
For assembly, observe the general information and installation notices on page 158.

Installation:

- Non-flush on steel
- Non-metal

Antenna type:

- Rod
- Round



Nuts and mounting clamps included in scope of delivery.

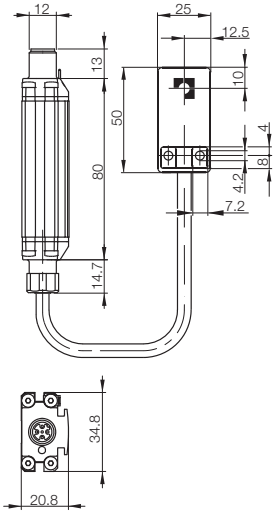
Mounting bracket
(please order separately)

For use with	BIS VM-352 and VM-305
Order code	**BAM01MY**
Part number	BAM MB-XA-010-B07-4
Additional information	See page 346

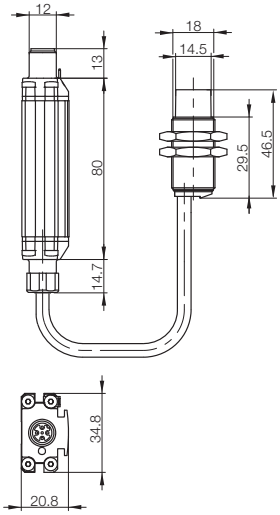
25×50×10 mm	**M18×1**
Aluminum, anodized and ABS, fiberglass reinforced	Aluminum, anodized and brass, coated
BIS00T9	**BIS00T8**
BIS VM-305-001-S4	BIS VM-307-001-S4
0...+70 °C	0...+70 °C
–20...+85 °C	–20...+85 °C
IP 67	IP 67
ISO 15693, ISO 14443	ISO 15693, ISO 14443
0.5 m PUR cable	0.5 m PUR cable
M12 male, 4-pin	M12 male, 4-pin
Processor unit BIS V-...	Processor unit BIS V-...
See page 304...309	See page 304...309

BIS0042	BIS M-105-02/A	**BIS0044**	BIS M-110-02/L	**BIS004A**	BIS M-122-02/A	**BIS0043**	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-143-02/A-M_	**See data carrier**	BIS M-144-02/A-M_
>10	>0	>25		>10	>0	>25	>0	>25	>0	>0		>0		>0	
>24	>0	>30		>25	>0	>24	>0	>24	>0	>39		>39		>39	
0...8	0...6	0...13		0...7	0...5	0...17	0...11	0...17	0...11	0...17		0...12		0...17	
0...8	0...6	0...13		0...7	0...5	0...17	0...11	0...17	0...11	0...17		0...12		0...17	
±4	±4	±6		±4	±3	±12	±8	±12	±8	±10		±7		±10	
±4	±2	±6		±3	±2	±12	±8	±12	±8	±10		±7		±10	
		±4				±12	±6	±12	±6	±10		±6		±10	
		±4				±10	±6	±10	±6	±9		±6		±9	
		±4				±10	±4	±10	±4	±9		±3		±9	
						±10		±10		±9		±3		±9	
						±8		±8		±4				±4	
						±4		±4		±4				±4	

BIS0042	BIS M-105-02/A	**BIS0044**	BIS M-110-02/L	**BIS004A**	BIS M-122-02/A	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-143-02/A-M_	**See data carrier**	BIS M-144-02/A-M_
>10	>0	>25		>10	>0	>0		>0		>0	
>24	>0	>30		>25	>0	>100		>100		>100	
0...8	0...6	0...13		0...7	0...5	0...16		0...12		0...16	
0...8	0...6	0...13		0...7	0...5	0...16		0...12		0...16	
				±4	±4	±6		±4	±3	±9	
±4	±2	±6		±3	±2	±9		±7		±9	
		±4				±9		±6		±9	
		±4				±8		±6		±8	
		±2				±8		±6		±8	
		±2				±8		±3		±8	
						±3				±3	



Nuts and mounting clamps included in scope of delivery.



Nuts and mounting clamps included in scope of delivery.

Industrial RFID System BIS M at 13.56 MHz (HF)

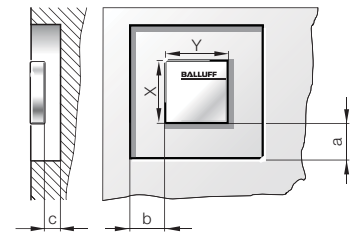
Read/write head, 105×40×15 mm

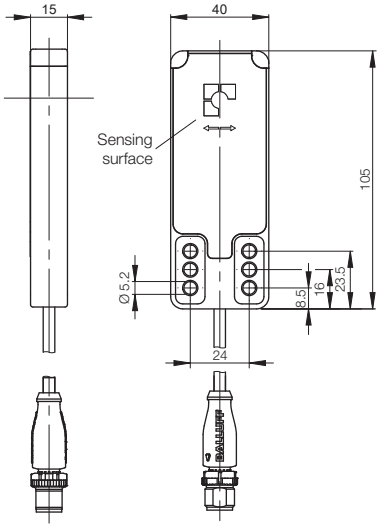
reddot design award
winner 2015

CE

Dimension		
Housing material		
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers





Appropriate data carrier

Data carrier clear zone in mm (a)	
Data carrier clear zone in mm (b)	
Data carrier clear zone in mm (c)	
Metallic mounting surface 40×22 mm	
Metallic mounting surface ≥ 200×200 mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	
0 mm	
5 mm	
10 mm	
12 mm	
15 mm	
18 mm	
20 mm	
22 mm	
25 mm	
30 mm	
32 mm	
35 mm	
40 mm	
45 mm	
50 mm	
52 mm	
60 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-flush on steel

Antenna type:

Rod

Read/write head, 105×40×15 mm

	105×40×15 mm
	Cast zinc, coated and PBT
	BIS0131
	BIS VM-355-401-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	0.3 m PUR cable with M12 plug, 4-pin
	Processor unit BIS V-...
	See page 304...309

	BIS004F	BIS M-150-02/A	**BIS004H**	BIS M-151-02/A	**BIS00M2**	BIS M-152-03/A	**BIS00P3**	BIS M-153-02/A	**See data carrier**	BIS M-153-1_/A	**BIS0117**	BIS M-155-20/A	**BIS0112**	BIS M-156-20/A	**See data carrier**	BIS M-155-1_/A	**See data carrier**	BIS M-156-1_/A	**BIS00NZ**	BIS M-191-02/A
	>80 >80	>80 >80	>89 >89	>89 >89	>88	>88	>100 >100	>100 >100	>100	>100	>80 >80	>80 >80	>89 >89	>89 >89	>80 >80	>80 >80	>89 >89	>89 >89	>27	>27
	>89 >89	>89 >89	>80 >80	>80 >80	>99	>99	>200 >200	>200 >200	>200	>200	>89 >89	>89 >89	>80 >80	>80 >80	>89 >89	>89 >89	>80 >80	>80 >80	>27	>27
	0 0	0 0	0 0	0 0	>50	>50	>50 >50	0 0	>50	>50	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
	0...45 0...45		0...45 0...45								0...45 0...45		0...45 0...45		0...34 0...34		0...30 0...30			
		0...45 0...45		0...45 0...45								0...45 0...45		0...45 0...45		0...34 0...34		0...30 0...30		
	0...45 0...45	0...45 0...45	0...45 0...45	0...45 0...45	0...25	0...25	0...60 0...60	0...60 0...60	0...36	0...36	0...45 0...45	0...45 0...45	0...45 0...45	0...45 0...45	0...34 0...34	0...34 0...34	0...30 0...30	0...30 0...30	0...25	0...25
	0...45 0...45	0...45 0...45	0...45 0...45	0...45 0...45	0...25	0...25	0...60 0...60	0...60 0...60	0...36	0...36	0...45 0...45	0...45 0...45	0...45 0...45	0...45 0...45	0...34 0...34	0...34 0...34	0...30 0...30	0...30 0...30	0...25	0...25
	X Y	X Y	X Y	X Y	X	Y	X Y	X Y	X	Y	X Y	X Y	Y X	Y X	X Y	X Y	Y X	Y X	X	Y
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±32	±16	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±38 ±18	±40 ±18	±40 ±20	±40 ±20	±30	±20
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±32	±16	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±38 ±18	±40 ±18	±40 ±20	±40 ±20	±30	±20
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±32	±16	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±38 ±18	±40 ±18	±40 ±20	±40 ±20	±30	±20
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±32	±16	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±38 ±18	±40 ±18	±38 ±17	±38 ±17	±30	±20
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±30	±14	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±38 ±18	±40 ±18	±38 ±17	±38 ±17	±25	±15
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±30	±14	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±35 ±15	±40 ±18	±38 ±17	±38 ±17	±25	±15
	±50 ±24	±50 ±24	±50 ±24	±50 ±24	±30	±14	±80 ±36	±80 ±36	±50	±26	±58 ±24	±58 ±24	±55 ±24	±48 ±20	±35 ±15	±40 ±18	±38 ±17	±38 ±17	±15	±10
	±40 ±20	±40 ±20	±40 ±20	±40 ±20	±30	±14	±80 ±36	±80 ±36	±40	±20	±53 ±21	±53 ±21	±50 ±20	±38 ±16	±35 ±15	±35 ±16	±30 ±15	±30 ±15	±15	±10
	±40 ±20	±40 ±20	±40 ±20	±40 ±20	±15	±8	±75 ±30	±75 ±30	±40	±20	±53 ±21	±53 ±21	±50 ±20	±38 ±16	±35 ±15	±35 ±16	±16 ±7	±16 ±7	±5	±5
	±40 ±20	±40 ±20	±40 ±20	±40 ±20			±75 ±30	±75 ±30	±40	±20	±53 ±21	±53 ±21	±50 ±20	±38 ±16	±27 ±12	±35 ±16	±16 ±7	±16 ±7		
	±40 ±20	±40 ±20	±40 ±20	±40 ±20			±75 ±30	±75 ±30	±35	±17	±53 ±21	±53 ±21	±50 ±20	±38 ±16	±27 ±12	±35 ±16				
	±40 ±20	±40 ±20	±40 ±20	±40 ±20			±75 ±30	±75 ±30	±20	±10	±53 ±21	±53 ±21	±50 ±20	±38 ±16						
	±38 ±18	±38 ±18	±38 ±18	±38 ±18			±75 ±30	±75 ±30			±45 ±18	±45 ±18	±40 ±18	±38 ±16						
	±20 ±10	±20 ±10	±20 ±10	±20 ±10			±75 ±30	±75 ±30			±25 ±12	±25 ±12	±22 ±10	±20 ±10						
							±75 ±30	±75 ±30												
							±55 ±25	±55 ±25												
							±20 ±10	±20 ±10												

Industrial RFID System BIS M at 13.56 MHz (HF)

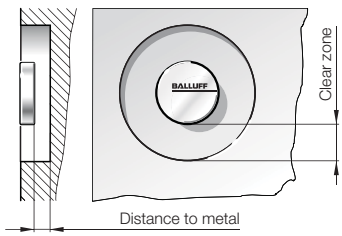
Read/write head, 105×40×15 mm

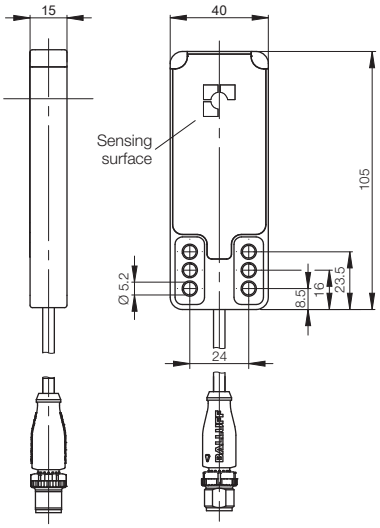
reddot design award
winner 2015

CE

Dimension		
Housing material		
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers





Appropriate data carrier

Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	5 mm	
	10 mm	
	12 mm	
	15 mm	
	18 mm	
	20 mm	
	22 mm	
	25 mm	
	28 mm	
	32 mm	
	35 mm	
	40 mm	
	42 mm	
	45 mm	
	48 mm	
	50 mm	
	52 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-flush on steel

Antenna type:

Round

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write head, 105×40×15 mm

	105×40×15 mm
	Cast zinc, coated and PBT
	BIS0133
	BIS VM-345-401-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	0.3 m PUR cable with M12 plug, 4-pin
	Processor unit BIS V-...
	See page 304...309

	BIS0043 BIS M-108-02/L	**BIS0111** BIS M-108-20/A	**See data carrier** BIS M-108-1_/A	**BIS00YE** BIS M-132-03/L-HT	**BIS00Y4** BIS M-135-03/L-HT	**BIS0044** BIS M-110-02/L	**BIS0045** BIS M-111-02/L	**BIS0046** BIS M-112-02/L	**See data carrier** BIS M-142-02/A-M_	**See data carrier** BIS M-142-20/A-M_	**See data carrier** BIS M-142-1_/A-M_	**See data carrier** BIS M-144-02/A-M_
	>25	>25	>25	>10	>10	>25	>25	>50	>0	>0	>0	>0
	>24	>24	>24	>60	>60	>30	>35	>50	>39	>39	>39	>39
	0...28	0...28	0...18	0...34	0...52	0...22	0...28	0...45	0...22	0...22	0...10	0...22
	0...28	0...28	0...18	0...34	0...52	0...22	0...28	0...45	0...22	0...22	0...10	0...22
	±16	±16	±14	±20	±30	±14	±16	±26	±13	±13	±10	±13
	±16	±16	±14	±20	±30	±14	±16	±26	±13	±13	±8	±13
	±16	±16	±14	±20	±30	±14	±16	±26	±13	±13	±4	±13
	±14	±14	±11	±18	±30	±12	±14	±26	±10	±10		±10
	±14	±14	±11	±18	±30	±12	±14	±26	±10	±10		±10
	±14	±14	±5	±18	±30	±10	±14	±26	±10	±10		±10
	±14	±14		±18	±30	±10	±14	±26	±10	±10		±10
	±12	±12		±15	±28	±10	±12	±24	±6	±6		±6
	±12	±12		±15	±28	±6	±9	±24				
	±9	±9		±15	±28			±24				
				±8	±28			±24				
					±28			±24				
					±28			±24				
					±24			±15				
					±24			±15				
					±24							
					±24							
					±10							

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads, 80×84.5×40 mm

The right choice if you require a flat design and large read/write distances.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Only for processor units	**Order code**	
BIS M-407 (up to 2 kbytes)	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly	BIS M	
	BIS VM	
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection	BIS M	
	BIS VM	
Connection to		
Connection cables	BIS M	
	BIS VM	

Installation:

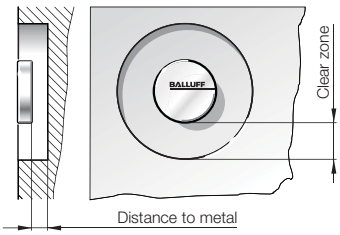
Non-metal

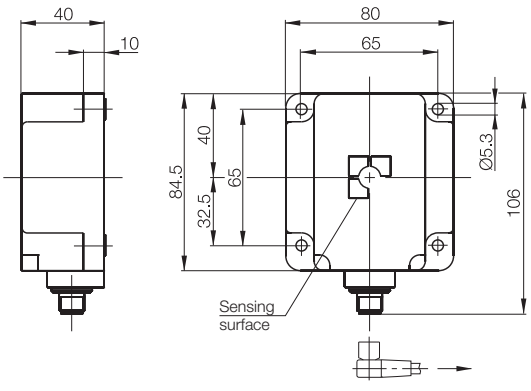
Non-flush on steel

Antenna type:

Round

Installation note for data carriers





Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm
	32 mm
	35 mm
	40 mm
	43 mm
	45 mm
	50 mm
	60 mm
	65 mm
	70 mm

For assembly, observe the general information and installation notices on page 158.

* Can only be used with read/write heads BIS VM-3_ _.

Read/write heads, 80×84.5×40 mm

	80×84.5×40 mm
	PBT, ASA
	BIS0055
	BIS M-301-001-S115
	BIS0056
	BIS M-301-003-S115
	BIS00T0
	BIS VM-301-001-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693, ISO 14443
	M12 male, 8-pin
	M12 male, 4-pin
	Processor unit BIS M... or BIS V...
	See page 310...311
	See page 304...309

BIS00KM	BIS M-115-03/A	**BIS0043**	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A*	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>0		>50	>20	>50	>20	>50	>30	>50	>30	>50	>30
>50		>74	>10	>74	>10	>90	>40	>90	>40	>75	>25
0...30		0...45	8...22	0...45	8...22	0...32	0...20	0...45	0...30	0...70	0...45
0...30		0...45	8...22	0...45	8...22	0...32	0...20	0...45	0...30	0...70	0...45
±25		±32	±20	±32	±20	±28	±20	±32	±22	±40	±25
±25		±32	±20	±32	±20	±28	±20	±32	±22	±40	±25
±20		±32	±20	±32	±20	±28	±18	±32	±22	±40	±25
±20		±32	±18	±32	±18	±24	±18	±32	±22	±40	±25
±20		±32	±18	±32	±18	±24	±15	±32	±20	±40	±25
±20		±32	±18	±32	±18	±24	±15	±32	±20	±40	±25
±20		±32	±16	±32	±16	±24	±12	±32	±18	±40	±25
±18		±32	±16	±32	±16	±24	±8	±32	±16	±40	±25
±18		±25	±14	±25	±14	±20		±25	±14	±40	±22
±18		±25		±25		±20		±25	±12	±40	±22
±8		±25		±25		±12		±25	±10	±40	±22
		±20		±20		±12		±20		±40	±22
		±20		±20				±20		±40	±20
		±20		±20				±20		±40	±20
		±12		±12				±12		±35	±15
		±12		±12				±12		±35	±12
										±35	
										±30	
										±30	
										±20	

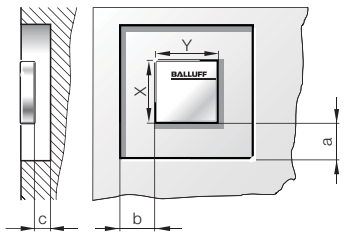
Industrial RFID System BIS M at 13.56 MHz (HF)

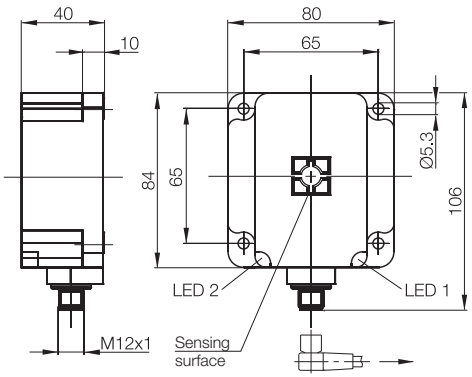
Read/write heads, 80×84.5×40 mm

FERRO*IDENT* read/write head with rod antenna. The right choice if you require a flat design and large read/write distances. For fast positioning, orient yourself to the arrows when setting up.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Only for processor unit	**Order code**	
BIS M-407 (up to 2 kbytes)	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection	BIS M	
	BIS VM	
Connection to		
Connection cables	BIS M	
	BIS VM	

Installation note for data carriers





Installation:

Non-flush on steel

Antenna type:

Rod

Appropriate data carrier

Data carrier clear zone in mm (a)	
Data carrier clear zone in mm (b)	
Data carrier clear zone in mm (c)	
Metallic mounting surface 40×22 mm	
Metallic mounting surface ≥ 200×200 mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	
0 mm	
10 mm	
12 mm	
15 mm	
18 mm	
22 mm	
25 mm	
30 mm	
32 mm	
35 mm	
40 mm	
45 mm	
50 mm	
52 mm	
60 mm	
65 mm	
80 mm	
90 mm	
100 mm	

For assembly, observe the general information and installation notices on page 158.

* Can only be used with read/write heads BIS VM-3_ _-401.

FERROIDENT

	80×84.5×40 mm
	PBT, ASA
	BIS005C
	BIS M-351-001-S115
	BIS00KU
	BIS M-351-003-S115
	BIS012Z
	BIS VM-351-401-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	M12 male, 8-pin
	M12 male, 4-pin
	Processor unit BIS M... or BIS V...
	See page 310...311
	See page 304...309

BIS004F		BIS M-150-02/A		**BIS004H**		BIS M-151-02/A		**BIS00P3**		BIS M-153-02/A		**See data carrier**	BIS M-153-1_/A*	**See data carrier**		BIS M-155-1_/A*		**See data carrier**		BIS M-156-1_/A*		**BIS00NZ**		BIS M-191-02/A	
>80	>80	>80	>80	>89	>89	>89	>89	>100	>100	>100	>100	>100	>100	>80	>80	>80	>80	>89	>89	>89	>89	>27	>27	>27	>27
>89	>89	>89	>89	>80	>80	>80	>80	>200	>200	>200	>200	>200	>200	>89	>89	>89	>89	>80	>80	>80	>80	>27	>27	>27	>27
0	0	0	0	0	0	0	0	>10	>10	>0	>0	>10	>10	0	0	0	0	0	0	0	0				
0...52	0...52			0...52	0...52									0...40	0...40			0...42	0...42						
		0...65	0...65			0...65	0...65									0...50	0...50			0...42	0...42				
0...52	0...52	0...65	0...65	0...52	0...52	0...65	0...65	0...100	0...100	0...100	0...100	0...60	0...60	0...40	0...40	0...50	0...50	0...42	0...42	0...42	0...42	0...57	0...57	0...57	0...57
0...52	0...52	0...65	0...65	0...52	0...52	0...65	0...65	0...100	0...100	0...100	0...100	0...60	0...60	0...40	0...40	0...50	0...50	0...42	0...42	0...42	0...42	0...57	0...57	0...57	0...57
X	Y	X	Y	Y	X	Y	X	X	Y	X	Y	X	Y	X	Y	X	Y	Y	X	Y	X	X	Y	X	Y
±60	±25	±65	±26	±60	±25	±65	±26	±100	±20	±100	±20	±70	±30	±50	±24	±55	±28	±50	±25	±50	±25	±70	±35	±40	±20
±60	±25	±65	±26	±60	±25	±65	±26	±100	±20	±100	±20	±70	±30	±50	±24	±55	±28	±50	±25	±50	±25	±70	±35	±40	±20
±60	±25	±65	±25	±60	±25	±65	±25	±100	±20	±100	±20	±70	±30	±50	±24	±55	±28	±50	±25	±50	±25	±70	±35	±40	±20
±60	±25	±65	±25	±60	±25	±65	±25	±100	±20	±100	±20	±70	±30	±50	±24	±55	±28	±45	±25	±45	±25	±70	±35	±30	±18
±60	±25	±65	±25	±60	±25	±65	±25	±100	±20	±100	±20	±70	±30	±50	±24	±55	±28	±45	±22	±45	±22	±70	±35	±30	±18
±60	±25	±65	±25	±60	±25	±65	±25	±100	±20	±100	±20	±60	±30	±40	±22	±50	±25	±45	±22	±45	±22	±60	±30	±30	±18
±60	±25	±65	±25	±60	±25	±65	±25	±80	±20	±80	±20	±60	±30	±40	±22	±50	±25	±45	±22	±45	±22	±60	±30	±25	±15
±60	±25	±65	±25	±60	±25	±65	±25	±80	±20	±80	±20	±60	±30	±40	±22	±50	±25	±36	±19	±36	±19	±60	±30		
±50	±25	±65	±25	±50	±25	±65	±25	±80	±20	±80	±20	±60	±30	±40	±22	±40	±20	±36	±19	±36	±19	±60	±30		
±50	±25	±65	±25	±50	±25	±65	±25	±80	±20	±80	±20	±60	±30	±40	±22	±40	±20	±36	±19	±36	±19	±60	±30		
±50	±20	±50	±25	±50	±20	±50	±25	±80	±20	±80	±20	±60	±30	±20	±10	±40	±20	±18	±10	±18	±10	±60	±30		
±25	±20	±50	±25	±25	±20	±50	±25	±80	±20	±80	±20	±50	±25			±40	±20					±50	±25		
±25	±20	±50	±25	±25	±20	±50	±25	±80	±20	±80	±20	±50	±25			±20	±10					±50	±25		
±25	±8	±25	±25	±25	±8	±25	±25	±80	±20	±80	±20	±50	±25									±30	±15		
		±25	±10			±25	±10	±65	±20	±65	±20	±15	±10												
		±25	±10			±25	±10	±65	±20	±65	±20														
								±65	±20	±65	±20														
								±50	±20	±50	±20														
								±40	±20	±40	±20														

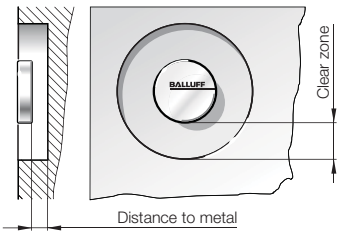
Industrial RFID System BIS M at 13.56 MHz (HF)

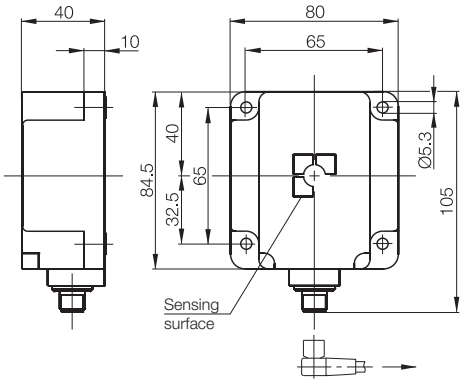
Read/write heads, 80×84.5×40 mm

The right choice if you require a flat design and large read/write distances.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Only for processor units	**Order code**	
BIS M-407 (up to 2 kbytes)	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly	BIS M	
	BIS VM	
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection	BIS M	
	BIS VM	
Connection to		
Connection cables	BIS M	
	BIS VM	

Installation note for data carriers





Installation:

- Non-flush on steel
- Non-metal

Antenna type:

- Round

Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm
	35 mm
	40 mm
	45 mm
	50 mm
	60 mm
	70 mm
	80 mm
	100 mm

For assembly, observe the general information and installation notices on page 158.

* Can only be used with read/write heads BIS VM-3_ _-401.

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads, 80×84.5×40 mm

	80×84.5×40 mm
	PBT, ASA
	BIS00M6
	BIS M-341-001-S115
	BIS00R3
	BIS M-341-003-S115
	BIS0130
	BIS VM-341-401-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	M12 male, 8-pin
	M12 male, 4-pin
	Processor unit BIS M... or BIS V...
	See page 310...311
	See page 304...309

BIS0043	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A*	**BIS0046**	BIS M-112-02/L	**See data carrier**	BIS M-142-02/A-M_	**See data carrier**	BIS M-142-20/A-M_*	**See data carrier**	BIS M-143-02/A-M_	**See data carrier**	BIS M-144-02/A-M_
>50	>0	>50	>0	>50		>0		>0		>0		>0	
>75	>0	>74	>0	>50		>74		>39		>39		>39	
20...60	0...50	20...60	0...50	0...100		0...40		0...40		0...23		0...40	
20...60	0...50	20...60	0...50	0...100		0...40		0...40		0...23		0...40	
	±30		±30	±50		±25		±25				±25	
	±30		±30	±50		±25		±25		±25		±25	
	±30		±30	±50		±25		±25		±17		±25	
	±30		±30	±50		±25		±25		±17		±25	
	±30		±30	±50		±25		±25		±17		±25	
	±30		±30	±50		±25		±25		±17		±25	
	±30		±30	±50		±25		±25		±17		±25	
±35	±30	±35	±30	±50		±25		±25				±25	
±35	±30	±35	±30	±50		±25		±25				±25	
±35	±30	±35	±30	±50		±25		±25				±25	
±35	±30	±35	±30	±50		±25		±25				±25	
±30	±20	±30	±20	±50		±15		±15				±15	
±30	±20	±30	±20	±50		±15		±15				±15	
±30	±20	±30	±20	±50									
±30	±20	±30	±20	±50									
±30		±30		±45									
				±45									
				±45									
				±20									

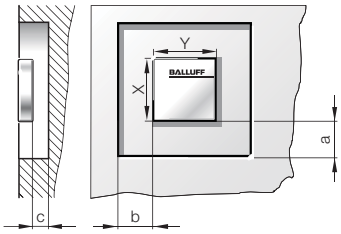
Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads, 240×120×60 mm

One of the challenges of intralogistics is the transportation of constantly changing materials. Despite this challenge, operations need to flow smoothly with transparent processes. This usually poses a difficult task for RFID systems. Not so for the HF antenna BIS M-350. This is because metallic surfaces, liquids and contamination do not pose a challenge to the antenna and their optimized data carriers. All data can be traced at any time and maximum transparency is guaranteed.

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-60_ _-... (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection to		
Connection cables		

Installation note for data carriers



	Order code	
Appropriate data carrier	Part number	
Data carrier distance to metal in mm (c)		
Data carrier clear zone in mm (a x b)		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance		
	0 mm	
	25 mm	
	50 mm	
	75 mm	
	100 mm	
	150 mm	
	200 mm	
	250 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-flush on steel

Antenna type:

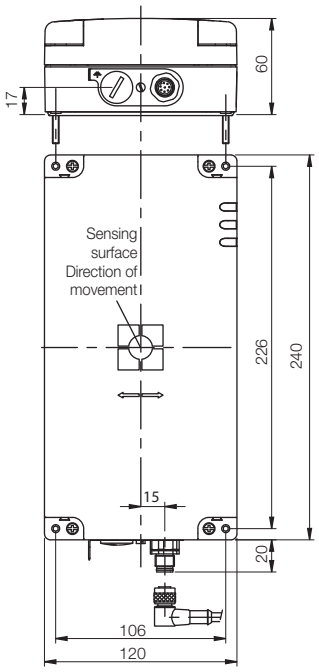
Rod

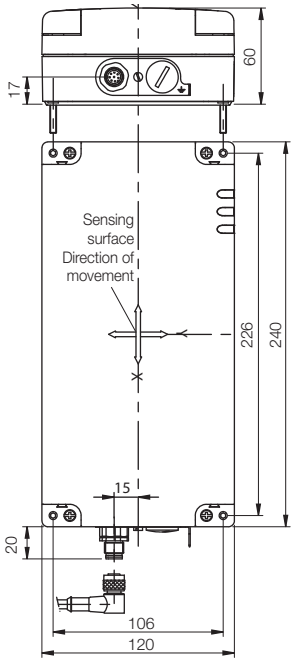
Round

FERROIDENT

	240×120×60 mm	**240×120×60 mm**
	PC	PC
	BIS00LZ	**BIS00N6**
	BIS M-350-001-S115	BIS M-340-001-S115
	0...+55 °C	0...+55 °C
	–20...+85 °C	–20...+85 °C
	IP 65	IP 65
	ISO 15693	ISO 15693
	M12 male, 8-pin	M12 male, 8-pin
	Processor unit BIS M-...	Processor unit BIS M-...
	See page 310...311	See page 310...311

	BIS00P3		**BIS004H**		**BIS0046**		**BIS00Y4**	
	BIS M-153-02/A		BIS M-151-02/A		BIS M-112-02/L		BIS M-135-03/L-HT	
	0		0		> 50		> 120	
	> 240×480		> 240×480		> 240×480		> 240×480	
	0...275		0...130		0...170		0...200	
	0...275		0...130		0...170		0...200	
	X	Y	X	Y	X	Y	X	Y
	±200	±100	±60	±140	±60	±85	±80	±100
	±200	±100	±60	±135	±60	±85	±80	±100
	±200	±100	±60	±125	±60	±85	±80	±100
	±200	±100	±55	±100	±60	±85	±80	±100
	±200	±100			±60	±85	±80	±100
	±200	±100			±55	±75	±80	±100
	±175	±100					±80	±100
	±100	±100						





Industrial RFID System BIS M at 13.56 MHz (HF)

HF antenna for Conveyor Belts, 70×500×6 mm

These antennas **must** be used with the following processor units:

- BIS M-620-068-A01-00-ST29
- BIS M-620-067-A01-04-ST30
- BIS M-626-069-A01-06-ST32

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-62_-... (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection to		
Connection cable (please order separately)		

Appropriate data carrier

Working distance for writing in mm	
Working distance for reading in mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-flush on steel

Antenna type:

Round

Extension cable set
(please order separately)

Application for	HF antennas BIS M-37_-...
Order code	**BIS00WJ**
Part number	BIS M-500-PVC-07-A01/02

	70×500x6 mm
	PA
	BIS00WN
	BIS M-370-000-A02
	–20...+50 °C
	–20...+70 °C
	IP 65
	ISO 15693, ISO 14443
	1× internal RCA jack plug for processor unit
	Extension cable set BIS00WJ

BIS00Y7	BIS M-134-10/L-HT
0...48 mm	10...95 mm
0...48 mm	10...95 mm

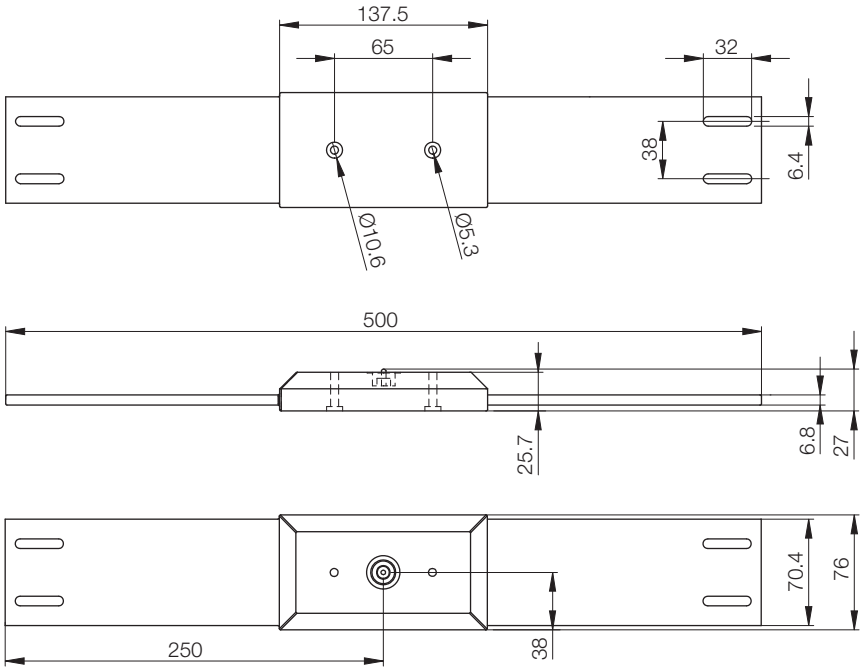
BIS00Y6	BIS M-135-02/L
0...48 mm	10...95 mm
0...48 mm	10...95 mm

BIS00Y5	BIS M-135-03/L
0...135 mm	0...135 mm
0...135 mm	0...135 mm

BIS00Y4	BIS M-135-03/L-HT
0...130 mm	0...130 mm
0...130 mm	0...130 mm

BIS00Y2	BIS M-135-07/L-HT
15...95 mm	0...100 mm
15...95 mm	0...100 mm

BIS00Y1	BIS M-136-03/L-HT
0...100 mm	
0...100 mm	



Industrial RFID System BIS M at 13.56 MHz (HF)

HF antennas for long ranges, 112×100×6 mm

These antennas **must** be used with the following processor units:

- BIS M-620-068-A01-00-ST29
- BIS M-620-067-A01-04-ST30
- BIS M-626-069-A01-06-ST32

Dimensions		
Housing material		
For processor units	**Order code**	
BIS M-62_-... (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection to		
Connection cable (please order separately)		

Appropriate data carrier

Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	25 mm
	40 mm
	50 mm
	75 mm
	100 mm
	105 mm
	125 mm
	130 mm
	150 mm
	175 mm
	185 mm
	200 mm
	210 mm
	225 mm
	250 mm

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-metal

Antenna type:

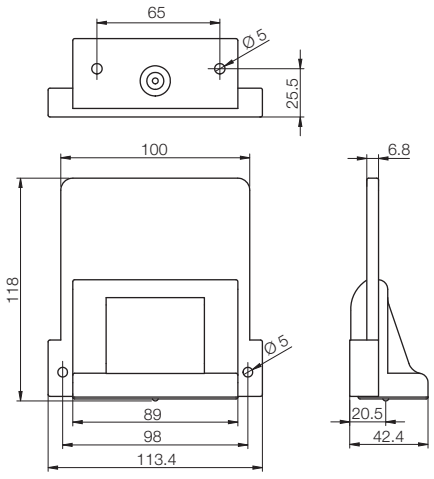
Round

Extension cable set
(please order separately)

Application for	HF antennas BIS M-37_-...
Order code	**BIS00WJ**
Part number	BIS M-500-PVC-07-A01/02

	112×100×6 mm	**112×100×6 mm**
	PA	PA
	BIS00WM	**BIS013L**
	BIS M-371-000-A01	BIS M-371-000-A01-SA1
	–20...+50 °C	–20...+50 °C
	–20...+70 °C	–20...+70 °C
	IP 65	IP 65
	ISO 15693, ISO 14443	ISO 15693, ISO 14443
	1× internal RCA jack plug for processor unit	1× internal RCA jack plug for processor unit
	Extension cable set BIS00WJ	Extension cable set BIS00WJ

BIS00YF	BIS M-132-03/L	**BIS00YE**	BIS M-132-03/L-HT	**BIS00Y5**	BIS M-135-03/L	**BIS00Y4**	BIS M-135-03/L-HT	**BIS00W9**	BIS M-136-03/L	**BIS00Y1**	BIS M-136-03/L-HT
0...130		0...105		25...185		25...210		25...255		25...255	
0...130		0...105		25...185		25...210		25...255		25...255	
±65		±60									
±65		±60		±100		±100		±130		±130	
±65		±60		±100		±100		±130		±130	
±62		±55		±100		±100		±130		±130	
±62		±50		±90		±100		±130		±130	
±60		±50		±90		±100		±130		±130	
±55		±30		±90		±100		±120		±120	
±55				±90		±90		±120		±120	
±10				±90		±90		±120		±120	
				±90		±90		±120		±120	
				±50		±60		±105		±105	
				±50		±60		±105		±105	
						±60		±105		±105	
						±60		±105		±105	
								±60		±60	
								±40		±40	



Industrial RFID System BIS M at 13.56 MHz (HF)

HF antennas for long ranges, 200×200×6 mm

These antennas **must** be used with the following processor units:

- BIS M-620-068-A01-00-ST29
- BIS M-620-067-A01-04-ST30
- BIS M-626-069-A01-06-ST32

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-62_-... (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection to		
Connection cable (please order separately)		

Appropriate data carrier

Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	25 mm
	40 mm
	50 mm
	75 mm
	100 mm
	105 mm
	125 mm
	130 mm
	150 mm
	175 mm
	185 mm
	200 mm
	210 mm
	225 mm
	250 mm

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-metal

Antenna type:

Round

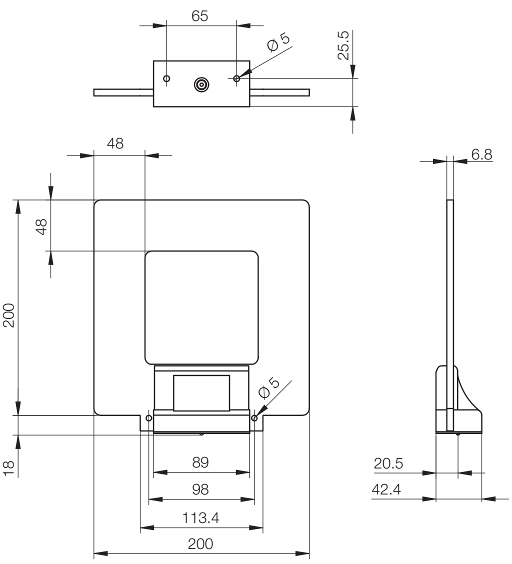
Extension cable set
(please order separately)

Application for	HF antennas BIS M-37_-...
Order code	**BIS00WJ**
Part number	BIS M-500-PVC-07-A01/02

DEXYÍ

	200×200×6 mm	**200×200×6 mm**
	PA	PA
	BIS00WL	**BIS013K**
	BIS M-372-000-A01	BIS M-372-000-A01-SA1
	▬	▬
	–20...+50 °C	–20...+50 °C
	–20...+70 °C	–20...+70 °C
	IP 65	IP 65
	ISO 15693, ISO 14443	ISO 15693, ISO 14443
	1× internal RCA jack plug for processor unit	1× internal RCA jack plug for processor unit
	Extension cable set BIS00WJ	Extension cable set BIS00WJ

	BIS00YF BIS M-132-03/L	**BIS00YE** BIS M-132-03/L-HT	**BIS00Y5** BIS M-135-03/L	**BIS00Y4** BIS M-135-03/L-HT	**BIS00W9** BIS M-136-03/L			**BIS00Y1** BIS M-136-03/L-HT
	0...185	0...150	65...225	0...310	0...330			0...340
	0...185	0...150	65...225	0...310	0...330			0...340
	±65	±60						
	±65	±60	±100	±100	±130			±130
	±65	±60	±100	±100	±130			±130
	±62	±55	±100	±100	±130			±130
	±62	±50	±90	±100	±130			±130
	±60	±50	±90	±100	±130			±130
	±55	±30	±90	±100	±120			±120
	±55		±90	±90	±120			±120
	±10		±90	±90	±120			±120
			±90	±90	±120			±120
			±50	±60	±105			±105
			±50	±60	±105			±105
				±60	±105			±105
				±60	±105			±105
					±60			±60
					±40			±40



Industrial RFID System BIS M at 13.56 MHz (HF)

HF antennas for long ranges, 300×300×6 mm

These antennas **must** be used with the following processor units:

- BIS M-620-068-A01-00-ST29
- BIS M-620-067-A01-04-ST30
- BIS M-626-069-A01-06-ST32

Dimension		
Housing material		
For processor units	**Order code**	
BIS M-62_-... (up to 2 kbytes)	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection to		
Connection cable (please order separately)		

Appropriate data carrier

Working distance for writing in mm	
Working distance for reading in mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-metal

Antenna type:

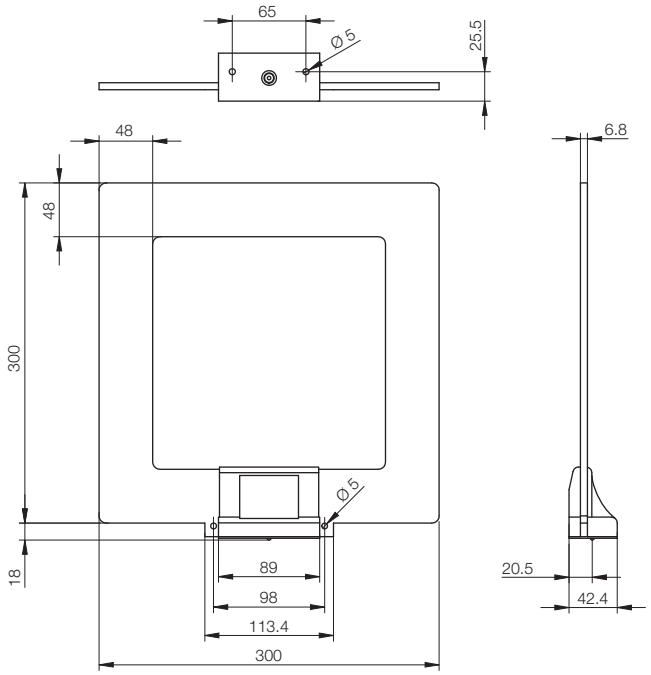
Round

Extension cable set
(please order separately)

Application for	HF antennas BIS M-37_-...
Order code	**BIS00WJ**
Part number	BIS M-500-PVC-07-A01/02

	300×300×6 mm	**300×300×6 mm**
	PA	PA
	BIS00WK	**BIS013K**
	BIS M-373-000-A01	BIS M-373-000-A01-SA1
	▬	▬
	–20...+50 °C	–20...+50 °C
	–20...+70 °C	–20...+70 °C
	IP 65	IP 65
	ISO 15693, ISO 14443	ISO 15693, ISO 14443
	1× internal RCA jack plug for processor unit	1× internal RCA jack plug for processor unit
	Extension cable set BIS00WJ	Extension cable set BIS00WJ

BIS00YF	BIS M-132-03/L	**BIS00YE**	BIS M-132-03/L-HT	**BIS00Y5**	BIS M-135-03/L	**BIS00Y4**	BIS M-135-03/L-HT	**BIS00W9**	BIS M-136-03/L	**BIS00Y1**	BIS M-136-03/L-HT
0...195		0...185		0...320		0...355		0...360		0...380	
0...195		0...185		0...320		0...355		0...360		0...380	



Industrial RFID System BIS M at 13.56 MHz (HF)

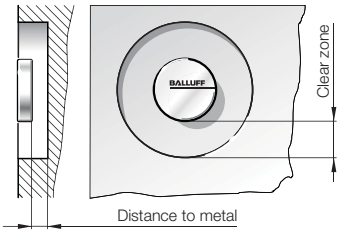
Read/write heads with integrated processor units, Serial RS232, M30×1.5

For longer ranges

Integrated version of read/write head with processor unit in large form factor. For direct connection to the controller.

Dimension		
Housing material		
Serial RS232 (up to 2 kbytes)	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Accessories included		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	5 mm	
	9 mm	
	12 mm	
	15 mm	
	16 mm	
	18 mm	
	20 mm	
	22 mm	
	25 mm	
	30 mm	
	32 mm	
	35 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

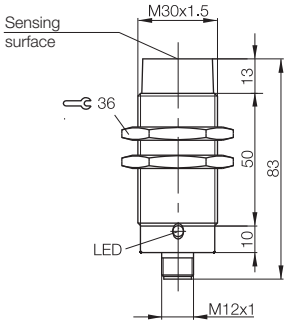
Non-metal

Antenna type:

Round

	M30×1.5
	Brass, coated
	BIS00EJ
	BIS M-400-007-001-00-S115
	⎓
	24 V DC +10%/–20% including ripple
	≤ 50 mA no load
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693, ISO 14443
	1× M12 male, 8-pin
	Configuration software
	See page 318

BIS0042	BIS M-105-02/A	**BIS0043**	BIS M-108-02/L	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>20	>5	>25	>0	>25	>5	>25	>5	>50	>10
>44	>44	>24	>0	>40	>15	>35	>10	>50	>10
0...11	0...7	0...28	0...16	0...20	0...8	0...28	0...10	0...38	0...15
0...11	0...7	0...28	0...16	0...20	0...8	0...28	0...10	0...38	0...15
±9	±6	±16	±10	±12	±6	±16	±7	±22	±13
±8	±6	±16	±10	±12	±5	±16	±7	±22	±13
±5		±14	±8	±10		±14	±2	±22	±10
		±14	±6	±8		±14		±20	±8
		±14	±6	±8		±14		±20	±6
		±14	±4	±5		±14		±20	
		±14		±5		±14		±20	
		±14		±5		±14		±20	
		±12				±12		±20	
		±12				±12		±20	
								±16	
								±10	
								±10	



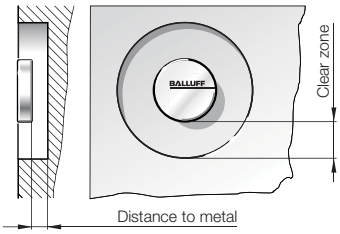
Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial RS232, M30×1.5

For direct connection to the controller.
Ideal for tight spaces.

Dimension		
Housing material		
Serial RS232 (up to 2 kbytes)	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Accessories included		
Connection cables		

Installation note for data carriers



Appropriate data carrier (valid for both heads)		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	5 mm	
	9 mm	
	12 mm	
	15 mm	
	16 mm	
	18 mm	
	20 mm	
	22 mm	
	25 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-metal

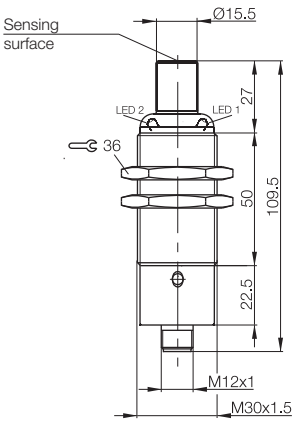
Antenna type:

Round

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial RS232, M30×1.5

M30×1.5											
Brass, coated											
BIS00EK											
BIS M-400-007-002-00-S115											
⎓											
24 V DC +10%/–20% including ripple											
≤ 50 mA no load											
0...+70 °C											
–20...+85 °C											
IP 67											
ISO 15693, ISO 14443											
1× M12 male, 8-pin											
Configuration software											
See page 318											
BIS0042	BIS M-105-02/A	**BIS004A**	BIS M-122-02/A	**BIS0043**	BIS M-108-02/L	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>10	>0	>10	>0	>25	>0	>25	>5	>25	>5	>50	>20
>25	>0	>25	>0	>10	>0	>30	>15	>30	>15	>50	>10
0...9	0...5	0...6	0...5	0...20	0...12	0...15	0...6	0...20	0...5	0...28	0...10
0...9	0...5	0...6	0...5	0...20	0...12	0...15	0...6	0...20	0...5	0...28	0...10
±6	±4	±4	±3	±14	±10	±8	±4	±12	±7	±20	±14
±6	±2	±3	±2	±14	±8	±8	±4	±12	±4	±20	±14
±2				±12	±6	±6		±10		±18	±10
				±10	±4	±4		±10		±18	±6
				±10		±4		±10		±18	
				±7				±7		±16	
				±7				±7		±16	
				±7				±7		±16	
										±12	
										±12	



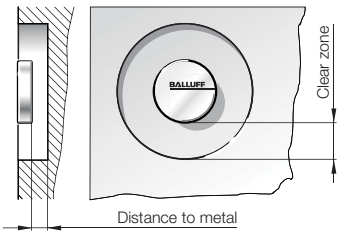
Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial RS232, M18×1, 25×50×10 mm

For tight mounting spaces
The remote electronics of the integrated version creates extra installation space. For direct connection to the controller.

Dimension		
Housing material		
Serial RS232	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Accessories included		
Connection cables		

Installation note for data carriers



Appropriate data carrier		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	5 mm	
	9 mm	
	12 mm	
	15 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-metal

Antenna type:

Round

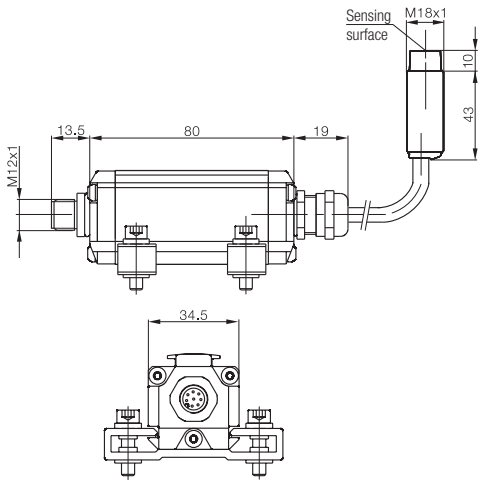
Industrial RFID System BIS M at 13.56 MHz (HF)

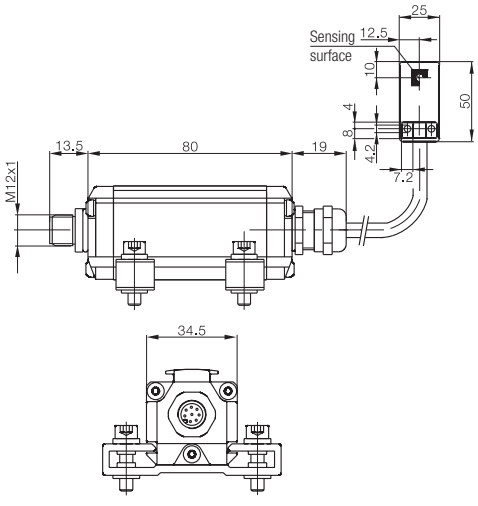
Read/write heads with integrated processor units, Serial RS232, M18×1, 25×50×10 mm

M18×1	**25×50×10 mm**
Aluminum, anodized and brass, coated	Aluminum, anodized and ABS (fiberglass reinforced)
BIS00EN	**BIS00RU**
BIS M-402-007-002-00-S115	BIS M-402-007-004-00-S115
⎓	⎓
24 V DC +10%	24 V DC +10%
≤ 50 mA no load	≤ 50 mA no load
0...+70 °C	0...+70 °C
–20...+85 °C	–20...+85 °C
IP 67	IP 67
ISO 15693, ISO 14443	ISO 15693, ISO 14443
1× M12 male, 8-pin	1× M12 male, 8-pin
Configuration software	Configuration software
See page 318	See page 318

BIS0042	BIS M-105-02/A	**BIS004A**	BIS M-122-02/A	**BIS0044**	BIS M-110-02/L	**BIS00UC**	BIS M-116-03/A
>10	>0	>10	>0	>25		>5	>0
>25	>0	>25	>0	>30		>25	>25
0...8	0...6	0...8	0...5	0...5		0...7	0...4,5
0...8	0...6	0...8	0...5	0...5		0...7	0...4,5
±3	±2	±3	±2	±8		±4	±3
±2	±2	±2	±2	±8		±3	
				±6			
				±4			
				±4			

BIS0042	BIS M-105-02/A	**BIS004A**	BIS M-122-02/A	**BIS0044**	BIS M-110-02/L
>10	>0	>10	>0	>25	
>25	>0	>25	>0	>30	
0...8	0...6	0...8	0...5	0...5	
0...8	0...6	0...8	0...5	0...5	
±3	±2	±3	±2	±8	
±2	±2	±2	±2	±8	
				±6	
				±4	
				±4	

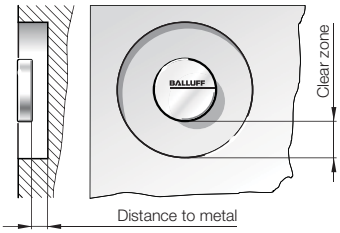




Read/write heads with integrated processor units, Serial, Subnet16™, 56×40×42 mm

Dimension		
Housing material		
Subnet16™, RS485	**Order code**	
	Part number	
Serial, RS232	**Order code**	
	Part number	
Serial, RS422	**Order code**	
	Part number	
Serial, USB	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection cables		

Installation note for data carriers



Appropriate data carrier (valid for all heads)

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	10 mm
	15 mm
	23 mm
	32 mm
	46 mm
	60 mm
	70 mm
	85 mm

For assembly, observe the general information and installation notices on page 158.

* For the configuration of multiple read/write heads, see Gateways BIS Z-GW-001-... on page 154...155.

Installation:

Non-metal

Antenna type:

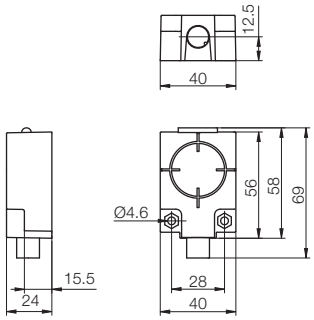
Round

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial, Subnet16™, 56×40×42 mm

56×40×42 mm	**56×40×42 mm**	**56×40×42 mm**	**56×40×42 mm**
PC	PC	PC	PC
BIS00W1			
BIS M-410-067-001-04-S92*			
	BIS00W2		
	BIS M-410-068-001-00-S115		
		BIS00W3	
		BIS M-410-068-001-02-S115	
			BIS00W4
			BIS M-410-068-001-09-S72
⎓	⎓	⎓	⎓
10...30 V DC using Bus	10...30 V DC using Bus	10...30 V DC using Bus	5 V DC
87 mA at 24 V DC	87 mA at 24 V DC	87 mA at 24 V DC	500 mA at 24 V DC
–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C
–20...+70 °C	–20...+70 °C	–20...+70 °C	–20...+70 °C
IP 67	IP 67	IP 67	IP 67
ISO 15693, ISO 14443	ISO 15693, ISO 14443	ISO 15693, ISO 14443	ISO 15693, ISO 14443
M12 male, 5-pin	M12 male, 8-pin	M12 male, 8-pin	M12 male, 5-pin, B-coded
See page 327	See page 335	See page 311	See page 335

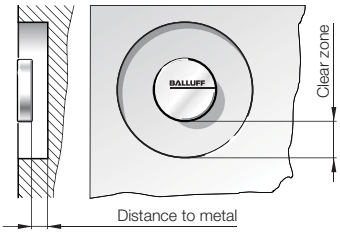
BIS00YF	BIS M-132-03/L	**BIS00YE**	BIS M-132-03/L-HT	**BIS00YA**	BIS M-132-10/L-HT	**BIS00Y9**	BIS M-133-02/A	**BIS00Y7**	BIS M-134-10/L-HT	**BIS00Y6**	BIS M-135-02/L	**BIS00Y5**	BIS M-135-03/L	**BIS00Y4**	BIS M-135-03/L-HT	**BIS00Y2**	BIS M-135-07/L-HT	**BIS00W9**	BIS M-136-03/L	**BIS00YL**	BIS M-130-03/L	**BIS00YK**	BIS M-130-07/L
>10		>10		>10		>10		>10		>10		>10		>10		>10		>10		>10		>10	
>50		>50		>50		>50		>50		>50		>50		>50		>50		>50		>25		>25	
0...48		0...40		0...15		0...32		0...36		0...60		0...68		0...70		23...46		0...85		0...17		0...12	
0...48		0...40		0...15		0...32		0...36		0...60		0...68		0...70		23...46		0...85		0...17		0...12	
±30		±25		±15		±20		±25		±35		±40		±44				±40		±15		±12	
±30		±25		±15		±20		±25		±35		±40		±44				±40		±15		±12	
±30		±25		±12		±20		±25		±35		±40		±44				±40		±14		±14	
±25		±20		±8		±16		±25		±35		±40		±44				±40		±12			
±25		±20				±10		±20		±35		±40		±32		±24		±35					
±20		±12				±8		±12		±30		±32		±32		±18		±35					
±12										±24		±32		±32		±10		±35					
										±16		±24		±25				±25					
														±15									



Read/write heads with integrated processor units, Serial, Subnet16™, 105×73×24 mm

Dimension		
Housing material		
Subnet16™, RS485	**Order code**	
	Part number	
Serial, RS232	**Order code**	
	Part number	
Serial, RS422	**Order code**	
	Part number	
Serial, USB	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection cables		

Installation note for data carriers



These read/write heads with integrated processor unit can be mounted on wood, plastic and metal. However, they cannot be enclosed in metal. For an optimal function, a clear zone of 60 mm (2.5") to the metal must be maintained on all sides.

Appropriate data carrier (valid for all heads)

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	11 mm
	22 mm
	26 mm
	38 mm
	52 mm
	60 mm
	75 mm
	95 mm
	100 mm
	110 mm
	125 mm
	150 mm
	155 mm

For assembly, observe the general information and installation notices on page 158.

* For the configuration of multiple read/write heads, see Gateways BIS Z-GW-001-... on page 154...155.

Installation:

- Non-flush on steel
- Non-metal

Antenna type:

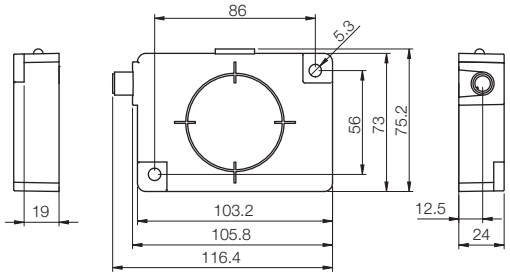
- Round

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial, Subnet16™, 105×73×24 mm

105×73×24 mm	**105×73×24 mm**	**105×73×24 mm**	**105×73×24 mm**
PC	PC	PC	PC
BIS00W5			
BIS M-411-067-001-04-S92*			
	BIS00W6		
	BIS M-411-068-001-00-S115		
		BIS00W7	
		BIS M-411-068-001-02-S115	
			BIS00W8
			BIS M-411-068-001-09-S72
⎓, ⎓	⎓, ⎓	⎓, ⎓	⎓, ⎓
10...30 V DC	10...30 V DC	10...30 V DC	5 V DC
87 mA at 24 V DC	87 mA at 24 V DC	87 mA at 24 V DC	500 mA at 24 V DC
–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C
–20...+70 °C	–20...+70 °C	–20...+70 °C	–20...+70 °C
IP 67	IP 67	IP 67	IP 67
ISO 15693, ISO 14443	ISO 15693, ISO 14443	ISO 15693, ISO 14443	ISO 15693, ISO 14443
M12 male, 5-pin	M12 male, 8-pin	M12 male, 8-pin	M12 male, 5-pin, B-coded
See page 327	See page 335	See page 311	See page 335

BIS00YF BIS M-132-03/L	**BIS00YE** BIS M-132-03/L-HT	**BIS00YA** BIS M-132-10/L-HT	**BIS00Y7** BIS M-134-10/L/HT	**BIS00Y6** BIS M-135-02/L	**BIS00Y5** BIS M-135-03/L	**BIS00Y4** BIS M-135-03/L-HT	**BIS00Y2** BIS M-135-07/L-HT	**BIS00W9** BIS M-136-03/L	**BIS00YL** BIS M-130-03/L	**BIS00YK** BIS M-130-07/L	**BIS00Y9** BIS M-133-02/A
>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>25
>60	>60	>60	>60	>60	>60	>60	>60	>60	>60	>25	>100
0...80	0...70	0...20	0...60	0...100	0...110	0...125	10...75	0...155	0...20	0...15	38...52
0...80	0...70	0...20	0...60	0...100	0...110	0...125	10...75	0...155	0...20	0...15	38...52
±50	±42	±20	±32	±50	±62	±65		±90	±22	±22	
±50	±42	±20	±32	±50	±62	±65	±50	±90	±19	±12	
±40	±39	±10	±32	±50	±62	±65	±50	±90			
±40	±39		±30	±50	±62	±65	±50	±90			
±40	±39		±30	±50	±58	±65	±42	±80			±25
±35	±36		±25	±50	±58	±62	±42	±80			±25
±35	±36		±20	±50	±58	±62	±35	±80			
±30				±45	±52	±62	±35	±80			
				±45	±52	±58		±75			
				±45	±52	±58		±75			
					±50	±58		±75			
						±50		±60			
								±60			
								±50			



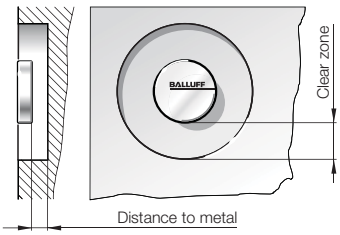
Industrial RFID System BIS M at 13.56 MHz (HF)

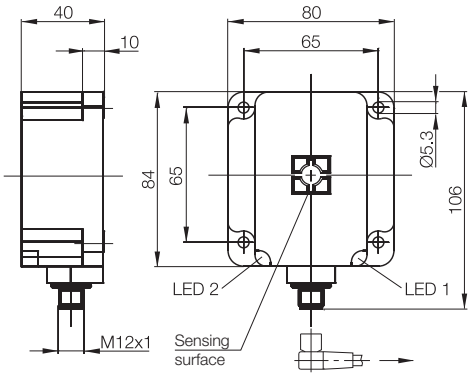
Read/write heads with integrated processor units, Serial RS232, 80×84×40 mm

When the available space requires a flat housing, this version is the ideal choice. For direct connection to the controller.

Dimension		
Housing material		
Serial RS232 (up to 2 kbytes)	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Accessories included		
Connection cables		

Installation note for data carriers





Installation:

Non-metal

Antenna type:

Round

Appropriate data carrier		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	0 mm	
	5 mm	
	9 mm	
	12 mm	
	15 mm	
	16 mm	
	18 mm	
	20 mm	
	22 mm	
	25 mm	
	30 mm	
	32 mm	
	35 mm	
	40 mm	
	43 mm	
	45 mm	
	50 mm	
	52 mm	
	60 mm	

For assembly, observe the general information and installation notices on page 158.

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial RS232, 80×84×40 mm

	80×84×40 mm
	PBT, ASA
	BIS00EM
	BIS M-401-007-001-00-S115
	⎓
	24 V DC +10%/–20% including ripple
	≤ 50 mA no load
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693, ISO 14443
	1× M12 male, 8-pin
	Serial includes configuration software
	See page 318

BIS0043	BIS M-108-02/L	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>50	>20	>50	>30	>50	>30	>50	>30
>74	>10	>90	>40	>90	>40	>75	>25
0...40	0...18	0...30	0...18	0...40	0...25	0...60	0...25
0...40	0...18	0...30	0...18	0...40	0...25	0...60	0...25
±30	±16	±25	±18	±30	±20	±35	±25
±30	±16	±25	±18	±30	±20	±35	±25
±30	±16	±25	±15	±30	±20	±35	±25
±25	±16	±20	±15	±25	±20	±35	±25
±25	±16	±20	±12	±25	±18	±35	±25
±25	±16	±20	±12	±25	±18	±35	±25
±25	±14	±20	±8	±25	±16	±35	±25
±25		±20		±25	±14	±35	±25
±20		±15		±20	±12	±35	±22
±20		±15		±20	±10	±35	±22
±20		±10		±20		±35	±22
±15		±10		±15		±35	±22
±15				±15		±35	±20
±15				±15		±35	
						±25	
						±25	
						±25	
						±25	
						±25	

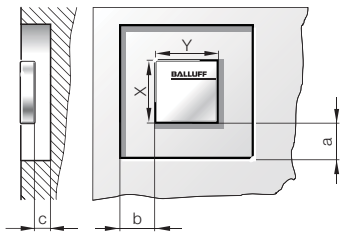
Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Serial RS232, 80×84×40 mm

FERRO*IDENT* read/write head with rod antenna. The right choice if you require a flat design and large read/write distances. For fast positioning, orient yourself to the arrows when setting up.

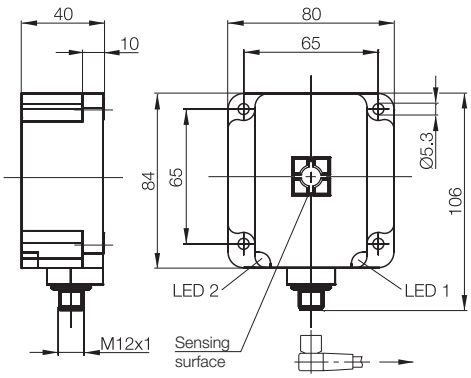
Dimension		
Housing material		
Serial RS232 (up to 2 kbytes)	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Accessories included		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier clear zone in mm (a)	
Data carrier clear zone in mm (b)	
Data carrier clear zone in mm (c)	
Metallic mounting surface 40×22 mm	
Metallic mounting surface ≥ 200×200 mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	
0 mm	
5 mm	
10 mm	
12 mm	
15 mm	
18 mm	
20 mm	
22 mm	
25 mm	
30 mm	
32 mm	
35 mm	
40 mm	
45 mm	
50 mm	
52 mm	
60 mm	
65 mm	
70 mm	
80 mm	
90 mm	
100 mm	



Installation:

Non-flush on steel

Antenna type:

Rod

For assembly, observe the general information and installation notices on page 158.

Read/write heads with integrated processor units, Serial RS232, 80×84×40 mm

FERROIDENT

	80×84×40 mm
	PBT, ASA
	BIS00ER
	BIS M-451-007-001-00-S115
	⎓
	24 V DC +10%/–20% including ripple
	≤ 50 mA no load
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	1× M12 male, 8-pin
	Configuration software
	See page 318

BIS004F		BIS M-150-02/A		**BIS004H**		BIS M-151-02/A		**BIS00M2**		BIS M-152-03/A		**BIS00P3**	BIS M-153-02/A
>80	>80	>80	>80	>89	>89	>89	>89	>88	>88	>14	>14	>100	>100
>89	>89	>89	>89	>80	>80	>80	>80	>99	>99	>5	>5	>200	>200
								>50	>50	>2	>2	>10	>10
0...52	0...52			0...52	0...52								
		0...65	0...65			0...65	0...65						
0...52	0...52	0...65	0...65	0...52	0...52	0...65	0...65	0...30	0...30	15...30	15...30	0...100	0...100
0...52	0...52	0...65	0...65	0...52	0...52	0...65	0...65	0...30	0...30	15...30	15...30	0...100	0...100
X	Y	X	Y	Y	X	Y	X	X	Y	X	Y	X	Y
±60	±25	±65	±26	±60	±25	±65	±26	±35	±20			±60	±20
±60	±25	±65	±26	±60	±25	±65	±25	±35	±20			±60	±20
±60	±25	±65	±26	±60	±25	±65	±25	±35	±20			±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20			±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±20	±12	±28	±15	±60	±20
±60	±25	±65	±25	±60	±25	±65	±25	±20	±12	±28	±15	±60	±20
±50	±25	±65	±25	±50	±25	±65	±25					±60	±20
±50	±25	±65	±25	±50	±25	±65	±25					±60	±20
±50	±20	±50	±25	±50	±20	±50	±25					±60	±20
±25	±20	±50	±25	±25	±20	±50	±25					±60	±20
±25	±20	±50	±25	±25	±20	±50	±25					±60	±20
±25	±8	±25	±25	±25	±8	±25	±25					±60	±20
		±25	±10			±25	±10					±60	±20
		±25	±10			±25	±10					±60	±20
												±60	±20
												±60	±20
												±40	±20
												±40	±20

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with integrated processor units, Ethernet TCP/IP, 240×120×60 mm

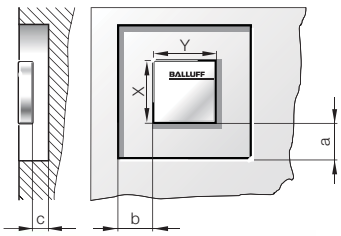
Ethernet TCP/IP

A powerful high-frequency package ensures maximum transparency

- Distances up to 275 mm offer greater flexibility, regardless of the background surface
- FRAM data carriers ensure virtually unlimited read/write cycles.
- Can be used all over the world thanks to ISO 15693 conformity.
- Status indicators mounted directly on the antenna housing make everyday work easier.
- The robust housing guarantees reliable operation in harsh environments.
- 100% RFID quality means greater reliability.

Dimension		
Housing material		
Ethernet TCP/IP	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection	Power	
	Ethernet TCP/IP	
Accessories included		
Connection cables	Power	
	Ethernet TCP/IP	

Installation note for data carriers



	Order code	
Appropriate data carrier	Part number	
Data carrier distance to metal (c)		
Data carrier clear zone (a x b)		
Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance		
	0 mm	
	25 mm	
	50 mm	
	75 mm	
	100 mm	
	150 mm	
	200 mm	
	250 mm	

For assembly, observe the general information and installation notices on page 158.

Installation:

Non-flush on steel

Antenna type:

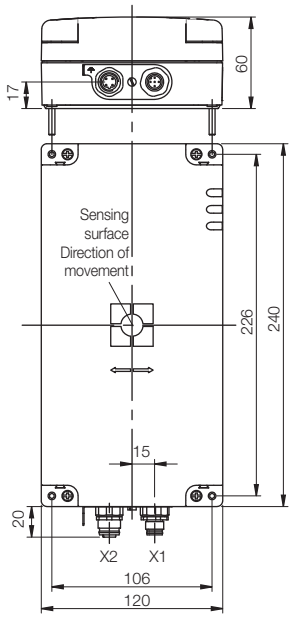
Rod

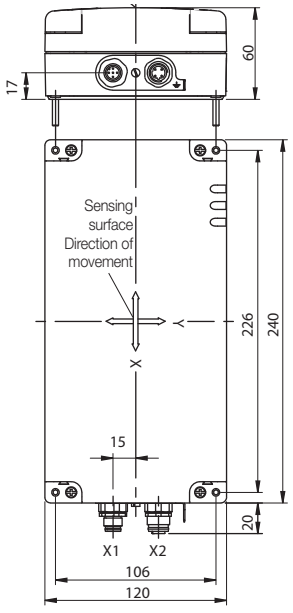
Round

FERROIDENT

	240×120×60 mm	**240×120×60 mm**
	PC	PC
	BIS00R0	**BIS00PZ**
	BIS M-450-039-001-06-ST2	BIS M-440-039-001-06-ST2
	⎓	⎓
	19.2...28 V DC, ≤ 10% ripple	19.2...28 V DC, ≤ 10% ripple
	≤ 1 A	≤ 1 A
	0...+55 °C	0...+55 °C
	–20...+85 °C	–20...+85 °C
	IP 65	IP 65
	ISO 15693	ISO 15693
	1× M12 male, 5-pin	1× M12 male, 5-pin
	1× M12 female, 4-pin, D-coded	1× M12 female, 4-pin, D-coded
	Configuration software	Configuration software
	See page 337	See page 337
	See page 322...323	See page 322...323

	BIS00P3		**BIS004H**		**BIS0046**		**BIS00Y4**	
	BIS M-153-02/A		BIS M-151-02/A		BIS M-112-02/L		BIS M-135-03/L-HT	
	0		0		> 50		> 120	
	> 240×480		> 240×480		> 240×480		> 240×480	
	0...275		0...130		0...170		0...200	
	0...275		0...130		0...170		0...200	
	X	Y	X	Y	X	Y	X	Y
	±200	±100	±60	±140	±60	±85	±80	±100
	±200	±100	±60	±135	±60	±85	±80	±100
	±200	±100	±60	±125	±60	±85	±80	±100
	±200	±100	±55	±100	±60	±85	±80	±100
	±200	±100			±60	±85	±80	±100
	±200	±100			±55	±75	±80	±100
	±175	±100					±80	±100
	±100	±100						





Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with IO-Link, M30×1.5

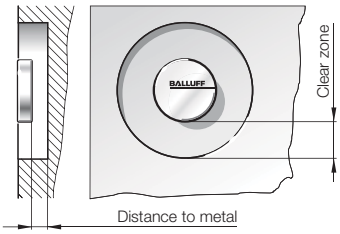
Process Data Buffer

Choose between 10 byte and 32 byte cyclical process data buffer.

For information on other IO-Link and networking products, refer to our "Industrial Networking and Connectivity" catalog or visit us online at **www.balluff.com**

Dimension		
Housing material		
IO-Link, 10 bytes	**Order code**	
	Part number	
IO-Link, 32 bytes	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm
	32 mm
	35 mm

For assembly, observe the general information and installation notices on page 158.

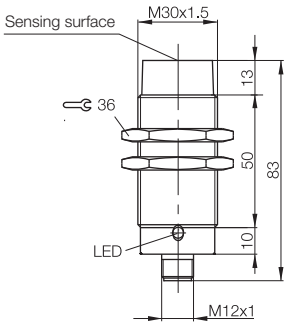
Non-metal

Antenna type:

Round

	M30×1.5
	Brass, coated
	BIS00LH
	BIS M-400-045-001-07-S4
	BIS0108
	BIS M-400-072-001-07-S4
	⎓
	18…30 V DC
	Holder for 24 V DC ≤ 150 mA
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693
	1× M12 male, 4-pin
	IO-Link master BNI (for more information, see page 330...331)
	See page 304...307

BIS0042	BIS M-105-02/A	**BIS0043**	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>20	>5	>25	>0	>25	>0	>25	>5	>25	>5	>50	>10
>44	>44	>24	>0	>24	>0	>40	>15	>35	>10	>50	>10
0...11	0...7	0...28	0...16	0...28	0...16	0...20	0...8	0...28	0...10	0...38	0...15
0...11	0...7	0...28	0...16	0...28	0...16	0...20	0...8	0...28	0...10	0...38	0...15
±9	±6	±16	±10	±16	±10	±12	±6	±16	±7	±22	±13
±8	±6	±16	±10	±16	±10	±12	±5	±16	±7	±22	±13
±5		±14	±8	±14	±8	±10		±14	±2	±22	±10
		±14	±6	±14	±6	±8		±14		±20	±8
		±14	±6	±14	±6	±8		±14		±20	±6
		±14	±4	±14	±4	±5		±14		±20	
		±14		±14		±5		±14		±20	
		±14		±14		±5		±14		±20	
		±12		±12				±12		±20	
		±12		±12				±12		±20	
										±16	
										±10	
										±10	



Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with IO-Link, M30×1.5

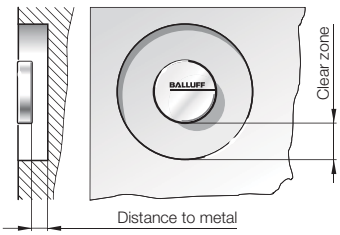
Process Data Buffer

Choose between 10 byte and 32 byte cyclical process data buffer.

For information on other IO-Link and networking products, refer to our "Industrial Networking and Connectivity" catalog or visit us online at **www.balluff.com**

Dimension		
Housing material		
IO-Link, 10 bytes	**Order code**	
	Part number	
IO-Link, 32 bytes	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier	
Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm

For assembly, observe the general information and installation notices on page 158.

Installation:

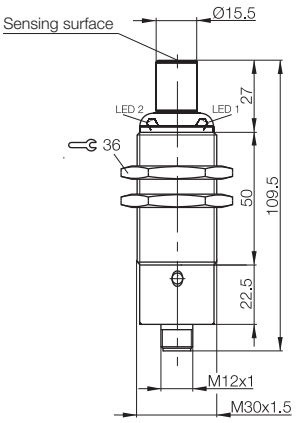
Non-metal

Antenna type:

Round

M30×1.5	
Brass, coated	
BIS00LJ	
BIS M-400-045-002-07-S4	
BIS0104	
BIS M-400-072-002-07-S4	
⎓	
18…30 V DC	
Holder for 24 V DC ≤ 150 mA	
0...+70 °C	
–20...+85 °C	
IP 67	
ISO 15693, ISO 14443	
1× M12 male, 4-pin	
IO-Link master BNI (for more information, see page 330...331)	
See page 304...307	

BIS0042	BIS M-105-02/A	**BIS004A**	BIS M-122-02/A	**BIS0043**	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>10	>0	>10	>0	>25	>0	>25	>0	>25	>5	>25	>5	>50	>20
>24	>0	>25	>0	>10	>0	>10	>0	>30	>15	>30	>15	>50	>10
0...9	0...5	0...6	0...5	0...20	0...12	0...20	0...12	0...15	0...6	0...20	0...5	0...28	0...10
0...9	0...5	0...6	0...5	0...20	0...12	0...20	0...12	0...15	0...6	0...20	0...5	0...28	0...10
±6	±4	±4	±3	±14	±10	±14	±10	±8	±4	±12	±7	±20	±14
±6	±2	±3	±2	±14	±8	±14	±8	±8	±4	±12	±4	±20	±14
±2				±12	±6	±12	±6	±6		±10		±18	±10
				±10	±4	±10	±4	±4		±10		±18	±6
				±10		±10		±4		±10		±18	
				±7		±7				±7		±16	
				±7		±7				±7		±16	
				±7		±7				±7		±16	
												±12	
												±12	



Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with IO-Link, 105×40×15 mm

Process Data Buffer
Choose between 10 byte and 32 byte cyclical process data buffer.

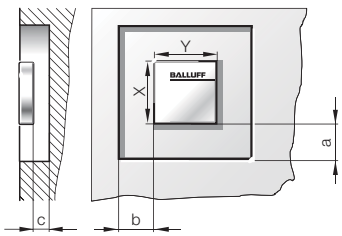
reddot design award winner 2015

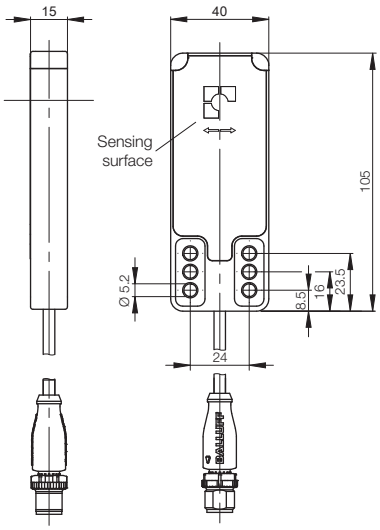
IO-Link CE

Dimension		
Housing material		
IO-Link, 10 bytes	**Order code**	
	Part number	
IO-Link, 32 bytes	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

For information on other IO-Link and networking products, refer to our "Industrial Networking and Connectivity" catalog or visit us online at **www.balluff.com**

Installation note for data carriers





Installation:

Non-flush on steel

Antenna type:

Rod

Appropriate data carrier (valid for both heads)

Data carrier clear zone in mm (a)	
Data carrier clear zone in mm (b)	
Data carrier clear zone in mm (c)	
Metallic mounting surface 40×22 mm	
Metallic mounting surface ≥ 200×200 mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	
0 mm	
5 mm	
10 mm	
15 mm	
17 mm	
19 mm	
20 mm	
25 mm	
28 mm	
30 mm	
34 mm	
35 mm	
38 mm	
40 mm	
42 mm	
45 mm	
50 mm	
54 mm	

For assembly, observe the general information and installation notices on page 158.

	105×40×15 mm
	Cast zinc, coated and PBT
	BIS014K
	BIS M-458-045-001-07-S4
	On request
	BIS M-458-072-001-07-S4
	18…30 V DC
	Holder for 24 V DC ≤ 150 mA
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15663, ISO 14443
	0.3 m PUR cable with M12 plug, 4-pin
	IO-Link master BNI (for more information, see page 330...331)
	See page 304...307

BIS004F		BIS M-150-02/A		**BIS004H**		BIS M-151-02/A		**BIS00M2**	BIS M-152-03/A	**BIS00P3**		BIS M-153-02/A		**BIS00NZ**	BIS M-191-02/A
>80	>80	>80	>80	>89	>89	>89	>89	>88	>88	>100	>100	>100	>100	>27	>27
>89	>89	>89	>89	>80	>80	>80	>80	>99	>99	>200	>200	>200	>200	>27	>27
0	0	0	0	0	0	0	0	>50	>50	>50	>50	0	0		
0...38	0...38			0...38	0...38										
		0...42	0...42			0...34	0...34								
0...38	0...38	0...42	0...42	0...38	0...38	0...34	0...34	0...18	0...18	0...54	0...54	0...54	0...54	0...25	0...25
0...38	0...38	0...42	0...42	0...38	0...38	0...34	0...34	0...18	0...18	0...54	0...54	0...54	0...54	0...25	0...25
X	Y	X	Y	Y	X	Y	X	X	Y	X	Y	X	Y	X	Y
±43	±18	±45	±21	±40	±20	±35	±17	±22	±12	±60	±30	±60	±30	±30	±20
±43	±18	±45	±21	±40	±20	±35	±17	±22	±12	±60	±30	±60	±30	±30	±20
±43	±18	±45	±21	±40	±20	±35	±17	±21	±10	±60	±30	±60	±30	±30	±20
±40	±17	±43	±20	±35	±18	±33	±15	±16	±8	±55	±27	±55	±27	±25	±15
±40	±17	±43	±20	±35	±18	±33	±15	±5	±2	±55	±27	v55	±27	±25	±15
±40	±17	±43	±20	±35	±18	±33	±15	±5	±2	±55	±27	±55	±27	±25	±15
±40	±17	±43	±20	±35	±18	±33	±15			±55	±27	±55	±27	±15	±10
±35	±15	±40	±18	±30	±15	±28	±13			±50	±25	±50	±25	±5	±5
±35	±15	±40	±18	±30	±15	±28	±13			±50	±25	±50	±25		
±35	±15	±40	±18	±30	±15	±28	±13			±50	±25	±50	±25		
±18	±5	±24	±12	±10	±5	±10	±5			±50	±25	±50	±25		
±18	±5	±24	±12	±10	±5					±50	±25	±50	±25		
±18	±5	±24	±12	±10	±5					±50	±25	±50	±25		
		±24	±12							±50	±25	±50	±25		
		±15	±8							±35	±17	±35	±17		
										±35	±17	±35	±17		
										±35	±17	±35	±17		
										±15	±7	±15	±7		

Process Data Buffer
Choose between 10 byte and 32 byte cyclical process data buffer.

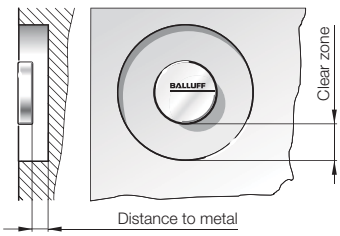
reddot design award winner 2015

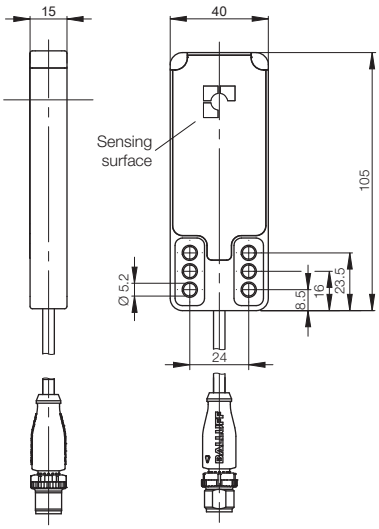
IO-Link CE

Dimension		
Housing material		
IO-Link, 10 byte	**Order code**	
	Part number	
IO-Link, 32 bytes	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

For information on other IO-Link and networking products, refer to our "Industrial Networking and Connectivity" catalog or visit us online at **www.balluff.com**

Installation note for data carriers





Installation:

Non-flush on steel

Antenna type:

Round

Appropriate data carrier (valid for both heads)

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	4 mm
	5 mm
	6 mm
	7 mm
	8 mm
	9 mm
	10 mm
	11 mm
	13 mm
	15 mm
	18 mm
	20 mm
	22 mm
	23 mm
	25 mm
	26 mm
	28 mm

For assembly, observe the general information and installation notices on page 158.

105×40×15 mm	
Cast zinc, coated and PBT	
BIS014J	
BIS M-408-045-001-07-S4	
On request	
BIS M-408-072-001-07-S4	
⎓	
18…30 V DC	
Holder for 24 V DC ≤ 150 mA	
0...+70 °C	
–20...+85 °C	
IP 67	
ISO 15663, ISO 14443	
0.3 m PUR cable with M12 plug, 4-pin	
IO-Link master BNI (for more information, see page 330...331)	
See page 304...307	

BIS0042	BIS M-105-02/A	**BIS004A**	BIS M-122-02/A	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**See data carrier**	BIS M-142-02/A-_ _	**See data carrier**	BIS M-143-02/A-_ _	**See data carrier**	BIS M-144-02/A-_ _
>10	>0	>10	>0	>25		>25		>0		>0		>0	
>15	>15	>15	>15	>30		>35		>39		>39		>39	
0...13	0...11	0...11	0...9	0...23		0...28		0...22		0...13		0...22	
0...13	0...11	0...11	0...9	0...23		0...28		0...22		0...13		0...22	
±10	±8	±8	±8	±15		±16		±13		±10		±13	
±10	±8	±8	±8	±15		±16		±13		±10		±13	
±10	±8	±8	±7	±15		±16		±13		±10		±13	
±9	±7	±7	±7	±15		±16		±13		±9		±13	
±9	±7	±7	±6	±15		±16		±13		±9		±13	
±9	±7	±7	±6	±15		±16		±13		±9		±13	
±9	±7	±7	±3	±15		±16		±13		±9		±13	
±7	±4	±4		±15		±16		±13		±9		±13	
±7	±4	±4		±12		±15		±11		±5		±11	
±4				±12		±15		±11		±5		±11	
				±12		±15		±11				±11	
				±12		±15		±11				±11	
				±12		±15		±7				±7	
				±5		±10		±7				±7	
						±10							
						±10							
						±5							
						±5							

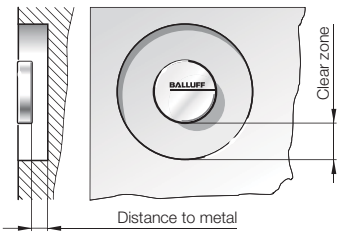
Process Data Buffer
Choose between 10 byte and 32 byte cyclical process data buffer.

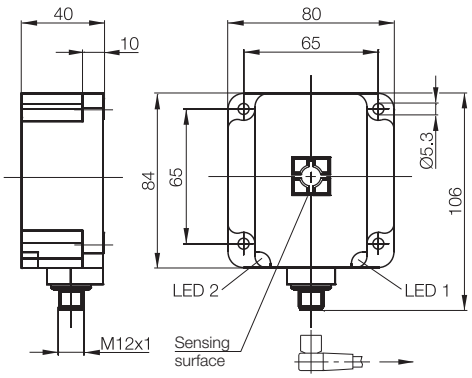
For information on other IO-Link and networking products, refer to our "Industrial Networking and Connectivity" catalog or visit us online at **www.balluff.com**

IO-Link

Dimension		
Housing material		
IO-Link, 10 bytes	**Order code**	
	Part number	
IO-Link, 32 bytes	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers





Installation:

Non-metal

Antenna type:

Round

Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	0 mm
	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm
	32 mm
	35 mm
	40 mm
	43 mm
	45 mm
	50 mm
	52 mm
	60 mm

For assembly, observe the general information and installation notices on page 158.

Read/write heads with IO-Link, 80×84×40 mm

	80×84×40 mm
	PBT, ASA
	BIS00LK
	BIS M-401-045-001-07-S4
	BIS0102
	BIS M-401-072-001-07-S4
	18…30 V DC
	Holder for 24 V DC ≤ 150 mA
	0...+70 °C
	–20...+85 °C
	IP 67
	ISO 15693, ISO 14443
	1× M12 male, 4-pin
	IO-Link master BNI (for more information, see page 330...331)
	See page 304...307

BIS0043	BIS M-108-02/L	**BIS0111**	BIS M-108-20/A	**BIS0044**	BIS M-110-02/L	**BIS0045**	BIS M-111-02/L	**BIS0046**	BIS M-112-02/L
>50	>20	>50	>20	>50	>30	>50	>30	>50	>30
>74	>10	>74	>10	>90	>40	>90	>40	>75	>25
0...40	0...18	0...40	0...18	0...30	0...18	0...40	0...25	0...60	0...25
0...40	0...18	0...40	0...18	0...30	0...18	0...40	0...25	0...60	0...25
±30	±16	±30	±16	±25	±18	±30	±20	±35	±25
±30	±16	±30	±16	±25	±18	±30	±20	±35	±25
±30	±16	±30	±16	±25	±15	±30	±20	±35	±25
±25	±16	±25	±16	±20	±15	±25	±20	±35	±25
±25	±16	±25	±16	±20	±12	±25	±18	±35	±25
±25	±16	±25	±16	±20	±12	±25	±18	±35	±25
±25	±14	±25	±14	±20	±8	±25	±16	±35	±25
±25		±25		±20		±25	±14	±35	±25
±20		±20		±15		±20	±12	±35	±22
±20		±20		±15		±20	±10	±35	±22
±20		±20		±10		±20		±35	±22
±15		±15		±10		±15		±35	±22
±15		±15				±15		±35	±20
±15		±15				±15		±35	
								±25	
								±25	
								±25	
								±25	
								±25	

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with IO-Link, 80×84×40 mm

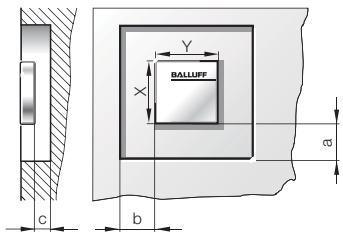
FERRO*IDENT* read/write head with rod antenna. The right choice if you require a flat design and large read/write distances. For fast positioning, orient yourself to the arrows when setting up.

Process Data Buffer
Choose between 10 byte and 32 byte cyclical process data buffer.

For information on other IO-Link and networking products, refer to our "Industrial Networking and Connectivity" catalog or visit us online at **www.balluff.com**

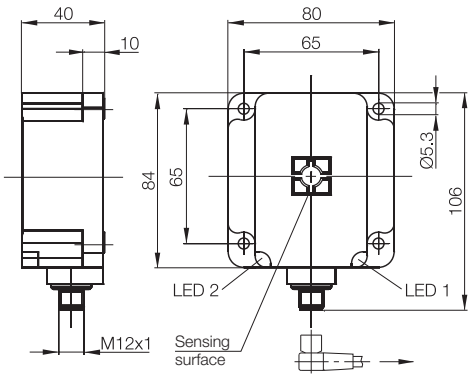
Dimension		
Housing material		
IO-Link, 10 bytes	**Order code**	
	Part number	
IO-Link, 32 bytes	**Order code**	
	Part number	
Assembly		
Power supply		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Supported standard		
Connection		
Connection to		
Connection cables		

Installation note for data carriers



Appropriate data carrier

Data carrier clear zone in mm (a)	
Data carrier clear zone in mm (b)	
Data carrier clear zone in mm (c)	
Metallic mounting surface 40×22 mm	
Metallic mounting surface ≥ 200×200 mm	
Working distance for writing in mm	
Working distance for reading in mm	
Offset in mm at distance	
0 mm	
5 mm	
10 mm	
12 mm	
15 mm	
18 mm	
20 mm	
22 mm	
25 mm	
30 mm	
32 mm	
35 mm	
40 mm	
45 mm	
50 mm	
52 mm	
60 mm	
65 mm	
70 mm	
80 mm	
90 mm	
100 mm	



Installation:
Non-metal

Antenna type:
Rod

For assembly, observe the general information and installation notices on page 158.

Industrial RFID System BIS M at 13.56 MHz (HF)

Read/write heads with IO-Link, 80×84×40 mm

DEXYÍ®

FERRO*IDENT*

80×84×40 mm
PBT, ASA
BIS00LM
BIS M-451-045-001-07-S4
BIS0103
BIS M-451-072-001-07-S4
18…30 V DC
Holder for 24 V DC ≤ 150 mA
0...+70 °C
–20...+85 °C
IP 67
ISO 15693
1× M12 male, 4-pin
IO-Link master BNI (for more information, see page 330...331)
See page 304...307

BIS004F		BIS M-150-02/A		**BIS004H**		BIS M-151-02/A		**BIS00M2**		BIS M-152-03/A		**BIS00P3**	BIS M-153-02/A	**BIS0117**		BIS M-155-20/A		**BIS0112**		BIS M-156-20/A	
>80	>80	>80	>80	>89	>89	>89	>89	>88	>88	>14	>14	>100	>100	>80	>80	>80	>80	>89	>89	>89	>89
>89	>89	>89	>89	>80	>80	>80	>80	>99	>99	>5	>5	>200	>200	>89	>89	>89	>89	>80	>80	>80	>80
								>50	>50	>2	>2	>10	>10								
0…52	0…52			0…52	0…52									0…52	0…52			0…52	0…52		
		0…65	0…65			0…65	0…65									0…65	0…65			0…65	0…65
0…52	0…52	0…65	0…65	0…52	0…52	0…65	0…65	0…30	0…30	15…30	15…30	0…100	0…100	0…52	0…52	0…65	0…65	0…52	0…52	0…65	0…65
0…52	0…52	0…65	0…65	0…52	0…52	0…65	0…65	0…30	0…30	15…30	15…30	0…100	0…100	0…52	0…52	0…65	0…65	0…52	0…52	0…65	0…65
X	Y	X	Y	Y	X	Y	X	X	Y	X	Y	X	Y	X	Y	X	Y	Y	X	Y	X
±60	±25	±65	±26	±60	±25	±65	±26	±35	±20			±60	±20	±60	±25	±65	±26	±60	±25	±65	±26
±60	±25	±65	±26	±60	±25	±65	±25	±35	±20			±60	±20	±60	±25	±65	±26	±60	±25	±65	±25
±60	±25	±65	±26	±60	±25	±65	±25	±35	±20			±60	±20	±60	±25	±65	±26	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20			±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±35	±20	±35	±15	±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±20	±12	±28	±15	±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±60	±25	±65	±25	±60	±25	±65	±25	±20	±12	±28	±15	±60	±20	±60	±25	±65	±25	±60	±25	±65	±25
±50	±25	±65	±25	±50	±25	±65	±25					±60	±20	±50	±25	±65	±25	±50	±25	±65	±25
±50	±25	±65	±25	±50	±25	±65	±25					±60	±20	±50	±25	±65	±25	±50	±25	±65	±25
±50	±20	±50	±25	±50	±20	±50	±25					±60	±20	±50	±20	±50	±25	±50	±20	±50	±25
±25	±20	±50	±25	±25	±20	±50	±25					±60	±20	±25	±20	±50	±25	±25	±20	±50	±25
±25	±20	±50	±25	±25	±20	±50	±25					±60	±20	±25	±20	±50	±25	±25	±20	±50	±25
±25	±8	±25	±25	±25	±8	±25	±25					±60	±20	±25	±8	±25	±25	±25	±8	±25	±25
		±25	±10			±25	±10					±60	±20			±25	±10			±25	±10
		±25	±10			±25	±10					±60	±20			±25	±10			±25	±10
												±60	±20								
												±60	±20								
												±40	±20								
												±40	±20								

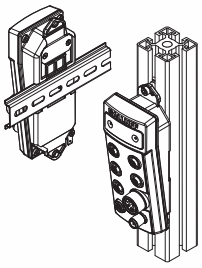
Industrial RFID System BIS M at 13.56 MHz (HF)
Processor units BIS V

The variable system for intelligence in a small space: connect up to four read/write heads

Fast contact-free data communication is considerably more efficient with industrial RFID BIS V. Only BIS V combines RFID and sensors. BIS V, along with the four antenna channels, has an integrated IO-Link master with the latest version, 1.1. The four antenna channels work completely independently of each other. This saves costs, as fewer processor units are needed. The IO-Link master provides a node for additional information. Additional sensors and/or actuators can be connected directly and can create a simple network structure.
The high performance BIS V offers maximum convenience. Display and status LEDs support ease of use. Standard hardware, like a PC, is easy to connect to the USB service interface. All connections are easily accessible and provide plug connectors.

- Function indicator: each read/write head connection has two LEDs for the status and operating state
- Eight single-color LEDs show the bus status
- LCD indicators with control buttons: setting and displaying the Profibus address and displaying UIDs from data carriers that have been read
- USB connection: for fast commissioning without bus connection (reading and writing data carriers), update/upgrade of the processor unit or the read/write heads and retrieving the operating manual as a PDF file
- Intelligent power plug for saving parameters on site
- Simple mounting on top-hat rails or extruded profiles

The compact EMC-protected metal housing with small dimensions (170×60×40 mm) is perfectly integrated and simple to mount. In control cabinets or in the field up to IP 65, on a top-hat rail, or on a profile.



The industrial-grade RFID system BIS V was developed and qualified according to the principles of GAMP® 5. Additional information upon request at **rfidpharma@balluff.com**

reddot design award
winner 2012

Industrial RFID System BIS M at 13.56 MHz (HF)

Processor unit BIS V Profibus

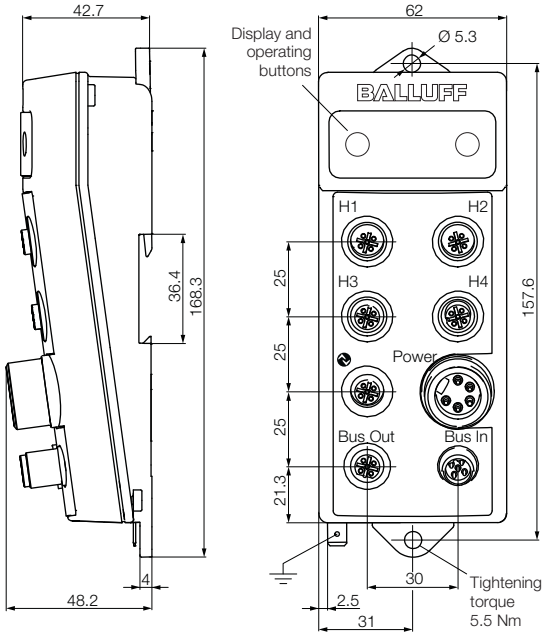
Description		Processor unit
Housing material		Die-cast aluminum, coated
Profibus	**Order code**	**BIS00T3**
	Part number	BIS V-6102-019-C001
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
IO-Link master		V 1.1, max. 0.5 A
Read/write head ports		4× BIS VM-3_ _ _ (external)
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	Profibus IN	1× M12 male, 5-pin
	Profibus OUT	1× M12 female, 5-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	Profibus	See page 320...321
	IO-Link	See page 304...307
Accessories included		Configuration software (GSD file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VM** and **BIS VL** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Processor unit BIS V EtherCAT

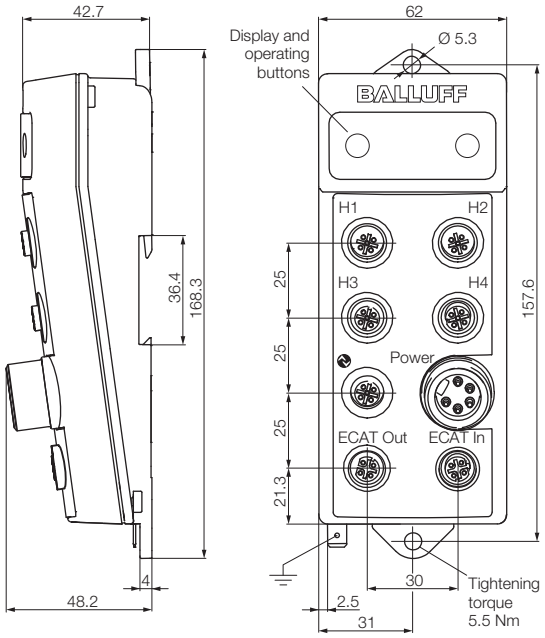
Description		Processor unit
Housing material		Die-cast aluminum, coated
EtherCAT	**Order code**	**BIS00U9**
	Part number	BIS V-6110-063-C002
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		4× BIS VM-3_ _ _ (external)
IO-Link master		V 1.1, max. 0.5 A
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	EtherCAT In	1× M12 female, 4-pin
	EtherCAT Out	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	EtherCAT	See page 322...323
	IO-Link	See page 304...307
Accessories included		Configuration software (ESI file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VM** and **BIS VL** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS M at 13.56 MHz (HF)

Processor unit BIS V CC-Link

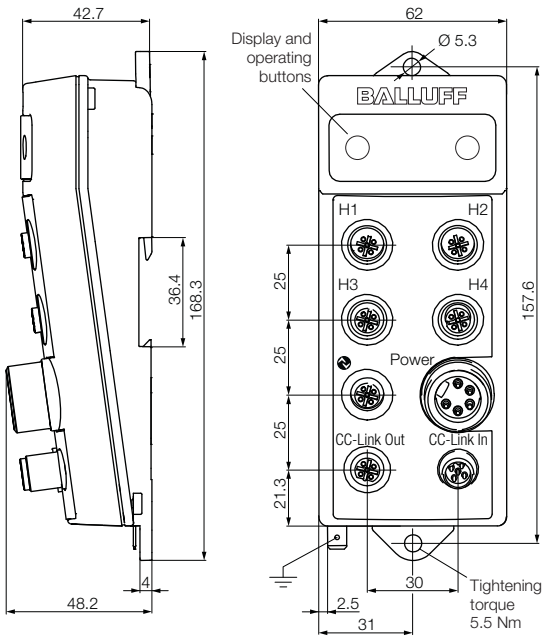
Description		Processor unit
Housing material		Die-cast aluminum, coated
CC-Link	**Order code**	**BIS010P**
	Part number	BIS V-6111-073-C003
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		4× BIS VM-3_ _ _ (external)
IO-Link master		V 1.1, max. 0.5 A
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	CC-Link In	1× M12 male, 5-pin
	CC-Link Out	1× M12 female, 5-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	CC-Link	See page 328...329
	IO-Link	See page 304...307
Accessories included		Configuration software (CSP file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VM** and **BIS VL** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS M at 13.56 MHz (HF)

Processor units BIS V Ethernet/IP

Connection
Supply voltage
5-pin

Connection
Supply voltage
4-pin

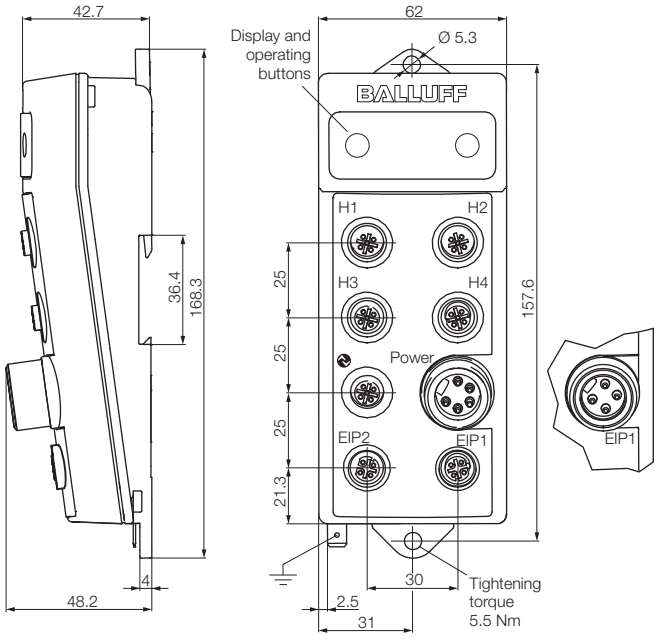
Description		Processor unit	Processor unit
Housing material		Die-cast aluminum, coated	Die-cast aluminum, coated
Ethernet/IP	**Order code**	**BIS012F**	**BIS0122**
	Part number	BIS V-6106-034-C002	BIS V-6106-034-C004
Power supply		24 V DC ±10% LPS Class 2	24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%	≤ 10%
Power supply		≤ 2 A	≤ 2 A
Operating temperature		0...+60 °C	0...+60 °C
Storage temperature		0...+60 °C	0...+60 °C
Degree of protection per IEC 60529		IP 65	IP 65
IO-Link master		V 1.1, max. 0.5 A	V 1.1, max. 0.5 A
Read/write head ports		4× BIS VM-3_ _ _ (external)	4× BIS VL-3_ _ _ (external)
Connection configuration	Read/write heads H1...H4	4× M12 female, 5-pin	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin	1× 7/8" male, 4-pin
	Ethernet/IP In	1× M12 female, 4-pin	1× M12 female, 4-pin
	Ethernet/IP Out	1× M12 female, 4-pin	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309	See page 304...309
	Power	See page 338...339	See page 340...341
	Ethernet/IP	See page 322...323	See page 322...323
	IO-Link	See page 304...307	See page 304...307
Accessories included		Configuration software (EDS file)	Configuration software (EDS file)
Power supply units		See page 352...353	See page 352...353

The processor units BIS V can be used with series **BIS VM** and **BIS VL** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Processor unit BIS V Profinet

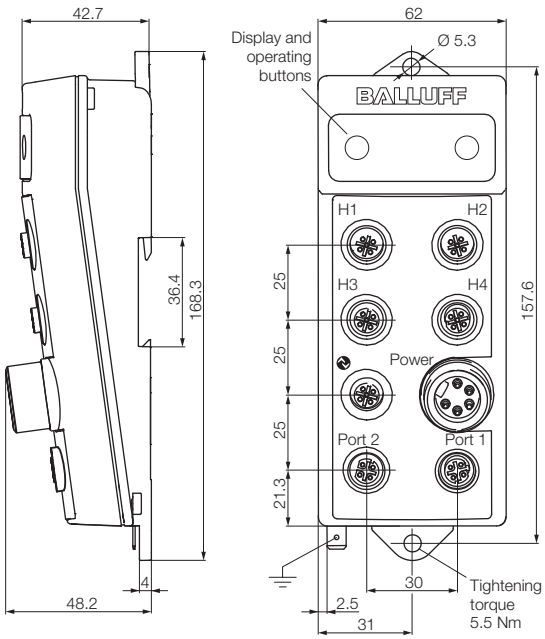
Description		Processor unit
Housing material		Die-cast aluminum, coated
Profinet	**Order code**	**BIS013U**
	Part number	BIS V-6108-048-C002
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
IO-Link master		V 1.1, max. 0.5 A
Read/write head ports		4× BIS VM-3_ _ _ (external)
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	Profinet In	1× M12 female, 4-pin
	Profinet Out	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	Profinet	See page 322...323
	IO-Link	See page 304...307
Accessories included		Configuration software (GSDML file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VM** and **BIS VL** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS M at 13.56 MHz (HF)

Processor units for HF antennas

Serial RS232

Subnet16™ RS485

Description		Processor unit	Processor unit
Interface		**Serial RS232 with I/O**	**Subnet16™ RS485 with I/O**
Housing material		Aluminum	Aluminum
Order code		**BIS00ZH**	**BIS00ZK**
Part number		BIS M-620-068-A01-00-ST29	BIS M-620-067-A01-04-ST30*
Assembly		▬	▬
Power supply		12...30 V DC	12...30 V DC
Power supply		≤ 500 mA	≤ 500 mA
Operating temperature		–20...+50 °C	–20...+50 °C
Storage temperature		–20...+70 °C	–20...+70 °C
Degree of protection per IEC 60529		IP 65	IP 65
Connectable antenna		1× HF antenna (external)	1× HF antenna (external)
Control/data inputs		1	1
Control/data outputs		2	2
Connection configuration	HF antenna	RCA female	RCA female
	Interface	integrated in the power connection	integrated in the power connection
	Power	1× M12 male, 8-pin	1× M12 male, 5-pin
	I/O	1× M12 female, 8-pin	1× M12 female, 8-pin
	Service interface		

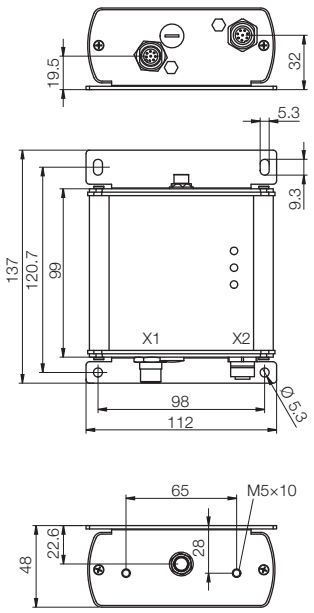
Accessories

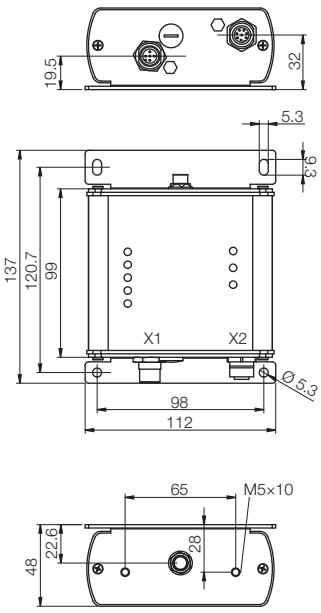
Connection cables	HF antenna	See page 100...106 (BIS00WJ)	See page 100...106 (BIS00WJ)
	Interface		
	Power	See page 335	See page 327
	Service interface		
Accessories included		2 screws	2 screws
Power supply units		See page 352...353	See page 352...353

* See Gateways BIS Z-GW-001-... on page 154...155 processor units for the configuration of multiple processor units

Installation:

▬ Non-flush on steel





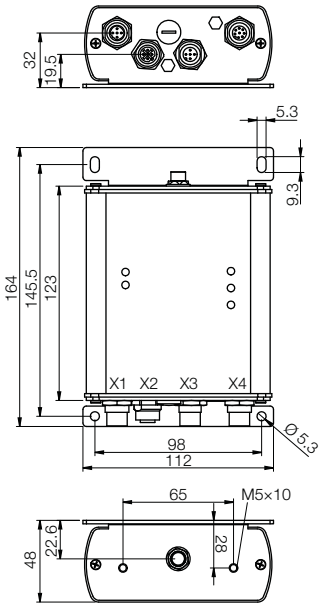
These processor units **must** be used with the following antennas:

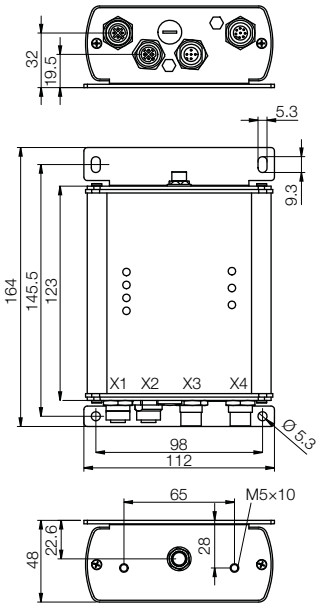
- BISM-370
- BISM-371
- BISM-372
- BISM-373

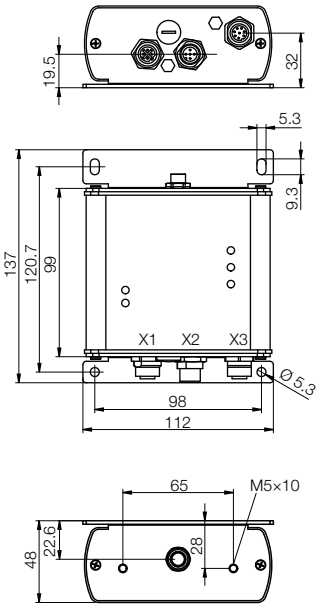
Processor units for HF antennas

Industrial Ethernet

	Processor unit	Processor unit	Processor unit
	Profibus	**Profinet**	**Ethernet/IP and Ethernet TCP/IP with I/O**
	Aluminum	Aluminum	Aluminum
	BIS00ZF	**BIS011P**	**BIS00ZA**
	BIS M-622-070-A01-03-ST33	BIS M-628-075-A01-03-ST34	BIS M-626-069-A01-06-ST32
	▬	▬	▬
	12...30 V DC	12...30 V DC	12...30 V DC
	≤ 500 mA	≤ 500 mA	≤ 500 mA
	–20...+50 °C	–20...+50 °C	–20...+50 °C
	–20...+70 °C	–20...+70 °C	–20...+70 °C
	IP 65	IP 65	IP 65
	1× HF antenna (external)	1× HF antenna (external)	1× HF antenna (external)
			1
			2
	RCA female	RCA female	RCA female
	1× M12 male, 5-pin, B-coded, 1× M12 female, 5-pin, B-coded	2× M12 female, 4-pin, D-coded	1× M12 female, 4-pin, D-coded
	1× M12 male, 8-pin	1× M12 male, 5-pin	1× M12 male, 5-pin
			1× M12 female, 8-pin
	1× M12 female, 8-pin	1× M12 female, 8-pin	
	See page 100...106 (BIS00WJ)	See page 100...106 (BIS00WJ)	See page 100...106 (BIS00WJ)
	See page 320...321	See page 322...323	See page 322...323
	See page 334	See page 334	See page 334
	See page 311 and 335	See page 311 and 335	
	2 screws	2 screws	2 screws
	See page 352...353	See page 352...353	See page 352...353







Description		
Housing material		
Serial RS232	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Control inputs		
Connection configuration	Read/write heads H1...H2	
	Power	
	Serial RS232	

Accessories

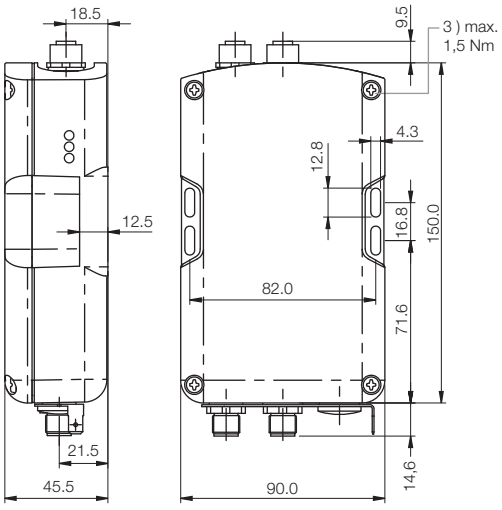
Connection cables	Read/write Heads	
	Power	
	Serial RS232	
Accessories included		
Further accessories		
Power supply units		

Industrial RFID System BIS M at 13.56 MHz (HF)

Processor units Serial RS232

	Processor unit
	ABS
	BIS00N1
	BIS M-6000-007-050-00-ST15
	19.2...28.8 V DC, ≥ 10%
	24 V DC ≤ 400 mA
	0...+60 °C
	0...+60 °C
	IP 65 (with connectors)
	2× BIS M-3_ _-001 (external)
	RS232
	1× optocoupler, insulated
	2× M12 female, 8-pin
	1× M12 male, 5-pin
	1× M12 male, 4-pin, B-coded

	See page 310...311
	See page 337
	See page 319
	Software
	See page 345 (mounting set for mounting rails)
	See page 352...353



Industrial RFID System BIS M at 13.56 MHz (HF)
Processor units Profibus

Due to its small design and flexible interface variants, the **processor unit BIS M-6002** can be used anywhere that the ambient conditions require IP 65. These devices are also ideal for applications involving media that do not corrode PS plastic. They are small, compact, flexible and economical.

The **processor unit BIS M-6022** has a small, robust housing made from die-cast aluminum. This allows it to provide great mechanical stability and high chemical resistance. It is available in various interface variants. This guarantees flexible usability.

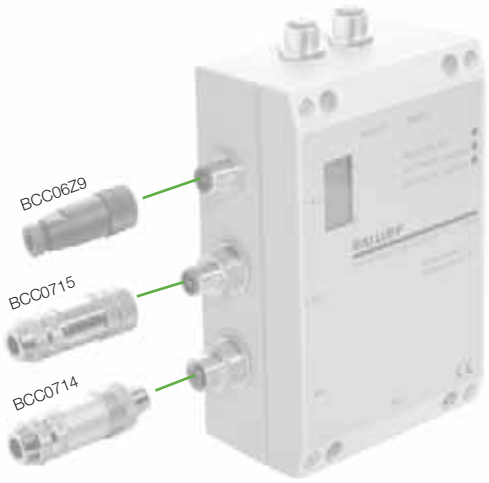
Cost-effective identification –
operate two read/write heads simultaneously!

- Selectable division of the data width on the PROFIBUS-DP, 4...128 bytes
- Free assigning of the data width for each read/write head
- Optimum data speed, the internal cycle time is shorter than the bus activation time
- Service friendly, all parameter data is stored in exchangeable memory
- Bus address selectable with switches
- Accepts all read/write heads

Description		
Housing material		
Profibus	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection configuration	Read/write heads H1...H2	
	Power	
	Profibus IN	
	Profibus OUT	
	Service interface	

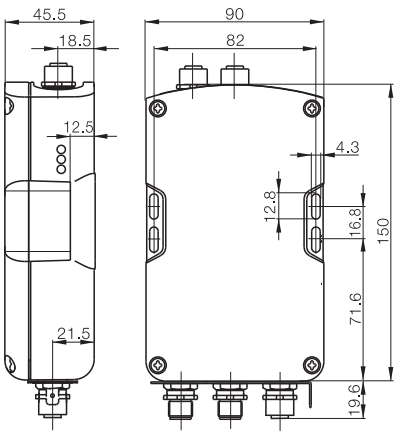
Accessories

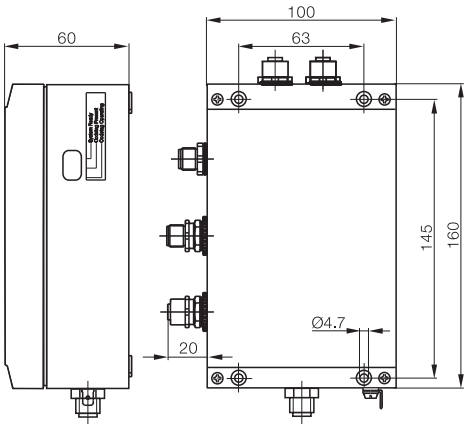
Connection configuration	Read/write Heads	
	Power	
	Profibus	
	Service interface	
Accessories included		
Further accessories		
Power supply units		



In robust metal housing

Processor unit	Processor unit
ABS	Die-cast aluminum, coated
BIS00EW	**BIS00F0**
BIS M-6002-019-050-03-ST11	BIS M-6022-019-050-03-ST14
24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
≤ 400 mA	≤ 400 mA
0...+60 °C	0...+60 °C
0...+60 °C	0...+60 °C
IP 65	IP 65
2× BIS M-3_ _-001 (external)	2× BIS M-3_ _-001 (external)
RS232	RS232
2× M12 female, 8-pin	2× M12 female, 8-pin
1× M12 male, 5-pin	1× M12 male, 5-pin
1× M12 male, 5-pin, B-coded	1× M12 male, 5-pin, B-coded
1× M12 female, 5-pin, B-coded	1× M12 female, 5-pin, B-coded
internal	1× M12 male, 4-pin
See page 310...311	See page 310...311
See page 337	See page 337
See page 320...321	See page 320...321
	See page 319 (BCC00PL)
Configuration software (GSD file)	Configuration software (GSD file)
See page 345 (mounting set for mounting rails)	
See page 352...353	See page 352...353





Screw plug
(please order separately)

Application for	M12 connection
Order code	**BAM0114**
Part number	BKS 12-CS-01

Industrial RFID System BIS M at 13.56 MHz (HF)
Processor units Devicenet

Due to its small design and flexible interface variants, the **processor unit BIS M-6003** can be used anywhere that the ambient conditions require IP 65. These devices are also ideal for applications involving media that do not corrode PS plastic. They are small, compact, flexible and economical.

The **processor unit BIS M-6023** has a small, robust housing made from die-cast aluminum. This allows it to provide great mechanical stability and high chemical resistance. It is available in various interface variants. This guarantees flexible usability.

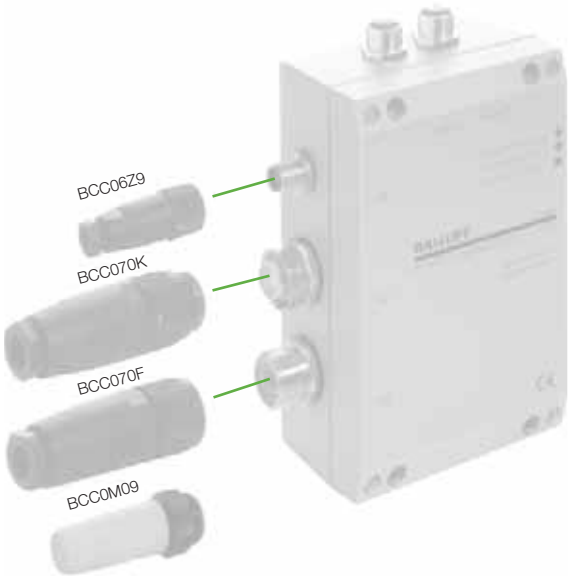
Cost-effective identification –
operate two read/write heads simultaneously!

- User-selectable buffer size, 0...256 bytes
- Service friendly, all parameter data is stored in exchangeable memory
- Accepts all read/write heads

Description		
Housing material		
DeviceNet	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection configuration	Read/write heads H1...H2	
	Power	
	DeviceNet In	
	DeviceNet Out	
	Service interface	

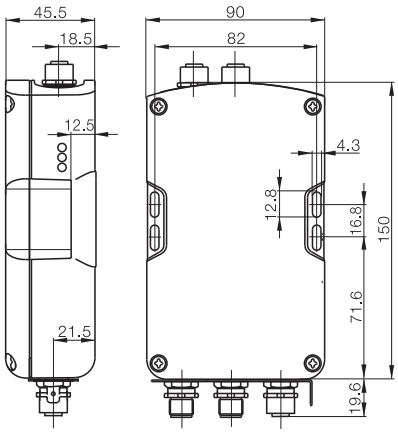
Accessories

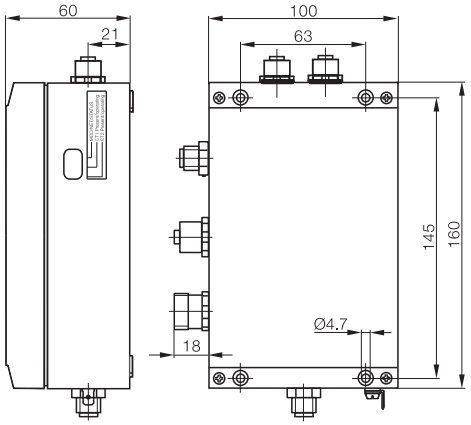
Connection cables	Read/write Heads	
	Power	
	DeviceNet	
	Service interface	
Accessories included		
Further accessories		
Power supply units		



In robust metal housing

Processor unit	Processor unit
ABS	Die-cast aluminum, coated
BIS00EY	**BIS00F1**
BIS M-6003-025-050-03-ST12	BIS M-6023-025-050-03-ST13
24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
≤ 400 mA	≤ 400 mA
0...+60 °C	0...+60 °C
0...+60 °C	0...+60 °C
IP 65	IP 65
2× BIS M-3_ _-001 (external)	2× BIS M-3_ _-001 (external)
RS232	RS232
2× M12 female, 8-pin	2× M12 female, 8-pin
1× M12 male, 5-pin	1× M12 male, 5-pin
1× M12 male, 5-pin	1× 7/8" male, 5-pin
1× M12 female, 5-pin	1× 7/8" female, 5-pin
internal	1× M12 male, 4-pin
See page 310...311	See page 310...311
See page 337	See page 337
See page 327	See page 324
	See page 319 (BCC00PL)
Configuration software (EDS file)	Configuration software (EDS file)
See page 345 (mounting set for mounting rails)	
See page 352...353	See page 352...353





Industrial RFID System BIS M at 13.56 MHz (HF)

Processor units Ethernet/IP

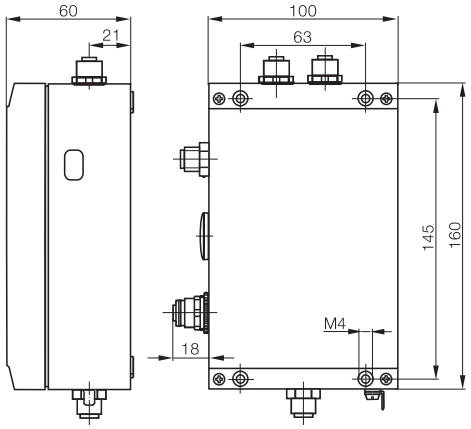
In robust metal housing

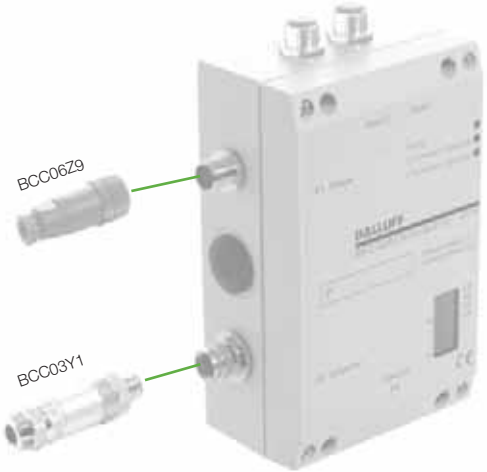
Description		Processor unit
Housing material		Die-cast aluminum, coated
Ethernet/IP	**Order code**	**BIS00F2**
	Part number	BIS M-6026-034-050-06-ST19
Power supply, ripple		24 V DC ±20%, ≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS M-3_ _-001 (external)
Service interface		RS232
Connection configuration	Read/write heads H1...H2	2× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	Ethernet/IP	1× M12 female, 4-pin, D-coded
	Service interface	1× M12 male, 4-pin

Accessories

Connection cables	Read/write Heads	See page 310...311
	Power	See page 337
	Ethernet/IP	See page 322...323
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software (EDS file)
Power supply units		See page 352...353

- Cost-effective identification – operate two read/write heads simultaneously!
- Rugged processor for EtherNet/IP networks





Industrial RFID System BIS M at 13.56 MHz (HF)

Processor unit Ethernet TCP/IP

Description		Processor unit
Housing material		Anodized aluminum
Ethernet TCP/IP	**Order code**	**BIS00EP**
	Part number	BIS M-407-039-003-06-S115
Power supply, ripple		24 V DC ±20%, ≤ 10%
Power supply		≤ 150 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 67
Read/write head ports		1× BIS M-3_ _-003 (external)
Connection configuration	Read/write head H1	1× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	Ethernet TCP/IP	1× M12 female, 4-pin, D-coded

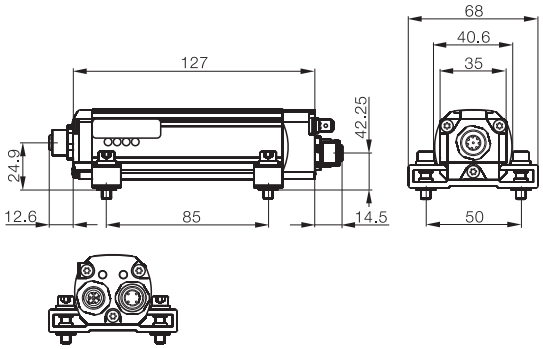
Accessories

Connection cables	Read/write head	See page 310...311
	Power	See page 337
	Ethernet TCP/IP	See page 322...323
Accessories included		Configuration software
Power supply units		See page 352...353

- Small and compact – for one read head
- Connect easily to any PC-based controller

For use only with these read heads

- BIS M-300-**003**-S115
- BIS M-301-**003**-S115
- BIS M-302-**003**-S115
- BIS M-304-**003**-S115
- BIS M-351-**003**-S115



Ethernet adapter cable
(please order separately)

Description	M12, D-coded on RJ45 coupling
Order code	**BCC0C5J**
Part number	BIS C-526-PU-00,6
Additional information	See page 323

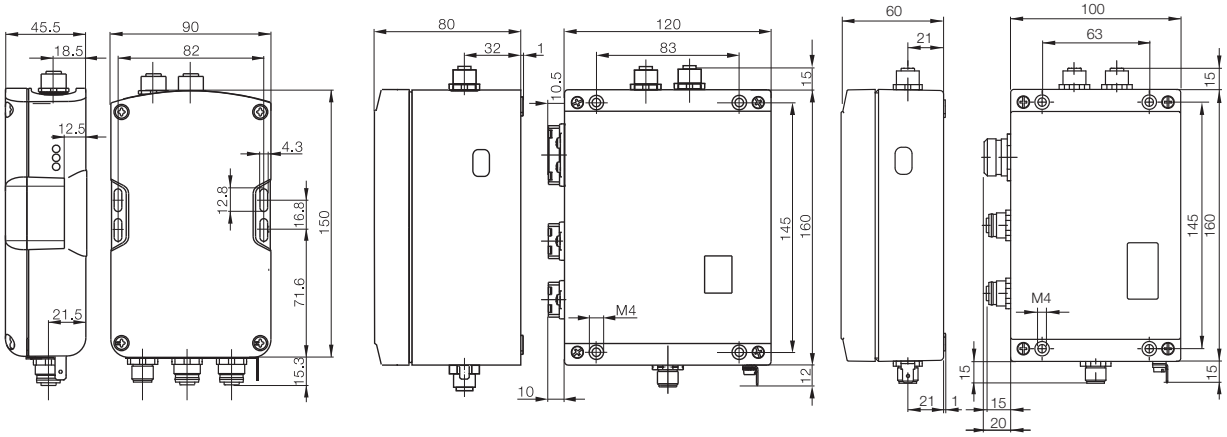
Description		
Housing material		
Profinet RT with	**Order code**	
IRT-capable 2-port switch	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection configuration	Read/write heads H1...H2	
	Power	
	Profinet In	
	Profinet Out	
	Service interface	

Accessories

Connection cables	Read/write Heads	
	Power	
	Profinet	
	Service interface	
Accessories included		
Further accessories		
Power supply units		

In robust metal housing

Processor unit	Processor unit	Processor unit
ABS	Die-cast aluminum, coated	Die-cast aluminum, coated
BIS00L7	**BIS00KZ**	**BIS00TW**
BIS M-6008-048-050-06-ST23	BIS M-6028-048-050-06-ST22	BIS M-6028-048-050-06-ST28
24 V DC ±10%, ≤ 10%	24 V DC ±10%, ≤ 10%	24 V DC ±10%, ≤ 10%
≤ 400 mA	≤ 400 mA	≤ 400 mA
0...+60 °C	0...+60 °C	0...+60 °C
0...+60 °C	0...+60 °C	0...+60 °C
IP 65	IP 65	IP 65
2× BIS M-3_ _-001 (external)	2× BIS M-3_ _-001 (external)	2× BIS M-3_ _-001 (external)
RS232 internal	RS232	RS232
2× M12 female, 8-pin	2× M12 female, 8-pin	2× M12 female, 8-pin
1× M12 male, 5-pin	1× AIDA push-pull male, 5-pin	1× 7/8" male, 5-pin
1× M12 female, 4-pin, D-coded	1× AIDA push-pull male, 8-pin	1× M12 female, 5-pin, D-coded
1× M12 female, 4-pin, D-coded	1× AIDA push-pull male, 8-pin	1× M12 female, 5-pin, D-coded
	1× M12 male, 4-pin	1× M12 male, 4-pin
See page 310...311	See page 310...311	See page 310...311
See page 337	Cable selection on request	See page 338...339
See page 322...323	Cable selection on request	See page 322...323
See page 319 (BCC00PL)	See page 319 (BCC00PL)	See page 319 (BCC00PL)
Configuration software (GSDML file)	Configuration software (GSDML file)	Configuration software (GSDML file)
See page 345 (mounting set for mounting rails)		
See page 352...353	See page 352...353	See page 352...353



The robust version for connection to ProfiNet with AIDA standard (Automation Initiative of German Domestic Automobile Manufacturers)

Industrial RFID System BIS M at 13.56 MHz (HF)
Gateways

The gateway is used for point-to-point or bus connection. It is connected directly using the serial interface of a host computer (RS232) or a suitable bus interface.

The Subnet16™ bus architecture supports a subnet of up to sixteen nodes using a RS485 interface. Can only be used with read/write heads with integrated processor unit (starting on page 108) and HF antenna (starting on page 100):

- BIS M-620-067-A01-04-ST30
- BIS M-410-067-001-04-S92
- BIS M-411-067-001-04-S92

Dimension		
Housing material		
RS232	**Order code**	
	Part number	
Ethernet/IP, Modbus TCP	**Order code**	
	Part number	
Profibus	**Order code**	
	Part number	
Ethernet TCP/IP	**Order code**	
	Part number	
Power supply, ripple		
Operating temperature		
Degree of protection per IEC 60529		
Service interface		
Connection configuration	RS232	
	Ethernet	
	Profibus	
	Subnet 16	
	Service interface	

Accessories

Connection cables	Bus interface	
	Subnet 16	
	Service interface	

For assembly, observe the general information and installation notices on page 158.

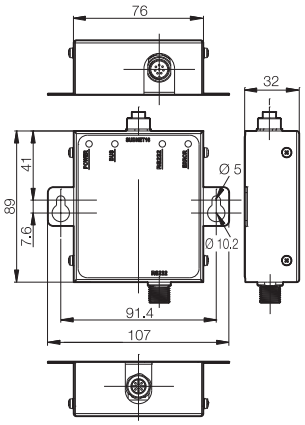
Subnet16™

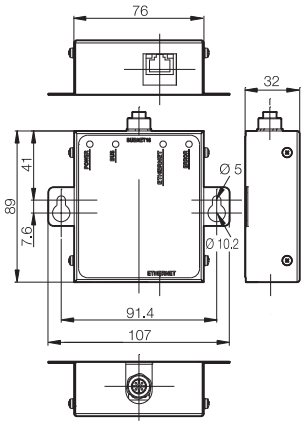
Subnet16™

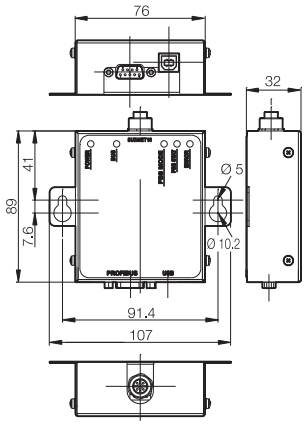
Subnet16™

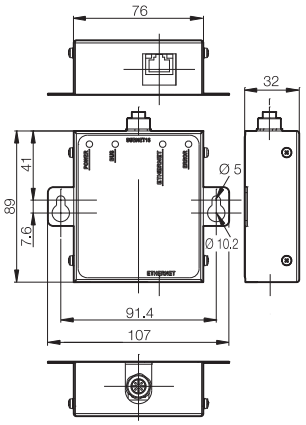
Subnet16™

	89×76×32 mm	**89×76×32 mm**	**89×76×32 mm**	**89×76×32 mm**
	Aluminum	Aluminum	Aluminum	Aluminum
	BAE00JL			
	BIS Z-GW-001-RS232			
		BAE00JJ		
		BIS Z-GW-001-IND		
			BAE00JK	
			BIS Z-GW-001-PBS	
				BAE00JM
				BIS Z-GW-001-TCP
	10...30 V DC via network	10...30 V DC via network	10...30 V DC via network	10...30 V DC via network
	0...+50 °C	0...+50 °C	0...+50 °C	0...+50 °C
	IP 30	IP 30	IP 30	IP 30
	No	No	USB	No
	1× M12 male, 8-pin			
		1× RJ45 male		1× RJ45 male
			1× female D-Sub plug, 9-pin	
	1× M12 female, 5-pin	1× M12 female, 5-pin	1× M12 female, 5-pin	1× M12 female, 5-pin
			1× USB, Type B	
	See page 335	See page 322...323	See page 320...321	See page 322...323
	See page 327	See page 327	See page 327	See page 327
	See page 311 and 335	See page 311 and 335	See page 311 and 335	See page 311 and 335









Industrial RFID System BIS M at 13.56 MHz (HF)
Handheld devices

For a high level of convenience
Allows portable writing and reading of BIS M data carriers.
Easy operation thanks to
- Touch screen with large Windows CE®color display
- Preinstalled Balluff software and keyboard or stylus

Handheld devices are ideal in poor lighting and harsh environments. Data is transmitted over optional Wi-Fi, Bluetooth or a wired USB connection. The handheld device can be expanded with modules.

PSION-based handheld device
- Windows CE®
- Touch screen
- Delivered with a software development kit (SDK)
- Includes a charger
- Bluetooth

Optional
- 1D/2D barcode reader
- Docking station
- Pistol grip for ergonomic work

Customer-specific software on request:
tecsupport@balluff.com

Design		
Function		
Housing material		
Standard	**Order code**	
	Part number	
Standard + Wi-Fi	**Order code**	
	Part number	
Standard + 1D code reader	**Order code**	
	Part number	
Standard + 2D code reader	**Order code**	
	Part number	
Standard + 1D code reader + Wi-Fi	**Order code**	
	Part number	
Standard + 2D code reader + Wi-Fi	**Order code**	
	Part number	
Keyboard		
Display		
Power supply		
Capacity		
Interface		
Operating temperature		
Degree of protection per IEC 60529		
Read/write head option		
Appropriate data carrier		

Accessories

Accessories included	
Pistol grip	
Docking station	
Power supply	
Carrying case	

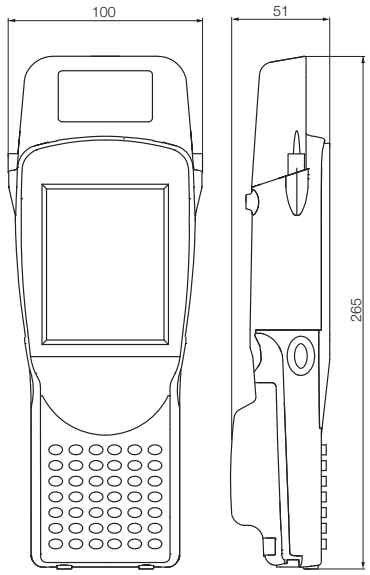
Antenna type:
Rod
Round

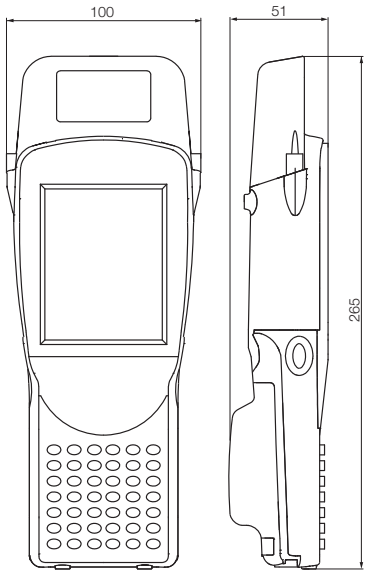
Accessories
(please order separately)

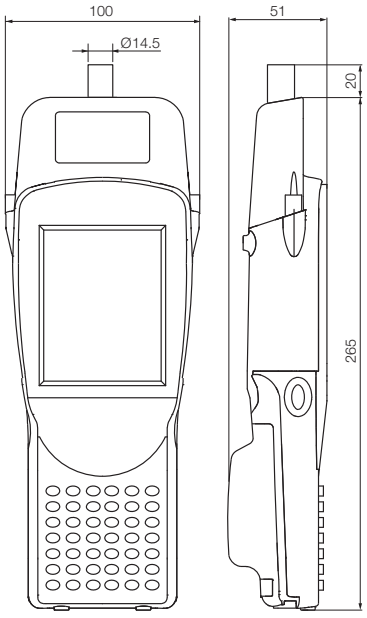



Description	Pistol grip	Docking station	Power supply	Carrying case
Order code	**BAM0281**	**BAM0282**	**BAE00TA**	**BAM021R**
Part number	BAM MD-XA-002-0001	BAM MD-XA-001-0001	BAE PS-XA-1W-05-030-702-CX-01	BAM PC-XA-016-001-A

All-purpose	Rod	Tool ID
Reading/writing	Reading/writing	Reading/writing
ABS	ABS	ABS
BAE00A1	**BAE00CM**	**BAE00CA**
BIS M-870-1-008-X-000	BIS M-871-1-008-X-000	BIS M-873-1-008-X-000
BAE00M1		**BAE00F0**
BIS M-870-1-008-X-001	BIS M-871-1-008-X-001	BIS M-873-1-008-X-001
		BAE00T2
BIS M-870-1-008-X-002	BIS M-871-1-008-X-002	BIS M-873-1-008-X-002
		BAE00H9
BIS M-870-1-008-X-003	BIS M-871-1-008-X-003	BIS M-873-1-008-X-003
BAE00CC		**BAE00E9**
BIS M-870-1-008-X-004	BIS M-871-1-008-X-004	BIS M-873-1-008-X-004
BAE00L3		**BAE00KL**
BIS M-870-1-008-X-005	BIS M-871-1-008-X-005	BIS M-873-1-008-X-005
52 keys, alphanumeric	52 keys, alphanumeric	52 keys, alphanumeric
TFT touchscreen display	TFT touchscreen display	TFT touchscreen display
3.7 V rechargeable battery pack	3.7 V rechargeable battery pack	3.7 V rechargeable battery pack
4000 mA/h	4000 mA/h	4000 mA/h
RS232/Balluff Dialog	RS232/Balluff Dialog	RS232/Balluff Dialog
–10...+50 °C	–10...+50 °C	–10...+50 °C
IP 65	IP 65	IP 65
Integrated	Integrated	Integrated
For BIS M data carrier with round coil Ø ≥ 35 mm	For BIS M data carrier with round coil Ø ≥ 35 mm	For BIS M data carrier with round coil Ø ≥ 35 mm
Charger power supply and stylus	Charger power supply and stylus	Charger power supply and stylus
See below	See below	See below
See below	See below	See below
See below	See below	See below
See below	See below	See below







Assembly

Flush in steel
The sensing surface can be mounted on the surface of steel so that it is even with adjacent areas. See the product data sheet for more information.

Non-flush on steel
The sensing surface must not be in contact or surrounded by steel.
See the product data sheet for more information about the clear zone.

Non-metal
The entire clear zone must remain free of any type of metal.
See the product data sheet for more information about the clear zone.

Please contact TecSupport for additional metal mounting options.

Minimum distance between two data carriers

	BIS M-122-01/L, BIS M-122-02/L	BIS M-110-02/L	BIS M-101-01/A, BIS M-111-02/A	BIS M-102-01/L, BIS M-112-02/L	BIS M-105-01/A, BIS M-105-02/A	BIS M-108-02/A	BIS M-120-01/L	BIS M-151-02/A, BIS M-150-02/A
BIS M-300		> 100	> 100	> 150	> 100	> 100		
BIS M-301		> 200	> 200	> 200	> 100	> 200	> 250	
BIS M-302, BIS VM-307	> 100	> 100	> 100	> 100	> 100	> 100		
BIS M-304	> 100	> 100	> 100	> 100	> 100	> 100		
BIS M-400-007-001-00-S115		> 100	> 100	> 150	> 100	> 100		
BIS M-401-007-001-00-S115		> 200	> 200	> 200	> 100	> 200	> 250	
BIS M-400-007-002-00-S115	> 100	> 100	> 100	> 100	> 100	> 100		
BIS M-351, BIS VM-351								> 250
BIS M-451-007-001-00-S115								> 250

Dimensions in mm

Minimum distance between two read/write heads

BIS M-300	200
BIS M-301	600
BIS M-351/BIS VM-351	600
BIS M-302/BIS VM-307	100
BIS M-304	100
BIS M-400-007-001-00-S115	200
BIS M-401-007-001-00-S115	600
BIS M-451-007-001-00-S115	600
BIS M-400-007-002-00-S115	100
BIS M-410-007-002-00-S115	200
BIS M-411-007-002-00-S115	300
BIS VM-305-001-S4	100
BIS VM-341-401-S4	600
BIS VM-343-401-S4	50
BIS VM-344-401-S4	200
BIS VM-345-401-S4	200
BIS VM-346-401-S4	50
BIS VM-348-401-S4	50
BIS VM-352-001-S4	100
BIS VM-355-401-S4	200

Dimensions in mm

Clear zones for data carrier

To reach the specified read/write distance, a data carrier in a metallic environment must be mounted within a certain metal-free clear zone. These values can be found on the corresponding product pages.

Clear zones for read/write heads

	Fig.	Dimension A	Dimension B	Dimension C	Dimension D
BIS M-300-001-S115	3	60		30	
BIS M-300-003-S115	3	60		30	
BIS M-301-001-S115	4	82	85		70
BIS M-301-003-S115	4	82	85		70
BIS M-302-001-S115	3	21		30	
BIS M-302-003-S115	3	21		30	
BIS M-305-001-S115	5	25	25	10	
BIS M-307-001-S115	3	41		12	
BIS M-340-001-S115	5	200	200	60	
BIS M-341-001-S115	4	82	85		70
BIS M-341-003-S115	4	82	85		70
BIS M-350-001-S115	5	200	200	60	
BIS M-351-001-S115	5	247	247	40	
BIS M-351-003-S115	5	247	247	40	
BIS M-352-001-S115	5	25	25	10	
BIS M-370-000-A02	4	150	150		150
BIS M-371-000-A01	4	100	100		150
BIS M-372-000-A01	4	150	150		300
BIS M-373-000-A01	4	200	200		400
BIS M-400-007-001-00-S115	3	60		30	
BIS M-400-007-002-00-S115	3	67		30	
BIS M-400-045-001-07-S4	3	60		30	
BIS M-400-045-002-07-S4	3	67		30	
BIS M-400-072-001-07-S4	3	60		30	
BIS M-400-072-002-07-S4	3	67		30	
BIS M-401-007-001-00-S115	4	72	72		30
BIS M-401-045-001-07-S4	4	72	72		30
BIS M-401-072-001-07-S4	4	72	72		30
BIS M-402-007-002-00-S115	3	42		10	
BIS M-402-007-004-00-S115	5	25	25	10	
BIS M-410-067-001-04-S92	4	50	50		50
BIS M-410-068-001-00-S115	4	50	50		50
BIS M-410-068-001-02-S115	4	50	50		50
BIS M-410-068-001-09-S72	4	50	50		50
BIS M-411-067-001-04-S92	5	60	60	24	
BIS M-411-068-001-00-S115	5	60	60	24	
BIS M-411-068-001-02-S115	5	60	60	24	
BIS M-411-068-001-09-S72	5	60	60	24	
BIS M-440-039-001-06-ST2	5	200	200	60	
BIS M-450-039-001-06-ST2	5	200	200	60	
BIS M-451-007-001-00-S115	4	247	247		60
BIS M-451-045-001-07-S4	4	247	247		60
BIS M-451-072-001-07-S4	4	247	247		60
BIS VM-344-401-S4	3	60		30	
BIS VM-301-001-S4	4	72	72		30
BIS VM-305-001-S4	5	25	25	10	
BIS VM-307-001-S4	3	43		12	
BIS VM-341-401-S4	5	72	72	40	
BIS VM-351-401-S4	5	72	72	40	
BIS VM-352-001-S4	5	25	25	10	
BIS VM-355-401-S4	5	50	50	15	
BIS VM-348-401-S4	3	1		5	
BIS VM-346-401-S4	3	1		12,5	
BIS VM-345-401-S4	5	50	50	15	
BIS VM-343-401-S4	3	0		0	

Dimensions in mm

For figures, see page 160

Clear zones for read/write heads (continued)

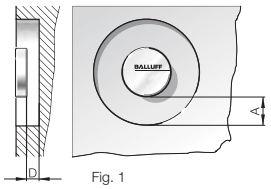


Fig. 1

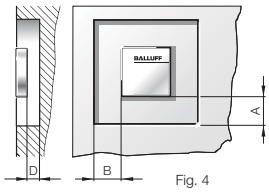


Fig. 4

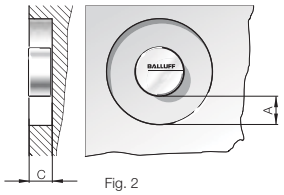


Fig. 2

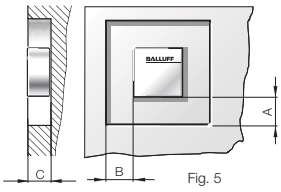


Fig. 5

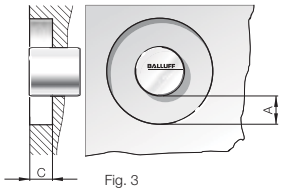


Fig. 3

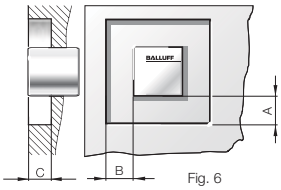


Fig. 6

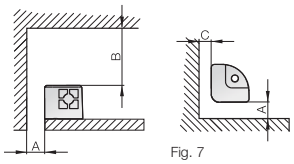
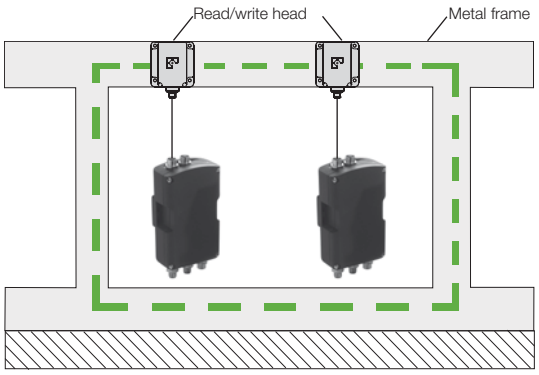


Fig. 7

Mounting the read/write heads on metal frames

If the read/write heads are mounted so that they are joined through an enclosed metal frame, mutual interference may result (conductor loop). This may reduce the read/write distances. The smaller the read/write head, the less the interference. This may result in a reduction of the maximum distance by 80%. In such a case you should test the actual effective read distance.



Mechanical Strength

Data carriers and read/write heads BIS M-1_ _, BIS M-3_ _	
Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz as per IEC 60068-2-6

Processor units BIS M-6_ _ _	
Shock load	15 g/11 ms per EN 60068-2-27 and 15 g/6 ms per EN 60068-2-29
Vibration	5 g, 10...150 Hz per EN 60068-2-6

Memory access

Our processor units can read or write each individual byte in the data carrier. But since the data carrier is divided into 16 byte blocks, the actual reading and writing is done by blocks. Our electronic processor unit converts this accordingly. To calculate the read/write times, the block read or write time must, therefore, always be estimated.

Data carrier detection

20 ms are required to recognize a data carrier.

Read/write Times

Read times BIS M-1_ _-0_ and BIS M-1_ _-20

EEPROM – data carrier with 16 byte blocks	
Byte	Read time
0 to 15	20 ms
for each additional started 16 bytes add additional	10 ms

FRAM – data carrier with 16 byte blocks	
Byte	Read time
0 to 15	30 ms
for each additional started 16 bytes add additional	15 ms

Read times for BIS M-1_ _-1_ and BIS VM-3_ _-401-S4

FRAM – data carrier with 64 byte blocks	
Byte	Read time
0 to 63	14 ms
For each additional started 64 bytes add additional	6 ms

Write times BIS M-1_ _-0_ and BIS M-1_ _-20

EEPROM – data carrier with 16 byte blocks	
Byte	Write time
0 to 15	40 ms
for each additional started 16 bytes add additional	30 ms

FRAM – data carrier with 16 byte blocks	
Byte	Write time
0 to 15	60 ms
for each additional started 16 bytes add additional	40 ms

Write times for BIS M-1_ _-1_ and BIS VM-3_ _-401-S4

FRAM – data carrier with 64 byte blocks	
Byte	Write time
0 to 63	30 ms
For each additional started 64 bytes add additional	15 ms

Example:

Read and write 183 bytes starting at address 42
Address 42 is in Block 3 (42/16)
Address 224 is in Block 14 (224/16)

Therefore a total of 12 blocks will be processed, where the first block always has a slightly longer read or write time.

Read time = 20 ms + 11 × 10 ms = 130 ms
Write time = 40 ms + 11 × 30 ms = 370 ms

Caution! Fluctuations in the ms range are possible.
Electrical noise effects may increase the read/write time.

Write/read cycles

Data carriers	Memory type	Write cycles	Read cycles	Data retention time
112 bytes	EEPROM	100000	Unlimited	10 years
160 bytes	EEPROM	100000	Unlimited	10 years
736 bytes	EEPROM	100000	Unlimited	10 years
752 bytes	EEPROM	100000	Unlimited	10 years
992 bytes	EEPROM	100000	Unlimited	10 years
2.000 Byte	FRAM	Unlimited	Unlimited	10 years
8,192 bytes	FRAM	Unlimited	Unlimited	10 years
32,768 bytes	FRAM	Unlimited	Unlimited	10 years
65,536 bytes	FRAM	Unlimited	Unlimited	10 years
131,072 bytes	FRAM	Unlimited	Unlimited	10 years

Maximum speed

To calculate the permitted speed in which the data carrier and head move relative to each other, the static distance values are used (see section BIS M).

The permissible speed is:

$$V_{max.\ perm.} = \frac{Path}{Time} = \frac{2 \times |offset\ value|}{Processing\ time}$$

The offset value is dependent on the read/write distance actually used in the system.

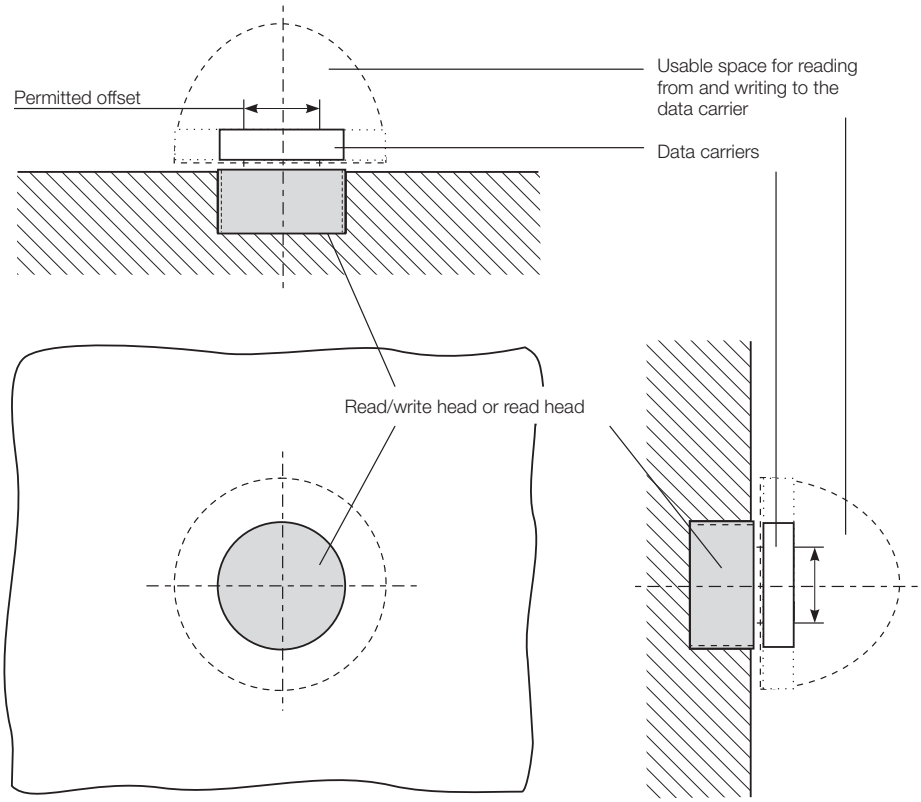
$$Processing\ time = \text{Data carrier response time} + \text{Read/write time of first block to be read} + n^1 \times \text{Read/write time for additional started blocks}$$

n^1 = number of started blocks

Spatial arrangement of read/write head or read head and data carrier

The key to reliable data exchange between the read/write head or read head and the data carrier is maintaining sufficient dwell time of the data carrier within a specified spatial distance from the read/write head or read head.
The two sketches illustrate this relationship. For non-directional operation, see the sketch on page 164, for directional write/read heads, see the sketch on page 165.

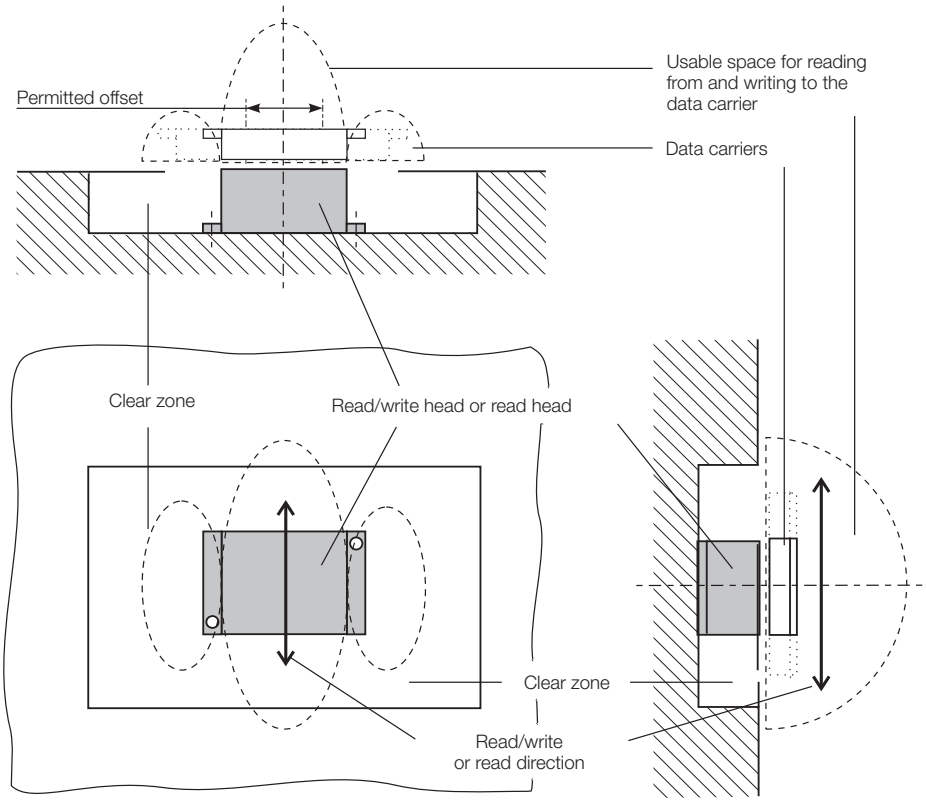
For a **static read/write or read operation**, the data carrier comes to a complete stop in front of the read/write or read head; This enables a larger distance between the two.



Spatial arrangement of read/write heads or read head and data carrier for non-directional read/write heads or read heads and **non-flush mounting** (round antenna).

Read/write Heads and Data Carriers Working in Combination

For **dynamic operation** the data carrier is read or programmed on the fly as it moves past the read/write head or read head. The shorter distance is necessary in order to achieve as large a read/write path or read path as possible.
Each read/write head or read head has certain data carriers which can be used with it (the pairing is based on physical size and antenna field configuration).
The associated specifications for distance and permissible offset, the distance and relative speed between the read/write head or read head and the data carrier are listed in the respective chapter.



Spatial arrangement of read/write heads or read head and data carrier for directional read/write heads or read heads and **non-flush mounting** (rod antenna).

Industrial RFID System BIS C

RFID with 433/70 kHz (LF)

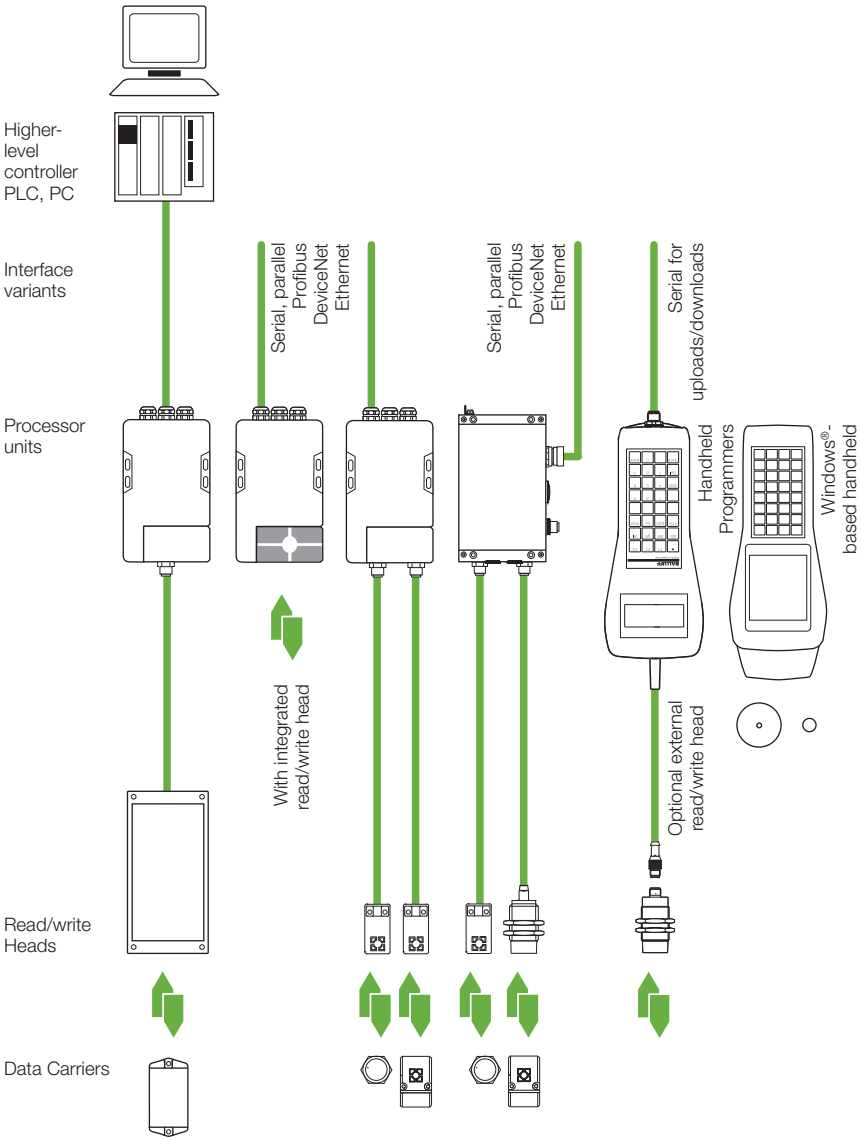
The versatile BIS C features an exceptionally wide range of applications. It offers particularly high performance and flexibility in reliable tool identification in machining centers with heavy contamination from coolant and cooling lubricant and for sterilization at high temperatures in the autoclave.

Contents

Product topology

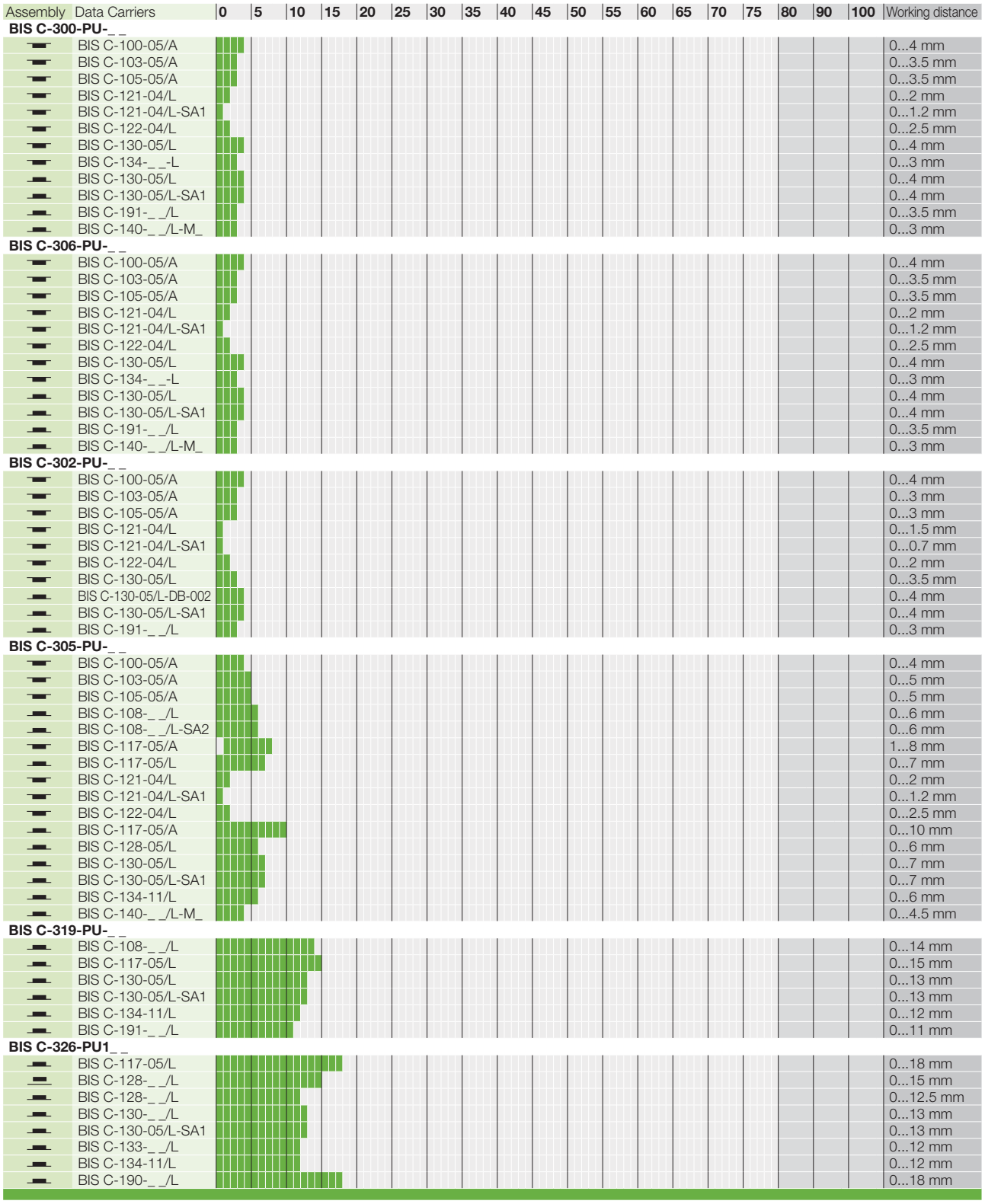
BIS C works in the low-frequency range (LF) and uses two frequencies: 433 kHz for writing and 70 kHz for reading. The system is used with passive data carriers and is designed for ranges up to 100 mm. BIS C delivers outstanding performance for asset tracking and production control such as when palletizing or recording on the workpiece or for tracking for quality management. Therefore, the system is exceptionally well suited for tool identification. BIS C works with flush mounting, even directly into metal, and provides reusable data carriers.

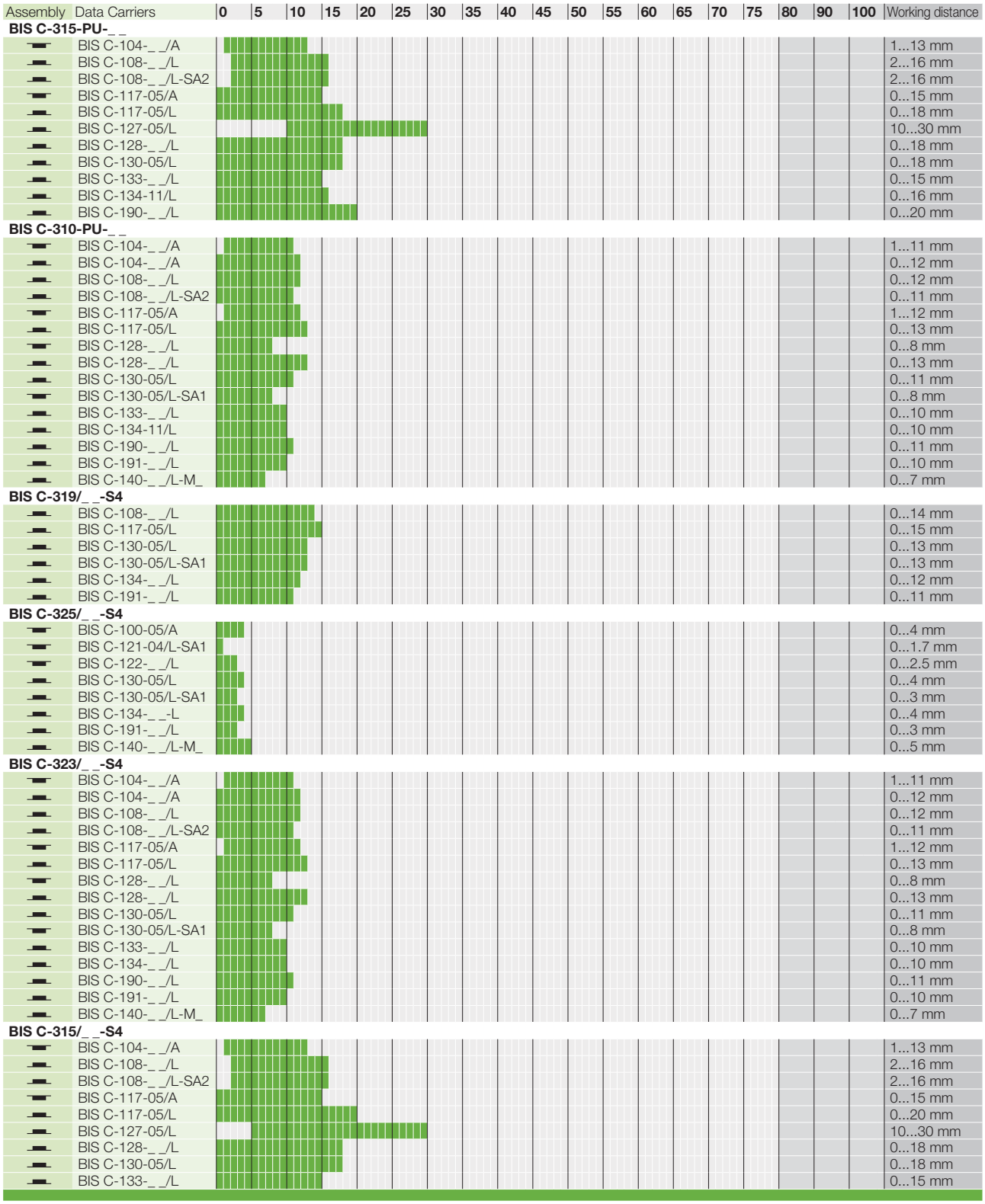
The versatile BIS C is ideal for a wide range of applications. Select the most suitable BIS C system for your application from the table.



Data Carriers		Page	Tools		Production				Intralogistics						Access and Object Control					Reading/writing	Dynamic or static	Installation in metal	For harsh environments	Long distances (> 16 mm)	EEPROM	FRAM
			Data storage on machine tools		Tool and die management		Assembly conveying systems		Closed-loop logistics		Storage and retrieval equipment		Intelligent vehicles		Object detection		Access control										
			Tool holder collar	Retention knob	On tool	Dies	Pallets	On part	Retainer/Workpiece carrier	Pallets	Retainer/Workpiece carrier	Workpiece sliders	Guiding, steering	Identification	In component	On component	Secure access control	Process access	Component ID							
BIS0002	BIS C-100-05/A	175	■		■			■	■						■					■		■	■		■	
BIS0004	BIS C-103-05/A	174	■	■		■	■	■	■	■										■	■	■	■		■	
BIS0006	BIS C-104-11/A	176					■			■	■	■								■	■	■	■		■	
BIS0007	BIS C-104-32/A	176					■			■	■	■								■	■	■	■			■
BIS0009	BIS C-105-05/A	174	■	■	■	■		■			■					■				■		■	■		■	
BIS000C	BIS C-108-05/L	176				■	■			■	■		■			■				■	■		■		■	
BIS000H	BIS C-108-11/L	176				■	■			■	■		■			■				■	■				■	
BIS000K	BIS C-108-32/L	176				■	■			■	■		■			■				■	■					■
BIS000F	BIS C-108-05/L-SA2	179					■		■	■										■	■		■		■	
BIS000J	BIS C-108-11/L-SA2	179					■		■	■										■	■		■		■	
BIS000M	BIS C-117-05/A	175				■	■			■		■		■						■	■	■	■		■	
BIS000N	BIS C-117-05/L	175				■	■			■		■		■						■	■				■	
BIS000R	BIS C-117-11/L	175				■	■			■		■		■						■	■				■	
BIS000T	BIS C-121-04/L	174	■		■			■									■		■	■		■	■		■	
BIS000W	BIS C-121-04/L-SA1	178					■			■	■								■	■					■	
BIS0011	BIS C-122-04/L	174	■	■	■			■									■		■	■		■	■		■	
BIS0015	BIS C-122-11/L	174	■	■	■			■									■		■	■		■	■		■	
BIS0017	BIS C-127-05/L	177										■	■							■	■		■	■	■	
BIS0019	BIS C-128-05/L	175				■	■	■	■	■						■				■	■		■		■	
BIS001C	BIS C-128-11/L	175				■	■	■	■	■						■				■	■		■		■	
BIS001E	BIS C-130-05/L	175			■		■		■	■	■								■	■	■		■		■	
BIS001H	BIS C-130-05/L-SA1	178			■		■		■	■						■			■	■	■		■		■	
BIS001Z	BIS C-133-05/L	179					■		■	■										■	■		■		■	
	BIS C-133-11/L	179					■		■	■										■	■		■		■	
BIS0020	BIS C-134-05/L-H120	179				■	■		■	■										■	■		■		■	
BIS0021	BIS C-134-11/L	179				■	■		■	■										■	■		■		■	
BIS00J4	BIS C-140-05/L-M6	179			■	■		■	■		■								■	■	■	■	■		■	
BIS00J2	BIS C-140-05/L-M8	179			■	■		■	■		■								■	■	■	■	■		■	
BIS00J3	BIS C-140-11/L-M6	179			■	■		■	■		■								■	■	■	■	■		■	
BIS00J1	BIS C-140-11/L-M8	179			■	■		■	■		■								■	■	■	■	■		■	
BIS0028	BIS C-150-05/A	177					■			■		■	■							■	■		■	■	■	
BIS002A	BIS C-150-11/A	177					■			■		■	■							■	■		■	■	■	
BIS002E	BIS C-150-32/A	177					■			■		■	■							■	■		■	■		■
BIS002K	BIS C-190-05/L	177					■		■	■	■					■				■					■	
BIS002M	BIS C-190-11/L	177					■		■	■	■					■				■					■	
BIS002N	BIS C-190-32/L	177					■		■	■	■					■				■						■
BIS002P	BIS C-191-05/L	177					■		■	■	■					■				■					■	
BIS002R	BIS C-191-11/L	177					■		■	■	■					■				■					■	

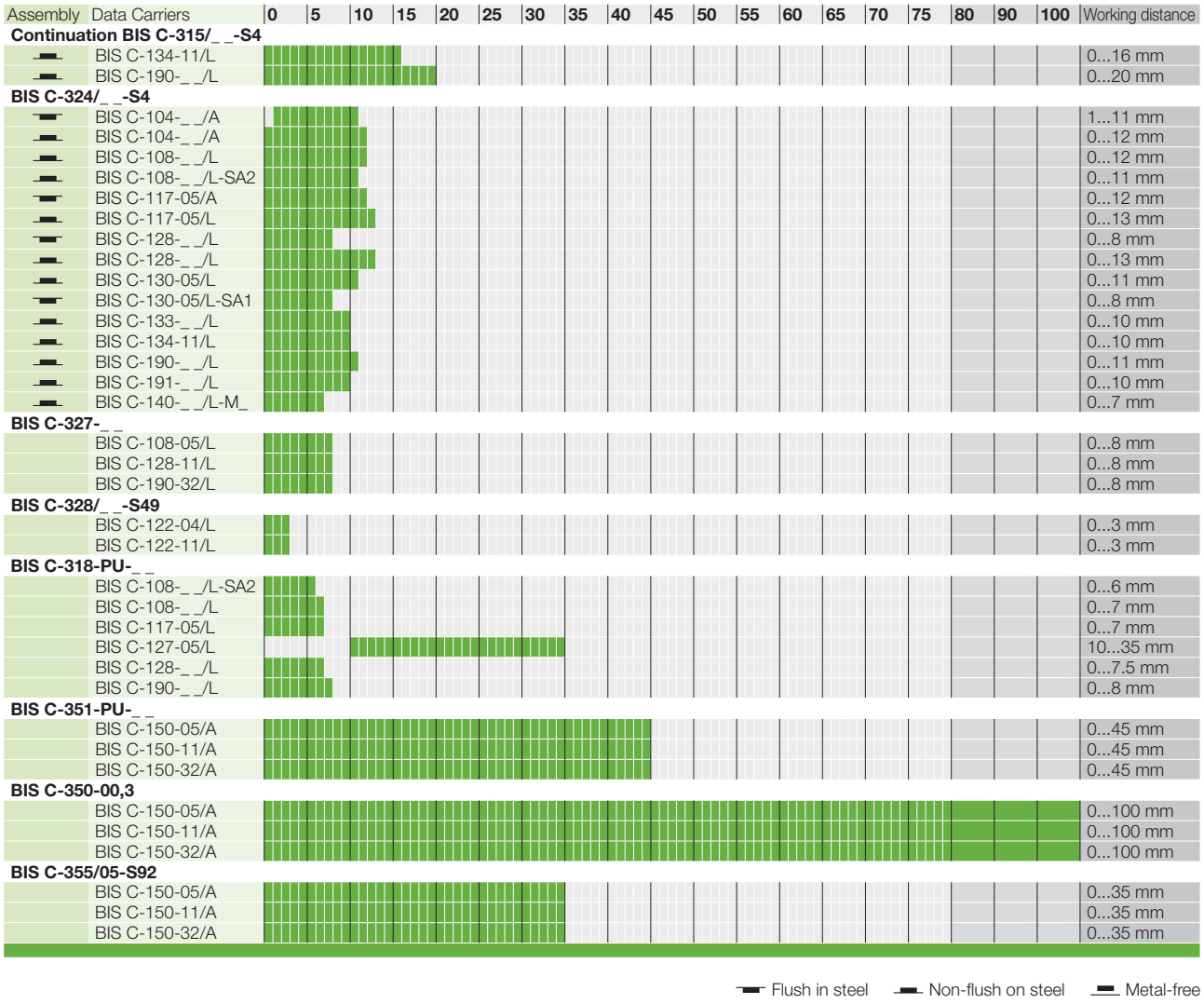
Overview of read/write distances





Industrial RFID System BIS C with 433/70 kHz (LF)

Overview of read/write distances



Industrial RFID System BIS C with 433/70 kHz (LF)

Overview of read/write distances

Dimension		**Ø 9×4.5 mm**	**Ø 10×4.5 mm**	**Ø 12×8 mm**	**Ø 12×6 mm**
Housing material		EP	EP	EP	EP
Weight		0.5 g	0.7 g	1.8 g	1.2 g
BIS C programmable					
511 bytes	**Order code**	**BIS000T**	**BIS0011**		
	Part number	BIS C-121-04/L	BIS C-122-04/L		
1023 bytes	**Order code**			**BIS0004**	**BIS0009**
	Part number			BIS C-103-05/A	BIS C-105-05/A
2047 bytes	**Order code**		**BIS0015**		
	Part number		BIS C-122-11/L		
Operating temperature		0...+70 °C	0...+70 °C	–30...+70 °C	–30...+70 °C
Storage temperature		–30...+85 °C*	–30...+85 °C*	–30...+85 °C*	–30...+85 °C*
Degree of protection per IEC 60529		IP 68	IP 68	IP 68	IP 68

Suitable read/write head with max. read/write working distance

Assembly							
BIS C-300	2 mm	3 mm	2.5 mm	3 mm	3.5 mm	4 mm	3.5 mm	4 mm
BIS C-302	1.5 mm	2.5 mm	2 mm	2.5 mm	3 mm	3.5 mm	3 mm	3.5 mm
BIS C-305	2 mm	3 mm	2.5 mm	3 mm	5 mm	6 mm	5 mm	6 mm
BIS C-306	2 mm	3 mm	2.5 mm	3 mm	3.5 mm	4 mm	3.5 mm	4 mm
BIS C-310								
BIS C-315								
BIS C-318								
BIS C-319								
BIS C-323								
BIS C-324								
BIS C-325	1.7 mm	3 mm	2.5 mm	3 mm	4.5 mm	5 mm	4.5 mm	5 mm
BIS C-326								
BIS C-327								
BIS C-328				3 mm				

For assembly, observe the general information and installation notices on page 230.

* Also available for up to+ 120 °C on request for specific applications

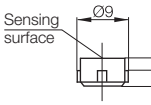
Installation:

Flush in steel

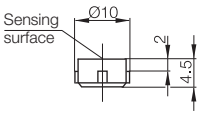
Non-metal

Antenna type:

Round

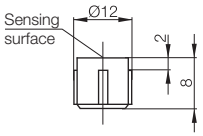


Glue into hole
Ø 9 H11

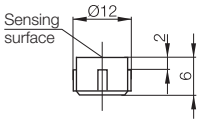


Glue into hole
Ø 10 H11

DIN 69 873



Glue into hole
Ø 12 H11



Glue into hole
Ø 12 H11

Installation tools
(please order separately)

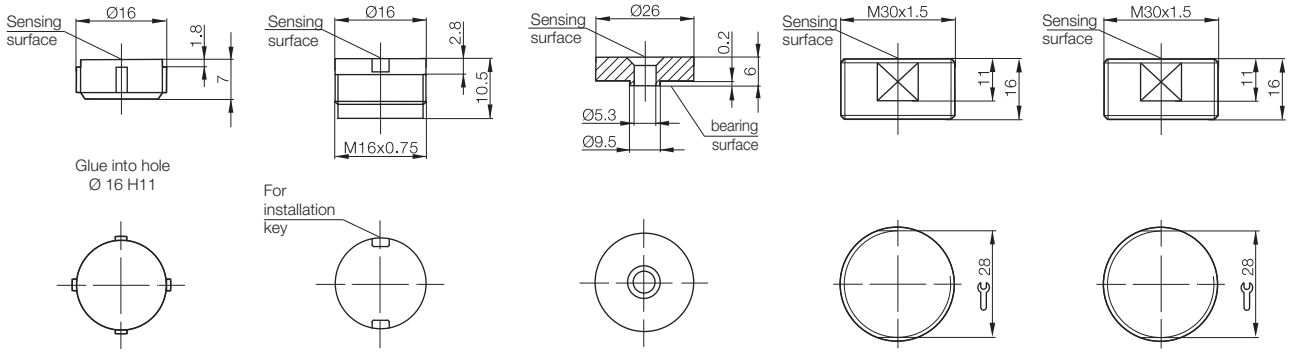
Application for	Data carrier BIS C-100-05/A
Order code	**710691**
Part number	BIS INSTALLATION KEY FOR CODE CARRIERS





Ø 16×7 mm	**Ø 16×10.5 mm**	**Ø 26×6 mm**	**Ø 30×16 mm**	**Ø 30×16 mm**
EP	PA 66	EP	PBT	PBT
2 g	3 g	6 g	23 g	5.5 g
BIS001E	**BIS0002**	**BIS0019**	**BIS000M**	**BIS000N**
BIS C-130-05/L	BIS C-100-05/A	BIS C-128-05/L	BIS C-117-05/A	BIS C-117-05/L
		BIS001C		**BIS000R**
		BIS C-128-11/L		BIS C-117-11/L
–30...+70 °C	0...+70 °C	-20...+70 °C	–30...+70 °C	–30...+70 °C
–30...+85 °C*	–20...+85 °C	–30...+85 °C*	–30...+85 °C	–30...+85 °C
IP 68	IP 68	IP 68	IP 68	IP 68

4 mm	4 mm	4 mm	4 mm						
		4 mm	4 mm						
6 mm	7 mm	4 mm	4 mm	3.5 mm (1)	6 mm (1)	8 mm	10 mm		7 mm
4 mm	4 mm	4 mm	4 mm						
	11 mm			8 mm	3 mm	2 mm	13 mm		13 mm
	18 mm				18 mm	15 mm	22 mm		20 mm
					7.5 mm				7 mm
6 mm	13 mm				14 mm	13 mm	16 mm	8 mm	15 mm
	11 mm			8 mm	13 mm	12 mm	13 mm		13 mm
				8 mm	13 mm	12 mm	13 mm		13 mm
4 mm	5 mm	4 mm	4 mm						
	13 mm				15 mm				18 mm
					8 mm				



Usable screws for
data carrier BIS C-128-...:
DIN EN ISO 2009 M5
(slotted countersunk flat head screw)
DIN EN ISO 7046-1 M5
(countersunk flat head screw with cross recess)
Tightening torque of the screws 2.5 Nm

(1) BIS C-305, only if
BIS C-128_ _ is fastened with plastic screw.

Dimension		**Ø 30×35 mm**	**52×32×11 mm**
Housing material		Brass, coated	PBT
Weight		54 g	28 g

BIS C programmable

1023 bytes	**Order code**		**BIS000C**
	Part number		BIS C-108-05/L
2047 bytes	**Order code**	**BIS0006**	**BIS000H**
	Part number	BIS C-104-11/A	BIS C-108-11/L
8 kbytes	**Order code**	**BIS0007**	**BIS000K**
	Part number	BIS C-104-32/A	BIS C-108-32/L
Operating temperature		–30...+70 °C	–30...+70 °C
Storage temperature		–30...+85 °C	–30...+85 °C
Degree of protection per IEC 60529		IP 67	IP 68

Suitable read/write head with max. read/write working distance

Assembly	▬	▬	▬	▬
BIS C-300				
BIS C-305				6 mm
BIS C-306				
BIS C-310	11 mm	12 mm	5 mm	12 mm
BIS C-315	13 mm	14 mm	10 mm	16 mm
BIS C-318				7 mm
BIS C-319			11 mm	14 mm
BIS C-323	11 mm	12 mm		12 mm
BIS C-324	11 mm	12 mm		12 mm
BIS C-325				
BIS C-326				
BIS C-327				8 mm
BIS C-350				
BIS C-351				

For assembly, observe the general information and installation notices on page 230.

Installation:

▬ Flush in steel

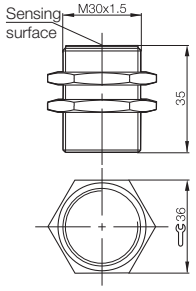
▬ Non-flush on steel

▬ Non-metal

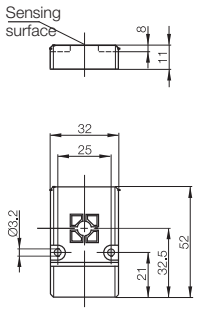
Antenna type:

Rod

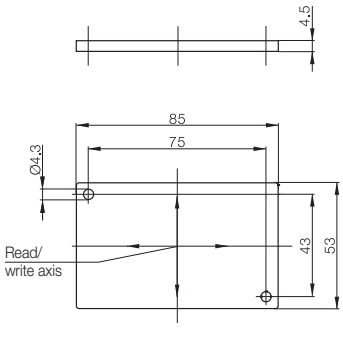
Round

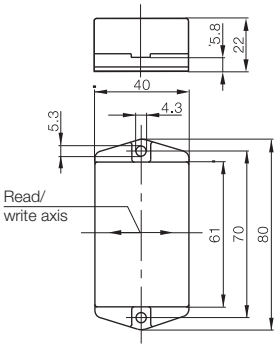


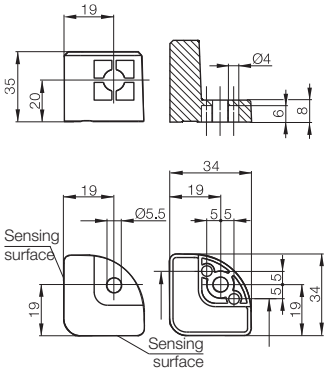
Screw tightening torque 40 Nm



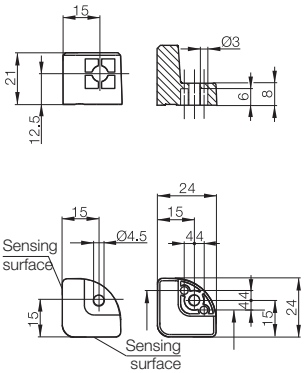
	85×53×4.5 mm	**80×40×22 mm**	**34×34 mm**	**12.5×12.5 mm**
	ABS	POM	PBT	PBT
	30 g	75 g	29 g	10 g
	BIS0017	**BIS0028**	**BIS002K**	**BIS002P**
	BIS C-127-05/L	BIS C-150-05/A	BIS C-190-05/L	BIS C-191-05/L
		BIS002A	**BIS002M**	**BIS002R**
		BIS C-150-11/A	BIS C-190-11/L	BIS C-191-11/L
		BIS002E	**BIS002N**	
		BIS C-150-32/A	BIS C-190-32/L	
	0...+60 °C	–30...+70 °C	–30...+70 °C	–30...+70 °C
	-20...+60 °C	–30...+85 °C	–30...+85 °C	–30...+85 °C
	IP 65	IP 68	IP 68	IP 68
				3.5 mm
				3.5 mm
			11 mm	10 mm
	30 mm		20 mm	
	25 mm		8 mm	
				11 mm
			11 mm	10 mm
			11 mm	10 mm
				3.5 mm
			18 mm	
			8 mm	
		100 mm		
		50 mm		







Screw tightening torque
1.5 Nm, twist-proof installation with
use of Ø 4 mm parallel pin
in accordance with DIN EN 22338;
DIN EN 28734



Screw tightening torque
1.5 Nm, twist-proof installation with
use of Ø 4 mm parallel pin
in accordance with DIN EN 22338;
DIN EN 28734

Dimension	**Ø 11×13 mm**	**Ø 15.5×7 mm**	
Housing material	Glass	PBT	
Weight	0.9 g	28 g	

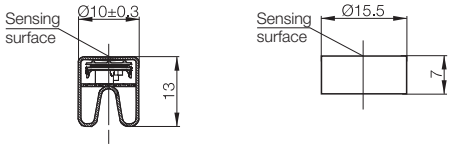
BIS C programmable

511 bytes	**Order code**	**BIS000W**		
	Part number	BIS C-121-04/L-SA1		
1023 bytes	**Order code**		**BIS001H**	
	Part number		BIS C-130-05/L-SA1	
2047 bytes	**Order code**			
	Part number			
Operating temperature		+10...+70 °C	–30...+70 °C	
Storage temperature		+10...+126 °C	–30...+85 °C	
Degree of protection per IEC 60529/DIN 40050		IP 68	IP 68	
Suitable for		**Use in the autoclave**	**Use in vacuum****	

Suitable read/write head with max. read/write working distance

Assembly	▬		▬	▬	
BIS C-300	1.2 mm		4 mm	4 mm	
BIS C-302	0.7 mm				
BIS C-305	1.2 mm		6 mm	7 mm	
BIS C-306	1.2 mm		4 mm	4 mm	
BIS C-310	1.7 mm		8 mm	11 mm	
BIS C-315					
BIS C-318					
BIS C-319			7 mm	13 mm	
BIS C-323			8 mm	11 mm	
BIS C-324			8 mm	11 mm	
BIS C-325			4 mm	5 mm	
BIS C-326				13 mm	

For assembly, observe the general information and installation notices on page 230.



***** Also available for up to+ 120 °C on request for specific applications

****** Residual pressure 830 mbar

Installation:

▬ Flush in steel

▬ Non-flush on steel

▬ Non-metal

Antenna type:

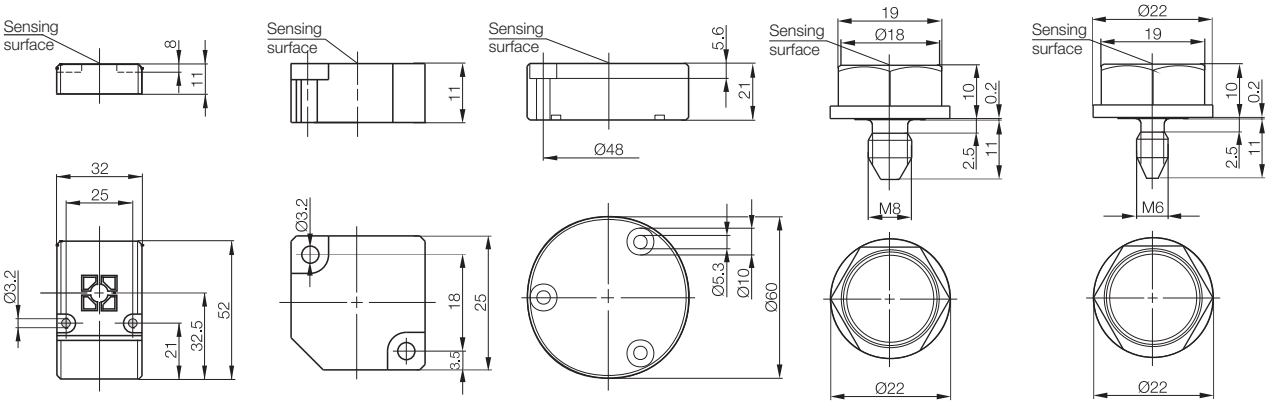
Round





	52×32×11 mm	**25×25 mm**	**Ø 60×21 mm**	**Ø 22×21 mm**	**Ø 22×21 mm**
	PBT	PA 66 (fiberglass reinforced)	POM	Steel, coated	Steel, coated
	28 g	9 g	85 g	18 g	18 g
	BIS000F	**BIS0020**	**BIS001Z**	**BIS00J2**	**BIS00J4**
	BIS C-108-05/L-SA2	BIS C-134-05/L-H120	BIS C-133-05/L	BIS C-140-05/L-M8	BIS C-140-05/L-M6
	BIS000J	**BIS0021**		**BIS00J1**	**BIS00J3**
	BIS C-108-11/L-SA2	BIS C-134-11/L	BIS C-133-11/L	BIS C-140-11/L-M8	BIS C-140-11/L-M6
	–30...+70 °C	–30...+70 °C	–30...+70 °C	–30...+70 °C	–30...+70 °C
	–30...+85 °C*	–30...+85 °C*	–30...+85 °C	–30...+85 °C	–30...+85 °C
	IP 68	IP 68	IP 68	IP 68/x9K	IP 68/x9K
	Use in vacuum**	**Use in vacuum****	**Use in vacuum****	**Use in vacuum****	**Use in vacuum****

			3 mm				3 mm		3 mm
		6 mm		6 mm			4.5 mm		4.5 mm
			3 mm				3 mm		3 mm
	4 mm	11 mm		10 mm	10 mm	10 mm	7 mm		7 mm
	10 mm	16 mm		16 mm	15 mm	15 mm			
		6 mm							
				12 mm					
	4 mm	11 mm		10 mm	10 mm	10 mm	7 mm		7 mm
	4 mm	11 mm		10 mm	10 mm	10 mm	7 mm		7 mm
				4 mm			5 mm		5 mm
		12 mm		12 mm	12 mm	12 mm			



Industrial RFID System BIS C with 433/70 kHz (LF)

Read/write heads, Ø 14.5 mm, M16×1

Dimension		**Ø 14.5 mm**	**M16×1**
Housing material		Brass, coated	Brass, coated
1 m cable	**Order code**	**BIS00P5**	**BIS00PC**
	Part number	BIS C-300-PU1-01	BIS C-306-PU1-01
5 m cable	**Order code**	**BIS005Z**	**BIS006F**
	Part number	BIS C-300-PU1-05	BIS C-306-PU1-05
10 m cable	**Order code**	**BIS00P6**	**BIS00PE**
	Part number	BIS C-300-PU1-10	BIS C-306-PU1-10
Assembly		▬	▬
Operating temperature		0...+70 °C	0...+70 °C
Storage temperature		–20...+85 °C	–20...+85 °C
Degree of protection per IEC 60529		IP 67	IP 67
Connection to		Processor unit	Processor unit
Connection cables		Cables in scope of delivery	Cables in scope of delivery

Matching data carriers		**BIS0002** BIS C-100-05/A	**BIS0004** BIS C-103-05/A	**BIS0009** BIS C-105-05/A	**BIS000T** BIS C-121-04/L	**BIS000W** BIS C-121-04/L-SA1	**BIS0011** BIS C-122-04/L	**BIS001E** BIS C-130-05/L	**See data carrier** BIS C-134-_ _-L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-191-_ _/L	**See data carrier** BIS C-140-_ _/L-M_
Assembly		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Working distance for writing in mm		0...4	0...3,5	0...3,5	0...2	0...1,2	0...2,5	0...4	0...3	0...4	0...4	0...3,5	0...3
Working distance for reading in mm		0...4	0...3,5	0...3,5	0...2	0...1,2	0...2,5	0...4	0...3	0...4	0...4	0...3,5	0...3
Offset in mm at distance	0.7 mm					±2							
	1 mm	±3	±3	±3	±2		±2,5	±3,5	±4	±5	±5	±4	±3,5
	3 mm	±2	±2	±2				±3		±4	±4	±3	±2

For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

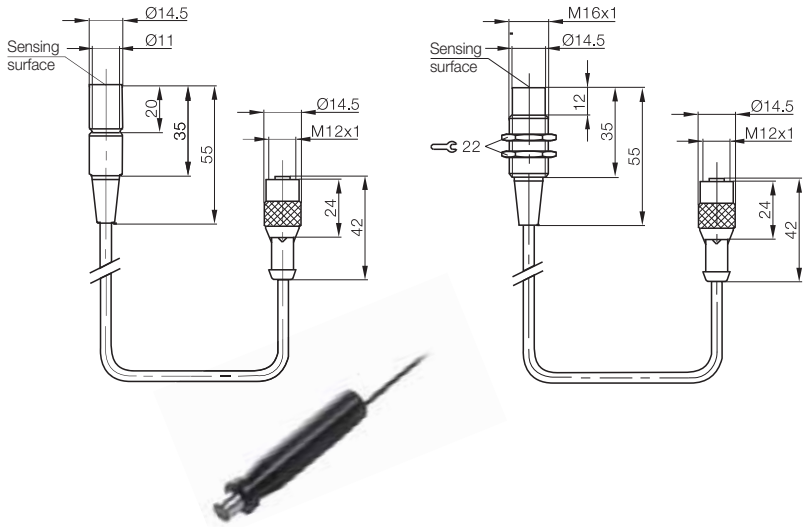
Important!
At 10 m cable length, read/write distance is reduced by 10%.

Installation:

▬ Flush in steel

Antenna type:

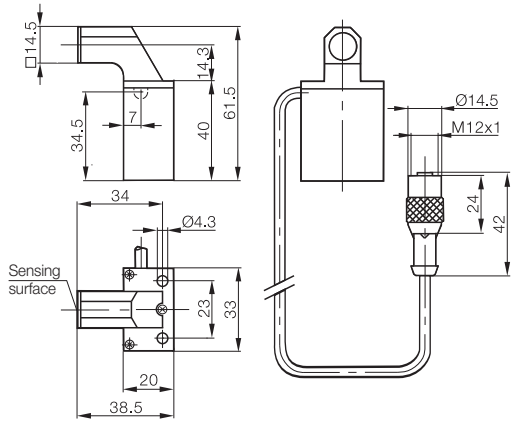
Round



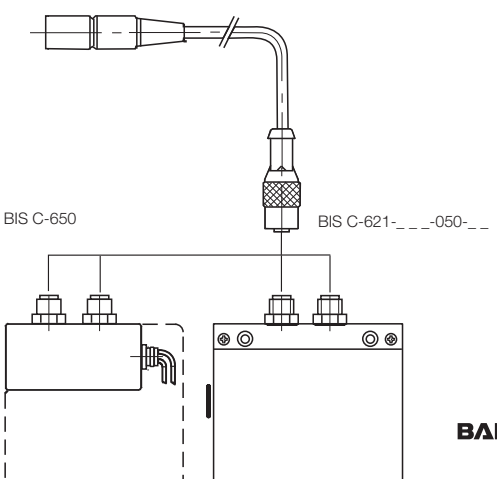
Description	**Handle**
Use	For read/write head BIS C-300-_ _
Order code	**BAM012A**
Part number	BIS C-300-HG1
Additional information	From page350

	33×61.5×38.5 mm
	Aluminum, coated and PA 66
	BIS00PA
	BIS C-302-PU1-05
	BIS00P9
	BIS C-302-PU1-10
	0...+70 °C
	–20...+85 °C
	IP 67
	Processor unit
	Cables in scope of delivery

BIS0002 BIS C-100-05/A	**BIS0004** BIS C-103-05/A	**BIS0009** BIS C-105-05/A	**BIS000T** BIS C-121-04/L	**BIS000W** BIS C-121-04/L-SA1	**BIS0011** BIS C-122-04/L	**BIS001E** BIS C-130-05/L	**BIS0031** BIS C-130-05/L-DB-002	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-191-_ _/L
0...4	0...3	0...3	0...1,5	0...0,7	0...2	0...3,5	0...4	0...4	0...3
0...4	0...3	0...3	0...1,5	0...0,7	0...2	0...3,5	0...4	0...4	0...3
				±1					
±3	±3	±3	±1,5		±2	±3	±5	±5	±4
±2	±1,5	±1,5				±2	±3	±3	±2



Example:
BIS C-300-_ _



Cables on read/write heads must not be shortened, since functionality can then no longer be ensured.

Dimension		**50×25×10 mm**
Housing material		ABS (fiberglass reinforced)
1 m cable	**Order code**	**BIS0066**
	Part number	BIS C-305-PU1-01
5 m cable	**Order code**	**BIS0067**
	Part number	BIS C-305-PU1-05
10 m cable	**Order code**	**BIS0068**
	Part number	BIS C-305-PU1-10
Assembly		▬
Operating temperature		0...+70 °C
Storage temperature		–20...+85 °C
Degree of protection per IEC 60529		IP 67
Connection to		Processor unit
Connection cables		Cables in scope of delivery

Matching data carriers		**BIS0002** BIS C-100-05/A	**BIS0004** BIS C-103-05/A	**BIS0009** BIS C-105-05/A	**See data carrier** BIS C-108-_/L	**See data carrier** BIS C-108-_/L-SA2	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**BIS000T** BIS C-121-04/L	**BIS000W** BIS C-121-04/L-SA1	**BIS0011** BIS C-122-04/L	**BIS000M** BIS C-117-05/A	**BIS0019** BIS C-128-05/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-140-_/L-M_
Assembly		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Working distance for writing in mm		0...4	0...5	0...5	0...6	0...6	1...8	0...7	0...2	0...1,2	0...2,5	0...10	0...6	0...7	0...7	0...6	0...4,5
Working distance for reading in mm		0...4	0...5	0...5	0...6	0...6	1...8	0...7	0...2	0...1,2	0...2,5	0...10	0...6	0...7	0...7	0...6	0...4,5
Offset in mm at distance	0.7 mm									±2							
	1 mm	±3	±4	±4	±8	±8	±5	±8,5	±2		±3	±6	±8	±5	±5	±5	±4,5
	3 mm	±2	±3	±3	±7	±7	±4	±7,5			±2	±6	±7	±5	±5	±5	±3,5
	5 mm				±5	±5	±3	±6				±6	±5	±4	±4	±4	
	7 mm						±2	±4				±5		±2	±2		
	10 mm											±3					

For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

Important!
At 10 m cable length, read/write distance is reduced by 10 %.

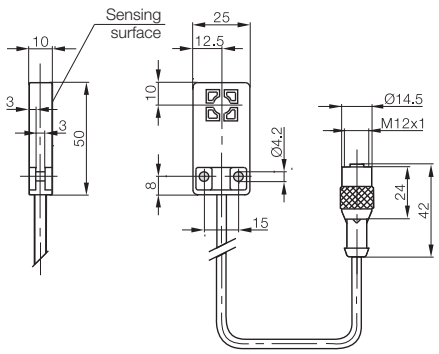
Installation:

▬ Flush in steel

▬ Non-metal

Antenna type:

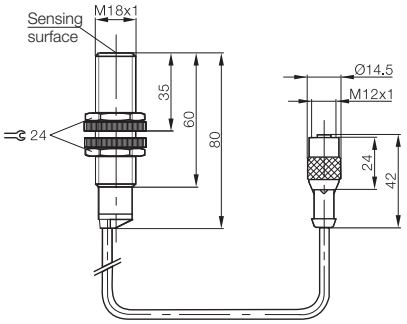
Round

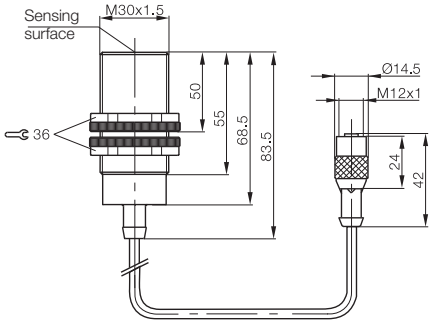


M18×1	**M30×1.5**
PBT	PVDF
BIS0077	
BIS C-319-PU1-01	
BIS0078	**BIS007Y**
BIS C-319-PU1-05	BIS C-326-PU1-05
BIS0079	**BIS007Z**
BIS C-319-PU1-10	BIS C-326-PU1-10
▬	▬
0...+70 °C	0...+70 °C
–20...+85 °C	–20...+85 °C
IP 67	IP 67
Processor unit	Processor unit
Cables in scope of delivery	Cables in scope of delivery

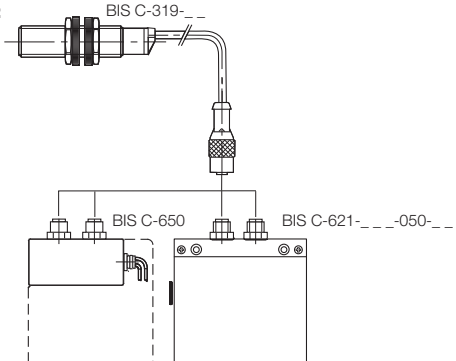
See data carrier BIS C-108-_ _/L	**BIS000N** BIS C-117-05/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-191-_ _/L
▬	▬	▬	▬	▬	▬
0...14	0...15	0...13	0...13	0...12	0...11
0...14	0...15	0...13	0...13	0...12	0...11
±12	±13	±9	±9	±9	±9
±12	±12	±9	±9	±9	±9
±11	±12	±9	±9	±9	±9
±11	±11	±8,5	±8,5	±8.5	±8
±9	±10	±7,5	±7,5	±7	

BIS000N BIS C-117-05/L	**See data carrier** BIS C-128-_ _/L	**See data carrier** BIS C-128-_ _/L	**See data carrier** BIS C-130-_ _/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-133-_ _/L	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-190-_ _/L
▬	▬	▬	▬	▬	▬	▬	▬
0...18	0...15	0...12.5	0...13	0...13	0...12	0...12	0...18
0...18	0...15	0...12.5	0...13	0...13	0...12	0...12	0...18
±15	±14	±13	±12	±12	±14	0...12	±17
±15	±14	±12	±12	±12	±14	0...12	±17
±15	±14	±12	±10	±10	±14	±10	±17
±14	±14	±11	±10	±10	±8,5	±10	±16
±11	±8,5	±8					±14





Example:



Cables on read/write heads must not be shortened, since functionality can then no longer be ensured.

Industrial RFID System BIS C with 433/70 kHz (LF)

Read/write heads, 80×80×40 mm

Dimension		**80×80×40 mm**
Housing material		PBT
1 m cable	**Order code**	**BIS00PK**
	Part number	BIS C-315-PU1-01
5 m cable	**Order code**	**BIS00PL**
	Part number	BIS C-315-PU1-05
10 m cable	**Order code**	**BIS00PM**
	Part number	BIS C-315-PU1-10
Assembly		▬
Operating temperature		0...+70 °C
Storage temperature		–20...+85 °C
Degree of protection per IEC 60529		IP 67
Connection to		Processor unit
Connection cables		Cables in scope of delivery

Matching data carriers		**See data carrier** BIS C-104-_ _/A	**See data carrier** BIS C-108-_ _/L	**See data carrier** BIS C-108-_ _/L-SA2	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**BIS0017** BIS C-127-05/L	**See data carrier** BIS C-128-_ _/L	**BIS001E** BIS C-130-05/L	**See data carrier** BIS C-133-_ _/L	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-190-_ _/L
Assembly		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Working distance for writing in mm		1...13	2...16	2...16	0...15	0...18	10...30	0...18	0...18	0...15	0...16	0...20
Working distance for reading in mm		1...13	2...16	2...16	0...15	0...18	10...30	0...18	0...18	0...15	0...16	0...20
Offset in mm at distance	0.7 mm											
	1 mm	±15	±15		±15	±17		±17	±16	±17	±16	±18
	3 mm	±14	±14	±15	±15	±17		±17	±16	±15	±16	±18
	5 mm	±11	±12	±12	±14	±17		±17	±16	±15	±16	±18
	7 mm	±10	±11	±10	±12	±15		±15	±14	±14	±14	±18
	10 mm	±8	±8	±8	±12	±15	±30	±15	±14	±14	±12	±18
	15 mm					±14	±27	±14	±11			±16
	20 mm						±20					

For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

Important!
At 10 m cable length, read/write distance is reduced by 10 %.

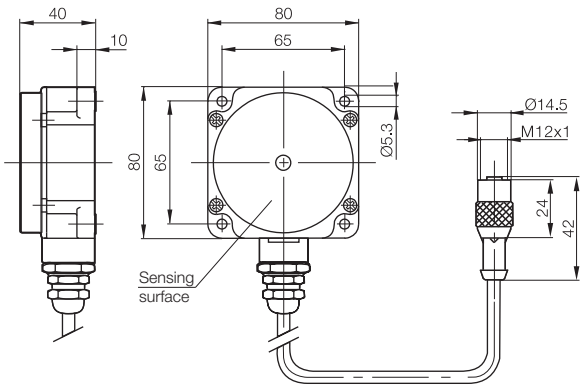
Installation:

▬ Flush in steel

▬ Non-flush on steel

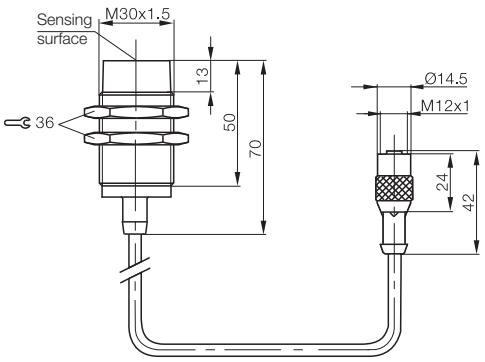
Antenna type:

Round

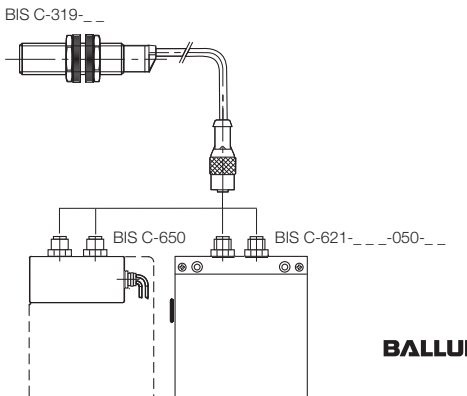


M30×1.5														
Brass, coated														
BIS00PF														
BIS C-310-PU1-01														
BIS00PH														
BIS C-310-PU1-05														
BIS00PJ														
BIS C-310-PU1-10														
0...+70 °C														
–20...+85 °C														
IP 67														
Processor unit														
Cables in scope of delivery														

See data carrier BIS C-104-_ _/A	**See data carrier** BIS C-104-_ _/A	**See data carrier** BIS C-108-_ _/L	**See data carrier** BIS C-108-_ _/L-SA2	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**See data carrier** BIS C-128-_ _/L	**See data carrier** BIS C-128-_ _/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-133-_ _/L	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-190-_ _/L	**See data carrier** BIS C-191-_ _/L	**See data carrier** BIS C-140-_ _/L-M_
1...11	0...12	0...12	0...11	1...12	0...13	0...8	0...13	0...11	0...8	0...10	0...10	0...11	0...10	0...7
1...11	0...12	0...12	0...11	1...12	0...13	0...8	0...13	0...11	0...8	0...10	0...10	0...11	0...10	0...7
±7,5	±7,5	±10	±10	±7,5	±11	±8	±10	±9	±6,5	±10	±9	±10	±8	±5,5
±7	±7	±9	±9	±7,5	±10	±7	±10	±8	±6	±9	±8	±9	±7,5	±5
±7	±7	±9	±8,5	±7	±10	±6,5	±9	±7	±5,5	±9	±7	±9	±7	±4
±7	±7	±8,5	±7,5	±6,5	±9,5	±5,5	±9	±5		±7	±4	±8	±6,5	
												±6,5		



Example:



Cables on read/write heads must not be shortened, since functionality can then no longer be ensured.

Dimension		**M18×1**	**M18×1**
Housing material		PBT	Stainless steel
For 1 m cable	**Order code**		**BIS007P**
	Part number	BIS C-319/01-S4	BIS C-325/01-S4
For 5 m cable	**Order code**	**BIS007A**	**BIS007R**
	Part number	BIS C-319/05-S4	BIS C-325/05-S4
For 10 m cable	**Order code**	**BIS007C**	**BIS007T**
	Part number	BIS C-319/10-S4	BIS C-325/10-S4
Assembly			
Operating temperature		0...+70 °C	0...+70 °C
Storage temperature		–20...+85 °C	–20...+85 °C
Degree of protection per IEC 60529		IP 67	IP 67
Connection to		Processor unit	Processor unit
Connection cables		See page 312...313	See page 312...313

Matching data carriers		**See data carrier** BIS C-108-_ _/L	**BIS000N** BIS C-117-05/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-134-_ _/L	**See data carrier** BIS C-191-_ _/L			**BIS0002** BIS C-100-05/A	**BIS000W** BIS C-121-04/L-SA1	**See data carrier** BIS C-122-_ _/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-134-_ _-L	**See data carrier** BIS C-191-_ _/L	**See data carrier** BIS C-140-_ _/L-M_
Assembly																	
Working distance for writing in mm		0...14	0...15	0...13	0...13	0...12	0...11			0...4	0...1,7	0...2,5	0...4	0...3	0...4	0...3	0...5
Working distance for reading in mm		0...14	0...15	0...13	0...13	0...12	0...11			0...4	0...1,7	0...2,5	0...4	0...3	0...4	0...3,5	0...5
Offset in mm at distance	0.7 mm										±2						
	1 mm	±12	±13	±9	±9	±9	±9			±3,5	±2	±2,5	±4	±4	±4	±4	±3
	3 mm	±12	±12	±9	±9	±9	±9			±3			±2	±2	±2	±3	±3
	5 mm	±11	±12	±9	±9	±9	±9										±2
	7 mm	±11	±11	±8,5	±8,5	±8	±8										
	10 mm	±9	±10	±7,5	±7,5	±6											

For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

Important!
At 10 m cable length, read/write distance is reduced by 10%.

Installation:

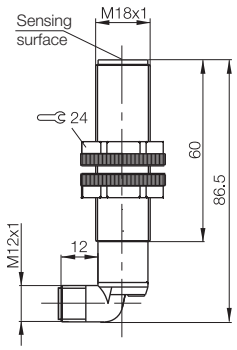
Flush in steel

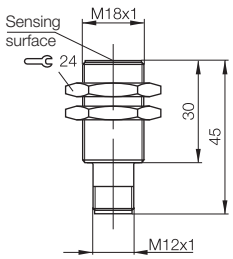
Non-flush on steel

Non-metal

Antenna type:

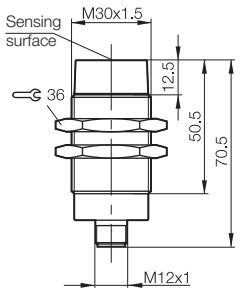
Round



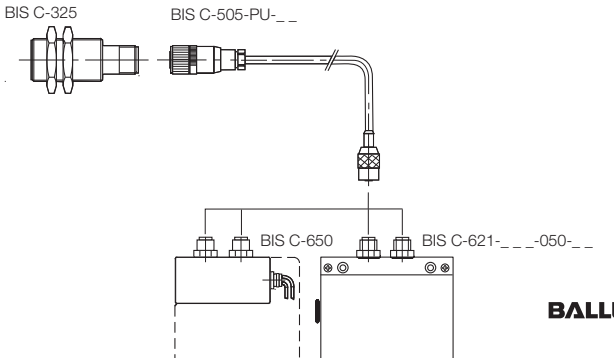


	M30×1.5
	Stainless steel
	BIS007J
	BIS C-323/01-S4
	BIS007K
	BIS C-323/05-S4
	BIS007L
	BIS C-323/10-S4
	-20...+70 °C
	–20...+85 °C
	IP 67
	Processor unit
	See page 312...313

See data carrier BIS C-104-_ _/A	**See data carrier** BIS C-104-_ _/A	**See data carrier** BIS C-108-_ _/L	**See data carrier** BIS C-108-_ _/L-SA2	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**See data carrier** BIS C-128-_ _/L	**See data carrier** BIS C-128-_ _/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-133-_ _/L	**See data carrier** BIS C-134-_ _/L	**See data carrier** BIS C-190-_ _/L	**See data carrier** BIS C-191-_ _/L	**See data carrier** BIS C-140-_ _/L-M_
1...11	0...12	0...12	0...11	1...12	0...13	0...8	0...13	0...11	0...8	0...10	0...10	0...11	0...10	0...7
1...11	0...12	0...12	0...11	1...12	0...13	0...8	0...13	0...11	0...8	0...10	0...10	0...11	0...10	0...7
±7,5	±7,5	±10	±10	±7,5	±11	±8	±10	±9	±6,5	±10	±9	±10	±8	±5,5
±7	±7	±9	±9	±7,5	±10	±7	±10	±8	±6	±9	±8	±9	±7,5	±5
±7	±7	±9	±8,5	±7	±10	±6	±9	±7	±5,5	±9	±7	±9	±7	±4
±7	±7	±8,5	±7,5	±6,5	±9,5	±5,5	±9	±5		±7	±4	±8	±6,5	
												±6,5		



Example:



Cables on read/write heads must not be shortened, since functionality can then no longer be ensured.

Industrial RFID System BIS C with 433/70 kHz (LF)

Read/write heads, 80×80×40 mm

Dimension		**80×80×40 mm**
Housing material		PBT
For 5 m cable	**Order code**	**BIS006Y**
	Part number	BIS C-315/05-S4
For 10 m cable	**Order code**	**BIS006Z**
	Part number	BIS C-315/10-S4
Assembly		▬
Operating temperature		0...+70 °C
Storage temperature		–20...+85 °C
Degree of protection per IEC 60529		IP 67
Connection to		Processor unit
Connection cables		See page 312...313

Matching data carriers		**See data carrier** BIS C-104-_ /A	**See data carrier** BIS C-108-_ /L	**See data carrier** BIS C-108-_ /L-SA2	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**BIS0017** BIS C-127-05/L	**See data carrier** BIS C-128-_ /L	**BIS001E** BIS C-130-05/L	**See data carrier** BIS C-133-_ /L	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-190-_ /L
Assembly		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Working distance for writing in mm		1...13	2...16	2...16	0...15	0...20	10...30	0...18	0...18	0...15	0...16	0...20
Working distance for reading in mm		1...13	2...16	2...16	0...15	0...20	10...30	0...18	0...18	0...15	0...16	0...20
Offset in mm at distance	1 mm	±15			±15	±17		±17	±16	±17	±16	±18
	3 mm	±14	±14	±15	±15	±17		±17	±16	±15	±16	±18
	5 mm	±11	±12	±12	±14	±17		±17	±16	±15	±16	±18
	7 mm	±10	±11	±10	±12	±15		±15	±14	±14	±14	±18
	10 mm	±8	±8	±8	±12	±15	±30	±15	±14	±14	±12	±18
	15 mm					±14	±27	±14	±11			±16
	20 mm						±20					

For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

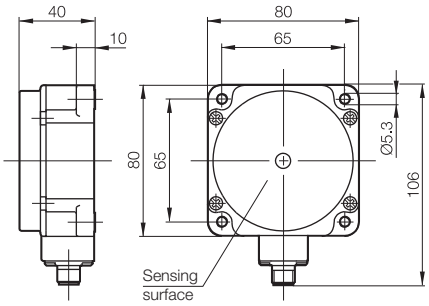
Important!
At 10 m cable length, read/write distance is reduced by 10%.

Installation:

▬ Flush in steel

Antenna type:

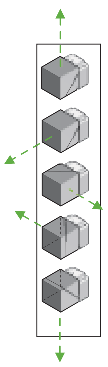
Round

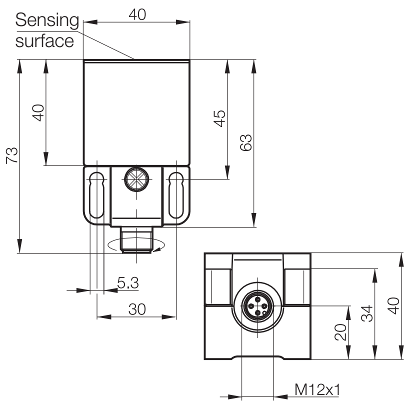


Read/write heads, 40×40×73 mm

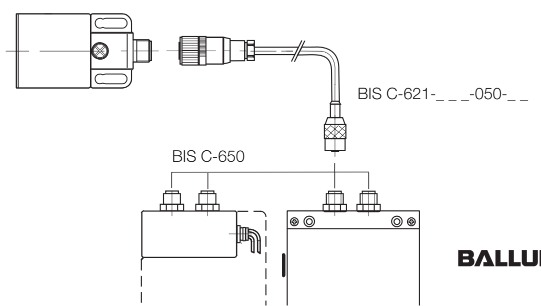
	40×40×73 mm
	PBT and cast zinc
	BIS007M
	BIS C-324/05-S4
	BIS007N
	BIS C-324/10-S4
	0...+70 °C
	–20...+85 °C
	IP 67
	Processor unit
	See page 312...313

	See data carrier BIS C-104-_ _/A	**See data carrier** BIS C-104-_ _/A	**See data carrier** BIS C-108-_ _/L	**See data carrier** BIS C-108-_ _/L-SA2	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**See data carrier** BIS C-128-_ _/L	**See data carrier** BIS C-128-_ _/L	**BIS001E** BIS C-130-05/L	**BIS001H** BIS C-130-05/L-SA1	**See data carrier** BIS C-133-_ _/L	**BIS0021** BIS C-134-11/L	**See data carrier** BIS C-190-_ _/L	**See data carrier** BIS C-191-_ _/L	**See data carrier** BIS C-140-_ _/L-M_
	1...11	0...12	0...12	0...11	0...12	0...13	0...8	0...13	0...11	0...8	0...10	0...10	0...11	0...10	0...7
	1...11	0...12	0...12	0...11	0...12	0...13	0...8	0...13	0...11	0...8	0...10	0...10	0...11	0...10	0...7
	±7,5	±7,5	±10	±10	±7,5	±11	±8	±10	±9	±6,5	±10	±9	±10	±8	±5,5
	±7	±7	±9	±9	±7,5	±10	±7	±10	±8	±6	±9	±8	±9	±7,5	±5,5
	±7	±7	±9	±8,5	±7	±10	±6,5	±9	±7	±5,5	±9	±7	±9	±7	±4
	±7	±7	±8,5	±7,5	±6,5	±9,5	±5,5	±9	±5		±7	±4	±8	±6,5	
													±6,5		





Cables on read/write heads must not be shortened, since functionality can then no longer be ensured.

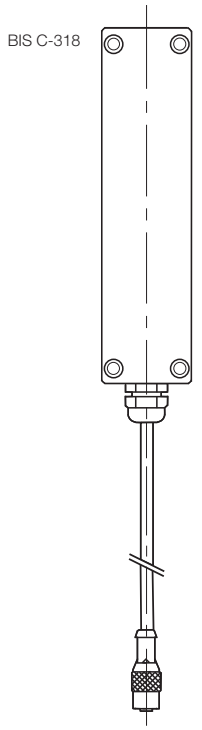


Industrial RFID System BIS C with 433/70 kHz (LF)

Read/write heads, 88×43×20 mm, 55×30×20 mm, 186×48×30 mm, 170×80×50 mm

Dimension		**88×43×20 mm**
Housing material		POM
For 1 m cable	**Order code**	
	Part number	BIS C-327-01
For 5 m cable	**Order code**	**BIS0080**
	Part number	BIS C-327-05
For 10 m cable	**Order code**	
	Part number	BIS C-327-10
Assembly		▬
Operating temperature		0...+70 °C
Storage temperature		–20...+85 °C
Degree of protection per IEC 60529		IP 67
Connection to		Processor unit
Connection cables		Cables in scope of delivery

Matching data carriers		**BIS000C** BIS C-108-05/L	**BIS001C** BIS C-128-11/L	**BIS002N** BIS C-190-32/L
Working distance for writing in mm		0...8	0...8	0...8
Working distance for reading in mm		0...8	0...8	0...8
Offset in mm at distance	1 mm	±6	±6	±6
	2 mm	±6	±6	±6
	3 mm	±6	±6	±6
	4 mm	±5	±5	±5
	5 mm	±5	±5	±5
	6 mm	±4	±4	±4
	10 mm			
	20 mm			



For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

Important!
At 10 m cable length, read/write distance is reduced by 10%.

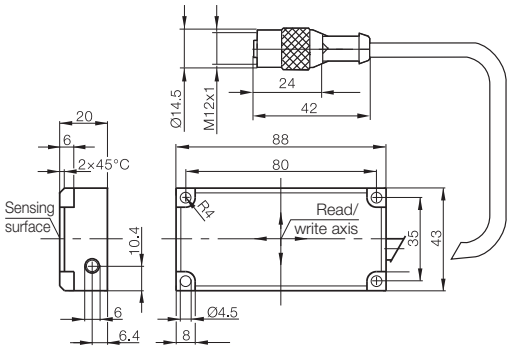
Installation:

▬ Non-flush on steel

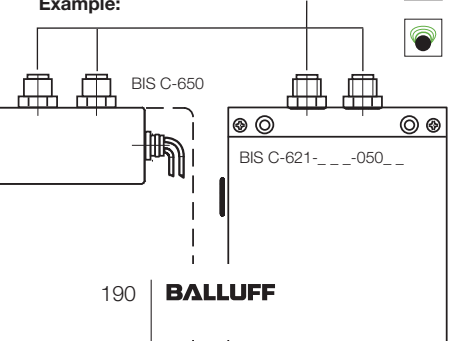
Antenna type:

Rod

Round



Example:

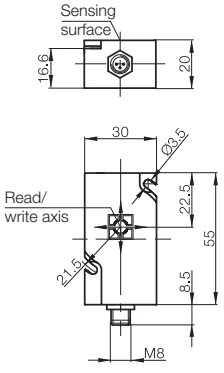


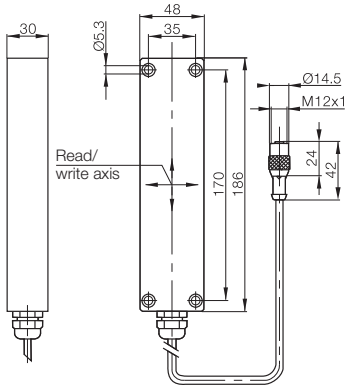
Cables on read/write heads must not be shortened, since functionality can then no longer be ensured.

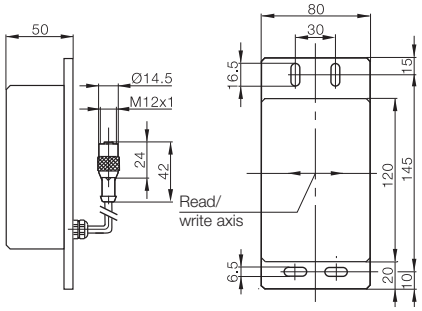
For long distances

	55×30×20 mm	**186×48×30 mm**	**170×80×50 mm**
	POM	PA 66	POM
	BIS C-328/01-S49		
	BIS0081	**BIS0075**	**BIS00PN**
	BIS C-328/05-S49	BIS C-318-PU1-05	BIS C-351-PU1-05
		BIS00L4	**BIS00PP**
	BIS C-328/10-S49	BIS C-318-PU1-10	BIS C-351-PU1-10
	0...+70 °C	0...+70 °C	–20...+80 °C
	–20...+85 °C	–20...+85 °C	–20...+85 °C
	IP 67	IP 67	IP 67
	Processor unit	Processor unit	Processor unit
	See page 314	Cables in scope of delivery	Cables in scope of delivery

BIS0011	**BIS0015**	**See data carrier**	**See data carrier**	**BIS000N**	**BIS0017**	**See data carrier**	**See data carrier**	**BIS0028**	**BIS002A**	**BIS002E**
BIS C-122-04/L	BIS C-122-11/L	BIS C-108-_ _/L-SA2	BIS C-108-_ _/L	BIS C-117-05/L	BIS C-127-05/L	BIS C-128-_ _/L	BIS C-190-_ _/L	BIS C-150-05/A	BIS C-150-11/A	BIS C-150-32/A
0...3	0...3	0...6	0...7	0...7	10...35	0...7,5	8	0...45	0...45	0...45
0...3	0...3	0...6	0...7	0...7	10...35	0...7,5	8	0...45	0...45	0...45
±2,5	±2,5	±8,5	±9,5	9,5		±11	±11	±15	±15	±15
±2,5	±2,5	±8,5	±9,5	9,5		±11	±11	±15	±15	±15
±2,5	±2,5	±8,5	±9,5	9,5		±11	±11	±15	±15	±15
		±8,5	±9,5	9,5		±8	±10	±15	±15	±15
		±5,5	±8,5	±8,5		±8	±10	±15	±15	±15
			±8,5	±8,5				±15	±15	±15
					±25			±15	±15	±15
					±20			±15	±15	±15



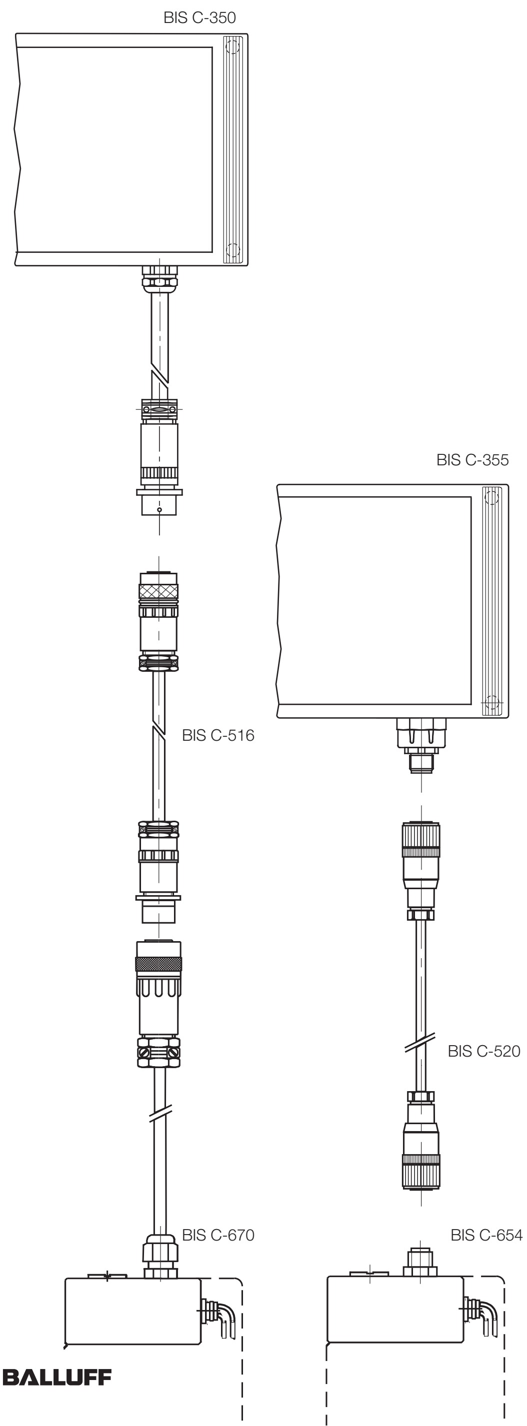




Industrial RFID System BIS C with 433/70 kHz (LF)
Read/write heads, 240×120×60 mm

Dimension	
Housing material	
Order code	
Part number	
Assembly	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Connection to	
Connection cables	

Example:



Matching data carriers

Working distance for writing in mm		
Working distance for reading in mm		
Offset in mm at distance	10 mm	
	15 mm	
	20 mm	
	35 mm	
	42 mm	
	60 mm	

For information about the dynamic mode and about installation, observe the basic information and installation notes on page 230.

Installation:

Non-flush on steel

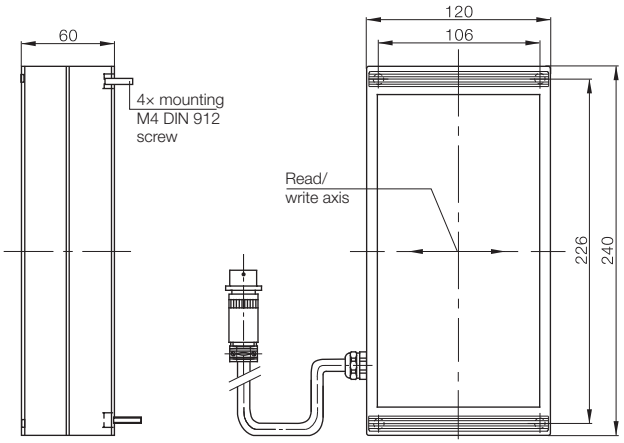
Antenna type:

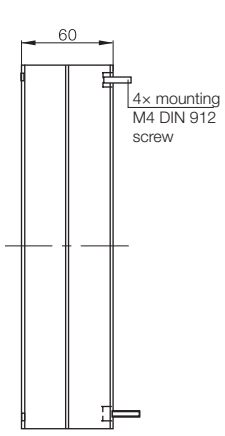
Rod

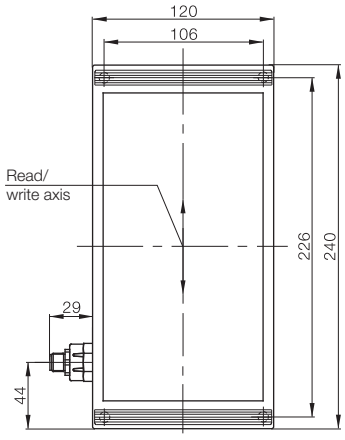
Dual antenna for increased traverse speed

	240×120×60 mm	**240×120×60 mm**
	PC	PC
	BIS0086	**BIS008E**
	BIS C-350-00,3	BIS C-355/05-S92
	0...+40 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C
	IP 67	IP 65
	Processor unit only with connection cable	Processor unit only with connection cable
	BIS C-516-PU-_ _ (page 317, please order separately)	BIS C-520-PVC-05 (page 317, please order separately)
	0.3 m PUR cable with Burndy® connector, 8-pin	

BIS0028 BIS C-150-05/A	**BIS002A** BIS C-150-11/A	**BIS002E** BIS C-150-32/A	**BIS0028** BIS C-150-05/A	**BIS002A** BIS C-150-11/A	**BIS002E** BIS C-150-32/A
90	90	90	0...35	0...35	0...35
100	100	100	0...40	0...40	0...40
±30	±30	±30	±15	±15	±15
±30	±30	±30	±15	±15	±15
±30	±30	±30	±15	±15	±15
±30	±30	±30	±15	±15	±15
±30	±30	±30	±5	±5	±5
±30	±30	±30			

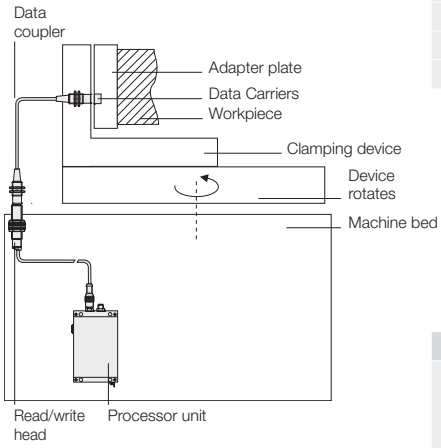






Data coupler BIS C-380-...
For data transmission between data carriers BIS C-1_ _ and read/write head BIS C-3_ _ via a contactless extension.

Dimension		**M16×1 and M16×1**
Housing material		Brass, coated
1 m cable	**Order code**	**BIS00JJ**
	Part number	BIS C-380-06/06-01
2 m cable	**Order code**	**BIS00LU**
	Part number	BIS C-380-06/06-02
5 m cable	**Order code**	**BIS00N9**
	Part number	BIS C-380-06/06-05
Read head connection		contactless connection
Operating temperature		0...+70 °C
Storage temperature		–20...+85 °C
Degree of protection per IEC 60529		IP 67



Data couplers are used in applications where a dual mechanical interface is mandatory.

Matching data carriers	**BIS0002** BIS C-100-05/A	**BIS0004** BIS C-103-05/A	**BIS0009** BIS C-105-05/A	**BIS000T** BIS C-121-04/L	**BIS0011** BIS C-122-04/L
Assembly	▬	▬	▬	▬	▬
Compatible read/write heads	BIS C-300 BIS C-302 BIS C-305 BIS C-306				
max. read/write distance	see diagram				

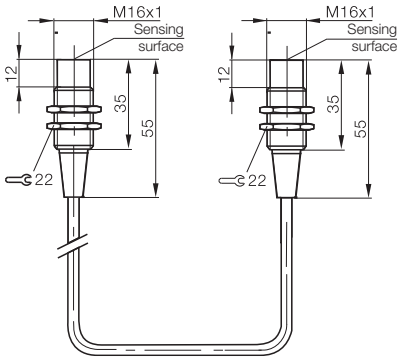
Installation:

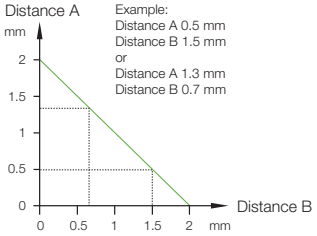
▬ Flush in steel

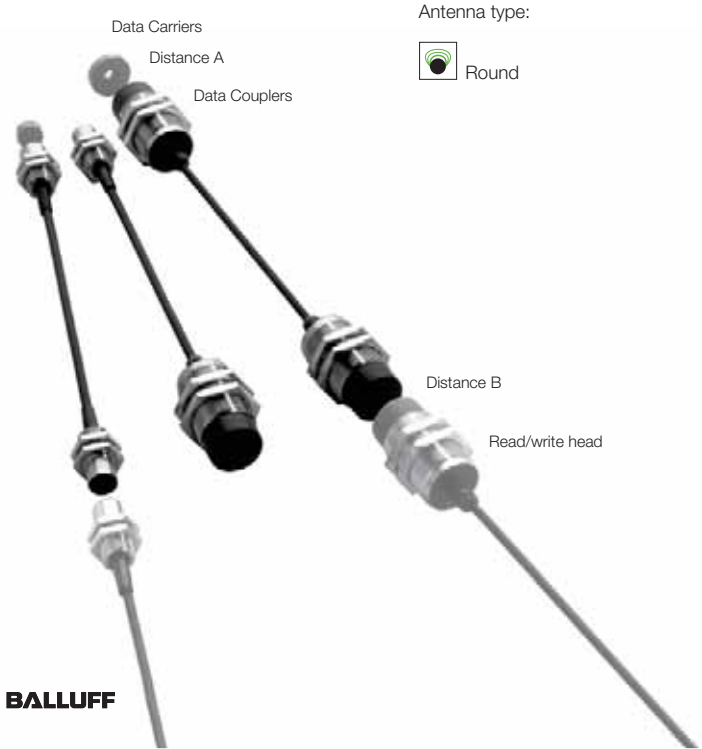
▬ Non-flush on steel

Antenna type:

Round

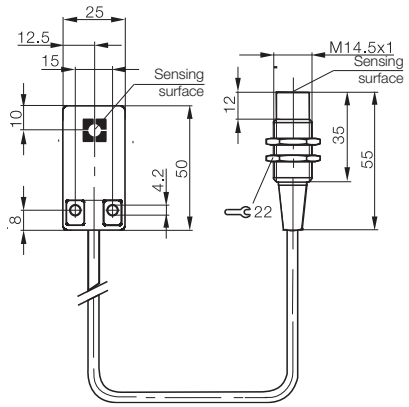


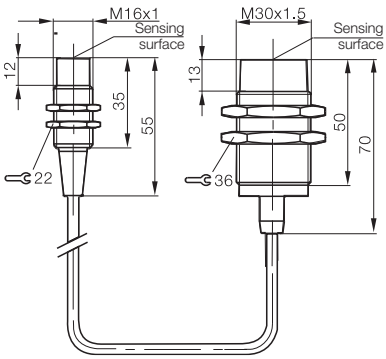


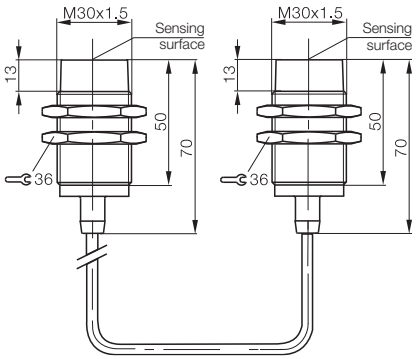


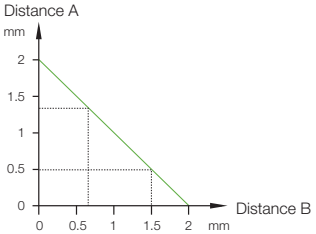
50×25×10 mm and M16×1	**M16×1 and M30×1.5**	**M30×1.5 and M30×1.5**
ABS, fiberglass reinforced, and brass, coated	Brass, coated	Brass, coated
		BIS00JP
		BIS C-380-10/10-01
BIS00JE	**BIS00JM**	
BIS C-380-05/06-02	BIS C-380-06/10-02	
BIS00N8	**BIS00JN**	**BIS00JR**
BIS C-380-05/06-05	BIS C-380-06/10-05	BIS C-380-10/10-05
contactless connection	contactless connection	contactless connection
0...+70 °C	0...+70 °C	0...+70 °C
–20...+85 °C	–20...+85 °C	–20...+85 °C
IP 67	IP 67	IP 67

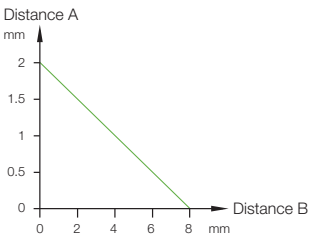
BIS0002 BIS C-100-05/A	**BIS0002** BIS C-100-05/A	**See data carrier** BIS C-104-_ _/A
BIS0004 BIS C-103-05/A	**BIS0004** BIS C-103-05/A	**See data carrier** BIS C-108-_ _/L
BIS0009 BIS C-105-05/A	**BIS0009** BIS C-105-05/A	**BIS000N** BIS C-117-05/L
BIS000T BIS C-121-04/L	**BIS000T** BIS C-121-04/L	**See data carrier** BIS C-128-_ _/L
BIS0011 BIS C-122-04/L	**BIS0011** BIS C-122-04/L	**BIS001E** BIS C-130-05/L
BIS C-300	BIS C-310	BIS C-310
BIS C-302		
BIS C-305		
BIS C-306		
see diagram	see diagram	see diagram

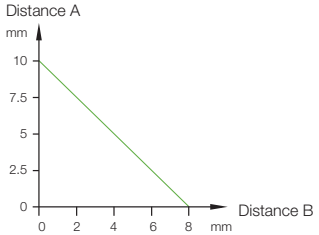


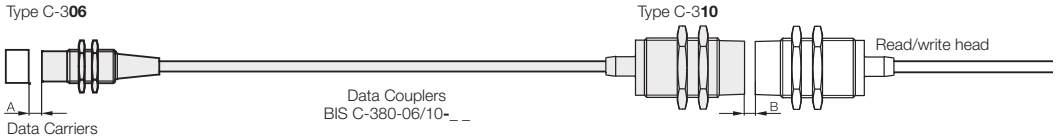












Industrial RFID System BIS C with 433/70 kHz (LF)

8-bit processor unit for read-only operation

Dimension		**M30×1**	**M30×1**	**M30×1**
Housing material		Brass, coated	Brass, coated	Brass, coated
Description/interface		**8-bit parallel**	**8×8-bit parallel**	**2×8-bit parallel dynamic***
5 m cable	**Order code**	**BIS00H6**	**BIS00HC**	**BIS00HH**
	Part number	BIS C-60R-001-08P-PU-05	BIS C-60R-002-08P-PU-05	BIS C-60R-003-08P-PU-05
10 m cable	**Order code**	**BIS00H7**	**BIS00HE**	**BIS00HJ**
	Part number	BIS C-60R-001-08P-PU-10	BIS C-60R-002-08P-PU-10	BIS C-60R-003-08P-PU-10
20 m cable	**Order code**	**BIS00H8**	**BIS00TC**	
	Part number	BIS C-60R-001-08P-PU-20	BIS C-60R-002-08P-PU-20	BIS C-60R-003-08P-PU-20
Assembly		▬	▬	▬
Power supply		24 V DC +10/–20 %, including ripple	24 V DC +10/–20 %, including ripple	24 V DC +10/–20 %, including ripple
Power supply		max. 300 mA without load	max. 300 mA without load	max. 300 mA without load
Output current per output		max. 50 mA	max. 50 mA	max. 50 mA
Voltage drop		≤ 1.5 V	≤ 1.5 V	≤ 1.5 V
Residual current		≤ 0.08 mA	≤ 0.08 mA	≤ 0.08 mA
Operating temperature		0...+50 °C	0...+50 °C	0...+50 °C
Degree of protection per IEC 60529		IP 67	IP 67	IP 67
Tightening torque		20 Nm	20 Nm	20 Nm
Conductor cross-sections		2×0.5 mm² and 9×0.18 mm²	2×0.5 mm² and 9×0.18 mm²	2×0.5 mm² and 9×0.18 mm²
LED function indicator		Yes	Yes	Yes

Matching data carriers		**BIS000T** BIS C-121-04/L	**BIS000T** BIS C-121-04/L	**BIS0011** BIS C-122-04/L	**BIS0004** BIS C-103-05/A	**BIS0004** BIS C-103-05/A	**BIS001E** BIS C-130-05/L	**BIS001E** BIS C-130-05/L	**BIS0002** BIS C-100-05/A	**BIS0002** BIS C-100-05/A	**BIS0019** BIS C-128-05/L	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**BIS000C** BIS C-108-05/L	**BIS0006** BIS C-104-11/A	**BIS000C** BIS C-108-05/L
Assembly		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Working distance for reading in mm		0...3	1...5	1...5	0...4	1...5	0...5	1...8	0...5	1...6	3...12	1...8	1...8	1...8	1...8	0...6
Offset in mm at distance	1 mm	±2	±3	±3	±4	±2,5	±3	±4	±2,5	±3		±5	±7	±7	±4	±7
	3 mm	±2	±3	±3	±2,5	±2,5	±3	±5	±3	±3	±7	±5	±7	±7	±4	±7
	5 mm		±3	±3		±2,5	±3	±5	±3	±3	±6	±5	±7	±7	±4	±6
	7 mm							±5			±5	±5	±6	±6	±4	

* Dynamic operation only for BIS C-60R-003

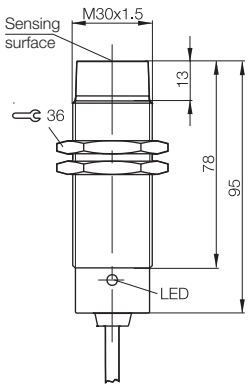
Installation:

▬ Flush in steel

▬ Non-flush on steel

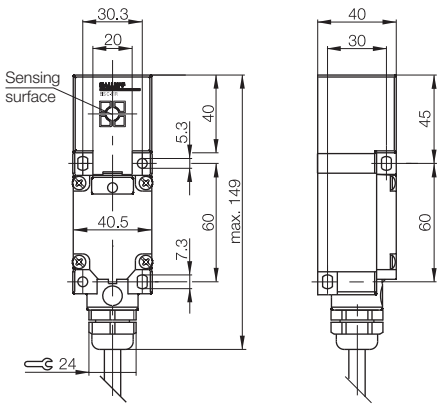
Antenna type:

Round



	40×40×149 mm
	ABS
	8-bit parallel
	BIS00HL
	BIS C-61R-001-08P-PU-05
	24 V DC +10/–20 %, including ripple
	max. 300 mA without load
	max. 50 mA
	≤ 1.5 V
	≤ 0.08 mA
	0...+50 °C
	IP 67
	20 Nm
	2×0.5 mm² and 9×0.18 mm²
	Yes

BIS000T BIS C-121-04/L	**BIS0011** BIS C-122-04/L	**BIS000T** BIS C-121-04/L	**BIS0011** BIS C-122-04/L	**BIS0004** BIS C-103-05/A	**BIS0004** BIS C-103-05/A	**BIS001E** BIS C-130-05/L	**BIS001E** BIS C-130-05/L	**BIS0002** BIS C-100-05/A	**BIS0002** BIS C-100-05/A	**BIS0019** BIS C-128-05/L	**BIS0019** BIS C-128-05/L	**BIS000M** BIS C-117-05/A	**BIS000N** BIS C-117-05/L	**BIS0006** BIS C-104-11/A	**BIS000H** BIS C-108-11/L	**BIS000H** BIS C-108-11/L
0...2	0...2	1...4	1...4	0...3	1...4	0...4	1...7	0...4	1...5	0...3	3...7	1...7	1...7	1...4	0...5	1...7
±2	±2	±3	±3	±3	±2,5	±3	±4	±2,5	±3	±5		±5	±7	±4	±7	±7
		±3	±3		±2,5	±3	±5	±3	±3		±7	±5	±7	±4	±6	±7
							±5				±6	±5	±6	±4		±6



The **BIS C-60R-001-08P-_ _** read-only system is designed for simple applications of the BIS C read/write system. It is supplied as a read-only system and provides the 8 bits of information without any additional components in parallel format.
3 bytes per value are always used starting at Address 0.

The remaining bytes on the data carrier can be used for other purposes with the appropriate processor units. For this function the bytes on the data carrier (starting at Address 0) must be pre-programmed before a read operation can take place.

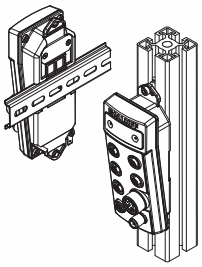
To easily program the data carrier a processor with serial port and Balluff 007 protocol are used. Programming is easy and fast using the free BISCOMRW software downloadable from the Balluff website at www.balluff.com.

Industrial RFID System BIS C with 433/70 kHz (LF)
Processor units BIS V

The variable system for intelligence in a small space: connect up to four read/write heads
Fast contact-free data communication is considerably more efficient with industrial RFID BIS V. Only BIS V combines RFID and sensors. BIS V, along with the four antenna channels, has an integrated IO-Link master with the latest version, 1.1. The four antenna channels work completely independently of each other. This saves costs, as fewer processor units are needed. The IO-Link master provides a node for additional information. Additional sensors and/or actuators can be connected directly and can create a simple network structure.
The high performance BIS V offers maximum convenience. Display and status LEDs support ease of use. Standard hardware, like a PC, is easy to connect to the USB service interface. All connections are easily accessible and provide plug connectors.

- Function indicator: each read/write head connection has two LEDs for the status and operating state
- Eight single-color LEDs show the bus status
- LCD indicators with control buttons: setting and displaying the Profibus address and displaying UIDs from data carriers that have been read
- USB connection: for fast commissioning without bus connection (reading and writing data carriers), update/upgrade of the processor unit or the read/write heads and retrieving the operating manual as a PDF file
- Intelligent power plug for saving parameters on site
- Simple mounting on top-hat rails or extruded profiles

The compact EMC-protected metal housing with small dimensions (170×60×40 mm) is perfectly integrated and simple to mount. In control cabinets or in the field up to IP 65, on a top-hat rail, or on a profile.



The industrial-grade RFID system BIS V was developed and qualified according to the principles of GAMP® 5. Additional information upon request at **rfidpharma@balluff.com**

reddot design award
winner 2012

Industrial RFID System BIS C with 433/70 kHz (LF)

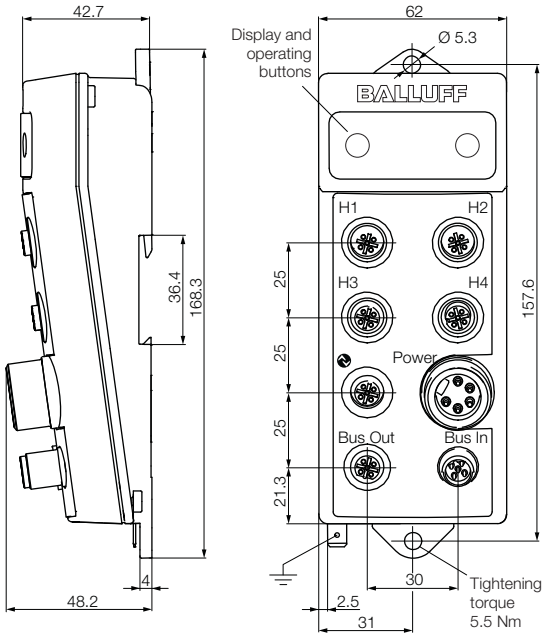
Processor units BIS V Profibus

Description		**Processor unit**
Housing material		Die-cast aluminum, coated
Profibus	**Order code**	**BIS012E**
	Part number	BIS V-6102-019-C101
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
IO-Link master		V 1.1, max. 0.5 A
Read/write head ports		4× BIS C-3_ _-PU1-_ _ (external)
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	Profibus IN	1× M12 male, 5-pin
	Profibus OUT	1× M12 female, 5-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 312...313 (adapter* necessary)
	Power	See page 338...339
	Profibus	See page 320...321
	IO-Link	See page 304...307
Accessories included		Configuration software (GSD file)
Power supply units		See page 352...353

The processor units BIS V can also be used with series **BIS VM** and **BIS VL** read/write heads.



***Adapter**
(please order separately)

Description	Adapter for connecting read/ write heads BIS C to processor unit BIS V
Order code	**BCC0FCK**
Part number	BCC M414-M414-6A-710-PS0434-003
Additional information	See page 314

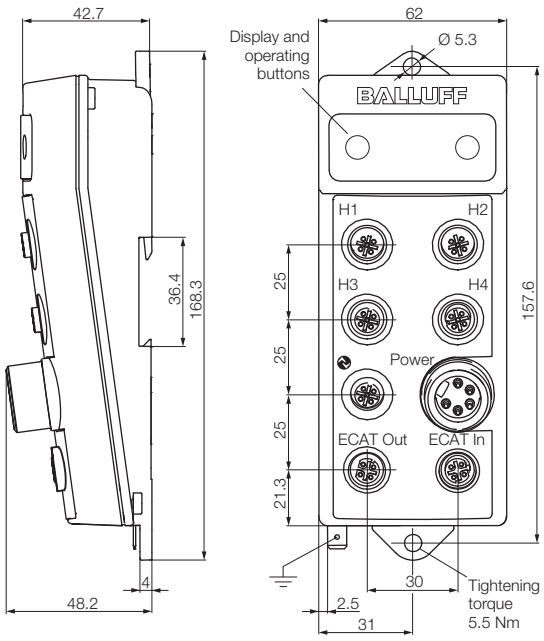
Processor unit BIS V EtherCAT

Description		**Processor unit**
Housing material		Die-cast aluminum, coated
EtherCAT	**Order code**	**BIS0147**
	Part number	BIS V-6110-063-C102
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		4× BIS C-3_ _-PU1-_ _ (external)
IO-Link master		V 1.1, max. 0.5 A
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	EtherCAT In	1× M12 female, 4-pin
	EtherCAT Out	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 312...313 (adapter* necessary)
	Power	See page 338...339
	EtherCAT	See page 322...323
	IO-Link	See page 304...307
Accessories included		Configuration software (ESI file)
Power supply units		See page 352...353

The processor units BIS V can also be used with series **BIS VM** and **BIS VL** read/write heads.



***Adapter**
(please order separately)

Description	Adapter for connecting read/ write heads BIS C to processor unit BIS V
Order code	**BCC0FCK**
Part number	BCC M414-M414-6A-710-PS0434-003
Additional information	See page 314

Industrial RFID System BIS C with 433/70 kHz (LF)

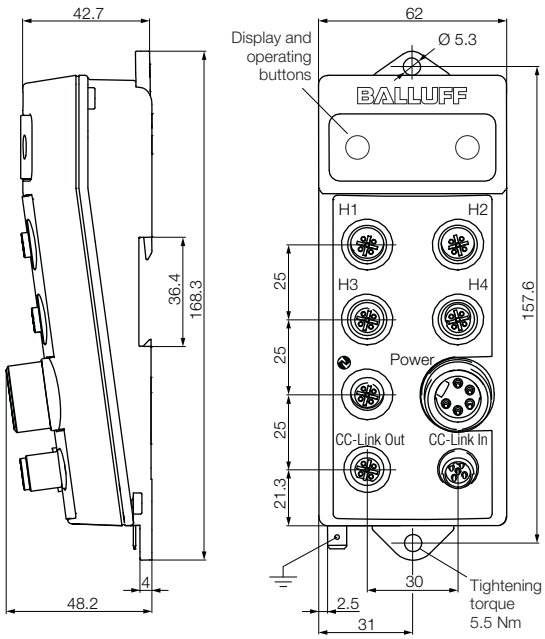
Processor Unit BIS V CC-Link

Description		**Processor unit**
Housing material		Die-cast aluminum, coated
CC-Link	**Order code**	**BIS014E**
	Part number	BIS V-6111-073-C103
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		4× BIS C-3_ _-PU1-_ _ (external)
IO-Link master		V 1.1, max. 0.5 A
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	CC-Link In	1× M12 male, 5-pin
	CC-Link Out	1× M12 female, 5-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 312...313 (adapter* necessary)
	Power	See page 338...339
	CC-Link	See page 328...329
	IO-Link	See page 304...307
Accessories included		Configuration software (CSP file)
Power supply units		See page 352...353

The processor units BIS V can also be used with series **BIS VM** and **BIS VL** read/write heads.



***Adapter**
(please order separately)

Description	Adapter for connecting read/ write heads BIS C to processor unit BIS V
Order code	**BCC0FCK**
Part number	BCC M414-M414-6A-710-PS0434-003
Additional information	See page 314

Processor units BIS V Ethernet/IP

Connection
Supply voltage
5-pin

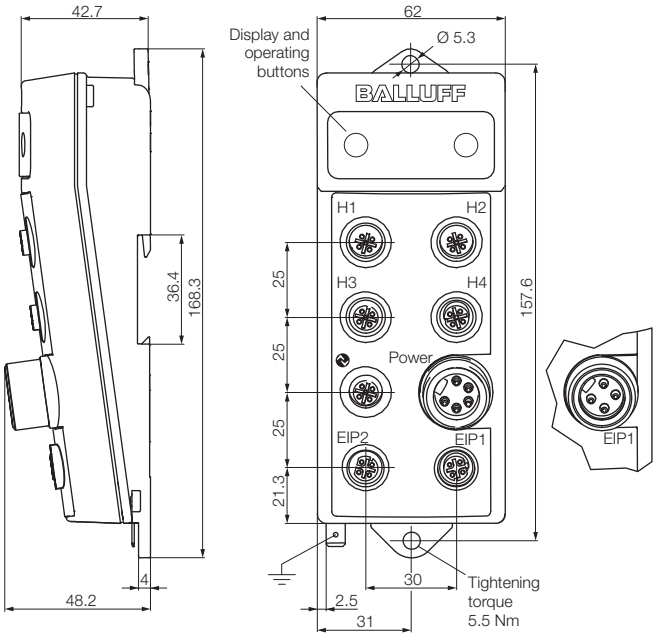
Connection
Supply voltage
4-pin

Description		Processor unit	Processor unit
Housing material		Die-cast aluminum, coated	Die-cast aluminum, coated
Ethernet/IP	**Order code**	**BIS014C**	**BIS0146**
	Part number	BIS V-6106-034-C102	BIS V-6106-034-C104
Power supply		24 V DC ±10% LPS Class 2	24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%	≤ 10%
Power supply		≤ 2 A	≤ 2 A
Operating temperature		0...+60 °C	0...+60 °C
Storage temperature		0...+60 °C	0...+60 °C
Degree of protection per IEC 60529		IP 65	IP 65
IO-Link master		V 1.1, max. 0.5 A	V 1.1, max. 0.5 A
Read/write head ports		4× BIS C-3_ _-PU1-_ _ (external)	4× BIS C-3_ _-PU1-_ _ (external)
Connection configuration	Read/write heads H1...H4	4× M12 female, 5-pin	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin	1× 7/8" male, 4-pin
	Ethernet/IP In	1× M12 female, 4-pin	1× M12 female, 4-pin
	Ethernet/IP Out	1× M12 female, 4-pin	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 312...313 (adapter* necessary)	See page 312...313 (adapter* necessary)
	Power	See page 338...339	See page 340...341
	Ethernet/IP	See page 322...323	See page 322...323
	IO-Link	See page 304...307	See page 304...307
Accessories included		Configuration software (EDS file)	Configuration software (EDS file)
Power supply units		See page 352...353	See page 352...353

The processor units BIS V can also be used with series **BIS VM** and **BIS VL** read/write heads.



***Adapter**
(please order separately)

Description	Adapter for connecting read/write heads BIS C to processor unit BIS V
Order code	**BCC0FCK**
Part number	BCC M414-M414-6A-710-PS0434-003
Additional information	See page 314

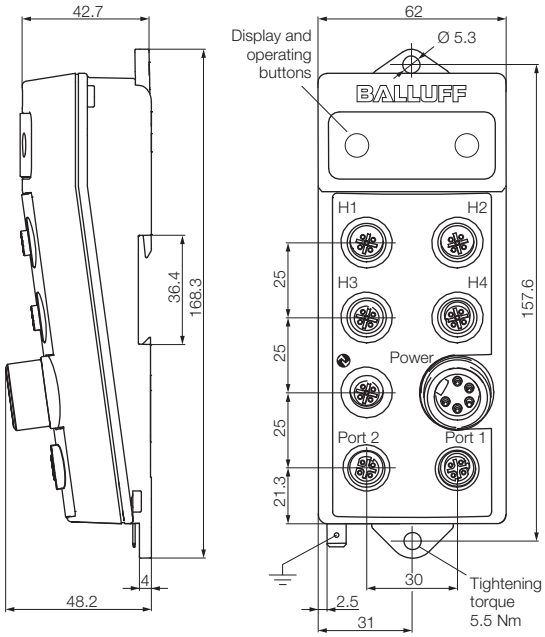
Processor unit BIS V Profinet

Description		Processor unit
Housing material		Die-cast aluminum, coated
Profinet	**Order code**	**BIS013W**
	Part number	BIS V-6108-048-C102
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
IO-Link master		V 1.1, max. 0.5 A
Read/write head ports		4× BIS C-3_ _-PU1-_ _ (external)
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	Profinet In	1× M12 female, 4-pin
	Profinet Out	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 312...313 (adapter* necessary)
	Power	See page 338...339
	Profinet	See page 322...323
	IO-Link	See page 304...307
Accessories included		Configuration software (GSDML file)
Power supply units		See page 352...353

The processor units BIS V can also be used with series **BIS VM** and **BIS VL** read/write heads.



***Adapter**
(please order separately)

Description	Adapter for connecting read/ write heads BIS C to processor unit BIS V
Order code	**BCC0FCK**
Part number	BCC M414-M414-6A-710-PS0434-003
Additional information	See page 314

Description		
Housing material		
RS232,	**Order code**	
Balluff Dialog	Part number	
RS422/RS485,	**Order code**	
4-wire, point-to-point, Balluff Dialog	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Control inputs		
Control outputs		
Connection	Read/write Heads	
	Power, RS232, I/O, service	
	Power	
	RS232, I/O, service	

Accessories

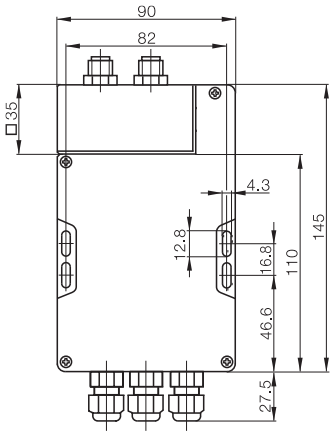
Connection cables	Read/write Heads	
	Power	
	RS232, I/O, service	
Accessories included		
Power supply units		

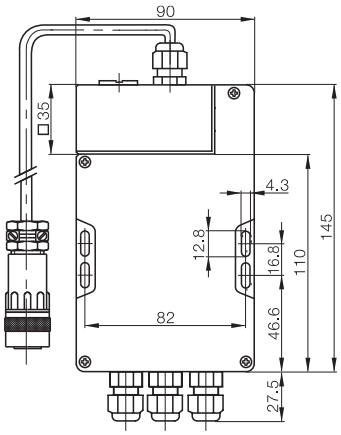
Adapter or antenna can be rotated in 3 directions

The **compact class BIS C-6_ _** with its reduced dimensions and various interface options can be used wherever ambient conditions require higher protection. The devices are ideal for IP 65 and applications involving media that do not corrode PS plastic. They are small, compact, flexible and economical.

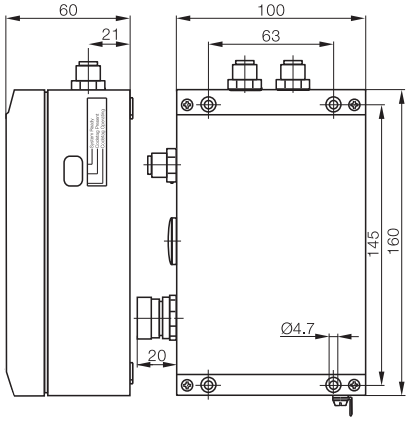
Processor units Serial RS232

	Processor unit	Processor unit	Processor unit
	ABS	ABS	Die-cast aluminum, coated
	BIS008U	**BIS0092**	**BIS00AZ**
	BIS C-600-007-650-00-KL1	BIS C-600-007-670-00-KL1	BIS C-620-007-050-00-ST2
	BIS008W		**BIS00KW**
	BIS C-600-007-650-02-KL1		BIS C-620-007-050-02-ST2
	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
	≤ 400 mA	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C	0...+60 °C
	IP 65	IP 65	IP 65
	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355	1× BIS C-350 (external)	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
	1× via optocoupler, 24 V DC	1× via optocoupler, 24 V DC	
	4× via optocoupler, 24 V DC	4× via optocoupler, 24 V DC	
	2× M12 male, 4-pin	1× Burndy® socket, 8-pin	2× M12 male, 4-pin
	1× terminal strip, 19-pin (3× cable gland Pg 9)	1× terminal strip, 19-pin (3× cable gland Pg 9)	
			1× M12 male, 5-pin
			1× M23 male, 9-pin
	See page 312...313	See page 317 (connection cable BIS C-516-PU-_ _)	See page 312...313
			See page 337
			See page 315
	Configuration software See page 352...353	Configuration software See page 352...353	Configuration software See page 352...353





for read/write head C-350



Processor unit **BIS C-62_** enclosed in a robust metal housing is suitable for applications requiring degree of protection IP 65. It features flexible interface variants and gives you the ability to connect up to two read/write heads to one unit. The housing provides effective protection against environmental influences and aggressive media. Even impacts do not affect the degree of protection.

Industrial RFID System BIS C with 433/70 kHz (LF)
Processor unit Parallel

Advantages of the BIS C-605 parallel version
The parallel interface is a read only interface. However, the processor unit can write a single piece of bit information (OK/NOK, large/small, version 1/version 2) to the data carrier. This bit information is also output as a separate output signal.

The **compact class BIS C-6_ _** with its reduced dimensions and various interface options can be used wherever ambient conditions require higher protection. It is small, compact, flexible and economical.

Description		
Housing material		
Parallel	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Control inputs		
Control outputs		
Connection	Read/write Heads	
	Power, parallel, I/O, service	

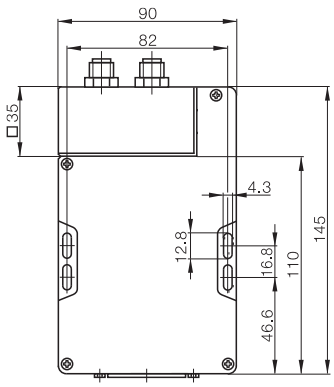
Accessories

Connection cables	Read/write Heads	
	Power, parallel, I/O, service	
Accessories included		
Power supply units		

Adapter or antenna can be rotated in 3 directions

	Processor unit
	ABS
	BIS00N7
	BIS C-6005-027-650-05-ST4
	24 V DC ±20%, ≤ 10%
	≤ 400 mA
	0...+60 °C
	0...+60 °C
	IP 54
	2× external
	4× via optocoupler, 24 V DC
	13× via optocoupler, 24 V DC
	2× M12 male, 4-pin
	SUB-MIN-D connector, 25-pin

	See page 312...313
	See page 317
	Configuration software
	See page 352...353



Industrial RFID System BIS C with 433/70 kHz (LF)

Processor units Profibus

The **compact class BIS C-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require higher protection. It is small, compact, flexible and economical.

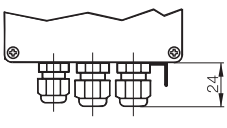
Cost-effective identification – operate two read/write heads simultaneously!

- Selectable division of the data width on the Profibus, 4 to 128 bytes
- Free assigning of the data width for each read/write head
- Optimum data speed, internal cycle time is shorter than the bus activation time
- Service friendly, all parameter data are stored in an exchangeable memory
- Bus address selectable with switches
- Compatible with BIS C-602 device family
- Accepts all read/write heads
- Compatible with entire BIS C system

Description		**Processor unit**
Housing material		ABS
Profibus with connector	**Order code**	**BIS009A**
	Part number	BIS C-6002-019-650-03-ST11
Profibus memory optimisation with connector	**Order code**	**BIS009M**
	Part number	BIS C-6002-028-650-03-ST11
Profibus with PG fitting	**Order code**	**BIS0099**
	Part number	BIS C-6002-019-650-03-KL2
Profibus memory optimisation with PG fitting	**Order code**	**BIS009L**
	Part number	BIS C-6002-028-650-03-KL2
Power supply, ripple		24 V DC ±20%, ≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
Service interface		RS232 internal
Control inputs		1× via optocoupler, 24 V DC
Control outputs		2× via optocoupler, 24 V DC
Connection configuration connector ST11	Read/write Heads	2× M12 male, 4-pin
	Power	1× M12 male, 5-pin
	Profibus IN	1× M12 male, 5-pin, B-coded
	Profibus OUT	1× M12 female, 5-pin, B-coded
Connection configuration terminals KL2	Power, Profibus, I/O, service	

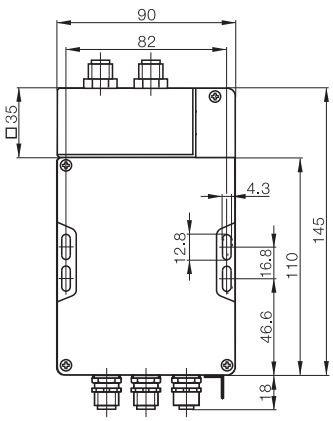
Accessories

Connection cables	Read/write Heads	See page 312...313
	Power	See page 337
	Profibus	See page 320...321
Accessories included		Configuration software (GSD file)
Power supply units		See page 352...353



version KL2

Adapter or antenna can be rotated in 3 directions

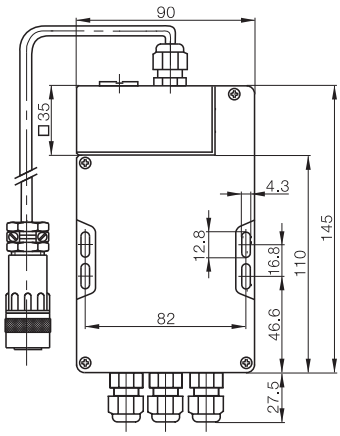


Screw plug
(please order separately)

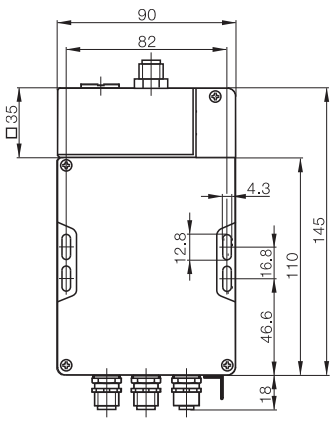
Application for	M12 connection
Order code	**BAM0114**
Part number	BKS 12-CS-01

Processor units Profibus

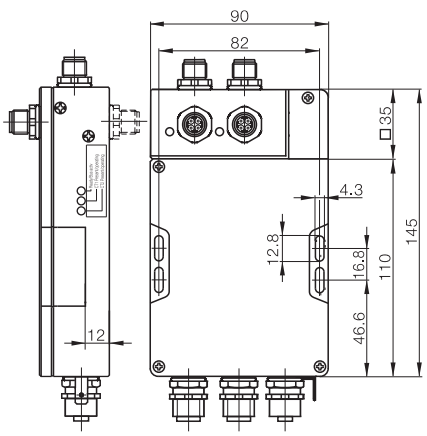
	Processor unit	Processor unit	Processor unit
	ABS	ABS	ABS
		BIS009F	**BIS009J**
		BIS C-6002-019-654-03-ST11	BIS C-6002-019-655-03-ST11
	BIS009K		**BIS009H**
	BIS C-6002-019-670-03-KL2		BIS C-6002-019-655-03-KL2
	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
	≤ 400 mA	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C	0...+60 °C
	IP 65	IP 65	IP 65
	1× BIS C-350 (external)	1× BIS C-355 (external)	4× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
	RS232 internal	RS232 internal	RS232 internal
	1× via optocoupler, 24 V DC	1× via optocoupler, 24 V DC	1× via optocoupler, 24 V DC
	2× via optocoupler, 24 V DC	2× via optocoupler, 24 V DC	2× via optocoupler, 24 V DC
	1× Burndy® socket, 8-pin	1× M12 male, 5-pin	4× M12 male, 4-pin
		1× M12 male, 5-pin	1× M12 male, 5-pin
		1× M12 male, 5-pin, B-coded	1× M12 male, 5-pin, B-coded
		1× M12 female, 5-pin, B-coded	1× M12 female, 5-pin, B-coded
	1× terminal strip, 19-pin (cable gland 1× Pg 9, 2× Pg 11)		
	See page 317 (connection cable BIS C-516-PU-_ _)	See page 317 (connection cable BIS C-520-PVC-05)	
		See page 337	See page 337
		See page 320...321	See page 320...321
	Configuration software (GSD file)	Configuration software (GSD file)	Configuration software (GSD file)
	See page 352...353	See page 352...353	See page 352...353



For read/write head BIS C-350-_ _



For read/write head BIS C-355/_ _-S92



2 read/write heads can be operated at the same time

Industrial RFID System BIS C with 433/70 kHz (LF)
Processor units Profibus

Cost-effective identification – operate two read/write heads simultaneously! In a rugged metal housing.

Description		
Housing material		
Profibus	**Order code**	
	Part number	
Profibus	**Order code**	
with memory-optimized data carrier processing	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection configuration	Read/write Heads	
	Power	
	Profibus IN	
	Profibus OUT	
	Service interface	

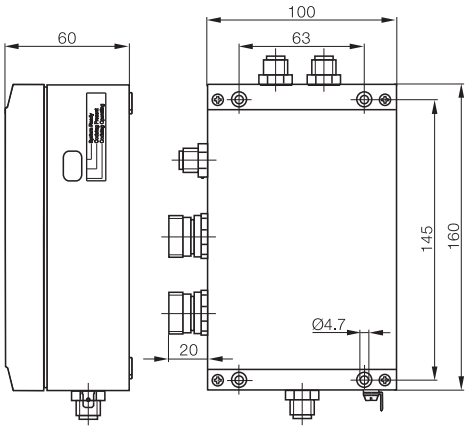
Accessories

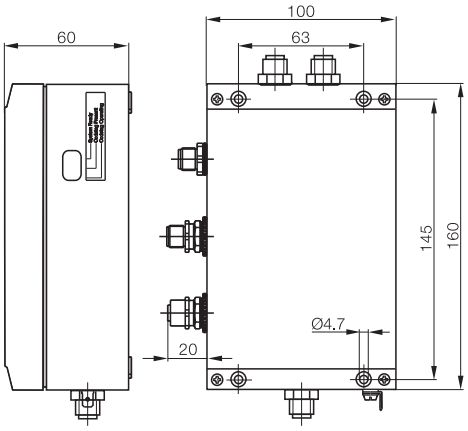
Connection cables	Read/write Heads	
	Power	
	Profibus	
	Service interface	
Accessories included		
Power supply units		

Screw Plugs
(please order separately)

Application for	M12 connection	M23 connection
Order code	**BAM0114**	**BAM012P**
Part number	BKS 12-CS-01	BKS 23-CS-00

	Processor unit	**Processor unit**
	Die-cast aluminum, coated	Die-cast aluminum, coated
	BIS00AL	**BIS00AM**
	BIS C-6022-019-050-03-ST10	BIS C-6022-019-050-03-ST14
	BIS00AP	**BIS00AR**
	BIS C-6022-028-050-03-ST10	BIS C-6022-028-050-03-ST14
	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
	RS232	RS232
	2× M12 male, 4-pin	2× M12 male, 4-pin
	1× M12 male, 5-pin	1× M12 male, 5-pin
	1× M23 female, 12-pin	1× M12 male, 5-pin, B-coded
	1× M23 female, 12-pin	1× M12 female, 5-pin, B-coded
	1× M12 male, 4-pin	1× M12 male, 4-pin
	See page 312...313	See page 312...313
	See page 337	See page 337
	See page 315	See page 320
	See page 319 (BCC00PL)	See page 319 (BCC00PL)
	Configuration software (GSD file)	Configuration software (GSD file)
	See page 352...353	See page 352...353





Industrial RFID System BIS C with 433/70 kHz (LF)
Processor units Devicenet

The **compact class BIS C-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require higher protection. The devices are ideal for IP 65 and applications involving media that do not corrode PS plastic. It is small, compact, flexible and economical.

Cost-effective identification –
operate two read/write heads simultaneously!

- Freely selectable buffer size between 0 and 256 bytes
- Service-friendly, all parameter data are stored in an exchangeable memory
- Accepts all read/write heads
- Compatible with entire BIS C system

Description		
Housing material		
DeviceNet	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection configuration	Read/write Heads	
	Power	
	DeviceNet In	
	DeviceNet Out	

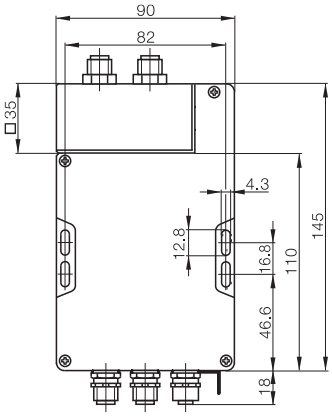
Accessories

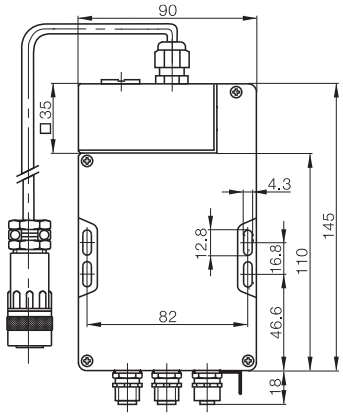
Connection cables	Read/write Heads	
	Power	
	DeviceNet	
Accessories included		
Power supply units		

Adapter or antenna can be rotated in 3 directions

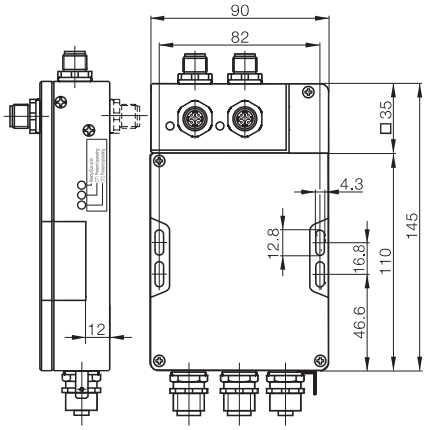
Processor units Devicenet

	Processor unit	Processor unit	Processor unit
	ABS	ABS	ABS
	BIS009N	**BIS009T**	**BIS009R**
	BIS C-6003-025-650-03-ST12	BIS C-6003-025-670-03-ST12	BIS C-6003-025-655-03-ST12
	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
	≤ 400 mA	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C	0...+60 °C
	IP 65	IP 65	IP 65
	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355	1× BIS C-350 (external)	4× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
	RS232 internal	RS232 internal	RS232 internal
	2× M12 male, 4-pin	1× Burndy® socket, 8-pin	4× M12 male, 4-pin
	1× M12 male, 5-pin	1× M12 male, 5-pin	1× M12 male, 5-pin
	1× M12 female, 5-pin	1× M12 female, 5-pin	1× M12 female, 5-pin
	1× M12 female, 5-pin	1× M12 female, 5-pin	1× M12 female, 5-pin
	See page 312...313	See page 317 (connection cable BIS C-516-PU-_ _)	See page 312...313
	See page 337	See page 337	See page 337
	See page 327	See page 327	See page 327
	Configuration software (EDS file)	Configuration software (EDS file)	Configuration software (EDS file)
	See page 352...353	See page 352...353	See page 352...353





For read/write head BIS C-350-_ _



2 read/write heads can be operated at the same time

Industrial RFID System BIS C with 433/70 kHz (LF)
Processor units Devicenet

Cost-effective identification – operate two read/write heads simultaneously! In a rugged metal housing.

Description		
Housing material		
DeviceNet	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection configuration	Read/write Heads	
	Power	
	DeviceNet In	
	DeviceNet Out	
	Service interface	

Accessories

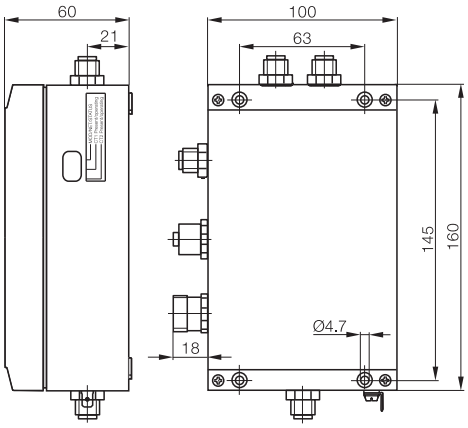
Connection cables	Read/write Heads	
	Power	
	DeviceNet	
	Service interface	
Accessories included		
Power supply units		

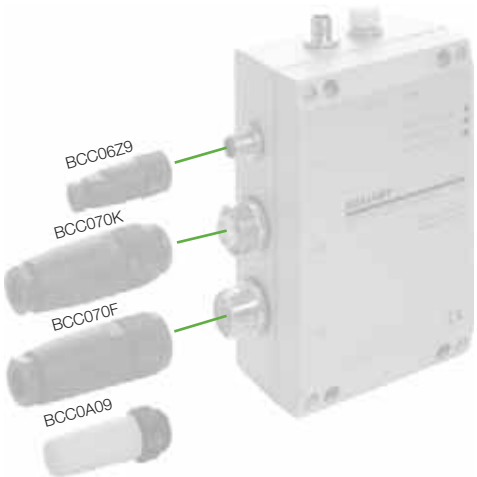
Screw plug
(please order separately)

Application for	7/8" connection
Order code	**BAM012T**
Part number	BKS-7/8-CS-00-A

	Processor unit
	Die-cast aluminum, coated
	BIS00AT
	BIS C-6023-025-050-03-ST13
	24 V DC ±20%, ≤ 10%
	≤ 400 mA
	0...+60 °C
	0...+60 °C
	IP 65
	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
	RS232
	2× M12 male, 4-pin
	1× M12 male, 5-pin
	1× 7/8" female, 5-pin
	1× 7/8" male, 5-pin
	1× M12 male, 4-pin

	See page 312...313
	See page 337
	See page 324
	See page 319 (BCC00PL)
	Configuration software (EDS file)
	See page 352...353





Industrial RFID System BIS C with 433/70 kHz (LF)

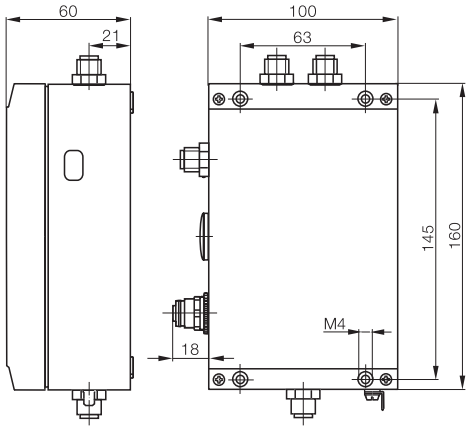
Processor unit Ethernet/IP

Cost-effective identification – operate two read/write heads simultaneously! In a rugged metal housing.

Description		**Processor unit**
Housing material		Die-cast aluminum, coated
Ethernet/IP	**Order code**	**BIS00AU**
	Part number	BIS C-6026-034-050-06-ST19
Power supply, ripple		24 V DC ±20%, ≤ 20%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
Service interface		RS232
Connection configuration	Read/write Heads	2× M12 male, 4-pin
	Power	1× M12 male, 5-pin
	Ethernet/IP	1× M12 female, 4-pin, D-coded
	Service interface	1× M12 male, 4-pin

Accessories

Connection cables	Read/write Heads	See page 312...313
	Power	See page 337
	Ethernet/IP	See page 322...323
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software (EDS file)
Power supply units		See page 352...353



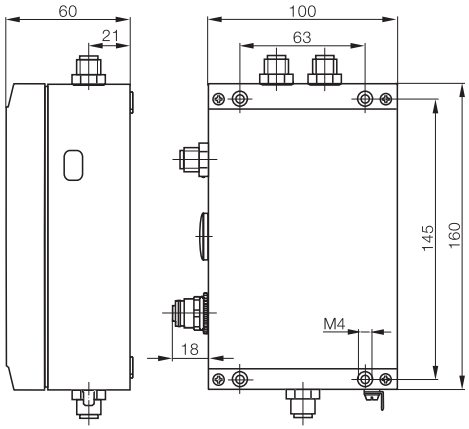
Industrial RFID System BIS C with 433/70 kHz (LF)

Processor unit Ethernet TCP/IP

Description		**Processor unit**
Housing material		Die-cast aluminum, coated
Ethernet	**Order code**	**BIS00AY**
with standard TCP/IP protocol	Part number	BIS C-6027-039-050-06-ST19
Power supply, ripple		24 V DC ±20%, ≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
Service interface		RS232
Connection configuration	Read/write Heads	2× M12 male, 4-pin
	Power	1× M12 male, 5-pin
	Ethernet TCP/IP	1× M12 female, 4-pin, D-coded
	Service interface	1× M12 male, 4-pin

Accessories

Connection cables	Read/write Heads	See page 312...313
	Power	See page 337
	Ethernet TCP/IP	See page 322...323
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software
Power supply units		See page 352...353



Ethernet adapter cable
(please order separately)

Description	M12, D-coded on RJ45 coupling
Order code	**BCC0C5J**
Part number	BIS C-526-PU-00,6
Additional information	See page 323

Industrial RFID System BIS C with 433/70 kHz (LF)
Processor units Profinet

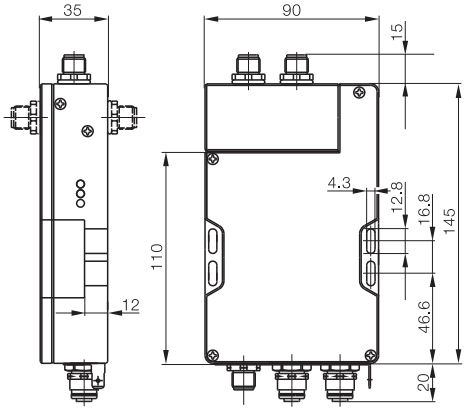
Cost-effective identification – operate two read/write heads simultaneously!

Description		**Processor unit**
Housing material		ABS
Profinet RT with IRT-capable	**Order code**	**BIS00K3**
2-port switch	Part number	BIS C-6008-048-650-06-ST23
Power supply, ripple		24 V DC ±10%, ≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
Service interface		RS232 internal
Connection configuration	Read/write Heads	2× M12 male, 4-pin
	Power	1× M12 male, 5-pin
	Profinet In	1× M12 female, 4-pin, D-coded
	Profinet Out	1× M12 female, 4-pin, D-coded
	Service interface	

Accessories

Connection cables	Read/write Heads	See page 312...313
	Power	See page 337
	Profinet	See page 322...323
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software (GSDML file)
Power supply units		See page 352...353

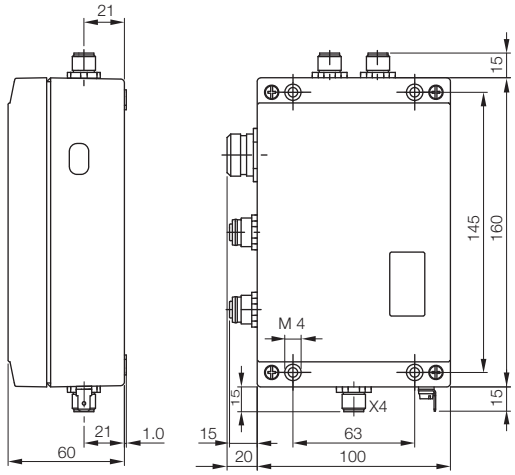
Adapter or antenna can be rotated in three directions

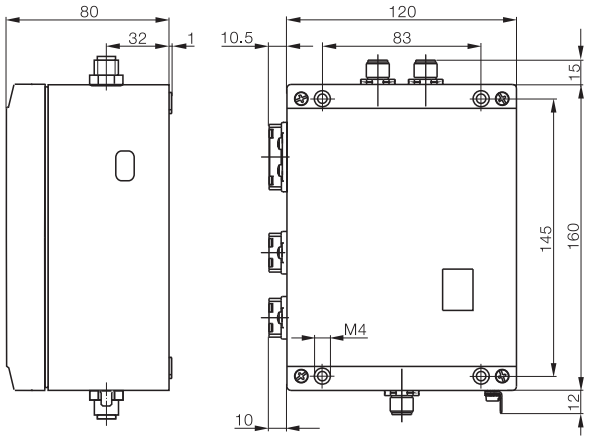


Ethernet adapter cable
(please order separately)

Description	M12, D-coded on RJ45 coupling
Order code	**BCC0C5J**
Part number	BIS C-526-PU-00,6
Additional information	See page 323

	Processor unit	**Processor unit**
	Die-cast aluminum, coated	Die-cast aluminum, coated
	BIS00TU	**BIS00K4**
	BIS C-6028-048-050-06-ST28	BIS C-6028-048-050-06-ST22
	24 V DC ±10%, ≤ 10%	24 V DC ±10%, ≤ 10%
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355	2× BIS C-3_ _ (external), exception: BIS C-350 and BIS C-355
	RS232	RS232
	2× M12 male, 4-pin	2× M12 male, 4-pin
	1× 7/8" male, 5-pin	1× push-pull connector AIDA, 5-pin
	1× M12 female, 4-pin, D-coded	1× push-pull connector RJ45 AIDA, 8-pin
	1× M12 female, 4-pin, D-coded	1× push-pull connector RJ45 AIDA, 8-pin
	1× M12 male, 4-pin	1× M12 male, 4-pin
	See page 312...313	See page 312...313
	See page 338...339	Cable selection on request
	See page 322...323	Cable selection on request
	See page 319 (BCC00PL)	See page 319 (BCC00PL)
	Configuration software (GSDML file)	Configuration software (GSDML file)
	See page 352...353	See page 352...353





The robust version for connection to ProfiNet with AIDA standard
(Automation Initiative of German Domestic Automobile Manufacturers)

Industrial RFID System BIS C with 433/70 kHz (LF)
Handheld devices

For a high level of convenience
Allows portable writing and reading of BIS C data carriers.
Easy operation thanks to
- Touch screen with large Windows CE®color display
- Preinstalled Balluff software and keyboard or stylus

Handheld devices are ideal in poor lighting and harsh environments. Data is transmitted over optional Wi-Fi, Bluetooth or a wired USB connection. The handheld device can be expanded with modules.

PSION-based handheld device
- Windows CE®
- Touch screen
- Delivered with a software development kit (SDK)
- Includes a charger
- Bluetooth

Optional
- 1D/2D barcode reader
- Docking station
- Pistol grip for ergonomic work

Customer-specific software on request:
tecsupport@balluff.com

Design		
Function		
Housing material		
Standard	**Order code**	
	Part number	
Standard + Wi-Fi	**Order code**	
	Part number	
Standard + 1D code reader	**Order code**	
	Part number	
Standard + 2D code reader	**Order code**	
	Part number	
Standard + 1D code reader + Wi-Fi	**Order code**	
	Part number	
Standard + 2D code reader + Wi-Fi	**Order code**	
	Part number	
Keyboard		
Display		
Supply voltage		
Capacity		
Interface		
Operating temperature		
Degree of protection per IEC 60529		
Read/write head option		
Appropriate data carrier		

Accessories

Accessories included	
Pistol grip	
Docking station	
Power supply	
Carrying case	

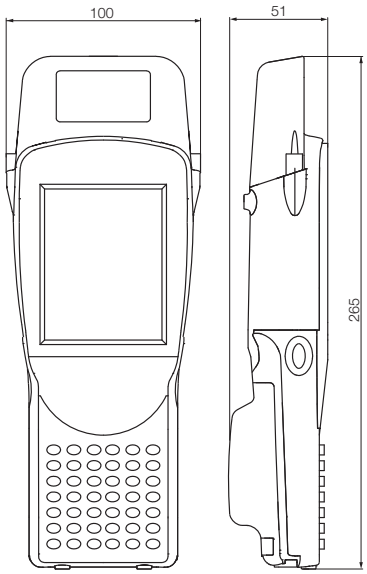
Antenna type:
Rod
Round

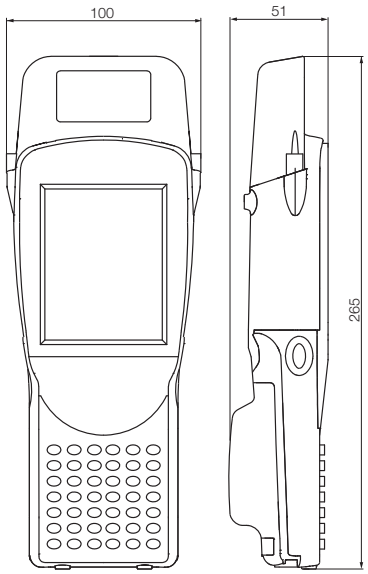
Accessories
(please order separately)

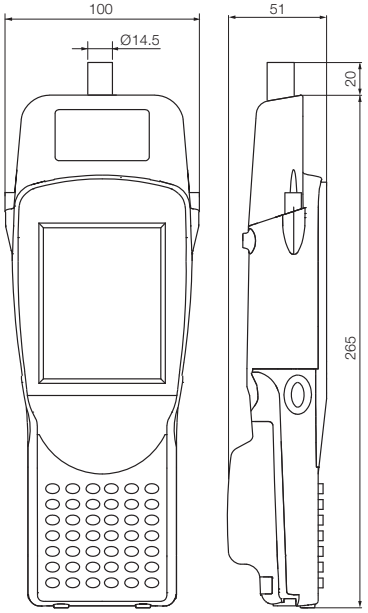



Description	Pistol grip	Docking station	Power supply	Carrying case
Order code	**BAM0281**	**BAM0282**	**BAE00TA**	**BAM021R**
Part number	BAM MD-XA-002-0001	BAM MD-XA-001-0001	BAE PS-XA-1W-05-030-702-CX-01	BAM PC-XA-016-001-A

	All-purpose	Rod	Tool ID
	Reading/writing	Reading/writing	Reading/writing
	ABS	ABS	ABS
	BAE00C4	**BAE00CL**	**BAE00CK**
	BIS C-870-1-008-X-000	BIS C-871-1-008-X-000	BIS C-873-1-008-X-000
	BAE00CR		**BAE00NR**
	BIS C-870-1-008-X-001	BIS C-871-1-008-X-001	BIS C-873-1-008-X-001
	BAE00K5		
	BIS C-870-1-008-X-002	BIS C-871-1-008-X-002	BIS C-873-1-008-X-002
			BAE00T6
	BIS C-870-1-008-X-003	BIS C-871-1-008-X-003	BIS C-873-1-008-X-003
	BAE00J6		**BAE00E8**
	BIS C-870-1-008-X-004	BIS C-871-1-008-X-004	BIS C-873-1-008-X-004
	BAE00K6		**BAE00KM**
	BIS C-870-1-008-X-005	BIS C-871-1-008-X-005	BIS C-873-1-008-X-005
	52 keys, alphanumeric	52 keys, alphanumeric	52 keys, alphanumeric
	TFT touchscreen display	TFT touchscreen display	TFT touchscreen display
	3.7 V rechargeable battery pack	3.7 V rechargeable battery pack	3.7 V rechargeable battery pack
	4000 mA/h	4000 mA/h	4000 mA/h
	RS232/Balluff Dialog	RS232/Balluff Dialog	RS232/Balluff Dialog
	–10...+50 °C	–10...+50 °C	–10...+50 °C
	IP 65	IP 65	IP 65
	Integrated	Integrated	Integrated
	For BIS C data carrier with round coil Ø ≥ 35 mm	For BIS C data carrier with rod antenna	For BIS C data carrier with round coil Ø ≥ 34 mm
	Charger power supply and stylus	Charger power supply and stylus	Charger power supply and stylus
	See below	See below	See below
	See below	See below	See below
	See below	See below	See below
	See below	See below	See below







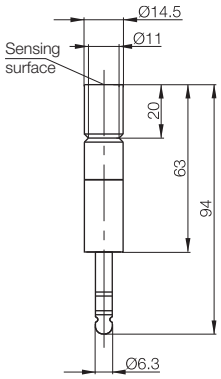
Dimension	
Description	
Housing material	
Order code	
Part number	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Read head connection	
Connection to	

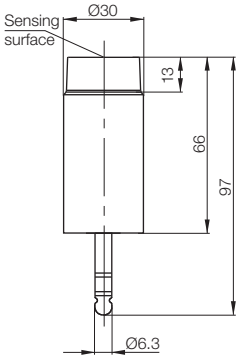
Appropriate data carrier

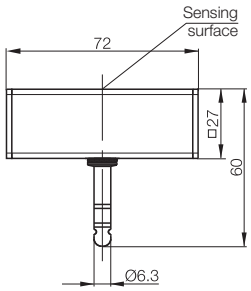
Read/write heads for handheld programmers and read/write gun

	Ø 14.5×63 mm	**Ø 30×66 mm**	**72×27×27 mm**	
	Read/write head	Read/write head	Read/write head	Adapter cable
	Brass, coated	POM	PVC	
	BAE0095	**BAE0096**	**BAE0097**	**BAE0094**
	BIS C-851	BIS C-852	BIS C-853	BIS C-850
	0...+70 °C	0...+70 °C	0...+70 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C	–20...+85 °C	–20...+85 °C
	IP 67	IP 67	IP 67	IP 67
	6.3 mm jack	6.3 mm jack	6.3 mm jack	6.3 mm jack
	BIS C-810	BIS C-810	BIS C-810	BIS C-810
	BIS C-820	BIS C-820	BIS C-820	BIS C-820
	BIS C-720	BIS C-720	BIS C-720	BIS C-720

	BIS C-100_ _	BIS C-100_ _	BIS C-150-_ _/A	Adapter cable for handheld programmer or handheld and all read/write heads with M12 connector.
	BIS C-103_ _	BIS C-104_ _		
	BIS C-105_ _	BIS C-108_ _		
	BIS C-121_ _	BIS C-117_ _		
	BIS C-122_ _	BIS C-128_ _		
		BIS C-130_ _		
		BIS C-190_ _		
		BIS C-191_ _		







Industrial RFID System BIS C with 433/70 kHz (LF)
Handheld programmer

For maximum flexibility
The handheld programmer with read/write function helps you stay mobile and independent – for example during maintenance. The handheld programmer is fitted with an interface for connection to a PC. Customer-specific menu interfaces are possible.

Function	
Housing material	
Order code	
Part number	
Keyboard	
Display	
Current	
Capacity	
Interface	
Operating temperature	
Degree of protection per IEC 60529	
Read head connection	

Accessories

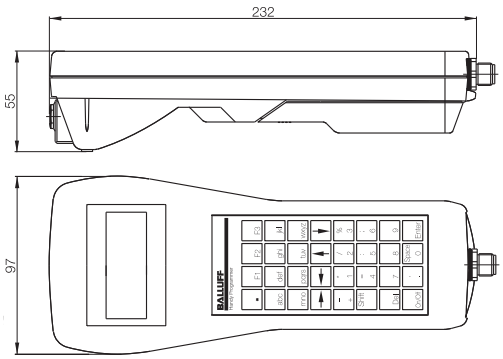
Accessories included	
Charger	
Charging cradle with charger power supply	

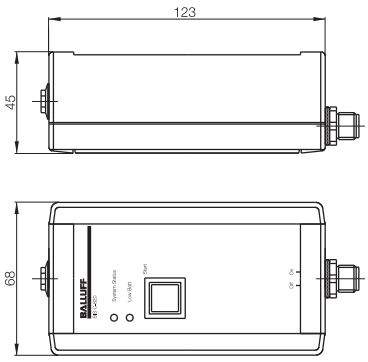
Charger and charging cradle with charger power supply
(please order separately)

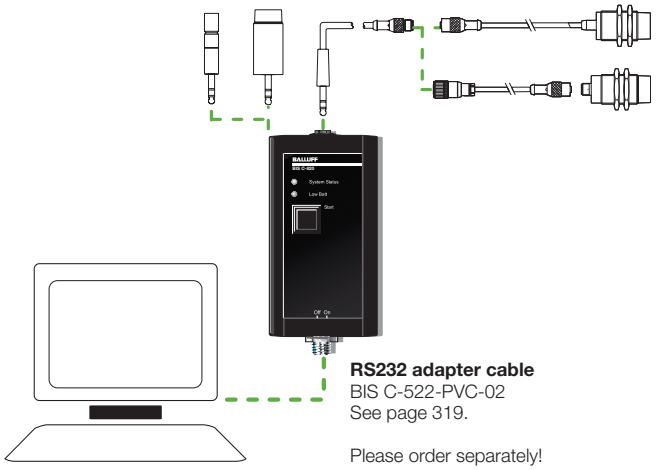
Description	Charger	Charging cradle with charger power supply
Order code	**BAE0047**	**BAE0048**
Part number	BIS C-701-A	BIS C-702-A

Handheld programmer

	Handheld Programmer	Handheld Programmer
	ABS	ABS
	BAE0088	**BAE008C**
	BIS C-810-0-003	BIS C-820-0-004-D
	32 keys, alphanumeric	1 key
	LCD display, 20 characters/4 lines	2 LEDs status/battery
	2.4 V rechargeable battery pack NiMH	2×R6 AA rechargeable NiMH
	1500 mA/h	800 mA/h
	RS232, Balluff Dialog	RS232, Balluff Dialog
	0...+50 °C	0...+50 °C
	IP 40	IP 40
	1× 6.3 mm jack socket	1× 6.3 mm jack socket
	Carrying case	
	See below	See below
	See below	See below







RS232 adapter cable
BIS C-522-PVC-02
See page 319.

Please order separately!

Industrial RFID System BIS C with 433/70 kHz (LF)
Read/write gun

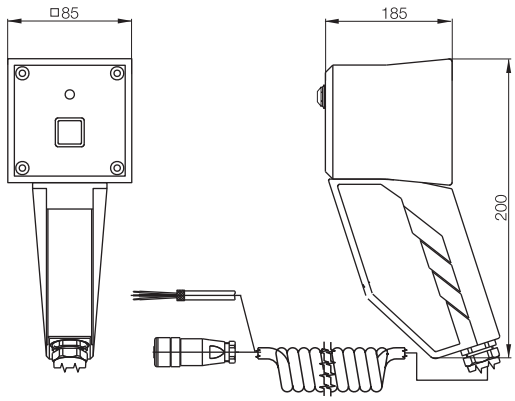
Outstanding operating comfort
Benefit from the advantages of the ergonomic pistol grip with the option of attaching three different read/write heads. The pistol grip rests snugly in your hand while you activate a read/write function at the press of a button. The LEDs and an integral buzzer signal the end of the read/write process.

Description	
Housing material	
Order code	
Part number	
Keyboard	
Display	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Read head connection	
Coiled cable extended	
Connection to	

Industrial RFID System BIS C with 433/70 kHz (LF)

Read/write gun

	Read/write Gun
	PA 66
	BAE004C
	BIS C-720-01-03
	1 key
	1 LED
	0...+70 °C
	–20...+85 °C
	IP 40
	6.3 mm jack
	3 m
	Processor and PLC



For read/write heads, see page 223

Access Protection

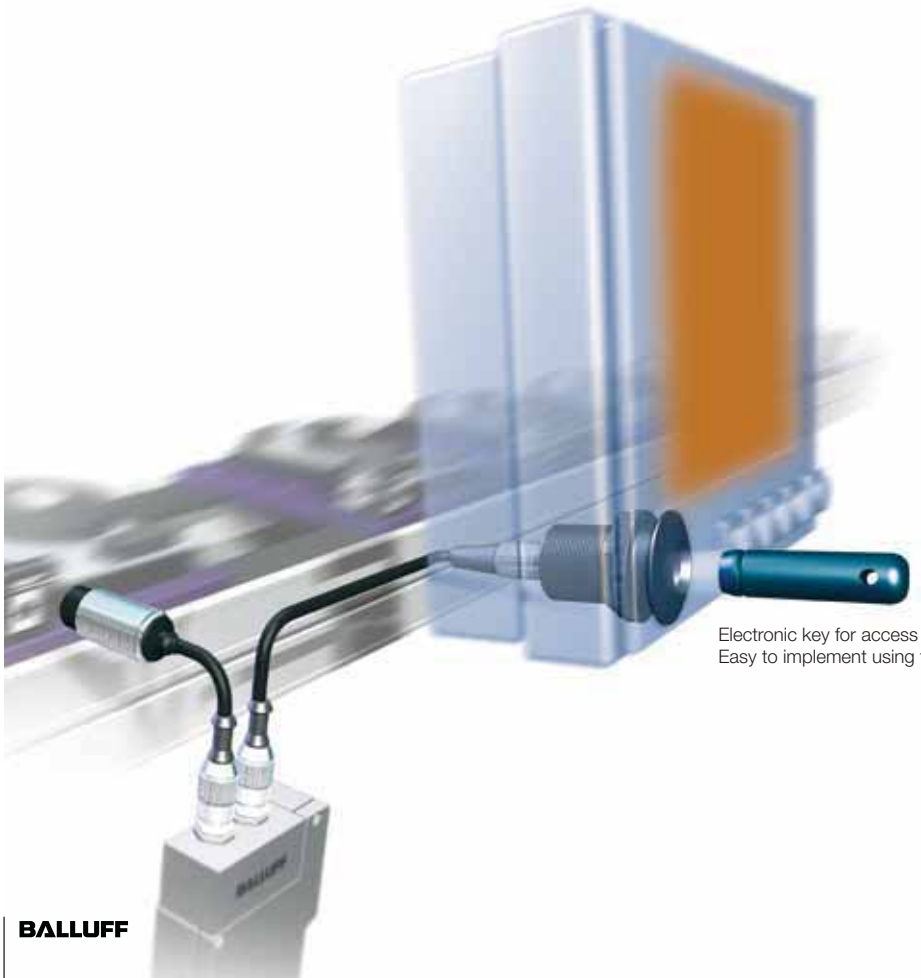
The access protection prevents data keys from being tampered with by unauthorized persons. For this purpose, individual access codes are allocated via programmable data keys, and these data keys are subsequently blocked from further programming.

The data key is read via an antenna fitted to a special bracket. The processor unit then issues the data. Different interfaces such as Profibus, Devicenet, Ethernet/IP or serial and parallel make conection to the system to be monitored very easy. The access protection is available for the BIS C and BIS L systems.

Benefits

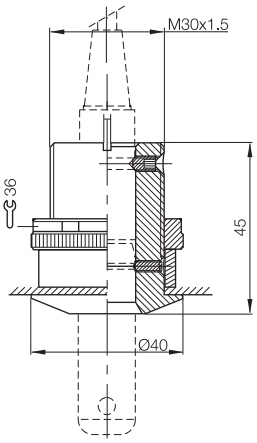
The programmable data key allows upgrades or replacements without requiring modifications to the system software. End users become independent of the system supplier. The access system is easy to integrate in read/write stations that already use an identification system. The antenna for access monitoring is simply connected to the second channel of the existing processor unit. This reduces hardware expenses to a minimum and software only requires slight modification in order to process both channels.

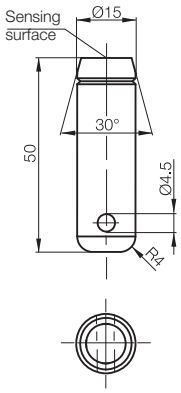
Version	
Use	
Housing material	
Order code	
Part number	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	



Electronic key for access control.
Easy to implement using the “RFID key”.

	Installation unit	**Data carrier and holder**
	Attachment for read/write head BIS C-300	Used with BIS C-300-ZA1
	POM and PA 6.6	POM and PA 12
	BAM012C	**BIS002Y**
	BIS C-300-ZA1	BIS C-122-04/L-ZC1
	0...+70 °C	–25...+70 °C
	–20...+85 °C	–25...+85 °C
		IP 67





Assembly

Flush in steel
The sensing surface can be mounted on the surface of steel so that it is even with adjacent areas. See the product data sheet for more information.

Non-flush on steel
The sensing surface must not be in contact or surrounded by steel.
See the product data sheet for more information about the clear zone.

Non-metal
The entire clear zone must remain free of any type of metal.
See the product data sheet for more information about the clear zone.

Please contact TecSupport for additional metal mounting options.

Mounting in steel

To reach the specified read/write distance, the data carrier in the metallic environment must be mounted within a certain metal-free clear zone.

Clear zone dimensions

Data Carriers	Fig.	Dimension A	Dimension B	Dimension C	Dimension D
BIS C-100-05/A	1	0			0
BIS C-103-05/A	1	0			0
BIS C-104-11/A	1	0			0
BIS C-104-32/A	1	0			0
BIS C-105-05/A	1	0			0
BIS C-108-05/L	5	0	0	11	
BIS C-108-05/L-SA2	5	0	0	11	
BIS C-108-11/L	5	0	0	11	
BIS C-108-11/L-SA2	5	0	0	11	
BIS C-108-32/L	5	0	0	11	
BIS C-117-05/A	2	0		16	
BIS C-117-05/L	1	15			20
BIS C-117-11/L	1	15			20
BIS C-121-04/L	2	0		4,5	
BIS C-121-04/L-SA1	1	0			0
BIS C-122-04/L	2	0		4,5	
BIS C-122-11/L	2	0		4,5	
BIS C-127-05/L	4	30	30		30
BIS C-128-05/L	1	17			20
BIS C-128-11/L	1	17			20
BIS C-130-05/L	1	15			2
BIS C-130-05/L-SA1	1	15			2
BIS C-133-05/L	1	0			0
BIS C-133-11/L	1	0			0
BIS C-134-05/L-H120	5	22	22	11	
BIS C-134-11/L	5	22	22	11	
BIS C-140-05/L-M6	2	29		10	
BIS C-140-05/L-M8	2	29		10	
BIS C-140-11/L-M6	2	29		10	
BIS C-140-11/L-M8	2	29		10	
BIS C-150-05/A	4	20	20		0
BIS C-150-11/A	4	20	20		0
BIS C-150-32/A	4	20	20		0
BIS C-190-05/L	7	20	17	20	
BIS C-190-11/L	7	20	17	20	
BIS C-190-32/L	7	20	17	20	
BIS C-191-05/L	7	9	27	9	
BIS C-191-11/L	7	9	27	9	

Dimensions in mm

Mounting in steel (continued)

Read/write Heads	Fig.	Dimension A	Dimension B	Dimension C
BIS C-300-PU1-01	3	0		0
BIS C-300-PU1-05	3	0		0
BIS C-300-PU1-10	3	0		0
BIS C-302-PU1-05	3	0		0
BIS C-302-PU1-10	3	0		0
BIS C-305-PU1-01	5	0	0	10
BIS C-305-PU1-05	5	0	0	10
BIS C-305-PU1-10	5	0	0	10
BIS C-306-PU1-01	3	0		0
BIS C-306-PU1-05	3	0		0
BIS C-306-PU1-10	3	0		0
BIS C-310-PU1-01	3	15		13
BIS C-310-PU1-05	3	15		13
BIS C-310-PU1-10	3	15		13
BIS C-315/05-S4	5	0	0	40
BIS C-315/10-S4	5	0	0	40
BIS C-315-PU1-01	5	0	0	40
BIS C-315-PU1-05	5	0	0	40
BIS C-315-PU1-10	5	0	0	40
BIS C-318-PU1-05	5	50	50	30
BIS C-318-PU1-10	5	50	50	30
BIS C-319/01-S4	3	16		35
BIS C-319/05-S4	3	16		35
BIS C-319/10-S4	3	16		35
BIS C-319-PU1-01	3	16		35
BIS C-319-PU1-05	3	16		35
BIS C-319-PU1-10	3	16		35
BIS C-323/01-S4	3	15		13
BIS C-323/05-S4	3	15		13
BIS C-323/10-S4	3	15		13
BIS C-324/05-S4	5	0	0	0
BIS C-324/10-S4	5	0	0	0
BIS C-325/01-S4	3	0		0
BIS C-325/05-S4	3	0		0
BIS C-325/10-S4	3	0		0
BIS C-326-PU1-05	3	25		35
BIS C-326-PU1-10	3	25		35
BIS C-327-01	5	50	50	20
BIS C-327-05	5	50	50	20
BIS C-327-10	5	50	50	20
BIS C-328/01-S49	5	50	50	20
BIS C-328/05-S49	5	50	50	20
BIS C-328/10-S49	5	50	50	20
BIS C-350-00.3	5	60	50	60
BIS C-351-PU1-05	5	100	60	50
BIS C-351-PU1-10	5	100	60	50
BIS C-355/05-S92	5	60	50	60

Dimensions in mm

For figures, see page 232

Note! Depending on the combination of read/write head and data carrier, clear zone dimension A and B should always be selected for the larger of the components.

Mounting in steel (continued)

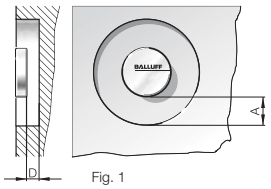


Fig. 1

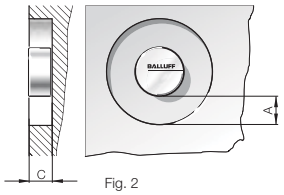


Fig. 2

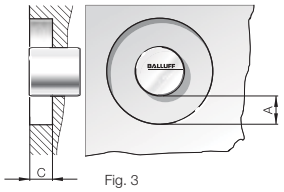


Fig. 3

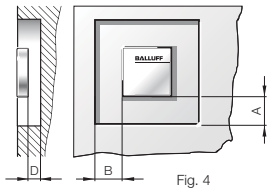


Fig. 4

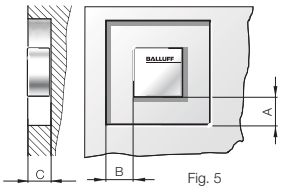


Fig. 5

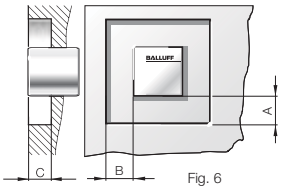


Fig. 6

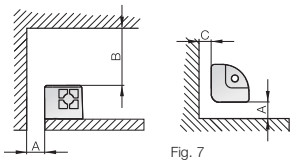


Fig. 7

Installation in aluminum

With clear zone, static operation

When installing components in aluminum, provide clear zones for trouble-free operation. In static operation, the depth of the clear zone in aluminum of at least 10 mm must be observed, Figure 1. Clear zone dimension **A** corresponds to the diameter of the larger communication partner (data carrier or read/write head) plus the maximum possible offset (see information for read/write head), Figure 2. In combination with the read/write heads BIS C-318, 327, 328, 350, 351 and 355, dimension **B** and **C** is calculated over the length and width of the larger communication partner (data carrier or read/write head) plus the maximum possible offset (see information for read/write head), Figure 3.

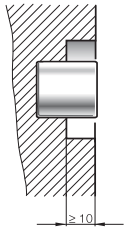


Fig. 1

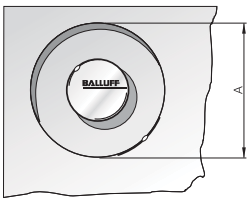


Fig. 2

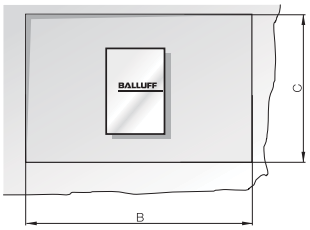


Fig. 3

With clear zone, dynamic operation

In dynamic operation, the depth of the clear zone in aluminum also has to be at least 10 mm, Figure 1. Clear zone dimension **A** corresponds to twice the diameter of the larger communication partner and the equivalent of the diameter of the smaller communication partner. Clear zone dimension **C** corresponds to the diameter of the larger communication partner plus the corresponding maximum offset (see information for read/write head), Figure 4. In combination with the read/write heads BIS C-318, 327, 328, 350, 351 and 355, dimension **B** is calculated from twice the read/write distance (see information about read/write heads) plus the width of the data carrier. Clear zone dimension **C** corresponds to the read/write head length plus the corresponding maximum offset (see specification for read/write head), Figure 5.

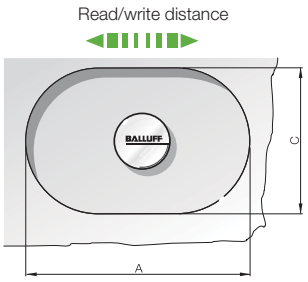


Fig. 4

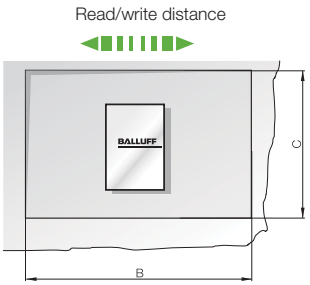
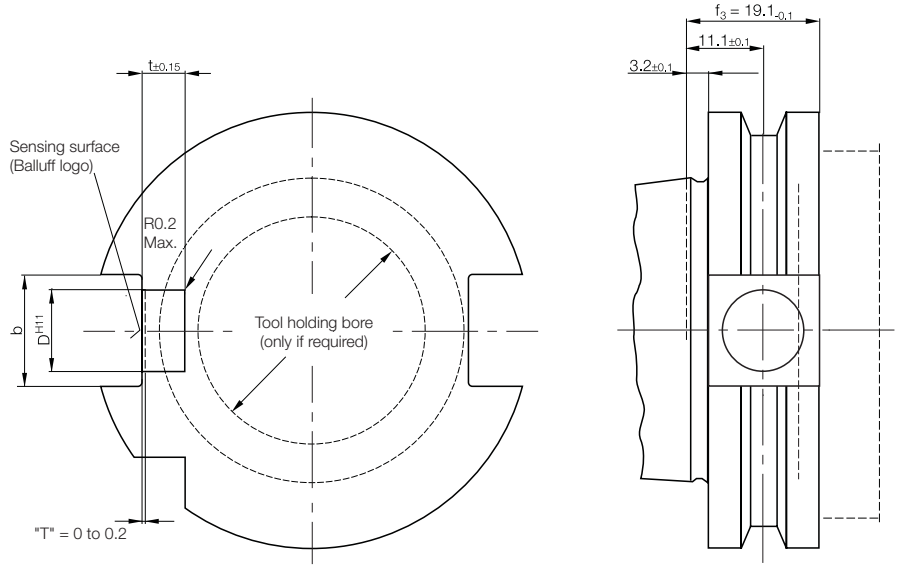


Fig. 5

Installation in taper SK

Data Carriers	BIS C-122			BIS C-103			BIS C-105		
Taper DIN 69871-A	D^{H11}	t±0.15	rpm max	D^{H11}	t±0.15	rpm max	D^{H11}	t±0.15	rpm max
No. 30	10	4,65	90000	12	8,15	68000	12	6,15	68000
No. 40	10	4,65	75000	12	8,15	54000	12	6,15	54000
No. 45	10	4,65	66000	12	8,15	43000	12	6,15	43000
No. 50	10	4,65	59000	12	8,15	33000	12	6,15	33000

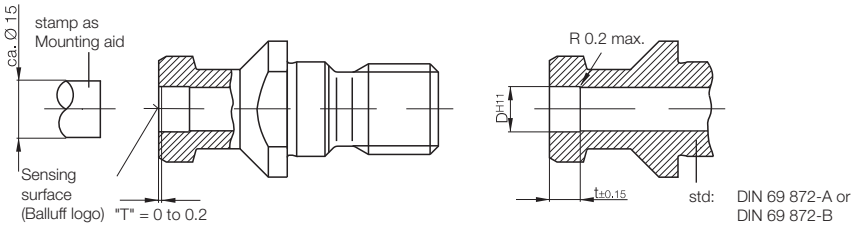
Dimensions in mm



Installation in retention knob

Data Carriers	BIS C-122		BIS C-103		BIS C-105	
Taper DIN 69871-A	D^{H11}	t±0.15	D^{H11}	t±0.15	D^{H11}	t±0.15
No. 30						
No. 40	10	4,65				
No. 45	10	4,65	12	8,15	12	6,15
No. 50	10	4,65	12	8,15	12	6,15

Dimensions in mm



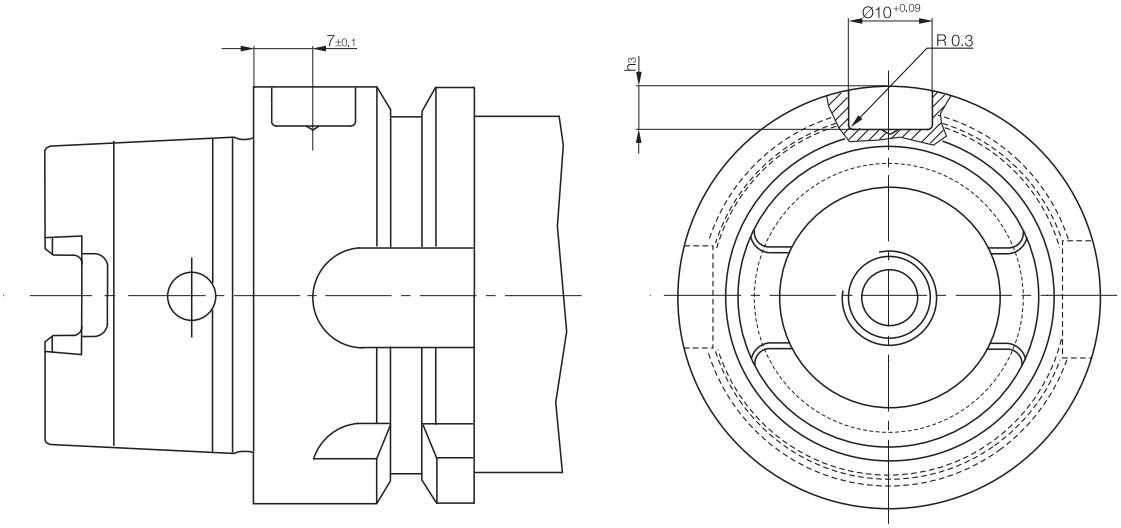
Installation

1. Degrease gluing surfaces.
2. Apply a bead of glue approximately 3 mm wide around the perimeter of the data carrier housing (recommended glue e.g. LOCTITE Hysol 1C or UHU-Plus endfest 300), observe manufacturer's processing instructions
3. Press in data carrier housing manually, observe dimension "T"
4. Remove excess glue
5. Allow to cure

Installation in hollow shank taper HST

Data Carriers	BIS C-122	
HST Form A ISO/DIN 12164-1	$h_{3\ +0.20}$	rpm $_{max}$
32	5,4	96000
49	5,2	80000
50	5,1	75000
63	5	65000
80	4,9	57000
100	4,9	48000

Dimensions in mm



Mechanical Strength

Data carriers and read/write heads BIS C-1_ _, BIS C-3_ _	
Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6
	Values apply to data carriers BIS C-1_ _ and read/write heads BIS C-3_ _ except for the non-potted read/write heads BIS C-350, BIS C-351, BIS C-352 and BIS C-355.

Processor units and non-potted read/write heads BIS C-6_ _ _, BIS C-350, BIS C-351, BIS C-352, BIS C-355	
Shock load	15 g/11 ms per EN 60068-2-27 and 15 g/6 ms per EN 60068-2-29
Vibration	5 g, 10...150 Hz per EN 60068-2-6

Read/write times

Read/write cycles

Data Carriers	Memory type	Coding	Write cycles up to 30 °C	Write cycles up to 70 °C	Read cycles	Memory organization
511 bytes	EEPROM	-04	1000000	500000	Unlimited	32-byte blocks
1023 bytes	EEPROM	-05	1000000	500000	Unlimited	32-byte blocks
2047 bytes	EEPROM	-11	1000000	500000	Unlimited	64-byte blocks
8 kbytes	FRAM	-32	Unlimited	Unlimited	Unlimited	64-byte blocks

Read times in static mode

For double read and compare:

Data carrier with 32 bytes per block		**Data carrier with 64 bytes per block**	
Byte	Read time	Byte	Read time
from 0 to 31	110 ms	from 0 to 63	220 ms
for each additional started 32 bytes add additional	120 ms	For each additional started 64 bytes add additional	230 ms
from 0 to 255	= 950 ms	from 0 to 2047	= 7350 ms

Write times in static mode

Includes checking and comparing:

Data carrier with 32 bytes per block		**Data carrier with 64 bytes per block**	
Byte	Write time [ms]	Byte	Write time [ms]
from 0 up to 31	110 + n × 10	from 0 up to 63	220 + n × 10
≥ 32	y × 120 + n × 10		y × 230 + n × 10
from 0 up to 255	= max. 3510	from 0 up to 2047	= max. 27830

n = Number of contiguous bytes to write
y = Number of blocks to process

Example:
17 bytes should be written starting at address 187. Data carrier block size = 32 bytes. Blocks 5 and 6 are processed, since the start address 187 is in block 5 and end address 204 is in block 6.

t = 2 × 120 + 17 × 10 = **410 ms**

Read times in dynamic operation

Read times within the 1st block for double read and compare:

Data carrier with 32 bytes per block		**Data carrier with 64 bytes per block**	
Byte	Read time	Byte	Read time
from 0 up to 3	14 ms	from 0 up to 3	14 ms
for all additional bytes	3.5 ms	for all additional bytes	3.5 ms
from 0 up to 31	112 ms	from 0 up to 64	224 ms

The times indicated apply after the data carrier has been detected. If the tag has not been recognized, an additional 30 ms must be added to allow for creating the energy field necessary to recognize the Data carrier.

Example:
Read 11 bytes starting at address 9, i. e. the highest address to be read is 20 (use for “m” in the formula).

t = 14 ms + (m – 3) × 3.5 ms = **73.5 ms**

In the internal memory organization of the data carrier, a distinction is made between the two block sizes 32 and 64 bytes (also referred to as ‘page size’).

Memory organization

Memory size up to 1023 bytes = 32 bytes per block
Memory size 2047 bytes and larger = 64 bytes per block

Maximum speed

To calculate the permitted speed in which the data carrier and head move relative to each other, the static distance values are used (see section BIS C).

The permissible speed is:

$$V_{max.\ perm.} = \frac{Path}{Time} = \frac{2 \times |offset\ value|}{Processing\ time}$$

The offset value is dependent on the read/write distance actually used in the system.

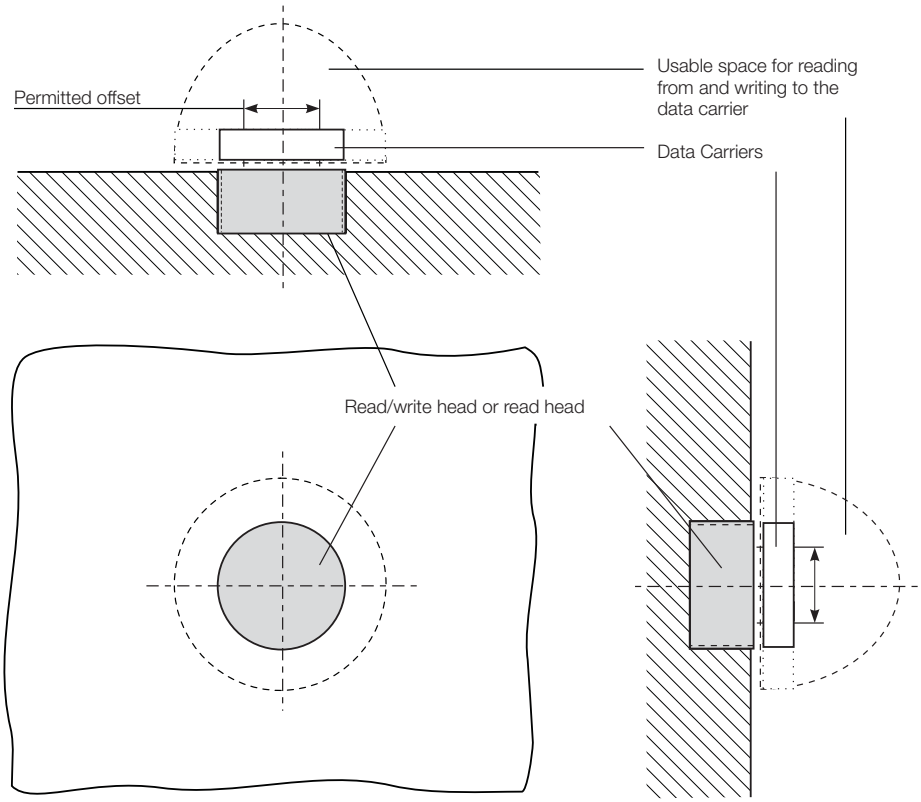
$$Processing\ time = \text{Data carrier response time} + \text{Read/write time of first block to be read} + n^1 \times \text{Read/write time for additional started blocks}$$

n^1 = number of started blocks

Spatial arrangement of read/write head or read head and data carrier

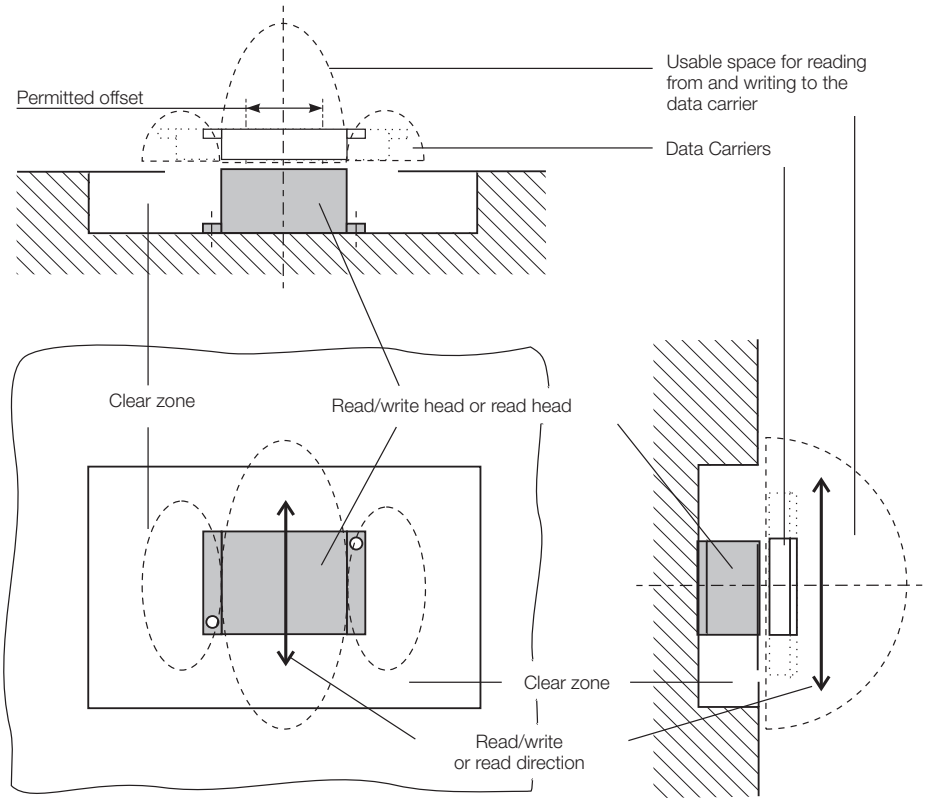
The key to reliable data exchange between the read/write head or read head and the data carrier is maintaining sufficient dwell time of the data carrier within a specified spatial distance from the read/write head or read head.
The two sketches illustrate this relationship. For non-directional operation, see the sketch on page 238, for directional write/read heads, see the sketch on page 239.

For a **static read/write or read operation**, the data carrier comes to a complete stop in front of the read/write or read head; This enables a larger distance between the two.



Spatial arrangement of read/write heads or read head and data carrier for non-directional read/write heads or read heads and **non-flush mounting** (round antenna).

For **dynamic operation** the data carrier is read or programmed on the fly as it moves past the read/write head or read head.
The shorter distance is necessary in order to achieve as large a read/write path or read path as possible.
Each read/write head or read head has certain data carriers which can be used with it (the pairing is based on physical size and antenna field configuration).
The associated specifications for distance and permissible offset, the distance and relative speed between the read/write head or read head and the data carrier are listed in the respective chapter.



Spatial arrangement of read/write heads or read head and data carrier for directional read/write heads or read heads and **non-flush mounting** (rod antenna).

Industrial RFID System BIS L

RFID at 125 kHz (LF)

The cost-effective BIS L is used in logistics and on assembly lines.
It uses LF technology at 125 kHz and passive tags for short ranges.

Industrial RFID System BIS L at 125 kHz (LF)

Contents

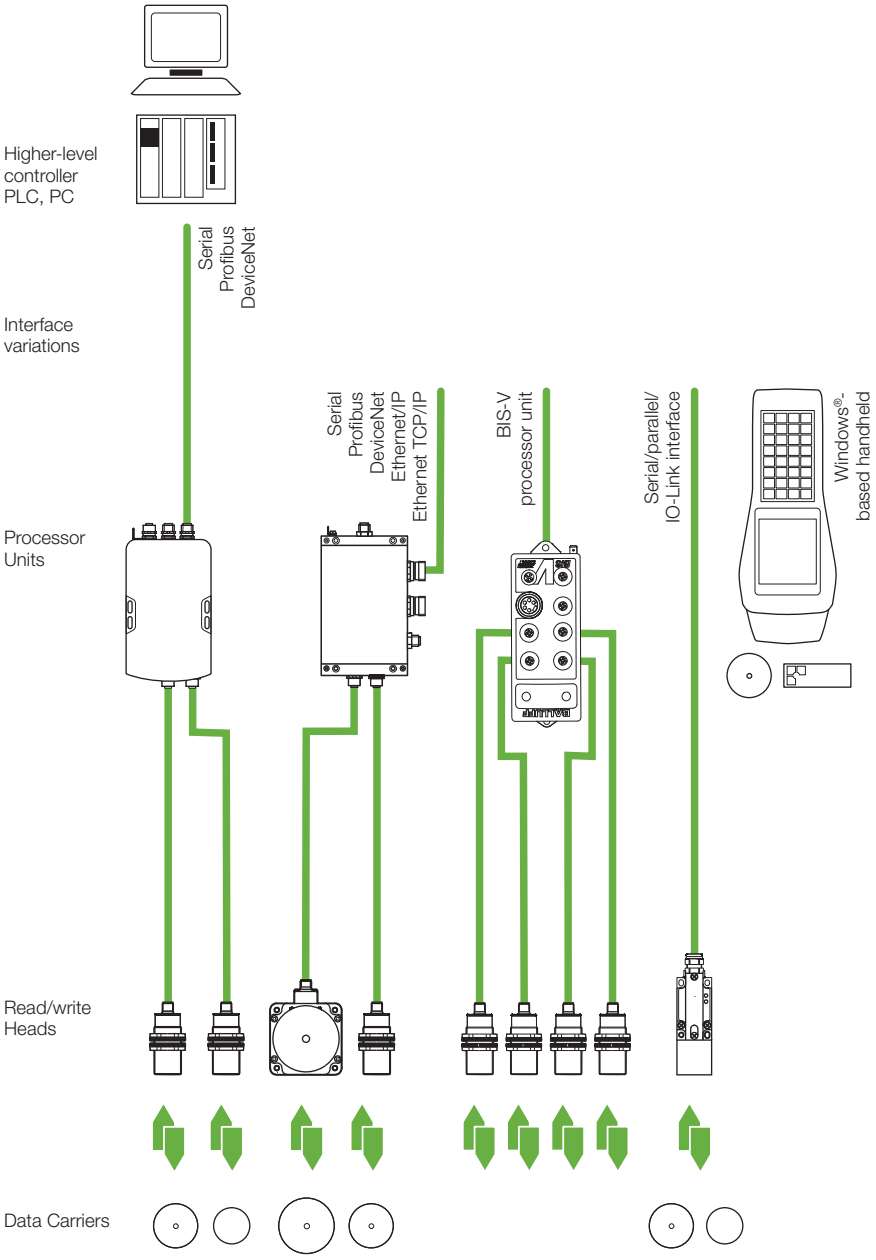
Industrial RFID System BIS L at 125 kHz (LF)

Product overview and range of applications

The BIS L in the 125 kHz low-frequency range utilizes passive data carriers. These make it possible to implement RFID solutions for ranges up to 100 mm. For traceability of parts or applications in production control such as when palletizing or recording on the workpiece or for tracking for quality management. If only one ID is required, the system also enables cost-effective solutions in read-only mode.
BIS L works with flush mounting, even directly into metal, and provides reusable data carriers.

How much data do you require?
How dynamic is your application?
In three steps you will have put together your BIS L system:

- First choose the appropriate form factor for your data carrier and the associated read/write heads.
- Then determine your read/write distance, which also depends on the speed of your system. The faster the data carrier moves, the closer the distance needs to be.
- Finally determine the desired storage capacity. This lets you take advantage of maximum data security.



Industrial RFID System BIS L at 125 kHz (LF)

Product overview and range of applications

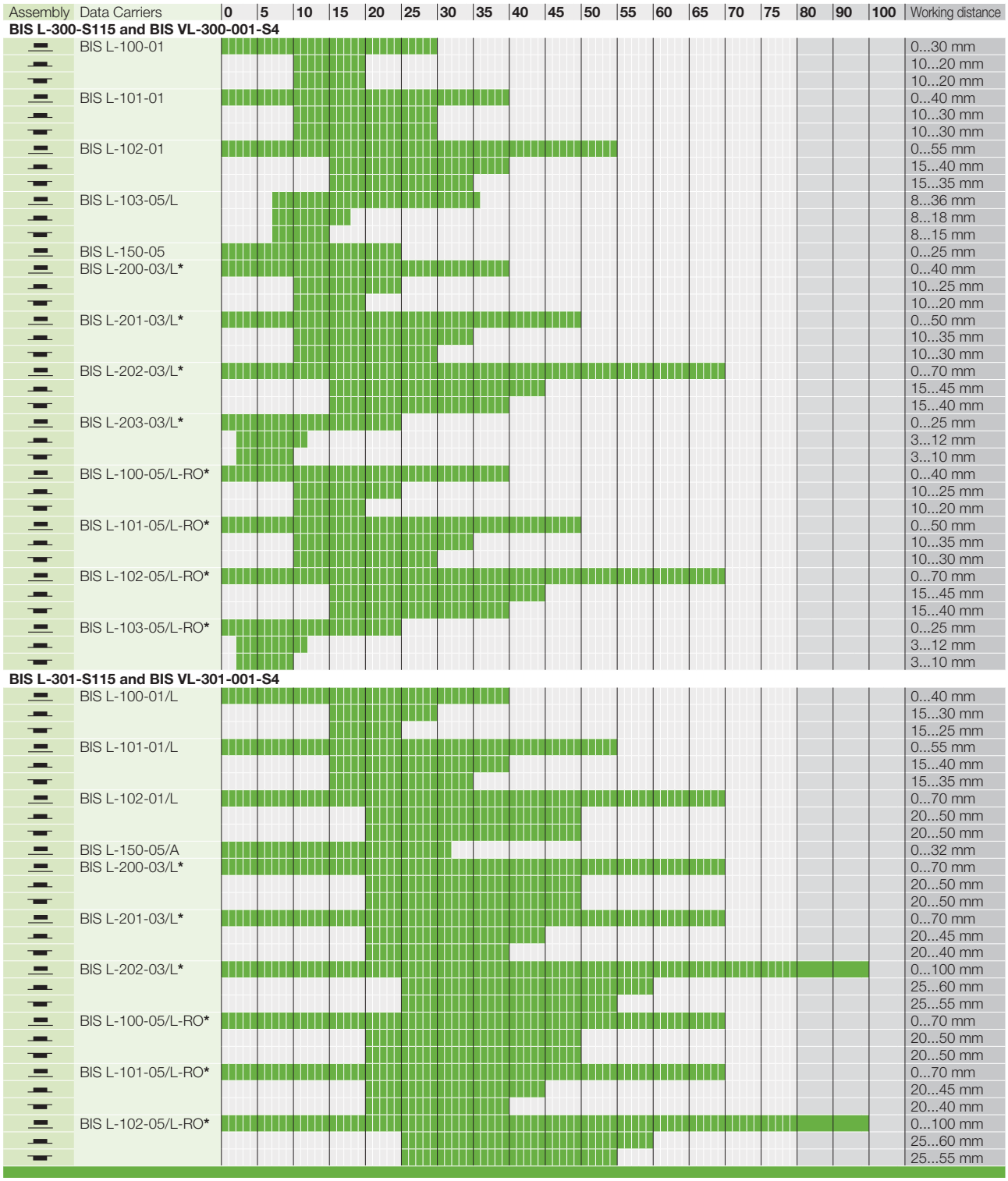
Select the most suitable BIS L system for your application from the table and benefit from the outstanding safety and quality of economical industrial RFID systems.

Data Carriers		Page	Production			Intralogistics						Access and object control											
			Tool and die management		Assembly conveying systems	Closed-loop logistics		Storage and retrieval equipment		Inteligent vehicles		Object detection		Access and object control			Reading/writing	Installation in metal	Long distances (> 16 mm)	EEPROM reading/writing	Read-only	
			On tool	Dies	Pallets	Holders/workpiece carriers	Pallets	Holders/workpiece carriers	Workpiece sliders	Guiding, steering	Identification	In component	On component	Secure access control	Process access	Part ID				192 bytes	3 bytes + CRC	5 bytes
BIS0033	BIS L-100-01/L	248			■	■	■										■			■		
BIS0034	BIS L-100-05/L	248			■	■	■										■			■		
BIS0035	BIS L-100-05/L-RO	251			■	■	■				■										■	
BIS0036	BIS L-101-01/L	249			■		■	■		■							■		■	■		
BIS0038	BIS L-101-05/L-RO	251			■		■	■			■								■		■	
BIS0039	BIS L-102-01/L	249			■	■		■	■								■		■	■		
BIS003C	BIS L-102-05/-RO	251			■	■		■	■		■								■		■	
BIS003E	BIS L-103-05/L	249	■	■									■	■	■		■			■		
BIS003F	BIS L-103-05/L-RO	251	■	■							■										■	
BIS00ZY	BIS L-103-05/L-ZC1	295												■	■		■			■		
BIS003N	BIS L-150-05/A	249	■	■								■				■	■	■		■		
BIS003R	BIS L-200-03/L	251			■		■	■			■								■			■
BIS003T	BIS L-201-03/L	251			■		■	■			■								■			■
BIS003U	BIS L-202-03/L	251			■	■		■	■										■			■
BIS003W	BIS L-203-03/L	251		■		■					■					■						■



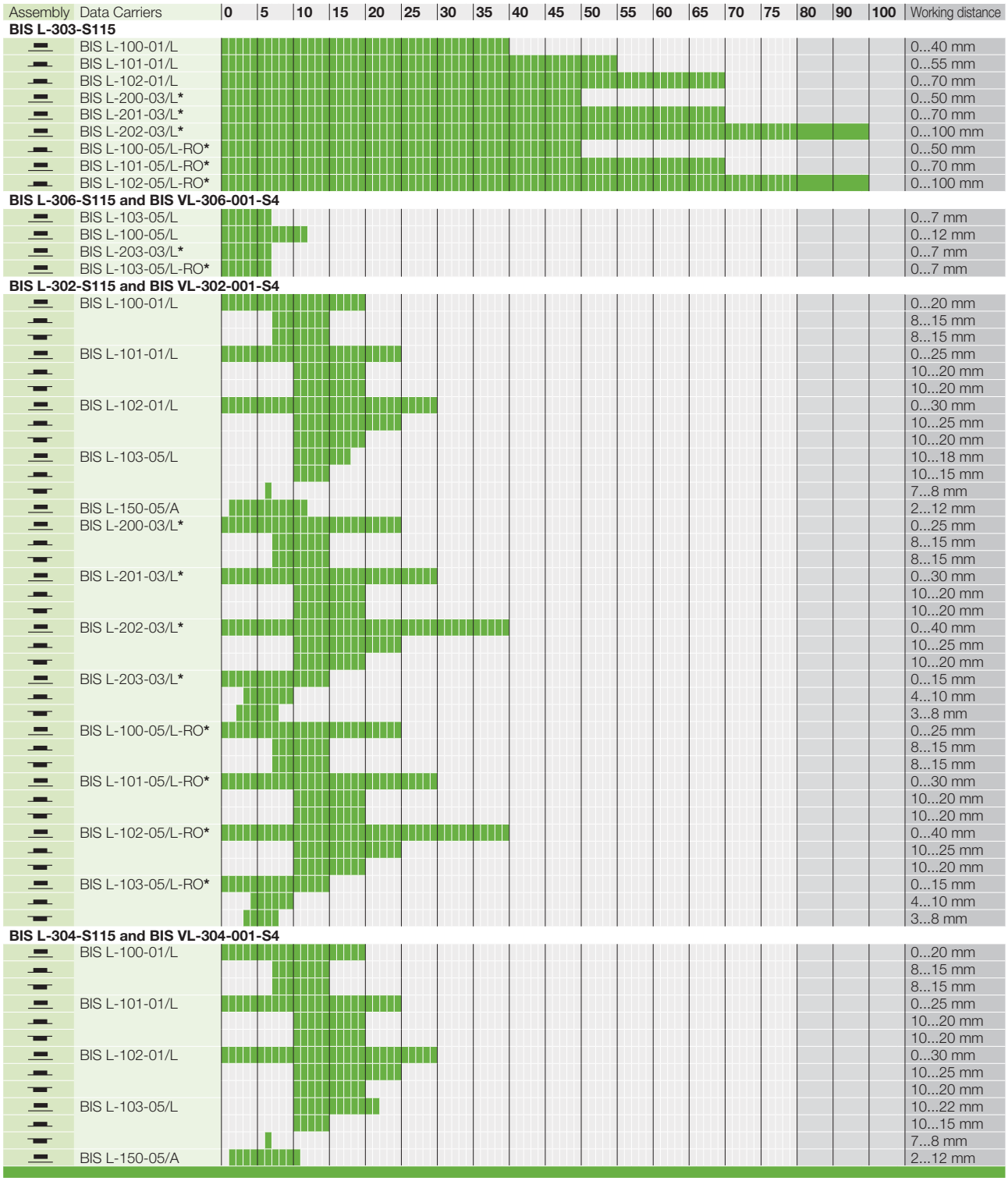

Industrial RFID System BIS L at 125 kHz (LF)

Overview of read/write distances



* Read-only

Flush in steel | Non-flush on steel | Metal-free

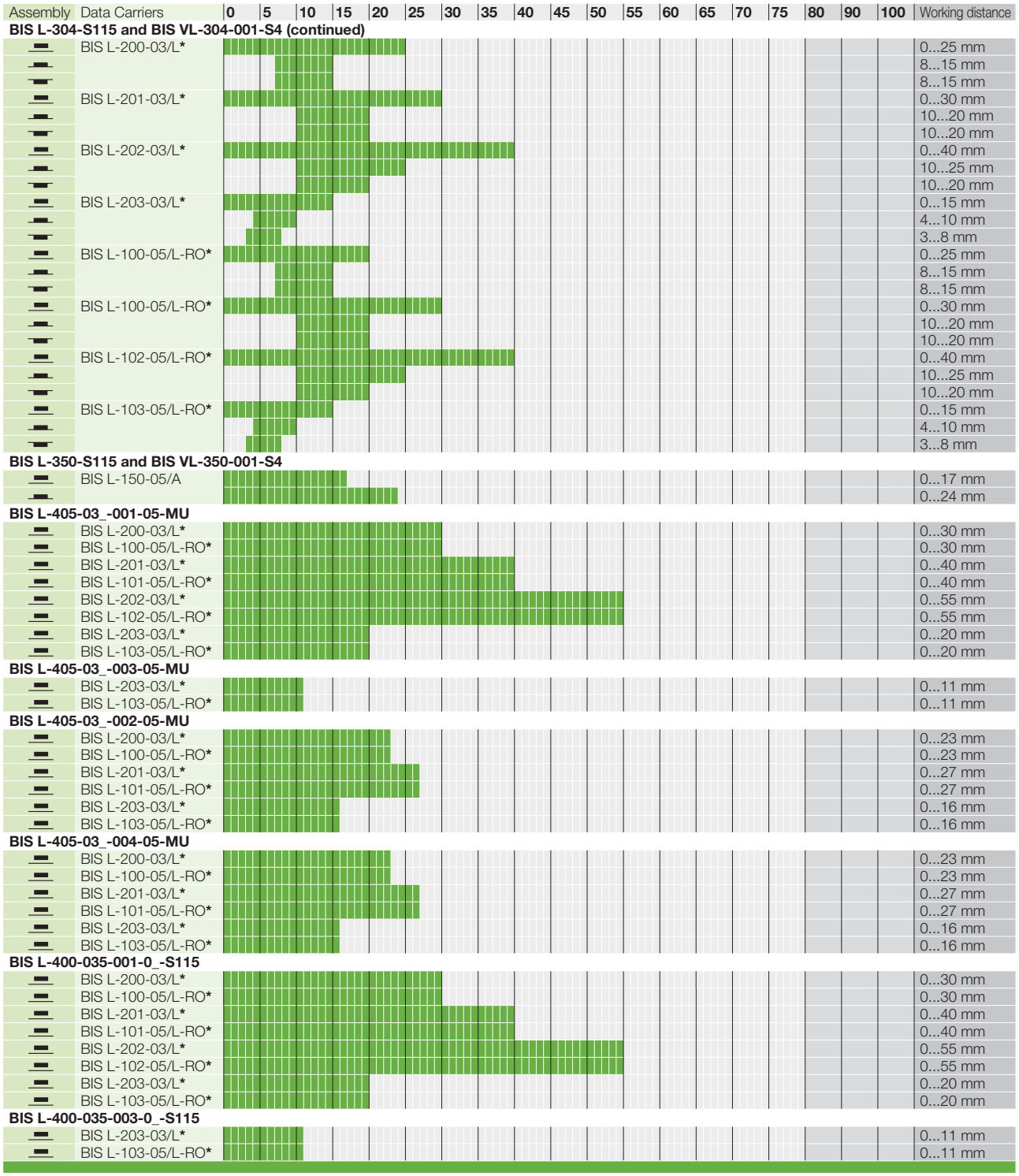


* Read-only

Flush in steel | Non-flush on steel | Metal-free

RFID System BIS M at 13.56 MHz (HF)
RFID System BIS C at 433/70 kHz (LF)
RFID System BIS L at 125 kHz (LF)
Topology, Range of Applications, Overview
Data Carriers
Read/write Heads
Data Couplers
Read/write Heads with Integrated Processor Unit
easy loop®
Processor Units
Handheld Devices
Access Protection
Installation Notes
Read/ Write Times
Read/write Heads and Data Carriers Working in Combination
Connectivity for RFID Systems
Mounting Accessories for RFID Systems

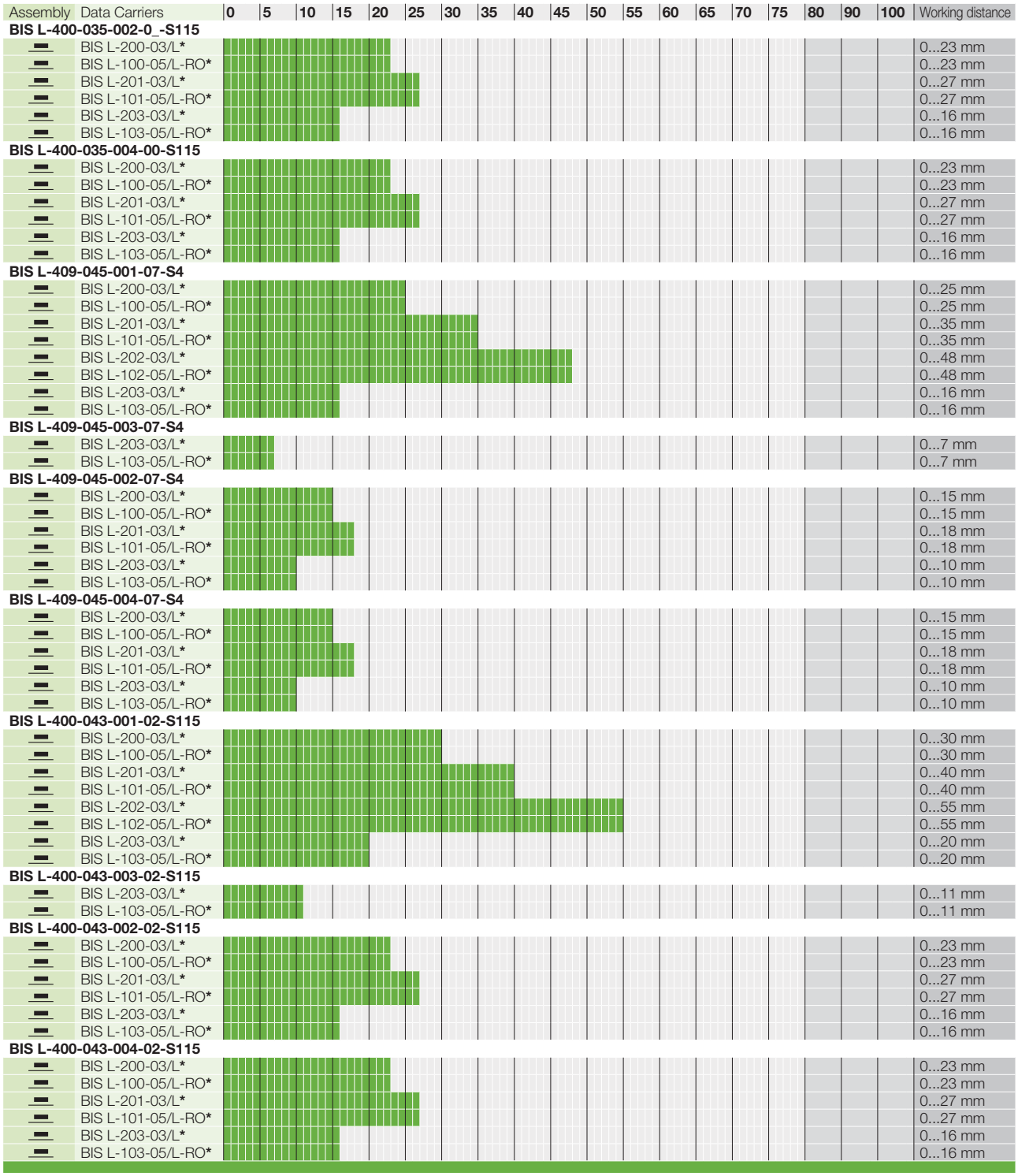
Overview of read/write distances



* Read-only

Flush in steel | Non-flush on steel | Metal-free

Overview of read/write distances



* Read-only

Flush in steel | Non-flush on steel | Metal-free

For harsh environments

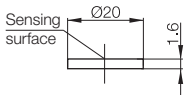
- Housing material extremely resistant to chemicals
- Compact designs for special applications

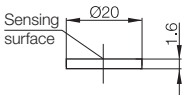
Dimension		**Ø 20×1.6 mm**	**Ø 20×1.6 mm**
Housing material		EP	EP
Weight		1.4 g	1.4 g
BIS L programmable			
192 bytes	**Order code**	**BIS0033**	**BIS0034**
	Part number	BIS L-100-01/L	BIS L-100-05/L
Operating temperature		–25...+85 °C	–25...+85 °C
Storage temperature		–40...+95 °C	–40...+95 °C
Degree of protection per IEC 60529		IP 67	IP 67

Suitable read/write head with max. read/write distance

Assembly						
BIS L-300, BIS VL-300	30 mm	20 mm	20 mm			
BIS L-301, BIS VL-301	40 mm	30 mm	25 mm			
BIS L-302, BIS VL-302	20 mm	15 mm	15 mm			
BIS L-303	50 mm	14 mm				
BIS L-304, BIS VL-304	20 mm	15 mm	15 mm			
BIS L-306, BIS VL-306				12 mm		
BIS L-350, BIS VL-350						

Please observe the Basic Information and Definitions starting on page 296 during installation.





Installation:

Flush in steel

Non-flush on steel

Non-metal

Antenna type:

Rod

Round

Ø 30×1.6 mm
EP
2.6 g

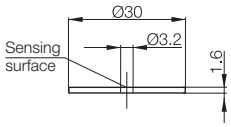
Ø 50×1.6 mm
EP
6.5 g

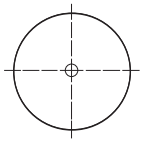
Ø 12.4×2 mm
EP
0.8 g

Ø 3.15×13.3 mm
Glass
0.22 g

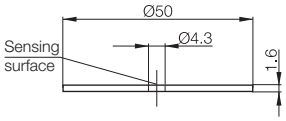
	BIS0036	**BIS0039**	**BIS003E**	**BIS003N**
	BIS L-101-01/L	BIS L-102-01/L	BIS L-103-05/L	BIS L-150-05/A
	–25...+85 °C	–25...+85 °C	–25...+85 °C	–40...+85 °C
	–40...+95 °C	–40...+95 °C	–40...+130 °C	–40...+90 °C
	IP 67	IP 67	IP 68	IP 68

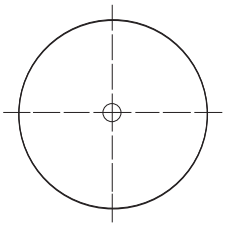
	40 mm	30 mm	30 mm	55 mm	40 mm	35 mm	32 mm	18 mm	12 mm	25 mm	
	55 mm	40 mm	35 mm	70 mm	50 mm	50 mm				32 mm	
	25 mm	20 mm	20 mm	30 mm	25 mm	20 mm	18 mm	15 mm	8 mm	12 mm	
	65 mm	25 mm	15 mm	85 mm	30 mm	25 mm					
	25 mm	20 mm	20 mm	30 mm	25 mm	20 mm	22 mm	15 mm	8 mm	12 mm	
							7 mm				
										17 mm	24 mm	24 mm



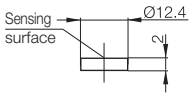


Tightening torque max. 1 Nm

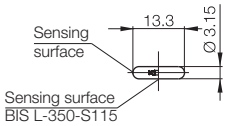




Tightening torque max. 1 Nm



For metal



Glass data carriers –
resistant to chemicals!

Order code	**BIS003L**
Part number	BIS L-130-05/L-SA1

For radial data retrieval on rotating parts,
positioning omitted. Contact us

Industrial RFID System BIS L at 125 kHz (LF)

Read-only data darriers, round housings

For maximum data integrity

The CRC-16 (cyclic redundancy check) procedure lets you write a check code to the data carrier to allow you to control data anywhere at any time. The benefit to you: Extremely high data integrity even in the inactive phase (data carrier not at read/write head). The procedure is only possible with data carriers of the BIS L-1_ _-05/L type configured as read-only.

BIS L-1_ _-05/L-RO are read-only data carriers that can be programmed according to your specifications. In their setup, they provide 2 bytes for the check and 3 bytes as user data. Work with your specific data and experience the benefits of high data integrity. Please use an ordering form for ordering.

The BIS L-2_ _-03/L uses read-only data carriers with a fixed unique number of 5 bytes (40 bits).
Delivery of sequential numbers is not possible.

Dimension		
Housing material		
Weight		

BIS L read-only

24 bits + CRC	**Order code**	
	Part number	
40 bits	**Order code**	
	Part number	
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		

Suitable read/write head with max. read/write distance

Assembly	
BIS L-300, BIS VL-300	
BIS L-301, BIS VL-301	
BIS L-302, BIS VL-302	
BIS L-303	
BIS L-304, BIS VL-304	
BIS L-306, BIS VL-306	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Flush in steel

Non-flush on steel

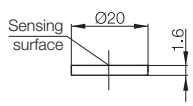
Non-metal

Antenna type:

Round

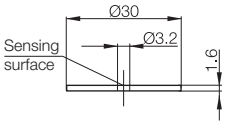
Ø 20×1.6 mm
EP
1.4 g
BIS0035
BIS L-100-05/L-RO
BIS003R
BIS L-200-03/L
–40...+85 °C
–40...+95 °C
IP 67

40 mm	25 mm	20 mm
50 mm	35 mm	30 mm
25 mm	15 mm	15 mm
55 mm		
25 mm	15 mm	15 mm



Ø 30×1.6 mm
EP
2.6 g
BIS0038
BIS L-101-05/L-RO
BIS003T
BIS L-201-03/L
–40...+85 °C
–40...+95 °C
IP 67

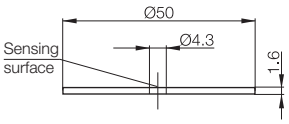
50 mm	35 mm	30 mm
70 mm	45 mm	40 mm
30 mm	20 mm	20 mm
70 mm	30 mm	15 mm
30 mm	20 mm	20 mm

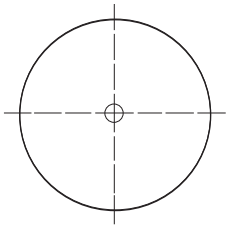


Tightening torque max. 1 Nm

Ø 50×1.6 mm
EP
6.5 g
BIS003C
BIS L-102-05/L-RO
BIS003U
BIS L-202-03/L
–40...+85 °C
–40...+95 °C
IP 67

70 mm	45 mm	40 mm
100 mm	60 mm	55 mm
40 mm	25 mm	20 mm
100 mm	45 mm	40 mm
40 mm	25 mm	20 mm

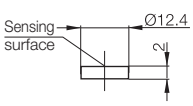




Tightening torque max. 1 Nm

Ø 12.4×2 mm
EP
0.8 g
BIS003F
BIS L-103-05/L-RO
BIS003W
BIS L-203-03/L
–25...+85 °C
–40...+130 °C
IP 68

25 mm		10 mm
15 mm		8 mm
15 mm		8 mm
7 mm		



RFID System BIS M at 13.56 MHz (HF)
RFID System BIS C at 433/70 kHz (LF)
RFID System BIS L at 125 kHz (LF)
Topology, Range of Applications, Overview
Data Carriers
Read/write Heads
Data Couplers
Read/write Heads with Integrated Processor Unit
easy loop®
Processor Units
Handheld Devices
Access Protection
Installation Notes
Read/ Write Times
Read/write Heads and Data Carriers Working in Combination
Connectivity for RFID Systems
Mounting Accessories for RFID Systems

Dimension		
Housing material		
For processor units	**Order code**	
BIS L-60_ _-...	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cables	For BIS L	
	For BIS VL	

	Order code	
	Part number	
	Order code	
Matching data carriers	Part number	
Assembly		
Write distance in mm		
Read distance in mm		
Offset in mm at distance	0 mm	
	3 mm	
	8 mm	
	10 mm	
	12 mm	
	15 mm	
	20 mm	
	25 mm	
	30 mm	
	35 mm	
	40 mm	
	45 mm	
	50 mm	
	55 mm	
	60 mm	
	70 mm	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Flush in steel

Non-flush on steel

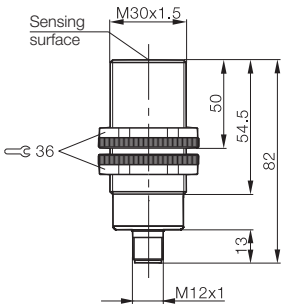
Non-metal

Antenna type:

Round

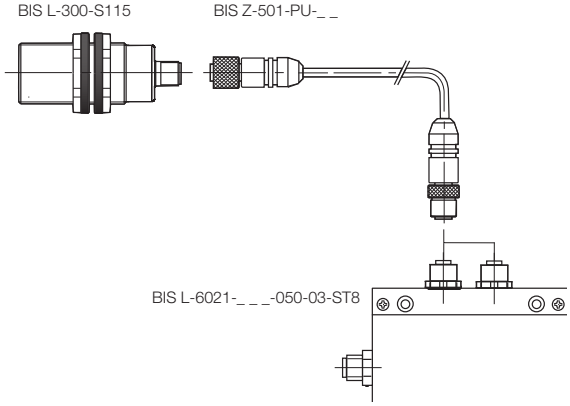
	M30×1.5
	PA 66
	BIS004R
	BIS L-300-S115
	BIS00UL
	BIS VL-300-001-S4
	▬
	0...+70 °C (negative temperatures on request)
	–20...+85 °C
	IP 67
	Processor unit
	See page 310...311
	See page 304...308

	BIS0033			**BIS0036**			**BIS0039**			**BIS003E**			**BIS003N**			**BIS003R**			**BIS003T**			**BIS003U**			**BIS003W**		
	BIS L-100-01			BIS L-101-01			BIS L-102-01			BIS L-103-05/L			BIS L-150-05			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L			BIS L-203-03/L		
																BIS0035			**BIS0038**			**BIS003C**			**BIS003F**		
																BIS L-100-05/L-RO			BIS L-101-05/L-RO			BIS L-102-05/L-RO			BIS L-103-05/L-RO		
	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
	0...30	10...20	10...20	0...40	10...30	10...30	0...55	15...40	15...35	8...36	8...18	8...15	0...25															
	0...30	10...20	10...20	0...40	10...30	10...30	0...55	15...40	15...35	8...36	8...18	8...15	0...25			0...40	10...25	10...20	0...50	10...35	10...30	0...70	15...45	15...40	0...25	3...12	3...10
	±18			±28			±30						±18			±20			±28			±35			±15		
	±18			±28			±30						±18			±20			±28			±35			±15	±12	±9
	±18			±28			±30			±15	±10	±5	±18			±20			±28			±35			±15	±12	±8
	±18	±8	±8	±28	±15	±13	±30			±15	±10	±5	±18			±20	±15	±10	±28	±20	±17	±35			±15	±9	±7
	±18	±8	±8	±28	±15	±13	±30			±15	±10	±5	±17			±20	±15	±10	±28	±20	±17	±35			±15		
	±18	±5	±5	±28	±15	±10	±30	±20	±20	±15	±10	±3	±17			±20	±10	±10	±28	±20	±17	±35	±25	±20	±15		
	±18	±0	±0	±28	±15	±10	±30	±20	±15	±15			±17			±20	±10	±0	±28	±20	±17	±35	±25	±20	±15		
	±18			±28	±10	±5	±30	±15	±15	±15			±14			±20	±0		±28	±20	±15	±35	±20	±20	±13		
	±18			±28	±0	±0	±30	±15	±10	±15						±20			±28	±15	±0	±35	±20	±20			
				±28			±30	±15	±0	±5						±20			±28	±0		±35	±15	±15			
				±28			±30	±0								±20			±28			±35	±12	±0			
							±30												±28			±35	±0				
							±30												±28			±35					
																						±35					
																						±35					
																						±35					
																						±35					



Example:

BIS L-300-S115 BIS Z-501-PU-_ _



BIS L-6021-_ _ _-050-03-ST8

Dimension		
Housing material		
For processor units	**Order code**	
BIS L-60_ _-...	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cables	For BIS L	
	For BIS VL	

	Order code	
	Part number	
	Order code	
Matching data carriers	Part number	
Assembly		
Write distance in mm		
Read distance in mm		
Offset in mm at distance	0 mm	
	3 mm	
	8 mm	
	10 mm	
	15 mm	
	20 mm	
	25 mm	
	30 mm	
	35 mm	
	40 mm	
	45 mm	
	50 mm	
	55 mm	
	60 mm	
	70 mm	
	100 mm	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Flush in steel

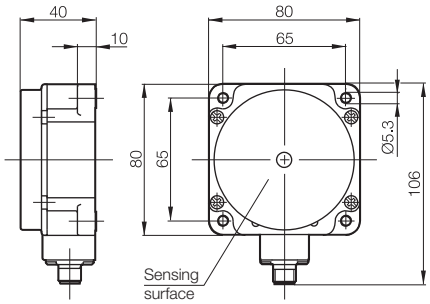
Non-flush on steel

Non-metal

Antenna type:

Round

80×80×40 mm																				
PBT																				
BIS004T																				
BIS L-301-S115																				
BIS00U6																				
BIS VL-301-001-S4																				
0...+70 °C (negative temperatures on request)																				
–20...+85 °C																				
IP 67																				
Processor unit																				
See page 310...311																				
See page 304...308																				
BIS0033				**BIS0036**			**BIS0039**			**BIS003N**			**BIS003R**			**BIS003T**			**BIS003U**		
BIS L-100-01/L				BIS L-101-01/L			BIS L-102-01/L			BIS L-150-05/A			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L		
													BIS0035			**BIS0038**			**BIS003C**		
													BIS L-100-05/L-RO			BIS L-101-05/L-RO			BIS L-102-05/L-RO		
0...40	15...30	15...25	0...55	15...40	15...35	0...70	20...50	20...50	0...32												
0...40	15...30	15...25	0...55	15...40	15...35	0...70	20...50	20...50	0...32			0...70	20...50	20...50	0...70	20...45	20...40	0...100	25...60	25...55
±30			±35			±40			±24			±40			±40			±45		
±30			±35			±40			±24			±40			±40			±45		
±30			±35			±40			±24			±40			±40			±45		
±30			±35			±40			±24			±40			±40			±45		
±30	±20	±15	±35	±20	±20	±40			±24			±40			±40			±45		
±30	±15	±10	±35	±20	±20	±40	±25	±22	±24			±40	±25	±22	±40	±24	±20	±45		
±30	±10	±0	±35	±20	±15	±40	±25	±22	±24			±40	±25	±22	±40	±24	±20	±45	±30	±30
±30	±0		±35	±20	±15	±40	±25	±22	±24			±40	±25	±22	±40	±20	±20	±45	±30	±30
±30			±35	±15	±0	±40	±20	±15				±40	±20	±15	±40	±20	±15	±45	±30	±25
±30			±35	±0		±40	±15	±15				±40	±15	±15	±40	±18	±0	±45	±30	±25
			±35			±40	±15	±10				±40	±15	±10	±40	±0		±45	±25	±20
			±35			±40	±0	±0				±40	±0	±0	±40			±45	±20	±20
			±35			±40						±40			±40			±45	±10	±0
						±40						±40			±40			±45	±0	
						±40						±40			±40			±45		
																		±45		



Industrial RFID System BIS L at 125 kHz (LF)
Read/write heads

Suitable for roller conveyors/internal company logistics

Dimension		
Housing material		
For processor units	**Order code**	
BIS L-60_ _-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cables	For BIS L	

	Order code	
	Part number	
	Order code	
Matching data carriers	Part number	
Assembly		
Write distance in mm		
Read distance in mm		
Offset in mm at distance	0 mm	
	3 mm	
	8 mm	
	10 mm	
	15 mm	
	20 mm	
	25 mm	
	30 mm	
	35 mm	
	40 mm	
	45 mm	
	50 mm	
	55 mm	
	60 mm	
	70 mm	
	100 mm	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Non-flush on steel

Non-metal

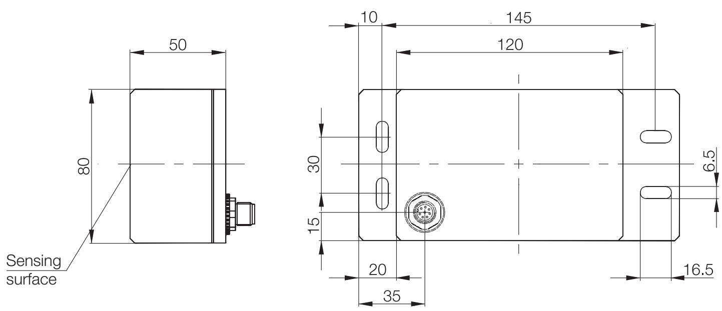
Antenna type:

Round

Read/write heads

	170×80×50 mm
	PBT
	BIS004Y
	BIS L-303-S115
	0...+70 °C (negative temperatures on request)
	–20...+85 °C
	IP 67
	Processor unit
	See page 310...311

	BIS0033	**BIS0036**	**BIS0039**	**BIS003R**	**BIS003T**	**BIS003U**
	BIS L-100-01/L	BIS L-101-01/L	BIS L-102-01/L	BIS L-200-03/L	BIS L-201-03/L	BIS L-202-03/L
				BIS0035	**BIS0038**	**BIS003C**
				BIS L-100-05/L-RO	BIS L-101-05/L-RO	BIS L-102-05/L-RO
	0...40	0...55	0...70			
	0...40	0...55	0...70	0...50	0...70	0...100
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
	±30	±35	±40	±35	±40	±45
		±35	±40	±35	±40	±45
		±35	±40	±35	±40	±45
		±35	±40		±40	±45
			±40		±40	±45
			±40		±40	±45
						±45



RFID System BIS M at 13.56 MHz (HF)
RFID System BIS C at 433/70 kHz (LF)
RFID System BIS L at 125 kHz (LF)
Topology, Range of Applications, Overview
Data Carriers
Read/write Heads
Data Couplers
Read/write Heads with Integrated Processor Unit
easy loop®
Processor Units
Handheld Devices
Access Protection
Installation Notes
Read/ Write Times
Read/write Heads and Data Carriers Working in Combination
Connectivity for RFID Systems
Mounting Accessories for RFID Systems

Exceptionally compact read heads with remote electronic processor unit for when space is at a premium

Dimension		**M12×1**	
Housing material		Aluminum, anodized and brass, coated	
For processor units	**Order code**	**BIS00RN**	
BIS L-60_ _-...	Part number	BIS L-306-S115	
For processor units	**Order code**	**BIS00UJ**	
BIS V-...	Part number	BIS VL-306-001-S4	
Assembly		▬	
Operating temperature		0...+70 °C	
Storage temperature		–20...+85 °C	
Degree of protection per IEC 60529		IP 67	
Connection to		Processor unit	
Connection cables	For BIS L	See page 310...311	
	For BIS VL	See page 304...308	

	Order code	**BIS003W**			**BIS003E**			**BIS0034**		
	Part number	BIS L-203-03/L			BIS L-103-05/L			BIS L-100-05/L		
	Order code	**BIS003F**								
Matching data carriers	Part number	BIS L-103-05/L-RO								
Assembly		▬	▬	▬	▬	▬	▬	▬	▬	▬
Write distance in mm					0...7			0...12		
Read distance in mm		0...7			0...7			0...12		
Offset in mm at distance	0 mm	±4			±4			±7		
	2 mm	±4			±4			±7		
	4 mm	±4			±4			±7		
	7 mm	±2			±4			±7		
	8 mm							±7		
	10 mm							±7		
	12 mm							±7		
	15 mm							±7		
	20 mm									
	25 mm									
	30 mm									
	35 mm									
	40 mm									

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

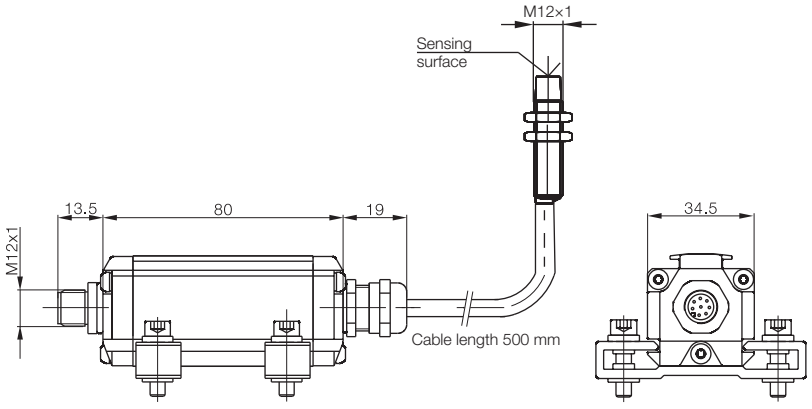
▬ Flush in steel

▬ Non-flush on steel

▬ Non-metal

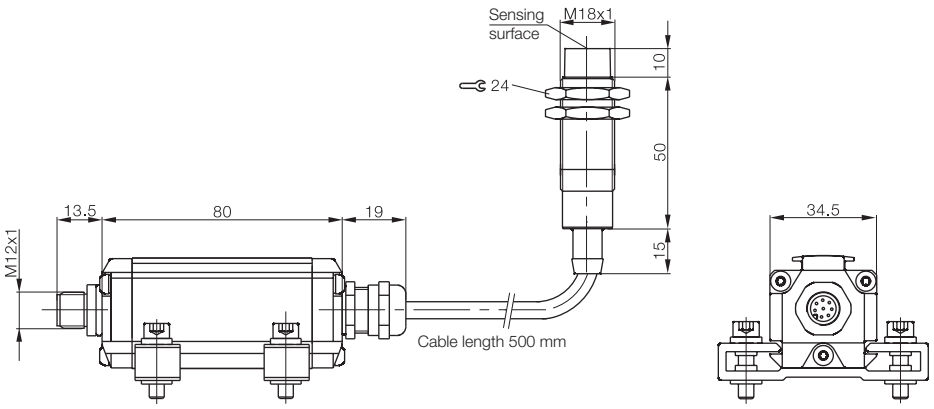
Antenna type:

Round



	M18×1
	Aluminum, anodized and brass, coated
	BIS004U
	BIS L-302-S115
	BIS00UF
	BIS VL-302-001-S4
	▬
	0...+70 °C (negative temperatures on request)
	–20...+85 °C
	IP 67
	Processor unit
	See page 310...311
	See page 304...308

	BIS0033			**BIS0036**			**BIS0039**			**BIS003E**			**BIS003N**			**BIS003R**			**BIS003T**			**BIS003U**			**BIS003W**		
	BIS L-100-01/L			BIS L-101-01/L			BIS L-102-01/L			BIS L-103-05/L			BIS L-150-05/A			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L			BIS L-203-03/L		
																BIS0035			**BIS0038**			**BIS003C**			**BIS003F**		
																BIS L-100-05/L-RO			BIS L-101-05/L-RO			BIS L-102-05/L-RO			BIS L-103-05/L-RO		
	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
	0...20	8...15	8...15	0...25	10...20	10...20	0...30	10...25	10...20	10...18	10...15	7...8	2...12															
	0...20	8...15	8...15	0...25	10...20	10...20	0...30	10...25	10...20	10...18	10...15	7...8	2...12			0...25	8...15	8...15	0...30	10...20	10...20	0...40	10...25	10...20	0...15	4...10	3...8
	±10			±12			±15									±13			±15			±20			±6		
	±10			±12			±15						±8			±13			±15			±20			±6	±7	±5
	±10			±12			±15						±8			±13			±15			±20			±6	±7	±5
	±10			±12			±15					±3	±8			±13			±15			±20			±6	±7	±4
	±10	±6	±6	±12			±15					±2	±8			±13	±8	±6	±15			±20			±6	±6	±3
	±10	±5	±5	±12	±10	±8	±15	±15	±10	±10	±6		±8			±13	±8	±6	±15	±10	±10	±20	±15	±8	±6	±5	
	±10	±4	±4	±12	±10	±8	±15	±15	±10	±10	±6					±13	±8	±6	±15	±10	±10	±20	±15	±8	±6		
	±10	±0	±0	±12	±5	±5	±15	±15	±5	±10	±2					±13	±0	±0	±15	±10	±8	±20	±15	±6	±6		
	±10			±12	±0	±0	±15	±10	±0	±5						±13			±15	±0	±0	±20	±10	±0			
				±12			±15	±0								±13			±15			±20	±0				
							±15												±15			±20					
																						±20					
																						±20					



Flat housings for when height is at a premium

Dimension		
Housing material		
For processor units	**Order code**	
BIS L-60_ _-...	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cables	BIS L	
	BIS VL	

	Order code	
	Part number	
	Order code	
Matching data carriers	Part number	
Assembly		
Write distance in mm		
Read distance in mm		
Offset in mm at distance	0 mm	
	2 mm	
	4 mm	
	7 mm	
	8 mm	
	10 mm	
	12 mm	
	15 mm	
	20 mm	
	25 mm	
	30 mm	
	35 mm	
	40 mm	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Flush in steel

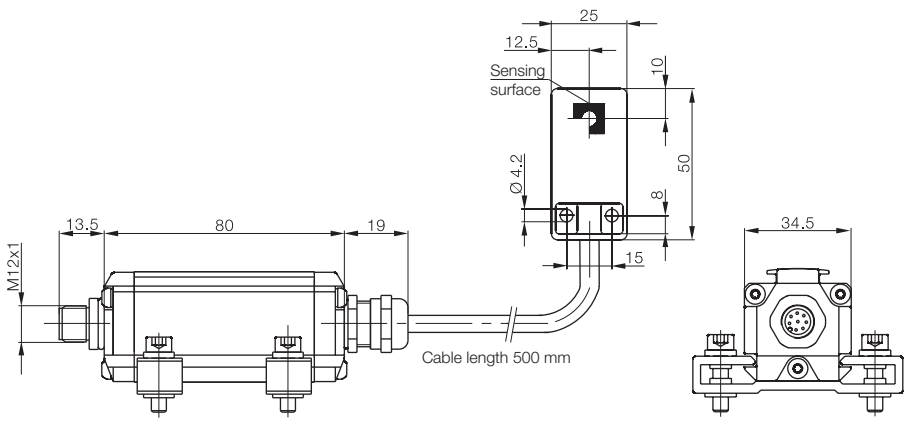
Non-flush on steel

Non-metal

Antenna type:

Round

	25×50×10 mm																								
	Aluminum, anodized and ABS																								
	BIS004Z																								
	BIS L-304-S115																								
	BIS00UH																								
	BIS VL-304-001-S4																								
	▬																								
	0...+70 °C (negative temperatures on request)																								
	–20...+85 °C																								
	IP 67																								
	Processor unit																								
	See page 310...311																								
	See page 304...308																								
	BIS0033			**BIS0036**			**BIS0039**			**BIS003E**			**BIS003N**			**BIS003R**			**BIS003T**			**BIS003U**			**BIS003W**		
	BIS L-100-01/L			BIS L-101-01/L			BIS L-102-01/L			BIS L-103-05/L			BIS L-150-05/A			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L			BIS L-203-03/L		
																BIS0035			**BIS0035**			**BIS003C**			**BIS003F**		
																BIS L-100-05/L-RO			BIS L-100-05/L-RO			BIS L-102-05/L-RO			BIS L-103-05/L-RO		
	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
	0...20	8...15	8...15	0...25	10...20	10...20	0...30	10...25	10...20	10...22	10...15	7...8	2...12															
	0...20	8...15	8...15	0...25	10...20	10...20	0...30	10...25	10...20	10...22	10...15	7...8	2...12			0...25	8...15	8...15	0...30	10...20	10...20	0...40	10...25	10...20	0...15	4...10	3...8
	±10			±12			±15									±13			±15			±20			±6		
	±10			±12			±15						±8			±13			±15			±20			±6	±7	±5
	±10			±12			±15						±8			±13			±15			±20			±6	±7	±5
	±10			±12			±15					±3	±8			±13			±15			±20			±6	±6	±3
	±10	±6	±6	±12			±15					±2	±8			±13	±8	±6	±15			±20			±6	±6	±3
	±10	±5	±5	±12	±10	±8	±15	±15	±10	±10	±6		±8			±13	±8	±6	±15	±10	±10	±20	±15	±8	±6	±5	
	±10	±3	±3	±12	±10	±8	±15	±15	±10	±10	±6		±8			±13	±8	±6	±15	±10	±10	±20	±15	±8	±6		
	±10	±0	±0	±12	±5	±5	±15	±15	±5	±10	±2					±13	±0	±0	±15	±10	±8	±20	±15	±6	±6		
	±10			±12	±0	±0	±15	±10	±0	±5						±13			±15	±0	±0	±20	±10	±0			
				±12			±15	±0								±13			±15			±20	±0				
							±15												±15			±20					
																						±20					
																						±20					



For limited space, even on metal
Small read heads with remote electronic processor unit for glass data carriers

Dimension		
Housing material		
For processor units	**Order code**	
BIS L-60_ _-...	Part number	
For processor units	**Order code**	
BIS V-...	Part number	
Assembly		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cables	For BIS L	
	For BIS VL	

	Order code	
Matching data carriers	Part number	
Assembly		
Write distance in mm		
Read distance in mm		
Offset in mm at distance	0 mm	
	10 mm	
	15 mm	
	20 mm	
	25 mm	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Flush in steel

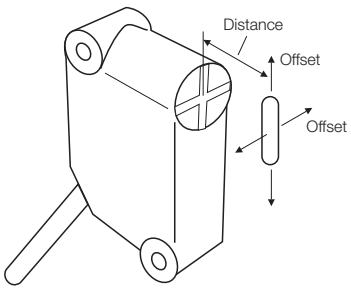
Non-flush on steel

Non-metal

Antenna type:

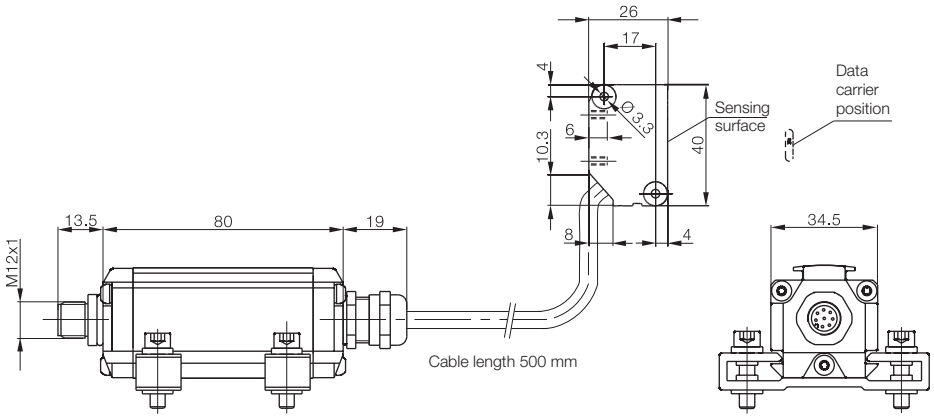
Rod

For use with BIS L-150-05/A



	26×40×12 mm
	Aluminum, anodized and ABS
	BIS0051
	BIS L-350-S115
	BIS00UK
	BIS VL-350-001-S4
	▬
	0...+70 °C (negative temperatures on request)
	–20...+85 °C
	IP 67
	Processor unit
	See page 310...311
	See page 304...308

	BIS003N		
	BIS L-150-05/A		
	▬	▬	▬
	0...17	0...24	0...24
	0...17	0...24	0...24
	±18	±20	±20
	±18	±20	±20
	±10	±20	±20
		±14	±14
		±14	±14

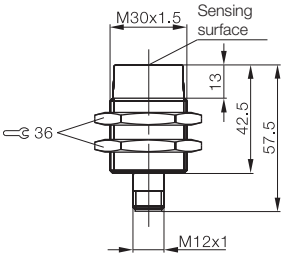


For maximum flexibility from pallet to pallet – with 2-way air interface

Dimension		**M30×1.5**	
Housing material		Brass, coated	
Base coupler for read/write head	**Order code**	**BIS00K1**	
	Part number	BIS L-380-ST/10	
Data coupler for data carrier	**Order code**		
	Part number		
Data coupler for data carrier	**Order code**		
	Part number		
Assembly		▬	
Operating temperature		0...+70 °C	
Storage temperature		–20...+85 °C	
Degree of protection per IEC 60529		IP 67	
Connection		M12 male, 4-pin	
For use with		BIS L-300-S115	

	Order code		
Matching data carriers	Part number		

Please observe the Basic Information and Definitions starting on page 296 during installation.

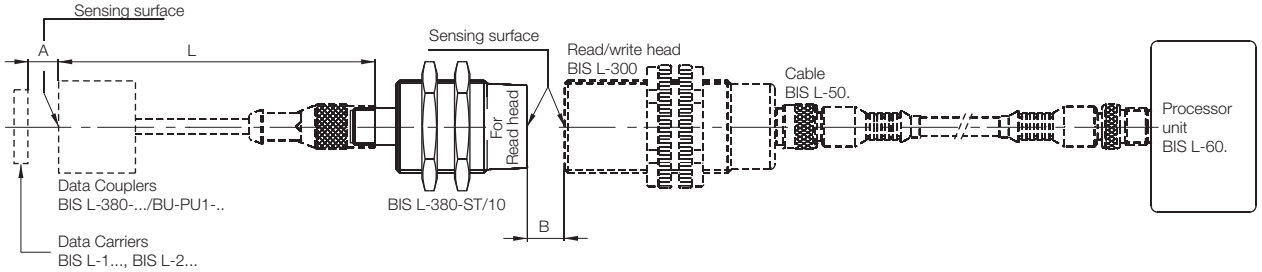


Installation:

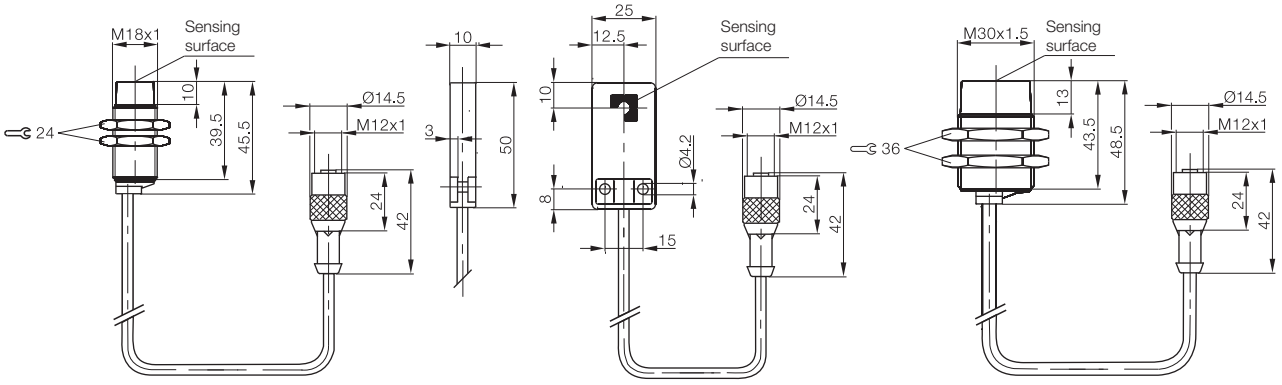
▬ Non-metal

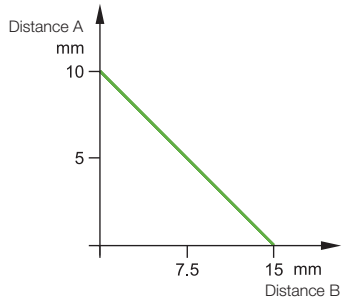
Antenna type:

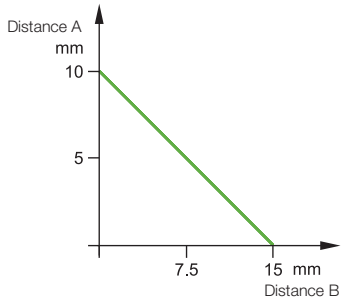
Round

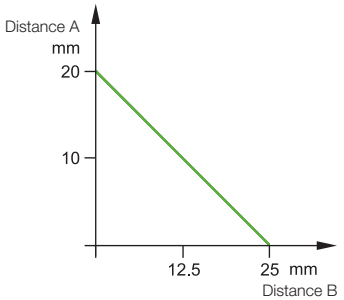


	M18×1	**25×50×10 mm**	**M30×1.5**
	Brass, coated	ABS	Brass, coated
	BIS00JT	**BIS00JW**	**BIS00JZ**
	BIS L-380-02/BU-PU1-00,15	BIS L-380-05/BU-PU1-00,15	BIS L-380-10/BU-PU1-00,5
	BIS00JU	**BIS00JY**	
	BIS L-380-02/BU-PU1-00,5	BIS L-380-05/BU-PU1-00,5	
	▬	▬	▬
	0...+70 °C	0...+70 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C	–20...+85 °C
	IP 67	IP 67	IP 67
	M12 female 4-pin	M12 female 4-pin	M12 female 4-pin
	BIS L-380-ST/10	BIS L-380-ST/10	BIS L-380-ST/10
	BIS003E	**BIS003E**	**BISL101**
	BIS L-103-05/L	BIS L-103-05/L	BIS L-101-01/L









Industrial RFID System BIS L at 125 kHz (LF)

Read/write heads with integrated processor unit, parallel, read only

For applications without a controller:
For direct activation of actuators, switches, etc.
Parallel signals for easier integration. The remote antennas provide solutions for a vast array of applications, even in dynamic processes. The data from the most recently scanned data carrier is temporarily stored until retrieved to facilitate this. This makes the data available longer, simplifying programming as a result. The BIS L-**2**_ _-03/L are read-only data carriers with a large, fixed 5 byte (40-bit) unique number. These data carrier types are used together with the processor unit BIS L-405-**033**-...

Cyclic redundancy check (CRC) offers security
The CRC-16 checksum can be used for applications that require **high data integrity**. This sum is defined on the data carrier and verified during a data check in order to immediately diagnose any deviations.

Process: The processor unit BIS L-405-**037**-... verifies the CRC value of the data carrier automatically calculated from the data in the carrier's byte 0, byte 1 and byte 2. This CRC-16 checksum is stored in byte 3 and 4 of the data carrier and ensures an extremely high level of data integrity without any additional programming effort. In order to use the CRC-16 checksum, the type BIS L-10_-05/L data carriers must first be initialized using a BIS L-60_ _ processor unit and suitable computer software. 3 bytes are available for the user data.

The BIS L-405-037-... processor unit can only be operated using initialized type BIS L-10_-05/L data carriers.

Description, dimension			
Housing material			
Parallel		**Order code**	
		Part number	
Parallel to cyclic redundancy check		**Order code**	
		Part number	
Mounting base	5 m cable	**Order code**	
		Part number	
	10 m cable	**Order code**	
		Part number	
	15 m cable	**Order code**	
		Part number	
	20 m cable	**Order code**	
		Part number	
Assembly			
Power supply, residual ripple			
Power supply			
Operating temperature			
Degree of protection per IEC 60529			
Connection type			
Controller I/O			
Connection base (please order separately)			

Matching data carriers

Assembly		
Read distance in mm		
Offset in mm at distance	0 mm	
	5 mm	
	8 mm	
	10 mm	
	15 mm	
	20 mm	
	25 mm	
	30 mm	
	35 mm	
	40 mm	
	45 mm	

Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

Non-flush on steel

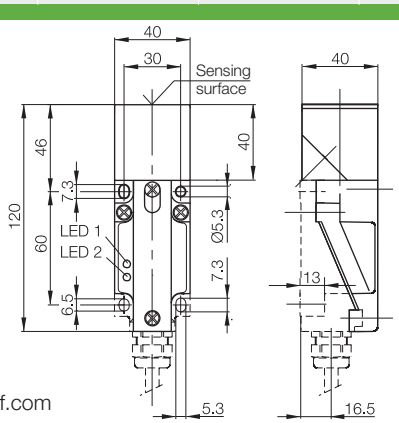
Non-metal

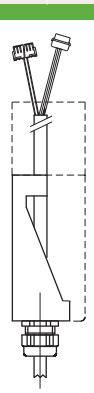
Antenna type:

Round

	Module 40×41×120 mm	**Connection**
	PBT	PBT
	BIS00CM	
	BIS L-405-033-001-05-MU	
	BIS00CT	
	BIS L-405-037-001-05-MU	
		BCC00R2
		BIS L-503-PU1-05
		BCC00R3
		BIS L-503-PU1-10
		BCC00R4
		BIS L-503-PU1-15
		BCC00R5
		BIS L-503-PU1-20
	⎓	⎓
	24 V DC +10%/–20%, ≤ 10%	
	≤ 50 mA no load	
	0...+70 °C	0...+70 °C
	IP 67 (in assembled state)	IP 67 (in assembled state)
	Requires mounting base	
		2 inputs, 10 outputs
	BIS L-503-PU1-_ _	

BIS003R	BIS L-200-03/L **BIS0035**	BIS L-100-05/L-RO **BIS003T**	BIS L-201-03/L **BIS0038**	BIS L-101-05/L-RO **BIS003U**	BIS L-202-03/L **BIS003C**	BIS L-102-05/L-RO **BIS003W**	BIS L-203-03/L **BIS003F**	BIS L-103-05/L-RO
⎓			⎓		⎓		⎓	
0...30			0...40		0...55		0...20	
±15			±20		±30		±10	
±15			±20		±30		±10	
±15			±20		±30		±10	
±15			±20		±30		±10	
±15			±20		±30		±10	
±15			±20		±30			
±15			±20		±30			
			±20		±30			
			±20		±30			
					±30			
					±30			





RFID System BIS M at 13.56 MHz (HF)
RFID System BIS C at 433/70 kHz (LF)
RFID System BIS L at 125 kHz (LF)
Topology, Range of Applications, Overview
Data Carriers
Read/write Heads
Data Couplers
Read/write Heads with Integrated Processor Unit
easy loop®
Processor Units
Handheld Devices
Access Protection
Installation Notes
Read/ Write Times
Read/write Heads and Data Carriers Working in Combination
Connectivity for RFID Systems
Mounting Accessories for RFID Systems

Industrial RFID System BIS L at 125 kHz (LF)

Read/write heads with integrated processor unit, parallel, read only

For applications without a controller: For direct activation of actuators, switches, etc.

Description, dimension			**M12×1 module**	
Housing material			PBT and brass, coated	
Parallel		**Order code**	**BIS00CP**	
		Part number	BIS L-405-033-003-05-MU	
Parallel to cyclic redundancy check		**Order code**	**BIS00CW**	
		Part number	BIS L-405-037-003-05-MU	
Mounting base	5 m cable	**Order code**		
		Part number		
	10 m cable	**Order code**		
		Part number		
	15 m cable	**Order code**		
		Part number		
	20 m cable	**Order code**		
		Part number		
Assembly			▬	
Power supply, ripple			24 V DC +10%/–20%, ≤ 10%	
Power supply			≤ 50 mA no load	
Operating temperature			0...+70 °C	
Degree of protection per IEC 60529			IP 67 (in assembled state)	
Connection type			Requires mounting base	
Controller I/O				
Connection base (please order separately)			BIS L-503-PU1-_ _	

Matching data carriers		**BIS003W** BIS L-203-03/L	**BIS003F** BIS L-103-05/L-RO
Assembly		▬	
Read distance in mm		0...11	
Offset in mm at distance	0 mm	±6	
	5 mm	±6	
	8 mm	±4	
	10 mm	±2	
	15 mm		
	20 mm		
	25 mm		

Please observe the Basic Information and Definitions starting on page 296 during installation.

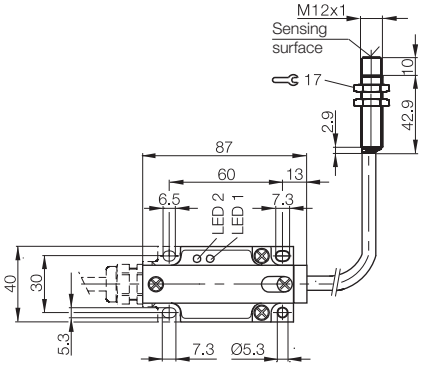
Installation:

▬ Non-flush on steel

▬ Non-metal

Antenna type:

Round



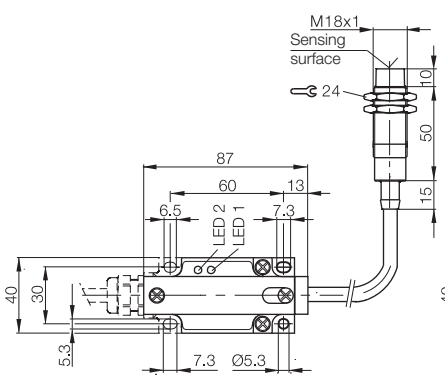
Industrial RFID System BIS L at 125 kHz (LF)

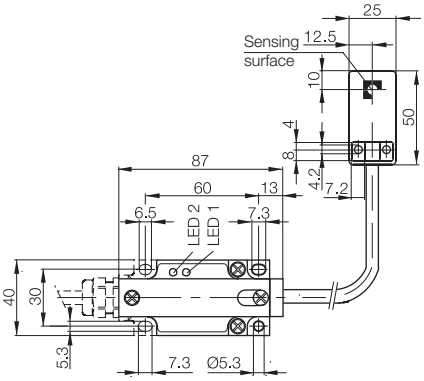
Read/write heads with integrated processor unit, parallel, read only

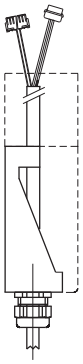
	M18×1 module	Module 25×50×10 mm	Connection
	PBT and brass, coated	PBT and ABS	PBT
	BIS00CN	**BIS00CR**	
	BIS L-405-033-002-05-MU	BIS L-405-033-004-05-MU	
	BIS00CU	**BIS00CY**	
	BIS L-405-037-002-05-MU	BIS L-405-037-004-05-MU	
			BCC00R2
			BIS L-503-PU1-05
			BCC00R3
			BIS L-503-PU1-10
			BCC00R4
			BIS L-503-PU1-15
			BCC00R5
			BIS L-503-PU1-20
	⎓	⎓	⎓
	24 V DC +10%/–20%, ≤ 10%	24 V DC +10%/–20%, ≤ 10%	
	≤ 50 mA no load	≤ 50 mA no load	
	0...+70 °C	0...+70 °C	0...+70 °C
	IP 67 (in assembled state)	IP 67 (in assembled state)	IP 67 (in assembled state)
	Requires mounting base	Requires mounting base	
			2 inputs, 10 outputs
	BIS L-503-PU1-_ _	BIS L-503-PU1-_ _	

BIS003R	BIS L-200-03/L	**BIS0035**	BIS L-100-05/L-RO	**BIS003T**	BIS L-201-03/L	**BIS0038**	BIS L-101-05/L-RO	**BIS003W**	BIS L-203-03/L	**BIS003F**	BIS L-103-05/L-RO
⎓				⎓				⎓			
0...23				0...27				0...16			
±12				±15				±8			
±12				±15				±8			
±12				±15				±8			
±12				±15				±8			
±12				±15				±4			
				±15							
				±6							

BIS003R	BIS L-200-03/L	**BIS0035**	BIS L-100-05/L-RO	**BIS003T**	BIS L-201-03/L	**BIS0038**	BIS L-101-05/L-RO	**BIS003W**	BIS L-203-03/L	**BIS003F**	BIS L-103-05/L-RO
⎓				⎓				⎓			
0...23				0...27				0...16			
±12				±15				±8			
±12				±15				±8			
±12				±15				±8			
±12				±15				±8			
±12				±15				±4			
±8				±15							
				±6							







Industrial RFID System BIS L at 125 kHz (LF)

Read/write heads with integrated processor unit, serial RS232 and RS422, read-only

For simple connection to the controller:
Read-only data carriers
Easy ID solutions are available with a parallel or serial interface. They are absolutely ideal for smart, individual production platforms. Balluff offers a wide range of device-specific point-to-point connections for the platform (RS232 interfaces, RS422 interfaces, IO-Link or daisy chaining into a RS232 or Ethernet TCP/IP).

Antennas
The systems are available with and without remote antennas. This makes it possible to handle nearly any installation situation, even in dynamic processes. The data from the most recently scanned data carrier is temporarily stored until retrieved. This means the data is available longer, simplifying programming as a result.

Data Carriers
- BIS L-2_ _-03/L (read-only)
- BIS L-10_-05/L (programmed, with CRC. Processor units have to be configured using the configuration software).

BIS L at a glance
- Tough
- Compact
- Read-only
- Simple to integrate

Dimension		**40×41×120 mm**
Housing material		PBT
Serial, RS232	**Order code**	**BIS00C5**
	Part number	BIS L-400-035-001-00-S115
Serial, RS422	**Order code**	**BIS00C6**
	Part number	BIS L-400-035-001-02-S115
Assembly		▬
Power supply, ripple		24 V DC +10%/–20%, ≤ 10%
Power supply		≤ 50 mA
Operating temperature		0...+70 °C
Degree of protection per IEC 60529		IP 67
Connection		M12 male, 8-pin
Connection cables	For BIS L	See page 310...311

Matching data carriers		**BIS003R** BIS L-200-03/L	**BIS0035** BIS L-100-05/L-RO	**BIS003T** BIS L-201-03/L	**BIS0038** BIS L-101-05/L-RO	**BIS003U** BIS L-202-03/L	**BIS003C** BIS L-102-05/L-RO	**BIS003W** BIS L-203-03/L	**BIS003F** BIS L-103-05/L-RO
Assembly		▬		▬		▬		▬	
Read distance in mm		0...30		0...40		0...55		0...20	
Offset in mm at distance	0 mm	±15		±20		±30		±10	
	5 mm	±15		±20		±30		±10	
	8 mm	±15		±20		±30		±10	
	10 mm	±15		±20		±30		±10	
	15 mm	±15		±20		±30		±10	
	20 mm	±15		±20		±30			
	25 mm	±15		±20		±30			
	30 mm	±4		±20		±30			
	35 mm			±20		±30			
	40 mm					±30			
	45 mm					±30			
	50 mm					±6			

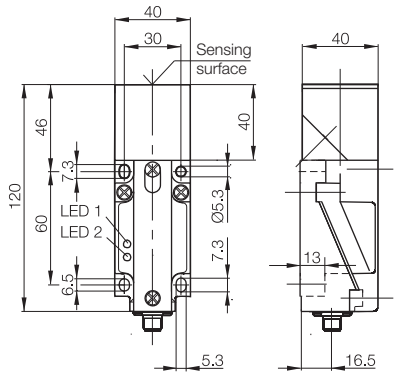
Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

▬ Non-metal

Antenna type:

Round

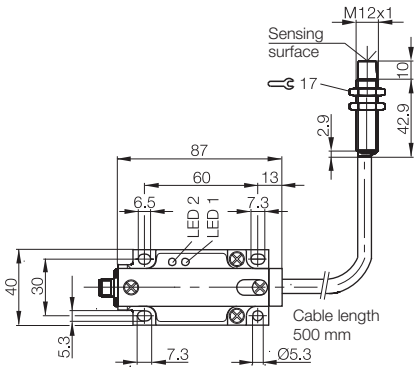


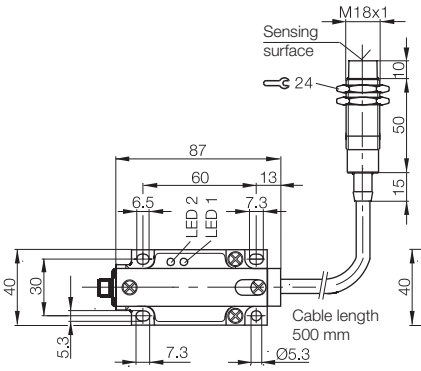
Industrial RFID System BIS L at 125 kHz (LF)

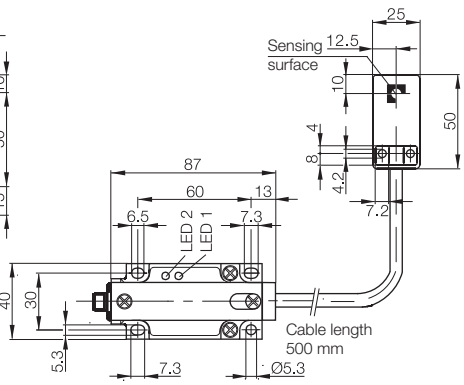
Read/write heads with integrated processor unit, serial RS232 and RS422, read-only

M12×1	**M18×1**	**25×50×10 mm**
PBT and brass, coated	PBT and brass, coated	PBT and ABS
BIS00C9	**BIS00C7**	**BIS00CC**
BIS L-400-035-003-00-S115	BIS L-400-035-002-00-S115	BIS L-400-035-004-00-S115
	BIS00C8	
	BIS L-400-035-002-02-S115	
⎓	⎓	⎓
24 V DC ±10%/–20%, ≤ 10%	24 V DC +10%/–20%, ≤ 10%	24 V DC ±10%/–20%, ≤ 10%
≤ 50 mA no load	≤ 50 mA no load	≤ 50 mA no load
0...+70 °C	0...+70 °C	0...+70 °C
IP 67	IP 67	IP 67
M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
See page 310...311	See page 310...311	See page 310...311

BIS003W BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO	**BIS003R** BIS L-200-03/L **BIS0035** BIS L-100-05/L-RO **BIS003T** BIS L-201-03/L **BIS0038** BIS L-101-05/L-RO **BIS003W** BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO	**BIS003R** BIS L-200-03/L **BIS0035** BIS L-100-05/L-RO **BIS003T** BIS L-201-03/L **BIS0038** BIS L-101-05/L-RO **BIS003W** BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO
⎓	⎓	⎓
0...11	0...23	0...23
±6	±12	±12
±6	±12	±12
±8	±12	±12
±2	±12	±12
	±12	±12
	±12	±8
	0...27	0...27
	±15	±15
	±15	±15
	±15	±15
	±15	±15
	±15	±15
	±15	
	±6	±6
	0...16	0...16
	±8	±8
	±8	±8
	±8	±8
	±8	±8
	±4	±4







Industrial RFID System BIS L at 125 kHz (LF)

Read/write heads with integrated processor unit, IO-Link, read only

For simple connection to the controller:
Read-only data carriers
Easy ID solutions are available with a parallel or serial interface. They are absolutely ideal for smart, individual production platforms. Balluff offers a wide range of device-specific point-to-point connections for the platform (RS232 interfaces, RS422 interfaces, IO-Link or daisy chaining into a RS232 or Ethernet TCP/IP).

Antennas
The systems are available with and without remote antennas. This makes it possible to handle nearly any installation situation, even in dynamic processes. The data from the most recently scanned data carrier is temporarily stored until retrieved. This means the data is available longer, simplifying programming as a result.

Data Carriers
- BIS L-2_ _-03/L (read-only)
- BIS L-10_-05/L (programmed, with CRC. Processor units have to be configured using the configuration software).

BIS L at a glance
- Tough
- Compact
- Read-only
- Simple to integrate

IO-Link

Dimension		**40×41×120 mm**
Housing material		PBT
IO-Link, 8 bytes	**Order code**	**BIS00CZ**
	Part number	BIS L-409-045-001-07-S4
Assembly		▬
Power supply, ripple		18…30 V DC
Power supply		≤ 150 mA
Operating temperature		0...+70 °C
Degree of protection per IEC 60529		IP 67
Connection		M12 male, 4-pin
Connection cables	For BIS L	See page 304...307

Matching data carriers		**BIS003R** BIS L-200-03/L	**BIS0035** BIS L-100-05/L-RO	**BIS003T** BIS L-201-03/L	**BIS0038** BIS L-101-05/L-RO	**BIS003U** BIS L-202-03/L	**BIS003C** BIS L-102-05/L-RO	**BIS003W** BIS L-203-03/L	**BIS003F** BIS L-103-05/L-RO
Assembly		▬		▬		▬		▬	
Read distance in mm		0...25		0...35		0...48		0...16	
Offset in mm at distance	0 mm	±15		±20		±25		±10	
	3 mm	±15		±20		±25		±10	
	4 mm	±15		±20		±25		±10	
	5 mm	±15		±20		±25		±10	
	7 mm	±15		±20		±25		±10	
	8 mm	±15		±20		±25		±10	
	10 mm	±15		±20		±25		±10	
	12 mm	±15		±20		±25		±10	
	15 mm	±15		±20		±25		±10	
	20 mm	±15		±20		±25			
	25 mm	±8		±20		±25			
	30 mm			±20		±25			
	35 mm			±20		±25			
	40 mm					±25			
	45 mm					±25			

IO-Link Version 1.1

Max. cycle time	8.8 ms
IO-Link process data length	8 input bytes/8 output bytes
Communication indicators	Green LED, pulsing

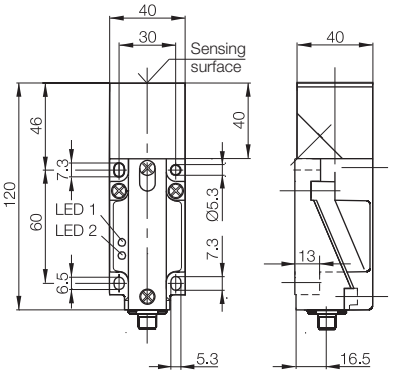
Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

▬ Non-metal

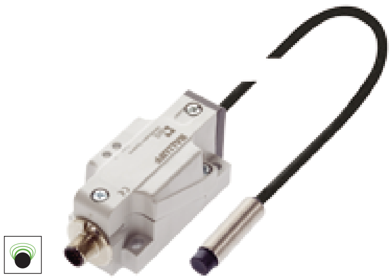
Antenna type:

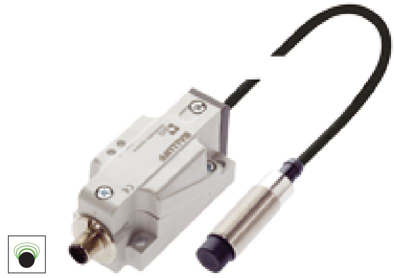
Round

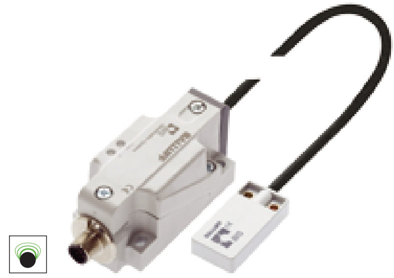


For information on other IO-Link and networking products, refer to our “Industrial Networking and Connectivity” catalog or visit us online at **www.balluff.com**

Read/write heads with integrated processor unit, IO-Link, read only



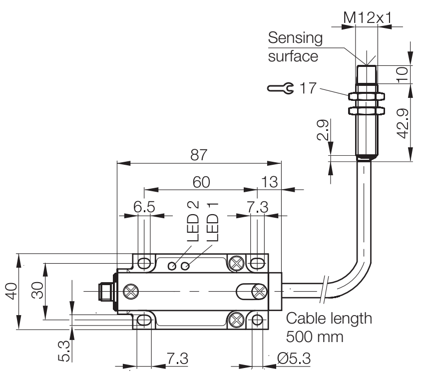


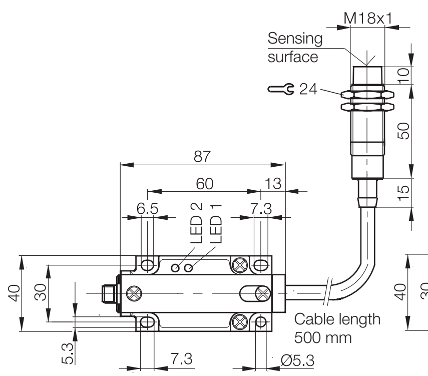


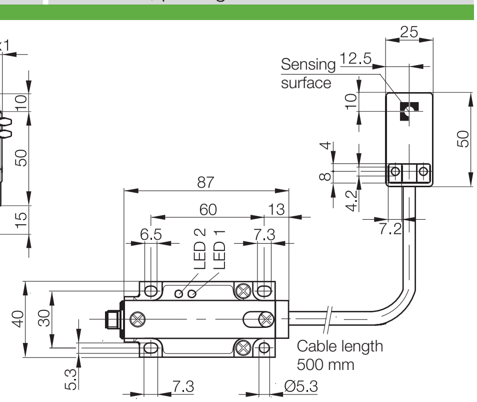
M12×1	**M18×1**	**25×50×10 mm**
PBT and brass, coated	PBT and brass, coated	PBT and ABS
BIS00E1	**BIS00E0**	**BIS00E2**
BIS L-409-045-003-07-S4	BIS L-409-045-002-07-S4	BIS L-409-045-004-07-S4
▬	▬	▬
18…30 V DC	18…30 V DC	18…30 V DC
≤ 150 mA	≤ 150 mA	≤ 150 mA
0...+70 °C	0...+70 °C	0...+70 °C
IP 67	IP 67	IP 67
M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
See page 304...307	See page 304...307	See page 304...307

Head	Data carriers										
BIS00E1	**BIS003W** BIS L-203-03/L, **BIS003F** BIS L-103-05/L-RO	0...7	±4	±4	±4	±4					
BIS00E0	**BIS003R** BIS L-200-03/L, **BIS0035** BIS L-100-05/L-RO	0...15	±10	±10	±10	±10	±10	±10	±10		
BIS00E0	**BIS003T** BIS L-201-03/L, **BIS0038** BIS L-101-05/L-RO	0...18	±12	±12	±12	±12	±12	±12	±12	±12	±12
BIS00E0	**BIS003W** BIS L-203-03/L, **BIS003F** BIS L-103-05/L-RO	0...10	±4	±4	±4	±4	±4	±4	±4		
BIS00E2	**BIS003R** BIS L-200-03/L, **BIS0035** BIS L-100-05/L-RO	0...15	±10	±10	±10	±10	±10	±10	±10		
BIS00E2	**BIS003T** BIS L-201-03/L, **BIS0038** BIS L-101-05/L-RO	0...18	±12	±12	±12	±12	±12	±12	±12	±12	±12
BIS00E2	**BIS003W** BIS L-203-03/L, **BIS003F** BIS L-103-05/L-RO	0...10	±4	±4	±4	±4	±4	±4	±4		

8.8 ms	8.8 ms	8.8 ms
8 input bytes/8 output bytes	8 input bytes/8 output bytes	8 input bytes/8 output bytes
Green LED, pulsing	Green LED, pulsing	Green LED, pulsing







Industrial RFID System BIS L at 125 kHz (LF)

Read/write heads with integrated processor unit, easy loop®, read only

For simple connection to the controller:
Read-only data carriers
Easy ID solutions are available with a parallel or serial interface. They are absolutely ideal for smart, individual production platforms. Balluff offers a wide range of device-specific point-to-point connections for the platform (RS232 interfaces, RS422 interfaces, IO-Link or daisy chaining into a RS232 or Ethernet TCP/IP).

Antennas
The systems are available with and without remote antennas. This makes it possible to handle nearly any installation situation, even in dynamic processes. The data from the most recently scanned data carrier is temporarily stored until retrieved. This means the data is available longer, simplifying programming as a result.

Data Carriers
- BIS L-2_ _-03/L (read-only)
- BIS L-10_-05/L (programmed, with CRC. Processor units have to be configured using the configuration software).

BIS L at a glance
- Tough
- Compact
- Read-only
- Simple to integrate

Dimension		**40×41×120 mm**
Housing material		PBT
RS422, easy loop®	**Order code**	**BIS00CH**
	Part number	BIS L-400-043-001-02-S115
Assembly		▬
Power supply, ripple		24 V DC +10%/–20%, ≤ 10%
Power supply		≤ 50 mA
Operating temperature		0...+70 °C
Degree of protection per IEC 60529		IP 67
Connection		M12 male, 8-pin
Connection cables	For BIS L	See page 310...311

Matching data carriers		**BIS003R** BIS L-200-03/L	**BIS0035** BIS L-100-05/L-RO	**BIS003T** BIS L-201-03/L	**BIS0038** BIS L-101-05/L-RO	**BIS003U** BIS L-202-03/L	**BIS003C** BIS L-102-05/L-RO	**BIS003W** BIS L-203-03/L	**BIS003F** BIS L-103-05/L-RO
Assembly		▬		▬		▬		▬	
Read distance in mm		0...30		0...40		0...55		0...20	
Offset in mm at distance	0 mm	±15		±20		±30		±10	
	3 mm	±15		±20		±30		±10	
	4 mm	±15		±20		±30		±10	
	5 mm	±15		±20		±30		±10	
	7 mm	±15		±20		±30		±10	
	8 mm	±15		±20		±30		±10	
	10 mm	±15		±20		±30		±10	
	12 mm	±15		±20		±30		±10	
	15 mm	±15		±20		±30		±10	
	20 mm	±15		±20		±30			
	25 mm	±15		±20		±30			
	30 mm			±20		±30			
	35 mm			±20		±30			
	40 mm					±30			
	45 mm					±30			
	50 mm					±6			

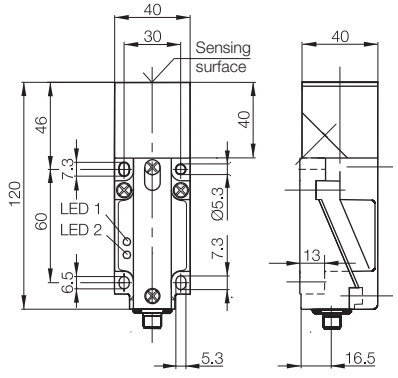
Please observe the Basic Information and Definitions starting on page 296 during installation.

Installation:

▬ Non-metal

Antenna type:

Round

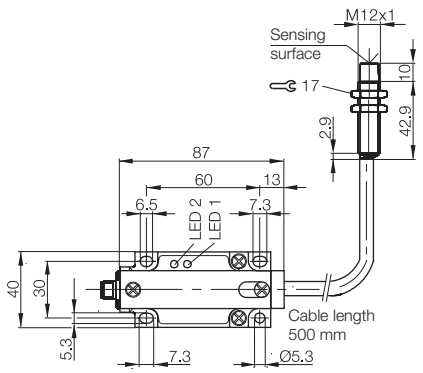


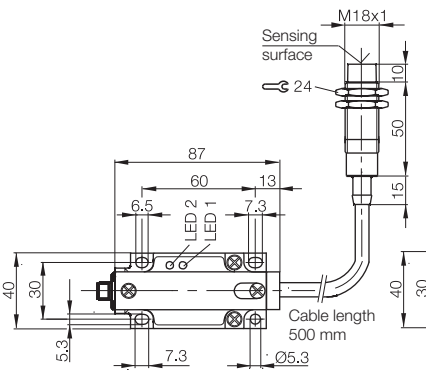
Read/write heads with integrated processor unit, easy loop®, read only

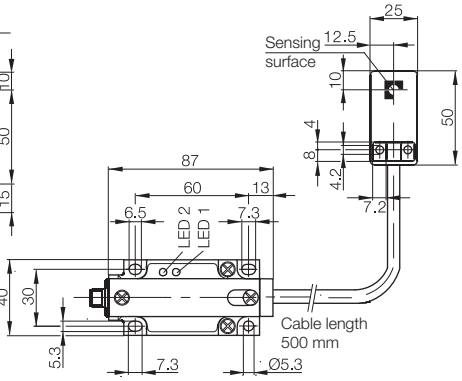
M12	**M18**	**25×50×10 mm**
PBT and brass, coated	PBT and brass, coated	PBT and ABS
BIS00CK	**BIS00CJ**	**BIS00CL**
BIS L-400-043-003-02-S115	BIS L-400-043-002-02-S115	BIS L-400-043-004-02-S115
⎓	⎓	⎓
24 V DC ±10%/–20%, ≤ 10%	24 V DC +10%/–20%, ≤ 10%	24 V DC ±10%/–20%, ≤ 10%
≤ 50 mA no load	≤ 50 mA	≤ 50 mA no load
0...+70 °C	0...+70 °C	0...+70 °C
IP 67	IP 67	IP 67
M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
See page 310...311	See page 310...311	See page 310...311

BIS003W BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO	**BIS003R** BIS L-200-03/L **BIS0035** BIS L-100-05/L-RO **BIS003T** BIS L-201-03/L **BIS0038** BIS L-101-05/L-RO **BIS003W** BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO	**BIS003R** BIS L-200-03/L **BIS0035** BIS L-100-05/L-RO **BIS003T** BIS L-201-03/L **BIS0038** BIS L-101-05/L-RO **BIS003W** BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO
⎓	⎓	⎓
0...11	0...23	0...23
±6	±12	±12
±6	±12	±12
±6	±12	±12
±4	±12	±12
±4	±12	±12
±4	±12	±12
±2	±12	±12
	±12	±12
	±12	±12
	±12	±8

BIS003W BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO	**BIS003R** BIS L-200-03/L **BIS0035** BIS L-100-05/L-RO **BIS003T** BIS L-201-03/L **BIS0038** BIS L-101-05/L-RO **BIS003W** BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO	**BIS003R** BIS L-200-03/L **BIS0035** BIS L-100-05/L-RO **BIS003T** BIS L-201-03/L **BIS0038** BIS L-101-05/L-RO **BIS003W** BIS L-203-03/L **BIS003F** BIS L-103-05/L-RO
⎓	⎓	⎓
0...16	0...27	0...16
±8	±15	±8
±8	±15	±8
±8	±15	±8
±8	±15	±8
±8	±15	±8
±8	±15	±8
±8	±15	±8
±8	±15	±4
±4	±15	±4
	±15	
	±6	



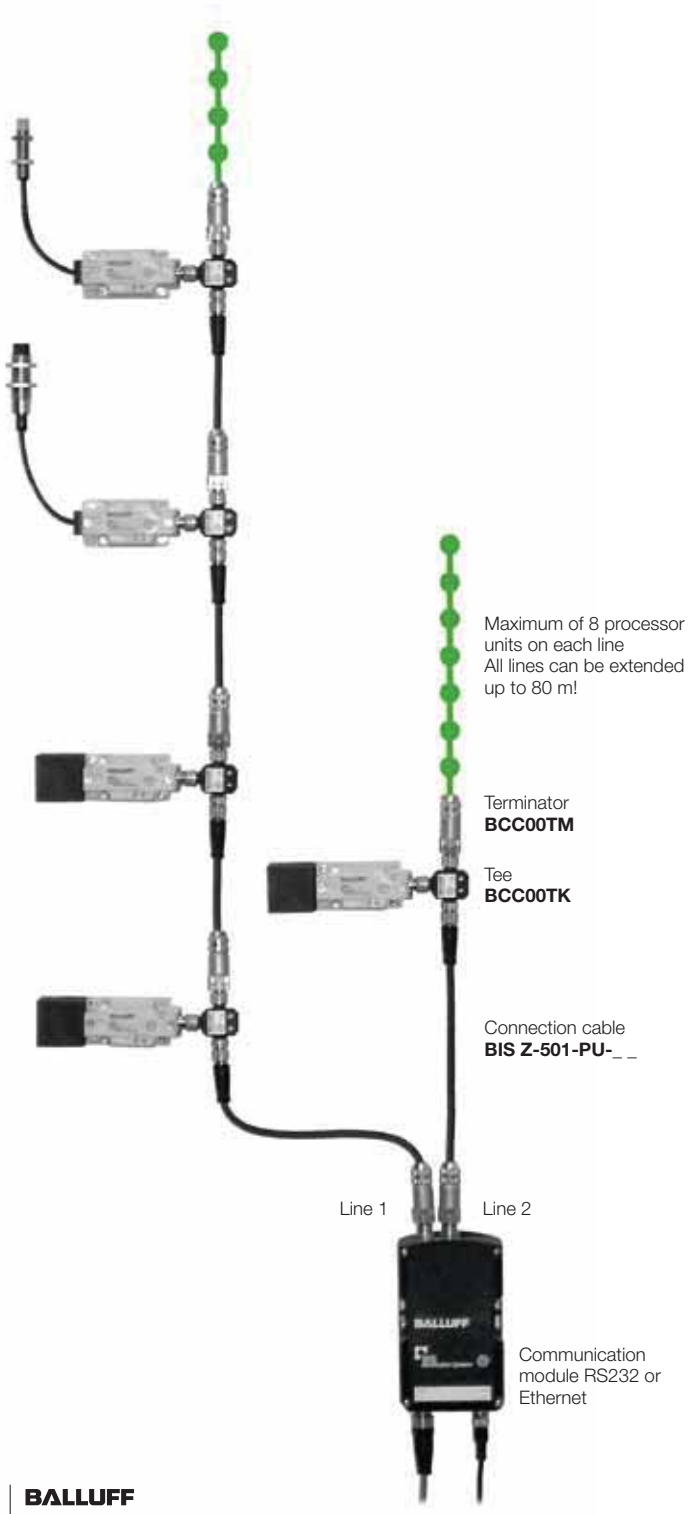




Industrial RFID System BIS L at 125 kHz (LF)
easy loop® communication module

For simple installation
easy loop® provides compact read heads and a communication module for simple connection to the controller at minimal cost for extending BIS L systems.
Prefabricated cable and connectors for fast, proper connections.
No need to configure addresses.

Install the BIS L simply by connecting up to eight read heads on each of two lines with the easy loop® interface. One cable is all you need for the simple installation of BIS L A separate power supply is not necessary. All processor units function independently to allow dynamic operation: Data is transferred reliably when the data carrier passes by.



Description		
Housing material		
Serial RS485	**Order code**	
	Part number	
Ethernet TCP/IP	**Order code**	
	Part number	
Power supply, ripple		
Power supply		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Connection configuration	Line 1 and 2	
	Power	
	Serial RS485	
	Ethernet	

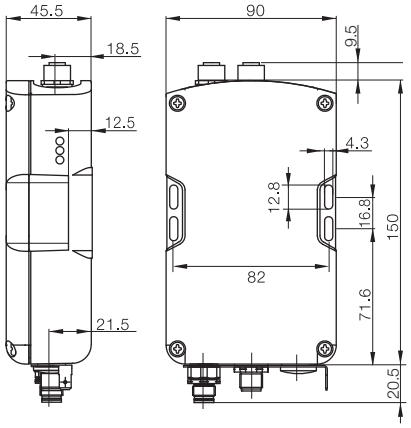
Accessories

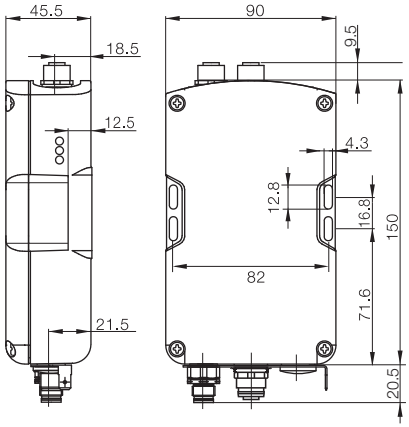
Connection and interface cable	

Suitable connectors
(please order separately)

Description	
Order code	
Part number	

	Communications module	Communications module
	ABS	ABS
	BAE003W	
	BIS Z-EL-002-RS232	
		BAE003U
		BIS Z-EL-001-Ethernet
	24 V DC ±20%, ≤ 10%	24 V DC ±20%, ≤ 10%
	≤ 200 mA (+20 mA per connected processor unit)	≤ 200 mA (+20 mA per connected processor unit)
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2 lines, each with up to 8 BIS L-400-043-...	2 lines, each with up to 8 BIS L-400-043-...
	2× M12 female, 8-pin	2× M12 female, 8-pin
	1× M12 male, 5-pin	1× M12 male, 5-pin
	1× M12 male, 5-pin, A-coded	
		M12 female, 4-pin, D-coded
	See below	See below



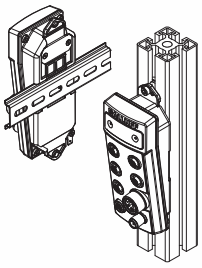


	Tee	Terminator	Supply voltage	Ethernet connector	RS232 connector	Ethernet adapter
	BCC00TK	**BCC00TM**	**BCC06Z9**	**BCC03WZ**	**BCC00PM**	**BCC0C5J**
	BKS-S115-TW2-03	BKS-S117-RO1	BCC M435-0000-1A-000-41X475-000	BCC M474-0000-2D-000-51X475-000	BIS C-522-PVC-02	BIS C-526-PU-00,6

The variable system for intelligence in a small space: Connect up to four read/write heads
Quick, contactless data communication becomes noticeably more efficient with Industrial RFID BIS V. Only BIS V combines RFID and sensors. BIS V, along with the four antenna channels, has an integrated IO-Link master with the latest version, 1.1. The four antenna channels work completely independently of each other. This saves costs, as fewer processor units are needed. The IO-Link master provides a node for additional information. Additional sensors and/or actuators can be connected directly and can create a simple network structure. The high-performance BIS V offers maximum convenience. Display and status LEDs support ease of use. Standard hardware, like a PC, is easy to connect to the USB service interface. All connections are easily accessible and provide plug connectors.

- Function indicator: each read/write head connection has two LEDs for the status and operating state
- Eight single-color LEDs show the bus status
- LCD indicators with control buttons: setting and displaying the Profibus address and displaying UIDs from data carriers that have been read
- USB connection: for fast commissioning without bus connection (reading and writing data carriers), update/upgrade of the processor unit or the read/write heads and retrieving the operating manual as a PDF file
- Intelligent power plug for saving parameters on site
- Simple mounting on top-hat rails or extruded profiles

The compact EMC-protected metal housing with small dimensions (170×60×40 mm) is perfectly integrated and simple to mount. In control cabinets or in the field up to IP 65, on a top-hat rail, or on a profile.



The industrial-grade RFID system BIS V was developed and qualified according to the principles of GAMP® 5. Additional information upon request at **rfidpharma@balluff.com**

reddot design award
winner 2012

Industrial RFID System BIS L at 125 kHz (LF)

Processor unit BIS V Profibus 62×168×48 mm

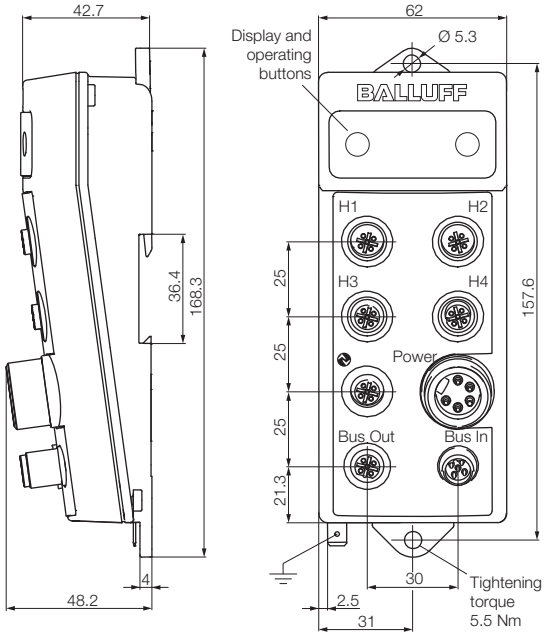
Description		Processor unit
Housing material		Die-cast aluminum, coated
Profibus	**Order code**	**BIS00T3**
	Part number	BIS V-6102-019-C001
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
IO-Link master		V 1.1, max. 0.5 A
Read/write head ports		4× BIS VL-3_ _ _ (external)
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	Profibus IN	1× M12 male, 5-pin
	Profibus OUT	1× M12 female, 5-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	Profibus	See page 320...321
	IO-Link	See page 304...307
Accessories included		Configuration software (GSD file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VL** and **BIS VM** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS L at 125 kHz (LF)

Processor unit BIS V EtherCAT 62×168×48 mm

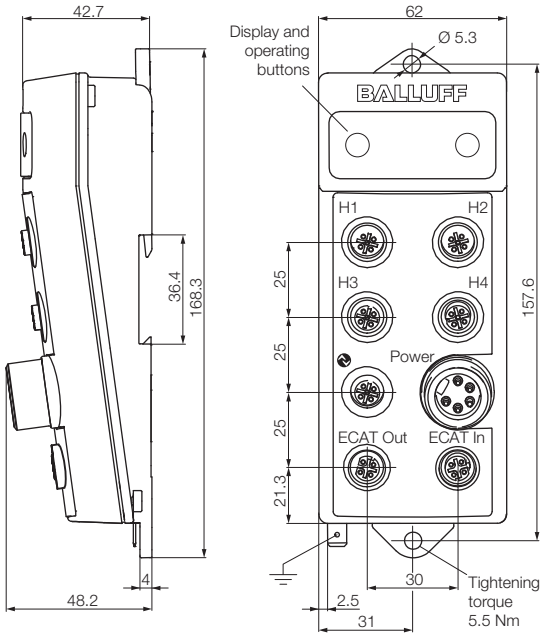
Description		Processor unit
Housing material		Die-cast aluminum, coated
EtherCAT	**Order code**	**BIS00U9**
	Part number	BIS V-6110-063-C002
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		4× BIS VL-3_ _ _ (external)
IO-Link master		V 1.1, max. 0.5 A
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	EtherCAT In	1× M12 female, 4-pin
	EtherCAT Out	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	EtherCAT	See page 322...323
	IO-Link	See page 304...307
Accessories included		Configuration software (ESI file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VL** and **BIS VM** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS L at 125 kHz (LF)

Processor unit BIS V CC-Link 62×168×48 mm

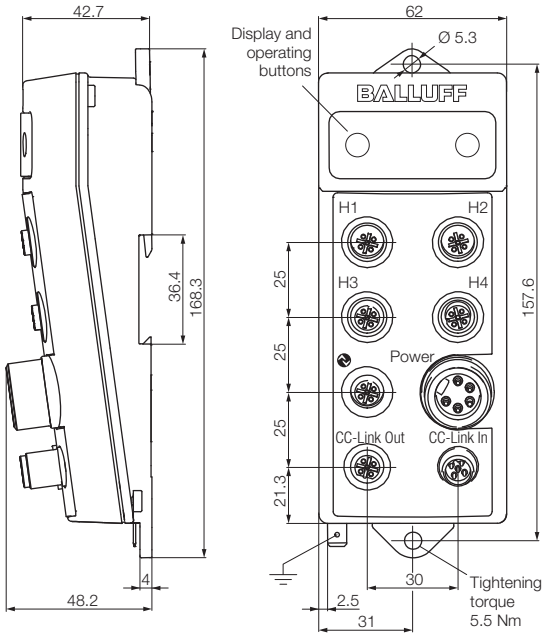
Description		Processor unit
Housing material		Die-cast aluminum, coated
CC-Link	**Order code**	**BIS010P**
	Part number	BIS V-6111-073-C003
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		4× BIS VL-3_ _ _ (external)
IO-Link master		V 1.1, max. 0.5 A
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	CC-Link In	1× M12 male, 5-pin
	CC-Link Out	1× M12 female, 5-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	CC-Link	See page 328...329
	IO-Link	See page 304...307
Accessories included		Configuration software (CSP file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VL** and **BIS VM** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS L at 125 kHz (LF)

Processor unit BIS V Ethernet/IP 62×168×48 mm

Connection
Supply voltage
5-pin

Connection
Supply voltage
4-pin

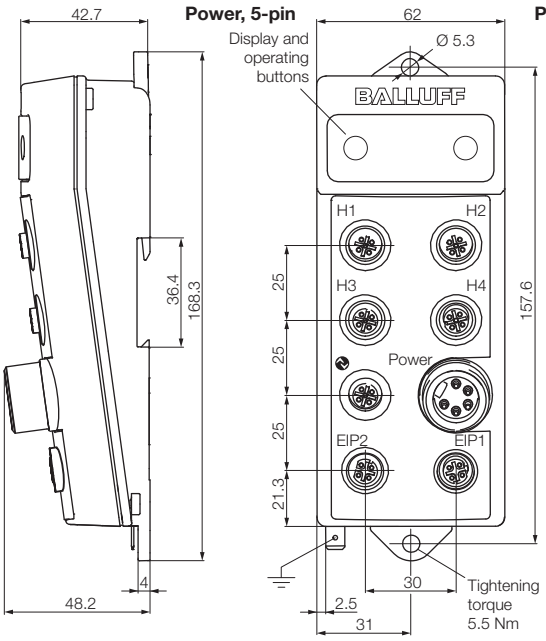
Description		Processor unit	Processor unit
Housing material		Die-cast aluminum, coated	Die-cast aluminum, coated
Ethernet/IP	**Order code**	**BIS012F**	**BIS0122**
	Part number	BIS V-6106-034-C002	BIS V-6106-034-C004
Power supply		24 V DC ±10% LPS Class 2	24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%	≤ 10%
Power supply		≤ 2 A	≤ 2 A
Operating temperature		0...+60 °C	0...+60 °C
Storage temperature		0...+60 °C	0...+60 °C
Degree of protection per IEC 60529		IP 65	IP 65
IO-Link master		V 1.1, max. 0.5 A	V 1.1, max. 0.5 A
Read/write head ports		4× BIS VL-3_ _ _ (external)	4× BIS VL-3_ _ _ (external)
Connection configuration	Read/write heads H1...H4	4× M12 female, 5-pin	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin	1× 7/8" male, 4-pin
	Ethernet/IP In	1× M12 female, 4-pin	1× M12 female, 4-pin
	Ethernet/IP Out	1× M12 female, 4-pin	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309	See page 304...309
	Power	See page 338...339	See page 340...341
	Ethernet/IP	See page 322...323	See page 322...323
	IO-Link	See page 304...307	See page 304...307
Accessories included		Configuration software (EDS file)	Configuration software (EDS file)
Power supply units		See page 352...353	See page 352...353

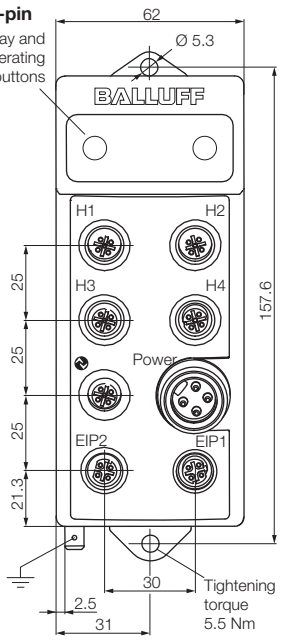
The processor units BIS V can be used with series **BIS VL** and **BIS VM** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Power, 5-pin

Power, 4-pin



Industrial RFID System BIS L at 125 kHz (LF)

Processor unit BIS V Profinet 62×168×48 mm

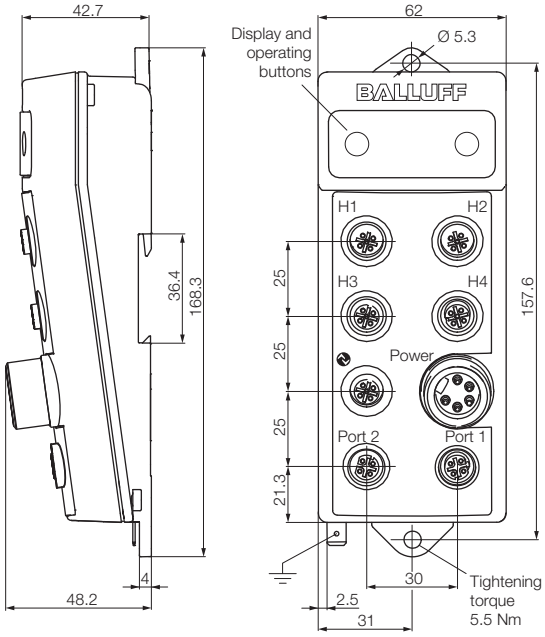
Description		Processor unit
Housing material		Die-cast aluminum, coated
Profinet	**Order code**	**BIS013U**
	Part number	BIS V-6108-048-C002
Power supply		24 V DC ±10% LPS Class 2
Residual ripple		≤ 10%
Power supply		≤ 2 A
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
IO-Link master		V 1.1, max. 0.5 A
Read/write head ports		4× BIS VL-3_ _ _ (external)
Connection configuration	Read/write heads H1…H4	4× M12 female, 5-pin
	Power	1× 7/8" male, 5-pin
	Profinet In	1× M12 female, 4-pin
	Profinet Out	1× M12 female, 4-pin
	IO-Link	1× M12 female, 3-pin

Accessories

Connection cables	Read/write Heads	See page 304...309
	Power	See page 338...339
	Profinet	See page 322...323
	IO-Link	See page 304...307
Accessories included		Configuration software (GSDML file)
Power supply units		See page 352...353

The processor units BIS V can be used with series **BIS VL** and **BIS VM** read/write heads.

For connecting series **BIS C** read/write heads, see page 198...203.



Industrial RFID System BIS L at 125 kHz (LF)
Processor units Serial RS232

Easy integration in all controllers
The **compact class BIS L-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require higher protection. The devices are ideal for IP 65 and applications involving media that do not corrode PS plastic. They are small, compact, flexible and economical.

Operate two read/write heads simultaneously!
- Sequential reading of the data carrier ID number on both read/write heads
- Service friendly, all parameter data is stored in exchangeable memory
- Accepts all read/write heads
- Interface-compatible with BIS C, BIS S and BIS M identification systems

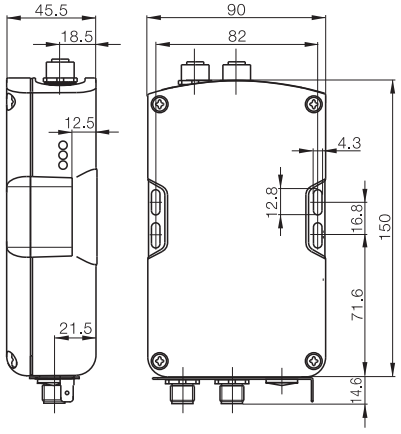
Industrial RFID System BIS L at 125 kHz (LF)

Processor units Serial RS232

Description		Processor unit
Housing material		ABS
Serial RS485	**Order code**	**BIS00E3**
	Part number	BIS L-6000-007-050-00-ST15
Power supply		24 V DC ±20%
Residual ripple		≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS L-3_ _ (external)
Connection configuration	Read/write heads H1...H2	2× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	Serial RS232	1× M12 male, 4-pin

Accessories

Connection cables	Read/write Heads	See page 310...311
	Power	See page 337
	Serial RS232	See page 319
Accessories included		Configuration software
Further accessories		See page 345 (mounting set for mounting rails)
Power supply units		See page 352...353



Industrial RFID System BIS L at 125 kHz (LF)
Processor unit Profibus

The **processor unit BIS L-602_** has a small, robust housing made from die-cast aluminum. This allows it to provide great mechanical stability and high chemical resistance. The processor unit is available in a variety of interface variants. This guarantees flexible usability.

Operate two read/write heads simultaneously!

- Selectable division of the data width on the PROFIBUS-DP, 4...128 bytes
- Free assigning of the data width for each read/write head
- Optimum data speed, the internal cycle time is shorter than the bus activation time
- Service friendly, all parameter data is stored in exchangeable memory
- Bus address selectable with switches
- Accepts all read/write heads
- Interface-compatible with identification systems BIS C and BIS M

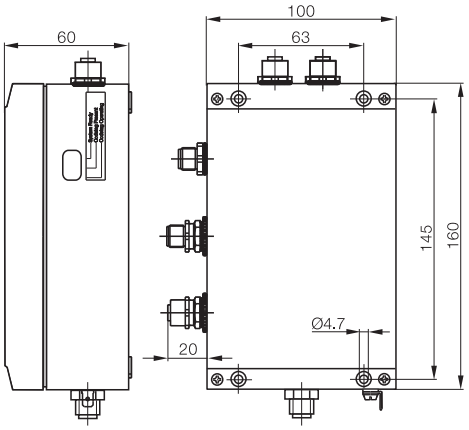
Industrial RFID System BIS L at 125 kHz (LF)

Processor unit Profibus

Description		Processor unit
Housing material		Die-cast aluminum, coated
Profibus	**Order code**	**BIS00EC**
	Part number	BIS L-6022-019-050-03-ST14
Power supply		24 V DC ±20%
Residual ripple		≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS L-3_ _ (external)
Service interface		RS232
Connection configuration	Read/write heads H1...H2	2× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	Profibus IN	1× M12 male, 5-pin, B-coded
	Profibus OUT	1× M12 female, 5-pin, B-coded
	Service interface	1× M12 male, 5-pin

Accessories

Connection cables	Read/write Heads	See page 310...311
	Power	See page 337
	Profibus	See page 320...321
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software (GSD file)
Power supply units		See page 352...353



Screw plug
(please order separately)

Application for	M12 connection
Order code	**BAM0114**
Part number	BKS 12-CS-01

Industrial RFID System BIS L at 125 kHz (LF)

Processor unit Devicenet

The **compact class BIS L-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require higher protection. The devices are ideal for IP 65 and applications involving media that do not corrode PS plastic. They are small, compact, flexible and economical.

Operate two read/write heads simultaneously!

- User-selectable buffer size, 0...256 bytes
- Service friendly, all parameter data is stored in exchangeable memory
- Accepts all read/write heads
- Interface-compatible with identification systems BIS C and BIS M

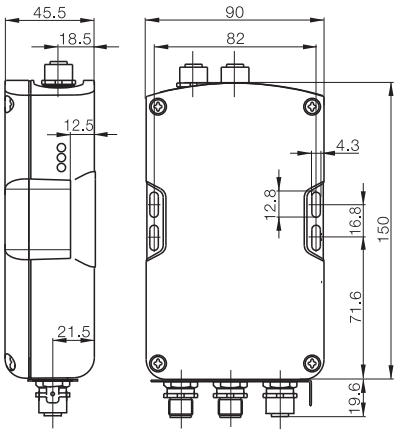
Industrial RFID System BIS L at 125 kHz (LF)

Processor unit Devicenet

Description		Processor unit
Housing material		ABS
DeviceNet	**Order code**	**BIS00E7**
	Part number	BIS L-6003-025-050-03-ST12
Power supply		24 V DC ±20%
Residual ripple		≤ 10%
Power supply		≤ 600 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS L-3_ _ (external)
Service interface		RS232
Connection configuration	Read/write heads H1...H2	2× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	DeviceNet In	1× M12 male, 5-pin
	DeviceNet Out	1× M12 female, 5-pin

Accessories

Connection cables	Read/write Heads	See page 310...311
	Power	See page 337
	DeviceNet	See page 327
Accessories included		Configuration software (EDS file)
Further accessories		See page 345 (mounting set for mounting rails)
Power supply units		See page 352...353



Industrial RFID System BIS L at 125 kHz (LF)

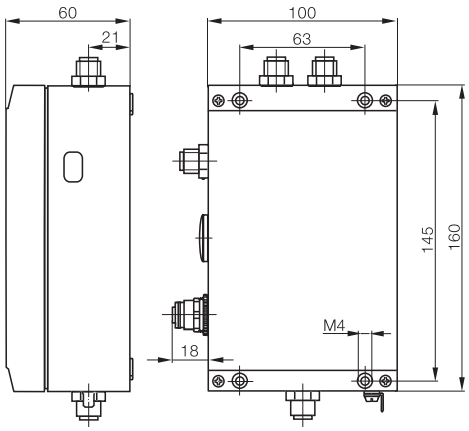
Processor unit Ethernet/IP

Operate two read/write heads simultaneously!

Description		Processor unit
Housing material		Die-cast aluminum, coated
Ethernet/IP	**Order code**	**BIS00EF**
	Part number	BIS L-6026-034-050-06-ST19
Power supply		24 V DC ±20%
Residual ripple		≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS L-3_ _ (external)
Service interface		RS232
Connection configuration	Read/write heads H1...H2	2× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	Ethernet	1× M12 female, 4-pin, D-coded
	Service interface	1× M12 male, 4-pin

Accessories

Connection cables	Read/write Heads	See page 310...311
	Power	See page 337
	Ethernet	See page 322...323
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software (EDS file)
Power supply units		See page 352...353



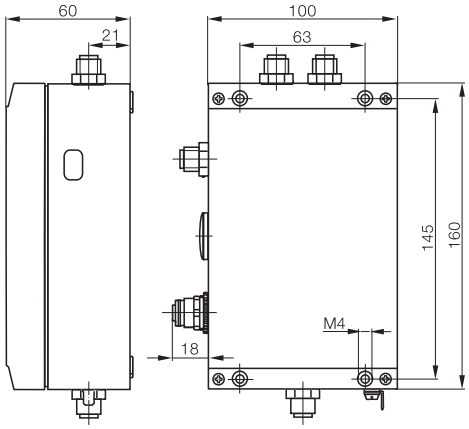
Industrial RFID System BIS L at 125 kHz (LF)

Processor unit Ethernet TCP/IP

Description		Processor unit
Housing material		Die-cast aluminum, coated
Ethernet TCP/IP	**Order code**	**BIS00EH**
	Part number	BIS L-6027-039-050-06-ST19
Power supply		24 V DC ±20%
Residual ripple		≤ 10%
Power supply		≤ 400 mA
Operating temperature		0...+60 °C
Storage temperature		0...+60 °C
Degree of protection per IEC 60529		IP 65
Read/write head ports		2× BIS L-3_ _ (external)
Service interface		RS232
Connection configuration	Read/write heads H1...H2	2× M12 female, 8-pin
	Power	1× M12 male, 5-pin
	Ethernet	1× M12 female, 4-pin, D-coded
	Service interface	1× M12 male, 4-pin

Accessories

Connection cables	Read/write Heads	See page 310...311
	Power	See page 337
	Ethernet	See page 322...323
	Service interface	See page 319 (BCC00PL)
Accessories included		Configuration software
Power supply units		See page 352...353



Ethernet adapter cable
(please order separately)

Description	M12, D-coded on RJ45 coupling
Order code	**BCC0C5J**
Part number	BIS C-526-PU-00,6
Additional information	See page 323

Industrial RFID System BIS L at 125 kHz (LF)
Handheld devices

For a high level of convenience
Allows portable writing and reading of BIS L data carriers.
Easy operation thanks to
- Touch screen with large Windows CE® color display
- Preinstalled Balluff software and keyboard or stylus

Handheld devices are ideal in poor lighting and harsh environments. Data is transmitted over optional Wi-Fi, Bluetooth or a wired USB connection. The handheld device can be expanded with modules.

PSION-based handheld device
- Windows CE®
- Touch screen
- Delivered with a software development kit (SDK)
- Includes a charger
- Bluetooth

Optional
- 1D/2D barcode reader
- Docking station
- Pistol grip for ergonomic work

Customer-specific software on request:
tecsupport@balluff.com

Design		
Function		
Housing material		
Standard bases	**Order code**	
	Part number	
Standard + Wi-Fi	**Order code**	
	Part number	
Standard + 1D code reader	**Order code**	
	Part number	
Standard + 2D code reader	**Order code**	
	Part number	
Standard + 1D code reader + Wi-Fi	**Order code**	
	Part number	
Standard + 2D code reader + Wi-Fi	**Order code**	
	Part number	
Keyboard		
Display		
Power supply		
Capacity		
Interface		
Operating temperature		
Degree of protection per IEC 60529		
Read/write head option		
Appropriate data carrier		

Accessories

Accessories included	
Pistol grip	
Docking station	
Power supply	
Carrying case	

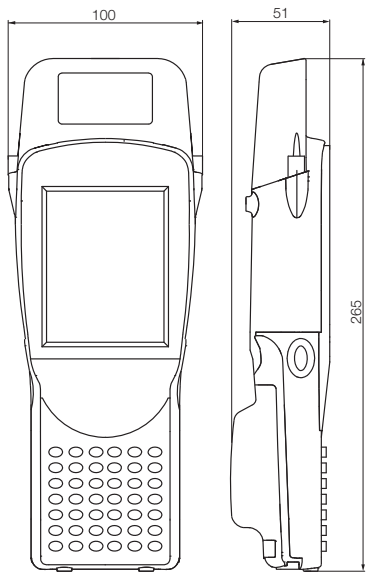
Antenna type:
Rod
Round

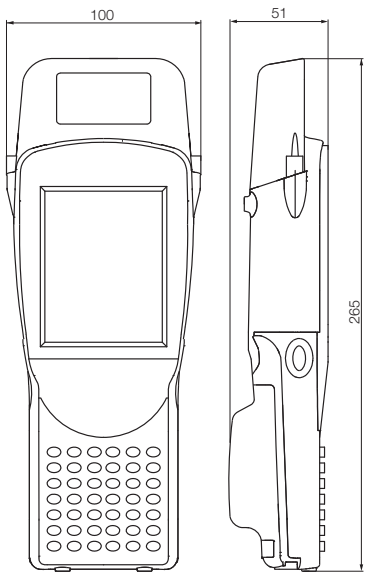
Accessories
(please order separately)

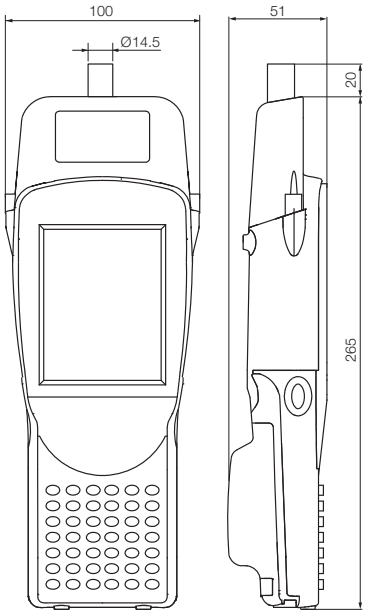



Description	Pistol grip	Docking station	Power supply	Carrying case
Order code	**BAM0281**	**BAM0282**	**BAE00TA**	**BAM021R**
Part number	BAM MD-XA-002-0001	BAM MD-XA-001-0001	BAE PS-XA-1W-05-030-702-CX-01	BAM PC-XA-016-001-A

	All-purpose	Rod	Tool ID
	Reading/writing	Reading/writing	Reading/writing
	ABS	ABS	ABS
	BAE00A2	**BAE00CN**	**BAE00CH**
	BIS L-870-1-008-X-000	BIS L-871-1-008-X-000	BIS L-873-1-008-X-000
	BAE00K4		**BAE00EJ**
	BIS L-870-1-008-X-001	BIS L-871-1-008-X-001	BIS L-873-1-008-X-001
	BIS L-870-1-008-X-002	BIS L-871-1-008-X-002	BIS L-873-1-008-X-002
	BIS L-870-1-008-X-003	BIS L-871-1-008-X-003	BIS L-873-1-008-X-003
	BAE00EA		
	BIS L-870-1-008-X-004	BIS L-871-1-008-X-004	BIS L-873-1-008-X-004
	BIS L-870-1-008-X-005	BIS L-871-1-008-X-005	BIS L-873-1-008-X-005
	52 keys, alphanumeric	52 keys, alphanumeric	52 keys, alphanumeric
	TFT touchscreen display	TFT touchscreen display	TFT touchscreen display
	3.7 V rechargeable battery pack	3.7 V rechargeable battery pack	3.7 V rechargeable battery pack
	4000 mA/h	4000 mA/h	4000 mA/h
	RS232/Balluff Dialog	RS232/Balluff Dialog	RS232/Balluff Dialog
	–10...+50 °C	–10...+50 °C	–10...+50 °C
	IP 65	IP 65	IP 65
	Integrated	Integrated	Integrated
	For BIS L data carrier	For BIS L data carrier	For BIS L data carrier
	with round coil Ø ≥ 35 mm	with rod antenna	with round coil Ø ≤ 34 mm
	Charger power supply and stylus	Charger power supply and stylus	Charger power supply and stylus
	See below	See below	See below
	See below	See below	See below
	See below	See below	See below
	See below	See below	See below







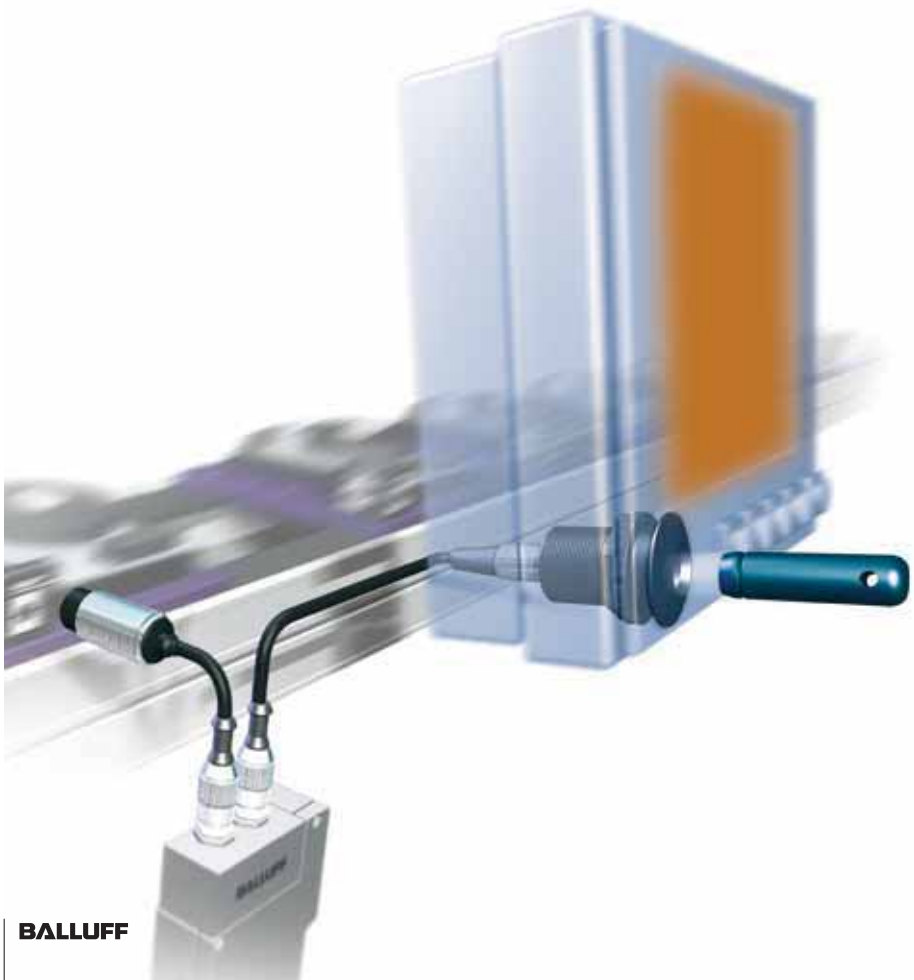
Industrial RFID System BIS L at 125 kHz (LF)
Access protection

Access protection
The access protection prevents data keys from being tampered with by unauthorized persons. For this purpose, individual access codes are allocated via programmable data keys, and these data keys are subsequently blocked from further programming.

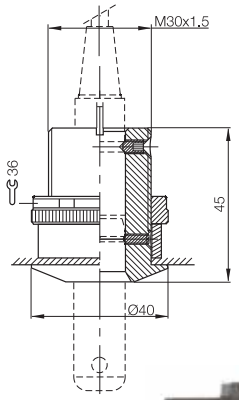
The data key is read via an antenna fitted to a special bracket. The processor unit then issues the data. Different interfaces such as Profibus, Devicenet, Ethernet/IP or serial and parallel make conection to the system to be monitored very easy. Access protection is available for BIS C and BIS L systems.

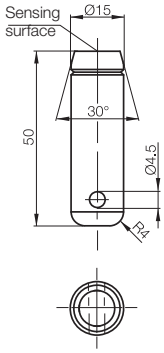
Benefits
The programmable data key allows upgrades or replacements without requiring modifications to the system software. End users become independent of the system supplier. The access system is easy to integrate in read/write stations that already use an identification system. The antenna for access monitoring is simply connected to the second channel of the existing processor unit. This reduces hardware expenses to a minimum and software only requires slight modification in order to process both channels.

Version	
Use	
Housing material	
Order code	
Part number	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	

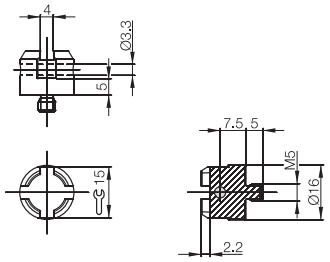


	Installation unit	Data carrier and holder	Tag holder
	Attachment for read/write head BIS M-304	Used with BIS Z-ZA-001	Used with BIS L-103 and BIS L-203
	POM and PA 6.6	POM and PA 12	POM
	BAM012N	**BIS00ZY**	**BAM012H**
	BIS Z-ZA-001	BIS L-103-05/L-ZC1	BIS L-203-ZH1
	0...+70 °C	–25...+70 °C	–25...+85 °C
	–20...+85 °C	–25...+85 °C	
		IP 67	IP 67



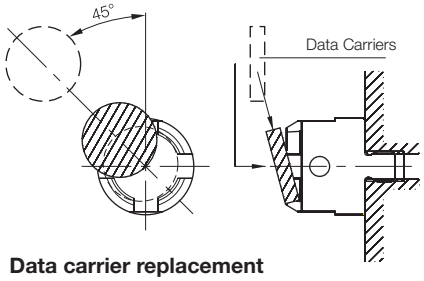


Electronic key for access control.
Easy to implement using the “RFID key”.

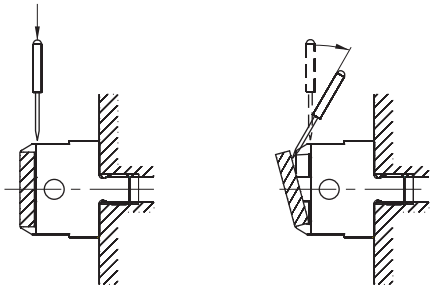


Interchangeable with data carriers BIS L-103 and BIS L-203, easy to mount, even on metal
The holder uses a prismatic clamp to prevent the data carrier from falling out.

Data carrier installation



Data carrier replacement



Installation notes

Assembly

Flush in steel
The sensing surface can be mounted on the surface of steel so that it is even with adjacent areas. See the product data sheet for more information.

Non-flush on steel
The sensing surface must not be in contact or surrounded by steel.
See the product data sheet for more information about the clear zone.

Non-metal
The entire clear zone must remain free of any type of metal.
See the product data sheet for more information about the clear zone.

Please contact TecSupport for additional metal mounting options.

Minimum distance between two data carriers

	BIS L-100-01/L	BIS L-101-01/L	BIS L-102-01/L	BIS L-103-05/L	BIS L-200-03/L	BIS L-100-05/L-RO	BIS L-201-03/L	BIS L-101-05/L-RO	BIS L-202-03/L	BIS L-102-05/L-RO	BIS L-203-03/L	BIS L-103-05/L-RO	BIS L-150-05/A
BIS L-300-S115	250	300	400	250	250	250	300	300	400	400	250	250	
BIS L-301-S115	300	400	500	350	350	350	400	400	500	500	350	350	
BIS L-302-S115	150	200	200	180	180	180	200	200	250	250	180	180	
BIS L-303-S115	300	400	500	350	350	350	400	400	500	500	350	350	
BIS L-304-S115	150	200	200	180	180	180	200	200	250	250	180	180	
BIS L-306-S115	80			50							50		
BIS L-350-S115													50
BIS L-4_ _					250	250	300	300	400	400			
BIS VL-300-001-S4	250	300	400	250	250	250	300	300	400	400	250	250	
BIS VL-301-001-S4	300	400	500	350	350	350	400	400	500	500	350	350	
BIS VL-302-001-S4	300	400	500	350	350	350	400	400	500	500	350	350	
BIS VL-304-001-S4	150	200	200	180	180	180	200	200	250	250	180	180	
BIS VL-306-001-S4	80			50							50		
BIS VL-350-001-S4													50

Dimensions in mm

Minimum distance between two read/write heads

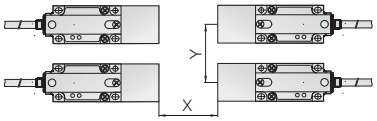
BIS L-300	400
BIS L-301	800
BIS L -302	200
BIS L-303	800
BIS L-304	200
BIS L-306-S115	100
BIS L-350-S115	100
BIS L-4_ _	400
BIS VL-300-001-S4	400
BIS VL-301-001-S4	800
BIS VL-302-001-S4	200
BIS VL-304-001-S4	200
BIS VL-306-001-S4	100
BIS VL-350-001-S4	100

Dimensions in mm

Distance from read head to read head

Read head	Distance x	Distance Y
BIS L-40 _-...-001-...	1000 mm	1000 mm
BIS L-40 _-...-002-...	500 mm	300 mm
BIS L-40 _-...-003-...	500 mm	300 mm
BIS L-40 _-...-004-...	500 mm	300 mm

Dimensions in mm



Installation in metal

To reach the specified read/write distance, the data carrier in the metallic environment must be mounted within a certain metal-free clear zone.

Data Carriers	Fig.	Dimension A	Dimension B	Dimension C	Dimension D
BIS L-100-01/L	1	40			50
BIS L-100-05/L-RO	1	40			50
BIS L-101-01/L	1	35			50
BIS L-101-05/L-RO	1	35			50
BIS L-102-01/L	1	25			50
BIS L-102-05/L-RO	1	25			50
BIS L-103-05/L	1	44			50
BIS L-103-05/L-RO	1	44			50
BIS L-150-05/A	5	0*	0*		3,15
BIS L-201-03/L	1	40			50
BIS L-202-03/L	1	35			50
BIS L-203-03/L	1	25			50
BIS L-203-ZH1	1	44			50

Read/write Heads	Fig.	Dimension A	Dimension B	Dimension C	Dimension D
BIS L-300-S115	3	35		30	
BIS L-301-S115	5	80	80	40	
BIS L-302-S115	3	40		10	
BIS L-303-S115	5	80	60	50	
BIS L-304-S115	5	50	50	10	
BIS L-306-S115	3	26		5	
BIS L-350-S115	4	50	50		30
BIS L-400-035-001-00-S115	5	30	30	40	
BIS L-400-035-001-02-S115	5	30	30	40	
BIS L-400-035-002-00-S115	3	40		10	
BIS L-400-035-002-02-S115	3	40		10	
BIS L-400-035-003-00-S115	3	40		10	
BIS L-400-035-003-02-S115	3	40		10	
BIS L-400-035-004-00-S115	5	50	50	10	
BIS L-400-043-001-02-S115	5	30	30	40	
BIS L-400-043-002-02-S115	3	40		10	
BIS L-400-043-003-02-S115	3	40		10	
BIS L-400-043-004-02-S115	5	50	50	10	
BIS L-405-033-001-05-MU	5	30	30	40	
BIS L-405-033-002-05-MU	3	40		10	
BIS L-405-033-003-05-MU	3	40		10	
BIS L-405-033-004-05-MU	5	50	50	10	
BIS L-405-037-001-05-MU	5	30	30	40	
BIS L-405-037-002-05-MU	3	40		10	
BIS L-405-037-003-05-MU	3	40		10	
BIS L-405-037-004-05-MU	5	50	50	10	
BIS L-409-045-001-07-S4	5	30	30	40	
BIS L-409-045-002-07-S4	3	40		10	
BIS L-409-045-003-07-S4	3	40		10	
BIS L-409-045-004-07-S4	5	50	50	10	
BIS VL-300-001-S4	3	35		30	
BIS VL-301-001-S4	5	80	80	40	
BIS VL-302-001-S4	3	40		10	
BIS VL-304-001-S4	5	50	50	10	
BIS VL-306-001-S4	3	26		5	
BIS VL-350-001-S4	4	50	50		30

*in steel with BIS L-350 head

Dimensions in mm

For figures, see page 298

Note! Depending on the combination of read/write head and data carrier, clear zone dimension A should always be selected for the larger of the components. If the clear zones cannot be maintained, the read/write distance will be reduced.

Installation in metal (continued)

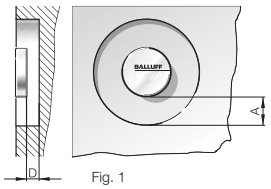


Fig. 1

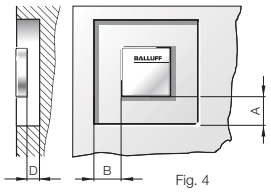


Fig. 4

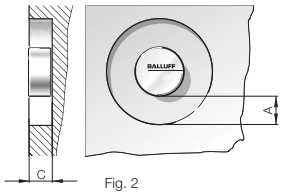


Fig. 2

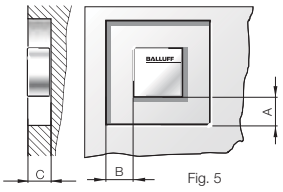


Fig. 5

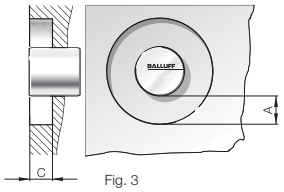


Fig. 3

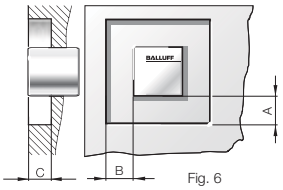


Fig. 6

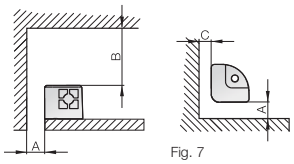
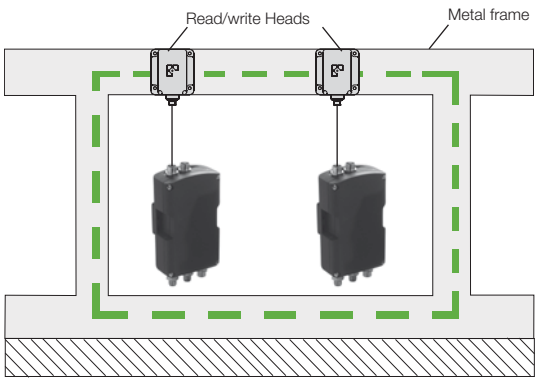


Fig. 7

Mounting the read/write heads on metal frames

If the read/write heads are mounted so that they are joined through an enclosed metal frame, mutual interference may result (conductor loop). This may reduce the read/write distances. The smaller the read/write head, the less the interference. For the BIS L-301, the maximum distance can be reduced by up to 20%. The distance should therefore be tested.



Mechanical Strength

Data carrier and read/write heads BIS L-1_ _, BIS L-2_ _, BIS L-3_ _, BIS L-4_ _	
Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6

Processor units BIS L-6_ _ _	
Shock load	15 g/11 ms per EN 60068-2-27 and 15 g/6 ms per EN 60068-2-29
Vibration	5 g, 10...150 Hz per EN 60068-2-6

Maximum speed

To calculate the permitted speed in which the data carrier and head move relative to each other, the static distance values are used (see section BIS L).

The permissible speed is:

$$V_{max.\ perm.} = \frac{Path}{Time} = \frac{2 \times |offset\ value|}{Processing\ time}$$

The offset value is dependent on the read/write distance actually used in the system.

$$\text{Processing time} = \text{Data carrier response time} + \text{Read/write time of first block to be read} + n^1 \times \text{Read/write time for additional started blocks}$$

n^1 = number of started blocks

Read times BIS L-1_ _

Serial number detection typically 110 ms*

Data carrier with 4 byte blocks	
Byte	Read time
From 0 to 3	180 ms
For each additional started 4 bytes add additional	90 ms

Read times BIS L-2_ _

Serial number detection = reading data carriers = Typically 100 ms*

Write times BIS L-1_ _

Data carrier with 4 byte blocks	
Byte	Write time
From 0 to 3	305 ms
For each additional started 4 bytes add additional	215 ms

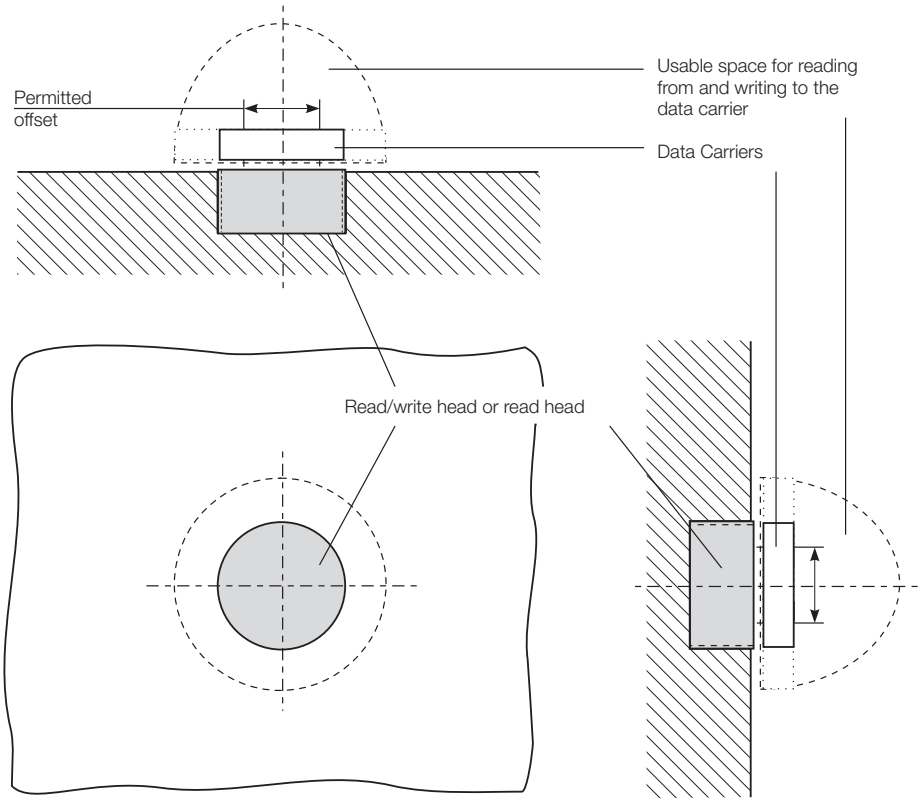
*Only applies to the parameter type and output of the serial number.

All information is provided as general values. Deviations are possible depending on the application and combination of read/write head and data carrier.

Spatial arrangement of read/write head or read head and data carrier

The key to reliable data exchange between the read/write head or read head and the data carrier is maintaining sufficient dwell time of the data carrier within a specified spatial distance from the read/write head or read head.
The two sketches illustrate this relationship. For non-directional operation, see the sketch on page 300, for directional write/read heads, see the sketch on page 301.

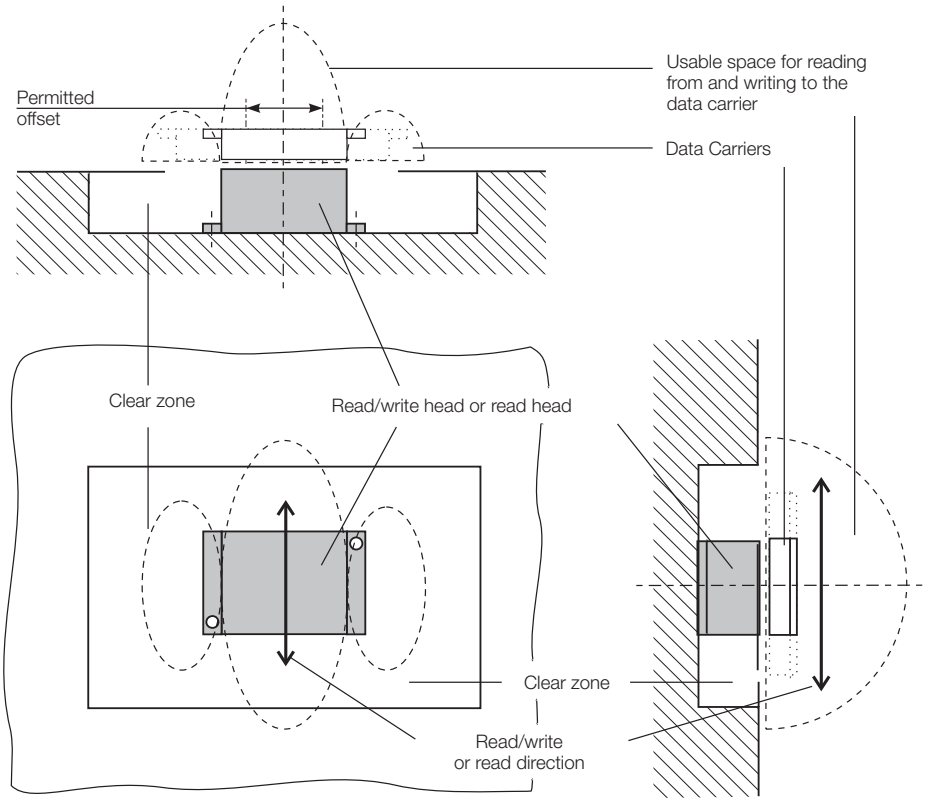
For a **static read/write or read operation**, the data carrier comes to a complete stop in front of the read/write or read head; This enables a larger distance between the two.



Spatial arrangement of read/write heads or read head and data carrier for non-directional read/write heads or read heads and **non-flush mounting** (round antenna).

Read/write heads and data carriers working in combination

For **dynamic operation** the data carrier is read or programmed on the fly as it moves past the read/write head or read head. The shorter distance is necessary in order to achieve as large a read/write path or read path as possible.
Each read/write head or read head has certain data carriers which can be used with it (the pairing is based on physical size and antenna field configuration).
The associated specifications for distance and permissible offset, the distance and relative speed between the read/write head or read head and the data carrier are listed in the respective chapter.



Spatial arrangement of read/write heads or read head and data carrier for directional read/write heads or read heads and **non-flush mounting** (rod antenna).

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Contents

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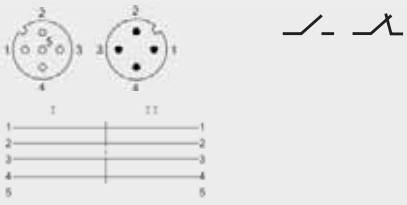
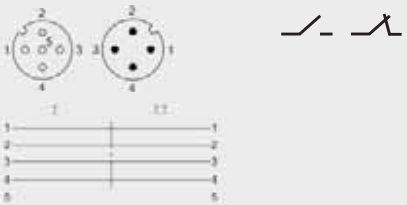
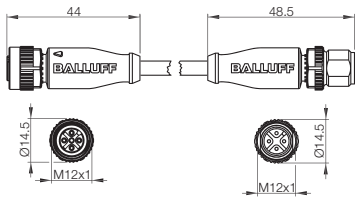
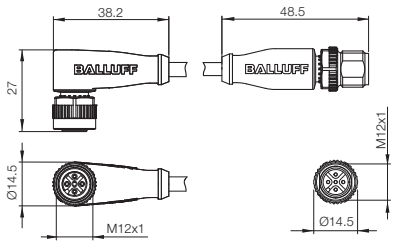
Connectors for read/write heads BIS VM/VL, unshielded and IO-Link connection

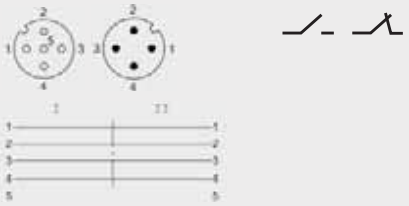
Connector diagram and wiring			
Type	M12 female/M12 male	M12 female/M12 male	
Max. supply voltage AC U_S	250 V AC	250 V AC	
Max. supply voltage DC U_S	250 V DC	250 V DC	
Number of conductors × conductor cross-section	4×0.34 mm²	4×0.34 mm²	
Degree of protection per IEC 60529	IP 68	IP 68	
Ambient temperature T_a static	–40...+90 °C	–40...+90 °C	
moving	–25...+90 °C (UL 80 °C)	–25...+90 °C (UL 80 °C)	
Use	Complementary (NO/NC) ⌐-/-⌐	Complementary (NO/NC) ⌐-/-⌐	

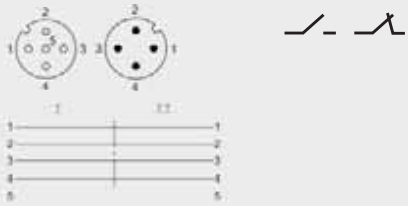
Cable material	Color	Length	Order code		
			Part number		
PUR	Black	0,3 m	**BCC039H**	**BCC03A8**	
			BCC M415-M414-3A-304-PX0434-003	BCC M425-M414-3A-304-PX0434-003	
PUR	Black	0.6 m	**BCC039J**	**BCC03A9**	
			BCC M415-M414-3A-304-PX0434-006	BCC M425-M414-3A-304-PX0434-006	
PUR	Black	1 m	**BCC039K**	**BCC03AA**	
			BCC M415-M414-3A-304-PX0434-010	BCC M425-M414-3A-304-PX0434-010	
PUR	Black	1.5 m	**BCC039L**	**BCC03AC**	
			BCC M415-M414-3A-304-PX0434-015	BCC M425-M414-3A-304-PX0434-015	
PUR	Black	2 m	**BCC039M**	**BCC03AE**	
			BCC M415-M414-3A-304-PX0434-020	BCC M425-M414-3A-304-PX0434-020	
PUR	Black	3 m	**BCC039N**	**BCC03AF**	
			BCC M415-M414-3A-304-PX0434-030	BCC M425-M414-3A-304-PX0434-030	

Other cable materials, colors, and lengths on request.



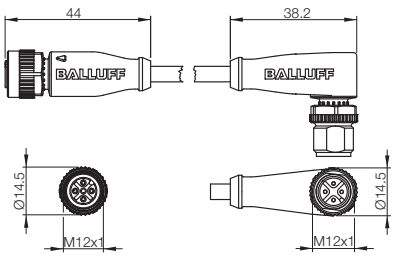


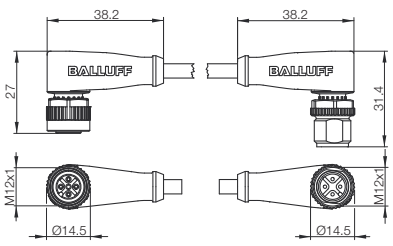




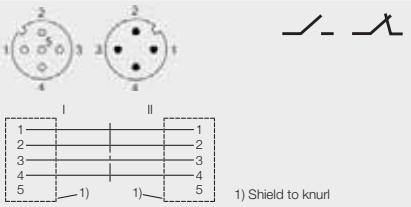
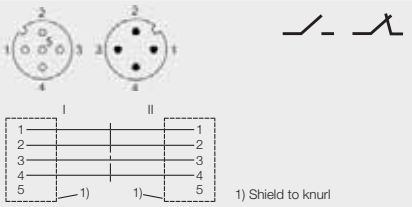
M12 female/M12 male	M12 female/M12 male	
250 V AC	250 V AC	
250 V DC	250 V DC	
4×0.34 mm²	4×0.34 mm²	
IP 68	IP 68	
–25...+80 °C	–25...+80 °C	
–25...+80 °C	–25...+80 °C	
Complementary (NO/NC) ⌐-/-⌐	Complementary (NO/NC) ⌐-/-⌐	

Order code		
Part number		
BCC039R	**BCC03AJ**	
BCC M415-M424-3A-304-PX0434-003	BCC M425-M424-3A-304-PX0434-003	
BCC039T	**BCC03AK**	
BCC M415-M424-3A-304-PX0434-006	BCC M425-M424-3A-304-PX0434-006	
BCC039U	**BCC03AL**	
BCC M415-M424-3A-304-PX0434-010	BCC M425-M424-3A-304-PX0434-010	
BCC039W	**BCC03AM**	
BCC M415-M424-3A-304-PX0434-015	BCC M425-M424-3A-304-PX0434-015	
BCC039Y	**BCC03AN**	
BCC M415-M424-3A-304-PX0434-020	BCC M425-M424-3A-304-PX0434-020	
BCC039Z	**BCC03AP**	
BCC M415-M424-3A-304-PX0434-030	BCC M425-M424-3A-304-PX0434-030	



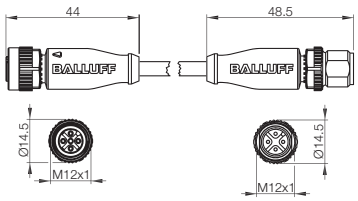


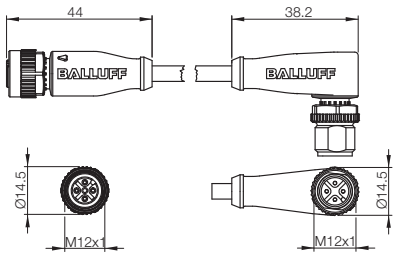
Connectors for read/write heads BIS VM/VL, shielded and IO-Link connection

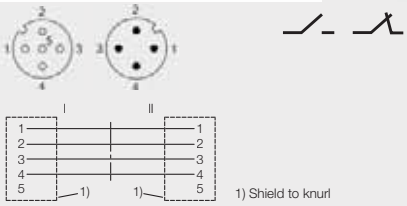
Connector diagram and wiring	 1) Shield to knurl	 1) Shield to knurl	
Type	M12 female/M12 male	M12 female/M12 male	
Max. supply voltage AC U_S	250 V AC	250 V AC	
Max. supply voltage DC U_S	250 V DC	250 V DC	
Number of conductors × conductor cross-section	4×0.34 mm²	4×0.34 mm²	
Degree of protection per IEC 60529	IP 68	IP 68	
Ambient temperature T_a static	–25...+80 °C	–25...+80 °C	
moving	–25...+80 °C	–25...+80 °C	
Use	Complementary (NO/NC) ⌐-/-⌙	Complementary (NO/NC) ⌐-/-⌙	

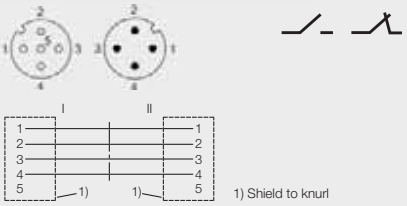
Cable material	Color	Length	Order code		
			Part number		
PUR	Black	3 m	**BCC0C8L**	**BCC0E3J**	
			BCC M415-M414-3A-305-PS0434-030	BCC M415-M424-3A-305-PS0434-030	
PUR	Black	5 m	**BCC0C02**	**BCC0E3K**	
			BCC M415-M414-3A-305-PS0434-050	BCC M415-M424-3A-305-PS0434-050	
PUR	Black	10 m	**BCC0C03**	**BCC0E3L**	
			BCC M415-M414-3A-305-PS0434-100	BCC M415-M424-3A-305-PS0434-100	
PUR	Black	20 m	**BCC0C04**	**BCC0E3M**	
			BCC M415-M414-3A-305-PS0434-200	BCC M415-M424-3A-305-PS0434-200	

Other cable materials, colors, and lengths on request.



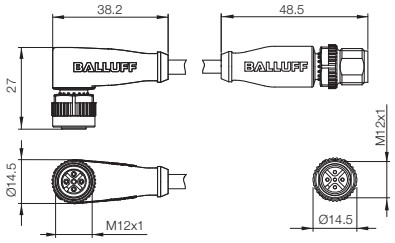


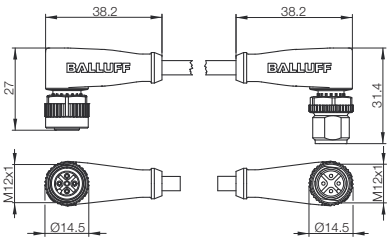


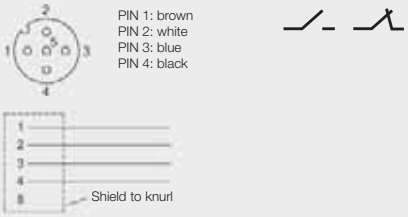
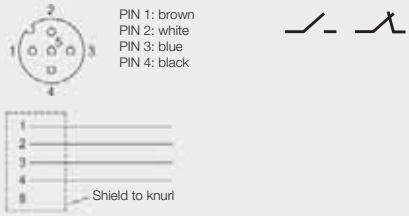


M12 female/M12 male	M12 female/M12 male
250 V AC	250 V AC
250 V DC	250 V DC
4×0.34 mm²	4×0.34 mm²
IP 68	IP 68
–25...+80 °C	–25...+80 °C
–25...+80 °C	–25...+80 °C
Complementary (NO/NC) ⌐-/-⌐	Complementary (NO/NC) ⌐-/-⌐

Order code	
Part number	
BCC0E3C	**BCC0E3N**
BCC M425-M414-3A-305-PS0434-030	BCC M425-M424-3A-305-PS0434-030
BCC0E3E	**BCC0E3P**
BCC M425-M414-3A-305-PS0434-050	BCC M425-M424-3A-305-PS0434-050
BCC0E3F	**BCC0E3R**
BCC M425-M414-3A-305-PS0434-100	BCC M425-M424-3A-305-PS0434-100
BCC0E3H	**BCC0E3T**
BCC M425-M414-3A-305-PS0434-200	BCC M425-M424-3A-305-PS0434-200

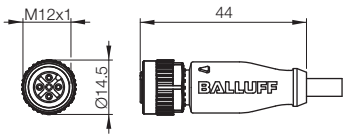


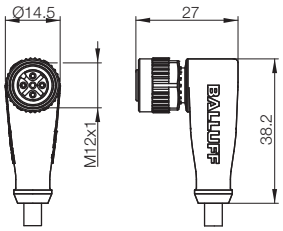


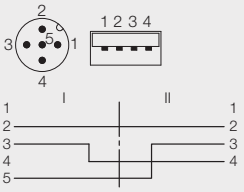
Connector diagram and wiring			
Type		M12 female	M12 female
Max. supply voltage AC U_S		250 V AC	250 V AC
Max. supply voltage DC U_S		250 V DC	250 V DC
Number of conductors × conductor cross-section		4×0.34 mm²	4×0.34 mm²
Degree of protection per IEC 60529		IP 68	IP 68
Ambient temperature T_a static/moving	PUR shielded	–40...+80 °C/–25...+80 °C	–40...+80 °C/–25...+80 °C
	PVC shielded	–20...+105 °C (UL 80 °C)	–20...+105 °C (UL 80 °C)
Use		Complementary (NO/NC)	Complementary (NO/NC)

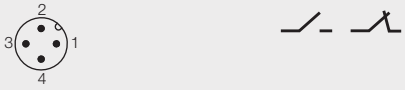
Cable material	Color	Length	Order code	
			Part number	
PUR shielded	Black	2 m	**BCC032K**	**BCC0331**
			BCC M415-0000-1A-014-PS0434-020	BCC M425-0000-1A-014-PS0434-020
PUR shielded	Black	5 m	**BCC032L**	**BCC0332**
			BCC M415-0000-1A-014-PS0434-050	BCC M425-0000-1A-014-PS0434-050
PUR shielded	Black	10 m	**BCC032M**	**BCC0333**
			BCC M415-0000-1A-014-PS0434-100	BCC M425-0000-1A-014-PS0434-100
PVC shielded	Gray	2 m	**BCC036A**	**BCC036T**
			BCC M415-0000-1A-014-VS8434-020	BCC M425-0000-1A-014-VS8434-020
PVC shielded	Gray	5 m	**BCC036C**	**BCC036U**
			BCC M415-0000-1A-014-VS8434-050	BCC M425-0000-1A-014-VS8434-050
PVC shielded	Gray	10 m	**BCC036E**	**BCC036W**
			BCC M415-0000-1A-014-VS8434-100	BCC M425-0000-1A-014-VS8434-100

Other cable materials, colors, and lengths on request.

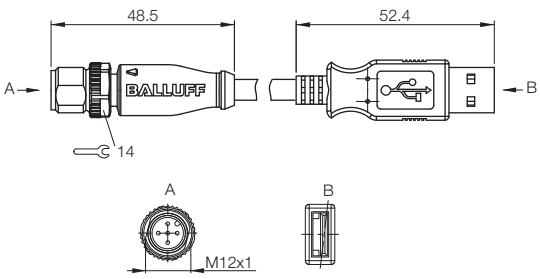


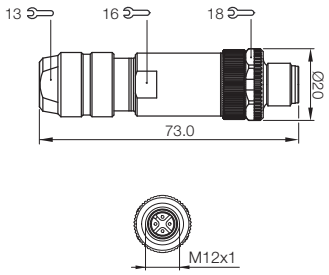


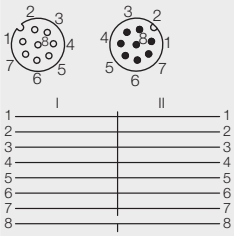
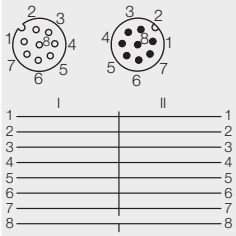




	M12 male/USB-A		M12 connector
	250 V AC		250 V AC
	250 V AC		250 V AC
	4×0.34 mm²		4×0.34 mm²
	IP 68/IP 20		IP 67
	–5...+105 °C/–40...+105 °C		–25...+85 °C
			Complementary (NO/NC) ⌐-/-⌐
	Order code		
	Part number		
	BCC0CR2		**BCC0869**
	BCC M415-U024-8F-696-VX04T8-018		BCC M474-0000-2A-000-01X475-000

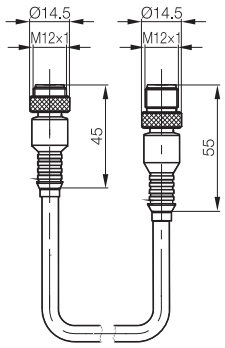


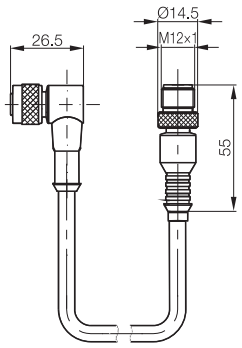


Connector diagram and wiring			
Type	M12 female/M12 male	M12 female/M12 male	
Max. supply voltage AC U_S	60 V AC	60 V AC	
Max. supply voltage DC U_S	60 V DC	60 V DC	
Number of conductors × conductor cross-section	8×0.25 mm²	8×0.25 mm²	
Degree of protection per IEC 60529	IP 67	IP 67	
Ambient temperature T_a static	–40...+85 °C	–40...+85 °C	
moving	–20...+85 °C	–20...+85 °C	

Cable material	Color	Length	Order code Part number		
PUR	Black	0,5 m	**BCC00R6** BIS Z-501-PU1-00,5/M	**BCC00RK** BIS Z-502-PU1-00,5/M	
PUR	Black	1 m	**BCC00R7** BIS Z-501-PU1-01/M	**BCC00RL** BIS Z-502-PU1-01/M	
PUR	Black	2 m	**BCC00R8** BIS Z-501-PU1-02/M	**BCC00RM** BIS Z-502-PU1-02/M	
PUR	Black	5 m	**BCC00RA** BIS Z-501-PU1-05/M	**BCC00RR** BIS Z-502-PU1-05/M	
PUR	Black	10 m			
PUR	Black	20 m			
PUR	Black	25 m			
PUR	Black	50 m			

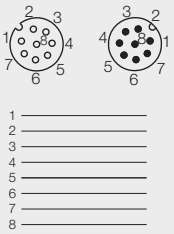
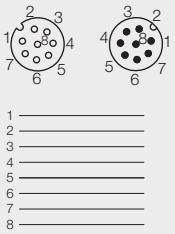
Other cable materials, colors, and lengths on request.



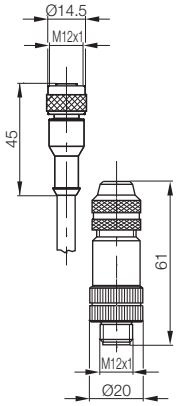


Connectors for read/write heads BIS M/L, shield[ed], user-fabricated

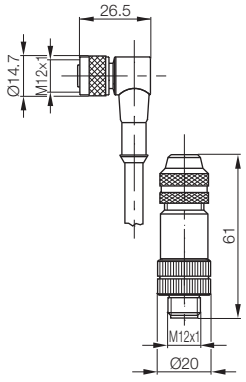


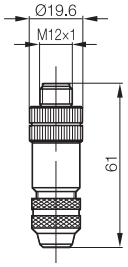
	M12 female, straight, M12 male, user-fabricated	M12 female, right-angle M12 male, user-fabricated	M12 male, user-fabricated	M12 female, user-fabricated
	60 V AC	60 V AC	60 V AC	60 V AC
	60 V DC	60 V DC	60 V DC	60 V DC
	8×0.25 mm²	8×0.25 mm²	8×0.25 mm²	8×0,14...0,5 mm²
	IP 67	IP 67	IP 67	IP 67
	–40...+85 °C	–40...+85 °C	–40...+85 °C	–20...+85 °C
	–20...+85 °C	–20...+85 °C		
Order code				
Part number				
			BCC00TL	**BCC0A03**
			BKS-S117-00	BCC M438-0000-1A-000-51X850-000
BCC00R9	**BCC00RP**			
BIS Z-501-PU1-05/E	BIS Z-502-PU1-05/E			
BCC00RC	**BCC00RU**			
BIS Z-501-PU1-10/E	BIS Z-502-PU1-10/E			
BCC00RF	**BCC00RY**			
BIS Z-501-PU1-20/E	BIS Z-502-PU1-20/E			
BCC00RH	**BCC00RZ**			
BIS Z-501-PU1-25/E	BIS Z-502-PU1-25/E			
BCC00RJ	**BCC00T0**			
BIS Z-501-PU1-50/E	BIS Z-502-PU1-50/E			

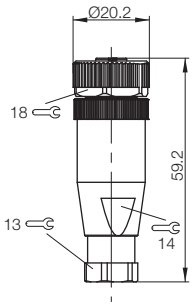


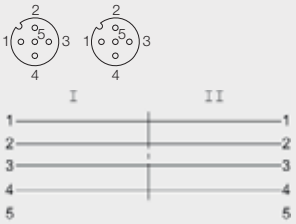
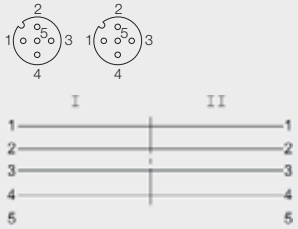
User-fabricated connector included in scope of delivery



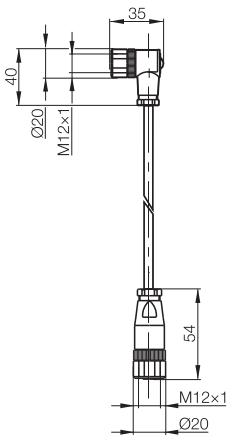
User-fabricated connector included in scope of delivery

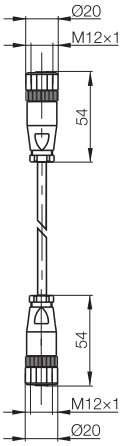


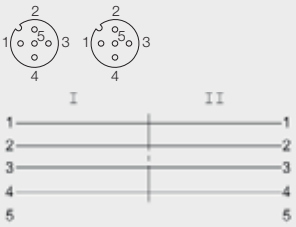


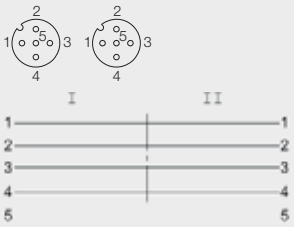
Connector diagram and wiring			
Type		M12 female/M12 female	M12 female/M12 female
Max. supply voltage AC U_S		250 V AC	250 V AC
Max. supply voltage DC U_S		250 V DC	250 V DC
Number of conductors × conductor cross-section		4×0.34 mm²	4×0.34 mm²
Degree of protection per IEC 60529		IP 67	IP 67
Ambient temperature T_a	PUR		
static/moving	PVC	–25...+105 °C/–5...+105 °C	–25...+105 °C/–5...+105 °C

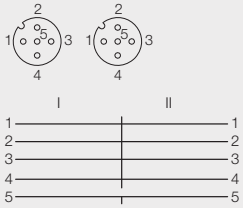
Cable material	Color	Length	Order code Part number	
PUR	Black	1 m		
PUR	Black	5 m		
PUR	Black	10 m		
PUR drag chain-compatible	Black	5 m		
PUR drag chain-compatible	Black	10 m		
PVC	Black	1 m	**BCC00P8** BIS C-517-PVC-01	**BCC00PC** BIS C-518-PVC-01
PVC	Black	5 m	**BCC00P9** BIS C-517-PVC-05	**BCC00PE** BIS C-518-PVC-05
PVC	Black	10 m	**BCC00PA** BIS C-517-PVC-10	**BCC00PF** BIS C-518-PVC-10





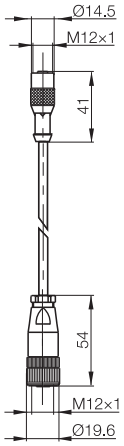


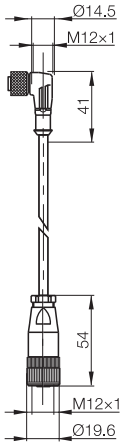




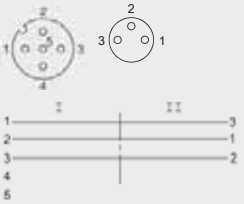
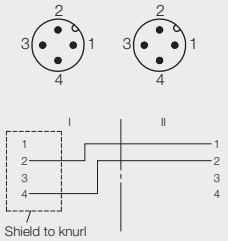
M12 female/M12 female	M12 female/M12 female	M12 female/M12 female
250 V AC	250 V AC	250 V AC
250 V DC	250 V DC	250 V DC
4×0.34 mm²	4×0.34 mm²	5×0.34 mm²
IP 67	IP 67	IP 65
–40...+70 °C/–5...+70 °C	–40...+70 °C/–5...+70 °C	–30...+80 °C/–5...+80 °C

Order code		
Part number		
BCC00N1	**BCC00N6**	
BIS C-505-PU-01	BIS C-506-PU-01	
BCC00N2	**BCC00N7**	
BIS C-505-PU-05	BIS C-506-PU-05	
BCC00N3	**BCC00N8**	
BIS C-505-PU-10	BIS C-506-PU-10	
BCC00N4	**BCC00N9**	
BIS C-505-PU1-05	BIS C-506-PU1-05	
BCC00N5	**BCC00NA**	
BIS C-505-PU1-10	BIS C-506-PU1-10	
		BCC00PJ
		BIS C-520-PVC-05



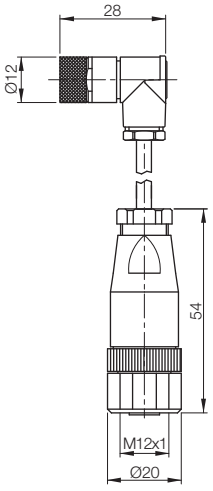


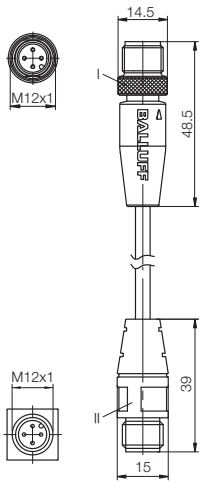
Connectors for read/write heads BIS C, shielded adapter cables BIS V for read/write heads BIS C

Connector diagram and wiring			
Type		M8 female/M12 female	M12 male/M12 male
Max. supply voltage AC U_S		60 V AC	250 V AC
Max. supply voltage DC U_S		60 V DC	250 V DC
Number of conductors × conductor cross-section		3×0.34 mm²	4×0.34 mm²
Degree of protection per IEC 60529		IP 65	IP 67
Ambient temperature T_a	static	–40...+70 °C	–25...+80 °C
	moving	+5...+70 °C	–40...+80 °C

Cable material	Color	Length	Order code	
			Part number	
PUR, shielded	Black	0.3 m		**BCC0FCK**
				BCC M414-M414-6A-710-PS0434-003
PUR	Gray	5 m	**BCC00PP**	
			BIS C-523-PU1-05	
PUR	Black	5 m	**BCC00PN**	
			BIS C-523-PU-05	

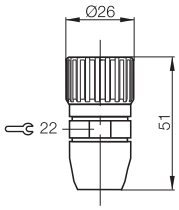
Other cable materials, colors and lengths on request.

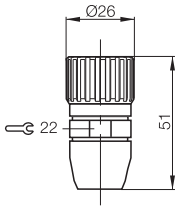




Connector diagram and wiring		
Type	M23 female, 9-pin	M23 connector, 12-pin
Max. supply voltage AC U_S	250 V	250 V
Max. supply voltage DC U_S	250 V	250 V
Number of conductors × cross-section	9×0.34 mm²	12×0.34 mm²
Degree of protection per IEC 60529	IP 67	IP 67
Ambient temperature T_a	–40...+125 °C	–40...+125 °C

	Order code	
	Part number	
	BCC00TA	**BCC00TC**
	BKS-S 84-00	BKS-S 86-00

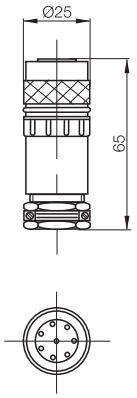




Connector diagram and wiring		
Type		Female, 8-pin
Max. supply voltage AC U_S		60 V AC
Max. supply voltage DC U_S		60 V DC
Recommended cable		LiYCY-0
Number of conductors × conductor cross-section		
Degree of protection per IEC 60529		IP 65
Ambient temperature T_a	static	–55...+125 °C
	moving	–55...+125 °C
Use		For connecting to read/write head BIS C-35_

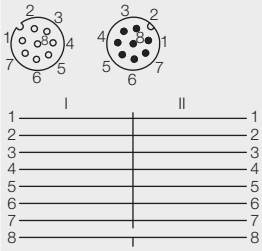
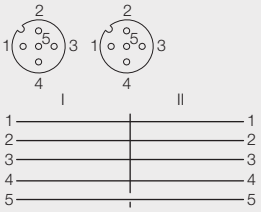
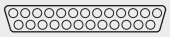
Cable material	Color	Length	Order code Part number
PUR	Black	5 m	
PUR	Black	10 m	
PUR	Black	20 m	
PUR	Black	30 m	
PVC	Gray	5 m	
			BCC011M BKS-S 45-00

Other cable materials, colors, and lengths on request.

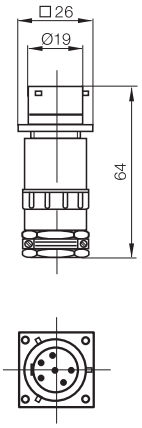


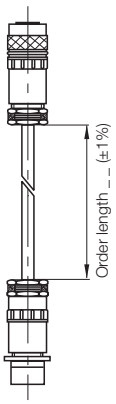


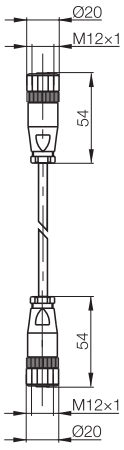


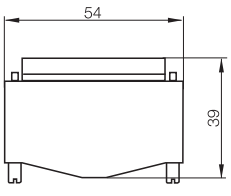




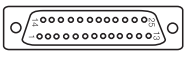
	Male, 6-pin	Female, 8-pin/male, 6-pin	Female, 5-pin	25-pin
	60 V AC	60 V AC	60 V AC	60 V AC
	60 V DC	60 V DC	60 V DC	60 V DC
	LiYCY-0		LiYCY-0	LiYCY-0
		8×0.34 mm²		
	IP 65	IP 65	IP 65	IP 40
	–30...+80 °C	–30...+80 °C	–30...+80 °C	–40...+85 °C
	–30...+80 °C	–5...+80 °C	–5...+80 °C	–40...+85 °C
	For expansion with BKS-S 45-00	For read/write head adapter BIS C-350 BIS C-670	Connection cable BIS C-355 and BIS C-654	For processors BIS C-6005-...
	Order code			
	Part number			
		BCC00P4		
		BIS C-516-PU-05		
		BCC00P5		
		BIS C-516-PU-10		
		BCC00P6		
		BIS C-516-PU-20		
		BCC00P7		
		BIS C-516-PU-30		
			BCC00PJ	
			BIS C-520-PVC-05	
	BCC011N			**BCC00T6**
	BKS-S 46-00			BKS-S 52-00







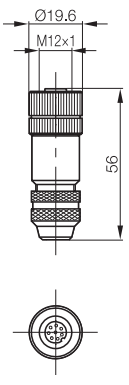


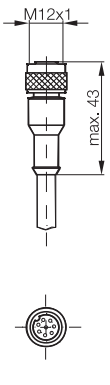


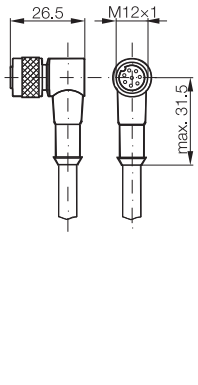
Connector diagram and wiring			
Type	M12 female, straight, 8-pin	M12 female, straight, 8-pin	M12 female, right-angle, 8-pin,
Max. supply voltage AC U_S	60 V AC	30 V	30 V
Max. supply voltage DC U_S	60 V DC	36 V	36 V
Number of conductors × cross-section		8×0.25 mm²	8×0.25 mm²
Degree of protection per IEC 60529	IP 67	IP 67 (when screwed into place)	IP 67 (when screwed into place)
Ambient temperature T_a	–40...+85 °C	–25...+90 °C	–25...+90 °C

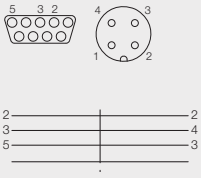
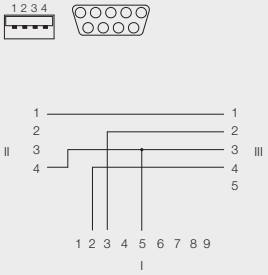
Cable material	Color	Length	Order code		
			Part number		
PUR	Black	2 m		**BCC00YE**	**BCC00YU**
				BKS-S115-PU-02	BKS-S116-PU-02
PUR	Black	5 m		**BCC00YF**	**BCC00YW**
				BKS-S115-PU-05	BKS-S116-PU-05
PUR	Black	10 m		**BCC00YH**	**BCC00YY**
				BKS-S115-PU-10	BKS-S116-PU-10
PUR	Black	15 m		**BCC00YJ**	**BCC00YZ**
				BKS-S115-PU-15	BKS-S116-PU-15
			BCC00YA		
			BKS-S115-00		

Other cable materials, colors and lengths on request.



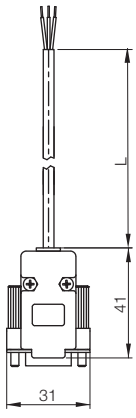


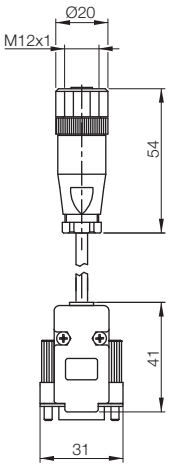


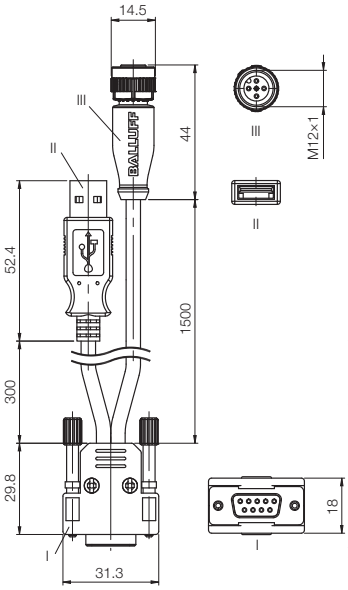
Connector diagram and wiring				
Type		Serial RS232	Serial RS232	Serial RS232
Max. supply voltage AC U_S		60 V AC	60 V AC	60 V AC
Max. supply voltage DC U_S		60 V DC	60 V DC	60 V DC
Number of conductors × conductor cross-section		3×0.34 mm²	3×0.34 mm²	3×0.34 mm²
Degree of protection per IEC 60529		IP 40	IP 40	IP 40
Ambient temperature T_a /	static	–30...+80 °C	–30...+80 °C	–30...+80 °C
	moving	–5...+80 °C	–5...+80 °C	–5...+80 °C

Cable material	Color	Length	Order code		
			Part number		
PVC	Gray	1.5 m			**BCC0H34**
					BCC D279-M415-U024-U2066-015
PVC	Gray	2 m	**BCC00PK**	**BCC00PL**	
			BIS C-521-PVC-02	BIS C-522-PVC-02	

Other cable materials, colors and lengths on request.



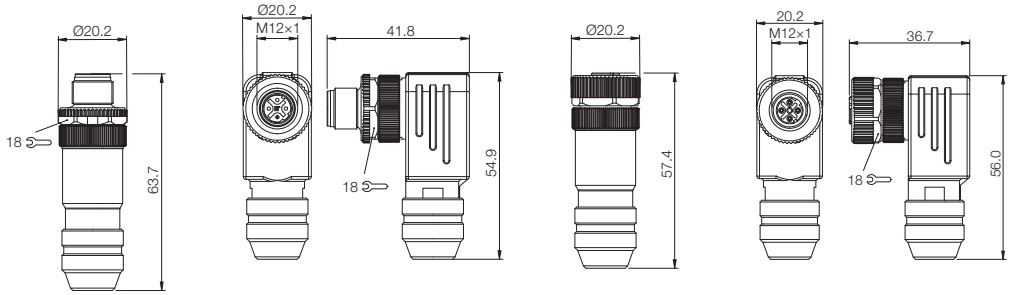


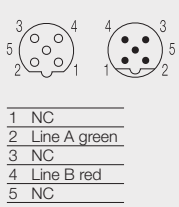
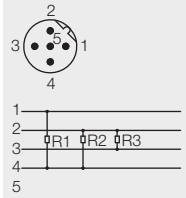
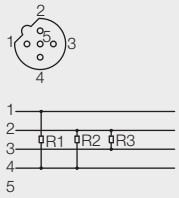





Connector diagram and wiring				
Type	M12 male, straight, 5-pin, B-coded	M12 male, right-angle, 5-pin, B-coded	M12 female, straight, 5-pin, B-coded	M12 female, right-angle, 5-pin, B-coded
Supply voltage U_S	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Number of conductors × cross-section	5× max. 0.75 mm²	5× max. 0.75 mm²	5× max. 0.75 mm²	5× max. 0.75 mm²
Cable diameter min.	Max. 8 mm	Max. 8 mm	Max. 8 mm	Max. 8 mm
Connection	Screw terminal	Screw terminal	Screw terminal	Screw terminal
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature T_a	–25...+85 °C	–25...+85 °C	–25...+85 °C	–25...+85 °C
Housing material	Brass, coated	Brass, coated	Brass, coated	Brass, coated
Shielded design	Yes	Yes	Yes	Yes

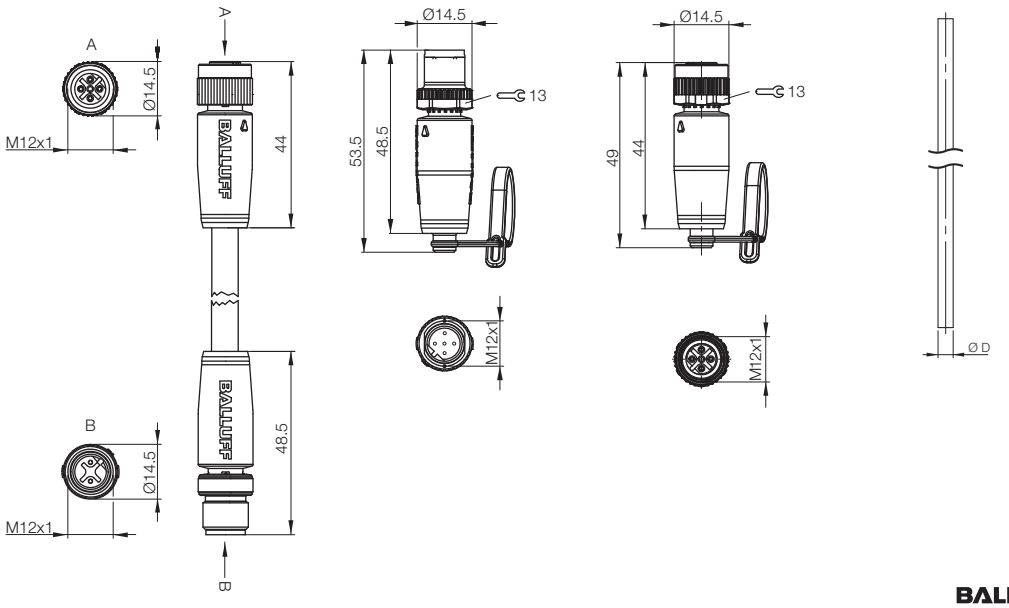
	Order code			
	Part number			
	BCC0714	**BCC0716**	**BCC0715**	**BCC0717**
	BCC M475-0000-2B-000-01X575-000	BCC M485-0000-2B-000-01X575-000	BCC M475-0000-1B-000-01X575-000	BCC M485-0000-1B-000-01X575-000



Connector diagram and wiring				
Type	M12 female, straight / M12 male, straight	Terminating resistor M12 male, straight, 5-pin, B-coded	Terminating resistor M12 female, straight, 5-pin, B-coded	PUR cable, shielded
Supply voltage U_S	300 V	10...30 V DC	10...30 V DC	
Number of conductors × conductor cross-section	2×0.64 mm²			2×0.25 mm²
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature T_a	-20...+70 °C	–40...+85 °C	–40...+85 °C	-20...+60 °C

Cable material	Color	Length	Order code Part number			
				BCC0718 BCC M415-0000-2B-R01	**BCC0C6E** BCC M415-0000-1B-R01	
PUR	Violet	0.3 m	**BCC0A11** BCC M415-M412-3B-329-PS72N1-003			
PUR	Violet	0.6 m	**BCC0A12** BCC M415-M412-3B-329-PS72N1-006			
PUR	Violet	1 m	**BCC0A13** BCC M415-M412-3B-329-PS72N1-010			
PUR	Violet	2 m	**BCC0A14** BCC M415-M412-3B-329-PS72N1-020			
PUR	Violet	5 m	**BCC0A15** BCC M415-M412-3B-329-PS72N1-050			
PUR		100 m				**BCC0ACA** BCC 0000-0000-00-000-PS72N1-10X

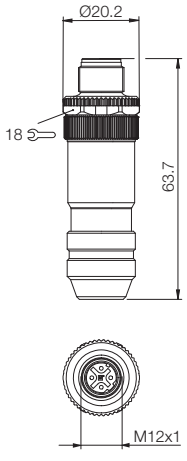
Other cable lengths on request.

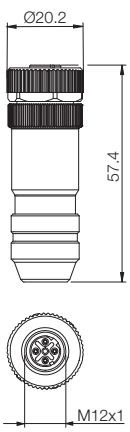


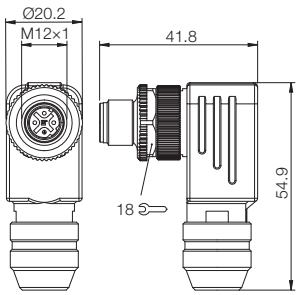


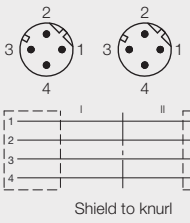
Connector diagram and wiring			
Type	M12 male, straight, 4-pin, D-coded	M12 female, straight, 4-pin, D-coded	M12 male, right-angle, 4-pin, D-coded
Supply voltage U_S	60 V AC/DC	60 V AC/DC	60 V AC/DC
Number of conductors × conductor cross-section	4×0.75 mm²	4×0.75 mm²	4×0.75 mm²
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Ambient temperature T_a	–25...+85 °C	–25...+85 °C	–25...+85 °C
Connection	Cage clamp	Cage clamp	Screw plug

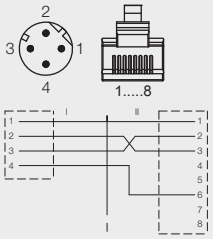
Cable material	Color	Length	Order code Part number		
			BCC03WZ BCC M474-0000-2D-000-51X475-000	**BCC03Y1** BCC M474-0000-1D-000-51X475-000	**BCC03Y0** BCC M484-0000-2D-000-51X475-000
PUR shielded	Green	0.6 m			
PUR shielded	Green	2 m			
PUR shielded	Green	5 m			
PUR shielded	Green	10 m			
PUR shielded	Green	15 m			
PUR shielded	Green	20 m			
PUR shielded	Green	30 m			

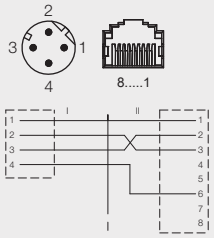




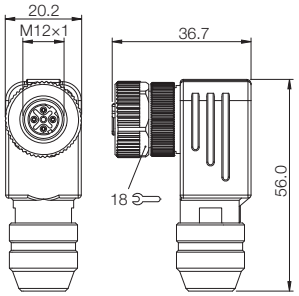


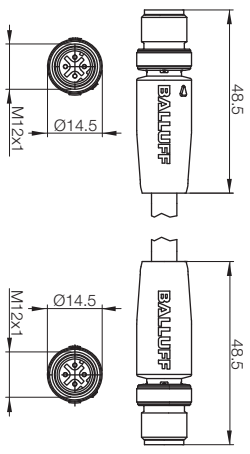


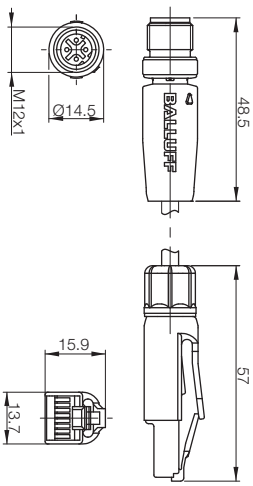


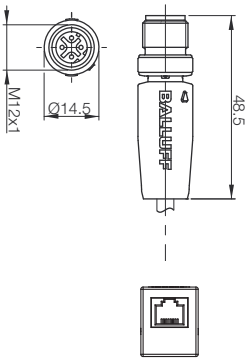


	M12 female, right-angle, 4-pin, D-coded	M12 male, straight/ M12 male, straight	M12 male, straight/ RJ45 male, straight	M12 male, straight/ RJ45 female, straight
	60 V AC/DC	60 V AC/DC	60 V AC/DC	60 V AC/DC
	4×0.75 mm²	4×22 AWG	4×22 AWG	4×22 AWG
	IP 67	IP 68	IP 68/IP 20	IP 40
	–25...+85 °C	-20...+60 °C	-20...+60 °C	-20...+80 °C
	Screw plug			
Order code				
Part number				
BCC03Y2				
BCC M484-0000-1D-000-51X475-000				
		BCC04K0	**BCC04K6**	**BCC0C5J**
		BCC M414-M414-6D-331-PS54T2-006	BCC M414-E834-8G-668-PS54T2-006	BIS C-526-PU-00.6
		BCC04K1	**BCC04K7**	
		BCC M414-M414-6D-331-PS54T2-020	BCC M414-E834-8G-668-PS54T2-020	
		BCC04K2	**BCC04K8**	
		BCC M414-M414-6D-331-PS54T2-050	BCC M414-E834-8G-668-PS54T2-050	
		BCC04K3	**BCC04K9**	
		BCC M414-M414-6D-331-PS54T2-100	BCC M414-E834-8G-668-PS54T2-100	
		BCC04ZH	**BCC04ZJ**	
		BCC M414-M414-6D-331-PS54T2-150	BCC M414-E834-8G-668-PS54T2-150	
		BCC04K4	**BCC04KA**	
		BCC M414-M414-6D-331-PS54T2-200	BCC M414-E834-8G-668-PS54T2-200	
		BCC04K5	**BCC04KC**	
		BCC M414-M414-6D-331-PS54T2-300	BCC M414-E834-8G-668-PS54T2-300	





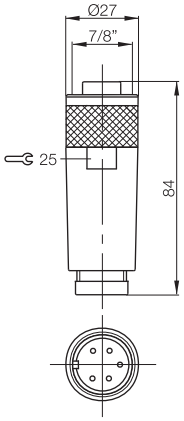


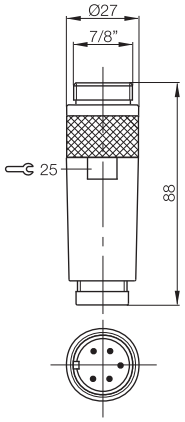


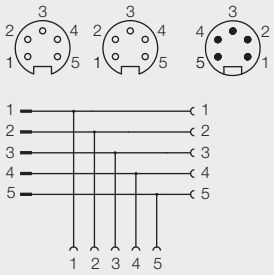
Connector diagram and wiring		
Type	7/8" female, 5-pin	7/8" plug, 5-pin
Supply voltage U_S	300 V	300 V
Number of conductors × conductor cross-section	5× max. 1.5 mm²	5× max. 1.5 mm²
Degree of protection per IEC 60529	IP 67	IP 67
Ambient temperature T_a	–25...+80 °C	–25...+80 °C

Cable material **Cable dia.**	**Color**	**Order code** Part number	
PUR 8...10 mm	Black	**BCC070F** BCC A335-0000-10-000-61X5A5-000	**BCC070K** BCC A335-0000-20-000-61X5A5-000

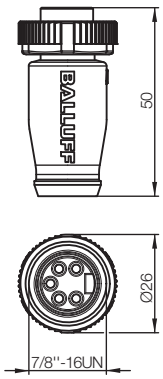
Other cable diameters on request.

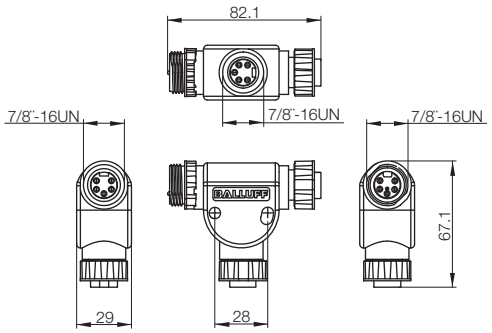


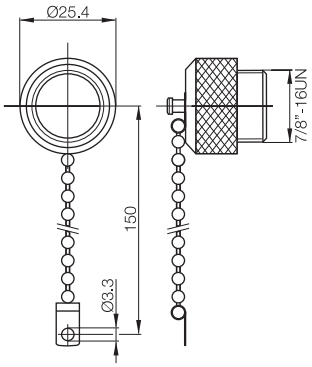


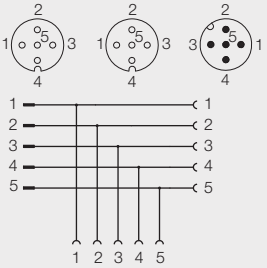
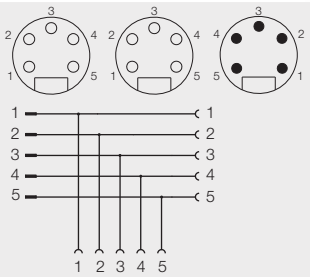
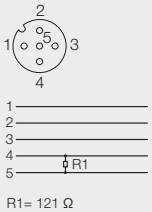


	7/8" female, 5-pin	2×7/8" female, 7/8" male, 5-pin	7/8" screw plug
	50 V	300 V AC	
	IP 68	IP 67	
	–25...+80 °C	–40...+90 °C	-20...+80 °C
	Order code		
	Part number		
	BCC0A0A	**BCC0AA7**	**BAM012T**
	BCC A315-0000-1A-R04	BCC A315-A315-A315-T0023-000	BKS-7/8-CS-00-A

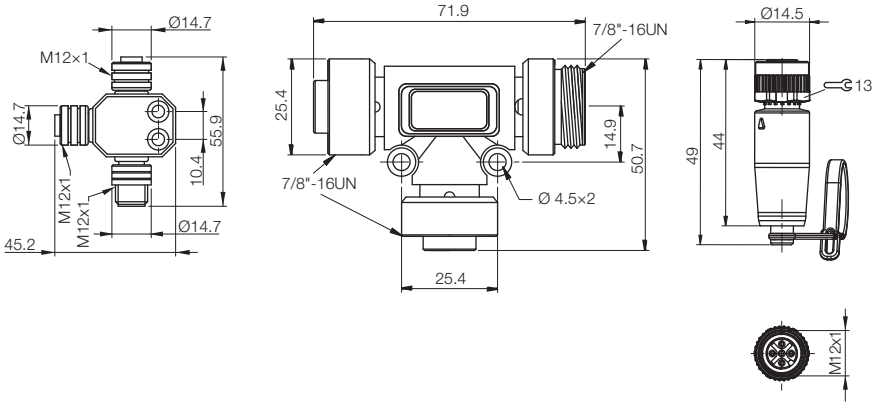


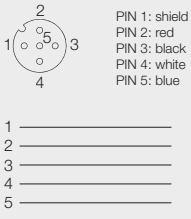
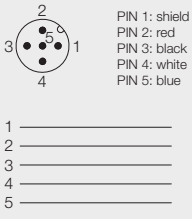
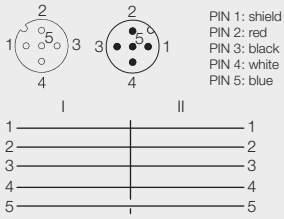




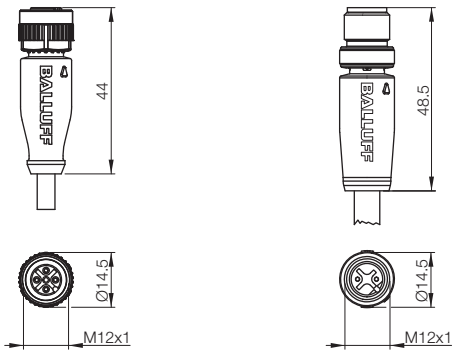
Connector diagram and wiring			
Type	2×M12 female, M12 male, 5-pin	2× 7/8" female, 7/8" male	M12 female, 5-pin
Supply voltage U_S	300 V AC	30 V DC	10...30 V DC
Degree of protection per IEC 60529	IP 68	IP 67	IP 68
Ambient temperature T_a	–36...+60 °C	-20...+80 °C	–40...+85 °C
Housing material	Plastic	Plastic	Plastic

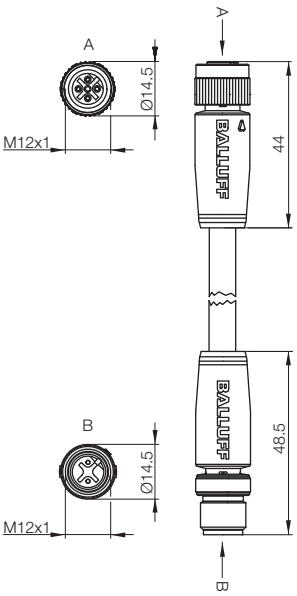
	Order code		
	Part number		
	BCC07WR	**BCC07WP**	**BCC0A08**
	BDN T-DTN-DD-01	BDN T-DTE-AA-01	BCC M415-0000-1A-R04

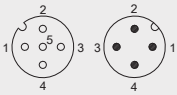


Connector diagram and wiring			
Type	M12 female, straight	M12 male, straight	M12 female, straight / M12 male, straight
Supply voltage U_S	30 V	30 V	30 V
Number of conductors × conductor cross-section	2×24 AWG + 2×22 AWG	2×24 AWG + 2×22 AWG	2×24 AWG + 2×22 AWG
Degree of protection per IEC 60529	IP 68	IP 68	IP 68
Ambient temperature T_a	–20...+80 °C	–20...+80 °C	–20...+80 °C

Standard lengths	Order code Part number		
0.3 m			**BCC0ERY** BCC M415-M415-3A-330-PS85N6-003
2 m			**BCC0ERZ** BCC M415-M415-3A-330-PS85N6-010
2 m	**BCC0ETA** BCC M415-0000-1A-030-PS85N6-020	**BCC0E00** BCC M415-0000-2A-030-VS85N6-020	**BCC0ET0** BCC M415-M415-3A-330-PS85N6-020
5 m	**BCC0ETC** BCC M415-0000-1A-030-PS85N6-050	**BCC0E01** BCC M415-0000-2A-030-VS85N6-050	**BCC0ET1** BCC M415-M415-3A-330-PS85N6-050
10 m		**BCC0E02** BCC M415-0000-2A-030-VS85N6-100	

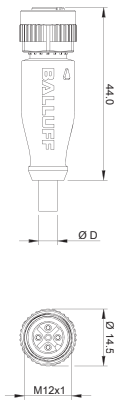


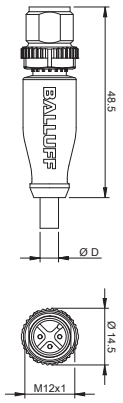


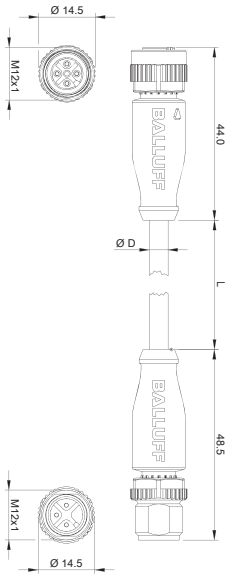
Connector diagram and wiring	 PIN 1: shield PIN 2: white PIN 3: yellow PIN 4: blue	 PIN 1: shield PIN 2: white PIN 3: yellow PIN 4: blue	 PIN 1: shield PIN 2: white PIN 3: yellow PIN 4: blue
Type	M12 female, straight	M12 male, straight	M12 female, straight / M12 male, straight
Supply voltage U_S	250 V	250 V	250 V
Number of conductors × conductor cross-section	3×1×AWG20	3×1×AWG20	3×1×AWG20
Degree of protection per IEC 60529	IP 67	IP 67	IP 67
Ambient temperature T_a	–25...+70 °C	–25...+70 °C	–25...+70 °C

Cable material	Color	Length	Order code Part number		
PVC	Red	0.6 m			**BCC06WU** BCC M415-M414-3A-337-VS24N7-006
PVC	Red	2 m	**BCC06Y1** BCC M415-0000-1A-068-VS24N7-020	**BCC084R** BCC M414-0000-2A-068-VS24N7-020	**BCC06WW** BCC M415-M414-3A-337-VS24N7-020
PVC	Red	5 m	**BCC06Y2** BCC M415-0000-1A-068-VS24N7-050	**BCC084T** BCC M414-0000-2A-068-VS24N7-050	**BCC06WY** BCC M415-M414-3A-337-VS24N7-050
PVC	Red	10 m	**BCC06Y3** BCC M415-0000-1A-068-VS24N7-100	**BCC084U** BCC M414-0000-2A-068-VS24N7-100	**BCC06WZ** BCC M415-M414-3A-337-VS24N7-100
PVC	Red	15 m			**BCC06Y0** BCC M415-M414-3A-337-VS24N7-150

Other cable materials, colors and lengths on request.



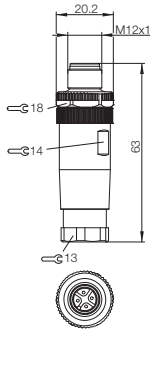


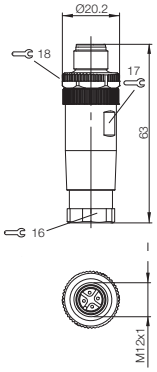


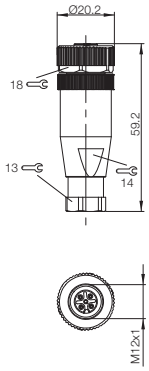


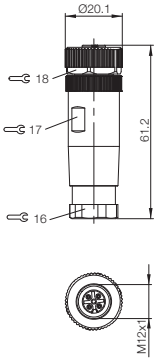

Connector diagram				
Design	M12 male, straight	M12 male, straight	M12 female, straight	M12 female, straight
Max. supply voltage AC Us	250 V AC	250 V AC	250 V AC	250 V AC
Max. supply voltage DC Us	250 V DC	250 V DC	250 V DC	250 V DC
Cable	User-fabricated	User-fabricated	User-fabricated	User-fabricated
Number of conductors × conductor cross-section	4×0.14...0.75 mm²	4×0.14...0.50 mm²	4×0.14...0.75 mm²	4×0.14...0.50 mm²
Connection	Screw terminal	Spring clamp terminal	Screw terminal	Spring clamp terminal
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature T_a	–40...+85 °C	–25...+85 °C	–40...+85 °C	–25...+85 °C

Cable dia.	**Order code**			
	Part number			
6...8 mm	**BCC06F7**	**BCC06Y5**	**BCC06F6**	**BCC06Y6**
	BCC M434-0000-2A-000-51X475-000	BCC M434-0000-2A-000-55X450-000	BCC M435-0000-1A-000-51X475-000	BCC M435-0000-1A-000-55X450-000



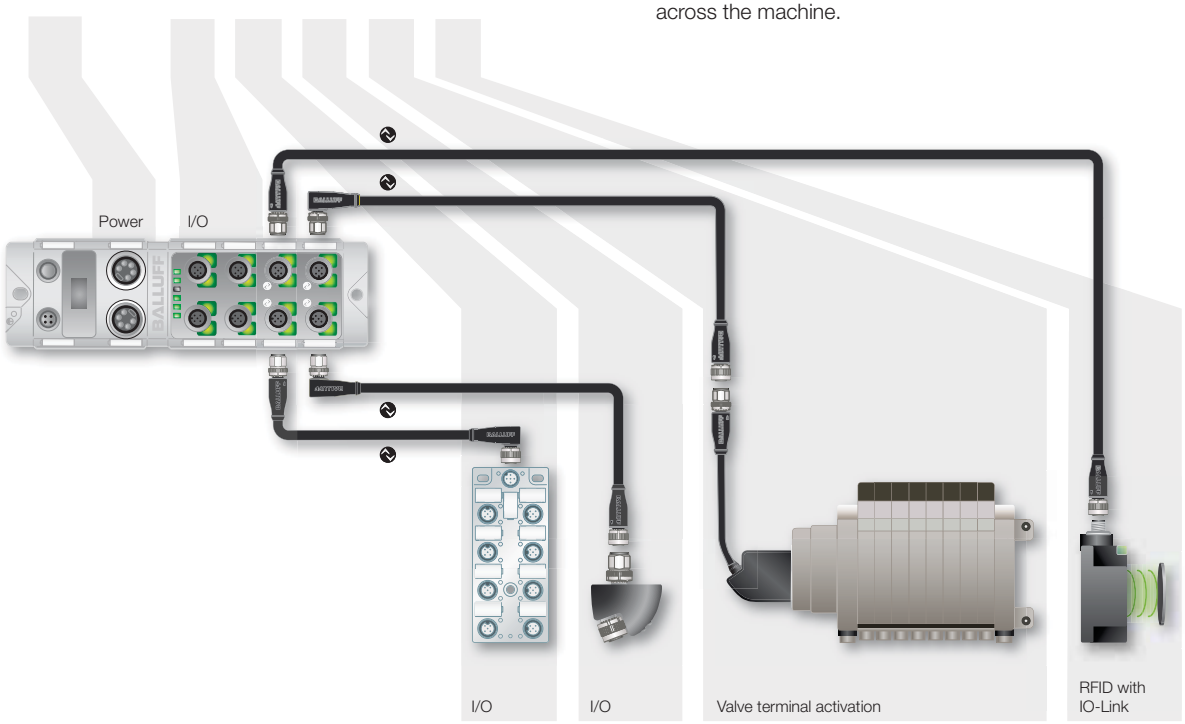






An I/O-Link solution is comparable to a decentralized remote station. Here, the fieldbus communication head and the power supply are usually located on the left side. A limited number of slots are available on the right side. These are connected to the communication head and the power supply via a backplane. Individual I/O devices such as discrete 24-V input/output cards, analog cards or interface cards with a special function (RS232, SSI, etc.) can be inserted into these slots.

An IO-Link master takes over the task of a gateway between the fieldbus system and the connected sensors, actuators and intelligent devices. The master uses the fieldbus interface to communicate with the higher-level controller via the desired industrial network. Depending on the connected device, it functions via the IO-Link master port as a data collector for sensors or as a signal splitter for the actuators. Intelligent devices also receive their parameter data via the IO-Link master port and use the port to make the diagnostics information available. Instead of a backplane, each IO-Link device is connected to an M12 port. A simple, three-core sensor cable (up to 20 m long) is used. This allows IO-Link devices to be installed up to 20 m away from the master and they can easily be distributed across the machine.



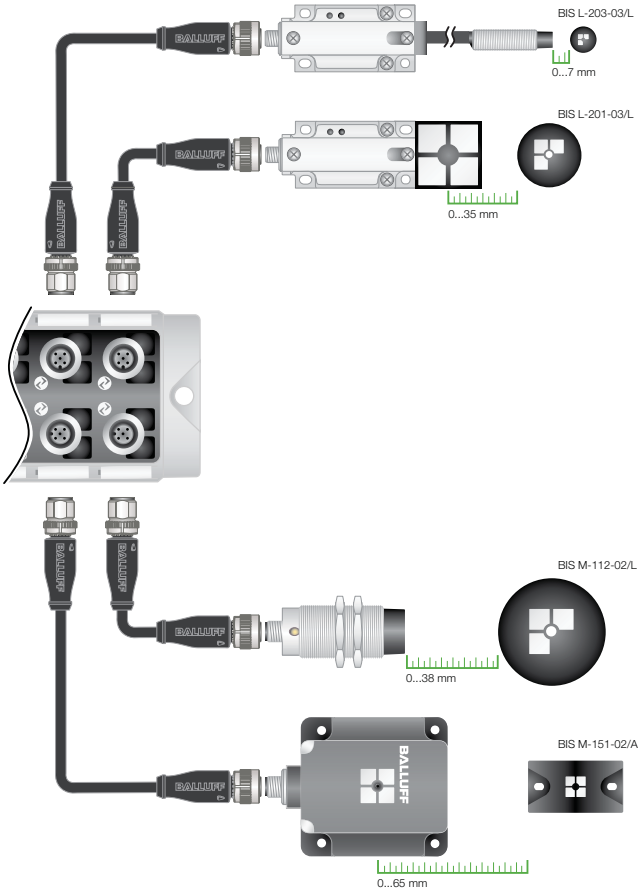
Network protocol	**Ethernet/IP**	**DeviceNet**	**Profinet**	**Profibus**	
Addressing	Display	Display	Display	Rotary knobs	

	Order code				
	Part number				
1× IO-Link, 4× RFID BIS VM or VL					
4× IO-Link, 4× Configurable					
4× IO-Link, 12× Configurable	**BNI004A** BNI EIP-502-105-Z015	**BNI005A** BNI DNT-502-100-Z001	**BNI004U** BNI PNT-502-105-Z015	**BNI003K** BNI PBS-502-001-Z001	
8× IO-Link, 8× Configurable	**BNI006A** BNI EIP-508-105-Z015		**BNI005H*** BNI PNT-508-105-Z015		

Subject to availability on request

Transparency through RFID

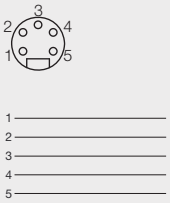
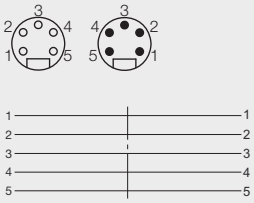
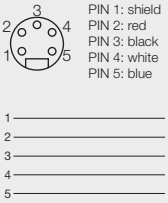
The secure tracking of production and quality data during manufacturing is becoming increasingly important. Industrial RFID makes this transparency possible. RFID read heads with an IO-Link interface can be connected to the IO-Link master with a simple sensor cable. This master enables simultaneous data acquisition in different areas. It does so by using its 4 or 8 IO-Link ports to combine data from various devices and reduce the number of devices.



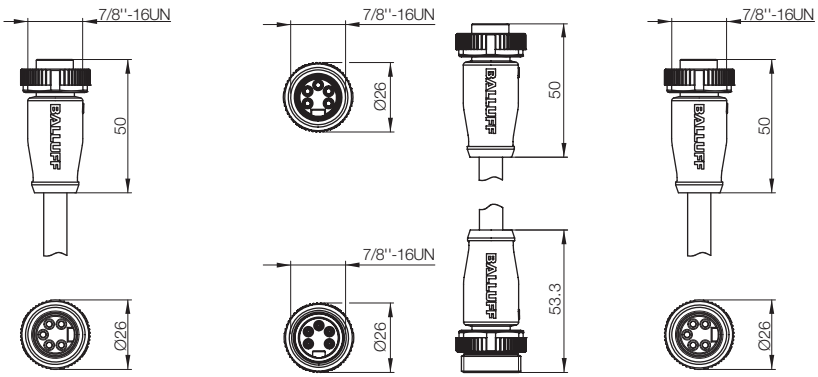




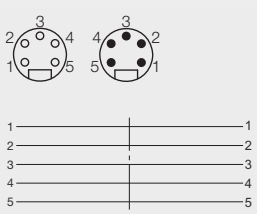
	Profibus	**Profibus**	**Profibus**	**Profibus**	**CC-Link**
	Display	Rotary knobs	Rotary knobs	Display	Display
	Order code				
	Part number				
				BIS00T3	
				BIS V-6102-019-C001	
		BNI003P	**BNI0030**		
		BNI PBS-507-001-Z011	BNI PBS-504-001-K008		
	BNI005R				**BNI0040**
	BNI PBS-502-101-Z001				BNI CCL-502-100-Z001

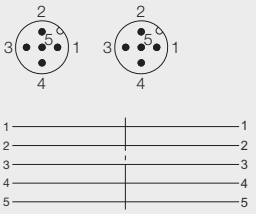
Connector diagram and wiring			 PIN 1: shield PIN 2: red PIN 3: black PIN 4: white PIN 5: blue	
Type	7/8" female, straight/ 7/8" male, straight	7/8" female, straight	7/8" female, straight	
Supply voltage U_S	300 V	300 V	30 V	
Number of conductors × conductor cross-section	AWG 15, AWG 18	AWG 15, AWG 18	2×24 AWG, 2×22 AWG	
Degree of protection per IEC 60529	IP 67	IP 67	IP 68	
Ambient temperature T_a	–20...+80 °C	–20...+80 °C	–20...+80 °C	

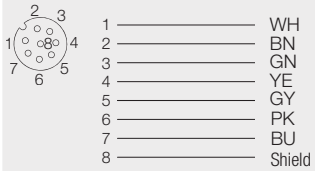
Standard lengths	**Order code** Part number			
0.6 m				
2 m				
5 m	**BCC096Y** BCC A315-0000-10-030-PS85N4-050	**BCC095A** BCC A315-A315-30-330-PS85N4-020	**BCC08WT** BCC A315-0000-10-030-PS85N6-050	
10 m		**BCC095F** BCC A315-A315-30-330-PS85N4-050		
15 m				
20 m				

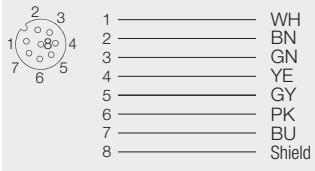




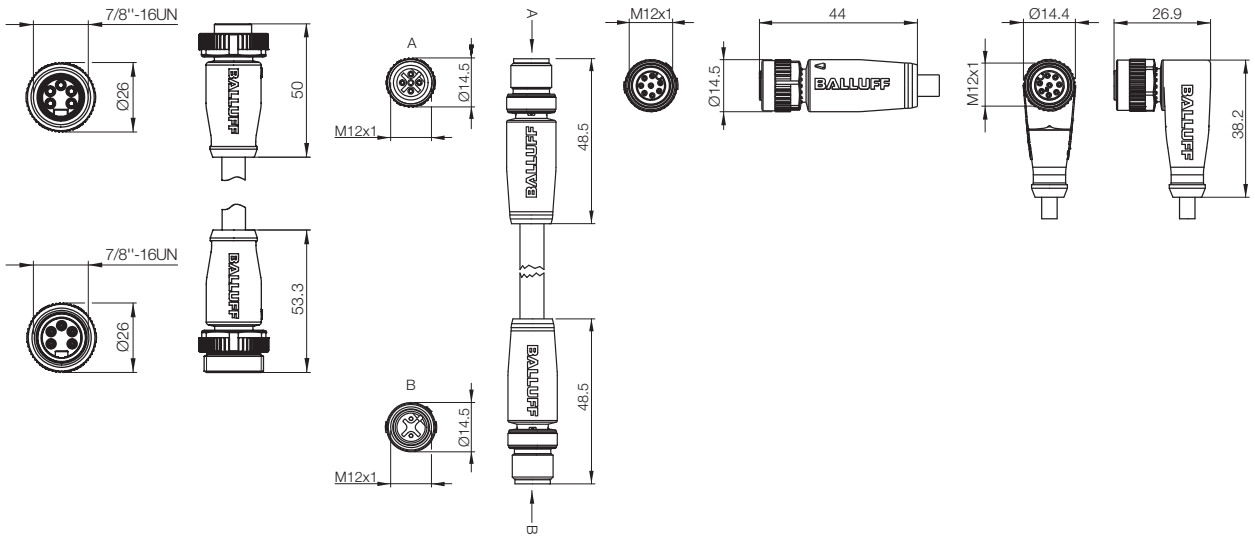







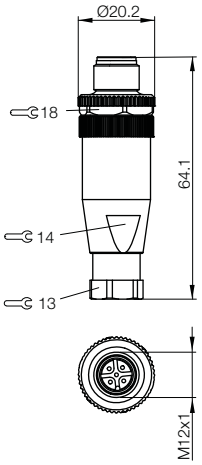


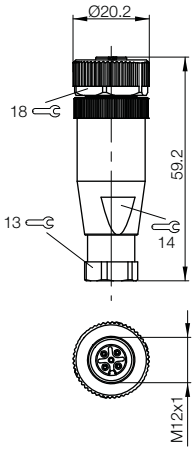
	7/8" female, straight/ 7/8" male, straight	M12 male, straight/ M12 male, straight	M12 male, straight	M12 male, right-angle
	30 V		60 V	60 V
	2×24 AWG, 2×22 AWG		7×0.25 mm²	7×0.25 mm²
	IP 68		IP 67	IP 67
	–20...+80 °C		–25...+80 °C (moving)	–25...+80 °C (moving)
Order code				
Part number				
BCC09YA				
BCC A315-A315-30-330-VS85N6-006				
BCC09YE	**BCC0ET2**		**BCC0ET5**	
BCC A315-A315-30-330-VS85N6-020	BCC M415-M415-6A-330-PS85N6-002		BCC M418-0000-1A-104-PS0825-020	
BCC09YJ			**BCC0ET6**	
BCC A315-A315-30-330-VS85N6-050			BCC M418-0000-1A-104-PS0825-050	
BCC09YP	**BCC0ET3**			**BCC0ET7**
BCC A315-A315-30-330-VS85N6-100	BCC M415-M415-6A-330-PS85N6-010			BCC M428-0000-1A-104-PS0825-100
BCC09YT				**BCC0ET8**
BCC A315-A315-30-330-VS85N6-150				BCC M428-0000-1A-104-PS0825-150
	BCC0ET4			
	BCC M415-M415-6A-330-PS85N6-020			

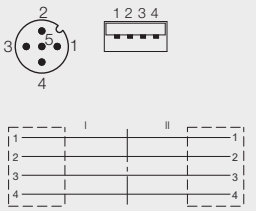


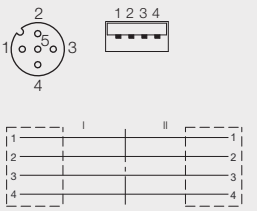
Connector diagram and wiring			
Type	M12 male, straight	M12 female, straight	
Supply voltage U_S	125 V	125 V	
Number of conductors × conductor cross-section	5×0.14...0.75 mm²	5×0.14...0.75 mm²	
Degree of protection per IEC 60529	IP 67	IP 67	
Ambient temperature T_a	–40...+85 °C	–40...+85 °C	

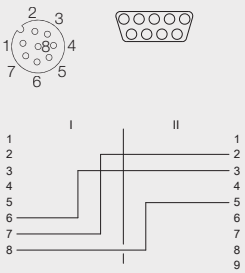
Standard lengths	**Order code**		
	Part number		
2 m			
3 m			
Cable Ø 4...6 mm, no LED, NO and NC	**BCC06YA** BCC M435-0000-2A-000-41X575-000	**BCC06ZF** BCC M435-0000-1A-000-41X575-000	
Cable Ø 6...8 mm, no LED, NO and NC		**BCC06W9** BCC M435-0000-1A-000-51X575-000	

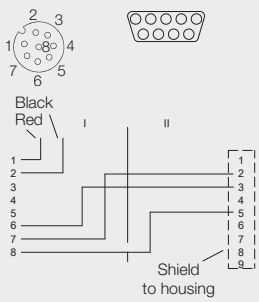




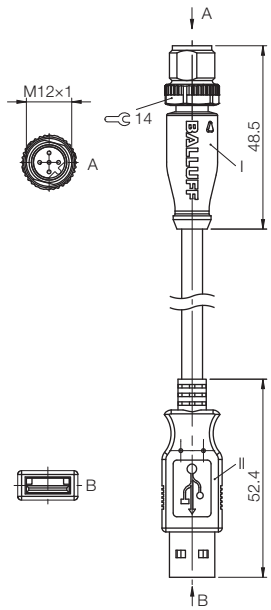


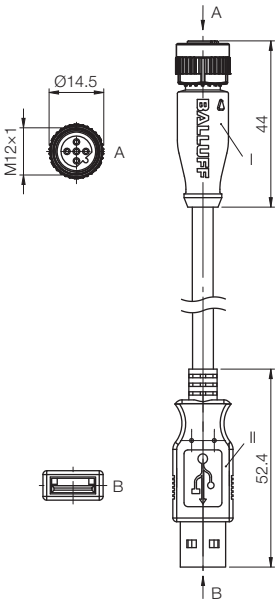


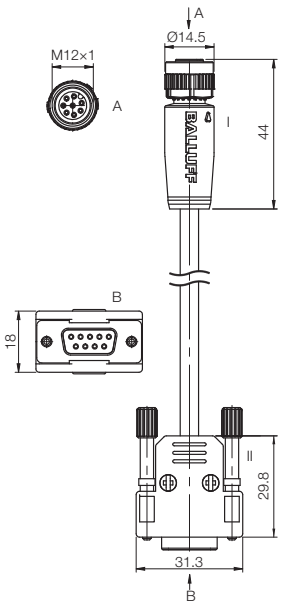


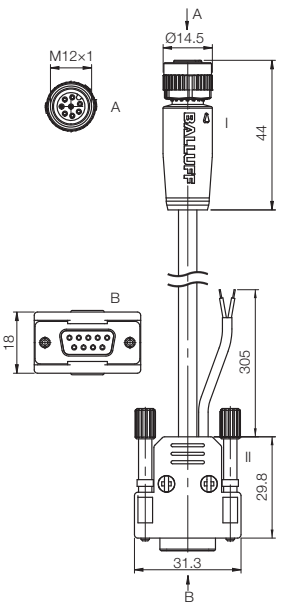


M12 male, straight/ USB-A male	M12 female, straight/ USB-A male	M12 female, straight/ D-Sub female	M12 female, straight/ D-Sub female
30 V	30 V	60 V	60 V
4×AWG24	4×AWG24	8×0.25 mm²	8×0.25 mm²
IP 68, IP 20	IP 68, IP 20	IP 67, IP 20	IP 67, IP 20
–40...+105 °C	–40...+105 °C	–50...+80 °C	–50...+80 °C
Order code			
Part number			
		BCC0H0U	**BCC0H0W**
		BCC M418-D279-BF-715-PS0825-020	BCC M418-D279-BF-714-PS0825-020
BCC0ETE	**BCC0ETF**		
BCC M415-U024-8K-697-VS04T4-030	BCC M415-U024-AK-697-VS04T4-030		

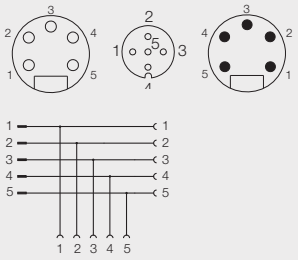
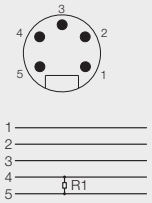
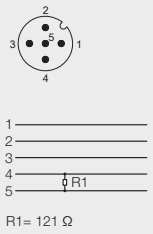






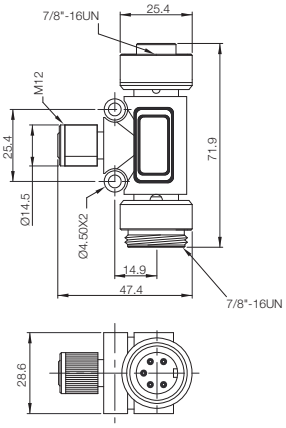


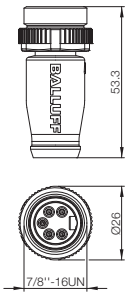


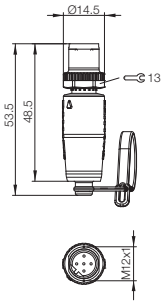
Connector diagram and wiring			
Type	7/8" male, 7/8" female, M12 female	Terminating resistor 7/8" male, straight	Terminating resistor M12 male, straight
Supply voltage U_S	300 V AC	50 V	50 V
Design	Standard, 5-pin	Male standard 5-pin DN	5-pin A-coded
Degree of protection per IEC 60529	IP 67	IP 68	IP 68
Ambient temperature T_a	-20...+80 °C	–25...+80 °C	–40...+85 °C

	Order code		
	Part number		
	BCC07WZ	**BCC0A09**	**BCC09MR**
	BDN T-DTE-AD-01	BCC A315-0000-2A-R04	BCC M415-0000-2A-R04

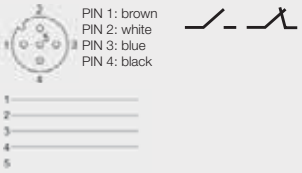
Other cable materials, colors and lengths on request.
Connectors without LED are suitable for PNP and NPN switching functions.
NPN versions on request.





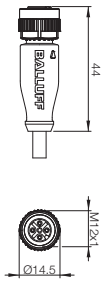


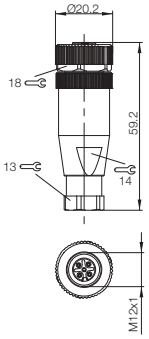


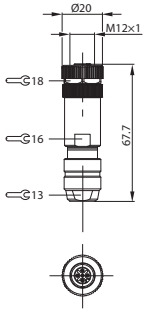
Connector diagram and wiring			
Type	M12 female, straight	M12 female, straight, for cable Ø 4...6 mm, no LED	M12 female, straight
Supply voltage U_S	250 V	250 V	150 V
Design		5-pin	5-pin
Number of conductors × conductor cross-section	4×0.34 mm²	4×0.14...0.75 mm²	
Degree of protection per IEC 60529	IP 68	IP 67	IP 67
Ambient temperature T_a	–40...+90 °C/–25...+90 °C (UL 80° C)	–40...+85 °C	–25...+85 °C
Use	Complementary (NO/NC)	NO/NC	

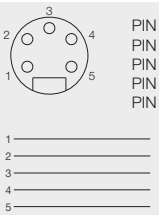
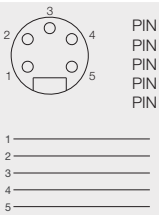
Cable material	Color	Length	Order code		
			Part number		
PUR	Black	2 m	**BCC032F**		
			BCC M415-0000-1A-003-PX0434-020		
PUR	Black	5 m	**BCC032H**		
			BCC M415-0000-1A-003-PX0434-050		
PUR	Black	10 m	**BCC032J**		
			BCC M415-0000-1A-003-PX0434-100		
				BCC06Z9	**BCC06ZN**
				BCC M435-0000-1A-000-41X475-000	BCC M475-0000-1A-000-01X575-000

Other cable materials, colors and lengths on request.



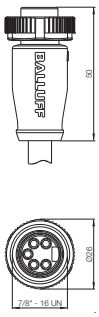


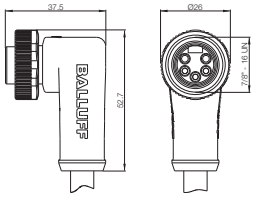


Connector diagram and wiring		
Type	7/8" female	7/8" female
Supply voltage U_S	300 V DC	300 V DC
Number of conductors × conductor cross-section	5×1.5 mm²	5×1.5 mm²
Degree of protection per IEC 60529	IP 68	IP 68
Ambient temperature T_a	–25...+80 °C	–25...+80 °C

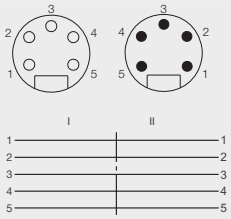
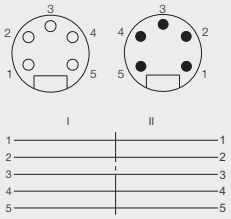
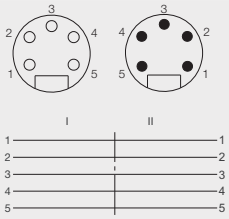
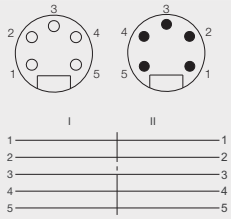
Cable material	Color	Length	Order code Part number	
PUR	Black	0.6 m		
PUR	Black	2 m	**BCC06HC** BCC A315-0000-10-063-PX05A5-020	**BCC06HH** BCC A325-0000-10-063-PX05A5-020
PUR	Black	5 m	**BCC06HE** BCC A315-0000-10-063-PX05A5-050	**BCC06HJ** BCC A325-0000-10-063-PX05A5-050
PUR	Black	10 m	**BCC06HF** BCC A315-0000-10-063-PX05A5-100	**BCC06HK** BCC A325-0000-10-063-PX05A5-100
PUR	Black	15 m		

Other cable materials, colors and lengths on request.

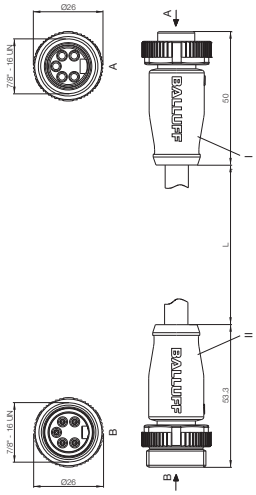
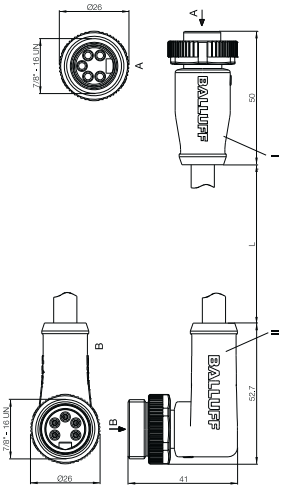
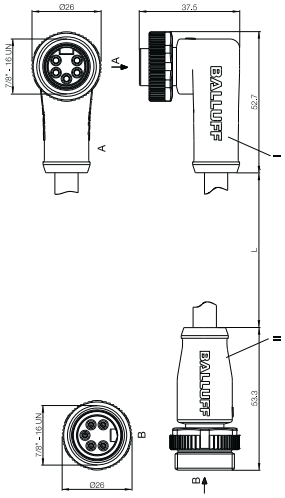
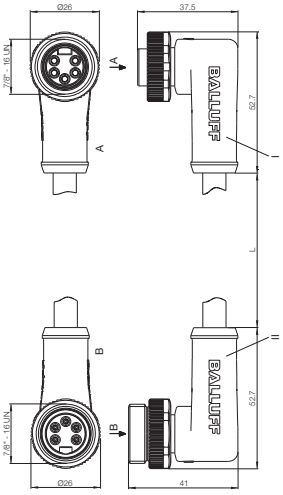


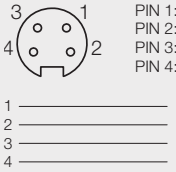
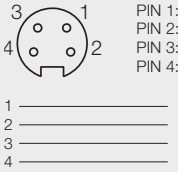




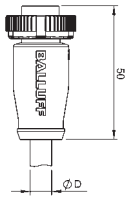
	7/8" female / 7/8" male	7/8" female / 7/8" male	7/8" female / 7/8" male	7/8" female / 7/8" male
	300 V DC	300 V DC	300 V DC	300 V DC
	5×1.5 mm²	5×1.5 mm²	5×1.5 mm²	5×1.5 mm²
	IP 68	IP 68	IP 68	IP 68
	–25...+80 °C	–25...+80 °C	–25...+80 °C	–25...+80 °C
Order code				
Part number				
BCC06FM	**BCC06FU**	**BCC06H1**	**BCC06H6**
BCC A315-A315-30-335-PX05A5-006	BCC A315-A325-30-335-PX05A5-006	BCC A325-A315-30-335-PX05A5-006	BCC A325-A325-30-335-PX05A5-006
BCC06FN	**BCC06FW**	**BCC06H2**	**BCC06H7**
BCC A315-A315-30-335-PX05A5-020	BCC A315-A325-30-335-PX05A5-020	BCC A325-A315-30-335-PX05A5-020	BCC A325-A325-30-335-PX05A5-020
BCC06FP	**BCC06FY**	**BCC06H3**	**BCC06H8**
BCC A315-A315-30-335-PX05A5-050	BCC A315-A325-30-335-PX05A5-050	BCC A325-A315-30-335-PX05A5-050	BCC A325-A325-30-335-PX05A5-050
BCC06FR	**BCC06FZ**	**BCC06H4**	**BCC06H9**
BCC A315-A315-30-335-PX05A5-100	BCC A315-A325-30-335-PX05A5-100	BCC A325-A315-30-335-PX05A5-100	BCC A325-A325-30-335-PX05A5-100
BCC06FT	**BCC06H0**	**BCC06H5**	**BCC06HA**
BCC A315-A315-30-335-PX05A5-150	BCC A315-A325-30-335-PX05A5-150	BCC A325-A315-30-335-PX05A5-150	BCC A325-A325-30-335-PX05A5-150

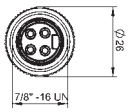





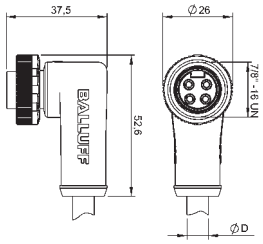
Connector diagram and wiring		
Type	7/8" female	7/8" female
Supply voltage U_S	300 V DC	300 V DC
Number of conductors × conductor cross-section	4×1.5 mm²	4×1.5 mm²
Degree of protection per IEC 60529	IP 68	IP 68
Ambient temperature T_a	–25...+80 °C	–25...+80 °C

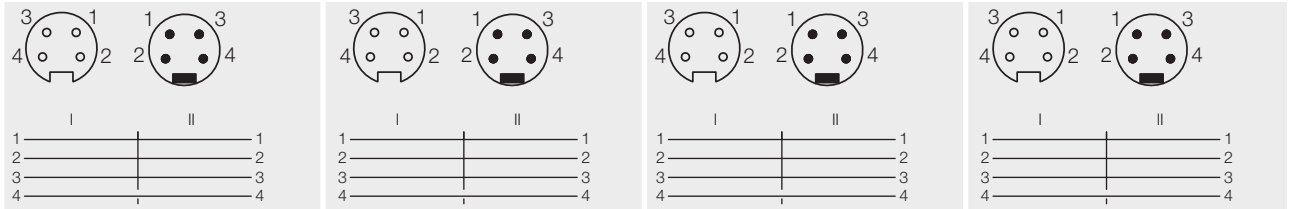
Cable material	Color	Length	Order code Part number	
PUR	Black	0.6 m		
PUR	Black	2 m	**BCC06HU** BCC A314-0000-10-003-PX04A5-020	**BCC06HZ** BCC A324-0000-10-003-PX04A5-020
PUR	Black	5 m	**BCC06HW** BCC A314-0000-10-003-PX04A5-050	**BCC06J0** BCC A324-0000-10-003-PX04A5-050
PUR	Black	10 m	**BCC06HY** BCC A314-0000-10-003-PX04A5-100	**BCC06J1** BCC A324-0000-10-003-PX04A5-100
PUR	Black	15 m		

Other cable materials, colors and lengths on request.









7/8" female / 7/8" male	7/8" female / 7/8" male	7/8" female / 7/8" male	7/8" female / 7/8" male
300 V DC	300 V DC	300 V DC	300 V DC
4×1.5 mm²	4×1.5 mm²	4×1.5 mm²	4×1.5 mm²
IP 68	IP 68	IP 68	IP 68
–25...+80 °C	–25...+80 °C	–25...+80 °C	–25...+80 °C
Order code			
Part number			
BCC06J2	**BCC06J7**	**BCC06JE**	**BCC06JL**
BCC A314-A314-30-304-PX04A5-006	BCC A314-A324-30-304-PX04A5-006	BCC A324-A314-30-304-PX04A5-006	BCC A324-A324-30-304-PX04A5-006
BCC06J3	**BCC06J8**	**BCC06JF**	**BCC06JM**
BCC A314-A314-30-304-PX04A5-020	BCC A314-A324-30-304-PX04A5-020	BCC A324-A314-30-304-PX04A5-020	BCC A324-A324-30-304-PX04A5-020
BCC06J4	**BCC06J9**	**BCC06JH**	**BCC06JN**
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BCC06J5	**BCC06JA**	**BCC06JJ**	**BCC06JP**
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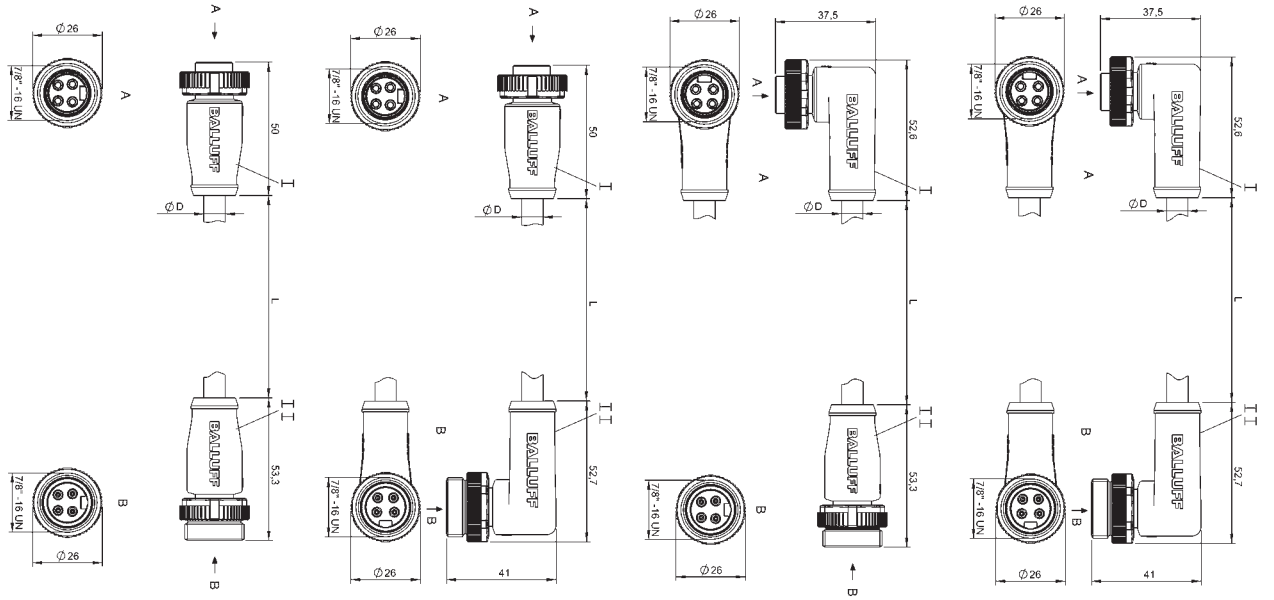
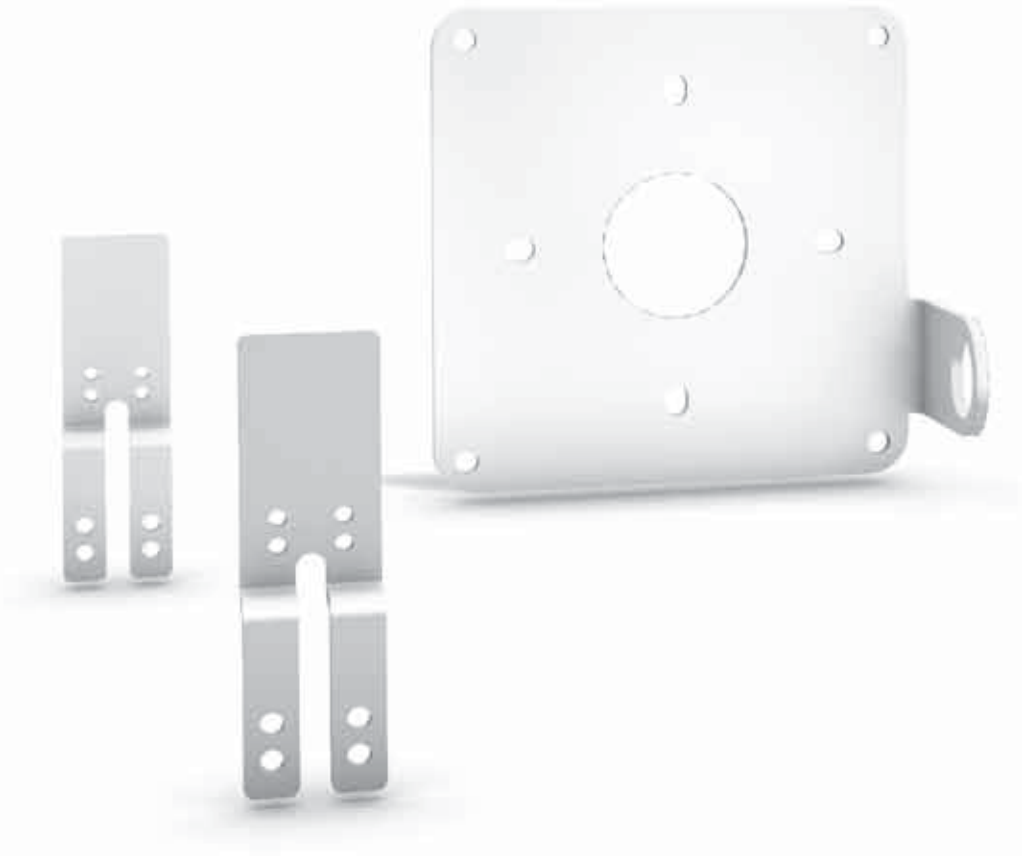
BCC06J6	**BCC06JC**	**BCC06JK**	**BCC06JR**
BCC A314-A314-30-304-PX04A5-150	BCC A314-A324-30-304-PX04A5-150	BCC A324-A314-30-304-PX04A5-150	BCC A324-A324-30-304-PX04A5-150



Accessories

Accessories for RFID systems

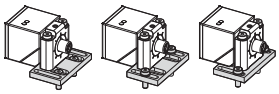
Fitting accessories are the optimal peripherals for sensors:
We provide reliable products for time and cost-saving integration into your automation system and for reliable operation.
We have put together a selection for you from our comprehensive product line.



Contents

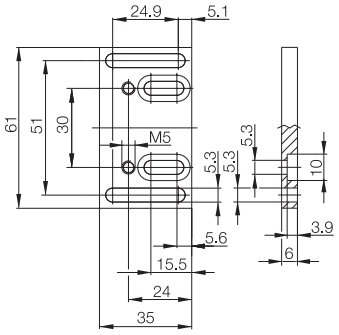
Many additional products can be found in our complete catalog: “Accessories Product Line – The Optimum Peripherals for Sensors”, or on the Internet at: **www.balluff.com**

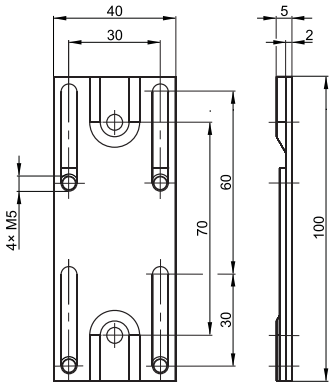
Description	**Mounting plate**	**Mounting plate**
Use	For BIS C-324	For BIS C-324
Order code	**BAM00JW**	**BAM01TM**
Part number	BES Q40-HW-1	BAM MC-XA-016-Q40-1
Material	Aluminum, anodized	Aluminum, anodized



BAM00JW: Three different mounting options

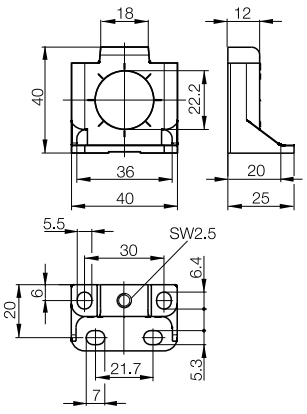
BAM01TM: BIS C-324 can be moved on this mounting plate 30 mm in wired condition and fastened at the desired location. To do so, simply unscrew the fastening screw (M5×25, included in scope of delivery), move the unit and retighten the screws. The mounting plate consists of corrosion-resistant aluminum.

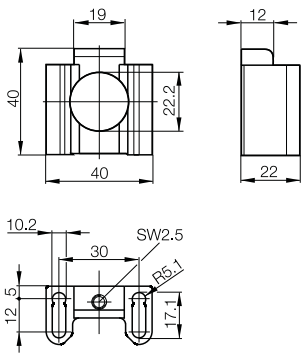




Description	**Unicompact mounting base**	**Unicompact mounting base**
Use	for BIS C-324-...	for BIS C-324-...
Order code	**BAM00JY**	**BAM00JZ**
Part number	BES Q40-HW-2	BES Q40-HW-3
Material	Cast zinc, coated	Anodized aluminum

Please note permissible installation options!

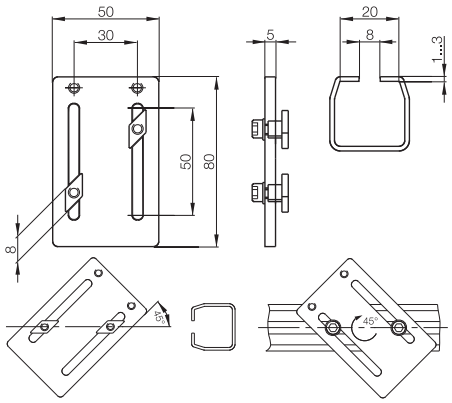




Description	**Holder system**
Use	For BIS C-324
Order code	**BAM026J**
Part number	BAM MC-XA-032-Q40-1
Material	Aluminum, anodized, and brass

This holder system is used to fasten BIS-C-324 read/write heads on profile rails.

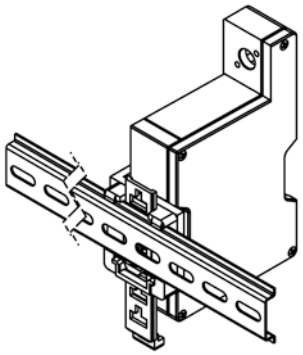
The mounting set consists of:
- 1 mounting plate
- 2 T-slides 8 mm
- 2 T-slides 16 mm
- 2 socket head cap screws M5×10 DIN 912, galvanized
- 2 washers Ø 5.3, DIN 533
- 2 socket head cap screws
- M5×40 ISO 4762M5×40, ISO 4762

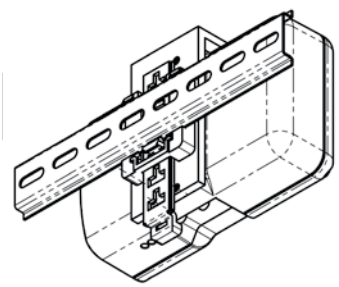


Description	**Mounting set for mounting rails**
Use	For processor units BIS C/L/M/S-600_
Order code	**BAM012L**
Part number	BIS Z-HW-001
Material	Aluminum, anodized, and PA 6

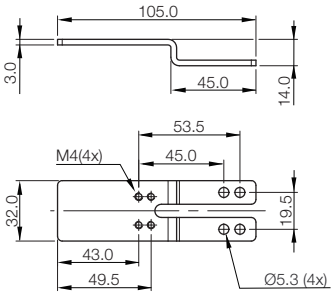
For easy adjustment and attachment to profile rails

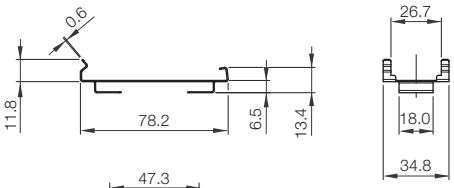
The following are added to the mounting set BIS Z-HW-001:
- 1 mounting brackets
- 1 mounting rail holder
- 4 hexagon socket head cap screws, corresponding to DIN 912 (M4×16)
- 2 slotted socket head cap screws, corresponding to DIN 84 (M3×8)



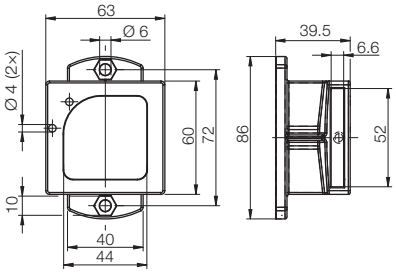


Description	**Mounting bracket**	**Mounting bracket**
Use	For mounting read/write heads on BOSCH pallet conveyor system TS1 and TS2	For BIS VM read/write head (included for BIS VM-3_ _)
Order code	**BAM01MY**	**BAM01Y3**
Part number	BAM MB-XA-010-B07-4	BAM MC-XA-018-B04-4
Material	Stainless steel	Stainless steel

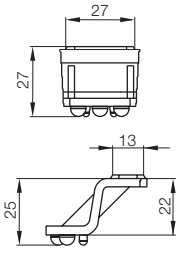




Description	**Clamping holder**	**Mounting brackets**
Use	For data carriers BIS U-101-..., BIS M-134-... and BIS M-135-...	For data carriers BIS U-102-05/CA-HT and BIS M-136-03/L-HT
Order code	**BAM0241**	**BAM01YK**
Part number	BIS Z-HW-006	BIS Z-HW-005



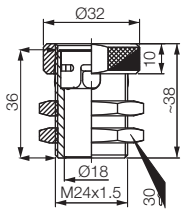
Included for mounting are:
1 Clamps
2 Socket head cap screws M3, DIN 933 A2
2 Nuts M3, DIN 980 A2

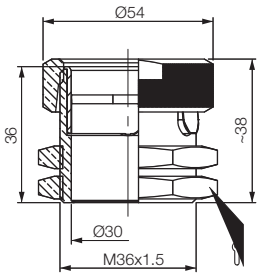


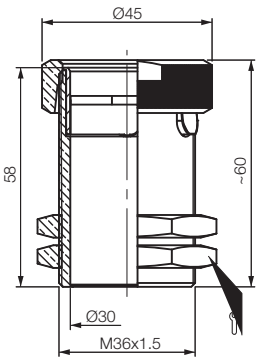
Included for mounting are:
2 Mounting Brackets
4 Socket head cap screws
4 Nuts



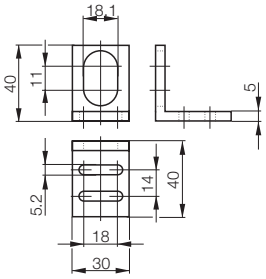
Description	**Clamping holder, flush with positive stop**	**Clamping holder, flush with positive stop**	**Clamping holder, flush with positive stop**
Use	For sensors **Ø 18** mm and **M18** with thread length ≥ 36 mm	For sensors **Ø 30** mm and **M30** with thread length ≥ 36 mm	For sensors **Ø 30** mm and **M30** with thread length ≥ 58 mm
Order code	**BAM022K**	**BAM0264**	**BAM0265**
Part number	BAM MC-XA-023-D18,0-2-FS	BAM MC-XA-023-D30,0-2-FS	BAM MC-XA-023-D30,0-2-FXL
Material	Brass, coated	Brass, coated	Brass, coated

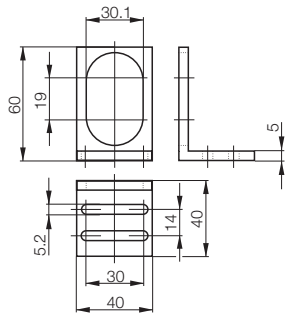






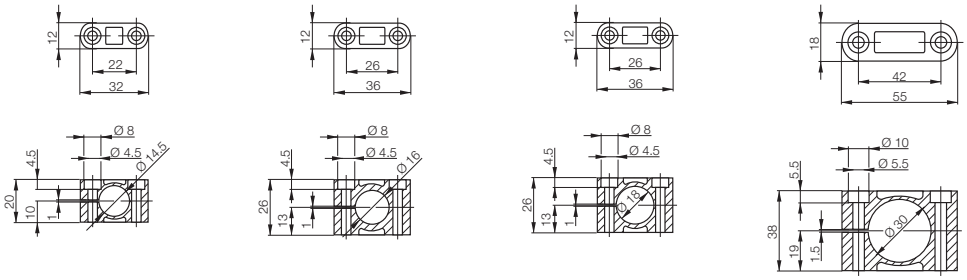

Description	**Mounting bracket**	**Mounting bracket**
Use	For housing M18	For housing M30
Order code	**BAM00EY**	**BAM00HH**
Part number	BES 18,0-HW-1	BES 30,0-HW-1
Material	Anodized aluminum	Anodized aluminum





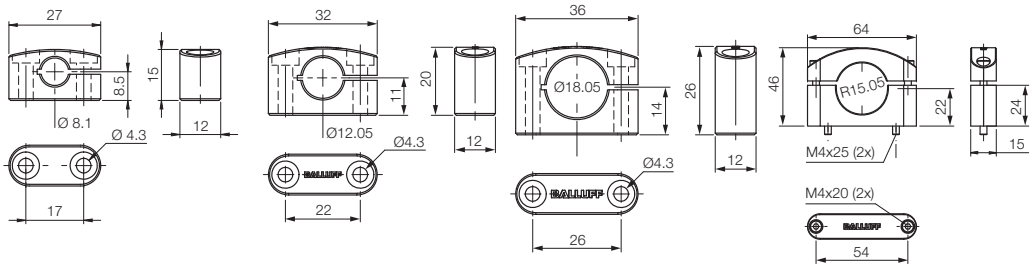



Description	**Mounting cuff**	**Mounting cuff**	**Mounting cuff**	**Mounting cuff**
Hole diameter	Ø 14.5 mm	Ø 16 mm	Ø 18 mm	Ø 30 mm
Order code	**BAM00EM**	**BAM00ET**	**BAM00F2**	**BAM00HN**
Part number	BES 14,5-BS-1	BES 16,0-BS-1	BES 18,0-BS-1	BES 30,0-BS-1
Material	PA 6	PA 6	PA 6	PA 6

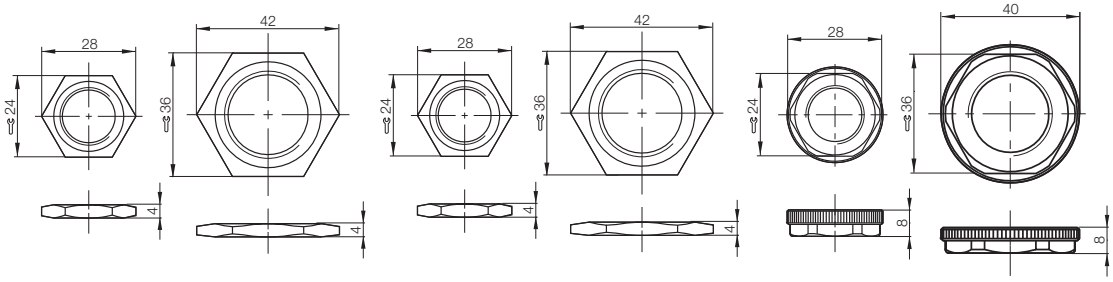




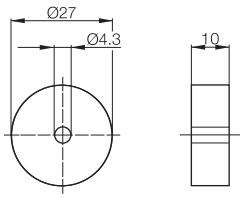

Description	**Mounting cuff**	**Mounting cuff**	**Mounting cuff**	**Mounting cuff**
Use	For **Ø 8 mm** and **M8** sensors	For **Ø 12 mm** and **M12** sensors	For **Ø 18 mm** and **M18** sensors	For **Ø 30 mm** and **M30** sensors
Order code	**BAM0269**	**BAM0218**	**BAM0219**	**BAM01U0**
Part number	BAM MC-XA-027-D08,0-1	BAM MC-XA-027-D12,0-1	BAM MC-XA-027-D18,0-1	BAM MC-XA-017-D30,0-1
Material	Anodized aluminum	Anodized aluminum	Anodized aluminum	Anodized aluminum



Description	M18×1 nut	M30×1.5 nut	M18×1 nut	M30×1.5 nut	M18×1 nut	M30×1.5 nut
Order code	**BAM01WJ**	**BAM01WK**	**BAM01W4**	**BAM01W5**	**BAM01WL**	**BAM01WM**
Part number	BAM MC-XA-021-M18-4	BAM MC-XA-021-M30-4	BAM MC-XA-021-M18-2	BAM MC-XA-021-M30-2	BAM MC-XA-021-M18-A	BAM MC-XA-021-M30-A
Material	Stainless steel	Stainless steel	Brass, coated	Brass, coated	Plastic	Plastic



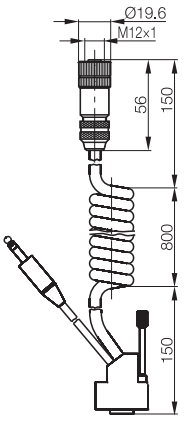
Description	Spacer
Use	For data carriers when mounting on metal
Order code	**BAM018M**
Part number	BIS Z-SP-001
Material	POM

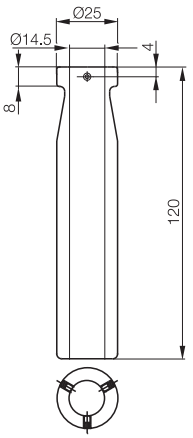


Description	**Connection cables**	**Handle**
Use	Connection cable for BIS M-4_ _ systems with coupling for BIS C-703-A power supply and RS232 interface	For read/write head BIS C-300-_ _
Order code	**BCC00T2**	**BAM012A**
Part number	BIS Z-AK-001-PU1-03	BIS C-300-HG1
Degree of protection per IEC 60529	IP 40 (only when screwed together)	
Ambient temperature T_a	0...+70 °C	0...+70 °C
Storage temperature		–20...+85 °C
Material		POM

Power supply

Order code	**BAE0049**
Part number	BIS C-703-A





For M18

Description	**Ergonomic handle**
Use	For read/write heads or read/write heads with integrated processor unit
Order code	**BAM012J**
Part number	BIS Z-HG-002

For M30

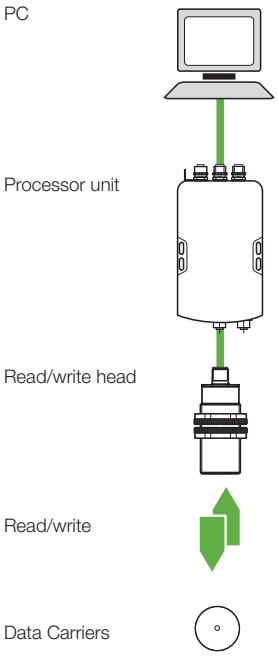
Description	**Ergonomic handle**
Use	For read/write heads or read/write heads with integrated processor unit
Order code	**BAM012K**
Part number	BIS Z-HG-003

BIS processor unit for software coupling for Siemens Simatic S7

For fast integration into the controller. Save time and money with prefabricated function modules: When connecting processor units with Profibus interface to the Simatic S7 control unit. The function modules offer the full scope of function of the processor units. Data are exchanged through the I/O section of the controller.

Advantages:
- Fast startup
- Easy to use
- Complete scope of commands

The parameters are configured using the “BIS UHF Manager” software. One requirement is that the processor unit be connected to the controlling system. The parameter settings can be overwritten at any time. The parameters can be saved in an XML file so that they can be retrieved whenever needed.



Service tools – for easy startup

Save time and money and use the CD-ROM for simple startup of your BIS system. Every processor comes with this CD-ROM including service tools to assist you.

BISCOMRW

This free software allows you to read or program a data carrier using any common PC.

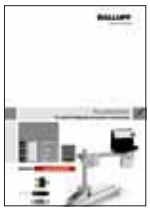
Requirements:
Serial port or USB port using a USB to RS232 converter.
Windows XP or Windows 2000. CD-ROM drive.

Processor:
Any processor using Balluff Protocol (-007) and built-in serial port.

Functions:
- Read data carrier and display the data in ASCII and hexadecimal format
- Edit data and write data to the data carrier
- Initialize data carrier for the CRC function

Every industrial automation system needs a reliable, clean, and controlled source of power without spikes. Only then can these systems deliver the expected performance. With the Balluff power supplies you get what you expect and more. They ensure reliable power even under demanding conditions. Thus they stand in the long Balluff tradition of reliable and high-quality performance products for industrial automation.

- Ultra-reliable power supplies:
  for protecting sensitive control electronics
- Protection against unforeseen events:
  Integrated overload and overvoltage protection
- Wide selection of models:
  Whether stand-alone or an individual combination of various models, these solutions are perfect for your requirements
- Clean, precise power supply for particularly demanding systems:
  Load regulation to ±1% for all models,
  ripple-and-noise for most models under 50 mV
- Long service life for less system downtime:
  MTBF (Mean Time Between Failure) up to 800,000 h (91 years)



Many additional products can be found in our complete catalog: “Accessories Product Line – The Optimum Peripherals for Sensors,” or on the Internet at:
www.balluff.com

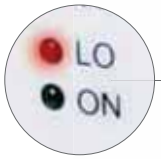
Parallel/single mode
If more power is required, multiple units can be combined in parallel mode (for most models)

Ready output
Notifies the control system that the power supply is ready (included with most models)

Adjustable output
The output voltage can be adjusted to compensate for losses from cabling and distributed components

Rugged DIN rail mounting

CE, UL/cUL, and TÜV Approvals



Status indicator
LED for DC ON and DC LO indicator (for most models)

IP 20 metal housing (most models)

Terminals with contact protection
No additional protection necessary

Design	Output voltage	Output power: 0.75 A/18 W	1.25 A/30 W	1.5 A/18 W	2.5 A/30 W	2.5 A/60 W	2.5 A/120 W	3.8 A/91.20 W	5 A/60 W	5 A/120 W	5 A/240 W	10 A/120 W	10 A/240 W	10 A/480 W	20 A/480 W	40 A/960 W	Features: Input voltage	Housing material	Parallel mode	Ready output	Product information: Order code	Part number
Standard IP 20	12 V			■													Single-phase[1]	Plastic			**BAE0036**	BAE-PS-XA-1W-12-015-001
					■												Single-phase[1]	Plastic		■	**BAE0039**	BAE-PS-XA-1W-12-025-002
									■								Single-phase[1]	Metal		■	**BAE003E**	BAE-PS-XA-1W-12-050-002
												■					Single-phase[2]	Metal	■	■	**BAE003H**	BAE-PS-XA-1W-12-100-003
	24 V	■															Single-phase[1]	Plastic			**BAE0001**	BAE-PS-XA-1W-24-007-001
			■														Single-phase[1]	Plastic		■	**BAE0004**	BAE-PS-XA-1W-24-012-002
						■											Single-phase[1]	Plastic		■	**BAE0005**	BAE-PS-XA-1W-24-025-002
								■									Single-phase[2]	Metal	■	■	**BAE003J**	BAE-PS-XA-1W-24-038-003
										■							Single-phase[2]	Metal	■	■	**BAE0006**	BAE-PS-XA-1W-24-050-003
												■					Single-phase[2]	Metal	■	■	**BAE0002**	BAE-PS-XA-1W-24-100-004
														■			Single-phase[2]	Metal	■	■	**BAE0003**	BAE-PS-XA-1W-24-200-005
										■							3-phase[3]	Metal		■	**BAE0007**	BAE-PS-XA-3Y-24-050-009
												■					3-phase[3]	Metal	■	■	**BAE0008**	BAE-PS-XA-3Y-24-100-006
														■			3-phase[3]	Metal	■	■	**BAE0009**	BAE-PS-XA-3Y-24-200-007
																■	3-phase[3]	Metal	■	■	**BAE003R**	BAE-PS-XA-3Y-24-400-010
	48 V						■										Single-phase[2]	Plastic	■	■	**BAE003K**	BAE-PS-XA-1W-48-025-003
											■						Single-phase[2]	Metal	■	■	**BAE003L**	BAE-PS-XA-1W-48-050-004
													■				Single-phase[2]	Metal	■	■	**BAE003M**	BAE-PS-XA-1W-48-100-005

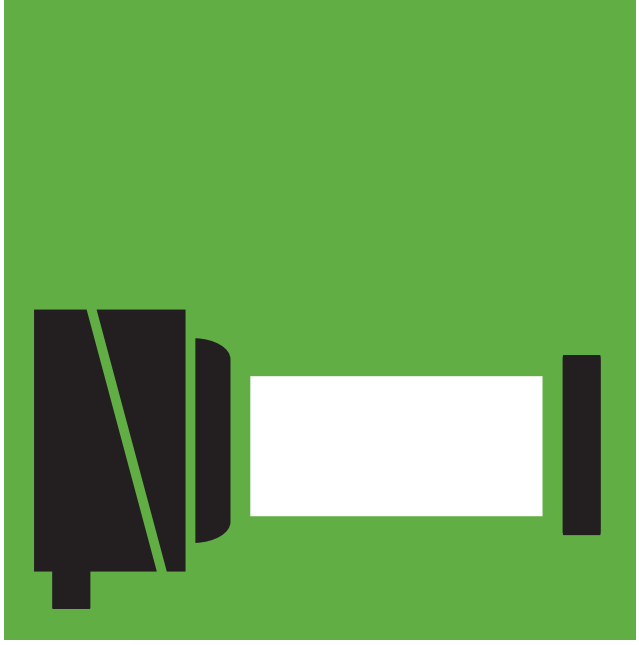
[1] = 100...240 V AC
[2] = 115/230 V AC (Auto-Select)
[3] = 340...575 V AC

Power for controllers and networks
Specially developed for controller units, Balluff power supplies can be perfectly integrated into your control package.

The PS series of ultra-reliable power supply units is available in a wide range of 12, 24, and 48 V DC models with single or 3-phase input. With a bandwidth of 18 W to 960 W, they truly leave nothing to be desired. For even greater power, multiple power supplies are interconnected (parallel switching mode).
Do you need a different voltage? Please contact us.

Trouble-free installation
Reliable power has never been so simple to install. Starting with the convenient mounting of DIN rails using the integrated Balluff high-performance mounting system. The screw terminals are aligned to enable the integration of an AC input from below and a DC output from above. Connections with contact protection render additional safety equipment superfluous.

RFID System BIS M at 13.56 MHz (HF)
RFID System BIS C at 433/70 kHz (LF)
RFID System BIS L at 125 kHz (LF)
Connectivity for RFID Systems
Accessories for RFID Systems
Mounting Accessories
Software and Service Tools
Standard Power Supplies



Vision Solutions BVS

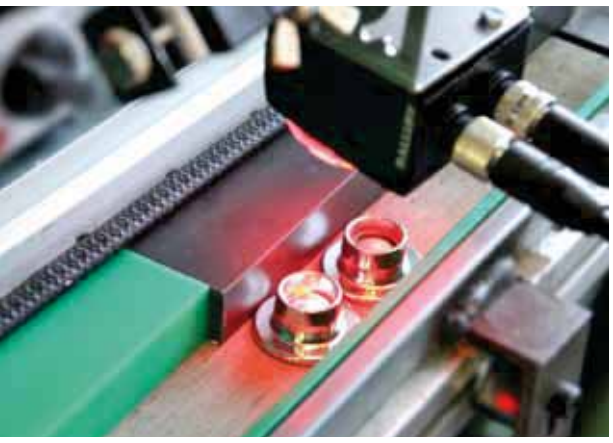
Vision-based Identification

The vision sensor BVS E from Balluff is the perfect choice for flexible, reliable and highly efficient quality control and part identification. The BVS offers a large number of high-performance image processing functions. They can be combined for robust application solutions in error detection, quality inspection or reading and verifying codes.

Vision-Sensors BVS E
The best combination of simplicity and function

Easy to use – As simple as a sensor
In many production facilities, vision systems can be overkill – too expensive, too much functionality or simply too much complexity. Balluff vision sensors, however, are easy to set up and operate. This allows them to pay themselves off more quickly than the complex solutions – and at the same production quality.

The vision sensor BVS E is a high-performance sensor for error detection, quality inspection and part identification. It can be used in almost every area of production and logistics processes. Thus, it reliably detects the presence or absence of parts or features and their position. It also inspects dimensions and reads barcodes and data matrix codes accurately and reliably. The BVS E can also replace a complex compilation of different sensors. This is what allows it to outperform most vision sensors in its class.

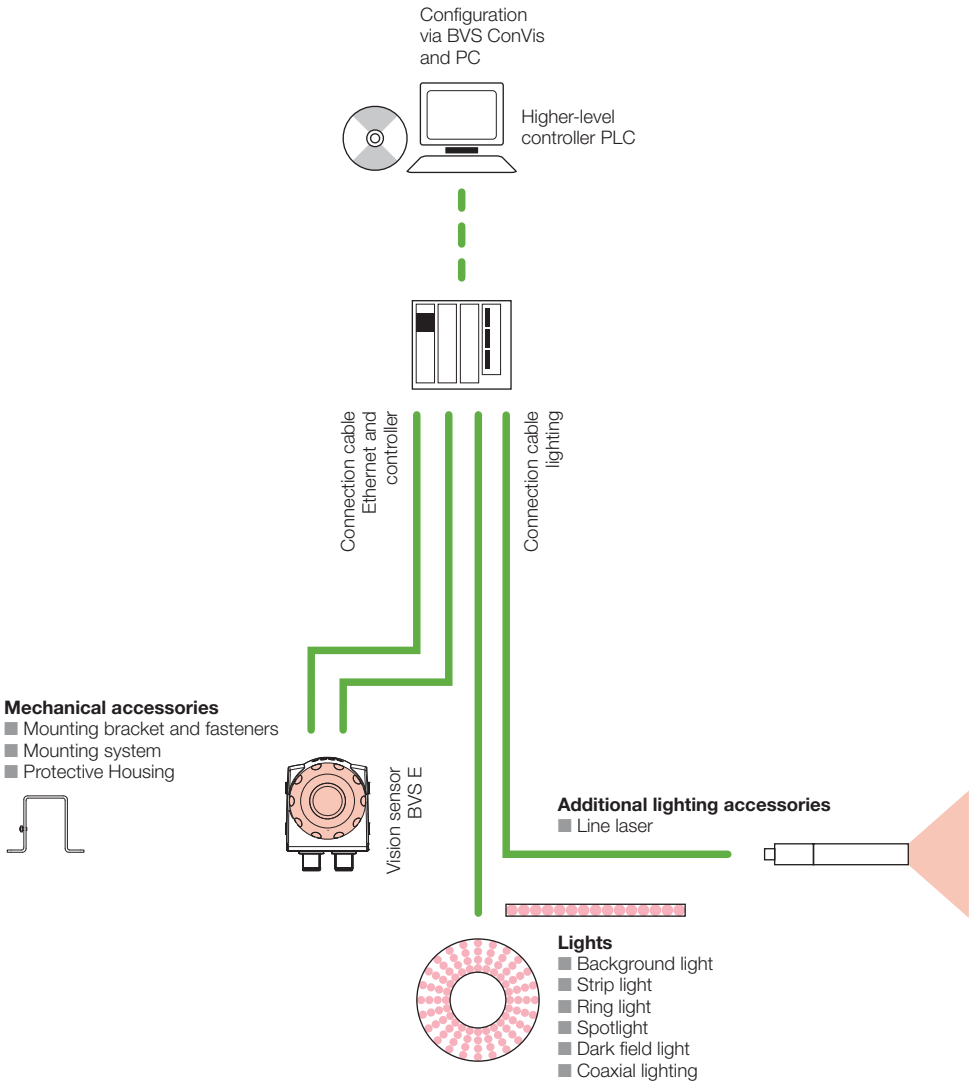


The BVS E reduces costs
- One vision sensor instead of many different standard sensors saves hardware costs and assembly time
- Four different models offer the best solution for your application at an appropriate price
- One piece of software for all sensors enables quick commissioning – no complex programming language required

The BVS E increases product quality
- Prevents unreliable manual inspection
- Offers 100% quality control (without random sampling)
- Ensures the resolution required for a reliable quality inspection
- Enables automatic reading of barcodes, data matrix codes and QR codes

The BVS E increases productivity
- Detects defects early, reduces downtimes and failures
- Prevents errors – no need for inspection by hand
- Reliably reads difficult codes by itself
- Reduces set-up time thanks to high functionality and flexibility such as type changeover via PLC

Vision sensor BVS E system overview



Vision-Sensors BVS E
Product overview – the models at a glance

Regardless of which model you need for solving your task, you can use the BVS to optimize your processes. Benefit from greater efficiency.

In all model series, various combinations of four different lenses and an integrated red light or infrared lighting are available. Depending on the model, two or more digital outputs are also available. Use the overview to find the ideal vision sensor for your application. You can easily compare the different functions and special features at a glance.

Compatible with all models: BVS E Monitor – small, easy-to-use display to see what the sensor is seeing.

BVS E Identification:
Versatile code reading and identification
BVS identification allows you to clearly identify your products. Regardless of whether you use 1D codes (barcodes) or 2D codes (data matrix codes) for labeling, the BVS reads all common codes on the market. Texts and sequences of numbers such as code plain text can be verified using OCV. If you need to view the read code data to find out which parts are being processed, you can output it via the RS232 or Ethernet interface.

BVS E Standard:
The solution for simple tasks in error detection
The BVS E Standard makes low-cost, simultaneous inspection of multiple product or part features a reality. Here, inspection features can be combined with each other so that simple tasks involving error detection can be managed with ease (e.g. in feeds or before a process step).

BVS E Advanced:
Quality assurance and error detection at any position
In addition to the functions of the BVS E Standard, the Advanced provides the option to detect parts and products regardless of location and position and output the acquired process data over an Ethernet TCP/IP interface. Short process times and the option to combine individual inspection results with each other using logical functions ensures efficient monitoring of product quality.

BVS E Universal:
Highly versatile
The BVS E Universal features outstanding high performance and is able to locate, inspect and count parts regardless of how they are positioned. The orientation and positions of parts can be transmitted over the interface in this process. Reading barcodes and data matrix codes is particularly fast and reliable. During read operations like this, the BVS E Universal inspects up to 40 codes per second. That makes this vision sensor one-of-a-kind.

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)
From page	**364**	**366**	**368**	**370**

Each model series has a specific task-relevant combination of image processing functions. This overview can be used to select the right model to meet your requirements.
The BVS E provides the best solutions for any application.

	BVS E Identification	BVS E Standard	BVS E Advanced	BVS E Universal
Checking brightness ■ Identifying different types and parts ■ Checking illumination brightness ■ Detecting the operability of a display		■	■	■
Comparing contrast ■ Monitoring the presence of labels ■ Detecting a label ■ Checking for completeness		■	■	■
Counting edges ■ Monitoring the number of pins on ICs ■ Checking threads for completeness ■ Monitoring the quality of gear wheels		■	■	■
Comparing width ■ Checking for presence (e.g. lids) ■ Differentiating parts ■ Monitoring location and orientation		■	■	■
Detecting patterns ■ Checking parts quality ■ Differentiating types	■	■	■	■
Checking contours ■ Checking that punched parts are free of burrs ■ Differentiating parts shapes ■ Nominal/Actual comparison		■	■	
Checking items ■ Monitoring level ■ Positioning parts and products ■ Positioning labels		■	■	■
Checking 360° contours ■ Quality inspection of parts based on nominal/actual comparison ■ Checking complete assembly ■ Error detection for parts				■
Counting 360° contours ■ Checking for the correct number of parts ■ Checking the presence/absence of parts (e.g. screws) ■ Checking for correct filling (blisters)				■
Locating 360° contours ■ Fine positioning of the parts regardless of the reason ■ Outputting part positions, e.g. for robot control system (via Ethernet interface)				■
Comparing characters (OCV) ■ Checking labels ■ Monitoring printing (e.g. ensuring correct dates for different lots) ■ Checking logos	■			■
360° position detection ■ Aligning parts ■ Controlling robots (over an Ethernet interface) ■ Inspection regardless of position			■	■
Detecting and identifying barcodes, data matrix codes and QR codes ■ Code verification ■ Documentation of parts used ■ Verifying characters	■			■

One piece of operating software for all sensor models
The ConVis software detects the connected vision sensor BVS automatically. Using the software makes it possible to simulate other sensor models. This lets you test which model is suitable for solving your tasks without any additional costs. The software is very easy to operate thanks to a guide that leads the user through the configuration step by step. The integrated online help provides additional information for every step.

BVS E Identification

BVS E Identification
This version allows you to detect and read all standard codes available on the market. Barcodes and data matrix codes within the field of view are read quickly and checked depending on the default and/or output over the serial interface. The large number of codes that the sensor can recognize allows you to use devices capable of reading an assortment of different code types.

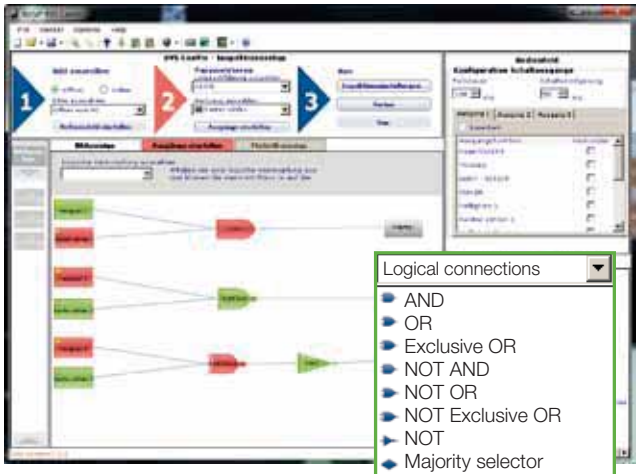
BVS E Standard

BVS E Standard
The standard version of the vision sensor has the following features: 20 inspection memory slots, free rotation of tools and a zoom function. You have the choice of seven independent tools. Free software updates are included. You can also update the sensors you already have.

Detecting and reading barcodes
Barcodes are a way of uniquely identifying products during the manufacturing process. The BVS E Identification has two modes:
1. A taught-in barcode is checked and an OK/NOK signal is output.
2. Any code is read and output over the serial interface.

Detecting location
Screws are provided for installation in the feed of an oscillating conveyor. The BVS helps you avoid problems, since incorrectly located screws or different screw types are immediately detected and shunted out.

BVS E Advanced

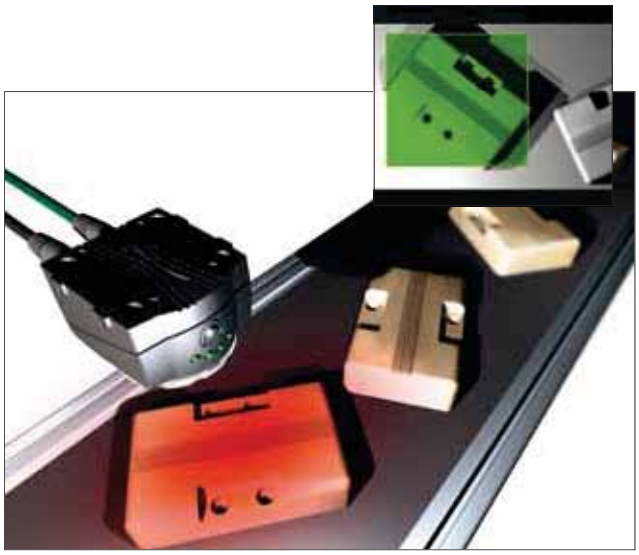


BVS E Advanced
In addition to the standard version, the BVS-E Advanced also has 360° position detection and logical linking. These features allow the combination of up to 255 tools as well as full utilization of up to four digital outputs.

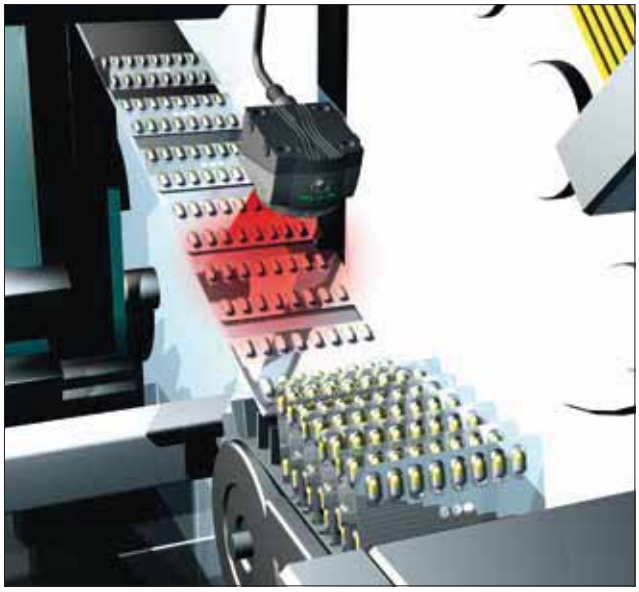
BVS E Universal

BVS E Universal
The BVS Universal checks the presence of parts, reads and verifies codes and handles tasks for part positioning. New high-performance contour tools enable the position tracking of parts turned into any position as well as the ability to inspect and count them. The exact location of the part can be transferred directly to a PLC or a robot via the integrated communication interface.

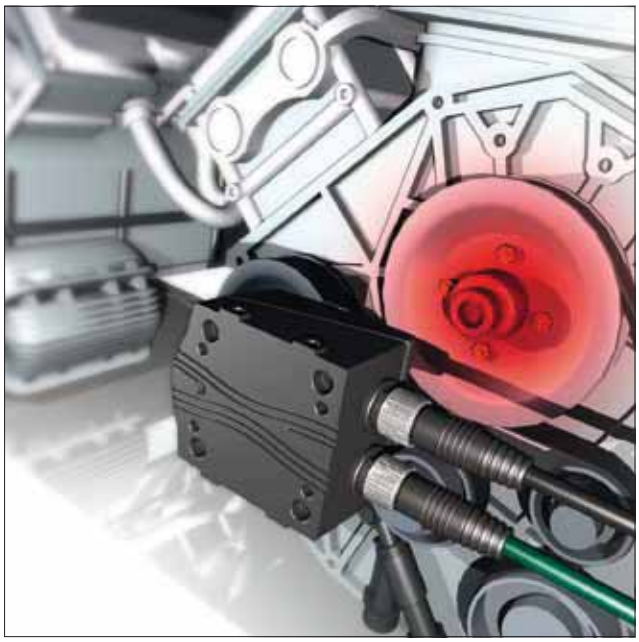
Checking for completeness
After manual equipping, the completeness of a product is inspected. Three flexibly configurable outputs allow you for example to monitor the completeness of each series or special features.

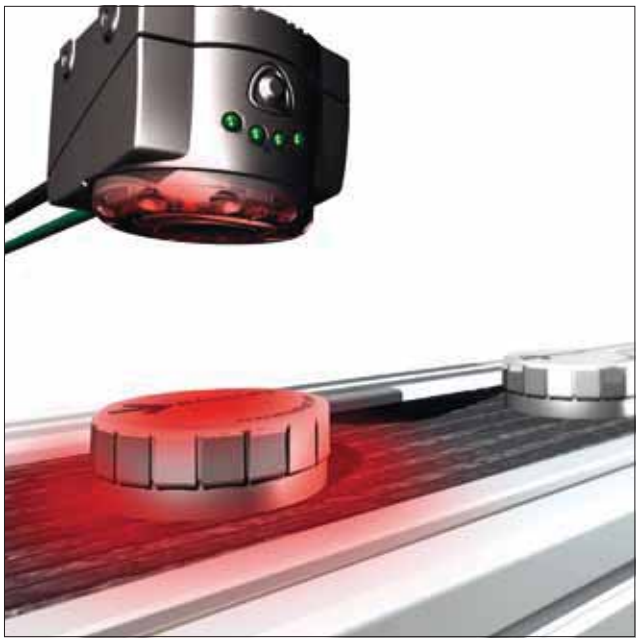


Checking contours
Injection molded parts are checked at the inspection station: Defective workpieces or workpieces with burrs are shunted out for special rework.



Checking blister filling
For quality assurance, tablet blisters are checked after automated filling. The BVS E checks that each nest is filled and the correct specimen is inserted. Format changes are possible at any time. This is ensured through changeovers even in-process. You can use the BVS to monitor your production with flexibility and security.





Checking for presence
V-belt pulleys are attached using four nuts. The vision sensor checks the presence of all the nuts all once, simultaneously and independently of the alignment position.

Checking printing and correct positioning
Quality assurance requires that a capsule can be checked for correct printing in any position. The integrated 360° contour detection locates the capsule, checks the printing and can be combined with other BVS tools. The capsule position is transferred to a PLC or robot over an Ethernet interface. This makes it possible to pick the capsules right off the belt.

TecSupport

Your added value for planning and commissioning
- Decision guidance for selecting the right product
- Multifaceted product, application and integration support
- Customer-specific training sessions
- Intensive technical support during the project phase.
- Taking over time-consuming project development

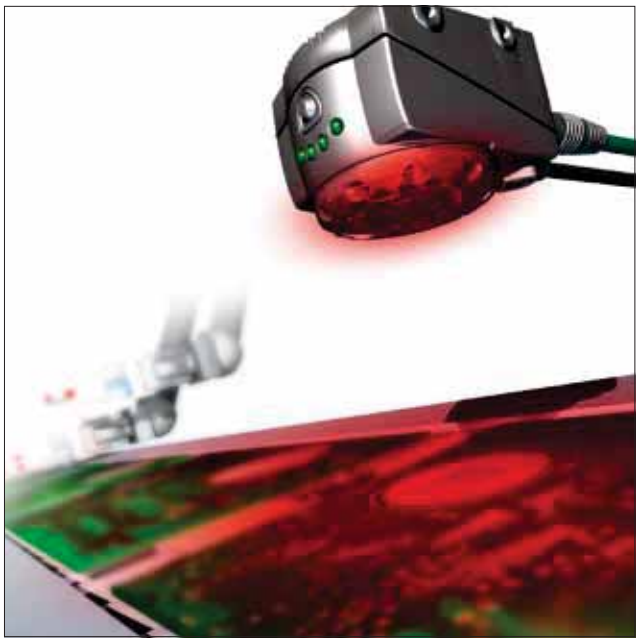
We are happy to help!
Phone +49 7158 173-401
+49 7158 173-727
E-mail TecSupport@balluff.de

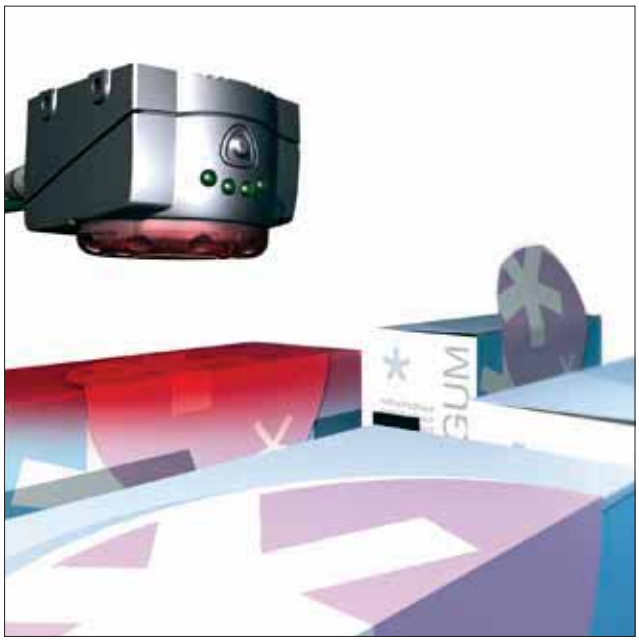
Checking bottle caps

To seal bottles perfectly, the cap needs to be seated correctly. Leave the checks to our vision sensor. It inspects positions with absolute reliability, reduces the number or reject parts and increases productivity. Formats can be converted in the process.

Detecting and reading 2D codes

Data matrix codes and QR codes are used in industrial environments. The BVS tool provides two operating modes: 1. A taught-in data matrix code/QR code is inspected and a OK/NOK signal is output. 2. Any code is read and output over the serial interface. Thus, you know what is happening at all times.





Verifying a position

The vision sensor BVS E can be used to inspect labels on packaging accurately. It checks whether a label is present and whether it is in the correct position.

Vision Sensors BVS E Identification
Detection and identification of various codes

Check the marking on your products. The BVS reads all common codes used on the market, regardless of whether the are 1D (barcodes) or 2D (data matrix codes).
Texts and sequences of numbers such as code plain text can be verified using OCV. The result: “OK” or “not OK”.
If you need to view the read code data to find out which parts are being processed, you can output it via the RS232 or Ethernet interface.

- Reading several codes in an inspection simultaneously
- Outputting code data via RS232 or Ethernet interface
- Verifying character strings
- Toggling between inspections via PLC
- Codes can be read in any position
- Function module for PLC available

Readable barcodes
- Interleaved 2-of-5
- Code 39
- Code 128
- Pharmacode
- Codabar
- EAN 8
- EAN 13
- UPC-E
- UPC-A
- PDF 417

Readable data matrix codes
- ECC 200 (suitable for high and low contrast, for directly marked and mirrored codes)

Readable QR codes
- QR code
- Mini QR code

Model			
Design			
Lens, focal length			
Red light	PNP	**Order code**	
		Part number	
Infrared	PNP	**Order code**	
		Part number	
Supply voltage U_S			
Switching inputs			
Switching outputs			
Interface			
Rated operating current I_e			
Configuration interface			
Parameter configuration			
Typ. detection rate			
Image sensor			
Working range			
Field of view (horizontal × vertical)		Working distance 50 mm	
		Working distance 250 mm	
		Working distance 500 mm	
		Working distance 1000 mm	
Integrated lighting			
Eye safety per IEC 62471			
Degree of protection per IEC 60529			
Ambient temperature T_a			
Connection cables		Controller	
		Ethernet	

Accessories

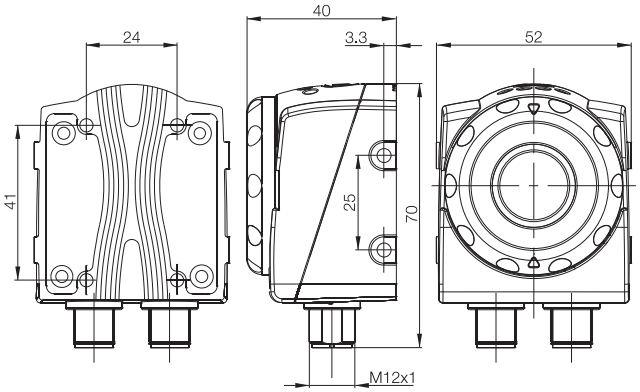
Connection cables	Controller	
	Ethernet	
Vision Sensor Monitor		
Lights		
Mounting accessories		
Power supply units		

Information on optics and electrical systems, see **starting on page 404.**
To determine the field of view and working distance, please use the distance computer under: **www.balluff.de/vision**

Take advantage of the added-value kits. You can receive the vision sensor BVS E in your desired design, with software CD, user’s guide, mounting bracket, installation accessories and connection and parameterization cable. Additional information on the kits can be found **starting on page 373.**




	Vision sensor BVS E **Identification** Wide-angle lens, 6 mm **BVS001R** BVS ID-3-005-E	Vision sensor BVS E **Identification** Standard lens, 8 mm **BVS0001** BVS ID-3-001-E	Vision sensor BVS E **Identification** Telephoto lens, 12 mm **BVS000T** BVS ID-3-003-E	Vision sensor BVS E **Identification** Telephoto lens, 16 mm **BVS000Y** BVS ID-3-007-E
	BVS001C BVS ID-3-105-E	**BVS0019** BVS ID-3-101-E	**BVS001A** BVS ID-3-103-E	**BVS001E** BVS ID-3-107-E
	24 V DC ±10%	24 V DC ±10%	24 V DC ±10%	24 V DC ±10%
	1× trigger	1× trigger	1× trigger	1× trigger
	1× lighting synchronization, 2× PNP	1× lighting synchronization, 2× PNP	1× lighting synchronization, 2× PNP	1× lighting synchronization, 2× PNP
	RS232, Ethernet TCP/IP	RS232, Ethernet TCP/IP	RS232, Ethernet TCP/IP	RS232, Ethernet TCP/IP
	100 mA	100 mA	100 mA	100 mA
	Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T
	ConVis for Windows	ConVis for Windows	ConVis for Windows	ConVis for Windows
	3...40 Hz (depending on processing function)	3...40 Hz (depending on processing function)	3...40 Hz (depending on processing function)	3...40 Hz (depending on processing function)
	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480
	50...1000 mm	50...1000 mm	50...1000 mm	180...1000 mm (red light), 230...1000 mm (infrared)
	34×25 mm	24×18 mm	16×12 mm	–
	170×128 mm	120×90 mm	80×60 mm	60×45 mm
	338×253 mm	240×180 mm	160×120 mm	120×90 mm
	676×507 mm	480×360 mm	320×240 mm	240×180 mm
	LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable
	Exempt group	Exempt group	Exempt group	Exempt group
	IP 54	IP 54	IP 54	IP 54
	–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C
	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
	See page 374	See page 374	See page 374	See page 374
	See page 375	See page 375	See page 375	See page 375
	See page 372	See page 372	See page 372	See page 372
	See page 380...397	See page 380...397	See page 380...397	See page 380...397
	See page 398...403	See page 398...403	See page 398...403	See page 398...403
	See page 352...353	See page 352...353	See page 352...353	See page 352...353



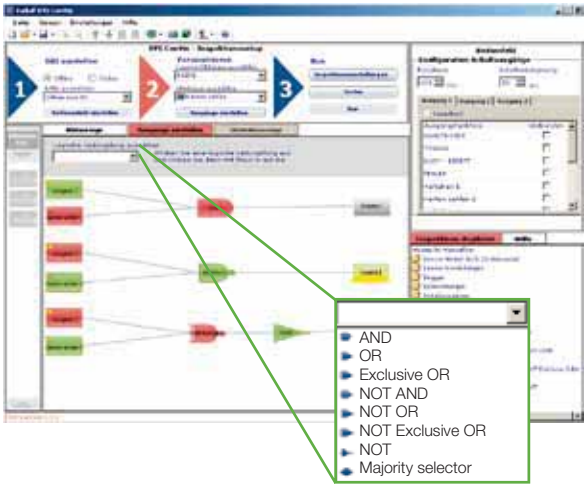
Vision Sensors BVS E Standard
For maximum quality and productivity

Inspect and monitor your production process with the BVS-E Standard. Select the right tool from a large number of tools. This sets up the inspection.
You can replace several sensors with a combination of tools. If different workpieces are used, activate the relevant inspection via the PLC control to allow production to continue seamlessly without requiring a teach-in/setup process.

- Simple operation
- Convenient setup
- Reliable evaluation
- Extensive range of accessories
- Function module for PLC available

Software
- Memory for 20 inspections
- Free rotation of tools
- Zoom function
- Existing sensors updated at no extra cost
- Seven independent tools

Logical connections



Model			
Design			
Lens, focal length			
Red light	PNP	**Order code**	
		Part number	
	NPN	**Order code**	
		Part number	
Infrared	PNP	**Order code**	
		Part number	
Supply voltage U_S			
Switching inputs			
Switching outputs			
Rated operating current I_e			
Configuration interface			
Parameter configuration			
Typ. detection rate			
Image sensor			
Working range			
Field of view (horizontal×vertical)		Working distance 50 mm	
		Working distance 250 mm	
		Working distance 500 mm	
		Working distance 1000 mm	
Integrated lighting			
Eye safety per IEC 62471			
Degree of protection per IEC 60529			
Ambient temperature T_a			
Connection cables		Controller	
		Ethernet	

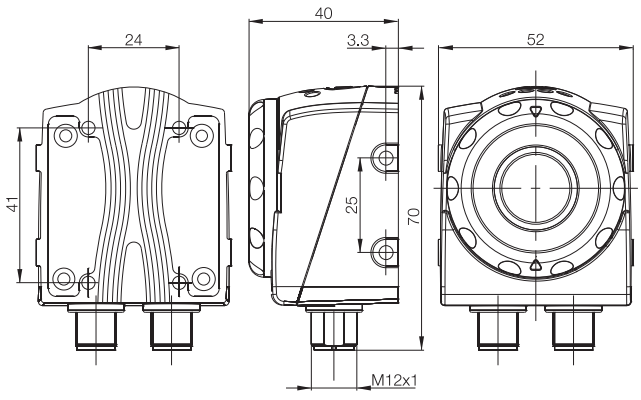
Accessories

Connection cables	Controller
	Ethernet
Vision Sensor Monitor	
Lights	
Mounting accessories	
Power supply units	

Information on optics and electrical systems, see **starting on page 404.**
To determine the field of view and working distance, please use the distance computer under: **www.balluff.de/vision**

Take advantage of the added-value kits. You can receive the vision sensor BVS E in your desired design, with software CD, user's guide, mounting bracket, installation accessories and connection and parameterization cable. Additional information on this can be found **starting on page 373.**

Vision sensor	Vision sensor	Vision sensor
BVS E **Standard**	BVS E **Standard**	BVS E **Standard**
Wide-angle lens, 6 mm	Standard lens, 8 mm	Telephoto lens, 12 mm
BVS000E	**BVS0003**	**BVS0005**
BVS OI-3-005-E	BVS OI-3-001-E	BVS OI-3-003-E
BVS000C	**BVS0004**	**BVS0006**
BVS OI-3-006-E	BVS OI-3-002-E	BVS OI-3-004-E
BVS0013	**BVS0014**	**BVS0012**
BVS OI-3-105-E	BVS OI-3-101-E	BVS OI-3-103-E
24 V DC ±10%	24 V DC ±10%	24 V DC ±10%
1× Trigger, 1× Select	1× Trigger, 1× Select	1× Trigger, 1× Select
1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable	1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable	1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable
100 mA	100 mA	100 mA
Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T
ConVis for Windows	ConVis for Windows	ConVis for Windows
3...15 Hz (depending on processing function)	3...15 Hz (depending on processing function)	3...15 Hz (depending on processing function)
CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480
50...1000 mm	50...1000 mm	50...1000 mm
34×25 mm	24×18 mm	16×12 mm
170×128 mm	120×90 mm	80×60 mm
338×253 mm	240×180 mm	160×120 mm
676×507 mm	480×360 mm	320×240 mm
LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable
Exempt group	Exempt group	Exempt group
IP 54	IP 54	IP 54
–10...+55 °C	–10...+55 °C	–10...+55 °C
M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
See page 374	See page 374	See page 374
See page 375	See page 375	See page 375
See page 372	See page 372	See page 372
See page 380...397	See page 380...397	See page 380...397
See page 398...403	See page 398...403	See page 398...403
See page 352...353	See page 352...353	See page 352...353



Vision Sensors BVS-E Advanced
360° detection for optimizing process control

Along with standard functions of the BVS E, the Vision Sensor Advanced also offers the inspection of the turned positions. It can detect objects regardless of the location and position. Production can be monitored more efficiently through shorter process times and the option of using logical functions to combine individual queries.

- 360° position tracking
- Faster processor reduces process times
- Features linked by logical functions
- Extensive range of accessories
- Function module for PLC available

Model			
Design			
Lens, focal length			
Red light	PNP	**Order code**	
		Part number	
	NPN	**Order code**	
		Part number	
Infrared	PNP	**Order code**	
		Part number	
Supply voltage U_S			
Switching inputs			
Switching outputs			
Interface			
Rated operating current I_e			
Configuration interface			
Parameter configuration			
Typ. detection rate			
Image sensor			
Working range			
Field of view (horizontal×vertical)		Working distance 50 mm	
		Working distance 250 mm	
		Working distance 500 mm	
		Working distance 1000 mm	
Integrated lighting			
Eye safety per IEC 62471			
Degree of protection per IEC 60529			
Ambient temperature T_a			
Connection cables		Controller	
		Ethernet	

Accessories

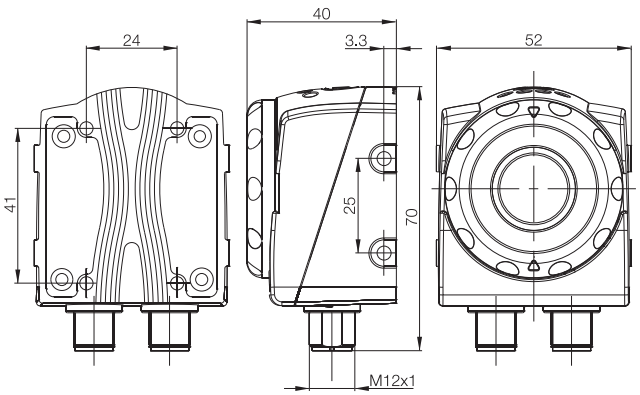
Connection cables	Controller	
	Ethernet	
Vision Sensor Monitor		
Lights		
Mounting accessories		
Power supply units		

Information on optics and electrical systems, see **starting on page 404.**
To determine the field of view and working distance, please use the distance computer under: **www.balluff.de/vision**

Take advantage of the added-value kits. You can receive the vision sensor BVS E in your desired design, with software CD, user's guide, mounting bracket, installation accessories and connection and parameterization cable. Additional information on this can be found **starting on page 373.**




	Vision sensor BVS E **Advanced** Wide-angle lens, 6 mm **BVS000L** BVS OI-3-055-E	Vision sensor BVS E **Advanced** Standard lens, 8 mm **BVS000J** BVS OI-3-051-E	Vision sensor BVS E **Advanced** Telephoto lens, 12 mm **BVS000K** BVS OI-3-053-E	Vision sensor BVS E **Advanced** Telephoto lens, 16 mm **BVS000W** BVS OI-3-057-E
	BVS000R BVS OI-3-056-E	**BVS000P** BVS OI-3-052-E	**BVS000N** BVS OI-3-054-E	
	BVS0016 BVS OI-3-155-E	**BVS0015** BVS OI-3-151-E	**BVS0017** BVS OI-3-153-E	**BVS0018** BVS OI-3-157-E
	24 V DC ±10%	24 V DC ±10%	24 V DC ±10%	24 V DC ±10%
	1× Trigger, 1× Select	1× Trigger, 1× Select	1× Trigger, 1× Select	1× Trigger, 1× Select
	1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable	1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable	1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable	1× lighting synchronization or 1× PNP, 3× PNP or NPN are configurable
	Ethernet TCP/IP	Ethernet TCP/IP	Ethernet TCP/IP	Ethernet TCP/IP
	100 mA	100 mA	100 mA	100 mA
	Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T
	ConVis for Windows	ConVis for Windows	ConVis for Windows	ConVis for Windows
	3...50 Hz (depending on processing function)	3...50 Hz (depending on processing function)	3...50 Hz (depending on processing function)	3...50 Hz (depending on processing function)
	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480
	50...1000 mm	50...1000 mm	50...1000 mm	180...1000 mm (red light), 230...1000 mm (infrared)
	34×25 mm	24×18 mm	16×12 mm	–
	170×128 mm	120×90 mm	80×60 mm	60×45 mm
	338×253 mm	240×180 mm	160×120 mm	120×90 mm
	676×507 mm	480×360 mm	320×240 mm	240×180 mm
	LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable
	Exempt group	Exempt group	Exempt group	Exempt group
	IP 54	IP 54	IP 54	IP 54
	–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C
	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
	See page 374	See page 374	See page 374	See page 374
	See page 375	See page 375	See page 375	See page 375
	See page 372	See page 372	See page 372	See page 372
	See page 380...397	See page 380...397	See page 380...397	See page 380...397
	See page 398...403	See page 398...403	See page 398...403	See page 398...403
	See page 352...353	See page 352...353	See page 352...353	See page 352...353



Universal Vision Sensors BVS E
Highly versatile

The range of applications for the vision sensor BVS-E Universal extends from checking assembly and presence to reading and verifying codes to advanced applications such as part positioning.

The exceptionally powerful, contour-based image processing tools allow all parts to be located and checked or counted no matter how they have been positioned. The orientation and positions of parts can be transmitted via the interface in this process. Reading barcodes, data matrix codes and QR codes is particularly fast and reliable. During read operations like this, the BVS E inspects up to 40 codes per second.

- One model, versatile functionality – for reducing your inventory requirements
- Contour-based analysis – locate and inspect parts no matter their orientation
- Ethernet TCP/IP and RS232 interface – part positions and inspection results are available to the PLC and enable improved process control
- Quick locating, reading and verifying codes – reliably even at high part rates

Series			
Design			
Lens, focal length			
Red light	PNP	**Order code**	
		Part number	
Infrared	PNP	**Order code**	
		Part number	
Supply voltage U_S			
Switching inputs			
Switching outputs			
Interface			
Rated operating current I_e			
Configuration interface			
Parameter configuration			
Typ. detection rate			
Image sensor			
Working range			
Field of view (horizontal × vertical)		Working distance 50 mm	
		Working distance 250 mm	
		Working distance 500 mm	
		Working distance 1000 mm	
Integrated lighting			
Eye safety per IEC 62471			
Degree of protection per IEC 60529			
Ambient temperature T_a			
Connection cables		Controller	
		Ethernet	

Accessories

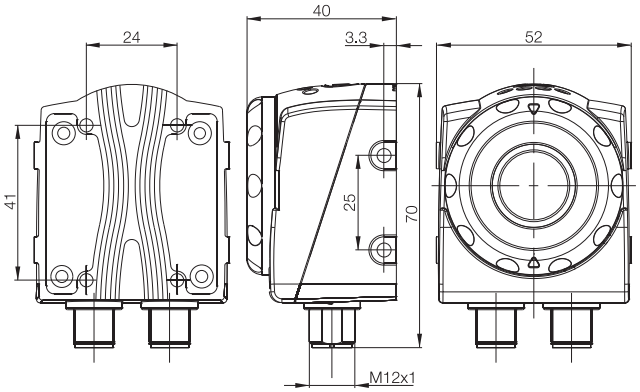
Connection cables	Controller	
	Ethernet	
Vision Sensor Monitor		
Lights		
Mounting accessories		
Power supply units		

Information on optics and electrical systems, see **starting on page 404.**
To determine the field of view and working distance, please use the distance computer under: **www.balluff.de/vision**

Take advantage of the added-value kits. You can receive the vision sensor BVS E in your desired design, with software CD, user's guide, mounting bracket, installation accessories and connection and parameterization cable. Additional information on this can be found **starting on page 373.**




	Vision sensor	Vision sensor	Vision sensor	Vision sensor
	BVS E **Universal**	BVS E **Universal**	BVS E **Universal**	BVS E **Universal**
	Wide-angle lens, 6 mm	Standard lens, 8 mm	Telephoto lens, 12 mm	Telephoto lens, 16 mm
	BVS001L	**BVS001M**	**BVS001N**	**BVS001P**
	BVS UR-3-005-E	BVS UR-3-001-E	BVS UR-3-003-E	BVS UR-3-007-E
	BVS001F	**BVS001H**	**BVS001J**	**BVS001K**
	BVS UR-3-105-E	BVS UR-3-101-E	BVS UR-3-103-E	BVS UR-3-107-E
	24 V DC ±10%	24 V DC ±10%	24 V DC ±10%	24 V DC ±10%
	1× trigger	1× trigger	1× trigger	1× trigger
	1× lighting synchronization or 1× PNP, 2× PNP	1× lighting synchronization or 1× PNP, 2× PNP	1× lighting synchronization or 1× PNP, 2× PNP	1× lighting synchronization or 1× PNP, 2× PNP
	RS232, Ethernet TCP/IP	RS232, Ethernet TCP/IP	RS232, Ethernet TCP/IP	RS232, Ethernet TCP/IP
	100 mA	100 mA	100 mA	100 mA
	Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T	Ethernet 10/100 Base T
	ConVis for Windows	ConVis for Windows	ConVis for Windows	ConVis for Windows
	3...40 Hz (depending on processing function)	3...40 Hz (depending on processing function)	3...40 Hz (depending on processing function)	3...40 Hz (depending on processing function)
	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480	CMOS-SW-VGA 640×480
	50...1000 mm	50...1000 mm	50...1000 mm	180...1000 mm (red light), 230...1000 mm (infrared)
	34×25 mm	24×18 mm	16×12 mm	–
	170×128 mm	120×90 mm	80×60 mm	60×45 mm
	338×253 mm	240×180 mm	160×120 mm	120×90 mm
	676×507 mm	480×360 mm	320×240 mm	240×180 mm
	LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable	LED, incident light, deselectable
	Exempt group	Exempt group	Exempt group	Exempt group
	IP 54	IP 54	IP 54	IP 54
	–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C
	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin	M12 male, 8-pin
	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
	See page 374	See page 374	See page 374	See page 374
	See page 375	See page 375	See page 375	See page 375
	See page 372	See page 372	See page 372	See page 372
	See page 380...397	See page 380...397	See page 380...397	See page 380...397
	See page 398...403	See page 398...403	See page 398...403	See page 398...403
	See page 352...353	See page 352...353	See page 352...353	See page 352...353



BVS E Vision Sensor Monitor

See what the sensor sees

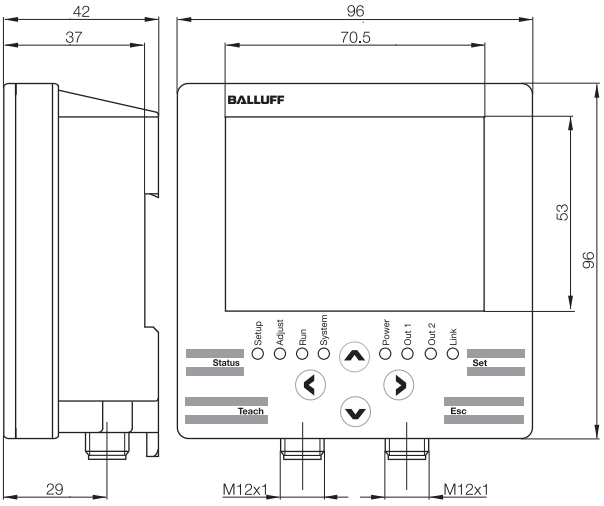
Use Vision Sensor Monitor to see what the sensor is seeing. And increase your inspection quality using statistical values. The monitor makes it easy for you to adapt inspections to part changes. The Vision Sensor Monitor visualizes sensor images and inspection results, showing the process statistics in an overview graphic. This lets you quickly detect unwanted deviations.
If an inspection feature changes, such as a sell-by date, authorized users can then adapt the inspection criteria even without a PC or long configuration. This also makes it possible to switch the monitor between two inspections quickly. The monitor's simple, intuitive user interface can be controlled by operating buttons and is available in multiple languages.

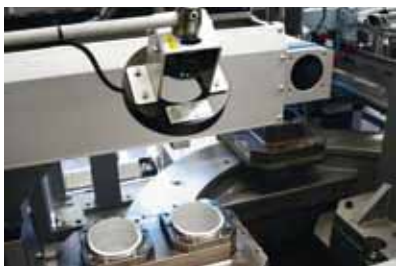
- Easy and self-explanatory operation
- Can be retrofitted on all existing sensors
- Clearly arranged presentation of process statistics and sensor results
- Access for operators, technicians and administrators can be restricted using passwords
- Memory for 20 inspections
- Connection to sensor via direct link or network (TCP/IP)

Model		Vision Sensor Monitor
Type		BVS E
PNP	**Order code**	**BAE00EH**
	Part number	BAE PD-VS-002-E
Supply voltage U_S		24 V DC ±10%
Dimensions		96×96×42.4 mm
Connection		2× M12 male, 4-pin
Degree of protection per IEC 60529		IP 40
Ambient temperature T_a		–10...+55 mm
Display		3.5" color LCD display

Accessories

Connection cable for controller	See page 374
Connection cable BVS	See page 375
Protective cover	See page 401
Mounting accessories	See page 399





Sensors and accessories – neatly packed

Description			Added-Value Kit with Vision Sensor BVS E	
			Includes red light sensor	**Includes infrared sensor**
Standard series	6-mm lens	**Order code**	**SET012P**	**SET0121**
		Part number	BAV BP-PH-00022-01	BAV BP-PH-00068-01
	8-mm lens	**Order code**	**SET012M**	**SET0122**
		Part number	BAV BP-PH-00020-01	BAV BP-PH-00069-01
	12-mm lens	**Order code**	**SET012N**	**SET0123**
		Part number	BAV BP-PH-00021-01	BAV BP-PH-00070-01
Advanced series	6-mm lens	**Order code**	**SET012U**	**SET0124**
		Part number	BAV BP-PH-00025-01	BAV BP-PH-00071-01
	8-mm lens	**Order code**	**SET012R**	**SET0125**
		Part number	BAV BP-PH-00023-01	BAV BP-PH-00073-01
	12-mm lens	**Order code**	**SET012T**	**SET0126**
		Part number	BAV BP-PH-00024-01	BAV BP-PH-00074-01
	16-mm lens	**Order code**	**SET012W**	**SET0127**
		Part number	BAV BP-PH-00026-01	BAV BP-PH-00075-01
Identification series	6-mm lens	**Order code**		**SET0128**
		Part number		BAV BP-PH-00076-01
	8-mm lens	**Order code**	**SET012J**	**SET0129**
		Part number	BAV BP-PH-00017-01	BAV BP-PH-00077-01
	12-mm lens	**Order code**	**SET012K**	**SET012A**
		Part number	BAV BP-PH-00018-01	BAV BP-PH-00078-01
	16-mm lens	**Order code**	**SET012L**	**SET012C**
		Part number	BAV BP-PH-00019-01	BAV BP-PH-00079-01
Universal series	6-mm lens	**Order code**	**SET014U**	**SET0150**
		Part number	BAV BP-PH-00092-03	BAV BP-PH-00092-07
	8-mm lens	**Order code**	**SET014R**	**SET014Y**
		Part number	BAV BP-PH-00092-01	BAV BP-PH-00092-05
	12-mm lens	**Order code**	**SET014T**	**SET014Z**
		Part number	BAV BP-PH-00092-02	BAV BP-PH-00092-06
	16-mm lens	**Order code**	**SET014W**	**SET0151**
		Part number	BAV BP-PH-00092-04	BAV BP-PH-00092-08
Contents			Vision sensor, mounting bracket, installation accessories, connector, software CD and user's guides	

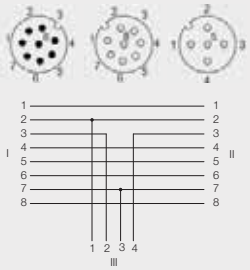
Your BVS vision sensor has been delivered with a connection cable – as requested. During initial operation, however, you determine that you need parameterization cables and mounting brackets as well. An Added-Value Kit provides you with all components and accessory parts in one order item.

An Added-Value Kit includes

- A vision sensor in your desired design
- Software CD
- User's guide
- Mounting bracket
- Mounting accessories
- Supply cable
- Parameterization cable

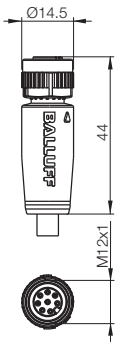
Now all you need to do is connect the vision sensor to a 24 V power supply. If you do not happen to have a power supply unit, needless to say we can also supply you with one.

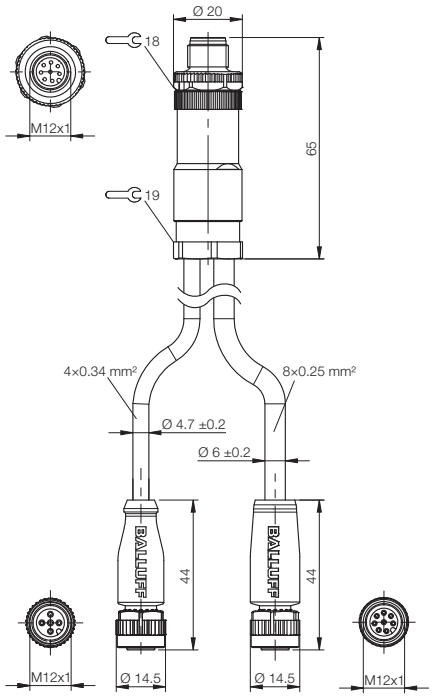
Connectors and connecting cables for vision sensors BVS E, BVS monitor and lights

Connector diagram and wiring		
Type	M12 female, straight	M12 male, straight/2× M12 female, straight
Max. operating voltage U_O	60 V DC	30 V DC
Number of conductors × conductor cross-section	8×0.25 mm²	4×0.34 mm²/8×0.25 mm²
Degree of protection per IEC 60529	IP 67	IP 67
Ambient temperature $T_a$static/moving	–25...+80 °C/–50...+80 °C	–25...+80 °C/–25...+80 °C
Use	Connection cable for BVS E	Connection cable for BVS E and light
Special properties	Drag chain compatible	

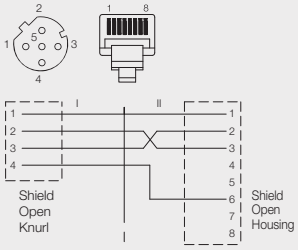
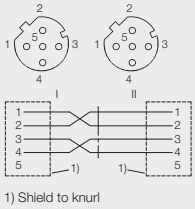
Cable material	Length	Order code Part number	
PUR	0.4 m		**BCC0H0J** BCC M438-M418-M415-U2059-004
PUR shielded	2 m	**BCC0994** BCC M418-0000-1A-046-PS0825-020	
PUR shielded	5 m	**BCC0995** BCC M418-0000-1A-046-PS0825-050	
PUR shielded	10 m	**BCC0996** BCC M418-0000-1A-046-PS0825-100	
PUR shielded	20 m	**BCC09HL** BCC M418-0000-1A-046-PS0825-200	
PUR shielded	40 m	**BCC0AT8** BCC M418-0000-1A-046-PS0825-400	

Other cable materials, colors and lengths on request.



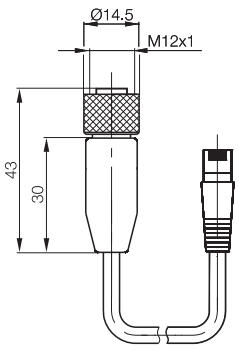


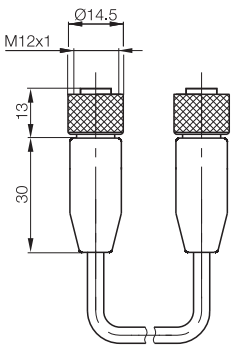
Connectors and connecting cables for vision Sensors BVS E, BVS monitor and lights

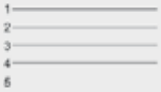
Connector diagram and wiring		
Type	M12 female, straight / RJ45	M12 female, straight / M12 female, straight
Max. operating voltage U_O	60 V DC	250 V DC
Number of conductors × conductor cross-section	4×0.34 mm²	5×0.34 mm²
Degree of protection per IEC 60529	IP 67/IP 20	IP 67
Ambient temperature T_a static/moving	–40...+80 °C/–60...+80 °C	–40...+80 °C/–60...+80 °C
Use	Parameterization cable for BVS E	Connection cable BVS E and BVS Monitor

Cable material	Length	Order code	
		Part number	
TPE	1.5 m	**BCC0E7P**	
		BCC M415-E834-AG-672-ES64N8-015	
TPE	2 m		**BCC0ANA**
			BCC M415-M415-5D-687-ES64N8-020
TPE	3 m	**BCC0E7R**	
		BCC M415-E834-AG-672-ES64N8-030	
TPE	5 m	**BCC0E7T**	**BCC0ANC**
		BCC M415-E834-AG-672-ES64N8-050	BCC M415-M415-5D-687-ES64N8-050
TPE	10 m	**BCC0E7U**	
		BCC M415-E834-AG-672-ES64N8-100	
TPE	15 m	**BCC0E7W**	
		BCC M415-E834-AG-672-ES64N8-150	
TPE	20 m	**BCC0E7Y**	
		BCC M415-E834-AG-672-ES64N8-200	

Other cable materials, colors and lengths on request.

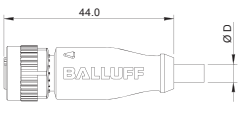


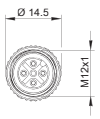


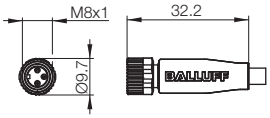
Connector diagram and wiring		 PIN 1: brown PIN 2: white PIN 3: blue PIN 4: black  	 PIN 1: brown PIN 3: blue PIN 4: black  
Type		M12 female, straight	M8 female, straight
Max. operating voltage U_O		250 V DC	60 V DC
Number of conductors × conductor cross-section		4×0.34mm²	3×0.34 mm²
Degree of protection per IEC 60529		IP 68	IP 67
Ambient temperature T_a	PUR	–40...90 °C/–25...90 °C (UL 80 °C)	–25...+90 °C/–25...+90 °C (UL 80 °C)
Static/moving	PVC	–40...105 °C/–5...105 °C (UL 80 °C)	–40...105 °C/–5...105 °C (UL 80 °C)
Use		Connection cables for BVS Monitor and lights	Connection cables for coaxial lighting
Special properties		Drag chain compatible	Drag chain compatible

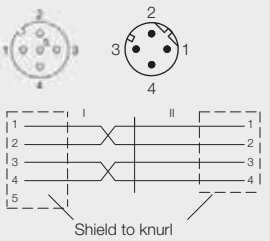
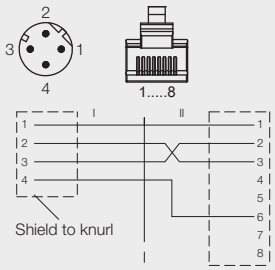
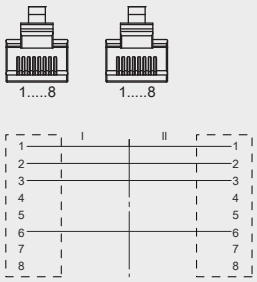
Cable material	Length		
PUR	2 m	**BCC032F**	**BCC02M8**
		BCC M415-0000-1A-003-PX0434-020	BCC M313-0000-10-001-PX0334-020
PUR	5 m	**BCC032H**	**BCC02M9**
		BCC M415-0000-1A-003-PX0434-050	BCC M313-0000-10-001-PX0334-050
PUR	10 m	**BCC032J**	**BCC02MA**
		BCC M415-0000-1A-003-PX0434-100	BCC M313-0000-10-001-PX0334-100
PVC	2 m	**BCC0367**	**BCC02NU**
		BCC M415-0000-1A-003-VX8434-020	BCC M313-0000-10-001-VX8334-020
PVC	5 m	**BCC0368**	**BCC02NW**
		BCC M415-0000-1A-003-VX8434-050	BCC M313-0000-10-001-VX8334-050
PVC	10 m	**BCC0369**	**BCC02NY**
		BCC M415-0000-1A-003-VX8434-100	BCC M313-0000-10-001-VX8334-100

Other cable materials, colors and lengths on request.



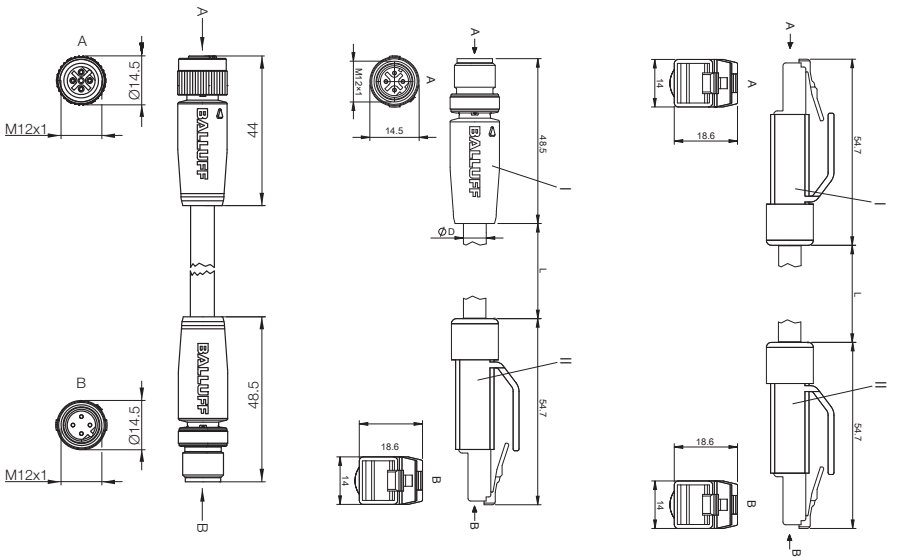




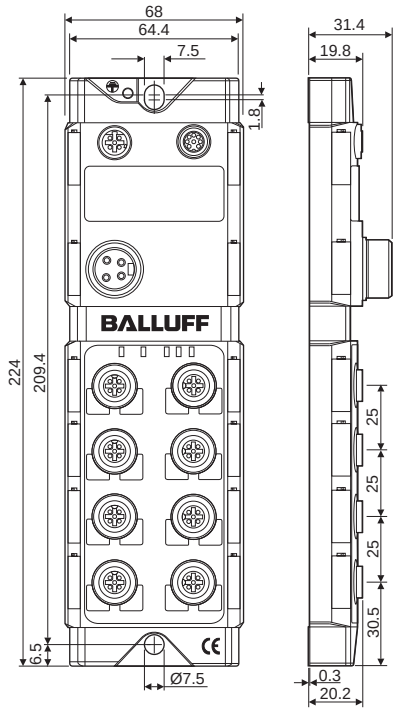
Connector diagram and wiring			
Supply voltage U_S	60 V AC/DC	60 V AC/DC	60 V AC/DC
Data transmission rate	Cat. 5e	Cat. 5e	Cat. 5e
No. of conductors × conductor cross-section	2×2×24 AWG	2×2×24 AWG	2×2×24 AWG
Degree of protection per IEC 60529	IP 67	IP 67/IP 20	IP 20/IP 20
Ambient temperature T_a	–25…+70 °C	–25…+70 °C	–25…+70 °C

Cable material	Color	Length			
TPE shielded	blue-green	0.6 m		**BCC0CZA**	**BCC0CZJ**
				BCC M414-E834-8G-672-ES64N9-006	BCC E834-E834-90-339-ES64N9-006
TPE shielded	blue-green	2 m	**BCC0FEU**	**BCC0CZC**	**BCC0CZK**
			BCC M415-M414-3D-687-ES64N8-052	BCC M414-E834-8G-672-ES64N9-020	BCC E834-E834-90-339-ES64N9-020
TPE shielded	blue-green	5 m	**BCC0FEW**	**BCC0CZE**	**BCC0CZL**
			BCC M415-M414-3D-687-ES64N8-050	BCC M414-E834-8G-672-ES64N9-050	BCC E834-E834-90-339-ES64N9-050
TPE shielded	blue-green	10 m		**BCC0CZF**	**BCC0CZM**
				BCC M414-E834-8G-672-ES64N9-100	BCC E834-E834-90-339-ES64N9-100
TPE shielded	blue-green	15 m		**BCC0CZH**	**BCC0CZN**
				BCC M414-E834-8G-672-ES64N9-150	BCC E834-E834-90-339-ES64N9-150

Other cable materials, colors and lengths on request.



Communication	Unmanaged Switch
Design	No display
Order code	**BNI000F**
Part number	BNI EIP-950-000-Z009
Supply voltage U_S	24 V DC
Module current consumption	80...100 mA
Module status indicator: Mod LED	Yes
Network status indicator: Net LED	Yes
Network data transfer rate: link LED	Yes
Port status indicator	Black, red, yellow, green
Connection: Fieldbus	M12 female, D-coded
Connection: AUX power	7/8" male, 4-pin
Number of Ethernet ports	9
Degree of protection per IEC 60529	IP 67
Operating temperature	0...+55 °C
Storage temperature	–25...+70 °C
Housing material	Cast zinc, coated
Transfer rates	10/100 Mbps, automatic detection, full-duplex
Degree of protection	IP 67
Max. switching frequency	32 gigabyte
Overload protection	IEEE 802.3
IP address space	IPv4
Approvals	ODVA, UL-CUL, CSA, CE

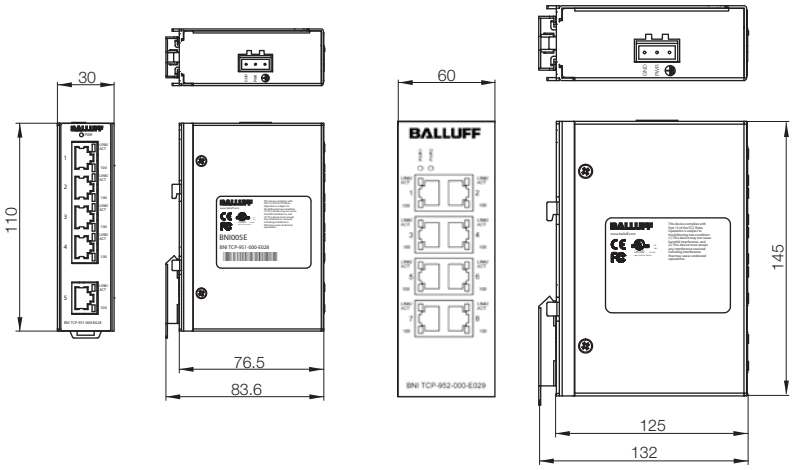


Ethernet 5-port switch IP 20
Ethernet 8-port switch IP 20
Ethernet 9-port switch IP 67
Balluff provides a wide variety of Ethernet-based systems and network components such as Profinet or Ethernet/IP for machine and plant equipment.

With Balluff, you receive a complete system so that you can use Ethernet to link Ethernet system components easily. The Ethernet product line was expanded with the addition of 5-port and 8-port Ethernet switches for this reason.

The switch makes it possible to connect 5-port and 8-port Ethernet devices to a component radially. The RJ45 ports and the 10 and 100 Mbps transmission rates support this. The transfer speed is automatically set via the auto-negotiation function. Wiring errors are reliably ruled out by the autocrossing function. This is because the module does not identify on its own what type of cable is being used.

Communication	Ethernet	Ethernet
Design	Ethernet switch	Ethernet switch
Order code	**BNI005E**	**BNI0067**
Part number	BNI TCP-951-000-E028	BNI TCP-952-000-E029
Ports	5× RJ-45 spring force clamp	8× RJ-45 spring force clamp
System power supply	0.2...2.5 mm²	0.2...2.5 mm²
Supply voltage U_S	12...48 V DC	2×12...30 V DC, redundant
Transfer rate	10/100 Mbps full duplex Auto crossing	10/100 Mbps full duplex Auto crossing
Operating modes	Auto negotiation	Auto negotiation
Communication status	Link/run LED, (yellow/green)	Link/run LED, (yellow/green)
Supply voltage	LED (green), power	LED (green), power
Degree of protection	IP 20	IP 20
Housing	Black plastic	Black plastic
Temperature range	–10...+60 °C (storage temperature –25...+70 °C)	–10...+60 °C (storage temperature –25...+70 °C)
Fastening	Snaps onto mounting rail TH35 (EN60715)	Snaps onto mounting rail TH35 (EN60715)
Weight	152 g	363 g

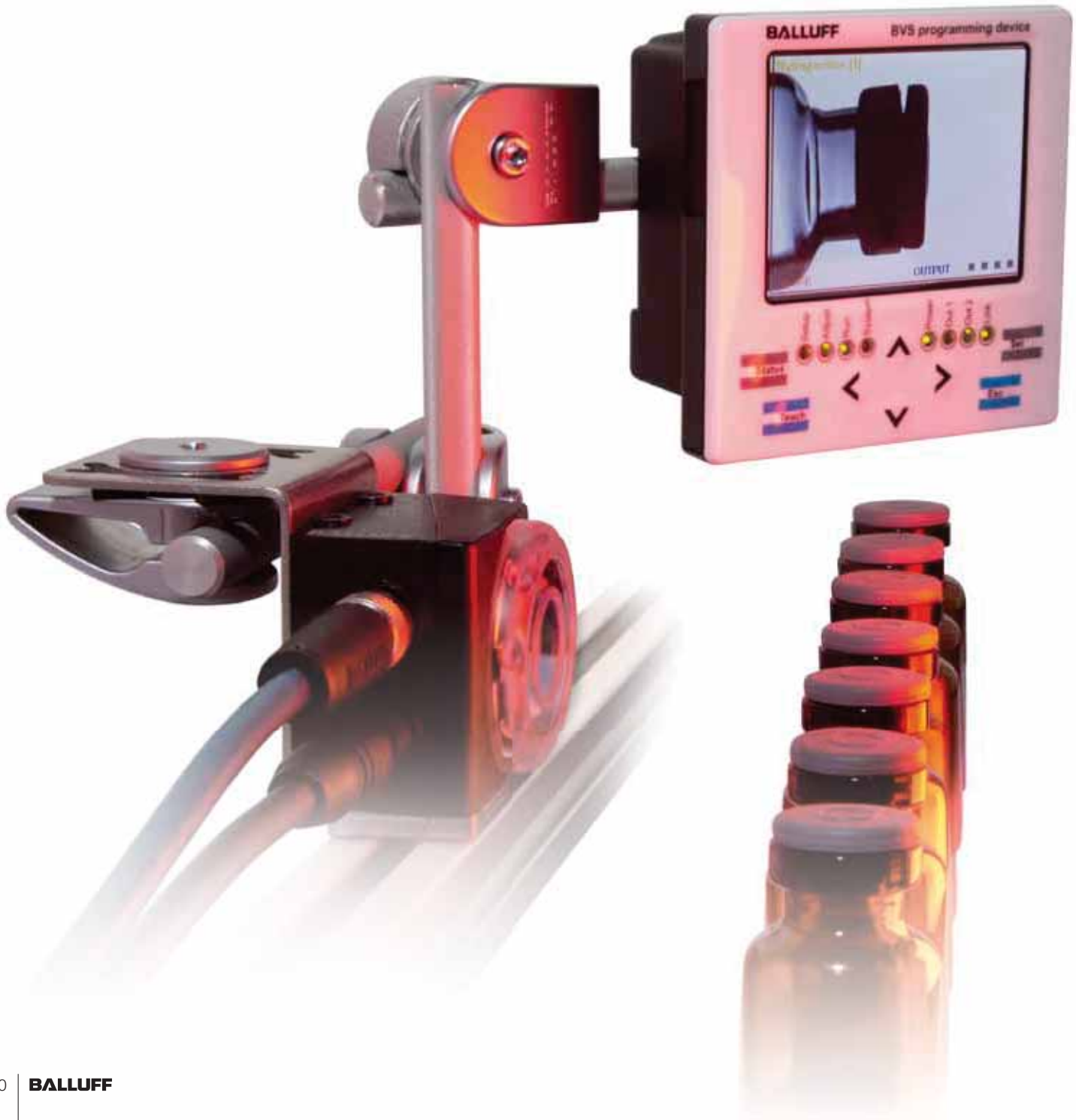


Accessories for Vision Sensors BVS E
Lights

Lights used in an industrial environment depend on maximum reliability, outstanding quality and a good price/performance ratio. Balluff offers different versions of light to suit your needs. Select the optimal solution for your task and benefit from our mature technology.

Available variants

- Background lights
- Line lights
- Ring lights
- Spotlights
- Dark field light
- Coaxial Lights
- Line lasers



Highest quality
Our wide range of lights is subject to strict quality standards. The lights are protected against damage, for instance, from voltage pulses on the connection cable or static discharges (ESD). EMC tests performed by an accredited testing laboratory have proven this.

Eye safety in accordance with IEC 62471
Strong visual radiation, such as from LEDs, can impair your vision. Therefore our lights are tested by an independent, certified test center according to the latest standard (IEC 62471). All of our lights come under the “Exempt group” or “Risk group 1” and are therefore considered extremely safe. By comparison: the sun falls into risk group 3.

Fast and easy mounting
All lights are quick, easy and economical to mount and align with the Balluff Mounting System BMS.

Long service life
We only install extremely luminous LEDs of the highest quality in our lights. Our extremely luminous ring and Line lights are equipped with an excess temperature deactivation mechanism to extend the useful life of an LED,

Simple startup
You only need a conventional 24 V power supply to connect our lights. Expensive control units are not required. Our background lights and dark field lights need only to be connected to a 24 V DC power supply. Ring and Line lights are triggered directly by the Vision Sensor or a PLC.

Boost function
The ring lights and linear lights have a boost function with 30% higher light intensity, which reduces the influence of ambient light. Overall process reliability is increased as a result.

Selecting the right lights
Image processing always depends on the right lighting. Balluff provides a broad range of additional lighting. Only optimal lighting can provide an optimum solution for your application.

What should the distance between the light and the component be?
The intensity of illumination on an object decreases dramatically with the working distance. Therefore objects that are farther away appear darker than closer objects. A bright object should be inspected, for example, once at a distance of 10 cm and once at 100 cm. The brightness of the object at 10 cm is 100 times greater than at a distance of 100 cm. Select the optimum distance between the light source, sensor and target object. In order to prevent saturation, make sure that the brightness of the light source is correct.

How should reflective components be illuminated?
When inspecting highly reflective surfaces, the sensor must be mounted with extreme care. If necessary, attach an external light to a suitable bracket in order to maximize the contrast between the object to be detected and the background.

How can the illumination of the part to be inspected be kept constant?
Avoid fluctuations in brightness due to ambient light, sunlight or other external light sources. These fluctuations are the most frequent cause of errors in image processing and are difficult to identify. Errors can be limited by decreasing the exposure time of the sensor. External lighting may be required in addition to the light inside the sensor. Alternative solutions include covers or any kind of physical screen that specifically controls the light within the inspection area.

How should the field of view be illuminated?
The entire image area should be illuminated as evenly as possible. Avoid extremely bright points or dark areas. The component features you wish to inspect should, however, contrast as much as possible and show up clearly on the background. If you want to check for the presence of a certain feature, you can illuminate the component so that a clear shadow is cast upon the function to be identified. The Vision Sensor can then detect the feature.

Background lights
- Simple monitoring of dimensions and shapes
- Independent of material and surface type
- Various light field sizes available

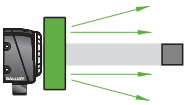
With the transmitted light method, the backlighting is positioned behind the object you wish to detect. The vision sensor only detects the outline of the object based on this position and allows you to monitor part dimensions or shapes extremely easily. Extraneous light also poses no problems. Changes in the surface (markings, color, etc.) can be suppressed almost completely and have no influence on the test result. Our backlights are particularly bright and versatile. Therefore, they are also very suitable as diffuse incident lights to illuminate highly reflective components. Due to the extremely flat design, they are ideal for use in applications with limited space.

From page 384

Line lights
- Homogeneous, targeted light
- Generate shadows to check features
- Available with red, infrared and white light

Line lights generate a uniform and efficient light that illuminates the image area and are suitable for direct illumination If used to illuminate from the side, diffuse reflections and shadows can be produced. The diffuse reflection generates more uniform illumination without shiny areas. The shadows generated allow you to check the presence or absence of features on the object more easily.

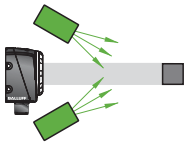
From page 390



Ring lights
- Compatible mounting bracket for sensor and light
- Shadow-free illumination with very high brightness
- For inspections with a large working distance

Ring lights are used as additional incident lights. The design of the light and powerful integral LEDs ensure virtually shadow free illumination with a high degree of intensity. Ring lights are highly recommended for applications where the distance between the BVS and the detected object is greater than 300 mm. Due to the high intensity of the light they generate, these lights can also be used to suppress influences from changing ambient light. The ring light can be fitted and aligned together with the vision sensor using our mounting bracket adapted to the Balluff Mounting System. As an accessory, we offer a diffuser attachment This prevents strong reflections, for example, on shiny components.

From page 392



Spotlights
- Pinpoint lighting
- Achieve greater inspection distances
- Available with red light and infrared

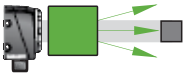
Spotlights are used to illuminate areas with the best accuracy. Spotlights make it possible to implement larger inspection distances.
Unlike ring lights, spotlights can be attached in any position. They swivel the light to the area requiring illumination.

From page 393

Dark field light
- Inspection of scratches and dents in surfaces
- Independent of material and surface type
- Various light field sizes available

Dark field lighting lets you illuminate scratches, dents and impurities on surfaces extremely well. The dark field light must be attached to the detection object at a distance of 10…20 mm so that the surfaces on the component can be inspected. If the diameter of the dark field is insufficient, two or more linear lights can also be installed to implement this type of illumination.

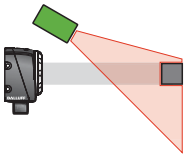
From page 394



Coaxial lights
- Very homogeneous illumination
- For highly reflective surfaces
- For inspection of labels and dot-peen codes

Coaxial lighting is used if the industrial image processing system requires diffuse light, for example, to illuminate highly reflective surfaces uniformly and prevent reflections.

From page 395



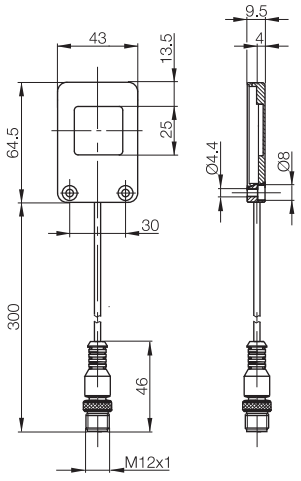
Line laser
- Bright, zoomable line laser up to 2000 mm
- For height detection of parts with triangulation
- For checking completeness of parts

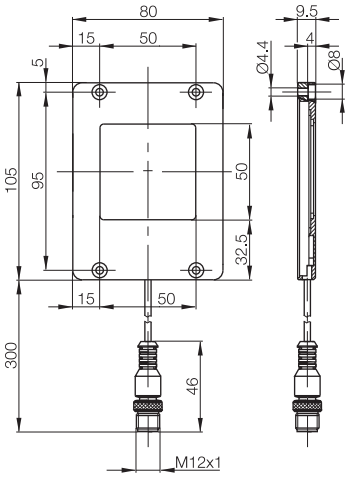
Line lasers are used in industrial image processing and for aligning and positioning workpieces or accessories. The combination of laser lighting and image processing provides interesting options for automating visual quality control.

From page 396

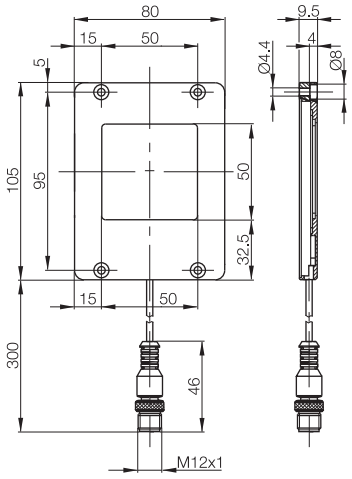
Model	BAE LX-VS	BAE LX-VS
Design	**Background light**	**Background light**
Light type	Red light	Red light
Order code	**BAE000E**	**BAE000F**
Part number	BAE LX-VS-HR025	BAE LX-VS-HR050
Supply voltage U_S	24 V DC	24 V DC
Operating current	150 mA	250 mA
Trigger	No	Yes
Light field size	25×25 mm	50×50 mm
Emitter, light type	LED, red light	LED, red light
Wavelength	617 Nm	617 Nm
Dimension	64.5×43×9.5 mm	105×80×9.5 mm
Fastening	M4 screws	M4 screws
Connection	M12 male, 4-pin	M12 male, 4-pin
Housing material	Anodized aluminum	Anodized aluminum
Optical surface	Glass	Glass
Weight	66 g	155 g
Degree of protection per IEC 60529	IP 54	IP 54
Eye safety per IEC 62471	Exempt group	Exempt group
Ambient temperature T_a	–10...+55 °C	–10...+55 °C
Storage temperature	–25...+75 °C	–25...+75 °C

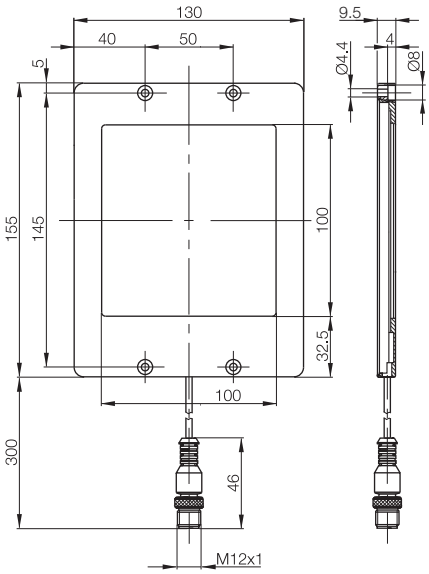
Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.

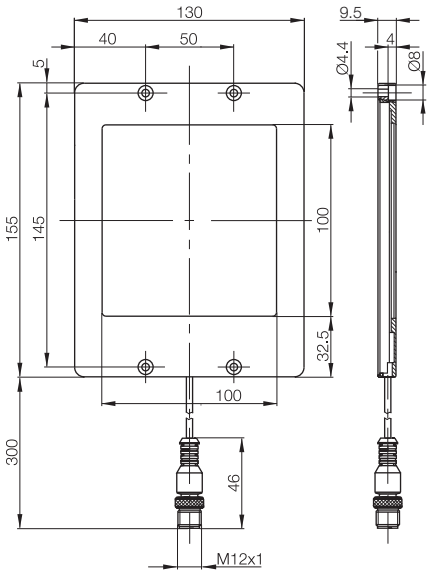




	BAE LX-VS	BAE LX-VS	BAE LX-VS
	Background light	**Background light**	**Background light**
	Infrared	Red light	Infrared
	BAE00KR	**BAE000H**	**BAE00FR**
	BAE LX-VS-HI050	BAE LX-VS-HR100	BAE LX-VS-HI100
	24 V DC	24 V DC	24 V DC
	350 mA	400 mA	625 mA
	Yes	Yes	Yes
	50×50 mm	100×100 mm	100×100 mm
	LED, infrared	LED, red light	LED, infrared
	875 Nm	617 Nm	875 Nm
	105×80×9.5 mm	155×130×9.5 mm	155×130×9.5 mm
	M4 screws	M4 screws	M4 screws
	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
	Anodized aluminum	Anodized aluminum	Anodized aluminum
	Glass	Glass	Glass
	155 g	345 g	345 g
	IP 54	IP 54	IP 54
	Risk group 1	Exempt group	Risk group 1
	–10...+55 °C	–10...+55 °C	–10...+55 °C
	–25...+75 °C	–25...+75 °C	–25...+75 °C

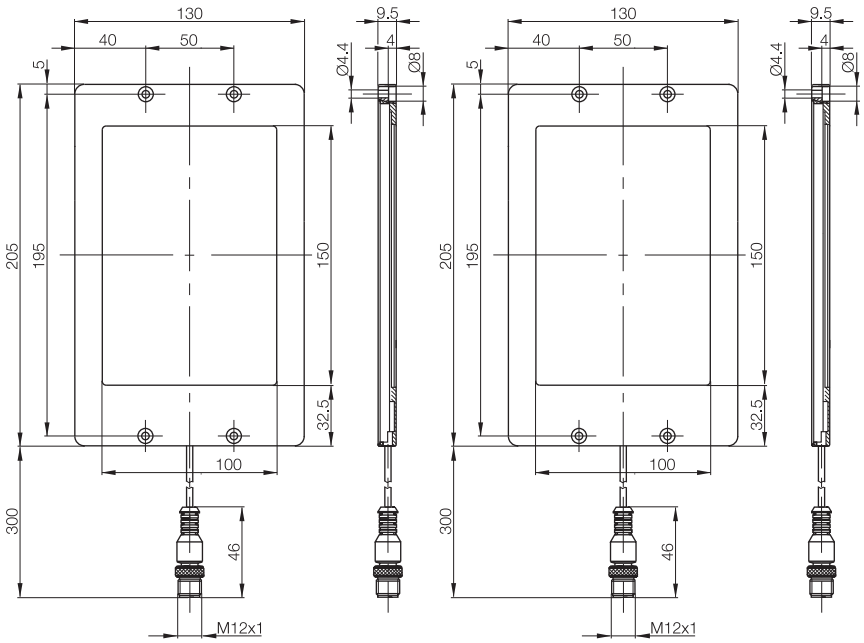




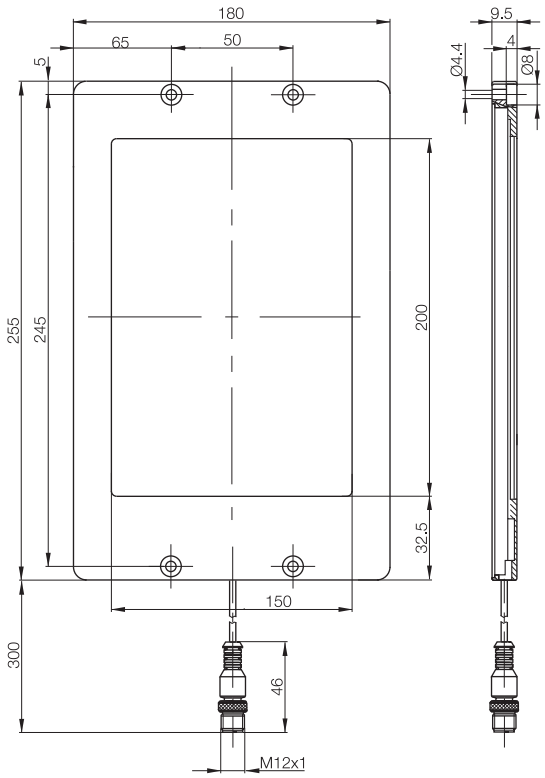


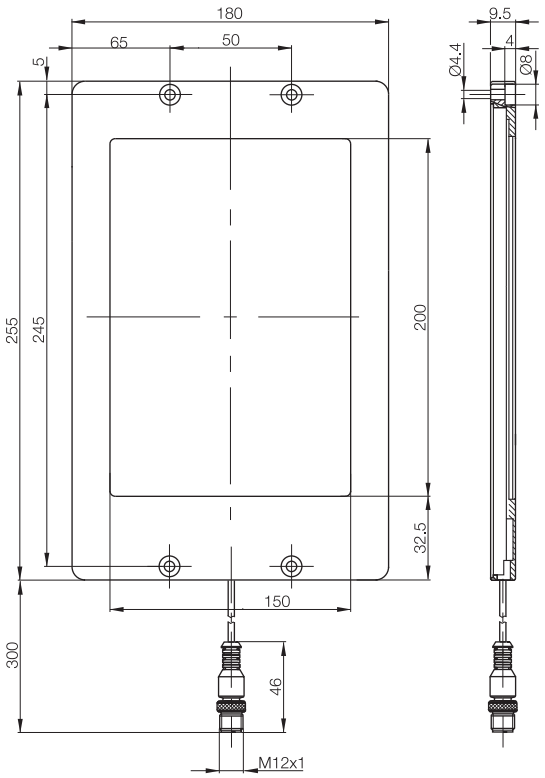
Model	BAE LX-VS	BAE LX-VS	
Design	**Background light**	**Background light**	
Light type	Red light	Infrared	
Order code	**BAE00C5**	**BAE00KP**	
Part number	BAE LX-VS-HR150	BAE LX-VS-HI150	
Supply voltage U_S	24 V DC	24 V DC	
Operating current	500 mA	800 mA	
Trigger	Yes	Yes	
Light field size	150×100 mm	150×100 mm	
Emitter, light type	LED, red light	LED, infrared	
Wavelength	617 Nm	875 Nm	
Dimension	205×130×9.5 mm	205×130×9.5 mm	
Fastening	M4 screws	M4 screws	
Connection	M12 male, 4-pin	M12 male, 4-pin	
Housing material	Anodized aluminum	Anodized aluminum	
Optical surface	Glass	Glass	
Weight	435 g	435 g	
Degree of protection per IEC 60529	IP 54	IP 54	
Eye safety per IEC 62471	Exempt group	Risk group 1	
Ambient temperature T_a	–10...+55 °C	–10...+55 °C	
Storage temperature	–25...+75 °C	–25...+75 °C	

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.



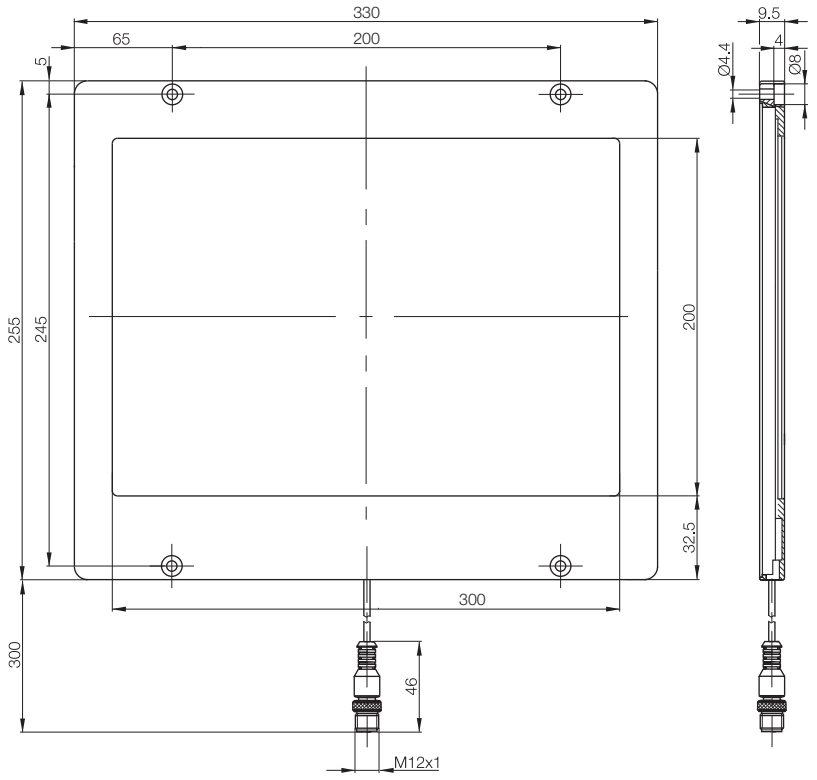
	BAE LX-VS	BAE LX-VS
	Background light	**Background light**
	Red light	Infrared
	BAE00JC	**BAE00JE**
	BAE LX-VS-HR200	BAE LX-VS-HI200
	24 V DC	24 V DC
	800 mA	625 mA
	Yes	Yes
	200×150 mm	200×150 mm
	LED, red light	LED, infrared
	617 Nm	875 Nm
	255×180×9.5 mm	255×180×9.5 mm
	M4 screws	M4 screws
	M12 male, 4-pin	M12 male, 4-pin
	Anodized aluminum	Anodized aluminum
	Glass	Glass
	730 g	730 g
	IP 54	IP 54
	Exempt group	Risk group 1
	–10...+55 °C	–10...+55 °C
	–25...+75 °C	–25...+75 °C

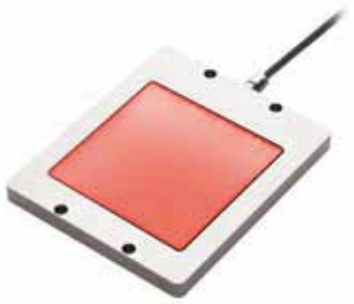




Model	BAE LX-VS
Design	**Background light**
Light type	Red light
Order code	**BAE00MU**
Part number	BAE LX-VS-HR300
Supply voltage U_S	24 V DC
Operating current	1000 mA
Trigger	Yes
Light field size	300×200 mm
Emitter, light type	LED, red light
Wavelength	617 Nm
Dimension	330×225×9.5 mm
Fastening	M4 screws
Connection	M12 male, 4-pin
Housing material	Anodized aluminum
Optical surface	Glass
Weight	1300 g
Degree of protection per IEC 60529	IP 54
Eye safety per IEC 62471	Exempt group
Ambient temperature T_a	–10...+55 °C
Storage temperature	–25...+75 °C

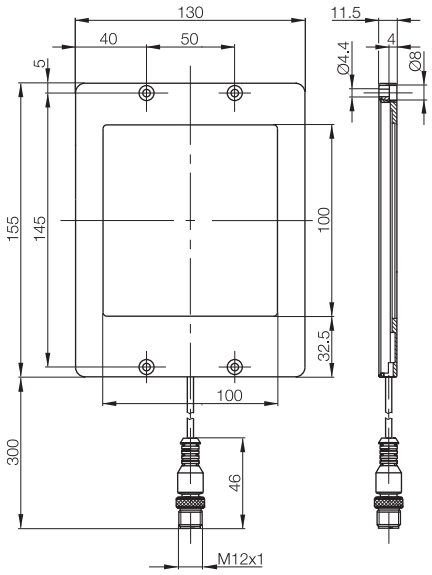
Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.

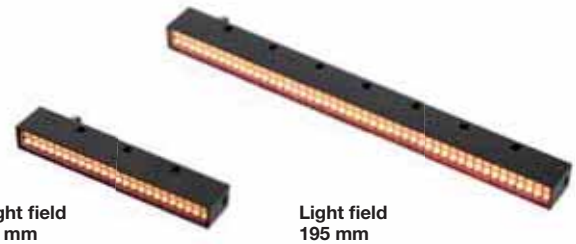




Model	BAE LX-VS
Design	**Background light IP 69K**
Light type	Red light
Order code	**BAE00JF**
Part number	BAE LX-VS-HR100-E
Supply voltage U_S	24 V DC
Operating current	400 mA
Trigger	Yes
Light field size	100×100 mm
Emitter, light type	LED, red light
Wavelength	617 Nm
Dimension	155×130×9.5 mm
Fastening	M4 screws
Connection	M12 male, 4-pin
Housing material	Stainless steel
Optical surface	Glass
Weight	350 g
Degree of protection per IEC 60529	**IP 69K**
Eye safety per IEC 62471	Exempt group
Ambient temperature T_a	–10...+55 °C
Storage temperature	–25...+75 °C

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.





	Light field 95 mm	Light field 195 mm
Model	BAE LX-VS	BAE LX-VS
Design	**Strip light**	**Strip light**
Light type	Red light	Red light
Order code	**BAE00NT**	**BAE00NY**
Part number	BAE LX-VS-LR100-S26	BAE LX-VS-LR200-S26
Supply voltage U_S	24 V DC	24 V DC
Operating current Normal	170 mA	270 mA
Operating current Boost	375 mA	650 mA
Trigger	Yes	Yes
Mode Normal	Yes	Yes
Mode Boost	Yes	Yes
Light field size	10×95 mm	10×195 mm
Emitter, light type	LED, red light	LED, red light
Wavelength	617 Nm	617 Nm
Dimension	100×13×18 mm	200×13×18 mm
Fastening	M4 screws	M4 screws
Connection	M5 male, 4-pin (M5 to M12 connection cable included in scope of delivery)	M5 male, 4-pin (M5 to M12 connection cable included in scope of delivery)
Housing material	Anodized aluminum	Anodized aluminum
Optical surface	Glass	Glass
Weight	47 g	95 g
Degree of protection per IEC 60529	IP 54	IP 54
Eye safety per IEC 62471 Normal	Exempt group	Exempt group
Eye safety per IEC 62471 Boost	Exempt group	Exempt group
Ambient temperature T_a	–10...+55 °C	–10...+55 °C
Storage temperature	–25...+75 °C	–25...+75 °C

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.

Linear lights BAE in IP 54 can be used with a large degree of flexibility. Thanks to their nearly borderless design, they can be strung together into any length you need. This makes it possible to easily illuminate even very large parts. The installation concept makes it possible to stack linear lights on top of each other seamlessly. In addition, they can be combined as quadratic or rectangular frames. As an additional useful feature, this makes it possible to individually configure the inclination angle of every light in the frame.

Description	Mounting bracket	Mounting bracket	Connectors
Use	For fastening with mounting system BMS	For frame installation of Line lights	For installing two Line lights
Order code	**BAM0277**	**BAM027R**	**BAM0278**
Part number	BMS CS-M-D12-BX17-11	BAM MB-XA-018-B11-4	BAM MB-XA-019-B11-4

Light field 95 mm

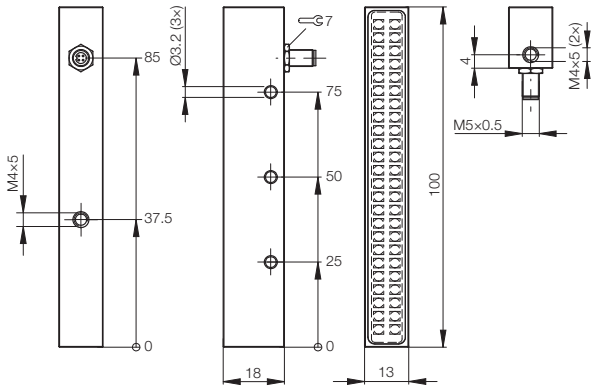
Light field 195 mm

Light field 95 mm

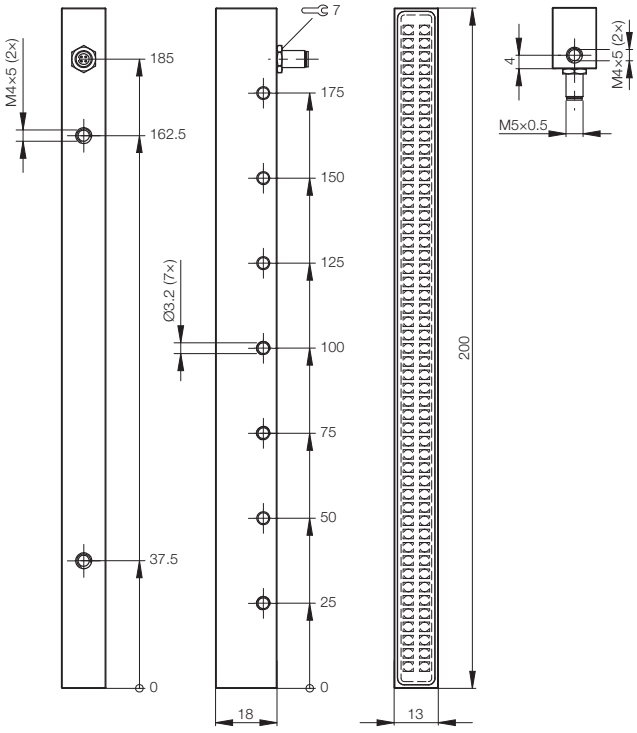
Light field 195 mm

	BAE LX-VS	BAE LX-VS	BAE LX-VS	BAE LX-VS
	Strip light	**Strip light**	**Strip light**	**Strip light**
	Infrared	Infrared	White light	White light
	BAE00NU	**BAE00NZ**	**BAE00NW**	**BAE00P0**
	BAE LX-VS-LI100-S26	BAE LX-VS-LI200-S26	BAE LX-VS-LW100-S26	BAE LX-VS-LW200-S26
	24 V DC	24 V DC	24 V DC	24 V DC
	160 mA	270 mA	100 mA	160 mA
	375 mA	700 mA	250 mA	450 mA
	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes
	10×95 mm	10×195 mm	10×95 mm	10×195 mm
	LED, infrared	LED, infrared	LED, white light	LED, white light
	875 Nm	875 Nm		
	100×13×18 mm	200×13×18 mm	100×13×18 mm	200×13×18 mm
	M4 screws	M4 screws	M4 screws	M4 screws
	M5 male, 4-pin (M5 to M12 connection cable included in scope of delivery)	M5 male, 4-pin (M5 to M12 connection cable included in scope of delivery)	M5 male, 4-pin (M5 to M12 connection cable included in scope of delivery)	M5 male, 4-pin (M5 to M12 connection cable included in scope of delivery)
	Anodized aluminum	Anodized aluminum	Anodized aluminum	Anodized aluminum
	Glass	Glass	Glass	Glass
	47 g	95 g	47 g	95 g
	IP 54	IP 54	IP 54	IP 54
	Exempt group	Exempt group	Exempt group	Exempt group
	Risk group 1	Risk group 1	Exempt group	Exempt group
	–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C
	–25...+75 °C	–25...+75 °C	–25...+75 °C	–25...+75 °C

Light field 95 mm

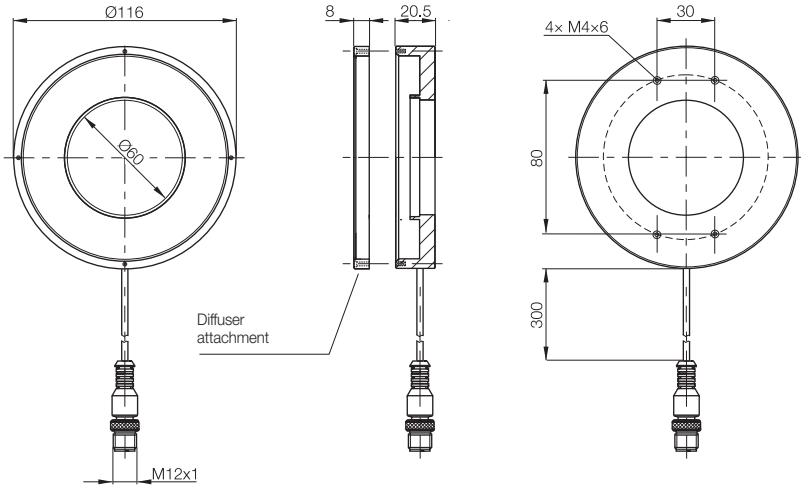


Light field 195 mm



Model		BAE LX-VS	BAE LX-VS	BAE LX-VS
Design		**Ring light**	**Ring light**	**Ring light**
Light type		Red light	Infrared	White light
Order code		**BAE000J**	**BAE000K**	**BAE00AN**
Part number		BAE LX-VS-RR100	BAE LX-VS-RI100	BAE LX-VS-RW100
Supply voltage U_S		24 V DC	24 V DC	24 V DC
Operating current	Normal	800 mA	600 mA	700 mA
	Boost	1300 mA	1300 mA	1200 mA
Trigger		Yes	Yes	Yes
Mode	Normal	Yes	Yes	Yes
	Boost	Yes	Yes	Yes
Light field size		Ø 100/60 mm	Ø 100/60 mm	Ø 100/60 mm
Emitter, light type		LED, red light	LED, infrared	LED, white light
Wavelength		617 Nm	875 Nm	
Dimension		Ø 116×20.5 mm	Ø 116×20.5 mm	Ø 116×20.5 mm
Fastening		M4 screws	M4 screws	M4 screws
Connection		M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
Housing material		Anodized aluminum	Anodized aluminum	Anodized aluminum
Optical surface		Glass	Glass	Glass
Weight		360 g	360 g	360 g
Degree of protection per IEC 60529		IP 65	IP 65	IP 65
Eye safety per IEC 62471	Normal	Exempt group	Risk group 1	Exempt group
	Boost	Exempt group	Risk group 1	Exempt group
Ambient temperature T_a		–10...+55 °C	–10...+55 °C	–10...+55 °C
Storage temperature		–25...+75 °C	–25...+75 °C	–25...+75 °C

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.

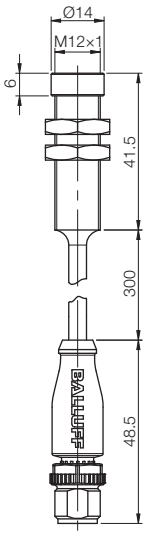


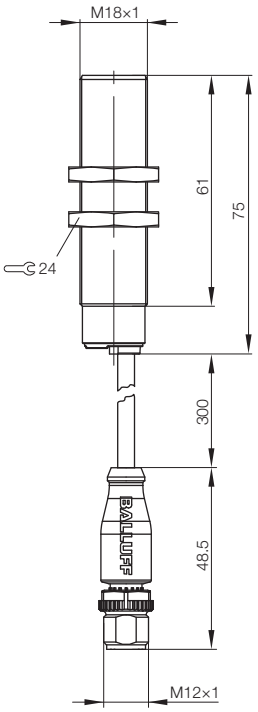
The **diffuser attachment** ensures even light without disturbing reflections in applications with reflective surfaces. The diffuser is made of high-quality glass and can be installed directly on the light.

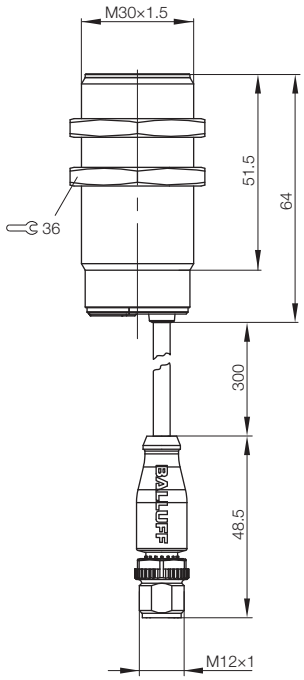
Description	Diffuser attachment
Use	For ring lights
Order code	**BAM01A7**
Part number	BAM OF-VS-001-D-RX100

Model		BAE LX-VS	BAE LX-VS	BAE LX-VS
Design		**Spotlight**	**Spotlight**	**Spotlight**
Light type		Red light	Red light, infrared	Red light, infrared
Red light	**Order code**	**BAE00KF**	**BAE00H0**	**BAE00FT**
	Part number	BAE LX-VS-SR012	BAE LX-VS-SR018	BAE LX-VS-SR030
Infrared	**Order code**		**BAE00H1**	**BAE00H2**
	Part number		BAE LX-VS-SI018	BAE LX-VS-SI030
Supply voltage U_S		24 V DC	24 V DC	24 V DC
Operating current		70 mA	85 mA	120 mA
Trigger			Yes	Yes
Light field size		Ø 12 mm	Ø 18 mm	Ø 30 mm
Emitter, light type	Red light	LED, red light	LED, red light	LED, red light
	Infrared		LED, infrared	LED, infrared
Wavelength	Red light	617 Nm	617 Nm	617 Nm
	Infrared		850 Nm	850 Nm
Dimension		M12×32.5 mm	M18×72 mm	M30×62 mm
Fastening		M12×1 nut	M18×1 nut	M30×1.5 nut
Connection		M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
Housing material		Stainless steel	Stainless steel	Stainless steel
Weight		45 g	75 g	90 g
Degree of protection per IEC 60529		IP 67	IP 67	IP 67
Eye safety acc. to	Red light	Exempt group	Exempt group	Exempt group
IEC 62471	Infrared		Risk group 1	Risk group 1
Ambient temperature T_a		–10...+50 °C	0...+50 °C	0...+50 °C
Storage temperature		–10...+60 °C	–10...+60 °C	–10...+60 °C

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.



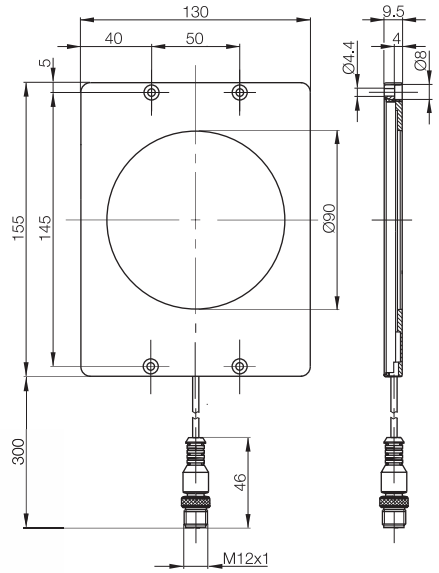




Dark field light

Model	BAE LX-VS
Design	**Dark field light**
Light type	Red light
Order code	**BAE00AM**
Part number	BAE LX-VS-DR090
Supply voltage U_S	24 V DC
Operating current	425 mA
Trigger	Yes
Light field size	Ø 90 mm
Emitter, light type	LED, red light
Wavelength	617 Nm
Dimension	105×80×9.5 mm
Fastening	M4 screws
Connection	M12 male, 4-pin
Housing material	Anodized aluminum
Optical surface	PMMA
Weight	250 g
Degree of protection per IEC 60529	IP 54
Eye safety per IEC 62471	Exempt group
Ambient temperature T_a	–10...+55 °C
Storage temperature	–25...+75 °C

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.

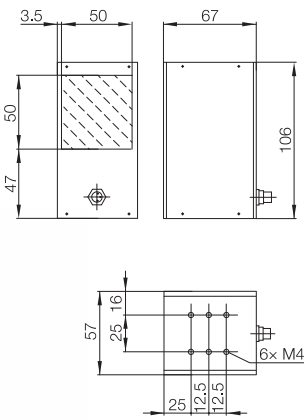


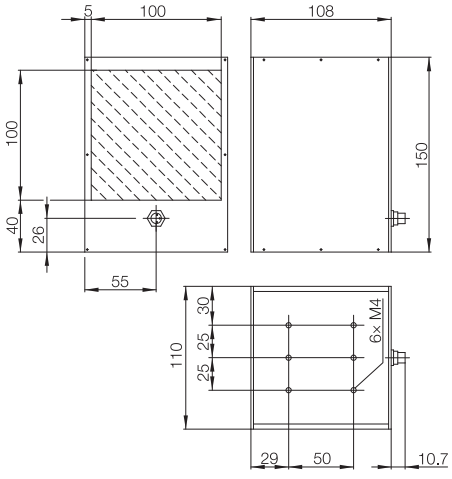
The dark field light allows you to illuminate surfaces to clearly reveal indentations and scratches. This ensures quick and reliable surface inspections.

Coaxial lights

Model	BAE LX-VS	BAE LX-VS
Design	**Coaxial lighting**	**Coaxial lighting**
Light type	Red light	Red light
Order code	**BAE00J9**	**BAE00JA**
Part number	BAE LX-VS-OR50	BAE LX-VS-OR100
Supply voltage U_S	24 V DC	24 V DC
Operating current	218 mA	600 mA
Trigger	No	No
Light field size	50×50 mm	100×100 mm
Emitter, light type	LED, red light	LED, red light
Wavelength	630 Nm	630 Nm
Dimension	106×67×57 mm	150×108×110 mm
Fastening	M4 screws	M4 screws
Connection	M8 male, 2-pin	M8 male, 2-pin
Housing material	Anodized aluminum	Anodized aluminum
Optical surface	Glass	Glass
Weight	450 g	1500 g
Degree of protection per IEC 60529	IP 54	IP 54
Eye safety per IEC 62471	Exempt group	Exempt group
Ambient temperature T_a	–10…+55 °C	–10…+55 °C
Storage temperature	–25…+75 °C	–25…+75 °C

Lighting accessories: See connectors on page 376 and mounting brackets (for direct mounting or compatible with Balluff mounting system BMS) starting on page 399.





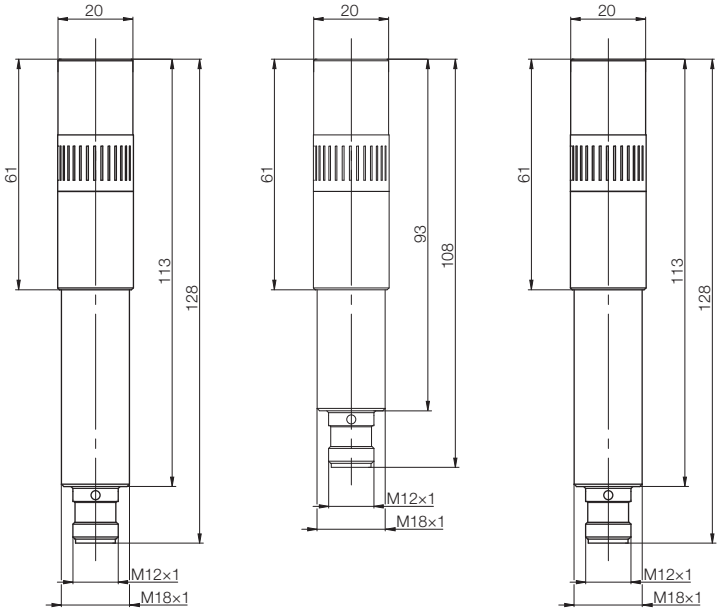
Coaxial lighting is the optimal solution for illuminating highly reflective surfaces. Therefore, coaxial lighting is well suited for transmitted light inspections of colored materials and for inspections of printed or dirty surfaces and for dot-peen codes. They are low-maintenance, industrially sound and thus can be integrated with low effort.

- Long service life
- Uniform lighting
- High standard of quality
- Energy-saving LED technology

Model		BAE LX-XO	BAE LX-XO	BAE LX-XO
Design		**Line lasers**	**Line lasers**	**Line lasers**
Projection type		Line, uniform	Line, uniform	Line, uniform
Order code		**BAE00KE**	**BAE00KZ**	**BAE00MY**
Part number		BAE LX-XO-PL018-L1-S4	BAE LX-XO-PL018-L2-S4	BAE LX-XO-PL018-L3-S4
Supply voltage U_S		5...30 V DC	5...30 V DC	5...30 V DC
Operating current		30 mA	30 mA	Max. 100 mA
Trigger		Yes	No	Yes
Line width	100 mm line length	80 µm	70 µm	70 µm
	500 mm line length	170 µm	107 µm	107 µm
	1000 mm line length	320 µm	190 µm	190 µm
	2000 mm line length	680 µm	360 µm	360 µm
Emitter, light type		Laser, red light	Laser, red light	Laser, red light
Wavelength		640 Nm	635 Nm	635 Nm
Dispersion angle		45°	10°	20°
Connection		M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
Housing material		Coated brass and anodized aluminum	Coated brass and anodized aluminum	Coated brass and anodized aluminum
Optical surface		Glass	Glass	Glass
Weight		66 g	56 g	56 g
Degree of protection per IEC 60529		IP 67	IP 67	IP 67
Laser class per IEC 60825-1		2M	1M	1M
Ambient temperature T_a		–10…+50 °C	–10…+50 °C	–10…+50 °C
Storage temperature		–10…+80 °C	–10…+80 °C	–10…+80 °C

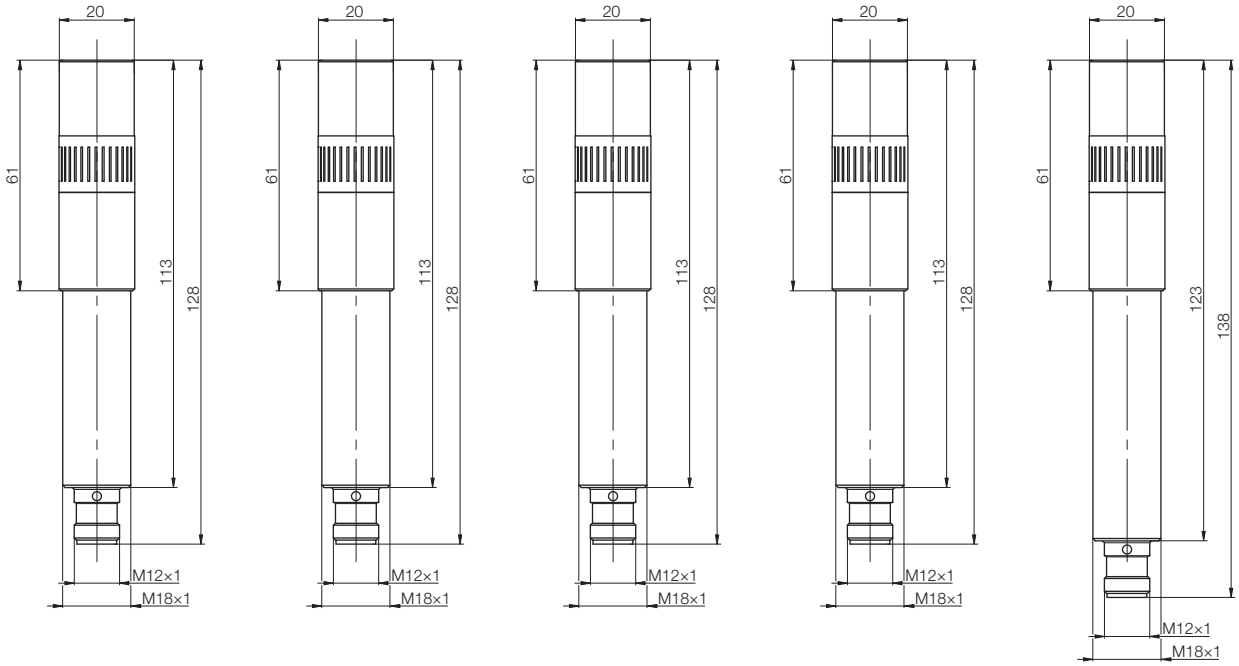
Lighting accessories:
see connector on page 376 and clamping holder and mounting bracket, starting on page 347.

Caution
Do not view laser radiation directly with optical instruments (magnifiers, microscopes, etc.).
Laser class 1M and 2M (DIN EN 60825-1: 2008)



Uniform, focusable and high quality
Line lasers are used in industrial image processing and for aligning and positioning workpieces or accessories. The combination of laser lighting and image processing provides interesting options for automating visual quality control. They are used in many ways for detecting and measuring defects, presence, diameters, edges, gaps, steps, etc.

	BAE LX-XO	BAE LX-XO	BAE LX-XO	BAE LX-XO	BAE LX-XO
	Line lasers	**Line lasers**	**Line lasers**	**Line lasers**	**Line lasers**
	Cross	Grid, 151×51 lines	Matrix, 11×11 dots	11 parallel lines	Line, uniform
	BAE00P4	**BAE00MZ**	**BAE00N0**	**BAE00N1**	**BAE00N2**
	BAE LX-XO-PL018-C1-S4	BAE LX-XO-PL018-L4-S4	BAE LX-XO-PL018-L5-S4	BAE LX-XO-PL018-L6-S4	BAE LX-XO-PL018-L7-S4
	5...30 V DC	5...30 V DC	5...30 V DC	5...30 V DC	5...30 V DC
	Max. 100 mA	Max. 100 mA	Max. 100 mA	Max. 100 mA	Max. 100 mA
	Yes	Yes	Yes	Yes	Yes
	70 µm	80 µm	80 µm	80 µm	80 µm
	107 µm	170 µm	170 µm	170 µm	170 µm
	190 µm	320 µm	320 µm	370 µm	320 µm
	360 µm		680 µm		680 µm
	Laser, red light	Laser, red light	Laser, red light	Laser, red light	Laser, blue light
	635 Nm	640 Nm	640 Nm	640 Nm	450 Nm
	30×30°	22°×22° at 633 nm	20°	20°, x/y 30° at 633 nm	20°
	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
	Coated brass and anodized aluminum	Coated brass and anodized aluminum	Coated brass and anodized aluminum	Coated brass and anodized aluminum	Coated brass and anodized aluminum
	Glass	Glass	Glass	Glass	Glass
	56 g	56 g	56 g	56 g	56 g
	IP 67	IP 67	IP 67	IP 67	IP 67
	1M	2M	2M	2M	2M
	–10…+50 °C	–10…+50 °C	–10…+50 °C	–10…+50 °C	–10…+50 °C
	–10…+80 °C	–10…+80 °C	–10…+80 °C	–10…+80 °C	–10…+80 °C

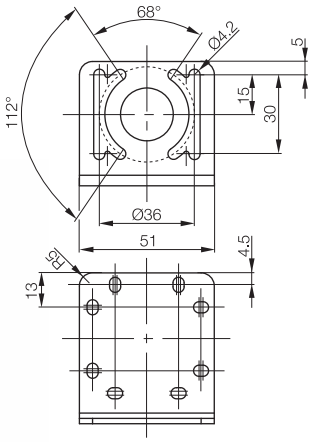


Mounting bracket

The variety of different mounting options allows you to integrate your vision sensor BVS easily into your equipment. Balluff accessories are perfectly matched to our sensors.

With flexible Balluff accessories you can position the BVS precisely. No tedious pre-work or time-consuming planning, even in difficult space conditions. Through optimum adaptation, you also save material and time.

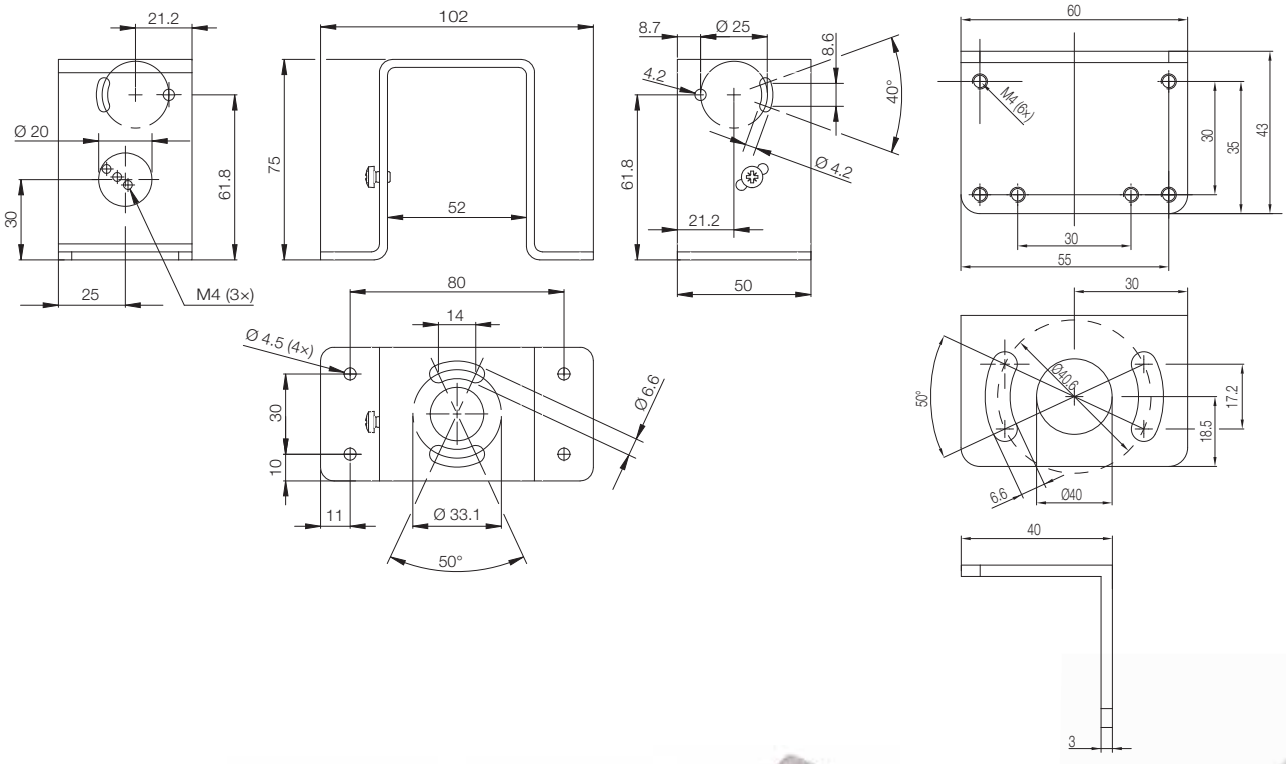
Description	**Mounting bracket for vision sensor BVS**	
Use	For mounting on mounting brackets or for clamping cylinders and installation systems	
Order code	**BAM00WN**	
Part number	BVS Z-MB-01	
Material	Stainless steel	



Description	
Design	
Use	
Order code	
Part number	
Material	

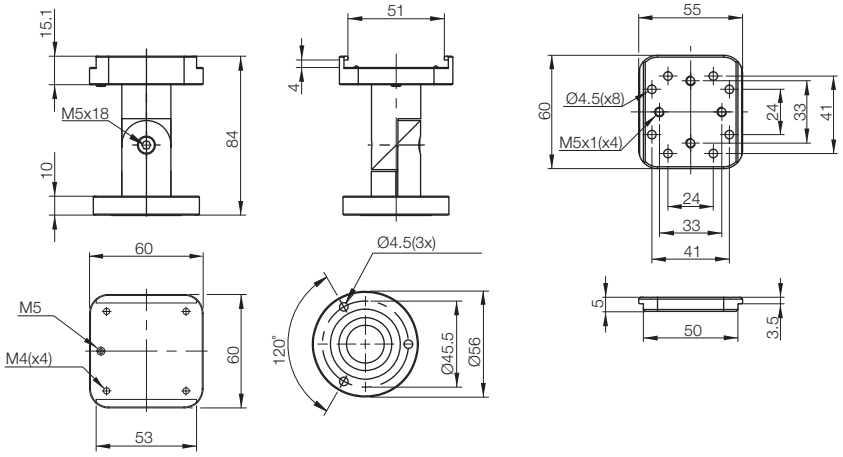
Technical drawings can be found on page 45.

	Mounting bracket for vision sensor BVS and right lighting BAE	**Mounting bracket for strip lighting and backlighting BAE**
	For mounting on mounting brackets or for clamping cylinders and installation systems	For mounting on mounting brackets or for clamping cylinders and installation systems
	BAM01AC	**BAM01AE**
	BAM MB-XA-003-B03-1	BAM MB-XA-002-B02-1
	Aluminum, anodized	Aluminum, anodized



	Cross-connector	**Sensor holder**	**Joint**	**Base holder**	**Base holder**	**Mounting rod**
	For 2 mounting rods Ø 12 mm	For 1 mounting rod Ø 12 mm	For 2 mounting rods Ø 12 mm	For 1 mounting rod Ø 12 mm (vertical or horizontal)	For 1 mounting rod Ø 12 mm (vertical or horizontal)	Knurled through, Ø 12 mm, Length 150 mm
	Connecting element for two rods	For sensor, reflector and antenna holder	Configurable connection piece	Mounting on base plates or profiles	Mounting on base plates or profiles	
	BAM027F	**BAM024T**	**BAM024R**	**BAM024P**	**BAM0275**	**BAM002R**
	BMS CC-M-D12-B-02	BMS CS-M-D12-BZ	BMS CCJ-M-D12-B-01	BMS CU-M-D12-B028-00	BMS CU-M-D12-B040-00	BMS RS-M-D12-0150-00
	Anodized aluminum	Cast zinc, coated	Cast zinc, coated	Cast zinc, coated	Cast zinc, coated	Anodized aluminum

Description	**3D holder system**	**3D holder system**
Version	Holder for quick-change plate	Quick-change plate
Order code	**BAM01YT**	**BAM01YP**
Part number	BMS CUJ-M-S25-D045-00	BMS CS-M-S25-DX15-00
Material	Anodized aluminum	Anodized aluminum



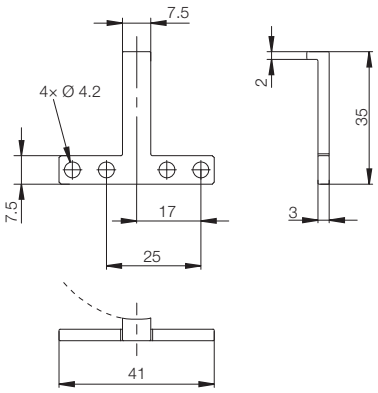
The **3D sensor holder with quick-change plate** allows any desired solid angle to be configured and the sensor to be aligned precisely. The position even remains intact if the sensor has to be replaced. That helps minimize downtimes. An optionally used safety screw provides protection from tampering as needed.

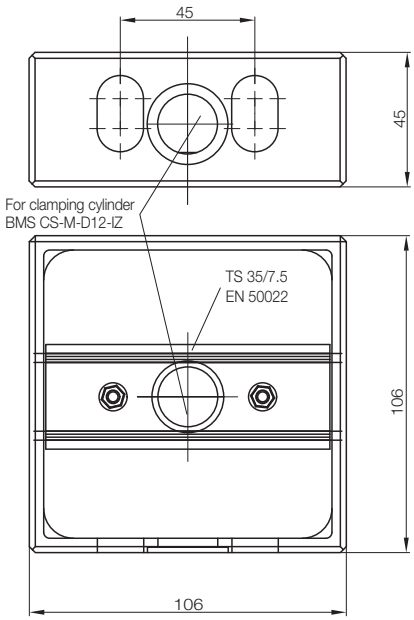
The industry-ready holder made of anodized aluminum is particularly easy and practical to operate. It fits on almost all common installation profiles and can be fastened directly to a machine frame, a worktop or a pallet with 3 holes. In addition, it offers substantial design freedom since the base, plate and holder are installed separately. It is being used with success in places such as the automotive industry as a result of these advantages.

Special properties
- Quick selection
- Exact alignment
- Stable, robust holder systems
- Ease of handling

Lock for focus ring, display housing for BVS monitor

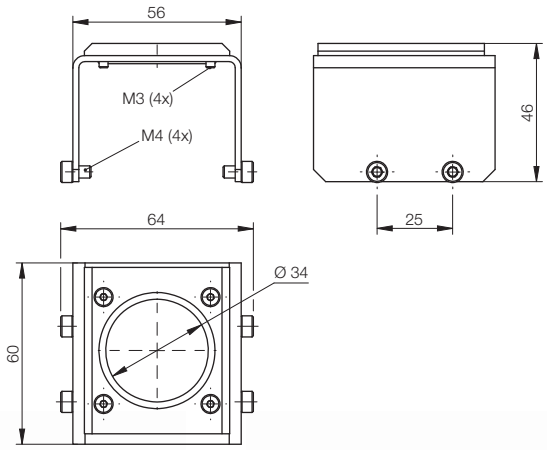
Description	Locking device for vision sensor focus ring	Display housing for BVS monitor
Use	For locking the set focus	For mounting with clamping cylinders and mounting systems BMS
Order code	**BAM0206**	**BAM01A8**
Part number	BAM FK-VS-002-03-1	BAM PC-AE-002-1
Material	Anodized aluminum	Anodized aluminum

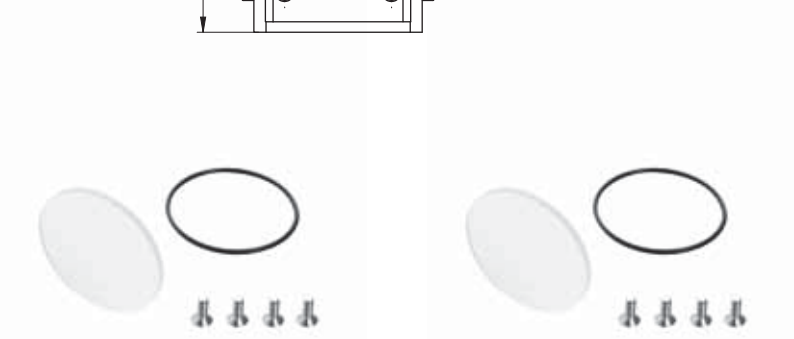




Focus ring lock
BAM FK-VS-002-03-1
The set focus is firmly locked and can no longer be adjusted. Errors caused by unintentional adjustment are therefore prevented. If the focus needs to be adjusted, the lock can be quickly unscrewed.

Description	**Protective cover for optics**	**Protective cover for optics**
Use	For protecting the vision sensor optics	For protecting the vision sensor optics
Order code	**BAM024W**	**BAM0253**
Part number	BAM PC-VS-017-1	BAM PC-VS-019-1
Dimensions	64×60×46 mm	64×60×46 mm
Assembly	M4 screws	M4 screws
Degree of protection per IEC 60529	IP 65 (when installed)	IP 65 (when installed)
Housing material	Stainless steel, aluminum	Stainless steel, aluminum
Optical surface	**Scratch-resistant glass ceramics**	**PMMA**





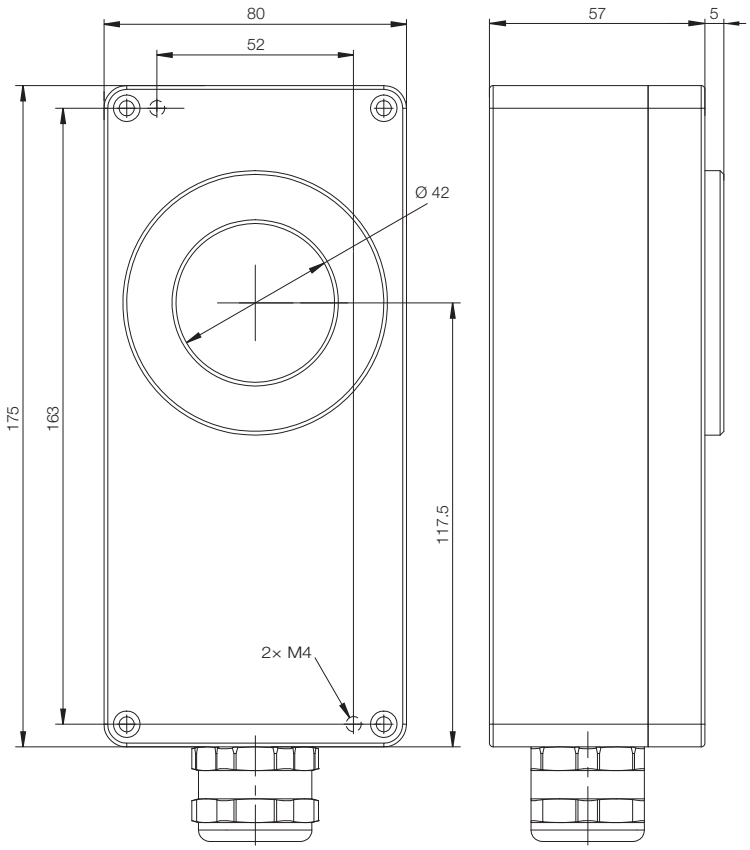
Description	**Spare glass set for BAM024W**	**Spare glass set for BAM0253**
Use	For protecting the vision sensor optics	For protecting the vision sensor optics
Order code	**BAM025Y**	**BAM025Z**
Part number	BAM PC-VS-017-G/RK	BAM PC-VS-019-M/RK
Dimensions	Ø 38.5×2 mm	64×60×46 mm
Assembly	M3 screws	M3 screws
Set includes	Spare glass, M3 screws, Viton sealing	Spare glass, M3 screws, Viton sealing
Optical surface	**Scratch-resistant glass ceramics**	**PMMA**

Optional IP 67+ housing for Vision Sensors BVS

An optional housing for splash water areas and other problematic environments is available for all sensors in the Vision Sensor family. Thanks to the IP 67+ degree of protection, this also provides reliable protection for long-term use in harsh environments. With a few simple hand movements, the sensor is easily integrated in the robust housing and then mounted on a machine or system. All functions are fully available as usual.

- Rugged housing
- IP 67+ degree of protection
- Flexible handling
- Easy mounting and fastening
- Full range of sensor functions
- Inexpensive acquisition

Description	**Protective housings for vision sensors BVS**
Use	For long-term operation in harsh environments
Order code	**BAM01RR**
Part number	BAM PC-VS-008-1
Dimensions	175×80×62 mm
Assembly	M4 screws (163×52 mm)
Connection	Screwed cable gland M25×1.5 (1× dia. 5 mm, 1× dia. 6 mm)
Degree of protection per IEC 60529	IP 67
Housing material	Cast aluminum, painted
Optical surface	Anti-reflective glass



Sensor overview

Vision sensor BVS E

Vision sensor BVS E is a comparing or reading sensor for inspection tasks. To check a part, the sensor is connected to a computer and configured using the BVS ConVis configuring software, which is free of charge. As part of the configuration, one or multiple inspection programs can be created and saved on the sensor.
The sensor can work autonomously and without a computer connection if at least one inspection program is saved on the sensor.

Inspection

An inspection consists of
- A taught-in reference image
- Tools that inspect one or more regions of interest within the digital image on the object and
- Three functions assigned to digital outputs e.g. output 1 signals the result “OK” and output 2 signals “Not OK”.

All settings such as triggers, lighting, etc. are saved in an inspection.

Inspection result

The results “OK”, “Not OK” or partial results that are formed by themselves using logical functions. They can be assigned to various outputs.

Part features and image area

A part inspection with the vision sensor is not carried out on the entire part (image), rather only in certain part features of an image area. They are defined during the configuration.

Example: Inspection of whether holes have been drilled at a certain location of a plate. The plate surface appears bright in the image; an available hole is dark. The 360° contour tool is suitable for inspecting this type of hole. During configuration, you must select which tool to use to inspect this part feature and where the part is located in the image.

Reference image

All inspection programs have a reference image. It is used to synchronize good/bad parts to be detected and the image areas of individual tools.

Tools

Tools are processing functions that inspect/read various characteristics such as position, width or a barcode. During configuration, appropriate tools have to be selected, positioned and configured to best solve a task. The result of a tool is “OK” or “not OK”.

Position tracking tool

A position tracking tool can be used to track a changing part location within the field of view. All other tools are aligned to the current part position.

Trigger

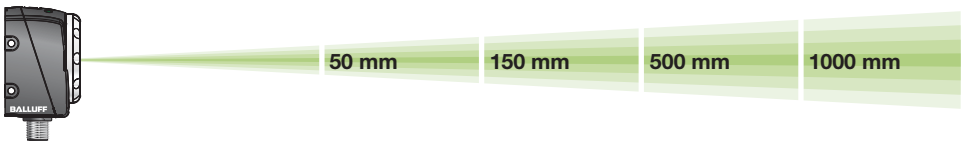
A trigger signal starts an event. Thus, for the BVS, a trigger signal triggers image acquisition and evaluation. The BVS has different trigger settings that can be adapted using software that is available free of charge.

Typical detection rate

The typical detection rate is a guide value that indicates how often a part can be inspected per second. The actual achievable detection rates can be larger or smaller and depends on the exact task. Therefore, for vision sensors, no fixed switching frequencies can be specified because different amounts of processing time are required for evaluating different tools.

Working distance and field of view

The **working distance** describes the minimum and maximum distance between the sensor lens and object. The **field of view** is the surface area that the sensor can detect at the specified working distance. The larger the working distance, the larger the field of view. The light intensity of the illuminated object decreases by the square root of the working distance.



6 mm Wide-angle lens	34×25 mm	170×128 mm	338×253 mm	676×507 mm
8 mm Standard lens	24×18 mm	120×90 mm	240×180 mm	480×360 mm
12 mm Telephoto lens	16×12 mm	80×60 mm	160×120 mm	320×240 mm
16 mm Telephoto lens*	–	60×45 mm	120×90 mm	240×180 mm

* Working range 180...1000 mm (red light), 230...1000 mm (infrared)

Bring your working range up close with the telephoto lens. Or take advantage of the larger field of view at the same working distance offered by the wide-angle and standard lenses. Use the distance computer: **www.balluff.de/vision**

Illumination

The correct lighting is key to finding a successful solution for part inspection with image processing. Because the solution can only work reliably and efficiently with the right amount of light. This requires carefully selecting, configuring and consistently maintaining the light for the parts to be inspected throughout all inspections of the parts.

Eye safety in accordance with EN 62471:2008

All LED lights are categorized into different groups based on the degree of risk to human eyes and skin. All lights from Balluff are in the two lowest groups.

Exempt group	Risk group 1
Sensors or lights do not pose a photobiological risk.	**Sensors or lights do not pose a risk due to standard precautionary measures taken by the user.**
■ Vision-Sensors BVS E ■ Background lights, red light ■ Ring lights, red and white light ■ Line lights, red and white light ■ Line lights, infrared during normal operation ■ Spotlights, red light ■ Dark field illumination, red light ■ Coaxial lighting, red light	■ Background lights, infrared ■ Ring lights, infrared ■ Line lights, infrared during boost mode ■ Spotlights, infrared

IP address

The IP address is a unique address that identifies a network device and enables communication with the sensor.
The standard address of all BVS devices is: **172.27.101.208**

Software

You will require ConVis software to operate vision sensors from Balluff. The software is available free of charge. The product is supplied with a CD ROM containing the software.

ConVis software

Step 1
Connect

Establish a connection between the ConVis software and the sensor. Define the image brightness and lighting settings.

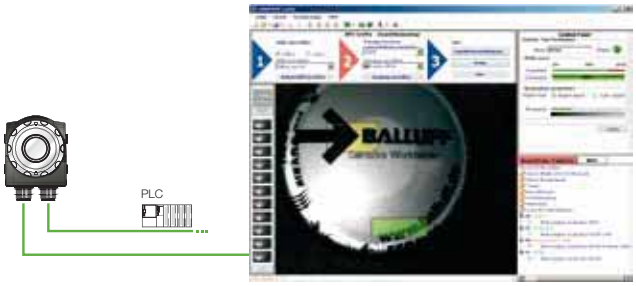
Step 2
Configure

Determine the features you wish to inspect and select all the relevant tools. Configure the output signals.

Step 3
Run

Test the inspection – view the results and correct if necessary.

BVS-E – with Balluff BVS ConVis® – the easy to use software
Connect the BVS-E Vision Sensor to your computer via Ethernet. The built-in software wizard guides you to successful configuration in just three steps. Simply enter your desired inspection parts or features test your inspection, and check the results on the screen. Slight changes and corrections are easily made. Thanks to clearly arranged resources, no programming language or training sessions are required.



Monitor

Step 1
Connect

Connect the sensor to the monitor.

Step 2
Monitor

It visualizes the sensor images and test results and displays the process statistics.

Step 3
Adjusting

Set the tool parameters and test your inspection.

BVS E Monitor – Visualize the current sensor images
If you would like to improve the statistical quality of your inspections or adapt your inspections easily to part changes, you should see what the sensor is seeing. The Vision Sensor Monitor makes this possible. Its display provides continuous status monitoring and simplifies corrections during ongoing operation because you continuously inspect the sensor function and can immediately access the sensor in the event of any deviations. This is how to prevent product errors.

Basic Information and Definitions

Contents

Standards

Protection class	II ⧈	EN 60947-5-2/IEC 60947-5-2
Degree of protection	IP 60...67	EN 60529/IEC 60529
	IP 68 per BWN Pr. 20	Balluff Factory Standard (BWN): temperature storage 48 h at 60 °C, 8 temperature cycles in accordance with EN 60068-2-14/IEC 60068-2-14 between the benchmark temperatures according to the data sheet, 1 h water storage, insulation test, 24 h water storage, insulation test, 8 temperature cycles in accordance with EN 60068-2-14 IEC 60068-2-14 between the benchmark temperatures according to the data sheet, 7 days water storage, insulation test.
	IP 68 per BWN Pr. 27	Balluff Factory Standard (BWN): Testing products for use in the foods industry.
	IP 69K	DIN 40050 part 9: Protection against ingress of water under high pressure- or steam jet cleaning.
EMC (Electromagnetic Compatibility)	Emissions, RF noise voltage and RF noise radiation from electrical equipment	EN 55011
	Interference immunity against discharge of static electricity (ESD)	EN 61000-4-2/IEC 61000-4-2
	Immunity against high-frequency electromagnetic fields (RFI)	EN 61000-4-3/IEC 61000-4-3
	Immunity to fast transients (bursts)	EN 61000-4-4/IEC 61000-4-4
	Immunity against conducted interference induced by high-frequency fields	EN 61000-4-6/IEC 61000-4-6
	Immunity to voltage dips and short interruptions	EN 61000-4-11/IEC 61000-4-11
	Surge-voltage stability	EN 60947-5-2/IEC 60947-5-2
Environmental simulation	Vibration, sinusoidal	EN 60068-2-6/IEC 60068-2-6
	Shock	EN 60068-2-27/IEC 60068-2-27
	Continuous shock	EN 60068-2-29/IEC 60068-2-29

Mounting torques

The following torques are to be observed so that the sensors are not mechanically destroyed during installation, as long as no other information is indicated on the data sheet or the sensor packaging.

Size	Material	Tightening torque
M12×1	Stainless steel	40 Nm
M18×1	PBT	1 Nm
M18×1	Stainless steel	60 Nm
M30×1.5	PBT	3 Nm
M30×1.5	Stainless steel	90 Nm

Degree of protection

The degrees of protection are specified according to IEC 60529.
Code letters IP (International Protection) designate protection for electrical equipment against shock hazard, ingress of solid foreign bodies and water

First digit:

2 Protection against penetration of solid bodies larger than 12 mm, shielding from fingers and objects
4 Protection against penetration of solid bodies larger than 1 mm, shielding from tools and wires
5 Protection against harmful dust deposits, complete shock-hazard protection
6 Protection against penetration of dust, complete shock-hazard protection

Second digit:

0 No special protection
4 Protection against water spraying from all directions against the equipment
5 Protection against a water jet from a nozzle striking the device from any direction
7 Protection against water when the device (housing) is temporarily immersed
8 Protection against water during prolonged immersion

Materials

Material	Use and characteristics
Plastics	
ABS Acrylonitrile-Butadiene-Styrene	Impact-resistant, stiff, limited chemical resistance. Some types flame-retardant. Used for housings.
ASA Acrylic ester-Styrene-Acrylonitrile	Impact-resistant material, scratch-resistant surface and high weather resistance.
EP Epoxy resin	Duromer, molded plastic material, highest mechanical strength and temperature resistance. Very good dimensional stability. Cannot be melted.
Epoxy resin hollow glass spheres	Hollow glass spheres can be treated with epoxy resins. They are used for manufacturing converters with low thickness and high pressure rating.
PA Polyamide	High impact resistance, good chemical resistance.
PA 6, PA 66, PA mod., PA 12 Polyamide	Good mechanical strength. Temperature resistance. PA 12 approved for food industry applications.
PBT Polybutylene terephtalate	High mechanical strength and temperature resistance. Some types flame-retardant. Good chemical resistance. Good oil resistance.
PC Polycarbonate	Clear, hard, elastic and impact resistant. Good temperature resistance. Limited chemical resistance.
PET Polyethylene terephtalate	High resistance to breakage, good dimensional stability. Frequently used in the food industry.
POM Polyoxymethylene	High impact resistance, good mechanical strength. Good chemical resistance.
Plastics	
PPS Polyphenylene sulfide	High strength, even in high temperatures. High resistance to chemicals.
PVC Polyvinyl chloride	Good mechanical strength and chemical resistance (cable).
PVDF Polyvinylidene fluoride	Thermoplastic. High mechanical strength and temperature resistance. Good chemical resistance (similar to PTFE).
Metal	
Al Aluminum, wrought alloy	Standard-aluminum for machined cutting. Can be anodized. Used for housings and mounting components.
CuZn brass	Standard-housing material with surface protection.
Stainless steel	Excellent corrosion resistance and strength. **Quality 1.4034, 1.4104:** Standard-material; **quality 1.4305, 1.4301:** Standard-material for the food industry; **quality 1.4401, 1.4404, 1.4571:** With increased requirements on chemical resistance at elevated temperatures for the food industry.
GD-Al die-cast-aluminum	Low specific gravity. Good strength and resistance. Some types can be anodized.
GD-Zn die-cast-zinc	Good resistance and strength. Usually with protective surface coating.
Other	
Glass	Good chemical resistance and strength. Used primarily in optical applications (lenses, cover lenses).

Quality and the environment

Quality management system as per DIN EN ISO 9001:2008

Balluff companies	
Balluff GmbH	Germany
Balluff SIE Sensorik GmbH	Germany
Balluff Controles Elétricos Ltda.	Brazil
Balluff Sensors (Chengdu) Co., Ltd.	China
Balluff Ltd.	Great Britain
Balluff Automation S.R.L.	Italy
Balluff Canada Inc.	Canada
Balluff de México S.A. de C.V.	Mexico
Balluff GmbH	Austria
Balluff Sp. z o.o.	Poland
Balluff Hy-Tech AG	Switzerland
Balluff Sensortechnik AG	Switzerland
Balluff S.L.	Spain
Balluff CZ, s.r.o	Czech Republic
Balluff Elektronika Kft.	Hungary
Balluff Inc.	USA

Reg.Nr.: 19279-03

Environmental management system as per DIN EN ISO 14001:2009

Balluff companies	
Balluff GmbH	Germany
Balluff Sensors (Chengdu) Co., Ltd.	China
Balluff Elektronika KFT	Hungary

Testing laboratory

The Balluff testing laboratory operates in accordance with ISO/IEC 17025 and is accredited by the German Accreditation Body (DAkks) for testing electromagnetic compatibility (EMC).

DAkkS Deutsche Akkreditierungsstelle D-PL-12017-01-01

Balluff products comply with EU directives

Products that require labeling are subject to a conformity evaluation process according to the EU directive and the product is labeled with the CE marking.
Balluff products fall under the following EU directive:

2004/108/EC	EMC directive
2006/95/EC	Low Voltage Directive valid for products with supply voltage ≥ 75 V DC/≥ 50 V AC

Product approvals

Product approvals are awarded by domestic and international institutions. Their symbols affirm that our products meet the specifications of these institutions.

“US Safety System” and “Canadian Standards Association” under the auspices of Underwriters Laboratories Inc. (cUL).

c UL US LISTED

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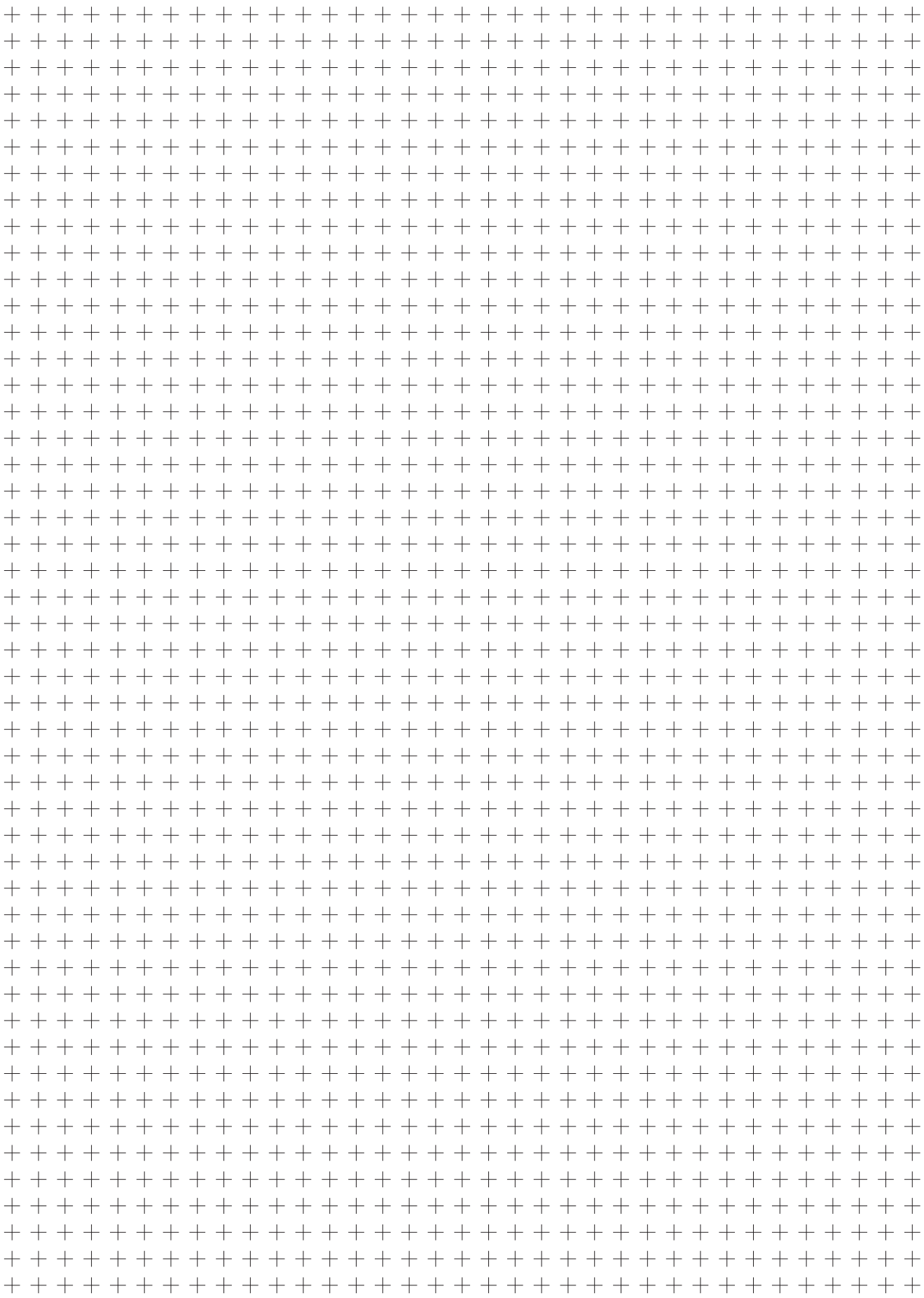

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Services

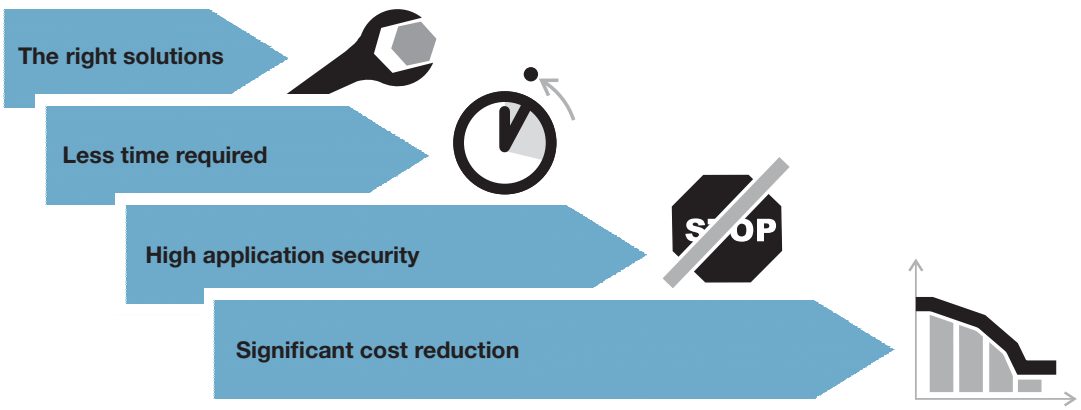
Customized. According to your specifications. In the best quality.

Balluff stands for highly efficient sensor technology, compact connection technology and an extensive range of accessories. We offer comprehensive services to support you, along with customized solutions and individualized advice. We do this completely according to your specifications.

We support you over the entire life cycle of our products, ranging from the design and planning of your projects, to the testing and setup on site, all the way to training and other support. For an optimal implementation and significant planning security.
This enables quick startup and an early start to production. This leads to maximum productivity and more cost-effectiveness. Learn about your options.

More information can be found in our Services brochure.

Application advice through our TechSupport Discuss your technical requirements. And take advantage of our expertise.	Real-world examples: ■ Selection of the correct identification procedure for an assembly line ■ IO-Link concept as a cost-effective alternative to conventional wiring ■ System consulting for radio frequency identification (RFID): Identification of large steel pipes in adverse environments ■ Recognizing multiple containers on a pallet in goods receiving
Commissioning Order expert knowledge. And benefit from a quick start of production.	Real-world examples: ■ Setting up an optical checkpoint with the vision sensor BVS ■ Consulting and support during the programming of RFID systems BIS ■ Installation and commissioning of a color detection application with the BFS color sensor
Fully customized products Specific versions according to your requirements: from preassembly to engineering services	Real-world examples: ■ Extending the housing of a BHS high-pressure resistant inductive sensor ■ Extra threads for the housing cover of a BTL micropulse transducer ■ Customer-specific holder for an RFID data carrier ■ Adaptation of the characteristics for BAW analog sensors
Training Make use of well-founded manufacturer knowledge. And benefit from application security.	■ **Professional sensor use:** Select effective principles, install sensors professionally and secure the reliable operation of your application. ■ **Position and Distance Measurement:** This is how you measure accurately and wear-free. ■ **RFID:** The right data at the right time at the right place. ■ **Vision sensor:** Ensuring manufacturing quality in three steps using an image processing sensor. ■ **Vision sensor identification:** Reliably identify a wide variety of data matrix codes with an image processing sensor. ■ **Industrial Networking with IO-Link:** Managing signals intelligently and cost-effectively.




DEXYÍ
®

Tool ID Upgrade – Upgrading from a Single Source

Upgrade your machine facilities. And transfer all tool parameters.

Tool ID Upgrade is a complete solution for upgrading the tool ID on existing machines. This all-around package with an industrial RFID system provides the optimal interface between the setting device and the machine control system. It is ideal for all common technologies.*
Each solution is tailored to your individual requirements.

*The system can be implemented in most controllers. such as those from Siemens, Heidenhain, Fanuc or Mazak. If you work with a different manufacturer, please contact us.

Features for optimizing your processes

- Safe transmission of the tool parameters
- Correct machine assignments by scanning on the tool magazine
- Visual depiction of tool data on the monitor
- Faster set-up times through automation
- Optimal utilization of the tools

Hardware – control unit
- Panel PC with touch screen
- RFID reader with BIS C series interface
- 24 V power supply for reader and panel PC
- Holder for the installation

Hardware – tool holder, e.g. for HSK, ISO
- Mechanical holder for the tools
- Holder for the read/write head
- BIS C series read/write head
- Holder for the installation
- Cabling

Software
- Pre-installed with the option for the relevant controller

Commissioning
- Installing tool holders and the control units on each machine
- Configuring the readers
- Connecting to the relevant controller
- Starting up individual machines
- Tests and validating function
- Collective acceptance of the installation

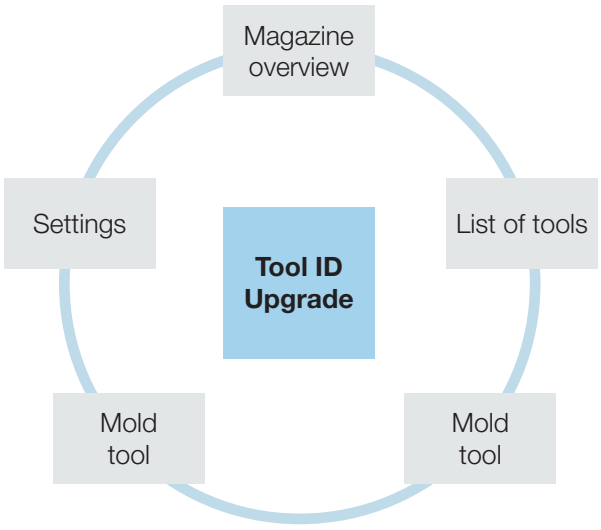
Training and instruction
- Creating specific documents
- Your authorized personnel will be instructed in operation.

Tool ID Upgrade – application description
A machine is to be upgraded with a tool ID. First, the components of the system are selected so that they perfectly match the present machine control system (for example, Heidenhain iTNC 530).

Then, a separate control unit with integrated RFID technology is installed on each machine outside of the tool room; this control unit communicates with the machine control system.

The control unit and a tool holder with RFID read/write head can be used to take data that is on the data carrier and read it into the controller as well as write it back to the data carrier. The touch screen controls the process of reading or writing to the data carrier. All data and commands are displayed in plain text.

After the tool holder and control unit are installed, the read/write heads are configured and the connection to the machine control system is established. Now the machine can be put into operation. Tests are performed to validate functionality so that the installation can be accepted together with the user.



Mold ID – Transparency in Mold Handling

Optimize the use of your injection molds. And enable preventive maintenance.

Mold ID makes the use of injection molds traceable and ensures their optimal utilization. Each mold has to be clearly identified, because all relevant data—such as drawing number, last maintenance or service life—is saved to the mold and can be retrieved at any time. This makes incorrect assignments and missing forms a thing of the past. Production cycles are also counted, which enables preventive maintenance of the molds. This extends the runtime and supports reliable operation. It increases the productivity of the systems and improves the efficiency. Ensure transparency with Mold ID.

Mold ID is backed by an autonomous system. All machines can be upgraded individually, without the manufacturer and regardless of the location.

Another plus: You can access the Mold ID system from anywhere in the world using a standard web browser, smartphone or tablet PC. An app with functions protected by configurable passwords enables access to the data directly on the mold by using Near Field Communication (NFC).

The benefits to you

- Recording of the production cycles by an autonomous system
- All data is available directly on the mold via RFID
- Optimum mold change by visualizing the inspection intervals
- Worldwide access to the Mold ID system using a standard web browser
- Can be integrated into higher-level systems (e.g. MES) using a web service interface
- Reliable – Balluff apps for access to the mold

Mold ID – components

Data carriers
- For each mold
- Variant depends on the ambient conditions

Shot counter
via an inductive sensor

RFID unit
for communication with the data carrier

Mold ID unit
- Industrial PC
- Software
- Gateway to the company network
- Visualization with the SmartLight signal light

Mobile end devices
- Read data
- For initializing data carriers
- For setting limit values
- For password protection

Molds are subject to wear and tear and must be regularly maintained as a result. The regularity of inspection often depends on the experience values of individual employees or handwritten notes that are not available to everyone. In many cases, therefore, maintenance and inspection are frequently carried out only if the produced parts no longer meet the required quality standards or if the mold malfunctions.

The benefits to you with an autonomous Mold ID
- Fewer unplanned downtimes as the result of
  – continuous **counting** of the shots
  – automatic **documentation** on the mold
  – **visualizing** the mold status
  – **notice** for the operator about the next scheduled maintenance
- Transparency through the level of use of identically designed molds
- Overview of all molds currently running on the machines, through access to the systems over the company network via TCP/IP.
- Mobile reading out of the documented mold data via smartphone or RFID handheld device, for example, during an audit or when selecting the correct mold

Mold ID makes mold use transparent, and provides the prerequisite for process optimization and the monitoring of maintenance and repairs.

BIS Application Description

Company

Address

Contact persons

Phone

Seller

Type of application?

Description

How many write/read positions?

Read

Write

How many and which type of data is saved on the data carrier?

What kind of read/write speeds are required for the application?

Does the line move during reading or writing?
(If it does move, how high is the maximum speed?)

m/min

What is the specified range?

mm

In which range does the operating temperature lie?

°C

How many read/write operations occur daily for each data carrier?

How long is the wiring section between the PLC and the processor unit?

Which type of PLC or computer?

Where will the data carrier be mounted (material, etc.)?

☐ Non-metal ☐ aluminum ☐ steel

Where will the read/write head be mounted (material, etc.)?

☐ Non-metal ☐ aluminum ☐ steel

Which transmission method and which protocol are used?

☐ RS232 ☐ RS422/RS485 ☐ Profibus

☐ DeviceNet ☐ IO-Link ☐ easy-loop®

☐ Profinet ☐ Ethernet/IP ☐ EtherCAT

☐ Ethernet TCP/IP

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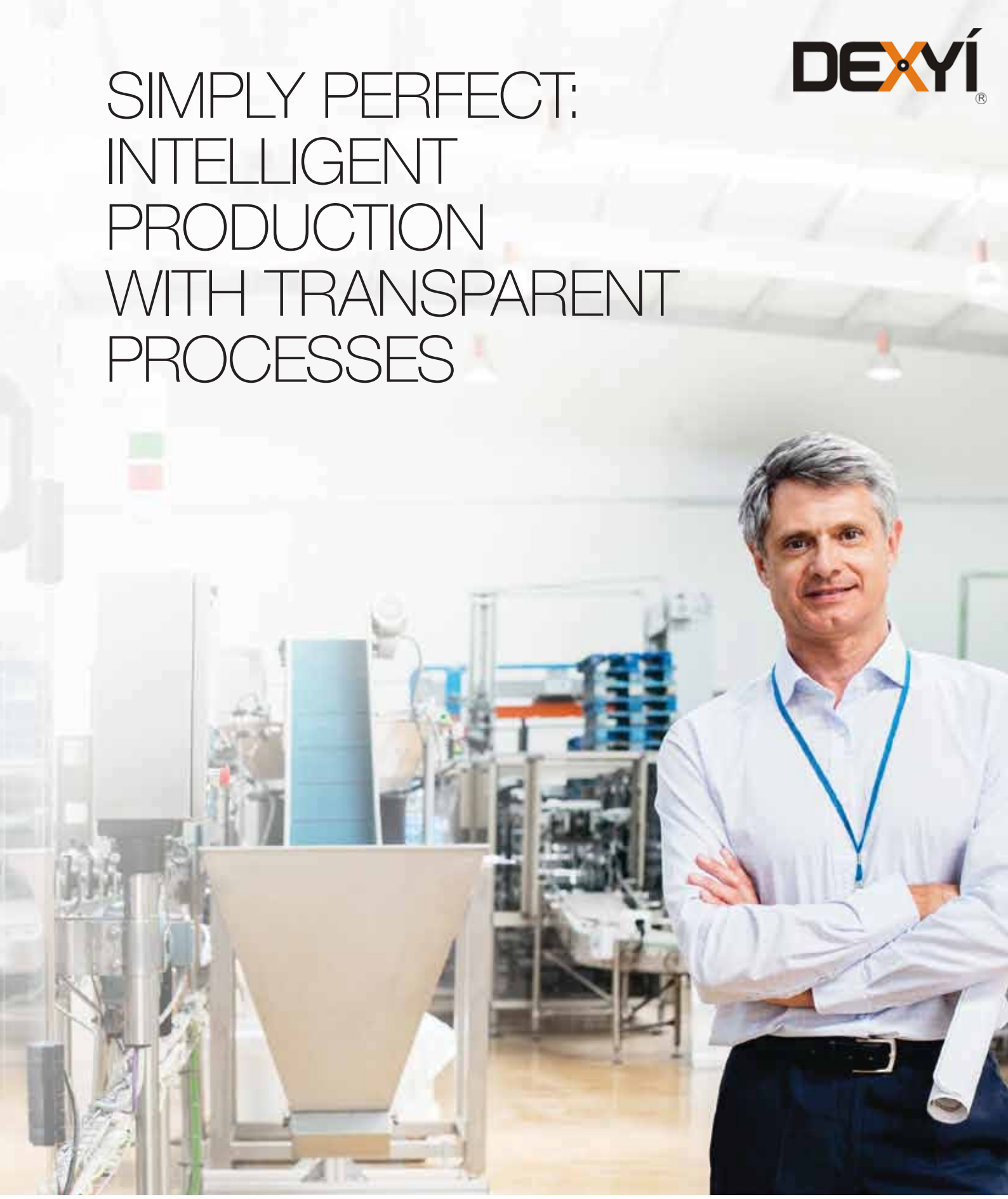
SIMPLY PERFECT: INTELLIGENT PRODUCTION WITH TRANSPARENT PROCESSES



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