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Industrial Identification

RFID systems for manufacturing and logistics

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New in this Catalog:

Easier Usability

- **Application Reference Charts**
  - At the beginning of each product family section
- **Data Carrier Range Guides**
  - Determine the correct ID tag and head quickly
- **RFID Functionality Indicators**
  - Machine Tool, Read Only or Read and Write Indicators
- **Graphic Wiring Guides**
  - Easily determine correct wiring need for accessories

Expanded Product Offerings

- **Metal Mount ISO 15693 M Series Data Carriers**
  Page 141

- **200 °C High Temperature M Series Data Carrier**
  Page 138

- **Longer Range Machine Tool Data Carriers in M Series**
  Page 136

- **Long Range ISO 15693 Databolts™**
  Page 140

- **IO-Link Read Only and Read/Write Self-Contained Heads and Processors**
  Page 122 and 158

- **PROFINET Processors for the C and M Series**
  Page 68 and 174

- **Hand Held PC Programmers for the C, L, and M Series**
  Page 72, 124, and 176

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File No E227256

For measurements without tolerance specifications, the general tolerances in accordance with DIN ISO 2768-1 tolerance class M and DIN ISO 2768-2 tolerance class H apply.

Industrial RFID Systems BIS
More Reliable and Higher-performance Tracking and Traceability

Why RFID?
Modern production technologies with greater batch sizes and ever shorter production cycle times require unambiguous recognition and matching of the produced parts. In response, various systems for industrial identification such as bar codes have been developed. These are cost-effective, but wear quickly. In addition, they are inherently read-only and hold a limited amount of data.

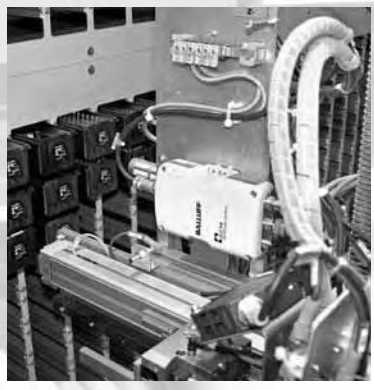
Far greater flexibility and visibility are provided by industrial RFID systems with read and write capability for ensuring the current data in every process segment. Balluff Industrial RFID reliably processes large quantities of data without making physical contact or visual interference.

Unlimited read/write cycles ensure flexible, rapid, contact-free communication even for the transfer of large data quantities in highly dynamic applications. Our wear-free systems are easy to integrate to all types of controllers.

Economical Balluff identification systems are able to manage the large volumes of information required in modern-day production plants and make sure your data is transferred to the right place at the right time. All relevant production and quality data is stored and made available for retrieval at any time: for optimized production processes and maximum production visibility.

Profit from the advantages of Balluff Industrial RFID and benefit from more than 20 years of Balluff RFID expertise. Simply select from the product range according to your application requirements.

Advantages
- **quick, flexible non-contact data communication without visual contact**
- **suitable for any industrial environment**
- **powerful and economical**



What is RFID?
RFID stands for Radio Frequency Identification and allows for automatic identification of any kind of object. A data carrier is affixed to the object and acts as a portable, moving memory. The data is sent back and forth between the data carrier and read or read/write head using inductive coupling and radio transmission. The read head then sends the data to the host controller. Industrial RFID is fast and reliable, even with changing objects and large amounts of data. This means that objects can be simply identified, tracked, and traceable.

Inductive coupling means the data carrier or tag is passive, with no power source on board. The inductive principle guarantees ruggedness and insensitivity to the surroundings, making these systems highly reliable. Balluff's Industrial RFID is therefore suitable for use in harsh environments.

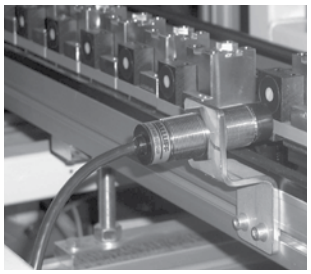
Maximum reliability and visibility
Balluff Industrial RFID leads the way in applications that require high quality, a high degree of data reliability, and optimized processes. Our Industrial RFID systems achieve an extremely high degree of data reliability for handling and assembly, commodity production and storage, internal company logistics and access control. Even tool management and driverless transport systems maintain data flawlessly with Balluff Industrial RFID.

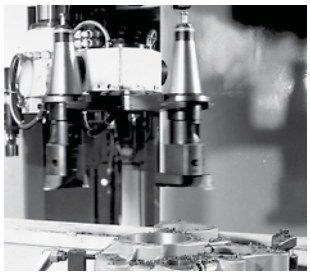
Balluff Industrial RFID systems record the complete production process of all batches and store all data for possible retracing at a later stage. Quality and production data is stored directly on the product to avoid confusion. Work pieces do not need to be aligned with the read/write head because the head can scan without requiring visual contact. Errors are consistently prevented as a result. Defects are detected immediately and the offending part can be returned and corrected or rejected autonomously. The identification process is fully automatic, reliable and fast. Balluff Industrial RFID can manage a large number of variants and control process data easily.

Balluff Industrial RFID guarantees a high degree of data reliability and quality, even in harsh environments. Balluff data carriers are resistant to shocks, vibrations, high electrical, inductive and electromagnetic interference and insensitive to aggressive materials. Goods manufactured using Balluff Industrial RFID are renowned for their high quality.

Use Balluff Industrial RFID for
- **100% data reliability**
- **consistent error prevention**
- **secure process control**
- **reliable traceability**
- **optimized production and visibility**

Increased productivity visibility
Reliable traceability of the production and quality data brings maximum visibility to your supply and production chain. You will know exactly which materials are being used when and where, which serial numbers are being used, and which machines were employed in the process. Data and goods flow can be linked with each other, so that delivery chains and inner-facility material flow are both optimized. Balluff Industrial RFID thereby prevents quality fluctuations. Rework and replacements can be reduced to a minimum. Take full advantage of the absolute reliability of Balluff Industrial RFID for your supply chain management.





Greater flexibility
Data is transferred reliably when the data carrier passes by, even in high-speed applications with greater flexibility because Balluff Industrial RFID is available with unlimited read/write cycles and different memory sizes.

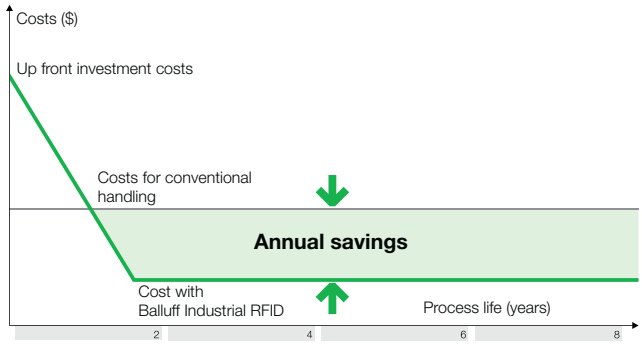
Expertise in designing solutions and secure integration – even when space is limited – results in a wide variety of components cast in different shapes such as disc, cylinder, cube or handy credit card format. International approvals allow global distribution. Simply choose from a comprehensive selection of system products according to your application requirements.

Balluff Industrial RFID is
- **available in various form factors, in plastic or metal**
- **compatible with any controller type**
- **usable on any common bus system**
- **compatible anywhere in the world**

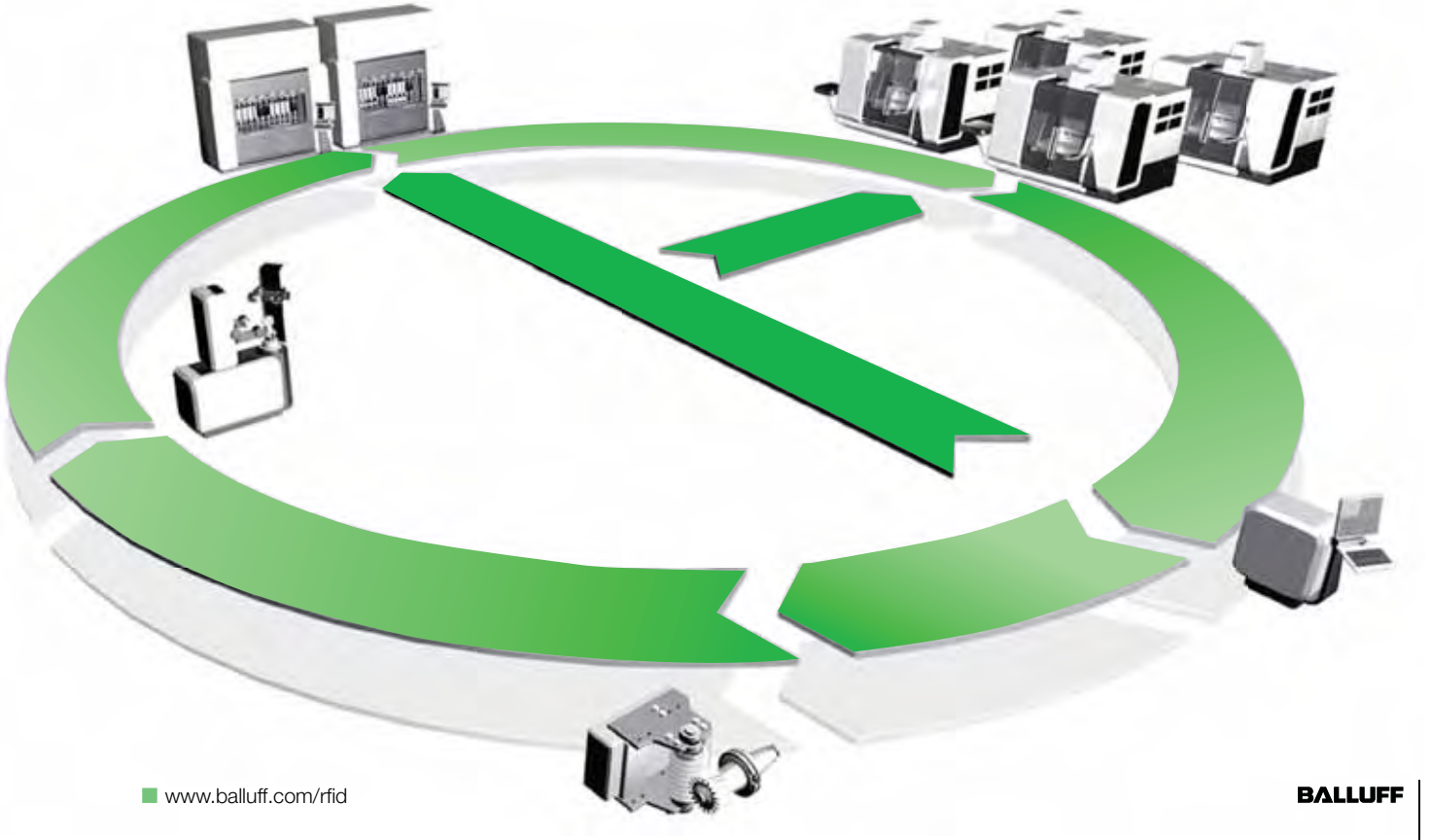
Quicker return on investment
The return on investment (ROI) can be so quick that the purchase of the Balluff Industrial RFID alone contributes to the success of your company. Data carriers are also reusable. New product lines that incorporate Industrial RFID systems have extremely short lead times, irrespective of whether alternating variants, minimum batch sizes or series products are manufactured. Use Balluff Industrial RFID to stay one step ahead of the competition.

Whenever you require a system for reliable production, our skilled consultants are ready to provide you with appropriate advice – all over the world and according to your specific requirements. We will be glad to answer any questions you may have.

Balluff Industrial RFID
- **is inexpensive**
- **can be reused**
- **amortizes quickly**



Industrial RFID for tool ID
Balluff is the most used and commonly available RFID system worldwide. Contact us today to see why.



Industrial RFID Systems BIS
Four BIS Systems – Maximum Versatility

Balluff systems advantage
Balluff Industrial RFID offers four different systems with varied components for a wide range of applications. One system is simply not sufficient for different applications such as

- **Tool management**
- **Production control**
- **Stock management**
- **Tracking of goods**
- **Access control**
- **Maintenance/Servicing**
- **Incoming/Outgoing goods**
- **Forgery/Copy protection**
- **Container management**
- **Consignment**

In addition, requirements for Industrial RFID have increased drastically over the last few years. Production control has benefited from data carriers with a large memory capacity, for example, while greater data security is available for copy protection. The read/write distance for tracking goods is usually large, but for access control is relatively small. Tool management usually requires small, extremely robust data carriers which would be too large for consignment. So select the best solution for you from four different systems with various transfer frequencies – optimized specifically for your application.

Balluff Industrial RFID systems overview
- Versatile BIS C ideal for a wide range of applications: extremely powerful and versatile for reliable tool identification in machining centers that process coolants and lubricants or sterilization under high temperatures in a vacuum of an autoclave
- Economical BIS L for logistics and assembly lines
- BIS M with fast data transfer and large read/write distance for flexible production lines, internal company logistics, access control, or copy protection
- BIS S for transferring large quantities of data to control assembly and production facilities

Balluff Industrial RFID system components
Balluff Industrial RFID systems consist of a data carrier, the so-called tag, a read or read/write head, and the processor.

The tag is used to read and store data. Data quantities and read/write cycles depend on the memory device. Balluff data carriers draw their power from the read/write unit. **No batteries are required.**

The electronics and antenna are integrated into the tag. The range is defined by the antenna and frequency of the tag.

Memory device	
Data carrier/Memory size	
Read/Write cycle	
Max. read/write distance	
Read time (64 bytes)	
Write time (64 bytes)	
Operating frequency	
Dynamic reading	
Dynamic writing	
Operating temperature (data carrier)	
Storage temperature (data carrier)	
Data storage time	
Degree of protection	
Norms/Standards	

RFID selection by function or application

Sometimes choosing the correct RFID product to use can seem like a daunting task. To make selecting the right BIS system easier, Balluff provides several ways of choosing the correct BIS system. You can choose based on read or read/write ranges between the tags and the head, application type (for example: assembly conveyor or storage and retrieval), and RFID functionality, like machine tool ID, read-only or read/write type. Within each BIS system section in this catalog, you will find icon designations like those above indicating what functions are possible within the system type as well as the other selection criteria mentioned to make selecting the correct system type as simple as possible.

Balluff also provides the same easy selection guidance online at **www.balluff.com/rfid**. Look to Balluff to ensure your success with your next RFID based data tracking and traceability needs.

	BIS C		BIS L	BIS M		BIS S
	EEPROM	FRAM	EEPROM	EEPROM	FRAM	FRAM
	511–1023 bytes	8 kbytes	192 bytes	752 bytes	2000 bytes	32 kbytes
	1.000.000	unlimited	100.000	100.000	unlimited	unlimited
	90 mm	100 mm	100 mm	150 mm	150 mm	50 mm
	220 ms	220 ms	1530 ms	60 ms	60 ms	29 ms
	860 ms	860 ms	3530 ms	130 ms	130 ms	120 ms
	70 kHz	455 kHz	125 kHz	13,56 MHz	13,56 MHz	560 kHz/3,65 MHz
	yes	yes	yes	yes	yes	no
	yes	yes	no	yes	yes	no
	–30 °C...+70 °C*	–30 °C...+70 °C*	–25 °C...+85 °C	–25 °C...+70 °C	–25 °C...+70 °C*	0 °C...+70 °C
	–30 °C...+120 °C*	–30 °C...+85 °C*	–40 °C...+130 °C*	–25 °C...+130 °C	–25 °C...+160 °C*	–20 °C...+70 °C
	10 years	10 years	10 years	10 years	10 years	10 years
	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
	DIN 69873	DIN 69873		ISO 14443	ISO 15693	

*extended temperature ranges on request. All time specifications include data checks

The specifications in the table are system-specific and not valid for each individual product.
Refer to the relevant catalog for more detailed specifications.

0-12 mm

Read/write heads

Data carrier	Memory capacity in bytes	**BIS C-300-_ _ / BIS C-306-_ _** Page 30	**BIS C-302-_ _** Page 31	**BIS C-305-_ _** Page 32	**BIS C-310-_ _** Page 35	**BIS C-318-_ _** Page 41	**BIS C-325-_ _** Page 36	**BIS C-327-_ _** Page 40
		Read/write distance						
BIS C-100-05/A Page 25	1023	**0...4 mm**	**0...4 mm**	**0...4 mm**			**0...4 mm**	
BIS C-103-05/A Page 24	1023	**0...3,5 mm**	**0...3 mm**	**0...5 mm**				
BIS C-104-11/A	2047				**0...11 mm**			
BIS C-104-32/A Page 26	8192				0...12 mm			
BIS C-105-05/A Page 24	1023	**0...3,5 mm**	**0...3 mm**	**0...5 mm**			**0...5 mm**	
BIS M-105-01/A	752							
BIS M-105-02/A Page 136	2000							
BIS C-108-05/L	1023			0...6 mm	0...12 mm	0...6 mm		0...8 mm
BIS C-108-11/L	2047			0...6 mm	0...12 mm	0...6 mm		
BIS C-108-32/L Page 26	8192			0...6 mm	0...12 mm	0...6 mm		
BIS C-108-05/L-SA2	1023				**0...11 mm**	**0...6 mm**		
BIS C-108-11/L-SA2 Page 28	2047				**0...4 mm**			
BIS C-117-05/A	1023			**0...8 mm**	**0...12 mm**			
BIS C-117-05/L Page 25	1023			0...7 mm	0...13 mm	0...7 mm		
BIS C-121-04/L Page 24	511	**0...2 mm**	**0...1,5 mm**	**0...2 mm**			**0...1,7 mm**	
BIS C-121-04/L-SA1 Page 28	511	**0...1,2 mm**	**0...0,7 mm**	**0...1,2 mm**				
BIS C-122-04/L	511	**0...2,5 mm**	**0...2 mm**	**0...2,5 mm**			**0...2,5 mm**	
BIS C-122-11/L Page 24	2047	**0...2,5 mm**	**0...2 mm**	**0...2,5 mm**			**0...2,5 mm**	
BIS M-122-01/A	752							
BIS M-122-02/A Page 136	2000							
BIS C-128-05/L	1023			0...6 mm	**0...8 mm**	0...7,5 mm		0...8 mm
BIS C-128-11/L Page 25	2047			0...6 mm	0...13 mm	0...7,5 mm		0...8 mm
BIS C-130-05/L Page 25	1023	**0...4 mm**	**0...3,5 mm**	0...7 mm			0...4 mm	
BIS C-130-05/L-SA1 Page 28	1023	0...4 mm	0...4 mm	0...7 mm	**0...8 mm**		0...4 mm	
BIS C-133-05/L Page 29	1023				0...10 mm			
BIS C-134-11/L Page 28	2047	**0...3 mm**		**0...6 mm**	0...10 mm		**0...4 mm**	
BIS C-190-05/L	1023				0...11 mm	0...8 mm		0...8 mm
BIS C-190-11/L	2047				0...11 mm	0...8 mm		0...8 mm
BIS C-190-32/L Page 27	8192				0...11 mm	0...8 mm		0...8 mm
BIS C-191-05/L	1023	0...3,5 mm	0...3 mm		0...10 mm		0...3 mm	
BIS C-191-11/L Page 27	2047	0...3,5 mm	0...3 mm		0...10 mm		0...3 mm	
BIS L-103-05/L-RO Page 91	3 + CRC (read only)							
BIS L-203-03/L Page 91	5 (read only)							
BIS L-150-05/A Page 89	192							
BIS M-110-02/L Page 137	2000							

0...2 mm = Data carrier flush mounted in steel

	BIS C-328-_ _-S49 Page 40	**BIS C-60R-...** **BIS C-61R-...** Page 50/51	**BIS L-302-S115** Page 97	**BIS L-400-035-003-05-S115** Page 107 **BIS L-400-043-003-02-S115** Page 121 **BIS L-405-033-003-05-MU** **BIS L-405-037-003-05-MU** Page 104/105	**BIS L-409-045-003-07-S4** Page 123	**BIS M-302-001-S115** **BIS M-302-003-S115** Page 143	**BIS M-304-001-S115** **BIS M-304-003-S115** Page 145	**BIS M-400-007-001-00-S115** Page 153	**BIS M-400-007-002-00-S115** Page 151	**BIS M-402-007-002-00-S115** Page 155
		0...6 mm **0...5 mm** **0...4 mm**								
		1...8 mm 1...8 mm								
		0...4 mm								
						0...7 mm 0...9 mm	**0...5 mm** 0...7 mm	0...7 mm 0...11 mm	**0...5 mm** 0...9 mm	**0...3 mm** 0...5 mm
		1...8 mm **0...6 mm**								
		1...8 mm 1...8 mm								
		1...5 mm 0...4 mm								
	0...3 mm 0...3 mm	1...5 mm 1...5 mm								
						0...5 mm **0...6 mm**	**0...4 mm** **0...5 mm**		**0...4 mm** 0...6 mm	**0...2 mm** 0...5 mm
		3...12 mm 3...12 mm								
		1...8 mm								
		1...8 mm								
			0...8 mm	0...11 mm	0...7 mm					
			0...8 mm	0...11 mm	0...7 mm					
			0...12 mm							
						0...16 mm	0...14 mm	0...20 mm	0...15 mm	0...8 mm

8-20 mm

Read/write heads

Data carrier	Memory capacity in bytes	BIS C-315-__ Page 34	BIS C-319-__ Page 36	BIS C-323-__ Page 37	BIS C-324-__ Page 39	BIS C-326-__ Page 33	BIS L-302-S115 Page 96/97	BIS L-304-S115 Page 98/99	BIS L-400-035-001-00-S115 BIS L-400-035-001-02-S115 Page 106 BIS L-400-043-001-02-S115 Page 120
		Read/write distance							
BIS C-104-11/A **BIS C-104-32/A** Page 26	2047 8192	**1...13 mm** **1...13 mm**		**1...11 mm** 0...12 mm	**1...11 mm** 0...12 mm				
BIS C-108-05/L **BIS C-108-11/L** **BIS C-108-32/L** Page 26	1023 2047 8192	0...16 mm 0...16 mm 0...16 mm	0...14 mm 0...14 mm 0...14 mm	0...12 mm 0...12 mm 0...12 mm	0...12 mm 0...12 mm 0...12 mm				
BIS C-108-05/L-SA2 **BIS C-108-11/L-SA2** Page 28	1023 2047	0...16 mm 0...16 mm		0...11 mm 0...11 mm	0...11 mm 0...11 mm	0...12 mm 0...12 mm			
BIS C-117-05/A **BIS C-117-05/L** Page 25	1023 1023	**0...15 mm** 0...20 mm	**0...13 mm** 0...15 mm	**1...12 mm** 0...13 mm	**1...12 mm** 0...13 mm	0...18 mm			
BIS C-128-05/L **BIS C-128-11/L** Page 25	1023 2047	0...18 mm 0...18 mm		**0...8 mm** 0...13 mm	**0...8 mm** 0...13 mm	0...15 mm 0...15 mm			
BIS C-130-05/L Page 25 **BIS C-130-05/L-SA1** Page 28	1023 1023	0...18 mm 0...18 mm	0...13 mm 0...13 mm	0...11 mm **0...8 mm**	 **0...8 mm**	0...13 mm 0...13 mm			
BIS C-133-05/L **BIS C-133-11/L** Page 29	1023 2047	**0...15 mm** 0...15 mm		**0...10 mm** 0...10 mm	**0...10 mm** 0...10 mm	**0...12 mm** 0...12 mm			
BIS C-134-11/L Page 28	2047	**0...16 mm**	**0...12 mm**	**0...10 mm**	**0...10 mm**	0...10 mm			
BIS C-190-05/L **BIS C-190-11/L** **BIS C-190-32/L** Page 27	1023 2047 8192	0...20 mm 0...20 mm 0...20 mm		0...11 mm 0...11 mm 0...11 mm	0...11 mm 0...11 mm 0...11 mm	0...18 mm 0...18 mm 0...18 mm			
BIS C-191-05/L **BIS C-191-11/L** Page 27	1023 2047		0...11 mm 0...11 mm	0...10 mm 0...10 mm	0...10 mm 0...10 mm				
BIS L-100-01/L Page 88	192						0...20 mm	0...20 mm	
BIS L-103-05/L-RO Page 91 **BIS L-203-03/L** Page 91	3 + CRC (read only) 5 (read only)						0...15 mm 0...15 mm	0...15 mm 0...15 mm	0...20 mm 0...20 mm
BIS L-100-05/L-RO Page 91 **BIS L-200-03/L** Page 91	3 + CRC (read only) 5 (read only)						0...23 mm 0...23 mm	0...25 mm 0...25 mm	0...30 mm 0...30 mm
BIS L-201-03/L Page 91	5 (read only)						**0...20 mm**	**0...20 mm**	0...40 mm
BIS M-101-01/L Page 136	752								
BIS M-102-01/L Page 137	752								
BIS M-105-01/A **BIS M-105-02/A** Page 136	752 2000								
BIS M-108-02/L Page 139	2000								
BIS M-110-02/L Page 137	2000								
BIS M-111-02/L Page 137	2000								

0...2 mm = Data carrier flush mounted in steel

	BIS L-400-035-002-00-S115 **BIS L-400-035-002-02-S115** Page 106 **BIS L-400-043-002-02-S115** Page 120	**BIS L-400-035-004-00-S115** Page 107 **BIS L-400-043-004-02-S115** Page 121	**BIS L-405-033-001-05-MU** **BIS L-405-037-001-05-MU** Page 104	**BIS L-405-033-002-05-MU** **BIS L-405-037-002-05-MU** Page 104	**BIS L-405-033-004-05-MU** **BIS L-405-037-004-05-MU** Page 105	**BIS L-409-045-001-07-S4** Page 122	**BIS L-409-045-002-07-S4** Page 122	**BIS L-409-045-004-07-S4** Page 123	**BIS M-300-001-S115** **BIS M-300-003-S115** Page 147	**BIS M-302-001-S115** **BIS M-302-003-S115** Page 143	**BIS M-304-001-S115** **BIS M-304-003-S115** Page 145	**BIS M-400-007-001-00-S115** Page 153	**BIS M-400-007-002-00-S115** Page 151
	0...16 mm	0...16 mm	0...20 mm	0...16 mm	0...16 mm	0...16 mm	0...10 mm	0...10 mm					
	0...16 mm	0...16 mm	0...20 mm	0...16 mm	0...16 mm	0...16 mm	0...10 mm	0...10 mm					
	0...23 mm	0...23 mm	0...30 mm	0...23 mm	0...23 mm	0...25 mm	0...15 mm	0...15 mm					
	0...23 mm	0...23 mm	0...30 mm	0...23 mm	0...23 mm	0...25 mm	0...15 mm	0...15 mm					
	0...27 mm	0...27 mm	0...40 mm	0...27 mm	0...27 mm	0...35 mm	0...18 mm	0...18 mm					
									0...22 mm	0...16 mm	0...14 mm	0...20 mm	0...15 mm
									0...32 mm	0...20 mm	0...18 mm	0...28 mm	0...18 mm
									0...11 mm 0...11 mm	0...7 mm 0...9 mm	0...5 mm 0...7 mm	0...7 mm 0...11 mm	0...6 mm 0...9 mm
									0...30 mm	0...20 mm	0...18 mm	**0...16 mm**	0...20 mm
									0...22 mm	0...16 mm	0...14 mm	0...20 mm	0...15 mm
									0...28 mm	0...20 mm		0...28 mm	0...20 mm

15-30 mm

Read/write heads

Data carrier	Memory capacity in bytes	BIS C-315-_ _ Page 34	BIS L-300-S115 Page 93	BIS L-301-S115 Page 94	BIS L-302-S115 Page 96/97	BIS L-303-S115 Page 95	BIS L-304-S115 Page 89/99	BIS L-350-S115 Page 100/101
		Read/write distance						
BIS C-117-05/A **BIS C-117-11/L** Page 25	1023 2047	0...20 mm 0...20 mm						
BIS C-127-05/L Page 26	1023	0...30 mm						
BIS C-190-05/L **BIS C-190-11/L** **BIS C-190-32/L** Page 27	1023 2047 8192	0...20 mm 0...20 mm 0...20 mm						
BIS L-100-01/L Page 88	192		0...30 mm	0...40 mm	0...20 mm	0...40 mm	0...20 mm	
BIS L-100-05/L-RO Page 91	3+CRC (read only)		0...40 mm	0...50 mm	0...25 mm	0...50 mm	0...25 mm	
BIS L-200-03/L Page 91	5 (read only)		0...40 mm	0...50 mm	0...25 mm	0...50 mm	0...25 mm	
BIS M-110-02/L Page 137	2000							
BIS L-101-01/L Page 88	192		0...40 mm	0...55 mm	0...25 mm	0...55 mm	0...25 mm	
BIS L-101-05/L-RO Page 91	3 + CRC (read only)		0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm	
BIS L-201-03/L Page 91	5 (read only)		0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm	
BIS M-101-01/L **BIS M-111-02/L** Page 136/137	752 2000							
BIS L-102-01/L Page 88	192		0...55 mm	0...70 mm	0...30 mm	0...70 mm		
BIS M-102-01/L Page 137	752							
BIS M-112-02/L Page 138	2000							
BIS L-103-05/L Page 89	192		0...25 mm		0...15 mm		0...15 mm	
BIS L-103-05/L-RO Page 91	3 + CRC (read only)		0...25 mm		0...15 mm		0...15 mm	
BIS L-203-03/L Page 91	5 (read only)		0...25 mm		0...15 mm		0...15 mm	
BIS L-150-05/A **BIS L-151-05/A** Page 89	192 192		0...25 mm 0...12 mm	0...32 mm 0...12 mm	0...12 mm 0...7 mm		0...12 mm 0...7 mm	**0...25 mm** **0...15 mm**
BIS M-108-02/L Page 139	2000							
BIS S-108-42/L **BIS S-108-52/L** Page 184	16 k 32 k							

0...2 mm = Data carrier flush mounted in steel

	BIS L-400-035-001-00-S115 **BIS L-400-035-001-02-S115** Page 106	**BIS L-400-043-001-02-S115** Page 120	**BIS L-405-033-001-05-MU** **BIS L-405-037-001-05-MU** Page 104	**BIS L-405-033-002-05-MU** **BIS L-405-037-002-05-MU** Page 104	**BIS L-405-033-004-05-MU** **BIS L-405-037-004-05-MU** Page 105	**BIS L-409-045-001-07-S4** Page 122	**BIS M-300-001-S115** **BIS M-300-003-S115** Page 147	**BIS M-302-001-S115** **BIS M-302-003-S115** Page 143	**BIS M-400-007-001-00-S115** Page 153	**BIS M-400-007-002-00-S115** Page 151	**BIS M-401-007-001-00-S115** Page 157	**BIS S-302-S115** **BIS S-303-S115** Page 186
	0...30 mm 0...30 mm	0...23 mm 0...23 mm	0...30 mm 0...30 mm	0...23 mm 0...23 mm	0...23 mm 0...23 mm	0...25 mm 0...25 mm						
							0...22 mm	0...16 mm	0...20 mm	0...15 mm	0...30 mm	
	0...40 mm 0...40 mm	0...27 mm 0...27 mm	0...40 mm 0...40 mm	0...27 mm 0...27 mm	0...27 mm 0...27 mm	0...35 mm 0...35 mm						
							0...22 mm 0...28 mm	0...16 mm 0...20 mm	0...20 mm 0...28 mm	0...15 mm 0...20 mm	0...28 mm 0...40 mm	
							0...32 mm	0...20 mm	0...28 mm	0...18 mm	0...45 mm	
							0...44 mm	0...30 mm	0...38 mm	0...28 mm	0...60 mm	
	0...20 mm 0...20 mm	0...16 mm 0...16 mm	0...20 mm 0...20 mm	0...16 mm 0...16 mm	0...16 mm 0...16 mm	0...16 mm 0...16 mm						
							0...30 mm	0...20 mm	0...28 mm	0...20 mm	0...40 mm	
												5...20 mm 5...20 mm

25-50 mm





		Read/write heads					
		BIS C-351-_ _ Page 41	**BIS C-355/05-S92** Page 43	**BIS L-300-S115** Page 93	**BIS L-301-S115** Page 94	BIS L-302-S115 Page 96/97	
Data carrier	**Memory capacity in bytes**	**Read/write distance**					
BIS C-150-05/A **BIS C-150-11/A** **BIS C-150-32/L** Page 27	1023 2047 8192	0...45 mm 0...45 mm 0...45 mm	0...35 mm 0...35 mm 0...35 mm				
BIS L-100-01/L Page 88	192			0...30 mm	0...40 mm	0...20 mm	
BIS L-100-05/L-RO Page 91	3+CRC (read only)			0...40 mm	0...70 mm	0...25 mm	
BIS L-200-03/L Page 91	5 (read only)			0...40 mm	0...70 mm	0...25 mm	
BIS M-110-02/L Page 137	2000						
BIS L-101-01/L Page 88	192			0...40 mm	0...55 mm	0...25 mm	
BIS L-101-05/L-RO Page 91	3 + CRC (read only)			0...50 mm	0...70 mm	0...30 mm	
BIS L-201-03/L Page 91	5 (read only)			0...50 mm	0...70 mm	0...30 mm	
BIS M-101-01/L **BIS M-111-02/L** Page 136/137	752 2000						
BIS L-102-01/L Page 88	192			0...55 mm	0...70 mm	0...30 mm	
BIS L-102-05/L-RO Page 91	3 + CRC (read only)			0...70 mm	0...100 mm	0...40 mm	
BIS L-202-03/L Page 91	5 (read only)			0...70 mm	0...100 mm	0...40 mm	
BIS M-102-01/L Page 137	752						
BIS M-112-02/L Page 138	2000						
BIS L-103-05/L Page 89	192			0...25 mm			
BIS M-108-02/L Page 139	2000						
BIS M-120-01/L Page 139	752						

	BIS L-303-S115 Page 95	**BIS L-304-S115** Page 98/99	**BIS L-400-035-001-00-S115** **BIS L-400-035-001-02-S115** Page 106	**BIS L-400-043-001-02-S115** Page 120	**BIS L-409-045-001-07-S4** Page 122	**BIS L-405-033-001-05-MU** **BIS L-405-037-001-05-MU** Page 104	**BIS M-300-001-S115** **BIS M-300-003-S115** Page 147	**BIS M-301-001-S115** **BIS M-301-003-S115** Page 149	**BIS M-302-001-S115** **BIS M-302-003-S115** Page 143	**BIS M-400-007-001-00-S115** Page 153	**BIS M-401-007-001-00-S115** Page 157
	0...40 mm	0...20 mm									
	0...50 mm	0...25 mm	0...30 mm	0...30 mm	0...25 mm	0...30 mm					
	0...50 mm	0...25 mm	0...30 mm	0...30 mm	0...25 mm	0...30 mm					
							0...22 mm	0...32 mm	0...16 mm	0...20 mm	0...30 mm
	0...55 mm	0...25 mm									
	0...70 mm	0...30 mm	0...40 mm	0...40 mm	0...35 mm	0...40 mm					
	0...70 mm	0...30 mm	0...40 mm	0...40 mm	0...35 mm	0...40 mm					
							0...22 mm 0...28 mm	0...34 mm 0...45 mm	0...16 mm 0...20 mm	0...20 mm 0...28 mm	0...28 mm 0...40 mm
	0...70 mm	0...30 mm									
	0...100 mm	0...40 mm	0...55 mm	0...55 mm	0...48 mm	0...55 mm					
	0...100 mm	0...40 mm	0...55 mm	0...55 mm	0...48 mm	0...55 mm					
							0...32 mm	0...45 mm	0...20 mm	0...28 mm	0...45 mm
							0...44 mm	0...70 mm	0...30 mm	0...38 mm	0...60 mm
	0...30 mm										
							0...30 mm	0...45 mm	0...20 mm	0...28 mm	0...40 mm
								0...50 mm			0...50 mm

> 40 mm

		Read/write heads						
		BIS C-350-00.3 Page 43	**BIS C-351-_ _** Page 41	**BIS L-300-S115** Page 93	**BIS L-301-S115** Page 94	**BIS L-302-S115** Page 96/97	**BIS L-303-S115** Page 95	
Data carrier	**Memory capacity in bytes**	**Read/write distance**						
BIS C-150-05/A **BIS C-150-11/A** **BIS C-150-32/A** Page 27	1023 2047 8192	0...100 mm 0...100 mm 0...100 mm	0...45 mm 0...45 mm 0...45 mm					
BIS S-150-42/A **BIS S-150-52/A** Page 185	16k 32k							
BIS L-100-01/L Page 88 **BIS L-100-05/L-RO** Page 91	192 3 + CRC (read only)			0...30 mm 0...40 mm	0...40 mm 0...50 mm	0...20 mm 0...25 mm	0...40 mm 0...50 mm	
BIS L-200-03/L Page 91	5 (read only)			0...40 mm	0...50 mm	0...25 mm	0...50 mm	
BIS L-101-01/L Page 88 **BIS L-101-05/L-RO** Page 91 **BIS L-201-03/L** Page 91	192 3 + CRC (read only) 5 (read only)			0...40 mm 0...50 mm 0...50 mm	0...55 mm 0...70 mm 0...70 mm	0...25 mm 0...30 mm 0...30 mm	0...55 mm 0...70 mm 0...70 mm	
BIS L-102-01/L Page 88 **BIS L-102-05/L-RO** Page 91 **BIS L-202-03/L** Page 91	192 3 + CRC (read only) 5 (read only)			0...55 mm 0...70 mm 0...70 mm	0...70 mm 0...100 mm 0...100 mm	0...30 mm 0...40 mm 0...40 mm	0...70 mm 0...100 mm 0...100 mm	
BIS M-102-01/L Page 137 **BIS M-112-02/L** Page 138	752 2000							
BIS M-108-02/L Page 139	2000							
BIS M-120-01/L Page 139	752							
BIS M-150-02/A **BIS M-151-02/A** Page 141	2000 2000							

	BIS L-400-035-001-00-S115 **BIS L-400-035-001-02-S115** Page 106	**BIS L-400-043-001-02-S115** Page 120	**BIS L-405-033-001-05-MU** **BIS L-405-037-001-05-MU** Page 104	**BIS M-300-001-S115** **BIS M-300-003-S115** Page 147	**BIS M-301-001-S115** **BIS M-301-003-S115** Page 149	**BIS M-351-001-S115** Page 148	**BIS M-401-007-001-00-S115** Page 157	**BIS M-451-007-001-00-S115** Page 156	**BIS S-301-S115** Page 187
									10...50 mm 10...50 mm
	0...30 mm 0...30 mm	0...30 mm 0...30 mm	0...30 mm 0...30 mm						
	0...40 mm 0...40 mm	0...40 mm 0...40 mm	0...40 mm 0...40 mm						
	0...55 mm 0...55 mm	0...55 mm 0...55 mm	0...55 mm 0...55 mm						
				0...32 mm 0...44 mm	0...45 mm 0...70 mm		0...45 mm 0...60 mm		
				0...30 mm	0...45 mm		0...40 mm		
					0...50 mm		0...50 mm		
						0...60 mm 0...60 mm On metal		0...60 mm 0...60 mm On metal	

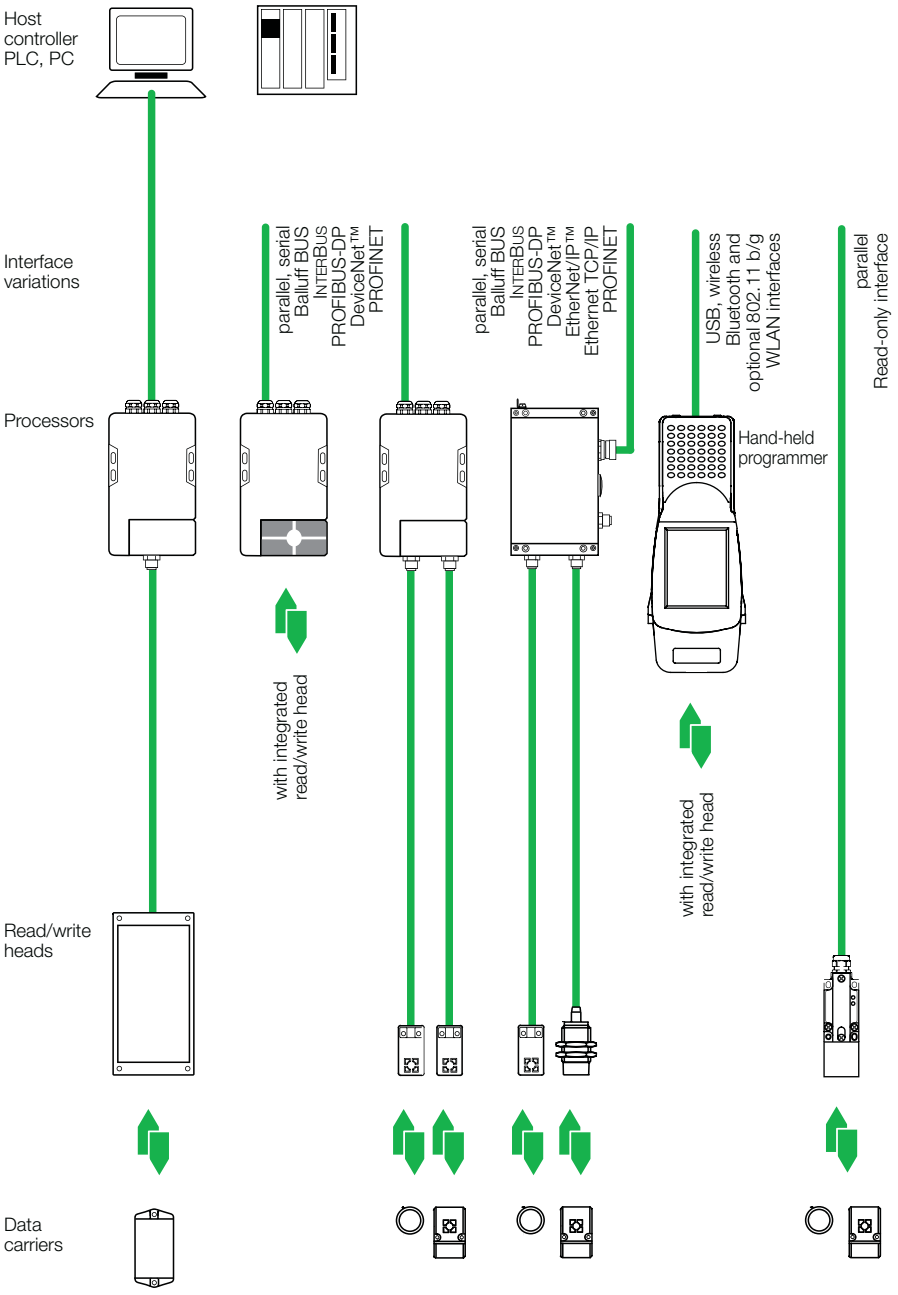

Head 2
Head 1
Ready
CT Present
CT Operating
X1
BALLUFF
BIS C-6027 Ethernet
IP
BALLUFF
BIS C-128-05/L
CE
S8
X2
S1
X3
BALLUFF
BALLUFF
sensors worldwide

Contents

This section includes durable machine tool RFID solutions.

This section includes simple read-only RFID solutions.

This section provides specifications on the rugged and durable BIS C series read/write RFID solutions.

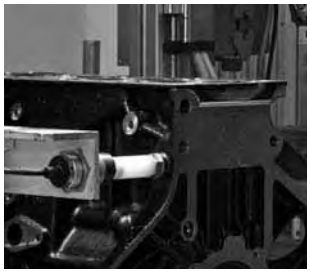


Many variants, wide spectrum – BIS C

Combine BIS C components according to your needs

BIS C

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



Data carrier	Tools		Production				
	Data storage on machine tools		Tool and die management		Assembly conveying systems		
	Tool holder collar	Retention knob	On tool	Dies	Pallets	On part	
BIS C-100-05/A	■		■			■	
BIS C-103-05/A	■	■		■	■	■	
BIS C-104-11/A					■		
BIS C-104-32/A					■		
BIS C-105-05/A	■	■	■	■		■	
BIS C-108-05/L				■	■		
BIS C-108-11/L				■	■		
BIS C-108-32/L				■	■		
BIS C-108-05/L-SA2					■		
BIS C-108-11/L-SA2					■		
BIS C-117-05/A				■	■		
BIS C-117-05/L				■	■		
BIS C-117-11/L				■	■		
BIS C-121-04/L	■		■			■	
BIS C-121-04/L-SA1					■		
BIS C-122-04/L	■	■	■			■	
BIS C-122-11/L	■	■	■			■	
BIS C-127-05/L							
BIS C-128-05/L				■	■	■	
BIS C-128-11/L				■	■	■	
BIS C-130-05/L			■		■		
BIS C-130-05/L-SA1			■		■		
BIS C-133-05/L					■		
BIS C-134-05/L				■	■		
BIS C-150-05/A					■		
BIS C-150-11/A					■		
BIS C-150-32/A					■		
BIS C-190-05/L					■		
BIS C-190-11/L					■		
BIS C-190-32/L					■		
BIS C-191-05/L					■		
BIS C-191-11/L					■		

	Intralogistics						Access and object control												
	Closed logistics circuits		Storage and retrieval equipment Storage and tracking		Intelligent vehicles (driverless transport vehicles)		Object detection		Access control Entry control			Read/write	Dynamic or static	Installation in metal	For harsh environments	Long distances (> 16 mm)	EEPROM	FRAM
	Retainer/workpiece carrier	Pallets	Retainer/workpiece carrier	Workpiece carrier Skid	Guiding, steering	Identification	In component	On component	Reliable access control	Process access	PartID							
	■						■					■		■	■		■	
	■	■										■	■	■	■		■	
		■	■	■								■	■	■	■		■	
		■	■	■								■	■	■	■			■
			■					■				■		■	■		■	
		■	■		■			■				■	■		■		■	
		■	■		■			■				■	■				■	
		■	■		■			■				■	■					■
	■	■										■	■		■		■	
	■	■										■	■		■		■	
		■		■		■						■	■	■	■		■	
		■		■		■						■	■					
		■		■		■						■	■				■	
									■			■		■	■		■	
		■	■									■					■	
									■		■	■		■	■		■	
									■		■	■		■	■		■	
				■	■							■	■		■	■	■	
	■	■						■				■	■		■		■	
	■	■						■				■	■		■		■	
	■	■	■								■	■	■		■		■	
	■	■						■			■	■	■		■		■	
	■	■										■	■		■		■	
		■		■	■							■	■		■	■	■	
		■		■	■							■	■		■	■	■	
		■		■	■							■	■		■	■		■
	■	■	■					■				■					■	
	■	■	■					■				■					■	
	■	■	■					■				■						■
	■	■	■					■				■					■	
	■	■	■					■				■					■	

BIS C

Range of Applications

- Selection Criteria
- Data Carriers Read/Write
- Read/Write Heads
- Read/Write Heads with Connector
- Read/Write Heads – Long Distances
- Data Couplers
- Modular Read/Write Heads
- Modular Head Adapters
- 8-bit Read-Only Processor
- Read-Only Parallel Processors
- Processors
- Metal Housing Processors
- Handy Programmer
- Handheld Programmer
- Machine Tool ID Interface
- Read/Write Handle Accessory
- Access Security System
- Read/Write Gun Accessory
- Installation Notes
- Read/Write Times

Use the tables and combine BIS C read/write head with tag based on range.

In three steps you will have selected your BIS C system:
1. First choose the appropriate form factor for your data carrier.
2. Then determine your read/write head based on range.
3. Finally, determine the desired memory capacity. Many tags provide several sizes.

Questions?

Whatever you need, whether analysis, selection and return on investment, formats, interfaces and software, installation, disassembly and retrofitting – in short: we are here to help you in every way.

Take advantage of our personal consultation, individual support and worldwide service.

0-12 mm

Read/write heads

Data carrier	Memory capacity in bytes	Read/write distance								
		BIS C-300-_ _ / BIS C-306-_ _ Page 30	**BIS C-302-_ _** Page 31	**BIS C-305-_ _** Page 32	**BIS C-310-_ _** Page 35	**BIS C-318-_ _** Page 41	**BIS C-325-_ _** Page 36	**BIS C-327-_ _** Page 40	**BIS C-328-_ _-S49** Page 40	**BIS C-60R-... / BIS C-61R-...** Page 50/51
BIS C-100-05/A Page 25	1023	**0...4 mm**	**0...4 mm**	**0...4 mm**			**0...4 mm**			0...6 mm **0...5 mm**
BIS C-103-05/A Page 24	1023	**0...3,5 mm**	**0...3 mm**	**0...5 mm**						**0...4 mm**
BIS C-104-11/A **BIS C-104-32/A** Page 26	2047 8192				**0...11 mm** 0...12 mm					1...8 mm 1...8 mm
BIS C-105-05/A Page 24	1023	**0...3,5 mm**	**0...3 mm**	**0...5 mm**			**0...5 mm**			0...4 mm
BIS C-108-05/L **BIS C-108-11/L** **BIS C-108-32/L** Page 26	1023 2047 8192			0...6 mm 0...6 mm 0...6 mm	0...12 mm 0...12 mm 0...12 mm	0...6 mm 0...6 mm 0...6 mm		0...8 mm		1...8 mm **0...6 mm**
BIS C-108-05/L-SA2 **BIS C-108-11/L-SA2** Page 28	1023 2047				**0...11 mm** **0...4 mm**	**0...6 mm**				
BIS C-117-05/A **BIS C-117-05/L** Page 25	1023 1023			**0...8 mm** 0...7 mm	**0...12 mm** 0...13 mm	0...7 mm				**1...8 mm** 1...8 mm
BIS C-121-04/L Page 24	511	**0...2 mm**	**0...1,5 mm**	**0...2 mm**			**0...1,7 mm**			1...5 mm
BIS C-121-04/L-SA1 Page 28	511	**0...1,2 mm**	**0...0,7 mm**	**0...1,2 mm**						0...4 mm
BIS C-122-04/L **BIS C-122-11/L** Page 24	511 2047	**0...2,5 mm** **0...2,5 mm**	**0...2 mm** **0...2 mm**	**0...2,5 mm** **0...2,5 mm**			**0...2,5 mm** **0...2,5 mm**		0...3 mm 0...3 mm	1...5 mm 1...5 mm
BIS C-128-05/L **BIS C-128-11/L** Page 25	1023 2047			0...6 mm 0...6 mm	**0...8 mm** 0...13 mm	0...7,5 mm 0...7,5 mm		0...8 mm 0...8 mm		3...12 mm 3...12 mm
BIS C-130-05/L Page 25	1023	**0...4 mm**	**0...3,5 mm**	0...7 mm			0...4 mm			1...8 mm
BIS C-130-05/L-SA1 Page 28	1023	0...4 mm	0...4 mm	0...7 mm	**0...8 mm**		0...4 mm			1...8 mm
BIS C-133-05/L Page 29	1023				0...10 mm					
BIS C-134-11/L Page 28	2047	**0...3 mm**		**0...6 mm**	**0...10 mm**		**0...4 mm**			
BIS C-190-05/L **BIS C-190-11/L** **BIS C-190-32/L** Page 27	1023 2047 8192				0...11 mm 0...11 mm 0...11 mm	0...8 mm 0...8 mm 0...8 mm		0...8 mm 0...8 mm 0...8 mm		
BIS C-191-05/L **BIS C-191-11/L** Page 27	1023 2047	0...3,5 mm 0...3,5 mm	0...3 mm 0...3 mm		0...10 mm 0...10 mm		0...3 mm 0...3 mm			

0...2 mm = Data carrier flush mounted in steel

8-20 mm





		Read/write heads				
		BIS C-315-_ _ Page 34	BIS C-319-_ _ Page 33	BIS C-323-_ _ Page 37	BIS C-324-_ _ Page 39	BIS C-326-_ _ Page 33
Data carrier	**Memory capacity in bytes**	**Read/write distance**				
BIS C-104-11/A **BIS C-104-32/A** Page 26	2047 8192	**1...13 mm** **1...13 mm**		**1...11 mm** 0...12 mm	**1...11 mm** 0...12 mm	
BIS C-108-05/L **BIS C-108-11/L** **BIS C-108-32/L** Page 26	1023 2047 8192	0...16 mm 0...16 mm 0...16 mm	0...14 mm 0...14 mm 0...14 mm	0...12 mm 0...12 mm 0...12 mm	0...12 mm 0...12 mm 0...12 mm	
BIS C-108-05/L-SA2 **BIS C-108-11/L-SA2** Page 28	1023 2047	0...16 mm 0...16 mm		0...11 mm 0...11 mm	0...11 mm 0...11 mm	0...12 mm 0...12 mm
BIS C-117-05/A **BIS C-117-05/L** Page 25	1023 1023	**0...15 mm** 0...20 mm	**0...13 mm** 0...15 mm	**1...12 mm** 0...13 mm	**1...12 mm** 0...13 mm	0...18 mm
BIS C-128-05/L **BIS C-128-11/L** Page 25	1023 2047	0...18 mm 0...18 mm		**0...8 mm** 0...13 mm	**0...8 mm** 0...13 mm	0...15 mm 0...15 mm
BIS C-130-05/L Page 25	1023	0...18 mm	0...13 mm	0...11 mm		0...13 mm
BIS C-130-05/L-SA1 Page 28	1023	0...18 mm	0...13 mm	**0...8 mm**	**0...8 mm**	0...13 mm
BIS C-133-05/L Page 29	1023	**0...15 mm**		**0...10 mm**	**0...10 mm**	**0...12 mm**
BIS C-134-11/L Page 28	2047	**0...16 mm**	**0...12 mm**	**0...10 mm**	**0...10 mm**	0...10 mm
BIS C-190-05/L **BIS C-190-11/L** **BIS C-190-32/L** Page 27	1023 2047 8192	0...20 mm 0...20 mm 0...20 mm		0...11 mm 0...11 mm 0...11 mm	0...11 mm 0...11 mm 0...11 mm	0...18 mm 0...18 mm 0...18 mm
BIS C-191-05/L **BIS C-191-11/L** Page 27	1023 2047		0...11 mm 0...11 mm	0...10 mm 0...10 mm	0...10 mm 0...10 mm	

15-30 mm

		Read/write heads
		BIS C-315-_ _ Page 34
Data carrier	**Memory capacity in bytes**	**Read/write distance**
BIS C-117-05/L **BIS C-117-11/L** Page 25	1023 2047	0...20 mm 0...20 mm
BIS C-127-05/L Page 26	1023	0...30 mm
BIS C-190-05/L **BIS C-190-11/L** **BIS C-190-32/L** Page 27	1023 2047 8192	0...20 mm 0...20 mm 0...20 mm

25-50 mm

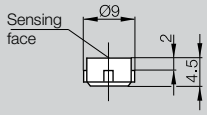

		Read/write heads	
		BIS C-351-_ _ Page 41	BIS C-355/05-S92 Page 43
Data carrier	**Memory capacity in bytes**	**Read/write distance**	
BIS C-150-05/A **BIS C-150-11/A** **BIS C-150-32/L** Page 27	1023 2047 8192	0...45 mm 0...45 mm 0...45 mm	0...35 mm 0...35 mm 0...35 mm

> 40 mm

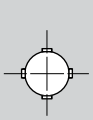

		Read/write heads	
		BIS C-350-00.3 Page 43	BIS C-351-_ _ Page 41
Data carrier	**Memory capacity in bytes**	**Read/write distance**	
BIS C-150-05/A **BIS C-150-11/A** **BIS C-150-32/A** Page 27	1023 2047 8192	0...100 mm 0...100 mm 0...100 mm	0...45 mm 0...45 mm 0...45 mm

Dimensions		**Ø 9x4.5**	**Ø 10×4.5**	**Ø 12×8**	**Ø 12×6**
Housing material		EP	EP	EP	EP
Antenna type		round	round	round	round
Weight		0.5 g	0.7 g	1.8 g	1.2 g

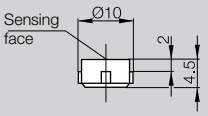
CE
c UL us LISTED
Control No 3TLJ
File No E227256



glue into hole Ø 9 H11


PI0120

Note installation instructions on page 78-81.

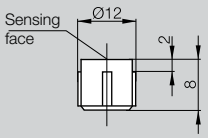


glue into hole Ø 10 H11

DIN 69 873


PI0119

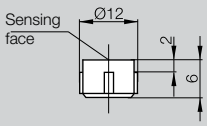
Note installation instructions on page 78-81.



glue into hole Ø 12 H11


PI0008

Note installation instructions on page 78-81.



glue into hole Ø 12 H11


PI0009

Note installation instructions on page 78-81.

BIS C Programmable

511 bytes	Part number	BIS C-121-04/L	BIS C-122-04/L		
1023 bytes	Part number			BIS C-103-05/A	BIS C-105-05/A
2047 bytes	Part number		BIS C-122-11/L		
8 Kbytes	Part number				
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*
Protection per IEC 60529		IP 68	IP 68	IP 68	IP 68

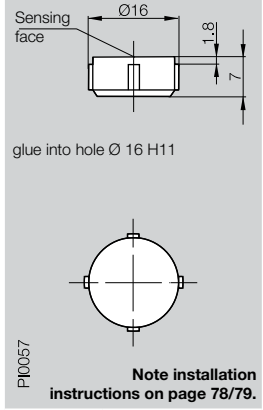
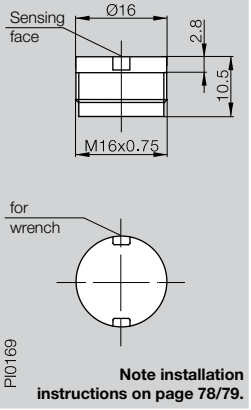
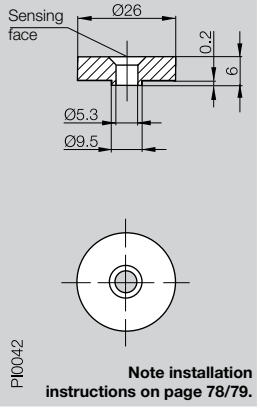
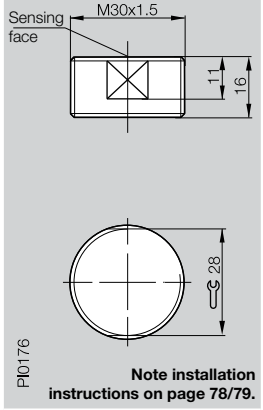
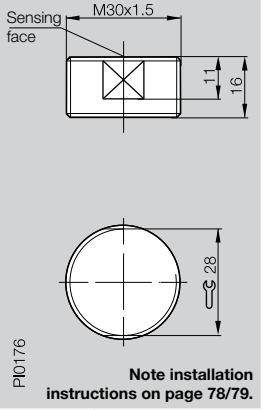
Mounting in steel			flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel
Appropriate read/write head		BIS C-300	2 mm	3 mm	BIS C-300	2,5 mm	3 mm	BIS C-300	3,5 mm	4 mm	BIS C-300	3,5 mm	4 mm
with max. read/write distance		BIS C-302	1,5 mm	2,5 mm	BIS C-302	2,0 mm	2,5 mm	BIS C-302	3 mm	3,5 mm	BIS C-302	3 mm	3,5 mm
		BIS C-305	2 mm	3 mm	BIS C-305	2,5 mm	3 mm	BIS C-305	5 mm	6 mm	BIS C-305	5 mm	6 mm
		BIS C-306	2 mm	3 mm	BIS C-306	2,5 mm	3 mm	BIS C-306	3,5 mm	4 mm	BIS C-306	3,5 mm	4 mm
		BIS C-325	1,7 mm	3 mm	BIS C-325	2,5 mm	3 mm	BIS C-325	4,5 mm	5 mm	BIS C-325	4,5 mm	5 mm
					BIS C-328		3 mm						

*also available for up to +120 °C on request

Machine tool identification
Ideal for imbedding in metal tool holders.

Read/Write Cycles

Data carriers	Memory type	Write cycles up to 30 °C	Write cycles up to 70 °C	Read cycles	Memory organization
511 bytes	EEPROM	1 000 000	500 000	unlimited	32 bytes per block
1023 bytes	EEPROM	1 000 000	500 000	unlimited	32 bytes per block
2047 bytes	EEPROM	1 000 000	500 000	unlimited	64 bytes per block
8 Kbytes	FRAM	unlimited	unlimited	unlimited	64 bytes per block

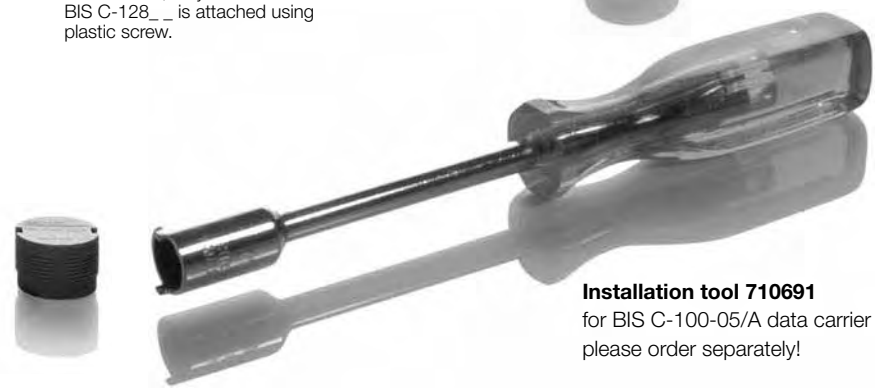
	Ø 16×7	Ø 16×10.5	Ø 26×6	Ø 30×16	Ø 30×16 air coil
	EP	PA 66	EP	PBT	PBT
	round	round	round	round	round
	2 g	3 g	6 g	23 g	5.5 g
	 **Note installation instructions on page 78/79.**	 **Note installation instructions on page 78/79.**	 **Note installation instructions on page 78/79.**	 **Note installation instructions on page 78/79.**	 **Note installation instructions on page 78/79.**
	BIS C-130-05/L	BIS C-100-05/A	BIS C-128-05/L BIS C-128-11/L	BIS C-117-05/A	BIS C-117-05/L BIS C-117-11/L
	–30...+70 °C –30...+85 °C*	0...+70 °C –20...+85 °C	–20...+70 °C –30...+85 °C*	30...+70 °C –30...+85 °C	30...+70 °C –30...+85 °C
	IP 68	IP 68	IP 68	IP 68	IP 68

	flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel
BIS C-300	4 mm	4 mm	BIS C-300	4 mm	4 mm	BIS C-305**	3,5 mm	6 mm	BIS C-305	8 mm	10 mm	BIS C-305		7 mm
BIS C-305	6 mm	7 mm	BIS C-302	4 mm	4 mm	BIS C-310	8 mm	13 mm	BIS C-310	12 mm	13 mm	BIS C-310		13 mm
BIS C-306	4 mm	4 mm	BIS C-305	4 mm	4 mm	BIS C-315		18 mm	BIS C-315	15 mm	22 mm	BIS C-315		20 mm
BIS C-310		11 mm	BIS C-306	4 mm	4 mm	BIS C-318		7,5 mm	BIS C-319	13 mm	16 mm	BIS C-318	8 mm	7 mm
BIS C-315		18 mm	BIS C-325	4 mm	4 mm	BIS C-319		14 mm	BIS C-323	12 mm	13 mm	BIS C-319		15 mm
BIS C-319	6 mm	13 mm				BIS C-323	8 mm	13 mm	BIS C-324	12 mm	13 mm	BIS C-323		13 mm
BIS C-323		11 mm				BIS C-324	8 mm	13 mm				BIS C-324		13 mm
BIS C-325	4 mm	5 mm				BIS C-326		15 mm				BIS C-326		18 mm
BIS C-326		13 mm				BIS C-327		8 mm						

Compatible screws for BIS C-128-...data carriers:
DIN EN ISO 2009 M5 (countersunk slot head screw)
DIN EN ISO 7046-1 M5 (countersunk Phillips head screw)
Screw tightening torque 2.5 Nm

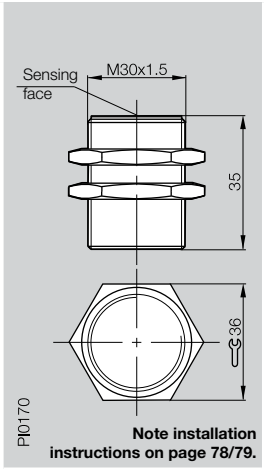
**BIS C-305, only if BIS C-128_ _ is attached using plastic screw.

Ideal for use on pallets

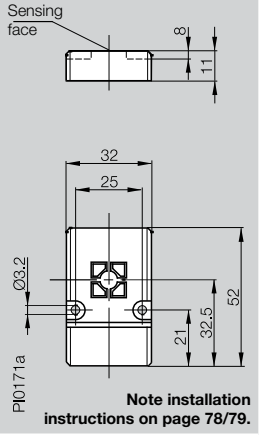


Installation tool 710691
for BIS C-100-05/A data carrier
please order separately!

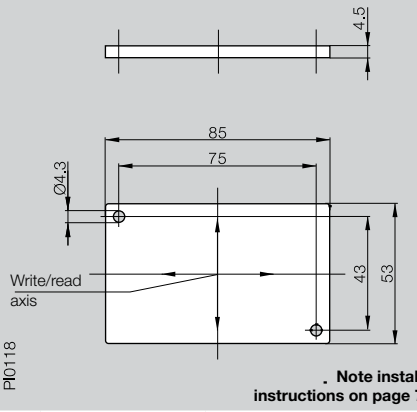
Dimensions		**Ø 30x35**			**52×32×11**			**85×53×4.5**			
Housing material		Nickel plated brass			PBT			ABS			
Antenna type		round			round			round			
Weight		54 g			28 g			30 g			



Note installation instructions on page 78/79.



Note installation instructions on page 78/79.



. Note installation instructions on page 78/79.

BIS C Programmable

511 bytes	Part number										
1023 bytes	Part number				BIS C-108-05/L			BIS C-127-05/L			
2047 bytes	Part number	BIS C-104-11/A			BIS C-108-11/L						
8 Kbytes	Part number	BIS C-104-32/A			BIS C-108-32/L						
Operating temperature		–30...+70 °C			–30...+70 °C			0...+60 °C			
Storage temperature		–30...+85 °C			–30...+85 °C			–20...+60 °C			
Protection per IEC 60529		IP 67			IP 68			IP 65			
Mounting in steel			flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel	
Appropriate read/write head with max. read/write distance		BIS C-310	11 mm	12 mm	BIS C-305		6 mm	BIS C-315		30 mm	
		BIS C-315	13 mm	14 mm	BIS C-310	5 mm	12 mm	BIS C-318		25 mm	
		BIS C-323	11 mm	12 mm	BIS C-315	10 mm	16 mm				
		BIS C-324	11 mm	12 mm	BIS C-318		7 mm				
					BIS C-319	11 mm	14 mm				
					BIS C-323		12 mm				
					BIS C-324		12 mm				
					BIS C-327		8 mm				
		Screw tightening torque 40 Nm									

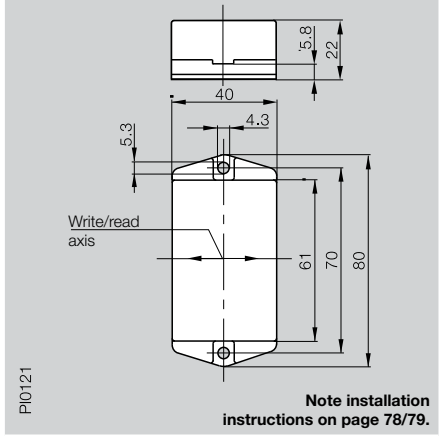
Specially designed for palletizing/logistics

Pallet Tags

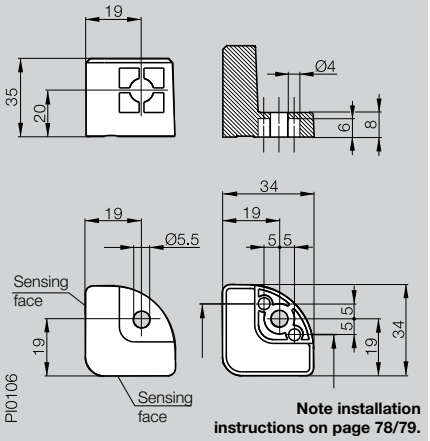
Read/Write Cycles

Data carriers	Memory type	Write cycles up to 30 °C	Write cycles up to 70 °C	Read cycles	Memory organization
511 bytes	EEPROM	1 000 000	500 000	unlimited	32 bytes per block
1023 bytes	EEPROM	1 000 000	500 000	unlimited	32 bytes per block
2047 bytes	EEPROM	1 000 000	500 000	unlimited	64 bytes per block
8 Kbytes	FRAM	unlimited	unlimited	unlimited	64 bytes per block

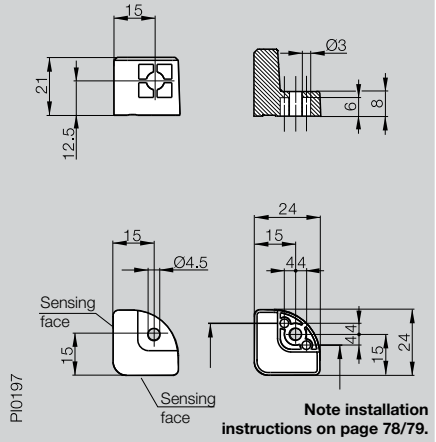
	80×40×22	34×34	12.5×12.5
	POM	PBT	PBT
	rod	round/double	round/double
	75 g	29 g	10 g



Note installation instructions on page 78/79.



Note installation instructions on page 78/79.



Note installation instructions on page 78/79.

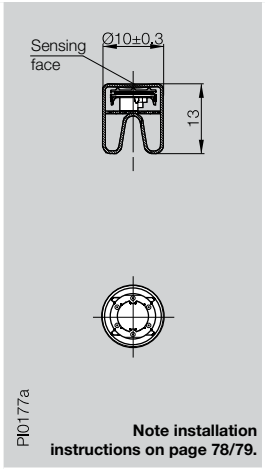
	BIS C-150-05/A			BIS C-190-05/L			BIS C-191-05/L				
	BIS C-150-11/A			BIS C-190-11/L			BIS C-191-11/L				
	BIS C-150-32/A			BIS C-190-32/L							
	–30...+70 °C			–30...+70 °C			–30...+70 °C				
	–30...+85 °C			–30...+85 °C			–30...+85 °C				
	IP 68			IP 68			IP 68				
		flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel		
	BIS C-350		100 mm	BIS C-310		11 mm	BIS C-300		3,5 mm		
	BIS C-351		50 mm	BIS C-315		20 mm	BIS C-306		3,5 mm		
				BIS C-318		8 mm	BIS C-310		10 mm		
				BIS C-323		11 mm	BIS C-319		11 mm		
				BIS C-324		11 mm	BIS C-323		10 mm		
				BIS C-326		18 mm	BIS C-324		10 mm		
				BIS C-327		8 mm	BIS C-325		3,5 mm		

Screw tightening torque 1.5 Nm, anti-torquing installation provided by straight pin Ø 4 mm according to DIN EN 22338; DIN EN 28734

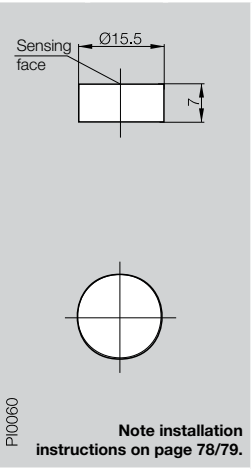
Screw tightening torque 1.5 Nm, anti-torquing installation provided by straight pin Ø 3 mm according to DIN EN 22338; DIN EN 28734

Dual Coil Data Carrier
Advantages:
Reading or writing can be performed on either active surface.

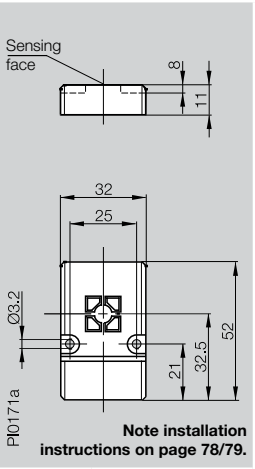
Dimensions	**Ø 11×13**	**Ø 15.5×7**	**52×32×11**	**25×25**
Housing material	Glass	PBT	PBT	PA 66-GF30
Antenna type	round	round	round	round
Weight	0.9 g	2 g	28 g	9 g



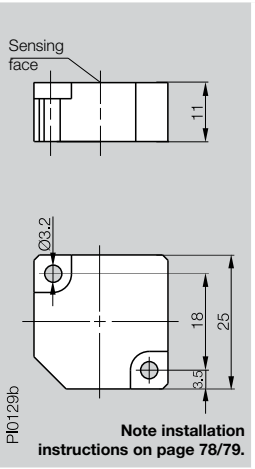
Note installation instructions on page 78/79.



Note installation instructions on page 78/79.



Note installation instructions on page 78/79.



Note installation instructions on page 78/79.

BIS C Programmable

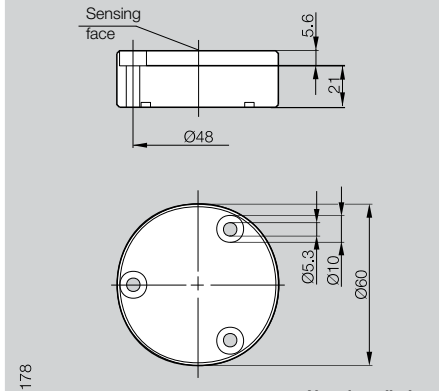
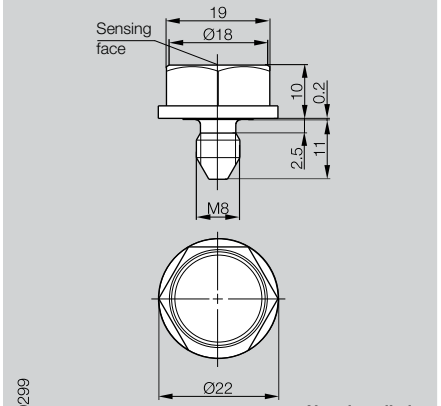
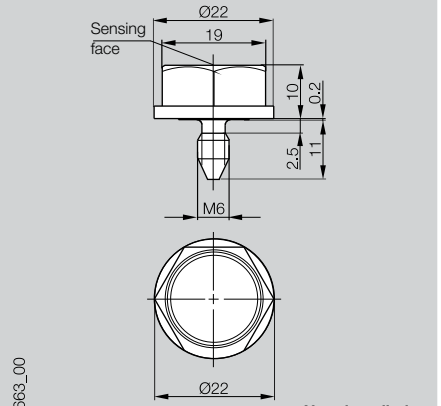
511 bytes	Part number	BIS C-121-04/L-SA1												
1023 bytes	Part number				BIS C-130-05/L-SA1			BIS C-108-05/L-SA2			BIS C-134-05/L-H120			
2047 bytes	Part number							BIS C-108-11/L-SA2			BIS C-134-11/L			
8 Kbytes	Part number													
Operating temperature		+10...+70 °C			–30...+70 °C			–30...+70 °C			–30...+70 °C			
Storage temperature		+10...+126 °C			–30...+85 °C			–30...+85 °C*			–30...+85 °C*			
Protection per IEC 60529		IP 68			IP 68			IP 68			IP 68			
Mounting in steel			flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel		flush in steel	mount on steel	
Appropriate read/write head		BIS C-300	1,2 mm		BIS C-300	4 mm	6 mm	BIS C-305		6 mm	BIS C-300	3 mm		
with max. read/write distance		BIS C-302	0,7 mm		BIS C-305	6 mm	11 mm	BIS C-310	4 mm	11 mm	BIS C-305		6 mm	
		BIS C-305	1,2 mm		BIS C-306	4 mm	16 mm	BIS C-315	10 mm	16 mm	BIS C-306	3 mm		
		BIS C-306	1,2 mm		BIS C-310	8 mm	6 mm	BIS C-318		6 mm	BIS C-310		10 mm	
		BIS C-325	1,7 mm		BIS C-319	7 mm	11 mm	BIS C-323	4 mm	11 mm	BIS C-315		16 mm	
					BIS C-323	8 mm	11 mm	BIS C-324	4 mm	11 mm	BIS C-319		12 mm	
					BIS C-324	8 mm	12 mm	BIS C-326		12 mm	BIS C-323		10 mm	
					BIS C-325	4 mm					BIS C-324		10 mm	
					BIS C-326						BIS C-325		4 mm	
											BIS C-326		12 mm	
Suitable for		use in autoclaves			use in vacuum			use in vacuum			use in vacuum			

*also available for up to +120 °C on request

Reliable identification, even in a vacuum

Read/Write Cycles

Data carriers	Memory type	Write cycles up to 30 °C	Write cycles up to 70 °C	Read cycles	Memory organization
511 bytes	EEPROM	1 000 000	500 000	unlimited	32 bytes per block
1023 bytes	EEPROM	1 000 000	500 000	unlimited	32 bytes per block
2047 bytes	EEPROM	1 000 000	500 000	unlimited	64 bytes per block
8 Kbytes	FRAM	unlimited	unlimited	unlimited	64 bytes per block

	Ø 60×21	**Ø 22×21**	**Ø 22**
	POM	42CrMoV	PA 66-GF30
	round	round	round
	85 g	18 g	18 g
	 **Note installation instructions on page 78/79.**	 **Note installation instructions on page 78/79.**	 **Note installation instructions on page 78/79.**
	BIS C-133-05/L	BIS C-140-05/L-M8 BIS C-140-11/L-M8	BIS C-140-05/L-M6 BIS C-140-11/L-M6
	–30...+70 °C –30...+85 °C	–30...+70 °C –30...+85 °C	–30...+70 °C –30...+85 °C
	IP 68	IP 68	IP 68

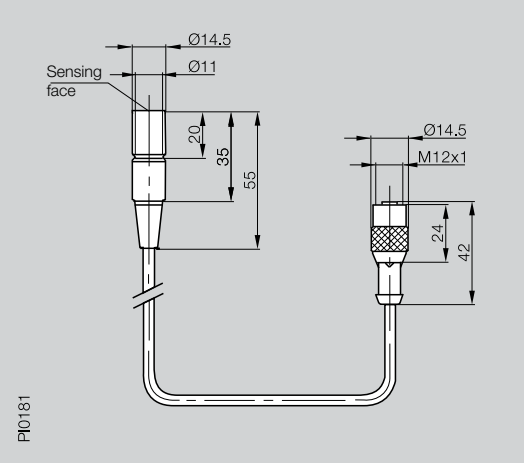
	flush in steel	mount on steel		flush in steel			flush in steel	
BIS C-310	10 mm	10 mm	BIS C-300	3 mm		BIS C-300	3 mm	
BIS C-315	15 mm	15 mm	BIS C-305	4,5 mm		BIS C-305	4,5 mm	
BIS C-323	10 mm	10 mm	BIS C-306	3 mm		BIS C-306	3 mm	
BIS C-324	10 mm	10 mm	BIS C-310	7 mm		BIS C-310	7 mm	
BIS C-326	12 mm	12 mm	BIS C-323	7 mm		BIS C-323	7 mm	
			BIS C-324	7 mm		BIS C-324	7 mm	
use in vacuum			use in vacuum			use in vacuum		

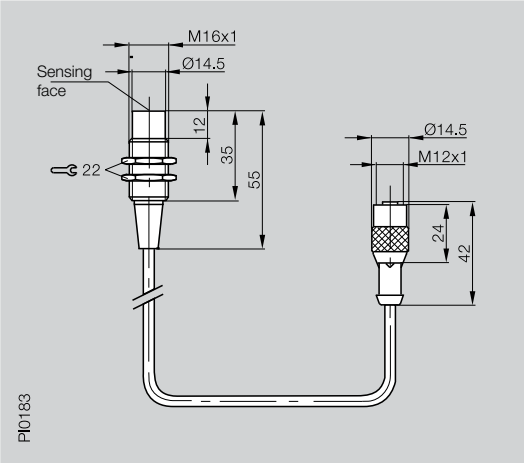
Databolt™
Ideal for automatic insertion and removal from parts like engine blocks and heads.

BIS C-131-05/L for radial data retrieval from rotating parts, positioning not required. Contact us.

Dimensions	**Ø 14.5**	**M16**
Housing material	CuZn	CuZn
Antenna type	round	round
Weight	210 g	200 g

c UL us LISTED
Control No 3TLJ
File No E227256





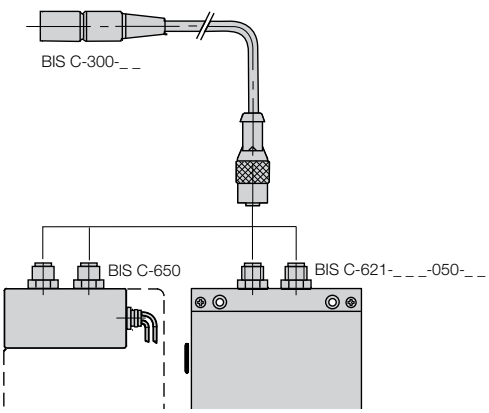
Part number		BIS C-300-_ _						BIS C-306-_ _					
Mounting in steel		flush											
Operating temperature		0...+70 °C											
Storage temperature		–20...+85 °C											
Protection per IEC 60529		IP 67											
Cable		1 m, 5 m or 10 m/PUR											
Connection to		Processor											
Appropriate data carriers		BIS C-100-05/A flush in steel	BIS C-103-05/A flush in steel	BIS C-105-05/A flush in steel	BIS C-121-04/L flush in steel	BIS C-121-04/L-SA1 flush in steel	BIS C-122-04/L flush in steel	BIS C-130-05/L flush in steel	BIS C-134-_ _-L flush in steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 mount on steel	BIS C-130-05/L-SA6	BIS C-191-_ _/-L mount on steel
Static mode													
Write distance 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	0-3,5
Read distance 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	0-3,5
Offset in mm	0.7 mm					±2							
at distance	1 mm	±3	±3	±3	±2		±2,5	±3,5	±4	±5	±5	±3,5	±4
	3 mm	±2	±2	±2				±3		±4	±4	±2	±3
Dynamic mode													
Read/write distance in mm		1	1	1	1		1	1-3	1-2	1-3	1-3	1-3	1-3
V_{max} to write bytes 0...3 in m/min									5-4	7-5	7-5	5-2,5	6-4
V_{max} to read bytes 0...3 in m/min		8	6	6	6		6	7	8-7	10-8	10-8	9-4	10-7

For read/write heads with connector, please append cable length to part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

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

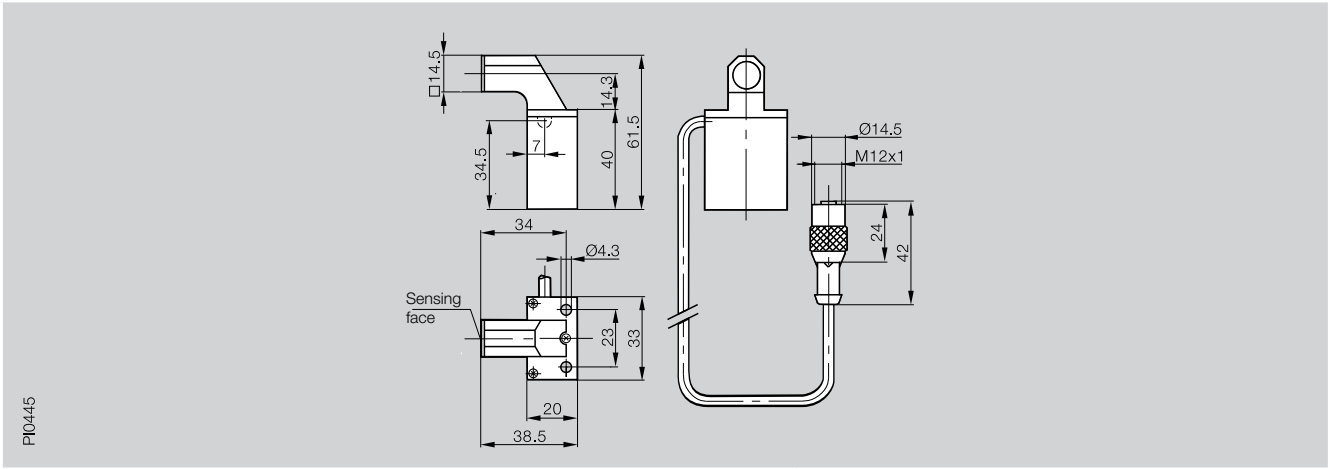
Recommended for machine tool identification.

Example:



Handle BIS C-300-HG1
for read/write head BIS C-300-_ _
Material: POM
see page 210

	Angle
	AlMg3/PA 66
	round
	270 g

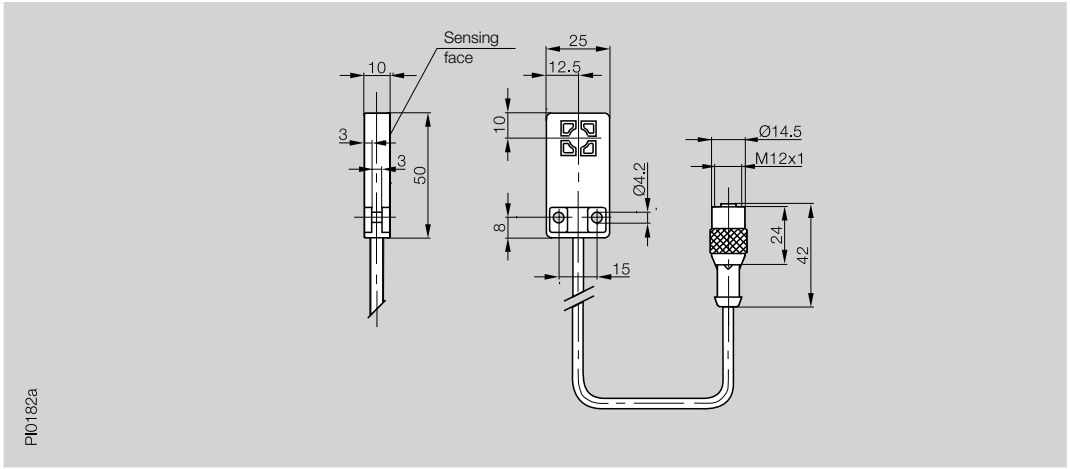


	BIS C-302-_ _										
	flush										
	0...+70 °C										
	–20...+85 °C										
	IP 67										
	5 m or 10 m PUR										
	Processor										
	BIS C-100-05/A flush in steel	BIS C-103-05/A flush in steel	BIS C-105-05/A flush in steel	BIS C-121-04/L flush in steel	BIS C-121-04/L-SA1 flush in steel	BIS C-122-04/L flush in steel	BIS C-130-05/L flush in steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 mount on steel	BIS C-191-_ _/L mount on steel
	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
	1	1	1	1		1	1-3	1-3	1-3	1-3
								6-3	6-3	4-3
	8	6	6	4		5	5	8-5	8-5	6-5

Recommended for roller conveyor use.

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

Dimensions	**50×25×10**
Housing material	ABS-GF16
Antenna type	round
Weight	230 g

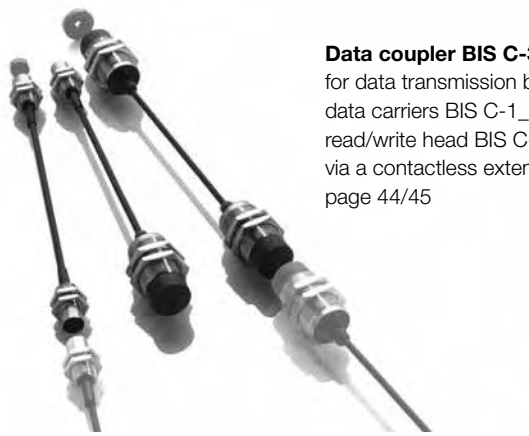


Part number	BIS C-305-_ _
Mounting in steel	flush
Operating temperature	0...+70 °C
Storage temperature	–20...+85 °C
Protection per IEC 60529	IP 67
Cable	1 m, 5 m or 10 m/PVC
Connection to	Processor

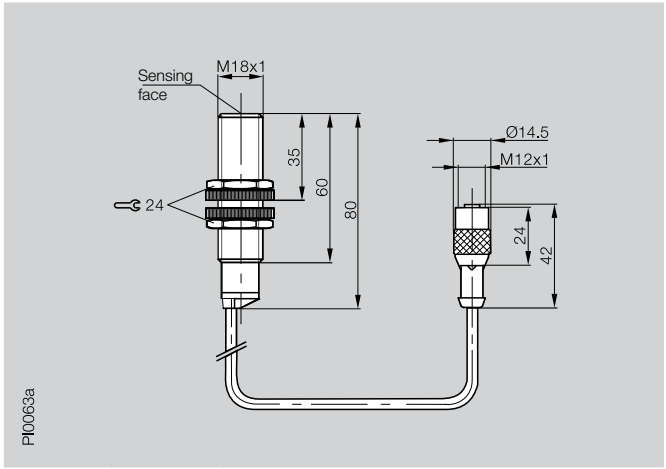
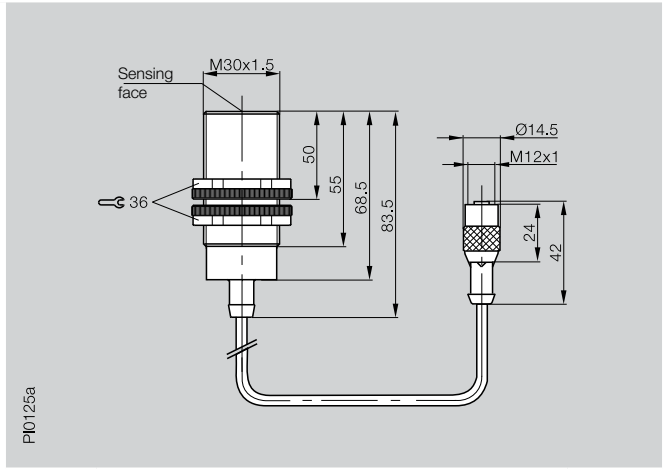
Appropriate data carriers		BIS C-100-05/A flush in steel	BIS C-103-05/A BIS C-105-05/A flush in steel	BIS C-108-_ _/L BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/A flush in steel	BIS C-117-05/L mount on steel	BIS C-121-04/L flush in steel	BIS C-121-04/L-SA1 flush in steel	BIS C-122-04/L flush in steel	BIS C-117-051A mount on steel	BIS C-128-05/L mount on steel	BIS C-130-05/L BIS C-130-05/L-SA1 mount on steel	BIS C-130-05/L-SA6 mount on steel	BIS C-134-11/L mount on steel
Static mode														
Write distance in mm		0-4	0-5	0-6	1-8	0-7	0-2	0-1,2	0-2,5	0-10	0-6	0-7	0-4,5	0-6
Read distance in mm		0-4	0-5	0-6	1-8	0-7	0-2	0-1,2	0-2,5	0-10	0-6	0-7	0-4,5	0-6
Offset in mm	0.7 mm							±2						
at distance	1 mm	±3	±4	±8	±5	±8,5	±2		±3	±6	±8	±5	±4,5	±5
	3 mm	±2	±3	±7	±4	±7,5			±2	±6	±7	±5	±3,5	±5
	5 mm			±5	±3	±6				±6	±5	±4		±4
	7 mm					±4				±5		±2		
	10 mm									±3				
Dynamic mode														
Read/write distance in mm		1	1	1-5	1-5	1-5	1		1	2-8	1-5	1-6	1-4	1-5
V_{max} to write bytes 0...3 in m/min				12-7	7-4	12-9				9-7	12-7	11-6	6-4,5	11-6
V_{max} to read bytes 0...3 in m/min		8	10	20-12	12-7	21-16	6		8	16-13	20-12	14-11	11-8	14-11

For read/write heads with connector, please append cable length to part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

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

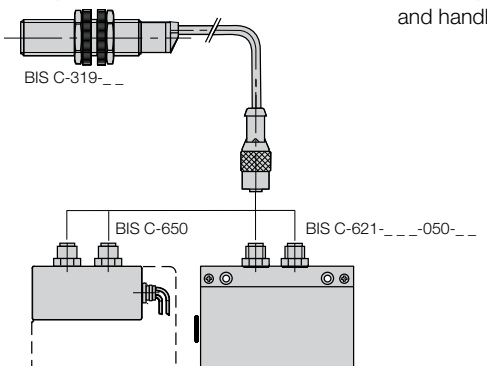


Data coupler BIS C-380-...
for data transmission between data carriers BIS C-1_ _ and read/write head BIS C-3_ _
via a contactless extension page 44/45

	M18	M30
	PBT	PVDF
	round	round
	197 g	270 g
		
	BIS C-319-_ _	BIS C-326-_ _
	non-flush	non-flush
	0...+70 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C
	IP 67	IP 67
	1 m, 5 m or 10 m/PUR	5 m or 10 m/PUR
	Processor	Processor

	BIS C-108-_ _/L mount on steel	BIS C-117-05/L mount on steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 mount on steel	BIS C-134-11/L mount on steel	BIS C-191-_ _/L mount on steel	BIS C-117-05/L mount on steel	BIS C-128-_ _/L mount on steel	BIS C-130-_ _/L mount on steel	BIS C-130-05/L-SA1 mount on steel	BIS C-133-_ _/L mount on steel	BIS C-134-11/L mount on steel	BIS C-190-_ _/L mount on steel
	0-14	0-15	0-13	0-13	0-12	0-11	0-18	0-12,5	0-13	0-13	0-12	0-12	0-18
	0-14	0-15	0-13	0-13	0-12	0-11	0-18	0-12,5	0-13	0-13	0-12	0-12	0-18
	±12	±13	±9	±9	±9	±9	±15	±13	±12	±12	±14	±12	±17
	±12	±12	±9	±9	±9	±9	±15	±12	±12	±12	±14	±12	±17
	±11	±12	±9	±9	±9	±9	±15	±12	±10	±10	±14	±10	±17
	±11	±11	±8,5	±8,5	±8,5	±8	±14	±11	±10	±10	±8,5	±10	±16
	±9	±10	±7,5	±7,5	±7		±11	±8					±14
	0-10	0-10	0-10	0-10	0-9	0-8	0-15	0-10	0-10	0-10	0-10	0-9	0-15
	17-13	18-15	13-11	13-11	13-11	13-11	22-16	18-11	17-11	17-11	19-12	17-11	25-17
	26-20	31-22	23-19	23-19	23-19	22-20	38-28	32-19	30-19	30-19	34-21	30-19	43-29

Example:

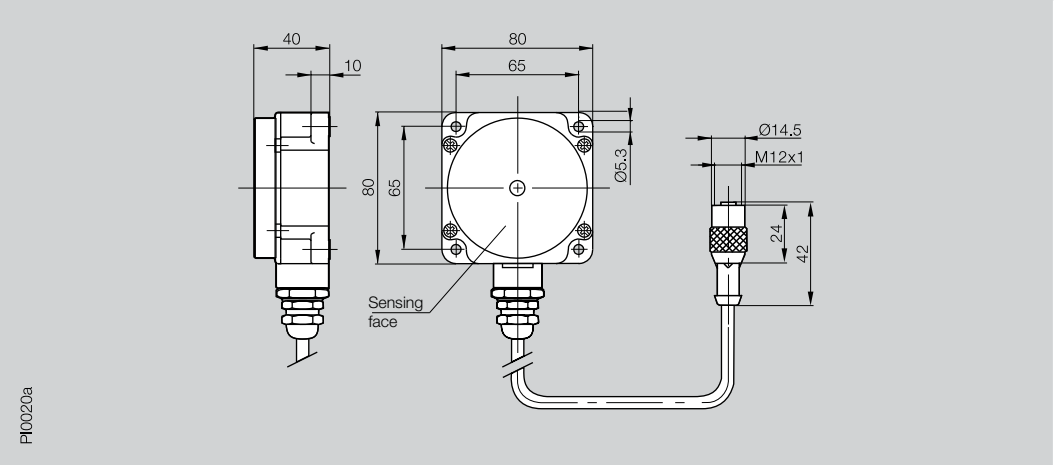


Ideal for palletizing, logistics and handling applications

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

Dimensions	**80×80×40**
Housing material	PBT
Antenna type	round
Weight	510 g

Control No 3TLJ
File No E227256

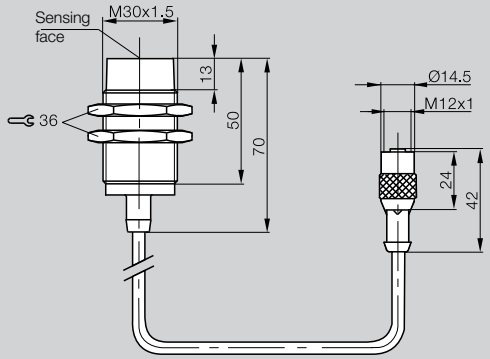


Part number		BIS C-315-_ _										
Mounting in steel		flush										
Operating temperature		0...+70 °C										
Storage temperature		–20...+85 °C										
Protection per IEC 60529		IP 67										
Cable		1 m, 5 m or 10 m/PUR										
Connection to		Processor										
Appropriate data carriers		BIS C-104-_ _/A flush in steel	BIS C-108-_ _/L mount on steel	BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/A flush in steel	IS C-117-05/L mount on steel	BIS C-127-05/L mount on steel	BIS C-128-_ _/L mount on steel	BIS C-130-05/L mount on steel	BIS C-133-_ _/L mount on steel	BIS C-134-11/L mount on steel	BIS C-190-_ _/L mount on steel
Static mode												
Write distance in mm		1-13	2-16	2-16	0-15	0-20	10-30	0-18	0-18	0-15	0-16	0-20
Read distance 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	1 mm	±15	±15	±15	±15	±17	±30	±17	±16	±17	±16	±18
at distance	3 mm	±14	±14	±15	±15	±17	±30	±17	±16	±15	±16	±18
	5 mm	±11	±12	±12	±14	±17	±30	±17	±16	±15	±16	±18
	7 mm	±10	±11	±10	±12	±15	±30	±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					
Dynamic mode												
Read/write distance in mm		1-7	2-10	2-10	3-10	1-15	10-20	1-15	1-15	1-10	1-15	1-15
V_{max} to write bytes 0...3 in m/min		18-9	18-9	18-9	20-14	24-19	39	24-19	22-15	24-19	22-15	25-23
V_{max} to read bytes 0...3 in m/min		25-13	25-13	25-13	34-25	42-33	68	42-33	39-27	42-33	39-27	44-39

For read/write heads with connector, please append cable length part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

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

	M30
	Nickel plated brass
	round
	314 g

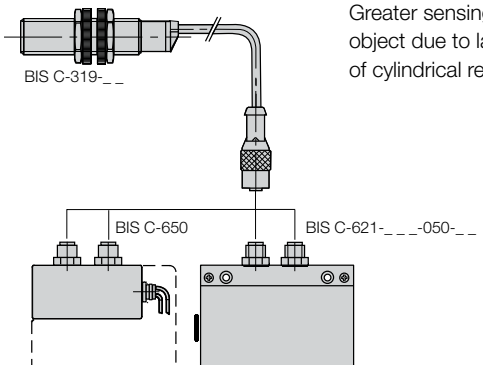


PI0184a

	BIS C-310-_ _
	non-flush
	0...+70 °C
	–20...+85 °C
	IP 67
	1 m, 5 m or 10 m/PUR
	Processor

	BIS C-104-_ _/A flush in steel	BIS C-104-_ _/A mount on steel	BIS C-108-_ _/L mount on steel	BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/A flush in steel	BIS C-117-05/L mount on steel	BIS C-128-_ _/L flush in steel	BIS C-128-_ _/L mount on steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 flush in steel	BIS C-130-05/L-SA6 mount on steel	BIS C-133-_ _/L mount on steel	BIS C-134-11/L mount on steel	BIS C-190-_ _/L mount on steel	BIS C-191-_ _/L mount on steel
	1-11	0-12	0-12	0-11	1-12	0-13	0-8	0-13	0-11	0-8	0-7	0-10	0-10	0-11	0-10
	1-11	0-12	0-12	0-11	1-12	0-13	0-8	0-13	0-11	0-8	0-7	0-10	0-10	0-11	0-10
	±7,5	±7,5	±10	±10	±7,5	±11	±8	±10	±9	±6,5	±5,5	±10	±9	±10	±8
	±7	±7	±9	±9	±7,5	±10	±7	±10	±8	±6	±5	±9	±8	±9	±7,5
	±7	±7	±9	±8,5	±7	±10	±6,5	±9	±7	±5,5	±4	±9	±7	±9	±7
	±7	±7	±8,5	±7,5	±6,5	±9,5	±5,5	±9	±5			±7	±4	±8	±6,5
														±6,5	
	3-7	3-7	1-7	1-7	3-7	1-7	1-5	1-7	1-7	1-5	1-6	1-7	1-7	1-10	1-7
	10	10	14-12	14-10	13	15-14	11-9	14-12	13-7	9-8	8,5-6	14-10	13-5	14-9	11-9
	17	17	24-22	24-17	17-16	27-24	19-16	24-22	23-12	16-14	14,5-10	24-17	23-10	25-16	20-16

Example:

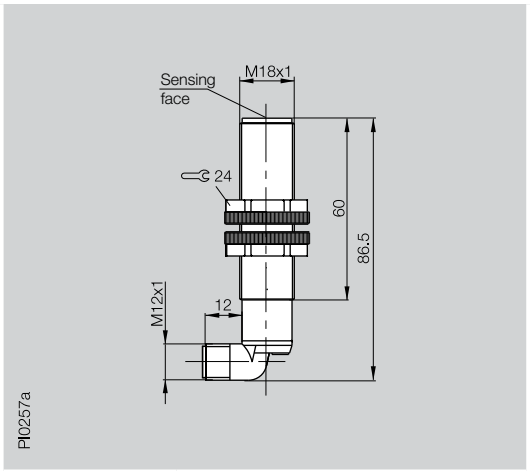


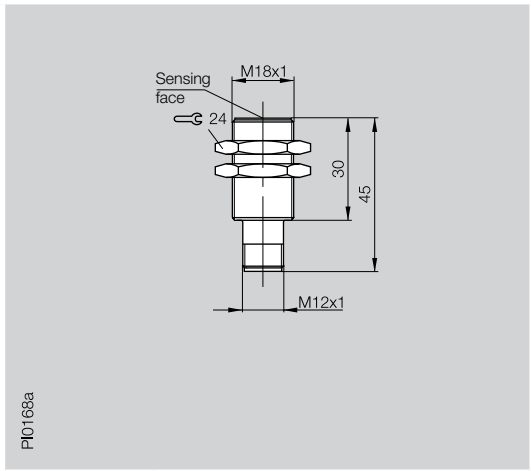
For handling and assembly.
Greater sensing distance to the object due to large diameter of cylindrical read/write heads.

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

Dimensions		**M18**	**M18**
Housing material		PBT	X6CrNiMoTi 17-12-2
Antenna type		round	round
Weight		40 g	26 g

Control No 3TLJ
File No E227256





Part number		BIS C-319/_ _-S4	BIS C-325/_ _-S4
Mounting in steel		non-flush	flush
Operating temperature		0...+70 °C	0...+70 °C
Storage temperature		–20...+85 °C	–20...+85 °C
Protection per IEC 60529		IP 67	IP 67
Connection	to	Processor	Processor
	with connection cable*	BIS C-505-PU-_ _/BIS C-506-PU-_ _	BIS C-505-PU-_ _/BIS C-506-PU-_ _
		BIS C-517-PVC-_ _/BIS C-518-PVC-_ _	BIS C-517-PVC-_ _/BIS C-518-PVC-_ _
Possible cable lengths		1 m, 5 m or 10 m	1 m, 5 m or 10 m

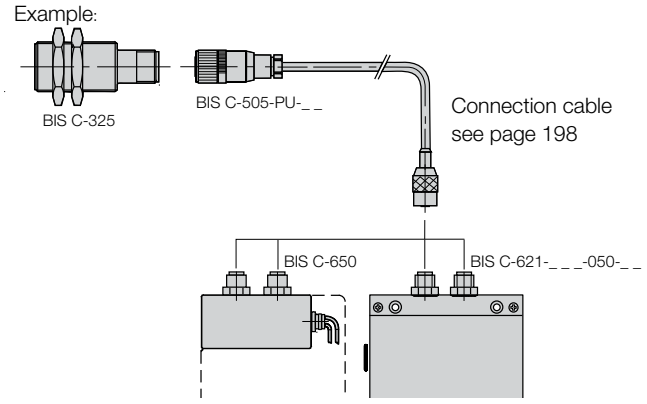
Appropriate data carriers		BIS C-108-_ _/L mount on steel	BIS C-117-05/L mount on steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 mount on steel	BIS C-134-_ _/L mount on steel	BIS C-191-_ _/L mount on steel	BIS C-100-05/A flush in steel	BIS C-121-04/L-SA1 flush in steel	BIS C-122-_ _/L flush in steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 mount on steel	BIS C-134-_ _L mount on steel	BIS C-191-_ _/L mount on steel
Static mode														
Write distance 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
Read distance 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
Offset in mm	0.7 mm								±2					
at distance	1 mm	±12	±13	±9	±9	±9	±9	±3,5	±2	±2,5	±4	±4	±4	±4
	3 mm	±12	±12	±9	±9	±9	±9	±3			±2	±2	±2	±3
	5 mm	±11	±12	±9	±9	±9	±9							
	7 mm	±11	±11	±8,5	±8,5	±8	±8							
	10 mm	±9	±10	±7,5	±7,5	±6								
Dynamic mode														
Read/write distance in mm		0-10	0-10	0-10	0-10	0-9	0-8	1		1	0-5	0-5	1	1
V_{max} to write bytes 0...3 in m/min		17-13	18-15	13-11	13-11	13-11	13-11	5		4	4-2	4-2	4	4
V_{max} to read bytes 0...3 in m/min		26-20	31-22	25-19	23-19	23-19	22-20	9		6	6-3	6-3	6	6

*please order connection cable separately, see page 194

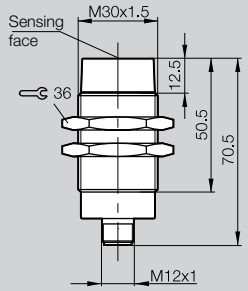
For read/write heads with connector, please append cable length to part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

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

Example:



	M30
	X8CrNiS 18-9
	round
	90 g



P10166b

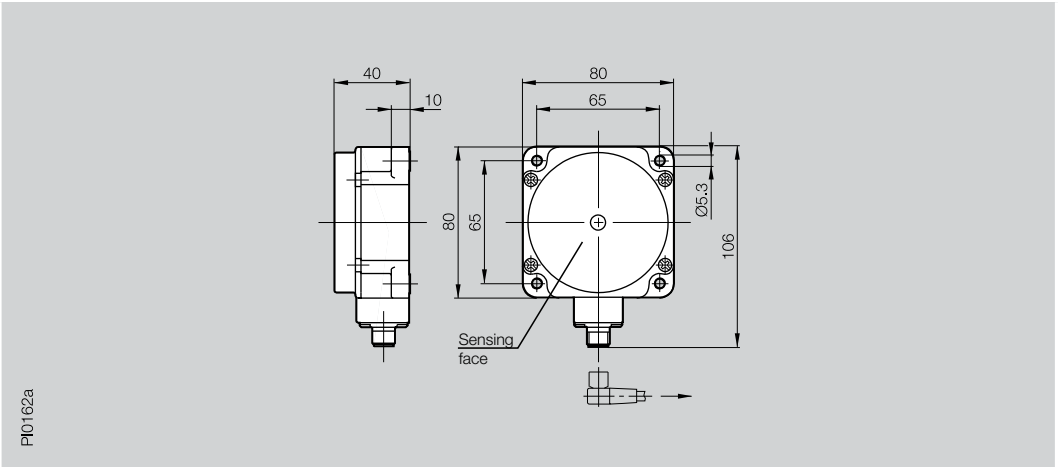
	BIS C-323-/_ _S4														
	non-flush														
	–20...+70 °C														
	–20...+85 °C														
	IP 67														
	Processor														
	BIS C-505-PU-_ _/BIS C-506-PU-_ _														
	BIS C-517-PVC-_ _/BIS C-518-PVC-_ _														
	5 m, 10 m														
	BIS C-104-_ _/A flush in steel	BIS C-104-_ _/A mount on steel	BIS C-108-_ _/L mount on steel	BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/A flush in steel	BIS C-117-05/L mount on steel	BIS C-128-_ _/L flush in steel	BIS C-128-_ _/L mount on steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 flush in steel	BIS C-130-05/L-SA6 mount on steel	BIS C-133-_ _/L mount on steel	BIS C-134-_ _/L mount on steel	BIS C-190-_ _/L mount on steel	BIS C-191-_ _/L mount on steel
	1-11	0-12	0-12	0-11	1-12	0-13	0-8	0-13	0-11	0-8	0-7	0-10	0-10	0-11	0-10
	1-11	0-12	0-12	0-11	1-12	0-13	0-8	0-13	0-11	0-8	0-7	0-10	0-10	0-11	0-10
	±7,5	±7,5	±10	±10	±7,5	±11	±8	±10	±9	±6,5	±5,5	±10	±9	±10	±8
	±7	±7	±9	±9	±7,5	±10	±7	±10	±8	±6	±5	±9	±8	±9	±7,5
	±7	±7	±9	±8,5	±7	±10	±6,5	±9	±7	±5,5	±4	±9	±7	±9	±7
	±7	±7	±8,5	±7,5	±6,5	±9,5	±5,5	±9	±5			±7	±4	±8	±6,5
														±6,5	
	3-7	3-7	1-7	1-7	3-7	1-7	1-5	1-7	1-7	1-5	1-6	1-7	1-7	1-10	1-7
	10	10	14-12	14-10	13	15-14	11-9	14-12	13-7	9-8	8,5-6	14-10	13-5	14-9	11-9
	17	17	24-22	24-17	17-16	27-24	19-16	24-22	23-12	16-14	14,5-10	24-17	23-10	25-16	20-16

Pluggable read/write heads for easier replacement in any application.

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

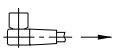
Dimensions	**80×80×40**
Housing material	PBT
Antenna type	round
Weight	410 g

c UL us LISTED
Control No 3TLJ
File No E227256



Part number		BIS C-315/_ _-S4										
Mounting in steel		flush										
Operating temperature		0...+70 °C										
Storage temperature		–20...+85 °C										
Protection per IEC 60529		IP 67										
Connection	to	Processor										
	with connection cable*	BIS C-505-PU-_ _/BIS C-506-PU-_ _										
		BIS C-517-PVC-_ _/BIS C-518-PVC-_ _										
Possible cable lengths		5 m or 10 m										
Appropriate data carriers		BIS C-104-_ _/A flush in steel	BIS C-108-_ _/L mount on steel	BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/A flush in steel	BIS C-117-05/L mount on steel	BIS C-127-05/L mount on steel	BIS C-128-_ _/L mount on steel	BIS C-130-05/L mount on steel	BIS C-133-_ _/L mount on steel	BIS C-134-11/L mount on steel	BIS C-190-_ _/L mount on steel
Static mode												
Write distance in mm		1-13	2-16	2-16	0-15	0-20	10-30	0-18	0-18	0-15	0-16	0-20
Read distance 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	±15	±15	±17	±30	±17	±16	±17	±16	±18
	3 mm	±14	±14	±15	±15	±17	±30	±17	±16	±15	±16	±18
	5 mm	±11	±12	±12	±14	±17	±30	±17	±16	±15	±16	±18
	7 mm	±10	±11	±10	±12	±15	±30	±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					
Dynamic mode												
Read/write distance in mm		1-7	2-10	2-10	3-10	1-15	10-20	1-15	1-15	1-10	1-15	1-15
V_{max} to write bytes 0...3 in m/min		18-9	18-9	18-9	20-14	24-19	39	24-19	22-15	24-19	22-15	25-23
V_{max} to read bytes 0...3 in m/min		25-13	25-13	25-13	34-25	42-33	68	42-33	39-27	42-33	39-27	44-39

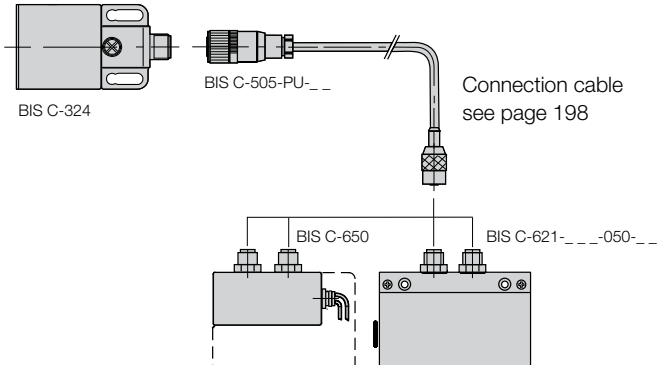
*please order connection cable separately, see page 194


Connector orientation

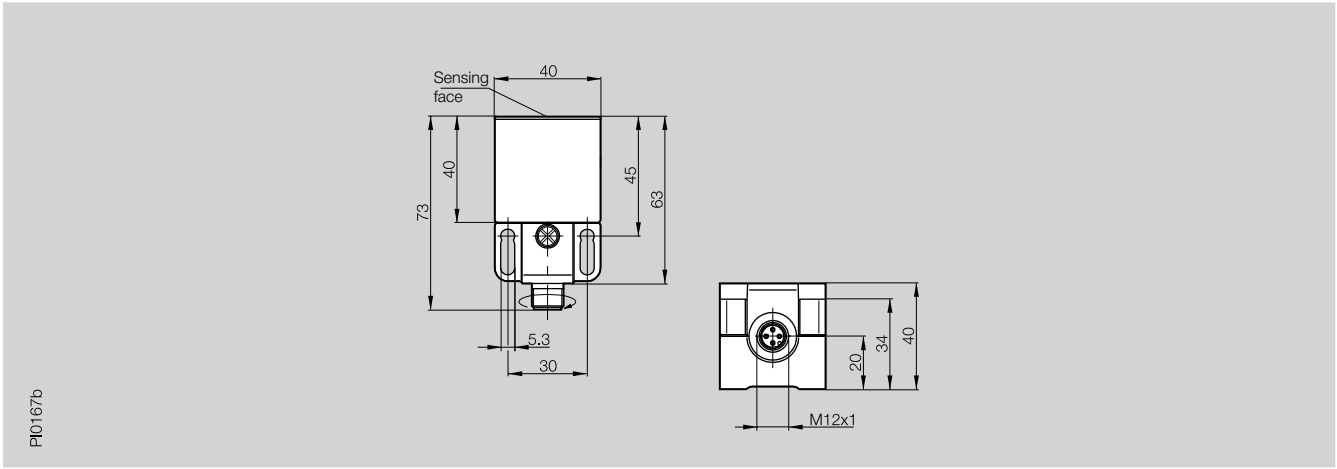
For read/write heads with connector, please append cable length to part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

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

Example:

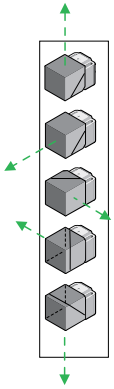


	40×40×73
	PBT/Mounting G-2nA14Cu1
	round
	180 g



	BIS C-324/_ _-S4
	flush
	0...+70 °C
	–20...+85 °C
	IP 67
	Processor
	BIS C-505-PU-_ _/BIS C-506-PU-_ _
	BIS C-517-PVC-_ _/BIS C-518-PVC-_ _
	5 m or 10 m

	BIS C-104-_ _/A flush in steel	BIS C-104-_ _/A mount on steel	BIS C-108-_ _/L mount on steel	BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/A flush in steel	BIS C-117-05/L mount on steel	BIS C-128-_ _/L flush in steel	BIS C-128-_ _/L mount on steel	BIS C-130-05/L mount on steel	BIS C-130-05/L-SA1 flush in steel	BIS C-130-05/L-SA6 mount on steel	BIS C-133-_ _/L mount on steel	BIS C-134-11/L mount on steel	BIS C-190-_ _/L mount on steel	BIS C-191-_ _/L mount on steel
	1-11	0-12	0-12	0-11	1-12	0-13	0-8	0-13	0-11	0-8	0-7	0-10	0-10	0-11	0-10
	1-11	0-12	0-12	0-11	1-12	0-13	0-8	0-13	0-11	0-8	0-7	0-10	0-10	0-11	0-10
	±7,5	±7,5	±10	±10	±7,5	±11	±8	±10	±9	±6,5	±5,5	±10	±9	±10	±8
	±7	±7	±9	±9	±7,5	±10	±7	±10	±8	±6	±5	±9	±8	±9	±7,5
	±7	±7	±9	±8,5	±7	±10	±6,5	±9	±7	±5,5	±4	±9	±7	±9	±7
	±7	±7	±8,5	±7,5	±6,5	±9,5	±5,5	±9	±5			±7	±4	±8	±6,5
														±6,5	
	3-7	3-7	1-7	1-7	3-7	1-7	1-5	1-7	1-7	1-5	1-6	1-7	1-7	1-10	1-7
	10	10	14-12	14-10	13	15-14	11-9	14-12	13-7	9-8	8,5-6	14-10	13-5	14-9	11-9
	17	17	24-22	24-17	17-16	27-24	19-16	24-22	23-12	16-14	14,5-10	24-17	23-10	25-16	20-16



Multidirectional head for greater flexibility
Simply align read/write head according to requirements

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

Dimensions		**88×43×20**	**55×30×20**	
Housing material		POM	POM	
Antenna type				
Weight		280	52 g	

Control No 3TLJ
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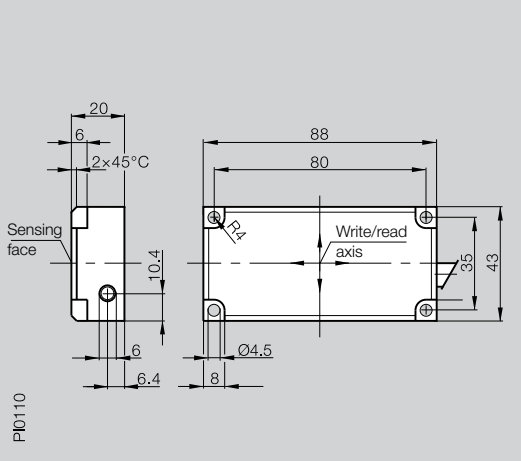
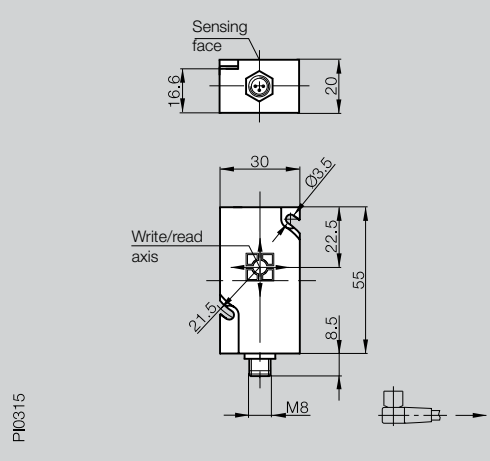




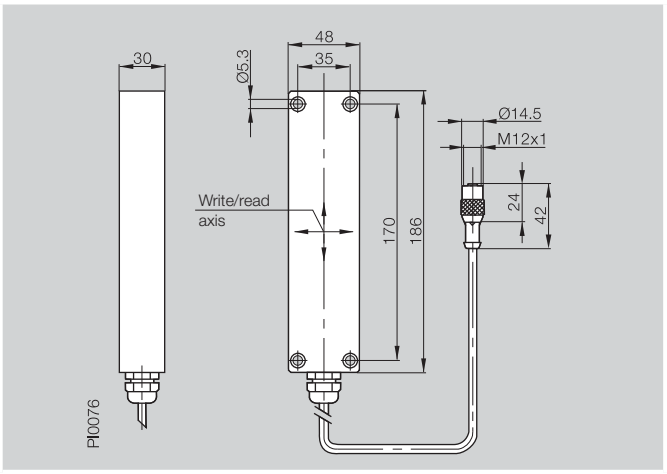
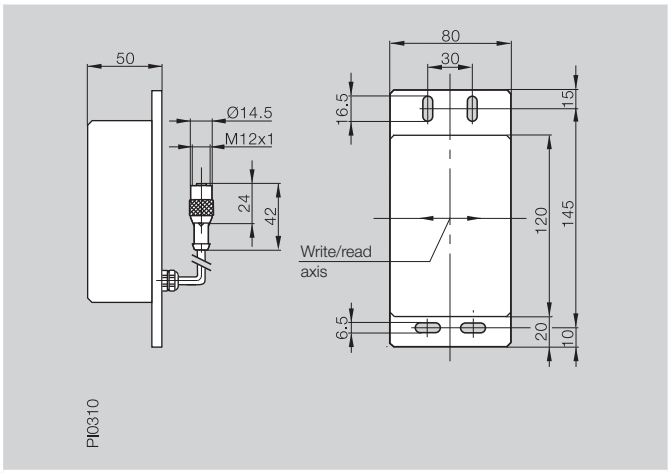
Part number		BIS C-327-_ _	BIS C-328-_ _-S49	
Mounting in steel		non-flush	non-flush	
Operating temperature		0...+70 °C	0...+70 °C	
Storage temperature		–20...+85 °C	–20...+85 °C	
Protection per IEC 60529		IP 67	IP 67	
Cable		1m, 5 m or 10 m/PUR	1 m, 5 m or 10 m/PUR	
Connection to with connection cable		Processor	Processor BIS C-523-PU-_ _/BIS C-523-PU1-_ _	

Appropriate data carriers		BIS C-108-05/L	BIS C-128-11/L	BIS C-190-32/L	BIS C-122-04/L	BIS C-122-11/L
Static mode						
Write distance in mm		0-8	0-8	0-8	0-3	0-3
Read distance in mm		0-8	0-8	0-8	0-3	0-3
Offset in mm at distance	1 mm	±6	±6	±6	±2,5	±2,5
	2 mm	±6	±6	±6	±2,5	±2,5
	3 mm	±6	±6	±6	±2,5	±2,5
	4 mm	±5	±5	±5		
	5 mm	±5	±5	±5		
	6 mm	±4	±4	±4		
	10 mm					
	20 mm					
Dynamic mode						
Read/write path in mm		54	54	54		
Read/write distance in mm		4	4	4	3	3
V_{max} to write bytes 0...3 in m/min		36	36	36	16	16
V_{max} to read bytes 0...3 in m/min		65	65	65	30	30

For read/write heads with connector, please append cable length to part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

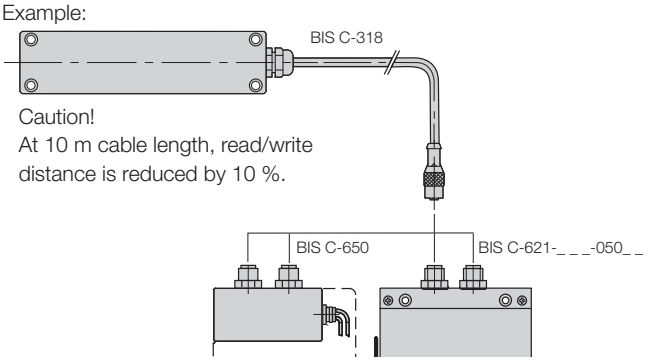
Recommended for handling and assembly in dynamic applications

Long Distances

	186×48×30	**170×80×50**
	PA 66	POM/Platte A/Mg3
	round	Stab
	550 g	595 g
		
	BIS C-318-_ _	BIS C-351-_ _
	non-flush	non-flush
	0...+70 °C	–20...+80 °C
	–20...+85 °C	–20...+85 °C
	IP 65	IP 67
	5 m or 10 m/PUR	5 m or 10 m/PUR
	Processor	Processor

	BIS C-108-_ _/L-SA2 mount on steel	BIS C-108-_ _/L mount on steel	BIS C-117-05/L mount on steel	BIS C-127-05/L mount on steel	BIS C-128-_ _/L mount on steel	BIS C-190-_ _/L mount on steel	BIS C-150-05/A mount on steel	BIS C-150-11/A mount on steel	BIS C-150-32/A mount on steel
	0-6	0-7	0-7	10-35	0-7,5	8	0-45	0-45	0-45
	0-6	0-7	0-7	10-35	0-7,5	8	0-45	0-45	0-45
	±8,5	±9,5	±9,5		±11	±11	±15	±15	±15
	±8,5	±9,5	±9,5		±11	±11	±15	±15	±15
	±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
	100	100	100	100	100	100	135-140	135-140	135-140
	5	6	6	20	6	5	10-30	10-30	10-30
	70	70	70	70	70	70	75-60	75-60	75-60
	120	120	120	100	120	120	135-110	135-110	135-110

Example:



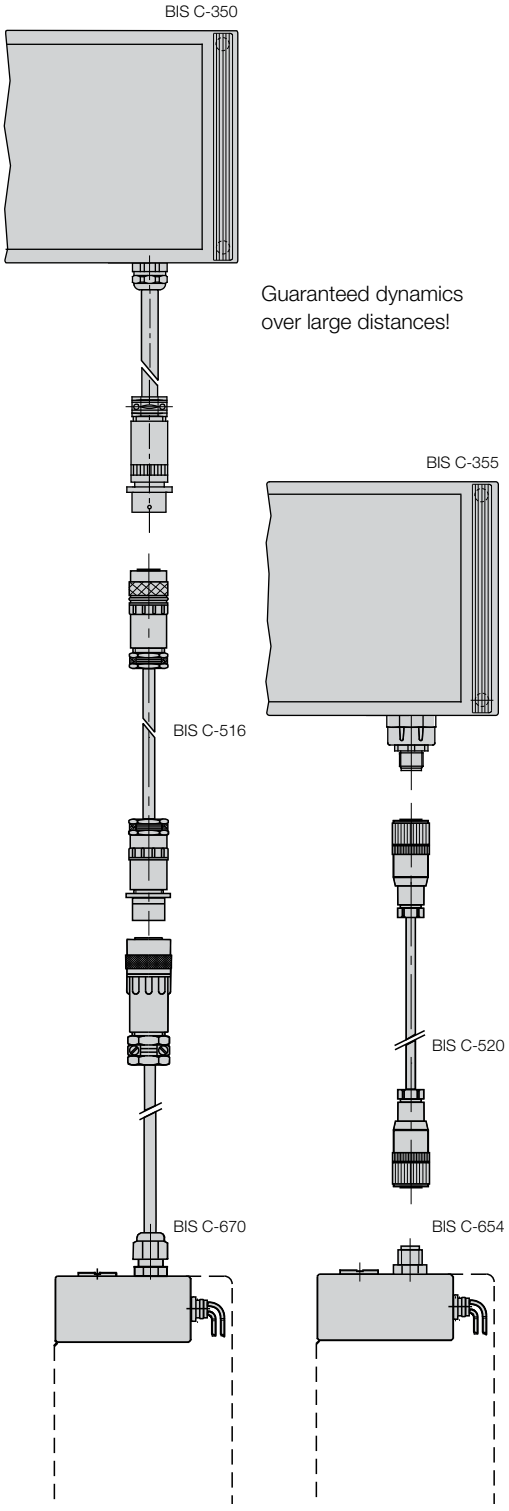
Caution!
At 10 m cable length, read/write distance is reduced by 10 %.

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

Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

Example:

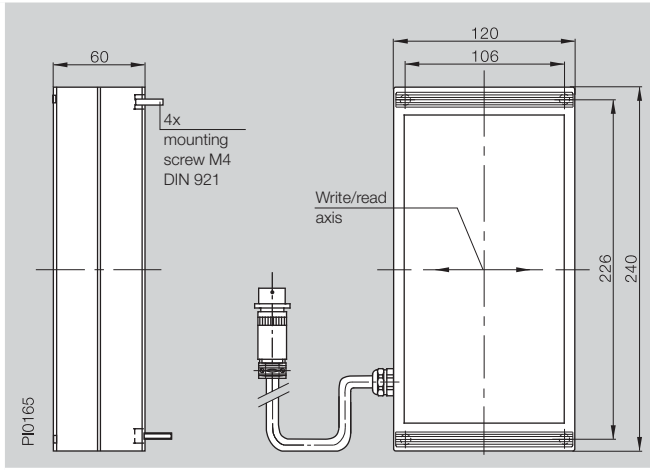
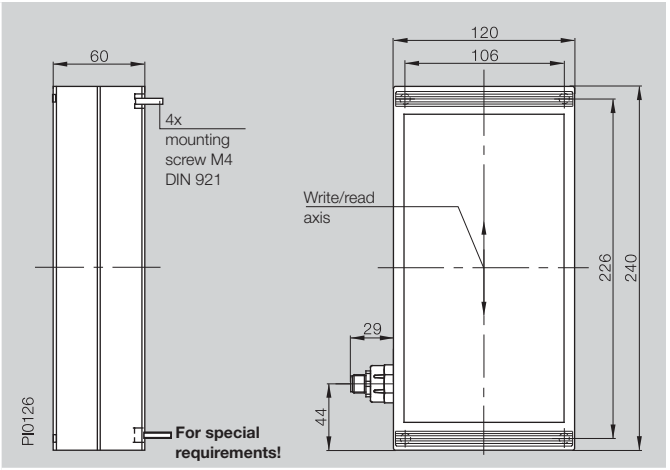


Part number	
Mounting in steel	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Cable	
Connection to	

Appropriate data carriers		
Static mode		
Write distance in mm		
Read distance in mm		
Offset in mm	10 mm	
at distance	20 mm	
	35 mm	
	42 mm	
	60 mm	
Dynamic mode		
Read/write path in mm		
Read/write distance in mm		
V_{max} to write bytes 0...3 in m/min		
V_{max} to read bytes 0...3 in m/min		

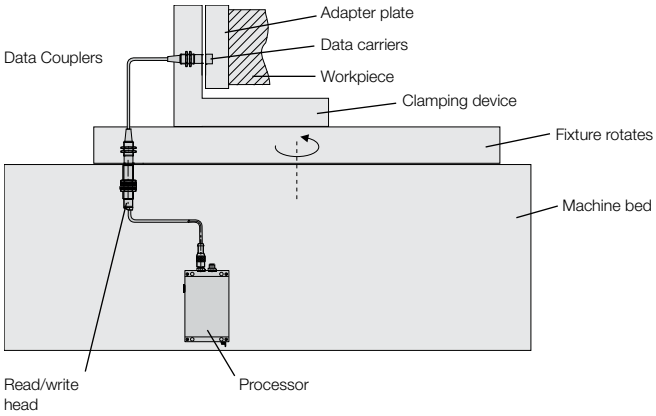
For read/write heads with integral cable, please indicate cable length in part number!
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.

Long Distances

	240×120×60	**240×120×60**
	PC	PC
	Rod	Rod/dual antenna for increased traverse speed
	976 g	710 g
		
	BIS C-350-00,3	BIS C-355/05-S92
	non-flush	non-flush
	0...+40 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C
	IP 67	IP 65
	0,3 m/PUR	5 m
	Processor only with connection cable BIS C-516-PU-_ _ (page 201) please order separately	Processor only with connection cable BIS C-520-PVC-05 (page 199) please order separately

	BIS C-150-05/A	BIS C-150-11/A	BIS C-150-32/A	BIS C-150-05/A	BIS C-150-11/A	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	±5	±5	±5
	±30	±30	±30			
	126/140	126/140	126/140	260	260	260
	63/70	63/70	63/70	1-35	1-35	1-35
	75	75	75	150	150	150
	120	120	120	220	220	220

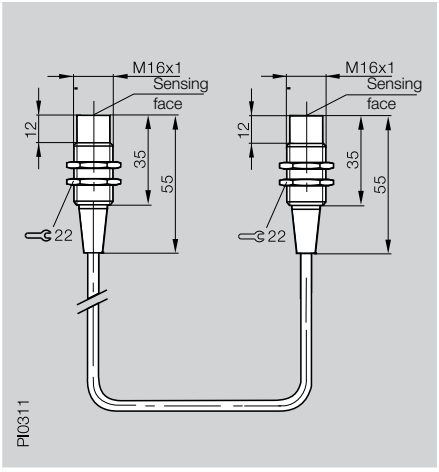
Recommended for higher speed pallet and logistics applications.



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

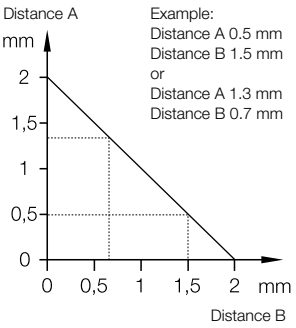
Dimensions	**M16/M16**
Housing material	Nickel plated brass
Antenna type	round/round

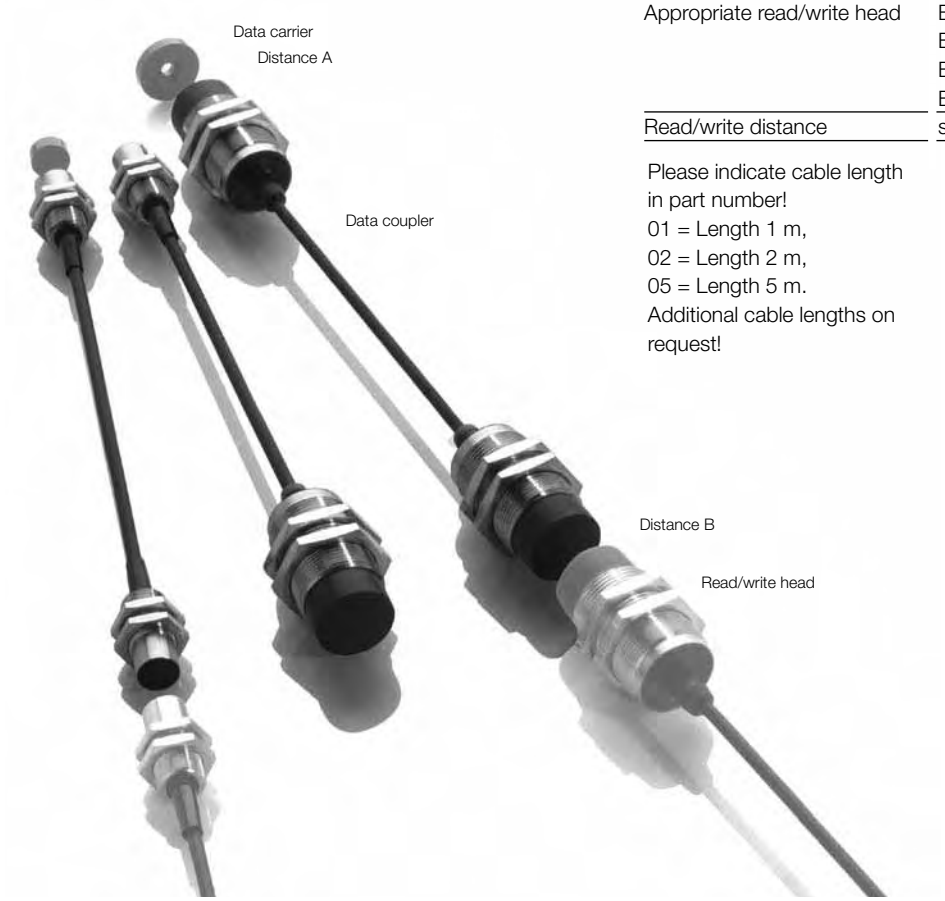
Control No 3TLJ
File No E227256



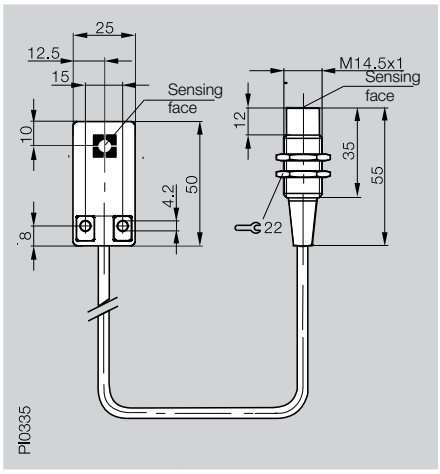
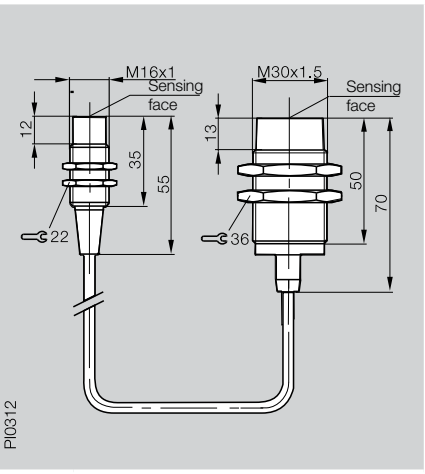
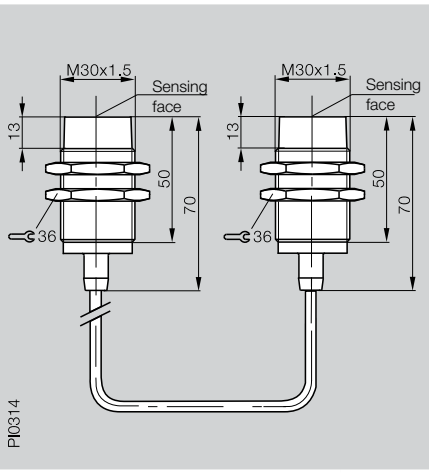
Part number	BIS C-380-06/06-_ _
Read head connection	contactless connection
Operating temperature	0...+70 °C
Storage temperature	–20...+85 °C
Protection per IEC 60529	IP 67
Appropriate data carriers	BIS C-100-05/A flush in steel BIS C-103-05/A flush in steel BIS C-105-05/A flush in steel BIS C-121-04/L flush in steel BIS C-122-04/L flush in steel
Appropriate read/write head	BIS C-300 BIS C-302 BIS C-305 BIS C-306
Read/write distance	see diagram

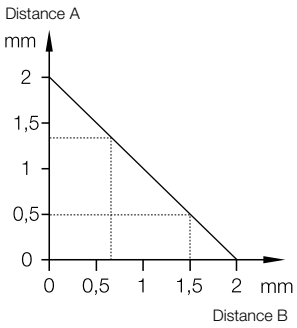
Please indicate cable length in part number!
01 = Length 1 m,
02 = Length 2 m,
05 = Length 5 m.
Additional cable lengths on request!

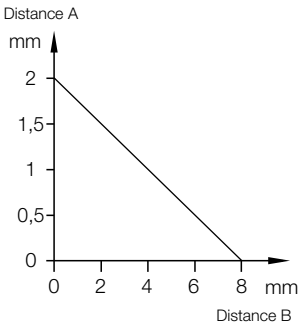


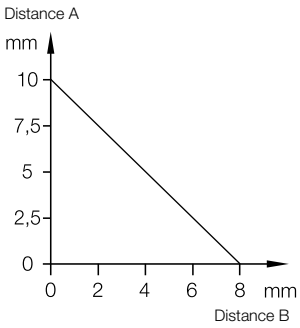


Allows tag access through multiple air gaps.

	50×25×10/M16	M16/M30	M30/M30
	Nickel plated brass	Nickel plated brass	Nickel plated brass
	round/round	round/round	round/round
			
	BIS C-380-05/06-_ _	BIS C-380-06/10-_ _	BIS C-380-10/10-_ _
	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
	BIS C-100-05/A flush in steel BIS C-103-05/A flush in steel BIS C-105-05/A flush in steel BIS C-121-04/L flush in steel BIS C-122-04/L flush in steel	BIS C-100-05/A flush in steel BIS C-103-05/A flush in steel BIS C-105-05/A flush in steel BIS C-121-04/L flush in steel BIS C-122-04/L flush in steel	BIS C-104-_ _/A mount on steel BIS C-108-_ _/L mount on steel BIS C-117-05/L mount on steel BIS C-128-_ _/L mount on steel BIS C-130-05/L mount on steel
	BIS C-300 BIS C-302 BIS C-305 BIS C-306	BIS C-310	BIS C-310
	see diagram	see diagram	see diagram

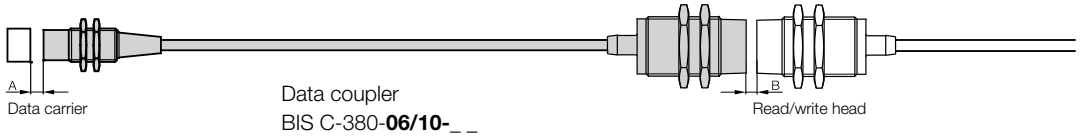




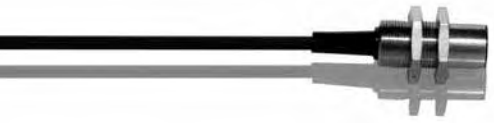


Type C-3**06**

Type C-3**10**



Data coupler
BIS C-380-**06/10-**_ _



For processor mounted solutions
Read/write heads for modular in processor units

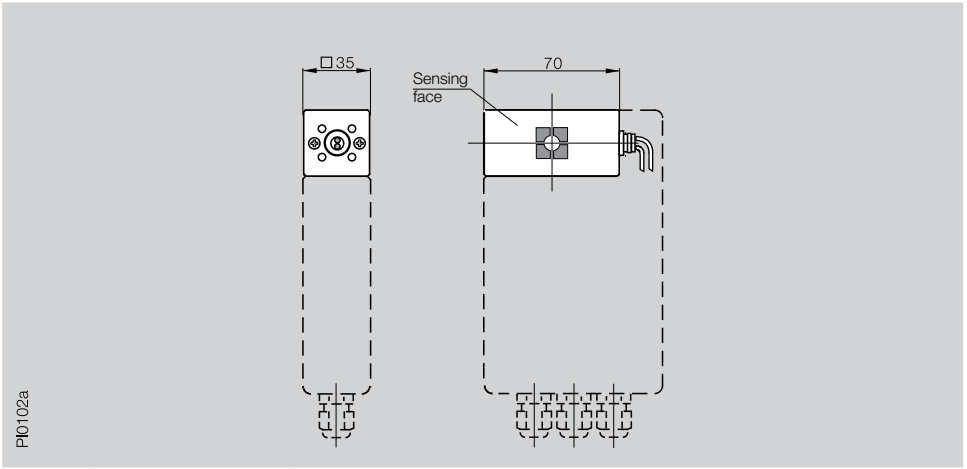
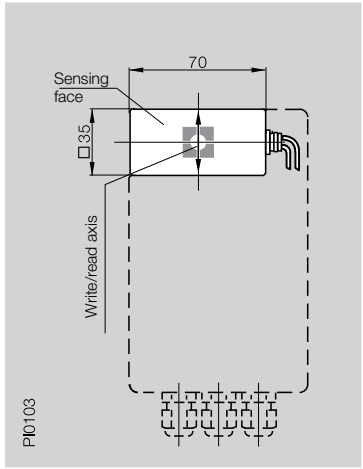
Dimensions	
Housing material	
Antenna type	
Function	

Control No 3TLJ
File No E227256

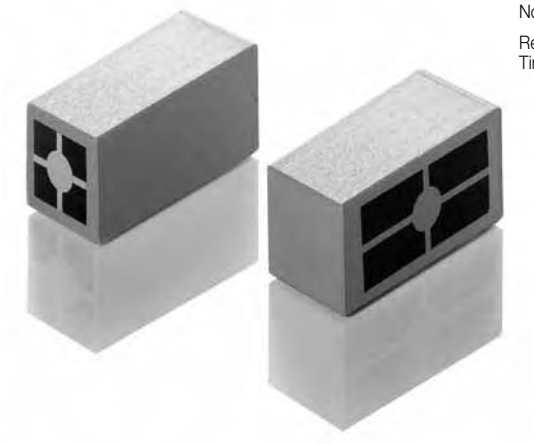
Part number	
Mounting in steel	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read head connection	
Connection to	

Read/write head can be rotated in 3 directions

Appropriate data carriers		
Static mode		
Write distance in mm		
Read distance in mm		
Offset in mm	1 mm	
at distance	3 mm	
	5 mm	
	7 mm	
Dynamic mode		
Read/write distance in mm		
V_{max} to write bytes 0...3 in m/min		
V_{max} to read bytes 0...3 in m/min		

	70×35×35	**70×35×35**
	ABS	ABS
	round	Rod
	Read/write head	Read/write head
		
	BIS C-652	BIS C-653
	non-flush	non-flush
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65 (when installed)	IP 65 (when installed)
	3-pin female	3-pin female
	Processors BIS C-600_ (page 52-61/68)	Processors BIS C-600_ (page 52-61/68)

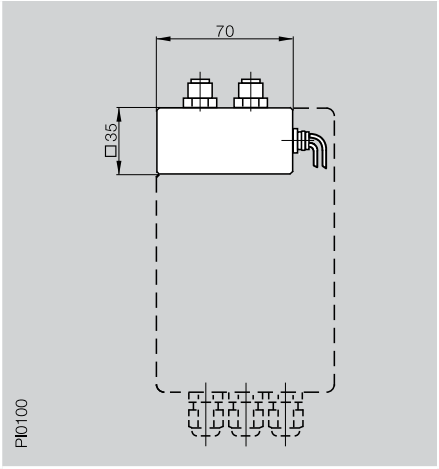
	BIS C-104-_ _/A mount on steel	BIS C-108-_ _/L mount on steel	BIS C-108-_ _/L-SA2 mount on steel	BIS C-117-05/L mount on steel	BIS C-128-_ _/L mount on steel	BIS C-130-05/L mount on steel	BIS C-130-04/L-SA2 mount on steel	BIS C-133-_ _/L mount on steel	BIS C-190-_ _/L mount on steel	BIS C-191-_ _/L mount on steel	BIS C-150-05/A mount on steel	BIS C-150-11/A mount on steel	BIS C-150-32/A mount on steel
	0-12	0-12	0-11	0-13	0-3	0-11	0-10	0-10	0-11	0-10	35	35	35
	0-12	0-12	0-11	0-13	0-13	0-11	0-10	0-10	0-11	0-10	40	40	40
	±7,5	±10	±10	±11	±10	±9	±9	±10	±10	±8	±15	±15	±15
	±7	±9	±9	±10	±10	±8	±8	±9	±9	±7,5	±15	±15	±15
	±7	±9	±8,5	±10	±9	±7	±7	±9	±9	±7	±15	±15	±15
	±7	±8,5	±7,5	±9,5	±9	±5	±4	±7	±8	±6,5	±15	±15	±15
	3-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-10	1-7	25/28	25/28	25/28
	10	14-12	14-10	15-14	14-12	13-7	13-5	14-10	14-9	11-9	20	20	20
	17	24-22	24-17	27-24	24-22	23-12	23-10	24-17	25-16	20-16	40	40	40



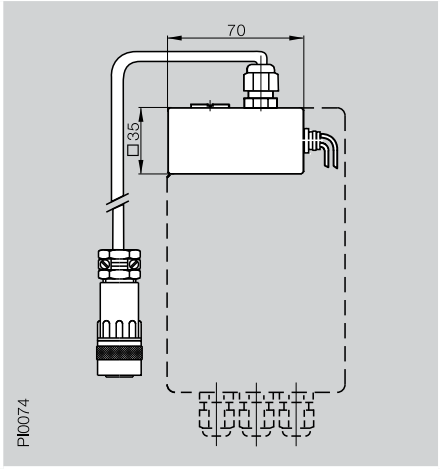
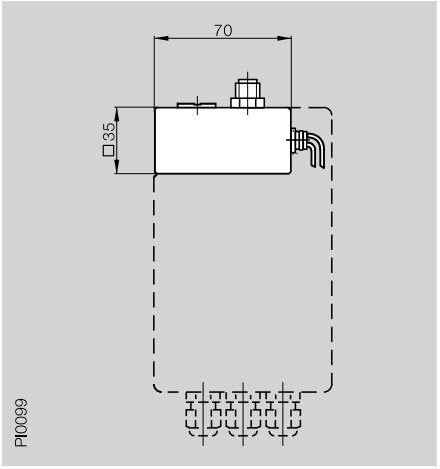
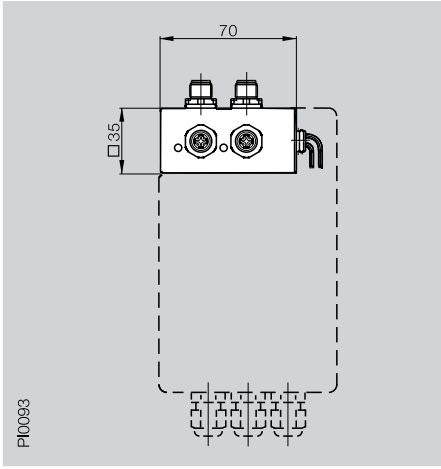
For remote mounted solutions
For the variable connection of read/write heads

Dimensions	**70×35×35**
Housing material	ABS
Antenna type	
Function	Adapter

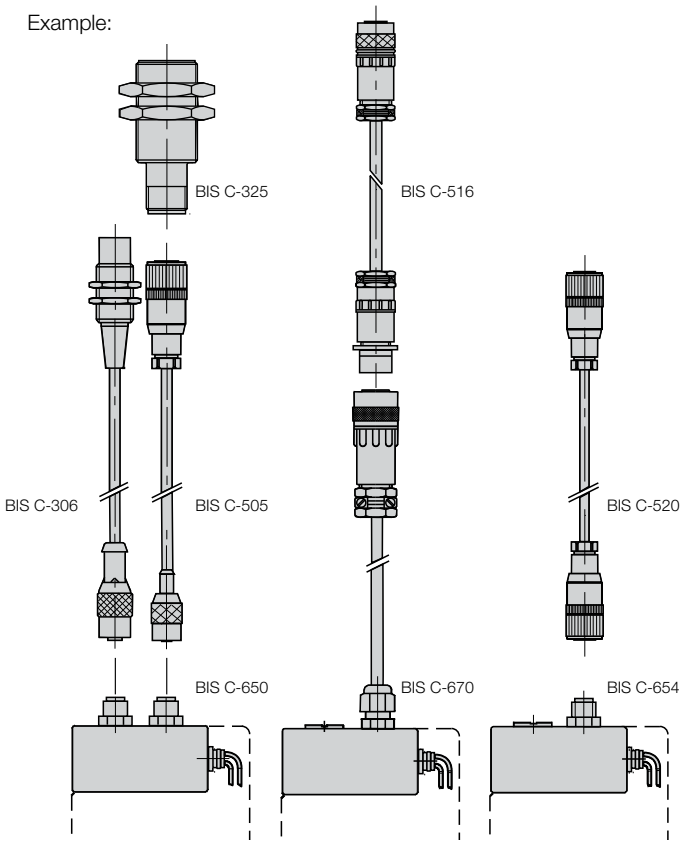
Control No 3TLJ
File No E227256



Part number	BIS C-650
Mounting in steel	
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65 (when installed)
Read head connection	2 built-in connectors 4-pin
Connection to	Processors BIS C-600_ (page 52-61/68)
Connection for	Read/write heads BIS C-3_ _ Exception: BIS C-350 and BIS C-355

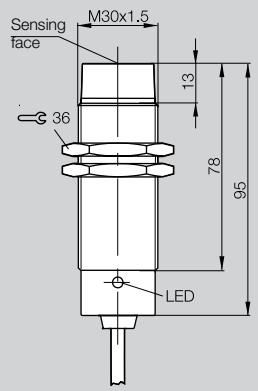
	70×35×35	**70×35×35**	**70×35×35**
	ABS	ABS	ABS round
	Adapter	Adapter	Adapter
			
	BIS C-670	BIS C-654	BIS C-655
		non-flush	non-flush
	0...+60 °C	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C	0...+60 °C
	IP 65 (when installed)	IP 65 (when installed)	IP 65 (when installed)
	1 coupling 8-pin	1 built-in connectors 5-pin	4-pin inline female connector, 4× panel-mount male connectors
	Processors BIS C-600_ (page 52-61/68)	Processors BIS C-600_ (page 52-61/68)	Adapter for BIS C-6002, BIS C-6003 for connecting all read/write heads, 4-pin (page 52-61/68)
	Read/write head BIS C-350 and cable BIS C-516-_ _	Read/write head BIS C-355/05-S92 and cable BIS C-520-PVC-05	Read/write heads BIS C-3_ _ Exception: BIS C-350 and BIS C-355

Example:



Dimensions	**M30**
Function	read
Antenna type	round
Weight	330 g

Control No 3TLJ
File No E227256



Description/interface	
8-bit parallel	BIS C-60R-001-08P-PU-_ _
8x 8-bit parallel	BIS C-60R-002-08P-PU-_ _
2x 8-bit parallel dynamic*	BIS C-60R-003-08P-PU-_ _
Supply voltage	24 V DC +10/–20 % (incl. ripple)
Current	max. 300 mA without load
Output current per output	max. 50 mA
Voltage drop	≤ 1.5 V
Leakage current	≤ 0.08 mA
Operating temperature	0...+50 °C
Enclosure rating	IP 67
Tightening torque	20 Nm
Mounting in steel	non-flush
Housing material	CuZn nickel plated/PA
Conductor cross-sections	2 × 0.5 mm² and 9 × 0.18 mm²
LED function indicator	yes

Appropriate data carriers		BIS C-121-04 flush in steel	BIS C-121-04 BIS C-122-04 mount on steel	BIS C-103-05 flush in steel	BIS C-103-05 mount on steel	BIS C-130-05 flush in steel	BIS C-130-05 mount on steel	BIS C-100-05 flush in steel	BIS C-100-05 mount on steel	BIS C-128-05 mount on steel	BIS C-117/A flush in steel	BIS C-117/L BIS C-108-05 mount on steel	BIS C-104-11 flush in steel mount on steel	BIS C-108-05 flush in steel
Static mode														
Read distance in mm		0-3	1-5	0-4	1-5	0-5	1-8	0-5	1-6	3-12	1-8	1-8	1-8	0-6
Offset in mm at distance	1 mm	±2	±3	±4	±2,5	±3	±4	±2,5	±3		±5	±7	±4	±7
	3 mm	±2	±3	±2,5	±2,5	±3	±5	±3	±3	±7	±5	±7	±4	±7
	5 mm		±3		±2,5	±3	±5	±3	±3	±6	±5	±7	±4	±6
	7 mm						±5			±5	±5	±6	±4	
Dynamic mode														
Read/write distance in mm							4-8		4-6	4-8	6-8	3-8		
V_{max} to read 1 byte in m/min							15		9	20	12	20		

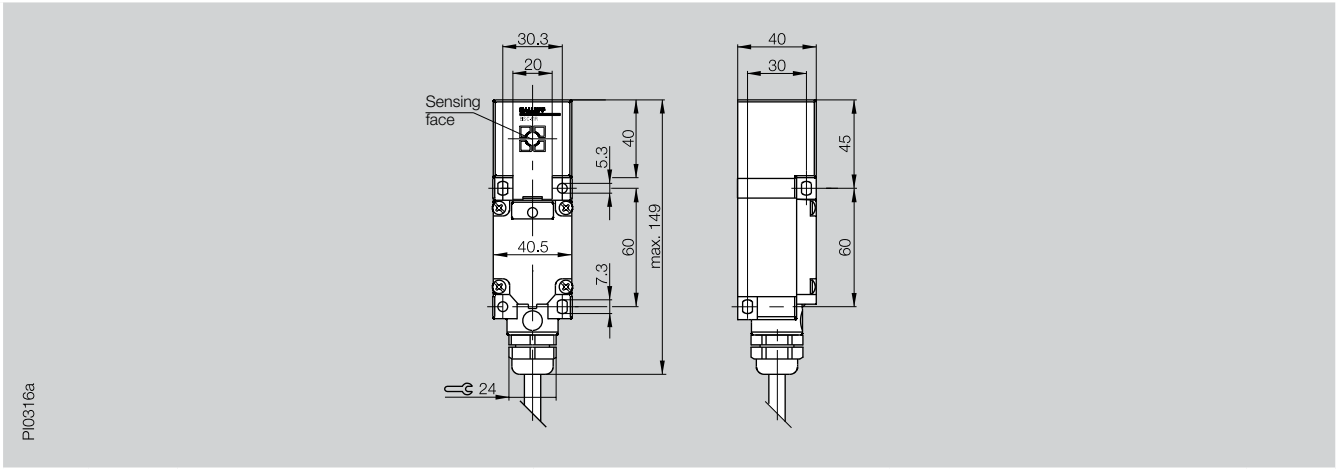
Please indicate cable length in part number!
Standard length
05 = Length 5 m,
10 = Length 10 m,
20 = Length 20 m

* Dynamic mode only possible with BIS C-60R-003

The BIS C-60R-001-08P-_ _ system is designed for simple read only applications. Read only applications are applications where only part tracking is needed. The traceability is provided by a central database system instead of the ID system.

Easily program the data carrier with any Balluff serial 007 protocol based processor. Programming is easy and fast using the free BISCOMRW software downloadable from the Balluff Web site at www.balluff.com.

	40×40×149
	read
	round
	330 g

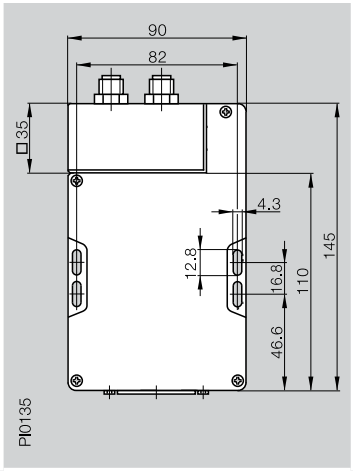


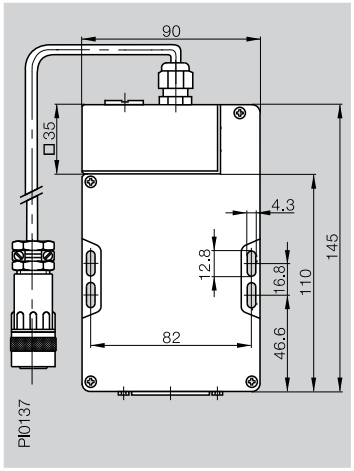
	BIS C-61R-001-08P-PU-05
	24 V DC +10/–20 %
	(incl. ripple)
	max. 300 mA without load
	max. 50 mA
	≤ 1.5 V
	≤ 0.08 mA
	0...+50 °C
	IP 67
	20 Nm
	non-flush
	CuZn nickel plated/PA ABS
	2 × 0.5 mm² and 9 × 0.18 mm²
	yes

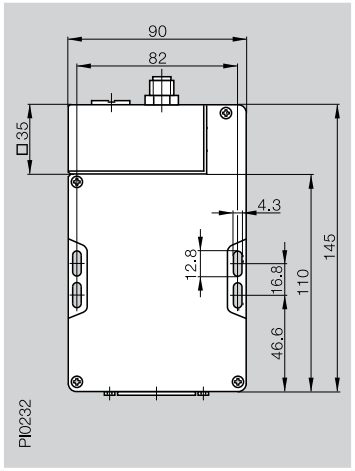
	BIS C-121-04 BIS C-122-04 flush in steel	BIS C-121-04 BIS C-122-04 mount on steel	BIS C-103-05 flush in steel	BIS C-103-05 mount on steel	BIS C-130-05 flush in steel	BIS C-130-05 mount on steel	BIS C-100-05 flush in steel	BIS C-100-05 mount on steel	BIS C-128-05 flush in steel	BIS C-128-05 mount on steel	BIS C-117/A flush in steel	BIS C-117/L mount on steel	BIS C-104-11 flush in steel mount on steel	BIS C-108-11 flush in steel	BIS C-108-11 mount on steel
	0-2	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	±3	±3	±2,5	±3	±4	±2,5	±3	±5		±5	±7	±4	±7	±7
		±3		±2,5	±3	±5	±3	±3		±7	±5	±7	±4	±6	±7
						±5				±6	±5	±6	±4		±6

For simple applications
where only part tracking is required.

Description	**BIS C-605-_ _ _-650-05-ST4**	**BIS C-605-_ _ _-670-05-ST4**	**BIS C-605-_ _ _-654-05-ST4**
Function	read/write	read/write	read/write
Antenna type			





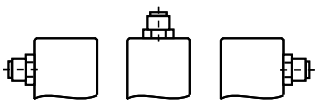


Supply voltage	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
Ripple	≤ 10 %	≤ 10 %	≤ 10 %
Current	≤ 400 mA	≤ 400 mA	≤ 400 mA
Operating temperature	0...+60 °C	0...+60 °C	0...+60 °C
Storage temperature	0...+60 °C	0...+60 °C	0...+60 °C
Protection per IEC 60529	IP 54	IP 54	IP 54
Read/write head ports	2 external	1 external	1 external
Control inputs	4 (via opto-coupler), 24 V DC	4 (via opto-coupler), 24 V DC	4 (via opto-coupler), 24 V DC
Control outputs	13 (via opto-coupler), 24 V DC	13 (via opto-coupler), 24 V DC	13 (via opto-coupler), 24 V DC
Connection type	MIN Sub D 25-pin	MIN Sub D 25-pin	MIN Sub D 25-pin
Description interface/software:			
Parallel	BIS C-605-027-650-05-ST4	BIS C-605-027-670-05-ST4	BIS C-605-027-654-05-ST4
Accessories included	Configuration software	Configuration software	Configuration software
Accessories (please order separately)	Connector page 201	Connector page 201	Connector page 201
			for read/write head BIS C-355/05-S92

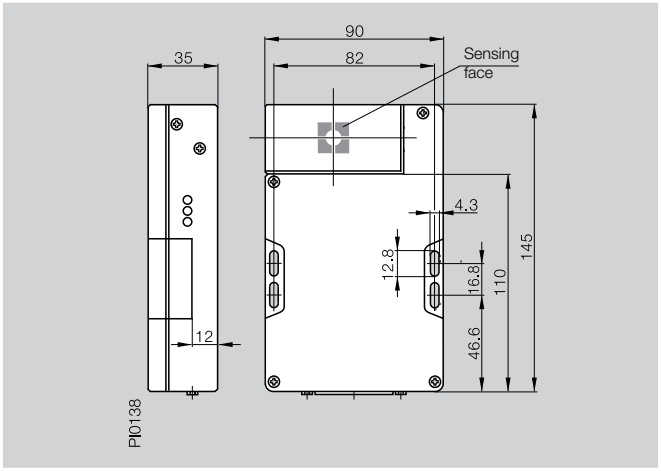
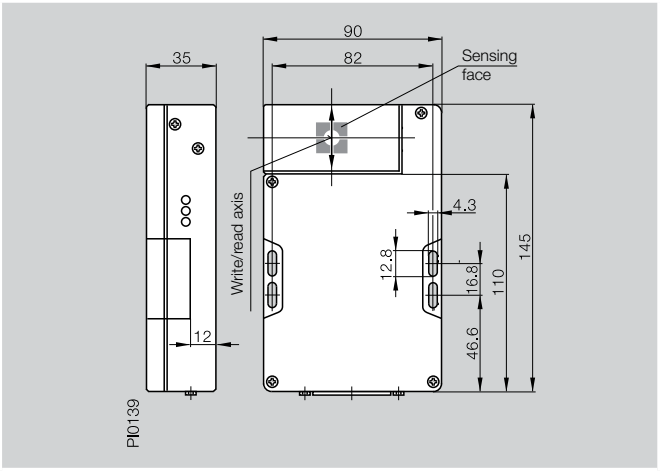
The **compact class BIS C-6**_ _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection.

Small, compact, flexible and economical

Advantages of the BIS C-605 parallel version
The parallel interface is a "read only" interface. Writing is not possible with parallel processors. The processor unit can read a single piece of bit information (OK/NOK, large/small, version 1/version 2) from the data carrier, then transmit it in the form of a separate output signal to discrete devices.



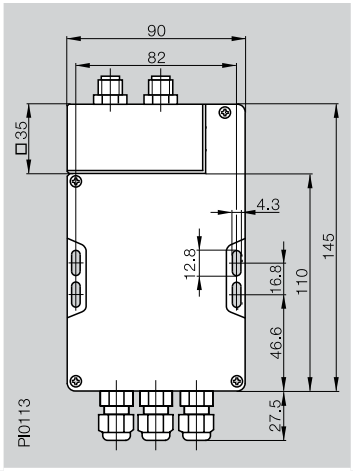
Adapter or antenna can be rotated in 3 directions

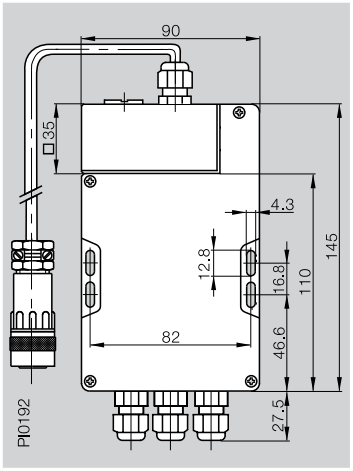
	BIS C-605-_ _ _-652-05-ST4	BIS C-605-_ _ _-653-05-ST4
	read/write	read/write
	round	Rod
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 54	IP 54
	1 internal	1 internal
	4 (via opto-coupler), 24 V DC	4 (via opto-coupler), 24 V DC
	13 (via opto-coupler), 24 V DC	13 (via opto-coupler), 24 V DC
	MIN Sub D 25-pin	MIN Sub D 25-pin
	BIS C-605-027-652-05-ST4	BIS C-605-027-653-05-ST4
	Configuration software	Configuration software
	Connector page 201	Connector page 201

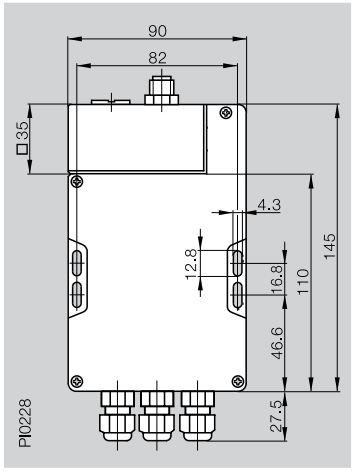
For applications with no controller:
for direct activation of actuators, switches, etc.

Description	BIS C-600-_ _ _-650-_ _-KL1	BIS C-600-_ _ _-670-_ _-KL1	BIS C-600-_ _ _-654-_ _-KL1
Function	read/write	read/write	read/write
Antenna type			

Control No 3TLJ
File No E227256





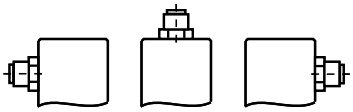


Supply voltage	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
Ripple	≤ 10 %	≤ 10 %	≤ 10 %
Current	≤ 400 mA	≤ 400 mA	≤ 400 mA
Operating temperature	0...+60 °C	0...+60 °C	0...+60 °C
Storage temperature	0...+60 °C	0...+60 °C	0...+60 °C
Protection per IEC 60529	IP 65	IP 65	IP 65
Read/write head ports	2 external	1 external	1 external/special
Control inputs	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC
Control outputs	4 (via opto-coupler), 24 V DC	4 (via opto-coupler), 24 V DC	4 (via opto-coupler), 24 V DC
Connection type	Terminals 3 × Pg 9	Terminals 3 × Pg 9	Terminals 3 × Pg 9
Description interface/software:			
RS232/Balluff dialog	BIS C-600-007-650-00-KL1	BIS C-600-007-670-00-KL1	BIS C-600-007-654-00-KL1
RS422/RS485, 4-wire, Point-to-Point/Balluff dialog	BIS C-600-007-650-02-KL1	BIS C-600-007-670-02-KL1	BIS C-600-007-654-02-KL1
Accessories included	Configuration software	Configuration software	Configuration software
Accessories (please order separately)	Connector page 201	Connector page 201	Connector page 201

The **compact class BIS C-6**_ _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection.

The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

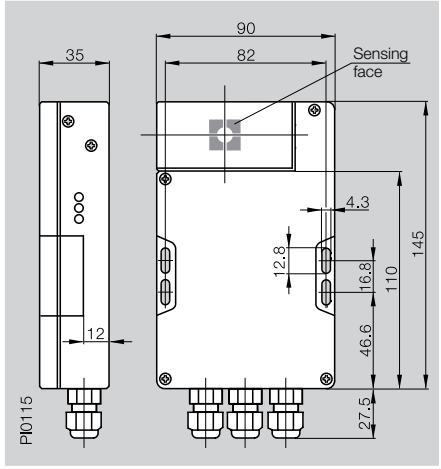
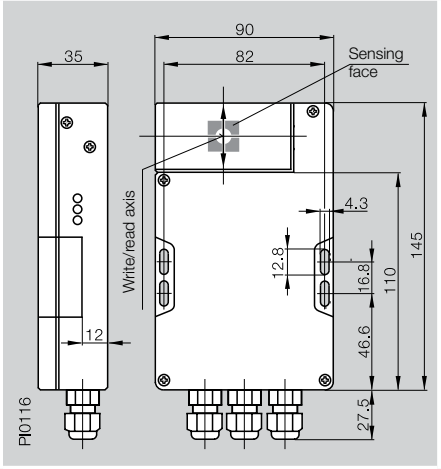
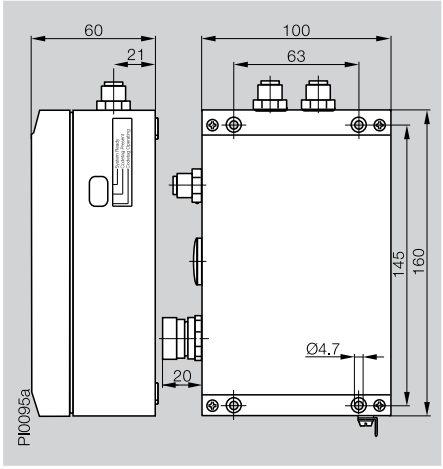
Small, compact, flexible and economical



Adapter or antenna can be rotated in 3 directions

for read/write head BIS C-355/05-S92

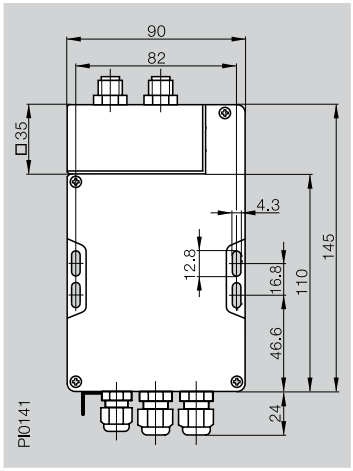
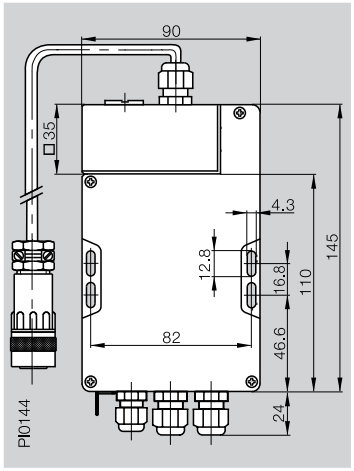
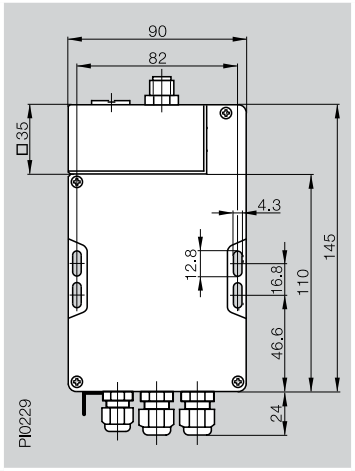
Read/write head can be rotated in 3 directions

	BIS C-600-_ _ _-652-_ _-KL1	BIS C-600-_ _ _-653-_ _-KL1	BIS C-620-_ _ _-050-_ _-ST2
	read/write	read/write	read/write
	round	Rod	
			
	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 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
	1 internal, 1 external	1 internal, 1 external	2 external
	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC	1 connector round 9-pin
	4 (via opto-coupler), 24 V DC	4 (via opto-coupler), 24 V DC	1 connector round 5-pin
	Terminals 3 × Pg 9	Terminals 3 × Pg 9	Read/write heads BIS C-3_ _ Exception: BIS C-350
	BIS C-600-007-652-00-KL1	BIS C-600-007-653-00-KL1	BIS C-620-007-050-00-ST2
	BIS C-600-007-652-02-KL1	BIS C-600-007-653-02-KL1	BIS C-620-007-050-02-ST2
	Configuration software	Configuration software	Configuration software
	Connector page 201	Connector page 201	Connector page 201

Serial connection –
for simple communication
to any PC or PLC

Processor unit
BIS C-62_ is enclosed in a robust metal housing.

This special housing provides effective protection against environmental influences and aggressive media. Impacts also do not affect the degree of protection.

Description	**BIS C-6001-_ _ _-650-03-KL2**	**BIS C-6001-_ _ _-670-03-KL2**	**BIS C-6001-_ _ _-654-03-KL2**
Function	read/write	read/write	read/write
Antenna type			
			
Supply voltage	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
Ripple	≤ 10 %	≤ 10 %	≤ 10 %
Current	≤ 400 mA	≤ 400 mA	≤ 400 mA
Operating temperature	0...+50 °C	0...+50 °C	0...+50 °C
Storage temperature	0...+50 °C	0...+50 °C	0...+50 °C
Protection per IEC 60529	IP 65	IP 65	IP 65
Read/write head ports	2 external	1 external	1 external
Control inputs	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC
Connection type	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11
Description interface/software:			
Service interface RS232	yes	yes	yes
INTERBUS	BIS C-6001-023-650-03-KL2	BIS C-6001-023-670-03-KL2	BIS C-6001-023-654-03-KL2
INTERBUS (with memory-optimized data carrier processing)	BIS C-6001-029-650-03-KL2	BIS C-6001-029-670-03-KL2	BIS C-6001-029-654-03-KL2

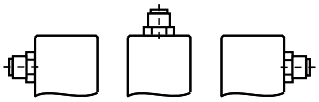
The **compact class BIS C-600** _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection.

The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

Small, compact, flexible and economical

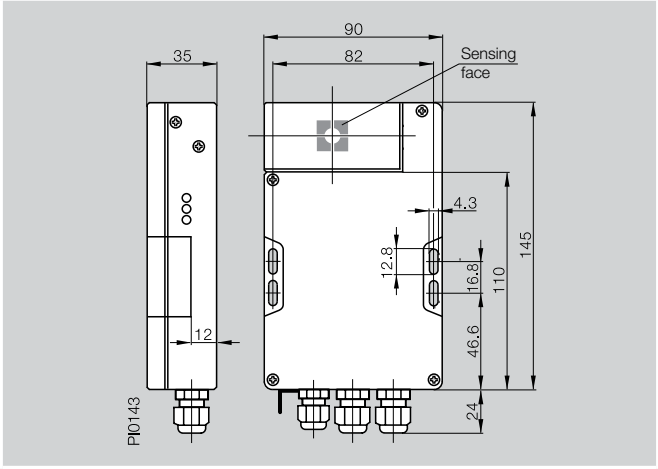
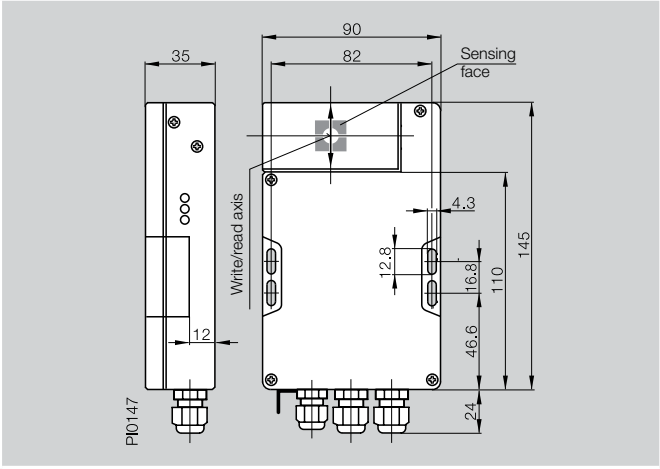
Cost-effective identification – operate 2 read/write heads simultaneously

- Data width on the bus, 16 bytes
- Service friendly, all parameter data are stored in an exchangeable memory
- Compatible with BIS C-601 device family
- Accepts all read/write heads
- Compatible with entire BIS C system



Adapter or antenna can be rotated in 3 directions

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

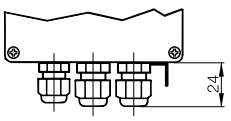
	BIS C-6001-_ _ _-652-03-KL2	BIS C-6001-_ _ _-653-03-KL2
	read/write	read/write
	round	Rod
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+50 °C	0...+50 °C
	0...+50 °C	0...+50 °C
	IP 65	IP 65
	1 internal	1 internal
	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC
	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11
	yes	yes
	BIS C-6001-023-652-03-KL2 BIS C-6001-029-652-03-KL2	BIS C-6001-023-653-03-KL2 BIS C-6001-029-653-03-KL2

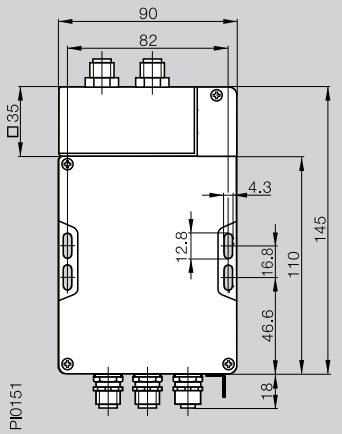
Read/write head can be rotated in 3 directions

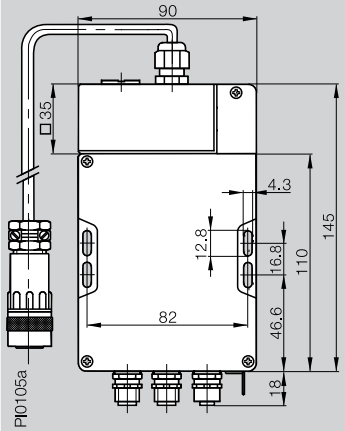
Description	**BIS C-6002-_ _ _-650-03-_ _ _ _**	**BIS C-6002-_ _ _-670-03-_ _ _ _**	**BIS C-6002-_ _ _-654-03-_ _ _ _**
Function	read/write	read/write	read/write
Antenna type			

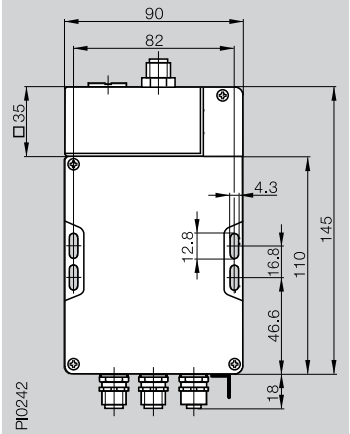
Control No 3TLJ
File No E227256

Version KL2









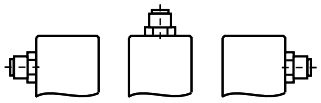
Supply voltage	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
Ripple	≤ 10 %	≤ 10 %	≤ 10 %
Current	≤ 400 mA	≤ 400 mA	≤ 400 mA
Operating temperature	0...+50 °C	0...+50 °C	0...+50 °C
Storage temperature	0...+50 °C	0...+50 °C	0...+50 °C
Protection per IEC 60529	IP 65	IP 65	IP 65
Read/write head ports	2 external	1 external	1 external
Control inputs	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC
Control outputs	2 (via opto-coupler), 24 V DC	2 (via opto-coupler), 24 V DC	2 (via opto-coupler), 24 V DC
Connection type clamp terminals KL2	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11
Connection version ST11	2 connector round 5-pin, B-coded 1 connector round 5-pin	2 connector round 5-pin, B-coded 1 connector round 5-pin	2 connector round 5-pin, B-coded 1 connector round 5-pin
Description interface/software:			
Service interface RS232	yes	yes	yes
PROFIBUS-DP	BIS C-6002-019-650-03-ST11	BIS C-6002-019-670-03-ST11	BIS C-6002-019-654-03-ST11
PROFIBUS-DP/memory optimization with connector	BIS C-6002-028-650-03-ST11	BIS C-6002-028-670-03-ST11	BIS C-6002-028-654-03-ST11
PROFIBUS-DP	BIS C-6002-019-650-03-KL2	BIS C-6002-019-670-03-KL2	BIS C-6002-019-654-03-KL2
PROFIBUS-DP/memory optimization with PG fitting	BIS C-6002-028-650-03-KL2	BIS C-6002-028-670-03-KL2	BIS C-6002-028-654-03-KL2
Accessories included	Software GSD file	Software GSD file	Software GSD file
Accessories (please order separately)	Connector page 205	Connector page 205	Connector page 205

The **compact class BIS C-600** _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection.

Small, compact, flexible and economical

Cost-effective identification – operate 2 read/write heads simultaneously

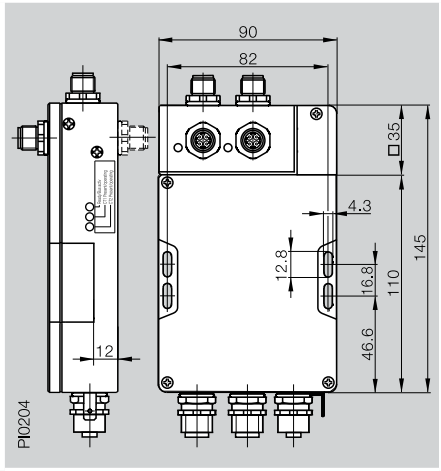
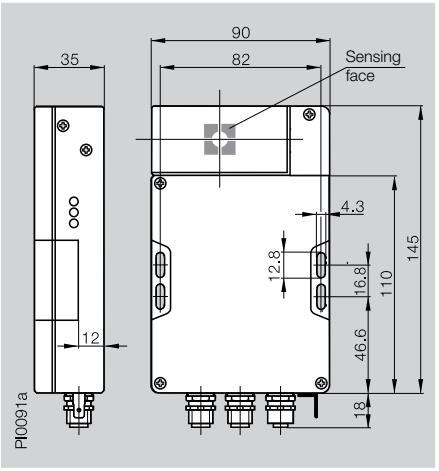
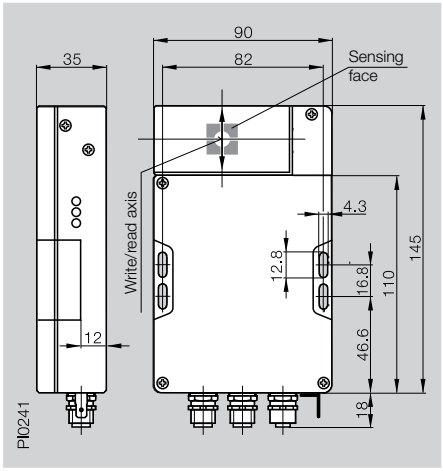
- Selectable division of the data width on the PROFIBUS-DP, from 4 to 128 bytes
- Free assigning of the data width for each read/write head
- Optimum data speed, internal cycle time is shorter than the BUS activation time
- Service friendly, all parameter data are stored in an exchangeable memory
- BUS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



Adapter or antenna can be rotated in 3 directions

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

Recommended type ST11

	BIS C-6002-_ _ _-655-03-_ _ _ _	BIS C-6002-_ _ _-652-03-_ _ _ _	BIS C-6002-_ _ _-653-03-_ _ _ _
	read/write	read/write	read/write
		round	Rod
			
	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA	≤ 400 mA
	0...+50 °C	0...+50 °C	0...+50 °C
	0...+50 °C	0...+50 °C	0...+50 °C
	IP 65	IP 65	IP 65
	4 external	1 internal	1 internal
	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC	1 (via opto-coupler), 24 V DC
	2 (via opto-coupler), 24 V DC	2 (via opto-coupler), 24 V DC	2 (via opto-coupler), 24 V DC
	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11	Terminals 1 × Pg 9 Terminals 2 × Pg 11
	2 connector round 5-pin, B-coded 1 connector round 5-pin	2 connector round 5-pin, B-coded 1 connector round 5-pin	2 connector round 5-pin, B-coded 1 connector round 5-pin
	yes	yes	yes
	BIS C-6002-019-655-03-ST11	BIS C-6002-019-652-03-ST11 BIS C-6002-028-652-03-ST11	BIS C-6002-019-653-03-ST11 BIS C-6002-028-653-03-ST11
	BIS C-6002-019-655-03-KL2	BIS C-6002-019-652-03-KL2 BIS C-6002-028-652-03-KL2	BIS C-6002-019-653-03-KL2 BIS C-6002-028-653-03-KL2
	Software GSD file	Software GSD file	Software GSD file
	Connector page 205	Connector page 205	Connector page 205

Threaded cover
BKS 12-CS-01
coded for M12 B
connector type

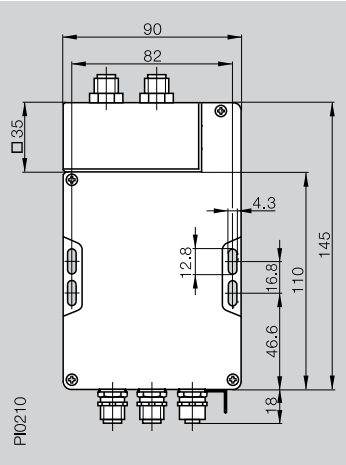
Read/write head can be rotated in 3 directions

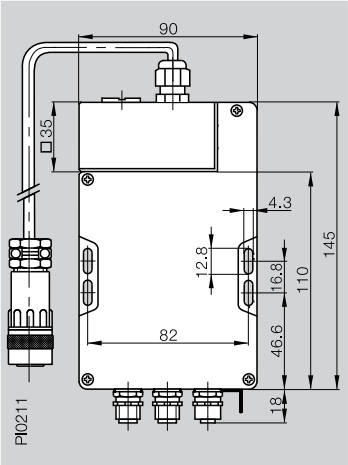
Description	BIS C-6003-_ _ _-650-03-ST12	BIS C-6003-_ _ _-670-03-ST12	BIS C-6003-_ _ _-654-03-ST12
Function	read/write	read/write	read/write
Antenna type			

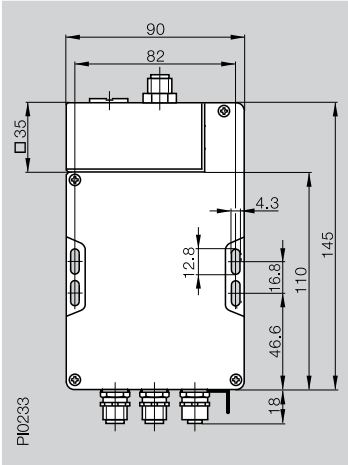
CE

c UL us LISTED
Control No 3TLJ
File No E227256

DeviceNet™







Supply voltage	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
Ripple	≤ 10 %	≤ 10 %	≤ 10 %
Current	≤ 400 mA	≤ 400 mA	≤ 400 mA
Operating temperature	0...+60 °C	0...+60 °C	0...+60 °C
Storage temperature	0...+60 °C	0...+60 °C	0...+60 °C
Protection per IEC 60529	IP 65	IP 65	IP 65
Read/write head ports	2 external	1 external	1 external
Connection type	3 connector round 5-pin	3 connector round 5-pin	3 connector round 5-pin
Description interface/software:			
Service interface RS232	yes	yes	yes
DeviceNet™	BIS C-6003-025-650-03-ST12	BIS C-6003-025-670-03-ST12	BIS C-6003-025-654-03-ST12
Accessories included	Software EDS file	Software EDS file	Software EDS file
Accessories (please order separately)	Connector page 207/208/209	Connector page 207/208/209	Connector page 207/208/209

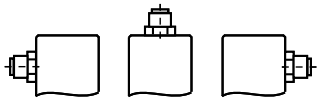
The **compact class BIS C-600** _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection.

The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

Small, compact, flexible and economical

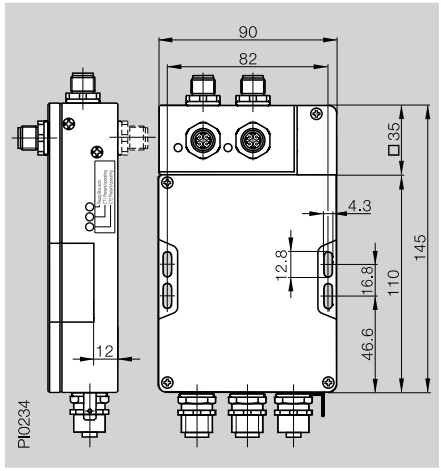
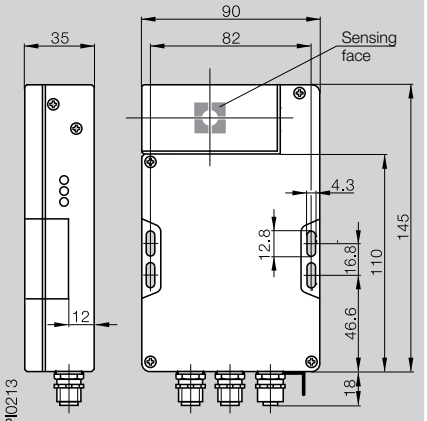
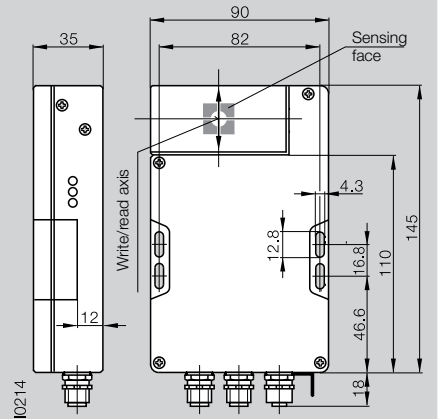
Cost-effective identification – operate 2 read/write heads simultaneously

- 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

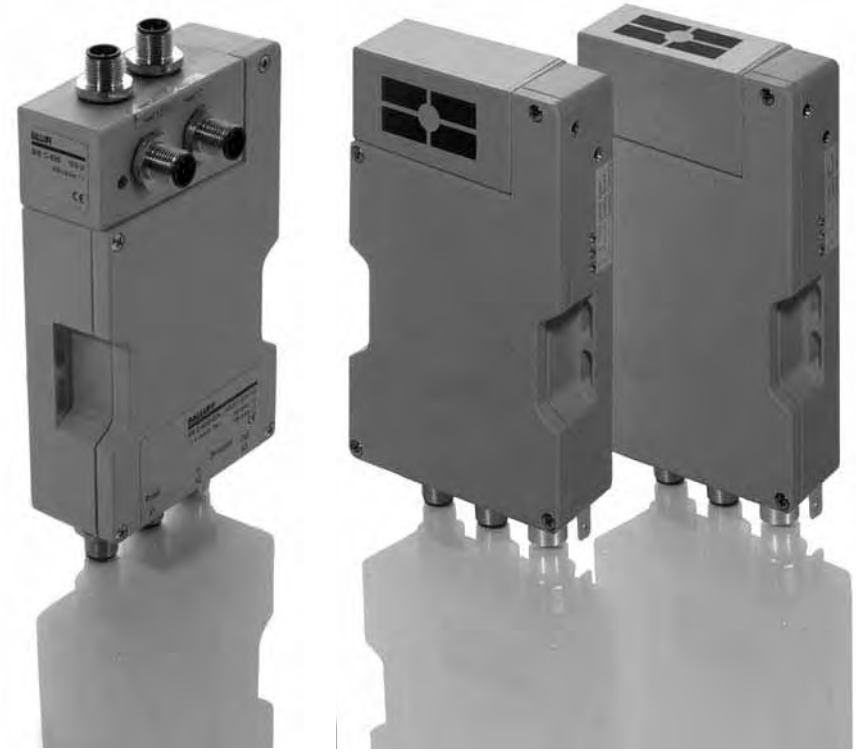


Adapter or antenna can be rotated in 3 directions

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

	BIS C-6003-_ _ _-655-03-ST12	BIS C-6003-_ _ _-652-03-ST12	BIS C-6003-_ _ _-653-03-ST12
	read/write	read/write	read/write
	round	round	Rod
			
	24 V DC ±20 %	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 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
	4 external	1 internal	1 internal
	3 connector round 5-pin	3 connector round 5-pin	3 connector round 5-pin
	yes	yes	yes
	BIS C-6003-025-655-03-ST12	BIS C-6003-025-652-03-ST12	BIS C-6003-025-653-03-ST12
	Software EDS file	Software EDS file	Software EDS file
	Connector page 207/208/2095	Connector page 207/208/209	Connector page 207/208/209

Read/write head can be rotated in 3 directions



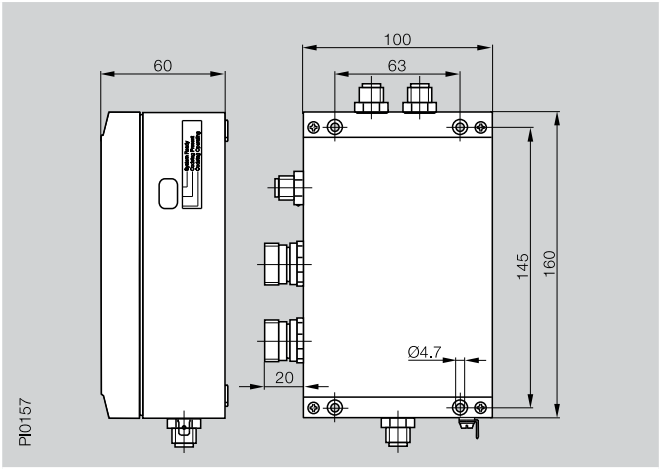
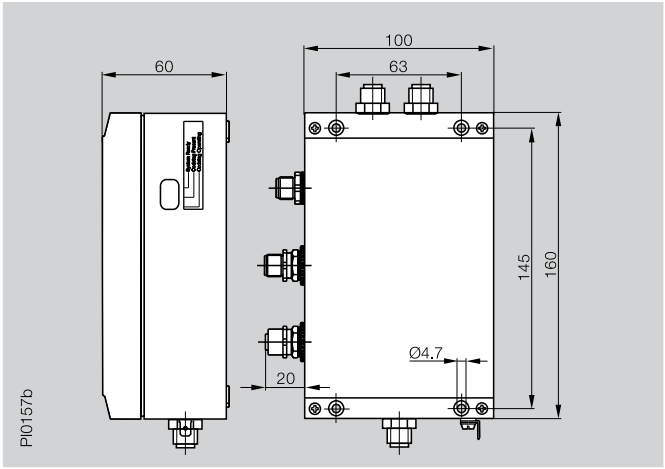
These robust metal housings provide effective protection against environmental influences and aggressive media. Impact also does not affect the degree of protection.

Control No 3TLJ
File No E227256

Description	
Function	
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Description interface/software:	
PROFIBUS-DP	
PROFIBUS-DP (with memory optimized data carrier processing)	
Accessories included	
Accessories (please order separately)	

**Cost-effective identification –
operate 2 read/write heads simultaneously!**

**Threaded cover
BKS 23-CS-00**
for M23 connector
IP 65 protective
cover for unused
connectors!

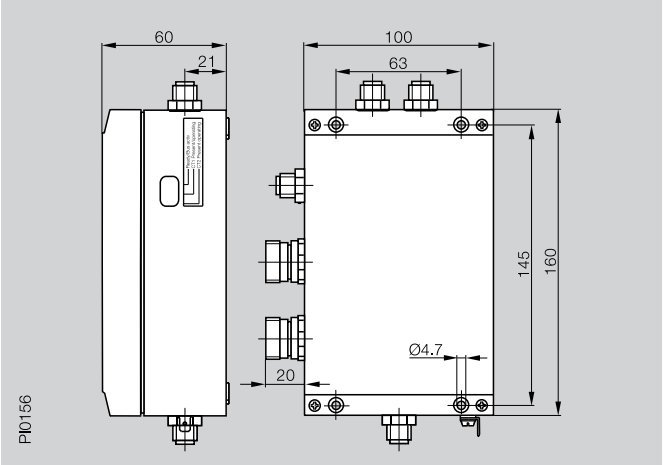
	BIS C-6022-_ _ _-050-03-ST10	BIS C-6022-_ _ _-050-03-ST14
	read/write	read/write
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+50 °C	0...+50 °C
	0...+50 °C	0...+50 °C
	IP 65	IP 65
	2 extern	2 extern
	yes	yes
	2 connectors round 12-pin, 1 connector round 5-pin 1 connector round 4-pin	Connector round 5-pin, B-coded, 1 connector round 5-pin 1 connector round 4-pin
	Read/write heads BIS C-3_ _ Exception: BIS C-350/BIS C-355	Read/write heads BIS C-3_ _ Exception: BIS C-350/BIS C-355
	BIS C-6022-019-050-03-ST10 BIS C-6022-028-050-03-ST10	BIS C-6022-019-050-03-ST14 BIS C-6022-028-050-03-ST14
	Software GSD file	Software GSD file
	BKS 23-CS-00	BKS 12-CS-01
	Connector page 204/205	Connector page 204/205

Threaded cover
BKS 12-CS-01
coded for M12 B
connector type

Description	**BIS C-6021-_ _ _-050-03-ST8**
Function	read/write

LISTED
Control No 3TLJ
File No E227256

Certified! No. 376



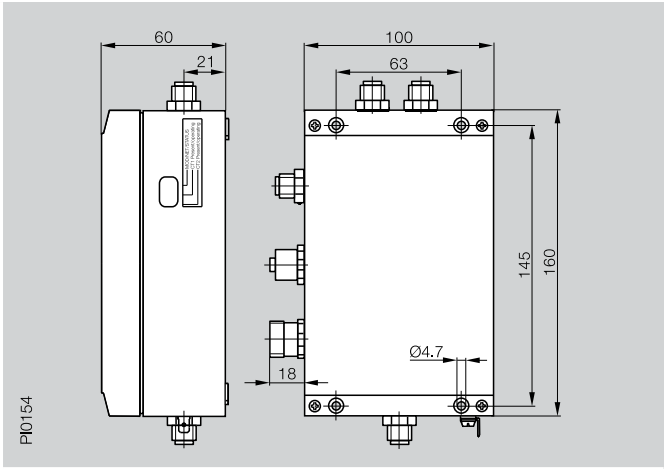
Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	2 connector round 9-pin 1 connector round 5-pin 1 connector round 4-pin
Connection for	Read/write heads BIS C-3_ _ Exception: BIS C-350/BIS C-355
Description interface/software:	
INTERBUS, remote bus subscriber	BIS C-6021-023-050-03-ST9
INTERBUS, remote bus subscriber with 2M Baud	BIS C-6021-023-050-03-ST9M
INTERBUS, remote bus subscriber (with memory optimized data carrier processing)	BIS C-6021-029-050-03-ST9
INTERBUS, installation bus	BIS C-6021-023-050-03-ST8
INTERBUS, installation bus with 2M baud	BIS C-6021-023-050-03-ST8M
INTERBUS, installation bus (with memory optimized data carrier processing)	BIS C-6021-029-050-03-ST8
Accessories (please order separately)	BKS 23-CS-00 Connector page 204

Cost-effective identification –
operate 2 read/write heads simultaneously!

Threaded cover
BKS 23-CS-00
for M23 connector
IP 65 protective cover
for unused connectors!

Description	**BIS C-6023-_ _ _-050-03-ST13**
Function	read/write

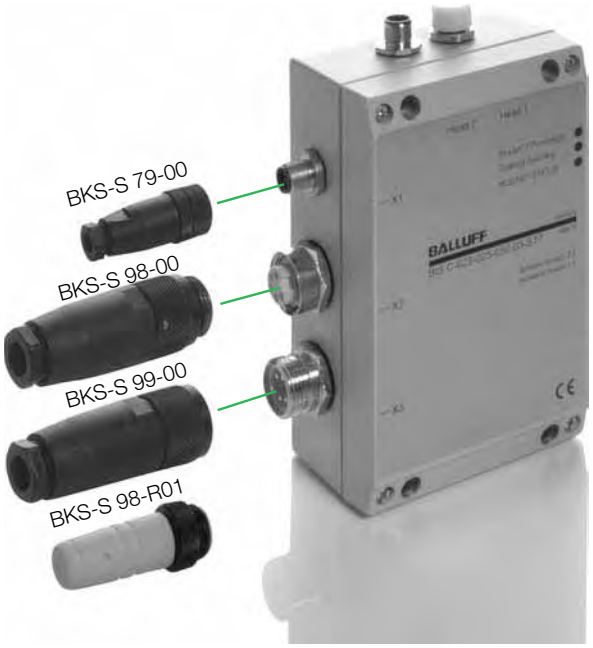
Control No 3TLJ
File No E227256



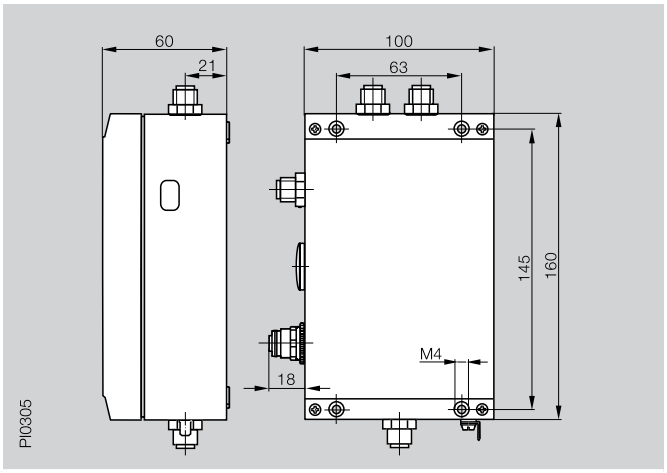
Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+50 °C
Storage temperature	0...+50 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	3 connector round 5-pin 1 connector round 4-pin
Connection for	Read/write heads BIS C-3_ _ Exception: BIS C-350/BIS C-355
Description interface/software:	
DeviceNet	BIS C-6023-025-050-03-ST13
Accessories included	Software ESD-file
Accessories (please order separately)	BIS-C -623 threaded cover 7/8" Connector page 200 Termination resistor page 207/208/209

Cost-effective identification –
operate 2 read/write heads simultaneously!

Threaded cover
BIS C-623
for 7/8" connection
IP 65 protective threaded
cover for unused connectors!



Description	**BIS C-6026-_ _ _-050-06-ST19**
Function	read/write

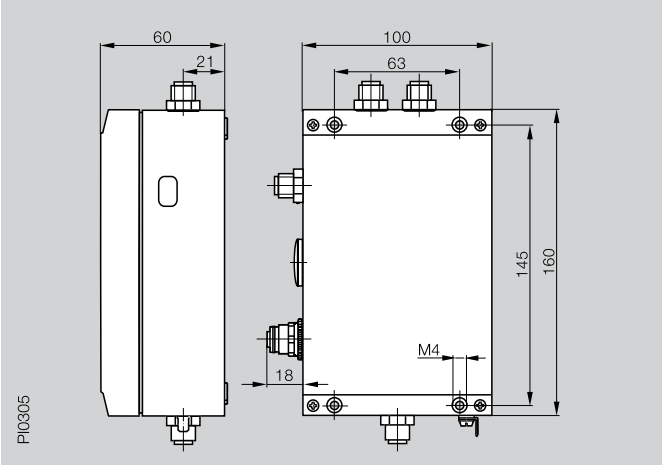


Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	Connector round 5-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	Read/write heads BIS C-3_ _ Exception BIS C-350 and BIS C-355
Description interface/software:	
EtherNet/IP™	BIS C-6026-034-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	Connectors page 206

Cost-effective identification –
operate 2 read/write heads simultaneously!

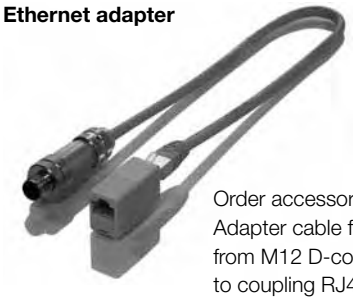
Description	**BIS C-6027-_ _ _-050-06-ST19**
Function	read/write

Control No 3TLJ
File No E227256



Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+50 °C
Storage temperature	0...+50 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	Connector round 5-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	Read/write heads BIS C-3_ _ Exception BIS C-350 and BIS C-355
Description interface/software:	
Ethernet with standard TCP/IP protocol	BIS C-6027-039-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	Connectors page 206

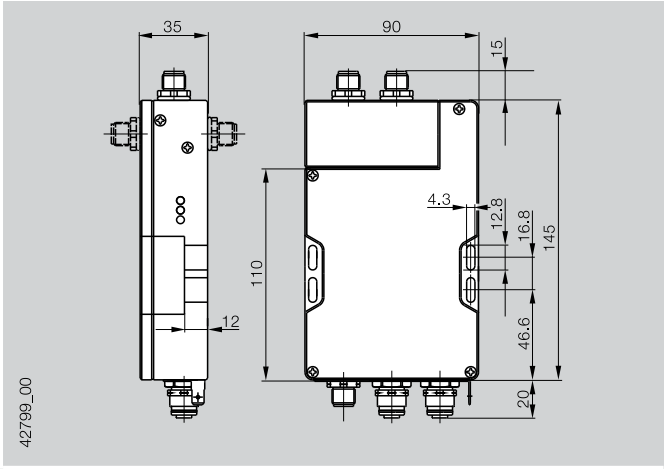
Ethernet adapter



Order accessories separately!
Adapter cable for Ethernet
from M12 D-coded
to coupling RJ45/RJ45
BIS C-526-PVC-00.5
page 206

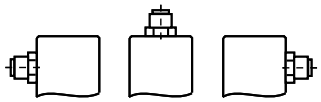
Description	**BIS C-6008-_ _ _-650-06-ST23**
Function	read/write
Housing material	ABS

Control No 3TLJ
File No E227256



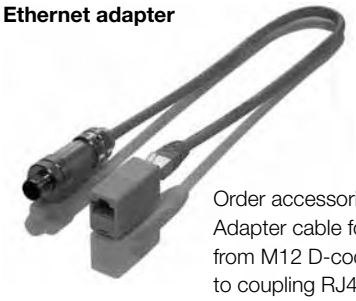
Supply voltage	24 V DC ±10 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes internal
Connection type	Connector round 5-pin, A-coded 2 connector 4-pin, D-coded
Connection for	Read/write heads BIS C-3_ _ Exception BIS C-350 and BIS C-355
Description interface/software:	
PROFINET RT with IRT-capable 2-PORT switch	BIS C-6008-048-650-06-ST23
Accessories included	Configuration software
Accessories (please order separately)	Connectors page 206

**Cost-effective identification –
operate 2 read/write heads simultaneously!**



Adapter or antenna can be
rotated in 3 directions

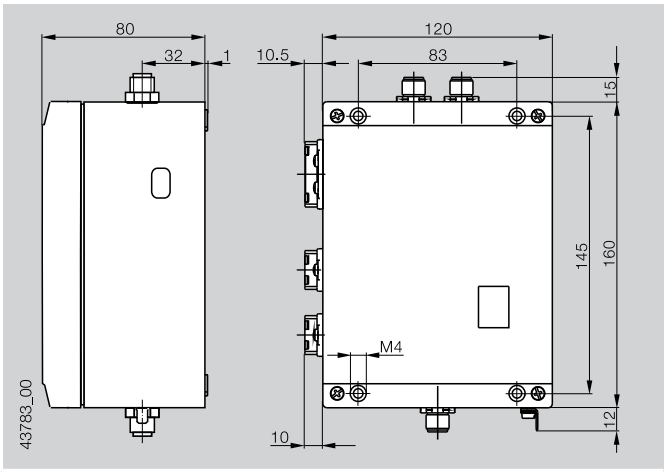
Ethernet adapter



Order accessories separately!
Adapter cable for PROFINET
from M12 D-coded
to coupling RJ45/RJ45
BIS C-526-PVC-00.5
page 206

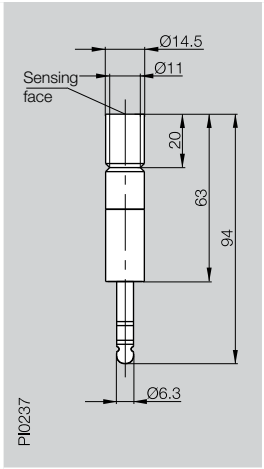
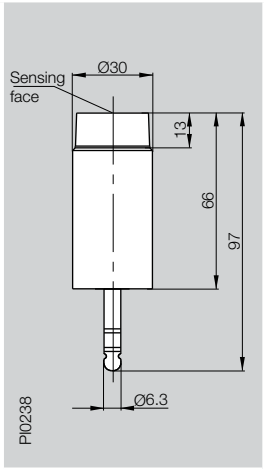
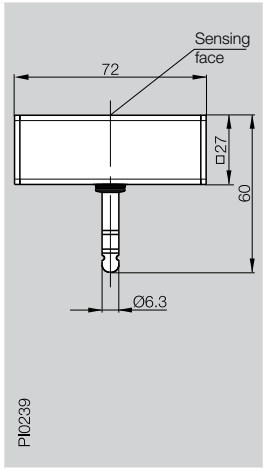
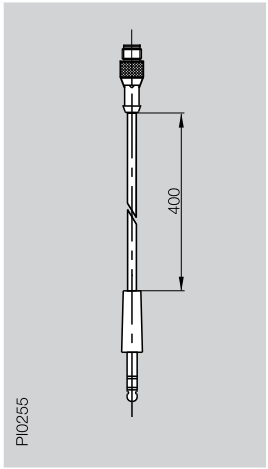
Description	**BIS C-6028-048-050-06-ST22**
Function	read/write
Housing material	Al

Control No 3TLJ
File No E227256



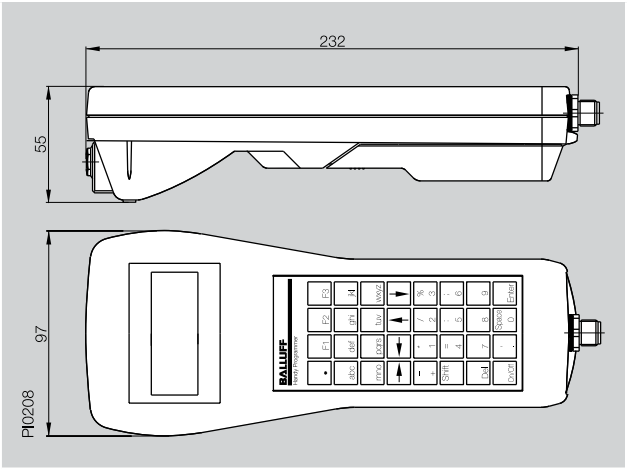
Supply voltage	24 V DC ±10 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	1 connector 5-pin, Push-pull AIDA 2 connector 8-pin, Push-pull RJ45 AIDA Connector round 4-pin
Connection for	Read/write heads BIS C-3_ _ Exception BIS C-350 and BIS C-355
Description interface/software:	
PROFINET RT with IRT-capable 2-PORT switch	BIS C-6028-048-050-06-ST22
Accessories included	Configuration software

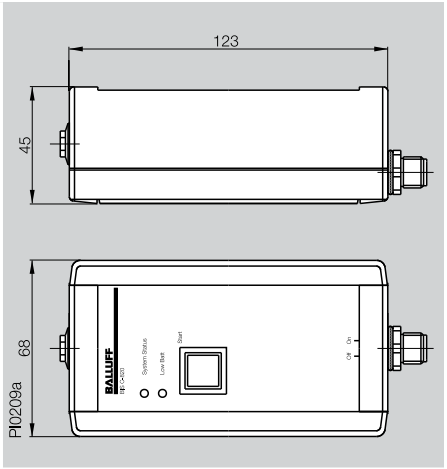
The robust version for connection to PROFINET with AIDA standard (Automation Initiative of German Domestic Automobile Manufacturers)

Dimensions	**Ø 14.5×63**	**Ø 30×66**	**72×27×27**	
Housing material	CuZn	POM	PVC	
Antenna type	round	round	Rod	
Function	Read/write head	Read/write head	Read/write head	Adapter cable
				
Part number	BIS C-851	BIS C-852	BIS C-853	BIS C-850
Operating temperature	0...+70 °C	0...+70 °C	0...+60 °C	0...+70 °C
Storage temperature	–20...+85 °C	–20...+85 °C	–20...+60 °C	–20...+85 °C
Protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Read head connection	6.3 mm jack socket	6.3 mm jack socket	6.3 mm jack socket	6.3 mm jack socket
Connect to	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
Appropriate data carriers	BIS C-100_ _	BIS C-100_ _	BIS C-150-_ _/A	
	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_ _		

Adapter cable for handy programmer or portable device and all read/write heads with M12 connector.

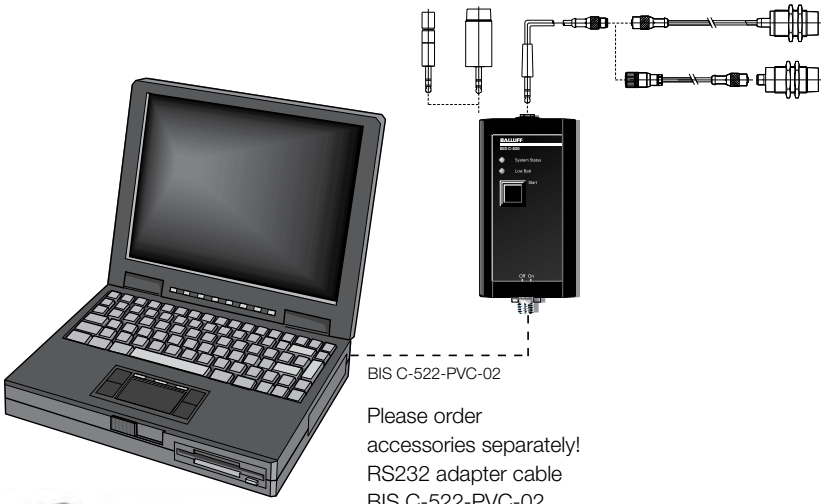
Function	read/write	read/write
Housing material	ABS	ABS





Part number	BIS C-810-0-003	BIS C-820-0-004-D
Keyboard	32 buttons, alphanumeric	1 key
Display	LCD-display, 20 characters/4 line	2 LED status/battery
Current	2.4 V rechargeable battery pack NiMH	2× R6 AA rechargeable NiMH
Capacity	1500 mA/h	800 mA/h
Interface	RS232/Balluff Dialog	RS232/Balluff Dialog
Operating temperature	0...+50 °C	0...+50 °C
Protection per IEC 60529	IP 40	IP 40
Read head connection	1× 6.3 mm jack socket	1× 6.3 mm jack socket
Accessories	Carrying case included	

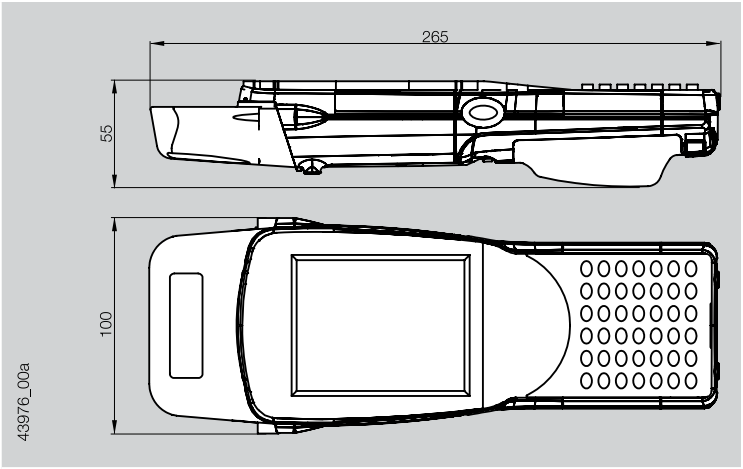
For maximum flexibility
The handy programmer with read/write function helps you stay mobile and independent. Benefits increased mobility during repair work.



Please order accessories separately!
RS232 adapter cable
BIS C-522-PVC-02
BIS C-524-PVC-01,5
page 199

Handheld Programmer

Function	read/write
Housing material	ABS



Standard Hand Held unit part number	BIS C-870-1-008-x-000
Keyboard	52 buttons, alphanumeric
Display	TFT Touchscreen display
Supply voltage	3.7 V rechargeable battery pack
Capacity	4000 mA/h
Interface	RS232/Balluff Dialog
Working temperature	–10...+50 °C
Degree of protection in accordance with IEC 60529	IP 65
Read/write head option	Integrated
Accessories included	Charging power supply and stylus
Appropriate data carrier	BIS C-1 ...
Please order additional accessories separately	Docking Station and Pistol Grip

For enhanced operating convenience

Allows easy manual writing and reading of BIS C data carriers.
Easy operation thanks to
– Touchscreen with large Windows CE® color display
– Pre-installed Balluff software and full keyboard or stylus

Ideal for manual rework stations or remote data access away from the line. Data transfer via optional WLAN, Bluetooth or wired USB. The handheld is also modular for expandability.

Additional options are available for greater functionality.

Basic Handheld
BIS C-870-1-008-x-000
Includes charger and stylus

Hand Held Accessories

Part Number	WA4003-G2
Description	Desktop Docking Station w/PS and USB Cable

Part Number	WA3010
Description	4000mAh Replacement Battery

Part Number	RA2041*
Description	802.11b/g WLAN Card

Part Number	WA6100-G1
Description	Stylus – pack of 5

Part Number	WA9212-G1*
Description	Imager, 2D Slim Pod HHP 5180 (compatible with pistol grip WA6102-G1)

Part Number	WA6102-G1
Description	Pistol Grip for WA9212-G1 2D Slim Pod HHP 5180

Part Number	WA9000-G1*
Description	Scanner 1D Laser High Performance (can work with Pistol Grip WA6001-G1)

Part Number	WA6101-G1
Description	Pistol Grip for WA9000-G1, 1D Scanner

Part Number	WA6097-G2
Description	Protective Carrying Case – 7527C-G2 universal end cap (open ended)

*Specifications available upon request.

Easy Setup

Physical installation consists of:
- Din Rail mounting miLink processor
- Mount Balluff read/write head
- Connect 24 V DC power
- Connect RS-232 cable to Balluff processor
- Connect Ethernet cable to CNC

Application configuration consists of:
- License Activation
- Set IP address* of GE Fanuc CNC
- Set RS-232 parameters for Balluff BIS processor
- Configure memory map for ID tag data

*Consult Fanuc or Balluff to confirm CNC controller Ethernet conformance.

Fanuc miLink CNC interface

The revolutionary Fanuc miLink Tool ID interface offers easy integration of Balluff BIS Tool ID RFID systems to machine tools using Fanuc CNC controllers with minimal or no engineering required. It's flexible, easy to install, and easy to configure. The engineering has been put in the box instead. The miLink is also industrially hardened for worry-free operation.

The miLink Tool ID interface requires:
- No Ladder Programming
- No Macro Executer
- No C-Executer

The miLink Tool ID interface is a bolt-on solution and requires no modifications to the Fanuc CNC control, cutting your implementation costs drastically. It is configured using a Windows® based GUI interface requiring a keyboard, mouse and monitor. The interface is simple to use, allowing the user to define where the data in the Tool ID tags memory gets transferred to in the Fanuc machine tool controller using a template driven format, storing memory map and setup information in a template file. Once configured, the monitor, keyboard and mouse are meant to be removed from the miLink allowing it to operate as a black box solution automatically transferring data between the Balluff BIS system and the Fanuc CNC controller autonomously.

Balluff BIS Tool ID system kits

Balluff has two kits available with the BIS C series RFID system parts needed to complete the RFID part of a Tool ID system, designed specifically to work with the Fanuc miLink interface. Each kit provides a BIS C based read/write head, RFID processor and RS232 communication cable designed to connect directly to the miLink serial communication port.

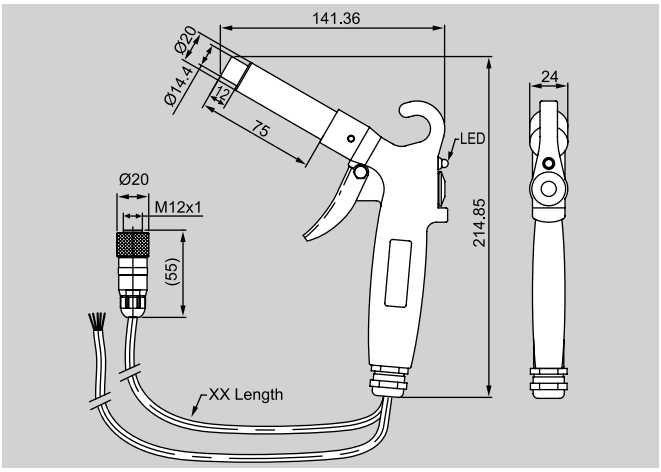
Part Number	BIS C-600-007-650-00-KL1/PK1
Kit contents**	BIS C-300-PU1-05
	BIS C-300 Machine Tool Head
	BIS C-600-007-650-00-KL1
	BIS RS232 serial processor
	BIS C-521-SA1-PVC-02
	RS232 serial cable

Part Number	BIS C-600-007-650-00-KL1/PK2
Kit contents**	BIS C-721-00-PU1-05
	BIS C-300 Machine Tool Head/Pistol Grip
	BIS C-600-007-650-00-KL1
	BIS RS232 serial processor
	BIS C-521-SA1-PVC-02
	Serial cable with wire labels

** See individual kit parts for specific part specifications.

www.balluff.com/miLink

Version	**Pistol grip handle and read/write head**
Function	Read/write head
Housing material	Al



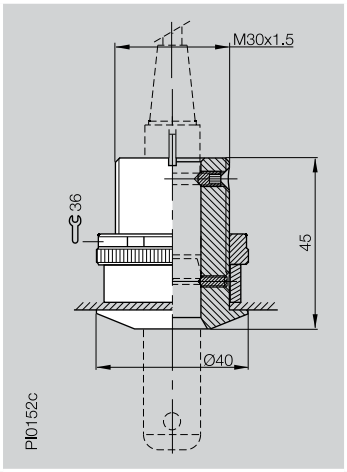
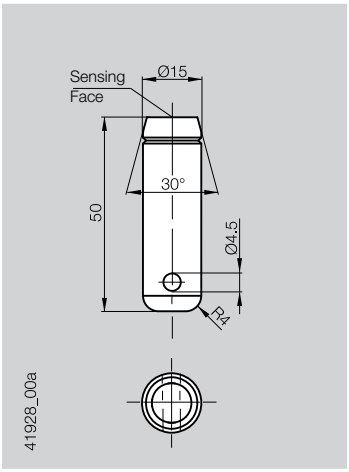
Part Number	BIS C-721-00-PU1-05
Trigger	1 manual switch
Display*	1 LED
Operating temperature	0…+70°C
Storage temperature	-20…+85°C
Protection	IP 65**
Cable	5 m
Connection to	Processor

*Trigger switch and indicator LED must be wired and configured by user to miLink interface.

**Protection rating is provided as stated if user provides properly sealed I/O cable pass through to miLink terminations and mounted in a IP rated cabinet.

Provides ergonomic comfort

Pistol grip handle provides a comfortable “air gun” like feel for use with the BIS C-300 mounted read/write head. It allows the user to hang the read/write head by convenient built-in hook on handles of cabinets or machining center doors for quick and easy access when reading tool tags is required. A convenient trigger switch and red feedback LED are provided to allow connection to external controllers for triggering and feedback for the tool tag process.

Version	Access protection	Data carrier
Use	Attachment for read/write head BIS C-300	
		
Part number	BIS C-300-ZA1	BIS C-122-04/L-ZC1
Degree of protection		IP 67
Ambient operating temperature	0...+70 °C	–25...+70 °C
Storage temperature	–20...+85 °C	–25...+85 °C

Access protection

Individual access codes are allocated via programmable data keys, which can then be disabled to prevent further programming.

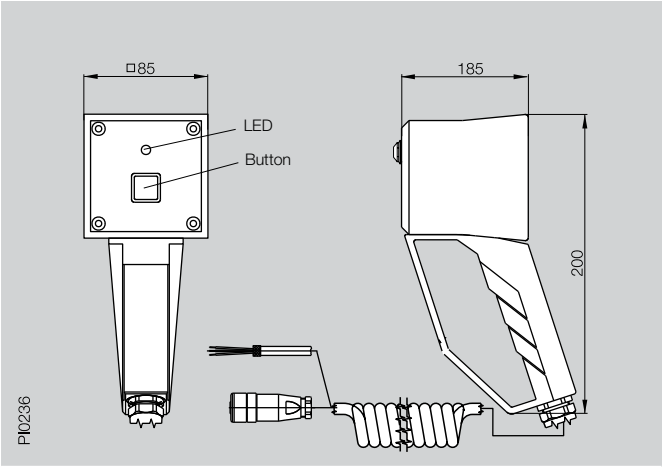
Unauthorized personnel cannot manipulate the data key as a result. The data key is read via an antenna fitted to a special bracket. The processor unit then reads the data.

Different interfaces such as serial, PROFIBUS, INTERBUS, DeviceNet™, EtherNet/IP™ or parallel interfaces enable simple connection to the monitored system. Available for systems BIS C, BIS L, and BIS M.

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

Housing material	PA 66

Control No 3TLJ
File No E227256



Part number	BIS C-720-01-03
Keyboard	1 key
Display	1 LED
Ambient operating temperature	0...+70 °C
Storage temperature	–20...+85 °C
Protection per DIN 40 050	IP 40
Read head connection	6.3 mm jack socket
Coiled cable extended	3 m
Connection to	Processor and PLC

Provides ergonomic 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. LEDs and an integral buzzer signal the end of the read/write process.

Note:
This device's LEDs and buzzer operate with functionality provided by a PLC or external controller.

Installation in Steel

Clear zone dimensions

Data carriers	Fig.	Dimensions (in mm)			
		A	B	C	D
BIS C-100-05/A	–	0	0	0	0
BIS C-103-_ _/A	–	0	0	0	0
BIS C-104-_ _/A	–	0	0	0	0
BIS C-105-_ _/A	–	0	0	0	0
BIS C-108-_ _/L	–	0	0	0	0
BIS C-117-05/A	–	0	0	0	0
BIS C-117-05/L	5	60	–	–	20
BIS C-121-04/L	–	0	0	0	0
BIS C-122-_ _/L	–	0	0	0	0
BIS C-127-05/L	4	30	30	–	30
BIS C-128-_ _/L	5	60	–	–	20
BIS C-130-05/L	5	70	–	–	2
BIS C-133-_ _/L	–	0	0	0	0
BIS C-134-_ _/L	2	70	–	11	–
BIS C-150-_ _/A	1	20	20	22	–
BIS C-190-_ _/L	3	20	17	20	–
BIS C-191-_ _/L	3	9	27	9	–

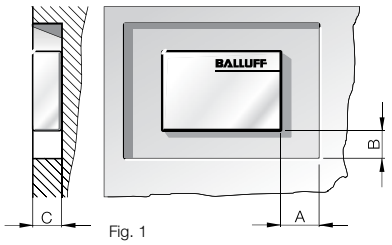


Fig. 1

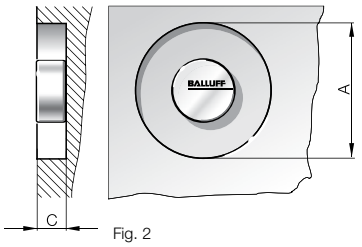


Fig. 2

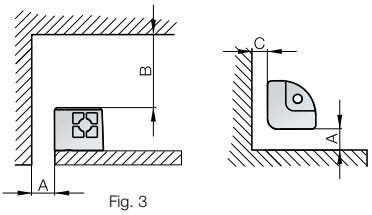


Fig. 3

Read/write head	Fig.	Dimensions (in mm)		
		A	B	C
BIS C-300	–	0	0	0
BIS C-302	–	0	0	0
BIS C-305	–	0	0	0
BIS C-306	–	0	0	0
BIS C-310	2	60	–	13
BIS C-315	–	0	0	0
BIS C-318	1	50	50	30
BIS C-319	2	50	–	35
BIS C-323	2	60	–	13
BIS C-324	1	0	0	0
BIS C-325	2	0	0	0
BIS C-326	2	80	–	35
BIS C-327	1	50	50	20
BIS C-328	1	50	50	20
BIS C-350	1	60	50	60
BIS C-351	1	100	60	50

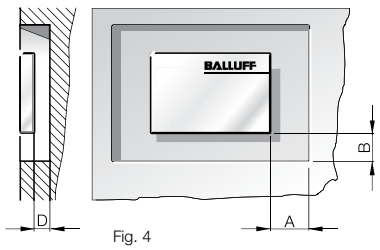


Fig. 4

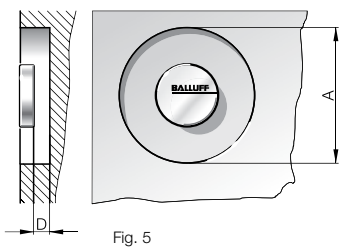


Fig. 5

Note

Depending on the combination of read/write head and data carrier, clear zone dimension A, C, and D should always be selected for the larger of the components.

Installation in Aluminum

With Clear Zone, Static Operation

When installing components in aluminum, provide clear zones for trouble-free operation.

In static mode a clear zone depth in aluminum of at least 10 mm must be maintained. Fig. 1

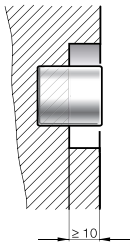


Fig. 1

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 specification for read/write head). Fig. 2

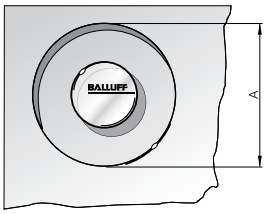


Fig. 2

When combined with read/write heads BIS C-318, 327, 328, 350, 351 and 355 dimension **B** and **C** are calculated from the length and width of the larger communication partner (data carrier or read/write head) plus the maximum permissible offset (see specification for read/write head). Fig. 3

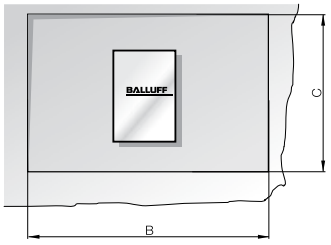


Fig. 3

With Clear Zone, Dynamic Operation

In dynamic mode a clear zone depth in aluminum of at least 10 mm must be maintained. Fig. 1

Clear zone dimension **A** corresponds to 2× the diameter of the larger communication partner + 1× 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 specification for read/write head). Fig.4

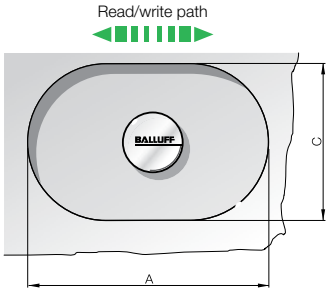


Fig. 4

When combined with read/write heads BIS C-318, 327, 328, 350, 351 and 355 dimension **B** is calculated from 2× the read/write path (see specification for read/write heads) + 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). Fig. 5

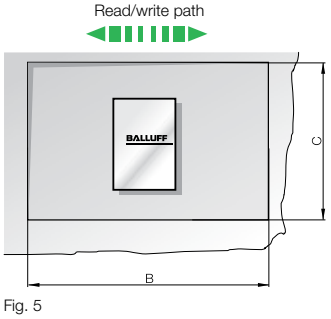
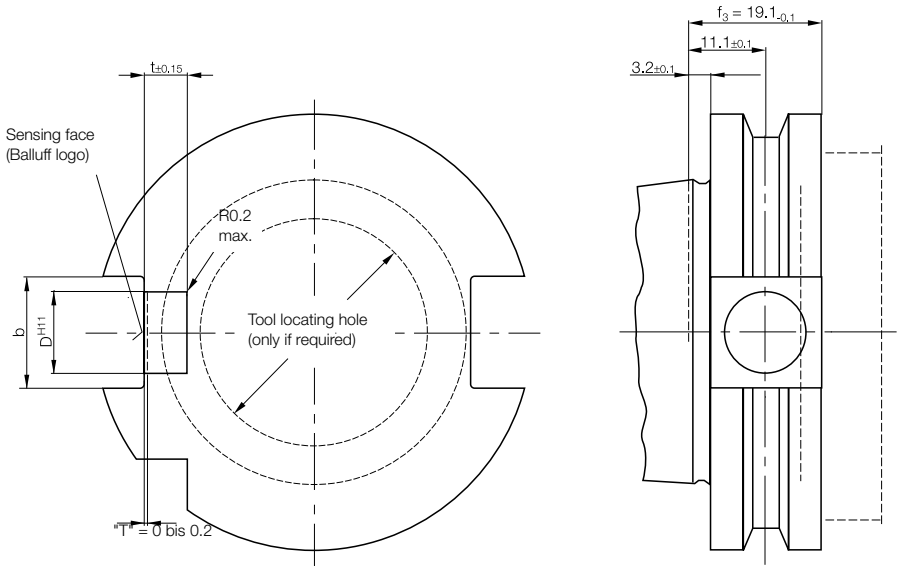


Fig. 5

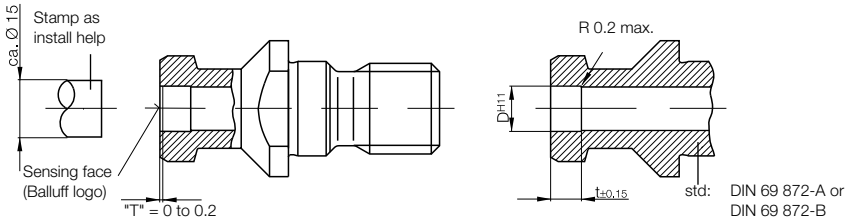
Installation in Taper

Taper DIN 69 871-A	Data carrier BIS C-122 D^{H11}	t±0,15	U/min. max.	Data carrier BIS C-103 D^{H11}	t±0,15	U/min. max.	Data carrier BIS C-105 D^{H11}	t±0,15	U/min. max.
Nr. 30	10	4,65	90000	12	8,15	68000	12	6,15	68000
Nr. 40	10	4,65	75000	12	8,15	54000	12	6,15	54000
Nr. 45	10	4,65	66000	12	8,15	43000	12	6,15	43000
Nr. 50	10	4,65	59000	12	8,15	33000	12	6,15	33000



Installation in Retention Knob

Taper DIN 69 871-A	Data carrier BIS C-122 D^{H11}	t±0,15	Data carrier BIS C-103 D^{H11}	t±0,15	Data carrier BIS C-105 D^{H11}	t±0,15
Nr. 30	—	–	—	—	—	—
Nr. 40	10	4,65	—	—	—	—
Nr. 45	10	4,65	12	8,15	12	6,15
Nr. 50	10	4,65	12	8,15	12	6,15

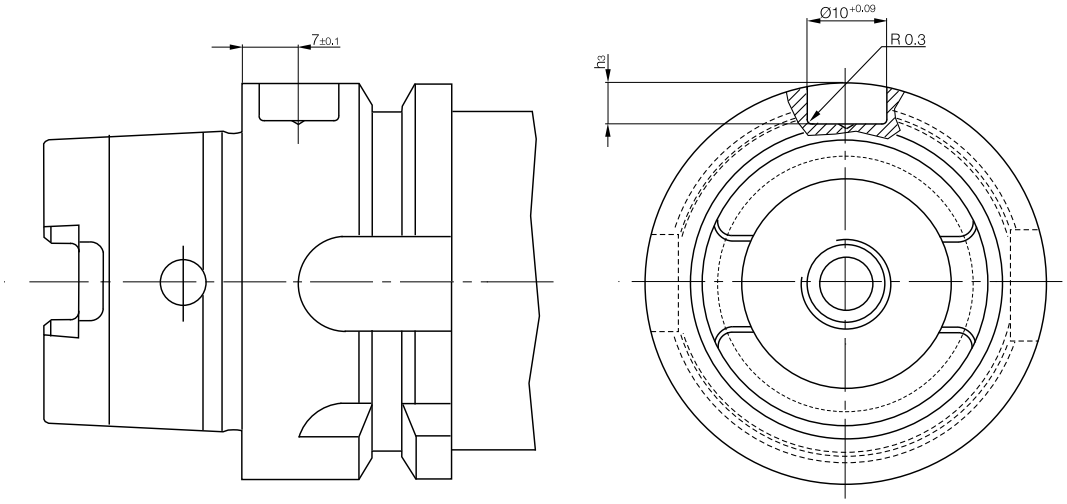


Installation

1. Degrease gluing surfaces.
2. Apply a bead of glue (e.g. Lictite Hysol IC) approximately 3 mm wide around the perimeter of the data carrier housing. Note manufacturer's instructions! Lictite can be provided by Balluff.
3. Press in data carrier housing by hand. Note dimension "T"!
4. Remove excess glue.
5. Allow to harden.

Installation in HSK Taper

	Data carrier BIS C-122	
HSK Form A ISO/DIS 12164-1	$h_{3\ +\ 0,20}$	U/min. max.
32	5,4	96000
40	5,2	80000
50	5,1	75000
63	5	65000
80	4,9	57000
100	4,9	48000



Mechanical Strength

Data carriers and read/write heads

Part number	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.

Processors and non-potted read/write heads

Part number	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 Times in Static Mode

For double read and compare

Data carrier with 32-bytes blocks	
Bytes	Read time [ms]
from 0 up to 31	110
for each additional 32 bytes started add an additional	120
from 0 up to 255	= 950

Data carrier with 64-bytes blocks	
Bytes	Read time [ms]
from 0 up to 63	220
for each additional 64 bytes started add an additional	230
from 0 up to 2047	= 7350

Write Times in Static Mode

Includes checking and comparing:

Data carrier with 32-bytes blocks	
Bytes	Write time [ms]
from 0 up to 31	110 + n × 10
≥ 32	y × 120 + n × 10
from 0 up to 255	= max. 3510

Data carrier with 64-bytes blocks	
Bytes	Write time [ms]
from 0 up to 63	220 + n × 10
≥ 64	y × 230 + n × 10
from 0 up to 2047	= max. 27830

n = number of contiguous bytes to be programmed
y = number of blocks to be processed

Example:
Write 17 bytes 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 Mode

Read times within the 1st block for double read and compare:

The time indicated apply after the data carrier has been recognized. 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.

Data carrier with 32-bytes blocks	
Bytes	Read time [ms]
from 0 up to 3	14
for each additional bytes	3.5
from 0 up to 31	112

Data carrier with 64-bytes blocks	
Bytes	Read time [ms]
from 0 up to 3	14
for each additional bytes	3.5
from 0 up to 64	224

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

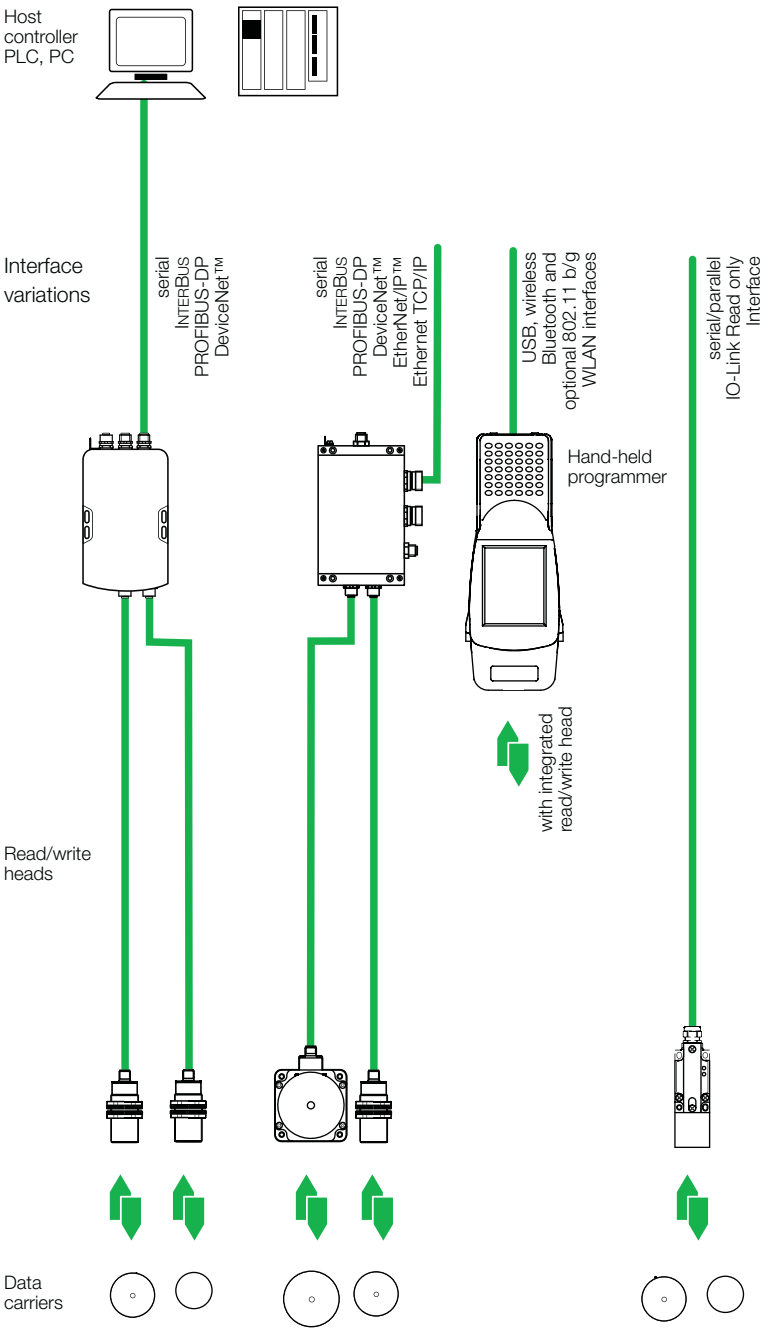
Memory size up to 1023 bytes = 32 bytes per block
Memory size 2047 bytes and larger = 64 bytes per block

Contents

This section includes durable Mazak™ machine tool RFID solution.

This section includes simple read-only RFID solutions.

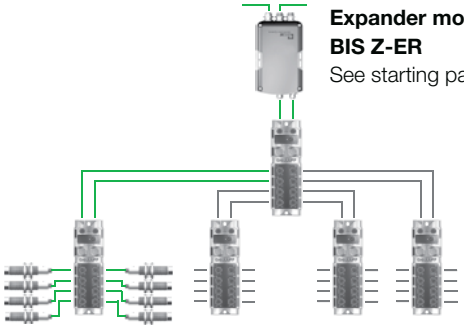
This section provides specifications on the low cost and flexible BIS L series read/write RFID solutions.



BIS L

Exceptionally economical, outstanding in logistics and assembly applications

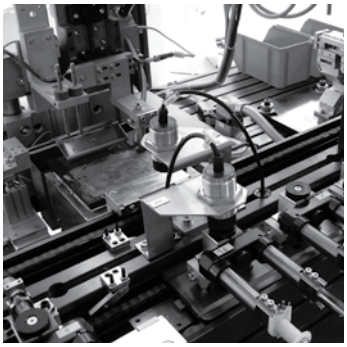
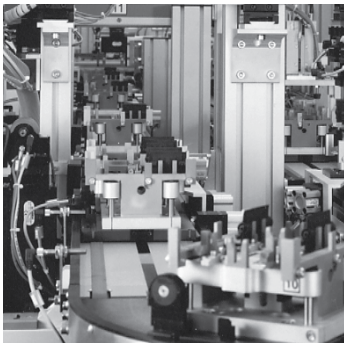
easy loop®



Expander module BIS Z-ER
See starting page 214

Industrial RFID Systems BIS L
Wide Range of Applications Supported

	Production				Intralogistics						Access and object control					
	Tool and die management		Assembly conveying systems		Closed logistics circuits		Storage and retrieval equipment Storage and tracking		Intelligent vehicles (driverless transport vehicles)		Object detection		Access control Entry control			
Data carrier	On tool	Dies	Pallets	On part	Retainer/workpiece carrier	Pallets	Retainer/workpiece carrier	Workpiece carrier Skid	Guiding, steering	Identification	In component	On component	Reliable access control	Process access	PartID	
BIS L-100-01/L			■		■	■										
BIS L-100-05/L-RO			■		■	■				■						
BIS L-101-01/L			■			■	■		■							
BIS L-101-05/L-RO			■			■	■			■						
BIS L-102-01/L			■		■		■	■								
BIS L-102-05/-RO			■		■		■	■		■						
BIS L-103-05/L	■	■										■	■	■		
BIS L-103-05/L-RO	■	■								■						
BIS L-103-05/L-ZC1													■	■		
BIS L-150-05/A	■	■									■				■	
BIS L-151-05/A	■	■		■							■				■	
BIS L-200-03/L																
BIS L-201-03/L			■			■	■			■						
BIS L-202-03/L			■		■		■	■								
BIS L-203-03/L		■			■					■					■	
BIS L-244-03/L	■															
BIS L-245-03/L	■															


Suggested Application

Select the most suitable BIS L system for your application from the table and benefit from the outstanding performance and quality of economical industrial RFID systems. The L series is best suited for palletized production, internal logistics, storage and retrieval, access control and tool tracking and features low cost read-only solutions.

	Read/write	Dynamic or static	Installation in metal	For harsh environments	Long distances (> 16 mm)	EEPROM	read only	
						192 Byte	3 Byte + CRC	5 Byte
	■					■		
							■	
	■				■	■		
					■		■	
	■				■	■		
					■		■	
	■					■		
							■	
	■					■		
	■		■			■		
	■		■			■		
								■
					■			■
					■			■
								■
			■	■				■
			■	■				■

Use the tables and combine BIS L read/write head with tag based on range.

In three steps you will have selected your BIS L system:
1. First choose the appropriate form factor for your data carrier.
2. Then determine your read/write head based on range.
3. Finally, determine the desired memory capacity. Many tags provide several sizes.

Questions?

Whatever you need, whether analysis, selection and return on investment, formats, interfaces and software, installation, disassembly and retrofitting – in short: we are here to help you in every way.

Take advantage of our personal consultation, individual support and worldwide service.

0-12 mm




Read/write heads

Data carrier	Memory capacity in bytes	Read/write distance	BIS L-302-S115 Page 96/97	BIS L-400-035-003-05-S115 Page 107 BIS L-400-043-003-02-S115 Page 121 BIS L-405-033-003-05-MU BIS L-405-037-003-05-MU Page 104/105	BIS L-409-045-003-07-S4 Page 123	BIS L-400-047-010-00-S115 Page 90
BIS L-103-05/L-RO Page 91	3 + CRC (read only)	**0...8 mm**		0...11 mm	0...7 mm	
BIS L-203-03/L Page 91	5 (read only)	**0...8 mm**		0...11 mm	0...7 mm	
BIS L-150-05/A Page 89	192	0...12 mm				
BIS L-244-03/L Page 90	5 (read only)					0...8 mm
BIS L-245-03/L Page 90	5 (read only)					0...10 mm

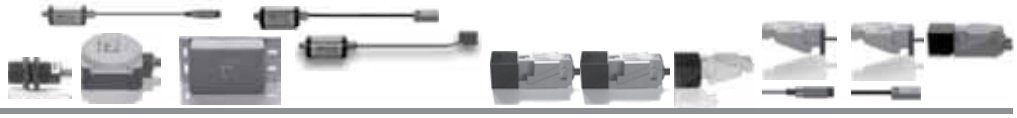
0...2 mm = Data carrier flush mounted in steel

8-20 mm

Read/write heads

Data carrier	Memory capacity in bytes	Read/write distance											
		BIS L-302-S115 Page 96/97	**BIS L-304-S115** Page 98/99	**BIS L-400-035-001-00-S115** **BIS L-400-035-001-02-S115** Page 106 **BIS L-400-043-001-02-S115** Page 120	**BIS L-400-035-002-00-S115** **BIS L-400-035-002-02-S115** Page 106 **BIS L-400-043-002-02-S115** Page 120	**BIS L-400-035-004-00-S115** Page 107 **BIS L-400-043-004-02-S115** Page 121	**BIS L-405-033-001-05-MU** **BIS L-405-037-001-05-MU** Page 104	**BIS L-405-033-002-05-MU** **BIS L-405-037-002-05-MU** Page 105	**BIS L-405-033-004-05-MU** **BIS L-405-037-004-05-MU** Page 105	**BIS L-409-045-001-07-S4** Page 122	**BIS L-409-045-002-07-S4** Page 122	**BIS L-409-045-004-07-S4** Page 123
BIS L-100-01/L Page 88	192	0...20 mm	0...20 mm									
BIS L-103-05/L-RO Page 91	3 + CRC (read only)	0...15 mm	0...15 mm	0...20 mm	0...16 mm	0...16 mm	0...20 mm	0...16 mm	0...16 mm	0...16 mm	0...10 mm	0...10 mm
BIS L-203-03/L Page 91	5 (read only)	0...15 mm	0...15 mm	0...20 mm	0...16 mm	0...16 mm	0...20 mm	0...16 mm	0...16 mm	0...16 mm	0...10 mm	0...10 mm
BIS L-100-05/L-RO Page 91	3 + CRC (read only)	0...23 mm	0...25 mm	0...30 mm	0...23 mm	0...23 mm	0...30 mm	0...23 mm	0...23 mm	0...25 mm	0...15 mm	0...15 mm
BIS L-200-03/L Page 91	5 (read only)	0...23 mm	0...25 mm	0...30 mm	0...23 mm	0...23 mm	0...30 mm	0...23 mm	0...23 mm	0...25 mm	0...15 mm	0...15 mm
BIS L-201-03/L Page 91	5 (read only)	**0...20 mm**	**0...20 mm**	0...40 mm	0...27 mm	0...27 mm	0...40 mm	0...27 mm	0...27 mm	0...35 mm	0...18 mm	0...18 mm

15-30 mm

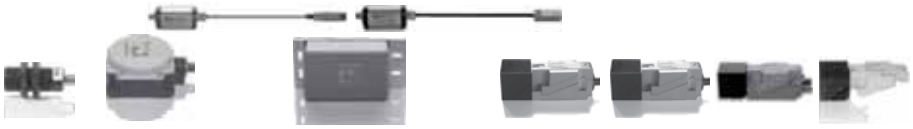


Read/write heads

Data carrier	Memory capacity in bytes	Read/write distance											
		BIS L-300-S115 Page 93	**BIS L-301-S115** Page 94	**BIS L-302-S115** Page 96/97	**BIS L-303-S115** Page 95	**BIS L-304-S115** Page 89/99	**BIS L-350-S115** Page 100/101	**BIS L-400-035-001-00-S115** **BIS L-400-035-001-02-S115** Page 106	**BIS L-400-043-001-02-S115** Page 120	**BIS L-405-033-001-05-MU** **BIS L-405-037-001-05-MU** Page 104	**BIS L-405-033-002-05-MU** **BIS L-405-037-002-05-MU** Page 104	**BIS L-405-033-004-05-MU** **BIS L-405-037-004-05-MU** Page 105	**BIS L-409-045-001-07-S4** Page 122
BIS L-100-01/L Page 88	192 3+CRC	0...30 mm	0...40 mm	0...20 mm	0...40 mm	0...20 mm							
BIS L-100-05/L-RO	5	0...40 mm	0...50 mm	0...25 mm	0...50 mm	0...25 mm		0...30 mm	0...23 mm	0...30 mm	0...23 mm	0...23 mm	0...25 mm
BIS L-200-03/L Page 91	(read only)	0...40 mm	0...50 mm	0...25 mm	0...50 mm	0...25 mm		0...30 mm	0...23 mm	0...30 mm	0...23 mm	0...23 mm	0...25 mm
BIS L-101-01/L Page 88	192												
BIS L-101-05/L-RO Page 91	3 + CRC (read only)	0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm		0...40 mm	0...27 mm	0...40 mm	0...27 mm	0...27 mm	0...35 mm
BIS L-201-03/L Page 91	5 (read only)	0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm		0...40 mm	0...27 mm	0...40 mm	0...27 mm	0...27 mm	0...35 mm
BIS L-102-01/L Page 88	192	0...55 mm	0...70 mm	0...30 mm	0...70 mm								
BIS L-103-05/L Page 89	192	0...25 mm		0...15 mm		0...15 mm							
BIS L-103-05/L-RO Page 91	3 + CRC (read only)	0...25 mm		0...15 mm		0...15 mm		0...20 mm	0...16 mm	0...20 mm	0...16 mm	0...16 mm	0...16 mm
BIS L-203-03/L Page 91	5 (read only)	0...25 mm		0...15 mm		0...15 mm		0...20 mm	0...16 mm	0...20 mm	0...16 mm	0...16 mm	0...16 mm
BIS L-150-05/A	192	0...25 mm	0...32 mm	0...12 mm		0...12 mm	**0...25 mm**						
BIS L-151-05/A Page 89	192	0...12 mm	0...12 mm	0...7 mm		0...7 mm	**0...15 mm**						

0...2 mm = Data carrier flush mounted in steel
Memory sizes 752 bytes used EEPROM technology. 100,000 write cycles and unlimited read cycles
Memory size 2000 uses FRAM technology with unlimited number of read/write cycles

25-50 mm



Read/write heads

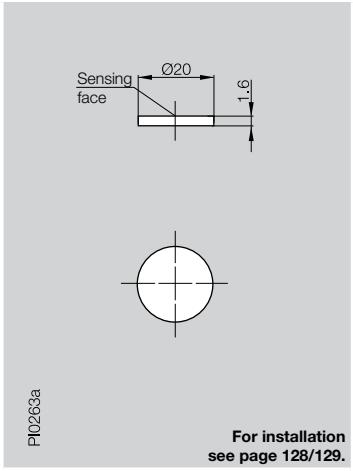
Data carrier	Memory capacity in bytes	BIS L-300-S115 Page 93	BIS L-301-S115 Page 94	BIS L-302-S115 Page 96/97	BIS L-303-S115 Page 95	BIS L-304-S115 Page 98/99	BIS L-400-035-001-00-S115 BIS L-400-035-001-02-S115 Page 106	BIS L-400-043-001-02-S115 Page 120	BIS L-409-045-001-07-S4 Page 122	BIS L-405-033-001-05-MU BIS L-405-037-001-05-MU Page 104
		Read/write distance								
BIS L-100-01/L Page 88	192	0...30 mm	0...40 mm	0...20 mm	0...40 mm	0...20 mm				
BIS L-100-05/L-RO Page 91	3+CRC (read only)	0...40 mm	0...70 mm	0...25 mm	0...50 mm	0...25 mm	0...30 mm	0...30 mm	0...25 mm	0...30 mm
BIS L-200-03/L Page 91	5 (read only)	0...40 mm	0...70 mm	0...25 mm	0...50 mm	0...25 mm	0...30 mm	0...30 mm	0...25 mm	0...30 mm
BIS L-101-01/L Page 88	192	0...40 mm	0...55 mm	0...25 mm	0...55 mm	0...25 mm				
BIS L-101-05/L-RO Page 91	3 + CRC (read only)	0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm	0...40 mm	0...40 mm	0...35 mm	0...40 mm
BIS L-201-03/L Page 91	5 (read only)	0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm	0...40 mm	0...40 mm	0...35 mm	0...40 mm
BIS L-102-01/L Page 88	192	0...55 mm	0...70 mm	0...30 mm	0...70 mm	0...30 mm				
BIS L-102-05/L-RO Page 91	3 + CRC (read only)	0...70 mm	0...100 mm	0...40 mm	0...100 mm	0...40 mm	0...55 mm	0...55 mm	0...48 mm	0...55 mm
BIS L-202-03/L Page 91	5 (read only)	0...70 mm	0...100 mm	0...40 mm	0...100 mm	0...40 mm	0...55 mm	0...55 mm	0...48 mm	0...55 mm
BIS L-103-05/L Page 89	192	0...25 mm			0...30 mm					

> 40 mm

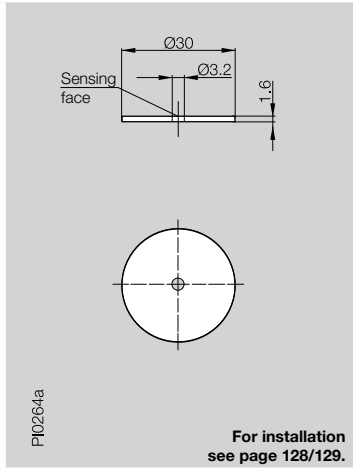
Read/write heads

Data carrier	Memory capacity in bytes	BIS L-300-S115 Page 93	BIS L-301-S115 Page 94	BIS L-302-S115 Page 96/97	BIS L-303-S115 Page 95	BIS L-400-035-001-00-S115 BIS L-400-035-001-02-S115 Page 106	BIS L-400-043-001-02-S115 Page 120	BIS L-405-033-001-05-MU BIS L-405-037-001-05-MU Page 104
		Read/write distance						
BIS L-100-01/L Page 88	192	0...30 mm	0...40 mm	0...20 mm	0...40 mm			
BIS L-100-05/L-RO Page 91	3 + CRC (read only)	0...40 mm	0...50 mm	0...25 mm	0...50 mm	0...30 mm	0...30 mm	0...30 mm
BIS L-200-03/L Page 91	5 (read only)	0...40 mm	0...50 mm	0...25 mm	0...50 mm	0...30 mm	0...30 mm	0...30 mm
BIS L-101-01/L Page 88	192	0...40 mm	0...55 mm	0...25 mm	0...55 mm			
BIS L-101-05/L-RO Page 91	3 + CRC (read only)	0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...40 mm	0...40 mm	0...40 mm
BIS L-201-03/L Page 91	5 (read only)	0...50 mm	0...70 mm	0...30 mm	0...70 mm	0...40 mm	0...40 mm	0...40 mm
BIS L-102-01/L Page 88	192	0...55 mm	0...70 mm	0...30 mm	0...70 mm			
BIS L-102-05/L-RO Page 91	3 + CRC (read only)	0...70 mm	0...100 mm	0...40 mm	0...100 mm	0...55 mm	0...55 mm	0...55 mm
BIS L-202-03/L Page 91	5 (read only)	0...70 mm	0...100 mm	0...40 mm	0...100 mm	0...55 mm	0...55 mm	0...55 mm

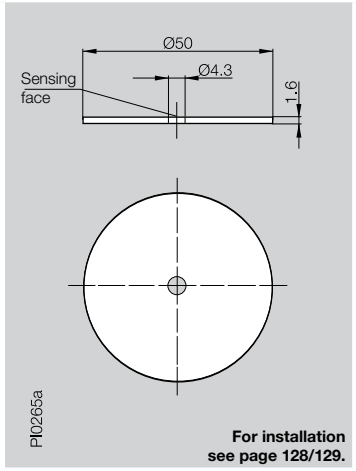
Dimensions	**Ø 20×1.6**	**Ø 30×1.6**	**Ø 50×1.6**
Housing material	EP	EP	EP
Antenna type	round	round	round



For installation see page 128/129.



For installation see page 128/129.



For installation see page 128/129.

BIS L Programmable

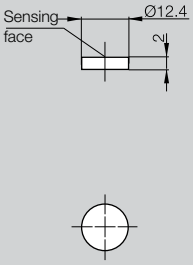
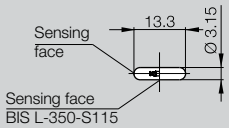
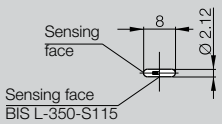
192 bytes Part number	BIS L-100-01/L	BIS L-101-01/L	BIS L-102-01/L
Operating temperature	–25...+85 °C	–25...+85 °C	–25...+85 °C
Storage temperature	–40...+95 °C	–40...+95 °C	–40...+95 °C
Protection per IEC 60529	IP 67	IP 67	IP 67

Installation in steel		non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel
Appropriate read/write head with max. read/write distance	BIS L-300	30 mm	20 mm	20 mm	BIS L-300	40 mm	30 mm	30 mm	BIS L-300	55 mm	40 mm	35 mm
	BIS L-301	40 mm	30 mm	25 mm	BIS L-301	55 mm	40 mm	35 mm	BIS L-301	70 mm	50 mm	50 mm
	BIS L-302	20 mm	15 mm	15 mm	BIS L-302	25 mm	20 mm	20 mm	BIS L-302	30 mm	25 mm	20 mm
	BIS L-303	50 mm	14 mm		BIS L-303	65 mm	25 mm	15 mm	BIS L-303	85 mm	30 mm	25 mm
	BIS L-304	20 mm	15 mm	15 mm	BIS L-304	25 mm	20 mm	20 mm	BIS L-304	30 mm	25 mm	20 mm
						Tightening torque max. 1 Nm				Tightening torque max. 1 Nm		

For metal or non-metal mounting

Read/Write Cycles

Data carriers	Memory type	Write cycles	Read cycles	Data retention time
192 Byte	EEPROM	100 000	unlimited	10 years

	Ø 12.4×2				Ø 3.15×13.3				Ø 2.12×8			
	EP				Glass				Glass			
	round				Rod				Rod			
	 For installation see page 128/129.				 For installation see page 128/129.				 For installation see page 128/129.			
	BIS L-103-05/L				BIS L-150-05/A				BIS L-151-05/A			
	–25...+85 °C				–40...+85 °C				–40...+85 °C			
	–40...+130 °C				–40...+90 °C				–40...+90 °C			
	IP 68				IP 68				IP 68			
		non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel
	BIS L-300	10 mm	18 mm	12 mm	BIS L-300	25 mm			BIS L-300	2 mm		
					BIS L-301	32 mm			BIS L-301	12 mm		
	BIS L-302	22 mm	15 mm	8 mm	BIS L-302	12 mm			BIS L-302	7 mm		
	BIS L-304	22 mm	15 mm	8 mm	BIS L-304	12 mm			BIS L-304	7 mm		
					BIS L-350	25 mm	25 mm	25 mm	BIS L-350	15 mm	20 mm	15 mm

For tight location mounting

Glass data carrier – chemically resistant!

BIS L-130-05/L-SA1 for radial data retrieval from rotating parts, for shaft mounting. Contact us.

For maximum data security

The CRC_16 procedure involves writing a test code to the data carrier as confirmation of the tag's data. The benefit to you: high level of data security even in non-active phase (data carrier outside of R/W head)

The procedure is only possible with data carriers of type BIS L-1_ _-05/L converted into read-only format.

BIS L-1_ _-05/L-RO are read-only data carriers that can be programmed according to your requirements. Please ask for the order form or download it from our web site. Three bytes of user data as well as two bytes for the CRC are stored. Data consistency is queried by the processor.

The BIS L-2_ _-03/L uses read-only data carriers with a fixed "unique number" of five bytes (40 bits). No repetition of the unique number or delivery of sequential numbers is possible.

Dimensions		
Housing material		
Antenna type		
BIS L read-only		
24 bits + CRC	Part number	
40 bits	Part number	
Operating temperature		
Storage temperature		
Protection per IEC 60529		
Installation in steel		
Appropriate read/write head with max. read/write distance		

Mazak™ Machine Tool ID
These read-only machine tool tags are specifically designed to work for Mazak tool ID systems. They come premounted in the retention knobs and are available in either Cat 40 or Cat 50 sizes. These tool tags are 100% compatible to existing Mazak systems.

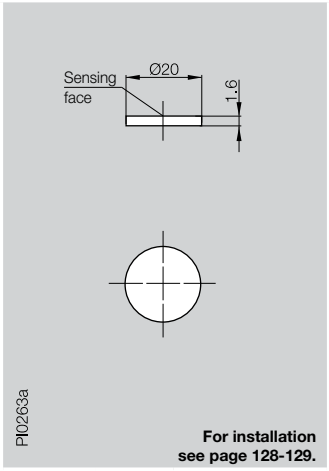
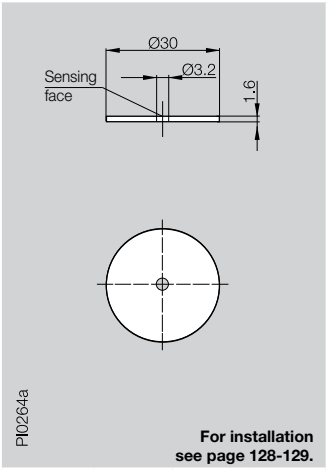
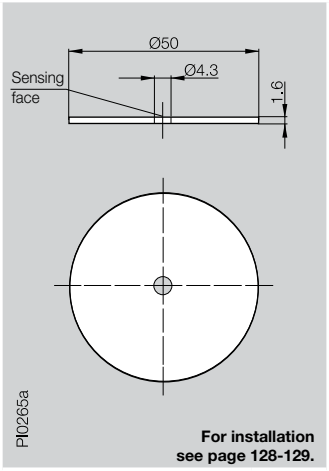
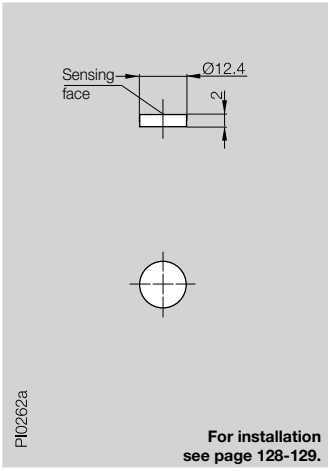
Cat 50

BIS L-245-03/L

Cat 40

BIS L-244-03/L

Use a **BIS-L-400-047-010-20-S115** processor and **BIS L-306-PU1-05-S49/A** head preprogrammed with the Mazak communication protocol for 100% compatibility to existing Mazak tool ID systems. **BKS-S115-SA4-PU-01** power/communication cable is also available for easy connectivity.

	Ø 20×1.6	Ø 30×1.6	Ø 50×1.6	Ø 12.4×2
	EP	EP	EP	EP
	round	round	round	round
	 For installation see page 128-129.	 For installation see page 128-129.	 For installation see page 128-129.	 For installation see page 128-129.
	BIS L-100-05/L-RO	BIS L-101-05/L-RO	BIS L-102-05/L-RO	BIS L-103-05/L-RO
	BIS L-200-03/L	BIS L-201-03/L	BIS L-202-03/L	BIS L-203-03/L
	–40...+85 °C	–40...+85 °C	–40...+85 °C	–25...+85 °C
	–40...+95 °C	–40...+95 °C	–40...+95 °C	–40...+130 °C
	IP 67	IP 67	IP 67	IP 68

	non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel		non-metal	mount on steel	flush in steel
BIS L-300	40 mm	25 mm	20 mm	BIS L-300	50 mm	35 mm	30 mm	BIS L-300	70 mm	45 mm	40 mm	BIS L-300	25 mm	12 mm	10 mm
BIS L-301	50 mm	35 mm	30 mm	BIS L-301	70 mm	45 mm	40 mm	BIS L-301	100 mm	60 mm	55 mm				
BIS L-302	25 mm	15 mm	15 mm	BIS L-302	30 mm	20 mm	20 mm	BIS L-302	40 mm	25 mm	20 mm	BIS L-302	15 mm	10 mm	8 mm
BIS L-303	55 mm			BIS L-303	70 mm	30 mm	15 mm	BIS L-303	100 mm	45 mm	40 mm				
BIS L-304	25 mm	15 mm	15 mm	BIS L-304	30 mm	20 mm	20 mm	BIS L-304	40 mm	25 mm	20 mm	BIS L-304	15 mm	10 mm	8 mm
					Tightening torque max. 1 Nm				Tightening torque max. 1 Nm						

Read-only data carriers:
preprogram your individual data and benefit from maximum data security

Read/Write Cycles

Data carriers	Read cycles	Data retention time
24 bits + CRC	unlimited	10 years
40 bits	unlimited	unlimited

For a greater sensing distance to the object, enclosed in a resistant plastic housing

Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

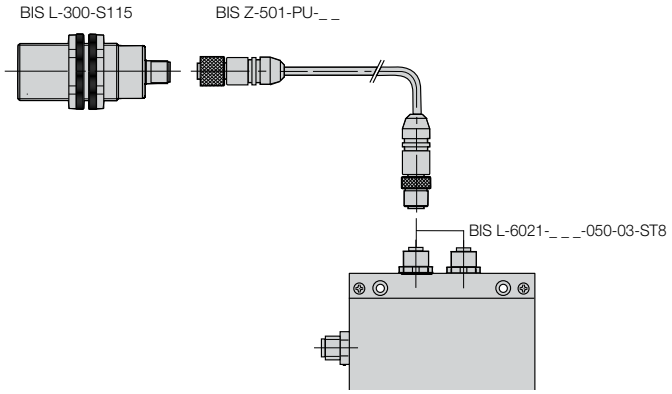
Part number		
Mounting in steel		
Operating temperature		
Storage temperature		
Protection per IEC 60529		
Connection	to	
	with connection cable	

Appropriate data carrier		
Installation types		

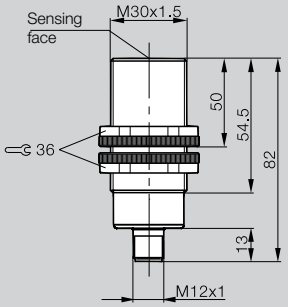
Write distance in mm		
Read distance in mm		
Offset in mm		0 mm
at distance		3 mm
		8 mm
		10 mm
		12 mm
		15 mm
		20 mm
		25 mm
		30 mm
		35 mm
		40 mm
		45 mm
		50 mm
		55 mm
		60 mm
		70 mm

*Please indicate cable length in part number. See page 202.

Example:



M30
PVDF
round
130 g



PI0266a

For installation see page 128.

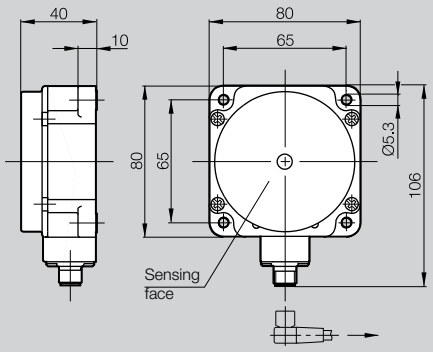
BIS L-300-S115
non-flush
0...+70 °C (minus temperatures on request)
–20...+85 °C
IP 67
Processor
BIS Z-501-PU1-_ _ / E*, BIS Z-502-PU1-_ _ / E*
BIS Z-501-PU1-_ _ / M*, BIS Z-502-PU1-_ _ / M*
Please order cable separately, see page 202

BIS L-100-01			BIS L-101-01			BIS L-102-01			BIS L-103-05/L			BIS L-150-05			BIS L-151-05			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		
non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel
0-30	10-20	10-20	0-40	10-30	10-30	0-55	15-40	15-35	7-40	7-18	8-15	0-25			0-12														
0-30	10-20	10-20	0-40	10-30	10-30	0-55	15-40	15-35	7-40	7-18	8-15	0-25			0-12			0-40	0-25	10-20	0-50	10-35	10-30	0-70	15-45	15-40	0-25	3-12	3-10
±18			±28			±30						±18			±10			±20			±28			±35			±15		
±18			±28			±30						±18			±10			±20			±28			±35			±15	±12	±9
±18			±28			±30			±15	±10	±5	±18			±10			±20			±28			±35			±15	±12	±8
±18	±8	±8	±28	±15	±13	±30			±15	±10	±5	±18			±10			±20	±15	±10	±28	±20	±17	±35			±15	±9	±7
±18	±8	±8	±28	±15	±13	±30			±15	±10	±5	±17			±6			±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					

Long Distances

Dimensions	**80×80×40**
Housing material	PBT
Antenna type	round
Weight	410 g

Control No 3TLJ
File No E227256



For installation see page 128.

Part number	BIS L-301-S115
Mounting in steel	non-flush
Operating temperature	0...+70 °C (minus temperatures on request)
Storage temperature	–20...+85 °C
Protection per IEC 60529	IP 67
Connection to	Processor
Connection with connection cable	BIS Z-501-PU1-_ _ / E*, BIS Z-502-PU1-_ _ / E* BIS Z-501-PU1-_ _ / M*, BIS Z-502-PU1-_ _ / M* Please order cable separately, see page 202

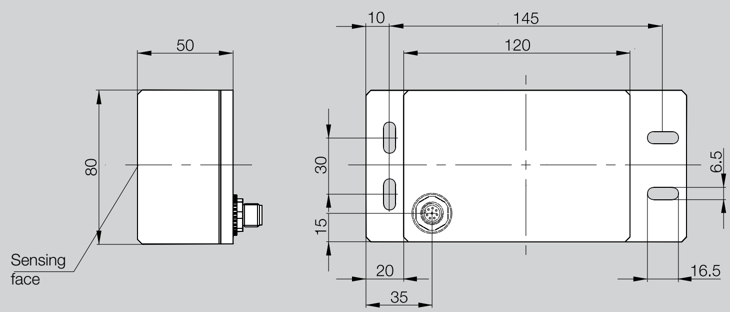
Appropriate data carrier / Installation types		BIS L-100-01/L			BIS L-101-01/L			BIS L-102-01/L			BIS L-150-05/A			BIS L-200-03/L BIS L-100-05/L-RO			BIS L-201-03/L BIS L-101-05/L-RO			BIS L-202-03/L BIS L-102-05/L-RO		
		non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel
Write distance in mm		0-40	15-30	15-25	0-55	15-40	15-35	0-70	20-50	20-50	0-32											
Read distance in mm		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
Offset in mm at distance	0 mm	±30			±35			±40			±24			±40			±40			±45		
	3 mm	±30			±35			±40			±24			±40			±40			±45		
	8 mm	±30			±35			±40			±24			±40			±40			±45		
	10 mm	±30			±35			±40			±24			±40			±40			±45		
	15 mm	±30	±20	±15	±35	±20	±20	±40			±24			±40			±40			±45		
	20 mm	±30	±15	±10	±35	±20	±20	±40	±25	±22	±24			±40	±25	±22	±40	±24	±20	±45		
	25 mm	±30	±10	±0	±35	±20	±15	±40	±25	±22	±24			±40	±25	±22	±40	±24	±20	±45	±30	±30
	30 mm	±30	±0		±35	±20	±15	±40	±25	±22	±24			±40	±25	±22	±40	±20	±20	±45	±30	±30
	35 mm	±30	±0		±35	±15	±0	±40	±20	±15				±40	±20	±15	±40	±20	±15	±45	±30	±25
	40 mm	±30			±35	±0		±40	±15	±15				±40	±15	±15	±40	±18	±0	±45	±30	±25
	45 mm				±35			±40	±15	±10				±40	±15	±10	±40	±0		±45	±25	±20
	50 mm				±35			±40	±0	±0				±40	±0	±0	±40			±45	±20	±20
	55 mm				±35			±40						±40			±40			±45	±10	±0
	60 mm							±40						±40			±40			±45	±0	
	70 mm							±40						±40			±40			±45		
	100 mm																			±45		

*Please indicate cable length in part number. See page 202.

Connector orientation

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

170×80×50
PBT
round
405 g



For installation see page 128.

BIS L-303-S115
non-flush
0...+70 °C (minus temperatures on request)
–20...+85 °C
IP 67
Processor
BIS Z-501-PU1-_ _ / E*
BIS Z-501-PU1-_ _ / M*
Please order cable separately, see page 202

BIS L-100-01/L			BIS L-101-01/L			BIS L-102-01/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		
non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel
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		

Suitable for roller conveyors/internal company logistics

Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

Part number	
Mounting in steel	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Connection to	
with connection cable	

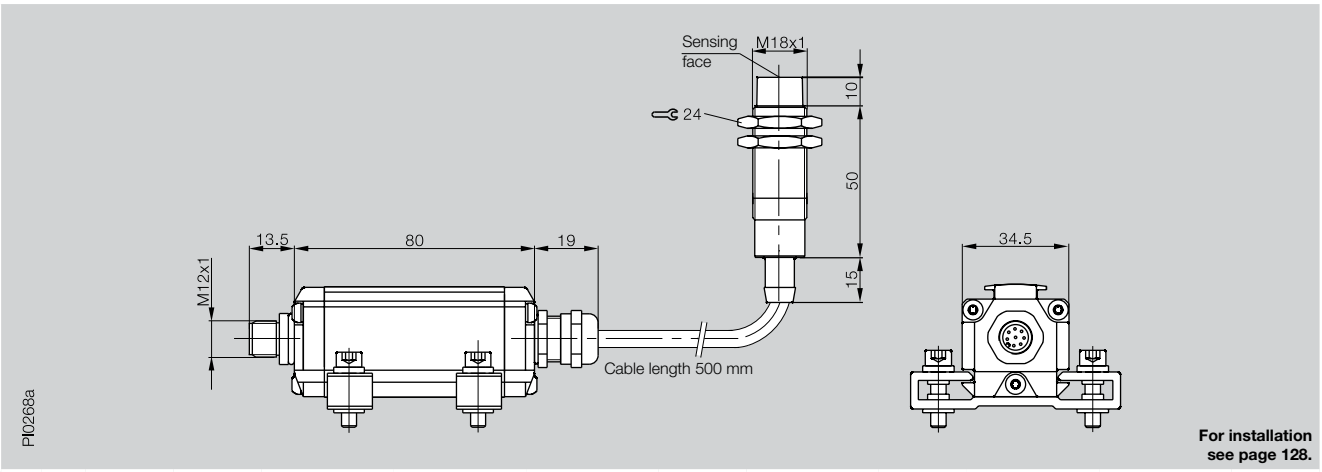
Appropriate data carrier	
Installation types	

Write distance in mm		
Read distance in mm		
Offset in mm		0 mm
at distance		3 mm
		4 mm
		7 mm
		8 mm
		10 mm
		12 mm
		15 mm
		20 mm
		25 mm
		30 mm
		35 mm
		40 mm

*Please indicate cable length in part number. See page 202.

Use small read heads with processor electronics if the available width is limited

M18
PVDF
round
130 g



For installation see page 128.

BIS L-302-S115
non-flush
0...+70 °C (minus temperatures on request)
–20...+85 °C
IP 67
Processor
BIS Z-501-PU1-_ _ / E*
BIS Z-501-PU1-_ _ / M*
Please order cable separately, see page 202

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-151-05/A			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		
non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel
0-20	8-15	8-15	0-25	10-20	10-20	0-30	10-25	10-20	10-22	10-15	7-8	0-12			0-7														
0-20	8-15	8-15	0-25	10-20	10-20	0-30	10-25	10-20	10-22	10-15	7-8	0-12			0-7			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						±8			±6			±13			±15			±20			±6		
±10			±12			±15						±8			±6			±13			±15			±20			±6	±7	±5
±10			±12			±15						±8			±6			±13			±15			±20			±6	±7	±5
±10			±12			±15					±3	±8			±3			±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		±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					

Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

Part number	
Mounting in steel	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Connection to	
with connection cable	

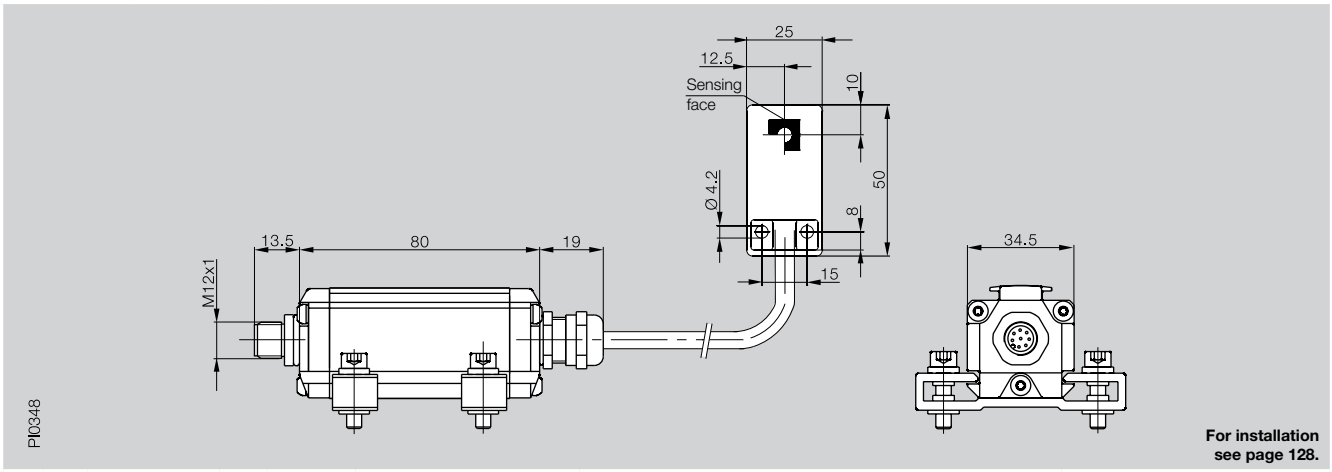
Appropriate data carrier	
Installation types	

Write distance in mm		
Read distance in mm		
Offset in mm		0 mm
at distance		3 mm
		4 mm
		7 mm
		8 mm
		10 mm
		12 mm
		15 mm
		20 mm
		25 mm
		30 mm
		35 mm
		40 mm

*Please indicate cable length in part number. See page 202.

Select a flat design if the available height is limited

25×50×10
PBT
round
210 g



For installation see page 128.

BIS L-304-S115
non-flush
0...+70 °C (minus temperatures on request)
–20...+85 °C
IP 67
Processor
BIS Z-501-PU1-_ _ / E*
BIS Z-501-PU1-_ _ / M*
Please order cable separately, see page 202

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-151-05/A			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		
non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel
0-20	8-15	8-15	0-25	10-20	10-20	0-30	10-25	10-20	7-22	7-15	7-8	0-12			0-7														
0-20	8-15	8-15	0-25	10-20	10-20	0-30	10-25	10-20	7-22	7-15	7-8	0-12			0-7			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						±8			±6			±13			±15			±20			±6		
±10			±12			±15						±8			±6			±13			±15			±20			±6	±7	±5
±10			±12			±15						±8			±6			±13			±15			±20			±6	±7	±5
±10			±12			±15					±3	±8			±3			±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					

Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

Part number	
Mounting in steel	
Operating temperature	
Storage temperature	
Protection per DIN 40050	
Connection to	
with connection cable	
Possible cable lengths	
Appropriate data carrier	
Installation types	

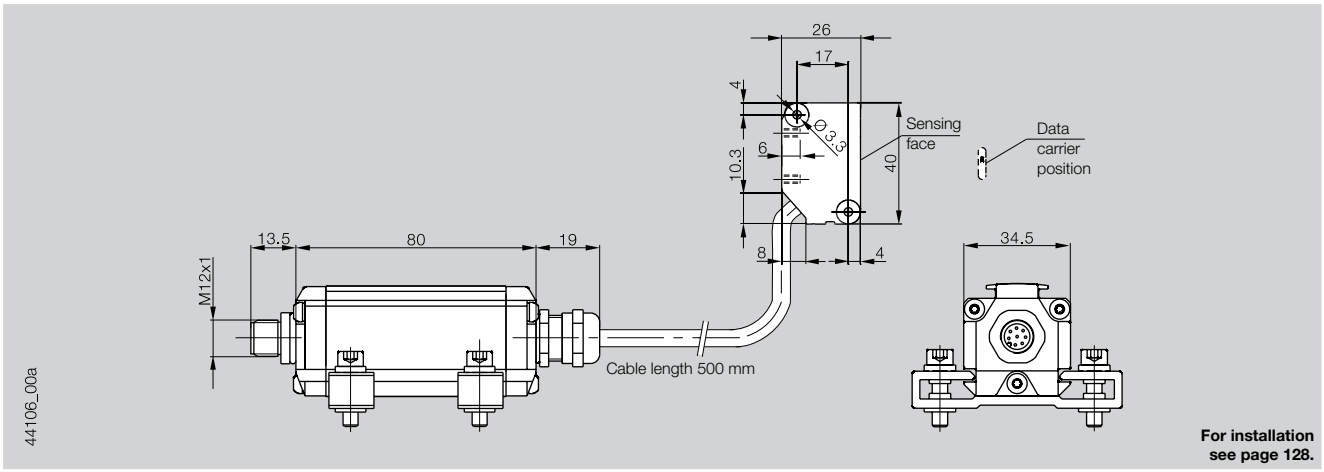
Write distance in mm		
Read distance in mm		
Offset in mm	0 mm	
at distance of and	10 mm	
max. offset ±5	15 mm	
	20 mm	
	25 mm	

*Please indicate cable length in part number. See page 202.

For limited space, even on metal

Small read heads with processor electronics for glass data carriers

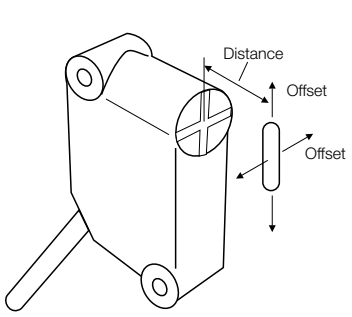
	26x40x12
	ABS
	Rod
	220 g



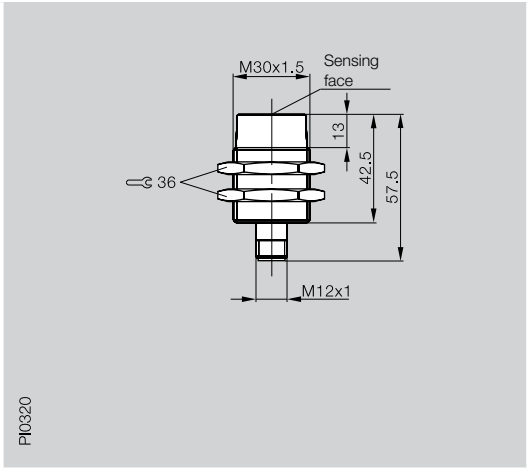
For installation see page 128.

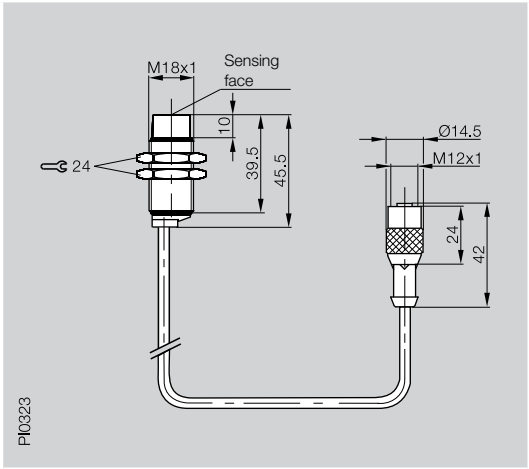
	BIS L-350-S115
	non-flush
	0...+70 °C (minus temperatures on request)
	–20...+85 °C
	IP 67
	Processor
	BIS Z-501-PU1-_ _ / E*
	BIS Z-501-PU1-_ _ / M*
	Please order cable separately, see page 202

	BIS L-150-05/A			BIS L-151-05/A		
	non-metal	mount on steel	flush in steel	non-metal	mount on steel	flush in steel
	0-17	0-24	0-24	0-15	0-15	0-15
	0-17	0-24	0-24	0-15	0-15	0-15
	±18	±20	±20	±15	±15	±15
	±18	±20	±20	±15	±15	±15
	±10	±20	±20	±8	±8	±8
		±14	±14			
		±14	±14			



Description/dimensions	**M30×1.5×57.5**	**M18×1×45.5**	
Function	non-flush	non-flush	
Housing material	CuZn	CuZn	
Weight	60 g	57 g	

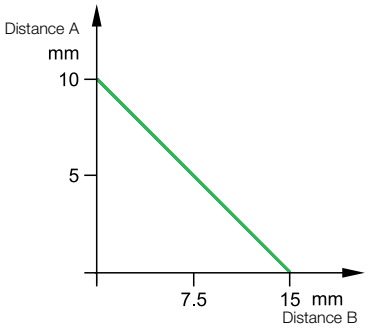


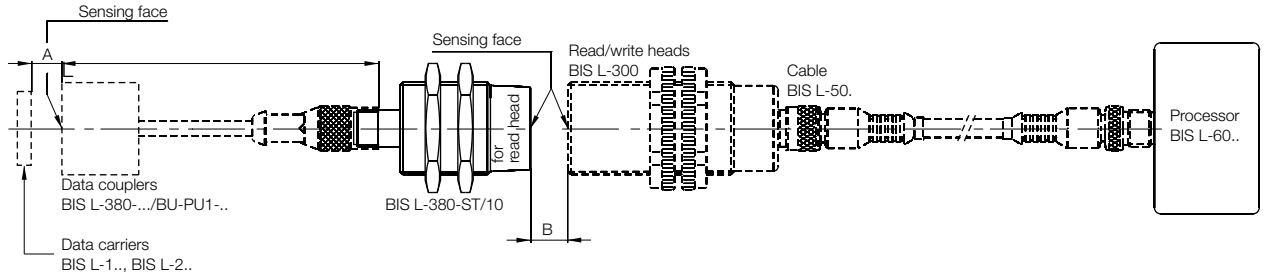


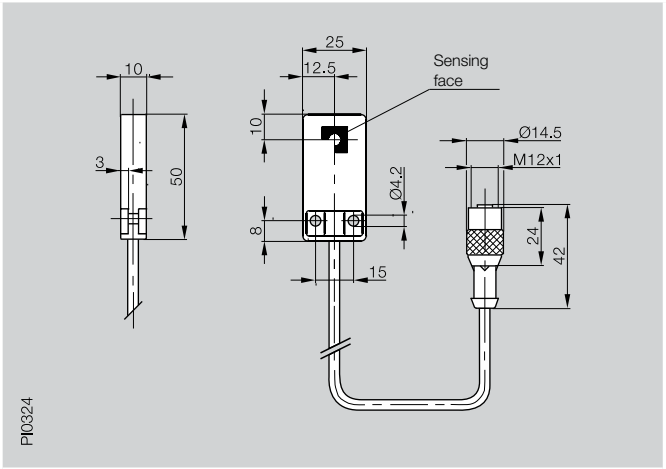
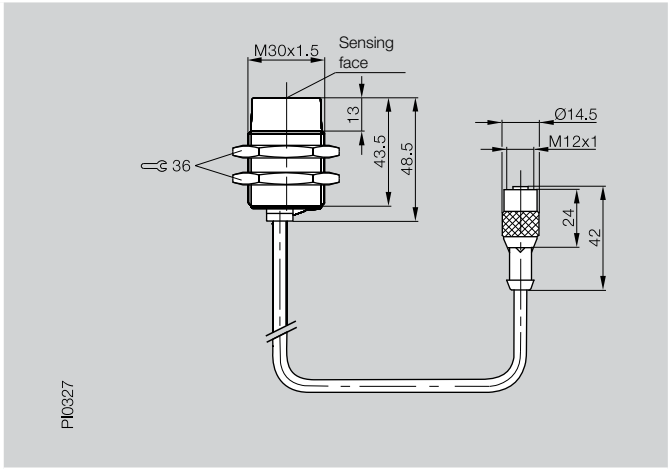
Base coupler for r/w head	BIS L-380-ST/10*		
Data coupler for data carrier		BIS L-380-02/BU-PU1-00,15	
Data coupler for data carrier		BIS L-380-02/BU-PU1-00,5	
Ambient operating temperature	0...+70 °C	0...+70 °C	
Storage temperature	–20...+85 °C	–20...+85 °C	
Protection per IEC 60529	IP 67	IP 67	
Connection type	4-pin round connector	4-pin, female	
For use with	BIS L-300-S115	BIS L-380-ST/10	
together with data carrier		BIS L-103-05/L	

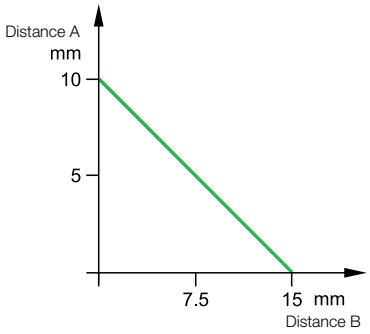
*connect any of the other 3 head options to this base to create a complete coupler

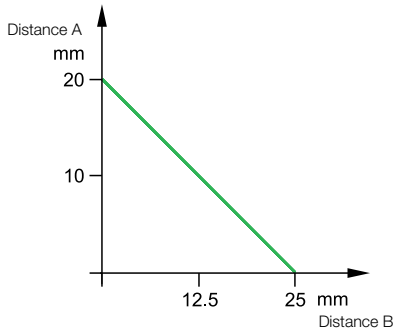
For maximum flexibility from pallet to pallet – with 2-way air interface



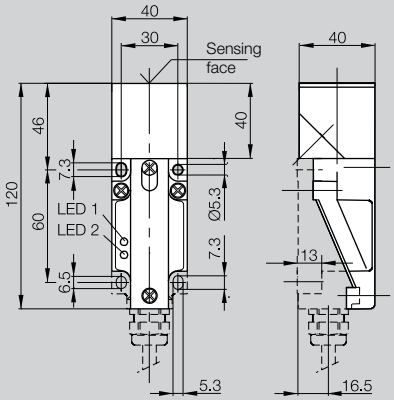


	25×50×10	**M30×1,5×48,5**
	non-flush	non-flush
	ABS	CuZn
	57 g	57 g
		
	BIS L-380-05/BU-PU1-00,15	BIS L-380-10/BU-PU1-00,5
	0...+70 °C	0...+70 °C
	–20...+85 °C	–20...+85 °C
	IP 67	IP 67
	4-pin, female	4-pin, female
	BIS L-380-ST/10	BIS L-380-ST/10
	BIS L-103-05/L	BIS L-101-01/L

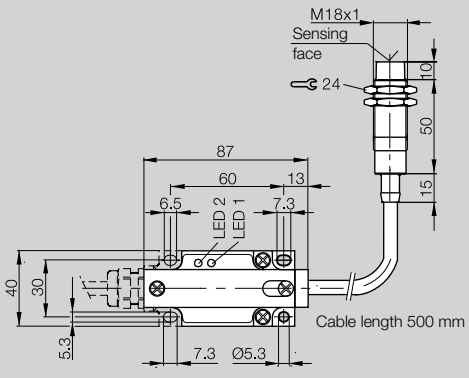




Description/dimensions	**Module 40×41×120**	**Module M18**
Housing material	PBT	PBT
Antenna type	round	round
Weight	170 g	



For installation see page 128.



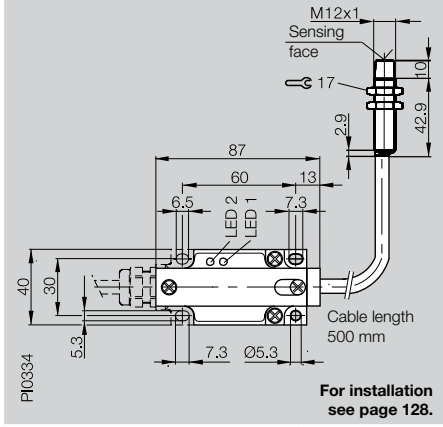
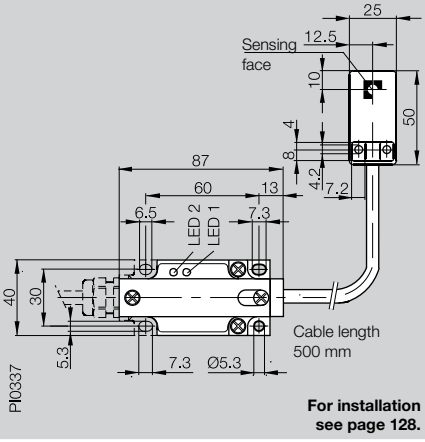
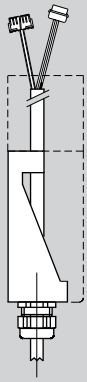
For installation see page 128.

Supply voltage	24 V DC ±10 %/–20 %	24 V DC ±10 %/–20 %
Ripple	≤ 10 %	≤ 10 %
Current	≤ 50 mA no load	≤ 50 mA no load
Output current per output	max. 50 mA	max. 50 mA
Ambient operating temperature	0...+60 °C	0...+70 °C
Protection per IEC 60529	IP 67 when assembled	IP 67 when assembled
Mounting in steel	non-flush	non-flush
LED function indicator	yes	yes
Control outputs		
Connection type	requires mounting base	requires mounting base
Part number	BIS L-405-033-001-05-MU	BIS L-405-033-002-05-MU
Part number with CRC test	BIS L-405-037-001-05-MU	BIS L-405-037-002-05-MU
No. of wires x conductor cross section		
Version		

Appropriate data carrier installation types		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-202-03/L BIS L-102-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal	BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
Read distance in mm		0-30	0-40	0-55	0-20	0-23	0-27	0-16
Offset in mm at distance	0 mm	±15	±20	±30	±10	±12	±15	±8
	5 mm	±15	±20	±30	±10	±12	±15	±8
	8 mm	±15	±20	±30	±10	±12	±15	±8
	10 mm	±15	±20	±30	±10	±12	±15	±8
	15 mm	±15	±20	±30	±10	±12	±15	±4
	20 mm	±15	±20	±30			±15	
	25 mm	±15	±20	±30			±6	
	30 mm		±20	±30				
	35 mm		±20	±30				
	40 mm			±30				
	45 mm			±30				
Max speed	m/s	0,85	0,9	1,2	0,55	0,29	0,37	0,22
	m/min	51	54	72	33	17,4	22,2	13,2

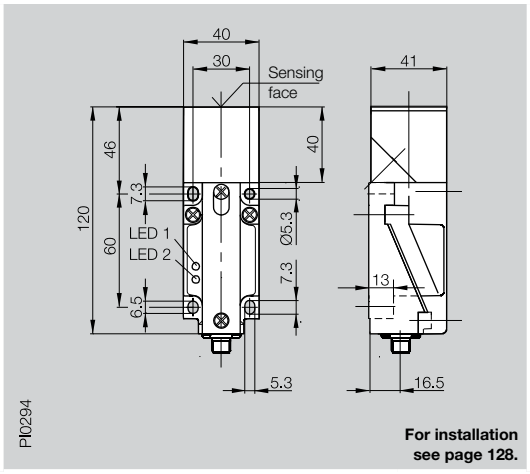
*Please indicate cable length in ordering code!
05 = Length 5 m
10 = Length 10 m
15 = Length 15 m
20 = Length 20 m

For applications with no controller:
for direct activation of actuators, switches, etc.

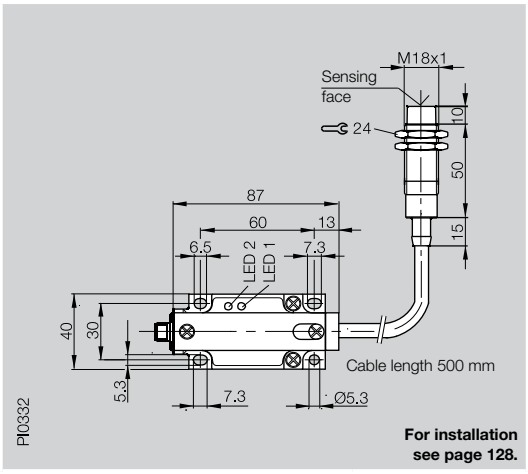
	Module M12		Module 25×10×50		Mounting base
	PBT		PBT		PBT
	round		round		
					70 g without cable
	 For installation see page 128.		 For installation see page 128.		 For installation see page 128.
	24 V DC ±10 %/–20 %		24 V DC ±10 %/–20 %		
	≤ 10 %		≤ 10 %		
	≤ 50 mA no load		≤ 50 mA no load		
	max. 50 mA		max. 50 mA		
	0...+70 °C		0...+70 °C		0...+60 °C
	IP 67 when assembled		IP 67 when assembled		IP 67 when assembled
	non-flush		non-flush		
	yes		yes		
					10 outputs/2 inputs
	requires mounting base		requires mounting base		Cable PUR, drag-chain compatible
	BIS L-405-033-003-05-MU		BIS L-405-033-004-05-MU		BIS L-503-PU1-_ _*
	BIS L-405-037-003-05-MU		BIS L-405-037-004-05-MU		
					14×0.15 mm2/2×0.34 mm2
					for BIS L-405-033-001-05-MU
	BIS L-203-03/L BIS L-103-05/L-RO non-metal		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
	0-11		0-23	0-27	0-16
	±6		±12	±15	±8
	±6		±12	±15	±8
	±4		±12	±15	±8
	±2		±12	±15	±8
			±12	±15	±4
			±8	±15	
				±6	
	0,18		0,29	0,37	0,22
	10,8		17,4	22,2	13,2

Mounting and I/O base unit

Description/dimensions	**40×41×120**	**40×41×87**
Housing material	PBT	PBT
Antenna type	round	round
Weight	170 g	



For installation see page 128.



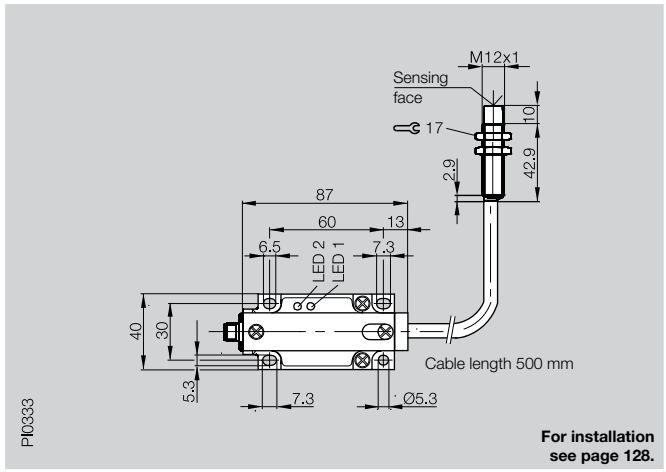
For installation see page 128.

Supply voltage	24 V DC ±10 %/–20 %	24 V DC ±10 %/–20 %
Ripple	≤ 10 %	≤ 10 %
Current	≤ 50 mA	≤ 50 mA no load
Ambient operating temperature	0...+60 °C	0...+60 °C
Protection per IEC 60529	IP 67	IP 67
Mounting in steel	non-flush	non-flush
LED function indicator	yes	yes
Connection type	8-pin M12 male	8-pin M12 male
Interface description:		
RS232	BIS L-400-035-001-00-S115	BIS L-400-035-002-00-S115
RS422	BIS L-400-035-001-02-S115	BIS L-400-035-002-02-S115
Accessories (please order separately)	BKS-S115-00* BKS-S115-PU-_ _**, BKS-S116-PU-_ _**	BKS-S115-00* BKS-S115-PU-_ _**, BKS-S116-PU-_ _**

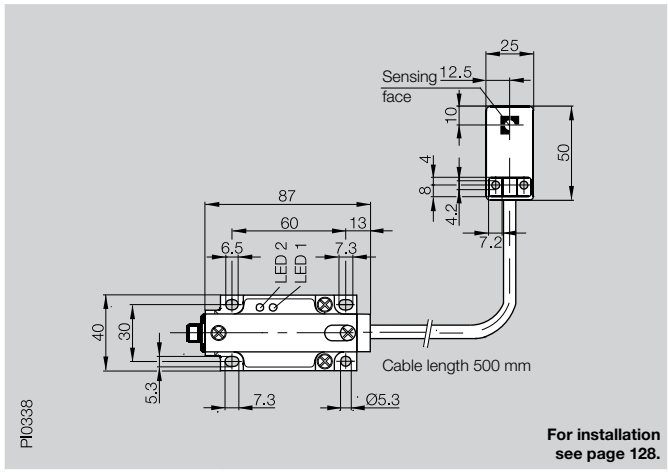
Appropriate data carrier installation types		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-202-03/L BIS L-102-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal	BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
Read distance in mm		0-30	0-40	0-55	0-20	0-23	0-27	0-16
Offset in mm at distance	0 mm	±15	±20	±30	±10	±12	±15	±8
	5 mm	±15	±20	±30	±10	±12	±15	±8
	8 mm	±15	±20	±30	±10	±12	±15	±8
	10 mm	±15	±20	±30	±10	±12	±15	±8
	15 mm	±15	±20	±30	±10	±12	±15	±4
	20 mm	±15	±20	±30			±15	
	25 mm	±15	±20	±30			±6	
	30 mm		±20	±30				
	35 mm		±20	±30				
	40 mm			±30				
	45 mm			±30				
Max speed	m/s	0,85	0,9	1,2	0,55	0,29	0,37	0,22
	m/min	51	54	72	33	17,4	22,2	13,2

*Connectors see page 202
**Please indicate cable length in ordering code! See page 202.

40×41×87	**40×41×87**
PBT	PBT
round	round



For installation see page 128.



For installation see page 128.

24 V DC ±10 %/–20 %	24 V DC ±10 %/–20 %
≤ 10 %	≤ 10 %
≤ 50 mA no load	≤ 50 mA no load
0...+60 °C	0...+60 °C
IP 67	IP 67
non-flush	non-flush
yes	yes
8-pin M12 male	8-pin M12 male
BIS L-400-035-003-00-S115	BIS L-400-035-004-00-S115
BIS L-400-035-003-02-S115	
BKS-S115-00*	BKS-S115-00*
BKS-S115-PU-_ _**, BKS-S116-PU-_ _**	BKS-S115-PU-_ _**, BKS-S116-PU-_ _**

	BIS L-203-03/L BIS L-103-05/L-RO		BIS L-200-03/L BIS L-100-05/L-RO	BIS L-201-03/L BIS L-101-05/L-RO	BIS L-203-03/L BIS L-103-05/L-RO
	non-metal		non-metal	non-metal	non-metal
	0-11		0-23	0-27	0-16
	±6		±12	±15	±8
	±6		±12	±15	±8
	±8		±12	±15	±8
	±2		±12	±15	±8
			±12	±15	±4
			±8	±15	
				±6	
	0,18		0,29	0,37	0,22
	10,8		17,4	22,2	13,2

For simple connection to the controller: read only data carriers

Cost-effective identification – operate 2 read/write heads simultaneously

- Sequential reading of the data carrier ID number on both read/write heads
- Service-friendly, all parameter data are stored in an interchangeable memory
- Accepts all read/write heads
- Protocol-compatible with BIS C, BIS S and BIS M identification systems

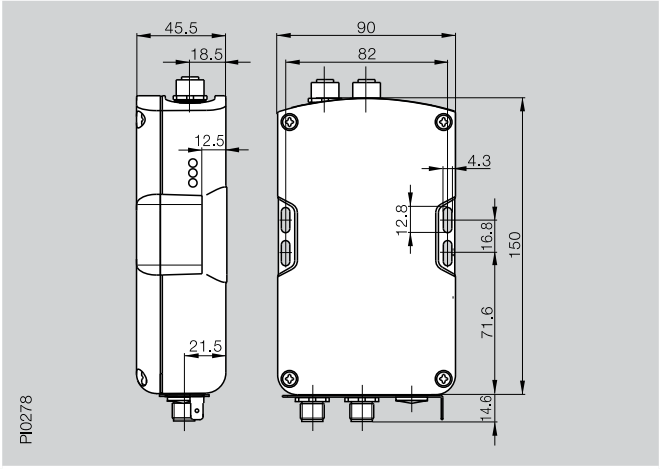
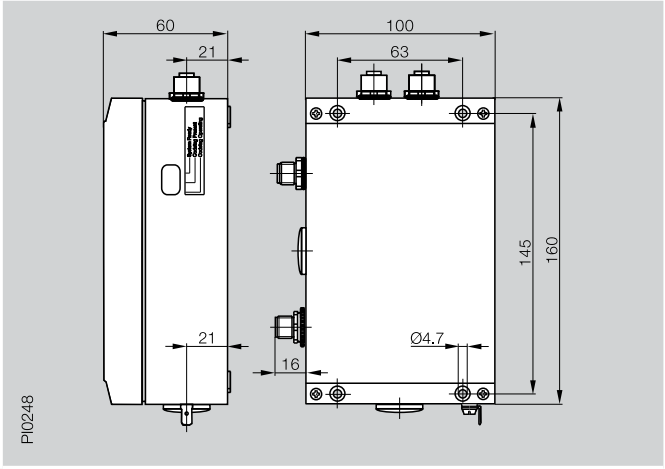
Description	
Function	
Antenna type	
	For easy integration with all controllers
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Connection type	
Connection for	
Interface description/Software:	
RS232/Balluff Dialog	
Accessories (please order separately)	

Control No 3TLJ
File No E227256

The **compact class BIS L-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require good protection.

The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

Small, compact, flexible and economical

	BIS L-6000-007-050-00-ST15	BIS L-6020-007-050-00-ST15
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2 external	2 external
	2 connector round 5-pin	2 connector round 5-pin
	2 read/write heads BIS L-3_ _	2 read/write heads BIS L-3_ _
	BIS L-6000-007-050-00-ST15	BIS L-6020-007-050-00-ST15
	Connectors page 199	Connectors page 199

For **rugged applications BIS L-602_** is, in spite of the mechanically rugged die-cast aluminum housing, a small, flexible processor which is available with various interface options.

Suitable for all applications with demanding requirements for mechanical rigidity and chemical resistance.

Cost-effective identification – operate 2 read/write heads simultaneously

- Data width on the bus, 16 bytes
- Service-friendly, all parameter data are stored in an interchangeable memory
- Accepts all read/write heads
- Protocol-compatible with BIS C and BIS S identification systems

Description	
Function	
Antenna type	

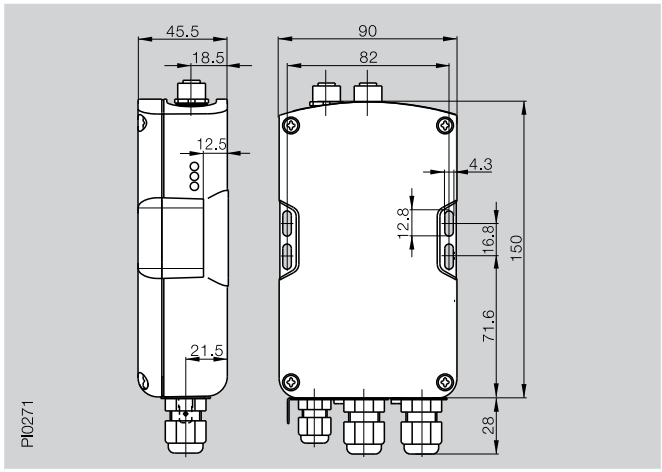
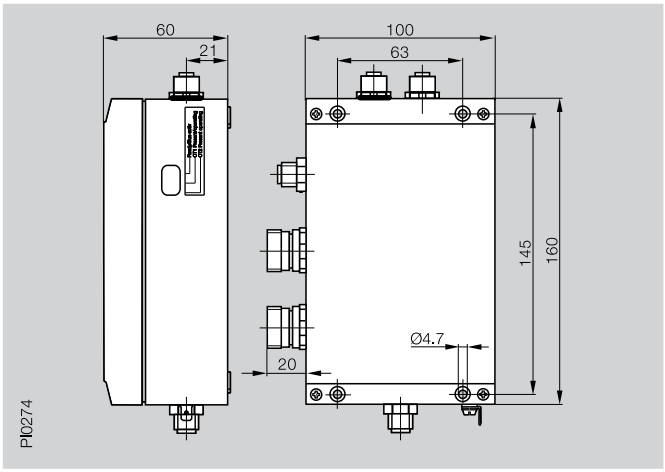
Control No 3TLJ
File No E227256

Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Interface description/Software:	
INTERBUS Remote bus station	
INTERBUS Remote bus station with 2 Mbaud	
INTERBUS Installation bus	
INTERBUS Installation bus with 2 Mbaud	
Accessories (please order separately)	

The **compact class BIS L-600**_ with its reduced dimensions and various interface options can be used wherever ambient conditions require good protection.

The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

Small, compact, flexible and economical

	BIS L-6001-_ _ _-050-03-KL2	**BIS L-6021-_ _ _-050-03-ST8**
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2 external	2 external
	yes	yes
	Terminals 1 × Pg 9 Terminals 2 × Pg 11	2 connector round 9-pin 2 connector round 5-pin
	2 read/write heads BIS L-3_ _	2 read/write heads BIS L-3_ _
	BIS L-6001-023-050-03-KL2	BIS L-6021-023-050-03-ST9
		BIS L-6021-023-050-03-ST9M
		BIS L-6021-023-050-03-ST8
		BIS L-6021-023-050-03-ST8M
		BKS 23-CS-00 Connectors page 204

Threaded cover
BKS 23-CS-00
for M23 connector
IP 65 protective cover for unused connectors!

For **rugged applications** **BIS L-602_** is, in spite of the mechanically rugged die-cast aluminum housing, a small, flexible processor which is available with various interface options.

Suitable for all applications with demanding requirements for mechanical rigidity and chemical resistance.

Cost-effective identification – operate 2 read/write heads simultaneously

- Selectable division of the data width on the PROFIBUS-DP, 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 interchangeable memory
- BUS address selectable with switches
- Accepts all read/write heads
- Protocol-compatible with BIS C and BIS S identification systems

Description	
Function	
Antenna type	

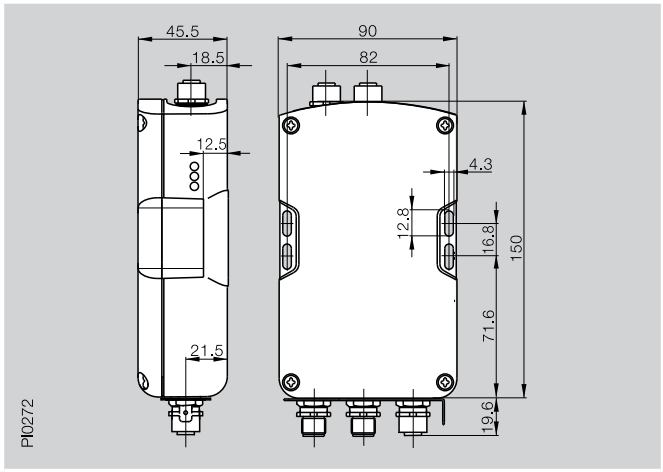
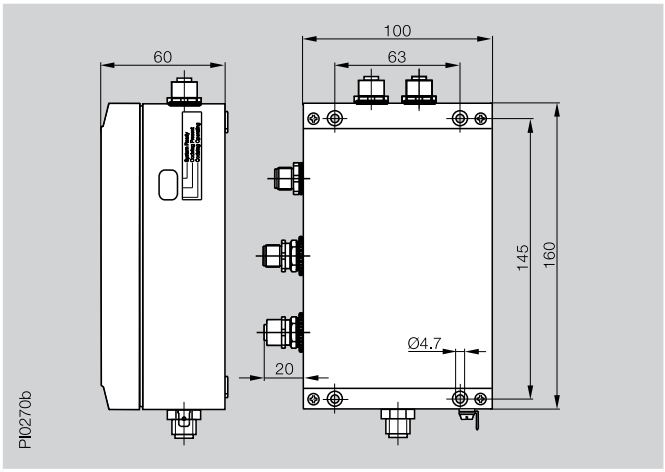
Control No 3TLJ
File No E227256

Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Interface description/Software:	
PROFIBUS-DP	
Accessories included	
Accessories (please order separately)	

The **compact class BIS L-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require good protection.

The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

Small, compact, flexible and economical

	BIS L-6002-019-050-03-ST11	BIS L-6022-019-050-03-ST14
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2 external	2 external
	yes	yes
	2 connector round 5-pin, B-coded 1 connector round 5-pin	2 connector round 5-pin, B-coded 2 connector round 5-pin
	2 read/write heads BIS L-3_ _	2 read/write heads BIS L-3_ _
	BIS L-6002-019-050-03-ST11	BIS L-6022-019-050-03-ST14
	Software GSD-file	Software GSD-file
	BKS 12-CS-01 Connectors page 204/205	BKS 12-CS-01 Connectors page 204/205

For **rugged applications BIS L-602_** is, in spite of the mechanically rugged die-cast aluminum housing, a small, flexible processor which is available with various interface options.

Suitable for all applications with demanding requirements for mechanical rigidity and chemical resistance.

Threaded cover
BKS 12-CS-01
coded for M12 B
Connector type

Cost-effective identification – operate 2 read/write heads simultaneously

- Freely selectable buffer size between 0 and 256 bytes
- Service-friendly, all parameter data are stored in an interchangeable memory
- Accepts all read/write heads
- Protocol-compatible with BIS C and BIS S identification systems

Description	
Function	
Antenna type	

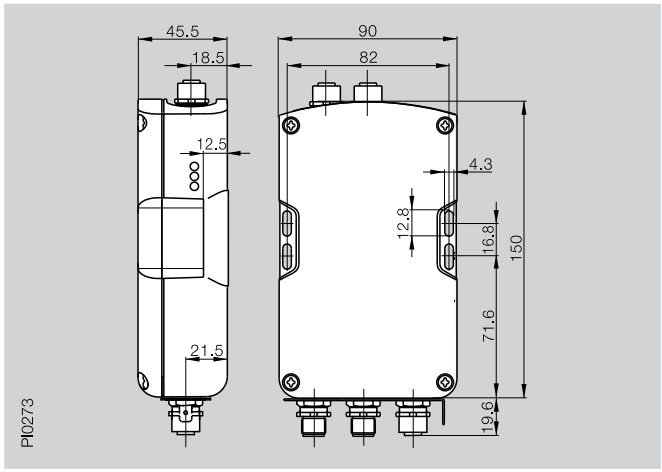
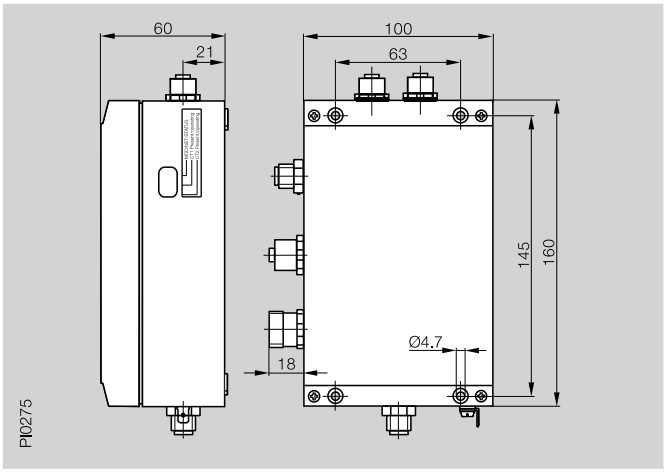
Control No 3TLJ
File No E227256

Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Interface description/Software:	
DeviceNet™	
Accessories included	
Accessories (please order separately)	

The **compact class BIS L-600_** with its reduced dimensions and various interface options can be used wherever ambient conditions require good protection.

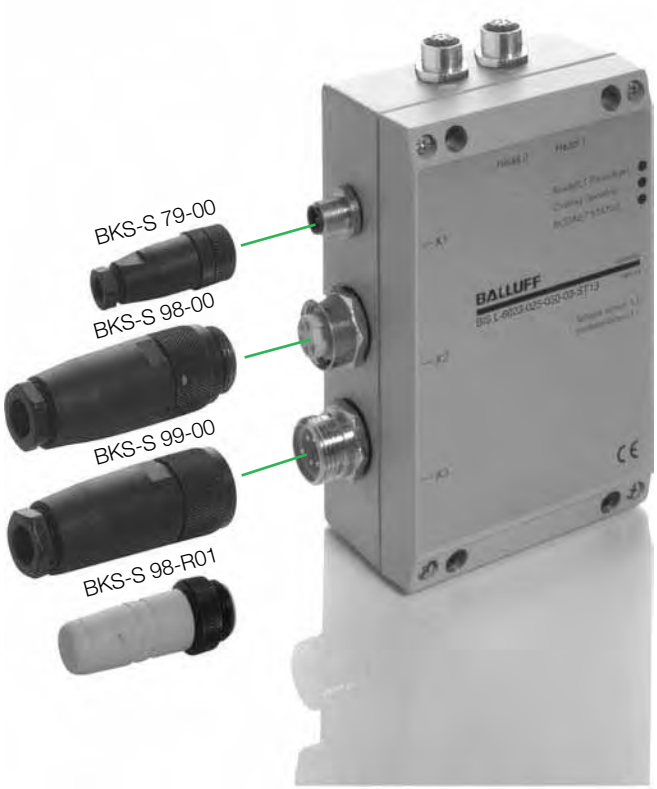
The devices are ideal for IP 65 and applications involving media that is not aggressive to PS plastic.

Small, compact, flexible and economical

	BIS L-6003-_ _ _-650-03-ST12	BIS L-6023-_ _ _-050-03-ST13
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+50 °C	0...+50 °C
	0...+50 °C	0...+50 °C
	IP 65	IP 65
	2 external	2 external
	yes	yes
	3 round, 5-pin connectors,	4 round, 5-pin connectors,
	2 read/write heads BIS L-3_ _	2 read/write heads BIS L-3_ _
	BIS L-6003-025-050-03-ST12	BIS L-6023-025-050-03-ST13
	Software EDS-file	Software EDS-file
		BKS 12-CS-01
	Connectors page 207/208/209	Connectors page 207/208/209

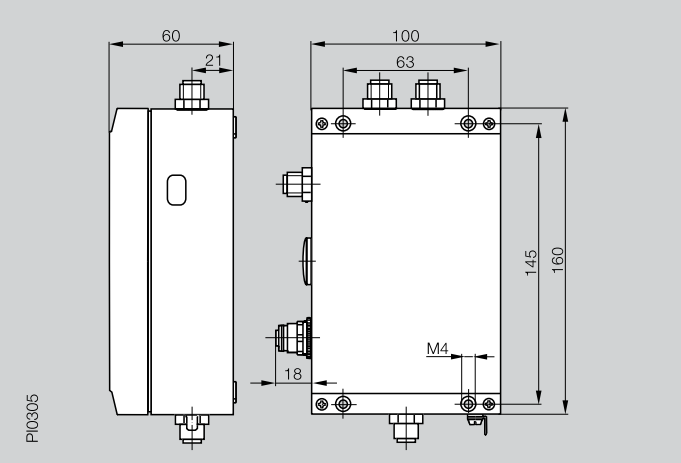
For **rugged applications BIS L-60_ _** is, in spite of the mechanically rugged die-cast aluminum housing, a small, flexible processor which is available with various interface options.

Suitable for all applications with demanding requirements for mechanical rigidity and chemical resistance.



Description	**BIS L-6026-_ _ _-050-06-ST19**
Function	read/write
Antenna type	AlSi 12

Control No 3TLJ
File No E227256

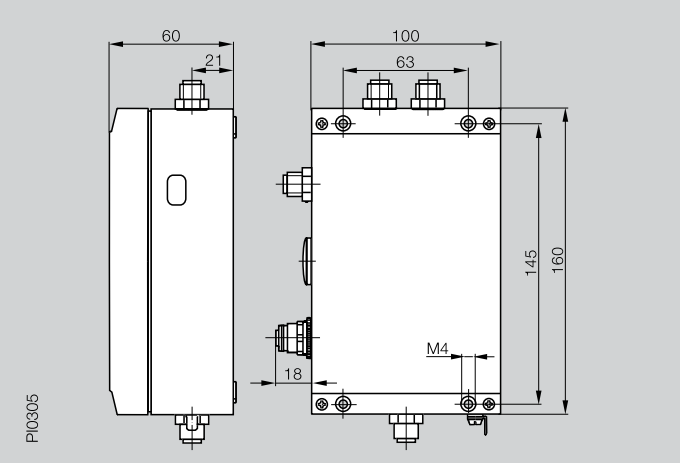


Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	Connector round 5-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	Read/write heads BIS L-3_ _ Exception: BIS L-350/BIS L-355
Interface description/Software:	
EtherNet/IP™	BIS L-6026-034-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	Connectors page 206

**Cost-effective identification –
operate 2 read/write heads simultaneously!**

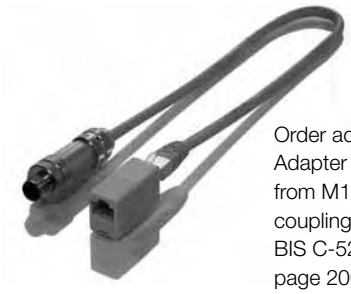
Description	**BIS L-6027-_ _ _-050-06-ST19**
Function	read/write
Antenna type	AlSi 12

Control No 3TLJ
File No E227256



Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+50 °C
Storage temperature	0...+50 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	Connector round 5-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	Read/write heads BIS L-3_ _ Exception: BIS L-350/BIS L-355
Interface description/Software:	
Ethernet with standard TCP/IP protocol	BIS L-6027-039-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	Connectors page 206

Operate 2 read/write heads sequentially



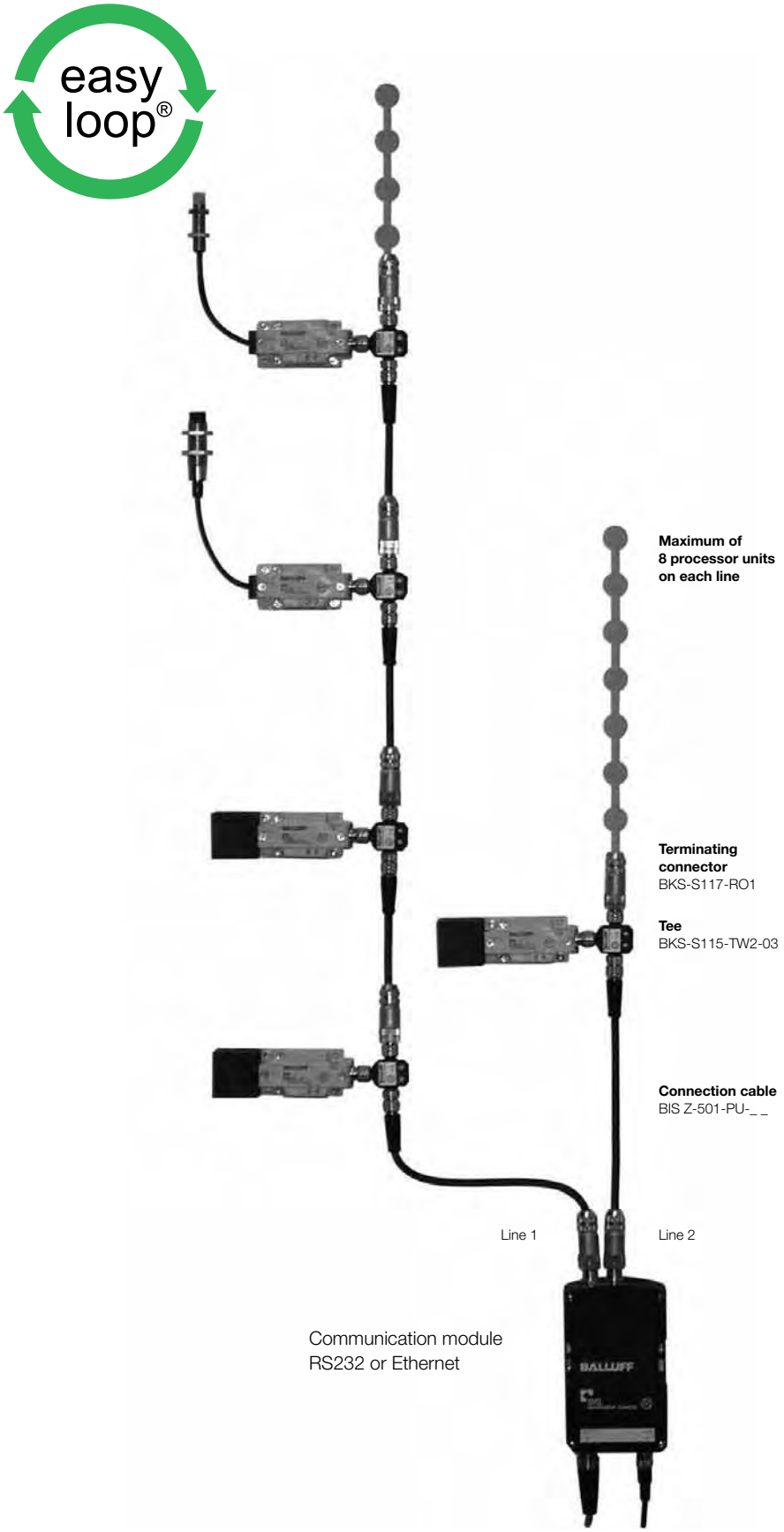
Order accessories separately!
Adapter cable for Ethernet
from M12 D-coded to
coupling RJ45/RJ45
BIS C-526-PVC-00.5
page 206

For simple installation

Use easy loop® to extend the BIS L system at minimal cost: compact read heads and the communication module for simple connection to the controller. Prefabricated cable and connectors for rapid, simple wiring. No address settings.

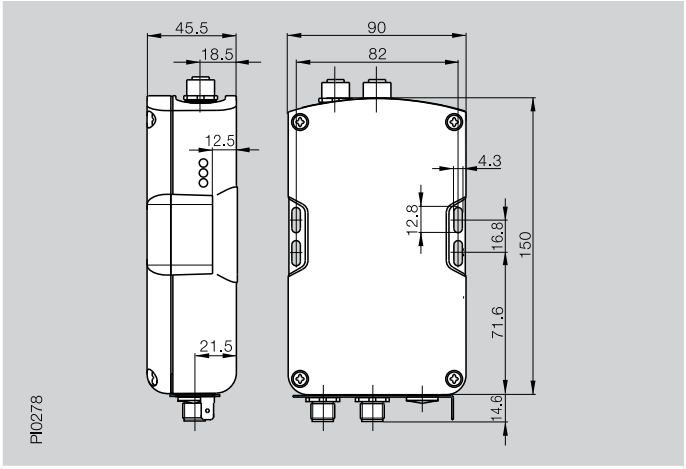
Install easy loop® by connecting up to a maximum of eight read heads with the easy loop® interface to two channels for up to a 16 head self-contained system. A single cable per channel will suffice and a separate power supply is no longer necessary for each head.

Each head is constantly scanned at set intervals and data transferred automatically to controller. Data is automatically read whenever a data carrier passes the head.



Description	**BIS Z-EL-002-RS232, BIS Z-EL-001-Ethernet**
Function	read
Antenna type	ABS

BUS type wiring ensures simple installation and error-free power connection

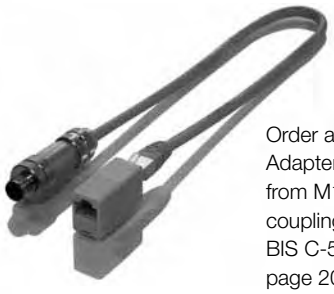


Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 500 mA +50 mA for each connected read head
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Connection type	1 connector round 4-pin, 1 connector round 5-pin
Connection for read/write heads/Line 1 and 2	2 connectors round 8-pin
Interface description/Software:	
RS232	BIS Z-EL-002-RS232
Ethernet TCP/IP	BIS Z-EL-001-Ethernet
Accessories (please order separately)	Connectors page 203

Please order accessories separately!

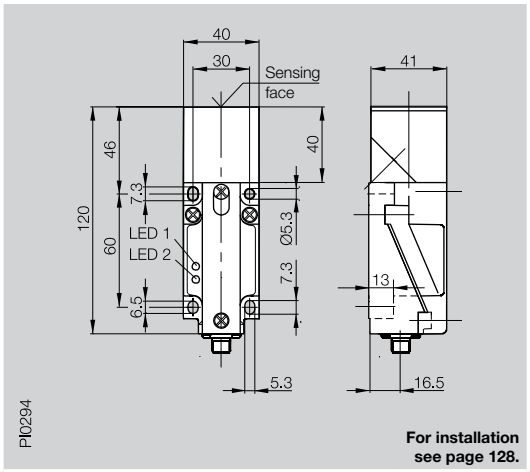
Tee
BKS-S115-TW2-03

Terminating connector
BKS-S117-RO1

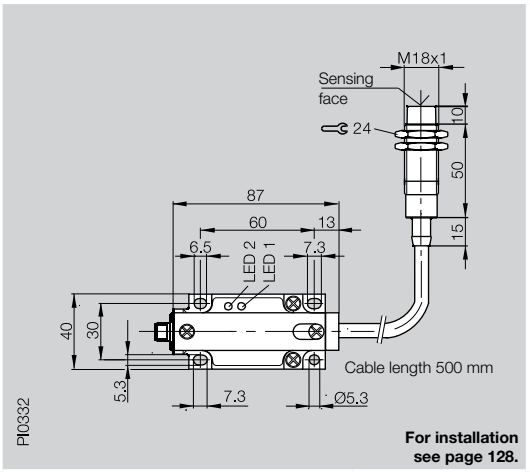


Order accessories separately!
Adapter cable for Ethernet from M12 D-coded to coupling RJ45/RJ45
BIS C-526-PVC-00.5
page 206

Description/dimensions	**40×41×120**	**M18**
Housing material	PBT	PBT
Antenna type	round	round
Weight	170 g	170 g



For installation see page 128.



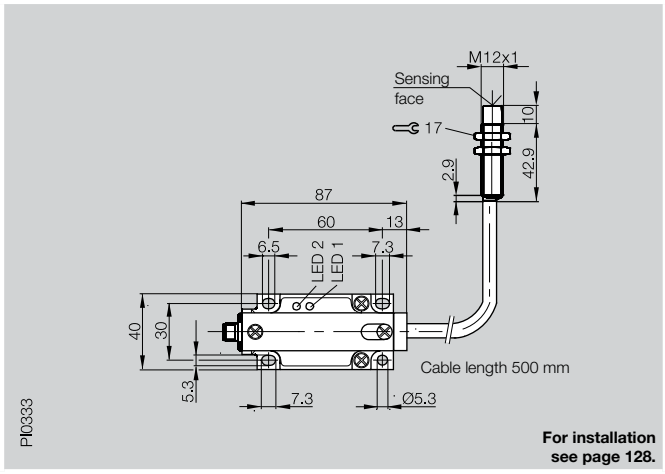
For installation see page 128.

Supply voltage	24 V DC ±10 %/–20 %	24 V DC ±10 %/–20 %
Ripple	≤ 10 %	≤ 10 %
Current	≤ 50 mA	≤ 50 mA no load
Ambient operating temperature	0...+60 °C	0...+60 °C
Protection per IEC 60529	IP 67	IP 67
Mounting in steel	non-flush	non-flush
LED function indicator	yes	yes
Connection type	8-pin M12 male	8-pin M12 male
Interface description:		
RS422/easy loop®	BIS L-400-043-001-02-S115	BIS L-400-043-002-02-S115
Accessories (please order separately)	Connection cable BIS Z-501-PU-_ _* Tee BKS-S115-TW2-03	Connection cable BIS Z-501-PU-_ _* Tee BKS-S115-TW2-03

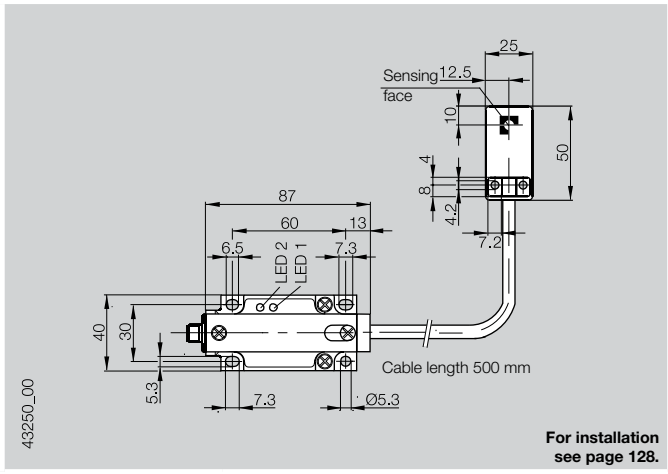
Appropriate data carrier installation types		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-202-03/L BIS L-102-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal	BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
Read distance in mm		0-30	0-40	0-55	0-20	0-30	0-40	0-20
Offset in mm at distance	0 mm	±15	±20	±30	±10	±15	±20	±10
	3 mm	±15	±20	±30	±10	±15	±20	±10
	4 mm	±15	±20	±30	±10	±15	±20	±10
	5 mm	±15	±20	±30	±10	±15	±20	±10
	7 mm	±15	±20	±20	±10	±15	±20	±10
	8 mm	±15	±20	±30	±10	±15	±20	±10
	10 mm	±15	±20	±30	±10	±15	±20	±10
	12 mm	±15	±20	±30	±10	±15	±20	±10
	15 mm	±15	±20	±30	±10	±15	±20	±10
	20 mm	±15	±20	±30		±15	±20	
	25 mm	±15	±20	±30		±15	±20	
	30 mm		±20	±30			±20	
	35 mm		±20	±30			±20	
	40 mm			±30				
	45 mm			±30				
Max speed	m/s	0,85	0,9	1,2	0,55	0,29	0,37	0,22
	m/min	51	54	72	33	17,4	22,2	13,2

*Please indicate cable length in part number! see page 202

	M12	**25×50×10**
	PBT	PBT
	round	round
	170 g	170 g



For installation see page 128.

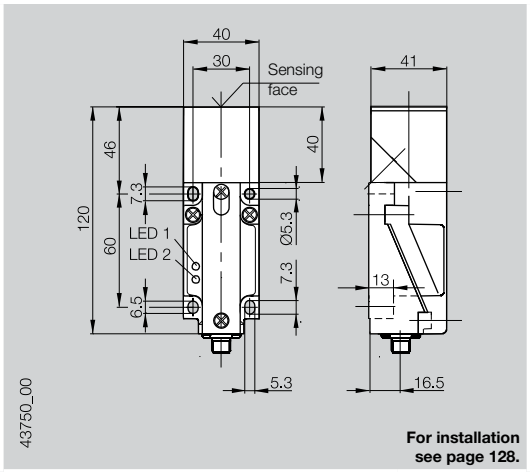


For installation see page 128.

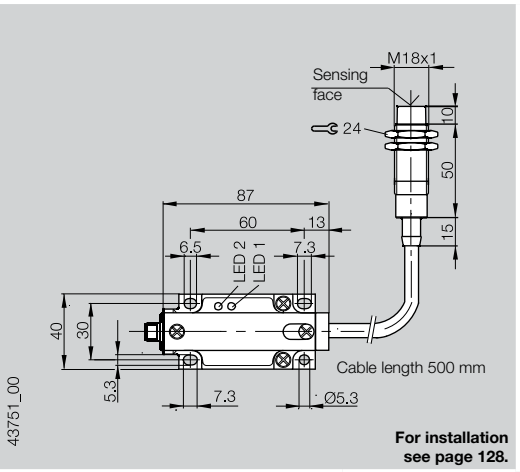
	24 V DC ±10 %/–20 %	24 V DC ±10 %/–20 %
	≤ 10 %	≤ 10 %
	≤ 50 mA no load	≤ 50 mA no load
	0...+60 °C	0...+60 °C
	IP 67	IP 67
	non-flush	non-flush
	yes	yes
	8-pin M12 male	8-pin M12 male
	BIS L-400-043-003-02-S115	BIS L-400-043-004-02-S115
	Connection cable BIS Z-501-PU-_ _*	Connection cable BIS Z-501-PU-_ _*
	Tee BKS-S115-TW2-03	Tee BKS-S115-TW2-03

	BIS L-203-03/L BIS L-103-05/L-RO non-metal		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
	0-11		0-23	0-27	0-16
	±6		±12	±15	±8
	±6		±12	±15	±8
	±6		±12	±15	±8
	±6		±12	±15	±8
	±6		±12	±15	±8
	±6		±12	±15	±4
	±2		±12	±15	
			±12	±15	
			±12	±15	
			±8	±15	
				±6	
	0,18		0,29	0,37	0,22
	10,8		17,4	22,2	13,2

Description/dimensions		**40×41×120**				**M18**		
Housing material		PBT				PBT		
Antenna type		round				round		
Weight		220 g				200 g		



For installation see page 128.

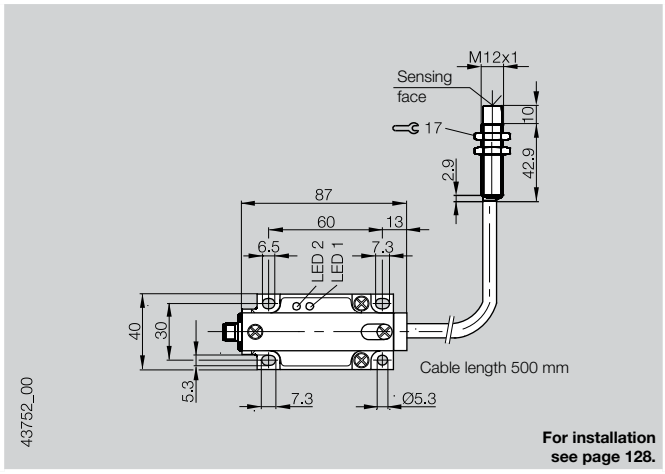
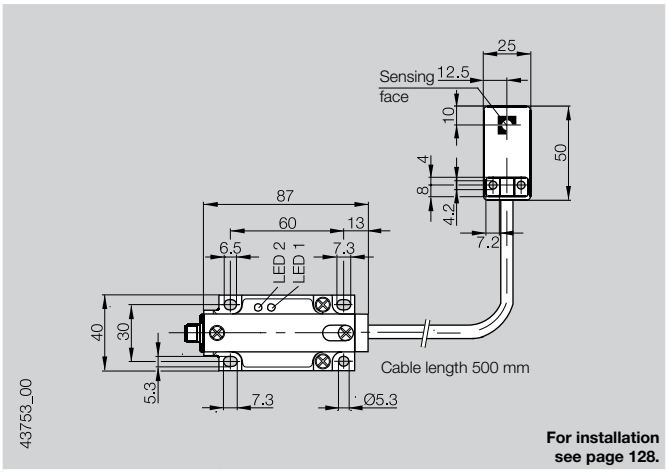


For installation see page 128.

Supply voltage		24 V DC ±10 %/–20 %				24 V DC ±10 %/–20 %		
Ripple		≤ 10 %				≤ 10 %		
Current		≤ 150 mA				≤ 50 mA no load		
Ambient operating temperature		0...+70 °C				0...+60 °C		
Protection per IEC 60529		IP 67				IP 67		
Mounting in steel		non-flush				non-flush		
LED function indicator		yes				yes		
Connection type		4-pin M12 male				8-pin M12 male		
Interface description:								
IO-Link		BIS L-409-045-001-07-S4				BIS L-409-045-002-07-S4		
Accessories (please order separately)		BCC M4/5-M4/3-3A-300-PX0334*				BCC M4/5-M4/3-3A-300-PX0334*		

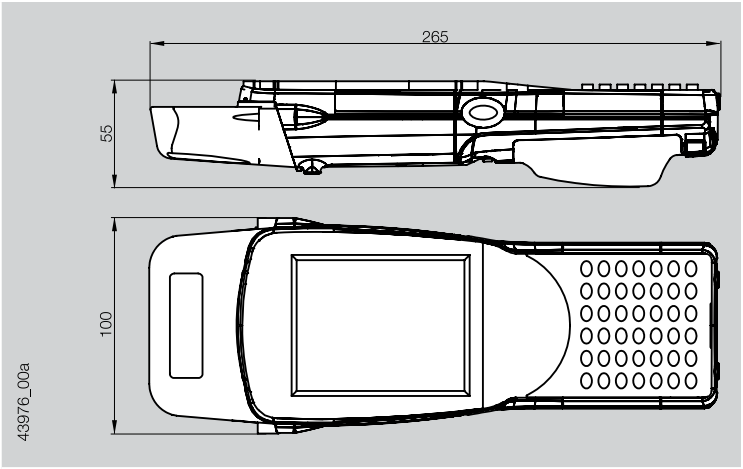
Appropriate data carrier installation types		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-202-03/L BIS L-102-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal	BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
Read distance in mm		0-25	0-35	0-48	0-16	0-15	0-18	0-10
Offset in mm at distance	0 mm	±15	±20	±25	±10	±10	±12	±4
	3 mm	±15	±20	±25	±10	±10	±12	±4
	4 mm	±15	±20	±25	±10	±10	±12	±4
	5 mm	±15	±20	±25	±10	±10	±12	±4
	7 mm	±15	±20	±25	±10	±10	±12	±4
	8 mm	±15	±20	±25	±10	±10	±12	±4
	10 mm	±15	±20	±25	±10	±10	±12	±4
	12 mm	±15	±20	±25	±10		±12	
	15 mm	±15	±20	±25	±10		±12	
	20 mm	±15	±20	±25				
	25 mm		±20	±25				
	30 mm		±20	±25				
	35 mm		±20	±25				
	40 mm			±25				
	45 mm			±25				
Max speed	m/s	0,85	0,9	1,2	0,55	0,29	0,37	0,22
	m/min	51	54	72	33	17,4	22,2	13,2

*For pre-finished cables, please append cable length to part number!
01 = Length 1 m
02 = Length 2 m
05 = Length 5 m
10 = Length 10 m

	M12	**25×50×10**
	PBT	PBT
	round	round
	170 g	200 g
	 **For installation see page 128.**	 **For installation see page 128.**
	24 V DC ±10 %/–20 %	24 V DC ±10 %/–20 %
	≤ 10 %	≤ 10 %
	≤ 50 mA no load	≤ 50 mA no load
	0...+60 °C	0...+70 °C
	IP 67	IP 67
	non-flush	non-flush
	yes	yes
	8-pin M12 male	4-pin M12 male
	BIS L-409-045-003-07-S4	BIS L-409-045-004-07-S4
	BCC M4/5-M4/3-3A-300-PX0334*	BCC M4/5-M4/3-3A-300-PX0334*

		BIS L-203-03/L BIS L-103-05/L-RO non-metal		BIS L-200-03/L BIS L-100-05/L-RO non-metal	BIS L-201-03/L BIS L-101-05/L-RO non-metal	BIS L-203-03/L BIS L-103-05/L-RO non-metal
		0-7		0-15	0-18	0-10
		±4		±10	±12	±4
		±4		±10	±12	±4
		±4		±10	±12	±4
		±4		±10	±12	±4
				±10	±12	±4
				±10	±12	±4
				±10	±12	±4
				±10	±12	±4
					±12	
					±12	
		0,18		0,29	0,37	0,22
		10,8		17,4	22,2	13,2

Function	read/write
Housing material	ABS



Basic Hand Held unit part number	BIS L-870-1-008-x-000
Keyboard	52 buttons, alphanumeric
Display	TFT Touchscreen display
Supply voltage	3.7 V rechargeable battery pack
Capacity	4000 mA/h
Interface	RS232/Balluff Dialog
Working temperature	–10...+50 °C
Degree of protection in accordance with IEC 60529	IP 65
Read/write head option	Integrated
Accessories included	Charging power supply and stylus
Appropriate data carrier	BIS L-1 ... BIS L-2 ...
Please order additional accessories separately	Docking Station and Pistol Grip

For enhanced operating convenience

Allows easy manual writing and reading of BIS L data carriers.
Easy operation thanks to
– Touchscreen with large Windows CE® color display and
– Pre-installed Balluff software and full keyboard or stylus.

Ideal for manual rework stations or remote data access away from the line. Data transfer via optional WLAN, Bluetooth, or wired USB. The handheld is also modular for expandability.

Additional options are available for greater functionality.

Standard Handheld
BIS L-870-1-008-x-000
Includes charger and stylus

Hand Held Accessories

Part Number	WA4003-G2
Description	Desktop Docking Station w/PS and USB Cable

Part Number	WA3010
Description	4000mAh Replacement Battery

Part Number	RA2041*
Description	802.11b/g WLAN Card

Part Number	WA6100-G1
Description	Stylus – pack of 5

Part Number	WA9212-G1*
Description	Imager, 2D Slim Pod HHP 5180 (compatible with pistol grip WA6102-G1)

Part Number	WA6102-G1
Description	Pistol Grip for WA9212-G1 2D Slim Pod HHP 5180

Part Number	WA9000-G1*
Description	Scanner 1D Laser High Performance (can work with Pistol Grip WA6001-G1)

Part Number	WA6101-G1
Description	Pistol Grip for WA9000-G1, 1D Scanner

Part Number	WA6097-G2
Description	Protective Carrying Case – 7527C-G2 universal end cap (open ended)

*Specification available upon request.

Description	
Version	
Housing material	
Weight	

CE

Part number	
Protection per IEC 60529	
Ambient operating temperature	
Storage temperature	

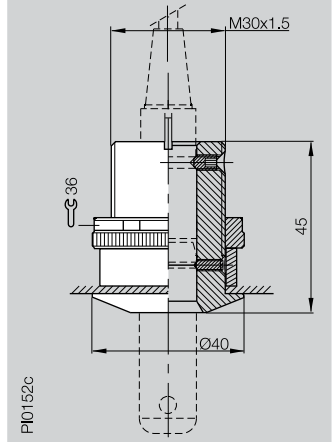
Access protection

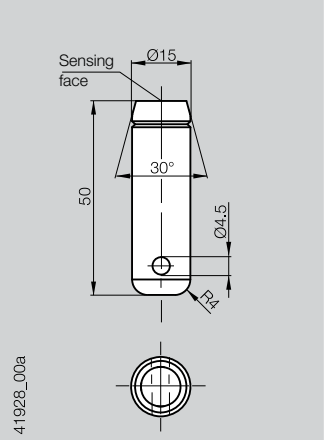
Individual access codes are allocated via programmable data keys, which can then be disabled to prevent further programming.

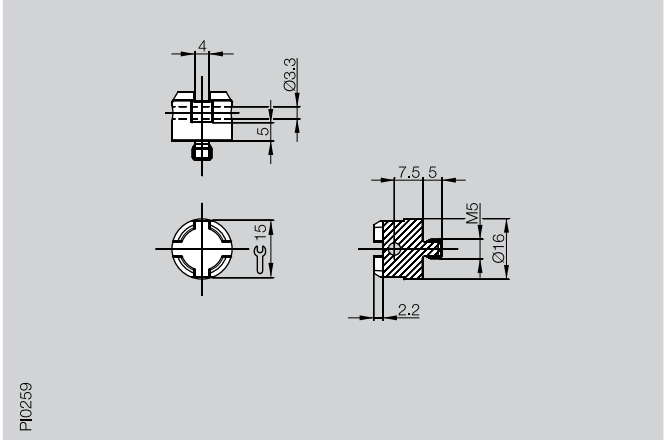
Unauthorized personnel cannot manipulate the data key as a result. The data key is read via an antenna fitted to a special bracket. The processor unit then reads the data.

Different interfaces such as serial, PROFIBUS, INTERBUS, DeviceNet™, EtherNet/IP™ or parallel interfaces enable simple connection to the monitored system. Available for systems BIS C, BIS L, and BIS M.

	Head interface socket	RFID key	BIS L-203-ZH1
	Access protection	Data carrier + bracket	POM
			3 g







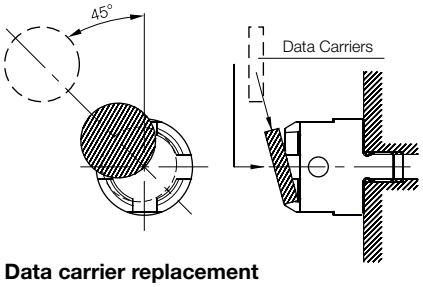
	BIS Z-ZA-001	BIS L-103-05/L-ZC1	BIS L-203-ZH1
		IP 67	IP 67
	0...+70 °C	–25...+70 °C	–25...+85 °C
	–20...+85 °C	–25...+85 °C	
		read/write distance see BIS L-103-05/L, reduced by 6 mm.	

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

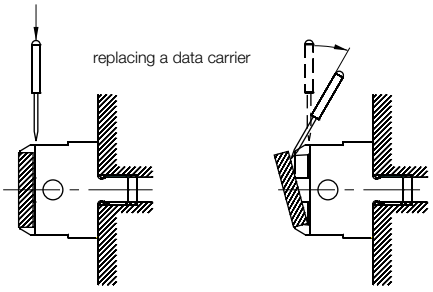
Interchangeable with data carriers BIS L-103 and BIS L-203, easy to mount – even on metal

The mount and prism clamp secure the data carrier and prevent it from falling out.

Mounting a data carrier



Data carrier replacement



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-201-03/L	BIS L-202-03/L	BIS L-203-03/L
BIS L-300	250 mm	300 mm	400 mm	250 mm	250 mm	300 mm	400 mm	250 mm
BIS L-301	300 mm	400 mm	500 mm	350 mm	350 mm	400 mm	500 mm	350 mm
BIS L-302	150 mm	200 mm	200 mm	180 mm	180 mm	200 mm	250 mm	180 mm
BIS L-303	300 mm	400 mm	500 mm	350 mm	350 mm	400 mm	500 mm	350 mm
BIS L-304	150 mm	200 mm	200 mm	180 mm	180 mm	200 mm	250 mm	180 mm
BIS L-40_					≥ 250 mm	≥ 300 mm	≥ 400 mm	

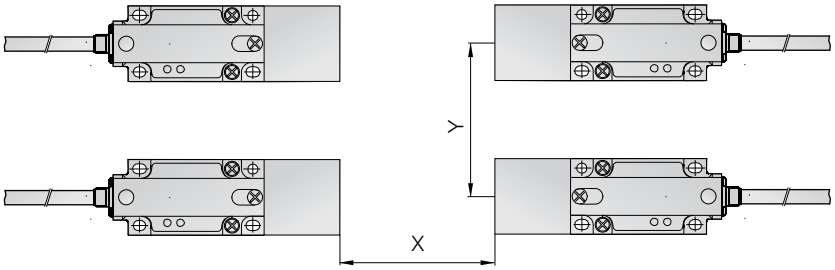
Minimum Distance between two Read/Write Heads

BIS L-300	800 mm
BIS L-301	800 mm
BIS L-302	200 mm
BIS L-303	800 mm
BIS L-304	200 mm

Distance from Read Head to Read Head

The following distances between individual BIS L-40_ systems must be maintained:

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

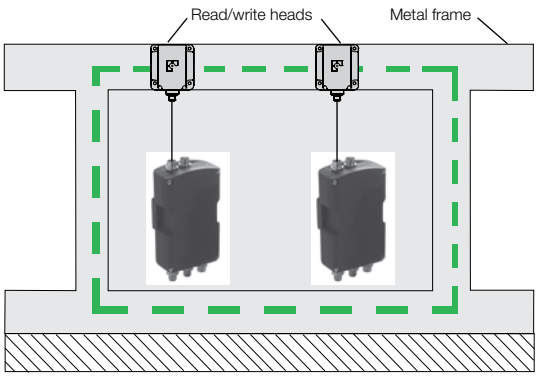


Mounting the Read/Write Heads on Metal Frames

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.

With the BIS L-301, the maximum distance can be reduced by up to 20 %. The distance should therefore be tested.



Installation in Metal

Clear zone dimensions

Data carriers	Fig.	Dimensions (in mm)	
		A	D
BIS L-100-01/L	1	100	50
BIS L-101-01/L	1	100	50
BIS L-102-01/L	1	100	50
BIS L-103-05/L	1	100	50
BIS L-200-03/L	1	100	50
BIS L-201-03/L	1	100	50
BIS L-202-03/L	1	100	50
BIS L-203-03/L	1	100	50

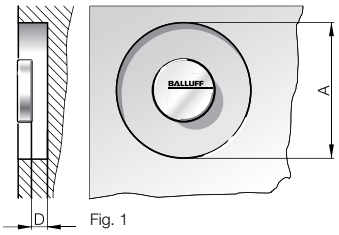


Fig. 1

Read/write heads	Fig.	Dimensions (in mm)			
		A	B	C	D
BIS L-300-_ _	2	100		50	
BIS L-301-_ _	1	240			0
BIS L-302-_ _	2	100		10	
BIS L-303-_ _	3	80	60	50	
BIS L-304-_ _	3	50	50	10	
BIS L-400-_ _-001	2	100		40	
BIS L-400-_ _-002	2	100		10	
BIS L-400-_ _-003	2	100		10	
BIS L-400-_ _-004	3	50	50	10	
BIS L-405-_ _-001	2	100		40	
BIS L-405-_ _-002	2	100		10	
BIS L-405-_ _-003	2	100		10	
BIS L-405-_ _-004	3	50	50	10	

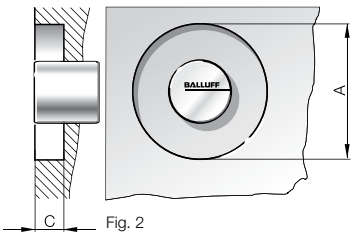


Fig. 2

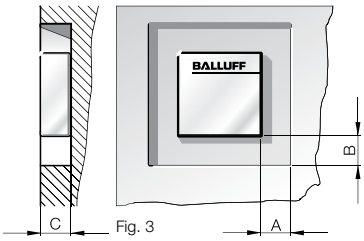


Fig. 3

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.

Mechanical Strength

Data carriers and read/write heads

Part number	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

Processors

Part number	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

Read/Write Times

Read Times
BIS L-1_ _

Typically 110 ms for recognizing the serial number*:

Data carrier with 4 byte blocks	
Byte	Read time [ms]
from 0 to 3	180
for each additional 4 bytes started add an additional	90

Read Times
BIS L-2_ _

Serial number recognition = read data carrier = 100 ms*

Write Times
BIS L-1_ _

Data carrier with 4 byte blocks	
Byte	Write time [ms]
from 0 to 3	305
for each additional 4 bytes started add an additional	215

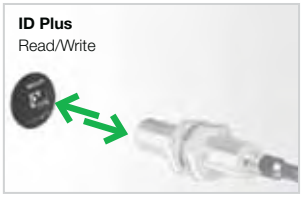
*Applies only to parameter type and serial number output.

All specifications are typical values. Deviations are possible depending on the application and combination of read/write head and data carrier.

Contents

Tool ID
For data storage

This section includes durable machine tool RFID solutions.

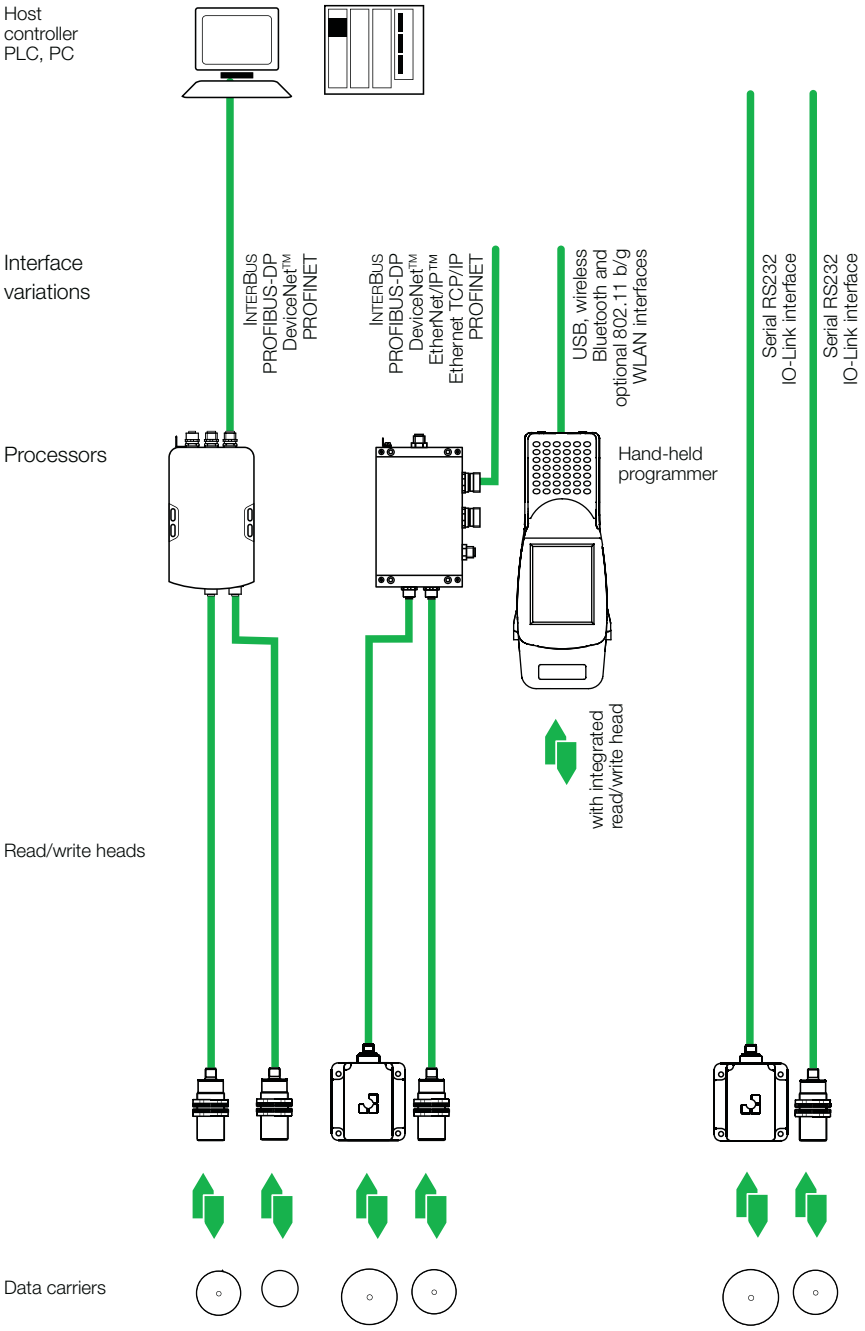


ID Plus
Read/Write

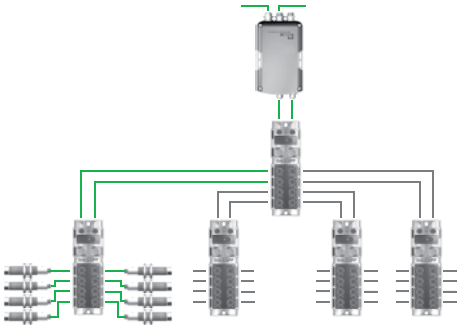
This section provides specifications on the low cost and flexible BIS M series read/write RFID solutions

BIS M

For lightning-quick data transfer and large read/write distances



Expander module BIS Z-ER
See starting page 214

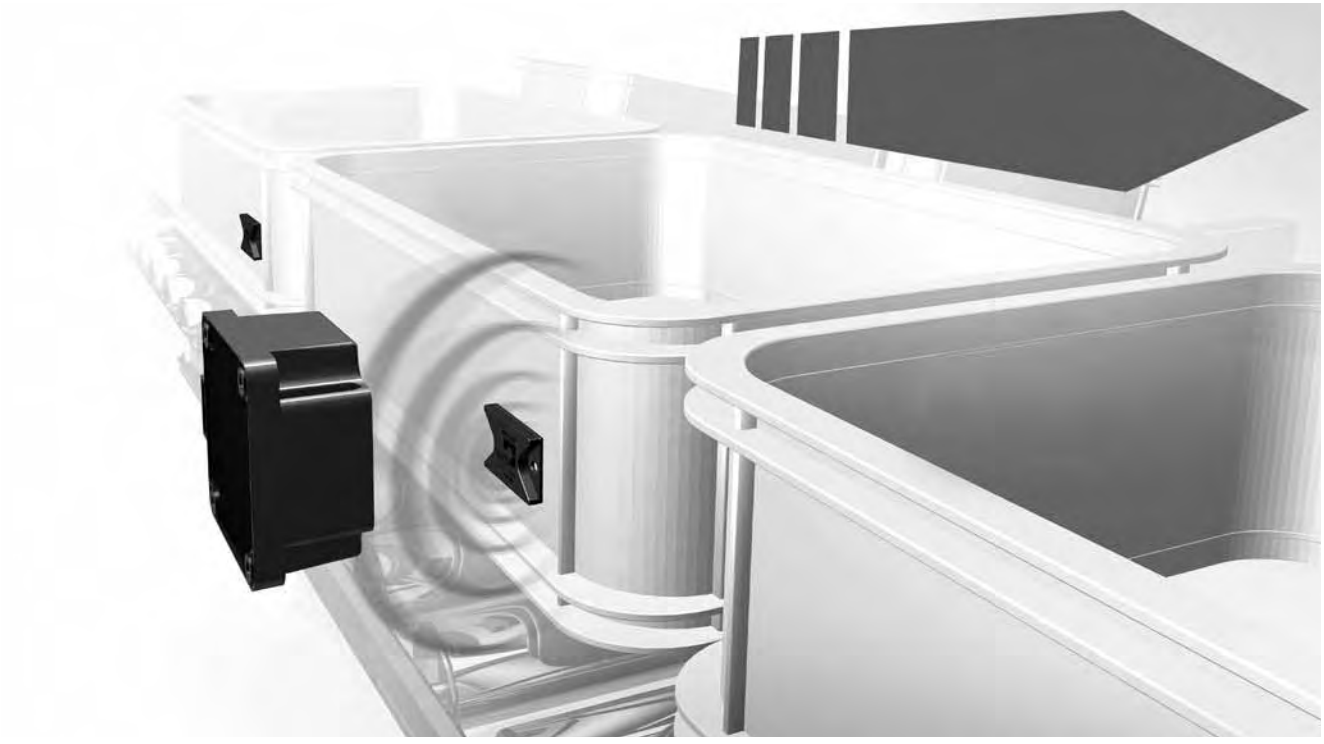


Industrial RFID Systems BIS M
Wide Range of Applications Supported

The main areas of application for the BIS M include palletized production, machine tool identification, and nonpalletized internal company logistics, access control and copy protection. This powerful identification system is proven in all applications where fast data transfer and large read/write distances are required. Select the most suitable BIS M system for your application from the table.

Data carrier	Tools		Production				
	Data storage on machine tools		Tool and die management		Assembly conveying systems		
	Tool holder collar	Retention knob	On tool	Dies	Pallets	On part	
BIS M-101-01/L					■		
BIS M-102-01/L					■		
BIS M-105-01/A	■	■	■	■		■	
BIS M-105-02/A	■	■	■	■		■	
BIS M-108-02/L			■	■	■		
BIS M-110-02/L					■		
BIS M-111-02/L					■		
BIS M-112-02/L					■		
BIS M-120-01/L							
BIS M-122-02/A	■	■	■			■	
BIS M-150-02/A			■	■			
BIS M-151-02/A			■	■			

	Intralogistics						Access and object control												
	Closed logistics circuits		Storage and retrieval equipment Storage and tracking		Intelligent vehicles (driverless transport vehicles)		Object detection		Access control Entry control			Read/write	Dynamic or static	Installation in metal	For harsh environments	Long distances (> 16 mm)	752-byte memory	2000-byte memory
	Retainer/workpiece carrier	Pallets	Retainer/workpiece carrier	Workpiece carrier Skid	Guiding, steering	Identification	In component	On component	Reliable access control	Process access	PartID							
	■					■				■		■	■			■	■	
	■	■				■				■		■	■			■	■	
			■		■		■				■	■		■	■		■	
			■		■		■				■	■		■	■			■
	■		■	■				■			■	■	■		■			■
	■	■	■						■	■		■	■		■			■
	■	■	■			■			■	■		■	■		■	■		■
	■	■				■				■		■	■		■	■		■
		■								■		■	■			■	■	
							■		■		■	■		■	■			■
		■	■	■		■		■				■	■	■	■	■		■
		■	■	■		■		■				■	■	■	■	■		■



BIS M

0-12 mm

Read/write heads

			BIS M-302-001_ _ M-302-003_ _ Page 143	BIS M-304-001-_ _ M-304-003-_ _ Page 145	BIS M-400-007-001-_ _ Page 153	BIS M-400-007-002-_ _ Page 151	BIS M-402-007-_ _ Page 155
Data carrier		**Memory capacity in bytes**	**Read/write distance**				
BIS M-105-01/A **BIS M-105-02/A** Page 136		752 2000	0...7 mm 0...9 mm	0...5 mm 0...5 mm	0...7 mm 0...11 mm	0...5 mm 0...5 mm	
BIS M-122-01/A **BIS M-122-02/A** Page 136		752 2000	0...7 mm 0...9 mm	**0...4 mm** 0...5 mm		**0...4 mm** **0...5 mm**	0...5 mm 0...5 mm
BIS M-110-02/L Page 137		2000	0...16 mm	0...14 mm	0...20 mm	0...15 mm	0...8 mm

8-20 mm

Read/write heads

			BIS M-300-001_ _ M-300-003_ _ Page 147	BIS M-302-001-_ _ M-302-003-_ _ Page 143	BIS M-304-001-_ _ M-304-003-_ _ Page 145	BIS M-400-007-001-_ _ Page 153	BIS M-400-007-002-_ _ Page 151
Data carrier		**Memory capacity in bytes**	**Read/write distance**				
BIS M-101-01/L Page 136		752	0...22 mm	0...16 mm	0...14 mm	0...20 mm	0...15 mm
BIS M-102-01/L Page 137		752	0...32 mm	0...20 mm	0...18 mm	0...28 mm	0...18 mm
BIS M-105-01/A **BIS M-105-02/A** Page 136		752 2000	0...11 mm 0...11 mm	0...7 mm 0...9 mm	0...5 mm 0...7 mm	0...7 mm 0...11 mm	0...6 mm 0...9 mm
BIS M-108-02/L Page 139		2000	0...30 mm	0...20 mm	0...18 mm	**0...16 mm**	0...20 mm
BIS M-110-02/L Page 137		2000	0...22 mm	0...16 mm	0...14 mm	0...20 mm	0...15 mm
BIS M-111-02/L Page 137		2000	0...28 mm	0...20 mm		0...28 mm	0...20 mm

15-30 mm

Read/write heads

			BIS M-300-001_ _ M-300-003_ _ Page 147	BIS M-302-001-_ _ M-302-003-_ _ Page 143	BIS M-400-007-001-_ _ Page 153	BIS M-400-007-002-_ _ Page 151	BIS M-401-007-001-_ _ Page 157
Data carrier		**Memory capacity in bytes**	**Read/write distance**				
BIS M-110-02/L Page 137		2000	0...22 mm	0...16 mm	0...20 mm	0...15 mm	0...30 mm
BIS M-101-01/L Page 136		752	0...22 mm	0...16 mm	0...20 mm	0...15 mm	0...28 mm
BIS M-111-02/L Page 137		2000	0...28 mm	0...20 mm	0...28 mm	0...20 mm	0...40 mm
BIS M-102-01/L Page 137		752	0...32 mm	0...20 mm	0...28 mm	0...18 mm	0...45 mm
BIS M-112-02/L Page 138		2000	0...44 mm	0...30 mm	0...38 mm	0...28 mm	0...60 mm
BIS M-108-02/L Page 139		2000	0...30 mm	0...20 mm	0...28 mm	0...20 mm	0...40 mm

0...2 mm = Data carrier flush mounted in steel

Use the tables and combine BIS M read/write head with tag based on range.

In three steps you will have selected your BIS M system:
1. First choose the appropriate form factor for your data carrier.
2. Then determine your read/write head based on range.
3. Finally, determine the desired memory capacity. Many tags provide several sizes.

Questions?

Whatever your need, whether analysis, selection and return on investment, formats, interfaces and software, installation, disassembly and retrofitting – in short: we are here to help you in every way.

Take advantage of our personal consultation, individual support and worldwide service.

25-50 mm

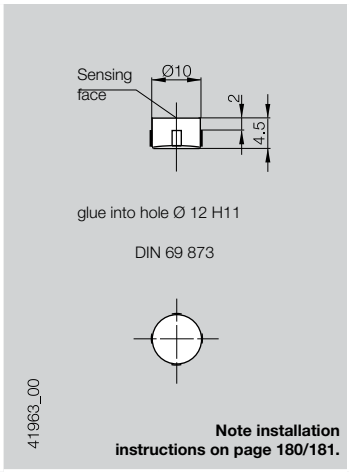
		Read/write heads				
		BIS M-300-001_ _ M-300-003_ _ Page 147	**BIS M-301-001-_ _ M-301-003-_ _** Page 149	**BIS M-302-001-_ _ M-302-003-_ _** Page 143	**BIS M-400-007-001-_ _** Page 153	**BIS M-401-007-001-_ _** Page 157
Data carrier	**Memory capacity in bytes**	**Read/write distance**				
BIS M-110-02/L Page 137	2000	0...22 mm	0...32 mm	0...16 mm	0...20 mm	0...30 mm
BIS M-101-01/L Page 136	752	0...22 mm	0...34 mm	0...16 mm	0...20 mm	0...28 mm
BIS M-111-02/L Page 137	2000	0...28 mm	0...45 mm	0...20 mm	0...28 mm	0...40 mm
BIS M-102-01/L Page 137	752	0...32 mm	0...45 mm	0...20 mm	0...28 mm	0...45 mm
BIS M-112-02/L Page 138	2000	0...44 mm	0...70 mm	0...30 mm	0...38 mm	0...60 mm
BIS M-108-02/L Page 139	2000	0...30 mm	0...45 mm	0...20 mm	0...28 mm	0...40 mm
BIS M-120-01/L Page 139	752		0...50 mm			0...50 mm

> 40 mm

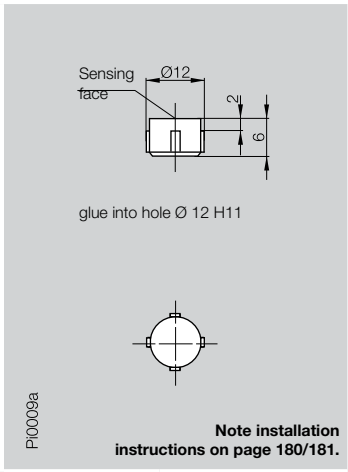
		Read/write heads				
		BIS M-300-001_ _ M-300-003_ _ Page 147	**BIS M-301-001-_ _ M-301-003-_ _** Page 149	**BIS M-351-001-_ _** Page 148	**BIS M-401-007-001-_ _** Page 157	**BIS M-451-007-001-_ _** Page 156
Data carrier	**Memory capacity in bytes**	**Read/write distance**				
BIS M-102-01/L Page 137	752	0...32 mm	0...45 mm		**0...45 mm on metal**	
BIS M-112-02/L Page 138	2000	0...44 mm	0...70 mm		**0...60 mm on metal**	
BIS M-108-02/L Page 139	2000	0...30 mm	0...45 mm		**0...40 mm on metal**	
BIS M-120-01/L Page 139	752		0...50 mm		0...50 mm	
BIS M-150-02/A Page 141	2000			0...60 mm **on metal**		0...60 mm **on metal**
BIS M-151-02/A Page 141	2000			0...60 mm **on metal**		0...60 mm **on metal**

Dimensions	**Ø 10×4.5**	**Ø 12×6**	**Ø 30×1.6**
Housing material	PA12	EP	EP
Antenna type	round	round	round
Weight	< 1.5 g	< 1.5 g	< 1.6 g

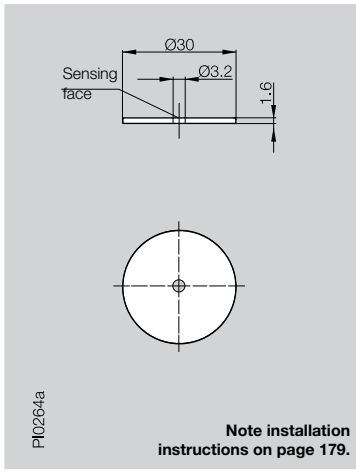
cULus LISTED
Control No 3TLJ
File No E227256



Note installation instructions on page 180/181.



Note installation instructions on page 180/181.



Note installation instructions on page 179.

BIS M Programmable

752 bytes	Part number	BIS M-122-01/A**	BIS M-105-01/A**	BIS M-101-01/L**
2000 bytes	Part number	BIS M-122-02/A*	BIS M-105-02/A*	
Operating temperature		0...+70 °C	–25...+70 °C	–25...+70 °C
Storage temperature		–25...+85 °C	–25...+85 °C	–40...+85 °C
Protection per IEC 60529		IP 67	IP 67	IP 67

Mounting		flush in steel	non-metal		flush in steel	non-metal		non-metal
Appropriate read/write head with max. read/write distance				BIS M-300		0-11 mm	BIS M-300	0-22 mm
							BIS M-301	0-34 mm
	BIS M-302	0-6 mm	0-9 mm	BIS M-302	0-6 mm	0-9 mm	BIS M-302	0-16 mm
	BIS M-304	0-5 mm	0-7 mm	BIS M-304	0-5 mm	0-7 mm	BIS M-304	0-14 mm
							Tightening torque max. 1 Nm	

Supported standard
* ISO 15693
** ISO 14443

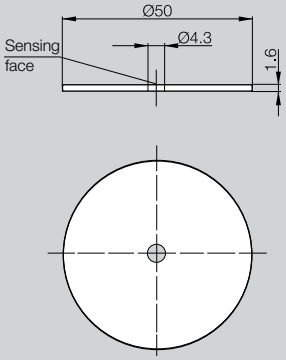
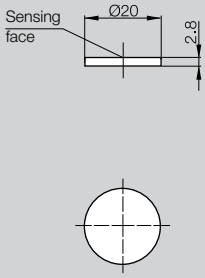
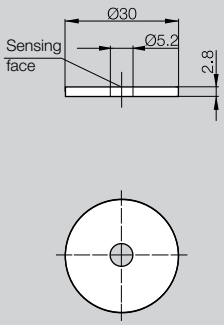
Simply attach data carrier
A single screw is enough – and the data carrier is firmly attached, or simply glue in place.

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

Machine Tool ID

Read/Write Cycles

Data carriers	Memory type	Write cycles	Read cycles	Data retention time
752 bytes	EEPROM	100 000	unlimited	10 years
2000 bytes	FRAM	unlimited	unlimited	10 years

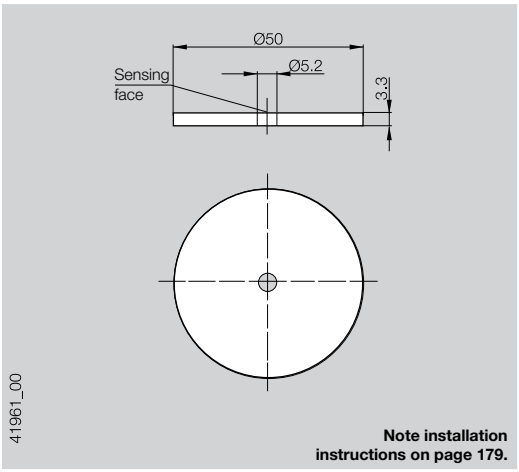
	Ø 50×1.6		**Ø 20×2.5**		**Ø 30×2.5**	
	EP		PA6		PA6	
	round		round		round	
	< 2.5 g		< 1.3 g		< 3.0 g	
	 **Note installation instructions on page 179.**		 **Note installation instructions on page 179.**		 **Note installation instructions on page 179.**	
	BIS M-102-01/L**					
			BIS M-110-02/L*		BIS M-111-02/L*	
	–25...+70 °C		–25...+85 °C		–25...+85 °C	
	–40...+85 °C		–40...+90 °C (100 h at 140 °C)		–40...+90 °C (100 h at 140 °C)	
	IP 67		IP 67		IP 67	
		non-metal		non-metal		non-metal
	BIS M-300	0-32 mm	BIS M-300	0-22 mm	BIS M-300	0-28 mm
	BIS M-301	0-45 mm	BIS M-301	0-32 mm	BIS M-301	0-45 mm
	BIS M-302	0-20 mm	BIS M-302	0-16 mm	BIS M-302	0-20 mm
	BIS M-304	0-18 mm	BIS M-304	0-14 mm		
	Tightening torque max. 1 Nm				Tightening torque max. 1 Nm	

Closed Loop Logistic Tags

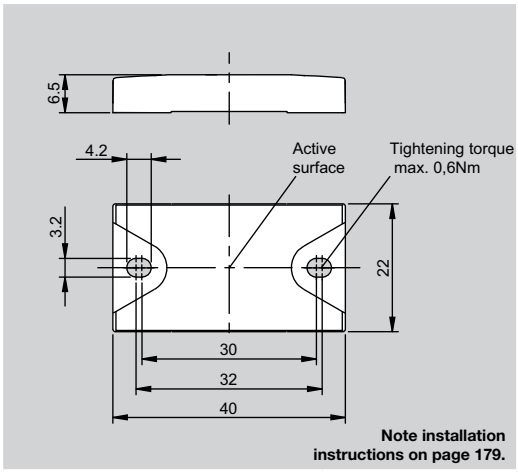
High Temperature

Dimensions		**50×3**		**40x22x6.5**	
Housing material		PA6		PPS-GF40	
Antenna type		round		round	
Weight		< 9.5 g		< 7.0 g	

c UL us LISTED
Control No 3TLJ
File No E227256



Note installation instructions on page 179.



Note installation instructions on page 179.

BIS M Programmable

112 bytes	Part number			BIS M-107-03/L-H200*		
752 bytes	Part number					
2000 bytes	Part number	BIS M-112-02/L*				
Operating temperature		–25...+85 °C		-25...+70 °C		
Storage temperature		–40...+90 °C (100 h at 140 °C)		-25...+85 °C (1000 h at +200 °C)		
Protection per IEC 60529		IP 67		IP 67		
			non-metal		non-metal	
Mounting						
Appropriate read/write head with max. read/write distance		BIS M-300	0-44 mm			
		BIS M-301	0-70 mm	BIS M-301	0-30 mm	
		BIS M-302	0-30 mm			

Supported standard
* ISO 15693
** ISO 14443

Tightening
torque max. 1 Nm

For greatest flexibility
Data carriers in various formats including wafer, cylinder, block or handy credit card format allow for a wide range of applications

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

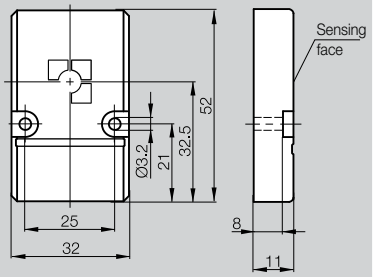
Closed Loop Logistics Tags

For High Temperature Applications

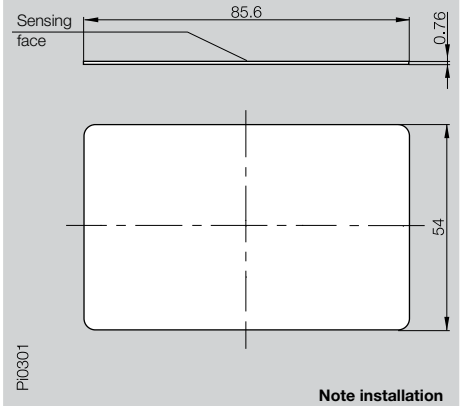
Read/Write Cycles

Data carriers	Memory type	Write cycles	Read cycles	Data retention time
112 bytes	FRAM	unlimited	unlimited	10 years
752 bytes	EEPROM	100 000	unlimited	10 years
2000 bytes	FRAM	unlimited	unlimited	10 years

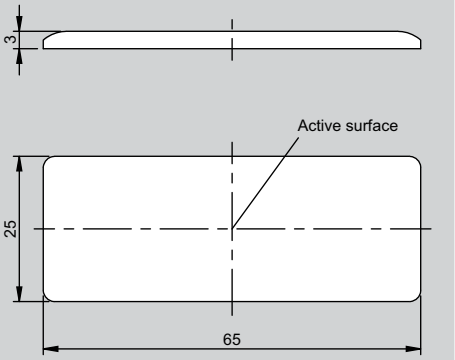
	52×32×11	**85.6×54×0.76**	**65x25x3**
	PBT	PVC	EP+PVC
	round	round	rectangular
	< 27.0 g	< 5.8 g	< 8.0 g



Note installation instructions on page 179.



Note installation instructions on page 179.

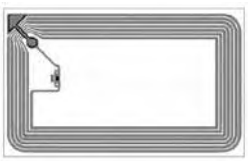


Note installation instructions on page 179.

						BIS M-115-03/A*			
				BIS M-120-01/L**					
	BIS M-108-02/L*								
	–25...+70 °C			–25...+70 °C		-25...+50 °C			
	–25...+85 °C			–25...+70 °C		-30...+60 °C			
	IP 67			IP 60		IP 65			
		flush in steel	non-metal		non-metal		mount on steel	non-metal	
	BIS M-300	0-16 mm	0-30 mm				0-15 mm	0-20 mm	
	BIS M-301		0-45 mm	BIS M-301	0-50 mm		0-20 mm	0-30 mm	
	BIS M-302	0-12 mm	0-20 mm						
	BIS M-304	0-10 mm	0-18 mm						

Special Pallet, Tote, or Skid Tags

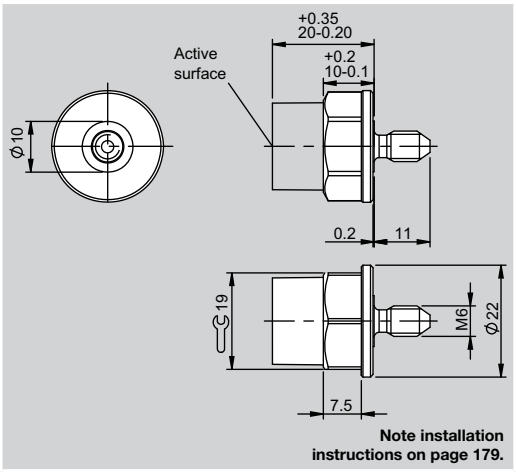
Paper tag options also available. Contact us.
Ideal for disposable applications in logistics



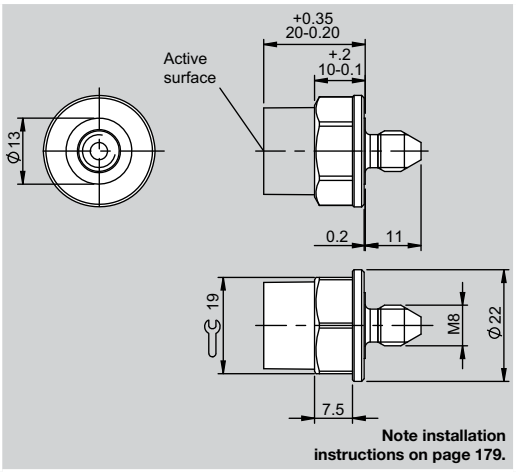
More solutions are available for your application. Contact us.

Description/dimensions	**19mm flat/M6**	**19mm flat/M8**
Housing material	42CrMo4 / PA12-GF30	42CrMo4 / PA12-GF30
Antenna type	Round	Round
Weight	17 g	18 g

Control No 3TLJ
File No E227256



Note installation instructions on page 179.



Note installation instructions on page 179.

BIS M Programmable

2000 bytes Part number	BIS M-140-02/A-M6*		BIS M-140-02/A-M8*	
Operating temperature	-20...+70 °C		-20...+70 °C	
Storage temperature	-20...+85 °C		-20...+85 °C	
Protection per IEC 60529	IP 68		IP 68	
Mounting		mount on steel		mount on steel
Appropriate read/write head with max. read/write distance	BIS M-301	0-40mm	BIS M-301	0-40mm

Supported standard
* ISO 15693

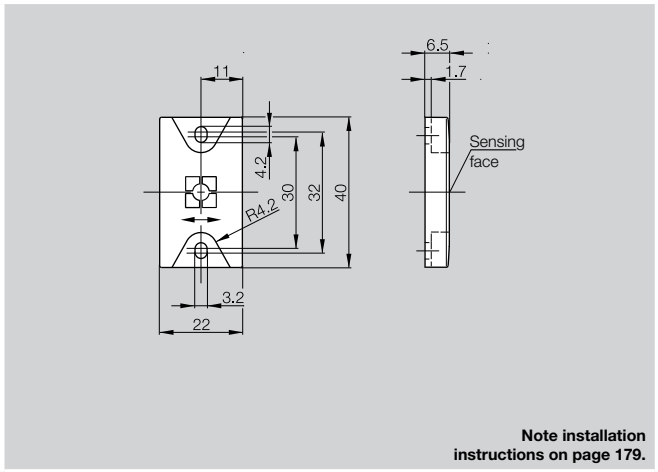
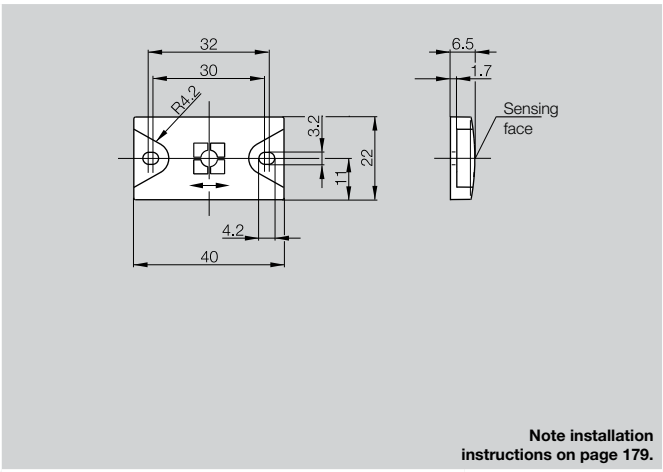
Databolt™
Ideal for automatic insertion and removal from parts like engine blocks and heads.

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

Read/Write Cycles

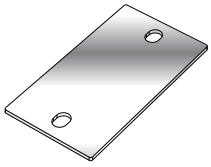
Data carriers	Memory type	Write cycles	Read cycles	Data retention time
2000 bytes	FRAM	unlimited	unlimited	10 years

Metal Mount

	40×22×6.5	**40×22×6.5**
	PPS-GF40	PPS-GF40
	Rod	Rod
	< 8.0 g	< 8.0 g
	 **Note installation instructions on page 179.**	 **Note installation instructions on page 179.**
	BIS M-150-02/A*	BIS M-151-02/A*
	–25...+70 °C	–25...+70 °C
	–25...+130 °C	–25...+130 °C
	IP 67	IP 67
mount on steel	BIS M-351	0-50 mm
mount on steel	BIS M-351	0-50 mm

Metal Mount Series
These tags provide highly reliable RFID performance mounted on any metal surface.

Features
- no reduction in range, regardless of metal alloy
- large read/write range
- compatible with all M processors



Metal mounting plate 40×22 mm
BIS Z-MP-001 **please order separately!**
(10 to a package) Required
if no metal substrate is used!

Use with **BIS M-351-001-S115** or
BIS M-451-007-001-00-S115 Read/Write Head

**Small size –
big performance**

Broad selection range
Read/write heads in various form factors offer wide application possibilities. Use with BIS M-105 and M-122 machine tool tags for Tool ID applications. Simply choose according to your application.

Dimensions	
Housing material	
Antenna type	
Weight	

CE

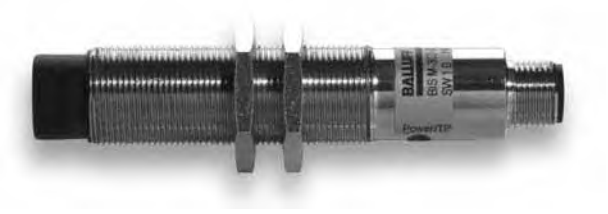
c UL us LISTED
Control No 3TLJ
File No E227256

Part number	
Part number	
Mounting in steel	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Connection to	
with connection cable	

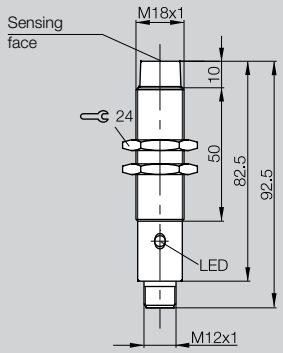
Appropriate data carrier	
Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm

* For use only with processor
BIS M-407-039-06-S115! see page 173

**Please indicate cable length in part number!
see page 202



M18
Nickel plated brass
round
52 g



PI0292b

Note installation instructions on page 179.

BIS M-302-001-S115
BIS M-302-003-S115*
non-flush
0...+70 °C
–20...+85 °C
IP 67
Processor
BIS Z-501-PU1-_ _ / E**, BIS Z-502-PU1-_ _ / E**
BIS Z-501-PU1-_ _ / M**, BIS Z-502-PU1-_ _ / M**
Please order cable separately, see page 202

BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/L		BIS M-105-02/A		BIS M-122-01/A		BIS M-122-02/A		BIS M-108-02/L		BIS M-110-02/L			BIS M-111-02/L			BIS M-112-02/A		
> 25	> 10	> 5	> 50	> 25	> 10	> 10	> 0	> 10	> 0	> 10	> 0	> 10	> 0	> 25	> 0	> 25	> 10	> 5	> 25	> 10	> 5	> 50	> 25	> 20
> 60	> 50	> 50	> 60	> 50	> 50	> 60	> 0	> 60	> 0	> 60	> 0	> 60	> 0	> 60	> 0	> 80	> 50	> 50	> 80	> 50	> 50	> 150	> 90	> 70
0-16	0-15	0-10	0-20	0-18	0-10	0-7	0-5	0-9	0-6	0-7	0-5	0-9	0-6	0-20	0-12	0-16	0-12	0-8	0-20	0-12	0-5	0-30	0-22	0-12
0-16	0-15	0-10	0-20	0-18	0-10	0-7	0-5	0-9	0-6	0-7	0-5	0-9	0-6	0-20	0-12	0-16	0-12	0-8	0-20	0-12	0-5	0-30	0-22	0-12
±10	±8	±4	±18	±14	±8	±5	±4	±5	±5	±4	±3	±4	±3	±14	±10	±8	±6	±4	±12	±8	±7	±20	±16	±14
±10	±8	±4	±18	±14	±6	±4	±3	±5	±3.5	±3	±2	±3	±2	±12	±8	±8	±6	±4	±12	±8	±4	±20	±16	±14
±10	±7	±2	±16	±12	±4			±3.5						±12	±6	±6	±5		±10	±6		±18	±16	±10
±8	±6		±14	±8										±10	±4	±4	±3		±10	±4		±18	±14	±6
±7	±4		±12	±6										±10		±4			±10			±18	±14	
±4			±10	±4										±7		±3			±5			±16	±12	
			±8	±4										±7					±5			±16	±12	
			±4											±5					±5			±16	±12	
																						±12	±8	
																						±12		
																						±8		

Greater flexibility

M18 housing with extra small read/write head: just 14mm provides more flexibility for Tool ID applications.

Dimensions		
Housing material		
Antenna type		
Weight		

Control No 3TLJ
File No E227256

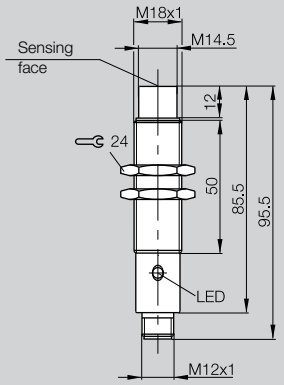
Part number		
Part number		
Mounting in steel		
Operating temperature		
Storage temperature		
Protection per IEC 60529		
Connection	to	
	with connection cable	

Appropriate data carrier		
Data carrier distance to metal in mm		
Data carrier clear zone in mm		
Write distance in mm		
Read distance in mm		
Offset in mm	0 mm	
at distance	5 mm	
	9 mm	
	12 mm	
	15 mm	
	16 mm	
	18 mm	

* For use only with processor
BIS M-407-039-06-S115! see page 173

**Please indicate cable length in part number!
see page 202

	M18
	Nickel plated brass
	round
	52 g



44224_00

Note installation instructions on page 179.

	BIS M-304-001-S115
	BIS M-304-003-S115*
	non-flush
	0...+70 °C
	–20...+85 °C
	IP 67
	Processor
	BIS Z-501-PU1-_ _ / E**, BIS Z-502-PU1-_ _ / E**
	BIS Z-501-PU1-_ _ / M**, BIS Z-502-PU1-_ _ / M**
	Please order cable separately, see page 202

	BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/A			BIS M-105-02/A			BIS M-122-01/A			BIS M-122-02/A			BIS M-108-02/A			BIS M-110-02/A		
	> 25	> 10	> 5	> 50	> 25	> 10	> 10	> 0		> 10	> 0		> 10	> 0		> 10	> 0		> 25	> 0		> 25	> 10	> 5
	> 60	> 50	> 50	> 60	> 50	> 50	> 60	> 0		> 60	> 0		> 60	> 0		> 60	> 0		> 60	> 0		> 80	> 50	> 50
	0-14	0-10	0-8	0-18	0-15	0-10	0-5	0-5		0-7	0-6		0-5	0-4		0-7	0-5		0-18	0-10		0-14	0-10	0-8
	0-14	0-10	0-8	0-18	0-15	0-10	0-5	0-5		0-7	0-6		0-5	0-4		0-7	0-5		0-18	0-10		0-14	0-10	0-8
	±10	±8	±4	±18	±14	±8	±5	±4		±5	±5		±4	±2		±4	±3		±14	±10		±8	±6	±4
	±10	±8	±4	±18	±14	±6	±4	±3		±5	±3.5		±3			±3	±2		±12	±8		±8	±6	±4
	±10	±7		±16	±12	±4				±3									±12	±6		±6	±5	
	±8			±14	±8														±10			±4		
				±12	±6														±10					
				±10															±7					
				±8															±5					

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

Larger size for greater range

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

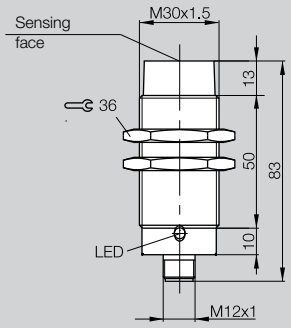
Dimensions			
Housing material			
Antenna type			
Weight			
Part number			
Part number			
Mounting in steel			
Operating temperature			
Storage temperature			
Protection per IEC 60529			
Connection	to		
	with connection cable		
Appropriate data carrier			
Data carrier distance to metal in mm			
Data carrier clear zone in mm			
Write distance in mm			
Read distance in mm			
Offset in mm		0 mm	
at distance		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	

Control No 3TLJ
File No E227256

* For use only with processor
BIS M-407-039-06-S115! see page 173

**Please indicate cable length in part number!
see page 202

M30
Nickel plated brass
round
100 g



PI0293b

Note installation instructions on page 179.

BIS M-300-001-S115
BIS M-300-003-S115*
non-flush
0...+70 °C
–20...+85 °C
IP 67
Processor
BIS Z-501-PU1-_ _ / E**, BIS Z-502-PU1-_ _ / E**
BIS Z-501-PU1-_ _ / M**, BIS Z-502-PU1-_ _ / M**
Please order cable separately, see page 202

BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/A			BIS M-105-02/A			BIS M-108-02/L			BIS M-110-02/L			BIS M-111-02/L			BIS M-112-02/L		
> 25	> 10	> 5	> 50	> 15	> 10	> 20	> 5		> 20	> 5		> 25	> 0		> 25	> 10	> 5	> 25	> 10	> 5	> 50	> 15	> 10
>100	> 60	> 50	> 150	> 90	> 70	> 100	> 100		> 100	> 100		> 100	> 0		>100	> 60	> 50	> 100	> 60	> 50	> 150	> 90	> 70
0-22	0-20	0-15	0-32	0-22	0-12	0-9	0-9		0-11	0-11		0-30	0-16		0-22	0-16	0-10	0-28	0-18	0-10	0-44	0-25	0-15
0-22	0-20	0-15	0-32	0-22	0-12	0-9	0-9		0-11	0-11		0-30	0-16		0-22	0-16	0-10	0-28	0-18	0-10	0-44	0-25	0-15
±15	±12	±8	±20	±15	±6	±7	±6		±10	±7		±18	±10		±14	±8	±7	±16	±10	±7	±25	±18	±15
±15	±12	±8	±20	±15	±6	±7	±6		±8	±7		±18	±10		±14	±8	±7	±16	±10	±7	±25	±18	±15
±15	±10	±6	±20	±15	±5	±2	±1		±5	±3		±18	±8		±12	±6	±2	±14	±8	±2	±25	±16	±12
±15	±8	±4	±20	±15	±4							±16	±6		±12	±5		±14	±7		±24	±15	±10
±15	±8	±4	±20	±12								±16	±6		±12	±4		±14	±6		±24	±14	±8
±12	±6		±20	±10								±16	±4		±10	±2		±14	±3		±24	±12	
±12	±6		±20	±8								±16			±10			±14	±2		±24	±12	
±12	±4		±20	±6								±16			±10			±14			±24	±10	
±4			±18	±4								±14			±6			±12			±22	±8	
			±14									±14						±12			±22	±6	
			±10									±10									±22		
			±4																		±16		
																					±16		
																					±16		
																					±10		

Metal Mount

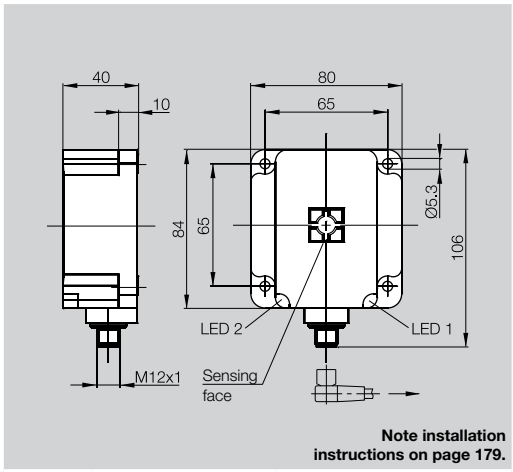
Longer range

The right choice when you need a flat design with long read/write distance.

Metal Mount version

Read/write head with rod type antenna. Simply use the arrows for alignment and for fast positioning.

Dimensions		**80×84.5×40**				
Housing material		PBT and ASA				
Antenna type		Rod				
Weight		250 g				



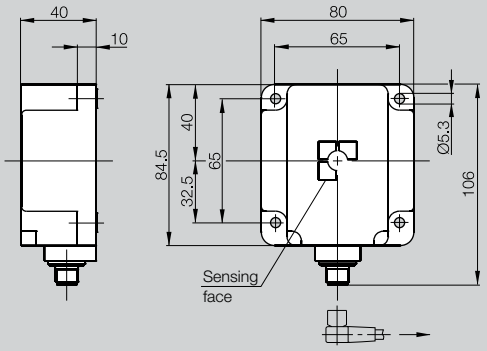
Note installation instructions on page 179.

Part number		BIS M-351-001-S115				
Part number		BIS M-351-003-S115				
Mounting in steel		non-flush				
Operating temperature		0...+60 °C				
Storage temperature		–20...+85 °C				
Protection per IEC 60529		IP 67				
Connection	to	Processor				
	with connection cable	BIS Z-501-PU1-_ _ / E**, BIS Z-502-PU1-_ _ / E**				
		BIS Z-501-PU1-_ _ / M**, BIS Z-502-PU1-_ _ / M**				
		Please order cable separately, see page 202				
Appropriate data carrier		BIS M-150-02/A			BIS M-151-02/A	
Data carrier distance to metal in mm		> 200	> 200		> 200	> 200
Data carrier clear zone in mm						
Metallic mounting surface 40x22		0-52			0-52	
Metallic mounting surface ≥ 200x200			0-65			0-65
Write distance in mm						
Read distance in mm						
Offset in mm		0 mm	±25	±26	±25	±26
at distance		5 mm	±25	±26	±25	±26
		9 mm	±25	±25	±25	±25
		12 mm	±25	±25	±25	±25
		15 mm	±25	±25	±25	±25
		16 mm	±25	±25	±25	±25
		18 mm	±25	±25	±25	±25
		20 mm	±25	±25	±25	±25
		22 mm	±25	±25	±25	±25
		25 mm	±25	±25	±25	±25
		30 mm	±25	±25	±25	±25
		32 mm	±25	±25	±25	±25
		35 mm	±25	±25	±25	±25
		40 mm	±20	±25	±20	±25
		43 mm	±20	±25	±20	±25
		45 mm	±20	±25	±20	±25
		50 mm	±20	±25	±20	±25
		52 mm	±8	±25	±8	±25
		60 mm		±10		±10
		65 mm		±10		±10
		70 mm				

* For use only with processor BIS M-407-039-06-S115! see page 173

**Please indicate cable length in part number! see page 202

	80×80×40
	PBT
	round
	410 g



PI0356

Note installation instructions on page 179.

	BIS M-301-001-S115
	BIS M-301-003-S115*
	non-flush
	0...+70 °C
	–20...+85 °C
	IP 67
	Processor
	BIS Z-501-PU1-_ _ / E**, BIS Z-502-PU1-_ _ / E**
	BIS Z-501-PU1-_ _ / M**, BIS Z-502-PU1-_ _ / M**
	Please order cable separately, see page 202

	BIS M-101-01/L			BIS M-102-01/L			BIS M-108-02/L		BIS M-110-02/L		BIS M-111-02/L		BIS M-112-02/L		BIS M-120-01/L
	> 50	> 10	> 5	> 50	> 25	> 10	> 50	> 20	> 50	> 30	> 50	> 30	> 50	> 30	> 80
	> 200	> 60	> 50	> 200	> 150	> 150	> 200	> 60	> 200	> 100	> 200	> 100	> 200	> 100	> 250
	0-34	0-20	0-15	0-45	0-43	0-35	0-45	8-22	0-32	0-20	0-45	0-30	0-70	0-45	0-50
	0-34	0-20	0-15	0-45	0-43	0-35	0-45	8-22	0-32	0-20	0-45	0-30	0-70	0-45	0-50
	±22	±18	±14	±30	±24	±18	±32	±20	±28	±20	±32	±22	±40	±25	±30
	±22	±18	±14	±30	±24	±18	±32	±20	±28	±20	±32	±22	±40	±25	±30
	±22	±18	±14	±30	±24	±18	±32	±20	±28	±18	±32	±22	±40	±25	±30
	±22	±18	±10	±30	±24	±18	±32	±18	±24	±18	±32	±22	±40	±25	±30
	±22	±18	±10	±30	±24	±18	±32	±18	±24	±15	±32	±20	±40	±25	±30
	±22	±16	±8	±30	±24	±18	±32	±18	±24	±15	±32	±20	±40	±25	±30
	±22	±16	±6	±30	±24	±18	±32	±16	±24	±12	±32	±18	±40	±25	±30
	±22	±16	±4	±30	±24	±18	±32	±16	±24	±8	±32	±16	±40	±25	±30
	±20	±10		±30	±24	±15	±25	±14	±20		±25	±14	±40	±22	±30
	±15	±10		±30	±24	±15	±25		±20		±25	±12	±40	±22	±30
	±15	±4		±30	±20	±12	±25		±12		±25	±10	±40	±22	±28
	±8			±30	±18	±8	±20		±12		±20		±40	±22	±24
	±4			±30	±16	±4	±20				±20		±40	±20	±22
				±24	±10		±20				±20		±40	±20	±18
				±20	±4		±12				±12		±35	±15	±14
				±16			±12				±12		±35	±12	±12
				±4									±35		±4
													±35		
													±30		
													±30		
													±20		

Connector orientation

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

ID Plus

Simple applications

For direct connection to the controller and for tight space conditions

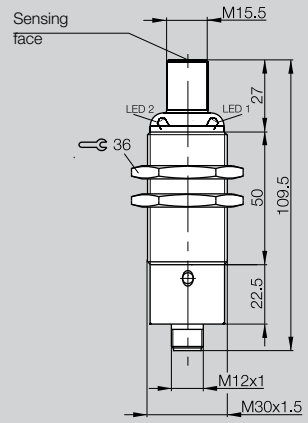
Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

Supply voltage	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Connection	
Interface type:	
RS232 Balluff Dialog	
Accessories included	
Please order separately	
Appropriate data carrier	
Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm

* Please indicate cable length in part number! see page 198

M30×1,5
Nickel plated brass
round
100 g



Note installation instructions on page 179.

24 V DC +10 %/–20 % including ripple
≤ 50 mA no-load
0...+70 °C
–20...+85 °C
IP 67
1 connector, round 8-pin

BIS M-400-007-002-00-S115
Configuration software
BKS S115-PU-_ _* or BKS S116-PU-_ _*

BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/A		BIS M-105-02/A		BIS M-122-01/A		BIS M-122-02/A		BIS M-108-02/L		BIS M-110-02/L			BIS M-111-02/L			BIS M-112-02/L		
> 25	> 10	> 5	> 50	> 25	> 10	>10	> 0	> 10	> 0	> 10	> 0	> 10	> 0	> 25	> 0	> 25	> 15	> 5	> 25	> 10	> 5	> 50	> 25	> 20
> 60	> 50	> 50	> 60	> 50	> 50	> 60	> 0	> 60	> 0	> 60	> 0	> 60	> 0	> 60	> 0	> 80	> 50	> 50	> 80	> 50	> 50	> 150	> 90	> 70
0-15	0-12	0-9	0-18	0-18	0-10	0-6	0-5	0-9	0-5	0-5	0-4	0-6	0-5	0-20	0-12	0-15	0-10	0-6	0-20	0-12	0-5	0-28	0-18	0-10
0-15	0-12	0-9	0-18	0-18	0-10	0-6	0-5	0-9	0-5	0-5	0-4	0-6	0-5	0-20	0-12	0-15	0-10	0-6	0-20	0-12	0-5	0-28	0-18	0-10
±9	±6	±4	±16	±12	±4	±5	±4	±6	±4	±4	±3	±4	±3	±14	±10	±8	±6	±4	±12	±8	±7	±20	±14	±14
±9	±6	±4	±16	±12	±4	±4	±2	±6	±2	±3		±3	±2	±14	±8	±8	±6	±4	±12	±8	±4	±20	±14	±14
±8	±4	±2	±12	±10	±2			±2						±12	±6	±6	±5		±10	±6		±18	±14	±10
±6	±2		±8	±5										±10	±4	±4			±10	±4		±18	±12	±6
±4			±8	±5										±10		±4			±10			±18	±12	
			±7	±3										±7					±7			±16	±10	
			±6	±2										±7					±7			±16	±8	
														±7					±7			±16		
																						±12		
																						±12		

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

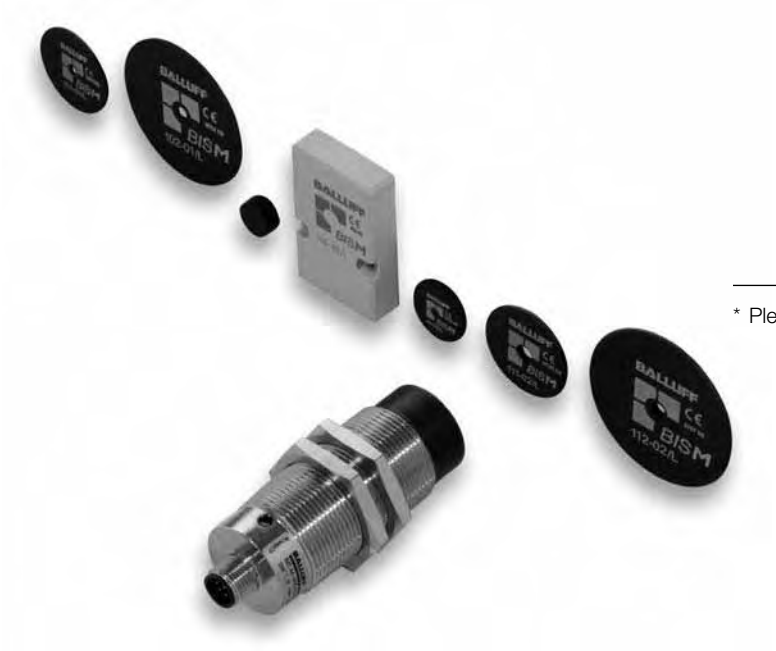
For longer ranges

Integrated version of read/write head with processor in a larger form factor for direct connection to the controller and longer ranges.

Dimensions	
Housing material	
Antenna type	
Weight	

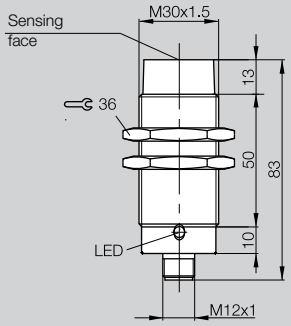
Control No 3TLJ
File No E227256

Supply voltage	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Connection	
Interface type:	
RS232 Balluff Dialog	
Accessories included	
Please order separately	
Appropriate data carrier	
Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm
	30 mm
	32 mm
	35 mm



* Please indicate cable length in part number! see page 198

	M30×1,5
	Nickel plated brass
	round
	100 g



Note installation instructions on page 179.

	24 V DC +10 %/–20 % including ripple
	≤ 50 mA no-load
	0...+70 °C
	–20...+85 °C
	IP 67
	1 connector, round 8-pin

	BIS M-400-007-001-00-S115
	Configuration software
	BKS S115-PU-_ _* or BKS S116-PU-_ _*

	BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/A			BIS M-105-02/A			BIS M-108-02/L			BIS M-110-02/L			BIS M-111-02/L			BIS M-112-02/L		
	> 25	> 10	> 5	> 50	> 15	> 10	> 20	> 5		> 20	> 5		> 25	> 0		> 25	> 10	> 5	> 25	> 10	> 5	> 50	> 15	> 10
	> 100	> 60	> 50	> 150	> 90	> 70	> 100	> 100		> 100	> 100		> 100	> 0		> 100	> 60	> 50	>100	> 60	> 50	> 150	> 90	> 70
	0-20	0-15	0-12	0-28	0-20	0-12	0-7	0-6		0-11	0-7		0-28	0-16		0-20	0-15	0-8	0-28	0-18	0-10	0-38	0-25	0-15
	0-20	0-15	0-12	0-28	0-20	0-12	0-7	0-6		0-11	0-7		0-28	0-16		0-20	0-15	0-8	0-28	0-18	0-10	0-38	0-25	0-15
	±14	±10	±6	±20	±15	±6	±7	±6		±9	±6		±16	±10		±12	±8	±6	±16	±10	±7	±22	±16	±13
	±14	±10	±6	±20	±15	±6	±7	±6		±8	±6		±16	±10		±12	±8	±5	±16	±10	±7	±22	±16	±13
	±14	±8	±4	±20	±15	±3				±5			±14	±8		±10	±6		±14	±8	±2	±22	±14	±10
	±10	±4	±2	±20	±13	±2							±14	±6		±8	±4		±14	±7		±20	±13	±8
	±10	±2		±20	±10								±14	±6		±8	±2		±14	±6		±20	±12	±6
	±8			±18	±3								±14	±4		±5			±14	±3		±20	±10	
	±6			±16									±14			±5			±14	±2		±20	±10	
	±5			±15									±14			±5			±14			±20	±8	
				±15									±12						±12			±20	±6	
				±10									±12						±12			±20	±4	
																						±16		
																						±10		
																						±10		

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

ID Plus

For tight mounting spaces

The remote antenna of the integrated version creates extra installation space and provides for direct connection to the controller.

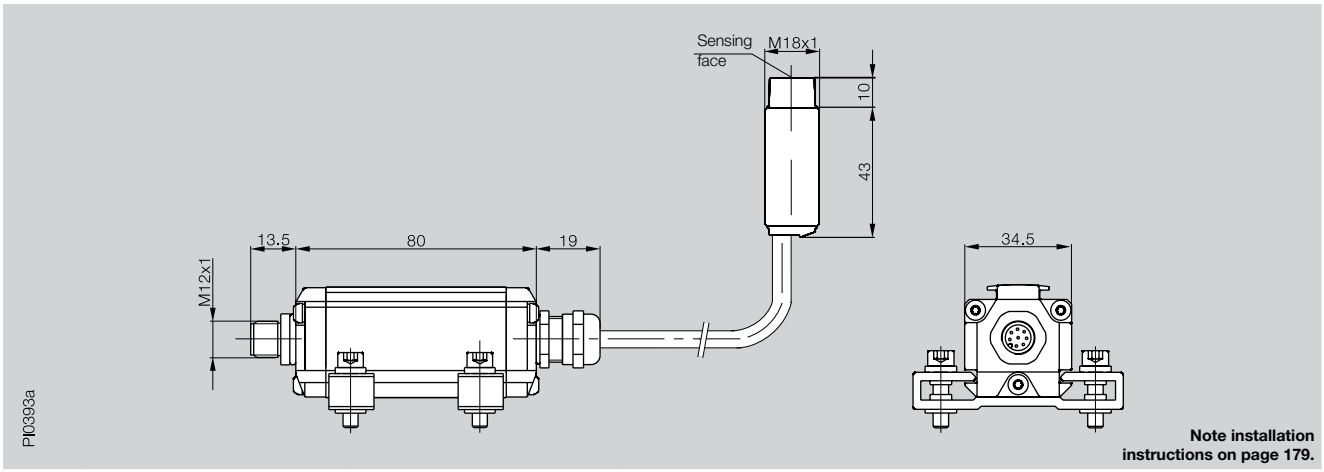
Dimensions	
Housing material	
Antenna type	
Weight	

Control No 3TLJ
File No E227256

Supply voltage	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Connection	
Interface type:	
RS232 Balluff Dialog	
Accessories included	
Please order separately	
Appropriate data carrier	
Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	5 mm

* Please indicate cable length in part number! see page 198

	M18×1,5
	Nickel plated brass
	round
	220 g



Note installation instructions on page 179.

	24 V DC +10 %/–20 % including ripple
	≤ 50 mA no-load
	0...+70 °C
	–20...+85 °C
	IP 67
	1 connector, round 8-pin
	BIS M-402-007-002-00-S115
	Configuration software
	BKS S115-PU-_ _*

BIS M-105-01/L			BIS M-105-02/A			BIS M-122-01/A			BIS M-122-02/A			BIS M-110-02/A		
> 10	> 0		> 10	> 0		> 10	> 0		>10	> 0		> 25	> 0	
> 60	> 0		> 60	> 0		> 60	> 0		> 60	> 0		> 80	> 0	
0-5	0-3		0-5	0-3		0-5	0-2		0-5	0-2		0-8	0-2	
0-5	0-3		0-5	0-3		0-5	0-2		0-5	0-2		0-8	0-2	
±3	±2		±3	±2		±3	±2		±3	±2		±5	±2	
±2			±2			±2			±2			±5		

Metal Mount

Longer range

When the available space requires a flat housing, this version is the ideal choice.

For direct connection to the controller

Metal Mount version

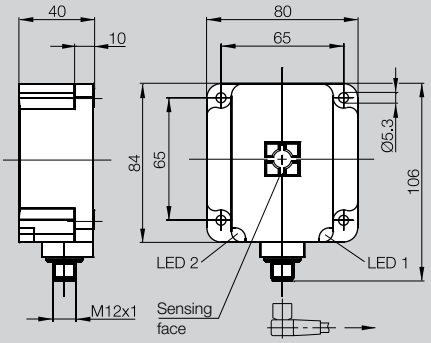
Read/write head with rod type antenna

Simply use the arrows for alignment and for fast positioning

Dimensions		**80×84,5×40**					
Housing material		PBT and ASA					
Antenna type		Rod					
Weight		250 g					

CE

c UL us LISTED
Control No 3TLJ
File No E227256



Note installation instructions on page 179.

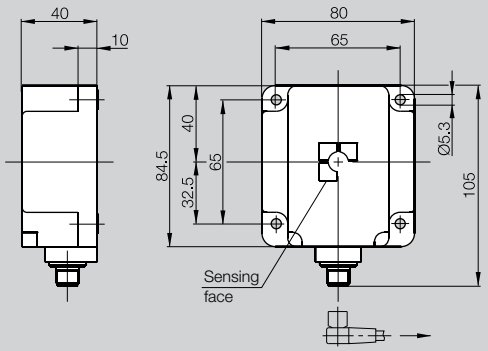
Supply voltage		24 V DC +10 %/–20 % including ripple					
Current		≤ 50 mA no-load					
Operating temperature		0...+70 °C					
Storage temperature		–20...+85 °C					
Protection per IEC 60529		IP 67					
Connection		1 connector, round 8-pin					
Interface type:							
RS232 Balluff Dialog		BIS M-451-007-001-00-S115					
Accessories included		Configuration software					
Please order separately		BKS S115-PU-_ _* or BKS S116-PU-_ _*					
Appropriate data carrier		BIS M-150-02/A			BIS M-151-02/A		
Data carrier distance to metal in mm							
Data carrier clear zone in mm		> 200	> 200		> 200	> 200	
Metallic mounting surface 40x22		0-52			0-52		
Metallic mounting surface ≥ 200x200			0-65			0-65	
Write distance in mm							
Read distance in mm							
Offset in mm	0 mm	±25	±26		±25	±26	
at distance	5 mm	±25	±26		±25	±26	
	9 mm	±25	±25		±25	±25	
	12 mm	±25	±25		±25	±25	
	15 mm	±25	±25		±25	±25	
	16 mm	±25	±25		±25	±25	
	18 mm	±25	±25		±25	±25	
	20 mm	±25	±25		±25	±25	
	22 mm	±25	±25		±25	±25	
	25 mm	±25	±25		±25	±25	
	30 mm	±25	±25		±25	±25	
	32 mm	±25	±25		±25	±25	
	35 mm	±25	±25		±25	±25	
	40 mm	±20	±25		±20	±25	
	43 mm						
	45 mm						
	50 mm						
	52 mm	±8	±25		±8	±25	
	60 mm		±10			±10	

* Please indicate cable length in ordering code! see page 198

Connector orientation

Serial RS232

	80×80×40
	PBT
	round
	410 g



Note installation instructions on page 179.

	24 V DC +10 %/–20 % including ripple
	≤ 50 mA no-load
	0...+70 °C
	–20...+85 °C
	IP 67
	1 connector, round 8-pin

	BIS M-401-007-001-00-S115
	Configuration software
	BKS S115-PU-_ _* or BKS S116-PU-_ _*

	BIS M-101-01/L			BIS M-102-01/L			BIS M-120-01/L	BIS M-108-02/L		BIS M-110-02/L		BIS M-111-02/L		BIS M-112-02/L	
	> 50	> 25	> 10	> 50	> 25	> 10	> 80	> 50	> 20	> 50	> 30	> 50	> 30	> 50	> 30
	> 200	> 150	> 150	> 200	> 150	> 150	>250	> 200	> 60	> 200	> 100	> 200	> 100	> 200	> 100
	0-28	0-25	0-20	0-45	0-40	0-34	0-50	0-40	0-18	0-30	0-18	0-40	0-25	0-60	0-25
	0-28	0-25	0-20	0-45	0-40	0-34	0-50	0-40	0-18	0-30	0-18	0-40	0-25	0-60	0-25
	±22	±18	±12	±30	±24	±16	±30	±30	±16	±25	±18	±30	±20	±35	±25
	±22	±18	±12	±30	±24	±16	±30	±30	±16	±25	±18	±30	±20	±35	±25
	±22	±18	±10	±30	±24	±16	±30	±30	±16	±25	±15	±30	±20	±35	±25
	±22	±16	±8	±30	±24	±14	±30	±25	±16	±20	±15	±25	±20	±35	±25
	±22	±16	±8	±30	±24	±14	±30	±25	±16	±20	±12	±25	±18	±35	±25
	±20	±15	±6	±30	±20	±12	±30	±25	±16	±20	±12	±25	±18	±35	±25
	±20	±13	±4	±30	±20	±10	±30	±25	±14	±20	±8	±25	±16	±35	±25
	±20	±12	±2	±30	±20	±10	±30	±25		±20		±25	±14	±35	±25
	±16	±8		±24	±18	±8	±30	±20		±15		±20	±12	±35	±22
	±12	±4		±24	±18	±8	±30	±20		±15		±20	±10	±35	±22
				±24	±15	±6	±28	±20		±10		±20		±35	±22
				±20	±12	±4	±24	±15		±10		±15		±35	±22
				±20	±10		±22	±15				±15		±35	±20
				±15	±5		±18	±15				±15		±35	
				±8			±14							±25	
				±5			±12							±25	
							±4							±25	
														±25	
														±25	

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

Dimensions	
Housing material	
Antenna type	
Weight	

IO-Link

CE

c UL us LISTED
Control No 3TLJ
File No E227256

Supply voltage	
Ripple	
Current	
Ambient operating temperature	
Protection per IEC 60529	
Mounting in steel	
LED function indicator	
Connection type	
Interface description:	
IO-Link	
Please order accessories separately	

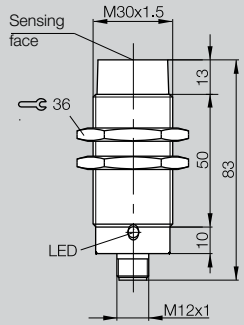
Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	

Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	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 pre-finished cables, please
append cable length to part number!
01 = Length 1 m
02 = Length 2 m
05 = Length 5 m
10 = Length 10 m

	M30x1.5
	CuZn nickel plated
	round
	100 g



Note installation instructions on page 179.

	24 V DC ±10 %/–20 %
	≤ 10 %
	≤ 150 mA
	0...+70 °C
	IP 67
	non-flush
	yes
	4-pin M12 male

	BIS M-400-045-001-07-S4
	BCC M4/5-M4/3-3A-300-PX0334

	BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/A			BIS M-105-02/A			BIS M-108-02/L			BIS M-110-02/L			BIS M-111-02/L			BIS M-112-02/L		
	> 25	> 10	> 5	> 50	> 15	> 10	> 20	> 5		> 20	> 5		> 25	> 0		> 25	> 10	> 5	> 25	> 10	> 5	> 50	> 15	> 10
	> 100	> 60	> 50	> 150	> 90	> 70	> 100	> 100		> 100	> 100		> 100	> 0		> 100	> 60	> 50	>100	> 60	> 50	> 150	> 90	> 70
	0-20	0-15	0-12	0-28	0-20	0-12	0-7	0-6		0-11	0-7		0-28	0-16		0-20	0-15	0-8	0-28	0-18	0-10	0-38	0-25	0-15
	0-20	0-15	0-12	0-28	0-20	0-12	0-7	0-6		0-11	0-7		0-28	0-16		0-20	0-15	0-8	0-28	0-18	0-10	0-38	0-25	0-15
	±14	±10	±6	±20	±15	±6	±7	±6		±9	±6		±16	±10		±12	±8	±6	±16	±10	±7	±22	±16	±13
	±14	±10	±6	±20	±15	±6	±7	±6		±8	±6		±16	±10		±12	±8	±5	±16	±10	±7	±22	±16	±13
	±14	±8	±4	±20	±15	±3				±5			±14	±8		±10	±6		±14	±8	±2	±22	±14	±10
	±10	±4	±2	±20	±13	±2							±14	±6		±8	±4		±14	±7		±20	±13	±8
	±10	±2		±20	±10								±14	±6		±8	±2		±14	±6		±20	±12	±6
	±8			±18	±3								±14	±4		±5			±14	±3		±20	±10	
	±6			±16									±14			±5			±14	±2		±20	±10	
	±5			±15									±14			±5			±14			±20	±8	
				±15									±12						±12			±20	±6	
				±10									±12						±12			±20	±4	
																						±16		
																						±10		
																						±10		

Dimensions	
Housing material	
Antenna type	
Weight	

IO-Link

CE

c UL us LISTED
Control No 3TLJ
File No E227256

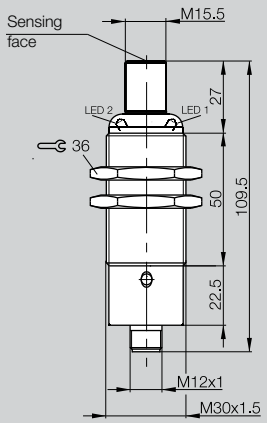
Supply voltage	
Ripple	
Current	
Ambient operating temperature	
Protection per IEC 60529	
Mounting in steel	
LED function indicator	
Connection type	
Interface description:	
IO-Link	
Please order accessories separately	

Appropriate data carrier

Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	5 mm
	9 mm
	12 mm
	15 mm
	16 mm
	18 mm
	20 mm
	22 mm
	25 mm

*For pre-finished cables, please
append cable length to part number!
01 = Length 1 m
02 = Length 2 m
05 = Length 5 m
10 = Length 10 m

	M30x1.5
	CuZn nickel plated
	round
	100 g



Note installation instructions on page 179.

	24 V DC ±10 %/–20 %
	≤ 10 %
	≤ 150 mA
	0...+70 °C
	IP 67
	non-flush
	yes
	4-pin M12 male

	BIS M-400-045-002-07-S4
	BCC M4/5-M4/3-3A-300-PX0334

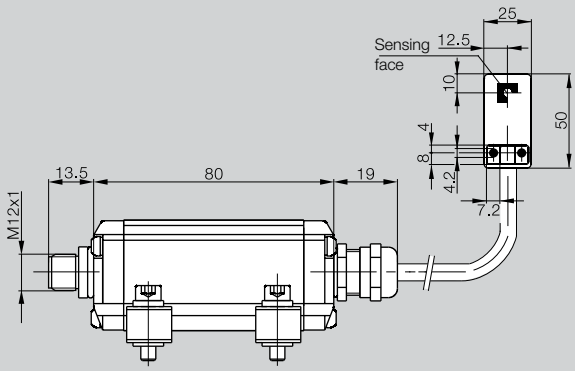
	BIS M-101-01/L			BIS M-102-01/L			BIS M-105-01/A		BIS M-105-02/A		BIS M-122-01/A		BIS M-122-02/A		BIS M-108-02/L		BIS M-110-02/L			BIS M-111-02/L			BIS M-112-02/L		
	> 25	> 10	> 5	> 50	> 25	> 10	>10	> 0	> 10	> 0	> 10	> 0	> 10	> 0	> 25	> 0	> 25	> 15	> 5	> 25	> 10	> 5	> 50	> 25	> 20
	> 60	> 50	> 50	> 60	> 50	> 50	> 60	> 0	> 60	> 0	> 60	> 0	> 60	> 0	> 60	> 0	> 80	> 50	> 50	> 80	> 50	> 50	> 150	> 90	> 70
	0-15	0-12	0-9	0-18	0-18	0-10	0-6	0-5	0-9	0-5	0-5	0-4	0-6	0-5	0-20	0-12	0-15	0-10	0-6	0-20	0-12	0-5	0-28	0-18	0-10
	0-15	0-12	0-9	0-18	0-18	0-10	0-6	0-5	0-9	0-5	0-5	0-4	0-6	0-5	0-20	0-12	0-15	0-10	0-6	0-20	0-12	0-5	0-28	0-18	0-10
	±9	±6	±4	±16	±12	±4	±5	±4	±6	±4	±4	±3	±4	±3	±14	±10	±8	±6	±4	±12	±8	±7	±20	±14	±14
	±9	±6	±4	±16	±12	±4	±4	±2	±6	±2	±3		±3	±2	±14	±8	±8	±6	±4	±12	±8	±4	±20	±14	±14
	±8	±4	±2	±12	±10	±2			±2						±12	±6	±6	±5		±10	±6		±18	±14	±10
	±6	±2		±8	±5										±10	±4	±4			±10	±4		±18	±12	±6
	±4			±8	±5										±10		±4			±10			±18	±12	
				±7	±3										±7					±7			±16	±10	
				±6	±2										±7					±7			±16	±8	
															±7					±7			±16		
																							±12		
																							±12		

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

Description/dimensions	**25x50x10**
Housing material	AlMgSi 0.5/ABS-GF16
Antenna type	round
Weight	220 g

Control No 3TLJ
File No E227256

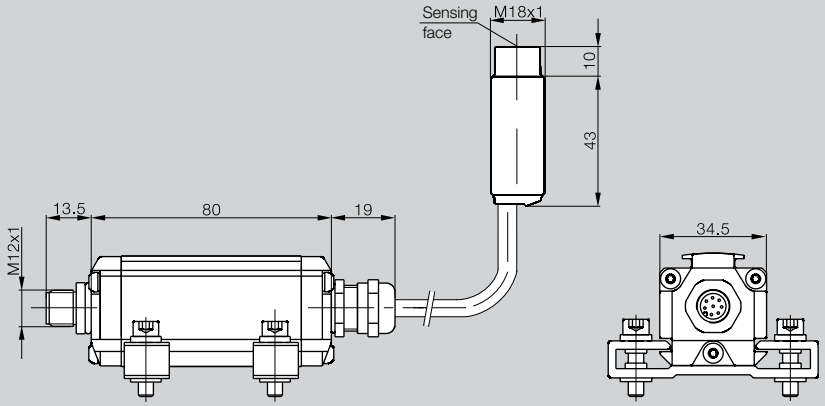


Note installation instructions on page 179.

Supply voltage	24 V DC ±10 %/–20 %
Ripple	≤ 10 %
Current	≤ 150 mA
Ambient operating temperature	0...+70 °C
Protection per IEC 60529	IP 67
Mounting in steel	non-flush
LED function indicator	yes
Connection type	4-pin M12 male
Interface description:	
IO-Link	BIS M-402-045-004-07-S4
Please order accessories separately	BCC M4/5-M4/3-3A-300-PX0334
Appropriate data carrier	Contact Balluff for tag information
Data carrier distance to metal in mm	
Data carrier clear zone in mm	
Write distance in mm	
Read distance in mm	
Offset in mm	0 mm
at distance	5 mm

*For pre-finished cables, please append cable length to part number!
01 = Length 1 m
02 = Length 2 m
05 = Length 5 m
10 = Length 10 m

	M18x1
	AlMgSio.S/CuZn nickel plated
	round
	220 g



Note installation instructions on page 179.

	24 V DC ±10 %/–20 %
	≤ 10 %
	≤ 150 mA
	0...+70 °C
	IP 67
	non-flush
	yes
	4-pin M12 male
	BIS M-402-045-001-07-S4
	BCC M4/5-M4/3-3A-300-PX0334

	BIS M-105-01/L			BIS M-105-02/A			BIS M-122-01/A			BIS M-122-02/A			BIS M-110-02/A		
	> 10	> 0		> 10	> 0		> 10	> 0		>10	> 0		> 25	> 0	
	> 60	> 0		> 60	> 0		> 60	> 0		> 60	> 0		> 80	> 0	
	0-5	0-3		0-5	0-3		0-5	0-2		0-5	0-2		0-8	0-2	
	0-5	0-3		0-5	0-3		0-5	0-2		0-5	0-2		0-8	0-2	
	±3	±2		±3	±2		±3	±2		±3	±2		±5	±2	
	±2			±2			±2			±2			±5		

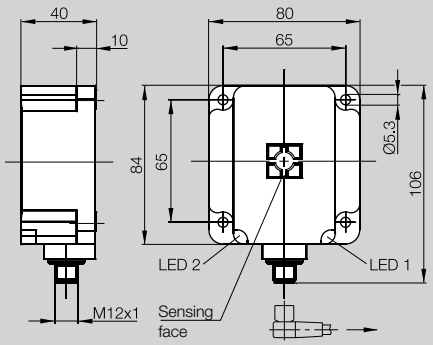
BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

Metal Mount

Description/dimensions		**80x80x40**					
Housing material		PBT					
Antenna type		rod					
Weight		360 g					

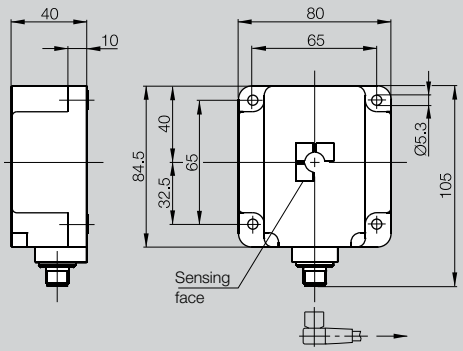
Control No 3TLJ
File No E227256



Note installation instructions on page 179.

Supply voltage		24 V DC ±10 %/–20 %					
Ripple		≤ 10 %					
Current		≤ 150 mA					
Ambient operating temperature		0...+70 °C					
Protection per IEC 60529		IP 67					
Mounting in steel		non-flush					
LED function indicator		yes					
Connection type		4-pin M12 male					
Interface description:							
IO-Link		BIS M-451-045-001-07-S4					
Please order accessories separately		BCC M4/5-M4/3-3A-300-PX0334					
Appropriate data carrier		BIS M-150-02/A			BIS M-151-02/A		
Data carrier distance to metal in mm							
Data carrier clear zone in mm		> 200	> 200		> 200	> 200	
Metallic mounting surface 40x22		0-52			0-52		
Metallic mounting surface ≥ 200x200			0-65			0-65	
Write distance in mm							
Read distance in mm							
Offset in mm	0 mm	±25	±26		±25	±26	
at distance	5 mm	±25	±26		±25	±26	
	9 mm	±25	±25		±25	±25	
	12 mm	±25	±25		±25	±25	
	15 mm	±25	±25		±25	±25	
	16 mm	±25	±25		±25	±25	
	18 mm	±25	±25		±25	±25	
	20 mm	±25	±25		±25	±25	
	22 mm	±25	±25		±25	±25	
	25 mm	±25	±25		±25	±25	
	30 mm	±25	±25		±25	±25	
	32 mm	±25	±25		±25	±25	
	35 mm	±25	±25		±25	±25	
	40 mm	±20	±25		±20	±25	
	43 mm						
	45 mm						
	50 mm						
	52 mm	±8	±25		±8	±25	
	60 mm		±10			±10	

	80x80x40
	PBT
	round
	190 g



Note installation instructions on page 179.

	24 V DC ±10 %/–20 %
	≤ 10 %
	≤ 150 mA
	0...+70 °C
	IP 67
	non-flush
	yes
	4-pin M12 male
	BIS M-401-045-001-07-S4
	BCC M4/5-M4/3-3A-300-PX0334

BIS M-101-01/L			BIS M-102-01/L			BIS M-120-01/L	BIS M-108-02/L		BIS M-110-02/L		BIS M-111-02/L		BIS M-112-02/L	
> 50	> 25	> 10	> 50	> 25	> 10	> 80	> 50	> 20	> 50	> 30	> 50	> 30	> 50	> 30
> 200	> 150	> 150	> 200	> 150	> 150	>250	> 200	> 60	> 200	> 100	> 200	> 100	> 200	> 100
0-28	0-25	0-20	0-45	0-40	0-34	0-50	0-40	0-18	0-30	0-18	0-40	0-25	0-60	0-25
0-28	0-25	0-20	0-45	0-40	0-34	0-50	0-40	0-18	0-30	0-18	0-40	0-25	0-60	0-25
±22	±18	±12	±30	±24	±16	±30	±30	±16	±25	±18	±30	±20	±35	±25
±22	±18	±12	±30	±24	±16	±30	±30	±16	±25	±18	±30	±20	±35	±25
±22	±18	±10	±30	±24	±16	±30	±30	±16	±25	±15	±30	±20	±35	±25
±22	±16	±8	±30	±24	±14	±30	±25	±16	±20	±15	±25	±20	±35	±25
±22	±16	±8	±30	±24	±14	±30	±25	±16	±20	±12	±25	±18	±35	±25
±20	±15	±6	±30	±20	±12	±30	±25	±16	±20	±12	±25	±18	±35	±25
±20	±13	±4	±30	±20	±10	±30	±25	±14	±20	±8	±25	±16	±35	±25
±20	±12	±2	±30	±20	±10	±30	±25		±20		±25	±14	±35	±25
±16	±8		±24	±18	±8	±30	±20		±15		±20	±12	±35	±22
±12	±4		±24	±18	±8	±30	±20		±15		±20	±10	±35	±22
			±24	±15	±6	±28	±20		±10		±20		±35	±22
			±20	±12	±4	±24	±15		±10		±15		±35	±22
			±20	±10		±22	±15				±15		±35	±20
			±15	±5		±18	±15				±15		±35	
			±8			±14							±25	
			±5			±12							±25	
						±4							±25	
													±25	
													±25	

BIS M

Range of Applications
Selection Criteria
Data Carriers Read/Write
Read/Write Heads
Read/Write Heads – Integrated Processor
IO-Link
Processors
Handheld Programmer
Access Security System
Installation Notes
Read/Write Times

ID Plus

Cost-effective identification – operate 2 Read/Write Heads simultaneously

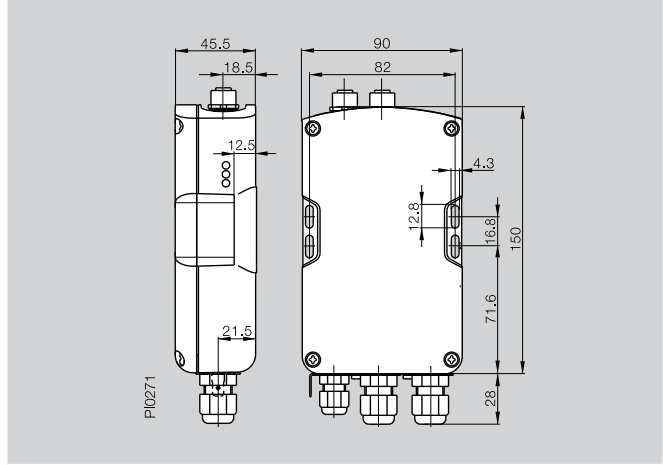
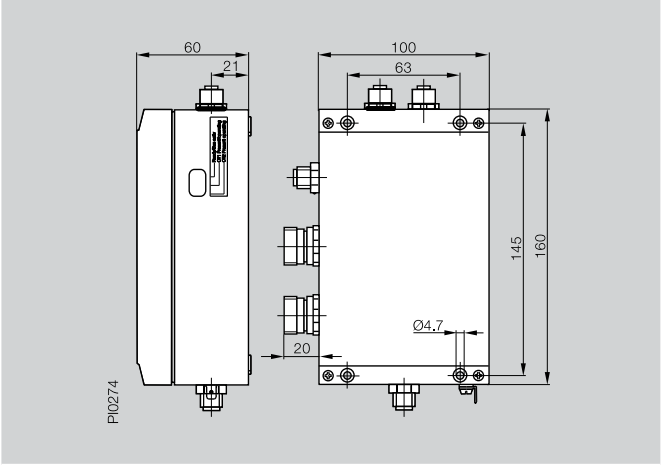
- Data width on the bus, 16 bytes
- Service friendly, all parameter data is stored in an exchangeable memory
- Accepts all read/write heads

Description	
Function	
Housing material	
	CE c UL us LISTED Control No 3TLJ File No E227256
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Interface description/Software:	
INTERBUS Remote node INTERBUS Remote node with 2 Mbaud INTERBUS Installation bus INTERBUS Installation bus with 2 Mbaud	
Accessories (please order separately)	

The **BIS M-6001 processor** features a small form factor and flexible interface options for use wherever ambient conditions require IP 65 protection.

These models are ideal also when no aggressive media are used with PS plastic.

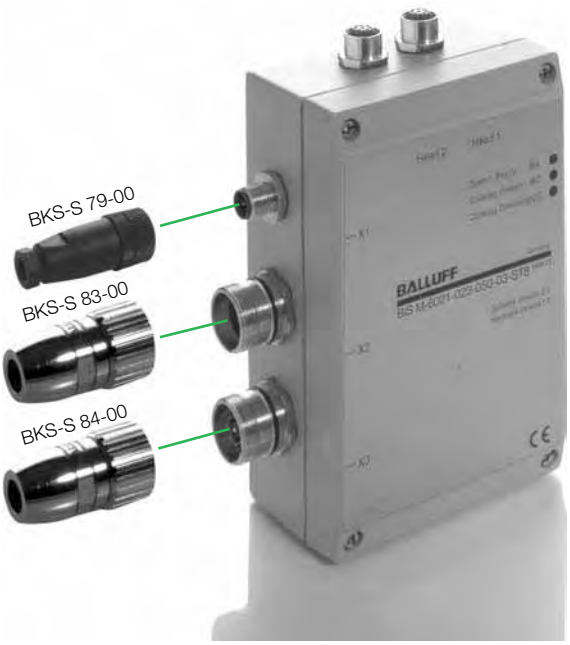
Small, compact, flexible and cost-effective

	BIS M-6001-_ _ _-050-03-KL2	BIS M-6021-_ _ _-050-03-ST8
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2 external	2 external
	yes	yes
	Terminals 1 × Pg 9 Terminals 2 × Pg 11	2 connectors round 9-pin 2 connectors round 5-pin
	2 read/write heads BIS M-3_ _	2 read/write heads BIS M-3_ _
	BIS M-6001-023-050-03-KL2	BIS M-6021-023-050-03-ST9 BIS M-6021-023-050-03-ST9M BIS M-6021-023-050-03-ST8 BIS M-6021-023-050-03-ST8M
		BKS 23-CS-00
		For connectors see page 204

The **rugged BIS M-6021** with the die-cast aluminum housing is a small, flexible processor which is available with various interface options.

Great mechanical stability and high chemical resistance.

Rugged, small and flexible



Threaded cover
BKS 23-CS-00
for M23 connector
IP-65 protective cover for unused connectors!

ID Plus

Cost-effective identification – operate 2 read/write heads simultaneously

- Selectable division of the data width on the PROFIBUS-DP, 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
- Accepts all read/write heads

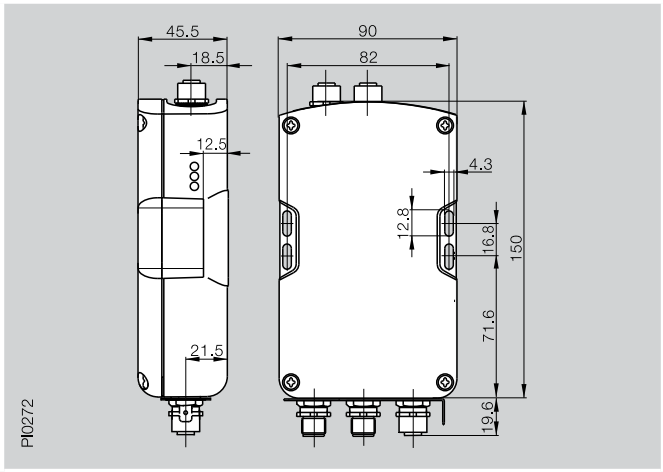
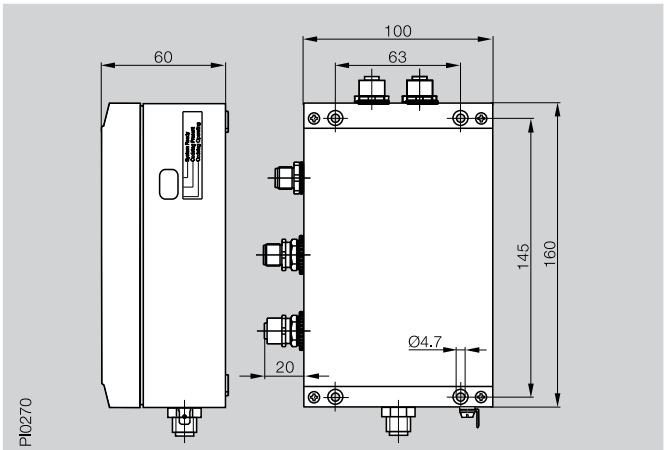
Description	
Function	
Housing material	
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection	
Connection for	
Interface type/Software:	
PROFIBUS-DP	
Accessories included	
Accessories (please order separately)	

Control No 3TLJ
File No E227256

The **BIS M-6002 processor** features a small form factor and flexible interface options for use wherever ambient conditions require IP 65 protection.

These models are ideal also when no aggressive media are used with PS plastic.

Small, compact, flexible and cost-effective

	BIS M-6002-019-050-03-ST11	BIS M-6022-019-050-03-ST14
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65	IP 65
	2 external	2 external
	yes	yes
	2 connectors round 5-pin, B-coded 1 connector round 5-pin	2 connectors round 5-pin, B-coded, 2 connectors round 5-pin
	2 read/write heads BIS M-3_ _	2 read/write heads BIS M-3_ _
	BIS M-6002-019-050-03-ST11	BIS M-6022-019-050-03-ST14
	Software GSD file	Software GSD file
	BKS 12-CS-01	BKS 12-CS-01
	For connectors see page 204/205	For connectors see page 204/205

Threaded cover
BKS 12-CS-01
coded for M12 B
Connector type

The **rugged BIS M-6022** with the die-cast aluminum housing is a small, flexible processor which is available with various interface options.

Great mechanical stability and high chemical resistance.

Rugged, small and flexible

ID Plus

Cost-effective identification – operate 2 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

DeviceNet™

CE

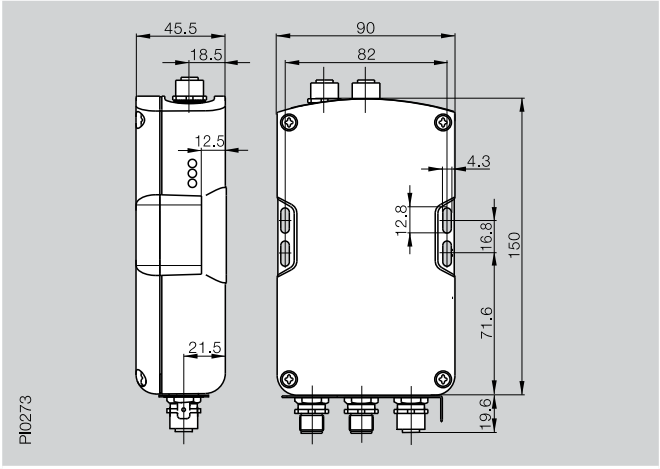
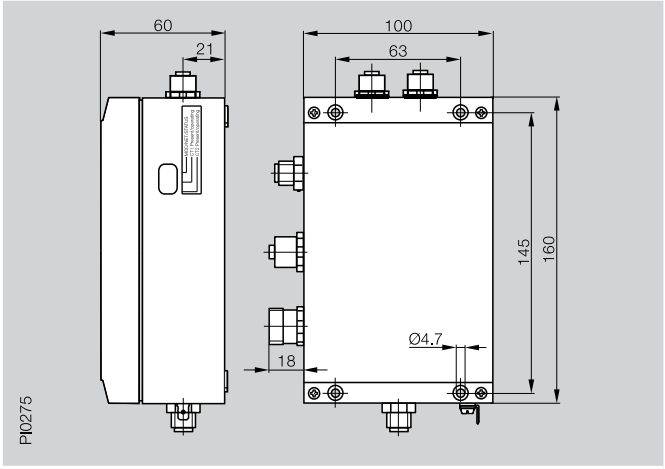
c UL us LISTED
Control No 3TLJ
File No E227256

Description	
Function	
Housing material	
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection	
Connection for	
Interface type/Software:	
DeviceNet™	
Accessories included	
Accessories (please order separately)	

The **BIS M-6003 processor** features a small form factor and flexible interface options for use wherever ambient conditions require IP 65 protection.

These models are ideal also when no aggressive media are used with PS plastic.

Small, compact, flexible and cost-effective

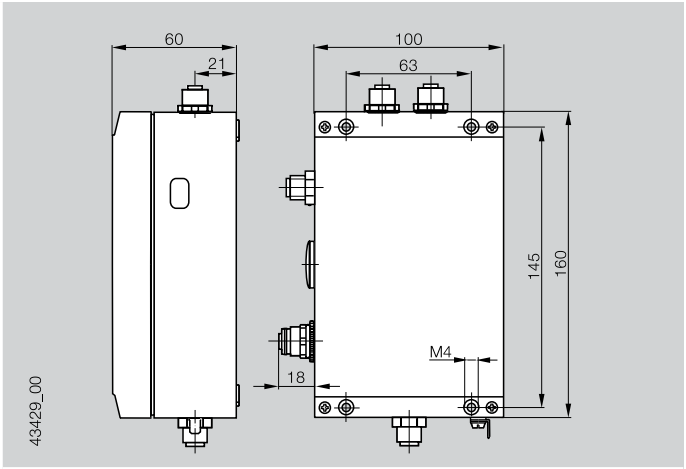
	BIS M-6003-_ _ _-650-03-ST12	BIS M-6023-_ _ _-050-03-ST13
	read/write	read/write
	ABS	AlSi 12
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 400 mA	≤ 400 mA
	0...+50 °C	0...+50 °C
	0...+50 °C	0...+50 °C
	IP 65	IP 65
	2 external	2 external
	yes	yes
	3 connectors round 5-pin,	4 connectors round 5-pin
	2 read/write heads BIS M-3_ _	2 read/write heads BIS M-3_ _
	BIS M-6003-025-050-03-ST12	BIS M-6023-025-050-03-ST13
	Software EDS file	Software EDS file
	For connectors see page 207/208/209	For connectors see page 207/208/209

The **rugged BIS M-6023** with the die-cast aluminum housing is a small, flexible processor which is available with various interface options.

Great mechanical stability and high chemical resistance.

Rugged, small and flexible

Description	**BIS M-6026-034-050-06-ST19**
Function	read/write



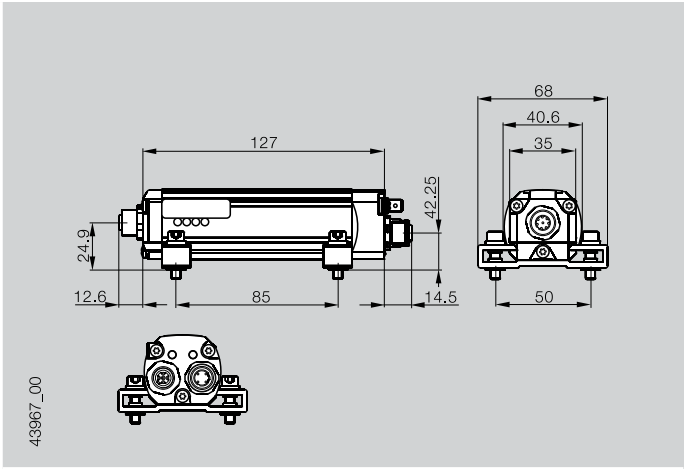
Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection	Connector round 4-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	2 read/write heads BIS M-3_ _
Interface type/Software:	
EtherNet/IP™	BIS M-6026-034-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	For connectors see page 206

Cost-effective identification – operate 2 read/write heads simultaneously!

Rugged processor for EtherNet/IP™ networks

Description	**BIS M-407-039-003-06-S115**
Function	read/write

Control No 3TLJ
File No E227256



Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 150 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 67
Read/write head ports	1 external
Service interface RS232	no
Connection	1 connector round 4-pin, D-coded 1 connector round 5-pin
Connection for	1 read/write head BIS M-3_ _-003-_ _ _
Interface type/Software:	
Ethernet TCP/IP	BIS M-407-039-003-06-S115*
Accessories included	Configuration software
Accessories (please order separately)	For connectors see page 206

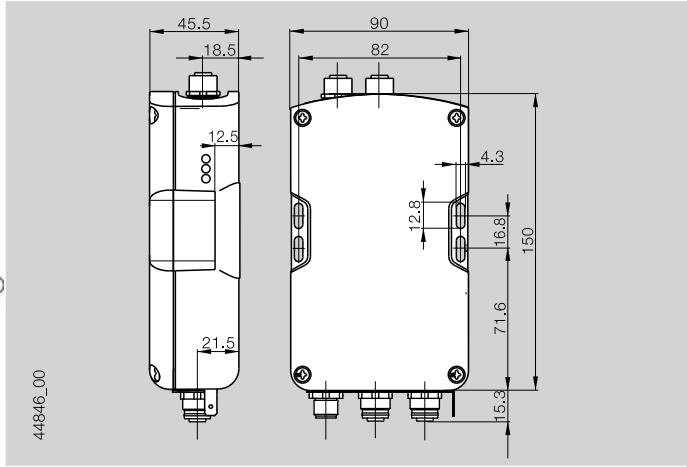
*Mounting brackets included

Small and compact –
for cost effective single read head
Easy to connect 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
see page 145/147/148/149/151

Description	**BIS M-6008-_ _ _-650-06-ST23**
Function	read/write
Housing material	ABS

Control No 3TLJ
File No E227256



Supply voltage	24 V DC ±10 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes internal
Connection	Connector round 5-pin, A-coded 2 connectors 4-pin, D-coded
Connection for	Read/write heads BIS M-3_ _ Exception BIS C-350 and BIS C-355
Interface type/Software:	
PROFINET RT with IRT-capable 2-PORT switch	BIS M-6008-048-650-06-ST23
Accessories included	Configuration software
Accessories (please order separately)	For connectors see page 206

Cost-effective identification –
operate 2 read/write heads simultaneously!

The **BIS M-6008 processor** features a small form factor and flexible interface options for use wherever ambient conditions require IP 65 protection.

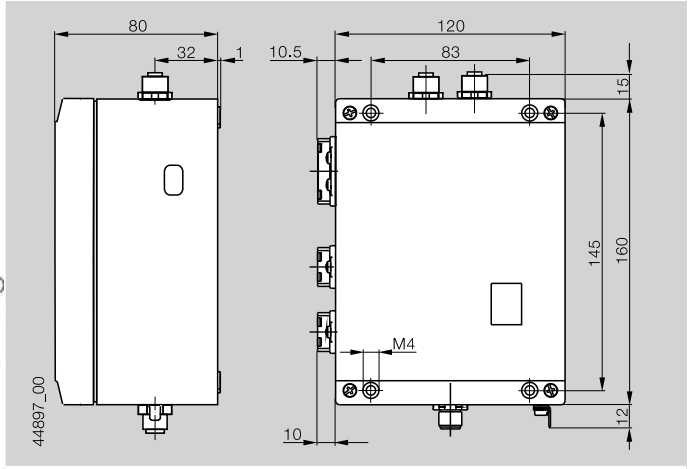
These models are ideal also when no aggressive media are used with PS plastic.

Small, compact, flexible and cost-effective

Please order accessories separately!
Adapter cable for PROFINET from M12 D-coded to coupling RJ45/RJ45
BIS C-526-PVC-00.5
page 206

Description	**BIS M-6028-048-050-06-ST22**
Function	read/write
Housing material	Al

Control No 3TLJ
File No E227256



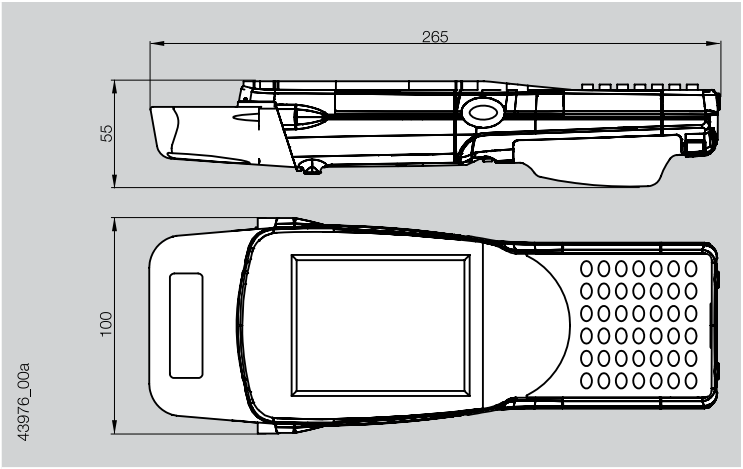
Supply voltage	24 V DC ±10 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection	1 connector 5-pin, Push-pull RJ45 AIDA 2 connectors 8-pin, Push-pull RJ45 AIDA Connector round 4-pin
Connection for	Read/write heads BIS M-3_ _ Exception BIS C-350 and BIS C-355
Interface type/Software:	
PROFINET RT with IRT-capable 2-PORT switch	BIS M-6028-048-050-06-ST22
Accessories included	Configuration software

The **rugged BIS M-6028** with the die-cast aluminum housing is a small, flexible processor which is available with various interface options.

Great mechanical stability and high chemical resistance.

Rugged, small and flexible

Function	read/write
Housing material	ABS



Basic Hand Held unit part number	BIS M-870-1-008-x-000
Keyboard	52 buttons, alphanumeric
Display	TFT Touchscreen display
Supply voltage	3.7 V rechargeable battery pack
Capacity	4000 mA/h
Interface	RS232/Balluff Dialog
Working temperature	–10...+50 °C
Degree of protection in accordance with IEC 60529	IP 65
Read/write head option	Integrated
Accessories included	Charging power supply and stylus
Appropriate data carrier	BIS M-1 ... BIS M-2 ...
Please order additional accessories separately	Docking Station and Pistol Grip

For enhanced operating convenience

Allows easy manual writing and reading of BIS M data carriers. Easy operation thanks to
– Touchscreen with large Windows CE® color display
– Pre-installed Balluff software and full keyboard or stylus

Ideal for manual rework stations or remote data access away from the line. Data transfer via optional WLAN, Bluetooth, or wired USB. The handheld is also modular for expandability.

Additional options are available for greater functionality.

Basic Handheld
BIS M-870-1-008-x-000
Includes charger and stylus

Hand Held Accessories

Part Number	WA4003-G2
Description	Desktop Docking Station w/PS and USB Cable

Part Number	WA3010
Description	4000mAh Replacement Battery

Part Number	RA2041*
Description	802.11b/g WLAN Card

Part Number	WA6100-G1
Description	Stylus – pack of 5

Part Number	WA9212-G1*
Description	Imager, 2D Slim Pod HHP 5180 (compatible with pistol grip WA6102-G1)

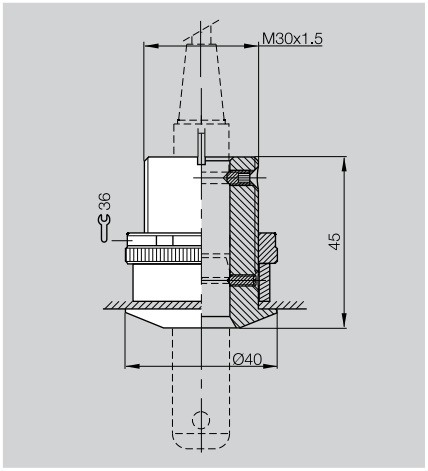
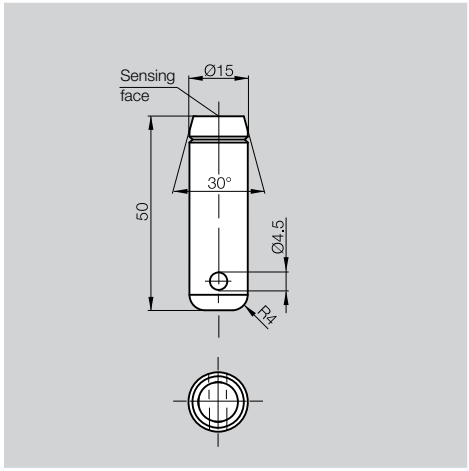
Part Number	WA6102-G1
Description	Pistol Grip for WA9212-G1 2D Slim Pod HHP 5180

Part Number	WA9000-G1*
Description	Scanner 1D Laser High Performance (can work with Pistol Grip WA6001-G1)

Part Number	WA6101-G1
Description	Pistol Grip for WA9000-G1, 1D Scanner

Part Number	WA6097-G2
Description	Protective Carrying Case – 7527C-G2 universal end cap (open ended)

*Specification available upon request.

Version	Access protection	Data carrier + Bracket
Use	Attachment for read/write head BIS M-304	
		
Part number	BIS Z-ZA-001	BIS M-122-01/A-ZC1
Protection per IEC 60529		IP 67
Ambient temperature range	0...+70 °C	–25...+70 °C
Storage temperature	–20...+85 °C	–25...+85 °C

Access protection

Individual access codes are allocated via programmable data keys, which can then be disabled to prevent further programming.

Unauthorized personnel cannot manipulate the data key as a result. The data key is read via an antenna fitted to a special bracket and the processor unit then reads the data. Different interfaces such as serial, PROFIBUS, INTERBUS, DeviceNet™, EtherNet/IP™ or parallel interfaces enable simple connection to the monitored system. Available for systems BIS C, BIS L, and BIS M.

The benefits

The programmable data key allows upgrades or replacements without requiring modifications to the system software.

End users are independent of system providers. The access system is easy to integrate in read/write stations that already use an identification system. Simply connect the access monitoring antenna to the second channel on the existing processor unit. Hardware expenses are reduced to a minimum and software only requires slight modification in order to process both channels.

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

Minimum Distance between two Data Carriers

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

Minimum Distance between two Read/Write Heads

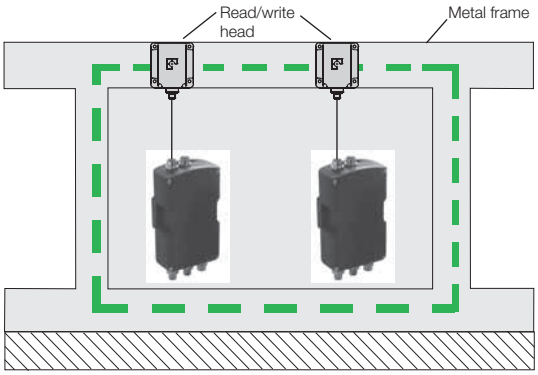
BIS M-300	200 mm	BIS M-400-007-001-00-S115	200 mm
BIS M-301	600 mm	BIS M-401-007-001-00-S115	600 mm
BIS M-351	600 mm	BIS M-451-007-001-00-S115	600 mm
BIS M-302	100 mm	BIS M-400-007-002-00-S115	100 mm
BIS M-304	100 mm		

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).

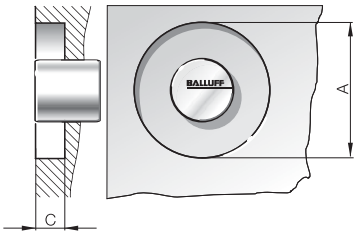
This may reduce the read/write distances. The smaller the read/write head, the less the interference.

This may result in a reduction of the maximum distance by 80 %. In such a case you should test the actual effective read distance.



Clear Zone Dimensions for Read/Write Heads

Read/write head	Data carriers with clear zone dimensions (in mm).									
	BIS M-111-02/L		BIS M-112-02/L		BIS M-105-02/A				BIS M-150-02/A	
	BIS M-101-01/L		BIS M-102-01/L		BIS M-105-01/A		BIS M-120-01/L		BIS M-151-02/A	
	A	C	A	C	A	C	A	C	A	C
BIS M-300-001	100	30	150	30	100	20				
BIS M-301-001	200	70	200	70			250	70		
BIS M-302-001	60	30	60	30	60	30				
BIS M-351-001									250	70
BIS M-304-001	60	30	60	30	60	30				
BIS M-400-007-001	100	30	150	30	100	20				
BIS M-400-007-002	60	30	60	30	60	30				
BIS M-401-007-001	200	70	200	70			250	70		
BIS M-451-007-001									250	70



Mechanical Strength

Data carriers and read/write heads

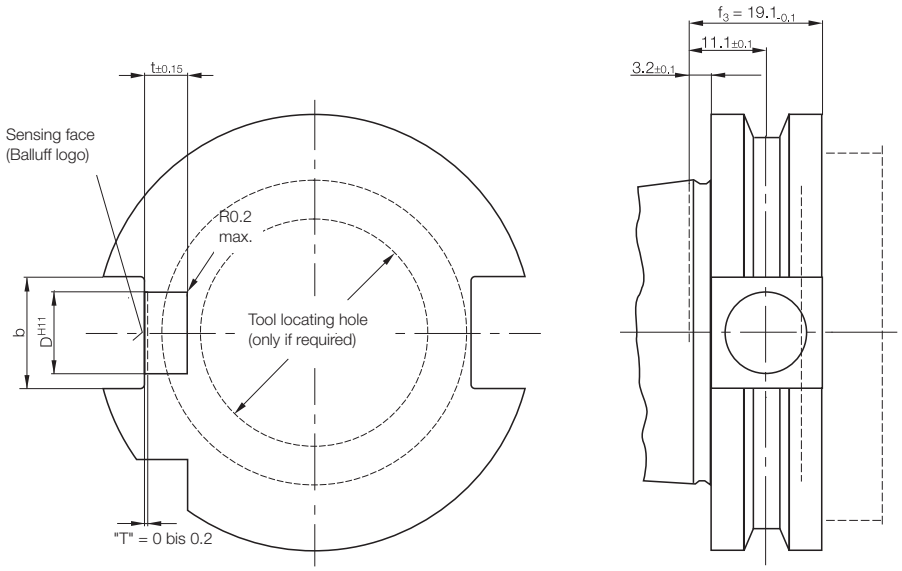
Part number	BIS M-1_ _, BIS M-3_ _
Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6

Processors

Part number	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

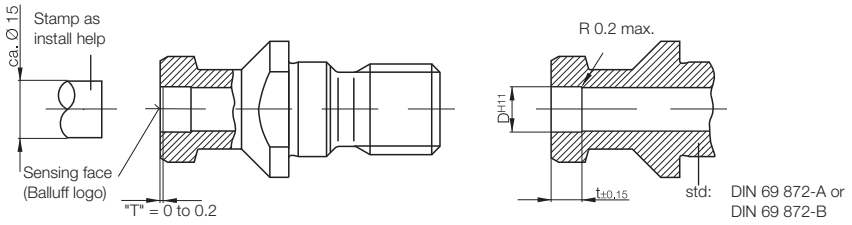
Installation in Taper

	Data carrier BIS M-122			Data carrier BIS M-105		
Taper DIN 69 871-A	D^{H11}	t±0,15	U/min. max.	D^{H11}	t±0,15	U/min. max.
Nr. 30	10	4,65	90000	12	6,15	68000
Nr. 40	10	4,65	75000	12	6,15	54000
Nr. 45	10	4,65	66000	12	6,15	43000
Nr. 50	10	4,65	59000	12	6,15	33000



Installation in Retention Knob

	Data carrier BIS M-122		Data carrier BIS M-105	
Taper DIN 69 871-A	D^{H11}	t±0,15	D^{H11}	t±0,15
Nr. 30	—	–	—	—
Nr. 40	10	4,65	—	—
Nr. 45	10	4,65	12	6,15
Nr. 50	10	4,65	12	6,15

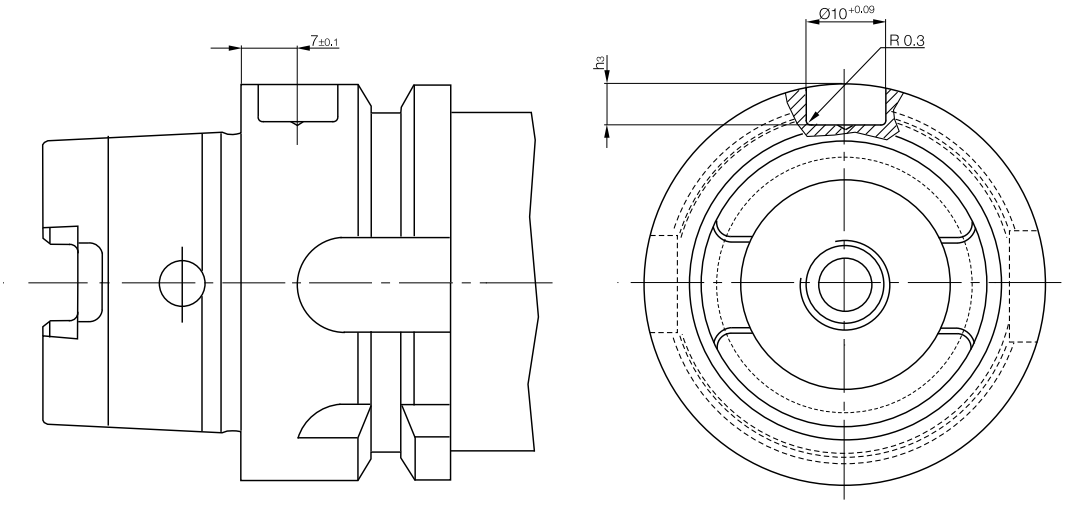


Installation

1. Degrease gluing surfaces.
2. Apply a bead of glue (e. g. Lictite Hysol 1c) approximately 3 mm wide around the perimeter of the data carrier housing. Note manufacturer's instructions! Lictite glue can be provided by Balluff.
3. Press in data carrier housing by hand. Note dimension "T"!
4. Remove excess glue.
5. Allow to harden.

Installation in HSK Taper

	Data carrier BIS M-122	
HSK Form A ISO/DIS 12164-1	$h_{3\ +\ 0,20}$	U/min. max.
32	5,4	96000
40	5,2	80000
50	5,1	75000
63	5	65000
80	4,9	57000
100	4,9	48000



Mechanical Strength

Data carriers and read/write heads

Part number	BIS M-122/105, BIS M-302/304
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 M-1_ _ and read/write heads BIS M-3_ _ except for the non-potted read/write heads.

Processors and non-potted read/write heads

Part number	BIS M-6_ _ _, BIS M-3_ _/4_ _
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 processors 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 processor electronics converts this time accordingly. To calculate the Read/write times the block read or write time must however be used.

Data carrier recognition

20 ms are required to recognize a data carrier.

Read Times BIS M-1_ _

EEPROM	
Data carrier with 16 byte blocks	
Byte	read time [ms]
from 0 to 15	20
for each additional 16 bytes started add an additional	10

FRAM	
Data carrier with 16 byte blocks	
Byte	read time [ms]
from 0 to 15	30
for each additional 16 bytes started add add an additional	15

Write Times BIS M-1_ _

Data carrier with 16 byte blocks	
Byte	write time [ms]
from 0 to 15	40
for each additional 16 bytes started add an additional	30

Data carrier with 16 byte blocks	
Byte	writetime [ms]
from 0 to 15	60
for each additional 16 bytes started add add an additional	40

Example

Read and write 183 bytes starting at address 42

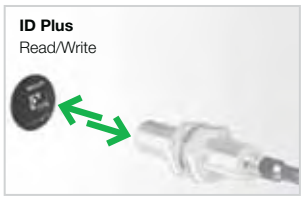
Address 42 is in Block 3 (42/16)
Address 224 is in Block 14 (224/16)

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

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

Contents

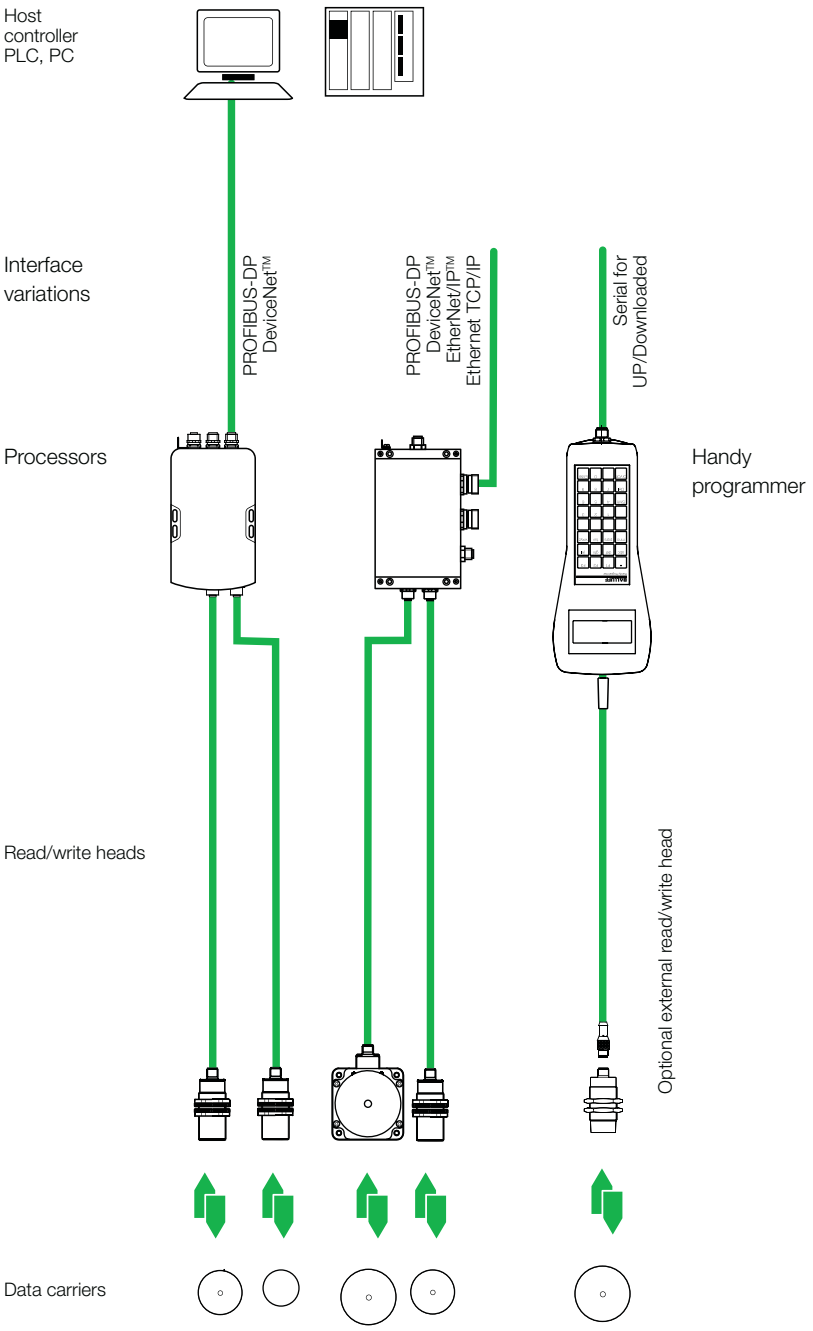


This section provides specifications on the high data memory capacity BIS S series read/write RFID solutions

BIS S

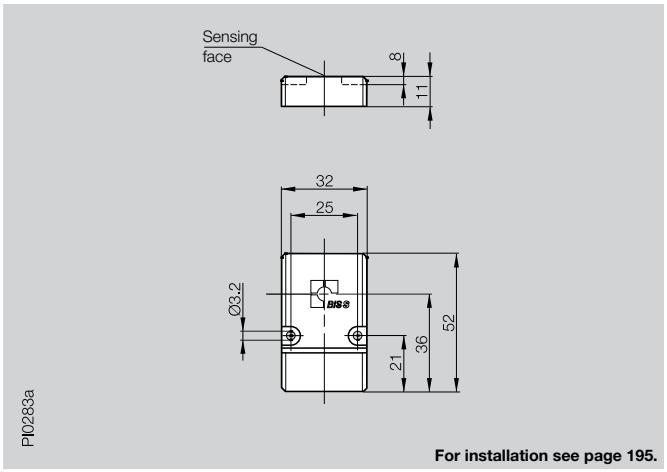
For large quantities of data in assembly and production. Flexible and robust, even in high-speed applications

BIS S



Dimensions	**52×32×11**
Housing material	PBTP
Antenna type	round
Weight	27 g

Complex product assembly
can benefit from a large
storage capacity

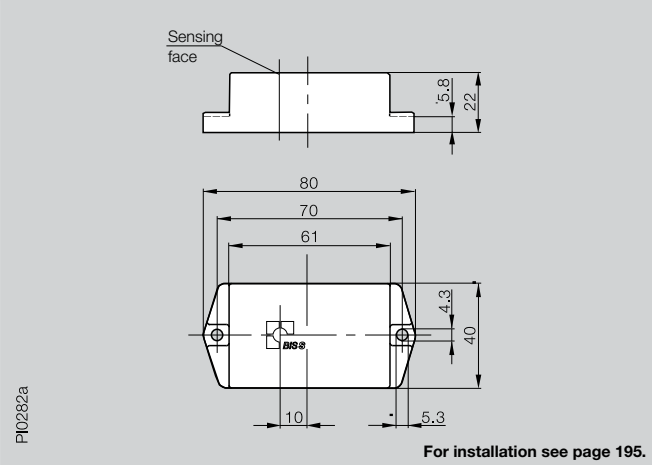


For installation see page 195.

BIS S Programmable

16 kBytes	Part number	BIS S-108-42/L	
32 kBytes	Part number	BIS S-108-52/L	
Operating temperature		–20...+70 °C	
Storage temperature		–20...+70 °C	
Protection per IEC 60529		IP 67	
			non-flush
Mounting in steel			
Appropriate read/write head		BIS S-302	20 mm
with max. read/write distance		BIS S-303	20 mm

Dimensions	**80×40×22**
Housing material	POM
Antenna type	round
Weight	93 g



For installation see page 195.

BIS S Programmable

16 kBytes	Part number	BIS S-150-42/A
32 kBytes	Part number	BIS S-150-52/A
Operating temperature		–20...+70 °C
Storage temperature		–20...+70 °C
Protection per IEC 60529		IP 67

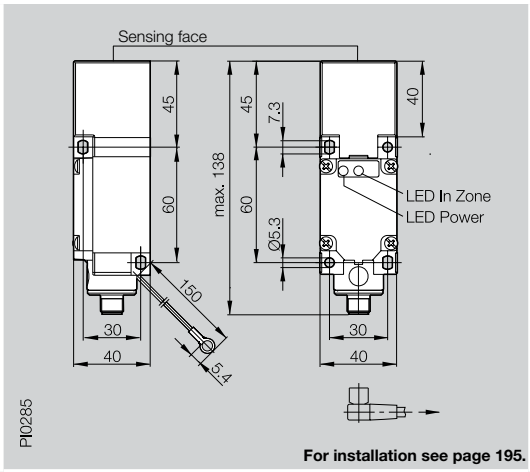
Mounting in steel			non-flush
Appropriate read/write head with max. read/write distance		BIS S-301	50 mm

Read/Write Cycles

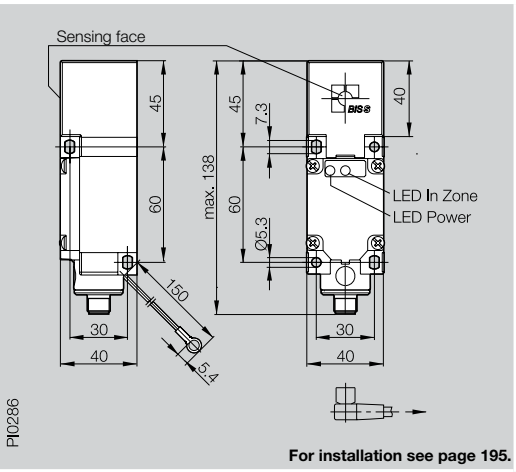
Data carriers	Memory type	Write cycles	Read cycles	Memory organization
16 kBytes	FRAM	unlimited	unlimited	64 bytes per block
32 kBytes	FRAM	unlimited	unlimited	128 bytes per block

Dimensions	**40×40×138**	**40×40×138**
Housing material	ABS	ABS
Antenna type	round	round
Weight	220 g	220 g

c UL us LISTED
Control No 3TLJ
File No E227256



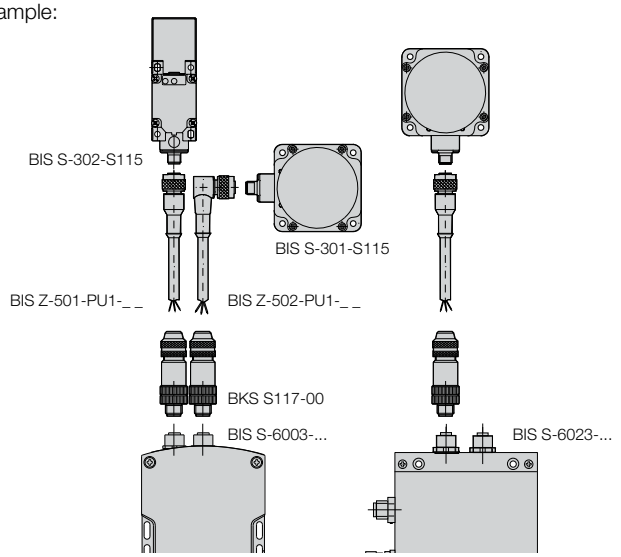
For installation see page 195.



For installation see page 195.

Part number	BIS S-302-S115	BIS S-303-S115
Mounting in steel	non-flush	non-flush
Operating temperature	0...+70 °C	0...+70 °C
Storage temperature	–20...+85 °C	–20...+85 °C
Protection per IEC 60529	IP 67	IP 67
Connection to	Processor	Processor
With connection cable	BIS Z-501-PU1-_ _*, BIS Z-502-PU1-_ _*	BIS Z-501-PU1-_ _*, BIS Z-502-PU1-_ _*
Appropriate data carrier	BIS S-108-_ _/L non-flush	BIS S-108-_ _/L non-flush
Static mode		
Write distance in mm	5-20	5-20
Read distance in mm	5-20	5-20
Offset in mm at distance 5 mm	±5	±5
7 mm	±5	±5
10 mm	±5	±5
15 mm	±5	±5
20 mm	±5	±5
30 mm		
50 mm		

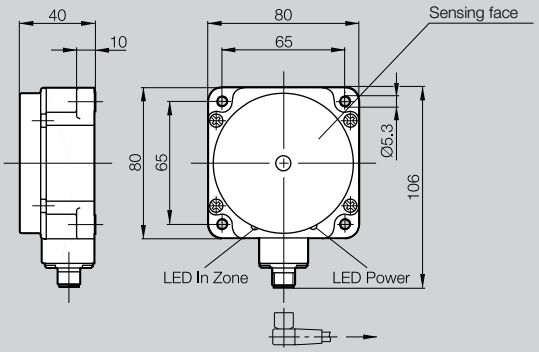
Example:



* please order connection cable separately, see page 202
Please append cable length to ordering code!
See page 202

Long Distances

	80×80×40
	PBT
	round
	410 g



PI0281

For installation see page 195.

	BIS S-301-S115
	non-flush
	0...+50 °C
	–20...+85 °C
	IP 67
	Processor
	BIS Z-501-PU1-_ _*, BIS Z-502-PU1-_ _*
	BIS S-150-_ _/A non-flush
	10-50
	10-50
	±5
	±5
	±5
	±5
	±5
	±5
	±5

Connector orientation

First choice in static applications involving large quantities of data

ID Plus

Cost-effective identification – operate 2 read/write heads simultaneously

- Selectable division of the data width on the PROFIBUS-DP, 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 interchangeable memory
- BUS address selectable with switches
- Accepts all read/write heads
- Interface-compatible with BIS C and BIS L identification systems

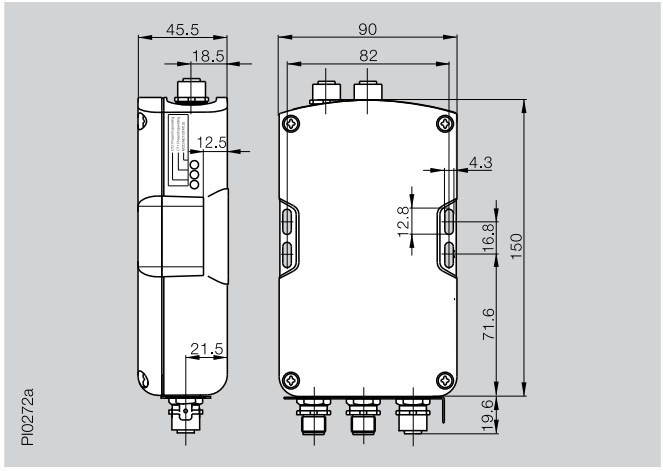
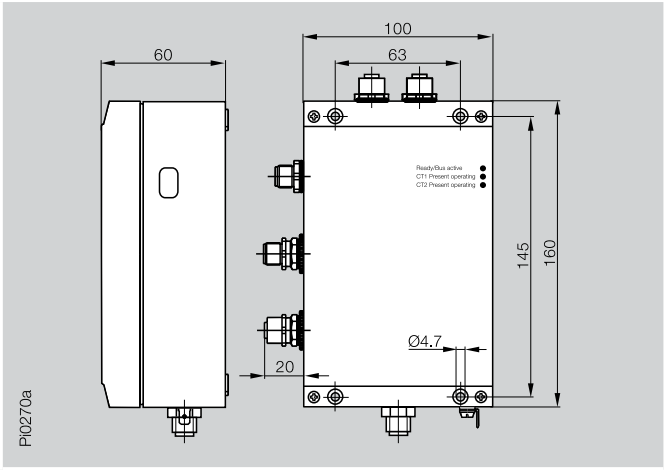
Control No 3TLJ
File No E227256

Description	
Function	
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Description interface/software:	
PROFIBUS-DP	
Accessories included	
Accessories (please order separately)	

The **compact class BIS -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 is not aggressive to PS plastic.

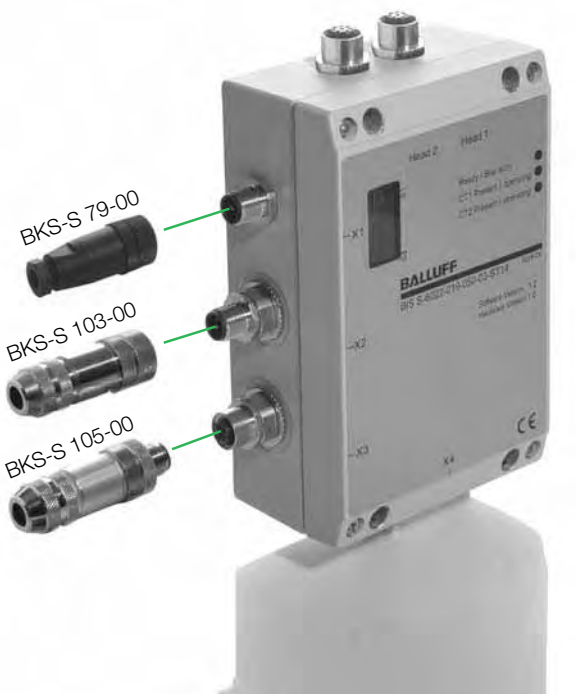
Small, compact, flexible and economical

	BIS S-6002-019-050-03-ST11	BIS S-6022-019-050-03-ST14
	read/write	read/write
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 600 mA	≤ 600 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65/NEMA 12	IP 65/NEMA 12
	2 external	2 external
	yes	yes
	2 connectors round 5-pin, B-coded, 1 connector round 5-pin	2 connectors round 5-pin, B-coded, 2 connector round 5-pin
	2 read/write heads BIS S-3_ _	2 read/write heads BIS S-3_ _
	BIS S-6002-019-050-03-ST11	BIS S-6022-019-050-03-ST14
	Software GSD file	Software GSD file
	BKS 12-CS-01	BKS 12-CS-01
	Connector page 204/205	Connector page 204/205

Threaded cover
BKS 12-CS-01
coded for M12 B connector type

For **rugged applications** **BIS S-602_** is in spite of the mechanically rugged die-cast aluminum housing a small, flexible processor which is available with various interface options.

Suitable for all applications with demanding requirements for mechanical stability and chemical resistance.



ID Plus

Cost-effective identification – operate 2 read/write heads simultaneously

- Freely selectable buffer size between 0 and 256 bytes
- Service-friendly, all parameter data are stored in an interchangeable memory
- Accepts all read/write heads
- Interface-compatible with BIS C and BIS L identification systems

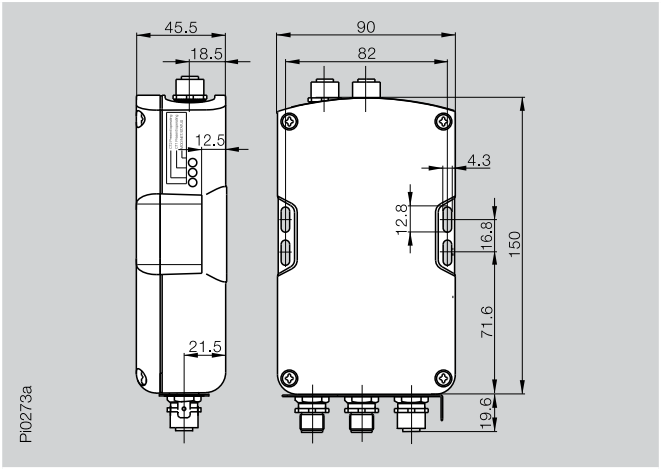
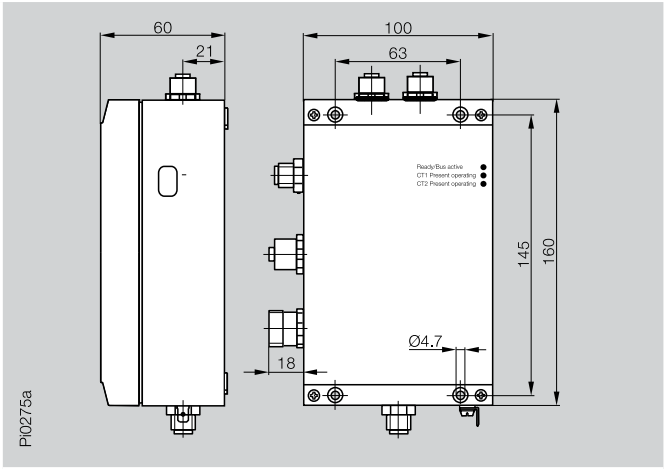
Description	
Function	
Supply voltage	
Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface RS232	
Connection type	
Connection for	
Description interface/software:	
DeviceNet™	
Accessories included	
Accessories (please order separately)	

Control No 3TLJ
File No E227256

The **compact class BIS -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 is not aggressive to PS plastic.

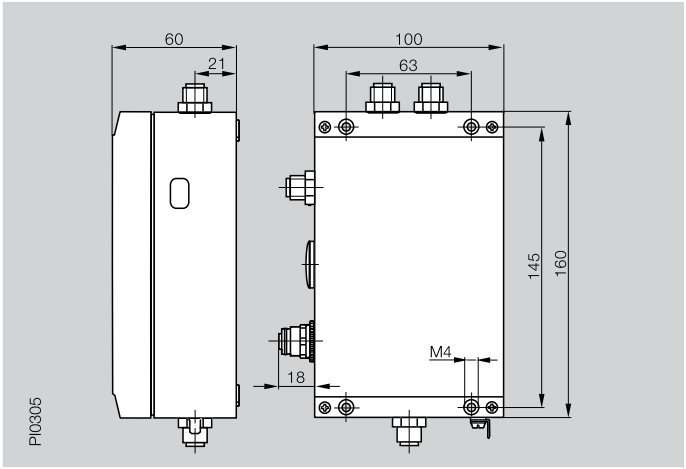
Small, compact, flexible and economical

	BIS S-6003-025-050-03-ST12	BIS S-6023-025-050-03-ST13
	read/write	read/write
		
	24 V DC ±20 %	24 V DC ±20 %
	≤ 10 %	≤ 10 %
	≤ 600 mA	≤ 600 mA
	0...+60 °C	0...+60 °C
	0...+60 °C	0...+60 °C
	IP 65/NEMA 12	IP 65/NEMA 12
	2 external	2 external
	yes	yes
	3 connectors round 5-pin	4 connectors round 5-pin
	2 read/write heads BIS S-3_ _	2 read/write heads BIS S-3_ _
	BIS S-6003-025-050-03-ST12	BIS S-6023-025-050-03-ST13
	Software EDS file	Software EDS file
		BKS 12-CS-01
	Connector page 207/208/209	Connector page 207/208/209

For **rugged applications BIS S-602** _ is in spite of the mechanically rugged die-cast aluminum housing a small, flexible processor which is available with various interface options.

Suitable for all applications with demanding requirements for mechanical stability and chemical resistance.

Description	**BIS S-6026-034-050-06-ST19**
Function	read/write

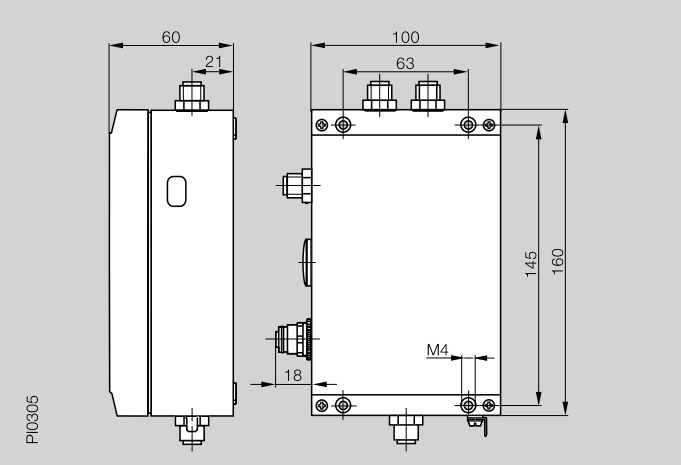


Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection type	Connector round 4-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	Read/write heads BIS S-3_ _
Description interface/software:	
EtherNet/IP™	BIS S-6026-034-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	Connector page 206

Cost-effective identification –
operate 2 read/write heads simultaneously!

Description	**BIS S-6027-039-050-06-ST19**
Function	read/write

Control No 3TLJ
File No E227256

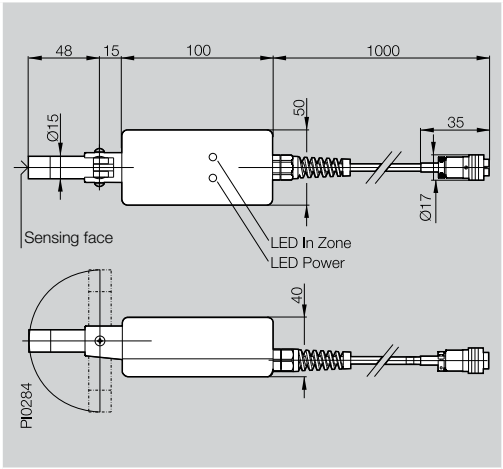


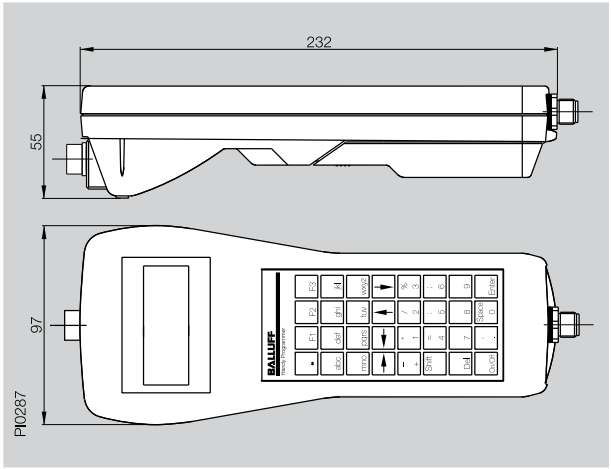
Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current	≤ 400 mA
Operating temperature	0...+50 °C
Storage temperature	0...+50 °C
Protection per IEC 60529	IP 65
Read/write head ports	2 external
Service interface RS232	yes
Connection	Connector round 4-pin, D-coded 1 connector 5-pin 1 connector 4-pin
Connection for	Read/write heads BIS S-3_ _
Description Interface/software:	
Ethernet TCP/IP	BIS S-6027-039-050-06-ST19
Accessories included	Configuration software
Accessories (please order separately)	Connector page 206

Order accessories separately!
Adapter cable for Ethernet
from M12 D-coded to
coupling RJ45/RJ45
BIS C-526-PVC-00.5
page 206

Handy Programmer

Function	Read/write heads	read/write
Dimensions	**Ø 15×63**	
Housing material	Plastic	ABS
Antenna type	round	





Part number	BIS S-850	BIS S-810-0-003
Keyboard		32 buttons, alphanumeric
Display		LCD-display, 20 characters/4 lines
Current draw		2.4 V rechargeable battery pack NiMH
Capacity		1500 mA/h
Interface		RS232/Balluff Dialog
Operating temperature	0...+40 °C	0...+50 °C
Storage temperature	–10...+50 °C	
Protection per IEC 60529	IP 54	IP 40
Read head connection	Fixed plug 6-pin	Fixed socket 6-pin
Connection to	BIS S-810	
Appropriate data carrier	BIS S-108_ _	
	BIS S-150_ _	
Accessories included		Carrying case

For manual or offline flexibility

The handy programmer with read/write function helps you stay mobile and independent. Benefit from increased mobility during repair work, for example. Needless to say, the handy programmer is fitted with an interface to a PC.

Installation in Steel

Clear zone dimensions

Data carriers	Fig.	Dimensions (in mm)		
		A	B	C
BIS S-108-_ _/L	1	10	10	11
BIS S-150-_ _/A	1	80	80	22

Read/write head	Fig.	Dimensions (in mm)		
		A	B	C
BIS S-301	2	80	80	40
BIS S-302	3	40	40	40
BIS S-303	4	40	40	40

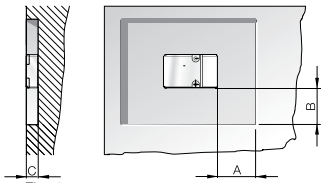


Fig. 1

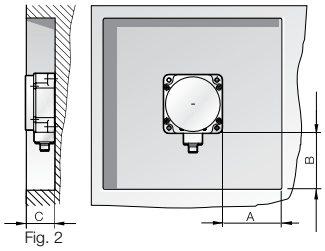


Fig. 2

Installation in Aluminum

Clear zone dimensions

Data carriers	Fig.	Dimensions (in mm)		
		A	B	C
BIS S-108-_ _/L	1	10	10	11
BIS S-150-_ _/A	1	80	80	22

Read/write head	Fig.	Dimensions (in mm)		
BIS S-301	2	80	80	40
BIS S-302	3	40	40	40
BIS S-303	4	40	40	40

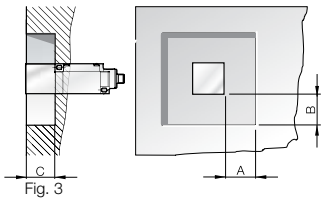


Fig. 3

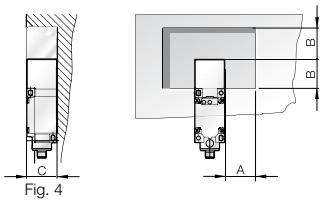


Fig. 4

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.

Read Times

Bytes	Read time [ms]
from 0 to 63	29
for each additional 64 bytes started add an additional	31
from 0 to 2047	990

Write Times

Byte	Write time [ms]
from 0 to 63	31 + n × 1.5
≥ 64	y × 31 + n × 1.5
from 0 to 2047	= max. 4064

n = Number of contiguous bytes to write
y = Number of blocks to process
Example:
Write 87 bytes starting with Address 187. Data carrier = 64-byte blocks.
Blocks 2 to 5 are processed, since start address 187 is in Block 2 and end address 274 is in Block 5.

t = 4 × 31 + 87 × 1.5 = 255 ms

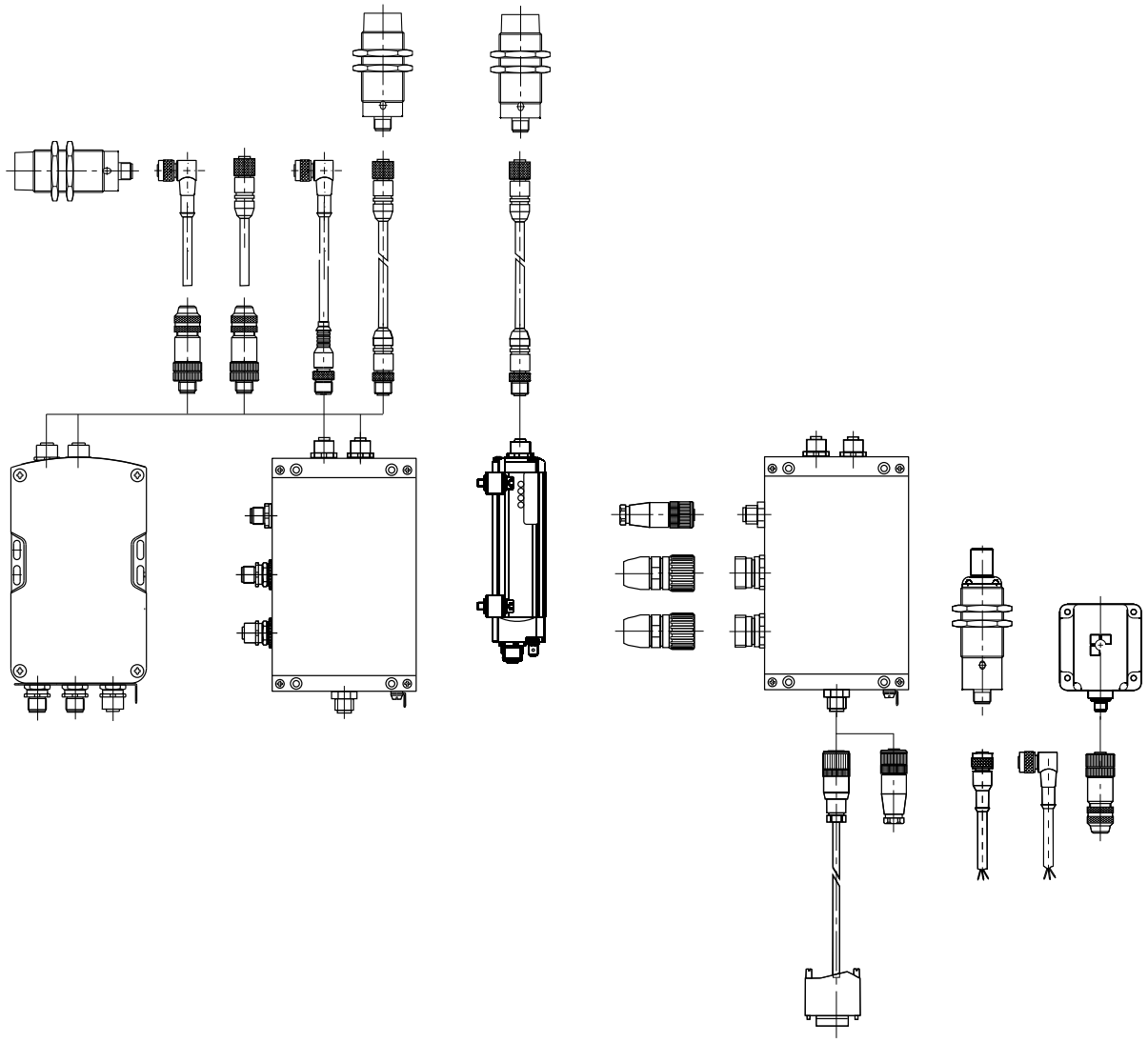
Mechanical Strength

Data carriers and read/write heads

Part number	BIS S-1_ _, BIS S-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

Processors

Part number	BIS S-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

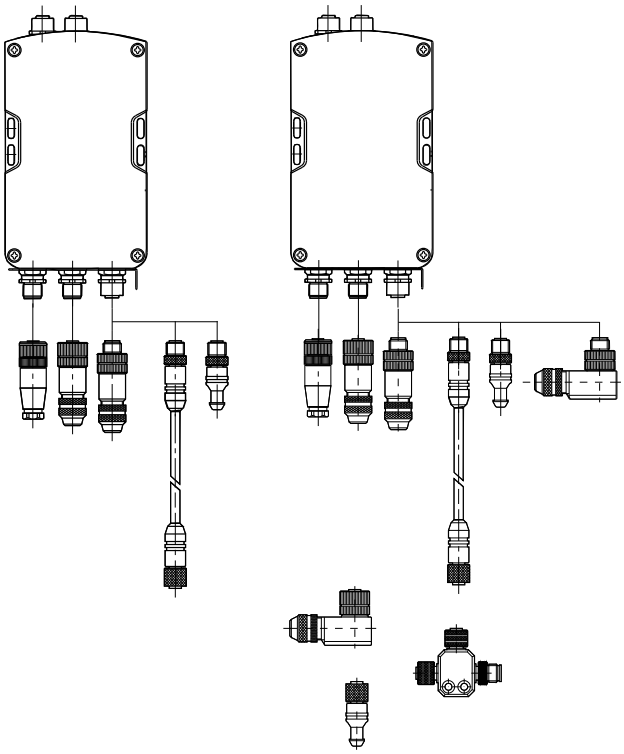


Contents

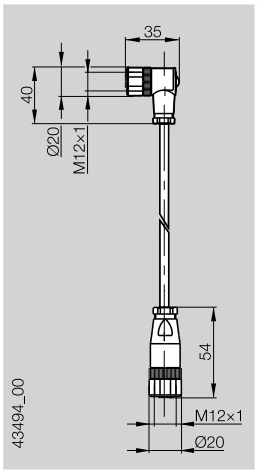
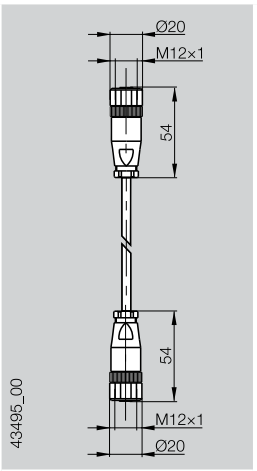
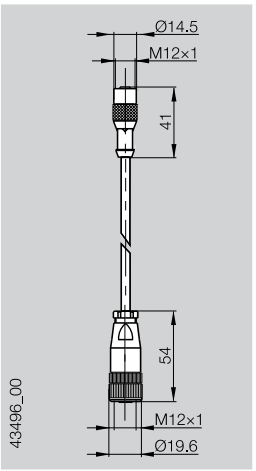
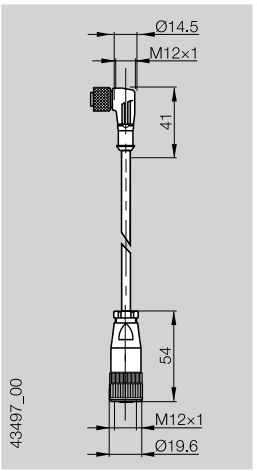
Accessories

Customized connection technology for optimal Industrial RFID use.

Main benefits:
- high-quality with regional standards
- adapted perfectly to sensors and systems
- quick and easy connection
- intensive testing in the accredited Balluff test laboratory, designed for the toughest demands

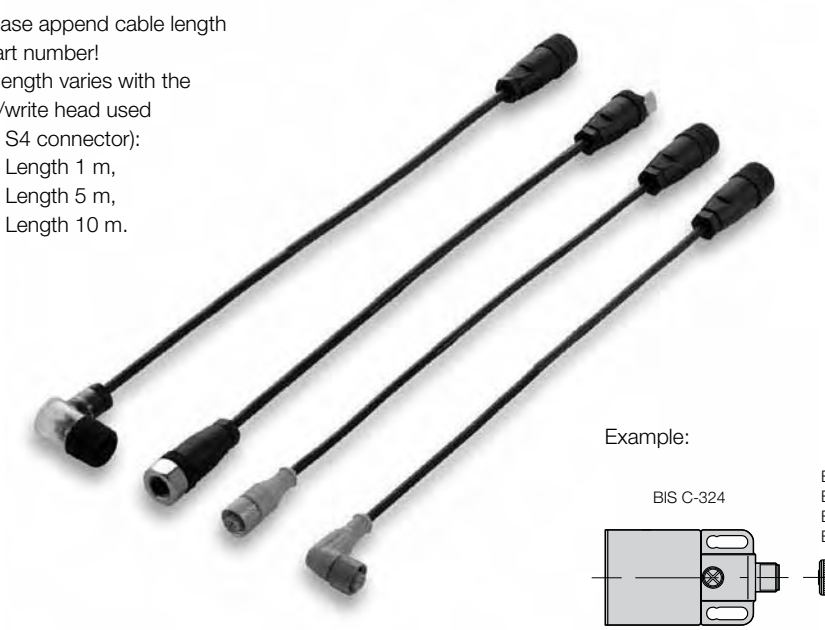


Accessories
Cables with Connectors

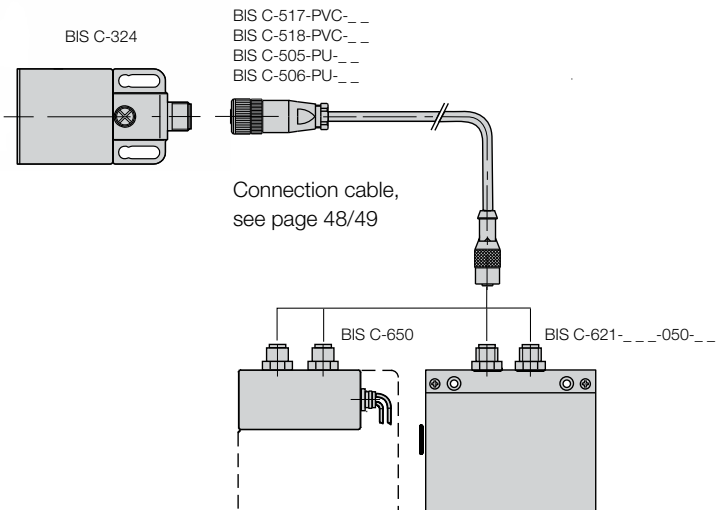
Version	2 connectors M12	2 connectors M12	2 connectors M12	2 connectors M12	
Use	for read/write head with M12 connector	for read/write head with M12 connector	for read/write head with M12 connector also drag chain compatible	for read/write head with M12 connector also drag chain compatible	
					
Part number	BIS C-517-PVC-_ _**	BIS C-518-PVC-_ _**	BIS C-505-PU-_ _** BIS C-505-PU1-_ _**	BIS C-506-PU-_ _** BIS C-506-PU1-_ _**	
Connector					
Cable diameter	5.4 mm	5.4 mm	5.4 mm	5.4 mm	
Protection* per IEC 60529	IP 67 when attached	IP 67 when attached	IP 67 when attached	IP 67 when attached	
Ambient temperature range	–25...+105 °C	–25...+105 °C	–40...+70 °C	–40...+70 °C	
Cable	PVC	PVC	PU BIS C-505-PU1-_ _ is Drag chain compatible	PU BIS C-506-PU1-_ _ is Drag chain compatible	

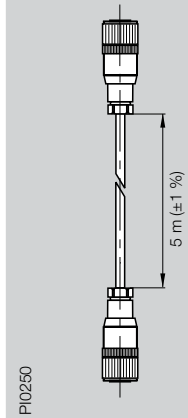
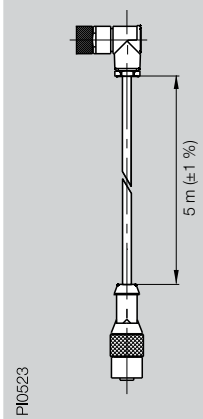
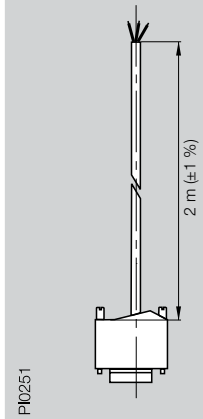
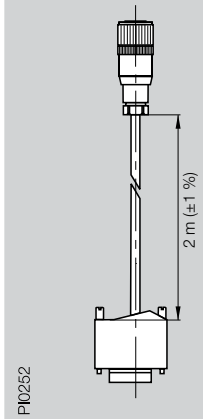
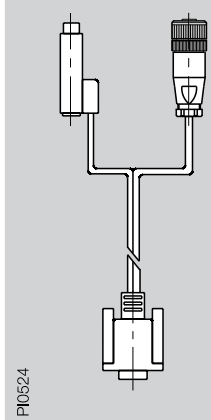
*only when connected

**Please append cable length to part number!
The length varies with the read/write head used (with S4 connector):
01 = Length 1 m,
05 = Length 5 m,
10 = Length 10 m.



Example:

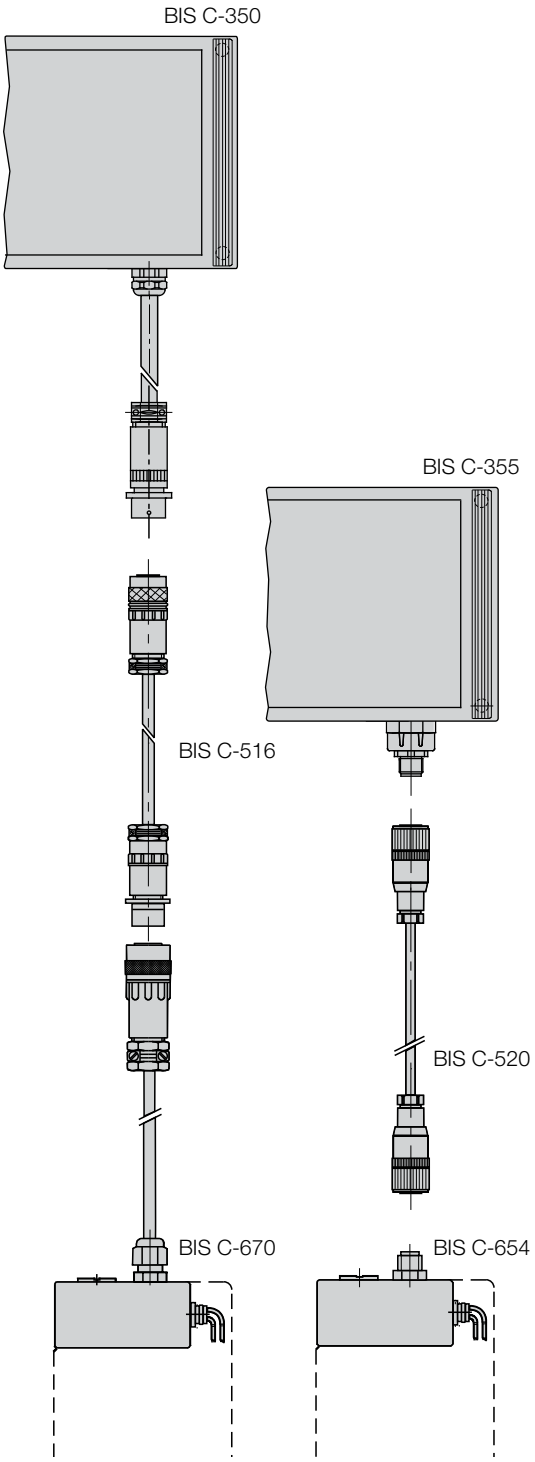


	2 connectors M12 for read/write head BIS C-355 and adapter BIS C-654	Connectors M8 and M12 for read/write head BIS C-328-_ _-S49	MIN D with fixed cable length 2 m for RS232 connection to PC	Adapter cable Connector M12 and MIN D, 9-pin Service interface	Adapter cable for RS 232, PS 2 connection to PC and BIS C-820
					
	BIS C-520-PVC-05	BIS C-523-PU-05 BIS C-523-PU1-05	BIS C-521-PVC-02	BIS C-522-PVC-02	BIS C-524-PVC-01,5
			Serial interface RS232 to PC	Serial interface RS232 to PC	
	5.8 mm		5.8 mm	5.8 mm	
	IP 65 when attached	IP 67 when attached			
	–30...+80 °C	–40...+70 °C	–5...+80 °C	–5...+80 °C	–5...+80 °C
	PVC	PU	PVC	PVC	PVC
				Please append cable length to part number! 02 = Length 2 m 03 = Length 3 m	

Cables with Connectors
Connectors and Termination Resistor
Connection Cables
Connectors
PROFIBUS-DP Connectors, Termination Resistor
Ethernet Connectors
DeviceNet™ Connectors, Termination Resistor
Accessories
Retaining Bracket, Retainer System, Mounting Plate
Processor Mounting Bracket
Mounting Cuffs
Expander Module BIS Z-ER

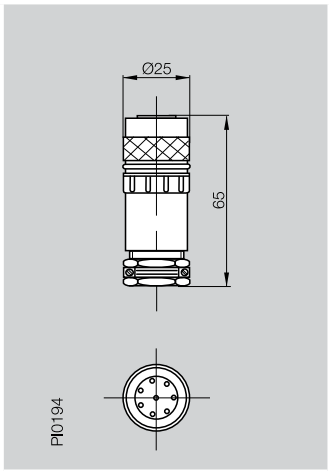
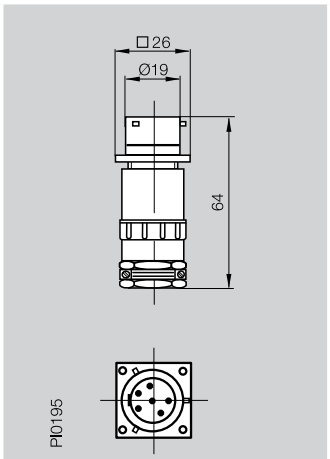
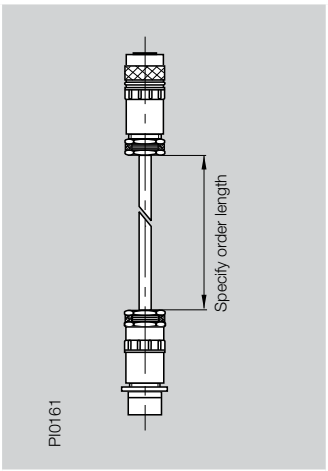
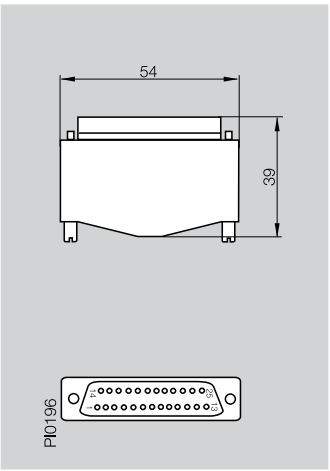
Version	
Use	

Example:

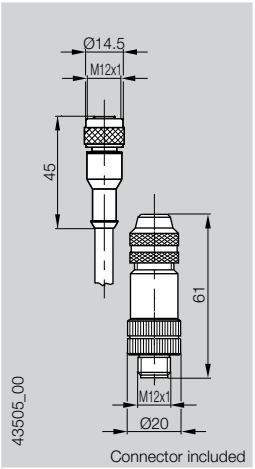
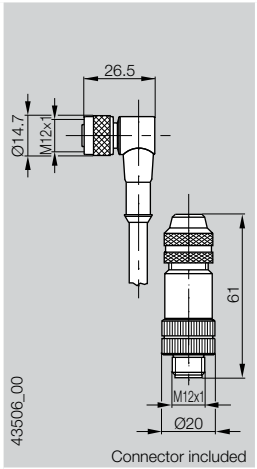
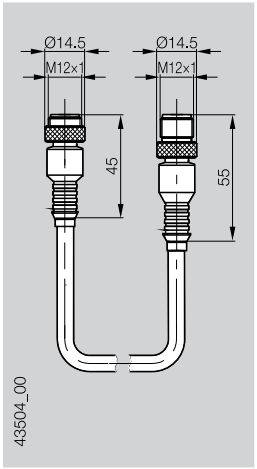
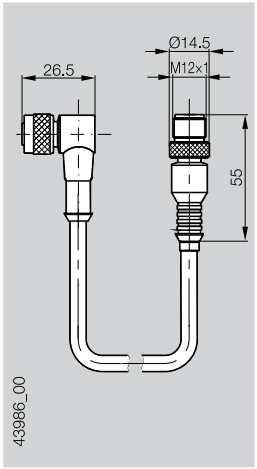


Part number	
Connector type	
Recommended cable	
Conductor cross section	
Protection* per IEC 60529	
Ambient temperature range	

*only when connected

	8-pin, female for connecting to read/write head BIS C-35_	6-pin, male for extension with BKS-S 45-00	BKS S 45-00, BKS S 46-00 for read/write head BIS C-350 to adapter BIS C-670	25-pin, female for processors BIS C-605-...
				
	BKS-S 45-00	BKS-S 46-00	BIS C-516-PU-_ _	BKS-S 52-00
	Round-connector	Round-connector		MIN D-plug
	LiYCY-0	LiYCY-0		LiYCY-0
	0.52 mm²	0.52 mm²		0.5 mm²
	IP 65	IP 65	IP 65 when attached	IP 40
	–55...+125 °C	–55...+125 °C	–30...+80 °C	–40...+85 °C
			Please append cable length to part number! 05 = Length 5 m, 10 = Length 10 m, 15 = Length 15 m, 20 = Length 20 m, 30 = Length 30 m, 40 = Length 40 m, 50 = Length 50 m, 75 = Length 75 m, 100 = Length 100 m.	

Accessories
Connection Cables

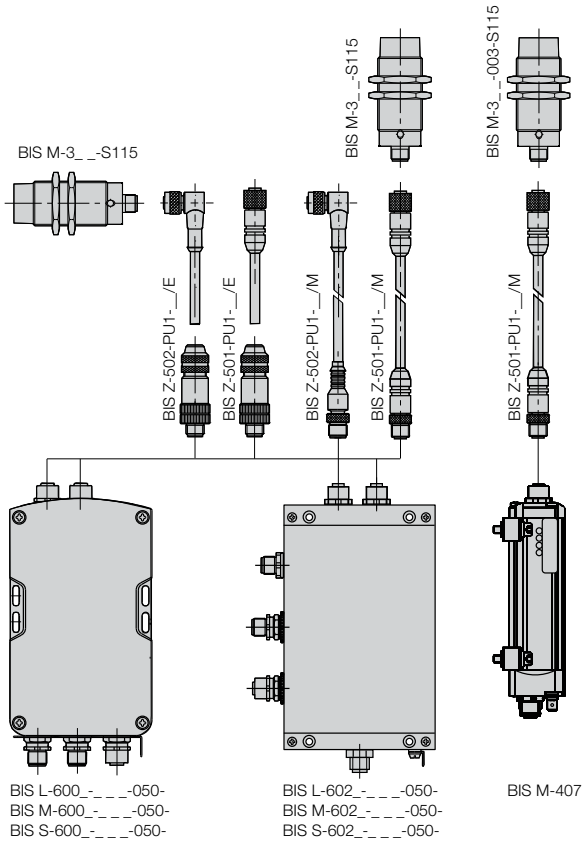
Version	8-pin, female	8-pin, female	8-pin, male, female	8-pin, male, female	
Use	for read/write head 8-pin, male for processor	for read/write head 8-pin, male for processor	for read/write head and processor	for read/write head and processor	
					
Part number	BIS Z-501-PU1-_ _/E	BIS Z-502-PU1-_ _/E	BIS Z-501-PU1-_ _/M	BIS Z-502-PU1-_ _/M	
Connector	M12	M12	M12	M12	
Cable diameter	6.9 mm	6.9 mm	6.9 mm	6.9 mm	
Protection* per IEC 60529	IP 67 when attached	IP 67 when attached	IP 67	IP 67	
No. of wires × cross-section	8×0.25 mm²	8×0.25 mm²	8×0.25 mm²	8×0.25 mm²	
Ambient temperature range	–40...+85 °C	–40...+85 °C	–40...+85 °C	–40...+85 °C	
Accessories included	BKS-S117-00	BKS-S117-00			
Cable	one end molded-in, other end pigtailed	one end molded-in, other end pigtailed	Both ends molded-on	Both ends molded-on	

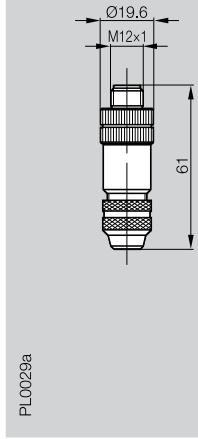
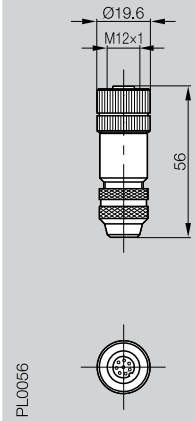
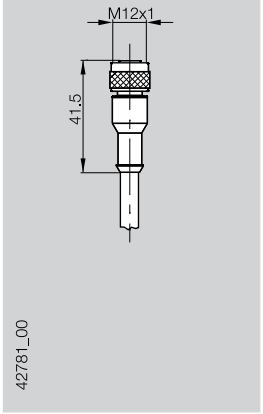
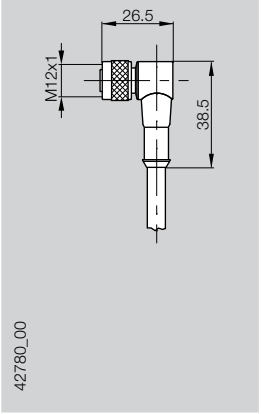
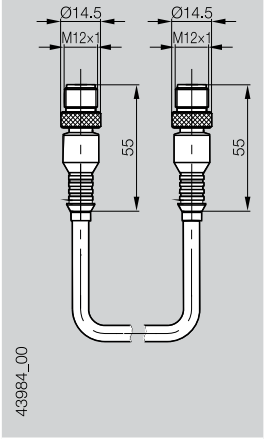
*only when connected
**at temperatures below freezing

Please append cable length to part number!
05 = Length 5 m
10 = Length 10 m
20 = Length 20 m
25 = Length 25 m
50 = Length 50 m

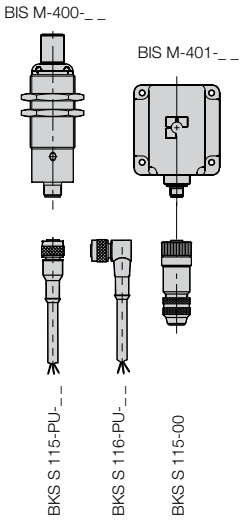
Please append cable length to part number!
00.5 = Length 0.5 m
01 = Length 1 m
02 = Length 2 m
05 = Length 5 m

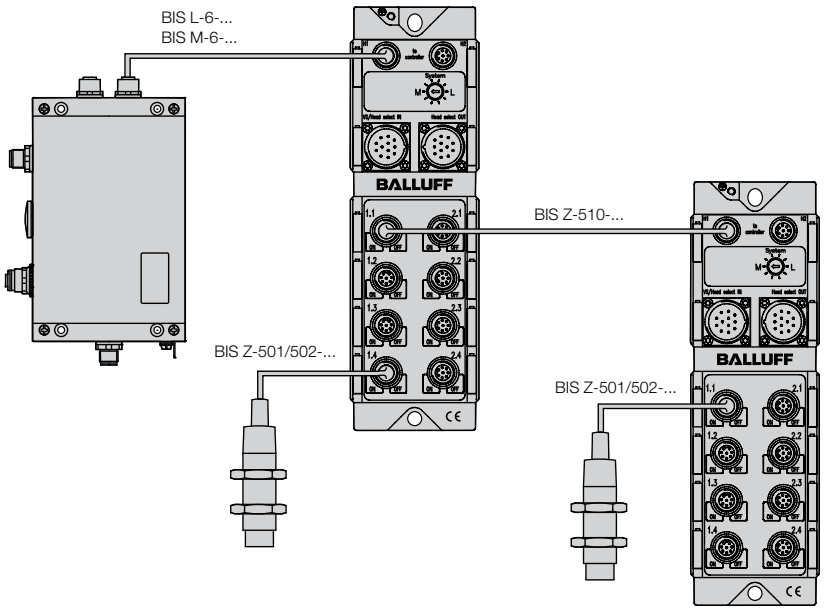
Cable can be trailed and may also be shortened to the required length. For fixed routing the minimum bending radius is 16 mm at an ambient temperature of –40...+85 °C. Least bending radius for flexed routing 80 mm at ambient temperature –25...+85 °C.



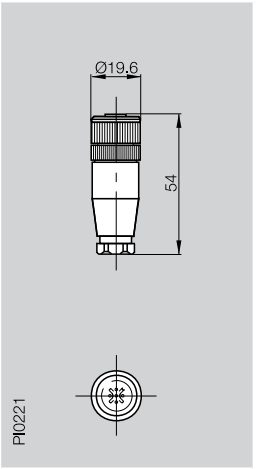
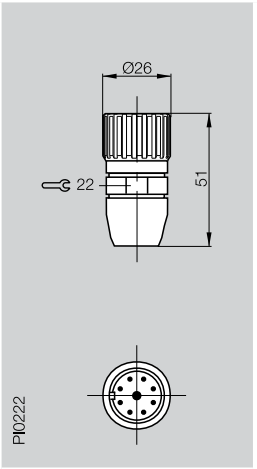
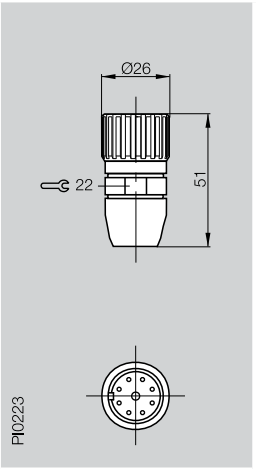
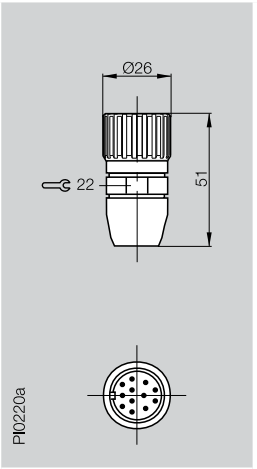
	8-pin, male for connecting read/write head to processor	8-pin, female BIS M-4_ _ RS232 port	8-pin, straight female BIS M-4_ _ with RS232 port	8-pin, right-angle, female BIS M-4_ _ with RS232 port	8-pin, male, male BIS L/M-6_ _ _ to Expander Module BIS Z-ER
					
	BKS-S117-00	BKS-S115-00	BKS-S115-PU-_ _	BKS-S116-PU-_ _	BIS Z-510-PU1-01
	M12	M12	M12	M12	M12
	6...8 mm	6...8 mm			
	IP 67	IP 67	IP 67	IP 67	IP 67
			8×0.25 mm²	8×0.25 mm²	8×0,25 mm²
	–40...+85 °C	–40...+85 °C	–25...+90 °C**	–25...+90 °C**	–25...+90 °C**
			molded PUR	molded PUR	
			Please append cable length to part number! 02 = Length 2 m 05 = Length 5 m 10 = Length 10 m 15 = Length 15 m		

Use matched accessories on your BIS for optimum integration!
Drag chain compatible cable for heightened requirements





Accessories
PROFIBUS-DP Connectors

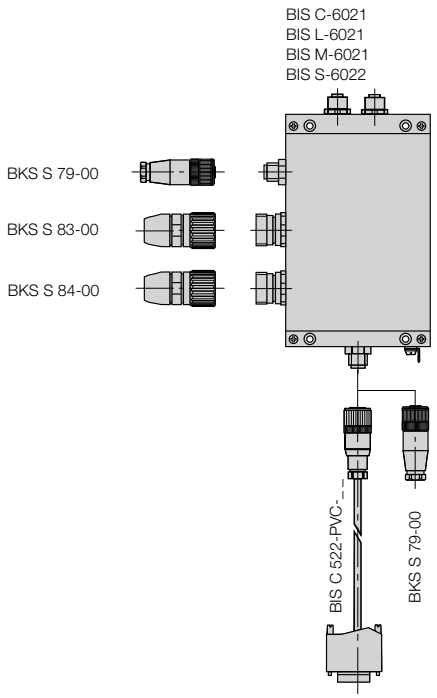
Version	5-pin, female	9-pin, male	9-pin, female	12-pin, male	
Use	for connection to processors BIS C/L/M/S-6_ _ (power)	for connection to processors BIS C/L/M/S-6021 output	for connection to processors BIS C/L/M/S-6021 input	for connection to processors BIS C-6022 ... ST10 input and/or output, PROFIBUS	
					
Part number	BKS-S 79-00	BKS-S 83-00	BKS-S 84-00	BKS-S 86-00	
Connector	M12	Round-connector	Round-connector	Round-connector	
Recommended cable	LiYCY-0	LiYCY-0	LiYCY-0	LiYCY-0	
Cable diameter		0.5 mm²	0.5 mm²		
Conductor cross section	0.34 mm²			0.5 mm²	
Protection* per IEC 60529	IP 67	IP 67	IP 67	IP 67	
Ambient temperature range	–40...+85 °C	–40...+85 °C	–40...+85 °C	–40...+125 °C	
Cable					

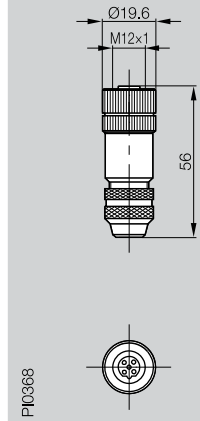
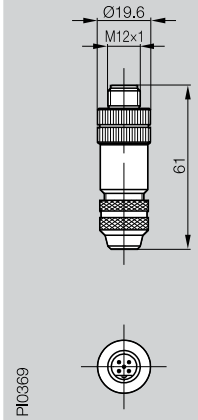
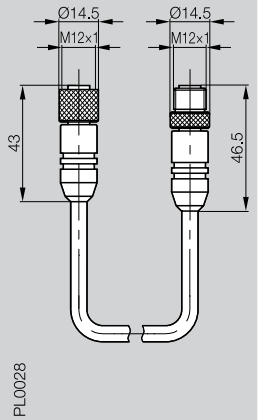
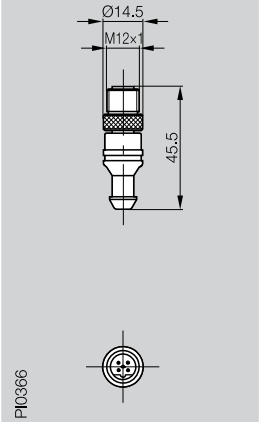
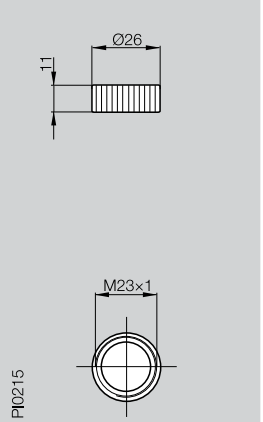
*only when connected

**at temperatures below freezing

INTERBUS

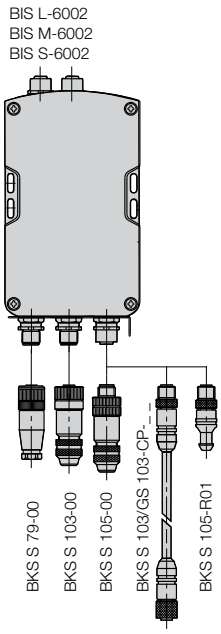
Supply voltage
for all BIS M-6_ _

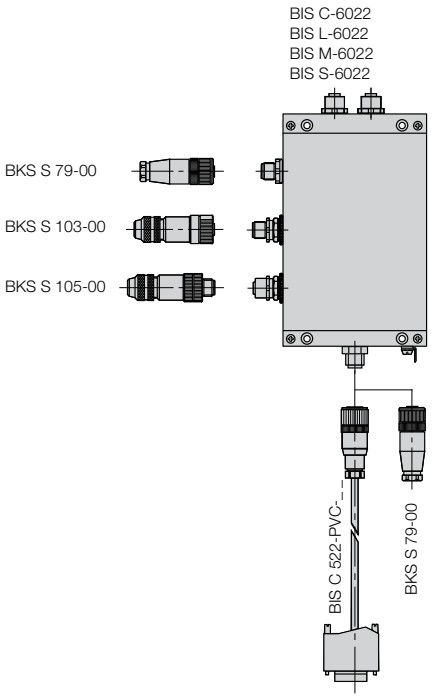


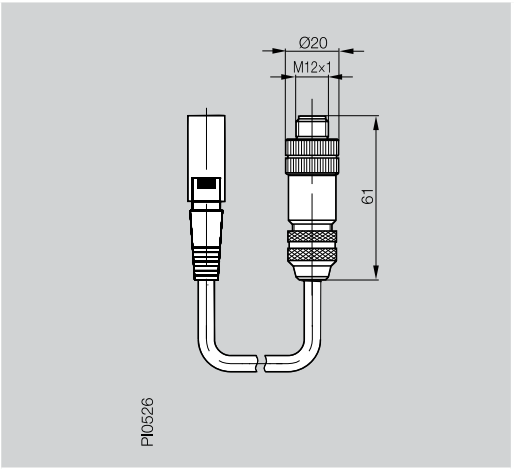
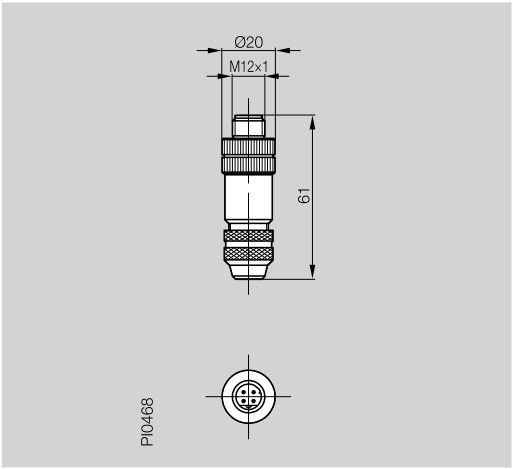
	5-pin, female for connecting PROFIBUS-DP	5-pin, female for connecting PROFIBUS-DP	5-pin, male, female PROFIBUS-DP extension cable	5-pin, male PROFIBUS-DP termination resistor	IP 65 protective cover for unused connectors!
					
	BKS-S103-00	BKS-S105-00	BKS-S103/GS103-CP-_ _	BKS-S105-R01	BKS 23-CS-00
	M12 B-coded	M12 B-coded	M12 B-coded	M12 B-coded	
			2×0.64 mm²		
	IP 67 –40...+85 °C	IP 67 –40...+85 °C	IP 67 –40...+85 °C PU Please append cable length to part number! 00.3 = Length 0.3 m 02 = Length 2 m 05 = Length 5 m 10 = Length 10 m	IP 67 –40...+85 °C	

Threaded cover
BKS 23-CS-00
for M23 plug connection IP65 cover fitting for unused connectors!

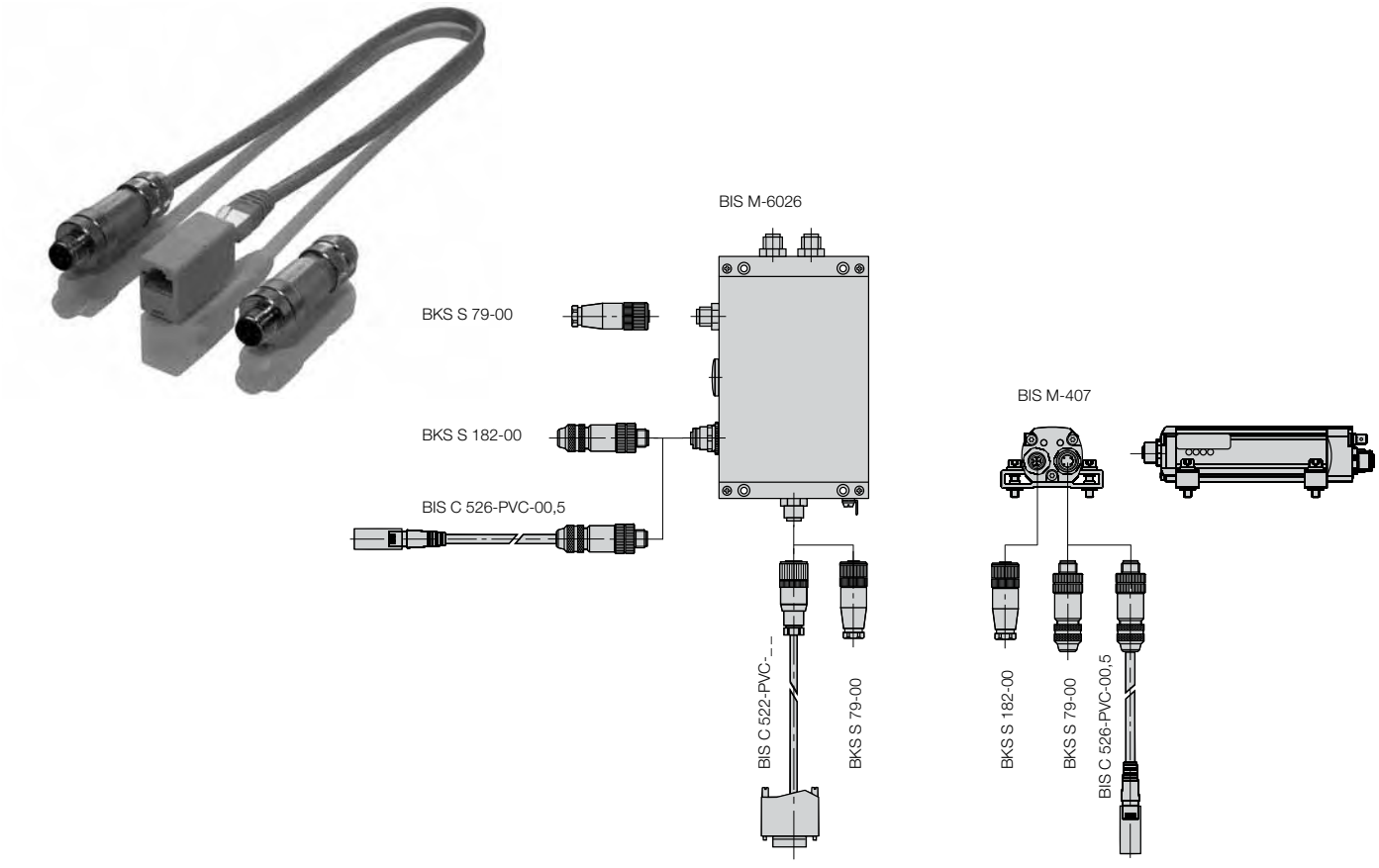
Threaded cover
BKS 12-CS-01
for M12 B-coded plug connection

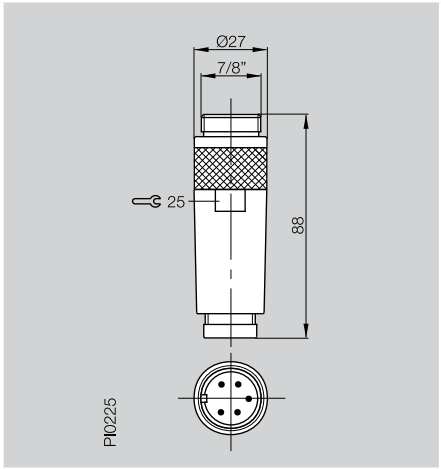
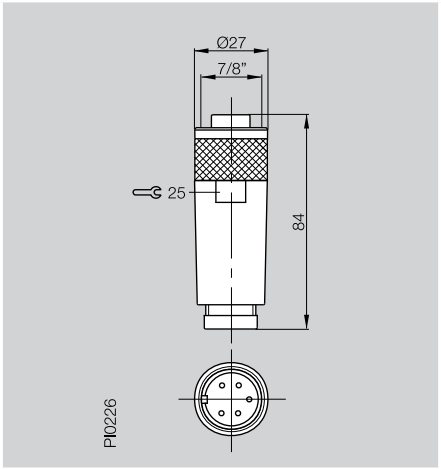
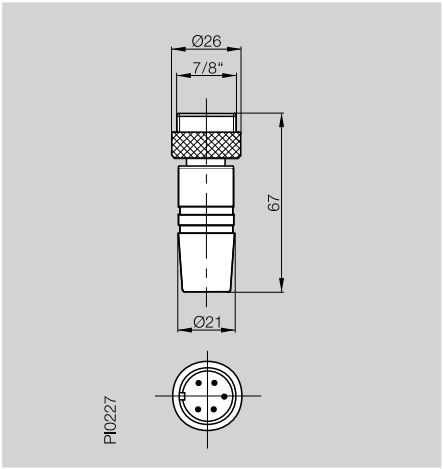


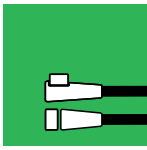


Version	Adapter cable	4-pin, male	
Use	for EtherNet from M12 D-coded to coupling RJ45/RJ45	for connection to processors BIS C-6026 and BIS C-6027, EtherNet	
			
Part number	BIS-C 526-PVC-00,5	BKS-S 182-00	
Connector		M12 D-coded	
Recommended cable			
Conductor cross section			
Protection* per IEC 60529	IP 40	IP 67	
Ambient temperature range	–20...+80 °C	–40...+85 °C	

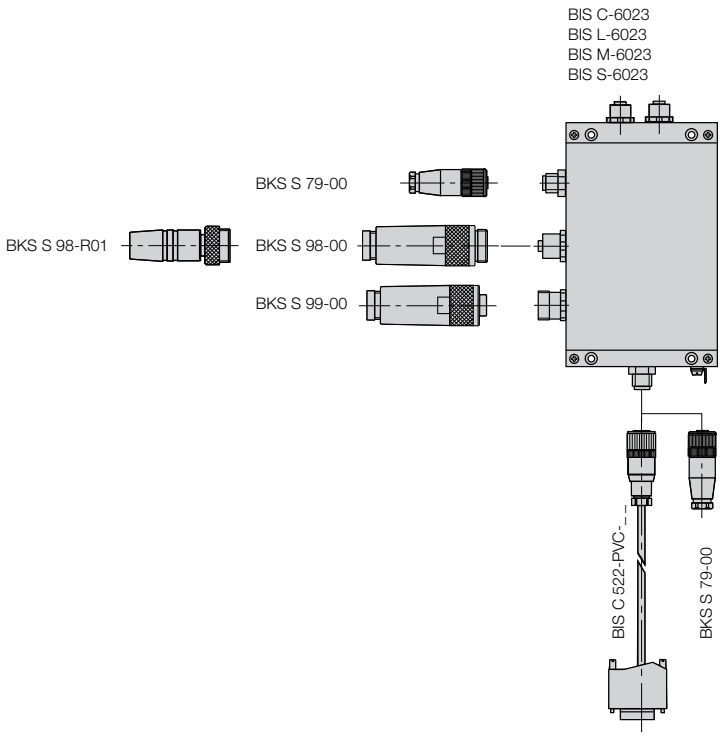
*only when connected

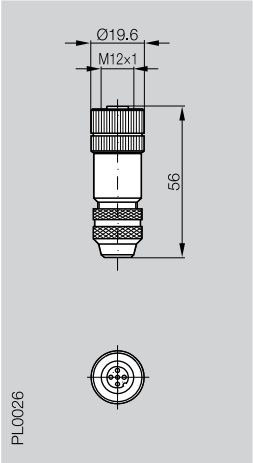
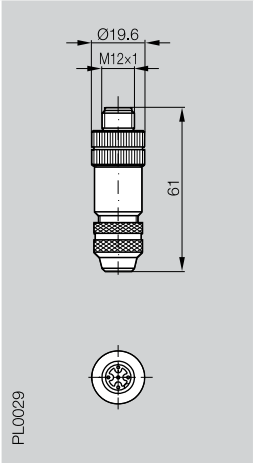
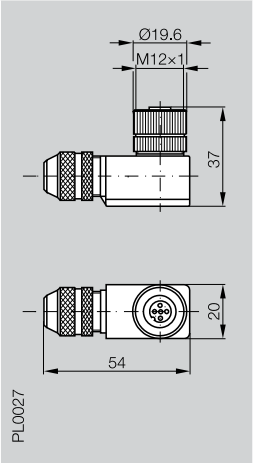
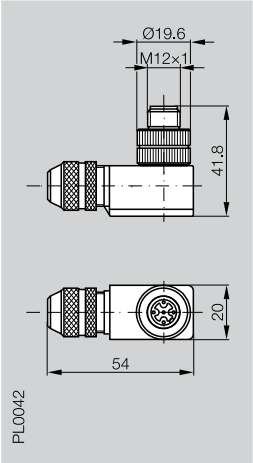


	5-pin, male for connection to processors BIS L-6023 DeviceNet	5-pin, female for connection to processors BIS L-6023 DeviceNet	5-pin, male termination resistor for processors BIS L-6023 DeviceNet
			
	BKS-S 98-00	BKS-S 99-00	BKS-S 98-R01
	Round-connector	Round-connector	Round-connector
	LiYCY-0	LiYCY-0	
	0.5 mm²	0.5 mm²	
	IP 67	IP 67	IP 67
	–40...+90 °C	–40...+90 °C	–40...+85 °C



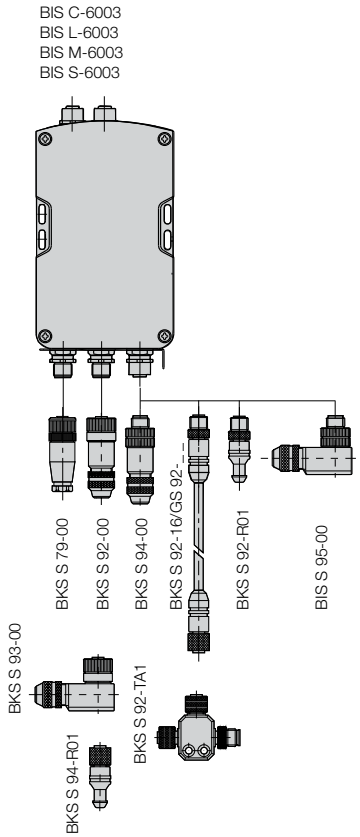
DeviceNet™

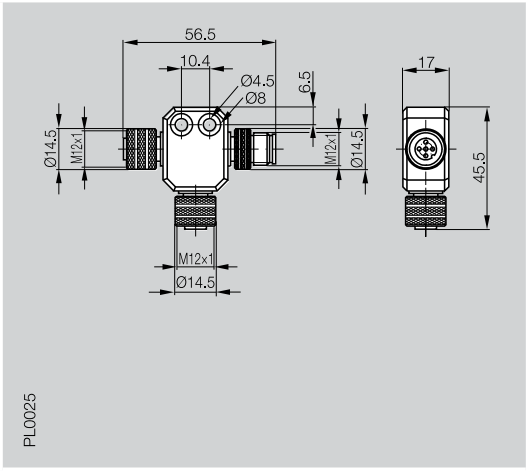
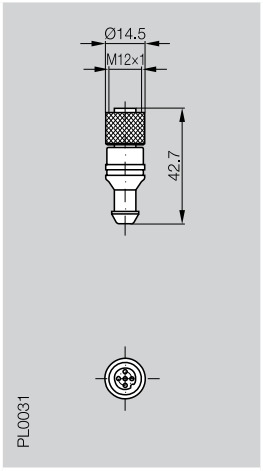
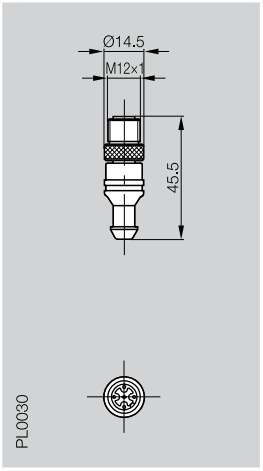
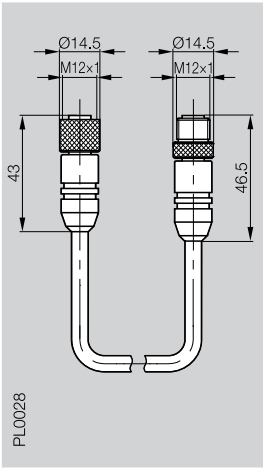


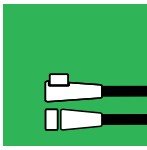
Version	5-pin, female	5-pin, male	5-pin, right-angle, female	5-pin, right-angle, male	
Use	BIS M-6003-...	BIS M-6003-...	BIS M-6003-...	BIS M-6003-...	
					
Part number	BKS-S 92-00	BKS-S 94-00	BKS-S 93-00	BKS-S 95-00	
Connector	Round-connector	Round-connector	Round-connector	Round-connector	
Cable diameter	6...8 mm	6...8 mm	6...8 mm	6...8 mm	
Protection per IEC 60529*	IP 67 (when connected)	IP 67 (when connected)	IP 67 (when connected)	IP 67 (when connected)	
Ambient temperature range	–40...+85 °C	–40...+85 °C	–40...+85 °C	–40...+85 °C	
Resistor					

*only when connected

Pin assignments	**BKS-S 92-00/-S 93-00/ -S 94-00/-S 95-00** Pin	Signal	**BKS-S 92-R01/ -S 94-R01** Pin	Signal
 View of female coupling side	1	Drain	1	–
	2	V+	2	–
	3	V–	3	–
	4	CAN_H	4	121 Ohm
	5	CAN_L	5	

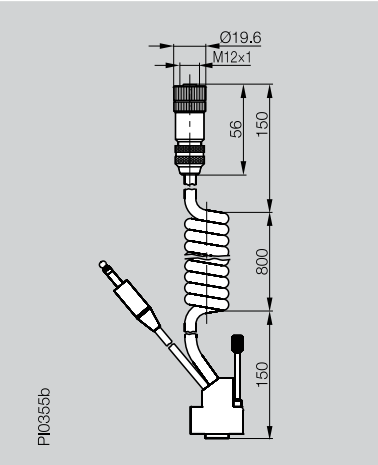


	T-splitter, 2 × female, 1 × male	5-pin, female	5-pin, male	5-pin, male, female
	BIS M-6003-...	BIS M-6003-... termination resistor	BIS M-6003-... termination resistor	BIS M-6003-... extension
				
	BKS-S 92-TA1 Round-connector	BKS-S 92-R01 Round-connector	BKS-S 94-R01 Round-connector	BKS-S 137-19/GS92-PC-_ _ Round-connector
	IP 65 –25...+85 °C	IP 68 –25...+90 °C 121 Ohm	IP 68 –25...+90 °C 121 Ohm	IP 67 –25...+90 °C Please append cable length to part number! 02 = Length 2 m 05 = Length 5 m 10 = Length 10 m



Cables with Connectors
Connectors and Termination Resistor
Connection Cables
Connectors
PROFIBUS-DP Connectors, Termination Resistor
Ethernet Connectors
DeviceNet™ Connectors, Termination Resistor
Accessories
Retaining Bracket, Retainer System, Mounting Plate
Processor Mounting Bracket
Mounting Cuffs
Expander Module BIS Z-ER

Version	Connection cable
Use	Connecting cable for BIS M-4_ _ systems with coupling for BIS C-703-A power supply and RS232 interface

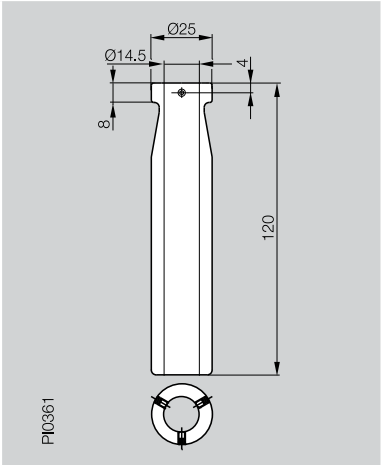


Part number	BIS Z-AK-001-PU1-03
Protection per IEC 60529*	IP 40
Ambient temperature range	0...+70 °C

*Only when connected

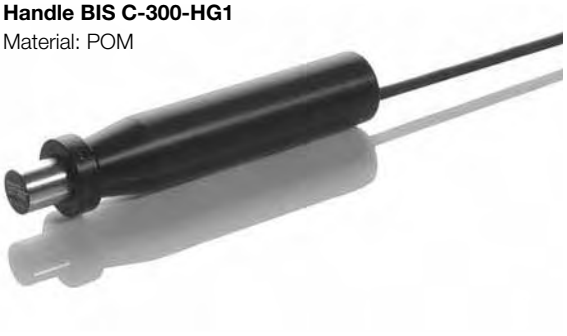
BIS C-703-A **BIS Z-AK-001-PU1-03**

Version	Handle
Use	For read/write head BIS C-300-_ _



Part number	BIS C-300-HG1
Ambient temperature range	-20...+85 °C
Storage temperature	0...+70 °C

Handle BIS C-300-HG1
Material: POM



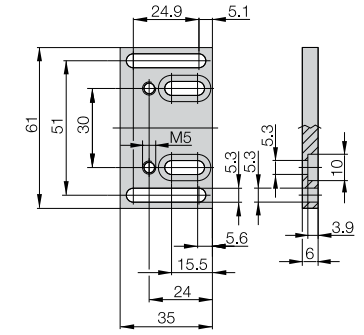
BIS Z-HG-002
for M18 housing

Hand grip –
for ergonomic use
for read/write heads or read/write heads with integrated processors in M18 or M30 housing

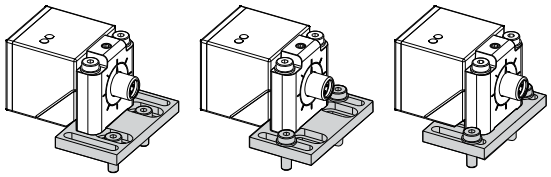
BIS Z-HG-003
for M30 housing

Description	**Retaining bracket for Unicompact Heads**
Part number	BES Q40-HW-1

Material: Al



PX1678

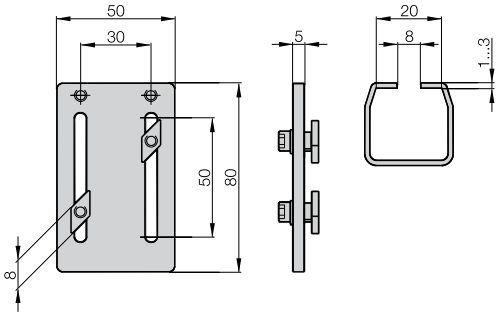


3 different mounting options

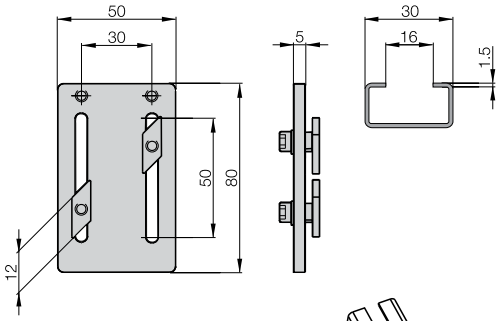
Description	**Retainer system for Unicompact Heads**	**Retainer system for Unicompact Heads**
Part number	BES HS-01-P1-C8/Q40	BES HS-01-P1-C16/Q40

This retainer system was designed for securing Unicompact heads to DIN rail.
Material: Al/CuZn.

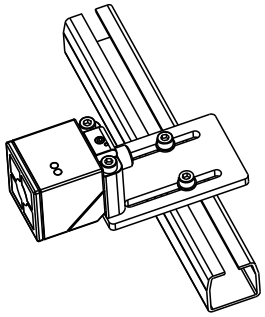
The mounting set consists of:
1 mounting plate
2 slot nuts
2 socket cap screws M5×10 DIN 912 galvanized
2 washers Ø 5,3 DIN 533
2 socket cap screws M5×40 ISO 4762



PX1636c

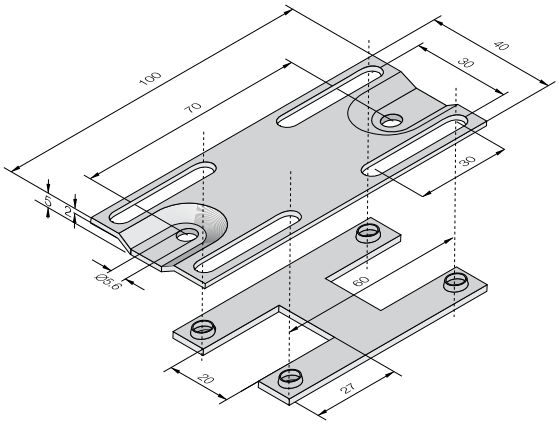


PX1536



Description	**Mounting plate for Uni-processors**
Part number	Mounting plate B 4 - 2057

Wired Uni-processors attached to this mounting plate can be displaced up to 30 mm.
The Unisensor can be moved and secured at the required point by loosening the sensor fastening screws (M5×25, included in the delivery). Tighten screws!
The mounting plate consists of corrosion-resistant aluminum.



Cables with Connectors
Connectors and Termination Resistor
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PROFIBUS-DP Connectors, Termination Resistor
Ethernet Connectors
DeviceNet™ Connectors, Termination Resistor
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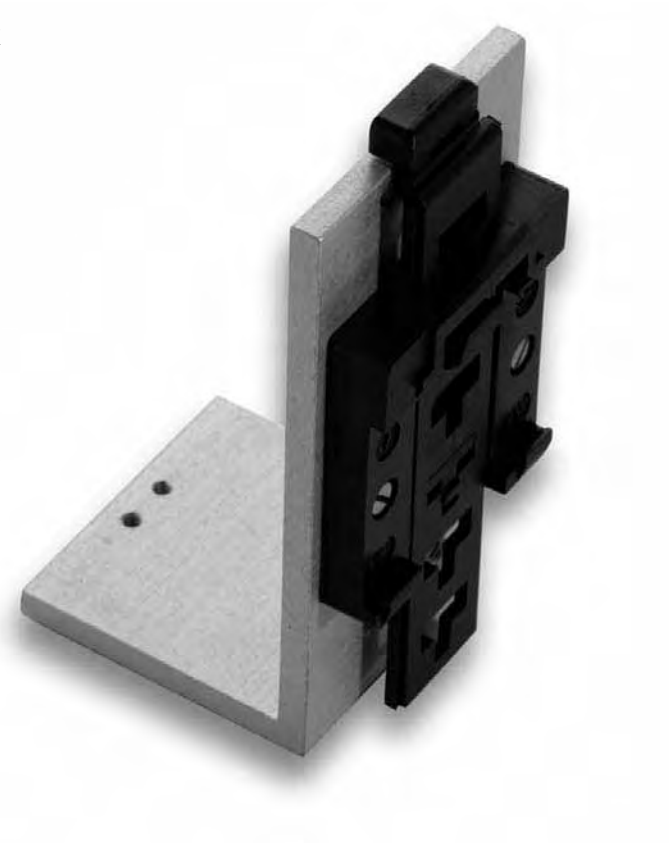
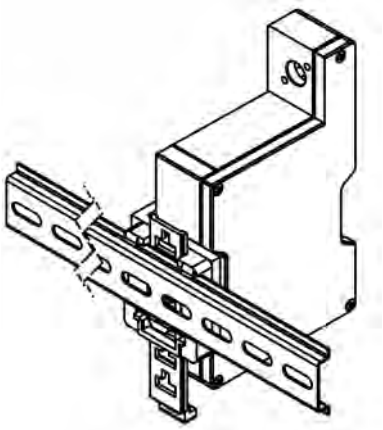
Processor Mounting Bracket
Mounting Cuffs
Expander Module BIS Z-ER

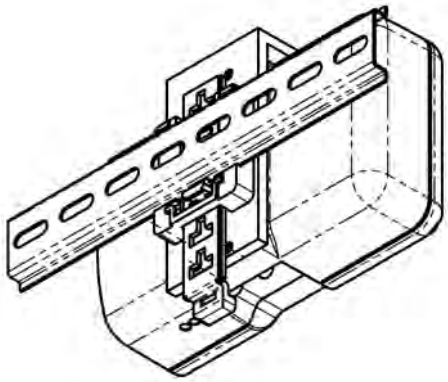
Mounting rail holder set for processor units BIS C/L/M/S-600X

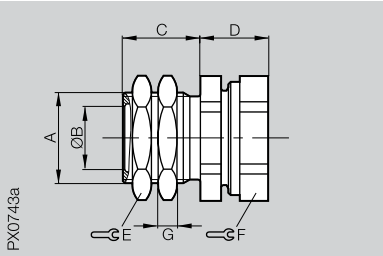
Mounting set BIS Z-HW-001 includes
1 retaining bracket
1 mounting rail holder
4 socket cap screws with hexagon socket, according to DIN 912-M4×16
2 socket cap screws with slot, according to DIN 84-M3×8

Mounting rails are not included.



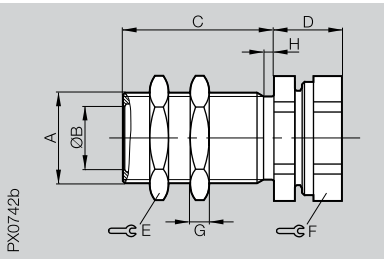


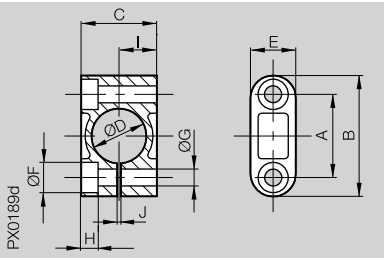




Clamps with positive stop for read/write heads having
≥ 30 mm thread length (material: nickel plated brass)

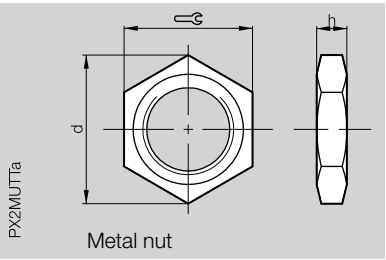
	A	Ø B	C	D max.	E	F	G
BES 18,0-KH-2S	M24×1.5	18	20.5	15.5	SW30	SW30	5
BES 30,0-KH-2S	M36×1.5	30	20.5	15.5	SW41	SW41	6
BES 30,0-KH-2L	M36×1.5	30	40	18	SW41	SW41	6





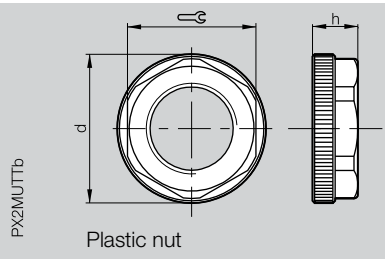
Mounting Cuffs

	A	B	C	D	E	F	G	H	I	J
BES 14,5-BS-1	22	32	20	14,5	12	8	4,5	4,5	10	1
BES 16,0-BS-1	26	36	26	16	12	8	4,5	4,5	13	1
BES 18,0-BS-1	26	36	26	17,9	12	8	4,5	4,5	13	1
BES 30,0-BS-1	42	55	38	30	18	10	5,5	5,5	18	1,5



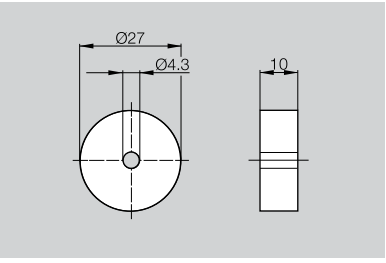
Metal nut

	Part no. = Ordering code	Material	d	SW	h
Metal nuts					
M30×1.5	500252	Ms nickel plated	42	36	5
Stainless steel nuts					
M18×1	636982	1.4301	28	24	4
M30×1.5	636983	1.4401	42	36	5



Plastic nut

	Part no. = Ordering code	Material	d	SW	h
Plastic nuts					
M18×1	606841	PA 6.6	28	24	8



BIS Z-SP-001
Spacer for data carriers when mounting on metal

Cables with Connectors
Connectors and Termination Resistor
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Ethernet Connectors
DeviceNet™ Connectors, Termination Resistor
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Retaining Bracket, Retainer System, Mounting Plate
Processor Mounting Bracket
Mounting Cuffs
Expander Module BIS Z-ER

Expander Module BIS Z-ER
For Multiplexing Up To 32 Read/Write Heads

The new expander module is a low-cost, economically scalable solution for extending your current L or M system by up to 32 read/write heads using only one processor.

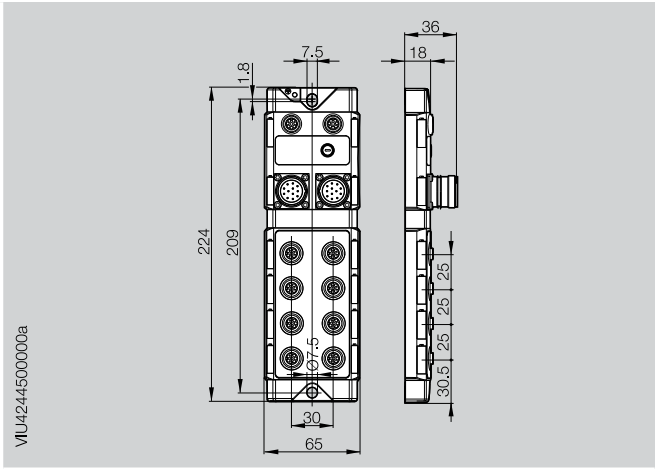
The expander module is designed for connecting up to 8 read/write heads:
BIS L-3_ _ or BIS M-3_ _ can be selected using digital inputs from a rotary switch or PLC.

The read/write heads are selected electronically from an external descrete source and are therefore not subject to switch wear. The process for selecting the read head can be monitored via feedback signals. 2 × 4 control signals help to select the desired read/write head.

A maximum of 2 expanders can be connected in series per head input on BIS processor.

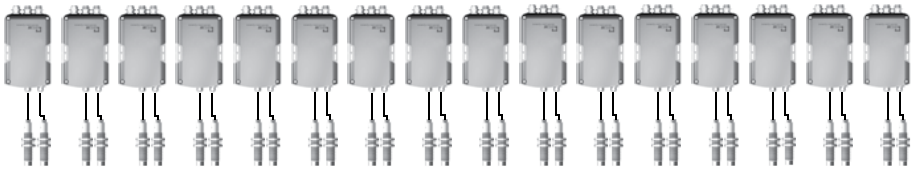
Expander Module BIS Z-ER
For Multiplexing Up To 32 Read/Write Heads

Dimensions	**225×68×37**
Function	Expander module in combination with BIS L-60XX, BIS M-60XX or BIS M-407
Housing material	GD-Zn, nickel-plated
Weight	approx. 580 g

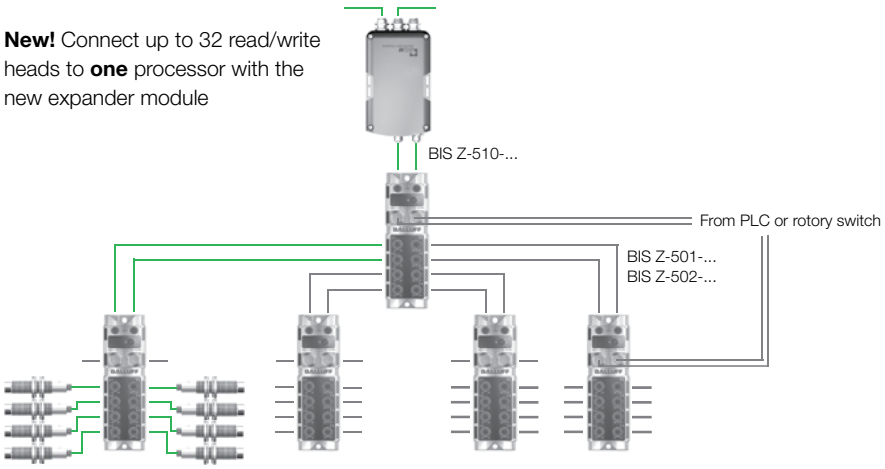


Part number	**BIS Z-ER-001**
Supply voltage	24 V DC ±20 %
Ripple	≤ 10 %
Current draw	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Protection as per IEC 60529	IP 65
Connection type	
Processor connection	2 × 8-pin connectors, M12
Read/Write head connections	2 × 4 8-pin connectors, M12
Control signal connection	2 × 12-pin connectors, M23
Read/Write head ports	2 × 4 external BIS L-3_ _ or BIS M-3_ _ specified by the processor used
Control displays	16 green LEDs and 16 yellow LEDs for indicating the selected read/write head
Mounting	2-hole mounting
Accessories please order separately	Connectors see page 198

Current standard configuration:



New! Connect up to 32 read/write heads to **one** processor with the new expander module

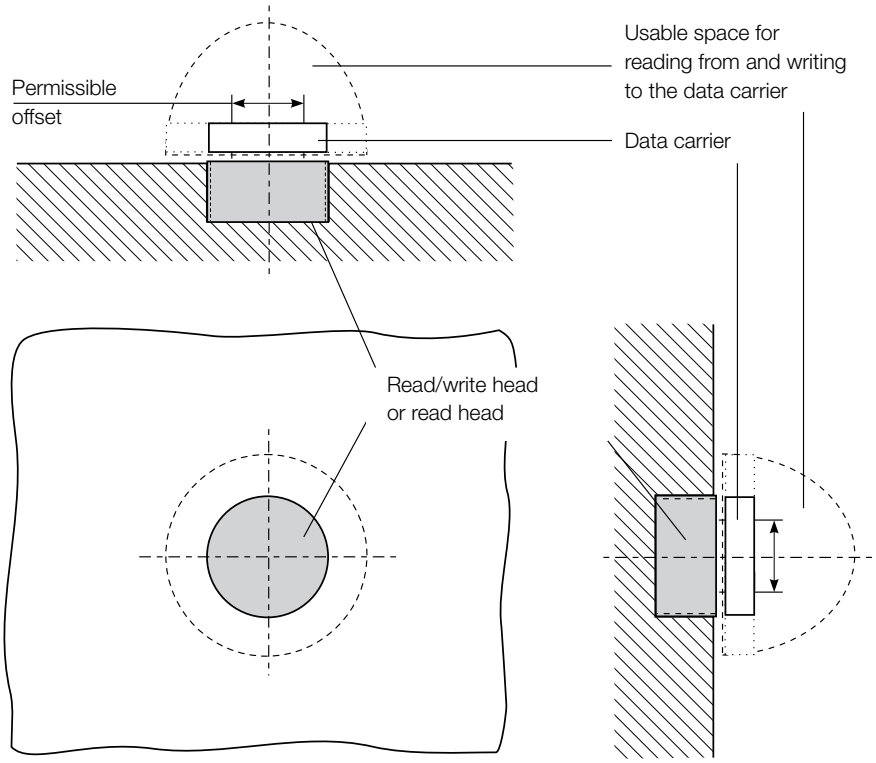


Spatial Arrangement of Read/Write Head or Read Head and Data Carrier

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 head.

The sketches on the two following pages are intended to clarify this requirement, in the first sketch for read/write heads or read heads with non-directional operation, in the second for heads in cases where the data carrier has to pass by from a certain direction or at a certain orientation.

For a **static read/write or read operation** the data carrier stops completely in front of the head; this permits a greater distance between the two.

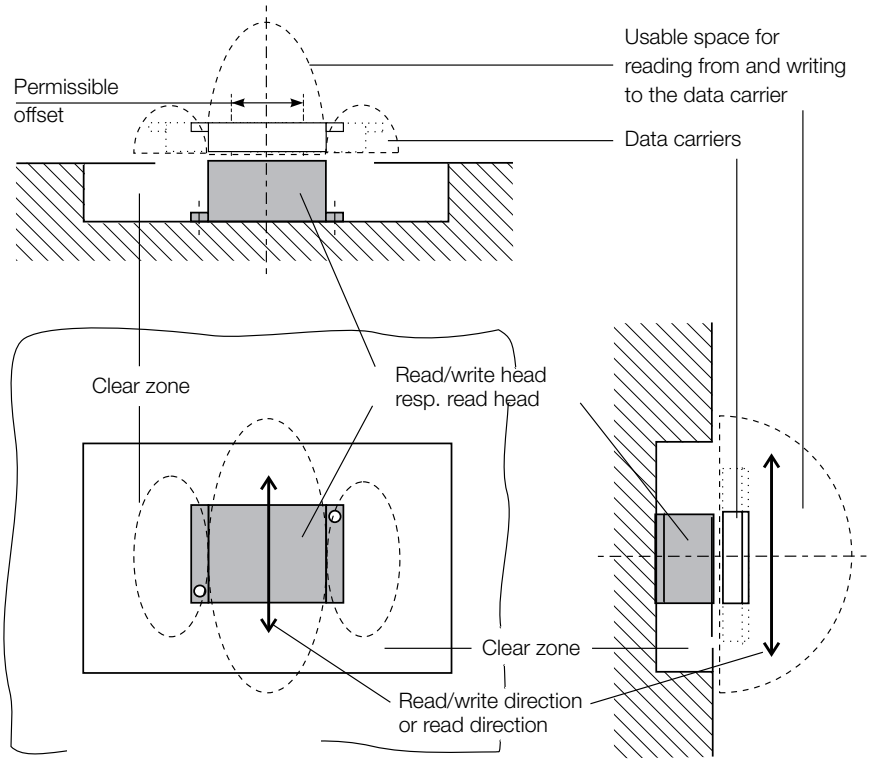


Spatial arrangement of read/write head or read head and data carrier for non-directional heads and **flush mounting** (circular antenna).

For **dynamic operation** the data carrier is read or programmed on the fly. The shorter distance is necessary in order to achieve as large a read/write or read path as possible.

Each read/write head or read head has a certain data carrier 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 are indicated as well as the distance and relative speed between the read/write head or read head and the data carrier.



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

**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

As an aid in startup, for test configuration!

This free software allows you to read or program a data carrier using any common PC.

Requirements:

PC:
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 hex format.
- Edit data and write data to the data carrier.
- Initialize data carrier for the CRC function.

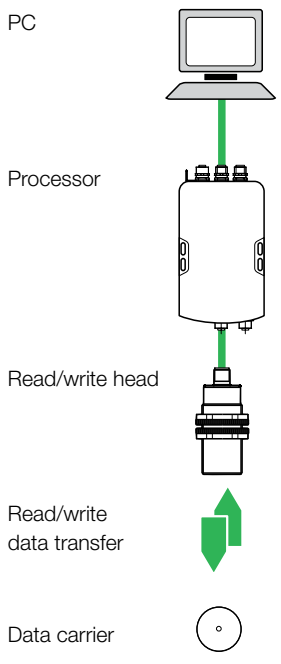
**Software code examples
BIS C-60_2 for
Siemens Simatic S7,
Allen Bradley ControlLogix,
and Mitsubishi Melsec**

For fast integration into the PLC controller. Save time and money with preconfigured functions!

Function modules and ladder code examples for easier integration of InterBus, PROFIBUS-DP, PROFINET, DeviceNet, and Ethernet/IP processors to Simatic S7, ControlLogix, or Mitsubishi Melsec based PLC controllers.

The function modules and ladder code offer the full functionality of the Balluff Processors. Data is exchanged through the I/O section of the controller.

Advantages:
- Faster startup
- Easy to use
- Full command set



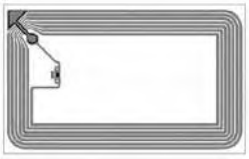
Special Data Carriers for special applications.

Balluff has designed many special ID tags and mounting methods for all kinds of applications. Contact us today for your special data carrier or read/write head needs

BIS M-107-03/L-H200
Data carrier for high temperatures

BIS M-140-02/A-M6
BIS M-140-02/A-M8
Databolt™ – Ideal for automatic insertion and removal from parts like engine blocks and heads.

BIS M-115-03/A
Other solutions for your application. Contact us.



Paper tags – Ideal for disposable applications in logistics. Contact us.

BIS C-131-05/L
For radial data retrieval from rotating parts, positioning not required. Contact us.

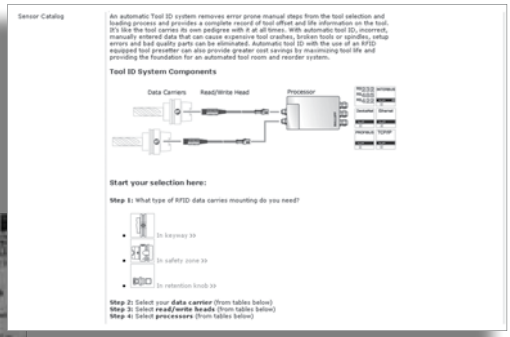
BIS L-130-05/L-SA1
For radial data retrieval from rotating parts, positioning not required. Contact us.

For more information on Industrial RFID products and systems visit

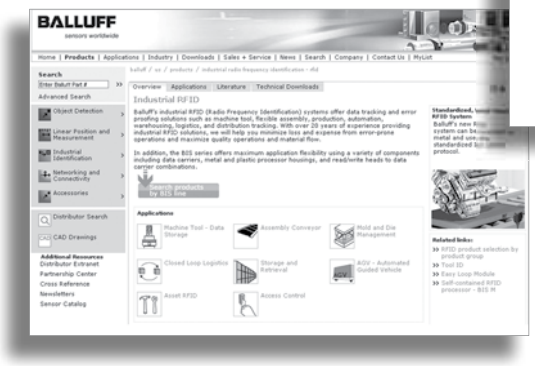
www.balluff.com/rfid

Resources available:

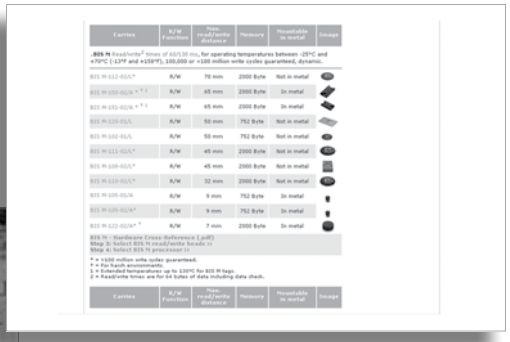
- Applications
- Usage information
- Datasheets
- Literature
- Drawings
- Videos



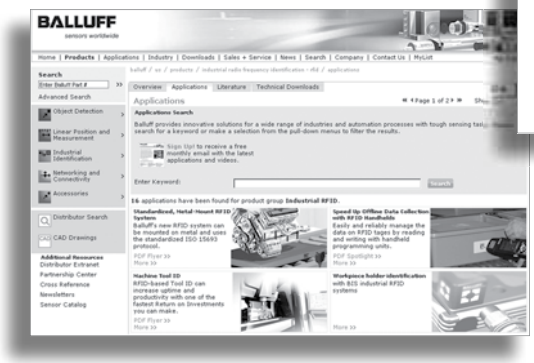
Individual application web pages will help guide you through the process of how Balluff's Industrial RFID can be applied. They include diagrams and specific information on how RFID can be used to solve your application.



Visit the Industrial RFID overview page to learn more about Ballluff's RFID products and systems. This page can help guide you by application type or by product functionality to help provide quick and easy methods to find the solution you're looking for.



The Industrial RFID product selection pages help guide you through the process of selecting an RFID system by providing step-by-step charts based on tag data. This method provides easy access to selection criteria such as tag read/write capability and memory size, tag range and mounting capability, and read/write head vs. tag cross reference data all right at your finger tips.



Visit the Industrial RFID applications web page to find out various ways Balluff's RFID has been applied to provide visibility into processes and solve manufacturing data handling requirements.

Balluff North America

Florence, Kentucky USA
Enjoying one of the highest growth rates in the automation industry, Balluff's Florence, Kentucky United States headquarters is located just south of Cincinnati, Ohio. Our customers are in industries such as automotive, machine tool, robotics, injection molding, packaging, material handling, and more.

In addition to sales, marketing, and logistic functions, this facility manufactures regionally focused inductive proximity sensors and Micropulse® magnetostrictive linear position sensors.

Balluff spans the globe with representation in 49 countries.

For a complete global listing visit **www.balluff.com/global**

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 Page 221-223 are in separate index file

***consult factory for available order codes**

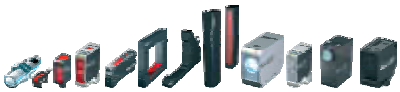
Index and Short Order Codes

***consult factory for available order codes**

***consult factory for available order codes**

Object Detection

Sensor Product Line
Inductive sensors BES DC 3-/4-wire
Inductive sensors BES DC 2-wire
Inductive sensors BES AC/DC
Inductive sensors BES with special properties
Sensors for pneumatic cylinders BMF
Magnetic field sensors BMF
Capacitive sensors BCS
Pressure sensors BSP



Photoelectric Product Line
Diffuse energetic BOS with fore- and background suppression
Retro-reflective sensors BOS
Through-beam sensors BOS (emitter/receiver)
Fiber optic systems BFB
Through-beam fork sensors BGL
Dynamic optical windows BOWA
Light grids BLG
Contrast sensors BKT
Luminescence sensors BLT
Color sensors BFS
Photoelectric distance sensors BOD

Mechanical Product Line
Mechanical Single and Multiple Position Switches
Mechanical single and multiple position switches to DIN EN 60204-1/VDE 0113
Mechanical single and multiple position switches with positive opening
Mechanical multiple position switches with quick plunger change-out
Inductive single and multiple position switches
Inductive single and multiple position switches with extended switching distance
Mechanical wireless position switches
Mixed assembly multiple position switches

Linear Position and Sensing

Linear Displacement Product Line
Micropulse® transducer BTL Profile Series
Micropulse® transducer BTL AT Series
Micropulse® transducer BTL Rod-Style Series
Micropulse® transducer BTL Compact Rod Series
Micropulse® processors, BUS interfaces
BML magnetic linear encoder system
BDG/BRG incremental and absolute encoders
BIW pulse-Inductive linear displacement sensor
BAW inductive distance sensors
BIL magnetoinductive position sensors
BOD photoelectric distance sensors

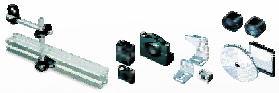
Industrial Identification

Industrial Identification
BIS C Industrial RFID systems
BIS L Industrial RFID systems
BIS M Industrial RFID systems
BIS S Industrial RFID systems
BVS Vision Sensor

Industrial Networking and Connectivity

Industrial Networking and Connectivity
BCC connectors and cables
BPI passive splitter boxes
BNI active splitter boxes
IO-Link
Inductive transmission systems - Remote
BIC inductive couplers
BUS systems
Wireless
Electrical Devices

Mechanical Accessories



Mechanical Accessories
Holders and Fastening Systems
BMS mounting system

BALLUFF

sensors worldwide

Object Detection

Linear Position and Measurement

Industrial Identification

Networking and Connectivity

Accessories

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