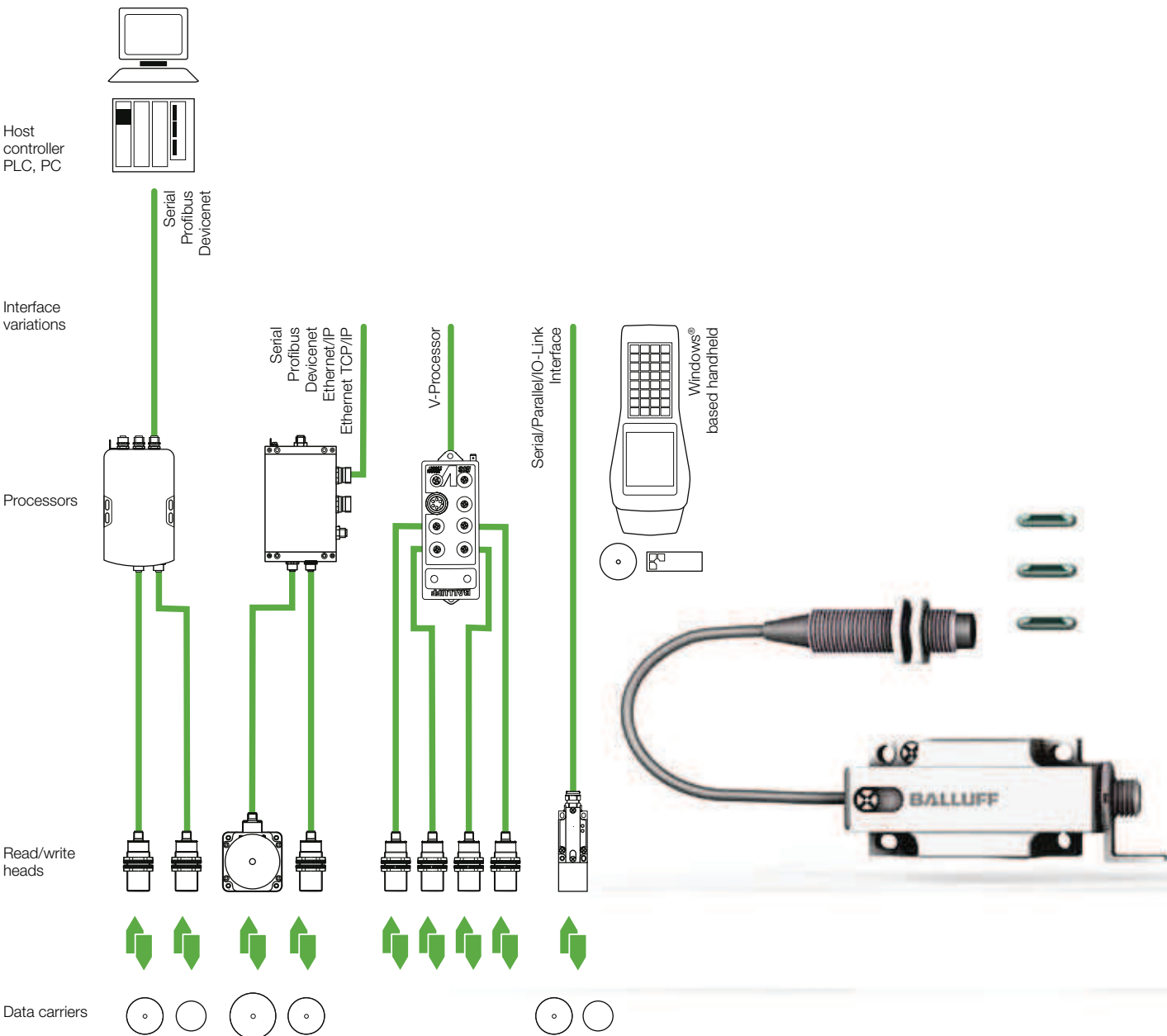




BIS L Industrial RFID System

Inductive Identification

The cost-effective BIS L is used in logistics and on assembly lines. It uses a LF 125 kHz technology along with passive tags to provide shorter range RFID solutions.

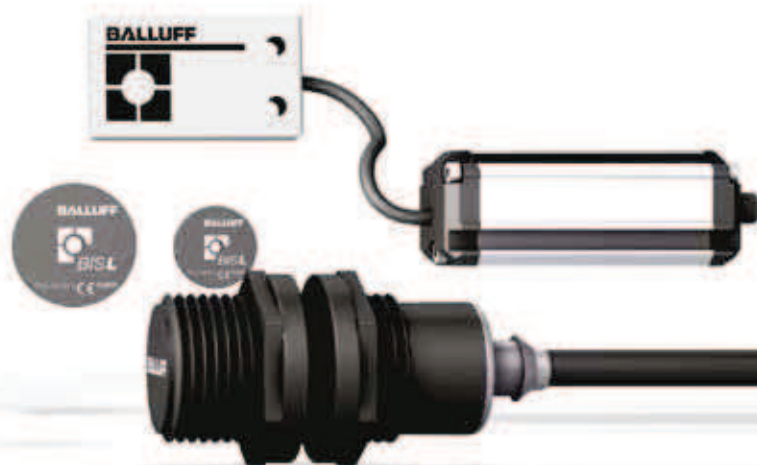


BIS L Industrial RFID System

Inductive identification



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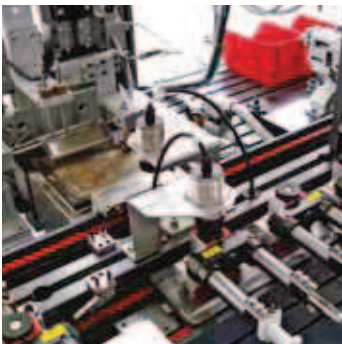


Basic information and definitions can be found on page 352

BIS L Industrial RFID System

Range of applications

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.




Data carrier		
	Page	
BIS0033	BIS L-100-01/L	192
BIS0035	BIS L-100-05/L-RO	195
BIS0036	BIS L-101-01/L	193
BIS0038	BIS L-101-05/L-RO	195
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BIS003U	BIS L-202-03/L	195
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BIS L Industrial RFID System

Range of applications

Production		Intralogistics									Access and object control								
Tool and die management		Assembly conveying systems			Closed logistics circuits		Storage and retrieval equipment		Driverless vehicles		Object detection		Access and entry control						
On tool	Dies	Pallets	Retainer/workpiece carrier	Pallets	Retainer/workpiece carrier	Workpiece carrier skid	Guiding, steering	Identification	In component	On component	Reliable access control	Process access	Part ID	Read/write	Installation in metal	Long distances (> 16 mm)	192 Byte	3 Byte + CRC	5 Byte
		■	■	■										■			■	■	■
		■	■	■			■	■						■			■	■	■
		■	■	■	■	■		■						■		■	■	■	■
	■	■	■	■	■	■		■			■	■		■		■	■	■	■
	■	■	■	■	■	■		■			■	■		■		■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
	■	■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■
		■	■	■	■	■		■					■		■	■	■	■	■



125 kHz LF

BIS L Industrial RFID System

Range of applications

- Read/write distances overview
- Data carriers read/write
- Data carriers read only
- Read/write heads
- Data couplers
- Read only compact processors
- Processors
- easy loop® Communication module
- Standard handheld
- Access protection

BIS L Industrial RFID System

Read/write distances overview

How much data do you require?

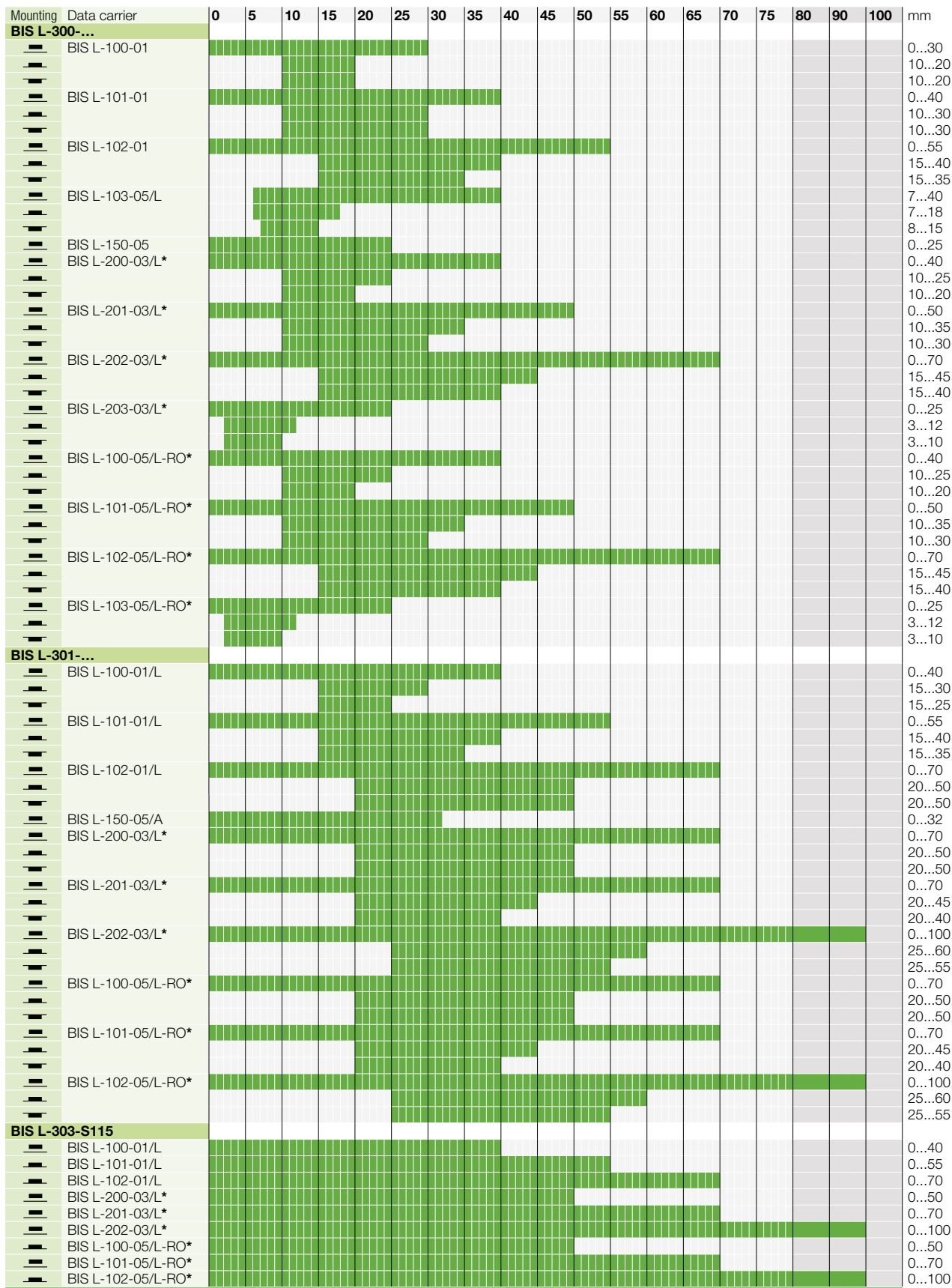
How dynamic is your application?

In three steps you will have selected your BIS L system:

- First choose the appropriate form factor for your data carrier and the associated read/write heads.

- Then determine your read/write distance, which also depends on the speed of your system: the faster the data carrier moves, the closer the distance needs to be.

- Finally, determine the desired memory capacity. This will give you the maximum data security.



— flush in steel — non-flush on steel — non-metal * read only

BIS L Industrial RFID System

Read/write distances overview

Mounting	Data carrier	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	mm
BIS L-302-S115																					
■	BIS L-100-01/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...20
■	BIS L-101-01/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	8...15
■	BIS L-102-01/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	8...15
■	BIS L-103-05/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...25
■	BIS L-150-05/A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-200-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-201-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...30
■	BIS L-202-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-203-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-100-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...15
■	BIS L-101-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	4...10
■	BIS L-102-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	3...8
■	BIS L-103-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...25
BIS L-304-...																					
■	BIS L-100-01/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...20
■	BIS L-101-01/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	8...15
■	BIS L-102-01/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	8...15
■	BIS L-103-05/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...25
■	BIS L-150-05/A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-200-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-201-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...30
■	BIS L-202-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-203-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10...20
■	BIS L-100-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...15
■	BIS L-101-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	4...10
■	BIS L-102-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	3...8
■	BIS L-103-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...25
BIS L-306-...																					
■	BIS L-103-05/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...7
■	BIS L-100-05/L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...15
■	BIS L-203-03/L*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...7
■	BIS L-103-05/L-RO*	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...7
BIS L-350-...																					
■	BIS L-150-05/A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...17
■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...24
■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0...24



125 kHz LF

BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

Read only compact processors

Processors

easy loop® Communication module

Standard handheld

Access protection

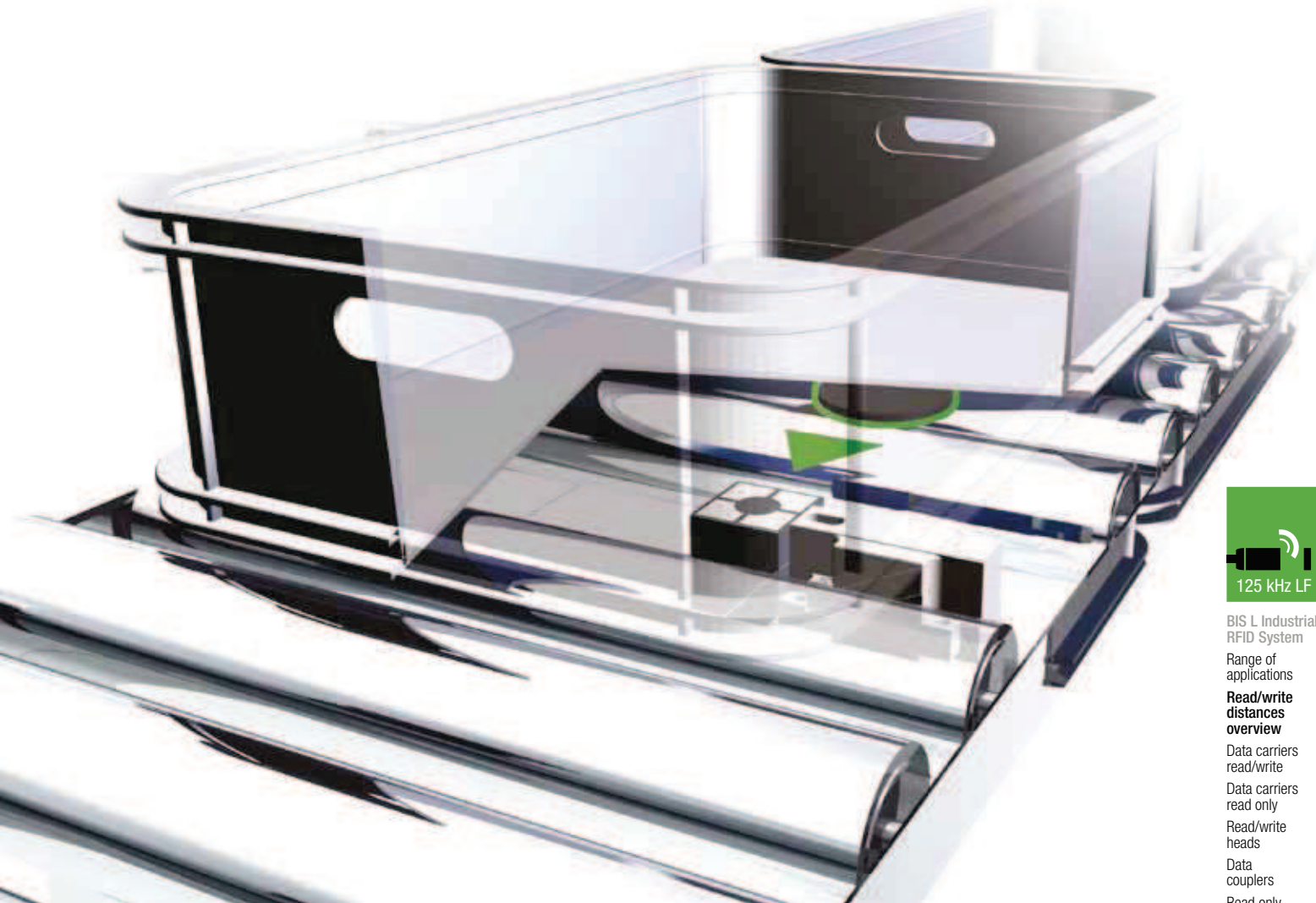
BIS L Industrial RFID System

Read/write distances overview

Mounting	Data carrier	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	mm	
BIS L-405-03 -001-05-MU																						
■	BIS L-200-03/L*																				0...30	
■	BIS L-100-05/L-RO*																				0...30	
■	BIS L-201-03/L*																					0...40
■	BIS L-101-05/L-RO*																					0...40
■	BIS L-202-03/L*																					0...55
■	BIS L-102-05/L-RO*																					0...55
■	BIS L-203-03/L*																					0...20
■	BIS L-103-05/L-RO*																					0...20
BIS L-405-03 -003-05-MU																						
■	BIS L-203-03/L*																					0...23
■	BIS L-103-05/L-RO*																					0...23
BIS L-405-03 -002-05-MU																						
BIS L-405-03 -004-05-MU																						
■	BIS L-200-03/L*																				0...23	
■	BIS L-100-05/L-RO*																				0...23	
■	BIS L-201-03/L*																	0...27				
■	BIS L-101-05/L-RO*																	0...27				
■	BIS L-203-03/L*																					0...16
■	BIS L-103-05/L-RO*																					0...16
BIS L-400-035-001-0 -S115																						
■	BIS L-200-03/L*																				0...30	
■	BIS L-100-05/L-RO*																				0...30	
■	BIS L-201-03/L*																					0...40
■	BIS L-101-05/L-RO*																					0...40
■	BIS L-202-03/L*																					0...55
■	BIS L-102-05/L-RO*																					0...55
■	BIS L-203-03/L*																					0...20
■	BIS L-103-05/L-RO*																					0...20
BIS L-400-035-003-0 -S115																						
■	BIS L-203-03/L*																					0...11
■	BIS L-103-05/L-RO*																					0...11
BIS L-400-035-002-0 -S115																						
BIS L-400-035-004-00-S115																						
■	BIS L-200-03/L*																				0...23	
■	BIS L-100-05/L-RO*																				0...23	
■	BIS L-201-03/L*																	0...27				
■	BIS L-101-05/L-RO*																	0...27				
■	BIS L-203-03/L*																					0...16
■	BIS L-103-05/L-RO*																					0...16
BIS L-409-045-001-07-S4																						
■	BIS L-200-03/L*																					0...25
■	BIS L-100-05/L-RO*																					0...25
■	BIS L-201-03/L*																					0...35
■	BIS L-101-05/L-RO*																					0...35
■	BIS L-202-03/L*																					0...48
■	BIS L-102-05/L-RO*																					0...48
■	BIS L-203-03/L*																					0...16
■	BIS L-103-05/L-RO*																					0...16
BIS L-409-045-003-07-S4																						
■	BIS L-203-03/L*																					0...7
■	BIS L-103-05/L-RO*																					0...7
BIS L-409-045-002-07-S4																						
BIS L-409-045-004-07-S4																						
■	BIS L-200-03/L*																				0...15	
■	BIS L-100-05/L-RO*																				0...15	
■	BIS L-201-03/L*																	0...18				
■	BIS L-101-05/L-RO*																	0...18				
■	BIS L-203-03/L*																					0...10
■	BIS L-103-05/L-RO*																					0...10
BIS L-400-043-001-02-S115																						
■	BIS L-200-03/L*																				0...30	
■	BIS L-100-05/L-RO*																				0...30	
■	BIS L-201-03/L*																					0...40
■	BIS L-101-05/L-RO*																					0...40
■	BIS L-202-03/L*																					0...55
■	BIS L-102-05/L-RO*																					0...55
■	BIS L-203-03/L*																					0...20
■	BIS L-103-05/L-RO*																					0...20
BIS L-400-043-003-02-S115																						
■	BIS L-203-03/L*																					0...11
■	BIS L-103-05/L-RO*																					0...11
BIS L-400-043-002-02-S115																						
BIS L-400-043-004-02-S115																						
■	BIS L-200-03/L*																				0...23	
■	BIS L-100-05/L-RO*																				0...23	
■	BIS L-201-03/L*																	0...27				
■	BIS L-101-05/L-RO*																	0...27				
■	BIS L-203-03/L*																					0...16
■	BIS L-103-05/L-RO*																					0...16

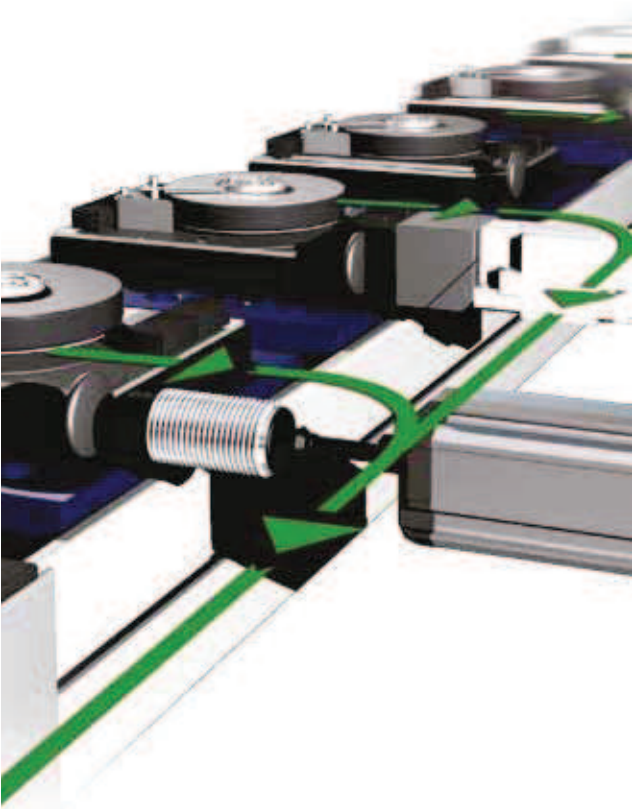
■ flush in steel ■ non-flush on steel ■ non-metal
* read only

BIS L Industrial RFID System
Read/write distances overview



125 kHz LF

- BIS L Industrial RFID System
- Range of applications
- Read/write distances overview**
- Data carriers read/write
- Data carriers read only
- Read/write heads
- Data couplers
- Read only compact processors
- Processors
- easy loop® Communication module
- Standard handheld
- Access protection



BIS L Industrial RFID System

Data carriers read/write

For harsh environments

- Housing material extremely resistant to chemicals
- Compact designs for special applications



Dimensions	Ø 20x1.6 mm
Housing material	EP
Weight	1.4 g

BIS L programmable

192 bytes	Ordering code	BIS0033
	Part number	BIS L-100-01/L
Operating temperature		-25...+85 °C
Storage temperature		-40...+95 °C
Degree of protection per IEC 60529		IP 67

Appropriate read/write head with max. read/write distance

Mounting			
BIS L-300	30 mm	20 mm	20 mm
BIS L-301	40 mm	30 mm	25 mm
BIS L-302	20 mm	15 mm	15 mm
BIS L-303	50 mm	14 mm	
BIS L-304	20 mm	15 mm	15 mm
BIS L-306	15 mm		
BIS L-350			

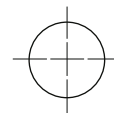
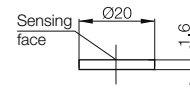
For installation pay attention to Basic Information chapter.

Mounting:

- flush in steel
- non-flush on steel
- non-metal

Antenna type:

- rod
- round



BIS L Industrial RFID System

Data carriers read/write



Ø 30x1.6 mm
EP
2.6 g



Ø 50x1.6 mm
EP
6.5 g



Ø 12.4x2 mm
EP
0.8 g



Ø 3.15x13.3 mm
Glass
0.22 g

BIS0036

BIS L-101-01/L
-25...+85 °C
-40...+95 °C
IP 67

BIS0039

BIS L-102-01/L
-25...+85 °C
-40...+95 °C
IP 67

BIS003E

BIS L-103-05/L
-25...+85 °C
-40...+130 °C
IP 68

BIS003N

BIS L-150-05/A
-40...+85 °C
-40...+90 °C
IP 68



125 kHz LF

BIS L Industrial RFID System

Range of applications
Read/write distances overview

Data carriers read/write

Data carriers read only
Read/write heads

Data couplers

Read only compact processors

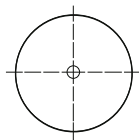
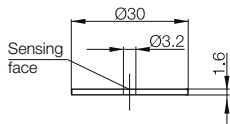
Processors

easy loop® Communication module

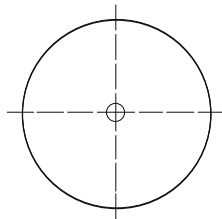
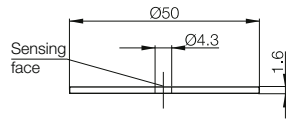
Standard handheld

Access protection

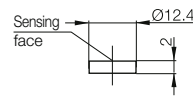
	Ø 30x1.6 mm			Ø 50x1.6 mm			Ø 12.4x2 mm			Ø 3.15x13.3 mm		
	40 mm	30 mm	30 mm	55 mm	40 mm	35 mm	10 mm	18 mm	12 mm	25 mm		
	55 mm	40 mm	35 mm	70 mm	50 mm	50 mm				32 mm		
	25 mm	20 mm	20 mm	30 mm	25 mm	20 mm	22 mm	15 mm	8 mm	12 mm		
	65 mm	25 mm	15 mm	85 mm	30 mm	25 mm						
	25 mm	20 mm	20 mm	30 mm	25 mm	20 mm	22 mm 7 mm	15 mm	8 mm	12 mm		
											17 mm	24 mm
												24 mm



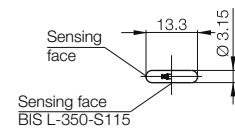
Tightening torque max. 1 Nm



Tightening torque max. 1 Nm



For metal



Sensing face
BIS L-350-S115

Glass data carrier –
chemically resistant!



Ordering code

BIS003L

Part number

BIS L-130-05/L-SA1

For radial data retrieval from rotating parts, positioning not required.
Contact us.

BIS L Industrial RFID System

Data carriers read only

For maximum data security

The CRC-16 procedure involves writing a test code to the data carrier to allow you to control data anywhere at any time. 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, which are 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 website. 3 bytes of user data as well as 2 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 5 bytes (40 bits). No repetition of the unique number or delivery of sequential numbers is possible.

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



Dimensions	
Housing material	
Weight	

BIS L read-only

24 bits + CRC	Ordering code	
	Part number	
40 bits	Ordering code	
	Part number	
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		


Appropriate read/write head with max. read/write distance

Mounting	
BIS L-300	
BIS L-301	
BIS L-302	
BIS L-303	
BIS L-304	
BIS L-306	

For installation pay attention to Basic Information chapter.

Mounting:

 flush in steel

 non-flush on steel

 non-metal

Antenna type:

 rod

 round

BIS L Industrial RFID System

Data carriers read only



Ø 20x1.6 mm	Ø 30x1.6 mm	Ø 50x1.6 mm	Ø 12.4x2 mm
EP	EP	EP	EP
1.4 g	2.6 g	6.5 g	0.8 g

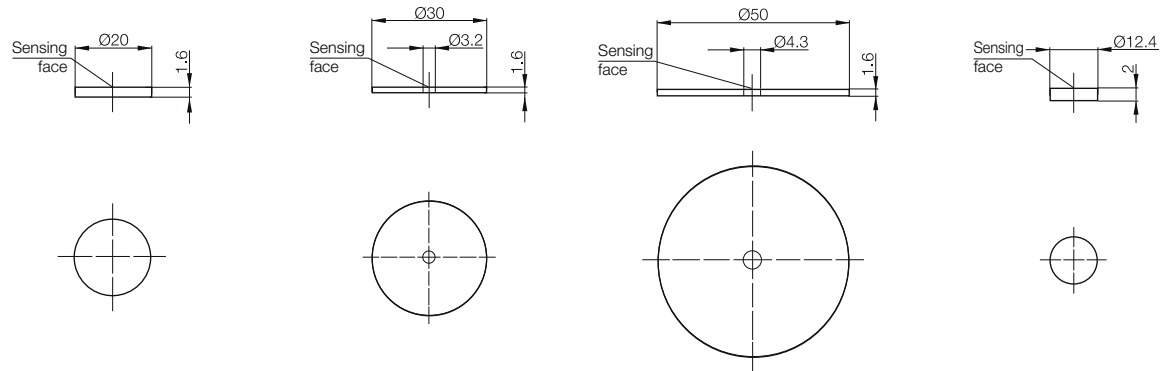
BIS0035	BIS0038	BIS003C	BIS003F
BIS L-100-05/L-RO	BIS L-101-05/L-RO	BIS L-102-05/L-RO	BIS L-103-05/L-RO
BIS003R	BIS003T	BIS003U	BIS003W
BIS L-200-03/L	BIS L-201-03/L	BIS L-202-03/L	BIS L-203-03/L
-40...+85 °C	-40...+85 °C	-40...+85 °C	-25...+85 °C
-40...+95 °C	-40...+95 °C	-40...+95 °C	-40...+130 °C
IP 67	IP 67	IP 67	IP 68



BIS L Industrial RFID System

- Range of applications
- Read/write distances overview
- Data carriers read/write
- Data carriers read only**
- Read/write heads
- Data couplers
- Read only compact processors
- Processors easy loop® Communication module
- Standard handheld
- Access protection

40 mm	25 mm	20 mm	50 mm	35 mm	30 mm	70 mm	45 mm	40 mm	25 mm		10 mm
50 mm	35 mm	30 mm	70 mm	45 mm	40 mm	100 mm	60 mm	55 mm	15 mm		8 mm
25 mm	15 mm	15 mm	30 mm	20 mm	20 mm	40 mm	25 mm	20 mm	15 mm		8 mm
55 mm			70 mm	30 mm	15 mm	100 mm	45 mm	40 mm	15 mm		8 mm
25 mm	15 mm	15 mm	30 mm	20 mm	20 mm	40 mm	25 mm	20 mm	7 mm		



Tightening torque max. 1 Nm

Tightening torque max. 1 Nm






Dimensions	
Housing material	
For standard processor	Ordering code
	Part number
For BIS V processor	Ordering code
	Part number
Mounting	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Connection to	
Connection cable	

Ordering code	
Part number	
Ordering code	
Part number	

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

For installation pay attention to Basic Information chapter.

Mounting:

-  flush in steel
-  non-flush on steel
-  non-metal

Antenna type:

-  rod
-  round

BIS L Industrial RFID System

Read/write heads



M30x1.5

PA 66

BIS004R

BIS L-300-S115

BIS00UL

BIS VL-300-001-S4

0...+70 °C (minus temperatures on request)

-20...+85 °C

IP 67

Processor

See page 280 for cable options



125 kHz LF

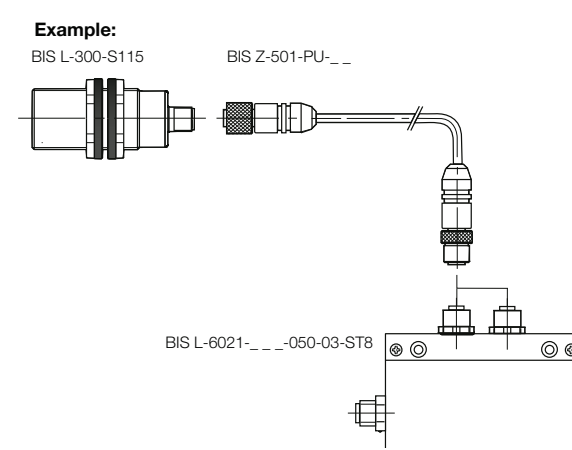
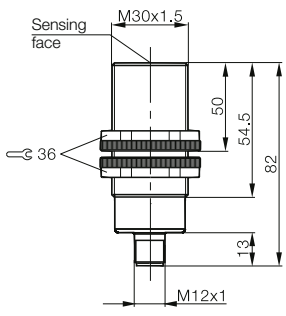
BIS L Industrial RFID System

Range of applications
Read/write distances overview

Data carriers read/write
Data carriers read only
Read/write heads

Data couplers
Read only compact processors
Processors
easy loop® Communication module
Standard handheld
Access protection

BIS0033			BIS0036			BIS0039			BIS003E			BIS003N			BIS003R			BIS003T			BIS003U			BIS003W			
BIS L-100-01			BIS L-101-01			BIS L-102-01			BIS L-103-05/L			BIS L-150-05			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L			BIS L-203-03/L			
BIS0035											BIS0038			BIS003C			BIS003F										
BIS L-100-05/L-RO											BIS L-101-05/L-RO			BIS L-102-05/L-RO			BIS L-103-05/L-RO										
0...30	10...20	10...20	0...40	10...30	10...30	0...55	15...40	15...35	7...40	7...18	8...15	0...25				0...40	10...25	10...20	0...50	10...35	10...30	0...70	15...45	15...40	0...25	3...12	3...10
±18			±28			±30						±18			±20			±28			±35			±15	±12	±9	
±18			±28			±30						±18			±20			±28			±35			±15	±12	±8	
±18	±8	±8	±28	±15	±13	±30			±15	±10	±5	±18			±20	±15	±10	±28	±20	±17	±35			±15	±9	±7	
±18	±8	±8	±28	±15	±13	±30			±15	±10	±5	±17			±20	±15	±10	±28	±20	±17	±35			±15			
±18	±5	±5	±28	±15	±10	±30	±20	±20	±15	±10	±3	±17			±20	±10	±10	±28	±20	±17	±35	±25	±20	±15			
±18	±0	±0	±28	±15	±10	±30	±20	±15	±15			±17			±20	±10	±0	±28	±20	±15	±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						
						±30															±35						
																					±35						





Dimensions	
Housing material	
For standard processor	Ordering code
	Part number
For BIS V processor	Ordering code
	Part number
Mounting	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Connection to	
Connection cable	




	Ordering code
	Part number
	Ordering code
	Part number

Appropriate data carrier

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

For installation pay attention to Basic Information chapter.

Mounting:

-  flush in steel
-  non-flush on steel
-  non-metal

Antenna type:

-  rod
-  round

BIS L Industrial RFID System Read/write heads



125 kHz LF

BIS L Industrial
RFID System

Range of
applications

Read/write
distances
overview

Data carriers
read/write

Data carriers
read only

**Read/write
heads**

Data
couplers

Read only
compact
processors

Processors

easy loop®
Communi-
cation module

Standard
handheld

Access
protection

80×80×40 mm

PBT

BIS004T

BIS L-301-S115

BIS00U6

BIS VL-301-001-S4

0...+70 °C (minus temperatures on request)

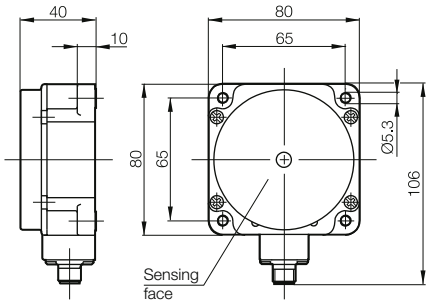
-20...+85 °C

IP 67

Processor

See page 280 for cable options

BIS0033	BIS0036		BIS0039			BIS003N			BIS003R			BIS003T			BIS003U		
BIS L-100-01/L	BIS L-101-01/L		BIS L-102-01/L			BIS L-150-05/A			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L		



BIS L Industrial RFID System

Read/write heads

Suitable for roller conveyors/internal company logistics



Dimensions	
Housing material	
For standard processor	Ordering code
	Part number
Mounting	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Connection to	
Connection cable	

Ordering code

Part number

Ordering code

Part number

Appropriate data carrier


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

For installation pay attention to Basic Information chapter.

Mounting:

 flush in steel

 non-flush on steel

 non-metal

Antenna type:

 rod

 round

BIS L Industrial RFID System Read/write heads



170x80x50 mm

PBT

BIS004Y

BIS L-303-S115



0...+70 °C (minus temperatures on request)

-20...+85 °C

IP 67

Processor

See page 280 for cable options



125 kHz LF

	BIS0033			BIS0036			BIS0039			BIS003R			BIS003T			BIS003U		
	BIS L-100-01/L			BIS L-101-01/L			BIS L-102-01/L			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L		
										BIS0035			BIS0038			BIS003C		
	BIS L-100-05/L-RO			BIS L-101-05/L-RO			BIS L-102-05/L-RO											
	0...40			0...55			0...70			0...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		
	±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		

BIS L Industrial
RFID System

Range of
applications

Read/write
distances
overview

Data carriers
read/write

Data carriers
read only

**Read/write
heads**

Data
couplers

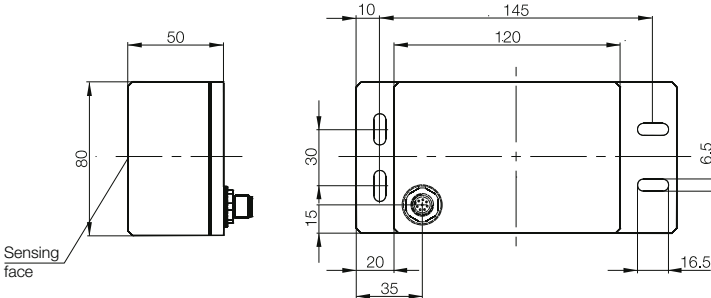
Read only
compact
processors

Processors

easy loop®
Communi-
cation module

Standard
handheld

Access
protection



BIS L Industrial RFID System

Read/write heads




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



Dimensions		
Housing material		
For standard processor	Ordering code	
	Part number	
For BIS V processor	Ordering code	
	Part number	
Mounting		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cable		
	Ordering code	
	Part number	
	Ordering code	
	Part number	
Appropriate data carrier		
Mounting		
Write distance in mm		
Read distance in mm		
Offset in mm at distance		
	0 mm	
	3 mm	
	4 mm	
	7 mm	
	8 mm	
	10 mm	
	12 mm	
	15 mm	
	20 mm	
	25 mm	
	30 mm	
	35 mm	
	40 mm	

For installation pay attention to Basic Information chapter.

Mounting:

-  flush in steel
-  non-flush on steel
-  non-metal

Antenna type:

-  rod
-  round

BIS L Industrial RFID System

Read/write heads



M18x1

Aluminum, anodized and brass, coated

BIS004U

BIS L-302-S115

BIS00UF

BIS VL-302-001-S4

0...+70 °C (minus temperatures on request)

-20...+85 °C

IP 67

Processor

See page 274/280 for cable options



125 kHz LF

BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

Read only compact processors

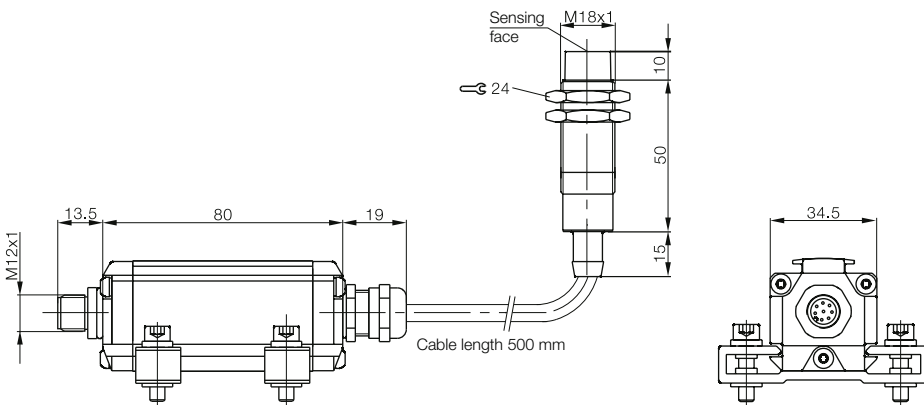
Processors

easy loop® Communication module

Standard handheld

Access protection

BIS0033			BIS0036			BIS0039			BIS003E			BIS003N			BIS003R			BIS003T			BIS003U			BIS003W			
BIS L-100-01/L			BIS L-101-01/L			BIS L-102-01/L			BIS L-103-05/L			BIS L-150-05/A			BIS L-200-03/L			BIS L-201-03/L			BIS L-202-03/L			BIS L-203-03/L			
															BIS0035			BIS0038			BIS003C			BIS003F			
															BIS L-100-05/L-RO			BIS L-101-05/L-RO			BIS L-102-05/L-RO			BIS L-103-05/L-RO			
0..20	8..15	8..15	0..25	10..20	10..20	0..30	10..25	10..20	10..22	10..15	7..8	0..12				0..25	8..15	8..15	0..30	10..20	10..20	0..40	10..25	10..20	0..15	4..10	3..8
±10			±12			±15						±8				±13			±15			±20			±6	±7	±5
±10			±12			±15						±8				±13			±15			±20			±6	±7	±5
±10			±12			±15					±3	±8				±13			±15			±20			±6	±7	±4
±10	±6	±6	±12			±15					±2	±8				±13	±8	±6	±15			±20			±6	±6	±3
±10	±5	±5	±12	±10	±8	±15	±15	±10	±10	±6		±8				±13	±8	±6	±15	±10	±10	±20	±15	±8	±6	±5	
±10	±4	±4	±12	±10	±8	±15	±15	±10	±10	±6		±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					
																						±20					



BIS L Industrial RFID System

Read/write heads

Select a flat design if the available height is limited



Dimensions	25x50x10 mm	
Housing material	Aluminum, anodized and ABS	
For standard processor	Ordering code	BIS004Z
	Part number	BIS L-304-S115
For BIS V processor	Ordering code	BIS00UH
	Part number	BIS VL-304-001-S4
Mounting	—	
Operating temperature	0...+70 °C (minus temperatures on request)	
Storage temperature	-20...+85 °C	
Degree of protection per IEC 60529	IP 67	
Connection to	Processor	
Connection cable	See page 274/280 for cable options	




Ordering code	BIS0033	BIS0036	BIS0039	BIS003E	
Part number	BIS L-100-01/L	BIS L-101-01/L	BIS L-102-01/L	BIS L-103-05/L	
Ordering code					
Part number					

Appropriate data carrier

Mounting	—			—			—			—		
Write distance in mm	0...20	8...15	8...15	0...25	10...20	10...20	0...30	10...25	10...20	10...22	10...15	7...8
Read distance in mm	0...20	8...15	8...15	0...25	10...20	10...20	0...30	10...25	10...20	10...22	10...15	7...8
Offset in mm at distance												
	0 mm	±10		±12			±15					
	3 mm	±10		±12			±15					
	4 mm	±10		±12			±15					
	7 mm	±10		±12			±15					±3
	8 mm	±10	±6	±6	±12		±15					±2
	10 mm	±10	±5	±5	±12	±10	±8	±15	±15	±10	±10	±6
	12 mm	±10	±3	±3	±12	±10	±8	±15	±15	±10	±10	±6
	15 mm	±10	±0	±0	±12	±5	±5	±15	±15	±5	±10	±2
	20 mm	±10			±12	±0	±0	±15	±10	±0	±5	
	25 mm				±12			±15	±0			
	30 mm							±15				
	35 mm											
	40 mm											

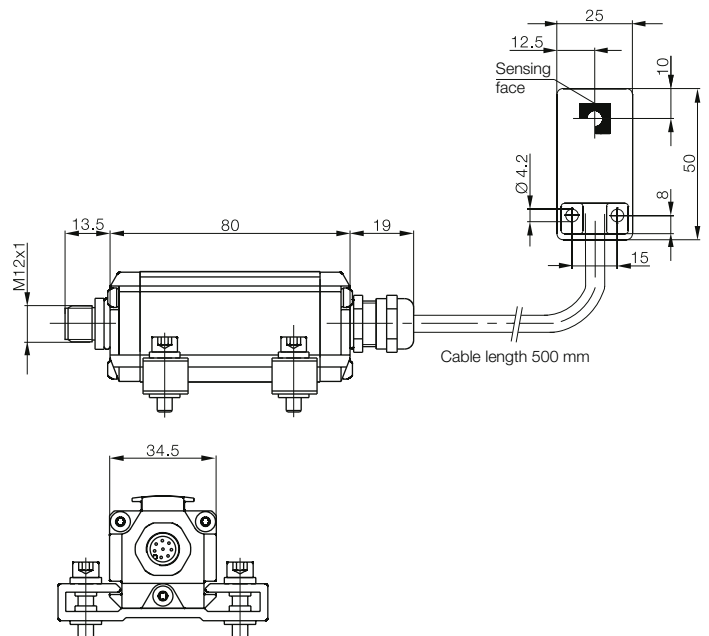
For installation pay attention to Basic Information chapter.

Mounting:

-  flush in steel
-  non-flush on steel
-  non-metal

Antenna type:

-  rod
-  round



BIS L Industrial RFID System

Read/write heads



M12x1
 Aluminum, anodized and brass, coated
BIS00RN
 BIS L-306-S115
BIS00UJ
 BIS VL-306-001-S4
 —
 0...+70 °C
 -20...+85 °C
 IP 67
 Processor
 See page 274/280 for cable options

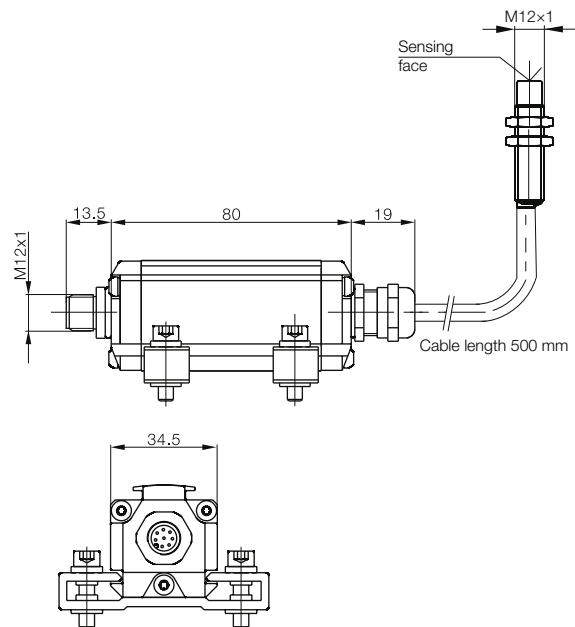


125 kHz LF

BIS L Industrial RFID System

Range of applications
 Read/write distances overview
 Data carriers read/write
 Data carriers read only
Read/write heads
 Data couplers
 Read only compact processors
 Processors
 easy loop®
 Communication module
 Standard handheld
 Access protection

	BIS003N	BIS003R	BIS003T	BIS003U	BIS003W	BIS003W	BIS003E	BIS0033
	BIS L-150-05/A	BIS L-200-03/L	BIS L-201-03/L	BIS L-202-03/L	BIS L-203-03/L	BIS L-203-03/L	BIS L-103-05/L	BIS L-100-05/L
		BIS0035	BIS0035	BIS003C	BIS003F	BIS003F		
		BIS L-100-05/L-RO	BIS L-100-05/L-RO	BIS L-102-05/L-RO	BIS L-103-05/L-RO	BIS L-103-05/L-RO		
	—	—	—	—	—	—	—	—
	0...12						0...7	0...15
	0...12	0...25 8...15 8...15	0...30 10...20 10...20	0...40 10...25 10...20	0...15 4...10 3...8	0...7	0...7	0...15
	±8	±13	±15	±20	±6	±4	±4	±7
	±8	±13	±15	±20	±6 ±7 ±5	±4	±4	±7
	±8	±13	±15	±20	±6 ±7 ±5	±4	±4	±7
	±8	±13 ±8 ±6	±15	±20	±6 ±6 ±3	±2	±4	±7
	±8	±13 ±8 ±6	±15 ±10 ±10	±20 ±15 ±8	±6 ±5			±7
	±8	±13 ±8 ±6	±15 ±10 ±10	±20 ±15 ±8	±6			±7
		±13 ±0 ±0	±15 ±10 ±8	±20 ±15 ±6	±6			±7
		±13	±15 ±0 ±0	±20 ±10 ±0				
		±13	±15	±20 ±0				
			±15	±20				
				±20				
				±20				
				±20				



BIS L Industrial RFID System

Read/write heads

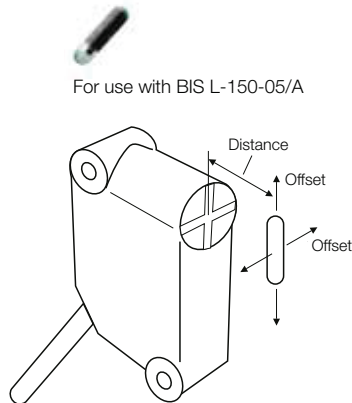
For limited space, even on metal

Small read heads with processor electronics for glass data carriers



Dimensions		
Housing material		
For standard processor	Ordering code	
	Part number	
For BIS V processor	Ordering code	
	Part number	
Mounting		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Connection to		
Connection cable		

For use with BIS L-150-05/A



	Ordering code	
Appropriate data carrier	Part number	
Mounting		
Write distance in mm		
Read distance in mm		
Offset in mm at distance		0 mm
		10 mm
		15 mm
		20 mm
		25 mm

For installation pay attention to Basic Information chapter.

Mounting:

- flush in steel
- non-flush on steel
- non-metal

Antenna type:

- rod
- round

BIS L Industrial RFID System

Read/write heads



26x40x12 mm

Aluminum, anodized and ABS

BIS0051

BIS L-350-S115

BIS00UK

BIS VL-350-001-S4

0...+70 °C (minus temperatures on request)

-20...+85 °C

IP 67

Processor

See page 274/280 for cable options

BIS003N

BIS L-150-05/A

0...17	0...24	0...24
0...17	0...24	0...24
±18	±20	±20
±18	±20	±20
±10	±20	±20
	±14	±14
	±14	±14



125 kHz LF

BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

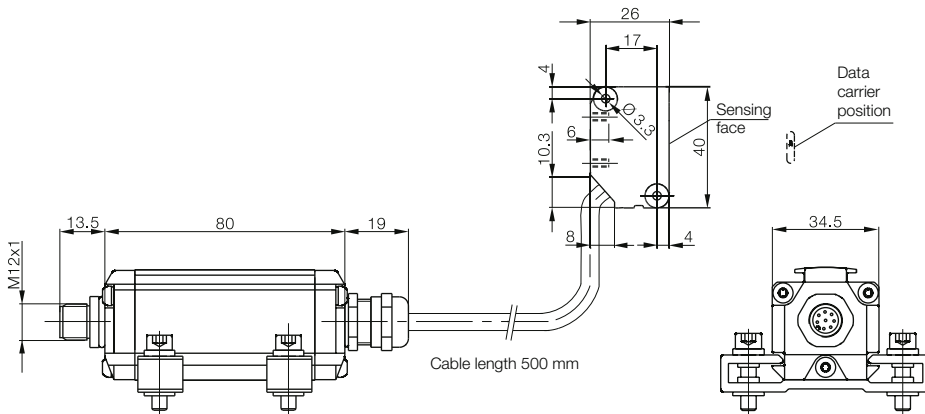
Read only compact processors

Processors

easy loop® Communication module

Standard handheld

Access protection



BIS L Industrial RFID System

Data couplers

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






Dimensions		M30x1.5	
Housing material		Brass, coated	
Base coupler for read/write head	Ordering code	BIS00K1	
	Part number	BIS L-380-ST/10	
Data coupler for data carrier	Ordering code		
	Part number		
Data coupler for data carrier	Ordering code		
	Part number		
Mounting		—	
Operating temperature		0...+70 °C	
Storage temperature		-20...+85 °C	
Degree of protection per IEC 60529		IP 67	
Connection type		M12 connector male, 4-pin	
For use with		BIS L-300-S115	

	Ordering code		
Appropriate data carrier	Part number		

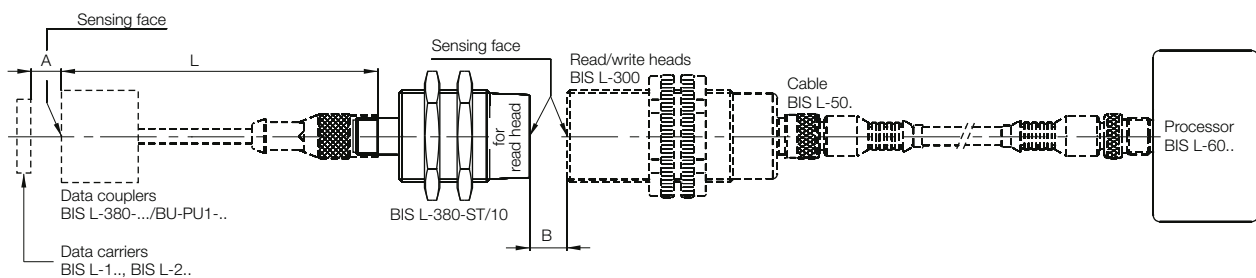
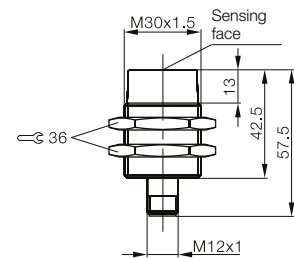
For installation pay attention to Basic Information chapter.

Mounting:

-  flush in steel
-  non-flush on steel
-  non-metal

Antenna type:

-  rod
-  round



BIS L Industrial RFID System

Data couplers



M18x1	25x50x10 mm	M30x1.5
Brass, coated	ABS	Brass, coated
BIS00JT	BIS00JW	BIS00JZ
BIS L-380-02/BU-PU1-00,15	BIS L-380-05/BU-PU1-00,15	BIS L-380-10/BU-PU1-00,5
BIS00JU	BIS00JY	
BIS L-380-02/BU-PU1-00,5	BIS L-380-05/BU-PU1-00,5	
0...+70 °C -20...+85 °C IP 67 M12 connector female, 4-pin BIS L-380-ST/10	0...+70 °C -20...+85 °C IP 67 M12 connector female, 4-pin BIS L-380-ST/10	0...+70 °C -20...+85 °C IP 67 M12 connector female, 4-pin BIS L-380-ST/10
BIS003E	BIS003E	BISL101
BIS L-103-05/L	BIS L-103-05/L	BIS L-101-01/L



BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

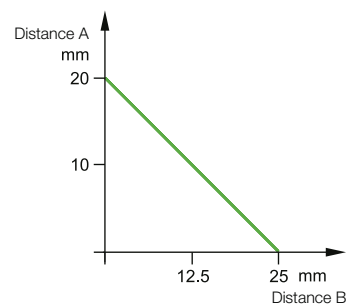
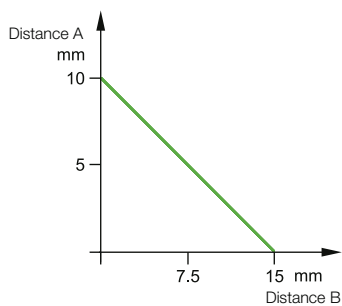
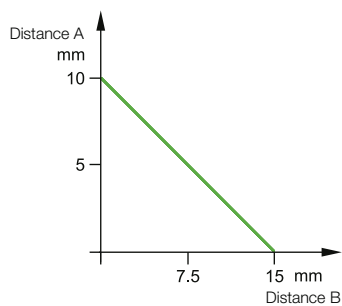
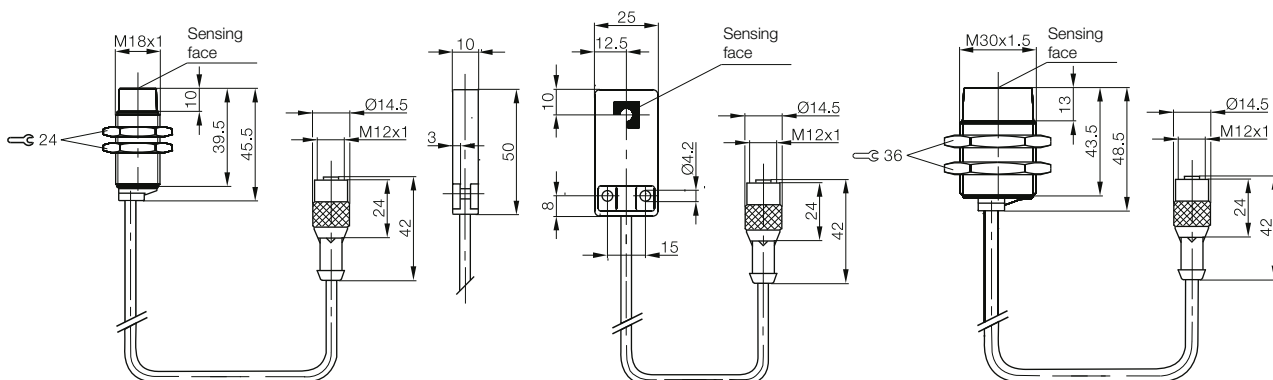
Read only compact processors

Processors

easy loop® Communication module

Standard handheld

Access protection



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

Parallel signals for easier integration. The processors are compact, handy and very easy to install and the recessed antennas, which are available in different designs, make them ideal for a wide variety of different applications. These simple processors can also be used in dynamic processes: the data from the data carrier last accessed is stored in the cache until retrieved again. The data is available for longer and programming is simplified as a result. Different antenna characteristics and data carriers are used dependin on application requirements. The selection does not depend on the interface being used – only the design is a decisive factor. The BIS L-2_-03/L are read-only data carriers with a fixed 5-byte (40 bits) „unique number“. No repetition of the unique number or delivery of sequential numbers is possible – other options are available here. These data carrier types are used with BIS L-405-033-... processors.

Secure is secure: CRC test

The CRC-16 check sum can be used for applications with higher demands for data integrity. A check sum that allows the validity of data to be checked anywhere and at any time is stored on the data carrier. Discrepancies are diagnosed immediately. The BIS L-405-037-... processor checks the correctness of the read data using a CRC-16 check sum. The CRC value is calculated automatically using the data in bytes 0, 1 and 2 of the data carrier. Stored in bytes 3 and 4 of the data carrier, this CRC 16 check sum guarantees an extremely high degree of data integrity without requiring additional programming work. In order to use the CRC-16 check sum, the type BIS L-10_-05/L data carriers must first be initialized using a BIS L-60_- processor and BISCORRW.EXE software. 3 bytes are available for the user data.

The BIS L-405-037-... processor can only be operated using initialized type BIS L-10_-05/L data carriers.



Description, Dimensions			
Housing material			
Parallel	Ordering code		
	Part number		
Parallel with CRC check	Ordering code		
	Part number		
Sensor base	5 m cable	Ordering code	
		Part number	
	10 m cable	Ordering code	
		Part number	
	15 m cable	Ordering code	
		Part number	
	20 m cable	Ordering code	
		Part number	
Mounting			
Supply voltage, Ripple			
Current			
Operating temperature			
Degree of protection per IEC 60529			
Connection type			
Control I/O			
Connection base (please order separately)			

Appropriate data carrier

Mounting		
Read distance in mm		
Offset in mm at distance		0 mm
		5 mm
		8 mm
		10 mm
		15 mm
		20 mm
		25 mm
		30 mm
		35 mm
		40 mm
		45 mm

For installation pay attention to Basic Information chapter.

Mounting:

- flush in steel
- non-flush on steel
- non-metal

Antenna type:

- rod
- round

BIS L Industrial RFID System

Read only compact processors



LED function indicators included



125 kHz LF

BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

Read only compact processors

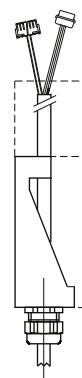
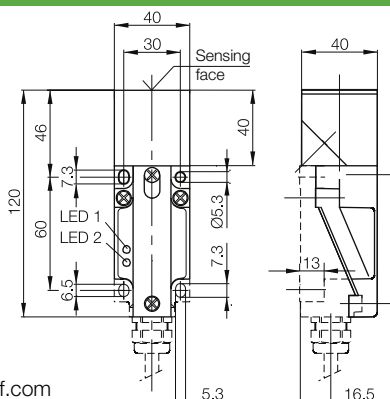
Processors
easy loop®
Communication module

Standard handheld

Access protection

Module 40x41x120 mm	Connection
PBT	PBT
BIS00CM	
BIS L-405-033-001-05-MU	
BIS00CT	
BIS L-405-037-001-05-MU	
	BCC00R2
	BIS L-503-PU1-05
	BCC00R3
	BIS L-503-PU1-10
	BCC00R4
	BIS L-503-PU1-15
	BCC00R5
	BIS L-503-PU1-20
24 V DC +10 %/-20 %, ≤ 10 %	0...+70 °C
≤ 50 mA no load	IP 67 (when assembled)
0...+70 °C	
IP 67 (when assembled)	2 inputs, 10 outputs
Requires mounting base	
BIS L-503-PU1-__	

BIS003R	BIS0035	BIS003T	BIS0038	BIS003U	BIS003C	BIS003W	BIS003F
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
0...30	0...40	0...40	0...40	0...55	0...55	0...20	0...20
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10
±15	±20	±20	±20	±30	±30	±10	±10



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



LED function indicators included

Description, Dimensions		Module M18x1
Housing material		PBT and brass, coated
Parallel	Ordering code	BIS00CN
	Part number	BIS L-405-033-002-05-MU
Parallel with CRC check	Ordering code	BIS00CU
	Part number	BIS L-405-037-002-05-MU
Sensor base	5 m cable	Ordering code
		Part number
	10 m cable	Ordering code
		Part number
15 m cable	Ordering code	
	Part number	
20 m cable	Ordering code	
	Part number	
Mounting		—
Supply voltage, Ripple		24 V DC +10 %/-20 %, ≤ 10 %
Current		≤ 50 mA no load
Operating temperature		0...+70 °C
Degree of protection per IEC 60529		IP 67 (when assembled)
Connection type		Requires mounting base
Control I/O		
Connection base (please order separately)		BIS L-503-PU1-__

Appropriate data carrier

	BIS003R	BIS L-200-03/L	BIS0035	BIS L-100-05/L-RO	BIS003T	BIS L-201-03/L	BIS0038	BIS L-101-05/L-RO	BIS003W	BIS L-203-03/L	BIS003F	BIS L-103-05/L-RO
Mounting	—		—		—		—		—		—	
Read distance in mm		0...23		0...27		0...16						
Offset in mm at distance		±12		±15		±8						
	0 mm											
	5 mm											
	8 mm											
	10 mm											
	15 mm											
	20 mm											
	25 mm											

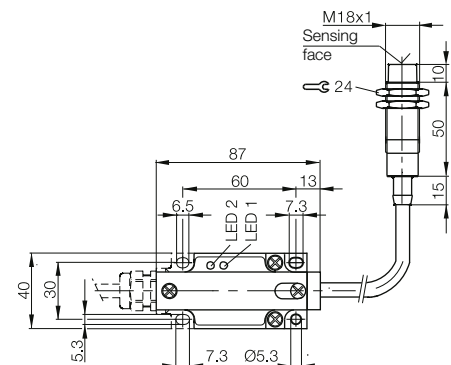
For installation pay attention to Basic Information chapter.

Mounting:

- flush in steel
- non-flush on steel
- non-metal

Antenna type:

- rod
- round

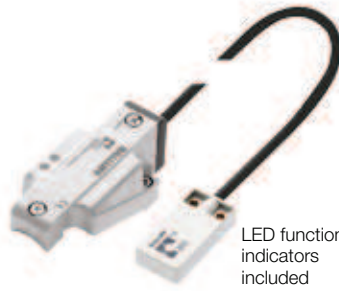


BIS L Industrial RFID System

Read only compact processors



LED function indicators included



LED function indicators included



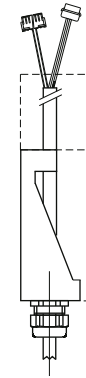
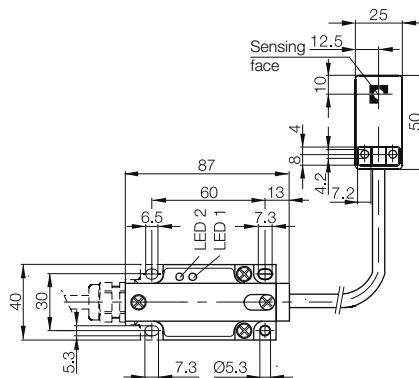
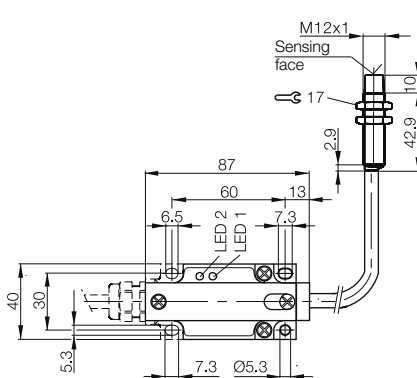
125 kHz LF

BIS L Industrial RFID System

- Range of applications
- Read/write distances overview
- Data carriers read/write
- Data carriers read only
- Read/write heads
- Data couplers
- Read only compact processors
- Processors
- easy loop® Communication module
- Standard handheld
- Access protection

Module M12x1	Module 25x50x10 mm	Connection
PBT and brass, coated	PBT and ABS	PBT
BIS00CP	BIS00CR	
BIS L-405-033-003-05-MU	BIS L-405-033-004-05-MU	
BIS00CW	BIS00CY	
BIS L-405-037-003-05-MU	BIS L-405-037-004-05-MU	
		BCC00R2
		BIS L-503-PU1-05
		BCC00R3
		BIS L-503-PU1-10
		BCC00R4
		BIS L-503-PU1-15
		BCC00R5
		BIS L-503-PU1-20
24 V DC +10 %/-20 %, ≤ 10 % ≤ 50 mA no load 0...+70 °C IP 67 (when assembled) Requires mounting base	24 V DC +10 %/-20 %, ≤ 10 % ≤ 50 mA no load 0...+70 °C IP 67 (when assembled) Requires mounting base	0...+70 °C IP 67 (when assembled) 2 inputs, 10 outputs
BIS L-503-PU1-__	BIS L-503-PU1-__	

BIS003W	BIS L-203-03/L	BIS003F	BIS L-103-05/L-RO	BIS003R	BIS L-200-03/L	BIS0035	BIS L-100-05/L-RO	BIS003T	BIS L-201-03/L	BIS0038	BIS L-101-05/L-RO	BIS003W	BIS L-203-03/L	BIS003F	BIS L-103-05/L-RO
0...11				0...23				0...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											



For simple connection to the controller: readable data carriers only


Easy ID solutions are not only available with a parallel interface, but also with a serial interface, which is why they are suitable for smart, single-celled production platforms. Balluff offers different point-to-point connections specific to each device. The range extends from interfaces such as RS232, RS422 to IO-Link. A "daisy chain" configuration with RS232 or Ethernet TCP/IP is also possible. Systems with or without recessed antennas are available to allow a flexible response to different installation situations such as cramped spaces, for example.


These simple processors can also be used in dynamic processes: the data from the data carrier last accessed is stored in the cache until retrieved again. The data is available for longer and programming is simplified as a result. A distinction is made between use of the type BIS L-2_-03/L data carrier and the programmed data carrier with type BIS L-10_-05/L CRC check. The processors must be parameterized accordingly using the relevant configuration software. Different antenna characteristics and data carriers are used depending on application requirements.

The selection does not depend on the interface being used – only the design is a decisive factor.

BIS L at a glance

- Tough
- Compact
- Read only
- Simple to integrate









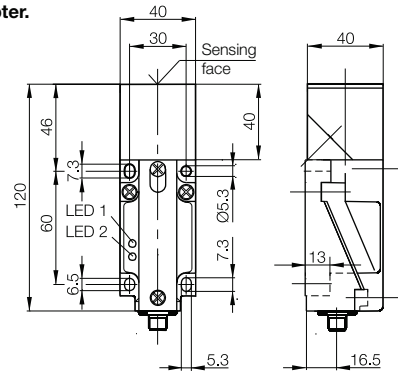
LED function indicators included

Dimensions	40x41x120 mm	
Housing material	PBT	
Serial, RS232	Ordering code	BIS00C5
	Part number	BIS L-400-035-001-00-S115
Serial, RS422	Ordering code	BIS00C6
	Part number	BIS L-400-035-001-02-S115
Mounting	—	
Supply voltage, Ripple	24 V DC +10 %/-20 %, ≤ 10 %	
Current	≤ 50 mA	
Operating temperature	0...+70 °C	
Degree of protection per IEC 60529	IP 67	
Connection type	M12 connector male, 8-pin	
Connection cable	See page 281 for cable options	

	BIS003R	BIS L-200-03/L	BIS0035	BIS L-100-05/L-RO	BIS003T	BIS L-201-03/L	BIS0038	BIS L-101-05/L-RO	BIS003U	BIS L-202-03/L	BIS003C	BIS L-102-05/L-RO	BIS003W	BIS L-203-03/L	BIS003F	BIS L-103-05/L-RO
Mounting	—															
Read distance in mm	0...30		0...40		0...55		0...20									
Offset in mm at distance	0 mm		±15		±20		±30		±10							
	5 mm		±15		±20		±30		±10							
	8 mm		±15		±20		±30		±10							
	10 mm		±15		±20		±30		±10							
	15 mm		±15		±20		±30		±10							
	20 mm		±15		±20		±30									
	25 mm		±15		±20		±30									
	30 mm		±4		±20		±30									
	35 mm				±20		±30									
	40 mm						±30									
	45 mm						±30									
	50 mm						±6									

For installation pay attention to Basic Information chapter.

- Mounting:
- flush in steel
 - non-flush on steel
 - non-metal
- Antenna type:
-  rod
 -  round



BIS L Industrial RFID System

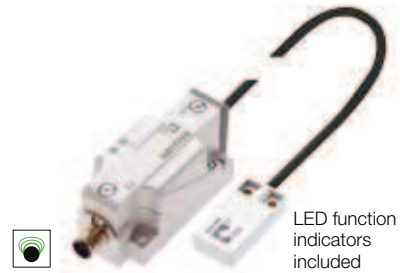
Read only compact processors



LED function indicators included



LED function indicators included



LED function indicators included

M18x1

PBT and brass, coated

BIS00C7

BIS L-400-035-002-00-S115

BIS00C8

BIS L-400-035-002-02-S115

24 V DC $\pm 10\%$ / -20% , $\leq 10\%$
 ≤ 50 mA no load
 0...+70 °C

IP 67

M12 connector male, 8-pin

See page 281 for cable options

M12x1

PBT and brass, coated

BIS00C9

BIS L-400-035-003-00-S115

BIS00CA

BIS L-400-035-003-02-S115

24 V DC $\pm 10\%$ / -20% , $\leq 10\%$
 ≤ 50 mA no load
 0...+70 °C

IP 67

M12 connector male, 8-pin

See page 281 for cable options

25x50x10 mm

PBT and ABS

BIS00CC

BIS L-400-035-004-00-S115

24 V DC $\pm 10\%$ / -20% , $\leq 10\%$
 ≤ 50 mA no load
 0...+70 °C

IP 67

M12 connector male, 8-pin

See page 281 for cable options



125 kHz LF

BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

Read only compact processors

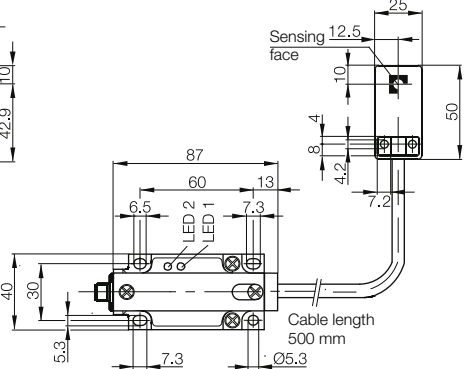
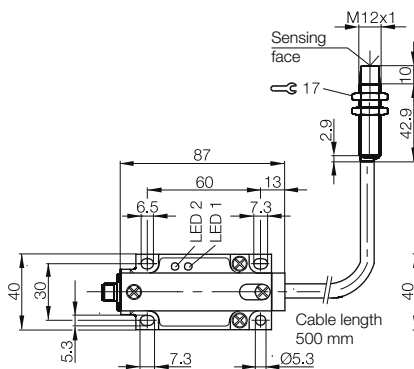
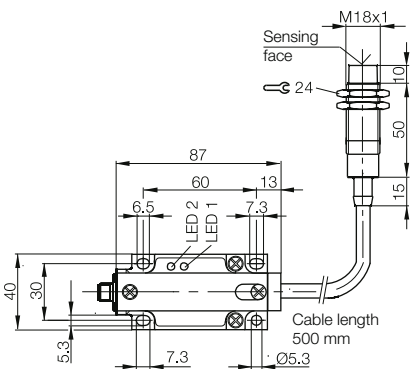
Processors

easy loop[®] Communication module

Standard handheld

Access protection

BIS003R		BIS003T		BIS003W		BIS003F		
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	BIS L-203-03/L	BIS L-103-05/L-RO	
0...23	0...27	0...16		0...11		0...23	0...27	0...16
± 12	± 15	± 8		± 6		± 12	± 15	± 8
± 12	± 15	± 8		± 6		± 12	± 15	± 8
± 12	± 15	± 8		± 8		± 12	± 15	± 8
± 12	± 15	± 8		± 2		± 12	± 15	± 8
± 12	± 15	± 4				± 12	± 15	± 4
± 12	± 15					± 8	± 15	
	± 6						± 6	



BIS L Industrial RFID System

Read only compact processors with IO-Link interface

IO-Link

Easy ID solutions are not only available with a parallel interface, but also with a serial interface, which is why they are suitable for smart, single-celled production platforms. Balluff offers different point-to-point connections specific to each device. The range extends from interfaces such as RS232, RS422 to IO-Link. A "daisy chain" configuration with RS232 or Ethernet TCP/IP is also possible. Systems with or without recessed antennas are available to allow a flexible response to different installation situations such as cramped spaces, for example.

These simple processors can also be used in dynamic processes: the data from the data carrier last accessed is stored in the cache until retrieved again. The data is available for longer and programming is simplified as a result. A distinction is made between use of the type BIS L-2_-03/L data carrier and the programmed data carrier with type BIS L-10_-05/L CRC check. The processors must be parameterized accordingly using the relevant configuration software. Different antenna characteristics and data carriers are used depending on application requirements.

The selection does not depend on the interface being used – only the design is a decisive factor.

BIS L at a glance

- Tough
- Compact
- Read only
- Simple to integrate



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



LED function indicators included



Dimensions	40x41x120 mm
Housing material	PBT
IO-Link, 8 byte	Ordering code BIS00CZ
	Part number BIS L-409-045-001-07-S4
Mounting	■
Supply voltage, Ripple	24 V DC +10 %/-20 %, ≤ 10 %
Current	≤ 150 mA
Operating temperature	0...+70 °C
Degree of Protection per IEC 60529	IP 67
Connection type	M12 connector male, 4-pin
Connection cable	See page 274 for cable options

Appropriate data carrier

Mounting	■	■	■	■
Read distance in mm	0...25	0...35	0...48	0...16
Offset in mm at distance				
0 mm	±15	±20	±25	±10
3 mm	±15	±20	±25	±10
4 mm	±15	±20	±25	±10
5 mm	±15	±20	±25	±10
7 mm	±15	±20	±25	±10
8 mm	±15	±20	±25	±10
10 mm	±15	±20	±25	±10
12 mm	±15	±20	±25	±10
15 mm	±15	±20	±25	±10
20 mm	±15	±20	±25	
25 mm	±8	±20	±25	
30 mm		±20	±25	
35 mm		±20	±25	
40 mm			±25	
45 mm			±25	

BIS003R	BIS L-200-03/L	BIS0035	BIS L-100-05/L-RO	BIS003T	BIS L-201-03/L	BIS0038	BIS L-101-05/L-RO	BIS003U	BIS L-202-03/L	BIS003C	BIS L-102-05/L-RO	BIS003W	BIS L-203-03/L	BIS003F	BIS L-103-05/L-RO
----------------	----------------	----------------	-------------------	----------------	----------------	----------------	-------------------	----------------	----------------	----------------	-------------------	----------------	----------------	----------------	-------------------

IO-Link Version 1.1

Max. cycle time	8.8 ms
IO-Link process data length	8 input bytes/8 output bytes
Communication indicators	Green LED, pulsing

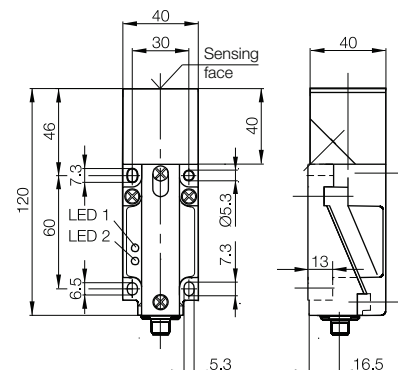
For installation pay attention to Basic Information chapter.

Mounting:

- flush in steel
- non-flush on steel
- non-metal

Antenna type:

- rod
- round



BIS L Industrial RFID System

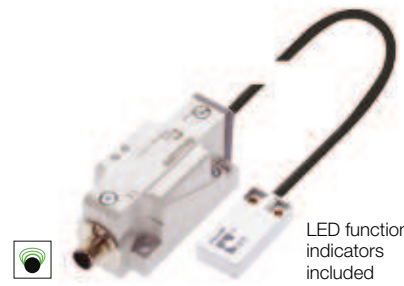
Read only compact processors with IO-Link interface



LED function indicators included



LED function indicators included



LED function indicators included

M18x1	M12x1	25x50x10 mm
PBT and brass, coated	PBT and brass, coated	PBT and ABS
BIS00E0	BIS00E1	BIS00E2
BIS L-409-045-002-07-S4	BIS L-409-045-003-07-S4	BIS L-409-045-004-07-S4
24 V DC +10 %/-20 %, ≤ 10 % ≤ 150 mA 0...+70 °C IP 67 M12 connector male, 4-pin See page 274 for cable options	24 V DC ±10 %/-20 %, ≤ 10 % ≤ 150 mA no load 0...+70 °C IP 67 M12 connector male, 4-pin See page 274 for cable options	24 V DC ±10 %/-20 %, ≤ 10 % ≤ 150 mA no load 0...+70 °C IP 67 M12 connector male, 4-pin See page 274 for cable options



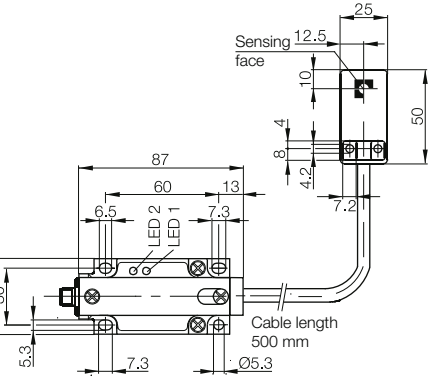
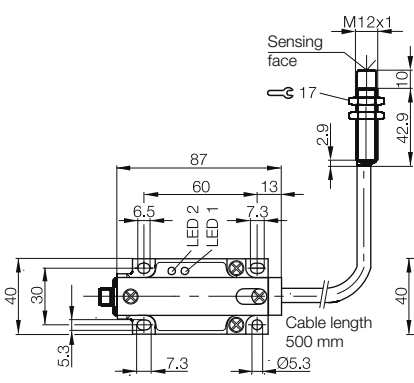
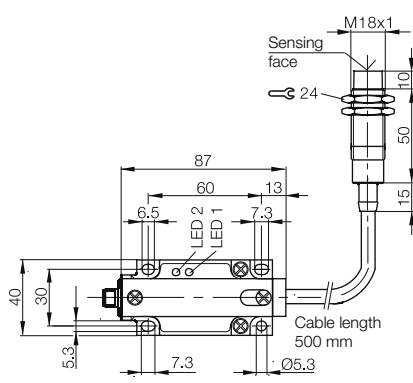
125 kHz LF

BIS L Industrial RFID System

- Range of applications
- Read/write distances overview
- Data carriers read/write
- Data carriers read only
- Read/write heads
- Data couplers
- Read only compact processors**
- Processors
- easy loop® Communication module
- Standard handheld
- Access protection

M18x1				M12x1				25x50x10 mm			
BIS003R	BIS0035	BIS003T	BIS0038	BIS003W	BIS003F	BIS003R	BIS0035	BIS003T	BIS0038	BIS003W	BIS003F
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	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
0...15	0...18	0...10		0...7		0...15	0...18	0...10			
±10	±12	±4		±4		±10	±12	±4			
±10	±12	±4		±4		±10	±12	±4			
±10	±12	±4		±4		±10	±12	±4			
±10	±12	±4		±4		±10	±12	±4			
±10	±12	±4		±4		±10	±12	±4			
±10	±12	±4		±4		±10	±12	±4			
±10	±12	±4		±4		±10	±12	±4			
	±12						±12				
	±12						±12				

8.8 ms	8.8 ms	8.8 ms
8 input bytes/8 output bytes	8 input bytes/8 output bytes	8 input bytes/8 output bytes
Green LED, pulsing	Green LED, pulsing	Green LED, pulsing



Easy ID solutions are not only available with a parallel interface, but also with a serial interface, which is why they are suitable for smart, single-celled production platforms. Balluff offers different point-to-point connections specific to each device.



LED function indicators included

The range extends from interfaces such as RS232, RS422 to IO-Link. A "daisy chain" configuration with RS232 or Ethernet TCP/IP is also possible. Systems with or without recessed antennas are available to allow a flexible response to different installation situations such as cramped spaces, for example.

These simple processors can also be used in dynamic processes: the data from the data carrier last accessed is stored in the cache until retrieved again. The data is available for longer and programming is simplified as a result.

A distinction is made between use of the type BIS L-2_ _-03/L data carrier and the programmed data carrier with type BIS L-10_ -05/L CRC check. The processors must be parameterized accordingly using the relevant configuration software. Different antenna characteristics and data carriers are used depending on application requirements.

The selection does not depend on the interface being used – only the design is a decisive factor.

BIS L at a glance

- Tough
- Compact
- Read only
- Simple to integrate

Dimensions	40x41x120 mm
Housing material	PBT
RS422, easy loop®	Ordering code BIS00CH
	Part number BIS L-400-043-001-02-S115
Mounting	■
Supply voltage, Ripple	24 V DC +10 %/-20 %, ≤ 10 %
Current	≤ 50 mA
Operating temperature	0...+70 °C
Degree of protection per IEC 60529	IP 67
Connection type	M12 connector male, 8-pin
Connection cable	See page 280 for cable options

Appropriate data carrier

Mounting	■	■	■	■
Read distance in mm	0...30	0...40	0...55	0...20
Offset in mm at distance				
0 mm	±15	±20	±30	±10
3 mm	±15	±20	±30	±10
4 mm	±15	±20	±30	±10
5 mm	±15	±20	±30	±10
7 mm	±15	±20	±30	±10
8 mm	±15	±20	±30	±10
10 mm	±15	±20	±30	±10
12 mm	±15	±20	±30	±10
15 mm	±15	±20	±30	±10
20 mm	±15	±20	±30	±10
25 mm	±15	±20	±30	
30 mm		±20	±30	
35 mm		±20	±30	
40 mm			±30	
45 mm			±30	
50 mm			±6	

BIS003R	BIS L-200-03/L	BIS0035	BIS L-100-05/L-RO	BIS003T	BIS L-201-03/L	BIS0038	BIS L-101-05/L-RO	BIS003U	BIS L-202-03/L	BIS003C	BIS L-102-05/L-RO	BIS003W	BIS L-203-03/L	BIS003F	BIS L-103-05/L-RO
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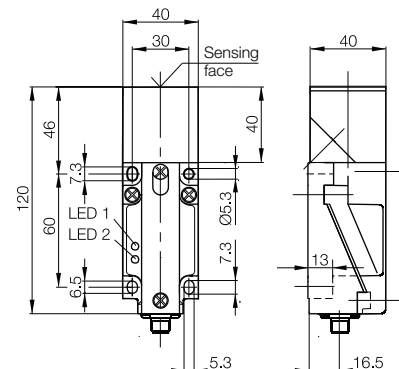
For installation pay attention to Basic Information chapter.

Mounting:

- flush in steel
- non-flush on steel
- non-metal

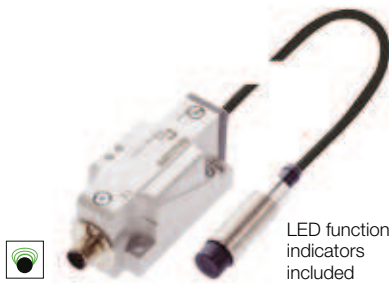
Antenna type:

- rod
- round



BIS L Industrial RFID System

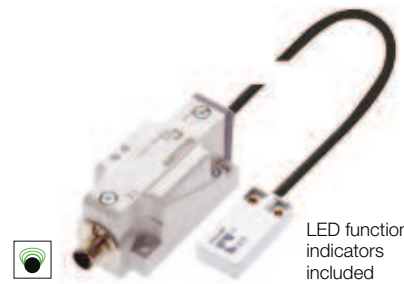
Read only compact processors with easy loop®



LED function indicators included



LED function indicators included



LED function indicators included

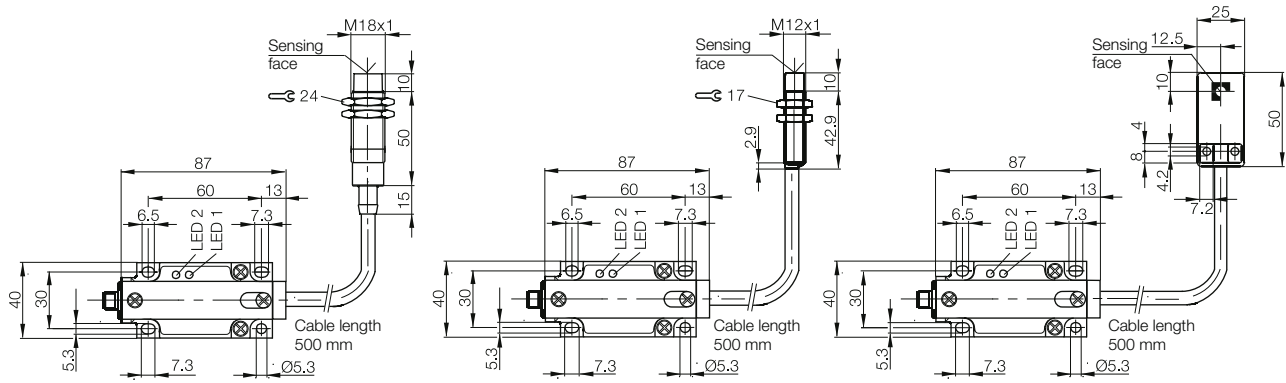
M18	M12	25x50x10 mm
PBT and brass, coated	PBT and brass, coated	PBT and ABS
BIS00CJ	BIS00CK	BIS00CL
BIS L-400-043-002-02-S115	BIS L-400-043-003-02-S115	BIS L-400-043-004-02-S115
24 V DC +10 %/-20 %, ≤ 10 % ≤ 50 mA 0...+70 °C IP 67 M18 connector male, 8-pin See page 280 for cable options	24 V DC ±10 %/-20 %, ≤ 10 % ≤ 50 mA no load 0...+70 °C IP 67 M12 connector male, 8-pin See page 280 for cable options	24 V DC ±10 %/-20 %, ≤ 10 % ≤ 50 mA no load 0...+70 °C IP 67 M12 connector male, 8-pin See page 280 for cable options



125 kHz LF

- BIS L Industrial RFID System
- Range of applications
 - Read/write distances overview
 - Data carriers read/write
 - Data carriers read only
 - Read/write heads
 - Data couplers
 - Read only compact processors**
 - Processors
 - easy loop® Communication module
 - Standard handheld
 - Access protection

BIS003R	BIS0035	BIS003T	BIS0038	BIS003W	BIS003F	BIS003W	BIS003F	BIS003R	BIS0035	BIS003T	BIS0038	BIS003W	BIS003F
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	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
0...23	0...27	0...16		0...11						0...27	0...16		
±12	±15	±8		±6				±12	±15	±8			
±12	±15	±8		±6				±12	±15	±8			
±12	±15	±8		±4				±12	±15	±8			
±12	±15	±8		±4				±12	±15	±8			
±12	±15	±8		±4				±12	±15	±8			
±12	±15	±8		±2				±12	±15	±8			
±12	±15	±8						±12	±15	±8			
±12	±15	±8						±12	±15	±8			
±12	±15	±8						±12	±15	±8			
±12	±15	±8						±8	±15				
	±6									±6			



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
- Interface-compatible with BIS C, BIS S and BIS M identification systems

Easy integration in all controllers

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

The **ruggedized version 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.



Description	
Housing material	
Serial RS232	Ordering code
	Part number
Supply voltage, Ripple	
Current	
Operating temperature	
Storage temperature	
Degree of protection per IEC 60529	
Read/write head ports	
Connection for	
Connection type	
Accessories included	
Connection cable	

BIS L Industrial RFID System

Serial RS232 processors



Processor
ABS
BIS00E3
BIS L-6000-007-050-00-ST15
24 V DC $\pm 20\%$, $\leq 10\%$
 ≤ 400 mA
0...+60 °C
0...+60 °C
IP 65
2x external
2x read/write heads BIS L-3_ _
2x M12 connector male, 5-pin
Configuration software
See page 305 for cable options

Processor
Aluminum cast, coated
BIS00E8
BIS L-6020-007-050-00-ST15
24 V DC $\pm 20\%$, $\leq 10\%$
 ≤ 400 mA
0...+60 °C
0...+60 °C
IP 65
2x external
2x read/write heads BIS L-3_ _
2x M12 connector male, 5-pin
Configuration software
See page 305 for cable options



BIS L Industrial
RFID System

Range of
applications

Read/write
distances
overview

Data carriers
read/write

Data carriers
read only
Read/write
heads

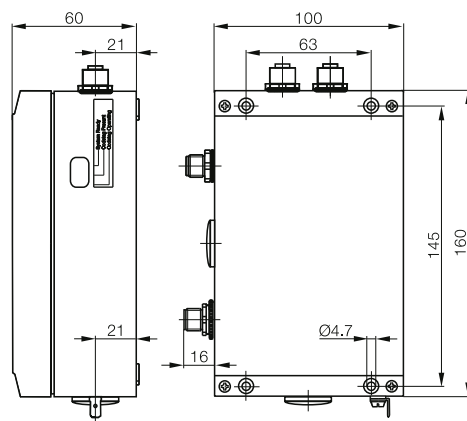
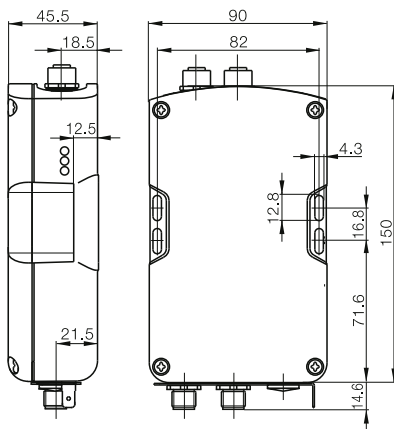
Data
couplers

Read only
compact
processors

Processors

easy loop®
Communi-
cation module

Standard
handheld
Access
protection





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

- Selectable division of the data width on the Profibus, 4...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 M identification systems

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

The **ruggedized version 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.



Description		
Housing material		
Profibus	Ordering code	
	Part number	
Supply voltage, Ripple		
Current		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection for		
Connection type		
Accessories included		
Connection cable		

BIS L Industrial RFID System

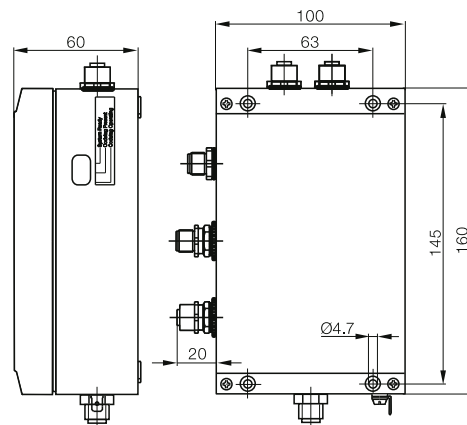
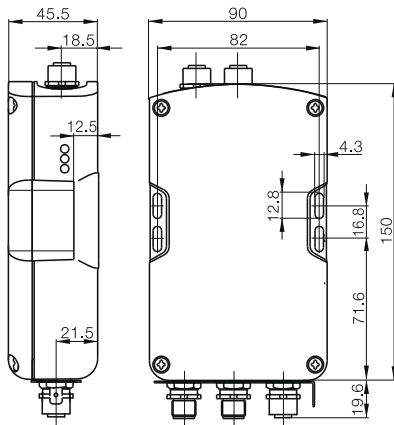
Profibus processors



Processor ABS	Processor Aluminum cast, coated
BIS00E6	BIS00EC
BIS L-6002-019-050-03-ST11	BIS L-6022-019-050-03-ST14
24 V DC $\pm 20\%$, $\leq 10\%$	24 V DC $\pm 20\%$, $\leq 10\%$
≤ 400 mA	≤ 400 mA
0...+60 °C	0...+60 °C
0...+60 °C	0...+60 °C
IP 65	IP 65
2x external	2x external
RS232	RS232
2x read/write heads BIS L-3_ _	2x read/write heads BIS L-3_ _
1x M12 connector male, 5-pin, B-coded	1x M12 connector male, 5-pin, B-coded
1x M12 connector female, 5-pin, B-coded	1x M12 connector female, 5-pin, B-coded
1x M12 connector male, 5-pin	2x M12 connector male, 5-pin
Software GSD-file	Software GSD-file
See page 290/305 for cable options	See page 290/305 for cable options



- BIS L Industrial RFID System
- Range of applications
- Read/write distances overview
- Data carriers read/write
- Data carriers read only
- Read/write heads
- Data couplers
- Read only compact processors
- Processors**
- easy loop® Communication module
- Standard handheld
- Access protection



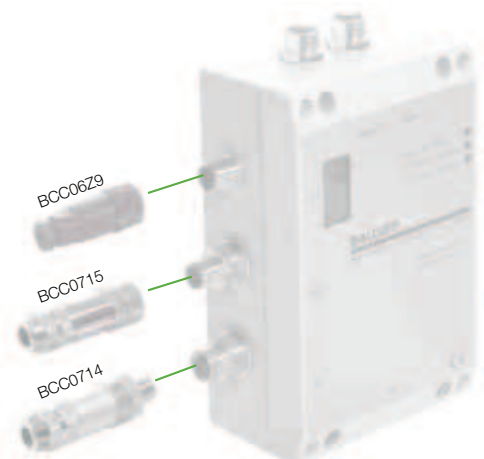
Recommended accessories

(please order separately)



Ordering code	BAM0114
Part number	BKS 12-CS-01

Threaded cover for M12 connector





**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 M identification systems

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

The **ruggedized version 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		
Housing material		
Devicenet	Ordering code	
	Part number	
Supply voltage, Ripple		
Current		
Operating temperature		
Storage temperature		
Degree of protection per IEC 60529		
Read/write head ports		
Service interface		
Connection for		
Connection type		
Accessories included		
Connection cable		

BIS L Industrial RFID System

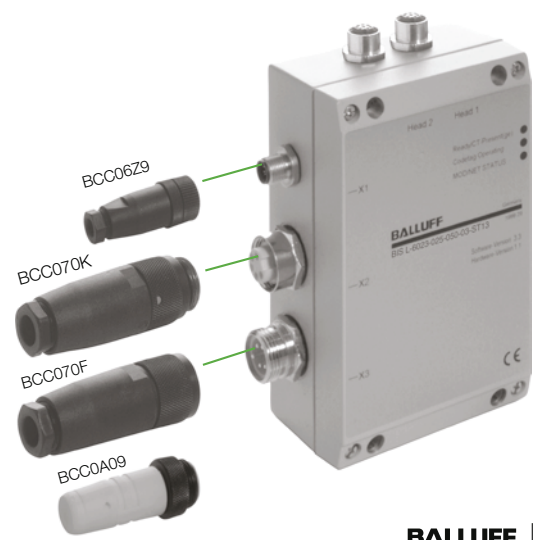
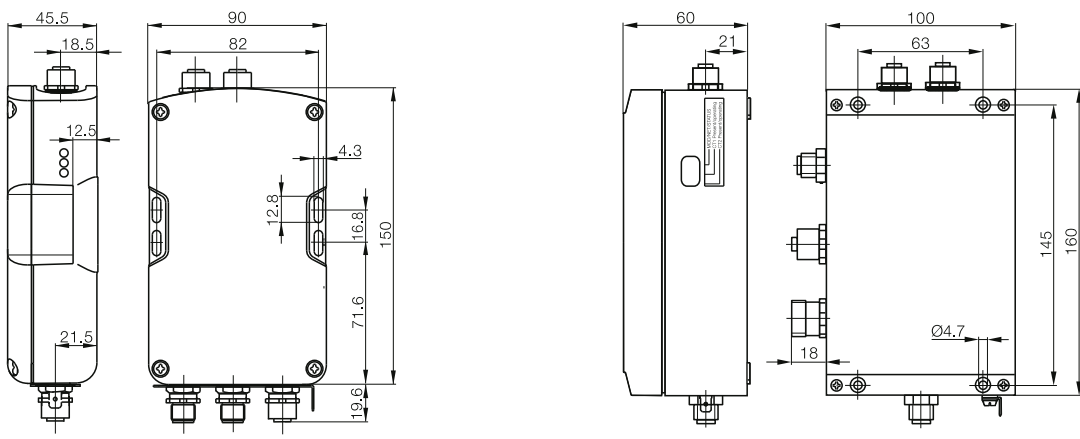
Devicenet processors



Processor ABS	Processor Aluminum cast, coated
BIS00E7	BIS00EE
BIS L-6003-025-050-03-ST12	BIS L-6023-025-050-03-ST13
24 V DC $\pm 20\%$, $\leq 10\%$	24 V DC $\pm 20\%$, $\leq 10\%$
≤ 600 mA	≤ 600 mA
0...+60 °C	0...+60 °C
0...+60 °C	0...+60 °C
IP 65	IP 65
2x external	2x external
RS232	RS232
2x read/write heads BIS L-3_ _	2x read/write heads BIS L-3_ _
2x M12 connector male, 5-pin	2x M12 connector male, 5-pin
1x M12 connector female, 5-pin	1x 7/8" connector male, 5-pin
	1x 7/8" connector female, 5-pin
Software EDS-file	Software EDS-file
See page 296/305 for cable options	See page 294/305 for cable options



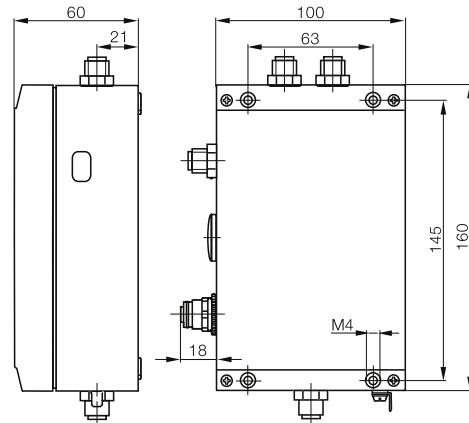
BIS L Industrial RFID System
 Range of applications
 Read/write distances overview
 Data carriers read/write
 Data carriers read only
 Read/write heads
 Data couplers
 Read only compact processors
Processors
 easy loop® Communication module
 Standard handheld
 Access protection



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



Description	Processor
Housing material	Aluminum cast, coated
Ethernet/IP	BIS00EF
	Ordering code
	Part number
Supply voltage, Ripple	24 V DC $\pm 20\%$, $\leq 10\%$
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Degree of protection per IEC 60529	IP 65
Read/write head ports	2x external
Service interface	RS232
Connection for	Read/write heads BIS L-3_ _
Connection type	1x M12 connector female, 4-pin, D-coded 1x M12 connector male, 5-pin 1x M12 connector male, 4-pin
Accessories included	Configuration software
Connection cable	See page 292/305 for cable options



Ethernet TCP/IP

BIS L Industrial RFID System Ethernet TCP/IP processor

Operate 2 read/write heads sequentially.

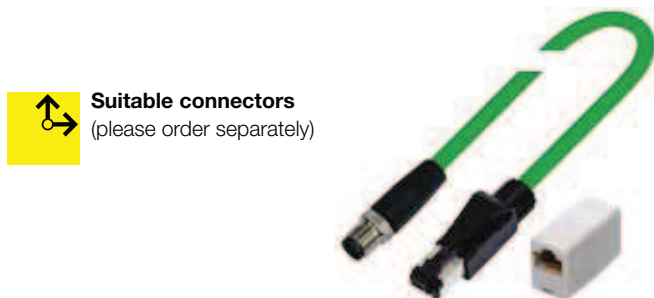
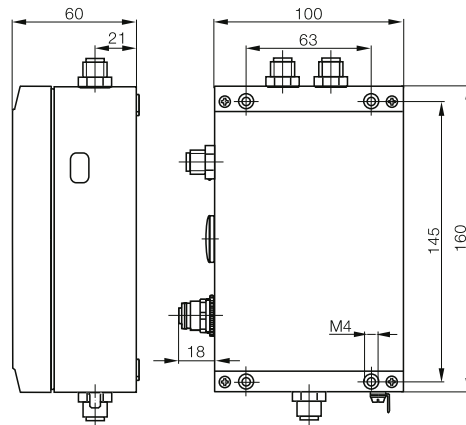



Description	Processor
Housing material	Aluminum cast, coated
Ethernet TCP/IP	Ordering code BIS00EH
	Part number BIS L-6027-039-050-06-ST19
Supply voltage, Ripple	24 V DC $\pm 20\%$, $\leq 10\%$
Current	≤ 400 mA
Operating temperature	0...+60 °C
Storage temperature	0...+60 °C
Degree of protection per IEC 60529	IP 65
Read/write head ports	2x external
Service interface	RS232
Connection for	Read/write heads BIS L-3_ _
Connection type	1x M12 connector female, 4-pin, D-coded 1x M12 connector male, 5-pin 1x M12 connector male, 4-pin
Accessories included	Configuration software
Connection cable	See page 292/305 for cable options



BIS L Industrial
RFID System

- Range of applications
- Read/write distances overview
- Data carriers read/write
- Data carriers read only
- Read/write heads
- Data couplers
- Read only compact processors
- Processors**
- easy loop® Communication module
- Standard handheld
- Access protection



 **Suitable connectors**
(please order separately)

Ordering code	BCC0C5J
Part number	BIS C-526-PU-00,6

Order accessories separately! Adapter cable for Ethernet from M12, D-coded to coupling RJ45 see connectivity section.

BIS L Industrial RFID System

BIS V processors – new generation



A new generation system for more flexible RFID: Combine up to four low and high frequency read/write heads with I/O in one device.

The BIS V Radio Frequency Identification (RFID) system is founded on a new generation of RFID processors that maximize your flexibility by providing a single device for both low frequency 125Khz and high frequency 13.56Mhz read/write heads with an IO-Link master port. Combining up to four heads on either frequency with local analog, valve manifold or I/O access/control provides a solution you can apply to many types of RFID applications. This can save cost and time using a single processor platform across your application installation base. The BIS V system also allows you to draw on a single processor family with a wide array of read/write head and RFID tag options for both manufacturing and logistics solutions.

The BIS V RFID system offers a higher level of performance than other systems to solve today's industrial applications. Designed to maximize performance while improving usability out on the line, the BIS V processor provides a functional display and LED's making status and setup easier. And a USB service interface makes connection for setup to today's PC's simple. The BIS V offers these additional functions:

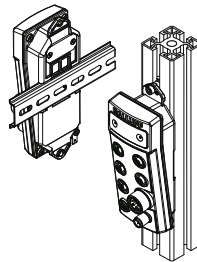
- Four asynchronous 125Khz and 13.56Mhz read/write antenna channels.
- LCD display with control buttons for setting and displaying the Profibus address and data carrier/tags UID.
- An integrated IO-Link master port for connecting discrete or analog I/O, or valve manifolds.
- Intelligent power plug option for saving parameters on the device.
- Industrial IP rated metal housing for any application environment.
- Flexible mounting options for hard-point or DIN rail.



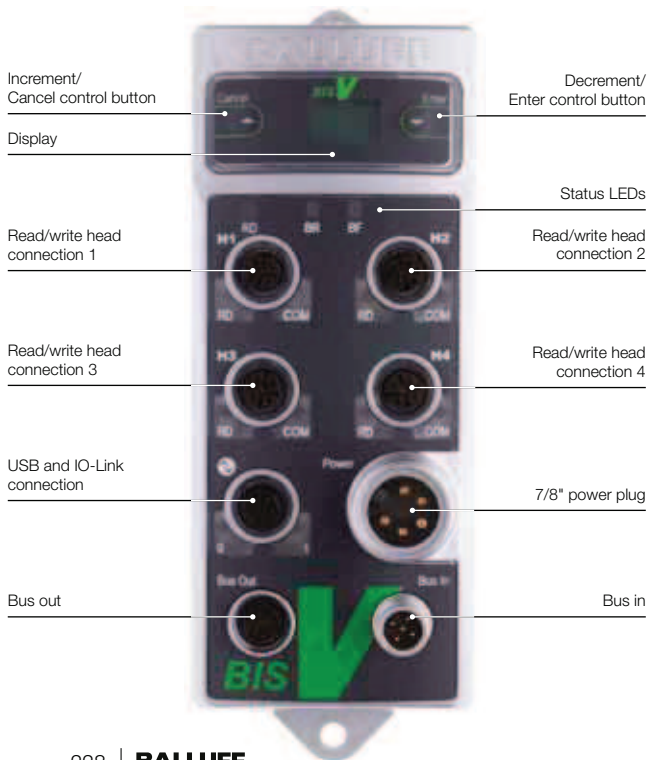
Description	
Housing material	
Profibus	Ordering code
	Part number
EtherCAT	Ordering code
	Part number
CC-Link	Ordering code
	Part number
Supply voltage, Ripple	
Current	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/write head ports	
Service interface	
Control inputs / outputs	
Connection for	
Connection type	
Accessories included	
Connection cable	

The following communication options will become available in 2013: Ethernet/IP, CC-Link, Profinet, and Ethernet TCP/IP

The compact EMC-protected metal housing with small dimensions (170x60x40 mm) is perfectly integrated and simple to mount. In control cabinets or in the field up to IP 65, on a top-hat rail, or on a profile.



The industrial RFID system BIS V was developed and qualified according to the principles of GAMP® 5. You can obtain more detailed information upon request at rfidpharma@balluff.com



BIS L Industrial RFID System

BIS V processors – new generation



Profibus processor Aluminum cast, coated	EtherCAT processor Aluminum cast, coated	CC-Link processor Aluminum cast, coated
BIS00T3		
BIS V-6102-019-C001		
	BIS00U9	
	BIS V-6110-063-C002	
		BIS010P
		BIS V-6111-073-C003
24V DC $\pm 10\%$ LPS Class 2, $\leq 10\%$ ≤ 2 A 0...+60 °C 0...+60 °C IP 65 4x external IO-Link 1.1, USB 2.0 IO-Link based 4 Read/write head BIS VM-3_ _ _ 4x M12 connector female, 5-pin 1x 7/8" connector male, 5-pin 1x M12 connector male, 5-pin 1x M12 connector female, 5-pin 1x M12 connector female, 3-pin Configuration software See page 274/279/290/306 for cable options	24V DC $\pm 10\%$ LPS Class 2, $\leq 10\%$ ≤ 2 A 0...+60 °C 0...+60 °C IP 65 4x external IO-Link 1.1, USB 2.0 IO-Link based 4 Read/write head BIS VM-3_ _ _ 4x M12 connector female, 5-pin 1x 7/8" connector male, 5-pin 2x M12 connector female, 4-pin 1x M12 connector female, 3-pin Configuration software See page 274/279/290/306 for cable options	24V DC $\pm 10\%$ LPS Class 2, $\leq 10\%$ ≤ 2 A 0...+60 °C 0...+60 °C IP 65 4x external IO-Link 1.1, USB 2.0 IO-Link based 4 Read/write head BIS VM-3_ _ _ 4x M12 connector female, 5-pin 1x 7/8" connector male, 5-pin 1x M12 connector male, 5-pin 1x M12 connector female, 5-pin 1x M12 connector female, 3-pin Configuration software See page 274/279/290/306 for cable options



BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

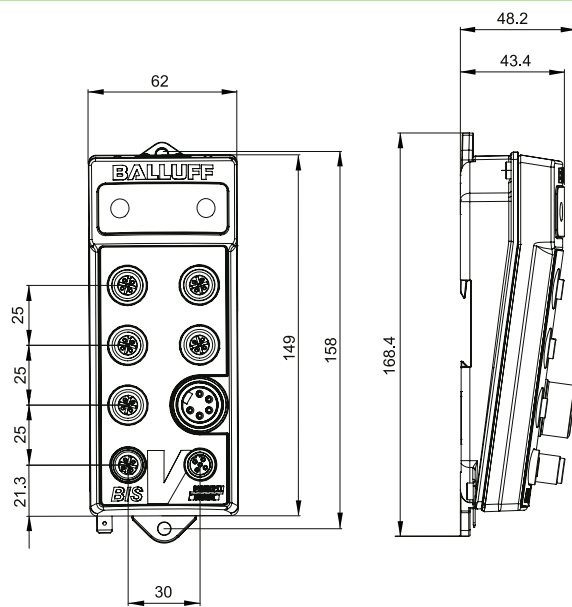
Read only compact processors

Processors

easy loop® Communication module

Standard handheld

Access protection



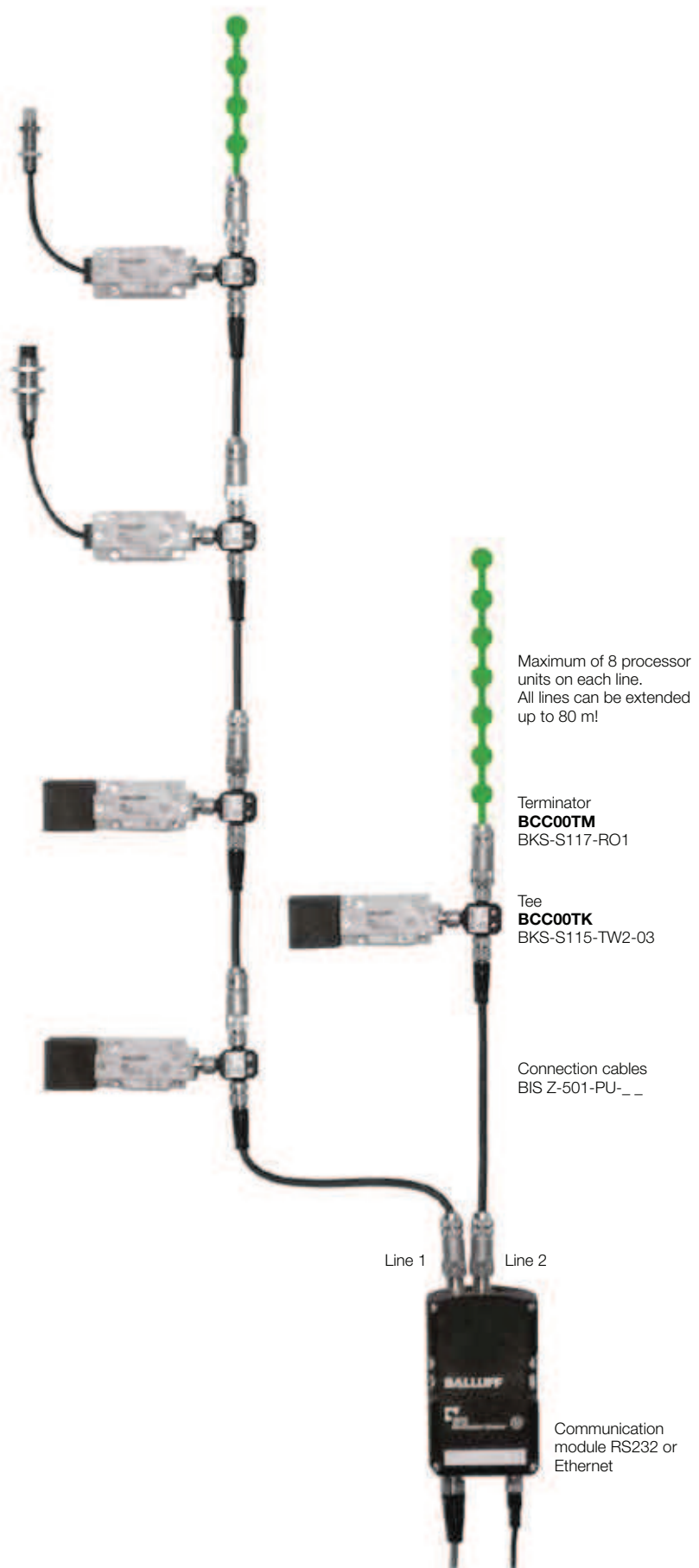


For simple installation

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, correct wiring. No address settings.

Install the BIS L simply by connecting a maximum of eight read heads with easy loop® interface to two lines. A single cable will suffice and a separate power supply is no longer necessary.

All processor units function independently to allow dynamic operation: Data is transferred reliably when the data carrier passes by.



BIS L Industrial RFID System

Communication module for easy loop®



Description		Communication interface
Housing material		ABS
Serial RS232	Ordering code	BAE003W
	Part number	BIS Z-EL-002-RS232
Ethernet TCP/IP	Ordering code	BAE003U
	Part number	BIS Z-EL-001-Ethernet
Supply voltage, Ripple	24 V DC $\pm 20\%$, $\leq 10\%$	
Current	≤ 200 mA (+20 mA for each connected processor unit)	
Operating temperature	0...+60 °C	
Storage temperature	0...+60 °C	
Degree of protection per IEC 60529	IP 65	
Read/write head ports	2x external	
Connection for	Line 1 and 2 (2x M12 connector female, 8-pin)	
Connection type	1x M12 connector male, 5-pin 1x M12 connector male, 5-pin, A-coded (RS232) or M12 connector female, 4-pin, D-coded (TCP/IP)	
Connection cable	See page 280/305/293 for cable options	



BIS L Industrial RFID System

Range of applications

Read/write distances overview

Data carriers read/write

Data carriers read only

Read/write heads

Data couplers

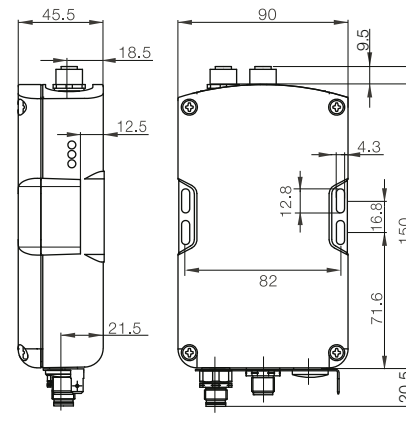
Read only compact processors

Processors

easy loop® Communication module

Standard handheld

Access protection



RS232 version shown



Suitable connectors
(please order separately)



Description	Tee	Terminator	Operating voltage	Ethernet connector	RS232 connector	Ethernet adapter
Ordering code	BCC00TK	BCC00TM	BCC06Z9	BCC03WZ	BCC00PM	BCC0C5J
Part number	BKS-S115-TW2-03	BKS-S117-RO1	BCC M435-0000-1A-000-41X475-000	BCC M474-0000-2D-000-51X475-000	BIS C-522-PVC-02	BIS C-526-PU-00,6

BIS L Industrial RFID System

Standard handheld

For enhanced operating convenience

Allows portable writing and reading of BIS L data carriers.

Easy operation thanks to

- Touchscreen with large color Windows CE® display and
- Pre-installed Balluff software and keyboard or stylus.

Ideal for poor light conditions and challenging environments. Data transfer via optional WLAN, Bluetooth or wired USB. The Handheld is also modular for expandability.



Additional convenience

A pistol grip is provided for ergonomic comfort.

Antenna type		
Function		
Housing material		
Standard base	Ordering code	
	Part number	
Standard + WLAN module	Ordering code	
	Part number	
Standard + 1D code reader	Ordering code	
	Part number	
Standard + 2D code reader	Ordering code	
	Part number	
Standard + 1D code reader + WLAN	Ordering code	
	Part number	
Standard + 2D code reader + WLAN	Ordering code	
	Part number	
Keyboard		
Display		
Supply voltage		
Capacity		
Interface		
Working temperature		
Degree of protection per IEC 60529		
Read/write head option		
Accessories included		
Appropriate data carrier		
Please order additional accessories separately		

Standard handheld **BIS L-87_-1-008-X-000_** includes charger and stylus.

Antenna type:



rod



round



Recommended accessories

(please order separately)



Description	Pistol grip option	Optional docking station with power supply
Ordering code	FHW0004	FHW0003
Part number	11023836	11023834

BIS L Industrial RFID System

Standard handheld



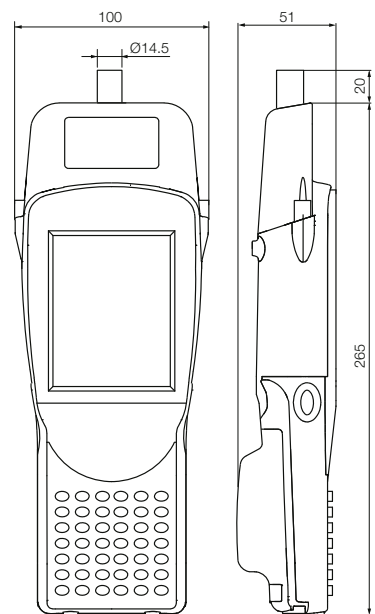
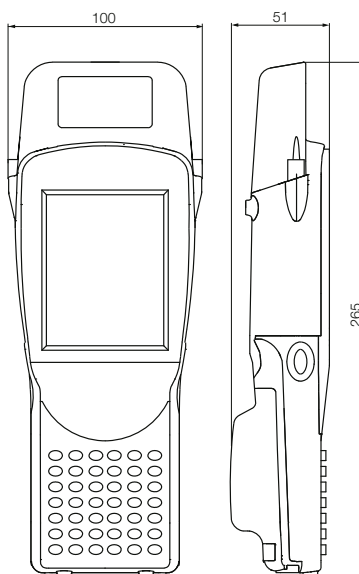
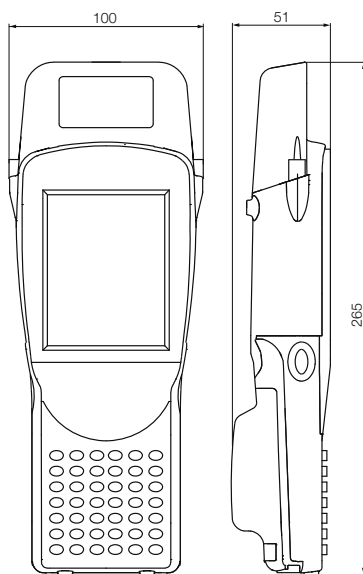
125 kHz LF

BIS L Industrial RFID System

Range of applications
Read/write distances overview
Data carriers read/write
Data carriers read only
Read/write heads
Data couplers
Read only compact processors
Processors
easy loop® Communication module

Standard handheld
Access protection

General purpose	Rod	Tool ID
Read/write ABS	Read/write ABS	Read/write ABS
BAE00A2	BAE00CN	BAE00CH
BIS L-870-1-008-X-000	BIS L-871-1-008-X-000	BIS L-873-1-008-X-000
BAE00K4		BAE00EJ
BIS L-870-1-008-X-001	BIS L-871-1-008-X-001	BIS L-873-1-008-X-001
BIS L-870-1-008-X-002	BIS L-871-1-008-X-002	BIS L-873-1-008-X-002
BIS L-870-1-008-X-003	BIS L-871-1-008-X-003	BIS L-873-1-008-X-003
BAE00EA		BAE00EA
BIS L-870-1-008-X-004	BIS L-871-1-008-X-004	BIS L-873-1-008-X-004
BIS L-870-1-008-X-005	BIS L-871-1-008-X-005	BIS L-873-1-008-X-005
52 buttons, alphanumeric TFT Touchscreen display 3.7 V rechargeable battery pack 4000 mA/h RS232/Balluff Dialog -10...+50 °C IP 65 Integrated Charging power supply and stylus for BIS L-Data carrier with round coil $\varnothing \geq 35$ mm Docking station and Pistol Grip	52 buttons, alphanumeric TFT Touchscreen display 3.7 V rechargeable battery pack 4000 mA/h RS232/Balluff Dialog -10...+50 °C IP 65 Integrated Charging power supply and stylus for BIS L-Data carrier with rod antenna Docking station and pistol Grip	52 buttons, alphanumeric TFT Touchscreen display 3.7 V rechargeable battery pack 4000 mA/h RS232/Balluff Dialog -10...+50 °C IP 65 Integrated Charging power supply and stylus for BIS L-Data carrier with round coil $\varnothing \leq 34$ mm Docking station and pistol grip



BIS L Industrial RFID System

Access protection

Access protection

And here's how it works: 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 issues the data.

Different interfaces such as serial, Profibus, 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 to you

Simple upgrade and rapid replacement without modifying 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.



Version	
Use	
Housing material	
Ordering code	
Part number	
Operating temperature	
Storage temperature	
Protection per IEC 60529	

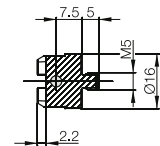
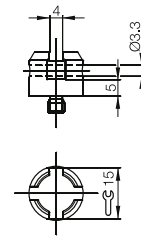
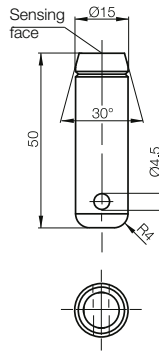
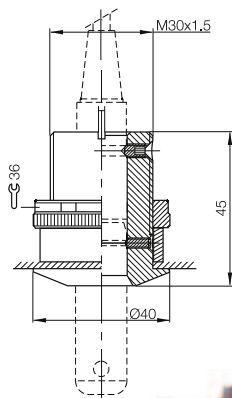


BIS L Industrial RFID System

Access protection



Access protection	Data carrier and bracket	Tag Holder
Attachment for read/write head BIS M-304 POM and PA 6.6	Used with BIS Z-ZA-001 POM and PA 12	Used with BIS L-103 and BIS L-203 POM
BAM012N	BIS00ZY	BAM012H
BIS Z-ZA-001	BIS L-103-05/L-ZC1	BIS L-203-ZH1
0...+70 °C -20...+85 °C	-25...+70 °C -25...+85 °C	-25...+85 °C
	IP 67	IP 67



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

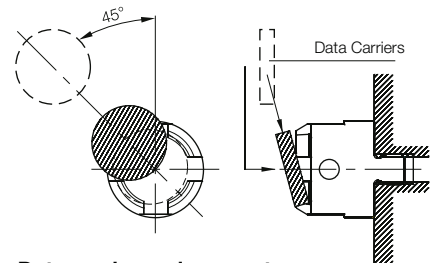


Interchangeable with data carriers BIS L-103 and BIS L-203, easy to mount – even on metal. The mount and prism clamp secure the data carrier and prevent it from falling out.

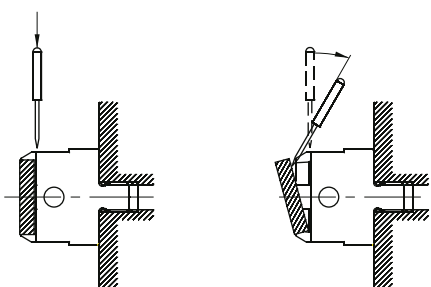


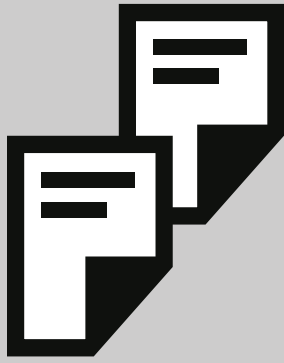
- BIS L Industrial RFID System
- Range of applications
 - Read/write distances overview
 - Data carriers read/write
 - Data carriers read only
 - Read/write heads
 - Data couplers
 - Read only compact processors
 - Processors
 - easy loop@ Communication module
 - Standard handheld
 - Access protection**

Mounting a data carrier

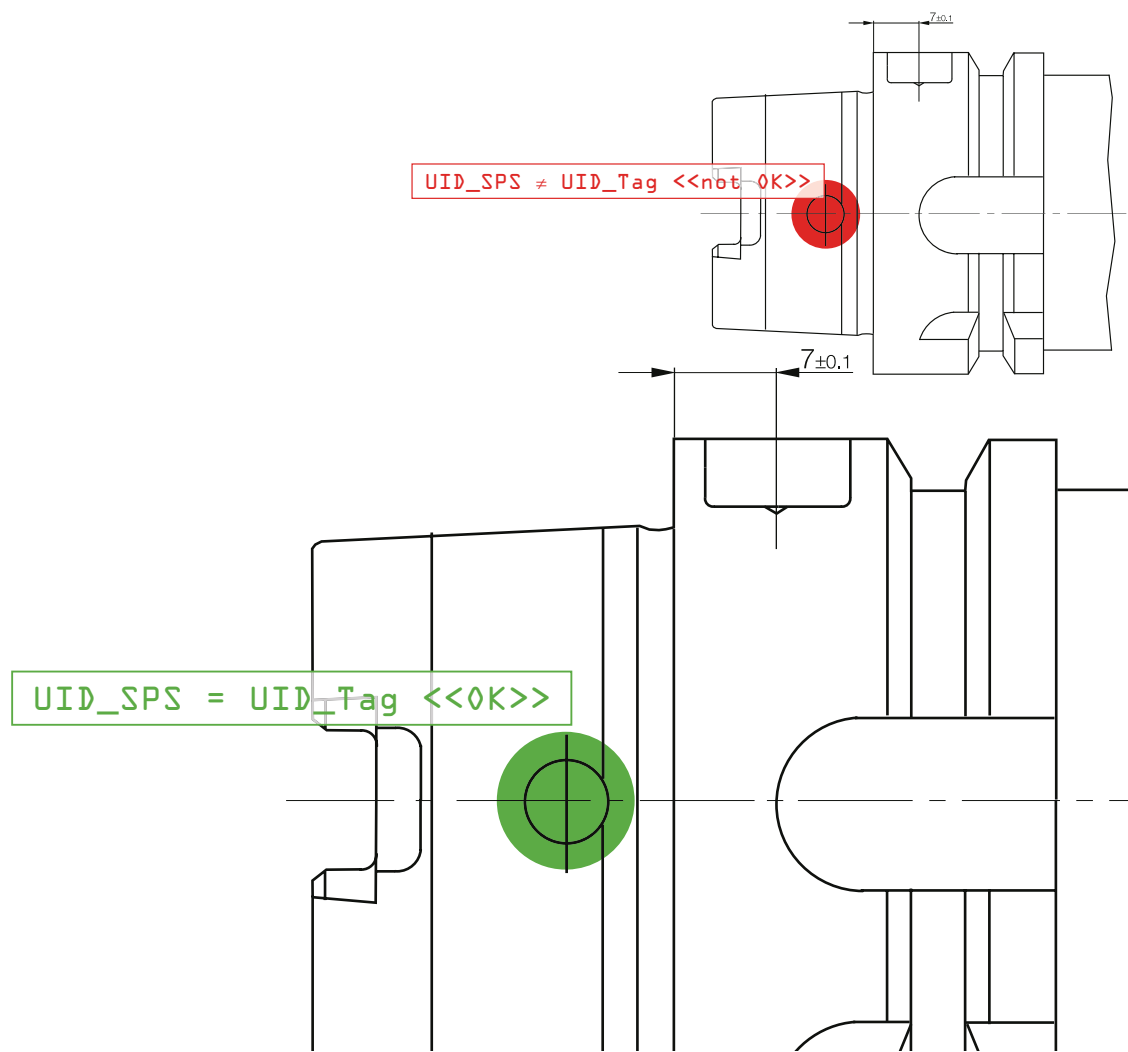


Data carrier replacement





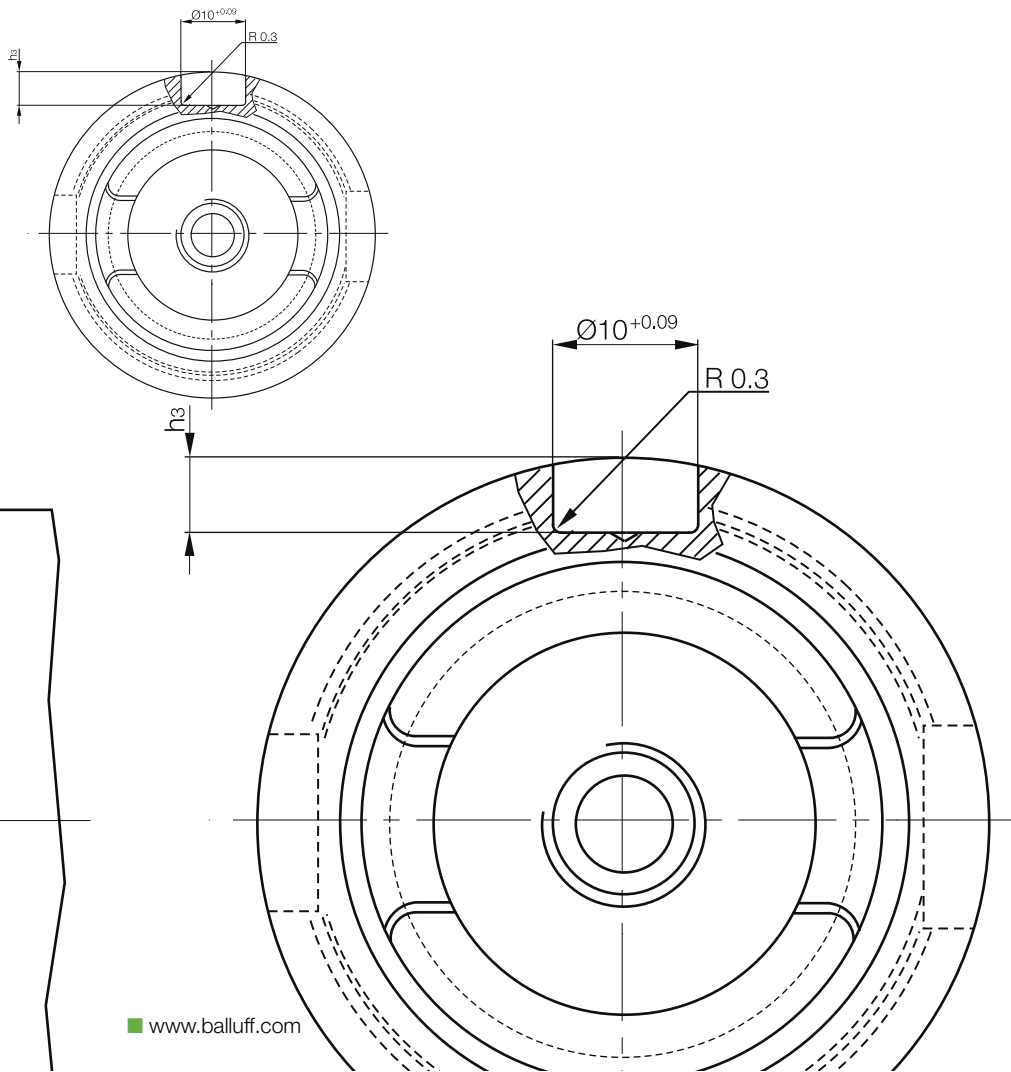
Basic Information and Definitions



Basic Information and Definitions

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BIS U Industrial RFID System	358
Inductive identification	
BIS M Industrial RFID System	360
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Standards

Protection class	II □	EN 60947-5-2/IEC 60947-5-2
Degree of protection	IP 60...67 IP 68 per BWN Pr. 20	EN 60529/IEC 60529 Balluff factory standard (BWN): Temperature storage 48 h at 60 °C, 8 temperature cycles according to EN 60068-2-14/IEC 60068-2-14 between the benchmark temperatures according to the data sheet, 1 h storage in water, insulation inspection, 24 h storage in water, insulation test, 8 temperature cycles according to EN 60068-2-14 IEC 60068-2-14 between the benchmark temperatures according to the data sheet, 7 days storage in water, insulation test.
	IP 68 per BWN Pr. 27	Balluff Factory Standard (BWN): Testing products for use in the foods industry.
	IP 69K	DIN 40050 part 9: Protection against entry of water under high pressure- or steam jet cleaning.
EMC (Electromagnetic Compatibility)	Emissions, RF noise voltage and RF noise radiation from electrical equipment	EN 55011
	Interference immunity against discharging static electricity (ESD)	EN 61000-4-2/IEC 61000-4-2
	Radio frequency immunity against high-frequency electromagnetic fields (RFI)	EN 61000-4-3/IEC 61000-4-3
	Immunity to fast transients (bursts)	EN 61000-4-4/IEC 61000-4-4
	Interference immunity against conducted interference, induced by high-frequency fields	EN 61000-4-6/IEC 61000-4-6
	Immunity to voltage dips and voltage interruptions	EN 61000-4-11/IEC 61000-4-11
	Surge-voltage stability	EN 60947-5-2/IEC 60947-5-2
Environmental simulation	Vibration, sinusoidal	EN 60068-2-6/IEC 60068-2-6
	Shock	EN 60068-2-27/IEC 60068-2-27
	Continuous shock	EN 60068-2-29/IEC 60068-2-29

Basic Information and Definitions

General information

Mounting torques

The following torques are to be followed so that the sensors are not mechanically destroyed during installation, as long as no other information is indicated on the data sheet or the sensor packaging.

Size	Material	Tightening torque
M12×1	Stainless steel	40 Nm
M18×1	PBT	1 Nm
M18×1	Stainless steel	60 Nm
M30×1.5	PBT	3 Nm
M30×1.5	Stainless steel	90 Nm

Degree of protection

The degrees of protection are given according to IEC 60529. Code letters IP (International Protection) designate protection for electrical equipment against shock hazard, ingress of solid foreign bodies and water.

First digit:

- 2 Protection against penetration of solid bodies larger than 12 mm, shielding from fingers and objects
- 4 Protection against penetration of solid bodies larger than 1 mm, shielding from tools and wires
- 5 Protection against damaging dust deposits, complete contact protection
- 6 Protection against penetration of dust, complete contact protection

Second digit:

- 0 No special protection
- 4 Protection against water, which is sprayed from all directions against the equipment
- 5 Protection against a stream of water from a nozzle which hits the equipment from all directions
- 7 Protection against water, if the equipment (housing) is temporarily submerged
- 8 Protection against water when submerged for some time



Basic Information and Definitions

General information

Mechanical properties
Quality
BIS U
BIS M
BIS C
BIS L
BIS S
Interaction between read/write heads and data carriers
BVS

Materials

Material	Use and characteristics
Plastics	
ABS Acrylonitrile-Butadiene-Styrene	Impact-resistant, stiff, limited chemical resistance. Some types flame-retardant. Used for housings.
ASA Acrylonitrile styrene acrylate	Impact-resistant material, scratch-resistant surface and good weather resistance
EP Epoxy resin	Duromer, molded plastic material, highest mechanical strength and temperature resistance. Very good dimensional stability. Cannot be melted.
Epoxy resin - hollow glass spheres	Hollow glass spheres can be treated with epoxy resins. They are used for manufacturing converters with low thickness and high pressure rating.
PA Polyamide	High impact resistance, good chemical resistance.
PA 6, PA 66, PA mod., PA 12 Polyamide	Good mechanical strength. Temperature resistance. PA 12 approved for food industry applications.
PBT Polybutylene terephthalate	High mechanical strength and temperature resistance. Some types flame-retardant. Good chemical resistance. Good oil resistance.
PC Polycarbonate	Clear, hard, elastic and impact resistant. Good temperature resistance. Limited chemical resistance.
PET Polyethylene terephthalate	High resistance to breakage, good dimensional stability. Frequently used in the food industry.
POM Polyoxymethylene	High impact resistance, good mechanical strength. Good chemical resistance.
Plastics	
PPS Polyphenylene sulfide	High strength, even at high temperatures. High chemical resistance.
PVC Polyvinyl chloride	Good mechanical strength and chemical resistance (cable).
PVDF Polyvinylidene fluoride	Thermoplastic. High mechanical strength and temperature resistance. Good chemical resistance (similar to PTFE).
Metal	
Wrought aluminum alloy	Standard-aluminum for machined cutting. Can be anodized. Used for housings and mounting components.
CuZn Brass	Standard-housing material with surface protection.
Stainless steel	Excellent corrosion resistance and strength. Quality 1.4034, 1.4104: Standard-material; quality 1.4305, 1.4301: Standard-material for the food industry; quality 1.4401, 1.4404, 1.4571: With increased requirements on chemical resistance at elevated temperatures for the food industry.
GD-Al die-cast aluminum	Low specific gravity. Good strength and resistance. Some types can be anodized.
GD-Zn die-cast zinc	Good resistance and strength. Usually with protective surface coating.
Other	
Glass	Good chemical resistance and strength. Used primarily in optical applications (lenses, cover lenses).

Quality and the environment

Quality management system per DIN EN ISO 9001:2008

Balluff companies	
Balluff GmbH	Germany
Balluff SIE Sensorik GmbH	Germany
Balluff Controles Eléctricos Ltda.	Brazil
Balluff Sensors (Chengdu) Co., Ltd.	China
Balluff Ltd.	Great Britain
Balluff Automation S.R.L.	Italy
Balluff Canada Inc.	Canada
Balluff de México S.A. de C.V.	Mexico
Balluff GmbH	Austria
Balluff Sp. z o.o.	Poland
Balluff Hy-Tech AG	Switzerland
Balluff Sensortechnik AG	Switzerland
Balluff S.L.	Spain
Balluff CZ, s.r.o	Czech Republic
Balluff Elektronika Kft.	Hungary
Balluff Inc.	USA



Environmental management system per DIN EN ISO 14001:2009

Balluff companies	
Balluff GmbH	Germany
Balluff Sensors (Chengdu) Co., Ltd.	China
Balluff Elektronika KFT	Hungary

Testing laboratory

The Balluff testing laboratory operates in accordance with ISO/IEC 17025 and is accredited by DAkkS for testing electromagnetic compatibility (EMC).



Balluff products comply with EU directives

Products that require labeling are subject to a conformity evaluation process according to the EU directive and the product is labeled with the CE marking.



Balluff products fall under the following EU directive:

2004/108/EC	EMC directive
2006/95/EC	Low Voltage Directive valid for products with supply voltage ≥ 75 V DC/ ≥ 50 V AC

Product approvals

Product approvals are awarded by domestic and international institutions. Their symbols affirm that our products meet the specifications of these institutions.

"US Safety System" and "Canadian Standards Association" under the auspices of Underwriters Laboratories Inc. (cUL).



Basic
Information
and Definitions

General
information

**Mechanical
properties**

Quality

BIS U

BIS M

BIS C

BIS L

BIS S

Interaction
between
read/write
heads and
data carriers

BVS

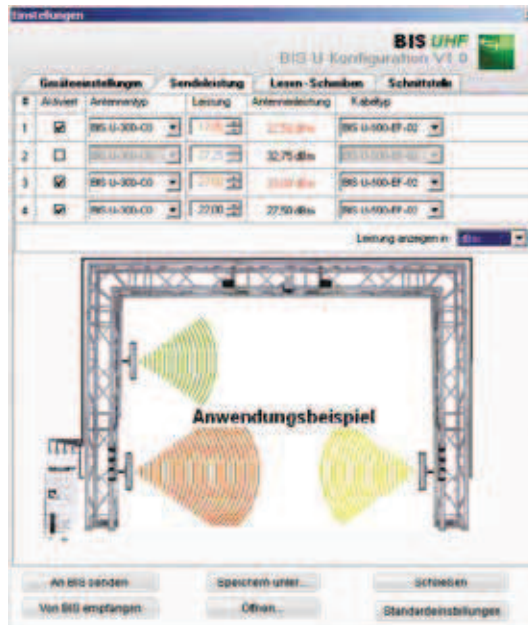
Basic Information and Definitions

BIS U configuration software

Parameters are configured using the "BIS UHF Manager" software. One requirement is that the processor is connected to the controlling system. The parameter settings can be overwritten at any time. The parameters can be saved in an XML file so that they can be retrieved whenever needed.

Application software

Balluff partners with only best in class software providers and elite integrators to deliver the complete RFID solution. From a full system rollout to meshing into the current process, our software partners understand the needs of the manufacturing industry. Logistics, Work in process (WIP) production control, E-Kanban etc., are just a few of the applications in which our partners specialize.



Setting the transmission power and dependency on the antenna being used



The BIS U-6027 processor and the controlling system communicate via Ethernet. Assigning a unique IP address associates the processor with a network.



We assist you in finding a solution to your RFID task with short decision paths and personal contacts – from design to implementation. The objectives and probability of success of your RFID identification task are objectively analyzed and the system design refined. The RFID system components are then selected.

The solution design phase is concluded with a temporary test setup on-site on the system. You thereby receive valuable information for RFID use in your environment and are then able to perform a realistic ROI assessment.

Step 1: Preanalysis

Description of the installation conditions and physical characteristics:

- Mechanical installation
- Power limits
- Ambient parameters
- Detection type
- Transponder types
- Stationary/mobile read/write devices

Step 2: Feasibility

- Project description and definition of objectives
- Type and characteristics of the solution
- Where are the weak points
- Selection of system components

Step 3: Solution suggestion

- Preparation of samples and test settings
- Testing of RFID technology in the actual environment
- Performance comparison of various applications

Step 4: Project coaching

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

We are happy to help!

Tel. +49 7158 173-401
 +49 7158 173-727
 E-mail: TecSupport@balluff.de

Mounting definitions

Flush in steel

Active sensing surface can be flush mounted to surface of steel. Consult part data sheet for additional information.

Non-flush on steel

Active sensing surface must be clear and not be surrounded by steel. Consult part data sheet and clear zone definitions for more information.

Non-metal

Total clearance zone from any kind of metal must be maintained. Consult part data sheet and clear zone definitions for more information.

Consult technical support for other metal mounting options.



Mounting definitions

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Minimum distance between two data carriers

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

Dimensions in mm

Minimum distance between two read/write heads

BIS M-300	200
BIS M-301	600
BIS M-351/BIS VM-351	600
BIS M-302/BIS VM-307	100
BIS M-304	100
BIS M-400-007-001-00-S115	200
BIS M-401-007-001-00-S115	600
BIS M-451-007-001-00-S115	600
BIS M-400-007-002-00-S115	100
BIS M-410-007-002-00-S115	200
BIS M-411-007-002-00-S115	300

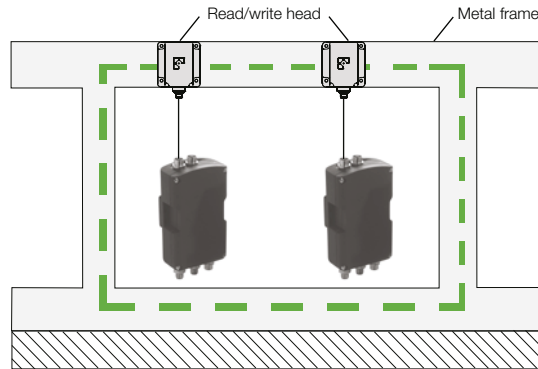
Dimensions in mm

Basic Information and Definitions

BIS M installation notes

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.

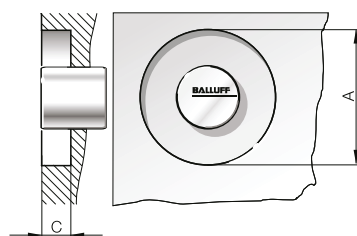


Clear zone dimensions for read/write heads

For compliance to the read/write distances as rated for a given data carrier to read/write head, the following Clear Zone Dimension must be used for a non-metal data carrier mounting:

Data carriers with clear zone dimensions	BIS M-111-02/L, BIS M-101-01/L		BIS M-112-02/L, BIS M-102-01/L		BIS M-105-02/A, BIS M-105-01/A		BIS M-120-01/L		BIS M-150-02/A, 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

Dimensions in mm



Mechanical strength

Data carriers and read/write heads BIS M-1_ __, BIS M-3_ __

Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6

Processors 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

Basic Information and Definitions

BIS M read/write times

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		FRAM – Data carrier with 16 byte blocks	
Byte	read time	Byte	read time
from 0 to 15	20 ms	from 0 to 15	30 ms
for each additional 16 bytes started add an additional	10 ms	for each additional 16 bytes started add an additional	15 ms

Write times BIS M-1_ _

EEPROM – Data carrier with 16 byte blocks		FRAM – Data carrier with 16 byte blocks	
Byte	write time	Byte	write time
from 0 to 15	40 ms	from 0 to 15	60 ms
for each additional 16 bytes started add an additional	30 ms	for each additional 16 bytes started add an additional	40 ms

Example:

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

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

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

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

Basic Information and Definitions

BIS M read/write times

Read/write cycles

Data carriers	Memory type	Write cycles	Read cycles	Data retention time
112 bytes	EEPROM	100000	unlimited	10 years
160 bytes	EEPROM	100000	unlimited	10 years
736 bytes	EEPROM	100000	unlimited	10 years
752 bytes	EEPROM	100000	unlimited	10 years
992 bytes	EEPROM	100000	unlimited	10 years
2000 bytes	FRAM	unlimited	unlimited	10 years
8192 bytes	FRAM	unlimited	unlimited	10 years

Maximum speed

To calculate the permissible speed at which the data carrier and head may move relative to one another, the static distance values are used (see section BIS M).

The permissible speed is:

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

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

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

n^1 = Number of started blocks



Basic Information and Definitions

General information

Mechanical properties

Quality

BIS U

BIS M

BIS C

BIS L

BIS S

Interaction between read/write heads and data carriers

BVS

Mounting definitions

Flush in steel

Active sensing surface can be flush mounted to surface of steel.
Consult part data sheet for additional information.

Non-flush on steel

Active sensing surface must be clear and not be surrounded by steel.
Consult part data sheet and clear zone definitions for more information.

Non-metal

Total clearance zone from any kind of metal must be maintained.
Consult part data sheet and clear zone definitions for more information.

Consult technical support for other metal mounting options.

Installation in steel

For compliance to the read/write distances as rated for a given data carrier to read/write head, the following Clear Zone Dimension must be used for a "non-flush" or "non-metal" data carrier mounting:

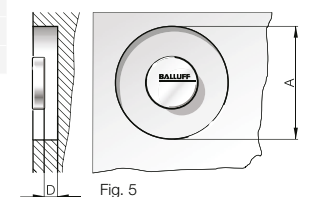
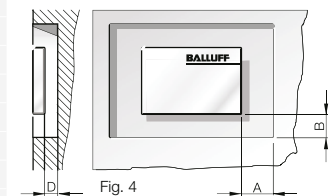
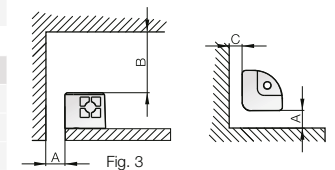
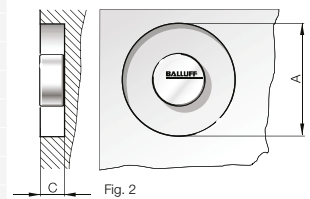
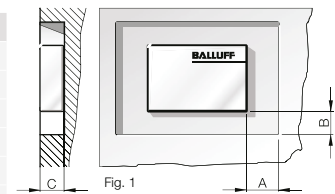
Clear zone dimensions

Data carriers	Fig.	A	D	C	B
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-121-04/L	5	60			20
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	

Read/write heads	Fig.	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

Dimensions in mm

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.



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. 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. 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.

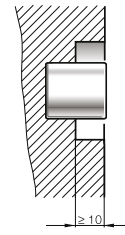


Fig. 1

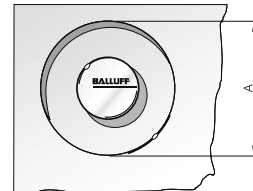


Fig. 2

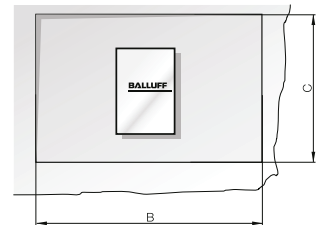


Fig. 3

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 $2 \times$ the diameter of the larger communication partner + $1 \times$ 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. When combined with read/write heads BIS C-318, 327, 328, 350, 351 and 355 dimension **B** is calculated from $2 \times$ 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.

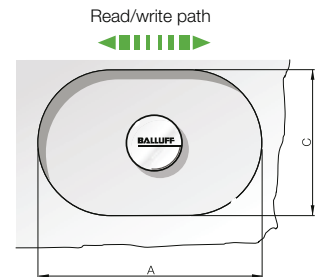


Fig. 4

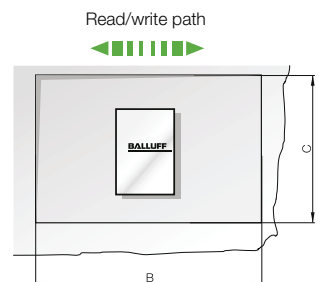


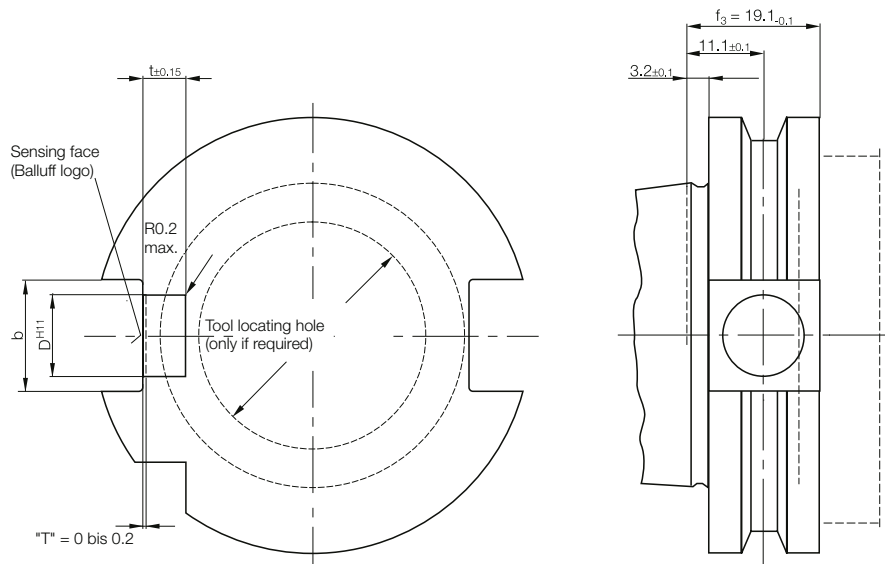
Fig. 5

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Installation in SK taper

Data carrier	BIS C-122			BIS C-103			BIS C-105			
	Taper DIN 69871-A	D ^{H11}	t ±0.15	RPM _{max}	D ^{H11}	t ±0.15	RPM _{max}	D ^{H11}	t ±0.15	RPM _{max}
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

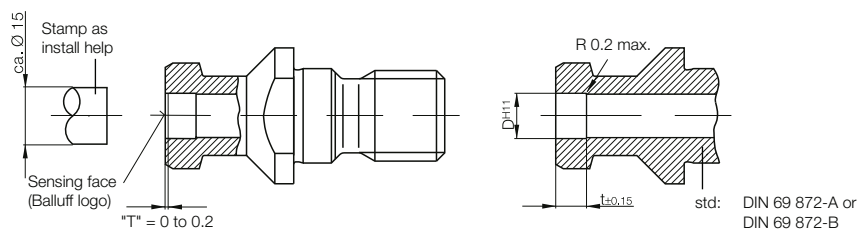
Dimensions in mm



Installation in retention knob

Data carrier	BIS C-122		BIS C-103		BIS C-105		
	Taper DIN 69871-A	D ^{H11}	t ±0.15	D ^{H11}	t ±0.15	D ^{H11}	t ±0.15
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

Dimensions in mm



Installation

1. Degrease gluing surfaces
2. Apply a bead of glue (recommended glue e.g. LOCTITE Hysol 1C or UHU-Plus endfest 300) approximately 3 mm wide around the perimeter of the data carrier housing. Note manufacturer's instructions!
3. Press in data carrier housing by hand. Note dimension "T"!
4. Remove excess glue
5. Allow to harden

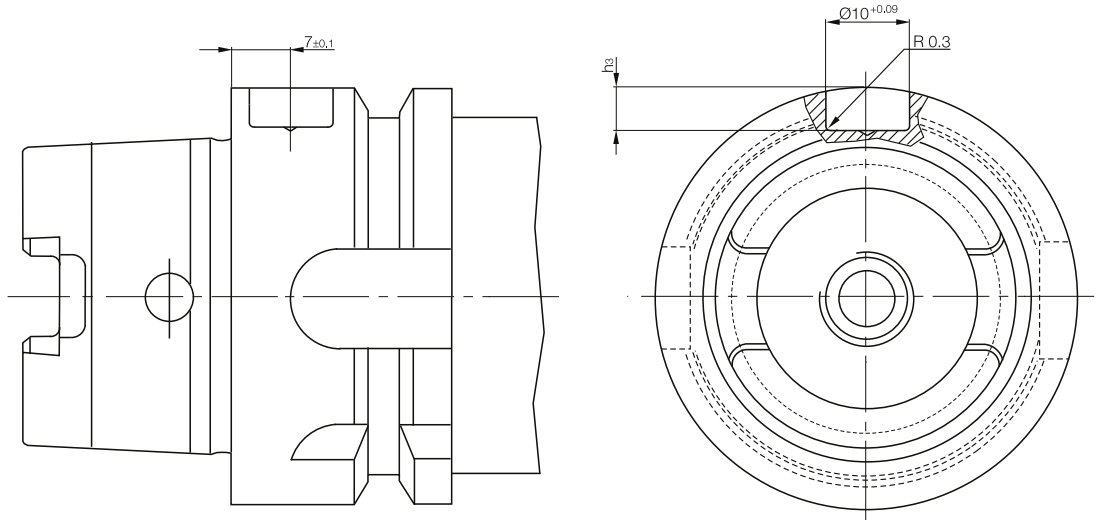
Basic Information and Definitions

BIS C installation notes

Installation in HSK taper

Data carrier	BIS C-122	
HSK Form A ISO/DIN 12164-1	$h_3 +0,20$	RPM _{max}
32	5.4	96000
49	5.2	80000
50	5.1	75000
63	5	65000
80	4.9	57000
100	4.9	48000

Dimensions in mm



Mechanical strength

Data carriers and read/write heads BIS C-1_-, BIS C-3_-

Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6

Values apply to data carriers BIS C-1_- and read/write heads BIS C-3_- except for the non-potted read/write heads BIS C-350, BIS C-351, BIS C-352 and BIS C-355.

Processors and non-potted read/write heads

BIS C-6_-, BIS C-350, BIS C-351, BIS C-352, BIS C-355

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



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BIS C read/write times

Read/write cycles

Data carriers	Memory type	Code	Write cycles up to 30 °C	Write cycles up to 70 °C	Read cycles	Memory Organization
511 bytes	EEPROM	-04	1000000	500000	unlimited	32 byte blocks
1023 bytes	EEPROM	-05	1000000	500000	unlimited	32 byte blocks
2047 bytes	EEPROM	-11	1000000	500000	unlimited	64 byte blocks
8 Kbytes	FRAM	-32	unlimited	unlimited	unlimited	64 byte blocks

Read times in static mode

For double read and compare:

Data carrier with 32-bytes blocks		Data carrier with 64-bytes blocks	
Bytes	Read time	Bytes	Read time
from 0 up to 31	110 ms	from 0 up to 63	220 ms
for each additional 32 bytes started add an additional	120 ms	for each additional 64 bytes started add an additional	230 ms
from 0 up to 255	= 950 ms	from 0 up to 2047	= 7350 ms

Write times in static mode

Includes checking and comparing:

Data carrier with 32-bytes blocks		Data carrier with 64-bytes blocks	
Bytes	Write time [ms]	Bytes	Write time [ms]
from 0 up to 31	$110 + n \times 10$	from 0 up to 63	$220 + n \times 10$
≥ 32	$y \times 120 + n \times 10$		$y \times 230 + n \times 10$
from 0 up to 255	= max. 3510	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.

$$t = 2 \times 120 + 17 \times 10 = \mathbf{410 \text{ ms}}$$

Read times in dynamic mode

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

Data carrier with 32-bytes blocks		Data carrier with 64-bytes blocks	
Bytes	Read time	Bytes	Read time
from 0 up to 3	14 ms	from 0 up to 3	14 ms
for each additional bytes	3.5 ms	for each additional bytes	3.5 ms
from 0 up to 31	112 ms	from 0 up to 64	224 ms

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.

Example:

Read 11 bytes starting at address 9, i.e. the highest address to be read is 20 (use for "m" in the formula).

$$t = 14 \text{ ms} + (m - 3) \times 3.5 \text{ ms} = \mathbf{73.5 \text{ ms}}$$

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').

Basic Information and Definitions

BIS C read/write times

Memory organization

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

Maximum speed

To calculate the permissible speed at which the data carrier and head may move relative to one another, the static distance values are used (see section BIS C).

The permissible speed is:

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

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

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

n^1 = Number of started blocks



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Mounting definitions

Flush in steel

Active sensing surface can be flush mounted to surface of steel.
Consult part data sheet for additional information.

Non-flush on steel

Active sensing surface must be clear and not be surrounded by steel.
Consult part data sheet and clear zone definitions for more information.

Non-metal

Total clearance zone from any kind of metal must be maintained.
Consult part data sheet and clear zone definitions for more information.

Consult technical support for other metal mounting options.

Minimum distance between two data carriers

	BIS L-100-01/L	BIS L-101-01/L	BIS L-102-01/L	BIS L-103-05/L	BIS L-200-03/L	BIS L-201-03/L	BIS L-202-03/L	BIS L-203-03/L
BIS L-300	250	300	400	250	250	300	400	250
BIS L-301	300	400	500	350	350	400	500	350
BIS L-302	150	200	200	180	180	200	250	180
BIS L-303	300	400	500	350	350	400	500	350
BIS L-304	150	200	200	180	180	200	250	180
BIS L-40_					≥ 250	≥ 300	≥ 400	

Dimensions in mm

Minimum distance between two read/write heads

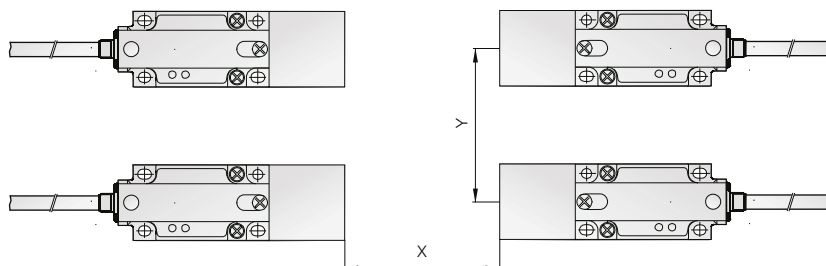
BIS L-300	800 mm
BIS L-301	800 mm
BIS L-302	200 mm
BIS L-303	800 mm
BIS L-304	200 mm

Dimensions in mm

Distance from read head to read head

Read head	Distance X	Distance Y
BIS L-40 _-...-001-...	1000 mm	1000 mm
BIS L-40 _-...-002-...	500 mm	300 mm
BIS L-40 _-...-003-...	500 mm	300 mm
BIS L-40 _-...-004-...	500 mm	300 mm

Dimensions in mm

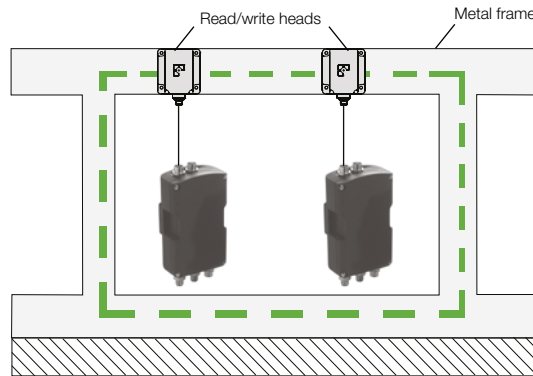


Basic Information and Definitions

BIS L installation notes

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

For compliance to the read/write distances as rated for a given data carrier to read/write head, the following Clear Zone Dimension must be used for a "non-flush" or "non-metal" data carrier mounting.

Clear zone dimensions

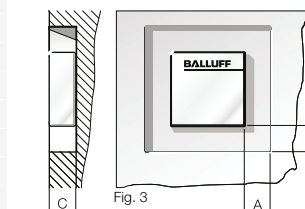
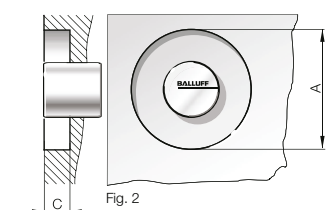
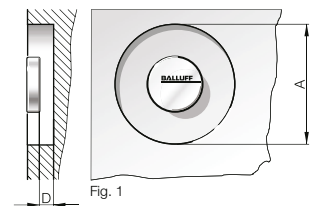
Data carriers	Fig.	A	D	C	B
BIS L-100-01/L	1	100	50		
BIS L-101-01/L	1	100	50		
BIS L-102-01/L	1	100	50		
BIS L-103-05/L	1	100	50		
BIS L-150-05/A	3	0		3	0*
BIS L-200-03/L	1	100	50		
BIS L-201-03/L	1	100	50		
BIS L-202-03/L	1	100	50		
BIS L-203-03/L	1	100	50		

Read/write heads	Fig.	A	D	C	B
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-350-001-S4		50	50	30	
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	

*in steel and BIS L-350 head

Dimensions in mm

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.



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BIS L installation notes

Mechanical strength

Data carriers and read/write heads BIS L-1_ __, BIS L-2_ __, BIS L-3_ __, BIS L-4_ __	
Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6

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

Maximum speed

To calculate the permissible speed at which the data carrier and head may move relative to one another, the static distance values are used (see section BIS L).

The permissible speed is:

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

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

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

n^1 = Number of started blocks

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BIS L read times

Read times BIS L-1_ _

Typically 110 ms for recognizing the serial number*

Data carrier with 4 byte blocks

Byte	read time
from 0 to 3	180 ms
for each additional 4 bytes started add an additional	90 ms

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
from 0 to 3	305 ms
or each additional 4 bytes started add an additional	215 ms

*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.



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Mounting definitions

Flush in steel

Active sensing surface can be flush mounted to surface of steel.
Consult part data sheet for additional information.

Non-flush on steel

Active sensing surface must be clear and not be surrounded by steel.
Consult part data sheet and clear zone definitions for more information.

Non-metal

Total clearance zone from any kind of metal must be maintained.
Consult part data sheet and clear zone definitions for more information.

Consult technical support for other metal mounting options.

Installation in steel

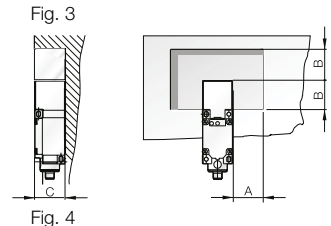
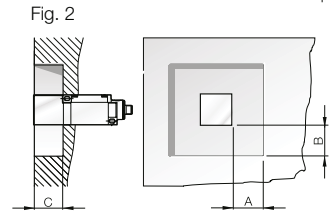
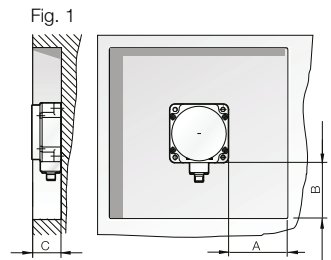
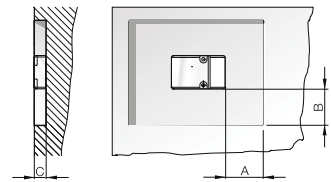
For compliance to the read/write distances as rated for a given data carrier to read/write head, the following Clear Zone Dimension must be used for a "non-flush" data carrier mounting:

Clear zone dimensions

Data carriers	Fig.	A	B	C
BIS S-108-_/L	1	35	35	11
BIS S-150-_/A	1	20	20	22

Read/write heads	Fig.	A	D	B
BIS S-301	2	80	80	40
BIS S-302	3	10	10	40
BIS S-303	4	10	10	40

Dimensions in mm



Installation in aluminum

Clear zone dimensions

Data carriers	Fig.	A	B	C
BIS S-108-_/L	1	35	35	11
BIS S-150-_/A	1	20	20	22

Read/write heads	Fig.	A	D	B
BIS S-301	2	80	80	40
BIS S-302	3	40	40	40
BIS S-303	4	40	40	40

Dimensions in mm

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.

Basic Information and Definitions

BIS S installation notes and read/write times

Mechanical strength

Data carriers and read/write heads BIS S-1_ _ , BIS S-3_ _

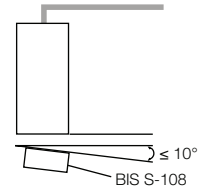
Shock load	100 g/6 ms per EN 60068-2-27 and 100 g/2 ms per EN 60068-2-29
Vibration	20 g, 10...2000 Hz per EN 60068-2-6

Processors 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

Permissible inclination

The sensing surfaces of read/write head and data carrier should be installed in parallel. If the inclination of data carrier to read/write head becomes over 10 degrees, read/write distance and offset will decrease.



Read/write cycles

Data carriers	Memory type	Write cycles	Write cycles	Read cycles	Memory organization
8 kBytes	FRAM	unlimited	unlimited	unlimited	64 byte blocks
16 kBytes	FRAM	unlimited	unlimited	unlimited	64 byte blocks
32 kBytes	FRAM	unlimited	unlimited	unlimited	128 byte blocks

Read times

Byte	read time
from 0 to 63	29 ms
for each additional 64 bytes started add an additional	31 ms
from 0 to 2047	990 ms

Write times

Byte	write time [ms]
from 0 to 63	$31 + n \times 1.5$
≥ 64	$y \times 31 + n \times 1.5$
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.

$$t = 4 \times 31 + 87 \times 1.5 = 255 \text{ ms}$$

Maximum speed

No dynamic operation is recommendet.



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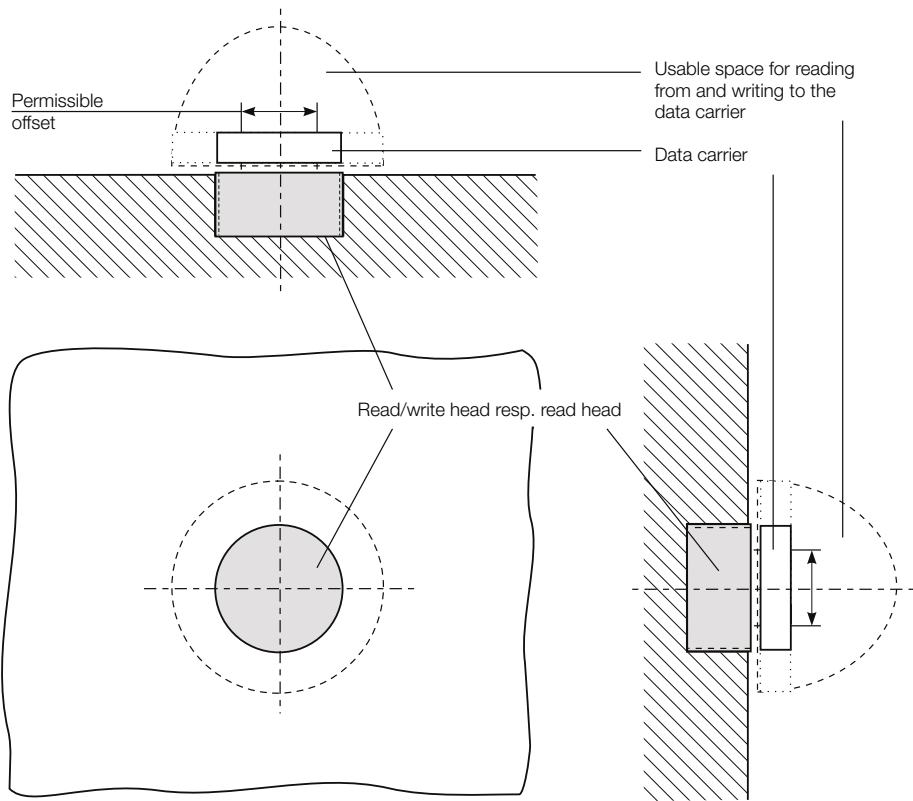
BVS

Spatial arrangement of read/write head resp. read head and data carrier

The key to reliable data exchange between the read/write head resp. read head and the data carrier is maintaining sufficient dwell time of the data carrier within a specified spatial distance from the read/write head resp. read head.

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

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



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

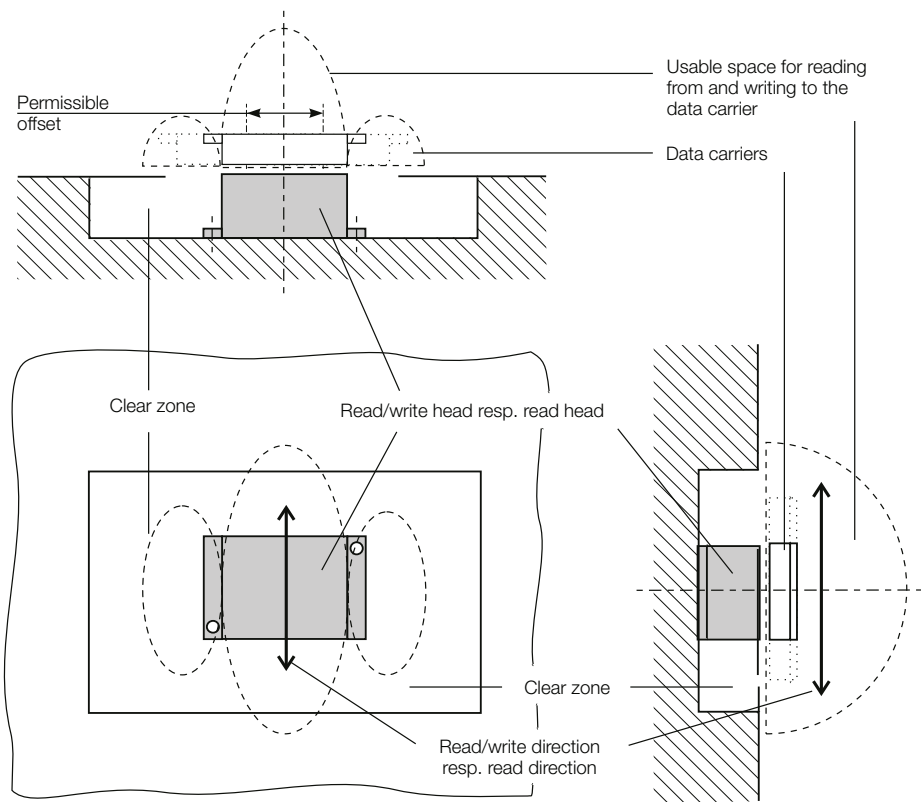
Basic Information and Definitions

Interaction between read/write heads and data carriers

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 resp. read path as possible.

Each read/write head or read head has 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 resp. read head and data carrier for directional read/write heads resp. read heads and **non-flush mount** (bar-shaped antenna).



Basic Information and Definitions

General information

Mechanical properties

Quality

BIS U

BIS M

BIS C

BIS L

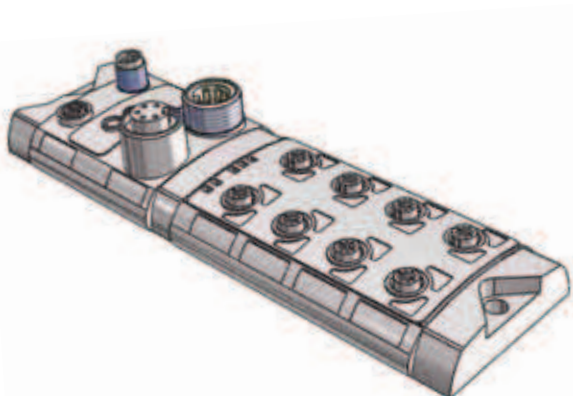
BIS S

Interaction between read/write heads and data carriers

BVS

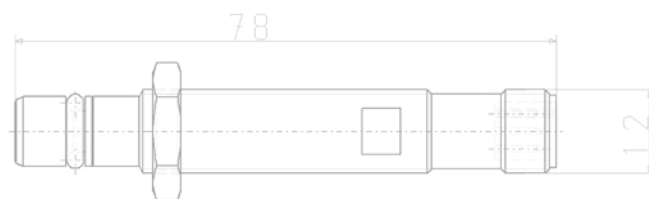
Retrieving Product Information Online

CAD and electronic diagram formats available



- All catalog products are available: inductive sensors, photoelectric sensors, sensors for pneumatic cylinders, micropulse transducers, industrial RFID systems, vision sensors BVS, mechanical single and multiple position switches, industrial networking and connectivity, and so on.
- sizephics reduced to the essentials for optimized performance

CAD formats on the Cadenas PARTserver



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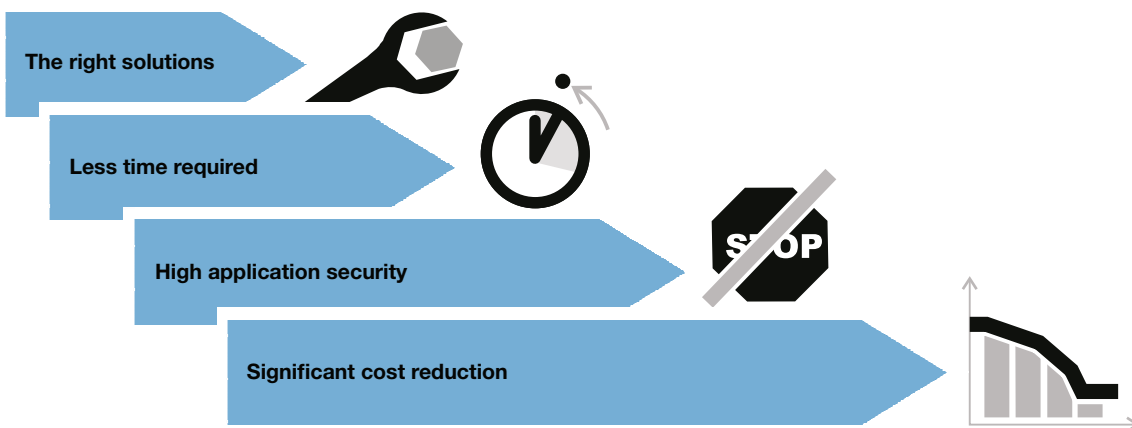
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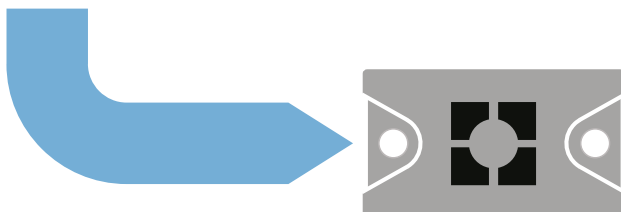
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Tool identification with Industrial RFID

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Tool identification with Industrial RFID means incorrect assignments or missing tools are a thing of the past. Our systems provide complete tool data with extreme reliability and guarantee assured operation as well as increased productivity of the equipment.

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- Quality assurance through error prevention
- Electronic data transmission and paperless tool information
- Optimal tool utilization
- Reduce set-up time through quick and precise tool identification

The system

Balluff Industrial RFID stands for flexible, secure, contactless communication. The systems are entirely tolerant of environmental influences on account of their inductive operating principle. Therefore, they are excellently suited for use in harsh industrial environments such as the machine tool. Our systems therefore provide complete tool data robustly and reliably and ensure reliable identification. Balluff Tool ID supports process reliability.



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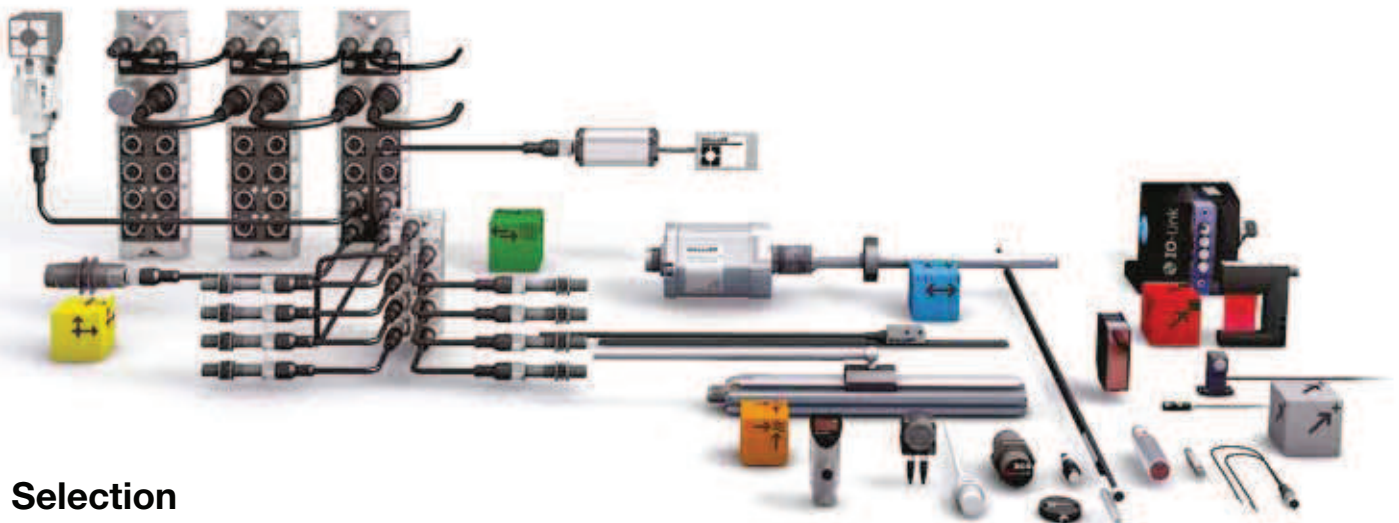
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Product
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Decision help

BIS Application Specification

Company

Address

Contact

Phone

Salesperson

What is the application?

Description

How many read/write stations?

Read

Write

How much/what type of information is going to be stored on the data carrier?

What are the read/write speeds required in the application?

Will the line be moving while reading or writing?
(If moving, what will max velocity be?)

m/min

What will the sensing distance be?

mm

What will the operating temperature range be?

°C

How many read and/or write operations per day and tags occur?

What will be the cable distance between PLC and processor?

What type of PLC or PC?

What will the data carrier be mounted in/on (material etc.)?

Non-metal Aluminum Steel

What will the read/write head be mounted to (material etc.)?

Non-metal Aluminum Steel

What will be the method of communication and protocol?

RS232 RS422/RS485 Profibus
 Devicenet IO-Link easy-loop®
 Profibus Ethernet/IP EtherCAT
 Ethernet TCP/IP



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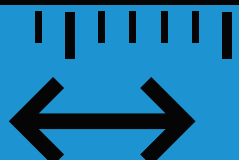
Industrial
Networking and
Connectivity



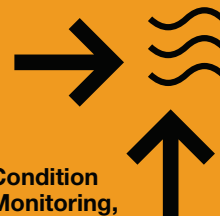
Industrial
Identification



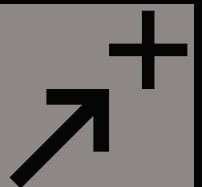
Object
Detection



Linear Position
Sensing and
Measurement



Condition
Monitoring,
Fluid Sensors



Accessories



Systems and Service



Industrial Networking and Connectivity



Industrial Identification



Object Detection



Linear Position Sensing and Measurement

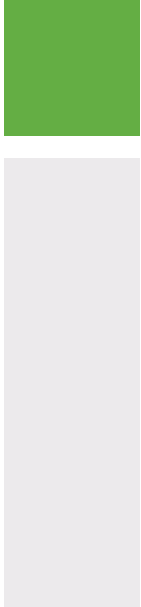
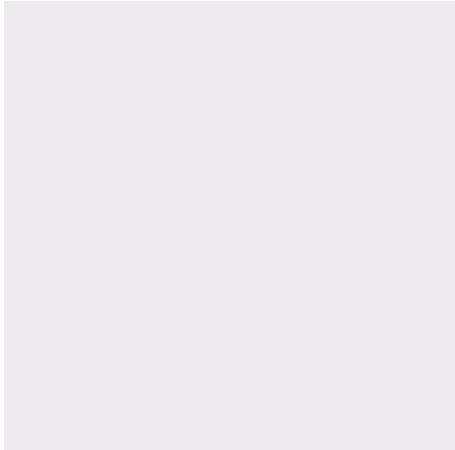


Condition Monitoring and Fluid Sensors



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