BALLUFF

Identification Systems BIS S

... non-contact data communication with High Speed

Modern automation technology without automatic identification has become unthinkable. Several approaches are available, including bar code labels, mechanical coding, transmitter/receiver systems using microwave, or inductive identification systems.

It's not always easy to make the right choice. But practice has shown that inductive identification systems are often the preferred solution, especially in production and assembly technology.

The inductive principle guarantees ruggedness and resistance to ambient effects, and makes these non-contacting systems extremely reliable and function-secure. Use in harsh industrial environments is therefore never a problem.

Assembly line identification

Material and information flow are inseparable in computer controlled assembly and manufacturing. The consistent coupling of these two flow elements is required today for flexibility and cost effectiveness in automation.

Series BIS Identification Systems ensure a reliable exchange of information between material flow and data processing, including all areas of manufacturing where materials are being moved:
- workpiece transport in conveying systems
- FTS and pallet transport systems
- assembly

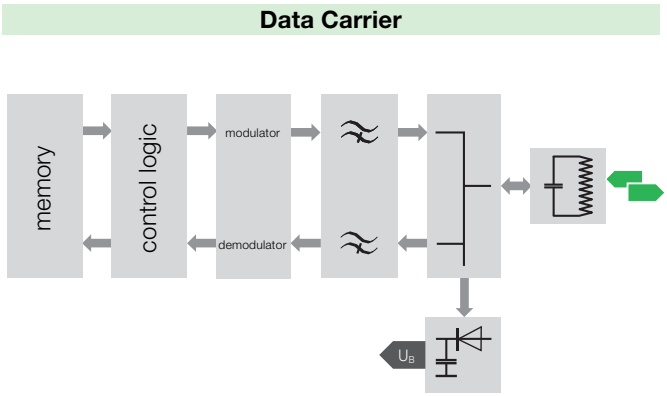
The advantage to you is cost reduction through:
- flexibility
- faster access to information
- shorter response times
- stock optimization

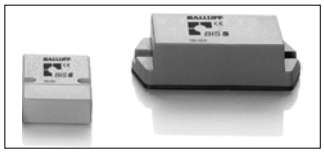
The components of a BIS Identification System are:

The data carrier receives the energy signal and uses it to create the supply voltage. It then sends its data to the read/write head.

The read/write head is the communications partner of the data carrier. It sends a energy signal out and receives the data signal transmitted back from the data carrier. The energy signal, since it is pulsed, is also used for programming the data carrier memory.

The processor supervises the bi-directional data transfer between data carrier and read/write head and serves as buffer storage. It is the link between the host system and the data carrier.
To allow for adapting to various computer and controller designs, numerous software packages are available. A sophisticated checking algorithm assures safe and reliable data transmission.

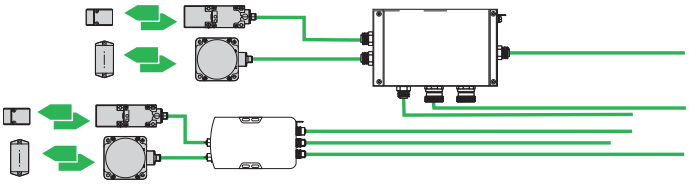


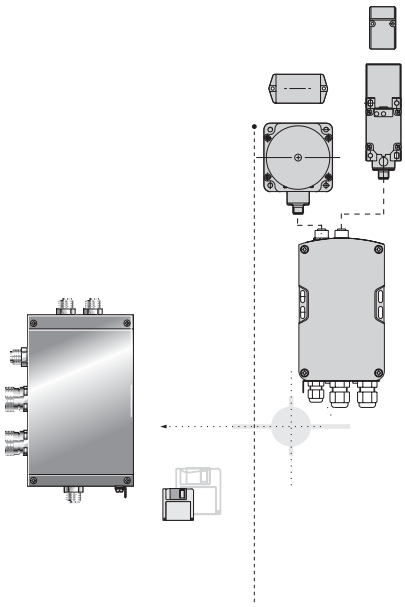


Features

- non-contact and wear-free
- safe data transfer
- immune to dirt and liquids
- adaptable to virtually any existing control
- interface versions for virtually any control
- maintenance-free
- high mechanical strength

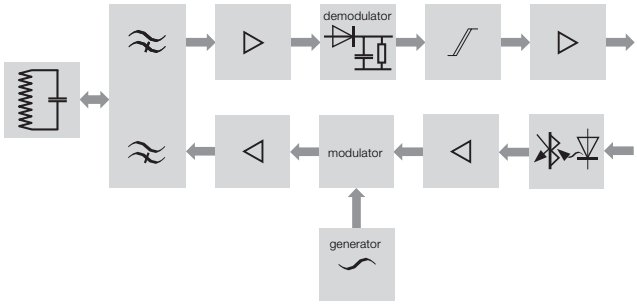
Gitterbox identification

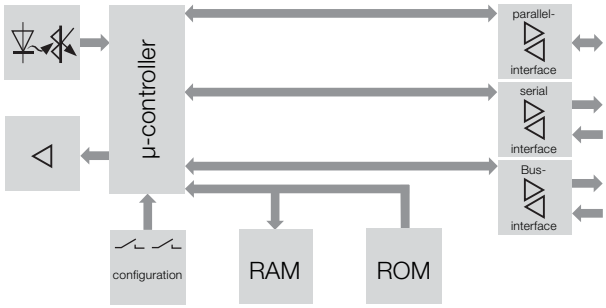


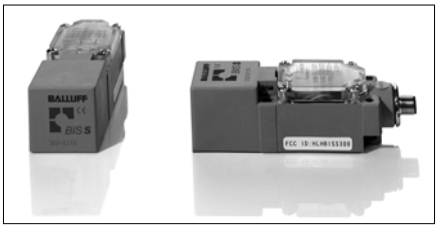


Read/Write Head

Processor

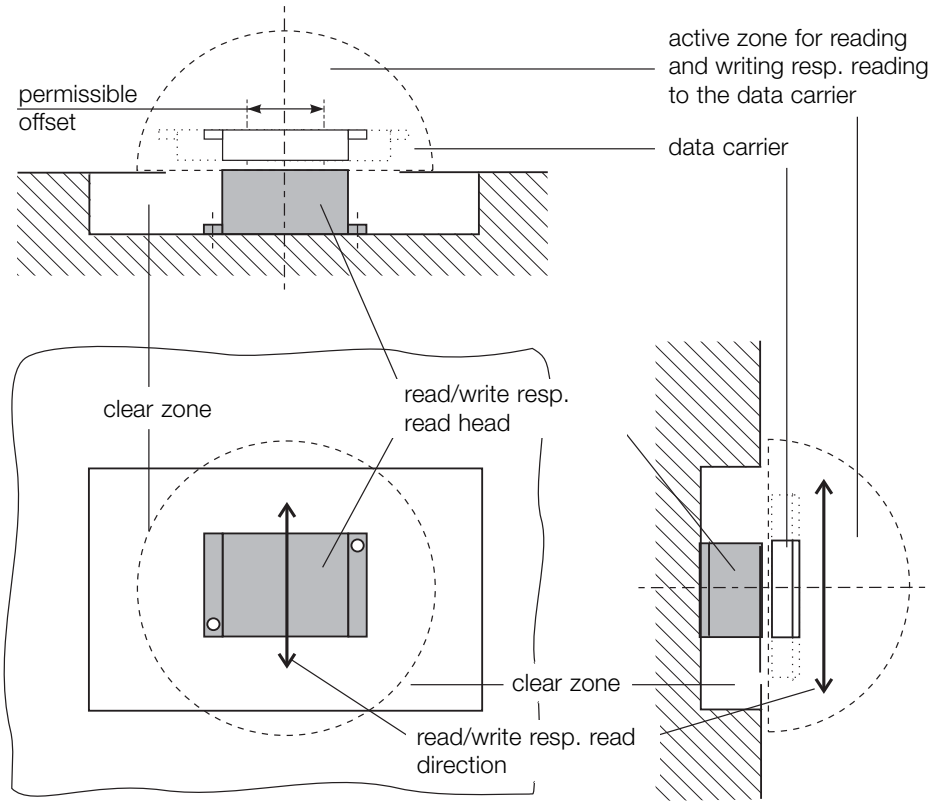






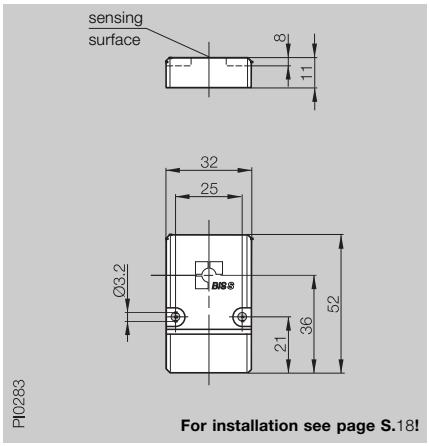
Spatial Arrangement of Read/Write Head resp. Read Head and Data Carrier

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

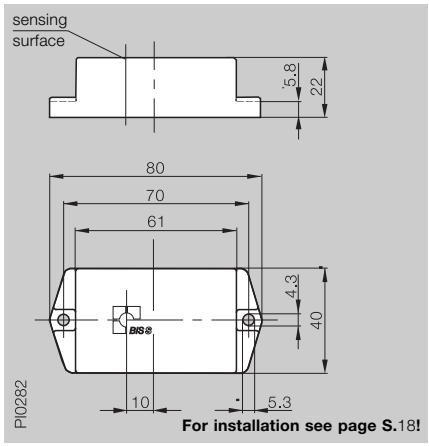


Spatial arrangement of read/write head resp. read head and data carrier for directional read/write heads resp. read heads and **non-flush mount** (circular antenna).

Dimensions	**52×32×11**	**80×40×22**
Housing material	PBT	POM
Antenna type	round	round
Weight	28 g	75 g



For installation see page S.18!



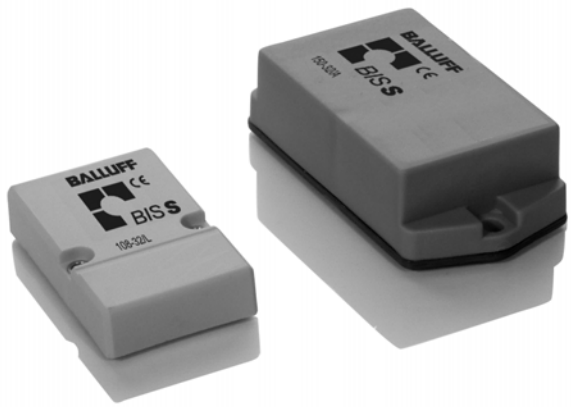
For installation see page S.18!

BIS S Programmable

8 kByte	Order code	BIS S-108-32/L	BIS S-150-32/A
16 kByte	Order code	BIS S-108-42/L	BIS S-150-42/A

Operating temperature			0...+70 °C				0...+70 °C		
Storage temperature			–20...+70 °C				–20...+70 °C		
Protection per IEC 60529			IP 67				IP 67		
Mounting in steel				non-flush				non-flush	
appropriate read/write head		BIS S-301	30 mm			BIS S-301	50 mm		
with max. read/write distance		BIS S-302	20 mm			BIS S-302	30 mm		
		BIS S-303	20 mm			BIS S-303	30 mm		

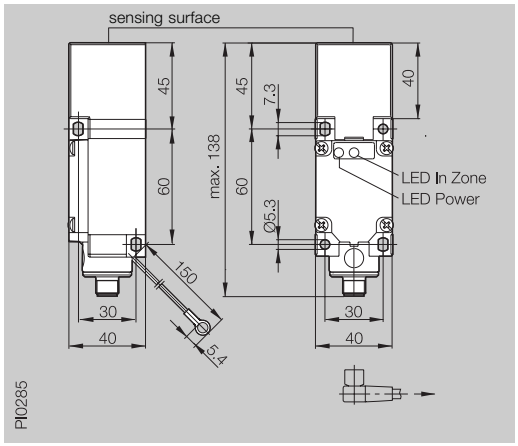
16 kByte version in development.
Inquire about delivery time.

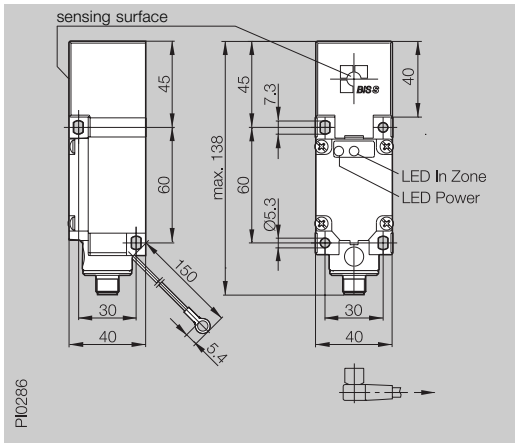


Read/Write Cycles

Data carriers	Memory type	Write cycles up to 30 °C	Write cycles up to 70 °C	Read cycles	Memory organization
8 kByte	FRAM	unlimited	unlimited	unlimited	64 bytes per block
16 kByte	FRAM	unlimited	unlimited	unlimited	64 bytes per block

Dimensions	**40 × 40 × 138**	**40 × 40 × 138**
Housing material	ABS	ABS
Antenna type	round	round
Weight	420 g	420 g

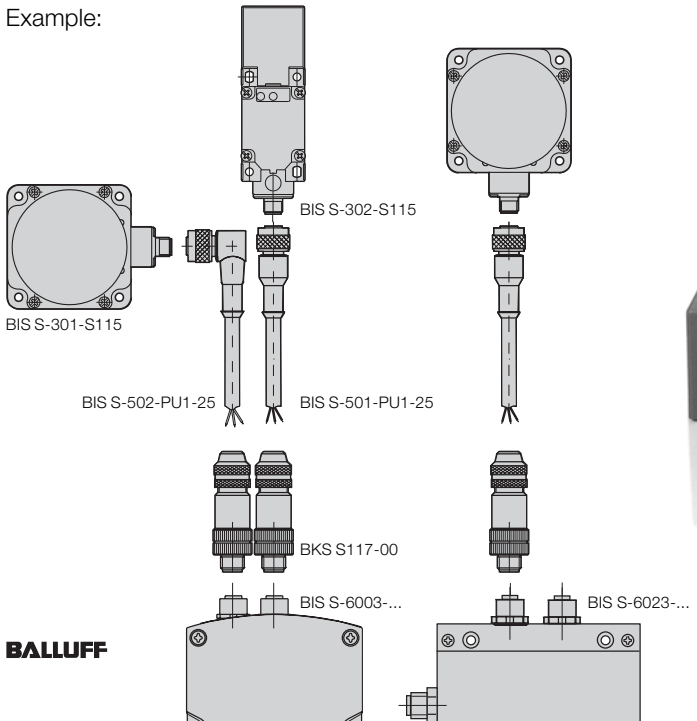


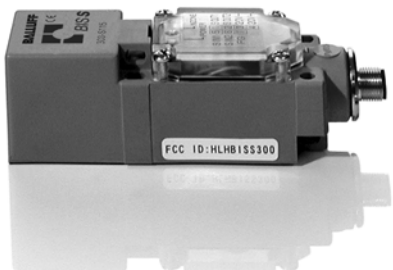


Order code	BIS S-302-S115	BIS S-303-S115
Mounting in steel	non-flush	non-flush
Operating temperature	0...+70 °C	0...+70 °C
Storage temperature	–20...+85 °C	–20...+85 °C
Protection per IEC 60529	IP 67	IP 67
Connection to	processor	processor
with connection cable	BIS S-501-PU1-25, BIS S-502-PU1-25	BIS S-501-PU1-25, BIS S-502-PU1-25

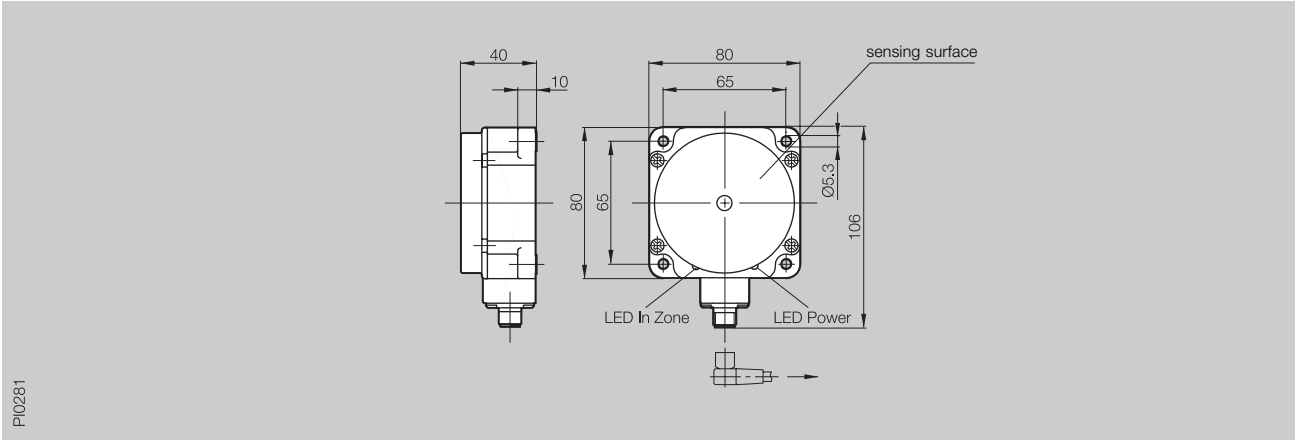
appropriate data carriers		BIS S-108-_-/L non-flush			BIS S-108-_-/L non-flush	
Static mode						
Write distance in mm		5-20			5-20	
Read distance in mm		5-20			5-20	
Offset in mm at distance	5 mm	±5			±5	
	7 mm	±5			±5	
	10 mm	±5			±5	
	15 mm	±5			±5	
	20 mm	±5			±5	
	30 mm					
	50 mm					

Example:





	80×80×40
	PBT
	round
	510 g



	BIS S-301-S115
	non-flush
	0...+50 °C
	–20...+85 °C
	IP 67
	processor
	BIS S-501-PU1-25, BIS S-502-PU1-25

	BIS S-150-_ _/A non-flush
	10-50
	10-50
	±5
	±5
	±5
	±5
	±5
	±5
	±5

Connector orientation

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

- Selectable division of the data width on the PROFI-BUS-DP, 4 to 128 Byte
- Free assigning of the data width for each read/write head
- Optimum data speed, internal cycle time is shorter than the BUS activation time
- Service friendly, all parameter data are stored in an exchangeable memory
- BUS address selectable with switches
- Accepts all read/write heads
- Interface-compatible with BIS C and BIS L identification systems

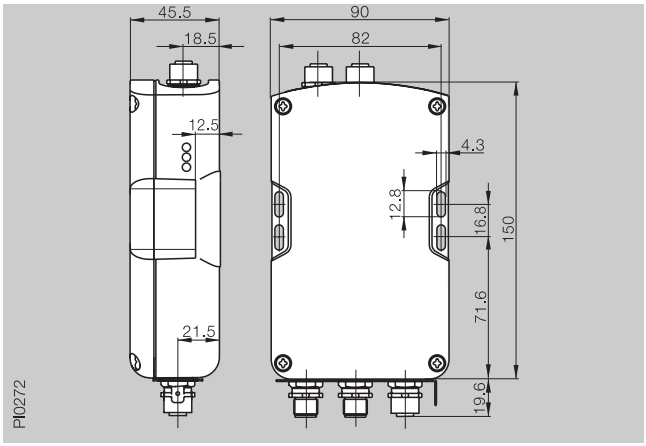
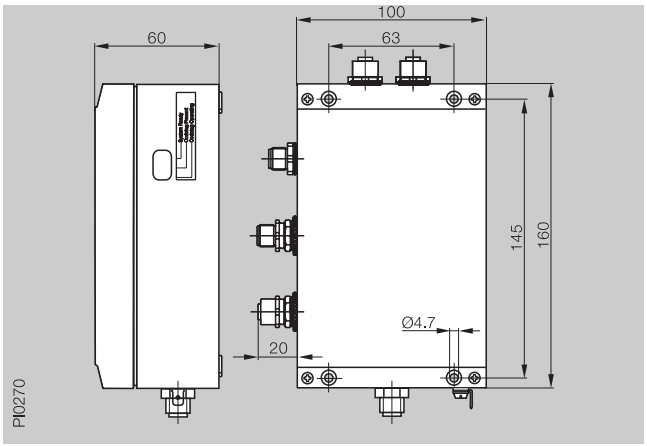
Description	
Function	

CE

MEMBER OF PROFIBUS INTERNATIONAL

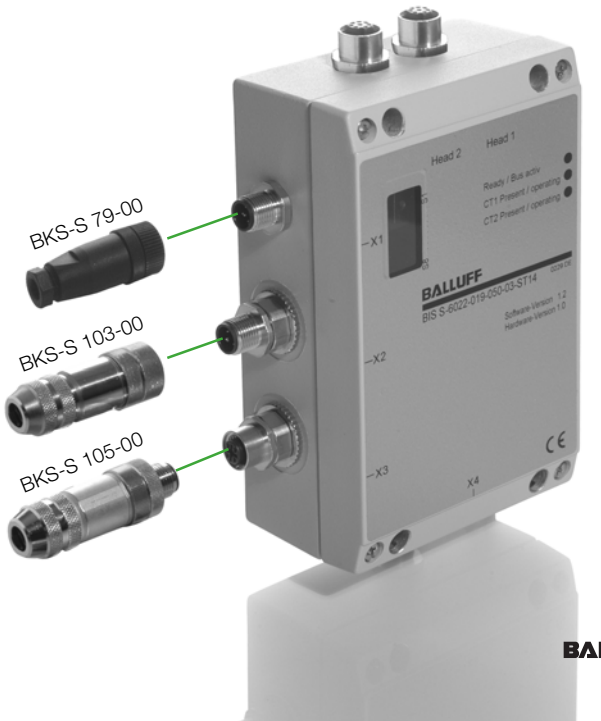
Supply voltage	
Ripple	
Current draw	
Operating temperature	
Storage temperature	
Protection per IEC 60529	
Read/Write Head ports	
Service interface RS232	
Connection type	
Connection for	
Description Interface/Software:	
PROFIBUS-DP	
Accessories included	
Accessories (please order separately)	

The **compact class BIS S-600** _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection. If IP 65 is sufficient and no media aggressive to PS plastic are present, this device family is the ideal solution.
Small, compact, flexible and economical: these are the characteristics of this series.

	BIS S-6002-019-050-03-ST11	**BIS S-6022-019-050-03-ST14**
	read/write	read/write
		
	24 V DC ±20 %	
	≤ 10 %	
	≤ 600 mA	
	0...+60 °C	
	0...+60 °C	
	IP 65/NEMA 12	
	2 external	
	yes	
	2 connector round 5-pin, B-coded, 1 connector round 5-pin	2 connector round 5-pin, B-coded, 2 connector round 5-pin
	2 read/write heads BIS S-3_ _	2 read/write heads BIS S-3_ _
	BIS S-6002-019-050-03-ST11	BIS S-6022-019-050-03-ST14
	software GSD-file	software GSD-file
	BKS 12-CS-01 connector page **S.**13-15	BKS 12-CS-01 connector page **S.**13-15

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.

This version is ideal where increased demands on mechanical stability or chemical resistance are made.



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

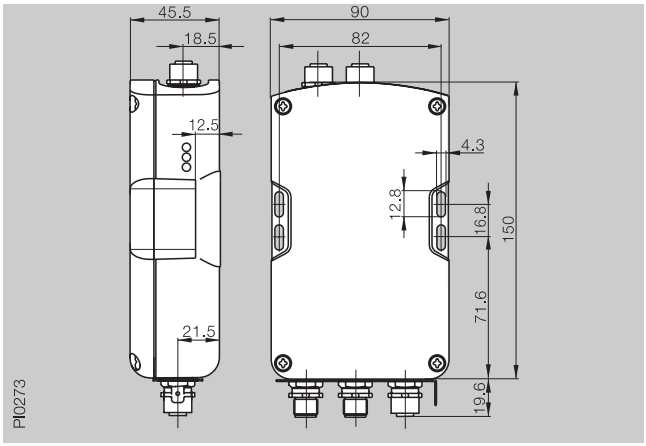
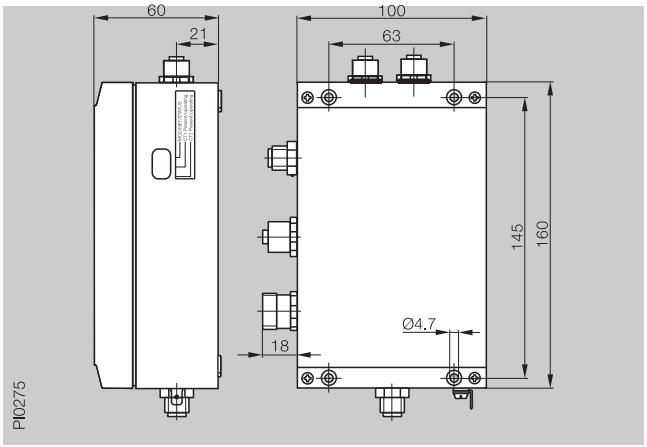
Description
Function

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

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

Supply voltage
Ripple
Current draw
Operating temperature
Storage temperature
Protection per IEC 60529
Read/Write Head ports
Service interface RS232
Connection type
Connection for
Description Interface/Software:
DeviceNet
Accessories included
Accessories (please order separately)

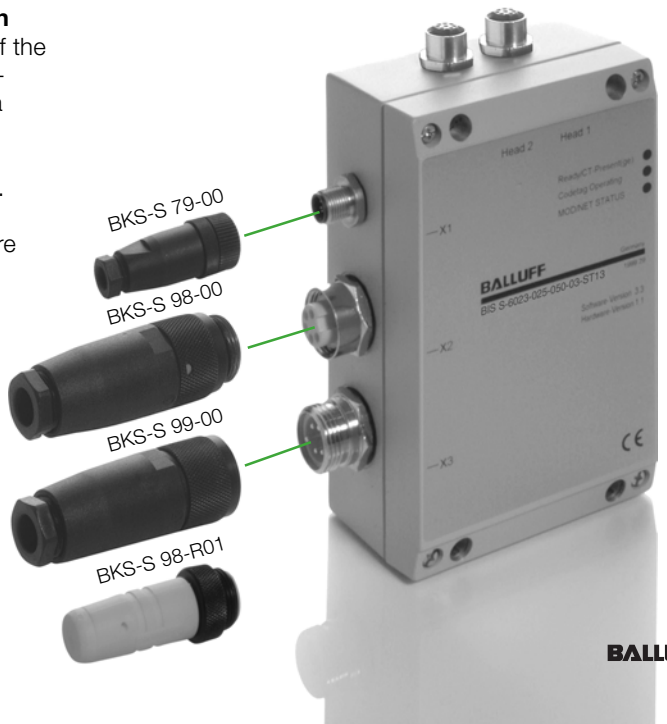
The **compact class BIS S-600** _ with its reduced dimensions and various interface options can be used wherever ambient conditions do not require higher protection. If IP 65 is sufficient and no media aggressive to ABS plastic are present, this device family is the ideal solution. Small, compact, flexible and economical: these are the characteristics of this series.

	BIS S-6003-025-050-03-ST12	BIS S-6023-025-050-03-ST13
	read/write	read/write
		
	24 V DC ±20 %	
	≤ 10 %	
	≤ 600 mA	
	0...+60 °C	
	0...+60 °C	
	IP 65/NEMA 12	
	2 external	
	yes	
	3 connector round 5-pin	4 connector round 5-pin
	2 read/write heads BIS S-3_ _	2 read/write heads BIS S-3_ _
	BIS S-6003-025-050-03-ST12	BIS S-6023-025-050-03-ST13
	software EDS-file	software EDS-file
		BKS 12-CS-01
	connector page **S.**13-17	connector page **S.**13-17

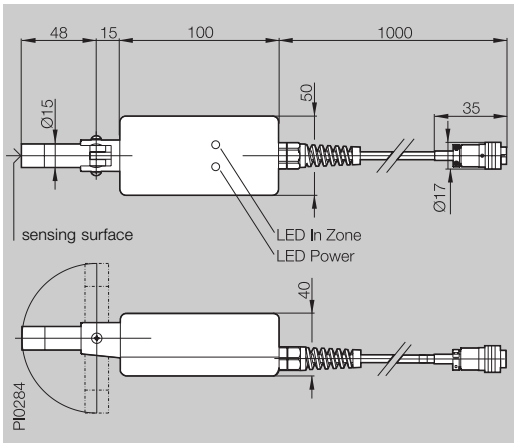
BIS S
Data Carriers
Read/Write Heads
Compact Processors for Simultaneous Mode
Handy Programmer, Connectors
Connectors, Termination Resistor
Installation Notes, Read/Write Times Software, Service Tools

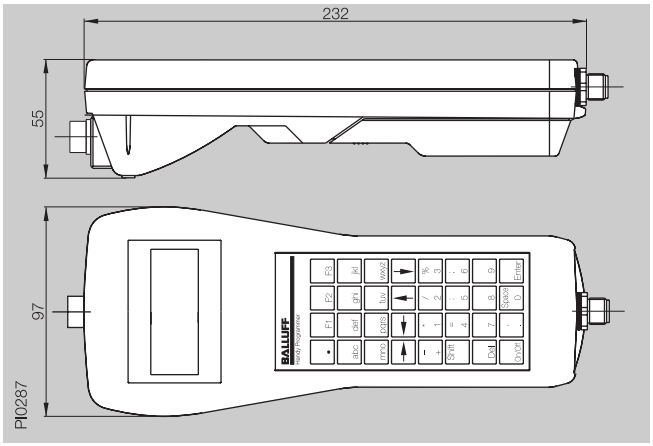
The **ruggedized version BIS S-602** _ is in spite of the mechanically rugged die-cast aluminum housing a small, flexible processor which is available with various interface options.

This version is ideal where increased demands on mechanical stability or chemical resistance are made.



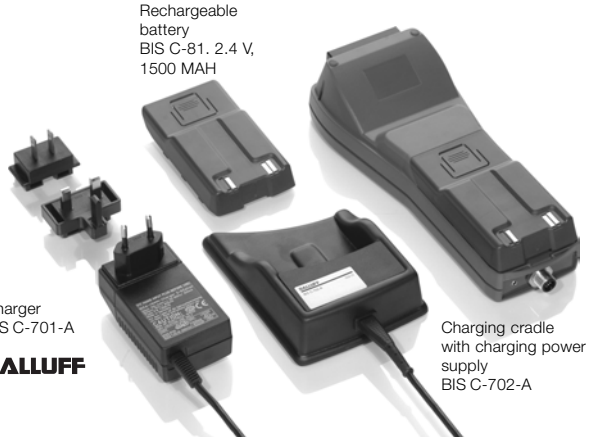
Function	read/write head	read/write
Dimensions	∅ **15×63**	
Housing material	Plastic	ABS
Antenna type	round	

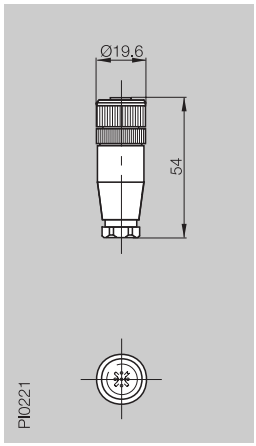
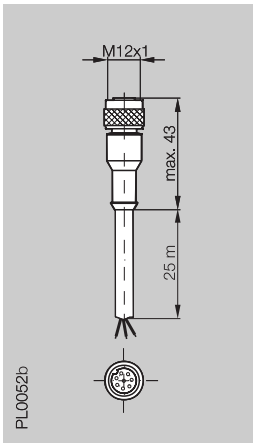
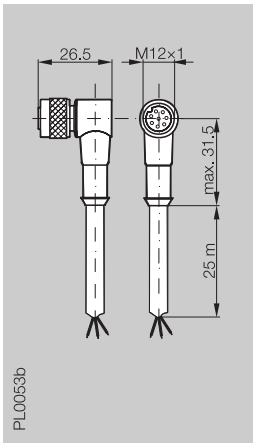
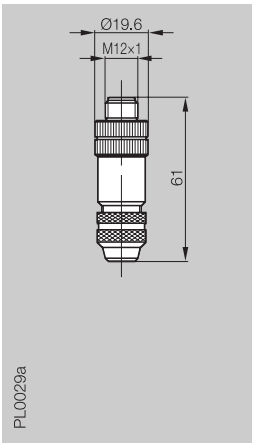




Order code	BIS S-850	BIS S-810
Keyboard		32 buttons, alphanumeric
Display		LCD-display, 20 characters/4 lines
Supply voltage		2.4 V rechargeable battery pack NiMH
Capazity		1650 mA/h
Interface		RS232/Balluff Dialog
Operating temperature	0...+40 °C	0...+50 °C
Storage temperature	–10...+50 °C	
Protection per IEC 60529	IP 54	IP 40
Read head connection	fixed plug 6-pin	fixed socket 6-pin
Connection to	BIS S-810	
appropriate data carrier	BIS S-108_ _ BIS S-150_ _	

The Handy Programmer is a service and testing device for checking and modifying data in data carriers. A read/write head is plugged into the unit. A built-in RS232 port allows data exchange with a PC.
The device is equipped with a recharageable battery for portable single-shift operation.



Order code	BKS-S 79-00	BIS S-501-PU1-25	BIS S-502-PU1-25	BKS-S117-00
Version	for connection to processors BIS S-6_ _	for read/write head with cable length 25 m	for read/write head with cable length 25 m	for connecting read/write head to processor
				
Connector type	round-connector	M12	M12	M12
Version	5-pin, female	8-pin, female	8-pin, female	8-pin, male
recommended cable	LiYCY-0			
Conductor cross section	0.34 mm²	8 × 0.25 mm²	8 × 0.25 mm²	
Protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
ambient temperature range	–40...+85 °C			–40...+85 °C
Accessories included		BKS-S117-00	BKS-S117-00	
Cable		one end molded-in, other end pigtailed	one end molded-in, other end pigtailed	

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

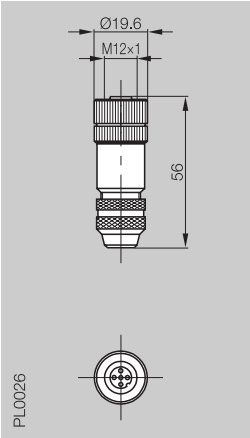
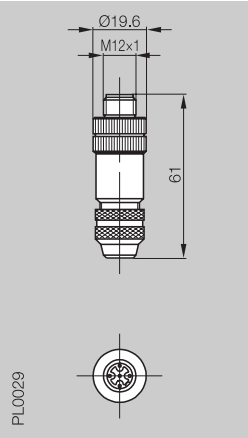
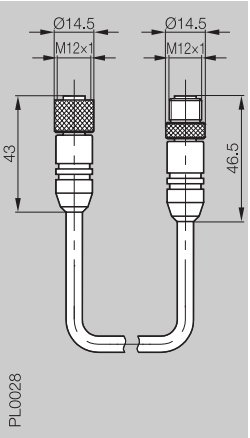
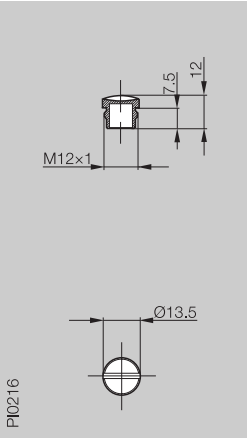
Supply voltage for all BIS S-6_ _

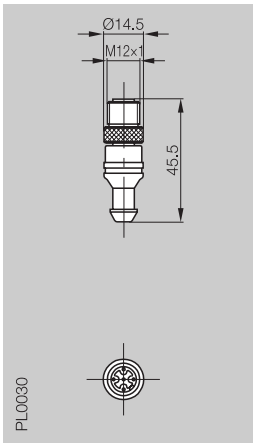
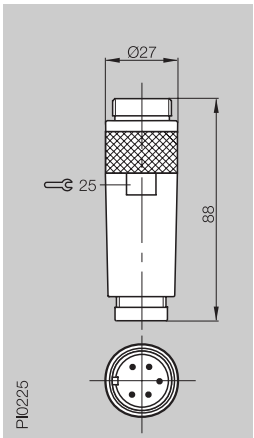
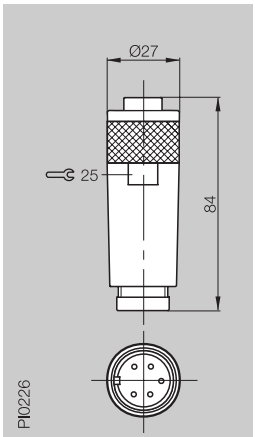
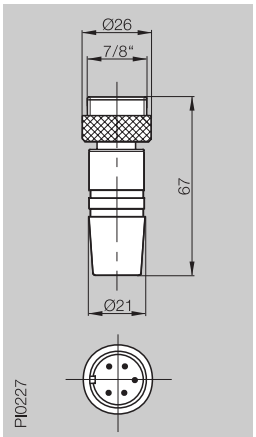
Connectors Read/Write Head

BIS S

Data Carriers
Read/Write Heads
Compact Processors for Simultaneous Mode
Handy Programmer, Connectors
Connectors, Termination Resistor
Installation Notes, Read/Write Times Software, Service Tools

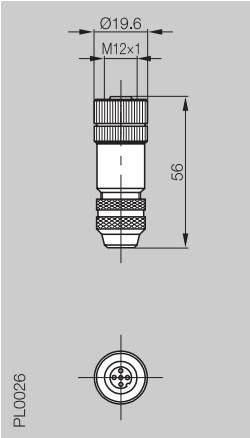
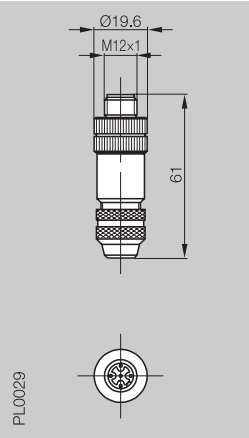
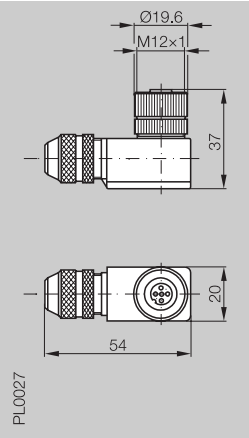
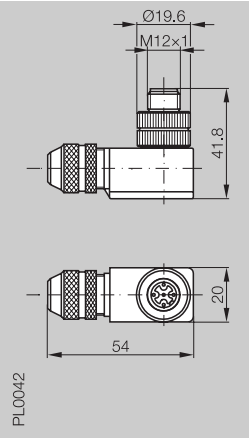
PROFIBUS-DP

Order code	BKS-S103-00	BKS-S105-00	BKS-S103/GS103-CP-_ _	BKS 12-CS-01	
Version	for connection PROFIBUS-DP	for connection PROFIBUS-DP	PROFIBUS-DP extension cable	IP 65 protective cap for unused terminals	
					
Connector type	M12 B-coded	M12 B-coded	M12 B-coded	M12 B-coded	
Version	5-pin, female	5-pin, male	male, female		
recommended cable					
Conductor cross section			2 × 0.64 mm²		
Protection* per IEC 60529	IP 67	IP 67	IP 67		
ambient temperature range	–40...+85 °C	–40...+85 °C	–40...+85 °C	–40...+85 °C	
*only when connected			Please indicate cable length in ordering code! 00.3 = Length 0.3 m 02 = Length 2 m 05 = Length 5 m 10 = Length 10 m		

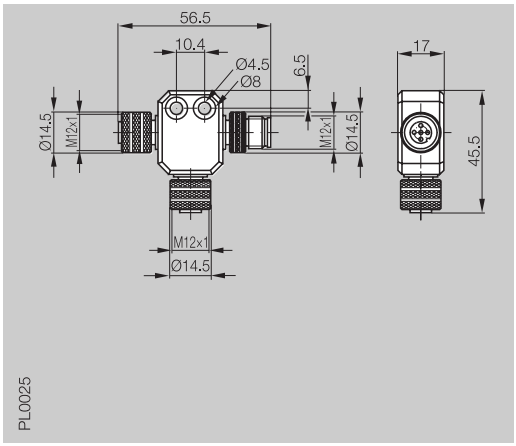
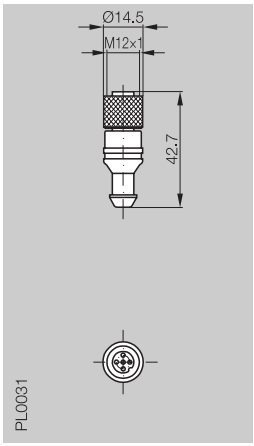
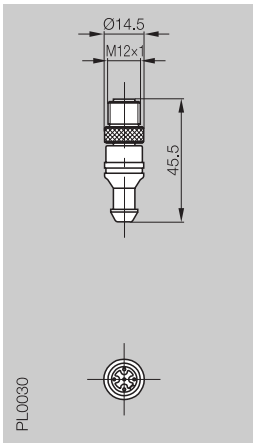
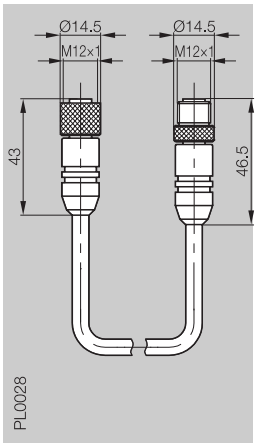
	BKS-S105-R01 PROFIBUS-DP termination resistor		BKS-S 98-00 for connection to processors BIS L-6023 DeviceNet	BKS-S 99-00 for connection to processors BIS L-6023 DeviceNet	BKS-S 98-R01 termination resistor for processors BIS L-6023 DeviceNet
					
	M12 B-coded 5-pin, male		round-connector 5-pin, male LiYCY-0 0.5 mm² IP 67 –40...+90 °C	round-connector 5-pin, female LiYCY-0 0.5 mm² IP 67 –40...+90 °C	round-connector 5-pin, male IP 67 –40...+85 °C

BIS S

Data Carriers
Read/Write Heads
Compact Processors for Simultaneous Mode
Handy Programmer, Connectors
Connectors, Termination Resistor
Installation Notes, Read/Write Times Software, Service Tools

Order code	BKS-S 92-00	BKS-S 94-00	BKS-S 93-00	BKS-S 95-00	
Version	BIS S-6003-...	BIS S-6003-...	BIS S-6003-...	BIS S-6003-...	
					
Connector type	round-connector	round-connector	round-connector	round-connector	
Version	5-pin, female	5-pin, male	5-pin, right angle, female	5-pin, right angle, male	
Cable diameter	6...8 mm	6...8 mm	6...8 mm	6...8 mm	
No. of wires × conductor cross section					
Protection per IEC 60529	IP 67 (when attached)	IP 67 (when attached)	IP 67 (when attached)	IP 67 (when attached)	
Resistor					

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

	BKS-S 92-TA1	BKS-S 92-R01	BKS-S 94-R01	BKS-S 92-16/GS92-_ _
	BIS S-6003-...	BIS S-6003-...	BIS S-6003-...	BIS S-6003-...
				
	round-connector	round-connector	round-connector	round-connector
	T-splitter, 2 × female, 1 × male	termination resistor, female	termination resistor, male	male/female extension
				5 × 0.34 mm²
	IP 65	IP 68	IP 68	IP 67
		121 Ohm	121 Ohm	
				Please indicate cable length in ordering code! 02 = Length 2 m 05 = Length 5 m 10 = Length 10 m

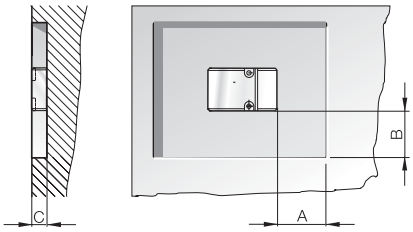


Fig. 1

Installation in steel

Clear zone dimensions for components with rod antenna or air coil.

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

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

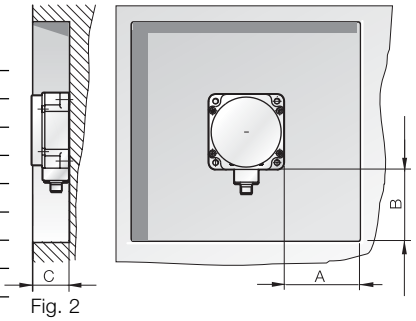


Fig. 2

Installation in aluminium

Clear zone dimensions for components with rod antenna or air coil.

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

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

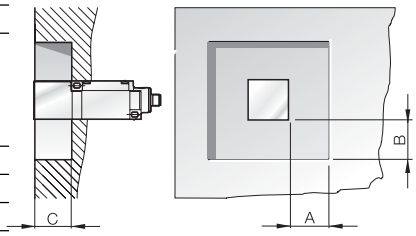


Fig. 3

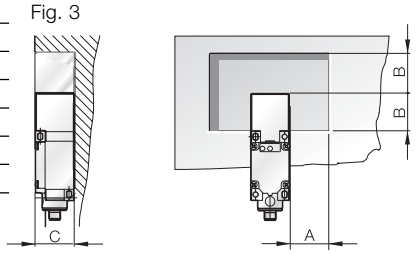


Fig. 4

Note

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

Read Times

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

Write Times

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

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

t = 4 × 31 + 87 × 1.5 = **255 ms**

Mechanical Strength

Data carriers and read/write heads

Order code	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

Order code	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

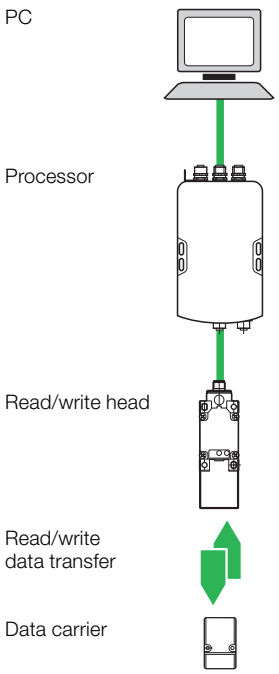
BISMASK/BISEDIT

The BISMASK/BISEDIT software package makes it possible to create a manual work station for the Balluff Identification System using a standard PC.

Requirements:
PC with a serial port, Windows 95, Windows 98 or Windows NT, floppy drive, hard drive.

The workstation consists of a PC, a BIS C processor with Balluff Dialog-Protocol (-007), and a read/write head.

The program package consists of two program sections:



BISEDIT

makes use of the mask file created in BISKMASK and outputs the data carrier data with the assigned fixed texts to the monitor screen or a printer. There is also the option of storing the data carrier data on diskette or hard disk, or downloading it from those sources.

It is also possible to modify the data carrier data.

A password can be assigned to prevent data from being changed.

BISMASK

enables the user to assign certain fixed texts to the various data on the data carrier.

At the same time, the user can define how the data is represented and create system settings for later use with BISEDIT.

This organization is stored in a mask which is used by BISEDIT.

Software Coupling BIS C-60_2 for Siemens Simatic S7

Function modules for linking a Processor with PROFIBUS-DP option to a Simatic S7 controller.

The function modules offer the full functionality of the Balluff Processors. Data are exchanged through the I/O section of the controller.

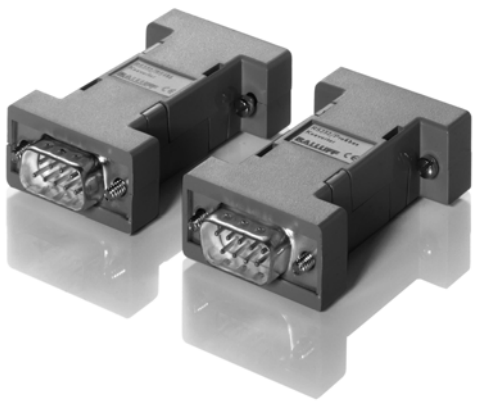
Features:
- short startup times
- easy system operation
- full command set

PROFIBUS-DP Master Simulator

The PROFIBUS-DP Master Simulator is a simple, universal program for data exchange with PROFIBUS slaves from virtually any manufacturer over PROFIBUS-DP.

Included with delivery are:

- Software PROFIBUS-DP master simulator
- PROFIBUS-DP converter
- D-Sub data cable



BALLUFF

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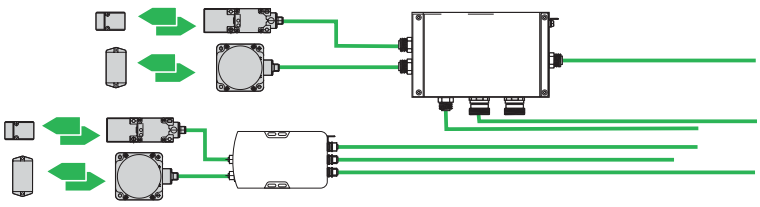

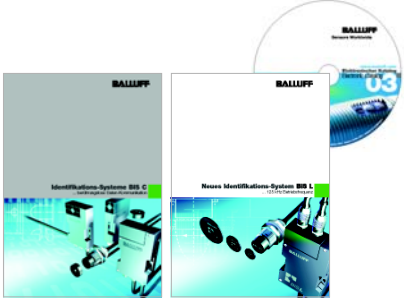

For more Identification Systems
refer to catalogs for BIS C and BIS L,
on CD-ROM or online!

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