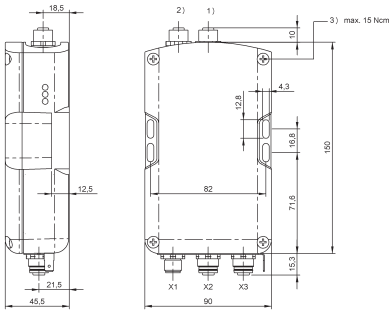


Condensed Guide



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1 Notes to the user

1.1 About this manual

This manual describes processors in the series BIS M-60_8 identification system as well as startup instructions for immediate operation.

1.2 Structure of the manual

The manual is organized so that the sections build on each other

- Section 2: Basic safety information
- Section 3: Key steps for installing the Identification System
- Section 4: Introduction to the material
- Section 5: Technical data for the processor
- Section 6: Mechanical and electrical connection
- Section 7: Logging the processor on to the network
- Section 8: User-defined settings for the processor
- Section 9: Processor and host system interaction

1.3 Typographical conventions **Enumerations**

The following conventions are used in this manual:

Enumerations are shown as a list with en-dash.

- Entry 1,
- entry 2.

Actions

Action instructions are indicated by a preceding triangle. The result of an action is indicated by an arrow.

- ▶ Action instruction 1.
⇒ Action result.
- ▶ Action instruction 2.

Syntax

Numbers

- Decimal numbers are shown without additional indicators (e.g. 123),
- Hexadecimal numbers are shown with the additional indicator `hex` (e.g. 00_{hex}).

Parameters

Parameters are shown in italics (e.g. CRC_16).

Directory paths

References to paths in which data are stored or are to be saved to are shown in small caps (e.g. PROJECT:\DATA TYPES\USER DEFINED).

Cross-references

Cross-references indicate where additional information on the topic can be found ([see Technical Data“ starting page 14](#)).

1.4 Symbols



Attention!

This symbol indicates a safety instruction that must be followed.



Note, tip

This symbol indicates general notes.

1 Notes to the user

1.5 Abbreviations

BIS	Balluff Identification System
CRC	Cyclic Redundancy Check
DIL	Dual in-line package (also Dual In-Line)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMC	Electromagnetic Compatibility
GSD	General Station Description
GSDML	General Station Description Markup Language
MAC-ID	Media Access Control Identifier
PC	Personal Computer
PNO	Profibus Nutzerorganisation e.V. (organized user group)
PLC	Programmable Logic Controller

2 Safety

2.1 Intended use

The BIS M-60_8 processor is a component of the BIS M Identification System. Within the Identification System it is used to for connecting to a host computer (PLC, PC). It may be used only for this purpose in an industrial environment corresponding to Class A of the EMC Law. This description is valid for processors in series BIS M-60_8-...

2.2 General safety notes

Installation and startup

Installation and startup are to be performed only by trained personnel. Any damage resulting from unauthorized manipulation or improper use voids the manufacturer's guarantee and warranty.

When connecting the processor to an external controller, observe proper selection and polarity of the connection as well as the power supply (see ["Installation" section on page 18](#)).

The processor may be operated only using an approved power supply (see ["Technical Data starting page 14](#)).

Operation and testing

The operator is responsible for ensuring that local safety regulations are observed.

When defects and non-clearable faults in the Identification System occur, take the system out of service and secure it against unauthorized use.

2.3 Meaning of the warning notes



Attention!

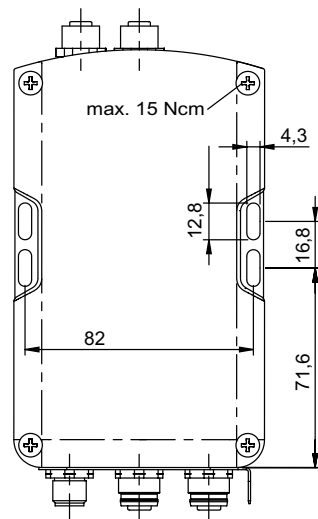
The pictogram together with the expression "Attention!" warns of a possible hazardous situation for the health of persons or of equipment damage. Disregard of these warning notes may result in injury or damage to equipment.

- Always observe the described measures for preventing this danger.

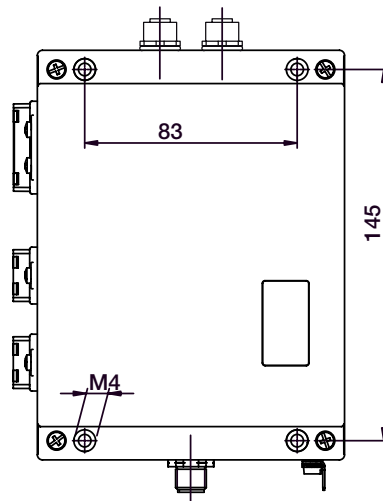
3 Getting Started

3.1 Quick start

Mechanical connection



BIS M-6008



BIS M-6028

Fig. 1: Mechanical connection (dimensions in mm)

- Attach processor using 4 M4 screws.

Installation with support rail (accessory for BIS M-6008)

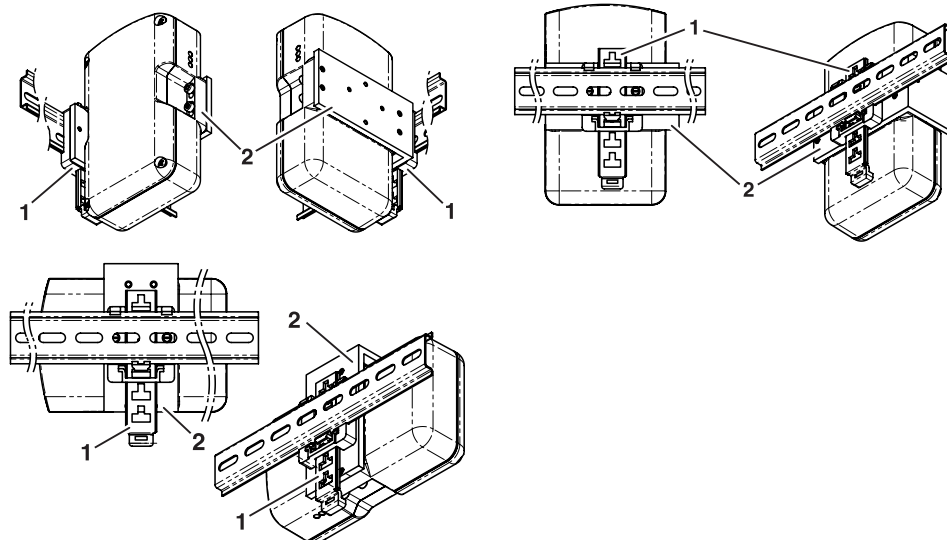


Fig. 2: Mounting using rail holder BIS Z-HW-001 (accessory)

- 1 Rail holder
- 2 Mounting brackets

3 Getting Started

**Electrical
connection**

BIS M -6008

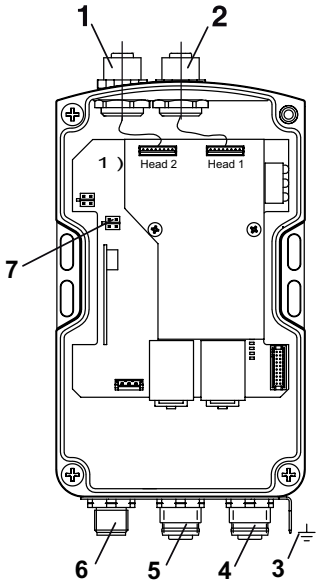
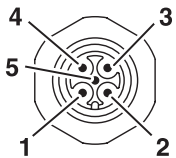


Fig. 3: Electrical connection BIS M-6008

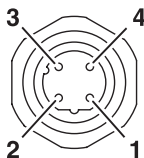
- | | |
|-------------------------------------|-------------------------------|
| 1 Head 2 – Read/write head 2 | 4 X3 – PROFINET Port 2 |
| 2 Head 1 – Read/write head 1 | 5 X2 – PROFINET Port 1 |
| 3 Function ground FE | 6 X1 – Supply voltage |
| | 7 X7 – Service port |

X1 – Supply voltage



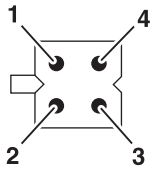
PIN	Function
1	+Vs
2	n.c.
3	-Vs
4	n.c.
5	n.c.

X2, X3 – PROFINET



PIN	Function
1	TD+
2	RD+
3	TD-
4	RD-

X7 – Service port



PIN	Function
1	TxD
2	RxD
3	GND
4	n.c.



Attention!

Make the ground connection either directly or using an RC combination to ground. When making your connection to the Ethernet, be sure that the shield is perfectly connected to the connector body.

Getting Started

BIS M -6028

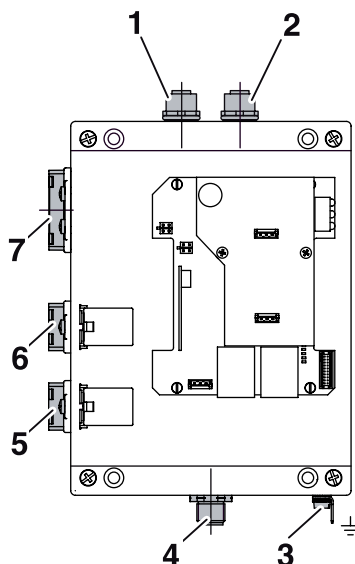
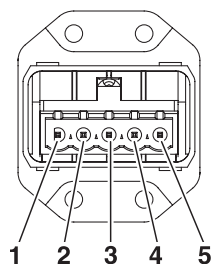


Fig. 4: Electrical connection BIS M-6028

- 1 Head 2 – Read/write head 2
- 2 Head 1 – Read/write head 1
- 3 Function ground FE

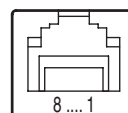
- 4 X4 – Service port
- 5 X3 – PROFINET Port 2
- 6 X2 – PROFINET Port 1
- 7 X1 – Supply voltage

X1 – Supply voltage



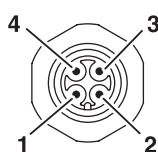
PIN	Function
1	+Vs
2	-Vs
3	n.c.
4	n.c.
5	n.c.

X2, X3 – PROFINET



PIN	Function
1	TD+
2	TD-
3	RD+
4	n.c.
5	n.c.
6	RD-
7	n.c.
8	n.c.

X4 – Service port



PIN	Function
1	n.c.
2	TxD
3	GND
4	RxD

3 Getting Started

Project administration

Project administration is accomplished using the project administration tool "SIMATIC NCM PC Manager" or using "STEP 7".

The following steps are required for integrating a BIS M-60_8 processor:

1. Install the GSDML file of the IO device in the hardware configuration
2. Update catalog
3. Use "Insert object" to add the IO device "BIS M-60x8_RT" or „BIS M-60x8_IRT“
4. Insert both modules for inputs and outputs
(e.g.: "RT 32 Byte E" and „RT 32 Byte A" for processor "BIS M-60x8_RT" or „IRT 32 Byte E" and IRT 32 Byte A" for processor "BIS M-60x8_IRT")

Additional project administration steps:

5. The name suffix "RT" or "IRT" tells you how the read and write data are exchanged.



Note

Both processors have a 2-port IRT switch and are therefore able to pass IRT data packets.

The object properties of these modules can be used to set the start addresses of the input and output data.



Note

The input and output data can be used to control the BIS M-60_8 as described in Section 9.

Device name

6. The object properties of the inserted object "m-60_8" can be used to assign the device name, the device number and the IP address.

The processor and the host system communicate using PROFINET protocol. This means an IP address and a unique device name are required. The device name and IP address can be saved in the IO device using "Target system > Ethernet > Edit Ethernet device".



Note

The BIS M-60_8 processor is shipped without a device name. In the included GSDML file the device name "m-60x8" is preset.

4 Basic Knowledge

4.1 Function principle of Identification Systems

The BIS M Identification System is classified as a non-contacting system with read and write function. This makes it possible to not only transport information which is fixed programmed in the data carrier, but also to collect and pass on current information.

The main components of the BIS M Identification System are:

- Processor,
- Read/write heads,
- Data carriers.

The main areas of application are:

- In production for controlling material flow (e.g. in model-specific processes), in workpiece transport with conveying systems, for acquiring safety-relevant data,
- In warehousing for monitoring material movement,
- transporting and conveying..

4.2 Product description

Processor BIS M-6008:

- Plastic housing,
- PROFINET connections using 2 round M12 connectors, D-coded, supply voltage using M12 round connector,
- Two read/write heads can be connected,
- Read/write heads are suitable for dynamic and static operation,
- Power for the system components provided by the processor,
- Power for the data carrier provided by the read/write heads via carrier signal.

Processor BIS M-6028:

- Metal housing,
- PROFINET connections using 2 RJ45 plugs - IP65 (AIDA), supply voltage via push-pull power connector (AIDA),
- Two read/write heads can be connected,
- Read/write heads are suitable for dynamic and static operation,
- Power for the system components provided by the processor,
- Power for the data carrier provided by the read/write heads via carrier signal.

Arrangement of the read/write heads:

Which arrangement of the read/write heads makes the most sense depends essentially on the possible spatial arrangement of the components. There are no functional restrictions. Distance and relative speed depend on the characteristics of the data carriers used.



Note

If two read/write heads are connected to the BIS M-60_8 processor, both can be operated independently of each other:
One data carrier can be read at the first read/write head, while a different data carrier can be written to at the second read/write head.

4 Basic Knowledge

4.3 Control function

The processor is the link between data carrier and controlling system. It manages two-way data transfer between data carrier and read/write head and provides buffer storage. The processor uses the read/write head to write data from the controlling system to the data carrier or reads the data from the carrier and makes it available to the controlling system.

Host systems may be the following:

- A control computer (e.g. industrial PC),
- a PLC.

Double bit header for asynchronous data transmission:

If a controller does not send the data range for updating the input/output buffer synchronous, data inconsistencies may occur when sending more than 2 bytes. Consistency of the sent data can then only be ensured by sending the control bits in the first byte and again in the last bytes of the in-/output buffer. By comparing the two bit headers it can be determined whether the data are fully updated and can be accepted.

This method affects neither the PLC cycle time nor the bus access time.

Only one byte in the data buffer for the byte of the 2nd bit header is required instead of using it for data.

4 Basic Knowledge

4.4 Data integrity

In order to ensure data integrity, data transfer between the data carrier and processor must be monitored using a check procedure.

The factory default setting in the processor is for double reading with comparison. Alternately the CRC_16 data check can be selected.

In CRC_16 data checking a checksum is written to the data carrier which enables the data to be checked for validity at any time.

Which procedure should be used depends on how the identification system is used.



Note

Mixed operation of both check procedures is not possible!

The following table provides an overview of the advantages of the respective check procedure.

CRC_16 data check	Double reading
Data integrity even during the non-active phase (data carrier outside the read/write head zone)	No user bytes are sacrificed for storing a check code.
Shorter read time – page is read once	Shorter write time – no check code is written.

4.5 Bus connection

Processor and controlling system are connected via PROFINET.

The PROFINET IO (decentralized peripheral) is tailored to communication between a controller and decentralized field devices.

PROFINET is a combination of ProfiBus DP and Ethernet in one system, whereby the IO view of ProfiBus is retained. The device model of PROFINET IO is also oriented towards the ProfiBus technology. The characteristics of the IO devices are however described by GSD files based on XML (GSDML), and project administration/system integration is accomplished analogous to ProfiBus devices.

In a PROFIBUS network IO controllers and IO devices are connected to each other using all common network topologies: Star, line, ring or tree type topologies are possible.

The BIS M-60_8 has a built-in IRT switch with 2 ports for this purpose. This means both RT and IRT can be used.

Appendix

**A.1 BIS M-6008
Ordering
information**

Type designation code

BIS M - 6008 - 0 - - - - 06 - ST -

Balluff Identification System

Series M Read/Write System

Hardware type

6008 = Plastic housing

Software type

044 = PROFINET IRT

048 = PROFINET RT

Version

050 = with two connectors for external read/write heads type BIS M-3_ _

Interface

06 = Ethernet

Customer connection

ST23 = Connector types

X1 = Round connector for supply voltage (5-pin male)

X2 = Round connector for Ethernet (4-pole female, D-coded)

X3 = Round connector for Ethernet (4-pole female, D-coded)

**Accessories
(optional, not
included)**

Type

Ordering code

Connector

for X1

BKS-S 79-00

for X2, X3

BKS-S 182-00

Cover cap

for Head 1, Head 2
for X2, X3

Cover cap, M12 female (121 671)
BKS 12-CS-00

Adapter cable, M12 D-coded
per RJ45

BIS M-526-PVC-00,5

Mounting brackets
(mounting kit)

For attaching the
processor to rails

BIS Z-HW-001

Appendix

**A.2 BIS M-6028
Ordering
information**

Type designation code

	BIS	M	6028	-0	-	-	-06	-ST
Balluff Identifikations-System								
Series M Read/Write System								
Hardware type								
6028 = Metal housing								
Software type								
044 = PROFINET IRT								
048 = PROFINET RT								
Version								
050 = with two connectors for external read/write heads type BIS M-3_ _								
Interface								
06 = Ethernet								
Customer connection								
ST22 = Connector types								
X1 = Round connector for supply voltage (5-pin male, AIDA recommendation)								
X2 = Ethernet connector (8-pole female, AIDA recommendation)								
X3 = Ethernet connector (8-pole female, AIDA recommendation)								
X4 = Round connector for RS232 interface (4-pin male)								

**Accessories
(optional, not
included)**

Type

Cover cap	for Head 1, Head 2, X4 for X2, X3
Female	X1
Male	X2, X3

Ordering code

Cover cap, M12 female (121 671) on request
5-pole female, Push-Pull Power
8-pin male, Push-Pull RJ-45

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