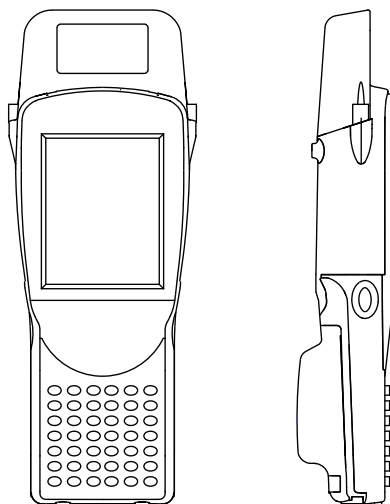


Handheld Programmer BIS M-87_

Quick Guide



www.balluff.com

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1 User Instructions

1.1 CE Declaration of Conformity and user safety



Declaration of Conformity

This product was developed and produced in compliance with applicable European standards and directives.



Note

You can request a Declaration of Conformity separately.
For additional safety instructions, refer to the "[Safety](#)" section on page 6

1.2 Scope of Delivery

Included in the scope of delivery:

- Handheld Programmer BIS M-87_
- BIS Software CD
- Power supply
- Printed Manual

1.3 About this manual

This manual describes operation of the BIS M-87_ Identification System together with the "Workabout Pro" handheld computer made by "PSION Teklogix GmbH

The present manual does not describe:

- Startup, operation and care of the "Workabout Pro" handheld computer,
- Installation and operation of accessories and expansion devices,
- Docking station and device interfaces.

This information is found in the manuals from PSION Teklogix GmbH on the enclosed CD. The most current documentation can be found on the Internet at "www.pSIONteklogix.com".



Note

A detailed user's guide for the processor can be found on the accompanying BIS-CD or in the Internet under www.balluff.com.

1.4 Manual organization

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

Section 2: Basic safety information.

Section 3: First steps (starting the software).

Section 4: Processing data carriers and using files.

Section 5: Connecting the Handheld Programmer to the PC.

Section 6: Technical data for the identification system.

1 User Instructions

1.5 Conventions The following conventions are used in this manual.

Enumerations 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.

Cross-references Cross-references indicate where additional information on the topic can be found (see Technical Data“ starting page 29).

Buttons Buttons are set in brackets, e.g. **[Write]**.

Menu commands Menu commands are joined with a greater than symbol, e.g. **"Start > Programs"** stands for the menu command <Programs> from the start menu.

Buttons Keys are set in angle brackets, e.g. confirm by pressing **Enter**.

1.6 Symbols



Attention!

This symbol indicates a safety instruction that must be followed.



Note, tip

This symbol indicates general notes.

1.7 Abbreviations

BIS	Balluff Identification System
CRC	Cyclic Redundancy Check
EEPROM	Electrically Erasable Programmable Read Only Memory
EMC	Electromagnetic Compatibility
PC	Personal Computer
RFID	Radio Frequency Identification
PLC	Programmable Logic Controller

2 Safety

2.1 Intended use

The BIS M-87_ Handheld Programmer is a component of the BIS M identification system. Within the identification system it is used for checking, correcting or initializing data carriers. The Handheld Programmer 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-87_-1-008-....

2.2 General safety notes

Startup

Startup is to be performed only by trained specialists. Any damage resulting from unauthorized manipulation or improper use voids the manufacturer's guarantee and warranty. When starting up, observe the instructions in the manuals from PSION Teklogix GmbH. The Handheld Programmer is to be operated only using the power supply approved for the device (see "Technical Data on page 29).

Operation and testing

The operator is responsible for ensuring that local prevailing 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 Important notes about rechargeable batteries



Attention!

Improper use, charging, disposal or replacement of the rechargeable battery may result in an explosion! Replace the rechargeable batteries only with the same or a type recommended by the manufacturer.



Note

Batteries and rechargeable batteries may not be disposed of with regular waste. As an end user you are legally required to recycle used batteries or rechargeable batteries. You can return batteries or rechargeable batteries after use at community collection points at no cost. You may also return batteries or rechargeable batteries to us by mail with sufficient postage:
Balluff GmbH, Schurwaldstraße 9, 73765 Neuhausen a.d.F., Deutschland



Attention!

Use only Balluff approved power supplies.

2.4 Meaning of the warning notes



Attention!

The pictogram used with the word "Caution" warns of a possible hazardous situation affecting the health of persons or equipment damage. Disregard of these warning notes may result in injury or damage to equipment.

- ▶ Always take the described measures to prevent hazardous situations.
-

Getting Started

3.1 Battery operation

The system components of the Handheld Programmer are powered by a 3.7V rechargeable battery pack (Li-Ion). Rechargeable batteries provided by Balluff are already charged and do not have to be charged prior to first use.

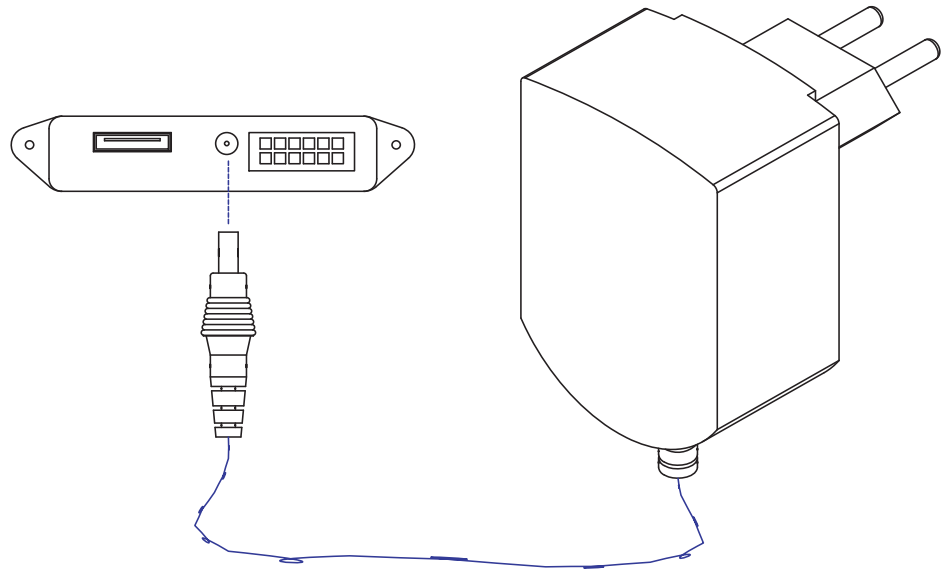


Fig. 3: Connecting the power supply – Charging the battery pack

Changing rechargeable batteries and operating life

A rechargeable battery with high capacity has a battery life of up to 12 hours after a full charge. Data in the Handheld Programmer are retained for at least 10 to 15 minutes while the battery is being replaced.



Note

User data are by default saved in a RAM-based folder. The data in this RAM folder are lost if the main battery pack and backup battery pack are completely drained or if the device is cold started (see also "Cold Reset", Section 3.3 on page 10). The safest place to store the data is an SD or MMC memory card (Flash Disk).

Charging rechargeable batteries



Attention!

Components can be damaged by using an incorrect charging current.

- ▶ Use the docking station or the Balluff recommended charger/power supply for charging the battery pack.

- ▶ Insert unit in the docking station OR connect the power supply



Note

When using a docking station, an uncharged battery pack may be used. Then simply dock the unit and turn it on.

3 Getting Started

**3.2 Overview of
WORKABOUT
PRO C**

**BIS M-870-1-
008-X-000**

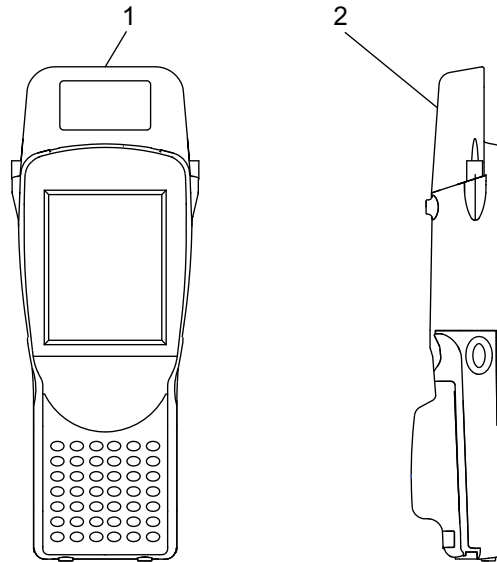


Fig. 4: Handheld Programmer BIS M-870-1-008-X-000

- 1 Read/write head for BIS M data carriers with round coil $\varnothing > 20$ mm
- 2 Active surface (underside)

**BIS M-871-1-
008-X-000**

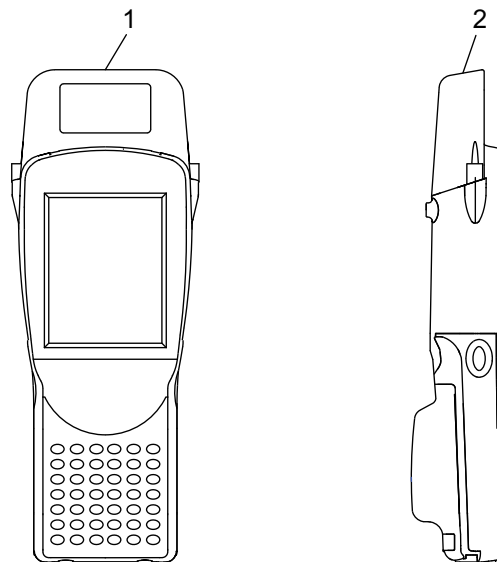


Fig. 5: Handheld Programmer BIS M-871-1-008-X-000

- 1 Read/write head for BIS M-15_-XX data carriers
- 2 Active surface (frontside)

3 Getting Started

BIS M-873-1-
008-X-000

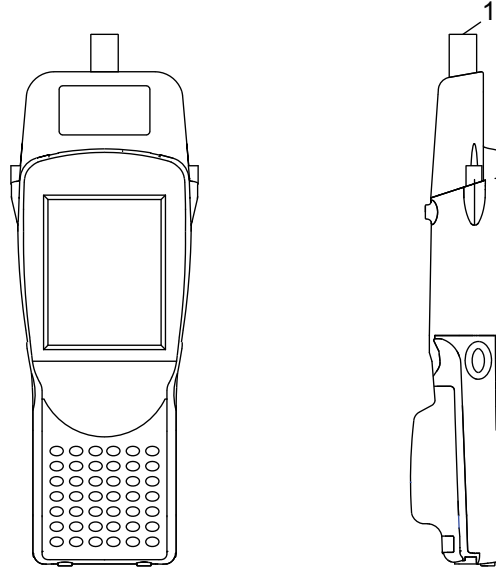


Fig. 6: Handheld Programmer BIS M-873-1-008-X-000

- 1 Read/write head for BIS M data carriers with round coil $\varnothing < 20$ mm
Active surface (frontside)

BIS M-870-1-
008-X-002

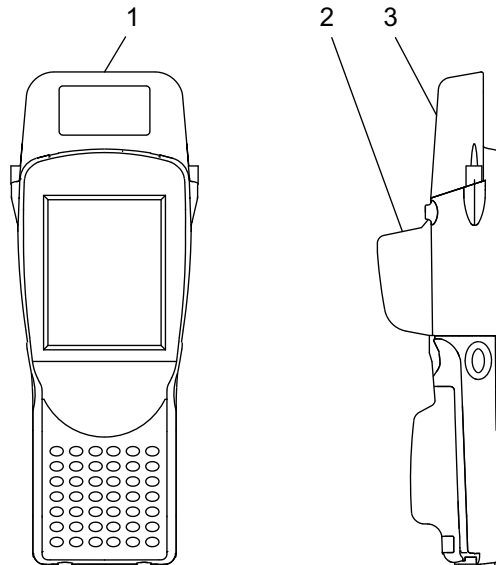


Fig. 7: Handheld Programmer BIS M-870-1-008-X-002

- 1 Read/write head for BIS M data carriers with round coil $\varnothing > 20$ mm
- 2 Barcode scanner
- 3 Active surface (underside)

3 Getting Started

3.3 COLD RESET or battery replacement



Note

Removing the battery pack or performing a cold reset will delete data, drivers and settings from the RAM of the unit!

The program **"Total Recall"** can be used to save the personal profile so that it is automatically loaded after a cold reset.

The program **"Total Recall"** is located in the **"Control Panel"** of the Workabout Pro.

Saving your own profile with "Total Recall"

- To open the Control Panel: <Windows Start> - <Settings> - <Control Panel>.
- Double-click on the program <Total Recall> (or select it and in the upper left corner select <File> and <open>).
- A new window opens; click on <Next> ; the following window is opened:
- Change <Profile Name> to <BISM>.
- Change <Profile Type> to <AutoRestore for this device only>.
- Keep <Profile Location> (should be set to <\Flash Disk>).
- Click on <Next>.
- <All Files> window opens. Do not change anything. Click on <Next>.
- <View Selections> window opens. Do not change anything. Click on <Next>.
- Click on <Backup>.
- In the <Perform the Operation> window click on <Finish1> .

3.4 Turning the Handheld Programmer on/off

Requirements:

- Supply voltage is present (battery pack used and charged, device is in the docking station of power supply is connected).



Attention!

This is a Class A product. When using this product indoors, the device may cause RF interference, requiring the user to take appropriate measures.

Turning on

- ▶ Hold down **<Enter>** for at least 1 second. As soon as the green LED flashes, release the **<ENTER>** key.
⇒ The start screen <(Today)> displayed.



Note

If the device was used previously, it can happen that it is in Suspend mode; pressing **<ENTER>** reactivates the unit. The screen you were working in before the computer switched to Suspend mode is displayed again.

Turning off

- **Suspend -**
- ▶ Press **<FN>** (blue) and then **<ENTER>** to shut off the WORKABOUT PRO or
- ▶ From the start menu select **"Shutdown > Suspend"** .

3.5 Keyboard, display and operating concept

Familiarize yourself with the operating concept and characteristics of the WORKABOUT PRO. The operating manual can be found on the included CD or in the Internet at: <http://www.pSION-teklogix.com/>

3.6 Creating your own operating interface



Note

The BALLUFF.dll was developed as an independent software for creating a custom tailored operating interface, for the Handheld Programmer. The ordering code for this application is available on demand.

Getting Started

3.7 Starting the RFID application

- ▶ On the desktop press on **"Start > Programs > BALLUFF RFID > BIS M RFID"** (depending on the WindowsCE® version only the Windows®-Logo may appear (as shown in Fig. 8), instead of a "Start" button.
- ▶ **As an alternative start option** doubleclick the link **"BIS M RFID"** on the desktop.
 - ⇒ The application **"BIS M RFID"** is started.
 - ⇒ The start screen is displayed.

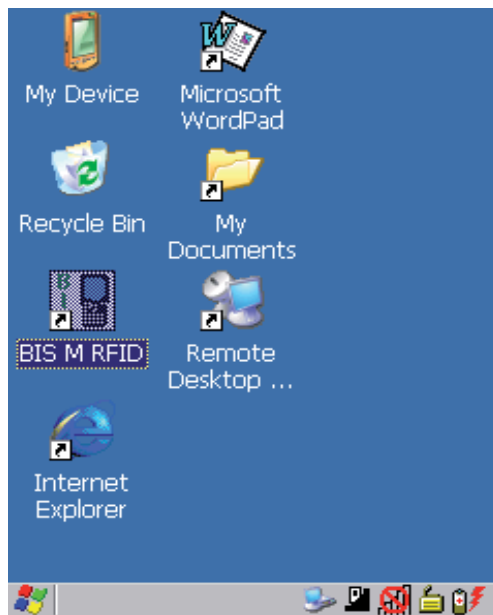


Fig. 8: Windows CE Desktop



Fig. 9: Balluff application start screen

3.8 Operating menu overview

After the start screen the tab **"Settings"** is displayed.

"Settings" tab

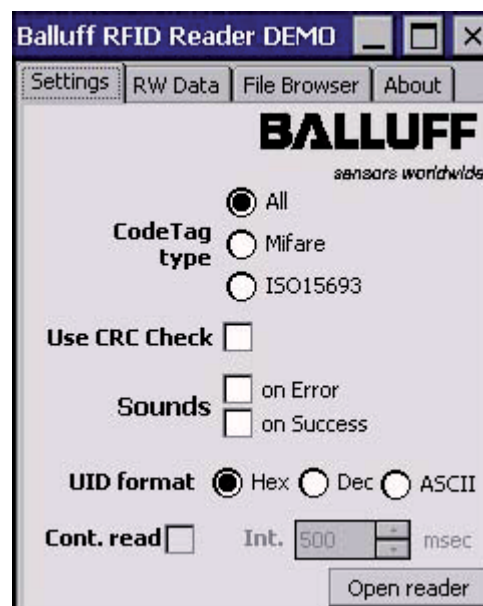


Fig. 10: "Settings" tab

3 Getting Started

The "Settings" tab cont.

The following settings can be made:

CodeTag Type

Selection of the data carrier type. All or one particular data carrier type may be selected.

All	All Balluff supported data carrier types are processed (factory default setting).
Mifare	All Balluff supported Mifare data carriers are processed.
ISO15693	All Balluff supported ISO 15693 data carriers are processed.

Use CRC Check

Uses the CRC checksum. If the CRC data check is activated, the validity of the data is ensured using a CRC checksum (see also "Data security" in Section 4 "BasicKnowledge", starting on page 15).

If the CRC data check is not activated, the validity of the data is checked using a double read.

Sounds

Setting an audio signal for a read error ("on Error") or successful reading ("on Success").

UID Format

Setting the display format of the serial number.

The serial number can be displayed in "Hex" (hexadecimal), "Dec" (decimal) or "ASCII" (ASCII-Format) format

Continuous Read

Continuous Read.

If this option is enabled, read requests are carried out automatically at the set interval.

[Open Reader]

Activating the read/write head.

The read/write head is activated with the settings made and the options are grayed out. The label on the button changes to "**Close Reader**".

Go to the "**RW Data**" tab to perform read or write operations.

[Close Reader]

Deactivate the read/write head. The settings are enabled for editing.

Unterstützte Datenträger

Following data carrier types can be processed with the BIS M-870:		
BIS M-101-01/L	BIS M-110-02/L	BIS M-115-03L
BIS M-102-01/L	BIS M-111-02/L	BIS M-120-01/L
BIS M-108-02/L	BIS M-112-02/L	

A BIS M-871 is required to process the following data carriers:		
BIS M-150-02/A	BIS M-151-02/A	BIS M-152-03/A

A BIS M-871 is required to process the following data carriers:		
BIS M-105-01/A	BIS M-107-03/L	BIS M-140-02/A
BIS M-105-02/A	BIS M-122-01/A	
BIS M-106-03/L	BIS M-122-02/A	

You can obtain more detailed information upon request.

Getting Started

"RW Data" tab

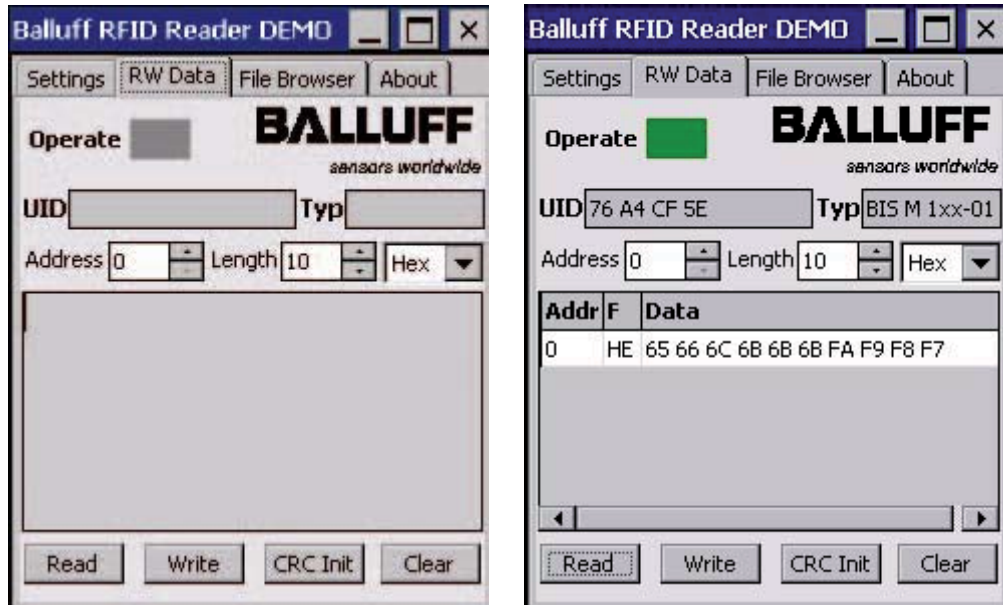


Fig. 11 and 12: "RW Data" tab

Operate

Status indicator:

Yellow flashing: Read/write head activated, waiting for data carrier.

Green: Read/write operation successfully finished.

Red: Read/write error occurred.

UID

Display data carrier serial number. The serial number is displayed in the format selected under "Settings" (Hex, Dec, ASCII).

Type

Display of the data carrier type.

Address

Start address for reading or writing

The start address can be entered or set using the spin box.

Length

Number of bytes you want to read or write.

The number of bytes can be entered or set using the spin box.

Format (Char, Byte, Hex, Bin)

Selecting the display format for data.

The data which were read are displayed according to the selection made in the selection field.

[Read]

Starts a read operation, the status indicator flashes yellow and the button label changes to "Stop" (cancel read operation).

[Write]

Starts a write operation, the status indicator flashes yellow and the button label changes to "Stop" (cancel write operation).

3 Getting Started

[CRC Init]

Initializes a data carrier for using the CRC checksum.

The button is only shown if on the "Settings" tab the option "Use CRC Check" is activated

[Clear]

Clears the data read so far from the display window.

Editing data

- ▶ Tap on a data line in the display window.
 - ⇒ The entry field "Edit data..." opens.
 - ⇒ The data can be changed using the keyboard.
- ▶ Confirm the change with [OK].
 - ⇒ The entry field is closed, the changed data are displayed on the "RW Data" tab.



Fig. 13: Example - Editing data

Getting Started

"File Browser"
tab

"File Browser" can be used to load or save files.



Fig. 14: "File Browser" tab

[Open]

Opens the dialog "Open file...".
A saved file can be selected and opened.
The data are displayed on the "RW Data" tab.

[Save]

Opens the dialog "Save file as...".
The data (from the display field on the tab "RW Data") can be saved in a file.

3 Getting Started

"About" tab

Display of the software version and manufacturer information.



Fig. 15: "About" tab

4 Basic knowledge

4.1 Function principle of Identification Systems

The BIS M portable Identification System is classified as a non-contacting system with read and write function. This allows it 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 portable BIS M Identification System are:

- Handheld Programmer,
- 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 tool coding and monitoring,
- In process equipment organization,
- In warehousing for monitoring stock movement and levels,
- In transporting and conveying,
- In waste disposal for quantity-based fee assessment.

4.2 Product description

Handheld Programmer BIS M-87_:

- Plastic housing,
- Reading/writing using built-in antenna,
- Power for system components provided by 3.7V lithium-ion battery pack,
- Editor function for editing data to be read or written,
- Saving/loading files.

Creating your own operating interface



Note

Separate software is available for creating a custom tailored operating interface. The BALLUFF.dll can be ordered separately. The ordering code can be found in the Appendix.

4.3 Control function

The Handheld Programmer is the link between data carrier and controlling system. The Handheld Programmer can be used to check, correct or initialize data carriers.

The data read on the equipment can be stored in the Handheld Programmer and sent at a later time to the host system.

Host systems may be the following:

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

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 Handheld Programmer is for double reading with comparison. Alternately the CRC_16 data check can be selected.

Here a check code is written to the data carrier which always allows the data to be checked for integrity.

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



Note

Mixed operation of both check procedures is not possible!

4 Basic knowledge

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 Files

Data read from a data carrier can be saved under a file name or saved files can be loaded.



Note

User data are by default saved in a RAM-based folder. The data in this RAM folder are lost if the main battery pack and backup battery pack are fully drained or if the device is cold started. The safest place to store the data is an SD or MMC memory card (Flash Disk).

File format

Start address of the data on the data carrier No. of bytes Data carrier data

4 bytes	4 bytes	max. 184 bytes
---------	---------	----------------

Example: Data carrier file starting at Address 75 with 16 bytes of data in ASCII format.
Data: ABCDEFGHIJKLMNOP

Contents of data carrier file: 00750016ABCDEFGHIJKLMN

4.6 Data carrier types

The following data carrier types are compatible with the BIS M-87_ Handheld Programmer. Depending on the selection all or only a particular data carrier (Mifare or ISO 15693) can be processed.

Mifare data carriers:

Balluff data carrier type	Manufacturer	Description	Memory capacity	Memory type
BIS M-1_ _-01	Philips	Mifare Classic	752 bytes	EEPROM

ISO15693 data carriers:

Balluff data carrier type	Manufacturer	Description	Memory capacity	Memory type
BIS M-1_ _-02	Fujitsu	MB89R118	2000 bytes	FRAM
BIS M-1_ _-03*	Philips	SL21CS20	112 bytes	EEPROM
BIS M-1_ _-04*	Texas Instruments	TAG-IT Plus	256 bytes	EEPROM
BIS M-1_ _-05*	Infineon	SRF55V02P	224 bytes	EEPROM
BIS M-1_ _-06*	EM	EM4135	288 bytes	EEPROM
BIS M-1_ _-07*	Infineon	SRF55V10P	992 bytes	EEPROM

* On request

4 Basic knowledge

4.7 CRC check

The CRC check is a procedure for determining a check value for data in order to be able to recognize transmission errors. If the CRC check is activated, an error message is sent when a CRC error is detected.

Initializing

To use the CRC check, the data carriers must be initialized (see "Initializing data carriers" starting on page 23).

If the data carrier does not contain the correct CRC when reading or writing, the Handheld Programmer sends the error message 'CRC-Error'.

Data carriers as shipped from the factory can be written immediately with a checksum, since all data are set to 0.

Error message

- If an error message is the result of a failed write job, the data carrier must be reinitialized to make it usable again.
- If an error message is not the result of a failed write job, the one or more memory cells in the data carrier is likely defective. The data carrier must be replaced.

Checksum

The checksum is written to the data carrier as 2 bytes of information. 2 bytes per block are sacrificed. This leaves 14 bytes per block available. The usable number of bytes can be found in the following table.

Data carrier	Balluff data carrier type	Memory capacity (bytes)	Usable bytes for CRC_16
Mifare	BIS M-1_ _01	752	658
ISO 15693	BIS M-1_ _02	2000	1750
	BIS M-1_ _03	112	98
	BIS M-1_ _04	256	224
	BIS M-1_ _05	224	196
	BIS M-1_ _06	288	252
	BIS M-1_ _07	992	868

5 Technical Data

Dimensions

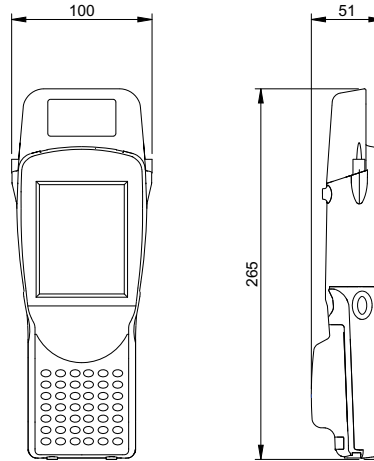


Fig. 29: BIS M-870-1-008-X-000 dimensions (in mm)

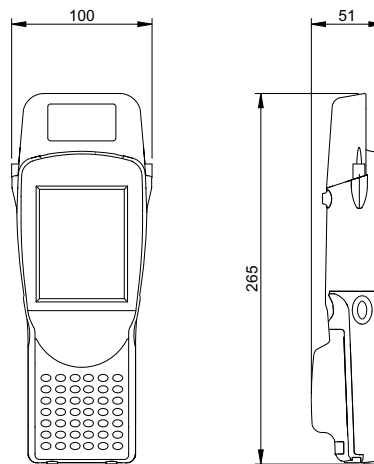


Fig. 30: BIS M-871-1-008-X-000 dimensions (in mm)

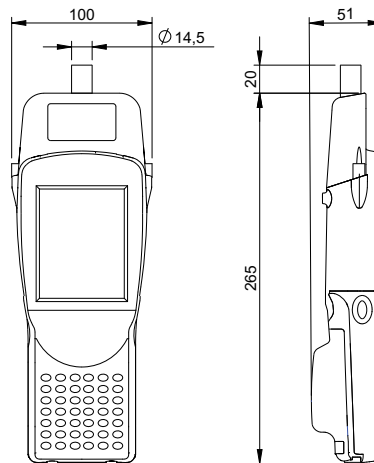


Fig. 31: BIS M-873-1-008-X-000 dimensions (in mm)

5 Technical Data

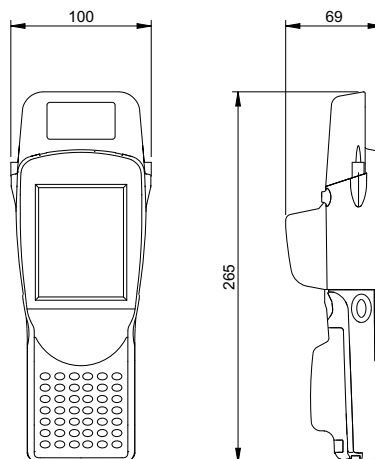


Fig. 32: BIS M-870-1-008-X-002 dimensions (in mm)

Housing

Weight (including battery pack)	585 grams
Keyboard	46 buttons, alphanumeric
Display	Touchscreen TFT 3.6"
Enclosure rating	IP 65

Connections

Read head connection	Built-in antenna
Charging socket	2.5 mm jack socket

Electrical Data

Operating voltage VS		3.7 V
Current consumption	Normal operation	approx. 300 mA
	Reading/writing	approx. 450 mA
Voltage and current supply	Type	3.7 V, Lithium Ion rechargeable
	Capacity	4000 mAh
	max. charging voltage	5 V
	Charging current	0.9 A
	Charging time	5 h
	Battery lifes	8 h

Operating Conditions

Ambient temperature range	-10 °C ... +50 °C
EMC	- EN 61000-4-2/3/4/5/6 - EN 55011
	- Severity Level 3A/3A-/-/-- - Gr. 1, Cl. A
Vibration/shock	EN 60068 Part 2-6/27/29/64/32

Appendix

Type designation code

BIS M - 87 - 1 - 008 - X - 000

Balluff Identification System

Series M Read/Write System

Hardware type

870 = Portable reader with integrated read/write head for data carriers with Ø > 20 mm

871 = Portable reader with integrated read/write head for data carriers BIS M-15_-XX

873 = Portable reader with integrated read/write head for data carriers with Ø < 20 mm

Interface

1 = Bluetooth

Software type

008 = Balluff Software for BIS _-87x-...

Language

X = Multilingual

Accessory (scope of delivery)

Additional features

000 = Standard

001 = With WLAN

002 = With 1D barcode scanner

003 = With 2D barcode/matrix scanner

004 = With WLAN and 1D barcode scanner

005 = With WLAN and 2D barcode/matrix scanner

Accessories (optional, not included in scope of delivery)

Type

Power supply

Ordering code

11023835

Type

Replacement stylus (package of 5)

Docking Station

Handle

Ordering code

11023833

11023834

11023836

Appendix

**Accessory
Charger
Handheld
Programmer**

Features

- Consisting of charger/power supply with 2.5mm jack plug,
- primary connector EURO, UK, US interchangeable (included),
- CE, UL approvals.

Technical Data

Primary voltage U_{primary}	100-240 V _{AC}
Secondary voltage U_{sec}	6 V _{DC} ± 5%
Input frequency F_{primary}	47-63 Hz
Secondary current I_{sec}	2,1 A
Ambient temperature range T_a	-40 °C ... +70 °C
Material	PPE-V1-125 °C
Color	black
Material number	11023835
Color	black

**Accessory
Docking Station**

Features

- Consisting of charger/power supply with charge status indicator and charging cradle,
- primary connector EURO, UK, US interchangeable (included),
- CE, UL approvals.

Charge status indicator

- LED red Battery charged
- LED red flashing Battery charging

Technical Data

Primary voltage U_{primary}	100-240 V _{AC}
Secondary voltage U_{sec}	6 V _{DC} ± 5%
Input frequency F_{primary}	50-60 Hz
Secondary current I_{sec}	800 mA
Ambient temperature range T_a	-40 °C ... +70 °C
Material	PPE-V1-125 °C
Color	black
Material number	11023834
Color	black

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