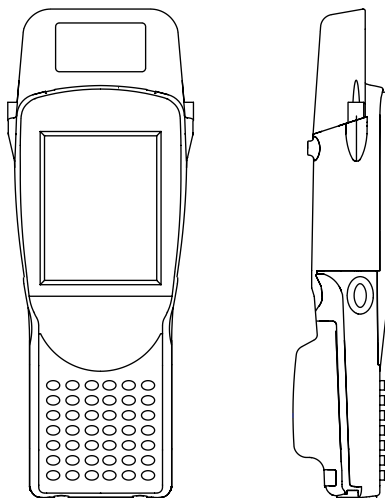


Handheld Programmer BIS M-87_

Technical Description, User's Guide



www.balluff.com

1	User Instructions	4
1.1	CE Declaration of Conformity and User Safety	4
1.2	Scope of delivery	4
1.3	About this manual	4
1.4	Structure of the manual	4
1.5	Typographical conventions	5
1.6	Symbols	5
1.7	Abbreviations	5
2	Safety	6
2.1	Intended Use	6
2.2	General safety notes	6
2.3	Notes on using and returning rechargeable batteries	6
2.4	Meaning of warning notes	6
3	Getting Started	7
3.1	Battery operation	7
3.2	Overview of WORKABOUT PRO C	8
3.3	COLD RESET or battery replacement	11
3.4	Turning the Handheld Programmer on/off	11
3.5	Keyboard, display and operating concept	11
3.6	Creating your own operating interface	11
3.7	Starting the RFID application	12
3.8	Operating menu overview	12
4	Basic Knowledge	18
4.1	Function principle of Identification Systems	18
4.2	Product description	18
4.3	Control function	18
4.4	Data integrity	18
4.5	Files	19
4.6	Data carrier types	20
4.7	CRC check	21
5	Operation	22
5.1	Keyboard, display and operating concept	22
5.2	Reading data carriers	22
5.3	Writing to data carriers	23
5.4	Editing data	25
5.5	Initializing data carriers	26
5.6	Working with files	27
5.7	Connecting the Handheld Programmer to a PC/laptop	28
6	Technical Data	29
	Appendix	32
	Index	35

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_
- AC adapter
- Operating instructions in printed form (GER/ENG)

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”

This 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.

The newest information for the product can be found on the internet at [“www.balluff.de”](http://www.balluff.de).

1.4 Structure of the manual

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 Typographical conventions

The following conventions are used in this manual.

Enumerations

Enumerations are shown as a list with an 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, e.g. (see [“Technical Data” starting on page 28](#)).

Buttons

Buttons are set in square 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



Caution!

This symbol indicates a security notice which must be observed.



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 only be used for this purpose in an industrial environment corresponding to Class A of the EMC Law. This description is valid for Handheld Programmers in series BIS M-87_-1-...

2.2 General safety notes

Startup

Startup is only to be performed 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 28).

Operation and testing

The operator is responsible for ensuring that locally applicable safety regulations are observed. In the event of defects and non-correctable faults in the identification system, take the system out of service and secure it to prevent unauthorized use.

2.3 Notes on using and returning rechargeable batteries



Caution!

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



Note

Every user is legally obligated by the German Battery Ordinance to return all regular or rechargeable batteries that have been used or spent. Disposal with household waste is prohibited. Old batteries and rechargeable batteries can be returned without charge at your municipal collection point and anywhere that batteries and rechargeable batteries of the type in question are sold. You can also return the included batteries to the following address (with sufficient postage) after using them: Balluff GmbH, Schurwaldstraße 9, 73765 Neuhausen a.d.F., Germany



Caution!

Use only Balluff-approved power supplies.

2.4 Meaning of warning notes



Caution!

The pictogram used with the word "Caution" warns of a situation that could harm someone's health or damage equipment. Failure to observe these warning notes may result in injury or damage to equipment.

- Always take the described measures to prevent hazardous situations.

3 Getting Started

3.1 Battery operation



Note

The system components of the Handheld Programmer are powered by a 3.7 V rechargeable battery pack (Li-Ion).

- Please charge rechargeable batteries provided by Balluff before using them for the first time!

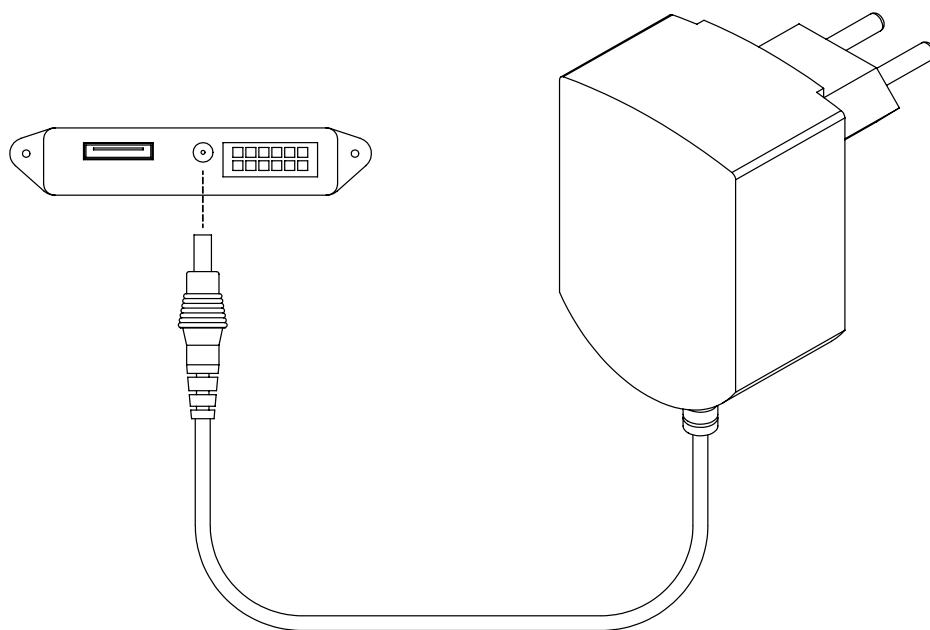


Fig. 3: Connecting the power supply – Charging the battery pack

Changing rechargeable batteries and operating life

A high-capacity rechargeable battery has a battery life of up to 48 hours after a full charge. Prerequisite: 200 read/write operations, after 3 min. without being used, the device enters Suspend Mode. Data in the Handheld Programmer are retained for at least 10 to 15 minutes while the battery is being replaced.



Note

User data are saved by default 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 restarted cold (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



Caution!

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 the device into the docking station or connect the power supply



Note

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

3 Getting Started

3.2 Overview of WORKABOUT PRO C

**BIS M-870-1-
0__-X-001**

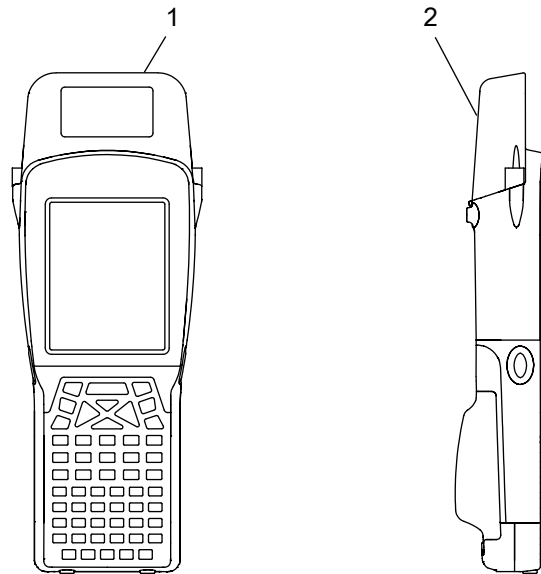


Fig. 4: Handheld Programmer BIS M-870-1-0__-X-001

- 1 Read/write head for BIS U data carrier with round coil $\varnothing \geq 20$ mm
- 2 Active surface (underside)

**BIS M-871-1-
0__-X-001**

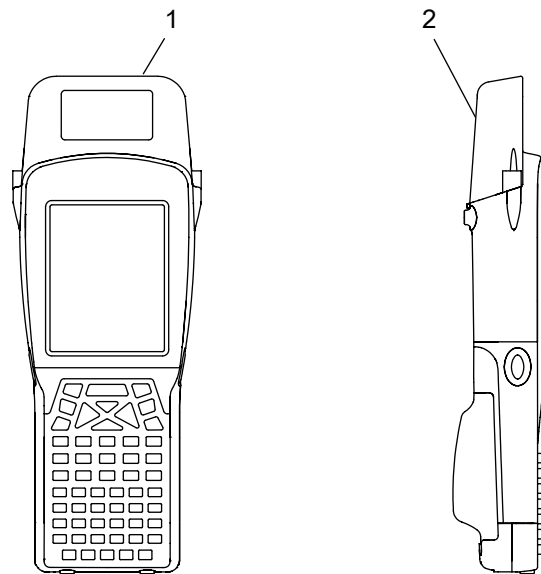


Fig. 5: Handheld Programmer BIS M-871-1-0__-X-001

- 1 Read/write head for BIS M-15_-XX
- 2 Active surface (front side)

3 Getting Started

**BIS M-873-1-
0_-X-001**

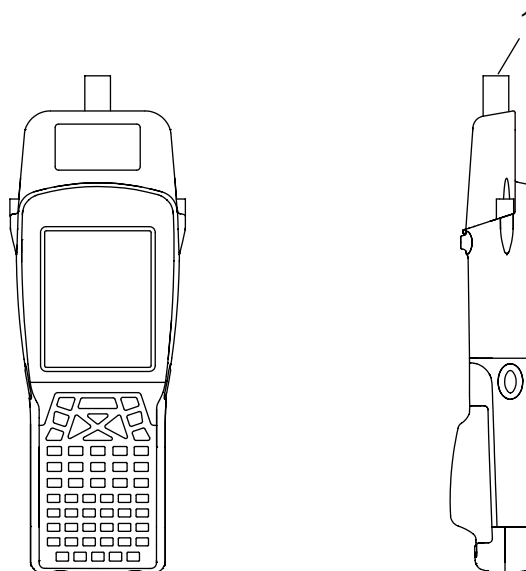


Fig. 6: Handheld Programmer BIS M-873-1-0_-X-001

- 1 Read/write head for BIS M data carrier with round coil $\varnothing \leq 19$ mm
Active surface (front side)

**BIS M-870-1-
0_-X-004 /
BIS M-870-1-
0_-X-005**

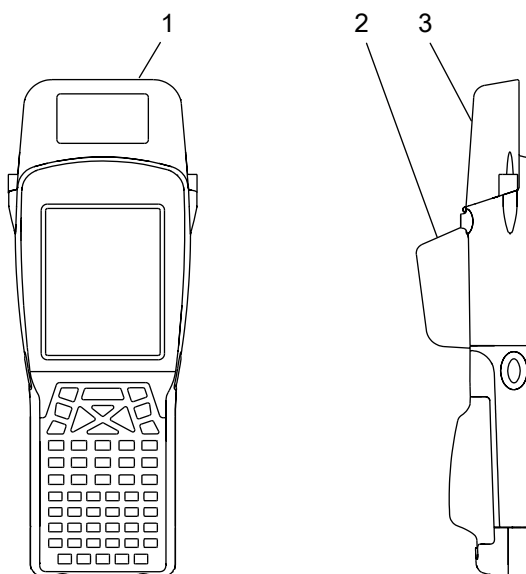


Fig. 7: Handheld Programmer BIS M-870-1-0_-X-004 / BIS M-870-1-0_-X-005

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

3 Getting Started

**BIS M-871-1-
0__-X-004 /
BIS M-871-1-
0__-X-005**

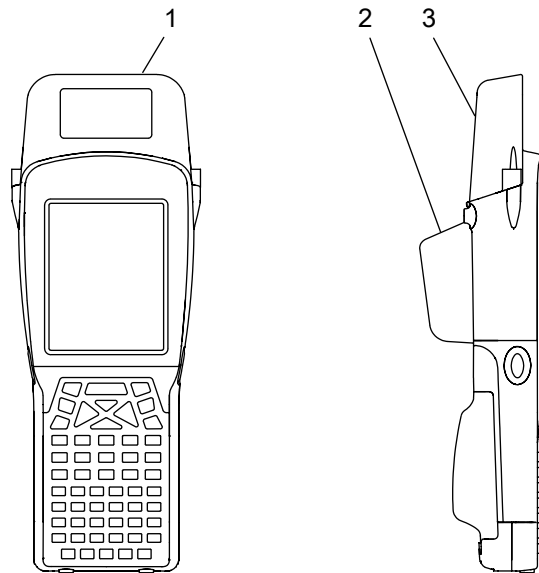


Fig. 8 : Handheld Programmer BIS M-871-1-0__-X-004 / BIS M-871-1-0__-X-005

- 1 Read/write head for BIS M-15_-XX data carrier
- 2 Barcode scanner
- 3 Active surface (underside)

**BIS M-873-1-
0__-X-004 /
BIS M-873-1-
0__-X-005**

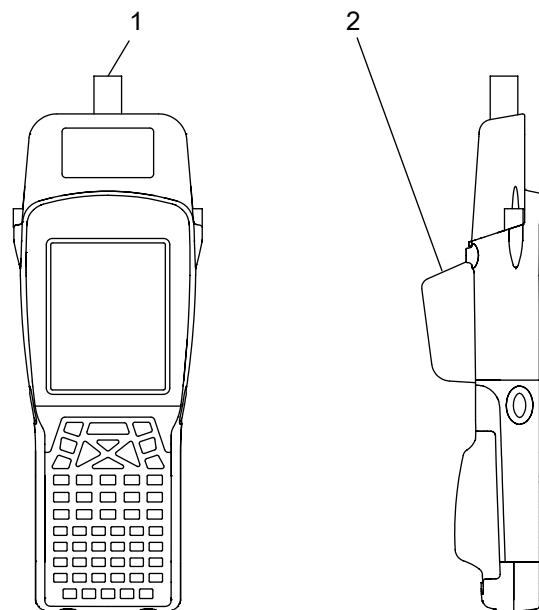


Fig. 9: Handheld Programmer BIS M-873-1-0__-X-004 / BIS M-873-1-0__-X-005

- 1 Read/write head for BIS M data carrier with round coil $\varnothing \leq 19$ mm
Active surface (front side)
- 2 Barcode scanner



3.3 COLD RESET or battery replacement



Note

Removing the battery or performing a cold reset will delete data, drivers, and settings from the device's RAM!

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

The **"Total Recall"** program 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 <Total Recall> program (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 inserted and charged, device is in the docking station or power supply is connected).



Caution!

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 LED flashes green, release the **<ENTER>** key again.
⇒ The start screen <Today> is 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 mode -**
- Press **<FN>** (blue) and then **<ENTER>** to shut off the WORKABOUT PRO
or
- Select **"Shutdown > Suspend"** from the Start menu.

3.5 Keyboard, display and operating concept

Familiarize yourself with the operating concept and characteristics of the WORKABOUT PRO. The user's guide is available on the internet at: www.zebra.com/workaboutpro4

3.6 Creating your own operating interface



Note

The BALLUFF.dll has been created as a discrete software solution for creating a custom user interface. The order number for this software is available on request.

3 Getting Started

3.7 Starting the RFID application

- ▶ On the Windows CE desktop, tap on **“Start > Programs > BALLUFF RFID > BIS M RFID”** (depending on the Windows CE® version, instead of “Start” tap on the 4-color Windows® logo. (See Fig. 8) or,
- ▶ Tap the **“BIS M RFID”** shortcut on the desktop.
 - ⇒ The application **“BIS M RFID”** is started.
 - ⇒ The start screen is displayed.

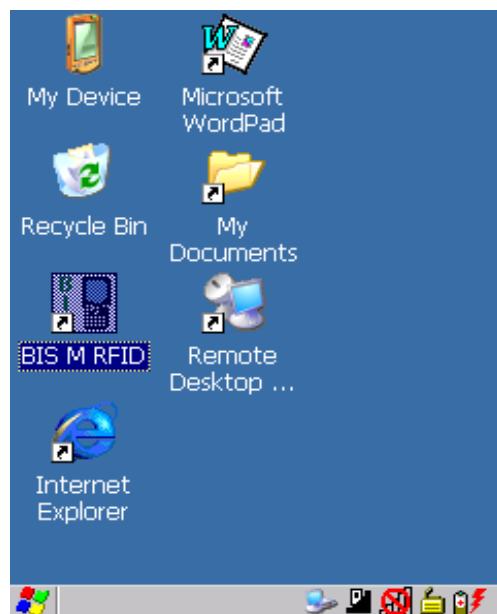


Fig. 10: Windows CE desktop



Fig. 11: Balluff application start screen

3.8 Operating menu overview

After the start screen, the **“Settings”** tab is displayed.

“Settings” tab

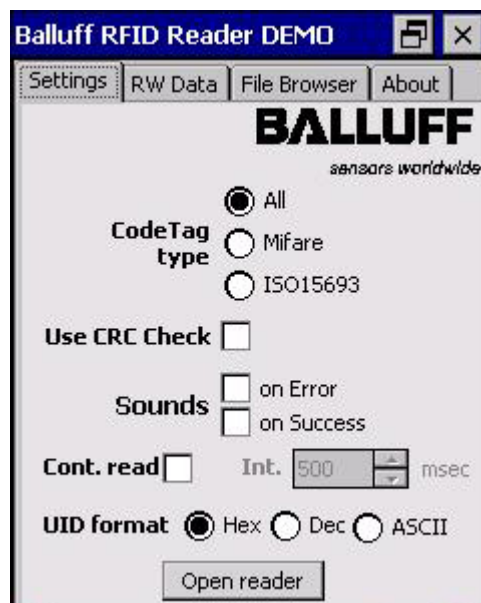


Fig. 12: “Settings” tab
– BIS M-87x-1-008-...

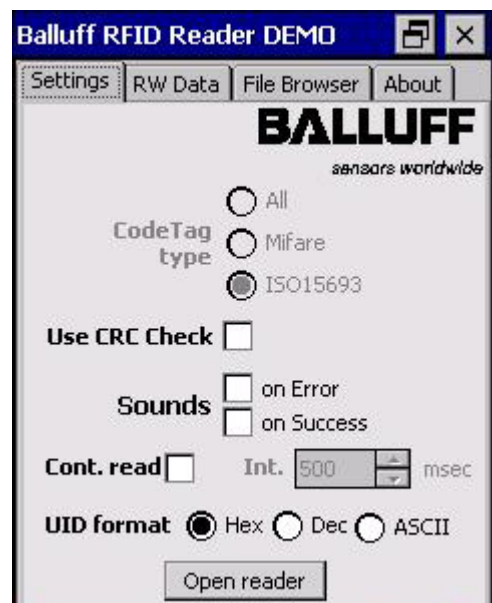


Fig. 13: “Settings” tab
– BIS M-87x-1-010-...

Getting Started

“Settings” tab (continued)

The following settings can be made:

Code Tag Type

Selecting the tag type is possible only with BIS M-87_-1-008-00_ Handhelds. All or one particular data carrier type may be selected:

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



Note

BIS M-87_-1-008-00_ : All, Mifare & ISO15693 data carriers
BIS M-87_-1-010-00_ : ISO15693 data carriers

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 17).

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 reading.

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.

3 Getting Started

Hardware types

BIS M-870-... :

Portable reader with integrated read/write head for BIS M- data carriers with round coil $\varnothing \geq 20$ mm

BIS M-871-... :

Portable reader with integrated read/write head for BIS M- data carriers with rod type antenna (BIS M-15_ ...)

BIS M-873-... :

Portable reader with integrated read/write head for BIS M- data carriers with round coil $\varnothing \leq 19$ mm

“RW Data” tab

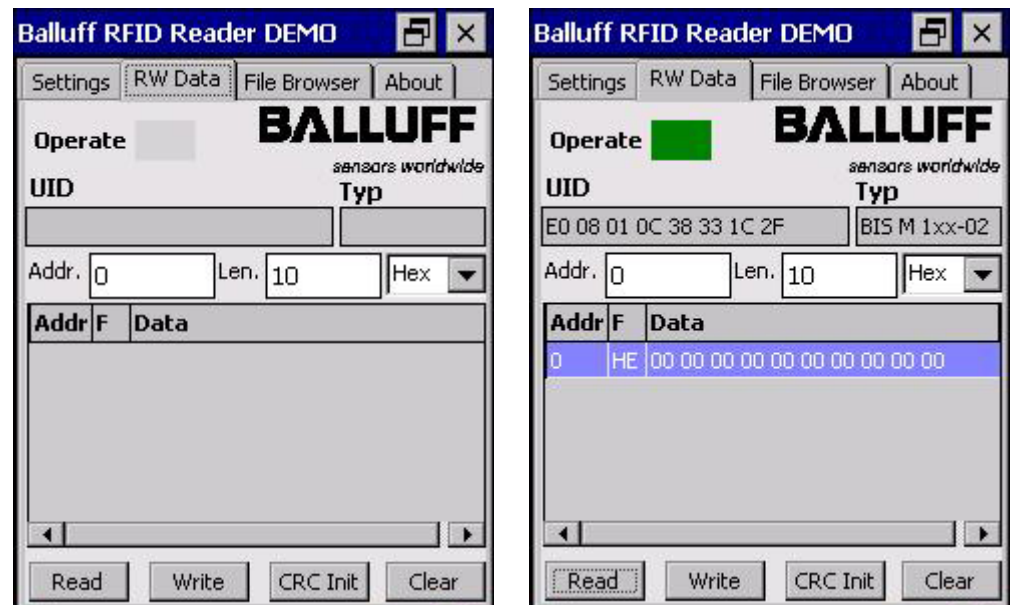


Fig. 14 and 15: “RW Data” tab

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.

Length

Number of bytes you want to read or write.



Getting Started

Format (Char, Byte, Hex, Bin)

Selecting the display format for data.

The data that 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).

[CRC Init]

Initializes a data carrier for using the CRC checksum.

The button is shown only if the **“Use CRC Check”** option is activated on the **“Settings”** tab.

[Clear]

Clears the data read so far from the display window.

Editing data

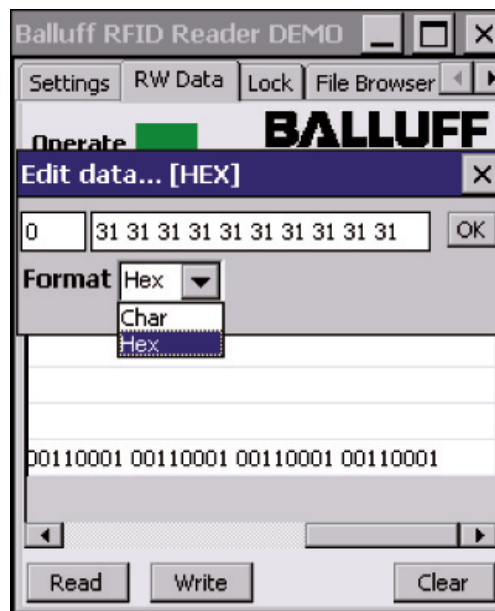


Fig. 16: Example - Editing data

- ▶ Tap on a data line in the display window.
 - ⇒ The **“Edit data...”** entry field 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.

3 Getting Started

**“File Browser”
tab**

“File Browser” can be used to load or save files.



Fig. 17: “File Browser” tab

[Open]

Opens the **“Open file...”** dialog.

A saved file can be selected and opened.

The data are displayed on the **“RW Data”** tab.

[Save]

Opens the **“Save file as...”** dialog.

The data (from the display field on the **“RW Data”** tab) can be saved in a file.

3 Getting Started

“About” tab

Display of the software version and manufacturer information.



Fig. 18: “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 convey information programmed permanently 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 carrier.

The main areas of application are:

- In production for controlling material flow (e.g. for model-specific processes, conveying systems that transport workpieces, acquisition of safety-relevant data)
- In tool coding and monitoring,
- In process equipment organization,
- In warehousing for monitoring stock movement and levels,
- In transporting and conveyor technology
- 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 3.7 V lithium-ion battery pack
- Editor function for editing data to be read or written,
- Saving/loading files.

Creating your own operating interface



Note

The BALLUFF.dll has been created as a discrete software solution for creating a custom user interface. The order number for this software is available on request.

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 that 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 saved by default 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 restarted cold. 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: 00750016ABCDEFGHIJKLMNOP

4 Basic Knowledge

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 15653) can be processed.

Mifare data carriers:

Balluff data carrier type	Manufacturer	Description	Memory capacity	Memory type
BIS M-1_-01	NXP	Mifare Classic	752 bytes	EEPROM
BIS M-1_-10	NXP	Mifare Classic	736 bytes	EEPROM



Note

Mifare data carriers can **not** be used with the BIS M-87_-1-010-00_ Handheld Programmer.

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	NXP	SL2ICS20	112 bytes	EEPROM
BIS M-1_-04*	Texas Inst.	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
BIS M-1_-08*	NXP	SL2IC553	160 bytes	EEPROM
BIS M-1_-09*	NXP	SL2ICS50	32 bytes	EEPROM
BIS M-1_-11**	Balluff	BIS M-1	8192 bytes	FRAM
BIS M-1_-13**	Balluff	BIS M-1	32768 bytes	FRAM
BIS M-1_-14**	Balluff	BIS M-1	65536 bytes	FRAM
BIS M-1_-15**	Balluff	BIS M-1	131072 bytes	FRAM
BIS M-1_-20	Fujitsu	MB89R112	8192 bytes	FRAM

* On request

** Can only be used with the BIS M-87_-1-010-00_ Handheld Programmer

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 25).

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 lost. This leaves 14 bytes per block available. The usable number of bytes can be found in the following table.

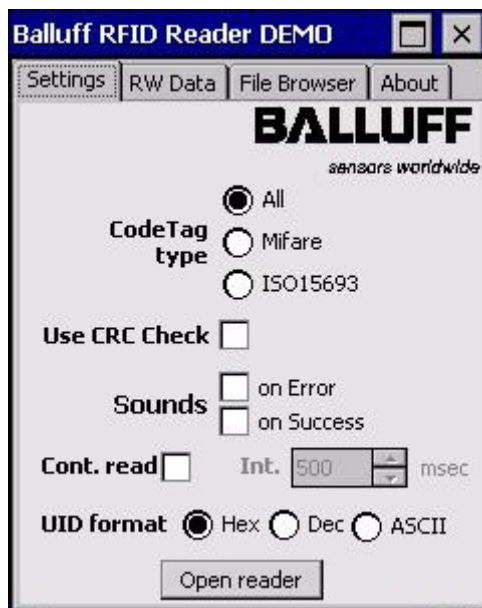
Balluff data carrier type	Memory capacity	Usable bytes for CRC_16
BIS M-1__-01	752 bytes	658 bytes
BIS M-1__-02	2000 bytes	1750 bytes
BIS M-1__-03	112 bytes	98 bytes
BIS M-1__-04	256 bytes	224 bytes
BIS M-1__-05	224 bytes	196 bytes
BIS M-1__-06	288 bytes	252 bytes
BIS M-1__-07	992 bytes	868 bytes
BIS M-1__-08	160 bytes	140 bytes
BIS M-1__-09	32 bytes	28 byte
BIS M-1__-10	736 bytes	644 bytes
BIS M-1__-11	8192 bytes	7168 bytes
BIS M-1__-13	32786 bytes	28672 bytes
BIS M-1__-14	65536 bytes	57344 bytes
BIS M-1__-15	131072 bytes	114688 bytes
BIS M-1__-20	8192 bytes	7168 bytes

5 Operation

5.1 Keyboard, display and operating concept

Familiarize yourself with the operating concept and characteristics of the WORKABOUT PRO. The user's guide is available on the internet at: www.zebra.com/workaboutpro4

5.2 Reading data carriers



- ▶ Start Balluff RFID Reader.
- ▶ Make desired settings.
- ▶ Activate read/write head by tapping **[Open reader]**.
⇒ The settings are grayed out and the button changes to **[Close reader]**.

Fig. 19: "Settings" tab



- ▶ Switch to the **"RW Data"** tab
- ▶ Select start address, number of bytes to write, and data format.
- ▶ Tap on **[Read]**.
⇒ The **"Operate"** field begins to flash yellow.
- ▶ Hold the active surface to the data carrier you wish to read.
⇒ The data are read and displayed. The **"Operate"** field lights up green.
⇒ If there is a read error **"UID"** and **"Type"** are not displayed, the field **"Operate"** lights up red.

Fig. 20: "RW Data" tab

5 Operation

Reading data
carriers, cont.

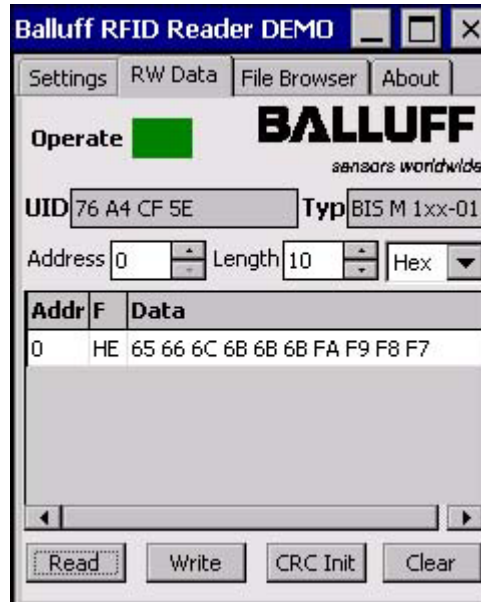


Fig. 21: Write operation successful

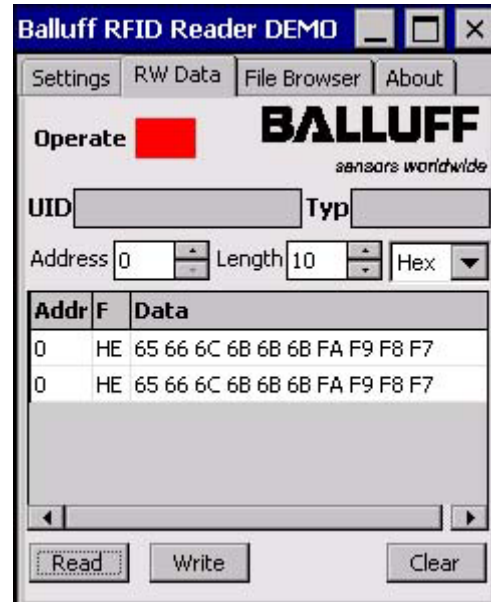


Fig. 22: Read error

5.3 Writing to data carriers

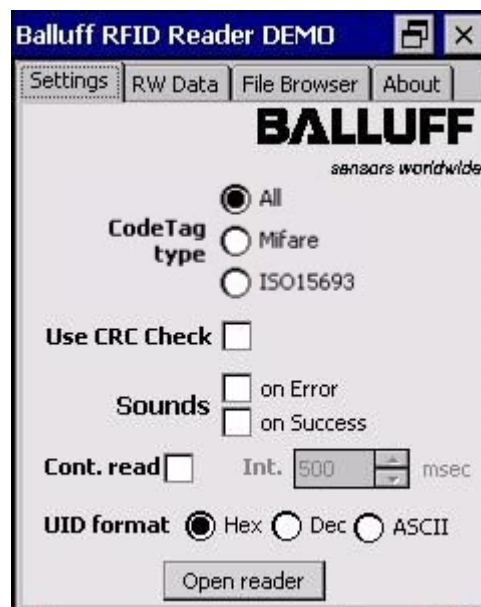


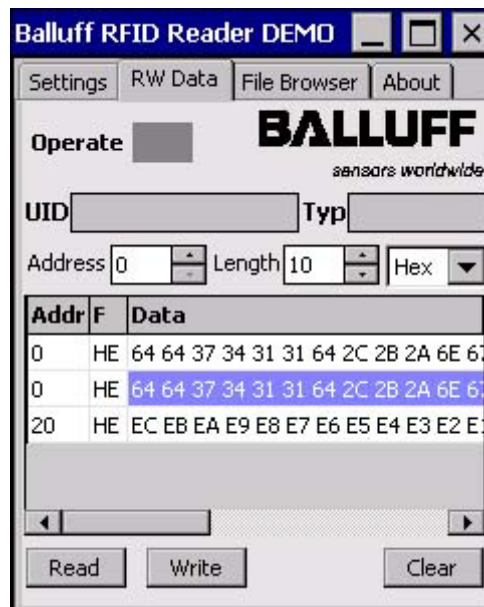
Fig. 23: Read error

- ▶ Start Balluff RFID Reader.
- ▶ Make desired settings.
- ▶ Activate read/write head by tapping **[Open reader]**.
⇒ The settings are grayed out and the button changes to **[Close reader]**.

5 Operation

Writing to data carriers, cont.

- ▶ Switch to the “RW Data” tab



- ▶ Start Balluff RFID Reader.
- ▶ Make desired settings.
- ▶ Activate read/write head by tapping **[Open reader]**.
⇒ The settings are grayed out and the button changes to **[Close reader]**.

Fig. 24: Writing to data carriers

- ▶ Select start address, number of bytes to write, and data format.
- ▶ Select the data record you want to write.
- ▶ Tap on **[Write]**.
⇒ The “Operate” field begins to flash yellow.
- ▶ Hold the active surface to the data carrier you wish to write to.
⇒ The data are written; if successful, the “Operate” field lights up green.
⇒ If there is a write error, the “Operate” field lights up red.

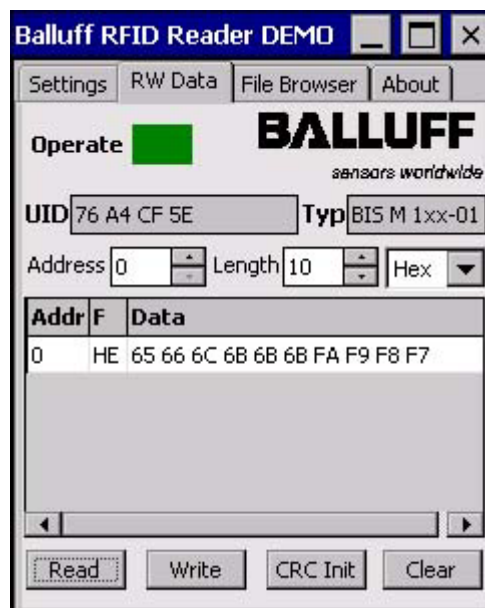


Fig. 25: Write operation successful

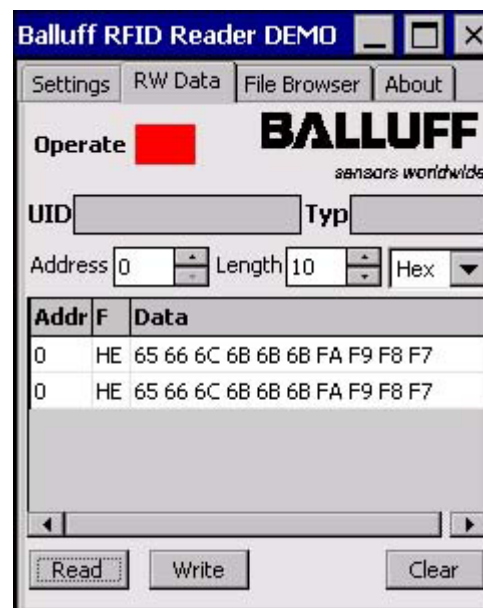


Fig. 26: Write error

5 Operation

5.4 Editing data

On the “RW Data” tab you can edit data read from the data carrier or data from an opened file.



- ▶ Tap on a data line in the display window.
⇒ The editor opens.
- ▶ Edit data using the keyboard and confirm with **[OK]**.
⇒ The editor is closed and the changed data are displayed.

Fig. 27: Editing data carriers

The data carrier is programmed with 00_{hex} and thereby prepared for operation with a CRC data check.

5 Operation

5.5 Initializing data carriers

- Switch to the **“Settings”** tab

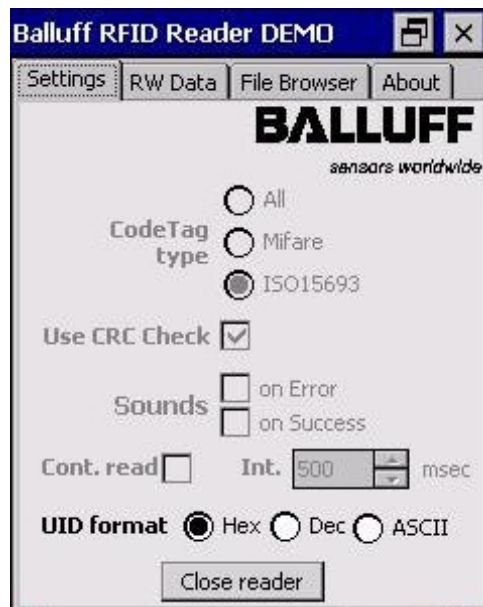


Fig. 28: Initialize data carrier

- Start Balluff RFID Reader.
- Activate **“Use CRC Check”**.
- Activate read/write head by tapping **[Open reader]**.
⇒ The settings are grayed out and the button changes to **[Close reader]**.

- Switch to the **“RW Data”** tab

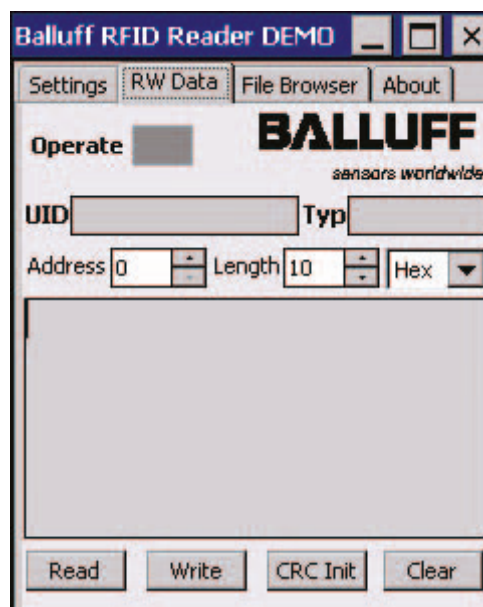


Fig. 29: Initialize data carrier

- Select start address, number of bytes, and data format.
- Tap on **[CRC Init]**
⇒ The **“Operate”** field begins to flash yellow.
- Hold the active surface to the data carrier you wish to initialize.
⇒ The data carrier is initialized; if successful, the **“Operate”** field lights up green.
⇒ If there is a write error, the **“Operate”** field lights up red.

5 Operation

5.6 Working with files

Saving files



Note

Data read from a data carrier can be saved under a file name. Already saved data can be opened and further processed.

- ▶ Switch to the **“File Browser”** tab.



- ▶ Switch to the **“File Browser”** tab.
- ▶ Tap on **[Save]**.
 - ⇒ The **“Save as...”** dialog opens.
- ▶ Select storage location and file name and confirm with **[OK]**.
 - ⇒ The data that were read are saved as a file.

Fig. 30: Saving files



Note

All data records on the **“RW Data”** tab are saved in the file with start address and number of bytes (see also **“Files”** on page 18).

User data are saved by default 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).

5 Operation

Loading files



- ▶ Switch to the **“File Browser”** tab.
- ▶ Tap on **[Open]**.
⇒ The **“Open”** dialog opens.
- ▶ Select file and confirm with **[OK]**.
⇒ The saved data are read and displayed on the **“RW Data”** tab.

Fig. 31: Saving files

5.7 Connecting the Handheld Programmer to a PC/laptop

The Handheld Programmer can optionally be connected to a PC/laptop using Bluetooth, WLAN, or USB (docking station).

Files can be sent between the Handheld Programmer and PC/laptop using the **“Windows Mobile Device Center”** software.



Note

Depending on the installed option, refer to the WORKABOUT PRO operating manual for the exact procedure for connecting the Handheld Programmer to the PC. Operation of the **“Windows Mobile Device Center”** software is described in its online help.

Data transmission

- ▶ Connect Handheld Programmer to PC.
- ▶ “Windows Mobile Device Center” (PC) responds and automatically opens a connection to the WORKABOUT.
or
- ▶ In Windows Explorer (PC) search for “WORKABOUT PRO”..
- ▶ From Explorer you can exchange files between the PC and WORKABOUT PRO.

Charge life



Note

A high-capacity rechargeable battery has a battery life of up to 48 hours after a full charge under normal operating conditions. Prerequisite: 200 read/write operations, after 3 min. without being used, the device enters Suspend Mode. Data in the Handheld Programmer are retained for at least 10 to 15 minutes while the battery is being replaced.

6 Technical Data

Dimensions

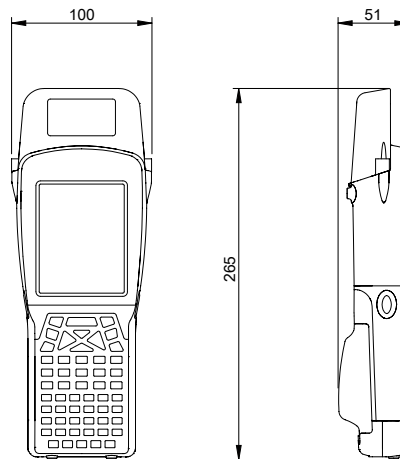


Fig. 32: Dimensions BIS M-870-1-0__X-001 (in mm)

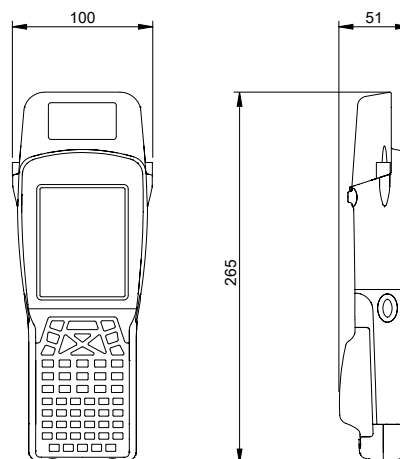


Fig. 33: Dimensions BIS M-871-1-0__X-001 (in mm)

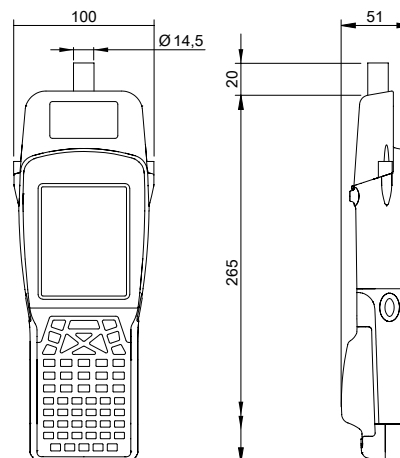


Fig. 34: Dimensions BIS M-873-1-0__X-001 (in mm)

6 Technical Data

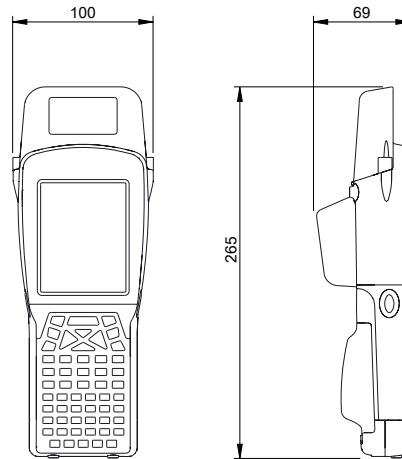


Fig. 35: Handheld Programmer BIS M-870-1-0__-X-004 / BIS M-870-1-0__-X-005 (in mm)

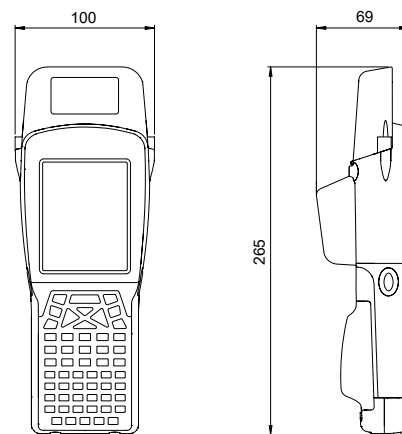


Fig. 36: Dimensions BIS M-871-1-0__-X-004 / BIS M-871-1-0__-X-005 (in mm)

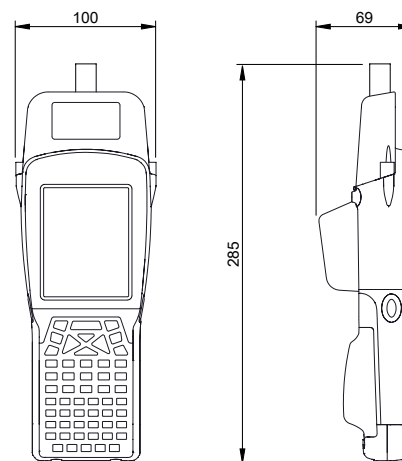


Fig. 37: Dimensions BIS M-873-1-0__-X-004 / BIS M-873-1-0__-X-005 (in mm)

6 Technical Data

Housing

Weight (including battery pack)	585 grams
Keyboard	46 keys, alphanumeric
Display	Touchscreen TFT 3.6"
Degree of protection	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 battery
	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	-10 °C...+50 °C
EMC	
– EN 61000-4-2/3/4/5/6	– Severity level 3A/3A/-/-/-
– EN 55011	– Size 1, Cl. A
Vibration/shock	EN 60068 Part 2-6/27/29/64/32

Appendix

Type code	BIS	M	- 87	- 1	- 008	- X	- 000
Balluff Identification System							
Series M Read/Write System							
Hardware type							
870 = Handheld Reader with integrated read/write head for BIS M data carriers with round coil $\varnothing \geq 20$ mm							
871 = Handheld Reader with integrated read/write head for BIS M data carriers with rod style antenna (BIS M-15_ ...)							
873 = Handheld Reader with integrated read/write head for BIS M data carriers with round coil $\varnothing \leq 19$ mm							
Interface							
1 = Bluetooth							
Software type							
008 = Standard Balluff Software for BIS _-87x-...							
010 = Fast Read/Write Balluff Software for BIS _-87x-...							
Language							
X = Multilingual							
Additional features							
001 = WLAN							
004 = With WLAN and 1D barcode scanner							
005 = With WLAN and 2D barcode/matrix scanner							

Accessory (scope of delivery)	Type	Order code
	Power supply	BAE00TA
Accessories (optional, not included in scope of delivery)	Type	Order code
	Replacement stylus (package of 5)	BAM0280
	Docking station	BAM0282
	Handle	BAM0281
	Carrying case	BAM021R

Appendix

Handheld Programmer charger accessory

Features

- Consisting of charger/power supply with 2.5 mm 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 T_a	–40 °C ... +70 °C
Material	PPE-V1-125 °C
Color	black
Material number	11023835
Color	black

Accessories 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 T_a	–40 °C ... +70 °C
Material	PPE-V1-125 °C
Color	black
Material number	11023834
Color	black

Appendix

ASCII table

Decimal	Hex	Control Code	ASCII	Decimal	Hex	ASCII	Decimal	Hex	ASCII
0	00	Ctrl @	NUL	43	2B	+	86	56	V
1	01	Ctrl A	SOH	44	2C	,	87	57	W
2	02	Ctrl B	STX	45	2D	-	88	58	X
3	03	Ctrl C	ETX	46	2E	.	89	59	Y
4	04	Ctrl D	EOT	47	2F	/	90	5A	Z
5	05	Ctrl E	ENQ	48	30	0	91	5B	[
6	06	Ctrl F	ACK	49	31	1	92	5C	\
7	07	Ctrl G	BEL	50	32	2	93	5D	]
8	08	Ctrl H	BS	51	33	3	94	5E	^
9	09	Ctrl I	HT	52	34	4	95	5F	_
10	0A	Ctrl J	LF	53	35	5	96	60	`
11	0B	Ctrl K	VT	54	36	6	97	61	A
12	0C	Ctrl L	FF	55	37	7	98	62	B
13	0D	Ctrl M	CR	56	38	8	99	63	c
14	0E	Ctrl N	SO	57	39	9	100	64	d
15	0F	Ctrl O	SI	58	3A	:	101	65	e
16	10	Ctrl P	DLE	59	3B	;	102	66	f
17	11	Ctrl Q	DC1	60	3C	<	103	67	g
18	12	Ctrl R	DC2	61	3D	=	104	68	h
19	13	Ctrl S	DC3	62	3E	>	105	69	i
20	14	Ctrl T	DC4	63	3F	?	106	6A	j
21	15	Ctrl U	NAK	64	40	@	107	6B	k
22	16	Ctrl V	SYN	65	41	A	108	6C	L
23	17	Ctrl W	ETB	66	42	B	109	6D	m
24	18	Ctrl X	CAN	67	43	C	110	6E	n
25	19	Ctrl Y	EM	68	44	D	111	6F	o
26	1A	Ctrl Z	SUB	69	45	E	112	70	p
27	1B	Ctrl [	ESC	70	46	F	113	71	q
28	1C	Ctrl \	FS	71	47	G	114	72	r
29	1D	Ctrl]	GS	72	48	H	115	73	s
30	1E	Ctrl ^	RS	73	49	I	116	74	t
31	1F	Ctrl _	US	74	4A	J	117	75	u
32	20		SP	75	4B	K	118	76	v
33	21		!	76	4C	L	119	77	W
34	22		"	77	4D	M	120	78	X
35	23		#	78	4E	N	121	79	Y
36	24		\$	79	4F	O	122	7A	Z
37	25		%	80	50	P	123	7B	{
38	26		&	81	51	Q	124	7C	
39	27		'	82	52	R	125	7D	}
40	28		(	83	53	S	126	7E	~
41	29		)	84	54	T	127	7F	DEL
42	2A		*	85	55	U			

Index

A

Abbreviations 5
Accessories 32
Areas of application 18
ASCII table 34

C

Charger 33
Check procedure 18
Checksum 21
Connecting 28
Connections 31
Control function 18
CRC check 21

D

Data carrier
 Initializing 21
 Types 20
Data integrity 18
Data transmission 28
Dimensions 29
Docking station 33

E

Electrical data 31
Error message 21

F

Files 19
 File format 19

H

Housing 31

I

Intended Use 6

M

Main components 18
Meaning
 Warning notes 6

O

Operating conditions 31

P

Parameters
 CRC_16 data check 13
Product description 18

R

Rechargeable batteries
 Loading 6

S

Safety
 Operation 6
 Startup 6
Symbols
 Representation 5

T

Technical Data
 Dimensions 29
Type code 32

U

Use
 Improper 6
 Intended 6

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