OPERATING INSTRUCTIONS

RFID Handheld Reader

IPT-HH27   (125 kHz)

IQT1-HH27 (13,56 MHz, ISO15693)

PEPPERL+FUCHS

SENSING YOUR NEEDS

With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

PEPPERL+FUCHS

PEPPERL+FUCHS

PEPPERL+FUCHS

1 Foreword

General hints and basics to this device are described in the Quick Start Guide, which are enclosed to this unit in printed version. It can also be found on our hompage www.pepperl-fuchs.com

The functionality of the Application program will be further expanded and so this documentation. For information about the newest version see our webpage.

2 Technical Data

Housing	ABS
Protection class	IP43
Operating temperature	0 °C to 45 °C Operation down to temperatures of -20 °C in cold storage chambers or outdoor areas is permissible. Is is advisable for the device to have been in operation for a period of 20 minutes prior to this. The formation of condensation on the device should be avoided.
Storage temperature	-20 °C to 70 °C
Relative humidity	5 % - 90 % non-condensing
Dimensions	219 x 62/83 x 39/41 mm (L x B x H)
Weight	Approx. 520 g (incl. RFID module)
Power supply	Quick-change rechargeable battery 7.4 V/Li-Po, 2,200 mAh Docking station or charging station
Display/screen	3.5" TFT colour screen with LED backlight, 240 x 320 pixels, 640 cd/m^2 Status LED
Touchscreen	Robust, min. surface hardness 3H
Keyboard	Rapid-entry keypad with alphanumeric function, 15 mm key spacing, 15 keys in hard-shell design, 10 function keys, two scanner buttons on the side
RFID reader	IQT1-HH27: HF reader, frequency: 13.56 MHz, ISO 15693 IPT-HH27: LF reader, frequency: 125 kHz
Processor	Marvell XScale processor PXA 166; 800 MHz
Memory	512 MB Flash, 256 MB RAM, larger memory available as option with microSD card
Operating system	Windows Embedded CE 6.0
Interfaces	MicroSD card (slot above battery compartment) USB host (100 mA) or USB slave WLAN module as per IEEE 802.11a/b/g (SDIO slots) BT-compatible near field communication (BT V2.0)
Miscellaneous	Integrated speaker for system messages Keyboard controller, monitors keys and system
Accessories	Retainer strap Stylus Docking station Battery charging station Spare battery

PEPPERL+FUCHS

3 General Description

3.1 Power management

The integrated power management has several energy-saving levels. The display illumination gets darker after a set period of time and the device is later switched off. Furthermore, scanners and the SDIO WLAN radio card can be put into energy-saving mode.

3.2 Emergency supply

The emergency supply can be used after the device has been switched on for at least 30 minutes. If the battery is replaced when the device is switched on, the device continues to be supplied with the emergency energy supply for up to 15 seconds. The removal of the battery is detected and a message is sent to the operating system. This message can be used by applications to store important data that may not be lost.

The display then switches off. Once the battery has been inserted again, the display switches on again.

3.3 Battery

There is a battery cover on the back of the device. The battery compartment contains a lithium polymer battery with 2,200 mAh and a nominal voltage of 7.4 V.

3.4 Stylus

The stylus is located on the bottom of the device.

3.5 Retainer strap

The retaining strap can be unhooked at the top for replacing the battery. To do so, turn the rubber band with the top metal loop by 90 ° and lift.

3.6 Status LED

The status LED is located beneath the "0" button. This LED lights up if the device is switched on or the device is just starting.

3.7 Switching the device on and off

3.7.1 Switching On the device

To switch on the device, press the key "C" as well as the orange "Enter" key and hold them both for at least two seconds. The keys can be released once the Status LED lights up. The device then starts automatically.

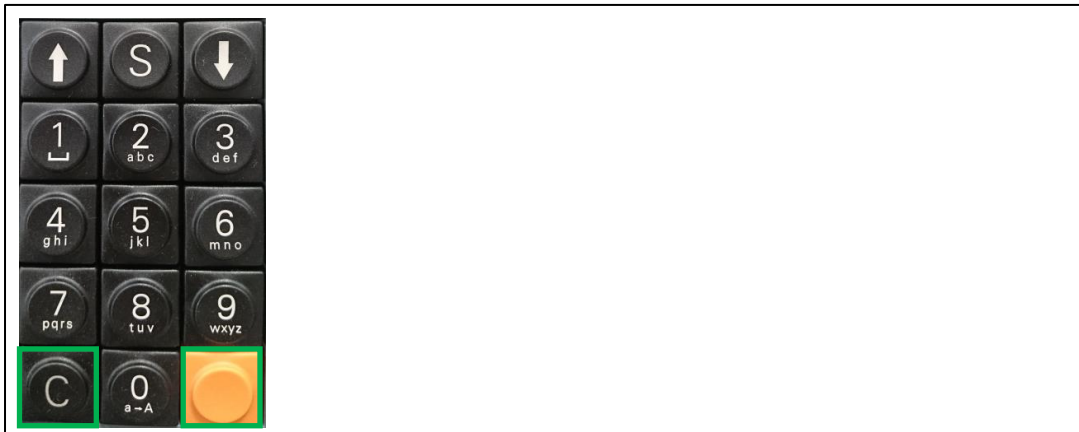After approx. two seconds, the device is ready for operation and the customer application is displayed.

PEPPERL+FUCHS

Figure 3.1   Switching On

3.7.2   Activating Suspend Mode for energy saving

In suspend mode, the operating system and the application running on it are stopped. The display is switched off and consequently becomes dark. Suspend mode can be accessed by simultaneously pressing the "C" button and the "orange enter" button to the right of "0". Upon leaving suspend mode (switching on the device), the application and the operating system starts to run from the same point.

Figure 3.2   Suspend Mode

PEPPERL+FUCHS

3.7.3 Switching Off the device

The device is switched off by pressing the three buttons C, ↓ and "orange enter" right of the "0", whereby the "C" button must first be pressed and held. Then also press and hold the ↓ button. Then also press and hold the orange "enter" button. Press and hold these three buttons for at least 8 seconds.

Figure 3.3   Switching off the device

When the unit is powered up again (Switching On), it boots up from zero and starts automatically the application program.

3.8 The keyboard

The numeric keypad is made up of 15 keys: 0 to 9, Enter, ↑, ↓, S and the C key. The latter is assigned to the Delete function and is only evaluated once the key is released.

The ten function keys F1 - F10 are located directly above. Furthermore, there is a button on both the left and right of the device at the top and they can be used, for example, to trigger the scanner. These keys are not assigned to any function in the current application program.

Key combinations are selected by holding the 'C' key and another key.

With the combination 'C + F5' the touch-keyboard can be faded into the display.

Entering letters using the keyboard is a common feature used for text messaging on mobile phones. Also this device supports this option.

Press the 0 key longer to shift between the alphanumeric and standard, numeric key layout. Briefly press the 0 key to switch between upper and lowercase. The letter you require is selected by repeatedly pressing the appropriate numeric key using the selection box displayed on the screen. The last selected letter is inserted where the cursor is positioned after a given time has elapsed or by pressing another key.

3.9 RFID reader

The RFID reader is available in two different versions. This manual covers both the LF version (125 kHz) and the HF version (13,56 MHz, ISO 15693).

The RFID reader is located on the top of the device, behind the black cover (see Fig. 4). In order to read an RFID tag, hold the device vertically and centrally over the RFID tag.
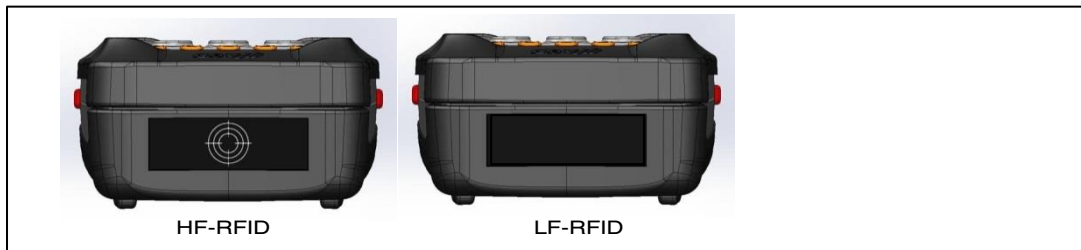

HF-RFID   LF-RFID

Figure 3.4   Location of RFID Reader

3.10 Settings

When you touch the lowermost edge of the display with the stylus, a new menu line appears. Tipping to the Windows-Symbol a choice of directories appears:

Figure 3.5

Clicking on the Windows Start symbol opens a choice of directories

PEPPERL+FUCHS

3.10.1 Setting the time to dim the Display

In the directory Settings open the 'Control Panel'. Click to the 'Display' symbol, then the Display Properties menu appears. In the folder 'Backlight' there is a choice after which time the display is dimmed.

Figure 3.6

3.10.2 Setting the time to activate the Idle- and Suspend Mode

Some icons below, the 'Power' icon can be found. In the Power Properties menu ‚Schemes‘ the time can be set, when the unit should switch to Idle mode.
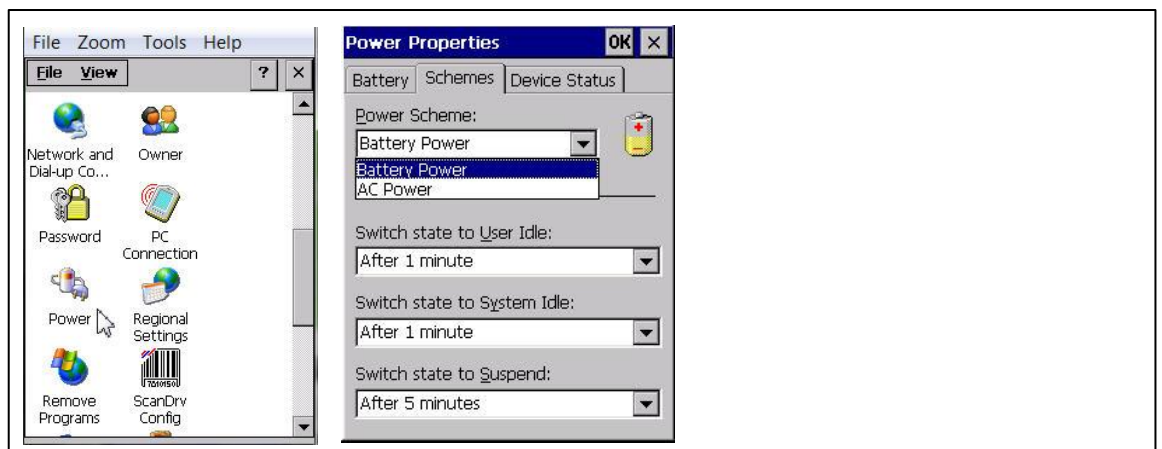

Figure 3.7

PEPPERL+FUCHS

3.10.3 Saving the Settings in the Registry

To store the settings above, they must be saved. In the directory 'Programs' choose the subdirectory ‚Systools'. In the folder ‚Save Registry' choose 'Save Registry' and click the OK button.
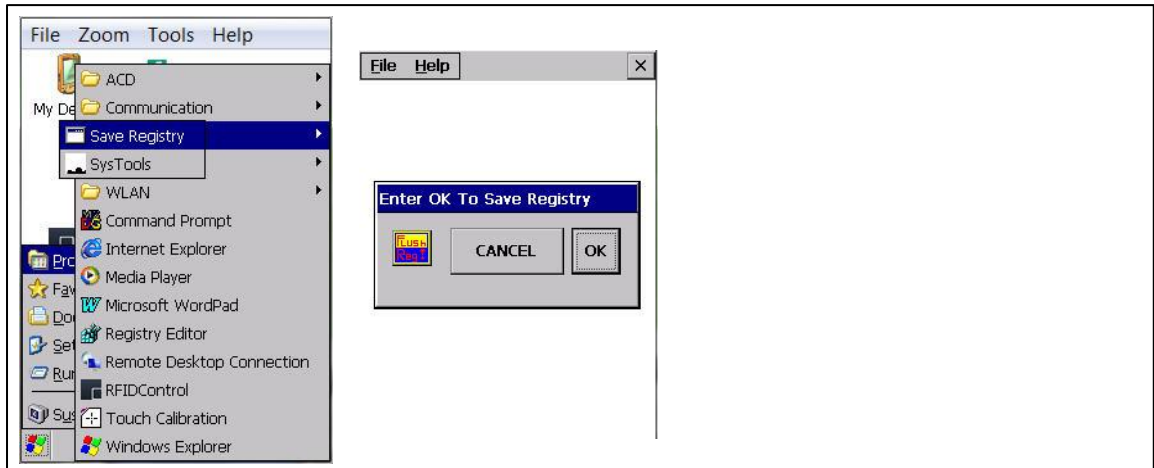

Figure 3.8

PEPPERL+FUCHS

4 Application Program RFIDControl

4.1 Starting the Application Program RFIDControl

After switching the reader ON, the application program RFIDControl is started automatically. If this does not happen or the program has been terminated, it can be restart by double-click onto the RFIDControl icon.

Figure 4.1

4.2 Main Menu

The application program RFIDControl offers the following menues:

- Collect Data   ->   Scanning for tags, storing data
- R/W Tag   ->   Read R/W tags, edit data, write back new data
- Commands   ->   Perform an own list of commands
- Settings   ->   Change settings, e.g. Tagtype, Sound, ..
- Tag Type   ->   Check unknown tags
- Big Data   ->   Read and Write big data volumes
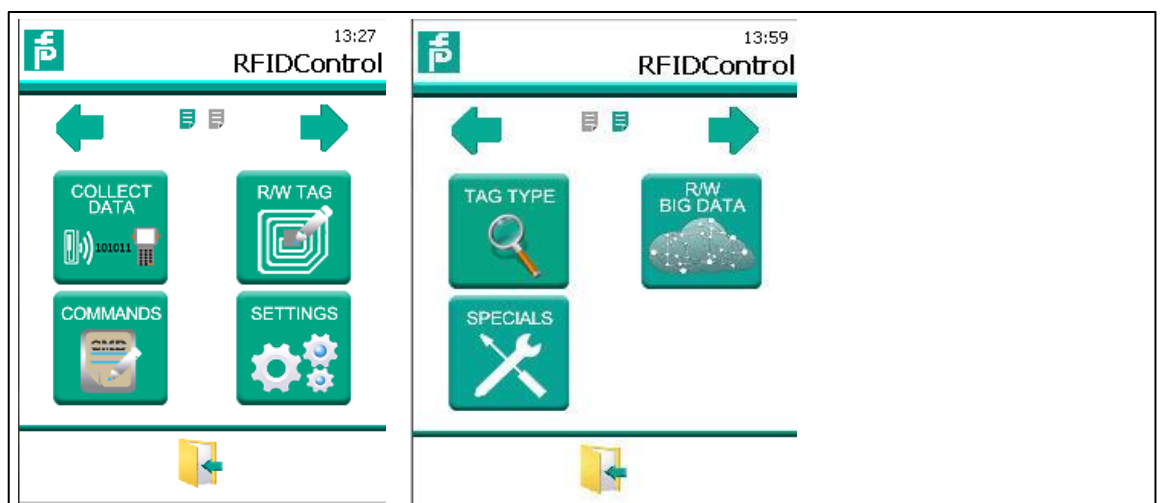- Specials   ->   Use special functions of certain tags

Figure 4.2

PEPPERL+FUCHS

4.2.1 Collect Data

Touching the SCAN – button starts the reader to search for tags. Below in the display the UID (fixcode) of each tag appears, plus the content of the R/W memory (if the option ‚User Memory' has been activated). Additionally a counter value gives an indication, how often this tag has been found.
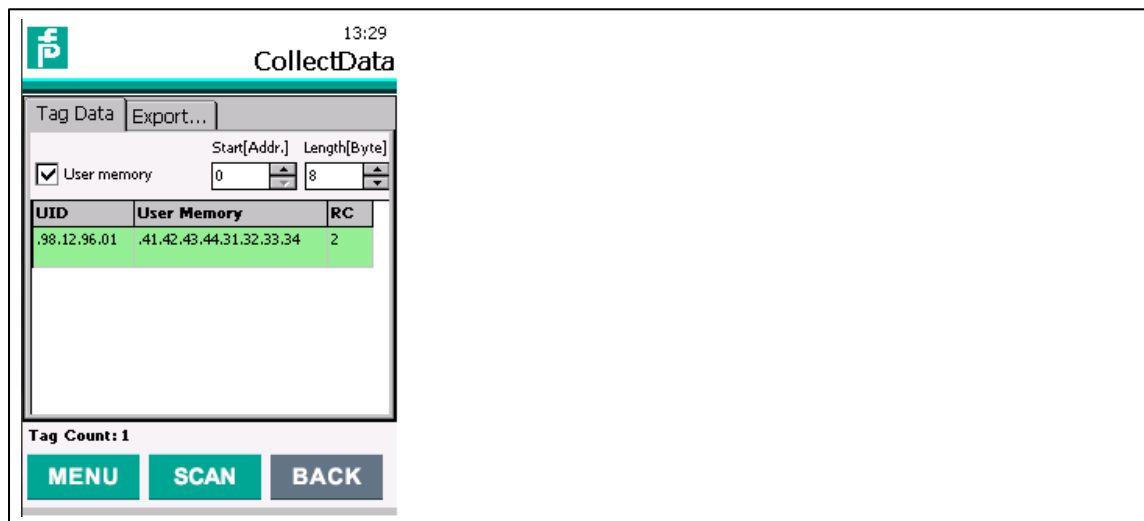

Figure 4.3

With the STOP – button (which appears instead of the Scan – Buttons), the Scan process is terminated.

If you click the SAVE – button in the Export folder, all data scanned in this session (since this certain scan has been started) is stored in the denoted file. The format of the data stored is explained in chapter 4.2.4, see 'Settings – Log'.
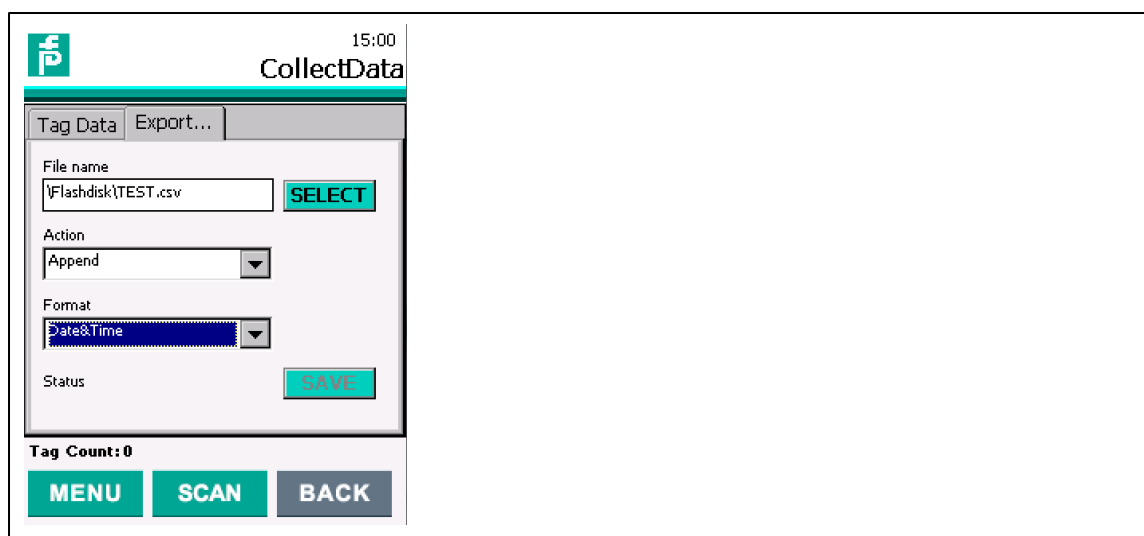

Figure 4.4

PEPPERL+FUCHS

Options for ‚Action':

- Create New file
- Append to existing file
- Replace the file

Options for ‚Format':

- No Timestamp
- Date&Time
- Time Stamp (ms)
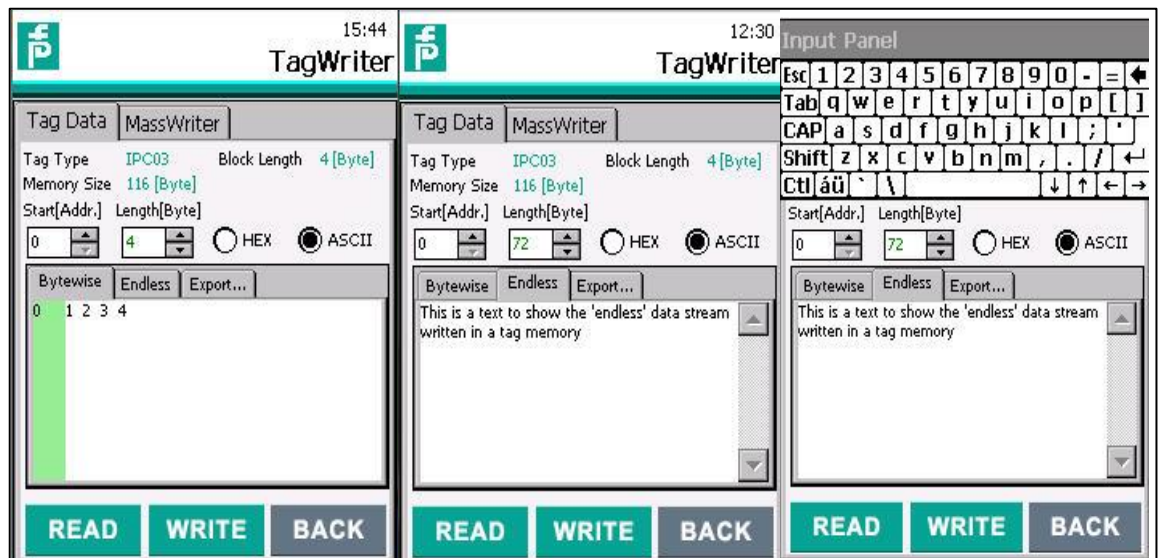
4.2.2 R/W Tags / TagWriter

Figure 4.5

This menu enables the user to read data from a certain tag, edit the data content and write back the new data.

After touching the READ button, the data, which is defined by the Start-Address and the no. of bytes, appears in the display. The User Memory in the tags is formatted in data blocks with a certain length. The access to these data is only possible in complete data blocks. In this example an IPC03 tag with a block size of 4 byte should be read. That's why the no. of bytes in the field ‚Length' are multiples of 4 bytes.

For altering the data, click into the respective line. Then the data can be changed. For writing the new data into the tag, touch the WRITE button.

In the submenu 'Bytewise' the data is displayed one data block per line (left image).
The Submenu 'Endless' offers a more clear arrangement, if e.g. a text stream should be read or written (see middle image).

With the '0' – key of the keyboard the data entry can be switched between numerical data (numbers) or alphanumerical data (characters). For a more convenient data entry the key-combination 'C + F5' fades up the touch-keyboard (see right image).

2017-05

PEPPERL+FUCHS

The folder **MassWrite**r offers the opportunity to write the same data multiple times. The data can be loaded from a data file.

Figure 4.6

Here is the content of an example data file ‚UserExample.txt', which can be selected by touching the LOAD button:

<DataBatch/>
0 0 0 0
1 1 1 1
2 2 2 2
3 3 3 3
<\DataBatch>

<DataBatch/>
4 4 4 4
5 5 5 5
6 6 6 6
7 7 7 7
<\DataBatch>

<DataBatch/>
A A A A B B B B C C C C D D D D
<\DataBatch>

Touching the PICK – button loads the first data set (0000 – 3333) into the display.

By touching the WRITE button this data is written into the tag. Now the next data set (batch) can be loaded by another click to the PICK button.

PEPPERL+FUCHS

4.2.3 Commands

In this menue it is possible to send a command direct to the reader board. The syntax of the command is the same as for standard RFID readers with serial interface RS485, like IQT1-..-R4-V1 or IPT1-FP. The same commands are also described in the manuals for our evaluation unit with serial interface, e.g. IC-KP2-1HRX-2V1, there is just an additional character to address the readhead channel.
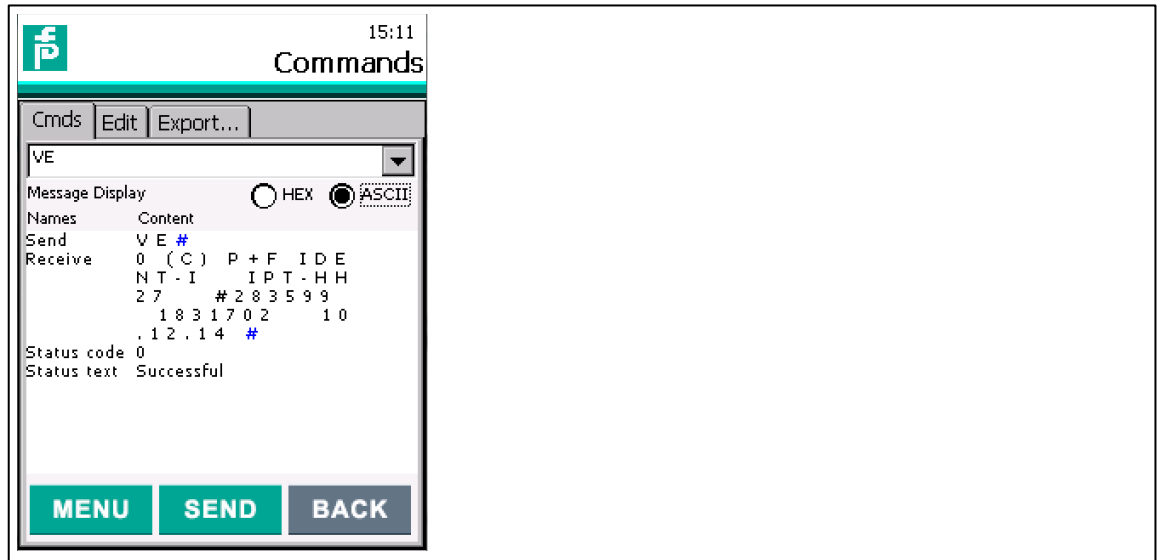

Figure 4.7

In the folder **Cmd** it is possible to select and run an already existing command.
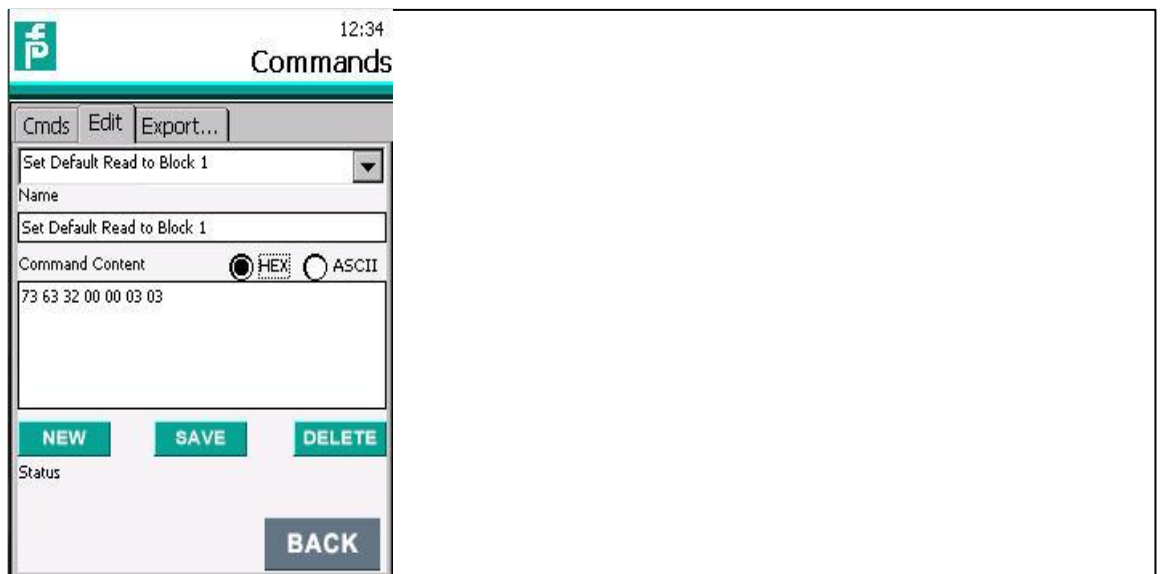

Figure 4.8

In the folder **Edit** it is possible to generate, edit or delete a command.

In this example an IPC03 tag is set into the so called 'Default Read Mode'. Detailed information about this and other commands can be found in the manual of the IdentControl device, IC-KP2-1HRX-2V1.

In the folder **Export** the communication of this session can be logged to a data file.
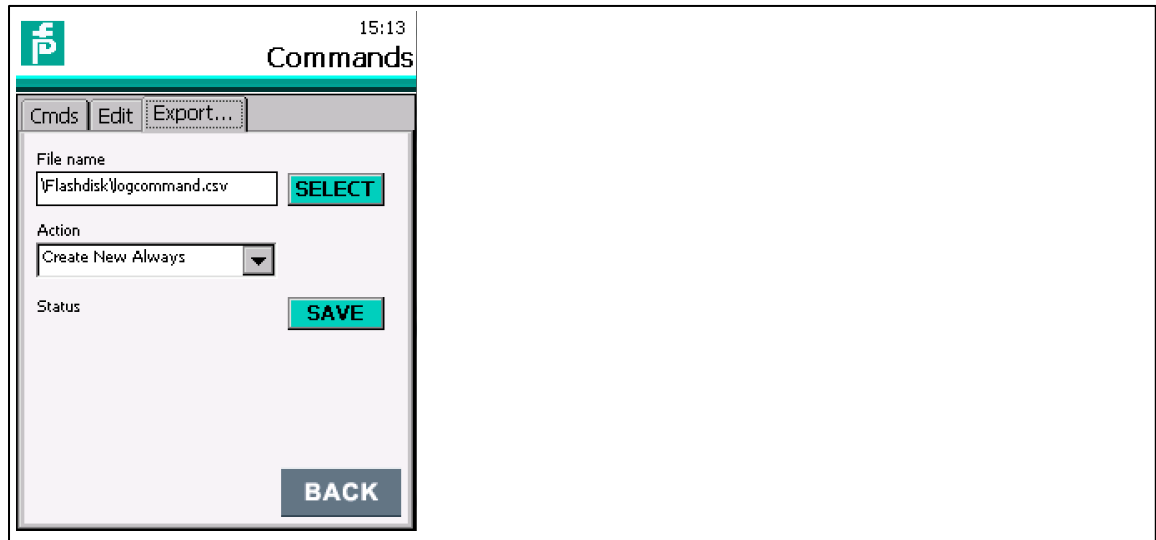

Figure 4.9

In the ‚File name' box it is possible to define the desired directory and file name.

Options for ‚Log File Action':

- ■ Create New file
- ■ Append to existing file
- ■ Replace the file

This example shows the content of the file ‚logcommand.csv' after sending a VE – command (request for the version of the reader board inside the handheld unit):

Send:
  (HEX) 56 45 23 0D
  (ASCII) V E #

PEPPERL+FUCHS

Receive:

(HEX) 20 28 43 29 20 50 2B 46 20 49 44 45 4E 54 2D 49 20 0D 0A 20 49 50 54 2D 48 48 32 37 20 0D 0A 20 23 32 38 33 35 39 39 20 0D 0A 20 31 38 33 31 37 30 32 20 0D 0A 20 31 30 2E 31 32 2E 31 34 20 23 0D

(ASCII) (C) P + F I D E N T - I

I P T - H H 2 7

2 8 3 5 9 9

1 8 3 1 7 0 2

1 0 . 1 2 . 1 4 #

Status code:

(HEX) 30
(ASCII) 0

Status text:

Successful

4.2.4 Settings

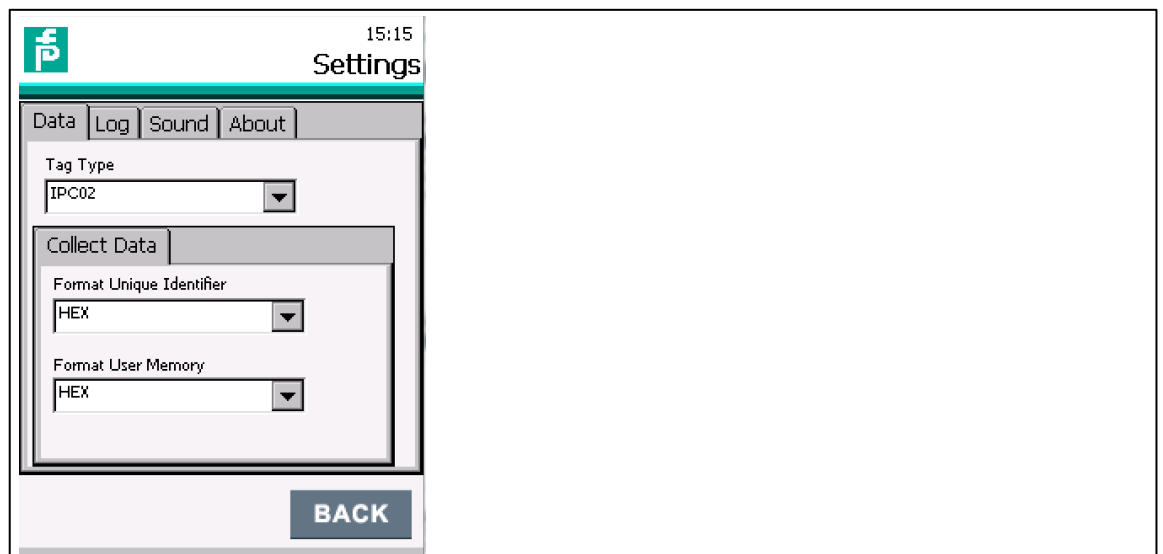In the folder Data there is a choice of tag types, which are supported by this Handheld device.

Figure 4.10

Tag Type:

These tags are supported by the IPT-HH27:

P+F Name	Chip-Typ and Manufacturer	Fixcode Length	Size of User - Memory (in Byte)	Blocksize of Memory (in Byte)
IPC02	EM4102	5	-	4
IPC03	EM4450	4	116	4
IPC11	Q5, Sokymat	-	5	4

PEPPERL+FUCHS

These tags are supported by the IQT1-HH27:

P+F Name	Chip-Typ and Manufacturer	Fixcode Length (in Byte)	Size of User - Memory (in Byte)	Blocksize of Memory (in Byte)
IQC21	I-Code SLI(X), NXP	8	112	4
IQC22	Tag-It HF-I Plus, Texas Instruments	8	256	4
IQC23	my-d SRF55V02P, Infineon	8	224	4
IQC24	my-d SRF55V10P, Infineon	8	992	4
IQC27	EM4135, EM Microelectronic Marin	8	288	4
IQC31	Tag-It HF-I Standard Texas Instruments	8	32	4
IQC32	Tag-It HF-I Pro, Texas Instruments	8	32	4
IQC33	MB89R118, Fujitsu	8	2000	8
IQC34	MB89R119, Fujitsu	8	232	4
IQC35	I-Code SLI-S, NXP	8	256	4
IQC36	I-Code SLI-L, NXP	8	32	4
IQC37	MB89R112, Fujitsu	8	8192	32

The format of the UID and User Memory can be indicated both in HEX or ASCII.

In the folder **LOG** can be defined, if and where a log-file should be stored. If this option is activated, every session of the SCAN menu will be stored in this file automatically.
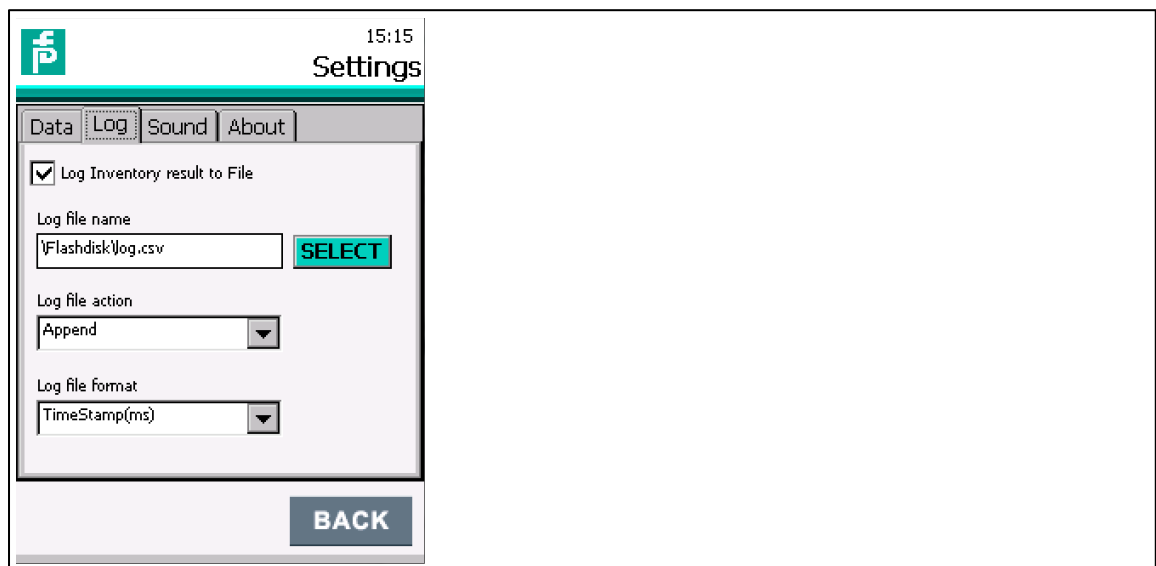

Figure 4.11

In the ‚Log file name' box it is possible to define the desired directory and file name.

Options for ‚Log file action':

- Create New file
- Append to existing file
- Replace the file

PEPPERL+FUCHS

PEPPERL+FUCHS

Options for ‚Log file format':

- No Timestamp
- Date&Time
- Time Stamp (ms)

Content of the file log.csv after the scanning of the UID of several tags, including a time stamp in ms

Save Time:,2017/01/05 13:50:01

No.	Date&Time	TimeStamp (ms)	UID	UserMemory	Read Count
1		0	.04.12.89.09.FF		2
2		10821	.04.12.89.02.27		2
3		14206	.04.12.AD.FB.E3		1
4		18084	.04.12.AE.08.51		1
5		20884	.04.12.AD.FD.7F		1
6		55575	.01.05.FA.1D.15		2
7		71859	.04.10.7D.A7.50		2

Content of the file log.csv after scanning of R/W tags, time stamp 'Date&Time', data format HEX

Save Time:,2017/02/02 13:03:06

No.	Date&Time	Time Stamp	UID	UserMemory	Read Count
1	2017/02/02 13:01:00:108		.07.4C.C4.02	.34.34.34.34.35.35.35.35	2
2	2017/02/02 13:01:07:397		.42.1F.C4.02	.41.42.43.44.34.35.36.38	1

The folder Sound offers the selection, which event should give an accoustic signal and offers also a choice of different melodies and the volume levels.
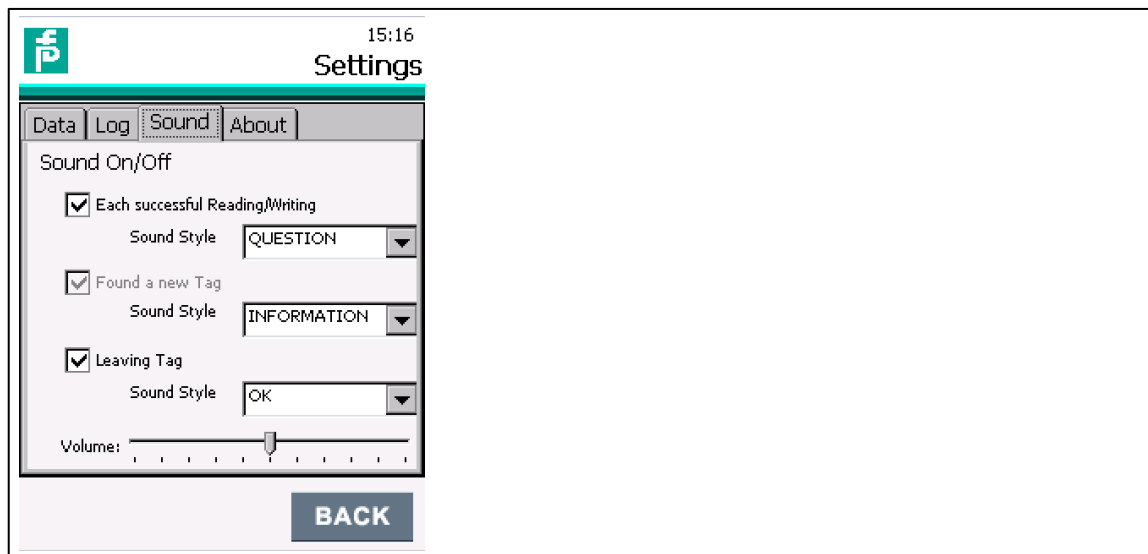
2017-05

PEPPERL+FUCHS

Figure 4.2

The folder **About** shows the Firmware version (date) of the integrated reader-module and also the version number of this application program.
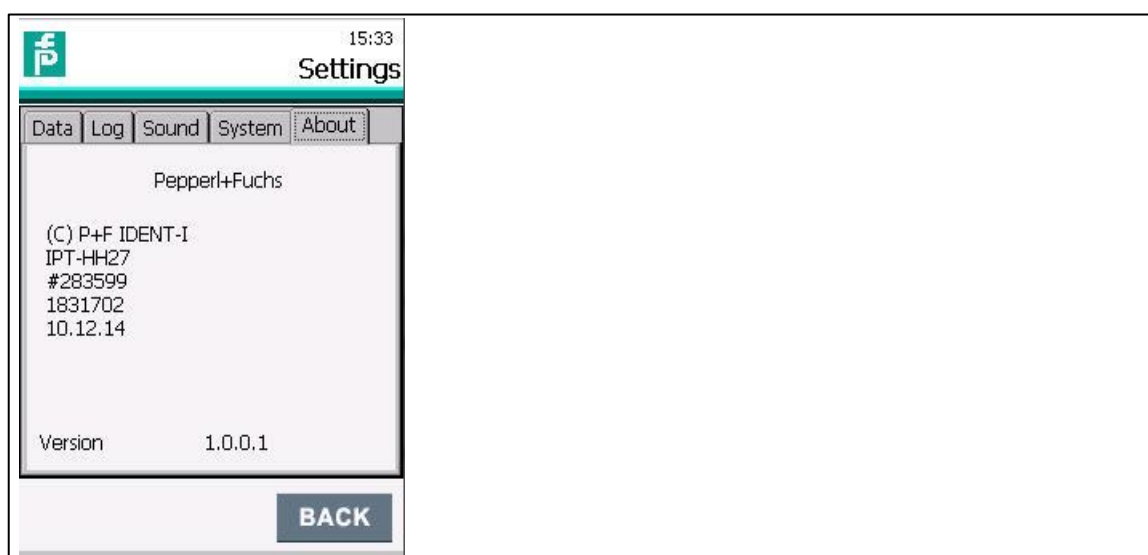

Figure 4.3

4.2.5   Tag Type

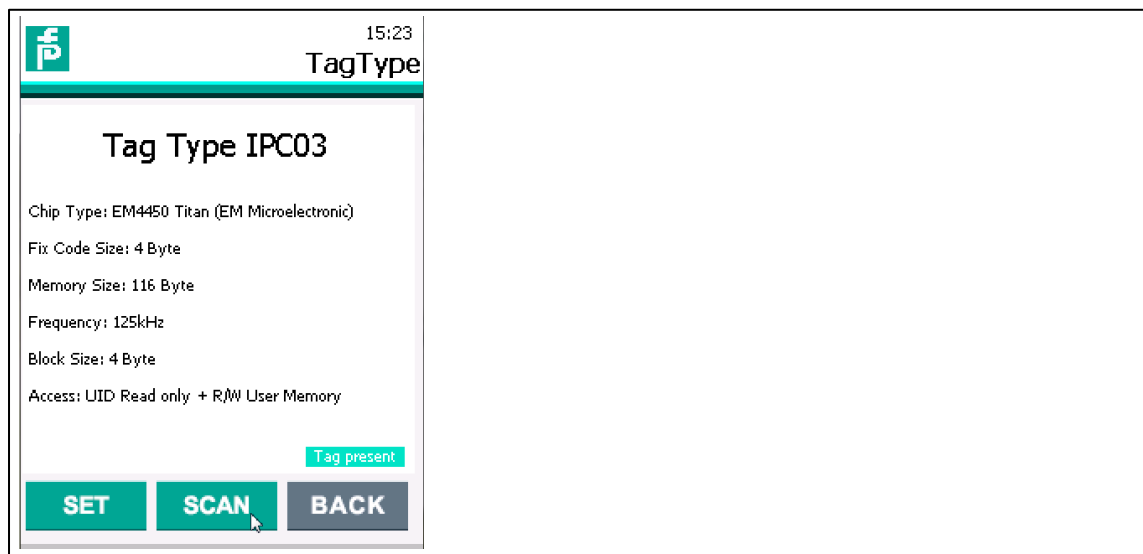In this menu it is possible to check an unknown tag.

Figure 4.14

Clicking on the **SCAN** button starts the reading. If a tag is recognized, the type of this chip is displayed. With the **SET** button this chip can be defined as tagtype for further R/W tasks with this reader.

4.2.6   Big Data – Reading and Writing of high data volumes

In this menu the reading and writing is optimized for tags with high data volumes:
IQC33 (2.000 byte) and IQC37 (8192 byte).

Figure 4.15

PEPPERL+FUCHS
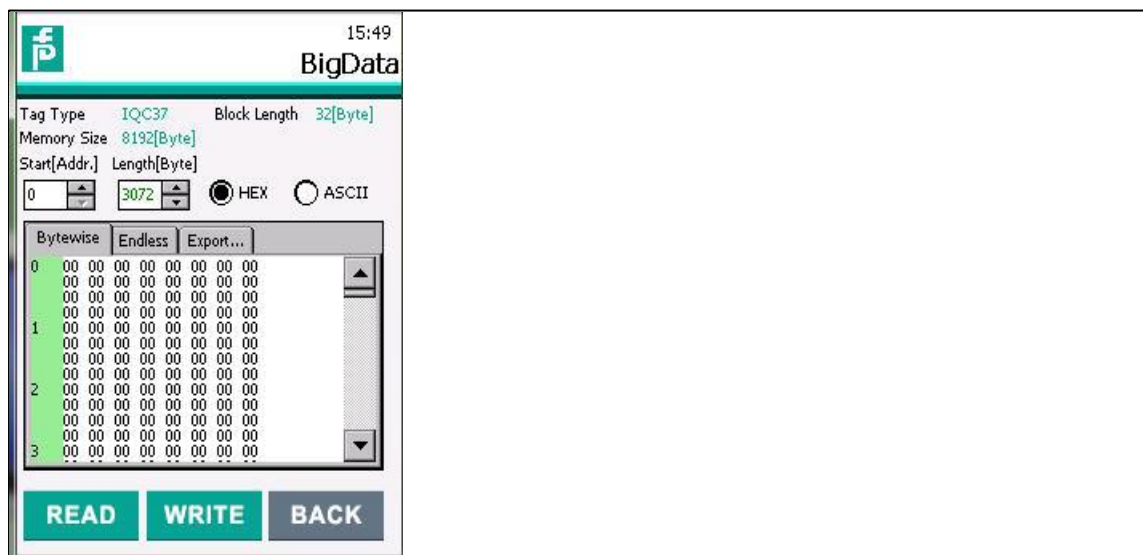
4.2.7 Special Functions – Special Options with certain chips

At the moment this menu is only active for the IPT-HH27, if Tagtype 11 is selected.
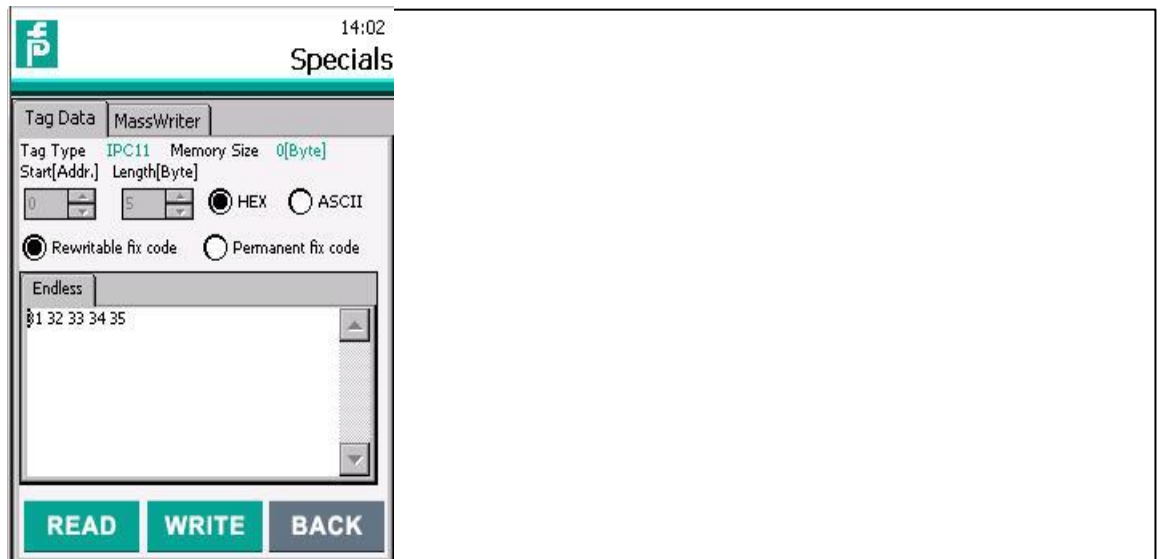
Figure 4.16

Here the programmable 5 byte fixcode can be entered in HEX or ASCII format.
After the WRITE process this code can either be 'Rewritable' again – or it is locked forever 'Permanent Fix Code'.

4.3 Outlook to new functions

The functionality of this handheld device will successively be improved.

In the next versions of the application program there will be some special commands for specific features of the supported tags as well as transferring data via the on-board Bluetooth and WLAN module.

P+F provides the latest version of the firmware on our homepage for free download.

PEPPERL+FUCHS

5 Interfaces

5.1 Connecting the device via the USB interface of the docking station

5.1.1 Connection to a PC via Windows Mobile

On the backside of the charging station, available at Pepperl+Fuchs as IQZ-HH27-Charger1, there are various connectors for the power supply and different interfaces. An USB cable is included to the parts package of the docking station.
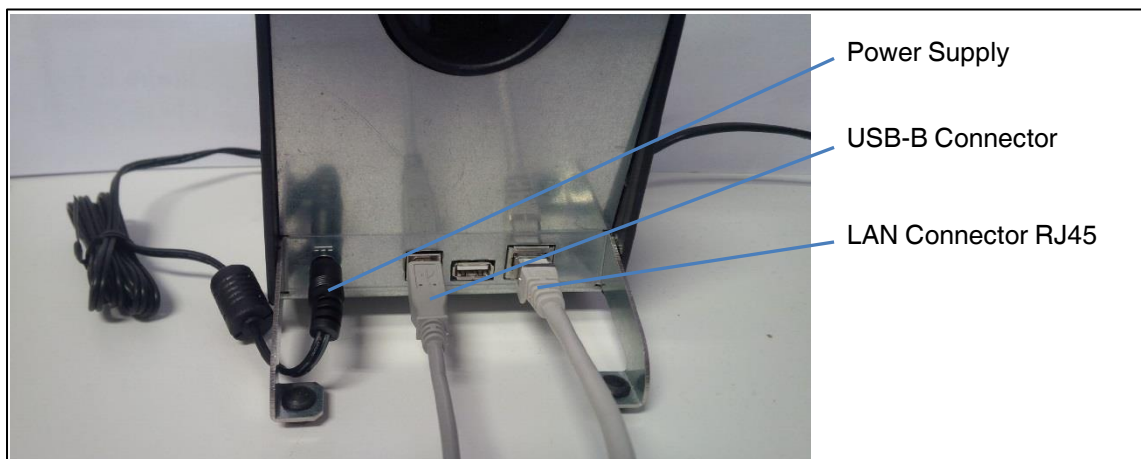

Power Supply

USB-B Connector

LAN Connector RJ45

Figure 5.1

To connect the handheld reader to the PC the Windows Mobile Device Center is required. This program can be downloaded free of charge from the Microsoft homepage. The version depends on the PC configuration (32 bit or 64 bit) and the Windows version.

When an already active handheld reader is put into the charging cradle, or the device in the charger is switched on, Windows Mobile starts automatically and the link to the PC is stablished.

PEPPERL+FUCHS

Figure 5.2

Now the unit appears in the Windows directory Computer, under the name M260SE…
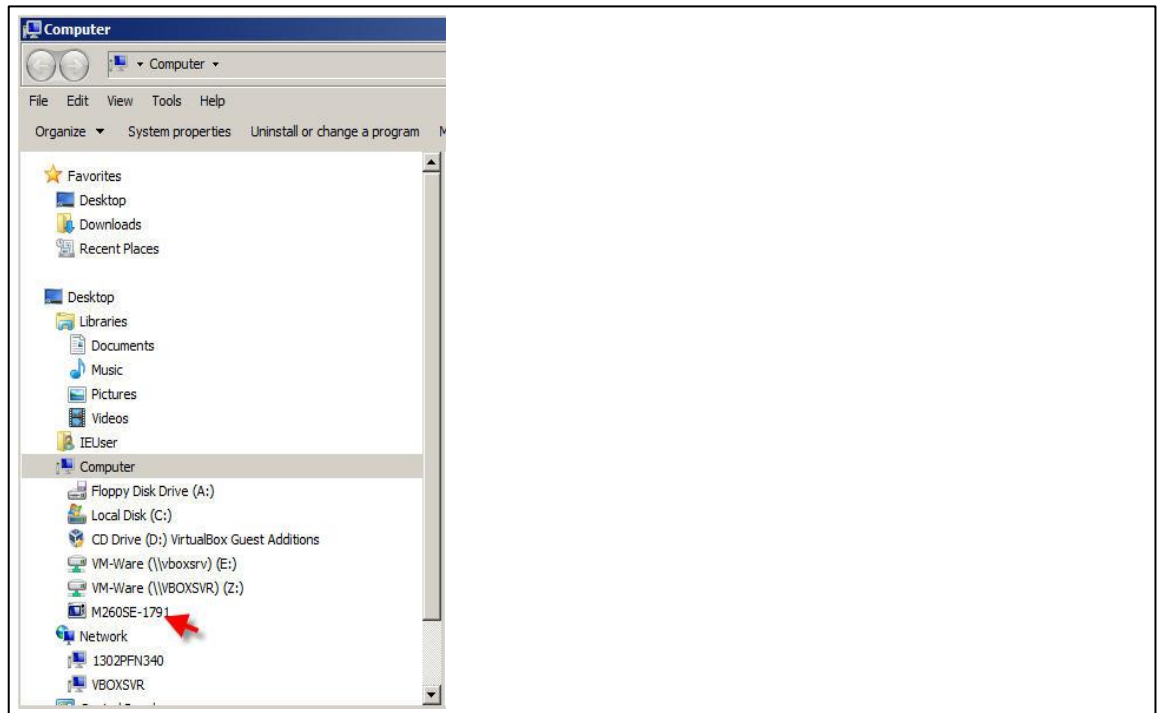

Figure 5.3

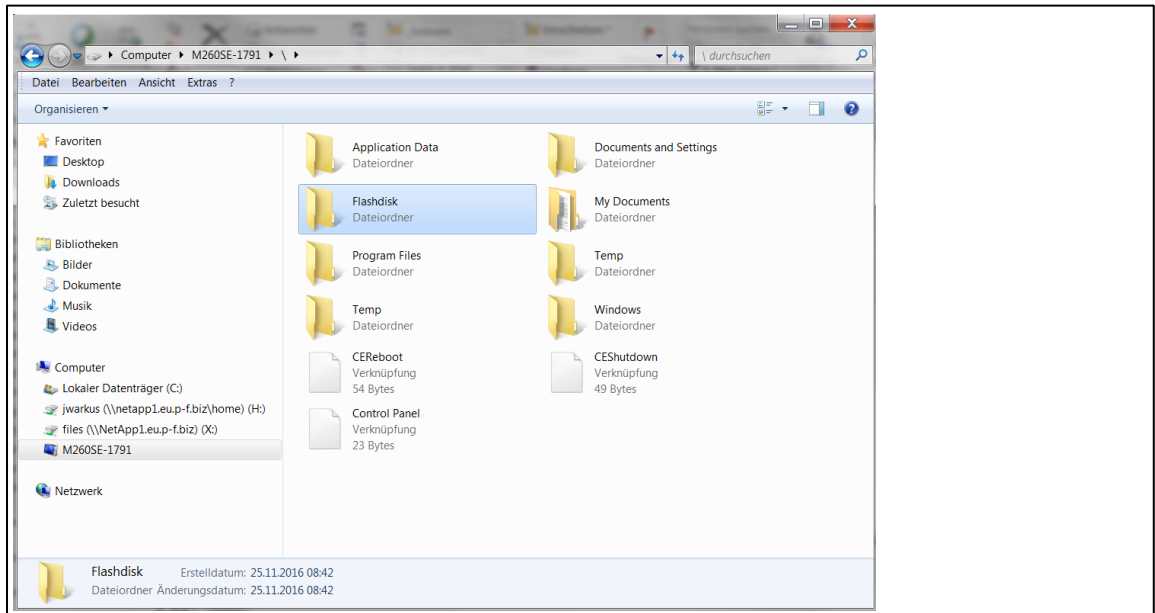**PEPPERL+FUCHS**

5.2 Exchange of data files

Figure 5.4

The directory 'Flashdisk' on the mobile device contains amongst other files also the log-files.

5.3 Update of application software RFIDControl

To install a new version of the application program, the file 'RFIDControlxxxx.cab' must be copied into the directory Flashdisk via the PC.
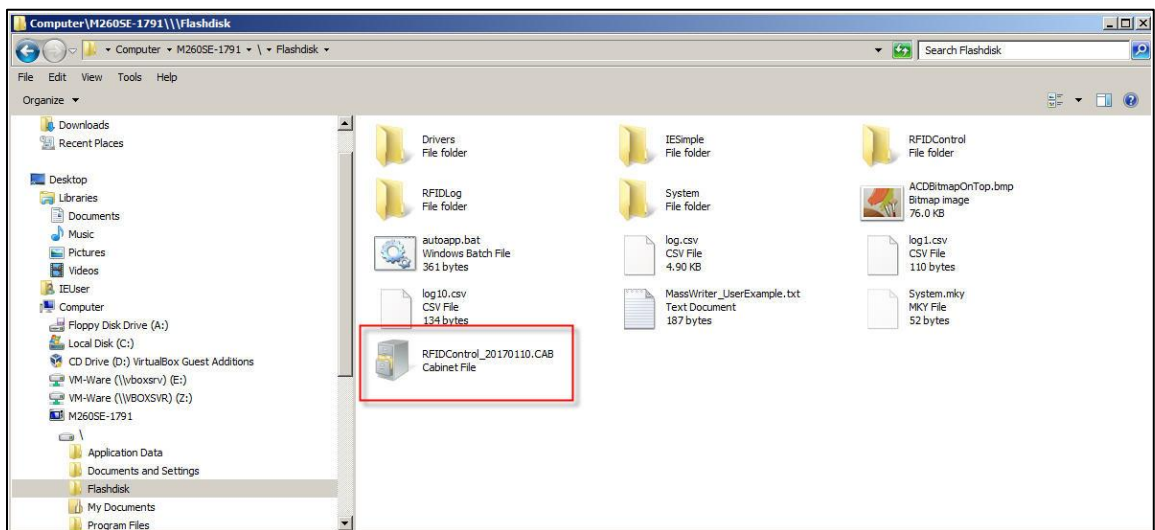

Figure 5.5

PEPPERL+FUCHS

Then the new version needs to be installed. Therefore this file must be started on the device (not via the PC) with a double-click (see left image). If the soft-keyboard appears now, it can be fades out by pressing 'C + F5' keys. Now accept the installation path (right image).
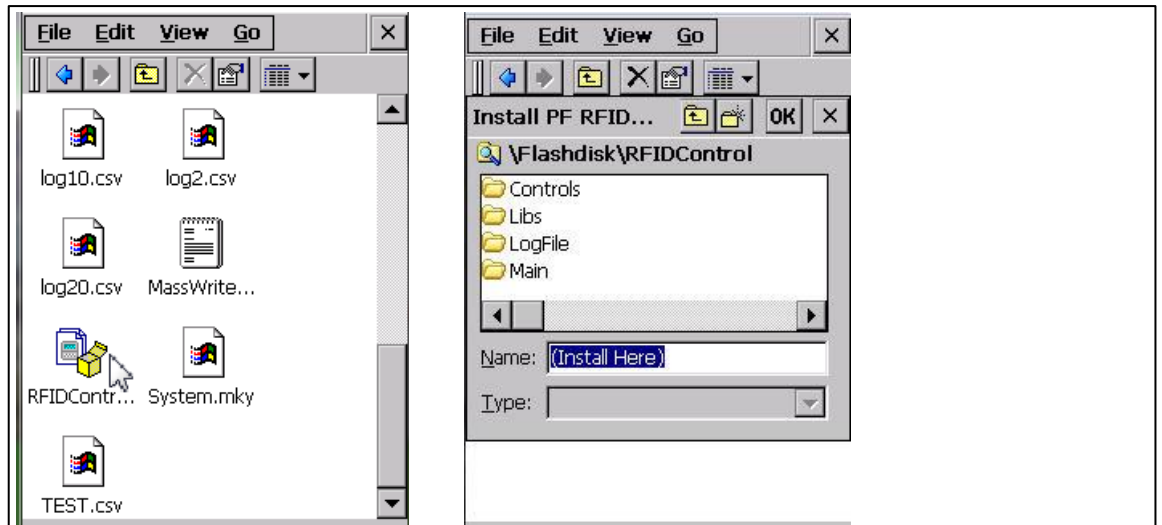

Figure 5.6

The program extracts itself automatically, installs the files in the corresponding subdirectories and deletes itself after the installation is finished.

After a restart of the application program the system is ready to start with the new version.

FACTORY AUTOMATION –
SENSING YOUR NEEDS

www.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

DOCT5632A
04/2017