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SIMATIC Ident

RFID Systems

SIMATIC RF310M

Operating Instructions

Ausgabe

10/2014

Answers for industry.

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SIMATIC Ident

RFID Systems SIMATIC RF310M Mobile Reader




Operating Instructions

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

Purpose of this document

These operating instructions contain information required for commissioning and using the SIMATIC RF310M device.

The documentation is intended for commissioning engineers and machine operators who commission the application themselves, and it describes the functions of the "SIMATIC RF-MANAGER RF310M" software and the "SIMATIC RF310M" software.

Scope of validity of this document

This documentation is valid for the SIMATIC RF310M mobile reader and describes the delivery status as of August 2013.

Further information

These instructions are a supplement to the User Manual of the basic device WORKABOUT PRO3.

The documentation "Workabout Pro3 Hand-Held Computer C Version Quick Start Guide", "WORKABOUT PRO Hand-Held Computer Regulatory & Warranty Guide", "Microsoft Windows CE End User License Agreement", "PSION SOFTWARE END USER LICENSE AGREEMENT" and "Information on Commissioning" ships with the device.

Please note the information they contain.

You will find further information in the User Manual WORKABOUT PRO3 or in the documentation "WORKABOUT PRO Desktop Docking Station Quick Start Guide" and "WORKABOUT PRO Desktop Docking Station Guide".

Conventions

The following terms/abbreviations are used synonymously in this document:

- tag, transponder, mobile data memory (MDS), data carrier
- Mobile reader, reader, handheld terminal, handheld; write/read device


History

Previous editions of these operating instructions:


Edition	Note
07/2007	First edition
12/2009	<ul style="list-style-type: none">• Second generation (G2) of the basic device from PSION (WA PRO G2)• Expansion by ISO functionalities• Expansion by SIMATIC RF-MANAGER RF310M software• New tag types
02/2011	Innovated basic unit
06/2011	Revision of the Operating Instructions
08/2013	Revision and expansion with the addition of the reader variant with an external antenna
10/2013	Revision of the Operating Instructions

Safety information


Alterations to the device


 CAUTION
Alterations to the devices are not permitted. Failure to observe this requirement shall constitute a revocation of the radio equipment approval, CE approval and warranty. Therefore do not make any alterations to the device.

Repairs

 WARNING
Personal injury or equipment damage due to unauthorized opening or repairing Unauthorized opening or repairing of the device can lead to personal injury or equipment damage. Therefore do not carry out repairs yourself. Repairs may only be carried out by authorized qualified personnel at the manufacturer's site. See Chapter Repair (Page 97).

Battery

 WARNING
There is the risk of an explosion if the battery is not replaced as directed. Only replace by an identical battery or an equivalent type recommended by Psion.

 WARNING
Risk of explosion and release of harmful substances from batteries Therefore, do not throw lithium batteries into an open fire, do not solder or open the cell body, do not short-circuit or reverse polarity, do not heat up above 100 °C, dispose of in accordance with regulations and protect against direct exposure to sunlight, moisture and condensation.

NOTICE

Information in the PSION manual concerning the use of other batteries

When using other batteries, please note the information in the PSION User Manual!
Unsuitable batteries can result in material damage.

Charging station

 **WARNING**

Explosion hazard when using a different charging station.

The danger of an explosion and severe personal injury exists if you do not use the original charging station. Therefore only use the original charging station from PSION.

Proper disposal and recycling

The HMI devices described in these Operating Instructions can be recycled due to the low levels of pollutants. Contact a certified disposal service company for environmentally sound recycling and disposal of your old devices.

When disposing of batteries, observe the locally applicable legal regulations.

Description

SIMATIC RF310M expands the SIMATIC RF300 identification system by a powerful mobile reader for applications in the areas of production and service. In addition, it is an indispensable aid for startup and testing.

3.1 Characteristics and field of application

Characteristics of the SIMATIC RF310M

The SIMATIC RF310M mobile reader comprises the following components:

- A powerful and rugged basic device for flexible use:

Handheld PSION WORKABOUT PRO 3

- An integral read/write unit

The basic device is a global standard among mobile readers.

The RFID read/write unit of SIMATIC RF300 is integrated in the PSION basic device. Communication with the basic device is handled via the internal serial scanner port that also supplies the power for the RFID unit.

The device is easy to operate thanks to its user-friendly, ergonomic design and the integral SIMATIC RF310M software.

Based on communications standards, the device guarantees simple integration into existing or planned infrastructure.

Suitable RFID systems

The SIMATIC RF310M device is suitable for the SIMATIC RF300 RFID system as well as for processing special tags of the MOBY D system.

RF-MANAGER

The SIMATIC RF310M mobile reader can exchange data with RF-MANAGER over a WLAN connection. This means that RFID data that has been read locally is also available for evaluation in enterprise systems.

Suitable tag types

You can process the following tags using the SIMATIC RF310M:

- All RF300 tags
- All ISO15693-compatible MOBY D tags, for example MDS D100, D124, D324.

Note

Restriction

The transponders MDS D117, D127, D421 and D422 can only be processed with the handheld with an external antenna (order number 6GT2803-1AC10).

Only transponders MDS D139 and D160 with order number "6GT2600-0AA10" or "6GT2600-0AB10" are supported.

It is not possible to process data memories of other RFID systems.

RF-MANAGER and RF310M software

The RF-MANAGER and RF310M software is stored in non-volatile memory on an integrated flash disk and permits user-friendly, distributed reading and writing of all RF300/ISO data memories.

Field of application of the device

The reader can also be used in harsh environments. The reader is extremely rugged and protected against spray water. The backlit display is easy to read even under unfavorable lighting conditions.


3.2 Overview of functions

You can perform the following functions with the SIMATIC RF310M device:

- Reading the data from the tag (data memory)
- Writing the data to the tag
- Deleting the entire data memory (overwriting it with a filler)
- Reading and displaying the ID number of the tag
- Reading the tag status
- Reading the reader status
- Representing and editing of data in decimal, hexadecimal and ASCII formats
- Activating or deactivating password protection for all write functions and for terminating the program
- Selecting German or English as the menu language (switchable)
- Saving of the read-in RF300/ISO tag data to files. The reader has approximately 900 MB available for this purpose.

3.3 Design

The SIMATIC RF310M reader consists of a handheld computer as the basic device and an integral read/write head (①) for tag processing. The charging and docking station (⑥) is available as an accessory. It has a USB port for data exchange with the PC.

Design of the SIMATIC RF310M	Item	Description
	①	Integrated read/write head
	②	Holder for input pen
	③	Charge indicator
	④	USB connection
	⑤	Power supply unit
	⑥	Charging station
	⑦	On/off button
	⑧	ASCII keypad
	⑨	Numeric keys
	⑩	Microphone
	⑪	Display
	⑫	Loudspeaker

3.4 Antenna and antenna field

Read head with integrated antenna (6GT2803-1AC00)

The antenna is housed in the read head ① under a cover.



Figure 3-1 Read head with integral antenna

Direction of propagation of the radio frequency field

The read/write area for transponders is above and below the front part of the housing. Transponders cannot be read or written from the end.

The figure below shows the direction of propagation of the RF field of the antenna.



Figure 3-2 Propagation of the RF field

Read head with the option of connecting an external antenna (6GT2803-1AC10)

The external antenna is connected via the antenna connector ② on the read head ①.



Figure 3-3 Read head with the option of connecting an external antenna

The following antennas can be connected to the RF310M reader with integrated RFID write/read unit and external antenna connector using an antenna connecting cable:

- ANT 8
- ANT 12
- ANT 18
- ANT 30

You will find detailed information on the antennas and the write/read ranges of the antennas in the RF300 system manual.



Description

3.4 Antenna and antenna field

Power supply

4.1 Inserting the battery


The mobile reader's battery is located on the rear of the unit.

Steps for inserting the battery	
1.	Turn the screws on the rear of the device in the direction of the arrow and lift the cover at the side where the screws are: 
2.	Hold the battery at an angle when inserting so that the side of the battery with the direction arrow is inserted into the battery compartment first (see the depiction of the arrow). 

4.2 Charging the device

Complete charging of an empty battery takes approximately 5 hours.

Starting the charging operation

 WARNING
Explosion hazard when using a different charging station. Use only the original charging station from PSION. Use of another charging station can result in explosions and serious personal injury.

Charging is started as soon as you insert the PSION Workabout Pro into the charging station.

Detecting the level of charge

You can check the charge condition via the charge indicator (LED) on the reader:

Table 4- 1 Status LED

LED color	LED status	Significance
Green	Flashing	Charging in progress. Battery charge is less than 80%
	Flashes slowly	Charging in progress. Battery charge exceeds 80%
	Rapid flashing	Battery temperature is higher than 45 °C. Charging not in progress.
	Permanently lit	Battery is fully charged.
Red	Permanently lit	Charging not in progress. Battery fault!

4.3 The backup battery

The backup battery in the unit PSION Workabout Pro is used for retaining the application data when the main batteries are uncharged. It is integrated in the device and cannot be replaced.

Please note that a backup battery (in the case of an empty or removed main battery) can only retain data in the RAM for a few minutes.

Commissioning

5.1 Scope of supply

The scope of supply of the SIMATIC RF310M comprises the following components.

- **SIMATIC RF310M mobile reader** with integrated RFID read/write unit for RF300 and ISO15693-compatible tags
- **Documentation**
in the directory "Flash Disk\Documents\Deutsch" or "Documents\English":
 - the operating instructions "BA_SIMATIC-RF310M_x"
 - the function manual "MobileReader_Function_Manual.pdf"
 - the operating instructions of the PSION "WORKABOUT PRO3 User Manual.pdf"
- **Driver and software**
in the directory "Flash Disk\Support":
 - the RFID software interface API
 - the USB driver

[see section Data transfer between the PC and reader (Page 88), Requirements, for the driver installation procedure during initial commissioning.]

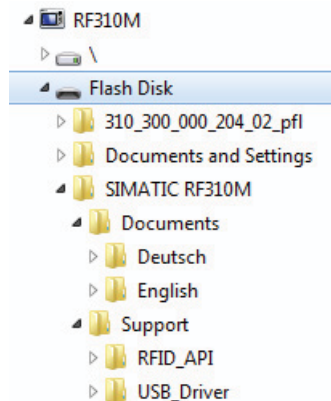


Figure 5-1 "Flash Disk" directory

Note

Information on accessing the directory "Flash Disk"

See section Data transfer between the PC and reader (Page 88).

5.2 Switching the device on and off

Requirement for commissioning

- The mobile SIMATIC RF310M reader is mounted
- The device battery is charged and inserted in the device (see sections Charging the device (Page 20) and Inserting the battery (Page 19)).

Note

Before switching the device on for the first time, you must charge the reader in the charging station for approximately 5 hours.

Switching the device on/off

To switch the reader on or off, press and hold the ON/OFF button for at least one second.



Figure 5-2 ON/OFF button

Note

After switching on, the first startup takes approximately 1 minute.

Automatic shutdown of the device

The device shuts down automatically if no key is pressed for 3 minutes. After switching on again, the reader continues to operate with the same interface it was using before it was manually or automatically switched off. See section The automatic power-saving function (Page 92).

5.3 Recommendations for first commissioning

We recommend the following steps for first commissioning:

1. Creating a back-up copy
2. Changing the password for the operating system
3. Implementing other operating system settings (e.g. WLAN)
4. Performing a back-up

The steps are explained in more detail in the following chapters.

5.3.1 Creating a back-up copy

Create a backup copy so that you can restore the saved status of the device when necessary.

Requirement

The reader is connected to the PC.

Procedure

Copy all the data from the directory "Flash Disk" to your PC. See also section Data transfer between the PC and reader (Page 88).

Note

Do not delete files with the extension ".PFL"

Files with the extension ".PFL" in the "Flash Disk" directory are used to restore the status that existed at the time of the last back-up and must therefore not be modified or deleted. If the files with the ending ".PFL" are damaged or lost, the original status of the device can only be restored at the factory.

To restore a backup, replace all the data on the device with your backup copy and then run a system reset.

5.3.2 Changing the password for the operating system

Assign a password to protect the system from unauthorized access.

Prerequisite

The operating mode must be set to "Supervisor". See Chapter Operating modes (Page 24)

Procedure for changing the password

To change the password of the operating system, select "Start > Security". Enter the previous password. The password on delivery is "**123456**".

You can assign a new password using the button "Set Password".

5.3.3 Performing a back-up

Set the operating mode to "Supervisor". See Chapter Operating modes (Page 24)

Select "Start > Settings > Control Panel > Total Recall".

1. Select the "Create Profile" button.
2. Select "Auto Restore" and then confirm with the "-->" button.
3. Select "Default Backup" and confirm this with the "Create Profile" button.

Reaction: The backup is started. On completion, a message window appears with information about the success of the back-up.

4. Click "Finished" to return to the application.

All changes, e.g. a new password for the operating system, are now stored in the back-up secure against power failure.

5.4 Basic settings in the operating system

5.4.1 Operating modes

Operating modes

The SIMATIC RF310M device has two operating modes:

1. "Supervisor mode"

Configuration and settings for the SIMATIC RF310M reader.

2. "User mode"

Preset mode. The user can only use the installed service and test applications. The start menu functionality is restricted.

Changing the operating mode

You can change the operating mode in the "Security Level" settings. "Start > Security" is used for changeover:

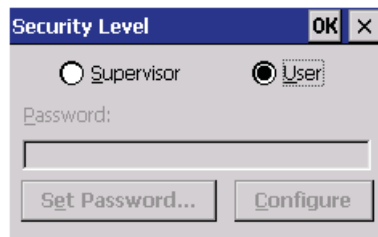


Figure 5-3 Operating mode

Changeover to "Supervisor Mode" is password-protected. On delivery, this password is set to "123456" and should be changed the first time it is used for security reasons.

5.4.2 Adjusting the acoustic signal volume

The tag functions trigger an acoustic signal indicating whether the operations were successful or were terminated with an error. You can switch these acoustic acknowledgements/signals on and off and you can regulate their volume.

Adjusting the volume of the acoustic signals

Press the blue labeled <FN> button in each case to regulate the volume of the acoustic signals in steps using the "Plus" button (louder) or the "Minus" button (quieter).



Figure 5-4 Keys for regulating the volume

Specific setting of the acoustic signals

In "Supervisor" mode, select "Start > Settings > Control Panel > Volume & Sounds".

On the "Volume" tab, you can regulate the volume between "Soft" and "Loud" using the bar.

You can also permit or deactivate acoustic signals for different messages by activating the relevant checkboxes.

5.4.3 Set the backlighting of the screen

To alter the brightness of the display, select "Start > Settings > Control Panel > Display > Backlight" in "Supervisor" mode.

Operation

6.1 The keypad

6.1.1 Key functions

Table 6- 1 Key functions

Overview of the keypad	Item	Key label	Function
	①	<F2>	If you first press the blue <FN> key, the function of other keys is changed. Similar to the <ALT> key in the Windows operating system.
	②	<SCAN>	Scanning of tags
	③		
	④	Blue <FN>	Shift key: Changes the function of other keys to that shown by the blue labeling
	⑤	<TAB>	Moves the cursor to the right or down at specific intervals.
	⑥	<ENTER>	On/Off key, Enter key
	⑦	<SPACE>	Inserting spaces. In a Windows dialog window, checkboxes can be activated or deactivated with the <SPACE> key.
	⑧	<SHIFT>	Display of uppercase letters (A-Z) and symbols also specified on the numeric keys (e.g. &, *,...).
	⑨	<BKSP>	Moves the cursor to the left to delete the last entered character. If the blue <FN> key is pressed first, the character after the cursor is removed.
	⑩	<ESC>	Closes the currently open menu, dialog window or started application and returns you to the previous interface.

Overview of the keypad	Item	Key label	Function
	⑪	Orange <FN>	Shift key: Changes the function of other keys to that shown by the orange labeling
	⑫	Arrow keys	Enable navigation to the left, right, up and down in the display.
	⑬	<F1>	If you first press the blue <FN> key, the function of other keys is changed. Corresponds to the <CTRL> key in the Windows operating system.

6.1.2 The shift keys

An activated shift key causes a change in the function of the subsequently pressed keys.

The following keys of the SIMATIC RF310M are shift keys:

- <SHIFT>
- Orange <FN>
(changes the key assignment in accordance with the orange-colored labeling on the keypad)
- Blue <FN>
(changes the key assignment in accordance with the blue-colored labeling on the keypad)

Activating the shift keys:

When you press a shift key once briefly, it is activated and the name of the selected switch key appears in lowercase in the task bar, e.g. "Org key", "Blue key".

Any subsequently pressed key then changes its function, the display in the task bar disappears and the shift key is deactivated again.

If you press a shift key briefly twice in succession, it will become inactive again.

6.2 The touch screen

The display of the SIMATIC RF310M is designed as a touch screen. You can easily enter commands by means of the input pen.

6.3 The SIMATIC RF310M menu

The menu bar of the SIMATIC RF310M program comprises four main menus:

- File
- Tag
- Tools
- Help

The functions of the individual menus can be selected on the touch screen (using the pen).

Operation of the SIMATIC RF310M software is described in detail in the next chapter.

Software overview

7.1 Software applications

Two software applications are available to you in SIMATIC RF310M:

- **The RF310M software of the standalone product SIMATIC RF310M**

The RF310M application program is primarily intended for use in the service and test fields for reading and writing tags in RFID applications.

- **The software "RF-MANAGER"**

With the RF-MANAGER application software, the SIMATIC RF310M device becomes an integral component of that of SIMATIC RF-MANAGER.

Data acquisition for the "RF-MANAGER" software is configured in the engineering system of SIMATIC RF-MANAGER.

The software serves to acquire data and transfer it to SIMATIC RF-MANAGER.

7.2 Overview of possible applications

You can use the SIMATIC RF310M device in different ways:

As a standalone product or in combination with SIMATIC RF-MANAGER

Interfacing to SIMATIC RF-MANAGER with the software "RF-MANAGER"		Standalone product with the RF310M software
Application mode "Remote"	Application mode "Mobile"	
<ul style="list-style-type: none"> • RF310M behaves like a stationary reader • The acquired data are only displayed and transferred to RF-MANAGER • The acquired data cannot be modified 	<ul style="list-style-type: none"> • The acquired data is acknowledged before being transferred to RF-MANAGER. Data that has been incorrectly scanned can be deleted. • All the tag data from the RFID chip can also be displayed or edited depending on the configuration in the engineering system. 	<ul style="list-style-type: none"> • Acquisition of tag data • All editing functions are permitted.

8.1 Overview of functions

After switching on the mobile reader, the Editor appears on the display. The following functions can be found in the menu:

Function		Description
File	Open	Load file from the integral PSION flashdisk to the work memory
	Save Tag	Save read-in tag data to the "Flash Disk" directory
	Save Tag As	Save read-in tag data to the "Flash Disk" directory with a specific file name
	Exit	Exit SIMATIC RF310M software
Tag	Write OTP	Switch on permanent write protection
	Tag Status	Reading the tag status
	Init Tag	Write a specific value to a tag
	Tag Type	
Tools	Password	Change password for the application
	Reader Status	Information about the reader
	Language	Set menu language
	Settings	<ul style="list-style-type: none"> • Specify format (editor, data, address, length) • Specify filename environment
Help	About RF310M	Overview with information on device, software release and version

8.2 Starting the SIMATIC RF310M software

Start the software by double-clicking on the RF310M icon on the desktop.



Figure 8-1 Desktop icon RF310M

During start-up of the software, a Stop symbol is displayed at the bottom right in the display of the SIMATIC RF310M:



You cannot use the application as long as the Stop symbol is displayed.

The device is ready for use as soon as the red Stop symbol at the bottom right of the display has disappeared.

Note

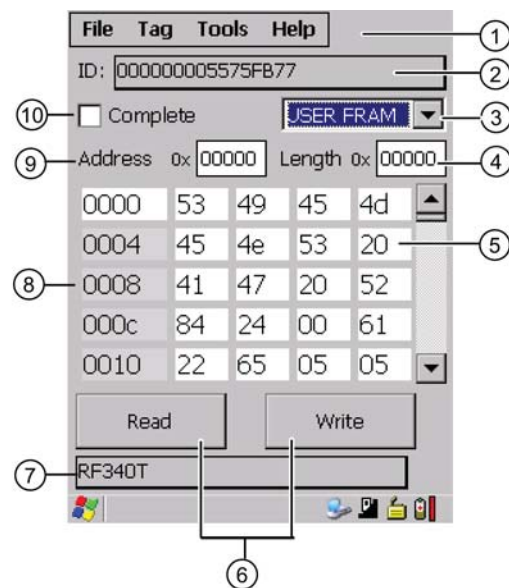
If you have activated "Supervisor" mode, you can also start the software via "Start > Programs > RF310M".

8.3 Edit tag data

8.3.1 The data editor

You can edit the transponder data in the editor window in hexadecimal, ASCII or decimal format. You can toggle between the two in the "Tools > Settings" menu (see Settings (Page 54)).

Interface structure of the data editor



- ① Menu bar
- ② Display of UID
- ③ Drop-down list box with the transponder-specific memory areas (e.g. USER FRAM, OTP, etc.) that are displayed in the data field.
- ④ Length of the data area (the field can be edited if "Complete" is not checked)
- ⑤ **Data field:**
The data can be displayed in either hexadecimal, decimal or ASCII format.
- ⑥ Buttons for processing the tag data:
 - Read tag data
 - Write tag data
- ⑦ Display of selected tag type
- ⑧ The editor window contains the tag data. The size of the represented data depends on the tag type.
- ⑨ (Start) address (the field can be edited if "Complete" is not checked)
- ⑩ "Complete" check mark: Indication of the completely selected memory area; all memory areas of the tag are always read or written at once, independent of the memory area currently set.

One memory area of the tag is always shown in the data editor. In the drop-down list box [③], you can select and display the different memory areas of the tag. If you check "Complete" [⑩], the current memory area will be displayed complete in the editor, otherwise you can enter values under "Address" [⑨] and "Length" [④] to edit the relevant data area only.

The "current area" in the data editor

If "Complete" is not checked, the area is displayed that is specified in the fields "Address" and "Length".

You can reach the individual addresses using the input pen or the arrow or TAB keys. If you change the values, they will have a green background.

The green background remains until the data are transferred/written to the transponder. Green data fields therefore indicate that the actual tag data differs from the values visible in the editor.

All other data fields/areas of the tag are shown against a white background.

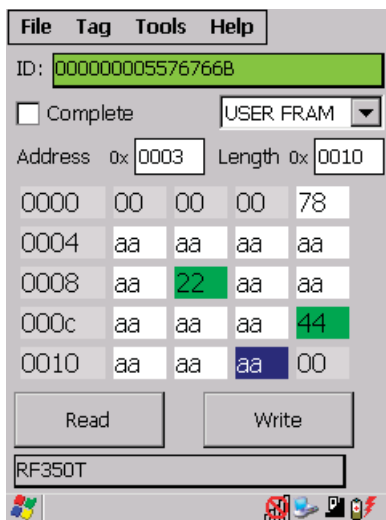


Figure 8-2 Current area

Transponder-specific memory areas

Different memory areas exist in accordance with the tag standard.

- **RF300**

- USER FRAM:

User data area. Freely available. Its size or presence is specific to the tag.

- CONFIG:

Configuration data. Relevant for service purposes only.

- OTP EEPROM:

EEPROM memory for user data. This area can also be used as an "OTP" memory (One Time Programmable). The function "Write OTP" is used for this purpose.

- **ISO15693**

- USER ISO

User data area. Freely available. Its size or presence is specific to the manufacturer.

- OTP ISO

User data memory. This area can also be used as an "OTP" memory (One Time Programmable). The function "Write OTP" is used for this purpose.

8.3.2 Requirements for operating the tag functions

In order to execute read and write operations, you must

- set a tag type
- observe the distance limits between the reader and the tag.

Set tag type

Set the memory size of the tag using "Tag > Tag Type ...". See also Chapter Tag Type Selection (Page 49).

Distance limits to be observed between the reader and the tag

For detailed information, please refer to SIMATIC RF300 System Manual (<http://support.automation.siemens.com/WW/view/en/21738946>).

Note

Transmission gaps with RF300 tags because the distance between reader and tag is too small

If the distance between reader and tag is too small, a transmission gap may occur directly on the surface of the RF310M read head in the center of the field. Communication with the transponder is not possible in the transmission gap.

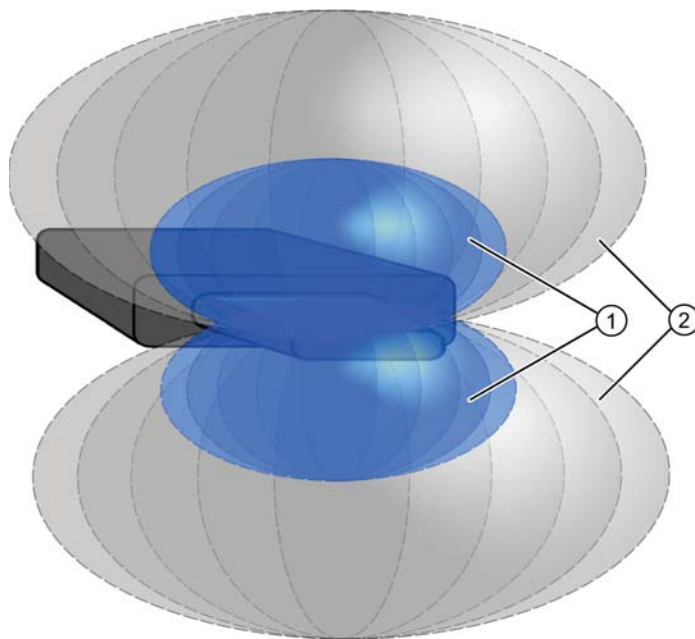
You can avoid a transmission gap by observing a minimum distance of 2 mm.

Note

Errors when reading and writing due to several tags in the field of the SIMATIC RF310M

Tags that follow each other closely, and are therefore in the area of the SIMATIC RF310M at the same time, can cause errors in reading and writing tag data.

Please ensure when executing the tag functions that the minimum distances from transponders are observed, that is, distances between 100 and 500 mm depending on the tag type. (See System Manual for SIMATIC RF300 or MOBY D > Plan system > Field data).



- ① Tag in the blue area: tag can be processed
- ② Tag in the gray area: tag cannot be processed

Figure 8-3 Tag detection range of the reader

Only one tag must be located within the combined blue and gray area (① and ②).

8.3.3 Setting of memory areas and address ranges for read and write operations

Selection of memory area

In the data editor, select the memory area of the tag for which you wish to carry out a read or write operation.

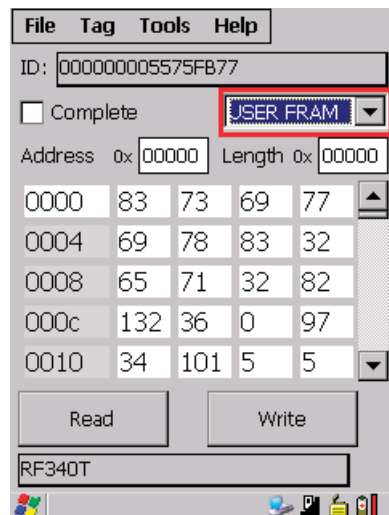


Figure 8-4 Selection of memory area

Setting of address and length of memory area

In the data editor, set the start address and length of the memory area for which you wish to carry out a read or write operation.

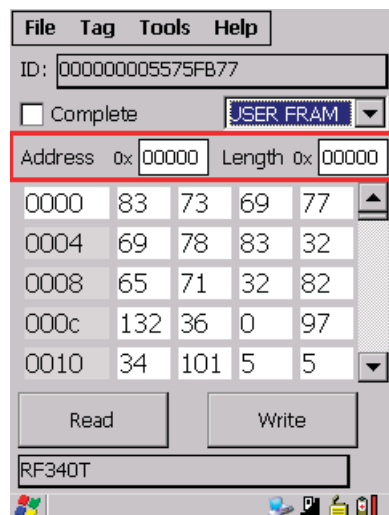


Figure 8-5 Address and length of memory area

Carrying out a read/write operation for the complete memory area

If all memory areas of the tag are to be completely read or written together, set the check mark for "Complete". With this function you can display the complete size of the selected memory area.

If the check mark is set for "Complete", "Read all" and "Write all" are displayed on the buttons.

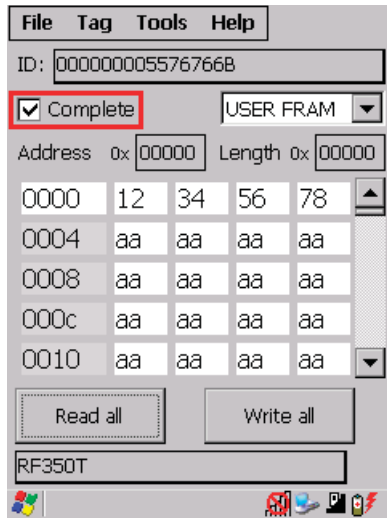


Figure 8-6 "Complete" check mark

See also

The data editor (Page 34)

8.3.4 Read tag data

You can scan tags and read tag data using the "Read" button in the data editor.

The tag ID is displayed in the editor underneath the menu bar. It has a green background when reading a tag for the first time. If you work further with the same tag, the green background disappears.

As soon as you scan a different tag, its ID also has a green background. The green background thus indicates if a different tag is being edited.

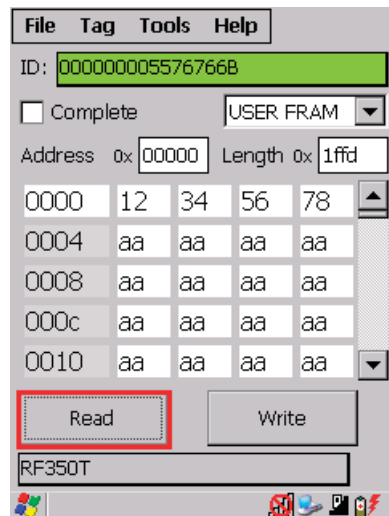


Figure 8-7 "Read" button

The data and memory areas are read which are currently set in the data editor. [see "Current area" in Chapter Setting of memory areas and address ranges for read and write operations (Page 39).]

8.3.5 Write tag data

You can write tag data in the data editor using the "Write" button or <CTRL+W>.

The tag ID has a green background just like with the read operation. [See Read tag data (Page 40).]

If you have previously read data from a tag with the reader, these values will be written to the tag with the next write operation.

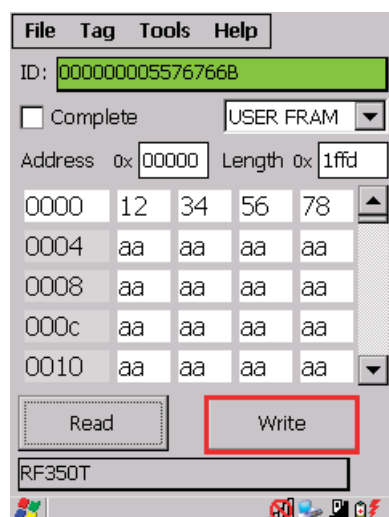


Figure 8-8 "Write" button

The data and memory areas are read which are currently set in the data editor. [See "Setting Setting of memory areas and address ranges for read and write operations (Page 39)".]

8.3.6 Progress and timeout display

With the read and write functions, communication takes place with the transponder. The progress of the currently executed function is indicated, acoustic signals are output, and also a timeout where applicable:

Progress display and acoustic signal with read/write operations

During the data transmission, the progress of the executed function is displayed on a bargraph:

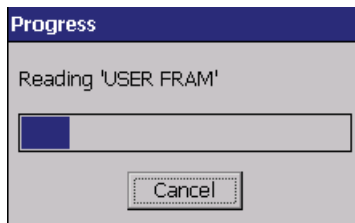


Figure 8-9 Progress display in the case of the tag function

The tag function is not interrupted if you briefly move the tag out of the read field. All read and write operations are repeated until a tag has been detected.

You can stop the respective read or write operation at any time using the "Cancel" button.

Acoustic signals

An acoustic signal is output when the read or write operation has been completed successfully.

With longer data blocks, an acoustic signal is output following each read block.

If an operation is canceled as a result of an error or by the user, a different audible signal is output.

Timeout display in the case of the tag function

If the tag remains unedited for longer than 20 seconds, the function is interrupted and the following message window appears:

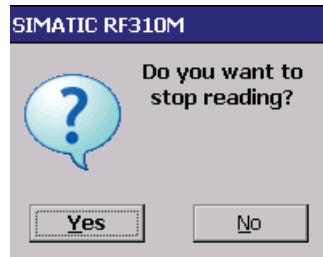


Figure 8-10 Timeout display in the case of the tag function

You can now stop the command completely with "Yes" or continue it with "No". If you retry, the interrupted command is continued at the point of interruption.

8.4 The functions in the "File" menu

The following options are available in the "File" menu:

- Open
- Save Tag
- Save Tag As
- Exit

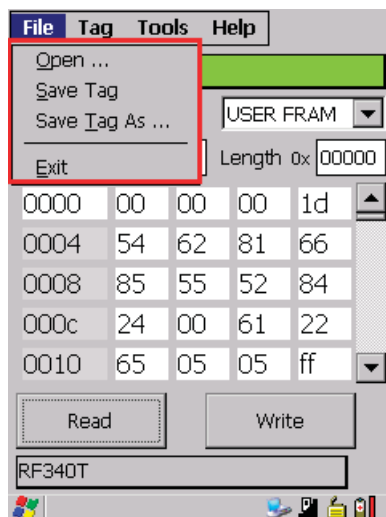


Figure 8-11 The "File" functions

8.4.1 Open file

You can load a file via "File > Open" if the file was saved beforehand with the command "File > Save" or if it was transferred from the PC to the "Flash Disk" directory of the SIMATIC RF310M (also see Data transfer between the PC and reader (Page 88)).

All the files of the "Flash Disk" folder are displayed. You can select the desired file via the touch screen or by entering the filename under "Name" and <OK>.

8.4.2 Save Tag / Save Tag As

Via "File > Save Tag/Save Tag As", you can save data currently displayed in the editor of the reader to a file on the SIMATIC RF310M. If you select "Save", the current file will be replaced; if you select "Save Tag As", you can select a new directory or a new file name.

The filename can be up to 100 (alphanumeric) characters in length. XML format is used automatically for saving. Also refer to the Chapter "File storage on the SIMATIC RF310M (Page 87)" as well as "Organization of the .XML files in the Flash Disk directory (Page 91)".

8.4.3 Exit file

You can exit the SIMATIC RF310M program via "File > Exit". You then reach the WinCE operating system level of the PSION Workabout Pro. You require the password relevant to the application for this if you have previously assigned one.

8.5 The functions in the "Tag" menu

The following tag functions are available that you can select in the menu via "Tag":

- Write OTP
- Tag Status
- Init Tag
- Tag Type

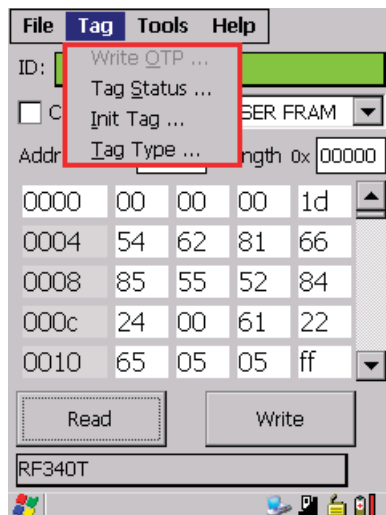


Figure 8-12 Tag functions

8.5.1 Write OTP

Using the function "Write OTP", you can write once to the OTP area of a tag that is at a sufficient distance from the reader.

CAUTION
The "Write OTP" function is non-reversible.
Please note that the OTP memory area can only be written to once. It is not possible to change the values in the OTP area of a tag at a later time.

Requirements

The memory area "OTP EEPROM" is selected in the data editor.

What to do

1. Select "Tag > Write OTP".
2. Confirm the confirmation prompt "Caution! Switch on permanent write protection?" with "Yes!".

The data displayed in the data editor is then transferred to the tag.

Result

The data is identified on the tag as being no longer writable.

In the data editor, the protected areas following a read operation are displayed in gray.

Note

OTP memory areas of the RF300 and ISO tags

For OTP memory areas of the RF300 tags, see the System Manual RF300, RF300/ISO transponders, memory configuration of the RF300/ISO tags.

Only complete rows with 4 bytes each are write-protected.

If, for example, you only select the 2nd byte in the data editor using the "Address" FF05 and "Length" 1, only this byte is transferred to the EEPROM area on the tag, but the address range FF04...FF07 is protected.

A write operation is carried out internally at block address FF84.

The OTP area refers to the 5 block addresses FF80, FF84, FF88, FF8C and FF90. A write command to this block address with a valid length (4, 8, 12, 16, 20 depending on the block address) protects the written data from subsequent overwriting.

Note

If the OTP area is used, it must be ensured that the blocks are used without gaps, starting with block 0.

Examples:

3 blocks (with write command), Block 0, 1, 2 (FF80, length = 12): valid

2 blocks (consecutive), Block 0 (FF80, length =4), Block 1 (FF84, length = 4): valid

2 blocks (consecutive), Block 0 (FF80, length =4), Block 2 (FF88, length = 4): invalid

1 block, Block 4 (FF90, length = 4): invalid.

8.5.2 Reading the tag configuration data

You can read the configuration data of a tag by selecting the memory area "CONFIG" in the editor and subsequently carrying out a read operation. The memory area "CONFIG" only exists with RF300 tags.

Byte address	EEPROM	Functional description
0xFF1f	Bank switch (bits 1 and 0)	Memory bank
0xFF1e	MDS delay (bits 7:5); LFD (bit 4)	MDS delay/LFD bit
0xFF1d	Reserved	
0xFF1c	Limit value A for LFD quotients	LFD (A)
0xFF1b	Limit value B for LFD quotients	LFD (B)
0xFF1a	Reserved	
0xFF19	Memory configuration, INIT (bits 7...1)	Memory configuration/Init bit
0xFF18	Range for lock bits	Lock bits
0xFF17	Tag ID, byte 3	Tag ID (b24-b31)
0xFF16	Tag ID, byte 2	Tag ID (b16-b23)
0xFF15	Tag ID, byte 1	Tag ID (b8-b15)
0xFF14	Tag ID, byte 0	Tag ID (b0-b7)

8.5.3 Read tag status

You can read and display the status data of the transponder via "Tag > Tag Status".

The following tag status information is displayed here:

- Tag ID
- FRAM memory size in bytes
- Lock bit register (8-bit binary value)
- ASIC version

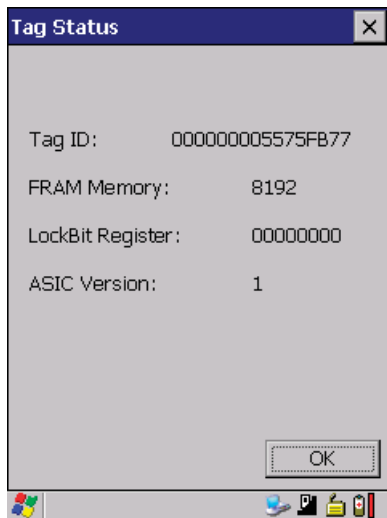


Figure 8-13 Reading the tag status

8.5.4 Initialize the tag

The "Init Tag" function is used to overwrite the complete data area of a tag with a specific value.

Prerequisite

A writable memory area is selected in the data editor:

- The memory area of the complete tag if the "Complete" check mark is selected in the data editor; or
- The memory area set in the fields "Address" and "Length".

Procedure for initializing the tag

1. Select "Tag > Init Tag".
2. You can enter a hexadecimal or decimal value with which you wish to write to the selected memory area in the window "Initialize Tag". Click "OK" to confirm.

The tag is then initialized.

Once the tag has been successfully initialized, the corresponding value is also preset in the data editor.

Note

Write protection in the OTP EEPROM memory area

Note that only those data can be written in the EEPROM memory area which have not been protected by the "Write OTP" function.

8.5.5 Tag Type Selection

Tag Type Selection

Use "Tag" > "Tag Type" to select the type of tag you wish to edit.

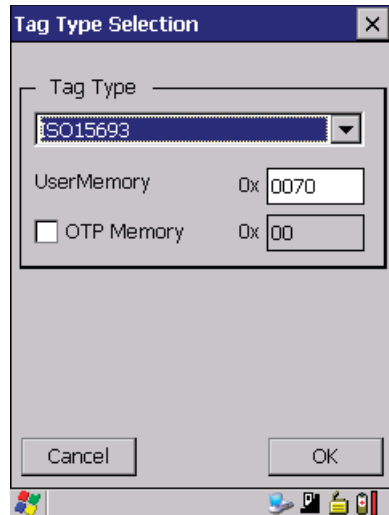


Figure 8-14 Tag Type Selection

The tag types supported by the SIMATIC RF310M are selected here. Depending on this selection, the corresponding memory areas are displayed in the data editor with the memory size supported by this selected tag type.

For memory areas of the RF300 tags (read/write memory) refer to the SIMATIC RF300 System Manual, "Transponders", section "Features" of the relevant tags. You can activate the OTP functionality for all ISO tags in the window "Tag Type Selection" if you set the check mark for "OTP Memory".

With the OTP functionality activated, the most significant 16 bytes of the user memory are handled as the OTP memory. This OTP area is handled analogous to the EEPROM area of an RF300 tag. It can be read and written as normal, and can be write-protected using the function "Write OTP".

Tag types

You can process the following tags using the SIMATIC RF310M:

- All RF300 tags
- All ISO15693-compatible MOBY D tags, for example MDS D100, D124, D324.

Note

Restrictions

The transponders MDS D117, D127, D421 and D422 can only be processed with the handheld with an external antenna (order number 6GT2803-1AC10).

Only transponders MDS D139 and D160 with order number "6GT2600-0AA10" or "6GT2600-0AB10" are supported.

Tag type display in the data editor

The tag type selected here is displayed in the bottom line of the data editor:

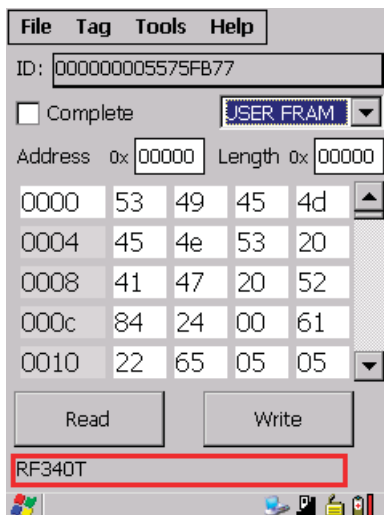


Figure 8-15 Tag type display in the editor

8.6 The functions in the "Extras" menu

The following functions can be selected in the "Tools" menu:

- Password
- Reader Status
- Language
- Settings

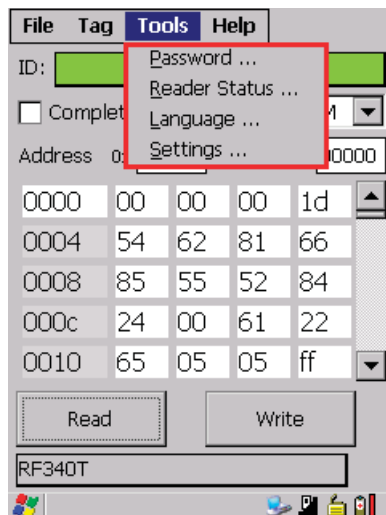


Figure 8-16 Tools functions

8.6.1 Password for the SIMATIC RF310M application

As an option, you can assign a password for the SIMATIC RF310M application.

Select "Tools > Password" from the menu.

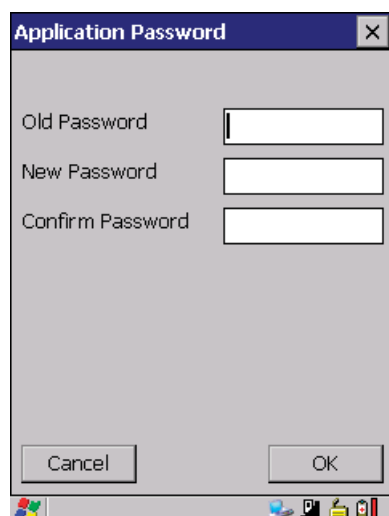


Figure 8-17 Password

8.6 The functions in the "Extras" menu

1. Enter a password with up to 8 characters under "New Password".
2. Then enter the password again under "Confirm password".
3. Select the "OK" button.

The password is now set. All write functions to a tag as well as exiting of the software are now protected by this password.

Password prompt

If you then wish to perform a write function, you will be prompted to enter the appropriate password. You only have to enter the password once in the case of several consecutive write commands. It will remain valid for 5 minutes after the last write function is executed.

This password is also required to exit the application.

Deactivation of password

If you have assigned a password and then wish to deactivate it, leave the "New Password" and "Confirm Password" fields empty, and confirm using the "OK" button.

Default password

No password is assigned in the delivery condition.

Note

I forgot my password

If you have forgotten your password, the original status of the device can be restored. See System reset (Page 92).

8.6.2 Reader Status

Via "Tools > Reader Status" you can view the following information:

- API Version
- Model (RF310M)
- Firmware version of the RFID module
- Reader Service

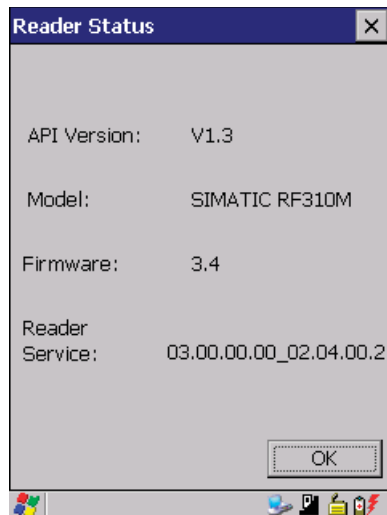


Figure 8-18 Reader Status

8.6.3 Setting the language

You can set English or German as the menu language of the SIMATIC RF310M software. Select the desired language in the "Language selection" window of the "Tools > Language" menu and confirm with "OK".



Figure 8-19 Language selection window

8.6.4 Settings

You can make the following settings using this function:

- Define the data formats
- Define the filename

Select "Tools > Settings" to parameterize these settings. The "Settings" window opens:

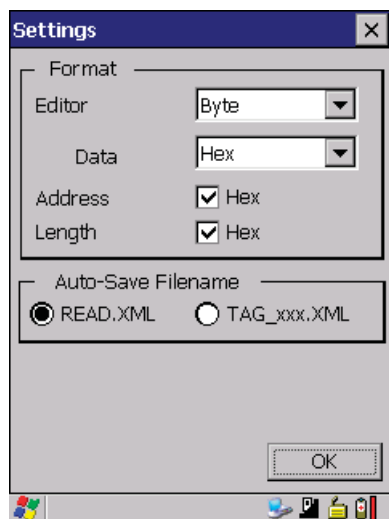


Figure 8-20 Settings window

Settings under "Format"

You can set different formats (for the editor, data, address and length) under "Format" that are explained below.

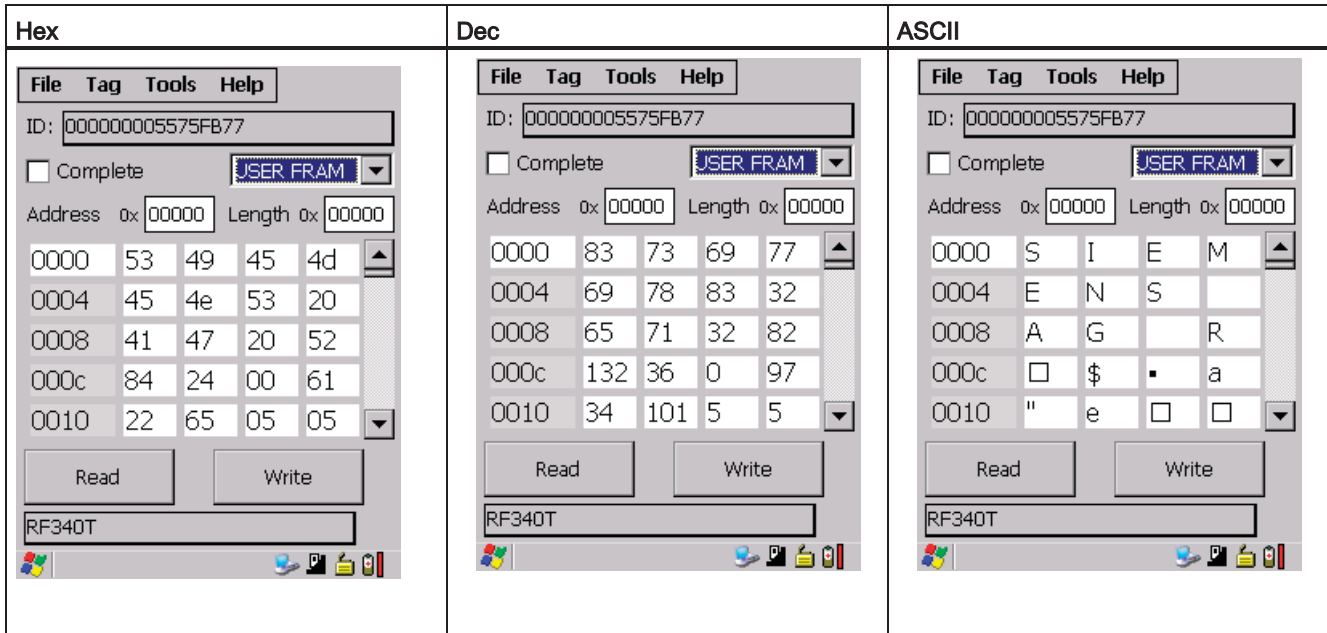
- **Effect of the "Editor" settings:**

Byte, binary

Depending on the format that you select, the interface in the data editor is as depicted below:

"Byte"	"Binary"
Format in bytes	Presentation with "0" and "1"

- **Effect of the "Data" settings:**
Hexadecimal, decimal or ASCII number format
"Hex" or "Dec" format can be recognized in the "Address" and "Length" lines in the data editor.



- **Effect of the settings under "Address" and "Length"**
When the check mark is missing, you can also enter decimal data here. If you subsequently set the check mark, the data will be converted into hexadecimal format. Depending on the format setting, the values will be changed in the editor. You can see from the data editor whether "Hex" or "Dec" is activated; for Hex format, "0x" is shown for "Address" and "Length":

	"Hex" check mark not activated	"Hex" check mark activated
Display in the editor	Address <input type="text" value="0"/> Length <input type="text" value="0x001c"/>	Address <input checked="" type="checkbox"/> <input type="text" value="0x0000"/> Length <input checked="" type="checkbox"/> <input type="text" value="0x001c"/>

Settings under "Auto-Save Filename"

Under "Auto-Save Filename" you can define whether the same file with the same name is always updated when scanning tags, or whether new files are saved in each case.



Figure 8-21 Auto-Save Filename

- **"READ.XML"**

If the setting "READ.XML" is selected, the same file READ.XML is always updated each time tag data is read.

- **"Tag_XXX.XML"**

If the setting "Tag_XXX.XML" is selected, a new file with the name TAGxxx.XML is created each time tag data is read. "xxx" is replaced by the ID of the read tag.

If a tag with the same ID is read again, the corresponding file is overwritten.

"READ.XML" is set as the default value.

8.7 The functions in the "Help" menu

Using "Help > About" you can obtain information on the following points:



Figure 8-22 "About RF310M" window

RF-MANAGER RF310M software

9.1 Prerequisites for working with the RF-MANAGER RF310M software

9.1.1 Required components

WLAN module

Communication with the runtime system of RF-MANAGER is performed over a radio link. The SIMATIC RF WLAN module is required for this purpose.

9.1.2 Starting the RF-MANAGER RF310M software

To start the RF-MANAGER RF310M application, double-click the "RF-MANAGER" icon on the desktop.



Figure 9-1 Desktop symbol for RF-MANAGER SIMATIC RF310M software

A connection to RF-MANAGER will only be established when you have started the RF-MANAGER RF310M software and the WLAN connection is active.

After it has been correctly installed, the SIMATIC RF310M mobile handheld terminal automatically receives its configuration from RF--MANAGER.

A Stop symbol is displayed at the bottom right in the display of the SIMATIC RF310M in the following cases:

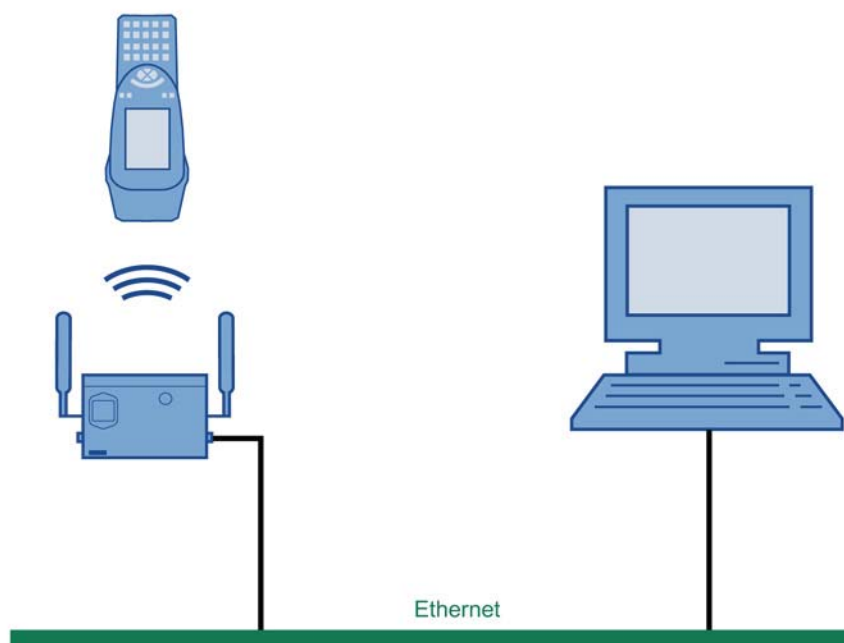


- During startup of the software
- During transfer of a new configuration from the RF-MANAGER

You cannot use the application as long as the Stop symbol is displayed.

9.1.3 Preconditions for parameterization of the WLAN connection

- The mobile reader must be ready for operation (the battery is charged).
- The mobile reader must contain a WLAN card.
- A WLAN connection must exist between the reader and the network of the PC, e.g. via an access point.
- Information regarding the WLAN settings must be available.
- The operating mode of the mobile reader must be set to "Supervisor".



9.1.4 Settings in the Engineering System

1. Enter IP address of the reader

Enter the assigned IP address in the device settings of the mobile handheld terminal ("RFID devices > RFID device_X").

2. Enter the network address of the PC

Enter the network address of the PC in the network settings ("Device settings > RFID / network settings").

Note

An automatic reader search is not possible in the Engineering System

The automatic reader search via "Project > Reader configuration > Communication settings" does not function in the case of mobile handheld terminals.

9.1.5 Parameterizing the WLAN card in the SIMATIC RF310M mobile handheld terminal

Two examples are given below for the procedure that you can follow for parameterizing the WLAN card of SIMATIC RF310M.

Consult your network administrator to ensure that the WLAN connection is set up correctly. You will find detailed information on configuring the WLAN in the operating instructions for the PSION WORKABOUT PRO.

Example 1

With this procedure, the active radio networks are displayed automatically.

1. Set the operating mode to "Supervisor" in SIMATIC RF310M.
2. In SIMATIC RF310M, select "Start > Programs > Summit > SCU"
3. Under "Active Config", select "**Third party**".
4. To activate these changes, change to the device to the "Powerdown" mode by pressing the blue <FN> key and the on/off button at the same time for approximately 7 seconds. The device then restarts.
5. Select the required active wireless network in the dialog that now opens.
6. Click the "Connect" button and enter the respective encryption code under "Authentication" and "Network key".
7. Click on the "OK" button.

Example 2

1. Select "Start > Programs > Summit > SCU" in the mobile reader.
2. Click on the "Profiles" tab.
3. Select the "New" button to create a new profile setting
4. Enter a name for the profile setting.
5. At least make the following settings:
 - **SSID** (name of the radio network), e.g. "RF310M"
 - **Auth Type** (security level): e.g. "Shared"
6. Select the encryption required under "Encryption": e.g. "WPA2 PSK".
7. Then click the button "WEP keys/PSKs". Enter the encryption code and confirm with "OK".
8. Click the "Commit" button to confirm the settings.
9. In the "Main" tab, under "Active config", select the profile that should be active.
10. To activate these changes, change to the device to the "Powerdown" mode by pressing the blue <FN> key and the on/off button at the same time for approximately 7 seconds. The device then restarts.

Note

Other encryption possibilities

You can also use other encryption methods, depending on the access point. "WEP" encryption is no longer regarded as secure; you should not use this.

9.1.6 Enter the IP address in the mobile reader

If a DHCP server is not present in the network, you must enter the IP address of SIMATIC RF310M in the SIMATIC RF310M mobile handheld terminal:

1. Double-click the WLAN icon in the taskbar for this purpose.
2. In the "IP Information" tab, click the "Configure" button and select "Specify an IP address". Enter the IP address.

As an alternative, you can also enter the IP address as follows:

1. "Start > Settings > Control Panel > Network and Dial-up Connections" and select the relevant connection.
2. In the "IP Information" tab, click the "Configure" button and select "Specify an IP address". Enter the IP address.

9.1.7 Creating a back-up

Create a back-up to save the settings even in the case of power failure. The steps you have to perform to do this are described in detail in the Chapter Performing a back-up (Page 24).

9.2 Application mode "Remote"

In application mode "Remote" that is configured via the Engineering System in RF-MANAGER, the SIMATIC 310M mobile handheld terminal has the properties of a stationary reader. This means that the acquired data are only displayed on the reader and transferred to RF-MANAGER.

You are not able to acknowledge or reject the scanned data in SIMATIC RF310M.

9.2.1 Acquire data and transfer it to RF-MANAGER

Data acquisition

Depending on the configuration in the Engineering System, you can activate an RFID read operation using the hardware keys or the "Scan" button of SIMATIC RF310M.

If you have configured the reading of RFID tag data, the scanned tag ID will be preceded by "RFID".

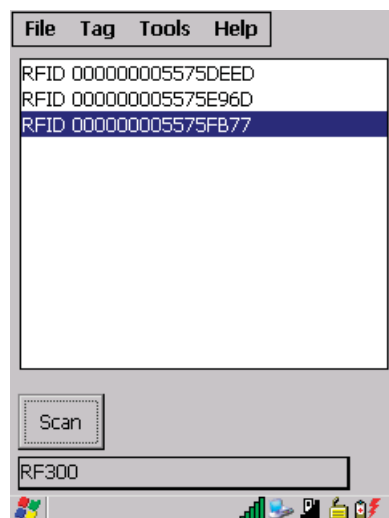



Figure 9-2 List of RFID tag IDs (remote).

A Note symbol is displayed at the bottom right in the display if the data has not yet been transferred to the RF-MANAGER: 

Transfer data to RF-MANAGER

All acquired data is transferred immediately to RF-MANAGER. The Note symbol disappears following the transfer.

9.3 Application mode "Mobile"

In application mode "Mobile" that is configured via the Engineering System in RF-MANAGER, you can check the scanned data for validity in the SIMATIC RF310M mobile handheld terminal and reject any faulty data. Only that data which you have acknowledged will be transferred to RF-MANAGER.

Functional expansion by means of configuration in the Engineering System

When the function "Edit Tag" is activated in RF-MANAGER, you can display and edit all the data for the read RFID tag. However, changes in the data editor are not transferred directly to the RF-MANAGER. See Acquire data and transfer it to RF-MANAGER (Page 64).

9.3.1 Acquire data and transfer it to RF-MANAGER

Data acquisition

Depending on the configuration in the Engineering System, you can activate an RFID read operation using the hardware keys, the RF-MANAGER, or the "Scan" button of SIMATIC RF310M.

If you have configured the reading of RFID tag data, the scanned tag ID will be preceded by "RFID".

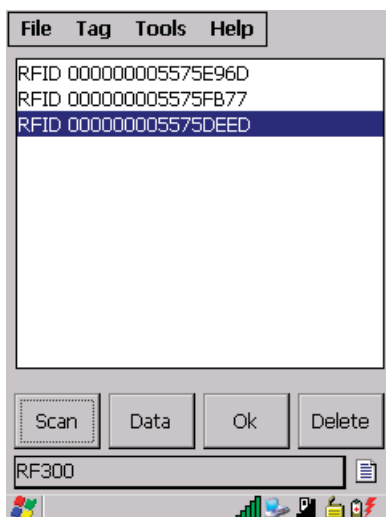



Figure 9-3 List of RFID tag IDs.

A Note symbol is displayed at the bottom right in the display if the data has not yet been transferred to the RF-MANAGER: 

Transfer data to RF-MANAGER

You can only transfer the data directly scanned from the tag to the RF-MANAGER.

If you want to transfer data to RF-MANAGER, select the "OK" button.

The data then disappears from the user interface of the SIMATIC RF310M.

The Note symbol is displayed as long as the data is still present on the RF310M (e.g. also if a WLAN is not currently present).

Read Data

You can edit the data using the "Data" button and transfer it again to the scanned RFID tag.

The following chapters contain detailed information about this.

Note

Changes in data only affect the tag

If you edit data in the data editor of the SIMATIC RF310M, it is not directly transferred to the RF-MANAGER. However, you can transfer this data to the tag using a write operation. If you subsequently scan the tag again, this data can also be transferred to the RF-MANAGER.

Delete data

You can reject any data that has been incorrectly acquired via the "Delete" button.

9.3.2 Edit tag data

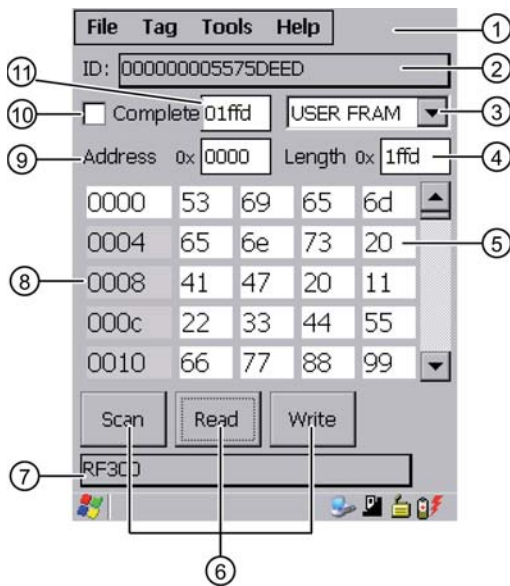
9.3.2.1 The data editor

Prerequisites for working in the data editor

In order to process tag data, a tag must have been scanned by the SIMATIC RF310M device and its tag ID must be indicated in the display.

The transponder data can be edited in the editor window in hex, ASCII or decimal format. You can toggle between the two in the "Tools > Settings" menu (see Settings (Page 83)).

Interface structure of the data editor



- ① Menu bar
- ② Indication of the tag ID
- ③ Drop-down list box with the transponder-specific memory areas (e.g. USER) that are displayed in the data field.
- ④ Length of the data area (the field can be edited if "Complete" is not checked)
- ⑤ **Data field**
The data can be displayed in either hexadecimal, decimal or ASCII format.
- ⑥ Buttons for processing the tag data:
 - Scan tag (ID)
 - Read tag data
 - Write to the tag
- ⑦ Indication of the tag type: RF300 or ISO
- ⑧ The editor window contains the tag data. The size of the represented data depends on the tag type.
- ⑨ (Start) address (the field can be edited if "Complete" is not checked)
- ⑩ "Complete" check mark: Indication of the completely selected memory area; all memory areas of the tag are always read or written at once, independent of the memory area currently set.
- ⑪ Length of the user area:
The software "RF-MANAGER" contains an additional field for the length of the user area. In this field, you must enter the tag-specific length of the user area.

One memory area of the most recently scanned tag is always shown in the editor. In the drop-down list box [③], you can select and display the different memory areas of the tag. If you check "Complete" ⑩, the current memory area will be displayed complete in the editor, otherwise you can enter values under "Address" [⑨] and "Length" [⑩] to display the relevant data area only.

The "current area"

If "Complete" is not checked, the area is displayed that is specified in the fields "Address" and "Length".

You can reach the individual addresses using the input pen. If you change the values, they will have a green background. The green background remains until the data are transferred/written to the transponder. The color green therefore indicates that the actual tag data differs from the values visible in the editor.

All other data areas of the tag are shown against a white background.

If you have selected the user area as the memory area, you must specify its length in the field "Length of user area" [⑪]. You can also call the length of the tag-specific user area using "Tag status".



Transponder-specific memory areas

Different memory areas exist in accordance with the tag standard.

- **RF300**
 - **USER FRAM:**
User data area. Freely available. Its size or presence is specific to the tag.
 - **CONFIG:**
Configuration data. Relevant for service purposes only.
 - **OTP EEPROM:**
EEPROM memory for user data. This area can also be used as an "OTP" memory (One Time Programmable). The function "Write OTP" is used for this purpose.
- **ISO15693**
 - **USER ISO**
User data area. Freely available. Its size or presence is specific to the manufacturer.
 - **OTP ISO**
User data memory. This area can also be used as an "OTP" memory (One Time Programmable). The function "Write OTP" is used for this purpose.

9.3.2.2 Requirements for operating the tag functions

In order to execute read and write operations, you must

- have configured the RF-MANAGER,
- observe the distance limits between the reader and the tag.

Configuration of RF-MANAGER

Configuration of the RF-MANAGER is carried in the RF-MANAGER. For detailed information, please refer to SIMATIC RF-MANAGER 2008 Operating Manual (<http://support.automation.siemens.com/WW/view/en/25332237>)

Distance limits to be observed between the reader and the tag

For detailed information, please refer to SIMATIC RF300 System Manual (<http://support.automation.siemens.com/WW/view/en/21738946>).

Note

Transmission gaps with the RF300 tags because the distance between reader and tag is too small

If the distance between reader and tag is too small, a transmission gap may occur directly on the surface of the RF310M read head in the center of the field. Communication with the transponder is not possible in the transmission gap.

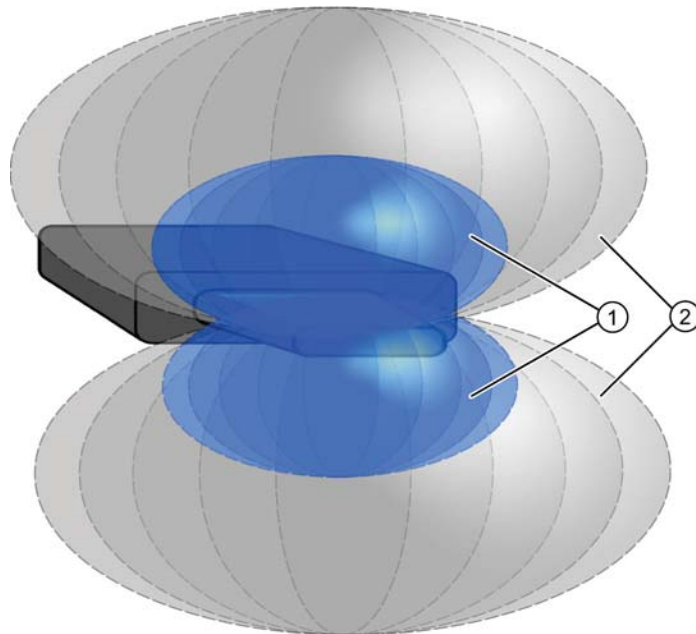
You can avoid a transmission gap by observing a minimum distance of 2 mm.

Note

Errors when reading and writing due to several tags in the field of the SIMATIC RF310M

Tags that follow each other closely, and are therefore in the area of the SIMATIC RF310M at the same time, can cause errors in reading and writing tag data.

Please ensure when executing the tag functions that the minimum distances from transponders are observed, that is, distances between 100 and 500 mm depending on the tag type. (See System Manual for SIMATIC RF300 or MOBY D > Plan system > Field data).



- ① Tag in the blue area: tag can be processed
- ② Tag in the gray area: tag cannot be processed

Figure 9-4 Tag detection range of the reader

Only one tag must be located within the combined blue and gray area (① and ②).

9.3.2.3 Setting of memory areas and address ranges for read and write operations

Selection of memory area

In the data editor, select the memory area of the tag for which you wish to carry out a read or write operation.

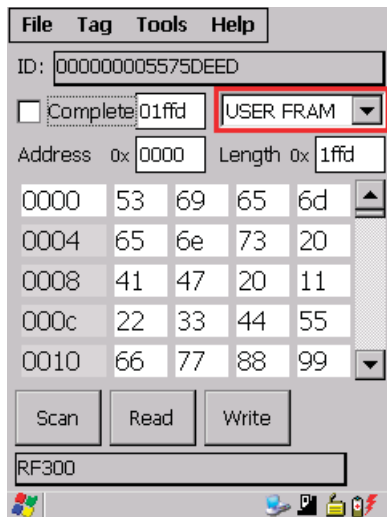


Figure 9-5 Selection of memory area

Setting of address and length of memory area

In the data editor, set the start address and length of the memory area for which you wish to carry out a read or write operation.

If you have selected the user area, you must specify its length in the field "Length of user area". You can also call the length of the tag-specific user area using "Tag status".

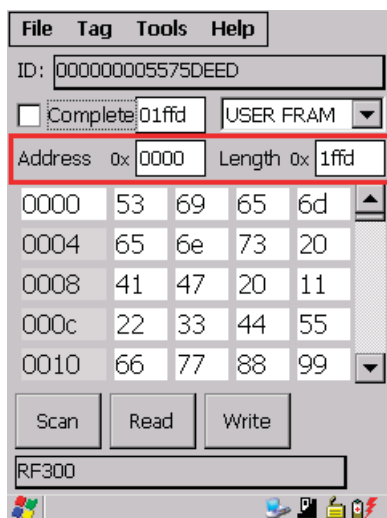


Figure 9-6 Address and length of memory area

Carrying out a read/write operation for the complete memory area

If all memory areas of the tag are to be completely read or written together, set the check mark for "Complete". With this function you can display the complete size of the selected memory area.

If the check mark is set for "Complete", "Read all" and "Write all" are displayed on the buttons.

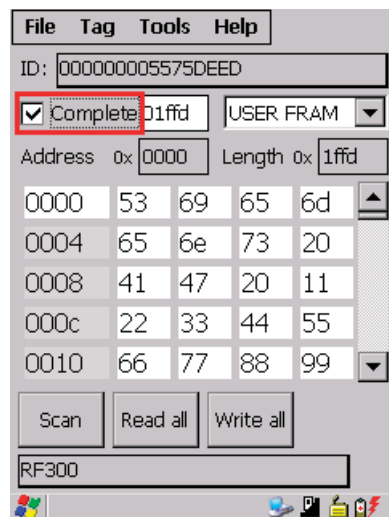


Figure 9-7 "Complete" check mark

9.3.2.4 Read tag data

You can scan tags and read tag data using the "Read" button in the data editor.

The tag ID is displayed in the editor underneath the menu bar. It has a green background when reading a tag for the first time. If you work further with the same tag, the green background disappears.

As soon as you scan a different tag, its ID also has a green background. The green background thus indicates if a different tag is being edited.

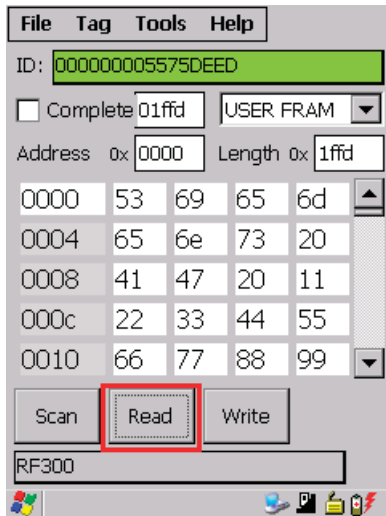


Figure 9-8 "Read" button

The data and memory areas are read which are currently set in the data editor. [see "Current area" in Chapter Setting of memory areas and address ranges for read and write operations (Page 70).]

9.3.2.5 Write tag data

You can write tag data in the data editor using the "Write" button or <CTRL+W>.

The tag ID has a green background just like with the read operation. [See Read tag data (Page 71).]

If you have previously read data from a tag with the reader, these values will be written to the tag with the next write operation.

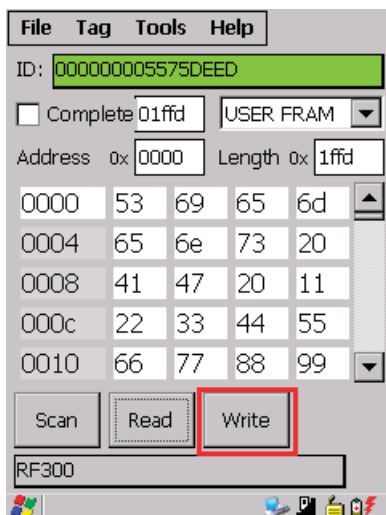


Figure 9-9 "Write" button

The data and memory areas are read which are currently set in the data editor. [See Setting of memory areas and address ranges for read and write operations (Page 70).]

9.3.2.6 Progress and timeout display

With the read and write functions, communication takes place with the transponder. The progress of the currently executed function is indicated, acoustic signals are output, and also a timeout where applicable:

Progress display and acoustic signal with read/write operations

During the data transmission, the progress of the executed function is displayed on a bargraph:

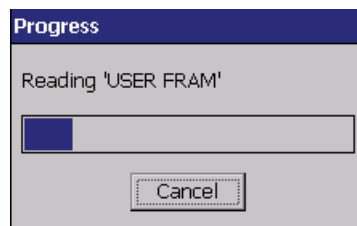


Figure 9-10 Progress display in the case of the tag function

The tag function is not interrupted if you briefly move the tag out of the read field. All read and write operations are repeated until a tag has been detected.

You can stop the respective read or write operation at any time using the "Cancel" button.

Acoustic signals

An acoustic signal is output when the read or write operation has been completed successfully.

With longer data blocks, an acoustic signal is output following each read block.

If an operation is canceled as a result of an error or by the user, a different audible signal is output.

Timeout display in the case of the tag function

If the tag remains unedited for longer than 20 seconds, the function is interrupted and the following message window appears:

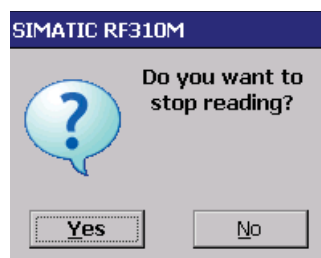


Figure 9-11 Timeout display in the case of the tag function

You can now stop the command completely with "Yes" or continue it with "No". If you retry, the interrupted command is continued at the point of interruption.

9.3.3 Overview of functions

After start-up of the RF-MANAGER RF310M application, the screen for scanning tags appears on the display. You can then scan tags or call a function from the menu. You can find out from the following table which functions are available in the respective application mode.

Note

If you want to use the function "Edit Tag" in application mode "Mobile", you must activate this in RF-MANAGER.

Function		Application mode			Description
		Remote	Mobile		
			Standard	Edit Tag	
File	Open	-	-	X	Load file from the integral PSION "Flash Disk" directory to the work memory.
	Save Tag	-	-	X	Save read-in tag data to the "Flash Disk" directory.
	Save Tag As	-	-	X	Save read-in tag data to the "Flash Disk" directory.
	Exit	X	X	X	Exit application
Tag	Scan	X	X	X	Read tag ID
	Read Data - Read <CTRL+R> - Write <CTRL+W>	-	-	X	Read tag data, write tag
	Write OTP	-	-	X	Lock data areas on the tag
	Tag Status	-	-	X	Tag status display
	Init Tag	-	-	X	Initialize data areas on the tag
Tools	Password	X	X	X	Change password for the application
	Reader Status	X	X	X	Information about the reader
	Language	X	X	X	Set the menu language
	Settings	-	-	X	Define tag area for reading/writing Specify format (editor, data, address, length)
Help	About RF310M	X	X	X	Manufacturer data

9.3.4 The functions in the "File" menu

9.3.4.1 Overview of file functions

The following options are available in the "File" menu:

- Open
- Save Tag
- Save Tag As
- Exit

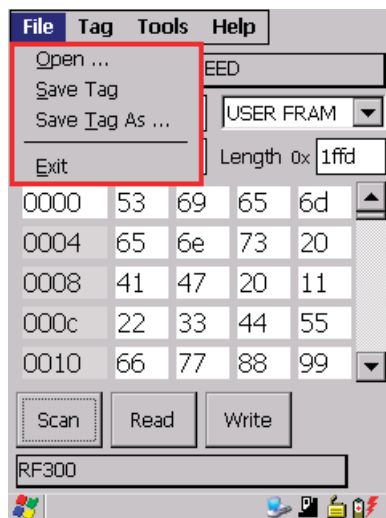


Figure 9-12 The "File" functions

9.3.4.2 Open

The function is available in the application mode "Mobile" when "Edit Tag" has been activated in RF-MANAGER.

You can load a file via "File > Open" if the file was saved beforehand with the command "File > Save" or if it was transferred from the PC to the "Flash Disk" directory of the SIMATIC RF310M (also see Data transfer between the PC and reader (Page 88)).

All the files of the "Flash Disk" folder are displayed. You can select the desired file via the touch screen or by entering the filename under "Name" and <OK>.

9.3.4.3 Save Tag / Save Tag As

The functions are available in the application mode "Mobile" when "Edit Tag" has been activated in RF-MANAGER.

Via "File > Save", you can save data currently displayed in the editor of the reader to a file on the SIMATIC RF310M. If you select "Save", the current file will be replaced; if you select "Save Tag As", you can select a new directory or a new file name.

The filename can be up to 100 (alphanumeric) characters in length. XML format is used automatically for saving. Also refer to the Chapter "File storage on the SIMATIC RF310M (Page 87)" as well as "Organization of the .XML files in the Flash Disk directory (Page 91)".

9.3.4.4 Exit

You can exit the "RF-MANAGER RF310M" program via "File > Exit". You then reach the WinCE operating system level of the PSION Workabout Pro. You require the password relevant to the application for this, if you have previously assigned one.

Note

A connection to RF--MANAGER is established as long as the "RF--MANAGER RF310M" software is running on the SIMATIC RF310M. On exiting, this connection is closed down.

9.3.5 The functions in the "Tag" menu

9.3.5.1 Overview of tag functions

The following tag functions are available that you can select in the menu via "Tag":

- Scan
- Read Data
- Write OTP
- Tag Status
- Init Tag

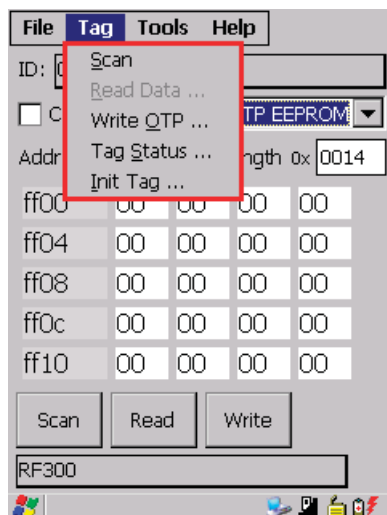


Figure 9-13 The tag functions

9.3.5.2 Scan tag

If you have activated the "Edit Tag" function in the RF-MANAGER, you can use "Tag > Scan" to select the interface for the scanning of tags.

See also Chapter Acquire data and transfer it to RF-MANAGER (Page 64).

9.3.5.3 Read Data

If you have already scanned a tag, you can select the data editor using "Tag > Read Data" in order to edit tag data. See also Chapter The data editor (Page 65).

9.3.5.4 Write OTP

If you have activated the "Edit Tag" function in the RF-MANAGER, you can use "Tag > Write OTP" to write once to the OTP area of a tag that is at a sufficient distance from the reader.

 CAUTION
The "Write OTP" function is non-reversible.
Please note that the OTP memory area can only be written to once. It is not possible to change the values in the OTP area of a tag at a later time.

Requirements

The memory area "OTP EEPROM" is selected in the data editor.

Procedure

1. Select "Tag > Write OTP".
2. Confirm the confirmation prompt "Caution! Switch on permanent write protection?" with "Yes!".

The data displayed in the data editor is then transferred to the tag.

Result

The data is identified on the tag as being no longer writable.

In the data editor, the protected areas following a read operation are displayed in gray.

Note

OTP memory areas of the RF300 and ISO tags

For OTP memory areas of the RF300 tags, see the System Manual RF300, RF300/ISO transponders, memory configuration of the RF300/ISO tags.

Only complete rows with 4 bytes each are write-protected.

If, for example, you only select the 2nd byte in the data editor using the "Address" FF05 and "Length" 1, only this byte is transferred to the EEPROM area on the tag, but the address range FF04...FF07 is protected.

A write operation is carried out internally at block address FF84.

The OTP area refers to the 5 block addresses FF80, FF84, FF88, FF8C and FF90. A write command to this block address with a valid length (4, 8, 12, 16, 20 depending on the block address) protects the written data from subsequent overwriting.

Note

If the OTP area is used, it must be ensured that the blocks are used without gaps, starting with block 0.

Examples:

3 blocks (with write command), blocks 0, 1, 2 (FF80, length = 12): valid

2 blocks (consecutive), block 0 (FF80, length =4), block 1 (FF84, length = 4): valid

2 blocks (consecutive), block 0 (FF80, length =4), block 2 (FF88, length = 4): invalid

1 block, block 4 (FF90, length = 4): invalid

9.3.5.5 Reading the tag configuration data

You can read the configuration data of a tag by selecting the memory area "CONFIG" in the editor and subsequently carrying out a read operation. The memory area "CONFIG" only exists with RF300 tags.

Byte address	EEPROM	Functional description
0xFF1f	Bank switch (bits 1 and 0)	Memory bank
0xFF1e	MDS delay (bits 7:5); LFD (bit 4)	MDS delay/LFD bit
0xFF1d	Reserved	
0xFF1c	Limit value A for LFD quotients	LFD (A)
0xFF1b	Limit value B for LFD quotients	LFD (B)
0xFF1a	Reserved	
0xFF19	Memory configuration, INIT (bits 7...1)	Memory configuration/Init bit
0xFF18	Range for lock bits	Lock bits
0xFF17	Tag ID, byte 3	Tag ID (b24-b31)
0xFF16	Tag ID, byte 2	Tag ID (b16-b23)
0xFF15	Tag ID, byte 1	Tag ID (b8-b15)
0xFF14	Tag ID, byte 0	Tag ID (b0-b7)

9.3.5.6 Read tag status

You can read and display the status data of the transponder via "Tag > Tag Status".

The following tag status information is displayed here:

- Tag ID
- FRAM memory size in bytes
- Lock bit register (8-bit binary value)
- ASIC version

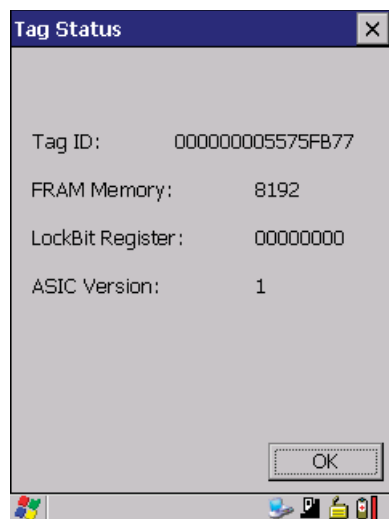


Figure 9-14 Reading the tag status

9.3.5.7 Initialize the tag

The "Init Tag" function is used to overwrite the complete data area of a tag with a specific value.

If you have activated the "Edit Tag" function in the RF-MANAGER, you can execute this function using "Tag > Init Tag".

Prerequisite

A writable memory area is selected in the data editor:

- The memory area of the complete tag if the "Complete" check mark is selected in the data editor; or
- The memory area set in the fields "Address" and "Length".

Procedure for initializing the tag

1. Select "Tag > Init Tag".
2. You can enter a hexadecimal or decimal value with which you wish to write to the selected memory area in the window "Initialize Tag". Click "OK" to confirm.

The tag is then initialized.

Once the tag has been successfully initialized, the corresponding value is also preset in the data editor.

Note

Write protection in the OTP EEPROM memory area

Note that only those data can be written in the EEPROM memory area which have not been protected by the "Write OTP" function.

9.3.6 The functions in the "Tools" menu

9.3.6.1 Overview of the Extras functions

The following functions can be selected in the "Tools" menu:

- Password
- Reader Status
- Language
- Settings

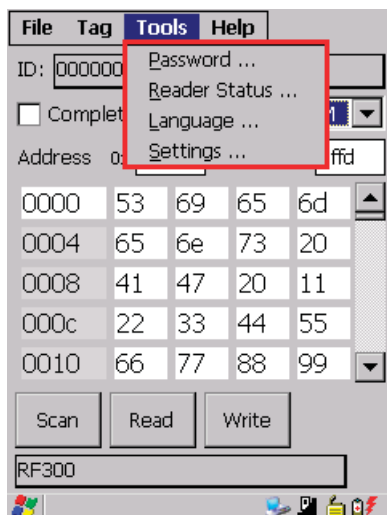


Figure 9-15 Tools functions

9.3.6.2 Password for the SIMATIC RF-MANAGER RF310M application

As an option, you can assign a password for the SIMATIC RF-MANAGER RF310M application.

Select "Tools > Password" from the menu.



Figure 9-16 Password

1. Enter a password with up to 8 characters under "New Password".
2. Then enter the password again under "Confirm password".
3. Select the "OK" button.

The password is now set. All write functions to a tag as well as exiting of the software are now protected by this password.

Password prompt

If you then wish to perform a write function, you will be prompted to enter the appropriate password. You only have to enter the password once in the case of several consecutive write commands. It will remain valid for 5 minutes after the last write function is executed.

This password is also required to exit the application.

Deactivation of password

If you have assigned a password and then wish to deactivate it, leave the "New Password" and "Confirm Password" fields empty, and confirm using the "OK" button.

Default password

No password is assigned in the delivery condition.

Note

I forgot my password

If you have forgotten your password, the original status of the device can be restored. See System reset (Page 92).

9.3.6.3 Reader Status

Via "Tools > Reader Status" you can view the following information:

- API Version
- Model (RF310M)
- Firmware version of the RFID module
- Reader Service

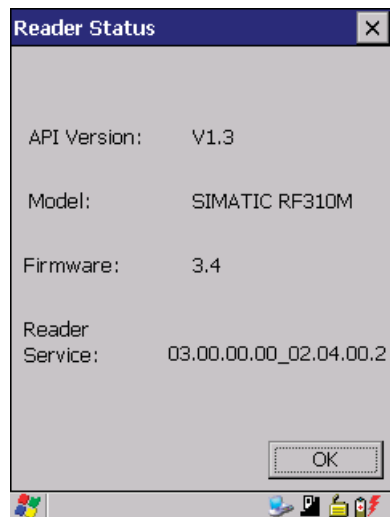


Figure 9-17 Reader Status

9.3.6.4 Setting the language

You can set English or German as the menu language of the SIMATIC RF-MANAGER RF310M software. Select the desired language in the "Language selection" window of the "Tools > Language" menu and confirm with "OK".



Figure 9-18 Language selection window

9.3.6.5 Settings

You can make the following settings using this function:

- Define the data formats
- Define the filename

Select "Tools > Settings" to parameterize these settings. The "Settings" window opens:

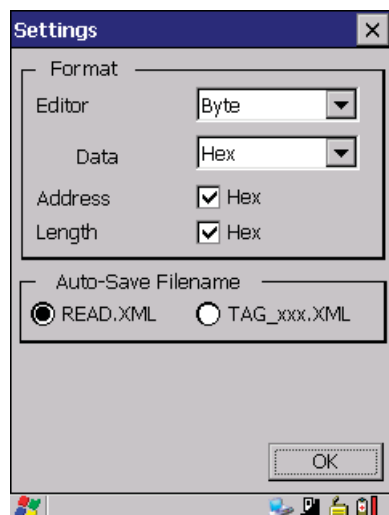


Figure 9-19 Settings window

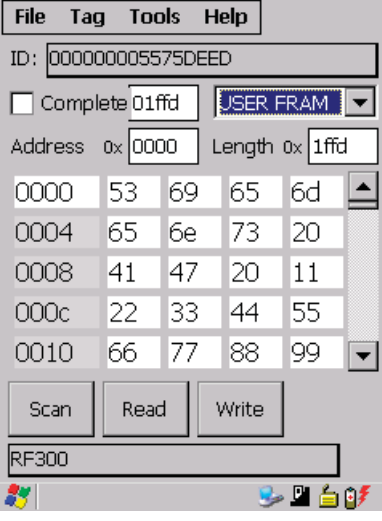
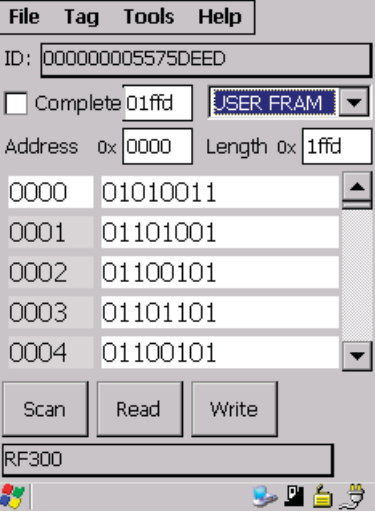
Settings under "Format"

You can set different formats (for the editor, data, address and length) under "Format" that are explained below.

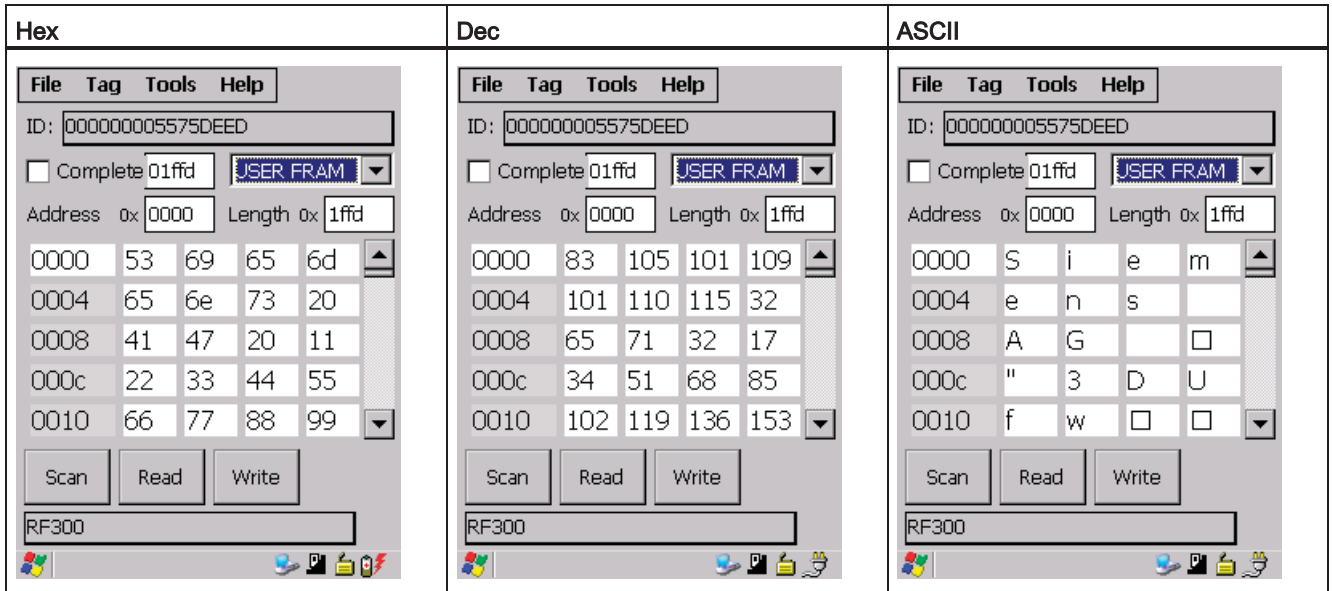
- **Effect of the "Editor" settings:**

Byte, binary

Depending on the format that you select, the interface in the data editor is as depicted below:

"Byte"	"Binary"
	
Format in bytes	Presentation with "0" and "1"

- **Effect of the "Data" settings:**
Hexadecimal, decimal or ASCII number format
"Hex" or "Dec" presentation format can be recognized in the "Address" and "Length" lines in the data editor.



- **Effect of the settings under "Address" and "Length"**
When the check mark is missing, you can also enter decimal data here. If you subsequently set the check mark, the data will be converted into hexadecimal format. Depending on the format setting, the values will be changed in the editor. You can see in the data editor whether "Hex" or "Dec" is activated; for Hex format, "0x" is shown for "Address" and "Length":

	"Hex" check mark not activated	"Hex" check mark activated
Display in the editor	Address <input type="text" value="0"/> Length 0x <input type="text" value="001c"/>	Address <input checked="" type="checkbox"/> 0x <input type="text" value="0000"/> Length <input checked="" type="checkbox"/> 0x <input type="text" value="001c"/>

Settings under "Auto-Save Filename"

Under "Auto-Save Filename" you can define whether the same file with the same name is always updated when scanning tags, or whether new files are saved in each case.



Figure 9-20 Auto-Save Filename

- **"READ.XML"**

If the setting "READ.XML" is selected, the same file READ.XML is always updated each time tag data is read.

- **"Tag_XXX.XML"**

If the setting "Tag_XXX.XML" is selected, a new file with the name TAGxxx.XML is created each time tag data is read. "xxx" is replaced by the ID of the read tag.

If a tag with the same ID is read again, the corresponding file is overwritten.

"READ.XML" is set as the default value.

9.3.7 The functions in the "Help" menu

9.3.7.1 Overview of "Help" menu

Using "Help > About" you can obtain information on the following points:



Figure 9-21 "About RF310M" window

Advanced functions

10.1 File storage on the SIMATIC RF310M

Storing the read tag data using the data editor

The data read from the tag are automatically stored on the reader to a file with the name "READ.XML" in the "Flash Disk" directory.

Every subsequent read command overwrites this file.

Length of the written tag data

When writing to the tag, the write data are written from the Editor to the tag and also to the "Flash Disk" directory of the reader under the name "WRITE.XML". Every subsequent write command overwrites this file.

Display Files

The function "File > Open" shows all files with the extension ".XML". You can select one of these. This file is then loaded into the Editor. The file is not saved with the name READ.XML or WRITE.XML.

Save files

The function "File > Save / Save Tag As" saves the data from the Editor to a file with the extension ".XML" in the "Flash Disk" directory of the reader. You can enter any name with 1 to 100 alphanumeric characters.

Note

Identification of modified data is retained in the XML file

If you read the data from the tag, modify them in the Editor and then save them, the modified data are saved to the .XML file. The identification of the modified data is also retained in the XML file; i.e. if you open the file again in the data editor, the modified data again have a green background.

10.2 Data transfer between the PC and reader

10.2.1 Prerequisites

If you want to access the supplied files and documentation, please note the following prerequisites:

- **USB driver for PSION Workabout Pro**

You will find the USB driver

- of PSION (www.pSIONteklogix.com).
- on the DVD "RFID Systems Software & Documentation" (order number 6GT2080-2AA20).

- **The Active Sync program from Microsoft**

You can download the current version of Microsoft Active Sync from the Internet at Microsoft homepage (<http://www.microsoft.com>).

- **Docking station with USB cable**

A docking station with USB cable to connect the PC to the SIMATIC RF310M.

10.2.2 Working with ActiveSync or the synchronization center

The ActiveSync program (Windows XP) or Synchronization Center (Windows 7) establishes a connection via USB to the SIMATIC RF310M. You can now copy data and programs very easily in the manner familiar from Explorer. You only need to select the "Flash Disk" directory in the Explorer. It is also possible to access the SIMATIC RF310M device directly with Active Sync / Synchronization Center.

Below, the section describes how to work with the ActiveSync program.

Requirements for opening the RF310M workstation

- The USB driver for the PSION Workabout Pro is installed.
- The ActiveSync/Synchronization Center program from Microsoft is installed.
- The SIMATIC RF310M is in the docking station and connected to the PC via the USB cable.

Opening the RF310M workstation via the PC's Explorer

1. Select the directory "RF310M/Flash Disk" in the Explorer.

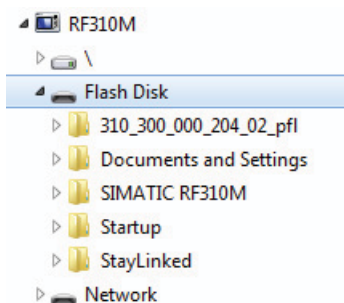


Figure 10-1 Opening the RF310M workstation via Explorer

Opening the RF310M workstation via ActiveSync and "Explore"

1. Start the "ActiveSync" program.
2. Select the button "Explore" (button for German installation: "Durchsuchen"), to access the device using ActiveSync.

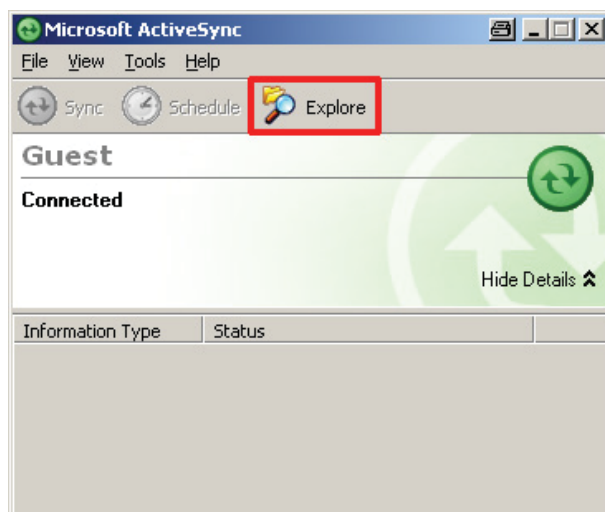


Figure 10-2 Access to the SIMATIC RF310M device using ActiveSync "Explore"

Opening the RF310M workstation/"Flash Disk" directory

Then select the "RF310M/Flash Disk" directory and open it.

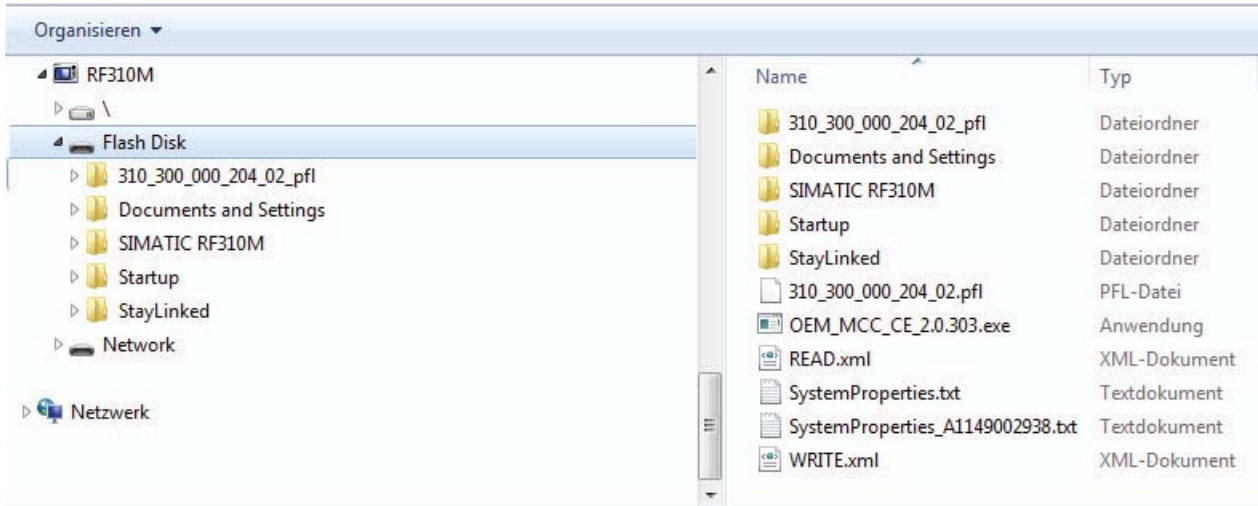


Figure 10-3 Flash Disk folder

In the directory, you will find the file "READ.XML" and the files you have saved with the extension ".XML". You can now drag or copy and paste these files from the drive of the SIMATIC RF310M to the PC drive.

You can now view and modify the file contents on the PC using a suitable editor.

You can use any editor to display the XML structure:

- Notepad
- Write
- Microsoft Word
- Microsoft Internet Explorer

10.2.3 Organization of the .XML files in the Flash Disk directory

The XML structure for the stored "Tag data" as well as the tag ID list is shown below.

XML structure of the read or written tag data

```

<?xml version="1.0" encoding="utf-8" ?>
- <tag xmlns:tag="urn:com:siemens:simatic:hmi:handheld:1" tagId="000000005576766B" tagTypeName="RF350T">
- <banks>
+ <bank name="OTP EEPROM">
- <bank name="CONFIG">
  <length>12</length>
- <items>
- <item>
  <tagAddress>65300</tagAddress>
  <value1>107</value1>
  <value2>118</value2>
  <value3>118</value3>
  <value4>85</value4>
  <changeMask>0</changeMask>
</item>
- <item>
  <tagAddress>65304</tagAddress>
  <value1>0</value1>
  <value2>42</value2>
  <value3>0</value3>
  <value4>0</value4>
  <changeMask>0</changeMask>
</item>
- <item>
  <tagAddress>65308</tagAddress>
  <value1>64</value1>
  <value2>0</value2>
  <value3>112</value3>
  <value4>0</value4>
  <changeMask>0</changeMask>
</item>
</items>
</bank>
+ <bank name="USER FRAM">
</banks>
</tag>

```

- ① Selected tag type
- ② Tag ID (UID)
- ③ Data area of the tag
- ④ Number of bytes in the data area
- ⑤ Start address of a 4-byte block (decimal)
- ⑥ Value of the 4 bytes of a data area (decimal format).
 - Value 1 = Start address + 1
 - Value 2 = Start address + 2
 - Value 3 = Start address + 3
 - Value 4 = Start address + 4
- ⑦ These values are hidden in this example with "Internet Explorer"; by clicking on the "+" character, the same view that is used for the "USER" data area can be displayed.

Figure 10-4 XML structure

10.3 The automatic power-saving function

The PSION Workabout Pro has an automatic shutdown function. This is activated if no key on the reader is pressed for approximately 3 minutes.

In addition, the "SIMATIC RF310M" software has a further power-saving function. If no tag is detected for 20 seconds after starting a tag command, or if the tag currently being edited exits the field for longer than 20 seconds, the current tag command is stopped. The following message appears (see also Progress and timeout display (Page 42):

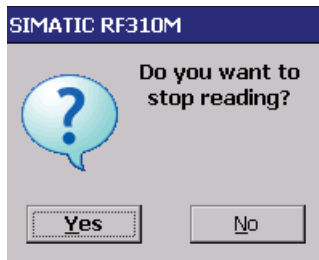


Figure 10-5 Timeout display

You can now stop the command with "Yes" or continue it with "No". If you retry, the interrupted command is continued at the point of interruption.

10.4 System reset

Requirements for the system reset:

- The "Flash Disk" directory contains the backup file with the extension *.pfl
- The devices must be in the "Supervisor" operating mode. See Operating modes (Page 24).

Performing a system reset and importing a back-up file

You can activate a system reset via "Start > Shutdown > Cold Reset". If there is a system crash, you start the system reset by pressing and holding down the <ON/OFF> (red), <FN> (orange) and <FN> (blue) buttons. The most recently saved back-up file will then be copied back in. Please note that during a "Cold Reset", the device restarts twice.

To restore a backup, replace all the data in the "Flash Disk" directory with your backup copy and then run a system reset.

Starting a system reset with battery

After inserting the batteries and switching on for the first time, the reader also carries out a system reset if the device was previously completely discharged. If the device is not completely discharged but you still wish to carry out a system reset, remove the battery and briefly set the switch in the bottom right corner of the battery compartment to "OFF". This reset is the same as a hardware reset.

Note

Data retention and data loss during system reset

When you perform a system reset, only the saved data in the flash memory are retained ("Flash Disk" directory). All other data in RAM (e.g. in the "Application Data" folder) is lost.

Note

Restoring the delivery status of the device

If you want to restore the delivery status of the device, delete the self-stored files in the "Flash Disk" directory, especially the self-created back-up files with the ending *.pfl.

Ensure that the "Flash Disk" directory still contains the files that were supplied on delivery (especially the files with the ending *.pfl). Otherwise, you will have to copy in the files that were backed up on initial commissioning again.

Troubleshooting


Table 11- 1

Problem	Possible cause	Problem recovery
The display goes blank when reading/writing.	The battery or the batteries of the reader are empty.	Insert the device into the charging and docking station or insert new batteries.
The display is blank after switching on.	<ul style="list-style-type: none"> The battery or the batteries are empty. 	<ul style="list-style-type: none"> Insert the device into the charging and docking station or insert new batteries.
	<ul style="list-style-type: none"> Software or driver were deleted from the Flash Disk. 	<ul style="list-style-type: none"> Send in the device.
Icons are missing on the display.	The icon has been deleted.	Restore the factory settings by running a system reset. Press and hold down the <ON/OFF> (red), <FN> (orange) and <FN> (blue) buttons simultaneously for approximately 6 seconds. As an alternative, remove the batteries from the basic device and re-insert them after 60 s.
Error messages appear that are not defined in the user documentation.	-	
The green LED on the read head of the RF310M does not go out after a read/write access to the transponder.	The program was illegally aborted.	
The supervisor password is not known.	-	
The password for the write commands of the SIMATIC RF310M application has been forgotten.	-	Copy in the most recent back-up.
The tag at the read head is not read.	The tag is defective.	Use a different/new tag.
	The tag is too far away from the read head.	Reduce the distance between the read head and the tag. Please observe the limit distances between the reader and tags. Refer to the limit distances in section Technical Specifications (Page 99)
	The orientation of the tag antenna does not comply with the alignment of the reader antenna.	Ensure correct alignment of the transponder antenna and reader antenna. See Antenna and antenna field (Page 16).
The function "Write Tag" cannot be executed/is represented in gray in the menu.	It was previously read in the protected OTP area.	Execute the function "Read Tag". Following this, the tag can be written to again assuming that the OTP area is not protected.
Writing or protection of the OTP area does not function	<ul style="list-style-type: none"> Write access to an OTP memory area which is already used the tag is defective 	First read the OTP area in order to determine whether the tag is still functioning or whether this area is already protected.
	An invalid transponder type was set	Check the transponder setting.
	An attempt is being made to write to a protected area	Correct the area to be written (see section The data editor (Page 34)).

Problem	Possible cause	Problem recovery
The message "Do you wish to exit reading/writing?" is output during a write operation.	• The transponder is not in the sensing area of the read head	• Move the transponder into the sensing area of the read head
	• The transponder is defective	• Replace the faulty transponder.

Maintenance

12.1 Repair

 WARNING
Personal injury or equipment damage due to unauthorized opening or repairing
Unauthorized opening or repairing of the device can lead to personal injury or equipment damage. Therefore do not carry out repairs yourself. Repairs may only be carried out by authorized qualified personnel at the manufacturer's site.

For repairs, send the device to the Return Center in Fürth. Repairs may only be carried out at the Return Center in Fürth.

Depending on the work necessary to repair the device, the Center may decide to give you a credit note. In this case, it is your responsibility to order a new device.

The address is:

Siemens AG
Industry Sector
Returns Center
Siemensstr. 2
90766 Fürth Germany

12.2 Servicing

Cleaning

NOTICE
Damage to the device due to detergents
The use of aggressive scouring agents or solvents to clean the device may damage it. Only use dish soap or foaming screen cleaner as cleaning agents for the device.

Technical Specifications

Table 13- 1 Technical specifications of the RF310M

		6GT2803-1AC00
		6GT2803-1AC10
Processor		Intel Xscale PXA270, 624 MHz, ARM
RAM		256 MB
ROM		1 GB Flash ROM
User program		RF310M.exe
Screen		Color Touch Display, 480 x 640 pixels, portrait
Keypad		Alphanumerical
Sound		Loudspeaker
Power supply		Lithium-ion battery (3.7 V; 3300 mAh) for rapid charging; automatic shutdown
Interfaces		LIF interface (Low Insertion Force interface) for battery charging and communication with PC; USB interface
Operating system		Microsoft Windows CE.NET 5.0
File management		MS-DOS-compatible
Integrated software		SIMATIC RF310M
Dimensions		<ul style="list-style-type: none"> • 277 x 100 x 44 mm or • 287 x 100 x 44 mm
Weight		Approx. 625 g
Temperature	Operation	-20 °C ... +50 °C
	Storage	-40 °C to +60°C (without battery)
Relative humidity		5 % ... 95 %, no condensation
Degree of protection		IP65, IEC 60529 (splashproof)
EMC		EN 55022
Electrostatic; RF; EFT		IEC 801-2; IEC 801-3; IEC 801-4
Transmission frequency for power/data		13.56 MHz
Compatibility		SIMATIC RF300 and ISO transponder Transponders MDS D117, D127, D421 and D422 can only be processed with Mobile Reader 6GT2803-1AC10.
Read/write distance to transponder		<ul style="list-style-type: none"> • RF 300 • ISO • Max. 50 mm • Max. 100 mm
Read time	1000 bytes	1.5 s
	8000 bytes	5 s

Ordering data

Table 14- 1 RF310M reader

Reader	Order number
SIMATIC RF310M mobile reader with integrated RFID read/write unit and integrated antenna for RF300 Consisting of basic unit (6GT2803-0AC00) and battery (6GT2898-0CA00)	6GT2803-1AC00
SIMATIC RF310M mobile reader with integrated RFID read/write unit and option of connecting an external antenna for SIMATIC RF300 Consisting of basic unit (6GT2803-0AC10) and battery (6GT2898-0CA00)	6GT2803-1AC10

Accessories

Table 14- 2 Accessories

Accessories	Order number
SIMATIC RF Reader charging/docking station. Charging station for Workabout PRO Incl. wide-range power supply unit with universal adapter, power cable and USB cable	6GT2898-0BA00
Replacement battery; 3300 mAh	6GT2898-0CA00
SIMATIC RF WLAN module for mounting on RF310M	6GT2898-0DA00

Table 14- 3 Antennas

Antennas	Order number
ANT 8 incl. one antenna connecting cable 3.3 m	6GT2398-1CF00
ANT 12 incl. one antenna connecting cable 3.3 m	6GT2398-1CC00
ANT 18 incl. one antenna connecting cable 3.3 m	6GT2398-1CA00
ANT 30 incl. one antenna connecting cable 3.3 m	6GT2398-1CD00

Table 14- 4 RFID accessories, general


RFID accessories, general	Order number
DVD "RFID Systems Software & Documentation"	6GT2080-2AA20

Appendix

A

A.1 Certificates and approvals

A.1.1 CE mark

Certificate	Description
	CE Approval to R&TTE

A.1.2 FCC

FCC § 15.19 This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC § 15.105

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

A.1.3 Canada

Canada CNR-Gen Section 7.1.3

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ICES-003

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

A.2 Accessories

The accessories include the charging and docking station (including wide-range power supply unit, 100 to 240 V AC, 50 to 60 Hz) for recharging the battery and connecting to PCs via USB port.

This station has a charging bay for an additional replacement battery and must be ordered separately. See Ordering data (Page 101).

A.3 Ordering components for advanced functions

Components for advanced functions

The advanced functions of the SIMATIC RF310M reader require components that are not supplied by Siemens.

If you require these components for your application, please contact PSION direct or its representative in your country.

For further PSION components such as memory expansions or rapid charging units, please contact PSION or its agents.

These components are not required for the RF300 application. They may become necessary if you want to program your own identification application on the reader.

Addresses and ordering lists of PSION

Addresses and ordering lists of PSION can be found on the Internet at PSION homepage (www.psionteklogix.com).

You can also find the PSION agent in your country at this Internet address.

In Germany, PSION components are supplied by WAROK (phone: +49 7721/202630).

A.4 Developing user applications

You can develop your own applications over the API interface. Further information can be found in the directory "Flash Disk" of the SIMATIC RF310M device:

"Flash Disk\SIMATIC RF310M\Support\RFID_API".

A.5 Service & Support

Technical Support

You can access technical support for all IA/DT projects via the following:

- Phone: + 49 (0) 911 895 7222
- Fax: + 49 (0) 911 895 7223
- E-mail (<mailto:support.automation@siemens.com>)
- Internet: Web form for Support Request (<http://www.siemens.com/automation/support-request>)

Contacts

If you have any further questions on the use of our products, please contact one of our representatives at your local Siemens office.

The addresses are found on the following pages:

- On the Internet (<http://www.siemens.com/automation/partner>)
- In Catalog CA 01
- In the catalog ID 10 specially for Industrial Identification Systems

Service & support for industrial automation and drive technologies

You can find various services on the Support home page (<http://www.siemens.com/automation/service&support>) of IA/DT on the Internet.

There you will find the following information, for example:

- Our newsletter containing up-to-date information on your products.
- Relevant documentation for your application, which you can access via the search function in "Product Support".
- A forum for global information exchange by users and specialists.
- Your local contact for IA/DT on site.
- Information about on-site service, repairs, and spare parts. Much more can be found under "Our service offer".

SIMATIC documentation on the Internet

A guide to the technical documentation for the various SIMATIC products and systems is available on the Internet:

SIMATIC Guide manuals (<http://www.siemens.com/simatic-tech-doku-portal>)

RFID homepage

For general information about our identification systems, visit RFID home page (<http://www.siemens.com/ident/rfid>).

Online catalog and ordering system

The online catalog and the online ordering system can also be found on the Industry Mall home page (<http://www.siemens.com/industrymall/en>).

Training center

We offer appropriate courses to get you started. Please contact your local training center or the central training center in

D-90327 Nuremberg.

Phone: +49 (0) 180 523 56 11

(€ 0.14 /min. from the German landline network, deviating mobile communications prices are possible)

For information about courses, see the SITRAIN home page (<http://www.sitrain.com>).

Glossary

ASIC version

Application Specific Integrated Circuit version is the hardware version of the RFID tag. This information is primarily required for servicing.

Byte

A group of eight bits form a byte.

CE mark

Communauté Européenne (product mark of the European Union)

DT

Drive Technologies

HF field

High-frequency field

IA

Industry Automation

LockBit register

Information on locked memory areas. Primarily required for servicing.

MDS

Mobile data memory (see transponder)

OTP

One Time Programmable

RAM

Random Access Memory

Reader Service

Software for controlling the RFID module.

Readers

Readers ensure fast, secure data transfer between mobile data storage units and higher-level systems. The data, energy included, are transmitted across an electromagnetic alternating field. This principle enables contact-free data transmission, ensures high industrial compatibility and works reliably in the presence of contamination or through non-metallic materials.

RFID

Radio Frequency Identification

RFID systems

SIMATIC RF identification systems control and optimize material flow and production sequences. They identify reliably, quickly and economically, use non-contact data communication technology, and store data directly on the product. They are also resistant to contamination.

Tag

See transponder

Transponder

An invented word from transmitter and responder. Transponders are used on the product, the product carrier, the object, or its transport or packaging unit, and contain production and manufacturing data, i.e. all application-specific data. They follow the product through assembly lines, transfer and production lines and are used to control material flow.

Because of their wireless design, transponders can be used, if necessary, at individual work locations or manufacturing stations, where their data can be read and updated.

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J31069-D0191-U001-A7-7618
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