SIEMENS

SIMATIC Ident

RFID systems
Mobile reader SIMATIC RF360M/RF660M

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.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

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

1

Purpose of these operating instructions

These operating instructions contain information required for commissioning and using the SIMATIC RF360M or RF660M (consisting of the RF160B base device and an RF360H or RF660H head module). The documentation is aimed at commissioning engineers, configuring engineers and operators who commission, set up/configure and work with the mobile readers.

Basic knowledge required

These operating instructions assume general knowledge of automation engineering and identification systems.

Scope of validity of this documentation

These operating instructions are valid for the SIMATIC RF360M and RF660M as of product version "01", SIMATIC Mobile Reader app V2.0, and describe the delivery state as of 08/2022.

Trademarks

The following and possibly other names not identified by the registered trademark sign ® are registered trademarks of Siemens AG:

SIMATIC ®, SIMATIC RF ® and MOBY ®

Orientation in the documentation

You can find detailed information on the transponders that can be read with the SIMATIC RF160B and on the antennas that can be connected to the HF head module in the "SIMATIC RF300" and "SIMATIC RF600" system manuals. The "Input parameters for the RF300 system" product information contains important information for working with RF300 and MIFARE Classic transponders.

You can find the current versions of the manuals on the pages of the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/14971/man).

Abbreviations and naming conventions

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

Mobile reader	Reader, hand terminal, handheld
Transponder	Tag, data carrier, mobile data storage (MDS)

Decommissioning

Decommission the device properly to prevent unauthorized persons from accessing confidential data in the device memory.

To do this, reset the device to the factory settings.

Recycling and disposal

The products are low in harmful substances, can be recycled and meet the requirements of the Directive 2012/19/EU for disposal of waste electrical and electronic equipment (WEEE).

Do not dispose of the products at public disposal sites.

For environmentally compliant recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste or your Siemens representative.

Note the different country-specific regulations.

Safety instructions

2

2.1 General safety information

NOTICE

Use of original parts only

To operate the mobile reader and the docking station, only original power supply units that can be ordered from Siemens and batteries approved by Siemens may be used! The use of impermissible components can result in the destruction of the mobile reader or the docking station.

⚠ CAUTION

Risk of explosion of the battery

The mobile reader has a lithium-ion battery. Lithium-ion batteries can explode when they are exposed to fire or heat. The battery must not be disassembled and exposed to fire or heat (greater than 60 °C / 140 °F).

If the mobile reader will not be used for some time, remove the battery.

NOTICE

Avoid environmental impacts on the reader/docking station

Do not place the mobile reader, docking station and power supply unit close to heat sources (fan heaters or similar) and do not expose them to direct sunlight, excessive dust sources or shock. Make sure that the cables and power supply unit do not pose a tripping hazard.

To avoid overheating, the mobile reader, docking station and power supply unit cannot be covered during operation.

Please note that the mobile reader should only be operated indoors.

NOTICE

Repairs only by authorized qualified personnel

Unauthorized opening of and improper repairs to the device may result in substantial damage to equipment or danger. Repairs may only be carried out by authorized qualified personnel.

NOTICE

Operating the touch screen

Only operate the touch screen with your fingertips or with a touch pen intended for this purpose. Never use a ballpoint pen or other sharp objects.

NOTICE

Maximum permissible transmit power

Maximum permissible transmit power in the frequency band:

- WLAN:
  - Max. 100 mW in 2.4 GHz band
  - Max. 200 mW in 5 GHz band
- RFID: Max. 42 dBµA/m at 10 m distance (mag. field strength)

CAUTION

Damage to retina due to camera flash

Do not flash the camera directly into the eyes of persons in the vicinity or your own eyes, as this could damage the retina.

Note

Switching on the display in Idle mode

If the display of the mobile reader is in Idle mode, it can be activated by pressing the "Power" button briefly.

2.2 Security recommendations

To prevent unauthorized access, observe the following security recommendations when working with the reader.

General

- Check regularly that the device complies with these recommendations and/or other internal security policies.
- Do not connect the device directly to the Internet. Operate the device within a protected network area.
- Do not establish a WLAN connection with the device. If you do establish a WLAN connection, make sure that it is a secure connection.

Physical access

- Restrict physical access to the device.
- The device does not have user management functions. Make sure that only adequately qualified and authorized personnel have access to the device.
- Lock unused physical ports (e.g. Ethernet ports) on the device. Unused ports can be used to access the system without authorization.

Software (security functions)

- Keep the software up to date. Keep yourself informed regularly about safety updates for the product.
  You can find information about this at Link: (https://www.siemens.com/industrialsecurity).
- For compatibility reasons, the pre-installed Web browser contains both weak and strong TLS encryption algorithms. For security reasons, protect your server against the use of weak encryption algorithms with corresponding measures.
- Make sure that the apps installed and operated on the device are from trusted sources.
- Activate only protocols that you actually need to use the device.
- The XML protocols are sent unencrypted. Take suitable measures to ensure that the XML communication is tap-proof.

Passwords

- The transponders usually have "Lock" and "Kill" passwords. Set these passwords to ensure that an attacker who obtains physical access to the transponders cannot set them or change the transponder contents.

Keys and certificates

This section deals with the security keys and certificates that you need to set up SSL.

- We urgently recommend creating your own SSL certificates and making them available. Preset certificates and keys are present in the device.

  The preset and automatically created SSL certificates are self-signed. We recommend using certificates signed either by a reliable external certification authority or an internal certification authority.

  The device has an interface via which you can import certificates and keys.
- We recommend that you use certificates with a cryptographic key length of at least 4096 bits.
- If protocols support both certificates and keys, you should favor certificates.
- The following certificate formats are supported for the import:

Certificate	Supported formats
HTTPS	*.p12

Firmware encryption

The firmware itself is signed and encrypted. This ensures that only authentic firmware can be downloaded to the device.

2.3 Protocols

Secure/non-secure protocols

- Use only secure protocols when access to the device is not secured by physical protection measures.

  The following protocols provide secure alternatives:

  HTTP → HTTPS

- To prevent unauthorized access to the device or network, set up appropriate safeguards against non-secure protocols.
- Enable only the services (protocols) that will actually be used on the device. The same applies to the installed interfaces/ports. Unused ports could be used to access the network downstream from the device.

List of available protocols

All available protocols and their ports that are used with SIMATIC RF160B are listed below.

Table 2- 1 List of available protocols

Service/ Protocol	Protocol/ Port number	Preset port status	Port configurable	Port number configurable	Authentication	Encryption [1]
DHCP	UDP/67 UDP/68	Open	✓	--	--	--
NTP	UDP/123	Open	✓	--	--	--
DNS	UDP/53	Open	✓	--	--	--
HTTP	TCP/80	Open [2]	✓	--	--	--
HTTPS	TCP/443	Open [2]	✓	--	--	✓

[1] You can find more information on the encryption methods used in the appendix.

[2] If the application was started.

Explanation of the table:

- Authentication

  Specifies whether authentication of the communication partner takes place.

- Encryption

  Specifies whether the transfer is encrypted.

2.4 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/cert.

Note on firmware/software support

Siemens only provides bug and security fixes for the last released firmware/software version. This means that Siemens only monitors the current firmware/software version for security vulnerabilities.

Description

3

The SIMATIC RF360M and RF660M mobile readers consist of a SIMATIC RF160B base device and a head module. Depending on the head module used, the reader can be operated in the HF (RF360H: SIMATIC RF200 and RF300) or in the UHF frequency range (RF660H: SIMATIC RF600).

Area of application

These devices expand the RFID systems with powerful mobile HF or UHF readers for applications in the areas of logistics, production and service. They are primarily used for mobile acquisition and transmission (reading and writing) of transponder data. This makes the readers an indispensable tool for commissioning and testing.

Figure 3-1 Product photo of the SIMATIC RF660M and RF360M incl. docking station

The mobile readers are designed for use in harsh environments - they are very rugged and protected against splash water. The backlit display is easy to read even under unfavorable lighting conditions.

Scope of delivery and accessories

The scope of delivery of the SIMATIC RF160B base device includes a battery and a retaining strap. For operation, you also need a HF or UHF head module suitable for your conditions of use (HF: RF360H / UHF: RF660H), as well as a charging/docking station. The product scope is expanded by a pistol handle and a battery that can be ordered separately.

You can find information and order data for these products in the section "Order data (Page 91)".

Features

The following tables provide you with an overview of the features of the mobile readers.

Table 3- 1 Features of the charging/docking station

Features	Charging/docking station
Power supply interface	DC socket (hollow plug)
Ethernet interface	RJ45 (10/100 Mb)
USB interface	Type A For connecting removable data storage media (USB sticks)

Table 3- 2 Features of the basic device

Features	Base device: SIMATIC RF160B
Camera	5 megapixels, autofocus
Degree of protection	IP65
Software	SIMATIC Mobile Reader for RFID
Interfaces	WLAN

Table 3- 3 Features of the reader depending on the head module used

Features	Head modules	
	HF head module: SIMATIC RF360H	UHF head module: SIMATIC RF660H
Frequency range	13.56 MHz	865 to 928 MHz [1)] • ETSI (Europe): 865 to 868 MHz • FCC (USA): 902 to 928 MHz • CMIIT (China): 920.625 to 924.375 MHz
Radiated power	--	• ETSI/CMIIT: 9 ... 400 mW EIRP; 9.5 ... 26 dBm EIRP • FCC: 8.5 ... 380 mW EIRP; 9.3 ... 25.8 dBm EIRP
Read range	≤ 10 cm	≤ 1.3 m

Features	Head modules	
Transmission speed	≥ 800 byte/s (depending on the transponder protocol)	400 kbps
Readable transponder protocols	• ISO 15693 / ISO 18000-3 • RF300 (proprietary) • ISO 14443 (MOBY E, MIFARE Classic)	• ISO 18000-62 • ISO 18000-63 • EPCglobal UHF Class 1 Gen 2
Compatible transponders	All RF300T, MDS D and MDS E transponders that ...: • the RF310R can also read (HF head module with internal antenna) • the RF350R with connected antenna can also read (HF head module with antenna connector) You can find detailed information on this in the "SIMATIC RF300" system manual.	All transponders and smart labels of the RF600 product family.
Functions	• Read tag ID • Initialize transponder • Read data from the transponder • Write data to the transponder • Save and transfer transponder data • Display and edit data in decimal, hexadecimal and ASCII format • Logbook function • App in English and German	• Read tag ID • Read data from the transponder • Write data to the transponder • Localize transponder • Daten in Dezimal, Hexadezimal und ASCII anzeigen und editieren • Password protection of the transponder that can be enabled or disabled • Logbook function • App in English and German

[1] Depending on the country or region and the SIMATIC RF660H head module version used.

Commissioning

4

4.1 Commissioning (hardware)

Before the first commissioning of the mobile reader, make sure that the battery inserted in the reader in the factory is fully charged. You can charge the battery by placing the reader in the charging/docking station. To do this, connect the charging/docking station to the power supply using the power supply unit provided and insert the reader in the charging/docking station.

4.1.1 Connecting the charging/docking station

You can charge the battery of the mobile reader and spare batteries using the charging/docking station. Over the Ethernet interface, you can connect the charging/docking station with your network via a reader. Over the USB interface, you can connect removable data storage media to the charging/docking station.

Procedure

Follow these steps to connect and commission the charging/docking station:

1. Set up the charging/docking station in a level, stable, clean place, away from direct sunlight.
2. Insert the power supply cable into the external power supply unit.
3. Insert the DC plug of the power supply unit into the DC socket on the rear of the charging/docking station (⎓).
4. If necessary, insert the Ethernet cable into the RJ45 socket on the rear of the charging/docking station.

Interfaces

The charging/docking station has three interfaces, as well as two charging interfaces for the mobile reader and spare batteries.

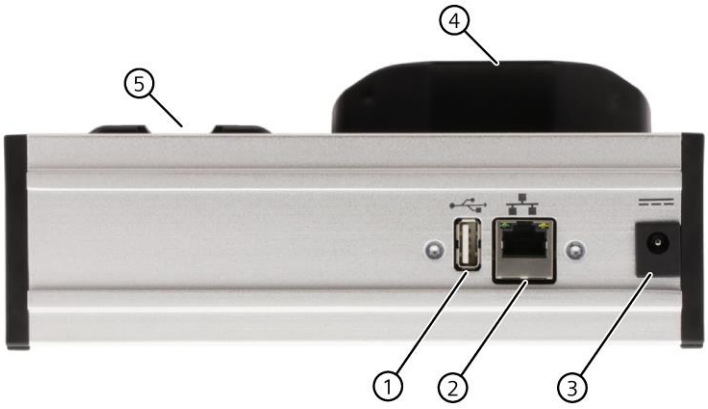


Figure 4-1 Interfaces of the charging/docking station

① USB interface (type A)
② Ethernet interface (RJ45; 10/100 Mb)
③ Power supply interface (DC socket; hollow plug)
④ Charging interface for the mobile reader
⑤ Charging interface for spare batteries

4.1.2 Replacing/inserting the battery

The reader's battery is inserted in the factory as standard. A description of how to replace the battery or insert a new battery is provided below. The battery compartment is located on the back of the reader.

Procedure

Follow these steps to replace the battery of the mobile reader:

1. Remove the retaining strap, if necessary, by unhooking it at the bottom of the remove or remove the pistol handle as described in section "Attaching/replacing the reader handle (Page 26)".
2. Turn or lay the reader on its front.
3. Open the battery compartment by pressing the latch (metal clip) lengthways towards the head module (top of reader) ①.

4. Remove the battery by lifting it upwards from the bottom of the device ②.

Figure 4-2 Removing the battery

5. Insert the battery downwards at an angle into the battery compartment ③ so that the contacts of the battery touch the contacts of the reader.
6. Then press the battery downwards on the underside of the device ④.

   Make sure that the latch (metal clip) engages.

Figure 4-3 Inserting the battery

7. If necessary, re-attach the retaining strap or the pistol handle.

Changing the battery during operation

The mobile reader has a buffer battery. This enables battery replacement during operation without the need to turn off the reader or close apps - provided the battery replacement is completed within a few seconds (about 5 s, max. 10 s) and the reader has been in operation for at least 30 minutes beforehand.

In battery replacement during operation, the display is disabled for energy-saving reasons. All other device functions, in particular the processor, memory and WLAN, remain operational. In addition, the device clock continues counting time for several days even without battery.

4.1.3 Charging the battery

You have a number of options for charging the battery of the mobile reader. The charging/docking station has two charging cradles. You can charge the reader battery with the left-hand charging cradle and a spare battery with the right-hand charging cradle.

Procedure: Charging the reader battery

To charge the reader battery, you must insert the bottom of the reader vertically into the left-hand charging cradle.

Figure 4-4 Inserting the reader in the charging/docking station

Procedure: Charging the spare battery

Follow these steps to insert a spare battery in the charging/docking station:

1. Insert the spare battery downwards at an angle into the battery compartment so that the contacts of the battery touch the contacts of the charging/docking station ①.
2. Then press the spare battery downwards ②.

   Make sure that the spare battery latches into place.

Figure 4-5 Inserting the battery in the charging/docking station

Follow these steps to remove a spare battery from the charging/docking station:

1. Open the latch by pressing the spare battery downwards at an angle into the charging/docking station ①.
2. Then remove the spare battery upwards ②.

Figure 4-6 Removing a battery from the charging/docking station

Reading the charge level of the batteries

You can read the charge level of the batteries via the two LEDs on the top of the charging/docking station. Charging a completely empty battery takes about 4 hours, provided that the reader is switched off while the reader battery is charged. If the reader is switched on, the charging process takes longer and the remaining charging duration of the reader battery is shown at the bottom edge of the display.

Table 4- 1 Reading the charge level via the LED charge display

LED color		
Reader battery (Speed CHARGE)		
	Red	The reader battery is being charged.
	Green	The reader battery is fully charged.
Spare battery (CHARGE)		
	Red	The spare battery is being charged.
	Green	The spare battery is fully charged.

4.1.4 Replacing the head module

To be able to read out transponder data using the mobile reader, you need to attach a head module suitable for your usage conditions to the reader. The SIMATIC RF360H head modules were designed for use in the HF range, while the SIMATIC RF660H head modules were designed for use in the UHF range.

Properties of the "SIMATIC RF360H" HF head modules

You can read and write transponders in the 13.56 MHz frequency range using the HF head modules.

Table 4- 2 Properties of the HF head modules

Features	SIMATIC RF360H
Frequency range	13.56 MHz
Readable transponder standards / transponder	• ISO 15693 (MDS D) / ISO 18000-3 • RF300 (proprietary; RF300T) • ISO 14443 (MOBY E, MIFARE Classic)

Note that there are two HF head module versions. The head module with the article number "6GT2803-1FA00" has an internal antenna and can be read out and written in connection with the SIMATIC RF160B transponder base device. In contrast, the head module with the article number "6GT2803-1FA10" has an M8 socket for connecting external antennas. For operation with this head module, you need an antenna for the HF frequency range in addition. You can find an overview of the suitable antennas in the section "Order data (Page 91)". You can find detailed information on the antennas in the "SIMATIC RF300" system manual.

Depending on the HF head module used, the RF360M can read and edit all RF300T, MDS D and MDS E transponders that the RF310R reader (HF head module with internal antenna) and the RF350R reader with connected antenna (HF head module with antenna connector) can also read.

Antenna field and read position

The following figure shows the antenna field (working range) of the SIMATIC RF160B in connection with a HF head module with internal antenna, as well as the optimum read position of the transponder and its alignment.

① Working range ≤ 60 ° below the HF head module

Figure 4-7 Radiation of the antenna field of the HF head module

When the HF head module with antenna connector for external antennas is used ("6GT2803-1FA10"), the transponder must be kept in front of the module.

Properties of the "SIMATIC RF660H" UHF head module

You can read and write transponders in the frequency range from 865 to 928 MHz using the UHF head modules.

Table 4- 3 Properties of the UHF head module

Features	SIMATIC RF660H
Frequency range	865 to 928 MHz [1)] • ETSI (Europe): 865 to 868 MHz • FCC (USA): 902 to 928 MHz • CMIIT (China): 920.625 to 924.375 MHz
Readable transponder standards / transponder	• ISO 18000-62 • ISO 18000-63 • EPCglobal UHF Class 1 Gen 2

1) Depending on the country or region and the SIMATIC RF660H head module version used

Note that there are three UHF head module versions. Depending on the country or region where you operate the SIMATIC RF160B mobile reader, you need to use one of the following head modules:

- SIMATIC RF660H (ETSI); article number "6GT2813-1FA00"
- SIMATIC RF660H (FCC): Article number "6GT2813-1FA10"
- SIMATIC RF660H (CMIIT); article number "6GT2813-1FA20"

You can find detailed information on the country profiles and on which head module is suitable for your country or region in "List of country profiles (https://www.siemens.com/rfid-approvals)".

The RF660M can read and edit all transponders and smart labels of the RF600 product family.

Note

Temperature rise during continuous operation

Please note that the UHF module can get very warm during continuous operation. To protect persons and the module, the maximum duration of a read operation is limited to two minutes.

Antenna field and read position

The following figure shows the antenna field (working range) of the SIMATIC RF160B in connection with a UHF head module, as well as the optimum read position of the transponder and its alignment.

① Working range ≤ 60 ° in front of the UHF head module (with horizontal alignment of the transponder axis)

② Optimum transponder alignment to the mobile reader (maximum range)

③ Alternatively transponder alignment to the reader (range reduced by approx. 20%)

Figure 4-8 Radiation of the antenna field of the UHF head module

Procedure

You can easily replace the head module interface cover or the head module by sliding it off or onto the base device from the side.

Figure 4-9 Replacing the head module

4.1.5 Attaching/replacing the retaining strap

The SIMATIC RF160B is delivered with a retaining strap intended to guarantee a secure hold.

Procedure: Attaching the retaining strap

Follow these steps to attach the retaining strap to the mobile reader:

1. Turn or lay the reader on its front.
2. Push or pull the retaining strap upwards from the bottom through the upper retaining strap hook.

Figure 4-10 Pushing/pulling the retaining strap through

3. Connect the retaining strap loop to the bottom of the reader.

Figure 4-11 Attaching the retaining strap loop

4. Close the Velcro fastener of the retaining strap.

Figure 4-12 Closing the Velcro fastener

To ensure a secure hold, the retaining strap should be tight enough that you can easily slide your hand between the retaining strap and the reader and hold the reader with minimal slack.

Procedure: Removing the retaining strap

Follow these steps to remove the retaining strap:

1. Turn or lay the reader on its front.
2. Open the Velcro fastener of the retaining strap.
3. Loosen the retaining strap loop at the bottom of the reader.
4. Pull the retaining strap out from the upper retaining strap hook.

4.1.6 Attaching/replacing the reader handle

There is a pistol handle for the SIMATIC RF160B which ergonomically improves the reading and writing of transponders. The pistol handle has a "trigger" that you use to initiate the scan button.

The pistol handle does not impede replacing the head module or charging the mobile reader. Both are possible with the pistol handle. However, the pistol handle must be removed before replacing the battery.

Procedure: Attaching the pistol handle

Follow these steps to attach the pistol handle to the mobile reader:

1. Remove the retaining strap, if necessary.
2. Guide the nose of the handle diagonally to the upper retaining strap hook and hang it there ①.
3. Then press the handle flat again the reader so that the sides of the handle enclose the reader ②.

Figure 4-13 Attaching the pistol handle

Procedure: Removing the pistol handle

Follow these steps to remove the pistol handle:

1. Press the sides of the handle downwards, from the front towards the back of the mobile reader ①.
2. Guide the handle out of the upper retaining strap hook ②.

Figure 4-14 Removing the pistol handle

3. If necessary, re-attach the retaining strap.

4.1.7 Camera

There is a 5 MP autofocus camera with flash/lighting on the rear of the mobile reader. Using this camera and the corresponding software (app for reading codes), you can optionally also use the reader to read bar codes and 2D codes.

4.2 Commissioning and operation (software)

4.2.1 Switch the reader on/off

Using the On/Off button on the right of the mobile reader, you can switch the reader on/off or restart it.

Switching on

To switch the mobile reader on, press the On/Off button on the right of the reader (⏻).

As soon as the mobile reader has been switched on, the status LED of the reader lights up green and the home screen of the operating system or your usual work environment appears on the display.

Switching off/restarting

To switch the mobile reader off, hold down the On/Off button on the right of the reader for three seconds (⏻).

After the three seconds, a dialog will appear on the right of the display with the options "Switch off", "Restart" and "Screenshot". Press the "Switch off" button to switch off the reader. Alternatively, you can of course also restart the reader using the corresponding button.

The status LED goes off as soon as the mobile reader is switched off.

If you do not want to perform any of the three options, you can close the dialog by pressing on a free area of the display.

4.2.2 Energy states / power modes

The mobile reader has a power-saving mode and an emergency power supply.

Idle mode (power saving mode)

To activate Idle mode of the mobile reader, hold down the On/Off button on the right of the reader for two seconds (⏻).

In Idle mode, (system) processes minimize their power consumption and only the necessary system components are kept running in order to save energy. In addition, the display is switched off so that the reader uses only very little power and the battery lifetime can be extended.

From this mode, the reader can be set to operational mode again very quickly because the operating system does not need to be rebooted. Note that the reader continues to be supplied with power in Idle mode and this mode can therefore only be retained for a certain amount of time (depending on the charge level of the reader battery).

To switch back to operational mode, press the On/Off button on he right of the reader again (⏻).

Power saving measures

Note that a brightly lit display and the WLAN function have a negative impact on the battery lifetime. To maximize the battery lifetime, you should dim the brightness of the display and disable the WLAN function when you do not need it.

Emergency power supply

The mobile reader has an emergency power supply. The prerequisite for this is that the reader was switched on for at least 30 minutes beforehand.

Through the emergency power supply, the mobile reader is supplied with power for up to ten seconds, every during battery replacement, so that battery replacement during operation is possible. Removal of the battery is detected and a message is sent to the operating system. If the various applications have been configured accordingly, this message can trigger storage of important data in open applications.

The display goes dark during the emergency power supply. Once the battery has been inserted again, the display becomes active again automatically.

4.2.3 Reader buttons

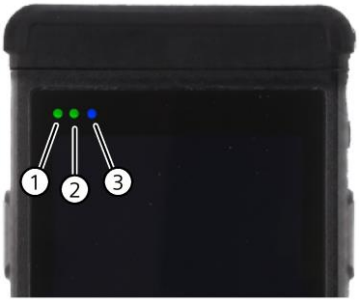
The mobile reader has three buttons.

Table 4- 4 Description of the reader-buttons

Button	Position	Appearance	Functions
On/Off button	On the right of the reader.	⏻	• 3 s press: – Switch the reader on/off – Restart reader – Creating screenshots • 2 s press: – Activate Idle mode
Scanner button (2x)	On the right and left of the reader.	Gray button	Start scan/read operation The antenna field of the reader is scanned and data is read from the detected transponders.

4.2.4 LED status display of the reader

The mobile reader has 2 status LEDs, as well as an LED via which various applications can be controlled. The status LEDs can adopt the colors green, red or yellow and the states off, on, flashing.



① On/Off LED
② Charge LED
③ Application LED

Figure 4-15 Status LEDs of the mobile reader

Table 4- 5 Meaning of the status LED display

LED	LED status	Meaning
On/Off		The reader is switched on or starting up.
On/Off		Idle mode of the reader is active.
Charge		The reader battery is being charged.
Charge		No battery detected.
Charge		The battery level is low and the battery should be charged soon.

The application LED can be controlled by various applications on the device and its function can be freely defined depending on the respective application.

4.2.5 Operating system and network settings

Operating system

The SIMATIC RF160B uses a modified Android operating system.

Android contains a Linux kernel, but is not a traditional Linux distribution as known for desktops and servers. Some basic properties that you would expect in a UNIX family system have been changed significantly. Nevertheless, many properties are comparable to other embedded Linux distributions.

Reading out the operating system version

You can view the Android operating system version and other version information in the system settings under "Desktop > App overview > Settings > About tablet".

You can view, for example, the following version information in the system settings:

- Android version

  This area contains information on the Android operating system version. It offers conclusions relating to basic functions of the Android version and its API level.

- Build number

  This area contains information on the product version as well as a unique internal ID of the software version.

- Kernel version

  This area contains information about the version of the standard Linux kernel used and its modifications. The date shown indicates the creation date of the modified kernel.

SystemApp

Using the "SystemApp", you can read out various Android-based device, memory, network and battery information relating to the reader.

NTP server

Android operating systems usually need Internet access to synchronize the device clock. By default, Android synchronizes its clock with the time server "2.android.pool.ntp.org". Synchronization with an NTP server is not planned and, therefore, it is not usually possible to set a specific NTP server in an Android operating system.

However, the SIMATIC RF160B has a function for synchronizing the device clock with an NTP server. You can find this function at the following path: "Desktop > App overview > Settings > Date & time > NTP server".

Ethernet/WLAN

Ethernet (charging/docking station)

The charging/docking station of the reader has an Ethernet interface via which the charging/docking station or the mobile reader can be integrated into a wired network. The device obtains its network configuration via DHCP by default.

To integrate the charging/docking station into a network, you need to create the "network_settings.ini" file under the path "sdcard > ACD". The file must contain the following entries:

Table 4- 6 Entries of the "network_settings.ini" file

/sdcard/xxx/network_settings.ini

```
ip-address=1.2.3.4
cidr=24
default-gateway=1.2.3.1
dns-server1=1.2.3.2
dns-server2=1.2.3.3
```

Note

Line breaks

Note that you create line breaks in the "network_settings.ini" file with <LF> (Linux style). Line breaks cannot be created with <CR><LF> (Windows style).

The IP addresses (IPv4) must be adapted to your local network settings. If there is only one DNS server, its IP address also needs to be entered in "dns-server2". The settings are activated automatically as soon as you connect the reader to the Ethernet again.

WLAN (SIMATIC RF160B)

NOTICE
Do not establish a WLAN connection Do not establish a WLAN connection with the device. If you do establish a WLAN connection, make sure that it is a secure connection.

The mobile reader has a WLAN module via which the reader can be integrated in an existing WLAN. As is usual with Android operating systems, you can define the network settings of the reader via the system settings of the operating system.

You can find detailed information on the WLAN standards and their encryption in the section "Technical specifications of the SIMATIC RF160B (Page 81)".

The SIMATIC RF160B provides the option to set further WLAN parameters outside of the values offered by Android as standard. You can edit these parameters in the file "wifi_config.conf" ("sdcard > ACD > wifi"). The values are also described in detail there. To apply the specific WLAN settings, you need to enter the maintenance code "77696" in the SystemApp.

"SIMATIC Mobile Reader" app

5

5.1 Starting the app

After the mobile reader has been switched on and started, the home screen of the operating system is shown on the display. The "SIMATIC Mobile Reader for RFID" app ("SIMATIC Mobile Reader" for short) and this manual are stored on the home screen as PDF file. Click on the app to open it.

Depending on the connected head module, the corresponding app version for the HF (SIMATIC RF200 and RF300) or UHF (SIMATIC RF600) frequency range is opened. The functions of the two app versions are described in the following sections.

NOTICE
Allow memory access on first app start Allow memory access the first time the app is started so that it can save extensions and log files on the device. Note that it is necessary to allow this in order for the app to start.

Alternatively, you can open the app via the app overview. To open the app overview, you simply need to swipe from bottom to top in the home screen on the display.

App languages

The app is available in an English and a German version. The app language depends on the selected language settings of the operating system. You can change these in the operating system settings under "Settings > System".

Navigation

As usual in Android operating systems, the reader has a 3-button control for navigation at the bottom edge of the display.

- Arrow symbol (left):

  Back button
- Circle symbol (center):

  Button to return to the home screen
- Square symbol (right):

  Button to open the apps that are still active in the background.

5.2 Functions of the HF app variant (RF360M)

5.2.1 Menu overview and functions

Once you have started the "SIMATIC Mobile Reader" app, the home screen of the app is displayed. You can call the three menus of the app as well as the "Settings" menu via the home screen. Using the menu, you can scan for transponders and edit them. In the menu "Settings" , you can configure the "SIMATIC Mobile Reader" app.

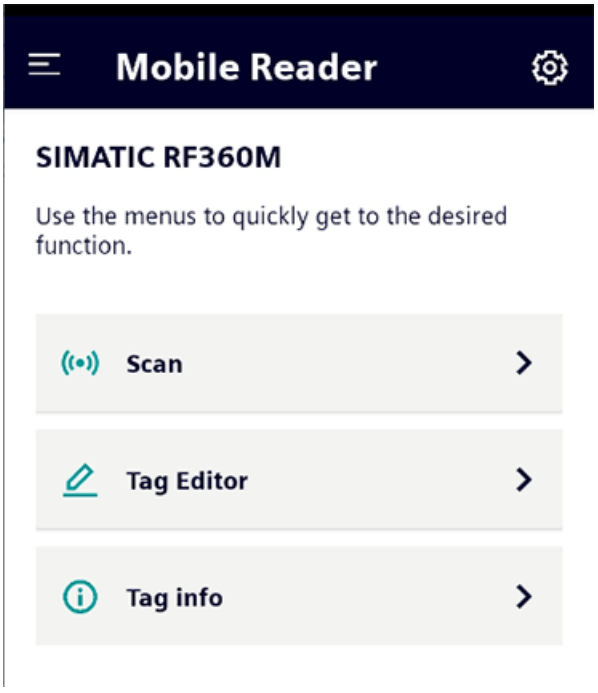


Figure 5-1 "Home page" menu

Table 5- 1 The menus of the "SIMATIC Mobile Reader" app

Menus	Functions
Scan	• Starting/stopping scanning • Overview of the identified transponders
Tag Editor	• Reading and writing transponder data • Copying and transferring transponder data • Initializing the transponder (overwriting memory area)

Menus	Functions
Tag Info	• Detailed information on the transponder located in the antenna field
Settings	• Defining transponder protocols/types to be read • Exporting and resetting the logbook • Defining the memory path of the transponder data • Performing firmware update of the reader head module (Mcon) • Enabling/disabling acoustic signals/sounds • Resetting the app to factory settings • Reading out version information

Click the button of the desired menu to open it.

With the icon at the top left, you open a menu overview via which you can jump directly to the relevant menus or back to the home screen.

Note

Terms within the app and documentation

Note that the term "Tag" is generally used in the "SIMATIC Mobile Reader" app, whereas the term "Transponder" is used in this manual. These terms are synonyms and have the same meaning.

5.2.2 Functions

5.2.2.1 "Scan" menu

In the "Scan" menu, you can scan the antenna field of the reader for transponders.

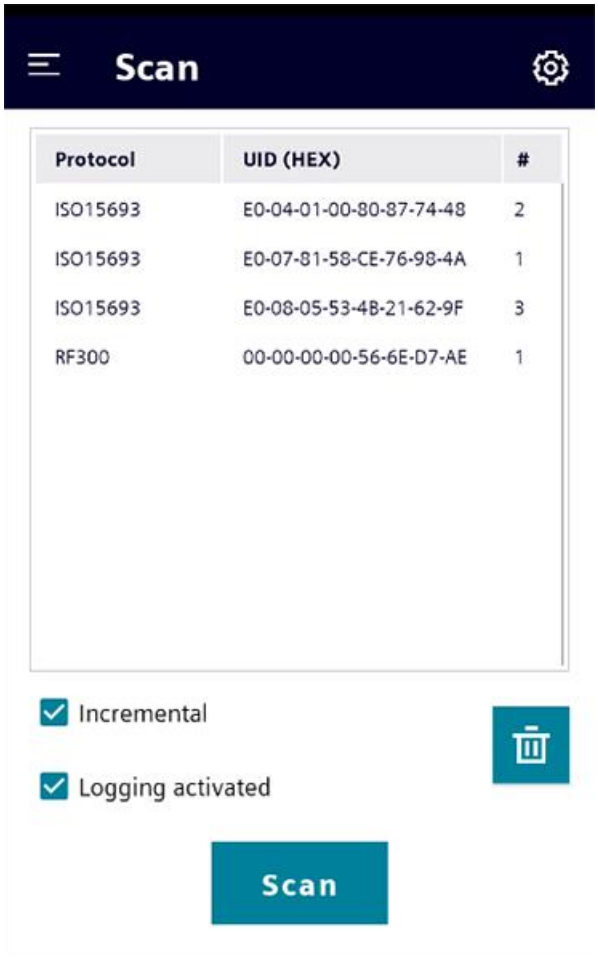


Figure 5-2 "Scan" menu

This menu is split up into two areas. A list of the detected transponders is shown in the upper area. In the bottom area, you can perform scans.

Properties of the transponder list

The transponder list displays the detected transponders as well as information on their acquisition.

Table 5- 2 Properties of the transponder list

Property	Description
Protocol	Transponder protocol with which the detected transponder works. The following protocols are possible: • RF300 • ISO 15693 • MIFARE Classic
UID (HEX)	UID of the identified transponder in hexadecimal format
#	Counter of how frequently a transponder was identified.

Functions of the menu

In this area, you can perform scans, define settings for the display or delete the current entries in the transponder list.

Table 5- 3 Functions of the "Scan" menu

Functions/ parameter	Description
Incremental	Check box to define the counting method when detecting transponders: • Disabled The transponder list is reset by a newly started scan operation. • Activated The counter levels of the transponders in the transponder list are not reset by a newly started scan operation. The counter levels of the transponders are counted in absolute form.
Logging activated	Check box for enabling/disabling the logbook. If this function has been enabled, all results of the scan operation are entered in the logbook. Note that the logbook is created as ring buffer. Note: This function corresponds to the "Scan logbook > Activate" parameter in the "Settings > Logbook" menu.
Clear transponder list 	Button to delete all transponders entered in the transponder list.
Scan/Stop	Button to start/stop scanning Note: Scanning is automatically stopped after 120 seconds to avoid overheating of the head module.

5.2.2.2 "Tag Editor" menu

In the "Tag Editor" menu, you can read data from a target transponder, change it and write to the target transponder (EEPROM and OTP memory area).

This menu is divided into the following tabs:

- Memory editor
- File editor
- Init

Memory editor

In the "Memory editor" tab, you can read out the transponder data of the transponder located in the antenna field, edit it if necessary and write it to the transponder again.

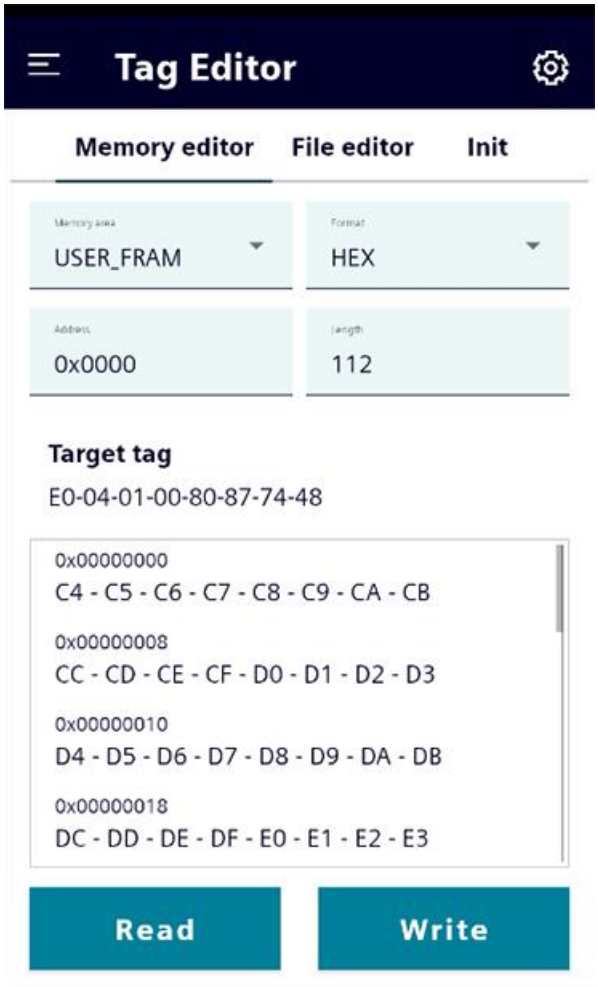


Figure 5-3 "Tag Editor > Memory editor" menu

Table 5- 4 Functions of the "Memory editor" tab

Functions/ parameter	Description
Memory area	Drop-down list to select the memory area within which you want to change or write the data of the target transponder. The memory areas that can be selected depend on the transponder protocol with which the transponder located in the antenna field works. The following memory areas are possible: • USER_FRAM • USER_EEPROM • OTP_EEPROM
Format	Drop-down list to select the input format of the data to be written. • HEX Hexadecimal input format. Hyphens are entered automatically. • BIN Decimal input format. Numbers 0 and 1 are allowed. • DEC Decimal input format. Numbers from 0 ... 255 are allowed. • ASCII6 ASCII6 input format. All characters compliant with VDA 5500 are allowed. • ASCII8 ASCII8 input format. All ASCII characters are allowed.
Address	Input box for entering the address within the selected memory area from which you want to read, change or write the data of the target transponder. The address can be specified in decimal or hexadecimal (0x...) input format.
Length	Input box for entering the length within the selected memory area in which you want to read, change or write the data of the target transponder. The length can be specified in decimal or hexadecimal (0x...) input format.
Read	Button to execute the read operation
Write	Button to execute the write operation

File editor

In the "File editor" tag, you can transfer transponder data saved in the mobile reader onto the transponder located in the antenna field.

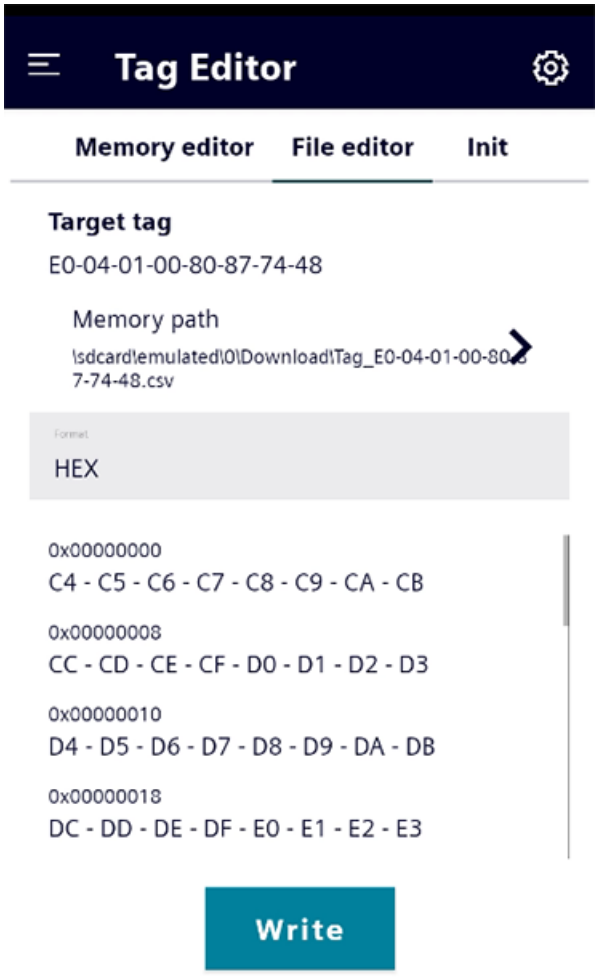


Figure 5-4 "Tag Editor > File editor" menu

Table 5- 5 Functions of the "File editor" tab

Functions/ parameter	Description
Target tag	The UID of the transponder located in the antenna field is displayed in this area.
Memory path	Selection of the memory path and the file of the transponder data saved in the reader that should be written to the transponder located in the antenna field. Note: A separate file in which the transponder data of the respective transponder is saved is created for each transponder read via the "Memory editor". The file name is created based on the UID of the respective transponder.

Functions/ parameter	Description
Format	Display of the input format of the data to be written. • HEX Hexadecimal input format. Hyphens are entered automatically.
Write	Button to execute the write operation

"Transfer transponder files" requirements

- The function "Tag content save as..." in the menu "Settings > Logbook" was enabled.
- In the "Memory editor" tab, the transponder was read with the desired transponder data to be transmitted.
- The transponder that is to be written and is located in the antenna field has sufficient storage space.

"Transfer transponder data" procedure

Follow these steps to transfer transponder data saved in the mobile reader onto the transponder located in the antenna field:

1. Select the desired file in the "Tag Editor > File editor" menu using the "Memory path" button.

   Note: You can define the memory path in the "Settings > Logbook" menu.

   The file name is created based on the UID of the read transponder.

2. Click the "Write" button.

   Make sure that the transponder to be written is in the antenna field of the mobile reader throughout the entire write operation.

Result: The transponder data is transferred to the transponder located in the antenna field.

Init

In the "Init" tab, you can initialize a transponder or overwrite the entire memory area of the transponder.

Figure 5-5 "Tag Editor > Init" menu

Table 5- 6 Functions of the "Init" tab

Functions/ parameter	Description
Initialization pattern	Check boxes to select the initialization pattern: • Increment 1 byte (0x00 - 0xFF) Ascending initialization, starting at value "0x00" • Decrement 1 byte (0x00 - 0xFF) Descending initialization, starting at value "0xFF" • Static Specification of a static value with which the complete memory area is overwritten.
Target tag	The UID of the transponder located in the antenna field is displayed in this area.
Initialize	Button to run the initialization process

5.2.2.3 "Tag Info" menu

In the "Tag Info" menu, you can read out all relevant information on the transponder located in the antenna field.

Figure 5-6 "Tag Info" menu

Table 5- 7 Information of the "Tag Info" menu

Information	Description
Target tag	The UID of the transponder located in the antenna field is displayed in this area. All of the following information relates to this transponder.
Tag type	Specification of the transponder type Additional information on the chip type or the memory size is supplied depending on the transponder type.
Version	Specification of the ASIC version of the chip
Size of the user memory	Size of the user memory in bytes

Information	Description
Lock status	Specification of the lock status of the OTP memory area The specification is provided per memory block. One memory block contains 4x 4 or 2x 8 bytes. • 0: No block is written or locked. • 1: The 1st block (address 0xFF80 ... 0xFF83) is written or locked. • 2: The 2nd block (address 0xFF84 ... 0xFF87) is written or locked. • 3: The 1st and 2nd block (address 0xFF80 ... 0xFF87) are written or locked. • ...
Size of a memory block	Size of memory block in bytes
Number of memory blocks	Number of memory blocks present

5.2.3 "Settings" menu

In the menu "Settings", you can configure the "SIMATIC Mobile Reader" app.

This menu is divided into the following tabs:

- Tag
- Logbook
- Update
- Other
- About

Tag

In the "Tag" tab, you can specify or restrict which transponder protocols/types are detected by the mobile reader. Restriction of the transponder types to be read increases the reading speed and may simplify work because only the desired transponder types are detected and displayed.

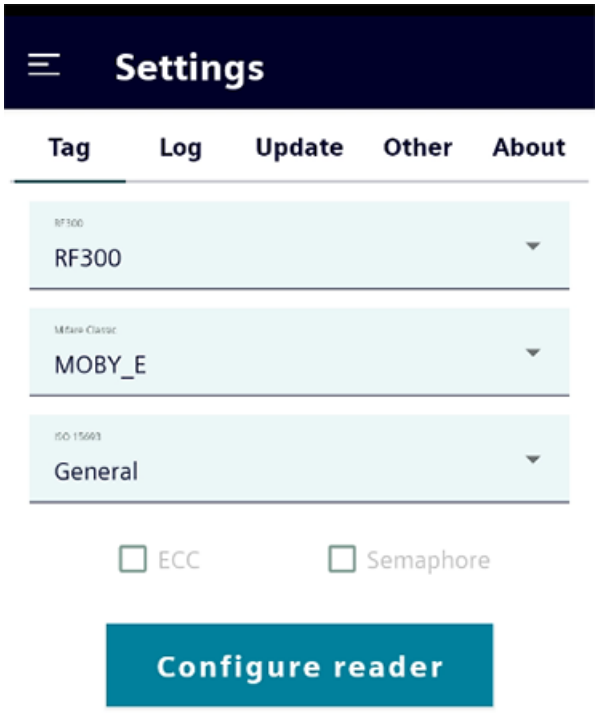


Figure 5-7 "Settings > Tag" menu

Table 5- 8 Settings of the "Tag" menu

Settings	Description
RF300	Drop-down list to select whether transponders of the "RF300" transponder protocol should be read.
MIFARE Classic	Drop-down list to select whether transponders of the "MIFARE Classic" transponder protocol should be read.
ISO15693	Drop-down list to select the transponder types to be read within the "ISO15693" transponder protocol. You can select all transponder types, one transponder type or none.
ECC	Check box for enabling/disabling the ECC method This function can only be enabled for the "RF300" and "MIFARE Classic" transponder protocols and is aimed at trained users. You can find detailed information on this method in the product information "Input parameters for the RF300 system".
Semaphore	Check box for enabling/disabling the semaphore method This function can only be enabled for the "RF300" and "MIFARE Classic" transponder protocols and is aimed at trained users. You can find detailed information on this method in the product information "Input parameters for the RF300 system".
Configure reader	Button to activate the settings

Logbook

In the "Logbook" tab, you can enable the memory card with which the transponder data of all read transponders is automatically saved in the mobile reader. You can also enable/disable the logbook function and export and reset the logbook.

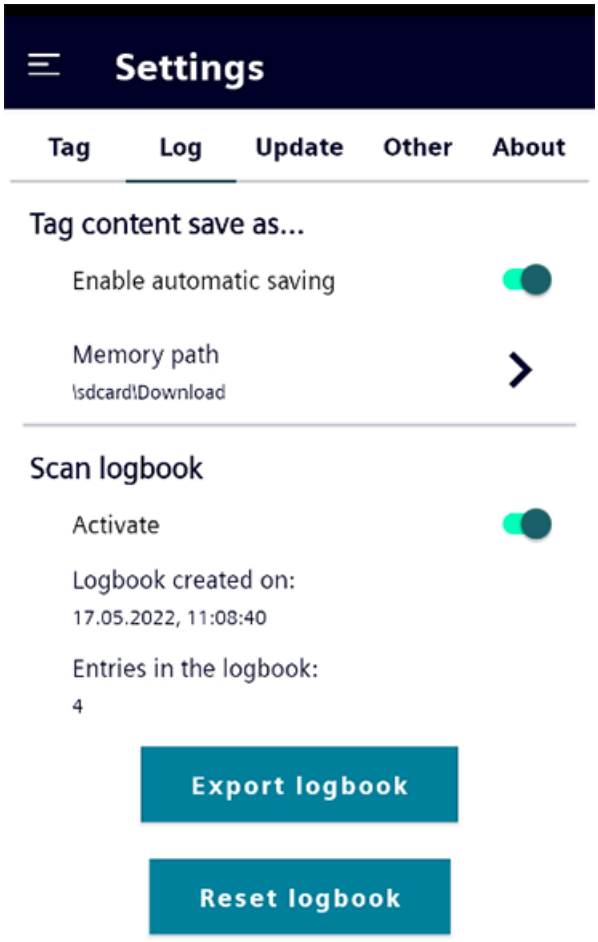


Figure 5-8 "Settings > Logbook" menu

Table 5- 9 Functions of the "Logbook" menu

Functions		Description
Tag content save as...		
	Enable automatic saving	Slider for enabling/disabling the memory function If the function has been enabled, the transponder data of all transponders read in the "Memory editor" is automatically saved in the mobile reader. Note: This function must be enabled to be able to use the "File editor" in the "Tag Editor" menu.
	Memory path	Specification of the memory path under which the files of the transponder data saved in the reader are stored. Note: A separate file in which the transponder data of the respective transponder is saved is created for each transponder read via the "Memory editor". The file name is created based on the UID of the respective transponder.

Functions	Description
Scan logbook	
Activate	Slider for enabling/disabling the logbook If this function has been enabled, all results of the scan operation are entered in the logbook. Note that the logbook is created as ring buffer (for up to 8,000 individual transponders). Note: This function corresponds to the "Logging activated" parameter in the "Scan" menu.
Logbook created on	Display of when the logbook was created. The date and time of the first scan performed that was entered in the current logbook or because of which the logbook was created are specified as start time.
Entries in the logbook	Number of entries that were saved in the logbook.
Export logbook	Button to export the logbook The logbook is saved as *.csv file. You can find a detailed description of the procedure to export the logbook below the table.
Reset logbook	Button for resetting the logbook

"Export logbook" requirements

- The charging/docking station is connected to the power supply.
- The mobile reader is in the charging/docking station.
- A USB stick is inserted in the charging/docking station.

"Export logbook" procedure

Follow these steps to export the logbook:

1. In the "Settings > Logbook" menu, click the "Export logbook" button.

   Reaction: The "Downloads" folder opens.
2. Use the button to select the desired memory path.

   Select the USB stick as storage location.

   You may need to show the internal memory first using the button .
3. If necessary, change the file name.
4. At the bottom right, right the "SAVE" button or the icon.

Result: The logbook file is saved on the USB stick.

Update

In the "Update" tab, you can update the software of the head module interface (Mcon) as well as the reader firmware of the HF head module.

To ensure that only authorized persons can perform updates, the update functions are password-protected. The password is "180999".

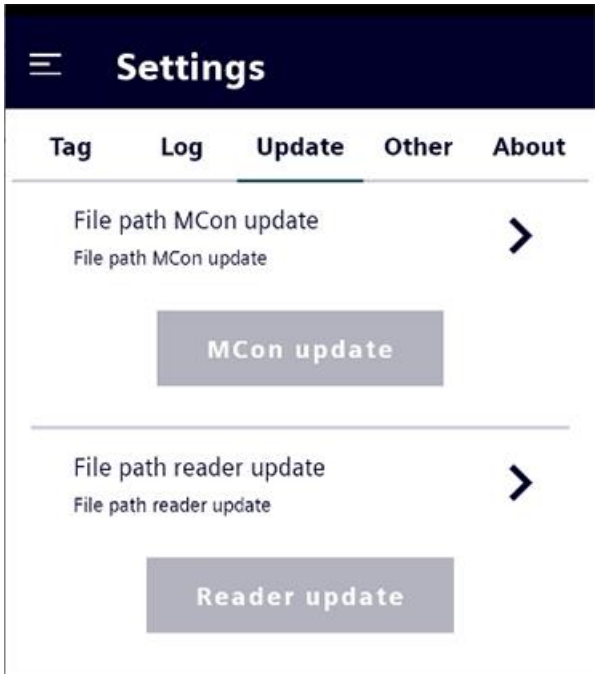


Figure 5-9 "Settings > Update" menu

You can find detailed information on the update in the section "Software updates/installations (Page 78)".

Other

In the "Other" tab, you can configure general reader settings, e.g. relating to acoustic signals or power-saving functions.

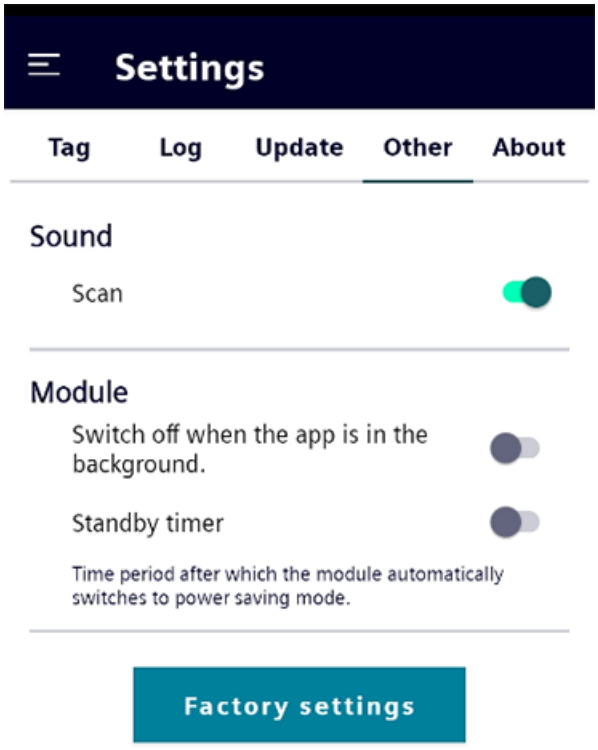


Figure 5-10 "Settings > Other" menu

Table 5- 10 Settings of the "Other" menu

Functions		Description
Sound		
	Scan	Slider to enable/disable the scan sound If the function has been enabled, a signal sound is generated for each transponder identified during a scan operation.
Module		
	Switch off when...	Slider to enable/disable the head module If the function has been enabled, the head module is switched off automatically as soon as the "SIMATIC Mobile Reader" app goes to the background. This function is an energy-saving function to maximize the battery lifetime.
	Standby timer	Slider to enable/disable the standby function of the head module If the function has been enabled, the head module is set to power-saving mode as soon as the user is inactive for the defined time period.

Functions	Description
Factory settings	Button for resetting the mobile reader to factory settings With this function, the "SIMATIC Mobile Reader" app is reset to the factory settings. The data saved on the device (e.g. log files) is not deleted in this process. To delete this data, you need to reset the operating system or delete the data manually. You can reset the operating system in the system settings under "Settings > System > Advanced > Reset options > Delete all data (factory settings)".

About

You can find information on the various current versions in the "About" tab.

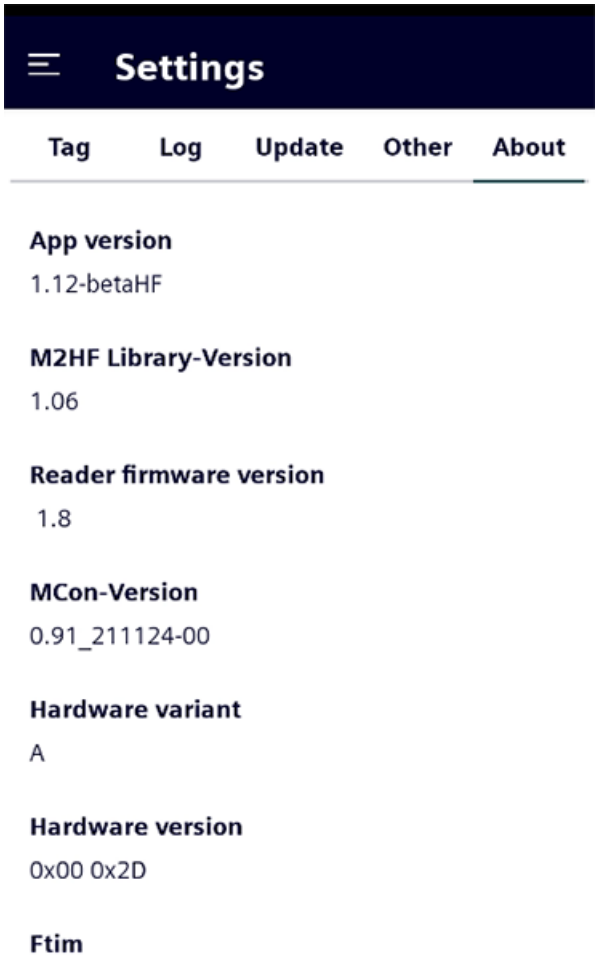


Figure 5-11 "Settings > About" menu

Table 5- 11 Information of the "About" menu

Information	Description
App version	Version specification of the "SIMATIC Mobile Reader" app
M2HF Library-Version	Version specification of the M2HF library (API)

Information	Description
Reader firmware version	Version specification of the reader firmware of the head module
MCon version	Version specification of the module controller of the head module interface.
Hardware type	Information on the hardware type of the head module • A: Head module with internal antenna • B: Head module with external antenna connector
Hardware version	Detailed information on the hardware version of the head module
Ftim	Specification of the transponder type
Presence	Operation with presence check (fixed value)
Third-party software	Link to the file with copyright information on the open source software contained in this product as well as its license conditions
Head module licenses	Link to the file with copyright information on the open source software contained in this head module as well as its license conditions

5.3 General notes on working with the UHF app version

All transponders have so-called communication protocols that control communication between the reader and transponder. For transponders in the UHF frequency range (RF600 transponders), these communication rules are stored in EPCglobal UHF Class 1 Gen 2 and valid for the protocols ISO 18000-62 and ISO 18000-63.

Transponder memory configuration

As a rule, each UHF transponder has 4 memory areas (memory banks) in which different, memory area-specific information is stored.

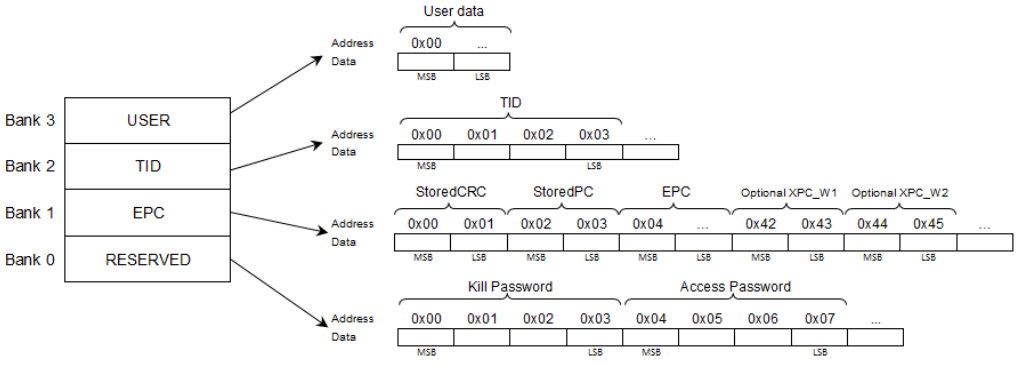


Figure 5-12 Memory configuration

- RESERVED

  Contains Access and Kill password
  This memory area is optional and is not present with all transponder types.

- EPC

  Contains the EPC (electronic product code), a checksum, and protocol information

- TID

  Contains information on the manufacturer and transponder type, as well as a unique serial number. This information serves the purpose of unique transponder identification.

- USER

  A freely usable memory area that can be written with user-defined data.
  This memory area is optional and is not present with all transponder types.

Example

Transponders with the chip NXP UCODE 7 have a USER memory area with 2048 bits (e.g. RF645T, RF642L). Transponders with the chip NXP UCODE 8 have a USER memory area (e.g. RF630L).

NOTICE
Memory areas > 2544 bits not addressable Please note that memory areas > 2544 bits cannot be addressed with the SIMATIC RF160B mobile reader.

Passwords

As a rule, each UHF-transponder has an Access and a Kill password.

- Access password

  Access password with which individual memory areas are protected from read and write access.

- Kill password

  Password required to destroy the transponder.

Both passwords are 4 bytes long and are saved in the RESERVED memory area. The Kill password is saved at the start of the RESERVED bank (first to fourth byte), followed by the Access password (fifth to eighth byte).

You should change the passwords to ensure that no unauthorized persons have access to the transponder data or can 'destroy' the transponder.

You can find detailed information on changing the passwords and locking memory areas using the Access password in the section ""Tag Editor" menu (Page 57)".

5.4 Functions of the UHF app variant (RF660M)

5.4.1 Menu overview and functions

Once you have started the "SIMATIC Mobile Reader" app, the home screen of the app is displayed. You can call the three menus of the app as well as the "Settings" menu via the home screen. Using the menu, you can scan for transponders, edit and locate them. In the menu "Settings" , you can configure the "SIMATIC Mobile Reader" app.

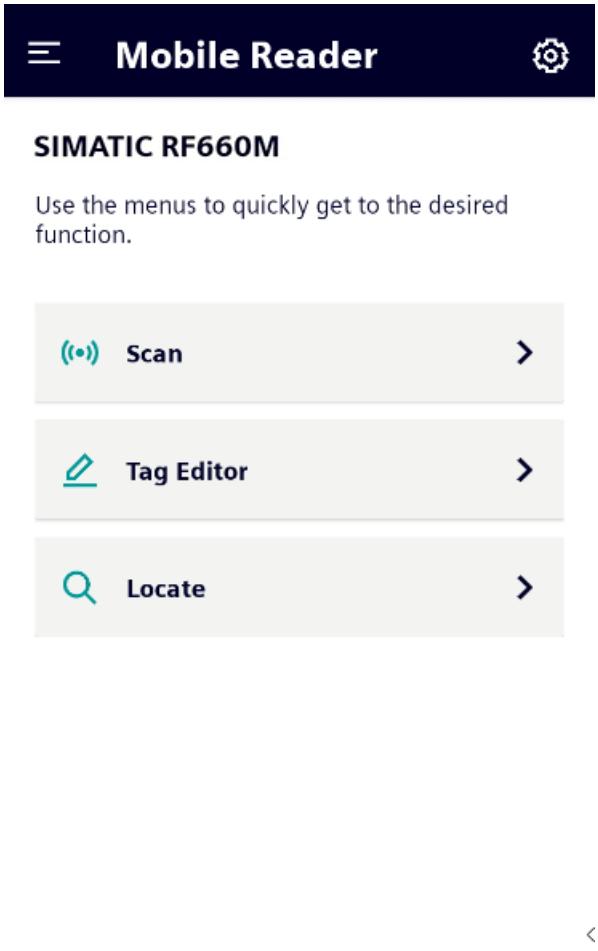


Figure 5-13 "Home page" menu

Table 5- 12 The menus of the "SIMATIC Mobile Reader" app

Menus	Functions
Scan	• Starting/stopping scanning • Overview of the identified transponders • Display of the acquisition speed
Tag Editor	• Starting/stopping scanning • Selecting the transponder to be edited • Reading and writing transponder data • Locking and unlocking memory areas • 'Killing' transponders
Locate	• Starting/stopping scanning • Overview of the identified transponders • Selecting the transponder to be located • Transponder localization based on the received signal strength
Settings	• Specifying UHF settings • Exporting and resetting the logbook • Performing firmware update of the reader head module (Mcon) • Enabling/disabling acoustic signals/sounds • Resetting the app to factory settings • Reading out version information

Click the button of the desired menu to open it.

With the icon at the top left, you open a menu overview via which you can jump directly to the relevant menus or back to the home screen.

Note

Terms within the app and documentation

Note that the term "Tag" is generally used in the "SIMATIC Mobile Reader" app, whereas the term "Transponder" is used in this manual. These terms are synonyms and have the same meaning.

5.4.2 Functions

5.4.2.1 "Scan" menu

In the "Scan" menu, you can scan the antenna field of the reader for transponders.

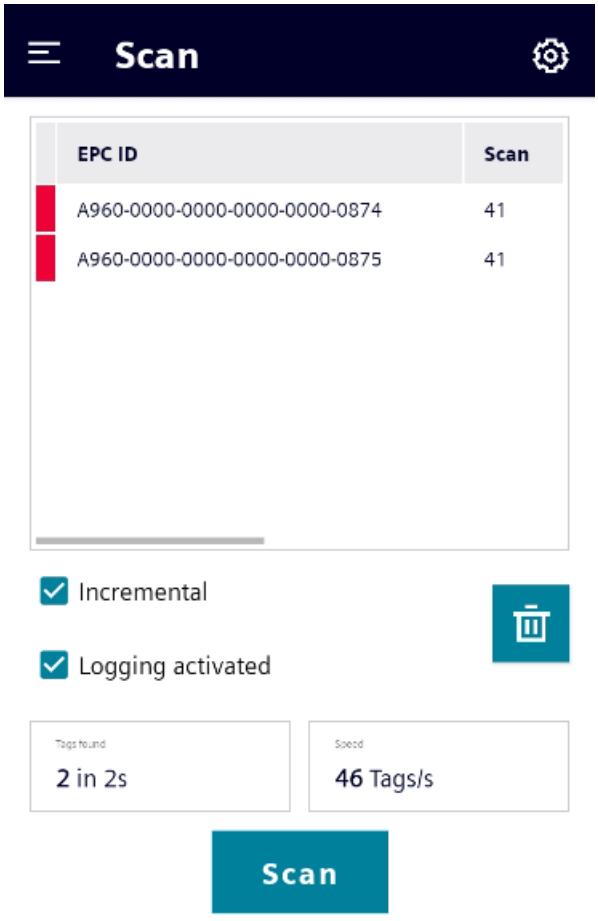


Figure 5-14 "Scan" menu

This menu is split up into two areas. A list of the detected transponders is shown in the upper area. In the bottom area, you can perform scans.

Properties of the transponder list

The transponder list displays the detected transponders as well as information on their acquisition.

Table 5- 13 Properties of the transponder list

Property	Description
Color code	Based on the color code of the transponder, you can determine whether the detected transponder is currently in the antenna field of the reader or not. • Green The transponder is currently in the antenna field of the reader. • Red The transponder is not currently in the antenna field of the reader.
EPC ID	EPC ID of the identified transponder in hexadecimal format
Scans	Counter of how frequently a transponder was identified.
RSSI	RSSI value with which the transponder was last identified.
Time stamp	Time stamp when the transponder was last identified.
PC	Protocol Control Word of the transponder You can find more information in the "EPCglobal Specifications (http://www.gs1.org)".

Functions of the menu

In this area, you can perform scans, define settings for the display or delete the current entries in the transponder list.

Table 5- 14 Functions of the "Scan" menu

Functions/ parameter	Description
Incremental	Check box to define the counting method when detecting transponders: • Disabled The transponder list is reset by a newly started scan operation. • Activated The counter levels of the transponders in the transponder list are not reset by a newly started scan operation. The counter levels of the transponders are counted in absolute form.
Logging activated	Check box for enabling/disabling the logbook. If this function has been enabled, all results of the scan operation are entered in the logbook. Note that the logbook is created as ring buffer. Note: This function corresponds to the "Scan logbook > Activate" parameter in the "Settings > Logbook" menu.
Clear transponder list 	Button to delete all transponders entered in the transponder list.

Functions/ parameter	Description
Tags found	Output field that shows the number of transponders found in the currently running or most recently started scan operation.
Velocity	Output field that shows the number of transponders found per second in the currently running or most recently started scan operation.
Scan/Stop	Button to start/stop scanning Note: Scanning is automatically stopped after 120 seconds to avoid overheating of the head module.

5.4.2.2 "Tag Editor" menu

In the "Tag Editor" menu, you can read data from a target transponder, change it and write to the target transponder. You can lock memory areas, assign Access and Kill passwords, and 'kill' the transponder.

This menu is divided into the following tabs:

- Target
- Write
- Read
- Disable

Target

In the "Target" tab, you can scan the antenna field of the reader for transponders ("Update" button) and select a target transponder from the transponder list. Note that, by default, the top transponder is always selected.

All the functions/settings described in the following tabs only affect the target transponder selected here.

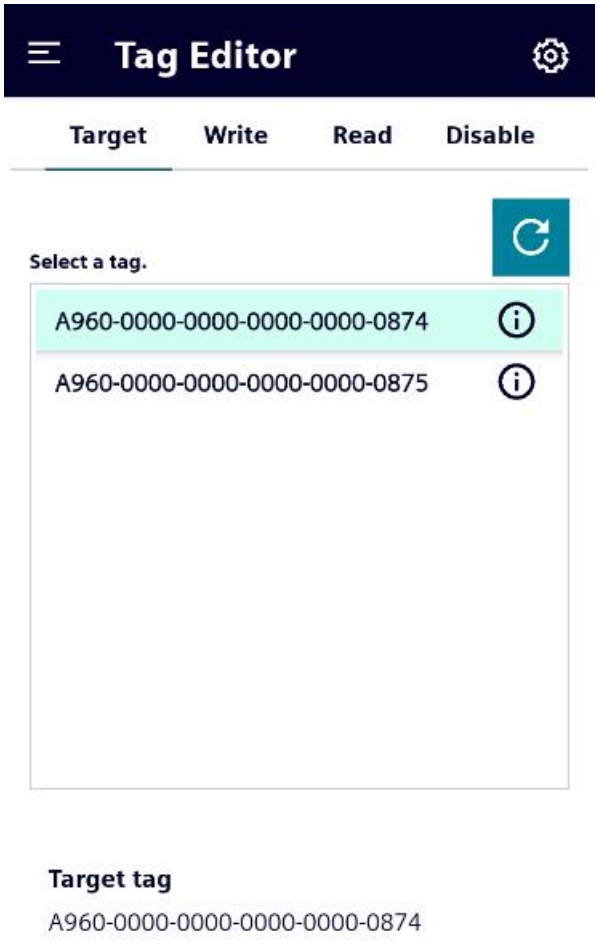


Figure 5-15 "Tag Editor > Target" menu

Write

In the "Write" tab, you can change data of a memory area and write it to the target transponder.

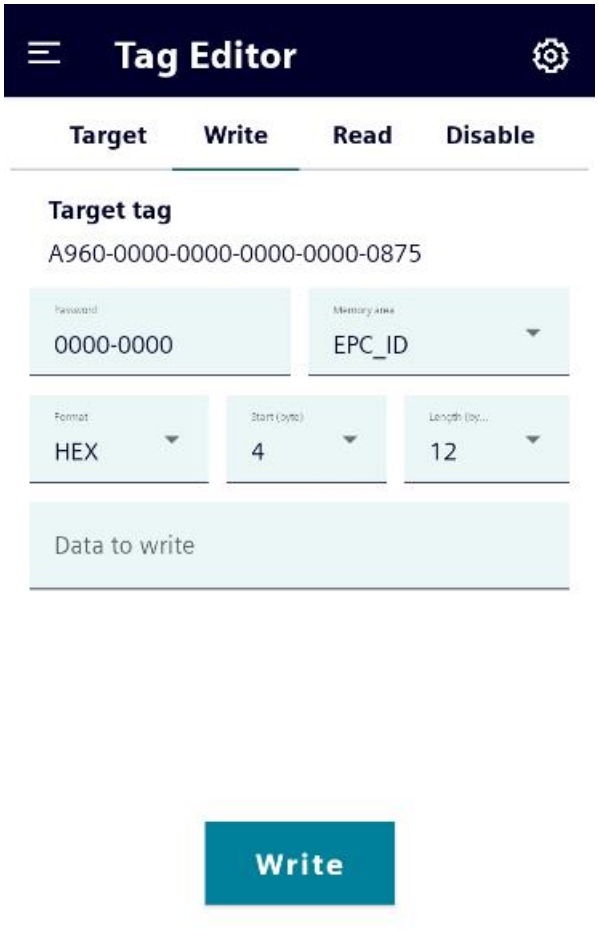


Figure 5-16 "Tag Editor > Write" menu

Table 5- 15 Functions of the "Write" tab

Functions/ parameter	Description
Target tag	The EPC ID of the selected target transponder is displayed in this area.
Password	Input box for the Access password If the transponder is password-protected, you need to enter the Access password here to be able to write the data to the selected memory area of the target transponder.
Memory area	Drop-down list to select the memory area within which you want to change or write the data of the target transponder.

Functions/ parameter	Description
Format	Drop-down list to select the input format of the data to be written. • DEC Decimal input format. Numbers from 0 ... 255 are allowed. • HEX Hexadecimal input format. Hyphens are entered automatically. • ASCII6 ASCII6 input format. All characters compliant with VDA 5500 are allowed. • ASCII8 ASCII8 input format. All ASCII characters are allowed.
Start (bytes)	Drop-down list to select the start address of the memory area in bytes from which you want to change or write the data of the target transponder. Maximum permissible start address: 255 bytes
Length (bytes)	Drop-down list to select the length of the memory area in bytes within which you want to change or write the data of the target transponder. Maximum permissible length: 63 bytes
Data to be written	Input box in which you can enter the data or the text that you want to write to the selected memory area of the target transponder. Note: Note that it is possible in principle to enter in this box data of a length that differs from the information in the "Length (bytes)" box. If less data is entered than specified in the "Length (bytes)" box and you click the "Write" button, this data is written. All other data is retained. If more data is entered than specified in the "Length (bytes)" box, it is highlighted in color. In this case, the data cannot be written.
Write	Button to execute the write operation

Read

In the "Read" tab, you can read data from a target transponder.

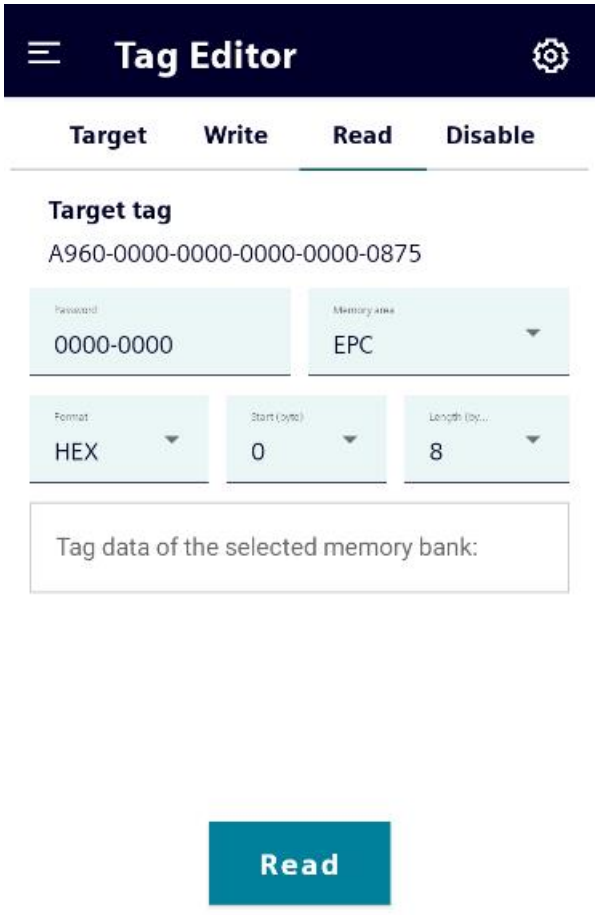


Figure 5-17 "Tag Editor > Read" menu

Table 5- 16 Functions of the "Read" tab

Functions/ parameter	Description
Target tag	The EPC ID of the selected target transponder is displayed in this area.
Password	Input box for the Access password If the transponder is password-protected, you need to enter the Access password here to be able to read the data from the selected memory area of the target transponder.
Memory area	Drop-down list to select the memory area from which you want to read the data of the target transponder.

Functions/ parameter	Description
Format	Drop-down list to select the output format of the data to be read. • DEC Decimal input format. Numbers from 0 ... 255 are allowed. • HEX Hexadecimal input format. Hyphens are entered automatically. • ASCII6 ASCII6 input format. All characters compliant with VDA 5500 are allowed. • ASCII8 ASCII8 input format. All ASCII characters are allowed. After the format is changed, you need to click the "Read" button to view the transponder data in the selected format.
Start (bytes)	Drop-down list to select the start address of the memory area in bytes from which you want to read the data of the target transponder. Maximum permissible start address: 255 bytes
Length (bytes)	Drop-down list to select the length of the memory area in bytes within which you want to read the data of the target transponder. Maximum permissible length: 63 bytes
Tag data of the selected memory bank	Output field showing the data or text that you read out from the selected memory area of the target transponder.
Read	Button to execute the read operation

Disable

In the "Disable" tab, you can adapt the access rights for individual memory areas (lock/unlock) and 'destroy' the transponder.

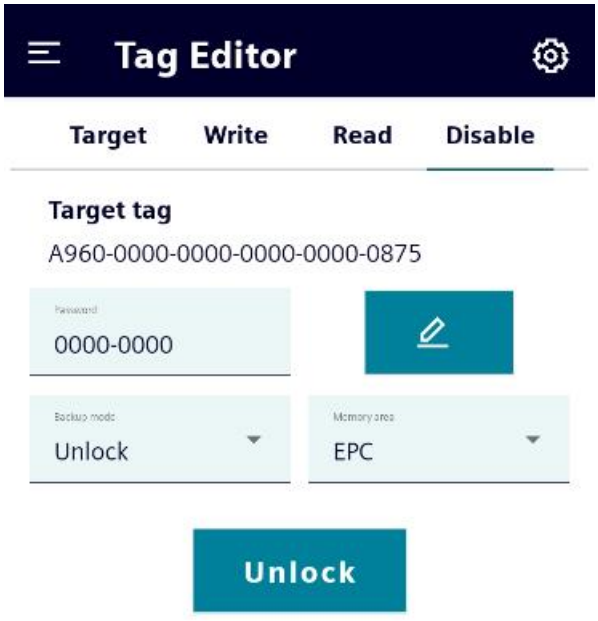


Figure 5-18 "Tag Editor > Disable" menu

Table 5- 17 Functions of the "Disable" tab

Functions/ parameter	Description
Target tag	The EPC ID of the selected target transponder is displayed in this area.
Password	Input box for the Access/Kill password.
Change password	Button to change the Access/Kill password Clicking the button opens a new window in which you can change the respective password. In the drop-down list, select which password you want to change and enter the old password and the new password in the input boxes.

Functions/ parameter	Description
Backup mode	Drop-down list to select the backup mode: • Unlock Unlock the selected memory area It may be necessary to input the Access password for this action. • Lock Lock the selected memory area It may be necessary to input the Access password for this action. • Permanent unlock Permanently unlock the selected memory area It may be necessary to input the Access password for this action. Caution: After this, the memory area cannot be locked again. • Permanent lock Permanently lock the selected memory area It may be necessary to input the Access password for this action. Caution: After this, the memory area cannot be unlocked again. • Kill A 'Kill' destroys the entire memory of the transponder so that the transponder can no longer be identified by an RFID reader and is therefore no longer usable. It may be necessary to input the Kill password for this action.
Memory area	Drop-down list to select the memory area that you want to lock or unlock.
Button	Button to run the selected backup mode

"Locking/unlocking memory area" procedure

Follow these steps to lock/unlock the memory area of a transponder:

1. In the "Memory area" drop-down list, select the memory area that you want to lock or unlock.
2. In the "Backup mode" drop-down list, select whether the selected memory area should be locked or unlocked.
3. In the "Password" field, enter the Access password of the transponder.
4. Click the button to perform the operation.

Result: The selected memory area is locked or unlocked.

The procedure to 'destroy' is identical, except that you need to enter the Kill password that the complete transponder is destroyed, not just an individual memory area.

5.4.2.3 "Locate" menu

In the "Locate" menu, you can find out the position of a transponder. The principle on which this functions is comparable to a metal detector. The nearer you get to the transponder, the faster the frequency of the signal sound becomes and the higher the RSSI signal strength is displayed.

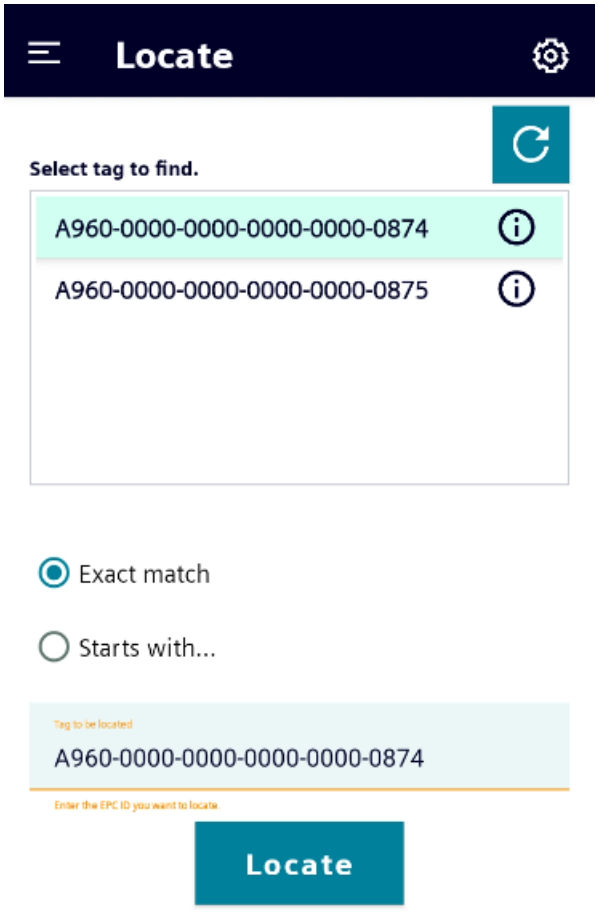


Figure 5-19 "Locate" menu

This menu is split up into two areas. In the upper area, you can scan the antenna field of the reader for transponders ("Update" button) and select a target transponder from the transponder list. In the lower area, you can define the conditions for the localization operation and start and stop the operation.

Via the Info buttons, you can read out detailed information on the identified transponders in each case.

Table 5- 18 Detailed information and parameters

Information/ parameter	Description
Chip model	Display of the chip model of the selected transponder
Vendor	Display of the chip manufacturer of the selected transponder
Properties	
Extended tag identification	Indication of whether the transponder supports these functions.
Security command	
File support	

Procedure

Follow the steps below to find out the position of a transponder:

1. Press the "Update" button to start scanning.

   If necessary, repeat the scan operation if the desired transponder was not detected.

2. From the transponder list, select the EPC ID of the transponder whose position you want to locate.

   Reaction: The selected EPC ID is transferred to the "Tag to be located" input box.

3. Via the option buttons, select whether the complete EPC ID of the detected transponder matches that of the selected transponder exactly or whether only part of the EPC ID has to match.

4. If you selected the "Starts with..." option:

   In the "Tag to be located" input box, enter the part of the EPC ID that needs to match the selected transponder.

   When searching for multiple transponders with the "Starts with ..." option, note that you can only remove digits starting from the end of the EPC ID.

5. Press the "Locate" button to start searching.

   Reaction: The view changes to search mode.

6. Now move through the room with the reader while moving the reader.

   As soon as the reader identifies the selected transponder, this is signaled both optically and acoustically. The reader shows the received RSSI signal strength with which the target transponder was identified. Based on the displayed signal strength, you can "work your way" to the selected target transponder and locate it.

   Note: The localization operation is automatically stopped after 118 seconds to avoid overheating of the head module.

Functions of the menu

Table 5- 19 Functions of the "Locate" menu

Functions/ parameter	Description
Exact match / Starts with ...	Option buttons for the match conditions of the EPC ID: • Exact match: Specification that the EPC ID of the detected transponder has to match that of the selected transponder exactly. • Starts with...: Specification that only part of the EPC ID of the detected transponder has to match that of the selected transponder. When searching for multiple transponders with the "Starts with ..." option, note that you can only remove digits starting from the end of the EPC ID.
Tag to be located	Input box to adapt the EPC ID.
Locate	Button to start the localization process

5.4.3 "Settings" menu

In the menu "Settings", you can configure the "SIMATIC Mobile Reader" app.

This menu is divided into the following tabs:

- Radio
- Logbook
- Update
- Other
- About

Radio

In the "Radio" tab, you can make specific UHF settings.

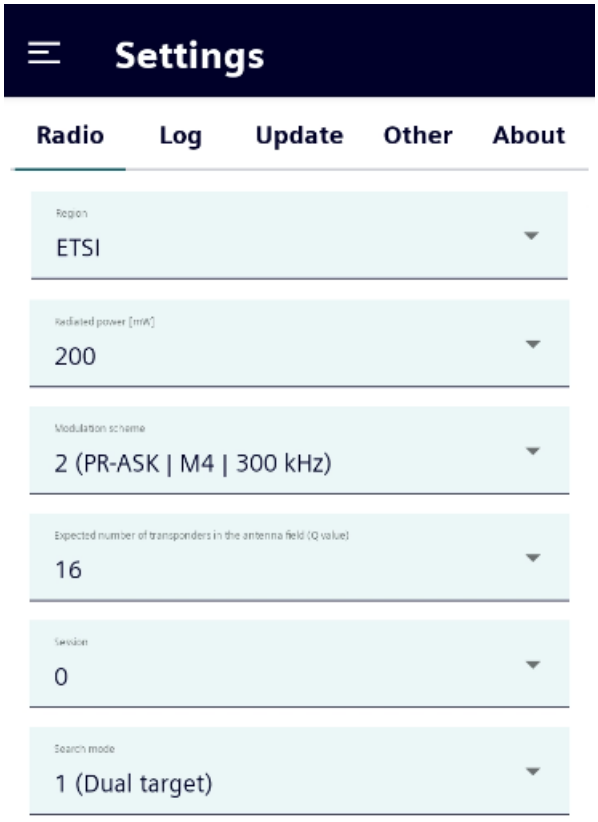


Figure 5-20 "Settings > Radio" menu

Table 5- 20 Parameters of the "Radio" menu

Parameter	Description
Region	Drop-down list to select the country profile valid for your region or country. The selection depends on the inserted head module.
Radiated power [mW]	Drop-down list to select the desired radiated power with which the reader scans are performed.

Parameter	Description
Modulation scheme	Drop-down list to select the modulation scheme Data transfer rates, radio profiles and codes with which the reader works are defined in the modulation schemes. The selection depends on the inserted head module. • 1 (PR-ASK | M4 | 250 kHz) Standard modulation scheme for FCC mode • 2 (PR-ASK | M4 | 300 kHz) Standard modulation scheme for ETSI mode • 3 (DSB-ASK | FM0 | 400 kHz) Very fast data transfer rates with reduced sensitivity and increased susceptibility to faults FCC mode • 4 (DSB-ASK | FM0 | 40 kHz) Very fast data transfer rates with reduced sensitivity and increased susceptibility to faults ETSI mode
Expected number of transponders ...	Drop-down list to select the number of transponders expected to be read during a scan with the reader. With this input, the reader can optimize the transponder identification. Enter the value as specific as possible. If there is a large discrepancy between expected and actual number of transponders, this will have a negative effect on the reading speed.
Session	Drop-down list for selecting the sessions If multiple readers are used in a small space, a separate session should be assigned to each reader to avoid radio collisions.
Search mode	Drop-down list to select the search mode with which the reader detects transponders. • 0 (Auto) The reader selects the search mode automatically. Search mode "1 (Dual target)" is used by default. • 1 (Dual target) The reader reads transponders without interruption and repeatedly as long as they are within the antenna field. In this mode, 50 or more transponders can be detected at the same time. This search mode should always be used when you want to locate transponders. • 2 (Single target: A to B) Extended method of the reader for identifying transponders. With this function, large transponder populations (≥ 100) can be identified quickly and reliably. • 3 (Single target: B to A) Extended method of the reader for identifying transponders. With this function, large transponder populations (≥ 100) can be identified quickly and reliably. The functions of the search modes "2 (Single target: A to B)" and "3 (Single target: B to A)" are very complex and it is recommended that only trained users should use them.

Logbook

In the "Logbook" tab, you can enable/disable the logbook function and export and reset the logbook.

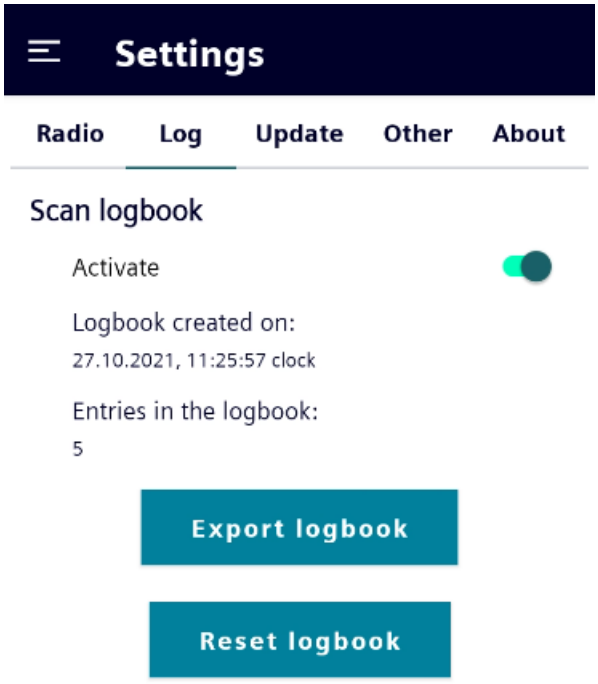


Figure 5-21 "Settings > Logbook" menu

Table 5- 21 Functions of the "Logbook" menu

Functions	Description
Activate	Slider for enabling/disabling the logbook If this function has been enabled, all results of the scan operation are entered in the logbook. Note that the logbook is created as ring buffer (for up to 8,000 individual transponders). Note: This function corresponds to the "Logging activated" parameter in the "Scan" menu.
Logbook created on	Display of when the logbook was created. The date and time of the first scan performed that was entered in the current logbook or because of which the logbook was created are specified as start time.
Entries in the logbook	Number of entries that were saved in the logbook.

Functions	Description
Export logbook	Button to export the logbook The logbook is saved as *.csv file. You can find a detailed description of the procedure to export the logbook below the table.
Reset logbook	Button for resetting the logbook

"Export logbook" requirements

- The charging/docking station is connected to the power supply.
- The mobile reader is in the charging/docking station.
- A USB stick is inserted in the charging/docking station.

"Export logbook" procedure

Follow these steps to export the logbook:

1. In the "Settings > Logbook" menu, click the "Export logbook" button.

   Reaction: The "Downloads" folder opens.
2. Use the button to select the desired memory path.

   Select the USB stick as storage location.

   You may need to show the internal memory first using the button .
3. If necessary, change the file name.
4. At the bottom right, right the "SAVE" button or the icon.

Result: The logbook file is saved on the USB stick.

Update

In the "Update" tab, you can update the software of the head module interface (Mcon).

Figure 5-22 "Settings > Update" menu

You can find detailed information on the update in the section "MCon update (Page 79)".

Other

In the "Other" tab, you can configure general reader settings, e.g. relating to acoustic signals or power-saving functions.

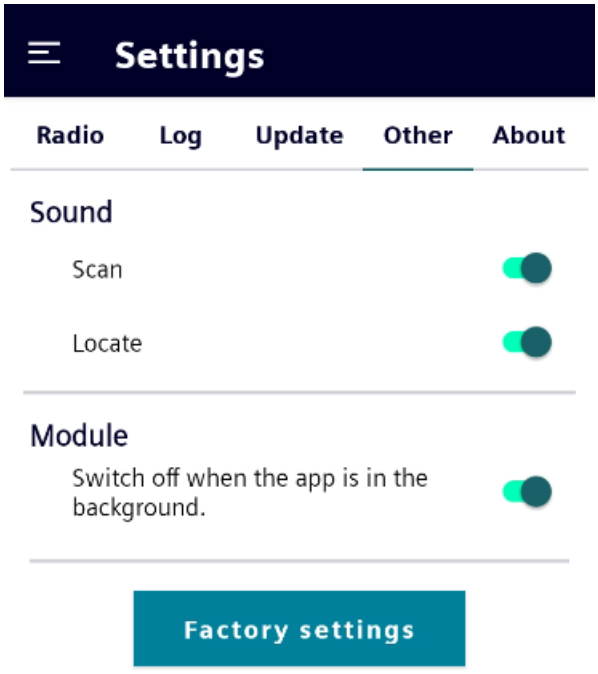


Figure 5-23 "Settings > Other" menu

Table 5- 22 Settings of the "Other" menu

Settings	Description
Sound	
Scan	Slider to enable/disable the scan sound If the function has been enabled, a signal sound is generated for each transponder identified during a scan operation.
Locate	Slider to enable/disable the localization sound If the function has been enabled, the distance to the transponder is reproduced by signal sounds when transponders are located. The nearer you get to the transponder, the higher the frequency of the signal sound becomes.
Module	

Settings	Description
Switch off when...	Slider to enable/disable the head module If the function has been enabled, the head module is switched off automatically as soon as the "SIMATIC Mobile Reader" app goes to the background. This function is an energy-saving function to maximize the battery lifetime.
Factory settings	Button for resetting the mobile reader to factory settings With this function, the "SIMATIC Mobile Reader" app is reset to the factory settings. The data saved on the device (e.g. log files) is not deleted in this process. To delete this data, you need to reset the operating system or delete the data manually. You can reset the operating system in the system settings under "Settings > System > Advanced > Reset options > Delete all data (factory settings)".

About

You can find information on the various current versions in the "About" tab.

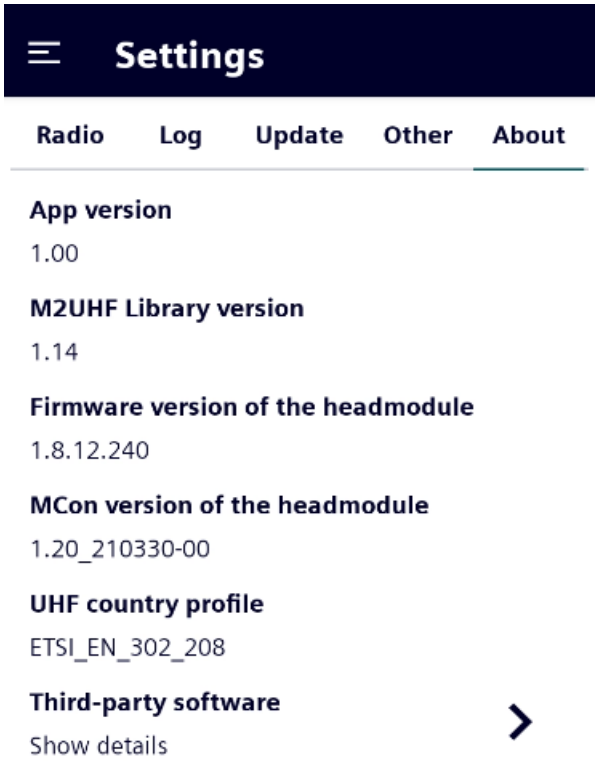


Figure 5-24 "Settings > About" menu

Table 5- 23 Information of the "About" menu

Information	Description
App version	Version specification of the "SIMATIC Mobile Reader" app
M2UHF library version	Version specification of the M2UHF library (API)
Reader firmware version	Version specification of the reader firmware of the head module
MCon version	Version specification of the module controller of the head module interface
MDID information	Detailed information on Mask Designer ID The Mask Designer ID contains information on the different transponder types (chip model and chip manufacturer). Based on the MDID, the reader can assign this information to the detected transponders.
UHF country profile	Detailed information on the UHF country profile used
Third-party software	Link to the file with copyright information on the open source software contained in this product as well as its license conditions

Maintenance and service

6

6.1 Cleaning and maintenance

During cleaning, place the mobile reader firmly on a surface (e.g. table) so that you have a secure hold and the mobile reader cannot slip from your hands.

NOTICE
Permitted cleaning agents Do not use any corrosive chemicals, cleaning solutions or aggressive cleaning agents.

Display

Turn the mobile reader off to clean the display because the display reacts to touch and the active program could be impaired or disrupted. Do not apply strong pressure to the display.

Charging and communication contacts

If charging or communication problems occur, clean the charging and communication contacts with a soft, damp cloth.

NOTICE
Cleaning the charging and communication contacts of the charging/docking station To clean the charging and communication contacts of the charging/docking station, disconnect the device from the power supply.

Keyboard/keys

Always turn the mobile reader off to clean the keyboard/keys because the keyboard/keys react to touch and the active program could be impaired or disrupted. Do not apply strong pressure to the keyboard/keys.

6.2 Software updates/installations

6.2.1 App update and installations

You can update the "SIMATIC Mobile Reader" app of the mobile reader using an update file and a USB stick. You can find a current version of the update file on the Siemens Industry Online Support pages (https://support.industry.siemens.com/cs/ww/en/ps/14971/dl).

Using *.apk files, you can also install additional apps on the mobile reader, as long as they support the target platform of the reader (ARM).

NOTICE
Apps from trusted sources
Make sure that the apps installed and operated on the device are from trusted sources.

Requirements

- The update file (*.apk) has been downloaded and transferred to a USB stick.
- The charging/docking station is connected to the power supply.
- The mobile reader is in the charging/docking station.

Procedure

Follow these steps to perform an app update:

1. Plug the USB with the update file into the USB port of the charging/docking station.

   As soon as the USB stick has been detected by the reader, a USB symbol is displayed in the navigation bar in the top left of the reader display. If the symbol is not displayed, restart the reader.

2. Open the "Total Commander" app.
3. If necessary, click the "Home" button of the Total Commander to return to the main page of the program.
4. Select the USB stick.

   Reaction: The folders and files of the USB stick are displayed.

5. Click on the *.apk file and then the "Install" button.

   Note: Depending on the defined security settings of the reader, the "Installation disabled" dialog window can appear.

   – In this case, click the "Settings" button and enable the "Unknown origin" setting.
   – Confirm the change by clicking "OK".
   – On the bottom left, click the "Back" button to return to the installation process in the Total Commander.
   – Click on the *.apk file again and then the "Install" button.

6. Confirm the installation process by clicking the "Install" button again.

Result: The installation is carried out. As soon as it has been completed successfully, a confirmation appears in the dialog window ("App has been installed."). Finally, click the "Finished" button and close the Total Commander.

6.2.2 MCon update

Using an update file and a USB stick, you can update the interface software of the head module (Module Controller or MCon). You can find a current version of the update file on the Siemens Industry Online Support pages (https://support.industry.siemens.com/cs/ww/en/ps/14971/dl).

Requirements

- The update file (*.bin) has been downloaded and transferred to a USB stick.
- The charging/docking station is connected to the power supply.
- The mobile reader is in the charging/docking station.

Procedure

Follow these steps to perform an MCon update:

1. Plug the USB with the update file into the USB port of the charging/docking station.

   As soon as the USB stick has been detected by the reader, a USB symbol is displayed in the navigation bar in the top left of the reader display. If the symbol is not displayed, restart the reader.

2. Open the "Total Commander" app and copy the update file from the USB stick into the local download folder.
3. Start the "SIMATIC Mobile Reader" app.
4. In the "Settings > Update > File path Mcon update" menu, click the button ›.

   Reaction: The "Downloads" folder opens.

5. Select the memory path of the update file with the button ☰.

6. Select the update file (*.bin).
7. Click the button "MCon update".

Result: The update is carried out. After the update is ended successfully, the module is restarted.

6.2.3 HF head module update (RF360M)

You can update the reader firmware of the HF head module using an update file and a USB stick. You can receive a current version of the update file from Siemens Support.

Requirements

- The three update files (*.apk) have been downloaded and transferred to a USB stick.
- The charging/docking station is connected to the power supply.
- The mobile reader is in the charging/docking station.

Procedure

To update the firmware, proceed as follows:

1. Plug the USB with the update file into the USB port of the charging/docking station.

   As soon as the USB stick has been detected by the reader, a USB symbol is displayed in the navigation bar in the top left of the reader display. If the symbol is not displayed, restart the reader.
2. Open the "Total Commander" app and copy the update files from the USB stick into the local download folder.
3. Start the "SIMATIC Mobile Reader" app.
4. Go to the "Settings > Update" menu and enter the password ("180999").
5. Under "File path reader update", click the › button.

   Reaction: The "Downloads" folder opens.
6. Select the memory path of the update file with the button ☰.
7. Select the largest update file (300vXX.upd).
8. Click the "Reader update" button.

Result: The update is carried out. After the update is ended successfully, the module is restarted.

Technical specifications

7

7.1 Technical specifications of the SIMATIC RF160B

Table 7- 1 Technical specifications

	6GT2003-0FA00
Product type designation	SIMATIC RF160B
Electrical specifications	
Power supply	Quick-change battery Li-Ion with 22.8 Wh (6,000 mAh / 3.8 V)
Charging time (0 ... 100%)	
• Device switched off	4 hours
• Device switched on	5¼ hours
Device runtime	5 to 10 hours [1)]
Hardware	
Processor	NXP i.MX8M Mini, 4x Cortex A53 (4x 1.8 GHz), 1x Cortex M4 (1x 400 MHz)
Memory	
• RAM	• 2 GB
• Flash	• 16 GB
Display	• 4.8" TFT color display with LED backlight (1280 x 720 pixels, 280 cd/m²) • 3 status LEDs
Touch screen	Capacitive touch, surface hardness according to MOHS category 5-6
Keyboard	• Side on/off button • Two side scanner buttons
Camera	5 MP autofocus camera with lighting
Sound	Integrated loudspeaker

	6GT2003-0FA00
Software	
Operating system	Android 9.0
User program	SIMATIC Mobile Reader app
WLAN standards	IEEE802.11 a/b/g/n/ac/d/h/e/i/r/w/v (2.4 GHz/5 GHz)
WLAN security	WEP, WPA, WPA2, WPA2-PSK, AES, TKIP, 802.1x authentication, IEEE802.11i (Personal and Enterprise), 802.1x authentication, 802.1x EAP, TLS, TTLS, PEAP, SIM, AKA, AKA-PRIME, PMK Caching
Mechanical specifications	
Weight	
• Incl. battery	• 400 g
• Incl. battery and UHF head module	• 460 g
• Incl. battery and HF head module	• 580 g
Dimensions (L x W x H)	
• Base device	• 174 × 82 × 28 mm
• Base device with UHF head module	• 210 × 82 × 32 mm
• Base device with HF head module	• 260 × 85 × 41 mm
Degree of protection	IP65
Material (housing)	ABS/PC
Color	Black
Permitted ambient conditions	
Ambient temperature	
• During operation	• -20 to +50 °C [2]
• During transport and storage	• -20 to +60 °C (without battery)
• During charging	• +5 to +35 °C
Relative humidity	5 to 90%, no condensation
Maximum drop height	1.2 m

[1] With a new and fully charged battery. Depending on the display settings, the transmit power and the number of read/write operations performed.

[2] Use at down to -20 °C / -4 °F in cold stores or outdoors is permissible. Provided the device was in operation for at least 20 minutes beforehand. Avoid condensation on the device.

7.2 Technical specifications of the HF head module SIMATIC RF360H

Table 7- 2 Technical specifications

	6GT2803-1FAx0
Product type designation	SIMATIC RF360H
Radio frequency	
Operating frequency	13.56 MHz
Electrical specifications	
Read range (max.)	10 cm
Protocol for wireless transmission	• ISO 15693 / ISO 18000-3 • RF300 (proprietary) • ISO 14443 (MOBY E, MIFARE Classic)
Product property, multitag capability	No
Mechanical specifications	
Weight	
HF head module with internal antenna	• 250 g
HF head module with antenna connector	• 250 g
Dimensions (L x W x H)	85 × 89 × 41 mm
Degree of protection	IP65
Material (housing)	ABS/PC
Color	Black
Permitted ambient conditions	
Ambient temperature	
• During operation	• -20 to +50 °C
• During transport and storage	• -20 to +60 °C
Relative humidity	5 to 90%, no condensation

7.3 Technical specifications of the UHF head module SIMATIC RF660H

Table 7- 3 Technical specifications

	6GT2813-1FAx0
Product type designation	SIMATIC RF660H
Radio frequency	
Operating frequency	
• UHF head module (ETSI)	• 865 to 868 MHz
• UHF head module (FCC)	• 902 to 928 MHz
• UHF head module (CMIIT)	• 920.625 to 924.375 MHz
Radiated power	
• UHF head module (ETSI)	• 9 ... 400 mW EIRP; 9.5 ... 26 dBm EIRP
• UHF head module (FCC)	• 8.5 ... 380 mW EIRP; 9.3 ... 25.8 dBm EIRP
• UHF head module (CMIIT)	• 9 ... 400 mW EIRP; 9.5 ... 26 dBm EIRP
Electrical specifications	
Read range (max.)	1.3 m
Protocol for wireless transmission	• ISO 18000-62 • ISO 18000-63 • EPCglobal UHF Class 1 Gen 2 • DRM (Dense Reader Mode) support
Product property, multitag capability	Yes
Polarization	Linear
Mechanical specifications	
Weight	60 g
Dimensions (L x W x H)	52 × 85 × 27 mm
Degree of protection	IP65
Material (housing)	ABS/PC
Color	Black
Permitted ambient conditions	
Ambient temperature	
• During operation	• -20 to +50 °C
• During transport and storage	• -20 to +60 °C
Relative humidity	5 to 90%, no condensation

7.4 Technical specifications of the charging/docking station

Table 7- 4 Technical specifications

	6GT2003-0FB00
Product type designation	Charging/docking station for SIMATIC RF160B
Electrical specifications	
Power supply	100 ... 240 V AC (max. 1.0 A; 50 ... 60 Hz)
Output voltage	15 V DC (36 W; 2.4 A)
Interfaces	
Power supply	DC socket (hollow plug)
Ethernet	RJ45 (10/100 Mb)
USB	Type A (USB host for removable storage media)
Hardware	
Display elements	2 status LEDs
Mechanical specifications	
Weight	Approx. 560 g
Dimensions (L x W x H)	138 × 200 × 82 mm
Degree of protection	IP20
Material (housing)	ABS and aluminum
Color	Black
Permitted ambient conditions	
Ambient temperature	
• During operation	• 0 to +40 °C
• During transport and storage	• -20 to +60 °C
• During charging	• +5 to +35 °C

Appendix

A

A.1 Encryption methods (ciphers)

The following tables list the encryption methods (ciphers) that the mobile reader uses.

SSL

- Service name: HTTPS
- Port number: 443
- Client/server: Server

Table A- 1 Supported SSL encryption methods (cipher suites)

Category	Official name	Value (hex)	Enabled by default
Cipher suite	TLS_AES_128_GCM_SHA256	0x1301	✓
Cipher suite	TLS_AES_256_GCM_SHA384	0x1302	✓
Cipher suite	TLS_CHACHA20_POLY1305_SHA256	0x1303	✓
Cipher suite	ECDHE-ECDSA-AES128-GCM-SHA256	0xc02b	✓
Cipher suite	ECDHE-RSA-AES128-GCM-SHA256	0xc02f	✓
Cipher suite	ECDHE-ECDSA-CHACHA20-POLY1305	0xcca9	✓
Cipher suite	ECDHE-ECDSA-AES256-GCM-SHA384	0xcca8	✓
Cipher suite	ECDHE-ECDSA-AES256-GCM-SHA384	0xc02c	✓
Cipher suite	ECDHE-RSA-AES256-GCM-SHA384	0xc030	✓
Cipher suite	ECDHE-ECDSA-AES256-SHA	0xc00a	✓
Cipher suite	ECDHE-ECDSA-AES128-SHA	0xc009	✓
Cipher suite	ECDHE-RSA-AES128-SHA	0xc013	✓
Cipher suite	ECDHE-RSA-AES128-SHA	0xc014	✓
Cipher suite	AES128-GCM-SHA256	0x009c	✓
Cipher suite	AES256-GCM-SHA384	0x009d	✓
Cipher suite	AES128-SHA	0x002f	✓
Cipher suite	AES256-SHA	0x0035	✓
Protocol version	TLSv1.2	--	✓
Protocol version	TLSv1.3	--	✓

A.2 Certificates & approvals

Note

Granted approvals on the type plate of the device

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

EC Declaration of Conformity

CE The SIMATIC RF160B meets the general and safety-related requirements of the following EU directives and conforms to the harmonized European standards (EN) for programmable controllers published in the official gazettes of the European Union and here:

- EU Directive 2014/53/EU "Radio Equipment Directive"

The CE Declaration of Conformity is available for the responsible authorities at the following address:

Siemens Aktiengesellschaft
Digital Industries
Process Automation
D-76181 Karlsruhe
Germany

You will find the CE Declaration of Conformity for this product on the Internet at the following address:

Siemens Industry Online Support
(https://support.industry.siemens.com/cs/ww/en/ps/29056/cert)

Open source software

This product contains software components that are licensed by rights owners as free software or open source software under the GNU General Public License. If necessary, you can request the source code of these software components from Siemens AG if you make a request to Siemens Support within three years after sale of the product by Siemens AG. Any costs that will be incurred for necessary workload will be communicated to you when you make the request.

You can find copyright information for the open source software contained in this product as well as the license terms in the system settings under "Settings > About the tablet > Legal information" and in the SIMATIC Mobile Reader app under "Settings > Info > Third-party software".

A.3 Country-specific approvals

If a device has one of the following marks, the corresponding approval has been obtained.

Table A- 2 Country-specific approvals

Marking	Description
CE	CE according to RED directive 2014/53/EU CE according to RoHS directive 2011/65/EU
FC Federal Communications Commission	1) Part 15 Clause 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." 2) Statement for Part 15 Clause 15.21: "Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment." 3) Statement for FCC Part 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." This radio transmitter 9137A-RF360HEANT has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device. Antennas: ANT 3, ANT 3S, ANT 8, ANT 12, ANT 18, ANT 30

Marking	Description
Industry Canada Radio Standards Specifications	CAN ICES-3 (B)/NMB-3(B) This device complies with Industry Canada's licence-exempt RSSs. 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; • 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
EAC	EAC (Eurasian Conformity) Eurasian Economic Union of Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, the Kyrgyz Republic and the Russian Federation Declaration of conformity according to the technical regulations of the customs union (TR CU)
CMIIT	Valid for RF160B and RF660H (6GT2813-1FA20): China (CMIIT) Radio Transmission Equipment Type Approval Certificate In accordance with the provisions on the Radio Regulations of the People's Republic of China, the following radio transmission equipment, after examination, conforms to the provisions with its CMIIT ID. CMIIT ID: 2022AJ0533
KC	South Korea (KCC) (only SIMATIC RF1060R/RF1070R) Korea Communications Commission Certificate of Broadcasting and Communication Equipments Republic of Korea • SIMATIC RF160B: xxx-xxx-xxx-RF160B • SIMATIC RF360H: xxx-xxx-xxx-RF360H

A.4 Order data

Table A- 3 Order data

		Article number
SIMATIC RF160B; base device		6GT2003-0FA00
SIMATIC RF360H; HF head modules		
	SIMATIC RF360H with internal antenna	6GT2803-1FA00
	SIMATIC RF360H with antenna connector for external antenna	6GT2803-1FA10
SIMATIC RF660H; UHF head modules		
	SIMATIC RF660H (ETSI)	6GT2813-1FA00
	SIMATIC RF660H (FCC)	6GT2813-1FA10
	SIMATIC RF660H (CMIIT)	6GT2813-1FA20
Charging/docking station for SIMATIC RF160B		6GT2003-0FB00
Accessories		
Battery for SIMATIC RF160B		6GT2093-0FA00
Pistol handle for SIMATIC RF160B		6GT2093-0FG00

Table A- 4 Order data, antennas for SIMATIC RF360H (6GT2803-1FA10)

Antenna	Description	Article number
ANT 3	• without antenna connecting cable	6GT2398-1CD30-0AX0
	• incl. one plug-in antenna connecting cable 3 m	6GT2398-1CD40-0AX0
ANT 3S	• without antenna connecting cable	6GT2398-1CD50-0AX0
	• incl. one plug-in antenna connecting cable 3 m	6GT2398-1CD60-0AX0
ANT 8	• without antenna connecting cable	6GT2398-1CF00
	• incl. one plug-in antenna connecting cable 3 m	6GT2398-1CF10
ANT 12	• incl. one integrated antenna connecting cable 0.6 m	6GT2398-1CC10
	• incl. one integrated antenna connecting cable 3 m	6GT2398-1CC00
ANT 12 (stainless steel variant)	• without antenna connecting cable	6GT2398-1DC00
	• incl. one plug-in antenna connecting cable 3 m	6GT2398-1DC10

Antenna	Description	Article number
ANT 18	• incl. one integrated antenna connecting cable 0.6 m	6GT2398-1CA10
	• incl. one integrated antenna connecting cable 3 m	6GT2398-1CA00
ANT 18 (stainless steel variant)	• without antenna connecting cable	6GT2398-1DA00
	• incl. one plug-in antenna connecting cable 3 m	6GT2398-1DA10
ANT 30	• incl. one integrated antenna connecting cable 3 m	6GT2398-1CD00
ANT 30 (stainless steel variant)	• without antenna connecting cable	6GT2398-1DD00
	• incl. one plug-in antenna connecting cable 3 m	6GT2398-1DD10

Table A- 5 Order data, antenna connecting cable for SIMATIC RF360H (6GT2803-1FA10)

		Article number
Antenna connecting cable M8-180 ↔ M8-90, trailing	60 cm	6GT2391-0AE60
Antenna connecting cable M8-180 ↔ M8-90, trailing	3 m	6GT2391-0AH30

Service & Support

B

Industry Online Support

In addition to the product documentation, you are supported by the comprehensive online information platform of Siemens Industry Online Support at the following Internet address:
Link: (https://support.industry.siemens.com/cs/de/en/)

Apart from news, you will also find the following there:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option to submit a support request:
  Link: (https://support.industry.siemens.com/My/ww/en/requests)
- Our service offer:

  Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

You will find contact data on the Internet at the following address:
Link: (https://www.automation.siemens.com/aspa_app/?ci=yes&lang=en)

"Industrial Identification" homepage

You can find the latest general information about our identification systems on the Internet at our Homepage (www.siemens.com/ident).

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The online catalog and the online ordering system can also be found on the Industry Mall home page (https://mall.industry.siemens.com).

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