ELATEC RFID TWN3 Mifare RFID Reader User Manual

Contents

ELATEC RFID Systems

ELATEC RFID TWN3 Mifare RFID Reader

INTRODUCTION

ABOUT THIS MANUAL

This user manual is intended for the user and enables a safe and appropriate handling of the product. It gives a general overview, as well as important technical data and safety information about the product. Before using the product, the user should read and understand the content of this user manual. For the sake of better understanding and readability, this user manual might contain exemplary pictures, drawings and other illustrations. Depending on your product configuration, these pictures might differ from the actual design of your product.

ELATEC SUPPORT

In case of any technical questions, refer to the ELATEC website (www.elatec.com) or contact ELATEC technical support at: **support-rfid@elatec.com**
In case of questions regarding your product order or if you wish additional copies of this user manual, contact your Sales representative or ELATEC customer service at:
info-rfid@elatec.com

REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
03	Chapters “Safety Information”, “Technical Data” and “Compliance Statements ” updated	09/2021
02	Editorial changes (layout), new template used (chapters reviewed or added)	02/2021
01	First edition	10/2008

INTENDED USE

The TWN3 MIFARE RFID reader is designed for easy integration into various applications. This device supports either USB or RS232 communication just in dependence on the connection cable and is available as a ready-to-connect desktop reader in a slim line black or white housing. The reader can be programmed with a scripting language for autonomous execution of even complex commands like login procedures, increment/decrement functions and many more. The product is for indoor use and may not be used outdoor. Any use other than the intended use described in this section, as well as any failure to observe the safety information listed in this document, will be considered misuse and will void the warranty. ELATEC is not responsible for any damage or injuries resulting from any misuse of the product.

SAFETY INFORMATION

Installation

- The installation of the product should be done by a trained and qualified personnel only.
  Do not install the product by yourself.
- Metallic materials on or in direct vicinity to the product might reduce the reading performance of the product. In some circumstances, plastic screws should be preferred to metallic screws when installing the product. Refer to the installation instructions or integration manual of the product for more information.

Handling

- Depending on your product configuration, the product might be equipped with one or more light-emitting diodes (LED). Avoid direct eye contact with the blinking or steady light of the light-emitting diodes.
- The product has been designed for a use under following conditions:
  - Temperature range: -25 °C – 70 °C (operating conditions)
  - Relative humidity: 5% – 95% (non-condensing)
  - Indoor use – no outdoor use!

Any use of the product under different conditions might damage the product or alter its reading performance.

- The use of other RFID readers or reader modules in direct vicinity to the product, or in combination with the product might damage the product or alter its reading performance. In case of doubts, contact ELATEC for more information.
- The user is liable for the use of spare parts or accessories other than the ones sold or recommended by ELATEC.
  ELATEC is not responsible for any damage or injuries resulting from the use of spare parts or accessories other than the ones sold or recommended by ELATEC.
- Like most electronic devices, RFID systems generate electromagnetic waves that can vary in amplitude and frequency. It is generally known and accepted that some RFID devices might potentially interfere with personal medical devices, like pacemakers or hearing aids.

Users with a pacemaker or any other medical device should use TWN3 MIFARE carefully and refer to the information given by the manufacturer of their medical devices before using TWN3 MIFARE or any host device containing TWN3 MIFARE.

Maintenance and cleaning

- Any repair or maintenance work should be done by a trained and qualified personnel only.
  Do not try to repair or carry out any maintenance work on the product by yourself.
  Do not allow any repair or maintenance work on the product by an unqualified or unauthorized third party.
- The product does not need any special cleaning. However, the housing may be carefully cleaned up with a soft, dry cloth on the outer surface only.
  Make sure that the used cloth and cleaning agent do not damage the product or its components (e.g. label(s)).

Disposal

- The product must be disposed of in accordance with the EU directive on waste electrical and electronic equipment (WEEE) or other applicable local regulations.

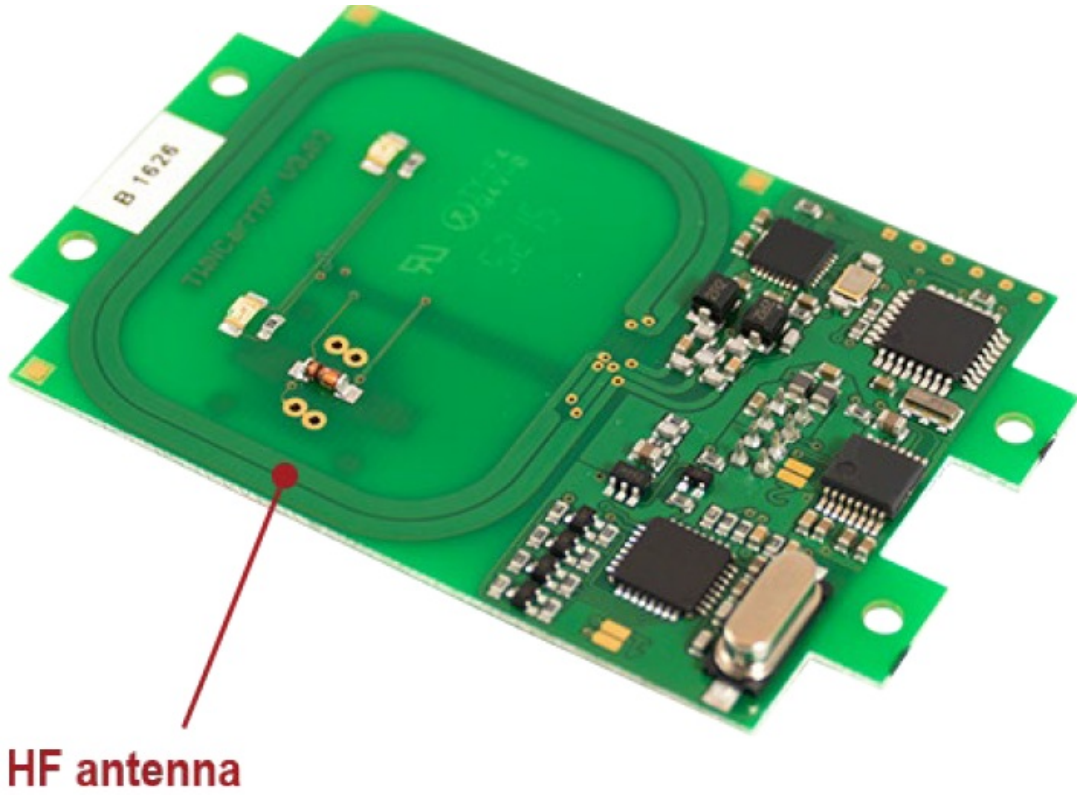
Product modifications

- The product has been designed, manufactured and certified as defined by ELATEC.

Any product modifications not expressly approved by ELATEC, including – but not limited to – modifications of antennas or other radio-related components, is not allowed and will void the warranty and all approvals granted to the product.
If you are unsure about any part of the safety information above, contact ELATEC support. Any failure to observe the safety information above will be considered misuse and will void the warranty. ELATEC is not responsible for any damage or injuries resulting from any misuse of the product.

TECHNICAL DATA

Power supply
5.0 V ± 10% via communication cable (USB); serial version requires external power supply
Current consumption
55 mA typ. (USB, normal operation); 120 mA peak
Antenna
The reader is equipped with the following antenna:



- PCB contained in TWN3 MIFARE – HF antenna (PCB air coil, integrated)

HF antenna (13.56 MHz)
Dimensions: 39.5 mm x 48 mm / 1.56 inch x 1.89 inch
Number of turns: 4
For more information, refer to the related product data sheet or other technical documents.

MODE OF OPERATION

OPERATING MODE

In order to start operating TWN3 MIFARE, it simply has to be connected directly to a host device.

POWER UP

In case of an external power supply unit is used, the following requirements must be satisfied:

- Limited power source according to the safety norms listed in the respective declaration(s) of conformity
- Short-circuit current < 8 A

Once TWN3 MIFARE is connected to the host, it detects the type of communications cable (e.g. USB or RS-232), with which it is connected to the host. The result of this detection is signaled via the two LEDs:

- **USB cable:** red LED flashes once.
- **RS-232 cable:** green LED flashes once. This flash is hidden by the directly following permanent one of the green LED.

In case of RS-232: Additionally, the RS-232 is sending a version string via RS-232 to the host.

ENUMERATION

This is only applicable for the USB version: Once the device has been powered up, it is waiting for completion of the enumeration by the USB host. As long as the device is not enumerated, it is entering a minimum power

consumption mode, where both LEDs are turned off.

INITIALIZATION

After powering up and enumeration (in USB mode), the device is turning on its built-in transponder reader logic. The green LED is turned on permanently. Some RFID readers need some kind of initialization, which is performed in this step. After successful initialization, the device sounds a short sequence, which consists of a lower tone followed by a higher tone, which is similar to a “plug & play” sound.

NORMAL OPERATION

As soon as the device has completed the initialization, it is entering normal operation. During normal operation, the device is searching for a transponder continuously.

DETECTION OF A TRANSPONDER

If a transponder is detected by the reader, following actions are performed:

- Send the ID to the host. By default, the USB device sends by emulating keystrokes of a keyboard. An RS-232 device sends the ASCII code of an ID.
- Sound a beep.
- Turn off the green LED.
- Blink the red LED for two seconds.
- Turn on the green LED.

Within the two seconds timeout, where the red LED is blinking, the transponder, which just has been recognized will not be accepted again. This prevents the reader from sending identical IDs more than one time to the host. If during the two seconds timeout of the red LED a different transponder is detected, the complete sequence restarts immediately.

SUSPEND MODE

The USB version of the reader supports the USB suspend mode. If the USB host is signaling suspend via the USB bus, then the reader is turning off most of its power consuming peripherals. During this operation mode, no detection of transponders is possible and all LEDs are turned off. Once the host is resuming to normal operation mode, this is also signaled via the USB bus. Therefore, the reader will resume to normal operation too.

COMPLIANCE STATEMENTS

EU

TWN3 MIFARE is in compliance with the EU directives and regulations as listed in the respective declaration of conformity. 6.2 FCC

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.

Caution

The Federal Communications Commission (FCC) warns the users that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

FCC §15.105 (b)

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.

FCC ID: WP5TWN3M1

IC

This device complies with Industry Canada's license-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.

IC: 7948A-TWN3M1

RF EXPOSURE COMPLIANCE

RF exposure statement (mobile and fixed devices)
This device complies with the RF exposure requirements for mobile and fixed devices. However, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

APPENDIX

- A – TERMS AND ABBREVIATIONS

TERM	EXPLANATION
FCC	Federal Communications Commission
HF	high frequency
IC	Industry Canada
LED	light-emitting diode
PCB	printed circuit board
RFID	radio frequency identification
WEEE	Waste of electrical and electronic equipment. Refers to Directive 2011/65/EU of the European Parliament and of the Council of the Europ ean Union

- B – RELEVANT DOCUMENTATION

ELATEC documentation

- ELATEC quick start guide
- Transponder Reader TWN3 Technical Manual
- TWN3 MIFARE data sheet

Documents / Resources

	ELATEC RFID TWN3 Mifare RFID Reader [pdf] User Manual TWN3 Mifare RFID Reader, TWN3, Mifare RFID Reader, RFID Reader, Reader

References

- Authentication Solutions by ELATEC
- Authentication Solutions by ELATEC

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