

ELATEC RFID TWN4 Palon Square M LF HF Module User Manual

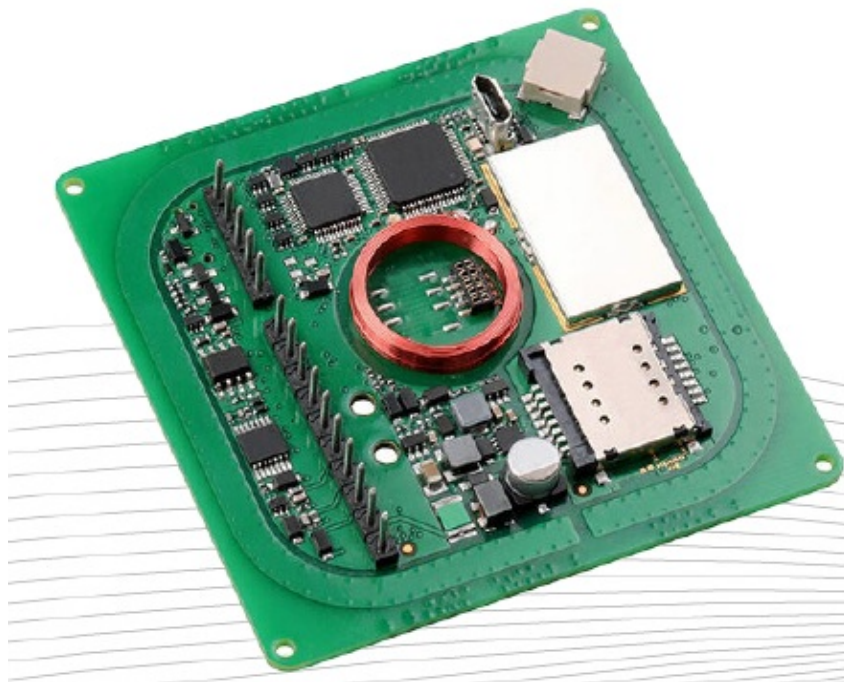
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ELATEC RFID TWN4 Palon Square M LF HF Module



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.

The original version of this user manual has been written in English. Wherever the user manual is available in another language, it is considered as a translation of the original document for information purposes only. In case of discrepancy, the original version in English will prevail.

SCOPE OF DELIVERY

COMPONENTS AND ACCESSORIES

Depending on your product configuration, the product can be delivered alone or with different components and accessories, such as cables or wall holders, as part of a kit. For more information about the delivered components and accessories, refer to your delivery note, consult the ELATEC website or contact ELATEC.

SOFTWARE

The product is delivered ex-works with a specific software version (firmware). Refer to the label attached to the product to find the software version installed ex-works.

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, contact your Sales representative or ELATEC customer service at: info-rfid@elatec.com

REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
02	Chapters “Introduction”, “Intended Use”, “Safety Information”, “Mode of Operation” and “Compliance Statements” updated	02/2022
01	First edition (replaces <i>ELATEC TWN4 Palon Square M user manual DocRev2</i> , dated 03/2021)	09/2021

INTENDED USE

TWN4 Palon Square M LF HF is a versatile OEM PCB for integration into third-party products and devices. It supports enhanced interfaces, especially RS-485. The new single PCB module inherits all advantages and tool support of the ELATEC TWN4 family. Although being a general-purpose PCB module, it is optimized for time attendance and access control. The product is intended to be integrated into a host device. Any use other than the intended use described in this section, as well as any failure to comply with the safety information given in this document, is considered improper use. ELATEC excludes any liability in case of improper use or faulty product installation.

SAFETY INFORMATION

Unpacking and installation

- The product contains sensitive electronic components that require particular attention when unpacking and handling the product. Unpack the product carefully and do not touch any sensitive components on the printed circuit board. In case the product is equipped with a cable, do not twist or pull the cable.
- The product is an electronic product whose installation requires specific skills and expertise. The installation of the product should be done by a trained and qualified personnel only. Do not install the product by yourself.

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 specific conditions (refer to the product data sheet). 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 excludes any liability for damages 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 TWN4 Palon Square M LF HF carefully and refer to the information given by the manufacturer of their

medical devices before using TWN4 Palon Square M LF HF or any host device containing TWN4 Palon Square M LF HF.

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.
 - Do not use any detergents or other cleaning agents on the product.

Disposal

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

Product modifications

The product has been designed, manufactured and certified as defined by ELATEC. Any product modification without prior written approval from ELATEC is prohibited and considered improper use of the product. Unauthorized product modifications may also result in the loss of product certifications.

If you are unsure about any part of the safety information above, contact ELATEC support. Any failure to comply with the safety information given in this document is considered improper use. ELATEC excludes any liability in case of improper use or faulty product installation.

TECHNICAL DATA

Power supply

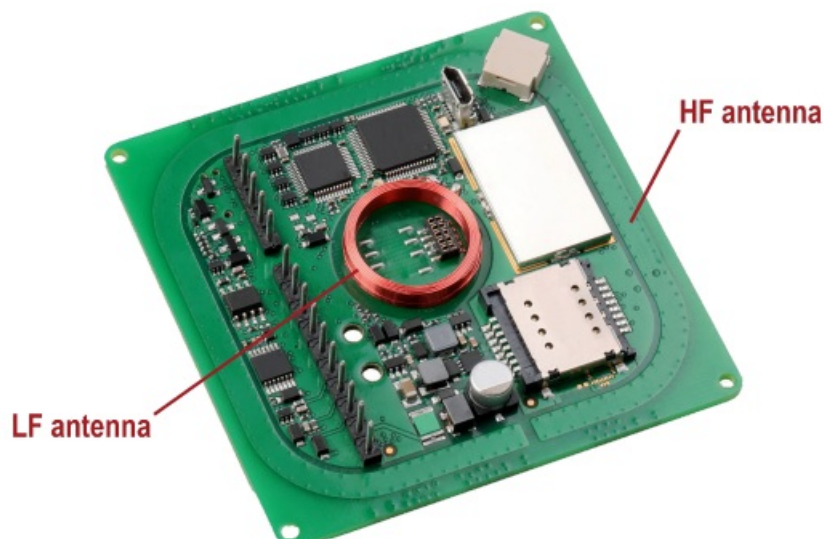
9.0 V – 30 V via connector X1; 4.3 V – 5.5 V via micro USB

Current consumption

Operating: typ. 180 mA @12 V; Idle: typ. 50 mA @12 V; Peak typ. 250 mA @12 V

Antennas

The reader module is equipped with the following antennas:



HF antenna (13.56 MHz)

- Dimensions: 62 mm x 62 mm / 2.44 inch x 2.44 inch
- Number of turns: 2

LF antenna (125 kHz)

- Diameter: 20 mm / 0.79 inch
- Number of turns: 234

For more information, refer to the related product data sheet or other technical documents.

MODE OF OPERATION

The mode of operation described in the following chapter is based on a standard ELATEC RFID reader module equipped with two LEDs. Depending on your product (number of LEDs, installed firmware, etc.) and in case the product settings have been modified with the AppBlaster tool, the information below might differ from your product configuration when in operation. In particular, the color and sequence of the LEDs on your product might be different.

OPERATING MODE

In order to start operating TWN4 Palon Square M LF HF, 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 standards listed in the respective declaration(s) of conformity
- Short-circuit current < 8 A Once TWN4 Palon Square M LF HF is connected to the host, it detects the type of communications cable (e.g. USB), with which it is connected 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 the built-in transponder reader logic. The green LED is turned on permanently. Some RFID reader modules 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.

NORMAL OPERATION

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

DETECTION OF A TRANSPONDER

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

- Send the ID to the host. By default, the USB device sends by emulating keystrokes of a keyboard.
- 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 module 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 module supports the USB suspend mode. If the USB host is signaling suspend via the USB bus, the reader module 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 module will resume to normal operation too.

COMPLIANCE STATEMENTS

EU

TWN4 Palon Square M LF HF is in compliance with the EU directives and regulations as listed in the respective declaration of conformity.

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.

Micropower scope of use declaration:

TWN4 Palon Square M LF HF supports transmission frequencies of 13.56 MHz and 125 kHz. The user needs to adhere to the following specifications when using the product:

1. The specific provisions listed in the “catalog and the technical specifications for micropower short-range radio transmission equipment” as well as the usage scenarios for the antenna type used, the functions, and the customary use of the control system, regulation, and switches must be complied with;

Transmission power:

- **13.56 MHz:** ≤ -2.66 dB μ A/m (field strength at 10 meters, standard max value)
 - **125 kHz:** ≤ -14.11 dB μ A/m (field strength at 10 meters, standard max value)
 - **Antenna:** built-in antenna (cannot be removed)
 - **Control system, regulation, and switches:** The user cannot control, regulate, or switch over the radio transmission function of the antenna.
2. The unauthorized modification of usage scenarios or the conditions of use, expansion of the transmission frequency range, or increase of the transmission power (including installing additional transmission power amplifiers), as well as the unauthorized modification of the transmission antenna are not allowed;
 3. The product may not interfere in any way with any legal radio transmitters (stations) and may not offer any shielding from harmful interference;
 4. The product must be able to tolerate interference caused by industrial, scientific, and medical (ISM) devices which radiate high frequency energy or other legal interference from radio transmitters (stations);
 5. Should the product cause harmful interference on other legal radio transmitters (stations), product use must be discontinued immediately and suitable measures must be taken prior to using the product again in order to eliminate said interference;
 6. When using micropower devices inside of an aircraft or radiometric observatories, or when using such devices

in meteorological radar stations, satellite ground stations (including measuring and control stations, distance measuring stations, receiving stations, or navigation stations), as well as in radio transmitters (stations) used by the military and electromagnetic environment protections zones at airports, all applicable provisions of the competent authorities as well as statutory provisions, national regulations, and national standards must be complied with;

7. Remote controls of any kind may not be used within 5000 meters of airport runways, measured from the middle of the runway;

8. Ambient conditions such as temperature and voltage when using micropower devices:

- **operating voltage of TWN4 Palon Square M LF HF:** 4.3 V – 5.5 V (charging via micro USB),
- **operating temperature:** -25 °C – 80 °C,
- **storage temperature:** -40 °C – 85 °C.

The user must strictly adhere to these temperature and voltage specifications when using the product.

UNITED KINGDOM

TWN4 Palon Square M LF HF complies with the requirements of the UK legislations and other regulations as listed in the respective UK declaration of conformity. The importer is responsible for applying the following information to the packaging of the product:

- the importer company's details, including the company's name and a contact address in the United Kingdom.
- UKCA marking

FURTHER STATEMENTS

Should the device be certified and installed in the following countries or regions, the corresponding statements (see below) must be contained in the user manual.

APPENDIX

A – TERMS AND ABBREVIATIONS

TERM	EXPLANATION
HF	high frequency
LED	light-emitting diode
LF	low frequency
NFC	near field communication
PCB	printed circuit board
RFID	radio frequency identification
UKCA	UK conformity assessed
WEEE	Waste of electrical and electronic equipment. Refers to Directive 2012/19/EU of the European Parliament and of the Council of the European Union

B – RELEVANT DOCUMENTATION ELATEC documentation

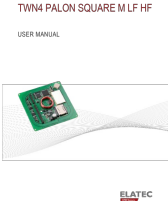
- ELATEC quick start guide
- TWN4 Palon technical handbook
- TWN4 Palon Square M LF HF data sheet
- TWN4 Palon Square M LF HF integration manual

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Documents / Resources

	<p>ELATEC RFID TWN4 Palon Square M LF HF Module [pdf] User Manual TWN4 Palon Square M LF HF Module, TWN4, Palon Square M LF HF Module</p>
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References

-  [Authentication Solutions by ELATEC](#)
-  [Authentication Solutions by ELATEC](#)

Manuals+.