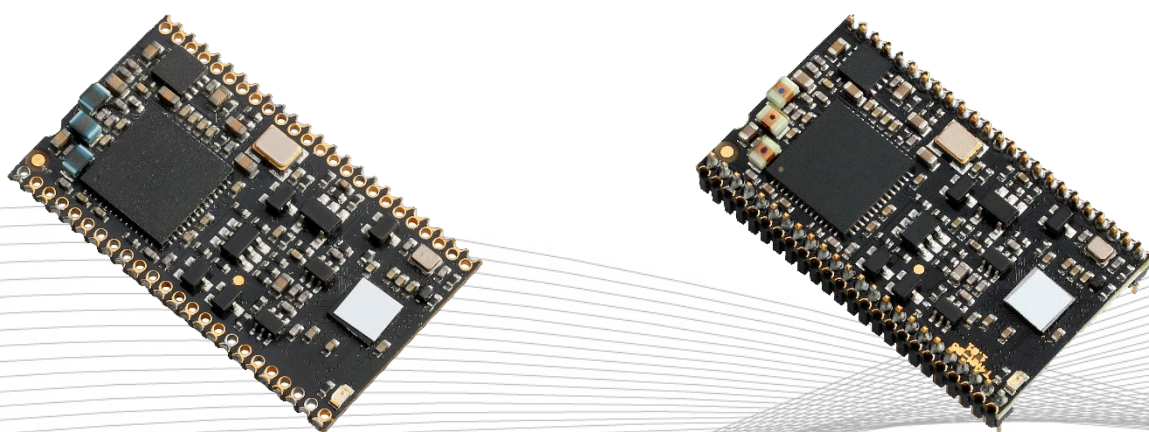


# TWN4 MULTITECH NANO LEGIC 42 M

USER MANUAL



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# 1 INTRODUCTION

## 1.1 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.

## 1.2 SCOPE OF DELIVERY

### 1.2.1 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.

### 1.2.2 SOFTWARE

The product is delivered ex-works with a specific software version (firmware), which can be found on the packaging label, on the delivery note or other delivery documents.

## 1.3 ELATEC SUPPORT

In case of any technical questions, refer to the ELATEC website ([www.elatec.com](http://www.elatec.com)) or contact ELATEC technical support at [support-rfid@elatec.com](mailto: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](mailto:info-rfid@elatec.com)

## 1.4 REVISION HISTORY

| VERSION | CHANGE DESCRIPTION  | EDITION |
|---------|---|---------|
| 04      | Chapter "Compliance Statements" updated   | 04/2022 |
| 03      | Product pictures updated  | 03/2022 |
| 02      | Chapters "Software", "Technical Data", "Compliance Statements" and "Labeling" updated | 01/2022 |
| 01      | First edition   | 12/2021 |

## 2 INTENDED USE

TWN4 MultiTech Nano LEGIC 42 M is designed for integration into machines or other devices. It can be connected to an external antenna through a printed circuit board (125 kHz, 13.56 MHz or both).

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.

## 3 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 product.**  
**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

- 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 MultiTech Nano LEGIC 42 M carefully and refer to the information given by the manufacturer of their medical devices before using TWN4 MultiTech Nano LEGIC 42 M or any host device containing TWN4 MultiTech Nano LEGIC 42 M.**

### 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.

## 4 TECHNICAL DATA

### Power supply

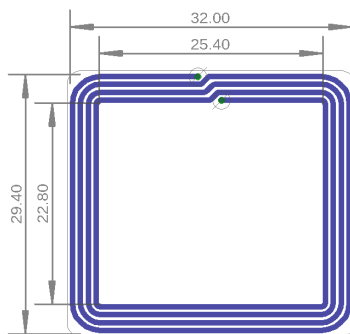
3.3 V  $\pm$  5% (direct supply) or 4.3 V - 5.5 V (use of on-board voltage regulator)

### Current consumption

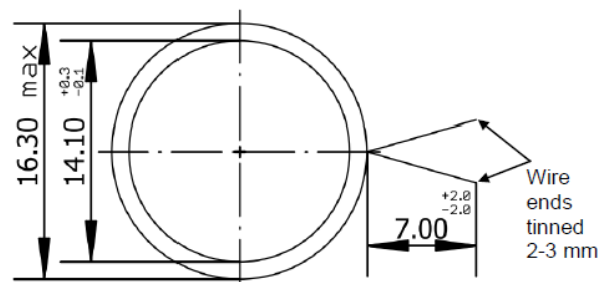
RF field on: 120 mA typically / Sleep: 500  $\mu$ A typ.

### Antennas

TWN4 MultiTech Nano LEGIC 42 M has been tested with an external printed circuit board equipped with the following antennas:



HF antenna on external PCB, printed, one-sided



LF antenna on external PCB, glued and soldered

### HF antenna (13.56 MHz)

Outer dimensions: 32 x 29.4 mm / 1.26 x 1.16 inch

Number of turns: 4

Inductance: 1.0  $\mu$ H  $\pm$  20%

PCB trace width: 0.6 mm / 0.02 inch

### LF antenna (125 kHz)

Outer diameter: max. 16.3 mm / 0.64 inch

Number of turns: 144

Inductance: 490  $\mu$ H  $\pm$  5%

Wire diameter: 0.10 mm / 0.0039 inch

Lead free, coil fixed by using backed wire

Please note that the use of TWN4 MultiTech Nano LEGIC 42 M with other antennas than the ones described above is not part of the approvals granted to the module. In case TWN4 MultiTech Nano LEGIC 42 M is used with other antennas, a separate approval, additional testing or new authorization for a use with these specific antennas is required

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

# 5 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.

## 5.1 OPERATING MODE

In order to start operating TWN4 MultiTech Nano LEGIC 42 M, it simply has to be connected directly to a host device.

## 5.2 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 MultiTech Nano LEGIC 42 M is connected to the host device, it detects the type of communications cable (e.g. USB), with which it is connected to the host.

## 5.3 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.

## 5.4 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 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.

## 5.5 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.

## 5.6 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.

## 5.7 SUSPEND MODE

The USB version of the RFID 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.



## 6 COMPLIANCE STATEMENTS

TWN4 MultiTech Nano LEGIC 42 M has been certified as a module and does not need further approval, provided that the module is used with antennas as specified in this manual. The use of TWN4 MultiTech Nano LEGIC 42 M with other antennas than the ones described in this manual is not part of the approvals granted to the module. In case TWN4 MultiTech Nano LEGIC 42 M is used with other antennas, a separate approval, additional testing or new authorization for a use with these specific antennas is required.

### 6.1 EU

TWN4 MultiTech Nano LEGIC 42 M is in compliance with the EU directives and regulations as listed in the respective EU 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: WP5TWN4F20

### 6.3 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.

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'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC: 7948A-TWN4F20

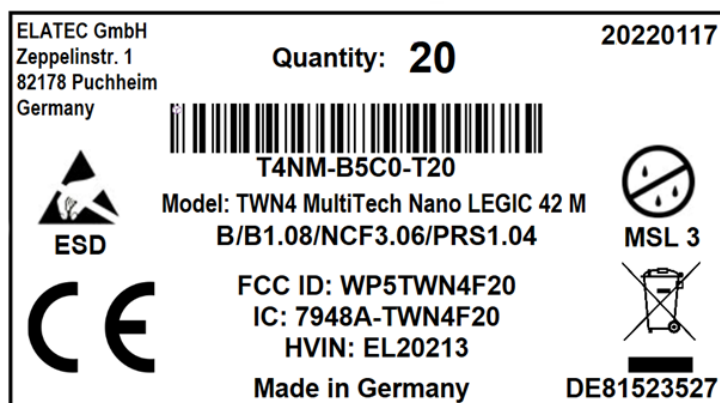
## 6.4 UNITED KINGDOM

TWN4 MultiTech Nano LEGIC 42 M 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

## 6.5 LABELING



Packaging label (exemplary)

# APPENDIX

## A – TERMS AND ABBREVIATIONS

| TERM | EXPLANATION   |
|------|---|
| FCC  | Federal Communications Commission   |
| IC   | Industry Canada   |
| RFID | radio frequency identification  |
| UKCA | UK conformity assessed  |
| WEEE | Waste of electrical and electronic equipment.<br>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 MultiTech Nano LEGIC 42 M data sheet
- TWN4 MultiTech Nano LEGIC 42 M integration manual
- TWN4 MultiTech Nano technical handbook



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