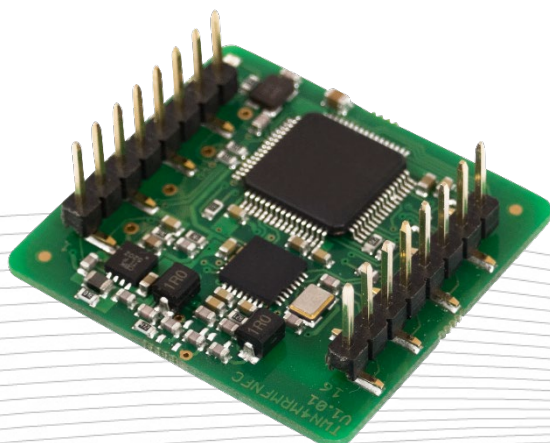


# TWN4 MULTITECH HF MINI

*TWN4 Mini Reader MIFARE NFC*

## INTEGRATION MANUAL



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# 1 INTRODUCTION

## 1.1 ABOUT THIS MANUAL

This integration manual explains how to integrate ELATEC RFID reader module TWN4 MultiTech HF Mini into a host device and is mainly intended for integrators and host manufacturers.

The content of this integration manual is subject to changes without prior notice and printed versions might be obsolete. Integrators and host manufacturers are required to use the latest version of this integration manual.

For the sake of better understanding and readability, this 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.

## 1.2 ABOUT TWN4 MULTITECH HF MINI

ELATEC TWN4 MultiTech HF Mini reader is designed for integration into machines, handheld computers or any other human interface devices such as displays, panels, etc. The focus has especially been set on size, flexibility and price. Thanks to its compact dimensions, integration directly on a PC board is possible.

## 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**

## 1.4 REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
01	First edition (replaces <i>Transponder Reader TWN4 Mini Reader MIFARE NFC Quick Start Guide</i> )	08/2021

# 2 SAFETY INFORMATION

- ELATEC TWN4 MultiTech HF Mini is an electronic component and should be installed exclusively by a trained and qualified personnel.
- ELATEC recommends the integrators to follow general ESD protective measures during the installation of TWN4 MultiTech HF Mini into a host device, e.g. the use of an antistatic wristband or special gloves.
- The integrator should not touch the antennas (if not shielded), printed circuit boards, connectors or other sensitive components on TWN4 MultiTech HF Mini.
- Before installing TWN4 MultiTech HF Mini into a host device, the integrator should also make sure that he/she has read and understood the ELATEC technical documentation related to TWN4 MultiTech HF Mini, as well as the technical documentation related to the host device. In particular, the instructions and safety information given in the user manual of TWN4 MultiTech HF Mini should be read carefully and listed in the technical documentation of the host manufacturer as well, as soon as these instructions and safety information are required for a safe and proper use of the host device containing TWN4 MultiTech HF Mini.

## 3 INTEGRATION INSTRUCTIONS

### 3.1 GENERAL

TWN4 MultiTech HF Mini may be installed in any host devices, as long as it is operated under the operational conditions stated in the user manual and other technical documents (e.g. data sheet). TWN4 MultiTech HF Mini is equipped with one integrated antenna. Thus, no antenna installation is required.

### 3.2 LIST OF APPLICABLE RULES

Refer to the approval certificates, grants and declarations of conformity issued for TWN4 MultiTech HF Mini, and to Chapter "Compliance Statements" for a detailed list of the rules applicable to TWN4 MultiTech HF Mini.

### 3.3 SPECIFIC OPERATIONAL USE CONDITIONS

There are no specific operational use conditions for TWN4 MultiTech HF Mini other than the conditions mentioned in the user manual and data sheet of TWN4 MultiTech HF Mini. The host manufacturer or integrator must ensure that these use conditions comply with the use conditions of the host device. In addition, these use conditions must be stated in the user manual of the host device.

### 3.4 LIMITED MODULE PROCEDURES

Refer to the grant of equipment authorization or approval certificate issued for TWN4 MultiTech HF Mini for more information.

### 3.5 TRACE ANTENNA DESIGN

n/a

### 3.6 RF EXPOSURE CONSIDERATIONS

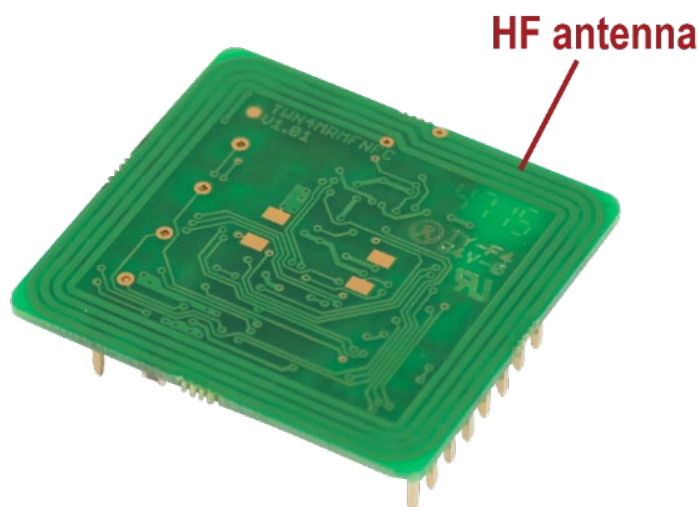
The module antenna(s) must be installed to meet the RF exposure compliance separation distance of 0 cm and any additional testing and authorization process as required.

Refer to Chapter "Compliance Statements" for detailed information about the radio frequency exposure conditions applicable to TWN4 MultiTech HF Mini.

These RF exposure conditions must be stated in the end-product manual(s) of the host product manufacturer.

### 3.7 ANTENNAS

TWN4 MultiTech HF Mini is equipped with the following antenna:



TWN4 MultiTech HF Mini

#### HF antenna (13.56 MHz)

Dimensions: 27.5 x 25 mm  
Number of turns: 4

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

### 3.8 LABEL AND COMPLIANCE INFORMATION

Refer to Chapters “Compliance Statements” and “Integrator and Host Requirements” for detailed label and compliance information.

### 3.9 TEST MODES AND ADDITIONAL TESTING REQUIREMENTS

No specific testing method has been defined by ELATEC for TWN4 MultiTech HF Mini.

TWN4 MultiTech HF Mini has been tested and found in compliance with the specifications noted on the approval certificates and other relevant approval documents. However, the integrator is still responsible for any additional testing and authorization process required for the end product.

Refer to the KDB Publication *996369 D04 Module Integration Guide* of the FCC Office of Engineering and Technology (OET) for detailed information about test modes and additional testing requirements for the host device.

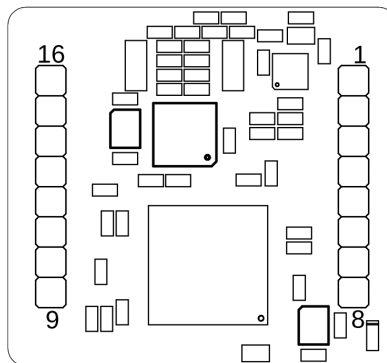
### 3.10 ADDITIONAL TESTING, PART 15 SUBPART B DISCLAIMER

TWN4 MultiTech HF Mini is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. In addition, the final host product still requires Part 15 Subpart B compliance testing with TWN4 MultiTech HF Mini installed.

### 3.11 MECHANICAL INSTALLATION

The module is plugged onto socket connectors. No further mechanical fixation is provided.

### 3.12 ELECTRICAL CONNECTION



PIN	PIN NAME	FUNCTION
1	RESET-	Low active TTL input with internal pull-up resistor for hard reset.
2	PWRDWN-	Low active TTL input with internal pull-up resistor for turning off the voltage regulator.
3	GND	Ground
4	VIN	Unregulated input to on-board voltage regulator.
5	RXD- (USB: D+)	Low active TTL input with internal pull-up resistor of asynchronous RXD to COM1. In case of USB version: USB Data+
6	TXD- (USB: D-)	Low active TTL output (push/pull) of asynchronous TXD from COM1. In case of USB version: USB Data-
7	SCK	SCK from SPI host interface
8	SS-	SS- from SPI host interface
9	VCC	Internally regulated 3.0V power supply. To be used for SAM1.
10	SAM_IO	I/O line for SAM1.
11	GPIO3	GPIO3, I/O pin for general purposes.
12	GPIO2	GPIO2, I/O pin for general purposes.
13	GPIO1	GPIO1, I/O pin for general purposes.
14	GPIO0	GPIO0, I/O pin for general purposes.
15	SAM_CLK	Clock output for SAM1
16	SAM_RST	Reset output for SAM1

### 3.13 PROGRAMMATION/SOFTWARE INTEGRATION

n/a

## 4 COMPLIANCE STATEMENTS

### 4.1 EU

TWN4 MultiTech HF Mini is in compliance with the EU directives and regulations as listed in the respective declaration of conformity (cf. *TWN4 Mini Reader MIFARE NFC EC Declaration of Conformity*).

### 4.2 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)**

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: WP5TWN4F15

### 4.3 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-TWN4F15

### 4.4 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.

# 5 INTEGRATOR AND HOST REQUIREMENTS

## Authorization requirements

TWN4 MultiTech HF Mini has been certified as a module and does not need further approval, provided that the module is used in accordance with the FCC grant conditions and no limitations or usage conditions have been defined by ELATEC. However, the host manufacturer must ensure that the host device still complies with all applicable regulations after TWN4 MultiTech HF Mini has been integrated.

In particular, the host integrator installing TWN4 MultiTech HF Mini into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369.

## Labeling requirements

Using a permanently affixed label, TWN4 MultiTech HF Mini must be labeled with its own FCC and IC identification numbers. In case this label is not visible anymore after integration of TWN4 MultiTech HF Mini in the host device, it is necessary to bring a label on the host device (on a visible and accessible place) stating the FCC and IC identification numbers of the integrated TWN4 MultiTech HF Mini:

Contains FCC ID: WP5TWN4F15

Contains IC: 7948A-TWN4F15

In case several modules have been integrated into the host device, the label should state all FCC and IC identification numbers of the integrated modules.

Example: "Contains FCC IDs: XXX-XXXXXXX, YYY-YYYYYYY, ZZZ-ZZZZZZZ".

## Compliance statements

All statements listed in Chapter "Compliance statements" of this integration manual must be also listed in the user manual of the host device.

## Special accessories

Where special accessories such as shielded cables and/or special connectors are required to comply with the emission limits, the instruction manual shall include appropriate instructions on the first page of the text describing the installation of the device.

## Simultaneous transmission

When the host product supports simultaneous-transmission operations the host manufacturer needs to check if there are additional RF exposure filing requirements due to the simultaneous transmissions. When additional application filing for RF exposure compliance demonstration is not required (e. g. the RF module in combination with all simultaneously operating transmitters complies with the RF exposure simultaneous transmission SAR test exclusion requirements), the host manufacturer may do his own evaluation without any filing, using reasonable engineering judgment and testing for confirming compliance with out-of-band, restricted band, and spurious emission requirements in the simultaneous-transmission operating modes. If additional filing is required please contact the person at ELATEC GmbH responsible for certification of the RF module.

# APPENDIX

## A – TERMS AND ABBREVIATIONS

TERM	EXPLANATION
host device	Also “host” or “host product”. Device in which an RFID module is intended to be installed for operation.
Integrator	Responsible party for the integration of an RFID module into a host device. The integrator might be the module manufacturer, the host manufacturer, the end user or any other third party.
KDB	Knowledge Database
modular type	Physical configuration in which a modular transmitter operates when installed within a host device. It can be a single-modular, a limited single-modular, a split-modular or a limited split-modular type.
n/a	Not applicable
RFID (reader) module	Device intended to be used within another device or product. Depending on the equipment configuration and intended use, an RFID module has to meet different requirements to get a modular grant.

## B – RELEVANT DOCUMENTATION

### ELATEC documentation

- TWN4 MultiTech HF Mini data sheet
- TWN4 MultiTech HF Mini functional description
- TWN4 MultiTech HF Mini user manual
- TWN4 MultiTech Mini technical handbook

### External documentation

Document name	Document title/description	Source
n/a	Technical documentation related to the host product	Host product manufacturer
784748 D01 General labeling and Notification	General Guidelines for Labeling and Other Information Required to be Provided to Users	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D01 Module Equip Auth Guide	Transmitter Module Equipment Authorization Guide	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D02 Module Q and A	Frequently Asked Questions and Answers about Modules	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D03 OEM Manual	Guidance for Modular Transmitter Instruction Manuals and TCB Certification Application Reviews	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D04 Module Integration Guide	Modular Transmitter Integration Guide— Guidance for Host Product Manufacturers	Federal Communications Commission Office of Engineering and Technology Laboratory Division
RSS-Gen	General Requirements for Compliance of Radio Apparatus	Innovation, Science and Economic Development Canada
RSS-102	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)	Innovation, Science and Economic Development Canada

For more information about this integration manual or TWN4 MultiTech HF Mini, go to [www.elatec.com](http://www.elatec.com) or contact ELATEC.





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RFID Systems

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