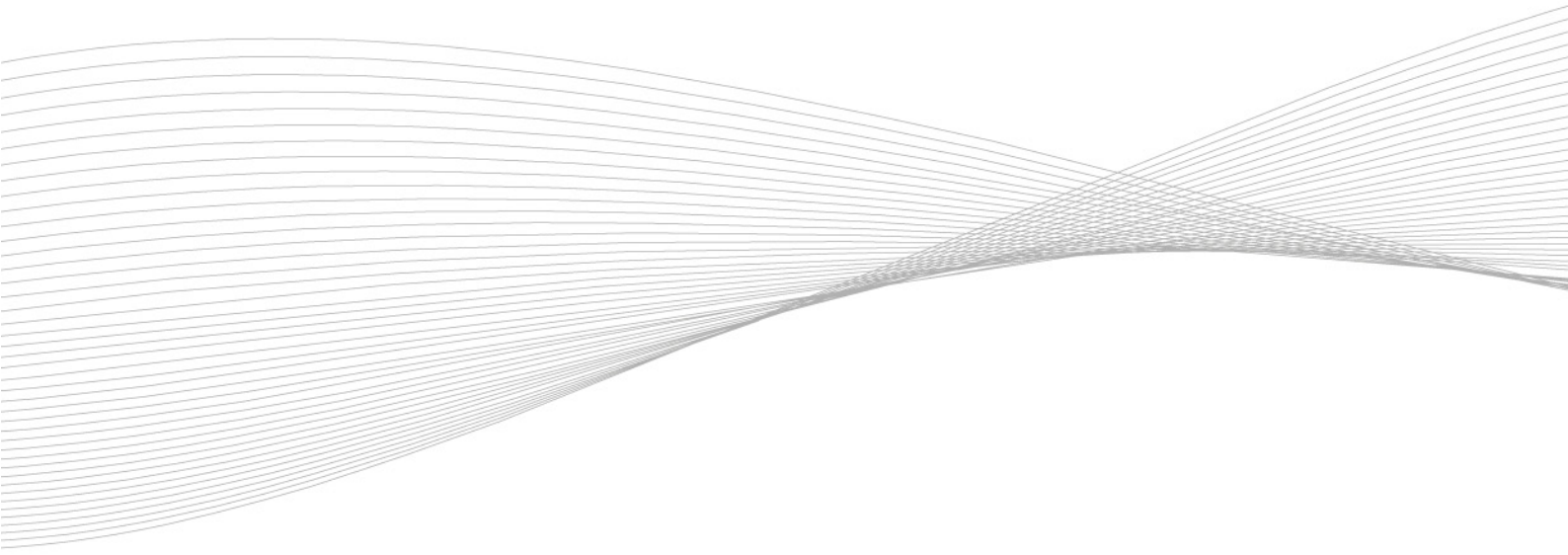
TWN4 MultiTech HF Mini

TWN4 Mini Reader MIFARE NFC

INTEGRATION MANUAL



ELATEC

RFID Systems

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1 INTRODUCTION

1.1 ABOUT THIS MANUAL

This integration manual explains how to integrate ELATEC RFID module TWN4 MultiTech HF Mini into a host device and is mainly intended for integrators and host manufacturers. Before installing the product, the integrators should read and understand the content of this manual and other relevant installation documents.

The content of this 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 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.

The original version of this manual has been written in English. Wherever the 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 ELATEC SUPPORT

In case of any technical questions or product malfunction, refer to the ELATEC website (www.elatec.com) or contact ELATEC technical support at **support-rfid@elatec.com**

2 SAFETY INFORMATION

- Before unpacking and installing the product, this manual and all relevant installation instructions must be read carefully and understood.

- The product is an electronic device whose installation requires specific skills and expertise.
  The installation of the product should be done by trained and qualified personnel only.

- Before installing the product into a host device, the integrator should make sure that he/she has read and understood the ELATEC technical documentation related to the product, as well as the technical documentation related to the host device. In particular, the instructions and safety information given in the user manual of the TWN4 Mini reader family 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.

- ELATEC also recommends the integrators to follow general ESD protective measures during the installation of the product into a host device, e.g. the use of an antistatic wristband or special gloves.

- The product might show sharp edges or corners and requires a particular attention during the unpacking and installation.
  Unpack the product carefully and do not touch any sharp edges or corners, or any sensitive components on the product.
  If necessary, wear safety gloves.

- The integrator should not touch the antennas (if not shielded), printed circuit boards, connectors or other sensitive components on the product.

- Metallic materials on or in direct vicinity to the product might reduce the reading performance of the product. Refer to the installation instructions or contact ELATEC for more information.

- In case the product is equipped with a cable, do not twist or pull the cable excessively.

- In case the product is equipped with a cable, the cable may not be replaced or extended.
  ELATEC excludes any liability for damages or injuries resulting from the use of the product with a cable extension or a replaced cable.

- To comply with the applicable RF exposure requirements, the product should be installed and operated with a minimum distance of 20 cm to any user's/nearby person's body at all times. Refer to Chapter "RF exposure considerations" for further information about RF exposure compliance.

- The use of other RFID readers or modules in direct vicinity to the product, or in combination with the product might damage the product or alter its reading performance. In case the host device already contains other RFID devices, observe a minimum distance of 30 cm between all RFID devices to achieve the best performance for each device. In case of doubts, contact ELATEC for more information.

- Before installing the product into the host device, the power supply of the host device must be turned off.

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.

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 product user manual and other technical documents (e.g. data sheet). The product is equipped with one integrated RFID 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 the following rules applicable to TWN4 MultiTech HF Mini:

- 47 CFR 15.225
- RSS-Gen
- RSS-102
- RSS-210

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 product user manual and data sheet. The host manufacturer and 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

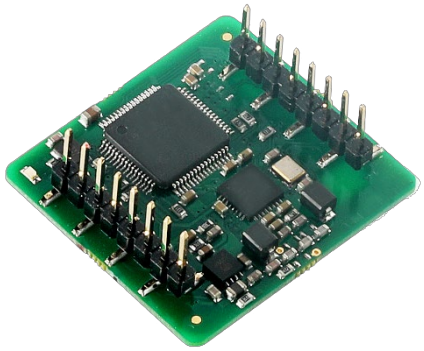
n/a

3.6 RF EXPOSURE CONSIDERATIONS

The antenna of TWN4 MultiTech HF Mini must be installed to meet the applicable RF exposure compliance requirements and any additional testing and authorization process as required.
Refer to Chapter “Safety information” for detailed information about the radio frequency exposure conditions applicable to the product. These RF exposure conditions must be stated in the end-product manual(s) of the host device manufacturer.

3.7 ANTENNAS

TWN4 MultiTech HF Mini is equipped with the following antenna:



HF antenna (13.56 MHz)

Dimensions: 27.50 x 25.00 mm / 1.08 x 0.98 inch
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 Chapter “Compliance statements” in the user manual of the TWN4 Mini reader family and to Chapter “Integrator and host requirements” in this integration manual 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.
The product 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.
It is recommended that the host device manufacturer installing the modular transmitter perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions). Detailed information regarding test procedure is described in the relevant rule parts (refer to Chapter “List of applicable rules”).

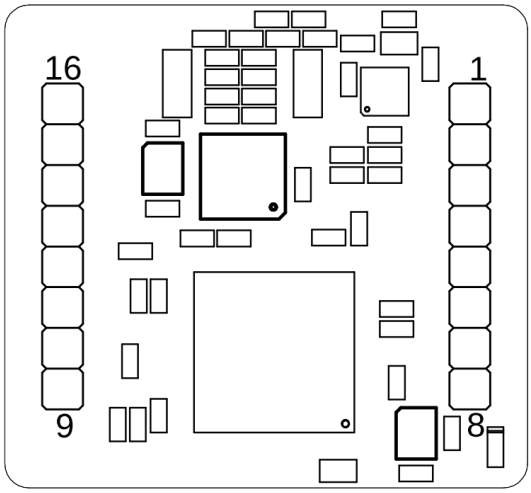
3.10 ADDITIONAL TESTING, PART 15 SUBPART B DISCLAIMER

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 device 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 system still requires Part 15 Subpart B compliance testing with TWN4 MultiTech HF Mini installed.

3.11 INSTALLATION

TWN4 MultiTech HF Mini is plugged onto socket connectors. No further mechanical fixation is provided. Observe the minimum separation distance recommended by ELATEC when the host device already contains other RFID devices (refer to Chapter “Safety information”).

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 INTEGRATOR AND HOST REQUIREMENTS

4.1 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 the module integration.
In particular, the host integrator installing TWN4 MultiTech HF Mini into their device 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.

4.2 LABELING REQUIREMENTS

4.2.1 FCC AND ISED CANADA

Using a permanently affixed label, TWN4 MultiTech HF Mini must be labeled with its own FCC and IC identification numbers.

FCC ID: WP5TWN4F15
IC: 7948A-TWN4F15

In case this label is not visible anymore after integration into 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”
“Contains transmitter modules IC: XXXXX-XXXXXX, YYYYY-YYYYYY, ZZZZZ-ZZZZZZ”

4.3 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.

4.4 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 – RELEVANT DOCUMENTATION

ELATEC documentation

- TWN4 MultiTech HF Mini data sheet
- TWN4 Mini reader family, user manual

External documentation

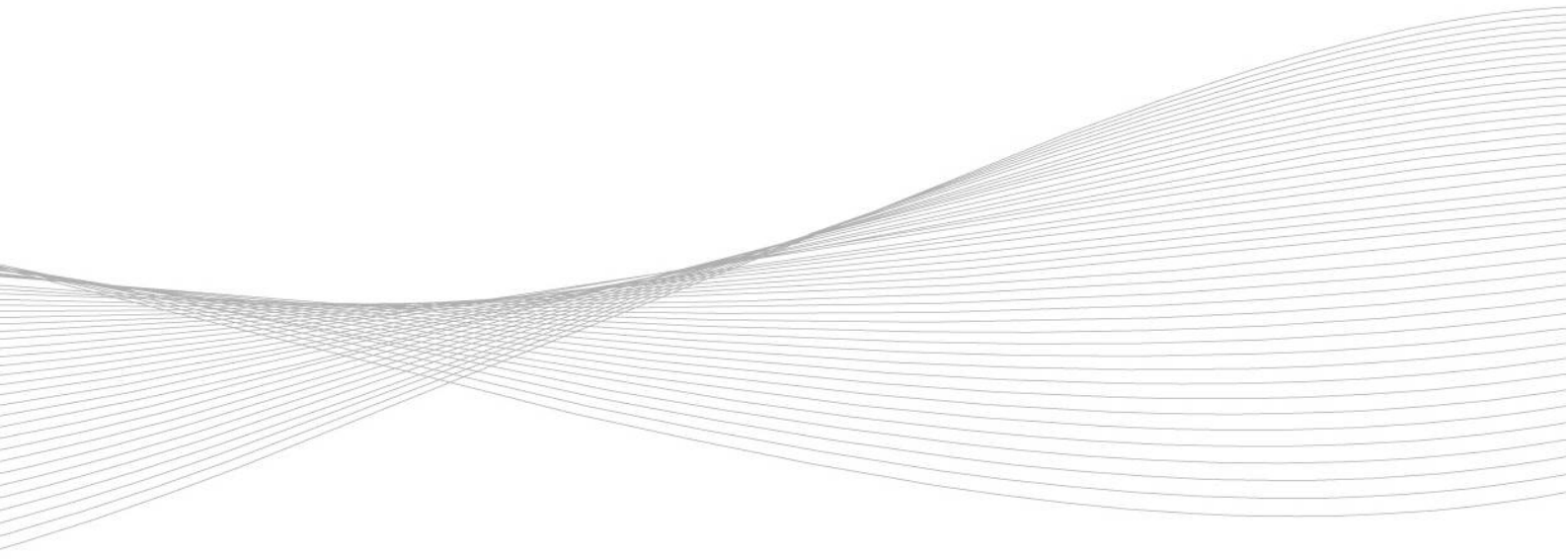
Document name	Document title/description	Source
n/a	Technical documentation related to the host product	Host product manufacturer
784748 D01 General labeling and Notification	General Guidelines for Labeling and Other Information Required to be Provided to Users	Federal Communications Commission Office 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
RSS-210	Licence-Exempt Radio Apparatus: Category I Equipment	Innovation, Science and Economic Development Canada
Title 47 of the Code of Federal Regulations (CFR)	FCC's rules and regulations	Federal Communications Commission

B – TERMS AND ABBREVIATIONS

TERM	EXPLANATION
ESD	electrostatic discharge
HF	high frequency
n/a	not applicable
RFID	radio frequency identification

C – REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
03	Editorial changes, chapters “Introduction”, “Safety information”, “Integration instructions” and “Integrator and host requirements” updated, chapter “Compliance statements” deleted	05/2024
02	Chapters “About this Manual”, “Safety information” and “Compliance statements” updated	02/2022
01	First edition (replaces Transponder Reader TWN4 Mini Reader MIFARE NFC Quick Start Guide)	08/2021



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