

TWN4 MULTITECH LEGIC M

INTEGRATION MANUAL

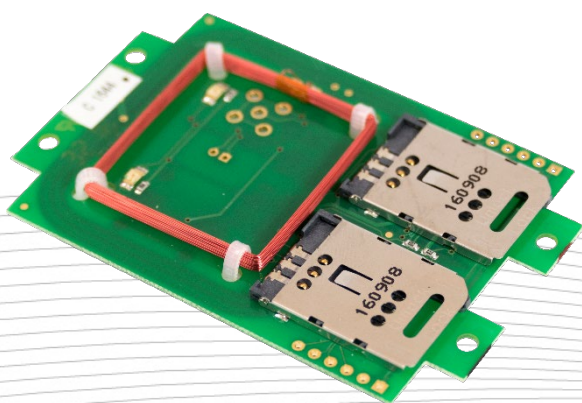


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1 INTRODUCTION

1.1 ABOUT THIS MANUAL

This integration manual explains how to integrate ELATEC RFID reader/writer module TWN4 MultiTech LEGIC M 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 integration manual and other relevant installation documents.

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.

The original version of this integration manual has been written in English. Wherever the integration 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 ABOUT TWN4 MULTITECH LEGIC M

The RFID reader/writer module TWN4 MultiTech LEGIC M is a device for reading and writing RFID transponders. Different versions of TWN4 devices are available, which cover a large range of transponder types both in the frequency range of 125 kHz and 13.56 MHz.

1.3 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

1.4 REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
04	Chapter "Electrical Connection" updated	03/2022
03	Chapters "About this Manual", "Safety Information", "Mechanical Installation", "Electrical Connection" and "Compliance Statements" updated	02/2022
02	Chapters "Limited module procedures", "Test modes and additional testing requirements", "Compliance statements" and "Integrator and host requirements" updated, chapter "Additional testing, Part 15 Subpart B disclaimer" added	10/2021
01	First edition	07/2021

2 SAFETY INFORMATION

- ELATEC TWN4 MultiTech LEGIC M 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 LEGIC M 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 LEGIC M.
- Metallic materials on or in direct vicinity to the product might reduce the reading performance of the product. Refer to the installation instructions for more information.
- Before installing TWN4 MultiTech LEGIC M 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 LEGIC M, 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 LEGIC M 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 LEGIC M.
- Any failure to comply with the safety information given in this document and in the user manual, 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 LEGIC M 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 LEGIC M is equipped with two integrated antennas. 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 LEGIC M, and to Chapter “Compliance Statements” for a detailed list of the rules applicable to TWN4 MultiTech LEGIC M.

3.3 SPECIFIC OPERATIONAL USE CONDITIONS

There are no specific operational use conditions for TWN4 MultiTech LEGIC M other than the conditions mentioned in the user manual and data sheet of TWN4 MultiTech LEGIC M. 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 LEGIC M for more information.

3.5 TRACE ANTENNA DESIGN

n/a

3.6 RF EXPOSURE CONSIDERATIONS

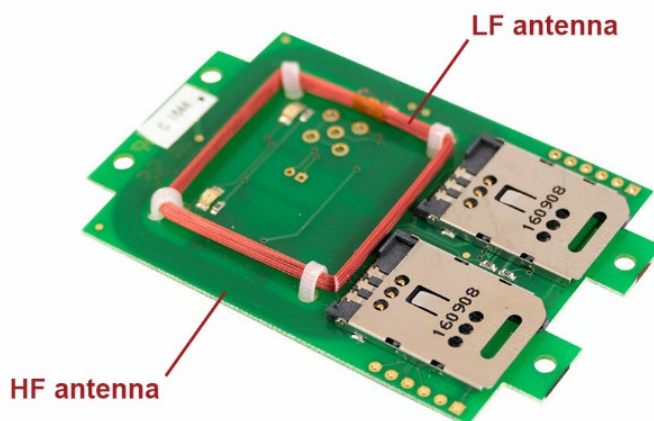
The module antenna(s) must be installed to meet the RF exposure compliance separation distance of 0 cm and any additional testing and authorization process as required.

Refer to Chapter “Compliance Statements” for detailed information about the radio frequency exposure conditions applicable to TWN4 MultiTech LEGIC M.

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

3.7 ANTENNAS

TWN4 MultiTech LEGIC M is equipped with the following antennas:



HF antenna (13.56 MHz)

Dimensions: 44 x 46 mm / 1.73 x 1.81 inch
Number of turns: 3

LF antenna (125 kHz)

Dimensions: 29 x 32 mm / 1.14 x 1.26 inch
Number of turns: 164

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 LEGIC M.

TWN4 MultiTech LEGIC M 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 LEGIC M 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 LEGIC M installed.

3.11 MECHANICAL INSTALLATION

There are 4 holes for mechanical fixation of the board (see Fig. 1).

3.12 ELECTRICAL CONNECTION

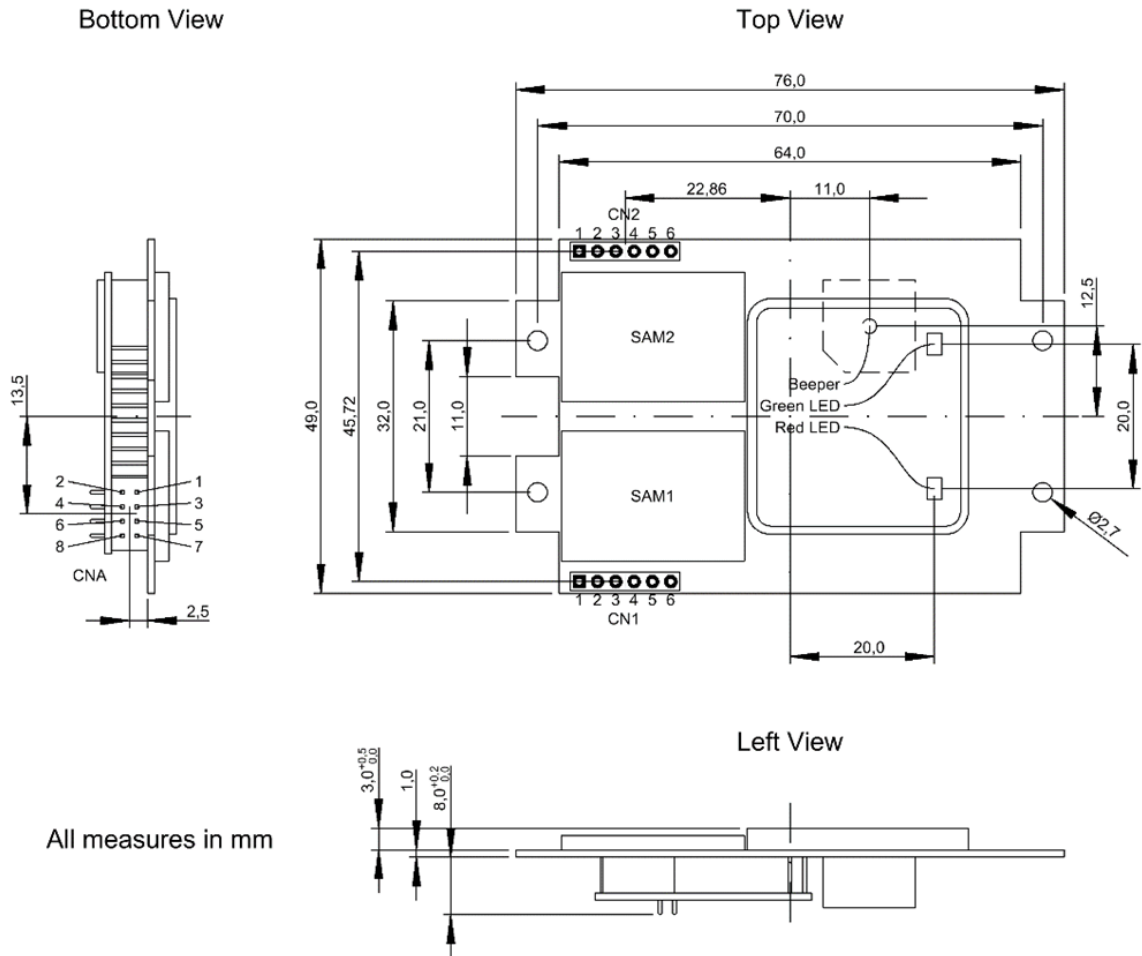
	CONNECTOR CNA*	CONNECTOR CN1	CONNECTOR CN2
Pin	Signal	Signal	Signal
1	USB/Supply Ground (black Wire)	Supply Ground	Supply Ground
2	USB Data+ (green Wire)	5V Supply	3.3V Supply
3	USB/Supply 5V (red Wire)	Logic Input RxD (active low)	SCL (I ² C)
4	USB Data- (white Wire)	Logic Output TxD (active low)	SDA (I ² C)
5	RX232 RxD (Input)	GPIO2	RESET (active low)
6	J2-1**	GPIO3	POWERDOWN (active low)
7	RX232 TxD (Output)		
8	J2-2**		

*Hirose DF11 series, 2mm pitch or type equivalent. In case the reader module is not connected with a cable delivered by ELATEC, the reader module can only be connected with a cable equipped with the following connector:

Manufacturer: Shenzhen Le Qing Lin Hai Electronics Co., Ltd

Part no.: A2002-H04X2

**RS-232 operation is achieved by either closing jumper J2 on the PCB or by connecting pin 6 and pin 8 of CNA.



All measures in mm

Fig. 1 - Dimensions and pinout of TWN4 MultiTech LEGIC M

The module can be connected via USB, RS-232 and other interfaces (see Fig. 1).
The input voltage is 4.3V to 5.5V.

3.13 PROGRAMMATION/SOFTWARE INTEGRATION

n/a

4 COMPLIANCE STATEMENTS

4.1 EU

TWN4 MultiTech LEGIC M is in compliance with the EU directives and regulations as listed in the respective 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: WP5TWN4F19

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-TWN4F19

4.4 UNITED KINGDOM

TWN4 MultiTech LEGIC 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

4.5 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 LEGIC M 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 LEGIC M has been integrated.

In particular, the host integrator installing TWN4 MultiTech LEGIC M 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 LEGIC M must be labeled with its own FCC and IC identification numbers. In case this label is not visible anymore after integration of TWN4 MultiTech LEGIC M 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 LEGIC M:

Contains FCC ID: WP5TWN4F19

Contains IC: 7948A-TWN4F19

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”

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/writer) 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 LEGIC M data sheet
- TWN4 MultiTech LEGIC M functional description
- TWN4 MultiTech LEGIC M user manual
- TWN4 MultiTech OEM PCBs 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 LEGIC M, go to www.elatec.com or contact ELATEC.



ELATEC

RFID Systems

ELATEC GMBH

Zeppelinstr. 1 • 82178 Puchheim • Germany
P +49 89 552 9961 0 • F +49 89 552 9961 129 • E-mail: info-rfid@elatec.com
elatec.com

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