ELATEC

RFID Systems

Transponder Reader

TWN4 Palon Compact LEGIC

Integration Manual

Rev. 1

1. Introduction

The transponder reader TWN4 Palon Compact LEGIC is a device for reading and writing RFID transponders. There are different versions of TWN4 devices available, which cover a large range of transponder types both in the frequency range of 125 kHz and 13.56 MHz.

2. Getting Started

2.1 Cable Connection

In order to start operating a TWN4 Palon Compact LEGIC transponder reader, it simply has to be connected to a host.

2.2 Power Up

Once a TWN4 Palon Compact LEGIC reader is connected to the host, it detects the type of communications cable (USB or RS232), with which it is connected to the host.

Additionally, the RS232 is sending a version string via RS232 to the host.

2.3 Enumeration (USB Only)

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.

2.4 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 transponder 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.

2.5 Normal Operation

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

2.6 Detection of a Transponder

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

- Send the ID to the host. By default, the USB device sends by emulating keystrokes of a keyboard. A RS232 device sends the ASCII code of an ID.

- 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 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.

2.7 Suspend Mode (USB Only)

The USB version of the transponder reader supports the USB suspend mode. If the USB host is signaling suspend via the USB bus, the transponder reader 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 transponder reader will resume to normal operation, too.
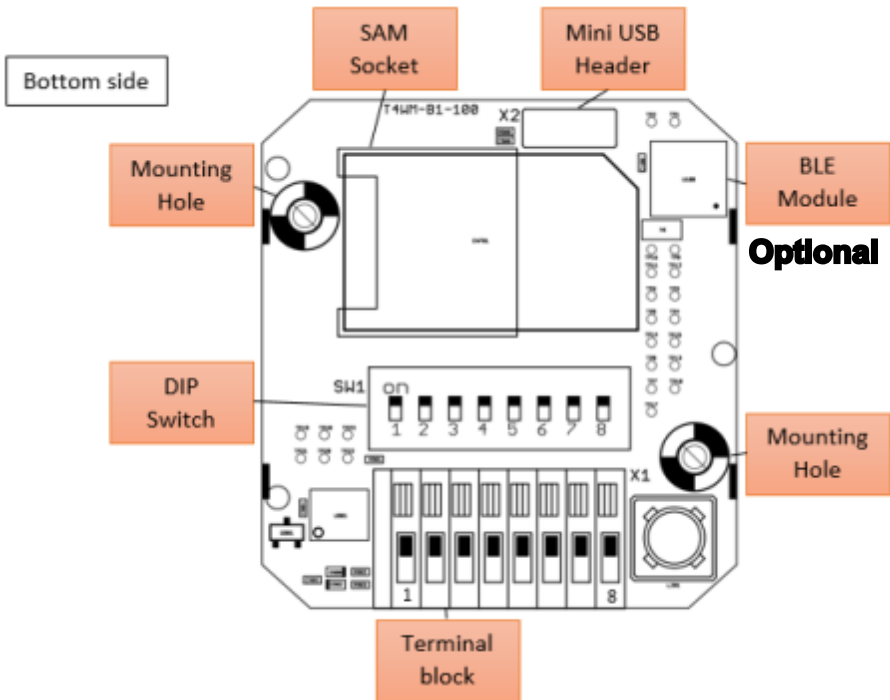
3. List of Antennas
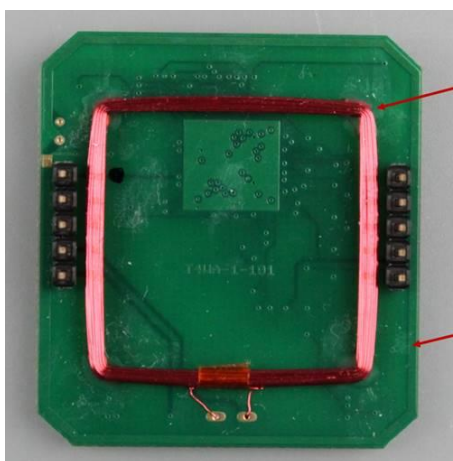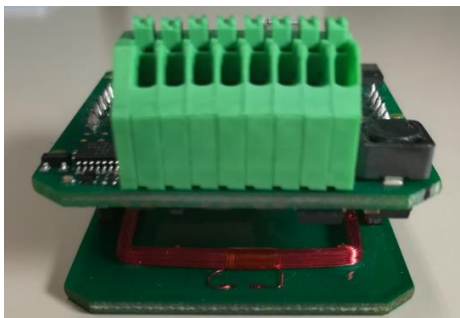
125 kHz antenna

13,56 MHz antenna

4. Power Supply

In case of USB connection, the input voltage is 4.3V to 5.5V.

If the device is supplied via the terminal block, the input voltage is 9V to 30V.

5. Pinout

Pin	Name
1	RS232_RX (Light: N/A)
2	RS232_TX (Light: N/A)
3	RS485_A
4	RS485_B
5	Wiegand D0 or DATA
6	Wiegand D1 or CLK
7	VIN 9-30V
8	GND

Table 5.1: X1 Pinout

6. External Antenna

Please note: Connecting an antenna to the UMCC connector is not included in the approvals of the device. In this case, the device requires separate approval with that specific antenna.

7. Compliance statements

7.1 RF module

USA (FCC)

(RF module)

Compliance statement:
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.

Modification of equipment:

The instruction manual of the host shall include the following statement: Changes or modifications made to this equipment not expressly approved by the party responsible for compliance may void the FCC authorization to operate this equipment.

Information to the user:

(The instruction manual of the host shall include the following statement) A compliance statement as applicable, e.g., for devices subject to part 15 of CFR 47 as specified in §15.19(a)(3), that the product complies with the rules; and the identification, by name, address and telephone number or Internet contact information, of the responsible party, as defined in §2.909. The responsible party for Supplier's Declaration of Conformity must be located within the United States.

CANADA (ISED)

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.

7.2 Host device

USA (FCC)

FCC notes for a host subject to SDoC:

For a host device assembled with the certified module and subject to 47 CFR Part 15, the following statements have to be included in the user manual and the host device has to be labelled as noted below. If the host device is subject to other authorization procedures or parts, the appropriate requirements of these authorization procedures or parts apply.

Important note:

OEM integrator is still responsible for the FCC compliance requirements of the end product, which integrates this module. Appropriate measurements as described in "KDB 996369 D04 Module Integration Guide" and, if applicable, additional equipment authorization of the host device have to be addressed by the integrator/ manufacturer

The end device must be labeled with:

Contains FCC ID: WP5TWN4F11

For class B devices:

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.

For class A devices:

FCC §15.105 (b):
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

CANADA (ISED)

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.

Important note:

OEM integrator is still responsible for the ISED compliance requirements of
the end product, which integrates this module. Appropriate requirements as
described in RSS-GEN have to be fulfilled by the integrator/ manufacturer.

Labeling requirements for Host device:
For Host devices subjected to ICES-003, the appropriate labeling
requirements apply.

CAN ICES-3 (*)/NMB-3(*)
* Insert either "A" or "B" but not both to identify the applicable Class of ITE.

The end device must be labeled with:

Contains IC: 7948A-TWN4F11

NCC Warning Statement

低功率電波輻射性電機管理辦法

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

(即低功率電波輻射性電機管理辦法第十二條)

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

(即低功率電波輻射性電機管理辦法第十四條)

本模組於取得認證後將依規定於模組本體標示審驗合格標籤，

並要求最終產品平台廠商(OEM Integrator)於最終產品平台(End Product)上標示

"本產品內含射頻模組，其NCC型式認證號碼為：CCXXxxYYyyyZzW "。

應避免影響附近雷達系統之操作。

Service Address

In case of any technical questions, please contact:

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Fax: +49 (0) 89 5529961 129
Email: info-rfid@elatec.com