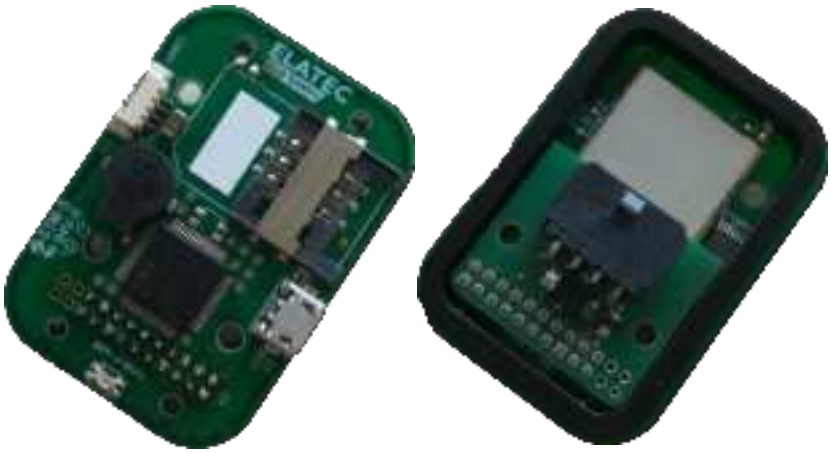
DATWN4

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.

2 INTENDED USE

DATWN4 integrates RFID (125 kHz, 134.2 kHz and 13.56 MHz) and NFC capabilities into a compact but powerful reader. Its reduced size combined with optimized read/write performance makes it the perfect reader for all applications where small size and full performance matters, e.g. driver identification. Furthermore, DATWN4 provides access to most common host interfaces, such as USB and CAN, which are readily accessible through an on-board connector.

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 observe the safety information listed in this document, will be considered misuse and will void the warranty. Toyota Material Handling, Inc. is not responsible for any damage or injuries resulting from any misuse of the product.

3 SAFETY INFORMATION

Installation

- The installation of the product should be done by a trained and qualified personnel only.
  Do not install the product by yourself.

- Metallic materials on or in direct vicinity to the product might reduce the reading performance of the product. In some circumstances, plastic screws should be preferred to metallic screws when installing the product. Refer to the installation instructions or integration manual of the product for more information.

Handling

- Depending on your product configuration, the product might be equipped with one or more light-emitting diodes (LED).
  Avoid direct eye contact with the blinking or steady light of the light-emitting diodes.

- The product has been designed for a use under following conditions:
  - Temperature range: -25 °C – 80 °C (operating conditions)
  - Relative humidity: 5% – 95% (non-condensing)
  - Integration into a host device.

  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 Toyota Material Handling, Inc. for more information.

- The user is liable for the use of spare parts or accessories other than the ones sold or recommended by Toyota Material Handling, Inc. Toyota Material Handling, Inc. is not responsible for any damage or injuries resulting from the use of spare parts or accessories other than the ones sold or recommended by Toyota Material Handling, Inc..

- 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 DATWN4 carefully and refer to the information given by the manufacturer of their medical devices before using DATWN4 or any host device containing DATWN4.

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 all applicable local regulations.

Product modifications

- The product has been designed, manufactured and certified as defined by Toyota Material Handling, Inc..
  Any product modifications not expressly approved by Toyota Material Handling, Inc., including – but not limited to – modifications of antennas or other radio-related components, is not allowed and will void the warranty and all approvals granted to the product.

If you are unsure about any part of the safety information above, contact Toyota Material Handling, Inc. support.

Any failure to observe the safety information above will be considered misuse and will void the warranty. Toyota Material Handling, Inc. is not responsible for any damage or injuries resulting from any misuse of the product.

4 TECHNICAL DATA

Power supply

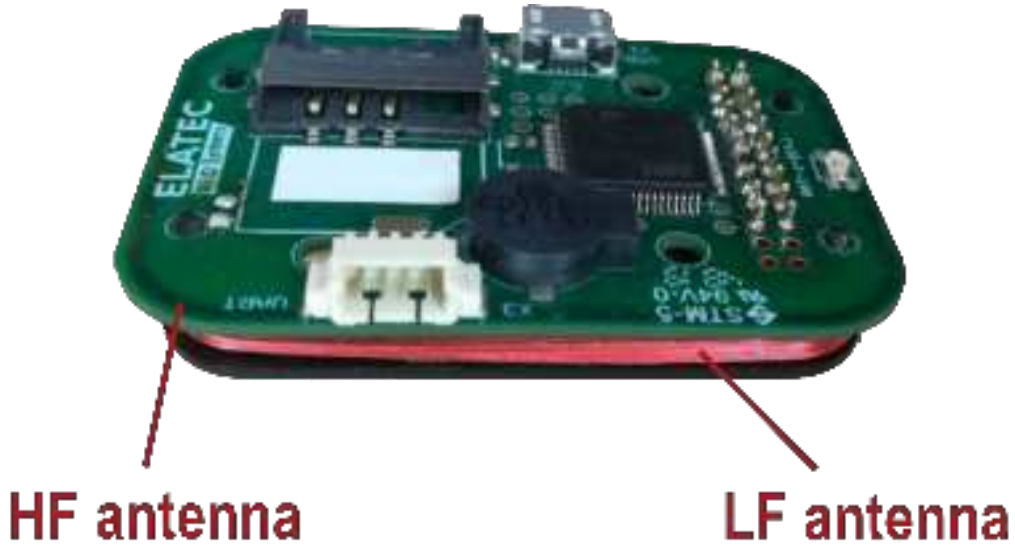
4.3 V - 5.5 V via USB or CAN

Current consumption

Operating (badge read): 190 mA; Idle: 81 mA; Sleep: 25 mA (sleep) / 11 mA (stop); Inrush current: 300 mA

Antennas

The reader module is equipped with the following antennas:



HF antenna (13.56 MHz)

Dimensions: 48 x 33 mm / 1.89 x 1.30 inch

Number of turns: 3

LF antenna (125 kHz / 134.2 kHz)

Dimensions: 49 x 34 mm / 1.93 x 1.34 inch

Number of turns: 123

5 MODE OF OPERATION

5.1 OPERATING MODE

In order to start operating DATWN4, 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:

- Short-circuit current < 8 A

Once DATWN4 is connected to the host, it detects the type of communications cable (e.g. USB or CAN), 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 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.

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 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

6.1 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: 2A226-TMHTWN4

6.2 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: 27732-TMHTWN4

6.3 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.