

# 4111000

## User Manual

User Manual for Radio Certification purposes

August 2024

v3

## Table of Contents

<b>1</b>	<b>General.....</b>	<b>3</b>
1.1	Product Description .....	3
1.2	Radio Certification information.....	3
<b>2</b>	<b>Operating conditions.....</b>	<b>4</b>
2.1	Temperature information .....	4
<b>3</b>	<b>Led indication legend .....</b>	<b>5</b>
<b>4</b>	<b>Product and compliance information.....</b>	<b>5</b>
4.1	FCC and ISED Statements .....	6
4.2	Labelling.....	7
<b>5</b>	<b>Safety Guidance .....</b>	<b>8</b>
5.1	Introduction .....	8
5.2	Battery safety.....	8
5.3	Care and maintenance .....	8
5.4	Damage .....	9
5.5	Small children.....	9
5.6	Interference with medical devices .....	9
5.7	Storage.....	9
5.8	Recycling .....	9

# 1 General

## 1.1 Product Description

4111000 is a device designed for asset tracking for e.g. road and marine transportation use. 4111000 uses several communication protocols utilizing different radio interfaces and it has an integrated battery pack (3 pcs NiMh batteries) for energy storage. The battery pack can solely be charged via an integrated solar panel. Device features also option for external connector for charging or communication.

## 1.2 Radio Certification information

The radio certification related information and naming of the 4111000 can be found below:

PMN: 4111000

HVIN: 4111000

FCC ID: 2AR86-TR41

IC ID: 24716-TR41

Contains FCC: XMR201906EG21G

Contains FCC: 2ANPO00NRF9160

Contains FCC: XPYLILYW1

Contains IC: 102224A-201906EG21G

Contains IC: 24529-NRF9160

Contains IC: 8595A-LILYW1

Manufacturer Information:

Treon Oy, Visiokatu 3, 33720 Tampere, Finland

## 2 Operating conditions

The operating conditions of 4111000 can be found in the table below.

	Min	Max
Operating voltage [V]	3.1	6
Extended Operating temperature [°C]	-30	+75
Current consumption	10 $\mu$ A	400 mA

Maximum clock frequency is 64MHz and sleep clock is 32kHz.

### 2.1 Temperature information

	4111000
Storage temperature	Recommended: -20°C to +35°C <ul style="list-style-type: none"> <li>• Ensure battery health during storage</li> </ul>
Operating temperature	Extended operating temperature range when on external power <ul style="list-style-type: none"> <li>• -30°C to +75°C</li> </ul> Normal autonomous mode operating temperature range <ul style="list-style-type: none"> <li>• -10°C to +75°C</li> <li>• Operation dependent on the internal battery charge level</li> </ul> Limited autonomous mode operating temperature range <ul style="list-style-type: none"> <li>• -30°C to -10°C</li> <li>• Autonomous mode cannot be guaranteed in cold conditions</li> </ul>

### CONDITIONS OF USE

Be aware of potential electrostatic charging hazard.

## 3 Led indication legend

4111000 Pattern	Explanation
Green blinking	4111000 is starting up
Green solid	4111000 is operating normally and able to report to cloud
Red – Green blinking sequence	4111000 is not able to connect to cloud
Red solid	4111000 has not finished the onboarding procedure
Red blinking	4111000 has an error

## 4 Product and compliance information

### Important

For important information on the safe use of this device, read the Safety Guidance part.

### Manufacturer Information:

Treon Oy, Visiokatu 3, 33720 Tampere, Finland

<https://www.treon.fi>

## 4.1 FCC and ISED Statements

### 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.

Any changes or modifications made to the device not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

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.

Radiofrequency radiation exposure information:

This device complies with the radiation exposure limits prescribed for an uncontrolled environment for fixed and mobile use conditions. This device should be installed and operated with a minimum distance of 20 cm between device and the body of the user or nearby persons.

## ISED

This device complies with Industry Canada license-exempt RSS standard(s). 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.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Cet appareil est conforme à la(aux) norme(s) RSS sans licence d'Industry Canada.

Son utilisation est soumise aux deux conditions suivantes :

- (1) Cet appareil ne doit pas causer d'interférences et
- (2) il doit accepter toutes interférences reçues, y compris celles susceptibles d'avoir des effets indésirables sur son fonctionnement.

Cet équipement respecte les limites d'exposition aux rayonnements IC RSS-102 définies pour un environnement non contrôlé. Il doit être installé et utilisé en maintenant une distance minimum de 20 cm entre le radiateur et votre corps.

## 4.2 Labelling

Label example, containing the FCC and ISED information, of 4111000 is presented below. Label is located on the back side of the device.



*Figure 1. Label example of 4111000 – Size not in scale.  
Actual label size 2 x 1 inch.*

## 5 Safety Guidance

### 5.1 Introduction

Read these simple guidelines. Not following them may be dangerous or against local laws and regulations. For further information, support requests and questions can be sent to: [support@treon.fi](mailto:support@treon.fi).

#### **NORWAY:**

This device is not allowed to be used within a 20 km radius of the centre of Ny-Ålesund at Svalbard, Norway.

### 5.2 Battery safety

4111000 has an internal battery, and it is used when external power is unavailable.

Battery information:

- Rechargeable NiMH battery (3 pcs)
- Operating voltage 3.6V
- Nominal capacity 3300mAh, minimum 3100mAh
- Recommended storage temperature for battery health: -20°C to +35°C



Disposal of the device into fire or a hot oven, or mechanically crushing or cutting of the device can result in an explosion.



Leaving the device in an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.



The device subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

### 5.3 Care and maintenance

Handle the device with care. The following suggestions help keeping the device operational.

- Do not open the device (other than as instructed).
- Unauthorized modifications may damage the device and violate regulations governing radio devices.
- Do not drop, knock, or shake the device. Rough handling can break it.
- To avoid electrostatic charging use only a moist, soft, clean cloth to clean the surface of the device. Do not clean the device with solvents, toxic chemicals, or strong detergents as they may damage the device and void the warranty.
- Do not paint the device. Paint can prevent proper operation.

- Device is dust and splash proof and classified as IP67 and IP69K. However, it is not recommended to immerse it in water.

## 5.4 Damage

If the device is damaged contact Treon Support. Only qualified personnel may repair this device.

## 5.5 Small children

The device is not a toy. It may contain small parts. Keep them out of the reach of small children.

## 5.6 Interference with medical devices

The device may emit radio waves, which could affect the operation of nearby electronics, including cardiac pacemakers, hearing aids and defibrillators. If device user has a pacemaker or other implanted medical device, do not use the device without first consulting a doctor or the manufacturer of the medical device. Maintain a safe distance between the device and the medical devices and stop using the device if observing a persistent interference with the medical device.

## 5.7 Storage

Always store and use the device as instructed and with covers attached. Recommended storage temperature for the device is -20°C to +35°C.

## 5.8 Recycling

Check the local regulations for proper disposal of electronic products.

The Directive on Waste Electrical and Electronic Equipment (WEEE), which entered into force as European law on 13th February 2003, resulted in a major change in the treatment of electrical equipment at end-of-life. The purpose of this Directive is, as a first priority, the prevention of WEEE, and in addition, to promote the reuse, recycling and other forms of recovery of such wastes so as to reduce disposal.



■ The crossed-out wheellie-bin symbol on the product, battery, literature, or packaging reminds that all electrical and electronic products and batteries must be taken to separate collection at the end of their working life. Do not dispose of these products as unsorted municipal waste: take them for recycling. For info on the nearest recycling point, check and contact with the local waste authority.