Manual

IOTSU® N12 IM04 for NB-IoT

(IOTSU® N12 IM04)

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1 Safety Notes

This manual is intended only for IOTSU® N12 IM04 for NB-IoT. The device is intended for professional corporate handling, installation, and maintenance use only. Read this manual carefully before installing and using the device.

WARNING! This device variant is not designed to be used with batteries. Do not install batteries on the device.

Handling

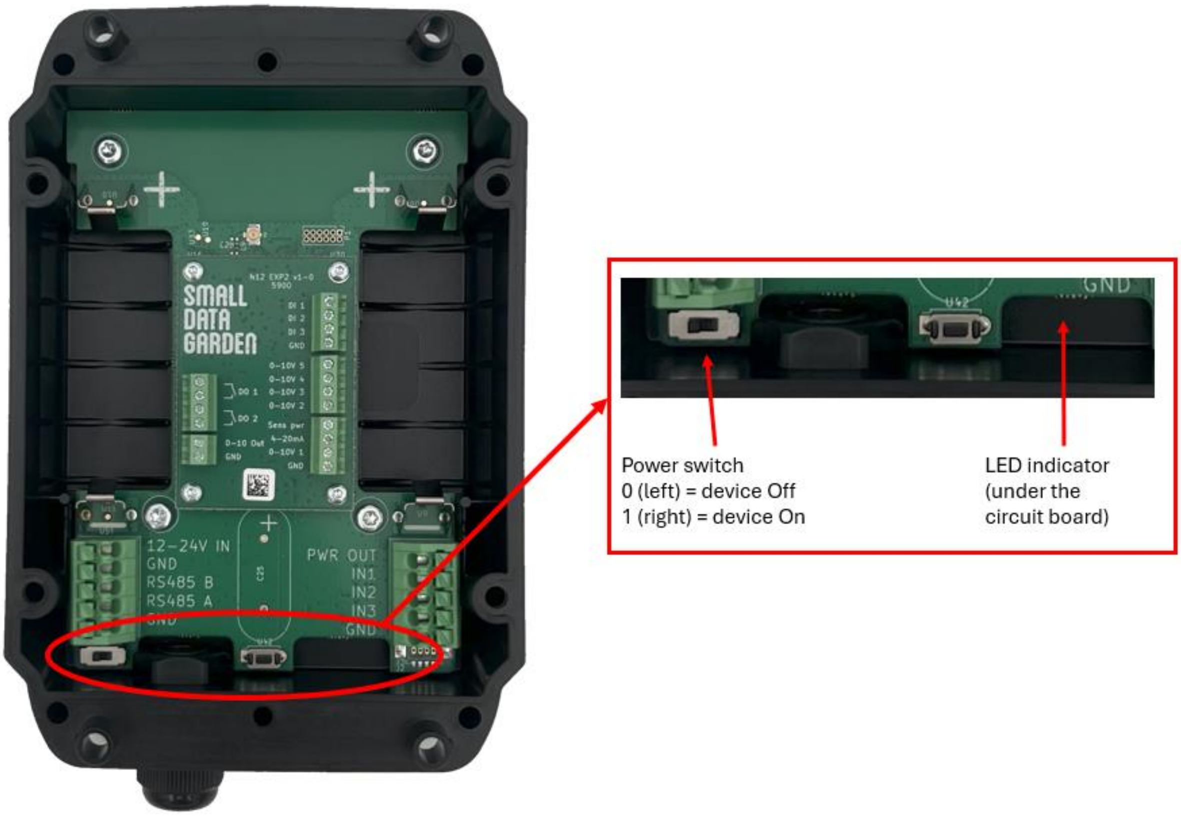
The device cannot tolerate shocks or hits. Store the device at appropriate temperatures. Do not use solvents or powerful cleaning agents and do not attempt repairs. Clean the outer surface of the device with a moist cleaning cloth if any visible dust is present. Utilise the device only in its intended use defined by Small Data Garden. If the device does not work, please contact the seller of the device.

2 Device commissioning

2.1 Powering the device

Please note that the device is delivered power OFF.

NOTE! Do not turn power ON before the sensors and outputs are attached.



Remove the back cover of the device carefully. To power the device, use a small tool, such as a small screwdriver to slide the power switch to the ON position.

After turning the switch to the ON position, device LED turns on immediately, and after initializing LED turns green and NB-IoT network search starts. LED blinks blue once per minute when device searches NB-IoT network and blinks three times when device has connected to NB-IoT network. If LED blinks red, the device has detected an error. If this happens, try to restart the device. If the device does not work, please contact the seller of the device.

Reattach the device's back cover. Make sure the gasket is correctly seated in the groove. The device is immediately ready for use after a successful start and will start sending data after joining the network.

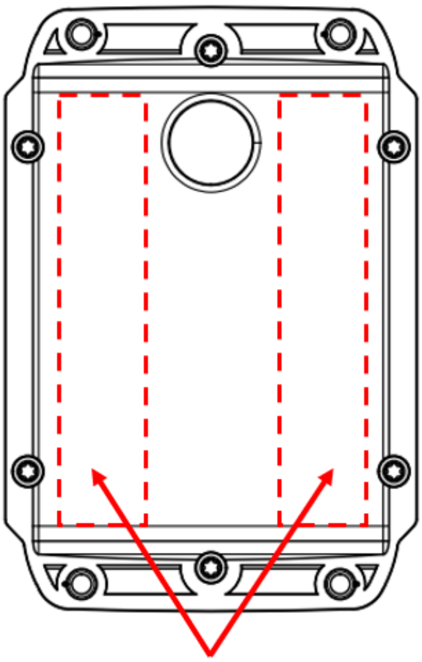
2.2 Powering off the device

Remove the back cover of the device carefully. To power off the device, use a small tool, such as a small screwdriver to slide the power switch to the Off (0) position.

2.3 Installation

IOTSU® N12 can be wall mounted with adhesive tape or screws. Please note during installation that IOTSU® N12 uses radio signals for cloud communication and therefore large metal objects such as metal walls and enclosures near the device may negatively impact the radio performance of the device.

2.3.1 Using double-sided tape



Tape size: 19 x 95mm (2 pcs)

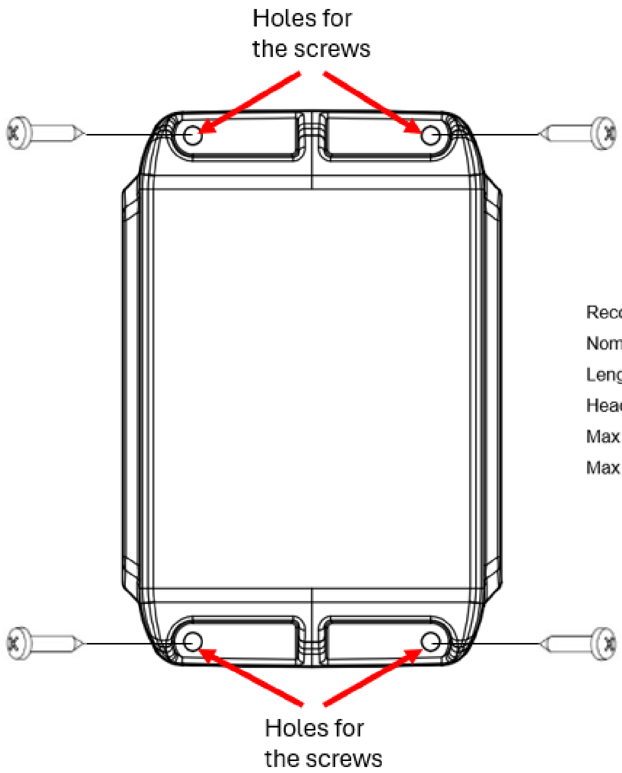
1. Place tapes in the recesses on the back of the device. Tape size: 19 x 95 mm (2 pcs).

2. Clean the installation surface well before starting. Install the device at a height of ≤ 2 meters. Remove the covers from the installation tapes. Press the device firmly on the wall and hold for 10 seconds.

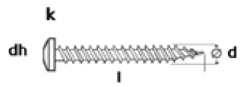
2.3.2 Using screws

The device shall be installed at a height of ≤ 2 meters. The device cover has four screw holes. Mounting screws are not included with the device.

1. Choose the correct size screws. Please note the recommended screw size in the picture below.
2. The screw holes for the screws are on the front of the device. Hold the device against the wall and drill the screws into all four holes. Please ensure that the device is installed straight.



Recommended screws: Würth 018124 35
Nominal diameter (d): 4.0 mm
Length (l): 35.0 mm
Head type: Pan head
Max head diameter (dh) 8.2 mm
Max head height (k) 3.5 mm



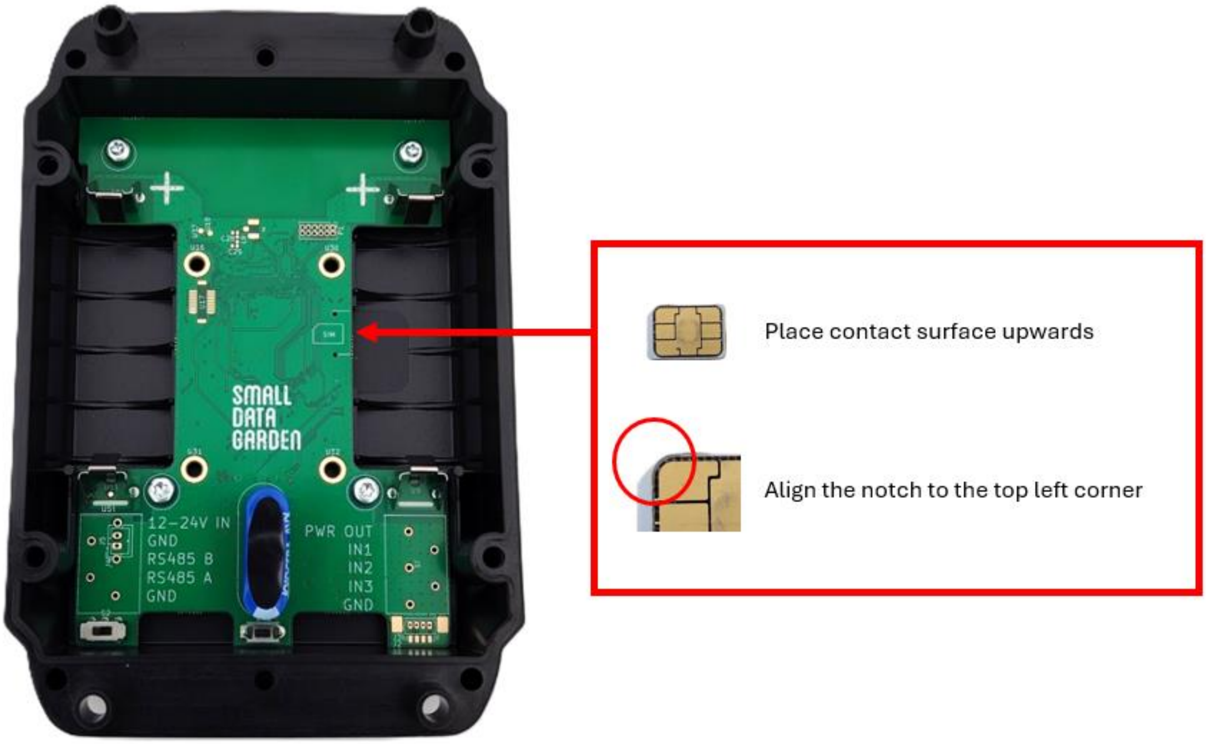
2.4 Battery

WARNING! This device variant is not designed to be used with batteries. Do not install batteries on the device.

2.5 SIM-card

2.5.1 Changing SIM-card

The slot for the SIM card is located behind the circuit board. **Note!** Use only SIM-cards that are specified in order or otherwise approved by the manufacturer.



Note! SIM card must be inserted correctly. Place the SIM card with the contact surface up. Ensure that the notch in the corner is aligned to the top left corner.

1. Remove the old SIM card by pressing the sim card until it clicks.
2. Remove the SIM card carefully by pulling it from the slot.
3. Insert the new SIM card into the slot by following the instructions in the picture above and press it until it clicks.

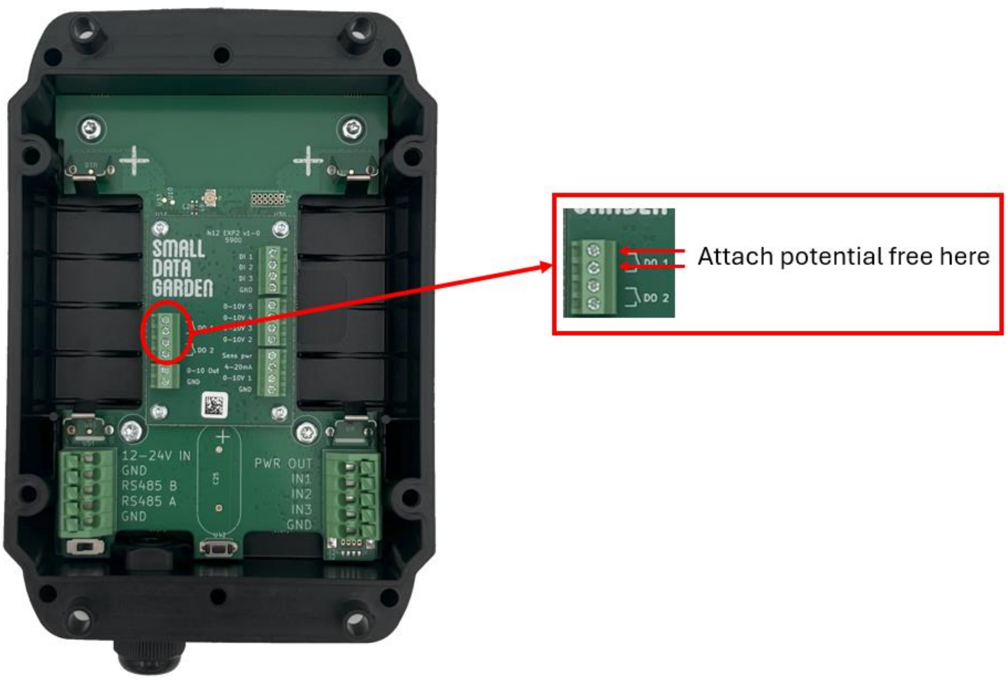
3 Features

Note! IOTSU® devices shall only be connected with sensors and devices that are specified in order or otherwise approved by the manufacturer. Do not connect anything to IOTSU® device that is not approved or specified by the manufacturer. If these instructions are not followed, the manufacturer's warranty and liability shall be void.

In addition, sensor and component manufacturers are independent partners providing information and Small Data Garden Oy is not liable for this information. Mentioning these sensors or components does not necessarily mean business relationship with these partners.

3.1 Potential free contact

The device includes potential free contact that can be used to connect external devices.



1. Strip the ends of the wires by 4-5mm.
2. Loosen the screws on DO1 terminals.
3. Put the signal wires to DO1 terminals. Hold the wires still and tighten screws.

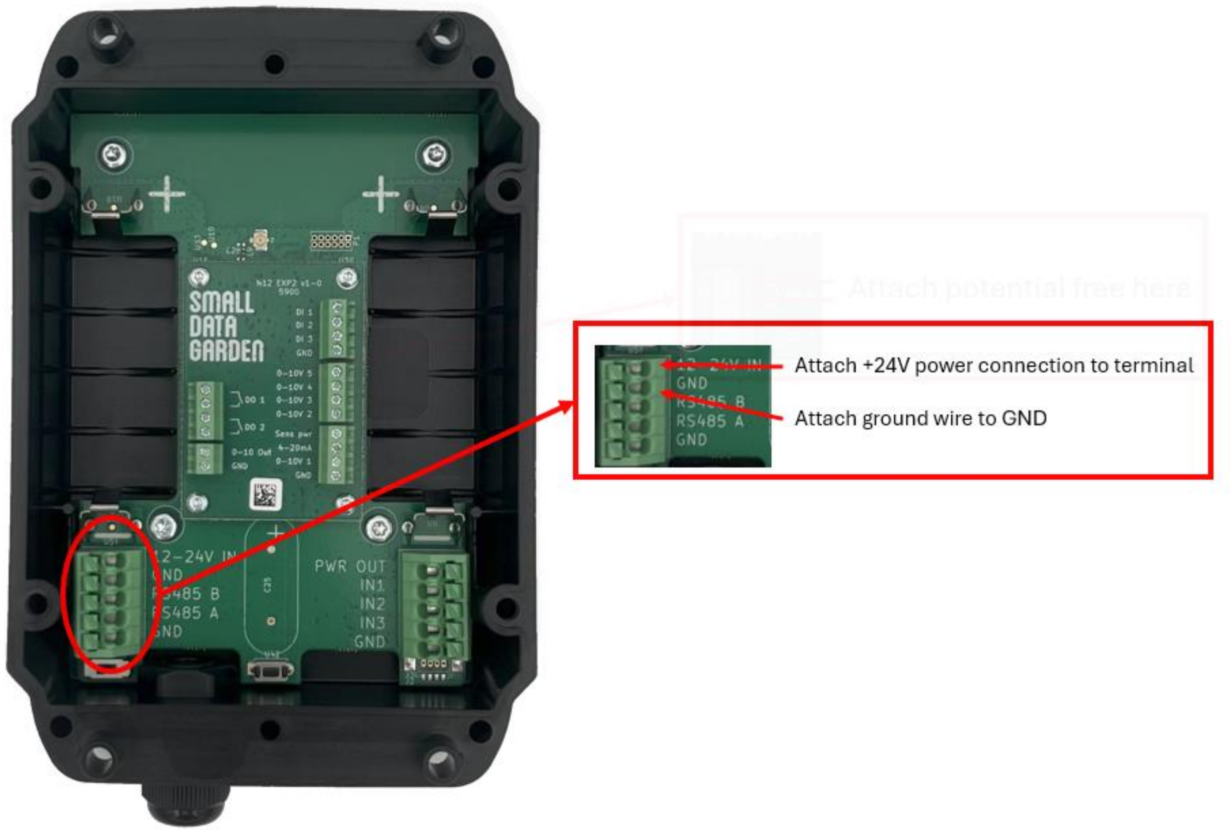
Note! Potential free contact maximum voltage is 24V and maximum current 40mA. Do not exceed those limits.

Note! Do not overtighten the screws. After tightening, please ensure that the wires are attached firmly. Maximum wire diameter is 0,2 – 0,75mm^2.

3.2 +24V External power supply

The power supply's voltage that is connected to device should be in +24V ±5%.

Note! The devices +24V power input should be protected with 160 mA fast-blow fuse.



Note! Maximum allowed cable length is 3 m.

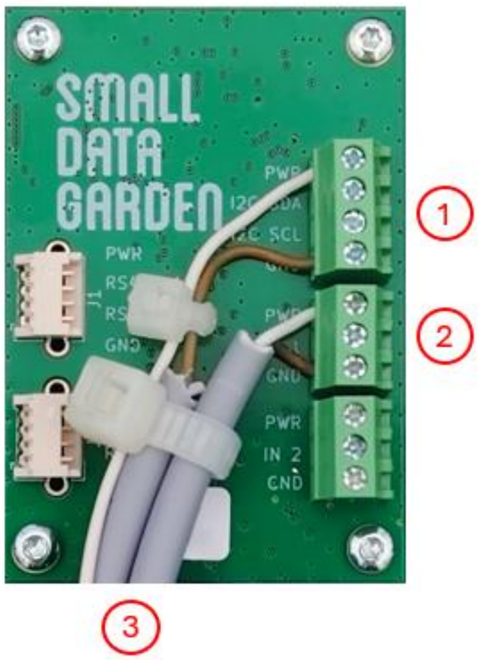
1. Strip the end of the wires by 4-5mm.
2. Press the button on the top of the screw terminal and attach +24V power connection to the 12-24V IN and ground wire to GND terminal.

Maximum wire diameter is 1,5mm^2.

3.3 Safe fastening of the wires

To ensure the safe operation of the device it is important to fasten the wires correctly to prevent unintentional disconnection.

Ensure that the maximum free length of the wires to be connected is 10-12mm. Free length is the distance from the point where the wire is attached to the point where it is mechanically attached to another wire or solid structure. Mechanic attachment could be e.g. cable sheath, heat shrink tubing or cable tie. Please follow the attachment instructions from the picture below:



1. Attachment using a cable tie to bundle the long wires together.
2. Attachment using cable sheath.
3. Attachment using a cable tie to bundle the cables together.

3.4 Channels

The device has channels for different types of measurements.

IOTSU® N12 IM04 channels are described in the table below:

Value type	Channel number *	Type
Digital output	0	Potential free output

*= When channel number is 0, the channel number is not transmitted.

4 Product disposal

First remove the battery from the device and dispose of the battery and the device properly.

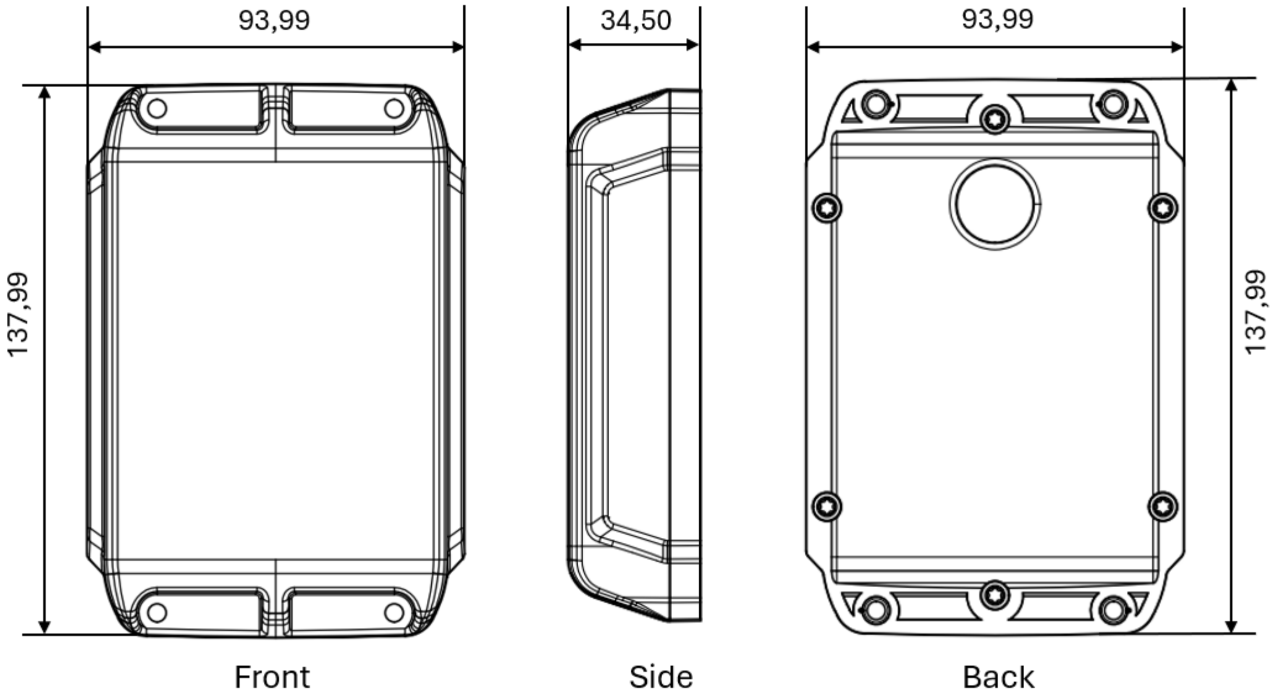
Dispose of the battery properly. For safety precautions, the battery should be insulated in proper manner by covering both terminals by tape, or wrapping the battery in an insulative bag in order to prevent ignition due to short-circuit.

The device without the battery must be delivered to a collection point that accepts electronic waste. It must not be put in mixed waste. The discarded device is accepted free of charge in more than 400 regional WEEE collection points in Finland. Their addresses can be found at www.kierratys.info. For other countries contact your local distributor. The product's packaging can be recycled for carton waste collection.

5 Device specifications

5.1 Dimensions

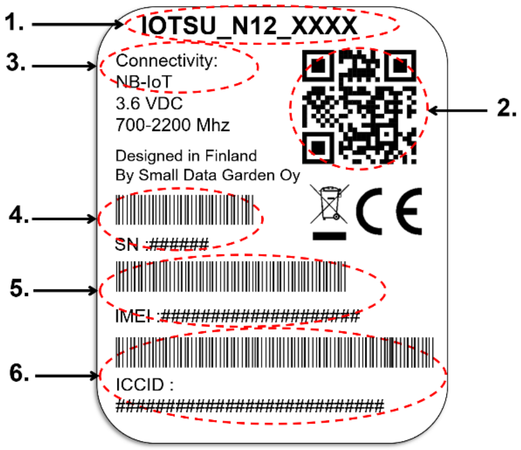
The dimensions of the device can be found in the picture below.



5.2 Device label

There is a nameplate on the back of the device, the markings of which are explained below.

1. Model
2. QR-code, contains device’s serial number, IMEI, and model
3. Connectivity
4. Barcode which contains manufacturer's serial number for the device
5. Barcode which contains device’s IMEI number
6. Barcode which contains device’s ICCID



5.3 Manufacturer

Company name	Small Data Garden Oy
Address	Maantie 1, 11130 Riihimäki, Finland
Webpage	www.smalldatagarden.fi
E-mail address	info@smalldatagarden.fi

5.4 Error and malfunction situations

Use the device only in its intended use defined by Small Data Garden Oy. If the device does not work, please contact the seller of the device. Do not attempt repairs.

5.5 Declaration of Conformity

IOTSU® N12 for NB-IoT is in conformity with the relevant Community harmonisation legislation described below:

- Electromagnetic Compatibility (EMC): Directive 2014/30/EU
- Low voltage (LVD): Directive 2014/35/EU
- Radio Equipment (RED): Directive 2014/53/EU
- Restriction of the use of certain hazardous substances (RoHS): Directive 2011/65/EU
- Waste electrical and electronic equipment (WEEE): Directive 2012/19/EU

More information of the EU Declaration of Conformity is available at:
https://www.smalldatagarden.fi/eu-doc

6 Datasheet

Company:	Small Data Garden Oy
Product name:	IOTSU® IMPACT N12 IM04 for NB-IoT
Product code:	IOTSU® IMPACT N12 IM04
Rev:	1.0_03rd Jul 2025

IOTSU® IMPACT IM04
Multipurpose relay control

IOTSU® IM04 can be used to provide a cloud-based application with relay control. The device provides effective management of conditions and equipment in real estates and infrastructure. The device uses NB-IoT network.

With IOTSU® IM04 it is possible to control different types of equipment and systems such as ventilation, lighting and heating. The logic is controlled via the cloud. The control message is generated in the cloud and after that the device receives the control message from the cloud via IoT connection and transmit it to the relay controller.

IOTSU® IM04 has 24V power supply with optional battery backup. Relay control information is normally 24V and 100mA.

OUTPUT:

Potential free contact output

TECHNICAL SPECIFICATIONS:

Dimensions	:	94 x 138 x 34,5 mm
Power source	:	+24V external power supply Optional battery backup
Connectivity	:	NB-IoT
Antenna	:	Internal
IP Rating	:	IP65
Configuration	:	OTA update-ability 2h transmit interval 30min measurement interval
Inputs and outputs *	:	Potential free contact output
Options	:	Optional battery backup 1-2 pcs Size C, 3.6 V battery Li-$SOCl_2$

Small Data Garden Oy's (SDG) products (IOTSU® Products) shall be used according to the manual and other instructions and not be used in any other way than their intended use defined by SDG. IOTSU® Products are designed for LPWAN technologies collecting non-critical information. SDG will not be held liable for any damage which may result from inaccurate readings and delayed data transmission. In case regular calibration of IOTSU® Products is needed, SDG shall not be responsible for this, and it is the Customer's responsibility to obtain calibration from a suitable service provider. For more information see SDG's General Terms and conditions for the supply of products and Legal Notices.

* IOTSU® devices shall only be connected with sensors and devices that are specified in order or otherwise approved by the manufacturer. Do not connect anything to IOTSU® device that is not approved or specified by the manufacturer. If these instructions are not followed, the manufacturer's warranty and liability shall be void.

7 Legal notices

Small Data Garden Oy's (SDG) products (IOTSU® Products) shall be used according to the manual and other instructions and not be used in any other way than their intended use defined by SDG.

The user right of the firmware of SDG is limited to the version and specifications confirmed by SDG. Any unauthorised usage of device is prohibited and must be suspended by request of SDG. In addition, SDG is entitled to charge for unauthorised usage including administrative and solving cost. SDG shall not be responsible for damages caused by the user connecting the SDG's products (IOTSU® Products) and/or using the IOTSU® Products in any other way than their intended use nor for any damages caused by materials or product design defined by the client or by the working or manufacturing processes the client has determined.

IOTSU® devices shall only be connected with sensors and devices that are specified in order or otherwise approved by the manufacturer. Do not connect anything to IOTSU® device that is not approved or specified by the manufacturer. If these instructions are not followed, the manufacturer's warranty and liability shall be void.

SDG provides a solution for measurement and environmental status data collection and the transmission of control data. SDG shall not be responsible for the function or operation of the controlled device in the event of internal or external exceptional events or malfunctions, and SDG shall not be liable for any direct or indirect damages to the controlled device, the property, or any other related targets.

IOTSU® Products are designed for collecting non-critical situational data and the IOTSU® Products are not intended to be used for life and security critical solutions. We rely on high-quality sensor, component and software suppliers and manufacturers and IT, LP-WAN and cloud service providers. However, for the reason that the accuracy and redundancy is depended among other things on operating circumstances, radiotechnology specifications and coverage, and because SDG relies on specifications provided by its suppliers, SDG will not be held liable for any damage which may result from inaccurate readings.

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In case regular calibration of IOTSU® Products is needed, SDG shall not be responsible for this, and it is the customer's responsibility to obtain calibration from a suitable service provider.