



LEAKAGE RUGGED

User and Installation Guide

v.22.06

Welcome to using Thingsee

Congratulations on choosing Haltian Thingsee as your IoT solution. We at Haltian want to make IoT easy and accessible for everyone, so we have created a solution platform that is easy to use, scalable and secure. I hope our solution will help you achieve your business goals!

Pasi Leipälä
CEO, Haltian Oy

Thingsee LEAKAGE RUGGED



Thingsee LEAKAGE RUGGED is a wireless IoT sensor for harsh environments that can detect even the smallest of leakages. As IP67 approved product, it can be used to identify water leakages and measure other environmental factors in extreme conditions such as factories, industries and even outdoors.

Thingsee LEAKAGE RUGGED is a part of Haltian Thingsee IoT solution and product family.

Sales package content

- Thingsee LEAKAGE RUGGED sensor
- Magnetic Switch

Using Thingsee LEAKAGE RUGGED sensor

Thingsee LEAKAGE RUGGED detects liquid underneath the device. The sensor detects a solid water layer between the two detection pins at the bottom of the device. The product is placed on the floor or place of potential leakage risk pins down.

The sensor can be used for leakage detection on floors, flat surfaces and pipes where flooding, leakage or even condensed water may take place.

Thingsee LEAKAGE RUGGED uses event based messaging where measurement is done every 30 seconds. In case there is a change to the previous measurement, the measured value will be reported immediately. In case the measurement value remains the same, it's reported once in every 1 hour.

Please note that the measurement values highly depend on the liquid in question: for example, clean tap water and salty sea water give different values. We recommend the location to be checked for leakages every time a high decrease of the measurements value is observed.

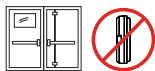
Note before installation

Please make sure the Thingsee gateway device is installed before you install the sensor.

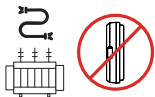
Things to avoid in installation

Avoid installing Thingsee products near the following:

Thick concrete structures or thick fire doors



Electrical transformers or high power or voltage cables



Escalators



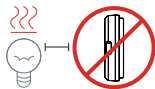
Nearby heating or cooling devices and/or vents



Direct sun light



Nearby halogen lamps, fluorescent lamps or similar lamps with hot surface



Nearby radio equipment like WiFi routers or any other similar high power RF transmitters



Inside or underneath a metal cabinet or box

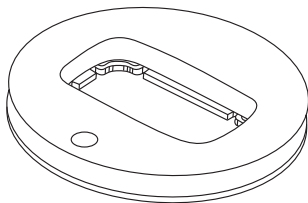


Near elevator motors or similar targets causing a strong magnetic field



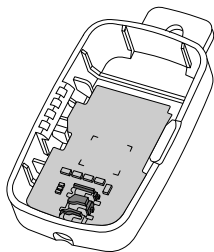
Accessories

- Thingsee Pontoon



Use the Pontoon accessory to float the device in the case of a flood. This will also support the device to sit firmly on the floor and not to turn over accidentally.

- Thingsee LEAKAGE Base

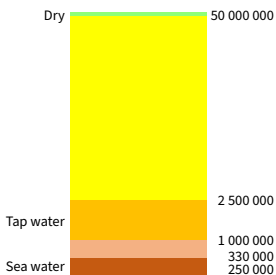


Thingsee LEAKAGE Base is an accessory for the Thingsee LEAKAGE sensor device. Thingsee LEAKAGE Base is used to attach LEAKAGE Rope to Thingsee LEAKAGE device and that which allows detecting leakages in a larger area.

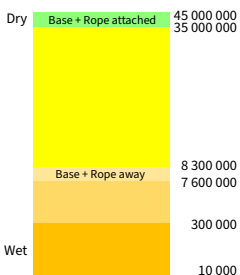
Thingsee Leakage Base has a feature to detect if the cable is not plugged in. When Thingsee LEAKAGE Base and LEAKAGE Rope are attached to Thingsee LEAKAGE, the value this device combination reports is between 35 000 000 and 4 500 000 in dry conditions.

Normally, Thingsee LEAKAGE reports a value of 50 000 000 in dry conditions when there's no leakages.

The illustration below shows the different values reported by Thingsee LEAKAGE on its own and when using Thingsee LEAKAGE Base and LEAKAGE Rope.



TS Leakage only



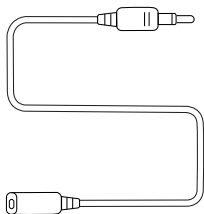
TS Leakage + Base + Rope

Note:

Value rising = cable is drying.

Value decreasing = cable is getting wet.

- Thingsee LEAKAGE Rope



Thingsee LEAKAGE Rope is a leakage detection cable that can be attached to Thingsee LEAKAGE Base accessory allowing leakage detection in a larger area. Thingsee LEAKAGE Rope detects a possible leakage through its entire length.

Note: LEAKAGE Rope dries up after a leakage detection relatively quickly, but this strongly depends on the conditions.

Thingsee Leakage Rope has a female 3.5 mm AV type connector at one end and a male connector at the other end.

You can continue extension by connecting two Thingsee Rope cables together. The standard length of Thingsee Rope is 1m. (Other lengths can be available on request). Diameter 4mm (the connector ends are slightly thicker).

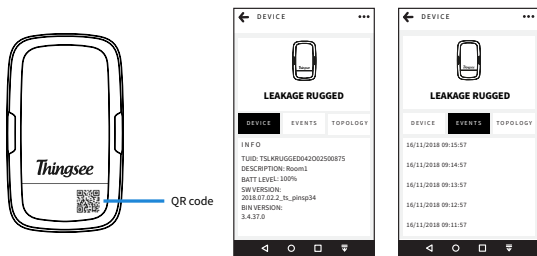
Please note that the operation temperature is 0 °C to +50 °C when using Thingsee LEAKAGE with Base and Rope.

Installation

Please make sure the Thingsee gateway device is installed before you install the sensors.

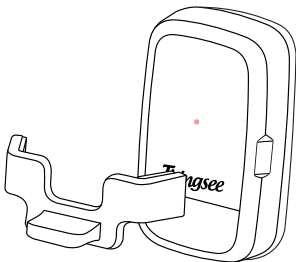
To identify the sensor, read the QR code on the front of the device with a QR code reader or Thingsee installation application on your mobile device.

Identifying the device is not necessary, but it will help you keep track of your IoT installation and help Haltian support to solve possible issues.

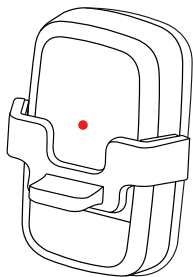


Before installation, the sensor is in low power mode and the LED indicator on the sensor blinks dimly every second.

The sensor is switched on with the magnet switch tool by holding it against the sensor's magnetic switch.



Hold the magnet switch tool against the sensor until the LED indicator starts to blink brightly for one minute. **The device is now ready. When the LED goes off, the sensor is switched on.**



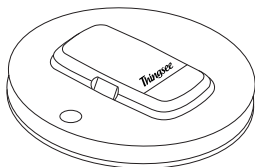
Installing the sensor on the floor

Install the sensor on the floor or surface where leakages, moisture or flooding is a concern. In the case of a flood, use the Pontoon accessory to float the device.

Sensor on the floor



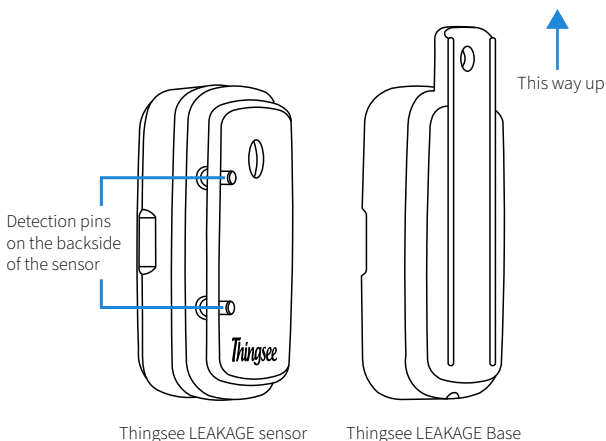
Sensor on the Pontoon



Thingsee LEAKAGE Base and LEAKAGE Rope

Installing Thingsee LEAKAGE Base to Thingsee LEAKAGE

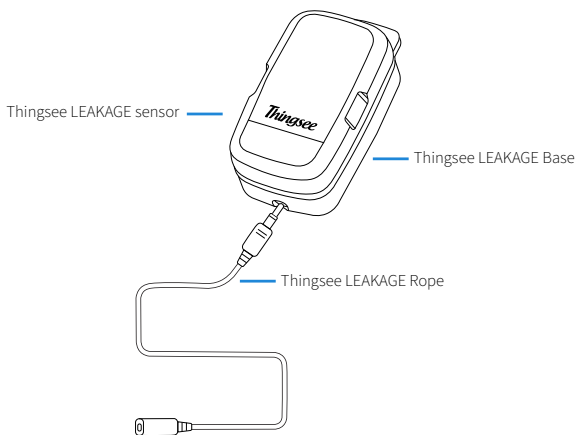
Snap the Thingsee LEAKAGE Base to the rails at the bottom of Thingsee LEAKAGE sensor device first from the side without the detection pins and then from the pins' side. Press until you hear a click. Make sure you install the Base the right way around: when LEAKAGE's 'Thingsee' logo is the right way, the Base's screw attachment is pointing upwards as shown in the image.



Plug Thingsee LEAKAGE Rope into LEAKAGE Base

Place the device combination of Thingsee LEAKAGE, Thingsee LEAKAGE Base and Thingsee LEAKAGE Rope to a location where you wish to detect leakages. Fix the device on the wanted location with a screw or e.g. a zip tie.

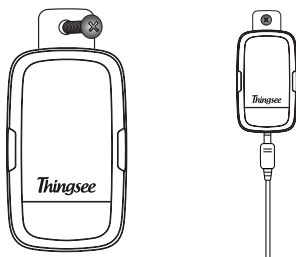
Note: Please note that Thingsee LEAKAGE Base is not waterproof and therefore it's recommended to be installed away from leakages to, e.g., on a wall high enough. Thingsee LEAKAGE Rope can be then laid on the surface wanted for leakage monitoring.



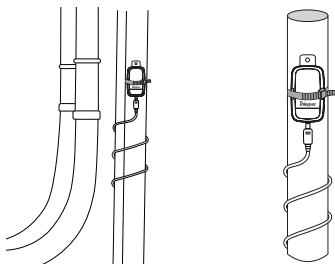
Thingsee LEAKAGE Rope can also be fixed to the surface by using glue, zip ties or fixing clips. Please confirm type of fixing with Haltian. Fixing clips are available from Haltian by request.

Using Thingsee LEAKAGE sensor with LEAKAGE Base and LEAKAGE Rope

Install the device on a wall using a screw for a more secure installation. Attach Thingsee LEAKAGE Rope to detect leakages in a larger area.



Install the device on a pipe with a cable tie and then circle Thingsee ROPE around the pipe underneath the device to detect any leakages.



Note: Install Thingsee LEAKAGE Rope in a place where it is not subjected to any activity that may disconnect LEAKAGE Rope from LEAKAGE Base.

Detection capability

- Electrical resistance values between 10 000 – 50 000 000 units
Example values:
 - Dry floor: 50 000 000 units
 - Tap water: 1 000 000 – 2 500 000 units
 - Salt water: 250 000 – 330 000 units
- Temperature -40 °C to +85 °C. Please note that the recommended operation temperature range is -20 °C to +50 °C . Accuracy $\pm 0,3$ °C.
- Accelerometer reports orientation or vibrations count in machine usage monitoring mode from 128 mG - 16 G. Note that Thingsee devices are not meant to withstand continuous, high vibration.
- Magneto-resistive sensor. Detects magnetic field from magnet or high DC current.

Default measurement and reporting

- Event based reporting
 - Measure the following values every 30 seconds:
 - Resistance
 - Temperature
 - 3-axis acceleration
 - Ambient light
 - Reports values when either
 - Resistance decreases or increases by 10000 units
 - Temperature has changed more than 0,5 Celsius degrees
 - Ambient light change more than 10000 nW/cm², approx. 70 lux
 - Accelerometer when orientation changes more than approx. 5 degrees
 - Event based messaging is always triggered by comparison to the previous reported value
- Time based reporting
 - Reports all the measured values every 1 hour

Other default settings

- Battery reporting interval 6 hours
- Sensor is in routing mode

Settings' impact to battery-life

- 5 min measurement interval up to 4 years
- 15 min measurement interval up to 5 years

Device info

Operating temperature -20 °C ... +50 °C when using Thingsee LEAKAGE Base and Rope

Operating humidity 0 % ... 100 % RH non-condensing

Storage temperature +5 °C ... +25 °C

Storage humidity 45 % ... 85 % RH non-condensing

IP rating grade: IP67

Certifications: CE, FCC, ISED and RoHS compliant

Battery type: 2 x AAA, fixed

Expected battery life:

- Up to 3 years with default functionality (30sec measurement interval)

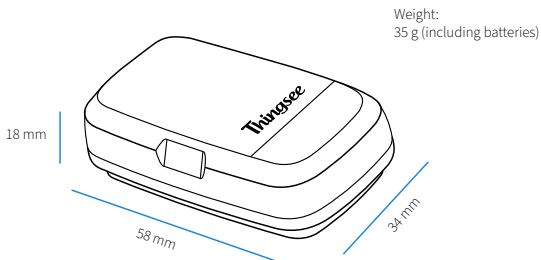
Radio sensitivity: -95 dBm (BTLE)

Size: width 34 mm, height 17,5 mm, length 58 mm

Weight: 35 g (including batteries)

More device info can be found at support.haltian.com

Device measurements



CERTIFICATION IN CERTIFICATION INFORMATION
EU DECLARATION OF CONFORMITY

Hereby, Haltian Oy declares that the radio equipment Thingsee LEAKAGE RUGGED is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.haltian.com

Haltian Oy vakuuttaa, että radiolaitetyyppi Thingsee LEAKAGE RUGGED on direktiivin 2014/53/EU mukainen. EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: www.haltian.com

Thingsee LEAKAGE RUGGED operates at Bluetooth® 2.4 GHz frequency band. Maximum radio-frequency power transmitted is +4.0 dBm.

Manufacturer name and address:

Haltian Oy
Yrteipellontie 1 D
90230 Oulu
Finland

FCC REQUIREMENTS FOR OPERATION IN THE UNITED STATES

FCC Information for the User

This product does not contain any user serviceable components and is to be used with approved, internal antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

FCC Guidelines for human Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radio Frequency Interference Warnings & Instructions

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 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 methods:

Increase the separation between the equipment and the receiver.

Connect the equipment into an electrical outlet on a circuit different from that which the radio receiver is connected

Consult the dealer or an experienced radio/TV technician for help

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

FCC 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.

Innovation, Science and Economic Development Canada (ISED) regulatory information

This device complies with RSS-247 of the Innovation, Science and Economic Development Canada (ISED) 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.

Ce dispositif est conforme à la norme CNR-247 d'Innovation, Sciences et Développement économique Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable

Radiation Exposure Statement :

This device complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and used with a minimum distance of 20 cm between the radiator and your body.

NOTE IMPORTANTE: Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 220 cm entre le radiateur et votre corps.

FCC ID: 2AEU3TSLEAK

IC ID: 20236-TSLEAK

SAFETY GUIDE

Read these simple guidelines. Not following them may be dangerous or against local laws and regulations. For further information, read the user guide and visit www.haltian.com

Usage

Do not cover the device as it prevents the device from operating properly.

- This product is intended for both in- and outdoor use.

- Do not modify the device. Unauthorized modifications may damage the device and violate regulations governing radio devices.

- Do not store the device in wet or humid conditions.

- The device should be stored in a dry place and at room temperature. Avoid large temperature changes and direct sunlight.

At higher temperature the electrical performance of the batteries may be reduced.

Care and maintenance

Handle your device with care. The following suggestions help you keep your device operational.

- Do not open the device.

- 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.

- Only use a soft, clean, dry cloth to clean the surface of the device. Do not clean the device with solvents, toxic chemicals or strong detergents as they may damage your device and void the warranty.

- Do not paint the device. Paint can prevent proper operation.

Damage

If the device is damaged contact support@haltian.com. Only qualified personnel may repair this device.

Small children

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

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 wheeler-bin symbol on your product, battery, literature, or packaging reminds you 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 your nearest recycling point, check with your local waste authority.



Innovation, Science and
Economic Development Canada

Innovation, Sciences et
Développement économique Canada



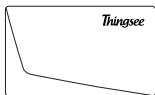
Get to know other Thingsee devices



Thingsee PRESENCE



Thingsee ENVIRONMENT



Thingsee AIR



Thingsee BEAM



Thingsee ENVIRONMENT
RUGGED



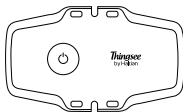
Thingsee LEAKAGE
RUGGED



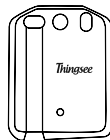
Thingsee ANGLE
RUGGED



Thingsee
COUNT



Thingsee GATEWAY
GLOBAL



Thingsee GATEWAY
LAN

For all devices and more information, visit our website
www.haltian.com or contact sales@haltian.com