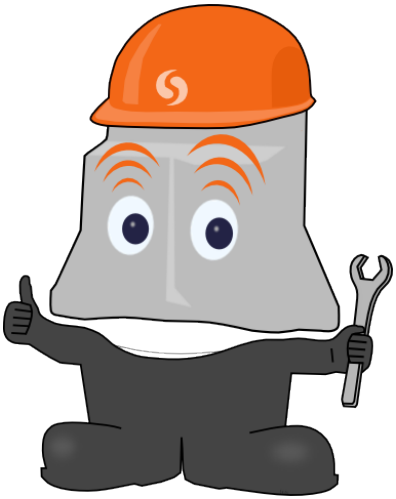
Sensile Technologies

NETRIS®2

USER MANUAL v6



ENGLISH

Sensile Technologies SA

Contents

Document revision

v6 April 25, 2023 General update / Prohibit component replacement / Tightening torque for cable gland update

This document applies to the following products:

R1NF868	W1GEGNS	W1GEQUD	W1LEEUG
W1LENAG	W1ME1WG	W1MEGWG	Z1GEQ3D
Z1GEQUD	Z1HENAG	Z1HEEUG	Z1ME1E2
Z1ME1WW	Z1MEGWW	Z1UEEUD	Z1UENAD

In this document

Indicates safety advice that must be strictly followed

Indicates useful information and advice

Recommended videos on YouTube

Circled numbers and letters in the text refer to the parts described in Figure 1 and 2 respectively (See page 5 and 6)

Symbols for cellular transmission, RF transmission

Acronyms

CSQ Cell Signal Quality

GNSS Global Navigation Satellite System

LED Light Emitting Diode

LPG Liquefied Petroleum Gas or Propane

PIN Personal Identification Number

RMA Return Material Authorization

SMS Short Messages Service

USB OTG USB On-The-Go

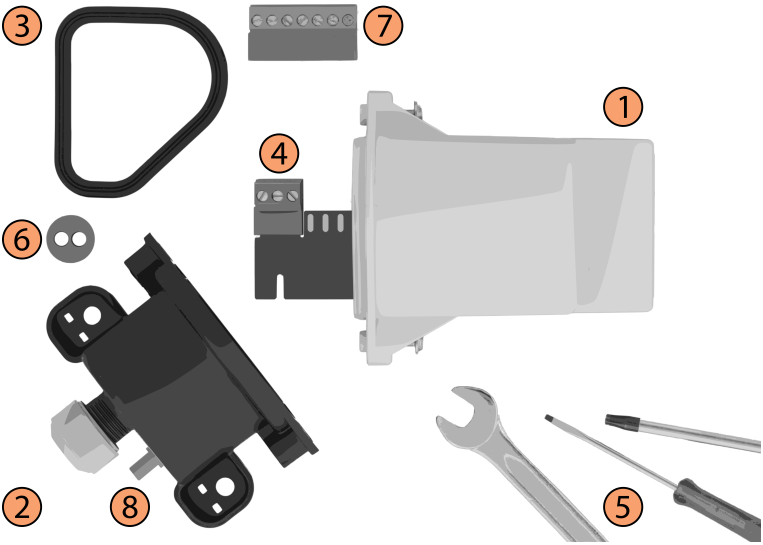


Figure 1: *NETRIS®2* Parts and Tools

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1. *NETRIS®2* (Upper Housing) with built-in battery
2. Lower Housing with cable gland for one sensor
3. Housing seal
4. Sensor connector for one sensor (3-pole)
5. Basic tools (Torx T20, flat screwdriver size 1, wrench size 21 or screw wrench)
6. **Optional** Cable gland seal for two sensors / one sensor and venting membrane
7. **Optional** Multi sensor connector (7-pole)
8. **Optional** External GNSS antenna connector (SMA)

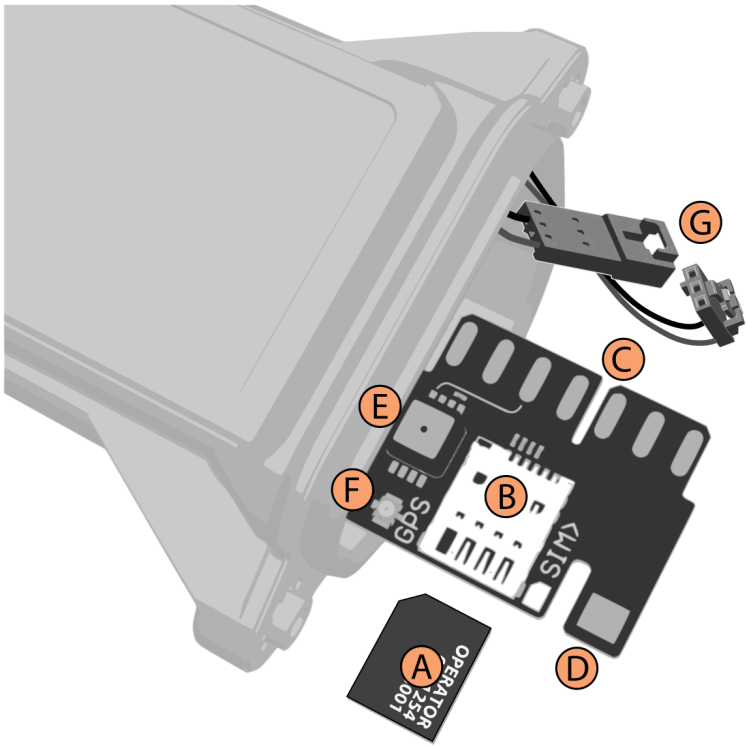


Figure 2: *NETRIS®2* Interface

A Micro SIM card (*3FF / Micro-SIM* format)

B SIM card connector (not on *NETRIS®2* with embedded SIM)

C Sensor card edge connector

D *NETRIS®2-Tool* card edge connector for trace and firmware upgrade

E **Optional** Integrated atmospheric pressure sensor on *Signal3*

F **Optional** Internal GNSS antenna connector

G **Optional** Battery connector

Sensor connector	3 / 7 pole			7 pole			
	GND	Supply	Signal1	Signal2	Signal3	Tx/Cnt	Rx
One pressure sensor	white	brown	green				
Two pressure sensors (Sensor 1 and 2)	white (1+2)	brown (1+2)	green (1)	green (2)			
Pressure sensor with temperature measurement	white	brown	green	yellow			
Rochester Jr/Sr *Grey* cable coating	blue	brown	black				
Rochester Jr/Sr (2016) *Blue* cable coating	brown	white	green				
Rochester R3D	black	red	white				
Pulse Counter	various					various	
Integrated Ambient Pressure Sensor					×		

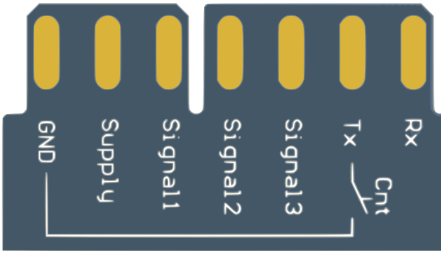


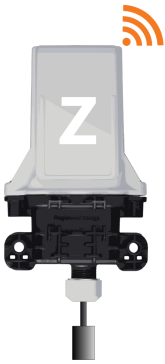
Figure 3: Sensor Interface and Connections

1 Introduction

1.1 Product family

The *NETRIS®2* product family consists of three basic variants. *NETRIS®2-Z* is for standard use with up to 3 sensors connected and cellular data transmission. *NETRIS®2-W* serves as relay for up to 10 *NETRIS®2-R* via short-range low-power radio link for underground tanks or locations with insufficient cellular network connectivity.

1.1.1 *NETRIS®2-Z*



- Up to 3 analog sensor signals, 1 meter input or sensor with serial data communication
- Integrated cellular modem, Short Messages Service (SMS) or data communication

1.1.2 *NETRIS®2-W*

- Relay between *NETRIS®2* sensor network and cellular communication
- Up to 2 analog sensor signals, 1 meter input or sensor with serial data communication
- Integrated cellular modem, SMS or data communication
- Integrated radio link to receive data from up to 10 *NETRIS®2-R* in a sensor network

***NETRIS®2* is available for different cellular standards such as *2G* and *4G*. Contact *Sensile Technologies SA* to find the best solution available depending on your application area**

1.1.3 *NETRIS®2-R*

- Node in a *NETRIS®2* sensor network
- Up to 3 analog sensor signals, 1 meter input or sensor with serial data communication
- Integrated radio link for data transmission to a *NETRIS®2-W* in a *NETRIS®2* sensor network

1.2 Interoperability *NETRIS®* / *NETRIS®2*

- Installation with *NETRIS®-W*

- Installation with *NETRIS®2-W*
- *NETRIS®2-R* can not be installed with first generation *NETRIS®-W*

1.3 Specifications

Dimensions	143 × 90 × 68mm
Weight	300 g
Connections	7 × 2.5mm^2 / AWG 12
Operating temperature	-30 °C …60 °C
Autonomy	10 years (1 SMS / day)

1.4 Packaging and shipment

NETRIS®2 are shipped by up to 4 × 5 in a box (60 × 40 × 17cm)

NETRIS®2 are delivered by default with a cable gland seal for one sensor and a 3-pole sensor connector. If an installation requires two sensors, the following parts need to be ordered additionally:

- cable gland seal with two holes (6)
- 7-pole sensor connector (7)

The 7-pole connector is also required for connecting special sensors (e.g meter, ultrasonic,…). For any spare part ordering refer to Chapter 11.

1.5 Contact information

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Production Site

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6850 Mendrisio
Switzerland

2 Health, Safety, Security & Environment

2.1 Ingress protection rating

NETRIS®2 has an intrusion protection[1] rating of IP68 in accordance with IEC 60529.

The protection level is guaranteed only if *NETRIS®2* has been installed by technicians instructed by Sensile Technologies and thereafter correctly maintained. During installation and maintenance, the inside of *NETRIS®2* must absolutely stay dry. Humidity may drastically shorten the battery and electronics lifetime.

2.2 Explosion protection

***NETRIS®2* are certified for use in hazardous locations (For details see Chapter 10.5 page 31).**

Do not rub the device in hazardous locations, due to electrostatic hazards. Use only damp cloths to clean *NETRIS®2*. Strongly soiled housings can be washed under running water (only when housing is closed and cable gland sealed).

Do not connect or disconnect the *NETRIS®2* battery connector G in hazardous locations. Always manipulate the battery connector in a non-hazardous area.

2.3 Battery

Using batteries other than those provided by Sensile Technologies causes danger of explosion. In this case the certification as well as the warranty on *NETRIS®2* become void.
The battery contained in *NETRIS®2* is not rechargeable and must be disposed properly at end of life.

[1] Protection against mechanical, dust and water intrusion by means of mechanical casing

2.4 Recycling

NETRIS®2 and contained batteries are marked with the symbol shown here. This means that according to local laws and regulations, they should be disposed of separately from household waste. When they reach their end of life, they should be taken to a collection point specified by local authorities. Some collection points accept such items free-of-charge. The separate collection and recycling of such items at the time of disposal helps preserve natural resources and ensures that recyclingis carried out in a way that protects human health and the environment.

3 Sensor mounting

3.1 Pressure sensors

A pressure sensor (with an integrated temperature sensor if desired) must be placed in the bottom of the tank for monitoring tanks with liquid products. If the tank is hermetically sealed an additional reference sensor is needed at the top of the tank.
Requirements for the sensor vary based on the liquid to be monitored. It is, therefore, indispensable to choose the correct sensor to ensure that the installation runs reliably.

NETRIS®2 are optionally available with an integrated atmospheric pressure sensor (E)

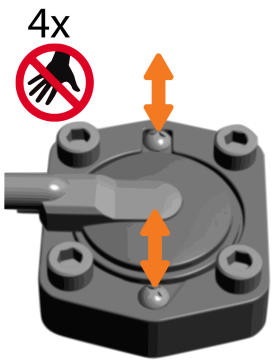
For all details concerning pressure sensor choice and mounting, refer to the pressure sensor manual, available from *Sensile Technologies SA*

3.2 LPG sensors *Rochester* brand

The Rochester type sensors replace the magnetic dial of the level gauge usually present on Liquefied Petroleum Gas or Propane (LPG) tanks. Installation must be performed as follows:

Never loosen the 4 socket screws of the Rochester Mount

1. Read and note the level indicated on the existing dial
2. Unscrew both dial screws and remove the dial
3. Mount the Rochester electronic dial and check that the difference between the displayed and the previously noted value is < 4%.
4. Fasten the electronic dial with both screws.



3.3 Meter with pulse emitter

Any pulse emitter may be connected to the *NETRIS®2* counter input if its electrical system is a normally open or normally closed contact. For setting up the pulse emitter, refer to the meter manufacturer's instructions and the indications on *NETRIS®2* .

To connect a meter to *NETRIS®2* the optional 7-pole sensor connector (7) is needed.

When installing the connection between the meter and *NETRIS®2* always connect *NETRIS®2* last to avoid arbitrary pulse counts

To run the system reset *NETRIS®2* and note the count from the local meter display at reset time. This value must be set on the web application platform so that of the system runs correctly.

4 *NETRIS®2* mounting

When mounting a *NETRIS®2* with accessories other than those recommended by Sensile Technologies, make sure not to damage or deform the housing in any way (warranty will become void)

4.1 Cellular network quality

Network strength indication from a cell phone gives initial information about reception quality on a potential installation site. For a more detailed analysis use *NETRIS®2* together with *NETRIS®2-Tool* , see Chapter 9.

Do not install: CSQ < 8

The *NETRIS®2-Tool* will indicate (amongst others) the Cell Signal Quality (CSQ), network reception quality as seen by *NETRIS®2* . Installation is not recommended below a CSQ of 8. As the cellular network quality may fluctuate strongly across the site it is recommended to test different locations.

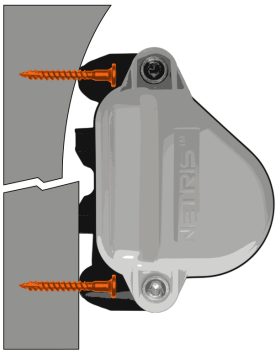
If network quality at tank position is not sufficient, the installation of a *NETRIS®2* sensor network may be evaluated. Install a *NETRIS®2-R* on the tank and a *NETRIS®2-W* at a location with good cellular network quality and within radio range of the *NETRIS®2-R* .

4.2 Orientation in space

NETRIS®2 should preferably be mounted in upright position (antenna side up, cable gland down) to guarantee longest battery lifetime and good cellular connectivity.
NETRIS®2 may have difficulties sending when submerged (e.g. in a manhole after rainfall). To guarantee reliable transmission install it as high as possible.

4.3 Installation on walls

NETRIS®2 is designed for direct fixing on walls using the two ears on the lower housing (2), one on each side and two screws (max 6mm diameter). The shape of the ears allows fixing on straight and curved surfaces, e.g. the inside wall of a manhole.
Drill the holes at the correct distance (72mm) or use the lower housing as a drilling gauge. The drilled holes must be perpendicular to the housing and not to the wall.

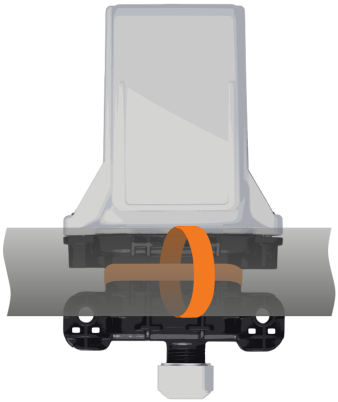


4.4 Installation on pipes

The T-shaped construction on the front side of the lower housing (2) facilitates mounting on any horizontal or vertical pipe. Appropriate cable ties must be used to mount *NETRIS®2* on pipes (See Chapter 11).

4.4.1 Horizontal pipes

Two cable ties are required for optimal orientation of *NETRIS®2* mounted on horizontal pipes. Tighten the first tie around the pipe while fastening the second one against the pipe with it. Then fasten *NETRIS®2* against the pipe using the second tie.



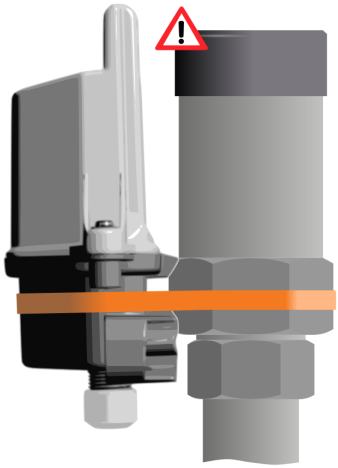
If mounting in vertical orientation is impossible, *NETRIS®2* may be fixed horizontally with only one cable tie (analog to fixation on vertical pipes, see Chapter 4.4.2).

4.4.2 Vertical pipes

NETRIS®2 is directly fixed to vertical pipes using one cable tie.

4.4.3 LPG tank safety valve

As space and mounting possibilities are restricted on LPG tanks, *NETRIS®2* may be attached to the safety valve. In this case the functionality of the valve should not be constrained in any way.
In particular the valve's cap has to stay unhindered. *NETRIS®2* 's housing is designed to satisfy this requirement.
Fix the *NETRIS®2* with one cable tie on the tube or the hexagonal bolt but do not squeeze the valve cap in any way.



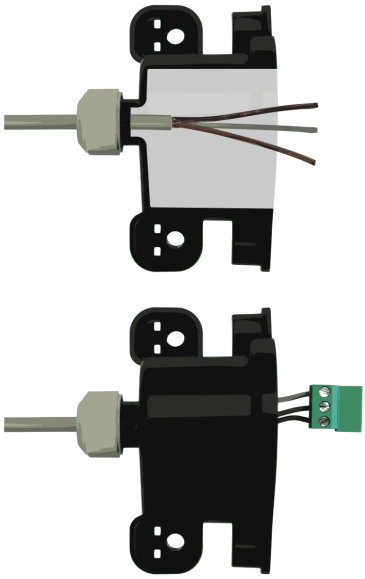
Always check with the tank owner if it is permitted to attach *NETRIS®2* to the safety valve

5 Interfacing sensors

The cable glands are designed for cables with 4…6 mm diameter. Water leakage may occur if sensors with cable diameters outside of these bounds are used

5.1 Installing the sensor cables

1. Dismantle the sensor cable to about the distance between the holes of the ears on the lower housing (5-7cm)
2. Insert the cable through the cable gland until the assembled cable appears slightly inside the lower housing
3. Fasten the cable gland as much as possible manually then tighten it with a wrench (size 21 mm) (tightening torque=2.7 Nm; if *NETRIS®2* produced before 2023 tightening torque=1.7 Nm). The rubber seal should be close-fitting around the cable but not extend too much outside the closing cap
4. Bare the stranded wires and connect them to the sensor connector, see Chapter 5.2



5.2 Installing the sensor connector

The bared stranded wires must be connected to the sensor connector following the color scheme of Figure 3 on page 7. For a single pressure or LPG sensor a 3-pole connector is sufficient (standard equipment). A 7-pole connecter must be used in the following configurations:

- Use of more than one sensor
- Use of a sensor with two outputs (e.g pressure sensor with temperature reading)
- Use of a sensor with digital output
- Reading a meter

If more than one sensor is used their respective wires for *GND* and *Supply* have to be connected together in the *GND* and *Supply* clamps of the sensor connector.

The sensor connector is polarized and thus can only be plugged in with correct orientation. If it is not possible to plug in the connector, check the orientation and if necessary turn the connector by 180 °

5.3 Pulse counting

Refer to the meter manufacturer's product information for complete information about functionality and connectivity information

The counting contact (normally open or normally closed) must be connected between *Tx/Cnt* and *GND* (see indications on *NETRIS®2*)

5.4 Integrated atmospheric pressure sensor

Certain *NETRIS®2* come with a fully integrated atmospheric pressure sensor (E). To use it just activate the *Signal3* in the web application platform and set the sensor type accordingly. No setup is required on *NETRIS®2* apart using a membrane.

When using an internal atmospheric pressure sensor *NETRIS®2* must be equipped with a venting membrane (see Chapter 11). Therefore the number of external sensors is limited to one with only *Signal1* and *Signal2* available for connections

6 SIM

6.1 Preparing the SIM card

NETRIS®2 sends the collected data to a number read from the SIM card (A) (*3FF / Micro-SIM* format). As such, the SIM card needs to be programmed with this number before being inserted in *NETRIS®2* . This can be done with a mobile (cell) phone or any available SIM card reader accepting the Micro SIM format. The receptor's number must be stored in the following format as first entry in the SIM card memory:

Name CENTRAL

Number *Ask Sensile Technologies SA for the appropriate number!*

Personal Identification Number (PIN) protection must be activated on the card. Ask *Sensile Technologies SA* for the PIN to be used with *NETRIS®2*

***NETRIS®2* with embedded SIM do not need special configuration and no SIM card needs to be inserted (the SIM is integrated in *NETRIS®2* and cannot be removed). All settings required are configured in-factory**

6.2 Inserting the SIM card

Insert the SIM card (A) with the golden contacts downwards into the card holder (B). Refer to Figure 2 page 6 and the symbol printed on *NETRIS®2* for correct SIM card orientation. The card must be completely inserted into the card holder. If the card is still overlapping the electronics card edge after insertion, remove it and check the card's orientation.

7 Geolocation

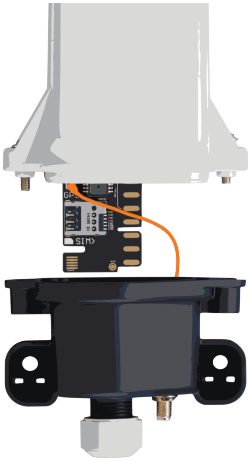
7.1 Basic information

NETRIS®2 is enabled for worldwide satellite-based position tracking tasks with GPS, GLONASS, Beidou or Galileo. Not all *NETRIS®2* variants have default built in Global Navigation Satellite System (GNSS) hardware. Contact *Sensile Technologies SA* for more information. To track the position of a *NETRIS®2* the following is required:

- *NETRIS®2* with built in GNSS module
- Lower housing (2) with external GNSS antenna connector (8) and internal antenna cable
- External GNSS antenna (See Chapter 11)

7.2 GNSS antenna connection

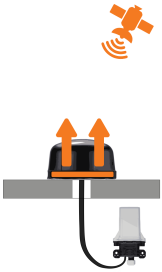
1. Connect the internal *GNSS* antenna cable with it's coaxial connector to the *NETRIS®2* 's socket (F) marked *GPS*
2. Connect the external *GNSS* antenna to the SMA connector (8)
3. When closing the housing make sure the *GNSS* cable assembly is not squeezed in any way between the lower and upper housing



7.3 GNSS antenna mounting

The external *GNSS* antenna must be installed horizontally and must be fully sky-visible to ensure satellite signal reception. Any close-by metallic surfaces (also facades) may reflect satellite signals and lead to position fix error.

There are no special requirements for of *NETRIS®2* geolocation-related orientation.



7.4 Activation and configuration

Activate the *GNSS* tracking mode on the web application platform and configure frequencies.

The use of *GNSS* tracking has no influence on the number of sensor inputs available, but reduces battery lifetime by up to 40 %[2]

[2]Based on daily position fix and data transmission

8 Starting service

Connection of the battery must be carried in a non-hazardous location.

If your *NETRIS®2* has a battery connector (G) make sure to connect it to the *NETRIS®2* in order to power it up.

8.1 Installation validation

The simplest and fastest way to verify the successful start of a *NETRIS®2* is the use of a *NETRIS®2-LED-Dongle* .
For immediate in-depth control of all relevant parameters or when the web application platform is not available (e.g mobile data communication not available at installation site) use the *NETRIS®2-Tool* (See Chapter 9 page 26)

8.2 Closing *NETRIS®2*

Before closing the housing make sure the inside of the housings as well as the seal are clean and dry. Presence of dust or humidity when installing may shorten the lifetime of *NETRIS®2*

1. Check that the housing seal (3) on the upper housing (1) is present and correctly oriented
2. Connect the sensor connector (4) / (7) to the card edge connector (C)
3. Insert *NETRIS®2* in its lower housing (2) . Do not force closure, if the two housings can not be fit together properly make sure there is no pinched cable
4. Close the two housing screws (T20) tightly (tightening torque=1.2 Nm). There should be no visible gab between the two housings

8.3 Activating *NETRIS®2*

See the video on www.youtube.com/user/SensileTechnologies

Once you have

- connected the sensors
- inserted the SIM card (unless *NETRIS®2* is equipped with an embedded SIM)
- closed the housing

pass the activation magnet over the ACTIVATE / RESET arrow indicated on the product label to start the first measurement and transmission cycle.

8.4 Activation feedback

Once *NETRIS®2* has sent its first data after activation, information about sensor readings and cellular network quality can be requested from the web application platform in different ways. Contact *Sensile Technologies SA* to discover the solution best adapted to your needs.

8.5 *NETRIS®2-W/R* pairing

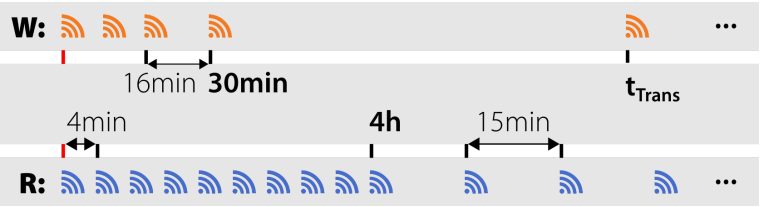


Figure 4: *NETRIS®2-W/R* timings

NETRIS®2-R First install and activate all *NETRIS®2-R*. They will start working as follows:

- During the first four hours after activation the *NETRIS®2-R* will measure and transmit at a shortened period of 4 minutes in order to facilitate installation checkup
- After four hours it switches to the standard, 15 minutes interval operation

NETRIS®2-W After installation and activation of the *NETRIS®2-R* activate the *NETRIS®2-W* as well and install it in its location. During the first phase it will listen permanently to all *NETRIS®2-R* within range

- A first empty message will be sent out directly (no measurements)
- A second message with measurements from all *NETRIS®2-R* in range goes out after about 6 minutes
- further messages follow after 12 and 30 minutes
- After these initial messages the *NETRIS®2-W* stops listening permanently to the *NETRIS®2-R* and will only send messages again on next configured transmission event t_{Trans}
- For every measurement event the *NETRIS®2-W* is listening to incoming messages during half an hour

9 Tools

9.1 *NETRIS®2-LED-Dongle*

Figure 5: *NETRIS®2* with connected *NETRIS®2-LED-Dongle*

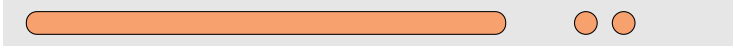
See the video on www.youtube.com/user/SensileTechnologies

Connect the *NETRIS®2-LED-Dongle* to the sensor connector (C) and activate *NETRIS®2* with a reset magnet. The Light Emitting Diode (LED) will indicate the transmission cycle status as follows:

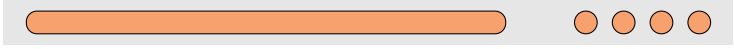
- Startup modem and searching connection:

- Connected to cellular network, preparing data to send:

- Data transmission completed successfully:



- Data transmission trial failed:



In addition to visual feedback *NETRIS®2-LED-Dongle* sets the sensor entries to a specific value for measurement validation.

The use of *NETRIS®2-LED-Dongle* in hazardous locations is strictly prohibited! Remove *NETRIS®2* from the installation site and test in a safe place, protected from environmental conditions

9.2 *NETRIS®2-Tool*

Tools for *NETRIS®* have the same connector but are not compatible with *NETRIS®2* - and vice versa

The connector slot on the *NETRIS®2-Tool* is divided in a shorter and a longer slot. Use the short slot to connect to *NETRIS®2* (leaving the longer slot unused) as in Figure 6. *NETRIS®2* is self-powered and its battery needs to be connected (battery connector G) for any use with the *NETRIS®2-Tool* .

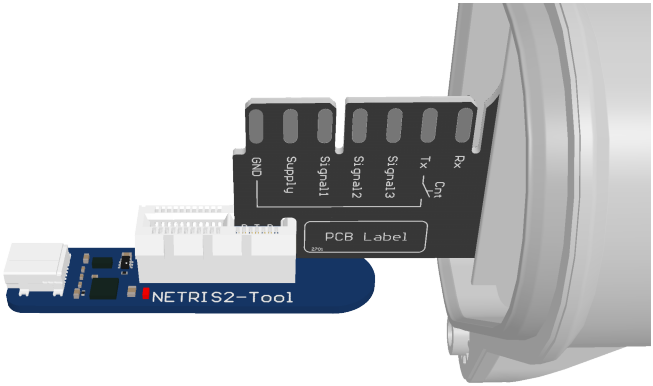


Figure 6: *NETRIS®2* with connected tool

The use of *NETRIS®2-Tool* in hazardous locations is strictly prohibited! Remove *NETRIS®2* from the installation site and operate in a safeplace, protected from environmental conditions

9.2.1 Installation checkup

See the video on www.youtube.com/user/SensileTechnologies
The *NETRIS®2-Tool* gives a complete output of relevant installation parameters such as sensor readings and cellular reception quality:

1. Connect the *NETRIS®2-Tool* to your mobile host with a USB On-The-Go (USB OTG) cable or to your PC with a standard USB-mini cable
2. Start the trace application on the host side
3. Check that the programmer interface contacts (D) on *NETRIS®2* are clean and free of oxidation. Otherwise clean them with contact spray or alcohol and let them dry
4. Connect the *NETRIS®2-Tool* to *NETRIS®2* as shown in Figure 6
5. If possible connect the sensor(s) to *NETRIS®2* and start it with a reset magnet
6. The host application will show information about the course of events and output relevant parameters
7. If the checkup result is positive remove the *NETRIS®2-Tool* and finalize installation

9.2.2 Firmware update

Before upgrading firmware on a *NETRIS®2* contact *Sensile Technologies SA* in order to have the latest release and correct version of firmware

See the video on www.youtube.com/user/SensileTechnologies

1. Connect the *NETRIS®2-Tool* to your computer via a standard USB-mini cable. If this is a first-time-use you might have to install *Silabs* drivers. In this case, follow the instructions in the *readme.txt* file contained in the firmware package provided by *Sensile Technologies SA* .
2. Check that the programmer interface contacts (D) on *NETRIS®2* are clean and free of oxidation. Otherwise clean them with contact spray or alcohol and let them dry
3. Connect the *NETRIS®2-Tool* to *NETRIS®2* as shown in Figure 6
4. Follow the instructions of the *readme.txt* file (firmware package) to load the new firmware on your *NETRIS®2*

10 Support

10.1 Battery lifetime

To know how much energy is left in a specific *NETRIS®2* battery refer to indications provided by your web application platform. Tests cannot be carried out on *NETRIS®2* to determine battery status.

10.2 Replace the battery pack

Use only the battery packs BN2D150 (TLP-93111/A/SN4A, 3.6 V, 19 Ah) or BN2D150 (TLP-93111/A/WA1A, 3.6 V, 19 Ah) provided by *Sensile Technologies SA* .

The exchange of the battery must be carried in a non-hazardous location.

To change the battery :

- open the housing with a Torx T20 screwdriver
- disconnect the sensor's connector (4) to be able to move the upper-part of the device in a non-hazardous location
- in a non-hazardous location, disconnect the battery connector (G) and extract the battery from the housing
- insert a new battery pack inside the upper part of the housing (1)
- connect the battery connector (G) only in a non-hazardous location
- connect the sensor's connector (4)
- tighten the two housing screws with Torx T20 screwdriver to a torque of 1.2 Nm
- tighten the cable gland nut (2) to a torque of 2.7 Nm; if *NETRIS®2* produced before 2023 tightening torque=1.7 Nm

10.3 Maintenance and retrofit

NETRIS®2 is maintenance-free over the entire battery lifetime. Settings such as measurement and transmission frequencies can be changed remotely. However, environmental conditions may shorten battery lifetime and humidity present inside the housing leading to corrosion. Prevent these situations with clean and robust installations.

When the battery reaches its end-of-life *Sensile Technologies SA* or an authorized reseller can retrofit *NETRIS®2* . The battery will be changed, the most current firmware loaded and the system tested.

Exept for battery replacement, no other repair or component replacement is permitted.

10.4 Return

Only return *NETRIS®2* under warranty after attribution of a Return Material Authorization (RMA) by *Sensile Technologies SA* 's helpdesk. The returned *NETRIS®2* must be clearly marked with the RMA number.

10.5 Hazardous location certification

10.5.1 Applied standards

EN IEC 60079-0:2018
UL 60079-0 6th Edition
IEC 60079-0 Edition 7.0
UL 913 8th Edition
ABNT NBR IEC 60079-0:2020

EN 60079-11:2012
UL 60079-11 6th Edition
IEC 60079-11 Edition 6.0
CSA C22.2 No. 157
ABNT NBR IEC 60079-11:2013

10.5.2 Hazardous location product classification

- Class I, Division 1, Group C,D
- Class I, Zone 0, AEx ia [ia] IIB T3
- Intrinsically safe devices for use in Class I, Division 1, Group C and D; Class I, Zone 0, Group IIB providing intrinsically safe circuits for Class I, Division 1, Group C and D; Class I, Zone 0, Group IIB hazardous locations when installed per Control Drawing No."NETRIS2 ControlDrawing".

- Intrinsically Safe **Ex ia**
- Associated Equipment **[Ex ia]**

10.5.3 ATEX product classification

-  II 1(1)G Ex ia [ia Ga] IIB T3 Ga

10.5.4 IECEx and INMETRO product classification

- Ex ia [ia Ga] IIB T3 Ga

10.5.5 Associated Apparatus Entity Parameters

In the following the L_o and C_o parameters already consider combination circuits.

Values for the following products:

R1NF868 W1GEGNS W1GEQUD W1LEEUG
W1LENAG W1ME1WG W1MEGWG Z1GEQ3D
Z1GEQUD Z1ME1E2 Z1ME1WW Z1MEGWW

U_o [V] =	5.88											
I_o [mA] =	192.2											
P_o [mW] =	281											
L_o [mH] =	6.3	5.0	2.0	1.0	0.5	0.2	0.1	0.05	0.02	0.01	0.005	0.002
C_o [μF] =	5.7	6.8	11	13	17	23	30	39	63	100	230	1000

Values for the following products:

Z1HENAG Z1HEEUG Z1UEEUD Z1UENAD

U_o [V] =	9.85									
I_o [mA] =	196.9									
P_o [mW] =	299									
L_o [mH] =	5.4	5.0	2.0	1.0	0.5	0.2	0.1	0.05	0.02	0.01
C_o [μF] =	2.2	2.4	3.9	5.1	6.5	8.8	11	14	21	22

10.5.6 Specific Conditions of Use

Do not rub due to electrosatic hazards.

10.5.7 *NETRIS®2* labelling (type plates)

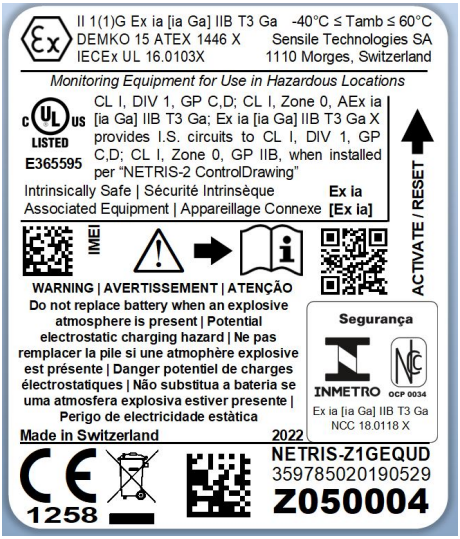


Figure 7: Typical product label

10.6 FCC notice

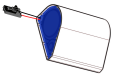
Products	*FCC ID*	*IC ID*
NETRIS®2-Z1UENAD	**RI7UE910NA**	**5131A-UE910NA**
NETRIS®2-Z1HENAG	**RI7HE910NA**	**5131A-HE910NA**
NETRIS®2-Z1MEGWW	**RI7ME910G1WW**	**5131A-ME910G1WW**

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

11 Accessories

Warranty may be void if accessories other than those recommended by *Sensile Technologies SA* are used

Part	Order Code	Description
	Z706	*NETRIS®2* housing seal
	Z708	Cable gland nut
	Z709	Cable gland seal 1-hole
	Z711	Cable gland seal 2-hole
	Z714	Standard sensor connector 3-pole
	Z715	Sensor connector 7-pole
	Z718	Venting membrane (for use in cable gland seal hole)
	120071254	Black cable tie C-TIE, 527×9mm (*Plica E-Nr*)
	Z800	Activation and reset magnet
	Z7072	Lower housing cable assembly for external GNSS antenna use

Part	Order Code	Description
	Z801	Cable assembly for external GNSS antenna
	Z802	GNSS external antenna, magnetic mount
	Z803	GNSS external antenna, screw mount
	Z712	*NETRIS®2* housing screw M4x16/6 TX20
	Z804	*NETRIS®2-LED-Dongle* for startup check
	Z805	*NETRIS®2-Tool* for firmware upgrade and trace
	BN2D150	Replacement battery BN2D150 (TLP-93111/A/SN4A, 3.6 V, 19 Ah) or BN2D150 (TLP-93111/A/WA1A, 3.6 V, 19 Ah) for *NETRIS®2*