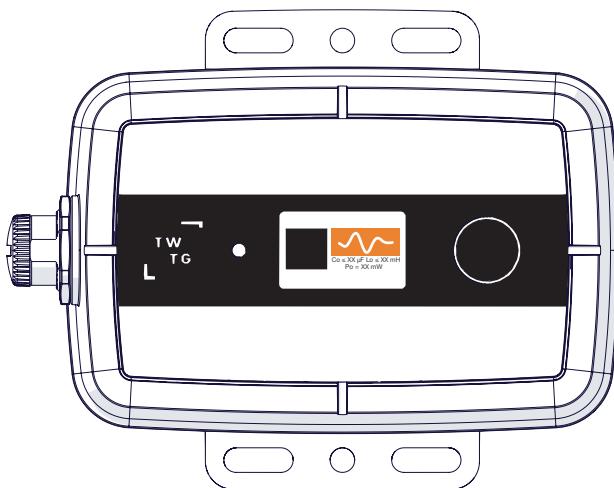


Ratiometric Transmitter

Product Manual

This document applies to version 1 of the:
 NEON Ratiometric Transmitter (DS-RT-02-XX)
 NEON Pressure Sensor (DS-PS-02-XX)
 NEON Pressure Gauge (DS-PG-02-XX)



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1 TWTG NEON

1.1 NEON Product Introduction

NEON stands for a standardised approach to collecting data points from the operational environment and in doing so, creates a general approach to integrated data collection within existing IT ecosystems.

The TWTG NEON product range supports all industrial customers moving towards LoRaWAN as the Industrial IoT network of the future.

The LoRaWAN network gives industrial operations a secure solution, which scales-up to tens of thousands of sensors, covers complete sites with only a small amount of gateways and best of all – the low-power approach means that the lifetime of the NEON products is extended dramatically.

1.2 Related Products

Document name	Document number
NEON Vibration Sensor	6016_N02-09_Data-Sheet-NEON-Vibration-Sensor_XX
NEON Temperature Transmitter	6015_N02-0_Data-Sheet-NEON-Temperature-Transmitter_XX
NEON NFC Tag	6003_P20-018_Datasheet-NEON-NFC-Tag_XX
NEON Temperature Sensor	604_P18-023_NEON-Data-Sheet-TS_XX
NEON Contact Sensor	601_P20-017_NEON-Data-Sheet-CS_XX
NEON Valve Sensor MT	604_P19-005_NEON-Data-Sheet-VS-MT_XX
NEON Valve Sensor QT	607_P18-023_NEON-Data-Sheet-VS-QT_XX

Table 1: Related Products

1.3 What you will need

In order to deploy the NEON product range, a compatible and operational LoRaWAN network architecture is required. This manual does not contain any instructions of how to setup and install LoRaWAN networks.

TWTG offers radio network planning and IT-architecture design services to fully integrate the products in the NEON product line.

2 Getting Started

2.1 Compatibility of this manual

This manual is applicable to version 1 of the NEON Ratiometric Transmitter, NEON Pressure Sensor and NEON Pressure Gauge. This manual is meant to be used with products from a specific production batch;
See [Serial Number](#) for an explanation on how to retrieve the production batch code from the serial number;
See chapter [Data Matrix Code](#) to determine the revision of the product.

2.2 Related Documents

Document name	Document number
NEON Data Sheet Pressure Sensor	6033_N02-09_Data-Sheet-NEON-Pressure-Sensor
Pressure Sensor installation manual	520_Drucksensor_BA
NEON Data Sheet Pressure Gauge	6036_N02-09_Data-Sheet-NEON-Pressure-Gauge
Pressure Gauge installation manual	PDS_PG_IOM_Badotherm
NEON Communication Protocol	6020_N02-09_Communication-Protocol-NEON-Ratiometric-Transmitter

Table 2: Related documents

2.3 What is in the box

When the product is delivered check the components for damage and whether all box items mentioned below are included.

Box Items Pressure Sensor (DS-PS-02-XX)	
NEON Ratiometric Transmitter	1 battery assembly (included in the product) 1 mounting bracket (mounted on the product) M12 connector (mounted on the product)
Sensor	Pressure Sensor
RT Sensor cable	DS-EC-02-AB03 (3 meter)
Declaration of Conformity	Declaration of Conformity, containing a link to latest version of this product manual and other relevant product documentation

Table 3: Box Items Pressure Sensor

Box Items Pressure Gauge (DS-PG-02-XX)	
NEON Ratiometric Transmitter	1 battery assembly (included in the product) 1 mounting bracket (mounted on the product) M12 connector (mounted on the product)
Sensor	Pressure Gauge
RT Sensor cable	DS-EC-02-AB03 (3 meter)
Declaration of Conformity	Declaration of Conformity, containing a link to latest version of this product manual and other relevant product documentation

Table 4: Box Items Pressure Gauge

2.4 Product Specifications RT

Product	
Product name	TWTG NEON Ratiometric Transmitter
Type identification	DS-RT-02-XX
Supported sensors	
Product name	TWTG NEON Pressure Sensor
Type identification	DS-PS-02-XX
Product name	TWTG NEON Pressure Gauge
Type identification	DS-PG-02-XX
Environmental conditions	
Operating temperature range Transmitter	-40 °C - 70 °C
Storage temperature range	10 °C - 30 °C
Operating humidity range	0% - 100% RH
Altitude	Up to 3000 m
Water & dust resistance	IP65
Pollution degree	3
Usage	Indoor and outdoor
Mechanical	
Material	Molded plastic
Weight (including mounting bracket)	330 g
Dimensions	100x70x57 mm
Installation	
Transmitter	Band clamp or bolts (not included)
Power Supply specifications	
Battery rated voltage	3.6 V
Battery rated capacity	17 Ah
Functional specifications	
Output	LoRaWAN
Input	M12 connector (maximum cable length 3 meter)
Input insulation rating	500VAC / 1 min
Connectivity	
Protocol	LoRaWAN
Frequency band	863-870 MHz
	902-928 MHz (compatible)
Maximum RF output power	+13 dBm
Provisioning	
QR / Serial number	Serial number (read only)
NFC	Serial number (read only)

2.5 Certifications

Certifications	
ATEX certificate number	DEKRA 20ATEX0004X
IECEX certificate number	IECEX DEK 20.0004X
ATEX IECex marking	Ex II 1G Ex ia IIC T4 Ga
Applicable ATEX/IECEX standards	EN 60079-0:2012+A11:2013 EN 60079-0:2018 EN 60079-11:2012
FM US certificate number	FM22US0061X
FM CA certificate number	FM22CA0043X
US Marking	IS Class I, Division 1, Group ABCD T4 Class I, Zone 0 Ex ia IIC T4 Ga
CA Marking	IS Class I, Division 1, Group ABCD T4 Ex II 1G AEx ia IIC T4 Ga
IMDA Dealer License	DA108442
CE	EN 300 220-1 V3.1.1 EN 300 220-2 V3.2.1 EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019 EN 62311:2020 EN 60529:1911+A1:2000+A2:2013 EN 301 489-1 V2.2.3 EN 301 489-3 V2.1.1
UKCA	Radio Equipment Regulation 2017
WEEE	Directive 2033/108/EC
RoHS	2011/65/EU
FCC	FCC CFR 47, Part 15, Subpart C FCC CFR 47, Part 15, Subpart B
ISED	USA FCC Part 15.209, 15.247, 15.205 RSS-247, RSS-Gen
ICES	CAN ICES-003(B) / NMB-003(B)
Manufacturer information	
Name	TWTG R&D BV
Address	Schaardijk 386 2909 LA Capelle a/d IJssel The Netherlands

Table 5: Product specifications. See also "NEON datasheet" in [Related documents](#) for a detailed overview of specifications.

2.6 Product Type Identification

2.6.1 NFC

The NFC label is located in the identification sticker and programmed with the serial number of the device. The serial number read from the NFC can be used as unique identifier for provisioning and registration.

2.6.2 Data Matrix Code

The Data Matrix Code label also represents the serial number of the device. The serial number read from the QR code can be used as unique identifier for provisioning and registration. See [Serial Number](#) for a detailed label description.

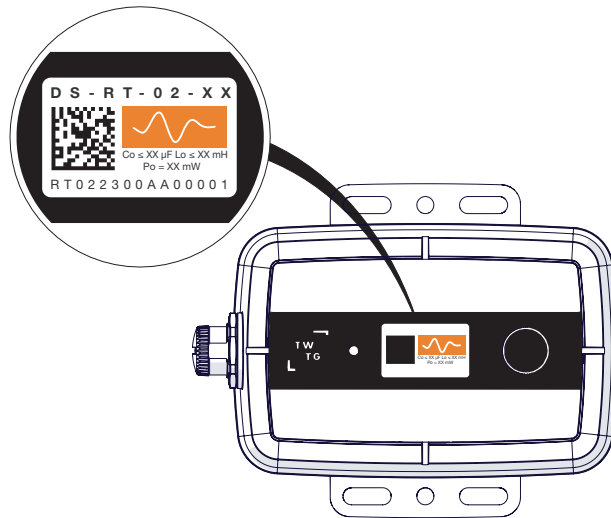


Figure 1: NFC and Data Matrix Code code location

AA-BB-CC-DD	
AA - Product Family	DS
BB - Product Variant	RT = Ratiometric Transmitter
CC - Main Revision	E.g. 02
DD - Region	E.g. 00 = Global

Table 6: Product Nomenclature

AABBCCDDEEFF	
AA - Product Variant	RT = Ratiometric Transmitter
BB - Product Revision	E.g. 02
CC - Production Year	E.g. 23 = 2023
DD - Region	E.g. 00 = Global
EE - Production Batch	E.g. AA
FFFF - Serial Number	E.g. 00001

Table 7: Serial Number

2.7 Product Dimensions

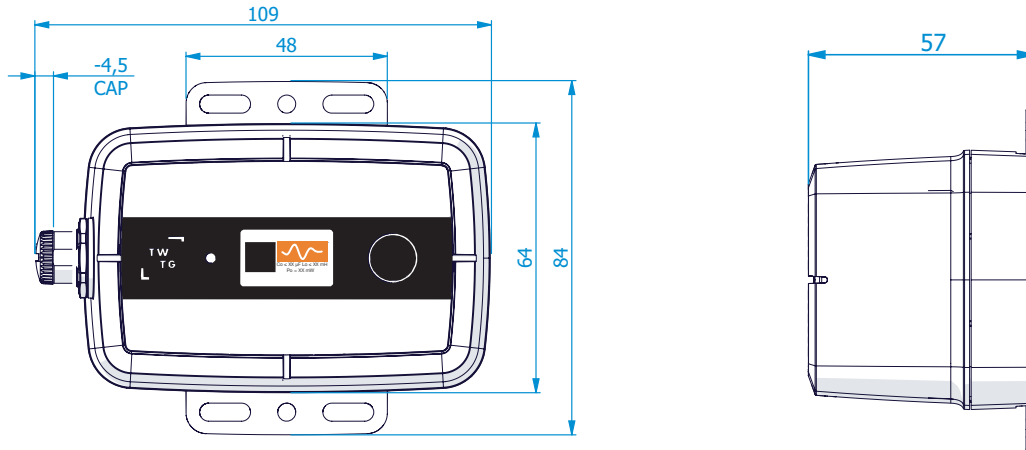


Figure 2: Neon Transmitter Dimensions (mm)

3 Warnings

3.1 ATEX / IECEx

3.1.1 Specific Conditions of Use



WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD

- The product shall be installed in such a way that the risk for electrostatic discharges is minimised;
- When the equipment is used in hazardous locations, avoid any actions which generate electrostatic discharge;
 - Cleaning: The equipment shall only be cleaned using a wet cloth;
 - Installation: Touch non-metallic parts with an insulating object;
 - Environment: Do not use the product in environments with powerful charge generating processes.

3.1.2 Installation

- This equipment shall be installed according to NEN-EN-IEC 60079-14 and the installation instructions;
- This equipment is intended for fixed installations only;
- This equipment is intended for use in restricted access areas only.
- To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.



WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

- Under no circumstances shall the equipment enclosure be opened within a hazardous area

3.1.3 Operation

- The connector of this equipment shall not be connected when an explosive atmosphere is present;
- This equipment shall only be used in environments where electromagnetic field strength is limited according to NEN-EN-IEC 60079-14;
- This equipment is only intended for use in combination with NFC Forum Tag 2 Type technical specification compatible readers;
- This equipment shall only be used within ambient temperatures between -40 °C and +70 °C.

3.1.4 Service

- This equipment shall only be opened by TWTG or by a competent instructed person;
 - The battery is serviceable by said persons;
 - Only replace the battery in a non-hazardous location;
 - Only use Tadiran S1P1/SL-2780/323/TWT battery assembly;
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- If damage to the enclosure is evident, a trained and competent person shall be immediately informed, who shall remove the device from service as soon as possible;
- If the equipment is or has been in contact with chemical materials, clean it appropriately.

3.1.5 Output parameters

The maximum output parameters are limited by the NEON Transmitter. When selecting the sensor to be used with the transmitter, the following values must be taken into account:

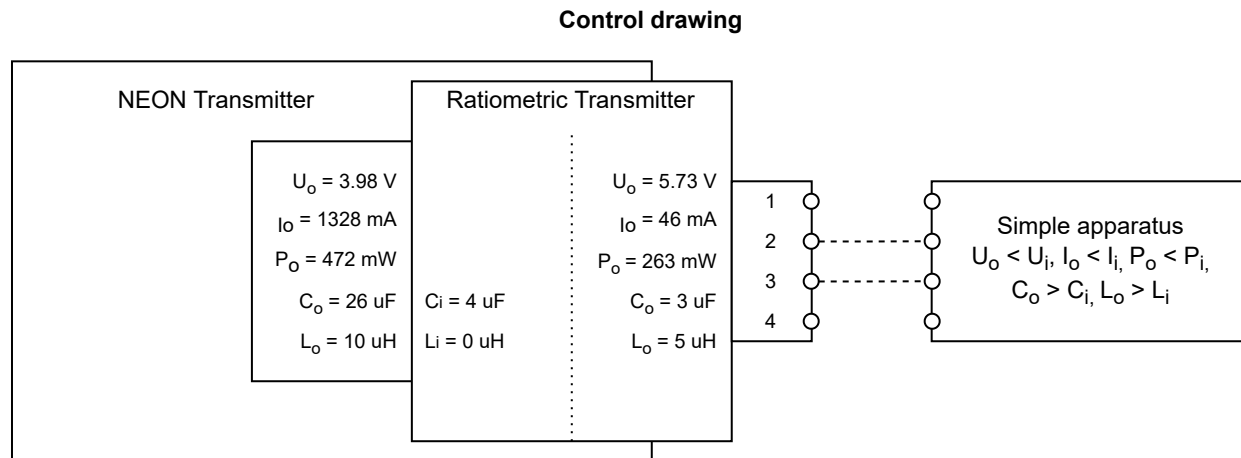


Figure 3: Intrinsic Safety Limiting Values

3.2 General

3.2.1 Transport and Storage

- The product must be kept in its original packaging until it reaches the installation site to prevent damage while in transit;
- The storage location must be dry;
- The product must not be exposed to vibrations or impact during storage.

3.2.2 Warranty

- The warranty covers the period noted on the quotation;
- If the device doesn't function as documented, the customer should contact TWTG and provide the following information;
 - Model specification;
 - Serial number;
 - Circumstances under which the problems developed;
 - Any previously generated data;
- The party responsible for the costs of solving the problem shall be determined by TWTG on the basis of an investigation conducted by TWTG.

3.2.3 Warranty will be void in case of

- Malfunction due to ignoring the design specifications;
- Malfunction due to modification of the product carried out by the user;
- Deferred maintenance of the product or the installation location.

4 Avertissements

4.1 ATEX / IECEx

4.1.1 Conditions spécifiques d'utilisation



ATTENTION – RISQUE POTENTIEL DE DECHARGES ELECTROSTATIQUES

- Le produit doit obligatoirement être installé de manière à minimiser le risque de décharges électrostatiques;
- Lorsque l'équipement est utilisé dans un environnement dangereux, évitez strictement toute action générant une décharge électrostatique;
 - Nettoyage: L'équipement doit être nettoyé uniquement à l'aide d'un chiffon humide;
 - Installation: Toucher les parties non métalliques qu'avec un objet isolant;
 - Environnement: N'utilisez pas le produit dans des environnements générant de fortes charges d'électricité.

4.1.2 Installation

- Cet équipement doit être installé conformément à la norme NEN-EN-IEC 60079-14 et aux instructions d'installation;
- Cet équipement est uniquement destiné aux installations fixes;
- Cet équipement est uniquement destiné à être utilisé dans des zones à accès restreint.



ATTENTION – NE PAS OUVRIR DANS UNE ATMOSPHÈRE EXPLOSIVE

- Le boîtier de l'équipement ne doit en aucun cas être ouvert dans une zone dangereuse.

4.1.3 Fonctionnement

- Le connecteur de cet équipement ne doit être utilisé qu'avec un équipement externe tel qu'indiqué dans le "product matrix";
- Le connecteur de cet équipement ne doit jamais être connecté dans une atmosphère explosive;
- Cet équipement ne doit être utilisé que dans un environnement où l'intensité du champ magnétique est limitée conformément à la norme EN 60079-14;
- Cet équipement est uniquement destiné à être utilisé en combinaison avec des lecteurs compatibles dont les spécifications techniques respectent la norme des tags NFC de Type 2;
- Cet équipement ne doit être utilisé qu'à des températures comprises entre -40° C et +70° C.

4.1.4 Entretien

- Cette pièce d'équipement ne doit être ouverte que par TWTG ou par une personne compétente et selon le guide d'utilisation;
 - La batterie peut être mise à neuf par ces personnes;
 - Ne remplacez la batterie que dans un endroit sans danger;
 - Utilisez uniquement l'ensemble de batterie Tadiran S1P1/SL-2780/323/TWT ;
- Si le boîtier est endommagé, informez immédiatement une personne compétente pour qu'elle vienne récupérer l'équipement;
- Si l'équipement est (ou a été) en contact avec des substances chimiques, nettoyez-le de manière appropriée.

4.1.5 Output parameters

The maximum output parameters are limited by the NEON Transmitter. When selecting the sensor to be used with the transmitter, the following values must be taken into account:

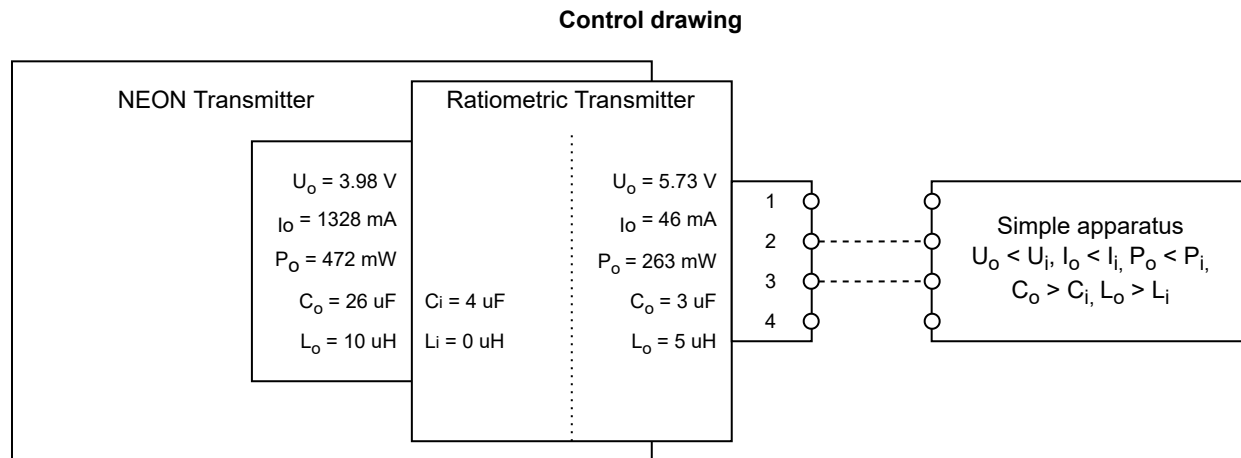


Figure 4: Intrinsic Safety Limiting Values

4.2 Informations générales

4.2.1 Transport et stockage

- Le produit doit être conservé dans son emballage jusqu'à ce qu'il atteigne le site d'installation pour éviter tout dommage pendant le transit;
- Le lieu de stockage doit être sec;
- L'appareil ne doit pas être exposé à des vibrations ou à des chocs pendant le transport et le stockage.

4.2.2 Garantie

- La garantie couvre la période indiquée sur le devis;
- Si l'appareil ne fonctionne pas comme prévu, le client doit contacter TWTG et fournir les éléments suivants:
 - Spécifications du modèle;
 - Numéro de série;
 - Les circonstances dans lesquelles les problèmes sont survenus;
 - Toutes les données précédemment générées;
- La partie responsable des coûts de résolution du problème sera déterminée par TWTG sur la base d'une enquête privée menée par TWTG.

4.2.3 La garantie sera annulée dans les cas suivants:

- Non-respect des spécifications du modèle;
- Modification du produit effectuée par l'utilisateur;
- Entretien non conforme aux spécifications du produit;
- Utilisation dans un endroit non conforme aux spécifications.

5 Provisioning

5.1 User Interface

The product contains one Light Emitting Diode (LED) to communicate with the user. In order to interact with the device a button is present on the right side of the NFC label.

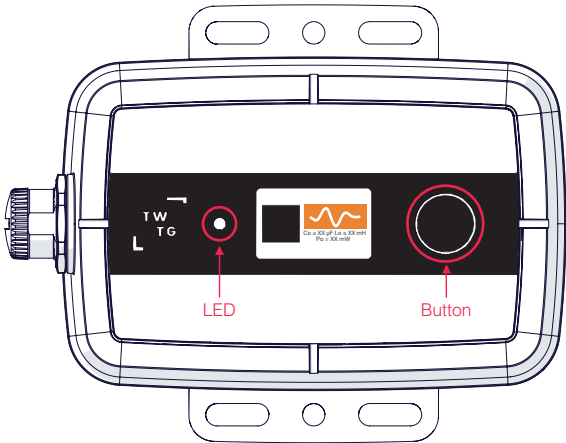
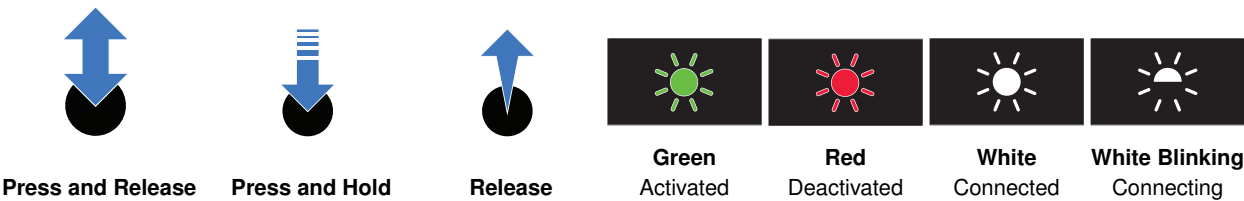


Figure 5: NEON Ratiometric Transmitter Interface

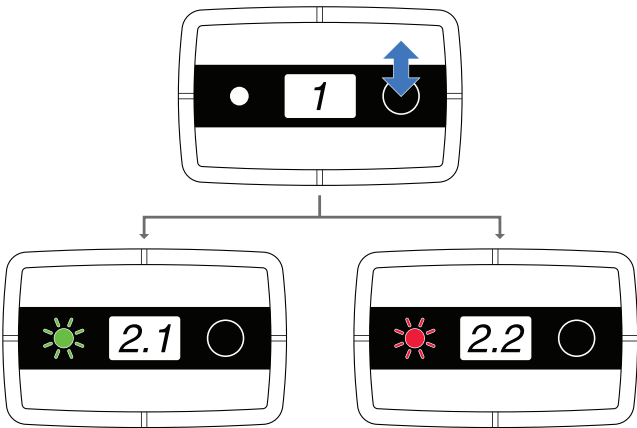
5.2 Operating the Device

5.2.1 Read device status

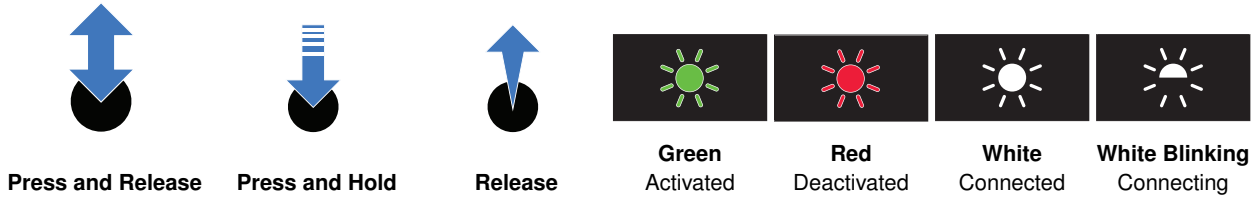


1. Press and Release the button button:

- 2.1 Green: Device is activated
- 2.2 Red: Device is deactivated



5.2.2 Device Activation



1. Press & hold the button and the device will immediately show it's status:

- 2.1 Red: Deactivated, or
- 2.2 Green: Already Activated

Note: Release the button if it's already activated otherwise the deactivation procedure will start.

3. Hold the button for 5 more seconds to start activation:

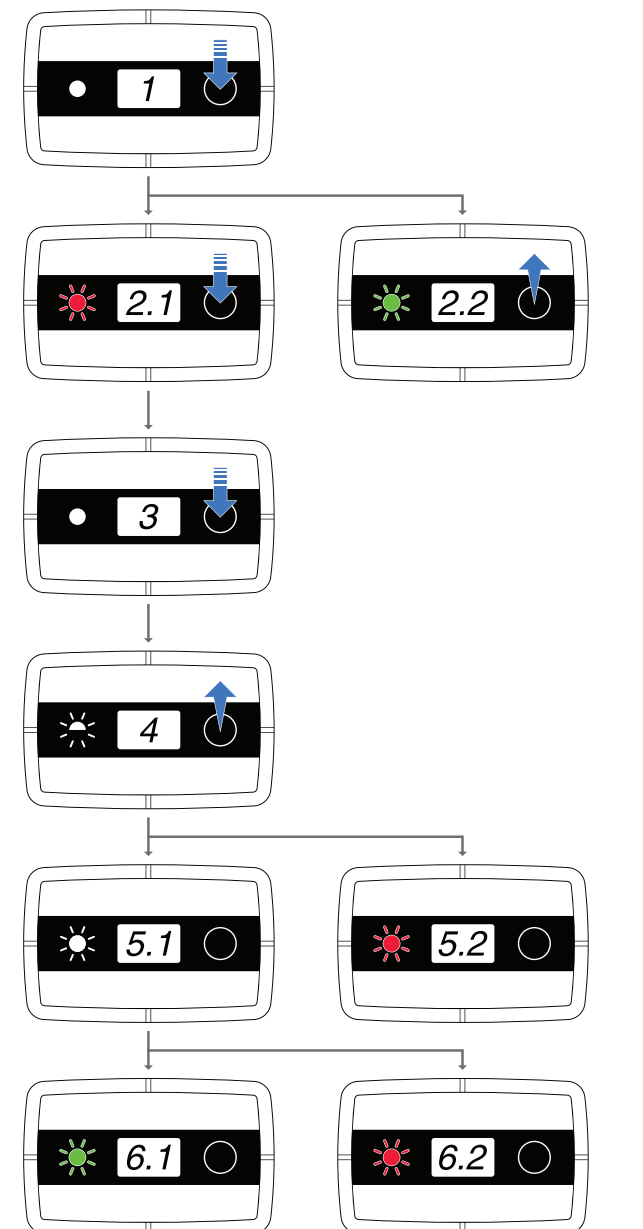
- 4. Blinking White: Connecting to the Network

5. Within a typical maximum of 3 minutes* the device will show:

- 5.1 White: Sending activation message, or
- 5.2 Red: Network failure

6. Within a typical maximum of 3 minutes* the device will show:

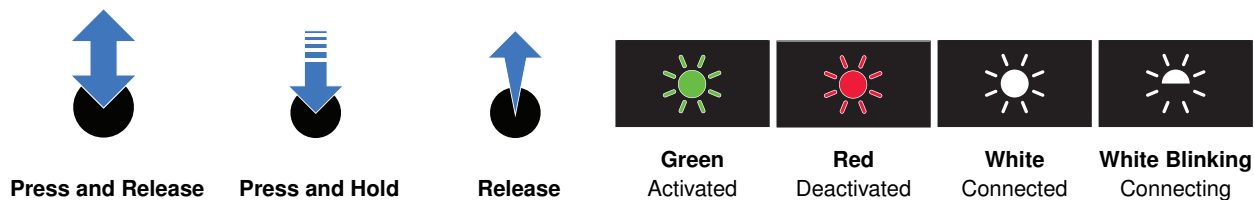
- 6.1 Green: Activation succeeded, or
- 6.2 Red: Network failure



Notes:

- **All timeout and retry values are valid for the default configuration, the maximum timeout might be longer when process is performed repeatedly due to RF duty cycle limitations.*

5.2.3 Device Deactivation



1. **Press and hold the button, the device will show:**

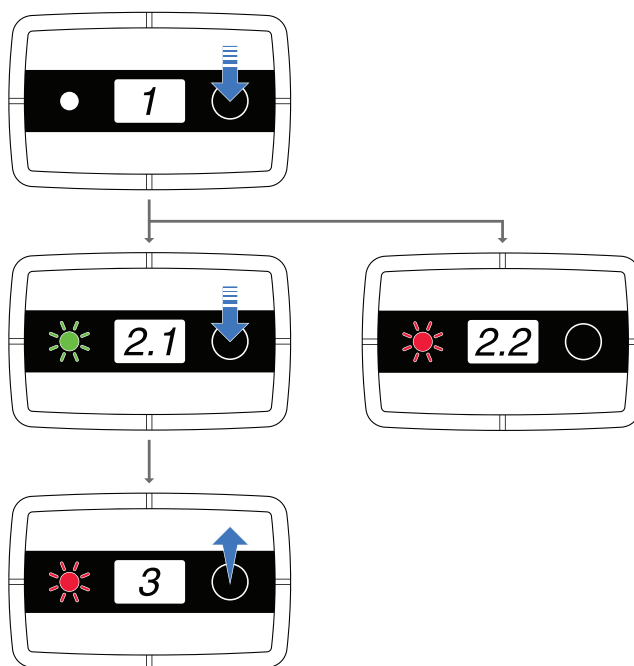
- **2.1 Green:** Activated
- **2.2 Red:** Already Deactivated, or

Note: Release the button if it is already deactivated otherwise the activation procedure will start.

Hold the button for 5 more seconds if the device is activated:

- **3. Red:** Deactivation Succeeded

NOTE: The deactivation procedure will always succeed. An attempt for sending a status message will be performed. This will not be shown as blinking white LED.



6 Installation

6.1 Precautions

WARNING

- Avoid placing wiring close to noise sources such as large motors or power supplies;
- To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter;
- Only connect the M12 connector to the Ratiometric Transmitter when there is no explosive atmosphere present;
- The equipment must be installed in accordance with EN 60079-14.

6.2 Mounting Bracket Dimensions

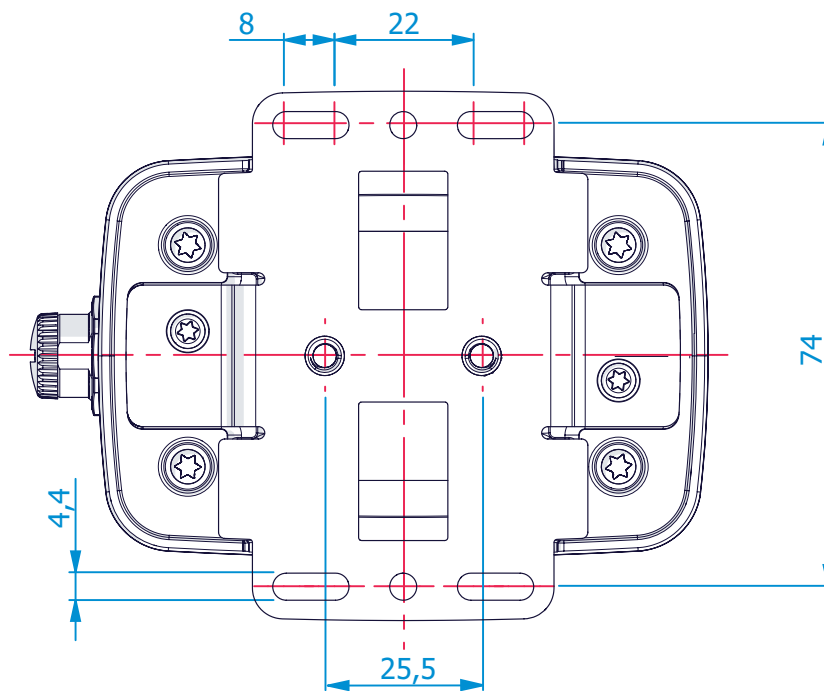


Figure 6: Product Dimensions

6.3 Installation Methods

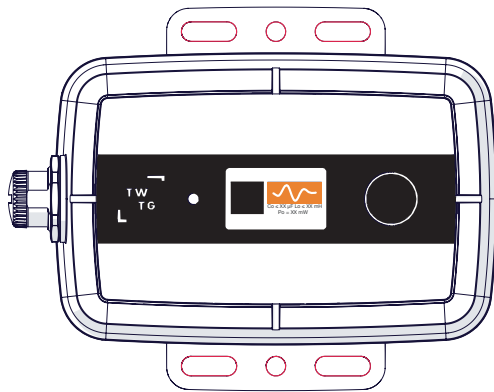
6.3.1 Installation using mounting holes

Place the bracket against the (flat) desired surface and use the screw holes or slots to fix in place.

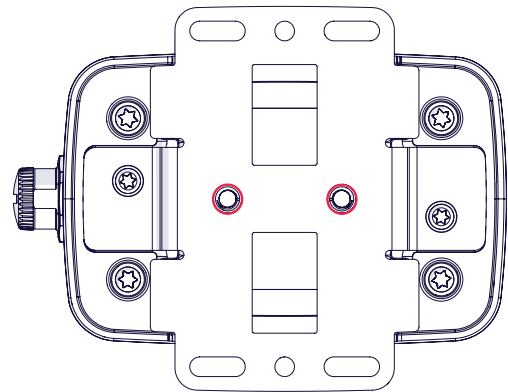
Note: Slots and screw holes are designed for M4 fasteners.

6.3.2 Installation using threaded holes

Note: Threaded hole accepts M5 bolts.



(a) Mounting holes



(b) Threaded mounting holes

6.3.3 Installation using bandclamp

The Neon Ratiometric Transmitter can be mounted to a pole using a 14 mm wide band clamp, other sizes are not recommended.

Procedure:

1. Place the band clamp through the bracket;
2. Place the band clamp around the pole and cut to size;
3. Place the band clamp through the adjustable tightener and fold around the bottom with a plier;
4. Place the band clamp around the pole with the (adjustable) tightener and fix it in place.

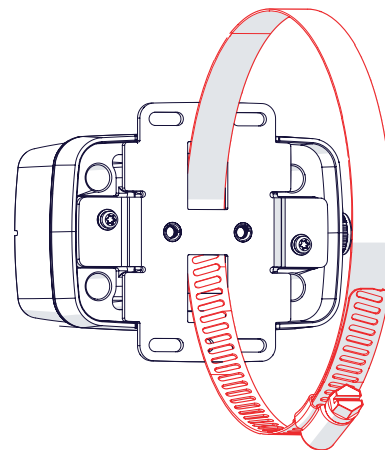


Figure 8: Installation using bandclamp

7 Product Functionalities

A detailed description of setting-up communication and configuring device settings can be found in "Communication protocol", refer to table 2. [Related documents](#).

7.1 Application Event Message

The Ratiometric Transmitter measures and reports the pressure either by set intervals (a timer-based trigger) or a condition-based trigger.

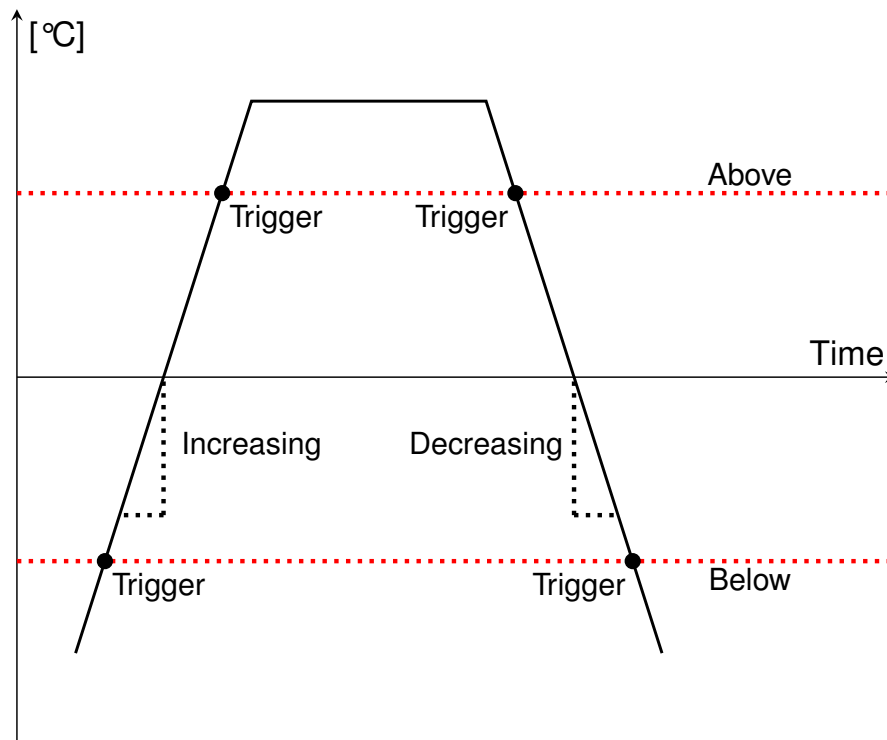


Figure 9: Application trigger event message

7.1.1 Event-triggers

Event-messages are triggered on one of the following triggers.

- **Timer (periodic):**

The timer trigger is configurable through the following configurations:

- *pressure_measurement_interval_seconds*
Interval in seconds, at which the pressure sensor is read.
- *periodic_event_message_interval*
Interval in the number of measurements at which the application event messages are periodically sent. The periodic counter is reset on every event message.

- **Condition:**

A condition-based trigger can be either of the following triggers:

- *Above*
If the maximum pressure is above the *pressure_threshold* then the condition is true. A transition of the condition from false to true or true to false will trigger an event message.

- *Below*
If the minimum pressure is below the pressure_threshold then the condition is true. A transition of the condition from false to true or true to false will trigger an event message.
- *Increasing*
The condition is true when the current pressure is at least pressure_threshold higher than the minimum pressure in the measurement_window (The maximum number of measurements to observe delta pressure to trigger an event). A transition of the condition from false to true or true to false will trigger an event message.
- *Decreasing*
The condition is true when the current pressure is at least pressure_threshold lower than the maximum pressure in the measurement_window (The maximum number of measurements to observe delta pressure to trigger an event). A transition of the condition from false to true or true to false will trigger an event message.

7.1.2 Content application event message

- **Pressure**

The connected sensor pressure in units of 0-365.6 PDI (0-25 Bar):

- Maximal;
- Average;
- Minimal.

- **Trigger**

Source of the trigger for the application event message:

- "timer" (0);
- "condition_0" (1);
- "condition_1" (2);
- "condition_2" (3);
- "condition_3" (4).

- **condition_n**

The current state of each condition.

7.2 Device Status

Besides reporting the application pressure as discussed previously, the Ratiometric Transmitter also reports on the device status itself. This is done through a device status messages. A device status message is sent periodically and includes a range of device health parameters, including the following:

- event_counter;
- battery_voltage;
- PCB temperature;
- tx_counter;
- avg_rssi;
- avg_snr.

See "Communication Protocol" in [Related documents](#) for a detailed explanation.

7.3 Default Configuration

The Ratiometric Transmitter is delivered with a default configuration. The default configuration includes:

- Measurement interval of 15 mins;
- Event-based message at the time of each periodic trigger with an interval of 15 measurements. ($15 * 15 = 225$ mins);
- Device status message interval of 24 hours;
- Enabled confirmation message on all messages.

See "Communication Protocol" in [Related documents](#) for a detailed explanation of all default configuration values.

8 Maintenance

8.1 Battery Specifications

Specifications	
Manufacturer	Tadiran
Part number	Tadiran S1P1/SL-2780/323/TWT
Quantity	1
Battery Type / Size	Type D
Chemistry	Lithium Thionyl Chloride
Terminal Type	Standard
Dimensions	61 x 32.5 mm
Battery Life	>7 years*

Table 8: Battery Specifications

**Note: Applicable to default configuration. Battery lifetime depends on average ambient temperature, network quality and device configuration.*

8.1.1 Battery Replacement

The battery can be replaced using the battery replacement kit. See [Accessories and Spare Parts](#). This kit consists of the following parts:

- 1X Tadiran S1P1/SL-2780/323/TWT
- 4X O-Ring
- 1X Gasket

8.1.2 Required tools

- Torque screwdriver with TX10 bit;
 - See [Assembly of device](#) for torque settings;
- ESD strap.



IMPORTANT: ESD Sensitive Electronics

The product shall be installed in such a way that the risk for electrostatic discharges is minimised.

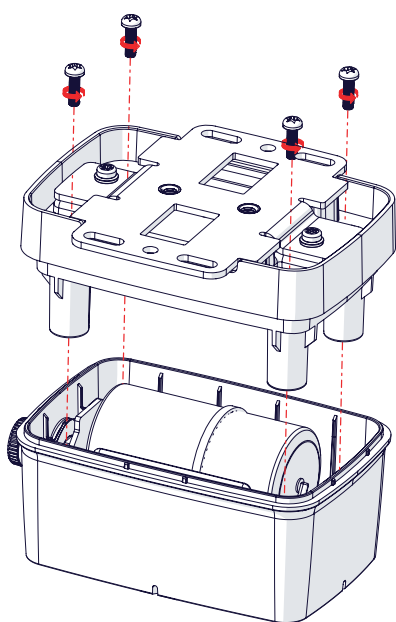
- Take proper precaution such as a grounded wrist strap and avoid touching the electronics board

8.1.3 Disassembly of device

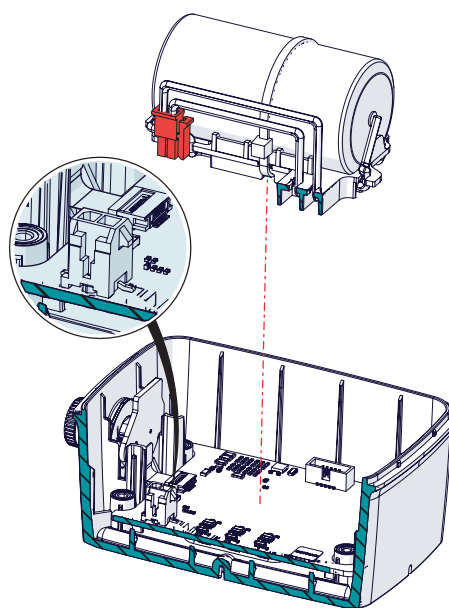


WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

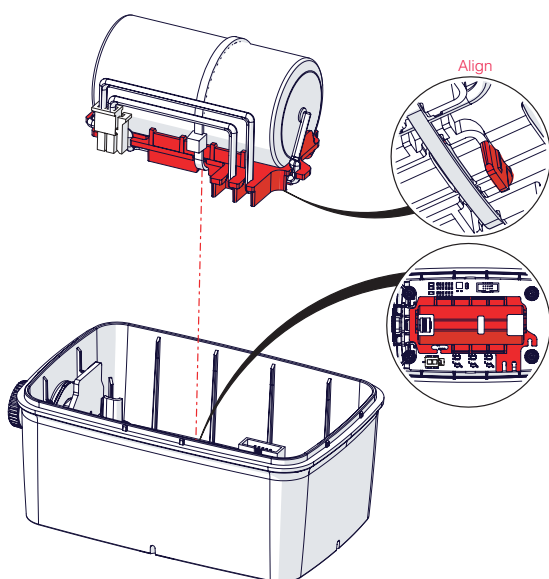
- This equipment shall only be opened by TWTG or by a competent instructed person;
 - The battery is serviceable by said persons;
 - Always disconnect M12 connector from Transmitter before replacing battery assembly



Step 1: Remove the four M3 screws and remove the bottom housing



Step 2: Before removing the battery assembly, disconnect the battery connector (marked in red)



Step 3: Place the new battery assembly. Use the rib on the battery cradle (marked in red) to align with designated cut out in top housing and connect the new battery connector

8.1.4 Built-In Self-Test Procedure

When the device is deactivated a built-in self-test is performed upon insertion of the battery. This test is not executed when the device is already activated. Use the deactivation sequence as described in [Device Deactivation](#) and reinsert the batteries if a self-test is needed.

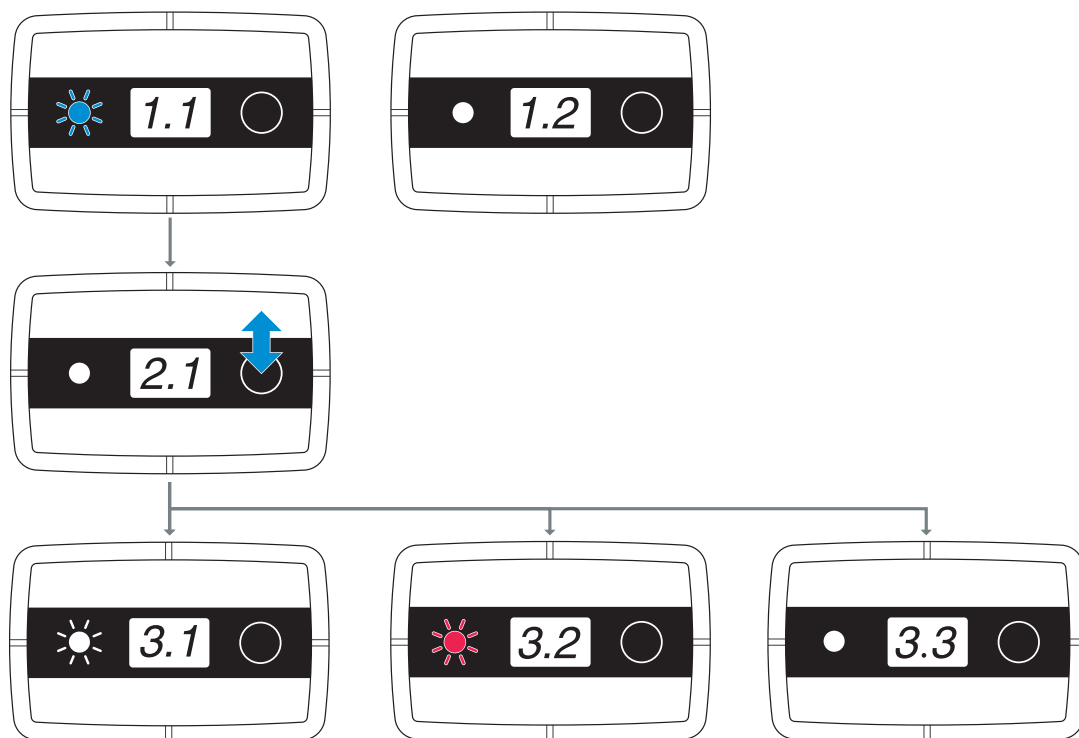


Figure 10: Built-in self-test

1: After successful replacement of the battery the device will go into self test mode. This mode is activated for 30 seconds;

- 1.1:** A BLUE LED will show after inserting the battery;
- 1.2:** If no LED is shown, check the battery and / or device;

2: Start the test;

- 2.1:** Press and Release the button;

3: Test Results;

- 3.1:** LED turns bright WHITE for 5 seconds. Self test passed;
- 3.2:** LED turns RED, self test failed. Check device;
- 3.3:** No LED, no response from device. Check device.

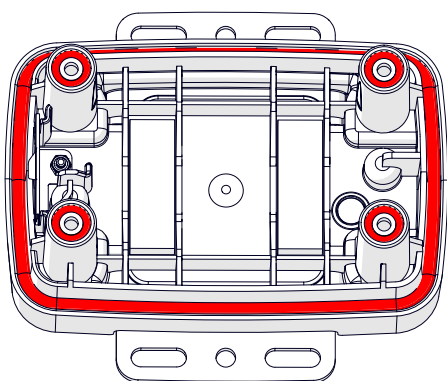
After pressing the button once and passing the self-test the device will leave the self-test mode. Pressing the button again will show the device status, as explained in [Read device status](#).

8.1.5 Assembly of device

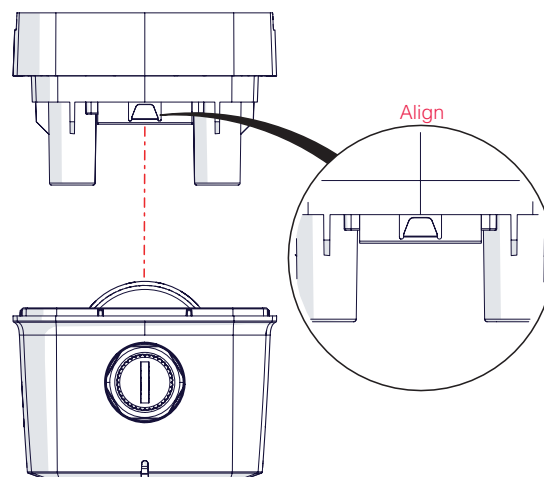


IMPORTANT - USE THE SPECIFIED TORQUE SETTINGS

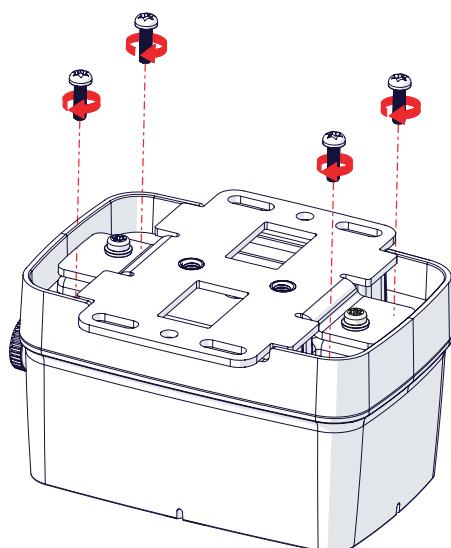
- Use a torque screwdriver to verify the applied torque;
- Failure to do so can result in water ingress;
- Improper assembly will void the warranty.



Step 4: Replace the 4 o-rings surrounding the screws and the gasket in the outer edge of the bottom housing



Step 5: Place the bottom housing back onto the top housing. For correct orientation; Make sure that the bottom housing grounding plate is aligned with the top housing M12 connector



Step 6: Tighten the four M3 screws to fix the bottom housing. Use a torque screwdriver to set the maximum torque to 1 Nm

9 Accessories and Spare Parts

Type	Order code	Description
Battery Replacement Kit	5029_N02-09_Battery- Replacement-Kit	Including 1 battery assembly, 4 O-Rings, 1 gasket
RT Sensor cable	DS-EC-02-AB03	

Table 9: Available Accessories & Spare Parts

10 EU Declaration of Conformity

This product complies with the following standards:

1. ATEX Directive (2014/34/EU):
 - EN 60079-0:2012 +A11:2013
 - EN 60079-0:2018
 - EN 60079-11:2012
2. Radio Equipment Directive (2014/53/EU):
 - EN 300 220-1 V3.1.1
 - EN 300 220-2 V3.2.1
 - EN 301 489-1 V2.2.3
 - EN 301 489-3 V2.1.1
 - EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019
 - EN 62311:2020
 - EN 60529:1991 + A1:2000 + A2:2013
3. WEEE Directive 2003/1008/EC
4. RoHS (2011/65/EU)

For the full Declaration of Conformity see:

www.twtg.io/legal

11 FCC and ISD Declarations

This device complies with part 15 of the FCC Rules and to RSS of Industry Canada. 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.

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, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de Classe B est conforme à la norme Canadienne ICES-003. CAN ICES-003(B) / NMB-003(B)

Revision History

Revision	Date	Author(s)	Description
A1	28-10-2022	SvW	Concept version
A2	24-11-2022	WK	Updated FCC/ISED declaration