

NEON Sonic Steam Trap Monitoring

Product Manual

This document applies to the NEON Sonic Steam Trap Monitoring, Ex Variant (DS-LD-SX-02-00)



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1 NEON

1.1 NEON Product Introduction

IMI TWTG NEON technology represents a standardised approach to collecting data points from operational environments. This creates a general approach to integrated data collection within existing IT ecosystems.

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

The LoRaWAN network provides industrial operations with a secure solution that can scale up tens of thousands of sensors. It can cover entire sites with only a few gateways while the low-power approach extends the lifetime of our NEON product range.

Knowledge is the basis of good decision making.

The NEON Sonic for Steam Trap Monitoring utilises IMI TWTG innovative firmware integrated in the NEON Sonic hardware to monitor steam trap performance. The solution is designed to be implemented within minutes and uses on-board intelligence to determine the operating state of the monitored steam trap, either blocked, leaking, healthy.

The NEON Sonic sensor uses non-intrusive acoustic and temperature monitoring for process temperatures up to 450°C. Real time values, and alarms can be analysed using SolidRed or integrated into existing systems.

1.2 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.

IMI TWTG offers radio network planning and IT-architecture design services to fully integrate the products in the NEON product line. For more information go to <https://processautomation.imiplc.com/services/digital-tools/solidred-industrial-iot-suite>

1.3 Related Documents

Table 1.1: Related Documents

Document type	Document name
Data Sheet	NEON_Sonic-Steam-Trap-Monitoring_Datasheet_DS-LD-SX-02-00_4000_XX
Communication Protocol	NEON_Communication-Protocol_Steam-Trap-Sensor-v1_XX

This manual is meant to be used with products from a specific production batch;

- See Product Type Identification for an explanation on how to retrieve the production batch code from the serial number;
- See chapter Product Type Identification to determine the revision of the product.

All product documentation from the NEON product line can be found on <https://processautomation.imiplc.com/products/digital-and-iiot/neon-sonic-for-steam-trap-monitoring-ex>

1.4 Service Desk for NEON products

In case you have any technical questions, or an issue to report please use the <https://twtg.atlassian.net/servicedesk/customer/portals>

2 Product Specifications

Product name	
Product name	NEON Sonic - Steam Trap Monitoring

2.1 Product specifications transmitter

Environmental conditions transmitter	
Operating temperature range	−40 °C .. 65 °C (−40 °F .. 149 °F)
Operating humidity range	0% RH .. 100% RH
Storage temperature range	10 °C .. 30 °C (50 °F .. 86 °F)
Water and dust resistance	IP66
Altitude	Up to 3000 m (9842 ft)
Usage	Indoor and outdoor
Mechanical	
Enclosure material	Molded plastic
Weight Transmitter (including mounting bracket)	330 g (11.64 oz)
Dimensions	106 mm × 86 mm × 57 mm (4.17" × 3.39" × 2.24")
Maximum cable length	Limited by equipment output parameters
Installation	
Transmitter	Band clamp or bolts (not included)
Power supply	
Battery rated voltage	3.6 V
Battery rated capacity	17 Ah
Battery	
Battery type (replaceable)	1x Type D
Battery life	14 years, at 25 °C (77 °F) (Depending on average ambient temperature, type of sensor and network quality)
Conditions, at 25 °C (77 °F)	Message interval: 1 message / 12 hours Measurement interval: 12 hours
Connectivity	
Protocol	LoRaWAN (private LoRaWAN)
Frequency band	868 MHz, 915 MHz and 923 MHz compatible
Maximum RF output power	+14 dBm
Provisioning	
Data matrix code/ Serial number	Serial number (read only)
NFC	Serial number (read only)

2.2 Supported sensors

Supported sensor	
Product name	NEON Sonic Ex Variant
Application	Steam Trap Monitoring
Type identification	DS-SX-02-00
Mechanical	
Weight sensor	530 g (18.69 oz)
Functionality	
Supported Steam Trap types	ThermoDynamic ThermoStatic Float Inverted Buckets Bimetallic
Independent event-based message triggers	1. Timer 2. Button press 3. Steam trap condition alert
Adjustable measurement interval	Flexible, 1 minute resolution (relative or absolute)
Adjustable message interval	Always, or on condition
Time synchronisation	Time synchronisation for multiple sensors Accuracy 12mSec
Steam trap fault indicator	Edge Intelligence spectral analysis 1. Blocked Trap 2. Leaking Trap
Firmware update over air	In accordance with LoRa Alliance specifications: TS006 - 1.0.0 TS005 - 2.0.0 TS004 - 2.0.0
Measurements	
Measuring range	15 kHz ...85 kHz (3 dB points)
Acoustic overload point	130 dBSPL
Temperature range	Sensor: -40 °C .. 260 °C (-40 °F .. 500 °F) Sensor + Extension: -40 °C .. 450 °C (-40 °F .. 842 °F) Ambient: -40 °C .. 65 °C (-40 °F .. 149 °F)
Installation	
Sensor	Pipe mount waveguide (not included)
Sensor + Extension	Pipe mount waveguide, with modularly extendable thermal riser (not included)

2.3 Certifications

Certifications	
ATEX/IECex rating	Ex II 1G Ex ia IIC T4 Ga
ATEX/IECEx standards	EN/IEC 60079-0:2018 EN 60079-11:2012 IEC 60079-0:2017 IEC 60079-11:2011
ATEX/IECEx certificates	22ATEX0004X / DEK22.0004X
cFMus Rating	IS Class I, Division 1, Group ABCD T4 Class I, Zone 0 AEX/Ex ia IIC T4 Ga
cFMus standards	FM Class 3600 FM Class 3610 FM Class 3810 ANSI/UL 60079-0 ANSI/UL 60079-11 CAN/CSA-C22.2 No. 61010-1 CAN/CSA-C22.2 No. 60079-0 CAN/CSA-C22.2 No. 60079-11
cFMus certificates	FM22US0061X / FM22CA0043X
CE	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 (pending*) EN 62311:2020 EN 60529:1911+A1:2000+A2:2013 (pending*)
UKCA	Radio Equipment Regulation 2017
INMETRO standards	ABNT NBR IEC 60079-0:2020 Versão Corrigida:2024 ABNT NBR IEC 60079-11:2013 Versão Corrigida:2017
INMETRO certificates	DEK25.0008X
WEEE	Directive 2033/108/EC
RoHS	2011/65/EU

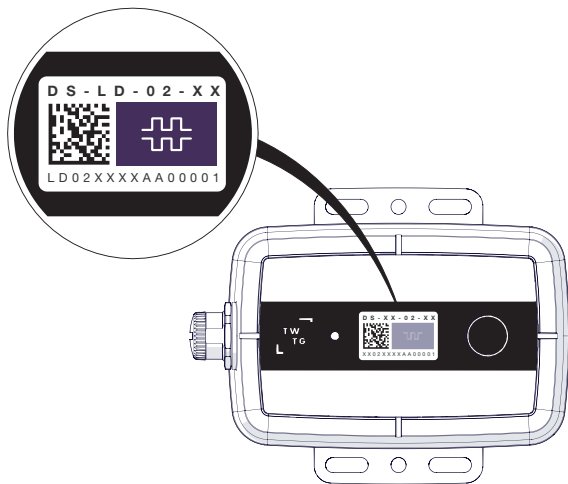
* Certification by Dekra is expected to be completed by Q3 2026.

3 Product Identification

3.1 Product Type Identification

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.

The Data Matrix Code label also represents the serial number of the device. The serial number can be used as an unique identifier for provisioning and registration. See Section 3.1 for a detailed label description.



AA-BB-CC-DD

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

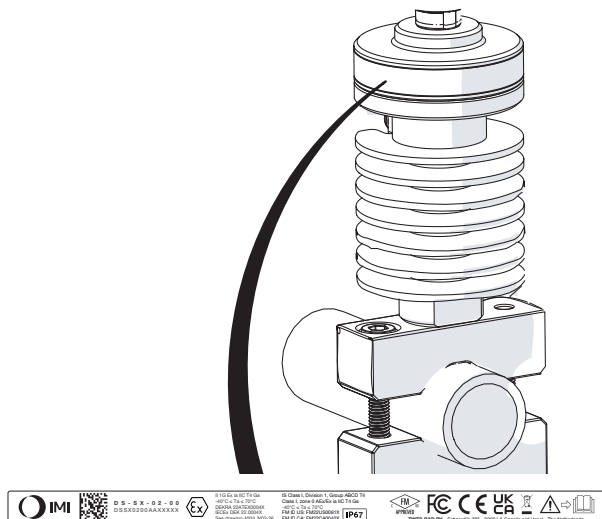
Product Nomenclature

AA-BB-CC-DD-EEEE

AA - Product Variant	LD = Transmitter
BB - Product Revision	E.g. 02
CC - Product Region	E.g. 00 = Global
DD - Production Year	E.g. 22 = 2022
EE - Production Batch	E.g. AA
FFFF - Serial Number	E.g. 00001

Serial Number

Figure 3.1: Transmitter product identification



AA-BB-CC-DD

AA - Product Family	DS
BB - Product Variant	SX = Sonic Sensor
CC - Main Revision	02
DD - Region	E.g. 00 = Global

Product Nomenclature

AA-BB-CC-DD-EEEE

AA - Product Variant	SX = Steam Trap Sensor
BB - Product Revision	02
CC - Region	E.g. 00 = Global
DD - Production Batch	E.g. AA
EEEE - Serial Number	E.g. 00001

Serial Number

Figure 3.2: Steam Trap Sensor product identification

3.2 Product Dimensions

3.2.1 Transmitter Direct Mount

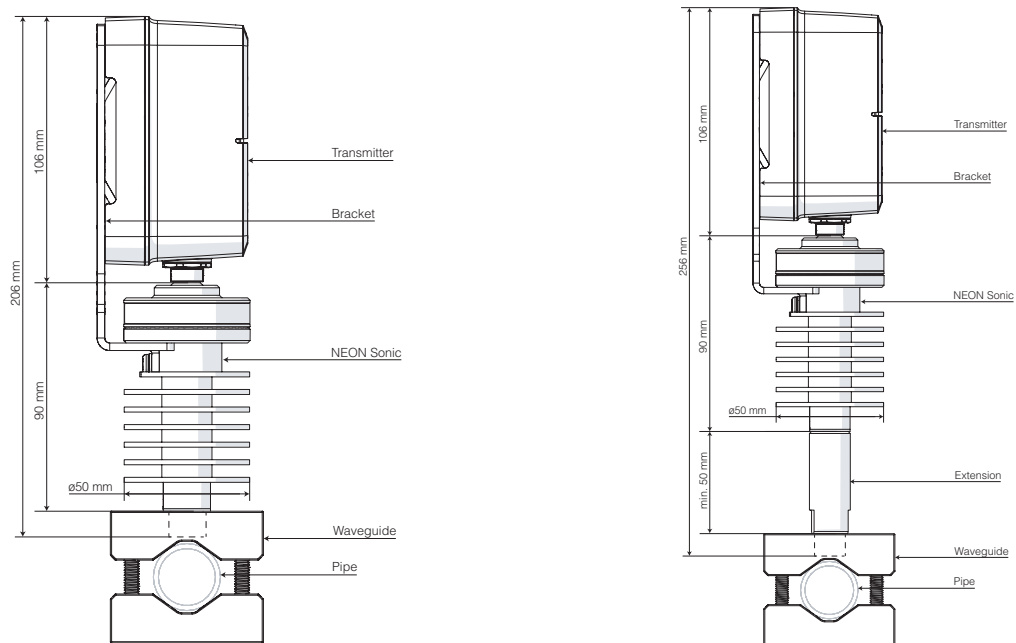


Figure 3.3: Neon Transmitter Direct Mount & Direct Mount + Extension

3.2.2 Transmitter Remote Mount

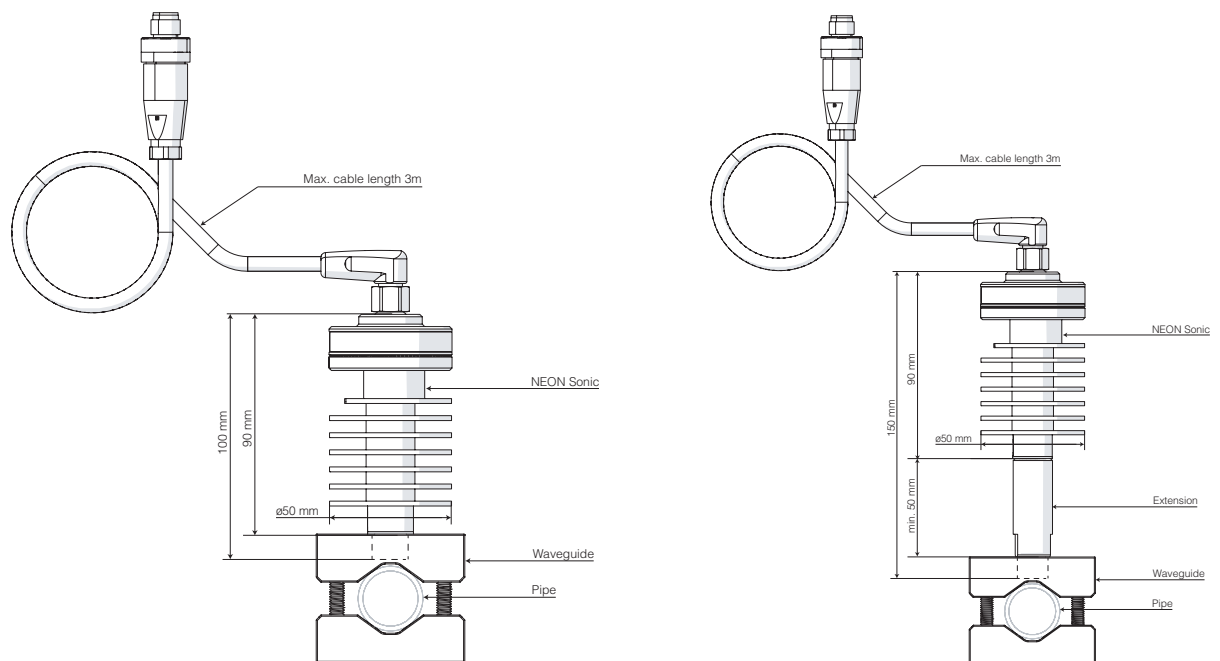


Figure 3.4: Neon Transmitter Remote Mount & Remote Mount + Extension

4 Installation



WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD

- 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 Transmitter when there is no explosive atmosphere present;
- The equipment must be installed in accordance with EN 60079-14.



WARNING - PHYSICAL INJURY - HIGH TEMPERATURES

- Hot surfaces may be present. Follow all applicable local health and safety regulations and wear appropriate personal protective equipment during installation.

4.1 Installation and orientation

Horizontal orientation is the correct installation due to potential temperature rises from local pipework or other heat sources. The below images show correct and not-correct installation orientations.

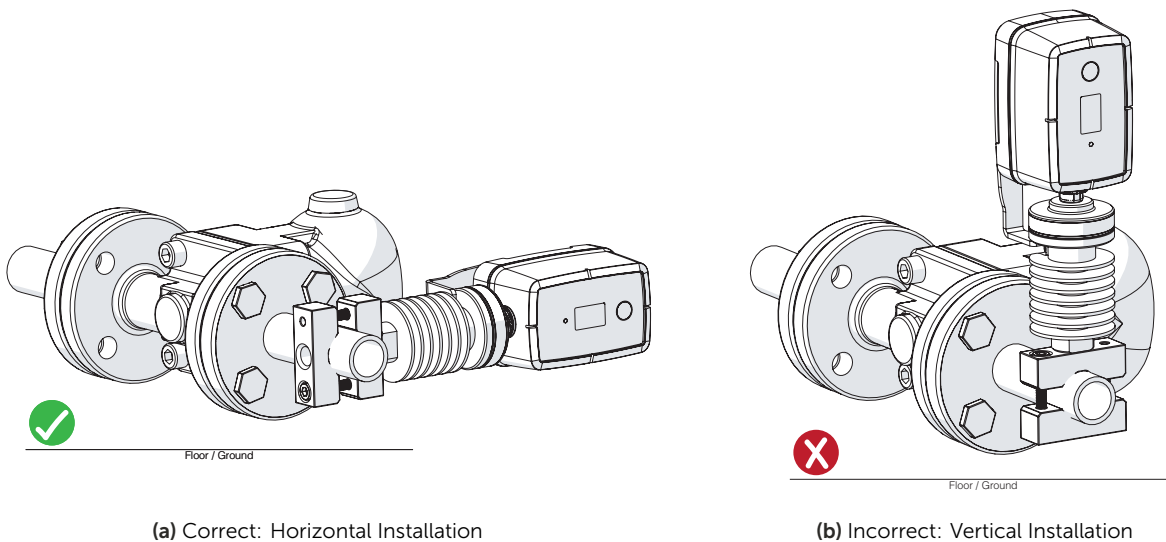


Figure 4.1: Correct and not-correct installation orientations

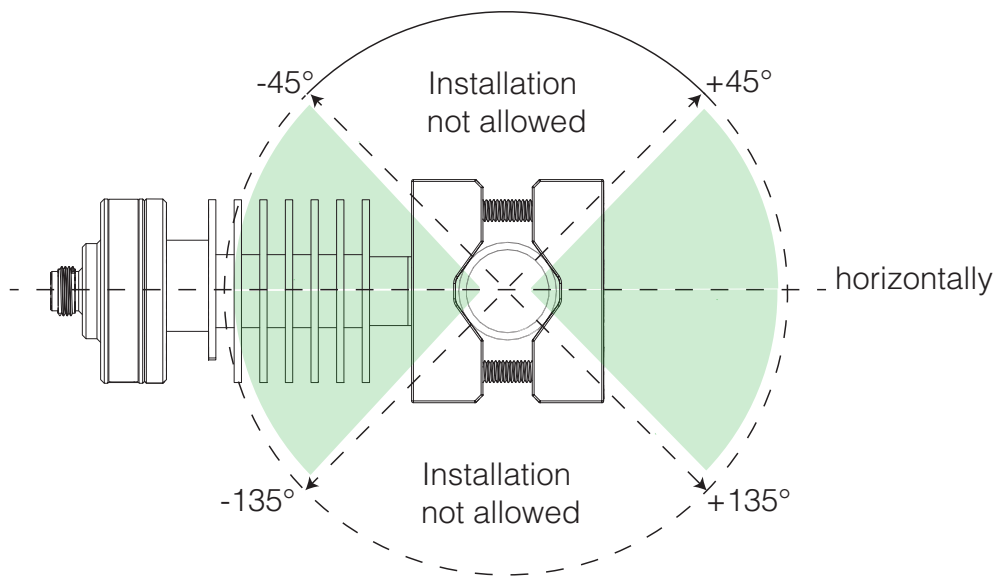


Figure 4.2: Detailed Installation Overview

4.2 Installation Remote Mount

For Remote Mount, use the standard included bracket on the transmitter.

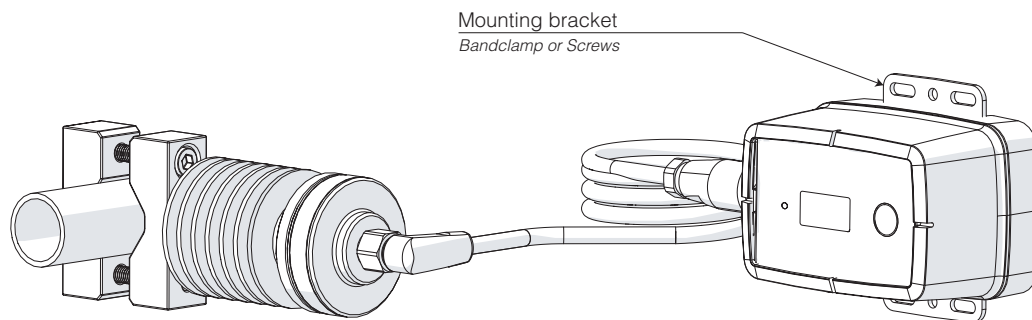


Figure 4.3: Remote Mount with bracket

Additionally, it is essential that no pipe insulation should cover either the heatsink or the electronics enclosure. Failure to observe can lead to degraded performance.

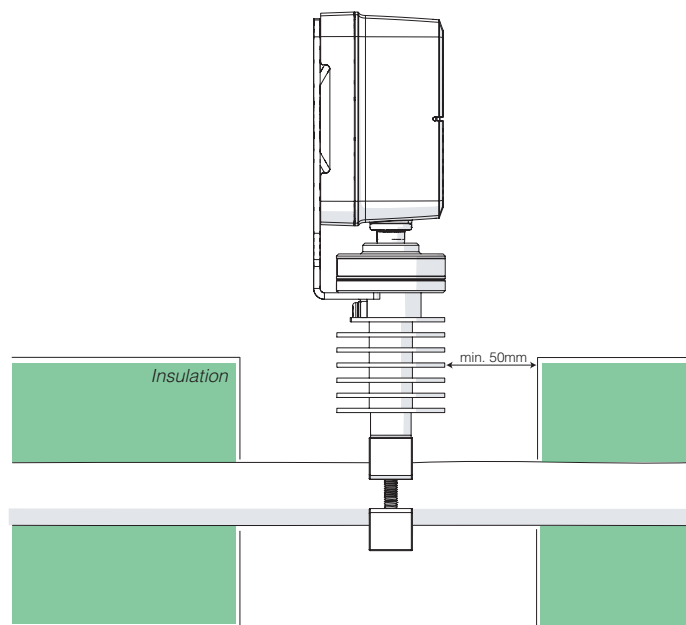


Figure 4.4: Installation distances (top view)

4.3 Installation Layout

The NEON Steam Trap is intended to be installed next to a steam trap with the device located on the condensate side of the pipework.

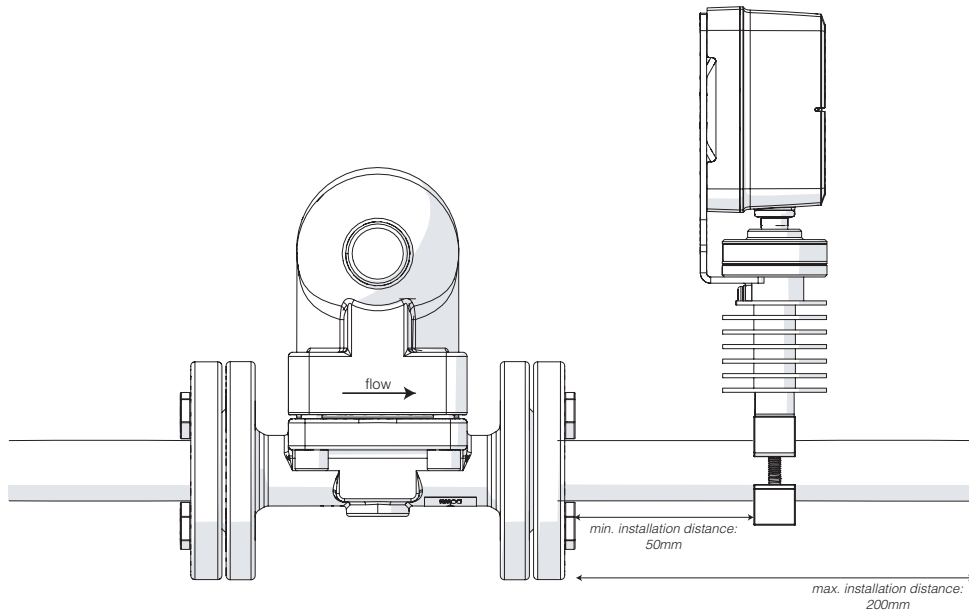


Figure 4.5: Installation layout (top view)

4.3.1 Pipework connection

The NEON Steam Trap is fastened to the steam pipework using a waveguide. The waveguide should be tightened to 5 N m on to the steam pipe using a socket and ratchet. Care should be taken not to overtighten or damage can occur.

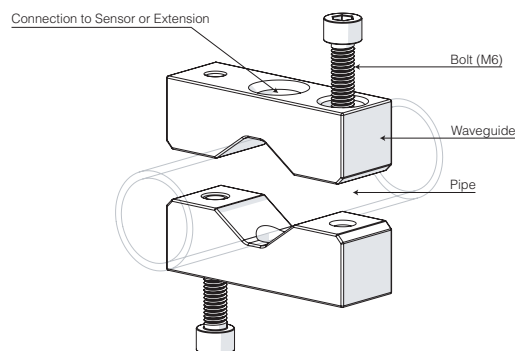


Figure 4.6: Pipework connection (top view)

4.3.2 Extension

Additional length can be added with extensions. To be used in case of pipe insulation and temp. up to 450 °C

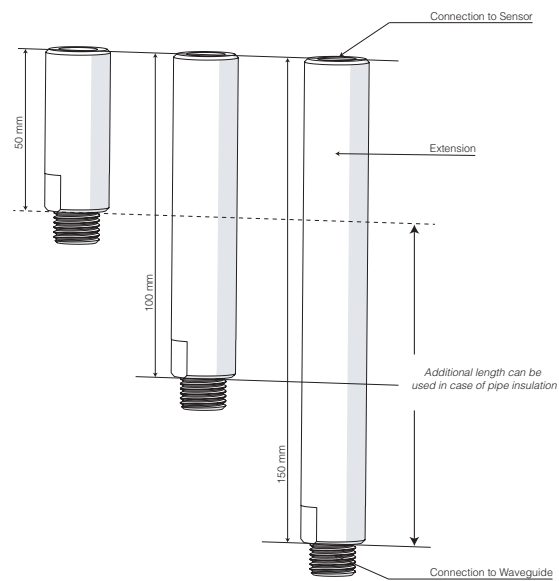


Figure 4.7: Extension

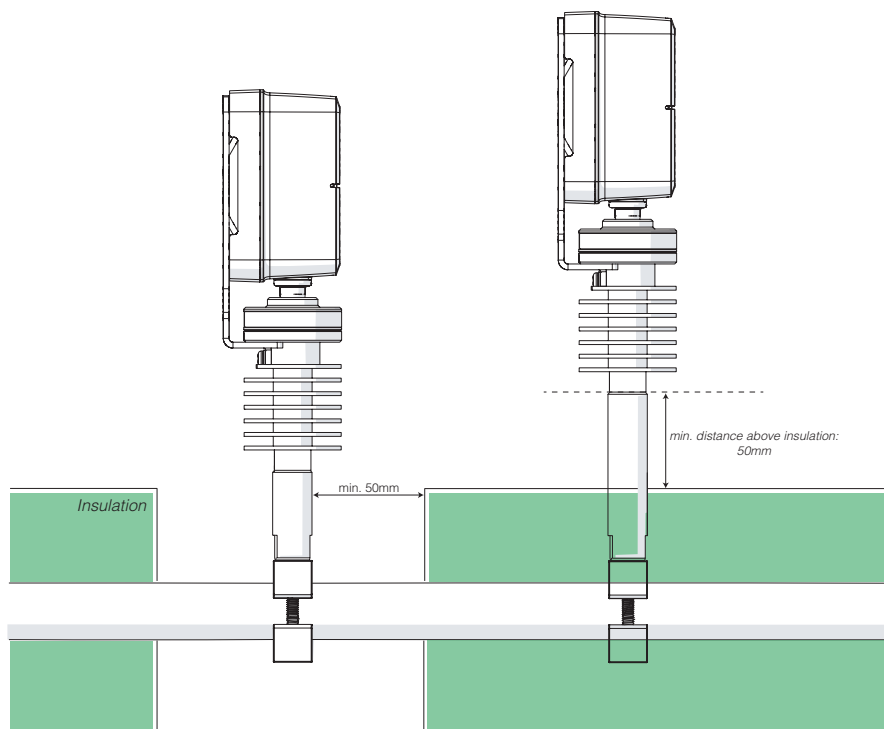


Figure 4.8: Installation distances with extension (top view)

4.4 Activation

After physical installation, the device must be activated before it can be used. As part of the activation process, the device will perform a calibration process in the background. For the calibration process to be successful, the pipeline should be pressurized and the steam trap should be operating under normal conditions. For activation instructions, see Section 5.2.2.

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.

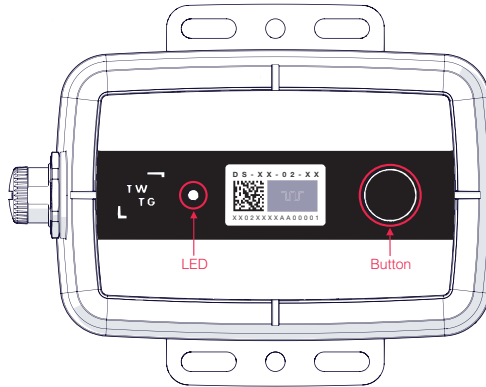


Figure 5.1: NEON Transmitter Interface

5.2 Operating the Device



Press and Release



Press and Hold



Release



Red (Illuminated 2 s)
Deactivated



Red (Illuminated)
Failed



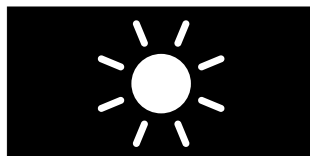
Green (Illuminated 2 s)
Activated



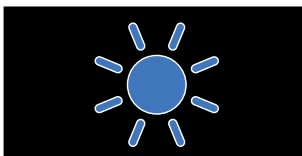
Green (Illuminated)
Passed



White (Blinking)
Connecting



White (Illuminated)
Calibrating



Blue (Illuminated)
Action / Handling Required



Blue (Flashing each second)
Button is being hold

5.2.1 Read device status

1. Press & release the button and the device will immediately show its status:

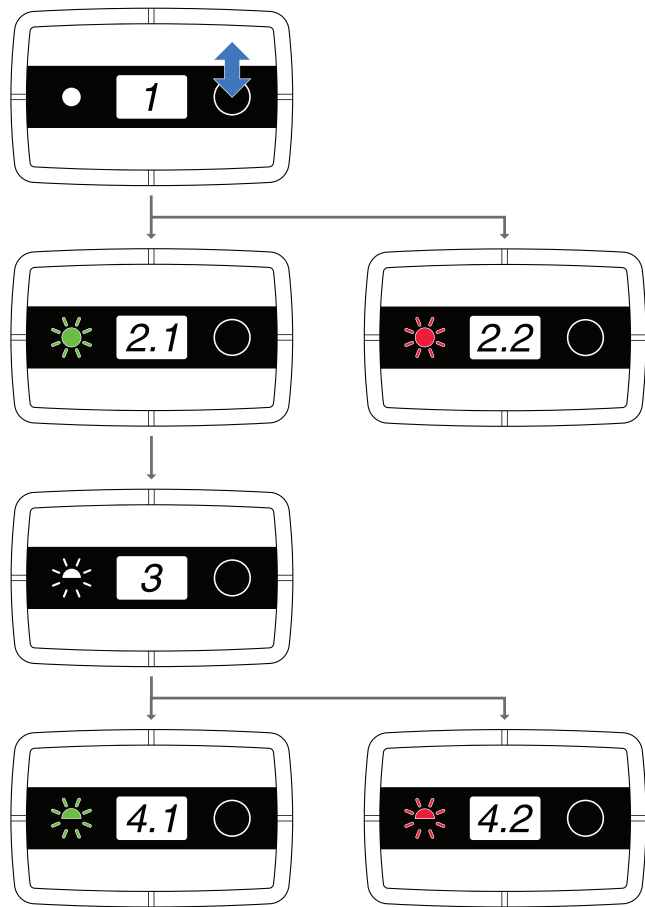
- **2.1 Green (Illuminated):** Device is activated
- **2.2 Red (Illuminated):** Device is deactivated

If the device is activated it will try to send the Device Status message over LoRa (using default configuration):

- **3. White (Blinking):** Connecting to network

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

- **4.1 Green (Blink 2x):** Message sent, or
- **4.2 Red (Blink 2x):** Failed to connect to send message / connect to network



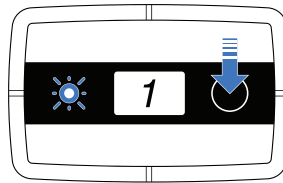
Notes:

- The NEON Transmitter can be configured to send a Sensor Data message upon a button press. In this configuration the Sensor Data message will be sent after the Sensor Event message;
- *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.

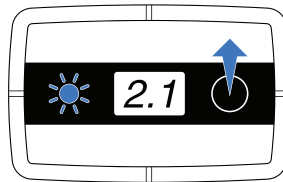
5.2.2 Device Activation

1. Press & hold the button for 5 seconds

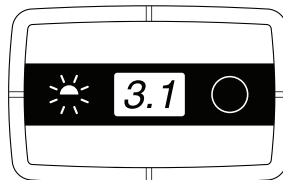
During the button hold the LED will blink Blue each second.



2. After holding the button for 5 seconds the device will first check the LoRa network:

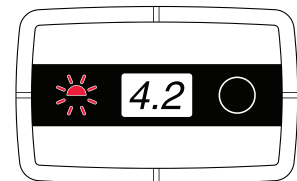
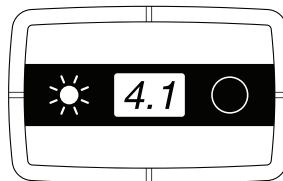


- **3.1 White (Blinking):** Checking LoRa network



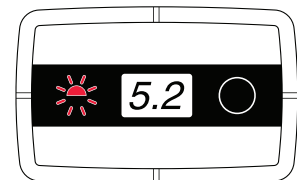
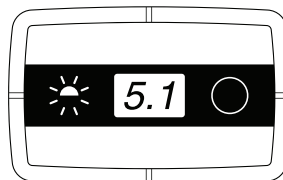
4. Within a typical maximum of 3 minutes* the device will show:

- **4.1 White (Illuminated):** Checking sensor communication
- **4.2 Red (Blink 2x):** Check network



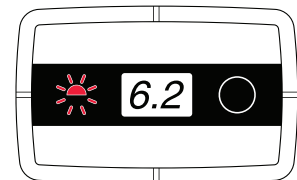
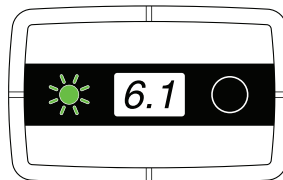
5. Within 30 seconds max. the device will show:

- **5.1 White (Blinking):** Sending activation over LoRa
- **5.2 Red (Blink 2x):** Check sensor



6. After communicating over LoRa, within a typical maximum of 3 minutes*, the device will show:

- **6.1 Green (Illuminated):** Activated, or
- **6.2 Red (Blink 2x):** Check network



7. After activation the device will perform calibration measurements for 24 hours.** During the calibration process, measurement messages will indicate that the device is calibrating. After the calibration process is completed, measurement messages will contain actual measurement data.

Notes:

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

- ***The calibration process is repeated on every activation. The device will only save its latest calibrated state.*

5.2.3 Device Deactivation

1. Normal Configuration

During the button hold the LED will blink Blue each second.

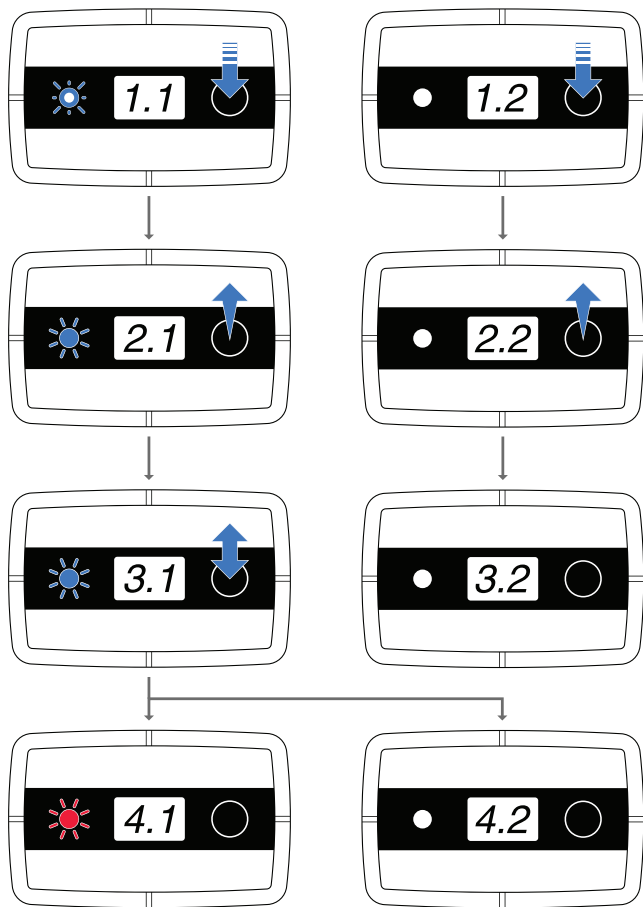
2. After holding the button for 5 seconds the device will show:

- **2.1 Blue (Illuminated):** Action required

3. The user can now release the button and press and release within 5 seconds:

4. If the button isn't pressed and released within these 5 seconds:

- **Red (Illuminated):** Deactivated
- **No LED:** Deactivation canceled



Notes:

- **Secured Configuration**
 - If the device is in Secured Configuration it is not possible to deactivate the device using the button. The device will not react to a press and hold of the button and the LED will stay off. See Diagram 1.2, 2.2 and 3.2 and Communication Protocol in Table 1.1.

6 Warnings

6.1 Specific Conditions of Use



WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD

- For safe installation and use, read and adhere to all safety warnings in the instruction manual;
- The product shall be installed in such a way that the risk for electrostatic discharges is minimized;
- The connector of this equipment may only be used with external equipment as listed in the *Product Matrix*;
- 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.

6.2 Installation



WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

- Under no circumstances shall the equipment enclosure be opened within a hazardous area;
- This equipment shall be installed according to EN-IEC 60079-14 and the installation instructions;
- Ensure that the transmitter is earthed according to EN-IEC 60079-14;
- Ensure that the sensor is earthed according to EN-IEC 60079-14;
- Field devices earth shall be isolated from device M12 connector earth with a dielectric strength of 500 VAC/min;
 - DS-TT-02-XX: The thermocouple or PT100 shall either be earthed or have an infallible isolation to earth with a dielectric strength of 500 VAC/min;
- 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.

6.3 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 EN-IEC 60079-14;
- This equipment is only intended for use in combination with NFC Forum Tag 2 Type technical specification compatible readers;
- This transmitter shall only be used within ambient temperatures between –40 °C .. 70 °C;
 - DS-VB-02-XX: This sensor shall only be used within ambient temperatures between –40 °C .. 80 °C;
 - DS-PS-02-XX: This sensor shall only be used within ambient temperatures between –25 °C .. 85 °C;
 - DS-PG-02-XX: This sensor shall only be used within ambient temperatures between –30 °C .. 80 °C;
 - DS-SX-02-XX: This sensor shall only be used within ambient temperatures between
Direct Mount: –40 °C .. 65 °C / Remote Mount: –40 °C .. 65 °C.

6.4 Service

- This equipment shall only be opened by IMI 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.

6.5 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.

6.6 Warranty

- The warranty covers the period noted on the quotation;
- If the device doesn't function as documented, the customer should contact IMI 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 IMI TWTG on the basis of an investigation conducted by IMI TWTG.

6.7 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.

7 Avertissements

7.1 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;
- Le connecteur de cet équipement ne doit être utilisé qu'avec un équipement externe tel qu'indiqué dans le "product matrix";
- 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.

7.2 Installation



ATTENTION – NE PAS OUVRIR DANS UNE ATMOSPHÈRE EXPLOSIVE

- Le boîtier de l'équipement ne doit en aucun cas être ouvert dans une zone dangereuse;
- Cet équipement doit être installé conformément à la norme EN-IEC 60079-14 et aux instructions d'installation;
- Assurez-vous que le transmetteur est mis à la terre conformément à la norme EN-IEC 60079-14;
- Assurez-vous que le capteur est mis à la terre conformément à EN-IEC 60079-14;
- La terre des appareils de terrain doit être isolée de la terre du connecteur M12 de l'appareil avec une rigidité diélectrique de 500 VAC/min;
 - DS-TT-02-XX: Le thermocouple ou PT100 doit être mis à la terre ou avoir une isolation infaillible à la terre avec une rigidité diélectrique de 500 VAC/min;
- Cet équipement est uniquement destiné aux installations fixes;
- Cet équipement est uniquement destiné à être utilisé dans des zones à accès restreint;
- Pour se conformer aux limites d'exposition RF FCC/IC pour la population générale/exposition non contrôlée, la ou les antennes utilisées pour cet émetteur doivent être installées de manière à fournir une distance de séparation d'au moins 20 cm de toutes les personnes et ne doivent pas être colocalisées ou fonctionner en conjonction avec toute autre antenne ou émetteur.

7.3 Fonctionnement

- 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;
- Ce transmetteur ne doit être utilisé qu'à des températures ambiantes comprises entre -40 °C .. 70 °C;
 - DS-VB-02-XX: Ce capteur ne doit être utilisé qu'à des températures ambiantes comprises entre -40 °C .. 80 °C;
 - DS-PS-02-XX: Ce capteur ne doit être utilisé qu'à des températures ambiantes comprises entre -25 °C .. 85 °C;
 - DS-PG-02-XX: Ce capteur ne doit être utilisé qu'à des températures ambiantes comprises entre -30 °C .. 80 °C;
 - DS-SX-02-XX: Ce capteur ne doit être utilisé qu'à des températures ambiantes comprises entre Montage direct: -40 °C .. 65 °C / Montage à distance: -40 °C .. 65 °C.

7.4 Entretien

- Cette pièce d'équipement ne doit être ouverte que par IMI 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 ;
- Les changements ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler le droit de l'utilisateur à utiliser l'équipement;
- 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.

7.5 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.

7.6 Garantie

- La garantie couvre la période indiquée sur le devis;
- Si l'appareil ne fonctionne pas comme prévu, le client doit contacter IMI 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 IMI TWTG sur la base d'une enquête privée menée par IMI TWTG.

7.7 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.

8 Avisos

8.1 Condições Específicas de Utilização



AVISO - POTENCIAL PERIGO DE CARGA ELETROSTÁTICA

- Para uma instalação e utilização seguras, leia e cumpra todos os avisos de segurança no manual de instruções;
- O produto deve ser instalado de forma a minimizar o risco de descargas eletrostáticas;
- O conector deste equipamento só pode ser utilizado com equipamentos externos conforme listado na *Matriz de Produto*;
- Quando o equipamento for utilizado em locais perigosos, evite quaisquer ações que gerem descarga eletrostática;
 - Limpeza: O equipamento deve ser limpo apenas com um pano húmido;
 - Instalação: Toque nas partes não metálicas com um objeto isolante;
 - Ambiente: Não utilize o produto em ambientes com processos intensos de geração de carga.

8.2 Instalação



AVISO - NÃO ABRIR QUANDO UMA ATMOSFERA EXPLOSIVA ESTIVER PRESENTE

- Em nenhuma circunstância o invólucro do equipamento deve ser aberto dentro de uma área perigosa;
- Este equipamento deve ser instalado de acordo com a EN-IEC 60079-14 e as instruções de instalação;
- Garanta que o transmissor está ligado à terra de acordo com a EN-IEC 60079-14;
- Garanta que o sensor está ligado à terra de acordo com a EN-IEC 60079-14;
- A terra dos dispositivos de campo deve ser isolada da terra do conector M12 do dispositivo com uma rigidez dielétrica de 500 VAC/min;
 - DS-TT-02-XX: O termopar ou PT100 deve estar ligado à terra ou ter um isolamento infalível à terra com uma rigidez dielétrica de 500 VAC/min;
- Este equipamento destina-se apenas a instalações fixas;
- Este equipamento destina-se apenas a utilização em áreas de acesso restrito;
- Para cumprir os limites de exposição a RF da FCC/IC para a população em geral / exposição não controlada, a(s) antena(s) utilizada(s) neste transmissor deve(m) ser instalada(s) de modo a proporcionar uma distância de separação de pelo menos 20 cm de todas as pessoas e não deve(m) ser co-localizada(s) nem operar em conjunto com qualquer outra antena ou transmissor.

8.3 Operação

- O conector deste equipamento não deve ser ligado quando estiver presente uma atmosfera explosiva;
- Este equipamento só deve ser utilizado em ambientes onde a intensidade do campo eletromagnético é limitada de acordo com a EN-IEC 60079-14;
- Este equipamento destina-se apenas à utilização em combinação com leitores compatíveis com a especificação técnica NFC Forum Tag Type 2;
- Este transmissor só deve ser utilizado em temperaturas ambiente entre -40°C .. 70°C ;
 - DS-VB-02-XX: Este sensor só deve ser utilizado em temperaturas ambiente entre -40°C .. 80°C ;
 - DS-PS-02-XX: Este sensor só deve ser utilizado em temperaturas ambiente entre -25°C .. 85°C ;
 - DS-PG-02-XX: Este sensor só deve ser utilizado em temperaturas ambiente entre -30°C .. 80°C ;
 - DS-SX-02-XX: Este sensor só deve ser utilizado em temperaturas ambiente entre -40°C .. 65°C (Montagem Direta) / -40°C .. 65°C (Montagem Remota).

8.4 Serviço

- Este equipamento só deve ser aberto pela TWTG ou por uma pessoa instruída e competente;
- A bateria pode ser intervencionada por essas pessoas;
- Substitua a bateria apenas numa localização não perigosa;
- Utilize apenas o conjunto de bateria Tadiran S1P1/SL-2780/323/TWT ;
- Alterações ou modificações não expressamente aprovadas pela parte responsável pela conformidade podem anular a autorização do utilizador para operar o equipamento;
- Se for evidente dano no invólucro, uma pessoa treinada e competente deve ser informada imediatamente, e deverá retirar o dispositivo de serviço o mais rapidamente possível;
- Se o equipamento estiver ou tiver estado em contacto com materiais químicos, limpe-o de forma adequada.

8.5 Transporte e Armazenamento

- O produto deve ser mantido na embalagem original até chegar ao local de instalação para evitar danos durante o transporte;
- O local de armazenamento deve ser seco;
- O produto não deve ser exposto a vibrações nem a impactos durante o armazenamento.

8.6 Garantia

- A garantia cobre o período indicado na proposta;
- Se o dispositivo não funcionar conforme documentado, o cliente deve contactar a TWTG e fornecer as seguintes informações;
 - Especificação do modelo;
 - Número de série;
 - Circunstâncias em que os problemas se desenvolveram;
 - Quaisquer dados previamente gerados;
- A parte responsável pelos custos de resolução do problema será determinada pela TWTG com base numa investigação conduzida pela própria TWTG.

8.7 A garantia será anulada em caso de

- Mau funcionamento devido ao incumprimento das especificações de projeto;
- Mau funcionamento devido à modificação do produto realizada pelo utilizador;
- Manutenção adiada do produto ou do local de instalação.

9 Legal

9.1 Declaration of Conformity EU

Hereby, TWTG R&D B.V., declares that this equipment is in compliance with;

- ATEX Directive - 2014/34/EU;
- Radio Equipment Directive - 2014/53/EU;
- WEEE Directive - 2003/108/EC;
- RoHS - 2011/65/EU.

The full text of the EU Declaration of Conformity is available at <https://processautomation.imiplc.com/about-us/brands/imi-twtg/imi-twtg-legal>

9.2 Declaration of conformity UK

Hereby, TWTG R&D B.V., declares that this equipment is in compliance with;

- ATEX Directive - 2014/34/EU;
- Radio Equipment Regulation - 2017;
- WEEE Directive - 2003/108/EC;
- RoHS - 2012/19/EU.

The full text of the UK Declaration of Conformity is available at <https://processautomation.imiplc.com/about-us/brands/imi-twtg/imi-twtg-legal>

9.3 FCC and ISED Declarations

FCCID: 2ATYF-DS02B 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).

The full text of the FCC and ISED Declarations are available at <https://processautomation.imiplc.com/about-us/brands/imi-twtg/imi-twtg-legal>

9.4 ANATEL Declaration/Declarações da ANATEL

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Este produto não é apropriado para uso em ambientes domésticos, pois poderá causar interferências eletromagnéticas que obrigam o usuário a tomar medidas necessárias para minimizar estas interferências.

9.5 Manufacturer information

Table 9.1: Manufacturer information

Manufacturer information	
Name	TWTG R&D BV
Address	Schaardijk 386 2909 LA Capelle a/d IJssel The Netherlands

For more information please visit <https://processautomation.imiplc.com/about-us/brands/imi-twtg>

9.6 Trademarks

Customer is responsible for selecting appropriate Products for desired application, testing and validating such application and ensuring that implementation is in compliance with rules and (safety) requirements as listed in the data sheet, instruction manual or equivalent. Supplier allows use of Products only for the primary purpose of each device. If Customer adapts or processes or makes changes to any Product delivered without prior written authorisation from the Supplier or does not use the Products in accordance with the instructions for use as listed in the respective Data Sheet, instruction manual or equivalent and to be found within the TWTG github or allows these to be used improperly, any warranty, if applicable, lapses. The Customer is not permitted to remove/hide any trademark/logo/warning /information applied by the Supplier from / to the Product. Supplier disclaims responsibility for, and Customer will fully indemnify Supplier and its representatives against, any claims, damages, costs, losses, and liabilities arising out of wrongful or intentionally wrong use of the Products. Supplier disclaims responsibility for any actions taken by Customer staff or third parties as a result of the data provided by Products. The Customer indemnifies the Supplier from any claims for damages and claims by third parties resulting from non-compliance on the part of the Customer of the obligations stipulated in this manual.

Revision History

Revision	Date	Description
A1	11-06-2026	Initial version

Process Automation

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