

Data Sheet ITR-3800

Version 1.5 - 2023-05-30

PRODUCT FAMILY

InnoSenT Traffic Radar

APPLICATIONS

- Intersection Management
- Traffic Monitoring
- Arterial Management

- Movement
- Velocity
- Direction
- Presence
- Distance
- Angle
- Optics

FEATURES:

- 4D MIMO FMCW RADAR operating in the 24 GHz ISM band
- Worldwide certification
- Incorporates software enabled tracking and classification
- Integrated Full HD camera
- Lane separation up to 240m
- Maximum detection range up to 300m
- 4 classes detectable up to 183m
- Velocity range from -233km/h to +233km/h



DESCRIPTION

The ITR-3800 Traffic Radar covers intersection management and traffic monitoring applications and provides the output of events. It has an integrated Full HD camera which enables the service technician to perform a much more efficient setup on the junction sites. Its modular design provides different interfaces, tailored to your needs.

CERTIFICATES

InnoSenT GmbH has established and implements a quality system for: development, production and sales of radar sensors for industrial and automotive sensors. See more information on our quality standards at:

<https://www.innosent.de/en/company/certifications/>

ADDITIONAL INFORMATION

InnoSenT Standard Product. Changes will not be notified as long as there is no influence on form, fit or specified function of the product described within this data sheet.

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PERFORMANCE

PARAMETER	TYPICAL VALUE ¹	UNIT
Regulatory		
Operating Frequency	24.05 .. 24.25	GHz
Bandwidth	200	MHz
Output Power (EIRP)	< 20dBm PK // < 108dBμV/m AVG	
Output Power (EIRP AVG)	< 12.7 dBm	
Range		
Min. Detection Range	5 16.4	m ft
Max. Detection // Classification: Pedestrian ²	130 427 // 83 272	m ft
Max. Detection // Classification: Bike ²	130 427 // 83 272	m ft
Max. Detection // Classification: Car ²	300 984 // 183 600	m ft
Max. Detection // Classification: Truck ²	300 984 // 183 600	m ft
Range Accuracy	0.47 1.5	m ft
Lane Separation ⁹ : Approaching // Receding	220 722 // 240 787	m ft
Speed		
Radial Speed Resolution	0.46 0.29	km/h mph
Speed Range	-233 .. +233 -144.8 .. +144.8	km/h mph
Speed Accuracy	0.23 0.14	km/h mph
Angle		
Field of View: Azimuth	110	°
Field of View: Elevation	30	°
Separation: Azimuth	5	°
Angular Accuracy: Azimuth	0.5	°
Operational		
Mode 1: High Performance Mode	50 .. 75	ms
Mode 2: Prediction Mode	56	ms
Mode 3: Camera Mode	64	ms
Processing Latency	1	cycle
Initialization Time: DHCP // Static IP	< 52 // < 49	s
Interfaces		
Configuration A ⁸	PoE Ethernet 1Gbit/s RS485 full duplex	
Configuration B	External Power Supply Ethernet 1Gbit/s RS485 full duplex	
Connectors	M12 industrial	

¹ typical specifications are for general understanding and may vary

² the classification parameter is defined as the max. distance up to which an object can be classified

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PERFORMANCE

PARAMETER	TYPICAL VALUE ¹	UNIT
Power supply		
Operating Voltage: DC	24 .. 48 ±5%	V
Supply Current ^{3,7}	0.75	A
Power Consumption: External Power Supply ^{3,7}	18	W
Power Consumption: PoE ^{3,7}	20	W
Camera		
Quality: Live Video	Full HD (1920 x 1080p)	
Quality: Still Image	Full HD (1920 x 1080p)	
Field of View: Diagonal	143	°
Field of View: Azimuth	121	°
Field of View: Elevation	73	°
Field of View: Range	5 .. 80 16.4 .. 262.5	m ft
Video Codec	H.264	
Frame Rate	30	Hz
Environment		
Operating Temperature Radar	-40 .. +80	°C
Storage Temperature	-40 .. +85	°C
Operating Temperature Camera ⁴	-30 .. +70	°C
Protection Class ^{5,6}	IP67	
Mechanical		
Dimensions (with connectors): H/W/D	102 x 270 x 37 (47) 4 x 10.6 x 1.5 (1.8)	mm in
Weight	< 1 < 2.2	kg lb
Mounting	VESA MIS-D 75	

³ the typical value is given for 24V at 19°C

⁴ the camera performance might be reduced by extreme temperatures

⁵ tested in independent laboratory

⁶ only IP67 protected, if cables and/or gaskets are plugged into connectors and screw-fastened with a torque of 0.4 Nm

⁷ current and power consumption increase with temperature and supply voltage

⁸ applied PoE standard: IEEE 802.3bt Type 3 „4PPoE“

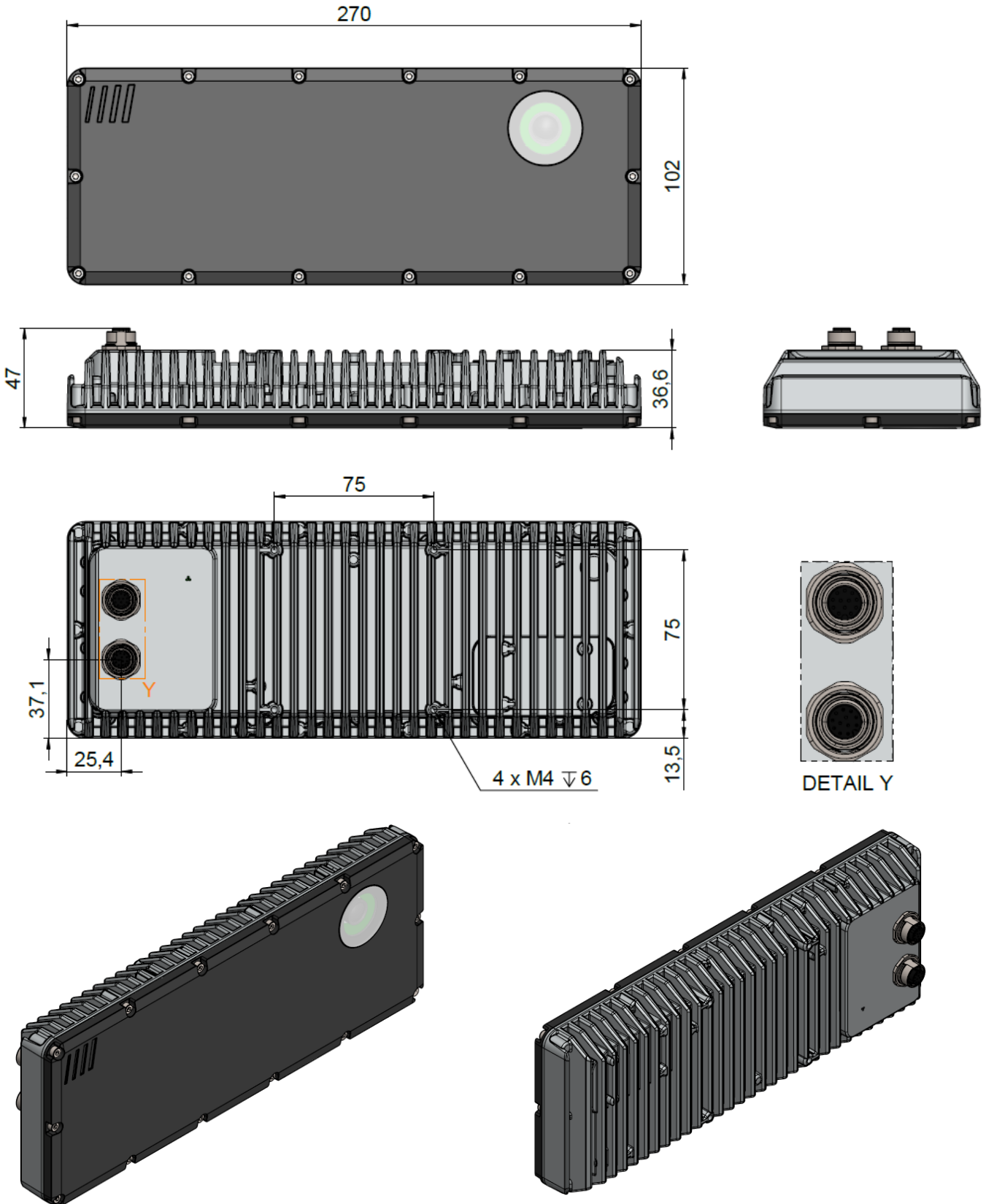
⁹ measured on highway with standard lane width of 3.75m

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MECHANICAL DRAWING

Note: All dimensions in mm



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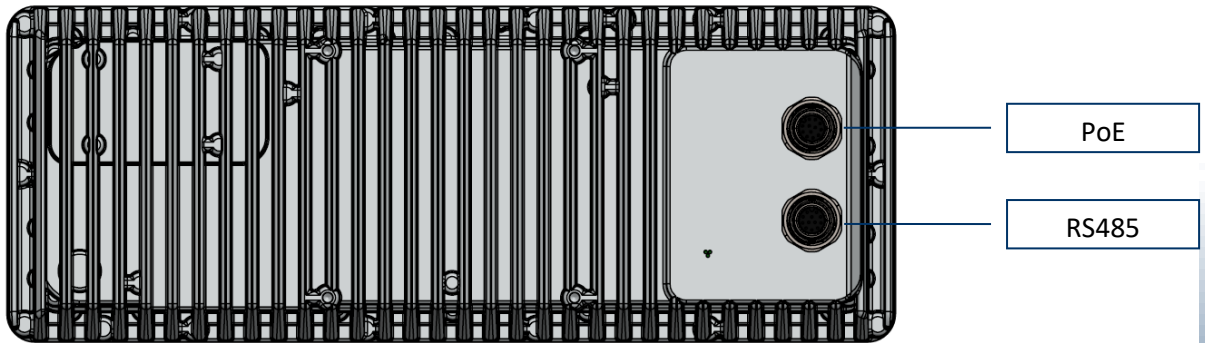
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INTERFACES

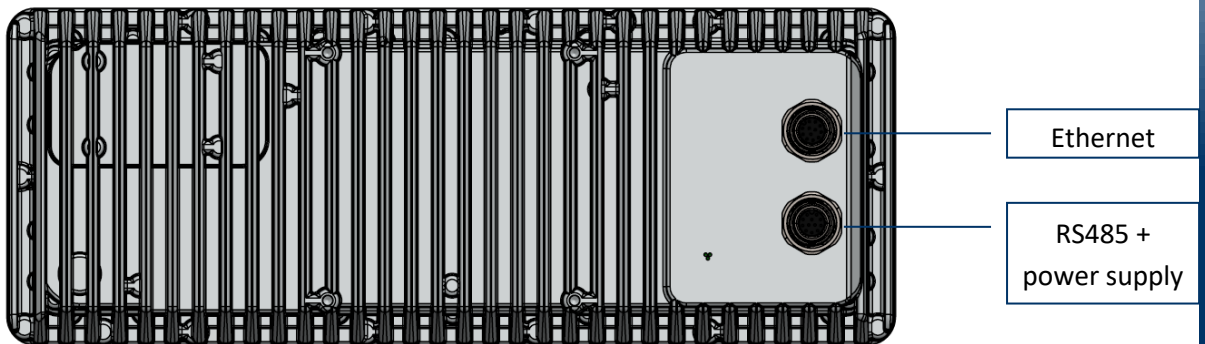
The module provides two different interfacing possibilities. The user may choose which one to use.

WARNING: Connect the module only as stated below. Do not interchange these options. Connections other than illustrated below may result in unexpected behaviour!

INTERFACES | Configuration A: PoE + Ethernet 1Gbit/s + RS485 full duplex



INTERFACES | Configuration B: Ethernet + RS485 full duplex + power supply



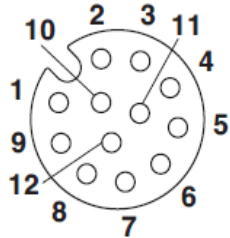
TYPE	CABLE	PIN COUNT	InnoSenT ORDERING NUMBER
PoE / Ethernet	M12 <-> RJ45 ETH	8	29.00000283
RS485 / power supply	M12 <-> COM / banana jacks	12	29.00000284
ITR-3800 Starter Kit			80.00000527

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CONNECTORS | Power Supply and RS485 Connector

Type: PHOENIX CONTACT - Contact insert - SACC-CI-M12FS-12CON-SH TOR 32 - 1457704

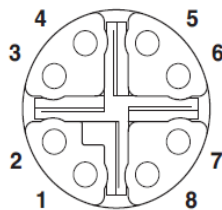


PIN	DESCRIPTION
1	GND
2	GND
3	RS485_FD.A
4	RS485_FD.B
5	RS485_FD.Z
6	RS485_FD.Y
7	VCC
8	VCC
9	<i>Do not connect</i>
10	<i>Do not connect</i>
11	<i>Do not connect</i>
12	<i>Do not connect</i>

CONNECTORS | PoE / Ethernet Connector

Type: PHOENIX CONTACT - Contact insert - SACC-CI-M12FS-8CON-L180-10G - 1402457

PoE is implemented, according to IEEE 802.3bt standard, see [User Manual, 9.2].

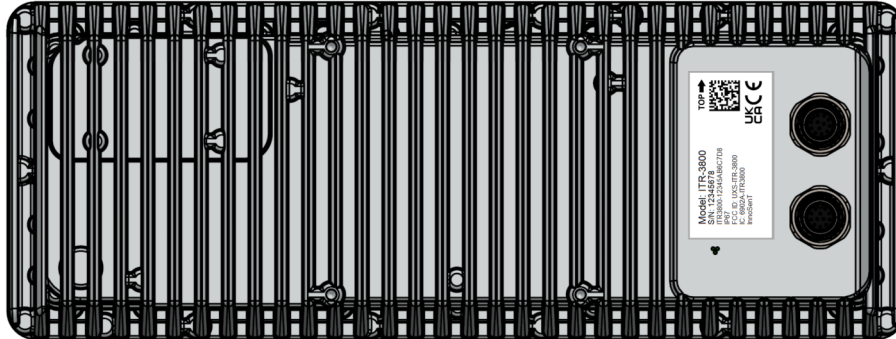


PoE IEEE 802.3bt		
PIN	DATA	PoE
1	A+	IN1
2	A-	
3	B+	IN1
4	B-	
5	D+	IN2
6	D-	
7	C-	IN2
8	C+	

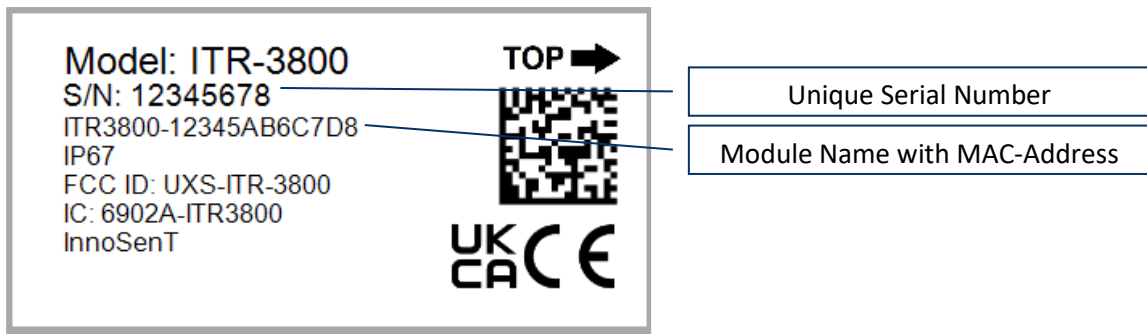
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LABEL LOCATION



LABEL DESCRIPTION



DISPOSAL

The device is to be disposed of according to the European Community Directive 2012/19/EU on waste electrical and electronic equipment.

Devices must not be disposed of with consumer waste.

For environmentally compatible recycling and disposal of the device, please contact a certified waste management company or send the device back to InnoSenT GmbH.

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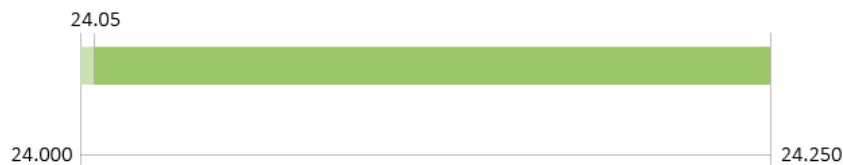
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FREQUENCY INFORMATION

The information that will be given below is only a broad overview; for details please contact the regional approval agency. An overview over the frequency bands in Europe can also be found in the REC 70-03 which is available under www.cept.org.

ISM FREQUENCY BAND

In general, the ITR-3800 can be used in EU, USA, Canada and UK, as well as other regions which apply to those regulations.



COMPLIANCES

Declarations of conformity, certificates and test reports can be provided upon request.

STANDARD	COMMENT
Conformity / Certificates	
CE	Declaration of Conformity
UKCA	
FCC Part 15.245	Tested by external TCB and applies to relevant regulatory limitations.
ISED	Tested by external TCB and applies to relevant regulatory limitations.
RF / Electrical / Traffic / Other	
EN 300 440 V2.1.1	
EN 301 489-1 V2.2.3	Tested by external TCB and applies to relevant regulatory limitations.
EN 301 489-3 V2.3.2	Tested by external TCB and applies to relevant regulatory limitations.
NEMA TS 2	Referring to temperature and vibration.
DIN EN 60529	Tested and certified by external laboratory.
DIN EN IEC 62311	
DIN EN IEC 62368-1	
IDs	
AGENCY	ID
FCC	UXS-ITR-3800
IC	6902A-ITR3800

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FCC & ISED COMPLIANCE

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s) and complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC §15.21

Changes or modifications made to this equipment not expressly approved by InnoSenT GmbH may void the FCC authorization to operate this equipment.

FCC §15.105

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.

RF Exposure

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

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.

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REVISION HISTORY

This Data Sheet contains the technical specifications of the described product. Changes to specifications will be in written form. All previous versions of this Data Sheet are invalid.

VERSION	DATE	COMMENT
1.0	2022-11-18	Initial release
1.1	2022-12-02	Typos - Bandwidth, Operating Frequency - Output Power - Classes Added - Accuracies: Range, Speed, Angular - IP67 footnote 6 - Connector Description - Initialization Time - Label Location
1.2	2023-01-10	Updated - Label - Disposal information - Power Supply values Added - Added max. output power for FCC - Interface configurations A, B
1.3	2023-03-29	Added - Lane Separation parameter
1.4	2023-04-21	Updated - Compliance section with document requests Added - FCC & ISED compliance section - IP67 part to compliance section - Required screw-fastening torque for IP67 proof to footnote 6
1.5	2023-05-30	Updated - FCC & ISED compliance section - Label with UKCA and CE Added - FCC and IC agency IDs

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