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1. SUMMARY



Figure 1. TSX sensor.

TSX is a sensor designed for measuring temperature in logistics operations e.g. ground transport or storage. Sensor transmits measurement data to gateway device via 868 MHz (EU only) or 2.4 GHz proprietary radio communication. Gateway then transmits the data to Cloud service via 3G/4G connection. TSX temperature measurements can also be read via NFC and Sensire provided app for mobile devices.

2. SAFE USE OF THE TSX SENSOR

2.1 HOW AND WHERE TO USE THE TSX SENSOR

TSX sensor is designed to measure temperature in logistics operations e.g. ground transport or storage spaces. This device is to be installed and used only indoors. Limited period of outdoor use e.g. during loading and unloading parcels for transportation, does not degrade safety.

TSX sensor is IP65 classified, which ensures that it can also be installed to various locations including warehouses, storage rooms and so on. Enclosure is sealed and closed with screws.

Safety distance of 20 cm to user, transported blood, organs or tissue shall be maintained.

2.2 TSX OPERATING TEMPERATURE AND OTHER CONDITIONS

Operating temperature range: -30...+75°C

Storage temperature range: -30...+75°C

Pollution degree: 2

2.3 HOW TO STORE AND CLEAN THE TSX SENSOR

When placing the sensor inside the desired location make sure that it will move around as little as possible. This ensures measurement precision and prevents fall/other damage. Best way to secure sensor is to use TSX wall holder.



Figure 2. TSX sensor wall holder.

If needed TSX can be cleaned by wiping it with a cloth and a mixture of detergent and water.

2.4 DISPOSAL OF THE TSX SENSOR

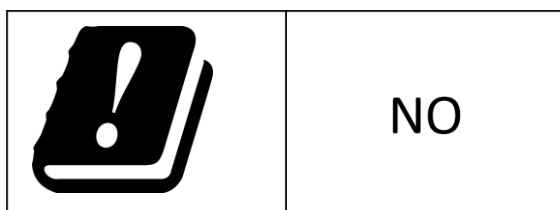
In case that sensor needs to be disposed, it must be sent back to manufacturer or disposed as WEEE waste. Local regulations must be obeyed when disposing the device.



2.5 RISKS AND HOW TO USE THE TSX SENSOR

To ensure that TSX sensor works properly and that no harm will come to user please make sure that:

- Do not open or disassemble the device
- Do not replace the batteries
- Handle TSX so it will not be physically damaged
- Stop using TSX if it becomes damaged as it contains lithium batteries
- If damaged return TSX to manufacturer or dispose it to WEEE waste in accordance with local regulations
- Sensor is cleaned only with mixture of detergent and water, do not use solvent
- If sensor is warm do not touch it. It might be damaged. Please contact manufacturer at info@sensire.com
- Note! If the device is used in a manner not specified in this manual and product specification the protection provided by the device may be impaired!



This device 2.4 GHz SRD feature is not allowed to be used within a 20 km radius of the centre of Ny-Ålesund at Svalbard, Norway.

3. TECHNICAL DETAILS

3.1 RADIO PROPERTIES

868 MHz mode (EU only)	
Used frequency bands	865 - 868 MHz and 869.4 - 869.65 MHz
Maximum power	< 25 mW
Receiver category	2
2.4 GHz mode	
Used frequency band	2402 - 2480 MHz
Maximum power	<10 mW
NFC	
Frequency	13.56 MHz
Maximum power	Passive

3.2 ANTENNA LOCATIONS

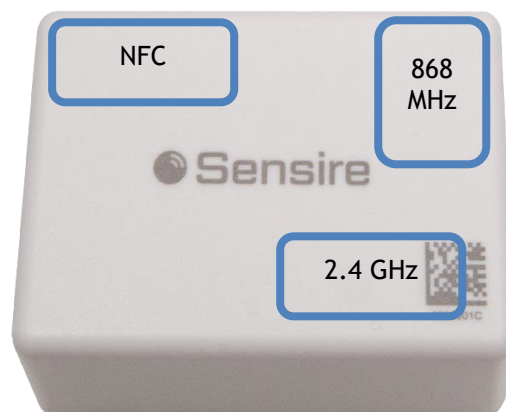


Figure 3. TSX antenna locations.

4. SALES BOX

Sales box will include:

- TSX device
- Wall holder
- Calibration certificate
- User manual, which includes installation instructions
- Datasheet

TSX device sales box package should be recycled based on local regulations.

5. SIMPLIFIED EU DECLARATION OF CONFORMITY

Hereby, Sensire declares that the radio equipment type TSX is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address: www.sensire.com.

6. FCC DECLARATION OF COMPLIANCE

This device complies with part 15 of the FCC Rules. TSX sensor **FCC ID is 2AYEK-TSX**. 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.

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.



7. CANADA DECLARATION OF COMPLIANCE

TSX sensor ISED ID is 26767-TSX.

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

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

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

L'émetteur/récepteur exempt de licence contenu dans le 6erver6 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.

Tout changement ou toute modification effectués par l'utilisateur et dont la conformité n'est pas expressément 6erver6 par l'organisme 6erver6er6e de sa conformité peut 6erver6er l'annulation de droit de cet utilisateur de se 6erver de l'équipement.

Version 0.7

20.1.2021

8. DOCUMENT HISTORY

Version	Author	Change	Date	Approver
0.1	Simo Kuusela	First draft version		
0.2	Simo Kuusela	Modified 20 cm safety distance comment	11.12.2020	
0.3	Simo Kuusela	Changed TSX pictures	21.12.2020	
0.4	Simo Kuusela	Changed antenna location	8.1.2021	
0.5	Elina Kukkonen	Changed FCC and ISED "Declaration of Conformity to "compliance". Added ISED ID	8.1.2021	
0.6	Simo Kuusela	Added Norway usage restriction	11.1.2021	
0.7	Simo Kuusela	2.4 GHz frequency band matched to technical specification Modified Norway usage restriction	20.1.2021	