WX SENSOR User Manual

Desk Configuration

Ceiling Configuration

ENVIRONMENTAL RECOMMENDATIONS

Your device is made of materials that can be recycled and reused if dismantled by a specialized firm. Please follow local regulations on how to dispose of old packaging materials, used batteries and your previous device.

WARNINGS

- Read the instructions in the manual.
- The safety provided by this product is only guaranteed for an intended use to its purpose.
- Maintenance can only be carried out by qualified staff.
- Caution : Do not install equipment near a heat source or a humidity source.
- Caution : When the equipment is open, do not perform operations other than those provided in this manual.

CE	CE standard : This product is certified and complies with european regulations.
FCC	FCC standard : This product is certified and complies with the regulations of the Federal Communications Commission in the United States.
IC	IC standard : This product is certified and complies with canadian regulations.
IDA	IDA standard : This product is certified and complies with singaporean regulations.
	Please read the enclosed user and safety instructions before using your device for the first time.
	Recycling : Do not dispose of in landfill or in a garbage container. Please comply with the current legislation for disposal.
	Use of direct voltage (DC)

Do not use this device under conditions other than those described in the technical specifications.
Risk of fire or explosion in these cases :

- ✓ Do not recharge the battery
- ✓ Do not short-circuit the battery

If the device is used for purposes not specified by the manufacturer, the safety of the sensor may be called into question.

Table of contents

Table of contents 1

1. Product description 2
2. Installation of the product in Desk configuration 3
3. Installation of the product in Ceiling configuration 4
4. Field of view of the presence measurement 6
5. Field of view of the counting measurement 7
6. Start up the product 8
7. Product configuration 8
8. Infrastructure 8
9. Technical characteristics 9
10. Certification 10
11. Human exposure to radio frequencies 11
12. Notes about the batteries 11
13. Commercial references 12
14. Technical support 13

1. Product description

Part of the Transform Together® range, the WX SENSOR provides wireless measurement and transmission of presence information at a workstation or in a room.

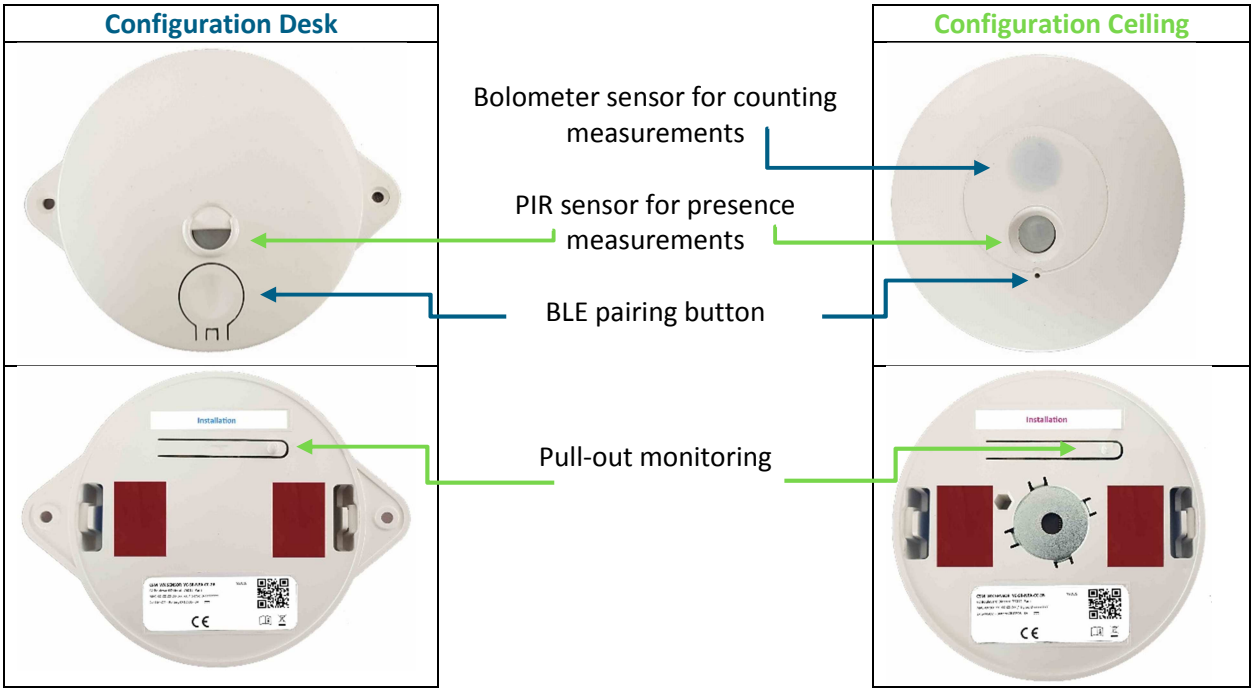
It can also, optionally, measure the number of people present in a space. The sensor is equipped with a bolometer that delivers 6400 temperature points over an area of 15 to 20m². A CSM algorithm transforms these measurements into a number of people present in the room.

Its characteristics make it compatible with different real estate needs such as the information of the availability of a workstation or a room in real time, the analysis and optimized management of surfaces according to criteria specific to the equipped building.

The absence of wiring and its small footprint allow a quick and easy installation of the sensor on almost all types of surface.

The available functions are :

1) Occupancy measurement
2) Counting
3) Pull-out monitoring
4) Auto-location
5) Bluetooth beacon
6) Battery level monitoring
7) Transmission of information through LPWA Sigfox® ou LoRa® networks
8) Configuration via Bluetooth®



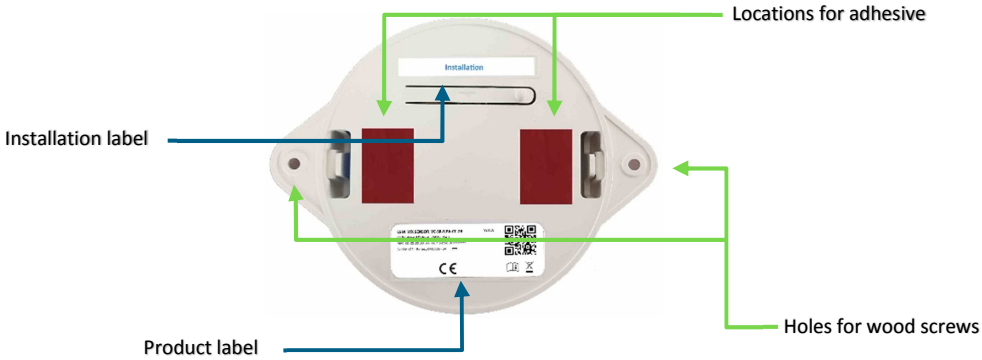
2. Installation of the product in Desk configuration

In this configuration, the WX SENSOR can be installed in all types of furniture with a flat, melamine, laminate, glass or metal coating. When ordering, it will be necessary to specify the desired installation kit :

1) Double-sided adhesives (ref VHB 4991 at 3M).
2) Wood screw

Support	Type of final fixation	Type of fixation location
Wood (raw, melamine, laminate)	Adhesive - Screw	Adhesive - Srew
Metal	Adhesive	Adhesive
Plastic	Adhesive	Adhesive

In case of the use of double-sided adhesive, the surface receiving the sensor will be cleaned beforehand with isopropyl alcohol in order to have an optimal bonding.



In addition to the particular shape of its mechanics, it will be possible to identify a desk product thanks to :

1) The commercial reference indicated on the product label (see chapter « Commercial References »)
2) The color of the installation label text :

In the Sensor Management mobile app, a desk object is symbolized by the icon :

3. Installation of the product in Ceiling configuration

In this configuration, the WX SENSOR can be installed on most types of ceiling (plaster, suspended ceiling, concrete, cable tray, etc.). When ordering, it will be necessary to specify the desired installation kit :

1) None
2) Double-sided adhesives (ref VHB 4991 at 3M).
3) Small magnet (Neodymium disc magnet Ø 20 mm, height 5 mm – adhesive strength 6kg)
4) Big magnet (Neodymium disc magnet Ø 25 mm, height 7 mm - adhesive strength 11kg)

If no fixing kit is required, the installer must use one the following fasteners :

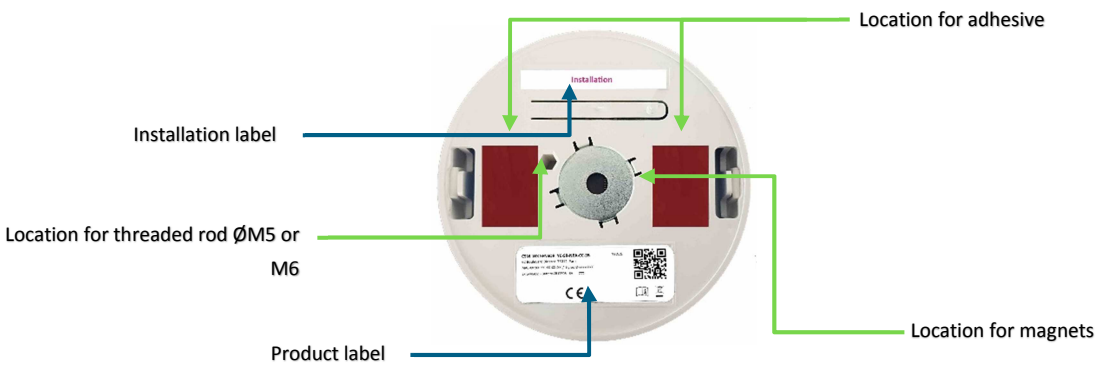
1) Threaded rod diameter Ø M5 or M6
2) Large round head metal screw. Ø M5
3) Twist fixing clip with integrated threaded rod Ø M6
4) Molly pin + Threaded rod Ø M5 ou M6
5) Stell and spiral fixing of X mm + large round head metal screw. Ø M5

Support	Type of final fixation	Type of fixation location
Plaster	Big magnet – Molly pin	Big magnet
Metal, cable tray	Small magnet	Small magnet
Fineline Rail suspended ceiling	Small magnet - Round head machine screws	Small magnet - Round head machine screws
Suspended ceiling Rail T24	Small magnet - Twist fixing clip	Small magnet - Twist fixing clip
Concrete	Threaded rod	Threaded rod
Cork acoustic plates	Steel and spiral fastening	Steel and spiral fastening

In case of the use of double-sided adhesive, the surface receiving the sensor will be cleaned beforehand with isopropyl alcohol in order to have an optimal bonding.

Do not use the adhesive on painted, dirty or friable surfaces. In general, the use of adhesive to fix a sensor to the ceiling is strongly discouraged.

The installer must check that the product is properly fixed for user safety.



We will differentiate the different ceiling product thanks to :

1) The commercial reference indicated on the product label (see chapter « Commercial References »)
2) The color of the installation label text for un product :
    a. Performing presence measurements and counting :
    b. Performing presence measurements and no counting :
    c. Performing neither presence measurement nor counting :

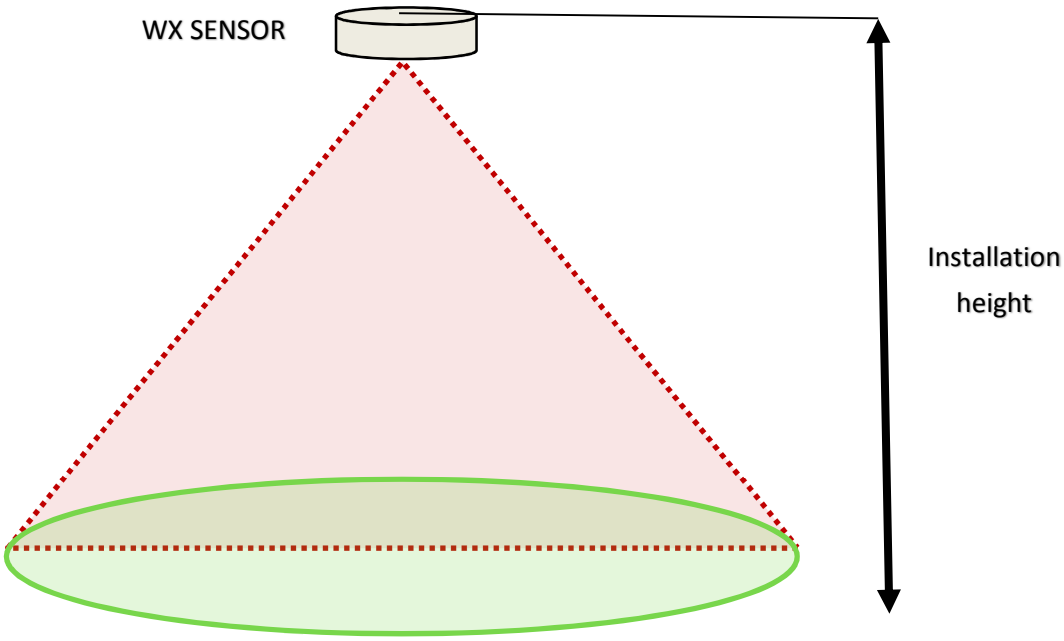
In the Sensor Management mobile app, a Ceiling object :

1) Performing presence measurements and counting is symbolized by the icon :
2) Performing presence measurements and no counting is symbolized by the icon :
3) Performing neither presence measurement nor counting is symbolized by the icon :

4. Field of view of the presence measurement

The WX SENSOR covers a circular surface whose dimensions will vary depending on the ceiling height according to the diagram below :

Field of view of the counting sensor



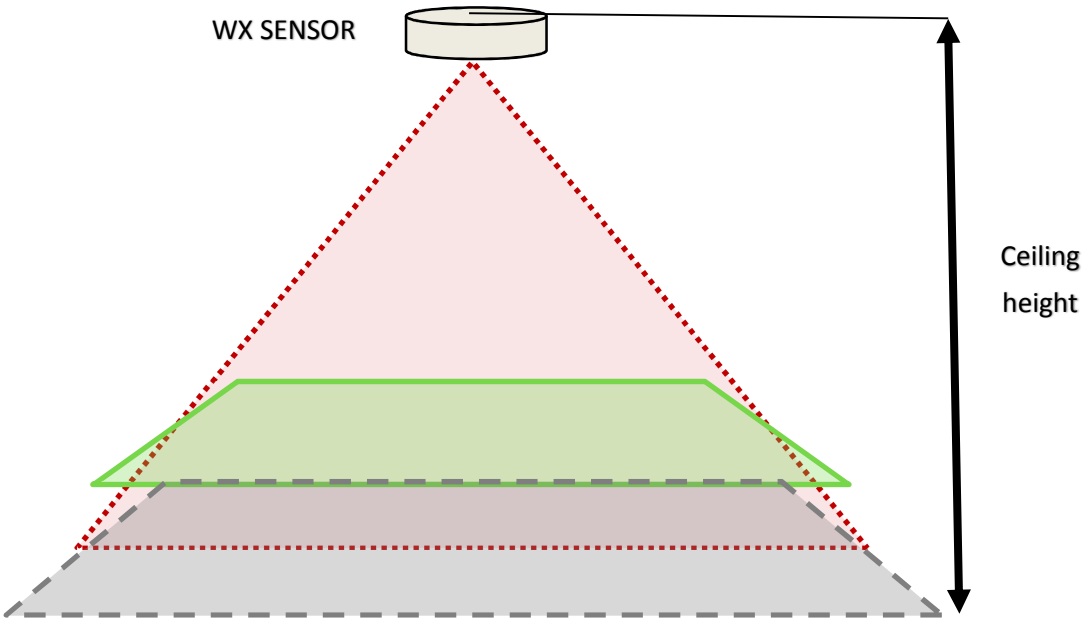
Installation height	Ground presence area
0,70 m	0,6 m² (Ø 0,9m)
2,20 m	20 m² (Ø 5m)
2,40 m	23 m² (Ø 5,4m)
2,70 m	29 m² (Ø 6,1m)
3,00 m	36 m² (Ø 6,8m)

In order to have a reliable counting measurement, the measurement area must not be blocked by objects such as suspended lights or other objects.

5. Field of view of the counting measurement

The WX SENSOR covers a square surface, whose dimensions will vary depending on the ceiling height according to the diagram below :

Field of view of the counting sensor

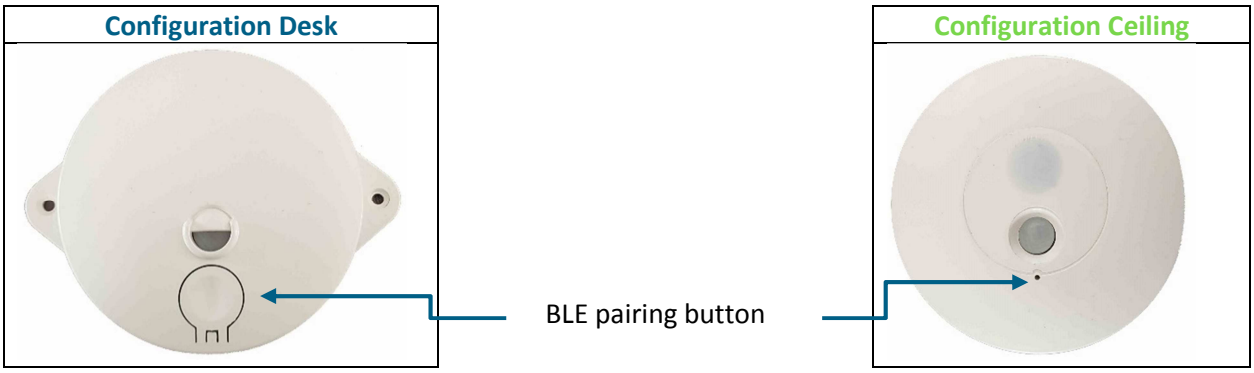


Ceiling height	Counting area 70 cm from the ground	Counting area on the ground
2,20 m	9 m² (3m x 3m)	16 m² (4m x 4m)
2,40 m	10 m² (3,1m x 3,1m)	19 m² (4,3m x 4,3m)
2,70 m	14 m² (3,7m x 3,7m)	24 m² (4,9m x 4,9m)
3,00 m	18 m² (4,2m x 4,2m)	30 m² (5,5m x 5,5m)

In order to have a reliable counting measurement, the measurement area must not be blocked by objects such as suspended lights or other objects.

6. Start up the product

The product will be delivered and configured in an operating mode blocking all radio frequency communication. During installation, before fixing the sensor to its support, the installer must press the pairing button in order to switch the product to nominal operation.



7. Product configuration

To be able to re-configure a product, there are two solutions :

1) Use the downlinks : see the CSM portal documentation
2) Use the Sensor Management app : see the Documentation of the Sensor management Application

8. Infrastructure

WX SENSOR data is transmitted by radio frequency through Sigfox or LoRa Networks. The antenna network must be sized to allow good communication of all the building's sensors.

9. Technical characteristics

Functionnal

- Presence detection and people counting
- Transmission of information by radio frequency
- Auto-location of the product
- Pull-out monitoring
- Bluetooth beacon
- Easy and quick configuration by bluetooth without disassembly
- Updating of configuration parameters possible by downlink (radio dialogue) without physical intervention by an operator

Electrical

- Integrated power supply by replaceable lithium battery
- Battery life and lifetime: 5 years to 10 years depending on features and additional battery option

Mechanical

- UL94V0 white polycarbonate housing
- Can be fastened by double-sided adhesive tape, magnet or screws
- Dimensions :
    - Diameter 105,1 mm
    - Height 23,2 mm

Environmental

- Operating temperature : + 0°C à + 32°C
- Storage temperature : + 0°C à + 60°C
- Humidity : +20% to 90% HR without condensation

Radiofrequency

- Frequency band :
    - ISM SubGiga : 863-870 MHz. / 902-928MHz / 865-867MHz
    - ISM 2,4GHz : Bluetooth 2,402–2,480 GHz
- Compatible with Sigfox® and Lorawan UNB protocols (Specifications v1.0.3 and Lorawan Regional Parameters v1.0.3 revA)

10. Certification

FCC certification

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.

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

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 instruction, 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 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 circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Operation of this equipment in a residential area may cause harmful interference, in which case the user will be required to correct the interference at their own expense.

This device complies with FCC RF radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna transmitter.

IC certification

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

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with ISED radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

11. Human exposure to radio frequencies

This equipment complies with the limits of human exposure to electromagnetic fields (EMF) for devices operating in the frequency range from 0 Hz to 300 GHz according to the EMF EN 62311 standard.

12. Notes about the batteries

The WX SENSOR is equipped with one or two batteries depending on the autonomy needs desired by the customer.

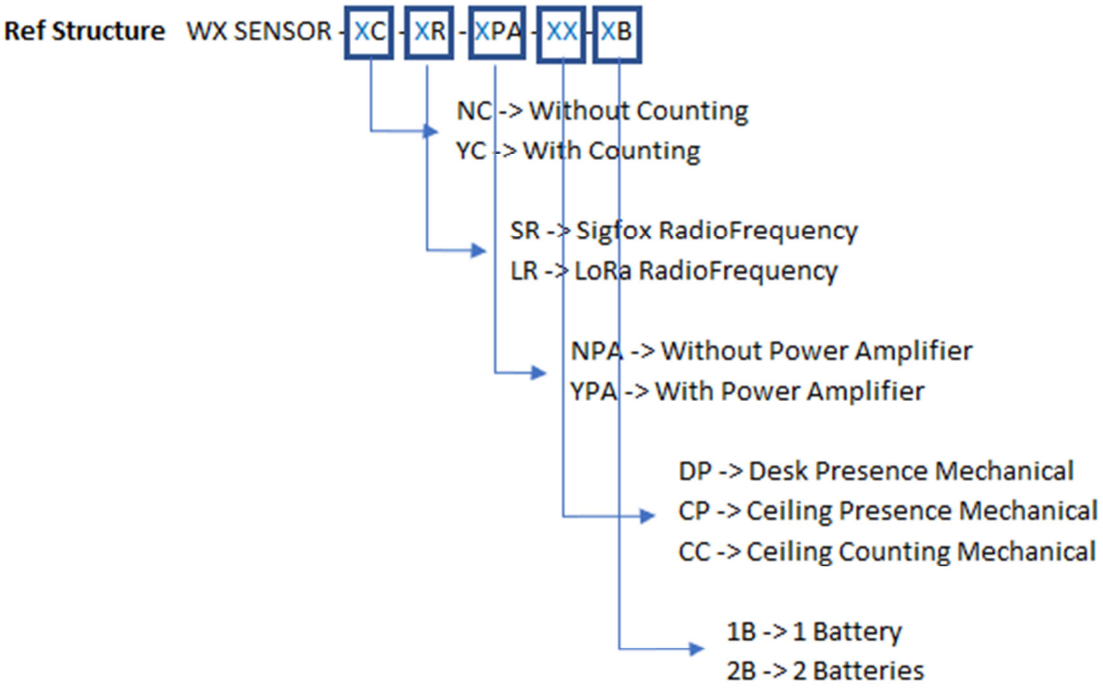
The commercial reference of the authorized batteries are mentioned below :

- JAUCH : CR17500 model 249239
- ENBAR : CR17505_2500-01 (CE only)

Li / MnO2 batteries are not rechargeable. The batteries are personalized to allow their integration. When changing batteries, please contact CSM in advance to order the correct batteries. After changing the batteries, a reset of the product will be necessary (see the Documentation Sensor management Application). Battery replacement should be performed by a qualified person.

⚠ Caution : There is a risk of explosion if the batteries are replaced by an incorrect reference. Dispose of the batteries according to the instructions. When changing the batteries, the product must be cleanly and correctly reassembled.

13. Commercial references



Ccommercial references	Electronical references	Mechanical references	Batteries
WX SENSOR-NC-SR-NPA-DP-1B	WX SENSOR-Sigfox without PA	Mechanical Desk	1 battery
WX SENSOR-NC-SR-NPA-DP-2B	WX SENSOR-Sigfox without PA	Mechanical Desk	2 batteries
WX SENSOR-NC-SR-NPA-CP-1B	WX SENSOR-Sigfox without PA	Mechanical Ceiling	1 battery
WX SENSOR-NC-SR-NPA-CP-2B	WX SENSOR-Sigfox without PA	Mechanical Ceiling	2 batteries
WX SENSOR-YC-SR-NPA-CC-2B	WX SENSOR-Sigfox without PA + Counting	Mechanical Ceiling Counting	2 batteries
WX SENSOR-NC-SR-YPA-DP-1B	WX SENSOR-Sigfox with PA	Mechanical Desk	1 battery
WX SENSOR-NC-SR-YPA-DP-2B	WX SENSOR-Sigfox with PA	Mechanical Desk	2 batteries
WX SENSOR-NC-SR-YPA-CP-1B	WX SENSOR-Sigfox with PA	Mechanical Ceiling	1 battery
WX SENSOR-NC-SR-YPA-CP-2B	WX SENSOR-Sigfox with PA	Mechanical Ceiling	2 batteries
WX SENSOR-YC-SR-YPA-CC-2B	WX SENSOR-Sigfox with PA + Counting	Mechanical Ceiling Counting	2 batteries
WX SENSOR-NC-LR-YPA-DP-1B	WX SENSOR-LoRa	Mechanical Desk	1 battery
WX SENSOR-NC-LR-YPA-DP-2B	WX SENSOR-LoRa	Mechanical Desk	2 batteries
WX SENSOR-NC-LR-YPA-CP-1B	WX SENSOR-LoRa	Mechanical Ceiling	1 battery
WX SENSOR-NC-LR-YPA-CP-2B	WX SENSOR-LoRa	Mechanical Ceiling	2 batteries
WX SENSOR-YC-LR-YPA-CC-2B	WX SENSOR-LoRa + Counting	Mechanical Ceiling Counting	2 batteries

PA = Power Amplifier allows to increase the transmission power for RC2 and RC4 Sigfox areas.

14. Technical support

In order to get a technical support :

Website	www.csmres.com
Mail	support@csmres.com
Phone number	+33 1 45 84 33 83
Address	CSM 62 Boulevard Diderot 75012 Paris France