

# User manual ultraBeacon Single-Zone

The user manual will be available on the Sonitor Partner Portal where it will be kept updated online, <https://partnerportal.sonitor.com/> A hard copy will be supplied with the product.

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## 1 About this manual

The content of this manual applies to the Sonitor™ ultraBeacon Single-Zone products used in the Sonitor platform for indoor location services. Updates to this manual will be made available continuously and news about and/or updated content will be posted on the Sonitor partner portal. Please contact Sonitor Technologies for access permission information.



**Note: The appearance of your specific product may not always be exactly the same as shown in this document. This is due to the continuous product improvement process.**

## 2 Product overview

### 2.1 General

The ultraBeacon Single-Zone products are combined BLE and ultrasound beacons used in the Sonitor platform. The units can be powered by batteries, Power over Ethernet (PoE) or from a DC source.

The ultraBeacon Single-Zone devices are small form-factor devices that can easily be mounted in a room to create a single ultrasound discrete zone. The four variants represent two different hardware versions (battery/DC powered or POE powered) and two different radio operation solutions (IEEE 802.15.4 or BLE operated).

### 2.2 Product description

Description of the ultraBeacon Single-Zone products are provided in the table below.

Model	Description
INF-C361	Single-Zone – Ultrasound, Battery or DC powered, IEEE 802.15.4 operated
INF-C365	Single-Zone – Ultrasound, PoE powered, IEEE 802.15.4 operated
INF-C371	Single-Zone – Ultrasound, Battery or DC powered, BLE operated
INF-C375	Single-Zone – Ultrasound, PoE powered, BLE operated

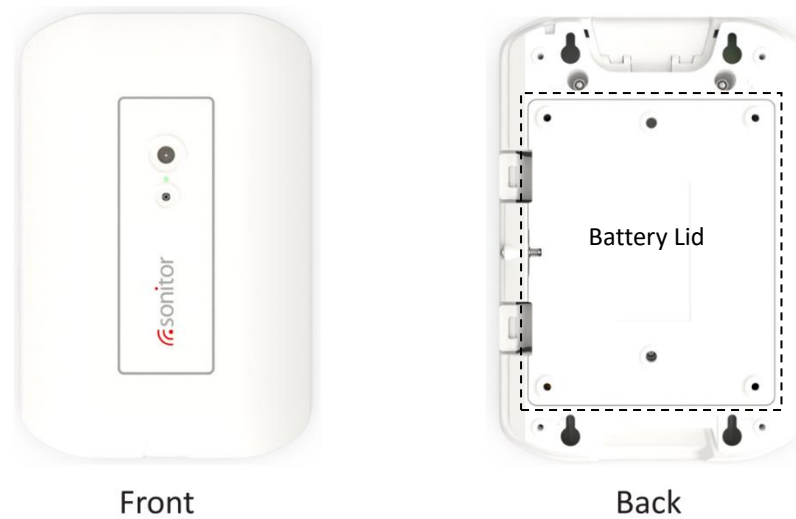


Figure 1: Front and back of the ultraBeacon Single-Zone devices. The Battery Lid is seen on the back.

### 3 Product variants

The top-level Product numbers (SKU) used for ordering specify whether the product is powered from batteries, a DC source or Power over Ethernet (PoE). The top-level product includes the main unit plus batteries and/or accessories.

Top level Product number (SKU)	Products included
<b>IEEE 802.15.4 radio models</b>	
INF-C361-BAT	INF-C361 + 4 batteries
INF-C361-6VDC	INF-C361 + Cable Cover Large + DC connector
INF-C365-PoE	INF-C365 + Cable Cover Large
<b>BLE radio models</b>	
INF-C371-BAT	INF-C371 + 4 batteries
INF-C371-6VDC	INF-C371 + Cable Cover Large + DC connector
INF-C375-PoE	INF-C375 + Cable Cover Large

#### 3.1 Battery model

Product numbers INF-C361-BAT and INF-C371-BAT include the main ultraBeacon model INF-C361 and INF-C371 which are delivered with “PCB Cover”, “Cable Cover Small” and “Battery Key Lock” pre-mounted in factory. 4 D-Cell batteries are shipped separately and inserted during installation.

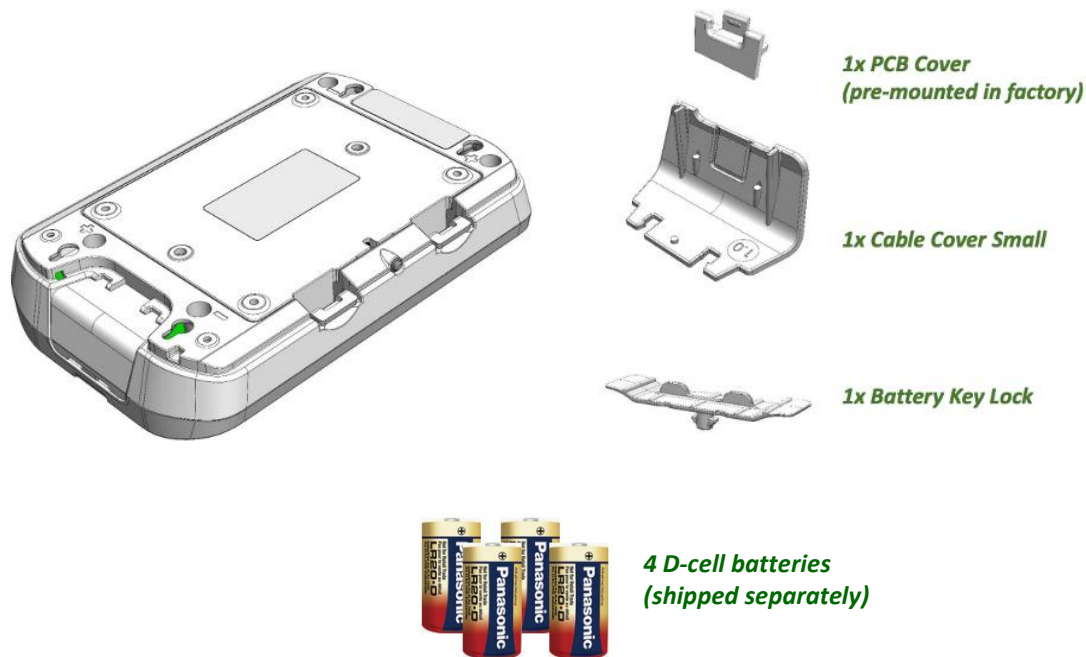


Figure 2: Parts for models INF-C361-BAT and INF-C371-BAT, parts not “shipped separately” are pre-mounted in factory.

### 3.2 DC model

Product numbers INF-C361-6VDC and INF-C371-6VDC include the main ultraBeacon model INF-C361 and INF-C371 (same as for the battery model) which are delivered with “PCB Cover”, “Cable Cover Small” and “Battery Key Lock” pre-mounted in factory. “DC connector” and “Cable Cover Larger” are shipped separately.

After termination, the power cable with the green connector is inserted into the power connector inside the unit.

During installation the pre-mounted Cable Cover Small is replaced with Cable Cover Large to cover the cable and prevent collection of dust and dirt around the connectors. The covers are held in place by snap tabs and can easily be removed or inserted by hand.

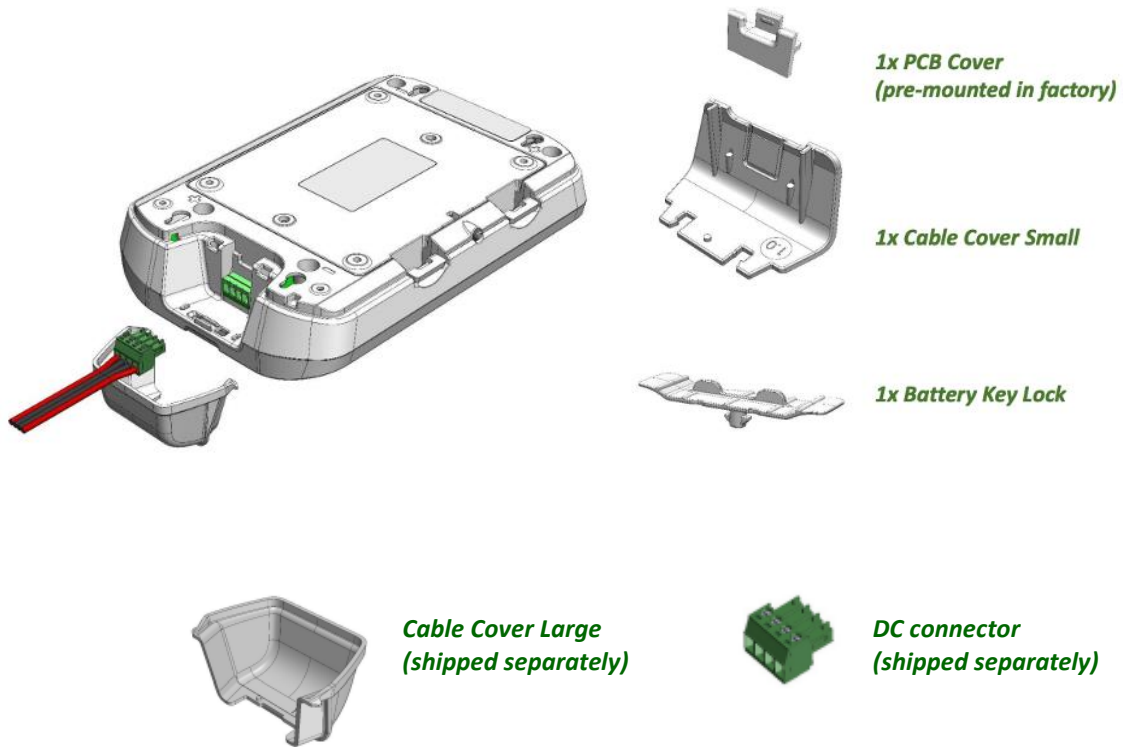


Figure 3: Parts for models INF-C361-6VDC and INF-C371-6VDC, parts not “shipped separately” are pre-mounted in factory.

### 3.3 PoE model

Models INF-C365-PoE and INF-C375-PoE are delivered with “Battery Key Lock” pre-mounted in factory as it also (and often temporarily) can be powered from batteries. “Cable Cover Larger” is shipped separately.

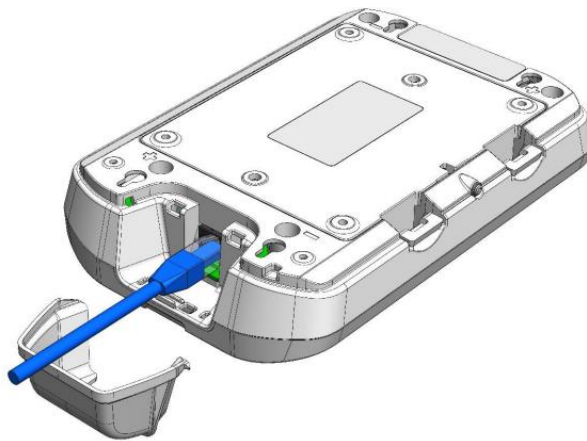


Figure 4: Parts for models INF-C365-POE and INF-C375-POE.



The PoE cable is inserted into the RJ45 connector inside the unit.

The Cable Cover Large is inserted to cover the cable and prevent collection of dust and dirt around the connectors. The cover is held in place by snap tabs and can easily be removed or inserted by hand.

## 4 Power


### 4.1 Battery powered

The battery powered ultraBeacon Single-Zone devices have been engineered to achieve a long battery life and for use with four industry grade alkaline D-cell batteries as listed below. For battery lifetime please refer to the datasheet for the product. Battery status is reported to the server and is available through the end user application.

-  **The batteries must be replaced within two weeks after the unit has reported that the battery level is low.**
-  **Batteries shall be visually inspected before insertion to ensure there are no visual damage, leakages, dents or imperfections to the battery or the packaging. If packaging is damaged and one or more batteries have damages or leakages, the whole package should be rejected. Batteries shall be replaced by a qualified service person only according to specification.**

The following industry grade alkaline batteries (4 x D/LR20 cell) must be used:

Manufacturer	Type	Voltage
Panasonic	LR20XWA	1.5 VDC
Panasonic	LR20AD/B	1.5 VDC

-  **Inserting other batteries than the ones provided by Sonitor or listed above invalidates the safety certificate/voids the product guarantee and may also affect the product functionality.**

**Follow these steps to change the batteries:**

1. Before starting, be aware that alkaline batteries can leak in some situations. Wear safety goggles and protective gloves when changing the batteries. There might be liquid from worn out batteries, avoid getting it on your skin.
2. Open the device by removing the Battery Lid.
3. Remove the exhausted batteries by carefully pushing them towards the spring and lifting them out.
4. Carefully place the new batteries in the battery slots. It is important that the batteries are installed correctly with the polarities (+/-) the right way, see polarity marking. Inserting the batteries the wrong way will deplete the batteries and may harm the batteries and/or the device. Twist the Battery Key Lock 90 degrees to prevent the batteries from falling out.
5. Carefully lock the parts together. The unit is now activated.

- ! **CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF BATTERIES ACCORDING TO THE INSTRUCTIONS. REPLACE ALL BATTERIES AT THE SAME TIME AND DO NOT MIX BATTERY TYPES (Lithium / Alkaline).**
- ! **ATTENTION: RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UN TYPE INCORRECT. METTRE AU REBUS LES BATTERIES USAGÉES SELON LES INSTRUCTIONS. REMPLACER TOUTES LES PILES EN MÊME TEMPS ET NE PAS MÉLANGER LES TYPES DE PILES (Lithium / Alcalin)**

## 4.2 DC powered

Models supporting DC power can be powered by a cable where the provided voltage is 6 VDC +/- 10% and minimum 0.1 Watt per ultraBeacon Single-Zone (should be a max. PS1 external AC/DC Power Supply). The 2-wire cable (6 V and Ground) from the DC source is terminated to the green DC connector with screw terminals using a flat screwdriver. The DC connector is included with the product. After termination, the DC connector is plugged into the unit.

### Power distribution

The DC connector has 4 terminals. Terminals 1 and 2 are used for power input to the device. Terminals 3 and 4 can be used as output lines for daisy chaining of power to a second ultraBeacon. For example, 5 ultraBeacons can be sourced from one DC distribution source (power supply) by daisy chaining.

To successfully daisy chain power to two or more ultraBeacons, the following aspects must be taken into consideration to prevent poor or unstable power quality or loss of voltage over the cables:

- Power rating, voltage and quality of DC power supply.
- Cable length and cable quality including cable resistance.

The DC power supply must be capable of providing multiples of the minimum power required per ultraBeacon in the chain. Examples:

- 1 ultraBeacon requires 0.1 Watt
- 5 ultraBeacons require  $5 \times 0.1 \text{ Watt} = 0.5 \text{ Watt}$

The 2 wires coming from the DC source (or the previous device in the daisy chain) are terminated to input terminals 1 (+) and 2 (-). The 2 wires forwarded to the next device in the daisy chain are terminated to output terminals 3 (-) and 4 (+):

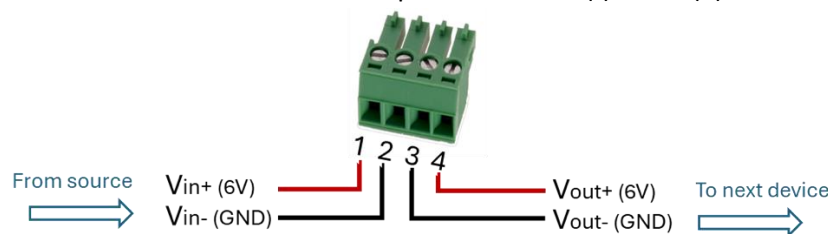


Figure 5: Overview of terminals for DC power supply.

### 4.3 PoE powered

Models supporting PoE (Power over Ethernet) can be powered from a PoE sourcing equipment (PSE) like a PoE switch. Connection is made via the RJ45 connector inside the unit. PoE cable homeruns cannot exceed 328 feet/100 meter from PSE to the device (based on the IEEE 802.3af standard). Any runs over the 328 feet/100 meter limit will experience connectivity issues due to low line power. The total cable length may be shorter due to limited PoE switch capabilities depending on brand and model and cable and connector quality.

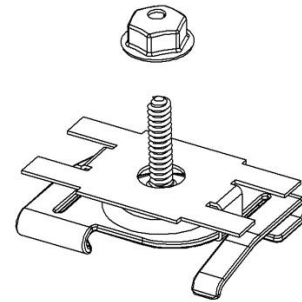
## 5 Mounting

Ceiling mounting is recommended. There are alternative methods of mounting, depending on the type of ceiling material.

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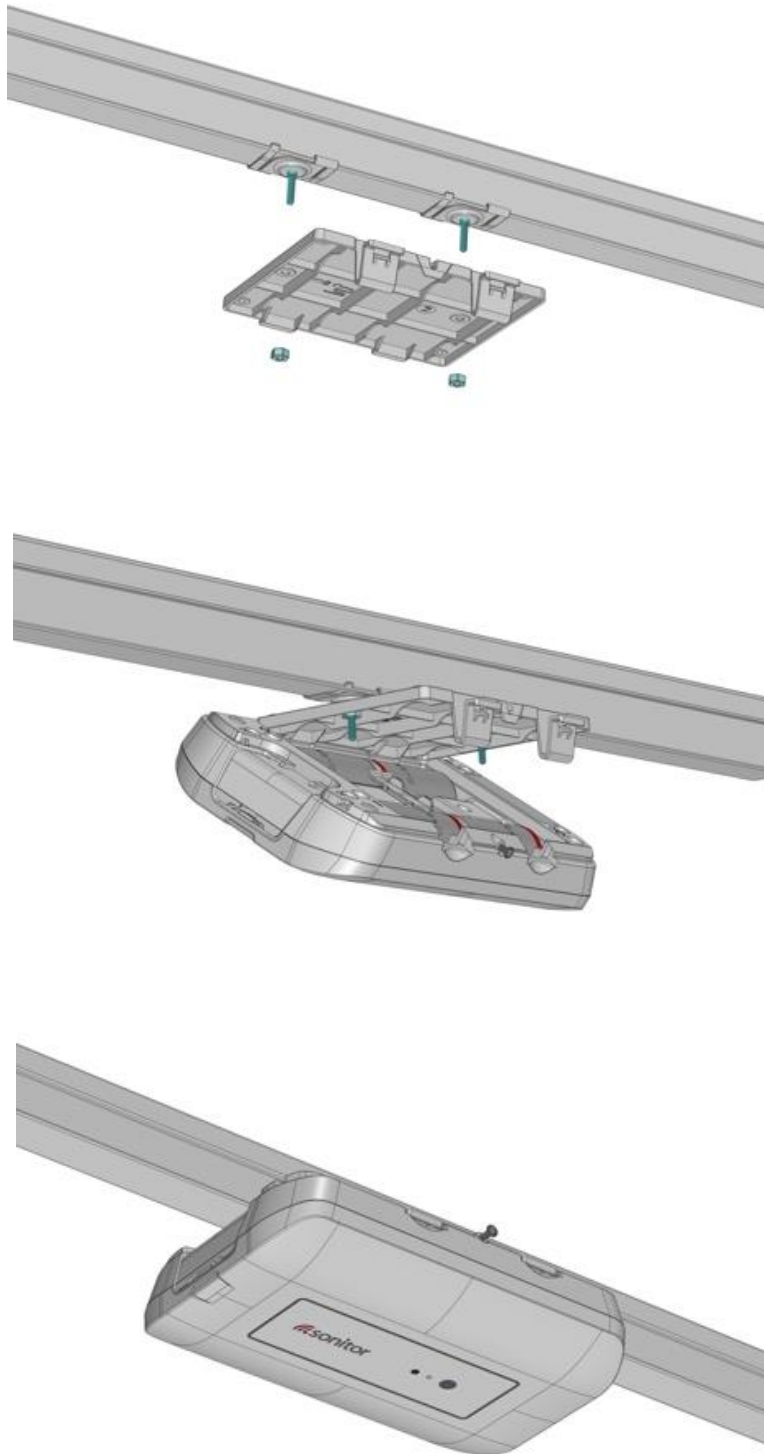
### Drop ceiling (using grid clip)

1. See Figure 6.
2. Position the grid clips on a T-bar\* and twist the clips clockwise until the prongs snap into place and grip the edges of the T-bar.
3. Remove the Battery Lid from the device.
4. With the Battery Lid upside down, slide the grid clips to position them to the two mounting holes at the middle of the short ends of the Battery Lid. Enter the grid clip studs into the Battery Lid mounting holes.
5. Insert washers and nuts and tighten.
6. Snap the main device to the Battery Lid.



\* Four types of ceiling scenarios: Broad T-bar/Narrow T-bar, flushed.

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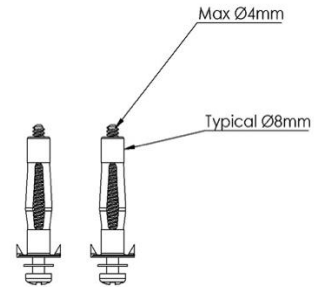
*Figure 6: Illustrations of mounting to drop ceiling.*

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### Plasterboard (using screws)

1. See Figure 7.
2. Drill holes in the ceiling to fit the four mounting holes in the corners of the Battery Lid.
3. Insert anchors\* and expand with setting tool.
4. Remove the Battery Lid from the device and place it over the anchors.
5. Insert washers over screws and tighten screws.
6. Snap the main device to the Battery Lid.

\*Wall Dog, 1 ¼ - 1 ½ inch pan head screw anchors may be used as an alternative. 2 x Hollow wall anchors (anchor, washer and screw).

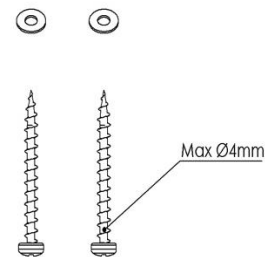


Max: Ø1/8 inch / 4mm screw. The screw head diameter must not exceed 1/5 inch / 5.3 mm. Make sure anchors length is suitable for the thickness of the plasterboard.

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### Solid plate or plasterboard with plywood plate (using screws)

1. See Figure 7.
2. Drill holes in the ceiling to fit the four mounting holes in the corners of the Battery Lid.
3. Remove the Battery Lid from the device and place it over the drilled holes.
4. Insert washers over screws and tighten screws.
5. Snap the main device to the Battery Lid.

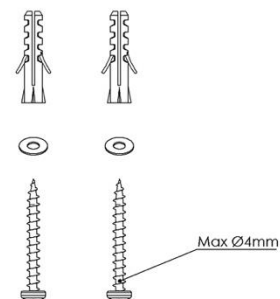


Max Ø 1/8 inch / 4 mm screw. The screw head diameter must not exceed 1/5 inch / 5.3 mm. Make sure anchor length is suitable for the thickness of the wall or boards.

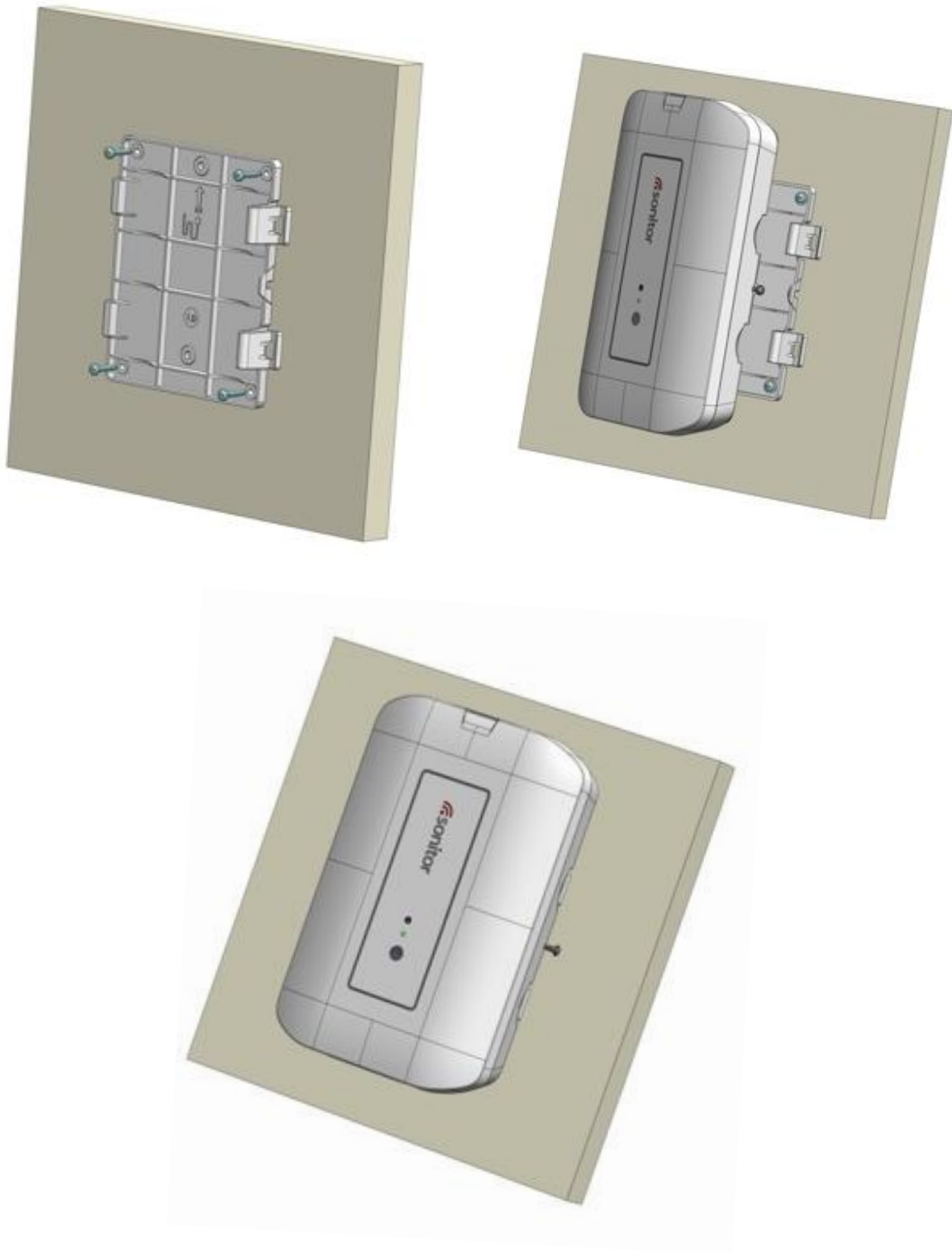
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### Concrete (using screws)

1. See Figure 7.
2. Drill holes in the ceiling to fit the four mounting holes in the corners of the Battery Lid.
3. Insert the expansion plugs into the drilled holes.
4. Remove the Battery Lid from the device and place it over the expansion plugs.
5. Insert washers over screws and tighten screws.
6. Snap the main device to the Battery Lid.



Max Ø 1/8 inch / 4 mm screw. The screw head diameter must not exceed 1/5 inch / 5.3 mm. Make sure anchor length is suitable for the thickness of the wall.



*Figure 7: Illustration of how to mount to ceiling plates.*

## 6 Cleaning

The ultraBeacon Single-Zone devices do not require extensive cleaning, however, if necessary, they can be dusted or wiped clean. The list below provides examples of cleaning wipes which were found safe to use on these units.



**Note: Wipe clean only, do not submerge in disinfectant solution. Do not rinse units under running water. Use disinfectants which do not require rinsing.**



**Note: The list below describes compounds tested which were found to be safe for use. The disinfection efficacy of the products has not been tested.**

- Examples of suitable wipes:
  - Medline: Micro-Kill™ 70
  - Ecolab: Klerwipe/Klercide 70|30 IPA (EPA Reg. No. 1677-249)
  - Ecolab: Klerwipe 70|30 Denatured Ethanol
  - Crystel SILVER (Sterile)



**Failure to read and comply with the instructions for cleaning will render your guarantee void.**

## 7 FCC

### Part 15 Compliance information

- INF-C361 and INF-C371
  - FCC ID: 2AD7T21123102501
- INF-C365 and INF-C375
  - FCC ID: 2AD7T21123102502

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.

### Part 15 Information to the User

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.
- Consult the dealer or an experienced radio/TV technician for help.

To comply with FCC 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 any persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## 8 Innovation, Science and Economic Development Canada

- INF-C361 and INF-C371
  - IC: 20330-21123102501
- INF-C365 and INF-C375
  - IC: 20330-21123102502

This device complies with Industry Canada license-exempt RSS standard(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.

To comply with 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 any persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Pour se conformer aux limites d'exposition RF d'ISED 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 toute personne et ne doivent pas être co-localisées ou fonctionner en conjonction avec une autre antenne ou un autre émetteur.

## 9 Recycling

Please dispose of the electronic devices and, if applicable, batteries and packaging material, in line with local environmental requirements.

For EU/EEA countries all Sonitor products are subject to the European Waste Electrical and Electronic equipment (WEEE) Directive 2012/19/EU. The party responsible to comply with the disposal regulations of the Directive is the party specified as liable according to the legislation in the country where the end user is located.

The WEEE responsibility for off-the-shelf batteries lies on the party defined as responsible in the local legislation.

## 10 Copyright

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