

User Guide

OMLOX SMARTANTENNA



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1. Introduction

omlox SmartAntenna is part of BeSpoon RTLS, a real-time locating system which uses Ultra-Wideband (UWB) pulses for real-time 3D location of objects in buildings in various industries.

omlox SmartAntennas are mainly used as mobile devices while omlox Satellites are used as fixed bases in BeSpoon RTLS. In this case, the omlox Satellites are synchronized with each other. The mobile devices, such as omlox WTags or omlox SmartAntennas are tracked in two modes which can coexist: Multi-Tag Tracking (server-centric) and GPS-like Positioning (device-centric).

omlox SmartAntennas may also be provided as part of special mobile kits without omlox Satellites and without server. In this case, BeSpoon RTLS works in a particular device-centric mode, called Single Self-Positioning: only 1 omlox mobile device is tracked, the others are used as fixed bases (then, unlike in the main configuration, the fixed bases are not synchronized).

BeSpoon RTLS overview - main configuration



BeSpoon RTLS overview - omlox mobile kits



This document includes regulatory information, as well as a detailed hardware specification and a description of its features.

For detailed features and user instructions regarding the complete system, please refer to the BeSpoon RTLS documentation included in the RTLS DELIVERY Pack. The RTLS DELIVERY Pack includes documentation and the related software toolchain, to make the development processes easier. It contents evolves according to BeSpoon RTLS developments.



2. Safety and compliance information

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.

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 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.

CAUTION

- BeSpoon RTLS equipments are configured to cover only the area inside buildings, preventing omlox SmartAntennas and other UWB devices of the system from emitting UWB signals outdoors.
Contact your system administrator if you are unsure as to the extent of coverage.
- **This equipment may only be operated indoors. Operation outdoors is in violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties.**
- **UWB devices may not be employed for the operation of toys.**
- **Operation onboard an aircraft, a ship or a satellite is prohibited.**
- **omlox SmartAntennas and the real-time location system BeSpoon RTLS may only be operated by qualified adult individuals. Installation and operation in childcare facilities and other places hosting children is prohibited.**
- **Any changes or modifications not expressly approved by BeSpoon could void the user's authority to operate this equipment.**



- Opening the casing of an omlox SmartAntenna and/or replacing any of its component is prohibited.
- omlox SmartAntennas only operate (i.e. receive and transmit UWB signals) within a complete UWB real-time location system BeSpoon RTLS, which must be professionally installed.
- In case omlox SmartAntennas must be disposed of, they must be collected in compliance with [Directive 2012/19/EU \(Waste of Electrical and Electronic Equipment\)](#).



EU Conformity Declaration



DECLARATION UE DE CONFORMITE (N° ...) (*)

1. Équipement radioélectrique (numéro de produit, de type, de lot ou de série):
2. Nom et adresse du fabricant ou de son mandataire:
3. La présente déclaration de conformité est établie sous la seule responsabilité du fabricant:
4. Objet de la déclaration (identification de l'équipement radioélectrique permettant sa traçabilité; au besoin, une image couleur suffisamment claire peut être jointe pour permettre l'identification de l'équipement radioélectrique):
5. L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable:
 Directive 2014/53/UE
 Autres législations d'harmonisation de l'Union, s'il y a lieu
6. Références des normes harmonisées pertinentes appliquées ou des autres spécifications techniques par rapport auxquelles la conformité est déclarée. Il faut indiquer, pour chaque référence, le numéro d'identification, la version et, le cas échéant, la date d'émission:
7. S'il y a lieu: l'organisme notifié ... (nom, numéro) ... a réalisé ... (description de l'intervention) ... et a délivré le certificat d'examen UE de type: ...
8. S'il y a lieu, description des accessoires et des éléments (y compris logiciels) qui permettent à l'équipement radioélectrique de fonctionner selon sa destination et qui sont couverts par la déclaration UE de conformité:
9. Informations complémentaires:
 Signé par et au nom de: ...
 (lieu et date d'émission):
 (nom, fonction) (signature):

3. Specification

3.1. Datasheet

- Data connections Bluetooth, UART, UWB
- Technology information
 - BLE Frequency band : [2402 – 2480] MHz
Max power (EIRP) : 4dBm
 - UWB Frequency band : [3250 – 4750] MHz
Max Mean power (EIRP) : -41.3dBm/MHz
- Dimensions 59 x 47 x 19 mm
- Power supply type USB C cable
- Power supply values Typ.: 5V (USB)
Min.: 4.35V
Max.: 5.5V
- Max. charging current default: 100 mA
adjustable to user requirements
- Operating temperature range -20° to 55°C
- Storage temperature range -20° to 25°C
- IP code 64
- Pre-programmed Unique ID 64 bits
- Light indicators see table below

Light indicators

Status	LED	Color	Lighting details
Starting	Point form LED and wave form LED	3 colors (green, orange, red)	All colors one after another, 500ms each
Supplied	Point form LED	Orange	Continuous
Temperature protection			Fast blink (every 200 ms)
Scanning	Wave form LED	Green	Slow breath
Calibrating			Fast blink
Ranging			Blink every 3s



3.2. Hardware overview

front view



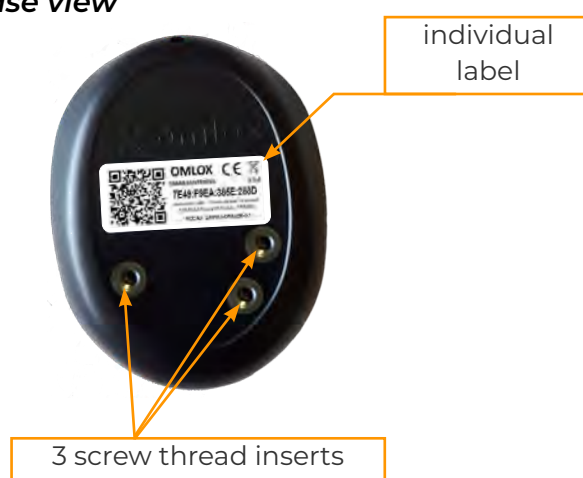
back view



side view



base view



individual label



symbols



[CE](#) certification mark

[WEEE symbol – Directive 2012/19/EU](#)

3.3. Equipment needs

BeSpoon RTLS main configuration (omlox Satellites used as fixed bases)

- Full system equipment such as defined at section 3.4. of the document **omloxSatellite_UserGuide.pdf**
- Wireless charging devices
- Optional mounting screws – Type: M3 diameter, minimum length 8mm e.g. *Phillips Pozidriv Recess Countersunk Head, DIN 96 - White Zinc Steel*



BeSpoon RTLS mobile kits (mobile devices as fixed bases)

- At least 5 mobile devices
- Wireless charging devices and/or USB C cables
- Android tablet or smartphone
- PC (if UART transmission only)
- Optional mounting screws – Type: M3 diameter, minimum length 8mm
e.g. *Phillips Pozidriv Recess Countersunk Head, DIN 96 - White Zinc Steel*

4. Deployment instructions

4.1. omlox SmartAntenna mounting (optional)

If you need to fix the omlox SmartAntenna, 3 screw thread inserts are included in the device's base.

► see illustration at [section 3.2](#)

Use all 3 screw thread inserts for each omlox SmartAntenna.

Warning: the equipment should not be used in places hosting children.

4.2. omlox SmartAntenna start

omlox SmartAntenna starts as soon the USB C cable is plugged and the board is supplied with power.

► see table of light indicators at [section 3.1](#)

4.3. omlox SmartAntenna placement

One simple golden rule ensures the best results when it comes to the deployment: avoid UWB signal deterioration and reflection by maximizing Line of Sight links (LoS) among all the devices included in the system. LoS matters among omlox Satellites for the quality of synchronization. Of course, it also matters between omlox Satellites and SmartAntennas for the location precision.

Short animation sequences summarizing the points to pay attention to (online content)



UWB synchronization



Non-Line of Sight Examples



Dilution of precision



How to place fixed devices



4.4. omlox SmartAntenna control

omlox SmartAntennas are configured and controlled via the Web UI of BeSpoon RTLS or via another application based on a compatible session protocol.

For more information, please refer to the corresponding documentation. It can be either the documentation included in the RTLS DELIVERY Pack or the documentation dedicated to the compatible application.

5. Ask for support

We offer standardized as well as customized solutions. Please note that all documents may be updated without notice to individual customers beforehand.

We provide remote assistance by e-mail at bshq@bespoon.com.

In case of support request, please indicate your system references.





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