

Ultra-wideband Location System

UBISENSOR30V1 (Revision D)

User's Manual

Written By

Andy Ward

Ubisense Limited

St Andrews House, St Andrews Road, Cambridge CB4 1DL,
ENGLAND

Tel: +44 (0)1223 535170

Fax: +44 (0)1223 448167

Email: support@ubisense.net

WWW: <http://www.ubisense.net/>

Revised: November 2022

Table of Contents

Introduction	1
Regulatory Information for the United States of America	1
Regulatory Information for Canada	2
Nomenclature	Error! Bookmark not defined.
Features of the Ubisensor	3
Installation and Operation Instructions	5
Mounting options	5
Powering the Ubisensors	5
Setting up sensors.....	5
Switching on the Ubisensor	5
Calibrating the Ubisensor	6
Troubleshooting.....	6
Ubisensor Specifications	7

Introduction

The UBISENSOR30V1 is a basestation used by the Ubisense Location System, which supports the real-time location of objects. It detects ultra-wideband (UWB) pulses emitted by wireless tags (Ubitags), allowing the 3D position of the tags to be found. The use of UWB technology enables greater positioning accuracy than other wireless technologies, because it is much less susceptible to multipath interference effects. Applications of the system include healthcare, workplace productivity, security, retail management and manufacturing.

This document describes the features and specifications of the UBISENSOR30V1, important regulatory information concerning its use, and details on how to diagnose potential problems.

Regulatory Information for the United States of America

The UBISENSOR30V1 is approved under Part 15.249 of the FCC rules:

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.

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 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.*

Changes or modifications to the equipment not expressly approved by the party responsible for the grant of equipment authorization issued by the FCC could void the user's authority to operate the equipment under the grant of equipment authorization.

IMPORTANT NOTE: FCC Radiation Exposure Statement: This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The device has been evaluated as safe to use at any separation from the person.

Regulatory Information for Canada

This device (PMN: UBISENSOR30V1; HVIN: UBISENSOR30V1; IC: 8673A-SENSOR33) is approved under Innovation, Science and Economic Development Canada documents RSS-GEN, RSS-102 and RSS-210.

Cet appareil (PMN : UBISENSOR30V1 ; HVIN : UBISENSOR30V1; IC : 8673A-SENSOR33) est approuvé en vertu des documents d'Innovation, Sciences et Développement économique Canada RSS-GEN, RSS-102 and RSS-210.

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.

Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device complies with the safety requirements for RF exposure in accordance with RSS-102 Issue 5 for portable use conditions in uncontrolled environments.

Cet appareil est conforme aux exigences de sécurité relatives à l'exposition aux radiofréquences, conformément à la norme RSS-102, édition 5, pour systèmes portables conditions d'utilisation dans des environnements non contrôlés.

This Class B digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B)

Cet appareil numérique de classe B est conforme à la norme canadienne CAN ICES-3 (B)/NMB-3(B).

CAUTION: Any changes or modifications made to the UBISENSOR30V1 which are not expressly approved by Ubisense Limited could void the user's authority to operate the equipment.

ATTENTION : Tout changement ou modification apporté à l'UBISENSOR30V1 qui n'est pas expressément approuvé par Ubisense Limited peut annuler l'autorisation de l'utilisateur à faire fonctionner l'équipement.

Regulatory Information for Europe

Hereby, Ubisense Limited declares that the radio equipment type UB-Tag Dimension4 UWB+BLE tag (D4UWBBLE) 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.ubisense.net or from:

Ubisense
St. Andrew's House
St. Andrews Road
Chesterton
Cambridge
CB4 1DL
United Kingdom

The device uses the following frequency bands, at the output powers shown:

Radio interface	Lower frequency (MHz)	Upper frequency (MHz)	Output power (dBm, peak e.i.r.p)
2.4GHz	2401.75	2481.75	9.1

Regulatory Information for the UK

Hereby, Ubisense Limited declares that the radio equipment type UB-Tag Dimension4 UWB+BLE tag (D4UWBBLE) is in compliance with the Radio Equipment Regulations 2017, the Electromagnetic Compatibility Regulations 2016, the Electrical Equipment (Safety) Regulations 2016 and the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012. The full text of the UKCA declaration of conformity is available at the following internet address: www.ubisense.net or from:

Ubisense
St. Andrew's House
St. Andrews Road
Chesterton
Cambridge
CB4 1DL
United Kingdom

The device uses the following frequency bands, at the output powers shown:

Radio interface	Lower frequency (MHz)	Upper frequency (MHz)	Output power (dBm, peak e.i.r.p)
2.4GHz	2401.75	2481.75	9.1

Features of the UBISENSOR30V1

The diagrams below show several important features of the UBISENSOR30V1:



Figure 1 – UBISENSOR30V1 Front

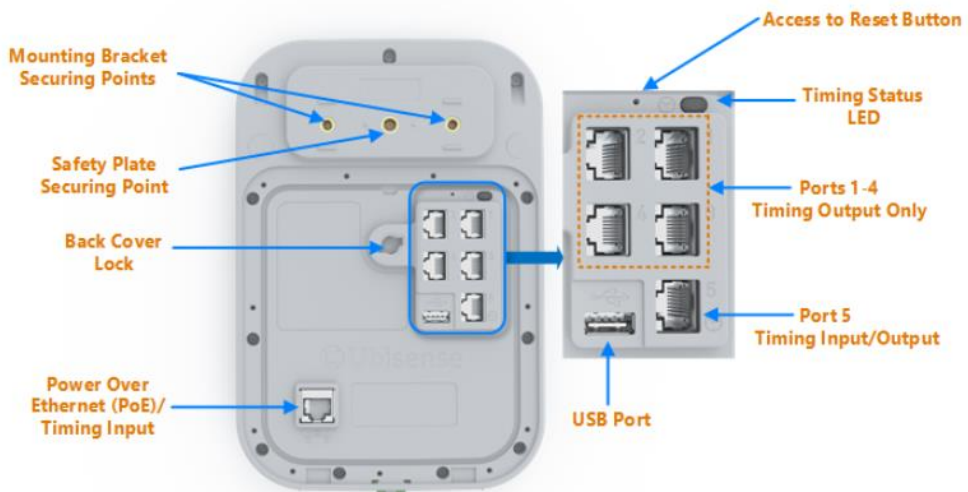


Figure 2 – UBISENSOR30V1 Rear



Figure 3 – UBISENSOR30V1 optional dust cover

The optional rear dust cover may be used for installations where the sensor needs additional protection from the environment. The cover may be fitted with suitable cable glands where the cables exit from the cover on the bottom surface.

Installation and Operation Instructions

For complete operating instructions, please visit www.ubisensedimension4.com

Mounting options

The UBISENSOR30V1 has three mounting holes in the back of the case, to which external clamps and brackets can be attached. The two outer holes are M4 size, the middle hole is M6 size (and can be used in conjunction with a standard photographic camera mount).

Powering the UBISENSOR30V1

The UBISENSOR30V1 must be powered using Power over Ethernet (PoE). This is normally done by connecting the unit to a network using a PoE switch. However, it is also possible to use mid-span injectors if desired.

Setting up the UBISENSOR30V1

The UBISENSOR30V1 must be entered into a configured Ubisense DIMENSION4 dataset. See www.ubisensedimension4.com for instructions on how to set up a dataset for your environment.

Each UBISENSOR30V1 has a unique MAC address, which can be found on the label on the rear of the unit. By entering the UBISENSOR30V1 in the dataset, and configuring it to account for the desired system setup, the correct tracking performance can be achieved. See www.ubisensedimension4.com for full instructions on how to configure UBISENSOR30V1 sensors within the dataset.

Switching on the UBISENSOR30V1

To turn on the UBISENSOR30V1, simply turn on the power to the device. The status LED on the front of the unit should illuminate, and the device will begin to attempt to contact the Ubisense location system dataset (which should already have been installed on your network – see www.ubisensedimension4.com for details).

Calibrating the UBISENSOR30V1

When the UBISENSOR30V1 has been installed in its final location, its position and orientation must be found and entered into the Ubisense location system's dataset. The Ubisense location system management tools make this calibration process simple and quick – refer to www.ubisensedimension4.com for details.

Troubleshooting

If you believe that the UBISENSOR30V1 is not functioning correctly, and the Ubisense location system management tools are not able to diagnose the problem, it is likely that the unit is not communicating with the rest of the location system for some reason. Check the following:

- The networking cable is fully plugged in at both ends.
- The unit is connected to a network connection which is providing PoE power.
- Your local network port is connected to the rest of your network.
- The link light corresponding to the device's network connection is illuminated on the nearest upstream switch.

If you are still unable to determine the cause of the problem, contact your system installer or Ubisense.

Ubisensor Specifications

Conventional radio transceiver section (FCC ID: SEASENSOR33, IC: 8673A-SENSOR33)

Lowest channel frequency:	2401.750MHz (802.15.4f-2012 channel 15)
Highest channel frequency:	2481.750MHz (802.15.4f-2012 channel 56)
Maximum average output e.i.r.p.:	-4.3dBm

General specifications

Dimensions:	200mm x 140mm x 60mm
Power supply:	48V PoE
Operating temperature range:	-40°C to +60°C