



Ubisense DIMENSION4™

Tool Tag User Guide

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Contents

- Ubisense Tool Tags 1**
 - Types of Tool Tags 1
- Features of Tool Tags 2**
- Head and Battery Unit Tool Tag: Power Supply Options 4**
- Preparing a Head and Battery Unit Tool Tag 5**
- Activating an Integrated Tool Tag 10**
 - Checking that a Tool Tag is Activated 10
- Putting a Tool Tag into Deep Sleep 11**
- Replacing the Battery of a Tool Tag 12**
- Connecting a Head Unit to an Integrated Tool Tag 13**
- Disposing of Batteries 15**
- Resetting the Battery History 16**
- Regulatory Information 17**
 - Regulatory Information for United States of America 17
 - Regulatory Information for Canada 18
 - Regulatory Information for Europe 18

Ubisense Tool Tags

Ubisense Tool Tags are small, sturdy devices that you can attach to tools such as torque wrenches. When you attach a Tool Tag to a tool, depending on your system configuration and environment, you can locate the tool to an accuracy of 15 cm in 3D in real-time. You can use Tool Tags in different types of environments, including industrial sites.

Types of Tool Tags

Ubisense provides the following types of tool tag:

- *Head and Battery Unit Tool Tag*: The Battery Unit is connected to the Head Unit by using a micro-USB B power cable.
- *Integrated Tool Tag*: The Battery Unit and Head Unit are combined into a strong casing.

Features of Tool Tags

The features of the Integrated Tool Tag and Head and Battery Unit Tool Tag, are shown in the following figures.



Features of Tool Tags

Feature	Description
A. Power LED (yellow)	Indicates that the tag is receiving power and is communicating with the DIMENSION4 Real-time Location System.
B. Programmable LEDs (green and red)	By default, these LEDs are not used.
C. Strapping Slots	You can mount a Battery Unit or an Integrated Tool Tag by using straps. The strap apertures have the following dimensions:

Feature	Description
	<ul style="list-style-type: none"><li data-bbox="688 348 911 380">• Length: 19.5 mm<li data-bbox="688 401 867 432">• Width: 4 mm
D. Power Cord Connector	The Battery Unit and Integrated Tool Tag have a mini USB power cord connector on the top. This cord connector is used for transferring power to the Head Unit.
E. Philips Head Screws	Screws that connect the body of the tag to its front case.

Head and Battery Unit Tool Tag: Power Supply Options

Depending on your requirements, you can use various power supply options to power-up the Head Unit. The power supply option that you use also determines how you prepare and use the tag, as described in the following table.

Power Supply Option	How to Use the Tag...
Plug the tag into a micro USB supply port.	The Head Unit has a long cable length. Fold the cable neatly and clamp the tie-wrap to the tool. You can discard the Battery Unit.
Plug the tag into a power supply, by using a screw terminal block.	Cut the cable to the required length, and prepare the wire ends, as described in Preparing a Head and Battery Unit Tool Tag . Connect the wire ends into the screw terminal block. You can discard the micro USB plug and the Battery Unit.
Use the Battery Unit.	Use the tag as described in Preparing a Head and Battery Unit Tool Tag .
Up to three Head Units, powered from a single power source.	Cut the cables from each Head Unit and prepare them, as described in Preparing a Head and Battery Unit Tool Tag . We recommend that you solder the wires together. If you do not want to solder the wires together, you can either: <ul style="list-style-type: none"> • Connect the wires into a screw terminal block. • Connect the wires to a Battery Unit, as described in Preparing a Head and Battery Unit Tool Tag.

Preparing a Head and Battery Unit Tool Tag

The Head and Battery Unit Tool Tag is supplied with a standard cable (wire) length, as shown in the following figure.

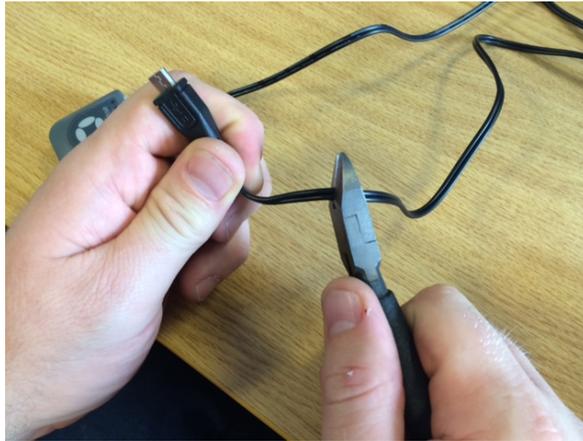


Head and Battery Unit Tool Tag

Before you attach a Head and Battery Unit Tool Tag to a tool, you must cut the wire to the correct length, depending on your particular requirements.

To prepare the tag, cut the wire to the appropriate length:

1. Determine the required length of the wire. Ensure that you allow sufficient length to properly terminate and strain-relieve the wires. Cut the wire to the appropriate length, as shown in the following figure. Discard the plug.

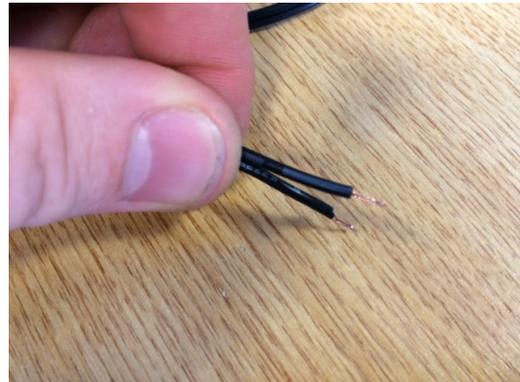


Cutting the Wire to the Required Length

2. Strip the wires and twist the individual strands together as shown in the following figures.



Stripping the Wires



Prepared Wires

3. Remove the battery holder PCBA from the Battery Unit. Remove the battery, and locate the wire entry slot, shown in the following figure.



Battery Unit with the Battery and Holder



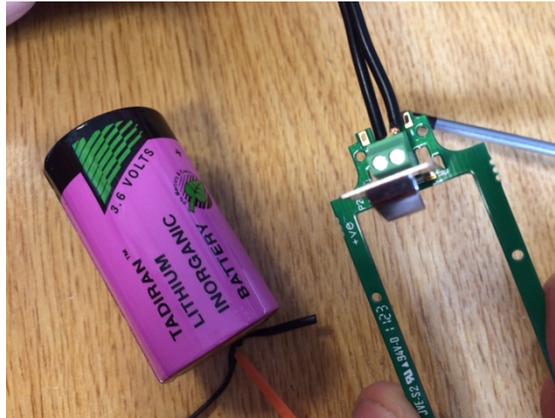
Battery Unit without the Battery

4. Pass the wire through the wire-entry slot, as shown in the following figure.



Passing the Wire through the Wire-entry Slot

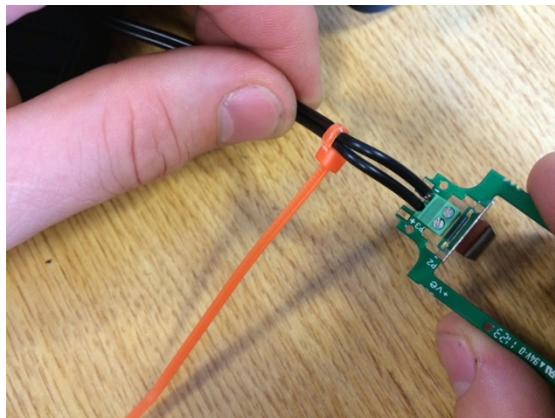
5. Connect the wires to the terminal block on the battery holder as shown in the following figure.



Connecting the Wires

Ensure that you use the correct polarity. The positive terminal is marked on the Printed Circuit Board with a + symbol. The wire with the White Stripe is the positive wire.

6. Install the strain relief cable tie on the cable as shown in the following figure.



Installing the Strain Relief



To provide strain relief, pull the cable tie tight. Cut the excess length of the cable tie.

7. Install the battery holder back in the battery box, ensuring that the strain relief is placed as shown in the following figure.



Battery Holder Installed in the Box

8. Reinstall the battery and assemble the Battery Unit, as shown in the following figure.



Assembled Head and Battery Unit

The yellow LED on the Head Unit slowly increase in brightness. After a few seconds, the yellow LED starts flashing to indicate the tag is communicating with the DIMENSION4 Real-time Location System.

You can now use the Tool Tag.

Activating an Integrated Tool Tag

The Integrated Tool Tag includes a battery. To reduce the loss of battery life, the tag is supplied in the deep sleep (deactivated state). For activation you need a paper clip or a screwdriver to access a button inside the tag.

To activate the tag, insert the paper clip or screwdriver into the slot on the side of the tag and hold it there for more than three seconds. See the following figure for the location of the slot.



The yellow LED on the head unit slowly increases in brightness, indicating that the tag has been activated. After a few seconds the LED starts flashing to indicate that it is communicating with the DIMENSION4 Real-time Location System.

Checking that a Tool Tag is Activated

To check that a Tool Tag has been activated, insert a paper clip or wire on the side of the unit for *less than 3 seconds*.

If the LED is constantly lit when you press the button, the tag is still in the deep sleep (deactivated) state. Repeat the process described above to activate.

Putting a Tool Tag into Deep Sleep

If a Tool Tag is activated, you can put it back into the deep sleep state at any time to preserve the battery.

To put the tool tag into deep sleep you need a paper clip or a screwdriver to access the button inside the tag.

1. Insert and hold a paper clip or screwdriver into the slot on the side of the tag, shown in the following figure.



2. The LED first stops blinking in readiness for the first challenge. It then starts blinking again.
 - a. Count the number of times the LED blinks brightly. This can be from one to five blinks.
 - b. Using the paper clip or screwdriver, press the button on the tag the same number of times.
3. Carry out the second challenge:
 - a. Count the number of times the LED blinks brightly.
 - b. Using the paper clip or screwdriver, press the button on the tag the same number of times.
4. If you are successful, the LED blinks brightly and switches off. The tag is now deactivated.

If you are unsuccessful, the green LED on the tag will continue to blink at a lower intensity, at the programmed UWB beacon rate.

Replacing the Battery of a Tool Tag



Tag parameters are retained when the power source is removed from the tag.

Tool Tags are supplied with a connectorized A-size 3.6 V battery (Part number: TOOLBAT). Tool Tags regularly report their battery status to the DIMENSION4 Real-time Location System through the UWB Sensors.

To replace the battery in a Tool Tag (Battery Unit or an Integrated Tool Tag):

1. Remove the screws on the front cover of the tag.
2. Do one of the following:
 - **Battery Unit:** Remove the old battery, and then insert a new battery.
 - **Integrated Tool Tag:** Remove the old battery by unplugging the battery connector. Insert a new battery, and then plug the connector into the battery socket, as shown in the following figure.



Replacing Battery of an Integrated Tool Tag

3. Replace the front cover of the tag by fixing the screws. The yellow LED on the tag gradually lights up to indicate that it is working correctly. The DIMENSION4 Real-time Location System can then find the location of the tag.

If the LED does not flash after you have replaced its battery, remove the battery and then reinsert the battery. Wait for 30 seconds.

Connecting a Head Unit to an Integrated Tool Tag

You may occasionally need to connect the Head Unit inside an Integrated Tool Tag. This requires you to detach the front cover of the tag and connect the tag correctly.

Note: Connecting the Head Unit also activates the tag.

To connect the Head Unit:

1. Separate the body of the tag from the front cover by unscrewing the four screws on the front case of the tag, shown in the following figure.



Front Case of the Integrated Tool Tag

2. Connect the Head Unit of the tag to the twenty-way pin connector on the printed circuit board of the tag, as shown in the following figure.

Connecting a Head Unit to an Integrated Tool Tag



Activating an Integrated Tool Tag

The yellow LED on the head unit slowly increases in brightness, indicating that the tag has been activated. After a few seconds the LED starts flashing to indicate that it is communicating with the DIMENSION4 Real-time Location System.

3. Replace the front case of the tag by connecting the four screws.

Disposing of Batteries

After you have replaced batteries, dispose of the old batteries according to the manufacturer's instructions, available at: <http://www.tadiranbat.com/index.php/shipping-and-information>.

Resetting the Battery History

After you have replaced the battery in a DIMENSION4 tag, you must reset the battery history of the tag. This enables you to:

- Clear all previous battery usage history
- Restart the battery history data collection process for the new battery

You can reset the battery history:

- If you have a license for the SmartSpace Visibility feature, on the Tag and Battery Status screen of SmartSpace Web. See [Resetting Battery Status](#) on the SmartSpace website.
- For tags which have been associated with a SmartSpace object, in SmartSpace Config on the TAG ASSOCIATION tab.
- By using the command-line tool `ubisense_tag_battery_replaced` and specifying the `<tag>` ID

For example:

```
ubisense_tag_battery_replaced 00:11:ce:00:00:De:ad:Be:ef
```

Or, by running `ubisense_tag_battery_replaced` without the `<tag>` argument and reading tag IDs from standard input

Note: This tool was introduced with version 3.6 and replaces the use of the `ubisense_battery_monitor_config` command-line tool in earlier 1.x versions.

Regulatory Information

Regulatory Information for United States of America

The Ubisense tag is a wideband wireless device certified under FCC Part 15.250. Its use is subject to technical requirements for wideband systems. Users should note carefully the following information:

- Operation on board an aircraft or a satellite is prohibited.
- 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 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.

Users should also carefully note the following information:



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

Regulatory Information for Canada

This Ubisense tag is approved under Industry Canada documents RSS-GEN, RSS-210 and RSS-220.

This device complies with Industry Canada licence-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.

Cet appareil est conforme avec Industrie Canada RSS standard exempts de licence (s). Son utilisation est soumise aux deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

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

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada, ICES-3 (B)/NMB-3(B).



CAUTION: Any changes or modifications made to the device which are not expressly approved by Ubisense Limited could void the user's authority to operate the equipment. This device must only be used indoors.

Regulatory Information for Europe

CE 0889

Hereby, Ubisense declares that this Ubisense tag is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. A copy of the Declaration of Conformity for this equipment may be obtained from:

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St. Andrews Road
Chesterton
Cambridge
CB4 1DL, United Kingdom

This UWB transmitter must not be installed at a fixed outdoor location or used in flying models, aircraft and other forms of aviation.