

# LS-100 Wireless Location Sensor

## Installation Guide

The Aruba LS-100 wireless location sensor is a single radio, dual-band WLAN device that scans the supported radio bands, collects relevant data about wireless devices in the network, and makes this information available to a locationing server by periodically connecting to the wireless network as a client device.

In addition to WLAN scanning to improve infrastructure based locationing performance, the LS-100 also incorporates a Bluetooth Low Energy (Bluetooth 4.0, BLE) chirper to support client based locationing services.

### Package Contents

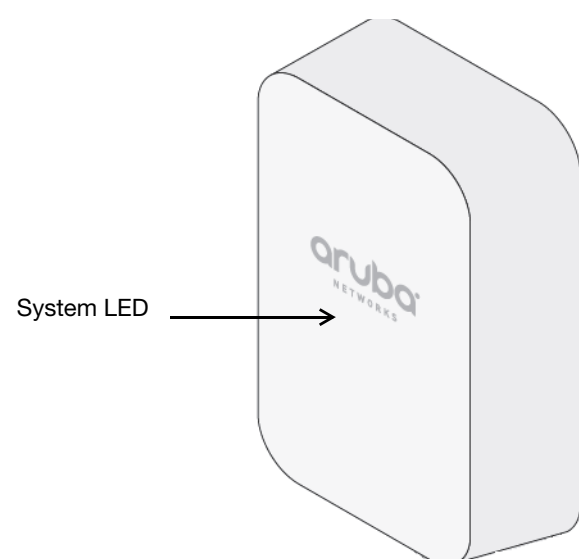
- LS-100 wireless location sensor
- AC Power Plug
- USB Power Cable (Type A to type Micro-B connectors) - 1m length
- AC Outlet Security Kit
- Wall Mount Bracket
- Release Key
- Aruba SW License Agreement (EULA)
- Installation guide (this document)



Inform your supplier if there are any incorrect, missing, or damaged parts. If possible, retain the carton, including the original packing materials. Use these materials to repack and return the unit to the supplier if needed.

### LS-100 Hardware Overview

Figure 1 LS-100 Front

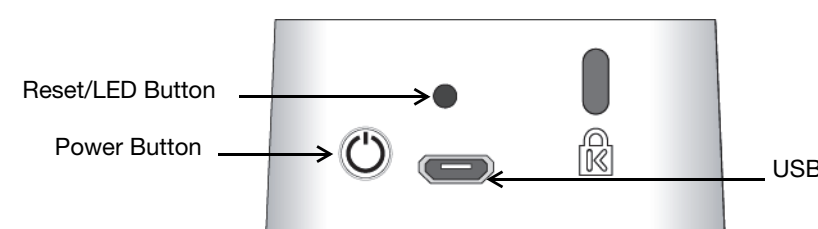


### LED

Table 1 LED Meanings

LED	Color/State	Meaning
System Status LED	Off	Device powered off
	Red	Error condition
	Red - Flashing	Device booting, not ready
	Green - Flashing	Device ready, not connected to network, configured
	Green - Steady	Device ready, connected to network, configured
	Amber - Flashing	Device ready, not connected to network, not configured
Amber - Steady	Device ready, connected to network, not configured	

Figure 2 LS-100 Bottom



### USB Interface

The LS-100 implements a Micro-B type USB interface for DC powering.

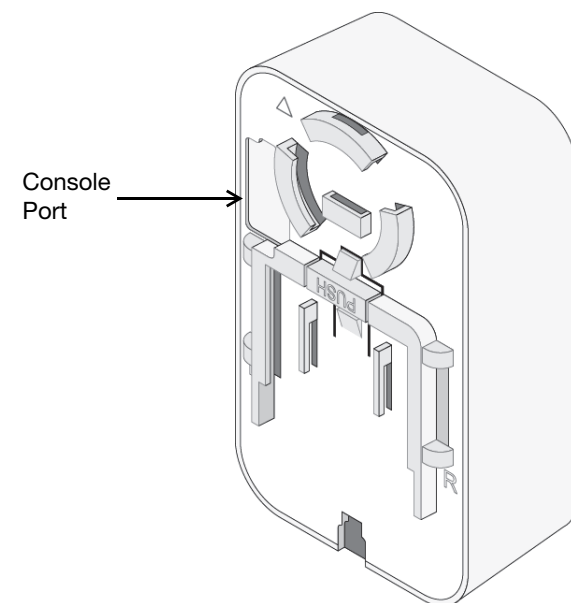
### Power Button

The power button allows you to enable/disable DC power to all circuits (AC power may remain active at all times).

### Reset/LED Button

The Reset/LED button is a dual-function push button, for system reset (during power on) and LED control (during normal operation). To reset LS-100 to manufacturing defaults the button has to be held down (for several seconds) while the unit is powered on. During normal operation, the button can be used to toggle LED mode between "normal" (default after power on) and "all off".

Figure 3 LS-100 Rear



### Console Port

The serial console port allows you to connect the device to a serial terminal or a laptop for direct local management. This port located at the rear of the LS-100 is a 4-pin connector covered by a dust cover. An optional serial adapter cable (AP-CBL-SER) is available for use with the LS-100 and is sold separately.



Hot-plug operation is not recommended for the console port.

### Before You Begin



**FCC Statement:** Improper termination of access points installed in the United States configured to non-US model controllers will be in violation of the FCC grant of equipment authorization. Any such willful or intentional violation may result in a requirement by the FCC for immediate termination of operation and may be subject to forfeiture (47 CFR 1.80).



**EU Statement:** Lower power radio LAN product operating in 2.4 GHz and 5 GHz bands. Please refer to the *ArubaOS User Guide* for details on restrictions.

Produit réseau local radio basse puissance operant dans la bande fréquence 2.4 GHz et 5 GHz. Merci de vous référer au *ArubaOS User Guide* pour les détails des restrictions.

Low Power FunkLAN Produkt, das im 2.4 GHz und im 5 GHz Band arbeitet. Weitere Informationen bezüglich Einschränkungen finden Sie im *ArubaOS User Guide*.

Apparati Radio LAN a bassa Potenza, operanti a 2.4 GHz e 5 GHz. Fare riferimento alla *ArubaOS User Guide* per avere informazioni dettagliate sulle restrizioni.



To meet regulatory restrictions, the device must be professionally installed.

### Identifying Known RF Absorbers/Reflectors/Interference Sources

Identifying known RF absorbers, reflectors, and interference sources while in the field during the installation phase is critical. Make sure that these sources are taken into consideration when you attach an AP to its fixed location. Examples of sources that degrade RF performance include:

- Cement and brick
- Objects that contain water
- Metal
- Microwave ovens
- Wireless phones and headsets

### Installing the Device



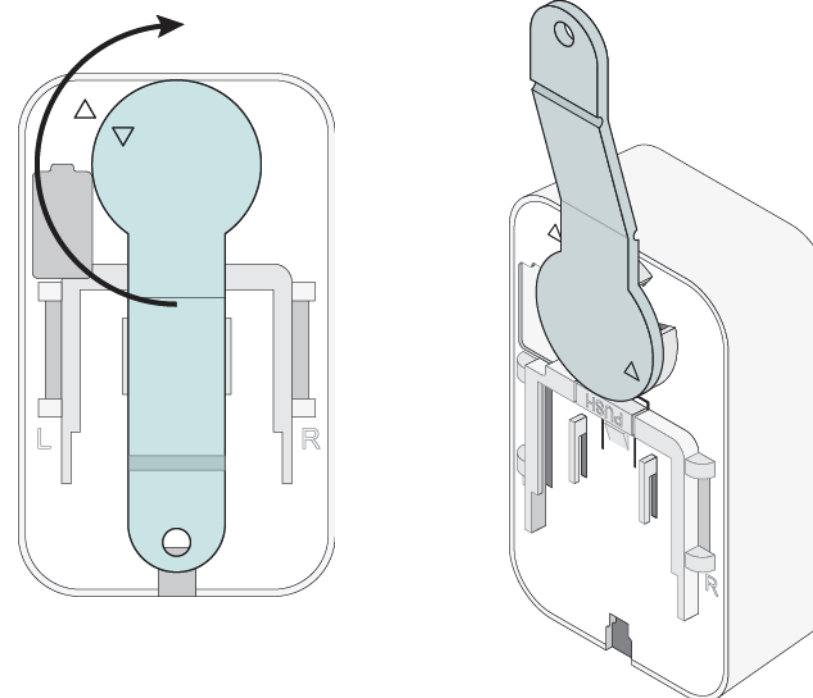
Service to all Aruba Networks products should be performed by trained service personnel only.

The LS-100 device can be either plugged into an AC power outlet or mounted on a wall (powered via USB).

#### Plugging LS-100 into an AC Power Outlet

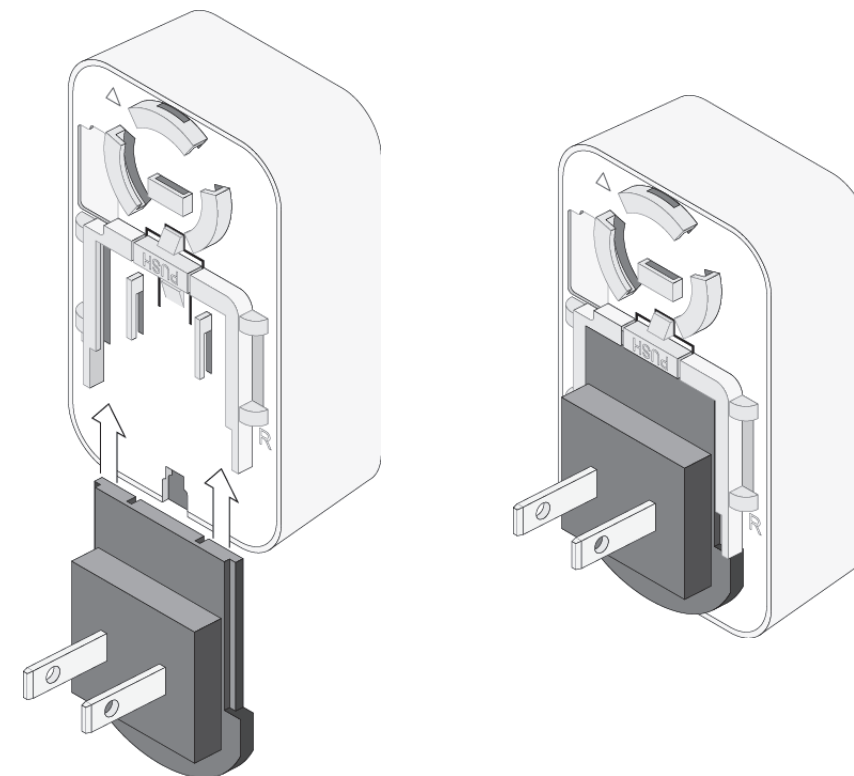
1. (Optional) You can keep your LS-100 device secure with the security kit.
  - a. Align the triangle mark on the AC outlet security kit with the same triangle mark on the back panel of the LS-100.
  - b. Rotate the security kit 180 degrees.

Figure 4 Installing Security Kit



2. Slide the AC power plug to the tracks at the back panel of the LS-100 until the plug locks into place.

Figure 5 Installing AC Power Plug



3. After plugging the LS-100 into an AC power outlet, you can use a screw to secure the security kit to the wall.

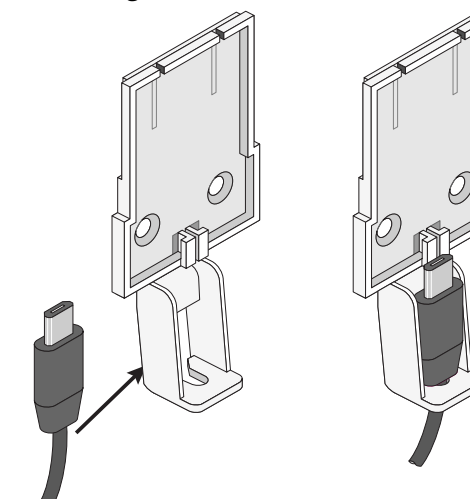


Avoid hitting a live wire when drilling into a wall to secure the security kit.

#### Mounting LS-100 on a Wall (Powered via USB)

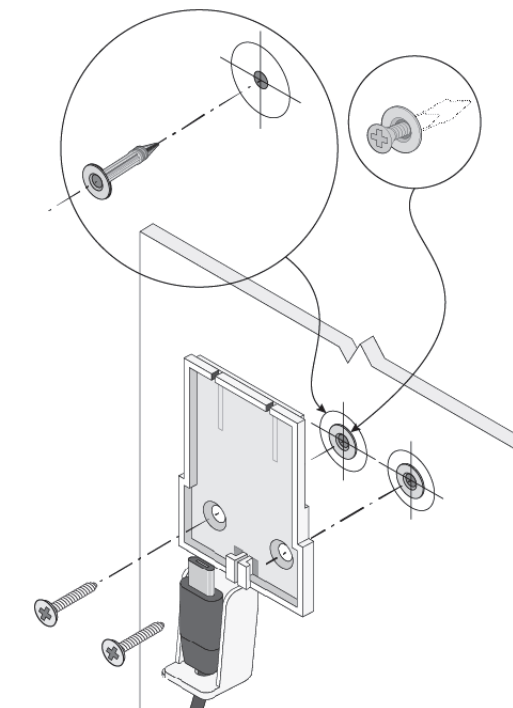
1. Route the USB cable through the bottom opening of the wall mount bracket.

Figure 6 Routing the USB Cable



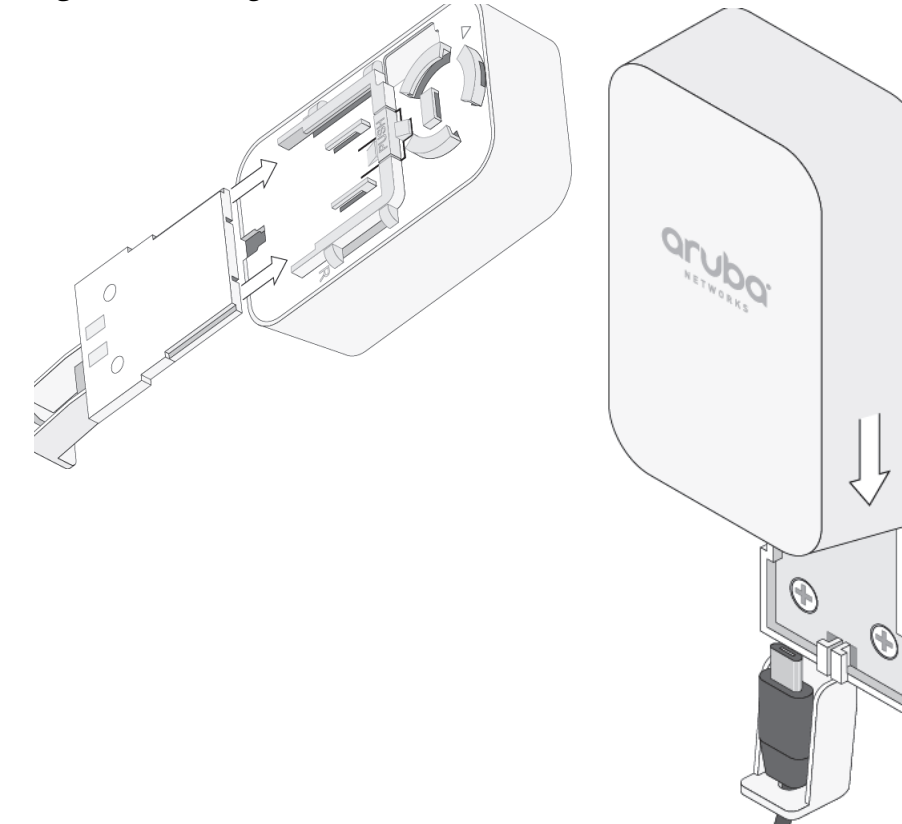
2. Attach the wall mount bracket to the wall.
  - a. Use the wall mount bracket as the template to mark the two mounting points on the wall.
  - b. Use a drill to create two holes on the two markings you created in the previous step.
  - c. Install any necessary wall anchors. Wall anchors are not included in the package.
  - d. Align the screw holes in the wall mount bracket with the previously installed anchors or demarcated screw points.
  - e. Insert the screws to secure the wall mount bracket. Screws are not included in the package.

Figure 7 Attaching the Wall Mount Bracket to a Wall



3. Align the tracks at the back panel of the LS-100 with the wall mount bracket. Push the LS-100 against the wall mount bracket and downward until the LS-100 locks into place.

Figure 8 Attaching LS-100 to the Wall Mount Bracket

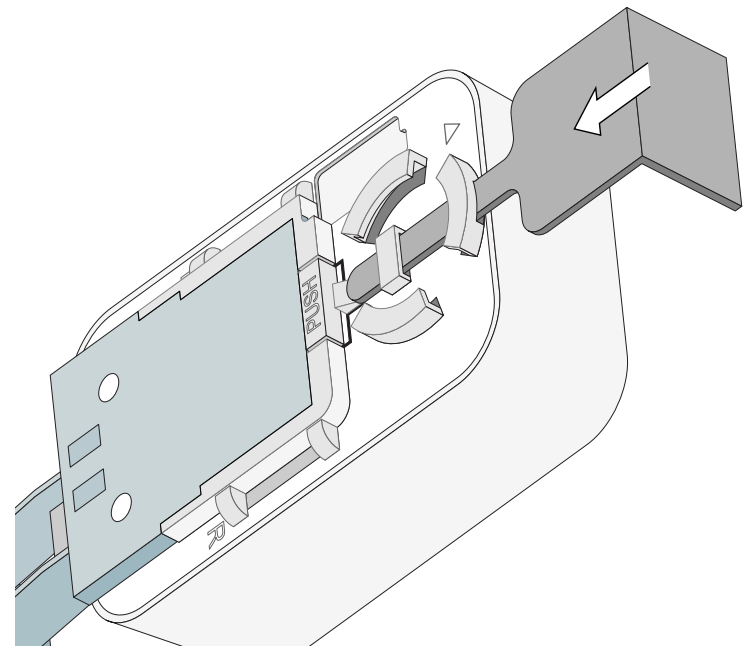




## Removing the LS-100 from the Wall Mount Bracket

- To remove the LS-100 device from the wall mount bracket, begin by inserting the release key into the holes.
- Use the release key to depress the tab on the LS-100 and push the device up.

Figure 9 Removing LS-100 from the Wall Mount Bracket



## Verifying Post-Installation Connectivity

The integrated LEDs on the AP can be used to verify that the AP is receiving power and initializing successfully (see Table 1). Refer to the *ArubaOS Quick Start Guide* for further details on verifying post-installation network connectivity.

## Product Specifications

### Electrical

- Power Consumption:
  - DC (USB): not exceeding 2.25W
  - AC: not exceeding 5W
- Supported Input AC Voltage Range: 90V to 265V
- Supported Input AC Frequency range: 47Hz to 63Hz

### Environmental

- Operating Temperature: 0°C to 50°C (32°F to 122°F)

For additional specifications on this product, please refer to the data sheet. The data sheet can be found at [www.arubanetworks.com](http://www.arubanetworks.com).

## Proper Disposal of Aruba Equipment

For the most current information about Global Environmental Compliance and Aruba products, see our website at [www.arubanetworks.com](http://www.arubanetworks.com).

### Waste of Electrical and Electronic Equipment



Aruba products at end of life are subject to separate collection and treatment in the EU Member States, Norway, and Switzerland and therefore are marked with the symbol shown at the left (crossed-out wheeled bin). The treatment applied at end of life of these products in these countries shall comply with the applicable national laws of countries implementing Directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE).

### European Union RoHS

Aruba products also comply with the EU Restriction of Hazardous Substances Directive 2011/65/EC (RoHS). EU RoHS restricts the use of specific hazardous materials in the manufacture of electrical and electronic equipment. Specifically, restricted materials under the RoHS Directive are Lead (including Solder used in printed circuit assemblies), Cadmium, Mercury, Hexavalent Chromium, and Bromine. Some Aruba products are subject to the exemptions listed in RoHS Directive Annex 7 (Lead in solder used in printed circuit assemblies). Products and packaging will be marked with the "RoHS" label shown at the left indicating conformance to this Directive.

### China RoHS



Aruba products also comply with China environmental declaration requirements and are labeled with the "EFUP 10" label shown at the left.

有毒有害物质声明 Hazardous Materials Declaration					
零件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)				
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr <sup>VI</sup> )	多溴联苯 (PBB)
含源锂电池	×	○	○	○	○
<p>○: 表示该有害物质在部件中的所有材料中的含量均在GB/T26572-2011 标准规定的限量要求以下。 Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the GB/T26572-2011 standard.</p> <p>×: 表示该有害物质在部件中的所有材料中的含量均超过GB/T26572-2011 标准规定的限量要求。 Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the GB/T26572-2011 standard.</p> <p>对销售之目的所有产品, 本表显示, 贵国销售的电子产品可能包含这些物质。 This table shows where these substances may be found in the supply chain of electronic information products, as of the date of sale of the enclosed product.</p> <p>此标志为针对所涉及产品的环保使用期标志, 某些零件会有一个不同的环保使用期 (例如, 电池单元模块) 粘在其产品上。 This environmental use period label is only for the products specified in the conditions of use. The Environment-Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here. The Environment-Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.</p>					

## Safety and Regulatory Compliance

Aruba Networks provides a multi-language document that contains country-specific restrictions and additional safety and regulatory information for all Aruba access points. This document can be viewed or downloaded from the following location: [www.arubanetworks.com/safety\\_addendum](http://www.arubanetworks.com/safety_addendum)

### Regulatory Model Names

The following regulatory model name apply to the LS-100:

- LS-100: LSIN0100

### FCC

This device is electronically labeled. To view the FCC ID:

- Log into the controller WebUI.
- Navigate to **Maintenance > Controller > About**.



**RF Radiation Exposure Statement:** This equipment complies with FCC RF radiation exposure limits. This equipment should be installed and operated with a minimum distance of 7.9 inches (20 cm) between the radiator and your body for 2.4 GHz and 5 GHz operations. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



**RF Radiation Exposure Statement:** When operated in the 5.15 to 5.25 GHz and 5.47 to 5.725 GHz frequency range, this device is restricted to indoor use to reduce the potential for harmful interference with co-channel Mobile Satellite Systems.

### FCC Class B Part 15

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.



Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instructions, may cause interference harmful to radio communications.

If this equipment does cause interference, 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 to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Complies with the Class B limits for radio noise emissions as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Users are advised that high power Radars are allocated as primary users of the bands 5250-5350 MHz and 5650-5850 MHz and these Radars could cause interference and/or damage to Licensed Exempt WLAN devices.

### CE EU Regulatory Conformance

This product is CE marked according to the provisions of the R & TTE Directive (1999/5/EC) - CE(I). Aruba Networks Inc., hereby declares that the APIN0103 device model is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC -CE(I)

The Declaration of Conformity made under Directive 1999/5/EC is available for viewing at the following location: <http://support.arubanetworks.com>

Users are advised that high power Radars are allocated as primary users of the bands 5250-5350 MHz and 5650-5850 MHz and these Radars could cause interference and/or damage to Licensed Exempt WLAN devices.

### Canadian Statement

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

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.

# LS-100 Wireless Location Sensor Installation Guide



## Contacting Aruba Networks

Web Support	
Main Site	<a href="http://www.arubanetworks.com">http://www.arubanetworks.com</a>
Support Site	<a href="https://support.arubanetworks.com">https://support.arubanetworks.com</a>
Airheads Social Forums and Knowledge Base	<a href="http://community.arubanetworks.com">community.arubanetworks.com</a>
North American Telephone	1-800-943-4526 (Toll Free) 1-408-754-1200
International Telephones	<a href="http://arubanetworks.com/support-services/aruba-support-program/contact-support/">arubanetworks.com/support-services/aruba-support-program/contact-support/</a>
Software Licensing Site	<a href="http://licensing.arubanetworks.com/login.php">licensing.arubanetworks.com/login.php</a>
Wireless Security Incident Response Team (WSIRT)	<a href="http://arubanetworks.com/support/wsirt.php">arubanetworks.com/support/wsirt.php</a>
Support Email Addresses	
Americas, APAC and EMEA	<a href="mailto:support@arubanetworks.com">support@arubanetworks.com</a>
WSIRT Email Please email details of any security problem found in an Aruba product.	<a href="mailto:sirt@arubanetworks.com">sirt@arubanetworks.com</a>

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### Legal Notice

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### Warranty

This hardware product is protected by an Aruba warranty. For details, see Aruba Networks standard warranty terms and conditions.



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