The Aruba IAP-134 and IAP-135 Instant access points support the IEEE 802.11n standard for high-performance WLAN. These access points use MIMO (Multiple-in, Multiple-out) technology and support existing 802.11a/b/g/n wireless services.

The Aruba IAP-130 Series access points provide the following capabilities:

- Wireless transceiver
- Protocol-independent networking functionality
- IEEE 802.11a/b/g/n operation as a wireless access point
- IEEE 802.11a/b/g/n operation as a wireless air monitor
- Compatibility with IEEE 802.3at PoE

**Minimum Software Requirements**

The IAP-130 Series access point requires Aruba Instant 2.0 or later.

**Package Contents**

- IAP-134 or IAP-135 access point
- Installation guide (this document)
- Aruba Instant Quick Start Guide
- 9/16” Ceiling Rail Adapter
- 15/16” Ceiling Rail Adapter

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.

Additional mounting kits for use with the IAP-130 Series access points are sold separately. Contact your Aruba sales representative for details.
**Device Overview**

**Figure 1** IAP-130 Series Access Points (IAP-134 Shown)

- **LEDs**
  - PWR: Indicates whether or not the IAP-130 is powered on and its status.
  - ENET 0: Indicates the status and activity of Ethernet port 0
  - ENET 1: Indicates the status and activity of Ethernet port 1
  - 11b/g/n: Indicates the status of the 2.4 GHz radio
  - 11a/n: Indicates the status of the 5.0 GHz radio

For more information about the LEDs and their behavior, see **Table 3 on page 9**.

- **External Antenna Connectors**

The IAP-134 is designed for use with external antennas. The IAP-135 is equipped with internal antennas. For more information about antenna types and configurations, visit **www.arubanetworks.com**.
**Console Port**

Use the console port to connect to a terminal for direct local management.

**Ethernet Ports**

IAP-130 Series is equipped with two 10/100/1000Base-T (RJ-45) auto-sensing, MDI/MDX wired-network connectivity ports. These ports support IEEE 802.3at Power over Ethernet (PoE) compliance, accepting 56 VDC as a standard defined Powered Device (PD) from a Power Sourcing Equipment (PSE) such as a PoE midspan injector, or network infrastructure that supports PoE.

**NOTE**

Use the ENET 0 port for uplink connections to a switch or router. The ENET 1 port does not provide wired connectivity.

**DC Power Socket**

If PoE is not available, an optional Aruba AP AC-DC adapter kit (sold separately) can be used to power the IAP-130 Series.

**Reset Button**

The reset button can be used to return the IAP-130 Series to factory default settings. To reset the IAP-130 Series:

1. Power off the IAP-130 Series by removing the Ethernet cable (POE) or power adapter cable.
2. Press and hold the reset button using a small, narrow object, such as a paperclip.
3. Power-on the IAP-130 Series without releasing the reset button. The power LED will flash within 5 seconds.
4. Release the reset button.

The power LED will flash again within 15 seconds indicating that the reset is completed. The IAP-130 Series will now continue to boot with the factory default settings.

**Kensington Lock Slot**

The IAP-130 Series is equipped with a Kensington security slot for additional security.

**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 Aruba Instant User Guide for details on restrictions.

**Pre-Installation Checklist**

Before installing your IAP-130 Series access point, be sure that you have the following:

- For the IAP-134: External antennas as specified in the network deployment plan
- CAT5 or better UTP cable of required length
- One of the following power sources:
  - IEEE 802.3at-compliant Power over Ethernet (PoE) source
  - The POE source can be any power source equipment (PSE)
  - Aruba 12 VDC AP AC-DC adapter kit (sold separately)
Summary of the Setup Process

It is important that you verify the items listed under Pre-Installation Checklist before you attempt to set up and install an IAP-130 Series AP.

Successful setup of an IAP-130 Series access point consists of five tasks, which must be performed in this order:

1. Verify pre-installation connectivity.
2. Identify the specific installation location for each AP.
3. Install each AP.
4. Verify post-installation connectivity.
5. Configure each AP.

Access points are radio transmission devices and as such are subject to governmental regulation. Network administrators responsible for the configuration and operation of access points must comply with local broadcast regulations. Specifically, access points must use channel assignments appropriate to the location in which the access point will be used.

Aruba Networks, in compliance with governmental requirements, has designed the IAP-130 Series access points so that only authorized network administrators can change the settings. For more information about AP configuration, refer to the Aruba Instant Quick Start Guide and Aruba Instant User Guide.

Identifying Specific Installation Locations

You can mount the IAP-130 Series access point a ceiling rail (using the included adapter) or on a wall (using the wall mount adapter, sold separately). Use the AP placement map generated by Aruba’s Airwave Virtual RF software application to determine the proper installation location(s). Each location should be as close as possible to the center of the intended coverage area and should be free from obstructions or obvious sources of interference. These RF absorbers/reflectors/interference sources will impact RF propagation and should have been accounted for during the planning phase and adjusted for in RF plan.

Unidentified 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.

RF absorbers include:

- Cement/concrete: Old concrete has high levels of water dissipation, which dries out the concrete, allowing for potential RF propagation. New concrete has high levels of water concentration within the concrete, blocking RF signals.
- Natural Items: Fish tanks, water fountains, ponds, and trees
- Brick

RF reflectors include:

- Metal Objects: Metal pans between floors, rebar, fire doors, air conditioning/heating ducts, mesh windows, blinds, chain link fences (depending on aperture size), refrigerators, racks, shelves, and filing cabinets
- Do not place an AP between two air conditioning/heating ducts. Make sure that APs are placed below ducts to avoid RF disturbances.

RF interference sources include:
- Microwave ovens and other 2.4 or 5 GHz objects (such as cordless phones)
- Lunch rooms and call centers with cordless headsets

# Installing the AP

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

## Using the Ceiling Rail Adapter

The IAP-130 Series ships with two ceiling rail adapters for 9/16” and 15/16” ceiling rails.

Make sure the AP fits securely on the ceiling tile rail when hanging the device from the ceiling, because poor installation could cause it to fall onto people or equipment.

1. Pull the necessary cables through a prepared hole in the ceiling tile near where the AP will be placed.
2. Place the adapter against the back of the AP with the adapter at an angle of approximately 30 degrees to the tabs (see Figure 3).
3. Twist the adapter clockwise until it snaps into place in the tabs (see Figure 3).

**Figure 3** Attaching the Ceiling Rail Adapter

4. If necessary, connect the console cable to the console port on the back of the AP.
5. Hold the AP next to the ceiling tile rail with the ceiling tile rail mounting slots at approximately a 30-degree angle to the ceiling tile rail (see Figure 4). Make sure that any cable slack is above the ceiling tile.
6. Pushing toward the ceiling tile, rotate the AP clockwise until the device clicks into place on the ceiling tile rail.

**Figure 4  Mounting the AP**

7. On the IAP-134, install the external antennas according to the manufacturer’s instructions, and connect the antennas to the antenna interfaces on the AP.

**Connecting Required Cables**

Install cables in accordance with all applicable local and national regulations and practices.

**Ethernet Ports**

The RJ-45 Ethernet ports (ENET0 and ENET1) support 10/100/1000Base-T auto-sensing MDI/MDX connections. Use these ports to connect the AP to a twisted pair Ethernet LAN segment or directly to an Aruba Controller. Use a 4- or 8-conductor, Category 5 UTP cable up to 100 m (325 feet) long.

The 10/100/1000 Mbps Ethernet ports are on the bottom of the AP. These ports have RJ-45 female connectors with the pin-outs shown in Table 1.

**Table 1  Ethernet Port Pin-out**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Pin</th>
<th>Signal Name</th>
<th>GE Connection</th>
<th>FE Connection</th>
<th>PoE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>BI_DA+</td>
<td>Bi-directional pair A+</td>
<td>RX+</td>
<td>POE negative</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>BI_DA−</td>
<td>Bi-directional pair A−</td>
<td>RX−</td>
<td>POE negative</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>BI_DB+</td>
<td>Bi-directional pair B+</td>
<td>TX+</td>
<td>POE positive</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>BI_DC+</td>
<td>Bi-directional pair C+</td>
<td>Spare pair</td>
<td>POE positive</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>BI_DC−</td>
<td>Bi-directional pair C−</td>
<td>Spare pair</td>
<td>POE positive</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>BI_DB−</td>
<td>Bi-directional pair B−</td>
<td>TX−</td>
<td>POE positive</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>BI_DD+</td>
<td>Bi-directional pair D+</td>
<td>Spare pair</td>
<td>POE negative</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>BI_DB−</td>
<td>Bi-directional pair D−</td>
<td>Spare pair</td>
<td>POE negative</td>
</tr>
</tbody>
</table>
Serial Console Port

The serial console port allows you to connect the AP to a serial terminal or a laptop for direct local management. This port is an RJ-45 female connector with the pinouts described in Table 2. Connect this port in one of the following ways:

- Connect it directly to a terminal or terminal server using an Ethernet cable.
- Use a modular adapter to convert the RJ-45 (female) connector on the AP to a DB-9 (male) connector, and connect the adapter to a laptop using an RS-232 cable. See Figure 5 for connector details of the adapter.

Table 2 Console Port Pin-out

<table>
<thead>
<tr>
<th>Connector</th>
<th>Pin</th>
<th>Signal Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>TXD</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RXD</td>
<td>Receive</td>
<td></td>
</tr>
</tbody>
</table>

Pins not listed are not connected.

Figure 5 RJ-45 (Female) to DB-9 (Male) Modular Adapter Conversion

Power Connection

The IAP-130 Series has a single 12V DC power jack socket to support powering through an AC-to-DC power adapter.

If both POE and DC power are available, the AP uses POE even when there is not enough POE voltage available to power the AP.
Verifying Post-Installation Connectivity

The integrated LEDs on the IAP can be used at this point to verify that the AP is receiving power and initializing successfully (see Table 3).

Table 3  *IAP-130 Series LED Meanings*

<table>
<thead>
<tr>
<th>LED</th>
<th>Color/State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR</td>
<td>Off</td>
<td>No power to AP</td>
</tr>
<tr>
<td></td>
<td>Green steady</td>
<td>Power on, device ready</td>
</tr>
<tr>
<td></td>
<td>Green flashing</td>
<td>Device booting, not ready</td>
</tr>
<tr>
<td></td>
<td>Red steady</td>
<td>System failed to initialize</td>
</tr>
<tr>
<td>ENET 0</td>
<td>Green/Amber off</td>
<td>No link</td>
</tr>
<tr>
<td>(100/1000 Mbps)</td>
<td>Green on</td>
<td>1000 Mbps link</td>
</tr>
<tr>
<td></td>
<td>Amber on</td>
<td>10/100 Mbps link</td>
</tr>
<tr>
<td></td>
<td>Green/amber blinking</td>
<td>Link activity</td>
</tr>
<tr>
<td>ENET 1</td>
<td>Green/Amber off</td>
<td>No Link</td>
</tr>
<tr>
<td>(100/1000 Mbps)</td>
<td>Green on</td>
<td>1000 Mbps link</td>
</tr>
<tr>
<td></td>
<td>Amber on</td>
<td>10/100 Mbps link</td>
</tr>
<tr>
<td></td>
<td>Green/amber blinking</td>
<td>Link activity</td>
</tr>
<tr>
<td>11A/N</td>
<td>Off</td>
<td>5 GHz radio disabled</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>5 GHz radio enabled in WLAN mode</td>
</tr>
<tr>
<td></td>
<td>Green steady</td>
<td>5 GHz radio enabled in 11n mode</td>
</tr>
<tr>
<td></td>
<td>Green flashing</td>
<td>5 GHz Air Monitor mode</td>
</tr>
<tr>
<td>11B/G/N</td>
<td>Off</td>
<td>2.4 GHz radio disabled</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>2.4 GHz radio enabled in WLAN mode</td>
</tr>
<tr>
<td></td>
<td>Green steady</td>
<td>2.4 GHz radio enabled in 11n mode</td>
</tr>
<tr>
<td></td>
<td>Green flashing</td>
<td>2.4 GHz Air Monitor Mode</td>
</tr>
</tbody>
</table>
Product Specifications

Mechanical
- Dimensions (antenna stowed) (HxWxD):
  - 6.69 inches x 6.69 inches x 1.77 inches
  - 17.0 cm x 17.0 cm x 4.5 cm
- Weight: 1.68 lbs/760 g
- Shipping Dimensions:
  - 11.22 inches x 9.45 inches x 2.76 inches
  - 28.5 cm x 24.0 cm x 7.0 cm
- Temperature:
  - Operating: 0ºC to 50ºC (32ºF to 122ºF)
  - Storage: -40ºC to 70ºC (-40ºF to 158ºF)
- Relative Humidity: 5% to 95% non-condensing
- Mounting:
  - Ceiling (with included adapter)
  - Wall (with adapter, sold separately)
- Antennas:
  - 6 integrated antenna elements (IAP-135)
  - 3 RP-SMA interfaces for external antennas (IAP-134)
- Visual Status Indicators (LEDs): See Table 3

Electrical
- Ethernet:
  - 2 x 10/100/1000 Base-T auto-sensing Ethernet RJ-45 Interfaces
  - MDI/MDX
  - IEEE 802.3 (10Base-T), IEEE 802.3u (100Base-T), IEEE 802.3ab (1000Base-T)
  - Power over Ethernet (IEEE 802.3at compliant), 48V DC/350mA (see Table 1 on page 7 for pin configuration)
- Power:
  - 12 VDC power interface, supports powering through an AC-to-DC mains electric power adapter

If a power adapter other than the one provided by Aruba Networks is used in the US or Canada, it should be cULus (NRTL) Listed, with an output rated 12VDC, minimum 1.25A, marked “LPS” or “Class 2,” and suitable for plugging into a standard power receptacle in the US and Canada. For information on approved power adapters, go to www.arubanetworks.com/safety_addendum.

- POE support on Ethernet ports:
  - 802.3at-compliant POE sourcing devices
**Wireless LAN**

- **Network Standards:** IEEE 802.11b, IEEE 802.11g, IEEE 802.11a, and IEEE 802.11n
- **Antenna Type:**
  - Integrated 802.11a/b/g/n omni-directional high-gain antenna
  - Detachable 802.11a/b/g/n omni-directional high-gain antenna
- **Antenna Gain (Integrated Antennas):**
  - 2.4 – 2.5 GHz (max)
  - 5.180 – 5.825 GHz (max)
- **Radio Technology:**
  - Orthogonal Frequency Division Multiplexing (OFDM)
  - Direct Sequence Spread Spectrum (DSSS)
  - 3 x 3 MIMO with up to three spatial streams
- **Radio Modulation Type:**
  - 802.11b - CCK, BPSK, QPSK
  - 802.11a/g/n - CCK, BPSK, QPSK, 16-QAM, 64-QAM
- **Media Access Control:** CSMA/CA with ACK
- **Supported Frequency Bands 2.4GHz:**
  - 2.400 – 2.4835GHz (Global), channels country specific
- **Supported Frequency Bands 5GHz:**
  - 5.150 – 5.250GHz (low band), country-specific
  - 5.250 – 5.350GHz (mid band), country-specific
  - 5.470 – 5.725GHz (Europe), country-specific
  - 5.725 – 5.850GHz GHz (high band), country-specific
- **Data Rates:**
  - 802.11b - 1, 2, 5.5, 11 Mbps per channel
  - 802.11g - 6, 9, 12, 18, 24, 36, 48 and 54 Mbps per channel
  - 802.11a - 6, 9, 12, 18, 24, 36, 48 and 54 Mbps per channel
  - 802.11n - Data rate MCS0 – MCS23 (from 6.5 Mbps to 450 Mbps)

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**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 wheelie 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 2002/96EC on Waste of Electrical and Electronic Equipment (WEEE).
**European Union RoHS**

Aruba products also comply with the EU Restriction of Hazardous Substances Directive 2002/95/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.

### Hazardous Materials Declaration

<table>
<thead>
<tr>
<th>部件名称 (Parts)</th>
<th>有害物有害物质或元素 (Harmful Substances)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>重 (P)</td>
</tr>
<tr>
<td>电子模块 (Electronic Modules)</td>
<td>×</td>
</tr>
<tr>
<td>机械部件 (Mechanical Assemblies)</td>
<td>×</td>
</tr>
</tbody>
</table>

○：表示该有害物质或元素不在该部件所有有害物质中的含量在 SJ/T11363-2006 和 SJ/T11364-2006 标准的要求以下。Indicates that the concentration of the hazardous substance or element in the parts is below the relevant threshold of the SJ/T11363-2006 standard.

×：表示该有害物质或元素不在该部件所有有害物质中的含量在 SJ/T11363-2006 和 SJ/T11364-2006 标准的要求要求。Indicates that the concentration of the hazardous substance or element in the parts is above the relevant threshold of the SJ/T11363-2006 standard.

- [www.arubanetworks.com/safety_addendum](http://www.arubanetworks.com/safety_addendum)

### 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**

The regulatory models of these products are the AP-134 and AP-135.

**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.
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 numerique de la classe B respecte toutes les exigencies du Reglement sur le materiel brouilleur du Canada.

**EU Regulatory Conformance**

This product is CE marked according to the provisions of the R & TTE Directive (99/5/EC) - CE 2280(!)

Aruba Networks Inc., hereby declares that this IAP-134 and IAP-135 device models are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. CE 2280(!)

The Declaration of Conformity made under Directive 1999/5/EC is available for viewing at the following location in the EU community.

**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 13.78 inches (35 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. When operated in the 5.15 to 5.25 GHz frequency range, this device is restricted to indoor use to reduce the potential for harmful interference with co-channel Mobile Satellite Systems.

**GS Statement**

This device is not intended for use in the direct field of view at visual display workplaces. To avoid incommoding reflexions at visual display workplaces, this device must not be placed in the direct field of view.
For More Information

To contact Aruba Networks, refer to the information below:

**Table 4 Contact Information**

<table>
<thead>
<tr>
<th>Web Site Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Site</strong></td>
</tr>
<tr>
<td><strong>Support Site</strong></td>
</tr>
<tr>
<td><strong>Software Licensing Site</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Support Emails</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas and APAC</td>
</tr>
<tr>
<td>EMEA</td>
</tr>
<tr>
<td>WSIRT Email</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Telephone Numbers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aruba Corporate</strong></td>
</tr>
<tr>
<td><strong>FAX</strong></td>
</tr>
<tr>
<td><strong>Support</strong></td>
</tr>
<tr>
<td>United States</td>
</tr>
<tr>
<td>Universal Free Phone Service Number (UIFN): Australia, Canada, China, France, Germany, Hong Kong, Ireland, Israel, Japan, Korea, Singapore, South Africa, Taiwan, and the UK</td>
</tr>
<tr>
<td>All other countries</td>
</tr>
</tbody>
</table>