APC 2S-14

Quick Installation Guide

Copyright

Notice

Trademarks

Contents

Introduction

FCC Warning

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.

FCC Caution

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement

To comply with FCC RF exposure requirements in section 1.1307, a minimum separation distance of 8.7 feet is required between the antenna and all public persons.

Antenna Installation

WARNING: It is installer's responsibility to ensure that when using the authorized antennas in the United States (or where FCC rules apply), only those antennas certified with the product are used. The use of any antenna other than those certified with the product is expressly forbidden in accordance to FCC rules CFR47 part 15.204. The installer should configure the output power level of antennas, according to country regulations and per antenna type. Professional installation is required of equipment with connectors to ensure compliance with health and safety issues.

Antenna Compliance

The APC 2S-14 radio module contains internal antenna. The internal antenna can be used with the supplied unique coupling parts (perforated antenna wings, refer to *Figure 1 – APC 2S-14 Package Contents*

CE Mark Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

R&TTE Compliance Statement

This equipment complies with all the requirements of the Directive 1999/5/EC of the European Parliament and the Council of 9 March 1999 on Radio Equipment and Telecommunication Terminal Equipment and the Mutual Recognition of their Conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this manual and of the computer manufacturer must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Intended for Use

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France (with Frequency channel restrictions), Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden and United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states Iceland, Liechtenstein, Norway and Switzerland.

EU Countries Not Intended for Use

None

About this Guide

Prerequisite Skills and Knowledge

To use this document effectively, you should have a working knowledge of Local Area Networking (LAN) concepts and wireless Internet access infrastructures.

Definitions, Acronyms and Abbreviations

The following typographic conventions and symbols are used throughout this document:

	Additional information that may be helpful but which is not required.
	Important information that should be observed.
bold	Menu commands, buttons, input fields, links, and configuration keys are displayed in bold
italic	References to sections inside the document are displayed in italic.
`code`	File names, directory names, form names, system-generated output, and user typed entries are displayed in constant-width type

Technical Support

If you encounter problems when installing or using this product, please consult the Deliberant website at www.deliberant.com for:

- Direct contact to the Deliberant support centers.
- Frequently Asked Questions (FAQ).
- Download area for the latest software, user documentation and product updates.

Contact Us

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Installation

This chapter provides installation instructions for the hardware components of the APC 2S-14.

Package Contents

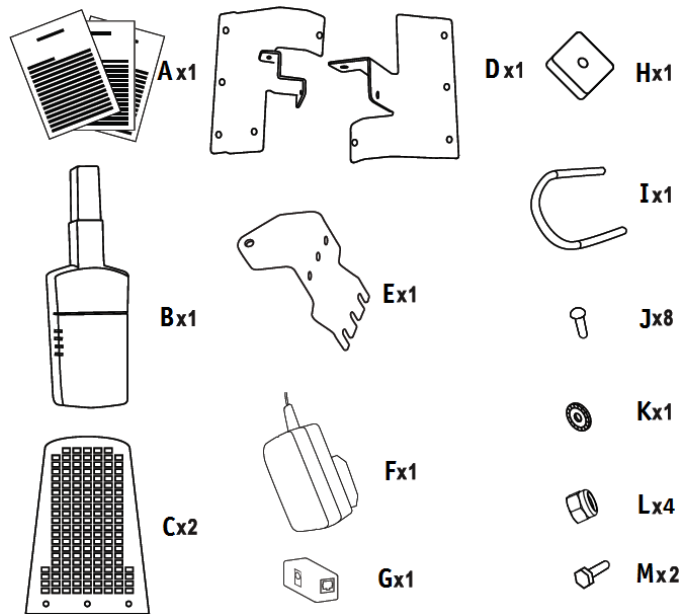The figure below displays APC 2S-14 package contents.

Figure 1 – APC 2S-14 Package Contents

Item	Component Name	Quantity
A	APC 2S-14 Quick Installation Guide	1
B	APC 2S-14 enclosure	1
C	Perforated antenna wing	2
D	Antenna corner reflector (right + left)	1
E	Mounting bracket for wall/pole mount	1
F	Power adapter	1
G	PoE injector	1
H	RJ45 connector's rubber gland	1
I	U bolt M6 for pole mounting	1
J	Screw M4 x 8 for antenna wing fastening	8
K	Anti-slip washer M6	1
L	Hexagon lock nut M6	4
M	Hexagon bolt M6 x 16 for wall/pole mount	2

If any of these items are missing or damaged, please contact your reseller.

Hardware Introduction

APC 2S-14 is housed in a plastic ultrasonically welded enclosure, ensuring a reliable sealing in a wide range of temperature and has an integrated 14dBi directional antenna.
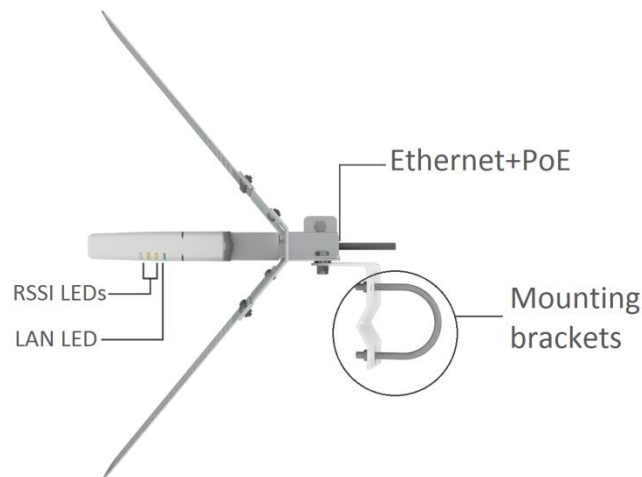

Figure 2 – APC 2S-14 Overview

The side panel of the APC 2S-14 contains:

- **Ethernet/Power connection** in the form of passive PoE through standard Ethernet cable.
- **4 LEDs**: one for LAN activity and 3 LEDs for device RSSI level indication

The back panel of the APC 2S-14 has label with following information:

Figure 3 – APC 2S-14 Label

The label of the APC 2S-14 contains:

- **Model** name. The official model name is **APC 2S-14**.
- **Serial Number**
- **Ethernet MAC** address
- **FCC ID: UB8-APC2S14**
- **IC ID: 6607-APC2S14**

LEDs

The APC 2S-14 has 4 LEDs located on the side panel: LAN and 3 RSSI LEDs (refer at the *Figure 2 – APC 2S-14 Overview* for details). The various states of the LEDs indicate different connection operations as follows:

LED	Color	Status	Indication
LAN	Green	On	LAN connection exists.
		Blinking	Indicates the traffic on LAN interface.
		Off	No LAN connection.
RSSI (1, 2, 3)	Yellow	On	The RSSI level has reached the appropriate threshold level (default RSSI threshold levels: 10, 25, 40)
		Off	The RSSI level has not reached the appropriate threshold level

Antenna Gain and Beamwidth

An APC 2S-14 comes with **Directional antenna** assembled with perforated antenna wings (refer to the *Figure 1 – APC 2S-14 Package Contents* for details) thus redirecting the more energy in one direction and less energy in all other directions. As the gain of a directional antenna increases, the angle of radiation becomes approx 20°, thus providing a greater coverage distance, but with a reduced coverage angle.
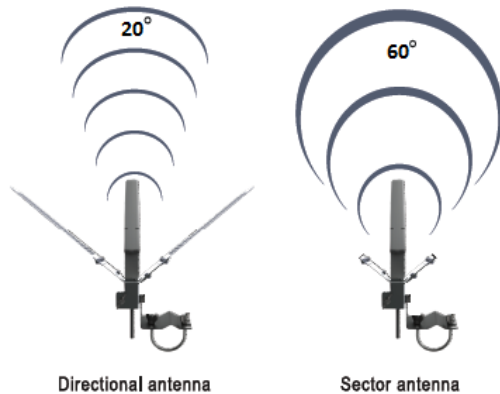

Figure 4 – Differences between Directional and Sector Antenna Performance

The APC 2S-14 with removed perforated antenna wings (refer to the *Figure 1 – APC 2S-14 Package Contents* for details) acts as **Sector antenna**, thus providing a greater beamwidth (approx 60°), but with reduced coverage distance.

Antenna Polarization

Antenna polarization is a very important consideration when installing an antenna. The vertical (V) polarization is when electric field is perpendicular to the Earth's surface, while the horizontal (H) polarization antennas have their electric field parallel to the Earth's surface. The APC 2S-14 unit polarization depends on the hole on which the mounting bracket is fixed to the antenna corner reflector:
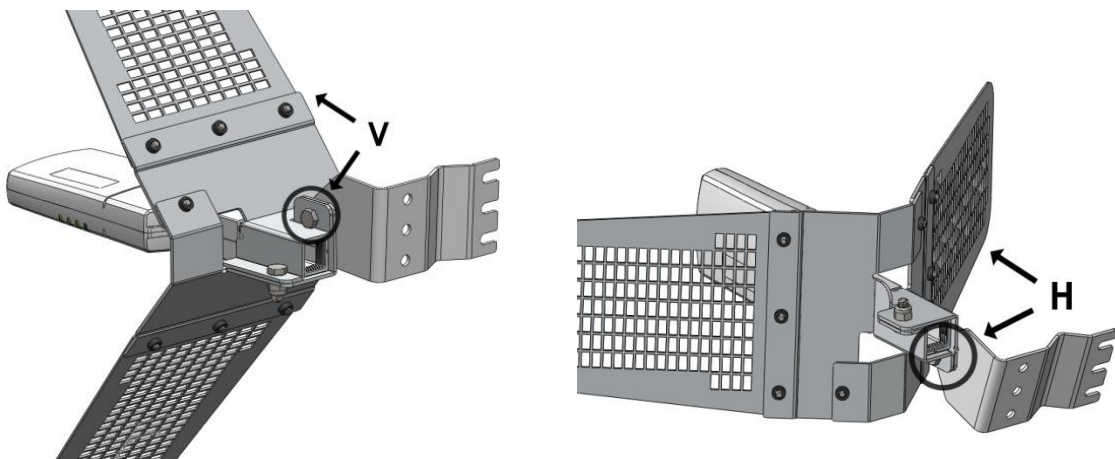

Figure 5 – Vertical (V) and Horizontal (H) Antenna Polarization

Assembling and Mounting the APC 2S-14

The APC 2S-14 units are supplied with mounting hardware for pole with diameters in the range 40mm to 50mm installations. After the unit is attached, its position is fixed with the single bolt. Follow the steps for APC 2S-14 assembling:

Step 1.   Make sure that the APC unit is powered-off.

Step 2.   Dependably on required APC 2S-14 antenna usage (refer *to Figure 4 – Differences between Directional and Sector Antenna Performance*), attach and screw perforated antenna wings with screws (item J in the *Figure 1 – APC 2S-14 Package Contents*):
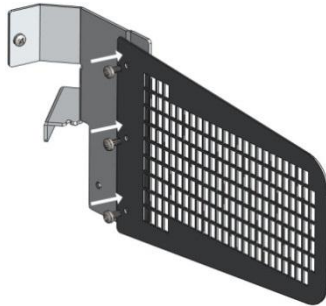
Step 3.   Attach corner reflectors with enclosure and tighten with one hexagon bolt and nut (items M and L in the *Figure 1 – APC 2S-14 Package Contents*):
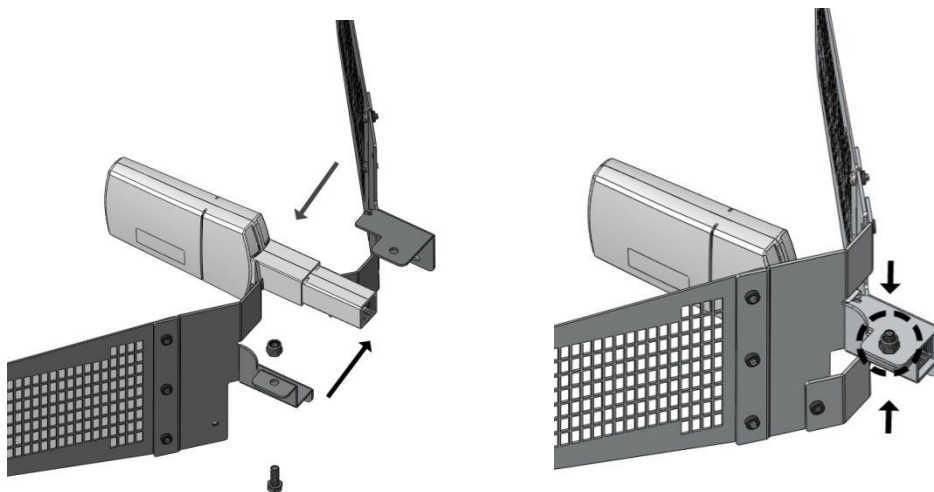
Step 4.   Fix corner reflectors with two screws (item J in the *Figure 1 – APC 2S-14 Package Contents*):
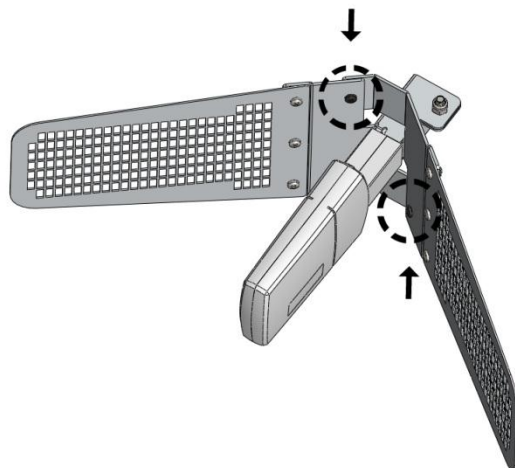
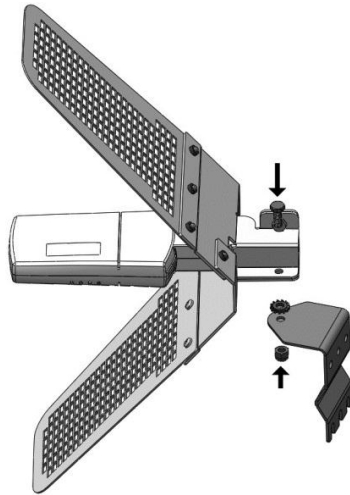**Step 5.**   Attach mounting bracket (items M, K, E and L in the *Figure 1 – APC 2S-14 Package Contents*) to the unit and tighten the nut and bolt. For mounting APC 2S-14 on the wall, first attach mounting bracket to the wall and then connect the unit together and tighten the nut and bolt.

It is recommended not to tighten the unit to its mounting bracket until the alignment process of the antenna is complete.

Step 6.   For the pole mounting attach APC 2S-14 on pole with U bolt (items I and L in the *Figure 1 – APC 2S-14 Package Contents*):
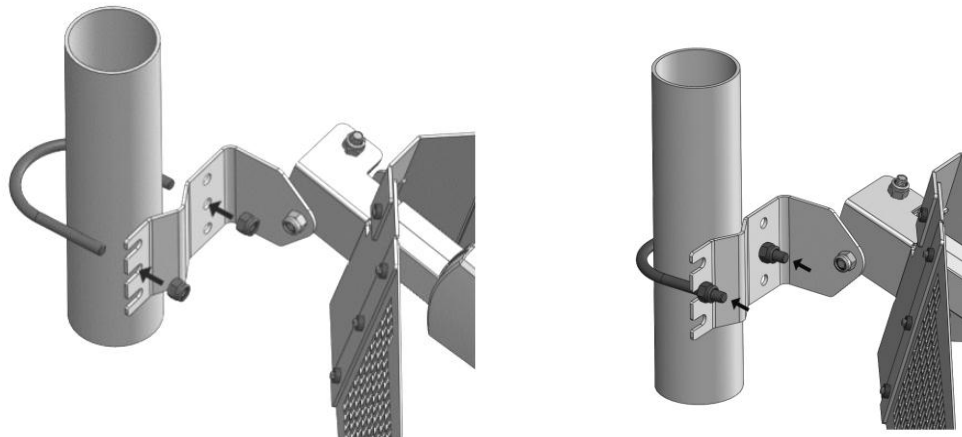
Step 7.   Place rubber seal on the UTP cable and insert it into the enclosure's ETH port with rubber seal:
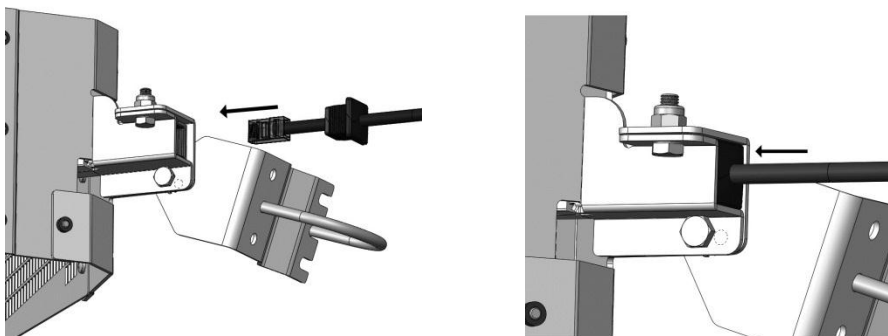
It is recommended to use shielded STP Ethernet cable to reduce exposure of the electromagnetic noise.

Step 8.   Connect power adapter into PoE injector together with UTP cables as displayed in the
                     picture below:

Step 9.   Power-up the unit. The green LAN LED must be on (refer at the respective section
                     LEDs). Depending on link quality, up to three yellow LEDs will switch on, indicating that
                     link between two units was established successfully.

Step 10.   After the link was established, align antenna for the maximum performance. Run the
                     Antenna Alignment tool in the Web management interface and move the antenna in
                     the horizontal and vertical panes until the maximum RSSI visible on the Antenna
                     Alignment graph is achieved. After the maximum RSSI level is reached, tighten down
                     the unit in the optimal position.

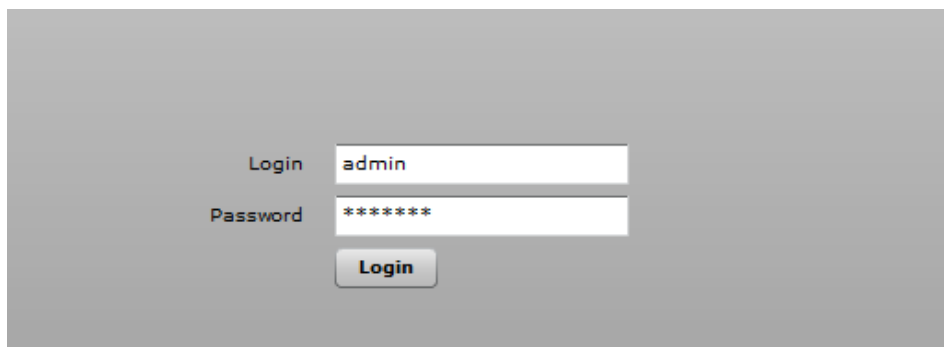Avoid standing directly in front of an operating antenna while aligning.

Access the APC 2S-14

The first connection to the APC 2S-14 can be made using a standard Ethernet cable connected directly to your PC. See next sections for the instructions on how to access the APC 2S-14 management interfaces.

Connection via WEB Browser

The default IP address of the APC 2S-14 is 192.168.2.66 with a subnet mask of 255.255.255.0.

Step 1.   Configure your PC with a static IP address on the 192.168.2.0 subnet with mask 255.255.255.0. Connect the APC 2S-14 Ethernet interface in to the same physical network as your PC. Open the Web browser and type the default IP address of the APC 2S-14: http://192.168.2.66/

Step 2.   Enter the APC 2S-14 administrator login details to access the Web management:

The default administrator login settings for all APC 2S-14 are:
Login: **admin**
Password: **admin01**

Step 3.   After successful administrator log in you will see the main page of the APC 2S-14 Web management interface. The APC 2S-14 now is ready for configuration. For further instructions on Web management refer to the respective document APC 2S-14 User Guide.

Resetting to Factory Defaults

APC 2S-14 has the capability of being reset to defaults by pinging the device with a certain packet size when the device is booting. During the startup of the device, when the drivers of the ethernet interfaces are loaded, the reset daemon is started. The daemon suspends startup process for 3 seconds and waits for ICMP "echo request" packet of length 369 bytes. If the packet received, the reset daemon sets the device to default configuration.

> It is recommended to connect PC to the device via switch, as depending on PC OS settings, the ARP table might be flushed during wired link status change (connecting the device that will be reset).

Steps to reset to default settings:

Step 1.   Power off the APC 2S-14 device.

Step 2.   Obtain the device MAC address.

Step 3.   Connect a PC to the same physical subnet as the device.

Step 4.   Execute 'arp -s' command to assign the IP address (IP address should be from the same subnet as PC) to the device MAC address:

```
arp -s <IP address to assign> <device MAC address>
```

> Note that syntax of MAC address differs depending on OS:
> - Linux OS: AA:BB:CC:DD:EE:FF
> - Windows OS: AA-BB-CC-DD-EE-FF

Step 5.   Start pinging the APC 2S-14 device:

For Linux users: ping <IP address> –s 369

For Windows users: ping <IP address> –l 369 –t -w 200

Step 6.   Power up device and wait about 30sec or more (depending on device hardware).

Step 7.   Stop pinging the APC 2S-14, and let the device boot as usual. The device should start up with factory default settings.