



# **APC Mach 5 v2**

## **Quick Installation Guide**

Revision 1.0  
13 September 2011

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## Introduction

### FCC Warning

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 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.
- 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 3.9 feet is required between the antenna and all occupational persons, and 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.

### 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

### Purpose

The purpose of this guide is to provide a quick and easy explanation of getting started with the APC Mach 5. This is only a starter guide and full documentation may be found at our online wiki:

<http://wiki.deliberant.com/>.

### 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](http://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 Mach 5.

### Package Contents

The figure below displays APC Mach 5 v2 package contents:

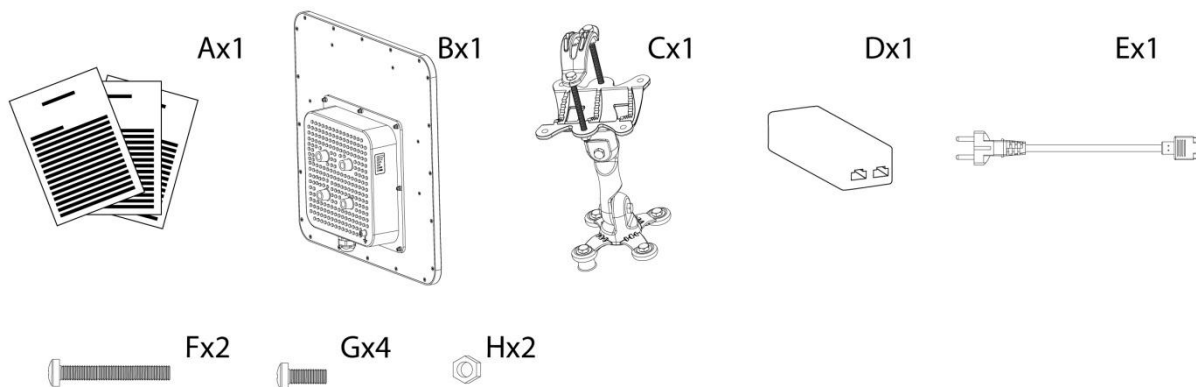


Figure 1 –APC Mach 5 v2 Package Contents

Item	Component Name	Quantity
A	Quick installation guide	1
B	APC Mach 5 unit	1
C	Articulating mounting bracket hardware	1
D	PoE Power Supply & Injector	1
E	Power cord	1
F	Screws for pole mounting	2
G	Screws for mounting bracket attaching to the device	4
H	Bolts for pole mounting	2



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

## Hardware Introduction

The APC Mach 5 unit is housed in an aluminum enclosure. The panel of the APC Mach 5 v2 unit contains:

- **Data/Power connection** in the form of passive PoE through standard Ethernet cable
- **LED indicators**
- **Mounting hardware**
- **Grounding stud**

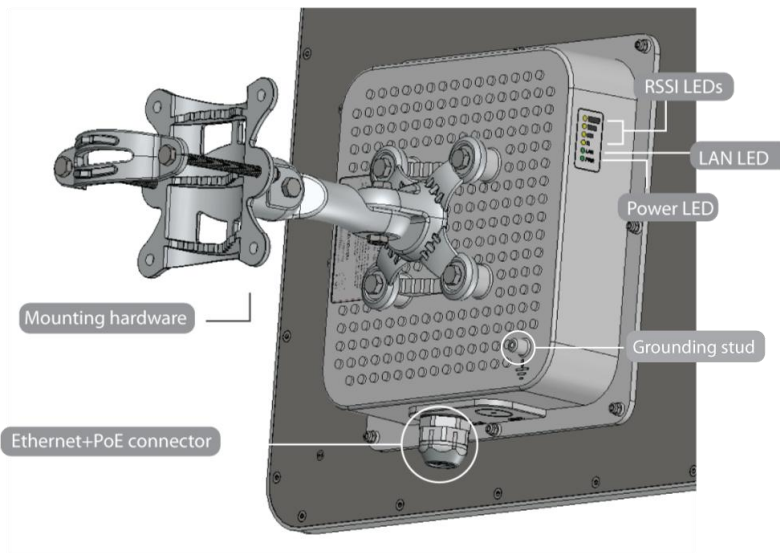


Figure 2 – General View of the APC Mach 5 v2 Unit

The APC Mach 5 has label with following information:

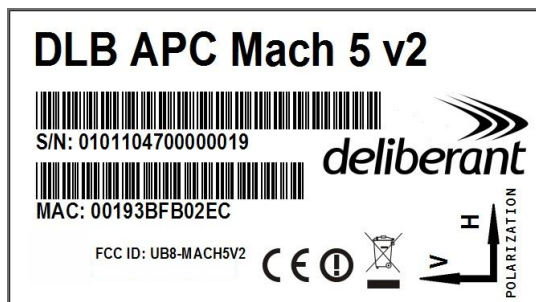


Figure 3 – APC Mach 5 v2 Label

The label of the APC Mach 5 v2 contains:

- **Model name.** The official model name is **APC Mach 5 v2**.
- **Serial number**
- **MAC address**
- **FCC ID: UB8-MACH5V2**
- **IC ID: 6607-MACH5V2**



## LEDs

The APC Mach 5 v2 has 6 LEDs located on the side panel: power, LAN and 4 RSSI LEDs (refer at the *Figure 2 – General View of the APC Mach 5 v2 Unit* for details). The various states of the LEDs indicate different connection operations as follows:

LED	Color	Status	Indication
Power	Green	On	APC Mach 5 unit is active/working
		Off	No power on APC Mach 5 unit.
LAN	Green	On	LAN connection exists.
		Blinking	Indicates the traffic on LAN interface.
		Off	No LAN connection.
RSSI (1, 2, 3, 4)	Yellow	On	The RSSI level has reached the appropriate threshold level (default RSSI threshold levels: 10, 25, 35, 50)
		Off	The RSSI level has not reached the appropriate threshold level

## APC Mach 5 v2 Mounting

The APC Mach 5 v2 unit can be mounted on the poles or on the wall. The mounting instructions are provided in the following sections.

### Mounting on a Pole

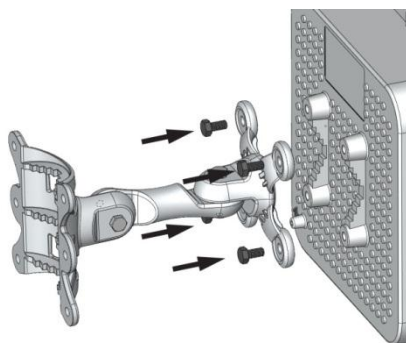
The APC Mach 5 units are supplied with mounting hardware for pole with diameters in the range 25mm (1") to 76mm (3") installations. Follow the steps for APC Mach 5 installation on a pole:

- Step 1.** Make sure that the APC Mach 5 v2 unit is powered-off.
- Step 2.** Ground the APC Mach 5 unit. The unit must be properly grounded to protect against lightning. The grounding wire must be attached to the grounding stud on the unit (refer at the *Figure 2 – General View of the APC Mach 5 v2 Unit*).



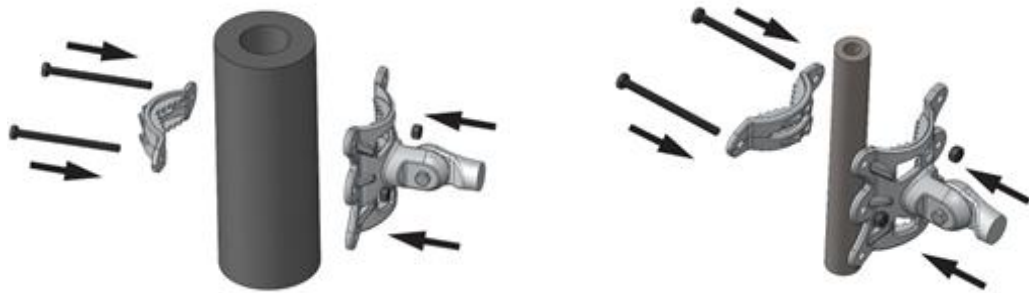
If the unit is attached to a metal pole which is earth-grounded, no further grounding is required.

- Step 3.** Connect the unit to the bracket together and tighten up with the screws:



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

- Step 3.** Attach the mounting bracket and the pole clamp with the bolts and nuts. The clamp's orientation will differ according the pole's diameter as displayed below:



- Step 4.** Connect power adapter into PoE injector together with UTP cables.
- Step 5.** Power-up the unit. The green Power LED must be on (refer at the respective section *LEDs*). Depending on link quality, up to four yellow LEDs will switch on, indicating that link between two units was established successfully.
- Step 6.** Run the **Antenna Alignment** tool on Web management interface and move the antenna in the horizontal and vertical planes until the maximum RSSI visible on the Antenna Alignment graph is achieved.



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

- Step 7.** After the maximal RSSI is reached, tighten the units in the optimum position.

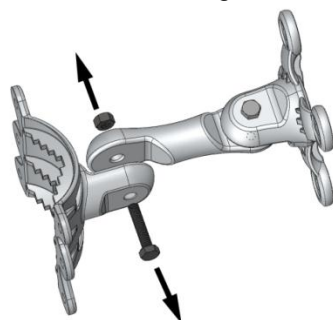
## Mounting on a Wall



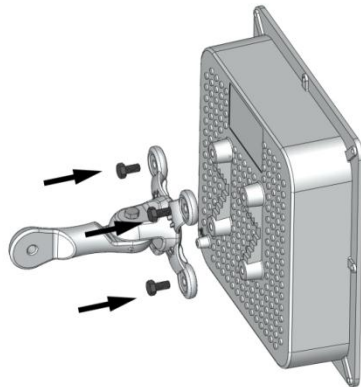
The mounting bolts for unit installation on the wall are not included in the package.

For mounting APC Mach 5 unit on the wall, first mount one half of the bracket to the wall and then connect the two halves of the bracket together and tighten the nut and bolt.

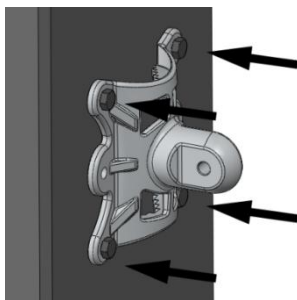
- Step 1.** Make sure that the APC Mach 5 v2 unit is powered-off.
- Step 2.** Ground the APC Mach 5 unit. The APC Mach 5 unit must be properly grounded to protect against lightning. The grounding wire must be attached to the grounding stud on the unit as shown in the *Figure 2 – General View of the APC Mach 5 v2 Unit*.
- Step 3.** Dismantle mounting bracket into the two parts for easier attachment to the wall:



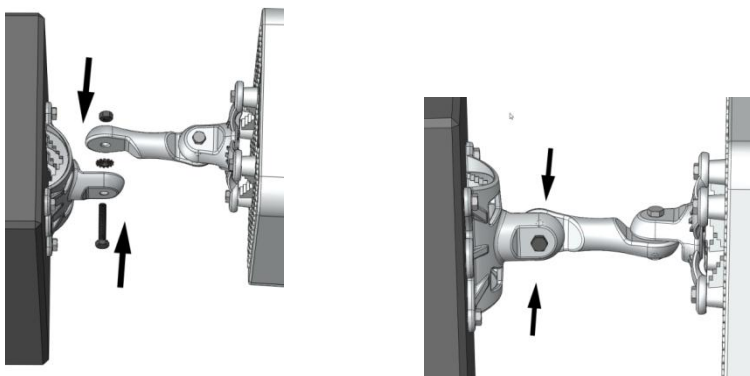
- Step 4.** Attach the following part of the mounting bracket to the APC Mach 5 v2 unit with 4 screws as displayed below:



- Step 5** Attach the second part of the mounting bracket to the wall using screws (not included) as displayed below:



- Step 6** Connect the mounting bracket parts together as displayed below and tighten up:



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

- Step 7.** Connect power adapter into PoE injector together with UTP cables.
- Step 8.** Power-up the unit. The green Power LED must be on (refer at the respective section *LEDs*). Depending on link quality, up to four yellow LEDs will switch on, indicating that link between two units was established successfully.
- Step 9.** Run the **Antenna Alignment** tool on Web management interface and move the antenna in the horizontal and vertical planes until the maximum RSSI visible on the Antenna Alignment graph is achieved.
- Step 10.** After the maximal RSSI is reached, tighten the units in the optimum position.

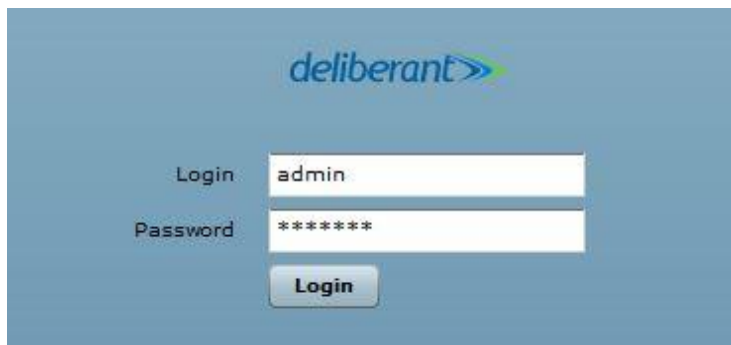
## Access the APC Mach 5 v2

The first connection to the APC Mach 5 v2 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 Mach 5 management interfaces.

### Connection via WEB Browser

The default IP address of the APC Mach 5 v2 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 Mach 5 Ethernet interface in to the same physical network as your PC. Open the Web browser and type the default IP address of the APC: `https://192.168.2.66/`



- Step 2.** Enter the APC Mach 5 v2 administrator login details to access the Web management:



The default administrator login settings for all APC Mach 5 v2 are:

Login: **admin**

Password: **admin01**

- Step 3.** After successful administrator log on you will see the main page of the APC Mach 5 v2 Web management interface. The APC Mach 5 v2 now is ready for configuration.

## Resetting to Factory Defaults

APC Mach 5 v2 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 Mach 5 v2 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 ping the APC Mach 5 v2 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 ping the APC Mach 5 v2, and let the device boot as usual. The device should start up with factory default settings.