AirLink V2

Quick installation guide
Multifunction Access Points WIFI 4 (802.11n)

- ✓ Access point, Router, repeater, Bridge, Mesh
- ✓ WIFI IEEE 802.11a/b/g/n 2T2R
- ✓ One port Gigabits Ethernet RJ45 PoE
- ✓ Compact metal housing, wall or optional DIN Rail mounting
- ✓ One power input 9 to 48 VDC
- ✓ Two RF connectors for externals antennas

Before starting, please check the product kit part listing below. Contact immediately your dealer if any item is missing or damaged:

- ➢ One **AirLink** device
- ➢ 1 RJ45 cable, straight, 1m, cat. 5e
- ➢ 2 WiFi antennas
- ➢ This quick installation guide

Before continuing, check for the latest documentations/firmware on the **www.acksys.fr** web site. Read the **« WaveOS user guide».**

You will need:
- ➢ **A Windows PC to install the « ACKSYS WaveManager » software**
- ➢ **A web browser**
- ➢ **An android smartphone if you want to install the optional « ACKSYS WaveViewer » App.**

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HARDWARE INSTALLATION

1. **Plug the antennas in**

- Plug the 2 antennas of your choice into the Ant.1 and Ant.2 connectors.
- For single antenna installation, use Ant.1 connector.
- For dual antenna installation, use Ant.1 and Ant.2 connectors.

⚠️ **WARNING: It is recommended to connect a 50 ohms terminator on unused antenna connector. If not, it may disturb radio link quality and data throughput.**

2. **Connect the power supply**

See the "**specifications**" section about the characteristics of the power supply.
The device has 2 sources of power supply:
- DC power through power connector
- PoE through LAN connector

The device has no ON/OFF switch. It turns-on automatically when power is applied.
Check LED Power
ON if DC power supply or PoE source is ON.

The Diag LED stays red for around 60 seconds, until the device is fully ready to use. Then the Diag LED turns green.

Connect the device to the ground with a braided metal wire, fixing on the lug.

3. **Connect the Ethernet cable**

- Plug the Ethernet cable to the device's LAN connector.
- Check that the corresponding LAN LED turns ON at that point.
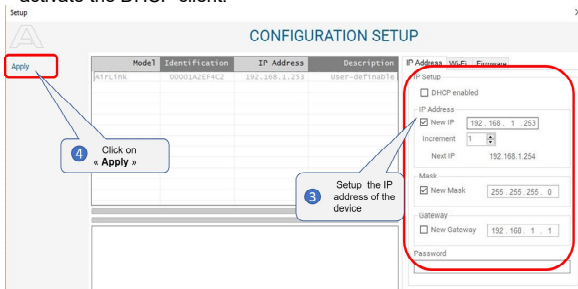- If the device is powered by a PoE source, use LAN connector.

4. Modifying the default IP address 192.168.1.253

From any PC on the network, run the Windows application **WaveManager** (found on the ACKSYS website http://www.acksys.com/)
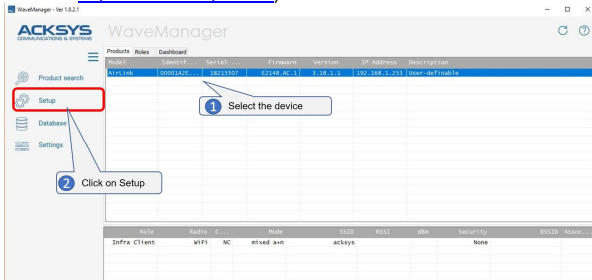
➢ Select the device and click on « **Setup** » button.
➢ You can configure the IP address to make it compatible with your network or activate the DHCP client.

⚠ **Warning:** If you change the IP address of the product also think about changing the IP address of the network interface of the connected PC

Access to the WEB Interface from WaveManager

In the **Products** tab of the dashboard
➢   Select your product by clicking on the right mouse button
➢   And click on **Details**

Select the « **Product** » with the right button of the mouse and click on « **Details** ».

➢   Click on **Web Interface**

Click on « **WEB Interface** ».

Web configuration

The default page (**STATUS** tab) displays the device status

Now select the "**SETUP**" tab.

> You will be asked for a username and password. You must choose the **root** user. **No password is required by default**.
> you get now access to the setup pages.

In the "**wireless interfaces overview**" section, you must:

a. **Enable the Wi-Fi radio interface** to set up its Wi-Fi parameters (alternatively you can navigate to change network and services configuration).
b. **Select your country** in order to enforce applicable **regulation rules**
c. **Click on Save & Apply** to validate

Wireless interface

➢ Upon delivery, the default factory settings are:

- Access point mode
- SSID "acksys"
- No security
- Automatic radio channel and 11an mode
- IP interface 192.168.1.253/24.

Setup the Wireless:

    a. Enable the WIFI interface. (Green color WIFI on, red color WIFI off)
    b. Click on **Edit,** to set Wireless essential parameters:

	CHANNEL	802.11 MODE	SSID	ROLE	SECURITY	ACTIONS
	Automatic	802.11a+n	acksys	Access Point (infrastructure)	none	

WI-FI INTERFACE

Wi-Fi 4 (802.11n) Wireless interface

Customize your Wireless interface according to

- The operating mode: Access point, client (bridge)
- Wi-Fi parameters: 802.11 mode, radio channel, SSID
- Wi-Fi security parameters (WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, SSID broadcast or not)

➢ You will find a complete description of all modes in the **WaveOS** user guide.

    ⚠ **Warning:** Save your settings by clicking "**Save & Apply**".
    Otherwise your settings will be lost if the product has to restart

FINAL INSTALLATION

6.   Install the device

- Place the device in an appropriate place.

7.   Install the antennas

- Insure that their position allows proper communication with the peer Wi-Fi devices.
- Specifically, insure that there are no obstacles between the device and its peers ("line of sight" concept)

QUICKLY EVALUATE AP & BRIDGE MODES

Quickly evaluate the ACKSYS device in AP role

You need a second computer (PC2) with a working Wireless connection.

Set up the PC2 Wireless network interface according to the default parameters of the ACKSYS AP device (802.11gn, SSID "acksys", no security).

Quickly evaluate the ACKSYS device in client role

You need two ACKSYS devices, and a second computer (PC2) with a wired LAN connection.

Set up the IP addresses according to the picture above and set the device connected to PC2 to Client (infrastructure) role.

From each PC, start a command prompt and run the ping command to verify the link.

From PC1: type ***ping 192.168.1.2,*** verify the answer returned by PC2
          « Answer from 192.168.1.2… »
From PC 2: type ***ping 192.168.1.1,*** verify the answer returned by PC1
          « Answer from 192.168.1.1… »

Notice: The State LED is flashing until the bridge connects to the AP.

TROUBLESHOOTING

None of the LED indicators turns ON
- Check the power supply (voltage, cabling).

The relevant LAN led indicator stays OFF
- Check that the remote device is turned ON.
- Check the Ethernet plugs on both sides.
- Try to connect to another device.
- Use the provided RJ45 cable to connect the device.

The Wi-Fi link does not come up
- Make sure that the Wi-Fi interface is enabled
- Make sure that the Wireless parameters of the Client (case sensitive SSID, 802.11 mode, radio channel and security) match those of the AP.
- Check the radio conditions: distance between devices, placement of antennas, interferences and obstacles to radio waves propagation.
- Try with all securities and encryption settings temporarily disabled.
- Try using the product with factory settings as shown in the "Quickly evaluate…" section.
- Try another radio channel.

"WaveManager" doesn't find your device
- WaveManager only scans the local network. To reach a device through a gateway, use the "file→remote products database" function.
- Check that your firewall does not block WaveManager.

How to restore factory settings
- If the built-in web-based interface is reachable, you can use your browser to restore factory settings.
- Else, power up the unit, wait for the red "Diag" LED to turn green, then hold down the reset button (for at least 2 seconds) until "Diag" goes red. Then release it and wait for the Diag LED to turn green again, meaning that the product rebooted with its factory settings.

RESET

- A **RESET** button is accessible from the back panel.
- Use exclusively a 2mm diameter non-metallic object to press the button.
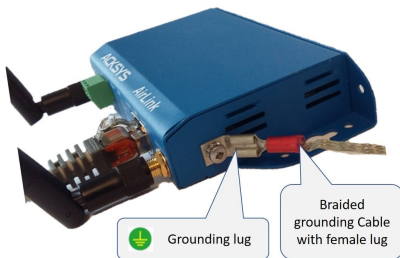

EARTH GROUNDING
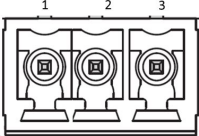
There are 2 ways to connect the product to the ground:
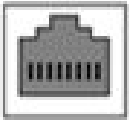
- Use the power terminal block on the front panel
- Use the grounding tab (0.81x6.35 mm) on the right side.

For efficient grounding we recommend using a braided metal wire (not supplied) and therefore using the grounding lug.

Grounding lug

Braided grounding Cable with female lug

CONNECTORS

Power supply		
3-way terminal block connector	**Signal Name**	**Pin**
EARTH		1
PWR	VIN+	2
	VIN-	3

Ref : MC 1,5/3-G-3.5

LAN (Ethernet)
RJ-45 female connector
LAN is an Ethernet **PoE** port.
This port supports the Auto-negotiation function. They can automatically select the transmission speed (10 Base-T, 100 Base-Tx or 1000 Base-T Half/Full Duplex). It enables to the device to coexist in the network by mitigating the risks of network disruption arising from incompatible technologies.

'WIFI Ant' antenna connector (50 ohms)		
RP SMA female connector	**Signal name**	**Function**
	Ant.1	RF chain 1
Center pin	Ant.2	RF chain 2

To get the full performance of the MIMO 2T/2R technology, you must connect the 2 antennas

However, it is possible to operate in degraded mode (with fewer throughputs) by connecting only one antenna, in this case use the **Ant1** connector.

Then, it is possible to use, the two following configurations:
- **Ant.1**
- **Ant.1** and **Ant.2**

In this case, it is recommended to put **a 50 ohms** terminator on the unused connectors.

Antenna configuration must be done as well in the product itself through the internal webserver.

ANTENNA
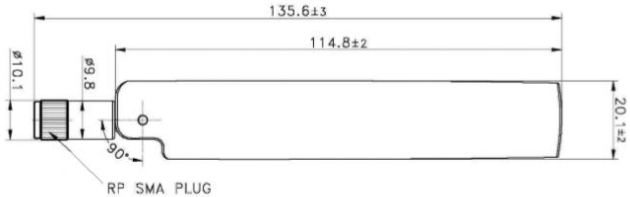
Unit: mm

Type of antennas	Dipole, dual band, omnidirectionnal, swivel
Dual band	2.4 / 5.8GHz
Connector	RP-SMA male
Gain	3 dBi

PANEL MOUNTING OF THE DEVICE

For fixing, use the 2 opposites holes of **Ø4** present on the case.

Fixing Holes
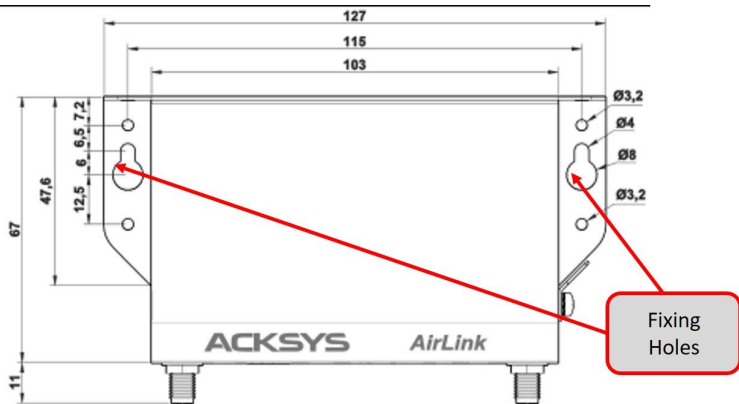
Moreover, it is possible to mount the product on a DIN RAIL using the **WL-FIX-RD2** kit

LEDs definition

The product has LEDs according to the models.

The status LEDs indicate:

LED	Color	Description
Power	Green	**On**: the product is powered by the power connector or a Poe source.
Diag	Red/ Green	This led indicates the unit operational state. **Off**: Power supply is off **Red**: Initialization during 40s after power is applied then goes Green **Red for more 120s**: hardware failure **Green**: Ready to use **Blinking**: Firmware in flash is loading or not valid; please load new firmware with "WaveManager"
LAN	Green/ Yellow	**On:** Link on LAN established **Flashing**: Tx/Rx activity **Yellow**: connected in 1000 BASE T **Green**: connected in 100 BASE Tx or 10 BASE T **Off**: Link on LAN broken
WIFI State	Green	**Off:** the radio is disabled, or DFS state. **Blinking:** the product is unassociated solid "**On**": the product is associated
WIFI Act (Activity)	Blue	**Flashing:** Radio Tx/Rx activity

SPECIFICATIONS

Mechanical characteristics	
Dimensions	127 x 67 x 23 mm, (5 x 2.64 x 0.91 pouces)
Weight	200g without accessories, 228 g with antennas.
Enclosure	IP 30
Operating temperatures ranges	-20°C to +60°C (-4°F à 140°F)
Storage temperatures ranges	-40°C to +85°C (-40°F à 185°F)
Reset button	Short push (< 1 sec), anytime: → Reset Long push (> 2 sec.): - while operating: → Restore factory settings - while in emergency upgrade mode: → Restore factory settings - at startup: → enter emergency upgrade

Software	
Device configuration	Automatic device discovery tool Built in web-based utility for easy configuration from any web browser (user/password protection & https)
Firmware upgrade	Via web browser or "ACKSYS WaveManager"
SNMP	SNMP V2C, V3
Operating mode	AP (Access Point), routeur, Repeater Client, Mesh
AP mode only	
Network topology	Infrastructure
Security	WEP, WPA-PSK/WPA (2) -PSK, WPA/ WPA (2) avec authentication 802.1x, SSID visibility status.

Client/Bridge mode only	
Network topology	Mode infrastructure ou mode ad-hoc
Security	WEP, WPA (2)-PSK, 802.1x supplicant
Power Supply	
DC	9 to 48VDC (5.5W typ., 10W peak), protected against wire inversion
PoE	The PoE power must be 802.3af / 802.3at type 1 class 2 compliant and connected to LAN

Electrical connection requirement	
Number of ports	1
Type of port	Auto MDI/MDI-X 10 BASE T, 100 BASE Tx or 1000 BASE T automatic negotiation (10/100/1000 Mbps), 802.3u
Wi-Fi interface	
Number of interfaces	1
Radio Mode	IEEE 802.11a/h, 802.11b, 802.11g, 802.11n
Modulation rates	802.11n: to 300 Mbps 802.11a/h: 6 à 54 Mbps 802.11b : 1 à 11 Mbps 802.11g : 1 à 54 Mbps
Frequency range for 802.11a/n	5 GHz ; 5.150 à 5.850 GHz
Frequency range for 802.11b/g/n	2.4 GHz ; 2.412 à 2.484 GHz
Number of antennas	2

Wi-Fi interface Dual band 11n 2T/2R			
	Modes	1 antenna (RF chain)	2 antennas (RF chains)
Radio card output Tx power Tolerance ± 2dB Subtract 2 dBm to get the value available at the antenna connector itself	802.11b/g	19 dBm @ 6M 15 dBm @ 54M	Add 3 dBm to the values given for 1 RF chain
	802.11a	18 dBm @ 6M 15 dBm @ 54M	
	802.11gn HT20	20.5 dBm @ 7.2 Mbps (MCS 0) 18 dBm @ 72.2 Mbps (MCS 7)	
	802.11gn HT40	20.5 dBm @ 15 Mbps (MCS 0) 18 dBm @ 150 Mbps (MCS 7)	
	802.11an HT20	18 dBm @ 7.2 Mbps (MCS 0) 15 dBm @ 72.2 Mbps (MCS 7)	
	802.11an HT40	18 dBm @ 15 Mbps (MCS 0) 15 dBm @ 150 Mbps (MCS 7)	
Rx sensitivity (radio card input) Tolerance ± 2dB Add 2 dBm to get the value available at the antenna connector	802.11b	Non disponible	
	802.11b/g	-94 dBm @6M -80 dBm @54M	
	802.11a	-96 dBm @6M -84 dBm @54M	
	802.11gn HT20	-92 dBm @ 7.2Mbps (MCS 0) -76 dBm @ 72.2 Mbps (MCS 7)	
	802.11gn HT40	-90 dBm @ 15 Mbps (MCS 0) -73 dBm @ 150 Mbps (MCS 7)	
	802.11an HT20	-96 dBm @ 7.2Mbps (MCS 0) -75 dBm @ 72.2 Mbps (MCS 7)	
	802.11an HT40	-91 dBm @ 15 Mbps (MCS 0) -72 dBm @ 150 Mbps (MCS 7)	

Regulatory compliance

The device conforms to the following council directive and is appropriately CE marked:

N°	Titre
2014/53/EU	Radio Equipment Directive (RED) (See the EU DECLARATION OF CONFORMITY on our website)

Wi-Fi interface complied with:

FCC	ID = Z9W-RMB
IC	ID: 11468A-RMB

OPTIONAL ACCESORIES

REFERENCE	CONTENT
PWS12-UNI-PH3	• AC (110V/220V) to 12 VDC power adapter with cable terminated by 3 pin Phoenix terminal block
WL-FIW-RD2	• DIN rail fixing kit
All items can be ordered separately	

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