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 <u>www.acksys.fr</u> 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

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- 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.

SOFTWARE CONFIGURATION

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 <u>http://www.acksys.com/</u>)

Manager - Ver 1.8.2.1									-		×
										С	0
_	Products Roles	Dashboard									
=	Mode1	Identif	Serial	. Firmare	Version	IP Address	Description	1			
Product search	AirLink	00001A2E	18215507	E2148.AC.1	3.18.1.1	192.168.1.253	User-defina	ible			
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Select the device and click on « Setup » button.

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You can configure the IP address to make it compatible with your network or activate the DHCP client.

			CONFIGU	RATION SET	UP	
sply	Mode1	Identification	IP Address	Description	IP Address Wi-Fi Finner	-
	AirLink	00001A2EF4C2	192.168.1.253	User-definable	IP Setup	
					DHCP enabled	
//					IP Address	
	X				New IP 192.168	. 1 .263
C				/	Increment 1 💼	
	Click on	-		/ /	Next IP 192	168.1.254
	« Appij »		(Д	Mask	
			0	Setup the IP	New Mask 25	5.255.255.0
				device		
				407100	Gateway	
					New Gateway 19	2.160.1.1
					Password	
					1 assired	

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

	-	Products Roles Dat	hiboard						
	_	Mode1							
0	Product search	RailBox/22A0	0000177CCF36		E2148.AC.1	3.18.1.1	192.168.15	User-definable	_
		ATTETOK	00001A2EF4C2	Setup	E2148.AC.1	5.18.1.1	192.168.1.255	User-definable	
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> Click on Web Interface

dian.						
	Product	AirLink S/N 18215507	IP Address Mask Gateway Group	192.168.1.253 255.255.255.0 0.0.0.0	Id Firmware Version	00001A2EF4C2 E2148.AC.1 3.18.1.1
iguration File	Discovery date	Monday, January 21, 2019 - 2:43:13 PM	Description	User-definable	1	
al Trace	Last connection	Monday, January 21, 2019 - 2:52:09 PM	Latitude		Longitude	
sciations	Validate F	Product Validate Configuration	Tr	acking	Ping	Web Interface
	Physical Interfaces Net	twork Interfaces			/	
	•	Type Label	MAC address			Sta
	2	VIFI WiFi LAN LAN	00:09:90:00:D7:30 00:09:90:00:D7:30	Clic	k on « WEB Int	erface ».
	Roles/Details					

Web configuration

The default page (STATUS tab) displays the device status

Convinence	NICATIONS & SYSTEMS	All Link Spiles
	SETUP TOOLS STAT	TUS
0	DEVICE INFORMATION	
	FIRMWARE INFORMATION	
	WaveOS version:	3.16.1.1
	Boot loader version:	3.0.7.1
	Firmwore ID:	82148.AG.1
	DEVICE INFORMATION	
	Host name:	Jakaya
	Modelt	AHLINK
	Product version:	V2
	Motherboard ID:	00001x2e44x2
	Product seriel number :	10215507
	POE+ (JEEE 802.3at type 2) support:	Powerel device
	HOC+ DEEE SUSTON ADD ST AND DOLE	Powered device

Now select the "SETUP" tab.

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

	SETUP	TOOLS ST	TUS					
A INTERFACES	WIRELESS	INTERFACES OVE	RVIEW					
	You can	set up to 8 simultaneous n	es (will interface types)	per radio card, among	the following con	binations:		
INTERFACES			Channel	and and an		Max sumbar of inter-		
ĸ		Combination	Multiplicity	Can use DES	Access point	Infrastructure client	Mach point	Adbo
		MUEDIE OCCESS DOINES	MINDIN, AUTO, MUITICINE	1978				
9		Portal	single	80	8		1	
/ FIREWALL		Client / bridge	single, auto, multiple,	yes		1		
		Other / repeater	single	80	8	1 (non-reaming)	1	1
9	When us	ing several roles, they all	se the same shared cha	nnel; in this case, the	client role must no	t be set to multichanne	I roaming.	-
5	When us Repeate WLFLINTERS	ing several roles, they all in r mode is a combination of ACE Fi 4 (802.11n) Wireless	ise the same shared cha two roles: access point interface	nnet, in this case, the	client role must no	t be set to multichanne	I roaming.	a
9	When us Repeate WI-FIINTERS WI-F	ing several roles, they all r mode is a combination of ACE Fi 4 (802.11n) Wireless CHANNEL 8 35	interface INTERFACE INTERFACE INTERFACE INTERFACE INTERFACE INTERFACE INTERFACE INTERFACE	nnet, in this case, the client. ID KOL Mesh (BD	client role must no b	SECURITY	I roaming.	a ans tisatied

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:

FI INTE	RFACE					
N	/i-Fi 4 (802.11n)	Wireless interface				<u>)</u>
	CHANNEL	802.11 MODE	SSID	ROLE	SECURITY	ACTIONS
	Automatic	802.11a+n	acksys	Access Point (infrastructure)	none	

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.



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.



CONNECTORS

F			
3-way terminal block	Signal N	lame	Pin
	EARTH		1
	PWR	VIN+	2
Ref : MC 1,5/3-G-3.5		VIN-	3

L	AN (Ethernet)
	LAN is an Ethernet PoE port.
RJ-45 female connector	
	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 conne	ctor (50 ohms	5)
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 connect the 2 antennas However, it is possible to operate in degraded by connecting only one antenna, in this case	2T/2R technol d mode (with few use the Ant1 co	ogy, you must /er throughputs) nnector.
Then, it is possible to use, the two following c Ant.1 Ant.1 and Ant.2 	onfigurations:	
In this case, it is recommended to put a 50 connectors.	ohms terminator	[.] on the unused

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

ANTENNA



RP SMA PLUG

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.



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:

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

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)
	802.11b/g	19 dBm @ 6M 15 dBm @ 54M	
Radio card output Tx	802.11a	18 dBm @ 6M 15 dBm @ 54M	
Radio card output 1x power Tolerance ± 2dB Subtract 2 dBm to get the value available at the antenna connector itself	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)	Add 3 dBm to the values given for 1 RF chain
	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)	
	802.11b	Non disponible	
Rx sensitivity (radio card input) Tolerance ± 2dB Add 2 dBm to get the value available at the antenna connector	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 (I -75 dBm @ 72.2 Mbps	MCS 0) (MCS 7)
	802.11an HT40	-91 dBm @ 15 Mbps (I -72 dBm @ 150 Mbps	MCS 0) (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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