WL-ACCESS
USER GUIDE

WL-ACCESS USER GUIDE

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I. INTRODUCTION

I.1 Purpose of this manual

This manual could be obsolete . Please download last documentation on our web site (www.acksys.fr)

This manual provides instructions to easily install and configure the WL-ACCESS product on your network.

Chapter II “Package checklist” allows you to check if your package was complete when delivered.

Chapter III “Product specifications” describes the fundamental possibilities of the product.

Chapter IV “Connectors” describes the power connector and ethernet connector of the WL-ACCESS.

Chapter V “Getting started” is a step-by-step description of a typical WL-ACCESS installation in a simple application context.

Chapter VI “locator application” describes the functionality of locator application.

Chapter VII “Configure WL-ACCESS” describes the WL-ACCESS configuration web page.

Chapter VIII “Upgrade your WL-ACCESS” describes upgrade process.

Chapter IX “Security” describes security in WL-ACCESS.

Chapter X “Troubleshooting” gives hints on what to do when the installation fails.

Chapter XI “Addressing in Network protocols” gives some background in networking, required to install the WL-ACCESS.

It is expected that the reader of this manual has some background knowledge of TCP/IP and how to setup and use TCP/IP on a Windows-based PC. As well, anyone installing a WL-ACCESS should know how his/her network is organized.

I.2 Product designation

WL-ACCESS is a 802.11b Wireless Network Acces Point.

Wireless Access Point serves as communications headquarters for a reliable 11 Mbps wireless network.

WL-ACCESS is provided with tools of configuration and update. See section “Upgrade your WL-ACCESS” for more information.

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II. PACKAGE CHECKLIST

The **WL-ACCESS** package contains the following components :

- One WL-ACCESS device
- One main supply cable
- ACKSYS PRODUCT RANGE CD-ROM
- Two antennas
- One network straight cable with RJ45.

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III. PRODUCT SPECIFICATIONS

III.1 Characteristics

Metal housing including RJ45 ethernet interface 10BT, WIFI interface (802.11b) at 11 Mbit/s.
External power supply 9 to 36 VDC for WL-ACCESS-DC
Internal AC power supply 85 to 246 VAC for WL-ACCESS
Power supply protection by current limitation

III.2 DC Power (for DC version)

External power 9 to 36 VDC
DC POWER via 3 pins screw terminal connector
Maximum current 280 mA at 9 VDC
Power consumption : 2.5W max

III.3 AC power (for AC version)

Main power 85 to 246 VAC
47-440 Hz 3W

III.4 WLAN interface

WIFI 802.11b interface, Ethernet speed 1,2,5.5,11 Mbps
300 m nominal range (open space) from access point, 60 m in other cases.
4 WEP key 64/128 bits.
IP Protocols: IPv4, ICMP, HTTP.

III.5 LAN interface

Ethernet 10 BASE T, RJ45 Ethernet connector
Ethernet II, IEEE 802.3
Ethernet speed 10 Mbps
IP Protocols: IP V4, HTTP, ICMP, DHCP.

III.6 Led indicators

Ten LED indicators :
- Power
- Diagnostic / general-purpose mode / reboot indicator
- LAN interface Link, Rx/Tx activity
- WLAN interface Rx/Tx activity
- RF signal quality on WLAN interface

III.7 Environmental limitations

Operating temperature: 0°C to 65°C
Storage temperature: -40°C to +85°C
Humidity: 0-95% RH (without condensation)

III.8 Product information label

Located on the underside of the WL-ACCESS, it contains the following information:

- Product name
- Product serial number

III.9 Mechanical characteristics

Metal housing
Size: 17×15×4,2 cm (6.7×6×1.6 in) (antenna plugs not included, fastening included)
Weigth : 0.700 Kg (1.54 lbs)

Two omni-directional antennas, 2dBi. You can replace them by an antenna with more gain, through External antenna (RSMA) connector.

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IV. CONNECTORS

IV.1 Power connector cabling

This connector is valid only on WL-ACCESS-DC (DC version of WL-ACCESS)

Screw terminal connector (3 pins)		
PIN	Signal name	Description
1	EARTH	Protective ground
2	+VDC (9-36V)	Positive power supply
3	GND	Ground power supply

IV.2 Ethernet connector cabling

RJ45 connector (8 pins)		
PIN	Signal name	Direction
1	TxD+	Output
2	TxD-	Output
3	RxD+	Input
4	N.C.	Not Connected
5	N.C.	Not Connected
6	RxD-	Input
7	N.C.	Not Connected
8	N.C.	Not Connected

V. GETTING STARTED

This chapter describes the required steps to get WL-ACCESS device on-line and working.

V.1 Collect network characteristics

You will need at hand the following information about your WLAN:

Will the WL-ACCESS use DHCP :	☐		
If DHCP is used:			
• Does the network administrator (or the DHCP server) require a specially crafted Client ID (DHCP option 61)?	☐	client identifier:	_____
• Does the network administrator (or the DHCP server) require a Client Host Name (DHCP option 12)?	☐	hostname identifier:	_____
If DHCP is not used:			
• IP address for the WL-ACCESS (see below):			_ _ _ . _ _ _ . _ _ _ . _ _ _
• Does your WLAN need use of a netmask?	☐	Netmask value :	_ _ _ . _ _ _ . _ _ _ . _ _ _
• Will the admin connection cross a gateway?	☐	Gateway address:	_ _ _ . _ _ _ . _ _ _ . _ _ _

WL-ACCESS IP address: You must assign an IP address to the WL-ACCESS. YOU **CANNOT** JUST PICK ONE AT RANDOM and wish it will work! The chosen address must meet the following requirements :

- Its network part must match the network part of other devices on the same WLAN/LAN,
- Its host part must be different from any other devices on the same WLAN/ LAN (beware of printers, routers and gateways),
- Its host part must not be a reserved value like 0 or 255.
- WL-ACCESS uses the same IP address on WLAN and LAN interface.
- WL-ACCESS must have one SSID to indicate the network to which will be connected the WiFi devices. The several devices and the Access Point of the same WiFi network must have the same SSID.
- You must choose a radio channel in addition to the SSID to define the network.

NETMASKS: If no netmask applies, it can be deduced from the IP address class:

Class A	netmask 255.0.0.0
Class B	netmask 255. 255.0.0
Class C	netmask 255. 255. 255.0

If in doubt, please ask to the local Network Administrator.

V.2 Connect power adapter

Connect the power supply to the WL-ACCESS.

Notice WL-ACCESS has no ON/OFF switch. It turns on automatically when power supply is connected.

V.3 Connect network cable

The cable given with WL-ACCESS is not crossed. Use it to connect WL-ACCESS directly to hub, router, switch.

If WL-ACCESS is connected successfully to the network, the LINK LED is on. See section “Checking the hardware” for more information.

V.4 Find WL-ACCESS device on your network

The default IP address of WL-ACCESS is 192.168.1.253 and subnet mask is 255.255.255.0.

To change IP address of your WL-ACCESS, run locator.exe on acksys CD-ROM. See section “locator application” for used locator.exe

If your WL-ACCESS is behind a gateway, Locator can’t find your device. In this case used computer on the same network, or put WL-ACCESS in the same network for initialization.

V.5 Administration by WLAN / LAN

To change any parameter of WL-ACCESS, run the administration web page.

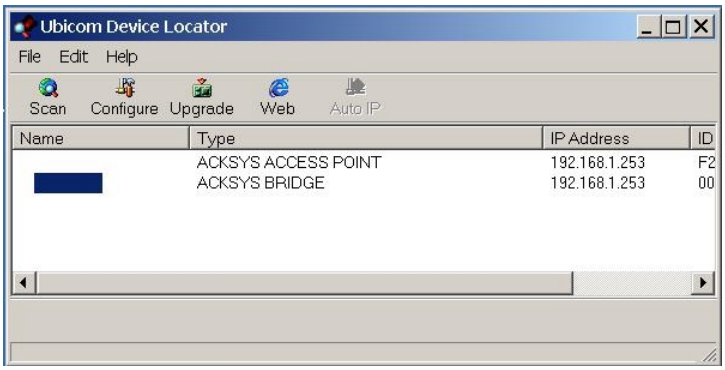
Execute your web browser, and in address field type http://192.168.1.253, (192.168.1.253 is default IP address of WL-ACCESS, if you have already change WL-ACCESS’s IP address type your IP address).

To enter in administration module you must type a user name and password. The default user name is “root”, and the default password is “root”.

VI. LOCATOR APPLICATION

Locator application it used to configure and to upgrade WL-ACCESS.

Connect WL-ACCESS to your computer with Ethernet cable, and execute locator.exe on CD.



Locator scans your network to locate all WL-ACCESS. If your WL-ACCESS is not ready (turn on, and connected on your computer), click on scan button when it is ready.

- Scan Button : When you click on this button, locator searchs the devices.

Before using others buttons, first select a device.

- Configure button : When you click on this button, you can configure IP address of WL-ACCESS or activate DHCP.
- Auto IP button : If this button is valid, when you click on, DHCP server is automaticly enable for your device. If you haven't DHCP server on your network, do not used this button.

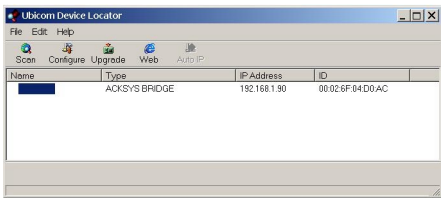
For the following buttons your device must have a good network configuration.

- Upgrade button : When you click on this button, you can donwload a new firmware in selectionned device.
- Web Button : When you click on this button, the administration web page is running with the selected device.

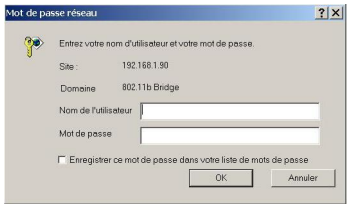
NOTE : If you use firewall on your computer, configure it, to not block UDP port 17784.

VII. CONFIGURE WL-ACCESS

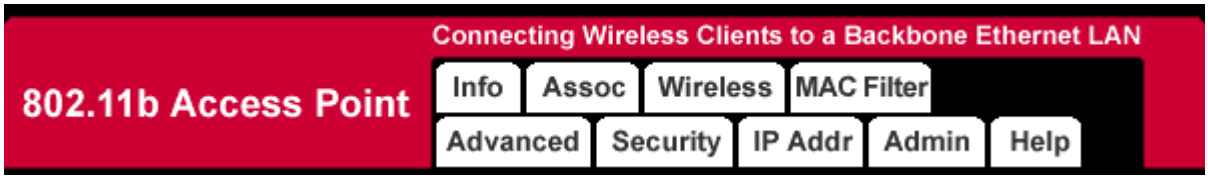
Run locator, (see section locator application)
To configure IP address, subnet mask and gateway, select a device and click on configure button.
Click on “web” button to administer the device by a web page.



When you have an identification window, type “root” for user name and “root” for password.



With administration web page, click on the tab to configure WL-ACCESS.



- Info tab : Basic information about the selected access point.
- Assoc tab : This is a list of all the stations that are associated, along with the amount of time since packets were transferred to or from each station.
- Wireless tab : On this page you can configure the basic 802.11b access point settings.
- Mac filter tab : On this page you can enable MAC address filtering.
- Advanced tab : On this page you can configure the advanced 802.11b access point settings.
- Security tab : On this page you can set the 802.11b security and encryption options.
- Ip Addr tab : On this page you can configure the IP address used by the Web and TFTP servers running on this access point.
- Admin tab : On this page you can change the password, reboot the access point, or reset all settings to their factory defaults.
- Help Tab : On this page you can found link to Acksys web site, or information to access to the hotline.

VIII. UPGRADE YOUR WL-ACCESS

To upgrade WL-ACCESS firmware, the latest firmware is downloadable on our web site (www.acksys.fr)

Sequence of update:

1. Run locator.
2. Select your device in list.
3. Click on upgrade button.
4. Choose your file (you can type file's path or click on choose button).
5. Click on upgrade button.
6. If the upgrade well-down, WL-ACCESS restarts.
7. If you have an error, correct the problem and try again.

NOTE : WL-ACCESS's Network configuration must be correct to launch the update. To test the network configuration, see section ***Checking the network topology***.

IX. SECURITY

Several levels of security are parametrables. In its default setting, the WL-ACCESS is does not activate any function of advanced security. To harden the confidentiality of the network exchanges, you have the following functions:

- Wep key : when wep key is enable, data is crypted with the used key. If you want to use wep key, all WIFI devices (Access point, bridge, computer …) must use the same wep key. To enable wep key, you have to use ***security tab*** in administration web page.

- Deny unencrypted data : If you use wep key, you can enable this option. When this option is enable, wifi not crypted packets are ignored. If this option is not enable, wifi not crypted packets are sent to Ethernet interface. To activate this option used ***security tab*** in administration web page.

- Block upgrade : When your installation is completed and it's running, you can block upgrade. When this option is enabled, it is impossible to upgrade WL-ACCESS. If you want to make an upgrade you must disable this option. You can enable this option with ***admin tab*** on administration web page.

- Mac filtering : If you use this option, only devices with mac address entered in WL-ACCESS's list, can be connected on your wifi network. If you used this option, do not forget to add all wifi devices mac address.

- AP Visibility : When Invisibility is selected, the AP is protected against AP discovery by NetStumbler, ApSniff and all wireless clients must explicitly use and know the SSID.

- Change login and password : Don't use default login ("root" "root") because all Acksys devices had this login by default, and it easy to find it. You can change login with ***admin tab*** in administration web page.

X. TROUBLESHOOTING

Please check the following thoroughly before calling for support. If you must call, we will need complete information about your network topology, IP addresses of intervening devices, model of the computer and operating system.

The checks should be done in the order given below.

X.1 Checking the hardware

Ten LEDs allow hardware diagnostic.

Power :

- this led lights up when the WL-ACCESS is correctly powered.

If the POWER LED stays off, it means that your power supply is bad, or incorrectly connected.

Diag :

- When resetting, this LED stays lighten until the WL-ACCESS is ready to use (usually in less than one second, or in about 10 seconds after upgrade)

If the "Diag" LED stays lighten at power up, the WL-ACCESS is out of order. Try to power it down, then up again after a few seconds.

WLan Tx/Rx :

- this LED flashes when sending or receiving data on the WLAN.

If the WLAN Tx/Rx LED stays off while your device is sending data, it means that your SSID is bad, the WL-ACCESS IP address is not correct, or the WL-ACCESS is not connected to the same SSID than your device.

If the WLAN Tx/Rx LED stays off while you are sending data to your device, it means that your cable is bad, the WL-ACCESS IP address is not correct.

LAN LINK, TX/RX :

- This LED is on if Ethernet link is detected, and flashes when sending or receiving data on the LAN.

X.2 Checking WLAN configuration

If your WiFi device, cannot be connected to WL-ACCESS check your WiFi configuration. SSID must be the same between your WL-ACCESS and your device. Be careful SSID is case sensitive.

If your device is connected to WL-ACCESS, but you can't send data to any devices. Check your WEP key configuration.

For other cases disable security options on WL-ACCESS, and try again.

X.3 Checking the network topology

In the following examples the WL-ACCESS IP address is 192.168.1.253 ; the computer used for the tests has IP address 192.168.1.244.

- First you must ensure that the WL-ACCESS has an unique IP address on the local network. Turn off the WL-ACCESS (unplug supply connector), then try to PING the WL-ACCESS address from a computer connected to the local network. This should result in an error or timeout :

```
C:\>arp -d 192.168.1.253
C:\>ping 192.168.1.253
Pinging 192.168.1.244 with 32 bytes of data :
Request timeout.
Request timeout.
Request timeout.
Request timeout.
```

  The « Request timeout » error messages are normal and expected in this case. If this is not the case, another host has the same IP address. Correct the problem.

  If the answer is some message like « no route to host », the computer you are using for the test has no access to the WL-ACCESS's LAN, or the network part of the IP address of the WL-ACCESS is incorrect.

- Now turn on the WL-ACCESS (plug supply connector) and try to PING it :

```
C:\>arp -d 192.168.1.253
C:\>ping 192.168.1.253
Pinging 192.168.1.244 with 32 bytes of data :
Answer from 192.168.1.253 : bytes=32 time<10ms TTL=64
Answer from 192.168.1.253 : bytes=32 time<10ms TTL=64
Answer from 192.168.1.253 : bytes=32 time<10ms TTL=64
Answer from 192.168.1.253 : bytes=32 time<10ms TTL=64
```

  If there is no answer, the IP address of the WL-ACCESS is not this one. Correct the problem with the administration system. Be sure to save the changed configuration.

- Then, if you need to cross a gateway, PING the WL-ACCESS from a computer installed on the other side of the gateway.

  DO NOT just move the above-mentioned computer from one LAN to the other ! You must set a new, appropriate IP address and SSID in the computer when you move it from one LAN to another.

  If there is no answer, the gateway IP address or the netmask is improperly set in the WL-ACCESS or in your computer. Correct the problem with the administration system. Be sure to save the changed configuration and reset the WL-ACCESS.

  Also the gateway itself may be improperly set. Check with your network administrator.

Did you set the gateway address (if any) in the WL-ACCESS ? Else the WL-ACCESS can receive the PING but does not know where to send the answer.

X.4 Checking the configuration

When you can PING the WL-ACCESS, you should be able to use remote administration. Try to connect to the administration system :

```
C:\> explorer http://192.168.1.253
```

You should runing your web browser and in field address pick http://192.168.1.253 (replace 192.168.1.253 by your IP address).

XI. ADDRESSING IN NETWORK PROTOCOLS

XI.1 TCP/IP network layers

TCP/IP is the name of the protocols used by Internet and many Intranets.

In a device participating in a TCP/IP network, there are four software layers: the **application layer**, the **transport layer** (TCP or UDP), the **network layer** (IP), the **LAN layer** (Ethernet, Wifi, point-to-point modems, etc.)

The **LAN layer address** allows a device to send data to another device connected to the same LAN. But there is not enough information in a LAN address to send to a device connected on another LAN through a router.

The **Network (IP) address** solves this problem by defining addresses which can be subject to routing. When the source and destination devices are not on the same LAN, the source device can send data to an intermediate gateway (also called router). The gateway has routing tables which allows it to forward data to the destination device, maybe through other gateways.

The a **transport layer address,** called a "port", is used inside a destination device to deliver data to the correct application process.

XI.2 SSID

The SSID (Service Set IDentifier), which is set on every wireless stations and Access Point, defines the logical network for the group of wireless network devices that share that particular SSID. You can use any keyboard characters to specify the SSID in WL-ACCESS. **SSID is case sensitive**.

XI.3 Ethernet Address

The Ethernet address is also referred to as the hardware address or MAC address. This address is assigned at the factory and should not be changed.

An Ethernet LAN can be made of hubs, switches, bridges, access points. These must not be confused with IP gateways (see below).

XI.4 IP address

The IP address is a 4 bytes number unique to each device on the network, which hosts can use to communicate.

IP addresses can be private or public. Public ones are reserved to devices that require to send data over a public network, such as internet. They are usually purchased or leased from a local ISP.

The IP address is usually represented in the "decimal dotted notation" which consists of the decimal value of each of the four bytes, separated by dots.

The IP address is divided into two parts : network and host. To support different needs, three network classes have been defined. In the following, 'x' stands for the host part of the IP address.

A host part with all bits set to 1 is the broadcast address, meaning for « for every device ».

A host part with all bits fixed to 0 addresses the network as a whole (for example, in routing entries).

Class A network : IP address 1.x.x.x to 127.x.x.x
The first byte defines the network and the last three bytes define the host. Only 127 different class A networks exist, and each consist of up to 16.777.216 devices

Class B network : IP address 128.0.x.x to 191.255.x.x
The first two bytes define the network and the last two bytes define the host. Class B networks are typically used for large company networks, and each can consist of up to 65,534 devices.

Class C network : IP address 192.0.0.x to 223.255.255.x
The first three bytes define the network and the last byte defines the host. Class C networks are the most common and are often used in smaller company, and each network can consist of up to 254 devices.

More complex classes can be defined by manipulating the IP netmask associated with the IP address. See the www.ietf.org documentation.

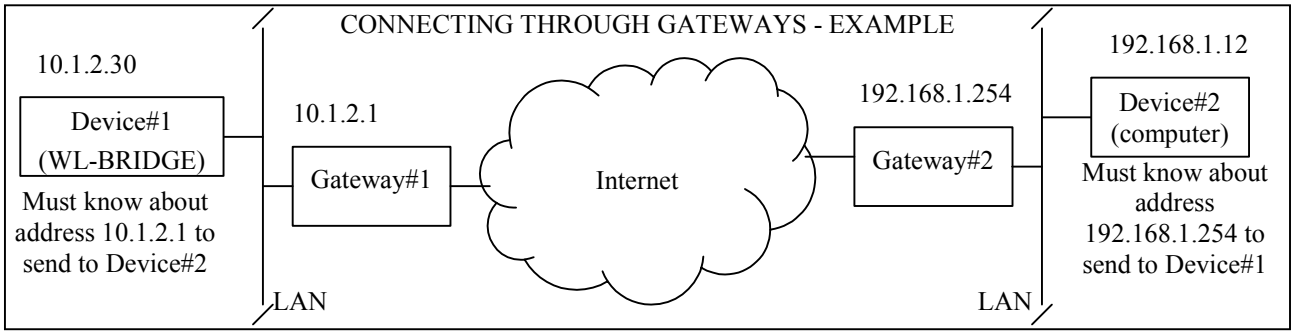
The bits set to one in the IP netmask define the bits of the associated IP address to be taken as the network part.

Network class	Network bits	Host bits	Netmask
A	8	24	255.0.0.0
B	16	16	255.255.0.0
C	24	8	255.255.255.0

Each wl8bridgehas one user-assigned IP address. Its factory-assigned default value is the Class C address “192.168.1.253”.

XI.5 Gateways

Each network device communicating through gateways MUST know the IP address of the gateway nearest to it. It will use this gateway to forward data to farther LANs. If a device does not know its gateway, it may receive data but may not return an answer. For example this can forbid answering a PING even if the PING request makes its way to the device.



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XII. NOTES

NOTES

XIII. DEFECT REPORT FORM

Name	
Company	
Telephone	
Fax	
E-mail	
WL-ACCESS	
Operating system	
driver version	
Type of computer	

Description of the problem

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