

# AW900i User's Manual



Distributed by:  
Grid Connect Inc. 1841 Centre Point Cr. #143 Naperville, IL 60563  
+1 630 245-1445, +1 630 245-1717 FAX  
[www.gridconnect.com](http://www.gridconnect.com) | [www.ipenabled.com](http://www.ipenabled.com) | [www.factorycomm.com](http://www.factorycomm.com)



Thank you for your purchase of the AW900i Wireless Ethernet Bridge.

If you have any questions when configuring your AvaLAN Bridge, please send us an email: [support@avalanwireless.com](mailto:support@avalanwireless.com)

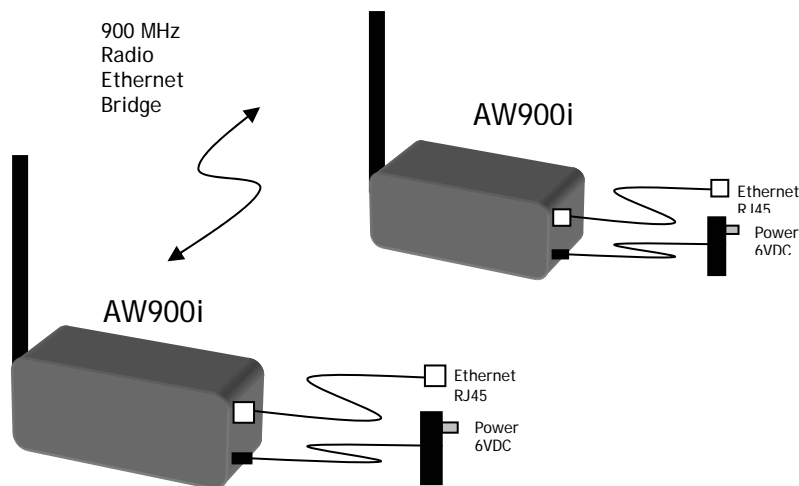
## Your Kit Should Contain:

- (2) AW900i Radio Units
- (2) Power Adapters 6VDC/80-240VAC
- (2) 2.5dBi Antennae

## Quick Setup:

1. Plug in the AW900i.
2. Connect an Ethernet cable from each AW900i to a client device.

Each AW900i radio automatically selects the best radio channel, encrypts the Ethernet traffic and transports the data wirelessly to its matched pair.



Any Ethernet device can be connected to the AW900i. The AW900i functions in place of an Ethernet cable and provides a transparent wireless point to point Ethernet cable replacement. Cross-over cables are not necessary as the AW900i automatically senses the device (client or switch).

## Advanced Settings:

The AW900i has three user selectable modes; *Site Survey*, *Manual Frequency Select* and *MAC filter*. These modes are enabled by the 8 position DIP switch on the master. These settings are automatically shared between the units and only need to be set on one unit for both to be activated in these user selected modes.

**Site survey mode** (DIP switch 4 - default is OFF for normal operation)

In this mode the AW900i can perform a site survey. When activated, the Link Quality LEDs will be continuously updated to allow the installer to optimize antennas orientation and perform a channel quality assessment. In this mode the Radio link is flooded with simulated Ethernet traffic to stress the link and increase the accuracy of the Link Quality display. Regular Ethernet traffic does not get transported while the radios are in this mode.

**Manual frequency selection mode** (DIP switches 2,3,5-8 - default is OFF for automatic mode)

The AW900i was designed to automatically select the best frequency for radio transmission. There may be circumstances when the user wishes to restrict the operation of the AW900i to a subset of the 902-928 band. The user may activate a manual selection mode that will allow the radio to automatically choose the best channel **within a grouped subset** of the 12 available channels:

DIP Setting	Channel	Frequency
2 On / 3 Off	1,2,3 or 4	903-909 MHz
2 Off / 3 On	5,6,7 or 8	911-917 MHz
2 On / 3 On	9,10,11 or 12	919-925 MHz

Or - the user may wish to specify a **specific channel**. This can be done by setting DIP switches 5-8 as shown in the table below. [Turn DIP 2 Off / 3 Off]

DIP Setting	Channel	Frequency
5 On / 6 Off / 7 Off / 8 Off	1	903 MHz
5 Off / 6 On / 7 Off / 8 Off	2	905 MHz
5 On / 6 On / 7 Off / 8 Off	3	907 MHz
5 Off / 6 Off / 7 On / 8 Off	4	909 MHz
5 On / 6 Off / 7 On / 8 Off	5	911 MHz
5 Off / 6 On / 7 On / 8 Off	6	913 MHz
5 On / 6 On / 7 On / 8 Off	7	915 MHz
5 Off / 6 Off / 7 Off / 8 On	8	917 MHz
5 On / 6 Off / 7 Off / 8 On	9	919 MHz
5 Off / 6 On / 7 Off / 8 On	10	921 MHz
5 On / 6 On / 7 Off / 8 On	11	923 MHz
5 Off / 6 Off / 7 On / 8 On	12	925 MHz

**MAC filter on/off mode** (DIP switch 1 - default is off for switched Ethernet network)

The AW900i is designed to work in hub or switched Ethernet networks. When the AW900i is used in a switched network the MAC filter should be off (default mode). When the AW900i will be operated on an un-switched hub it should be enabled. The MAC filter monitors local traffic and will not forward data that is destined for a local client. The filter monitors local MAC addresses and automatically updates these addresses as new devices enter the network. Broadcast and multicast messages are always transmitted and MAC addresses are transmitted until they are determined to be for a local device. This table is reset when the AW900i power is cycled for over 10 seconds.

distributed by:



## LED display:

The AW900i has a 16 LED display to display the status of the device.

LED	Name	Function	Color
1	<i>Power</i>	Unit has power and has successfully booted.	Red
2	<i>RF Link</i>	The radio has successfully linked with its partner.	Green
3	<i>RF TX</i>	Radio transmission is occurring.	Green
4	<i>RF RX</i>	Radio reception is occurring.	Green
5	<i>Eth Link</i>	The Ethernet Port has a valid Ethernet connection	Green
6	<i>Activity</i>	The AW900i is processing data	Green
7	<i>1 (channel)</i>	By adding the numbers that are lit the user can determine the current radio channel. 1 903 MHz 2 905 MHz 3 907 MHz 4 909 MHz 5 911 MHz 6 913 MHz 7 915 MHz 8 917 MHz 9 919 MHz 10 921 MHz 11 923 MHz 12 925 MHz	Green
8	<i>2 (channel)</i>		
9	<i>4 (channel)</i>		
10	<i>8 (channel)</i>		
11	<i>Link Quality</i>	Excellent link quality - No retransmissions	Green
12	<i>Link Quality</i>	Very good link quality - Few retransmissions	Green
13	<i>Link Quality</i>	Good link quality - Some retransmissions	Amber
14	<i>Link Quality</i>	Fair link quality - Many retransmissions	Amber
15	<i>Link Quality</i>	Weak link quality - Some packet failures	Red
16	<i>Link Quality</i>	Poor link quality Some packet successes	Red

distributed by:



## Technical Specifications: (typical)

Characteristic	Specification - description
RF transmission rate:	1.5 Mb/s
Throughput:	935 Kb/s
Output power:	+21dBm - (4 Watts EIRP with 15dBi antennae)
Receive sensitivity:	-101dBm at 10e-4 BER (-113dBm with 15dBi antennae)
Latency:	< 1ms - assuming a dedicated wireless link to client device.
Jitter:	±0.5ms - depending upon packet size, interference and SNR.
Current consumption:	Transmitting 260mA at 5V
Radio channels:	12 Non-overlapping
Automatic frequency select:	Yes - radio channel automatically selected and adaptively optimized
Manual frequency mode:	Yes
Status LEDs:	Power, RF Link, Ethernet Link, Traffic, RF RX, RF TX, 4/Channel and 6/Link Quality
MAC pass-through filter:	Yes - can be disabled
Error correction technique:	Sub-block error detection and retransmission
Adjacent-band rejection:	SAW receiver filter attenuates cellular and pager interference.
Temperature range	-40°C to 70°C
Power over Ethernet:	Compatible with common injector/5Volt splitters (Linksys WAPPOE)

## Troubleshooting:

### No Power LED:

Check the power connections.

### No Radio Link LED:

The radio is looking for its matched partner. If both units are powered up and the Power LEDs are active they may be too far away to create the radio connection. Try other locations that may have a less obstructed path or try to reorient the antennas.

Yagi type antennas get their best range when they are both oriented to point directly at each other with the antenna elements oriented in the same plane (eg. vertically or horizontally)

### Radio LINK LED on but Quality Indicator is low:

The units may be too far away to create a good radio connection. Try other locations that may have a less obstructed path or try to reorient the antennas.

### No Ethernet LINK LED:

Check your network connections.

### Still not working?

If practical, temporarily use an Ethernet cable to see if the network is working over a wired connection. If a wire does not work then the problem is with the network.

Support Email: [support@avalanwireless.com](mailto:support@avalanwireless.com)

### Product limited warranty:

This product is warranted to the original purchaser for normal use for a period of 30 days from the date of purchase. If a defect covered under this warranty occurs Avalan will repair or replace the defective part, at its option, at no cost. This warranty does not cover defects resulting from misuse or modification of the product.

### Compliance Statement ( Part 15.19 )

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.

### Warning ( Part 15.21 )

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### RF Exposure ( OET Bulletin 65 )

To comply with FCC RF exposure requirements for mobile transmitting devices, this transmitter should only be used or installed at locations where there is at least 20cm separation distance between the antenna and all persons.

### Information to the User - Part 15.105 (b)

Note: 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 or more 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.

distributed by:

 gridconnect.