Allied Wireless Installation Manual

Version: 3.0
Created: November 07, 2024

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Abstract:

This document contains instructions for installation of the Allied Wireless In-Dispenser Unit and Allied Wireless Access Point.

Revision History

Version 2.0 November 10, 2020
Initial Version to include all dispenser manufacturers.

Version 3.0 November 07, 2024
Updated device images
Updates to pairing process

Table of Contents

Introduction

This document is intended as a step-by-step guide for installing the Allied Wireless devices.

1.1 Read this manual before you begin

Dispensers have both electricity and a hazardous, flammable, and potentially explosive liquid. Failure to follow the below precautions and the Warning and Caution instructions in this manual may result in serious injury. Follow all rules, codes, and laws that apply to your area and installation.

WARNING!
ONLY TRAINED AND CERTIFIED TECHNICIANS MAY WORK ON OR INSTALL ALLIED WIRELESS UNITS.
ADHERE TO AND COMPLY WITH ALL LOCAL, STATE, AND FEDERAL SAFETY PROTOCOL REQUIREMENTS DURING THE INSTALLATION PROCESS.

1.1 Safety Precautions- Installation and Maintenance

Always make sure ALL power to the dispenser is turned OFF before you open the dispenser cabinet for maintenance. Physically lock, restrict access to, or tag the circuit breakers you turn off when servicing the dispenser. Be sure to trip (close) the emergency valve(s) under the dispenser BEFORE beginning maintenance.

Make sure that you know how to turn OFF power to the dispenser and submersible pumps in an emergency. Have all leaks or defects repaired immediately.

1.2 Installation and Environment

These devices may require installation of several wiring and hardware assemblies. Any installation or modification must comply with the requirements of the National Electrical Code (NFPA 70), the Automotive, Marine Service Station Code (NFPA 30A), and any other applicable codes.

You must wear a static wrist strap, securely attached to an earth ground when handling any circuit board, electronic component or assembly, or when reaching into the site controller or dispenser computer enclosure. Do not use power tools.

Care should be taken to ensure that the temperature does not exceed the operational ranges of -40°F to 140°F.

1.3 Unpacking and Inspection

Complete the following steps:

1. Before opening any cartons, count the number of cartons and verify the carton count against the supplied packing list.
2. Inspect the cartons for damage made during transit.
3. File claim information with the carrier on the bill of lading.
4. Retain cartons suspected of damage for future claim purposes.

NOTE: You must wear an anti-static wrist strap, PN 916962 or equivalent, when removing electronic components from static packages. Attach the wrist strap securely to an earth grounding point to prevent possible damage from static electricity.

5. Remove all equipment from the shipping cartons and carefully inspect for visible damage.

NOTE: Any damage should be brought to the attention of the carrier and claims made immediately. Return all equipment to the respective cartons for protection until actual installation is made. Save all cartons until it is certain that return shipments are not required.

1.4 Returning Damaged Components

Parts or components returned to the factory under warranty or for repair are subject to damage if not packaged properly. Complete the following steps to return parts or components to the production facility.

1. Place electronic components in an anti-static bag and in the original shipping cartons for return shipment to the production facility.
NOTE: If original shipping cartons are not available use a sturdy cardboard container and suitable packing materials such as anti-static polyethylene foam or bubble pack, to ensure the component is firmly packed.

2. Include a Return Parts Tag with the defective component describing the particular problem with the part.

3. Make sure adequate insurance is provided when returning parts to the factory.

WARNING
If the parts or components arrive at our facility in a damaged condition and it is determined that the damage is a direct result of inadequate or improper packaging, the damage will not be covered under the original warranty and the customer or distributor will be held responsible for the cost of repairs necessary to correct or replace the damaged parts.

1.5 Safety Precautions

Read NFPA 30A and NFPA 70 (U.S. Installations)

Before installing the equipment, the installer must read, understand, and follow this manual, NFPA 30A, NFPA 70, and applicable federal, state, and local codes and regulations. Failure to do so may adversely affect the safe use and operation of the equipment.

CSA C22.1 (Canadian Installations)

For installation in Canada the installer must read and understand this manual, CSA C22.1 (Canadian Electrical Code), and applicable federal, provincial, and local codes and regulations.

Emergency Power Cutoff

NFPA30A requires that an emergency power cutoff be installed. An emergency power cutoff is a single control that removes AC power from all site fueling equipment and submersible pumps. Make sure the control is accessible, labeled clearly, and installed away from dispensers. Make sure all station employees know where the Emergency Power Cutoff is located and how to operate it.

Electrical Circuits
Some of the procedures in this manual involve removal and connection of components during installation or service. Remove power from the distribution box before executing these procedures.

1.6 How to contact Allied

Technical questions related to the steps outlined in this installation manual should be referred to the Allied Technical Support Center at 215-785-6200. M-F 8:00 AM – 5:00 PM EST. Supportrequest@alliedelectronics.com

2 Installation Location for In-Dispenser Units

Equipment may be installed in a variety of locations; all the cabinets and required wire-ways must be located in an intrinsically safe enclosed space.

Ensure that all cabinets are located in an area that offers easy access for service, and free air space for cooling 3” away from other equipment.

Environmental Requirements
Care should be taken to ensure that the temperature of the cabinets does not exceed the operational ranges of -40°C to 140°F.

Power Requirements
The DC power source to the In-Dispenser Subscriber Unit device must have an input voltage of 24VDC.

3 Conformity with Standards

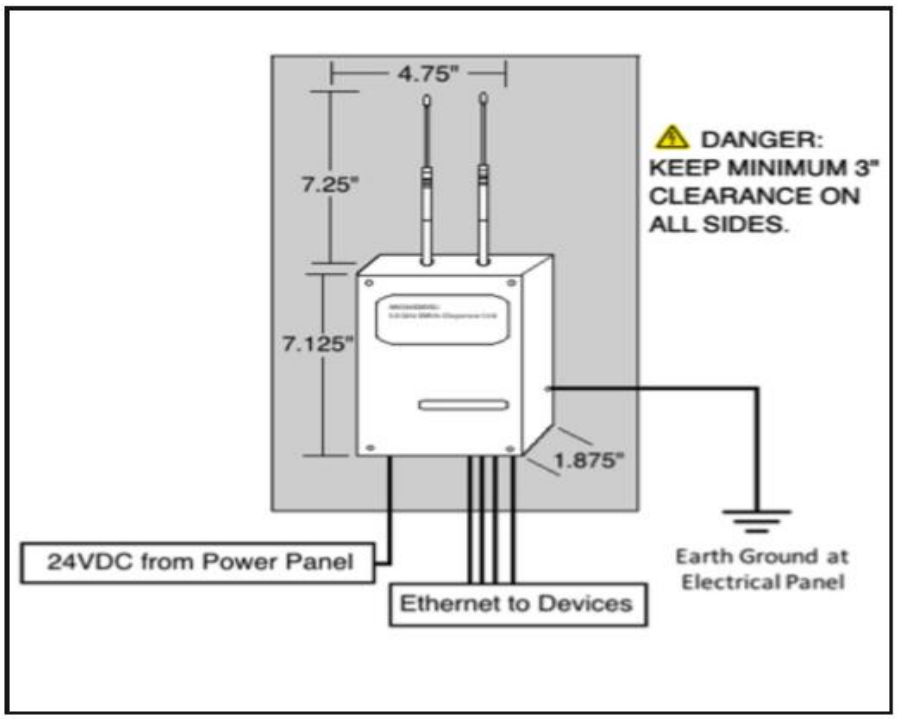
Ensure that all National, State, and local standards and codes are observed in site preparations, wiring, and installation.

Power Wiring
Warning: USE THE SUPPLIED POWER CABLE ONLY. Using other cables will void your warranty.

Emergency Stop Circuit
It is recommended that the electrical wiring for the In-Dispenser Wireless Unit be run through the Emergency Stop circuit at the site so that all electrical power is cut whenever the Emergency Stop button is pressed. The Emergency Stop Circuit wiring should be configured according to local electrical regulations.

Codes
Confirm that all equipment is installed in accordance with the US National Electrical Code (NFPA 70), the Automotive, Marine Service Station Code (NFPA 30A), and any other applicable state and local codes. For installations outside the US follow all applicable local and international codes.

4 Installation Best Practices



INSTALLATION NOTES:
1) Installation and use shall be in accordance with the Flammable and Combustible Liquids Code, NFPA 30
2) This device will connect to the Fuel Dispenser's 24VDC power panel
3) The cables provided with the product shall be reliably routed separate (>50mm) from other wiring/ cabling within the dispenser, unless all wiring insulation is rated for the highest circuit voltage.
4) The Earthing conductor shall be minimum 18AWG and copper only.
5) Only use the supplied cable to power device.
6) The power supply should be Class 2 or equivalent.

5 Preparation and Assembly of the Wireless In-Dispenser Units

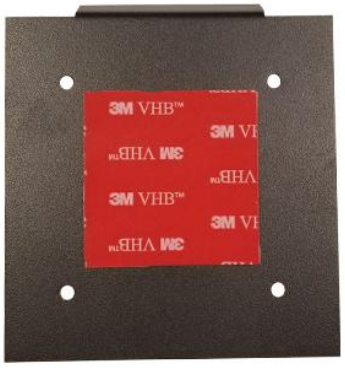
5.1 Locate all Wireless In-Dispenser Units.

5.2 Locate installation hardware and quick disconnect bracket.

Installation hardware bag includes screws and 3M VHB™ mounting tape for Wireless In-Dispenser Units.

5.3 Attach the supplied 3M VHB™ to the quick disconnect bracket.

3M VHB™ should be attached between the 4 holes on the opposite side of the 45° angle.



6 Installing the Wireless In-Dispenser Units for Wayne Dispensers

6.1 Power down the Wayne dispenser.

6.2 Open the dispenser bezel.

6.3 Locate a suitable mounting location for the Wireless In-Dispenser Unit.

On Ovation and Ovation 2 dispensers, the left or right cabinet walls work best. Make sure that the antennas are not touching the dispenser.

6.4 Clear any debris from the mounting area and remove the red backing from the 3M VHB™ installed on the quick disconnect bracket.

It is recommended that the dispenser bracket be connected to the Wireless In-Dispenser Unit at this time to obtain proper placement and clearance. Remember that the Wireless In-Dispenser Unit needs .5" clearance to be removed from the dispenser bracket for service and/or replacement. Seat the quick disconnect bracket to the mounting area. Hold in place for 10-15 seconds to confirm proper adhesion.

6.5 Locate the Allied Wireless In-Dispenser Subscriber Unit.

6.6 The Allied Wireless In-Dispenser power cable includes a two-PIN male adapter. The two-PIN male adapter found on the power cable will be used for Wayne Dispensers. (No additional adapter is required) Assorted adapters are provided depending on which dispenser manufacturer is associated with the installation.

6.7 Mount the Allied Wireless Subscriber Unit to the quick disconnect bracket via the slot found on the back of the unit.

6.8 Attach one side of the patch cable to one of the four available ports inside of the Allied Wireless In-Dispenser Subscriber Unit.

6.9 Attach the opposite side of the patch cable to the single IX board CAT 5 connector.

If you have multiple IX boards, run a standard CAT 5 patch cable from one of the additional ports in the Wireless In-Dispenser Unit to the additional IX board's CAT 5 connector.

6.10 Connect the power adapter of the Allied Wireless In-Dispenser cable to the 24volt power distribution board in the Wayne dispenser.

Male plug supports Wayne, additional female adapters support Gilbarco.

6.11 Power up the dispenser.

If the dispenser has bezel security, you will need to close the bezel, disable the security, and then open the bezel back up.

6.12 Verify that unit powers up.

Unit will emit an audible beep on initial power up (usually 5 seconds) and a second audible beep when the application starts. You will also start to see lights in the LED window.

6.13 Close the bezel.

6.14 Repeat steps 1-13 on all additional dispensers.

7 Installing the Wireless In-Dispenser Units for Gilbarco Dispensers.

7.1 Power down the Gilbarco dispenser.

7.2 Open the dispenser bezel.

7.3 Locate a suitable mounting location for the Wireless In-Dispenser Unit.

Make sure that the antennas are not touching the dispenser.

7.4 Clear any debris from the mounting area and remove the red backing from the 3M VHB™ installed on the quick disconnect bracket.

It is recommended that the dispenser bracket be connected to the Wireless In-Dispenser Unit at this time to obtain proper placement and clearance. Remember that the Wireless In-Dispenser Unit needs .5" clearance to be removed from the dispenser bracket for service and/or replacement. Seat the quick disconnect bracket to the mounting area. Hold in place for 10-15 seconds to confirm proper adhesion.

7.5 Locate the Allied Wireless In-Dispenser Subscriber Unit.

7.6 The Allied Wireless In-Dispenser Subscriber Unit power cable includes a two-PIN male adapter. Assorted adapters are provided depending on which dispenser manufacturer is associated with the installation.

7.7 Locate the Allied Wireless Gilbarco power adapter.

7.8 *Gilbarco with Omnia: Locate the Allied Wireless Gilbarco with Omnia Power Plug Adapter.

7.9 Mount the Allied Wireless Subscriber Unit to the quick disconnect bracket via the slot found on the back of the unit.

7.10 Attach one side of the patch cable to one of the four available ports inside of the Allied Wireless In-Dispenser Subscriber unit.

7.11 Attach the opposite side of the patch cable to the field connector on the Gilbarco HIP board. (P304A)

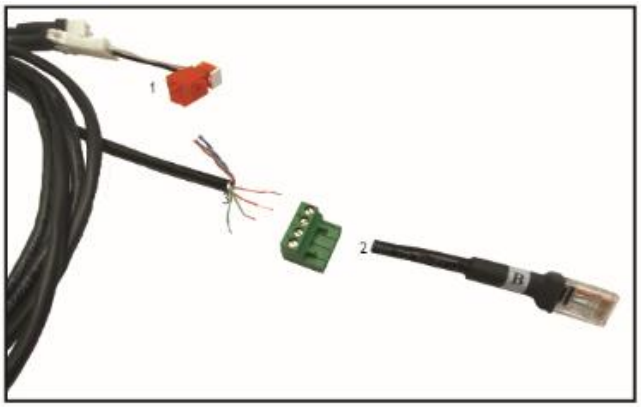
7.12 <u>Omnia Specific:</u> Attach the opposite side of the patch cable to an available ethernet port found on J6103. If a port is not available, please see 6.12 for alternate connectivity options.

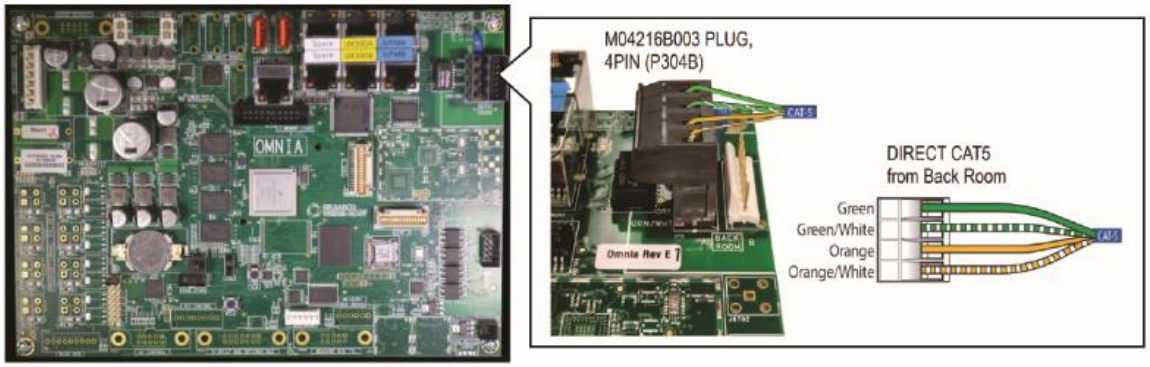
7.13 <u>Omnia Specific Alternative Connections:</u> There are two options for connecting the Allied Wireless In-Dispenser patch cable if a port is not available on the Omnia board.

7.13.1 (Option 1) Connect the 4-pin screw terminal of the AW9451 wire harness to P304B on the Gilbarco Omnia Board.

Attach the patch cable from the Allied Wireless In-Dispenser unit to the ethernet jack on the AW9451 wire harness.

7.13.2 (Option 2) Cut one end of the patch cable. Strip the Green, Green-White, Orange, and Orange-White cables and connect to the 4-pin screw terminal as seen below.





7.14 Connect the power portion of the Gilbarco power cable to the 24 VDC out on the HIP board (P306A or P306B).

7.15 <u>Omnia Specific:</u> Connect the provided Omnia power adapter (AE-OPA) to the 2-pin male power supply from the Wireless In-Dispenser Unit. Attach the Orange Ended power plug to J301A found on the Gilbarco wiring harness at P6001.

7.16 Power up the dispenser.

7.17 Verify that the unit powers up.

Unit will emit an audible beep on initial power up (usually 5 seconds) and a second audible beep when the application starts. You will also start to see lights in the LED window.

7.18 Close the Bezel.

7.19 Repeat steps 1-18 on all additional dispensers.

8 Installing the Wireless In-Dispenser Units for Bennett Dispensers

8.1 Power down the Bennett dispenser.

8.2 Open the dispenser bezel.

8.3 Locate a suitable mounting location for the Wireless In-Dispenser Unit.

Select the left or the right inside frame wall of the dispenser that you allow ample clearance for mounting the radio. Make sure that the antennas are not touching the dispenser.

8.4 Clear any debris from the mounting area and remove the red backing from the 3M VHB™ installed on the quick disconnect bracket.

It is recommended that the dispenser bracket be connected to the Wireless In-Dispenser Unit at this time to obtain proper placement and clearance. Remember that the Wireless In-Dispenser Unit needs .5" clearance to be removed from the dispenser bracket for service and/or replacement. Seat the quick disconnect bracket to the mounting area. Hold in place for 10-15 seconds to confirm proper adhesion.

8.5 Locate the Allied Wireless In-Dispenser Subscriber Unit.

8.6 The Allied Wireless In-Dispenser Subscriber Unit power cable includes a two-PIN male adapter. Assorted adapters are provided depending on which dispenser manufacturer is associated with the installation.

8.6.1 In-Dispenser power cable adapter 14 pin connection for 819 CPU Board.

8.6.2 In-Dispenser power cable adapter 6 pin connection for 919 CPU Board.

8.7 Mount the Allied Wireless Subscriber Unit to the quick disconnect bracket via the slot found on the back of the unit.

8.8 Attach one side of the patch cable to one of the four available ports inside of the Allied Wireless In-Dispenser Subscriber Unit.

8.9 Connect the opposite end of the patch cable to the J15 ethernet connector on the SBC2 board.

8.10 Depending on the CPU board type, connect the In-Dispenser power cable to the 819 or 919 CPU board inside the Bennett dispenser.

- 819 Board- connect to J4 or J6 to supply 24V power to the In-Dispenser Subscriber Unit.
- 919 Board- Connect to J17 to supply 24V power to the In-Dispenser Subscriber Unit.

8.11 Power up the dispenser.

If the dispenser has bezel security, you will need to close the bezel, disable the security, and then open the bezel back up.

8.12 Verify that unit powers up.

Unit will emit an audible beep on initial power up (usually 5 seconds) and a second audible beep when the application starts. You will also start to see lights in the LED window.

8.13 Close the bezel.

8.14 Repeat steps 1-13 on all additional dispensers.

9 Installing the Wireless In-Terminal Unit inside of the Outdoor Payment Terminal

9.1 Power down the Outdoor Payment Terminal.

9.2 Open the Terminal bezel.

9.3 Locate a suitable mounting location for the Wireless In-Terminal Unit.

9.4 Clear any debris from the mounting area and remove the red backing from the 3M VHB™ installed on the quick disconnect bracket.

It is recommended that the terminal bracket be connected to the Wireless In-Terminal Unit at this time to obtain proper placement and clearance. Remember that the Wireless In-Terminal Unit needs .5" clearance to be removed from the terminal bracket for service and/or replacement. Seat the quick disconnect bracket to the mounting area. Hold in place for 10-15 seconds to confirm proper adhesion.

9.5 Locate the In-Terminal Subscriber Unit power supply.

9.6 Locate the In-Terminal External Antenna.

9.7 Mount the Allied Wireless Subscriber Unit to the quick disconnect bracket via the slot found on the back of the unit.

9.8 Attach one side of the patch cable to one of the four available ports inside of the In-Terminal Subscriber Unit.

9.8 Attach the opposite side of the patch cable to the Data Communication Board of the Outdoor Payment Terminal.

9.9 Connect the power portion of the Outdoor Payment Terminal power cable to the 24 VDC out.

9.10 Install external antenna to the Outdoor Payment Terminal.

Due to a full metal enclosure and weather tight seal, Outdoor Payment Terminals require the use of an external antenna. Installation will require using the punchout found on most payment terminals or requires drilling a hole. If the terminal requires drilling a hole, please refer to manufacturers guidelines as this may void warranty.

9.11 Connect antenna cables to In-Terminal Subscriber Unit.

Please be certain NOT to crimp any cable wires in the process of installation. Also, do NOT gather slack cable wires and tie or bind together as this may cause communication interference.

9.12 Power up the Outdoor Payment Terminal.

9.13 Verify that unit powers up.

Unit will emit an audible beep on initial power up (usually 5 seconds) and a second audible beep when the application starts. You will also start to see lights in the LED window.

9.14 Close the Bezel.

9.15 Repeat steps 1-14 on all additional terminals.

10 Preparation for Installation of the Wireless Access Point (Indoor Unit)

10.1 Locate the Wireless Access Point Unit.

There should be one per site, unless connecting to more than 32 Fueling Points.

10.2 Locate the Wireless Access Point Gigabit PoE Injector.

This unit provides power to the Wireless Access Point.

10.3 Locate the 24 VDC power supply.

This will be connected to the PoE Injector.

10.4 Locate the Omnidirectional antennas and install them on the Wireless Access Point unit.

10.5 Locate the customer's existing network switch where connection from the Access Point will occur.

11 Installing the Wireless Access Point (Indoor Unit)

Locate an area where the Wireless Access Point Unit can be securely mounted.

We suggest that the Wireless Access Point is mounted in an area that has transparency to the forecourt. It is recommended that this is not inside a metal enclosure or against any metal objects. Make sure that the antennas are not touching any objects and that you have .5" of clearance on the top of the unit.

11.1 Mount the Access Point to the wall. Two screw keyholes can be found on the back of the device.

11.2 Connect CAT 5 Patch cable from the port in the Wireless Access Point Unit to female connector on the Wireless Access Point Gigabit PoE Injector.

11.3 Connect the CAT 5 male connector on the Wireless Access Point Gigabit PoE Injector into the customer's existing switch.

11.4 Connect 24 VDC power supply at 120vac outlet and Wireless Access Point Gigabit PoE Injector.

11.5 Gigabit PoE Injector will have a green light present when power is applied.

11.6 Wireless Access Point Unit will beep once when power is applied and a second time when the application is running.

12 Pairing In-Dispenser Units to the Access Point

Allied Wireless Management Application

The Allied Wireless EMV system is comprised of an Access Point, which provides a secure connection from the wired Local Area Network to a number of In-Dispenser Subscriber Units attached to fueling points in the forecourt.
The Allied Wireless Management Application provides a secure and fast mechanism to pair wireless devices and monitor signal strength.
Please contact Allied Support for the latest version of this application:
supportrequest@alliedelectronics.com

12.2 Prerequisites

1. Windows 10 or 11
2. Allied Wireless Management Application
3. Access to the customer's Local Area Network or a Multi-port switch and CAT-5 cables

The application must be run as an Administrator since it performs low level operations within the TCP/IP stack as part of the discovery process. Particularly, it listens for Cisco Discovery Protocol packets, and it uses them to cross reference IP and MAC addresses.

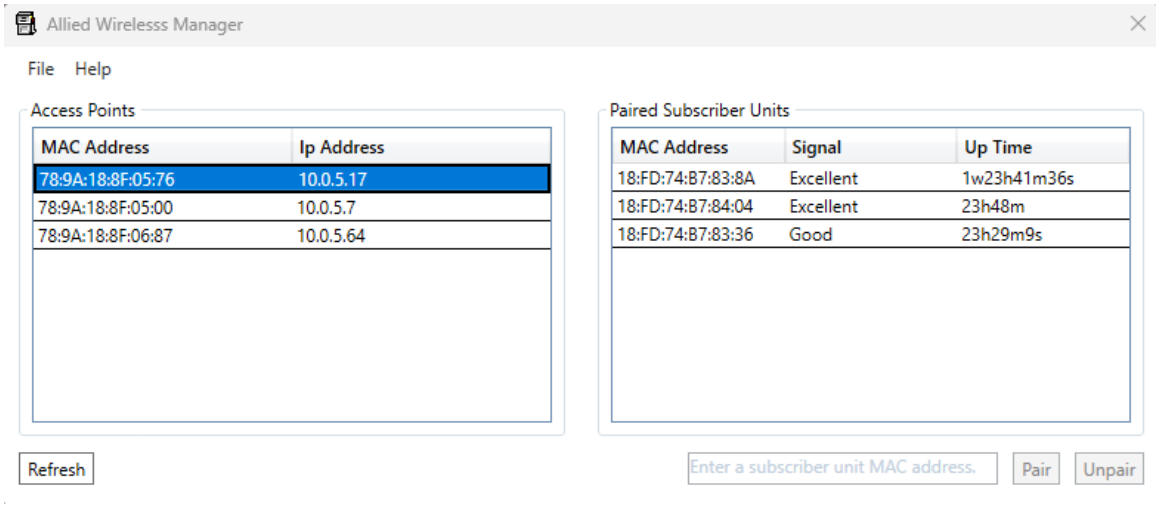
12.3 Pairing In-Dispenser Units

Aside from the secure connection process that the devices use, another crucial part of the security of this application is that the Access Point will ignore all attempts to connect to any MAC addresses that are configured into an Access List.
The Allied Wireless Management Application is used to manage the access list on the Access Point.

12.4 Discovery

- The left window labeled Access Points provides a list of Access Points that are discoverable on the network.
- We configure the Access Points to acquire an IP address through DHCP for configuration.
- This is not to say that the Access Point needs an IP address to perform its operation – just that in order to add or remove an entry from the access list we must be able to connect to it.

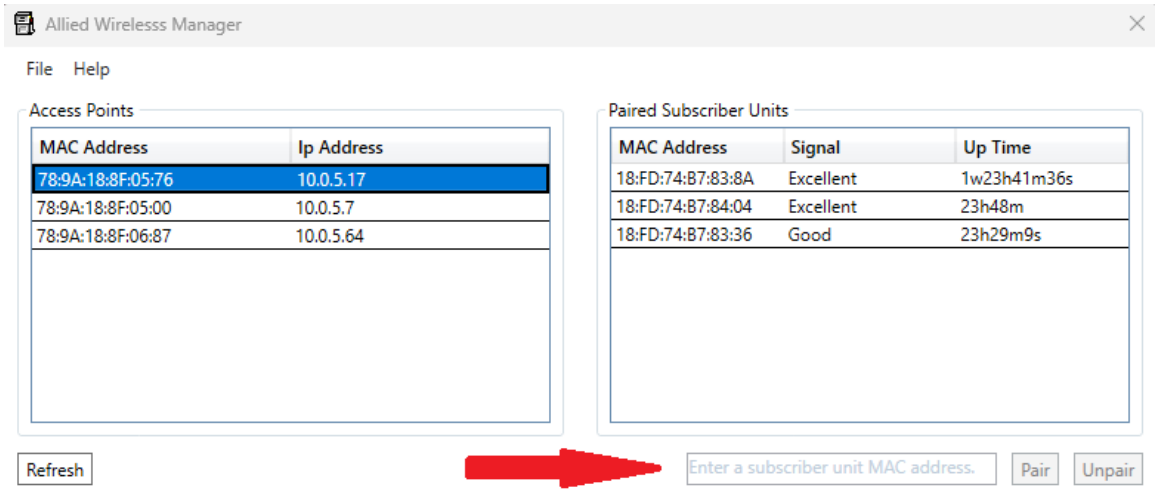
The following image shows the application with three visible Access Points displayed. (Typically, you will only see one Access Point on the list unless the site has multiple AP devices connected)
The program selects the first one it finds by default. Clicking on any other AP will refresh the Paired Subscriber Unit List on the right window.



12.5 Pairing Subscriber Units

Pairing a Subscriber Unit to an Access Point takes only a few steps.

Once the Access Point MAC/IP Address is selected you must enter the colon delimited MAC address of the In-Dispenser Subscriber Unit you wish to add.



Once the In-Dispenser Unit MAC Address appears in the associated box within the box labeled *Enter a Subscriber Unit MAC Address*, select "Pair" to the right.

This will begin pairing the SU to the AP. This process only takes a few seconds.
Once Paired the MAC Address of the Subscriber Unit will display on the window to the right labeled Paired Subscriber Units.
The Signal Strength and Up Time will then be displayed.

N.B:
• The MAC address required for pairing is included on a sticker located on the bottom of the subscriber unit.

12.6 Unpairing Subscriber Units

With the Access Point selected on the Access Points list, the Subscriber Unit MAC address and IP address should be highlighted. Enter the MAC address of the Subscriber Unit to be unpaired from the Access Point in the box labeled *Enter a Subscriber Unit MAC Address*. It should be listed in the Paired Subscriber Unit list on the right window.

Select Unpair to the right of the MAC address box.
Once this is completed the MAC address is no longer listed as a Paired Subscriber unit.

12.7 Help

Clicking on Help will display the version of Allied Wireless Manager currently loaded.

12.8 Signal Strength

The signal strength at the receiver is expressed in descending order as excellent, good, poor, and bad. Bad is the level in which a connection can be made but networking issues are expected.

Since these routers work in the Super High Frequency or 'C' band, they tend to propagate their electromagnetic energy in a straight line but not so much that they cannot be used for reasonably long distances.

As with any antenna, polarization is important. If the Access Point is situated with the antennae in a vertical orientation, the In-Dispenser Units will work best if they too are in a vertical orientation. Height is important – and setting up the Access Point in a good location is helpful.
Finally, an external antenna can be helpful provided that the coaxial cable run is reasonably short. The best antenna in the world is useless if the coax is attenuating the signal to nothing. The higher the frequency, the greater the loss per unit length in coaxial cable.