

### WARNING AND CAUTIONS:

- **TO AVOID FIRE, SHOCK, OR DEATH; TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE WIRING!**
- **Risk of Electric Shock** - More than one disconnect switch may be required to de-energize the equipment before servicing.
- To be installed and/or used in accordance with appropriate electrical codes and regulations.
- If you are unsure about any part of these instructions, consult an electrician.
- Use this device with copper or copper clad wire only.
- Switched output is energized by default at power up

### WARNINGS AND CAUTIONS:

- Disconnect power at circuit breaker or fuse when servicing, installing or removing fixture or changing lamps.
- **Mounting:** It is critical to the performance of this device that the antenna be oriented vertically. It must point straight up or down for proper operation.
- **Wiring Connectors:** All existing wiring connectors must be replaced with new UL listed wiring connectors. All wiring connectors must be correctly sized for the application and the number and the size of the electrical conductors.
- Metal conduit connector must be grounded.

## INSTALLATION GUIDE

### SPECIFICATIONS

- 2 Sensors Inputs: Each can operate with 0-10V photocell or 0-24V occupancy sensor
- Auxiliary Output: Switch closure, 40mA max, sink only
- Radio Frequency: 2.4 GHz (IEEE 802.15.4)
- RF Transmission Output Power: +20dBm
- Operating Temperature: -40 to +70C
- Operating Humidity: 10 to 90%, non-condensing
- Configuration/Programming: Stored in non-volatile memory
- Dimensions: 8.2L x 2.3W x 1.3H in (209 X 59 X 33 mm)
- Enclosure Type: Galvanneal steel, powder-coated white

### CAUTION

- AIM-121 controllers must be installed in accordance with national, state, and local electrical codes and requirements
- All work must be performed by qualified personnel
- Disconnect all power before installation or service
- Metal conduit connector must be grounded
- The switched output (**AUX LOAD**) is energized by default at power up

### NEEDED MATERIALS

- **50 OHM Terminator plug RP-SMA:** Part Number 132360RP from Amphenol
- **Wiring Connectors:** All existing wiring connectors must be replaced with new UL listed wiring connectors. All wiring connectors must be correctly sized for the application and the number and the size of the electrical conductors.

### ATTACHING THE TERMINATOR TO THE BULKHEAD

Make sure the power is off. Attach the 50 OHM Terminator to the RP-SMA bulkhead hand tight. Keep the 50 OHM Terminator on the bulkhead at all times, until the antenna replaces the 50 OHM Terminator. When installing the device, the technician must be grounded with a proper ground strap.

### ATTACHING THE ANTENNA

When it is time to attach the antenna, touch a grounded surface, remove the 50 OHM Terminator and screw on the antenna hand tight. Tighten a 1/4 turn with a pair of needle nose pliers. Do not over tighten or the RF pin in the bulkhead will crack, creating poor RF quality.

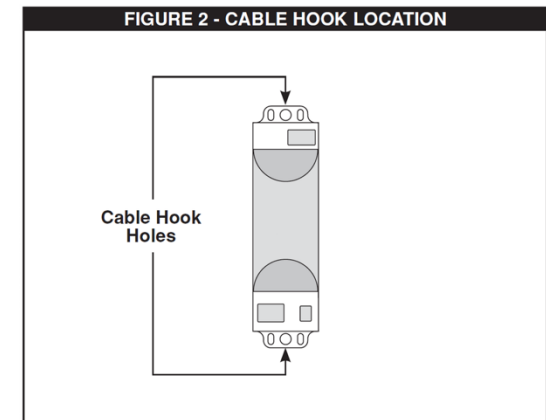
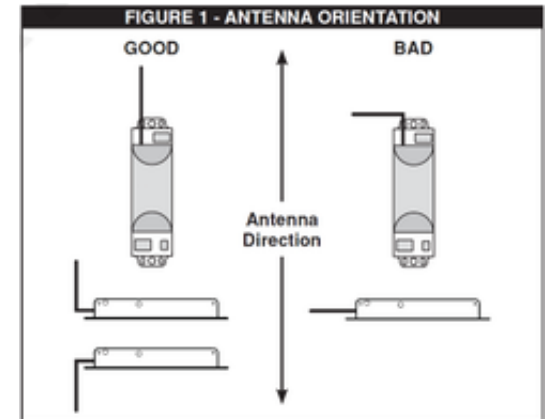
### MOUNTING

It is critical to the performance of this device that the antenna be oriented vertically. It must point straight up or down for proper operation. When installing the AIM-121 in an enclosure, antenna position must be considered in order to provide optimum wireless signal strength. For best transmission, all antenna should be oriented in the same direction.

**NOTE:** See the AIM-121 mounting template for assistance.

**Option A.** For standard installation: place the AIM-121 in the desired location and secure it using (4) #8 screws. Prior to permanently mounting it, make sure the antenna points directly upward or downward and is free of any metal objects within 12 in. of the antenna (Figure 1).

**Option B.** For installation in a light pole: hang the AIM-121 with an appropriate cable hook, by using the cable hook hole at either end of the device (Figure 2).



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FUSE AND VERIFY THAT POWER IS OFF  
BEFORE WIRING!**

## INSTALLATION INSTRUCTIONS

**Note:** When installing the AIM-121 into an enclosure, consideration of antenna position and interference is required to provide the optimum wireless signal strength. (Figure 1)

1. Connect the electrical service **black** wire (hot) to the **LINE** input on the AIM-121.
2. Connect the electrical service **white** wire (neutral) to the **NEUTRAL** input on the AIM-121.
3. Refer to Figure 3 for connecting sensors (if applicable).
4. The auxiliary output is a low voltage "current sink only" output intended to drive low-voltage external relays. Consult Synapse before using this output.
5. Refer to the SimplySNAP User's Manual for information on provisioning the AIM-121

**Note: Steps 6 - 9 are for attaching sensors. See Figure 3 for details.**

6. Connect the AIM-121 Input 1 input to the first sensor output and Input 2 to the second sensor output (if applicable).
7. Connect the AIM-121 COMMON signal to the Common (ground) connection on the sensor(s).
8. Connect the AIM-121 +24VDC output to the power input on the sensor(s).
9. Connect the AIM-121 RTN input to the Common (ground) signal on the sensor(s).

## USING THE AC CAGE CLAMPS

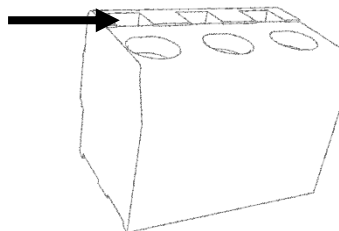
Synapse's AC terminal blocks use a secure locking mechanism for the AC connections that is called a cage clamp. To securely attach the AC wires to the AIM-121 follow the directions below.

1. Strip 1/3" of the conductor wire.
2. Insert a small bladed screw driver inside the **square** hole release mechanism to open the cage clamp. (Figure 4)
3. Insert the wire into the **round** hole to the cage clamp.

**NOTE: The conductor wire should fall into the hole with no force when the clamp is properly opened.**

4. Hold the wire in place as you remove the small screw driver from the **square** hole.
5. Tug on the conductor to verify it is snugly clamped. If it is not snug, go back to step 2 and repeat.

Insert small bladed screwdriver into square slot before inserting the wire in the corresponding circular hole

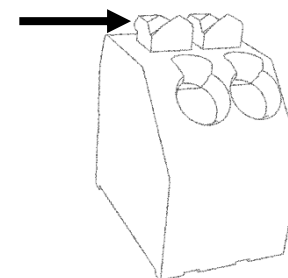


**Figure 4 - Insert a small bladed screwdriver before inserting the conductor wire.**

## USING THE DC CAGE CLAMPS

For the DC Cage Clamps, use a small flat head screwdriver to push the release button (Figure 5) before inserting the wire.

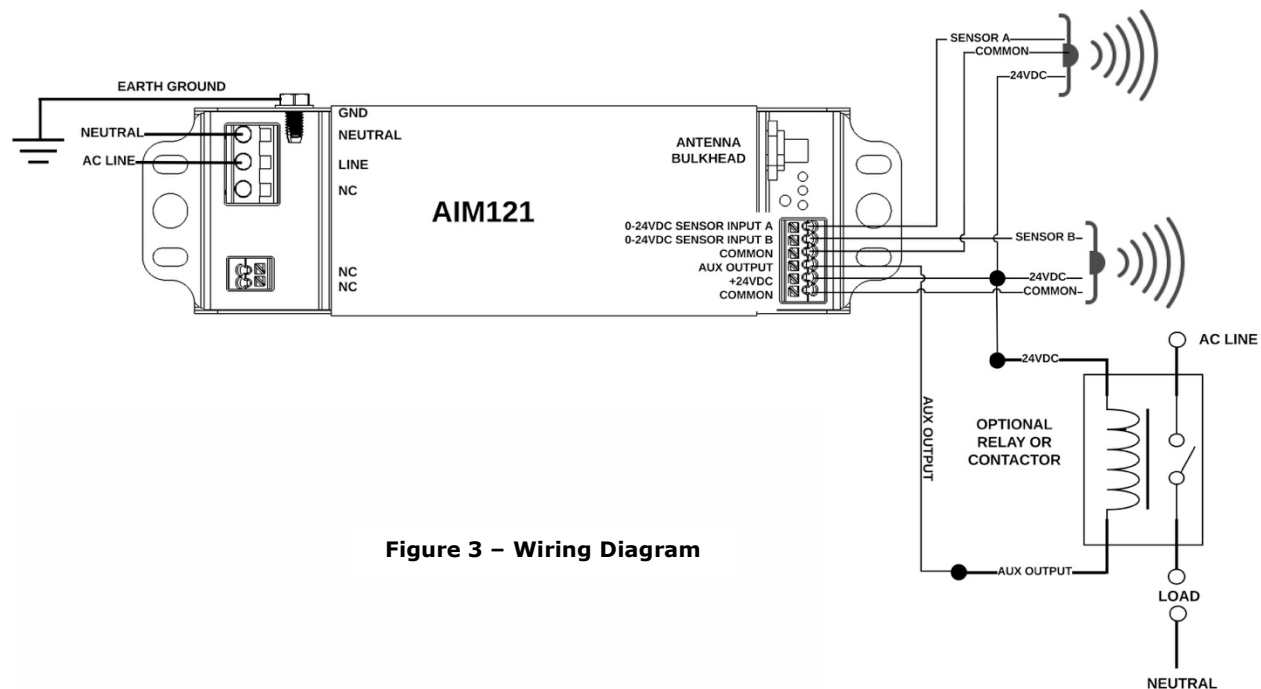
Use small bladed screwdriver to press release button before inserting wire in the corresponding circular hole



**Figure 5 - Use a small bladed screwdriver to press the clamp release before inserting the wire.**

## INSTALLING WIRES

Use a small screw driver inside the terminal block release mechanism to insert and release wires in the terminal block



**Figure 3 - Wiring Diagram**

## REGULATORY INFORMATION AND CERTIFICATIONS

**RF Exposure Statement:** This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**Industry Canada (IC) certifications:** This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicable aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

### **FCC certifications and regulatory information (USA only)**

FCC Part 15 Class B: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) These devices must accept any interference received, including interference that may cause harmful operation.

### **RADIO FREQUENCY INTERFERENCE (RFI) (FCC 15.105):**

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: (1) Re-orient or relocate the receiving antenna; (2) Increase the separation between the equipment and the receiver; (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected; (4) Consult the dealer or an experienced radio/TV technician for help.

### **Declaration of Conformity (FCC 96-208 & 95-19):**

Synapse Wireless, Inc. declares that the product name "AIM-121" to which this declaration relates, meet the requirements specified by the Federal Communications Commission as detailed in the following specifications:

Part 15, Subpart B, for Class B equipment  
FCC 96-208 as it applies to Class B personal computers and peripherals

This product has been tested at an External Test Laboratory certified per FCC rules and has been found to meet the FCC, Part 15, Emission Limits. Documentation is on file and available from Synapse Wireless, Inc.

If the FCC ID for the module inside this product enclosure is not visible when installed inside another device, then the outside of the device into which this product is installed must also display a label referring to the enclosed module FCC ID. Modifications (FCC 15.21): Changes or modifications to this equipment not expressly approved by Synapse Wireless, Inc., may void the user's authority to operate this equipment.

### **CERTIFICATIONS**

<b>Model</b>	: 200366-01
<b>Contains FCC ID</b>	: U90-SM220
<b>Contains IC</b>	: 7084A-SM220
<b>UL File No</b>	: E346690

**Contact Synapse for Support-** (877) 982-7888