DIM10-250-11 Lighting Controller
0-10V CONTROL, 2 ANALOG INPUTS
Load Ratings: 5A @ 100-277VAC (+/- 10%), 50/60 Hz
Operating Temperature: -40 to +70 C / Operating Humidity: 10 to 90%, non-condensing

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; all work should be performed by qualified personnel
- Use this device with copper or copper clad wire only.

WARNING AND CAUTIONS:

- Disconnect power at circuit breaker or fuse when servicing, installing or removing fixture or changing lamps.
- Switched output is energized by default at power up
- **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.

INSTALLATION GUIDE

SPECIFICATIONS

- Relay Max Switched Circuit: Zero Cross, 5A
- Dim Control Max Load: 20 mA Source/50 mA Sink
- Radio Frequency: 2.4 GHz (IEEE 802.15.4)
- RF Transmission Output Power: +20dBM
- Operating Temperature: -40 to +70 C
- 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 m)
- Enclosure Type: Galvanneal steel, powder-coated white

CAUTION

- DIM10-250-11 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 **(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 that are 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 tightly. Tighten a 1/4 turn with a pair of needle nose pliers. Do not overtighten or the RF pin in the bulkhead will crack, creating poor RF link 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 DIM10-250-11 in an enclosure, antenna position must be considered in order to provide optimum wireless signal strength. For best transmission, all antennas should be oriented in the same direction.

NOTE: See the DIM10-250-11 mounting template for assistance.

NOTE: Mount in an LED Fixture or Troffer.

Option A. For standard installation: place the light controller 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 light controller with an appropriate cable hook, by using the cable hook hole at either end of the device (Figure 2).

FIGURE 1 - ANTENNA ORIENTATION

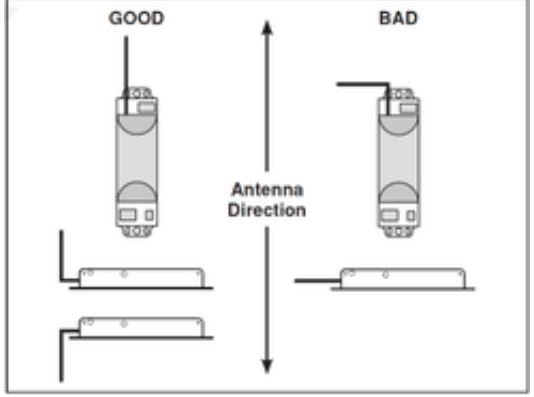
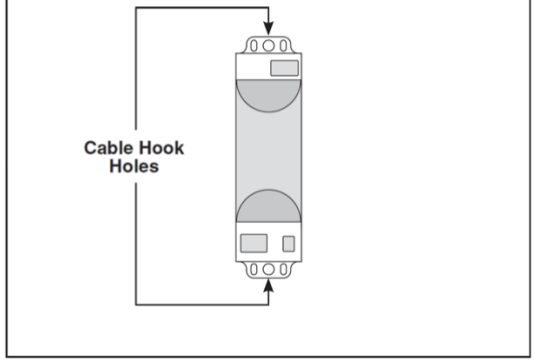


FIGURE 2 - CABLE HOOK LOCATION



WARNING: TO AVOID FIRE, SHOCK, OR DEATH:
TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND VERIFY THAT POWER IS OFF BEFORE WIRING!

INSTALLATION INSTRUCTIONS

Note: When installing the DIM10-250-11 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 DIM10-250-11.
2. Connect the **black** wire of the LED fixture to the **LOAD** output on the DIM10-250-11.
3. Connect the electrical service **white** wire (neutral) to the **NEUTRAL** input on the DIM10-250-11 and the **NEUTRAL** input on the fixture.
4. Connect the **white** wire (neutral) from the LED fixture to the electrical service white wire/neutral.

Note: Steps 5-7 are for Class 1/2 Dimming Control

5. Connect the **DIM-** wire on the LED fixture to the **DIM-** input on the DIM10-250-11.
6. Connect the **DIM+** wire on the LED fixture to the **DIM+** input on the DIM10-250-11.
7. Switch power on to the fixture. The light should turn on.

Note: When switched on, lamps should turn on to full brightness; approximately 10 VDC signal on the DIM+ wire using the DIM- wire as reference.

8. Refer to the SimplySNAP User's Manual for information on provisioning the DIM10-250-11.

Note: Steps 9-12 are for attaching sensors. See Figure 3 for details

9. Connect the DIM10-250-11 Input A to the first sensor output and Input B to the second sensor output (if applicable).
10. Connect the DIM10-250-11 COMMON signal to the Common (ground) connection on the sensor(s).
11. Connect the DIM10-250-11 +24VDC output to the power input on the sensor(s).
12. Connect the DIM10-250-11 COMMON input to the Common (ground) signal on the sensor(s).

DIMMING

Below are some recommendations for successful dimming using the DIM10-250-11. The dimming control wires are referenced as Dim+ and Dim- . The dimming signals have a Maximum voltage of 10V DC.

- Use multi-strand 18 Gauge Wire for noise immunity and current capability
- Do not ground the dimming wire. This is a return signal and is critical for dimming.
- When possible, route dimming wires away from AC lines
- Use connections with properly sized connectors.
- Eliminate excess wire between fixtures. Line length will cause voltage drop.
- Number of fixtures that can be daisy-chained depends on the following factors: dimming current, current requirements for driver, length of wire, quality of connection, and gauge of wire
- Verify dimming capability via a "test bed" with the number of actual fixtures, wire length, connectors, and wire gauge

INSTALLING WIRES

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

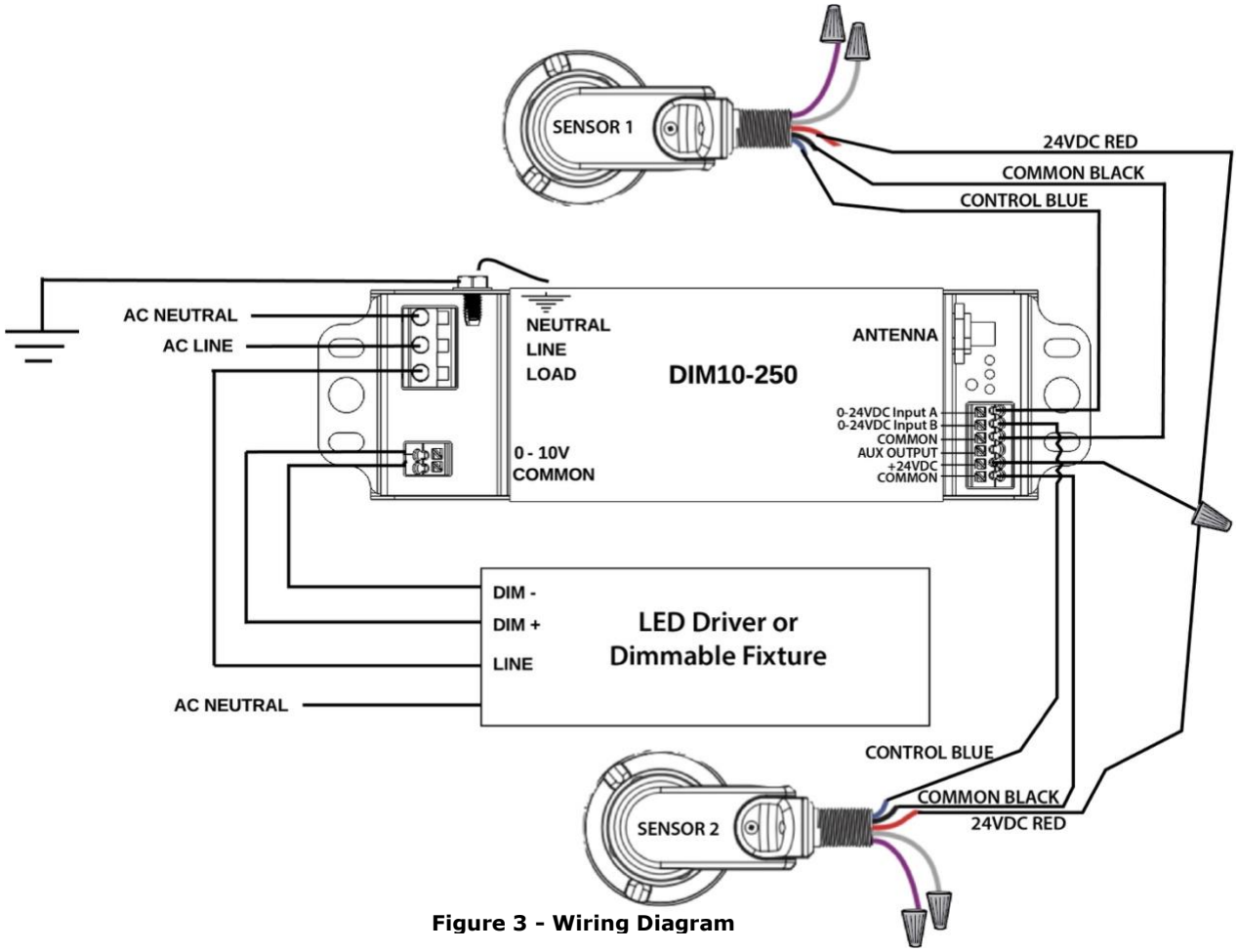


Figure 3 - Wiring Diagram

USING THE AC CAGE CLAMP

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 DIM10-250 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 snuggly 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

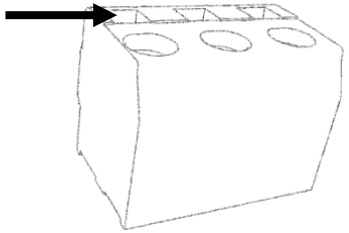


Figure 4 - Insert a small bladed screwdriver before inserting the conductor wire.

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

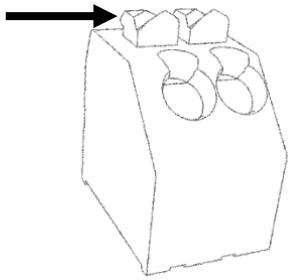


Figure 5 - Use a small bladed screwdriver to press the clamp release before inserting the wire.

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 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 "DIM10-250-11" 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

Model	**:** 200366-01
Contains FCC ID	**:** U9O-SM220
Contains IC	**:** 7084A-SM220
UL File No	**:** E346690

Contact Synapse for Support- (877) 982-7888