

DIM10-087-06 Controller

Load Ratings: 700mW @ 5 to 24V DC

Installation Guide



ORDERING INFORMATION

Part Numbers:
 DIM10-087-06: Wireless Lighting Controller, external antenna optional (not included)
 DIM10-087-06-F: Wireless Lighting Controller, internal antenna

FEATURES

- Small form factor
- Powered from LED driver auxiliary supply or other source
- 0-10V dimming, up to 10mA source/sink
- Two sensor inputs

RATINGS

Voltage Input: 5 to 24V DC
Power Consumption (Max): 700mW

DESCRIPTION

The Synapse DIM10-087-06 of lighting controllers is designed to be integrated into fixtures and controls lighting in commercial and industrial buildings using the SNAP wireless mesh network. It provides 0-10V analog dimming control using the 0-10V analog dimming protocol as well as two sensor inputs. The DIM10-087-06 is DC powered by an auxiliary output from compatible LED drivers or through other DC power sources. Synapse lighting controllers can be controlled with a browser-based application available with the Synapse SimplySNAP lighting solution.

SPECIFICATIONS

Dim Control Max Load: 10 mA Source/Sink
 Radio Frequency: 2.4 GHz (IEEE 802.15.4)
 RF Transmission Output Power: +20dBm
 Operating Temperature: -40 to +85 C
 Operating Humidity: 10 to 90%, non-condensing
 Dimensions: 2.25" L x 2.0" W x .3" H (57 x 50.8 x 7.6 mm)
 Configuration/Programming: Stored in non-volatile memory

INSTALLATION

CAUTION

- DIM10-087-06 controllers must be installed in accordance with national, state, and local electrical codes and requirements

Needed Materials

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.

Mounting: Secure with 1 #4 screw (max diameter of .312) and standoff.

Mounting Options: Mount in an LED Fixture or a Troffer. For the DIM10-087-06, an external antenna utilizing a u.FL connector must be used to provide RF connectivity to the SNAP mesh network.

Installation Instructions

1. WARNING: TO AVOID FIRE, SHOCK, OR DEATH: TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND VERIFY THAT POWER IS OFF BEFORE WIRING!
2. Place the DIM10-087-06 in desired location and secure it

using #4 sized screw and stand-off using the mounting hole located in the center of the board. Prior to permanently mounting the DIM10-087-06, make sure the antenna is free of any objects within 3 in. of the internal or external antenna.

Note: When installing the DIM10-087-06 into an enclosure, consideration of the internal or external antenna position and interference is required in order to provide the most optimum wireless signal strength.

3. Connect the 5-24VDC Aux output from LED driver to the DIM10-087-06.
 4. Connect the Aux ground from the LED driver to the DIM10-087-06.
- Note: Steps 5-8 are for Class 1/2 Dimming Control**
5. Connect the DIM- wire on the LED driver to the DIM- output on the DIM10-087-06.
 6. Connect the DIM+ wire on the LED driver to the DIM+ output on the DIM10-087-06.
 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 DIM10-087-06.

Connecting u.FL Antenna

An u.FL antenna may be connected to the DIM10-087-06 in order to get maximum RF connectivity. The recommended

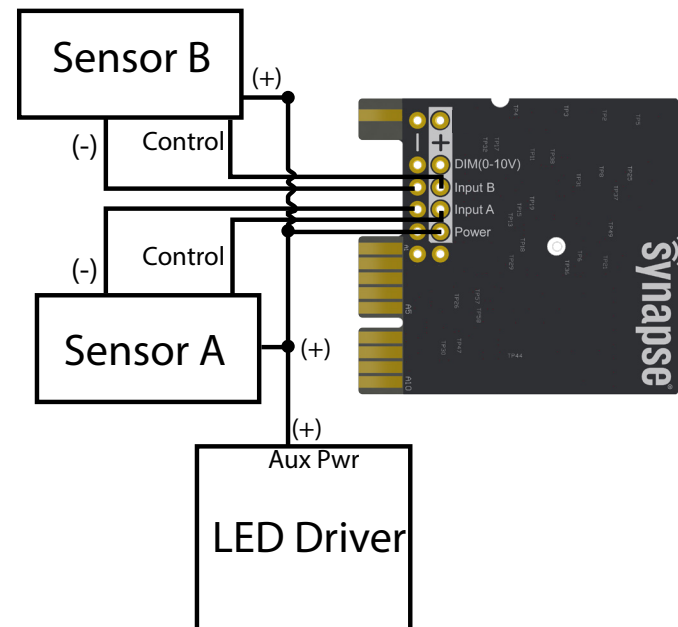


Figure 1 - Wiring Diagram Example

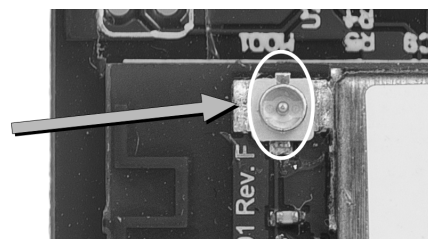


Figure 2 - u.FL Terminal

antenna kits are:

- KIT-ANTUFL18-01
- KIT-ANTUFL18-02
- KIT-ANTUFL18-03
- KIT-ANTUFL18-04

Please see the DIM10-087-06 cut sheet or contact Synapse sales for more information.

To install the antenna:

1. Connect the u.FL end of the antenna cable to the u.FL terminal on the DIM10-087-06. (see Figures 2 and 3)
2. Connect the antenna to the bulkhead.
3. Connect antenna to the SMA Bulkhead Jack.

Dimming

Below are some recommendations for successful dimming using the DIM10-087-06. 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
- Route dimming wires away from AC lines if possible
- 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 is dependent upon the following factors: dimming current, current requirements for LED 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

Regulatory Information and Certifications

Information	Description
Purpose of Control	Operating Control
Constructions of control and whether the control is electronic	Electronic Incorporated Control
TYPE1 or TYPE2 action	TYPE 1
External Pollution Situation	Pollution Degree 2
RATED IMPULSE VOLTAGE	330V
Control Class	III
Input and Output Circuit	SELV

u.FL Connector



Figure 3 - u.FL Connector Cable

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 dépassant les limites applicable aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministre 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 "DIM10-087-06" 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

UL File No: E346690

Contains **FCC ID:** U90-SM220 and **IC:** 7084A-SM220

SMA Bulkhead Jack
(Reverse Polarity)