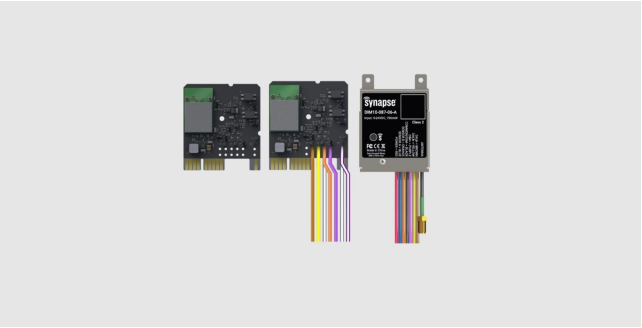

synapse EMB-S2-FW Controller Instruction Manual

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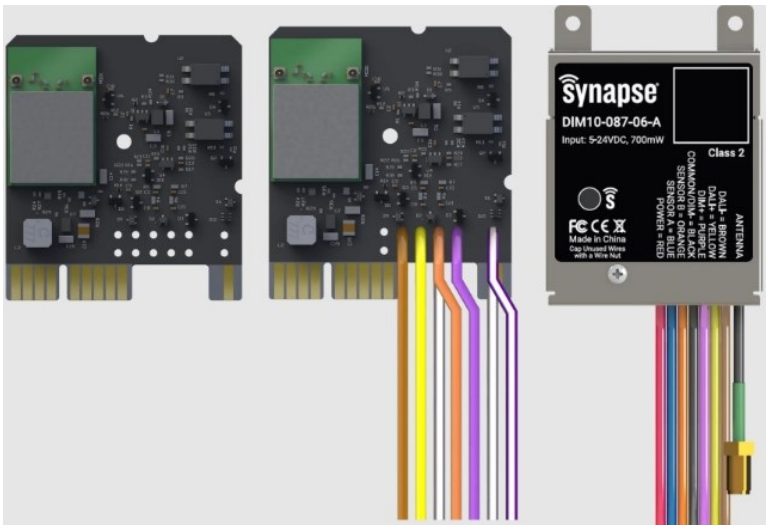

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SPECIFICATIONS

- Dim Control Max Load: 30 mA Source/Sink
- Radio Frequency: 2.4 GHz (IEEE 802.15.4)
- RF Transmission Output Power: +19dBM

- Operating Temperature: -40 to +80 C
- Operating Humidity: 10 to 90%, non-condensing
- Max D4i Drivers: Limited to a maximum of 6 D4i LED Drivers, any D4i LED Drivers >4 will need the power supply disabled.
- Wire Size: 18 AWG, 8” Wires, UL1316, 600V
- Dimensions: 2.25” L x 2.0” W x .3” H (57 x 50.8 x 7.6 mm)

CAUTION

EMB-S2-FW controllers must be installed in accordance with national, state, and local electrical codes and requirements.

DESIGN CONSIDERATIONS

Below are some recommendations for successful dimming using the EMB-S2-FW. The dimming control wires are referenced as DIM+ and DALI-/COM The dimming signals have a Maximum voltage of 10V DC.

- Do not ground the DALI-/COM wire to chassis ground; this is a return signal and is critical for proper dimming.
- Route dimming wires away from AC lines if possible.
- Maximum of 4 DALI-2/D4i LED Drivers per controller for DALI-2/D4i Designs.
- Maximum 0f 8 DIM to OFF LED Drivers for DIM to OFF Designs.
- Do not mount to a heatsink or to a LED driver.
- When installing the EMB-S2-FW into an enclosure,consideration of the internal antenna position and interference is required in order to provide the most optimum wireless signal strength. Prior to permanently mounting it, make sure the antenna is free of any metal objects within 12 in. of the antenna.

NEEDED MATERIAL

- Mounting Hardware: (1) #4 and M3 screws and standoff recommended

INSTALLATION INSTRUCTIONS

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

MOUNTING

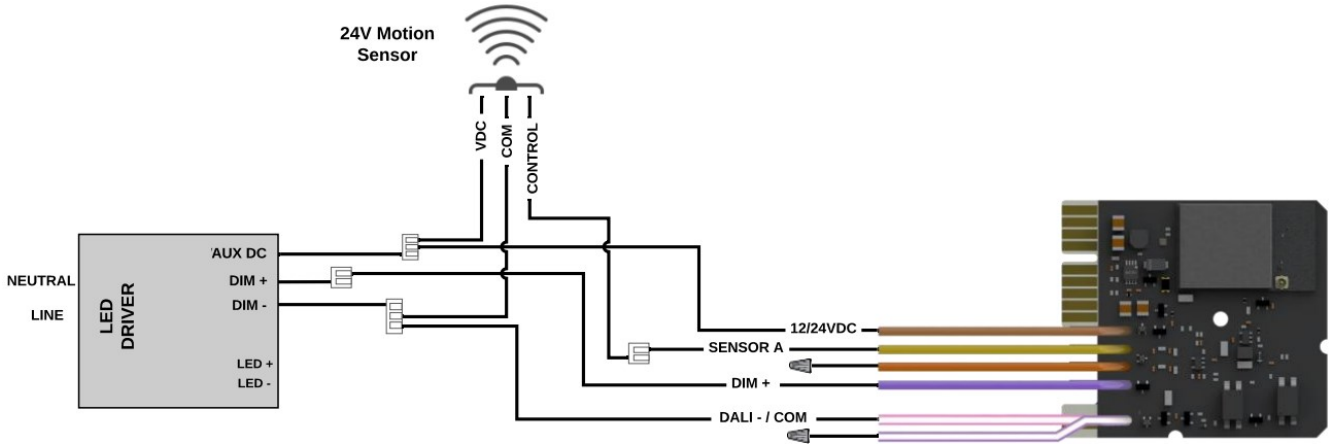
1. Place the controller in desired location and secure it using #4 sized screw and standoff using the mounting hole located in the center of the board. **WIRING THE EMB-S2-FW CONTROLLER**
   Note: Unless specified, the connections to a standard Dim to Off LED driver and the DALI 2 LED driver are the same.
2. Connect the POWER (BROWN) wire of the EMB-S2- FW to the 12-24V DC Aux output from the LED driver.
3. Connect the DALI-/COMMON (PINK/WHITE STRIPE) to the **COMMON/DALI- or COMMON/DIMwire on the LED driver you have. CONNECTING SENSORS Note: Steps 4-8 are for adding sensors to theEMB-S2-FW controller; if you are not connecting sensors skip this section.**
   There are two sensor inputs on the EMB-S2-FW designed for low powered (24V DC) type sensors.

1. The SENSOR A (YELLOW) wire is used to connect sensor A.
2. The SENSOR B (ORANGE) wire is used to connect sensor B.

4. Connect the sensor power wire to the AUX out on the LED driver (the LED driver powers the sensor).
5. Connect the sensor Common to the COMMON/DALI- or COMMON/DIM- based on the LED driver you have.
6. Connect the SENSOR A (YELLOW) wire or the SENSOR B (ORANGE) wire of the EMB-S2-FW controller to the sensor CTRL/Control wire.
7. If you are using more than one sensor then duplicate the installation as described above.
8. Sensors must be configured in software before they are functional in a SimplySnap system.

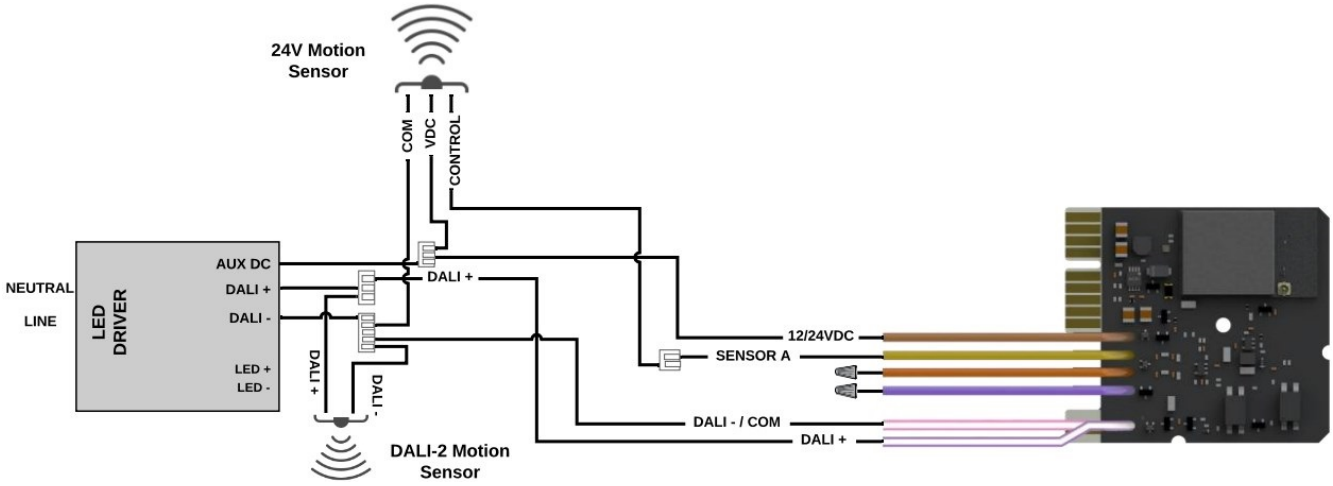
CONNECTING THE DIMMING CIRCUIT

Note: Steps 9-11 are for connecting up to a Standard Dim to Off LED driver; if you are using a DALI 2 LED driver skip to steps 12-13.



9. Connect the DIM+ (PURPLE) wire from the EMBS2-FW to the DIM+ wire on the LED driver.
10. Connect the DALI-/COM (PINK/WHITE STRIPE) wire from the EMB-S2-FW to the COMMON/DIMwire on the LED driver.
11. Cap the unused DALI+ (PURPLE/WHITE STRIPE) wire.

Note: Steps 12-13 are for connecting up to a DALI 2 LED driver.

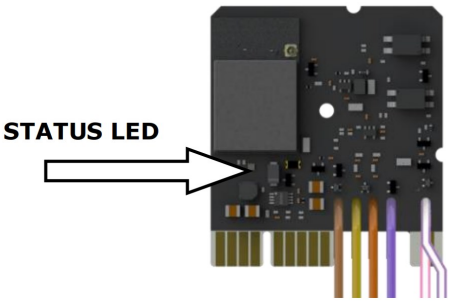


12. Connect the 12-24VDC Aux output from the LED driver to the (POWER = BROWN wire of the EMB-S2-A.
13. Connect the (DALI-/COMMON = PINK/WHITE STRIPE) wire of the EMB-S2-A to the COMMON/DALI- or COMMON/DIM- based on the LED driver you have.

POWERING UP THE FIXTURE AND CONTROLLER

After connecting the Controller to the LED Driver and any sensors, make sure to cap any unused wires. Switch

power on to the fixture. The light should turn on.



STATUS LED

Note: When the controller is powered the following colors indicate the current status.

- Red = No Network Found (Communication Lost)
- Blinking Green = Network Found, Controller Not Configured (Device not yet added toSimplySnap)
- Green = Network Found, Controller Configured (Normal Operation)

Refer to the SimplySnap User's Manual for information on provisioning the EMB-S2-FW.

WARNING:

- If a single Synapse controller is used to drive the DIM+ input of multiple LED drivers, then all of the DIM- lines from all drivers MUST be directly tied/shorted together to provide a common return/ground to the controller.
- Synapse will not warranty or be liable for designs with any other electronic means of coupling DIM- lines from multiple drivers.

REGUL ATORY 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 offand 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 "EMB-S2-FW" 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 : EMB -S2 -FW
Contains FCC ID : U9O-SM 520
Contains IC : 7084A -SM 520
UL File No : E346690 DALI
-2 Certified Application Controller

Contact Synapse for Support
TEL – (877) 982 -7888
Patented – virtual marking at
https://www.synapsewireless.com/about/patents

Documents / Resources

	synapse EMB-S2-FW Controller [pdf] Instruction Manual EMB-S2-FW Controller, EMB-S2-FW, Controller

References

- Synapse Wireless | Patents

Manuals+,