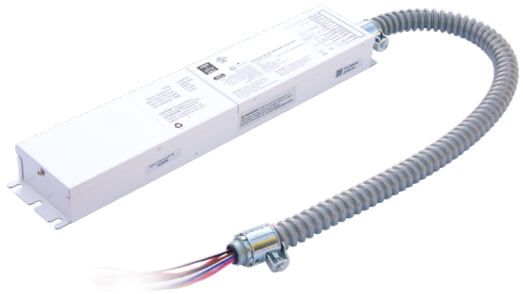
MI-25 Series

Installation Instructions



IMPORTANT SAFEGUARDS
READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

When using electrical equipment, basic safety precautions should always be followed including the following:

- **DISCONNECT AC POWER SUPPLY BEFORE SERVICING.**
- **DO NOT CONNECT BATTERY UNTIL FIXTURE IS INSTALLED.**
- **THE OUTPUT EM POWER WILL BE THE MAXIMUM OF CONNECTED BATTERY UNLESS PROGRAMED TO A LESSER VALUE. EM OUTPUT POWER WILL NOT EXCEED THE BATTERY RATING.**
- **IN ORDER TO MAINTAIN PROPER OPERATION AND WARRANTY COVERAGE, THE BATTERY MUST BE RECHARGED ONCE PER YEAR PRIOR TO INSTALLATION.**
- Installation and servicing of this equipment should be performed by qualified service personnel only.
- Ensure that the electrical wiring conforms to the National Electrical Code NEC® and local regulations if applicable.
- Do not let power supply cords touch hot surfaces.
- Do not mount near gas or electrical heaters.
- Do not use outdoors.
- Battery is a rechargeable LiFePO4 type and must be recycled or disposed of properly. Do not use this emergency driver with accessory equipment other than recommended by manufacturer.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Equipment should be mounted in locations and at heights where it will not be readily subjected to tampering by unauthorized personnel.
- Any modification or use of non-original components will void the warranty and product liability.
- Do not use this equipment for other than intended use.
- For use with a metal enclosed wiring system.
- LED indicator light indicates battery in charge mode when AC power is applied. It is recommended and required by applicable code to test emergency function to ensure proper operation of the system. Push the test switch for sixty (60) seconds every thirty (30) days to ensure the emergency driver is functioning as LED indicator reports. Conduct a ninety (90) minute discharge test one (1) time per year; LED indicator should be illuminated for a minimum of ninety (90) minutes.
- Allow battery to charge for a minimum of one (1) hour before testing the circuit. A full charge requires twelve (12) hours.

SAVE THESE INSTRUCTIONS!

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Installation Instructions

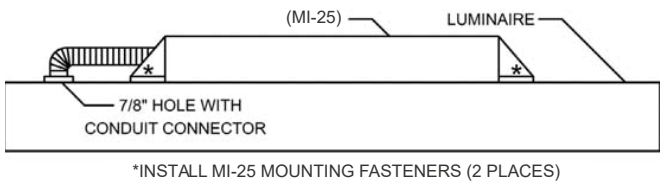
CAUTION: Before installing, make certain the AC power is off. Do not connect battery until fixture is installed.

1. Mount MI-25 to the top of the luminaire with suitable fasteners (not provided). Drill or punch a 7/8" hole (1/2" knockout) on top of luminaire for flexible conduit. Attach flexible conduit to luminaire. (Fig. 1)

   Note: Do not install on top of back-lit flat panels

2. Make the proper wire connections. Cap any unused leads. Refer to the **Wiring Diagram** section.

Fig. 1



Wiring Diagrams

Note: Cap unused leads to prevent shorting.

Fig. 2 ***For LED Driver with an output power less than 25W (45VA) and Non 0-10V dimming function***

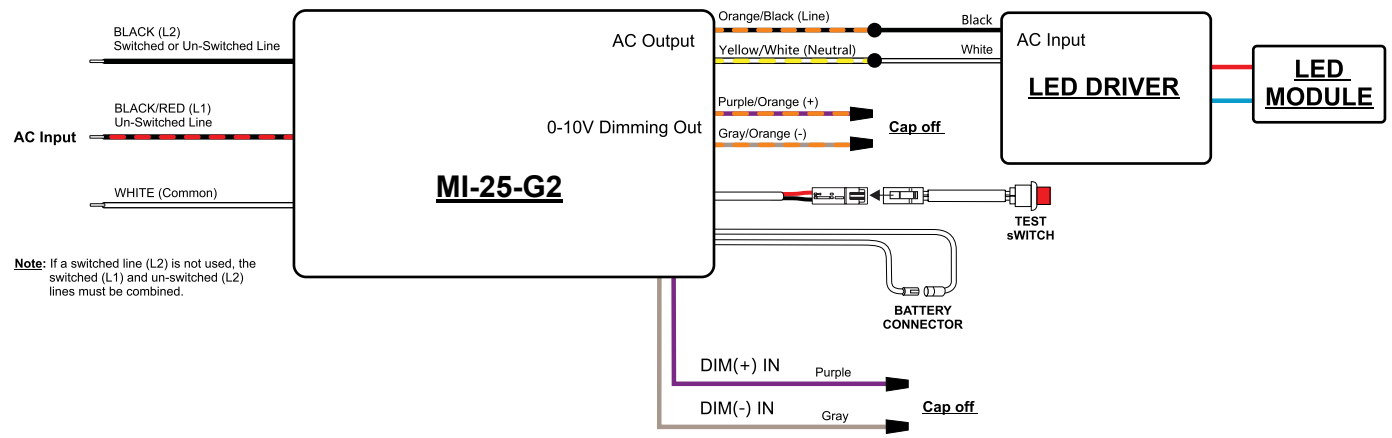


Fig. 3 ***For LED Driver with an output power less than 150W (170VA) and have 0-10V dimming function***

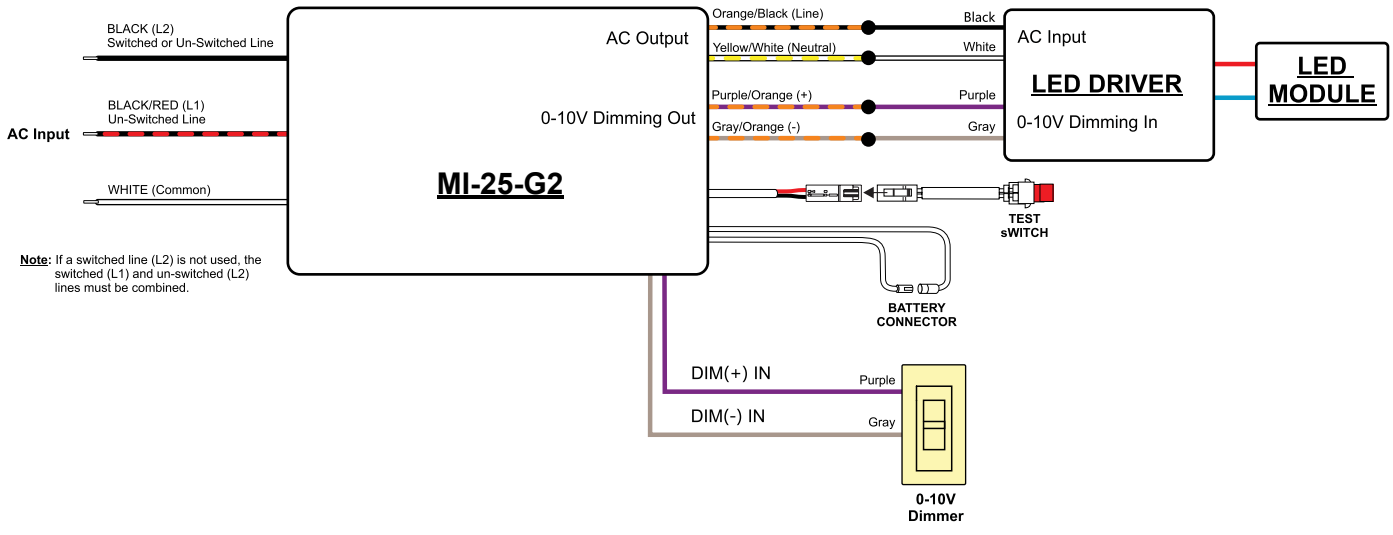
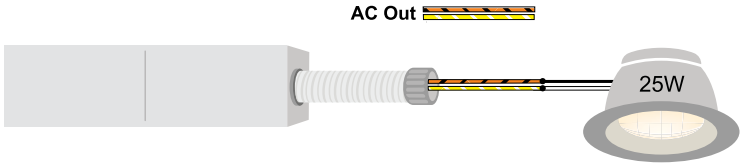
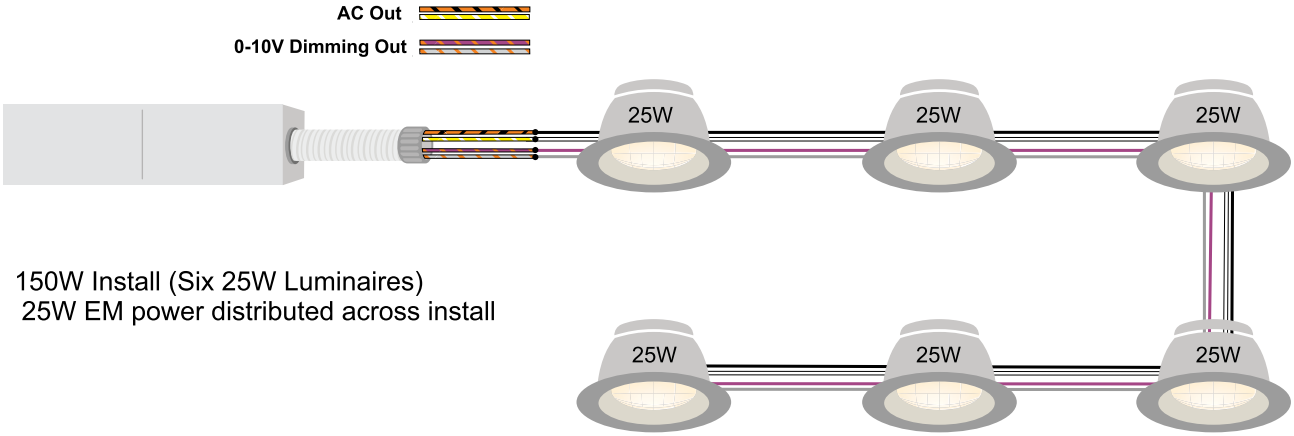


Fig. 4 ***Wiring one single luminaire without 0-10V dimming***



- One 25W luminaire powered at 100% during emergency

Fig. 5 ***Wiring multiple luminaires with 0-10V dimming***



- 150W Install (Six 25W Luminaires)
- 25W EM power distributed across install

Guideline on Calculating Emergency Illumination Level

The purpose of this guideline is to identify the illumination level of the LED luminaire when used with the MI Series LED emergency driver. The path of egress illumination level during emergency operation is determined by types of luminaires, Luminaire Efficacy, Luminaire Mounting Height, Emergency Power and some other effects in real application.

Step 1: Select an LED Luminaire, and make sure the LED light source is electrically compatible with MI Series LED emergency driver. Get the Light Distribution data (usually an .ies file) and Rated Efficacy data (lumen per watt) from luminaire supplier.

If the luminaire is DesignLights ConsortiumTM (DLC) compliant, you can also get the efficacy information from the DLC website.

- Open DLC Qualified Product List (QPL) database search page: https://www.designlights.org/search/
- Searching keywords by model, brand name or manufacturer for the luminaire used.
- Find the “Efficacy” data listed on website or calculate by dividing “Light output” by “Wattage”, the efficacy value should be shown in lumen per watt (lm/W).

If the luminaire is ENERGY STAR compliant, you can also get the luminaire efficacy information from the ENERGY STAR website.

- Open ENERGY STAR certified Light Fixtures database search page: https://www.energystar.gov/productfinder/product/certified-light-fixtures/results.
- Searching keywords by model, brand name or manufacturer for the luminaire used.
- Find the “Energy Efficiency” data listed on website. If it is showed as “Measured at the Source”, please contact the luminaire supplier for additional light loss for this light source inside the fixture. The value should be shown in lumen per watt (lm/W).

Step 2: Determine the Emergency Power and calculate the Emergency Light Output. The MI Series has a programmable output; setting a proper Emergency Power is vital to achieve desired illumination. Emergency Light Output is equal to the Emergency Power multiplied by the luminaire efficacy. For example, if the luminaire is 120lm/W and in 3W emergency operation, the total Emergency Light Output is 120lm/W 3W = 360lm.

Step 3: Use industry lighting design software to calculate the illumination level according to the luminaire layout in room, luminaire mounting height, the original .ies file and Emergency Light Output calculated above. If the illumination level cannot meet life safety codes, go back to Step2 to use a higher Emergency Power or go back to Step1 to select a higher efficacy luminaire or use more luminaires in the room.

The MI Series LED emergency driver is compliant with UL924 standard, according to UL test data, Table 1 and Table 2 below give basic indication to determine the min. Emergency Power and Luminaire Max. Mounting Height for 1 foot-candle illumination is based on a single luminaire with typical Lambertian distribution. It is the light designer/ construction contractor’s responsibility to validate the real illumination level on site, to assure the emergency light illumination level is in accordance

Table 1: Min Power for 1Fc @ 10ft vs. Luminaire Efficacy

Luminaire Efficacy (lm/W)	Min. EM Power to achieve 1Fc @ 10ft Mounting Height
80	5.0W
100	4.0W
120	3.3W
140	2.8W
160	2.5W
180	2.2W

Table 2: Max Mounting Height vs. Luminaire Efficacy

Luminaire Efficacy (lm/W)	Max. Mounting Height for 1 Fc		
	EM 3W	EM 5W	EM 10W
80	8.1ft	10.1ft	13.9ft
100	8.9ft	11.2ft	15.4ft
120	9.6ft	12.1ft	16.8ft
140	10.3ft	13.0ft	18.1ft
160	10.9ft	13.9ft	19.3ft
180	11.5ft	14.6ft	20.4ft

Operation (Battery Backup)

The battery in this unit may not be fully charged. After electricity is connected to the unit for at least 1 hour, system can be tested. Please wait at least 12 hours, then normal operation of this unit should take effect.

In accordance with NFPA 101, your emergency lighting system must be tested monthly for a minimum of 30 seconds and annually for 90 minutes. Refer to your local codes for any additional requirements that may apply.

Test Switch Indicator Status:

▬	Steady On (Green)		System/AC OK (Self-diagnostic Enabled or Disabled)
▬	Slow Flash (Red)	(4s on /1s off)	Battery not detected, check battery switch/connection
●	Flash (Red)	(1s on /1s off)	Battery short circuit
●	Flash (Green)	(2s on /2s off)	Self-diagnostic test underway
●	Flash (Red)	(0.5s on /2s off)	Over power fault
●	Flash (Red)	(0.5s on /3s off)	In self-diagnostic mode. Battery voltage/power is abnormal
●	Flash (Green)	(2.5s on /0.5s off)	Self-diagnostic enabled
●	Flash (Green)	(0.5s on /2.5s off)	Self-diagnostic disabled

Testing and Reporting Instructions (-G2 models)

1. EM Test:
   - Press and hold the test button (>1s) to enter EM mode with normal AC mode.
2. Manual Self-Diagnostics: (Battery voltage greater than 20.4V, or charge for 12 hours)
   - Quickly press the test button three times within three seconds to force the controller to enter a Self-Diagnostic cycle.
   - To quit the self-diagnostic cycle after cycle has started, press and hold the test button for three seconds.
3. Enable/Disable Auto Self-Diagnostics:
   - Press and hold the test button for two seconds, then release and quickly press the test button two times, then release and press and hold the test button for two more seconds.
   - When properly executed the indicator on the test button will display the appropriate Enable/Disable status. A flashing of 2.5s on and 0.5s off means “Enabled”, while a flashing of 0.5s on and 2.5s off means “Disabled”.
   - Once Enable/Disable is set, the status color on the test button will remain the same throughout normal operation (refer to **Test Switch Indicator Status** section).
4. Check the current Self-Diagnostic status:
   - Press the test button twice within two seconds.
     - If the LED Indicator Status is 2.5s on and 0.5 seconds off, the current state is enabled.
     - If the LED Indicator Status is 0.5s on and 2.5 seconds off, the current state is disabled.
5. Self-Diagnostics settings:
   - Press the test button once quickly. Then release and then press and hold the test button for two seconds and then release.
6. Emergency Battery Disconnect:
   - Press and hold the test button for five seconds during EM output condition to turn off EM output. This is useful for production environment to turn off the EM output once a luminaire has completed functionality testing.