

Technical Support: 313-259-6400, Press 5

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#### 1.0 SCOPE

The KIRLIN Symphony 0-10V System is intended for installation and use in areas with large spaces and where servicing lights is difficult. The system includes a Symphony 0-10V Remote Driver Cabinet, Symphony 0-10V Remote Driver Module, and Symphony Luminaire (sold separately) that work in harmony to provide a quality lighting experience.

This manual provides general installation, use, and application guidelines. Specifications are subject to change without prior notice.

This lighting system is Class 2 low voltage and can be installed in plenum or non-plenum locations in accordance with required local, state, provincial, country and NEC/CEC regulations. Only output cables marked with "CMP" may be installed in plenum locations.

### 2.0 OWNER/USER RESPONSIBILITY

It is the responsibility of the contractor, installer, buyer, owner and user to install, maintain, and operate the KIRLIN Symphony 0-10V System in accordance with all applicable laws, regulations and local electrical safety authority requirements.

This product is only to be installed by a qualified electrician.

#### **IMPORTANT!**

Thoroughly read the entire instructions guide and warnings before beginning installation. The instructions provided are intended to assist in the installation and service of the corresponding product. Failure to follow the instructions may result in product malfunction, damage, injury or death. Contact your Kirlin service representative for replacement parts and procedures.

## 3.0 SAFETY & IMPORTANT INFORMATION



Risk of fire or electric shock. Ensure all power is turned off during installation process. Refer to wiring diagrams to prevent damages and malfunctions.



The Symphony 0-10V Remote Driver Module may only be connected and installed by a qualified electrician. This system requires knowledge of luminaires and electrical systems. If not qualified, do not attempt installation or maintenance. All applicable regulations, legislation, and building codes must be observed. Incorrect installation of the LED driver can cause irreparable damage to the Symphony Lighting System.

Pay attention when connecting the LEDs: polarity reversal results in no light output and often damages the LEDs.



Connecting fixtures with power **ON** will "hot plug" the LEDs and cause damage.



Must use Kirlin supplied driver modules and light fixtures to maintain warranty.



Requires #16 AWG minimum twisted pair shielded wire for all driver module wiring. All system wiring must have a UL electrical rating of 300V.

# 3.0 SAFETY & IMPORTANT INFORMATION (Continued)



The maximum total wire length from the cabinet to light fixture is 250 feet.

To prevent wiring damage or abrasion, do not expose wiring to edges metal or other sharp objects.

## 4.0 STANDARDS & COMPLIANCE (Per Installed DVR Module)

This Low Voltage Luminaire System complies with UL 2108		
UL Listed, Class P, Class 2	UL 1310 UL 8750	
Conducted emissions	FCC title 47 CFR part 15 class B	
Radiated emissions	FCC title 47 CFR part 15 class B	
Electrostatic discharge	EN 61000-4-2	
0-10V	IES/EN 60929 annex E <b>NOTE:</b> From 0.6V to 10V drivers comply with IEC/EN 60929 annex E. Below 0.6V SmartLED <sup>™</sup> driver modules comply with ABL 0-10V. Design Spec v1.2 enabling standby mode.	
Surge protection	ANSI 62.41 1991 category B1: 2.5kV DM, 2.5kV CB @ 30 Ohm 0-10V input 0.5kv DM, 1kV CM surge	
Restriction of hazardous substances	RoHS3 (Directives 2011/65/EU-2015/863/EU)	

## 5.0 ELECTRICAL REQUIREMENTS (Per Installed DVR Module)

120 - 277V
108 - 306V
50 - 60Hz
50W (DVR-XXXXA) 75W (DVR-XXXXB)
85%
> 0.95
< 20%
< 200mA²s @ 120V / 60Hz < 200mA²s @ 277V / 60Hz
2kV differential mode (DM) 2kV common mode (CM)
0.5W





## 6.0 DIMMING CONTROL CHARACTERISTICS

Control protocol	0-10V
Dimming range	100% - 0.1%, off
Dimming curve	Linear

#### 7.0 BEFORE YOU BEGIN

#### **Before You Begin**

- Shut **OFF** power at fuse box or circuit breaker before installation, inspection or removal.
- Properly ground cabinet to main earth ground.
- To reduce the risk of fire or electric shock, **NEVER** interconnect or short output terminations.

#### **Electrical Requirements**

- This driver cabinet is intended for connection to a 20A branch circuit and an appropriate disconnect device shall be provided as part of the building installation.
- All secondary output circuits are class 2 low voltage.

## **Mounting and Environmental Requirements**

- This driver cabinet is rated for dry locations only and is designed to be wall mounted.
- This driver cabinet is rated for operation at a maximum ambient temperature of 25°C.
- Allow sufficient spacing around driver cabinet for convection air flow.

### **Environmental Conditions**

Enclosure is intended for use in ambient temperature of 25°C max.

Module operating ambient temperature (Ta) range	-20°C to +50°C
Fixture acoustic noise	< 19dBa
Driver acoustic noise - steady state	< 24dBa (Class A)
All components	Dry location only



## 8.0 SYSTEM OVERVIEW: SYMPHONY 0-10V SYSTEM

#### **SYM-CABNT: Driver Cabinet**

- 24"x 18"x 4.5" carbon steel enclosure supports up to **8 Remote Driver Modules**.
- Wall mounted enclosure fabricated from 16 gauge steel. Includes flat, removable cover fastened with plated steel screws. Cover design permits easy removal without extracting cover screws. Mounting holes on back of cabinet. Removable knockouts on all four sides.
- Certifications and Compliance: NEMA 1 rating, UL Listed.



#### Order Number: DVR-1400A



#### **DVR-1400A: Driver Module**

One module provides power and dimming control for:

- Up to two (2) 1500L Luminaires
- One (1) 2500L Luminaire
- 1/2 of a 5000L Luminaire (use 2 modules)
- 1/2 of a 6500L Luminaire (use 2 modules)

### **DVR-1050A: Driver Module**

One module provides power and dimming control for:

• One (1) 4000L Luminaire

#### Order Number: DVR-1050A



## **DVR-1400B: Driver Module**

One module provides power and dimming control for:

- Up to three (3) **1500L Luminaires**
- Up to two (2) 2500L Luminaires
- One (1) 5000L Luminaire

#### Order Number: DVR-1400B

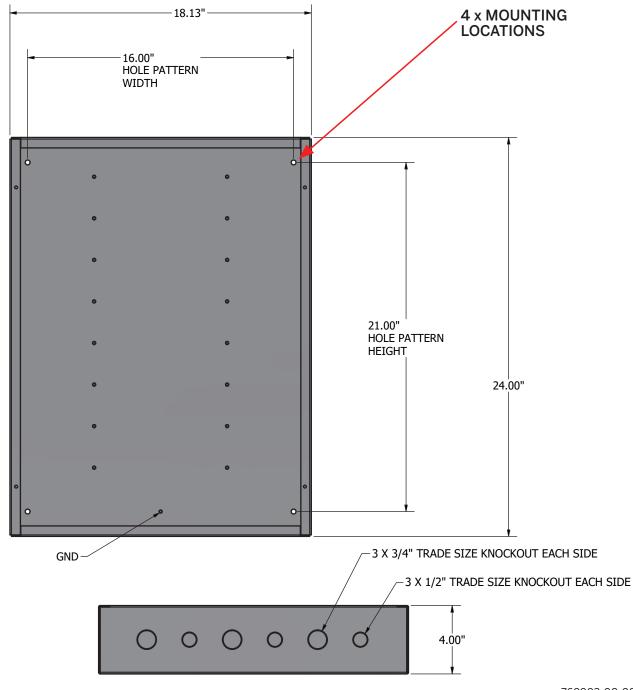




## 9.0 CABINET INSTALLATION

## Mounting

- 1. Loosen the 4 screws that mount the cover panel; lift cover to align key hole slots, remove and set aside.
- 2. Place the enclosure in the desired location and mount using the 4 designated mounting locations.
- 3. After system installation is complete, replace the cover panel and tighten the 4 mounting screws.





# 9.0 CABINET INSTALLATION (Continued)

#### **Install Modules**

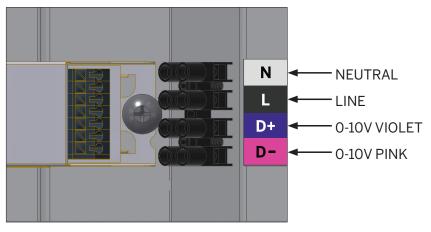
- 1. Each module is mounted in the cabinet via two threaded studs. Remove the keps-nuts installed on each stud, insert module, and replace both keps-nuts.
- 2. Repeat for each module to be installed.



## 9.0 CABINET INSTALLATION (Continued)

## Line Voltage Input Connections

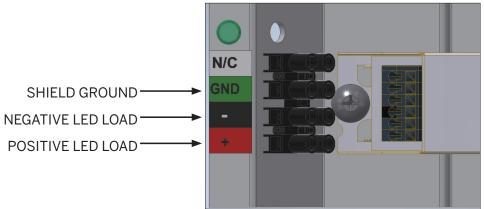
**NOTE:** Each enclosure ships with a jumper wire kit to allow fast & easy installation. The kit allows installer to customize dimming & switching zones by daisy chaining modules as needed. All system wiring must have a UL electrical rating of 300V minimum.



- 1. Install the AC line through the desired knock-out in the cabinet.
- 2. Install the 0-10V dimming wires in the desired knock-out in the cabinet.
- 3. Connect the AC Line and neutral wires to the terminal block as shown.
- 4. Connect the AC Ground wire to the supplied green ground wire located in the cabinet.
- 5. Connect the 0-10V violet and pink dimming wires.

# **Output Connections**

**NOTE:** Requires #16 AWG minimum twisted pair shielded wire. All system wiring must have a UL electrical rating of 300V minimum. See section 14.0 for cabling recommendations.



- 1. Install the LED load wires through the desired knock-out in the enclosure.
- Connect the twisted shielded pair wires to the terminal block as shown. Each fixture has a Light Description Value (ie. -2500L) that can be used in conjunction with the table below to determine wiring and drive current connection. DO NOT connect shield wire from driver cabinet to external ground bar. Make sure the fixture is connected to the proper drive current.

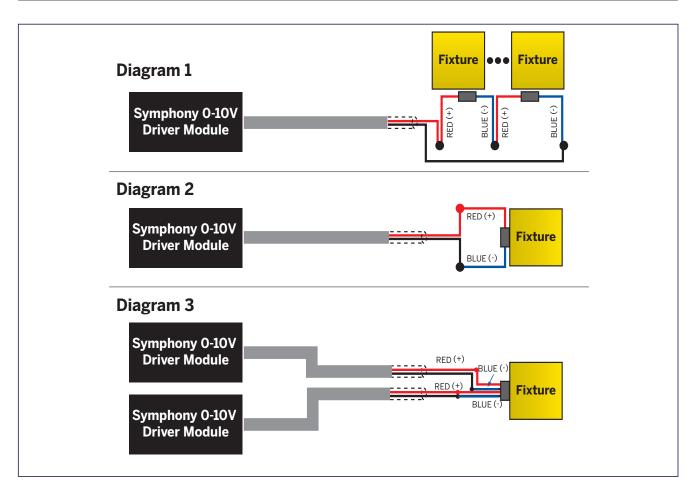




## 9.0 CABINET INSTALLATION (Continued)

## **LED Load Configuations**

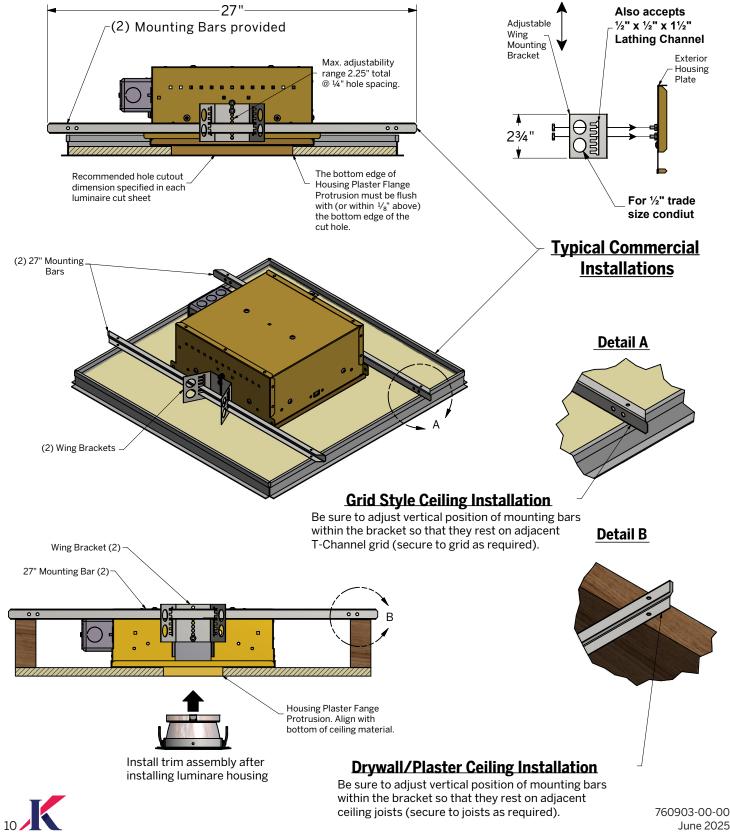
Description	LED Driver Module			
Description	DVR-1400A	DVR-1050A	DVR-1400B	
-1500L Luminaire	Up to 2 in series (diagr 1)		Up to 3 in series (diagr 1)	
-2500L Luminaire	1 fix per driver (diagr 2)		Up to 2 in series (diagr 1)	
-4000L Luminaire		1 fix per driver (diagr 2)		
-5000L Luminaire	2 drivers per fix (diagr 3)		1 fix per driver (diagr 2)	
-6500L Luminaire	2 drivers per fix (diagr 3)			



#### 10.0 **DOWNLIGHT FIXTURE INSTALLATION**

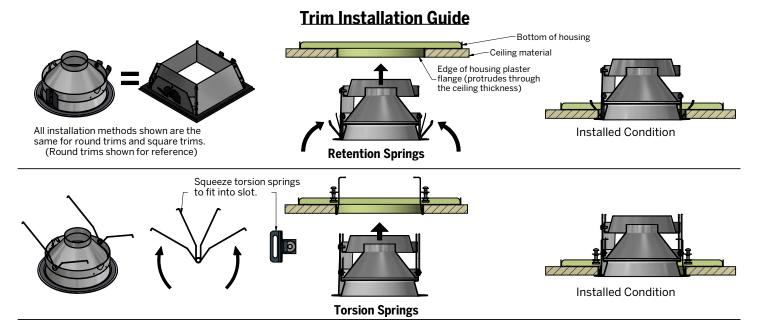
#### **Standard Mounting Hardware Installation Instructions**

(2) 27" Mounting Bars & (2) Wing Brackets with combined vertical adjustablility of 4.0"





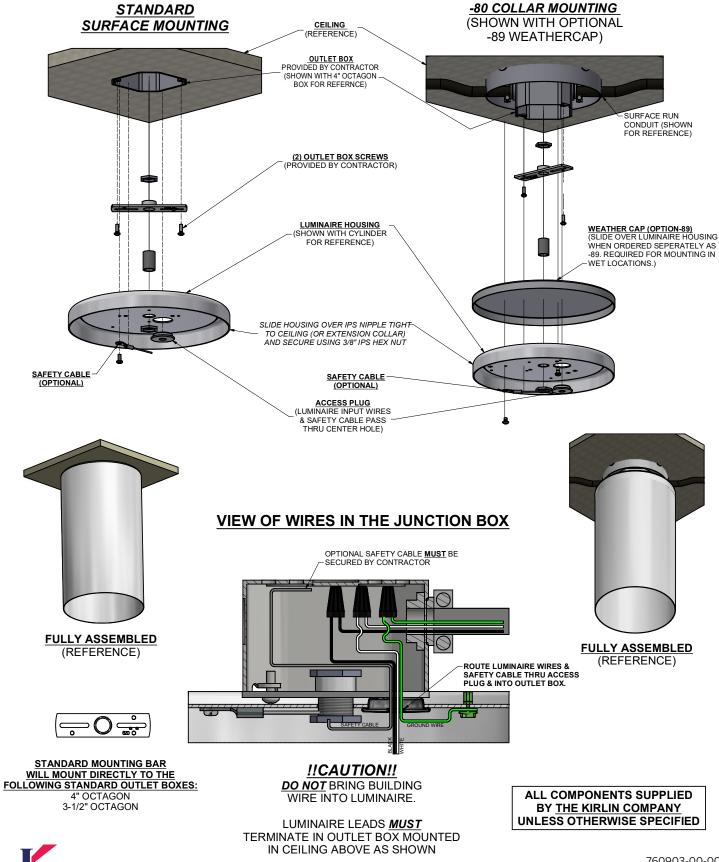
# 10.0 DOWNLIGHT FIXTURE INSTALLATION (Continued)







#### **11.0 SURFACE FIXTURE INSTALLATION**



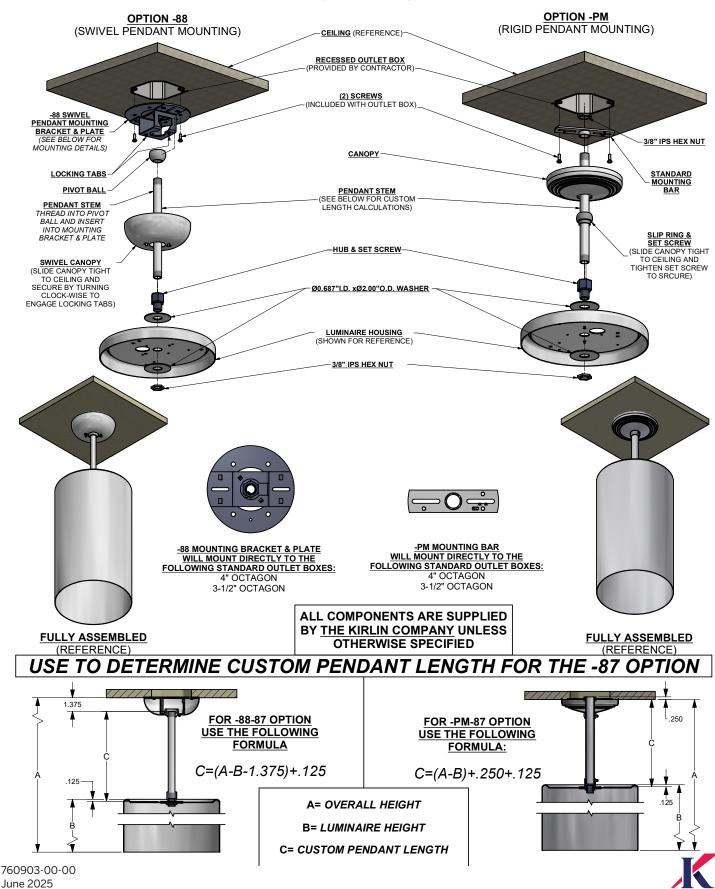
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INSTALL WITH ALL APPLICABLE LOCAL AND NATIONAL ELECTRIC CODES

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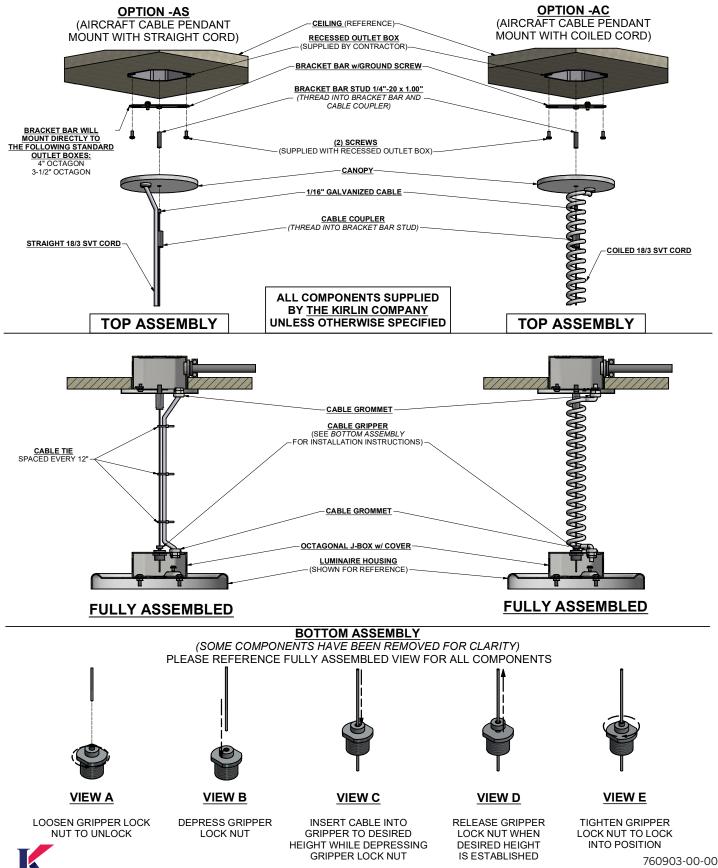


## 11.0 SURFACE FIXTURE INSTALLATION (Continued)





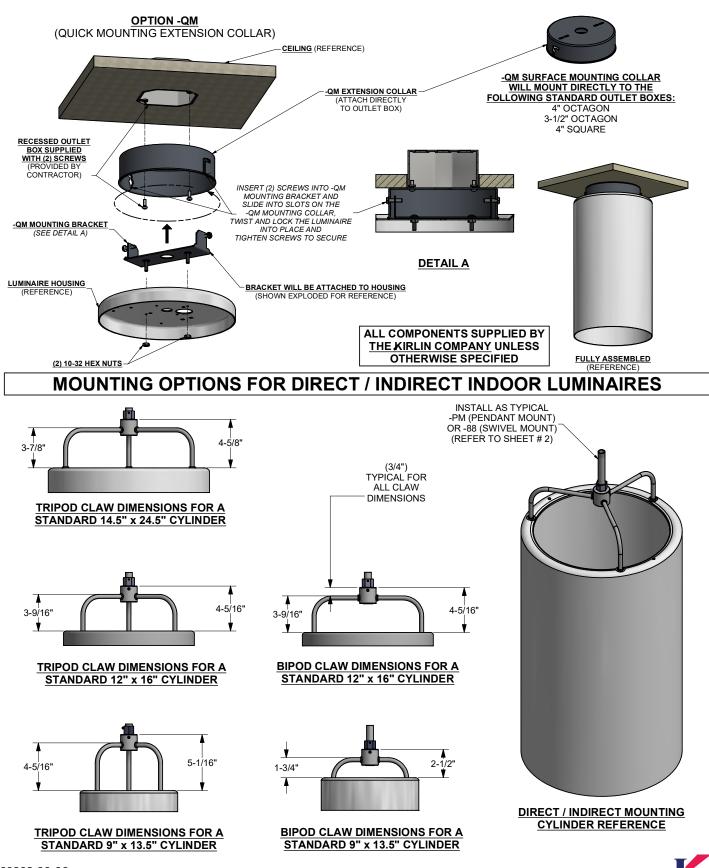
## 11.0 SURFACE FIXTURE INSTALLATION (Continued)



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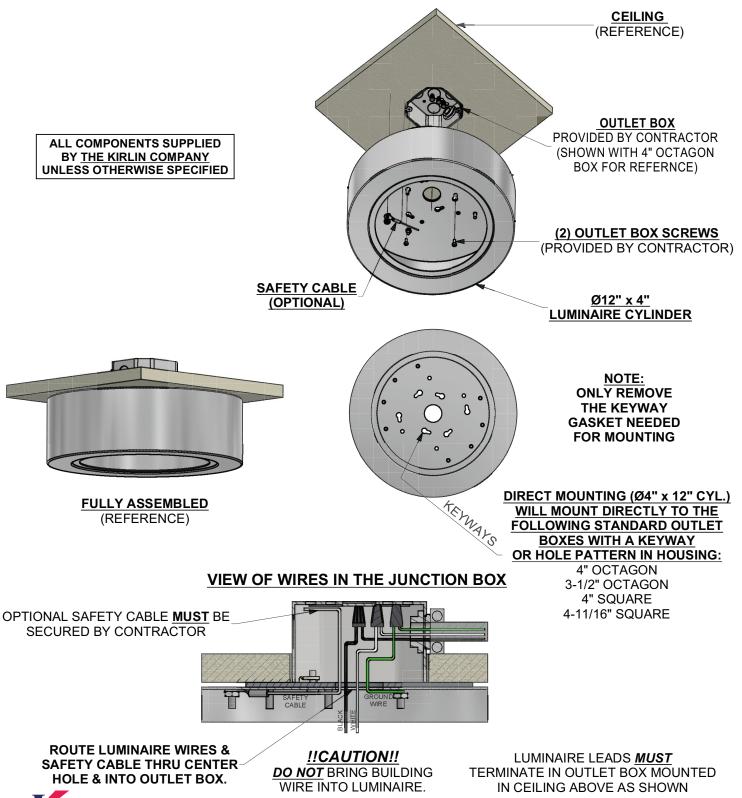
## 11.0 SURFACE FIXTURE INSTALLATION (Continued)





## 12.0 12 x 4 FIXTURE INSTALLATION

DIRECT RECESSED MOUNTING OUTLET BOX

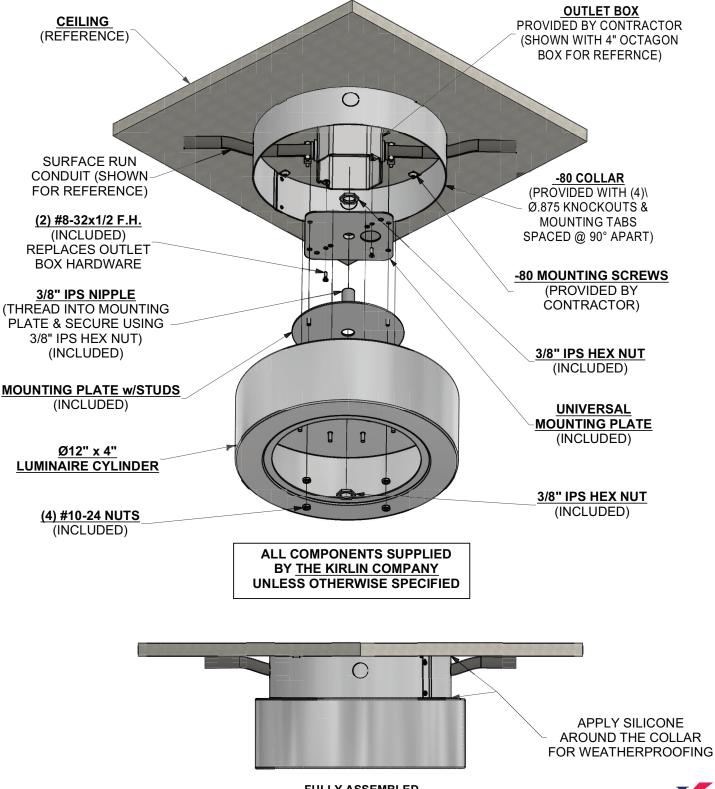


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### 12.0 12 x 4 FIXTURE INSTALLATION (Continued)

# **DIRECT SURFACE MOUNTING OUTLET BOX WITH OPTION -80**



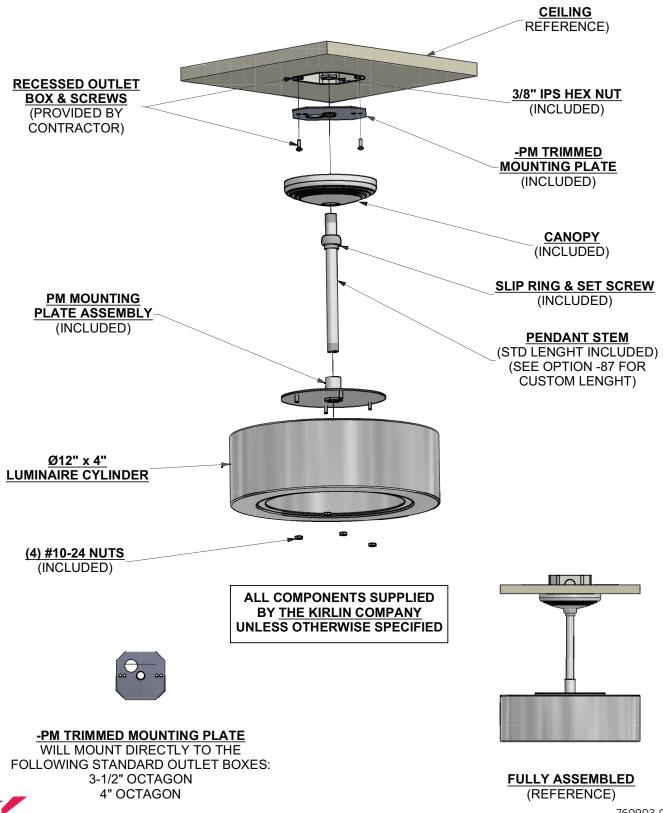
FULLY ASSEMBLED (REFERENCE)





#### 12.0 12 x 4 FIXTURE INSTALLATION (Continued)

# DIRECT RECESSED MOUNTING OUTLET BOX WITH OPTION -PM

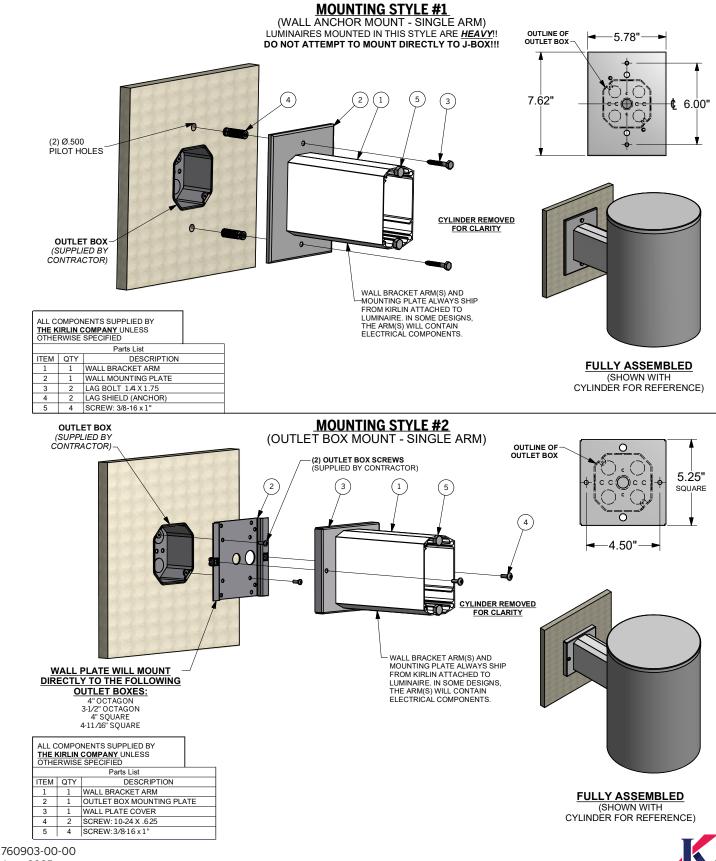


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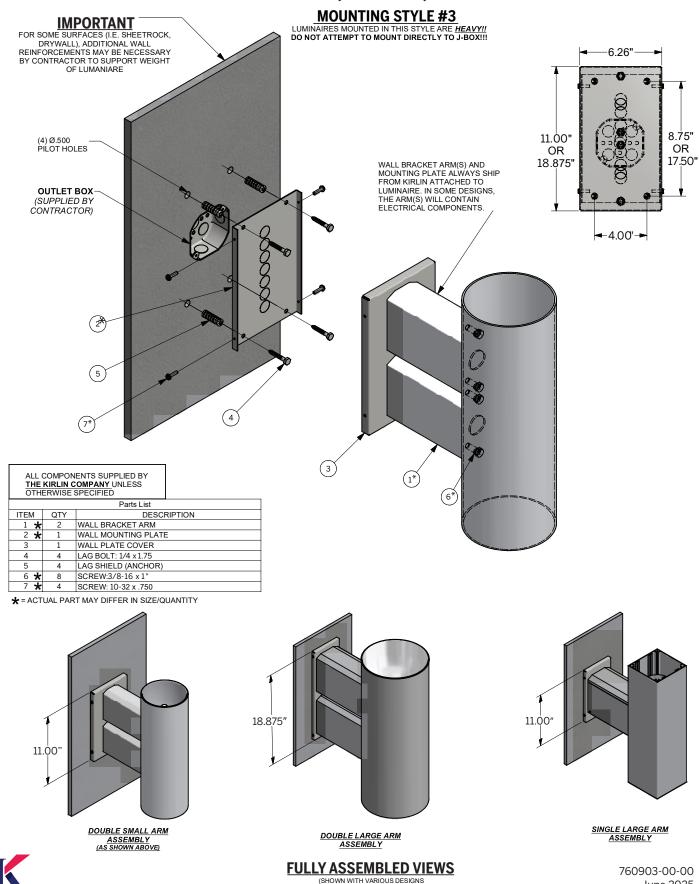
## 13.0 WALL BRACKET FIXTURE INSTALLATION



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#### WALL BRACKET FIXTURE INSTALLATION (Continued) 13.0



(SHOWN WITH VARIOUS DESIGNS FOR REFERENCE)

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## 14.0 OUTPUT CABLING TO FIXTURES

Output cabling must be #16 AWG (minimum) twisted pair shielded wire to minimize cross talk between channels and minimize Electromagnetic Interference (EMI). Total cable length must not exceed 250'.

#### **Output Wire Requirements and Recommendations**

ALL WIRES MUST BE: #16 AWG minimum, twisted pair shielded with drain wire, UL rated for 300V

RECOMMENDED WIRE					
CMP Versions (PLENUM)			CM Versions (OPEN AIR)		
Belden	#16 AWG	Part # 83702	Belden	#16 AWG	Part # 8719
ADC	#16 AWG	Part # 911602SD			

# 15.0 COMPATIBLE 0-10V DIMMERS & CONTROLS

COMPATIBLE 0-10V DIMMERS and SWITCHES				
Dimmer Manufacturer	Туре	Dimming Curve		
Busch-Jaeger	2112U-101	Logarithmic		
Jung	240-10	Logarithmic		
Leviton Lighting Controls	IllumaTech - IP710-DLZ / IP710-LFZ	Logarithmic		
Lightolier Controls	ZP600FAM120	Logarithmic		
Lutron Electronics	Diva: DVTV, DVSTV, NFTV /Nova-T; NTSTV	Linear		
Merten	5729	Logarithmic		
Pass & Seymour	CD4FB-W	Logarithmic		
WattStopper	DCLV2	Logarithmic		
Sensor Switch	n O EZ	Linear		
Synergy	ISD BC	Logarithmic		



# 15.0 COMPATIBLE 0-10V DIMMERS & CONTROLS (Continued)

COMPATIBLE DIMMING CONTROL SYSTEMS			
Control Manufacturer Type			
Lutron Electronics	GraphicEye - GRX-TVI w GRX3503, Linear Energy Savr Node - QSN-4T16-S, TVM2 Module		
Crestron	GLX-DIMFLV8, GLXP-DIMFLV8, GLPAC-DIMFLV4-*, GLPAC-DIMFLV8-*, GLPP-DIMFLVEX-PM, GLPP-1DIMFLV2EX-PM, GLPP-1DIMFLV3EX-PM, DIN-AO8, DIN-4DIMFLV4, CLS-EXP-DIMFLV, CLCI-1DIMFLV2EX		
ABB	SD/S 2.16.1		

**NOTE:** Some dimmers may cause reduced stability at the lowest dim level setting; this is normal and maybe resolved by increasing the lowest dim level setting if your selected dimmer allows.

## **16.0 INVERTER CONNECTIONS**

#### EMI-03120

The **EMI-03120** will power up to (3) 50W DVR modules or (2) 75W (DVR-XXXXB) DVR modules during a power failure. Please see the installation manual supplied with the **EMI-03120** for its specific wiring diagrams.

### EMI-21220

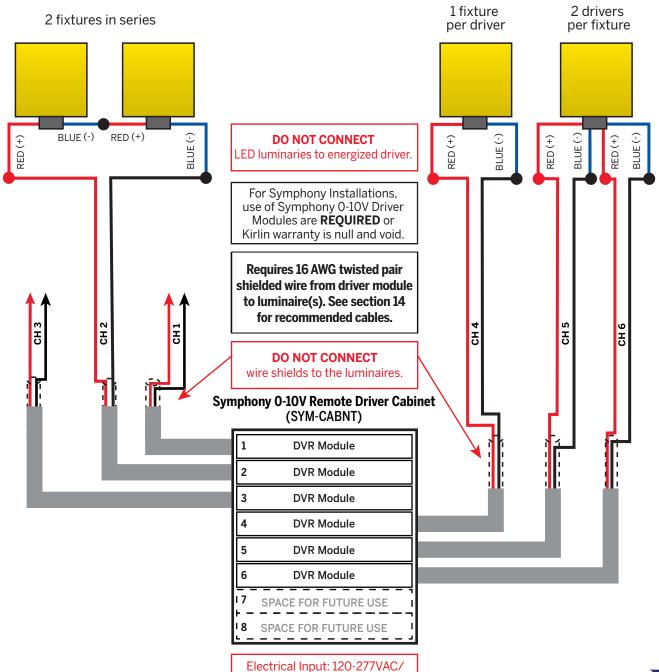
The **EMI-21220** will power up to (8) 50W (DVR-XXXA) DVR modules or (5) 75W (DVR-XXXB) DVR modules during a power failure. Please see the installation manual supplied with the **EMI-21220** for its specific wiring diagrams.





## 17.0 SYSTEM WIRING EXAMPLE

Light Deceription	LED Driver Module			
Light Description	DVR-1400A	DVR-1050A	DVR-1400B	
-1500L Luminaire	Up to 2 fixtures in series per driver		Up to 3 fixtures in series per driver	
-2500L Luminaire	1 fixture per driver		Up to 2 fixtures in series per driver	
-4000L Luminaire		1 fixture per driver		
-5000L Luminaire	2 drivers per fixture		1 fixture per driver	
-6500L Luminaire	2 drivers per fixture			



50-60Hz stand alone circuit only.





#### **18.0 TROUBLESHOOTING**

#### **Fixtures Do Not Illuminate**

- 1. Check to make certain that the dimmer is not set to its lowest position (depending on dimmer module, the system may dim to "off").
- 2. Verify that the cabinet is powered on. Each module has an LED indicator that will illuminate continuously when power is applied.
- 3. Confirm that all input and output connections are correct and secure. All wiring from the driver module to the LED fixture(s) is polarized; reversed connections may result LED light failure.
- 4. Verify that the number of fixtures per module and wiring connections are correct per diagram located on panel cover or section 17.0 of this manual.
- 5. Disconnect the LED fixture(s) not illuminating at the fixture junction box. Use a DC volt meter to measure the voltage at the fixture and driver module. Voltages should be approximately 55VDC. Lower voltages my indicate a short in the wiring or a failed driver module.

### **Fixtures Are Pulsing, Strobing or Flickering**

- 1. Confirm the installed parts are approved Kirlin parts.
- 2. Check all wire connections. The most common reason for pulsing/strobing fixtures is a loose wire connection.
- 3. Verify that #16 AWG (minimum) twisted pair shielded wire is used and properly grounded.
- 4. Verify the installed 0-10V dimmer is approved for use in section 15.0 of the owner's manual. **Note:** Some dimmers may cause reduced stability at the lowest dim level setting; this is normal and maybe resolved by increasing the lowest dim level setting if your selected dimmer allows.
- 5. Confirm that the supply line to the cabinet is a dedicated circuit (all fixtures flickering at the same time).

## Fixtures Do Not Dim (Full Output Only)

- 1. Verify the installed 0-10V dimmer is approved for use in section 15.0 of the owner's manual. **Note:** Some dimmers may cause reduced stability at the lowest dim level setting; this is normal and maybe resolved by increasing the lowest dim level setting if your selected dimmer allows.
- 2. Check all dimming wire connections for a disconnected splice or open connection.

## Fixtures Are Stuck in Dim (Low Output Only)

- 1. Verify the installed 0-10V dimmer is approved for use in section 15.0 of the owner's manual. **Note:** Some dimmers may cause reduced stability at the lowest dim level setting; this is normal and maybe resolved by increasing the lowest dim level setting if your selected dimmer allows.
- 2. Check all dimming wire connections for a short between the violet and gray wire or a reversed connection.

For additional assistance, contact factory at 313.259.6400.

