EM Solution

Integrated Battery Back-up System

OVERVIEW

The EM Solution features an integrated battery back-up system, seamlessly combined with v2 Lighting Group's specification-grade LED luminaires. The EM solution is compatible with a wide range of v2 luminaires to be used as emergency fixtures.

The EM Solution allows the same v2 luminaires to be used for both normal and emergency operation without compromising performance or aesthetics.

Its unobtrusive design allows for the luminaire to seamlessly blend in with other architectural fixtures installed in the project.

This EM Solution from v2 Lighting Group is built with reliability and flexiblity in mind, ideal for any modern emergency LED lighting applications.

Remote EM Solution
CORE 400 LX pendant
5" shallow canopy with
remote EM enclosure

Canopy EM Solution
CORE 400 LX pendant
7.5" deep canopy with
integrated battery back-up

FEATURES:

- ETL Listed to UL 924
- 180 minutes @ 5W, 90 minutes @ 10W - switch selectable
- 0-10V dimming, with 1% dimming and dim to off
- Manual and self-diagnostic test modes
- Input surge protection
- Test switch included

EM DRIVER SPECIFICATIONS

Input Voltage:	120-277VAC, 50/60Hz
Max Input Power:	54W
Power Factor:	>0.9
THD:	<20%
Standby Input Power:	<0.85W
Output Type:	Constant Current, Isolated, Class 2, Suitable for LEDs only
Output Voltage Range:	11-55VDC
Normal Output Power:	40W Max
Emergency Output Power:	5W or 10W switch selectable
Minimum Emergency Run Time:	180 Minutes @ 5W, 90 Minutes @ 10W
Dimming:	0-10V, 100% - 1%, 0% (dim to off)
RFI/EMI:	FCC Part 15A Non-Consumer
Battery Capacity Available:	3200mAh
Battery Recharge Time:	12 Hours
Battery Type:	LiFePO4 6.4VDC, User Replaceable
Replacement Battery:	Fulham p/n FHSBATL2-3.2L v2 p/n 401-0164
Remote Test Switch:	Included
Ambient Operating Temperature Range:	32°F to 104 °F [0°C to 40°C]
Sound Rating:	A
Input Surge Protection:	Line-Neutral 3kV , Line & Neutral-Gound 6kV, Ring Wave ANSI/IEEEC62.41
Protections:	Input Current Protection Output Open Circuit Protection Overload Protection Over Temperature Protection Output Short Circuit Protection Output To Ground Short Circuit Protection
EM Battery Service Life:	50,000 hours

Compatible Fixtures

	Pendant		Surface Mount	
CORE	C2LP	C2SP	C2LM	C2SM
	C3LP	C3SP	C3LM	C3SM
	C4LP	C4SP	C4LM	C4SM
QUBE	Q2LP	Q2SP	Q2LM	Q2SM
	Q3LP	Q3SP	Q3LM	Q3SM
	Q4LP	Q4SP	Q4LM	Q4SM

NOTES:
3000 lm or less
Remote or deep canopy LED Driver
w/ Integral EM & Battery

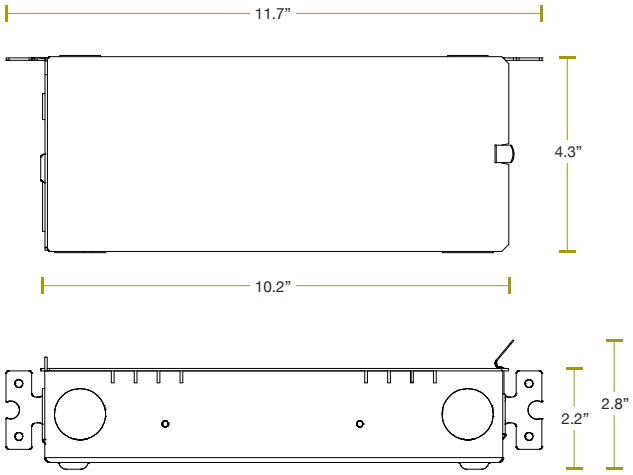
	Pendant		Surface Mount	
NOVA	NSRP	NSSP	NSRM	NSSM *
	NMRP	NMSP	NMRM	NMSM
	NLRP	NLSP	NLRM	NLSM

NOTES:
80 CRI: 1200 lm to 2000 lm
90 CRI: 1000 lm to 1800 lm
*Remote LED Driver w/ Integral EM & Battery

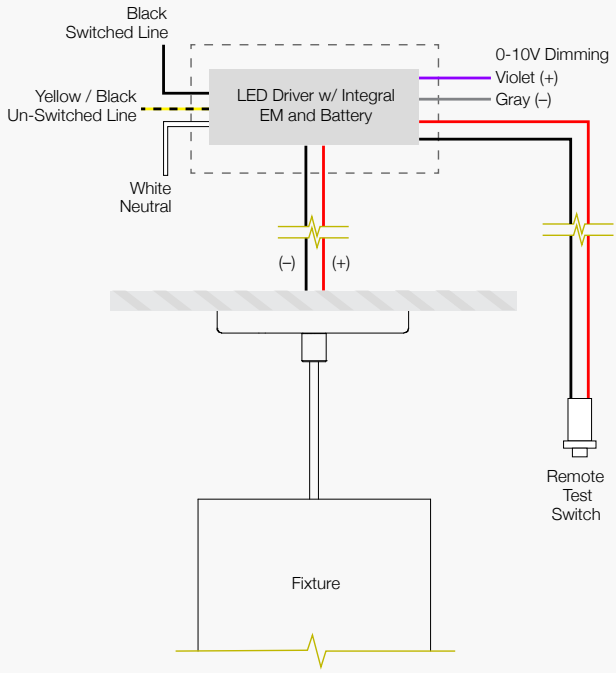
PRODUCT DIMENSION

Remote EM Solution

- EM enclosure holds LED driver with integrated battery back-up system
- 5" diameter canopy to match CORE, QUBE and NOVA
- Test switch mounted on face plate, can be located up to 20 feet from EM enclosure
- Damp or wet location fixture
- **EM enclosure must be damp location only**
- EM enclosure includes three 1/2" and three 3/4" conduit knockout

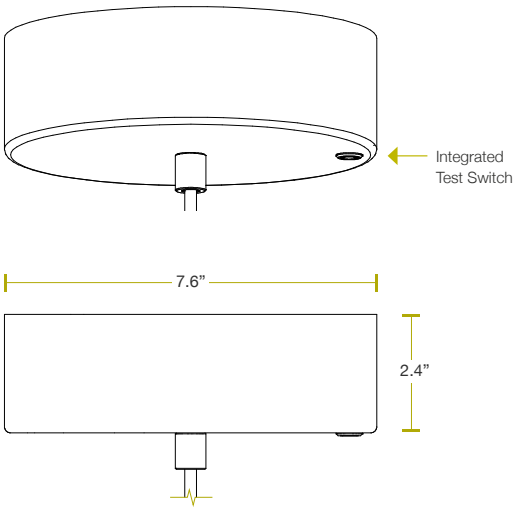


Remote Configuration Block Diagram

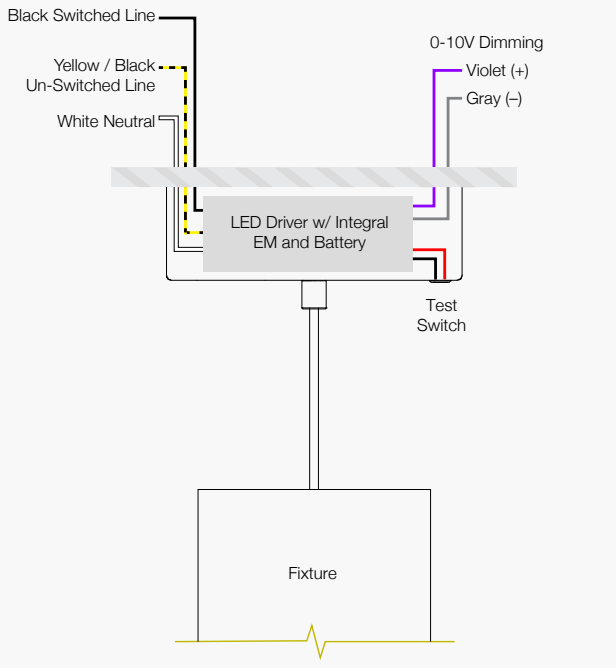


Canopy EM Solution

- Canopy holds LED driver with integrated battery back-up system
- 7.5" diameter canopy to match CORE, QUBE and NOVA
- Test switch mounted on canopy housing
- Damp location fixture only



Canopy Configuration Block Diagram



ORDERING INFORMATION

The EM Solution ordering option is embedded in the ordering logic under “Dimming” (see below). To order, follow the steps listed below.

1 Select fixture model
Must be compatible with the EM Solution

2 Select driver location
EM Solution available as Remote or Deep Canopy

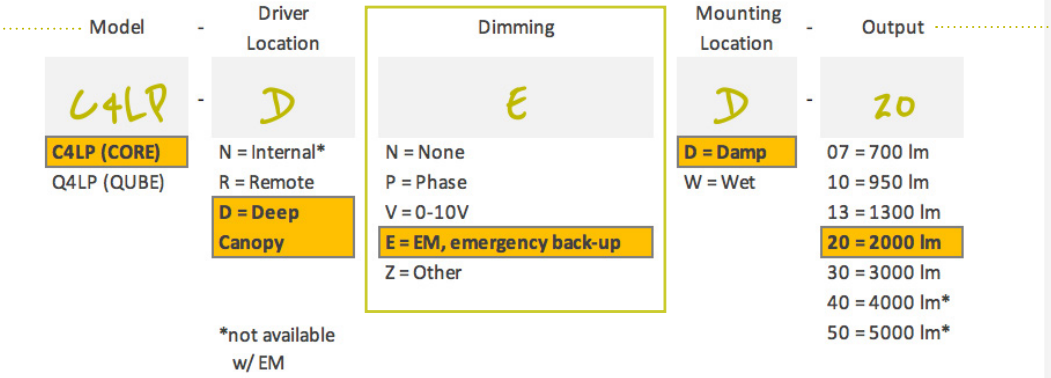
3 Select emergency back-up
E = EM Solution

4 Select your fixture location

- CORE & QUBE
  suitable for wet location if specified with remote driver

5 Select your lumen output

- CORE & QUBE
  3000 lm or less
- NOVA
  80 CRI: 1200 lm to 2000 lm
  90 CRI: 1000 lm to 1800 lm



CALCULATING EMERGENCY ILLUMINATION LEVEL

The theoretical illumination level along the path of egress during emergency operation is determined by four parameters: 1) LED efficacy, 2) luminaire mounting height, 3) luminaire optics, and 4) emergency power level setting on the EM driver.

Obtain the Required Data for the Luminaire

LED Efficacy (lumens per watt) for the chosen LED (typically page 2 of the data sheet)
LOR (Light Output Ratio) for the chosen reflector (typically page 3 of the data sheet)
IES file (from the v2 website)

Calculate the Emergency Light Output in Lumens

Emergency Light Output = Emergency Power Output Level x LED Efficacy x LOR

> EXAMPLE:
> v2 EM Solution is set to 5W emergency output
> Luminaire efficacy = 120lm/W
> LOR = 87%
> Emergency Light Output = 5W x 120lm/W x .87 = 522 lumens

Scaling the IES Files

Use the Emergency Light Output (in lumens) to scale the output for the IES file in any industry lighting design software to calculate the illumination level according to the luminaire layout and mounting height, the original IES file and Emergency Light Output calculated above.

> EXAMPLE:
> If the IES file is for 1,300 lm, and the emergency output is 522 lumens, then the scaling factor to applied to the IES file for emergency level calculations is 522 ÷ 1300 = 0.4

For the complete instructions on calculating emergency illumination levels please see the EM Installation Guides: https://www.v2lightinggroup.com/resourcelibrary/

Note:
It is the specifier or installer's responsibility to validate the real illumination level on site to assure it meets federal, state and local codes. It may differ from the theoretical calculation or simulation on a computer.

MAXIMUM MOUNTING HEIGHTS

The following charts show the maximum mounting height (from floor to bottom of fixture) for a single fixture that allows a minimum of 1.1 foot-candle at floor level, center beam, while operating in the 5W emergency mode. For the fixtures shown below it assumes the worst case scenario with the lowest LED Efficacy.

CORE / QUBE 200 & 300				CORE / QUBE 400				
Reflector	20˚	40˚	60˚	11˚	25˚	41˚	51˚	83˚
83 CRI	35'	25'	20'	35'	25'	20'	25'	20'
98 CRI	31'	22'	18'	31'	22'	18'	22'	18'

NOVA Reflectors				NOVA Lenses					
Optic	R1	R2	R4	L3	L6	L9	S1	S2	S3
80 CRI	73'	39'	26'	37'	25'	19'	34'	21'	15'
92 CRI	67'	36'	24'	34'	23'	17'	32'	20'	13'

