



FHSCP-UNV-10P-L-SD



Programmable Constant Power LED Driver

- Emergency LED Driver
- Input Voltage: 100-277VAC~,50/60Hz
- Output Voltage: 16-55VDC
- Output Current: 620mA
- IP20
- DALI
- Long Case and Terminal
- Output Type LED Class 2 / SELV

General Specifications

Input Voltage / Frequency	100-277VAC , 50/60Hz
Input Current	0.065A
Input Power	6.5W
Standby Power	<0.8W
Driver Type	Constant Power
Current Rated	620mA Max.
Output Voltage Range	16 - 55VDC
Output Power	3-10W Programmable
Number of Output Channels	1 Channel
RFI/ EMI	FCC Part 15A / EN55015
Output Type	LED Class 2 / SELV
Battery Type	NiCd 9.6VDC / LiFePo4 (9.6VDC)
Battery Capacity Available	3000mAh, 1800mAh, 1500mAh
Battery Recharge Time	<12 Hours or <24 Hours
Battery Discharge Time	1.5 Hours Min.
Rated Ambient (ta)	NiCd: 0°C to 55°C (32°F to 131°F) / LiFePo4: 10°C to 55°C (50°F to 131°F)
Input Surge Protection	Line-Neutral 2.5kV, Line & Neutral-Ground 2.5kV
Protections	Over / Under Voltage Protection Overload Protection Output Open Circuit Protection
Sound Rating	A
Humidity	5% - 95%
Communication Mode	DALI Version 1.0 or Bluetooth with supporting Smart Link
Safety Standards	UL924, CSA C22.2 No.141 / cUL Listed, ENCE / CB / CE EN61347-1, EN61347-2-7, EN62384, EN60598-2-22, EN50172, EN55015 EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4 EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11, EN61000-4-29
Service Life	50,000 Hours
Warranty	5 Years From the date of manufacture when properly installed

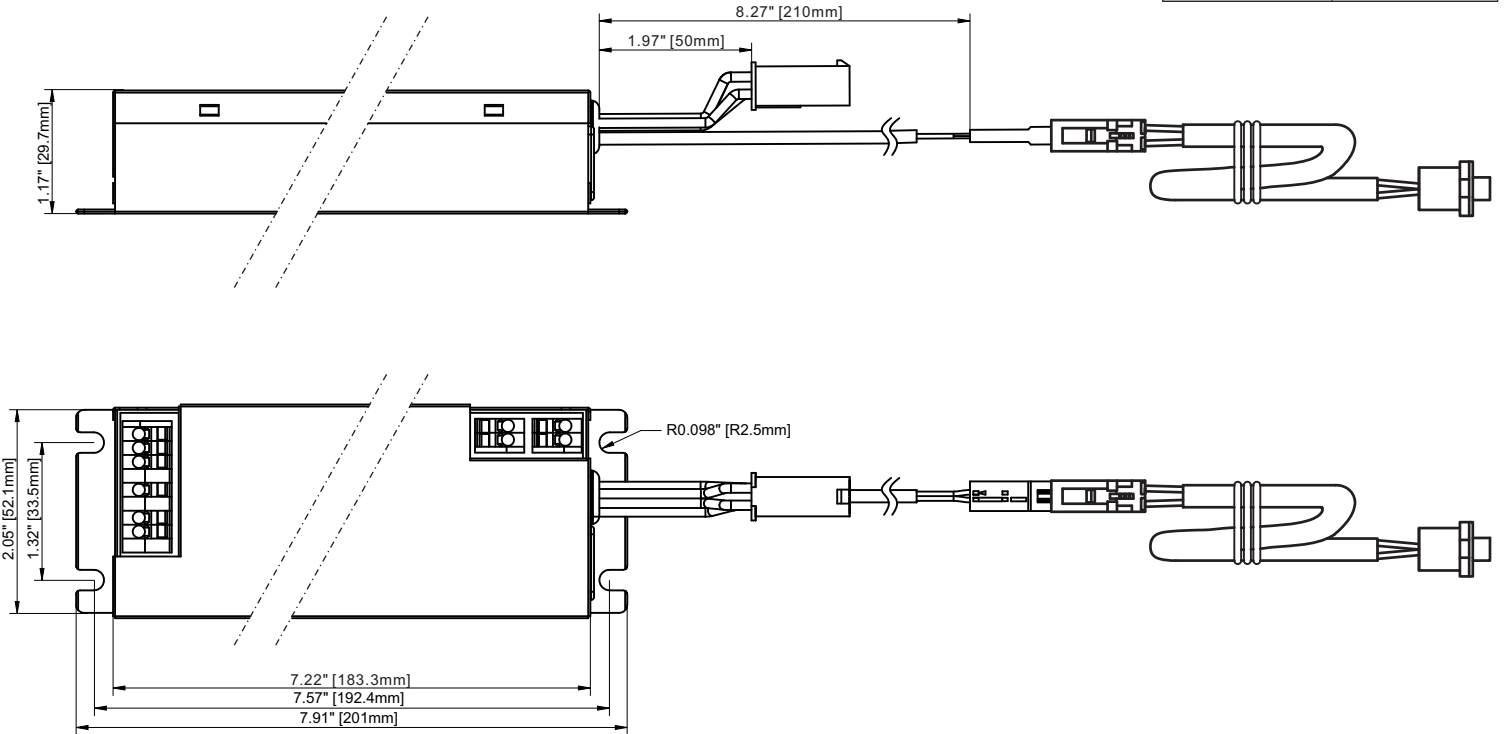


FHSCP-UNV-10P-L-SD



Mechanical Data

Overall Dimensions	
Length	7.91" (201mm)
Width	2.05" (52.1mm)
Height	1.17" (29.7mm)



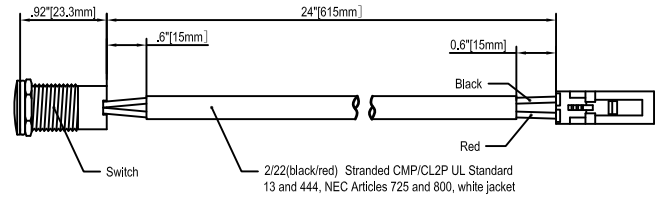
Tolerance=0.02"

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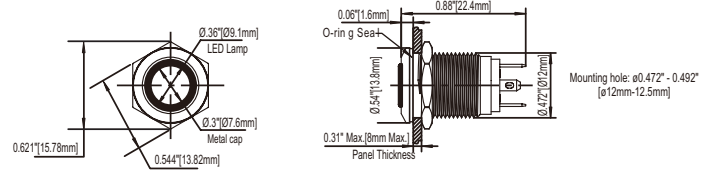


Accessories

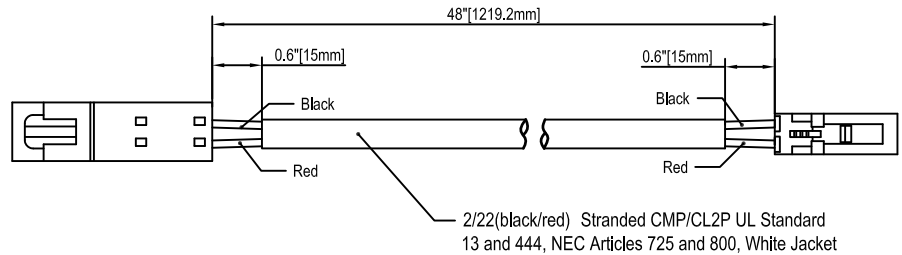
Bi-Color Wet Location Test Switch: FHS-TSTWL-BC



Overall Switch Dimension



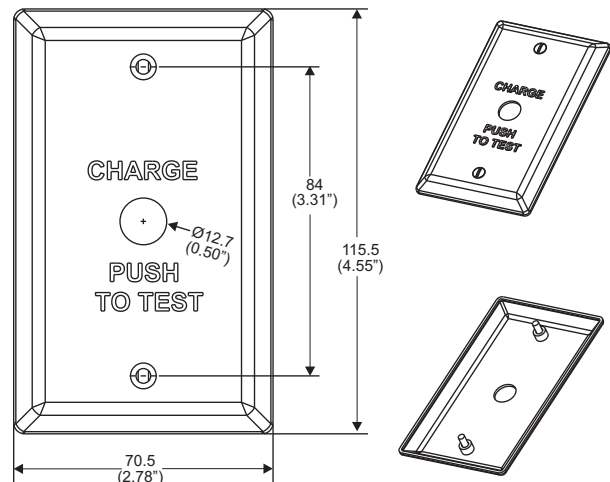
Test Switch Extension: FHS-EXT-48-TST



Wall Plate: FHSWLPWH



Wall plate and screw color:
white with black lettering



1. "Charge push to Test" plate
2. (2) 6-32 x 1/2" LG mounting screws



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GENERAL INSTALLATION GUIDELINES FOR LED EMERGENCY DRIVER

IMPORTANT SAFE PRACTICES

When using electrical equipment and this lighting device basic safety precaution should be followed at all times including but not limited to the following:

PLEASE READ CAREFULLY AND FOLLOW ALL INSTRUCTIONS FOR YOUR OWN SAFETY

IMPORTANT: Do not connect battery until fixture is installed.

IMPORTANT: An un-switched AC power source of 100VAC to 277VAC is required.

This device is designed for use in fixtures listed for **dry and damp locations**.

CAUTION: Make sure all electrical connections conform to the National Electrical Code and all applicable local regulations.

CAUTION: Do not let power supply cords touch hot surfaces.

CAUTION: Do not mount near gas or electric heaters.

CAUTION: Do not use outdoors.

CAUTION: Battery is rechargeable NiCd or LiFePO4 type and must be recycled or disposed of properly. Do not use this emergency driver with accessory equipment other than recommended by manufacturer; failure to follow this may cause an unsafe condition. Servicing should only be performed by qualified service personnel. Do not use this emergency driver for other than intended use.

CAUTION: Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.

IMPORTANT: The output EM power will be the maximum of connected battery unless programmed to a lesser value. EM output power will not exceed the battery rating.

IMPORTANT: Indicator (LED light) illuminated 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 thirty (30) seconds every 30 days to ensure the emergency driver is functioning as LED light source illuminated. Conduct a ninety minute (90) discharge test one time (1) per year; LED light source should be illuminated for a minimum of ninety minutes (90).

ASSEMBLY and FIELD INSTALLATION WIRING: WARNING: AC power must be off before proceeding with assembly or installation of emergency driver.

TESTING SYSTEM: The emergency battery requires a charge minimum of one (1) hour before testing the circuit. A full charge requires twelve (12) or twenty four (24) hours (Refer to battery chart).

IMPORTANT: In order to maintain proper operation and warranty coverage, the battery must be recharged once per year prior to installation.

Fulham Head Quarters:
Fulham Co., Inc
12705 South Van Ness Ave.
Hawthorne, CA 90250

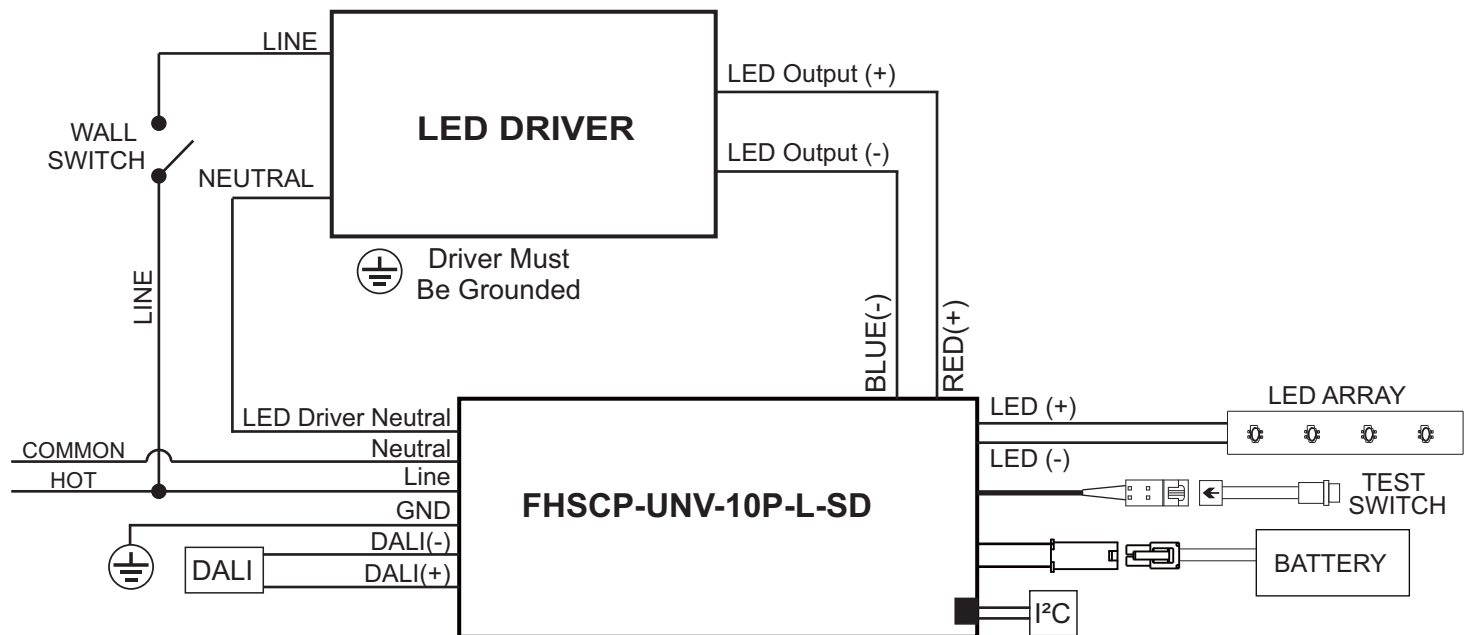
Manufacturer:
North China
Fulham Electronic Co. Ltd.
No. 9 Xingchang Road, Nanshao Zhen Changping Science Park, Beijing, P.R. China

SAVE THESE INSTRUCTIONS

FHSCP-UNV-10P-L-SD



Wiring Diagram



BatteryChart

Fulham Model No.	Chemistry	RoHS	Pack Capacity	Max Load for 90 min.	Battery Voltage	Recharge Time	Battery Dimensions
FHSBATL3-1.5-SD	LiFePO4	Compliant	1500mAh	5W	9.6V	12Hrs	3.48" x 2.87" x 0.96" (88.5 x 72.9 x 24.3mm)
FHSBATL3-3-SD	LiFePO4	Compliant	3000mAh	10W	9.6V	12Hrs	4.39" x 2.92" x 1.3" (111.5 x 74.4 x 33.2mm)
FHSBATL9-.6-SD	LiFePO4	Compliant	1800mAh	6W	9.6V	12Hrs	7.52" x 1.87" x 0.79" (191 x 47.6 x 20mm)
FHSBATL6-1.5L-SD	LiFePO4	Compliant	3000mAh	10W	9.6V	12Hrs	9.13" x 1.63" x 0.97" (232 x 41.4 x 24.7mm)
FHSBATT8-C3L-SD	NiCd	Exempt	3000mAh	10W	9.6V	24Hrs	9.25" x 2.11" x 1.21" (235 x 53.5 x 30.7mm)

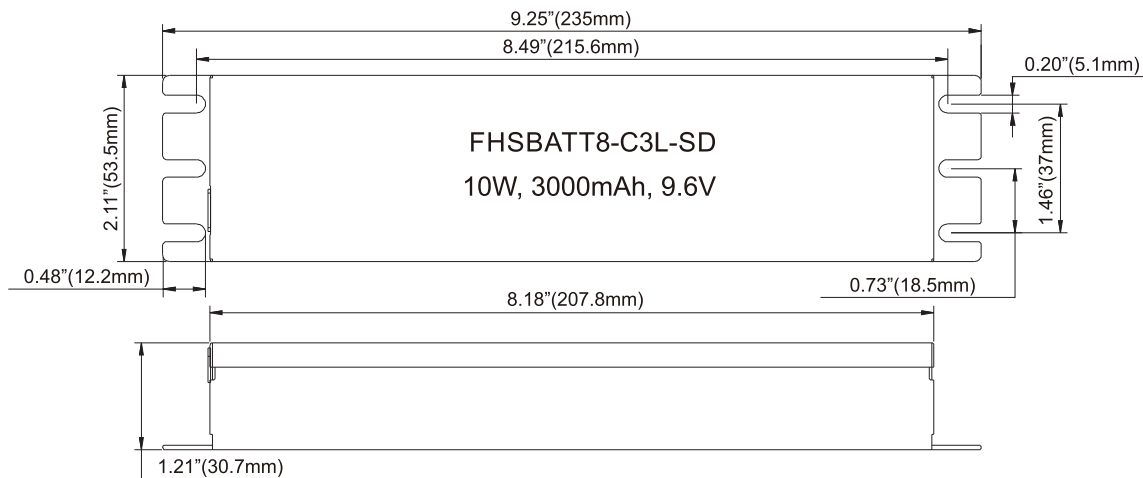
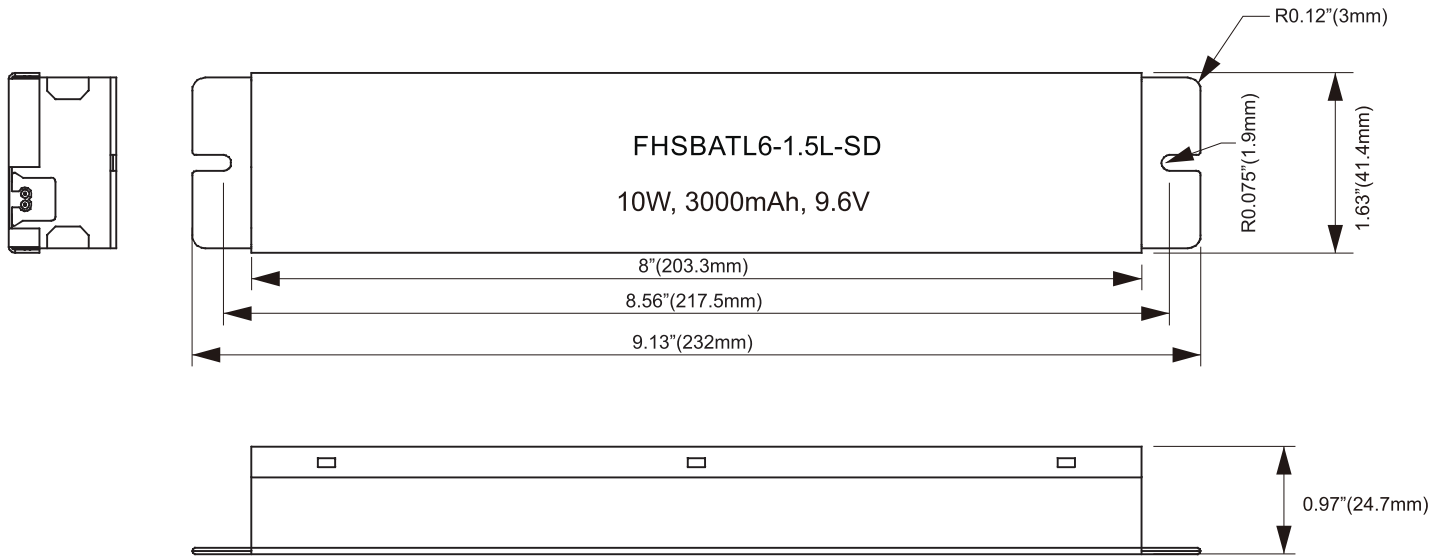
CAUTION: Replace battery only with corresponding part number.



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Battery Dimensions

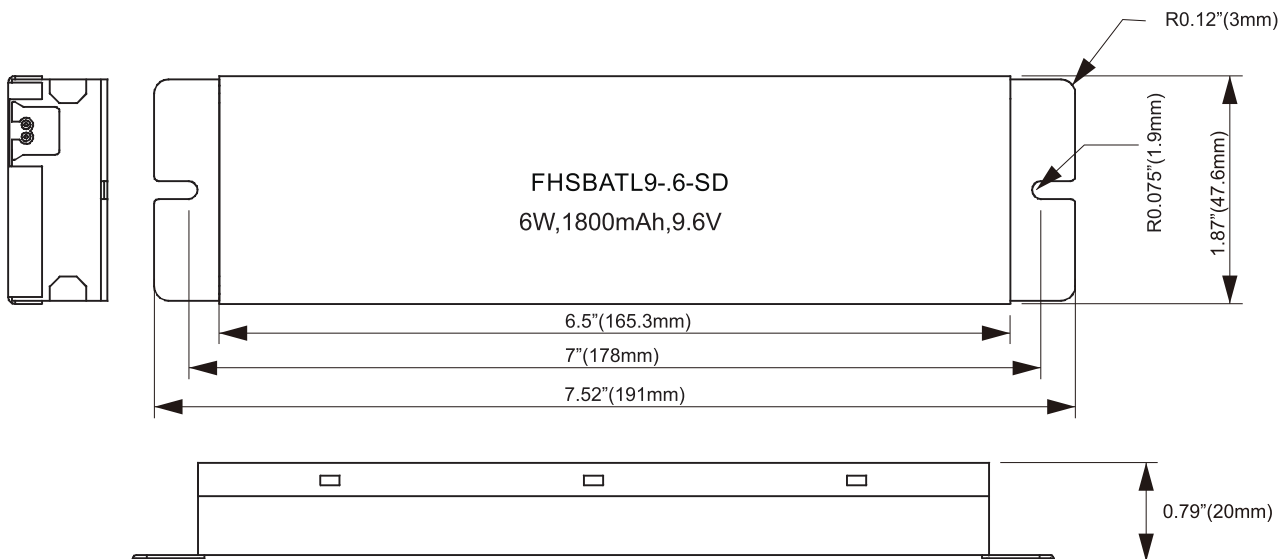
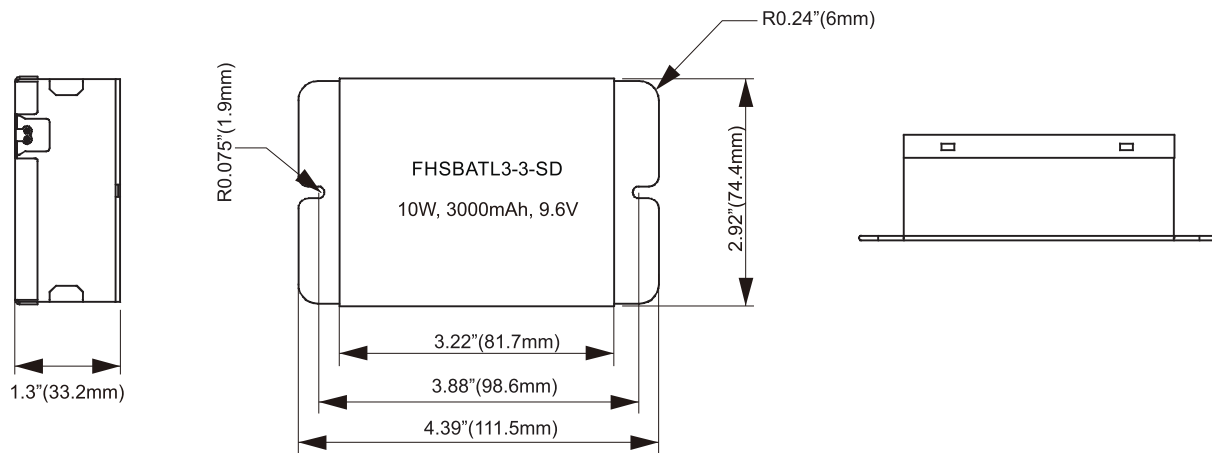
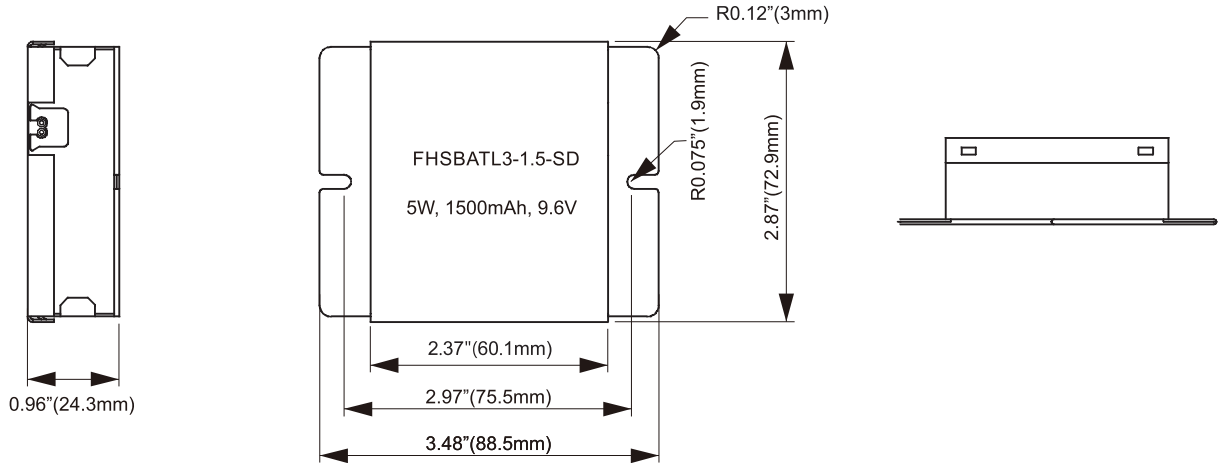




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Battery Dimensions





Guideline On Calculating Emergency Illumination Level

The purpose of this guideline is to identify the illumination level of the LED luminaire when used with Fulham's FHSCP-UNV-10P-L-SD 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 Fulham's 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 Consortium™ (DLC) compliant, you can also get the efficacy information from 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 calculated 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 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 with 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.

FHSCP-UNV-10P-L-SD is programmable output; setting a proper Emergency Power is vital to achieve desired illumination.

Emergency Light Output is equal to the Emergency Power multiply by 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.

Fulham's FHSCP-UNV-10P-L-SD LED emergency driver is compliant with UL 924 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 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 with the requirement of Federal, state and local municipal codes. It may diff to the theoretical calculation or simulation on computer.

Table 1. Min. EM Power for 1fc @ 10ft vs. Luminaire Efficacy

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

Table 2. Max. Mounting Height vs. Luminaire Efficacy

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



Test Switch Indicator Status:

LED Indicator Status	EM Driver Status/Mode
• Solid Green	System OK/AC OK.
• Slow Flashing Red, 4s On/1s Off	Battery not detected, check battery switch or connection.
• Flashing Red, 1s On/1s Off	Battery failure, replace battery.
• Flashing Green, 2s On/2s Off	DALI duration test underway.
• Fast Flashing Red, 0.1s On/0.1s Off	Open / Short Circuit, Check LED load.
• Slow Flashing Red, 0.1s On/3s Off	Normal working in EM mode.

Test Switch Operations:

1. EM Test: Press and hold the test button to enter EM mode for testing, in all normal AC powered situations including low power standby modes.
2. DALI Duration Test: Quickly press the test button three times within 1 second to enter the DALI duration test. To quit the DALI duration test, hold the test button for 10 seconds.

DALI Duration Test & Function Test:

1. Duration time: 90 Min.
2. Function time: 1 Min.
3. Duration time by manual entry: 90 Min.
4. Duration test and function time: Only test 1 time
5. Duration test: test switch or DALI controller
6. Duration test and function test interval time setting: Only by DALI controller

Programming:

Unless otherwise programmed the output will self-program to the maximum rating of the battery. This EM driver can be programmed using the Fulham SmartSet TPSB-100(E). Programming features include the following:

- Out put EM Power - 3W to 10W



SmartSet Software



TPSB-100 SmartSet Controller

* For more detailed programming instructions please see our Programming Instructions and Design Guide found on our website:

- <https://www.fulham.com/PDFs/SpecSheets/Fulham-Design-Guide-Programmable-Drivers.pdf>



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Guidelines

Grounding

- Driver must be grounded by means of the Driver case.

Overload Protection

- If the maximum output power is exceeded, the LED driver switches off automatically, after elimination of the overload the normal operation is restored automatically.

LED Load

- Fulham HotSpot Plus LED drivers are designed to drive passive LED's, COB's and LED assemblies. Proper function is not guaranteed when (LED) loads with active components are used.

Mounting and cooling

- Above an output power of 20W, the driver need to be mounted on a heat conductive surface of at least 200cm². Always test if the surface is sufficient enough before installing the LED driver.

Short Circuit Protection

- In case of a short circuit the LED driver switches to protection mode. After removal of the short-circuit the LED driver will recover automatically.

No Load Operation

- In no-load operation the output voltage will not exceed the specific open circuit output voltage.

Hot Swapping

- This driver does not support the hot swapping of the LED's.

Remote Mounting

- up to 50ft with 18AWG wire. Contact Fulham for higher remote distance.

Warranty

- Reference Fulham's limited Warranty: <https://cdn.fulham.com/PDFs/Limited-Warranty.pdf>



FHSCP-UNV-10P-L-SD



Part Number Matrix

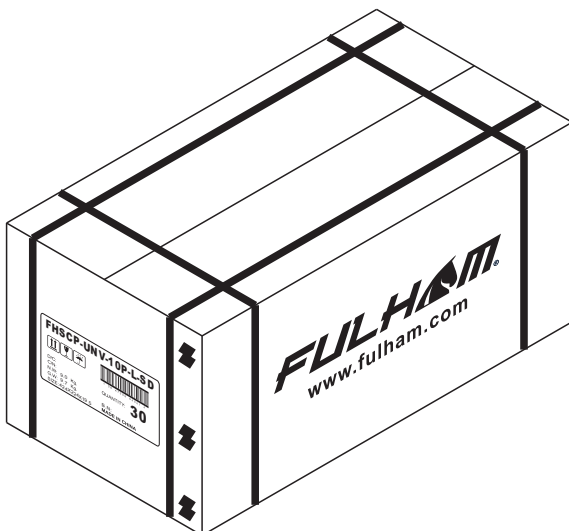
<u>FHS</u>	<u>CP</u>	<u>UNV</u>	<u>10</u>	<u>P</u>	<u>L</u>	<u>SD</u>
LED Driver	Driver Type	Input Voltage	Max Output Power	Characteristic	Case Type	Special Features
FHS = FireHorse HotSpot Driver	CP = Constant Power	UNV = 120V-277V	10W = 10 Watts	P = Programmable	L = Long Case	SD = Self Diagnostic

Product Image: FHSCP-UNV-10P-L-SD



Packaging

Master Carton



OUTER DIMENSION		
L	W	H
16.7"(424mm)	8.82"(224mm)	7.68"(195mm)
Net Weight	Gross Weight	QUANTITY
19.84 lbs. (9 kg)	21.38 lbs. (9.7kg)	30pcs