



# Fulham FHS2-UNV-36L HotSpot2 LED Emergency System Instruction Manual

[Home](#) » [FULHAM](#) » Fulham FHS2-UNV-36L HotSpot2 LED Emergency System Instruction Manual 



## FHS2-UNV-36L INSTALLATION INSTRUCTIONS



### Contents

- [1 FHS2-UNV-36L HotSpot2 LED Emergency System](#)
- [2 General Specifications](#)
- [3 Important and Safety Instructions](#)
- [4 Battery Dimensions](#)
- [5 Mounting Bracket Dimensions \(Optional\)](#)
- [6 TEST SWITCH INDICATOR STATUS:](#)
- [7 Documents / Resources](#)
  - [7.1 References](#)
- [8 Related Posts](#)

## FHS2-UNV-36L HotSpot2 LED Emergency System

- Emergency LED Driver
- Universal Voltage: 100-277VAC, 50/60Hz

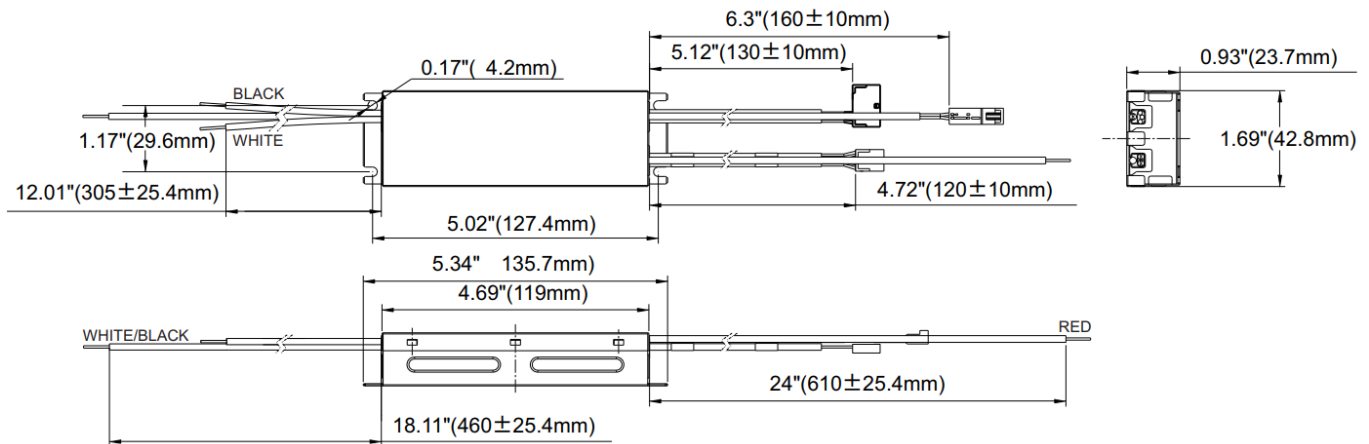
- Output Wattage: 1.2-20W
- Output Current range of 100mA – 700mA
- Output voltage range of 12-55VDC

This Driver Will Operate The Following LED Modules: Any LED module designed to accept an input voltage range of 12-55VDC and can operate up to a current of 700mA.

### General Specifications

Input Voltage	100-277VAC, 50/60Hz
Input Current	0.1A Max.
Input Power	6W Max.
Red Lead	3A,60V Max.
White/Black Lead	1A Max.
Standby Input Power	<0.8W
Driver Type	Constant Current
Output Current	100mA -700mA Initial (Refer
Output Voltage Range	12-55VDC
Output Power	20W Max
Number of Output Channels	1 Channel
RFI/EMI	FCC Part 15 Class A
Output Type	LED Class 2
Battery Type	NiCd 9.6VDC or LiFePO4 9.6V
Battery Capacity Available	900mAh, 1000mAh, 1200mAh
Battery Recharge Time	24-32 Hours (Refer To Battery
Battery Discharge Time	20' (6m) Max.
Test Switch Remote Mounting Distance	Input: 18AWG, Output: 22AWG
Wire Length	AWG
Ambient Operating Temperature Range	NiCd: 0°C to 50°C (32°F to 122°F)
Input Surge Protection	FHSBATCC3-3: -20°C to 50°C (32°F to 122°F)
Protections	2.5KV Ring Wave
Service Life	Battery Over Discharge Protection
Approvals / Class	Output Short Circuit Protection
	50,000 hours
	RoHS , cURus 1310 , cURus 1347-2-7:2012
	EN61347-1:2015, EN55015:2012, EN61547:2009

## Mechanical Data



## Important and Safety Instructions

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:** Battery is rechargeable Ni-Cd 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.
- Not suitable for high-risk task area lighting.

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 not exceed the max power rating of the battery.

**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 ballast to ensure proper function of the system; push the test switch for thirty (30) seconds every thirty (30) days to ensure the emergency driver is functioning by illuminating the light source. Conduct a ninety (90) minutes discharge test one (1) time per year; LED light source should be illuminated for a minimum of ninety (90) minutes .

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

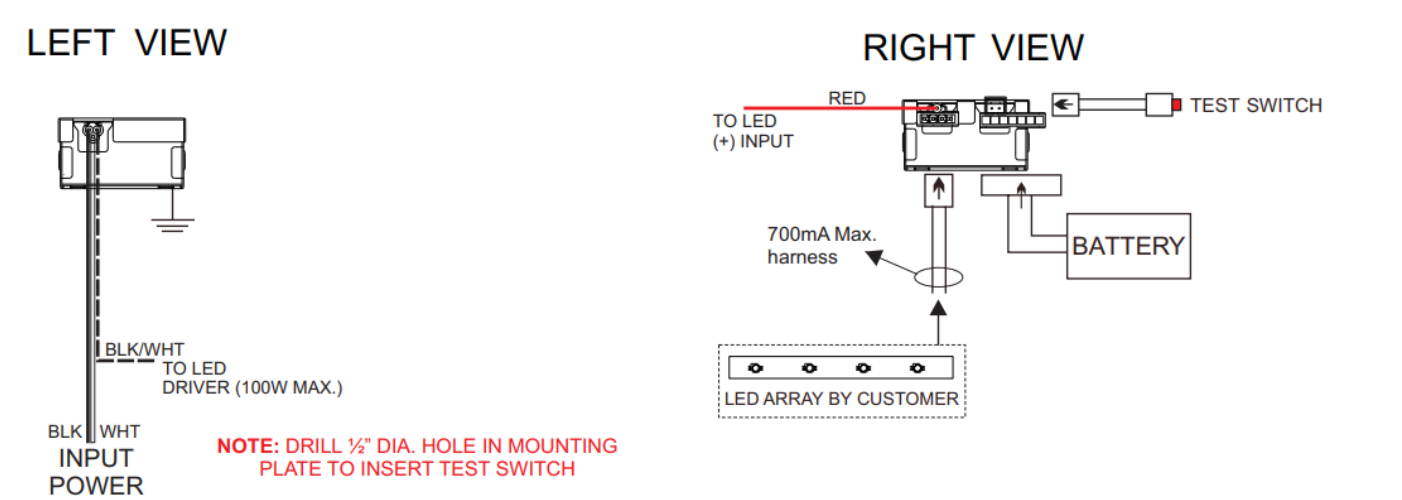
**TESTING SYSTEM:** The emergency battery requires a charge minimum of one (1) hour before testing the circuit. A full charge requires twenty four (24) or thirty two (32) hours, depending upon battery pack. Please refer to

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

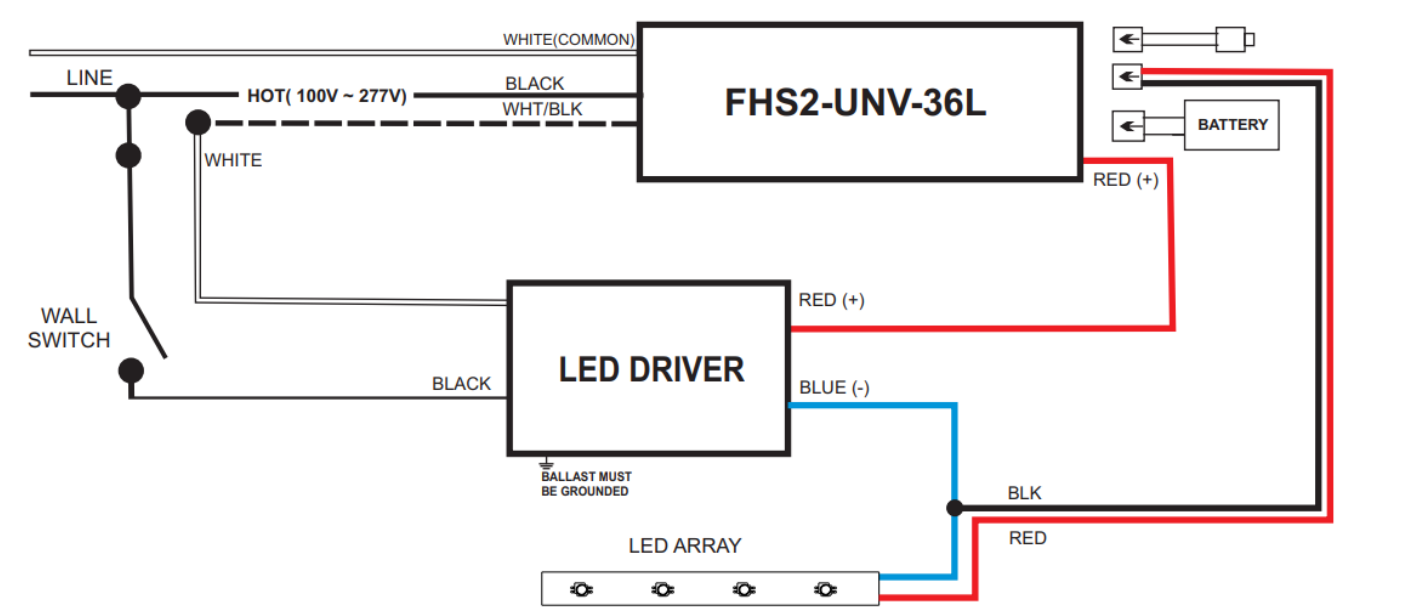
Fulham Head Quarters: Fulham Co., Inc 12705 South Van Ness Ave.	Manufacturer: North China Fulham Electronic Co. Ltd. No. 9 Xingchang Road, Nanshao Zhen P.R. China
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SAVE THESE INSTRUCTIONS

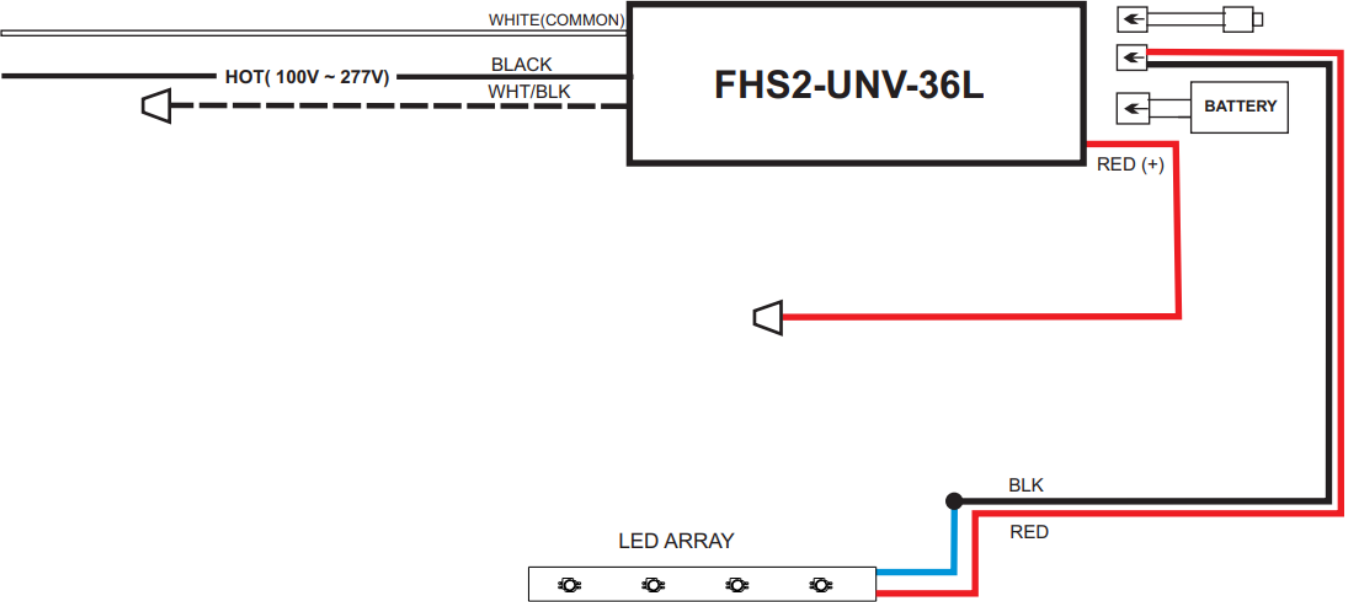
Wiring Diagrams 1



Wiring Diagram (TYP)



WIRING DIAGRAM (EMERGENCY ONLY)



Input

Wire Color	Length (Inches)
Black	12.01" ±1"
White	12.01" ±1"
Black / White	18.11" ±1"

Output

Wire Color	Length (Inches)
Red	24" ±1"
Test Switch	5.12" ±0.4"
Output Harness	4.72" ±0.4"
Battery Conn.	5.12" ±0.4"

Battery Chart

Fulham Model No.	Chemistry	Compliant	Pack Capacity	Max Load for 90 min.	Battery Voltage	Battery Count	Recharge Time	Dimensions (LxW x H)	12" Harness (Optional)	Mounting Accessory (Included / Optional)
FHSBATT8-AA.9	NiCd		900mAh	4W	9.6V	8 Cells	24Hrs	5.23" x 2.5" x 0.7"	FHS-EXTM	Bracket Included
FHSBATL3-1	LiFePO4	RoHS	1000mAh	4W		3 Cells	24Hrs	3.48" x 2.35" x 0.99"		
FHSBATL6-.6	LiFePO4	RoHS	1200mAh	6W		6 Cells	24Hrs	5.23" x 1.87" x 0.85"		
FHSBATL3-1.5	LiFePO4	RoHS	1500mAh	8W		3 Cells	24Hrs	3.48" x 2.76" x 0.99"		
FHSBATL3-1.5S	LiFePO4	RoHS	1500mAh	8W		3 Cells	24Hrs	8.87" x 1.11" x 0.955"		
FHSBATL9-.6	LiFePO4	RoHS	1800mAh	10W		9 Cells	24Hrs	7.52" x 1.87" x 0.85"		
FHSBATC C3-3 (-20° C Cold Pack)	LiFePO4	RoHS	3000mAh	14W/10W"		3 Cells	24Hrs	6" x 3.6" x 1.55"		
FHSBATT8-C3	NiCd		3000mAh	16W		8 Cells	24Hrs	4.15" x 3.29" x 2.11"		FHSBATSC 8-C3L
FHSBATT8-C3L	NiCd		3000mAh	16W		8 Cells	24Hrs	7.89" x 2.17" x 1.04"		
FHSBATL3-3	LiFePO4	RoHS	3000mAh	16W		3 Cells	24Hrs	4.39" x 2.82" x 1.3"		Bracket Included
FHSBATL6-1.5	LiFePO4	RoHS	3000mAh	16W		6 Cells	24Hrs	5.7" x 2.76" x 0.99"		
FHSBATL6-1.51:	LiFePO4	RoHS	3000mAh	16W		6 Cells	24Hrs	7.89" x 1.56" x 0.92"		FHSBATSC 6-1.5L
FHSBATL6-1.5S	LiFePO4	RoHS	3000mAh	16W		6 Cells	24Hrs	16.67" x 1.11" x 0.955"		Bracket Included
FHSBATT8-D4	NiCd		4000mAh	20W		8 Cells	24Hrs	4.89" x 3.84" x 2.72"		
FHSBATL6-3	LiFePO4	RoHS	6000mAh	20W/16W"		6 Cells	32Hrs	7.52" x 2.82" x 1.3"		FHSBATSC 6-3L
FHSBATL6-312	LiFePO4	RoHS	6000mAh	20W/16W"		6 Cells	32Hrs	7.94" x 2.17" x 1.21"		

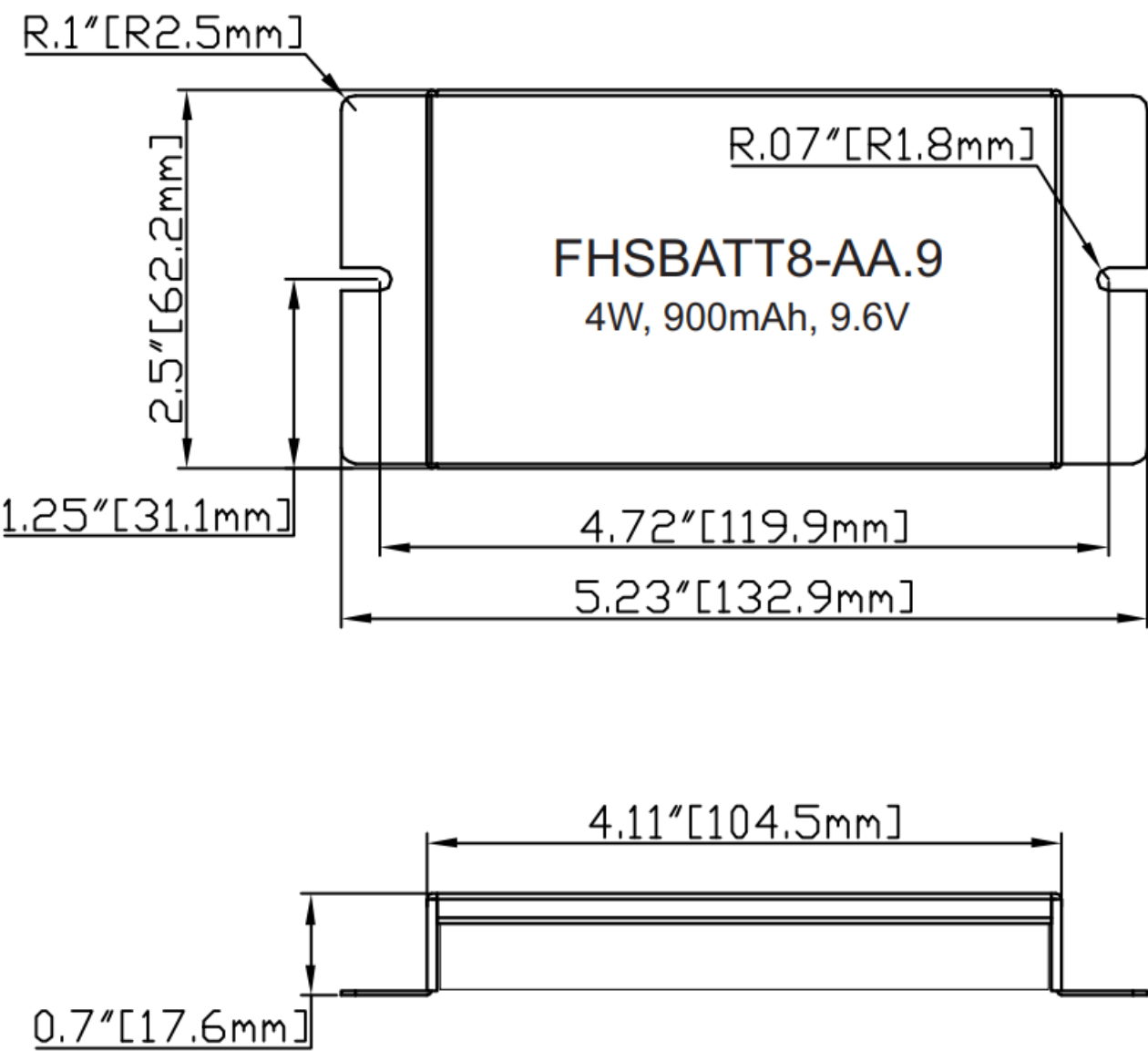
**CAUTION:** Replace battery only with corresponding part number.

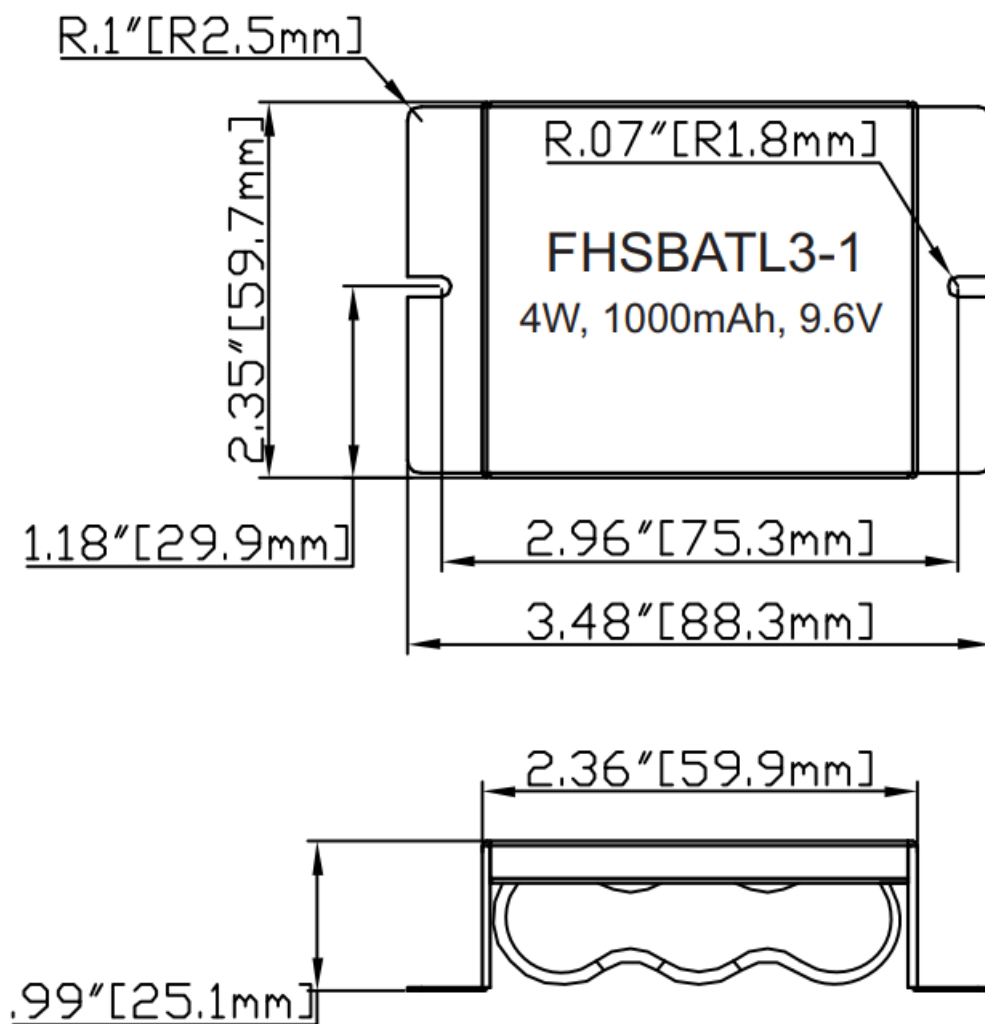
**\*Note:** These batteries do not include mounting means, separate mounting brackets are available.

**\*\*Note:** This battery rating applies for Canada use only.

Accessory Harness (Wire length 24")			
Part Number	Description	Part Number	Description
FHS-HARNESS-100	100 mALED Harness	FHS-HARNESS-125	125 mALED Harness
FHS-HARNESS-150	150 mALED Harness	FHS-HARNESS-175	175 mALED Harness
FHS-HARNESS-200	200 mALED Harness	FHS-HARNESS-225	225 mALED Harness
FHS-HARNESS-250	250 mALED Harness	FHS-HARNESS-300	300 mALED Harness
FHS-HARNESS-350	350 mALED Harness	FHS-HARNESS-400	400 mALED Harness
FHS-HARNESS-450	450 mALED Harness	FHS-HARNESS-500	500 mALED Harness
FHS-HARNESS-550	550 mALED Harness	FHS-HARNESS-600	600 mALED Harness
FHS-HARNESS-650	650 mALED Harness	FHS-HARNESS-700	700 mALED Harness

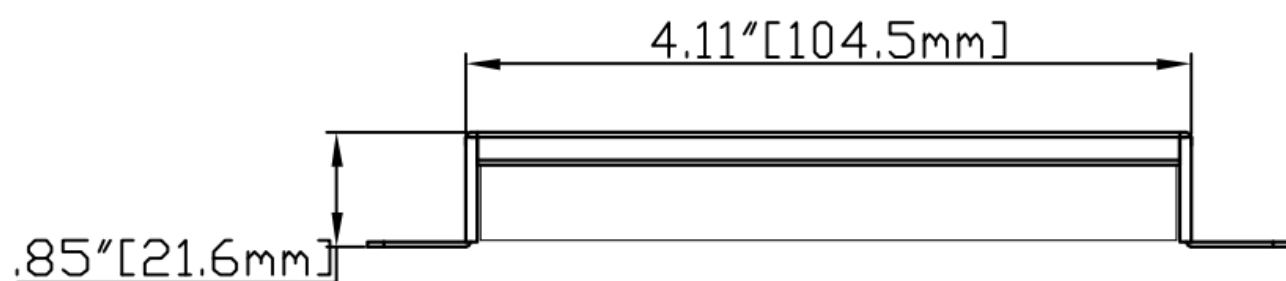
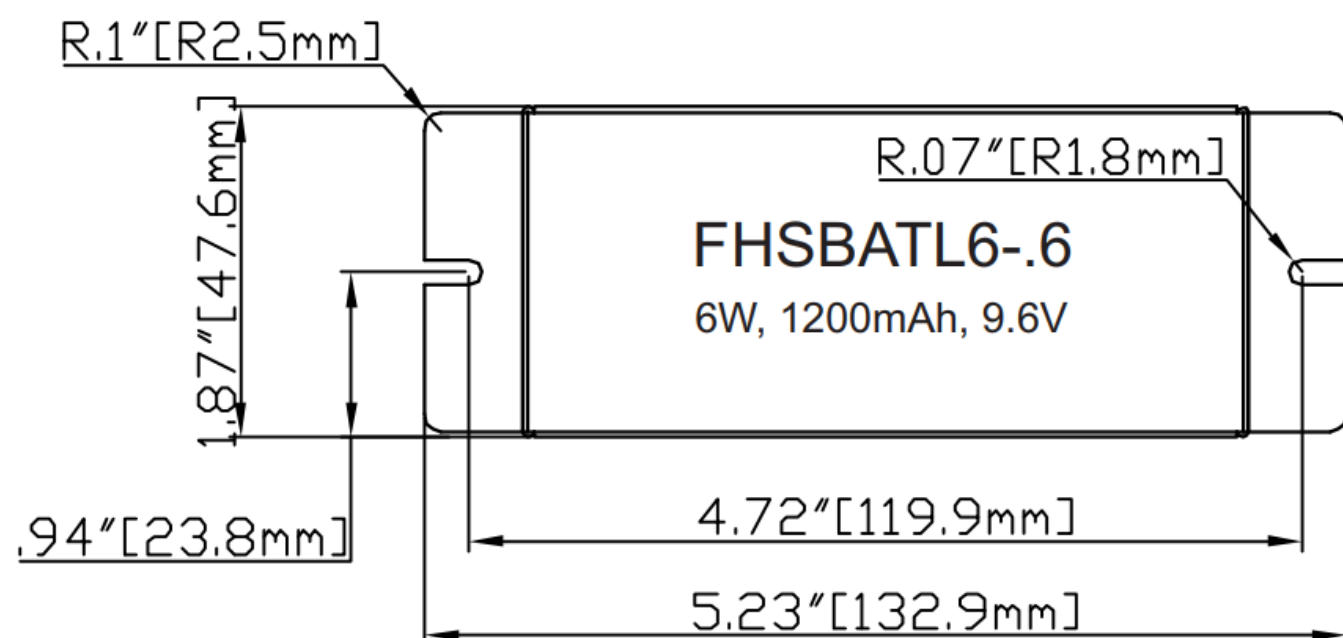
**Battery Dimensions**

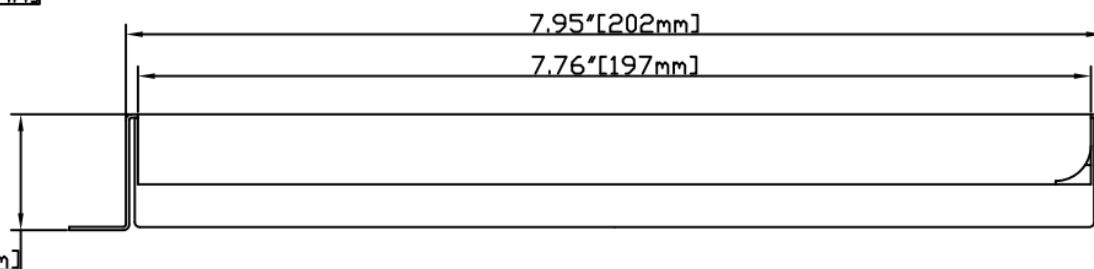
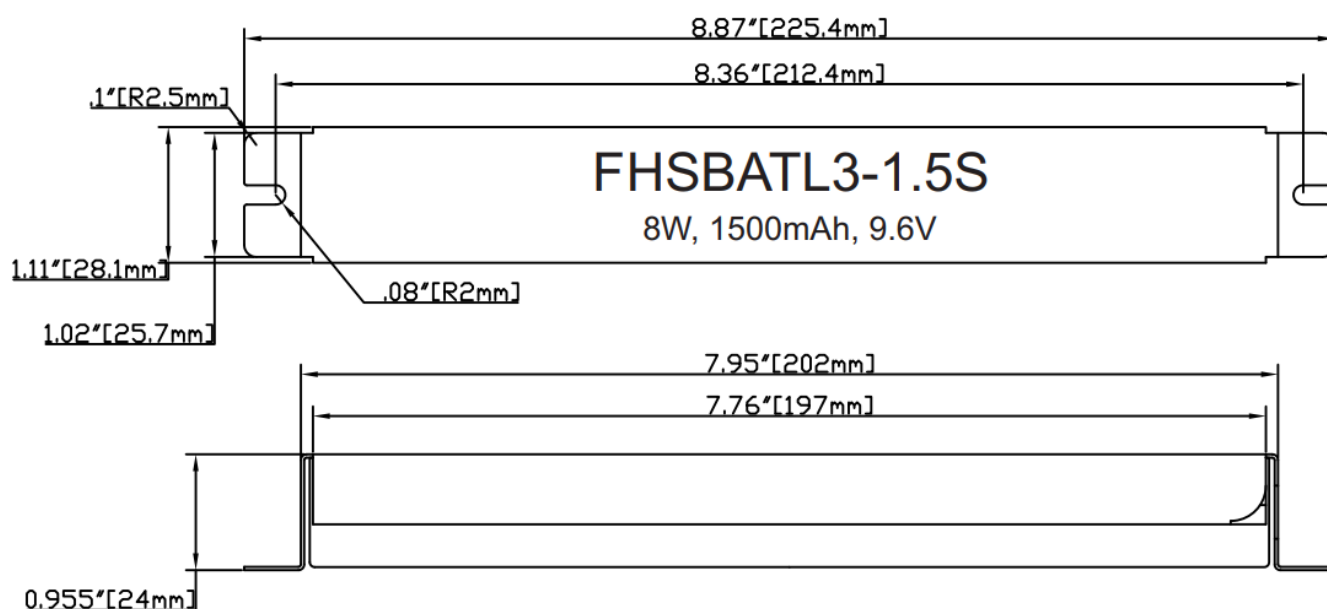
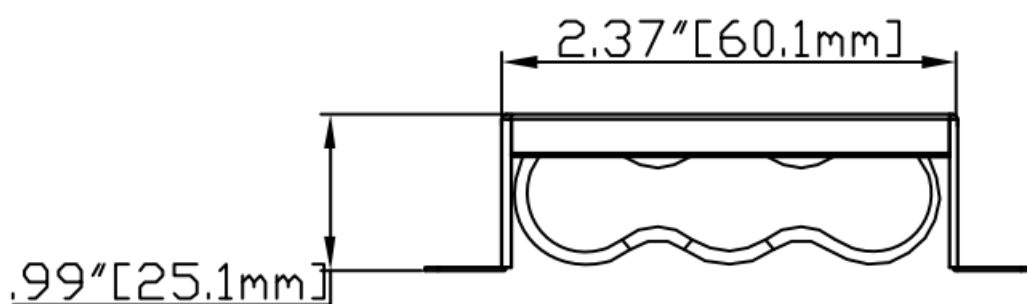
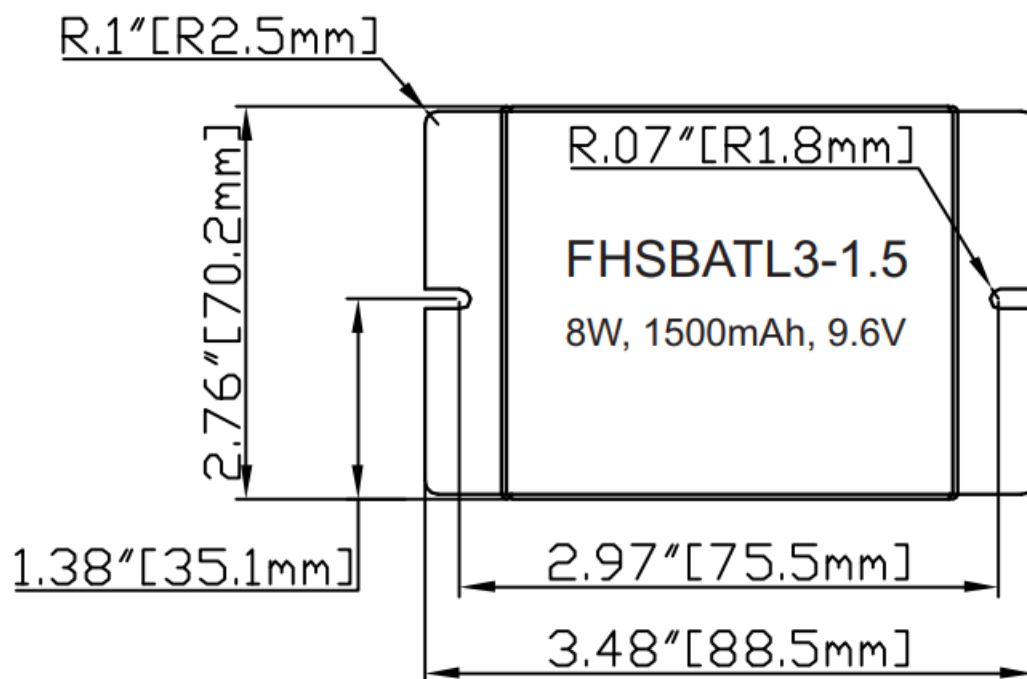


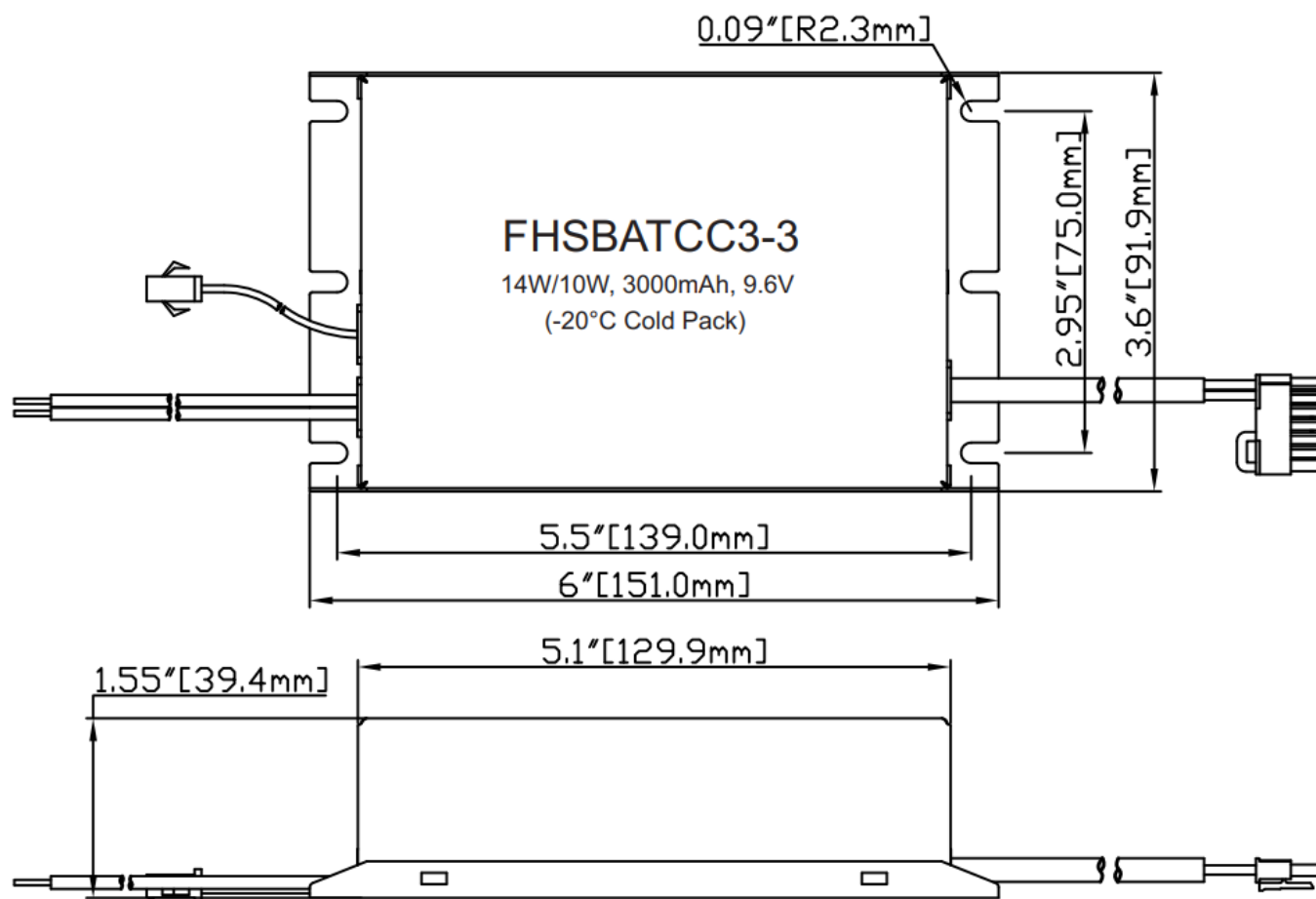
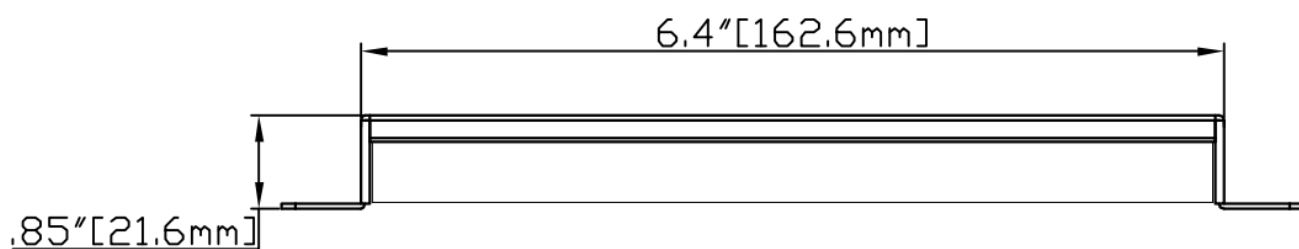
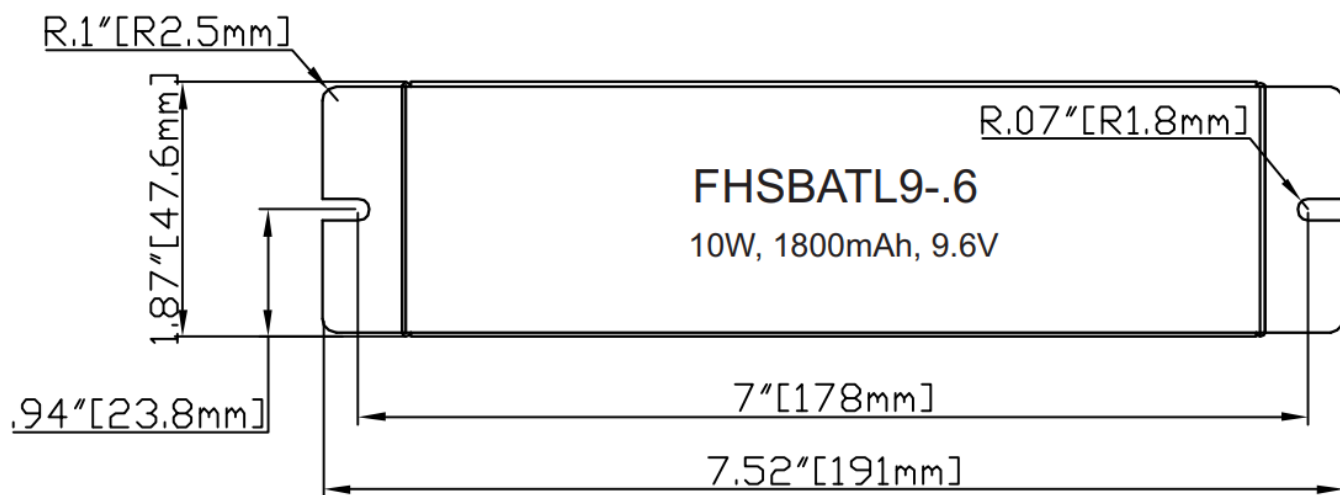


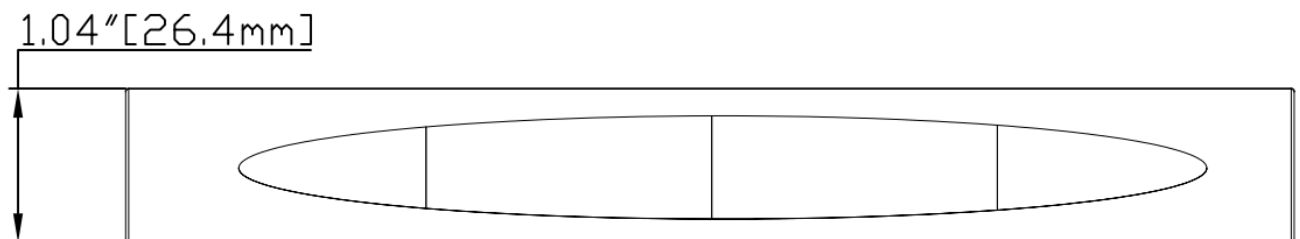
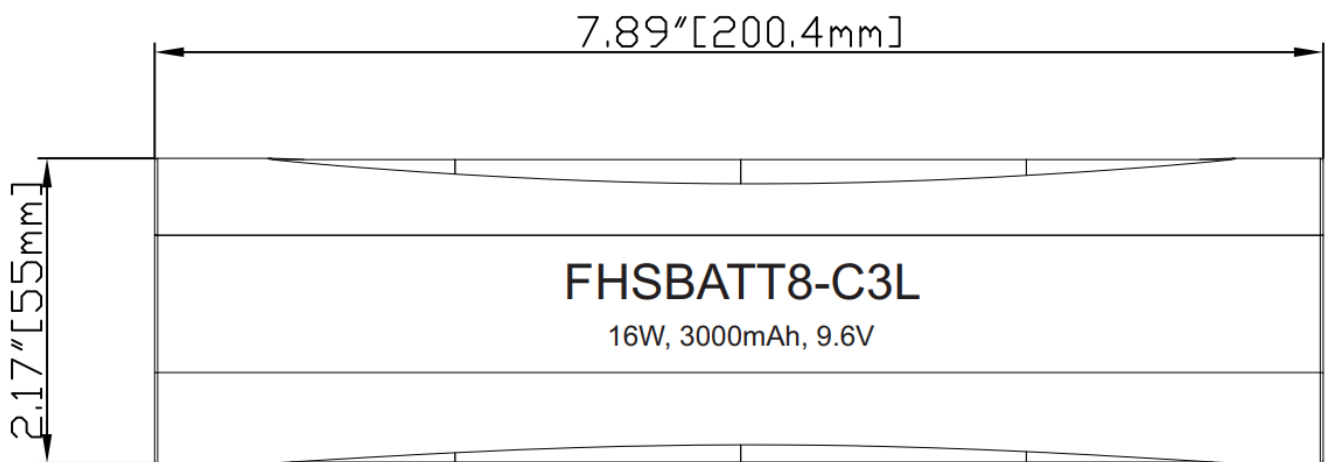
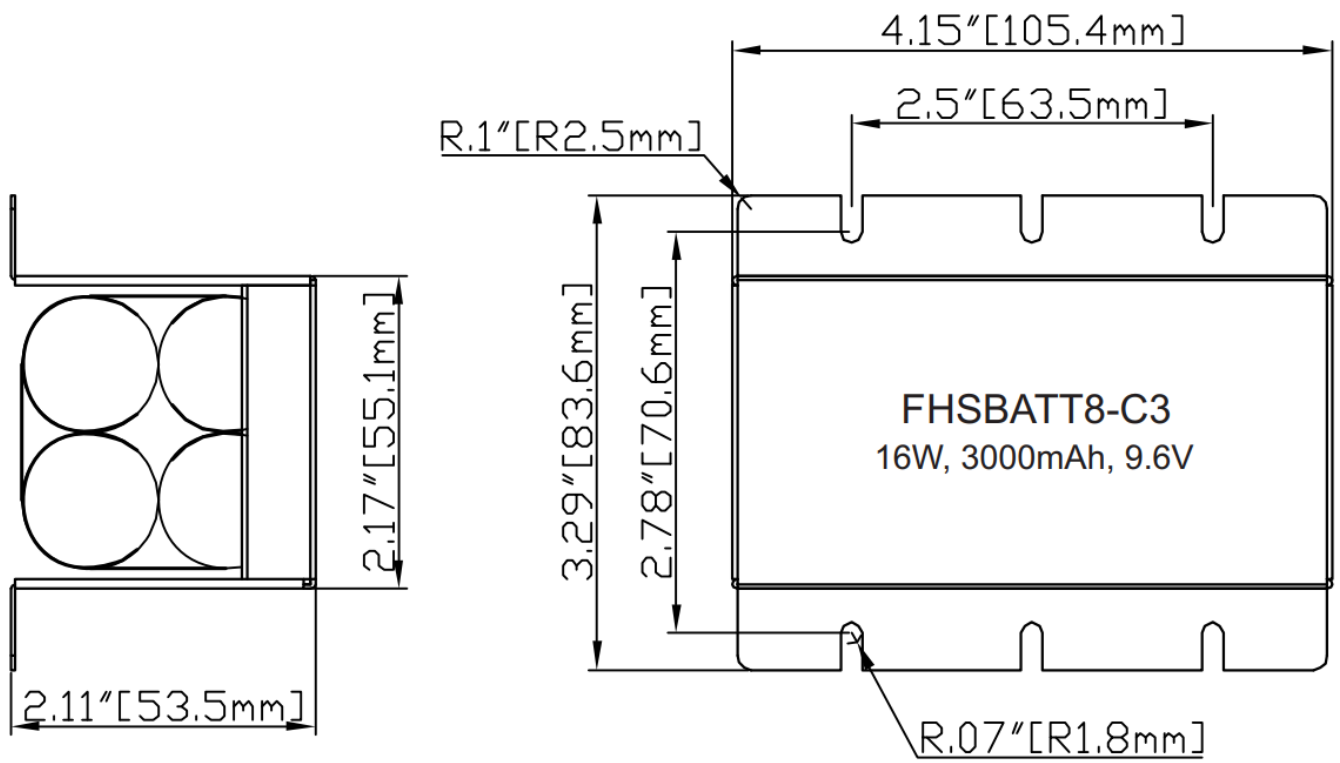
Battery Dimensions



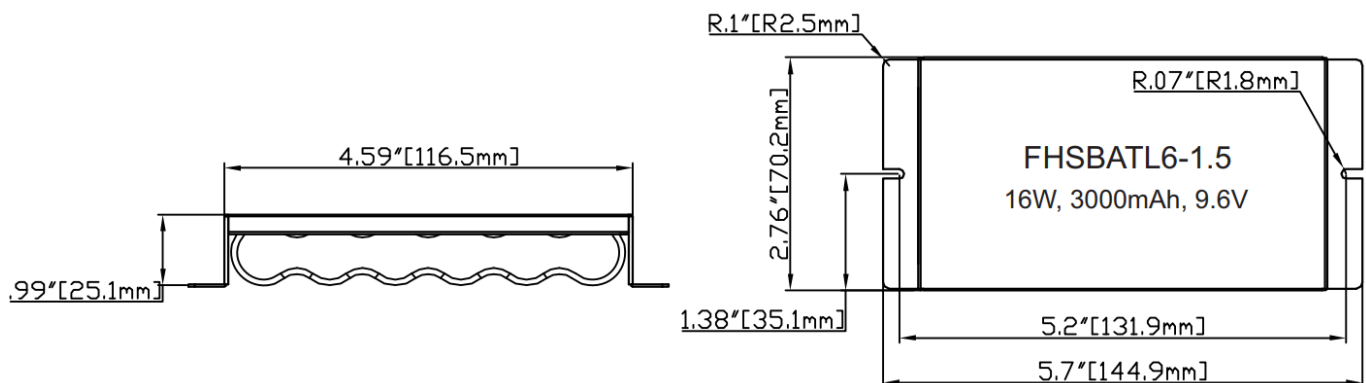
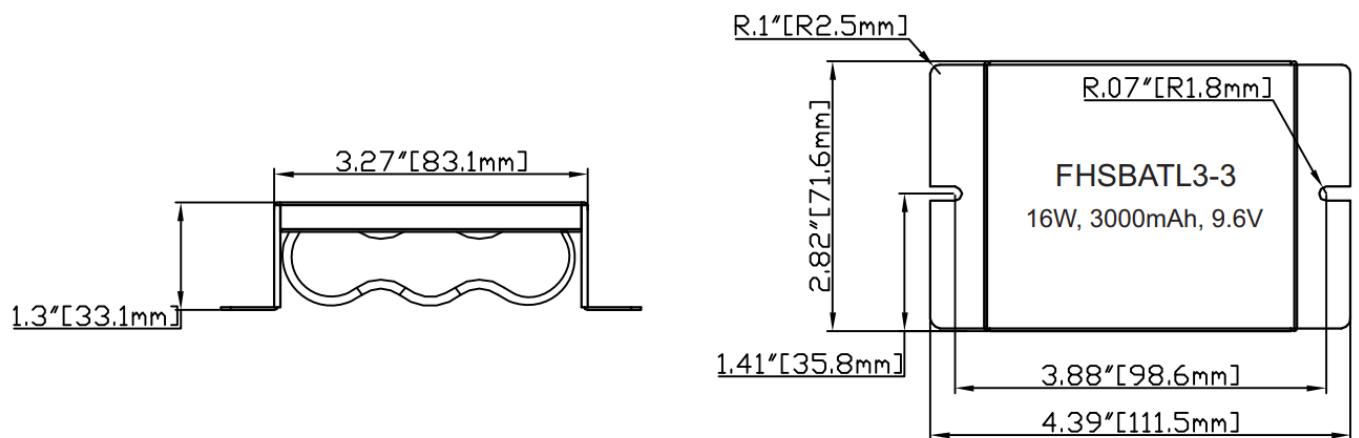
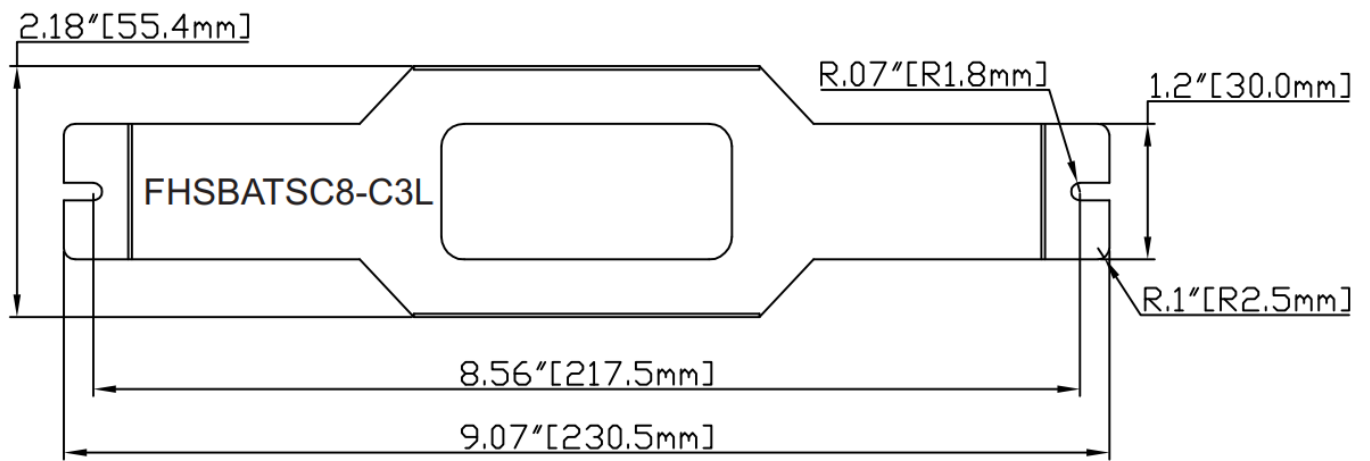




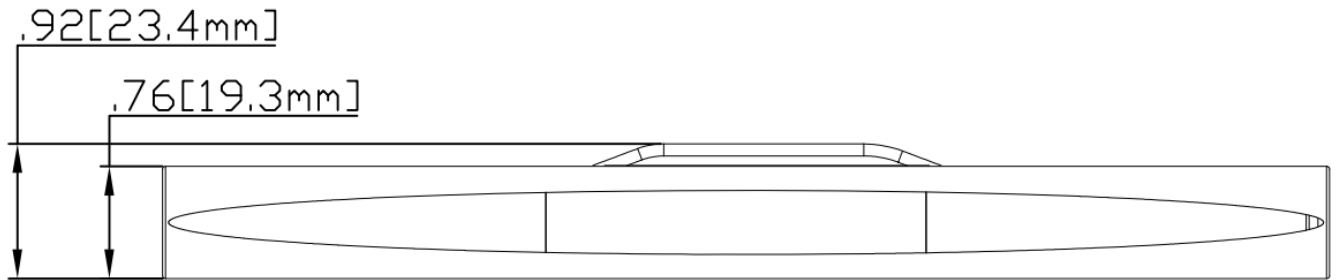
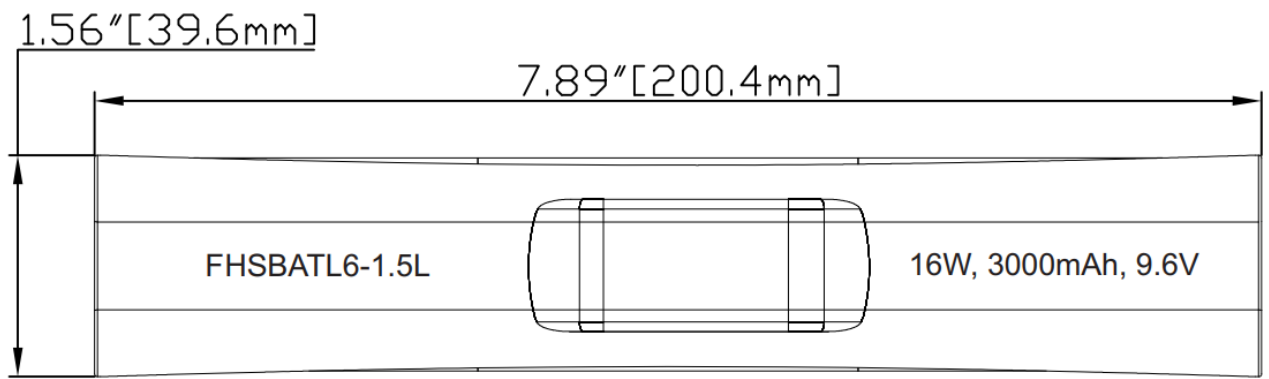




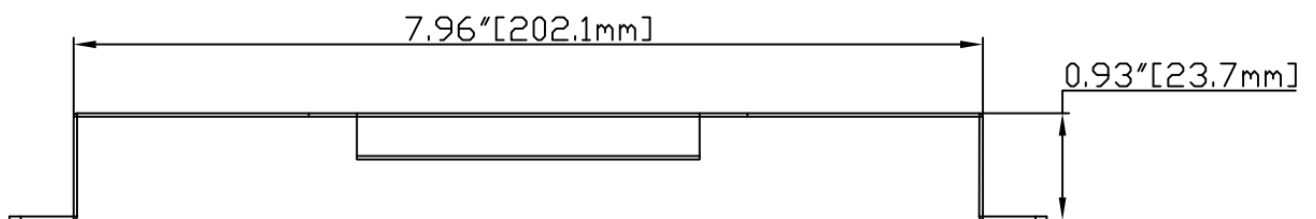
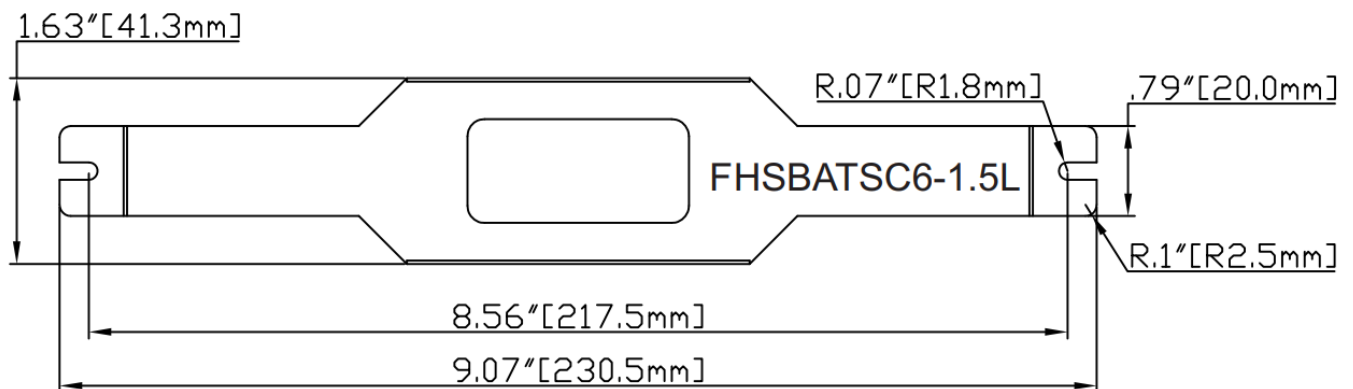
**Mounting Bracket Dimensions (Optional)**

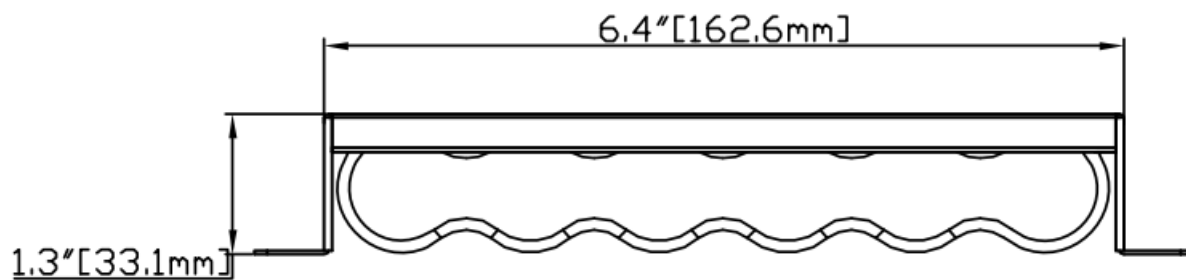
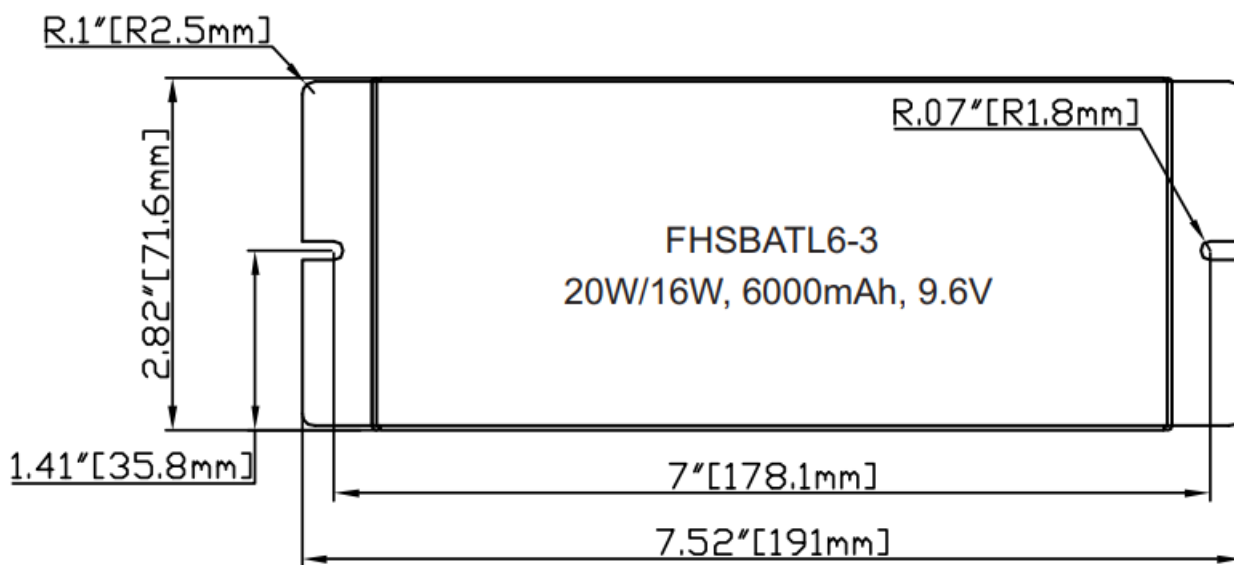
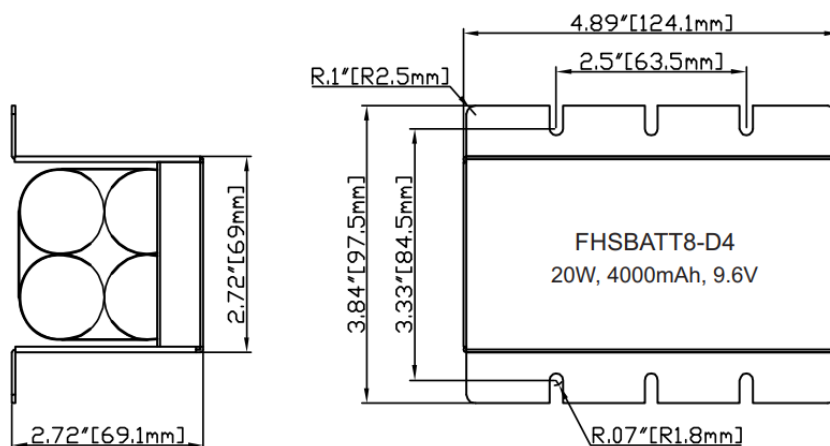
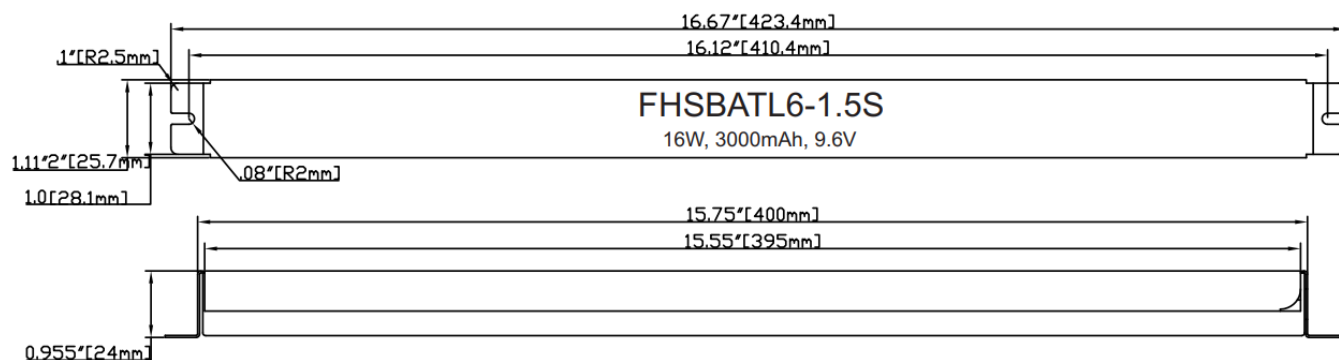


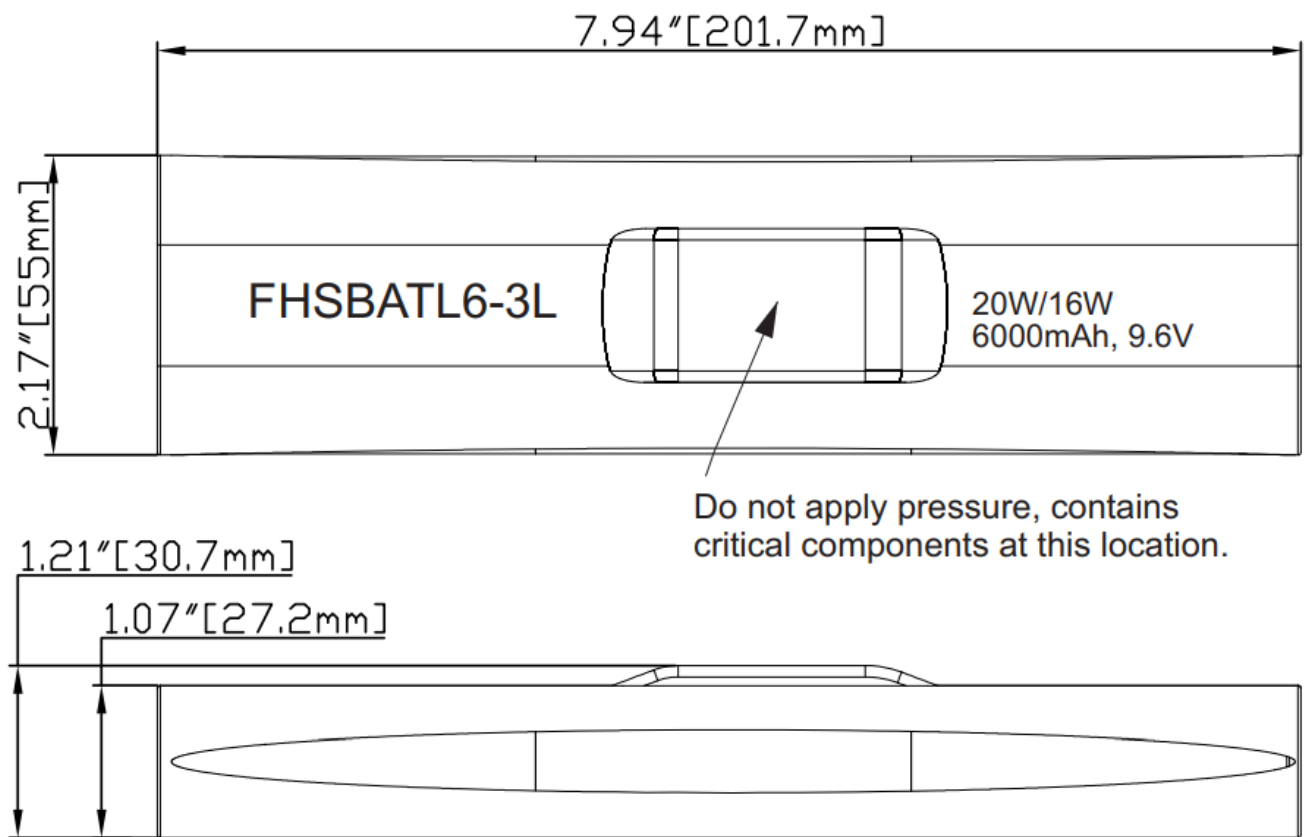
**Battery Dimensions**



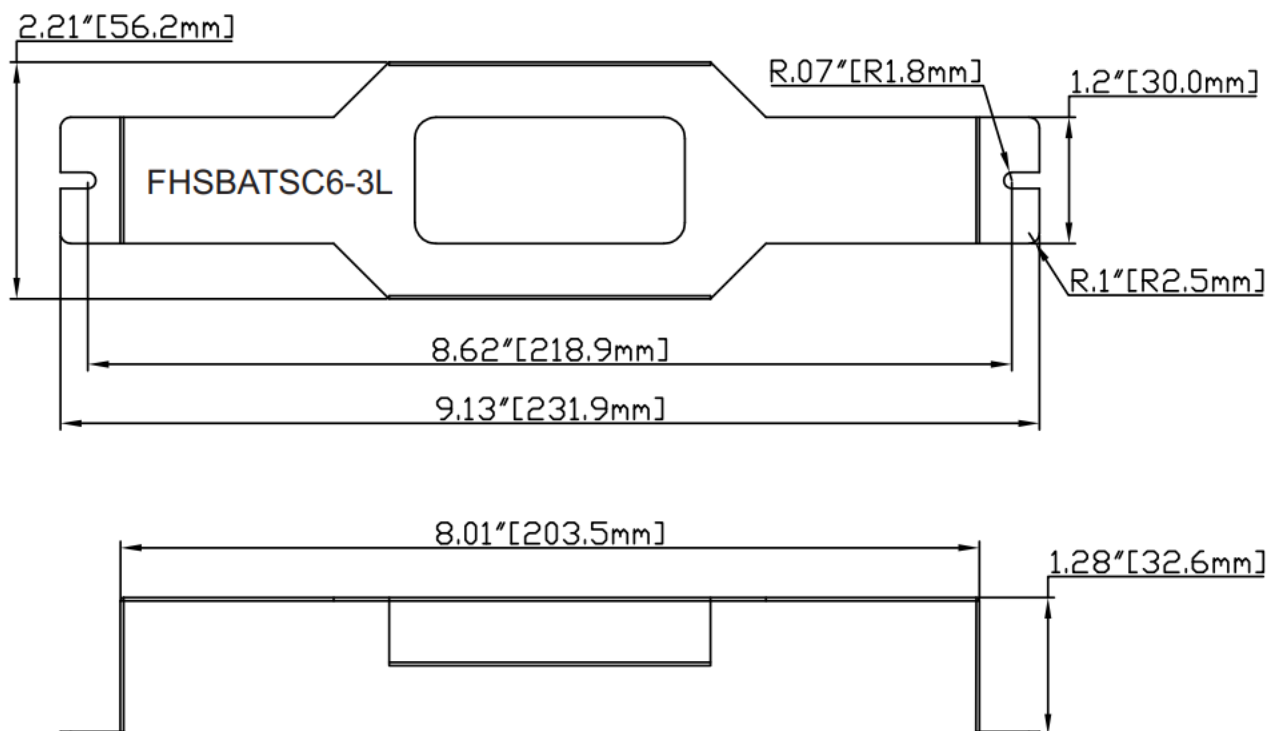
#### Mounting Bracket Dimensions (Optional)







#### Mounting Bracket Dimensions (Optional)



**TEST SWITCH INDICATOR STATUS:**



Indicators Type	LED Indicators Status	EM Driver Status/Mode
Bi-Color Indicator	● Solid Green	System OK/AC OK (Self-diagnostic Enabled or Disabled).
Single Color Indicator	● Solid RED ON	
Bi-Color Indicator	● Flashing Green, 0.1s on/3s off	System OK / EM Mode
Single Color Indicator	● Flashing RED, 0.1s on/3s off	
Bi-Color Indicator	● Slow Flashing Red, 4s on/1s off	Battery not detected, check battery switch or connection.
Single Color Indicator	● Slow Flashing Red, 4s on/1s off	
Bi-Color Indicator	● Flashing Red, 1s on/1s off	Replace battery.
Single Color Indicator	● Flashing Red, 1s on/1s off	
Bi-Color Indicator	● Flashing Green, 2s on/2s off	Self-Diagnostic test underway.
Single Color Indicator	● Flashing Red, 2s on/2s off	
Bi-Color Indicator	● Fast Flashing Red, 0.1s on/0.1s off	Abnormal driver performance, replace driver.
Single Color Indicator	● Fast Flashing Red, 0.1s on/0.1s off	
Bi-Color Indicator	● Very Slow Flashing Red, 1s on/7s off	Over temperature.
Single Color Indicator	● Very Slow Flashing Red, 1s on/7s off	
Bi-Color Indicator	● Very Slow Flashing Red, 4s on/4s off	LED output load is Short/Over Current/Over Voltage/Open Circuit in EM Mode.
Single Color Indicator	● Very Slow Flashing Red, 4s on/4s off	

## TEST SWITCH OPERATIONS:

1. EM Test: Press and hold test button (>1s) to enter EM mode for testing in normal AC powered .
2. Manual Self-Diagnostic: After charging twelve (12) hours or battery fully charged, quickly press the test button three times within two seconds to force the controller to enter a Self-Diagnostic cycle. To quit the self-diagnostic cycle after engaged press and hold the test button for ten seconds.
3. Enable/Disable Auto Self-Diagnostic: Press and hold the test button for one second, then release and quickly press the test button two times, then release and press and hold the test button for two seconds. When properly executed the indicator on the test button will display the appropriate color for the Enable/Disable status. A flashing of 2.5s ON/0.5s OFF means “Enabled”, while a flashing of 0.5s ON/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 Indicator Status Table).
4. Enable/Disable Self-Diagnostic Status: Fast click 2 times within 2s to query the Self-Diagnostic Enabled/Disabled status. The indicator would blink for current status for 3 cycles. 2.5s ON/0.5s OFF stands for Enabled. 0.5s ON/2.5s OFF stands for Disabled.
5. Exit Output Short Circuit/No Load/Over Voltage Protection: When the test button flashes red for 4s on/4s off, press and hold the test switch for 10 seconds.
6. Turn off EM output: Press and hold the test switch for 10 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. This applies to products with Serial Number starting with Date code: S12016 or higher.

### Programming:


Unless otherwise programmed the output will self-program to the rated output of the harness. This driver can be programmed using Fulham SmartSet TPSB-100 or TPSP-100E. Programming features include the following:

- Enable/Disable Self-Diagnostic
- Output EM Current : 0mA,100-700mA

\* When programmed to 0mA; output current defaults to rating of output harness(Refer to accessory harness chart).

Fulham extends a limited warranty to the original purchaser or first user for a period of 5 years from the date of manufacture when properly installed and operated under normal conditions of use. For complete terms and conditions, please refer to the Warranty Center at [www.fulham.com](http://www.fulham.com). Specifications subject to change without notice.

### Documents / Resources

	<a href="#">Fulham FHS2-UNV-36L HotSpot2 LED Emergency System</a> [pdf] Instruction Manual FHS2-UNV-36L, HotSpot2 LED Emergency System, FHS2-UNV-36L HotSpot2 LED Emergency System, LED Emergency System, Emergency System
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### References

- [Fulham: Lighting Solutions | LED Drivers | Ballasts | Emergency | Modules](#)