

# VOLTA

 Greenshine

OUTDOOR SOLAR LIGHTING SOLUTIONS



## Light Fixture (GS-LED-NSBP)

Luminaire Input Voltage	DC 12V   24V
Power Consumption	30W   40W
Lumen	3929   5288 lumens
Color Temperature	3000-4000 K
IES Lighting Type	Type II   III   V
Material	Die-cast aluminum



## Solar Panel (8 Units)

**40W**

Rating Power	40 W
Maximum Power Voltage	18.92 V
Maximum Power Current	2.12 A
Open Circuit Voltage	23.65 V
Short Circuit Current	2.26 A
Size	65" x 8"
Weight	11 lb

## Battery (2 Units)

Battery Type	GEL Deep Cycle Lead-Acid
Operating Voltage	12 V
Capacity	150 Ah at 20 hr-rate to 1.75 V per cell at 77°F
Dimensions	16(L)×7(W)×9.2(H) (in)
Expected Life	5 ~ 7 years

## Solar Charger

Operating Voltage	12 V/24 V auto recognition
Max. Charge / Load Current	5 A/ 10 A/ 20 A (different models)
Night / Day Detection	2.5 V – 10 V
IP Class	IP68

## Pole

Height	20 ft
Diameter	7 7/8" at the bottom, 7 7/8" at the top
Thickness	5/32"
Material	Galvanized Steel
Finishing	Powder Coating



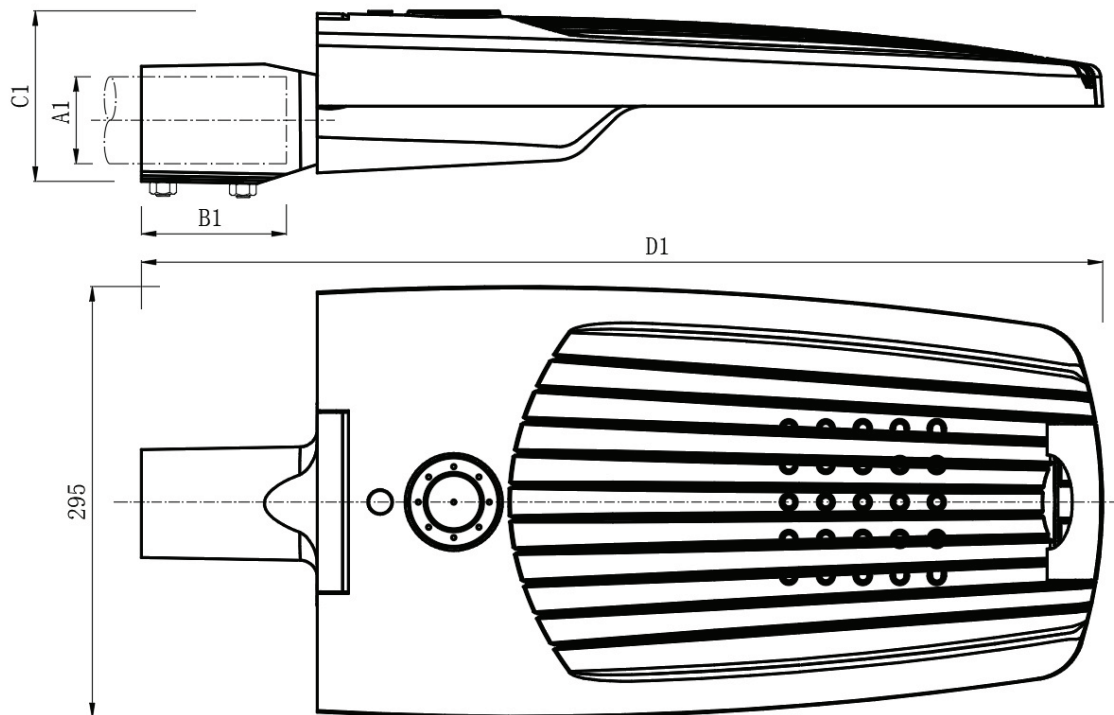


## SPECIFICATIONS

Luminaire Input Voltage	DC 12V   24V
Power Consumption	30W   40W
Lumen Output	3929   5288 lumens
Color Temperature	3000-4000 K
IES Lighting Type	Type II   III   V
Material	High pressure die-cast aluminum
Lens	5mm toughened glass, optical grade PMMA
IP Class	IP 65
Insulation	Class I
Operating Temperature	-30°C ~+50°C / -22°F ~+122°F
CRI	≥70

**Weight:** 8.3 kg | 18.3 lb

## DIMENSIONS



A1	B1	C1	D1
φ60	90	119	663





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# VOLTA SERIES

## Solar Powered LED Lighting System

### OVERVIEW

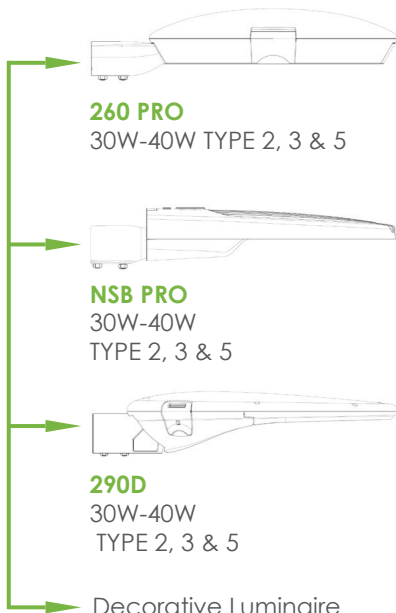
The Volta Series features customizable outdoor solar light solutions depending on your specific application and an adjustable mounting bracket. Each system is completely customized according to your location, project and lighting requirements; also systems can be configured to run throughout the night or have them to save energy when full light is not required and with the option for a motion detection.

### PART NUMBER

SYSTEM	LUM. QTY.	LUMINAIRE	OPTICS	LOAD	COLOR TEMP.	DRIVER	ARM	BOX QTY.
<b>VOLTA</b>	1 Single 2 Dual	<b>260P</b> <b>290D</b> <b>NSBP</b>	<b>T2</b> Type 2 <b>T3</b> Type 3 <b>T5</b> Type 5	<b>30W</b> <b>40W</b> <b>##</b>	<b>3K</b> 3000 Kelvin <b>4K</b> 4000 Kelvin <b>5K</b> 5000 Kelvin	<b>350MA</b> <b>525MA</b> <b>700MA</b> <b>950MA</b>	<b>A3</b> 3' Arm <b>A0</b> No Arm <b>A#</b> Custom	<b>1</b> 1 Box <b>2</b> 2 Boxes
BATTERY QTY.	BATT. MNT.	BATTERY	PV QTY.	PV WATT	POLE HEIGHT	COLOR	OPERATING PROFILE	
<b>1B</b> 1 Battery <b>2B</b> 2 Batteries <b>3B</b> 3 Batteries <b>4B</b> 4 Batteries	<b>BB</b> Buried Battery	<b>120</b> 120 amp <b>150</b> 150 amp <b>200</b> 200 amp	<b>8</b> Eight <b>12</b> Twelve <b>##</b> Custom	<b>40W</b>	<b>P20</b> 20ft <b>P#</b> Custom	<b>BK</b> Black <b>C#</b> Custom	<b>5/40 DIM</b> <b>6/40 DIM</b> <b>7/40 DIM</b> <b>8/40 DIM</b> <b>D2D</b>	

### FIXTURES

### SPECIFICATIONS



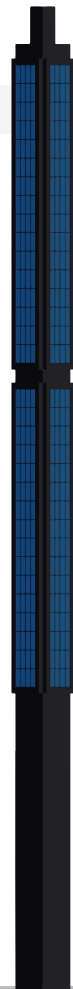
**260 PRO**  
30W-40W TYPE 2, 3 & 5

**NSB PRO**  
30W-40W  
TYPE 2, 3 & 5

**290D**  
30W-40W  
TYPE 2, 3 & 5

Decorative Luminaire Series available. See Decorative Data-sheets for more info.

- ▶ **Luminaire**
  - 60,000 hours.
  - 3000K - 5000K available with standard 4000K.
  - Turtle Friendly compliant fixtures available.
- ▶ **Panel Mount**
  - Rated to 145mph. 185mph available.
- ▶ **Solar Panel**
  - Mono-crystalline Photovoltaic solar panels.
- ▶ **Battery Enclosure**
  - Vented, corrosion resistant stainless steel battery box.
  - Holds battery and controller.
  - Includes lock.
- ▶ **GEL-Type Battery**
  - Greenshine Battery - Maintenance-free 99% recyclable.
  - 120Ah - 200Ah seal GEL Cell batteries.
- ▶ **Smart Controller**
  - Controller - Solar Charge controller that monitors and regulates charging and discharging of batteries. Also, programable to specific operating profile for project.
- ▶ **5 Year Limited Warranty**
  - Includes 10 year warranty on solar panel. 5 and 10 Year Full Warranty available.





# GREENSHINE SOLAR PANEL

Solar Powered LED Lighting System



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## OVERVIEW

- Volta solar wrapped pole consists of 8 x 40W solar panel. The solar panel back frame is anodized with black color finish, ideal for all kinds of outdoor weather condition use.
- Each solar panel is with MC4 type connectors, easy to connect.

Rating Power	40W
Product Tolerance	± 3%
Maximum Power Voltage	18.92V
Maximum Power Current	2.12A
Open Circuit Voltage	23.65 V
Short Circuit Current	2.26 A
Frame	Anodized aluminum, 4mm thickness
Dimensions	1650mm x 200mm 65" x 8" 5kg   11lb
Test Temperature	25°C   77°F, 1000w/m <sup>2</sup> , Air Mass 1.5
Junction Box / Wiring	IP65 Junction box with 900mm cable with MC4 connectors



# GREENSHINE GEL-TYPE BATTERY

Solar Powered LED Lighting System



Greenshine

## OVERVIEW

GEL deep cycle battery with a 12 years floating design life is especially designed for frequent cyclic discharge under extreme temperature.



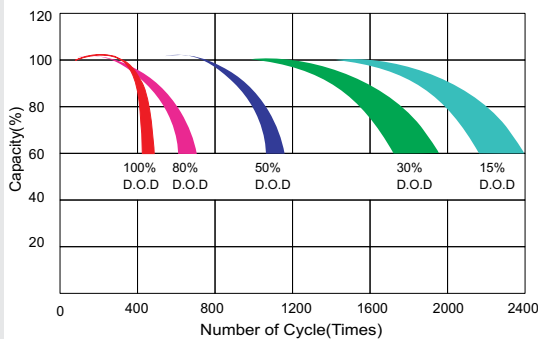
	GS-GEL-H120	GS-GEL-H150	GS-GEL-H200
Cells per unit	6	6	6
Voltage per unit	12V	12V	12V
Capacity	120Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F	150Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F	200Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F
Weight	38kg / 84lb	46kg / 100lb	59.2kg / 131.5lb
Dimensions L x W x H	406 x 173 x 233(mm) 16" x 7" x 9.2"	483 x 170 x 240(mm) 19" x 6.7" x 9.5"	522 x 240 x 218(mm) 20.5" x 9.44" x 8.7"
Max Discharge Current	1200A (5 Sec)	1500A (5 Sec)	2000A (5 Sec) <sup>2</sup>
Operating Temp. range	-40°C~60°C   -40°F~140°F		
Flot Charging Voltage	13.6 to 13.8 VDC / unit average at 25°C / 77°F		
Recommended max. charging current	24A	30A	40A
Self-discharge	Valve Regulated Lead Acid can be stored for more than 6 months at 25°C/77°F. Self-discharge ratio less than 3% per month at 25°C/77°F. Please charge batteries before using.		
Equalization and cycle service	14.6 to 14.8 VDC / unit average at 25°C / 77°F		
Terminal type	5ft cooper wire leads from the battery case		



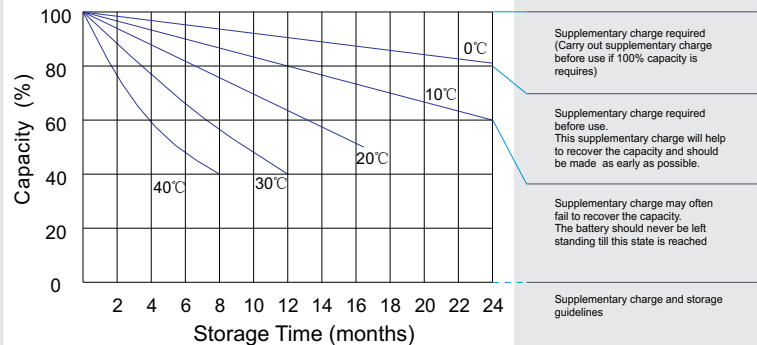
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# GREENSHINE GEL-TYPE BATTERY

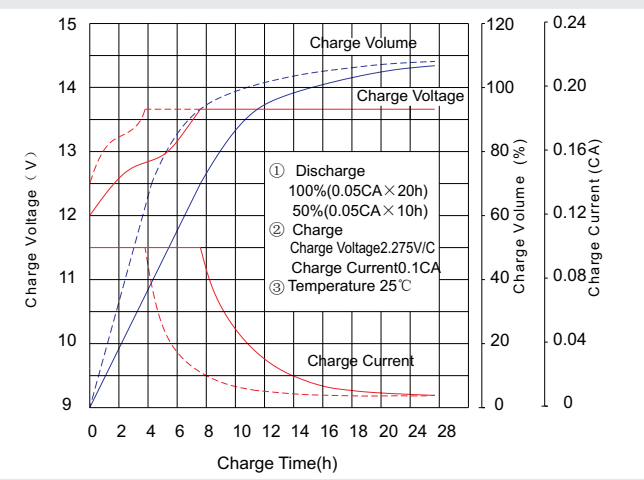
Life characteristics of cyclic use



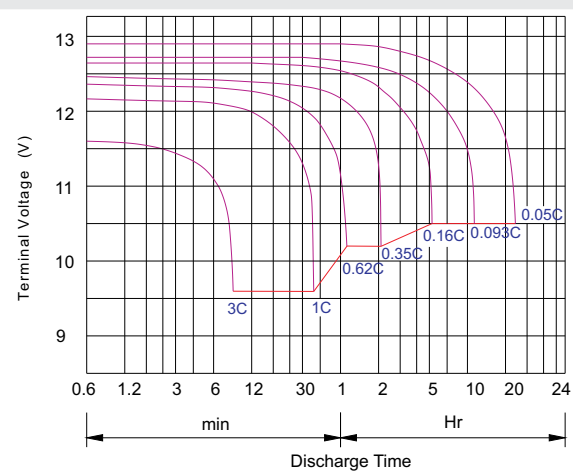
Storage characteristic



Charge characteristic curve for cyclic use



Discharge characteristic curve



## Capacity Factors With Different Temperature

Battery Type		-20°C	-10°C	0°C	5°C	10°C	20°C	25°C	30°C	40°C	45°C
GEL Battery	6V&12V	50%	70%	83%	85%	90%	98%	100%	102%	104%	105%
	2V	60%	75%	85%	88%	92%	99%	100%	103%	105%	106%
AGM Battery	6V&12V	46%	66%	76%	83%	90%	98%	100%	103%	107%	109%
	2V	55%	70%	80%	85%	92%	99%	100%	104%	108%	110%

## Discharge Current VS. Discharge Voltage

Final Discharge Voltage V /cell	1.75V	1.70V	1.60V
Discharge Current (A)	(A) ≤ 0.2C	0.2C < (A) < 1.0C	(A) ≥ 1.0C

**Charge the batteries at least once every six months, if they are stored at 25°C.**

Charging Method:

Constant Voltage	-0.2Cx2h+14.4-14.7Vx24h, Max. Current 0.2C
Constant Current	-0.2Cx2h+0.1Cx12h
Fast	-0.2Cx2h+0.2Cx6h

Bolt	M5	M6	M8
Terminal	F3 F4 F13 F18 T25 T26	F8 F11 F12-1 F15	F5 F9 F10 F12 F14 F16
Torque	6-7N-m	8-10N-m	10-12N-m

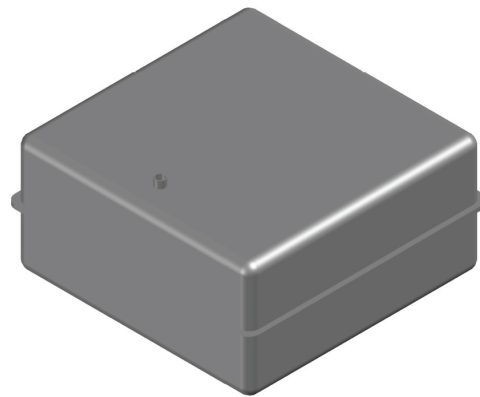
## Maintenance & Cautions

Cycle service
※ Avoid battery over discharge, especially battery series connection use.
※ Charged with recommend voltage, ensure battery can be full recharged.
In general, recharge capacity should be 1.1-1.15 times discharge capacity.
※ Effect of temperature on cycle charge voltage: -4mV/°C/Cell.
※ There are a number of factors that will affect the length of cyclic service.
The most significant are depth of discharge, ambient temperature, discharge rate, and the manner in which the battery is recharged.
Generally speaking, the most important factors is depth of discharge.

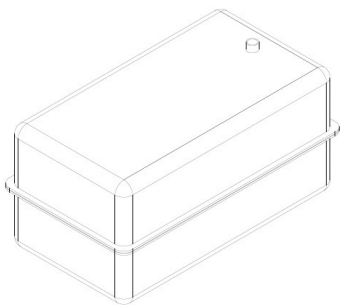
## BURIED BATTERY ENCLOSURE

### OVERVIEW

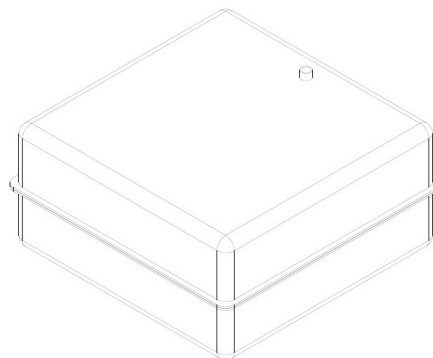
- Housing - Made of 201 stainless steel with powder coating finish unit that holds battery and smart controller. Vented to allow air circulation around batteries. Easy access through hinged/removable front cover to allow quick servicing or battery replacement. Maintenance-free 99% recyclable.
- Placement - Buried Battery Box.
- Battery - Our battery enclosures are designed to fit our 80Ah, 120Ah, 150Ah and 200Ah GEL TYPE batteries.
- Five Year System Warranty - Includes five year limited warranty on batteries.
- Controller - Mounted inside of hinged battery enclosure for ease of maintenance.
- The Battery Box is a stainless steel enclosure that has a lock for additional security.



TYPE	# OF BATTERIES	DIMENSIONS: L x W x D (A x B x C)	WEIGHT	EFFECTIVE PROJECTED AREA (EPA)
1200	1 X 200AH	1' x 1' x 2' (ft) 30.5 x 30.5 x 61 (cm)	30 lb 13.6 kg	2 sq ft 0.319 m2
2200	2 X 200AH	1' x 2' x 2' (ft) 30.5 x 61 x 61 (cm)	35 lb 15.8 kg	4 sq ft 0.336 m2



1 X 200AH



2 X 200AH

# GREENSHINE CONTROLLER

## Solar Powered LED Lighting System



Greenshine

### FEATURES

- Corrosion-proof epoxy-encapsulated PCB (IP68)
- Four-stage battery charging (main, float, boost, equalization)
- Temperature compensated
- Automatic system voltage recognition (12V/24V)
- Customized by Greenshine to fit specific needs of clients
- Easy to install

### SPECIFICATIONS

System Voltage

Max. charge / load current

#### Deep discharge protection:

Cut-off Voltage

Reconnect Level

Overvoltage Protection

Undervoltage Protection

Max. Panel Voltage

Temperature compensation

(Charge Voltage)

Ambient Temperature

Max. Altitude

Battery Type

#### Adjustment Range:

Evening / Morning Hours

Night / Day Detection

Wire Cross Section

Type of Protection

12V | 24 Auto Recognition

5A | 10A | 20A (Different Models)

11V - 12V | 22V - 24V

12.8V | 25.6V

15.5V | 31.0V

10.5V | 21V

$U_{BATmin} + 30V$  (if module and battery are connected with correct polarity)

-25mV | K at 12V

-50mV | K at 24V

-40°C to +60°C, -40°F to +140°F

4,000m above sea level

Lead acid (GEL, AGM, flooded)

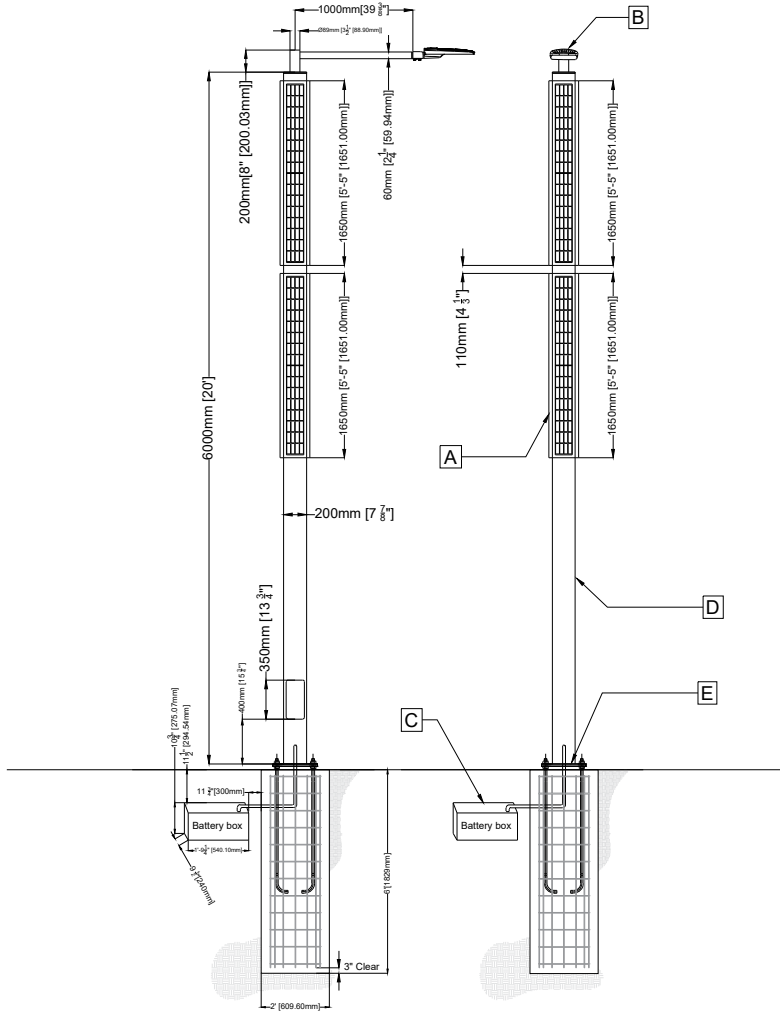
0 - 15h | 0 - 14h

2.5V - 10V

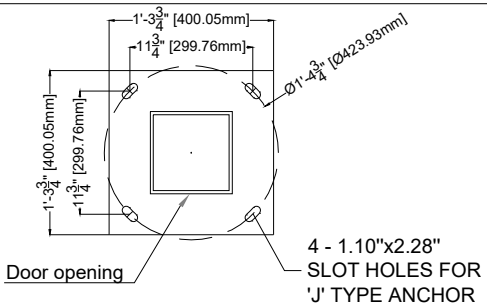
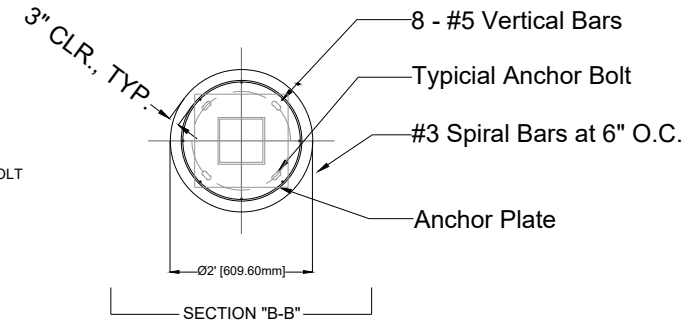
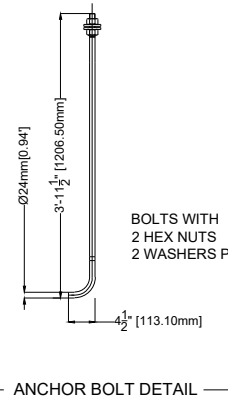
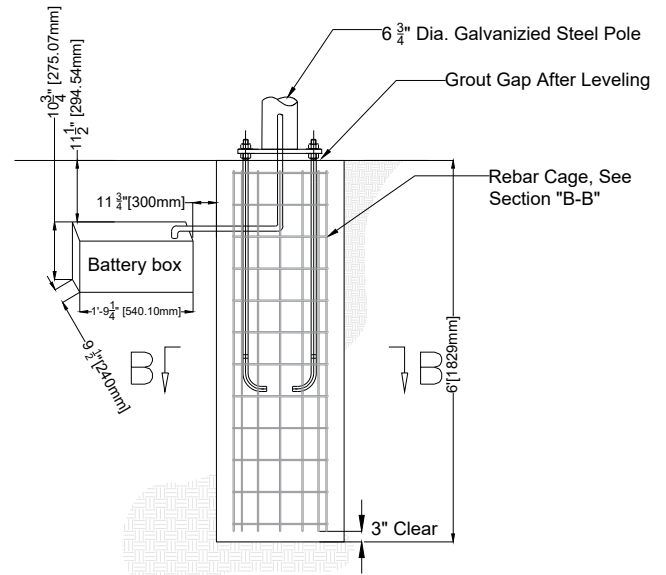
1.5mm<sup>2</sup>/ 1.5mm<sup>2</sup>/ 2.5mm<sup>2</sup>, 15 (AWG)

IP68 (1.5 m, 72 h)





- LEGEND**
- A. Mono-Crystalline Solar Cell - Solar Panel; Orient towards True South per manufacturer's recommendation.
  - B. Luminaire
  - C. Battery Box
  - D. 6 3/4" at the bottom, 4" at the top - Tapered Galvanized Steel Pole Flange
  - E. Flange



- Foundation dimensions shall be confirmed by a local engineering company, Greenshine New energy will not be held liable for any defect of the concrete foundation due to improper sizing.  
 - Drawings are based using hot-dipped galvanized steel, powder coating with a thickness of 0.52"  
 - \*EPA of the system exclude the EPA of the pole, includes the solar panels, brackets, arm and LED fixture and battery box.  
 - \*\*Wind resistance of the poles are indicative and further customization can be provided.

Tilt angle of the solar panels	15	30	45	60
EPA (ft <sup>2</sup> )*				
Wind resistance** (mph)				

System	Volta - NSBP - 8P
By	Luis Jimenez
Date	5/12/2021
Website	www.streetlights-solar.com





**Project 1**



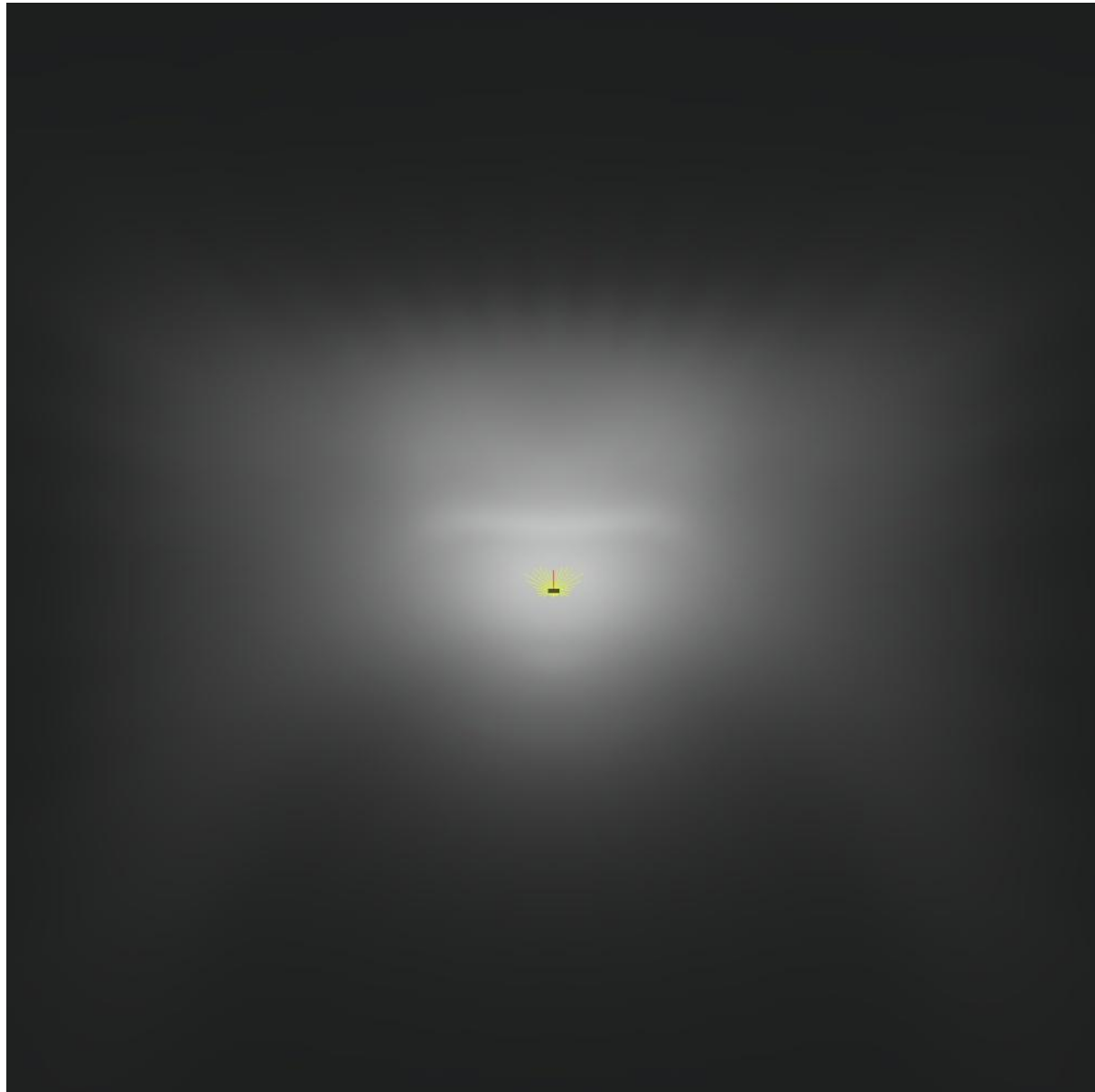
03 / 23 / 2020

Greenshine New Energy

23661 Birtcher Dr  
Lake Forest, CA 92630

Operator Luis Jimenez  
Telephone 949-609-9636 X 104  
Fax  
e-Mail [luis.jimenez@streetlights-solar.com](mailto:luis.jimenez@streetlights-solar.com)

**VOLTA 30W - 20' POLE / 3D Rendering**

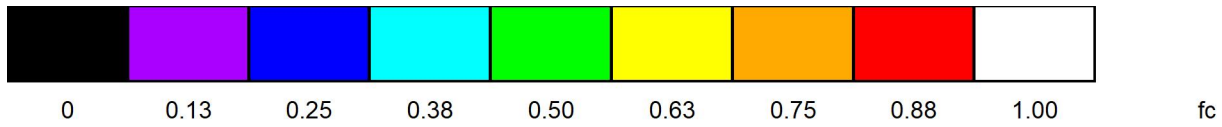
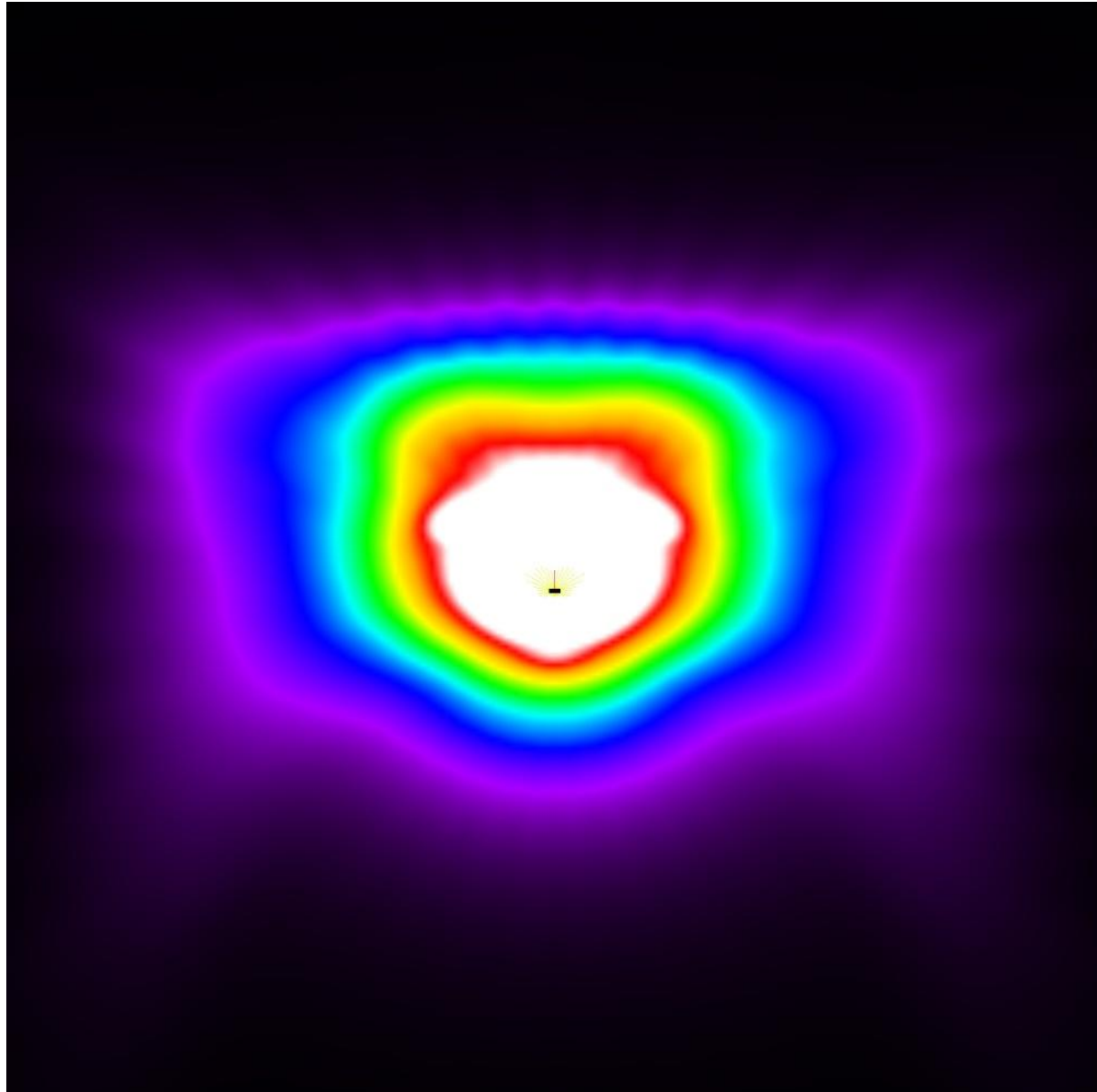




Greenshine New Energy  
23661 Birtcher Dr  
Lake Forest, CA 92630

Operator Luis Jimenez  
Telephone 949-609-9636 X 104  
Fax  
e-Mail luis.jimenez@streetlights-solar.com

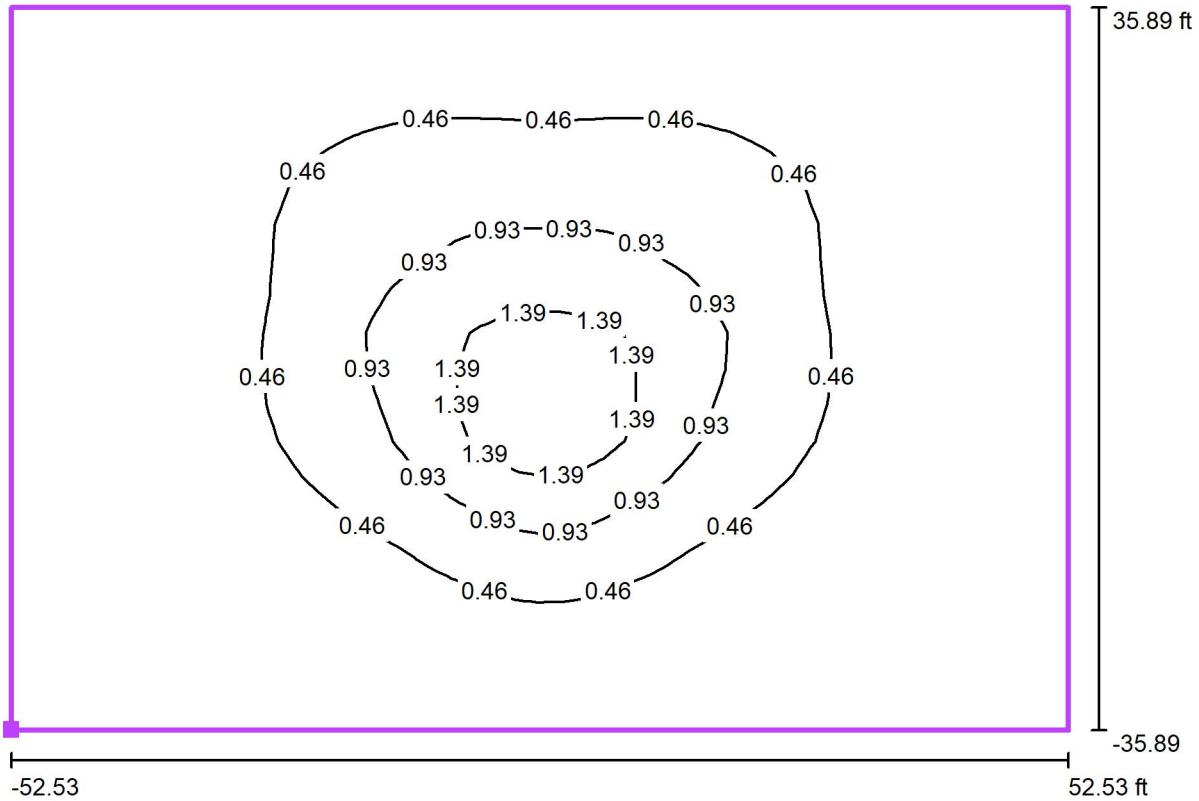
### VOLTA 30W - 20' POLE / False Color Rendering



Greenshine New Energy  
 23661 Birtcher Dr  
 Lake Forest, CA 92630

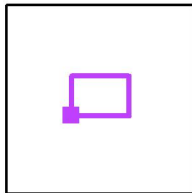
Operator Luis Jimenez  
 Telephone 949-609-9636 X 104  
 Fax  
 e-Mail luis.jimenez@streetlights-solar.com

### VOLTA 30W - 20' POLE / Calculation Grid 1 / Isolines (E, Perpendicular)



Values in Footcandles, Scale 1 : 229

Position of surface in external scene:  
 Marked point: (118.535 ft, 142.055 ft,  
 0.000 ft)



Grid: 50 x 20 Points

$E_{av}$  [fc]  
 0.41

$E_{min}$  [fc]  
 0.05

$E_{max}$  [fc]  
 1.75

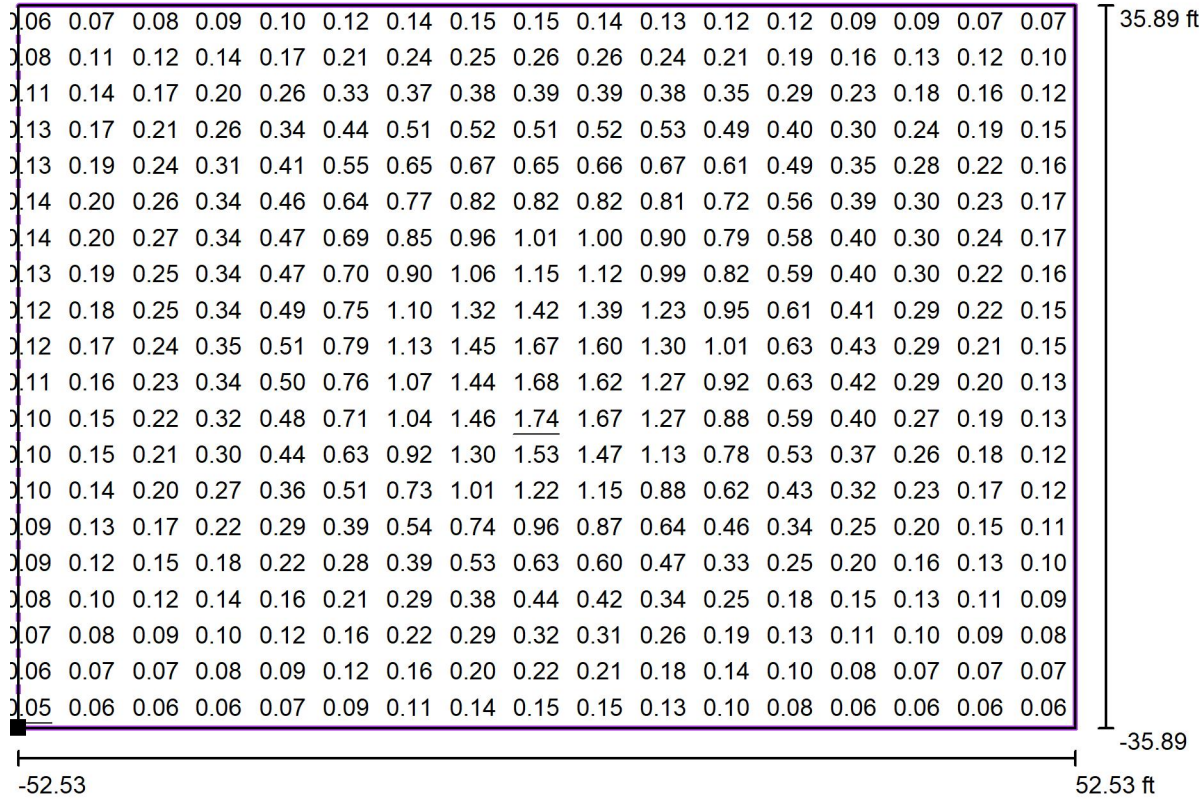
$u_0$   
 0.13

$E_{min} / E_{max}$   
 0.03

Greenshine New Energy  
 23661 Birtcher Dr  
 Lake Forest, CA 92630

Operator Luis Jimenez  
 Telephone 949-609-9636 X 104  
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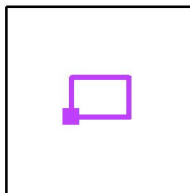
### VOLTA 30W - 20' POLE / Calculation Grid 1 / Value Chart (E, Perpendicular)



Values in Footcandles, Scale 1 : 229

Not all calculated values could be displayed.

Position of surface in external scene:  
 Marked point: (118.535 ft, 142.055 ft,  
 0.000 ft)



Grid: 50 x 20 Points

$E_{av}$ [fc]	$E_{min}$ [fc]	$E_{max}$ [fc]	u0	$E_{min} / E_{max}$
0.41	0.05	1.75	0.13	0.03

# GREENSHINE NEW ENERGY



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## 5 YEAR LIMITED WARRANTY

Greenshine New Energy provides a 5 year limited warranty on its solar lighting system. Greenshine will, at its option, repair or replace any Greenshine system that is defective. Additionally, certain components within Greenshine's system have extended warranty protection against failure as defined below:

COMPONENT	WARRANTY
*Solar Panel	20 Years
Pole and Mounting Brackets	5 Years
LED Light Fixture	5 Years
Electronics (Controller, driver)	5 Years
**Battery	5 Years

\* Greenshine New Energy warrants that the power output of the PV Modules will be at least 80% of the minimum Peak Power rating for 20 years, and warrants that for 20 years beginning on the Warranty Start Date, its photovoltaic modules, shall be free from defects in materials and workmanship under normal application, installation, use and service conditions.

Specific restrictions may apply due to site-specific conditions, please check quote's details for more information.

This warranty does not cover damage or malfunction, as determined by Greenshine service technicians or engineers, due to abuse, misuse, incorrect installation, or accident such as, but not limited to:

- Failure to follow storage, installation, operation, and maintenance instructions provided by Greenshine
- Vandalism, theft, lightning, flood, "Acts of God", and other problems beyond the control of Greenshine
- Unauthorized or improper repairs or adjustments including use of any replacement parts not provided by Greenshine.
- Deployed in an abnormal or inconsistent manner from Greenshine New Energy written and verbal instructions
- Greenshine New Energy liability and Purchaser's remedy under Greenshine New Energy warranty is limited to the replacement of any defective item, but under no circumstance shall exceed the purchase price of the goods. Other warranties may be available for an additional cost with additional coverage and/or labor allowance included.
- Any repair cost not approved by Greenshine New Energy will not be reimbursed.
- Purchaser is responsible for any and all costs involved to service and/or replace defective good including labor, shipping, and rental of equipment.

\*\*Greenshine New Energy provides a limited warranty for battery replacement with the following prorated coverage:

- 0 to 2 years: 100% credit (user pays 0% of the replacement battery price)
- 2 to 3 years: 60% credit (user pays 40% of the replacement battery price)
- 3 to 4 years: 40% credit (user pays 60% of the replacement battery price)
- 4 to 5 years: 20% credit (user pays 80% of the replacement battery price)