



Greenshine



# VOLTA

## NSB PRO

Cost Effective Solar Lighting Solutions



## **VOLTA - General Specifications**

### **Light Fixture** *(GS-LED-NSBP)*

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Luminaire input voltage	DC 12V/24 V
Power consumption	30W / 40W
Lumen	3929 / 5288 lumens
Color temperature	3000-4000-5000K
IES lighting type	Type II   III   V
Material	Die-cast aluminum

### **Solar Panel** *(8 units)*

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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	58.5" x 27"
Weight	39.5 lb

### **Battery** *(1 or 2 units)*

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Battery type	GEL Deep cycle lead-acid
Operating voltage	12 V
Capacity	120 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**

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Operating Voltage	12 V/24 V auto recognition
Max. charge/ current load	5 A/ 10 A/ 20 A (different models)
Night/day detection	2.5 V – 10 V
IP class	IP68

### **Pole**

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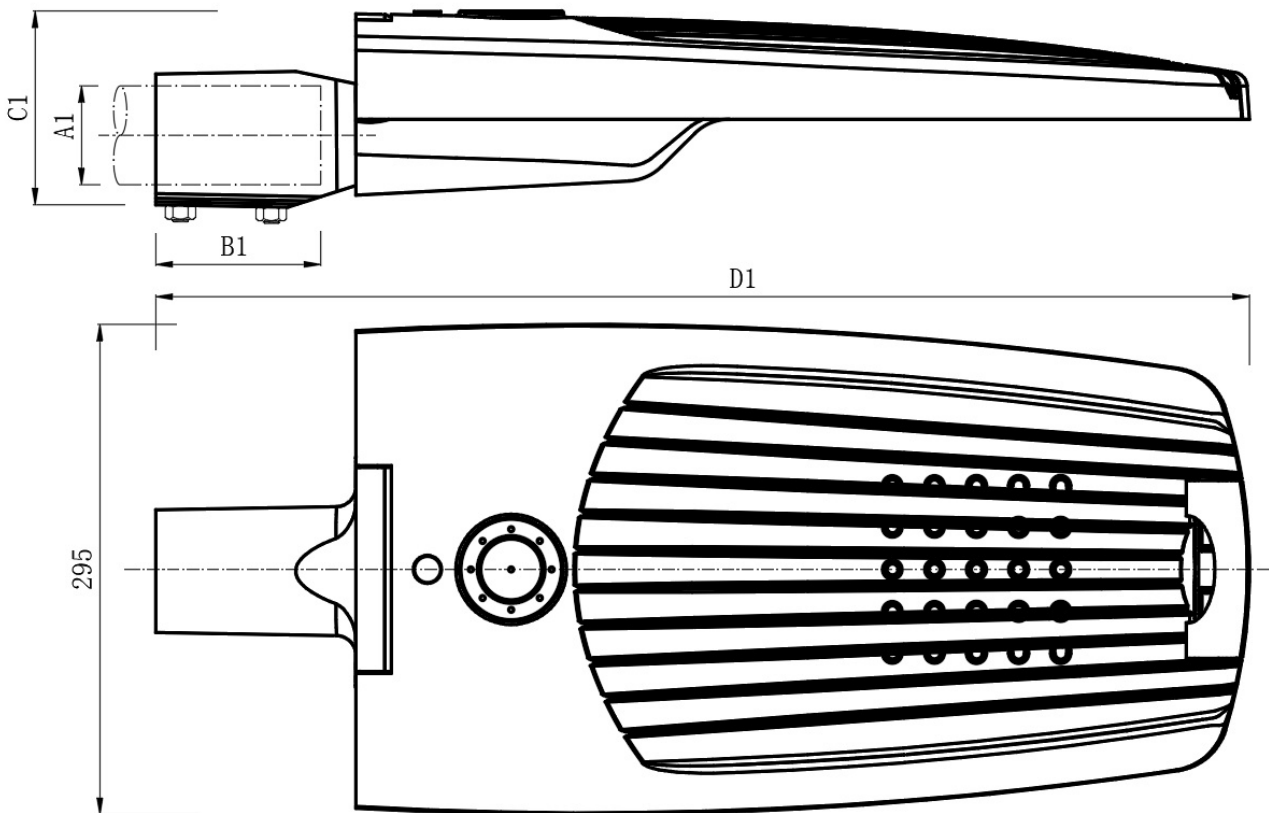
Height	20 ft.
Diameter	6 3/4" at the bottom, 4" at the top
Thickness	5/32"
Material	Galvanized steel
Finishing	Powder coating

## Specifications

Luminaire input voltage	DC 12V/24V
Power consumption	30W / 40W
Lumen output	3929 / 5288 lumens
LED type	CREE XPG, >130 lm/W
Color temperature	3000 - 4000K
IES lighting type	Type II   III   V
Material	High pressure die-cast aluminum
Lens	5mm toughened glass, optical grade PMMA
IP class	IP 66
Insulation	Class I
Operating temperature	-40°C ~+55°C
CRI	≥70

## Weight:

**7.1 kg/ 15.6 lb.**



\* Contact us for more details and options

A1	B1	C1	D1
∅60	90	119	663

# Solar panel



## 8 x 40W

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.

<u>Rating Power</u>	40W
<u>Production Tolerance</u>	± 3%
<u>Maximum Power Voltage</u>	18.92 V
<u>Maximum Power Current</u>	2.12 A
<u>Open Circuit Voltage</u>	23.65 V
<u>Short Circuit Current</u>	2.26 A
<u>Frame</u>	Anodized aluminum, 4mm thickness
<u>Dimensions</u>	1650mm x 200mm x 40mm 65" x 8" x 1.6" 5Kg / 11lb
<u>Test Temperature</u>	25°C / 77°F, 1000w/m <sup>2</sup> , Air Mass 1.5
<u>Junction box / Wiring</u>	IP65 Junction box with 900mm cable with MC4 connectors



## Greenshine Gel-type Battery

(80Ah – 120Ah – 150Ah – 200Ah)

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



	GS-GEL-H80	GS-GEL-H120	GS-GEL-H150	GS-GEL-H200
Cells per unit	6			
Voltage per unit	12V			
Capacity	80Ah @ 20hr-rate to 1.75V per cell @ 25°C/ 77°F	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	26 kg/ 58 lb.	38 kg/ 84 lb.	46 kg/ 100 lb.	59.2 kg/ 131.5 lb.
Dimensions L x W x H	330×172×214(mm) 13''×7''×8.5''	406×173×233 (mm) 16''×7''×9.2''	483×170×240 (mm) 19''×6.7''×9.5''	522×240×218 (mm) 20.5''×9.44''×8.7''
Max discharge current	800A (5 sec)	1200 (5sec)	1500 (5sec)	1500A (5 sec)
Operating temperature range	-40°C~60°C/ -40°F~140°F			
Float charging voltage	13.6 to 13.8 VDC/ unit average at 25°C/ 77°F			
Recommended maximum charging current	16A	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 copper wire leads from the battery case			

# Battery

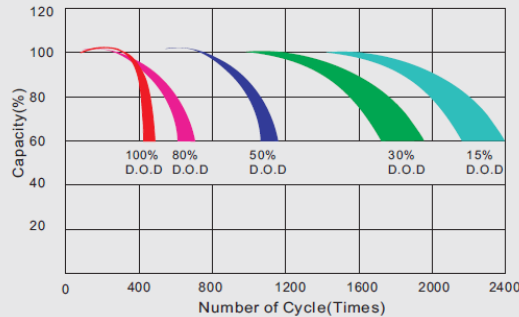


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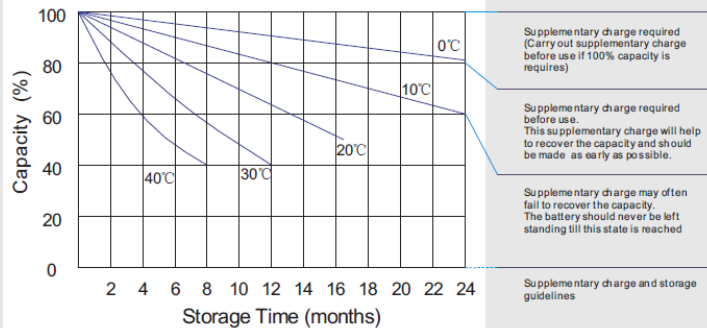
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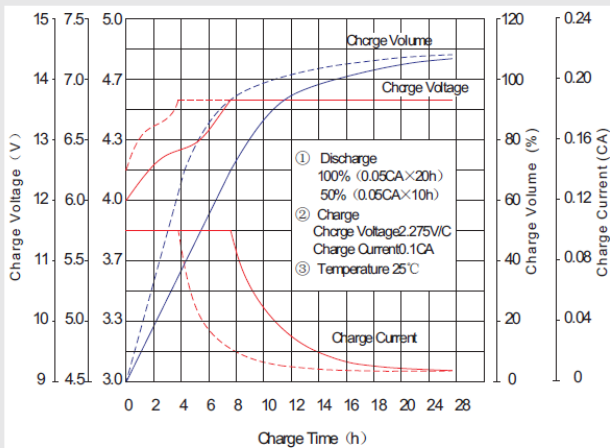
Life characteristics of cyclic use



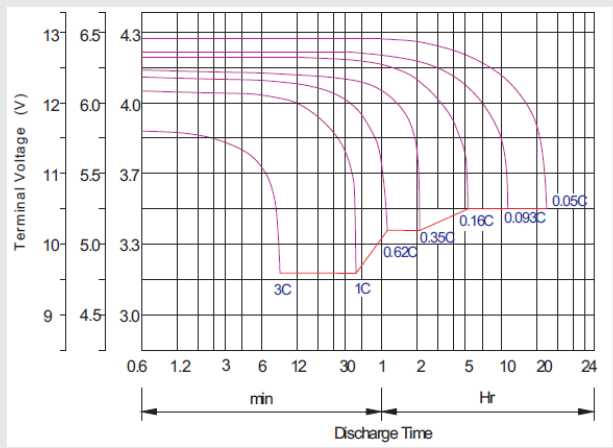
Storage characteristic



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+2.4-2.45V/Cellx24h, Max. Current 0.3CA
Constant Current	-0.2Cx2h+0.1CAx12h
Fast	-0.2Cx2h+0.3CAx4.0h

## 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.

## GS-LED-CTRL

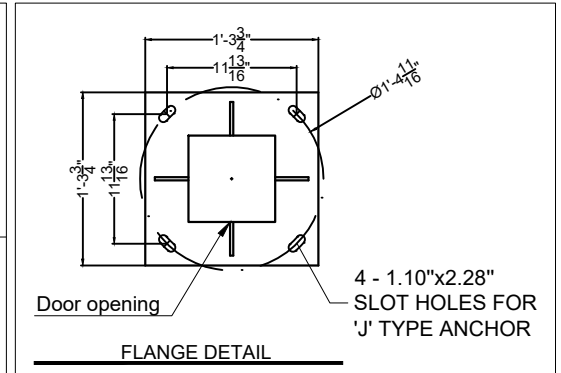
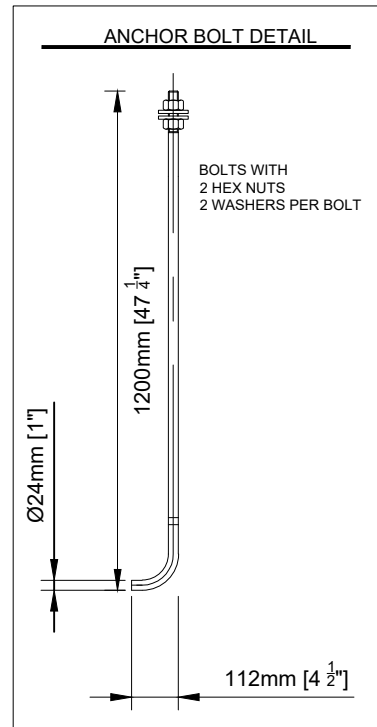
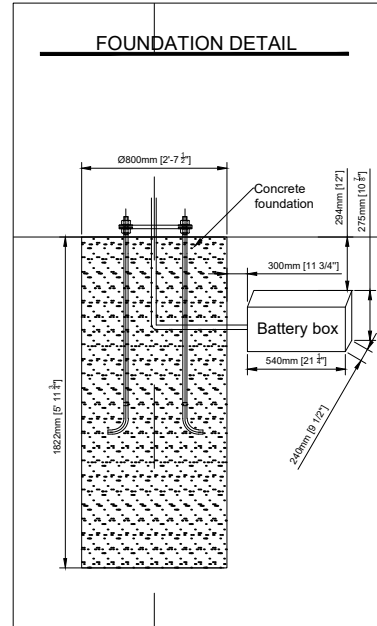
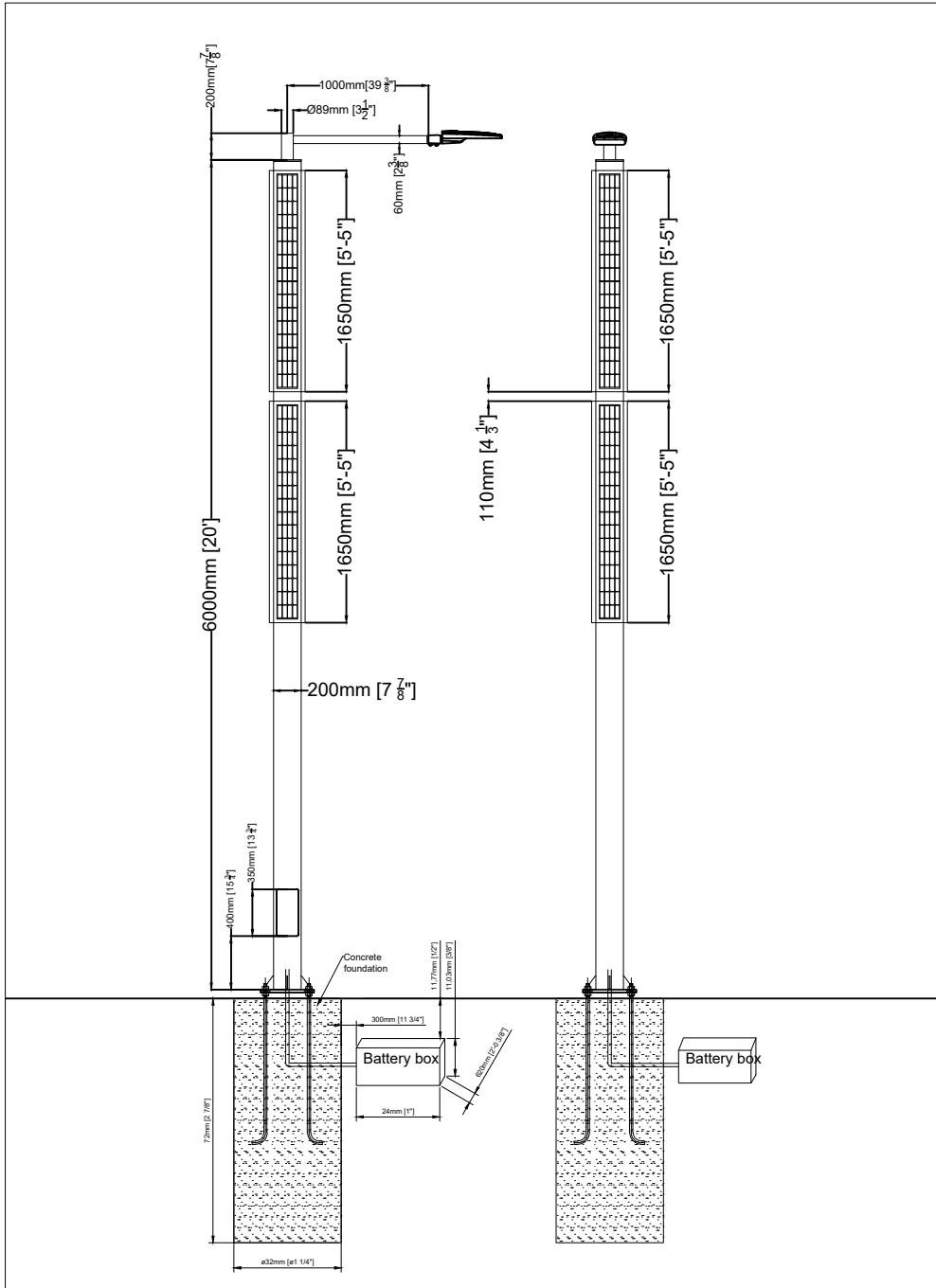
### Features

- 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


### Specification

System voltage	12V/24V auto recognition
Max. charge/ load current	5A/ 10A/ 20A (different models)
Deep discharge protection:	
Cut-off voltage	11V – 12V/ 22V – 24V
Reconnect level	12.8V/25.6V
Oversvoltage protection	15.5V/31.0V
Undervoltage protection	10.5V/21V
Max. panel voltage	$U_{BATmin} + 30V$ (if module and battery are connected with correct polarity)
Temperature compensation (Charge voltage)	-25mV/K at 12V -50mV/K at 24V
Ambient temperature	-40°C to +60°C, -40°F to +140°F
Max. altitude	4,000m above sea level
Battery type	Lead acid (GEL, AGM, flooded)
Adjustment range:	
Evening/morning hours	0 – 15h/ 0 – 14h
Night/day detection	2.5V – 10V
Wire cross section	1.5mm <sup>2</sup> / 1.5mm <sup>2</sup> / 2.5mm <sup>2</sup> , 15 (AWG)
Type of protection	IP68 (1.5 m, 72 h)





- 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 0.015".
- \*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.


Proposal	 <b>Greenshine</b>		
System	GS-LED-NSBP - 20' pole - 8 panels		
By	Luis Jimenez	Date	4/19/2019
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