



Hi-VAWT Technology Corp.

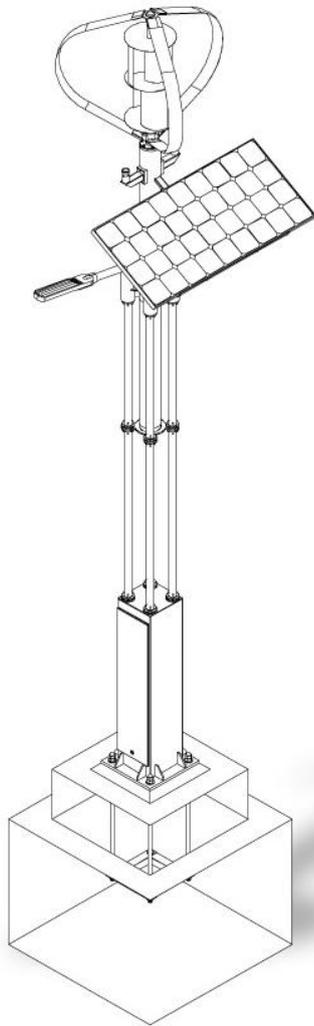
Hybrid Powered Landscape Lights
SL03-13024C-00-5
<Assembly Type>





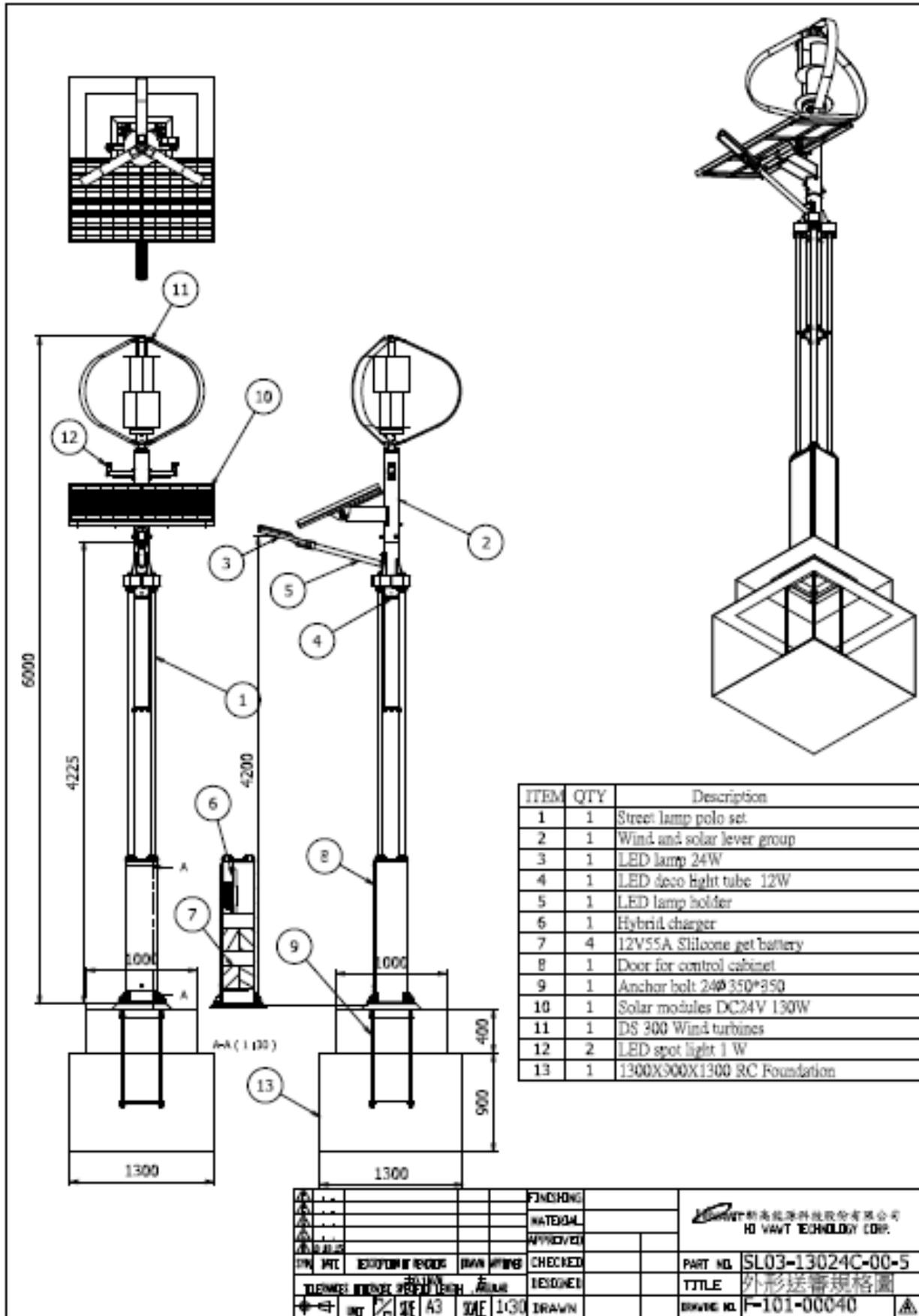
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1. Design Overview

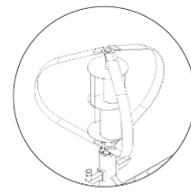


SL03-13024C-00-5

Feature and Description

Feature	Description
Dimensions	Total height of the pole: 6M, Lamp installation height: 4.2M,
Material	Continuous welding steel tube (diameter 48.6mm x 4mm thickness). Completed with galvanized surface treatment for rust-resistant.
Lighting Source	1 x Main Lamp: HIGH POWER white LED light,24W 1 x Deco Light: Colored LED light,12W 2 x Wind Turbine Sport Light: White LED light, 1W
Solar Panel	130W Mono-crystalline
Wind Turbine	DS-300 Vertical Axis Wind Turbine, high efficiency, quiet power generator with low-noise. 300W @13.5 m/s rated wind speed
Battery	4 x Deep Cycle of Gel Battery DC12V/50AH, warranty for one year
Installation	Bolt-mounted

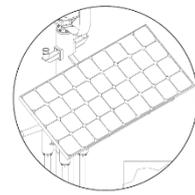
2. Wind Turbine



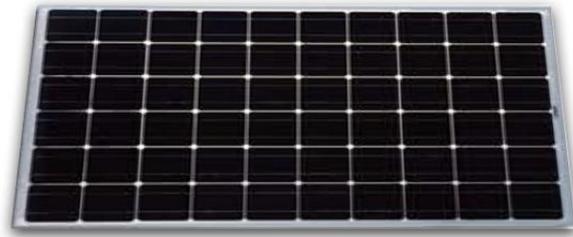
Hi-VAWT DS-300

Specification

General Specifications			
Rated power	300W	Rated wind speed	13.5 m/s
Rated rpm	750 rpm	Cut-in	<3m/s
Cut-out	15m/s	Survival wind	60m/s
Dimensions/Weight			
Rotor Diameter(A)	1.25m		
Total Height (B)	1.06m		
Turbine Weight	25kg		
Wind turbine specification			
External Darrius	3 blades		
Internal Savonius	2 layers		
Blades material	Anodized Aluminum		
Rotor Axis material	Anodized Aluminum		
Generator Specification		Power Curve	
Type	AC, 3phase, Synchronism PMG		
Rated power	300w		
Brake system			
Automatic	Over speed short circuit brake control		
Manual	Electronic Switch Type		
System Operation Conditions			
Ambient Temperature	-10~40°C		
Ambient Humidity	95% max.		

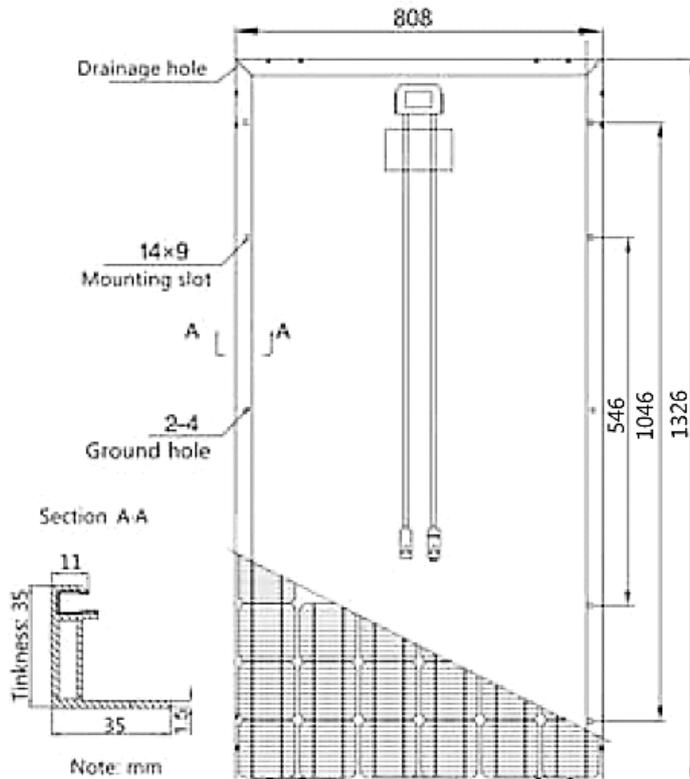


3. Solar Panel



Specification

Item	Description
Model	AD130M5-Aa
Maximum Power at STC (Pmax)	130W
Optimum Operating Voltage (Vmp)	28.71V
Optimum Operating Current (Imp)	4.71A
Open Circuit Voltage (Voc)	34.7V
Short Circuit Current (Isc)	5.2A
Module Efficiency	12.5 %
Operating Temperature	-50 ~ 85 °C
Maximum System Voltage	1000V DC
Maximum Series Fuse Rating	15A
Power Tolerance	0W ~ 5W
Cell Type	Mono-crystalline
Dimensions	1326 x 808 x 35mm
Weight	12.4kg



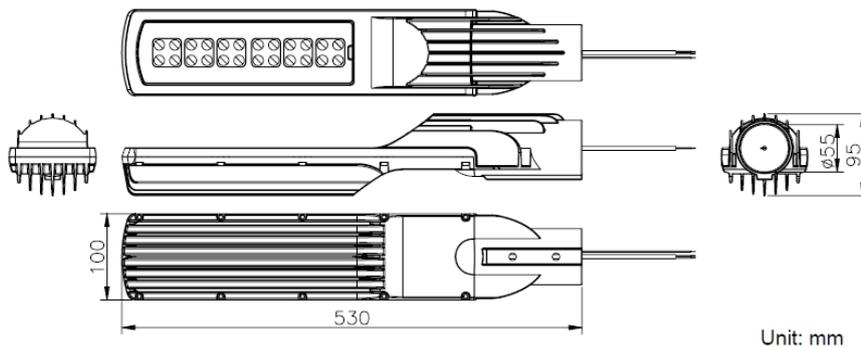
4. LED Lights

24 W Main Lamp



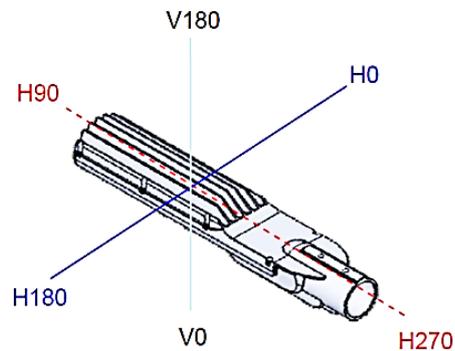
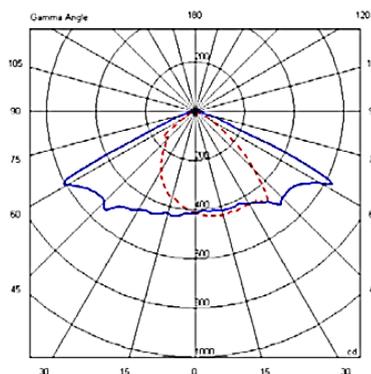
Specification

Item	Description
1. Model	PL52BH
2. LED light source	Nichia 083(BT) x 24 ea
3. Input Voltage	12Vdc or 24 Vdc
4. Total power	24W
5. Output Lumens (Typ.)	1789
6. Operation Temp.	-30°C ~ 50°C
7. Outline dimension	550 x 100 x 95 mm
8. Net Weight	2.1kg
9. IP Rating	IP65°C
10. Certification	CE, UL
Optical Spec.	
Color Temp.	5200±400K
Total lumen	1789 lm



Unit: mm

Beam Pattern



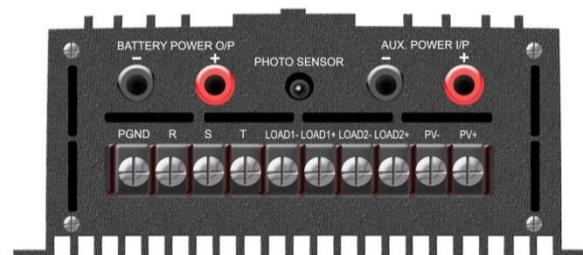
5. Hybrid Charger

WS320

Body Top View



Body Side View

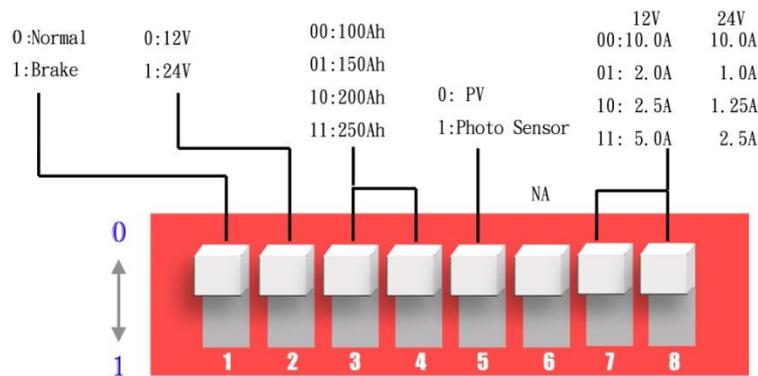


Specification

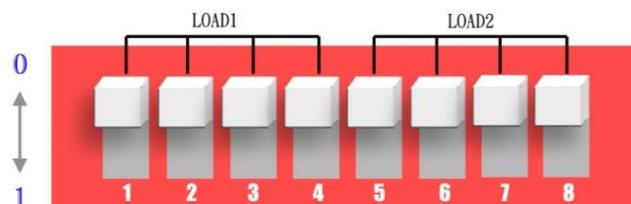
Wind channel specification		
Input format	3 phase sine wave AC	
Voltage(Vw)	0~50Vac	
Current(Iw)	0~17A	
Cut-in Voltage(Vcut-in)	Vw > 4.5Vac (6Vdc)	"WIND"LED lit up
Cut-off Voltage(Vcut-off)	Vw < 3.0Vac (4Vdc)	"WIND"LED off
Cut-out rotor speed(rpmcut-out)	750 rpm	"WIND"LED slow flash
withdrawing power algorithm	MPPT	Transfer efficiency > 92%
PV channel specification		
Input format	DC	
Voltage(Vp)	0~50Vdc	
Current(Ip)	0~10A	
Cut-in Voltage(Vpcut-in)	>Vbat	Higher than Vbat
Withdrawing power algorithm	PWM	Transfer efficiency > 90%
LED indicator		
Battery	Battery capacity status	
Wind	Wind power input status	
PV	PV power input status	
LOAD1	Load1 discharge status	
LOAD2	Load2 discharge status	
Aux.Power	Power source status	
Charge management		
Battery Voltage(Vbat)	12Vdc[24Vdc]	Selectable
Charging voltage(Vchg)	14.4Vdc[28.8Vdc]	Constant Voltage
Over charge detection	Vbat \geq Vchg	Auto brake for 10 min.
Over charge recovery	Vbat \leq 13.8V[27.6V]	Auto brake released
Charge current preset	Ibat=10A/15A/20A/25A	0.1C presetting
Discharge management (Load1 & Load2)		
Voltage	= Vbat	
Current	10A max.	
Time duration for discharge	16 section	Setting by DIP switch
Constant Current Io(constant)	24V: 1A/1.25A/2.5A/10A 12V: 2A/2.5A/5A/10A	For Load2 channel only
Cut-off voltage Vo(cut off)	11.2V[22.4V]	Over discharge protection
Over discharge recovery Vo(recovery)	12V[24v]	Discharge available
Start-up surge current bypass	disable the LVP for 3 sec.	Available for motor driver loading
Sleep voltage Vbat(sleep)	12V: Vbat < 10.5V+/-0.3V 24V: Vbat < 21V+/-0.3V	Battery exhausted protection
Wake up voltage Vbat(wake up)	12V: Vbat > 10.7V+/-0.3V 24V: Vbat > 21.2V+/-0.3V	Could be woke up by wind power
Light detection for discharge	PV panel or Aux. Power	Aux. Power(optional)
Nigh time detection	Vp < 8.5V[17V]	
Day time detection	Vp > 11V[22V]	
Power saving mode	Half power o/p after 4 hrs.	Available for LOAD2

Log data interface		
Monitoring data I/O port	RS232	D-SUB 9 pins
Protection		
Over speed protection	rpm >750	Brake for 10 min.
Lighting protection		
I/P Over current protection	Iw>17A , Ip>10A	Auto brake + PWM off
Over temperature protection	Core temperature >100°C Cabinet temperature >70°C	Auto brake + PWM off
O/P lower voltage protection	12V: Vbat<10.5V+/-0.3V 24V: Vbat<21V+/-0.3V	Sleep
Counting Low Battery Detection when discharge	5 times per discharge duration	When the 5 time counted, loading power will be off.
Discharge on/off confirmation	Delay time: 60sec.	
The others		
Working temperature	-10°C ~ 50°C	
Humidity	5~90%	
Dimension	245 x 155 x 80 (mm)	
Weight	1.5Kg	

DIP Switch Setting Common Setting (Top Switch)



Discharge Setting (Bottom Switch)



LOAD1				LOAD2				Discharge
1	2	3	4	5	6	7	8	
0	0	0	0	0	0	0	0	24hours
0	0	0	1	0	0	0	1	All the day time
0	0	1	0	0	0	1	0	12hrs (day time)
0	0	1	1	0	0	1	1	10hrs (day time)
0	1	0	0	0	1	0	0	8hrs (day time)
0	1	0	1	0	1	0	1	6hrs (day time)
0	1	1	0	0	1	1	0	4hrs (day time)
0	1	1	1	0	1	1	1	2hrs (day time)
1	0	0	0	1	0	0	0	All the night time
1	0	0	1	1	0	0	1	12hrs (Night time)
1	0	1	0	1	0	1	0	10hrs (Night time)
1	0	1	1	1	0	1	1	8hrs (Night time)
1	1	0	0	1	1	0	0	6hrs (Night time)
1	1	0	1	1	1	0	1	4hrs (Night time)
1	1	1	0	1	1	1	0	2hrs (Night time)
1	1	1	1	1	1	1	1	5 minutes test

LED Indicator Status Table

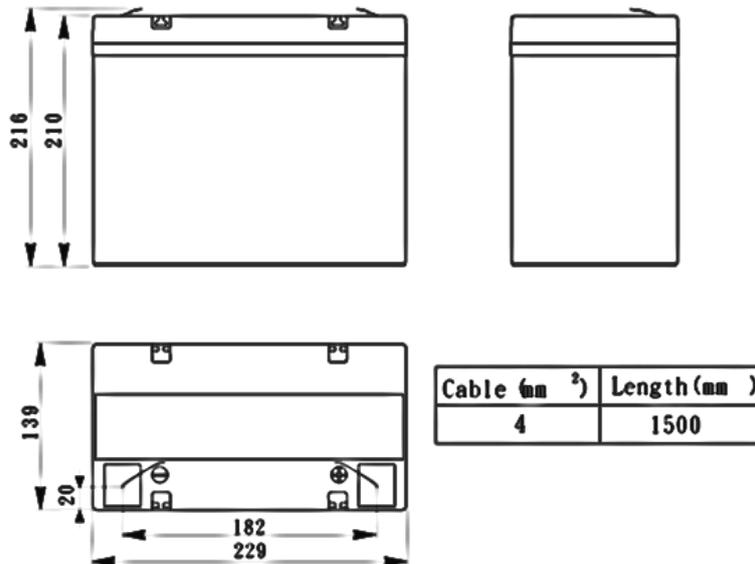
LED	Color	Function	Light up	Flash slowly	Flash quickly	OFF
LED1	Red	Battery capacity	Normal	Full(>13.6V)	Low battery (<11.2V)	Over discharge (<10.5V+/-0.3V)
LED2	Green	Wind power	Charging	Brake	Abnormal	Charge off
LED3	Green	PV power	Charging	Brake(PWM off)	Abnormal	Charge off
LED4	Red	Load 1	Discharging	NA	Abnormal	Discharge off
LED5	Red	Load 2	Discharging	NA	Abnormal	Discharge off

6. Battery

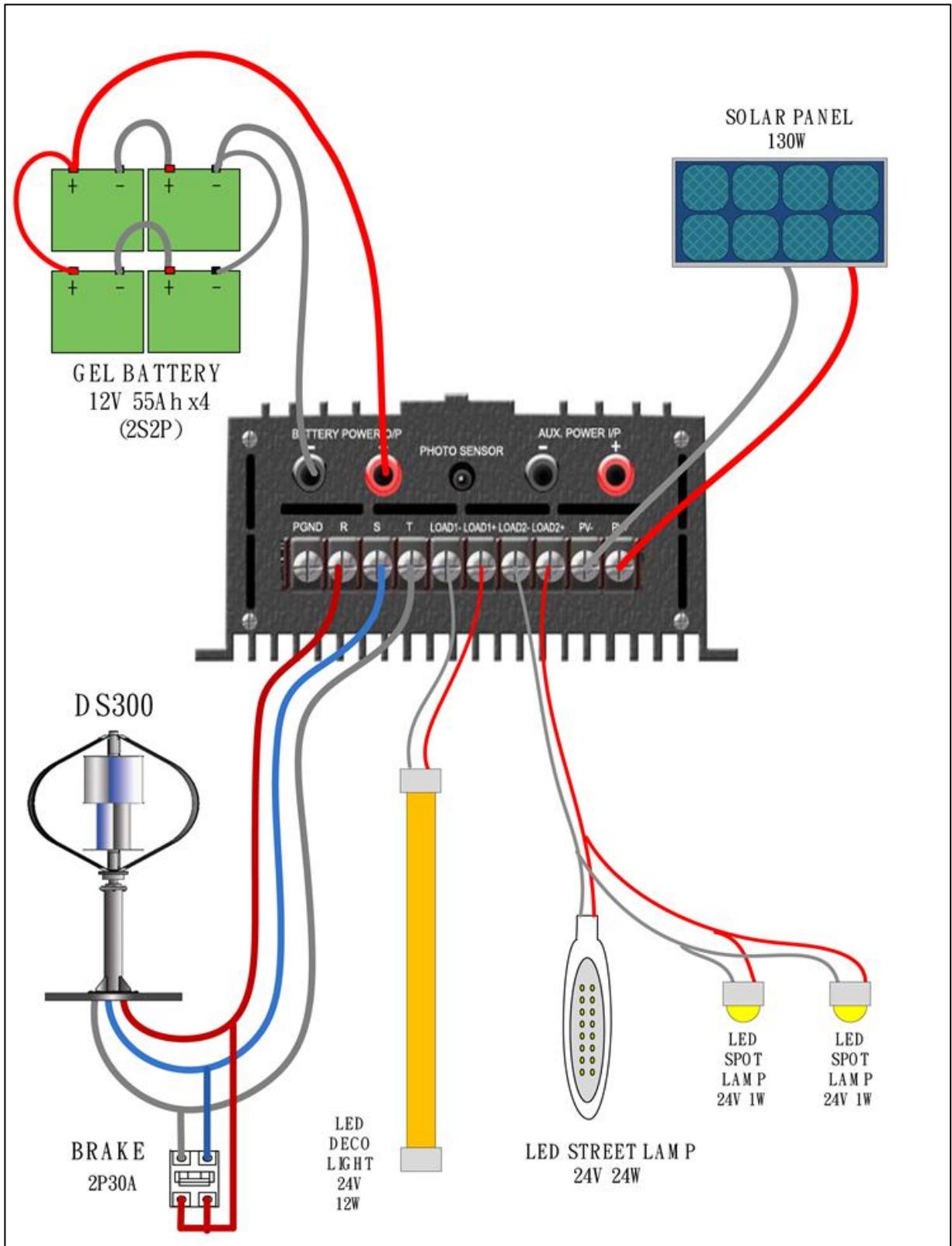


Specification

Item	Description
Model	FMJ/BB1255T
Voltage	12V
Capacity	46/ 50AH(20HR)
Dimension	220 x 139 x 210mm Total Height: 216mm
Weight	16.3kg



7. Wiring Diagram



Sample Photo

