

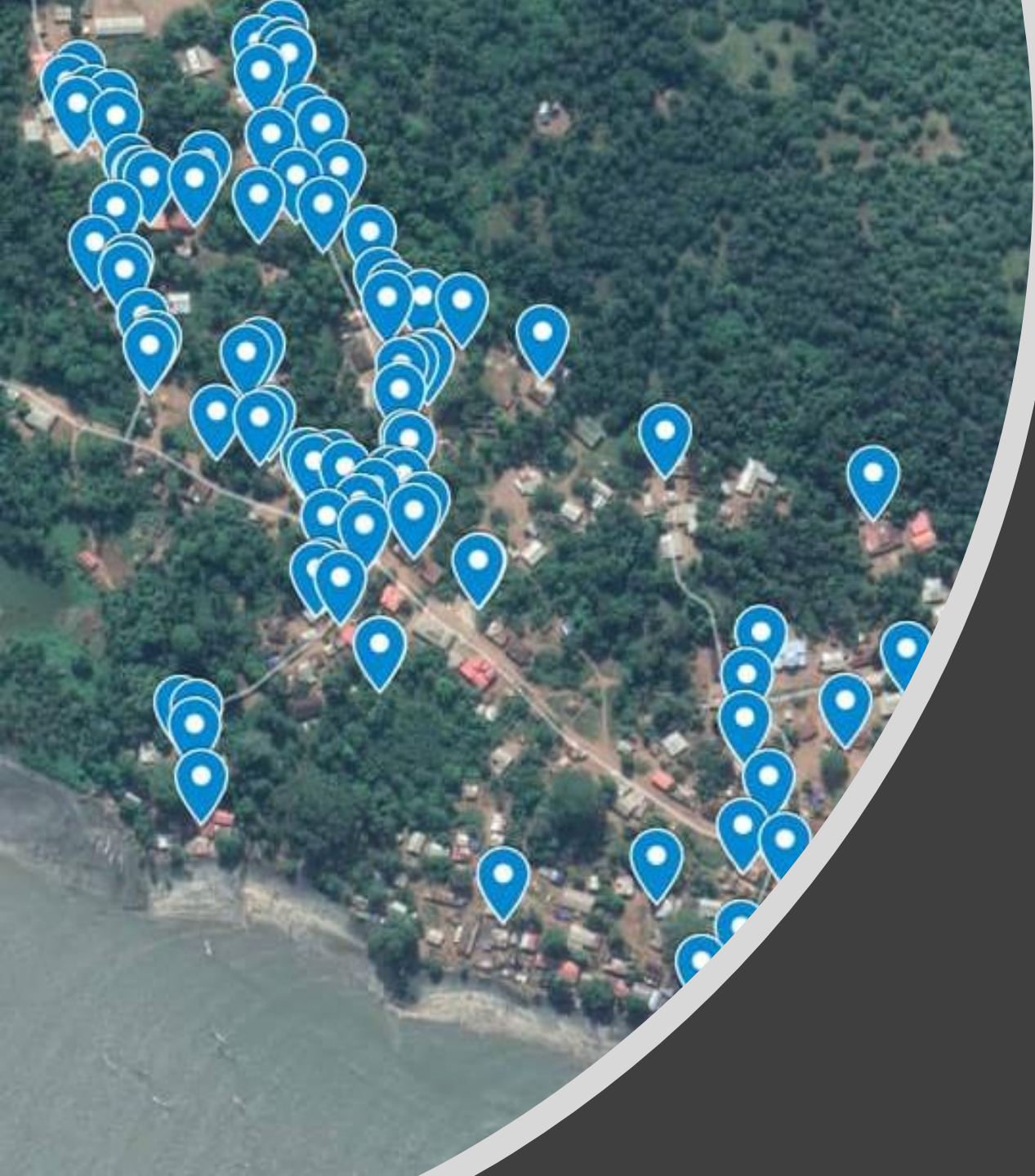


**MINI-GRID IN THE  
DISTRICT OF  
MATAKAN IN  
GUINEA  
(WESTERN PART  
OF AFRICA)**

**Project Design, Engineering &  
Project Management by  
SunPower & Consultants Pvt  
Ltd, India**

Matakan (Forécariah): PM launches ANIES pilot project (MiniGrid) in Energy





Village  
Mapping of all  
90 House Holds

# Project Profile

- Village - Matakan District, Guinea
- No. of House Holds Connected – 48 nos
- Total No. of House – 90 nos
- No. of Poles Erected – 8M, 28 nos (25 Metal + 3 Wooden)
- PV – 325Wp\*20nos
- Inverter – 6kW
- Battery – 12v\*200Ah\*12nos
- Power Cable – 1000M, 3\*25sqmm+25sqmm AB Cable (Al)
- Service Cable – 1500M, 2\*16sqmm (Al)

# Material Transportation

---





**PV Module Arrangements**



Power-Hub (Inverter & Battery Room)




Fencing of PV Module Hub






# Power Lines & Service Connections to Houses

# PV Module Technical Data Sheet




Solar Panels  
www.felicitysolar.com



Solar Panels  
www.felicitysolar.com

---



>>> About Us


Guangzhou Felicity Solar Technology Co., Ltd. (the holder) (referred to as Felicity Solar) is a company specializing in developing photovoltaic high-tech products. Felicity Solar was founded in 2007, and its headquarters is located in Guangzhou, one of the important export cities in China.

Felicitysolar is a high-tech enterprise integrating R & D, production, sales, engineering design, installation and after-sales service. In the past 10 years, Felicity Solar uses advanced production equipment and production technology, all kinds of advanced materials in research, communication has formed its own unique characteristics of the technical advantages, product advantages and market advantages.

At present, our products have been exported to more than 100 countries and regions around the world, such as Africa countries, Southeast Asia, the Middle East, and North America and South America, and has established a number of offices and subsidiaries all over the world. Felicity Solar will continue to focus on the property of solar energy storage system look into the future, adhering to the values of hard working, innovation, focus and integrity, provide clean energy to the world with excellent power, and light their life.






Guangzhou Felicity Solar Technology Co., Ltd.  
Tel: +86 20 320 107 10  
Fax: +86 20 320 107 10  
Add: No. 21, Xinghe Road, Guangzhou Economic Development Zone, Baiyun District, Guangzhou, China  
www.felicitysolar.com

## FL-325W-MONO

Monocrystalline solar panel 

---

### Product Features

-  Efficient monocrystalline modules are suitable for residential, public application areas, and can be widely used in the roof and ground electric power station projects.
-  Applying the most advanced module manufacturing technology with high output power. The maximum conversion rate is up to 18.42%.
-  Using anti-reflection glass, not only increases the absorption of light, but also strengthens its self-cleaning function when the modules are in the water environment, which can effectively reduce the power loss caused by dust.
-  Excellent low-light electricity generation performance.
-  Modules with strong compression capability, able to withstand 2400 Pa wind pressure and 5400 Pa snow load.






---

### Features

- high energy yields ensured by high conversion efficiency
- sturdy, clear anodized aluminum frame with pre-drilled holes for quick installation
- advanced EVA encapsulation with triple-layer backsheet, meets the most stringent safety requirements for high-voltage operation
- reliable bypass diodes to prevent overheating (hot spot effect) and to minimise power loss by shading

---

### Certification

## Engineering Drawing






---

### Specifications

Peak Power(PMP).....325Wp  
 Production Tolerance.....±3%  
 Open-Circuit Voltage(VOC).....44.16V  
 Maximum Power Current(IMP).....8.83A  
 Maximum Power Voltage(VMP).....36.80V  
 Short-Circuit Current(Isc).....9.36A  
 Maximum System Voltage.....1000VDC  
 Cell Technology.....MONOCRYSTALLINE SILICON  
 Module Dimension.....1664\*962\*40mm  
 Weight.....21kg

### I - V



---


### Product parameters

Module.....	Mono
Name.....	FL-M-325Wp
Manufacturer.....	Felicitysolar
Cell area(mm).....	156*156(mm)
Cell parallel.....	12*6
Ambient temp(°C).....	25°C
Operating temperature.....	-40°C ~ +85°C
Irradiance(W/m²).....	1000(W/m²)
Vmp(V).....	36.80V
Power current(IMP).....	8.83A
Voc(V).....	44.16V
Short circuit current.....	9.36A
Peak power.....	327.6Wp
P.F.....	78.3998
Module eff.(%).....	16.62%
Est series resistance(ohm).....	0.1110
V Load(V).....	37.00V
Frame.....	Aluminium alloy
Glass.....	Tempered glass
Connector.....	MC4 Plug type
Number of bypass diode.....	6
Cable.....	copper 4mm² , with 0.6m *2long

# Felicitysolar - Power Inverter Technical Data Sheet

## Specifications




Line Mode Specifications			
Model	FL-IVPL2524-2500VA	FL-IVPL3524-3500VA	FL-IVPL4048-4000VA
Rated Output Power	2500VA/2000W	3500VA/3000W	4000VA/3200W
Nominal DC Input Voltage	24V	24V	48V
Input Voltage Waveform	Sinusoidal (utility or generator)		
Nominal Input Voltage	220Vac		
Low Line Disconnect	90Vac±7Vac		
Low Line Re-connect AC Input Range	100Vac±7Vac		
High Line Disconnect	280Vac±7Vac		
High Line Re-connect	270Vac±7Vac		
Max AC Input Voltage	280Vrms		
Nominal Input Frequency	50Hz/60Hz		
Low Line Frequency disconnect	40±1Hz		
Low Line Frequency Re-connect	42±1Hz		
High Line Frequency Disconnect	65±1Hz		
High Line Frequency Re-connect	63±1Hz		
Output Voltage Waveform	as same as input waveform		
Over-Load Protection(SMPS load)	30A		
Output Short Circuit Protection	30A		
Efficiency(Line mode)	≥95% (Rated R load, and battery is full charged)		
Transfer Switch Rating	30A		
Transfer Time (AC to DC)	15ms(typical)		
Transfer Time (DC to AC)	15ms(typical)		
Pass Through Without Battery	No		
Max Bypass Overload Current	30A		
Charge Mode Specifications			
Nominal Input Voltage	220Vac		
Input Voltage Range	90-280Vac		
Nominal Output Voltage	dependent on battery type		
MAX Charge Current	40A		
Charge Current Regulation	charge current adjustable: 0A,10A,20A,30A,40A		
Battery Initial voltage	circuit breaker		
Charger Short Circuit	30A		
Breaker Size	dependent on battery type or Self-defined		
Over Charge Protection	Yes		
Charge Algorithm			
Algorithm	<b>Three stage:</b> Boost CC (constant current stage) → Boost CV (constant voltage stage) → Float (constant voltage stage)		

Charge Algorithm												
Charge Stage Transition Definitions	<p>(1)<b>Boost CC Stage:</b> If A/C input is applied, the charger will run at full current in CC mode until the charger reaches the boost voltage.</p> <p>(2)<b>Boost CV Stage:</b> the charger will keep the boost voltage in Boost CV mode until the T1 timer has run out. Then drop the voltage down to the float voltage, when the charging current is lower than 20% setting value.</p> <p>(3)<b>Float Stage:</b> In float mode, the voltage will stay at the float voltage. If the A/C is reconnected or the battery voltage drops below 12Vdc/24Vdc/48Vdc, the charger will reset the cycle above.</p> 											
Battery type setting	Battery Type	<table border="1"> <thead> <tr> <th>Boost CC, CV</th> <th>Float</th> </tr> </thead> <tbody> <tr> <td>24/48</td> <td>24/48</td> </tr> <tr> <td>AGM 28.8/57.6</td> <td>27.2/54.4</td> </tr> <tr> <td>Flooded 29.2/58.4</td> <td>27.6/55.2</td> </tr> <tr> <td>Self Defined</td> <td>Adjustable, up to 31.5/61.0</td> </tr> </tbody> </table>	Boost CC, CV	Float	24/48	24/48	AGM 28.8/57.6	27.2/54.4	Flooded 29.2/58.4	27.6/55.2	Self Defined	Adjustable, up to 31.5/61.0
Boost CC, CV	Float											
24/48	24/48											
AGM 28.8/57.6	27.2/54.4											
Flooded 29.2/58.4	27.6/55.2											
Self Defined	Adjustable, up to 31.5/61.0											
Invert Mode Specifications												
Model	FL-IVPL2524-2500VA	FL-IVPL3524-3500VA	FL-IVPL4048-4000VA									
Rated Output Power	2500VA/2000W	3500VA/3000W	4000VA/3200W									
Nominal DC Input Voltage	24V	24V	48V									
Output Voltage Waveform	pure sine wave											
Nominal Output Voltage	220V ac±5%											
Nominal Output Frequency(Hz)	50±0.3Hz/60±0.3Hz (adjustable)											
Output Voltage Regulation	±5% rms											
Peak Efficiency	90%											
Over-load Protection (SMPS)	60s@≥150% load; 120s@105%-150% load											
Surge rating	2* rated power for 5 seconds											
Capable of starting electric	Yes											
Output Short Circuit Protection	Yes											
Inverter Breaker Size	30A											
Nominal DC Input Voltage	24V / 48Vdc											
Min DC start voltage	23V / 46Vdc											
Low Battery Alarm	23V/46Vdc@ load < 50%; 22V/44Vdc@ load ≥ 50%;											
Low Battery Recovery	23.5V/47Vdc@ load < 50%; 23V/46Vdc@ load ≥ 50%;											
Low DC Input Shut-down	21.5V/43Vdc@ load < 50%; 21V/42Vdc@ load ≥ 50%;											
High DC input Alarm & Fault	31.5V±0.4V/ 63Vdc±0.4V											
High DC input Recovery	31.0V±0.4V/ 62Vdc±0.4V											
Invert Mode Specifications												
Operating Temperature	0°C to 40°C											
Range Storage temperature	-15°C ~ -60°C											
Dimension (D*W*H) mm	426*224*190MM											

# DEEP CYCLE BATTERY

(GEL Deep Cycle) series is specially designed for frequent cyclic discharge. By using strong grids and specially designed active material, the DC series battery offers 30% more cyclic life than the standby series. It is suitable for solar energy systems, marine and RV etc.

## Specification

Model	FL-G-100AH	FL-G-150AH	FL-G-200AH
Cells Per Unit	6		
Voltage Per Unit	12		
Capacity	100Ah@10hr-rate to 1.80V per cell @25°C	150Ah@10hr-rate to 1.80V per cell @25°C	200Ah@10hr-rate to 1.80V per cell @25°C
Weight	29.5KG	42KG	59.5KG
Max. Discharge Current	1000A (5 sec)	1500A (5 sec)	2000A (5 sec)
Internal Resistance	Approx. 7.5mΩ	Approx. 6mΩ	Approx. 5.2mΩ
Recommended Maximum Charging Current Limit	30A	45A	60A
Operating Temperature Range	Discharge: -20°C ~ 60°C Charge: 0°C ~ 50°C Storage: -20°C ~ 60°C		
Normal Operating Temperature Range	25°C ± 5°C		
Float charging Voltage	13.6 to 13.8V DC/unit Average at 25°C		
Equalization and Cycle Service	14.4 to 14.6V DC/unit Average at 25°C		
Self Discharge	GEL batteries can be stored for more than 6 months at 25°C. Self-discharge ratio less than 3% per month at 25°C. Please charge batteries before using.		
SIZE			

## Constant Current Discharge Characteristics: A (25 °C)

FL-G-100AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	320.7	226.9	161.4	112.7	65.00	38.89	26.88	22.03	18.03	12.42	10.50	5.78
10.0V	311.4	215.8	177.7	110.8	64.70	38.60	26.78	21.93	17.93	12.32	10.40	5.67
10.2V	302.2	208.2	174.9	109.8	64.10	38.31	26.57	21.83	17.82	12.22	10.30	5.57
10.5V	271.3	192.1	166.5	107.1	63.50	38.02	26.47	21.62	17.61	12.12	10.20	5.46
10.8V	244.9	175.2	153.5	102.4	62.00	37.33	25.75	21.11	17.29	11.92	10.10	5.36
11.1V	209.1	156.8	137.7	95.91	58.90	35.88	24.62	20.09	16.55	11.41	9.80	5.04

FL-G-150AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	452.4	337.8	272.1	150.7	93.63	57.81	39.28	31.68	26.29	17.32	15.61	8.26
10.0V	439.3	321.4	266.5	148.8	92.38	56.64	38.56	31.23	26.06	17.25	15.46	8.11
10.2V	426.3	310.1	262.4	146.5	91.50	56.04	38.21	30.91	25.89	17.10	15.30	7.95
10.5V	382.8	286.1	249.8	142.5	90.38	55.31	37.87	30.46	25.67	16.94	15.15	7.80
10.8V	345.5	260.9	230.3	137.8	89.12	54.85	37.43	29.41	25.55	16.87	15.01	7.72
11.1V	295.0	233.2	206.5	132.5	87.01	52.65	36.70	28.99	25.36	16.74	14.84	7.41

FL-G-200AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	569.6	426.7	344.7	200.9	124.8	77.07	52.38	42.23	35.06	23.09	20.81	11.02
10.0V	553.2	406.0	337.6	198.4	123.2	75.52	51.41	41.63	34.75	23.00	20.61	10.81
10.2V	536.8	391.7	332.3	195.3	122.0	74.72	50.95	41.22	34.52	22.79	20.40	10.61
10.5V	482.0	361.4	316.4	190.0	120.5	73.74	50.50	40.61	34.23	22.59	20.20	10.40
10.8V	435.1	329.6	291.7	183.7	118.8	73.14	49.91	39.22	34.06	22.50	20.02	10.30
11.1V	371.5	294.8	261.8	176.7	116.0	70.20	48.93	38.65	33.81	22.32	19.76	9.86

## Constant Power Discharge Characteristics: W (25°C)

FL-G-100AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	3317	2416	1996	1284	751.1	458.4	319.9	282.6	215.1	146.3	125.5	69.26
10.0V	3251	2342	1964	1269	749.3	456.0	320.0	282.3	214.6	147.6	124.7	68.08
10.2V	3214	2280	1941	1260	743.5	453.3	318.6	281.7	213.9	146.0	123.6	68.80
10.5V	2926	2123	1852	1230	736.8	450.0	317.4	280.3	211.3	145.4	122.4	65.54
10.8V	2665	1957	1712	1179	723.2	444.2	308.7	253.4	207.5	143.0	121.2	64.28
11.1V	2341	1770	1541	1108	692.3	427.7	295.4	241.1	198.6	136.9	117.6	60.50

FL-G-150AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	4679	3598	2993	1725	1085	677.4	462.5	379.1	315.0	207.4	187.2	99.54
10.0V	4587	3487	2945	1707	1075	669.1	455.6	373.8	312.2	206.6	185.7	97.81
10.2V	4534	3399	2912	1692	1069	664.4	453.6	370.3	310.3	205.0	184.1	96.00
10.5V	4128	3162	2778	1656	1062	656.0	445.9	365.3	307.9	203.3	182.2	94.19
10.8V	3780	2914	2567	1619	1048	651.1	444.9	353.0	306.4	202.4	180.4	93.28
11.1V	3302	2635	2311	1574	1033	626.7	437.4	347.0	305.3	201.0	178.5	89.94

FL-G-200AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	5892	4544	3792	2300	1447	903.2	616.7	505.5	420.0	276.5	249.6	132.7
10.0V	5778	4405	3721	2278	1433	892.2	607.5	498.4	416.2	275.5	247.6	130.4
10.2V	5710	4289	3689	2257	1425	885.8	604.8	493.7	413.7	273.4	245.4	128.0
10.5V	5198	3994	3518	2211	1416	874.6	599.0	487.1	410.4	271.1	243.0	125.6
10.8V	4734	3681	3252	2158	1398	868.1	593.2	479.6	408.5	269.9	240.6	124.4
11.1V	4159	3328	2927	2099	1377	835.6	583.2	463.0	407.0	268.0	238.0	119.9



Happy Customer  
with Surprise  
Package from Prime  
Minister – Executed  
by Solektra-Guinea

Enjoy the Right To Solar  
Energy by Solektra – Africa  
(A wholly owned subsidiary  
of ADS group)

- **Project Design, Engineering & Project Management by SunPower & Consultants Pvt Ltd, India**