SOLSTICE

ALL-IN-ONE HYBRID ESS

Split-Phase & Three-Phase Energy Storage System with Optional AC EV Charger

SPLIT PHASE	7.6–12kW | 16–96kWh
THREE PHASE	5–20kW | 16–96kWh
OPTIONAL AC EV CHARGER	7kW | 11kW | 22kW
IP55 WATERPROOF & DUSTPROOF DESIGN	
INTEGRATED HYBRID SYSTEM	



5-20kW power options	Rapid installation	200% 2x peak power output (10s)	97.6% Max. efficiency
200% PV oversizing	Scalable up to 96kWh	Max. 70A bypass current	8000+ life cycles[2]
Max. 380A charge/ discharge current	4ms Seamless on/ off-grid switching	IP66 Support short-term immersion in 0.5m of water	1-55 °C operation temperature

[1] Based on an equivalent-capacity comparison with conventional 8 kWh stackable systems. Actual cost savings may vary by system configuration and market.
[2] Tested at 25°C±2°C, 70%EOL.

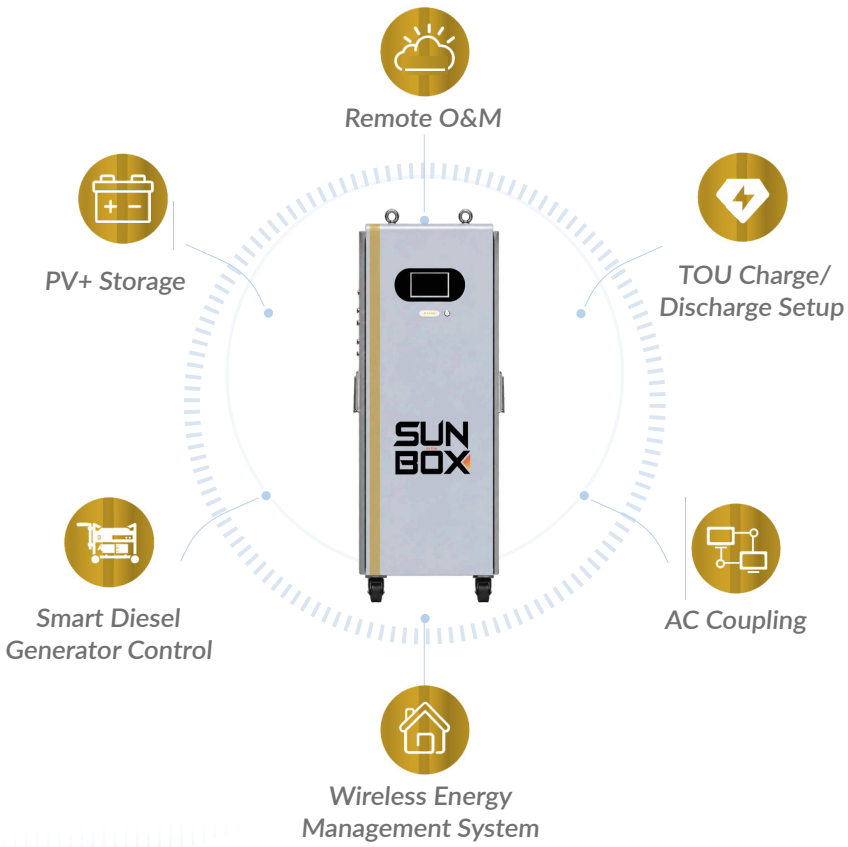
All-in-One Home ESS Solution

SOLSTICE

System Schematic

System Data						
Battery Type	$LiFePO_4$					
Max. Output Power	Split-Phase (120/240V): 7.6/8/10/12kW, Three-Phase: 5/6/8/10/12/15/20kW					
Number of Batteries	1	2	3	4	5	6
Nominal Energy (kWh)	16	32	48	64	80	96
Ingress Protection(IP) Rating	IP55					
Operation Temperature Range	Charge: 1°C- +55°C (-20°C-+55°C, with optional heating) / Discharge: -20°C- +55°C, >45°C Derating					
Permissible Ambient Humidity	0-100% (condensing)					
Max. Operation Altitude (m)	3000m					
Display	LCD+LED					
Type of Cooling	Natural Cooling					
Topology	Non-Isolated (solar), Isolated (battery)					
Communication Interface	WIFI, RS485, CAN, LORA, Bluetooth					
Warranty	Inverter: 5 years, extendable to 10 · Battery: 10 years					
Grid Regulation	IEC 61727, IEC 62116, CEI 0-21, EN 50549, NRS 097, RD 140, UNE 217002, OVE-Richtlinie R25, G99, VDE-AR-N 4105, AS 4777.2					
Safety EMC/Standard	IEC 62477, IEC 62619, SA TS 5398, IEC 62040, IEC62109-1/-2, EN61000-6-1, EN61000-6, VDE 2510-50,VDE 2510-2					

Highly Integrated Solution



7.6-12kW Split-Phase Hybrid Inverter



Model	SUN-7.6K-SG02 LP2-US-AM2-P	SUN-8K-SG02 LP2-US-AM2-P	SUN-10K-SG02 LP2-US-AM3-P	SUN-12K-SG02 LP2-US-AM3-P
Battery Input Data				
Battery Type	Lead-acid or Lithium-ion			
Battery Voltage Range (V)	40-60			
Max. Charging/Discharging Current (A)	190	190	220	250
Charging Strategy for Li-ion Battery	Self-adaption to BMS			
Number of Battery Input	1			
PV String Input Data				
Max. PV Input Power (W)	11400	12000	15000	18000
Max. PV Input Voltage (V)	500			
Start-up Voltage (V)	125			
MPPT Voltage Range (V)	150-425			
Rated PV Input Voltage (V)	370			
Max. Operating PV Input Current (A)	32+32		32+32+32	
Max. Input Short-Circuit Current (A)	60+60		60+60+60	
No. of MPP Trackers/No. of Strings per MPP Tracker	2/2+2		3/2+2+2	
AC Input/Output Data				
Rated AC Input/Output Active Power (W)	7600	8000	10000	12000
Max. AC Input/Output Apparent Power (VA)	7600	8000	10000	12000
Rated AC Input/Output Current (A)	31.7	33.4	41.7	50
Max. AC Input/Output Current (A)	31.7	33.4	41.7	50
Max. Continuous AC Passthrough (grid to load) (A)	200			
Peak Power (off-grid) (W)	2 times of rated power, 10 s			
Power Factor Adjustment Range	0.8 leading to 0.8 lagging			
Rated Input/Output Voltage (V)	120/240, 120/208 0.88Un-1.1Un 2L+N+PE			
Rated Input/Output Grid Frequency/Range (Hz)	60/55-65			
Total Current Harmonic Distortion THDi	<3%			
DC Injection Current	<0.5% In			
Efficiency				
Max. Efficiency	97.6%			
Euro Efficiency	96.5%			
MPPT Efficiency	>99%			
Equipment Protection				
Integrated	DC Reverse Polarity Protection, AC Output Overcurrent Protection, Thermal Protection, AC Output Overvoltage Protection, AC Output Short Circuit Protection, DC Component Monitoring, Arc Fault Circuit Interrupter (AFCI) (optional), Anti-islanding Protection, DC Switch, Insulation Impedance Detection, Residual Current Detection			
Surge Protection Level	TYPE II (DC), TYPE II (AC)			
Interface				
LCD/LED Display	LCD			
Communication Interface	WiFi, RS485			
General Data				
Operating Temperature Range (°C)	-40 to +60, >45 derating			
Permissible Ambient Humidity	0-100%			
Permissible Altitude (m)	2000			
Noise (dB)	<45			
Ingress Protection (IP) Rating	TYPE 3R			
Inverter Topology	Non-isolated (solar), Isolated (battery)			
Over Voltage Category	OVC II (DC), OVC IV (AC)			
Cabinet Size (W×H×D mm)	450×800×243 (excluding connectors and brackets)			
Weight (kg)	40			
Type of Cooling	Intelligent air cooling			
Warranty	5 years / up to 10 years (varies by installation country; see Warranty Policy)			
Grid Regulation	IEEE 1547.1, SRD V2.0			
Safety / EMC Standard	FCC, UL 1741			

5-20kW Three-Phase Hybrid Inverter



Model	SUN-5K-SG06 LP3-EU-TM2	SUN-6K-SG06 LP3-EU-TM2	SUN-8K-SG06 LP3-EU-TM2	SUN-10K-SG05 LP3-EU-TM2	SUN-12K-SG05 LP3-EU-TM2	SUN-15K-SG05 LP3-EU-TM3	SUN-20K-SG05 LP3-EU-TM3
Battery Input Data							
Battery Type	$LiFePO_4$						
Battery Voltage Range(V)	41.6-58.4						
Max. Charging/Discharging Current (A)	120	135	190	210	240	300	380
Number of Battery Input	1						
PV String Input Data							
Max. PV access power (W)	10000	12000	16000	20000	24000	30000	40000
Max. PV Input Power (W)	8000	9600	12800	16000	19200	24000	32000
Max. PV Input Voltage (V)	800						
Start-up Voltage (V)	160						
MPPT Voltage Range (V)	200-650					160-650	
Rated PV Input Voltage (V)	550						
Max. Operating PV Input Current (A)	20+20			26+26		36+20+20	
Max. Input Short-Circuit Current (A)	30+30			39+39		54+30+30	
No. of MPP Trackers/No. of Strings MPP Tracker	2/1+1			2/2+2		3/2+1+1	
AC Input/Output Data							
Rated AC Input/Output Active Power (W)	5000	6000	8000	10000	12000	15000	20000
Max. AC Input/Output Apparent Power (VA)	5500	6600	8800	11000	13200	16500	22000
Rated AC Input/Output Current (A)	7.6/7.3	9.1/8.7	12.2/11.6	15.2/14.5	18.2/17.4	22.8/21.8	30.4/29.0
Max. AC Input/Output Current (A)	8.4/8.0	10.0/9.6	13.4/12.8	16.7/16.0	20.0/19.2	25.0/24.0	33.4/31.9
Max. Continuous AC Passthrough (grid to load) (A)	45					70	
Peak Power (off-grid) (W)	2 times of rated power, 10s						
Power Factor Adjustment Range	0.8 leading to 0.8 lagging						
Rated input/output voltage	220/380V, 230/400V 0.85Un-1.1Un 3L+N+PE						
Rated Input/Output Grid Frequency/Range(Hz)	50/45-55, 60/55-65						
Total Current Harmonic Distortion THDi	<3%						
DC Injection Current	<0.5% In						
Efficiency							
Max. Efficiency	97.6%					97.6%	
Euro Efficiency	96.5%					97.0%	
MPPT Efficiency	>99%					>99%	
Equipment Protection							
Integrated	DC Reverse Polarity Protection, AC Output Overcurrent Protection, Thermal Protection, AC Output Overvoltage Protection, AC Output Short Circuit Protection, DC Component Monitoring, Arc Fault Circuit Interrupter (AFCI) (optional), Anti-islanding Protection, DC Switch, Insulation Impedance Detection, Residual Current Detection						
Surge Protection Level	TYPE II(DC), TYPE II(AC)						
Interface							
LCD/LED Display	LCD+LED						
Communication Interface	WIFI, RS485, CAN, LORA, Bluetooth						
General Data							
Noise (dB)	<45			≤50		<55	
Ingress Protection (IP) Rating	IP66						
Over Voltage Category	OVC II(DC), OVC III(AC)						
Cabinet Size (W×H×D mm)	662×354×255			662×375×255		662×450×255	
Weight (kg)	26.2			34		/	
Type of Cooling	Intelligent Air Cooling						

AI-B16 Battery



Model		AI-B16-L	AI-W16-H
Main Parameter			
Battery Chemistry		$LiFePO_4$	
Built-in Circuit Breaker		250A, 80Vdc	
Rated Capacity (Ah) [1]		314	
Nominal Voltage (V)		51.2	
Operating Voltage(V)		41.6-58.4	
Nominal Energy (kWh) [1]		16	
Usable Energy (kWh) [1]		14.4	
Charge Current (A) [2]	Max.Continuous	160	
	Peak	192	
Discharge Current (A) [2]	Max.Continuous	220	
	Peak	264	
Other Parameter			
Recommend Depth of Discharge		90% DoD	
Dimension (mm , W/H/D)		662 x 715 x 257 (Without base)	
Weight (kg)		120kg	
Display		LED(working, protecting, alarming)	
IP Rating of Enclosure		IP55	
Operating Temperature		Charge: 1~55°C, Discharge: -20~55°C	Charge: -20~55°C (Heating On), Discharge: -20~55°C
Storage Temperature		0°C~35°C	
Relative Humidity		95% (non-condensing)	
Cycle Life		≥8000(25°C±2°C, 70%EOL)	
Max. Energy RTE (DC) [1]		95%	
Installation		Floor-Mounted, Stack-Mounted	
Communication		CAN2.0	
Certification		UN38.3, CE, CB, UL9540A	
Energy Throughput [3]		50 MWh	
Warranty Period [3]		10 years	

[1] Test conditions : 25°C±2°C, at beginning of life, 0.2C charge & 0.2C discharge, 90% DOD.

[2] The current is affected by temperature and SOC.

[3] Conditions apply, refer to Solstice Warranty Agreement.

Regional Specifications

United States · Europe · Africa

The All-in-One Hybrid ESS uses the same AI-B16 battery worldwide. The hybrid inverter is supplied in two platforms: a split-phase model for the US grid and a three-phase model for European and African grids. Choose the column for your market.

	United States	Europe	Africa
Hybrid inverter			
Inverter platform	Split-phase hybrid inverter SUN-7.6K / 8K / 10K / 12K-SG02LP2-US	Three-phase hybrid inverter SUN-5K…8K-SG06LP3-EU · SUN-10K…20K-SG05LP3-EU	Three-phase hybrid inverter SUN-5K…8K-SG06LP3-EU · SUN-10K…20K-SG05LP3-EU
Power options	7.6 / 8 / 10 / 12 kW	5 / 6 / 8 / 10 / 12 / 15 / 20 kW	5 / 6 / 8 / 10 / 12 / 15 / 20 kW
Grid connection	120/240 V or 120/208 V 2L+N+PE	230/400 V 3L+N+PE	220/380 V or 230/400 V 3L+N+PE
Grid frequency	60 Hz (55–65 Hz)	50 Hz (45–55 Hz)	50 Hz (45–55 Hz)
Max. PV input voltage	500 V	800 V	800 V
Max. PV input power	11.4 – 18 kW	8 – 32 kW	8 – 32 kW
Max. AC pass-through (grid to load)	200 A	45 A (5–12 kW) · 70 A (15–20 kW)	45 A (5–12 kW) · 70 A (15–20 kW)
Inverter enclosure	Type 3R	IP66	IP66
Peak power (off-grid)	2× rated power, 10 s		
Parallel expansion	Up to 3 inverters · 90 kW single-phase	Up to 3 inverters · 100 kW three-phase	Up to 3 inverters · 100 kW three-phase
Compliance			
Grid code	IEEE 1547.1, SRD V2.0	VDE-AR-N 4105, EN 50549, CEI 0-21, G99, OVE-Richtlinie R25, RD 140, UNE 217002	NRS 097 (South Africa), IEC 61727, IEC 62116 — other countries per local utility
Safety / EMC	UL 1741, FCC	IEC 62109-1/-2, IEC 62477, IEC 62040, EN 61000-6-1	IEC 62109-1/-2, IEC 62477, SA TS 5398
Battery and system (all regions)			
Battery	AI-B16 · LiFePO4 · 16 kWh (14.4 kWh usable) · 51.2 V		
System capacity	16 kWh to 96 kWh (1 to 6 batteries in parallel)		
Battery certification	UN38.3, CE, CB, UL 9540A		
Warranty	Inverter: 5 years, extendable up to 10 years (varies by country) · Battery: 10 years		

[1] Data taken from the 7.6–12 kW Split-Phase and 5–20 kW Three-Phase inverter specifications and the AI-B16 battery specification in this document.

[2] Grid-code approval depends on each country and utility. Before ordering for a specific market (for example Morocco, Nigeria or Kenya), confirm the applicable certificate with the Solstice team.

[3] The three-phase inverter also supports 60 Hz (55–65 Hz) grids where required.

Key Enhancements

◎ Stay Powered Through Extreme Weather



With IP55 protection rating, the ESS supports outdoor installation and saves indoor space.
Its short-term immersion resistance at 50cm water helps withstand heavy rain, snowfall, and temporary water accumulation[1].



With optional heating module, low-temperature charging down to -20°C enables reliable operation in cold climates.

◎ Home Power Backup Solution

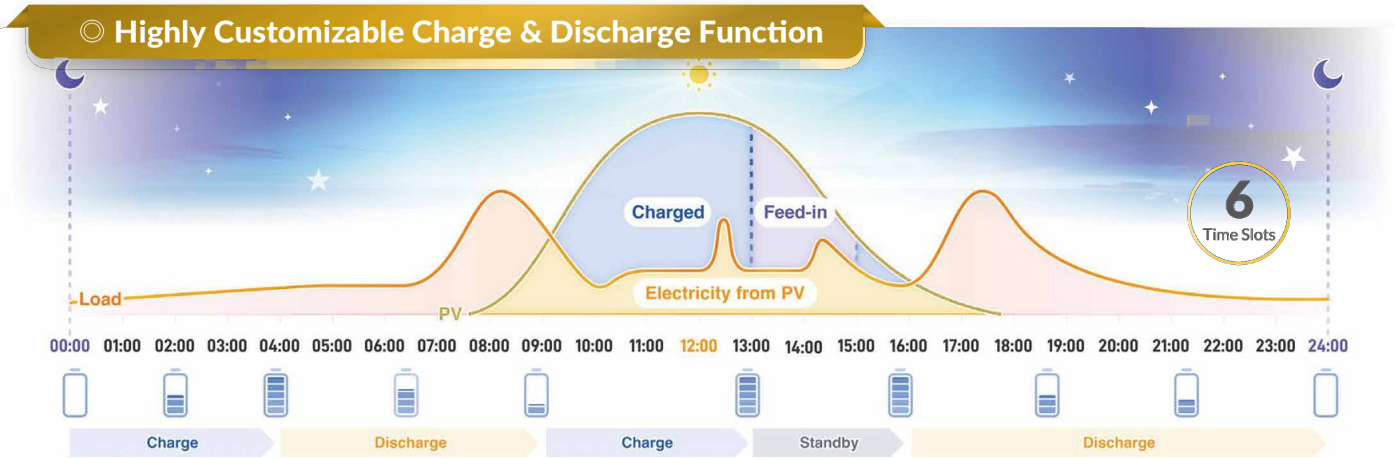
Lights	Refrigerator	Washing Machine	Microwave Oven	Air Fryer	Dishwasher	Hair Dryer	Water Heater	Air Conditioner	EV Charger
100W	200W	500W	1500W	1500W	1500W	1800W	2000W	2500W	7000W

5-20kW Three-Phase

7.6-12kW Split-Phase

3.6-6kW	6-12kW	12-20kW	20kW+
Essential Backup	**Extended Backup**	**Whole-Home Backup**	**Ultimate Home Backup**
Power all your daily essential loads to keep your family life running during an outage.	Power more than just essential loads for elevated home comfort.	Power your entire house through any blackout, including high-power appliances.	Enjoy total energy independence and live life normally.

◎ Highly Customizable Charge & Discharge Function

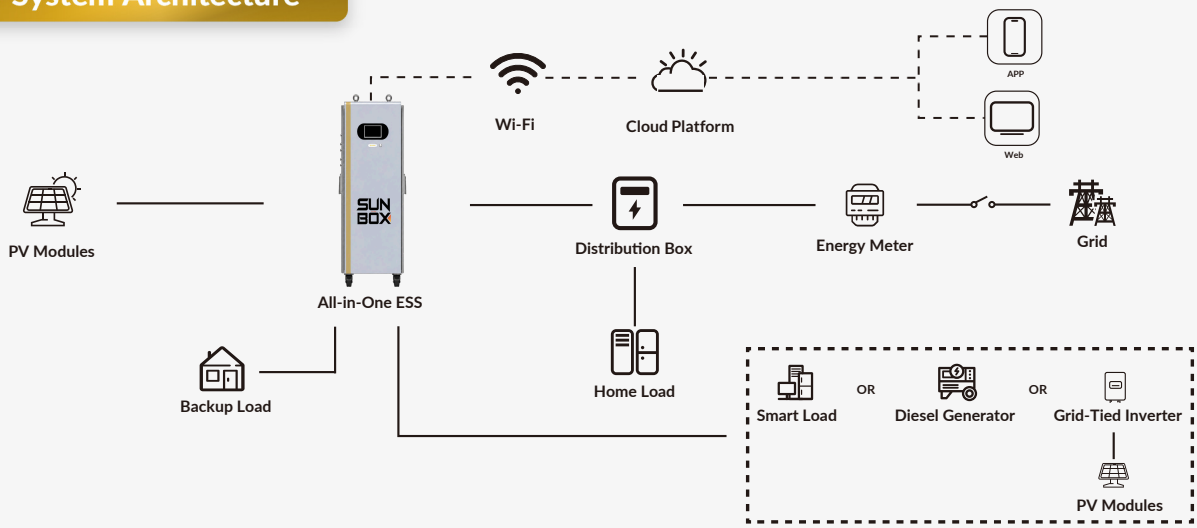


The system intelligently manages solar, battery, and grid power based on electricity tariffs. It stores energy during low-cost periods and supplies loads during peak-price hours, helping reduce electricity bills and improve energy efficiency.

[1] Tested under controlled conditions. Water resistance may decrease with wear and is not covered for liquid damage under warranty. The immersion capability requires intact seals and proper installation. Damage from improper installation or wear is excluded under warranty.

System Overview

System Architecture



Flexible Parallel Expansion

Modular expansion base minimizes wiring and installation time.



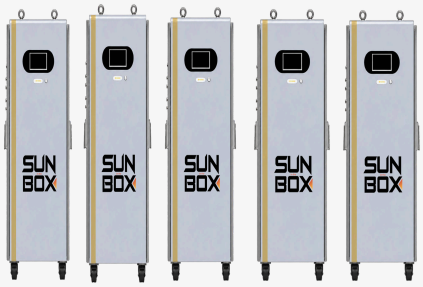
Standard Configuration

1 Inverter + 16 kWh Battery



Capacity Expansion (DC Side)

Up to 6 Batteries in Parallel
(Max. 96 kWh)



Power Expansion (AC Side)

Up to 3 Inverters in Parallel
(Max. 100 kW / 3-Phase, 90 kW / 1-Phase)

Application Scenarios



Indoor Application

Sleek, silent, and seamlessly integrated:
the perfect modular ESS for your modern home



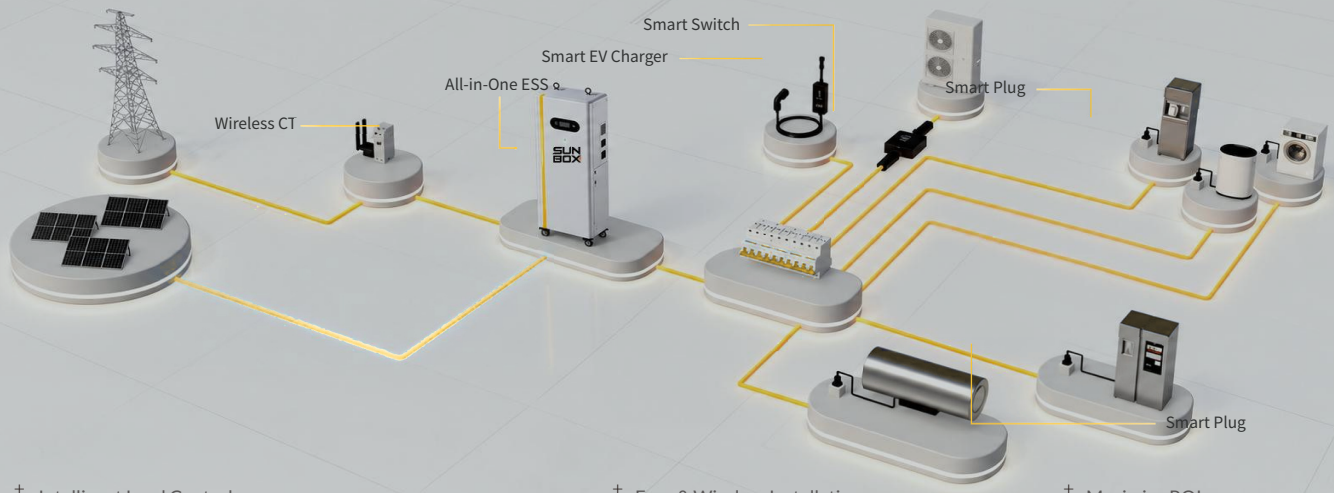
Outdoor Application

Consistent, all-season power delivery backed by
an IP55 rating for outdoor durability

Smart Home Energy Management

All-in-One Power, Build Your Home Energy Ecosystem

Seamlessly connects with Wireless Energy Management System, a smart load management and home automation solution based on LoRa communication.



+ **Intelligent Load Control**
  Automatically toggles essential and non-essential appliances based on solar generation and battery status.

+ **Easy & Wireless Installation**
  Reduces installation costs and time through wireless zero-export function.

+ **Maximize ROI**
  Optimizes self-consumption and overall energy efficiency.

Wireless CT

Installed in the distribution box to monitor real-time power consumption, supporting both LoRa and RS485 communication.



Smart Plug

Easily installed in any standard socket, instantly upgrading the appliance plugged in to a smart device.



Smart Switch

Designed for outdoor high-power loads, offering the same logic control as Smart Plug and supporting both single-phase and three-phase loads.



Smart EV Charger

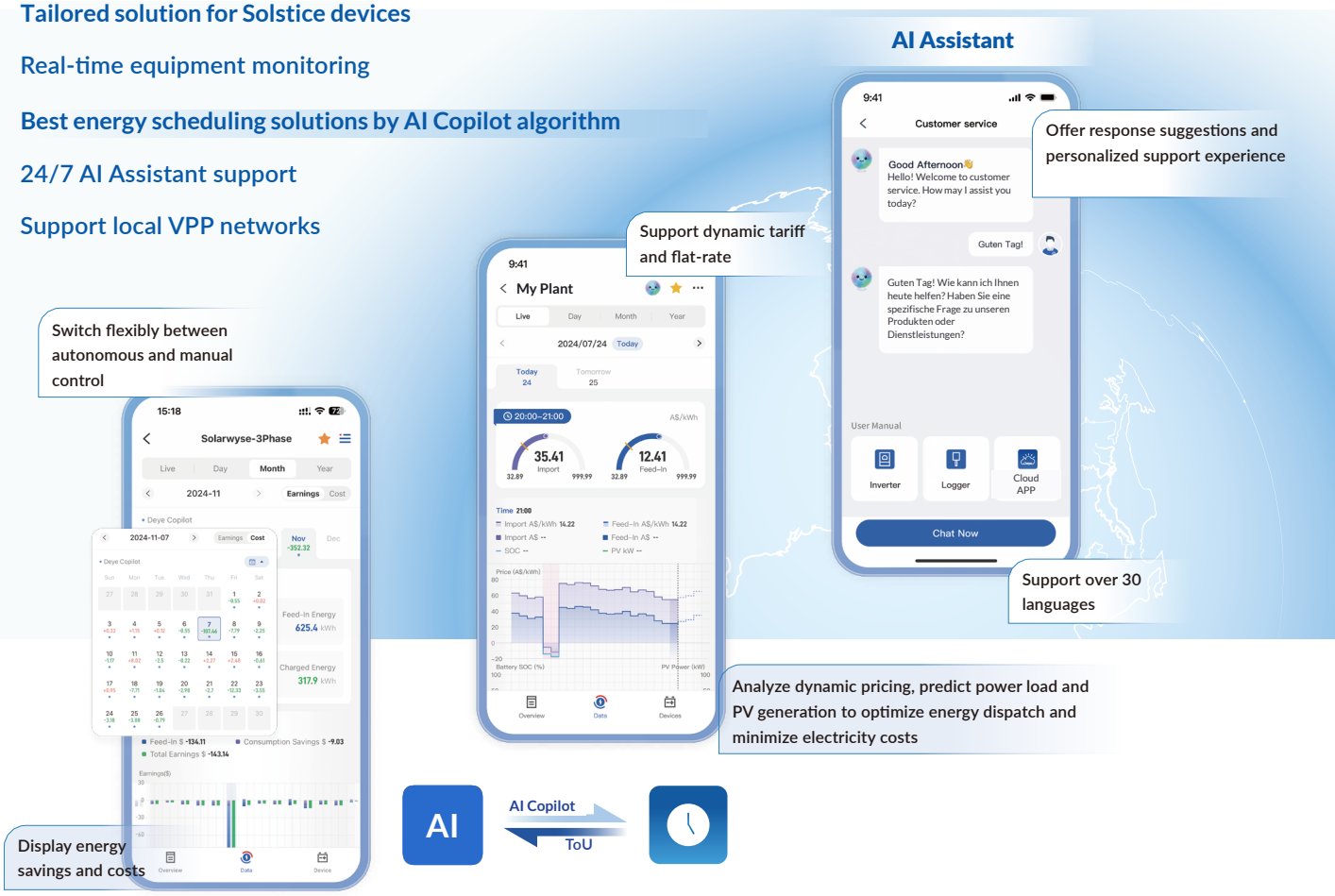
Directly connects to any AC port of the inverter via LoRa communication, charging your EV with 100% clean solar energy.



Smart Cloud
Intelligent Energy Management

SOLSTICE

- Unlock significant savings
- Individual Add-on for dynamic tariff
- Intelligent charging/discharging strategies
- Tailored solution for Solstice devices
- Real-time equipment monitoring
- Best energy scheduling solutions by AI Copilot algorithm
- 24/7 AI Assistant support
- Support local VPP networks



Smarten Up Your Home Energy

Scan the QR code to visit Solstice and get started!
Embrace a seamless, effortless energy experience that's both eco-friendly and budget-friendly with our intelligent assistant

APP & Web
Manage your energy effortlessly

Cloud-edge Collaboration
Faster and more efficient

Accelerated Connection
Optimized for speed and performance

Localized Data Centers
Ensure data sovereignty and compliance in EU & US

AI Copilot
AI-powered energy analysis and control

AI Assistant
24/7 support, fast, efficient, in your language

About

Solstice is a solar energy and battery storage brand with operations in West Palm Beach (Florida), San Juan (Puerto Rico) and Morocco. Our owners bring more than 15 years of experience and thousands of residential and commercial solar and storage installations in Puerto Rico.

Sun In The Box is the Solstice all-in-one energy storage line: hybrid inverter, LiFePO4 battery storage, protection and smart energy management integrated in a single outdoor-rated cabinet that arrives ready to install.

Solstice systems are produced with certified manufacturing partners. Every unit goes through electronic component, environmental, full-load and functional testing before shipment, and is backed by local technical support for installers, distributors and project developers.

Mega Energies LLC is the exclusive representative of Solstice in Puerto Rico.



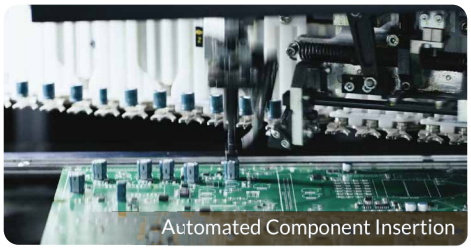
- Manufacturing Partner: R&D and Quality Testing

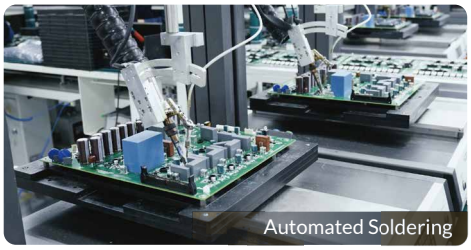

Electronic Component Testing


Rain and Snow Testing


Full-Load Endurance Testing


SMT Placement


Automated Component Insertion


Automated Soldering


Assembly Workshop


Aging Testing


ATE Functional Testing

SOLSTICE

Notes:

Business Card

Solstice Solar

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Solstice Website

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