Ningbo Sunways Technologies Co., Ltd.



Sunways LV Hybrid Inverter
STH 3-8KTL-LS

1/2 MPPT

1, 2026

www.sunways-tech.com



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03 Working Modes

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01

Overview & Compare

Basic Information

STH LV Series

LV Hybrid Inverter

Single-Phase

3kW | 3.6kW | 4kW | 4.6kW | 5KW | 6kW | 7.5kW | 8kW

Model

STH 3-3.6KTL-LSS、STH 4-8KTL-LS

Application

Residential Solar ESS Projects

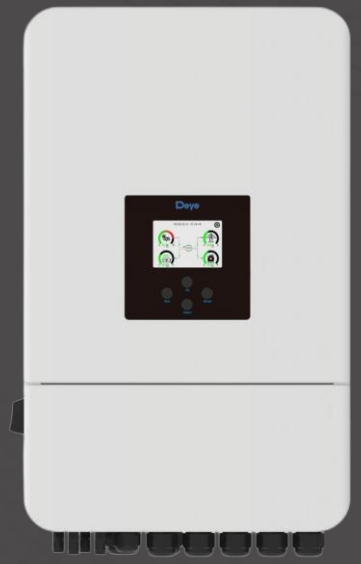


IP66
Protection Rating

97.6 %
Max. Efficiency

Appearance Compare

Deye
SUN-8K-SG05LP1-EU-SM2-P



Dimensions(mm): 366*589.5*237
Weight(KG): 26.8

Sunways
STH 3-8KTL-LS



Dimensions(mm): 488*374*205
Weight(KG): 20-21

Luxpower
GEN2-LB-EU 3-6K



Dimensions(mm):528*440*220
Weight(KG): 25

Sunways STH 3-8KTL-LS inverter is smaller in size and lighter in weight with the same power output, making it easier for transportation and one-man installation at home.

Parameter Compare

Parameter	Deye	Luxpower	Sunways
Rated power	3K~8KW	3K~6KW	**3K~8KW**
BTY	Lithium/Lead-acid	Lithium/Lead-acid	Lithium/Lead-acid **+ GenSet**
MPPT QTY	2	2	1 or 2
Work mode	General	General	**General/ECO/UPS/off-grid/TOU/Force mode**
Com port	RS485/CAN	Wi-Fi/RS485/CAN	**RS485/CAN/Wi-Fi/BluTH/GPRS**
Protection	IP65	IP66	**IP65/IP66**
Cooling	**Natural Cooling /Smart Cooling**	**Natural Cooling /Smart Cooling**	**Natural Cooling /Fan Cooling**
Warranty	5 years	5/10 years	**5/10 years**
Parallel	6	10	10
Installation	**User manual**	**User manual**	**AI QA service, 24*7 labor support, User manual, Video**
Remote monitor	Portal	Portal	**APP + Web + WIFI/LAN/Smart meter/Logger + OpenAPI**
Grid	Single-phase	Single-phase	**TN-S/TN-C/TT**

PV Input Parameter Comparison

	Sunways	Deye	Luxpower
Max Input Voltage (V)	600	500	530
Start-up Voltage (V)	58	125	100
MPPT Voltage Range (V)	80-550	150-425	150-420
Max Input Current Per String(A)	20	16	18
Max Short-circuit Current Per String (A)	25	24	32

Lower start-up voltage increases the daily PV revenue for customers.

Higher max input current adapts to big watts PV panels with higher Imp.

Output Parameter Comparison

	Sunways	Deye	Luxpower
Continuous AC Output Power Overload	10%	10%	10%
Rated Output Current for 8kW Model (A)	34.8	34.8	/
Back-up Peak Power	1.5~2 times, 10s	2 times, 10s	2 times, 10s
Back-up Load Capacity of Motors	**4HP**	/	/
THDi @ Rated Power	<3%	<3%	<3%
DCI	<0.5%In	<0.5%In	/

Matching Deye and Solax's performance on the AC output grid side and back-up side.

Efficiency Comparison

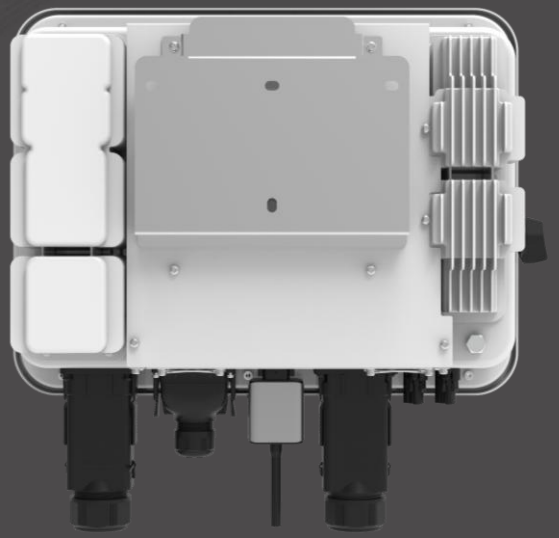
	Sunways	Deye	Luxpower
Max Efficiency	97.6%	97.6%	97.3%
European Efficiency	**97.0%**	96.5%	/
MPPT Efficiency	**99.9%**	>99%	99.9%

Great efficiency performance and higher European conversion efficiency, reducing PV energy conversion losses for our customers, reducing electricity purchasing from the national grid and improving the product economic benefits.

Exterior Information



Front View



Back View



Bottom View

Topology: Transformerless	Dimensions (mm): 488×374×205	Weight (kg): 20-21

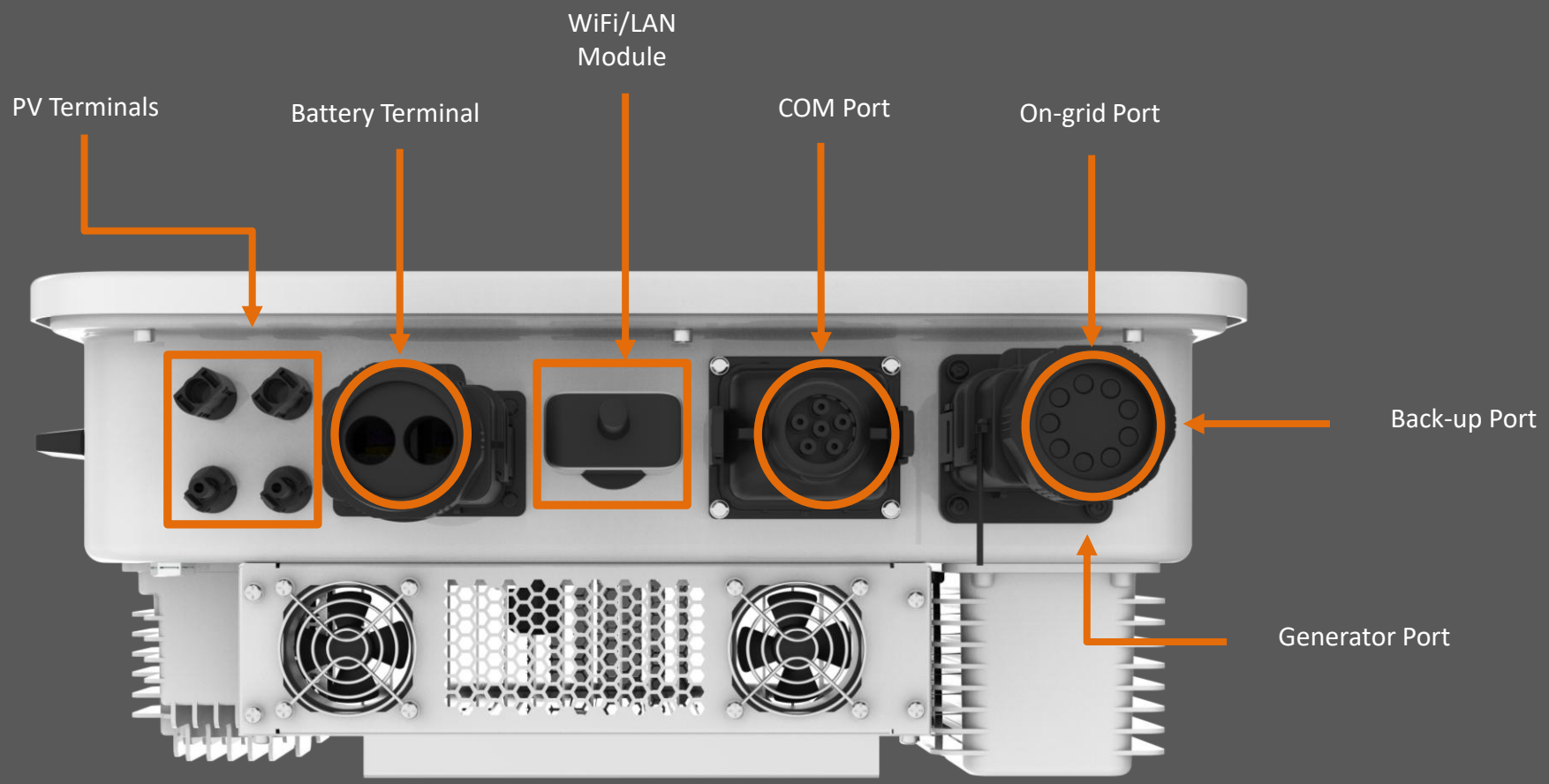
Display Interface

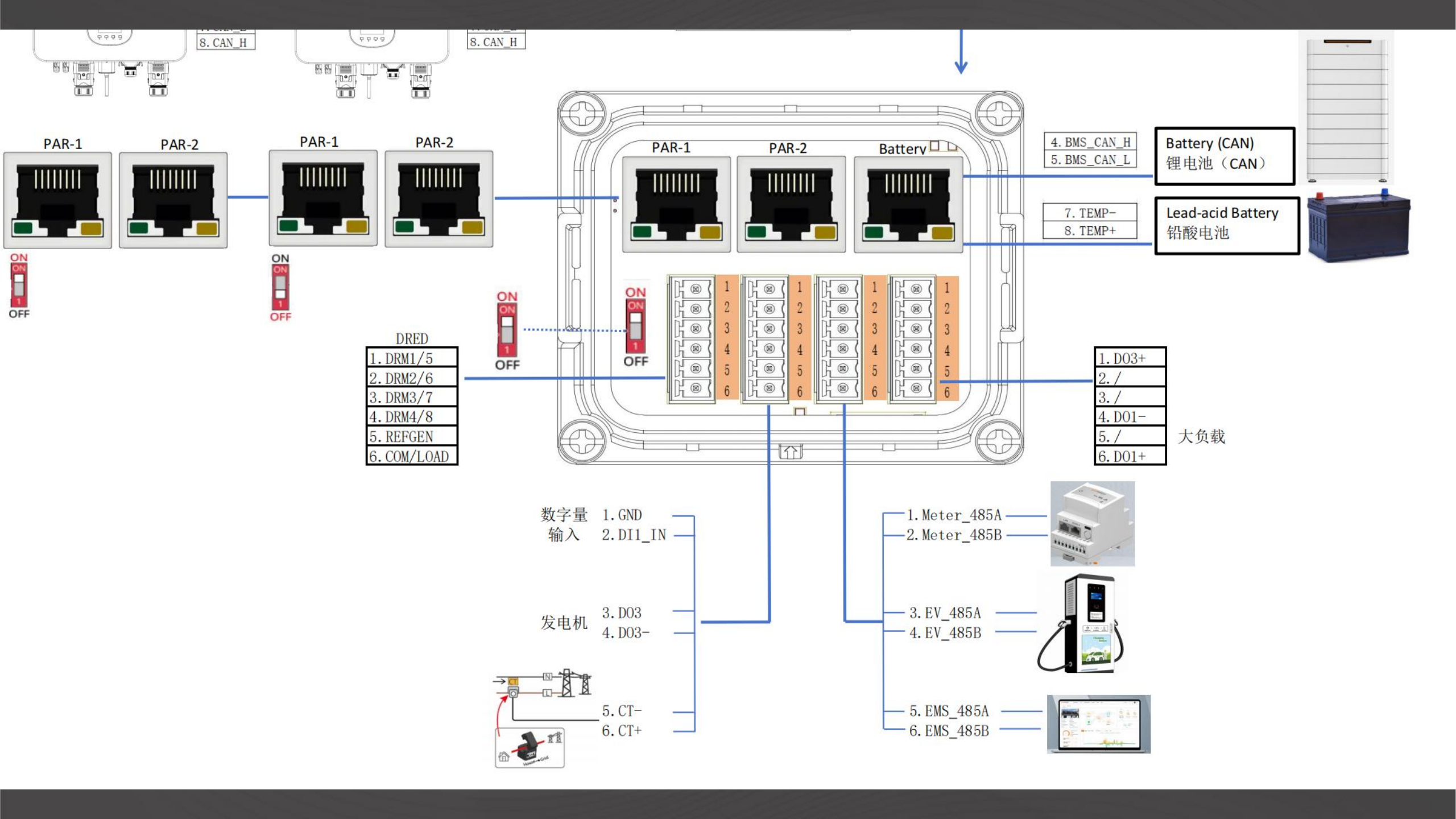
- Three state Indicator (System/Back-UP/Com)
- Tactile Push-button Control
- High-Resolution LCD Display
- Real-time Energy Flow Monitoring



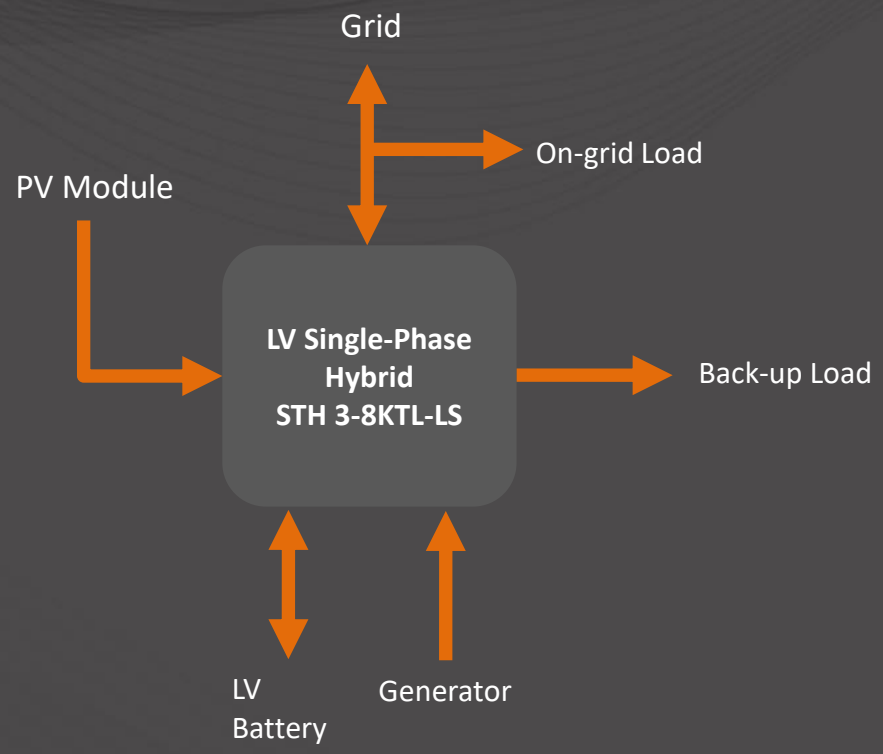
Appearance

Sunways STH 3-8KTL-LS Bottom View:



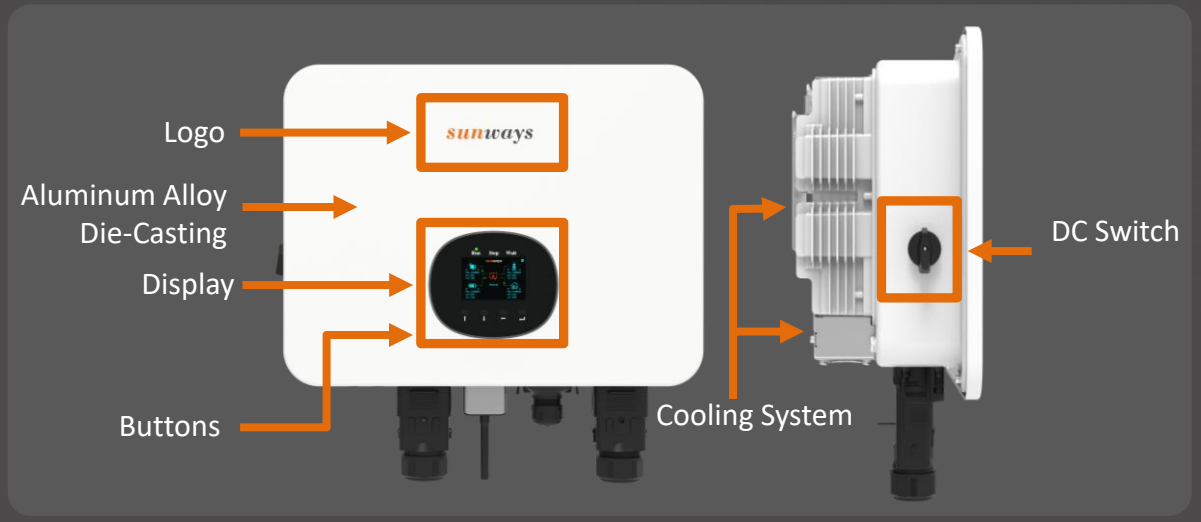

8. CAN_H
8. CAN_H
PAR-1
PAR-2
PAR-1
PAR-2
ON
OFF
ON
OFF
PAR-1
PAR-2
Battery
4. BMS_CAN_H
5. BMS_CAN_L
Battery (CAN)
锂电池（CAN）
7. TEMP-
8. TEMP+
Lead-acid Battery
铅酸电池
ON
OFF
ON
OFF
DRED
1. DRM1/5
2. DRM2/6
3. DRM3/7
4. DRM4/8
5. REFGEN
6. COM/LOAD
1. DO3+
2. /
3. /
4. DO1-
5. /
6. DO1+
大负载
数字量输入
1. GND
2. DI1_IN
发电机
3. DO3
4. DO3-
5. CT-
6. CT+
1. Meter_485A
2. Meter_485B
3. EV_485A
4. EV_485B
5. EMS_485A
6. EMS_485B

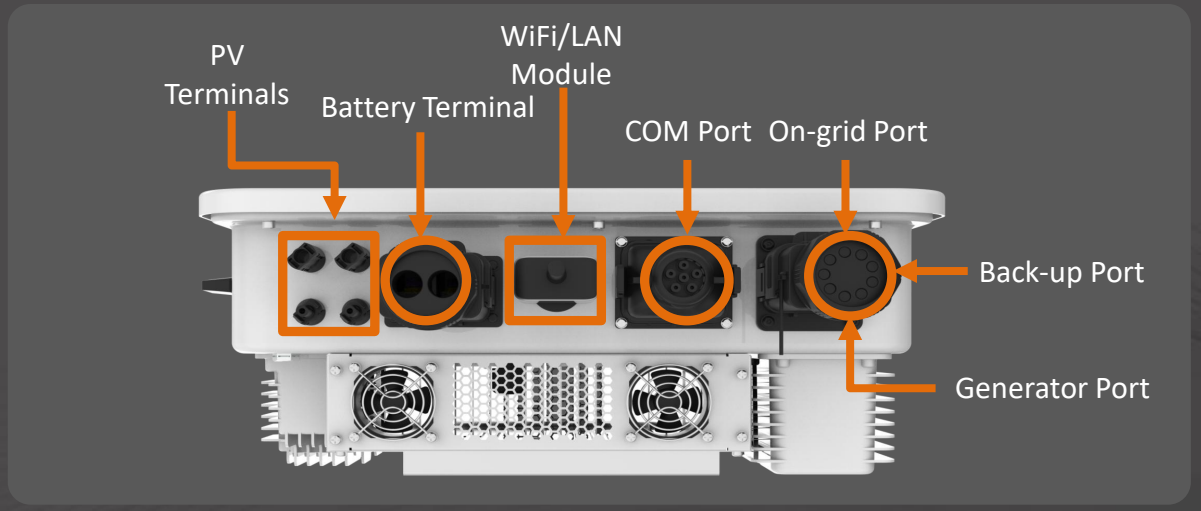
Structural Information

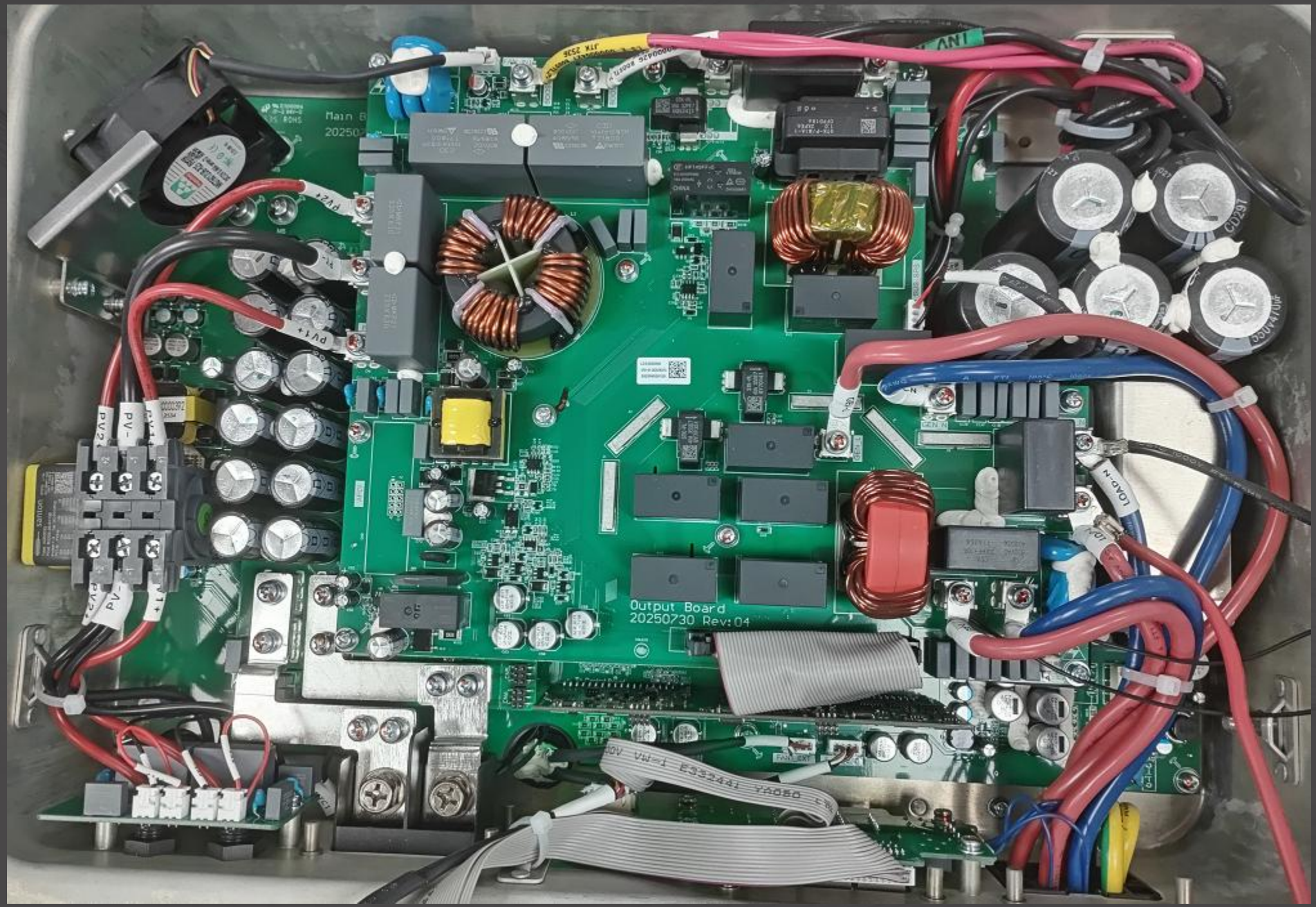


Seamlessly combines PV arrays, batteries, loads, grid connections, and generators.

Supports both on-grid and off-grid solar ESS applications.






Output Board
20250730 Rev:04
PV1+
PV-
PV2+
PV-
L1+
LOAD-N
CD291

Sunways Parameter Overview

STH 3-8KTL-LS



PV

MPPT/Input:
3-3.6kW: Single MPPT
4-8kW: Dual MPPT
Input Current: 20A
DC/AC: >150%

Battery

Voltage: 40-60V
Charge/Discharge Current:
80A(3-3.6kW)
100A(4-4.6kW)
120A(5-6kW)
160A(7.5-8kW)
Charge/Discharge Efficiency: 96%

Grid

On-grid Output Power: 110%
Efficiency: 97.6%

Load

UPS Switing Time: <10ms
Off-grid Overload Capacity: 200%, 10s

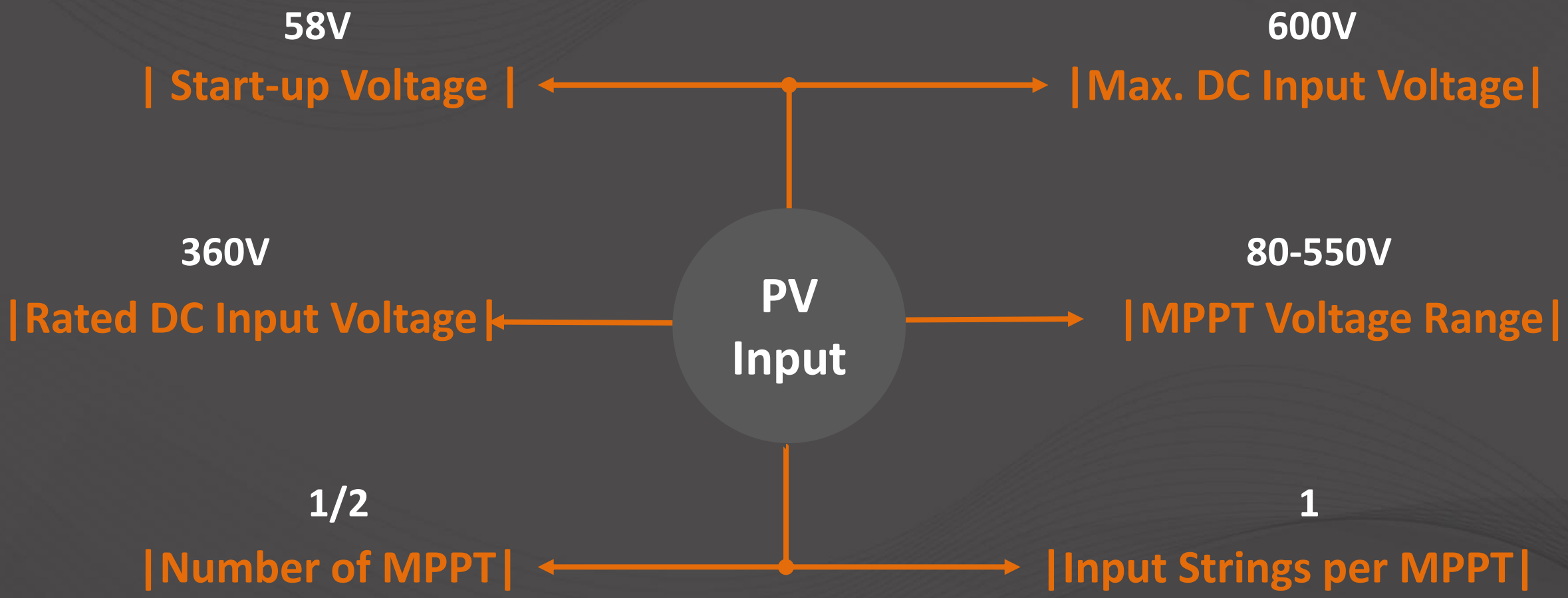
CONTENTS

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02

Key Features

PV Input Flexibility



* 3kW & 3.6kW- 1MPPT, 4kW, 4.6kW, 5kW, 6kW, 7.5kW, 8kW- 2MPPT

PV Input Flexibility

20A

| Max. Input Current per String |

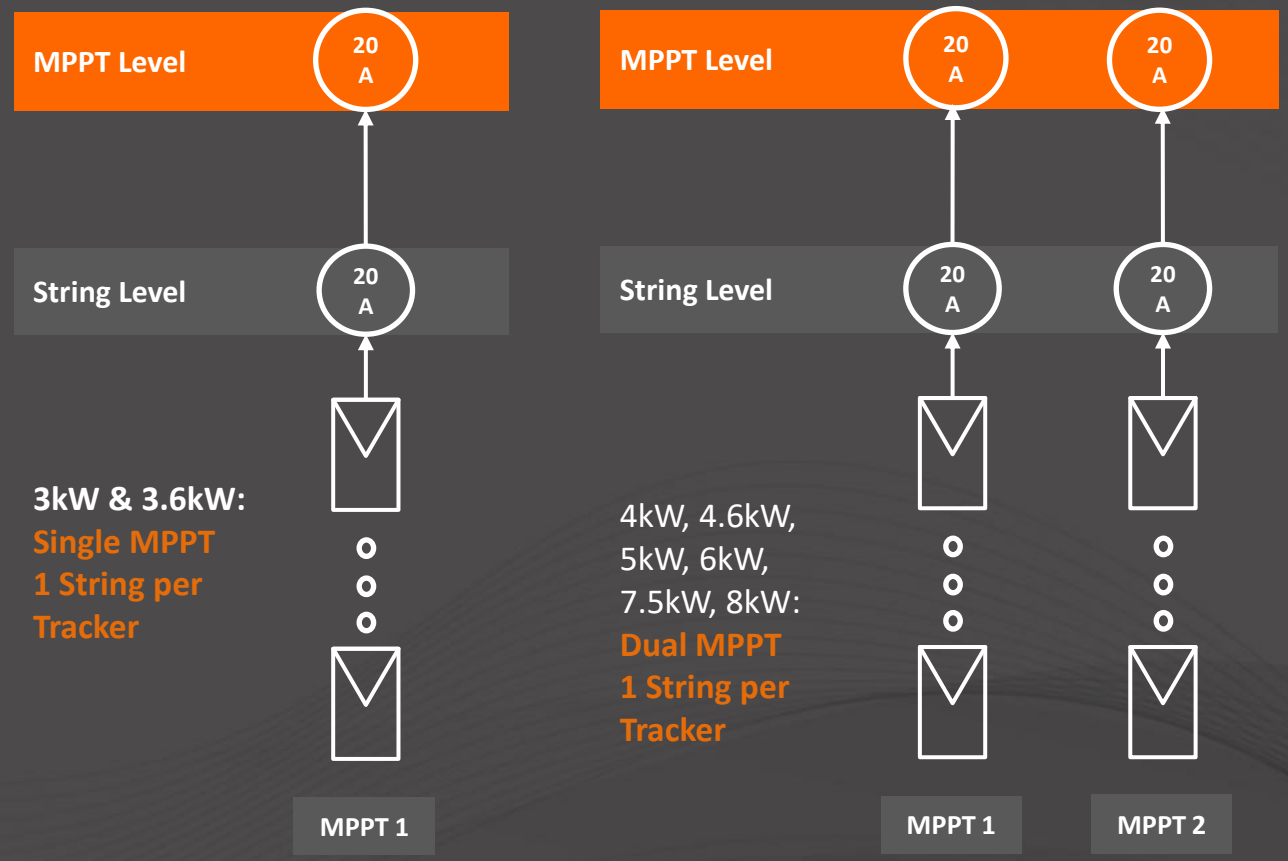
25A

| Max. Short-Circuit Current per String |

Compatible with High-Power Mono/Bifacial PV Modules

Zero Clipping Loss from Overcurrent Surges

MPPT & String Configuration:



Charge/Discharge Flexibility



Compatible Battery Types

Lithium-ion (with BMS)	Lead-acid

Battery Voltage Range

40-60V

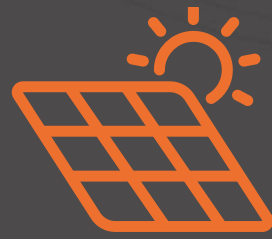
Maximum Charge/Discharge Current：

3kW, 3.6kW		4kW, 4.6kW		5kW, 6kW		7.5kW, 8kW	
↓	↑	↓	↑	↓	↑	↓	↑
80A	80A	100A	100A	120A	120A	160A	160A

Dynamic Power Adjustment： Dynamically adjusts charge/discharge power based on load demand to avoid battery overcharging or over-discharging, extending battery life.

AC Output Flexibility

PV Modules	Low-Voltage hybrid Inverter	Output (On / Off-grid)



Appropriate DC-Side Oversizing

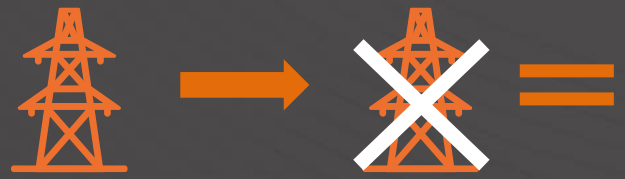


Rated Power（P）

P x 110%

Maximum Output Power（Pmax）

UPS switching time



Grid

Power Outage

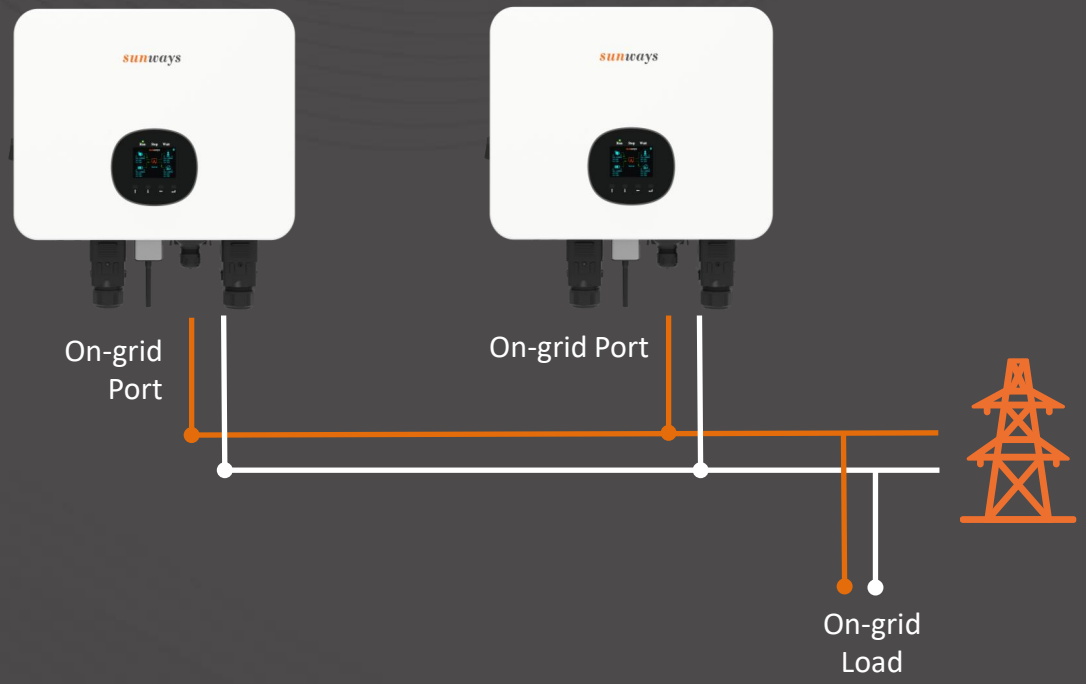
< 10ms

Backup Port Overload Capability

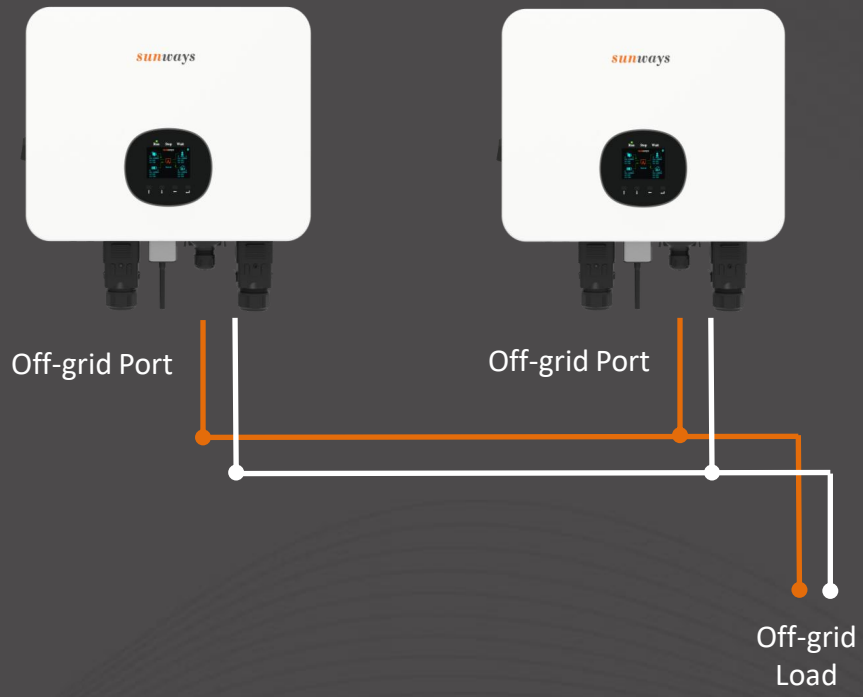
Rated Power (P) X	2 times, 10s	3kW, 3.6kW, 4kW, 4.6kW, 5kW, 6kW		
Rated Power (P) X	1.6 times, 10s	7kW	1.5 times, 10s	8kW

Capable of driving loads with high instantaneous starting power (e.g., motors, compressors) for short durations to meet sudden load demands.

Parallel Operation Flexibility



On-grid side parallel, supports 10 units



Off-grid side parallel, supports 3 units

HEMS



- **Multi-Source Compatibility & Smart Load**

Integrated bidirectional Smart Load interface connects backup diesel generators (input) or critical loads like heat pumps (output). Auto-switching to generator or smart load prioritization during low PV/off-grid operation to sustain the critical equipment.

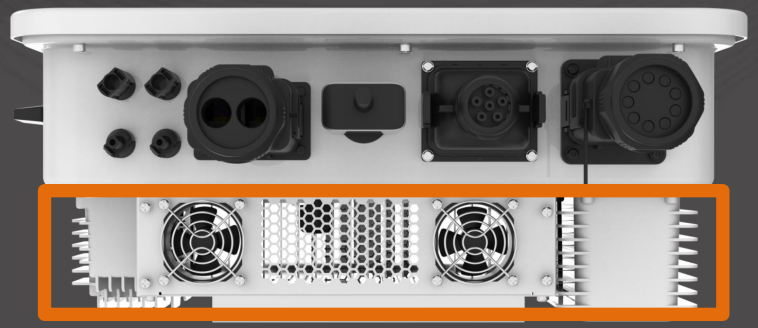
- **EV Charger Integration**

Direct PV-to-EV charging, maximizing solar utilization.

- **Smart Energy Management**

Built in intelligent algorithms manage the energy flow and priority of photovoltaic, battery, smart load interface devices (generators/loads) and the power grid in real-time. Automatically coordinate generator, battery, and load demands when off-grid, significantly reducing fuel consumption; Optimize the electricity costs and improve overall energy efficiency when on-grid.

Cooling Technology



Operating Temperature Range：-20~60℃

Natural Convection Cooling： 3kW | 3.6kW | 4kW | 4.6kW | 5kW

Natural Convection & Intelligent Fan Cooling: 6kW | 7.5kW | 8kW

Heat Sink

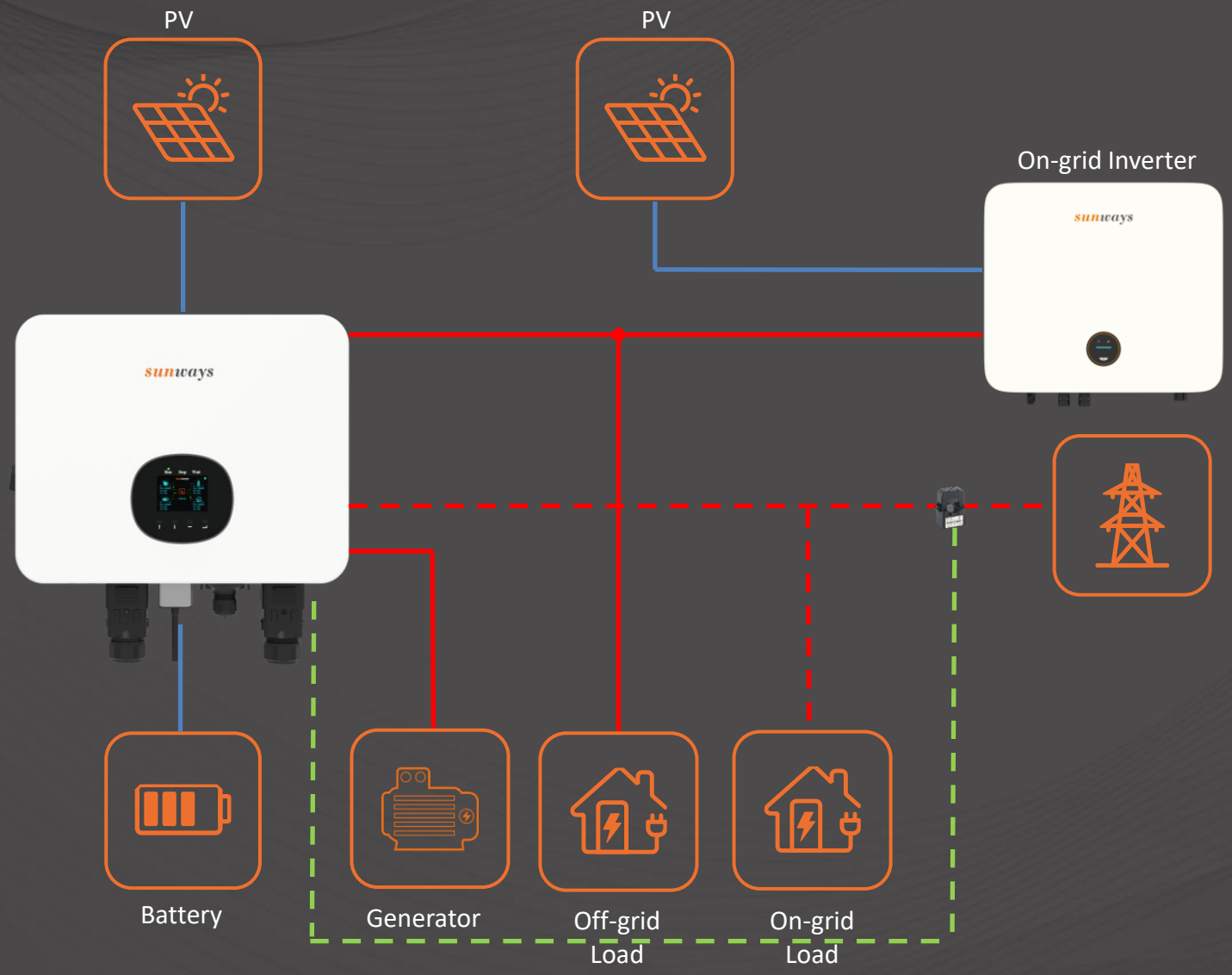
Natural Convection

Heat Sink + Intelligent Fan

Natural Convection & Intelligent Fan Cooling

IP68
FAN

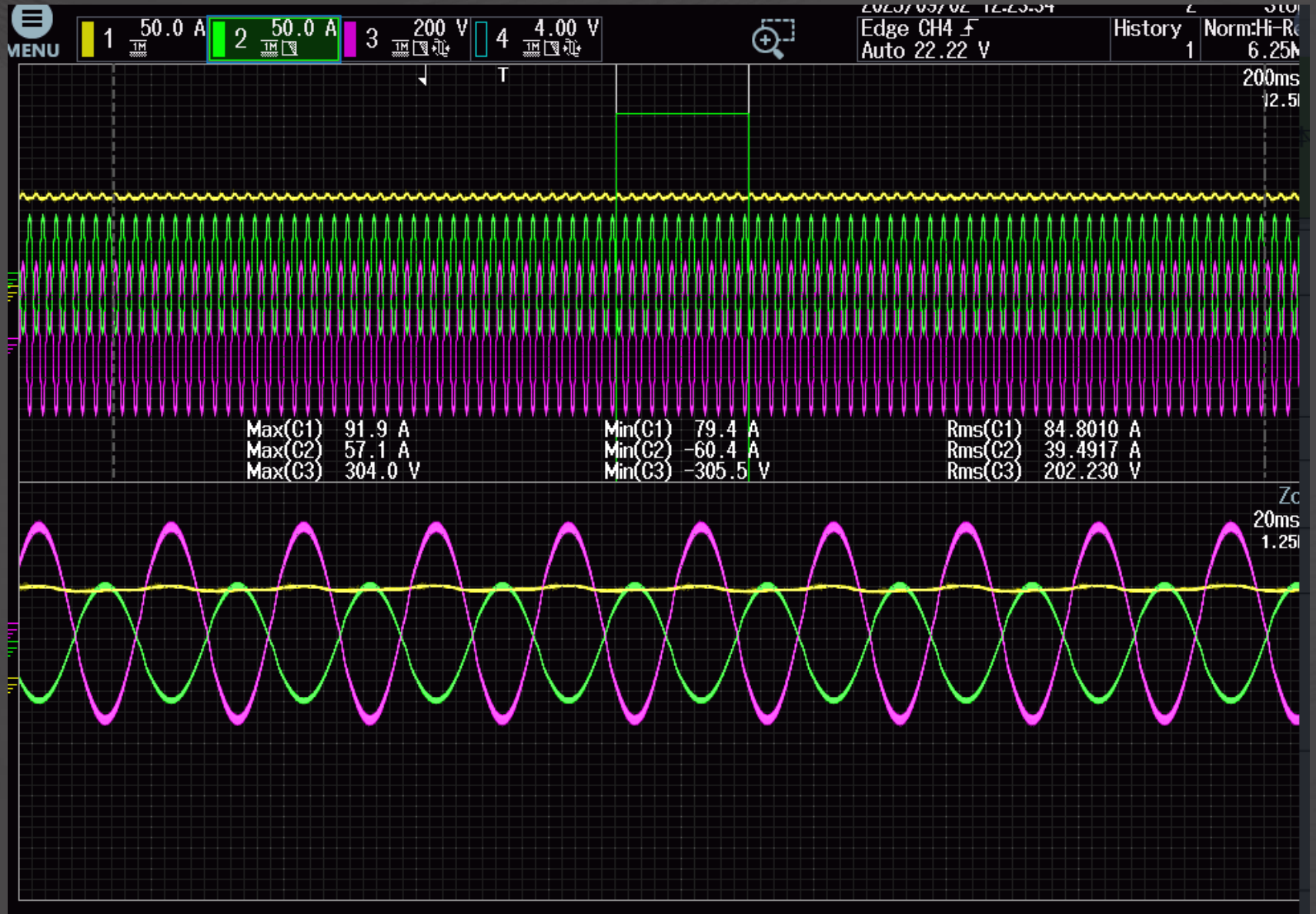
Microgrid Technology



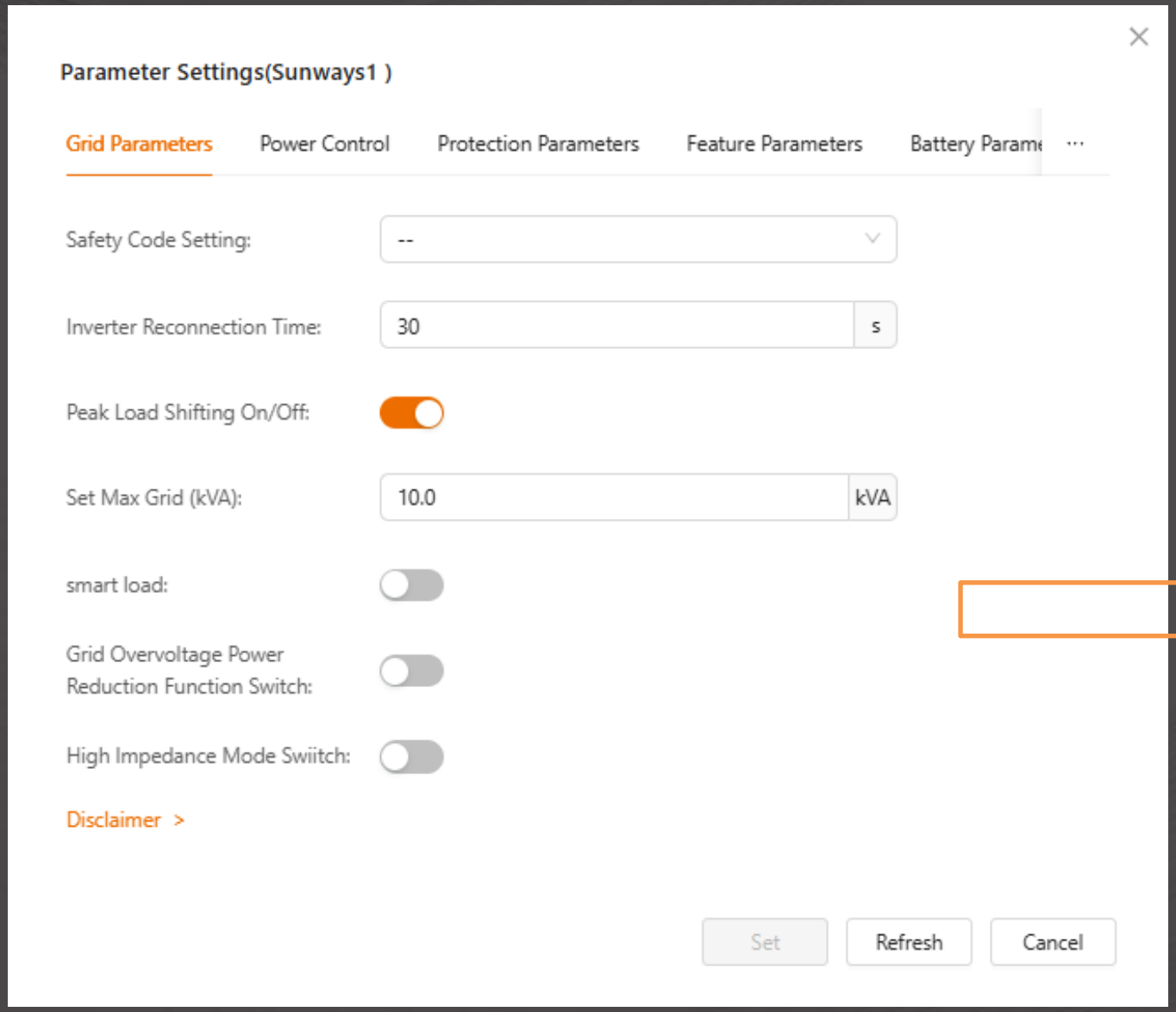
Eliminates Islanding Waste, Ensures Reliable Off-Grid Power

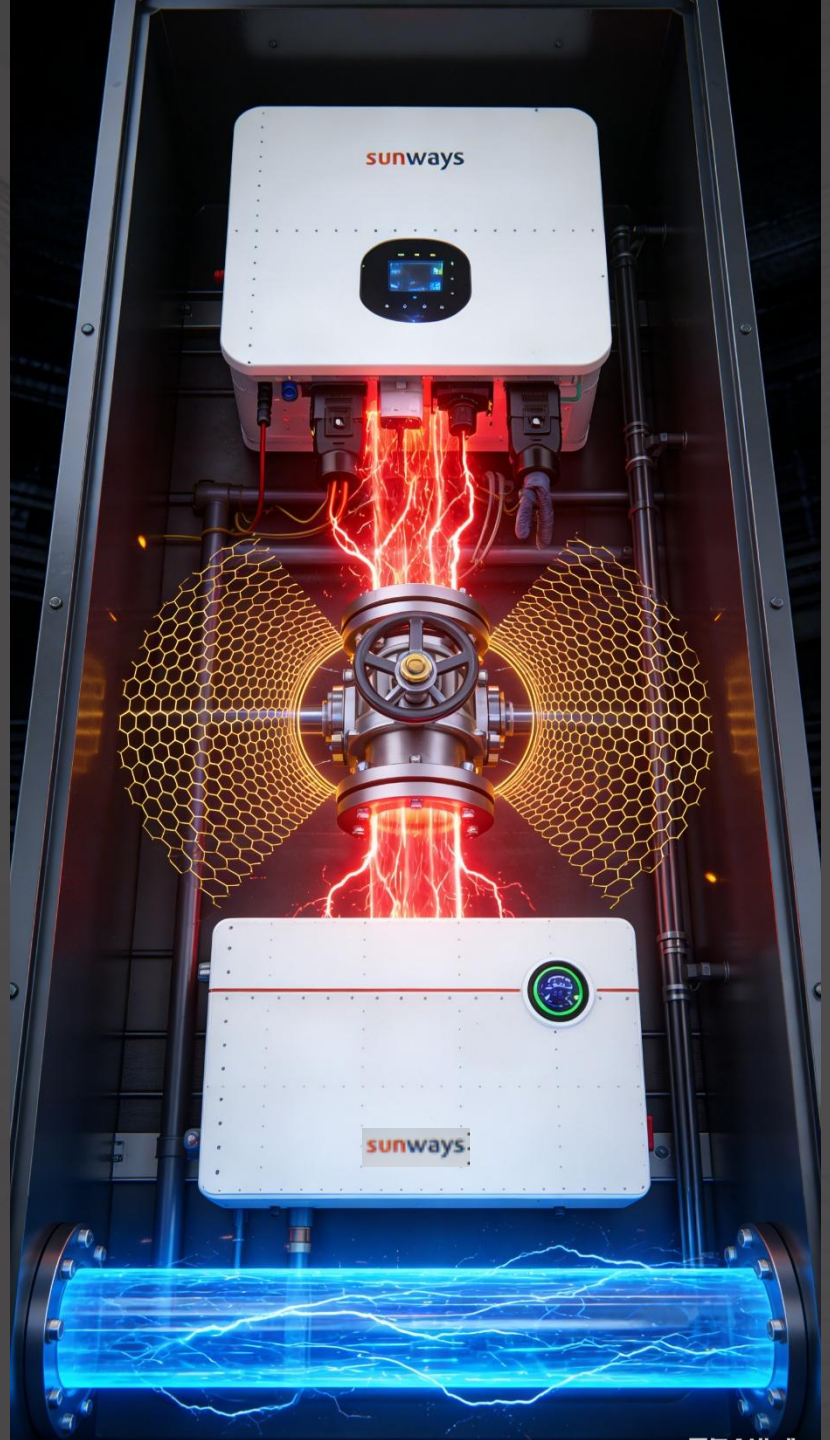
This system prevents on-grid inverters' "islanding shutdown" during grid faults or off-grid operation. Storage inverters simulate grid power to instantly establish microgrids, enabling continuous PV output. Also supports pure off-grid systems in gridless areas, maximizing PV utilization and critical load power supply.

High Load Capacity Even Under Low Voltage - Overload Capability



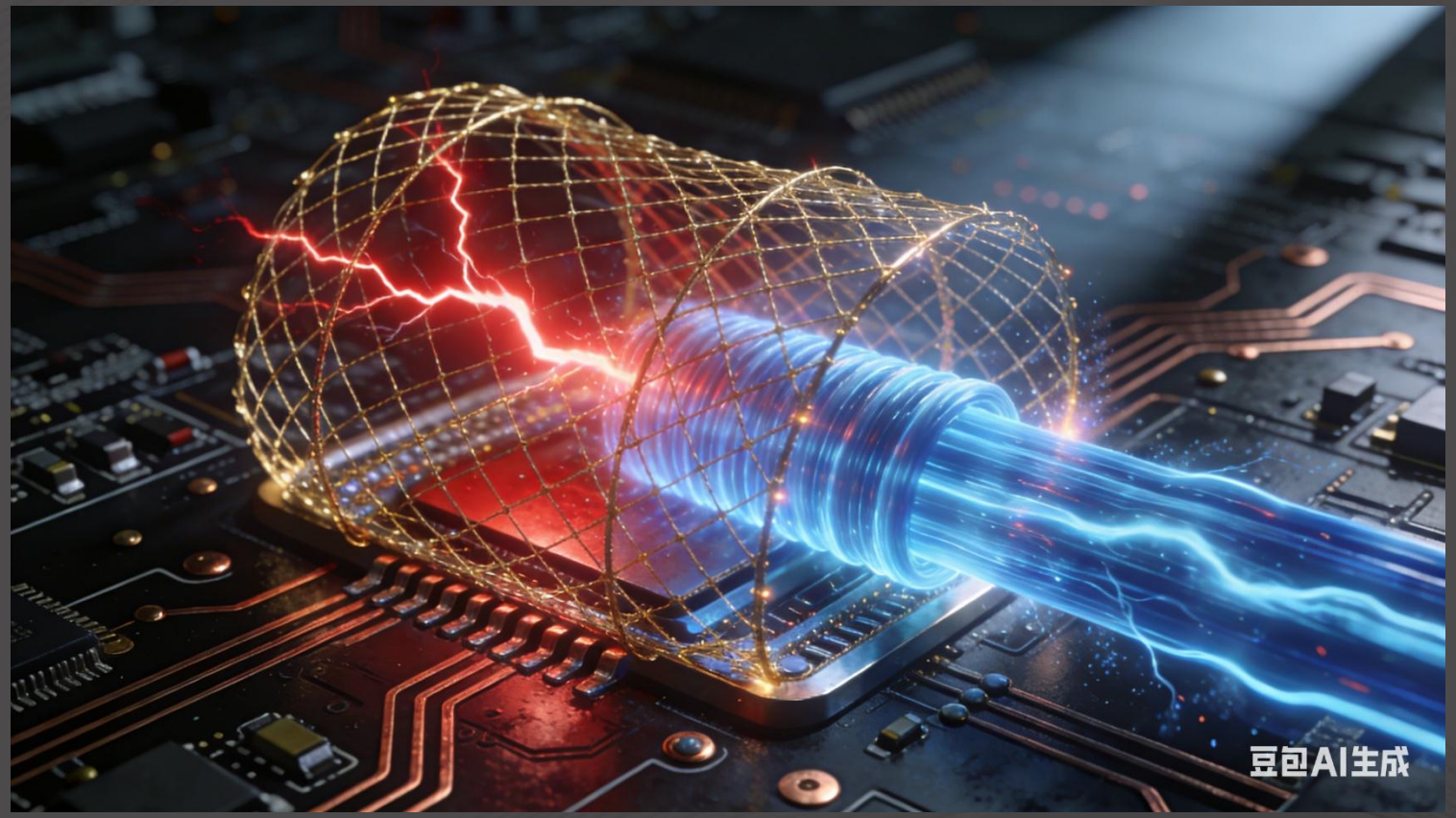
High Impedance Mode Switch



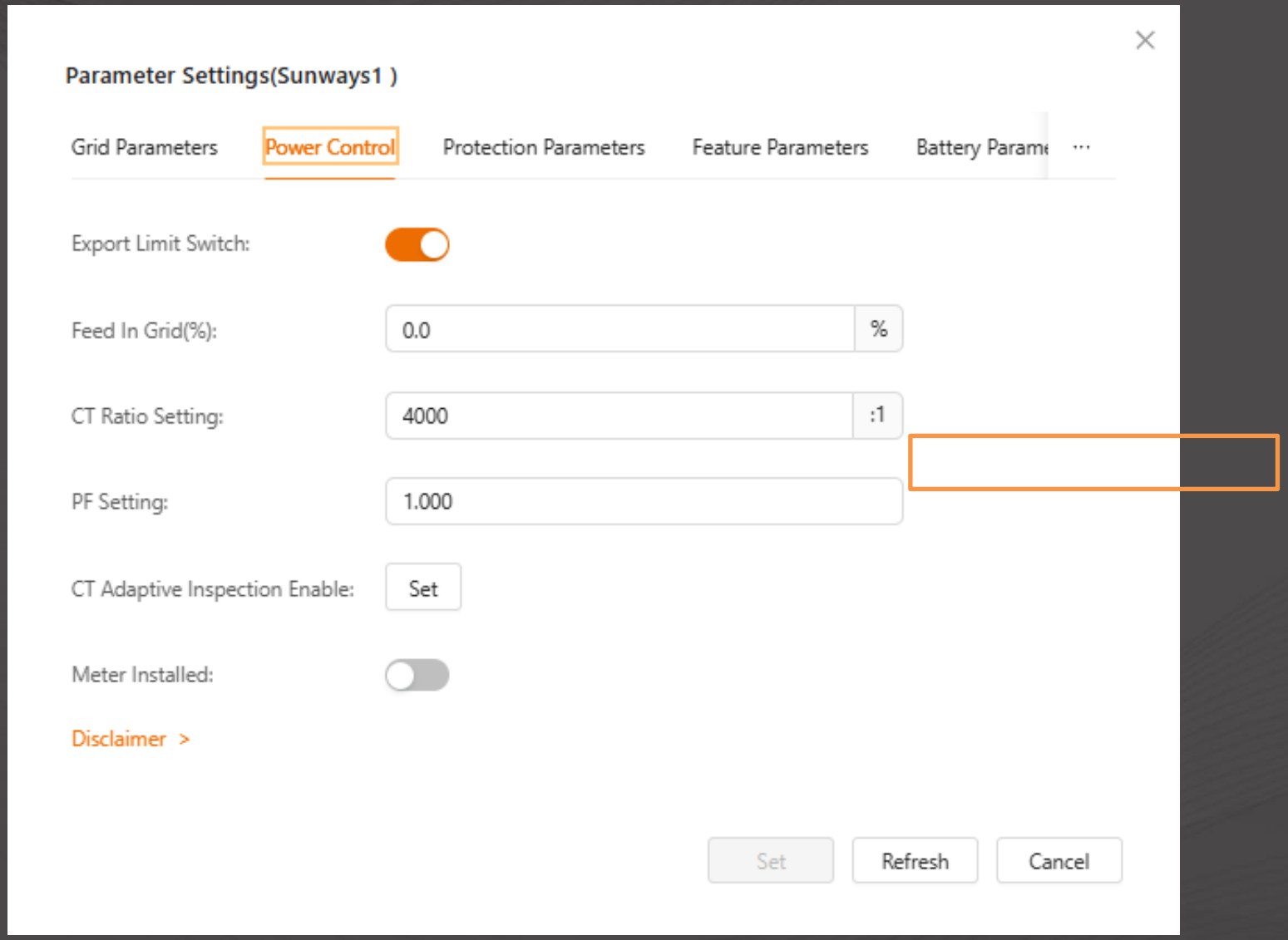


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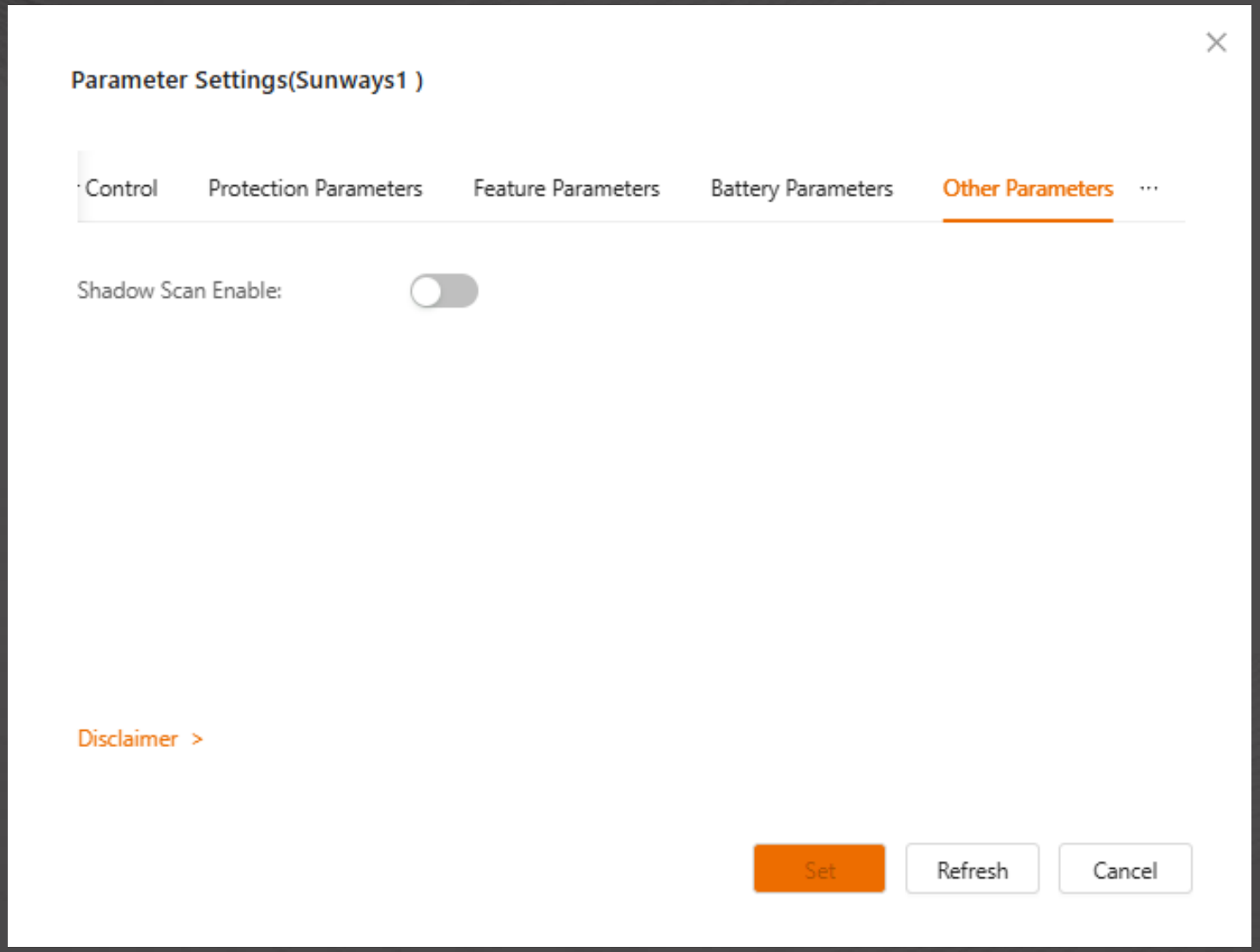
High Impedance Mode Switch

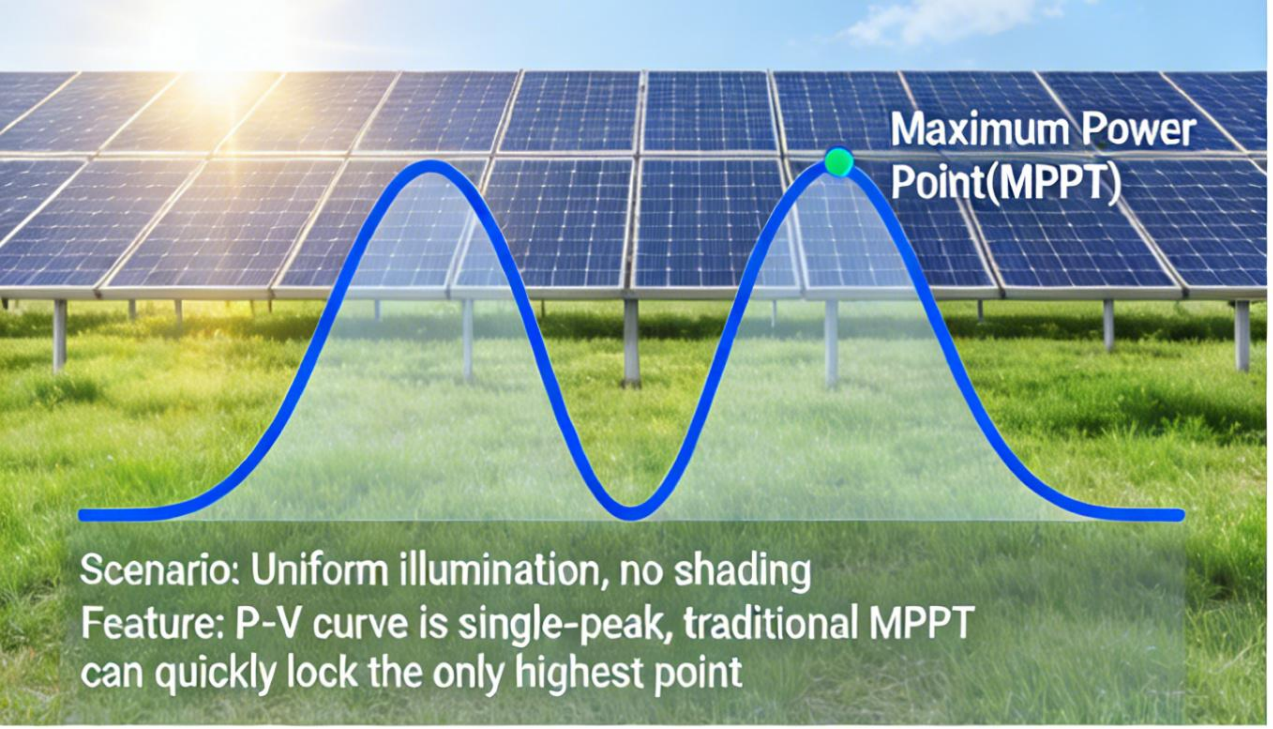


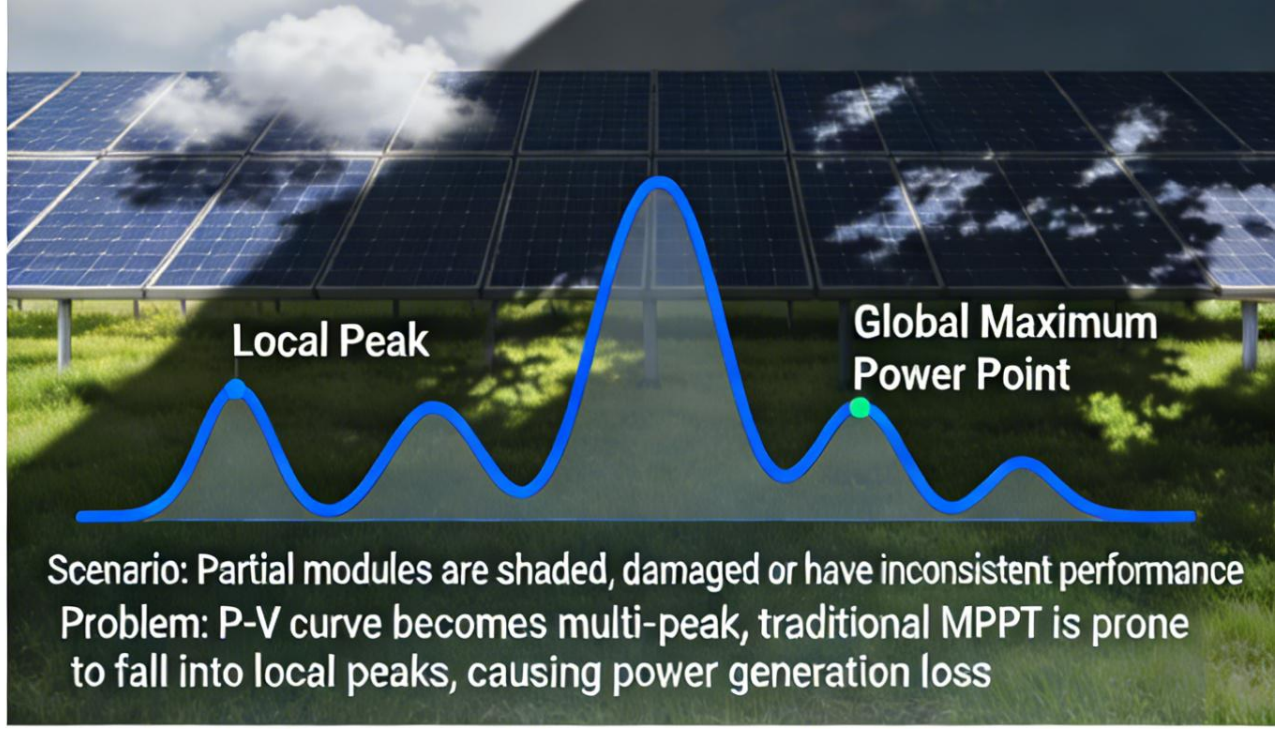
CT Adaptive Inspection Enable



Shadow Scan Enable





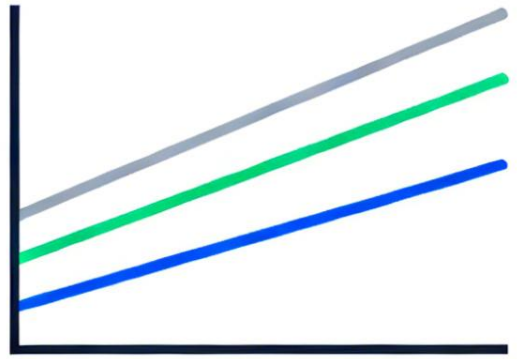


Turn on shadow scan



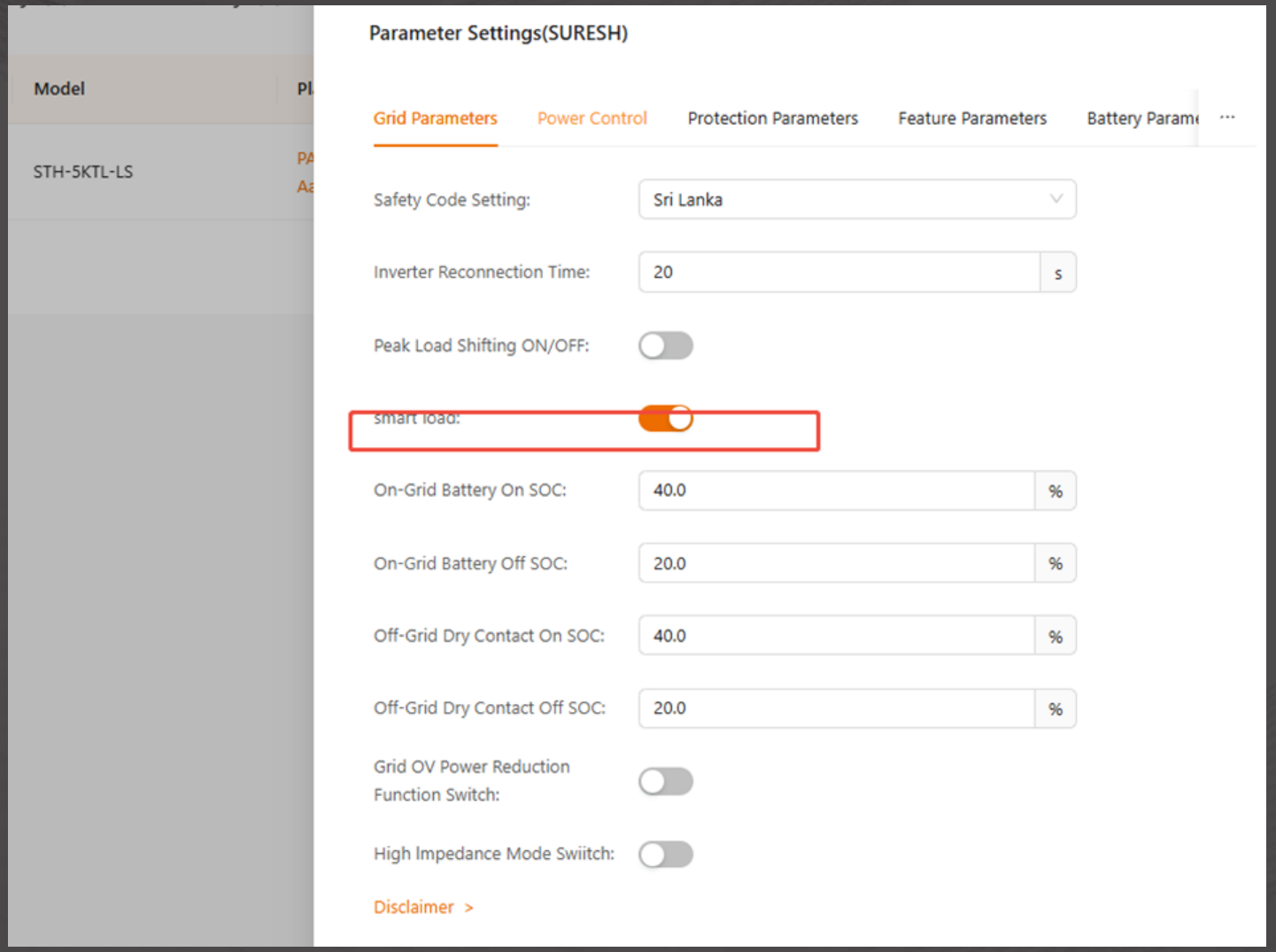
Shading Scan Enabled (MPPT Multi-peak Scanning)

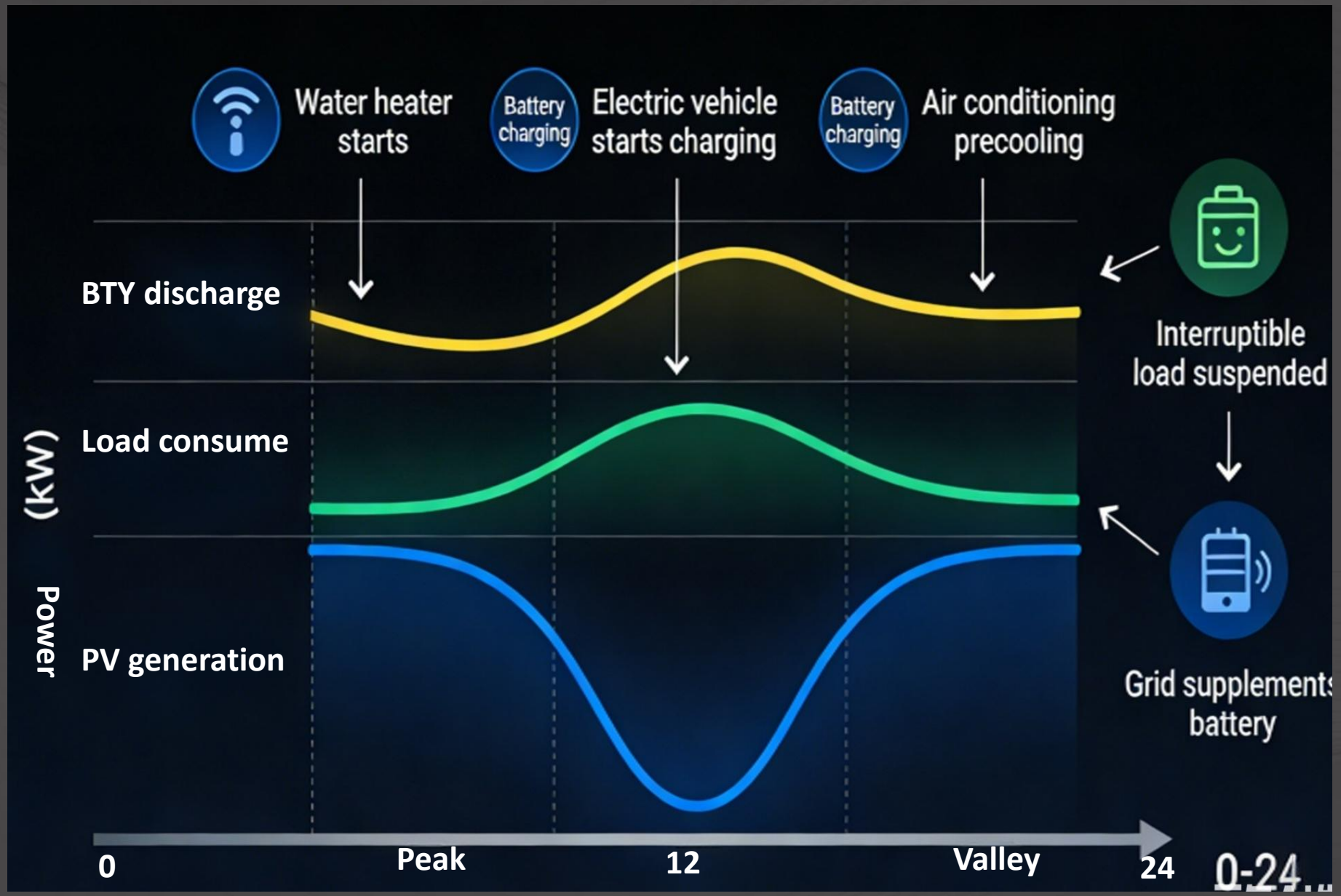
- Start Scanning: Perform a global scan over the entire voltage range.
- Identify All Peaks: Detect and analyze all possible peak points on the P-V curve.
- Lock Global Optimum: Compare and lock the global maximum power point



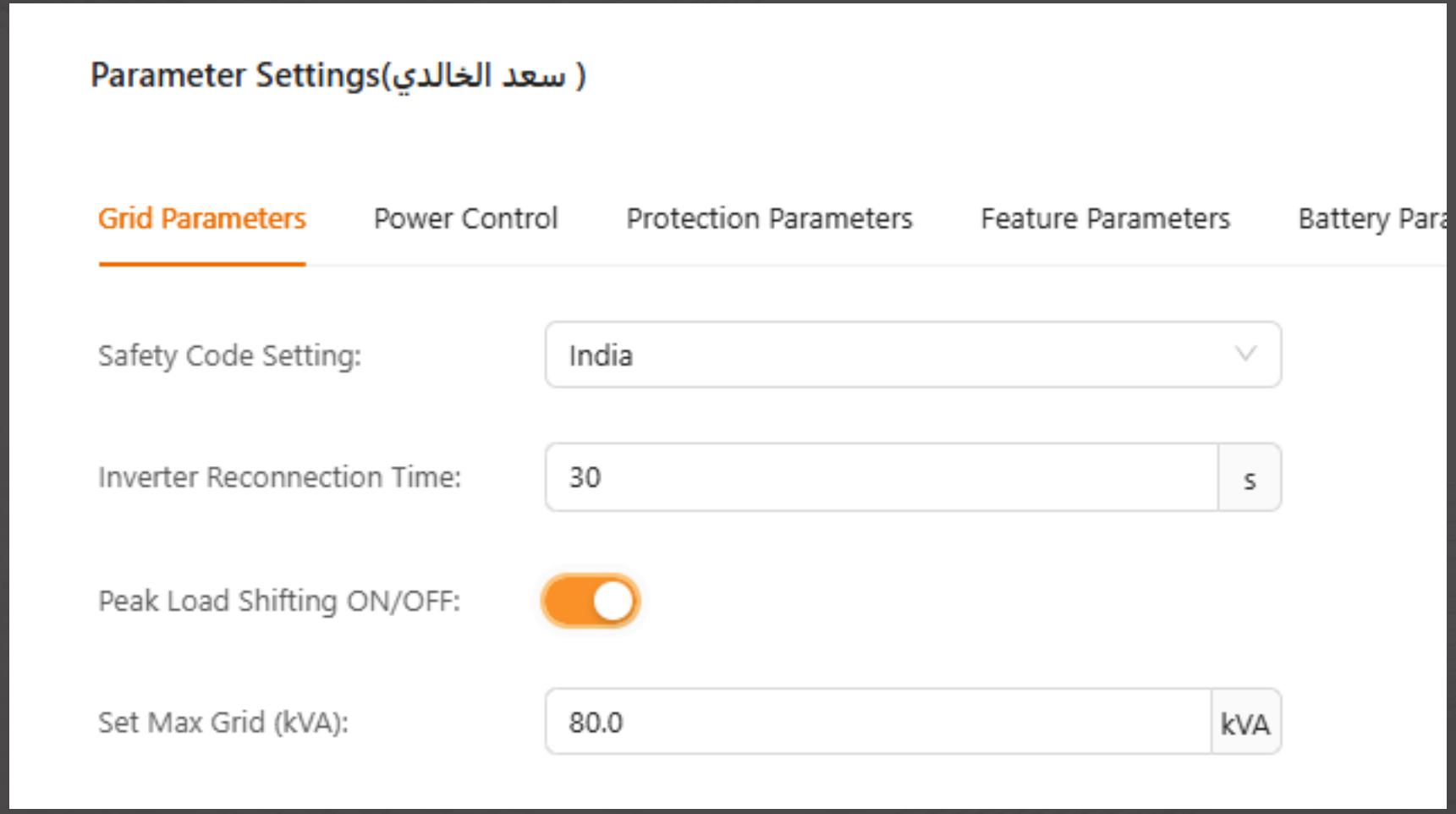
Increase Power Generation Efficiency

Smart Load


Model
STH-5KTL-LS
Parameter Settings(SURESH)
Grid Parameters
Power Control
Protection Parameters
Feature Parameters
Battery Parame
Safety Code Setting:
Sri Lanka
Inverter Reconnection Time:
20
s
Peak Load Shifting ON/OFF:
Smart load:
On-Grid Battery On SOC:
40.0
%
On-Grid Battery Off SOC:
20.0
%
Off-Grid Dry Contact On SOC:
40.0
%
Off-Grid Dry Contact Off SOC:
20.0
%
Grid OV Power Reduction Function Switch:
High Impedance Mode Swiitch:
Disclaimer >


Water heater starts
Battery charging
Electric vehicle starts charging
Battery charging
Air conditioning precooling
BTY discharge
Load consume
PV generation
Power (kW)
Interruptible load suspended
Grid supplements battery
0
Peak
12
Valley
24
0-24...

Peak-load Shifting



Energy Storage System Peak-Valley Transfer Workflow



When the grid electricity price is low, the battery pack absorbs and stores electrical energy from the grid



When the grid electricity price is high, the battery pack releases stored electrical energy to supply loads



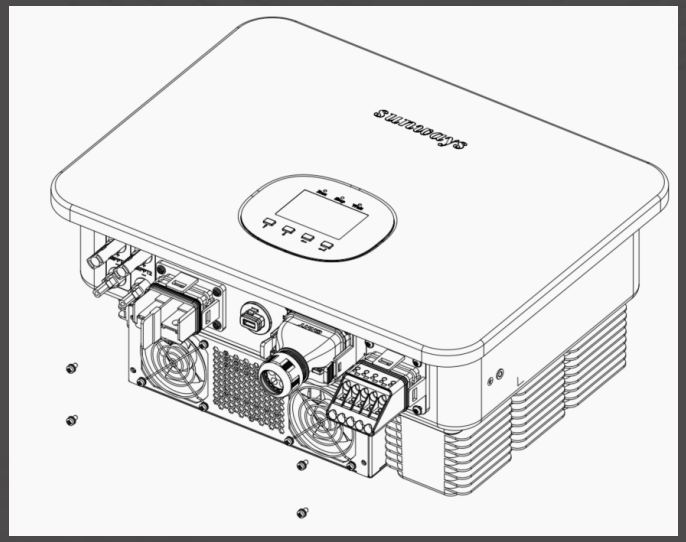
豆包AI生成

Battery Activation Switch

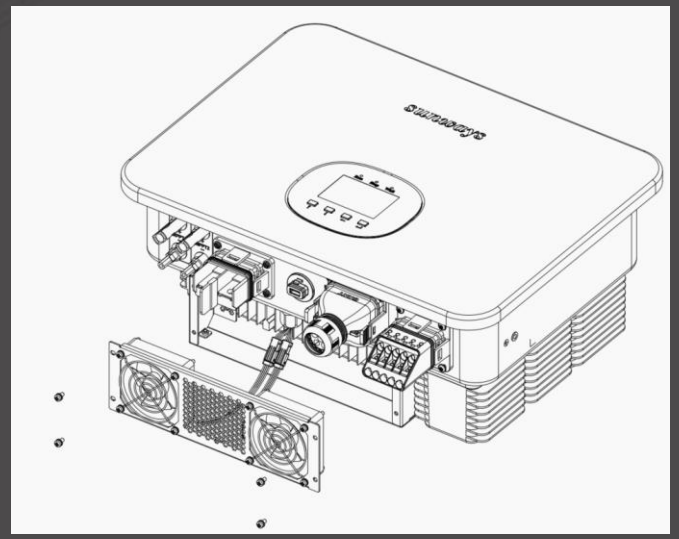




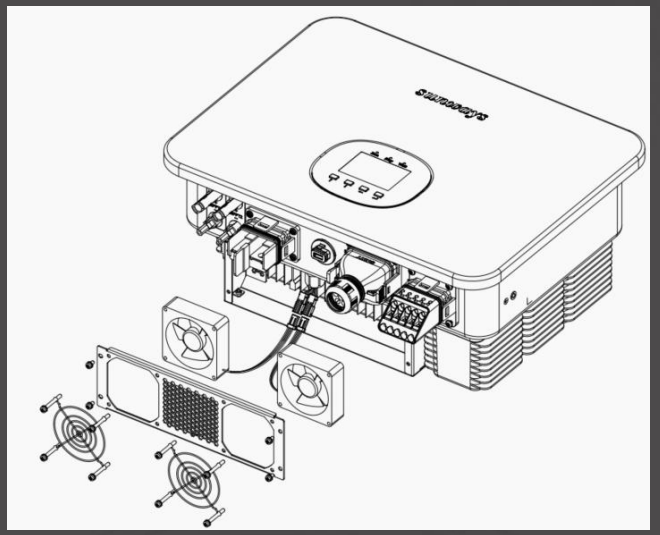
Fan Removal and Replacement



1. Remove the four fan baffle screws.



2. Detach the fan baffle and disconnect the fan terminals.



3. Replace the faulty fan and its baffle with new components.

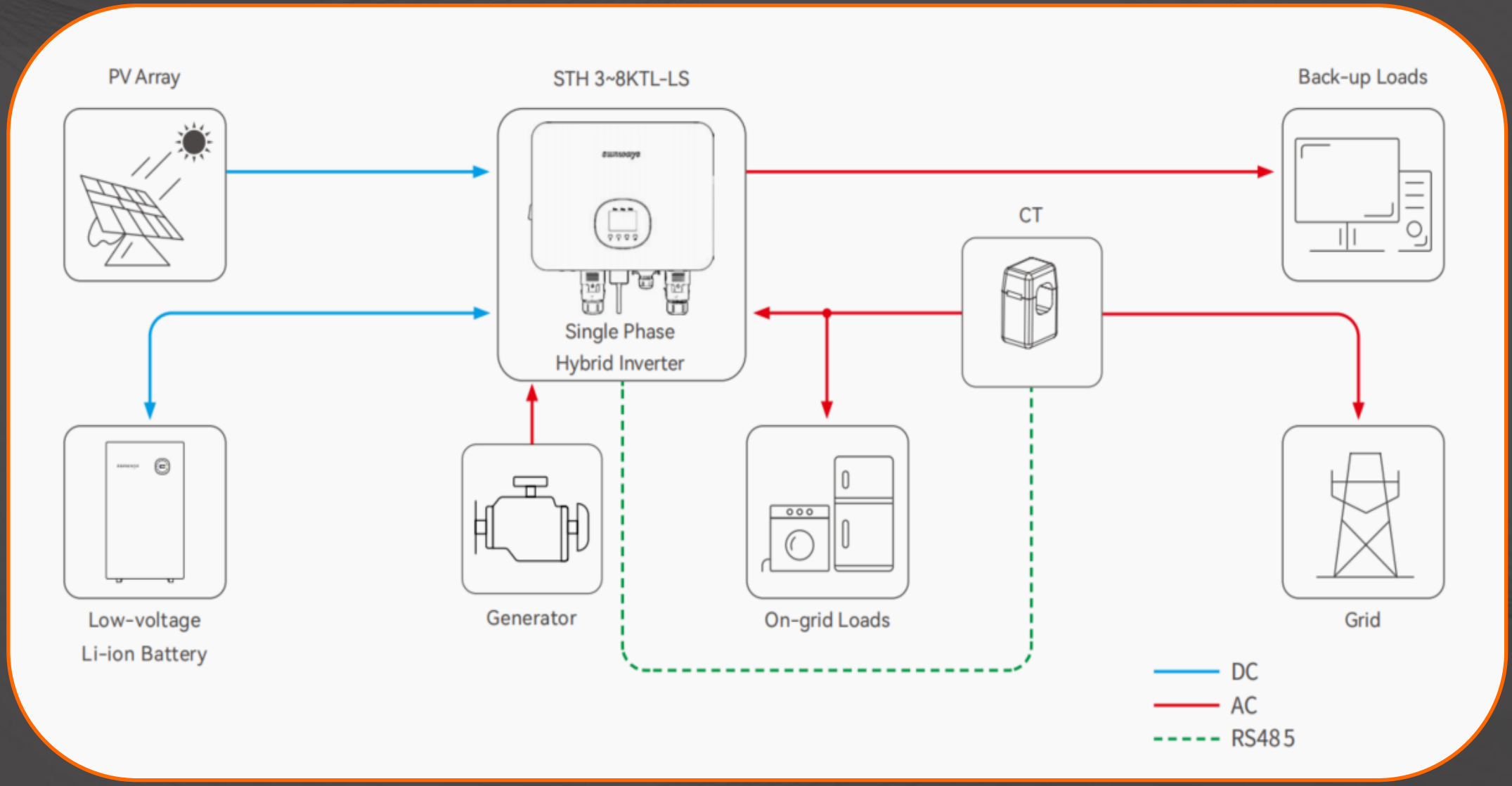
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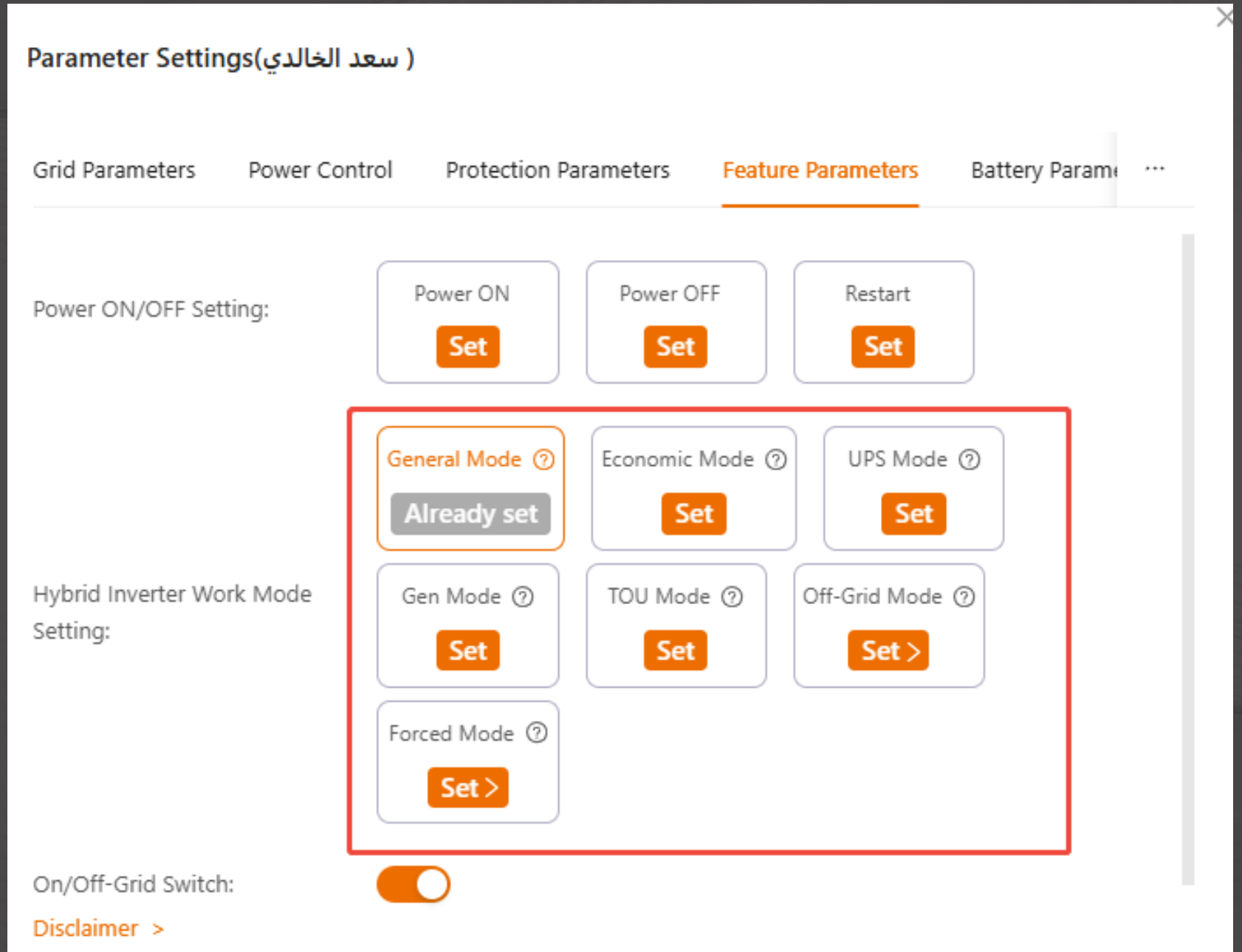
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03

Work Mode

Working Principle

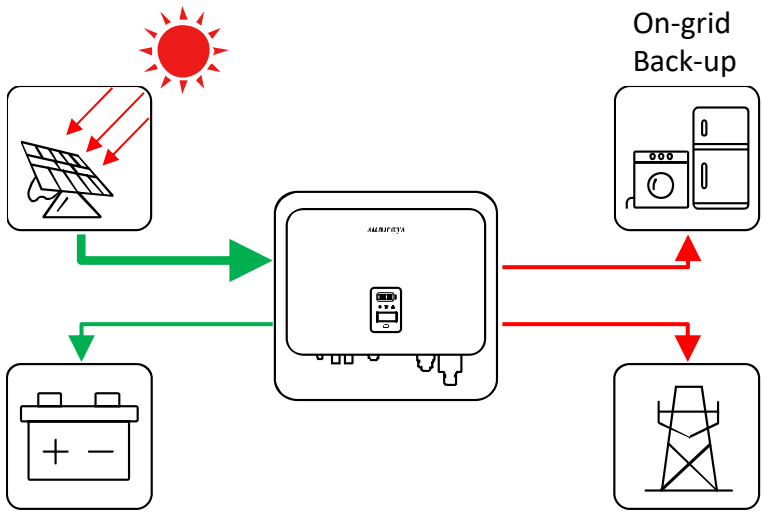



Parameter Settings(سعد الخالدي)
Grid Parameters
Power Control
Protection Parameters
Feature Parameters
Battery Parame
Power ON/OFF Setting:
Power ON
Set
Power OFF
Set
Restart
Set
Hybrid Inverter Work Mode Setting:
General Mode
Already set
Economic Mode
Set
UPS Mode
Set
Gen Mode
Set
TOU Mode
Set
Off-Grid Mode
Set >
Forced Mode
Set >
On/Off-Grid Switch:
Disclaimer >

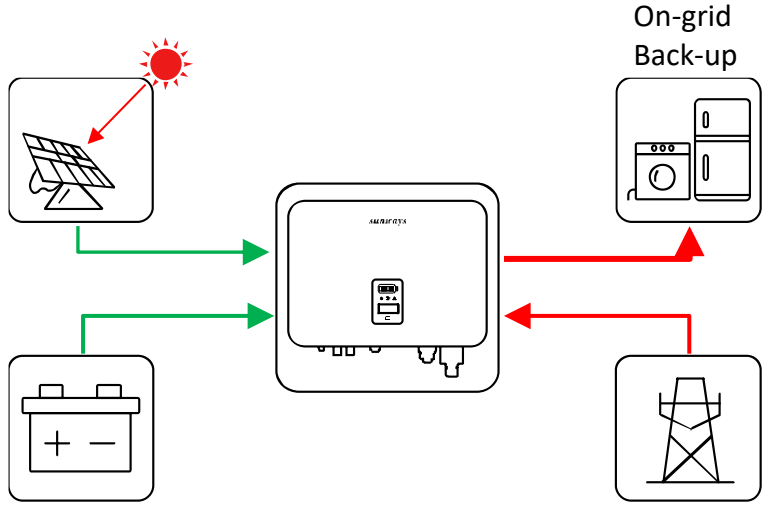
General mode

In this working mode, **when the power from the PV array is sufficient**, PV power will supply the loads, battery, and grid by the following sequence: Loads＞ Battery＞ Grid.

PV power will supply the loads first, and second charge the battery, and then feed to the grid. (You can set the power to the grid to 0W if the local grid doesn't allow).

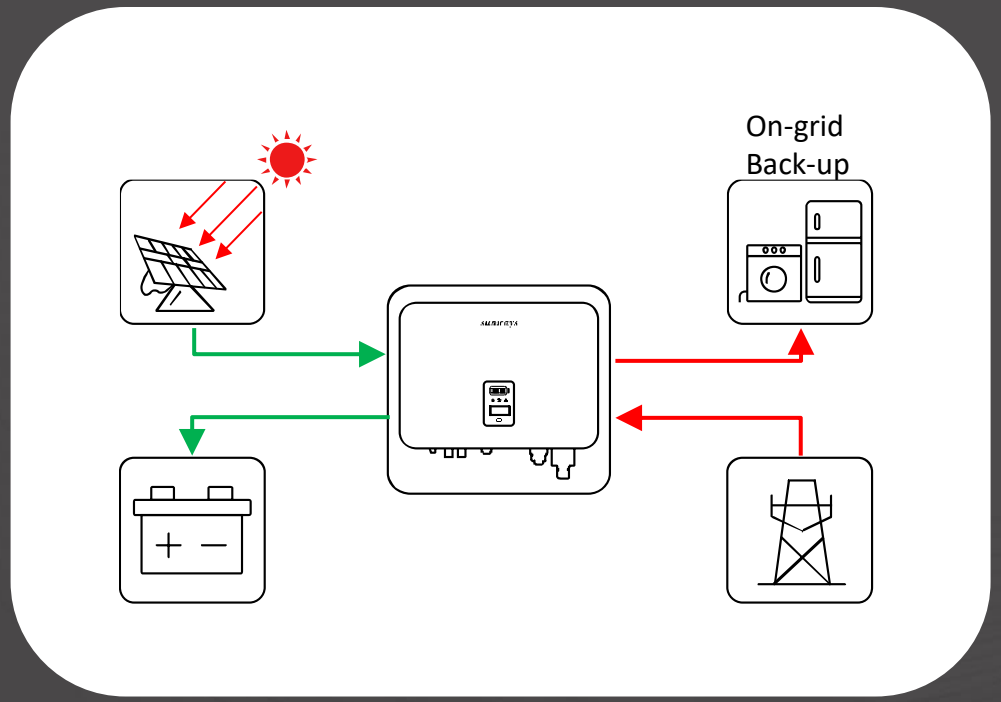


When the PV power is insufficient, the battery will discharge to supply loads, and the grid will join in if the battery is not enough.

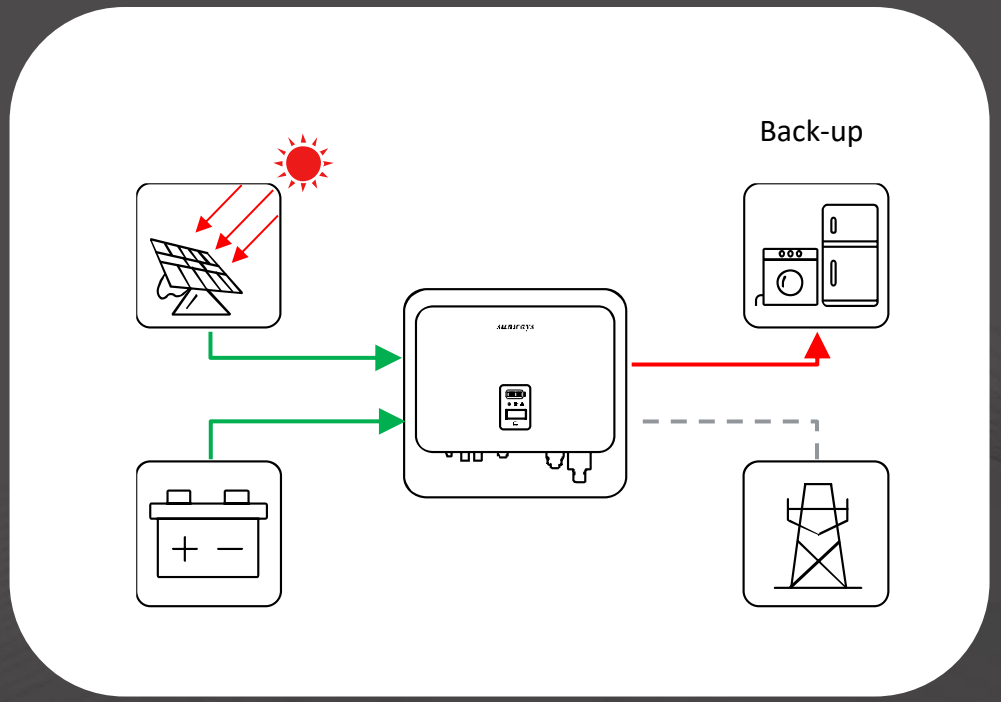


UPS Mode

In this working mode, the inverter will use the power from PV or grid (Set in the App) to charge the battery until it is fully charged, and as long as the grid is there, the battery won't discharge.

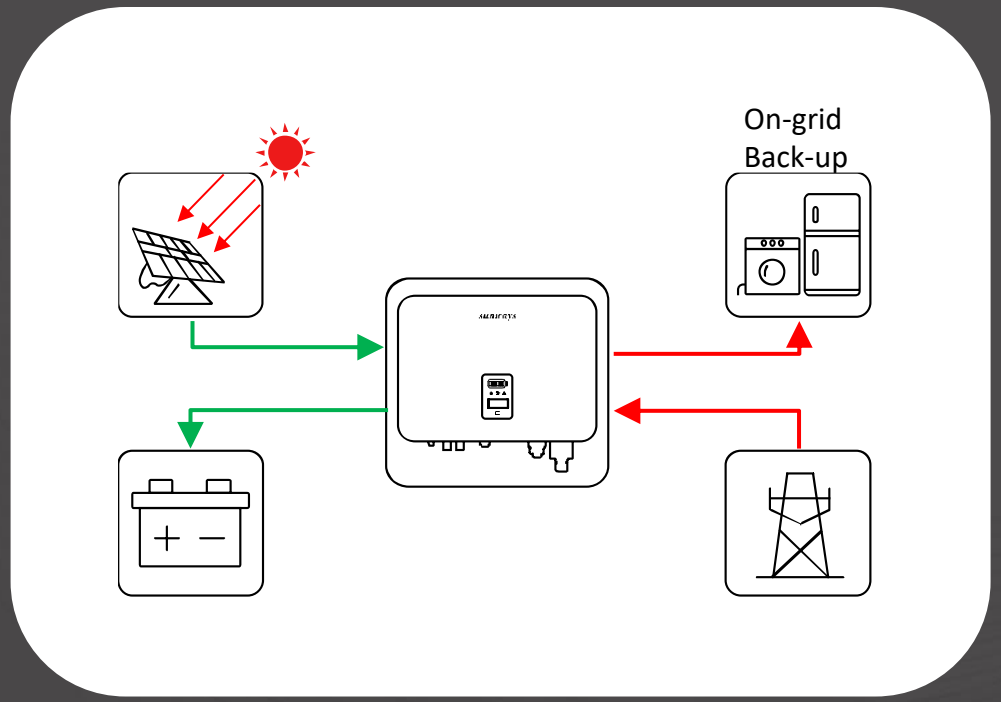


When the grid is cut off, power from PV and battery will supply loads connected in the back-up side (UPS).

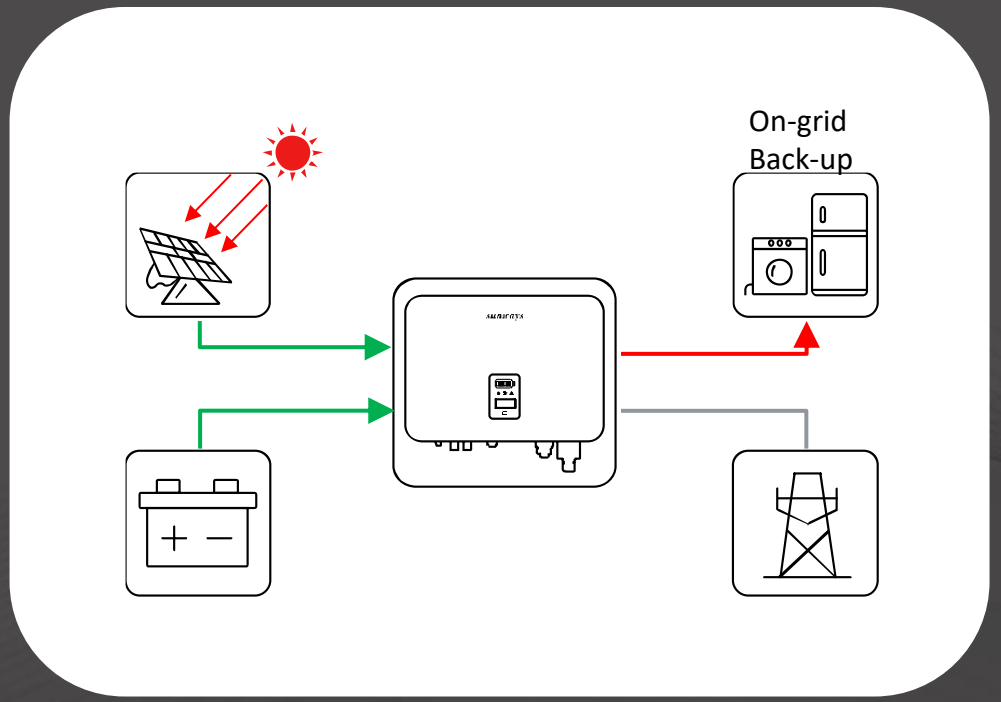


Economic Mode

In this working mode, you can set charge/discharge power and time in the App, inverter will use the power from PV or grid(whether to use can be set in the App) to charge the battery in the predetermined period.

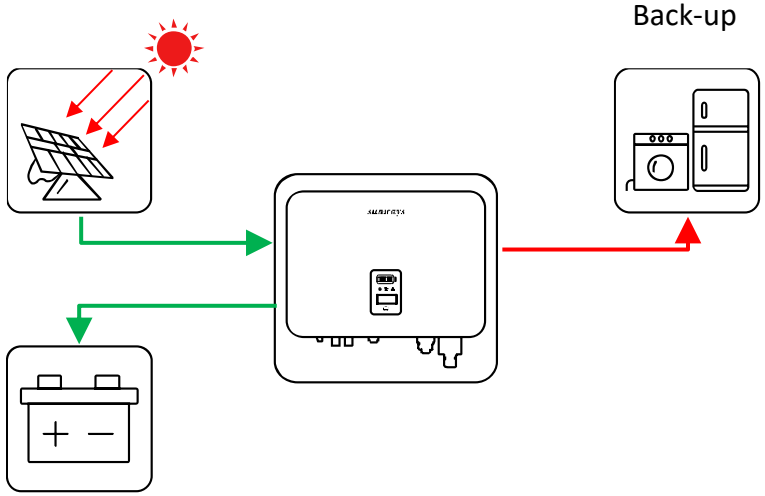


Inverter will use power from PV and battery to supply loads in the predetermined period and the insufficient part will be supplied by the grid.

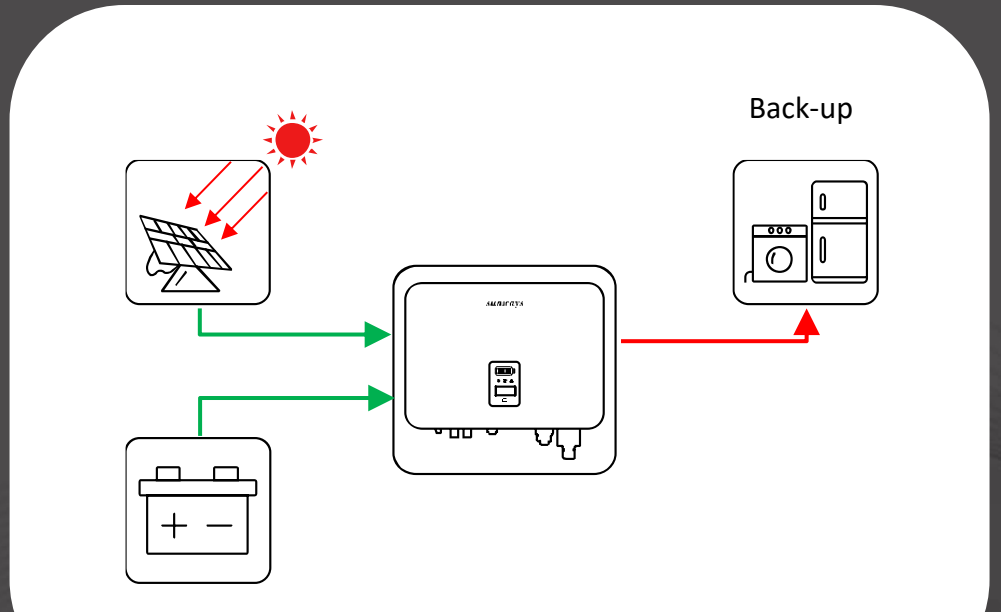


Off-grid Mode

In the purely off-grid mode, power from PV will supply the back-up loads first and then charge the battery if there're surplus.

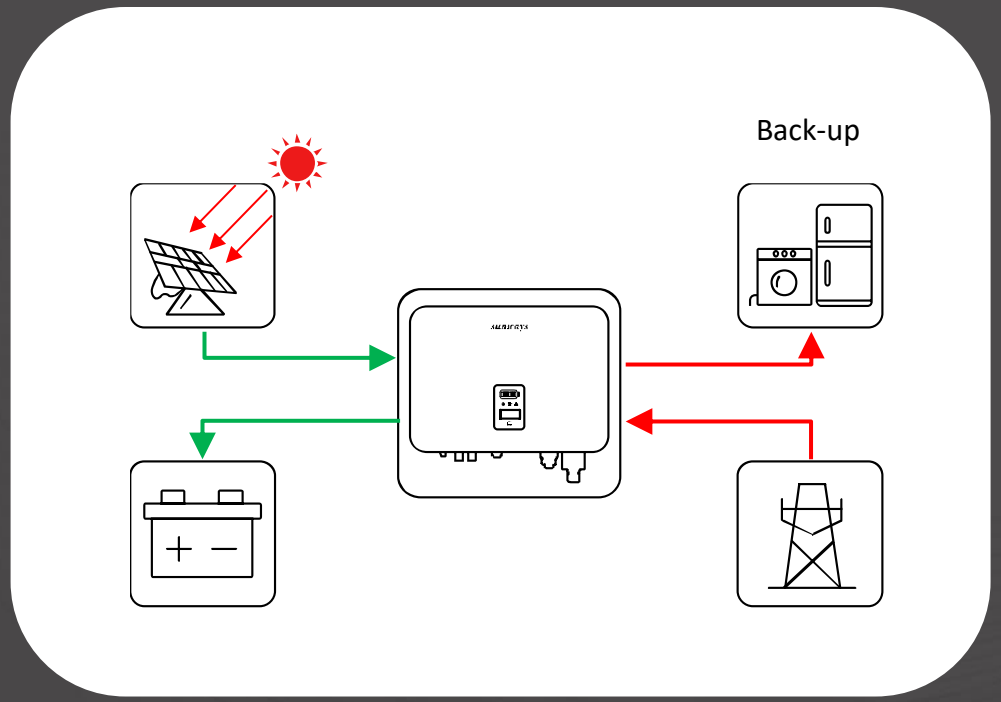


When the power from PV isn't enough, the battery will discharge to supply back-up loads together with PV.

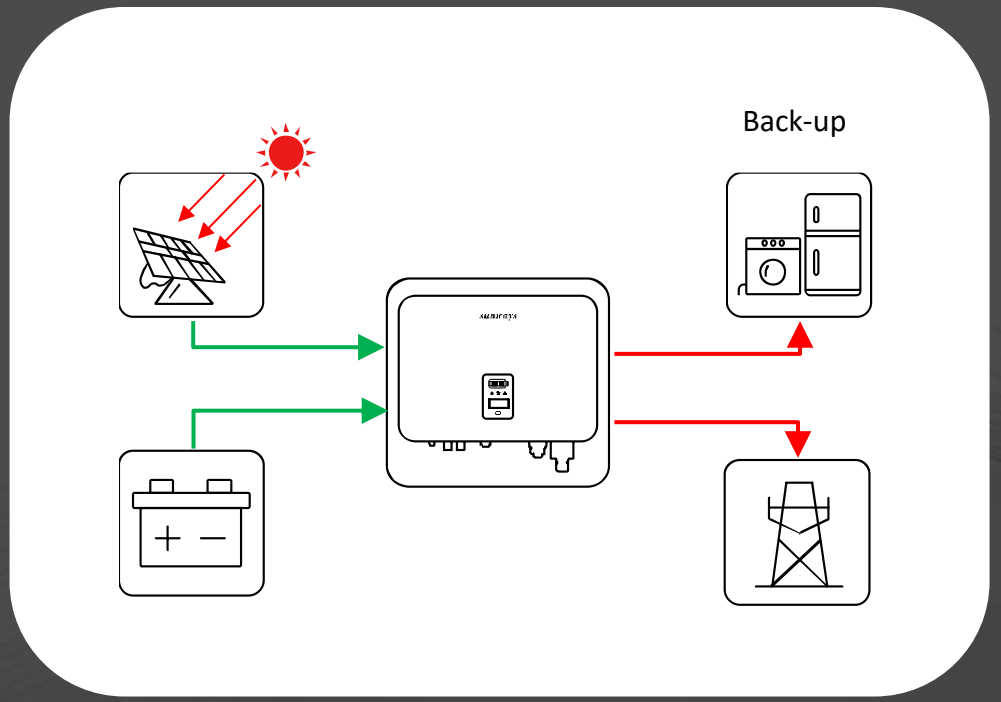


Force Mode

In this mode, if "Force charge" is selected, the PV will charge the battery first. If PV is insufficient, the grid will join to charge the battery.

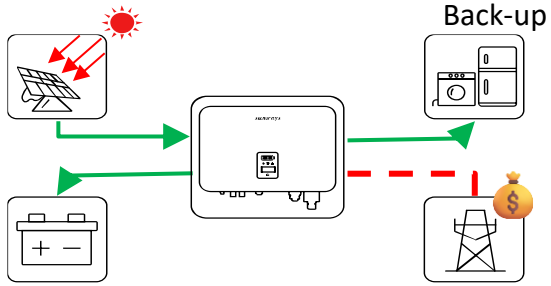


If “Forced Discharge” is selected, the battery will discharge to the grid.

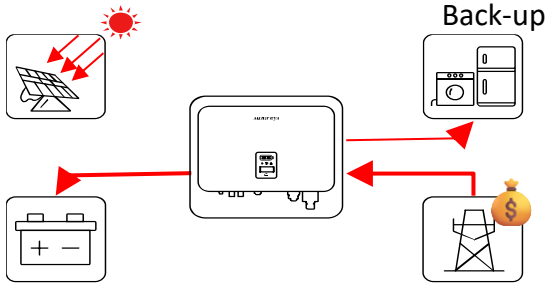


TOU Mode

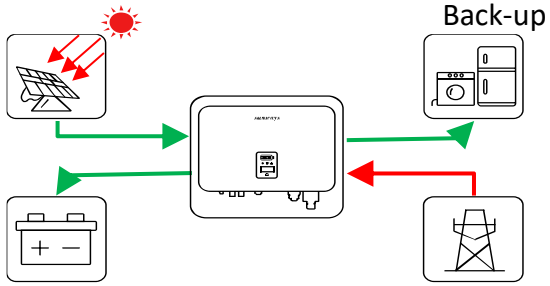
Peak Price Period



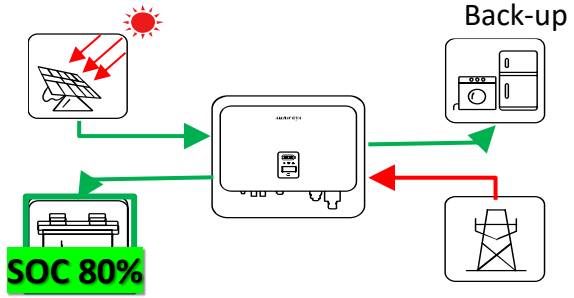
Negative Price Period



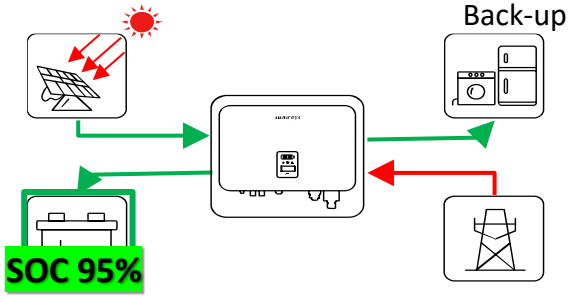
Parity Price Period



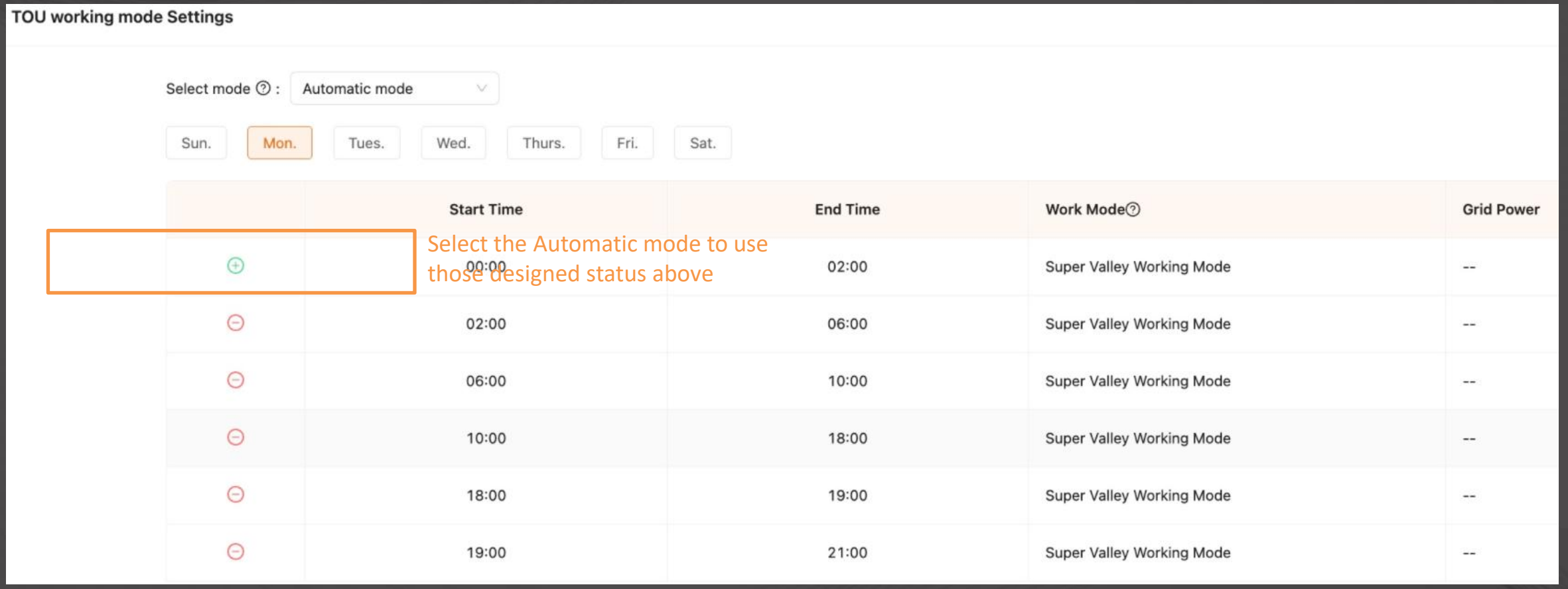
Valley Price Period



Super Valley Price Period



TOU Mode (Automatic mode)



TOU Mode (Manual mode)

Select the Manual mode to set the detailed parameters based on the real requirements

ode Settings

Select mode ⓘ : Manual mode

Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

	Start Time	End Time	Charge and Discharge status	Charge And Discharge Cutoff SOC (%)	Charge And Discharge Limit Current (A)	Grid Power	Battery Grid Schedule Enable ⓘ
⊕	00:00	24:00	Charge	40	50	5	

Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

	Start Time	End Time	Charge and Discharge status	Charge And Discharge Cutoff SOC (%)	Charge And Discharge Limit Current (A)	Grid Power	Battery Grid Schedule Enable ⓘ
⊕	00:00	24:00	Discharge	20	80	8	

CONTENTS

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04

Application Scenarios



- **Efficient Energy Management**

Smart algorithm scheduling: PV priority → Excess electricity storage → Automatic switch to battery supply at night/cloudy conditions → Significant energy savings.

- **Off-Grid Independent Power Supply**

Builds pure off-grid systems with PV and large batteries for 24/7 uninterrupted power.



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- **Safe and Reliable Operation**

Built-in multi-layer protection (over-voltage/over-current/islanding), IP66 robust protection.
Remote monitoring via mobile app for real-time power generation and storage status tracking.

- **Flexible Expansion Capability**

Supports parallel connection of multiple units, easily meeting high energy demands for villas/large residences.
Compatible with mainstream batteries, enabling capacity expansion as needed.



- **Multi-Device Compatibility**

Built-in high-efficiency MPPT (Max. 20A input), compatible with high-power PV modules, high efficiency in low-light conditions.
Supports direct starting of inductive loads (e.g., water pumps, AC units) for household/industrial needs.



- **Global 24*7 Monitor**

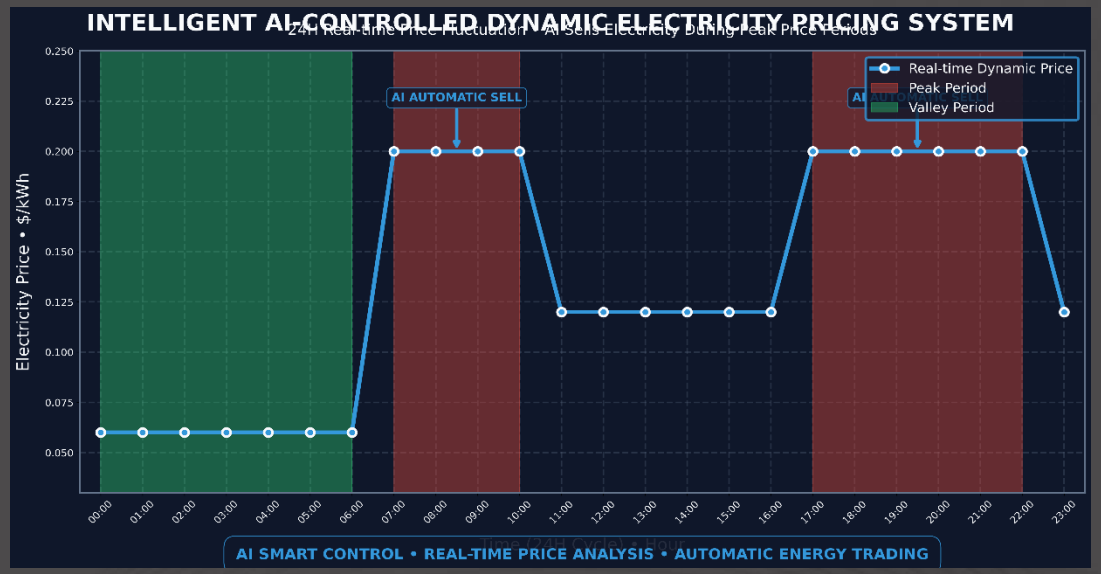
Support your laptop and mobile review
Check system generation and consume
Support 3rd party portal
Support remote set and control
Alarm notice when issue detected



- **Dynamic power control**

Sell power in peak-time-feed to grid

Save power in valley time –charge battery





- **Extreme Environment Adaptation**

Operating temperature range: -20°C to 60°C
Equipped with reverse polarity protection and lightning surge protection modules.
Suitable for harsh environments (deserts, alpine regions)
Salt spray-resistant coating on all enclosures for extended coastal service life.







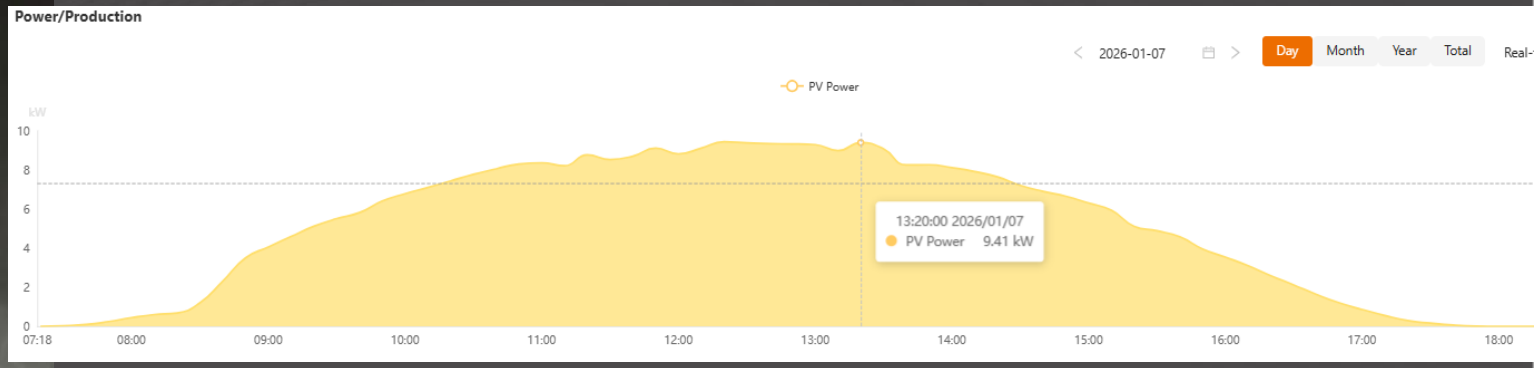
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BTY parallel system

Vietnam

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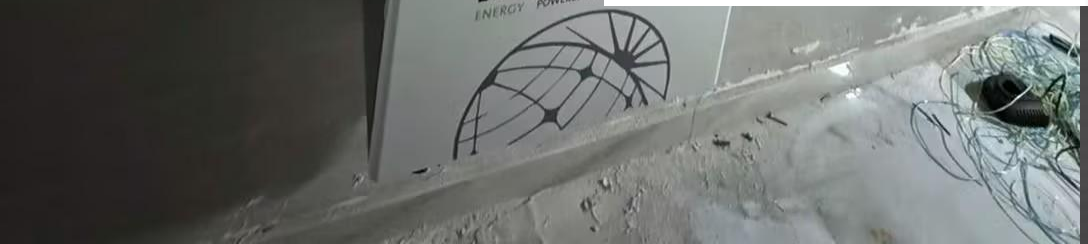


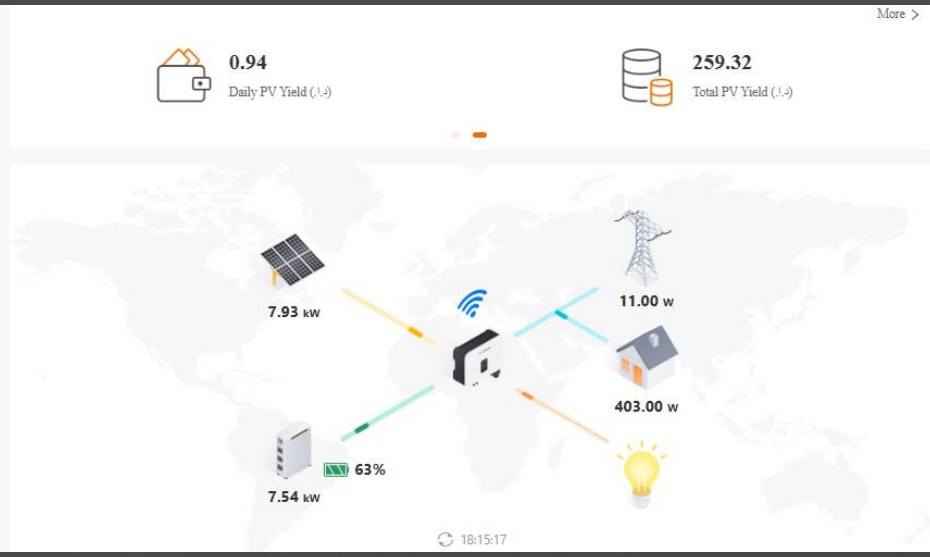


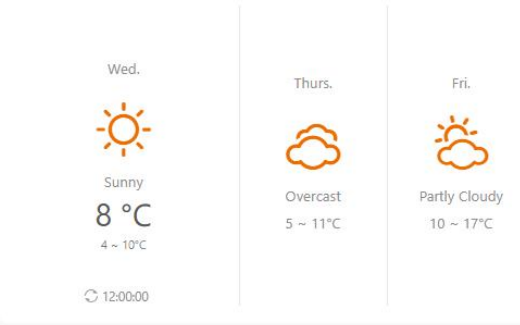


Plant Name:	فراس ابو فياض - هايبرد- جولدن لايت
Plant Status:	Normal
Grid-tied Date:	2025-10-05
Plant Timezone:	Asia/Amman
Plant Type:	Energy Storage
Address:	Irbid, Jordan

2
CO_2 Avoided (t)









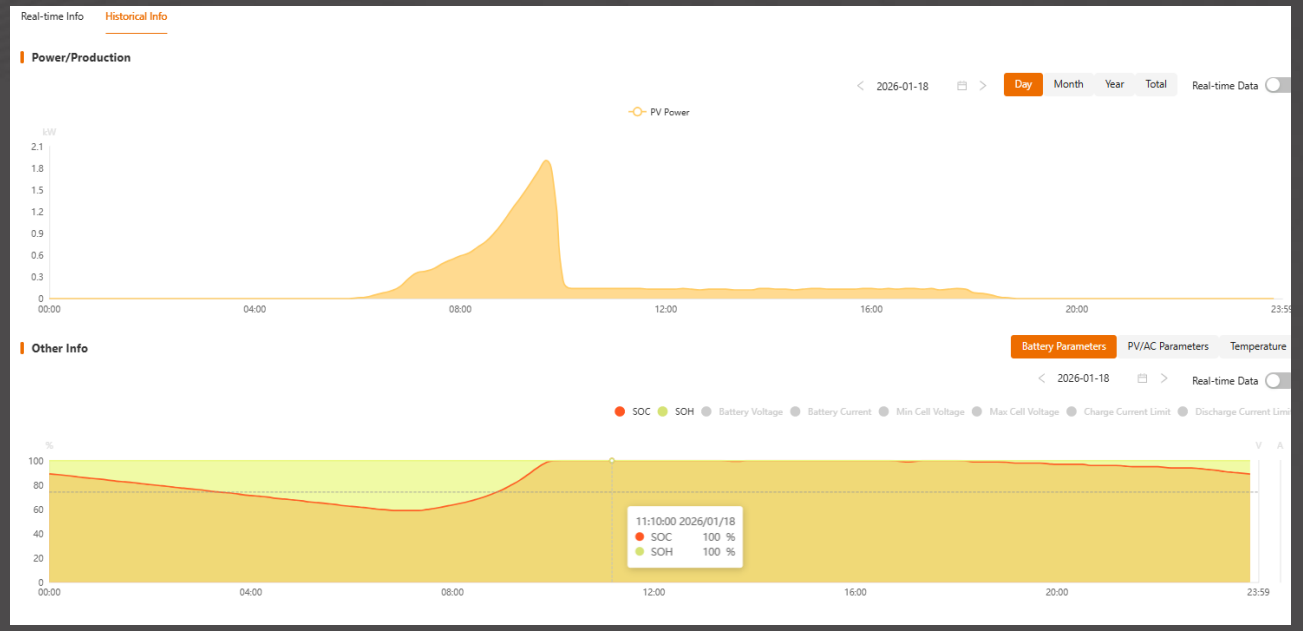
Jordan



Sri Lanka



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Zero export system

📍 Sri Lanka



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Afghanistan

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📍 Sri Lanka

THE END

THANK YOU

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