

**SUNGROW**  
Clean power for all

# POWERSTACK 200CS



# Powerstack 200CS

# PowerStack 200CS Series

C&I Liquid-Cooled ESS

225kWh  
Capacity

110kW  
Power

2h  
System

Up to 25x on-grid parallel



# ST225kWh-110kW-2h

## POWERSTACK: C&I SYSTEM FOR ENERGY STORAGE



### Technical Specifications 1

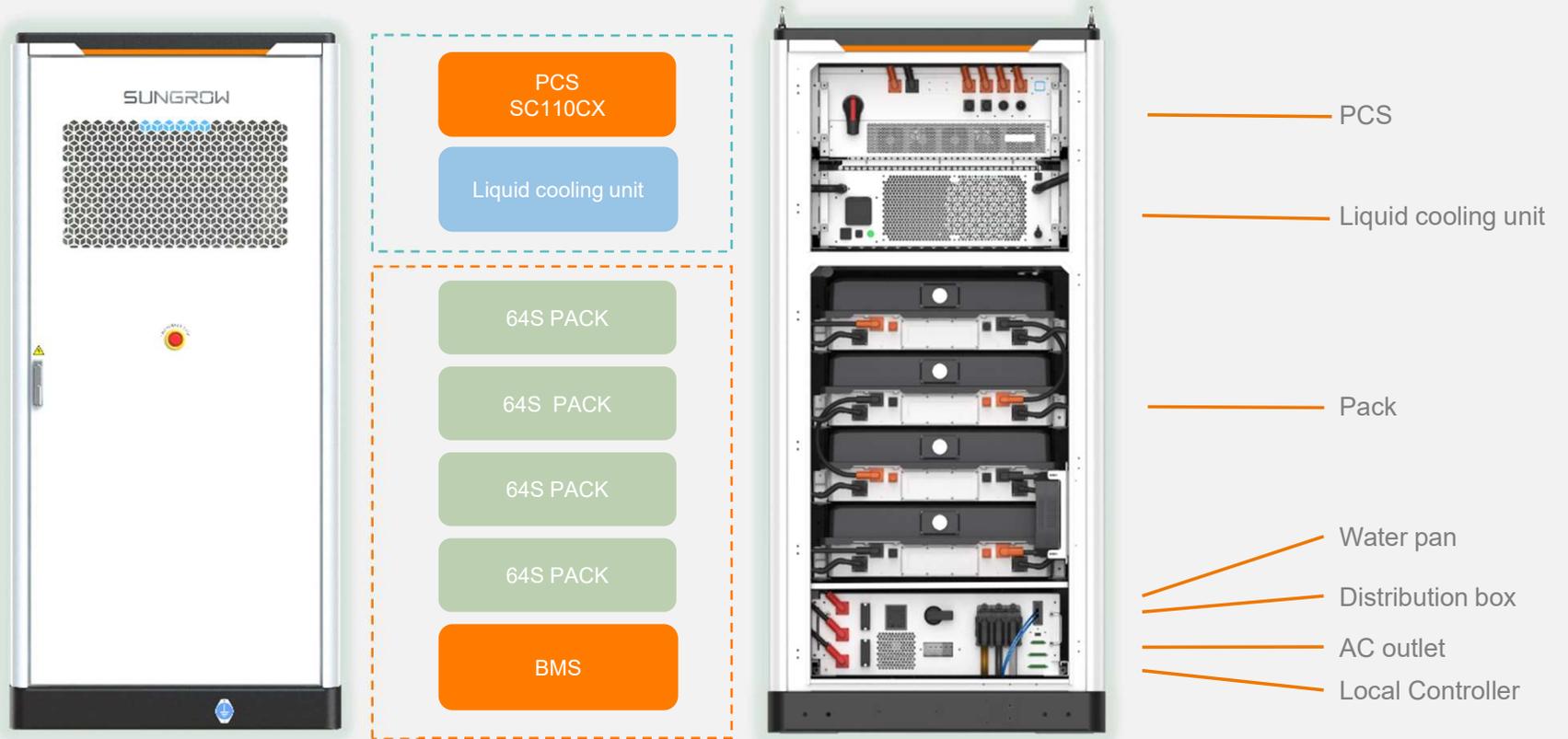
Dimensions W x H x D and weight	1150 x 2450 x 1610mm x 3100kg
Installation	Plug & Play (commissioning by SG)
Protection class	IP55   C5-L
Cell cooling	A liquido
Operating humidity range	0 ÷ 100%
Operating temperature range	-30 ÷ 50°C
Maximum altitude	3.000 m
Noise	<70dB @1m
Security	Flammable Gas Detector, Smoke, Heat, Aerosol with Sprinkler

### Technical Specifications 2

Communication	Ethernet with Modbus TCP protocol
Cells	LiFePO <sub>4</sub> 3,2V   280Ah
Nominal capacity	229kWh
DC Rated Voltage Range	691,2 ÷ 934,4V
AC on grid rated power	110kW
Voltage rating	400V
Nominal frequency	50Hz
Maximum on-grid current distortion	<3% @Pnom
DC Component	<0,5% @Pnom

# ST225kWh-110kW-2h

All in one: battery pack, PCS and BMS integrated in a single solution

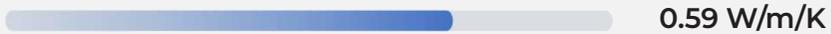


# ST225kWh-110kW-2h

## Cooling system managed by Artificial Intelligence

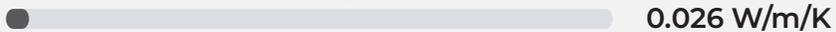
1

Thermal conductivity of liquid coolant

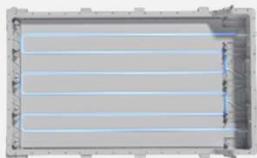


↑ 22 volte maggiore

Air thermal conductivity



AI heat dissipation balancing system acts at both the cell pack level and the system level



Pack-level channel:

Balanced heat dissipation for each cell



System-level channel:

Balanced heat dissipation of each pack

3

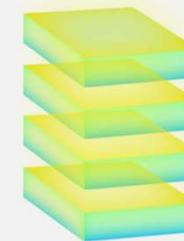
2,5 °C

PowerStack



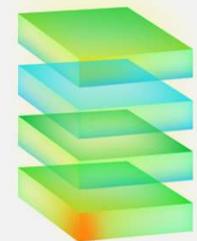
3,0 °C

Other liquid systems



10 °C

Air system



\* 0.5C, 1 cycle/day

The smaller the temperature difference between the cells, the longer the life of the system

2

# ST225kWh-110kW-2h

## FLEXIBILITY



### All in one

Integrated system design of EMS\PCS\BMS



### Flexible layouts

Seamless side-by-side parallel connection supported



### More convenient application

Support 1~25 200CS in parallel



Side by Side



Face to Face



Back to Back

# ST225kWh-110kW-2h

## EASY INSTALLATION

### Conveyance with forklift/crane

The bottom of the cabinet comes with forklift slots, which allow flexible conveyance at reduced cost.



### Bottom wiring supported

Only the power line is needed, requiring no underground wiring and smaller footprint.



### Intelligent EMS commission

Mobile phone or PC for EMS commissioning, no additional machine operation



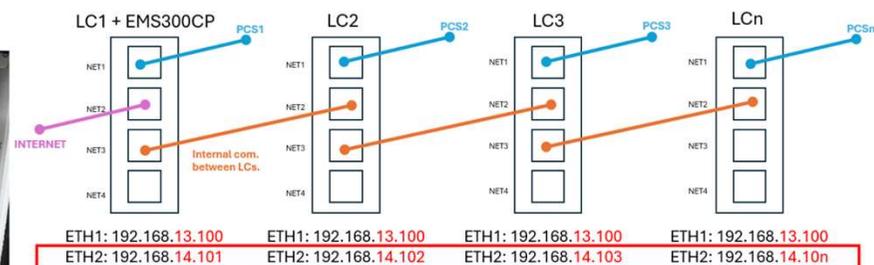
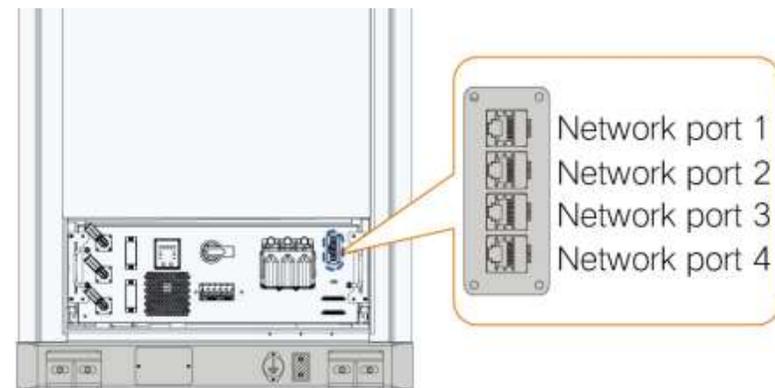
# Powerstack 225kWh/110kW EMS300CP



**Mandatory** to have at least one EMS300CP per system

Local Controller (incl.)

EMS300CP (to be taken separately)



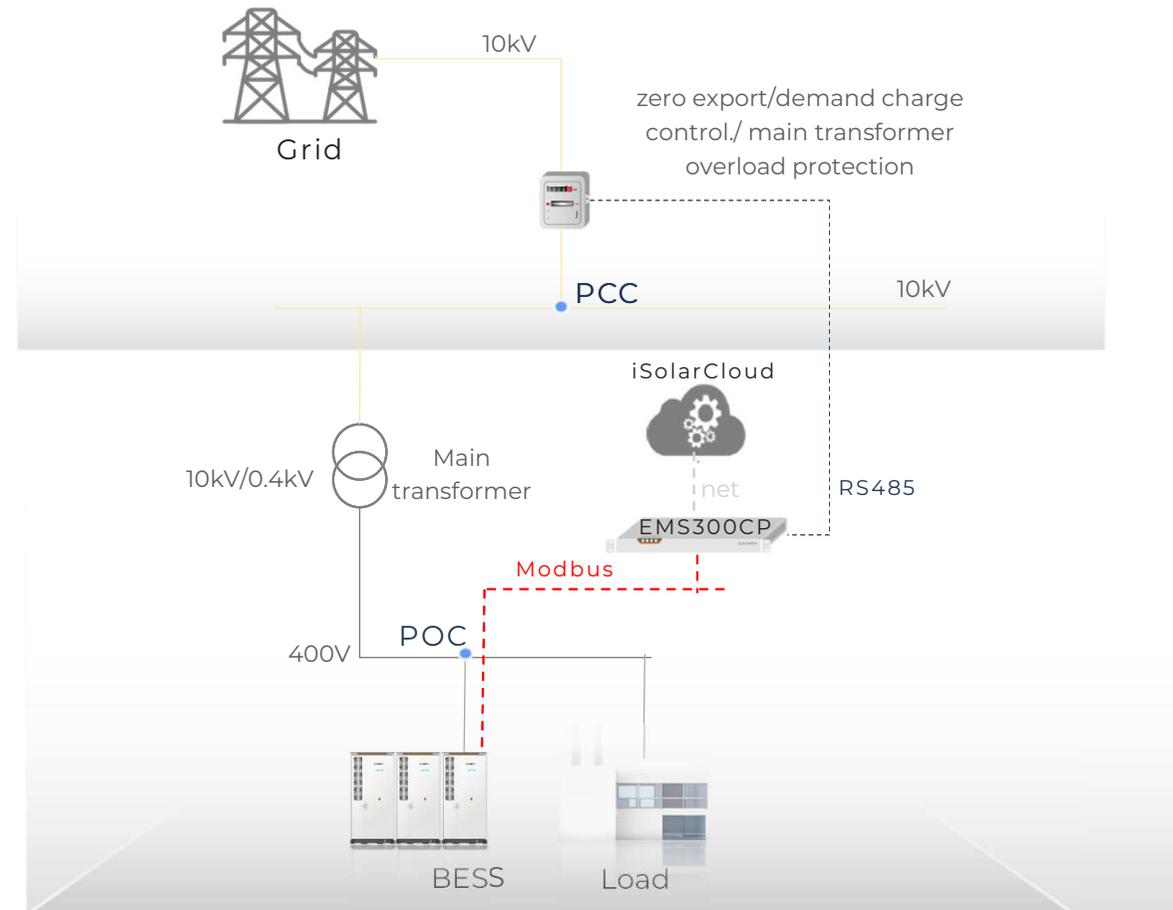
- NET1: Internal communication.
  - Must be used for PCS.
- NET2, NET3 and NET4: External communication.
  - Communicating with other LC/Internet to EMS300CP/client's EMS/external Laptop communication.
  - These ports are all the same.
  - On this figure we show an example, but LC, internet, client's EMS, laptop communication can be done by using any of these ports.



# PowerStack + EMS300CP

## Funzionalità

- On grid, off-grid (with transformer)
- Less than 25 PowerStacks
- One PCC, one MV/LV transformer, one meter
- Self-consumption – Also with third-party PV inverters
- Peak shaving– Even with third-party PV inverters
- Feed-in limitation – Only with Sungrow PV inverters



- *PCC: point of common coupling*
- *PoC: point of connection*



# PowerStack + EMS300CP

## Combinations and quantities with all Sungrow products



<b>ESS Stand-alone</b>	<ul style="list-style-type: none"><li>• ≤25 PowerStack 2h units</li></ul>
<b>PV + ESS</b>	<ul style="list-style-type: none"><li>• PV: ≤6MWp, SGCX, SGCX-P2 + COM100E/D-EU</li><li>• ESS ≤25 PowerStack Drives</li></ul>
<b>PV + ESS + EV</b>	<ul style="list-style-type: none"><li>• PV: ≤6MWp</li><li>• ESS: ≤25 PowerStack drives</li><li>• EV chargers: ≤20 units IDC30E, IDC180E, IDC480E</li></ul>



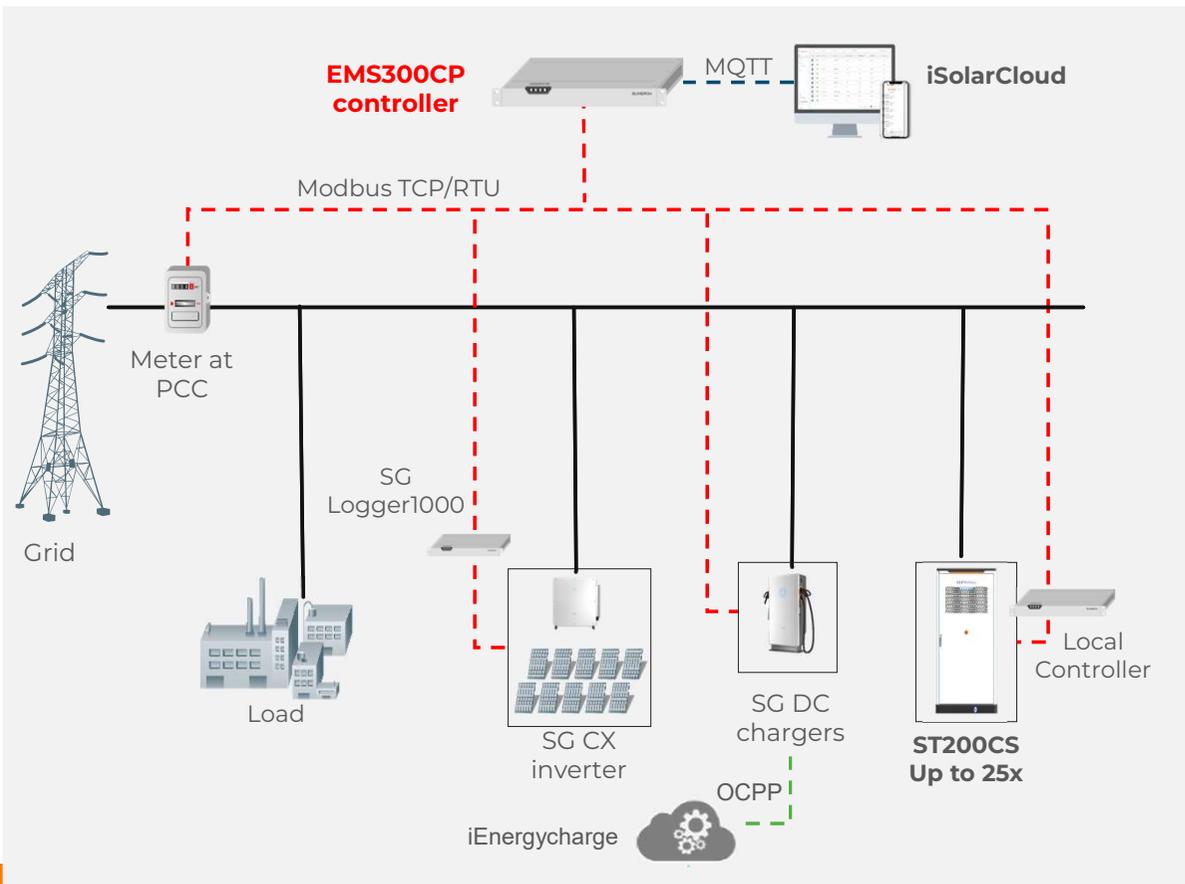
# PowerStack AC System Solution

## Condizioni generali

- PowerStack AC is controlled by EMS300CP (at least one per system required).
- If the customer wants to have full control of PV+ESS from different brands, then an external EMS must be used. In this case, EMS300CP is only used for site monitoring via iSolarCloud.



# EMS300CP Master All of Sungrow

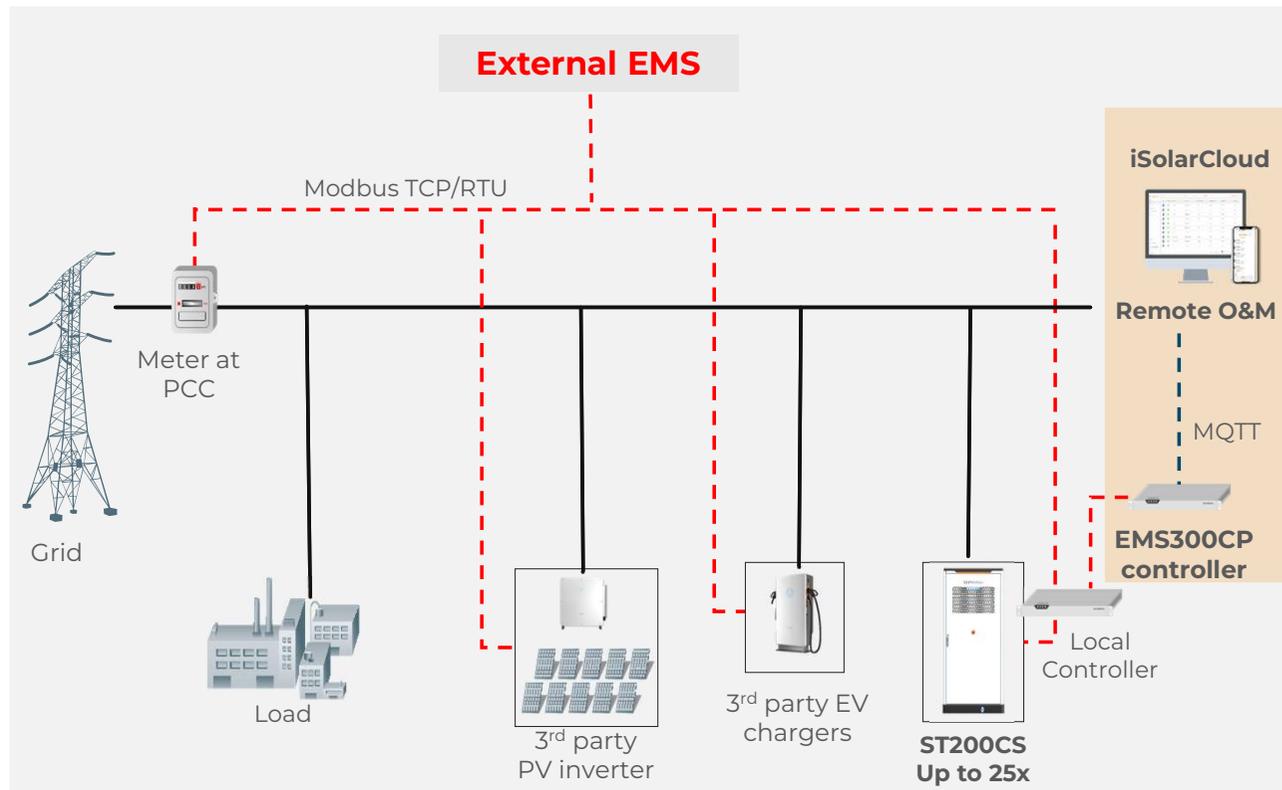


- Operating conditions for EMS300CP as a master controller:
  - Only with compatible Sungrow PV inverters and EV chargers. You must use Logger1000.
  - EMS300CP cannot connect directly to Nordpool or other dynamic rate providers.
  - Third-party PV system cannot be controlled by EMS300CP.
  - EMS300CP can be controlled by an external EMS via Modbus TCP protocol.



# Third-party EMS

## For integrations with third-party PV systems



- Operating modes that require an external EMS:
  - Energy trading;
  - Frequency regulation or ancillary services;
  - Control of third-party PV inverters, batteries and EV chargers;
  - Control based on dynamic rates via external API;
  - AI-forecasted control of PV systems and loads;
- In this case, EMS300CP is only used for connecting to iSolarCloud for remote firmware update and O&M



# EMS300CP

## Connection with meter

### Energy Meter Compatible

Weidmuller: Energy Meter 610

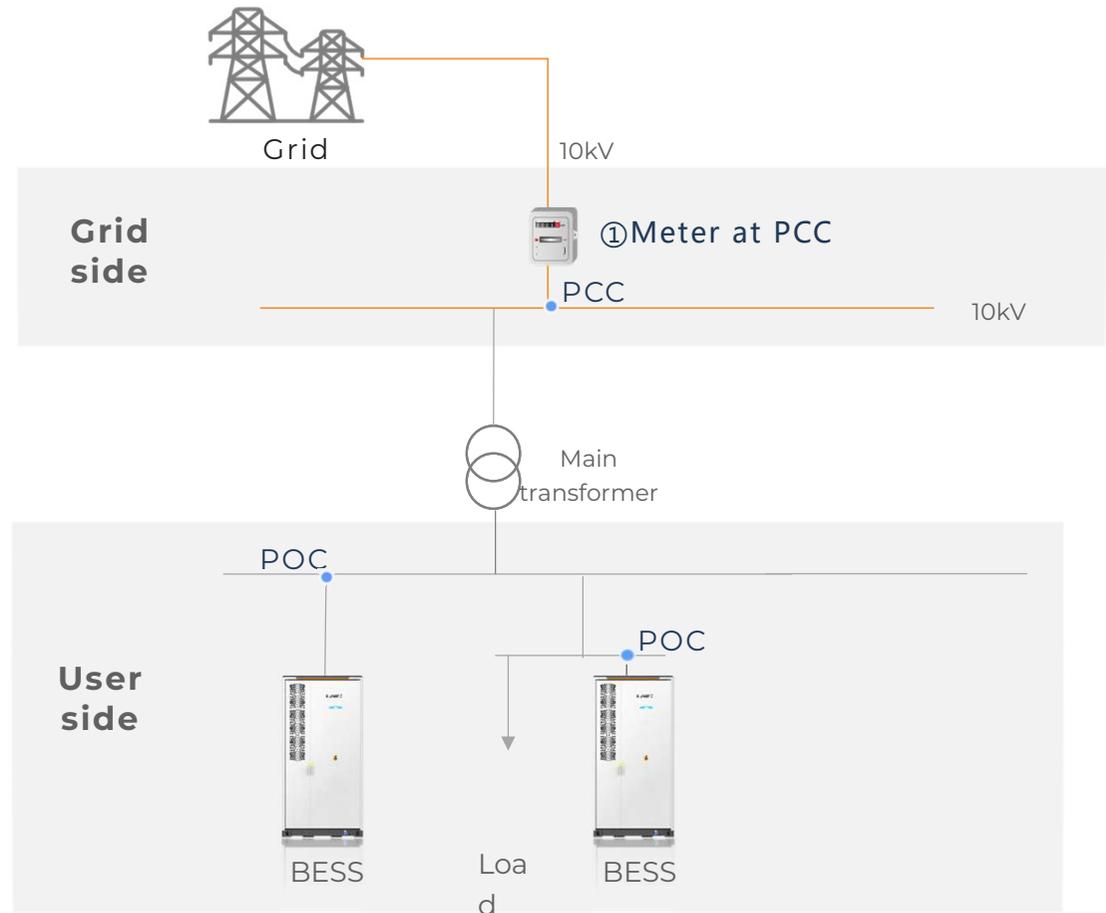
Janitza: UMG 604

Recommended distances

RS485: 800m

LAN: 100m

When using LAN, it is advisable to use fiber optics to reach distances >100m



- *PCC*: point of common coupling
- *PoC*: point of connection



# Funzionalità EMS300CP

# Features EMS300CP

## Setting Operation Parameters

- Set local control and local scheduling;
- Set the rated capacity of the ESS and the installed PV capacity;
- Connection point always "after CT" since the meter is at the PCC and the entire system is behind the meter.

The screenshot displays the EMS300CP configuration interface. The left sidebar shows the navigation menu with 'Operation Parameters' selected. The main content area is titled 'Plant Parameters' and contains several sections:

- Remote/On-site:** A dropdown menu set to 'Local'.
- Scheduling mode:** A dropdown menu set to 'Local'.
- Control Dead Zone (kW):** A text input field containing '3.000'.
- Cascading:** A dropdown menu set to 'Disable'.
- ESS Parameters:**
  - Rated Capacity of Energy Storage (MWh):** 100.000
  - ESS Connection Point:** After CT
  - Energy Storage Data Source:** Local Controller Data
- PV Parameters:**
  - PV Installed Capacity (MWp):** 0.000
  - PV Connection Point:** After CT
- Charger Parameters:**
  - Select Power Distribution Strategy:** Disable

A red box highlights the 'Remote/On-site', 'Scheduling mode', and 'Control Dead Zone (kW)' fields. An orange 'Save' button is located at the bottom of the configuration area.



# Features EMS300CP

## Time of Use – Peak/Valley Arbitrage

- When the customer has different rates for peak hours and for downstream hours, you must activate the time of use mode.
- You can create a daily schedule. Powerstack will schedule with a refresh rate of 30 minutes or 1 second.

Device Maintenance  
Device Start/Stop  
Control Method

Function Enable/Disable  
Enable

Date Settings of Time-of-Use Power 2025-02 - 2025-07 Configuration Select All Reset

2025/02 默认 秒级模板 默认

2025/03 默认

2025/04 默认

2025/05 默认

Template List  
Add New Template  
默认  
秒级模板  
模板

Time-of-Use Power Template Settings

The settings of the time-of-use power templates in the 30min and 1s modes must be set separately due to different data precision.

Template Name | 30min Import Template Template Export

Time Period The template must cover 24 hours with no overlaps. Charge Discharge No Charging/Discharging

Tip

Peak 05:00-09:00 Charge:20kW >

Flat 00:00-05:00 No Charging/Discharging 0.0kW >

Valley 09:00-20:00 Discharge:30kW >

Deep Valley 20:00-24:00 Charge:50kW >

00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 24:00

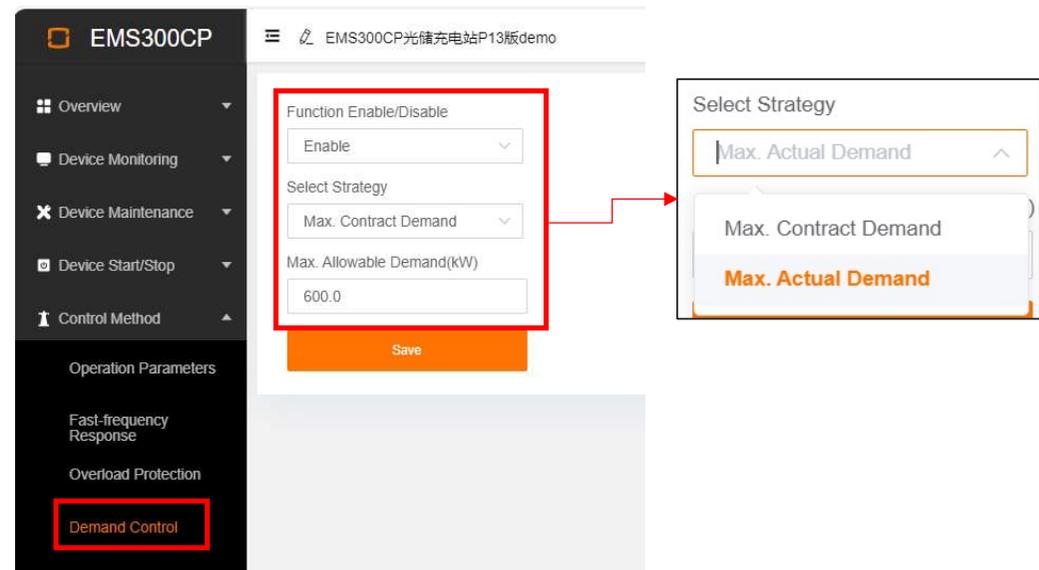
Save



# Features EMS300CP

## Demand Charge Control – Peak Shaving

- When the customer pays a tariff for the maximum power in kW purchased from the grid (demand charge);
- Enable Demand Control mode;
- If the kW limit of purchase from the grid is fixed, select Max Contract Demand;
- If the commission is based on last month's value and the customer wants to dynamically reduce the commission, select Max Actual Demand.



# Features EMS300CP

## Zero-Export – Limitation of feeding into the grid

- EMS300CP cannot control third-party PV inverters;
- Activate feed-in restriction in "Reverse power protection";
- Activate BESS charging;
- 1.3 s response time max including meter data acquisition.

EMS300CP 光储充电站P13版demo

Control Method

- Operation Parameters
- Off-grid PV-ESS-Load
- Fast-frequency Response
- Overload Protection
- Demand Control
- Multi-energy Coordination
- Reverse Power Protection**
- Time-of-Use Power

Function Enable/Disable  
Enable

Grid-connected Point Power Target Value(kW)  
0.0

Energy Storage Charged during Reverse Power  
Enable

Save

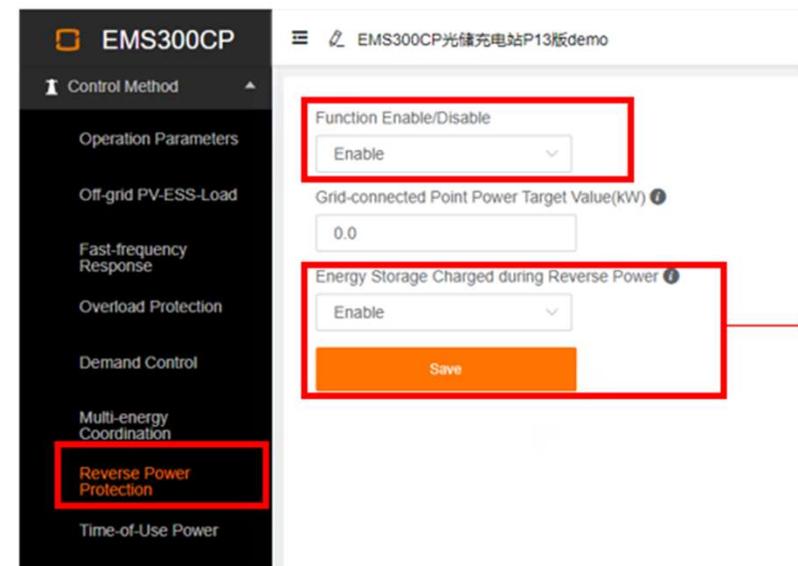
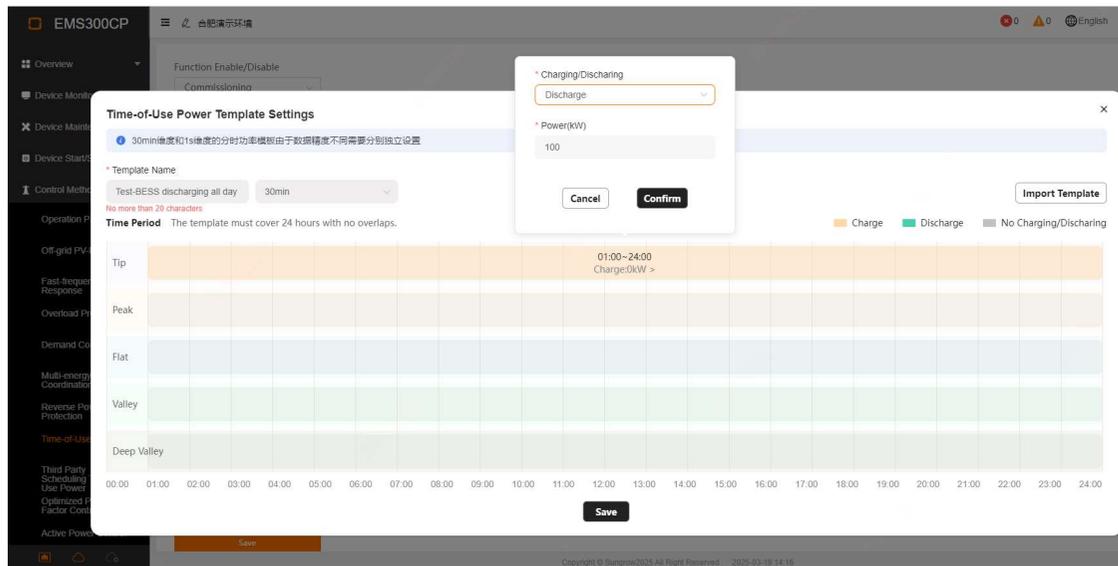
- Enable BESS charging: BESS and PV both cannot feed the electricity back into the Grid strictly
- Disable BESS charging: Surplus PV electricity can feed back into Grid



# Features EMS300CP

## Self-consumption

- Use case: self-consumption only, no feed-in limitations, no peak shaving, no energy arbitrage;
- Setup: First of all go to the time of use settings and enable 24h discharge, then go to "Reverse power protection" and set the target value of max Power at the AC connection point - enable BESS charging function.



## Features EMS300CP

### Retrofit with third-party inverters

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- EMS300CP cannot control third-party inverters;
- Self-consumption and peakshaving are performed with the exact same steps;
- The meter at the PCC will see when there is power flow to the grid and recharge the BESS accordingly.





# SUNGRROW

Clean power for all

**TIME IS NOW**