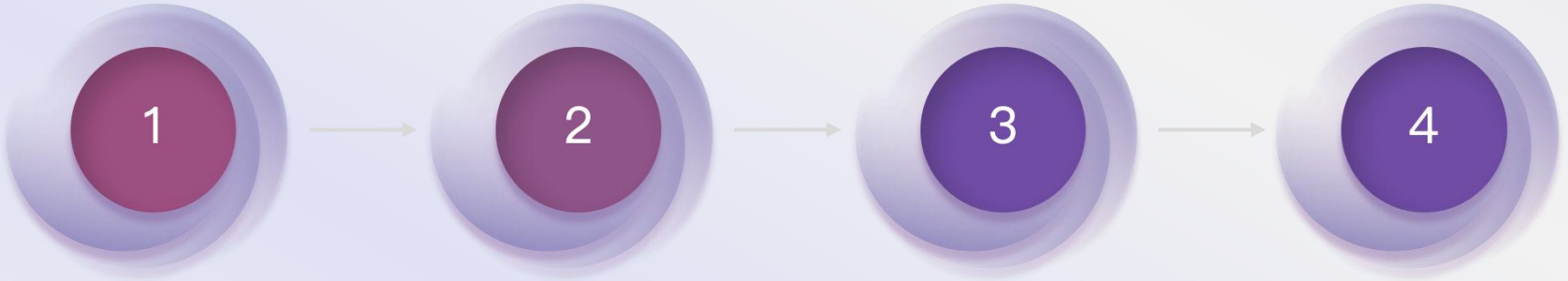
Solinteg
EV Charger Solution

SOLINTEG ACADEMY

CONTENT



Highlight
Work Mode
Cable Connection
Configuration

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01
Highlight

All–in–one solution

EV charger with Hybrid System

All–in–one solution

Providing an entire energy system Includes Solinteg hybrid inverter, storage batteries, EV charger and accessories, enjoying the all–in–one energy system and one–stop service.

Flexible charging strategies

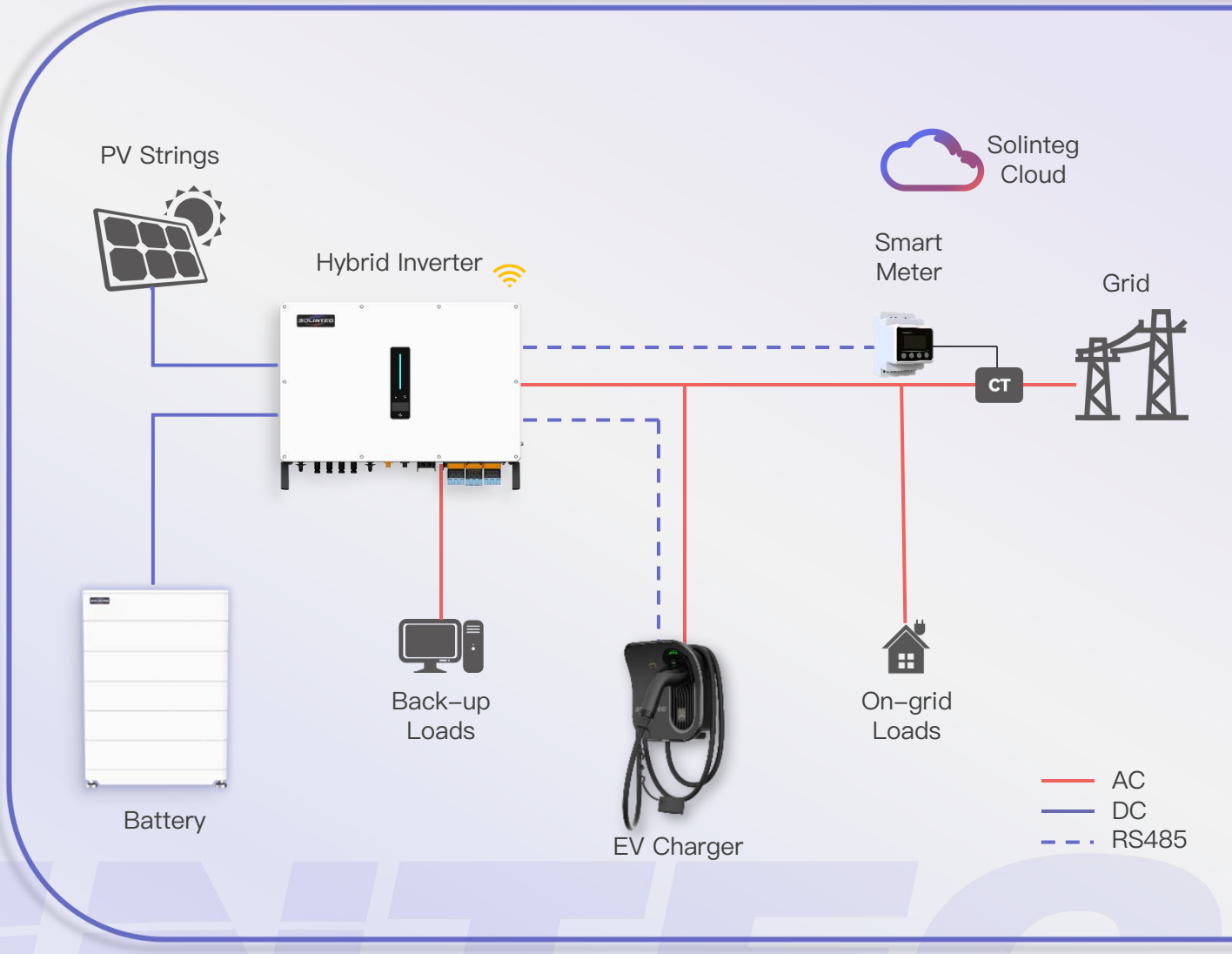
Providing a variety of intelligent control strategies , which can optimize the use of energy and reduce the bill from the grid*.

More convenient

Equipped with LED indicator, dual–channel to start & stop with RFID card and App, and the Solinteg platform for remote setting and monitoring.

Safer and more stable

All kinds of protections and emergency stop function are integrated.



*While using the EV charger, it is suggested to turn off the export limit.

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Highlight

For EV charger system

All-in-one system

- All-in-one solution for PV, storage and EV charging energy system.
- All in one platform for remote configuration and monitoring.
- One-stop after-sales service.

Smart and Economic

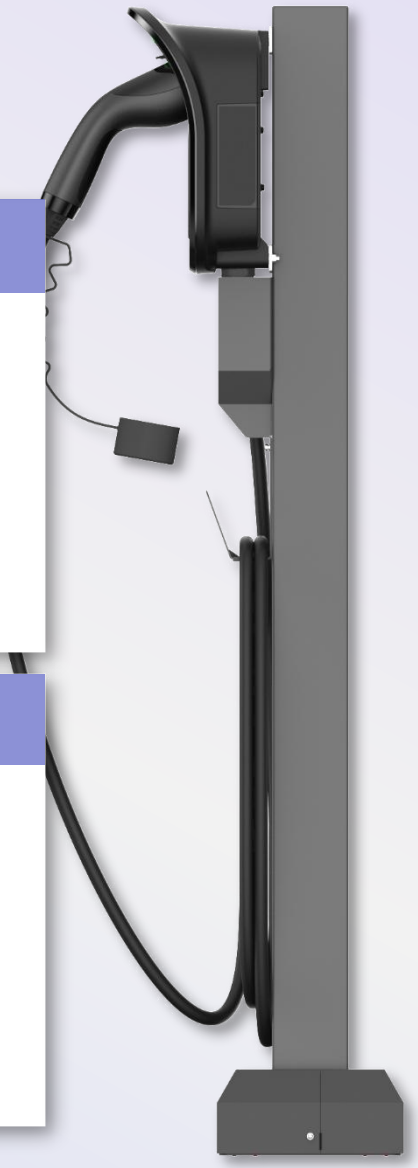
- Optimize energy use with the integrated green mode.
- Support schedule time charging to reduce bills during peak and valley price.
- Energy-saving and high-efficiency with standby power consumption of 4W.

User-friendly

- Compatible with 99.9% of Eur standard vehicle models.
- Easily identify the working status with LED indicator .
- Dual-channel to start & stop with RFID card and App.
- Flexible with wall-mounted and pole-mounted.
- Light weight for easy installation and maintenance.

Full Security Protection

- AC 30mA and DC 6mA for residual current protection.
- Not afraid of external mechanical impacts with IK10.
- IP65 for both indoor and outdoor installation.
- Integrated emergence stop.
- Integrated all kinds of protections to ensure the safety.



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Key parameters

For two models

Model	ECA-S07K-BS0	ECA-S11K-BS0
Input Rating	230±15%Vac, 50/60Hz	400±15%Vac, 50/60Hz
Input Rating	Single-phase, L+N+PE	Three-phase, L1+L2+L3+N+PE
Output Rating	7kW/ Max. 32A	11kW/ Max. 16A each phase
Start Current	6A	6A for each phase
Grid Type	TN-S, TN-C-S, TT, IT(L1+L2 230Vac Single phase)	
Charging Mode	Mode 3 (IEC 61851-1)	
Charging Interface	IEC 62196-2 Type 2 tethered plug (Case C)	
Metering	Onboard metering chip	
Power Consumption	4W	

7kW: Single-phase
11kW: Three-phase

- 7kW and 11kW for customer selection
- Determines the start and stop of the EV charger in green mode, saving electricity bills from grid
- Convenient and safer for residential use
- Universal European standard tethered plug
- Prepared for future commercial use and CE-MID
- Energy-saving with 4W standby power

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User–friendly

Flexible to use

7 kw

Single phase

ECA–S07K–BS0

Max. 32A

11 kw

Three phase

ECA–S11K–BS0

Max. 16A

RFID Card

App

Dual power options

Two types of EV charger models are available for customers to choose.

Type 2 tethered plug

Compatible with 99.9% of European standard vehicle models

Dual user authentication

Dual–channel to start and stop with RFID card and App

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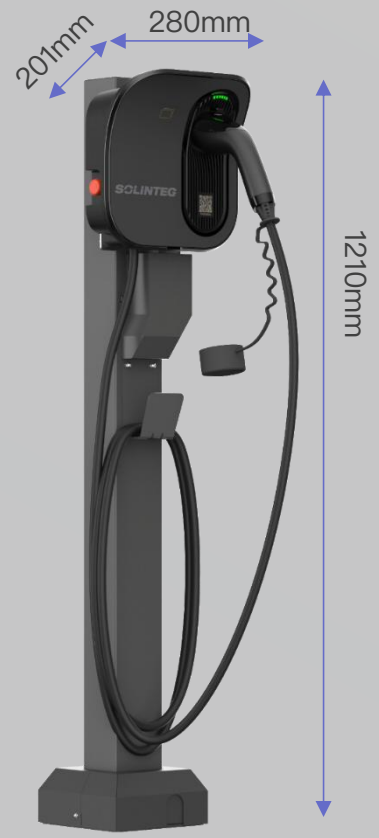
User–friendly

Easy to use



Breathing light — Identify working status at a glance

The charger is in standby state without failure.

Always on – The charging cable is connected

Quickly flashing –RFID card reading

Breathing flashing – Charging in progress

Slowly flashing – The vehicle suspends/the terminal suspends

Fault occurs or the emergency stop is pressed

Flexible installation – Wall–mounted or pole–mounted

Lightweight — Convenient for installation with 4kg

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Full Security Protection

Integrated full protections

Not afraid of external mechanical impacts

IK10

Suitable for both indoor and outdoor installation

IP65

Quickly stop at emergency situation

Stop

- Residual current protection
- Surge protection
- Overvoltage and Undervoltage protection
- Overcurrent protection
- Over temperature protection
- Grounding fault protection

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02
Work Mode

Work Mode

For EV charger

ATTENTION! The work mode priority of the inverter is **higher** than that of the EV charger.

Green mode

Introduction

Green mode is a smart charging mode, which fully utilizes the PV green energy and reduces the extra power taken from the grid.

Advantages

- Maximize the use of green energy
- Limit the electricity purchased from the grid
- Intelligent energy dispatching

Application

- When there is surplus green energy being fed into the grid
- When you don't want to use too much electricity from the grid to charge EV

Fast mode

Introduction

Fast mode can charge the EV with the maximum charging power. Green energy is used first, and the gap will be filled from the grid.

Advantages

- Charge with the fastest speed.
- Make full use of valley price electricity.
- Through RFID card achieve one-click start

Application

- When you want to charge up as quickly as possible
- When you want to use grid electricity as much as possible in vally price period

Green mode and Fast mode both can be applied under **scheduling charging** and **instant charging**.

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Green Mode

When will EV charger start?

P_{PV} + P_{BAT} − P_{load} + P_{set} > $P_{EV\ min}$

Surplus System Energy

Optional

The output power of PV panels

If battery is being charged, P_{BAT} would be negative. And positive for battery discharging.

The consumption power of other loads

(The priority of EV charger is lower than other normal loads.)

Setting the maximum power drawn from the grid for EV charger.

The minimum start power of EV charger.

1–Phase: 1.38kW

3–Phase: 4.14kW

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Green Mode

Situation1: Pure PV energy

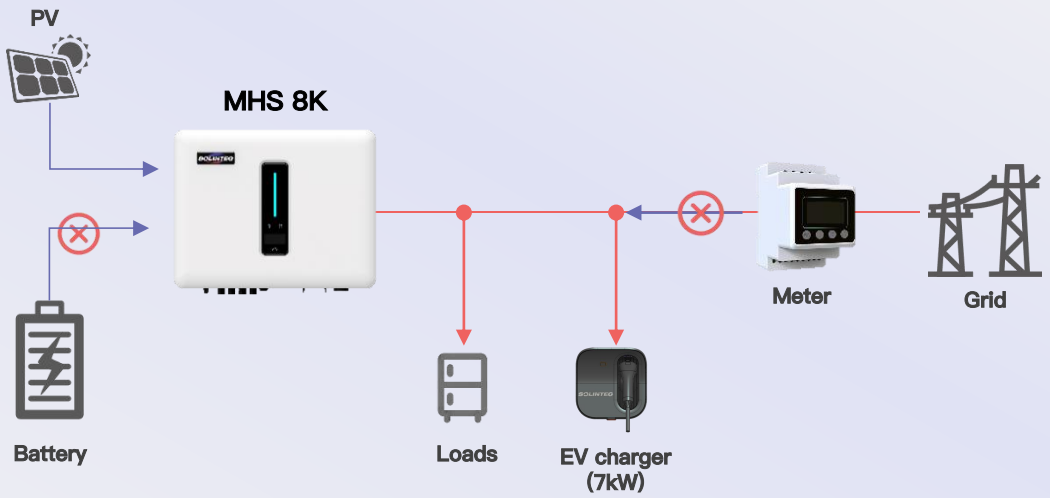
P_{PV} − P_{BAT} (Maybe) − P_{load} + P_{set} ≫ $P_{EV\ min}$

P_{BAT} (Maybe): Battery may be charged depend on inverter's work mode

P_{set}: Not use grid power

$P_{EV\ min}$: At least 1.38kW

Single-phase System



P_{PV} − $P_{load+charge}$ < $P_{EV\ min}$ 1.38kW

The EV charger will not work.

P_{PV} − $P_{load+charge}$ ≫ $P_{EV\ min}$ 1.38kW

The EV charger will start to work, but the instability of PV power may cause frequent restarts. The EV charger will work at PV's surplus power, and not exceed maximum power.

*: For three phase, the charger will only start when every phase meets the conditions.

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Green Mode

Situation2: Battery Discharge

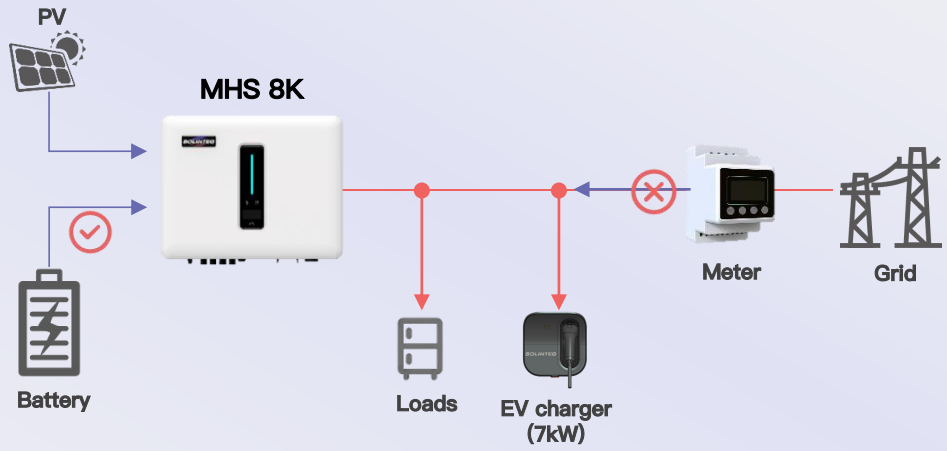
P_{PV} + P_{BAT} − P_{load} + P_{set} ⩾ $P_{EV\ min}$

P_{BAT}: Discharge power

P_{set}: Not use grid power

$P_{EV\ min}$: At least 1.38kW

Single-phase System



P_{PV} + P_{BAT} − P_{load} ⩾ $P_{EV\ min}$ 1.38kW

When the PV power insufficient, battery can discharge to supply power to the EV charger through settings.

Setting

Current SOC > **Cut-off SOC_{EV} SOC**

EV charger's power draw cut-off SOC_{EV} from battery

⩾ **End**

Battery's discharge End SOC set by inverter

Scenario: After supplying the load with PV power, the remaining energy is insufficient to start the EV charger. A lower cut-off SOC_{EV} can be set to allow 6kW rated battery to discharge.

Note: The power discharged from the battery will be used by other loads firstly. If the usage by these loads is too high, there will not be enough energy available to start the EV charger.

1

P_{PV}	+	P_{BAT}	−	P_{load}	+	P_{set}		$P_{EV\ min}$
3kW		5kW		1kW		0	⩾	1.38kW

The EV charger will work at 7kW.

2

P_{PV}	+	P_{BAT}	−	P_{load}	+	P_{set}		$P_{EV\ min}$
0kW		6kW		5kW		0	⩽	1.38kW

The EV charger will not work.

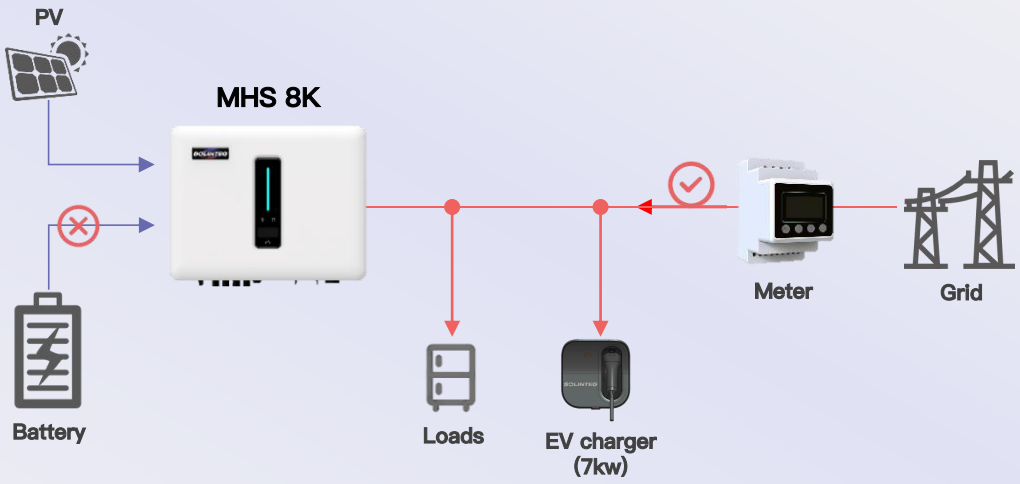
Green Mode

Situation3: Grid's Import Power

P_{PV} − $P_{BAT\ (Maybe)}$ − P_{load} + P_{set} ≫ $P_{EV\ min}$

- $P_{BAT\ (Maybe)}$: Battery may be charged depend on inverter's work mode
- P_{set}: Import power from grid to power EV charger
- $P_{EV\ min}$: At least 1.38kW

Single-phase System



P_{PV} − $P_{load+charge}$ + P_{set} ≫ $P_{EV\ min}$ 1.38kW

When PV power is insufficient to start EV charger, the EV charger can draw power from the grid to make up the gap, to meet the minimum start-up requirements. However, the power drawn from the grid should not exceed the set value.

Scenario 1: P_{set}= 1kW

	P_{PV}	−	$P_{load+charge}$	+	P_{set}		$P_{EV\ min}$
1	6kW		5kW		1kW	≫	1.38kW
	The EV charger will work at 1.38kW.						
2	6kW		9kW		1kW	≪	1.38kW
	The EV charger will not work.						

Scenario 2:

P_{set} = 2kW

(When the set value exceeds 1.38, it will ensure that EV charger can work at least the minimum start power)

P_{PV}	−	$P_{load+charge}$	+	P_{set}		$P_{EV\ min}$
6kW		6kW		2kW	≫	1.38kW
The EV charger will work at 1.38kW.						

Green Mode

Situation4: Discharge + Grid Power

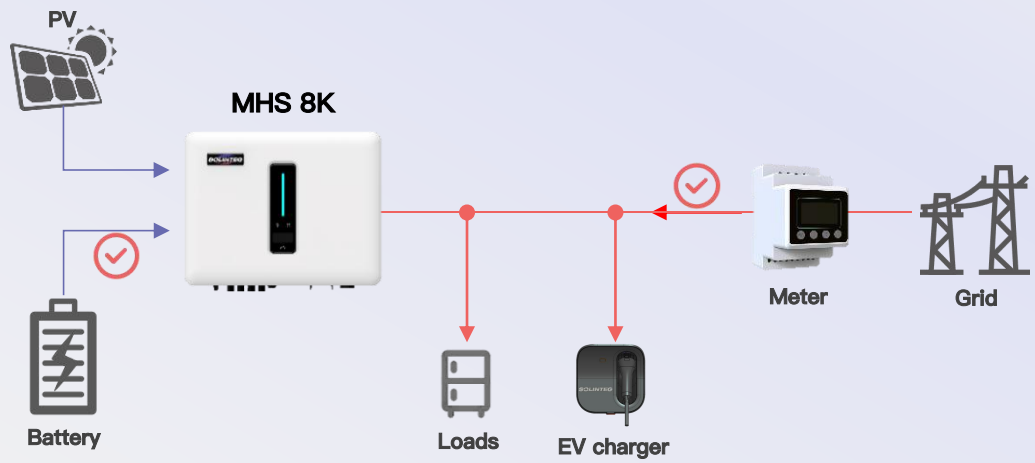
$P_{PV} + P_{BAT}$ (Discharge power) $- P_{load} + P_{set}$ (Import power from grid) $\geq P_{EV\ min}$ (At least 1.38kW)

The EV charger will prioritize using energy from the PV and battery, and when the energy from these sources is insufficient to meet the minimum power requirement, the EV charger will draw power from the grid without exceeding the set limits to fulfill the minimum power demand.

$P_{PV} + P_{BAT} - P_{load} + P_{set} \geq P_{EV\ min}$ 1.38kW

When users want to ensure that the EV charger charges at least at the minimum power level 1.38kW and utilizes green energy from PV and battery as much as possible, can set like this situation.

Single-phase System



Scenario1: Battery's Max. Output Power = 6kW & P_{set} = 1kW

	P_{PV}	+	P_{BAT}	−	P_{load}	+	P_{set}		$P_{EV\ min}$
1	3kW		5kW		1kW		0	≥	1.38kW
	The EV charger will work at 7kW.								
2	0kW		6kW		5kW		1kW	≥	1.38kW
	The EV charger will work at 1.38kW.								

Scenario 2: Battery's Max. Output Power = 6kW & P_{set} = 2kW

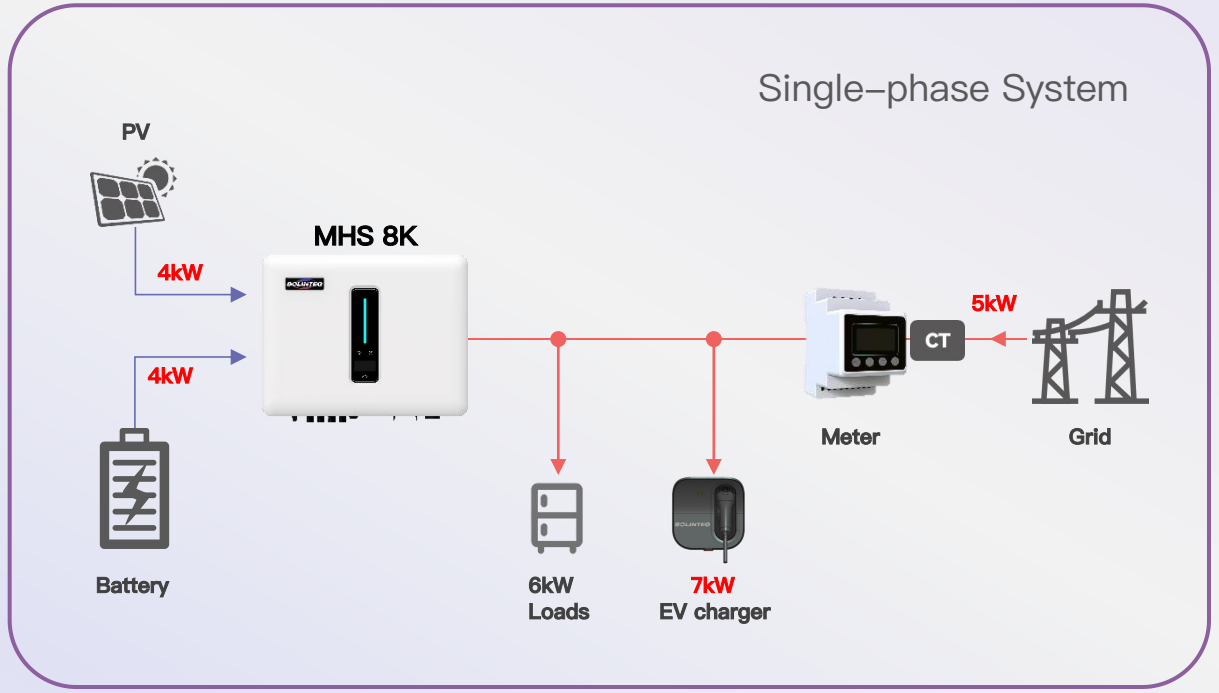
P_{PV}	+	P_{BAT}	−	P_{load}	+	P_{set}		$P_{EV\ min}$
0kW		6kW		6kW		2kW	≥	1.38kW
The EV charger will work at 1.38kW.								

Fast Mode

How does it work?

Working Principle

During working time, the EV charger will take power from PV and battery first, and if it is not sufficient, then take power from the grid to offset the gap, this will make sure the EV will be fully charged as soon as possible.



Fast Charging

Custom Timing

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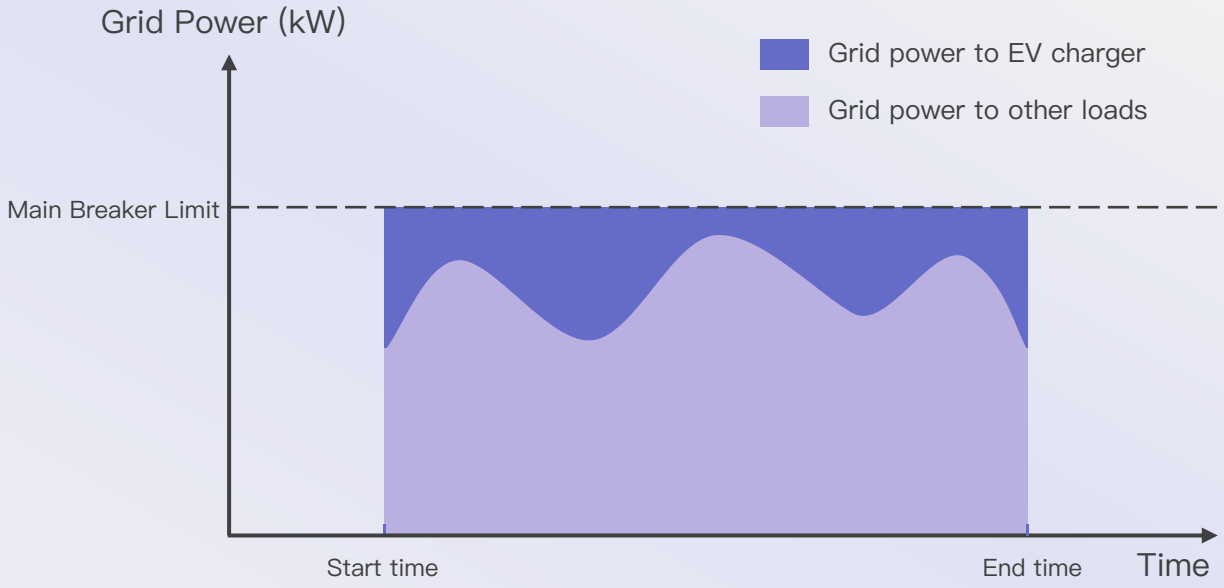
Dynamic load balancing function

How does it work when reaching the breaker limit



Adjust the charging power dynamically

To avoid the total power of all loads and EV charger exceeding the limit of main breaker, Solinteg has integrated the dynamic load balancing function, which means the EV charger power will be adjusted dynamically according to the variety of load power*.

- Avoid tripping and affecting the power supply
- Avoid turning off the EV charger directly
- Keep the EV charger continuously charging for worry-free travel

*If the power supplied to EV charger is less than $P_{EV\ min}$, EV charger will be turned off.

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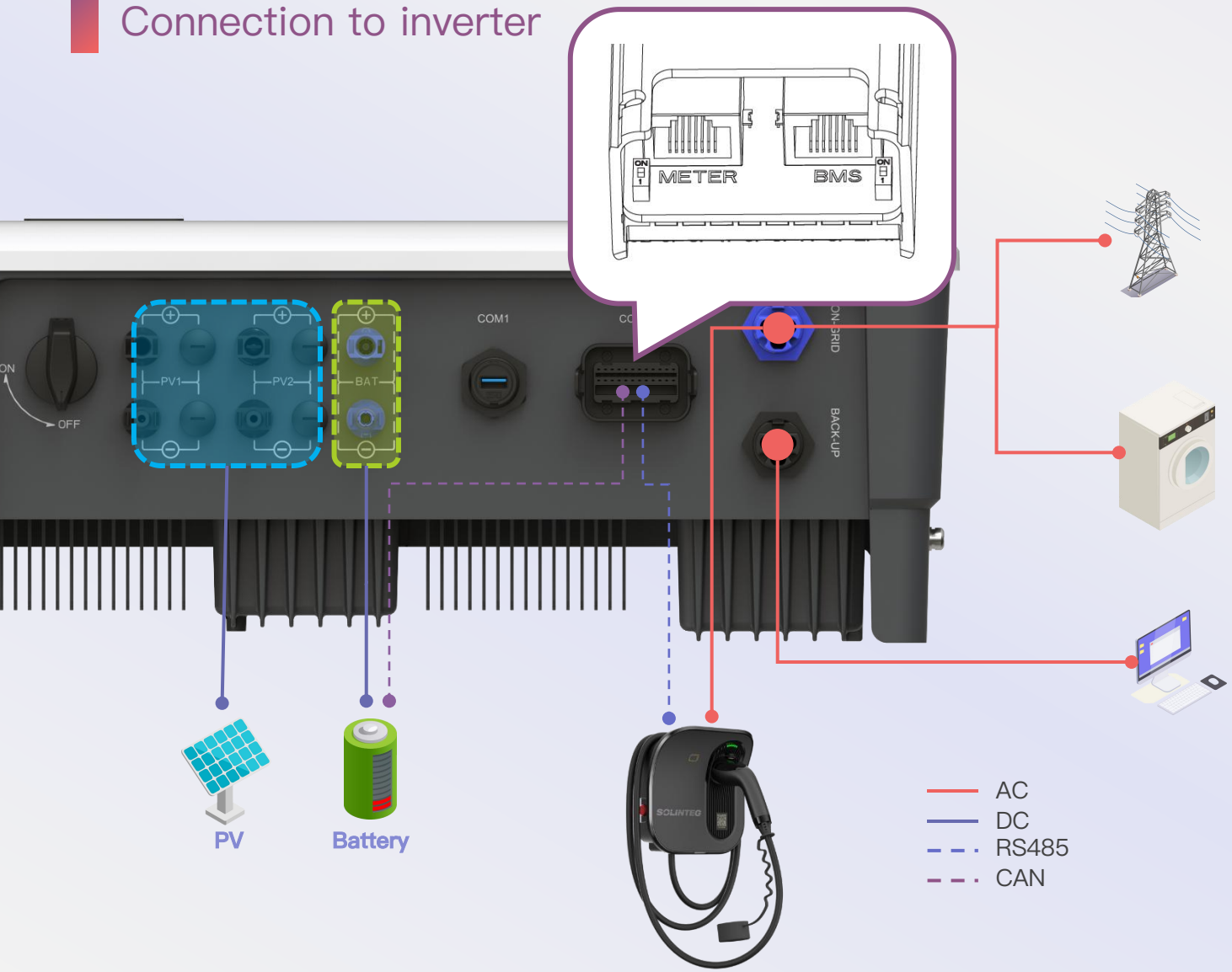
03
Cable connection

Cable connection

Connection to inverter



Power Supply

EV charger connect on-grid AC terminal of inverter as an on-grid load.

Communication

EV charger connect the communicate port of inverter through RS485.

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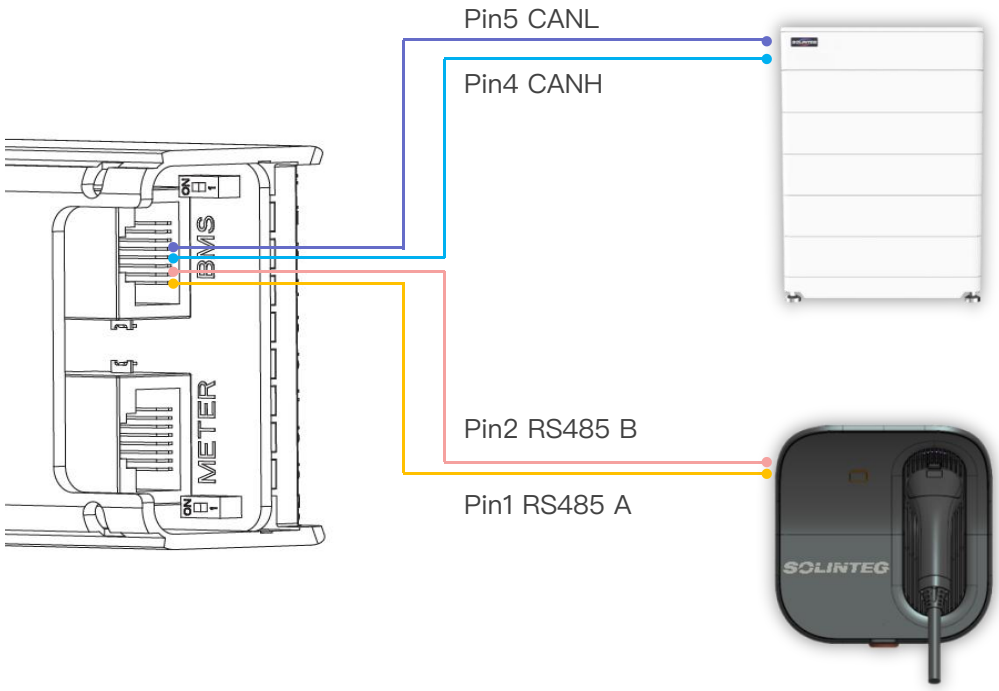
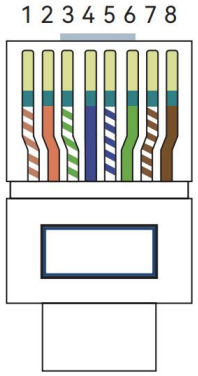
Cable connection

Communication cable connection

Inverter COM2 Port	EV charger and battery





No.	Color	Inverter COM2 port Battery side
1	Orange & White	EV charger RS485 A (RS485_A3)
2	Orange	EV charger RS485 B (RS485_B3)
3	Green & White	/
4	Blue	Battery (CANH_B)
5	Blue & White	Battery (CANL_B)
6	Green	/
7	Brown & White	/
8	Brown	/

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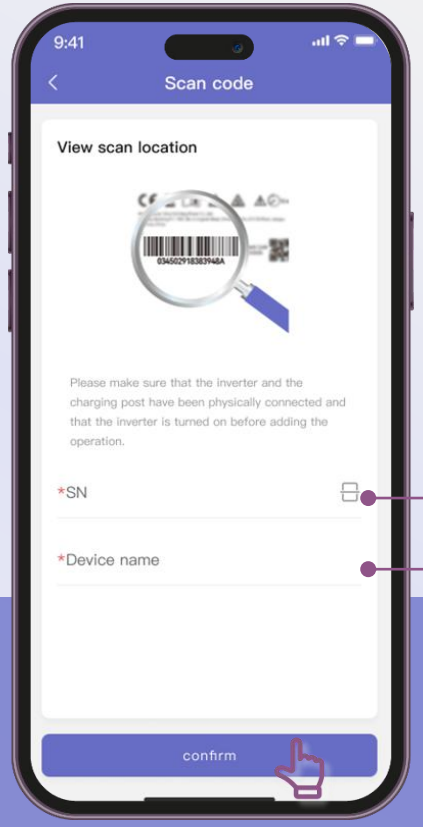
04
Configuration

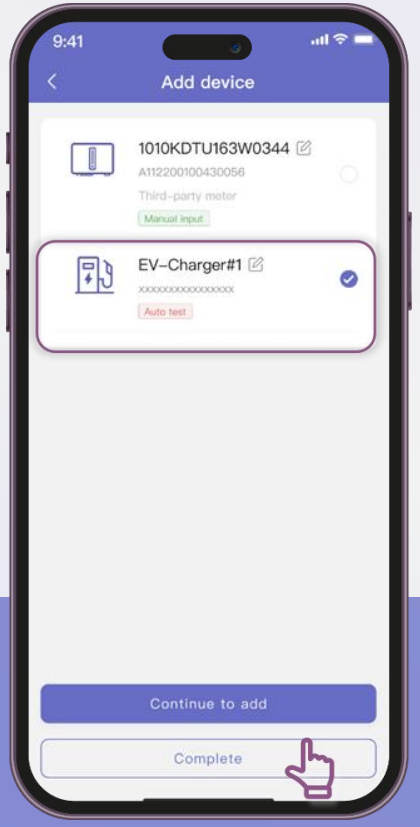
Configuration

Add device



Scanning input or manual input SN

Type device name



1 Enter the SN and device name*

2 Successful addition

*Note: The EV charger configuration function will be available on the NEW APP that will be released around June.

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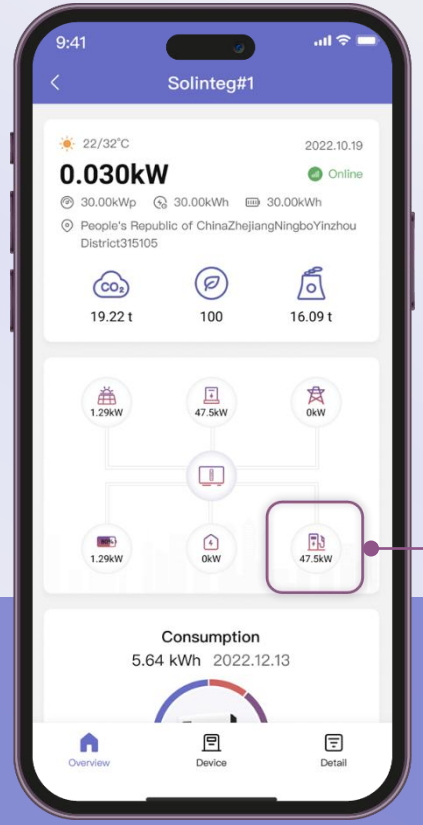
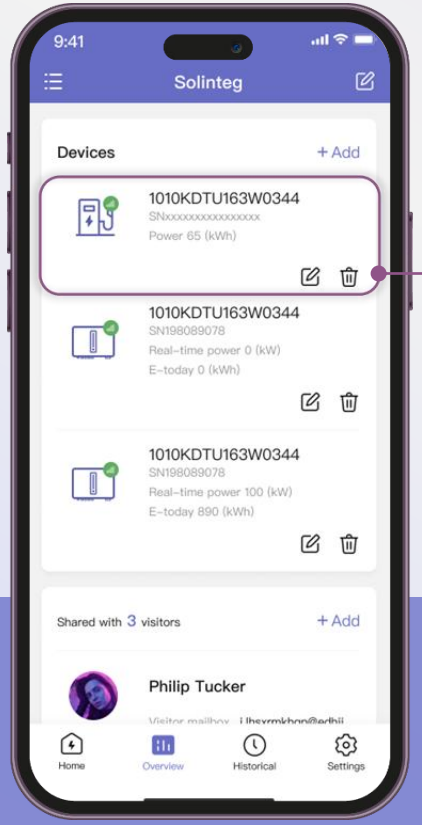
Configuration

Overview page



Real time charging power

Plant overview page



Edit or delete

Device overview page

Charging status

Consumption
Charging time
Real time power

EV charger overview page

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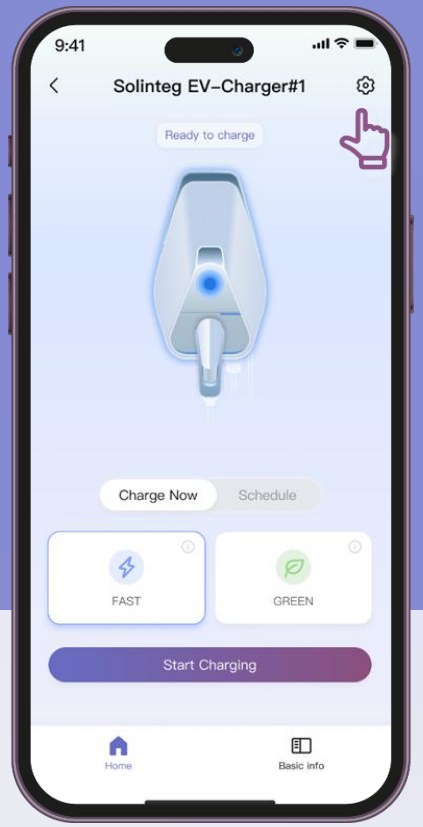
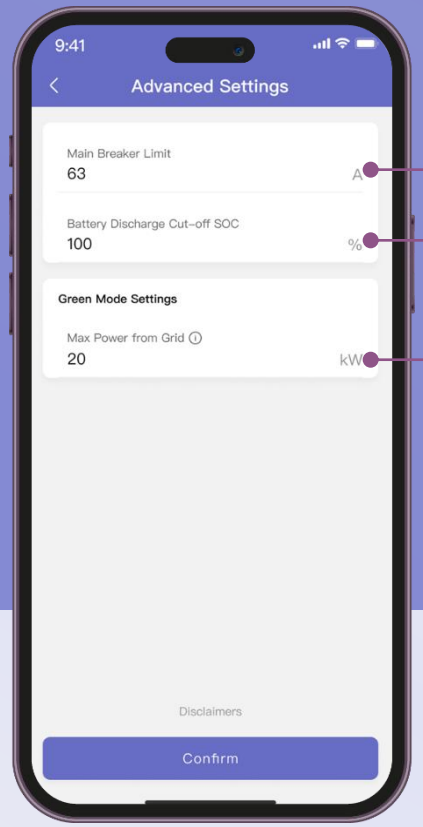
Configuration

EV charging setting





Set based on the limited current of the incoming meter.
The dynamic load balancing function will be activated based on this value.

Set according to user's preferences
If the SOC of battery is less than this value, the EV charger will not draw power from the battery when inverter is in general mode.

Set according to actual usage
It's a key value to start and stop EV charger under green mode.

1 Open the overview page

2 Advanced setting

Default: Main Breaker Limit – 80A, Battery Discharge Cut-off SOC $_{EV}$– 90%, Max Power from Grid – 0kW

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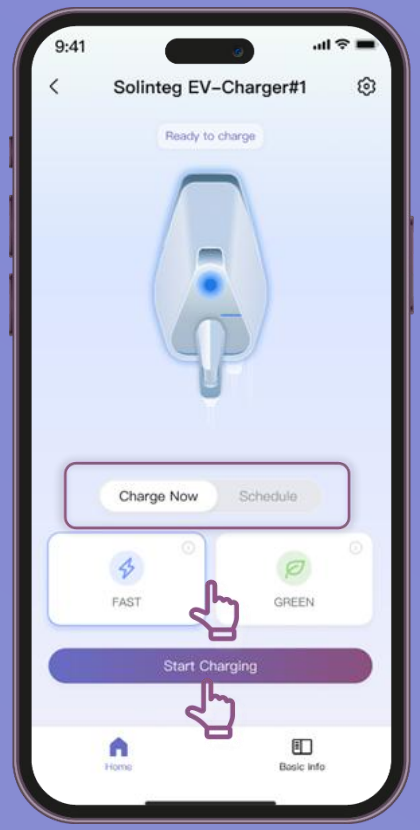
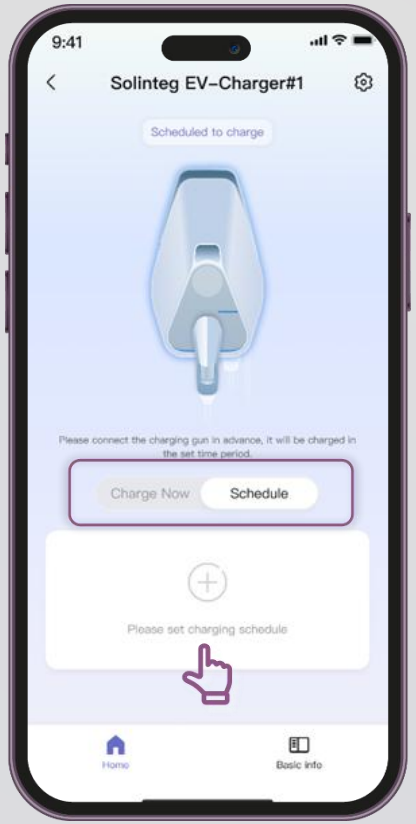
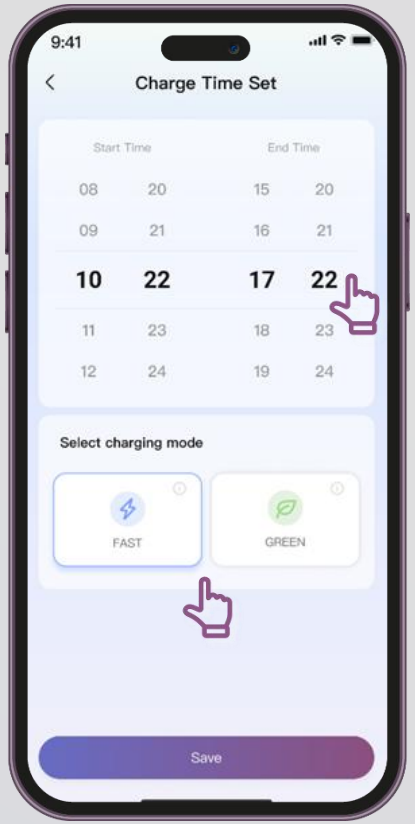
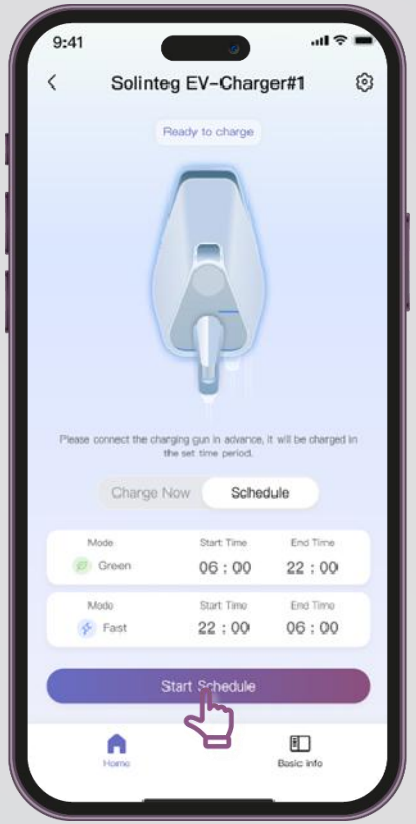
Configuration

Work time and work mode selection









- Charge now + Fast mode/Green mode
- Schedule + Fast mode/Green mode

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THANK YOU

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