Slenergy Intelligent Load Management

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Maximizing Self-Consumption

Why should we include load management in the energy storage system?

As more and more countries start limiting excess PV energy to feed into the power grid for grid stability purposes. A series of actions have been taken globally to stop people from exporting power to the grid, such as zero export limitations and negative electricity prices. So where does the excess PV power go if it's not allowed to export to the grid? The question of how to intelligently integrate our high-power household appliances into a solar energy management system to maximize the utilization of excess PV power and increase self-consumption for energy cost saving is a new one in the PV industry.

Thanks to the hard work of Slenergy team, the newly developed firmware and App can now integrate the heat pump which supports SG Ready function into the energy storage system for intelligent controlling the heat pump and maximizing electricity self-sufficiency.

INTRODUCTION

Load management definition & advantages

Definition

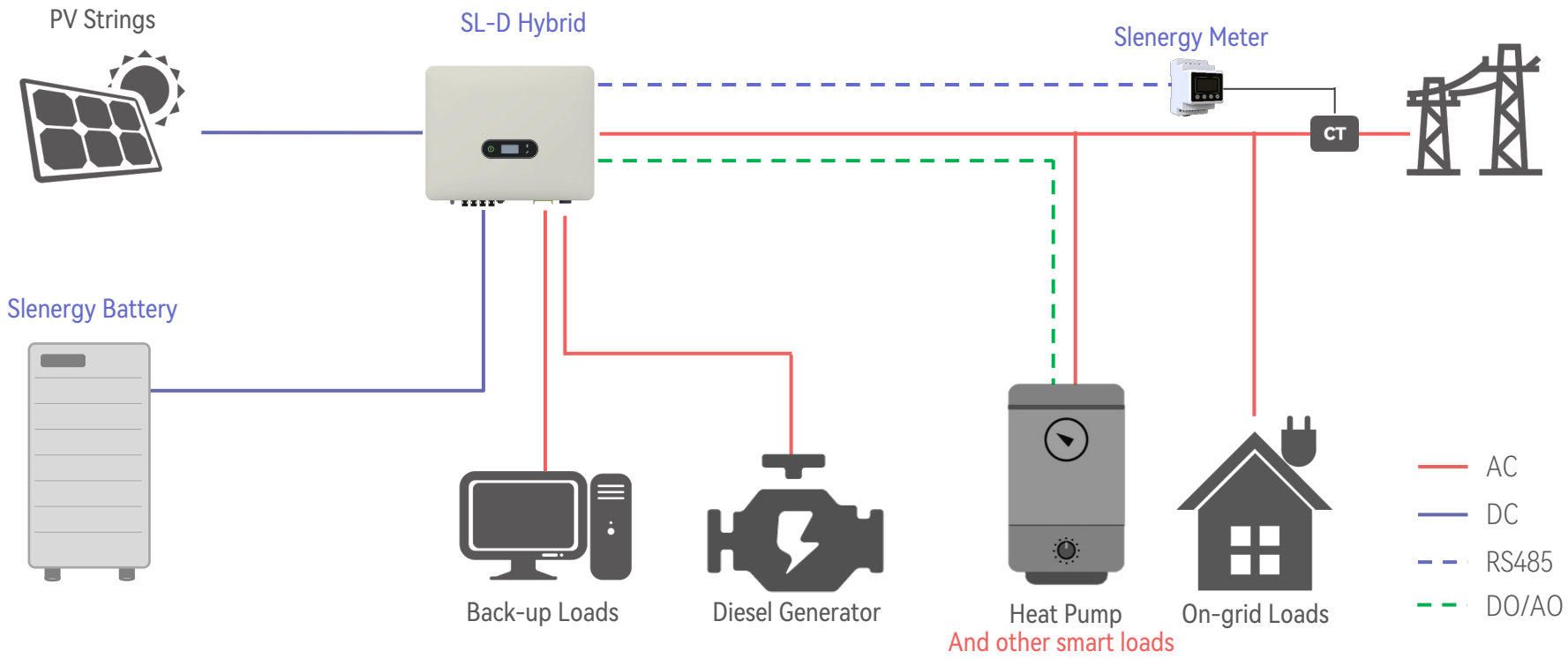
Load management means the inverter can be used as a smart home energy management unit to manage the heat pump and smart loads for maximizing energy self-sufficiency and electricity bill saving.

FOR 100% ENERGY INDEPENDENCE

Key Advantages

- Maximize the utilization of PV energy and avoid energy waste
- Improve energy self-sufficiency and green energy utilization
- Save electricity bills by shifting energy peaks
- Intelligently manage the heat pump working status according to your preference or the excess PV power and SOC.

Slenergy load management solution



Energy priority

A. Power from PV will first supply back-up and on-grid loads
B. Charge the battery if there's surplus power after the loads are satisfied
C. Excess power to supply smart loads such as the heat pump or water heater for optimizing energy utilization.

Load management compatibility

INVERTER

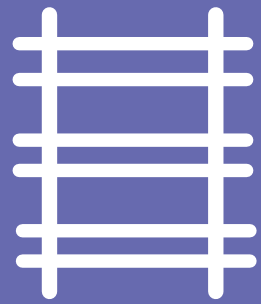


SL-D3-8K	SL-D4-12K	SL-D10-20K

SMART LOADS

SG Ready






Water Heater	Heat Pump	Electrical Towel Rack	Heating Loads

Heat pump SG ready introduction

Combination Situation	1	2	3	4
SG	ON/1	OFF/0	OFF/0	ON/1
SG-C				
EUV	OFF/0	OFF/0	ON/1	ON/1
EUV-C				
Meaning	Peak hour	Regular hour	Valley hour	Free/PV power
Control	Heat pump turn off 2hours in every 24hours	Heat pump operation according to preset value	Heat pump runs within the controller in boosted operation for space heating and domestic hot water preparation	Heat pump and electric heater operate together, heat pump will return to the original mode when the tank temperature reaches 75 Celsius

Work Modes

- Disable
- Smart Mode
- Manual Mode

Disable

Disable means not using the load management function.

Smart Mode

A. Feed-in Power Control--- use in system WITHOUT power export limitation.
Set the feed-in power threshold for triggering the heat pump entering Mode3 or turn on smart load. When the meter detects the feed-in power equal to or greater than the set value, heat pump will enter heating mode or smart loads start working.

B. Battery SOC Control--- use in system WITH power export limitation.
Set the battery SOC threshold for triggering the heat pump entering Mode3 or turn on smart load. When inverter detects the battery SOC value equal to or greater than the set value, pump will enter heating mode or smart loads start working.

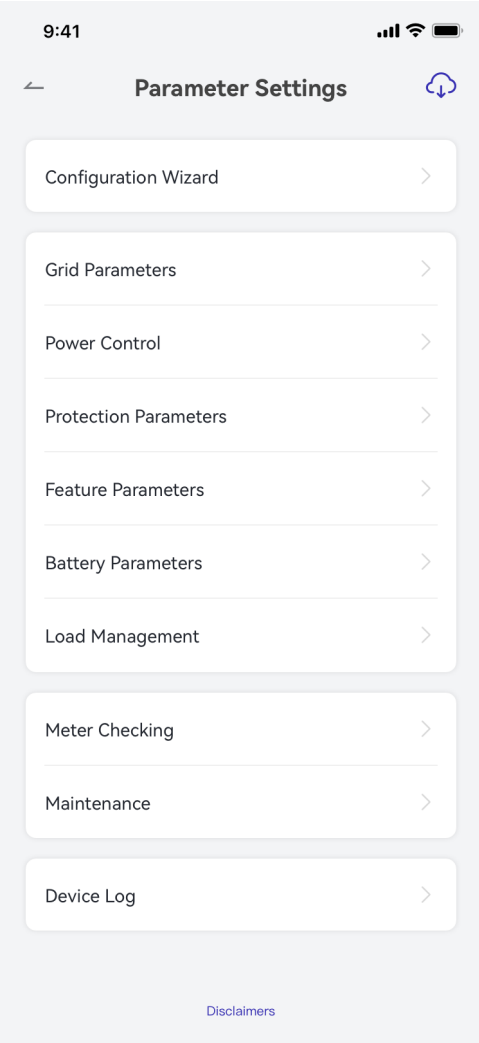
C. Time Control
Set the operation periods for heat pump Mode3 or smart load according to user habits or preferences. Up to 3 periods can be set. When this mode is enabled, a higher priority than other modes within the period. Outside the period, the heat pump or smart load operates according to the parameters set by the smart mode.

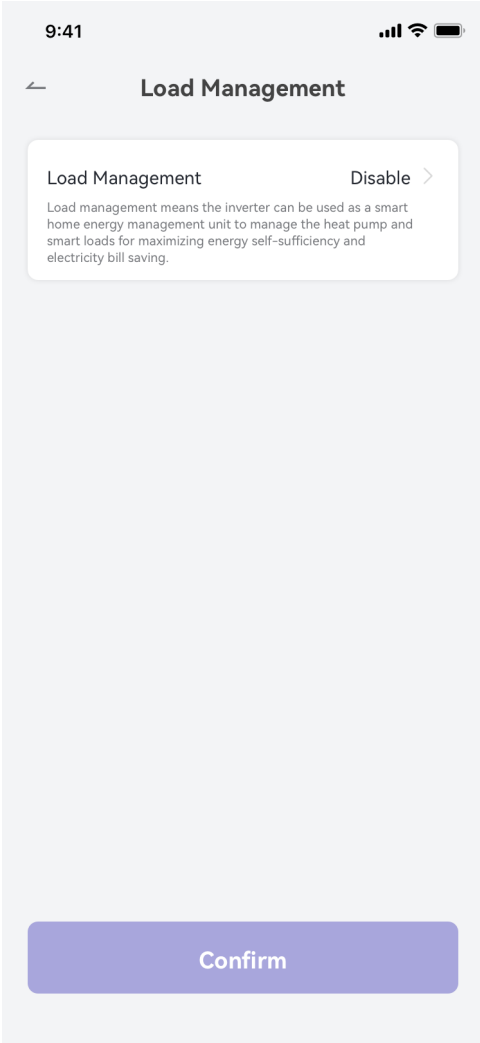
Manual Mode

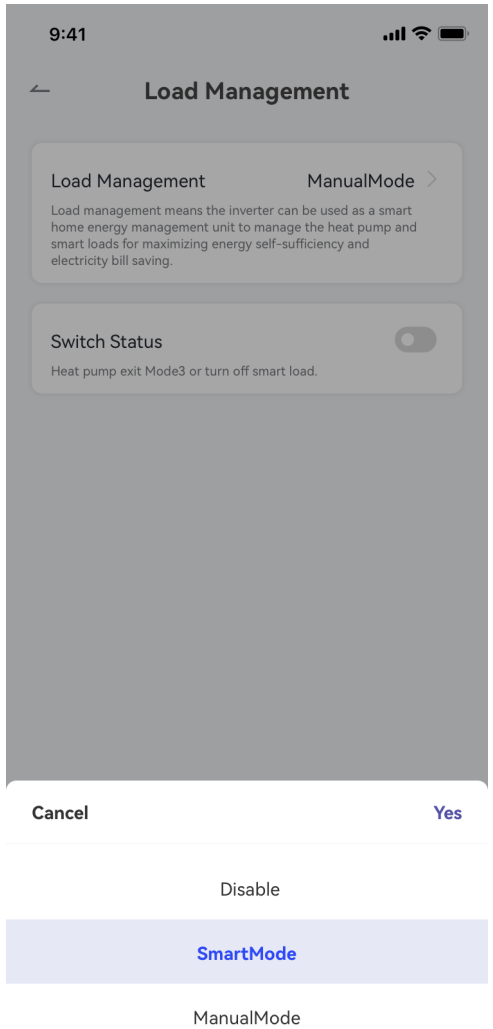
Manually control the heat pump entering Mode3 or starting the smart load.

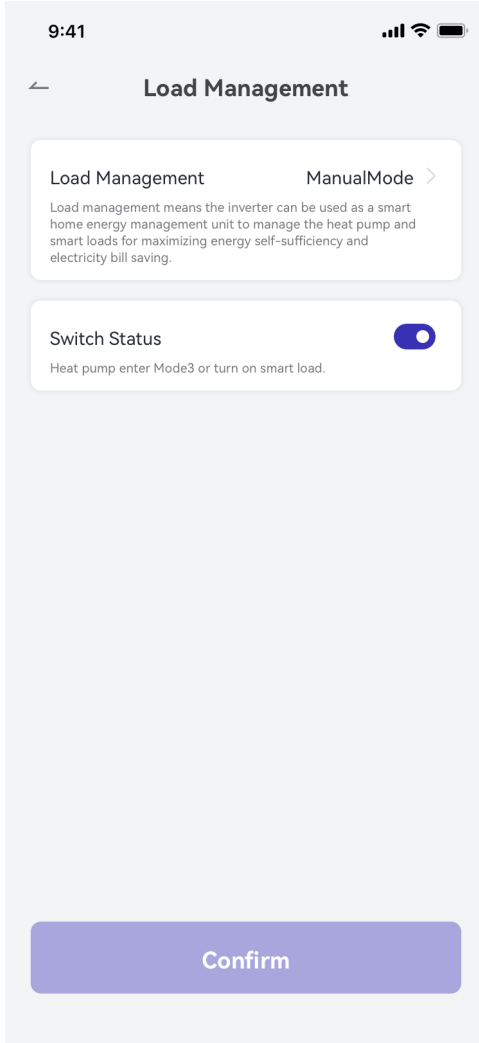
Three modes for flexible load management

Disable & Manual mode

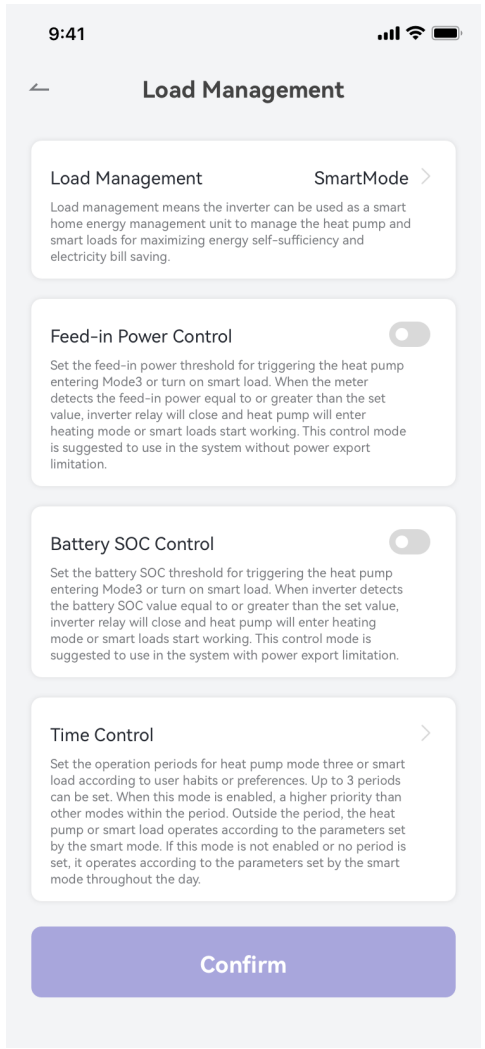








Smart mode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Load Management
Load Management
SmartMode
Load management means the inverter can be used as a smart home energy management unit to manage the heat pump and smart loads for maximizing energy self-sufficiency and electricity bill saving.
Feed-in Power Control
Set the feed-in power threshold for triggering the heat pump entering Mode3 or turn on smart load. When the meter detects the feed-in power equal to or greater than the set value, inverter relay will close and heat pump will enter heating mode or smart loads start working. This control mode is suggested to use in the system without power export limitation.
Battery SOC Control
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Time Control
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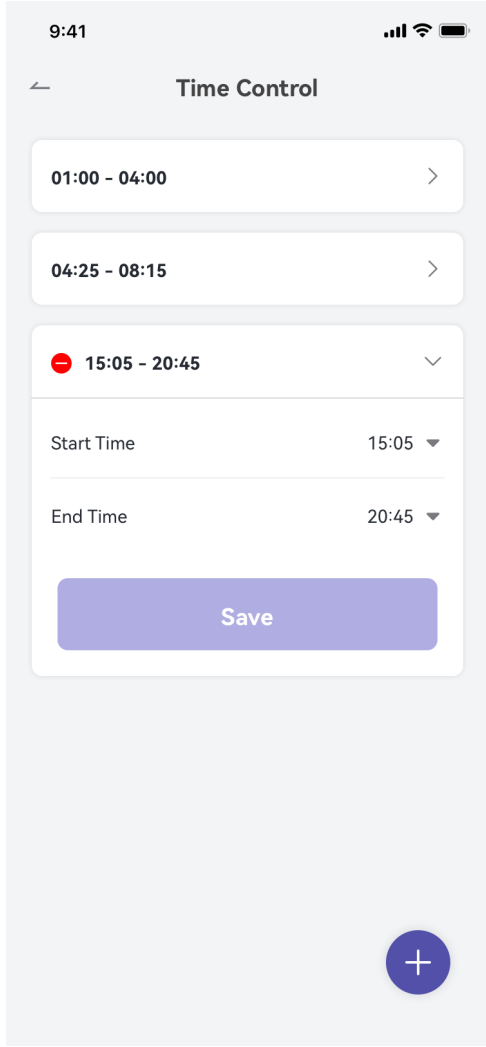
Confirm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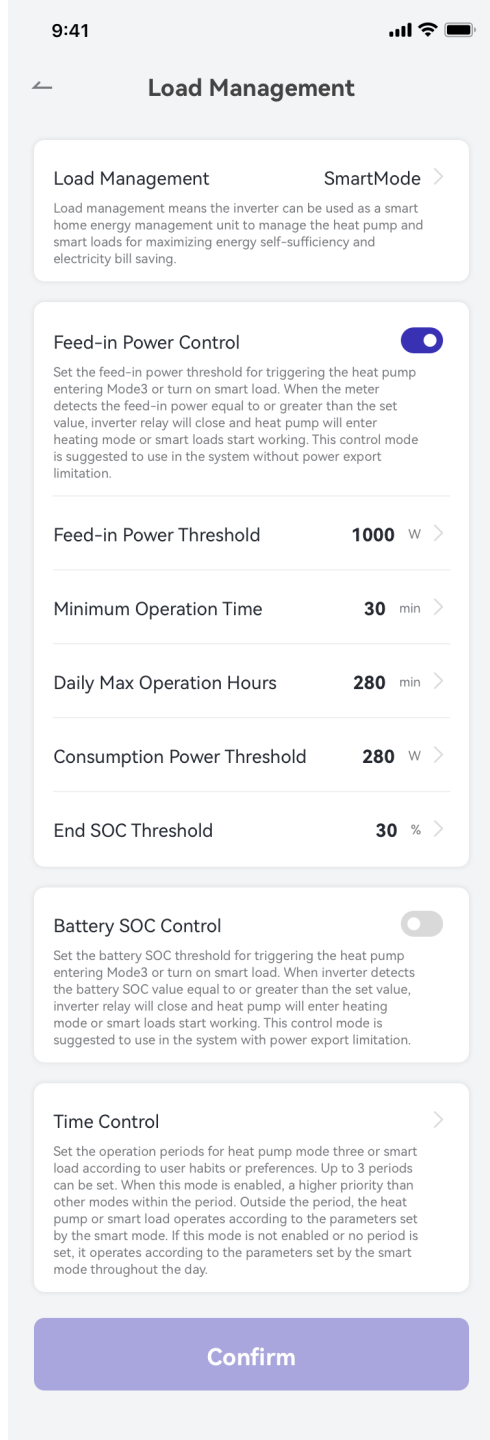
Time Control
01:00 - 04:00
04:25 - 08:15
15:05 - 20:45
Start Time
15:05
End Time
20:45
Save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Feed-in Power Threshold
1000 W
Minimum Operation Time
30 min
Daily Max Operation Hours
280 min
Consumption Power Threshold
280 W
End SOC Threshold
30 %
Battery SOC Control
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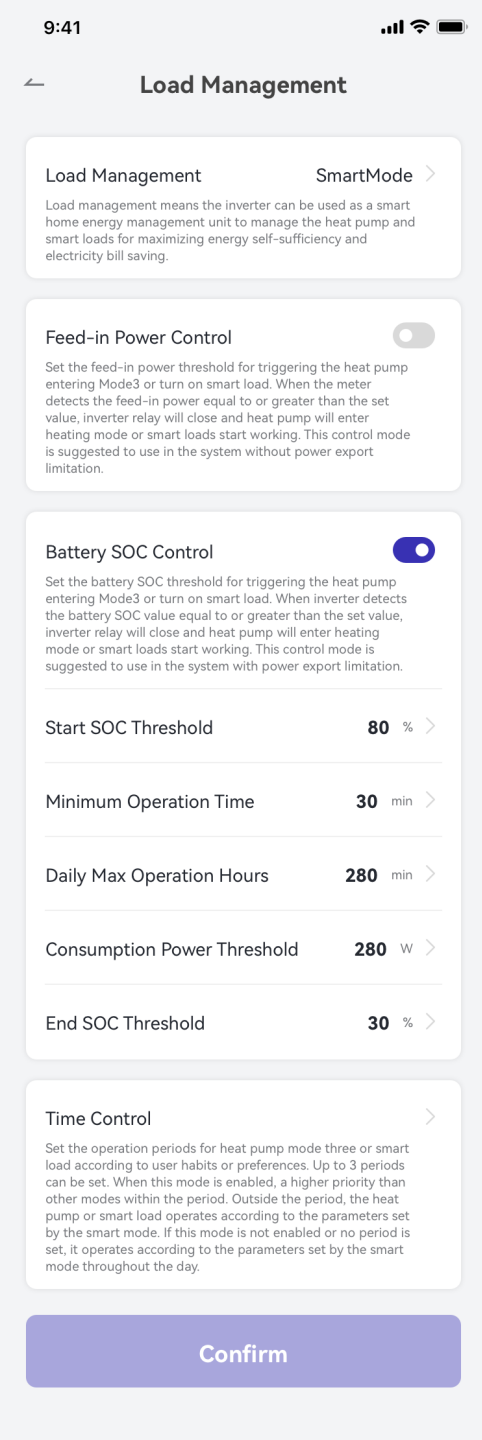
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Start SOC Threshold
80 %
Minimum Operation Time
30 min
Daily Max Operation Hours
280 min
Consumption Power Threshold
280 W
End SOC Threshold
30 %
Time Control
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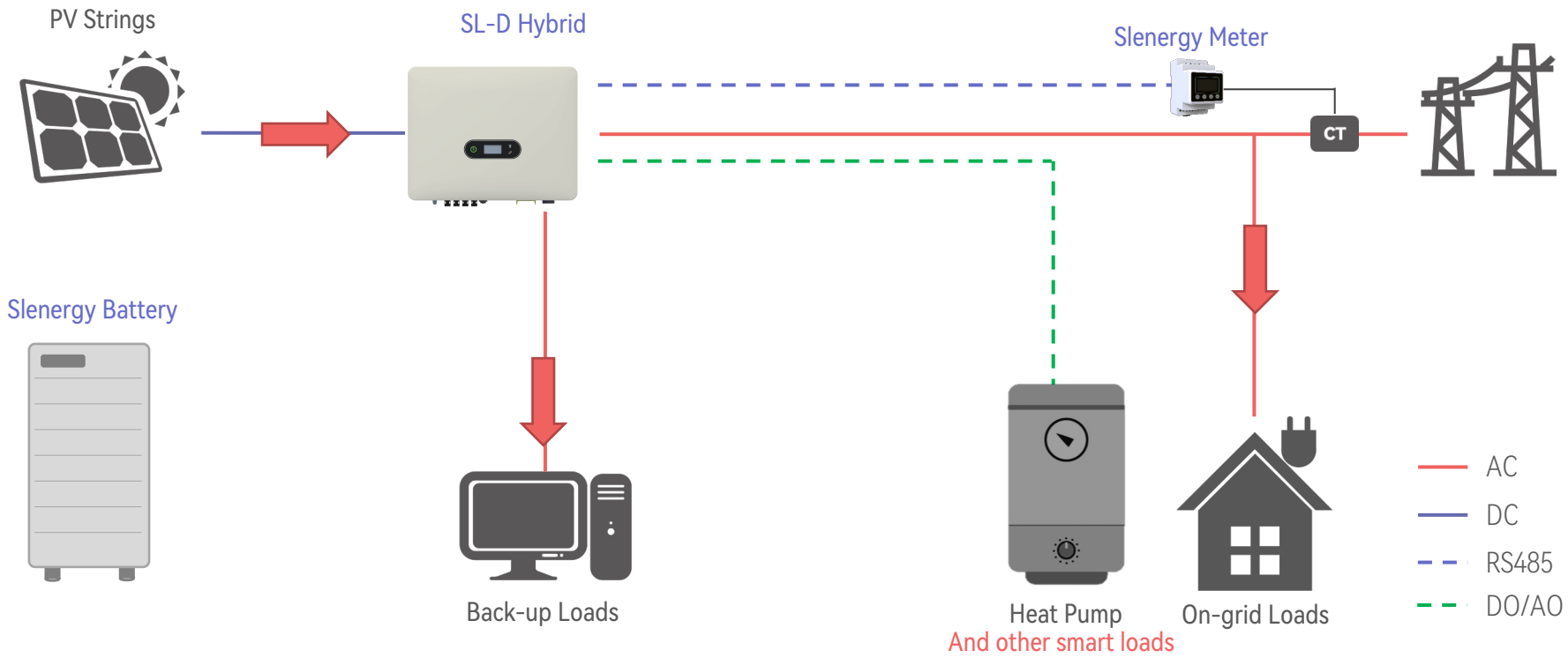
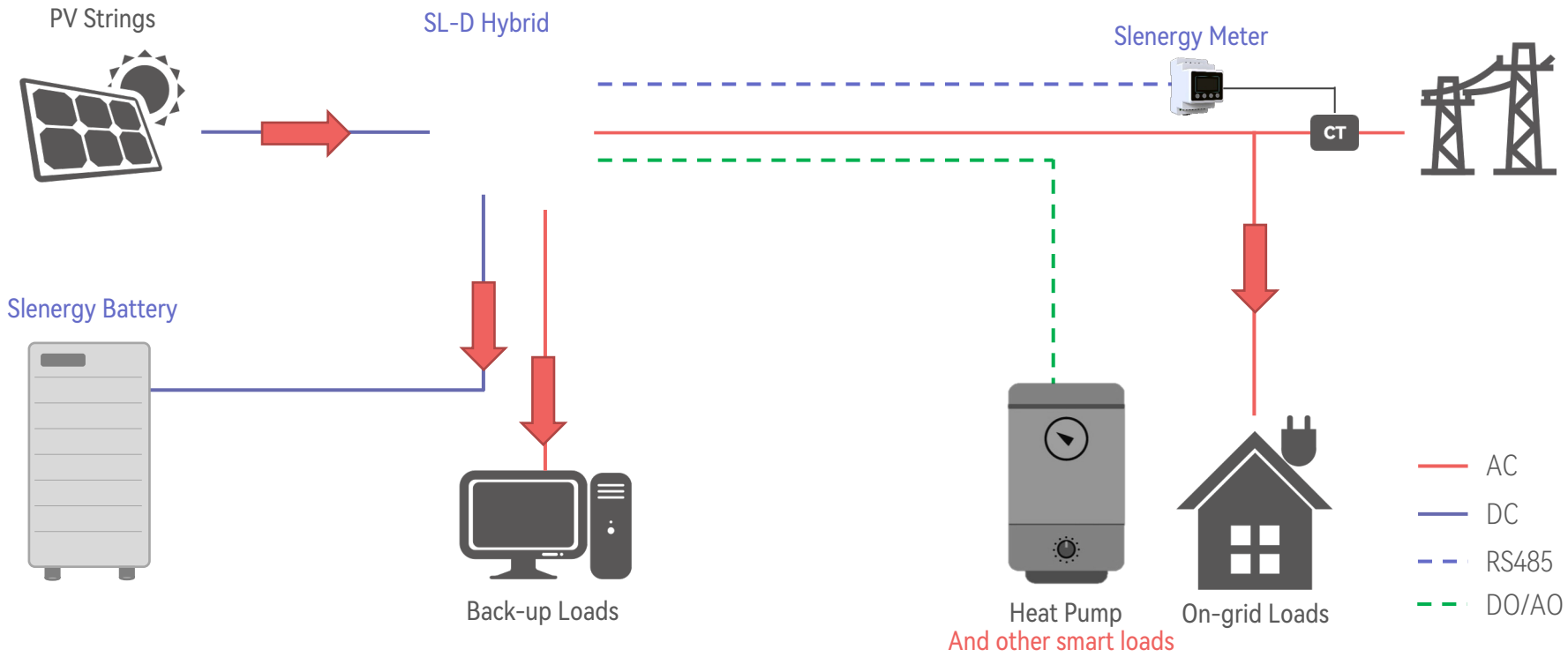
Smart mode application scenarios



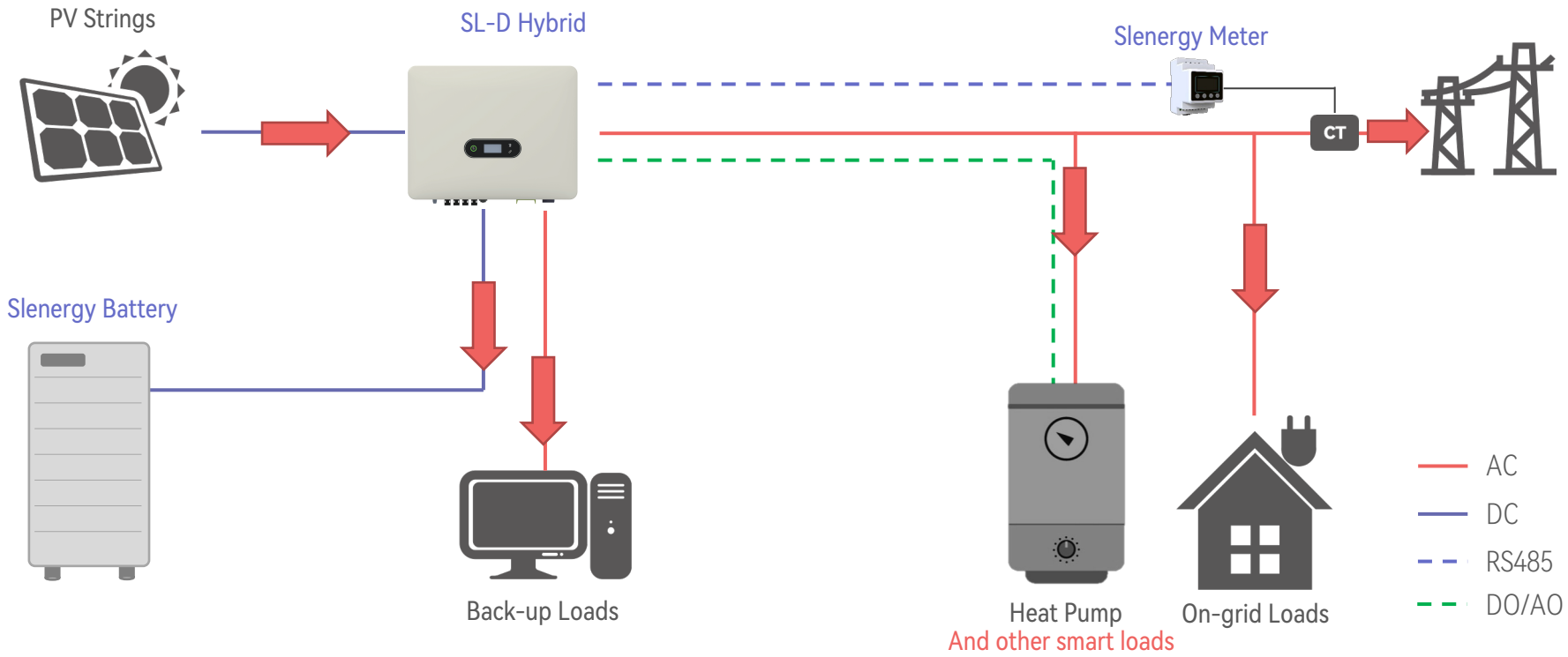
6：00-9:00 am
Inverter starts to convert power from PV to supply house loads consumption

Smart mode application scenarios



9：00-13:00 pm
PV generates more power and loads become lower, excess power will charge the battery.

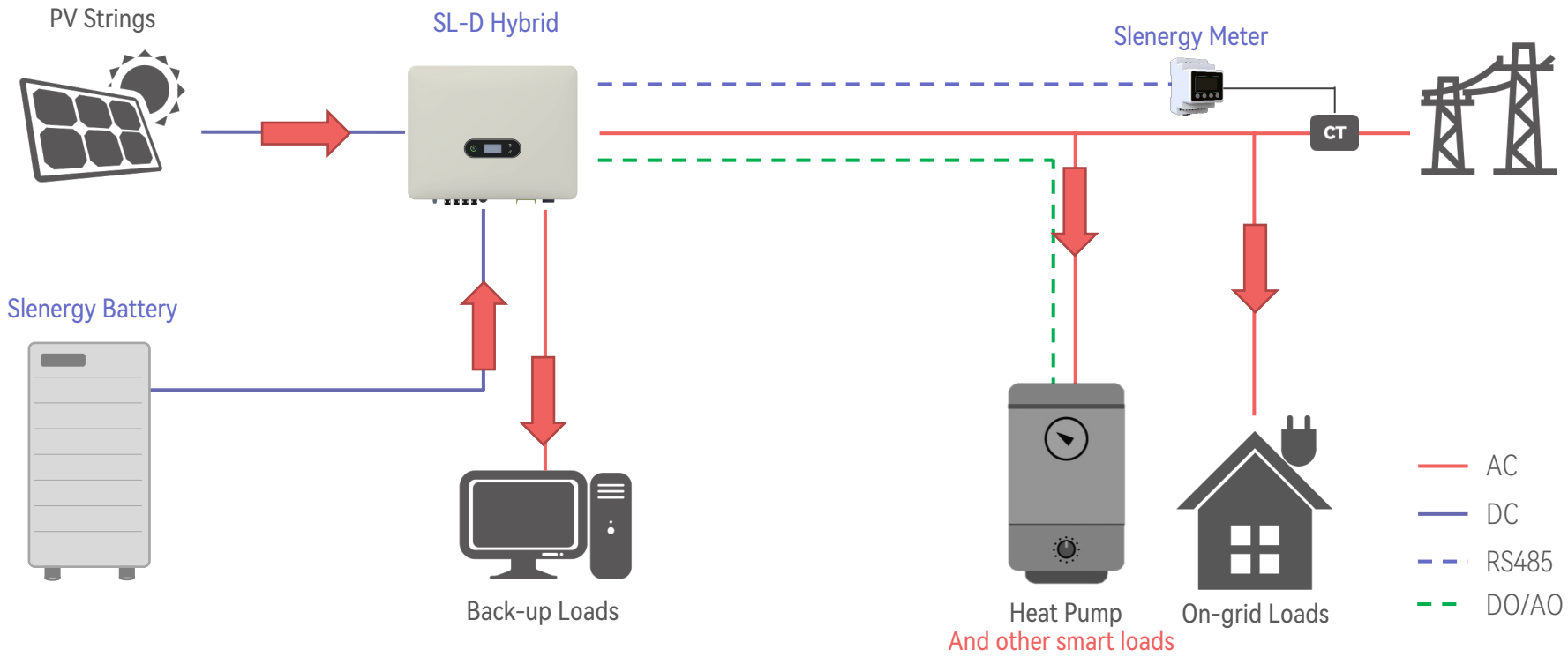
Smart mode application scenarios



13: 00-17:00 pm

After the battery is fully charged, surplus power will export to the grid for FIT but if there's no FIT or the power export limit is required, the excess power will be used to heat the heat pump water or support other smart loads.

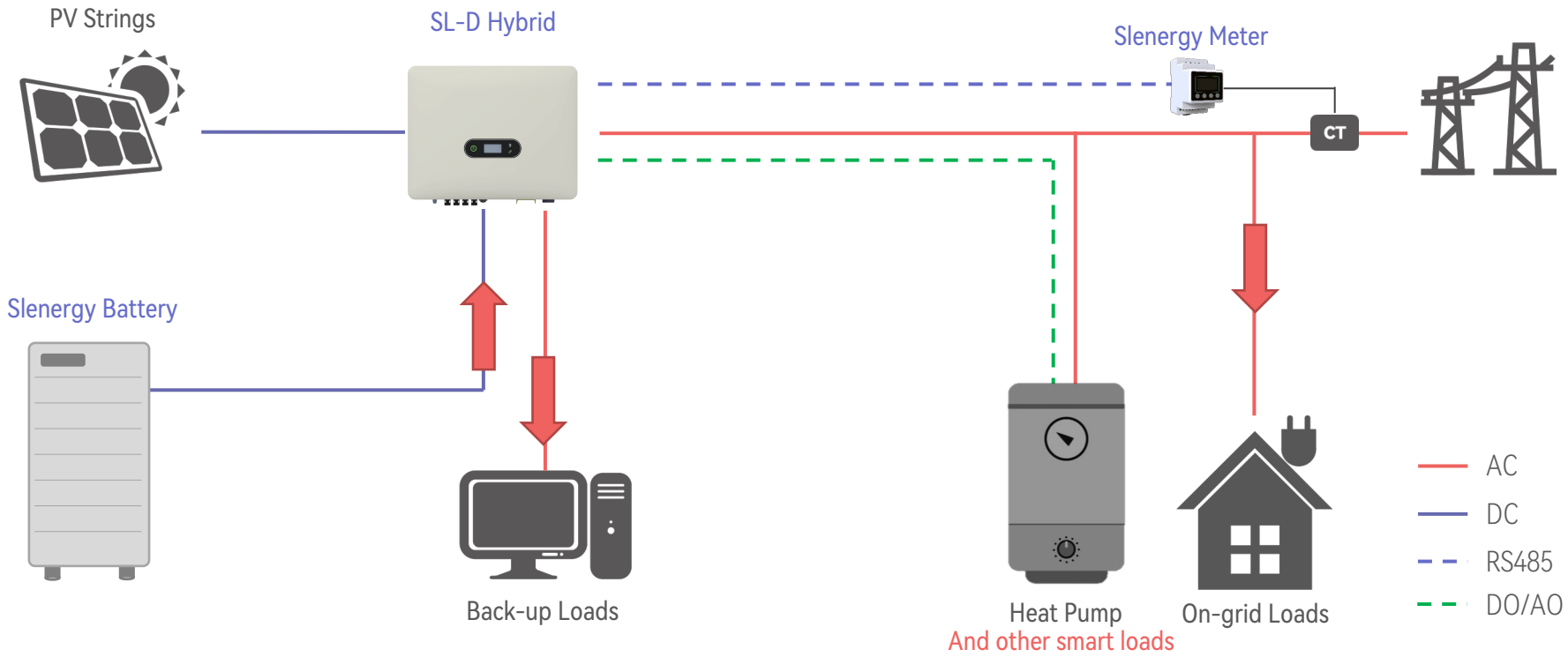
Smart mode application scenarios



17：00-19:00 pm

PV generation gets lower, and the battery starts discharging power to support loads and the heat pump. when the battery SOC drops to the preset value, the battery will stop providing power to the heat pump or smart loads.

Smart mode application scenarios



19：00-22:00 pm

No more PV generation and the battery with relatively low SOC can be used to light up the house and people can enjoy the hot water heated up during the day for showering or keeping the house warm.

THANK YOU

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