

Solinteg Intelligent Load Management

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Maximizing Self-Consumption

INTEGRATE SOLAR INTELLIGENTLY

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 Solinteg 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.



Load management definition & advantages

MY HOME

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

Devices

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 battery SOC.

Solinteg 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



Heat pump SG ready introduction

| Combination Situation | 1 | 2 | 3 | 4 | |
|-----------------------|---|--|--|--|--|
| SG | ON/1 | | | ON/1 | |
| SG-C | | OFF70 | OFF70 | | |
| EUV | | | 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

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

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|-----------------------|----------------|----|---|-----------|--|--|---------|----------|---|----------------|
| Parameter Settings | \bigcirc | ~ | Load Managem | ent | ← Load | l Management | | ~ | Load Manage | ement |
| Configuration Wizard | | L | ad Management ad management means the inverter can b | Disable > | Load Managemen | nt ManualN ns the inverter can be used as a | 1ode > | Loa | ad Management ad management means the inverter ca | ManualMode > |
| Grid Parameters | | sn | art loads for maximizing energy self-suffic ectricity bill saving. | iency and | smart loads for maximizi electricity bill saving. | ng energy self-sufficiency and | nd | sm | art loads for maximizing energy self-s ctricity bill saving. | ufficiency and |
| Power Control | | | | | Switch Status Heat pump exit Mode3 (| or turn off smart load. | | Sv He | vitch Status at pump enter Mode3 or turn on smar | t load. |
| Protection Parameters | | | | | | | | | | |
| Feature Parameters | | | | | | | | | | |
| Battery Parameters | | | | | | | | | | |
| Load Management | | | | | | | | | | |
| Meter Checking | | | | | | | | | | |
| Maintenance | | | | | Cancel | | Yes | | | |
| Device Log | | | | | | Disable | | | | |
| | | | Confirm | | | SmartMode | | | Confirm | |
| Disclaimers | | | | | | ManualMode | | | | |

Smart mode

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| Load Management | SmartMode > be used as a smart the heat pump and ficiency and | | 01:00 - 04:00 | |
| home energy management unit to manage smart loads for maximizing energy self-suffi electricity bill saving. | | | 04:25 - 08:15 | |
| | | | | |
| Feed-in Power Control Set the feed-in power threshold for triggeri entering Mode3 or turn on smart load. Whe | ng the heat pump n the meter | | — 15:05 - 20 |):45 |
| detects the feed-in power equal to or great value, inverter relay will close and heat pum heating mode or smart loads start working is suggested to use in the system without p limitation. | er than the set p will enter This control mode ower export | | Start Time | |
| | | | End Time | |
| Battery SOC Control | | | End fine | |
| Set the battery SOC threshold for triggering entering Mode3 or turn on smart load. Whe the battery SOC value equal to or greater th inverter relay will close and heat pump will a mode or smart loads start working. This cor suggested to use in the system with power | y the heat pump n inverter detects nan the set value, enter heating trol mode is export limitation. | | | Save |
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| Time Control | | | | |
| Set the operation periods for heat pump mu load according to user habits or preference: can be set. When this mode is enabled, a hi other modes within the period. Outside the pump or smart load operates according to t by the smart mode. If this mode is not enab set, it operates according to the parameters mode throughout the day. | ode three or smart s. Up to 3 periods gher priority than period, the heat he parameters set led or no period is s set by the smart | | | |
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| Confirm | | | | |
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| | Load management means the inverter can be used home energy management unit to manage the hea smart loads for maximizing energy self-sufficiency electricity bill saving. | l as a smart at pump and and |
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| > | entering Mode3 or turn on smart load. When the n detects the feed-in power equal to or greater thar value, inverter relay will close and heat pump will heating mode or smart loads start working. This co is suggested to use in the system without power e limitation. | neter 1 the set 2 nter 2 ntrol mode 2 xport |
| > | Feed-in Power Threshold | 1000 w > |
| ~ | Minimum Operation Time | 30 min > |
| 5:05 💌 | Daily Max Operation Hours | 280 min > |
| 0.45 | Consumption Power Threshold | 280 w > |
| 0.45 | End SOC Threshold | 30 % > |
| | | |
| | Battery SOC Control | |
| | Set the battery SOC threshold for triggering the he entering Mode3 or turn on smart load. When inver the battery SOC value equal to or greater than the inverter relay will close and heat pump will enter h mode or smart loads start working. This control m suggested to use in the system with power export | eat pump ter detects eset value, eating ode is limitation. |

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Load Management

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SmartMode

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Load Management

Time Control

Set the operation periods for heat pump mode three 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. If this mode is not enabled or no period is set, it operates according to the parameters set by the smart mode throughout the day.

Confirm

9:41 ...| 🌣 🔳 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 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, 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 with power export limitation. 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

Set the operation periods for heat pump mode three 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. If this mode is not enabled or no period is set, it operates according to the parameters set by the smart mode throughout the day.



6: 00-9:00 am

Inverter starts to convert power from PV to supply house loads consumption



9: 00-13:00 pm

PV generates more power and loads become lower, excess power will charge the battery.



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.



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.



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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