

Dynamic Pricing

Solinteg Intelligent Mode Introduction



V1.0
Date: 16.1.2025

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Introduction of Intelligent Mode

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Introduction of Dynamic Pricing



Dynamic pricing is a mechanism that adjusts electricity prices in **real-time** based on the **supply and demand** of electricity.

There are various forms of dynamic pricing in the electricity market, including **time-of-use pricing** and **real-time pricing**. Time-of-use pricing sets different prices for peak and off-peak hours to regulate consumer behavior. Real-time pricing adjusts prices frequently, like every hour or half-hour, to encourage more efficient and economical electricity usage.

What

is Dynamic Pricing



The basic principle of dynamic pricing is that when electricity **demand is high, prices increase** to suppress demand; when **demand is low, prices decrease** to stimulate demand. This mechanism uses price signals to guide users to **adjust their electricity consumption behavior**, thereby **balancing supply and demand**.

How

Dynamic Pricing Works



Balances supply and demand by adjusting prices based on usage patterns.

Improves grid efficiency by spreading out electricity load.

Enhances renewable energy use by aligning prices with renewable generation.

Reduces consumer costs for those who can shift usage to cheaper times.

Promotes energy conservation by encouraging efficient use.

Why

We Need Dynamic Pricing

Solinteg Intelligent Mode

What is Solinteg Intelligent Mode?

The intelligent mode is a comprehensive mode developed by Solinteg that integrates the **General Mode**, **Battery Charge**, and **Battery Discharge Mode**. It uses **real-time electricity pricing**, **PV generation**, and **load consumption** to **optimize energy use** and **save on electricity bills** for customers. It is suitable for areas where electricity prices fluctuate significantly and frequently, such as in some European countries.



By accessing **regional day-ahead electricity price** data, the dispatch strategy can be automatically created. The basic principle is to **purchase electricity when prices are low** and **sell it back when prices are high**. This mode boosts the system's revenue for end customers and streamlines the configuration process.

What are the benefits of the Intelligent Mode?

Enhance Energy Storage System Benefits:

The intelligent mode optimizes the use of PV-generated electricity and grid electricity. It prioritizes using PV-generated electricity for household loads when electricity prices are high and maximizes profit by feeding more electricity to the grid during peak daily feed-in tariff hours. Conversely, it prioritizes using grid electricity for household loads when prices are low and stores more power in the battery.



Reduce Electricity Bills:

The intelligent mode automatically charges the energy storage system during periods of low electricity prices and prioritizes using stored energy when prices are high. This effectively lowers electricity costs.

Scope of Using Intelligent Mode



Which countries are included in the Intelligent Mode use scope?

Included: Norway, Finland, Sweden, Denmark, Germany, Czech Republic, Hungary, Slovenia, Switzerland, Poland, Slovakia, Austria.

In Plan: England, Netherlands, Belgium, Spain...

Scope of Using Intelligent Mode in Different Hybrid Inverters and Requirements

MHT3-50K (Generation1)			M2HT25-50 (Generation2)	
MHT25-50K	MHT4-20K	MHS-3-8K	M2HS-3-6K	M2HT-25-50K
ARM \geq 03(15) DSP \geq 02(79)	ARM \geq 03(15) DSP \geq 02(36)	ARM \geq 03(15) DSP \geq 02(00)	No Limitation for ARM DSP \geq 00(10)	No Limitation
General Mode	General Mode	General Mode	General Mode	General Mode
Economic Mode	Economic Mode	Economic Mode	/	/
UPS Mode	UPS Mode	UPS Mode	Back-up Mode	Back-up Mode
Off-grid Mode	Off-grid Mode	Off-grid Mode	Off-grid Mode	Off-grid Mode
Peak Shifting	Peak Shifting	Peak Shifting	Peak Shifting	Peak Shifting
Time of Use (General Mode/Battery Charge/PV Charging/Peak Shifting/Feed-in Mode/ Battery Discharge)				
Feed-in Priority	Feed-in Priority	Feed-in Priority	Feed-in Priority	Feed-in Priority

02

Dynamic Pricing Strategies

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Integrated Dynamic Pricing Platforms

Bidding Zones

Integrated Platforms

	Completed
Elpriset	Feb.2025
octopusenergy	In Plan
NordPool	In Plan

Select multiple areas



Strategies of Intelligent Mode

Duration

Control the inverter's work mode switching by the day-ahead electricity price rankings acquired from the connected dynamic pricing platform.

The system discharges power during the highest price periods for maximum profit and charges power during the lowest price periods for minimum cost. Customers can define the charging and discharging durations according to their battery's full charge and discharge times.

Big battery to system capacity ratio, set once managing for a long period.

Percentage

Control the inverter's work mode switching based on the preset charging and discharging percentages of the daily price differences between off-peak and peak hours.

System discharge to grid at the high price percentage range and charge from grid at the low price percentage range.

Price fluctuates sharply, set once managing for a long period.

Fixed Price

Control the inverter's work mode switching based on the predefined charging & discharging prices.

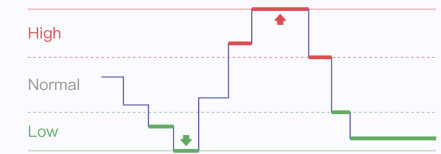
The system discharges power to the grid when the electricity price exceeds the high price you set and charges power from the grid when it reaches the low price.

Price variants gently, or customer has time to set the trigger value every day.

< Price strategy configuration

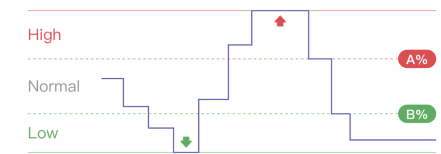
Duration ✓

Adjust charging and discharging schedules automatically according to the set high and low tariff periods and fluctuating electricity rates.



Percentage

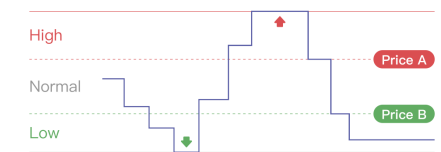
Calculate the daily peak and valley price difference and set the triggering value according to the percentage of price differences.



* Formula: $(P_{max} - P_{min}) * \% + P_{min}$

Fixed

Directly set a fixed electricity value to determine the electricity price range.



Confirm

Smart Strategies/Duration

Duration Control

Duration control refers to a strategy that adjusts the system's operation mode according to the time periods and electricity prices, our system will automatically relate the **Battery discharge** mode to top-ranking price periods and **Battery charge** mode to lowest-ranking price periods.

If your battery takes three hours to charge to full, and you choose the “**Duration control**” strategy and set the duration for high prices as 3 hours and low prices as 2 hours, the system will discharge power to the grid in the top three hours, and charge power from the grid in the lowest two hours.

According to the preset conditions,
the system operation will look like:

4:00–7:00 (The lowest 2 hours)

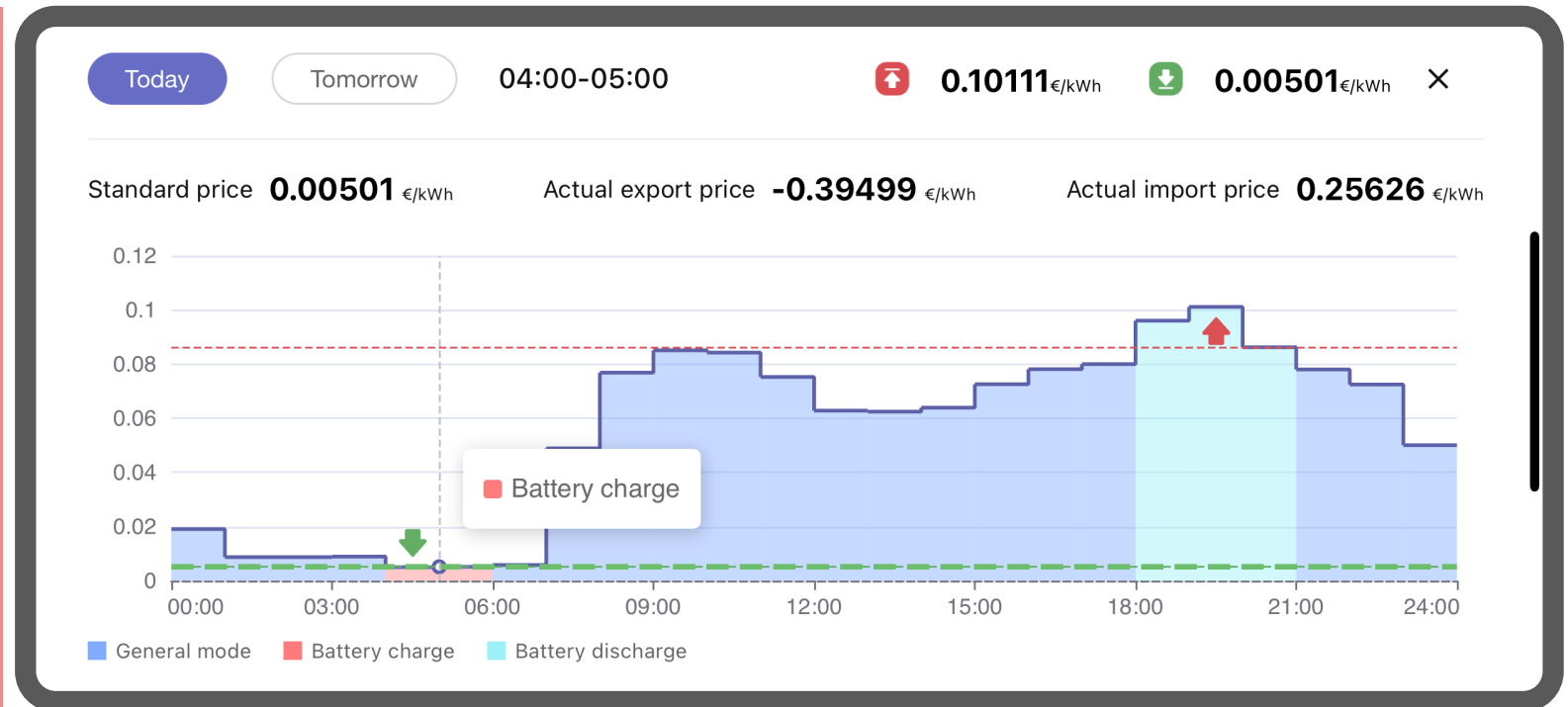
System operates in **Battery Charge Mode**

18:00–21:00 (The highest 3 hours)

System operates in **Battery Discharge Mode**

Other periods

System operates in **General Mode**



Smart Strategies/Percentage

Percentage Control

Percentage control refers to a strategy that adjusts the system work mode based on the preset charging and discharging percentages of the daily price differences between off-peak and peak hours.

If you set the percentage for triggering the discharge at $\geq 80\%$ and the charge at $\leq 20\%$ on the daily peak and valley price differences. The system will change to **Battery discharge** mode when the electricity price goes up to 80% of the total price range and **Battery charge** mode when the price drops to 20%. The charge and discharge segments will be as shown in the below picture.

According to the preset conditions, the system operation will look like:

0:00–6:00 (Percentage $\leq 20\%$ @ Peak-Valley)

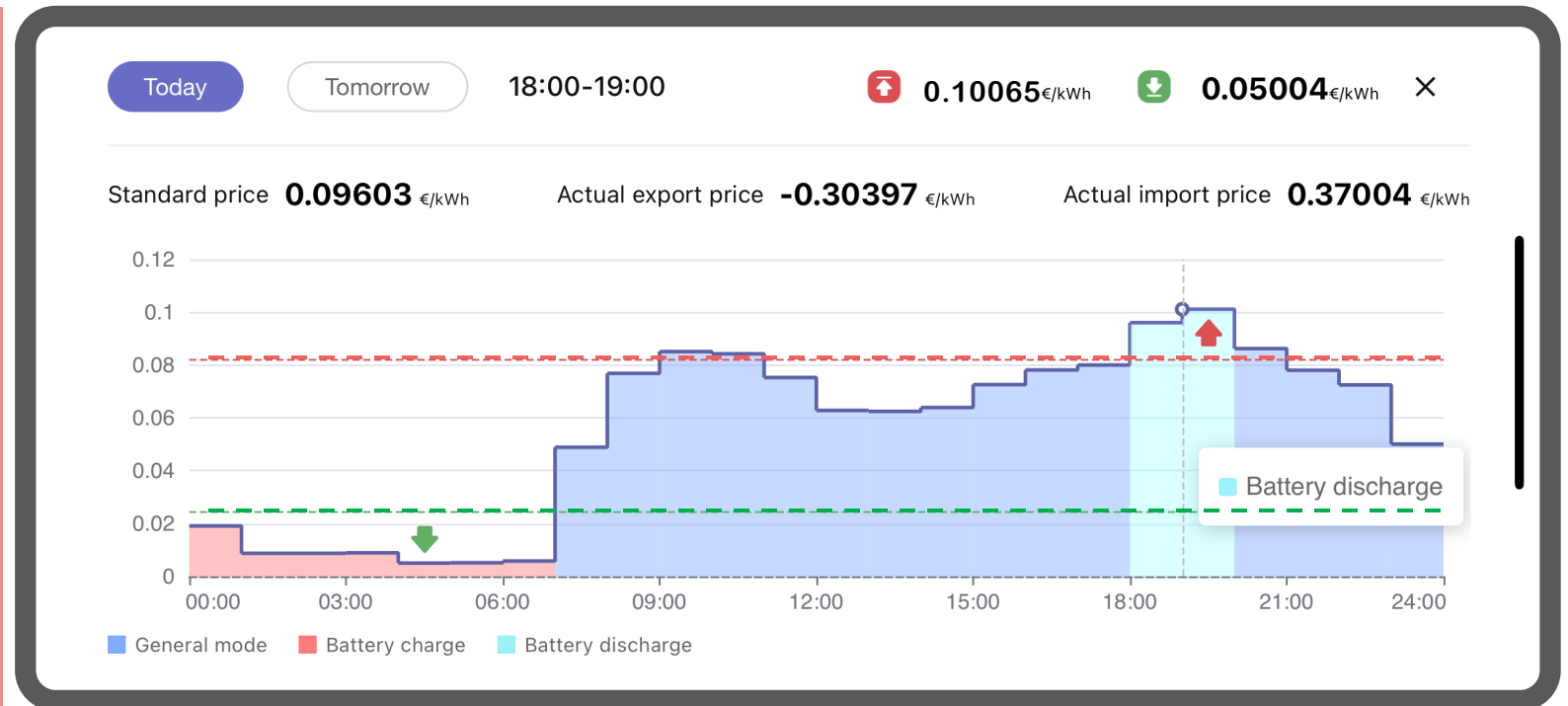
System operates in Battery Charge Mode

18:00–20:00 (Percentage $\geq 80\%$ @ Peak-Valley)

System operates in Battery Discharge Mode

Other periods

System operates in General Mode



Smart Strategies/Fixed Price

Fixed Price Control

Fixed price control refers to a strategy that adjusts the system's operation mode according to the specific triggering price that is predefined by the customer. This strategy requires the customer to set the triggering price every day manually for maximizing system earnings.

If the high price is set as when the standard price is ≥ 0.16 , and the low price is set as when the standard price is ≤ 0.05 . Take the dynamic price below as an example, the system will change to **Battery charge** mode when the standard price is lower than 0.05 and **Battery discharge** mode when the standard price exceeds 0.16.

According to the preset conditions, the system operation will look like:

0:00–1:00; 3:00–4:00 (Price ≤ 0.05)

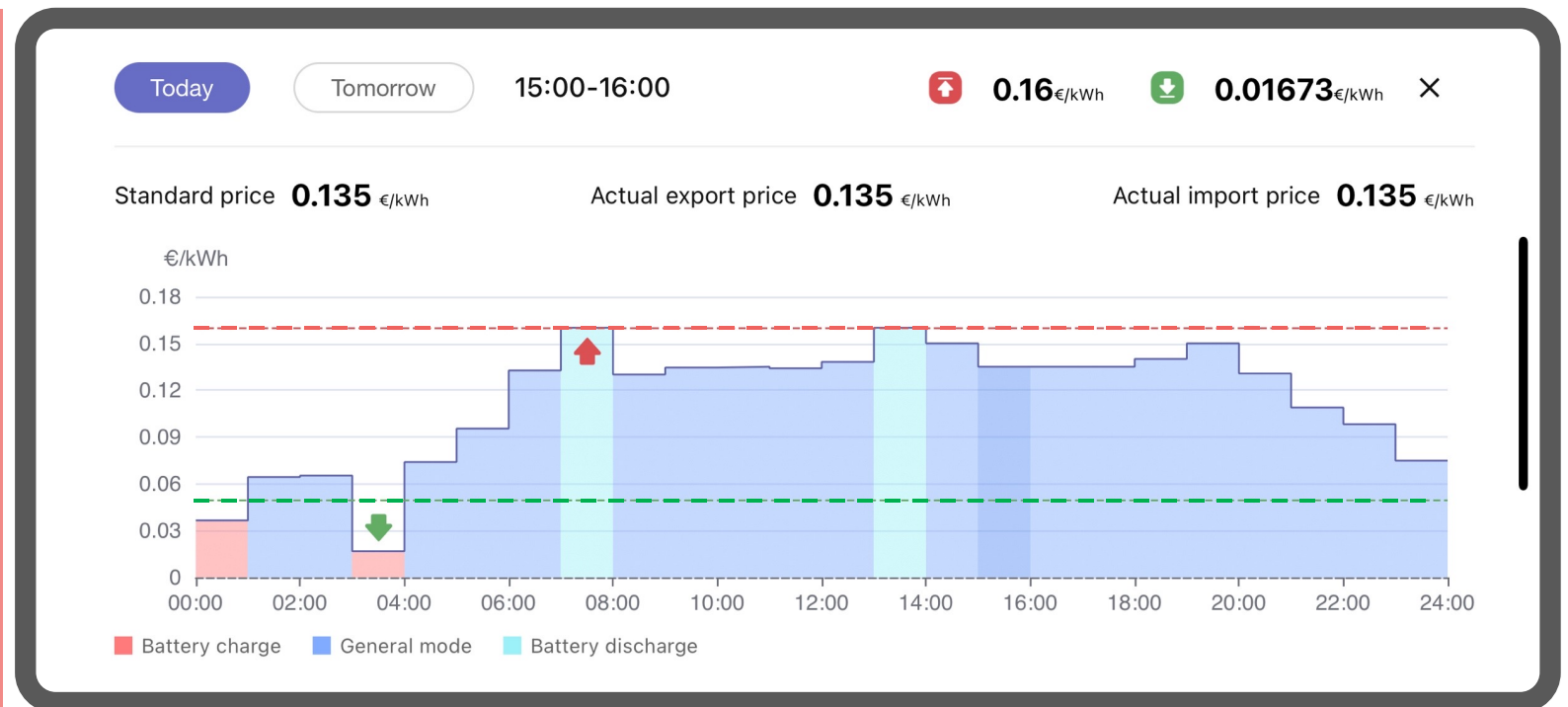
System operates in **Battery Charge Mode**

8:00–9:00; 13:00–14:00 (Price ≥ 0.15)

System operates in **Battery Discharge Mode**

Other periods

System operates in **General Mode**



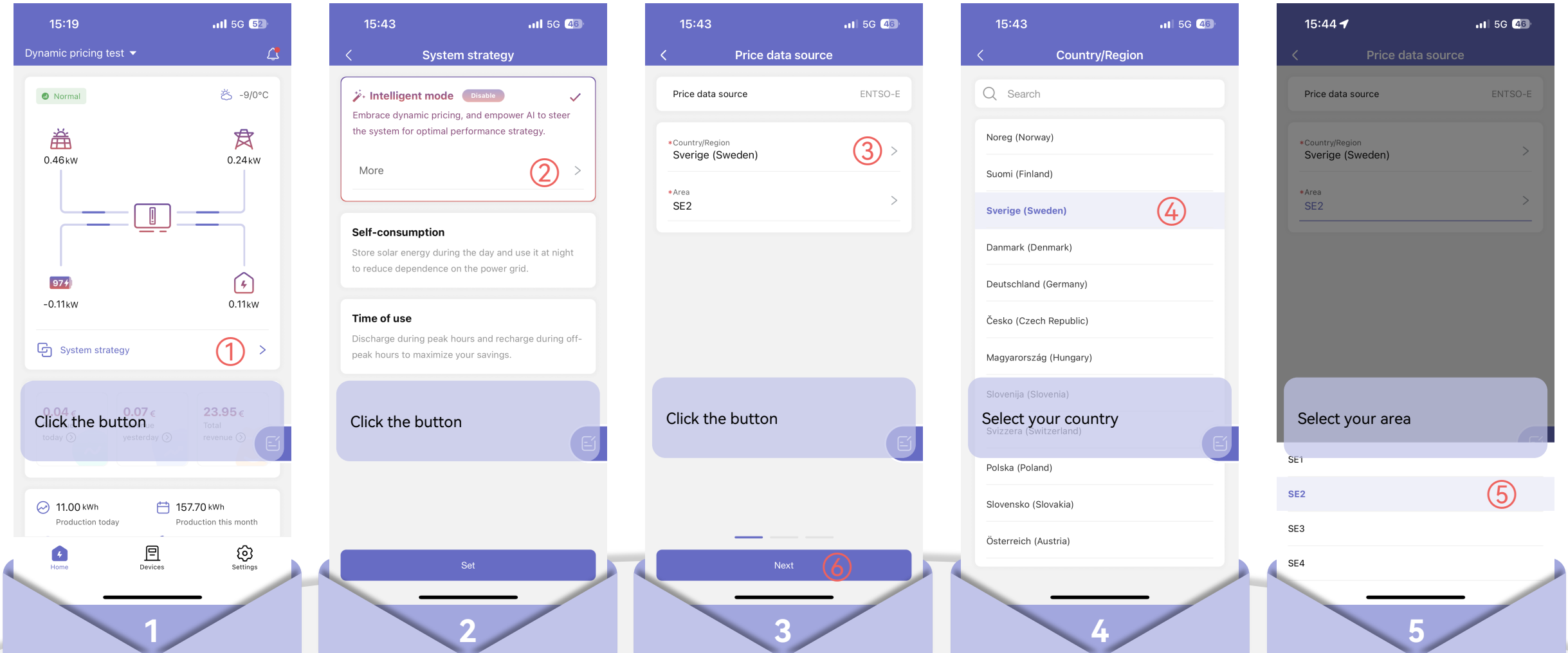
03

Operation & Configuration

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Operation & Configuration

10 Steps for Beginners to Easily Use Intelligent Mode (Take Sweden as an example)



Step 1: Home Screen
Time: 15:19, 5G, 52% battery. Screen shows 'Dynamic pricing test' and a power flow diagram with values: 0.46kW, 0.24kW, 97%, -0.11kW, 0.11kW. A 'System strategy' button is highlighted with a red circle 1. Callout: 'Click the button'.

Step 2: System strategy
Time: 15:43, 5G, 46% battery. Screen shows 'Intelligent mode' toggle (Disable) with a checkmark. A 'More' button is highlighted with a red circle 2. Callout: 'Click the button'.

Step 3: Price data source
Time: 15:43, 5G, 46% battery. Screen shows 'Price data source' as 'ENTSO-E'. A 'Country/Region' dropdown shows 'Sverige (Sweden)' with a red circle 3. A 'More' button is highlighted with a red circle 4. Callout: 'Click the button'.

Step 4: Country/Region
Time: 15:43, 5G, 46% battery. Screen shows a list of countries. 'Sverige (Sweden)' is selected with a red circle 4. Callout: 'Select your country'.

Step 5: Price data source
Time: 15:44, 5G, 46% battery. Screen shows 'Price data source' as 'ENTSO-E'. A 'Country/Region' dropdown shows 'Sverige (Sweden)'. A 'More' button is highlighted with a red circle 5. Callout: 'Select your area'.

Operation & Configuration

10 Steps for Beginners to Easily Use Intelligent Mode

Click “Basic settings” to amend the preset value

Basic settings

Advanced Settings

15:44 5G 46

< Extra charge ?

Actual export price/kWh

Handling fee ① €/kWh

0.00

Actual export price/kWh
= Standard price - Handling fee

Actual import price/kWh

Distribution fee ② €/kWh

0.00

Tax rate ③ %

0.00

Actual import price/kWh
= (Standard price + Distribution fee) * (1 + Tax rate)

* Standard price: The original price we take from dynamic price data source

Set “Handling fee”, “Distribution fee” and “Tax rate” accordingly

Skip this part if you are not sure about it.

Next

6

15:45 5G 46

< Extra charge ?

Actual export price/kWh

Handling fee €/kWh

0.1

Actual export price/kWh
= Standard price - Handling fee

Actual import price/kWh

Distribution fee €/kWh

0.1

Tax rate %

20

Actual import price/kWh
= (Standard price + Distribution fee) * (1 + Tax rate)

* Standard price: The original price we take from dynamic price data source

Skip the one if you don't know it

Skip this part if you are not sure about it.

Next

7

15:45 5G 46

< Power from grid

*Export limit ☒

*Power to grid ④ kW

10

*Import limit ☒

*Power from grid ⑤ kW

20

Turn on or off the export limit and import limit and set the relevant value

Save

8

15:46 5G 46

< Power from grid

Don't know how to set the import limit power?
Here are some tips for you:

If using a 16A AC breaker,
set the power to 11kW

If using a 20A AC breaker,
set the power to 13.8kW

If using a 32A AC breaker,
set the power to 22kW

For other size AC breakers, use the following formula
to calculate the value:

AC Breaker current x 3 x 230

The basic rule for setting the
value of power from grid

15:46 5G 46

< Intelligent mode ...

Today Tomorrow

0.01861€/kWh 0.00020€/kWh

00:00 24:00

00:00-02:00 General mode
04:00-22:00 General mode

You can view your daily energy
schedule and click “Run” button

Run ⑥

10

Main Params & Work Mode Introduction

Export Limit

Limit ON/Power to grid 0kW

Do not export power to the grid.

Limit ON/Power to grid 5kW

The maximum power export to the grid is 5kW.

Limit OFF

Power to the grid will follow the inverter's capability.

Import Limit

Limit ON/Power from grid 0kW

Do not take power from the grid.

Limit ON/Power from grid 10kW

The max power import from the grid is 10kW.

Limit OFF

Power import from the grid will be according to system consumption requirements.

General Mode

Work Logic:

PV → Load → Battery → Grid

Key Features:

1. Battery normally only charges from PV.
2. Battery only discharges power to supply loads, not export to grid.

Suitable For:

Maximum self-sufficiency

Battery Charge Mode

Work Logic:

PV+Grid → Battery → Load

Key Features:

1. Battery can be charged from PV(optional)+Grid.
2. Battery doesn't discharge in this mode.

Suitable For:

Low electricity price period or long time low PV generation.

Battery Discharge Mode

Work Logic:

PV+Battery → Load → Grid

Key Features:

1. Battery discharges power to supply loads and export to grid.
2. Battery discharge as much power as it can if there's no export limit

Suitable For:

High electricity price period.

Feed-in Mode

Work Logic:

PV → Load → Grid → Battery

Key Features:

1. Sell PV excess power to grid instead of charging battery.

Suitable For:

High electricity price period.

PV Charging

Work Logic:

PV → Load → Battery → Grid

Key Features:

1. Battery doesn't discharge in this mode.

Suitable For:

High electricity price period but battery SOC is low, unstable power grid, or AC retrofit system.

Peak Shifting

Work Logic:

PV → Load → Battery → Grid

Work Principle:

1. Loads < Pmax, PV+Grid will supply loads and charge the battery, battery doesn't discharge.
2. Loads > Pmax, PV+Grid+Battery will supply loads together to shift the peak for the customer.

Suitable For:

Places where power taken from the grid exceeds a limited power(Pmax) will lead to penalties or extra charges.

Power Limit of Charge

The maximum power you can take from the grid for battery charging.

Discharge Cut-off SoC

When the battery SoC reaches the set value, it will stop discharging in Battery Discharge mode.

Charge Cut-off SoC

The maximum SoC that you want the battery to charge in the Battery Charge mode.

PV Forbidden

This function is embedded in the Battery Charge mode, when the PV forbidden is turned on, PV will stop the generation.

Customized Settings for Professional Users

Check and adjust the default “Duration” strategy settings to meet your demands

17:29 5G 38

Intelligent

Basic settings

Advanced Settings ①

Today

0.01861 €/kWh

0.00020 €/kWh

Click “...” at the upper right corner and touch “Advanced settings”

17:30 5G 38

Advanced Settings

Pictures for reference only

High

Normal

Low

Price strategy configuration

Duration >

Set conditions

High price hours

* The duration for discharging at a high price

2 >

Normal price hours

The duration for operating in general mode

20

Low price hours

* The duration for charging at a low price

The default strategy is “Duration”

Set action

High price

Work mode

Battery discharge

More ② >

Normal price

Work mode

General mode

More ② >

Low price

Battery charge

More ② >

Save

17:31 5G 38

Advanced Settings

The duration for operating in general mode

20

Low price hours

* The duration for charging at a low price

2 >

Set action

High price

Work mode

Battery discharge ③ >

Click to change other work mode during this price period if you want to grid

Work mode

General mode

Battery charge

PV charging

Peak shifting

Feed-in mode

Battery discharge

17:59 5G 36

Advanced Settings

Work mode

General mode >

More >

* Power to grid

10.0 kW

Low price

Work mode

Battery charge >

* Power to grid

10 kW

* Power limit of charge

5 kW

* Charge cut-off SOC

100.0 %

PV forbidden

Save ④

Customized Settings for Professional Users

Switch to the “Percentage” strategy and adjust the default settings

Step 1: Price strategy configuration

Duration: Adjust charging and discharging schedules automatically according to the set high and low tariff periods and fluctuating electricity rates.

Percentage: Calculate the daily peak and valley price difference and set the triggering value according to the percentage of price differences. **(2)**

Fixed: Directly set a fixed electricity value to determine the... Click the arrow under the “Price strategy configuration” to jump to the strategy selection page. Select “Percentage”

Step 2: Advanced Settings

Price strategy configuration: Percentage **(1)**

Set conditions: High price, Normal price, Low price

Step 3: Advanced Settings

Set action: High price, Normal price, Low price

Step 4: Advanced Settings

Set action: High price, Normal price, Low price

Step 5: Advanced Settings

Normal price: Work mode, General mode

More: Power to grid, 10.0 kW

Low price: Work mode, Battery charge

More: Power to grid, 10.0 kW

Power limit of charge, 6.0 kW

Charge cut-off SOC, 100.0 %

PV forbidden

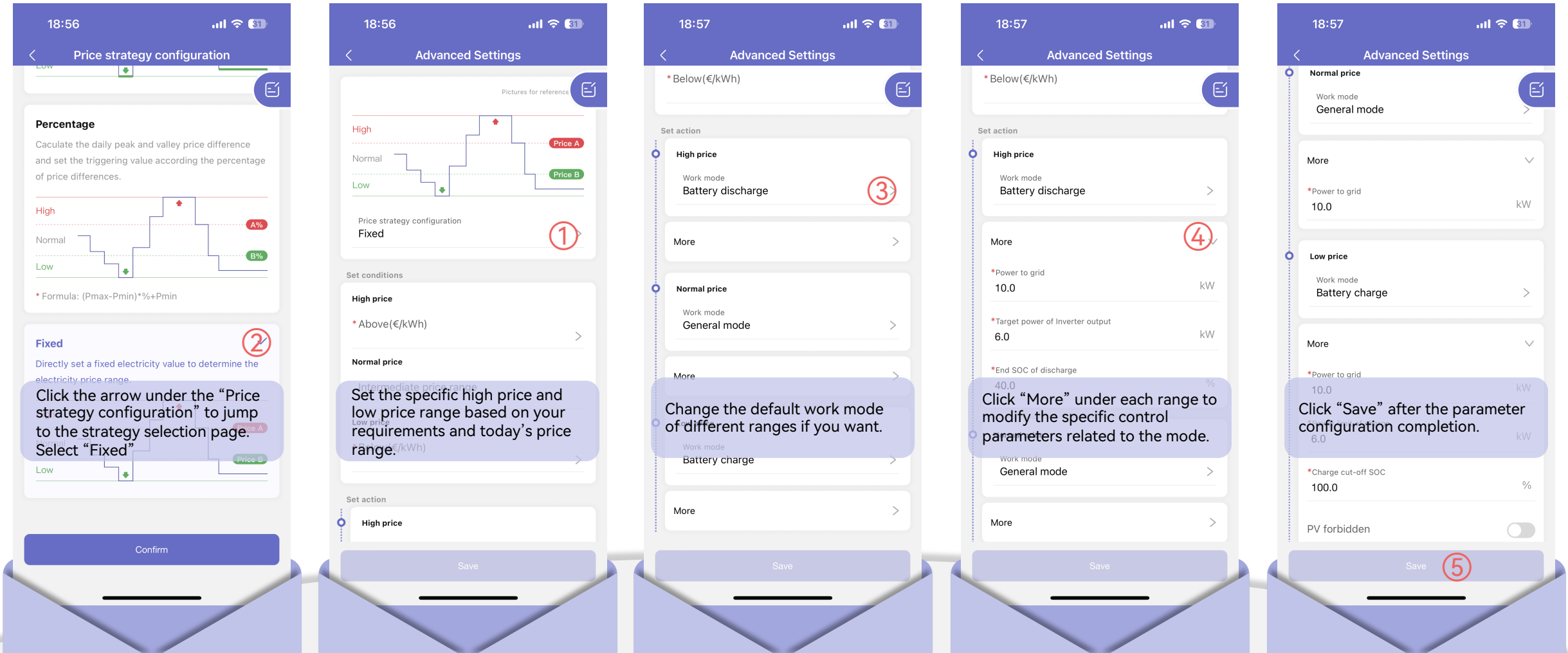
Save **(5)**

Click “More” under each range to modify the specific control parameters related to the mode.

Click “Save” after the parameter configuration completion.

Customized Settings for Professional Users

Switch to the “Fixed Price” strategy and configure the parameters



Step 1: Price strategy configuration

Percentage
Calculate the daily peak and valley price difference and set the triggering value according to the percentage of price differences.

High
Normal
Low

A%
B%

* Formula: $(P_{max} - P_{min}) * \% + P_{min}$

Fixed
Directly set a fixed electricity value to determine the electricity price range.

Click the arrow under the “Price strategy configuration” to jump to the strategy selection page. Select “Fixed”

Confirm

Step 2: Advanced Settings

Price strategy configuration
Fixed

Set conditions

High price
* Above (€/kWh)

Normal price
* Below (€/kWh)

Set action

High price
Work mode
Battery discharge

More

Normal price
Work mode
General mode

More

Set the specific high price and low price range based on your requirements and today's price range.

Save

Step 3: Advanced Settings

Set action

High price
Work mode
Battery discharge

More

Normal price
Work mode
General mode

More

Change the default work mode of different ranges if you want.

Save

Step 4: Advanced Settings

Set action

High price
Work mode
Battery discharge

More

Normal price
Work mode
General mode

More

Click “More” under each range to modify the specific control parameters related to the mode.

Save

Step 5: Advanced Settings

Normal price
Work mode
General mode

More

* Power to grid
10.0 kW

Low price
Work mode
Battery charge

More

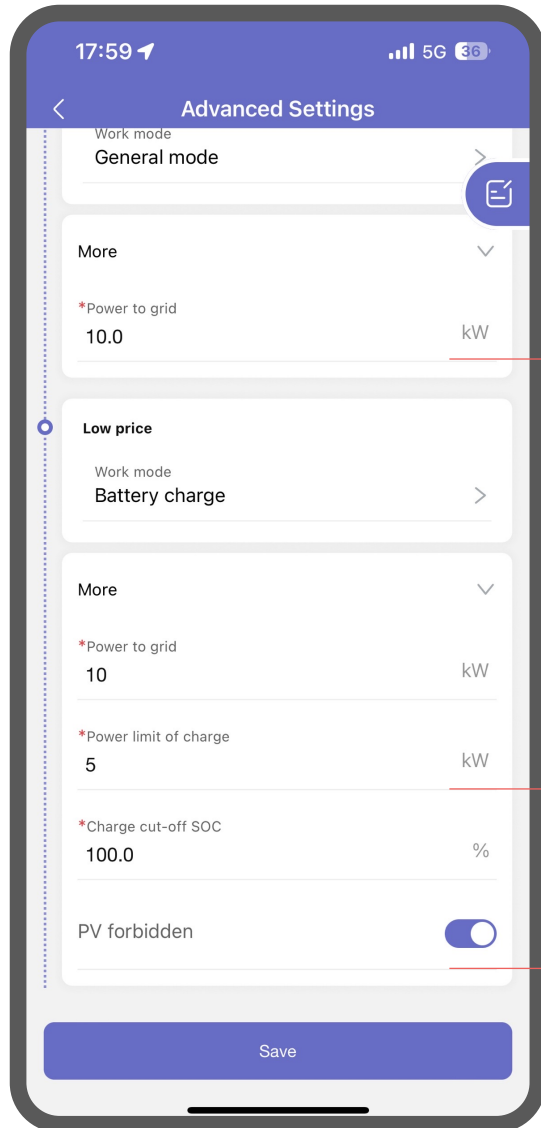
* Power to grid
10.0 kW

* Charge cut-off SOC
100.0 %

PV forbidden

Save

Explanation of Advanced Parameters



The max. power that allows exporting to grid

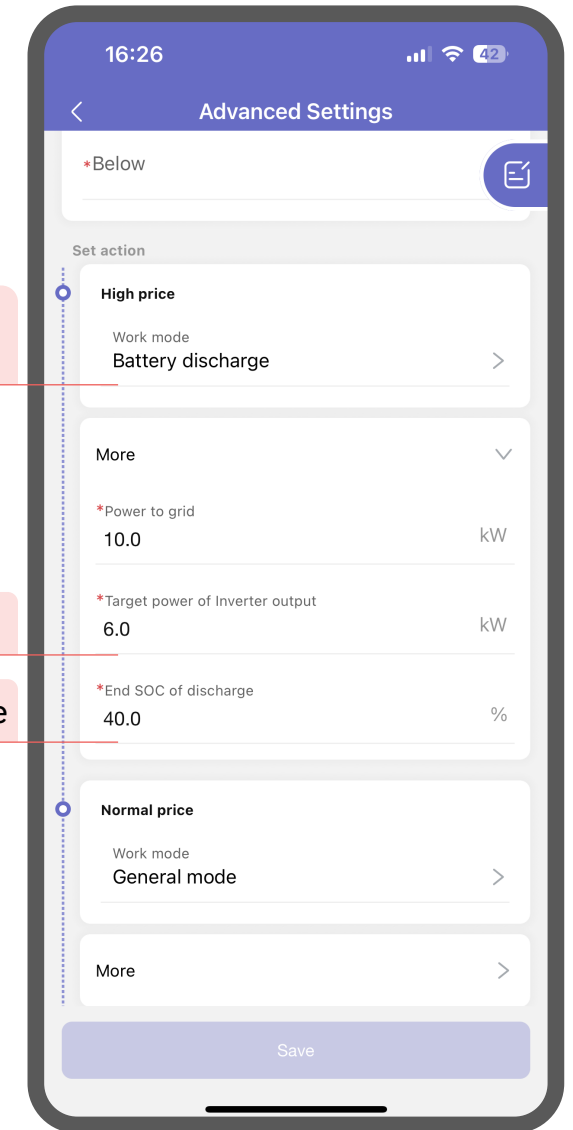
The maximum allowed battery charging power

Enable to stop PV power to charge battery
Suitable for a negative electricity price period

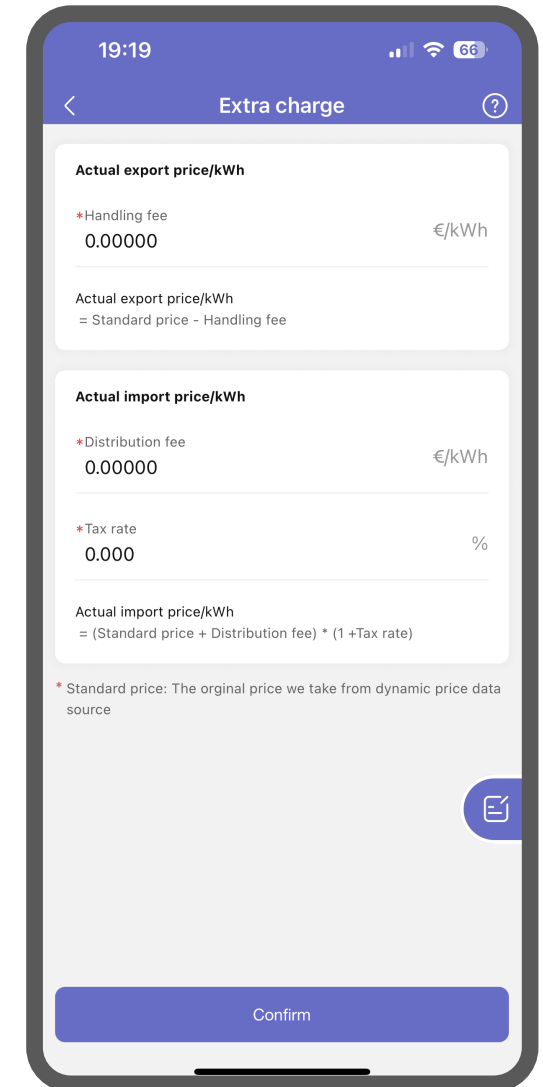
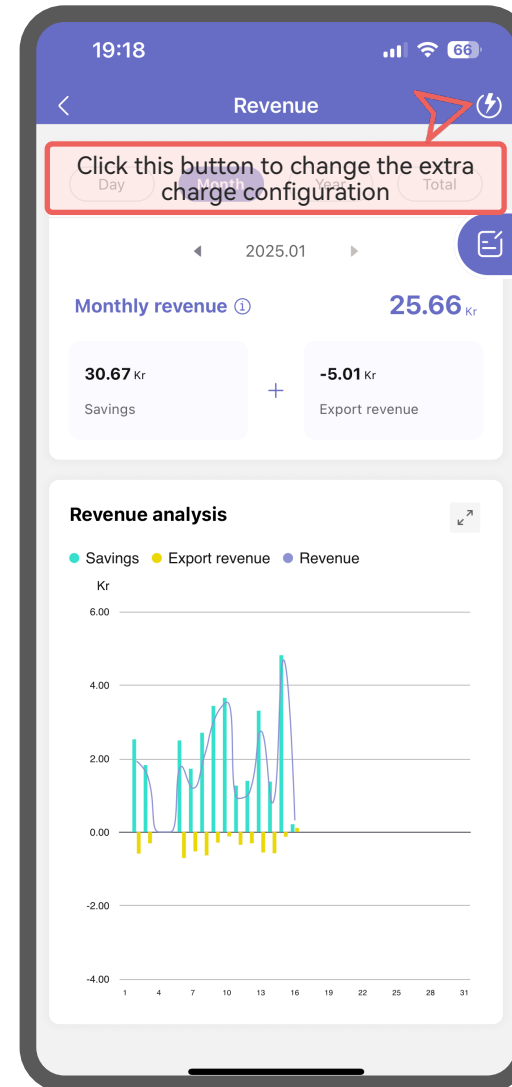
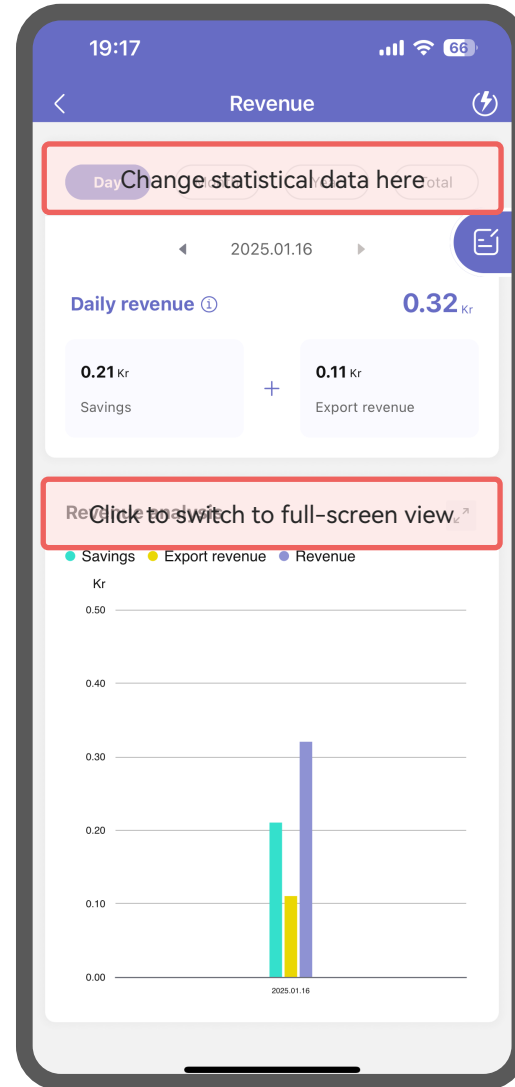
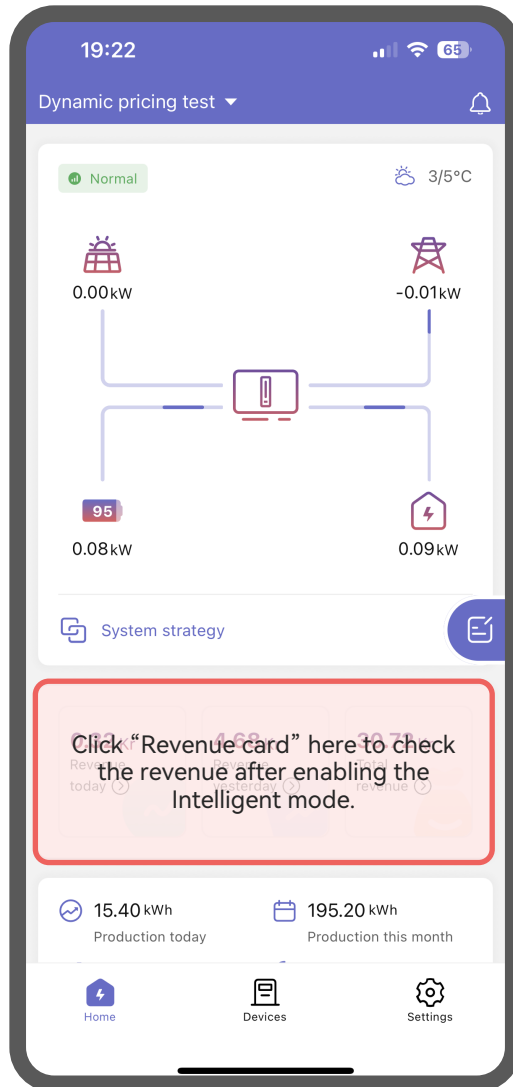
Change to “Feed-in mode” if you don’t want battery power to discharge to grid

The maximum allowed inverter output power

Battery stops discharging when SoC reaches this value



Intelligent Mode Revenue Review



04

Q & A

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1

Which countries are included in the Intelligent Mode use scope and which are in plan?

Answer: Norway, Finland, Sweden, Denmark, Germany, Czech Republic, Hungary, Slovenia, Switzerland, Poland, Slovakia, and Austria are in use, Netherlands, Belgium, Estonia, Latvia, Lithuania, The UK, and Spain are in plan.

How to apply for permission if the device firmware version does not meet the requirements?

Answer: Please contact our regional service team, or contact our headquarters' service at service@solinteg.com for inverter firmware upgrading.

2

3

What's the difference between Intelligent Mode and ToU Mode?

Answer: The Intelligent mode and ToU both optimize energy usage by adjusting work modes based on varying prices. However, ToU requires manual changes frequently, while the Intelligent mode does not.

How do I add my country to the Intelligent Mode use scope?

Answer: If your country uses dynamic pricing but not in the use scope we declared, please provide your country's dynamic pricing platform API with academy@solinteg.com for application.

4

5

What's the difference between Basic settings and Advanced settings?

Answer: The basic settings are for non-professional users aiming to use the Intelligent Mode efficiently. The advanced settings are for professional users seeking to maximize profits with a deeper understanding of the system.

What are the default operation settings for the Basic Mode?

Answer: The default strategy is "Duration", default battery charge and battery discharge hours are two, and the default discharge cut-off SoC is 40%.

6

How do I know which strategy is suitable for me?

Answer: The "Duration" strategy suits customers who want to be involved in energy trading only at valley and peak hours, maximizing every trading's profits in limited trading times.

The "Percentage" strategy suits customers who want to be involved in energy trading at any reasonable price, which will have more trading times and more earnings but use more charge and discharge circles every day as well.

The "Fixed" strategy suits customers who want to maximize system earnings and spend more time monitoring daily price changes to adjust their charge and discharge power plans.

7

4

THANK YOU

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