

The AI-Powered Energy Assistant: Smart Scheduling Mode

AI Adds 'Intelligence' to Personal Energy System!

Unlock the Electricity Bills Savings and Sustainability with Growatt !

TECHNICAL
WHITE PAPER



As energy prices fluctuate dramatically and the concept of sustainable development is deeply rooted in people's minds, more and more families are willing to install home energy storage systems to achieve energy independence and save electricity costs. Growatt launches the Smart Scheduling Mode to help end users control energy storage systems more conveniently and increase family income!

■ What is the Smart Scheduling Mode?

The Smart Scheduling Mode is a comprehensive smart mode based on artificial intelligence and big data launched by Growatt, which is suitable for dynamic electricity price application scenarios in the European market. Combining regional historical meteorological information and user electricity consumption habits, this mode can achieve accurate power generation forecasts and load consumption forecasts. By calling the regional day-ahead electricity price data, the dispatch strategy can be dynamically generated. The basic logic of this logic is to take electricity at a low price and feed electricity at a high price, which increases the system revenue for end customers and simplifies the setting process. At the same time, it optimizes the negative electricity price export limitation logic and supports viewing historical dispatch plans.

To fully understand the user's electricity consumption habits, 4 weeks are needed to take the model training to achieve 'real' smart scheduling!

■ The benefits of Smart Scheduling Mode

Improve Economic Benefits

- **Increase photovoltaic benefits:** Through the intelligent scheduling function, the system can use the electricity generated by photovoltaics more efficiently, give priority to powering household loads when electricity prices are high, feed more electricity to earn profits when the feed-in benefits are high, and store excess electricity in the battery;
- **Save electricity bills:** Through the intelligent scheduling mode, the system can automatically charge the energy storage device when the electricity price is low, and give priority to using the electricity in the energy storage device when the electricity price is high, thereby effectively reducing electricity bills; At the same time, it effectively handles the problem of electricity price feeding to the grid during negative electricity price periods;

Increase Energy Efficiency

- **Intelligent management:** Through intelligent dispatch, energy supply and demand can be monitored and analyzed in real-time, and energy distribution can be optimized by combining factors such as weather, historical power generation, electricity consumption data, and dynamic electricity prices to achieve intelligent management of electric energy.
- **Accurate prediction and scheduling:** Through AI algorithms, accurate predictions of power generation and load consumption are made, the scheduling logic of grid power / PV / battery is optimized, and the self-consumption rate of PV is increased.

■ Which kinds of systems support the mode?

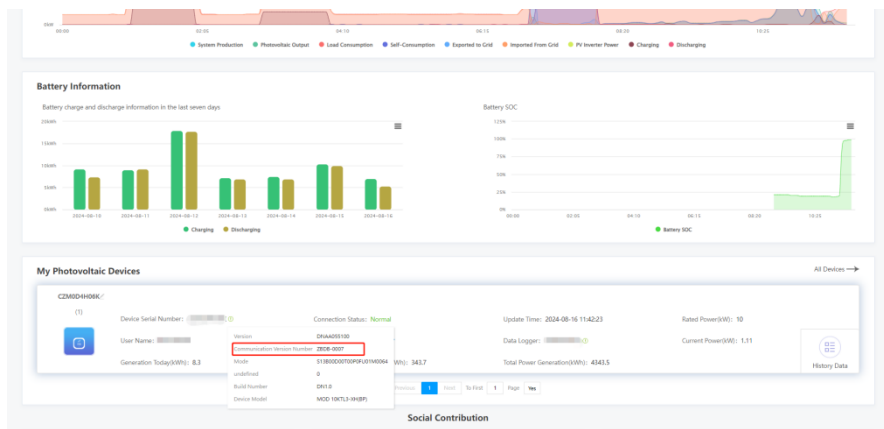
Energy storage systems with smart meters and dataloggers for specific inverters installed in the following areas could support the Smart Scheduling Mode.

Norway ◦	Sweden ◦	Finland ◦
Denmark ◦	Estonia ◦	Lithuania ◦
Latvia ◦	Austria ◦	Poland ◦
France ◦	Germany ◦	Netherlands ◦
Belgium ◦	UK ◦	◦

Below is the list of supported devices and their versions:

List of supported devices and versions							
Inverter Models & Versions Datalogger Models & Versions	MOD3000-10000TL3-XH/ MID 11-30KTL3-XH	MIN 2500-6000TL-XH	WIT 50-100K-AU/HU	SPA 4000-10000TL3 BH-UP	SPH 4000-10000TL3 BH-UP	SPH 3000-6000TL BL-UP	SPA 3000TL BL-UP
		ZBDB0007 and above	ZABA0016 and above	ZBea-410203 and above	ZDAA0006 and above	ZDAA0006 and above	ZCBC0001 and above
ShineWiFi-X	3.1.0.5 and above	3.1.0.5 and above	3.1.1.0 and above	3.1.0.5 and above	3.1.0.5 and above	3.1.0.5 and above	3.1.0.5 and above
ShineLan-x	3.6.0.2 and above	3.6.0.2 and above	Not supported	3.6.0.6 and above	3.6.0.6 and above	3.6.0.6 and above	3.6.0.6 and above
ShineGPRS-X	Not supported	Not supported	Not supported	1.5.0.6 and above	2.2.0.5 and above	Not supported	Not supported
Shine4G-X	Not supported	Not supported	Not supported	1.5.0.6 and above	2.2.0.5 and above	Not supported	Not supported

To check whether your system version is correct, please log in to the Server platform and view the device model and software version in the device card. If the software version is too low, it is recommended to upgrade the device software first.



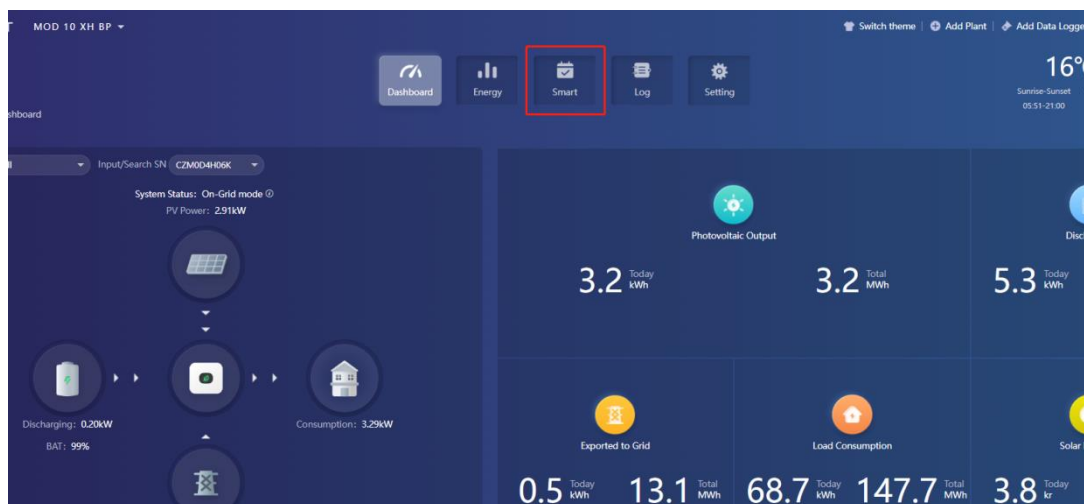
■ How to use the mode?

Step 1: Apply to join the trial program

When the device software version and installation location meet the above conditions, the feature will be added in the Server automatically, customer can decide whether to enable the Smart Scheduling Mode. *(Unfortunately, the system with SYN can not support the control, we will optimize the logic ASAP)*

If you want to join the trial but the devices with some old version, please contact the regional service engineer to take the upgrade and get the permission.

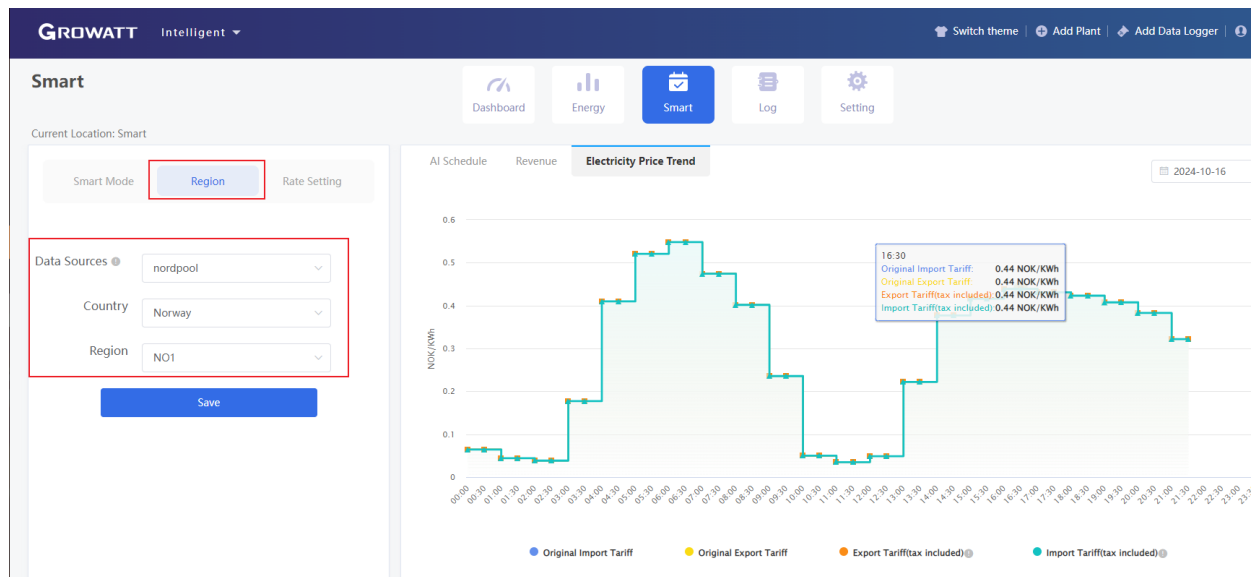
Then you can log in to the ShineServer platform (residential plant interface), select the smart scheduling function, and enter the function settings page.



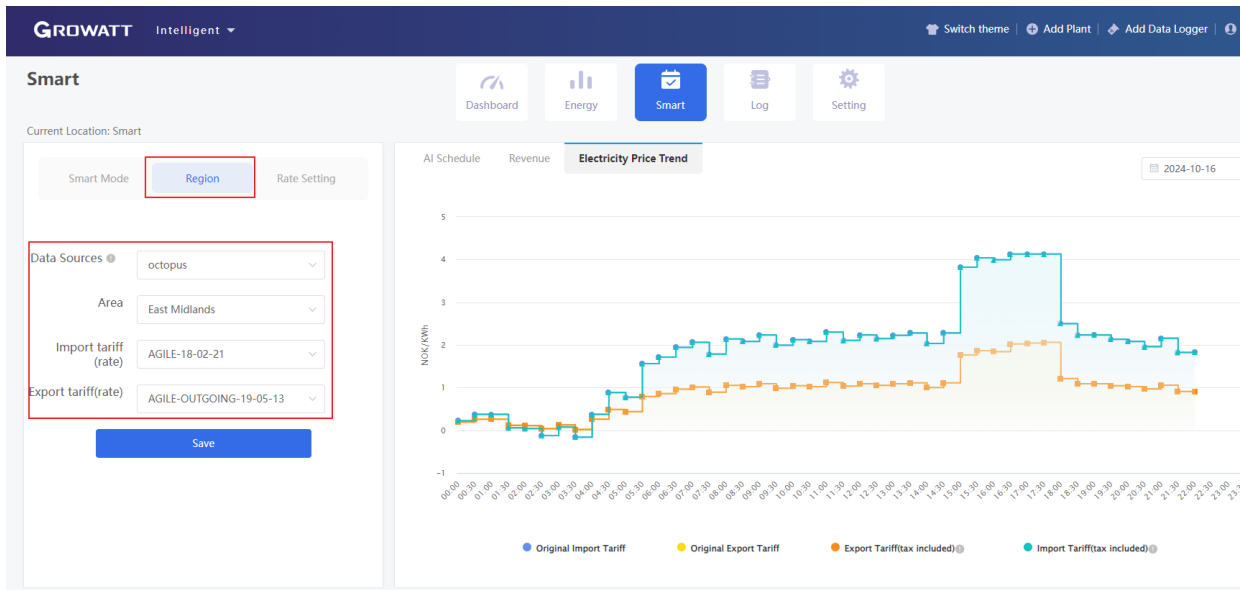
Step 2: Set the electricity price data

Select the dynamic electricity price data source according to the user's region. After the configuration is completed, smart scheduling can be performed. The interface in the different regions is slightly different.

Norway, Sweden, Finland, Denmark, Estonia, Lithuania, Latvia, Austria, Poland, France, Germany, Netherlands, and Belgium, the interface is as follows

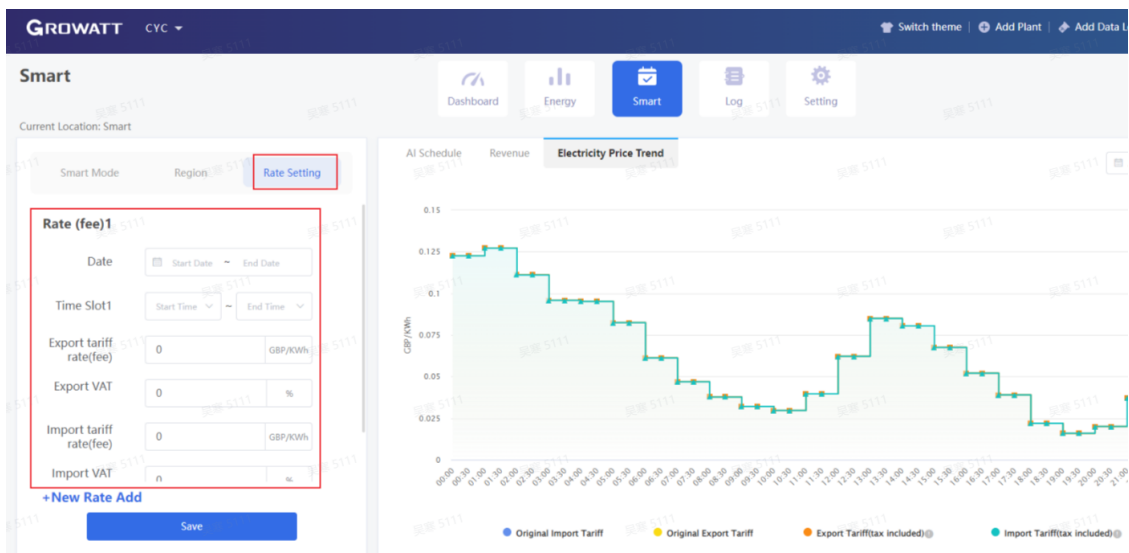


The United Kingdom interface is as follows:



Step 3: Take the rate setting

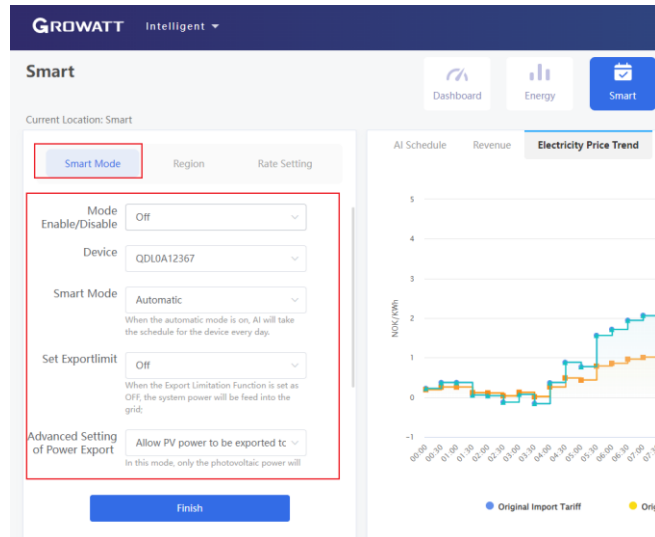
Set taxes and fees according to the regulations of the regional power grid company. Power grid companies in some areas will charge additional fees (rates) and VAT for power export and import. Users can configure it according to actual conditions(default value is 0). The interface is as follows



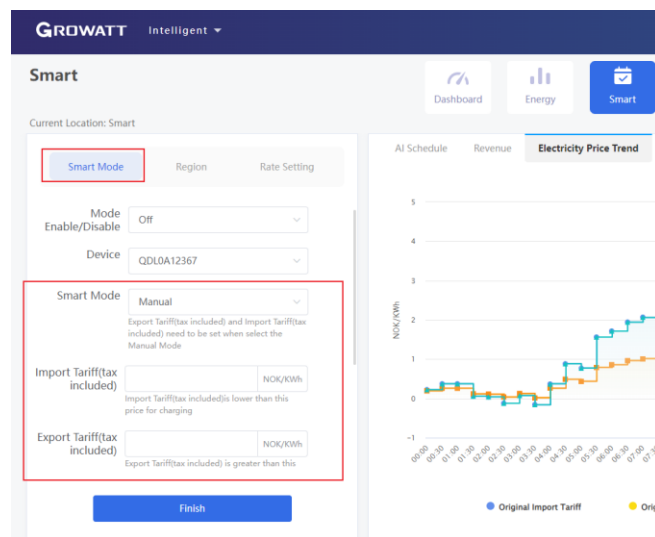
Step 4: Enable the Smart Scheduling Mode

The system supports two modes: Automatic and Manual.

If the customer want to use the Automatic Mode, just enable the function, select the [Automatic] mode, and click the Finish button.



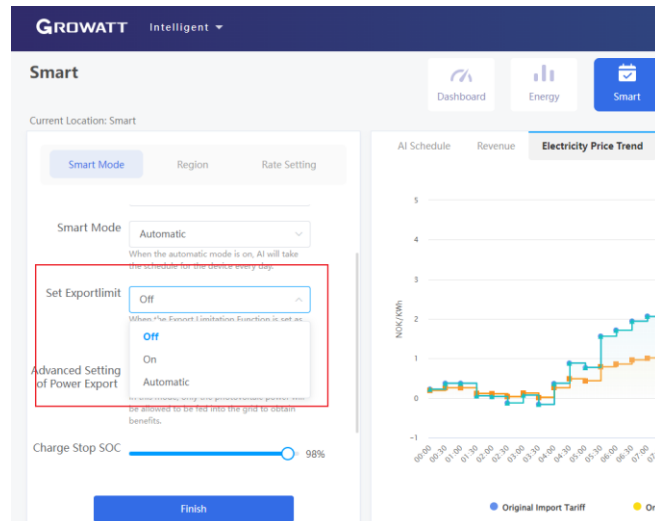
If customers want to set the scheduling plan manually, then can select the [Manual] mode, the export tariff and import tariff threshold could be set separately. The operation interface is as below:



When the Smart Mode is enabled, the system will charge during low electricity price periods, discharge during high electricity price periods, and keep in Load First Mode during other periods.

Step 5: Export Limitation Setting

➤ Basic Setting of Export Limitation

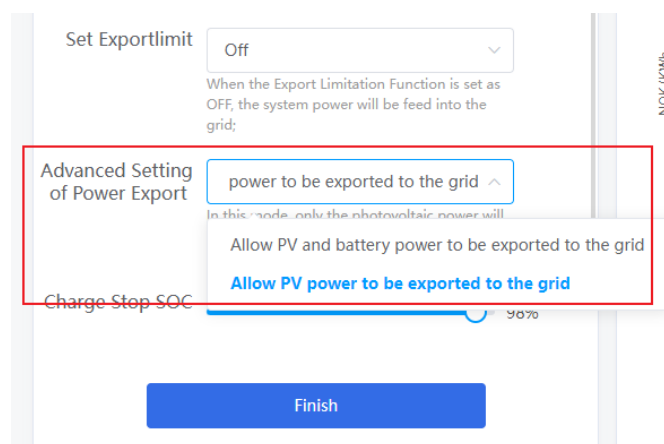


When the Export Limitation Function is selected as Off, the system power will be fed into the grid;

When the Export Limitation Function is set as On, the system power will not be fed into the grid;

When the Export Limitation Function is selected as Automatic, the system power will stop feeding into the grid when the Export Tariff (including tax) is negative, and will allow the system energy to feed into the grid when the Export Tariff (including tax) is positive;

➤ Advanced Setting of Power Export



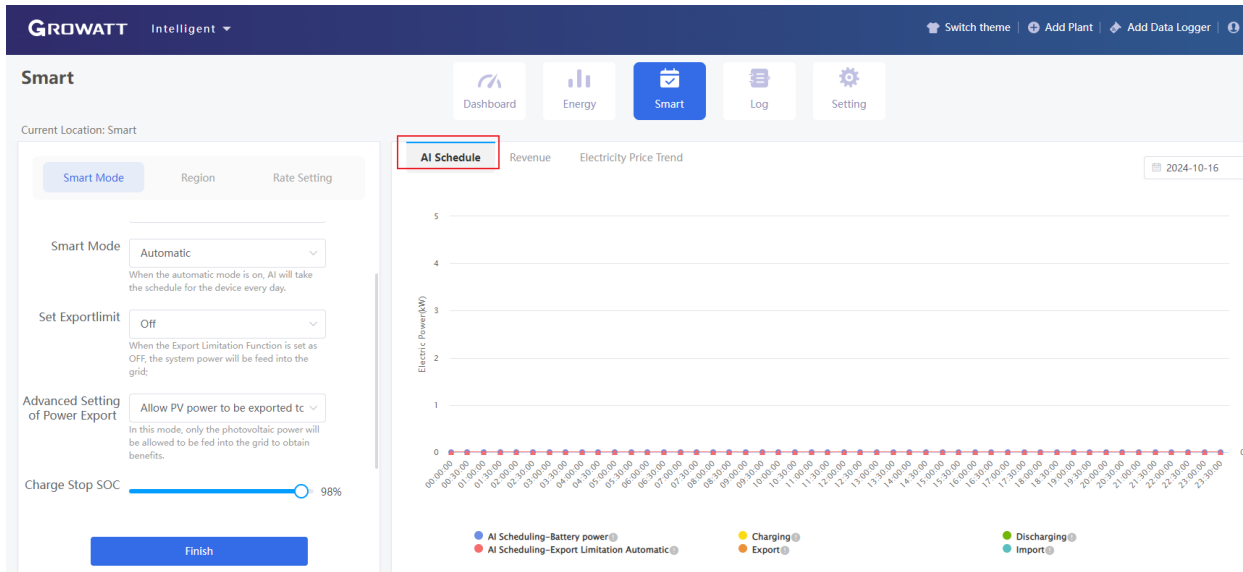
When allow PV and battery power to be exported to the grid, the PV and battery power will be

allowed to be fed into the grid to obtain benefits at the same time.

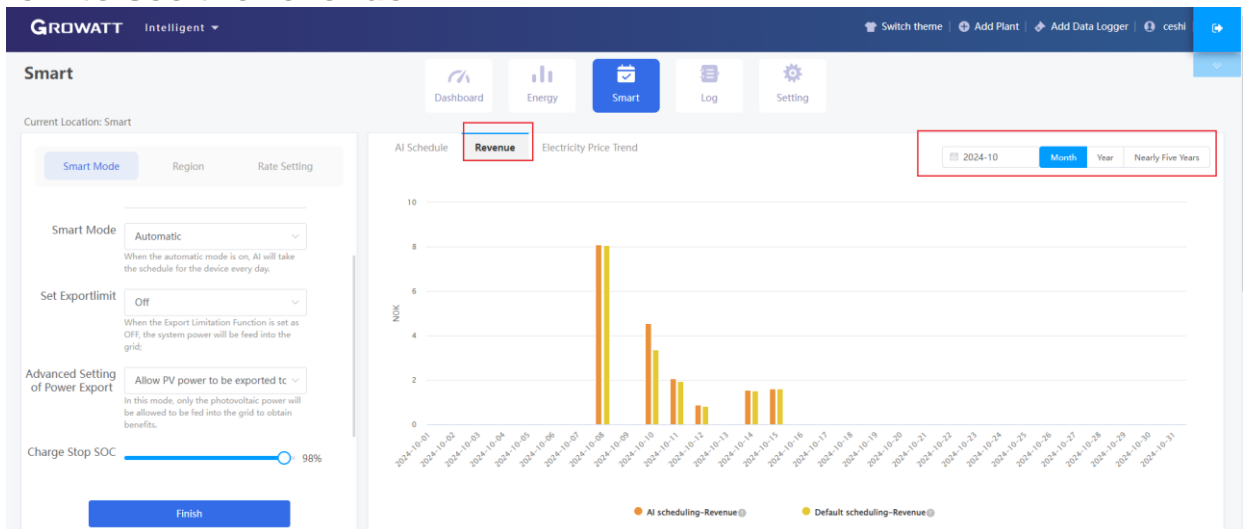
Allow PV power to be exported to the grid, only the photovoltaic power will be allowed to be fed into the grid to obtain benefits.

FAQ

○ How to see the AI Schedule?



○ How to see the revenue?



Note: The profit will be calculated at 8:00AM the next day.

○ How to stop the current plan?

The screenshot shows the 'Smart' mode configuration page. On the left, there are settings for 'Smart Mode' (On), 'Device' (QCM0E1N009), 'Smart Mode' (Automatic), 'Set Exportlimit' (Automatic), and 'Advanced Setting of Power Export' (Allow PV and battery power to be). A 'Finish' button is at the bottom of this section. The main area displays the 'AI Schedule' tab with a line graph showing 'Electric Power(W)' and 'AI Scheduling-Battery power(%)' over time. Below the graph is a table titled 'All Plans' with the following data:

Plan Type	Start Time	End Time	Condition	Expected Saving(DKK)	Status	Operating
Automatic	24-10-16 18:00:00	24-10-16 23:59:59	Device_SN: QCM0E1N009	0.03	Running	Terminate

○ How to turn off the Smart Scheduling Mode?

This screenshot shows the same 'Smart' mode configuration page as above. A red box highlights the 'Smart Mode' tab, and another red box highlights the 'Mode Enable/Disable' dropdown menu, which is currently set to 'On'. The rest of the interface, including the 'AI Schedule' graph and the 'All Plans' table, remains the same.

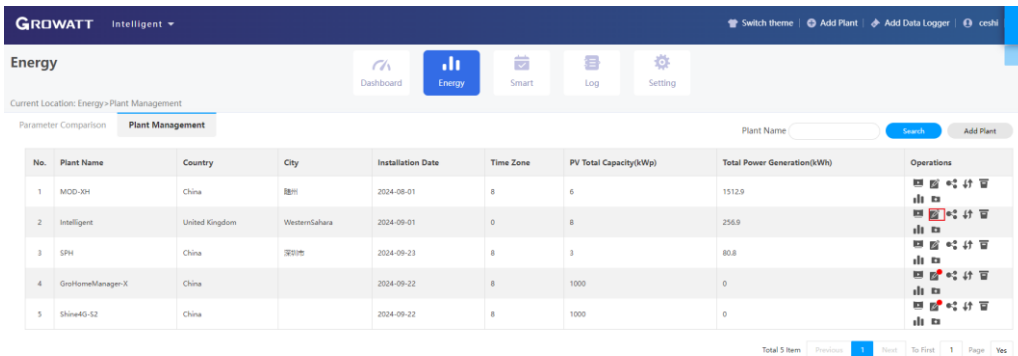
○ How to apply for the permission if the device software version does not meet the requirements, but the customer wants to use Smart Scheduling Mode?

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	ZBDB0007 and above	ZABA0016 and above	ZBea-410203 and above	ZDAA0006 and above	ZDAA0006 and above	ZCBC0001 and above	ZCBC0004 and above
ShineWiFi-X	3.1.0.5 and above	3.1.0.5 and above	3.1.1.0 and above	3.1.0.5 and above	3.1.0.5 and above	3.1.0.5 and above	3.1.0.5 and above
ShineLan-x	3.6.0.2 and above	3.6.0.2 and above	Not supported	3.6.0.6 and above	3.6.0.6 and above	3.6.0.6 and above	3.6.0.6 and above
ShineGPRS-X	Not supported	Not supported	Not supported	1.5.0.6 and above	2.2.0.5 and above	Not supported	Not supported
Shine4G-X	Not supported	Not supported	Not supported	1.5.0.6 and above	2.2.0.5 and above	Not supported	Not supported

Please contact the regional after-sales service engineer to upgrade the device and datalogger to the special version, then the smart scheduling mode could be enabled.

○ How to change the currency unit?

Step 1: Enter to the list of plant, Energy>Plant Management, and take the modification.



Step 2: Select the currency unit and save the settings.

