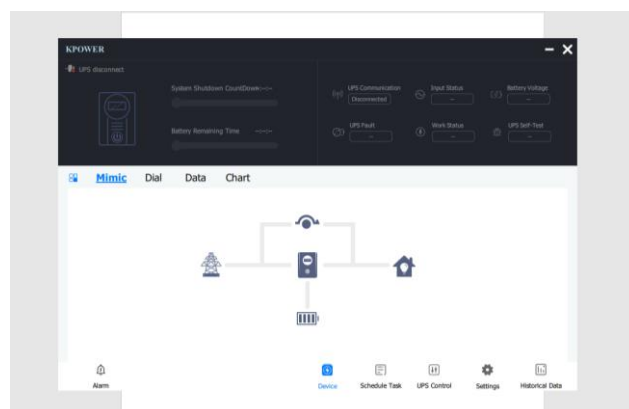
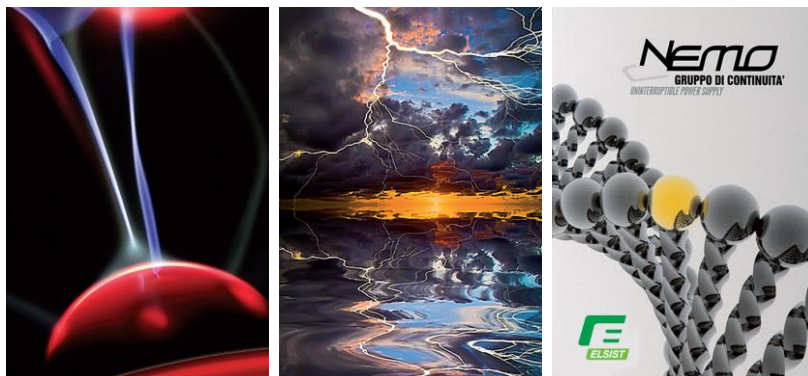


K-Power

Software



Sistemi per la continuità elettrica

1 Introduction	3
1.1 USB HID Module	3
1.2 Supported Operating System	4
2 Function	5
2.1 General Introduction	5
2.2 Device	5
2.2.1 Time Count	6
2.2.2 UPS Status	6
2.2.3 Main Panel	7
2.3 Alarm	8
2.4 Schedule Task	9
2.5 UPS Control	11
2.6 Historical Data	12
2.7 Setting	14
2.7.1 Public Parameters	14
2.7.2 Email	14
2.7.3 Shutdown	15
3 Instructions for installing KPower on a Linux system	16

1 Introduction

KPower is a computer desktop software used to communicate with the company's self-developed USB HID module. Through the KPower software, it is possible to realize dynamic data interaction with UPS without driving, plug and play, and support multiple operating system platforms.

1.1 USB HID Module

USB HID module is a interface module which is installed inside the UPS, it communicates with UPS host through serial port, and transfer the data collected into USB HID data, then uploads the data to PC. The user only needs to connect the USB cable and the system can recognize the device without installing any drivers, which is convenient and quick.

On the Windows system, when the USB HID module is connected for the first time, the system will perform the device identification operation. When the operation is completed, the system notification bar will add a battery device capacity display:

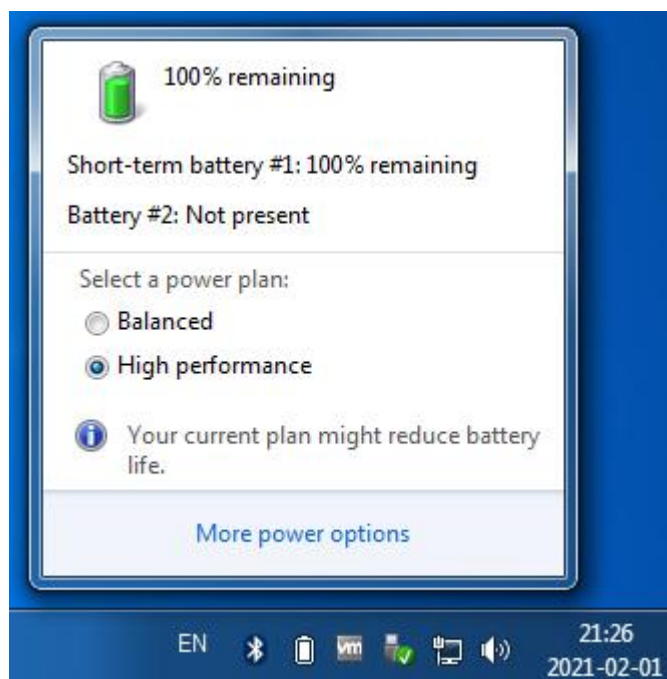


Figure 1-1 Windows battery capacity

Open the device manager, the HID UPS battery device will appear in the battery device:

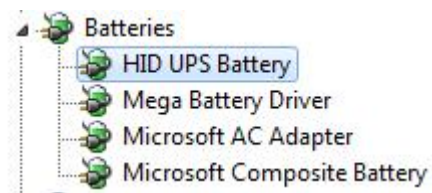


Figure 1-2 Windows UPS battery device

On Mac systems, the notification bar in the upper left corner of the system will display the UPS battery:

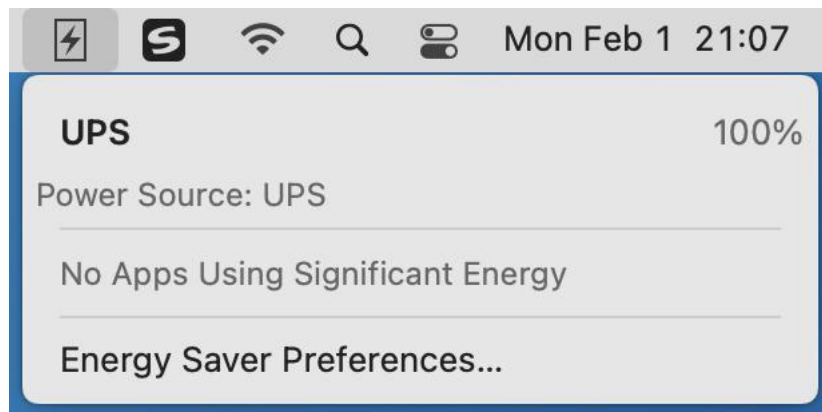


Figure 1-3 Mac UPS battery device

1.2 Supported Operating System

- Windows platform:
Windows 7、Windows 8、Windows 10(32/64 bit)
- Linux platform: (For the installation procedure, see the [Instructions for installing KPower on a Linux system](#))
Ubuntu 14.04、Ubuntu 16.04、Ubuntu 18.02、Ubuntu 20.04(64 bit)
Fedora 32(64 bit)
CentOS 7、CentOS 8(64 bit)
Deepin 15(64 bit)
OpenSUSE 15(64 bit)
- Mac OS platform:
Mac OS 10.15(64 bit)

2 Function

2.1 General Introduction

KPower adopts a flat design concept, the software concentrates all functions in the same window, the interface is simple and easy to operate. The main interface of the KPower program is shown as follows:

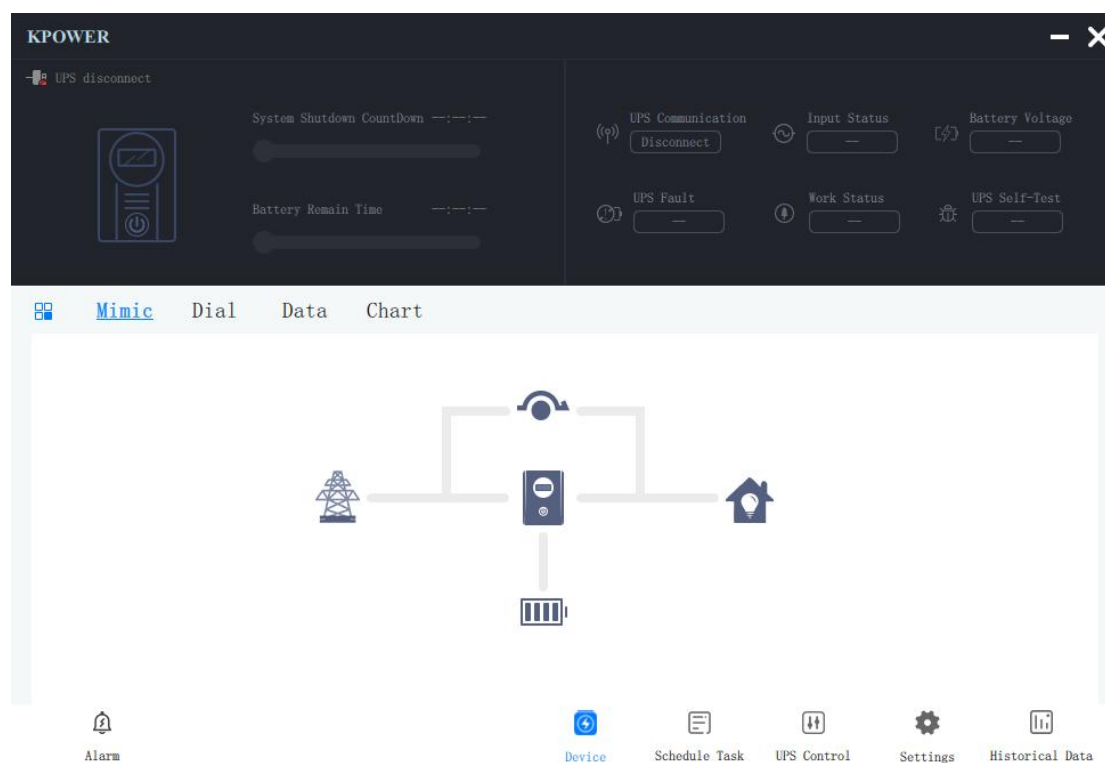


Figure 2 -1 KPower main interface

The main function pages of the program include : alarms, equipment, schedule task, UPS control, settings and historical records.

The default language of the interface is English, user can modify the language type on the setting page.

2.2 Device

The device page is the main interface of the KPower software. The upper left corner of the page displays the communication connection status with the UPS. When the communication connection is successful, the interface will display that the UPS is connected.

The default communication method of KPower is USB, user can modify the

communication type on the setting page.

2.2.1 Time Count

The system shutdown countdown time and UPS battery remaining time are displayed on the left side of the interface. When a shutdown protection event occurs and the shutdown function is enabled, the system shutdown countdown will start to count down. After the countdown is completed, the host currently running KPower will be shut down. If the user has also enabled the shutdown UPS function, a disable UPS command will be issued before the shutdown, as shown in the figure:

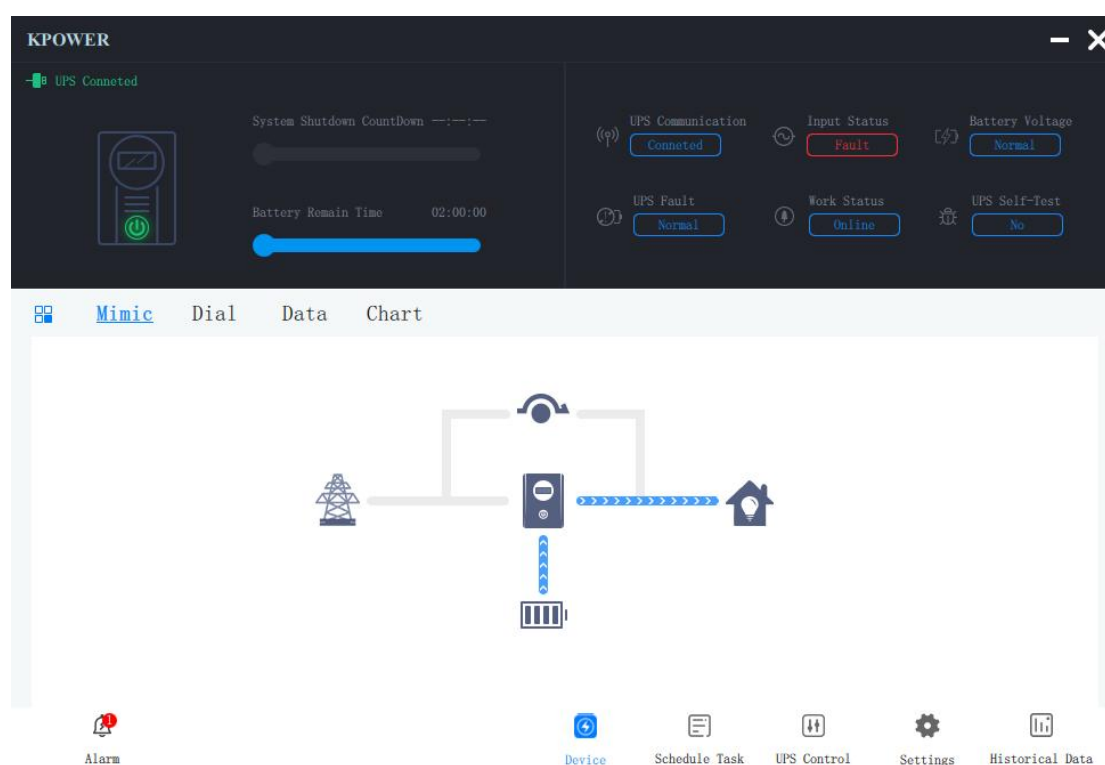


Figure 2 -2 System shutdown countdown

Below the system shutdown countdown is the battery remain time. When the UPS main circuit is disconnected, the user can know the UPS remain running time according to this value.

2.2.2 UPS Status

The right side of the main interface is the main operating status of the UPS :

- UPS communication. The communication status between KPower and UPS equipment;

- Input status. UPS input source state, when the input is abnormal, will show as fault, as in FIG.2 -2 shown ;
- Battery voltage. Battery that is connected to the UPS voltage state, when the battery voltage is low, will show as fault.
- UPS fault. UPS general fault status. When there are other faults in the UPS except for abnormal input status and low battery voltage, this flag will be activated.
- Work status. Operation type of UPS divides into online UPS and backup UPS.
- UPS self-test. UPS battery self-test status. When the UPS is self-testing, this state will be activated.

2.2.3 Main Panel

The main panel consists of four parts : Mimic, dial, data and chart.

1. The mimic shows the flow chart of the current machine operation, and the user can intuitively understand the current working status of the UPS.
2. The dial shows the current UPS load rate and battery remaining capacity rate.
3. The data page displays the current UPS operating data in text form.
4. Chart page shows UPS's input voltage and output voltage in 60 seconds in a dynamic waveform, users can intuitively observe the fluctuation of the voltage, as shown in the figure:

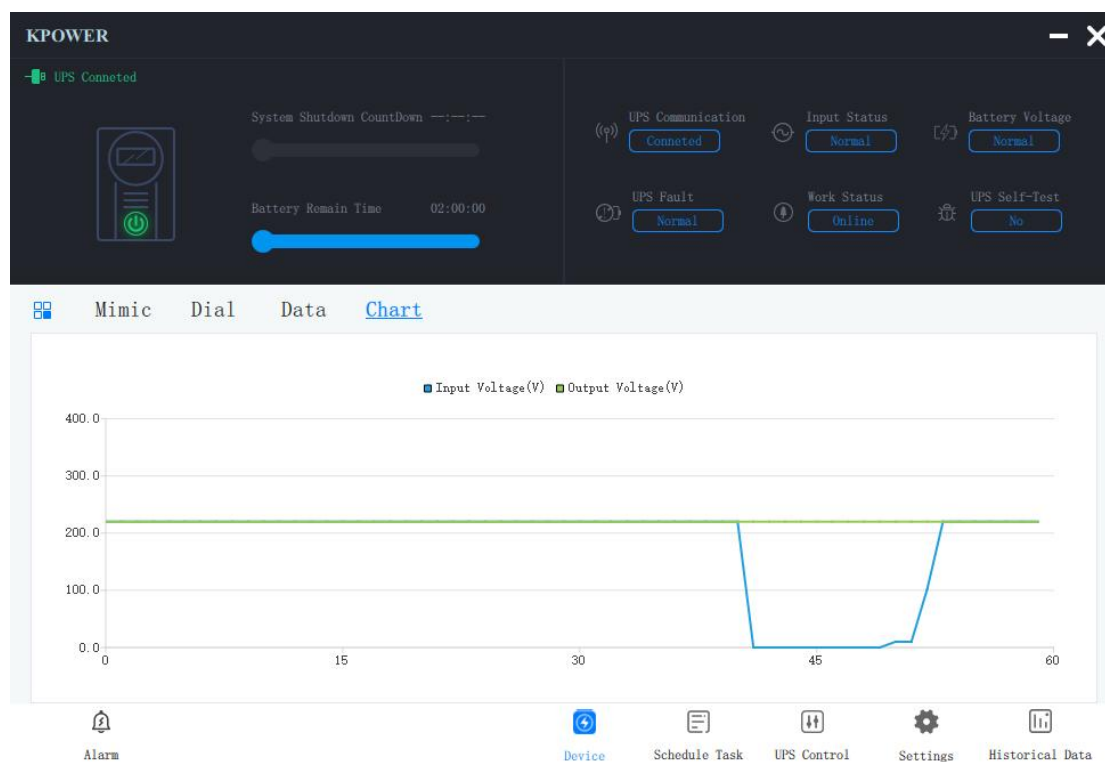


Figure 2 -3 Chart page

2.3 Alarm

The button that access into the alarm page is in the lower left corner of the main interface, when an alarm occurs or when the UPS status message is generated, the alarm icon will appear warning identifier, and displays the number of current messages and alarms, as shown in Figure 2-2. When the input voltage is abnormal, the alarm icon in the lower left corner will display the current alarm number. After the user clicks the icon, a list of current alarm information will pop up, as shown in the figure:

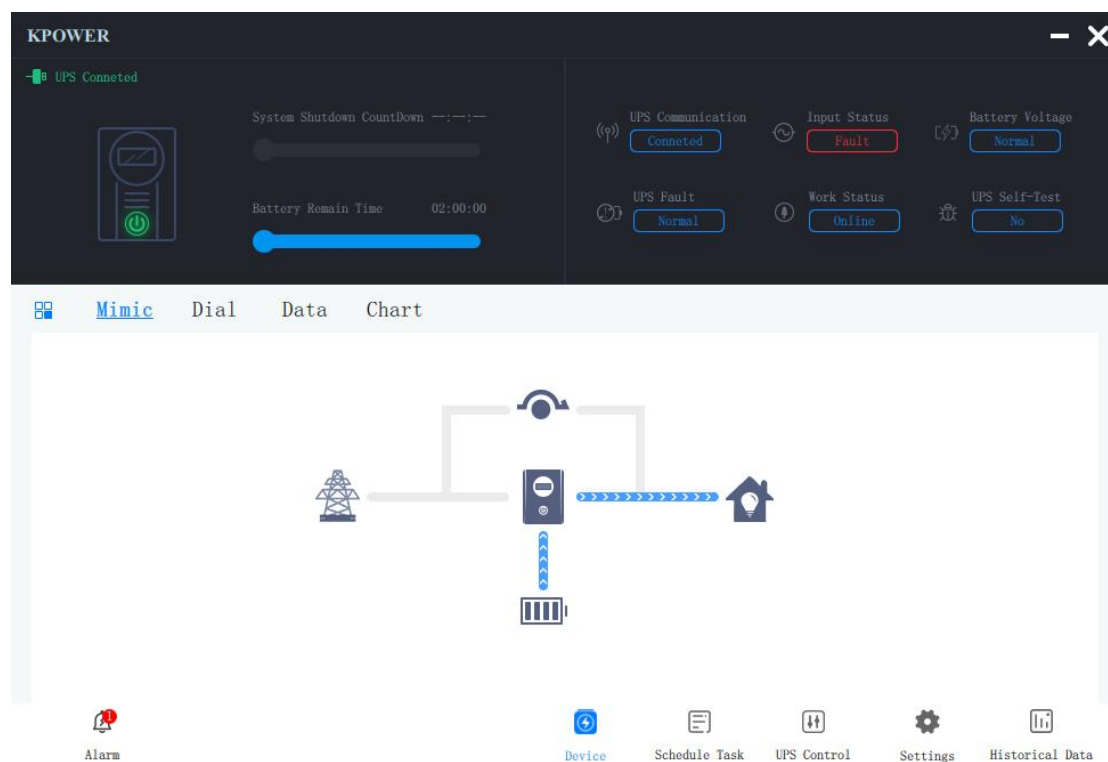


Figure 2-4 Alarm list

2.4 Schedule Task

KPower supports user-defined program of periodic tasks, including: UPS self-test for 10 seconds, UPS self-test to low battery voltage, UPS startup and shutdown systems and UPS. Users can choose the task execution cycle according to actual needs, including : single, daily, weekly and monthly.

Click the schedule task icon in the menu bar at the bottom of the interface to jump to the schedule task page. At this time, click the add task button at the top right of the program and the add task window will pop up, as shown in the figure:

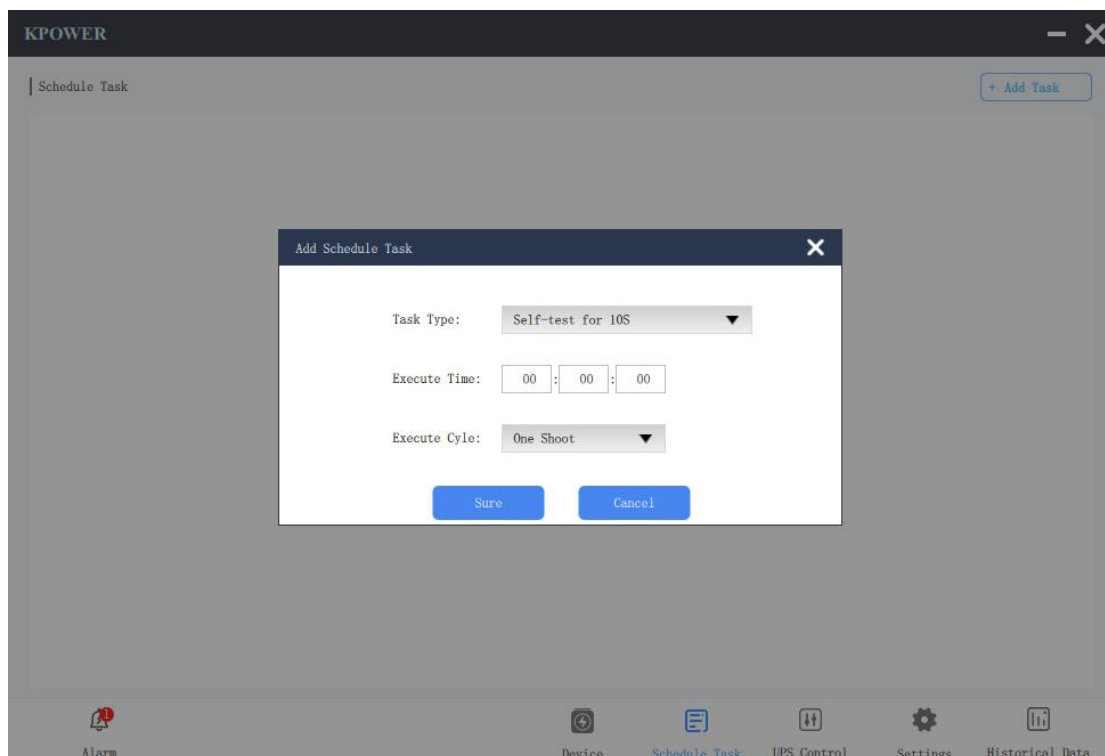


Figure 2 -5 Add schedule task

After selecting the task type and execution period, and filling in the execution time (the format of execution time is H H:MM:SS, which is hour, minute and second), click Sure, the task will be added and the adding window will be closed. When the filled execution time is greater than the current time, the plan will be executed for the first time this day, otherwise it will be executed on the next execution day. For example, if you select a single task and set the execution time to 00:00:00, then the plan will be executed at 00:00:00 the next day.

When the task is added, the schedule task page will display the task just added, and the user can modify, delete and open and close the task, as shown in the figure :

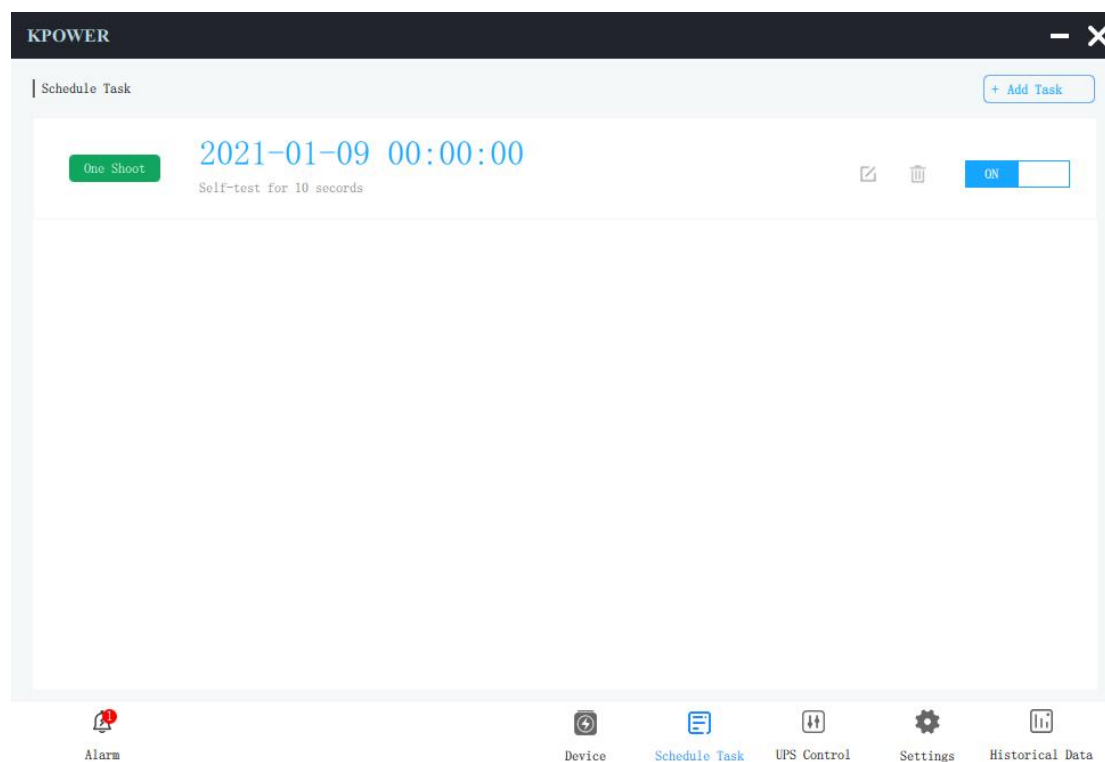


Figure 2 -6 Schedule task list

Click the switch button on the right side of the task item to enable or disable the current task. Click the delete icon to prompt the user whether to delete the current task. Click the Modify button to modify the current task again.

2.5 UPS Control

KPower supports immediate issuing of UPS control commands. Click the UPS item in the menu bar at the bottom of the main interface, and the interface will switch to the UPS control interface. The main types of control commands are: UPS self-check, UPS power on and off, and buzzer control. Users only need to click the selection box in front of the command item, select the type of command to be issued, and then click the Sure to issue the corresponding command to UPS. UPS control interface diagram:

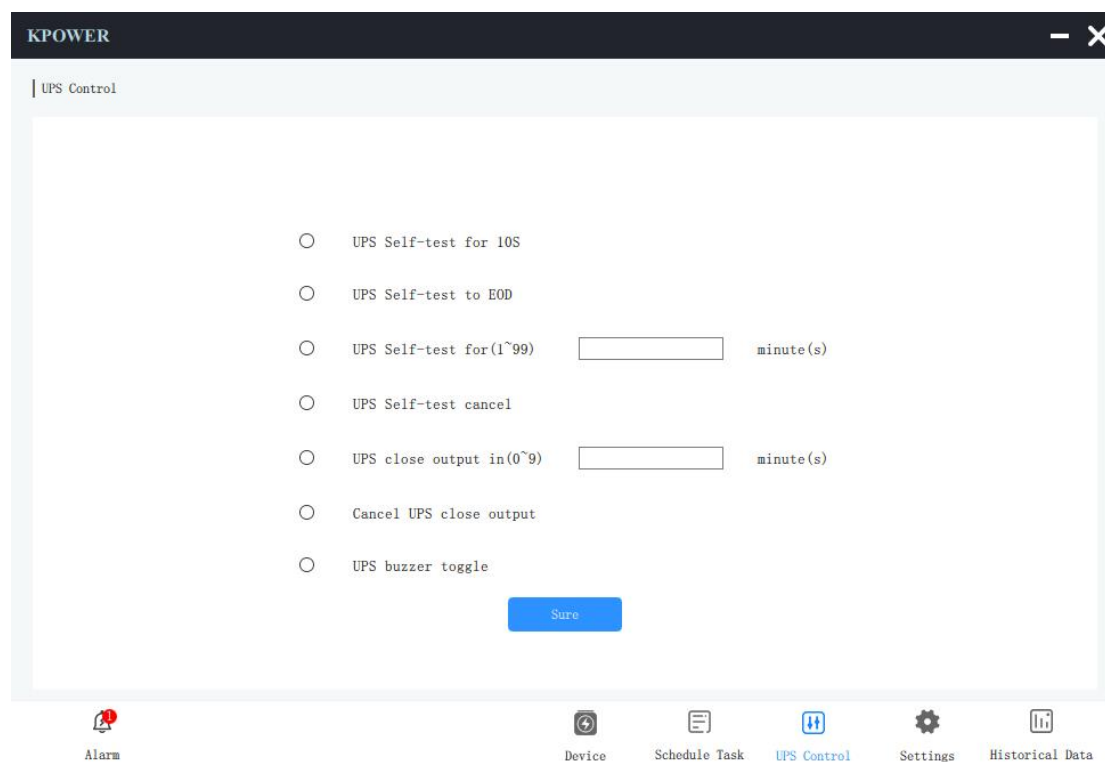


Figure 2-7 UPS control interface

2.6 Historical Data

KPower records UPS real-time operating data and alarm information for users to check UPS previous operating state, the number of storage up to 1 million, the time interval is 5 years, when stored historical data quantity exceeds, will automatically delete the oldest data and insert new historical data.

Click the historical data item in the main menu under the program, the interface will switch to the historical data interface. In the upper left corner of the interface, select the type of historical data you want to view, then select the start time of the data to be queried, and click the button in the search icon style. The program will display the data records to be queried :

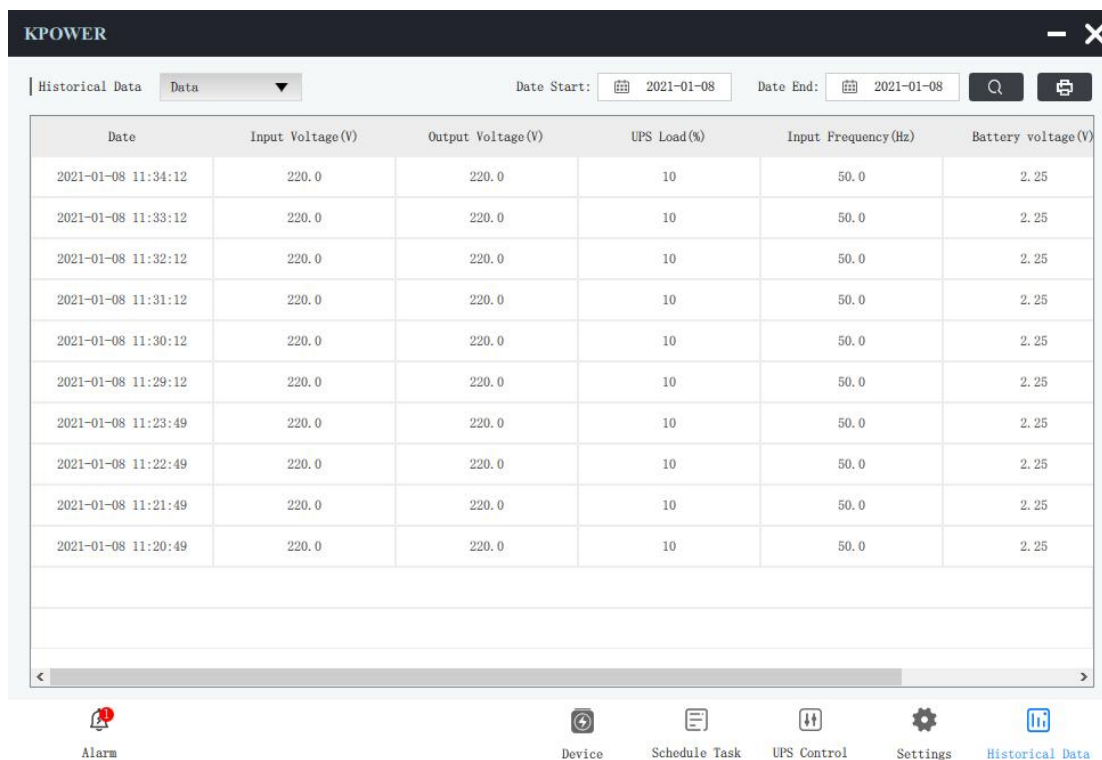


Figure 2-8 Historical data record

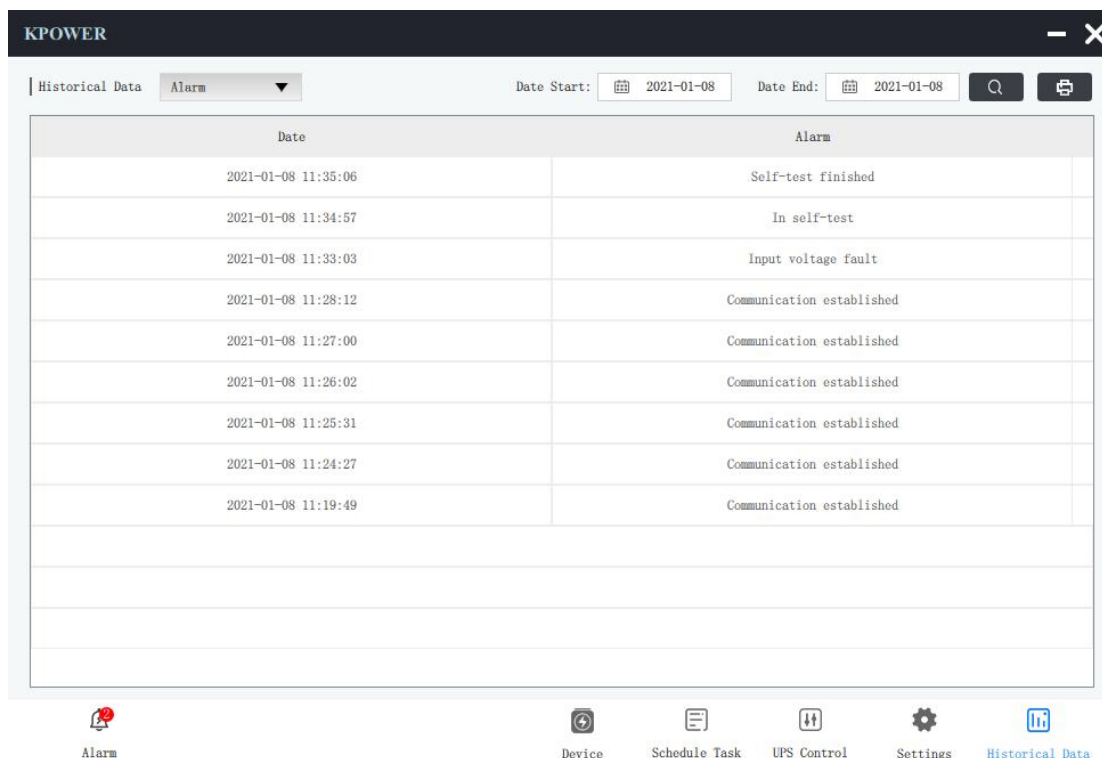


Figure 2-9 Historical alarm record

Click the button in the upper right corner in print style, the current query records can be exported to Excel files for easy data analysis.

2.7 Setting

The setting interface is used to set the KPower software related setting items : public parameters,email and shutdown.

2.7.1 Public Parameters

In the public parameters,the user can select the type of communication between KPower and UPS : USB and serial port.If you choose a serial port,you will also need to select the corresponding COM port.

KPower supports multi-language dynamic switching.Currently,it supports English and simplified Chinese.After the user selects the corresponding language,the program will automatically switch the interface display language.

Import and export settings,means the configuration of the import and export settings page.

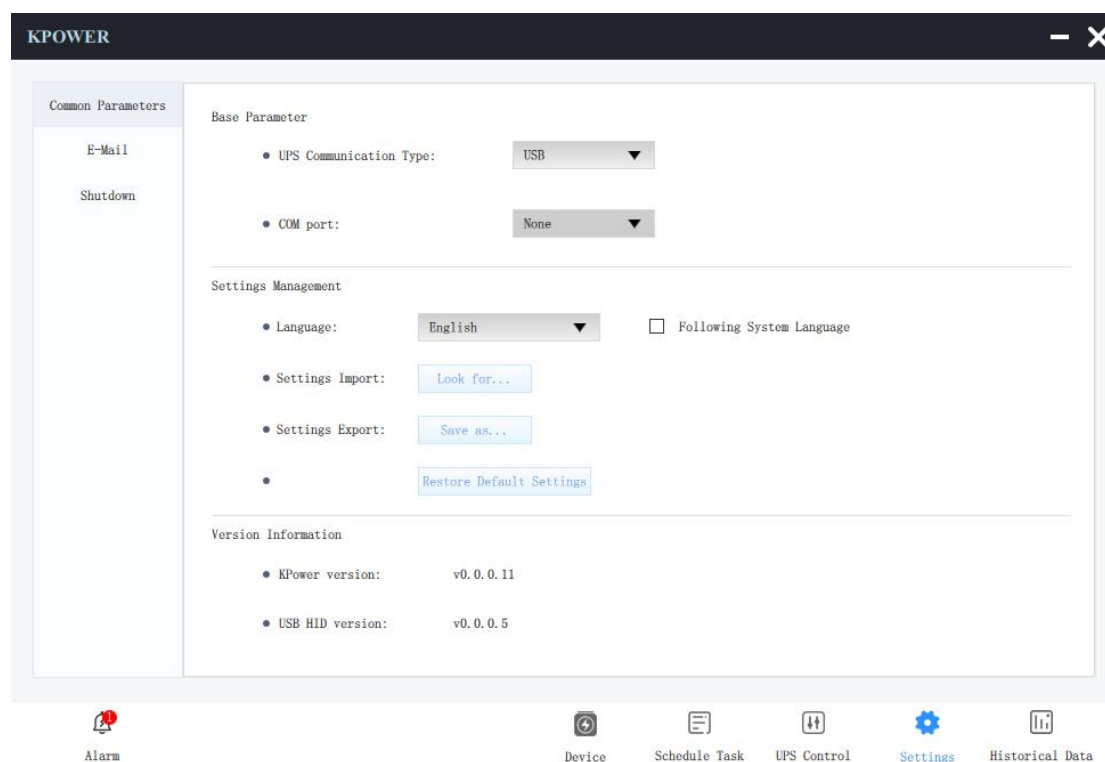


Figure 2-10 Public parameter setting

2.7.2 Email

KPower supports sending alarms and daily email functions.After enabling the

function,the user needs to fill in the email account information of an email sender:

- Sender Name: the name of the sender of the mail;
- Sender Address: the email address of the sender of the email;
- Server Address: mail server address;
- Server Port: mail server port number;
- Account authentication: set the email sender account and password;

When the sender mailbox information completed,the user can click the test button to send a test message to the sender mailbox.

The email address item needs to add the email recipient email.And under the recipient's email information,you can set the daily report sending function.When this function is enabled,the program will send the device operating data report of the yesterday at the set time every day.

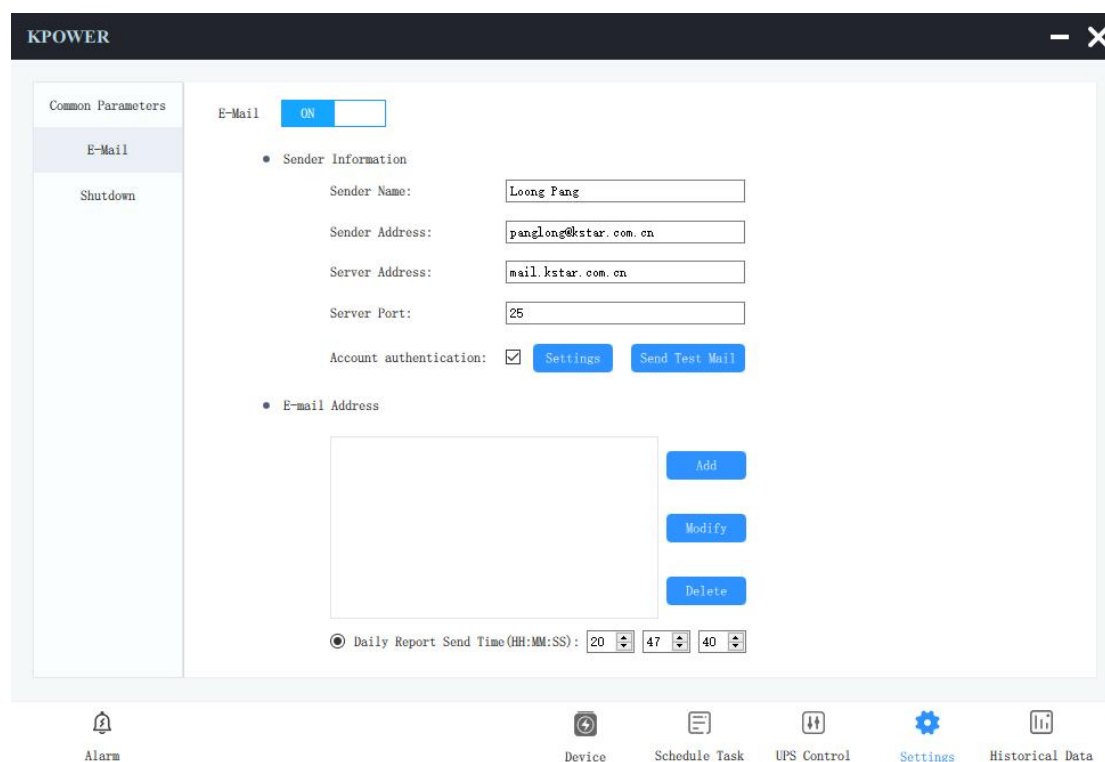


Figure 2-11 Email setting

2.7.3 Shutdown

KPower supports the shutdown protection function.When the UPS has an abnormal input or the battery is low,it can shut down the user's computer in time to avoid data loss.

KPower power control items can be set:

- After main AC fault,shutdown system in...minute(s)
- If low battery occurred,shutdown system in...minute(s)
- After main AC fault,shutdown system when battery capacity lower than...%

There are two main circuit abnormal shutdown protection logics.When the time meets the set shutdown time or the battery capacity is lower than the set value,the computer will be shutdown.

The user can also set the UPS shutdown conditions when shutdown the computer.If this function is not enabled,KPower will only shut down the computer but not the UPS.When this function is enabled,KPower will shut down the UPS after the set time when shutting down the computer.

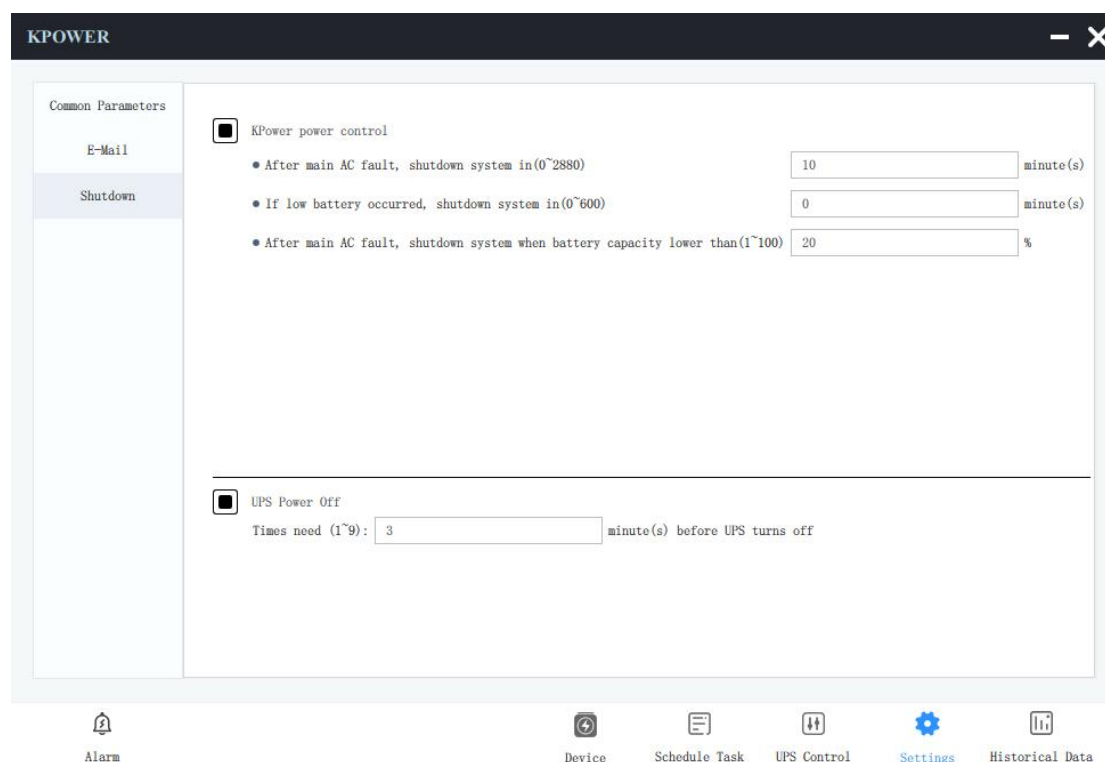


Figure 2-12 Shutdown setting

3 Instructions for installing KPower on a Linux system

Copy the installation file to the desktop or a custom folder. For example, the installation file is stored in /home/loong/kpower, where loong is the login user and

kpower is the custom folder.

Note: The following installation operations need to be performed in the command window.

```
[loong@localhost kpower]$ pwd
/home/loong/kpower
[loong@localhost kpower]$ ll
total 43732
-rw-rw-r--. 1 loong loong 44777678 Apr  6 01:50 KPower-20230406-v1.0.4.tar.gz
[loong@localhost kpower]$
```

The installation procedure is as follows:

- a. Decompress the installation package and run the following command:

```
tar -zxvf KPower-20230406-v1.0.4.tar.gz
```

```
[loong@localhost kpower]$
[loong@localhost kpower]$ tar -zxvf KPower-20230406-v1.0.4.tar.gz
KPower/
KPower/KPower
KPower/qml/
KPower/qml/OtCharts/
```

- b. Run the `ll` command to view the decompressed file, as shown in the following figure.

The name of the decompressed file is KPower.

```
[loong@localhost kpower]$ ll
total 43732
drwxrwxr-x. 6 loong loong    160 Apr  6 01:36 KPower
-rw-rw-r--. 1 loong loong 44777678 Apr  6 01:50 KPower-20230406-v1.0.4.tar.gz
[loong@localhost kpower]$
```

- c. To open the decompressed file, run `cd KPower/` and then `ll`. Note: `run.sh` is the program file to be executed in the next step.

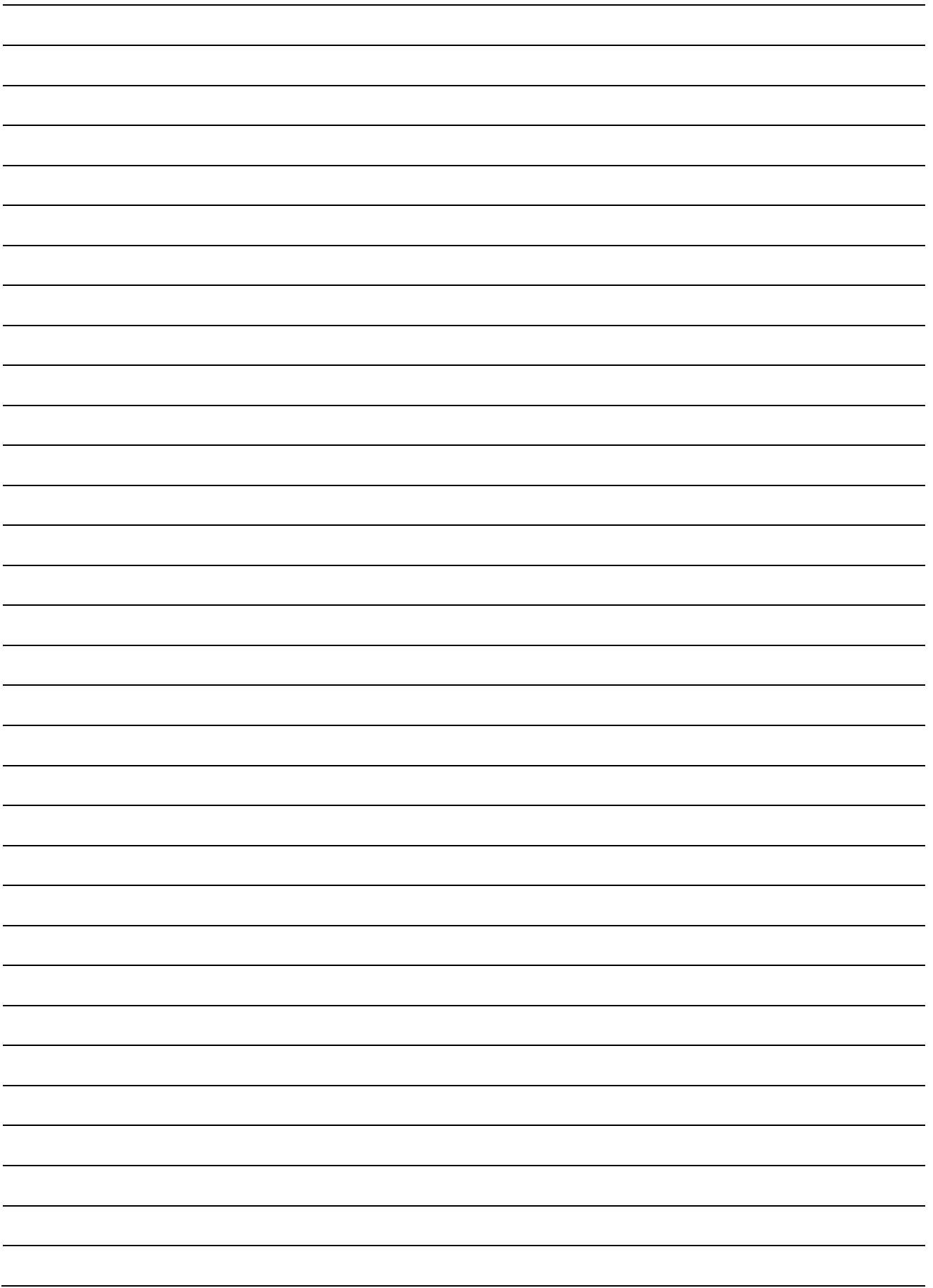
```
[loong@localhost kpower]$ cd KPower/
[loong@localhost KPower]$ ll
total 2088
lrwxrwxrwx. 1 loong loong      6 Oct 28  2020 AppRun -> KPower
-rwxr-xr-x. 1 loong loong 2093360 Apr  6 01:35 KPower
-rwxrwxr-x. 1 loong loong    116 Oct 28  2020 KPower.desktop
-rwxrwxr-x. 1 loong loong   16958 Oct 28  2020 KPower.ico
drwxrwxr-x. 2 loong loong    4096 Oct 28  2020 lib
drwxrwxr-x. 9 loong loong    148 Oct 28  2020 plugins
drwxrwxr-x. 8 loong loong    103 Oct 28  2020 qml
-rwxrwxr-x. 1 loong loong    145 Oct 28  2020 qt.conf
-rwxrwxr-x. 1 loong loong    259 Oct 28  2020 run.sh
drwxrwxr-x. 2 loong loong    4096 Apr  6 01:18 translations
[loong@localhost KPower]$
```

- d. Run the following command: `./run.sh`. After the program is successfully executed, the KPower monitoring page is automatically displayed.

```
-rwxrwxr-x. 1 loong loong 259 Oct 28 2020 run.sh
drwxrwxr-x. 2 loong loong 4096 Apr 6 01:18 translations
[loong@localhost KPower]$ ./run.sh
Warning: Ignoring XDG_SESSION_TYPE=wayland on Gnome. Use QT_QPA_PLATFORM=wayland to run on Wayland anyway.
```

The screenshot displays the KPower monitoring application interface. The top section shows system shutdown and battery remaining time controls. The middle section displays UPS status: UPS Communication (Disconnected), Input Status, Battery Voltage, UPS Fault, Work Status, and UPS Self-Test. The bottom section features a schematic diagram of a power system with a power source, a central UPS unit, and a load. Below the diagram are navigation buttons for Alarm, Device, Schedule Task, UPS Control, Settings, and Historical Data.

At this point, the installation step is complete. To restart the kpower monitoring page, go to the `/home/loong/kpower` directory and run the `./run.sh` command.





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