

# **Acrel IoT EMS APP Manual**

**Acrel Co., Ltd.**

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## 1. Register

After installing the APP, click the icon of the Energy Internet of Things to enter the login interface of the Energy Internet of Things, as shown in Figure 1-1. Enter the account, password and server address, click login to enter the program. Click the Settings button in the upper right corner, and enter the IP address and change language, as shown in Figure 1-2.

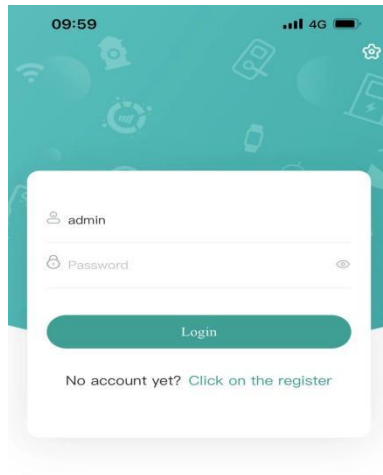


Figure 1-1

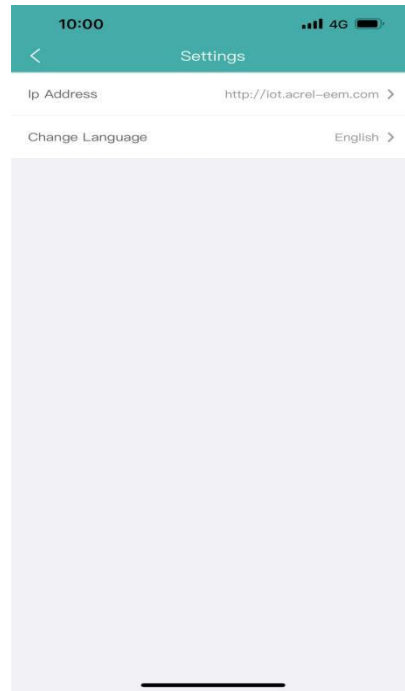


Figure 1-2

If you don't have an account, you can register, as shown in Figure 1-3.

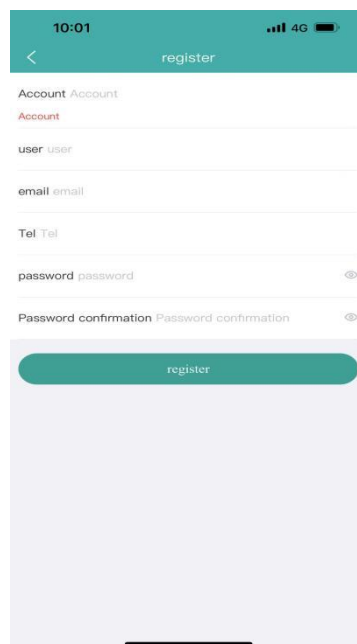


Figure 1-3

## 2.Home Page

The program home page displays 13 functions,such as monitoring page, energy consumption analysis,power quality,user management,demand analysis,room charge configuration,alarm management,area setting,operation and maintenance management,user report,financial analysis,basic data management and log management.As shown in Figure 2-1.

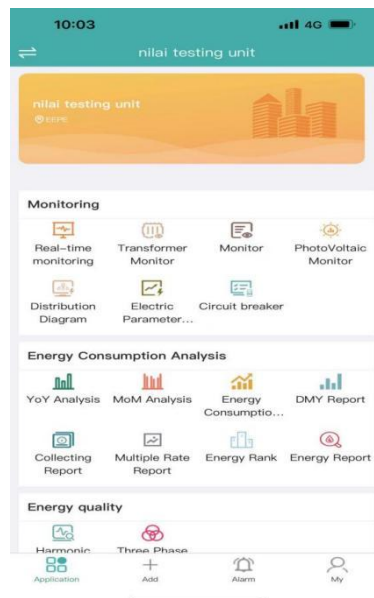


Figure 2-1

## 3. Project

### 3.1 Project Switch

User clicks the button in the upper left corner to jump to the project switching page,as shown in Figure 3-1.Search according to the project name,select the project,jump back to the home page,enter the relevant menu,query the data of the project.

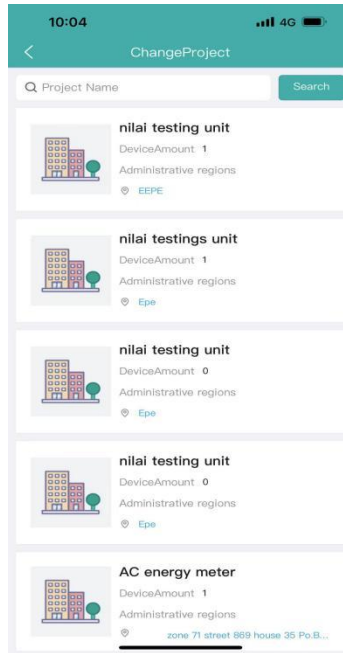


Figure 3-1

## 4. Monitoring Page

### 4.1 Electrical Parameter Report

The page of electrical parameter report displays the electrical parameter report of the project equipment. Users can view the electrical parameter report of the equipment in each area, and view the corresponding real-time data by filtering the date, energy node and types of electrical parameters, as shown in Figure 4-1.

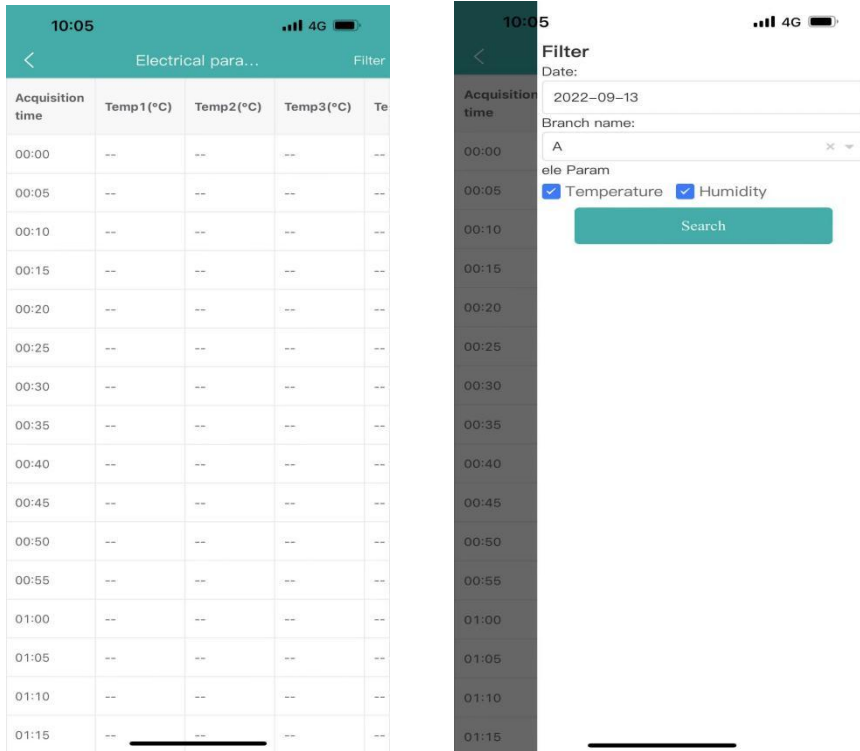


Figure 4-1

## 4.2 Real-time Monitoring

Real-time monitoring displays all the devices under the selected projects, and displays the gateway ID, Meter address, Meter model, circuit name and other information, which can be queried through the gateway ID and Meter model, as shown in Figure 4-2-1.

Click the corresponding device to enter the monitoring details page, and you can view real-time electrical parameter information and historical electrical parameter curve, as shown in Figure 4-2-2.

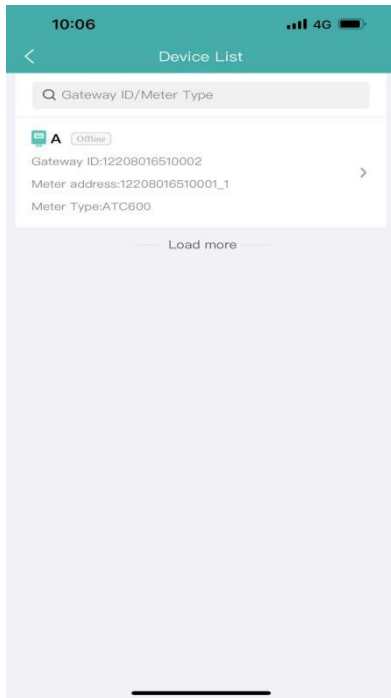


Figure 4-2-1

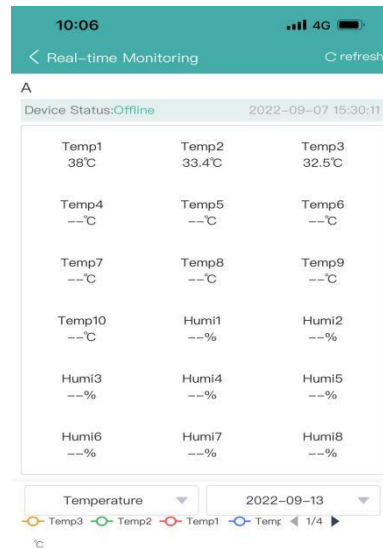


Figure 4-2-2

### 4.3 Transformer Monitoring

Transformer monitoring displays the load of each voltage generator and monitors the transformer's electrical parameters, as shown in Figure 4-3.

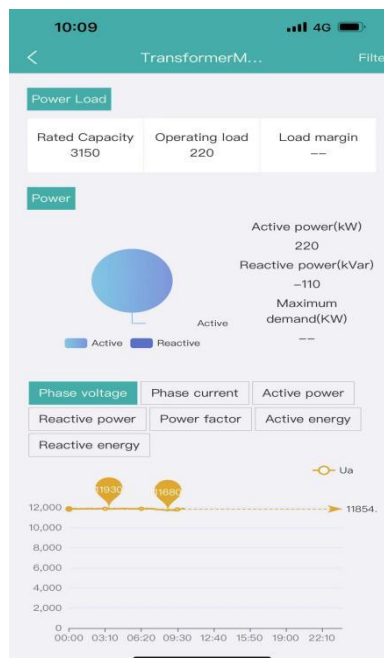


Figure 4-3

### 4.4 Power Distribution Diagram



Power distribution monitoring displays the power distribution diagram of the customer. You can add the power distribution diagram through background image management and view the image, as shown in Figure 4-4.



Figure 4-4

#### 4.5 Photovoltaic Monitoring System

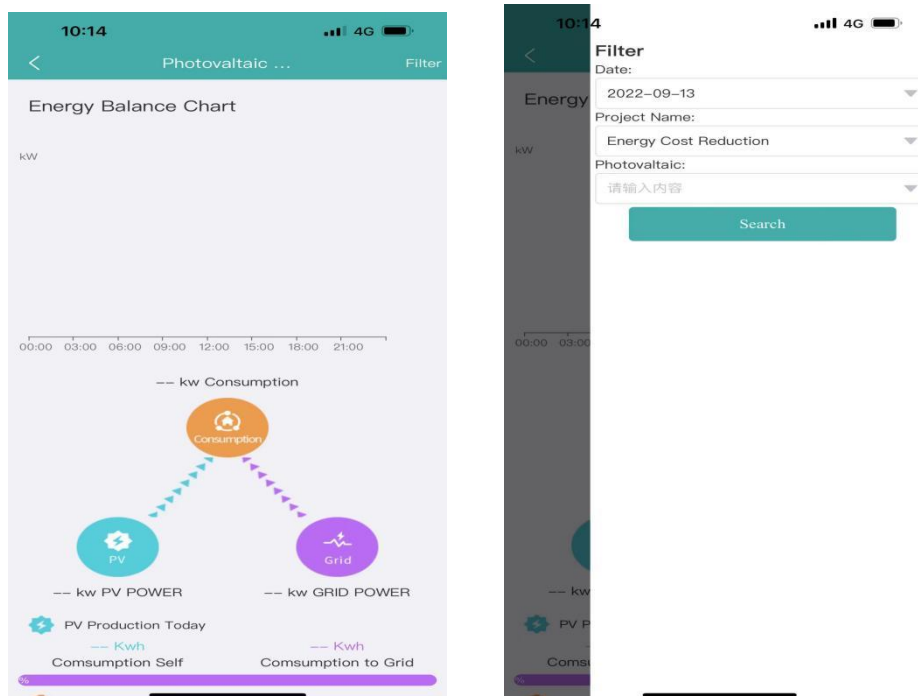


Figure 4-5

## 4.6 Circuit Breaker

Circuit Breaker displays the operation of each circuit breaker, so as to make scientific and reasonable planning for the circuit breaker equipment. The on-off status of each circuit breaker is analyzed, as shown in Figure 4-6.

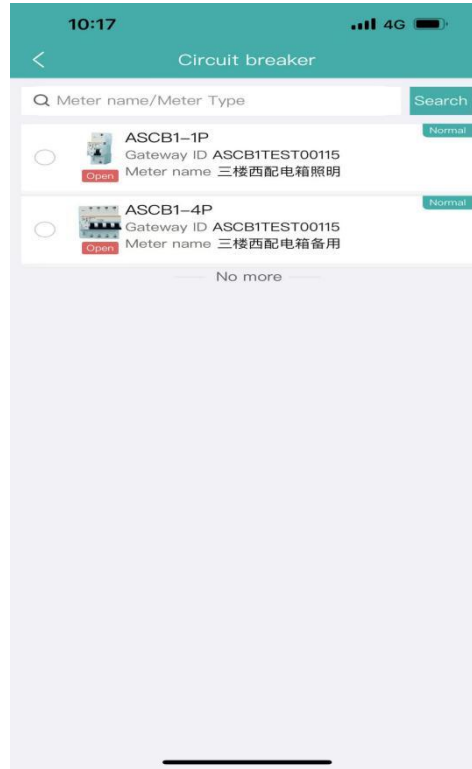


Figure 4-6

The Circuit Breaker real-time monitoring page displays the device running status, real-time data, historical curves of each electrical parameter, alarm information, and control logs, as shown in Figure 4-7.

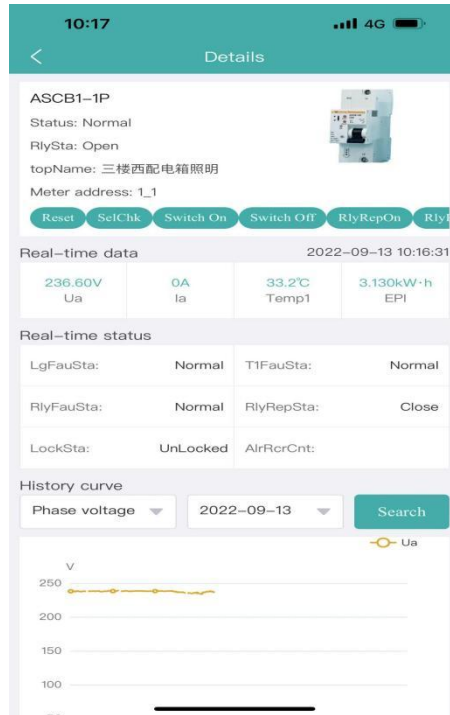


Figure 4-7

Users can reset the circuit breaker, self-check, switch, maintenance switch, forced open and close, time control setting, parameter setting and other operations. The user needs to enter an operation password before operation. When the user clicks the maintenance open, self-check, opening, closing, maintenance open, time control setting, parameter setting will be unavailable.

Users can set the time control for the circuit breaker. The circuit breaker starts and closes at the specified time, as shown in Figure 4-8.

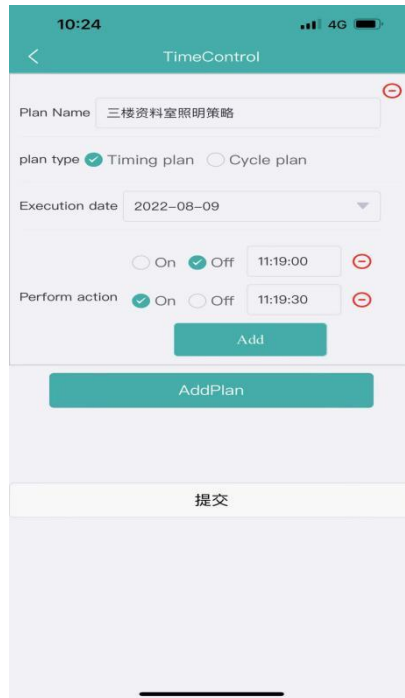


Figure 4-8

Users can set parameters of the circuit breaker and alarm values of electrical parameters to enable the alarm at any time,as shown in Figure 4-9.

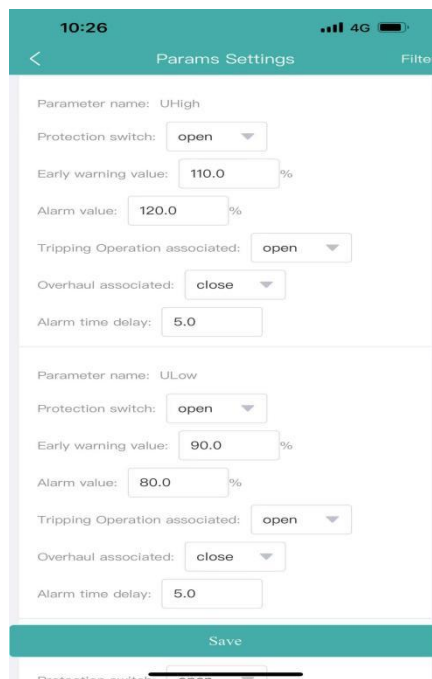


Figure 4-9

## 5. Energy Consumption Analysis

### 5.1 YoY Analysis

YoY Analysis collects energy consumption of an energy node in the current year and the same period of last year to analyze energy consumption, calculate the same ratio, and display it in bar charts and reports. Users can query by circuit name, year, and energy consumption by category, as shown in Figure 5-1.

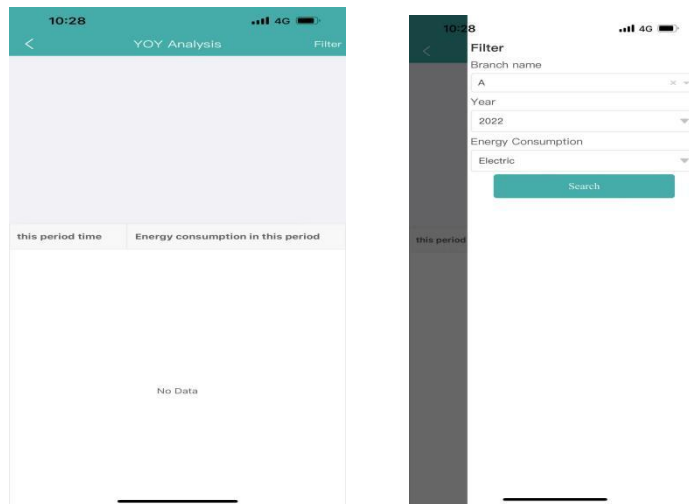


Figure 5-1

### 5.2 MoM Analysis

MoM Analysis is used to calculate the energy consumption of a certain energy node in the same period of the day and yesterday by “Day”, and the energy consumption of the same period of the current month and last month by “Month”, so as to analyze the energy consumption and calculate the added value and loop ratio. Users can query by loop name, date and classified energy consumption, as shown in Figure 5-2.

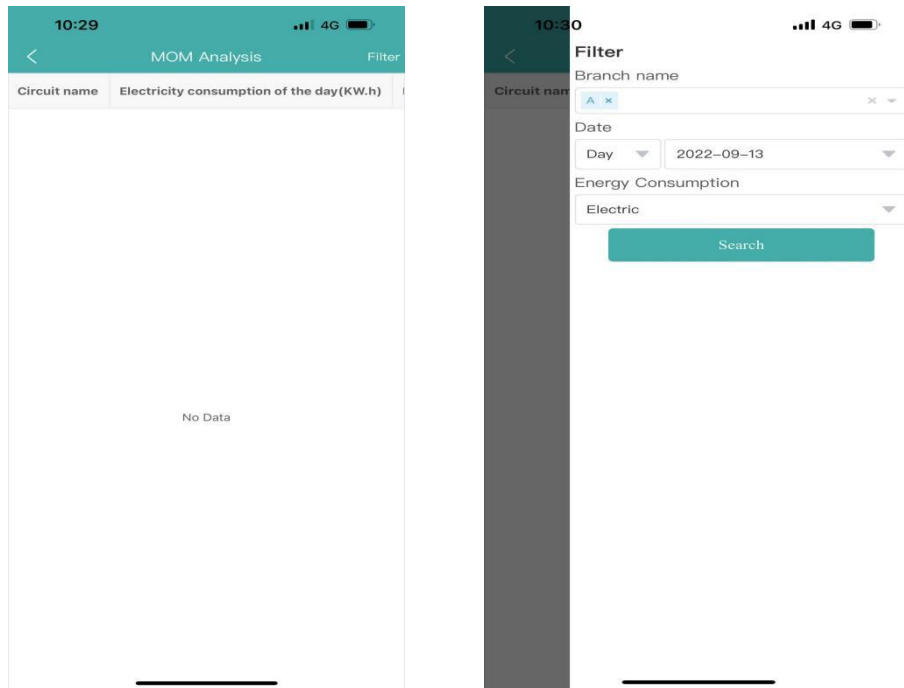


Figure 5-2

### 5.3 Multiple Tariff Report

The Multiple Tariff report page, you can view the peak and flat valleys power consumption and amount of each branch by day, month, and year. You can query the power consumption by circuit name, date, and energy consumption by category, as shown in Figure 5-3.

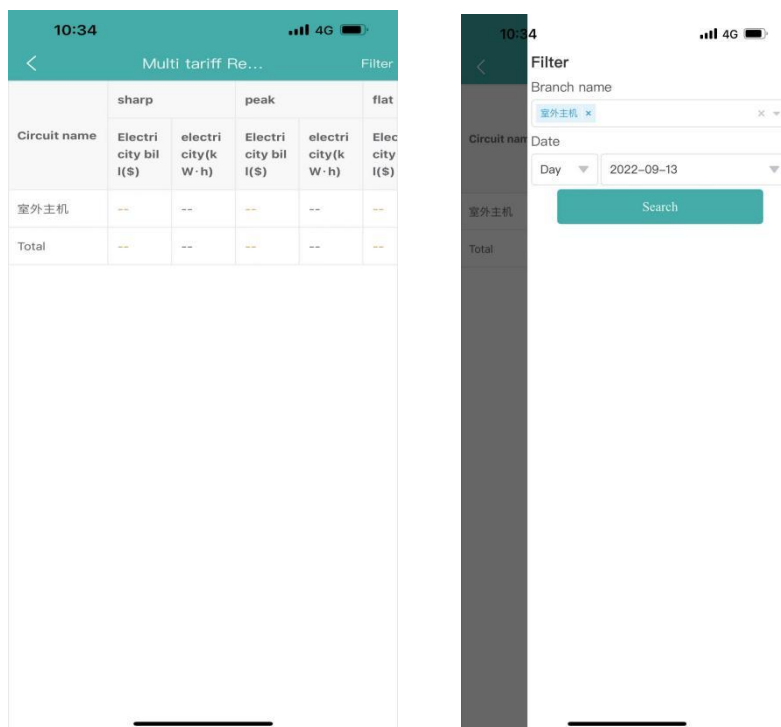


Figure 5-3

## 5.4 Energy Rank

Energy Rank ranks the energy consumption of rooms in the selected branch. You can query the energy consumption by circuit name, date, and energy consumption by category, as shown in Figure 5-4.

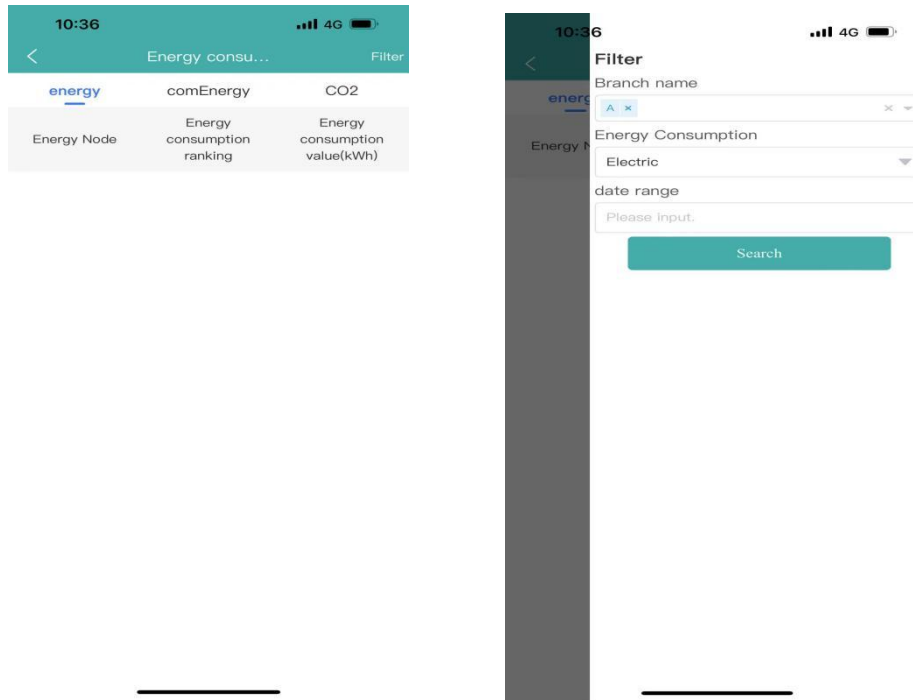


Figure 5-4

## 5.5 Loss Analysis

Loss Analysis can collect statistic on the line losses between the upper and lower branches of a project. Users can filter and query the line losses by project name, data range, and categorized energy consumption, as shown in Figure 5-5.

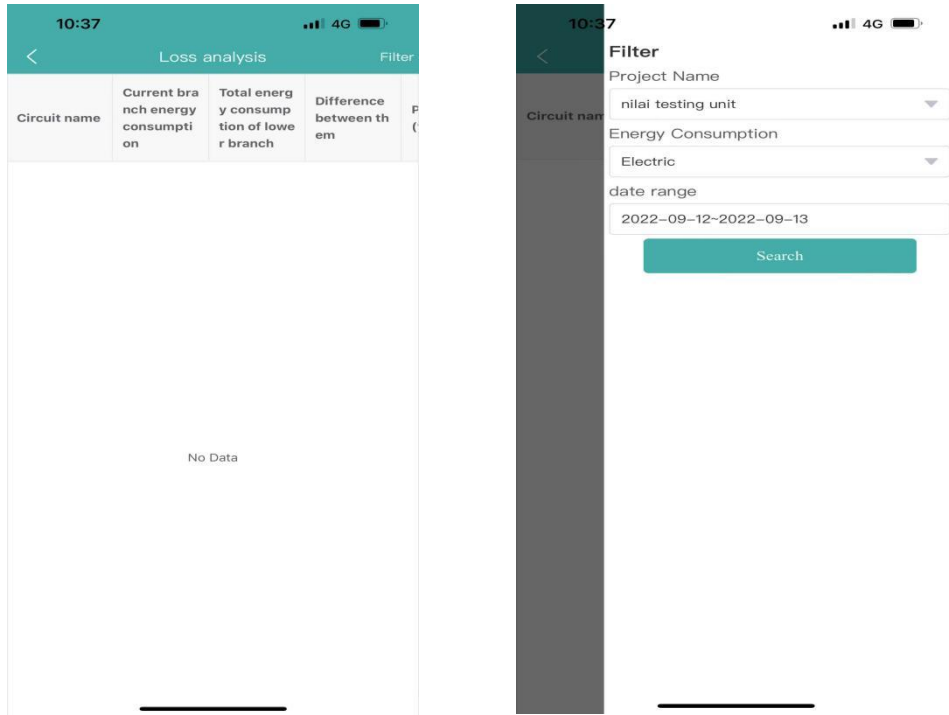


Figure 5-5

### 5.6 Collecting Report

Collecting Report displays the start consumption, end consumption, and their difference (i.e. The consumption in this period) collected by all meters within a period of time. Users can filter and query by circuit name, data range, and categorized energy consumption, as shown in Figure 5-6.

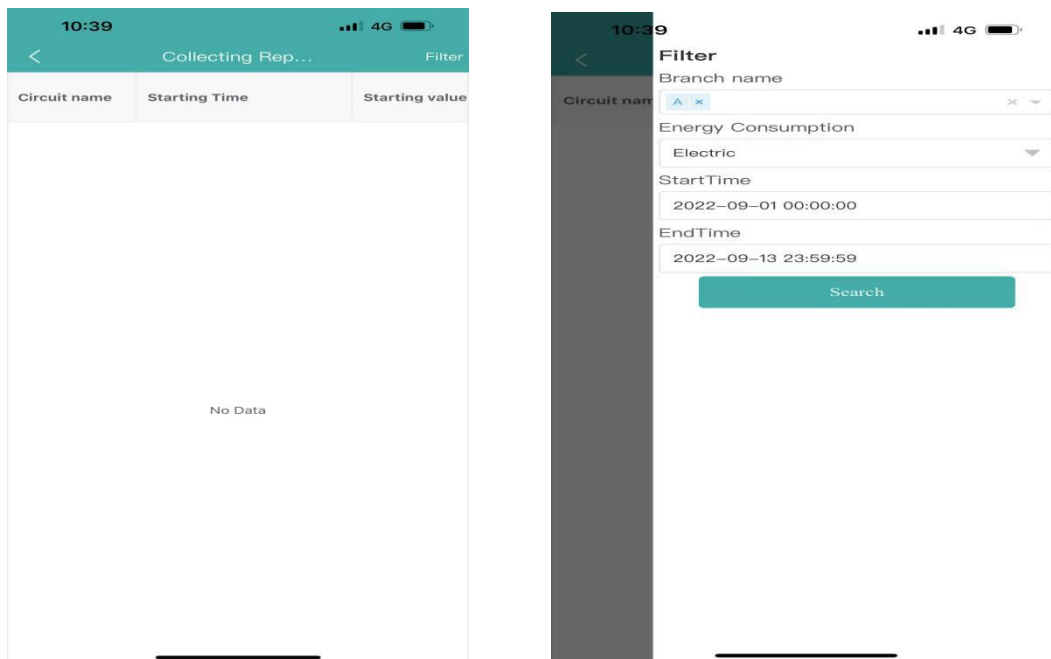


Figure 5-6



## 5.7 Energy Consumption Report

Energy Consumption Report displays the device consumption by year, month, and day in a bar chart. User can query the energy consumption by circuit name, date, and energy consumption by category, as shown in Figure 5-7.

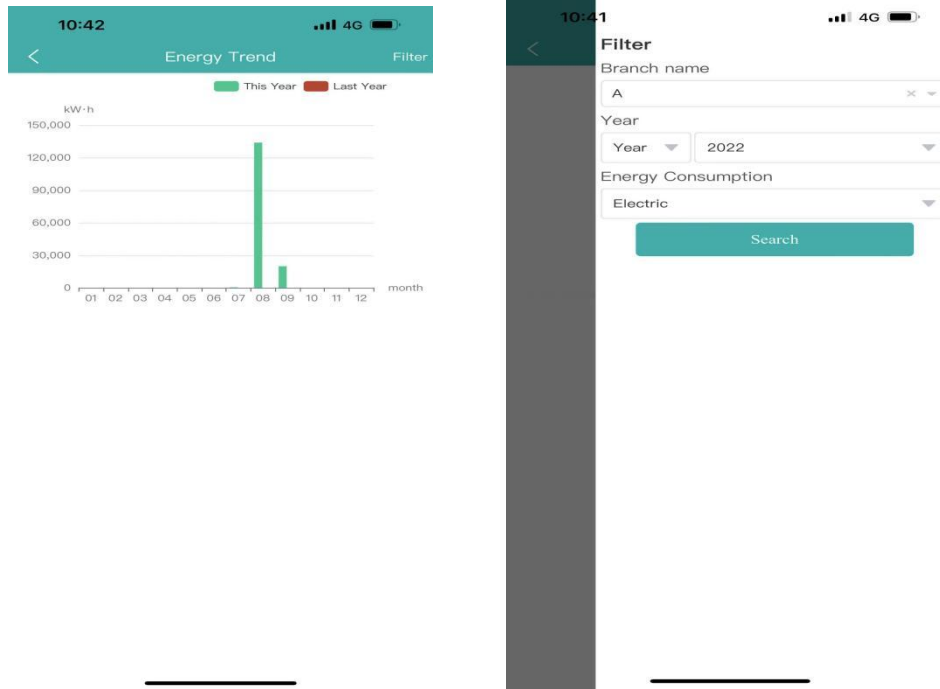


Figure 5-7

## 6. Energy Quality

### 6.1 Harmonic Monitoring

Harmonic Monitoring displays the harmonic monitoring data in charts and data forms. Users can select A-phase voltage harmonics, B-phase voltage harmonics, C-phase voltage harmonics, A-phase current harmonics, B-phase current harmonics, and C-phase current harmonics to display in graphs or data lists, as shown in Figure 6-1.

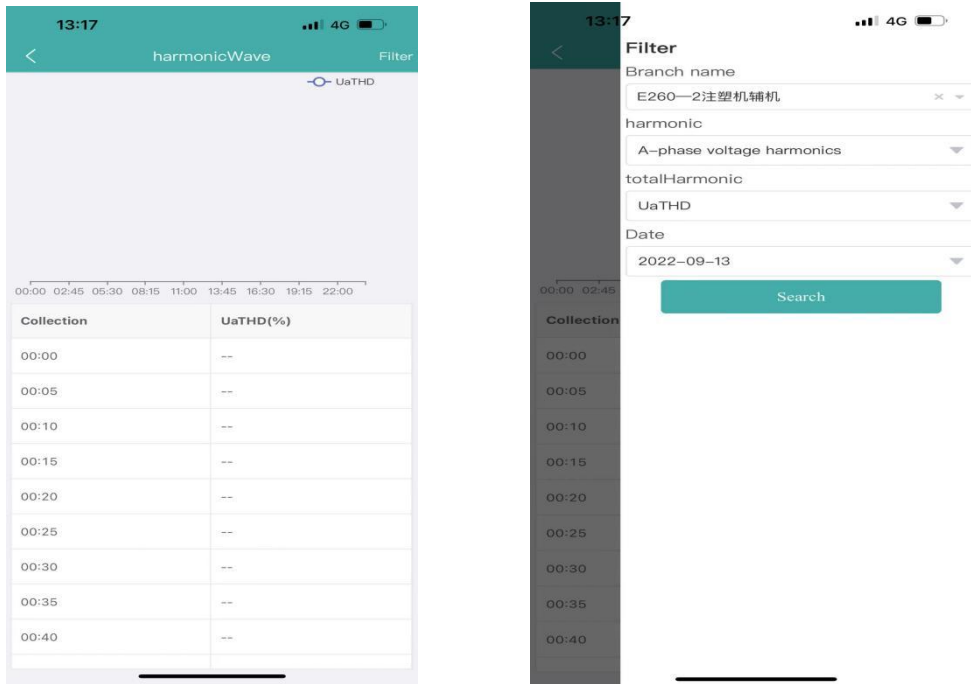


Figure 6-1

## 6.2 Three phase Unbalance

The three phase unbalance page shows the meter's three phase voltage and three phase current data, and the corresponding unbalance of three phase current and three phase voltage. You can query the three-phase unbalance data of the meter in a specified area at a specified time, as shown in Figure 6-2.

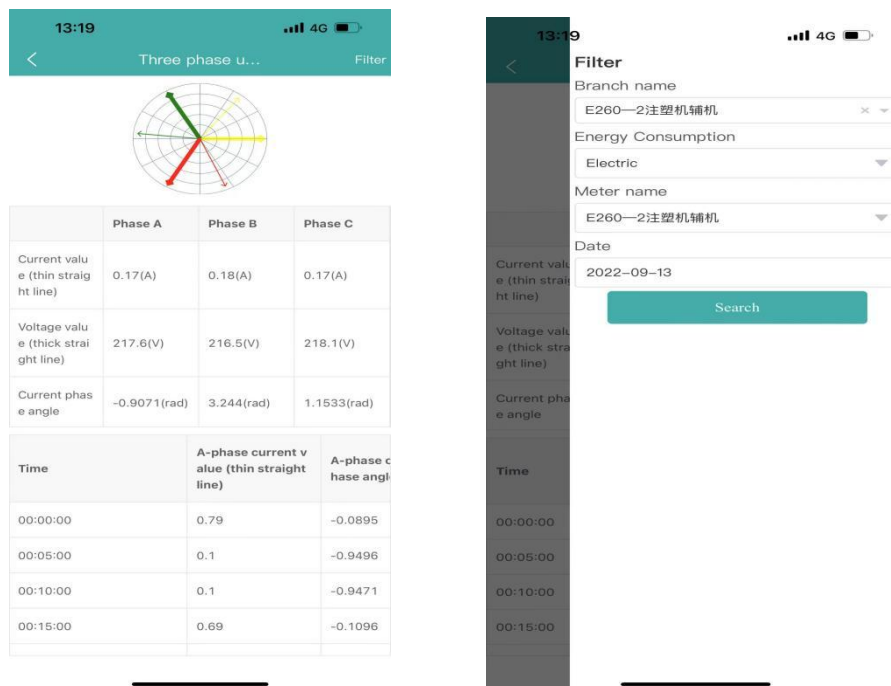


Figure 6-2

## 7. Demand Analysis

### 7.1 Maximum Demand Report

Maximum Demand Report displays the monthly maximum demand, Users can query the maximum demand by loop name and data range, as shown in Figure 7-1.

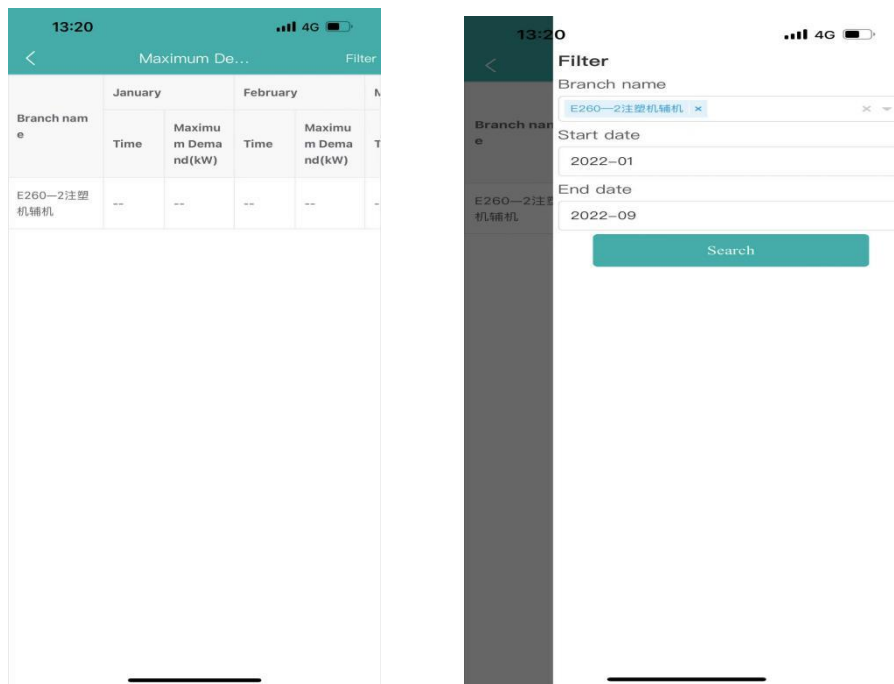


Figure 7-1

### 7.2 Demand Monitoring

Demand monitoring page displays the daily demand of the detector. Users can filter and query by loop name and date, as shown in Figure 7-2

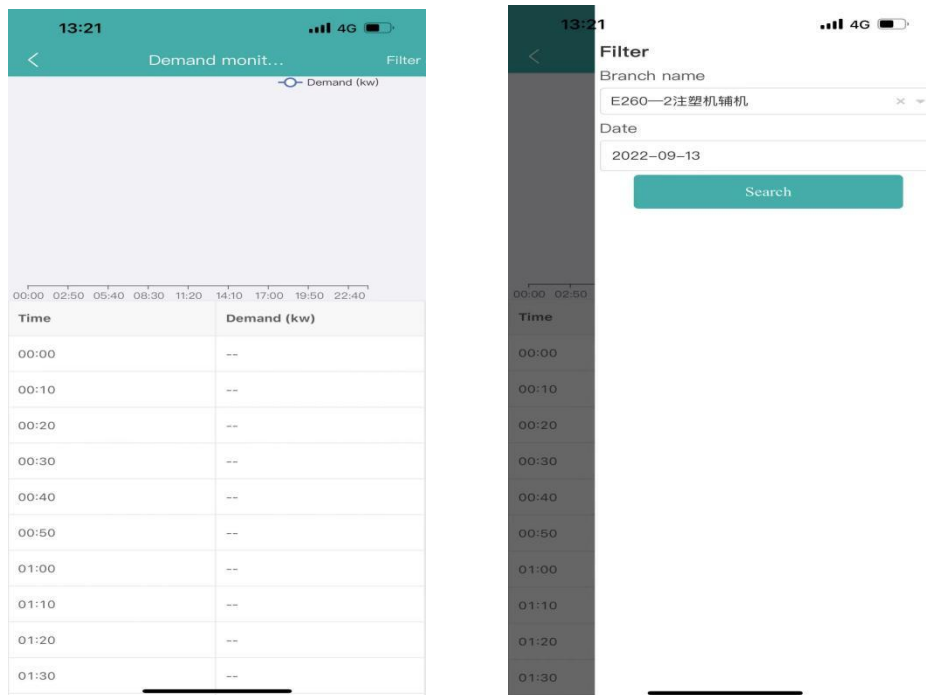


Figure 7-2

## 8. Prepayment

### 8.1 Account Cancellation Record Query

Account Cancellation Record Query is the query page for deregistered records. Users can search and query the records of all deregistered accounts, as shown in Figure 8-1.

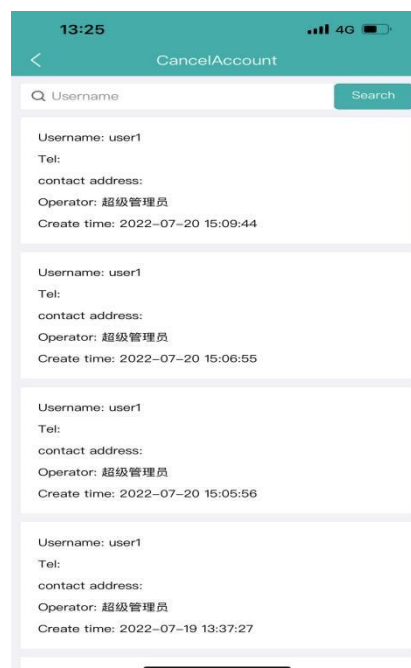


Figure 8-1

## 8.2 Comprehensive Report Form

Comprehensive Report Form allows users to query the electricity usage within the time range and room, as shown in Figure 8-2.

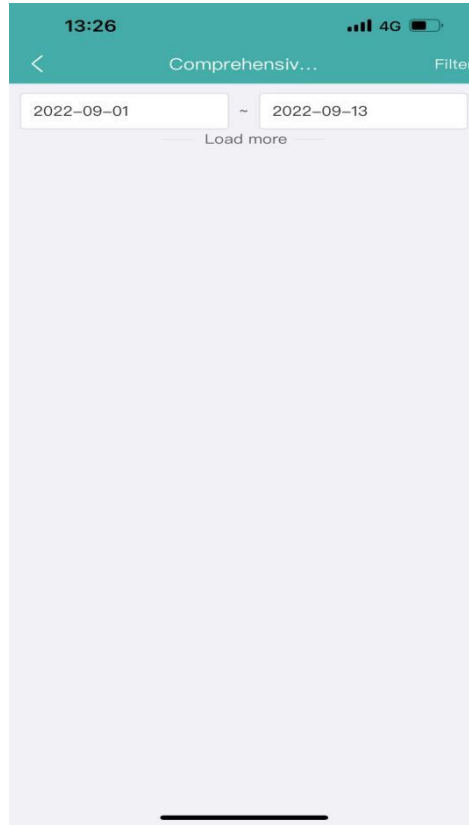


Figure 8-2

## 8.3 Add Meter

For the code-scanning debugging free process scheme of the prepaid system, click the scanning QR code, scan the QR code of the gateway device, and select the project for binding, as shown in Figure 8-3-1.

After the binding is successful, click Add, scan the QR code of the device again, fill in the device model, room name, serial port number and other information, and click Save to add successfully, as shown in Figure 8-3-2.

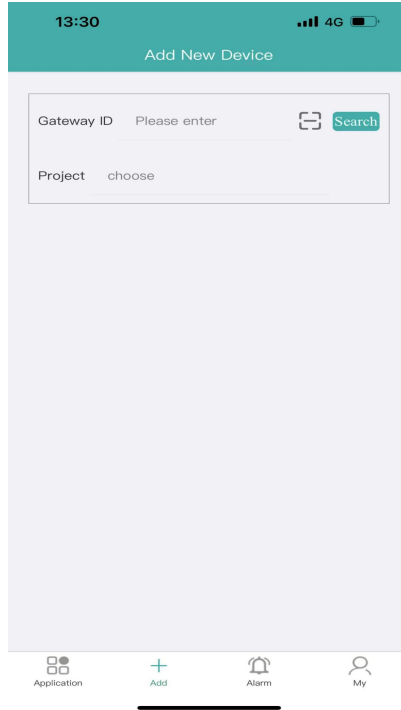


Figure 8-3-1

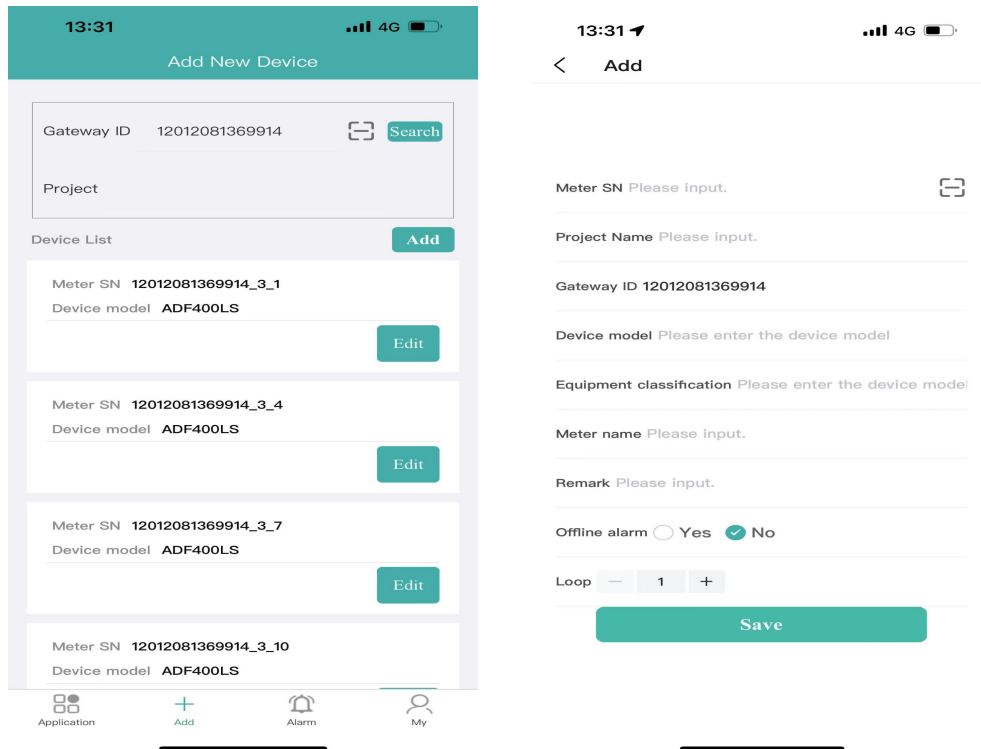


Figure 8-3-2

## 9.Operation and Maintenance Management

Operation and Maintenance Management module mainly includes inspection records,defect records,meter status,and gateway status.

### 9.1 Inspection Record

Inspection Record page displays the inspection records of the current month.Users need to log in to the inspection person account to enter the Inspection Record page and click the “Filter”button to query inspection data according to the inspection status,plan name/plan content,and schedule,as shown in Figure 9-1-1.

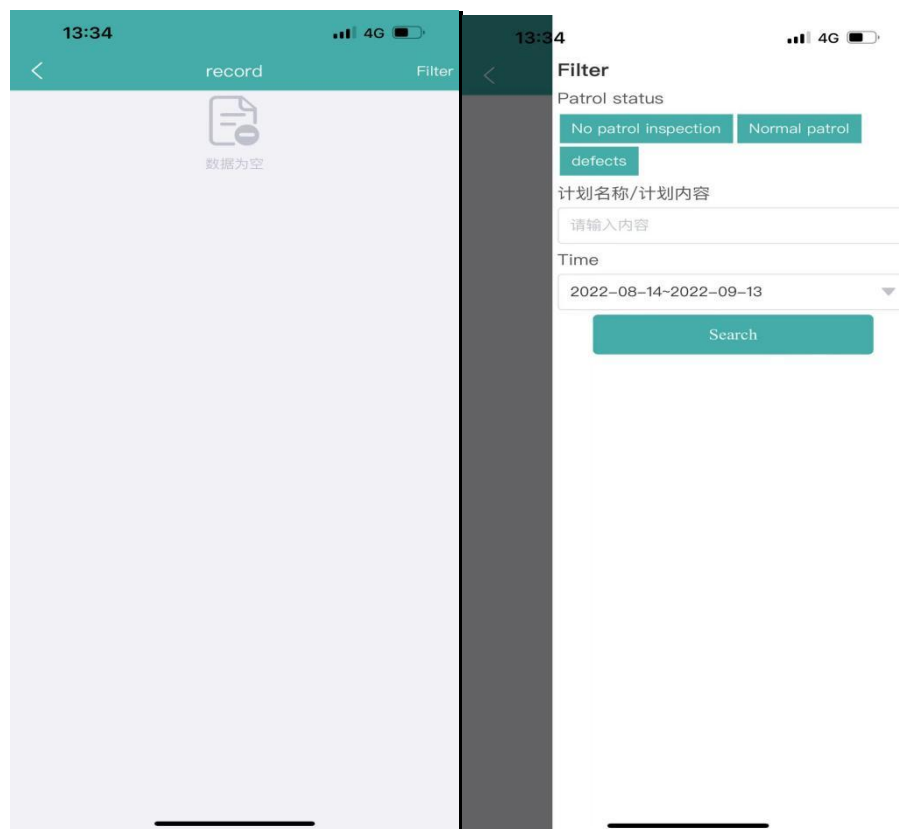


Figure 9-1-1 Inspection Record

The inspector clicks three points in the upper right corner of the “Inspection Records” interface,and clicks the “Processing”button in the pop-up box to switch to the punching interface,as shown in Figure 9-1-2.



Figure 9-1-2 Inspection Records-Processing Page

On the card punching processing screen, you can select the scanning QR code or NFC card punching mode, and click “Inspection Items” to switch to the inspection screen, as shown in Figure 9-1-3. Fill in inspection items based on inspection conditions.





Figure 9-1-3 Inspection Items

On the “Processing” page of inspection records,after clocking in successfully,fill in inspection items,upload the corresponding picture,fill in the remarks,and click Save.The inspection record status changes to the Defect state,as shown in Figure 9-1-4.



Figure 9-1-4 Inspection Record Status

## 9.2 Defect Record

Defect Record page displays the existing defect records,including the plan name,defect description,area location,creation time,inspection team leader, inspection personnel,and defect description.You can log in to the account of the inspection team leader to view the defect processing on this page.Users can also query the corresponding defect record data by the plan name,defect description, and time range,as shown in Figure 9-2-1,9-2-2.

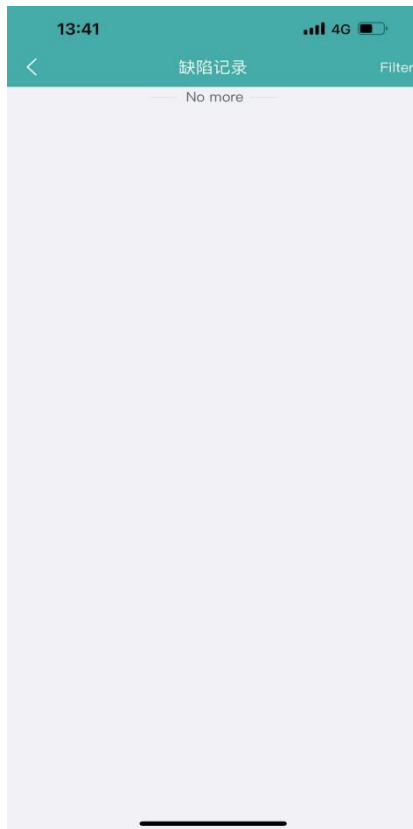


Figure 9-2-1 Defect Record

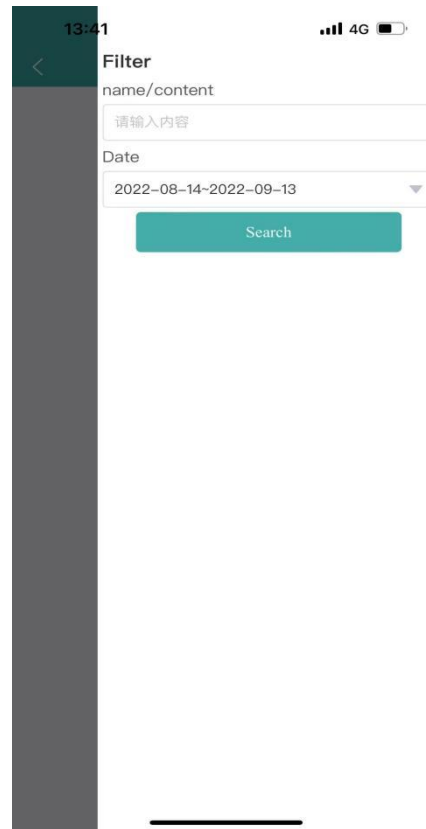


Figure 9-2-2 Filter Criteria Box

Log in the auditor's account, enter the defect records in operation and maintenance management, select a defect record, select three points in the upper right corner, and click the "Process" button in the pop-up box, as shown in Figure 9-2-3 and 9-2-4.



Figure 9-2-3 Defect Logging-Handle Button      Figure 9-2-4 Processing Interface

Defect Record interface,fill in the defect cause,picture upload,signature,and click the Save button.The defect record status changed from unprocessed to unaudited,as shown in Figure 9-2-5.



Figure 9-2-5 Defect Logging-Processing Status

View the Defect Record,click the three dots in the upper right corner.Currently only the the details button is available,but the processing button is missing.Click the details button to jump to the details interface and record the process of finding and handling defects.See Figure 9-2-6.



Figure 9-2-6 Defect Record-Details

The inspection leader handles the defect. Switch to log in the account of inspection auditor, click the operation and maintenance management interface, enter the defect record interface, and see the processing of defect records. The status is "Processed not audited", which requires the auditor to review. Users can also query the corresponding defect record data by the plan name/defect description, time period and other conditions. See Figure 9-2-7 and 9-2-8.



Figure 9-2-7 Defect Record-Reviewer



Figure 9-2-8 Defect Record-Filter

Log in the auditor's account, select a defect record, select three points in the upper right corner, and click the "Review" button in the pop-up box to jump to the review interface, as shown in Figure 9-2-9 and 9-2-10.



Figure 9-2-9 Defect Record-Audit



Figure 9-2-10 Defect Record-Audit

In the defect review interface, the auditor selects whether to pass, signs, remarks, and finally clicks the "Submit" button. If the audit is successful, the Processing Unaudited status on the defect record page changes to Approved. As shown in the Figure 9-2-11. If the auditor fails, the defect record status changes from "processed unaudited" to "not processed". You need to log in to the inspection leader account again. Check the defect record again, and finally the inspection auditor will check whether it is passed again. The operation process is the same as above.



Figure 9-2-11 Defect Record-Audit Status

Log in the auditor's account, view the defect record, and click the three points in the upper right corner. Currently, only the details button is available, but the audit button is not. Click the details button to jump to the details interface, record the discovery of defects, processing of defects, and review the processing process, as shown in Figure 9-2-12.



Figure 9-2-12 Defect Record-Audit Detail

### 9.3 Meter Status

By querying the item, gateway ID, meter address, meter model, and whether the item is online, you can summarize and display the communication status data of existing items, including the current communication status of the device, as shown in Figure 9-3.



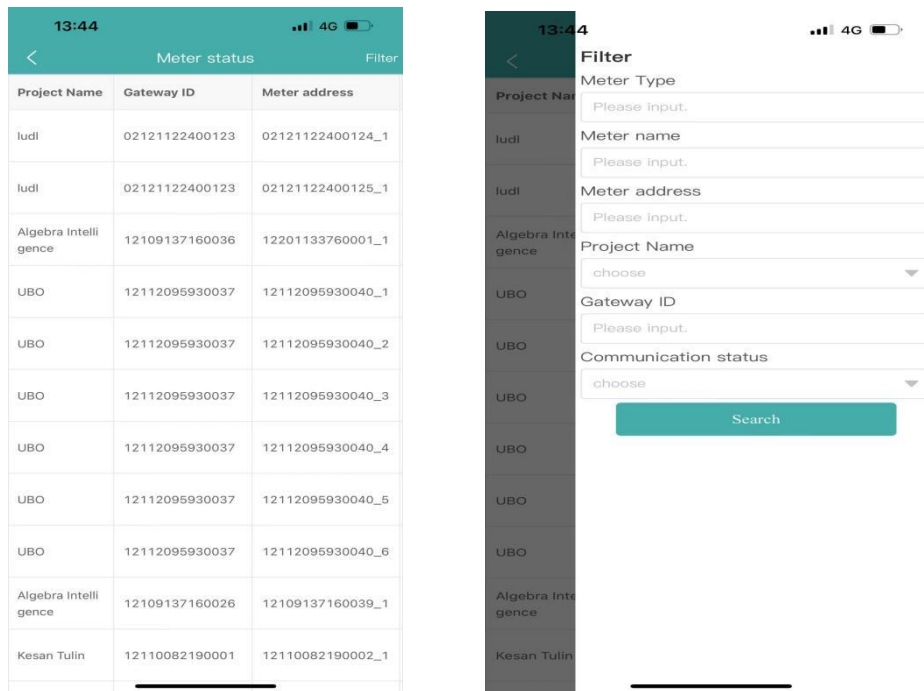


Figure 9-3

## 9.4 Gateway Status

By querying the item, gateway ID, and whether the item is online, users can summarize and display the communication status data of the gateway under the existing item, including the current communication status of the device, as shown in Figure 9-4.

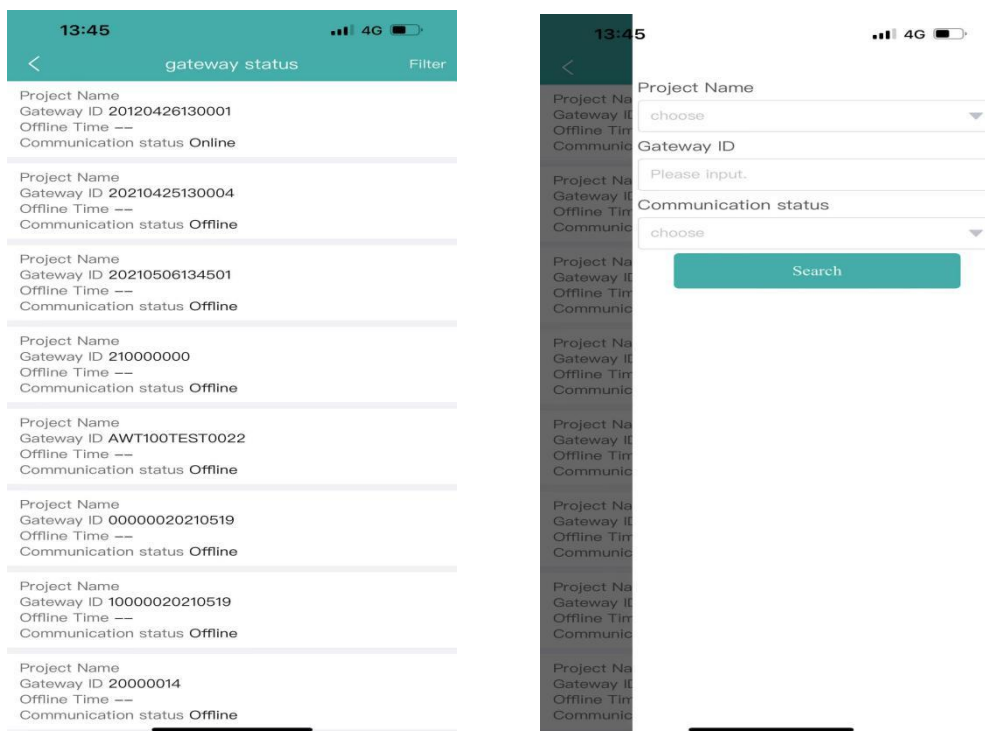


Figure 9-4

## 10. Financial Analysis

### 10.1 Order Summary

Users can query the order information of all users under the project on the order overview page by date, user name, order type, payment method and sales type, and click “Review” to review the order, as shown in Figure 10-1.

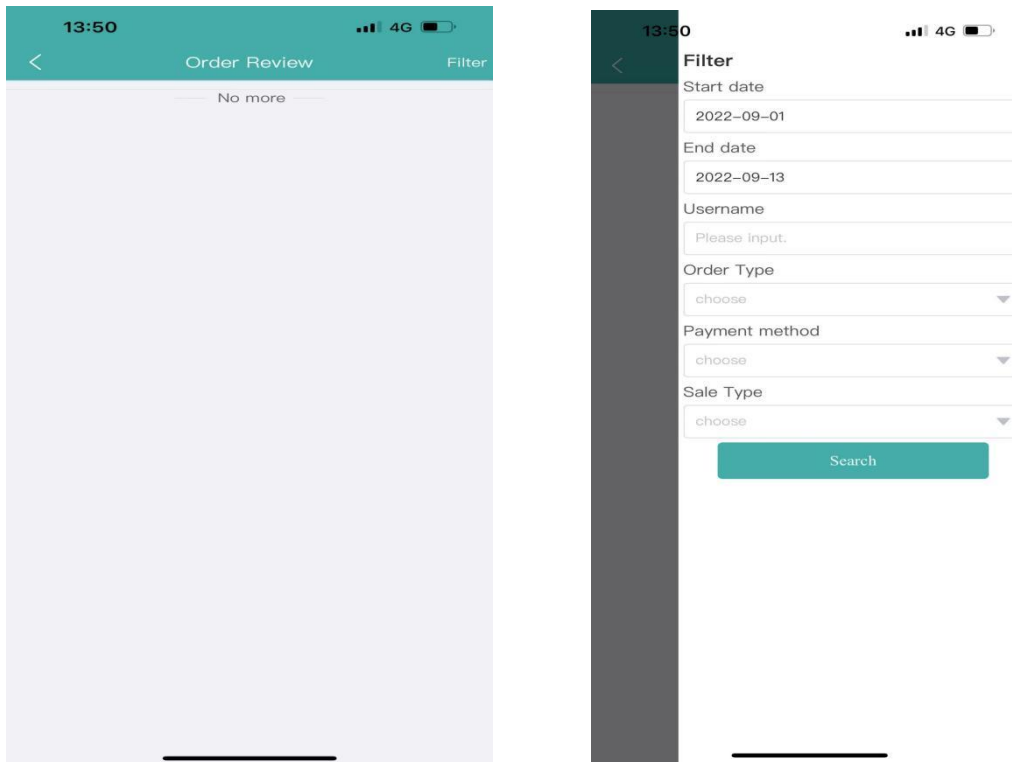


Figure 10-1

### 10.2 Income Profile

Income Profile page, the bar chart, percentage chart, and report are used to clearly and intuitively display the income obtained by different income method in each room, as shown in Figure 10-2.

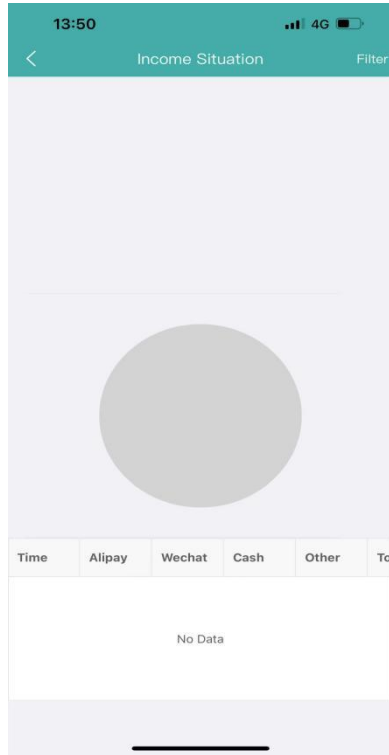


Figure 10-2

## 11. User Report

User Reports generate project overview, energy consumption analysis, energy consumption ranking, financial reports, and financial details based on the specified project and time period, as shown in Figure 11-1.



Figure 11-1

## 12. Alarm Management

Click the alarm button at the bottom of the home page to enter the alarm management page, which displays the hidden danger information of all devices under the associated items. The responding alarm records can be searched according to the alarm type, alarm level, work order status, project name, regional location, time and details, as shown in Figure 12-1.

Click Details to view the details of alarm records, as shown in Figure 12-2.

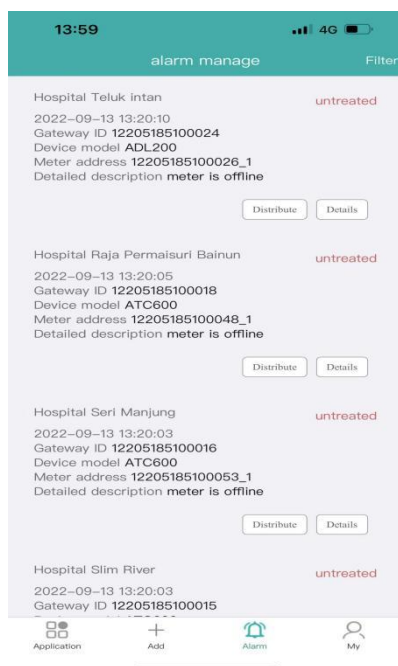


Figure 12-1

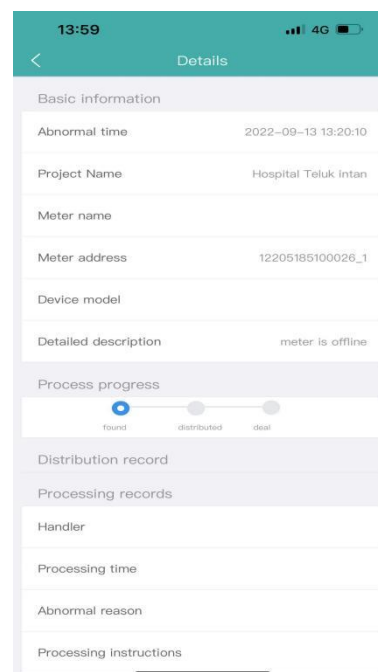


Figure 12-2

Click the alarm information distribution button, users can enter the alarm distribution page, select the executor and rectification period, if you need to fill in the work order task, users can fill in the work order task, after submission, the system will send the work order information to the executor, as shown in Figure 12-3.

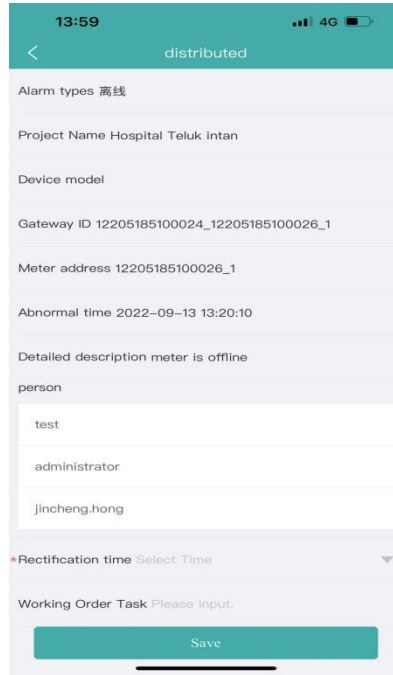


Figure 12-3

### 13. Scan Codes to Add Devices

Click the home page to deliver the Add menu, enter the Add device page, click the scan QR code, scan the QR code of the gateway device, all the devices belonging to the gateway will be uploaded, select the item to bind, as shown in Figure 13-1.

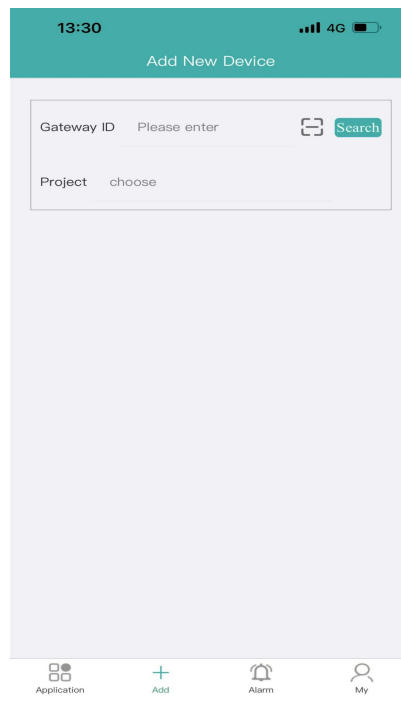


Figure 13-1

After the binding is successful, users can edit the existing device or click Add to add the device. Then scan QR code of the device again, fill in the device model, device classification, circuit name and other information, and click Save to add the device successfully, as shown in Figure 13-2.

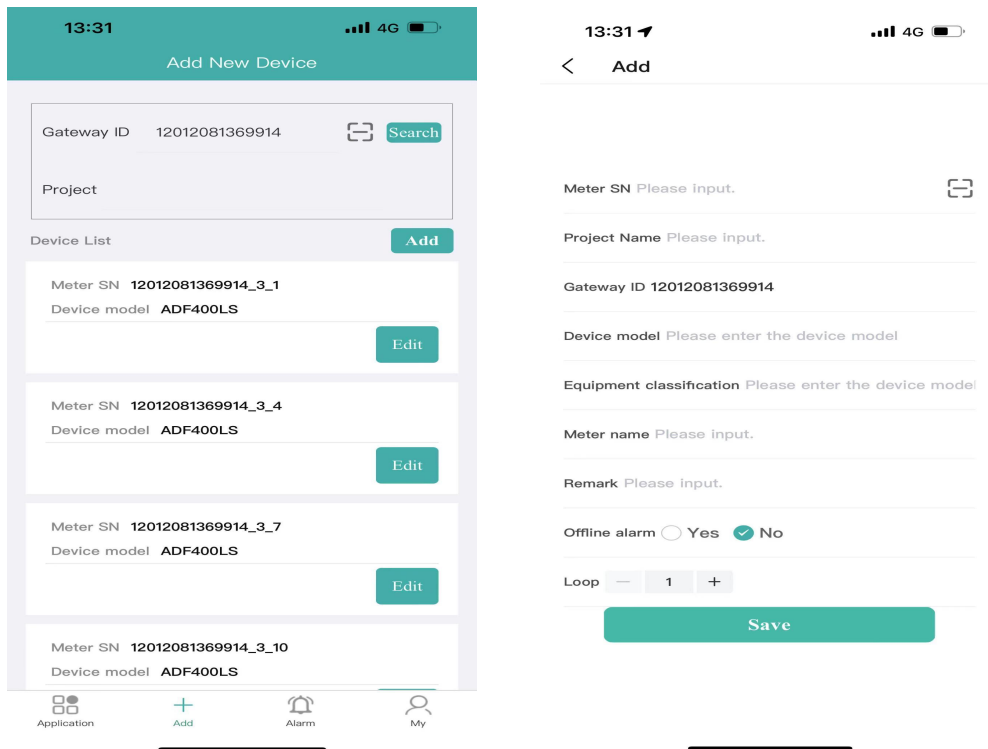


Figure 13-2

## 14. Personal Center

Personal center includes project management, gateway management, meter management, Chinese and English Settings, and version view, as shown in Figure 14-1.

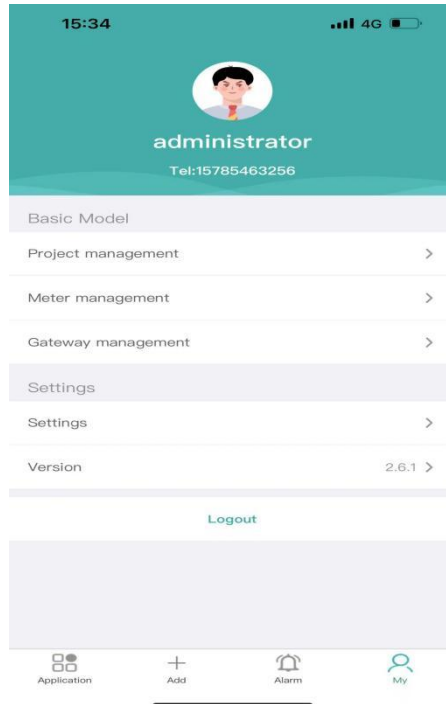


Figure 14-1

## 14.1 Project Management

Project Management page displays all the projects associated with current users. Users can add, modify, and delete the project information, as shown in Figure 14-1-1.

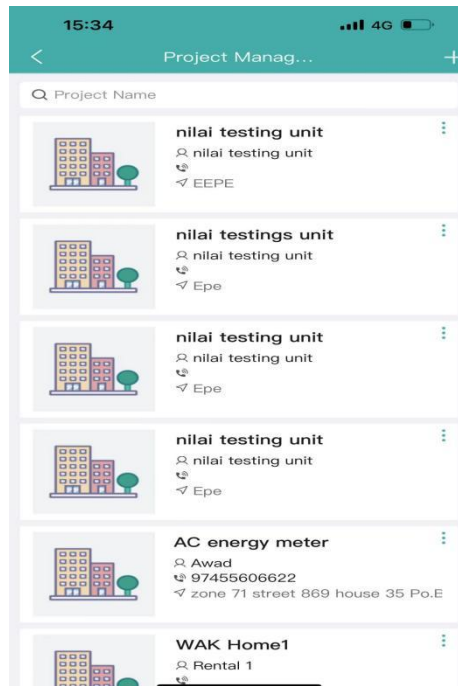


Figure 14-1-1

Click the plus button in the upper right corner to add project information, enter project name,

customer name, administrative area, detailed address, latitude and longitude, select user association, organization. Click Save to create the project. The editing operation method is the same as the new one, as shown in Figure 14-1-2 and 14-1-3.

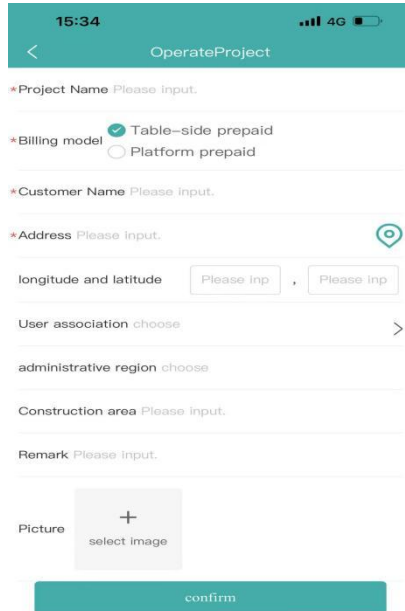


Figure14-1-2

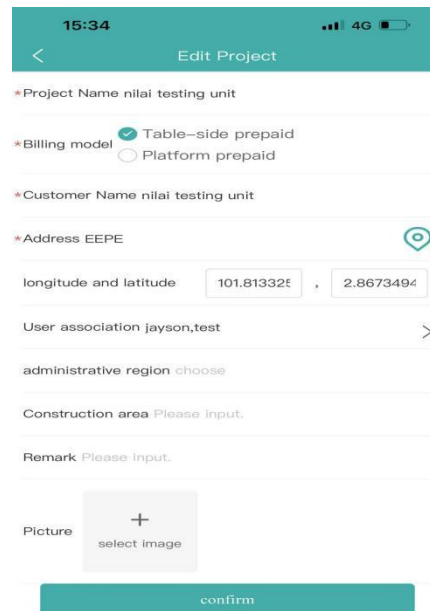


Figure 14-1-3

Click the option button in the upper right corner of the project to edit, delete, set electricity price and water price of the project; Click the setting of electricity price, select whether to re-rate or not, fill in the electricity price, and click Save to use the project re-rate report and energy report to calculate the cost, as shown in Figure 14-1-3.



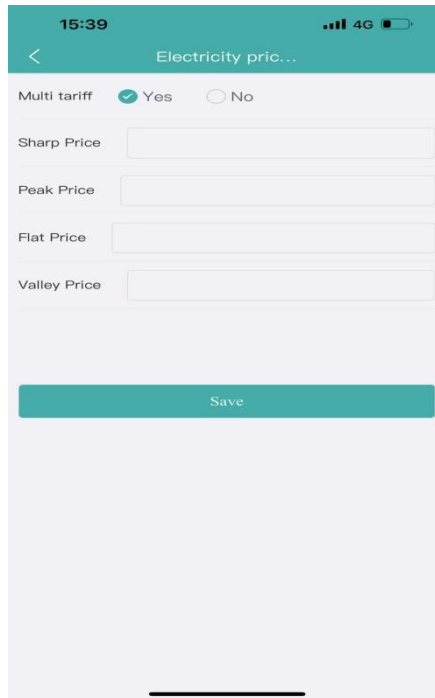


Figure 14-1-3

Click water price setting, enter water price, and click Save to calculate water cost in the energy consumption report of the project. Users can switch the energy item into water in the energy consumption report and view water cost, as shown in Figure 14-1-1.

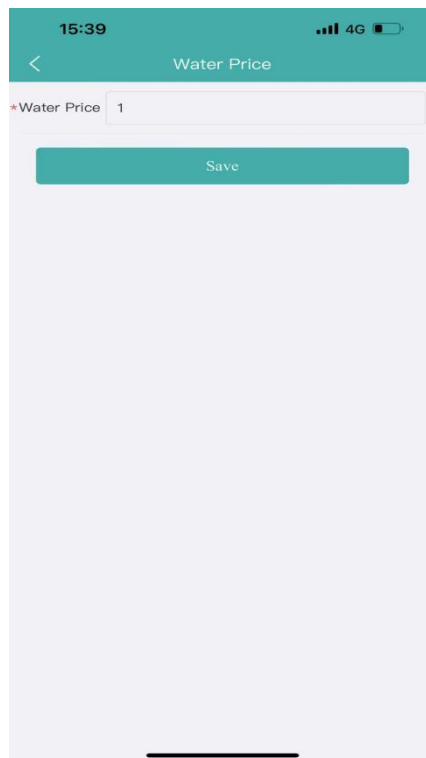


Figure 14-1-4

## 14.2 Gateway Management

Gateway Management page displays all meters information of associated items, including the project name, area location, gateway ID, gateway model, and creation time. Users can query the corresponding gateway based on the ID and gateway model, as shown in Figure 14-2.

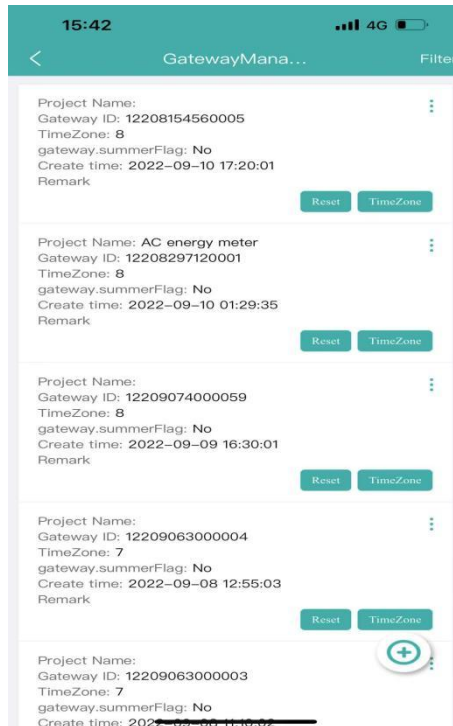


Figure 14-2

Click the “ADD” button to enter the page for adding gateway. Project name, gateway ID, gateway model and heartbeat interval are required. Click “Save” to create the gateway. The edit operations are the same as the additions, as shown in Figures 14-2-1 and 14-2-2.

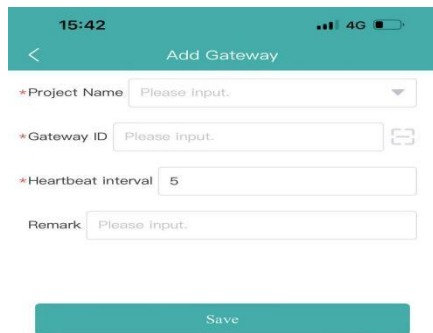


Figure 14-2-1

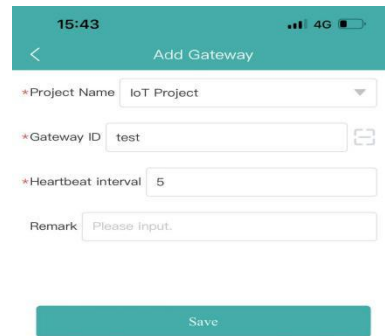


Figure 14-2-2

### 14.3 Meter Management

Meter Management page displays the information of all the electricity meters under the associated project, including the project name, loop name, gateway ID, meter address, meter model, creation time, etc. Users can query the corresponding meter according to the gateway ID and project name. As shown in Figure 14-3.

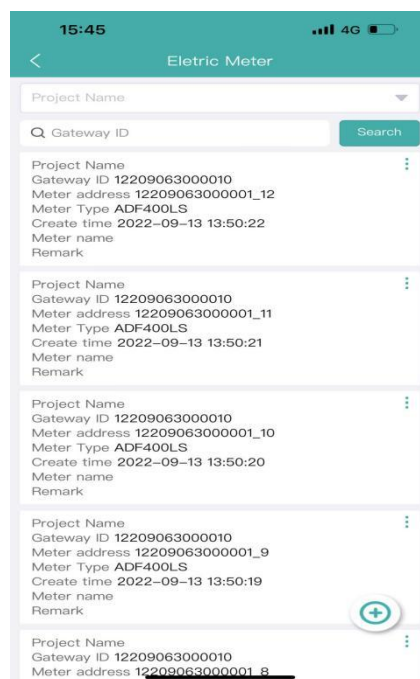
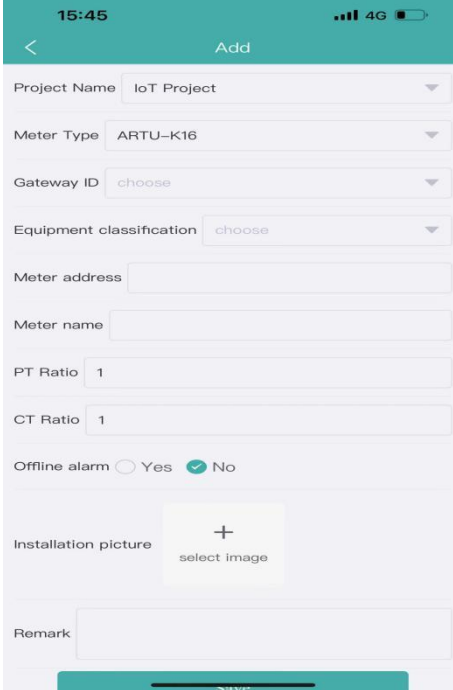


Figure 14-3

Click the "Add" button to enter the page of adding electricity meter, select the project name, gateway identification number and meter model, input the meter address, loop name and current/voltage ratio, and determine whether to alarm offline. Click "Save" to create the meter.

The editing operation method is the same as the new one, as shown in Figure 14-3-1.



The screenshot shows a mobile application interface for adding a new electricity meter. The top bar is teal with a back arrow, the time 15:45, and 4G signal strength. The title 'Add' is centered. The form contains the following fields:

- Project Name: IoT Project (dropdown)
- Meter Type: ARTU-K16 (dropdown)
- Gateway ID: choose (dropdown)
- Equipment classification: choose (dropdown)
- Meter address: (text input)
- Meter name: (text input)
- PT Ratio: 1 (text input)
- CT Ratio: 1 (text input)
- Offline alarm:  Yes  No
- Installation picture:  select image
- Remark: (text input)

A teal 'Save' button is located at the bottom center of the form.

Figure 14-3-1