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F-PLS User Manual

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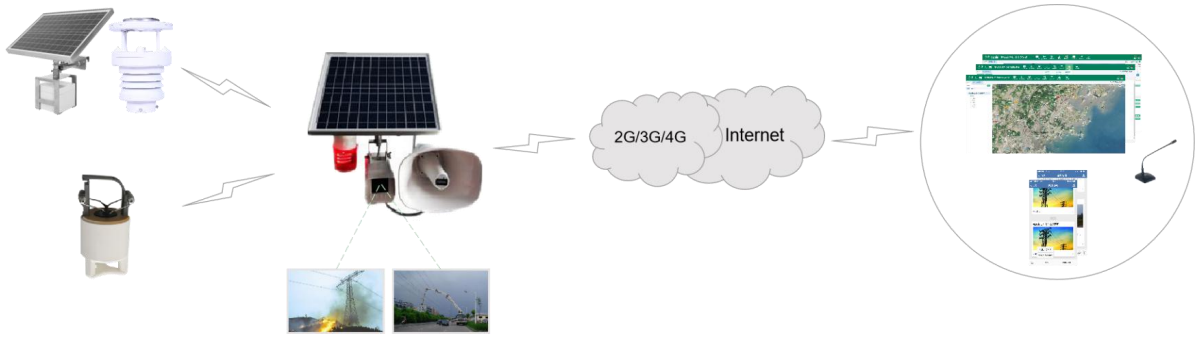
1 Brief Introduction

1.1 Overview

Power line security camera (F-PLS) is used to monitor the overhead power line (including transmission line and distribution line,tower and pole).F-PLS takes photo or short video periodically or manually,prevent the power line from damaging by people,vehicle or some other construction machines,such like theft the power line or equipment,wildfire,tower crane,excavator,especially in the construction site or the road which power line across.

F-PLS is a special camera which integrate with solar panel and battery inside. it also has 2G/3G/4 G communication, GPS positioning, 433MHz access, image recognition, line temperature measure ment, environmental monitoring, voice broadcast and other functions.

F-PLS is an important part of power line monitoring system. Adopting technologies of image acqu isition, data calculation, remote control, it provides an intelligent and visible real-time status monit oring solution for power line and power equipment.



Pic 1-1 system diagram

1.2 Feature

1.2.1 Industrial Application Design

- High performance 64 bit processor
- Stainless steel support
- IP67 protection
- “Solar energy + battery+ super capacitor” multi power source design

1.2.2 Reliability

- Re-transmission mechanism, data not easy lost
- Photo priority and video assistant, high on-line rate and low communication failure
- Support 30 days continuous working without light
- 8 year life span
- 30000 hours MTBF

- 2G/3G/4G antenna, GPS antenna, WIFI antenna, 433MHz antenna embedded
- SIM card embedded

1.2.3 Easy to use

- Support National Grid online monitoring standard, National Grid encryption, Southern Grid online monitoring standard
- Compliant with transmission line photo/video specification standard
- Small size, light weight, compact structure
- Easy installation within 10 minutes
- Mounting bracket can be adjusted horizontally 360 degree and vertically 90 degree
- Support access to sound and light, temperature, meteorological module

1.2.4 Function

Item	Content	
	F-PLS100	F-PLS110
Timed photo	support	
Timed video	support	
Remote manual photo	support	
Remote manual video	support	
Real time video	Not support	support
Sound and light function	support	
Remote Shout Function	support	
Platform control function	support	
Zoom function	Not support	support
Night shot function	Not support	support
Intelligent analyse function	Not support	support
Micro Meteorology access function	support	
Line temperature measuring access function	support	
Auto & Manual working mode function	support	
Near field debug function	support	

Table1-Function

1.3 Specification

1.3.1 Basic Parameters

Item		Content	
		F-PLS100	F-PLS110
High definition lens		8 Mega pixel, max 2100 Mega pixel optional	8 Mega pixel, max 2400 Mega pixel optional
Low light lens		/	2 Mega pixel, min light 0.001Lux
Zoom lens		/	20 times
Down view lens		/	Support high definition, low light lens
Tripod head		256 preset positions, 360° horizontally, 110° vertically	
Sound light Shout		200 m visible to light and hear sound	
Micro Meteorology	2 factors	wind direction, wind speed	
	5 factors	wind direction, wind speed, air pressure, temperature, humidity	
	6 factors	wind direction, wind speed, air pressure, temperature, humidity, rainfall	
Line temperature measurement		Range -40~+290℃, accuracy ±1℃，minimum start current 20A，Non-closed CT take power, current capture each 1 min	
Adjusted angle		Horizon 360°，vertical 90°	
Power supply		Solar energy + Lithium iron phosphate battery + Super capacitor	
Solar panel		12W	40W
Battery		Embedded 10Ah	Embedded 20Ah
Life time		10 pictures each day. Support 30 days working without light	50 pictures each day, support 30 days working without light. 1 hour video each day, support 30 days working without light.
Network Standard		All network supported	
Life span		Above 8 years	

Table 2- Basic Parameters

1.3.2 Physical Feature

Item	Content	
	F-PLS100	F-PLS110
Weight	≤5kg	≤15kg
Structure	Solar panel and main machine integrated design	
IP level	IP67	

Table 3-Physical Feature

1.3.3 Environment Parameter

Item	Content
Working temperature	-25～+70℃
Storage temperature	-40～+85℃
Relative Humidity	0~100%RH (No condensation)

Table 4-Environment Parameter

2 Installation

2.1 Overview

The equipment must be installed correctly to achieve the designed function, usually the equipment must be installed under the guidance of qualified engineers recognized by the company.

2.2 Package List

For a safe transportation, the equipment usually needs a reasonable packing. Please take good care of the packaging materials when you unfold the box, so that it can be used in future transportation.The unpacking list is as follows:

Items	Details	
	F-PLS100	F-PLS110
Camera and solar panel Integrated Device	1 Set	1 Set
Pan-and-tilt camera Integrated Device	(Optional) 1set	(Optional) 1set
Loud-speaker	(Optional) 1set	(Optional) 1set
Micro-weather sensor	(Optional) 1set	(Optional) 1set
Battery and solar panel integrated Device	(Optional) 1set	(Optional) 1set
Wire temperature sensor	(Optional) 1set	(Optional) 1set
Installation Instruction	1 Volume	1 Volume
Warranty Card	1 Volume	1 Volume
Certificate of Qualification	1 Volume	1 Volume

Table 5- Equipment List

2.3 Tower or Pole Installation

2.3.1 Tool

- Adjustable spanner： 1 set
- Slot type screwdriver： 1 set

2.3.2 Installation Angle and Height

- Camera direction: should be installed horizontal or downward, but not upward direction. Hidden area (such as construction site, accumulation, pond, fire, etc.) around the line/tower should be in the center of the image.
- Solar panel: solar panel should be installed at SBW 10 °, without shelter, mainly toward the south.
- Installation height: Camera installed at the lowest point of the wire sag is with the best

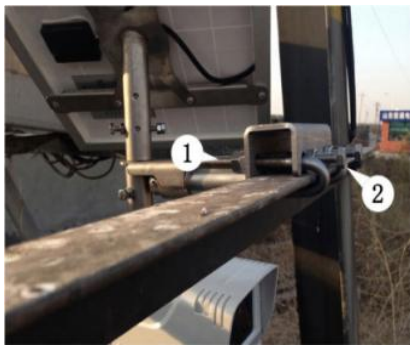
shooting Angle, as far as possible to install on high to prevent theft, try to apply the cross-brace installation.

2.3.3 Installation Process

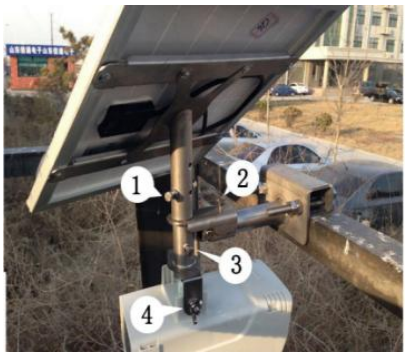
Pic :2 -1

Pic:2-2

- Remove the package.then pull out the solar panel cable and fix it to panel side (hide it in panel backside and fix it by plugging it to the panel edge), Finally, lock the No.1 and No.2 screws.
- Turn on the power switch and observe and check the red light, if it is blinking normally, it means normal operation.
- Preset the direction of solar panel and camera according to the shooting area and suspension direction, and pre-install the device. Configure the WeChat account of on-site debugging person and input related equipment on the platform. Then find the line to be installed, and test the automatic take photo function.



Pic:2 -3



Pic:2-4

- Hook the angle iron with two screw hooks and lock it with a screw head. As per photo 2-3.
- After adjusting the solar panel and camera angle, tighten screws No.1,2,3 and 4.as per photo 2-4.

Note：

Screw 1: adjust the horizontal angle of the solar panel

Screw 2: adjust the levelness of the camera

Screw 3: adjust the horizontal direction of the camera

Screw 4: adjust the vertical direction of the camera

3 Platform Software

3.1 Overview

The software and hardware of the platform shall be used together. After the installation of the equipment, users can check the position, pictures, video, sensor data and other information on the platform. Users shall ask for the account number and password from the service staff before logging into the platform initially.

3.2 Add New Equipment

Step 1: Add power lines and tower poles (after adding tower pole, remember to add "monitor point" information).

Pic 3-1

Pic 3-2

Pic 3-3

Step 2: Add SIM card and camera information (after that, it must be installed on the tower, and the installation of temperature measurement module and weather module is with the same steps.)

Pic 3-4

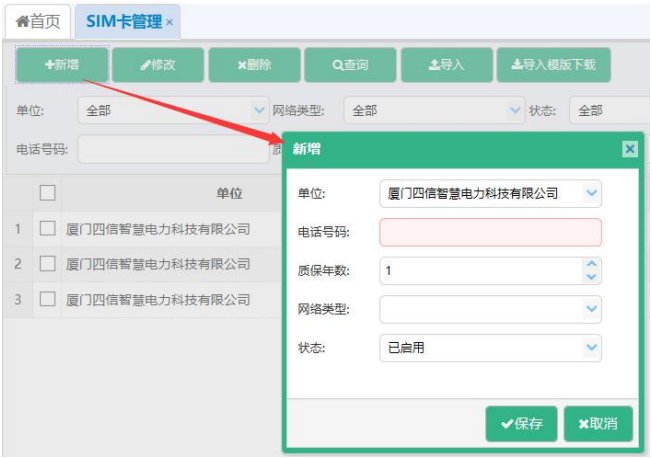


图 3-5

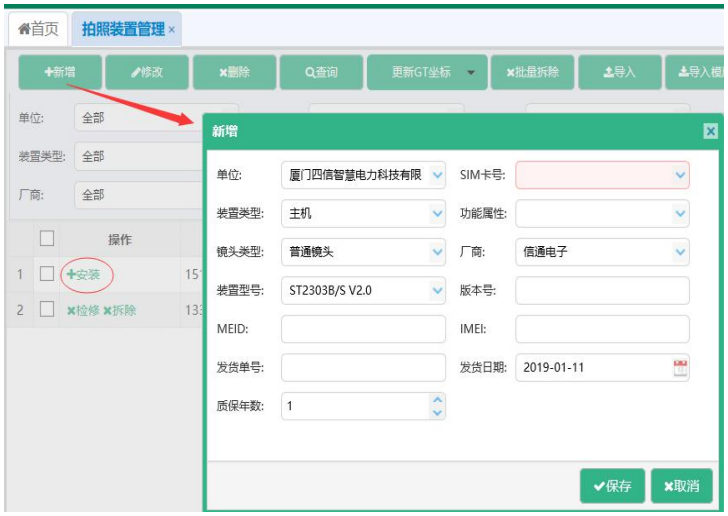


图 3-6

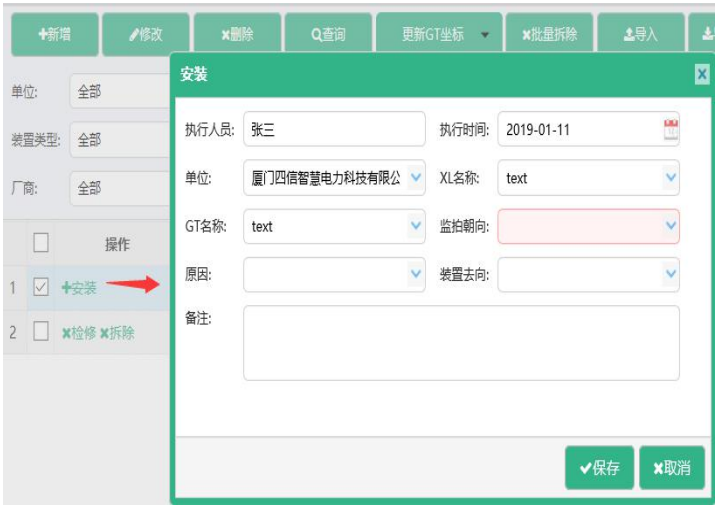
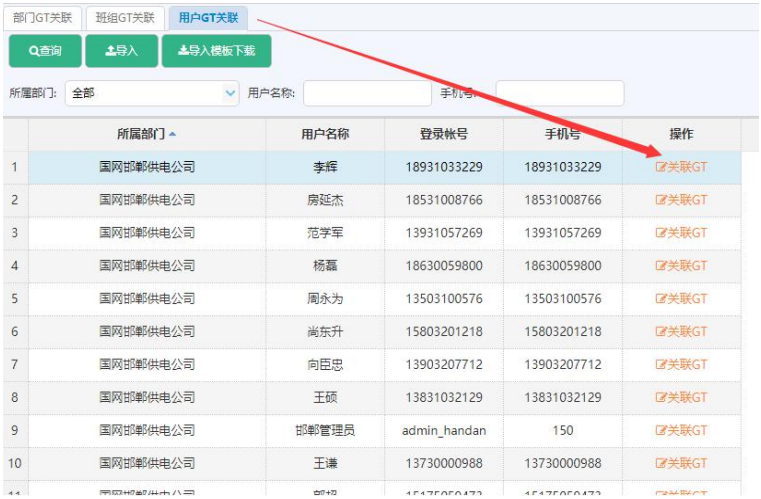


图 3-7

Step 3: Correlate the devices to the group and user as required

Pic 3-8



Pic 3-9

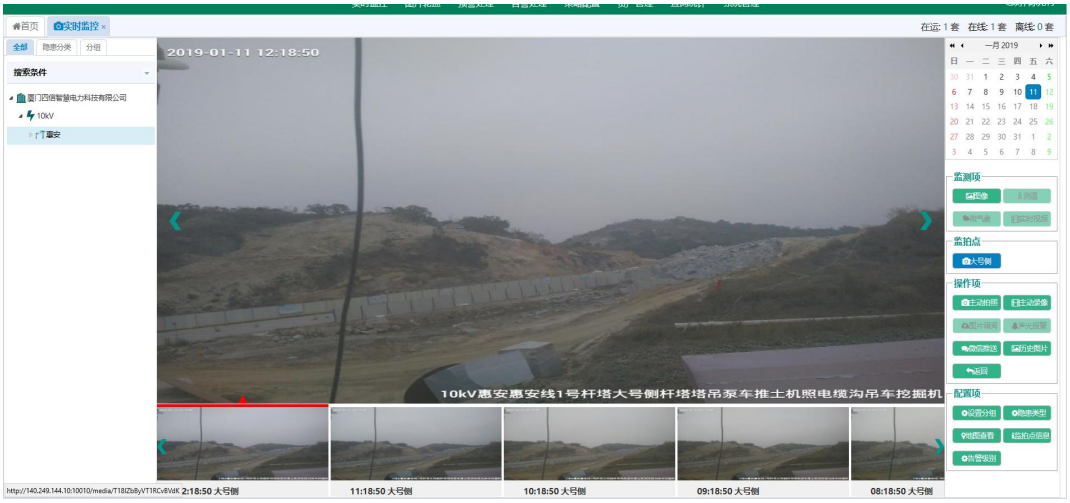
Pic 3-10

3.3 Real-time Monitoring

After adding the device, the data information of the device can be viewed in the real-time monitoring.

Click "real-time monitoring" and select the device to view to see all pictures of the device, click any picture to enter the large picture display and operation page, then historical pictures, temperature data, weather data will be indicated in the picture.and it also can auto-take photos, take auto-record video, view location information, set group and hidden danger types, etc..

Pic 3-11



Pic 3-12

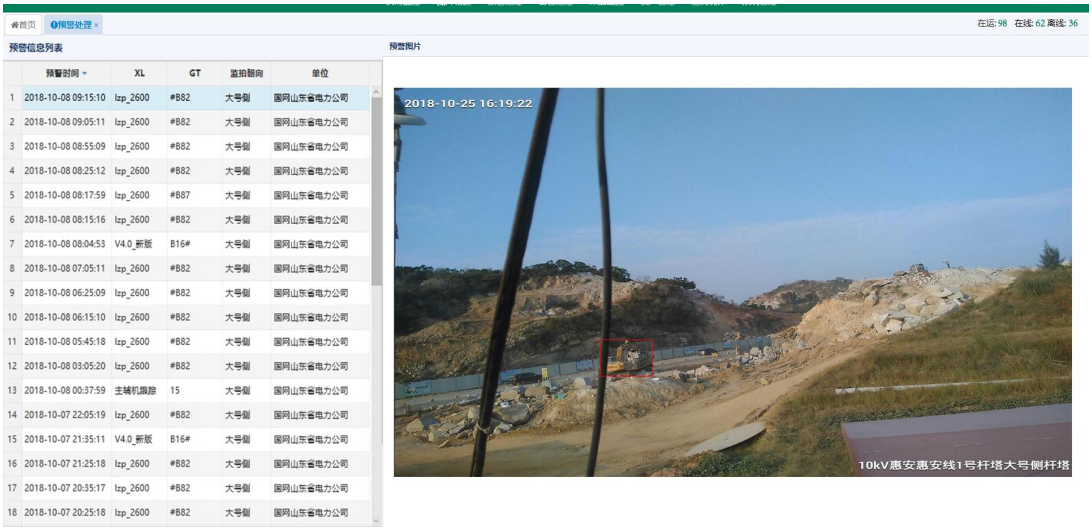
3.4 Photo Rotation

Picture rotation can replace manual view of equipment pictures. Set rotation conditions after entering this page, and then start rotation.

Pic 3-13

3.5 Warning Process

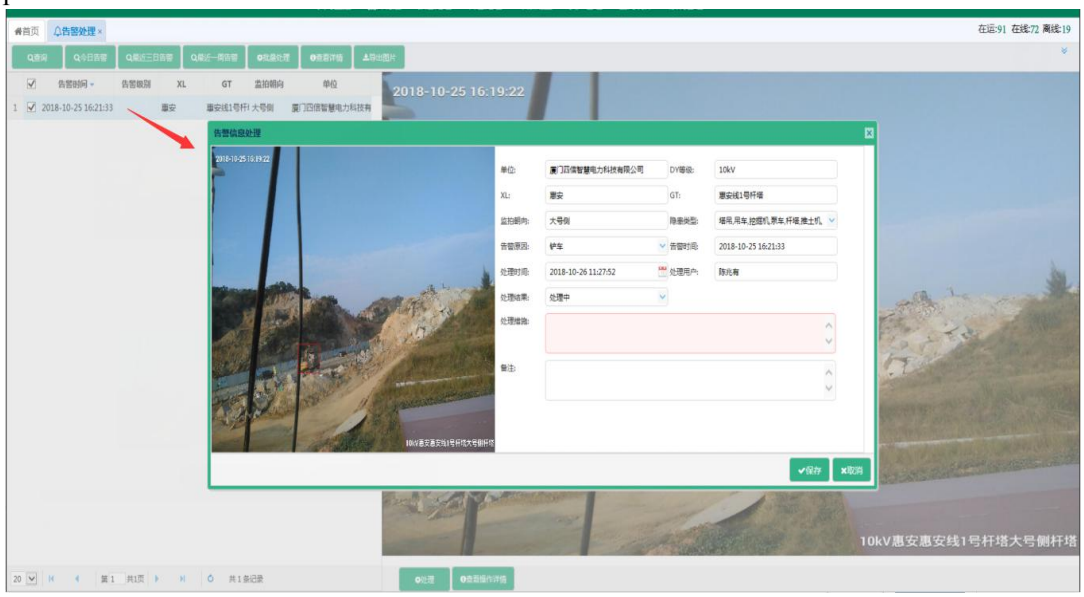
The platform analyzes the pictures and video data reported by the monitoring and photographing device in real time, and displays the hidden trouble pictures in the first time when hidden trouble occurs near the corridor of the line. Users can also conduct corresponding operation for the hidden trouble.



Pic 3-14

3.6 Alarm Process

The platform analyzes the pictures and video data reported by the monitoring and photographing device in real time, and displays the hidden trouble pictures in the first time when hidden trouble occurs near the corridor of the line. Users can also conduct corresponding operation for the hidden trouble.

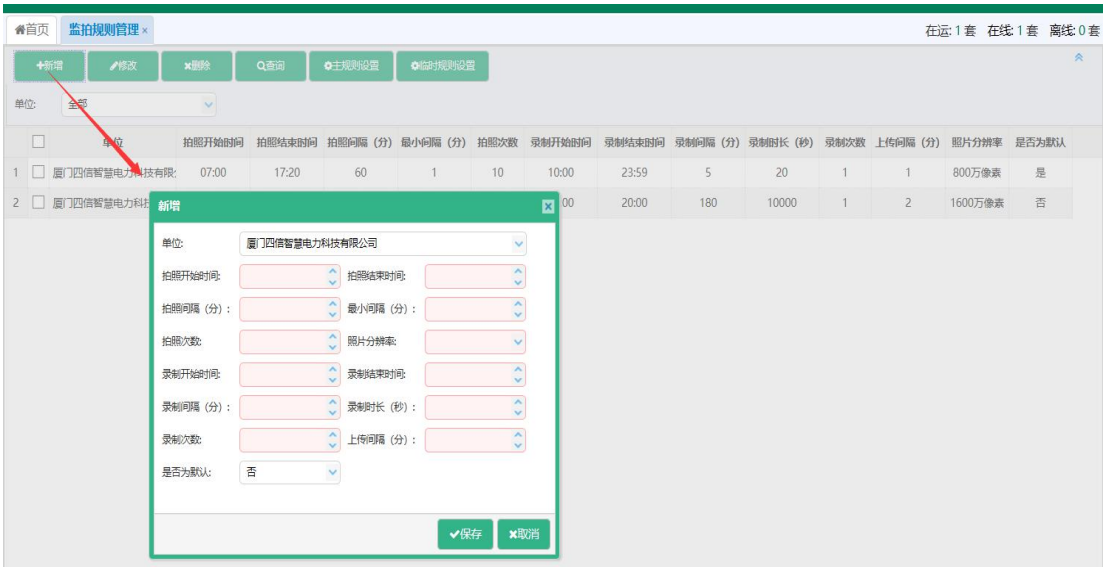


Pic 3-15

3.7 Configuration Policy

The platform can set the rules of taking photos, temperature alarm, micro weather alarm, etc. Since the device is in a dormant state when it is not in working status, it takes a certain time to take effect after parameter setting.

图 3-16



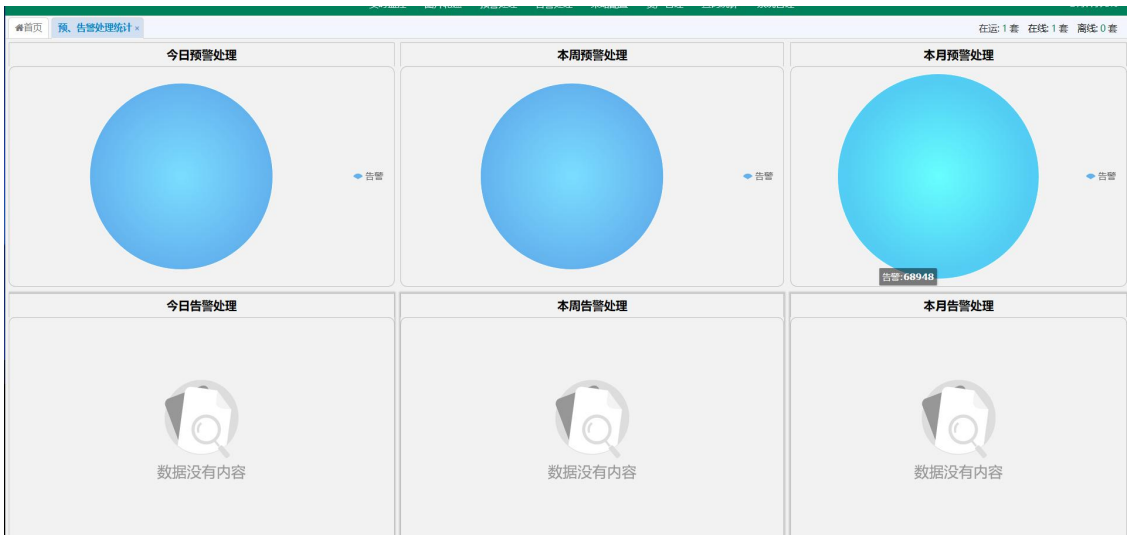
Pic 3-17

Pic 3-18

3.8 Statistics

The platform carries out automatic statistics on warning and alarm, operation status and device information, and the corresponding statistical information can be viewed through the statistics interface.

Pic 3-19

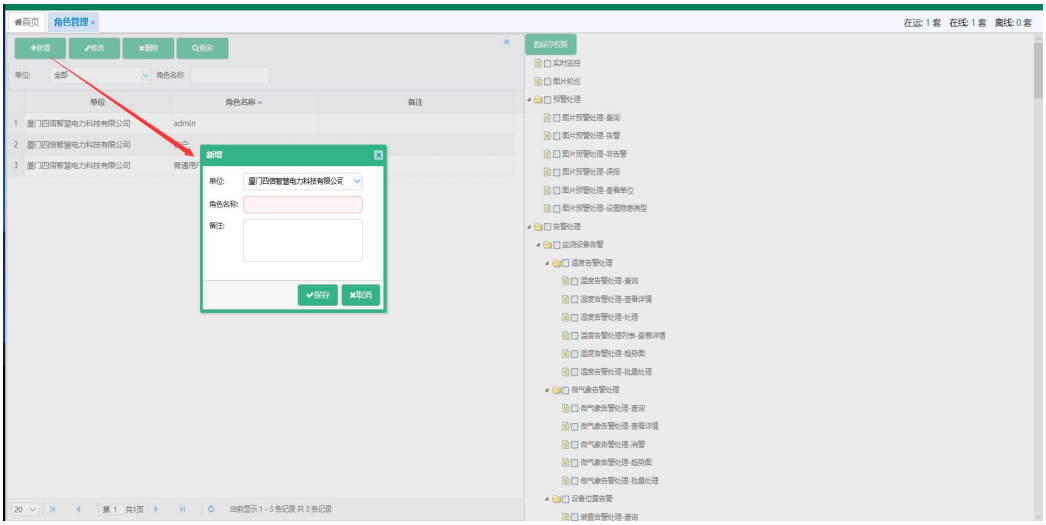


Pic 3-20

3.9System Management

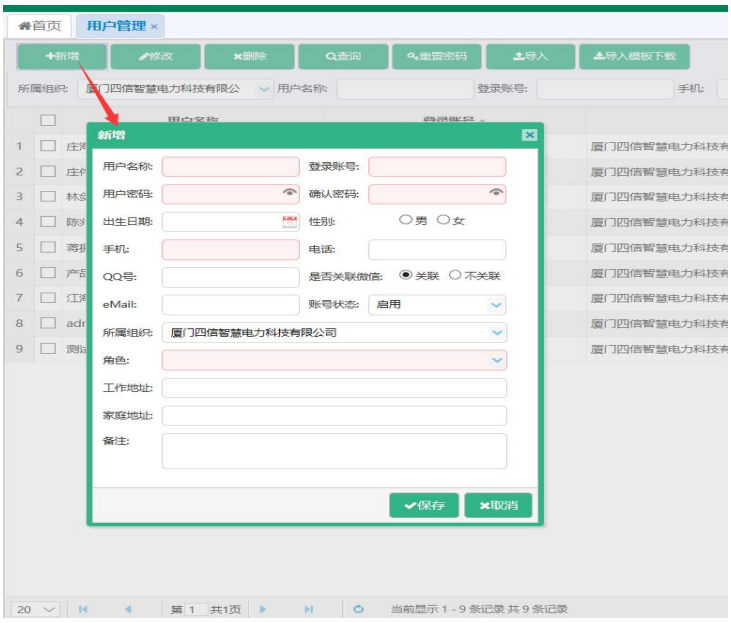
The platform supports the management of gourps, roles, users, and organizational parameters (not all users have this capability, depending on the level of the account).

Pic 3-21



Pic 3-22

Pic 3-23



Pic 3-24

4 Wechat Function

Real-time Photo Delivery: every photo taken by the device is immediately delivered to the user, which can be turned on or off in the Settings.

Pic 4-1

Pic 4-2

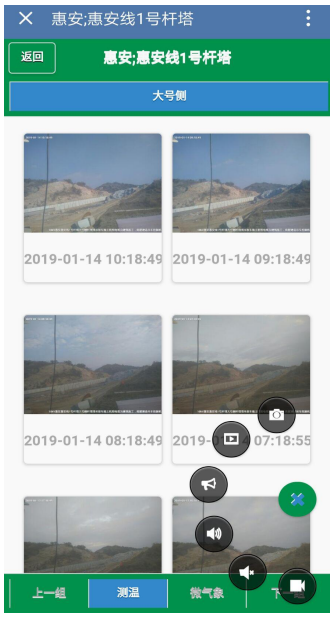
Deliver Alarm: the platform automatically identifies hidden dangers and deliver them to users.

Pic 4-3

Power Line Circuit inspection: automatic inspection on the latest photos of all equipment.

Pic 4-4

Take photo and record video actively, historical data and acousto-lighting control: the device can be remotely controlled and the historical data can be checked through this function



Pic 4-5