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Over-head line monitoring terminal User Manual



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Appendix 1: Instructions of Field Debugging and Installation for JYW-FF-HD Data Concentrator (Overhead Sub-Station)

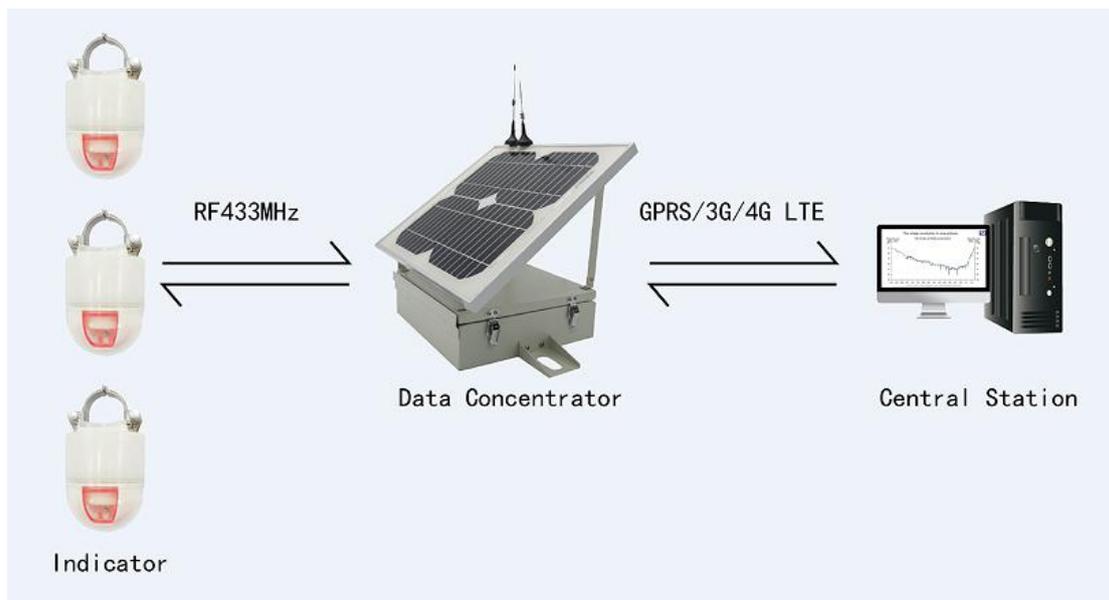
Appendix 2: Installation Label of JYW-FF-HD Data Concentrator (Overhead Sub-Station)

Chapter 1 Brief Introduction of Product

1.1 General

JYZ-FF fault indicator monitoring terminal is a data acquisition and communication terminal device of fault detection and FLS distribution network system. It usually installed on the outdoor overhead line.

The device can collect the fault information and switch state information, analysis, and compile, and then transmit the information to the distribution network master station by GSM/GPRS/CDMA, to locate the fault position as quick as possible.



1.2 Features and Benefits

Function

- ◆ Short circuit fault upload: Receiving and upload fault information and fault current
- ◆ Ground fault upload: Receiving and upload fault information and fault current
- ◆ load current: Upload load current value, Timing or out-of-limit upload

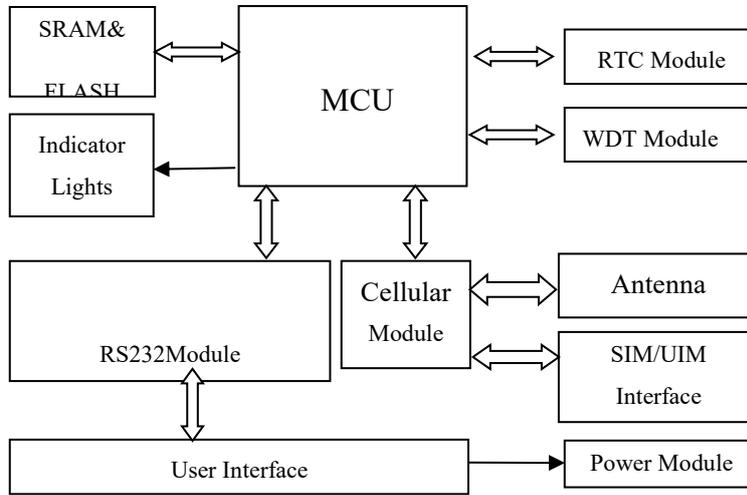
- ◆ Receiving and upload Low battery alarm function
- ◆ Heartbeat function: Timing upload heartbeat information
- ◆ Fault indicator Status measurement: Active measurement switch status and load current.
- ◆ Remote management: Remote management fault indicator, such as parameters, reset etc.
- ◆ Local and remote maintenance: Have local and remote upgrade function
- ◆ Working mode: 2.5G/3G/4G
- ◆ WDT design, to ensure the stability of system

Performance parameter

- ◆ Power supply: DC18V、15VA Solar power, 12V/8Ah rechargeable lithium backup battery
- ◆ Power consumption: less than 0.2VA
- ◆ Max power consumption : less than 5VA
- ◆ SOE: resolution ratio less than 2ms
- ◆ Wireless reception: short range wireless communication
- ◆ Weight: less than 5Kg
- ◆ Outline dimension: $\Phi 355*293*255$ mm
- ◆ Service life: more than 8 years
- ◆ Protection level: IP55
- ◆ Number of reliable action: more than 2000 times
- ◆ Punctuality accuracy: less than 24h/2s
- ◆ MTBF: more than 70000h

1.3 Working Principle

The principle chart of the fault indicator monitoring terminal is as following:



1.4 Specifications

Dimensions	360mm×280mm×70mm
Shell	304 stainless steel+ RAL7305 grey, protection class IP55
Weight	Less than 5Kg
Standard Power	DC18V、15VA Solar power , 12V/8Ah rechargeable lithium backup battery
Standby	less than 0.2W
Data forwarding	2.5G/3G/4G
Working Time under Rainy Weather Conditions	>15 Days
Lithium Battery Service Life	5 Years
Solar panel	PMMA Protection, 30 Years' Service Life
Operating Temperature	-40~+75°C(-40~+167°F)
Storage Temperature	-40~+85°C(-40~+185°F)
Operating Humidity	95% (Non-condensing)

2.3 Installation and Cable Connection

2.3.1 Installation of SIM/UIM card:

1. Power off the device
2. Open the housing
3. Install the SIM card
4. Connect power
5. Close the housing

Warning: Forbid to install SIM/UIM card when powered!

2.3.2 Terminal Installation

6. Before installation: Firstly, discuss with the engineers to see if the time and location meet the operating requirements, and then confirm. After that, prepare the needed devices. The sub-station can not be fixed by the hoop in some places, but the No. 8 galvanized iron wire instead.
7. Installation. When arrives at the location, the installer need to check and confirm that the power supply of the sub-station is correctly connected; and the connection of GSM (GPRS or CDMA) and RF sucker antenna is stable. Then record the field information in the form (see appendix 1). If there is special circumstance, please explain in the notes. Finally, make sure to lock the door.

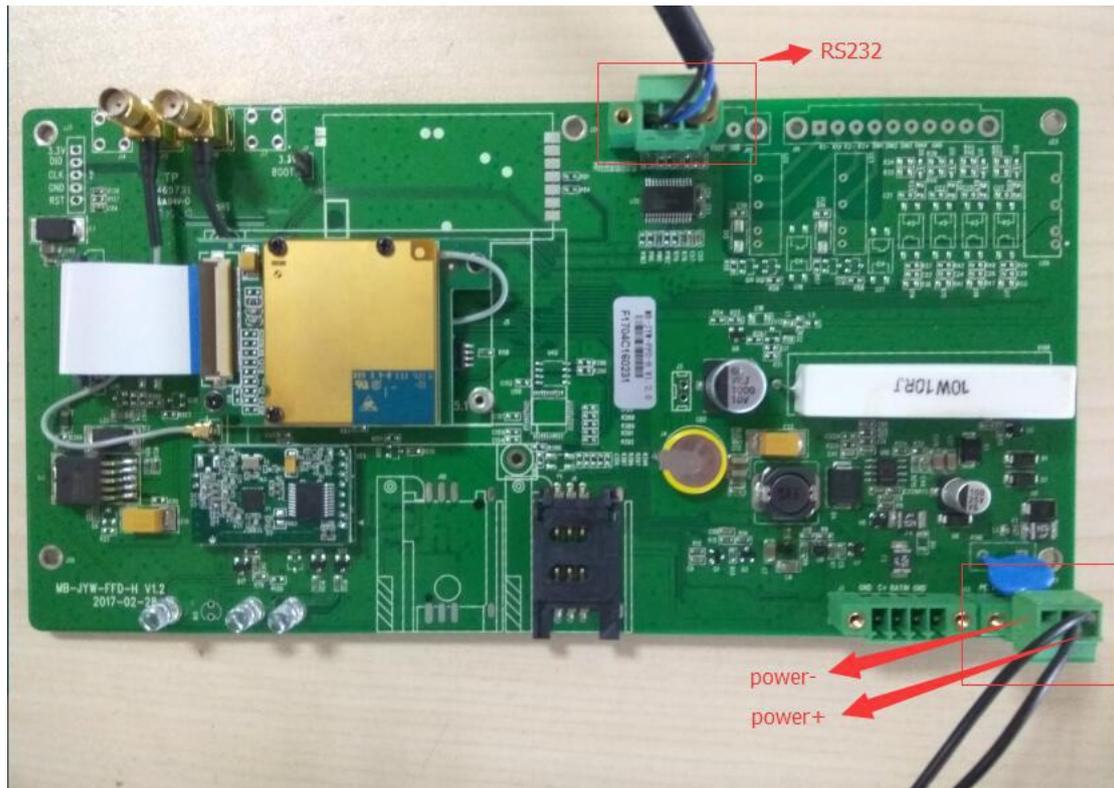
Warning: The solar panel can not be placed towards north, it must be vertically placed and pointing to the fault indicator!

Forbid to stand under the pole when installing.

Chapter 3 Configuration

3.1 Configuration Connection

Before configuration, it's necessary to connect the Over-head line monitoring terminal with the configure PC by the shipped RS232 conversion cable as following:

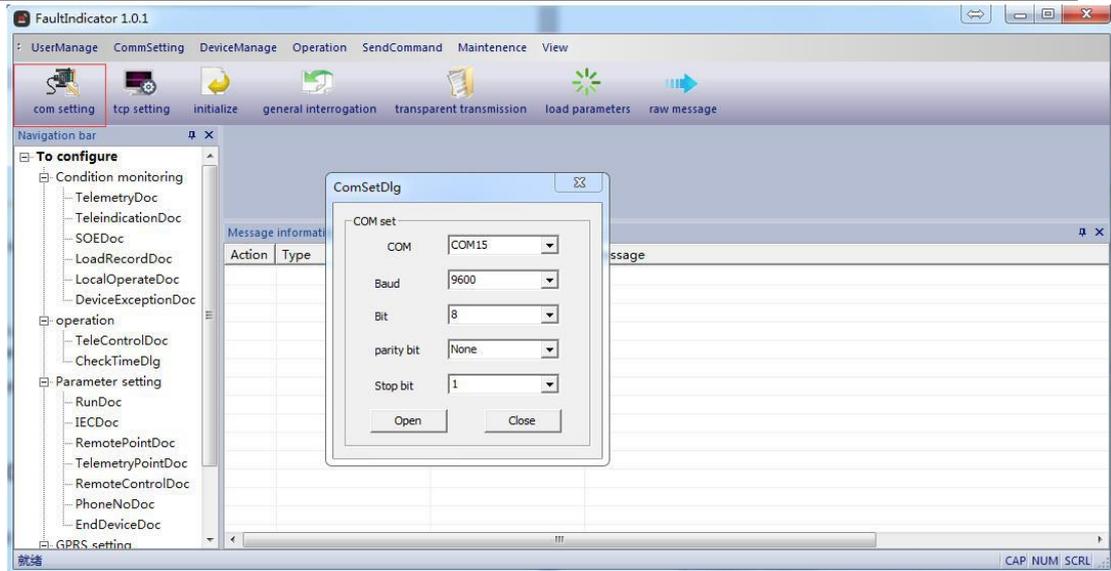


3.2 Configuration Introduction

There are one ways to configure the Over-head line monitoring terminal:

Configuration software tool: All the settings are configured through the shipped software tool. It's necessary to have one PC to run this tool.

3.3 Run the configure Tool: FaultIndicator.exe

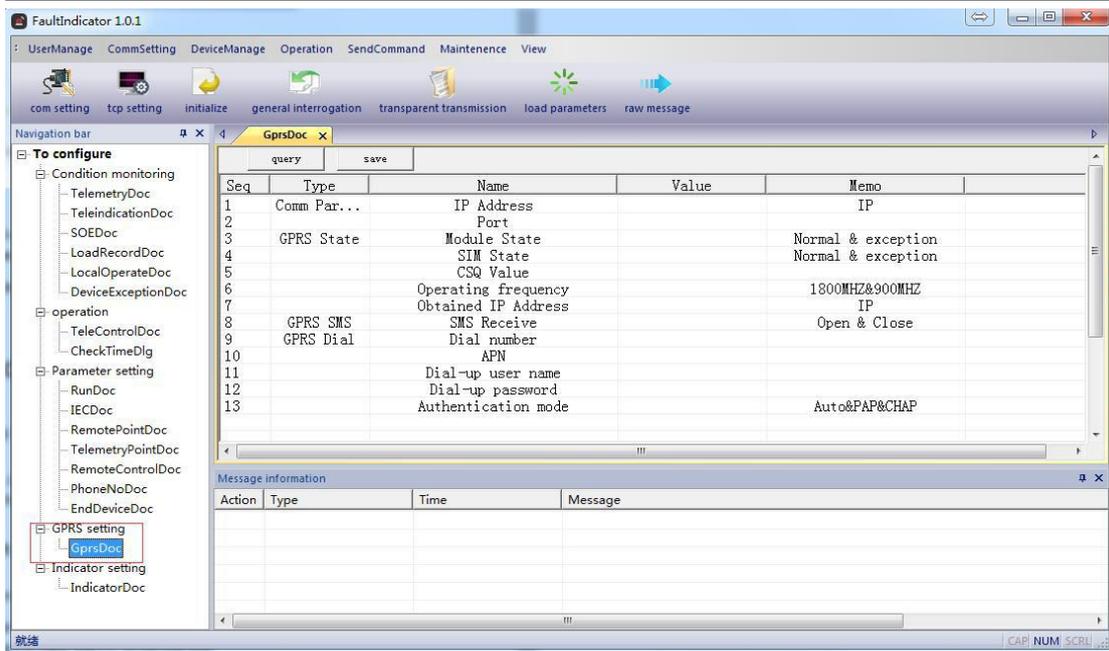


On the serial port setting interface, there will be the parameters of present opened serial port. The default value is **COM1,9600**. If the parameters of the connected data concentrator is not conform with the default value, please select correct value in this configuration and open the serial port. If the button “close the serial port” on the right of serial parameter setting bar can be clicked, that means serial port opened, or please select the correct value in the configuration. When serial port opened, you can click on the initialization on the interface to test the link, if there is a returned message, that means the communication between the configuration tool and the data concentrator is normal. Then user can proceed the following settings.

3.4 Configuration

Before using the configuration tool to set the parameters, click the query button first to read all the data into the tool, so that you can view and modify the data easily.

3.4.1 GPRS Settings



◆ Communication Parameters

In order to make sure the data concentrator is connected to the IP and the port when using the TCP/IP for communication, set the server's IP address and the parameters of the port first.

◆ GPRS Status

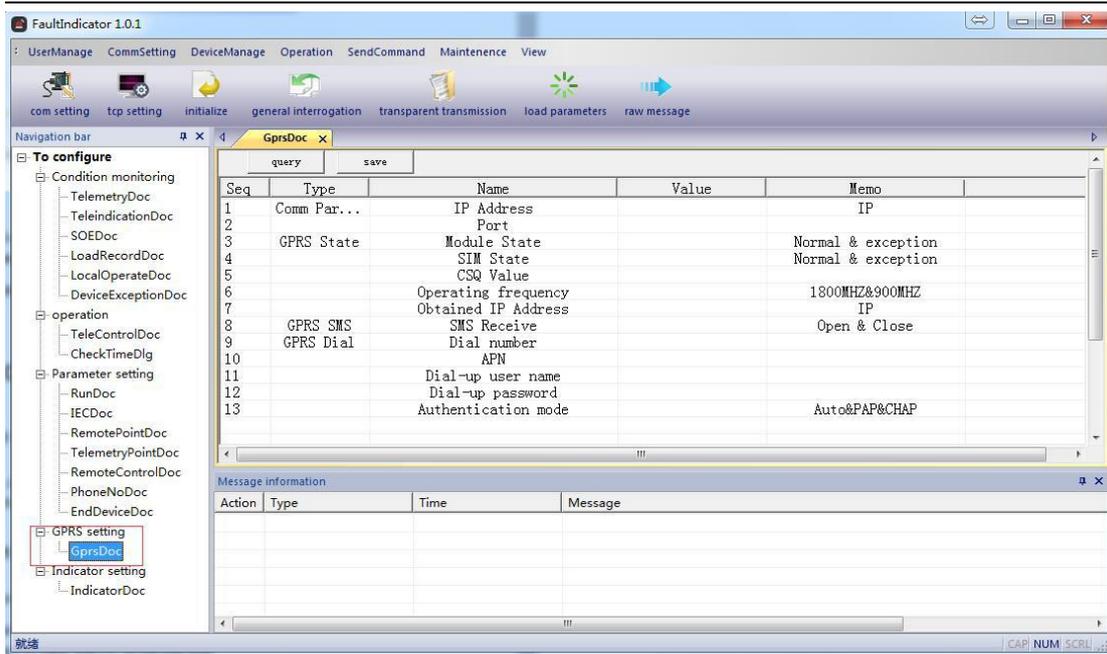
The GPRS status can not be set. It is used to check the module conditions in the data concentrator, SIM card status, CSQ value, operating frequency and the IP address obtained by the card, etc.

◆ Message send via GPRS

It is used to set the receiving of message, “0”means OFF, “1”means ON.

3.4.2 IEC Settings

For different customers' requirements, the user can set the specifications of 101 protocol. After the setting, user need to restart terminal for the setting to take effect. Specific settings are as follows:



◆ The bytes of link address, transmission reason, public address, and information carrier address means the length of corresponding numeric.

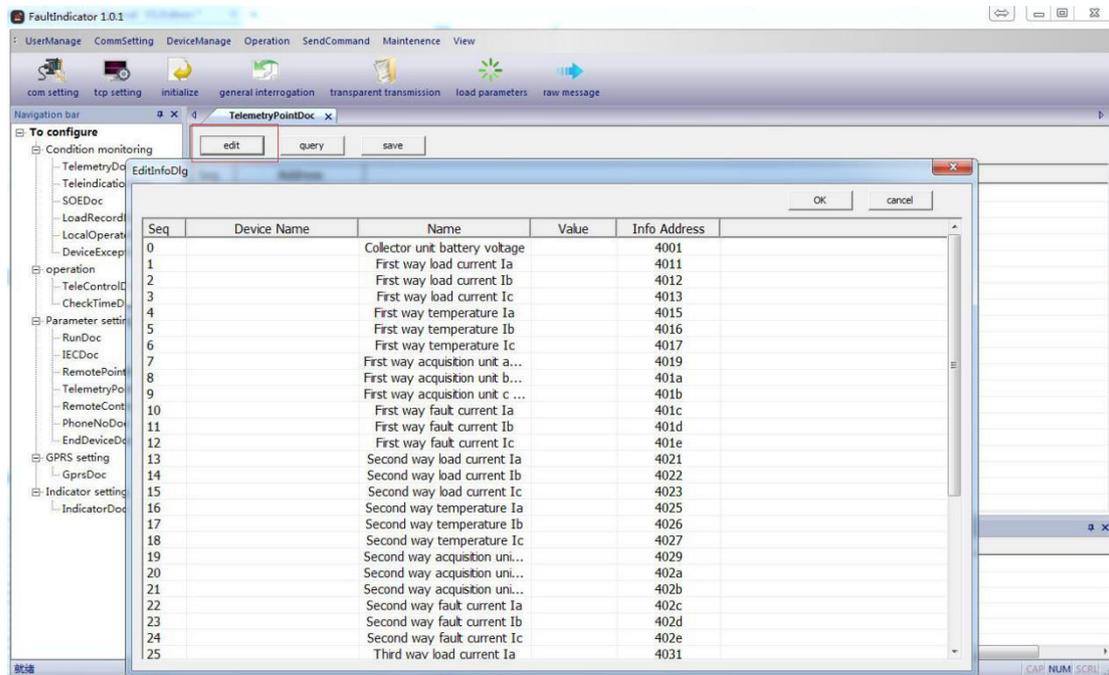
◆ Transmission Mode: equilibrium mode or non-equilibrium mode of 101 protocol.

◆ Automatic Report Mode

Initialization: Before data concentrator and configuration tool communicating with each other, it needs to be initialized or it will show that the server does not start.

When receiving the correct frame or more, the data concentrator can communicate with the configuration tool without initialization.

here are four buttons on the data sheet interface: EDIT, QUERY, SAVE and SET. Following are the introduction of the four buttons' functions.



◆ EDIT

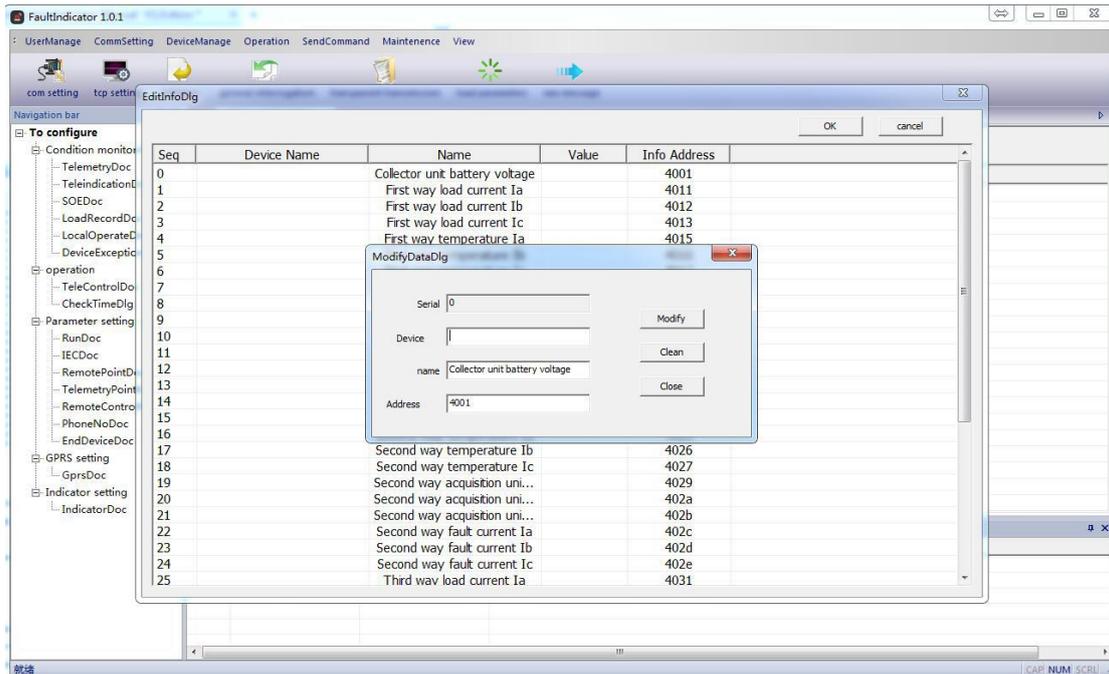
Click EDIT button and pop the above interface, double click the interface then pop the below interface to add and modify the device name, name and address of the under-surveillance object. This operation allows the customer to add the name of data sheet and the under-surveillance object address dynamically without modifying the tool.

Note:The edit only adds the name and under-surveillance object address supported by the data sheet. If customer want to select object information into the data concentrator, it also needs to enter the data sheet setting interface.

◆ QUERY、SAVE、SET

To query the telemetry data sheet that has already been set by the data concentrator.

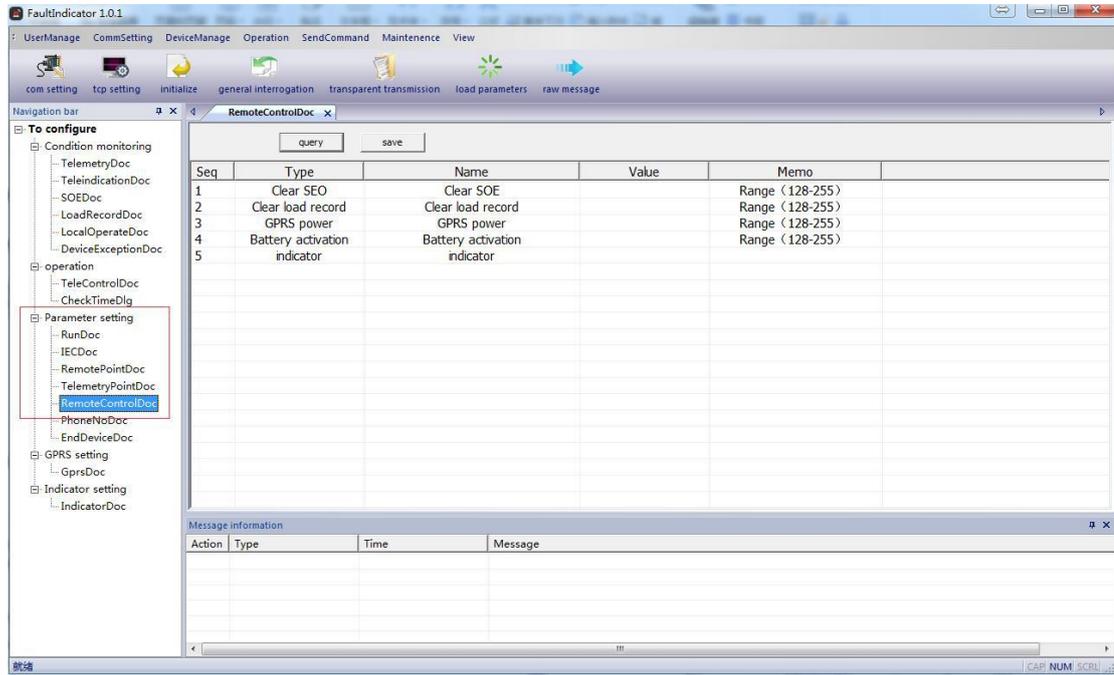
After user finishing setting the data sheet, it can be saved to data concentrator.



The user can select the address of under-surveillance object in the bar of general table, then add to the transmission bar; or select the address of under-surveillance object in the transmission bar and remove. The information of under-surveillance object in the transmission column need to be set into the address of under-surveillance object in the data concentrator. Click OK and go back to the data sheet interface, and then save. If there is returned confirmation message, which means the setting is successful, or it fails.

动作	类型	时间	报文
Tx	写文件	2017-03-28 10:09:36	68 2B 2B 68 F3 02 00 7D 01 0D 00 02 00 00 07 00 01 1C 01 40 11 40 12 40 13 40 15 40 16 40 17 40 19 40 1A 40 1B 40 1C 40 1D 4...
Rx	确认	2017-03-28 10:09:37	10 00 01 00 01 16
Rx	段	2017-03-28 10:09:38	68 2B 2B 68 53 01 00 7D 01 0D 00 02 00 00 07 00 01 1C 01 40 11 40 12 40 13 40 15 40 16 40 17 40 19 40 1A 40 1B 40 1C 40 1D 4...
Tx	确认	2017-03-28 10:09:38	10 80 02 00 82 16

3.4.5 Remote Communication Data Sheet



The settings is the same as the telemetry data sheet.

3.4.6 Operational Parameters

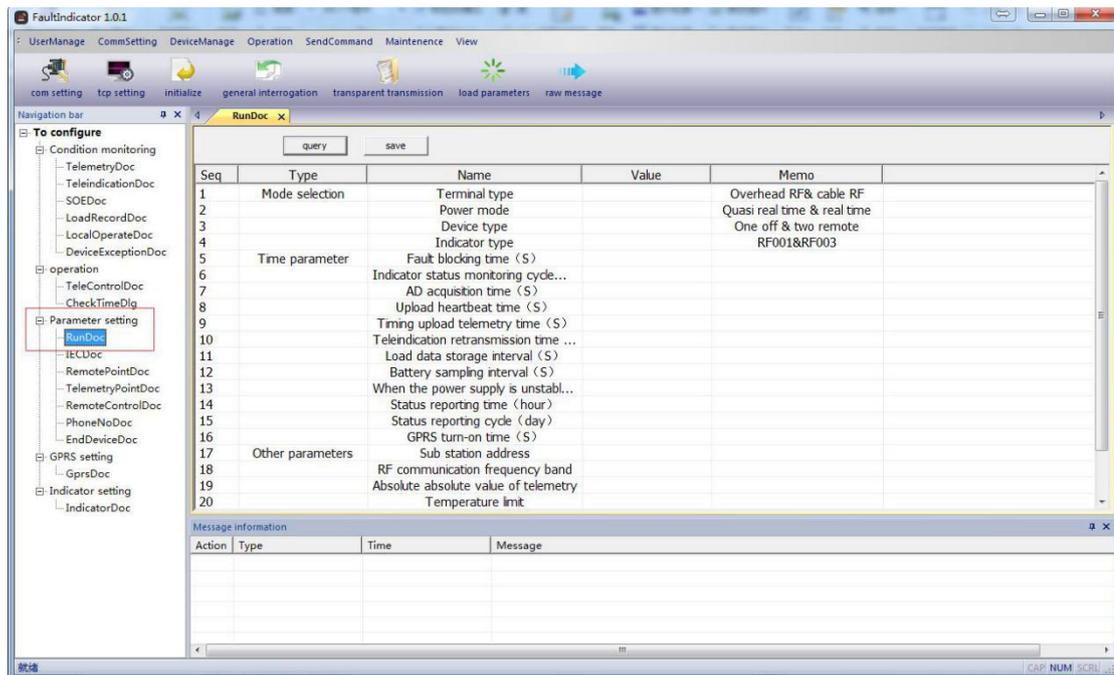
◆ mode selection

Type of Terminal: include overhead RF and underground cable lines RF

Power mode: Real time and quasi-real time. When set to quasi-real time, device do not deal with network tasks.

Type of Device: local fault indicator or remote fault indicator

Type of Indicator: RF001 or RF003



◆ Time Parameter

Fault lockout time: When the fault occurs to the indicator, it will be reported. When the time is out, the fault will be cleared.

Indicator status monitoring period: the communication period between indicator and Concentrator Unit. When the time is out it will report the fault of the indicator.

AD collecting Time: Solar Cell & voltage acquisition interval time

Upload heartbeat time: heartbeat interval time

Load data save time interval: Period of load time& save time.

Battery Sampling time Interval: Collect the time interval when the battery is stable.

Sampling time interval under unstable power: Sampling time interval under unstable power.

Status Report Period, Status Report Time: The time interval of the status report.

GPRS Opening Time: Reserved.

◆ Other Parameters

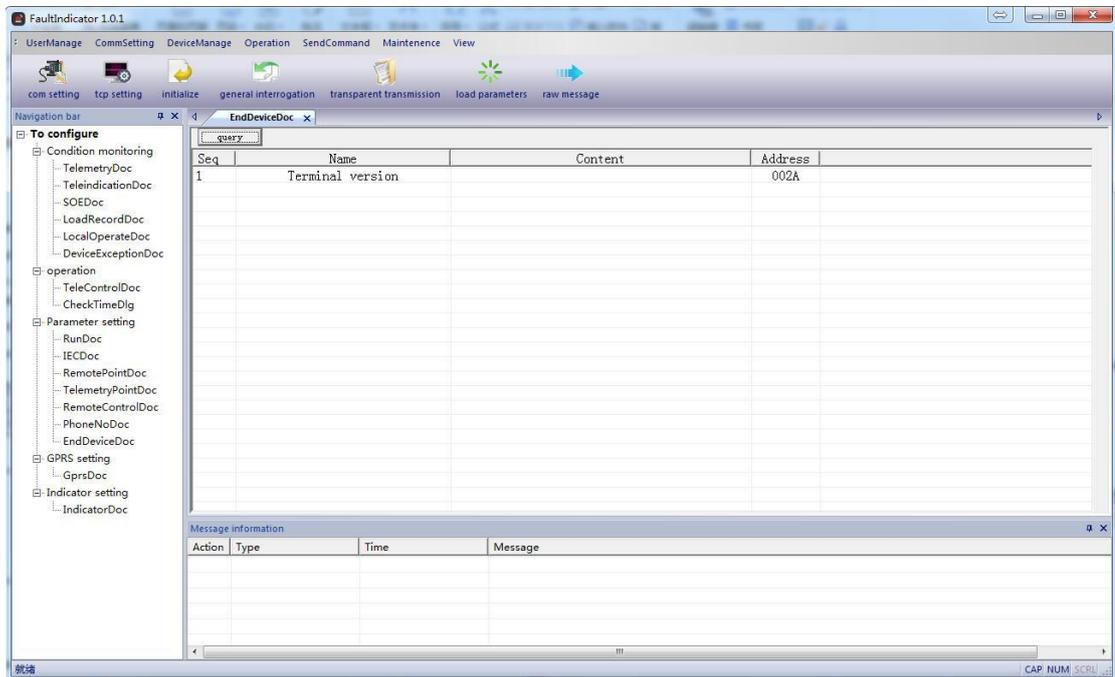
Sub Station Address: sub-station 101 communication protocol address

RF communication Frequency: RF 433 communication Frequency.

Telemetry absolute limit, telemetry relative limit: when the telemetry reaches these two conditions, will upload the telemetry to the server station.

Temperature limit:Reserved.

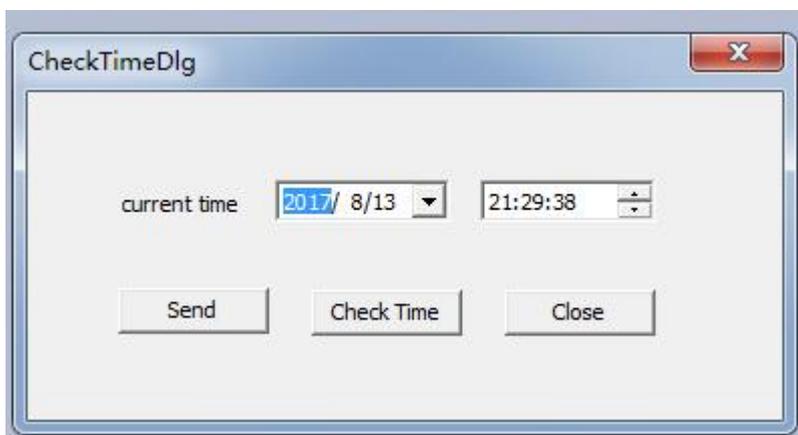
3.4.7 Terminal Parameter



Click on the query to check the the software version number of the Concentrator.

3.5 Operation

3.5.1 Time Revision



◆ Sending

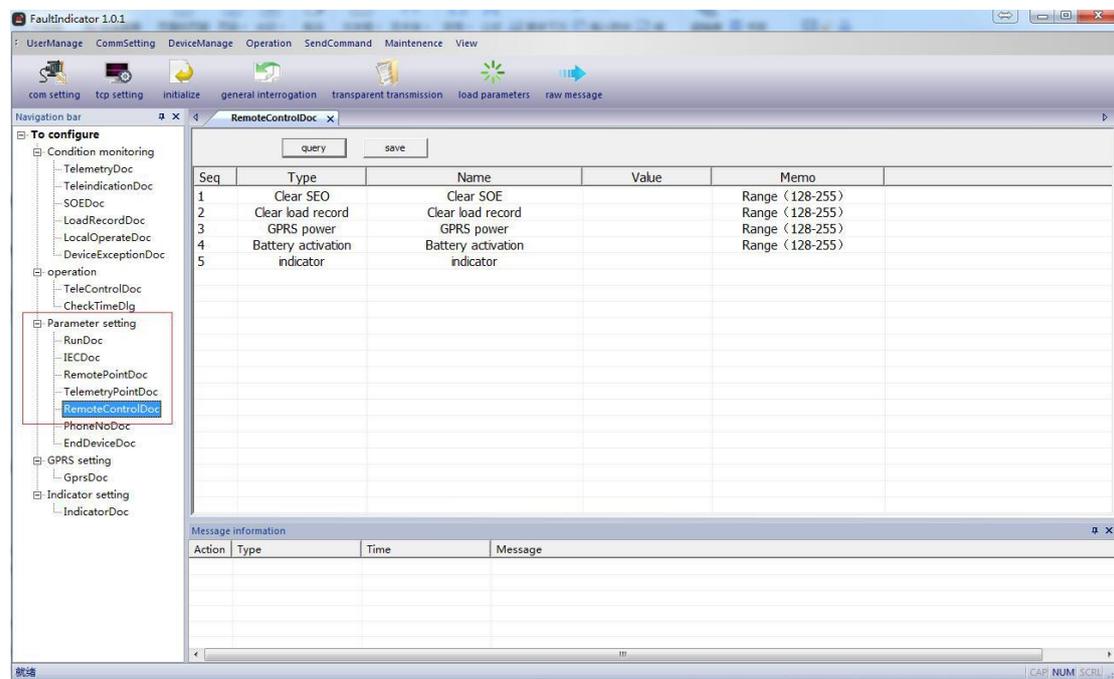
The current time will be sent to the terminal, when the concentrator unit returns to confirm, indicating that the time is sent successfully, otherwise failed.

◆ Time Synchronization

Use tools to obtain the system time and send it to Terminal Unit, when the concentrator unit returns to confirm the frame, indicating that the time is sent successfully, otherwise failed.

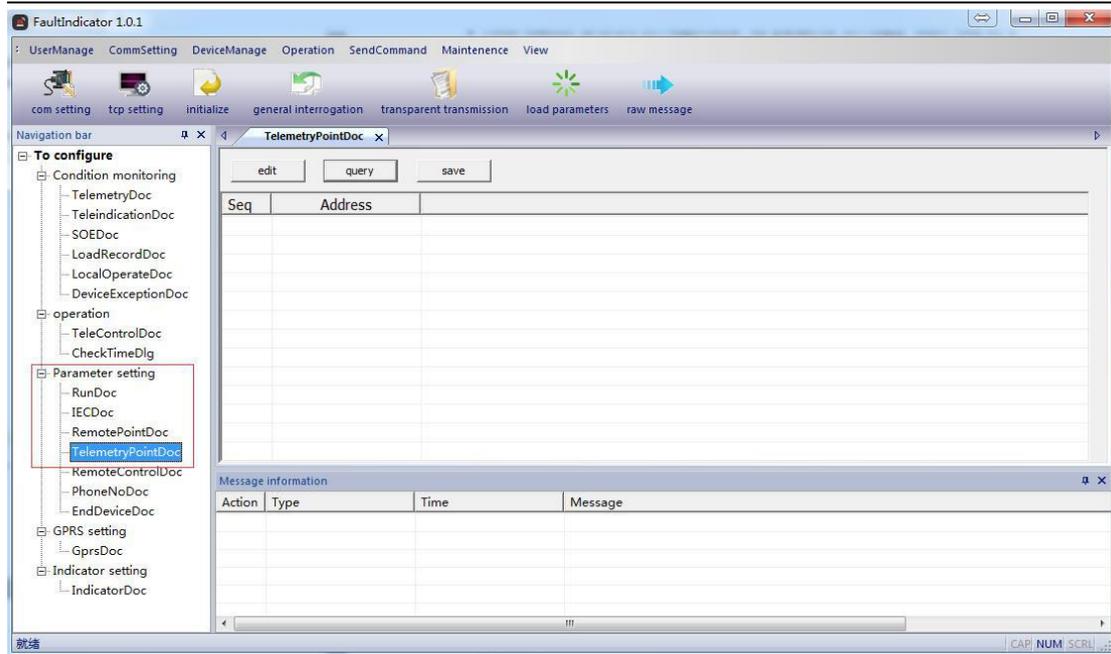
3.5.2

3.5.2 Remote



◆ Remote Operation

Double click the function of the remote control, the following dialog box pops up, and then click Execute to see the message field, the concentrator unit returns to response the remote command, indicating that the remote operation is successful, otherwise failed.

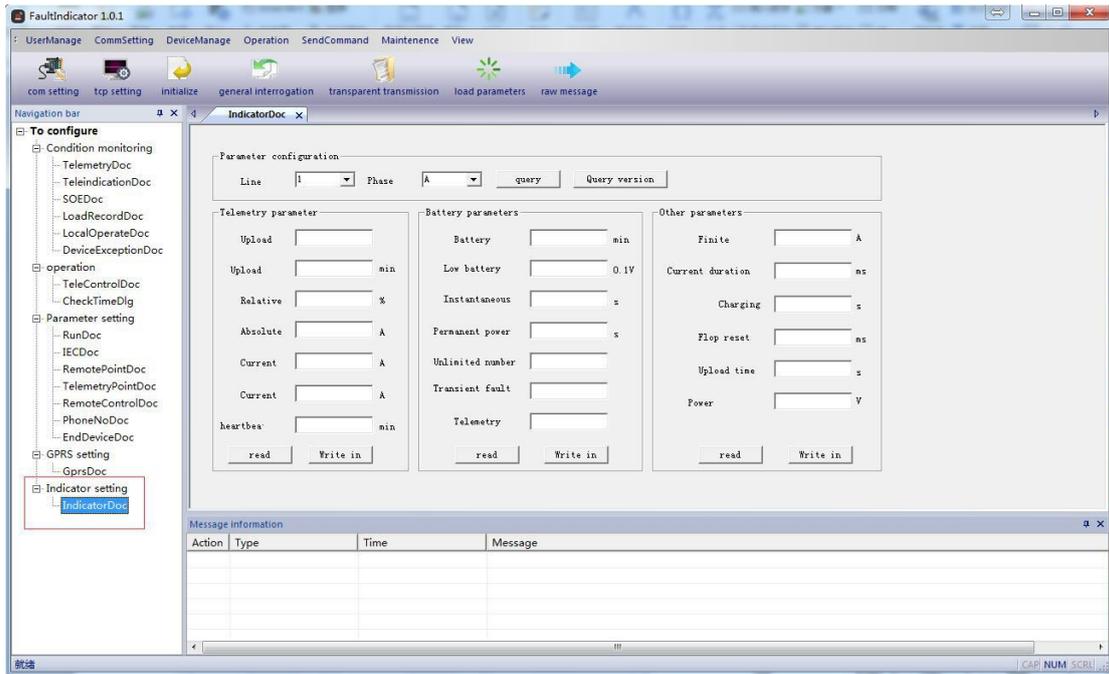


Pic 3.5.2 Remote Control

◆ Remote commands addition and modification

Double click the remote control name, it will pop out a remote control dialog box. The name, remote control command, remote control point number could be modified and information body address in the data operation column; Similarly, you can also add and delete.

3.6 Indicator Parameter Query & Setting



◆ Reading of the Indicator Parameter

Select the line deviation and phase offset, you can specify to read the parameters of an indicator. Click the query in the parameter bar to inquire about the telemetry parameters, battery parameters and other parameters of the indicator.

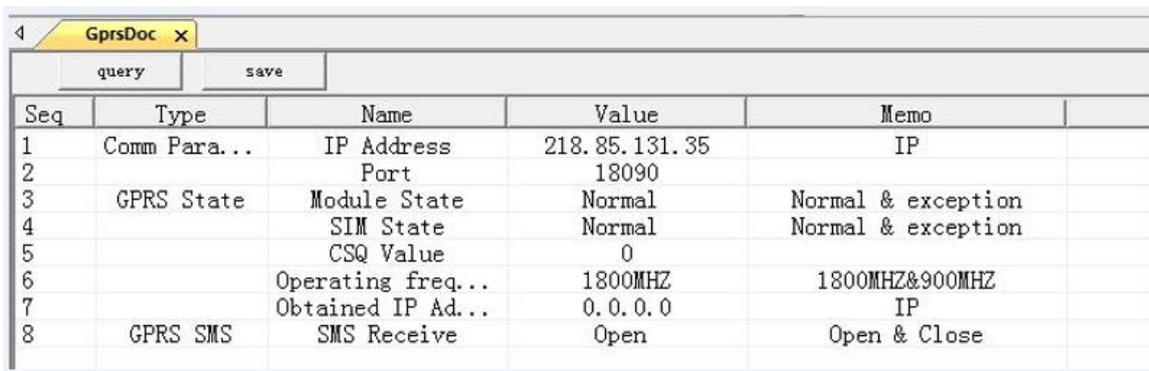
Click on the remote measurement parameter bar to read or write, read or write the telemetry parameters of the read; battery parameters and other parameters are available.

Click the query version number to check version number of the indicator.

4. Environment Test of Data Transmission Test

4.1 Test Steps

1.Run FaultIndicator.exe software on the PC, fill in the corresponding IP and port in the GPRS parameters Setting. Click Save after setting (you can configure it to other ports if needed). Please click the query button before filling in IP and port.



Seq	Type	Name	Value	Memo
1	Comm Para...	IP Address	218.85.131.35	IP
2		Port	18090	
3	GPRS State	Module State	Normal	Normal & exception
4		SIM State	Normal	Normal & exception
5		CSQ Value	0	
6		Operating freq...	1800MHZ	1800MHZ&900MHZ
7		Obtained IP Ad...	0.0.0.0	IP
8	GPRS SMS	SMS Receive	Open	Open & Close

2.Communication is divided into serial and TCP two ways. If you choose the serial port, then select the correct serial port, and open it to test.

If you choose the TCP / IP connection, then follow the steps 1 to set the server's IP address and port, you can restart the terminal unit after your setting and then wait for the terminal to connect to the server. When the terminal is connected to the server, the software will indicate "terminal is connected." You can also observe the terminal by the light, if the communication indicator light is always on, indicating that the terminal has been connected to the server.

5. Appendix

Appendix 1: Concentrator Unit(Overhead Sub Station) Debug Installation Procedures on site

Concentrator Unit

1. Debugging tools

Whole set of toolbox, powerful magnet, test mobile phone, computer, sub station interface software set, multimeter, Phillips screwdriver, needle nose pliers and so on.

2. Debug before installation

2.1 Inventory the goods before installation to ensure that the number of sub-stations and indicators is accurate and the parts are complete.

2.2 measure the voltage of the battery. Before setting the parameters, measure the actual voltage of across the battery to ensure that it is above 12V

2.3 Set the sub-station parameters. Connect the sub-station and the computer with a whole set of a toolbox after the sub-station is powered on. Use the configuration software of sub-station to set the mobile phone numbers and one of the mobile phone numbers should be set to the main station monitoring number of the headquarters.

Commissioning staff on site could use the central station SIM card as a temporary test card and insert it into the portable mobile phone to improve the work efficiency.

After the parameters are set, fill in the information such as the communication terminal number, the center station mobile phone number, the test mobile phone number, the frequency number (channel number) and so on into the blanks of the case.

2.4 Set the point sheet number:

2.5 Format of the Sub-Station Message

The format of the line fault message is:

065 056 001 000 001

Among them:

065 056 is the start of the message

001 000 is the number of the point sheet

001 Displacement information

2.6 disconnect the power terminal, debugging is completed.

3. Test after Installation

Trigger the test tooling after the installation of the sub-station to see whether to receive a fault message within 3 minutes, check the address on the record to confirm if the number of mobile phone is right, if the sub-station receives and sends incorrectly, on site maintenance is needed. If the problem can not be eliminated for a short period of time, record the location and number of the sub-station and continue the installation of other sub-stations. After all the sub-station installation test is completed, take the failure sub-station back to do further examination.

Appendix 2: JYW-FF-HD Installation Record Sheet of Concentrator Unit

Installation Record Sheet of Concentrator Unit					
Terminal model:					
Installation Time			Installation Place		
Installation Person:		Terminal Address:	;	Status Report Interval:(days)	
Main Station Head Address(GPRS exclusive)		Port Number (GPRS exclusive)		Whether support Router	
Main Station Spare Address(GPRS exclusive)		Port Number (GPRS exclusive)		Sub-Station RF001 Wireless Module Group Address:	
Number of the Indicator	Channel Number	Name of the Indicator installation line	Address of the Fault Indicator	Remark	
1					
2					
3					
4					