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JYZ-HW-GSM Fault Indicator User Manual

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1.Overview

JYZ-HW-GSM fault indicator, designed for medium voltage distribution lines, suitable for voltage levels up to 69KV, can detect overcurrent, ground faults, etc. in the line

2.Product appearance

Figure 2-1 Satellite indicator

Figure 2-2 GSM indicator

3.Functions

3.1The function and characteristics of the indicator

The GSM fault indicator is composed of 1 communication indicator and 2 satellite indicators. They send the line status collected by the indicator to SCADA through the 3G/4G communication module of the communication indicator, and send it to SCADA when a fault occurs. , which can quickly notify maintenance personnel and reduce fault detection time.

3.1.1Fault detection and indication

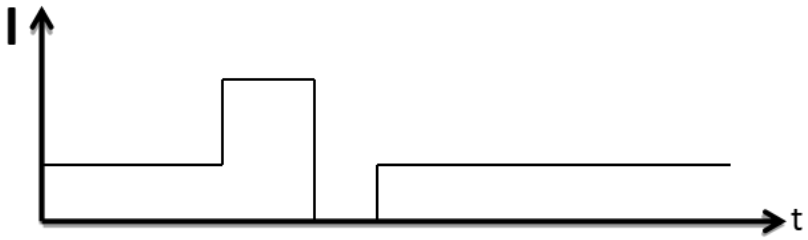
For fault detection, GSM indicator, supports detection of short circuit faults, ground faults, including transient faults,

a) Permanent Fault

The fault indicator can detect permanent short-circuit fault by electrical field and load current

change features. No matter how many automatic reclosing are operated, it is identified as a permanent fault if there is outage.

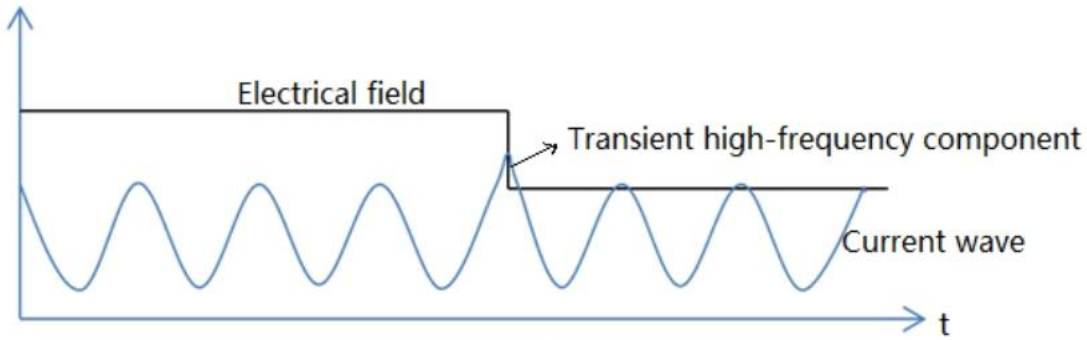
b) Transient Fault / Temporary Fault



If the fault is cleared by the automatic reclosing cycles and the line returns back to normal state, it is identified as a transient fault.

C)Earth-fault Detection

Drop of electrical field is the most important factor for earth-fault detection. The indicator can measure a bare voltage value which can reflect the change of electrical field.
After earth-fault occurs, there are a large number of transient high-frequency component and big capacitive current in the first half wave, and the electrical field will drop at the same time. This feature will be considered as an earth-fault if the transient current up to threshold value.



3.2 Reset Alarm

JYZ-HW-GSM fault indicator has many different reset methods, the main ones are as follows:
1. Manual magnet reset, fault reset by test magnet activation/indicator
2. Automatic reset, when the line is removed and the fault is restored to normal power supply, the indicator resets immediately
3. Through time reset, the indicator resets at 12h timing,

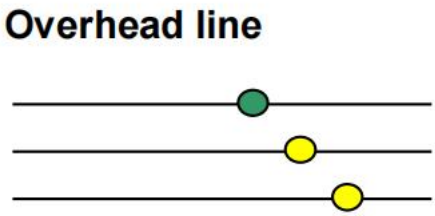
3.3 Function test

After manually activating the indicator with the magnet, the LED light will flash at intervals of 2S, simulating a short-circuit fault. At this moment, the manual magnet can be approached again to the activation part of the indicator to reset; or by automatic reset, the normal load current can be used to reset

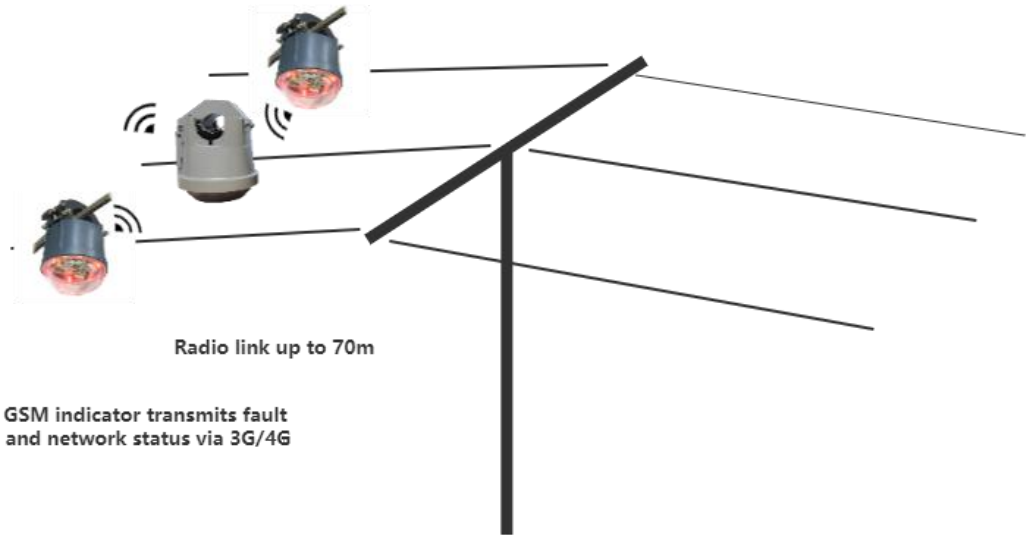
Note: It is not possible to use magnets to simulate faults frequently. It is recommended to test with equipment that simulates lines as much as possible, so that the GSM indicators can be charged in time to ensure their normal operation.

3.4 Remote transmission with GSM indicator

For remote transmission of fault information, via 1 GSM communication indicator and 2 satellite indicators. The picture below is the scene simulation picture



The message transmission between the GSM indicator and the satellite is realized by radio frequency technology, and the maximum communication distance can reach 100 m. GSM indicator transmits fault information and device address to Four-Faith fault location platform/user platform through 4G/3G network



3.5 GSM indicator and satellite indicator communicate RF

The GSM indicator communicates with the satellite indicator and communicates through RF wireless radio frequency technology. The GSM indicator and the satellite indicator have a corresponding communication group frequency address. The communication address of the GSM indicator and the communication address of the satellite indicator need to be maintained. Consistent

The following work needs to be prepared for RF communication:

✧ Prepare a PC, install the corresponding USB driver and place the maintenance software in the

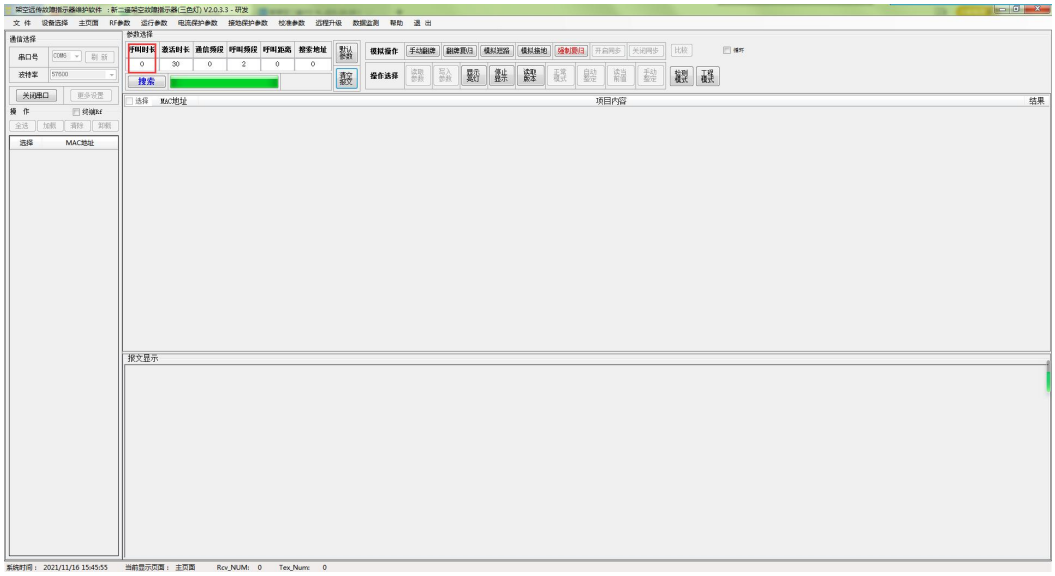
PC.

- ✧ Install the USB driver in the PC,
- ✧ Prepare a USB debugging tool
- ✧ Prepare a GSM fault indicator
- ✧ Use one GSM indicator with two satellite indicators
- ✧ When the C-phase has no current, use 10 to call the call duration, and use 1 to call when there is a current greater than the threshold 5A.

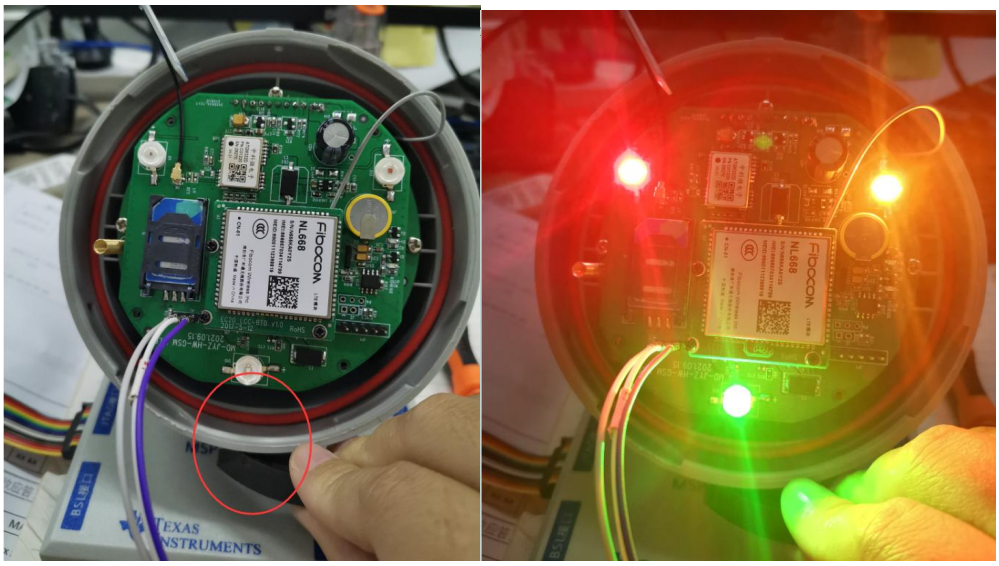
1. Connect the tooling to the computer and open the fault indicator maintenance software folder
2. Click "Fault Indicator Maintenance Software V2.0.3.3.exe" to open the maintenance software, select the indicator type "New 2 Remote Light Overhead Indicator--Three-color Light", and select "LB-FF" for the communication protocol
3. After entering the indicator maintenance software, select the corresponding correct serial port number, select "57600" for the baud rate, and then click to open the serial port.
4. Click "RF Parameters - Local Parameters" above, and click "Read Parameters" on the right. Read tooling parameters (synchronization type must select "1")
5. GSM indicator, the special frequency band is "0" (mainly used for magnet wake-up), if you need to use broadcast search, the calling frequency band is the same as the frequency band of the indicator being searched (need to know the indicator frequency band).

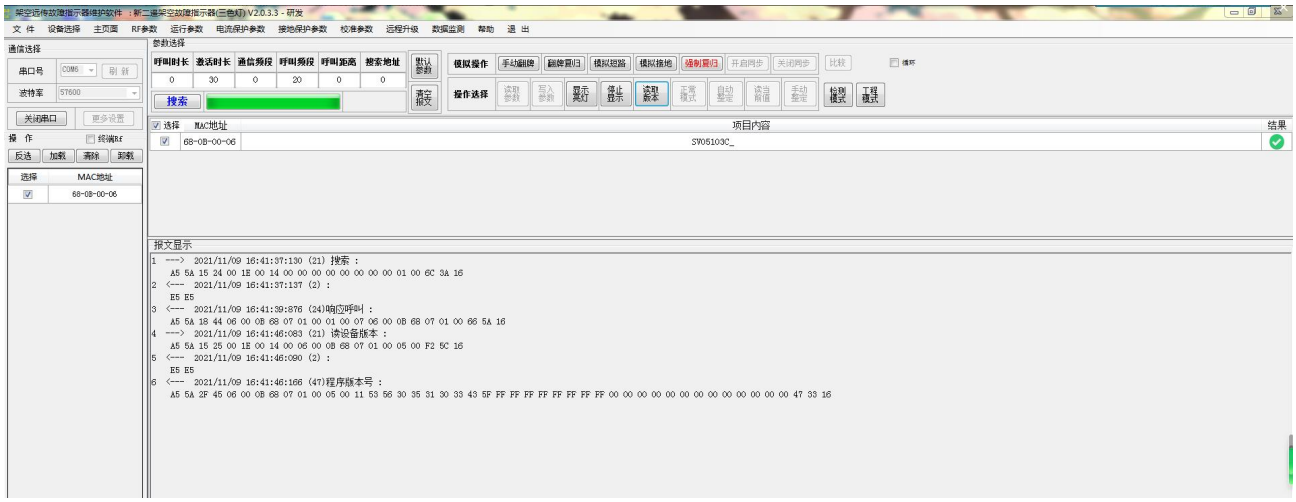
Magnet strong search indicator steps:

1) Use the strong search method to search the indicator, and set the call duration to "0"



2) Put the magnet in the upper corner of the indicator next to the spring antenna, so that the light turns from off to on, then off to on and then off again (twice on and off), remove the magnet from the indicator, and turn on the three indicators in turn. do this





3.6 GSM - Communication

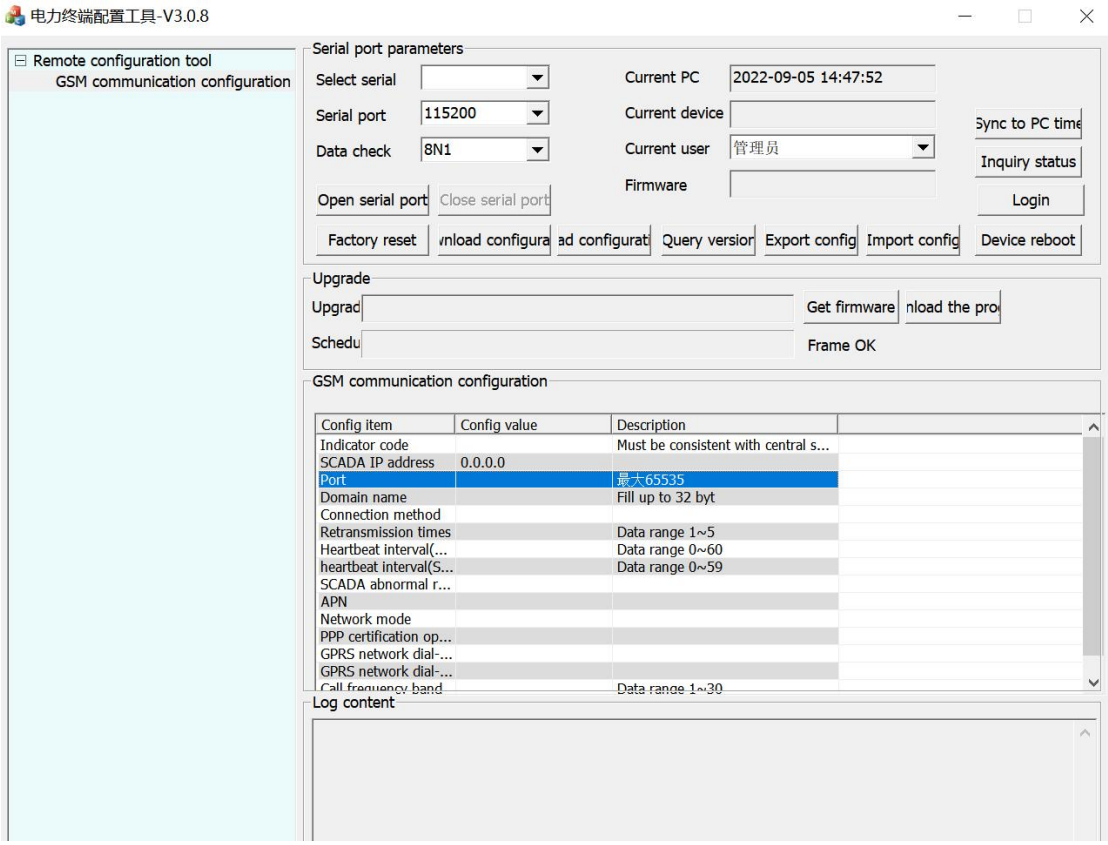
The GSM communication indicator collects the data of the satellite indicator and its own line, and transmits it to the Four-Faith fault location platform through the 3G/4G cellular network. The GSM indicator communication includes the following data:

- Supports short circuit fault detection
- Supports ground fault detection
- Supports instantaneous short circuit/ground fault detection
- Upload interval 48H
- Support mutation upload
- The uploaded content includes fault data (so it refers to front load current, fault current, fault type, battery voltage, temperature, indicator status, battery strength)
- indicator is dormant during non-fault and communication
- Support load 10A overhead line indicator can start normally

- Support 60HZ overhead line
- Support 12h timing reset
- Meet 44KV/69KV overhead line voltage
- Meet the installation altitude of 4500m environment
- Supports magnets to manually activate the indicator
- Communication indicator supports communication with platform over 2G/3G/4G cellular network
- Satellite indicator and communication indicator support wireless communication,

3.7 Configuration, local

Open the GSM Indicator Configuration Tool, "Remote Configuration Tool"



Fill in the parameters of the remote platform and connect to the Four-Faith fault location platform，Parameters include:

- Indicator code
- SCADA IP address
- Port

- APN
- GPRS parameters

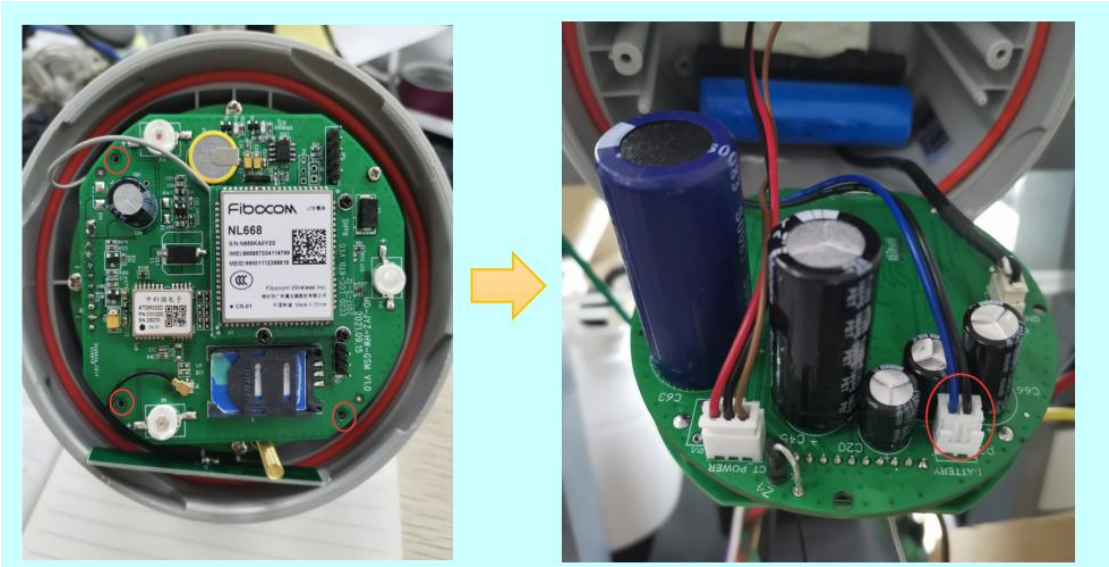
Through the configuration of the GSM indicator, the collected permanent faults and transient faults of the line can be sent to the Four-Faith fault location platform.

4 Maintenance

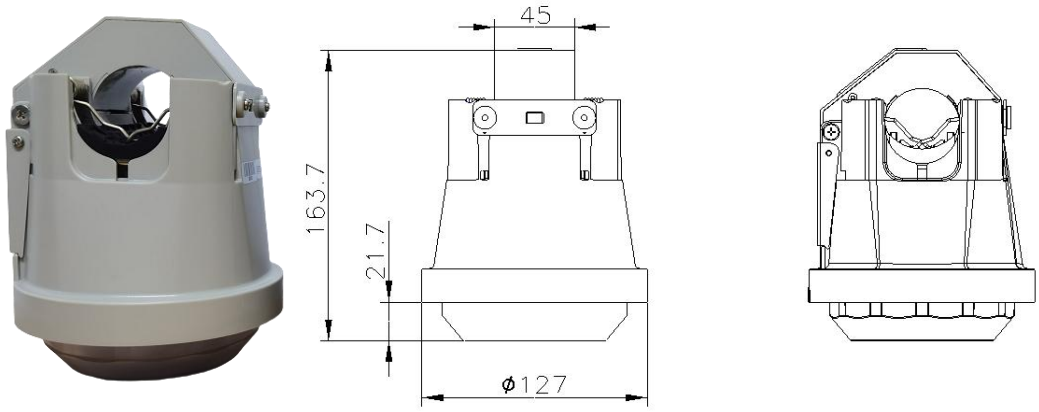
During the battery life, the device is maintenance-free. After the battery is discharged, it can be replaced by the user or the manufacturer. Battery life depends on the number of overcurrent faults and reset time. The device can be returned to the manufacturer to ensure proper disposal.

4.1Change of battery

• To replace the battery, first open the cover (picture 1) and disassemble the GSM indicator, pull out the pcb components, (picture 2).
• Cut the cable ties securing the battery Replace the battery with the correct type (Figure 3).
• Be careful to reconnect the battery with the correct polarity.
(Figure 4)



5.Technical Data



Reference Standard	IEEE 495, 2007
dI/dt	Adjustable, 1A step, 150A default
Overcurrent duration	20ms
Reset	12h time reset(default), 1-48 hours settable.or automatic after current of at least 5A
Power supply	Energy harvesting
Protection class	IP67
Dimensions	see dimension drawing
Weight	0.45kg
Wire diameters	Up to 28mm
Ambient temperature	- 40 ℃ ~ 85 ℃
Installation altitude	Up to 4500 m
Operating frequency	60Hz
Permissible voltage	69KV

Permissible short-term current	31.5KA/4s
Flash interval	2s
Indication visibility (daytime)	＞100m
Installation	Hot stick
GSM Band	850/900/1800/1900MHz
Number of satellite indicator	max 2.Satellite Indicator
Communication Range	max. 70 m
Starting current	⩾10A
Current accuracy	0A<I<300A: ±3A; I>300A: ±1%

6.Preparation and Installation

6.1 Installation

Before installation in the field

Reconfirm the communication parameters configuration of indicators and DCU before the installation in the field, such as group address, frequency, IP address, and port. And make sure the SIM card is in service and insert correctly.

Mounting

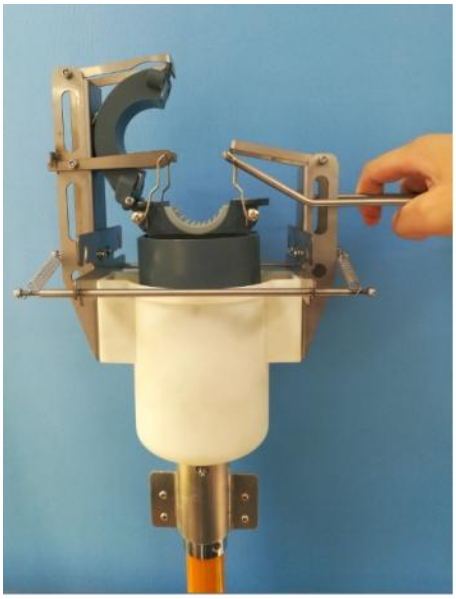
The indicators are mounted onto the overhead line with a special hot-stick installation tool (picture a).

First of all, put the indicator into the drum, and open the split coil CT with thumb and fix it (picture b). Secondly upwarp the spring with tool and fix them (picture c, d). Position the conductor between the open split coil CT, and with a forceful upward movement, install the indicator to the overhead line (picture e). When the indicator receives sufficient pressure, the spring will release and clamping the line, and the installation tool

will separate from the indicator (picture f).

Picture (a)

Picture (b)



Picture (c)

Picture (d)

Picture (e)

Picture (f)

6.2 Dismounting

1) Place the small iron rods on both sides tool in the position shown in below picture

3) Then, the small iron rod will be stuck detach on the body of indicator

2) Put the tool into indicator and push the upwards

4) Pull the tool down, and the wire will from the spring of indicator

6.3 Installation video

Please use your mobile phone to scan the QR code below to view the installation video instructions. If you have any questions, please contact our technical staff. Or please visit Four-Faith Smart Power official website for support. Thank you for your use

Installation

Unmounting

FCC Caution

§15.19 Labelling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

§15.21 Information to user.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

§15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between theequipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

***RF warning for Mobile device:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.