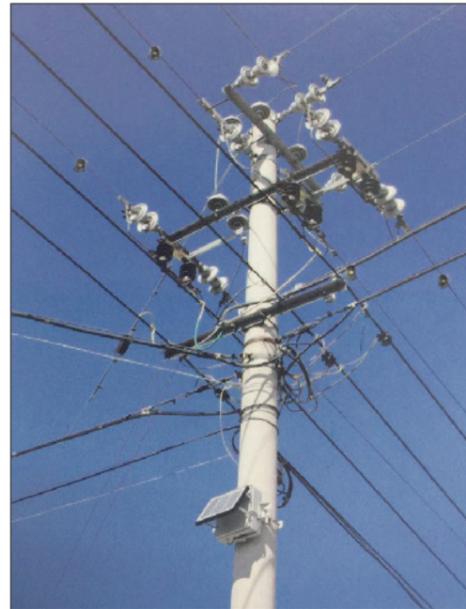


OPERATION CASES



OVERHEAD FAULT PASSAGE INDICATION SYSTEM

JYL-HY

10kV Line Earthing and Short-circuit Fault Identification



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QUALIFICATIONS & HONORS



National High-tech Enterprise Certificate



Zhongguancun High-tech Enterprise Certificate



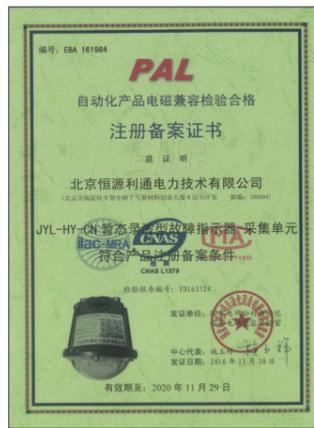
Eaton Excellent Supplier



Type Test Report of Collection Unit



Type Test Report of Acquisition Unit



Registration Certificate of Acquisition Unit



Registration Certificate of Collection Unit



Certificate of Quality Management System (ISO9001:2015)



Certificate of Environment Management System (ISO14001:2015)



Certificate of Occupational Health and Safety Management System (OHSAS 18001:2007)

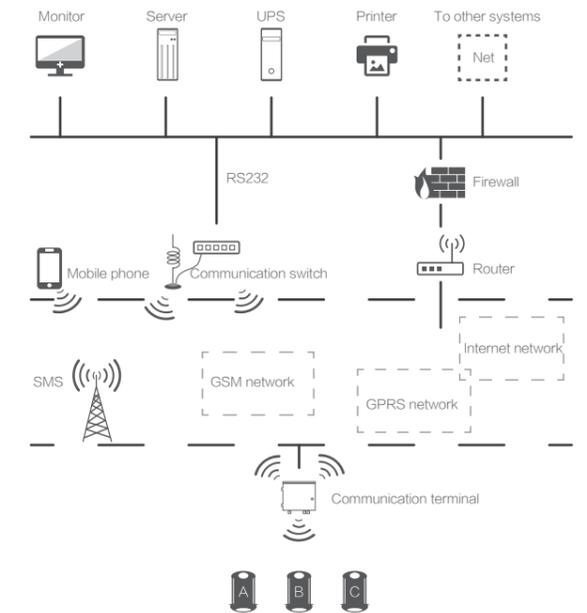


Patent for invention

WORKING PRINCIPLE

System Composition

The system consists of at least three acquisition units (model JYL-HY-CX fault indicator), a collection unit (model JYL-HY-HD) and the master station system. The distribution line fault location master station system consists of a variety of software and hardware components such as communication exchange, servers, master station software, etc., which supports access to existing distribution automation system simultaneously.



Acquisition unit

Achieve information interaction with system master station via RF (radio frequency)

Collection unit

Achieve information interaction with system master station via multiple communication methods

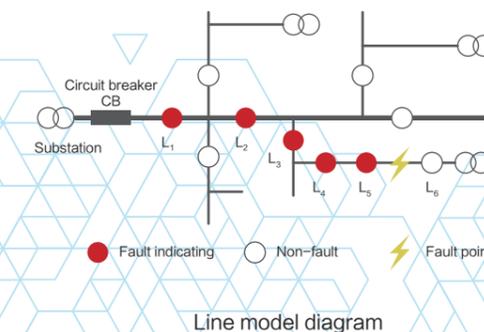
System master station

To carry out fault event recording, data release, storage of alarm log, sound and light alarm, SMS alarm according to the different processes of different types of faults through collection, storage, analysis and processing of the data returned by detection terminal.

System Working Principle

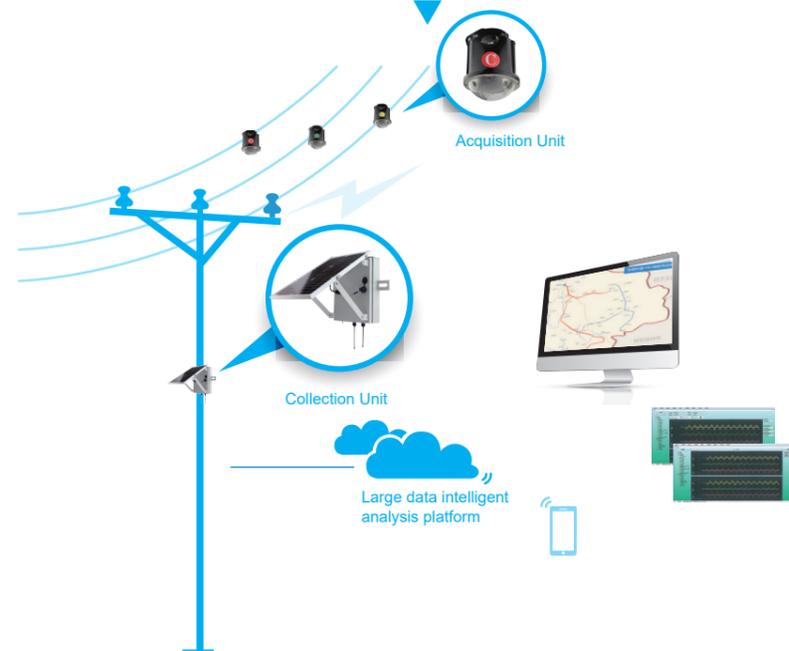
Fault Indicators are mainly installed at the boundaries of substation outlets, switch load sides, branch lines, cable inlets and outlets, and the main lines. The communication terminal is distributed and installed matched to the fault indicators according to the configuration rules, when the line fault online monitoring system is working, the fault indicators monitor line status in real time and accurately, and send back the collected information such as fault alarm, power transmission status, etc. to the master station monitoring system through the communication terminal; The master station monitoring system do statistics, analysis and topology calculation for the data, to determine the fault area; Simultaneously, the fault point message will be sent by SMS to the set mobile phones of related persons such as the utility production management departments, line specialists, line maintenance principals, etc., in order to guide the staff find the fault points promptly and accurately.

The master station monitoring system uses software combined with the line topology and fault indicator position information to determine the fault point is located between L5 and L6, and alarms by the way of graph and sound.



FEATURES

Installed in overhead lines,
which acquires operational and fault information



Features of Acquisition Unit

- Trigger line current intelligently, earthing electric field high-speed fault recording(4kHz), capture small current earthing fault instantaneous transient waveform signal, achieve synchronous waveform acquisition for three phase current and earthing electric field with high-precision($\pm 100\mu s$) wireless time;
- Identify line conditions accurately, support current waveform record;
- Live online, can control the line status in real time; can achieve wireless upgrade remotely;
- Can achieve live installation and removal with insulation operation rod, which is safe and convenient;
- Adopt small current self-powering technology, all the functions can be satisfied in the condition of 5A, 5s, through using new material and innovative power supply technology, with solar cells as backup power, which make it work normally when the line is out of power or the current is very low.

Features of Collection Unit

- Can support the data collection of at least 3 groups(3 sets for each group) of acquisition units;
 - The communication terminal synchronizes once every 30 minutes, to ensure high-precision($\pm 100\mu s$) three-phase wireless time synchronization;
 - Three-phase synthesis to obtain transient zero-sequence current, electric field signals, to achieve precise earth fault detection and positioning;
 - High reliability power supply, low power consumption design can make communication terminal work continuously for 15 days;
 - Regular self-test, and send self-test information to the monitoring center, can achieve remote maintenance and upgrade;
- With power management function, can detect battery voltage, control the start, exit and activation of storage battery.

TECHNICAL PARAMETERS

Technical Parameters of Acquisition Unit

Description	Data	Description	Data
Nominal voltage	10 kV /35kV	Self-powered operatio	Line current 5 A
Working current	0 ~ 600 A	Weight	< 2 kg
Nominal frequency	50 Hz	Protection grade	IP 68
Adaptable conductor diameter	Adapted to high-resistance	Assembling life	> 50 times harmless
Line current	Measurement accuracy: 0 ~ 300 A, $\pm 3\%$; 300 ~ 600 A, $\pm 1\%$	Mechanical strength	Vibration 1 grade
Neutral point earthing method	8 ~ 42 mm	Tensile strength of line clip mechanism	8 times of self weight in vertical direction;
Recognizable fault type	Short circuit between phases, single phase earthing: instantaneous and permanent faults	Ambient temperature	-40 ~ 70 °C
Minimum recognition time for reclosing	0.2 S	Storage temperature	-40 ~ 70 °C
Indicating type	Flash	Ambient temperature	5% ~ 95% (without condensation)
Visual angle	360°omnidirectional	Short-circuit current impact tolerance	31.5 kA/4 S
Continuous flash time after power off	≥ 2000 h	Fire hazard level	5 th grade
Fault reset mode	Automatic reset after power supply, timed automatic reset, remote manual reset	Electrostatic discharge immunity	4 th grade
Time automatic reset mode	0 ~ 48 hsettable, default24 h	RF electromagnetic field radiation immunity	4 th grade
Working frequency	433 MHz	Surge impact immunity	4 th grade
Communication distance	≥ 1000 m	Power frequency magnetic field immunity	5 th grade
Battery capacity	3.6 V, 8.5 Ah	Operational life	> 8 years
		Electrical life	> 2000 times

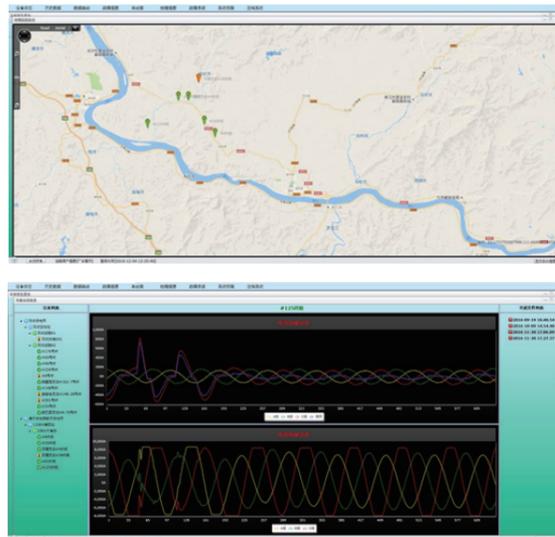
Technical Parameters of Collection Unit

Description	Data	Description	Data
Main power	Solar panels power supply	Communication	≥ 1000 m
Battery	12V maintenance-free long-life chargeable storage battery	Sync pulse interval	Synchronize once every 30m can guarantee 100 μs synchronization accuracy
Average sleep power consumption	≤ 1 mA	Wireless communication type	2G/3G/4G full network
Average standby power consumption	≤ 7 mA	Electric protocol	Support DL/T 634.5 101、104
Average operational power consumption	≤ 12 mA	Positioning support	Support GPS\Big Dipper
Maximum operational power consumption	≤ 100 mA	Secure encryption	Support national network hardware encryption
Dimensions (W * H * D)	$\leq 250 * 340 * 160$ mm (include solar pane)	Electrostatic discharge immunity	4 th grade
Weight	≤ 1 mA	RF electromagnetic field radiation immunity	4 th grade
Housing	Stainless steel	Surge impact immunity	4 th grade
Protection grade	IP 55	Power frequency magnetic field immunity	5 th grade
Working temperature	-40 °C ~ 70 °C	Pulse magnetic field immunity	5 th grade
Storage temperature	-40 °C ~ 70 °C	Damped oscillation magnetic field immunity	5 th grade
Ambient temperature	5% ~ 95% (without condensation)	Operational life	> 8年
Working frequency	433 MHz		

MASTER STATION

System Components

The master station system consists of system monitoring computer, detection system software, data servers, communication exchanges, UPS power supply, etc. It mainly do the fault event recording, data release, alarm log storage, sound and light alarm, SMS alarm etc. according to the different process procedures of different faults, by collection, storage, analysis and processing the data returned from detection terminal.

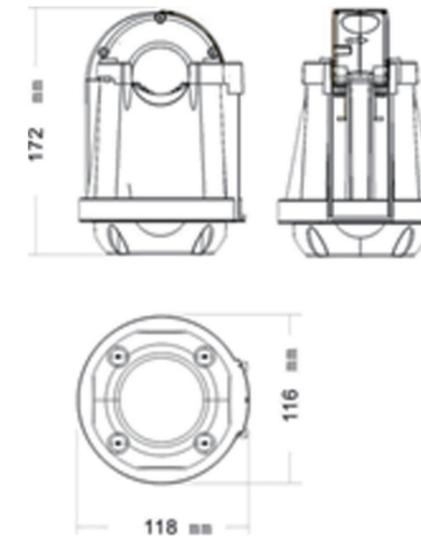


Software operation interface

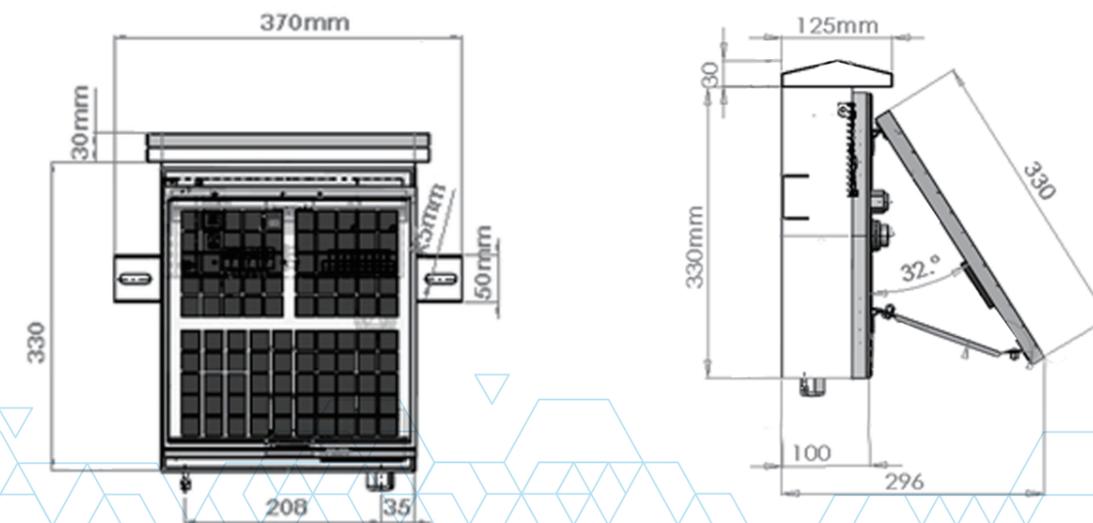
Features

- Show the current line state in the computer interface promptly and clearly ;
- Synthesize waveform according to fault recording data for the application of fault location;
- Analyze the fault type and location by big data;
- Send time checking signal;
- Send the fault description information to cell phones of the management staff, which is set before, after the fault occurs;
- Can check the alarm history data at any time;
- All system parameters can be set flexibly;
- Easy way to achieve LAN WEB browsing;
- Can complete the fault alarm log management job of electric network for the management staff;
- The system self-tests the detection units automatically;
- User-friendly interface, easy operation;
- With periodic SMS notification, to achieve unattended monitoring, to reduce the administrator's maintenance tasks;
- The system also reserves interfaces that can be integrated with production management software such as dispatching automation system, distribution automation system, GIS system and substation integrated automation system, so that the fault detection data can be used by more departments and play a greater role.

PRODUCT DIMENSIONS



The acquisition unit housing is made of insulating, flame-retardant and UV-proof materials.
Dimensions: 114.6mm*158mm



Maximum dimensions of collection unit: W*H*D=300*360*100