



Bringing Intelligence Across All Beings

Four-Faith Smart Power Technology Co., Ltd.

Address.: 11th Floor, A-06 Area, No.370, Chengyi Street, Jimei, Xiamen, Fujian, China
Tel.: +86 17750019379
Email: business@four-faith.com
Website: www.fourfaithpower.com



FOUR-FAITH SMART POWER
Product Manual
PRODUCTS AND SOLUTIONS

BRINGING INTELLIGENCE ACROSS ALL BEINGS



About US

Four-Faith Smart Power Technology Co.,Ltd., a core subsidiary of Four-Faiths Group, founded in 2016, is a high-tech innovative enterprise focusing on smart grid. The company is committed to bringing intelligence, automation and digitalization into the worldwide wave of grid reform and building a safer, more reliable and more efficient power service system.

Four-Faith Smart Power Technology Co.,Ltd. is headquartered in Xiamen, a beautiful egret island in China. The company has 3 R&D centers in China, with technical and R&D staff accounting for more than 60% of the total. Currently the company has 30+ invention and utility model patents, 100+ software copyrights, and is in a rapid development stage in the power industry.

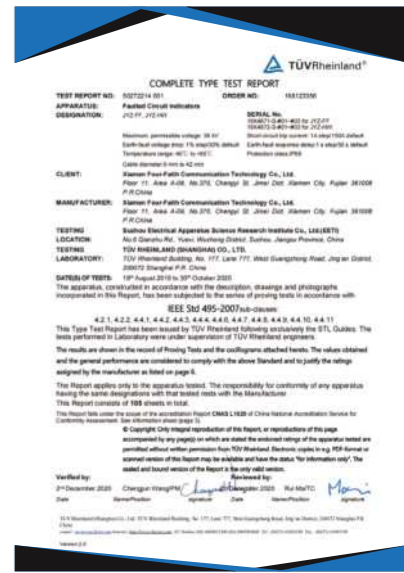
Since the establishment of the company, adhering to the vision of "making everything more intelligent", with a solid professional foundation and strong R&D strength, through continuous innovation, the company has formed a full range of power products covering power transmission, power transformation, power distribution and power consumption. Among them, fault indicators, FTUs, IEDs, gateways and routers have been sold to 50+ countries and regions worldwide. We have provided quality solutions for 300+ customers worldwide with rich after-sales service experience.

The production factories has modern equipment and a large scale production base, which provides a solid backing for the creation of excellent quality products. The production base has dust-free SMT workshops and finished product assembly and testing workshops, and is equipped with high-precision production lines of chip mounters in Japan, high-precision printing machines, ICT online tester and other professional production equipment. We have special product safety laboratories, product reliability test rooms, product environmental laboratories and product aging rooms to strictly control product quality, organize and manage in strict accordance with ISO9001 standard, which has contributed to our strong production and supply capabilities.




ENTERPRISE CERTIFICATE

The company has passed ISO9001, ISO14001, ISO45001, SGS and CMMI-Level 3 certification. Our products have passed IEC 60255, IEC 61000, IEC 62271-100, IEC 62271-111, IEC 60265-1, IEC60694 and IEEE495 type tests and certification to achieve the goals of our product being "intelligent", "standard", "safe" and "reliable".



FOUR-FAITH



Distribution Automation Products

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Feeder Terminal Unit

Introduction

In distribution power grid, Feeder Terminal Unit (FTU) is the key point to realize feeder automation. Its main function is to realize Fault Detection, Isolation and Restoration (FDIR), reducing outage time, improving reliability of power supply.

With the continuously development of distribution automation worldwide, more and more Feeder Terminal Units are applied in overhead lines, while protecting feeder, implementing local or centralized fault self-recovery control, and by communication network, connecting to SCADA system, realizing master station functions.



F-FTU200

Feeder Terminal Unit

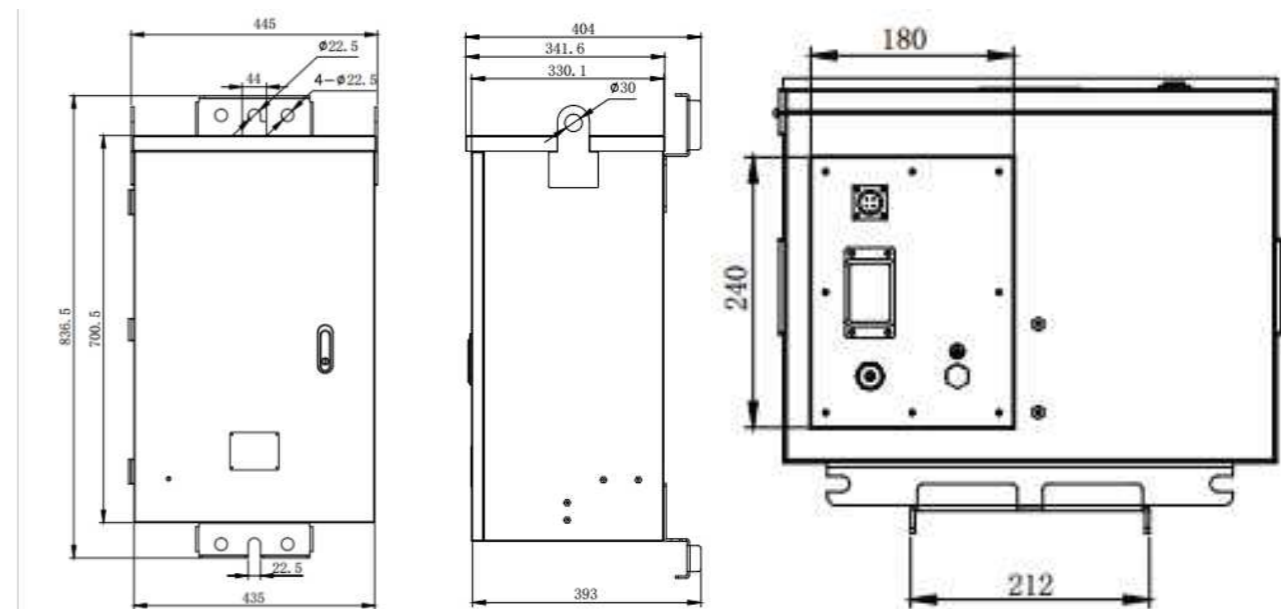
- Support multiple protection function
- Support distribution automation
- Support IEC 101/104, DNP3.0, Modbus
- Support PQM and load profile
- Support Disturbance Recorder

Parameters

Parameter	F-FTU200
Power supply range	100 ... 240 V AC
Rated frequency	50/60 Hz
Operation voltage	24 V DC
Analog input	4I+6Us
Current transformer input ratio	1/5A
Voltage sensor input range	0~4V
Binary input/output	8 BI/4BO ⁽¹⁾
Communication ports	RS232 & RS232/485&RJ45
Temperature range	-40°C ... +55°C
Degree of protection	IP55
Dimension	836*445*330 mm
Weight	60kg

(1).Standard configuration, up to 16BI/8BO with expand option card if required

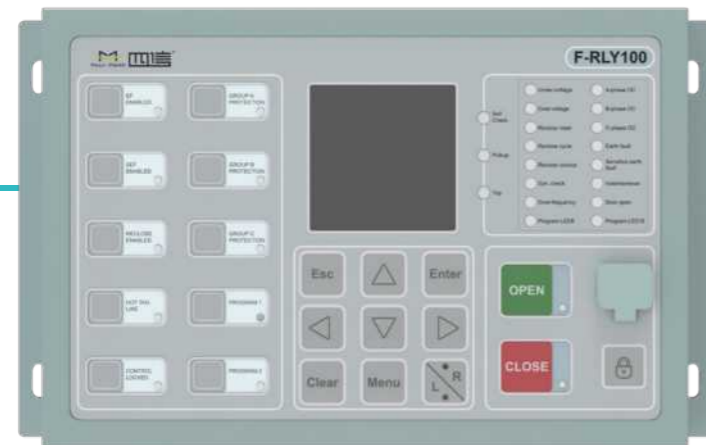
Dimensions



Feeder Protection Relay

Introduction

Feeder protection relays are mainly used in overhead lines and cable lines, and are the core components of Feeder Terminal Units (FTU), Ring Main Units (RMU), and Primary Switch-gears (PSG), with the functions of protection, control, measurement, communication, data processing, power management, etc. They can be configured with a variety of distribution automation logic to realize fault detection, isolation and restoration (FDIR) of feeders, thus reducing outage time, improving power supply reliability, and helping the intelligent upgrading and transformation development of distribution networks.



F-RLY100

Feeder Protection Relay

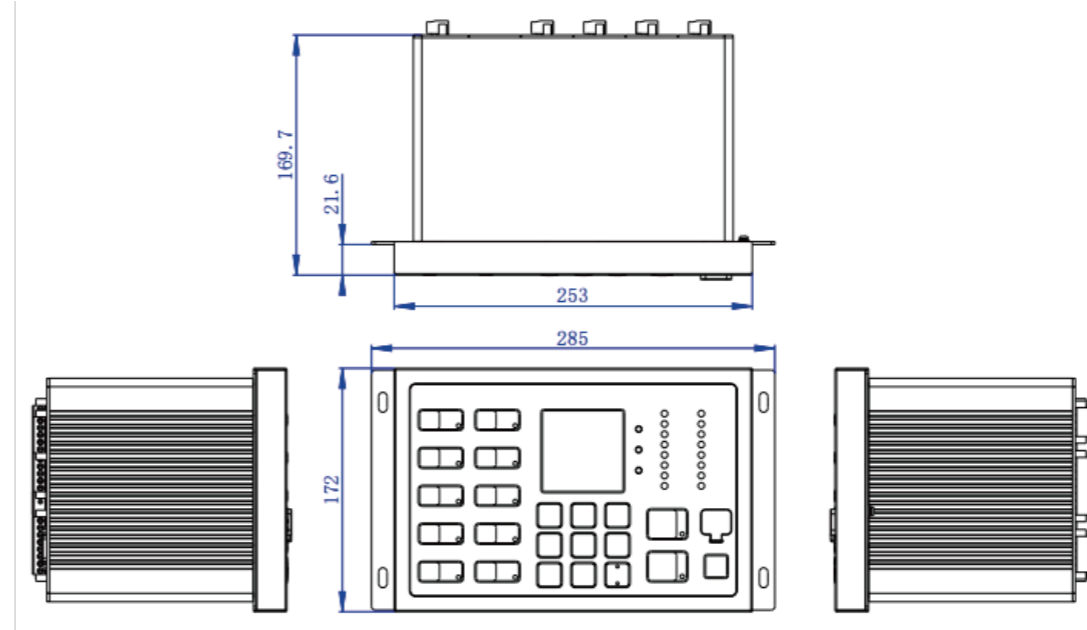
- Support multiple protection function
- Adopt modular design
- Support IEC 101/104, DNP3.0, Modbus
- Support PQM and load profile
- Support Disturbance Recorder

Parameters

Parameter	F-RLY100
Power supply range	24 V DC
Rated frequency	50/60 Hz
Analog input	4I+6Us
Current transformer input ratio	1/5A
Voltage sensor input range	0~4V
Binary input/output	8 BI/4BO(
RTD/mA inputs	4-20mA
Communication ports	RS232 & RS232/485&RJ45
Communication protocol	IEC101/104, DNP3.0, MODBUS
Operation temperature range	-25°C ... +70°C
Storage temperature range	-40°C ... +85°C
Dimension	253*172*167 mm
Weight	3.5 kg

(1). Standard configuration, up to 16BI/8BO with expand option card if required

Dimensions



Automatic Circuit Recloser

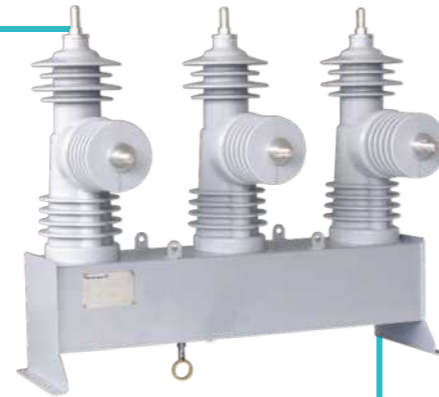
Introduction

Automatic Circuit Reclosers (ACRs) are outdoor intelligent switch applied in the field of distribution automation, usually mounted on outgoing line side of substation, tie points of ring network, trunk line of distribution grid, or at the head of important feeder lines, with short-circuit current breaking and making ability, completed with feeder terminal unit (FTU), which can realize multiple reclosing function.

F-ACR

Automatic Circuit Recloser

- Maximum Voltage: 15.5V~38KV
- Rated Current: 630/800/1000A
- Solid embedded pole
- Magnetic actuator
- Support sensor solution
- Emergency opening handle



Parameters

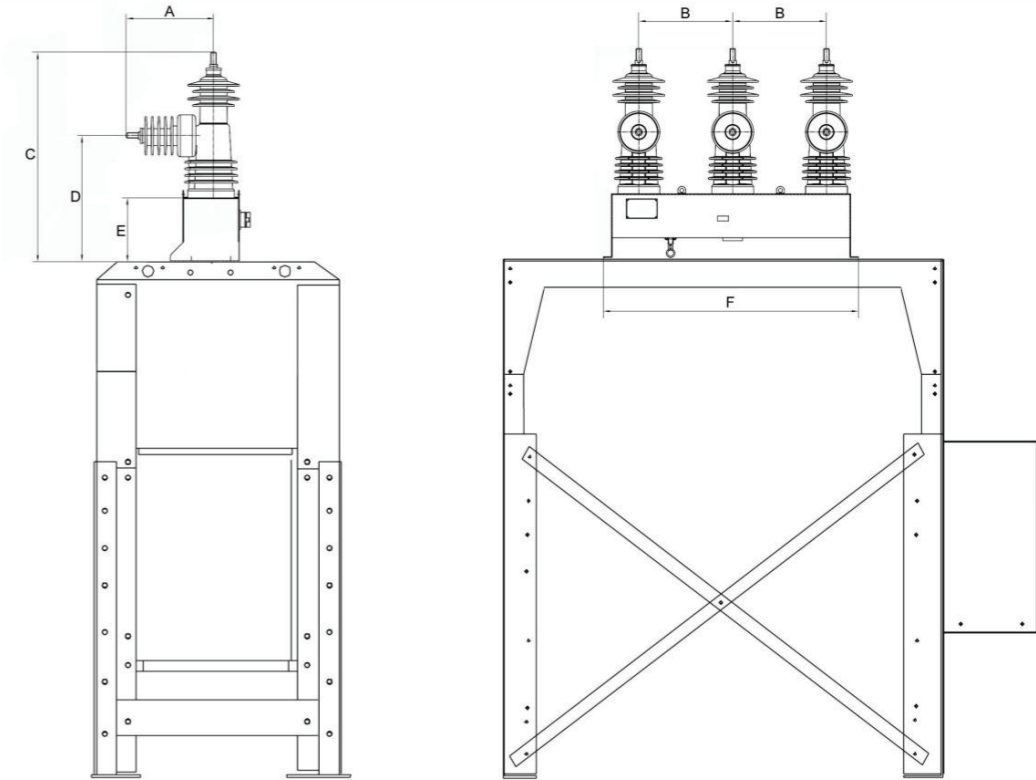
Parameter	F-ACR15	F-ACR27	F-ACR38
Rated maximum voltage	15.5 kV	27 kV	38 kV
Rated power frequency withstand voltage ⁽¹⁾	50/60 kV ⁽¹⁾	60/70 kV ⁽¹⁾	70/80 kV ⁽¹⁾
Rated lightning impulse withstand Voltage	110/125 kV	125/150 kV	150/170 kV
Rated continuous current	630 A ⁽²⁾	630 A ⁽²⁾	630 A ⁽²⁾
Rated short-circuit breaking current	12.5/16 kA	12.5/16 kA	12.5/16 kA
Rated peak withstand current	31.5/40 kA	31.5/40 kA	31.5/40 kA
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz
Extinguishing medium	Vacuum	Vacuum	Vacuum
Operation mechanism	Magnetic actuator	Magnetic actuator	Magnetic actuator
Mechanical endurance (CO-cycles)	10,000	10,000	10,000
Rated operating sequence	O-0.2s-CO-2s-CO	O-0.2s-CO-2s-CO	O-0.2s-CO-2s-CO
Altitude	2000 m ⁽³⁾	2000 m ⁽³⁾	2000 m ⁽³⁾
Degree of protection	IP65	IP65	IP65

(1).1 min dry, to earth and between phases/across the isolating distance

(2).Up to 1000A for customers special required

(3).If higher altitude required, please contact the manufacturer

Dimensions

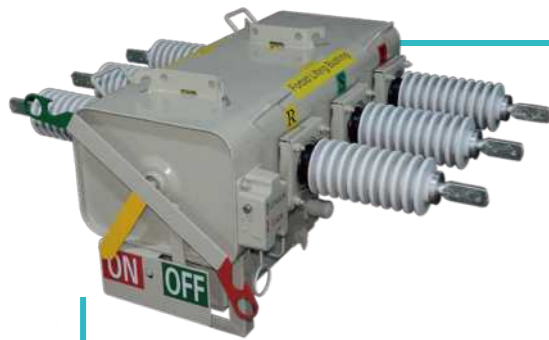


Size	Unit	A	B	C	D	E	F
15 kV	mm	460	380	850	508	270	970
27 kV	mm	460	380	850	508	270	970
38 kV	mm	512	380	970	590	270	970

Load Break Switch

Introduction

Load break switch, also referred to as sectionalizer, is an outdoor intelligent switch-gear with simple arc extinguishing device between the recloser (or circuit breaker) and dis-connector capable of breaking load current but not fault current. It is usually installed on the main line of overhead line, ring network normal open point, or branch line to divide the distribution line into smaller sections. Through the cooperation with upstream recloser or circuit breaker, it can precisely isolate the faulty section and restore the non-faulty section. It is a key product to effect the automation of distribution network.



F-LBS
Load Break Switch

- Maximum Voltage:12V~40.5KV
- Rated Current:630A
- SF6 extinguishing and insulation
- Support distribution automation
- Support sensor solution
- SF6 low gas alarm and lockout

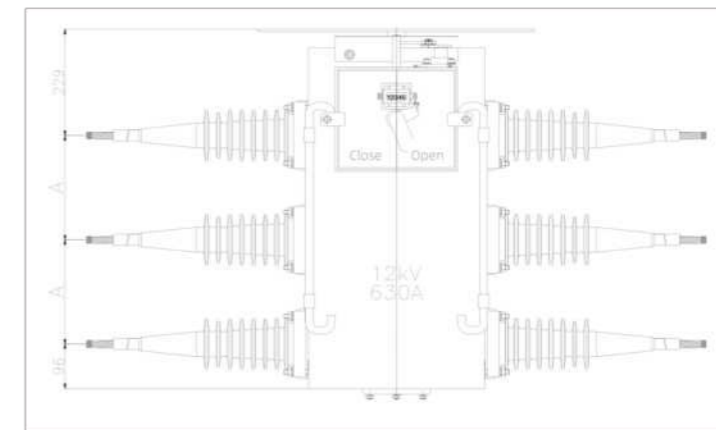
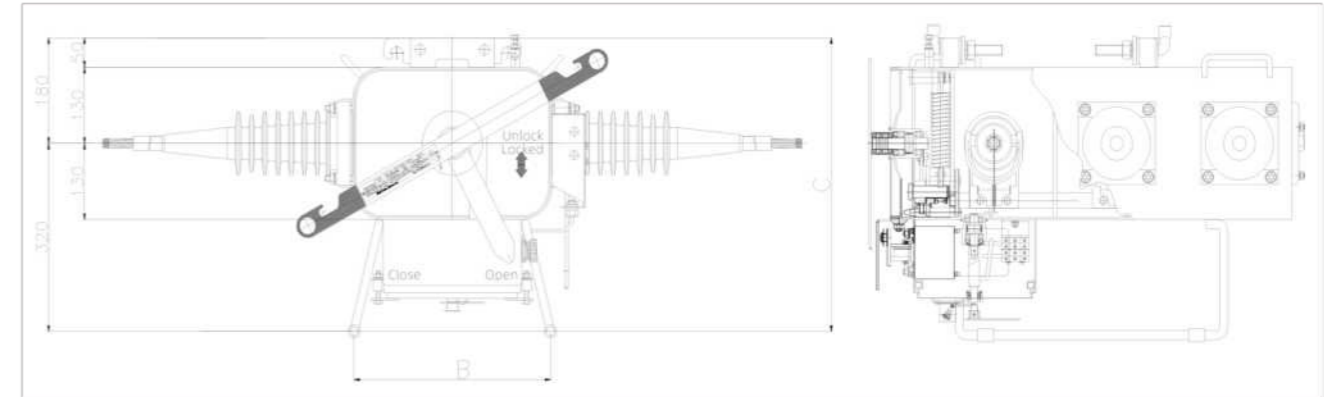
Parameters

Parameter	F-LBS12	F-LBS24	F-LBS36
Rated Voltage(kV)	12	24	36
Rated power frequency withstand voltage ⁽¹⁾	42/48kV ⁽¹⁾	50/60kV ⁽¹⁾	70/80kV ⁽¹⁾
Rated lightning impulse withstand Voltage	75/85 kV	125/145 kV	170/195 kV
Rated Normal Current(A)	630	630	630
Rated Short-time withstand Current(kA/s)	20/4	20/4	20/4
Rated Short Circuit Making Current(kA)	50	50	50
Rated frequency(Hz)	50/60 Hz	50/60 Hz	50/60 Hz
Mechanical endurance CO	6000	6000	6000
Number of Breaking Operations CO	≥400	≥400	≥400
SF6 Gas Leakage	≤1%	≤1%	≤1%
Altitude	2000 m ⁽²⁾	2000 m ⁽²⁾	2000 m ⁽²⁾
Degree of Protection	IP65	IP65	IP65

(1).min dry, to earth and between phases/across the isolating distance

(2).If higher altitude required, please contact the manufacturer

Dimensions



Size	Unit	A	B	C
12kV	mm	250	435	500
24kV	mm	300	435	500
36kV	mm	350	435	500

Overhead Line FCI

Introduction

With the progress of power detection and communication technology, as well as the development of big data, Four Faith's Smart Fault Indicator can operate under a current of 3A and conduct fast fault detection within 20ms, and supports online wire clamping for electricity, with a 10-year long service life and epoxy casting structure to adapt to the harsh outdoor environment. It is maintenance-free and equipped with a link stick that supports the installation and disassembly on live wires, and is easy to install.

JYZ-FF



- 0~300A:+3A:300~600A:+1%
- power supply and measurement are independent
- Support flop fault indication
- Support modem and router customized

Overhead Line FCI

JYZ-HW



- 0~300A:+3A:300~600A:+1%
- power supply and measurement are independent
- Support three color lamp fault indication
- Support modem and router customized

Overhead Line FCI

JYL-FF



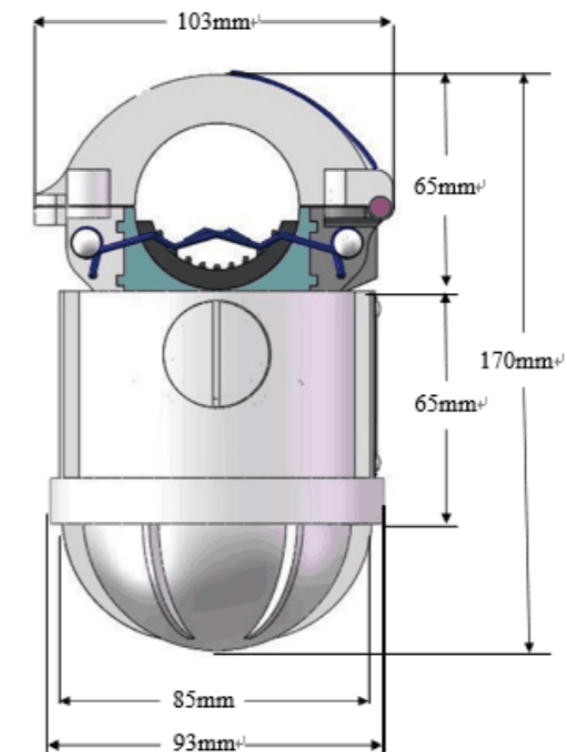
- 0~100A:±0.5A;100~600A:±0.5%
- Wave capture with 256 samples
- Supports low load start with a current of 1A
- Support modem and router customized

Wave Recording FCI

Parameters

Parameter	JYZ-FF	JYZ-HW	JYL-FF
Power Supply	Energy harvesting	Energy harvesting	Energy harvesting
Max. permissible voltage	≤38kV	≤38kV	≤38kV
Current measurement accuracy	0A~300A ±3A 300A~800A ±1%	0A~300A ±3A 300A~800A ±1%	0A~300A ±3A 300A~800A ±1%
Withstand current	31.5KA/4s	31.5KA/4s	31.5KA/4s
Remote communication	2G/3G/4G	2G/3G/4G	2G/3G/4G
Protection Class	IP68	IP68	IP68
Cable diameter	6mm~42mm	6mm~42mm	6mm~42mm
Temperature range	-40~+70°C	-40~+70°C	-40~+70°C
Installation	Hot stick	Hot stick	Hot stick

Dimensions



Conductor Mounted DCU

Introduction

The DCU is the communication bridge between the fault indicator and the background master station, and is responsible for the management of the uplink remote transmission channel and the downlink micro-power wireless networking communication channel. The device has a stable and reliable uplink and downlink channel management mechanism to ensure unblocked communication channels, system self-check and self-recovery capabilities, and data continued transmission in extreme cases.



JYL-FF-HX

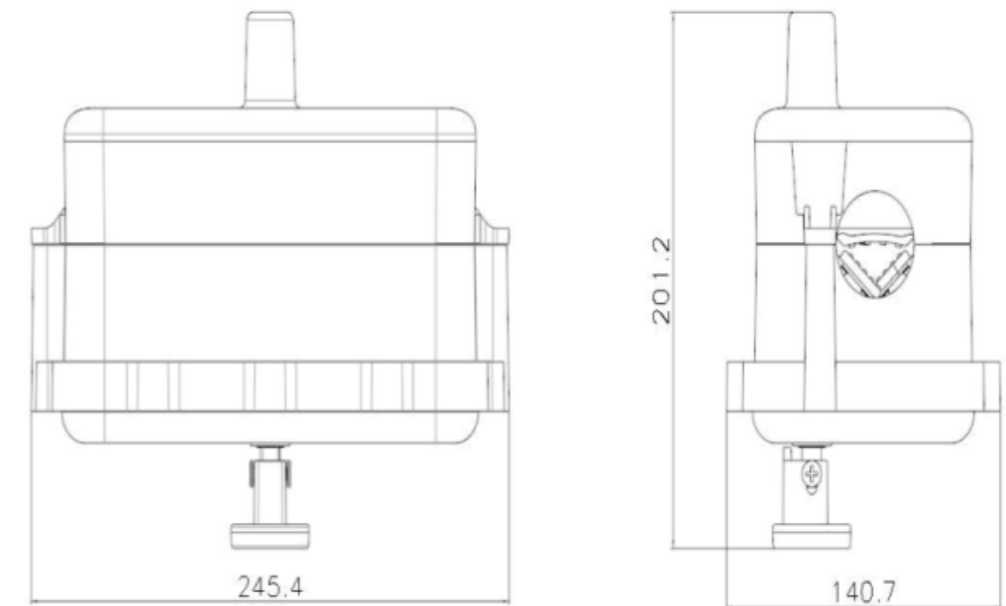
Conductor Mounted DCU

- Support line power supply to replace solar panel
- Support live suspension installation

Parameters

Parameter	JYL-FF-HX
Power supply	Energy harvesting
Maximum power consumption	≤1W (Energy harvesting model not included)
Cellular	2G/3G/4G (GSM/CDMA/LTE)
Pairing	Short-range wireless communication with up to 9 indicators
communicate with the indicator	433MHZ
Communication distance with indicator	Up to 100m
Protection Class	IP55
Temperature range	-40~+70°C
Working humidity	5~95%(No condensation)
service life	Up to 8 years
Dimensions	300*200*128mm
Installation	Conductor Mounted

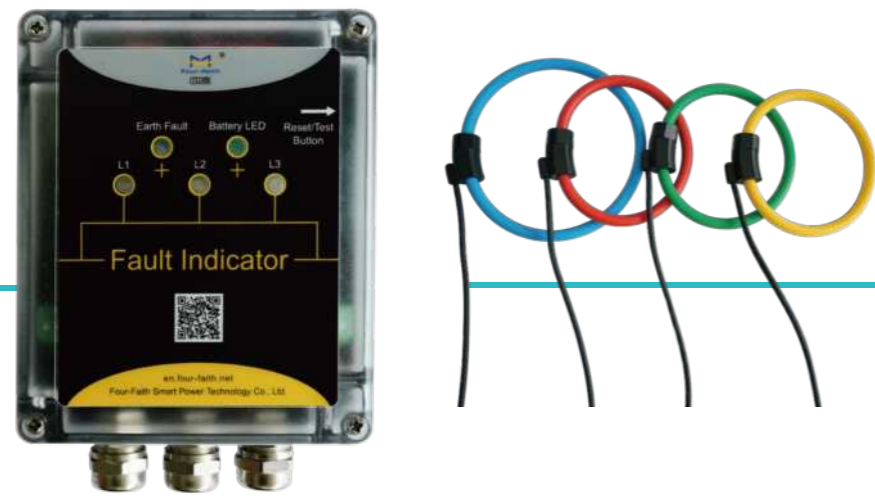
Dimensions



Underground Cable FCI

Introduction

Underground cable FCI is used for 6~35KV cable line distribution network, it is usually installed in ring main unit, distribution boxes, and switchgear to enable distribution network engineers to quickly identify network faulty section and restore electricity in the shortest time to provide customers with normal power supply. The product is composed of 1 display unit, 3 short circuit CT sensors, 1 ground fault CT sensor and monitoring central station.



DYO-FF-FIS

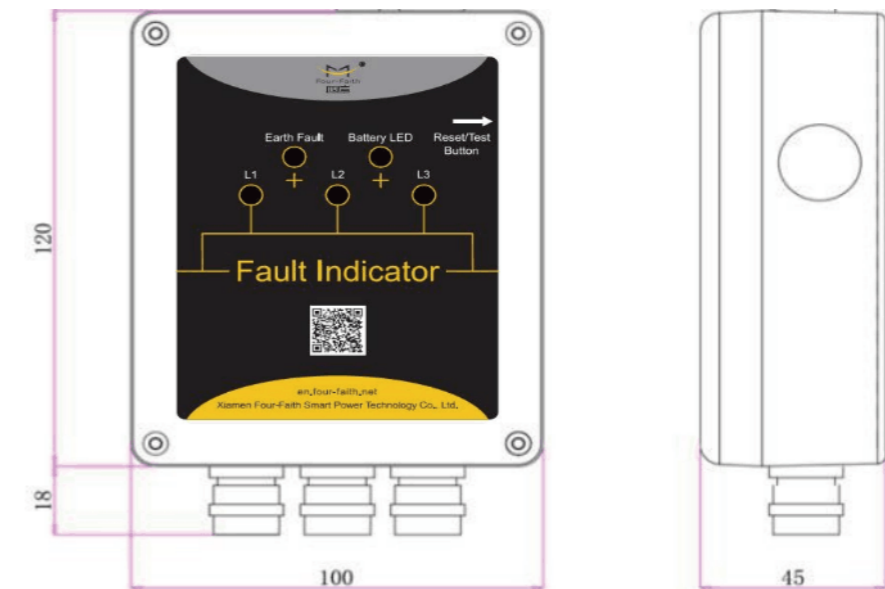
Wall Mounted Fault Indicator

- High accuracy current $\pm 3A \leq 100A$; $\pm 5\% > 100A$
- Instant fault detection
- modbus remote communication
- Short circuit fault current up to 2000A
- Support DIP shortcut settings

Parameters

Parameter	DYO-FF-FIS
Power supply	5~36VDC
Voltage level	5~38KV
Current level	0~1200A
Maximum fault current	1200A
Short-time Withstand Current	25kA/3s
Communication protocol	Modbus RTU
Communication interface	RS485
Current sensor	Three-phase + Neutral-phase
Environment temperature	-40°C to +70°C
Relative humidity	$\leq 95\%RH$
Altitude	$\leq 2000m$
Protection level	Display Unit IP54, Sensor (CT) IP65

Dimensions



Protocol Converter

Introduction

Protocol Converter Gateway is an IoT distributed processing unit designed for wireless remote and big data transmission. Our interface protocol converter gateways support IEC101, IEC104, Modbus, DNP3.0, etc. Protocol converter gateways provide powerful processing capabilities of data from Ethernet, standard RS485, standard RS232, or other different communication interfaces for different SCADA platforms, power protection devices, smart devices, different management systems, etc. The main function of the protocol converter gateway is to process uploaded and downloaded data, complete the forwarding of different protocols, and realize the data transmission of software communication between different systems and protocols.

F-DPU100-RK



Protocol Converter

- 4*LAN+1*WAN
- 8*RS485/232, 1*USB, 1*HDMI
- Support 4G/5G
- Option dual sim card
- Support MODBUS/101/103/104 DNP3.0/MQTT

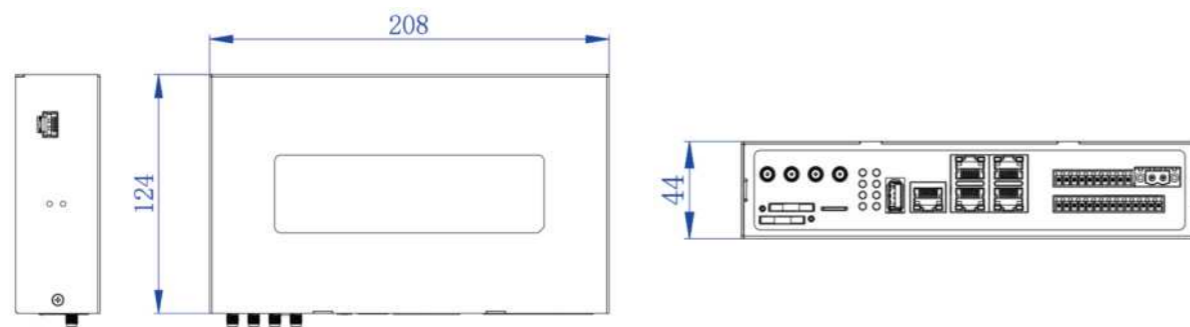
- 4LAN+1WAN
- 2*RS485, 2*RS232, 2*RS232/485 (optional), 4*DI/2*DO/1*RO
- Support 4G/5G
- Dual sim card
- Support MODBUS/101/103/104 DNP3.0/MQTT

F-DPU110-RK



Protocol Converter

Dimensions



Parameters

Parameter	DPU100-RK	DPU110-RK
CELLULAR WAN	5G NR: n1/n2/n3/n5/n7/n8/n20/n28/n41/n66/n71/n77/n78/n79 LTE: B1/B2/B3/B4(66)/B5(18/19/26)/B7/B8/B12(17)/B13/B14/B20/B25/B26/B28/B29/B30/B38/B39/B40/B41/B42/B43/B46/B48/B71	5G NR: n1/n2/n3/n5/n7/n8/n20/n28/n41/n66/n71/n77/n78/n79 LTE: B1/B2/B3/B4(66)/B5(18/19/26)/B7/B8/B12(17)/B13/B14/B20/B25/B26/B28/B29/B30/B38/B39/B40/B41/B42/B43/B46/B48/B71
HOST INTERFACES	<ul style="list-style-type: none"> • 2*RS485, 2*RS232/RS485 Port • Wan 1*10/100M Ethernet port (RJ45 socket) • Lan 4*10/100M Ethernet ports(RJ45 socket) • 4*DI, 2*DO, 1*RELAY 	<ul style="list-style-type: none"> • 8*RS232/RS485 Port • Wan 1*10/100M Ethernet port (RJ45 socket) • Lan 4*10/100M Ethernet ports(RJ45 socket) • HDMI *1 • USB *1
Power	<ul style="list-style-type: none"> • Standard: DC 12V • Range: DC 9-24V • Rated power: <36W 	<ul style="list-style-type: none"> • Standard: AC 220V • Range: AC 100-265V • Rated power: <46W (100Vac/240Vac)
LAN	<ul style="list-style-type: none"> • DNS, DNS Proxy • DHCP Server • IP Passthrough (option) • VLAN • Host Interface Watchdog • PPPoE 	<ul style="list-style-type: none"> • DNS, DNS Proxy • DHCP Server • IP Passthrough (option) • VLAN • Host Interface Watchdog • PPPoE
SERIAL	<ul style="list-style-type: none"> • TCP/UDP PAD Mode • Modbus (ASCII, DTU, Variable) • PPP • Reverse Telnet 	<ul style="list-style-type: none"> • TCP/UDP PAD Mode • Modbus (ASCII, DTU, Variable) • PPP • Reverse Telnet
VPN	<ul style="list-style-type: none"> • IPSec, GRE, and OPENVPN Client • Split Tunnel • Dead Peer Detection (DPD) • Multiple Subnets • VPN Failover 	<ul style="list-style-type: none"> • IPSec, GRE, and OPENVPN Client • Split Tunnel • Dead Peer Detection (DPD) • Multiple Subnets • VPN Failover
SECURITY	<ul style="list-style-type: none"> • SPI Firewall function • Access Restriction • DMZ 	<ul style="list-style-type: none"> • SPI Firewall function • Access Restriction • DMZ
PROTOCOLS SUPPORTED	IEC101, IEC104, ModBus, DNP3.0 etc	IEC101, IEC104, ModBus, DNP3.0 etc
OPERATION ENVIRONMENT	<ul style="list-style-type: none"> • Operating Temperature: -35°C to +75°C / -31°F to +167°F • Storage Temperature: -10°C to 80°C / 14°F to 176°F • Humidity: 40%~90% (Non-condensing) 	<ul style="list-style-type: none"> • Operating Temperature: -35°C to +75°C / -31°F to +167°F • Storage Temperature: -10°C to 80°C / 14°F to 176°F • Humidity: 40%~90% (Non-condensing)

Industrial Router

Introduction

This product has been widely used in the M2M industry in the IoT industry chain, such as self-service terminals, smart grids, smart transportation, smart homes, finance, mobile POS terminals, supply chain automation, industrial automation, smart buildings, fire protection, public safety, environment Conservation, meteorology, digital medicine, telemetry, military, space exploration, agriculture, forestry, water affairs, coal mining, petrochemical and other fields.

F3X14-DK

Industrial Router

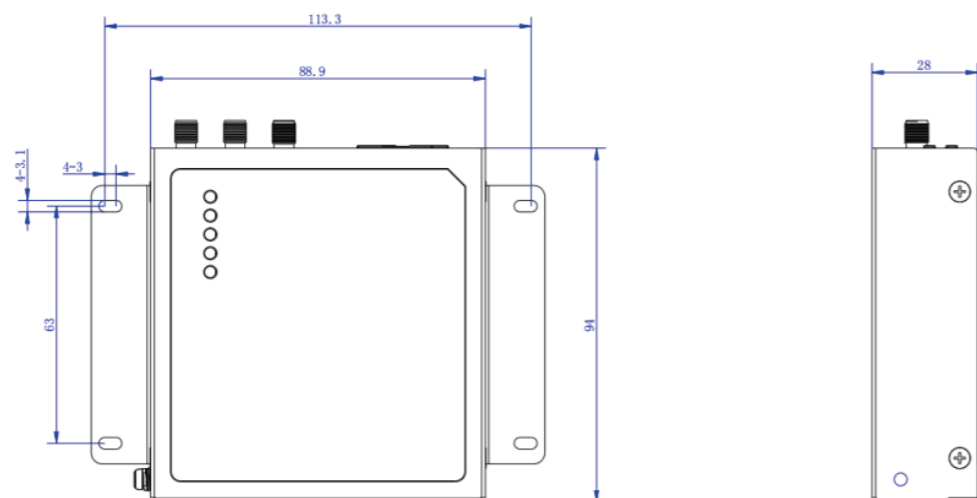
- Support RS232/RS485 serial port
- Support RJ45 Ethernet port
- Support routing and VPN functions
- Support 5G communication
- Support TCP/UDP connection



Parameters

Parameter	F3X14-DK
Standards and frequency bands	5G NR: n1/n2/n3/n5/n7/n8/n20/n28/n41/n66/n71/n77/n78/n79 LTE:B1/B2/B3/B4(66)/B5(18/19/26)/B7/B8/B12(17)/B13/B14/B20/B25/B26/B28/B29/B30/B38/B39/B40/B41/B42/B43/B46/B48/B71
Power supply	DC9~36V(Optional 9~60V)
SIM/UIM card interface	2 Standard SIM card interfaces, support 1.8V/3V SIM/UIM card, built-in 15KV ESD protection
Serial port	1 Channel RS232 serial port (configuration), 1 channel RS232 (optional with RS485) serial port (communication) parameters are as follows: Data bits: 5, 6, 7, 8 bits Stop bits: 1, 1.5 (optional), 2 bits Parity: no parity, even parity, odd parity Serial port rate: 2400~115200bits/s
Ethernet	Ethernet 10/100M, in line with Fast Ethernet specification; Lan port and wan port can be used interchangeably;
Standby	95~135mA@12VDC
Communication	165~220mA@12VDC
Housing	Metal, IP30
Dimensions	94x89x28 mm (not including antenna and mounting hardware)
Operating temperature	-35~+75°C (-31~+167°F)
Relative humidity	95%RH (non-condensing)

Dimensions



Wireless Communication Module

Introduction

The wireless communication module is the information entrance of all kinds of intelligent terminals connected to the Internet of Things (IoT), and is the key link connecting the perception layer and network layer of the Internet of Things (IoT). The data generated by all perception layer terminal devices need to be collected to the network layer through wireless communication module, and then control the devices through the cloud management platform remotely. At the same time, effective management and efficiency improvement of various application scenarios can be achieved through data analysis. Wireless communication modules are currently mainly used in 2G/3G/4G networks, which are widely used in smart grid, Internet of vehicles, mobile payment, etc. With the continuous development of NB-IoT/Lora and 5G technologies, they will inevitably replace the former gradually and be promoted widely.



F2X14-DK

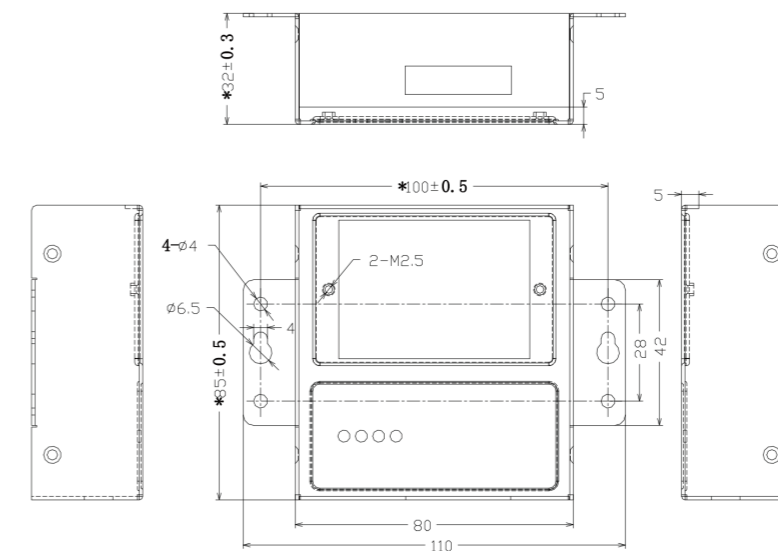
Wireless Communication Module

- Support 2G/3G/4G
- Support the Dual SIM Dual Standby
- Support RS232/RS485 serial port
- Support dual data center backup transmission
- support remote configuration upgrade and maintenance

Parameters

Parameter	F2X14-DK
Standard and Band	LTE FDD 2600/2100/1800/900/800MHz, 700/1700/2100MHz (Optional) DC-HSPA+/HSPA+/HSDPA/HSUPA/UMTS 850/900/2100MHz, 800/850/1900/2100MHz (Optional) EDGE/GPRS/GSM 850/900/1800/1900MHz, GPRS CLASS 10 EDGE CLASS 12
SDI	Num.of ports: 2 Port 1: RS232 Port 2: RS232 (Standard) / RS485 (Optional) Serial port type: Terminal interface Stop bits: 1、2 Parity: none, even, odd, Baud rate: 300~115200bps
Standard	DC 12V/0.5A
Power range	DC 5~36V
Communication	45~90mA@12VDC
Standby	10~15mA@12VDC
Housing	Metal, IP30
Dimension	110x85x32mm(Except antenna)

Dimensions



Distribution Automation Solutions



Contents

- 1 Overhead Line Automation Solution** **P**₂₅₋₂₈
 - Current Counter Solution
 - Loop Automation Solution
 - Auto-changeover Solution
- 2 Fault Detection and Position Solution** **P**₂₉₋₃₀
- 3 Smart Substation Solution** **P**₃₁₋₃₂

Overhead Line Automation Solution

Current-counter solution

The current-counter solution is usually used for radial lines, and the function is realized by the local FTU. When the logic conditions are met, the load break switch (sectionalizer) will be automatically open and locked out. The load break switch uses the detected current signal as the basis for logic judgment.

When over-current and ground fault of a line occurs, the upstream recloser or circuit breaker will execute open action. The load break switch will count the number of interruptions occurring on the fault current (over-current and ground fault). Once the number reaches a preselect value, it automatically opens and locks out when there is no voltage and current to isolate the permanently faulty section. Meanwhile, if the upstream recloser or circuit breaker closes again, the power supply of the non-faulty sections will be restored.

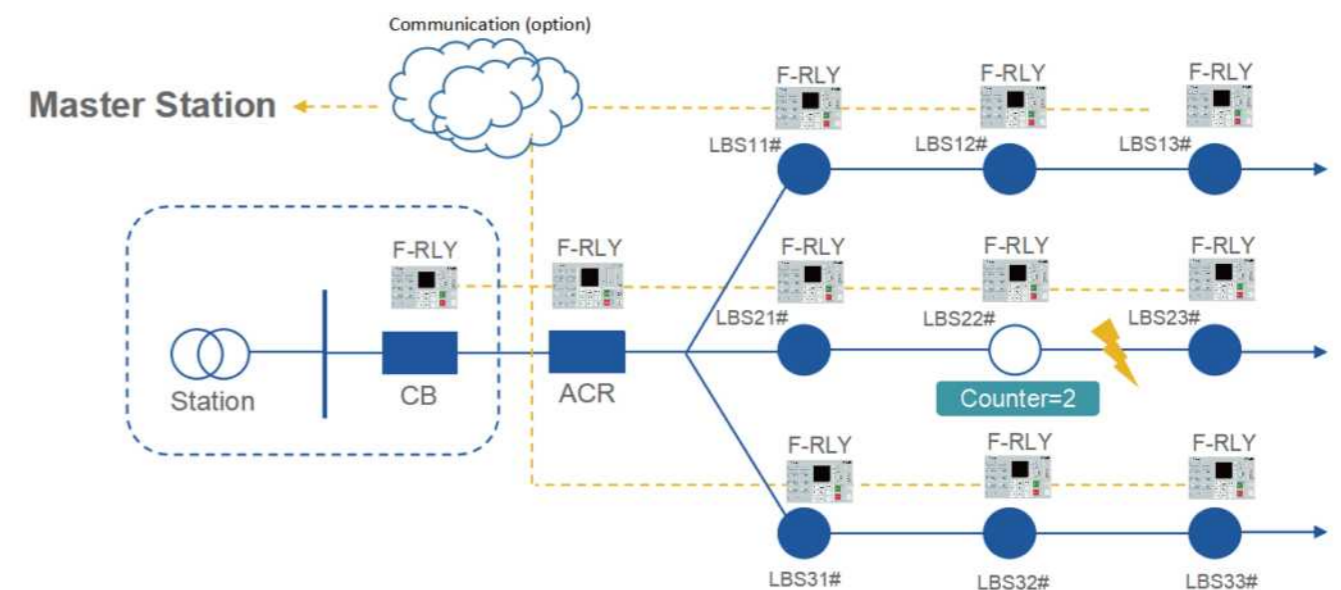
The whole process takes less than 1 minute.

Users may, according to their need, choose to establish communication and SCADA system for remote monitoring and control.

Overhead line distribution automation solutions enable rapid detection, isolation and restoration of feeder faults through the cooperation between reclosers, or between circuit breakers and load break switches.

The solutions are mainly divided into local and centralized types: the local type does not depend on the communication and SCADA systems. It can realize various logical actions through the local FTU; the centralized type needs to establish communication and SCADA, the master station sends control commands to the intelligent terminal, so as to realize the distribution network automation functions.

Our self-developed overhead line automation solutions, mainly local and partly centralized, with the innovative combination of both types, will meet the needs of customers for automation with different grid topologies. The solutions are mainly: Current-counter solution, loop automation solution and auto-changeover solution.



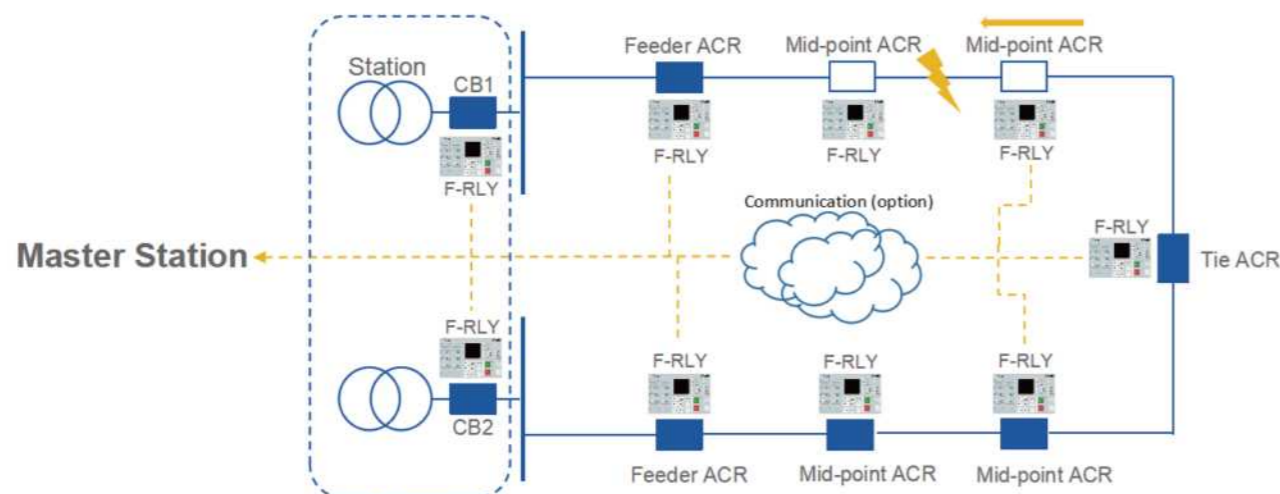
Loop Automation solution

The loop automation solution is applied in a ring network, and completed by the recloser and FTU it is equipped with. Depending on where the recloser is installed on the overhead line, it can be divided into: Feeder ACR, Mid-point ACR and Tie ACR.

When over-current and ground fault occur on the line, if the Feeder ACR detects the fault current and reaches the trip time, it trips for line protection, and filters the instantaneous fault through the first reclosing. It will trip again for reclosing lock out when it is a permanent fault; if no voltage is detected on both sides, it trips directly and locks out the closing after a set delay time. If the Mid-point ACR detects a fault current, it will trip before the Feeder ACR, and if it is a permanent fault, it will open and locks out; if it detects the absence of voltage on the power side, the current protection direction is reversed, and at the same time, the reclosing function is not activated and it becomes a single trip mode. When the Tie ACR detects voltage on one side and no voltage on the other side, it closes after a set delay time to complete the transfer of power; after the Tie ACR has closed, it plays the role of the Mid-point ACR. If the fault current is detected, it directly opens and locks out reclosing.

Through the above logic process, the recloser finally achieves faulty section isolation and restoration of power supply in the non-faulty sections within seconds.

Users may, according to their need, choose to establish communication and SCADA system for remote monitoring and control.



Auto-changeover solution

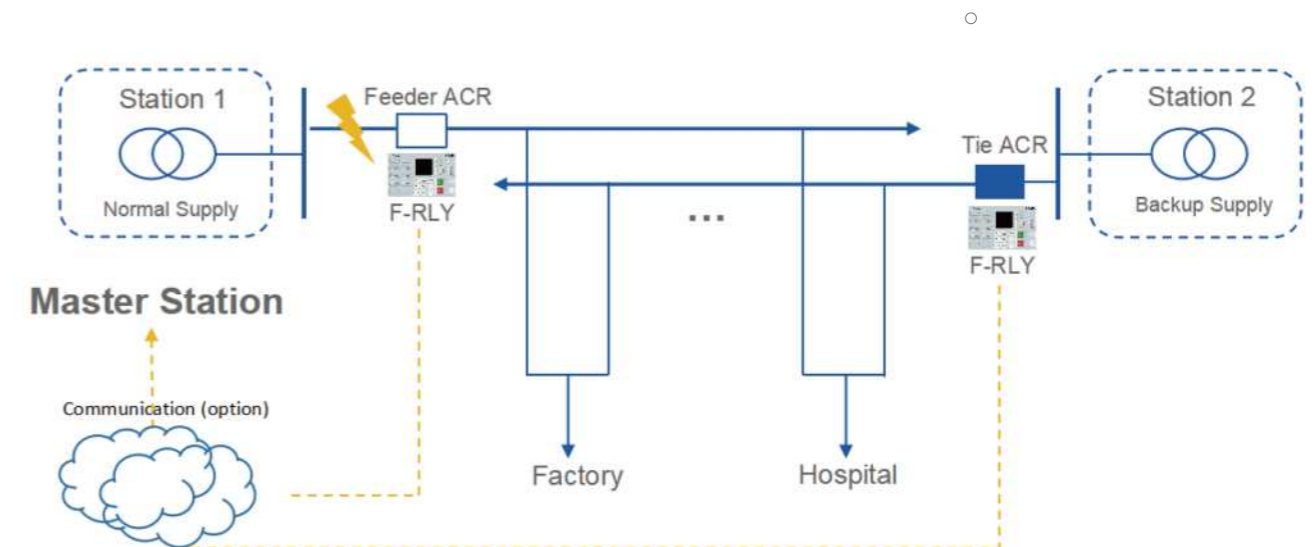
Auto-changeover solution is used in dual power supply system, usually the object of power supply is an important load, such as hospitals, factories, etc. The function logic is realized by the recloser and its own FTU. Depending on where the recloser is installed in the dual power supply system, it can be divided into: Feeder ACR and Tie ACR.

Normally it is powered by the main power supply. The Feeder ACR is installed on the terminal of the main power supply and is normally closed; the backup power supply is disconnected by the Tie ACR to prevent a closed loop.

When an over-current or ground fault occurs on the main power side, the circuit breaker in station trips, and the main circuit loses voltage. The Feeder ACR detects the absence of voltage on both sides, and after a set delay time, it trips and lock out the closing action directly; when the Tie ACR detects the absence of voltage on the load side, it closes after a set delay time to switch to the backup power supply and restore the power supply to the important load.

Through the above logic process, the recloser achieves automatic power transfer function within seconds.

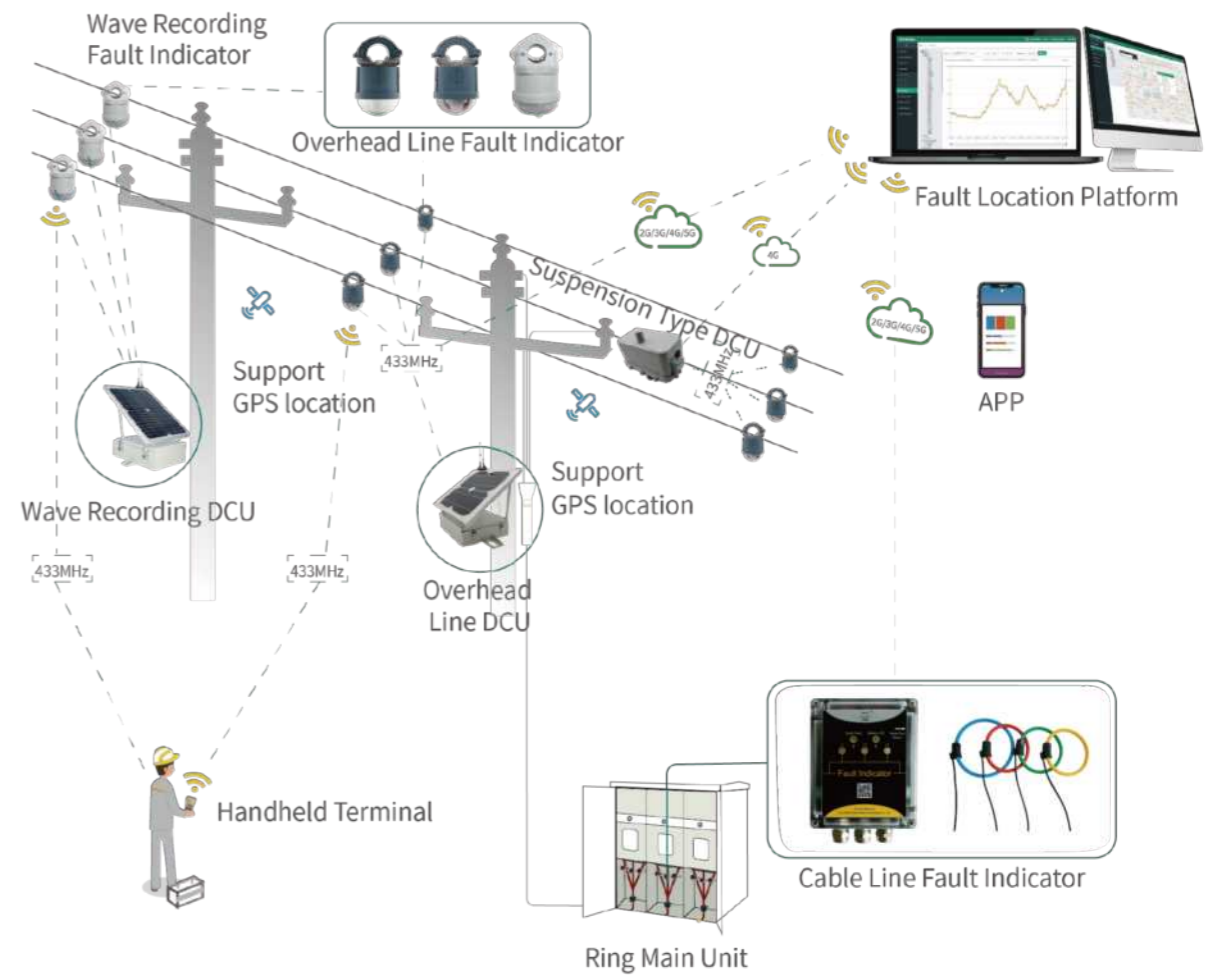
Users may, according to their need, choose to establish communication and SCADA system for background monitoring and control.





Fault Detection and Position Solution

Fault detection solution is applicable to overhead lines and cable line of distribution network. It is used for real-time monitoring of power lines and operating status and fault point detection and positioning. It is a distribution line fault monitoring system with remote transmission capability that features distributed monitoring, concentrated management and instant notification. In the case of non-fault, it monitors the changes in grid load to prevent line faults; in the event of a short circuit and grounding fault in the power line, it displays the fault location in a timely manner, which helps to guide the operations and maintenance personnel to quickly remove the fault and restore power supply, thus ensuring the stable operation of power lines and providing a basis for intelligent decision-making. At the same time, the fault signal will send to SCADA system platform, and SCADA system platform will display the fault information and fault location synchronously to help users identify and locate the fault point quickly.



Feature and Benefit

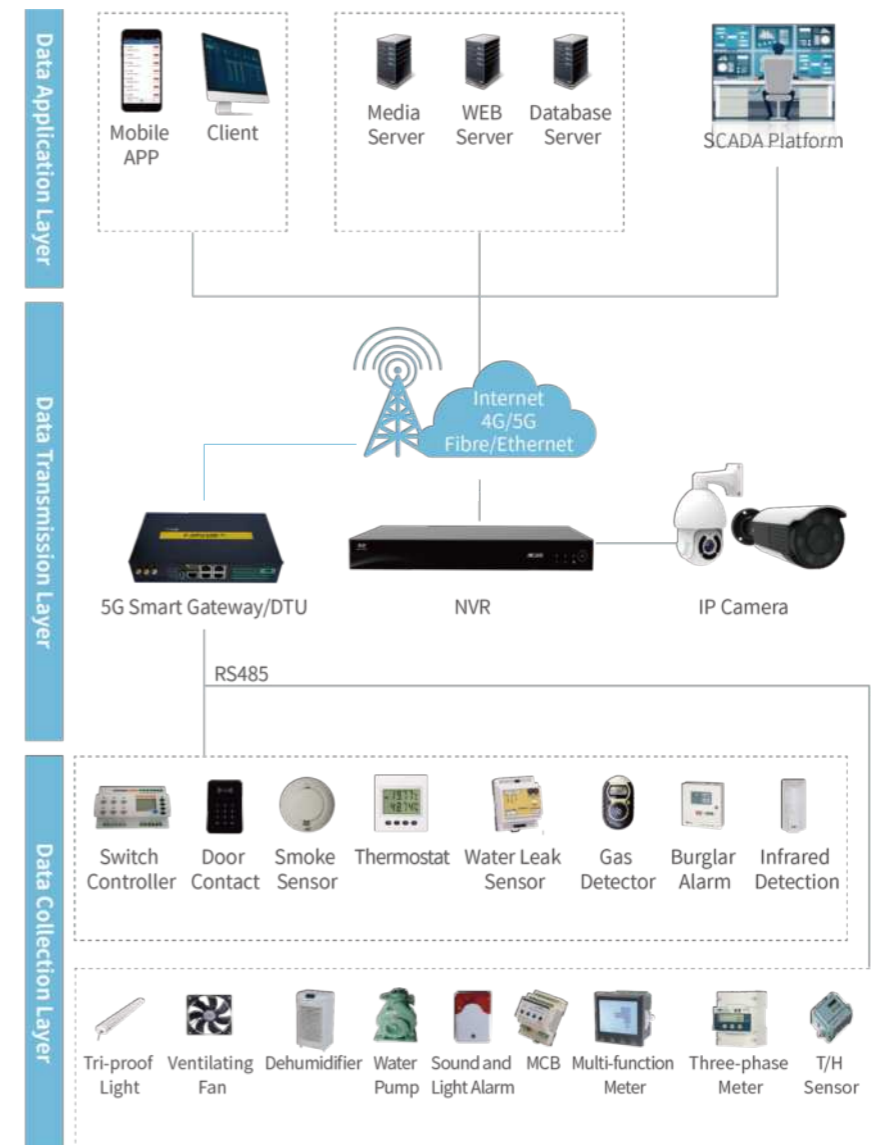
- 1** The big data platform runs safely and stably. The user interface of the platform is simple and easy to operate, and it is fully functional to meet all the needs of users.
- 2** It is used for the real-time monitoring of line status. It can rapidly locate and show the fault location and provide a better user experience through the mobile APP, cell phone SMS alerts pushing and other ways.
- 3** Remote configuration of equipment parameters and remote upgrade of collection units and aggregation units can be done without being on-site, facilitating the maintenance and management of equipment.
- 4** The system is simple to run, and can be operated remotely. It is easy to maintain, and can meet customer's needs.



Smart Substation Solution

Smart substation solution realizes intelligent switchgear operation monitoring, live display of high-voltage switchgear, load operation monitoring such as current and voltage, bus temperature measurement monitoring, cable temperature measurement monitoring, environmental monitoring, harmful gas monitoring, security monitoring, heating and ventilation monitoring, access control, lighting, fan, dehumidifier, air conditioning control and other functions.

Realize the detection of environmental data and equipment control, realize the optimization of the environment, avoid the loss of control of the operating environment leading to the operation failure of the power distribution equipment, ensure the safety of maintenance personnel, prolong the service life of the equipment, and reduce the excessive cost caused by the extensive management of the power distribution room. Distributed Remote Management of Power Distribution Environment.



Feature and Benefit

- 1** The platform implements remote and centralized monitoring of the power distribution room in the system, authorizes management, and realizes the real "unattended" power distribution room.
- 2** Extremely high security to prevent early warning attempts to destroy public property and unauthorized personnel.
- 3** Control the terminal through the communication layer, avoid going to the scene to deal with various faults, and deal with it when discovered.
- 4** Measurement, collection and verification of field (electrical and environmental) information.

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BUSINESS CASES

Overhead line FPI in SA

The customer is located in South of America, mainly dominated by thermal power generation. Due to its import dependency of fuel, the electricity price is relatively high. Under normal conditions, higher electricity price needs better service feedback to end user, however, an extended power outage encumbers end users' high quality experience, especially for some key users, such as hospitals and factories. Outage time is equivalence to a sustaining loss of life and fortune. The fault must be located as quickly as possible for processing isolation and restoration, thus shortening outage time and improving quality of electric power service.

"Four-faith Smart Power Technology" provides Overhead Line Fault Passage Indicator Solution, which has successfully solved the above problems for customer. Adopting advanced intelligent algorithms, extraction and judgment of fault feature can be completed within 20ms after the fault occurs, and local or remote instruction can help operation and maintenance personnel quickly locate fault area, thereby speeding up the restore time, shortening the outage interval, and providing important support to improve customers' electric service. Meanwhile, for village far from city and town, Fault Passage Indicator products provided by "Four-faith Smart Power Technology" have a service life of more than 10 years because of its Power Self-Sustained Solution (CT power source), thus greatly reducing maintenance costs and improving customers' efficiency of electric operation.



Gateway in MEA

The customer is located in Middle East Asia, it's electric market is developing rapidly and distribution automation is also deploying rapidly, communication system, as links, faces many challenges, such as malicious network attack and unstable data transmission, which seriously affect the remote management of power distribution construction. Protocol Convert Gateway (F-DPU model), provided by "Four-faith Smart Power Technology", has successfully solved above problems faced by customer. This product has firewall function, which can prevent cyber attacks, ensure data security in 3G/4G communication process, prevent data theft and leakage, and through 4G network in F-DPU product, within the coverage of base station, it can make sure the stability of on-site data output, avoiding data loss and leakage. In addition, the WiFi function in F-DPU can quickly deploy connection maintenance when an emergency occur, improving the operational efficiency of operation and maintenance personnel.

