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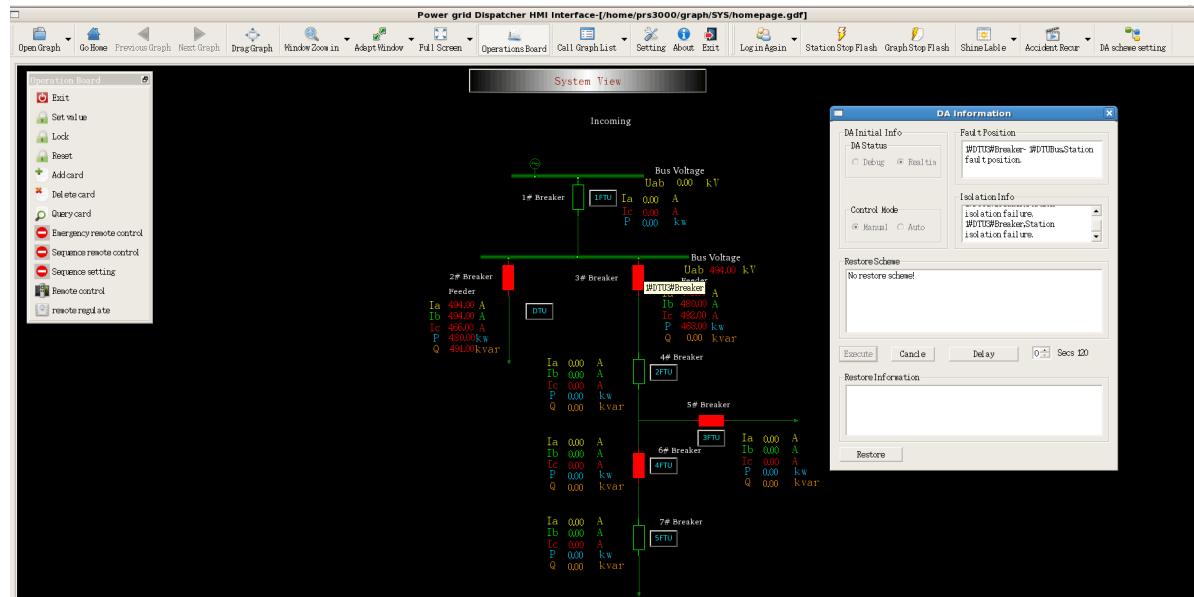


# PRs-3000



## General Application

PRs-3000 power distribution automation master station system is applicable to prefecture, city, county-level power distribution network, and also to power distribution network under 20kV and below. Based on standardized platform, with ultimate objectives of improving reliability of power supply, the line losses of power distribution network and power quality, promoting power supply capacity and management level, as well as decreasing operating cost.

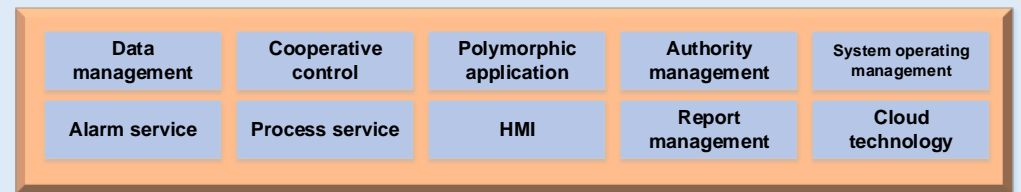
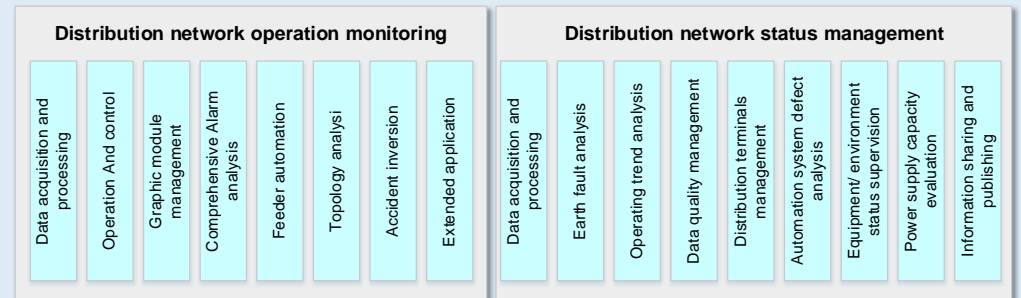


❖ Home Screen

## Feature

Item	Parameter
Standardization	IEC61968 / 61970 standard; Standard CIM model; Standard CIS component access interface; SVG standard graph; IEEE POSIX and OSF standards; C, FORTRAN, SQL database with ANSI standard; Open EMS made by IEEE working group of power control center.
Advancement	Uniform public service and system management; Layering platform design; Cross-platform solutions; Operation automatically synchronizes;
Openness	Support multiple commercial relational database, multiple brand hardware, multiple OS platforms. Provide standard database access interface, standard graphic editing, generation tools, standard network communication application layer protocol; The system capacity is extensible and function is scalable.
Security	Redundant configuration and cluster technology; Database disaster recovery technology; Database operation protection mechanism; Forward and reverse physical isolating device specially for trans-regional data; Fault alarm mechanism

## Software Functions



Supporting platform (Various middleware)

Operating system (Unix/ Linux/ Windows...)

Hardware platform (Computers and network devices)

## Technical Data

### Redundancy

Contents	Unit	Index
Time of hot standby switch	s	≤6s
Time of cold standby switch	s	≤4min

### Availability

Contents	Unit	Index
Annual availability rate of system equipment in the master station	%	≥99.9%

### Load Rate of Computer Resources

Contents	Unit	Index
Average load rate of CPU (within 5 min)	%	≤20%
Spare capacity (root zone)	%	≥20% (or 10G)

### System Node Distribution

Contents	Unit	Index
Accessible workstations number	PCS.	≥41
Number of front-end device group	PCS.	≥7

### Picture Invoking Response Time

Contents	Unit	Index
90% of the pictures	s	<4s
Other pictures	s	<10s

## Technical Data

### Acquisition and Monitoring of Power Distribution Data

Contents	Unit	Index
Accessible real-time data capacity	PCS.	≥1200000
Number of accessible terminals (each group is distributed in front)	PCS.	≥2500
Accessible control quantity	PCS.	≥90000
Updating time delay of the master station when the real-time data changes (local zone)	s	≤2s
Updating time delay of the master station when the real-time data changes (trans-regional)	s	≤4s
Time delay of remote control output in the master station	s	≤1s
Resolution ratio of event record	ms	≤1ms
Retention cycle of historical data	year	≥2 years
Response time of accident push picture	s	≤1s
Response time of invoking curve		≤2s
Time delay of coloring for single network topology	s	≤1.8s

### Feeder Fault Processing

Contents	Unit	Index
Number of feeder faults concurrently processed by the system	PCS.	≥20 PCS.
Time for processing one feeder fault (excluding the system communication time and data trans-regional transmission time)	s	≤5s

### Load-transfer

Contents	Unit	Index
Time for strategy analyzing single load-transfer	s	≤5s



# JYL-SR

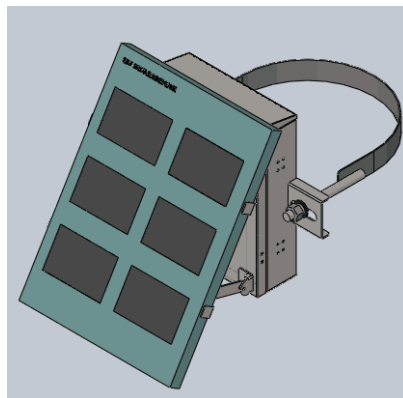


## General Application

JYL-SR aerial transient wave-recording remote transmission fault indicator is the auxiliary product that integrates fault detection and running status monitoring of distribution network lines at 35kV and below. It can reduce the response and handling time of line faults efficiently and improve power distribution reliability. JYL-SR consists of acquisition unit (JYL-SR-CX) and influx unit (JYL-SR-HD).



❖ Acquisition Unit

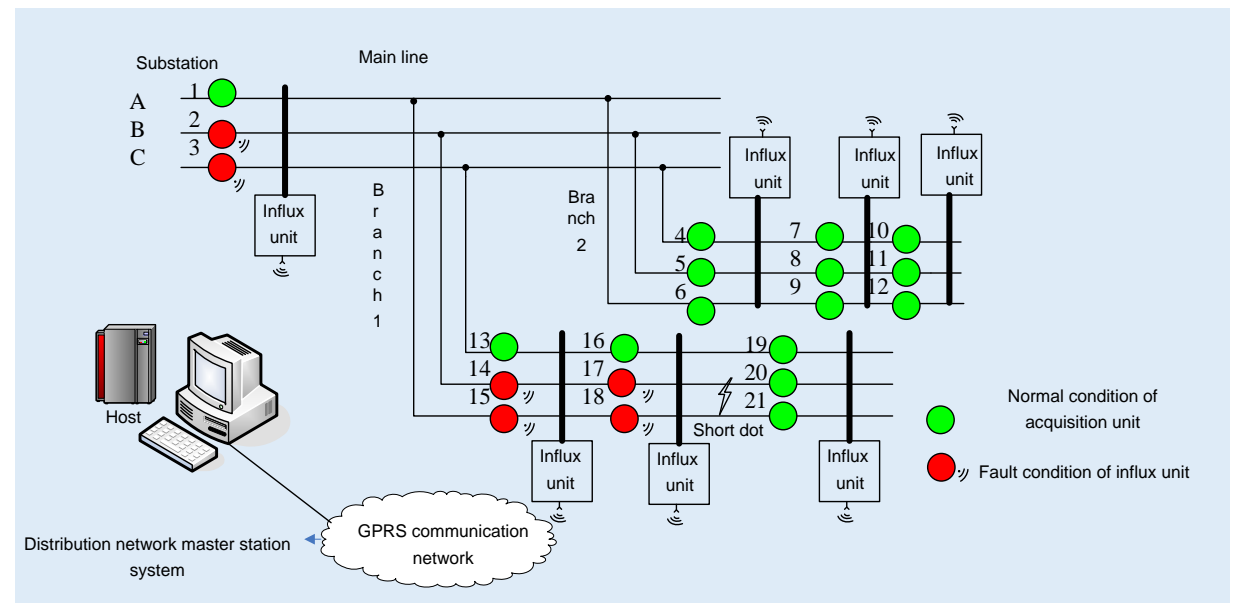


❖ Influx Unit

## Feature

Item	Parameter
Power Consumption	Adopt MCU with ultra-low power consumption and RF chips with low power consumption.
Energy-Acquiring	Acquisition unit realize continuous power acquisition when the line current is within the range from 0 to 600A. Influx unit adopts coupled electric modes of solar energy and storage battery.
Measurement	Current measurement range may reach 0~700A and the accuracy may reach 1%.
Monitoring	Provide work condition information of line current, over-the-ground electric field, fault status and electrification conditions, as well as auxiliary information of cable temperature, voltage of power acquisition and battery voltage.
Fault Identification	Accurately identify line faults and prevent from maloperation in case of current fluctuation, load switching, closing inrush current and non-fault-phase reclosing.

## Typical Application



## Device Functions

Supervision	Fault judgment, Fault location, Fault alarm
Measurement	Current: Ia, Ib, Ic, Io
Communication	RF, wireless GPRS with the protocols of IEC 60870-5-101, IEC 60870-5-104, USB to 232 lines for debugging
Recording	Fault message, waveform, log events
Synchronization	GPS clock synchronization, master station synchronization
Maintenance	Directly control outputs via maintenance tool

## Technical Data

### Electrical Specifications

Acquisition Unit	Applicable voltage class	6~35kV
	Applicable load current	0~600A
	Applicable power frequency	50Hz
	Maximum accessible fault current	20kA/4s
	Quiescent dissipation	<80μA
	Current measurement accuracy	Load current 0~300A: ±3A; 300~600A: ±1%
	Temperature measurement accuracy	±1°C
	Resetting time accuracy	±1%
	Wireless communication distance	≥60m
	Visual range at night	>200m
	Continuous flashing time	≥2000h
	Power supply mode	Inductive power acquisition + Lithium thionyl chloride battery (13Ah/3.6V) +Charging capacitor

## Technical Data

Influx Unit	Quiescent dissipation	<0.2VA
	Access number of radio frequency	≤3
	Service life	8years
	MTBF	60000h
	Power supply mode(optional)	Power acquisition by solar energy (15W/12V) +Lead-acid battery (7Ah/12V)
Power acquisition by solar energy (20W/12V) +Lithium iron phosphate battery (12Ah/12V)		
Power acquisition by solar energy (30W/12V) +Lithium iron phosphate battery (40Ah/12V)		

### Mechanical Specifications

Acquisition unit	Machine dimension	Height:172mm Diameter:118mm
	Weight	≤1Kg
	Color	Dark gray
	Protection grade	IP67
Influx unit	Pollution degree	IV
	Machine dimension (H×W×D)	Small case: 323mm*393mm*150mm
	Hole size	58mm*18mm
	Color	RAL7035light gray
	Protection grade	IP55
	Pollution degree	IV

### Environmental Parameter

Applicable environment temperature	-40~+85°C
Applicable environment humidity	≤95%
Applicable altitude	≤2000m
Maximum wind velocity	≤35m/s
Applicable wire diameter	35~240mm <sup>2</sup>

## Technical Data

### Communication

Acquisition Unit	Regularly upload messages of remote signal and remote metering to influx unit	Communicate with influx unit by RF only.
	Upload sudden fault messages to influx unit	
	Accept parameters reading and writing from influx unit.	
	Accept software upgrading from influx unit.	
Influx Unit	Communicate with master station	Communicate with master station by wireless GPRS Support 101 protocol Support 104 protocol
	Regularly upload messages of remote signal and remote metering	Including messages of remote signal and remote metering of acquisition units Including messages of remote signal and remote metering of influx unit.
	Upload sudden fault messages	Including fault warning messages of acquisition unit. Including fault warning messages of influx unit.
	Remote maintenance	Read and modify parameters of acquisition unit from master station Read and modify parameters of influx unit from master station Upgrade software of acquisition unit from master station Upgrade software of influx unit from master station
	Field maintenance	Connect with PC by serial port lines Modify parameters of influx unit. Modify parameters of acquisition unit. Upgrade software of influx unit Upgrade software of acquisition unit

### Terminals

Connection Type	Wire Size
Power supply	Screw terminals, 1.0mm <sup>2</sup> ~2.5mm <sup>2</sup> lead
Contact I/O	Screw terminals, 1.0mm <sup>2</sup> ~2.5mm <sup>2</sup> lead
Grounding (Earthing) Connection	Screw terminals, 1.0mm <sup>2</sup> ~2.5mm <sup>2</sup> lead

## Technical Data

### Measurement Scope and Accuracy

Current error	Range:0~1000A;0~300A:±3A; 300~600A:±1%
Accuracy of control operation	100%
Error of short circuit fault alarm activation	≤±10%
Duration of minimum identifiable short circuit current	≤40ms
Time deviation of fault and wave recording activation	≤20ms
Three-phase synchronization synthesis error	≤100μs



# PRS-3351



## General Application

PRS-3351 series feeder terminal unit (FTU), is mainly applied to pole mounted circuit breaker, branch circuit breaker, and distribution transformer. With the "three remote" function of distribution network automation terminal, local and centralized feeder automation solutions, power data acquisition and control, fault detection, fault section locating, isolation and power restoration of fault section can be achieved so as to improve power supply reliability.

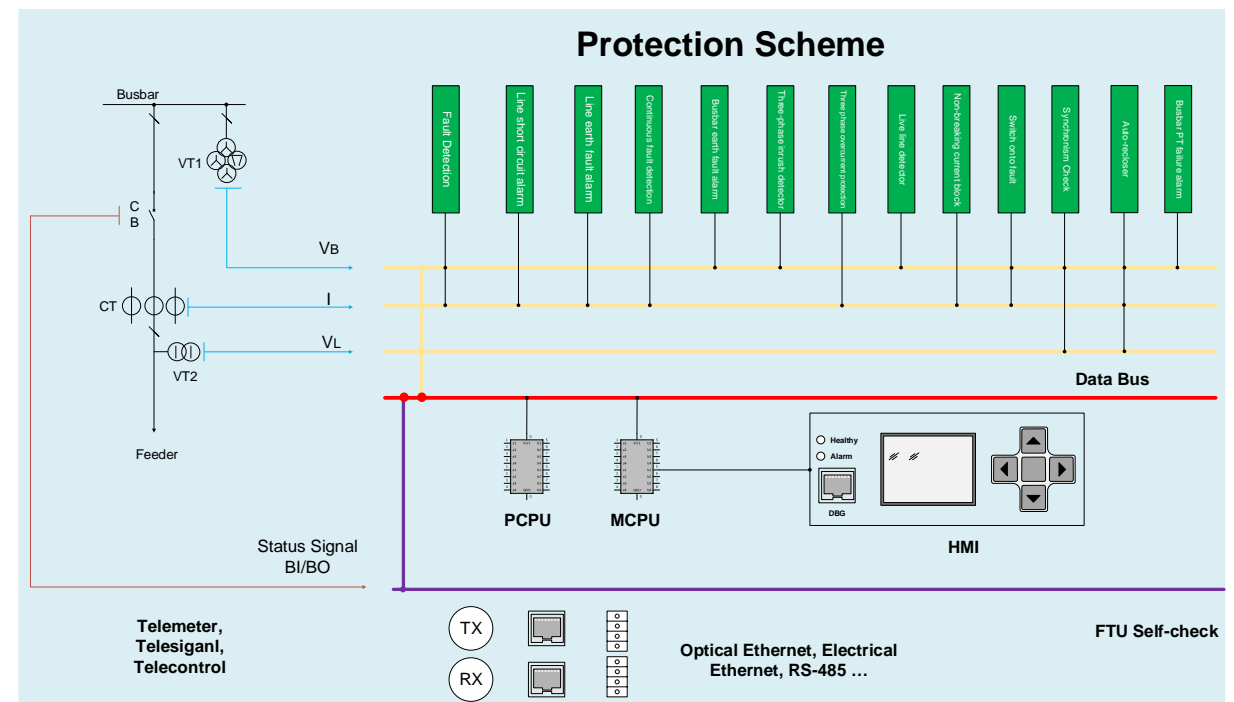


❖ Front Panel and Box Inside

## Feature

Item	Parameter
Performance	ARM+DSP dual-core CPU is adopted as the main CPU module, with good arithmetic capability and easy function expansion
Hardware	Modularized hardware design, plug-in structure, flexibly configurable, convenient extension
Measurement	High-precision collector and intelligent temperature compensation strategy is adopted for the terminal and the measurement accuracy
Communication	Various communication ports, which can be connected to electric meter and other intelligent equipment data and to various upper level master stations.
Protection	Quickly locate the fault, remove the fault section and restore power, locally fast self-healing of the distribution network.
Recording	Fully store record of various protection trips, input change record, self-test and unit error record, operation record, telemeter out-of-limit record and telemeter extrema record.

## Protection Functions





## Protection Functions

Function	Description
Fault Detection	Based on the acquired voltage & current amplitude and settings. The relative indicator light will be lit on and the fault information can be reported to the master or slave station.
Line short circuit alarm	Alarm signal will be issued if any phase current higher than the setting and last for the delay time.
Line earth fault alarm	Alarm signal will be issued if the zero sequence current higher than the setting and last for the delay time
Continuous fault detection	Continuously detect the overcurrent or earth fault condition, issue the alarm "the nth forward/reverse fault"
Busbar earth fault alarm	Alarm signal will be issued if the voltage higher than 18V(default) and last for the fixed delay time 10s.
Three-phase inrush detector	Calculate the ratio of the second harmonic and fundamental frequency phase currents, and block the correspond protection function.
Three phase overcurrent protection	Protection will operate if any phase current higher than the setting and last for the delay time.
Live line detector	Define the live line and issue remote signal, When the CB is in close state, and the maximum phase-phase voltage is higher than 0.7 times rated voltage
Non-breaking current block	Blocking the tripping binary output when fault current is much more higher than current tolerance of CB,
Switch onto fault	Accelerates the operation of the protection, ensuring a fast trip when the breaker is closed onto faulted feeder or bus.
Synchronism Check	Check for synchronization before closing has functions of frequency difference blocking, voltage difference blocking, angular difference blocking and frequency difference acceleration blocking
Auto-recloser	This relay will initiate the auto-recloser for fault clearance by the phase overcurrent protection, the earth fault protection etc.
Busbar PT failure alarm	Compare the bay voltage and the rated voltage or judge the amplitude of negative sequence voltage to conform PT failure and issue signal at the same time.

## Technical Data

### Environment Parameter

Normal operation environment temperature	-40°C~+70°C
Maximum change rate of ambient temperature	1°C/min
Relative humidity	5%~100%
Maximum absolute humidity	35g/m <sup>3</sup>
Atmospheric pressure	70kPa~106kPa
Altitude	< 3000m

### Rated Electrical Parameter

Frequency	50Hz	Permissible Deviation ±5%
Nominal voltage input	220V/110V	Permissible Deviation -20%~+20%;
Nominal current input	5A/1A	
DC power supply	220V/110V	Permissible Deviation -20% ~ +20%;
AC power supply	220V	
DC working voltage	48V/24V	Permissible Deviation -20% ~ +20%;
Harmonic component of AC power	Less than 10%	
The DC power supply ripple factor	Less than 5%	
power consumption	AC Voltage Circuit	<0.25VA/phase
	AC Current Circuit	<0.25VA/phase
Overload capacity	AC Voltage	Twice of rated voltage, continuous working
	AC Current	Twice of rated current, continuous working; 20 times that of rated current, permitting 1s

## Technical Data

### Analog Sampling

Precision of AC voltage/current sampling	Grade 0.2
Precision of DC voltage sampling	Grade 0.2
Frequency sampling precision	0.01Hz
Precision of active power, reactive power and power factor sampling	Grade 0.5
Input range of fault current	0~20In (In refers to rated input current) linear range, The overall deviation of fault current at 10In shall be not more than ±3%.

### Binary Inputs

Signal input mode	Passive contact
Input circuit	Optoelectronic isolation
Contact voltage	DC24V
SOE resolution	< 2 ms
Time for signal change transmission in case of fault	< 1s
Software debouncing time	Configurable in 0-60000 ms

### Telecontrol Output

Output mode	Normally open contact of relay
Contact capacity	DC24V 10A or AC220V 10A
Control command duration	Control pulse width can be set separately for each control contact

## Technical Data

### Power

Main power supply for distribution automation terminal unit	AC 220V/110V, permissible deviation -20%~ +20%	automatic switch function of two-way AC power supply
Backup power supply for distribution automation terminal unit	standard storage battery, optional lithium battery or super capacitor	the battery capacity can be configured as required; When external power is lost, the normal operation can be maintained for 8 hours or the number of opening/closing times can be more than 5
Output power of the power supply for CB operation	450W in short time (within 3~5s for CB closing to load)	
Overall power consumption of FTU (full configuration)	< 15VA	
Overall power consumption of FTU (half-case full configuration)	< 20VA	
Overall power consumption of FTU (full-case full configuration)	< 20VA	

### Communication Interface

Ethernet communication interfaces	3, one of which is commissioning port, expansion can be made as required	supports 10/100BASE-T self-adaption Ethernet communication
Serial communication ports	4, expansion can be made as required	supports RS-485/RS-232 communication

### Reliable

Average time for non-fault operation	No less than 50000 hour
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# PRs-3342



## General Application

PRs-3342 series distribution terminal unit (DTU), is mainly applied to ring main unit, small switching station, and power distribution room. With the "three remote" function of distribution network automation terminal, local and centralized feeder automation solutions, power data acquisition and control, fault detection, fault section locating, isolation and power restoration of fault section can be achieved so as to improve power supply reliability.

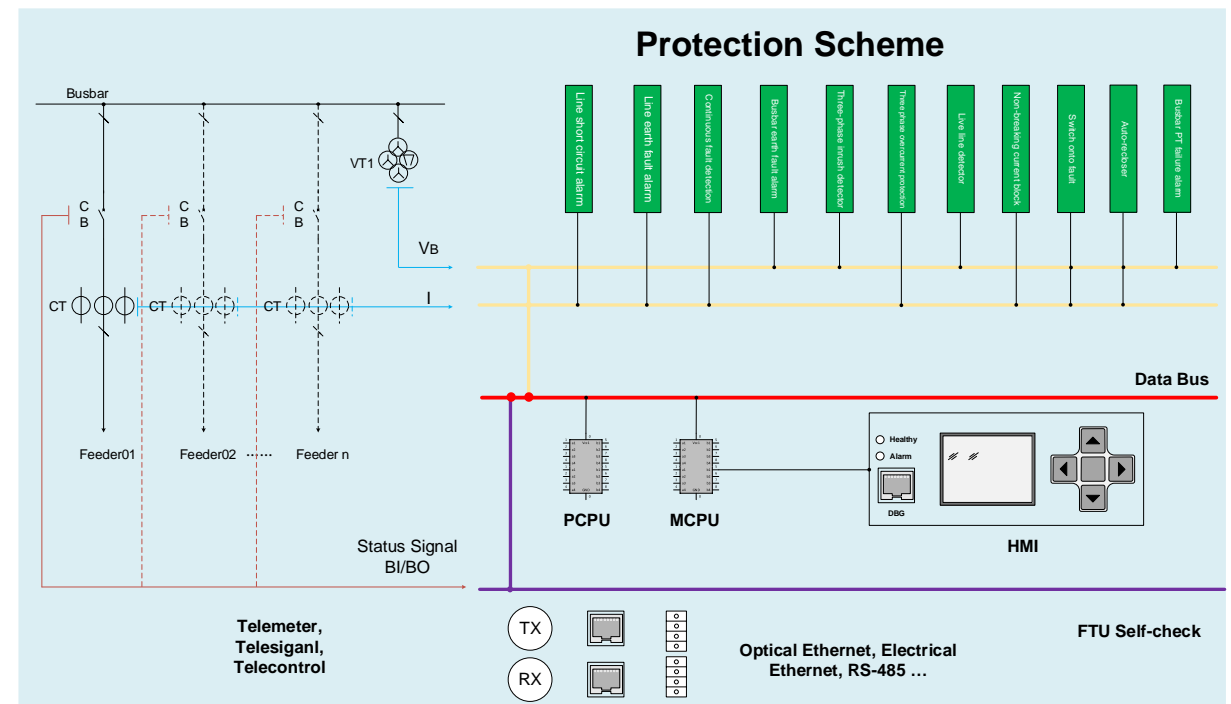


❖ Front Panel

## Feature

Item	Parameter
Performance	ARM+DSP dual-core CPU is adopted as the main CPU module, with good arithmetic capability and easy function expansion
Hardware	Modularized hardware design, plug-in structure, flexibly configurable, convenient extension
Measurement	High-precision collector and intelligent temperature compensation strategy is adopted for the terminal and the measurement accuracy
Communication	Various communication ports, which can be connected to electric meter and other intelligent equipment data and to various upper level master stations.
Protection	Quickly locate the fault, remove the fault section and restore power, locally fast self-healing of the distribution network.
Recording	Fully store record of various protection trips, input change record, self-test and unit error record, operation record, telemeter out-of-limit record and telemeter extrema record.

## Protection Functions



## Protection Functions

Function	Description
Line short circuit alarm	Alarm signal will be issued if any phase current higher than the setting and last for the delay time.
Line earth fault alarm	Alarm signal will be issued if the zero sequence current higher than the setting and last for the delay time
Continuous fault detection	Continuously detect the overcurrent or earth fault condition, issue the alarm "the nth forward/reverse fault"
Busbar earth fault alarm	Alarm signal will be issued if the voltage higher than 18V(default) and last for the fixed delay time 10s.
Three-phase inrush detector	Calculate the ratio of the second harmonic and fundamental frequency phase currents, and block the correspond protection function.
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