

Intelligent Modules Assembled In Power Distribution Unit

Data Center Solution

Instructions for Use

Reference No.:

Edition: A02

**Data center solution
Intelligent power distribution module
Monitor power quality and harmonic**

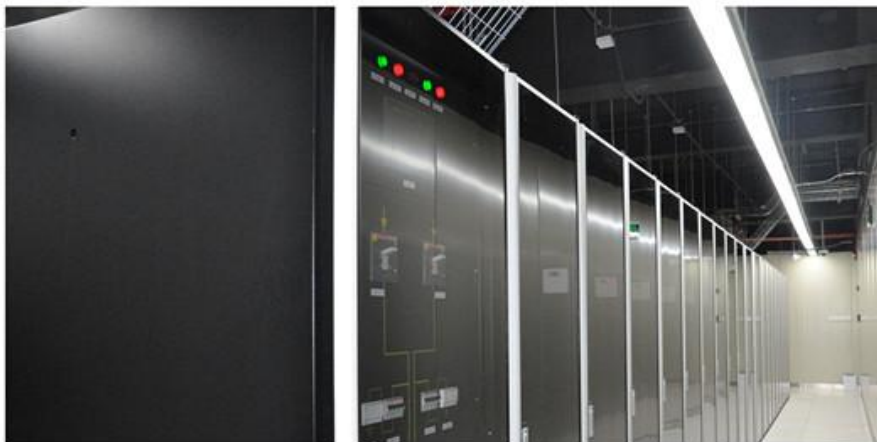


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I. Overview

Intelligent module precision array cabinet low-voltage power distribution (hereinafter referred to SPC (Smart Power Center) is new generation of modularization power distribution management system and mainly serves for IDC data room in finance, telecom, electric power dispatch, government and IT industry as well as provides the refined power utilization distribution and management for user's important loading.



Product appearance

II. Technological function and parameter information

Standard rated capacity		20~200kVA
mechanical parameter	Overall dimension (W×D×H)	600(800, 1000)×1100(500, 600, 800, 1000, 1200)×2000 (2200, 2500)mm, customizable
	Weight	160-250kg (without isolation transformer)
Electric parameters	service voltage	AC50/60HZ,Three Phase 400V, Single Phase 230V Grade
		DC 24VDC, 48VDC and 240VDC etc. multiple grades
	Input part	Optional for single circuit and double circuit
	Breaking capability of input switch	≥25kA
	output unit	Optional for single pole and multipole (MCB below 63A)
	Breaking capability of output	≥6kA
	Surge protection of electrical	Optional (Imax = 20kA, 8/20μS)
	Protection level	IP20
Testing parameters	Measureable parameters on main circuit	Electric quantity of main circuit, loading percentage, apparent power, active power, reactive power, power factor, electrical degree, frequency, zero-earth voltage and harmonic
	Measureable parameters on branch circuit	Electric quantity of branch circuit, loading percentage, apparent power, active power, power factor, electrical degree, frequency, harmonic and switch status, temperature, opening and closing frequency
	Warning information on the branch circuit	Input overvoltage/undervoltage, loss of power, overloading, frequency ultralimit, lightning protection on-off action, early warning for current on each branch circuit, warning of branch circuit, switch temperature and switch life.
Optional components	one-to-one transformer	Optional
	Auxiliary contact for branch circuit switch	Switch location, auxiliary warning contact
	Extension testing	Temperature testing, humidity testing and smoke sensing testing inside cabinet

Parameters under normal working environment	Temperature and humidity	Temperature: -5°C ~ +40°C , humidity: 0-90% no condensation
	Elevation above sea level	≤2000m; while exceeding 2000m, use for derating capacity
	Others	Non-dustiness Occasion free of intense vibration and impact
Communication protocol		RS485, RS232 Modbus, TCP/IP and SNMP etc.
Certifications		3C

III. Installation Maintenance

3.1 Installation procedure of product

Appearance inspection

1. Inspect the outer packing of cabinet. If the obvious collision and deformation trace is found, remain the original status and timely notify the forwarding agent.
2. Open the cabinet packing and inspect the cabinet appearance. If the cabinet appearance is found to be damaged, notify the forwarding agent and dealer, please!
3. Inspect whether the attached accessories are complete. If the accessories are found to lack, immediately notify the dealer, notify the dealer, please!

Cabinet carrying and fixing

1. Carry the cabinet onto the site where the installation is ready to be conducted. In the process of carrying, the forklift and other similar hoisting equipment must be employed, the hoisting mode can't be employed.
2. After the cabinet is positioned, fix the cabinet foot or fix the cabinet securely by the screw. The cabinet weight is heavier, ensure that the cabinet has been safe and reliable.

Notice: the installation environment must meet the requirement of this manual; under normal condition, over 800mm operating space should be reserved on the front and back of cabinet. If the cabinet that can lean against the wall rearward is customized, reserve the sufficient space on the corresponding side.

Cabinet wiring

1. Based on loading condition, select the electric cable with appropriate specification.
2. Before inspecting the wiring safely, the upper input switch required to be contacted in the whole operation must be confirmed to have been disconnected already, the electric cable and connecting conductor are electrically neutral uniformly. In the process of installation, the necessary protective tools must be used correctly.
 - c. The input null line is connected onto corresponding copper bar conductor.
 - d. The input live wire is connected onto corresponding Phase A, Phase B and Phase C input terminal for wiring.
3.
 - a. Penetrate the input electric cable into cabinet. On the top and at the bottom of cabinet, uniformly provide the incoming line hole, the use may select the upward incoming line or downward incoming line mode based on actual requirement.
 - b. Connect the input ground wire onto the corresponding copper bar conductor.
 - c. Lead out the corresponding live wire, null wire and ground wire from terminal board as

well as connect onto the corresponding loading.

- d. Employ the fixing bracket of electric cable to fix each electric cable. Generally, the input electric cable and output electric cable should be routed respectively and fixed to reduce the crosstalk between input and output.
- e. Based on demand, connect the corresponding communication connecting wire.

3.2 Product use

Prior to putting into use, following inspection must be conducted for cabinet:

1. Confirm that the cabinet's ground wire has been connected reliably.
2. The insulated resistance of measured cabinet should not be lower than $2M\Omega$. (Prior to measuring, be sure to cut off relevant secondary circuit. Each output switch is on disconnection status.)
3. After confirming to be free of error, power on the equipment according to steps as follows.

Notice: prior to powering, the equipment must be confirmed by the engineer !

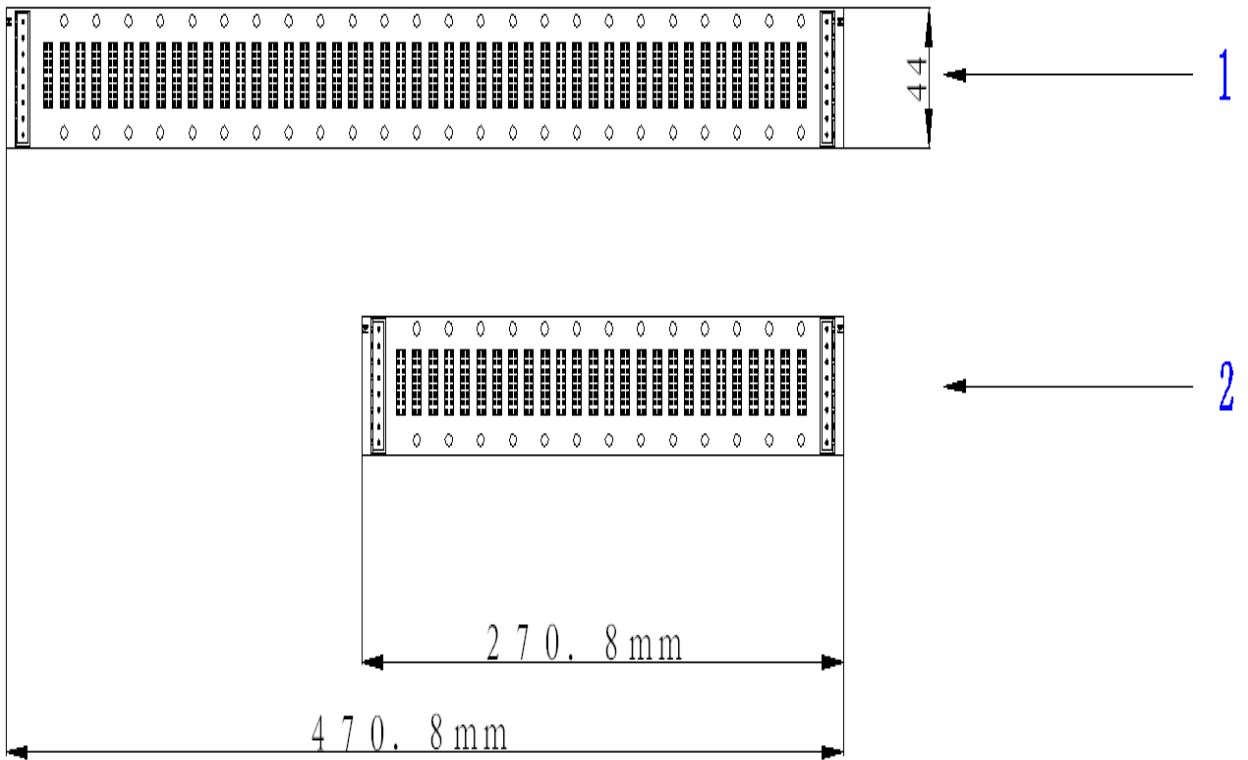
Powering step:

1. Switch on the input switch on the main circuit.
2. After 1 minute, observe whether LCD displays normally.
3. LCD operation guider operates LCD and observes whether each parameter is normal.
4. According to demand, switch on the output switch of corresponding feeder and supply the power towards loading.

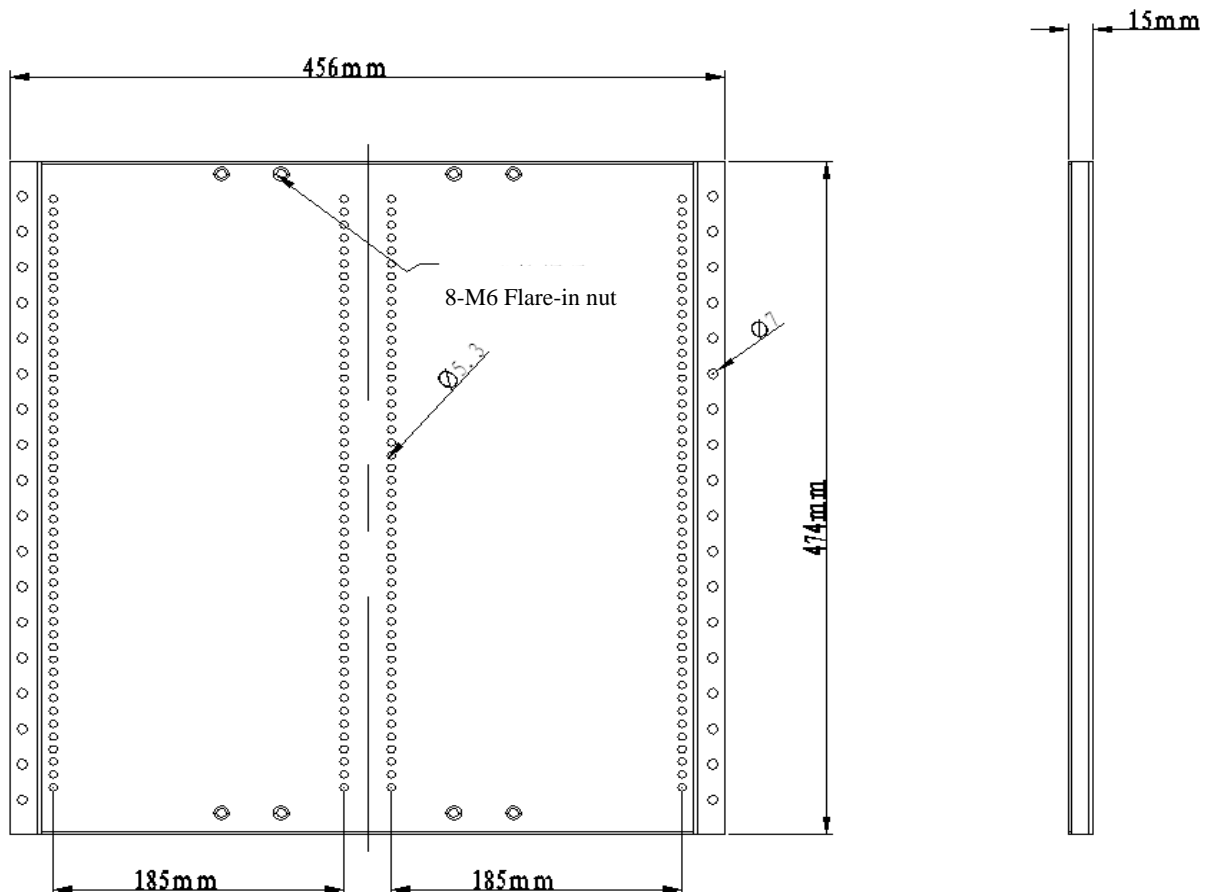
3.3 Installation introduction

Prior to installation, properly design the loop number required by the system and allocate the corresponding standard communication interface and installation baseplate.

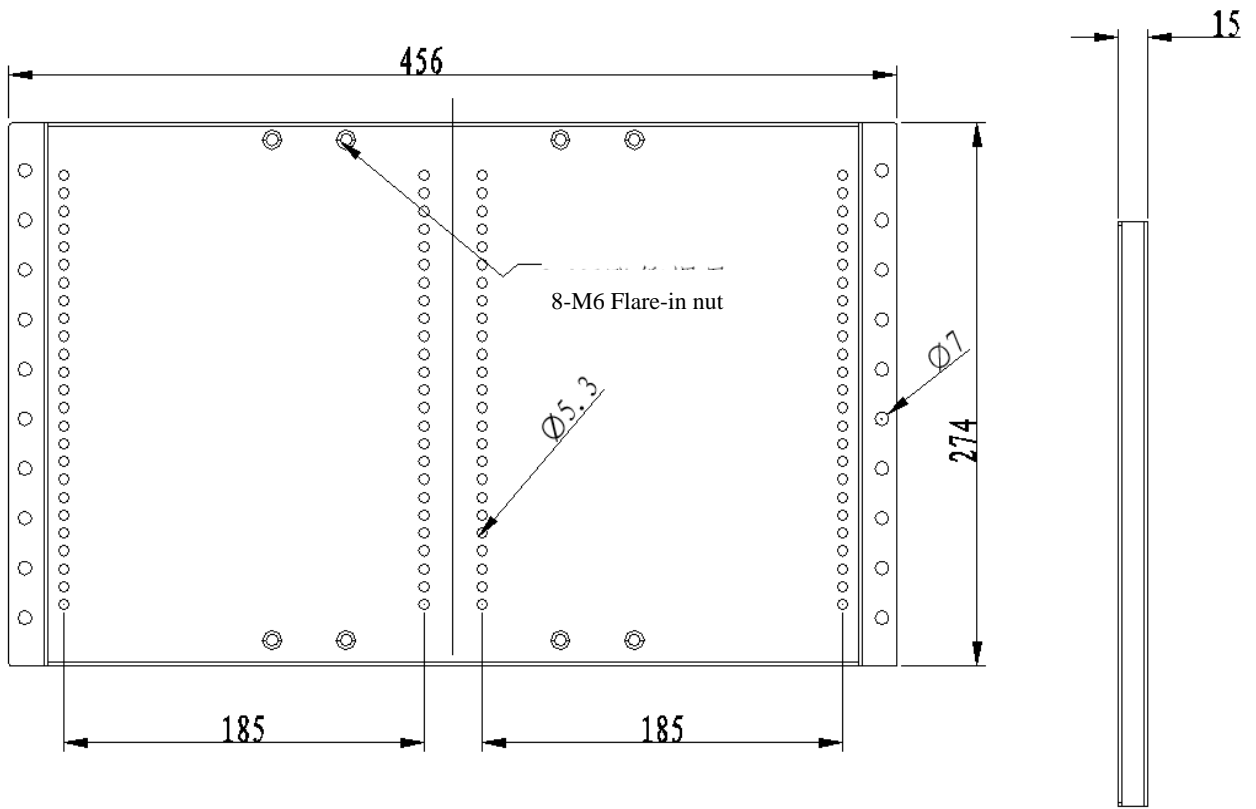
There are two kinds of specification for standard communication interface and installation baseplate uniformly:



1. 2# standard communication interface board



1 2# standard installation baseplate



2 2# standard installation baseplate

3.3.1 Internal Layout



Dimension of power distribution cabinet (1200W*600D*2000H)		
S/N	Miniature circuit breaker	Loop number
1	1P	8
2	1P+MX	2
3	3P	4
4	3P+MX	34

IV. Attached technical data

- precise power distribution cabinet operation instruction
- Ex-factory test report
- Whole set of technical drawing

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- Compliance Certificate
 - Packing List
 - Others

V. Packaging, transportation and safekeeping

Packing

Employ the dampproof and dust proof wholly-sealed packing case that can't be damaged mechanically.

Transportation

The fierce vibration, collision and inversion should not be allowed during product transit.

Custody

After purchasing, if the immediate use isn't conducted, following points should be noticed when the long-term or short-term safekeeping is required:

The equipment should be stored in the place with good ventilation to avoid high-temperature and dusty environment with much metallic foam.

The rainproofing, waterproofing and sunshine-proofing measures should be taken in the storage place.

VI. After-sale service and ordering notice

After sale service

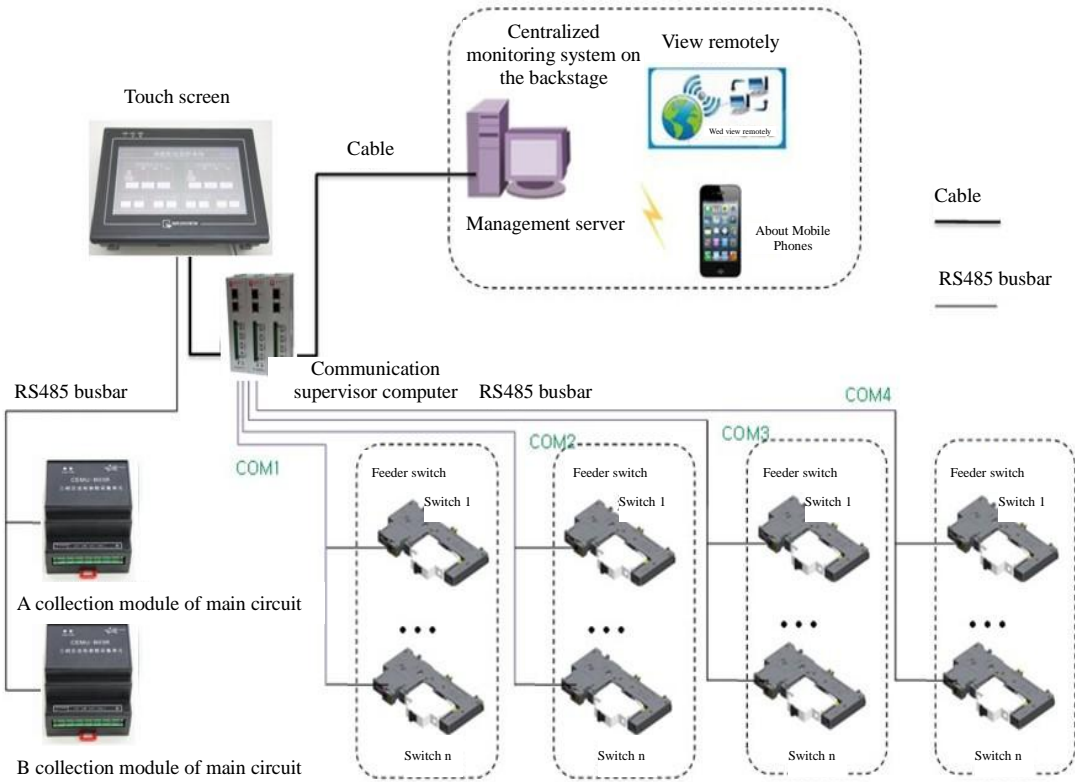
When the product is damaged not to work normally due to poor manufacturing quality, this company shall debug and repair free of charge. or replace the spare parts and guarantee for one year, with lifetime maintenance, the maintenance demand shall be responded within two hours; in the place where the aircraft is open to navigation, the maintenance demand shall be responded within 24 hours. Rush onto site.

Ordering Information:

- Note the equipment service environment and purpose;
- Note the equipment name, model, specification, quantity and date of delivery as well as relevant parameter requirement of system;
- Note the incoming line and branch circuit branch's capacity and quantity, frequent loading capacity and relevant requirements;

-
- Note the overall dimension and color of cabinet;
 - When the user has the special service environment and other technical requirements for equipment, the technicians from factory shall be invited to sign the technical agreement through negotiation.

Appendix 1 Monitoring System



Monitoring Network Diagram

The precise power distribution cabinet covers two parts: hardware system and software monitoring system. The hardware system mainly covers collection modules to monitor power quality (including the current,voltage, etc), alarm output device, LCD touch screen,etc.

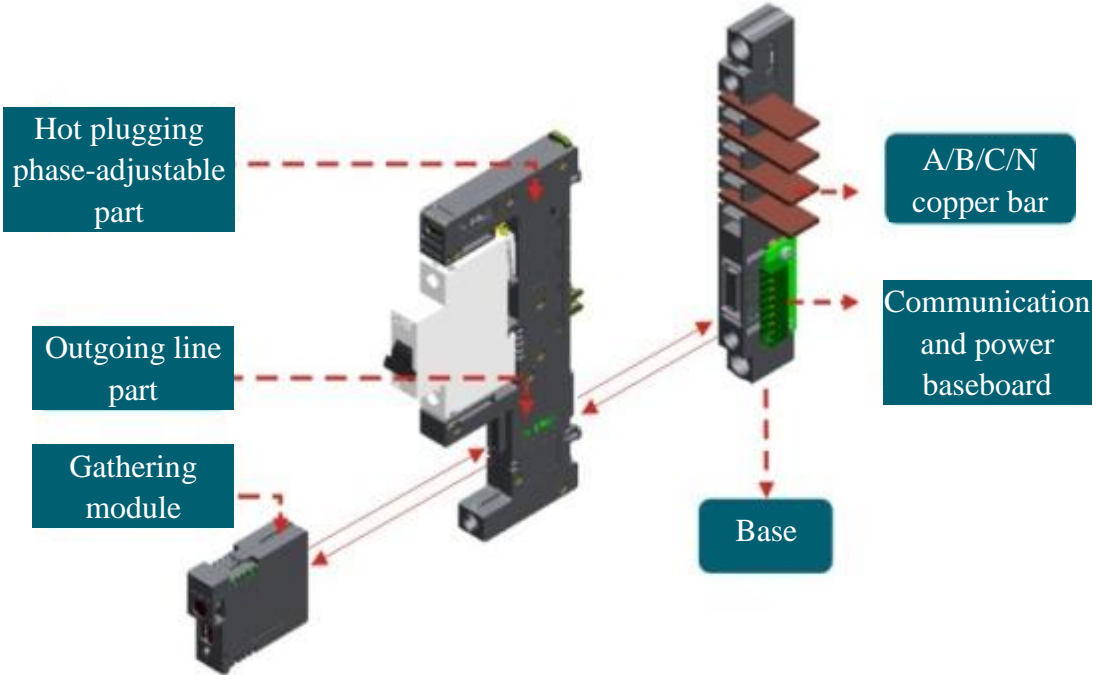
The monitoring system is composed by system monitoring software to implement the all-around monitoring and record for power supply status, current detection/monitor on each part, pre-alarm for voltage and current’s threshold valve and switch action warning parameters,etc.

Appendix 2 Operation Instruction of iTAC120 M Series Intelligent Adjustable Module

1. Scope of Application

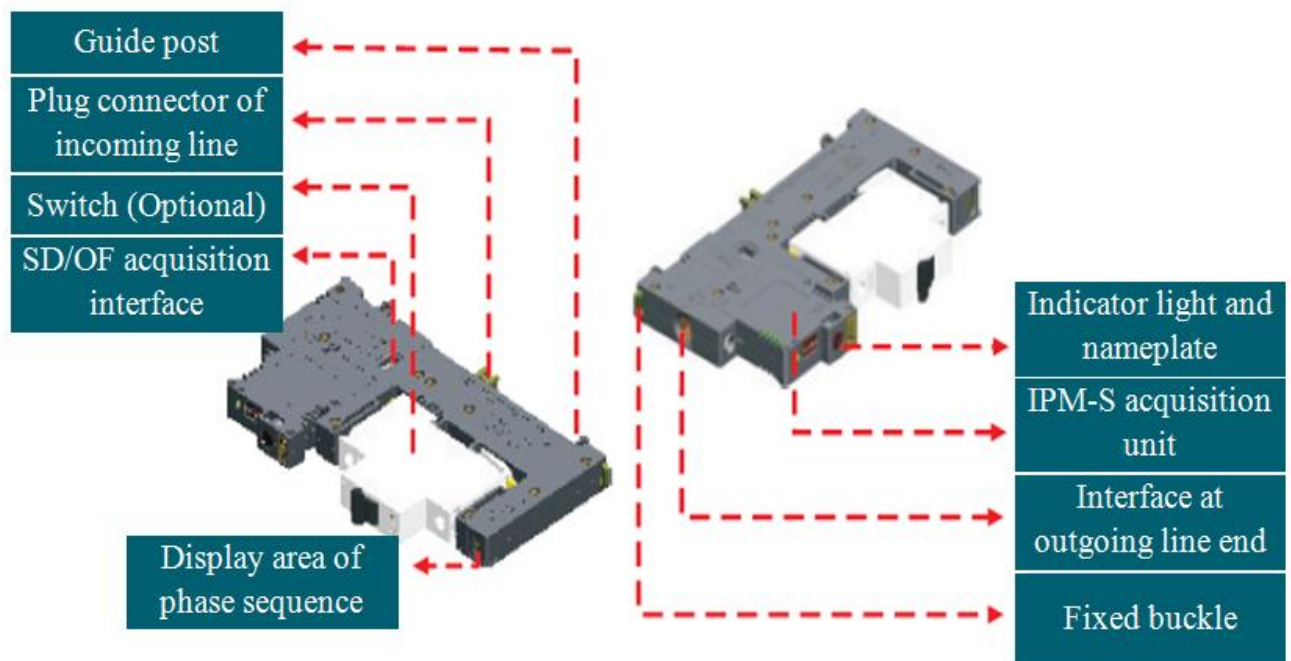
iTAC120 M series intelligent Adjustable Modules are applicable to data center and other power distribution systems in Telecom, IT companies, financial companies, schools, buildings, cloud servers, etc.

2. Structure composition



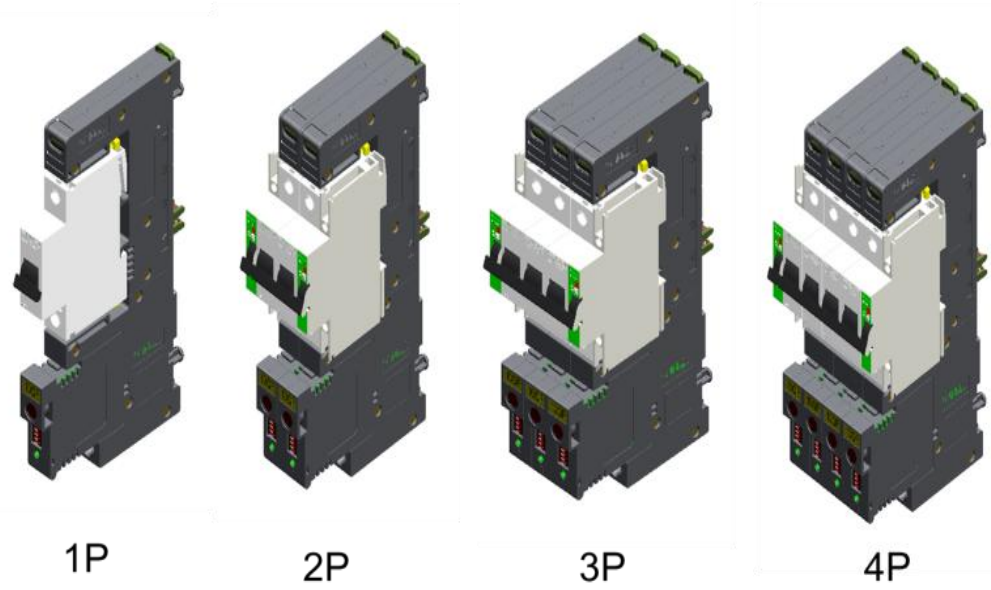
iTAC120M series intelligent adjustable modules are mainly composed by pluggable phasing part of incoming line, outgoing line part and base.

Therein, the connection between incoming line part and incoming line of main power source is provided with the live pluggable phasing function; except that the power source is supplied to loading end on the outgoing line part, the built-in acquisition module can also acquire various electricity parameters for feeder on this branch circuit and implement the information interaction for communication baseplate of base and backstage so as to realize the system’s remote management.

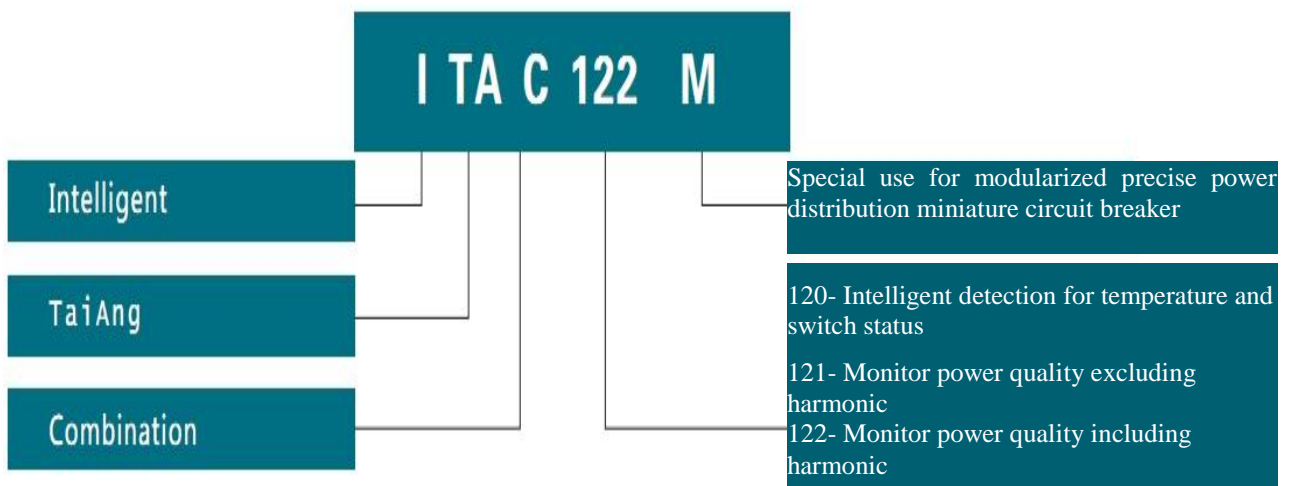


3. Main functions

- Pluggable maintenance in live doesn't affect other branch circuits' power supply;
- Easy phase selecting, three-phase loading for balanced system, onsite display for phase sequence;
- RS485 communication function;
- Support OF and SD of auxiliary installation contact;;
- Monitor the current, voltage, power, power factor, active and reactive power, power factor, electrical degree, harmonic wave and switch temperature, etc;
- The rated current of components is designed to meet the application demand of 63A rated current rating and below;
- All miniature circuit breakers at home and abroad as ABB, Schneider, Nader and Dem are compatible, and can be flexibly assembled as required.



4. Model and Meaning

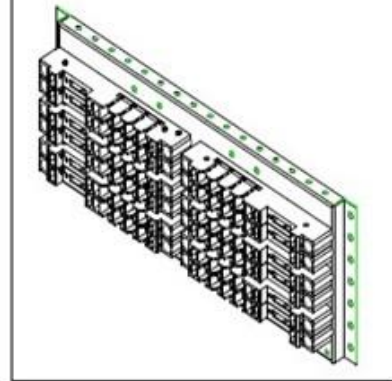
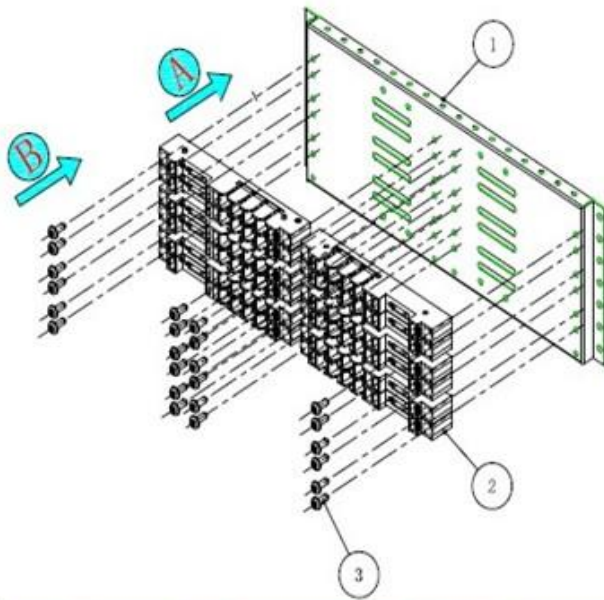


5 Installation examples



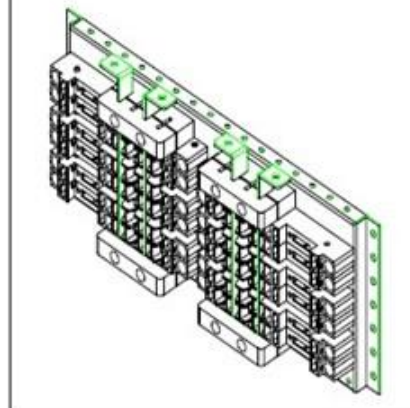
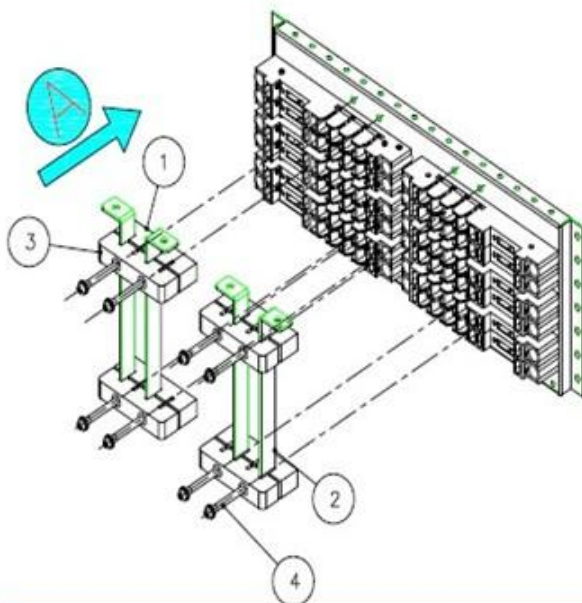
Schematic Diagram on Installation for Horizontal Left and Right Side

Base mounting



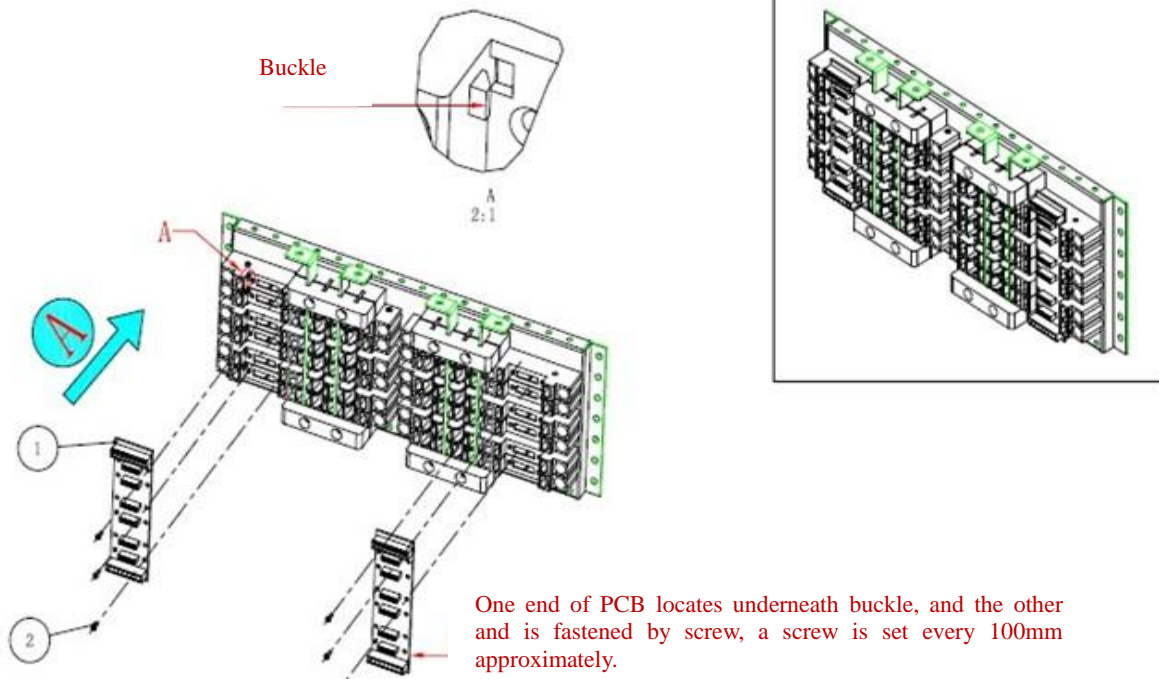
1. Baseboard; 2. Base; 3. ST 6.0*18 tapping screw.

Busbar mounting



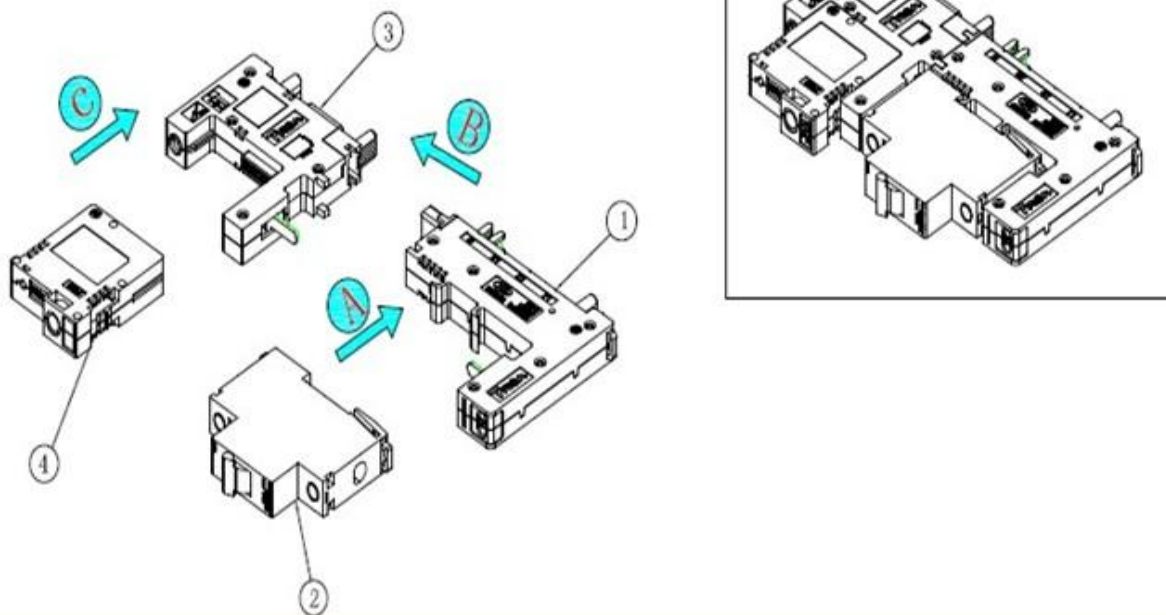
1 and 3, special busbar clamp; 2. Busbar; 4. ST 6.0*45 Screw.

Installation of communication PCB



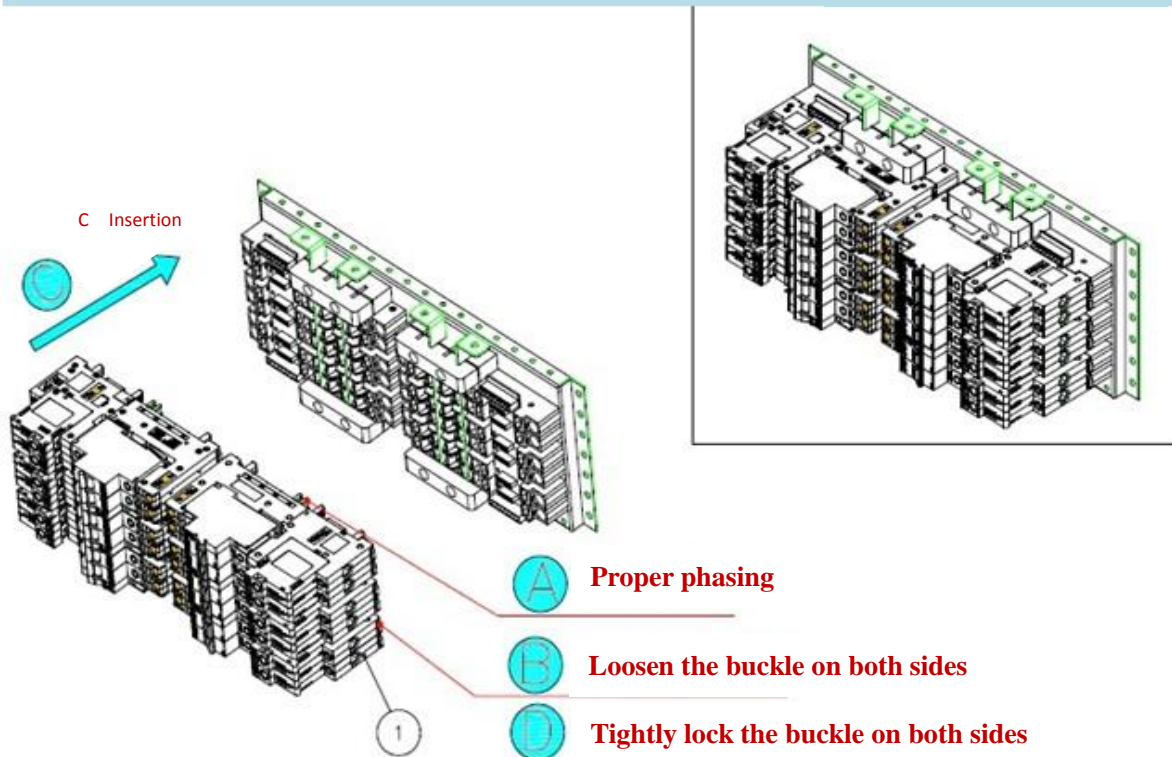
1. PCB board 2. ST 4.2*10 self-tapping screw.

Module Installation



1. Phasing components; 2. Miniature circuit breaker; 3. Gathered components for outgoing line ; 4. Gathering module.

Component insertion



1. Module components.

6 Module dial-up setting

Set the module address as shown in the figure below, dial onto ON location, it is 1; dial downward, it is 0; it is suggested not to set 00000 and 11111, this address is used as broadcasting location frequently, the specific setting is as follows accordingly:

ON				
□	□	□	□	□
1	2	3	4	5

Binary system	10000	01000	11000	00100	10100	01100	11100	00010
Decimal system	1	2	3	4	5	6	7	8
Binary system	10010	01010	11010	00110	10110	01110	11110	00001
Decimal system	9	10	11	12	13	14	15	16
Binary system	10001	01001	11001	00101	10101	01101	11101	00011
Decimal system	17	18	19	20	21	22	23	24

Binary system	10011	01011	11011	00111	10111	01111		
Decimal system	25	26	27	28	29	30		

7. Use and maintenance

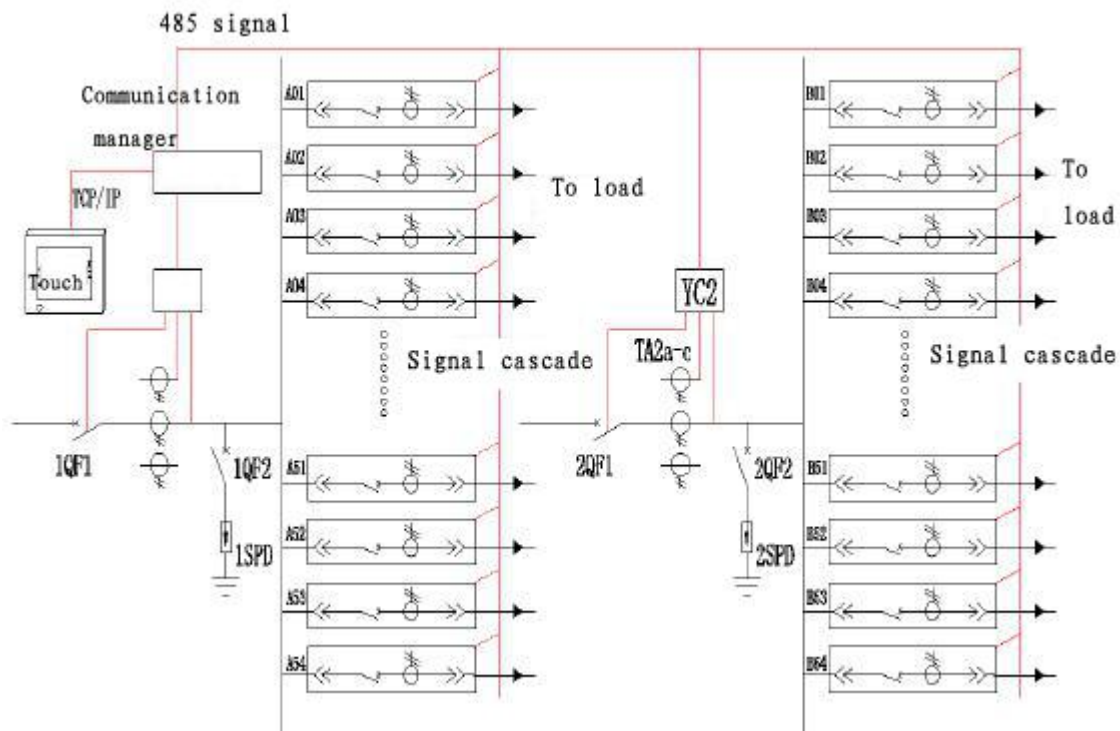
1. The product can't be exposed to rain during transportation & safekeeping and shall be placed or installed free from the invasion of rain.
2. The product shall be regularly inspected during operating, and the inspection period depends on the work condition, and the power supply shall be cut off during the inspection. The inspection items mainly include:
 - A. Remove the dust and dirt, and particularly remove the dirt between incoming and outgoing line levels.
 - B. Tighten the binding screws.

8. Safety warning

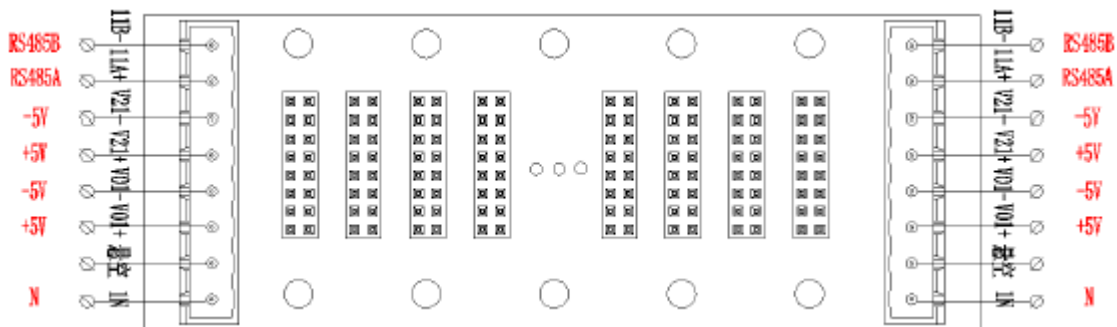
1. While installing the products, the operation in live isn't allowed so as to prevent the electric shock:
2. The live wire (phase wire) to earth short-circuit or null wire (neutral wire) and live wire touching method is **not** employed to test the product performance so as to avoid endangering the personal safety.
3. While installing, the wiring screw should be tightened tightly, and the lead wire can't be loosen or pulled out easily, the cross section of lead wire should be selected according to the requirement specified in this instruction;
4. It is strictly forbidden to operate the circuit breaker by using wet hands, otherwise, the electric shock accident may occur possibly;

Appendix 3 System Diagram

Appendix 1 Typical Array Cabinet System Diagram



Appendix 2 Communication Base Plate Wiring Diagram



Note: V01 and V21 of communication base plate are two groups of independent 5V power supply.

