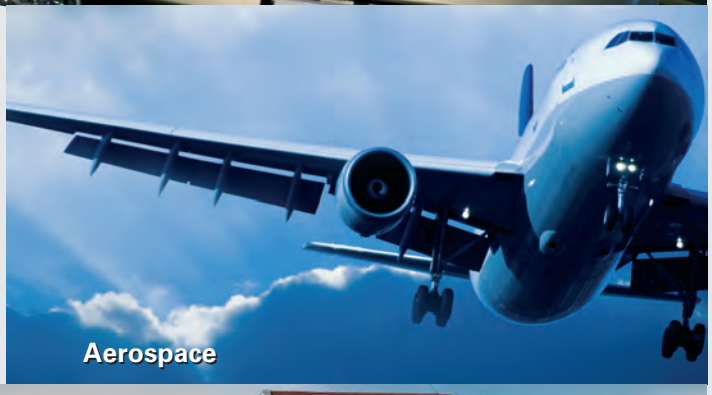
EPM precision distribution cabinet

COOPER POWER SERIES

Used for data centers

Powering Business Worldwide

COOPER



Powering business worldwide

COOPER INDUSTRIES GROUP & COOPER (NINGBO)

The former Cooper Industries Group is a global cross-industry equipment manufacturer. With nearly 200 years of history and upwards of 30,000 employees worldwide, it owns 100-plus manufacturing bases in 23 countries. Cooper (Ningbo), a joint venture under Cooper Industries Group, is invested and established by Cooper China Investment Limited in 2007. It boasts several world-class production lines, covering nearly 30 kinds of products in 6 categories. The products are widely used in such sectors as data center, power grid, power generation, petrochemical, metallurgy, rail transportation, and infrastructure, and is a complete distribution solution and service provider.

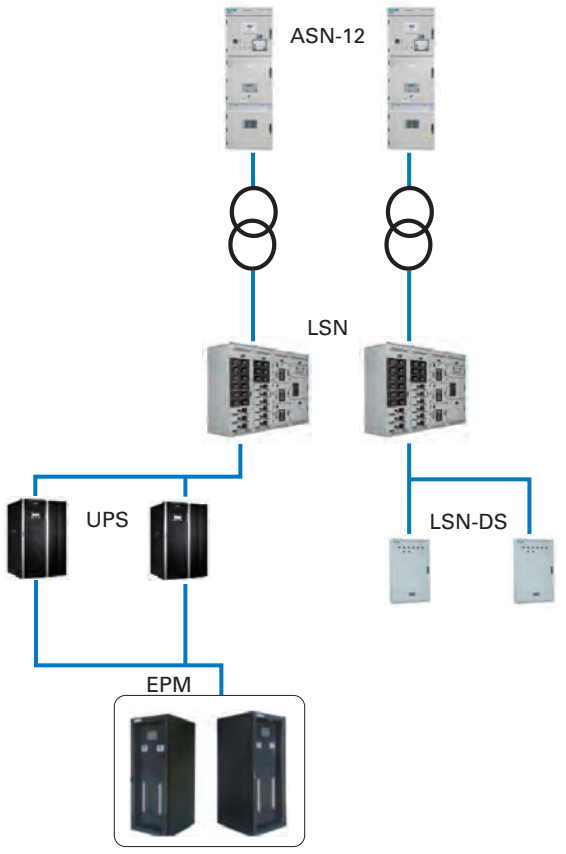
EATON ELECTRICAL

Eaton, as a leading global power management company, boasts a slew of industry-leading technologies and is dedicated to helping customers make more efficient and safer use of power, fluid power and mechanical power. It employs 97,000 employees worldwide, with its products exported to 175-plus countries and regions. As early as 1993, Eaton set up the first joint venture in the Chinese market. Then, it has realized rapid sustainable development via mergers and acquisitions, joint ventures and whollyowned enterprises. It has achieved a sales revenue of $1 billion in the Chinese market in 2010.

INTEGRATION AND DEVELOPMENT

In 2012, Eaton Electrical Group had fully acquired Cooper Industries Group. The two leaders in the electrical sector form to become a new global leader in power management. Cooper (Ningbo) is the strategic arm of Cooper Electric System for Asia Pacific region, global IEC product manufacturing base of Eaton, and UX36 and W-VACi manufacturer. We undertake the production of many advanced technologies and products in the electrical field. It boasts outstanding achievements in industry innovation in terms of manufacturing process and product design. Cooper (Ningbo), by virtue of its many advantages, joins hands with Eaton in bringing more focused, effective solutions for its customers, in a bid to create unmatched customer value.

EPM precision distribution cabinet



Product description

EPM is developed by Cooper Power Systems Thomas Edison R&D (Shanghai) Co., Ltd. based on the current situation of fault-prone singlepointsin power distribution and the security and reliability requirements of power distribution for data centers in accordance with Cooper Industrial's rich experience in power distribution system design and production.

The new-generation power distribution products, with its integrated design of power input, output, comprehensive power monitoring, and isolation, can comprehensively enhance the reliability and management level of power distribution at data centers, bringing a whole-new experience to the construction and management of data centers.

Full range of application programs, with maximum output of 168 circuits

EPM is a high-performance, highly reliable precision switchgear cabinet in accordance with GB7251.1 standard. Its capacity ranges from 20kW to 300kVA, and the product is certified by national compulsory test. It is chiefly used for data centers and the computer rooms at financial, telecommunications, business, government, airports, and hospitalfields.

Typical applications

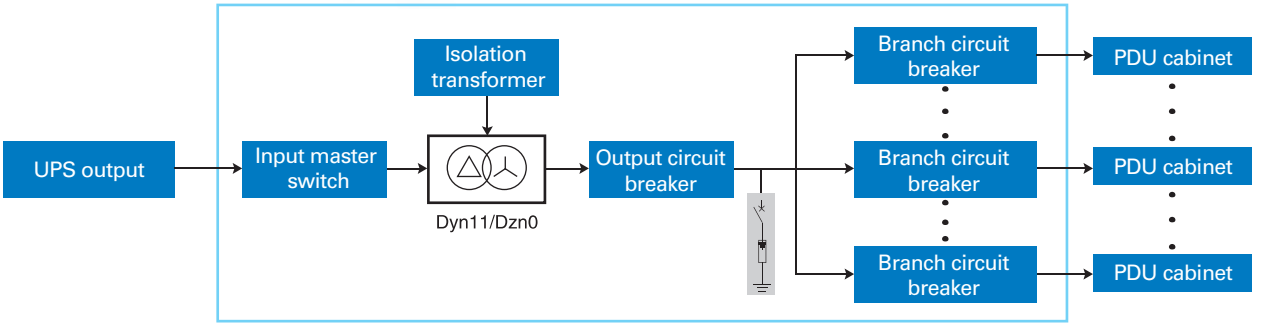
- Data center
- Finance
- Telecommunications
- Enterprises
- Government
- Airports
- Hospitals

EPM precision distribution cabinet

Product performance advantages and features

User-friendly and flexible equipment

- **Intelligent, reliable, comprehensive monitoring system**
  Equipped with 7" human-machine interface for the power quality of all circuits and the circuit status monitoring and alarm. Multi-level domain design to identify potential risks in advance.
- **Flexible capacity expansion**
  Optional hot plug and adjustable phase switch, live-line phase modulation.
- **High density**
  Adopt high-precision, high-integration moduleto improve the volume of the cabinet, support168 circuits, and reduce the floor area.
- **High reliability**
  Adopt a full range of EATON high-quality component. solutions.
- **High-strength cabinets**
  The cabinet column adopts Ω-bended profiles.
- **Optional isolation transformer**



Cabinet structure

Mechanical properties

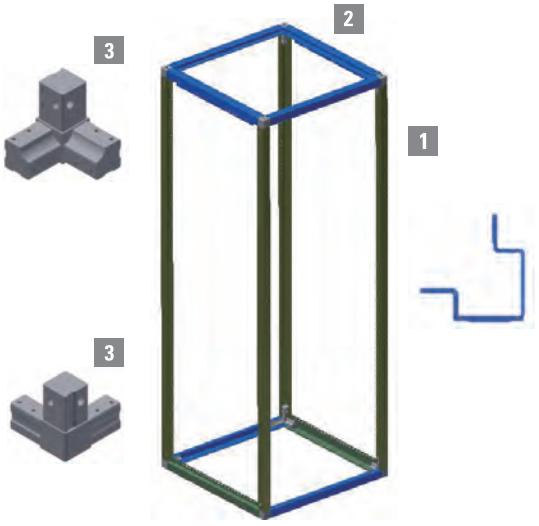
EPM precision power distribution cabinet is a kind of special power distribution cabinet designed by Eaton Cooper based on LSN series low voltage cabinet, which is specially designed for sensitive-load power supply and distribution for computer rooms and data centers.

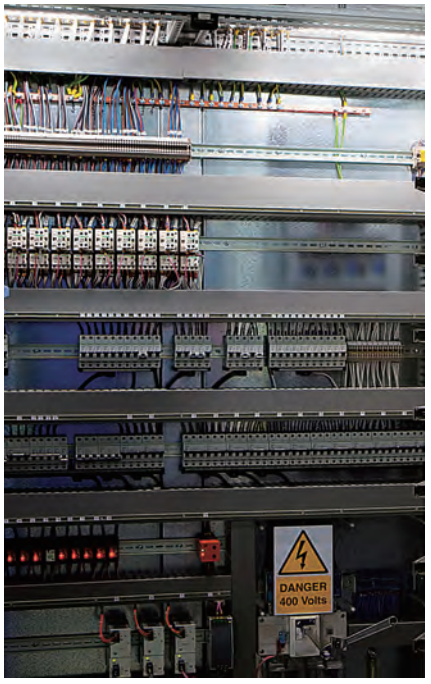
Cabinet dimensions are available in standard cabinet sizes and are highly compatible with cabinets at server rooms.

Structural features

- Adopt two-layer design on the front door and the mesh door (or glass door) on the outer door, with a through-hole rate> 60% allowing direct observation of the operation of equipment;
- The left and right side panels can be flexibly disassembled for maintenance of front, back and side panels;
- The cabinet is fully enclosed. The internal compartment structure allows flexible wiring upwards and downwards;
- The surface adopts sand grain surface and epoxy powder electrostatic spraying. The spraying thickness exceeds 70μm.

1. Assembly frame
2. Ω profile
3. Aluminum tee * 8

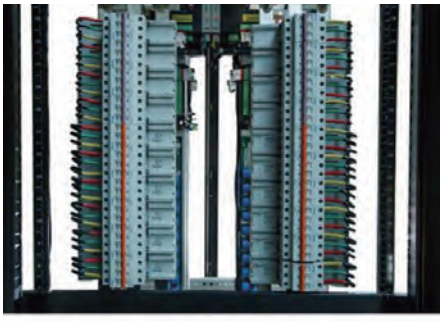




Cabinet wiring adopts the insulated, flame retardant, anti-arc self-extinguishing wiring duct technology, providing mechanical protection and electrical protection for the wires inside. It has convenient wiring, neat wiring, and reliableinstallation, thus conducive to location, repair and exchange of wires.

EPM precision distribution cabinet

Busbar system (Optional)

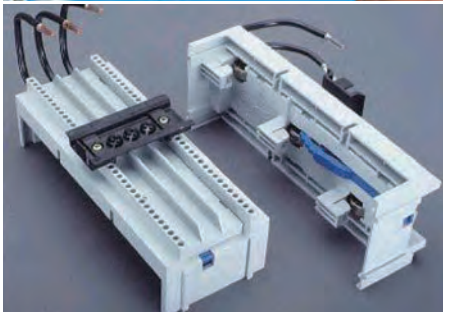


The advantages of the busbar system are:

1. Busbar system uses the busbar connecting technology without making holes; electrical components can be reliably linked to the busbar.
2. Save installation space and installation time and labor, and eliminate the complicated wiring.
3. The busbar serve two purposes as conductive component and also as an articulated component.
4. Betterelectrical performance, better installation process, and better protection class.
5. Wiring flexibility and strong capacity expansion.
6. Highquality and maintenance-free.

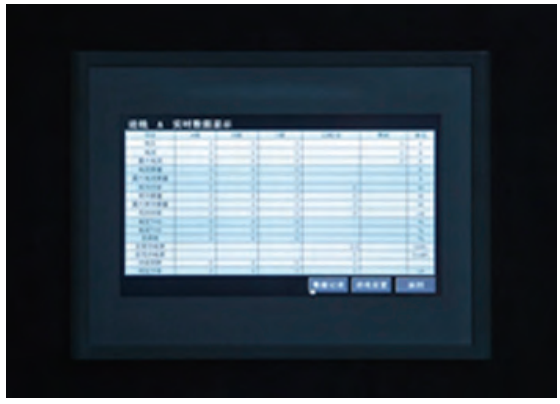
The drawbacks of traditional wiring method are:

1. Holes must be punched on the busbar to reduce carrying capacity. As for busbarsys tem, busbar of a greater section must be adopted for the same current load.
2. Time-consuming complex wiring and installation, requiring significantly greater installation space.



- Simple, safe and reliableoperation;
- Fast phase modulation;
- Phase indication;
- The phase indication window shows phases L1, L2, L3;
- User can know phase position without removing the protection device;
- Balanced load;
- Improved electrical performance and improved installation process;
- Increased protection class;
- Save space, save time and save money;
- Wiring flexibility and strong capacity expansion;
- High quality, maintenance-free;
- Connection without holes;
- It is a perfect solution to the power supply line; cable lugs are not required for the master inlet line and the busbar system, or cables and switches, circuit breakers and other components; user only needs to peel the wire shell and make direct connection by pressing on it.

Cabinet structure

ECM precision power distribution monitoring system is used for the monitoring of power distribution cabinets at data centers. It can monitor the electrical parameters and switch status of 2 inlet lines and 168 outlet lines, give two-level alarm information for abnormalities in voltage and current, etc., and realize the monitoring and early warning of power distribution cabinet position. The Product comes with standard 7-inch Chinese HMI and shows data in the form of system diagram. It has good visibility and maneuverability, and user can choose 21, 42, 63 or 84 outlet circuits according to the number of loads. The product also provides an additional communication port for easy connection to other systems in the room.

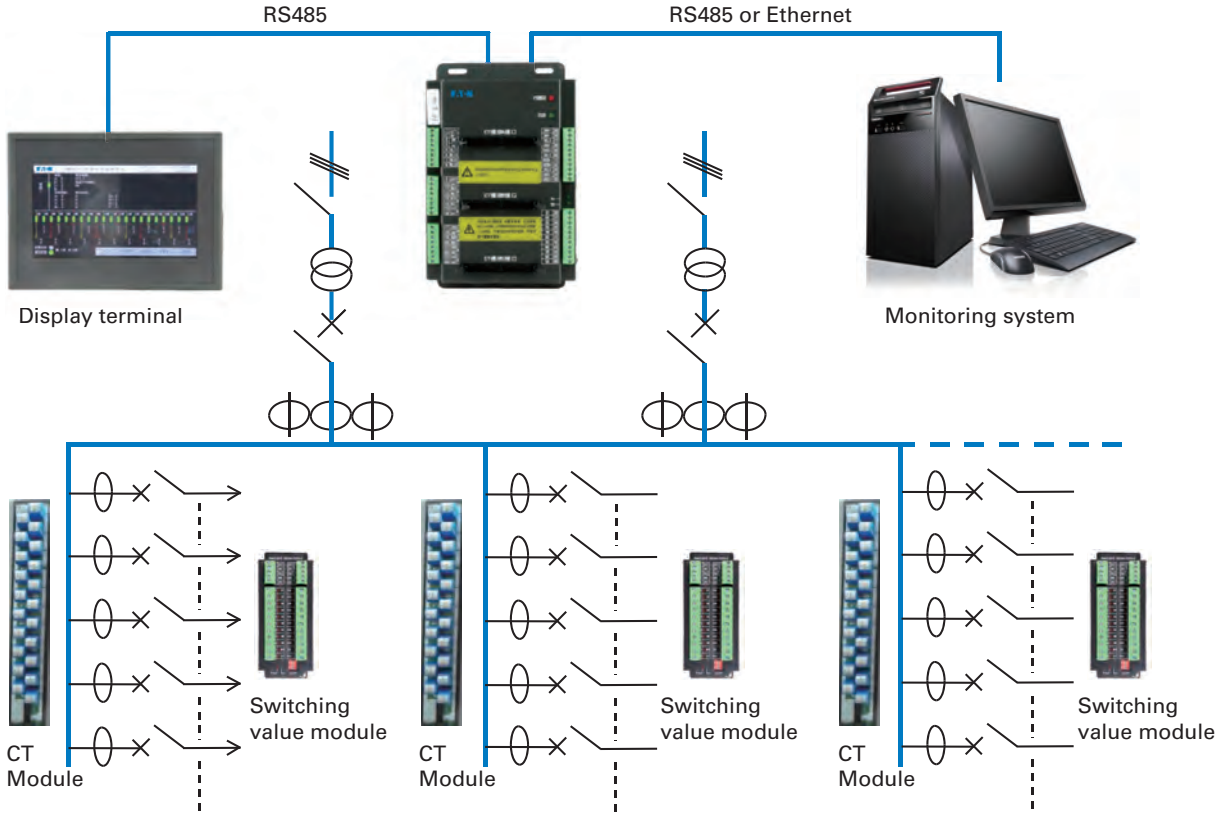
ECM precision distribution monitoring system features full range of functions and ease of operation, realizing the visualization and fine management of power distribution, and providing strong guarantee for the safe and stable operation of computer rooms.

Incoming circuit detection	Detection of branch circuit current
Current	Current
Busbar voltage	Active power
Active power	Reactive power
Reactive power	Apparent power
apparent power	Power factor
Power factor	Active energy
Active energy	Reactive energy
Reactive energy	Switching value monitoring
	Load percentage

- **Alarm function**
  Alarm of out-of-limit threshold value of inlet line current, alarm of out-of-limit threshold value of earthing current of inlet line, and alarm of overvoltage, under-voltage, phase loss, over-frequency, and low frequency of inlet lines.
- **Communication function**
  One remote RS485 bus interface, one local maintenance RS232 interface, and an optional Ethernet interface.
- **Local display function**
  7-inch touch screen LCD display.
- **Event logging function**
  Record over-limit alarm, switch status SOE Up to 1000 pieces of SOE records can be stored.
- **Self-diagnosis function**
  With self-diagnosis (communication, work state of collection board) function.

EPM precision distribution cabinet

System chart of the product



CT module uses 0.2-class current transformer, ensuring the accuracy of measurement. User can select 8, 12, 21-route CT modules according to the number of loads, providing customers with more economical choice

Isolation transformer (optional)

The main functions of isolation transformers at computer rooms are:

- Rebuild zero to earth system;
- Improve the system's impact resistance;
- Isolation protection of UPS and load of computer room.

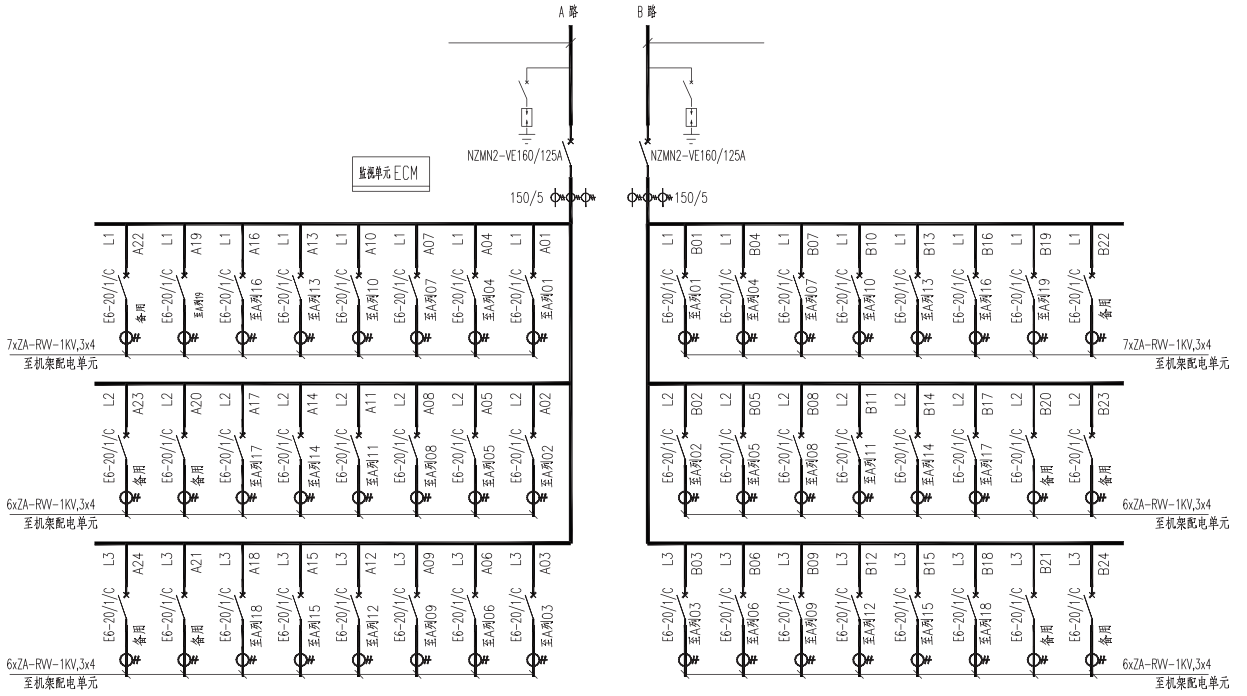
Requirements:

- Harmonic tolerance and filtering capability (K-factor);
- Temperature resistance rating and insulation capability (Class H or above);
- Closing inrush current limit;
- High common-mode noise attenuation constant (double-shielded).

EPM technical parameters

Technical indicators	
Power capacity	20/30/40/60/80/100/120/160/200/250/300 kVA
Efficiency	>97%
Output switch	10-63A (single-phase or three-phase)
Number of shunt switches	168 routes (single phase)
LCD display	Large-screen LCD touch screen (Chinese or English interface)
Site alarm mode	Audible and visual alarm
Communication interface	RS485 (optional RS232 and LAN)
Main route monitoring system	Three-phase voltage, current, frequency, zero sequence current, power factor, active power, reactive power, video power, harmonic
	voltage, harmonic percentage, harmonic active power, harmonic reactive power, harmonic apparent power, etc.
Main route alarm item	Three-phase overvoltage, under-voltage, voltage loss, voltage phase sequence error, phase loss, unbalance, three-phase overcurrent,
	zero sequence overcurrent, etc.
Shunt monitoring parameters	Actual current, percentage of load, on/off state of voltage or switches
Shunt alarm items	Shunt overload warning and open shunt circuit alarm
Dry contact of alarm	Optional
Monitoring software	Optional
Inlet and outlet line mode	Up inlet line or down inlet line
STS framework	Optional
Protection class	IP20/IP40
Operating temperature	-5 ~ +40 ℃
Operating humidity	0 ~ 95%
Dimensions	600/800×1000/1100×2000mm or adjusted dimensions according to user needs
Standards compliant	GB7251.1

Application schemes



EPM precision distribution cabinet

LZM Molded Case Circuit Breaker

LZM Series Molded Case Circuit Breaker is a high performance, multi-functional circuit breaker with ease of use:

- Has a variety of protection features: Power distribution protection, motor protection, generator protection, leakage and earthing protection;
- Breaking capacity of 25KA-70KA, rated current range of 20A to 630A, meeting the requirements of a vast majority of applications;
- Release has electronic type with complex functions, and conventional thermal magnetic type, thus meeting the different needs;
- The main switches can be mechanically interlocked;
- A variety of wiring terminals can be suited for cable wiring, and also for complex busbar system;
- Run short-circuit breaking current Icu = limit short-circuit breaking current Icu.

LZM B 2 - 4 - A 200

Designation	Breaking Capacity	Frame Size	Poles	Trip Unit	Ampere Rating
LZM = Circuit breaker	**B** = 25 kA **C** = 36 kA **N** = 50 kA **S** = 70 kA	**1** = 20A-160A **2** = 125A-250A **3** = 250A-630A	**Blank** = 3 Pole **4** = 4 Pole	**A** = Thermomagnetic system protection **AE** = Electronic system protection **S** = Motor protection without overload release **VE** = Electronic selective system protection	20A-630A

Molded Case Circuit Breaker

- Compact structure. Four sizes of frame, up to 1600A;
- Breaking capacity up to 150 kA and the working voltage of 690 volts, easily meeting various needs;
- NZM Molded Case Circuit Breakers with electronic release provides comprehensive data diagnosis function. All data can be directly connected to a personal computer with XPC-Soft software via USB or COM interface, and can monitor the key circuits without the need for additional hardware;
- Tripping units with different protection functions;
- Comprehensive electrical and mechanical accessories, providing a variety of installation schemes;
- No need of capacity reduction for use below 50℃;
- Worldwide certification, including IEC, UL/CSA certification, CCC and the world's major classification societies;
- The use of innovative breaking technology of double breaking contacts greatly reduces the breaking time. In the event of a short circuit, the contact mechanisms of special shape and material can produce a mutually repelling magnetic force, separating the contacts in a power frequency cycle;
- The circuit-breaker has a diagnostic data logging function that allows monitoring of without additional hardware;
- Distributed relay output terminal can offer warning for 70%, 100% and 120% loads.

Lightning Protection & Surge Protectors SPI, SPC, SPD

- Iimp: 100, 50, 35, 12.5 kA (10/350) μs Impulse current rating;
- Imax: 120, 80, 65, 50, 40, 10kA (8/20) μs Maximum discharge current specifications meet the requirements of various types of building protection;
- For Class-I SPD protection, both (10/350) μs and (8/20) μs are available;
- Full range of products with the best cost-effectiveness;
- Multi-pole products are equipped with standard busbar for easy and fast installation, avoiding excessive residual voltage caused by excessively long cable connection;
- Small size; for example 80,120 kA unipolar is only 36mm wide; unipolar products below 65kA is only 18mm, greatly reducing the floor area for power distribution cabinet;
- According to demand, user can easily select the remote signaling contact, transmitting the status signal of surge product to your control room, without the need of proceeding to the scene;
- Clear aging indication window provides reliable status indication, so that the user knows the product status at a glance without being at the site and without special testing. Thus, it facilitates maintenance and replacement;
- High-performance flame-retardant shell material ensures the safe and reliable use;
- In addition to the full range of AC surge protectors, we also provide dedicated DC 1000VDC products, especially for solar power systems or other DC class load.

Micro Circuit breaker

- The wide range of terminal distribution products such as MCBs are widely used in industrial, commercial and civil construction and other fields both at home and abroad;
- Has strong isolation function, especially for main switch at indoor boxes, without additional special isolation switch. This alone saves about 8% of the costs of your indoor box;
- Red-green contact position indicator clearly indicates the true contact state of the contacts, so that products have reliable isolation indication and ensure the operator's personal safety;
- The two-terminal structure design at both sides can connect all kinds of wires, and also connect the busbar, making wiring more flexible, more secure, and more reliable;
- Different handle colors indicate the different current levels. In addition to printed words, the current logo is more durable, adding a touch of color art to the product;
- Guide structure of terminal wiring ensures the correct wiring location, avoiding great risk of electrical fires caused by faulty wiring, while improving the wiring efficiency;
- 3-position DIN guide rail clamp for easy removal and replacement of existing busbar systems and rails, thus preventing all other switches from being switched off due to a failed switch;
- Exceedingly high breaking capacity and excellent current limiting features, improving the safety of electrical systems and reducing the impact of failure on the system;
- Unique arc-extinguishing system designed to ensure the rapid breaking of your electrical fault and rapid discharge of residual heat after breaking, so as to improve the service life of the switch;
- With a variety of accessories, it adopts fast adjacent clamping installation mode, with significant savings in labor time;
- The design concept allowing the continuity of old- and new-generation products ensures that new-genera tion products you choose are highly compatible with previous generation of products. There is no need of major changes at the time of upgrading;
- Comply with the latest international and Chinese standards, such as IEC/EN, GB and UL and so on;
- Eaton upholds the concept of environmentally-friendly and its products comply with environmental standards of RoHs and REACH, so that your equipment can be exported unimpeded to European and the United States market. You also make contribution to environmental protection in the use of high-quality switchgear.

Eaton is a power management company with 2016 sales of $19.7 billion. We provide energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton is dedicated to improving the quality of life and the environment through the use of power management technologies and services. Eaton has approximately 95,000 employees and sells products to customers in more than 175 countries. For more information, **visit www.eaton.com.**

Electrical Sector Asia Pacific
No.3, Lane 280, Linhong Road,
Changning District, Shanghai

Cooper (Ningbo) Electric Co., Ltd.
No.439,2nd Binhai Road ,
New Hangzhou Bay Zone,
Ningbo Zhejiang

Printed in China
May 2017

Mobile WeChat

WeChat public platform

Powering Business Worldwide