*China Power ensures products engineered with Craftsmanship*


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中电强能
CHINA-POWER

# *2026*
# *Product Selection Guide*
# *(V8.9)*

***We are both an electrical control equipment manufacturer and a cloud-based configuration solution provider.***

# Company profile

Shenzhen China Power Technology Co., Ltd. is a company deeply engaged in AI-based smart control, global electrical safety, LED display power safety, and digital cloud-based configuration solutions. Main Products & Services include

1. Smart power control products and software series: Including PLC control devices, power distribution cabinets, DC cabinets, PFC harmonic elimination equipment, and smart power modules.

2. Developing a multi-functional and open cloud platform: Targeted at small and medium-sized enterprises (SMEs) and individual users, the platform provides cloud-based monitoring, cloud control, cloud storage, cloud alerts, cloud editing, and cloud pass-through software, among other capabilities.

3. Establishing a Centralized Control & integration platform: The platform unifies the control of power devices, flexible LED display motion control, distribution boxes, video transmission, scene changes, lighting variations, and audio. This system is known as AVLM (Audio Video Lighting Machine), which enables Centralized Control of all functions.

China Power's vision is to embed safety and intelligence into every node, with a long-term mission of ensuring products engineered with craftsmanship.

The company was certified as a National High-Tech Enterprise and a Specialized, Refined, Distinctive, and Innovative Enterprise. It also holds China CCC, CE, FCC, and ISO certifications. The company has been awarded over 100 national and invention patents for its products and services.

China Power developed the nation's first industrial robot production line dedicated to distribution box manufacturing, CHINS-PLC/200 module, SmartPLC/100 integrated module, CHINS-PLC/480 3-in-1 module, and five globally standardized distribution cabinet series.

"China Power ensures products engineered with craftsmanship"; "China Power: Safety, Every Step of the Way". As "an electrical control equipment manufacturer and a cloud-based configuration solution provider", the company strives to make every product a high-quality masterpiece, never seeking short-term profit.

China Power enables intelligent electricity, with Centralized Control of distribution cabinets for LED displays, large-scale lighting, flexible LED displays, and cloud-based cluster management—anytime, anywhere. Control can be fully accessed via PCs, mobile phones, third-party Centralized Control platforms, tablets, and touch screens.

A journey of a thousand miles begins with a single step; a river is formed by countless streams. The company is practical, reliable, service-oriented, and quality-focused, providing customers with extra support and patience. China Power is committed to delivering fit-for-purpose, reliable, and user-friendly products that customers can trust and enjoy.






# Qualifications







# Product catalogue





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# PART 1 Channel–Oriented Distribution Boxes

## 1.QN–Power PLC Compact High Power PLC Distribution Box

### Product Model

QN–Power PLC Compact High–Power PLC Distribution Box 10 kW–60 kW

### Product Description

The Power PLC Series Distribution Box is the first core product family in the “Compact High–Power” portfolio. It is primarily designed for the domestic market, while also being fully suitable for overseas markets. The product offers high safety, reliable performance, aesthetic design, and competitive pricing, while remaining compatible with both domestic and international power supply systems.

This distribution box is suitable for applications including LED display systems, factories, industrial plants, and mining enterprises. It supports multiple control methods, including Manual Control, Scheduled Control, Remote RS–485 Control, Remote On/Off Control, Remote 433 MHz Control, and Ethernet Control.

The unit is equipped with Overcurrent Protection, Short–Circuit Protection, and Over–Temperature Protection, supports wide–range input voltage for global power systems, and operates silently during normal operation.

### Functional Features

1. Control Modes: It supports Manual Control, Remote RS-485 Control, Remote 433 MHz Control, Scheduled Control, On/Off Control, Automatic Cascade Control, and Network Control.
   1) Remote RS-485 Control: Third-party platform integration, Protocol: Modbus RTU
   2) Network Control: Manufacturer proprietary protocol, Protocol: Modbus TCP
   3) Remote 433 MHz Control: supplied with a compact external antenna, with a control range of up to 50 meters.
   4) Scheduled Control: Up to four time periods can be configured per day, with weekday-based start/stop settings and support for cross-day scheduling.
   5) On/Off Control: It supports Remote On/Off Control via manual inputs.
   6) One-to-One Control: One-key start/stop via front panel button and dedicated one-to-one power switching
2. Cable Routing: Bottom-entry/bottom-exit design is applied to prevent debris or foreign objects from entering the enclosure.
3. Operating Characteristics: Silent operation features strong anti-interference capability and resistant to power grid voltage fluctuations.
4. Emergency Power-On: In case of control module failure, manual power-on is supported. This is applicable to 40 kW and 60 kW models.
5. Original Software: It is compatible with domestic operating systems and supports 18 languages.

### Protection Functions

1.Short-Circuit Protection
2.Neutral Conductor Temperature Protection
3.Reverse-Drive Protection
4.Overcurrent / Overload Protection
5.Overvoltage / Undervoltage Protection (40 kW, 60 kW)

## Warranty

3–year Warranty With lifetime Service

## Dimensions

QN–Power PLC/10KW 270*170*70, Metal enclosure, 2KG
QN–Power PLC/20KW 300*200*81, Metal enclosure, 3.2KG
QN–Power PLC/40KW 330*230*100, Metal enclosure, 4.2KG
QN–Power PLC/60KW 350*265*100, Metal enclosure, 5.2KG

# 2.QN-Power Time Compact High-Power Scheduled Control Distribution Box

## Product Model

QN–Power Time /10 kW–60 kW Compact Scheduled Control Distribution Box

## Product Description

The Power Box Series Distribution Box is the second core product family in the “Compact High–Power” portfolio. It is primarily designed for the domestic market, while also being fully suitable for overseas markets. The product offers high safety, reliable performance, aesthetic design, and competitive pricing, while remaining compatible with both domestic and international power supply systems.

This distribution box is suitable for applications including LED display systems, factories, industrial plants, and mining enterprises. It supports multiple control methods, including Manual Control, Scheduled Control, Remote RS–485 Control, Remote On/Off Control, and Remote 433 MHz Control.

The unit is equipped with Overcurrent Protection, Short–Circuit Protection, and Over–Temperature Protection, supports wide–range input voltage for global power systems, and operates silently during normal operation.

The distribution box supports multiple delayed power outputs to help stabilize the power grid.

## Functional Features

1. Control Modes: It supports Manual Control, Centralized Control via Remote RS-485, Remote 433 Mhz Control, Scheduled Control, On/Off Control, and Automatic Cascade Control.
   1)RS-485 Control: via third-party platforms
   2)Remote 433 MHz Control: supplied with a compact external antenna, with a control range of up to 50 meters.
   3)Scheduled Control: Up to four time periods can be configured per day, with weekday-based start/stop settings and support for cross-day scheduling.
   4)On/Off Control: It supports Remote On/Off Control via manual inputs.
   5)One-to-One Control: One-key start/stop via front panel button and dedicated one-to-one power switching
2. Cable Routing: Bottom-entry/bottom-exit design is applied to prevent debris or foreign objects from entering the enclosure.
3. Operating Characteristics: Silent operation features strong anti-interference capability and resistant to power grid voltage fluctuations.
4. Emergency Power-On: In case of control module failure, manual power-on is supported. This is applicable to 40 kW and 60 kW models.



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## Protection Functions

1. Short-Circuit Protection
2. Neutral Conductor Temperature Protection
3. Reverse-Drive Protection
4. Overcurrent / Overload Protection
5. Overvoltage / Undervoltage Protection (40 kW, 60 kW)

## Warranty

3–year Warranty With lifetime Service

# 3.QN-Power Box Compact High-Power Supply Distribution Box

## Product Model

QN-Power Box/7.5 kW Compact High-Power Power Supply Distribution Box

## Product Description

The Power Box Series Distribution Box is the third core product family in the “Compact High–Power” portfolio. It delivers up to 7.5 kW of power, features a full aluminum enclosure, and is roughly the size of a smartphone. It is primarily designed for the domestic market, while also being fully suitable for overseas markets. The product offers high safety, reliable performance, aesthetic design, and competitive pricing, while remaining compatible with both domestic and international power supply systems.

Applications: E–structure, K–structure, Zhen structure, advertising screens, store front screens, COB screens, indoor displays, all–in–one devices, etc.

It supports multiple control methods, including Manual Control, Scheduled Control, Remote RS–485 Control, Remote On/Off Control, and Remote 433 MHz Control. The unit features Overtemperature Protection, supports wide input voltage ranges for both domestic and international power systems, and operates silently during normal use.

## Functional Features

1. Control Modes: It supports Manual Control, Centralized Control, Remote RS-485 Control, Remote 433 MHz Control, Scheduled Control, On/Off Control, and Automatic Cascade Control.
   1)RS-485 Control: Controlled via third-party platforms
   2)Remote 433 MHz Control: supplied with a compact external antenna, with a control range of up to 50 meters.
   3)Scheduled Control: It supports up to 4 programmable time periods per day, weekly scheduling with start/stop by weekday, and cross-day timing.
   4)On/Off Control: It supports Remote On/Off Control via manual inputs.
2. Cable Routing: Bottom-entry/bottom-exit design is applied to prevent debris or foreign objects from entering the enclosure.
3. Operating Characteristics: Silent operation features strong anti-interference capability andresistant to power grid voltage fluctuations.

## Protection Functions

1.neutral Conductor Temperature Protection
2.Reverse-Drive Protection
3.Overvoltage / Undervoltage Protection

## Warranty

3–year Warranty With lifetime Service

## Dimensions

190X81X30 mm aluminum enclosure
smartphone-sized 0.5 kg

# PART 2 Global Power Distribution Boxes

## 1.GL-BLADE/5KW, GL-BLADE/15KW, Global Blade-Type Distribution Box

### Product Model

GL–BLADE/5KW GL–BLADE/15KW Global Blade–Type Distribution Box

### Application scenarios

Applications: E-structure, K-structure, Zhen structure, advertising screens, store front screens, COB screens, indoor displays, all-in-one devices, etc.

### Functional Features

· Remote 433 MHz Control: supplied with a control range of up to 20 meters.
· RS-485 wired control, up to 1,000 meters
· LoRa wireless cascading, up to 2,000 meters
· Supports hardware daisy-chain (hand-in-hand) cascading
· Supports external signal start/stop control
· Supports up to 4 programmable start/stop timer schedules


### Protection Capabilities

· Live/Neutral Reverse Connection Protection
· Power-Off Reverse-Drive Protection
· Neutral Conductor Temperature Protection
· Maintenance Mode Protection

### Other Specifications

· Warranty: 5 years
· Weight: 1.0 kg / 1.5 kg
· Dimensions: 180 mm x 80 mm x30 mm 210 mm x 100 mm x 30 mm
· Application: Domestic and international use

## 2. GL-PLC Global PLC Smart Distribution Box (Invention Patent) Jointly developed with Delixi Electric

### Product Model

GL-PLC/ 10KW-100KW, LED Smart Distribution Box (Global Version)

### Product Overview

The GL–PLC Series Smart Power Distribution Box (Global Version) was launched by China Power in 2025. The product incorporates multiple patented technologies and features an architecture based on smart contactors and a discrete PLC control system. It is designed to provide high reliability, compact and refined construction, flexible control capability, and cost–effective implementation. These features make it suitable for deployment in both domestic and international applications.



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### Control Methods

1. PC Control, Centralized Control, Remote Control, and Touch Screen Control
2. PC Control: Ethernet and RS-485 communication (supports up to 4 RS-485 channels)
3. Centralized Control: Ethernet or serial communication protocols provided by the manufacturer
4. Remote Control Distance: 30–3000 meters (Optional)
5. Electronic Control Keys: Step-by-step control and one-to-one button control
6. Scheduled Control: Supports cross-day scheduling
7. I/O Expansion: Supports up to 8 I/O expansion modules, providing a total of 40 I/O channels
8. Remote Upgrade: Enables remote firmware updates and PLC program bug fixes
9. Cascading Control: Supports centralized management of more than 300 PLC units
10. Software Connectivity: Automatically modifies PLC parameters and IP addresses across different network segments
11. Domestic Software Support: Compatible with domestic operating systems and software environments

### Protection Capabilities

1.Overload Protection
2.Short-Circuit Protection
3.Overvoltage Protection
4.Undervoltage Protection
5.Phase Loss Protection
6.Distribution Enclosure Overtemperature Protection
7.Neutral Conductor Temperature Protection
8.Distribution Enclosure Humidity Monitoring and Protection

### Warranty

Five–year Warranty and lifetime Maintenance Support

### Advanced Components

High–current smart Contactors, discrete PLC control architecture Invention patents



GL–PLC/20KW

GL–PLC/20KW

GL–PLC/100KW

## 3.GL-DC Global DC Distribution Cabinet (Original Patent)

### Product Model

QN-DC/ 30KW-200KW DC Distribution Cabinet

### Product Description

The QN–DC DC Power Distribution Cabinet is a newly introduced product by China Power. It is primarily designed for LED display system applications with input AC 380 V and output DC 200–250 V.

Functions and Performance: 1. Eliminates harmonics generated by switching power supplies in LED display systems 2. Significantly reduces leakage current in LED displays 3. Noticeably improves low–gray–level display performance

The cabinet converts AC 380 V input power into a DC 200–250 V output using a modular design. The DC output power adopts a multi–step soft–start mechanism, with each startup step rated at 3.5 kW, effectively reducing inrush current and improving system stability.

It enables control methods covering Manual Control, Scheduled Control, Remote Control via RS–485 and Ethernet Control.

It supports protection functions cover Overcurrent Protection, Short–Circuit Protection, and Overtemperature Protection.

In addition to the DC 200–250 V output, the DC power distribution cabinet also provides a DC 48 V output, which can be used in combination with the DC 220 V output to meet different system requirements. The two DC output configurations are similar in cost and are significantly higher in cost compared with traditional AC 220 V output solutions.

### Functional Features

1.Control Modes: It supports Manual Control, Remote RS-485 Control, Scheduled Control, and Network Control.

1)Remote RS-485 Control: Third-party platform integration, Protocol: Modbus RTU
2) Network Control: Manufacturer proprietary protocol, Protocol: Modbus TCP
3) Scheduled Control: Up to four time periods can be configured per day, with weekday-based start/stop settings and support for cross-day scheduling.

4) Manual Control + Automatic control: One-key start/stop via front panel button and dedicated one-to-one power switching

2.Operating Characteristics: features strong anti-interference capability and resistant to power grid voltage fluctuations.

3.DC Output: 3.5 kW per output channel with adjustable output voltage: DC 200–250 V

4.Protection Functions: Short-Circuit Protection, Overtemperature Protection, Overcurrent / Overload Protection, and Overvoltage / Undervoltage Protection

### Main Specifications

Power:30 kW-200 kW
Input voltage:AC270V-AC490V
Output voltage:DC200V-250V
Output current:DC135A-DC900A
Voltage stabilizing accuracy:1 %
Power Factor:0.96

### Dimensions

Height × Width × Depth: 600 × 500 × 500 mm



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# PART 3 General-Purpose Distribution Boxes

## 1.SmartPLC All-in-One PLC Distribution Box

***Upgrade of a Proven Best-Selling PLC Model***
***Simplified operation with expanded functionality***

*Includes all functions of the previous PLC models*


### Additional Features:

- ***Automatic networking: automatic system connection***
  Direct operation: no manual configuration required
- ***Emergency start module***
  Enables emergency startup in case of PLC failure
- ***Multi-language support***

***Dedicated software***

PC-based control and monitoring, real-time display of electrical parameters, smoke detection, high-temperature alarms, intrusion status, etc.

***Smart control panel***

Manual Control buttons with status indicators
Highly integrated structure with a clean and modern appearance


***Internal layout***

Supports five control modes and six protection functions
Rational wiring design with neat and orderly cabling

***Outdoor Application***

Transparent protective cover for easy visual inspection
Waterproof and Lightning Surge Protection design to ensure operational safety

## Functional Features

Control Methods: Panel Control, PC Control, PC Scheduling, Centralized Control, On/Off Control, Cascade Control (multi-level cascade), Remote Control (optional), LoRa Wireless Control (optional)

**Panel Control**

One-key delayed Start/Stop Fault indication with buzzer alarm

**PC Control**

One-key delayed Start/Stop Scheduled control and Status Monitoring

**Centralized Control**

Supports Serial Port and Ethernet Port

**On/Off Control**

Supports optional Multifunction Cards lighting switches, etc.

**Cascade Control**

Automatic system connection for direct Operation without Manual Configuration

**Optional Control Modules**

Remote control and high-performance LoRa Wireless Module available as Options


(以Smart PLC 40KW为例)

## Protection Functions

- Short-Circuit Protection
- Overcurrent / Overload Protection
- Overvoltage / Undervoltage Protection (optional)
- Phase Loss Protection (optional)
- Residual Current Protection (optional)
- Neutral Conductor Temperature Protection
- Ambient Temperature Protection
- Environmental Smoke Detection Protection
- Lightning Surge Protection
- Intrusion Protection
- **Communication fault monitoring** (Temperature/humidity communication fault + Electric meter communication fault)



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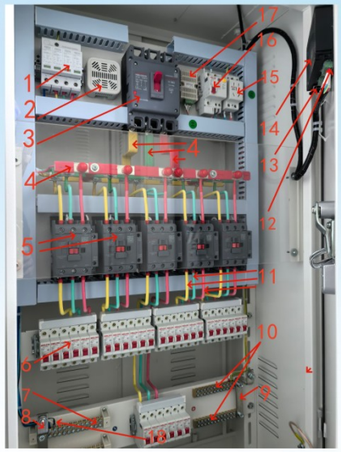
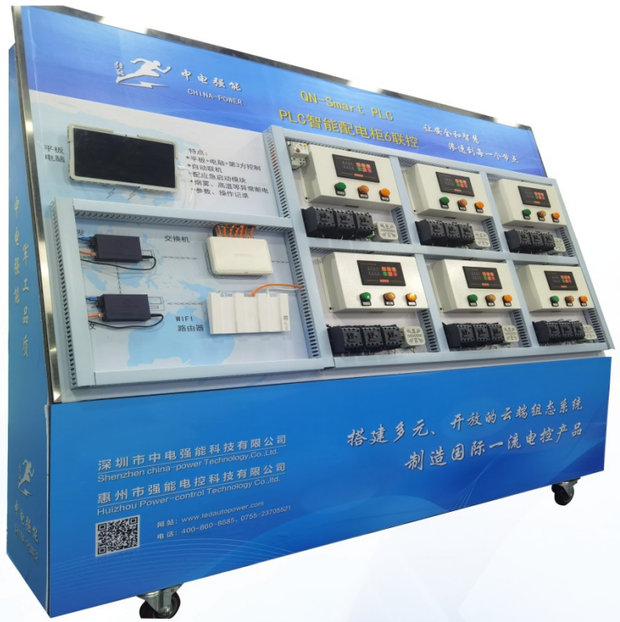
## 100 kW Configuration




1. Lightning Surge Protection module: 40 kA
2. Smoke sensor
3. Molded Case Main Circuit Breaker (MCCB)
4. Copper busbar: 20 mmX4 mm
5. AC contactor: 50 AX5 units
6. Single-Pole 25A D-Curve Miniature Circuit Breaker (MCB)
7. Neutral copper terminal bar
8. Main neutral copper busbar
9. Main grounding copper busbar
10. Ground copper terminal bar
11. Copper wiring: 10 mm²
12. PLC RS-485 interface
13. PLC Ethernet Port
14. PLC module
15. National standard socket: 10 A
16. 10 A, 1P+N Miniature Circuit Breaker (MCB)
17. Temperature sensor (RS-485)
18. Neutral conductor temperature sensor

## Photos

QN-SmartPLC – 6-Unit Cascade Control



## 2.CHINS PLC/CHINS PLC Distribution Box

***Fully Upgraded PLC***
***Enhanced performance and stability with expanded functionality***

***Four Control Modes & Five Protection Functions***

***PLC Options:***
***·CHINS/SIEMENS/MITSUBISHI/OMRON***
Interfaces: Ethernet Port (PTU) + Serial Port (TCP)

***Available Variants:***
***·Button control/Touch screen/Digital display***

### *Dedicated software*

PC-based control and monitoring, real-time display of electrical parameters, smoke detection, high-temperature alarms, intrusion status, etc.

### *CHINS PLC Features:*

Stable performance, simple operation
Flexible switching between Ethernet and serial port

### *Internal layout*

Standard components:
Delixi brand
Rational wiring design with neat and orderly cabling

### *Outdoor Application*

Transparent protective cover for easy visual inspection
Waterproof and Lightning Surge Protection design to ensure operational safety



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## Functional Features

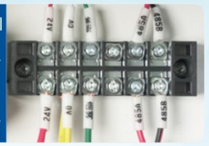
Manual Control + Scheduled Control + Remote Control + Centralized Control – 4-in-1 Integration

**Manual Control**
One-Key Start/Stop with multi-step power-on and power-off

**Scheduled Control**
Remote scheduling via PC
Up to 6 programmable time schedules

**Remote Control**
Serial Port + Ethernet Port
Remote PC Control
Real-time status monitoring

**Centralized Control**
Supports third-party Centralized Control codes
Protocol provided by the manufacturer



## Protection Functions

This product provides comprehensive safety protection for user peace of mind.

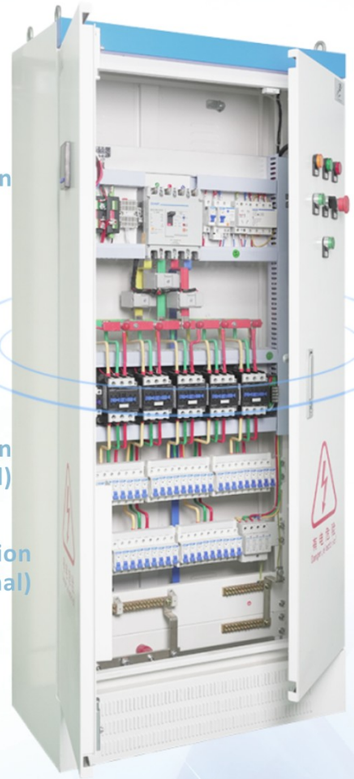
Short-Circuit Protection

Overcurrent / Overload Protection

Overvoltage / Undervoltage Protection (optional)

Phase Loss Protection (optional)

Residual Current Protection (optional)



Neutral Conductor Temperature Protection

Ambient Temperature Protection

Environmental Smoke Detection Protection

Lightning SurgeProtection

Load Imbalance Protection

## Product Specifications

The CHINS PLC Series Distribution Box is suitable for use in LED displays, architectural lighting, and industrial and mining enterprises.

| | |
|---|---|
| Product Name | CHINS PLC Smart Distribution Box |
| Installation | Wall-mounted or floor-standing cabinet |
| PLC Brands | CHINS, SIEMENS, MITSUBISHI, OMRON |
| Output Power | 10 kW-300 kW |
| IP Rating | IP43 (Indoor), IP54 (Outdoor) |
| Applicable Fields | 10 kW-300 kWApplicable Fields: LED displays, architectural lighting, industrial and mining enterprises |

(以Chins PLC 40KW为例)

## Photos

QN-PLC, 160 kW Large PLC, 4-Unit Cascade Control






## 3.QN-PRO-TIME Engineering Scheduled Control Distribution Box

***A cost-effective model by China Power***
***High cost-performance ratio,***
***high integration, stable operation***


### *Five control modes*

- Manual Control
- Emergency Module Control
- Scheduled Control
- Remote RS-485 Control
- On/Off Control

### *Three protection functions*

- Neutral Conductor Temperature Protection
- Overtemperature Power-Off Protection
- Short-Circuit Protection

### *Smart control panel*

Electronic buttons with Scheduled Control Temperature-controlled digital status display


### *PC Restart / Control*

PC Start: Simultaneously starts the distribution box.
PC Shutdown: Simultaneously shuts down the distribution box.


## Product Specifications

Engineering Scheduled Control Series Distribution Box, a cost-effective distribution box launched by China Power

| | |
|---|---|
| Product Name | Engineering Scheduled Control Distribution Box |
| Installation | Wall-mounted Or floor-Standing Cabinet |
| Output Power | 10 kW-300 kW |
| IP Rating | Ip43 (Indoor), IP54 (Outdoor) |
| Applicable Fields | LED displays, architectural lighting, industrial and mining enterprises |

Example: 20 kW Engineering Scheduled Control Distribution Box

## Functional Features

The distribution box is equipped with a 5 V power supply and a mounting clip. It can also be equipped with an Interlocking Control Module via the USB port, allowing the box to operate in coordination with a PC.

**Manual Control**

One-Key Start/Stop with multi-step power-on and power-off

**Scheduled Control**

Up to 4 programmable time periods

**On/Off Control**

Supports Multifunction Cards Remote Control

**Synchronized Startup and Shutdown with PC**

Requires an optional Interlocking Control Module
PC Start: Simultaneously starts the distribution box.
PC Shutdown: Simultaneously shuts down the distribution box.

## Photos

Example configurations


QN—PRO/007 Emergency Activation Module

QN—PRO 20kW Outdoor


QN-PRO, 100 kW Floor-Standing





# PART 4 Compact Distribution Boxes

## 1.QN-BOOK Book-Type Distribution Box (Invention Patent)

***Compact, Portable, Backpack-Sized Distribution Box for LED Display***

***Invention patent product***
***Ultra-thin distribution box with flexible control***

***Six control modes :***

- Manual Control
- Scheduled Control
- Remote Control
- Centralized Control
- Remote RS-485 Control
- Through-Wall Control

***Three protection functions :***

- Neutral Conductor Temperature Protection
- Overtemperature Power-Off Protection
- Short- Circuit Protection

Thin in thickness: 36 mm

Small in size: Approx. A4 paper

Light in weight: Approx. 2.5 kg

Flexible in operation: Easy and adaptable control

Easy in switching This distribution box supports remote forced switching.




## Functional Features

Manual Control+ Scheduled Control + Remote Control+ Centralized Control+ Remote RS-485 Control + Through-Wall Control (optional)

**Manual Control**

One-key start/ stop, multi-step power-on and power-off

**Scheduled Control**

Up to 4 programmable time periods

**Remote Control**

Forced switching supported, one-to-many control supported, Remote Control distance up to 100 meters

**Centralized Control**

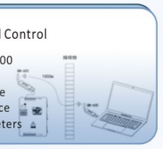
Multiple unit controllable via Modbus RTU (RS-485) protocol

**PC Control**

Dedicated control software is required to use the USB-to -RS-485 interface.

**Through-Wall Control**

Optional QN-600 Through-Wall Control module Control distance up to 1,000 meters



## Product Specifications

The Book-Type Series Distribution Box is designed for indoor applications and is suitable for LED displays, architectural lighting, and industrial and mining enterprises.

| | |
|---|---|
| Product Name | Book-Type Distribution Box |
| Installation Method | Wall-mounted |
| Output Power | 10kW/20kW |
| IP Rating | IP43(Indoor) |
| Application Areas | LED displays, architectural lighting, industrial and mining enterprises |

Example: 20 kW Engineering Scheduled Control Distribution Box

## 2.QN-MINI Mini Distribution Box(Invention Patent)

***Compact, Portable, Backpack-Sized Distribution Box for LED Display***

***Invention patent product***

***Small, flexible, simple operation and flexible control***

***Six control modes:***

- Manual Control
- Scheduled Control
- Remote Control
- Centralized Control
- Remote RS-485 Control
- Multifunction Card Control

***Three protection functions:***

- Neutral Conductor Temperature Protection
- Overtemperature Power-Off Protection
- Short-Circuit Protection

Thin in thickness: 36 mm

Small in size: Approx. A4 paper

Light in weight: Approx. 2.5 kg

Flexible in operation: Easy and adaptable control

Easy in switching This distribution box supports remote forced switching



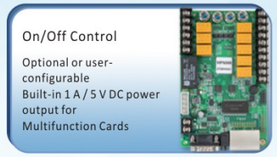


## Functional Features

Manual Control + Scheduled Control + Remote Control+ Centralized Control +Remote RS-485 Control + Multifunction Card Control(optional)+ Through-Wall Control(optional)



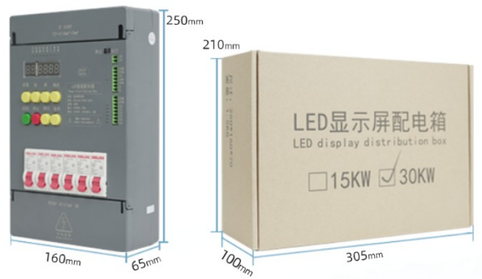



## Product Specifications

The Mini Series Distribution Box is designed for indoor applications and is suitable for LED displays architectural lighting and industrial and mining enterprises.

| | |
|---|---|
| Product Name | Mini Distribution Box |
| Installation Method | Wall-mounted |
| Output Power | 15 kW / 30 kW / 45 kW |
| IP Rating | IP43(Indoor) |
| Application Areas | LED displays, architectural lighting industrial and mining enterprises |



Specifications based on the Mini 30 kW model

## Selection Parameters

Warranty: Replacement-only service, 3-year warranty

| Total Power kW | Recommended Copper Cable Cross-Section of 3-phase 5-wire (For reference) | Output Circuits (1P) | Enclosure Dimensions (mm) | Installation |
|---|---|---|---|---|
| 15KW | YJV-4*6mm²+1*4mm² | 3 | 220*130*70 | Wall-mounted |
| 30KW | YJV-4*16mm²+1*10mm² | 6 | 250*160*70 | Wall-mounted |
| 45KW | YJV-4*25mm²+1*16mm² | 12 | 310*260*70 | Wall-mounted |

# PART 5 Mobile Distribution Boxes

## 1. QN-YD Manual Mobile Distribution Box

### Product Overview

· Input: 32 A / 5-pin aviation connector, 6 3A / 5-pin aviation connector
· Independent 200 A (MAX)heavy-duty power terminal for input
· Output: 16 A (MAX) compact aviation connector
· Digital display of three-phase current and three-phase voltage, convenient for night time operation
· Residual Current Protection, Short-Circuit Protection
· Available Power Ratings: 15 kW / 30 kW / 50 kW / 70 kW / 90 kW

### Reference Models

QN-YD/15kW(220V)

QN-YD/50 kW (Export Version)

QN-YD/60 kW (Export Version)

QN-YD/70 kW (Export Version)

QN-YD/50 kW
(Waterproof Version)

QN-YD/90 kW (200A Heavy-
Duty Terminal Version)



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## 2.QN-IMD Smart Mobile Distribution Box

### Product Overview

The QN-IMD Series Smart Mobile Distribution Box is a newly launched product by China Power. It features an industry-first design that enables one-touch start/stop or individual unit control via the LCD or PC interface. It also displays electrical parameters such as current and voltage. Designed for domestic and international sales, combining safety, reliability, aesthetics, and cost-effectiveness, it is suitable for LED display manufacturers, rental companies, and outdoor events. Compatible with domestic and international power supply systems, it enables control methods covering Manual Control, Scheduled Control, Remote Control via RS-485 and Ethernet Control.

This features Automatic Control and Manual Control independently. It enables one-touch start and stop. When the PLC is not operational, the unit can be manually started or stopped.

New high-current smart contactors are used, featuring Overcurrent Protection, Short-Circuit Protection, and Overtemperature Protection.

### Functional Features

1.It supports Manual Control, Remote RS-485 Control, Scheduled Control, and Network Control.
  1)Remote RS-485 Control (Modbus RTU compatible for third-party platforms)
  2)Network Control: Manufacturer protocol, Modbus TCP
  3)Scheduled Control: Up to four time periods can be configured per day, with weekday-based start/stop settings and support for cross-day scheduling.
  4)Manual Control + Automatic Control: One-touch Start/Stop: Panel buttons allow one-to-one start/stop
2.Operation Modes: Silent operation, anti-interference, resistant to grid fluctuations
3.Emergency Start: Allows manual power-on if module control fails

### Protection Capabilities

1.Short-Circuit Protection
2.Neutral Conductor Temperature Protection
3.Overcurrent Overload Protection
4.Overvoltage / Undervoltage Protection

QN-IMD/40KW

QN-IMD/60KW

QN-IMD/80KW

# PART 6 Harmonic Elimination Distribution Cabinets and Safety Distribution Cabinets for Large LED Display

## 1.QN-HEDC Harmonic Elimination Distribution Cabinet for LED Displays

### Product Model

QN-HEDC /50KW-200KW Harmonic Elimination Distribution Cabinet for LED Displays /50KW-200KW

### Reference Models

The QN-HEDC Series is designed for LED displays, factories, and industrial and mining enterprises. It enables control methods covering Manual Control, Scheduled Control, PLC Remote Control and Centralized Control, etc.

It features a 2-in-1 design combing standard PLC distribution box functionality, third-harmonic elimination, and a 7-inch touch screen control interface. The Third-Harmonic Elimination Unit is an independently designed unit. It utilizes a combination of hard magnetic and soft magnetic materials to increase magnetic flux density to prevent magnetic saturation.

### Control Modes

1.Control Methods: LCD Control + PC Control + PC Scheduling + Centralized Control + On/Off Control
2.LCD Control: Synchronized with PC interface, supports one-touch delayed start/stop, single-circuit control, and parameter display
3.PC Control: Remote one-touch delayed start/stop, single-circuit start/stop, emergency stop
4.PC Scheduling: Remote scheduling with up to 4 daily time periods, start/stop by weekday; supports off-line operation
5.Centralized Control: Modbus RTU, Modbus TCP, Modbus UDP protocols
6.On/Off Control: Supports Remote Manual Control via Dry Contact inputs or external devices

### Monitoring, Logging & Alerts

1.Data Recording: Records current, voltage, power, temperature, smoke status, alarm status, and operational status
2.Viewing Logs: Operation logs, alarm logs, and warning logs available
3.Warning Settings: High temperature, smoke, overload, and time-based alerts

### Third-Harmonic Elimination

1.Eliminates over 90 % of third harmonics
2.Automatic operation, no manual tuning required
3.Energy savings of 5–10 %, preventing overheating of cables and wires
4.Combines soft and hard magnetic materials to reduce magnetic flux saturation



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### Software Installation and Operation

1.Automatically connects and operates upon startup without manual configuration
2.Language selection supports 18 languages
3.This distribution box is compatible with domestic operating systems such as Kylin, UnionTech UOS, and Red Flag Linux.

### Protection Functions

1.Short-Circuit Protection
2.Overcurrent / Overload Protection
3.Overvoltage / Undervoltage Protection (optional)
4.Phase Loss Protection (optional)
5.Residual Current Protection (optional)
6.Neutral Conductor Temperature Protection
7.Ambient Temperature Protection
8.Environmental Smoke Detection Protection
9.Lightning Surge Protection

## 2.QN-SAFETY Safety Distribution Cabinet for Large LED Displays

### Product Model

QN-SAFETY / 50 kW-200 kW Safety Distribution Cabinet for Large LED Displays

### Product Overview

Safety Distribution Cabinet for Large LED Displays is suitable for applications including LED display systems, factories, industrial plants, and mining enterprises. It enables control modes covering Manual Control, Scheduled Control, Remote PLC Control, Centralized Control, etc.

This distribution cabinet is designed for overall safety of LED displays and offers powerful functionality. Key Features cover automatic reclosing, third-harmonic elimination, detection of smoldering, burning odor, and CO, Touch Screen Control, PLC Control, Centralized Control, PC Control, and 4G connectivity. Meanwhile, it enables high-temperature power cut, smoke-triggered power cut, neutral conductor temperature monitoring, fault warnings, and device positioning with notifications via SMS and WeChat. Protection functions cover overload, over/under voltage, and RCD. The Third-Harmonic Elimination Unit is an independently designed device. It utilizes a combination of hard magnetic and soft magnetic materials to increase magnetic flux density to prevent magnetic saturation.

### Control Modes

1.Control Methods: LCD Control + PC Control + PC Scheduling + Centralized Control + App Control
2.LCD Control: Synchronized with PC interface; supports one-touch delayed start/stop, single-circuit control, and parameter display
3.PC Control: Remote one-touch delayed start/stop, single-circuit start/stop, emergency stop
4.PC Scheduling: Remote scheduling with up to 4 daily time periods, start/stop by weekday; supports offline operation
5.Centralized Control: Modbus RTU, Modbus TCP, Modbus UDP protocols
6.App Control: Remote control and monitoring via mobile app interface

### Positioning, Alerts & Monitoring

1.Device Positioning: Provides exact location of the device
2.Alerts: Notifications via SMS, email, mobile app, and WeChat mini-program in case of anomalies

## Camera Surveillance

1.AI Monitoring 2.Fire Detection & Smart Monitoring

## Remote Closing and Opening of the Main Circuit Breaker

1.PC Interface: Remotely close/open the main circuit breaker
2.Mobile Interface: Remotely close/open the main circuit breaker

## Early Warning & Detection

1.Smoldering Particle Detection: Detects smoldering particles released from wiring for early fire warning
2.Burning Odor Detection: Detects small particles released from wiring for early fire warning
3.CO Detection: Detects carbon monoxide for early fire warning
4.Smoke Detection: Accurately detects smoke composition during a fire and provides advance warning

## Monitoring, Logging & Alerts

1.Data Recording: Records current, voltage, power, temperature, smoke status, alarm status, and operational status
2.Viewing Logs: Operation logs, alarm logs, and warning logs available
Warning Settings, High temperature, smoke, overload, and time-based alerts

## Chart Generation

Graphical Analysis / Curve Chart Analysis

## Online Payment

WeChat Pay and Alipay for Online Traffic Payment

## Third-Harmonic Elimination

1.Eliminates over 90 % of third harmonics
2.Automatic operation, no manual tuning required
3.Energy savings of 5–10 %, preventing overheating of cables and wires
4.Combines soft and hard magnetic materials to reduce magnetic flux saturation

## Software Installation and Operation

1.Automatically connects and operates upon startup without manual configuration
2.Language selection supports 18 languages
3.This distribution box supports operating environments running domestic systems such as Kylin, Union Tech UOS, and Red Flag Linux.

## Remote Software Upgrade

1.Remote OTA Upgrade 2.Remote Software Upgrade

## Protection Functions

1.Short-Circuit Protection
2.Overcurrent / Overload Protection
3.Overvoltage / Undervoltage Protection
4.Phase Loss Protection
5.Residual Current Protection
6.Ambient Temperature Protection
7.Environmental Smoke Detection Protection
8.CO Detection Protection
9.Smoldering Particle Protection
10.Lightning Surge Protection
11.Harmonic Elimination Protection



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# PART 7 Neutral Current Eliminators & Low-Voltage DC Power Supply

## 1.QN-ZERO Neutral Current Eliminator

### Overview

One of the distinctive characteristics—and major safety concerns—of LED display systems is that the neutral conductor current is often higher than the phase conductor current. When the current in the neutral conductor exceeds that of the phase conductors, it poses a serious safety hazard. Since the neutral conductor typically lacks Overcurrent Protection, no protective tripping or alarm is triggered under such conditions. As a result, the neutral conductor may overheat severely, and prolonged overheating can directly cause fire hazards. In addition, excessive neutral current significantly reduces the service life of transformers and power cables.

### Causes of Excessive Neutral Current

The excessive neutral current is mainly caused by third-order harmonics, which are generated by switching power supplies. During the conversion of AC 220 V to DC 5 V, harmonic currents are generated, predominantly third harmonics. Additionally, LED displays operate with dynamic content, resulting in three-phase imbalance, which further contributes to neutral current. In general, the neutral current of an LED display system is approximately twice the single-phase line current. For example, the phase conductor current of a 100 kW LED display system is approximately 150 A at full load, while the neutral conductor current may reach 300 A. If the phase conductors use YGV 4×50 $mm^2$ + 1 standard copper cable, the neutral conductor must be upgraded to YGV 95 $mm^2$ ×4 + 1 standard copper cable. For LED displays with a screen area exceeding 100 $m^2$, the installation of a neutral current eliminator is strongly recommended. The larger the display, the more critical this measure becomes—this is a cost that should not be compromised.

### Hazards of Harmonics

·Under normal conditions, the cross-sectional area of the neutral conductor is typically one-third to one-half that of the phase conductors. However, in many real-world applications, the neutral current exceeds the phase conductor current. This results in severe neutral conductor overloading and overheating, accelerated insulation aging, and an increased risk of short circuits and fire hazards, posing serious safety risks.
·The excessive neutral current also leads to frequent tripping of transformer zero-sequence protection,
·Increased energy consumption, as excessive neutral current and harmonics cause additional power losses.
·Resultantly, overheating of power factor correction capacitors leads to premature failure, reduced lifespan, and degraded power factor.
·This also leads to malfunction or false operation of switches and control devices and further reduces equipment accuracy and system stability.
·Since the neutral conductor typically has no Overcurrent Protection, prolonged overheating can easily result in fire incidents.

### Manifestations of Harmonics

1.The neutral current is approximately twice the single-phase line (phase) current.
2.Harmonics also leads to excessive heating of the neutral cable.
3.It also leads to audible AC noise from contactors, with sound levels varying according to the display content. The audible noise becomes louder when the screen background is predominantly white. The noise can propagate along the power cables.

### Mitigation Measures

1.Install a Neutral Current Eliminator
2.Use PFC (Power Factor Correction) switching power supplies
3.Adopt DC power supply systems
4.Increase the cross-sectional area of the neutral conductor

## Product Overview of the Neutral Current Eliminator

1.The Neutral Current Eliminator is a high-tech solution designed to address equipment failures and safety hazards caused by excessive neutral current in three-phase systems with unbalanced loads, such as LED display systems. It adopts an advanced composite magnetic structure combining hard magnetic and soft magnetic materials, delivering a compact size, light weight, high magnetic flux capability, and effective prevention of magnetic saturation.

2.Functional Features

Anti-Magnetic Saturation Materials: Advanced high-flux-density technology combining hard magnetic and soft magnetic materials to reduce magnetic flux saturation.

Harmonic Elimination Method: Passive, maintenance-free operation with automatic internal elimination of harmonic magnetic flux; no commissioning required.

Harmonic Elimination Performance: Eliminates over 90 % of neutral current, effective across both upstream and downstream sections of the power grid.

Energy-Saving Effect: Achieves 5–10 % or more energy savings while preventing overheating of cables and conductors.

Insulation Class: Class H, Ip30

Wiring Method: Installed in series with the three phase conductors; no connection to the neutral conductor

Service Life: Up to 10 years

## *2. QN-DC 48 V / 120 kW Low-Voltage DC Distribution Cabinet*

As LED display pixel pitch continues to decrease—evolving toward Mini-LED and Micro-LED technologies—the traditional power supply architecture of AC 220 V converted to DC 5 V can no longer meet industry requirements. Its main drawbacks include:

1)This power supply approach introduces harmonic distortion, adversely affecting the power quality of the supply system.

2)While the modules and display panels are slim, the power supply units remain bulky, leading to poor system integration. Therefore, direct DC power supply at DC 48 V and DC 220 V is increasingly critical to resolving these industry challenges.

### Overview

Direct current (DC) power supply is the development trend for display screens. Currently, some systems use low-voltage DC 48 V, while others adopt high-voltage DC 220 V.

The output principle of DC 48 V differs from that of DC 220 V: the former controls AC-to-DC conversion, whereas the latter controls DC-to-DC conversion.

### Features

1.Redundant and busbar designs ensure uninterrupted power supply for the display screen over the long term.
2.As the LED display is powered by DC, the AC-to-DC conversion is carried out within the distribution box. No switch-mode power supply is installed behind the display, significantly reducing overall heat generation and thereby extending service life.
3.The power supply modules can be replaced directly in the distribution box, eliminating the need to climb up to the rear of the display. Replacement can be carried out anytime and anywhere.
4.DC output generates no harmonics, so neutral current does not increase — remaining below 25 % of the single-phase live current. (In contrast, under AC power supply, the neutral current can reach twice the single-phase live current.)



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## *3. LoRa Module 25 LoRa Wireless Centralized Control Module*

### Overview

The LoRa Wireless Central Control Module is a compact central control platform developed by China Power. It can control over 100 devices that support the corresponding protocols. It supports Wi-Fi, Bluetooth, and LoRa wireless communication protocols, as well as RS-485.

The module comes with a 4-inch touch screen interface, featuring Scheduled Control and Manual Control, status and electrical parameter display, and alarm functions.

### Control Modes

Control methods: LoRa + Wi-Fi + Bluetooth + LCD interface + Centralized Control + Remote RS-485 Control

LCD Control: One-key delayed start/stop, single-channel control, parameter display and setting

PC Control: Remote RS-485 Control, single-channel start/stop, emergency stop

PC Scheduling: Schedule up to 4 time periods per day remotely, with start/stop configurable for each day of the week; can operate offline.

LoRa Control: Effective range > 1,000 meters

Wi-Fi Control: Effective range < 30 meters

Bluetooth Control: Effective range < 30 meters

### Protection Functions

Ambient Temperature Detection

### Application scenarios

Exhibition halls, exhibition buildings, conference room, etc.

### Installation & Dimensions

1.Supports embedded flush-mount installation and bracket-style surface mounting
2.Dimensions 86× 86× 43.7 mm

## *4. QN-RACK/20KW Rack-Mount Distribution Box*

### Overview

The QN-RACK/20 kW is a rack-mount distribution box suitable for LED displays, audio/video systems, stage lighting, and similar applications. It supports Manual Control, Scheduled Control, PLC Remote Control, Centralized Control, Remote Control, etc.

Equipped with a 4-inch touch screen interface, it features 6 output ports with aviation-style connectors, with a total power capacity of 20KW.

## Control Modes

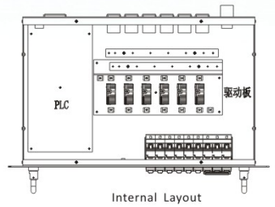
1.Control Methods: LCD Control + PLC (PC) Control + Centralize Control + Remote Control
2.LCD Control: Synchronized with the PC interface, one-key delayed start/stop, single-channel control, parameter display
3.PC Control: Remote one-key delayed start/stop, single-channel start/stop, emergency stop
4.PC Scheduling: Remote scheduling with up to 4 daily time periods, start/stop by weekday; supports offline operation
5.Centralized Control: Supports Modbus RTU, Modbus TCP, and Modbus UDP protocols
6.Remote Control: Wireless remote control with up to 30-meter range

## Software Installation and Operation

1.Automatically connects and operates upon startup without manual configuration
2.Language selection supports 18 languages
3.This distribution box supports operating environments running domestic systems such as Kylin, UnionTech UOS, and Red Flag Linux.

## Dimensions

This distribution box requires installation in a 3U standard rack-mount network cabinet.


Internal Layout

Right-Side View


Front View

## Protection Functions

1.Short-Circuit Protection
2.Overcurrent / Overload Protection
3.Neutral Conductor Temperature Protection
4.Ambient Temperature Protection

## Power

1.Single-Channel Output: 3.5 kW, 6 channels
2.Total Power: 20 kW
3.For power requirements above 40 kW, multiple units can be connected in parallel.

# PART 8 China Power Cloud Configuration Platform

## 1. Cloud Configuration Platform Overview

The cloud platform is a key component of AI control. It is primarily designed for small and medium-sized enterprises and individual units, enabling cloud-based configuration, computation, storage, alerts, and editing without relying on specific terminals. The platform provides a variety of communication terminals and integration solutions, supporting massive industrial device connections and allowing concurrent access for millions of devices. It offers comprehensive device monitoring features, including full-dimension data queries, fault reporting, maintenance, device status monitoring, real-time on-site equipment status detection, remote start/stop control, device alarm notifications, equipment map management, WeChat monitoring, authorization management, and payment management.

The platform is ready to use without requiring professional software knowledge. With this platform in hand, intelligent control is fully at your fingertips.



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## 2.QN-CLOUD Cloud Platform Distribution Box – Example 1

### Product Overview

·The CLOUD IoT Distribution Box is designed for large-scale wireless control, enabling cloud-based control, recording, querying, and alerts.
·Safety Management:Door open alarm, high-temperature alarm, burning smell alarm, smoke alarm, electric leakage alarm, overload alarm, cable temperature alarm, over/under-voltage alarm, etc.
·Power Management: Remote display, monitoring, recording, and querying of device power usage; predictive analysis and smart notifications.
·Responsibility Management: Records of personnel operations, timestamps, logs, and fault records.

### Functional Features

1.Control Modes: Cloud Control + Wi-Fi
2.Cloud Control: Decentralized control with no distance limitations
3.Wi-Fi Control: Accessible via mobile phones, tablets, and centralized Control interfaces
4.Monitoring: Real-time display of electrical parameters with warnings
5.Remote Encryption: On-site encryption via mobile phone, convenient and practical
6.Record Keeping: Operation logs, fault records, electrical parameter records with viewing capability
7.Fault Notification: Mobile vibration notifications and email alerts
8.Location Tracking: Real-time map positioning
9.Protection Types: Up to ten types of protection
10.Single-P Status: Supports single-phase and single-channel control

### Product Reference

QN-CLOUD/20KW

QN-CLOUD/200KW

QN-CLOUD/100KW

### Cloud interface control

## 3. QN-CLOUD Cloud Platform Control – Example 2

### Product Overview

The Cluster Distribution Box (CLOUD Distribution Box) is mainly used for landscape lighting, road traffic systems, sports advertising, and multiple commercial advertising screens.

Here, Cluster Control (Cloud Control) refers to large-scale management of devices across different locations through the Internet, IoT, and cloud computing.

It allows remote control, configuration, monitoring, and display of individual and grouped devices, scaling from a single city to multiple cities, and from a single area to multiple areas. Since different devices may be tasked with different control content and schedules, cluster control becomes particularly advantageous.

### Functional Features

Our QN-CLOUD distribution box supports Single-Unit Control as well as Multi-Unit Cluster (Cloud Library) Control, providing stable and reliable operation with minimal human intervention, and sometimes requiring no manual tuning. Key features:

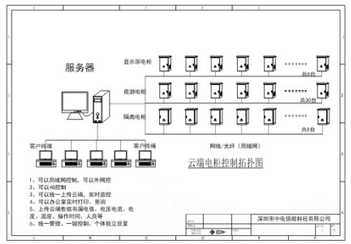
1.Cloud Library Control via mobile phone or PC

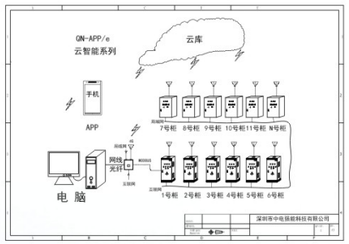
2.Control over LAN or internet/WAN

3.Supports wired Ethernet, 4G wireless network, and Modbus

4.Simultaneous control, monitoring, and recording of hundreds of distribution boxes

### Control Topology Diagram




### On-Site Photos



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## PART 9 China Power Classroom Sharing

### 1.Key Factors to Consider When Selecting a Distribution Box

***1)Calculation of cable sizing used for the distribution box***

When selecting a distribution box, first calculate the maximum power consumption of the LED display. In general, the power consumed by the display when playing videos is about one-third of the maximum power (white balance). However, the cable cross-section connected to the distribution box should be calculated based on the maximum power. If the LED display's third harmonics are not eliminated, the neutral conductor current can exceed twice the phase current, so the cable cross-section for the distribution box must be calculated based on the neutral current. In this case, a 4+1 cable is recommended.

Maximum power determination: 1. Based on the manufacturer-specified maximum power consumption per module. 2. Estimated by calculating the total power consumption according to the number of power supplies in the display system.

***2)Should the main breaker of the distribution box include a residual-current (RCD) function?***

First, please note that LED displays are industrial products and should not be treated like household appliances. The total leakage current of an entire LED display is generally higher than the 30 mA RCD trip rating commonly used in residential installations. For every 100 m² of display, leakage current can exceed 100 mA. Therefore, it is recommended to install a Residual Current Device (RCD) in the main circuit to provide additional leakage protection. It is suggested that the main breaker's RCD be adjustable, e.g., 100 mA, 300 mA, 500 mA. For personal safety, each output circuit should be protected by a 1P+N miniature circuit breaker (MCB) with a 30 mA RCD.

***3)Power Calculation for Distribution Boxes to be Used Overseas***

In countries overseas, the input voltage can be three-phase 220 V (possibly without a neutral) or three-phase 380 V, etc. The outputs can be single-phase 110 V, single-phase 220 V, and so on. If the power system in the country is three-phase 380 V with a 5-wire configuration, the power calculation method is the same as in China. If the power system in the country is three-phase 220 V with a 5-wire configuration, the output power is half of the domestic calculation. That is, a 100 kW distribution cabinet to be used overseas is equivalent to a 200 kW distribution cabinet to be used in China. If the power system in the country is three-phase 220 V with a 3-wire configuration (no neutral), the design approach for the distribution box is completely different.

***4)Methods for Harmonic Elimination***

During the process of converting AC 220 V to DC 5 V in a switching power supply, harmonics are generated. Among them, the 3rd-order harmonics have the most significant impact on the power supply lines. In the presence of harmonics, the neutral conductor current can be approximately twice the current of a single-phase live line.

Methods for harmonic elimination include: 1. Using a neutral current filter. 2. Using a PFC (Power Factor Correction) power supply. 3. Supplying the LED display directly with DC 220 V from the distribution box. Currently, most market-available harmonic filters are of traditional design, containing large inductors, which makes them heavy and difficult to install. Using a PFC (Power Factor Correction) power supply increases cost, and the effectiveness of harmonic elimination varies. In practice, neutral conductor current may still exceed the allowable limit. Directly supplying DC from the distribution box to the LED display fundamentally eliminates harmonics and improves leakage current conditions, making it an effective solution for enhancing power quality.

***5)Condensation Handling***

Condensation frequently occurs in northern regions. When the display is operating, the internal temperature is high. After shutdown, cold external air can enter into the display, forming water droplets inside and outside the display. Solution: After the display is turned off, the fans should continue operating for 1 hour to reduce the temperature difference between the inside and outside of the display, thereby preventing condensation caused by excessive temperature differences.

***6)What are the measures to protect LED Displays from lightning surge hazard?***

Common lightning protection methods include 1. power line surge protection, 2. signal line surge protection, and 3. lightning rods. Lightning rods are installed at the top of the display frame. Signal line protection applies to network cables, RS-485 signals, audio signals, etc. Power line protection is generally Class C, with a rated current-carrying capacity of 40 kA.

***7)Why D-Series Circuit Breakers Are Selected for Distribution Box for LED Display?***

LED displays extensively use 200 W, 5 V/40 A switching power supplies, which are inherently capacitive loads. The current leads the voltage, and the inrush current at start-up can be several times greater than the rated current. Therefore, the output circuit breaker is selected as D-series, which can tolerate 10× the rated current for short durations.

***8)Why are most main circuit breakers in LED display distribution boxes not equipped with RCD?***

8.1 Currently, two types of 200 W switching power supplies are commonly used for LED displays:

a) standard 200 W switching power supply b) PFC 200 W switching power supply

Both types have input 220 V AC and output DC 5 V/40 A. The PFC version also supports wide voltage input from 110 V to 220 V.

8.2 Parameters Affecting Leakage Current

Both types of switching power supplies exhibit some leakage current, generally less than 1 mA. The standard 200 W switching power supply usually has a Power Factor of 0.6. The PFC 200 W switching power supply usually has a Power Factor of 0.96. For switching power supplies above 75 W, Power Factor must be considered. Since our LED displays use 200 W power supplies, power factor consideration is necessary.

For example, an LED display with a total power of 20 kW requires 100 units of 200 W switching power supplies, resulting in a total leakage current of less than 200 mA. If a 30 mA Residual Current Device (RCD) is installed on the main breaker, it would trip immediately.

Conclusion: Most main circuit breakers in distribution boxes for LED display are not designed with RCD.

***9)Can RCDs be used for the input and output circuit breakers in LED display distribution boxes?***

Yes. The switching power supplies used in the LED displays are rated at 200 W. Whether standard or PFC switching power supplies are used, each unit generates approximately 1 mA of leakage current; therefore, the total leakage current of the display can be relatively high. As LED displays are industrial products, the main breaker RCD rating needs to be adjustable. For a 50 kW distribution cabinet, a 100 A 4-pole molded case main breaker can be equipped with a selectable RCD of 100 mA, 200 mA, or 300 mA. For output branch circuit breakers, if the single output circuit power does not exceed 3.5 kW, a 30 mA RCD can be used. Condition: The total number of 200 W switching power supplies on a single output circuit does not exceed 20 units.

***10)Why are D32A (or D25A) Circuit Breakers and 2.5 mm² Wires Commonly Used for Individual Output Circuits in the Distribution Cabinet for LED display?***

The rated current of the output circuit breaker depends on the load. Switching power supplies are capacitive loads, which exhibit high inrush currents at start-up. Different manufacturers' power supplies have varying inrush currents, so distribution box manufacturers select circuit breakers with a wider tolerance range. Although D20A might be sufficient based on calculation, D25A or D32A is generally selected for safety and coverage. Output wiring is typically 2.5 mm², because a 2.5 mm² copper conductor can safely carry 25 A continuously, which meets the 3.5 kW (16 A) power demand.

***11)Classification of Distribution Boxes for LED Displays***

c)Distribution boxes for LED displays can be classified by degree of protection (IP rating) into indoor distribution boxes (IP43) and outdoor distribution boxes (IP55).

d)Distribution boxes for LED displays can be classified by control modes into Manual Control, Scheduled Control, Multifunction Card Control, PLC Control, Remote 433 MHz Control, LoRa Wireless Control, APP Wireless Control, and CLOUD Wireless Remote Control.


PLC Control and Multifunction Card Control via network cable or RS-485 are considered a form of Remote Control. 433 MHz Wireless Control and LoRa Wireless Control are short-distance Wireless Control.

APP Wireless Control and CLOUD Wireless Control are long-distance Wireless Control.

Distribution boxes for LED displays can be manufactured with power ratings from 10 kW up to 300 kW. Standard configuration provides three outputs per 10 kW, using a single output cable of RVV3×2.5 mm².

***12)Are there any new fire protection detection methods for display screens?***

Yes. One such method is smoldering detection. In the early stage of a fire, a burning smell may appear; before that stage, smoldering occurs. When hot particles are released during smoldering, they can be detected, allowing an alarm to be triggered several hours in advance, effectively preventing a fire from developing. Compared with this, smoke detectors provide relatively late-stage protection.



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## 2. Introduction to China Power PLC Module Series

***1) PLC Images***

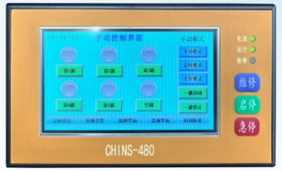
CHINS-PLC200

SmartPLC-F300

CHINS-PLC300


SmartPLC-100


SmartPLC-220




CHINS-PLC480

***2) PLC Overview***

Over the years, China Power has successfully launched multiple high-performance CHINS PLC control module series. The key products include the CHINS-PLC300 series, SmartPLC-100 series, CHINS-480 series, SmartPLC-F300 series, and CHINS-PLC200 series.

Each series is designed for different applications. CHINS-PLC300 is intended for traditional control distribution boxes, featuring button-based operation and DIN-rail mounting. SmartPLC-100 is designed for general-purpose distribution boxes, integrating control, keypad, and display into a single unit, and supports panel-mounted installation. CHINS-480 is applied in bidding control projects, integrating control, LCD touch interface, and display in one unit. It supports scanning, Wi-Fi, and 4G connectivity, and uses panel-mounted installation. SmartPLC-F300 is used in the global distribution box series, operating in conjunction with Smart-F100, and supports DIN-rail mounting. SmartPLC-220 is designed for general-purpose distribution boxes, integrating control, keypad, and display in a single unit. It supports single-channel control and DIN-rail mounting. CHINS-PLC200 is designed for traditional control distribution boxes, featuring a separated drive-and-control architecture and DIN-rail mounting.

The PLC supports programming, reading, downloading, verification, diagnostics, and monitoring using GX Developer and GX Works2 software. It is compatible with MITSUBISHI PLC programming software and supports domestic PLC software environments. The system supports multiple analog inputs and analog outputs, as well as RS-232 communication (via hardware adapter), RS-485 master/slave Modbus RTU communication, and CAN bus expansion. It supports multi-axis stepper motor control, PID regulation, and PWM functions, and is compatible with NTC and PT100 temperature sensors. Additional features include A/B-phase encoder input, multi-channel weighing functions, internal temperature and humidity monitoring, and neutral conductor temperature detection. The PLC also supports HMI (touch screen) operation, watchdog protection, external interrupts, super password configuration, power-failure detection with data retention, and fault detection. Networking and communication capabilities include Ethernet (ENET) networking, Modbus TCP master/slave communication, Modbus UDP communication, remote firmware upgrade, centralized device search, centralized management, and parameter configuration.

The PLC program incorporates protection features such as read-out prevention and other practical security functions. As a result, this PLC series offers enhanced functionality, greater application flexibility, and improved operational stability.

## *Main functional features*

| | | |
|---|---|---|
| Software | Supported Software | The PLC supports programming, reading, downloading, verification, diagnostics, and monitoring using GX Developer and GX Works2 software. |
| Voltage Input | Rated Voltage | 24 V |
| | Voltage Variation | ±5 % |
| Digital Input Points (X points) | Software Range | X0–X377 (total 256 points) |
| | Hardware Range | X0–X13 (total 12 points) |
| Digital Output Points (Y points) | Software Range | y0~y377 |
| | Hardware Range | Y0–Y7 (total 8 points) |
| | High-Speed Pulse (available only in the transistor series) | Supports up to 8 channels (Y0–Y7). Channels Y0–Y5 can operate simultaneously at a maximum frequency of 200 kHz. Channels Y6–Y7 can operate simultaneously at a maximum frequency of 100 kHz. Supports PLSY and PLSR pulse output (positioning commands supported). |
| Analog | Analog Inputs | 4 channels (1 channel for temperature & humidity, 1 channel for neutral conductor temperature), with 2 built-in channels reserved. |
| | Analog Outputs | Analog Outputs (4 channels built-in: reserved) |
| Communication Interfaces | RS-485 | 5 ports, supports ladder program download, touch screen communication protocols, master/slave configuration, Modbus RTU protocol (bit-level read supported), and RS /RS2 protocol-free communication. Supports master programming protocols. |
| | CAN (built-in reserved) | The built-in CAN interface supports register sharing, with up to 32 slave devices. Each slave device can share up to 32 registers. It also supports module expansion, allowing up to 16 additional slave devices, and supports extended I/O, analog, weighing, NTC, PT100, and thermocouple functions. |
| | ENET Ethernet interface | Supports ENET Ethernet port basic functions; ENET Ethernet port Modbus TCP/UDP Server (Slave); ENET Ethernet port Modbus TCP/UDP Client (Master); IPv4; MITSUBISHI 3C/4C Protocol. Provides 8 independent hardware sockets. Each communication channel operates independently. Supports remote parameter upload/download and online monitoring. |
| | Function Panel | Supports mode switching, one-to-one control, one-key start/stop, and emergency stop. |
| Clock | Real-time calendar clock | Compatible with original equipment (when the password is 12345678, programming software is prevented from modifying the clock data.) |
| Encoder | Encoder input function | Supports up to two AB-phase inputs, with a maximum response frequency of 100 kHz (AB-phase inputs can be set for 2x or 4x counting — the same encoder can achieve 2–4 times the resolution). Supports SPD instruction (x0–x5: 6 channels). Other software high-speed counters have a maximum response frequency of 10 kHz. |
| Watchdog | Watchdog function | Program watchdog |
| Interrupt function | External interrupt function | Supports pulse capture function, up to 6 channels (x0–x5), with a maximum response frequency of 10 kHz (with filtering) |
| Password | Supports super password setting | When the password is modified, the program is protected from reading, whileinternal memory/register data remains accessible. Modifying the password clears the program. |
| Power-Off Data Retention | Power-off data retention function | All power-off data is stored in FLASH (retention over 10 years). Data is checked upon power-up. |
| Fault Detection | ERR Indicator | During PLC operation, the program checks the specified ranges of programs and devices. If a problem is detected, a corresponding fault is reported. For minor fault, the ERR indicator flashes. For severe fault, the ERR indicator stays on. |
| RUN Indicator | RUN Indicator | When the RUN switch is turned on, the RUN indicator flashes. |
| Acceleration/ Deceleration | PLSV Instructions | Supports PLSV instruction with optional acceleration/deceleration setting |
| D Memory | | Supports using D-register bits Dn.b |
| Indexed Registers | | Supports the following indexed register formats: Constant: KnZn, HnZn, Bit: KnX (YMTC) Zn, Word: D(TC)nZn |



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## *Communication Ports and Function Description*

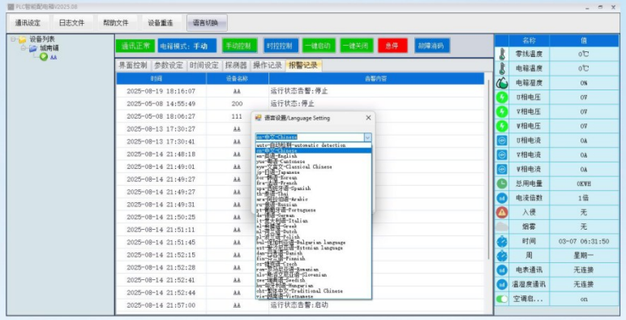
| Type | Supported Protocols | Notes |
|---|---|---|
| Serial Port 1<br>Serial Port 2<br>Serial Port 3<br>Serial Port 4<br>Serial Port 5 | Programming port mode | COM1: RS-485 (default programming port protocol)<br>COM2: RS-485 (default programming port protocol)<br>COM3: RS-485 (default programming port protocol)<br>COM4 (for panel communication)<br>RS-485 (default programming port protocol)<br>COM5 (built-in expansion for LoRa)<br>RS-485 (default programming port protocol) |
| | Modbus RTU Slave | |
| | Modbus RTU Master | |
| | Modbus ASCII Slave | |
| | Modbus ASCII Master | |
| | Free Port Mode | |
| | Compatible with MITSUBISHI FX serial communication protocol via RS-485 expansion board | |
| | N: N network protocol | |
| Ethernet Port (Total 8 Connections) | UDP Mode | Free Port Mode |
| | Multi-device communication | Unlimited PLC communication within a Local Area Network |
| | Compatible with MITSUBISHI ENET-ADP MC UDP mode | MC Protocol |
| | CHINS Host Computer Protocol | for HMI tools and network discovery |
| | TCP SERVER | Free Port Mode |
| | Modbus TCP SERVER | Used for PLC Ethernet programming |
| | Compatible with ENET-ADP MELSOFT mode | Modbus TCP server supports up to 4 connections |
| | Compatible with ENET-ADP MC TCP mode | for PLC Ethernet programming compatibility |
| | TCP CLIENT | Free Port Mode |
| | Modbus TCP CLIENT | Modbus TCP CLIENT |

The software provides a PC client for Microsoft Windows, PC clients for domestic operating systems, and a web interface. It fully supports Microsoft Windows as well as domestic operating systems such as Kylin, China Standard Kylin, UnionTech UOS, and Harmony OS, enabling operation across a wide range of application scenarios.

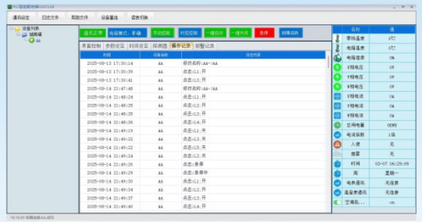
### *Control interface*

### *Parameter interface*

### *Operation Record Interface*



### *Multi-language Interface*



## *PART 10 Cable Introduction*

### *Cable Model Description*

#### 1.Incoming Main Cable for Distribution Box

Main Cable: YJV-0.6/1kV-4×50 mm²+25 mm²Copper core
Cross-linked polyethylene (XLPE) insulation
Polyethylene sheathRated voltage: 0.6/1 kV
5 cores, nominal cross-sectional area 50 mm²
Cable type coding V – PVC insulation
Y – PE insulation YJ – XLPE insulation
R – flexible conductor B – solid conductor

#### 2.Outgoing Cable from Distribution Box

Output Cable: RVV-0.6/1 kV-3×2.5 mm²
Copper core
PVC insulation
PVC sheath
Rated voltage: 0.6/1 kV
3 cores, nominal cross-sectional area 2.5 mm²


#### 3.Internal Wiring Cables for Distribution Box

Internal Wiring Cable 1: BV-0.6/1kV-1×6 mm²
Copper core
PVC insulation
Rated voltage: 0.6/1 kV
Single core, nominal cross-sectional area 6 mm²
Solid conductor (single-strand wire)

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### 4. Power Cable Nominal Cross-sectional Area

1.5mm² 2.5mm² 4.0mm² 6.0mm² 10mm² 16mm² 25mm² 35mm²
50mm² 70mm² 95mm² 120mm² 150mm² 185mm² 240mm² 300mm²
400mm² 500mm² 630mm² 800mm² 19种

### 5. Cable Current Carrying Capacity for Long-Term Continuous Load (Reference Only)

| Cable Cross-Section (mm²) | Current Capacity (A, 30℃) | Current per mm² (A) | Cable Cross-Section (mm²) | Current Capacity (A, 30℃) | Current per mm² (A) |
|---|---|---|---|---|---|
| 1 | 13 | 13 | 6 | 50 | 8.3 |
| 1.5 | 19 | 12.6 | 10 | 65 | 6.5 |
| 2.5 | 28 | 11.2 | 16 | 85 | 5.3 |
| 4 | 40 | 10 | 25 | 115 | 4.6 |

| Cable Cross-Section (mm²) | Current Capacity (A, 30℃) | Current per mm² (A) | Cable Cross-Section (mm²) | Current Capacity (A, 30℃) | Current per mm² (A) |
|---|---|---|---|---|---|
| 35 | 145 | 4.1 | 120 | 315 | 2.6 |
| 50 | 175 | 3.5 | 150 | 360 | 2.4 |
| 70 | 220 | 3.1 | 185 | 420 | 2.3 |
| 95 | 270 | 2.8 | 240 | 500 | 2.1 |

### *Cable Cross-Section Calculation (Reference)*

#### 1.10 kW Cable Cross-Section

P=1.732UIcosϕ
10000 W=1.732*380 V*I (assume cosϕ=1)
I=15.2 A
Incoming/outgoing distribution box live wire current: 15.2 A
Neutral conductor current with third harmonic: 30.4 A
Cable Selection: YJV-4*4 mm² + 2.5 mm²

#### 2.When selecting cables for the display distribution box, consider two maximum conditions

a) Maximum Power:The maximum power is reached when the display is performing white balance.
The power consumed during video playback is about one-third of the maximum power.The cross-sectional area of the input cable to the distribution box should be calculated based on the maximum power.

b) Maximum Current:Due to harmonics, the neutral current of the display can exceed twice the phase current.The cable cross-section for the distribution box should be based on the neutral current.Use 4+1 conductor cables (four phases + PE).

c) Methods to Determine Maximum Power:
1) Based on the maximum power per square meter of the module provided by the manufacturer.
2) Estimated from the total number of switching power supplies in the display.

#### 3.Input Cable Connection

1. Three-phase five-wire system: The incoming cable should have five cores: N (neutral), A phase, B phase, C phase, and PE (protective earth).
2. Cable color coding: Neutral (N) – Blue
A phase – Yellow B phase – Green C phase – Red Protective Earth (PE) – Yellow-green striped

## 4.Output Cable Connection

1.The number of three-core output cables is determined by the power configuration of the distribution box. There will be one three-core cable for each 1P circuit breaker installed.
2.For a single output below 4 kW, the cable used is a three-core 2.5 mm² cable: N (neutral), L (live), and PE (protective earth).

## 5.What is a Distribution Box?

1.A distribution box is a low-voltage device (within 1000 V).
2.It is a distribution unit that can step up or step down voltage.
3.Composed of electrical components, assemblies, and control units,
4.It can be controlled via smart PLC, mobile app, or access card (CARD).
5.It supports parameter readback, cloud upload, and record viewing.
6.It can provide abnormal condition alerts, fault prediction, and intelligent power-off.
7.Domestic Distribution System
a.Common domestic voltages: Single-phase AC 220 V, 3 wires: L1, N, PE Three-phase AC 380V, 5 wires: L1, L2, L3, N, PE (“three-phase five-wire system”) b.Cable color coding: L1 – Yellow L2 – Green L3 – Red N – Blue PE – Yellow-green

## 6.Component Selection List (Reference)

| Distribution Box Power | Theoretical Current (A) | Power Factorcos ϕ=0.9 | Selected Switch | Leakage Protection (Reference) | Input Copper Cable Cross-Section (Reference) | AC Contactor | Output D-Type 1P Circuit Breaker | Output Circuits | Box Size |
|---|---|---|---|---|---|---|---|---|---|
| 10KW | 15 | 16.7 | Type D 32 A 3P | 30, 50, 100 mA | YJV-4*4mm²+2.5mm² | 2510*1 | 25A/32A | 3 | 500*400*160 |
| 20KW | 30 | 33.3 | Type D 40 A 3P | 30, 50, 100 mA | YJV-4*6mm²+4mm² | 2510*2 | 25A/32A | 6 | 500*400*160 |
| 30KW | 45 | 50.0 | Molded Case 63 A | 100, 200, 300 mA | YJV-4*16mm²+10mm² | 2510*3 | 25A/32A | 9 | 650*500*200 |
| 40KW | 60 | 66.7 | Molded Case 80 A | 100, 200, 300 mA | YJV-4*16mm²+10mm² | 2510*4 | 25A/32A | 12 | 650*500*200 |
| 50KW | 75 | 83.3 | Molded Case 100 A | 100, 200, 300 mA | YJV-4*25mm²+16mm² | 2510+5011*2 | 25A/32A | 15 | 650*500*200 |
| 60KW | 90 | 100.0 | Molded Case 125 A | 100, 200, 300 mA | YJV-4*35mm²+16mm² | 5011*3 | 25A/32A | 18 | 800*600*200 |
| 70KW | 105 | 116.7 | Molded Case 125 A | 100, 200, 300 mA | YJV-4*35mm²+16mm² | 2510+5011*3 | 25A/32A | 21 | 800*600*200 |
| 80KW | 120 | 133.3 | Molded Case 160 A | 200, 300, 500 mA | YJV-4*50mm²+25mm² | 5011*4 | 25A/32A | 24 | 800*600*200 |
| 100KW | 150 | 166.7 | Molded Case 180 A | 200, 300, 500 mA | YJV-4*70mm²+35mm² | 5011*5 | 25A/32A | 30 | 1200*600*350 |
| 120KW | 180 | 200.0 | Molded Case 225 A | 200, 300, 500 mA | YJV-4*95mm²+50mm² | 5011*6 | 25A/32A | 36 | 1200*600*350 |
| 150KW | 225 | 250.0 | Molded Case 250 A | 200, 300, 500 mA | YJV-4*95mm²+50mm² | 6511*5 | 25A/32A | 45 | 1500*700*350 |
| 160KW | 240 | 266.7 | Molded Case 315 A | 200, 300, 500 mA | YJV-4*120mm²+70mm² | 3210+6511*5 | 25A/32A | 48 | 1500*700*350 |
| 180KW | 270 | 300.0 | Molded Case 315 A | 200, 300, 500 mA | YJV-4*150mm²+70mm² | 6511*6 | 25A/32A | 54 | 1800*800*400 |
| 200KW | 300 | 333.3 | Molded Case 350 A | 200, 300, 500 mA | YJV-4*185mm²+95mm² | 6511*7 | 25A/32A | 63 | 1800*800*400 |
| 250KW | 375 | 416.7 | Molded Case 500 A | 300, 500, 1000 mA | YJV-4*240mm²+120mm² | 3210+6511*8 | 25A/32A | 75 | 2000*1000*400 |
| 300KW | 450 | 500.0 | Molded Case 500 A | 300, 500, 1000 mA | YJV-4*300mm²+150mm² | 6511*10 | 25A/32A | 90 | 2200*1200*500 |



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## PART 11 Product Selection Table

| | Series | Models | Output Circuits | Main Configuration | Patent | Reference Image |
|---|---|---|---|---|---|---|
| Channels Sales Product Series | Compact High-Power Power Supply Distribution Box | QN-PowerBox/7.5KW | 2 | Scheduled Control + Centralized Control + Remote Control, bottom-entry/bottom-exit, neutral conductor temperature, aluminum enclosure, smart phone-sized, 0.5 kg(190X81X30) | Original Patent |  |
| | Compact High-Power Scheduled Control Distribution Box | QN-PowerTime/10KW | 3 | Scheduled Control + Centralized Control + Remote Control, bottom-entry/ bottom-exit, neutral conductor temperature, 2.2 kg(270X170X70) | Original Patent | |
| | | QN-PowerTime/20KW | 6 | Scheduled Control + Centralized Control + Remote Control, bottom-entry/ bottom-exit, neutral conductor temperature, 3.2 kg(300X200X81) | Original Patent | |
| | | QN-PowerTime/40KW | 12 | Scheduled Control + Centralized Control + Remote Control, bottom-entry/ bottom-exit, neutral conductor temperature, 4.2 kg(330X230X100) | Original Patent | |
| | | QN-PowerTime/60KW | 18 | Scheduled Control + Centralized Control + Remote Control, bottom-entry/ bottom-exit, neutral conductor temperature, 5.2 kg(350X265X100) | Original Patent | |
| | Compact High-Power Power PLC Distribution Box | QN-PowerPLC/10KW | 3 | Ethernet Port + serial port, Scheduled Control + Centralized Control + Remote Control bottom-entry/bottom-exit, neutral conductor temperature 2.2 kg(270X170X70) | Original Patent | |
| | | QN-PowerPLC/20KW | 6 | Ethernet Port + serial port, Scheduled Control + Centralized Control + Remote Control bottom-entry/bottom-exit, neutral conductor temperature 3.2 kg(300X200X81) | Original Patent |  |
| | | QN-PowerPLC/40KW | 12 | Ethernet Port + serial port, Scheduled Control + Centralized Control + RemoteControl bottom-entry/bottom-exit, neutral conductor temperature 4.2 kg(330X230X100) | Original Patent | |
| | | QN-PowerPLC/60KW | 18 | Ethernet Port + serial port, Scheduled Control + Centralized Control + Remote Control bottom-entry/bottom-exit, neutral conductor temperature 5.2 kg(350X265X100) | Original Patent | |
| Global Product Series | Global GL Blade Distribution Box | GL-BLADE/5KW | 1 | Global Blade: Scheduled Control + Centralized Control + Remote Control neutral conductor temperature, smart phone-sized 1.0 kg(180X80X30) | Invention Patents | |
| | | GL-BLADE/15KW | 3 | Global Blade: Scheduled Control + Centralized Control + Remote Control neutral conductor temperature, smart phone-sized 1.5 kg(210X100X30) | Invention Patents | |
| | Global GL Smart Distribution Box | GL-PLC/10KW | 3 | Global PLC: Ethernet Port + RS-485 + Centralized Control + Scheduled Control Overcurrent + Over/under voltage + Temperature Protection, one-to-one(380X270X120) | Invention Patents | |
| | | GL-PLC/20KW | 6 | Global PLC: Ethernet Port + RS-485 + Centralized Control + Scheduled Control Overcurrent + Over/under voltage + Temperature Protection, one-to-one(430X310X130) | Invention Patents |  |
| | | GL-PLC/40KW | 12 | Global PLC: Ethernet Port + RS-485 + Centralized Control + Scheduled Control Overcurrent + Over/under voltage + Temperature Protection, one-to-one(570X420X130) | Invention Patents | |
| | | GL-PLC/60KW | 18 | Global PLC: Ethernet Port + RS-485 + Centralized Control + Scheduled Control Overcurrent + Over/under voltage + Temperature Protection, one-to-one(570X420X130) | Invention Patents | |
| | | GL-PLC/80KW | 24 | Global PLC: Ethernet Port + RS-485 + Centralized Control + Scheduled Control Overcurrent + Over/under voltage + Temperature Protection, one-to-one(800X600X160) | Invention Patents | |
| | | GL-PLC/100KW | 30 | Global PLC: Ethernet Port + RS-485 + Centralized Control + Scheduled Control Overcurrent + Over/under voltage + Temperature Protection, one-to-one(800X600X160) | Invention Patents |  |
| Mini Product Series | Mini Distribution Box | QN-MINI/15KW | 3 | Scheduled Control + Centralized Control +On/Off Control + Remote Control + Antenna, neutral conductor temperature, tea box-sized, 1.2 kg(220X130X70) | Invention Patents | |
| | | QN-MINI/30KW | 6 | Scheduled Control + Centralized Control +On/Off Control + Remote Control + Antenna, neutral conductor temperature, tea box-sized, 1.5 kg(250X160X70) | Invention Patents | |
| | | QN-MINI/45KW | 9 | Scheduled Control + Centralized Control +On/Off Control + Remote Control + Antenna, neutral conductor temperature, tea box-sized, 3.0 kg(310X260X70) | Invention Patents | |
| | Book-Type Distribution Box | QN-BOOK/10KW | 3 | Scheduled Control + Centralized Control + Remote Control + Antenna, neutral conductor temperature, Thin in thickness, A4 paper-sized 1.5 kg(300X210X36) | Invention Patents |  |
| | | QN-BOOK/20KW | 6 | Scheduled Control + Centralized Control + Remote Control + Antenna, neutral conductor temperature, Thin in thickness, A4 paper-sized 2.0 kg(320X230X36) | Invention Patents | |
| Rental-Friendly Product Series | Smart Mobile | QN-IMD/20KW | 6 | RCD, flight case, Ethernet Port + serial port, high temperature resistance, emergency operation, one-key start + single control mode, LCD screen | Original Patent | |
| | | QN-IMD/40KW | 12 | RCD, flight case, Ethernet Port + serial port, high temperature resistance, emergency operation, one-key start + single control mode, LCD screen | Original Patent | |
| | | QN-IMD/60KW | 18 | RCD, flight case, Ethernet Port + serial port, high temperature resistance, emergency operation, one-key start + single control mode, LCD screen | Original Patent | |
| | | QN-IMD/80KW | 24 | RCD, flight case, Ethernet Port + serial port, high temperature resistance, emergency operation, one-key start + single control mode, LCD screen | Original Patent | |
| | | QN-IMD/100KW | 30 | RCD, flight case, Ethernet Port + serial port, high temperature resistance, emergency operation, one-key start + single control mode, LCD screen | Original Patent | |
| | Standard Mobile | QN-YD/15KW | 6 | RCD, flight case, aviation connector, handheld(220 V input) | ------ |  |
| | | QN-YD/30KW | 12 | RCD, flight case, digital display, with 63A/5-core aviation connector | ------ | |
| | | QN-YD/50KW | 18 | RCD, flight case, digital display, with 200A Heavy-Duty Terminal Version, aviation connector | ------ | |
| | | QN-YD/70KW | 27 | RCD, flight case, digital display, with 200A Heavy-Duty Terminal Version, aviation connector | ------ | |
| | | QN-YD/90KW | 36 | RCD, flight case, digital display, with 200A Heavy-Duty Terminal Version, aviation connector | ------ | |

| | Series | Models | Output Circuits | Main Configuration | Patent | Reference Image |
|---|---|---|---|---|---|---|
| General-Purpose Product Series | Engineering Scheduled Control (supports Multifunction Card) | QN-PRO-TIME/10KW | 3 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (400 × 300 × 130), equipped with Multifunction Card slot and 5 V power supply | Original Patent |  |
| | | QN-PRO-TIME/20KW | 6 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (400 × 300 × 130), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | | QN-PRO-TIME/30KW | 9 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (600 × 400 × 160), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | | QN-PRO-TIME/40KW | 12 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (600 × 400 × 160), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | | QN-PRO-TIME/60KW | 18 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (600 × 500 × 200), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | | QN-PRO-TIME/80KW | 24 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (800 × 600 × 200), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | | QN-PRO-TIME/100KW | 30 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (1200 × 600 × 350), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | | QN-PRO-TIME/150KW | 45 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (1500 × 700 × 350), equipped with Multifunction Card slot and 5 V power supply | Original Patent |  |
| | | QN-PRO-TIME/200KW | 60 | Manual Control + Scheduled Control + 60℃ high-temperature power-off (1800 × 800 × 400), equipped with Multifunction Card slot and 5 V power supply | Original Patent | |
| | Smart PLC Distribution Box | QN-SmartPLC/10KW | 3 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (400 × 300 × 130) | Original Patent | |
| | | QN-SmartPLC/20KW | 6 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (400 × 300 × 130) | Original Patent | |
| | | QN-SmartPLC/30KW | 9 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (600 × 400 × 160) | Original Patent | |
| | | QN-SmartPLC/40KW | 12 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (400 × 300 × 130) | Original Patent | |
| | | QN-SmartPLC/60KW | 18 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (650 × 500 × 200) | Original Patent | |
| | | QN-SmartPLC/80KW | 24 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (800 × 600 × 200) | Original Patent | |
| | | QN-SmartPLC/100KW | 30 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (1200 × 600 × 350) | Original Patent |  |
| | | QN-SmartPLC/150KW | 45 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (1500 × 700 × 350) | Original Patent | |
| | | QN-SmartPLC/200KW | 60 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (1800 × 800 × 400) | Original Patent | |
| | PLC Distribution Box | QN-PLC/10KW | 3 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (500 × 400 × 160) | Original Patent | |
| | | QN-PLC/20KW | 6 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (500 × 400 × 160) | Original Patent | |
| | | QN-PLC/30KW | 9 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (600 × 400 × 200) | Original Patent | |
| | | QN-PLC/40KW | 12 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (650 × 500 × 200) | Original Patent | |
| | | QN-PLC/60KW | 18 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (800 × 600 × 200) | Original Patent | |
| | | QN-PLC/80KW | 24 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (800 × 600 × 200) | Original Patent | |
| | | QN-PLC/100KW | 30 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (1200 × 600 × 350) | Original Patent |  |
| | | QN-PLC/150KW | 45 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (1500 × 700 × 350) | Original Patent | |
| | | QN-PLC/200KW | 60 | Ethernet Port + serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off + fault warning (1800 × 800 × 400) | Original Patent | |
| Bidding Control Product Series | Harmonic Elimination Distribution Cabinet (HEDC) | QN-HEDC/50KW | 15 | Eliminates 3rd harmonics, LCD touch control, PLC + Centralized Control + PC Control high-temperature power-off + smoke power-off + fault warning (800 × 600 × 500) | Original Patent | |
| | | QN-HEDC/100KW | 30 | Eliminates 3rd harmonics, LCD touch control, PLC + Centralized Control + PC Control high-temperature power-off + smoke power-off + fault warning (1300 × 700 × 500) | Original Patent | |
| | | QN-HEDC/200KW | 60 | Eliminates 3rd harmonics, LCD touch control, PLC + Centralized Control + PC Control high-temperature power-off + smoke power-off + fault warning (1800 × 800 × 600) | Original Patent |  |
| | Safety Distribution Cabinet for Large LED Displays (SAFETY) | QN-SAFETY/50KW | 15 | Automatic reclosing, eliminating 3rd harmonic, smoldering + burning smell + CO detection, LCD touch control, PLC + Centralized Control + PC + 4G, high-temperature power-off + smoke power-off + neutral conductor temperature + fault warning, positioning + SMS + WeChat, Overload + Over/Undervoltage Protection+ RCD (1160 × 600 × 200 ) | Original Patent | |
| | | QN-SAFETY/100KW | 30 | Automatic reclosing, eliminating 3rd harmonic, smoldering + burning smell + CO detection, LCD touch control, PLC + Centralized Control + PC + 4G, high-temperature power-off + smoke power-off + neutral conductor temperature + fault warning, positioning + SMS + WeChat, Overload + Over/Undervoltage Protection+ RCD (1650 × 800 × 600) | Original Patent | |
| | | QN-SAFETY/200KW | 60 | Automatic reclosing, eliminating 3rd harmonic, smoldering + burning smell + CO detection, LCD touch control, PLC + Centralized Control + PC + 4G, high-temperature power-off + smoke power-off + neutral conductor temperature + fault warning, positioning + SMS + WeChat, Overload + Over/Undervoltage Protection+ RCD (2000 × 1000 × 600) | Original Patent | |
| Other Product Series | Rack-Mount Distribution Box | QN-RACK/20KW | 6 | Ethernet Port+ serial port, PLC + Centralized Control, high-temperature power-off + smoke power-off (435×280×130 mm) | Original Patent | |
| | LoRa Centralized Control Module | LoRa Module25 | --- | Wi-Fi + Bluetooth + LoRa + RS-485, micro Centralized Control module (86 × 86 × 43.7) | Original Patent | |



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| | Series | Models | Main Configuration | Dimensions (W×D×H)mm | Weight | Reference Image |
|---|---|---|---|---|---|---|
| Voltage Stabilizer Product Series | Brush-Type Three-Phase Voltage Stabilizer | QN-TVC/10KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 370*425*825 | 44KG |  |
| | | QN-TVC/20KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 360*510*795 | 86KG | |
| | | QN-TVC/30KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 360*510*795 | 99KG | |
| | | QN-TVC/40KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 470*590*1030 | 123KG | |
| | | QN-TVC/60KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 550*720*1260 | 260KG | |
| | | QN-TVC/90KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 550*720*1260 | 280KG | |
| | | QN-TVC/120KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 700*1000*1310 | 327KG | |
| | | QN-TVC/150KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 750*1040*1510 | 384KG | |
| | | QN-TVC/180KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 750*1040*1510 | 418KG | |
| | | QN-TVC/220KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 750*1040*1510 | 434KG |  |
| | | QN-TVC/250KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 1200*850*1700 | 480KG | |
| | | QN-TVC/300KVA | Input: 3L + N + G 380 V ±15 %, Output: 3L+N+G 380 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 1200*850*1700 | 520KG | |
| | Brush-Type Single-Phase Voltage Stabilizer | QN-SVC/10KVA | Input: 3L + N + G 220 V ±15 %, Output: L+N+G 220 V ±1 %,efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 320*410*545 | 37KG | |
| | | QN-SVC/20KVA | Input: 3L + N + G 220 V ±15 %, Output: L+N+G 220 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 370*420*725 | 63KG | |
| | | QN-SVC/30KVA | Input: 3L + N + G 220 V ±15 %, Output: L+N+G 220 V ±1 %, efficiency ≥96 %, voltage stabilization accuracy maintained within ±2 % | 370*420*725 | 82KG | |
| Harmonic Elimination Product Series | Neutral Current Eliminator (Three-Phase Passive Filter) | QN-ZERO/30KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 380*260*300 | 70KG | |
| | | QN-ZERO/50KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*280*800 | 80KG | |
| | | QN-ZERO/60KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*280*800 | 110KG | |
| | | QN-ZERO/90KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*280*800 | 60KG | |
| | | QN-ZERO/100KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*280*800 | 62KG | |
| | | QN-ZERO/120KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*425*1100 | 65KG | |
| | | QN-ZERO/150KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*425*1100 | 100KG | |
| | | QN-ZERO/200KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 600*425*1100 | 120KG | |
| | | QN-ZERO/250KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 800*600*1300 | 195KG | |
| | | QN-ZERO/300KW | Eliminates 3rd, 6th, 9th, 12th, 15th harmonics, reduces neutral conductor current by 90 %, input + output + bypass circuit breakers, automatic ventilation | 800*600*1300 | 230KG |  |

Notes:
1.The difference in single-phase load between voltage stabilizers and harmonic eliminators must be controlled within 15 % for proper use.
2.Harmonic eliminators mainly remove the 3rd harmonic and reduce neutral conductor current by over 90 %.
3.For products exported abroad, it is necessary to understand the local power system, especially if there is no neutral line.
The LED display is equipped with PFC switching power supplies. However, when a neutral current eliminator is used, PFC switching power supplies are not required.

***China Power: Safety, Every Step of the Way***

***Embedding safety and intelligence into every node.***