



中电强能
China-Power

CHINA-POWER • MILITARY QUALITY

2025

Product
Selection Guide

>>

(V8.8)

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Electric control equipment manufacturer
Cloud configuration solution provider



ENTERPRISE

BRIEF INTRODUCTION

Company profile ➤

Shenzhen China-Power Technology Co., Ltd. focuses on the field of AI intelligent electrical control, comprehensively utilizing big data, artificial intelligence, digital cloud platforms, and terminal intelligent electrical control equipment to form a core closed-loop management of electricity safety, energy efficiency management, intelligent operation and maintenance, and intelligent control, providing safer and smarter electrical control solutions for enterprises and society. Specifically, it is:

- 1) Developing AI intelligent electronic control products and software series, including PLC electronic control equipment, distribution cabinets, dynamic irregular control equipment, PFC intelligent harmonic control equipment, intelligent power supplies (DC, high power), etc;
- 2) Building a diverse and open cloud configuration system: aimed at small and medium-sized enterprises and individual units, realizing cloud configuration, cloud computing, cloud storage, cloud warning, and cloud editing, without relying on specific terminals;
- 3) Create a central control integration platform: control of electronic control products, control of irregular movements, distribution boxes, video transmission, scene changes, lighting changes, audio, etc. will be uniformly completed by the central control.

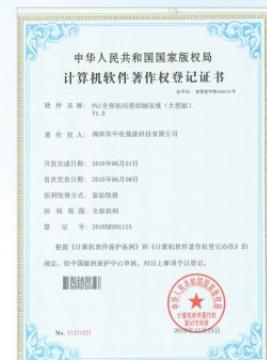
The company has obtained the "National High tech" enterprise certification, the "Specialized, Refined, Unique and New" enterprise certification, as well as the national 3C certificate, CE certificate, ISO certificate, etc. Its products have obtained more than 100 national patents and invention patents.

Building a diverse and open cloud configuration system to manufacture world-class electronic control products and ensuring that safety and intelligence permeate every node are the eternal pursuits of China Electric Power's strong energy personnel.

China-Power, Military Quality ", China-Power, Safety Companion ", Electric Control Equipment Manufacturer, Cloud Configuration Solution Provider ", the company strives to make every product a boutique and never seeks short-term profits. China-Power has given electricity ideas, making LED display distribution cabinet control, large-scale lighting control, irregular dynamic control, cloud cluster control, and more easily accessible anytime, anywhere. Computers, mobile phones, central control (third-party) PAD、 Touch screen and other arbitrary controls. Without taking small steps, one cannot reach a thousand miles, without accumulating small streams, one cannot form a river. The company is down-to-earth, prioritizing reputation, service, and quality, providing users with more support and patience. Provide suitable and sufficient products for the market, products that users like and trust



Qualification



Product list >>>

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PART1 Global General Distribution Box Part

Category 1: GL-BLADE/5KW Global Blade Distribution Box (Invention Patent)

PRODUCT MODEL

GL-BLADE/5KW

Application scenarios

E-structure, K-structure, Zhen structure, Advertising screen, Storefront screen, COB screen, Indoor screen, All-in-one machine screen, etc

Functional features

433 remote control, 20 meters
485 wired control, 1000 meters
LORA wireless cascade, 2000 meters
Support hardware hand in hand cascading
Support external signal start and stop control
Support 4 sets of timed start and stop controls

Protection capability

Fire and neutral reverse protection
Power off reverse drive protection
Zero line temperature protection
Maintenance mode protection

other

Warranty: Three years
Weight: 1KG
Volume: 180mmx80mmx30mm
Usage: Domestic+Overseas (110V-220V)



PART1 Global General Distribution Box Part

Category 2: GL-PRO-TIME/15KW Global Engineering Time Control Distribution Box (Invention Patent)

PRODUCT MODEL

GL-PRO-TIME/15KW

Application scenarios

Indoor screen, exhibition hall screen, irregular screen, COB screen, GOB screen, movie screen, command system screen, monitoring system screen, museum screen.....

Functional features

- Manual+time control+remote control
- Can be equipped with CARD
- Can be equipped with PLC (supporting network port+485)
- Can be equipped with 4G remote mobile phone control
- Can be equipped with LORA wireless control (supporting over 1000 meters)
- Can be equipped with AI voice control
- Support external dry contact signal start and stop control
- Support hardware hand in hand cascading
- Support 6-way 1-on-1 single control
- Support 485 central control

Protection capability

- Anti reverse protection
- Power off reverse drive protection
- Zero line temperature protection
- Maintenance mode protection
- Overcurrent protection
- Short circuit protection

other

- Warranty: Three years
- Weight: 2.5KG
- Volume: 330×224×56mm
- Usage: Domestic+Overseas



PART1 Global General Distribution Box Part

Category 3: Global Smart Distribution Box GL-SMARTS/20KW

PRODUCT MODEL

GL-SMARTS/20KW

Application scenarios

Indoor screen, exhibition screen, irregular screen, COB screen, GOB screen, monitoring system screen.....

Functional features

- Touch screen control
- Central control
- One click start stop control
- Three network control: Ethernet port+WIFI+485
- Mobile APP remote control
- Support manual and automatic closing
- Support detection of voltage, current, electricity consumption, etc

Protection capability

- Short circuit protection
- Lightning protection
- Zero line temperature protection
- Overvoltage protection
- Overcurrent protection
- Undervoltage protection
- Lack of phase protection
- High temperature protection
- Smoke protection
- Overload protection
- Maintenance mode protection

other

- Warranty: Three years
- Size: 400 × 280 × 100mm
- Weight 7Kg
- Usage: Domestic+Overseas



PART2 LED display distribution box section

Category 1: Smart PLC Intelligent Distribution Box Series

PLC POPULAR UPGRADE

Simpler operation and more comprehensive functions

Includes all functions of the old PLC

Additional additions:

Automatic connection

Direct operation, no need for manual settings

Emergency start module

PLC fault emergency start

Available in multiple languages



PROPRIETARY SOFTWARE

Computer control, status display
Electrical parameters+smoke+high temperature+Invasion, etc



Intelligent panel

Hand controlled buttons, status indication
Highly integrated, simple and elegant



Internal layout

Five controls, six protections
Reasonable layout and beautiful wiring



Outdoor Outdoor

Transparent face mask for easy viewing
Waterproof and lightning protection, safety guarantee



FUNCTIONAL CHARACTERISTICS

Panel control, computer control, computer timing, central control, dry contact, cascade control (multi-level linkage), remote control (optional), LORA (optional)

Panel control

One click delayed start stop
Fault indication, buzzing alarm

Computer control

One click delayed start stop
Timed control, status monitoring

Central control

provideSerial port+network port

Dry contact point

Can be retrofitted Multi functional card, lighting switch, etc

Cascade control

Automatic connection machineDirect operation, no need for manual settings

Optional control

Optional remote controlLORA high-performance wireless module



Taking SMART PLC 40Kw as an example

PROTECTIVE MEASURES

CHINA-POWER---Safe company

Short circuit protection

Overcurrent and overload protection

Under voltage and over voltage protection(optional)

Phase loss protection (optional)

Leakage protection (optional)



Zero line temperature protection

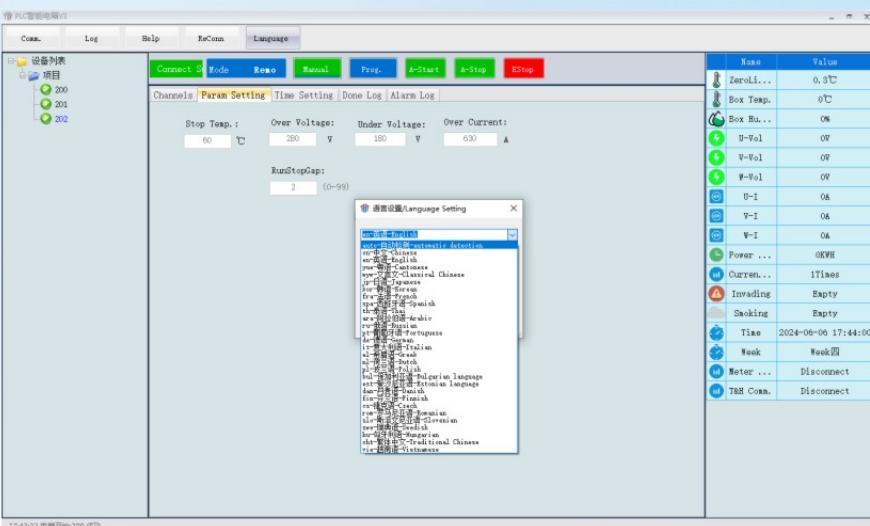
Increase rotation

Environmental temperature protection

Lightning Protection

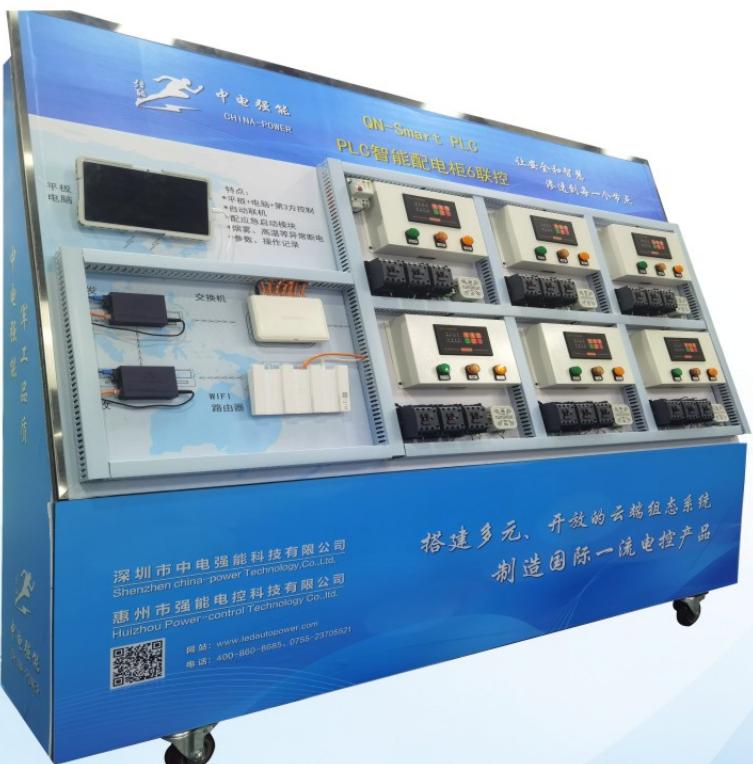
Intrusion Protection (Outdoor)

MULTI LANGUAGE



PHOTOS

QN Smart PLC 6 Joint Control



PART2 LED display distribution box section

Category 2: CHINS PLC Intelligent Distribution Box Series

New upgrade of PLC
More stable performance/
stronger functionality

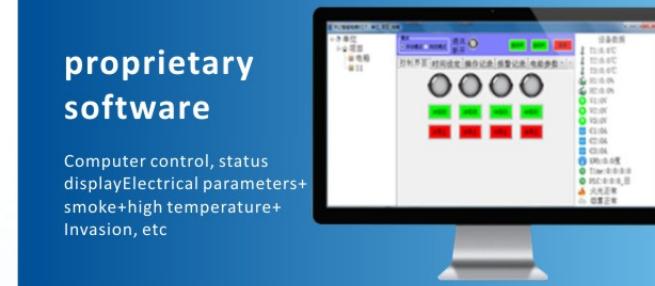
Four major controls and species conservation

Multiple PLC options available:

- Zhengsong/Siemens/Mitsubishi/Omron
Ethernet port (PTU)+serial port (TCP)

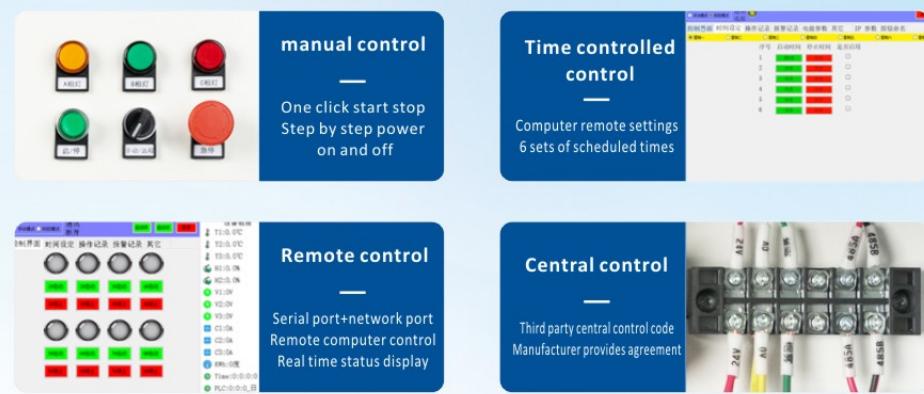
Multiple styles to choose from:

- Button/touch screen/digital display



FUNCTIONAL CHARACTERISTICS

Manual+Time Control+Remote+Central Control 4-in-1



PRODUCT PARAMETERS

The CHINS PLC series distribution box is suitable for LED display screens, lighting, industrial and mining enterprises and other fields.

Product Name	CHINS PLC intelligent distribution box
Installation method	Wall mounted and cabinet mounted
PLC brand	Zhengsong, Siemens, Mitsubishi, Omron
output power	10KW-300KW
IP rating	IP43 (indoor), IP54 (outdoor)
Applicable fields	LED display screens, lighting, industrial and mining enterprises, etc



(Taking Chins PLC 40KW as an example)

protective measures

Rest assured, because of comprehensive safety



PICTURES

QN-PLC/160KW Large PLC 4-Link Control



PART2 LED display distribution box section

Category 3: PRO-TIME Engineering Time Control Distribution Box Series

Zhongdian Economic Electric Box
High cost-effectiveness, high integration
and stable operation

Four major controls

Manual/time control/dry contact/emergency module

- Three major protections

High temperature protection for neutral cable
 High temperature power-off protection
 Short circuit protection

- Attachment: All are equipped with emergency start modules



PRODUCT PARAMETERS

The engineering time control series distribution box is an economical distribution box launched by China Electric Power Corporation

Product Name Engineering time control distribution box

Installation method Wall mounted and cabinet mounted

Output power 10KW-300KW

IP rating IP43 (indoor), IP54 (outdoor)

Applicable fields LED display screens, lighting, industrial and mining enterprises, etc



FUNCTIONAL CHARACTERISTICS

Equipped with a 5V power supply, a card holder, and a USB module that can also be started from a computer power distribution box



PHOTOS

Optional parameters, easy to understand with just one picture



QN-PRO/007 Emergency Start Module



QN-PRO/20KW Outdoor



QN-PRO/100KW floor standing

PART2 LED display distribution box section

Category 4: QN-MINI Mini Distribution Box Series

Invention patent product Small, agile, easy to operate, and flexible in control

Six major controls:

Manual/time control/remote control/
central control/485/multifunctional card

Three major protections:

High temperature protection for neutral cable
High temperature power-off protection
Short circuit protection



LED display distribution box that can fit into a backpack

Thin
70mm thick

Small
Tea box size

light
Weight 1.5KG

live
Flexible control

Switch
Remote control with strong switching capability

FUNCTIONAL CHARACTERISTICS

Manual+time control+remote control+central control+485+multifunctional card (optional)+wall through control (optional)



PRODUCT PARAMETERS

Mini series distribution boxes are applied in indoor environments, suitable for LED display screens, lighting, industrial and mining enterprises and other fields.

Product Name Mini distribution box

Installation method Wall mounted

Output power 15KW, 30KW, 45KW

IP rating IP43 (indoor)

Applicable fields LED display screens, lighting, industrial and mining enterprises, etc



(Taking the mini 30KW as an example)

SELECTION PARAMETERS

This distribution box is only replaceable and not repairable, with a three-year warranty. 15KW, 30KW, and 45KW are available for selection

Total power of the electrical box (KW)	Sectional area of 3-phase 5-wire copper cable (reference)	Number of output channels (1P)	Box size mm	Installation method
15KW	YJV-4*6mm ² +1*4mm ²	3	220*130*70	Wall mounted
30KW	YJV-4*16mm ² +1*10mm ²	6	250*160*70	Wall mounted
45KW	YJV-4*25mm ² +1*16mm ²	12	310*260*70	Wall mounted

PART2 LED display distribution box section

Category 5: QN-BOOK Book Distribution Box Series

Invention patent product
Ultra thin electrical box, flexible control

Six major controls:

Manual/time control/remote control/
central control/485/wall through control

Three major protections:

High temperature protection for neutral cable
High temperature power-off protection
Short circuit protection



LED display distribution box that can fit into a backpack

Thin
36mm thick

Small
A4 paper size

light
Weight 2.5KG

live
Flexible control

cut
Remote control with strong switching capability

FUNCTIONAL CHARACTERISTICS

Manual+time control+remote control+central control+485+wall through control (optional)



手控
一键启停
分步上电、断电



时控
可设置4组
控制时间段



遥控
可强切
可一控多
百米遥控



中控
MODBUS-RTU
485 协议
可控多台



电脑控制
USB转485口
须专用软件



穿墙控制
可选配QN-600
控制距离
长达1000m

PRODUCT PARAMETERS

The book series distribution box is applied in indoor environments, suitable for LED display screens, lighting, industrial and mining enterprises and other fields.

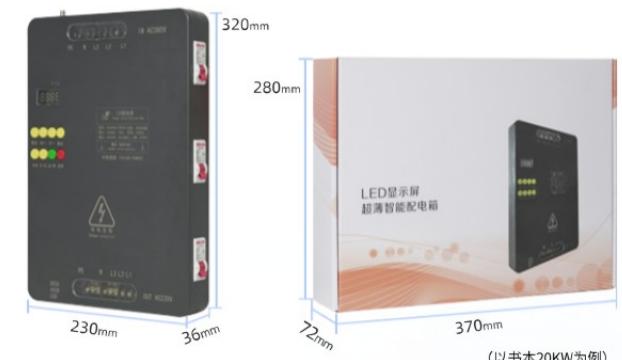
Product Name Book distribution box

Installation method Wall mounted

output power 10KW, 20KW

IP rating IP43 (indoor)

Applicable fields LED display screens, lighting, industrial and mining enterprises, etc



SELECTION PARAMETERS

This distribution box is only replaceable and not repairable, with a three-year warranty. 10KW and 20KW are optional

Total power of the electrical box (KW)	Sectional area of 3-phase 5-wire copper cable (reference)	Number of output channels (1P)	Box size mm	Installation method
10KW	YJV-4*4mm ² +1*2.5mm ²	3	300*210*36	壁挂式
20KW	YJV-4*6mm ² +1*4mm ²	6	320*230*36	壁挂式

PART2 LED display distribution box section

Category 8: Mobile Rental Distribution Box Series

OVERVIEW

Input 32-bit/5-core, 63A/5-core aviation head

Input independent Rhino 200A (MAX) dedicated terminal

Output 16A (MAX) small convenient aviation head

There are 3-phase current and 3-phase voltage digital displays, making night work convenient

Equipped with leakage protection and short circuit protection

Available in 15KW, 30KW, 50KW, 70KW, 90KW options

PRODUCT REFERENCE



QN-YD/15KW (220V)



QN-YD/50KW (Export)



QN-YD/60KW (Export)



QN-YD/70KW (Export)



QN-YD/50KW (waterproof)



QN-YD/90KW (Dicerorhinus)

PART2 LED display distribution box section

Category 9: QN-CLOUD IoT Distribution Box Series

OVERVIEW

CLOUD IoT distribution box is applied for large-scale infinite control, which can be controlled, recorded, queried, and alerted in the cloud

In terms of safety management, there are door opening alarm, high temperature alarm, odor alarm, smoke alarm, leakage alarm, overload alarm, cable temperature alarm, overvoltage and undervoltage alarm, etc

In terms of electricity management: remote display, monitoring, recording, querying equipment electricity usage, advance prediction, intelligent notification

Responsibility management: personnel operation records, time records, log records, fault records

FUNCTIONAL CHARACTERISTICS

- 1) Control mode: Cloud control+WIFI
- 2) Cloud control status: decentralized control, no distance limit
- 3) WIFI status: mobile phone+tablet+central control
- 4) Monitoring status: Real time display of electrical parameters, warning
- 5) Remote encryption: on-site encryption on mobile phones, convenient and practical
- 6) Record status: operation records, fault records, electrical parameter records and viewing
- 7) Fault reminder: mobile phone vibration reminder, send email
- 8) Positioning method: Real time map positioning
- 9) Protection type: can be protected up to ten times
- 10) Single P state: capable of single P and single channel control
- 5) Remote encryption: on-site encryption on mobile phones, convenient and practical

PRODUCT REFERENCE



QN-CLOUD/20KW



QN-CLOUD/200KW



QN-CLOUD/100KW

Cloud interface control



PART3 Lighting, Illumination, Scene Section

OVERVIEW

Lighting distribution box is an important branch of AI intelligent electronic control products, with a wide range of involvement. Application scenarios: office buildings, hotels, schools, hospitals, parking lots, transportation, stages, etc. It can control the lighting of exterior contours, internal lighting, lighting, scene changes, etc

Different intelligent controls can be networked, scene settings can be set separately, and multi loop sequential control can be achieved. Combined with lighting control software, they can perform colorful effects and change multiple programs

In addition to the usual switch control, it can also control lighting and dimming, preset scenes, freely control and monitor local and overall areas, and link fire protection, access control, alarm, etc

SMART CONTROL SCHEME

1) Local control:

Manual buttons, LCD touch, remote control

2) Automatic control:

Computer timing, automatic dimming, tablet, mobile phone

3) Scene mode:

Holiday mode, preset scene changes

4) Centralized monitoring:

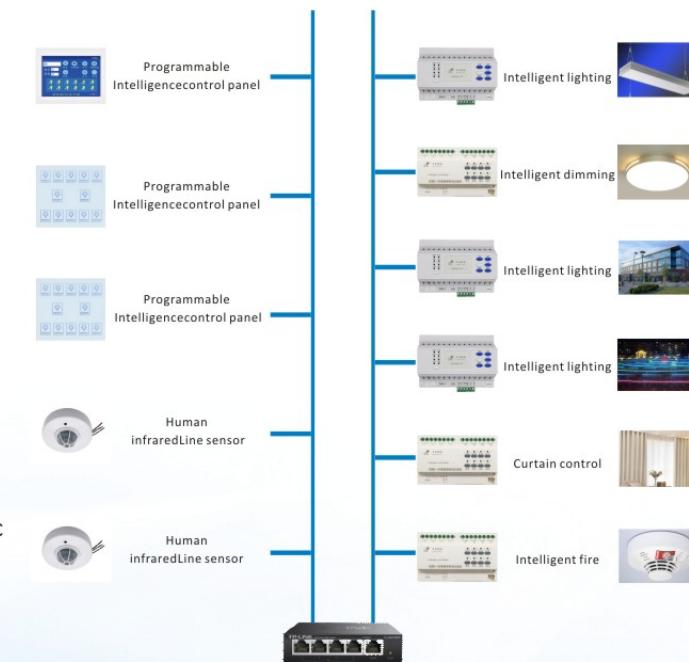
Single control, group control, and overall control in different regions

5) Linkage control:

Fire linkage, building OA, infrared, access control, etc

6) System integration:

Intervention in third-party control platform



MAIN MODULE CONTROLLED APPLICATION

1) 8-way 20A intelligent lighting module (CHINS8-I/O)

8-way 20A intelligent lighting module, manual control, scene sequence control, fire linkage, AB cascade, address dialing, touch panel control, computer control, mobile phone control, tablet control



2) 4-channel 20A intelligent dimming module (CHINS4-LIGTHING)

4-channel 20A intelligent dimming module, capable of 0-10V, 4-channel switch, RS485, communication scene preset, multi loop sequential delay



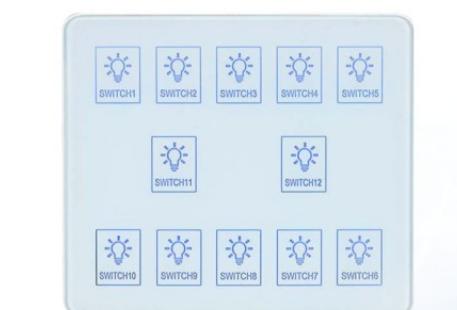
3) 8-way 20A intelligent time control lighting module (CHINS8-TIME)

8 channels of 20A output, each channel can set time control, LCD interface, and other functions are the same as those of CHINS8-I/O module



4) 8-way touch wireless remote control switch (CHINS8-TOUCH)

Touch wireless remote control switch, tempered glass panel, gentle touch for wireless control, local light on/off, can also be used in conjunction with multi-channel wireless remote control (CHINS8-REMOTE)



5) Seven inch intelligent touch screen

Using TFT LCD module, single channel time control can be set, and the computer can be turned off or run by itself, controlling the lighting module, dimming module, and touch wireless remote control switch



OFFICE BUILDING SOLUTIONS

4.1 Scheme Description

The office environment should not only have sufficient work lighting, but also create a comfortable visual environment to reduce light pollution. The lighting of modern office buildings has become one of the main factors directly affecting office efficiency.

The electricity consumption of office lighting accounts for about one-third of the energy consumption of the entire building, and the equipment cost of office lighting accounts for more than 10% of the electrical engineering cost. Therefore, choosing a reasonable office lighting control solution and configuring an advanced lighting control system can not only greatly simplify the workload of conduit wiring, but also effectively save energy, reduce user operating costs, improve building management level, and have great economic significance and social benefits.

The intelligent lighting control system of Shenzhen Zhongdian Qianneng Office Building can achieve remote monitoring and energy-saving management of office lighting systems, and comprehensively and finely control and manage office lighting systems from both management and energy-saving perspectives, improving the scientific management level of office lighting.

4.2 Solution

Manual control: Real time control of lighting on/off, brightness, etc. can be achieved through intelligent panels and touch screens installed in various areas according to actual requirements.

Inductive control: Install sensors in the public areas of the hallway. When someone lights up, the delay light will turn off after they leave.

Constant illumination control: Based on the changes in the brightness of the area, combined with the brightness sensor, the brightness is automatically adjusted. For example, when the brightness is sufficient, the light will not be bright, and when the brightness is insufficient, the light will automatically turn on.

Scene control: Different field guides can be pre-set for switching, such as class mode, dismissal mode, nap mode, projection mode, and self-study mode.

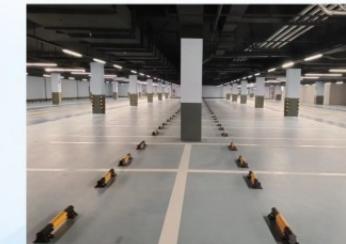
Timed control: Automatically turn on or off lighting fixtures according to different time settings, such as providing sufficient illumination for classroom corridors during evening self-study periods; After class, the system automatically turns off some lighting fixtures or dims the brightness of the lights. If there are special circumstances, switch to manual control to avoid energy waste.

Centralized control: Real time remote monitoring and effective control of the entire lighting area can be achieved through computers, tablets, and mobile phones for all controls, making the control method more convenient and efficient, and saving manpower and electricity.

System linkage control: This lighting system can be linked with BA, security, access control and other systems.

Fire linkage control: After receiving the alarm from the security and fire protection system, it automatically opens all designated areas such as the corridor and hallway, making it the simplest way to use strong start for control under the fire alarm.

4.3 Case pictures



PART4 cloud configuration platform central control integration platform

Category 1: QN-SOFT Remote Intelligent Control Software Description

Cloud platform is an important component of AI intelligent control, mainly aimed at small and medium-sized enterprises and individual units, realizing cloud configuration, cloud computing, cloud storage, cloud warning, and cloud editing, without relying on specific terminals. Provide multiple communication terminal products and access solutions, support connection requests for massive industrial equipment, and allow concurrent access for millions of devices. Provide comprehensive data query, equipment fault reporting, maintenance, equipment status monitoring and other feature rich equipment monitoring, which can realize real-time status detection of on-site equipment, remote start stop control, equipment alarm notification, equipment map management, WeChat monitoring, authorization management, payment management, etc.

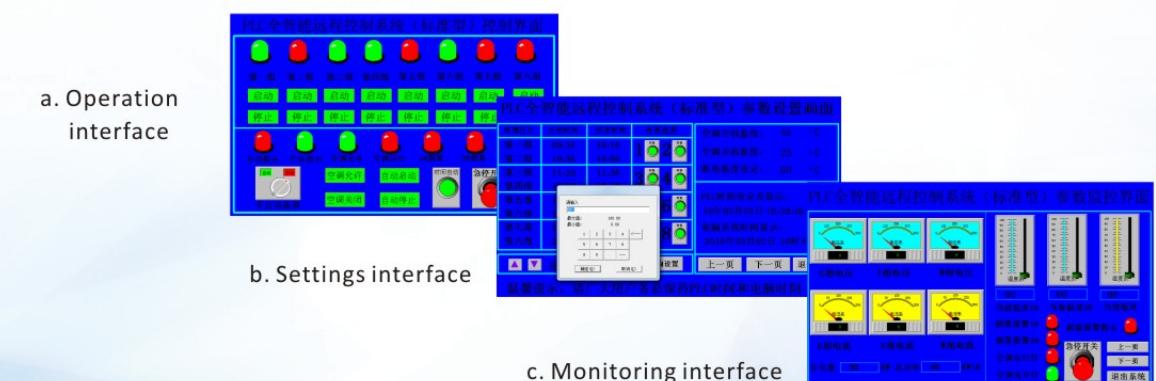
Ready to use, no professional software knowledge required. Truly implementing a platform in hand, with intelligent control in place.

Introduction to PLC fully intelligent remote software and APP, CLOUD software

1、PLC products have stable operation, powerful communication functions, and can be interconnected and controlled at multiple levels. The main functions are as follows:

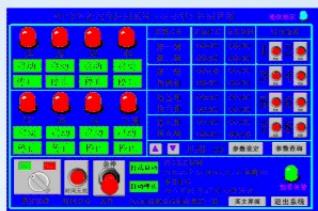
- 1) It can monitor, control, display, and set distribution information, including three-phase current, three-phase voltage, and power factor
- 2) Real time display of temperature, humidity, and smoke parameters inside the display screen
- 3) Intelligent activation of air conditioning and fans based on temperature, humidity, smoke, and other conditions
- 4) LED screen control time can be set at any time, 24/7
- 5) Optional LCD touch screen display control scheme, eliminating the need for buttons
- 6) When the temperature exceeds 60 degrees or there is smoke, the display screen power will be automatically disconnected

QN-PLC-B Standard Interface

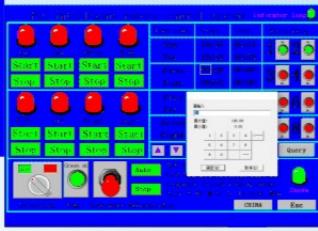


QN-PLC-A economical interface

a. Chinese interface



b. English interface

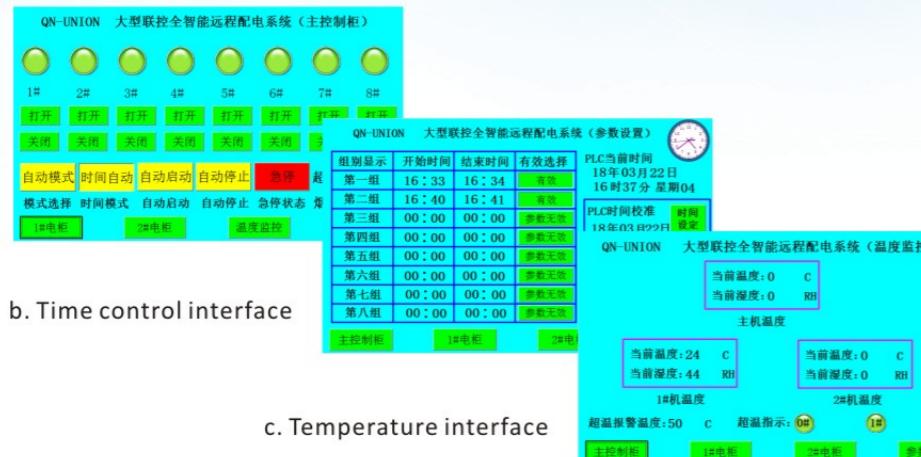


c. Simulation interface



QN-UNION Large scale Joint Control Interface

a. Operation interface



b. Time control interface

c. Temperature interface

2、Introduction to APP and CLOUD Palm Cloud Distribution Box Software: It can be controlled, recorded, queried, and alerted in the cloud

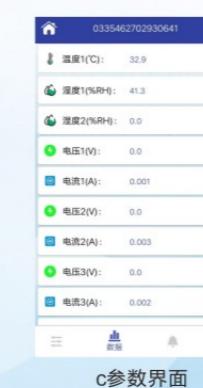
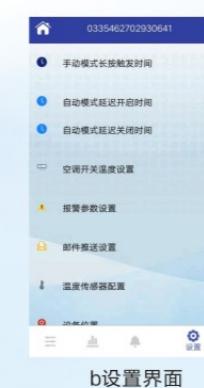
Abnormal alarm, mobile phone vibration

Check electrical parameters (current, voltage, power factor, power, etc.)

Web control, central control docking, touch screen control, tablet control

Historical record data (saved in the cloud and never lost)

Remote encryption and remote assistance



Category 2: QN-CLOUD Cloud Platform Control Instance

OVERVIEW

CLOUD cloud power box is mainly used in landscape lighting, road traffic, sports advertising, multiple commercial advertising screens and other occasions.

Cluster control (cloud control) here refers to large-scale control of equipment in different regions through Internet, Internet of Things, cloud computing and other connections. It can remotely control, set, monitor, and display individual and group objects.

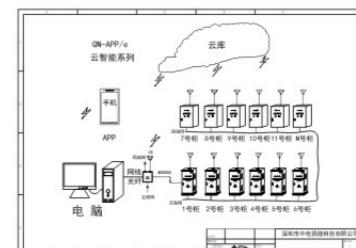
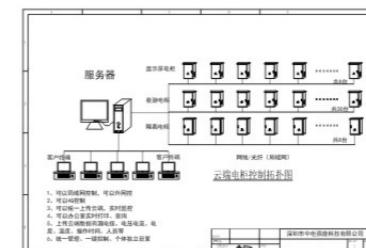
Expanding from a single city to multiple cities. Expanded from a single region to multiple regions. The control content and time period required by different individuals may vary, making cluster control more prominent.

FUNCTIONAL CHARACTERISTICS

Our company's QN-CLOUD electrical box can be controlled by a single unit or multiple clusters (cloud libraries), stable and reliable, with minimal human involvement and no need for manual debugging. The characteristics are as follows:

- 1) Can control mobile cloud storage and computer cloud storage
- 2) Can be controlled through local area network and internet connection
- 3) Can be connected to Ethernet control, 4G wireless network, MODBUS
- 4) Simultaneously control, monitor, and record the operation of hundreds of electrical boxes

CONTROL TOPOLOGY DIAGRAM



PHOTOS



PART5 PFC DC power supply and harmonic eliminator

PFC DC power supply: With the decreasing dot pitch of LED displays and the development towards Mini and Micro direction, the current AC220V to DC5V power supply method can no longer adapt to its development. The main drawbacks are:

- 1) This power supply method generates harmonics and pollutes the power supply environment;
- 2) The module is thin, the screen body is thin, and the power supply volume is large, which do not match each other. So, direct DC power supply of DC48V and DC280V will become increasingly important to solve industry pain points.

QN-DC48V/120KW DC distribution cabinet

1. Overview

DC power supply for display screens is the development direction, currently mostly using DC48V DC power supply, and some also using DC280V DC power supply.

The biggest advantage is:

- 1) Removing harmonic components, the zero line current will not exceed 25% of the unidirectional live line current
- 2) Large transparent screens, grille screens, soft film group screens, etc., do not require external power switches, making the overall display more transparent, lightweight, and beautifully laid out
- 3) There is a current sharing function, for example, a set of 4 3KW switch power supplies. When one power supply is damaged, the other three will automatically share the current supply, ensuring that the display screen will not be powered off for a long time

2. Characteristics

- 1) Input 3-phase 380V, output DC48V or DC280V,
- 2) Redundant and converged design ensures that the display screen remains powered on for a long time without interruption
- 3) Due to the DC power supply of the display screen, the AC to DC conversion is completed in the distribution line. There is no switch power supply behind the display screen, which greatly reduces the heat of the entire screen and extends its lifespan
- 4) Power module replacement, no need to climb high or low, become anytime, anywhere
- 5) DC output, without harmonic generation, the zero line current will not increase, that is, the zero line current is within 25% of the single-phase live line (if powered by AC, the zero line current is twice that of the unidirectional live line)



Introduction to QN-ZERO Zero Line Current Eliminator

1. Overview

The zero line current of LED display screen is greater than the live line current, which is one of the characteristics of display screen and also a freak. The current on the neutral line exceeding the current on the phase line is a huge safety hazard, as there is no overcurrent protection device on the neutral line, so there will be no protection and no alarm prompt. So, zero wire heating is very serious, and over time it can directly cause a fire. It also seriously affects the lifespan of transformers and cables.

2. Cause of Formation

The main reason for excessive zero line current is caused by the third harmonic, which is generated by the switching power supply. The process of converting AC 220V to DC 5V generates harmonics, mainly the 3rd harmonic. Secondly, LED display screens always display dynamic images, and the three phases are not balanced, which can also generate zero line current. Generally speaking, the zero line current of a display screen is about twice the single-phase live line current. For example, a display screen with a power of 200KW will have a live current of 300A and a neutral current of 600A when fully loaded. If the live wire is equipped with a $4 \times 120\text{mm}^2 + 1$ national standard copper cable, the neutral wire must be equipped with a $240\text{mm}^2 \times 4 + 1$ national standard copper cable. For display screens with a screen area exceeding 100m^2 , the engineering party should recommend that the first party use a neutral wire current eliminator. The larger the screen, the more attention should be paid, and this cost cannot be saved.

3. Handling method

- 1) The increase in neutral cables is significant
- 2) Zero line current eliminator
- 3) Choose PFC Switching Power Supply
- 4) DC power supply



4. Main technical indicators

- Installation method: Fixed inside the display screen, electric wellhead
- Control mode: Internal automatic control, generating suppressed magnetic flux
- Harmonic elimination method: using active+passive method
- Debugging method: foolproof, no need for customer debugging
- Insulation level: H-grade IP level: Ip30
- Zeroing effect: Eliminate over 90% of zero line current
- Execution standard: GB/T14549-1993
- Size: 1200 * 600 * 400 (reference)



PART6 Cable Introduction

Meaning of cable model

1. Model of main cable entering the distribution box

Main cable: YJV-0.6/1KV-4 * 50mm²+25mm² copper core, cross-linked polyvinyl chloride insulation, polyethylene sheath, rated voltage 0.6/1KV, 5-core, nominal cross-sectional area 50mm² V-polyvinyl chloride insulation, Y-polyethylene insulation, YJ cross-linked polyethylene insulation, R-flexible wire, B-hard wire



2. Cable model for distribution box

Output cable model: RVV-0.6/1KV-3 * 2.5mm² copper core, PVC insulation, PVC sheath, rated voltage 0.6/1KV, 3-core, nominal cross-sectional area 2.5mm²



3芯线

3. Cable model for internal wiring of distribution box

Internal wiring model 1: BV-0.6/1KV-1 * 6mm² copper core, PVC insulation, rated voltage 0.6/1KV, 1 core, nominal cross-sectional area 6mm², single stranded hard wire



4. Nominal cross-sectional area of power cables

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. Long term continuous load of cable current carrying capacity (for reference only)

Cable cutting Area mm ²	Current carrying capacity A 30°C	Per square millimeter Current carrying capacity A	Cable cutting Area mm ²	Current carrying capacity A 30°C	Per square millimeter Current carrying capacity 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 cutting Area mm ²	Current carrying capacity A 30°C	Per square millimeter Current carrying capacity A	Cable cutting Area mm ²	Current carrying capacity A 30°C	Per square millimeter Current carrying capacity 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

Calculation of cable cross-sectional area (reference)

1. 10KW cable cross-sectional area

$P=1.732UI\cos\Phi$
 $10000W=1.732 * 380V * I$ (assuming $\cos\Phi=1$)
 $I=15.2A$
 Current entering the live wire of the distribution box: 15.2A
 Zero line current with 3rd harmonic: 30.4A
 Select cable: YJV-4 * 4mm²+2.5mm²

100KW cable cross-sectional area

$P=1.732UI\cos\Phi$
 $100000W=1.732 * 380V * I$ (assuming $\cos\Phi=1$)
 $I=152.0A$
 Current entering the live wire of the distribution box: 152A
 Zero line current with 3rd harmonic: 304A
 Select cable: YJV-4 * 70mm²+1 * 35mm²

2. Component selection configuration list

Electric box power	Theoretical current A	Power factor cos Φ=0.9	Select switch	Leakage protection (Reference)	Input cross-sectional area of copper cable (for reference only)	communication Contactor	Output empty switchD-type 1P	Number of routes	Box size
10KW	15	16.7	D型, 32A/3P	30、50、100mA	YJV-4*4mm ² +2.5mm ²	2510*1	32A	3	500*400*160
20KW	30	33.3	D型, 40A/3P	30、50、100mA	YJV-4*6mm ² +4mm ²	2510*2	32A	6	500*400*160
30KW	45	50.0	塑壳, 63塑A	100、200、300mA	YJV-4*16mm ² +10mm ²	2510+5011	32A	9	600*400*200
40KW	60	66.7	塑壳, 100A	100、200、300mA	YJV-4*16mm ² +10mm ²	5011*2	32A	12	650*500*200
50KW	75	83.3	塑壳, 100A	100、200、300mA	YJV-4*25mm ² +16mm ²	2510+5011*2	32A	15	650*500*200
60KW	90	100.0	塑壳, 125A	100、200、300mA	YJV-4*35mm ² +16mm ²	5011*3	32A	18	800*600*200
70KW	105	116.7	塑壳, 125A	100、200、300mA	YJV-4*35mm ² +16mm ²	2510+5011*3	32A	21	800*600*200
80KW	120	133.3	塑壳, 160A	200、300、500mA	YJV-4*50mm ² +25mm ²	5011*4	32A	24	800*600*200
100KW	150	166.7	塑壳, 160A	200、300、500mA	YJV-4*70mm ² +35mm ²	5011*5	32A	30	1200*600*350
120KW	180	200.0	塑壳, 200A	200、300、500mA	YJV-4*95mm ² +50mm ²	5011*6	32A	36	1200*600*350
150KW	225	250.0	塑壳, 250A	200、300、500mA	YJV-4*95mm ² +50mm ²	6511*5	40A	45	1500*700*350
160KW	240	266.7	塑壳, 250A	200、300、500mA	YJV-4*120mm ² +70mm ²	3210+6511*5	40A	48	1500*700*350
180KW	270	300.0	塑壳, 315A	200、300、500mA	YJV-4*150mm ² +70mm ²	6511*6	40A	54	1800*800*400
200KW	300	333.3	塑壳, 315A	200、300、500mA	YJV-4*185mm ² +95mm ²	6511*7	40A	60	1800*800*400
250KW	375	416.7	塑壳, 400A	300、500、1000mA	YJV-4*240mm ² +120mm ²	3210+6511*8	40A	75	2000*1000*400
300KW	450	500.0	塑壳, 500A	300、500、1000mA	YJV-4*300mm ² +150mm ²	6511*10	40A	90	2200*1200*500

PART7 CHINA-POWER Classroom Sharing

What knowledge should be learned when choosing a distribution box?

1. Calculation of cables used in distribution boxes Firstly, calculate the maximum power consumption of the LED screen when selecting a distribution box. In general, the power consumed by the display screen to play videos is one-third of the maximum power (white balance). However, the cable connected to the distribution box should be calculated based on the maximum power. If the 3rd harmonic of the LED display screen is not eliminated, the zero line current of the display screen is more than twice the single-phase live line current. Therefore, the cable area connected to the distribution box should be calculated based on the zero line current, and 4+1 wires should be selected. Maximum power acquisition:

1) Calculate and estimate based on the maximum power consumption of a single module provided by the manufacturer. 2) Calculate and estimate based on the total number of switch power supplies on the display screen.

2. Does the main circuit breaker of the distribution box need to have leakage current? Firstly, it should be noted that display screens are industrial products and cannot be treated as household products. The leakage current of the entire LED display screen is generally greater than 30mA for civilian use. For every 100 square meters of display screen, there will be a leakage of over 100mA. Therefore, considering the correctness of protective wiring, adding leakage to the main circuit breaker is one of the safety measures. It is recommended that the leakage of the main circuit breaker be adjustable, such as 100mA, 300mA, 500mA, etc. If personal safety is considered, the output of each output circuit should be 1P+N air switch, with a protection current of 30mA.



3. Power Calculation of Foreign Distribution Boxes

Foreign input voltages include: 3-phase 220V input (perhaps without neutral wire), 3-phase 380V input, etc. The output includes single-phase 110V, single-phase 220V, etc. If the foreign power system is a 3-phase 380V, 5-wire system, then the power calculation method is the same as that in China; If the foreign power system is 3-phase 220V, 5-wire system, the power output is halved compared to domestic output. That is to say, the foreign 100KW distribution cabinet method is the domestic 200KW distribution cabinet method. If the foreign power system is a 3-phase 220V, 3-wire system without a neutral wire, the distribution method is another matter.

4. During the process of converting AC220V to DC5V in a switching power supply, harmonics are generated, with the third harmonic having the greatest impact on the power supply line. In the presence of harmonics, the zero line current will be about twice the single-phase live line current. The methods for removing harmonics include: 1) using a harmonic eliminator, 2) using a PFC power supply, and 3) outputting 380V DC from the distribution box to the display screen. The current harmonic eliminators on the market are traditional, with large inductors inside, which are particularly heavy and not conducive to installation; The cost of using PFC power supply will increase, and in addition to significant differences in harmonic effects, actual measurements still show excessive zero line current; The output of DC from the distribution box to the display screen fundamentally eliminates harmonics and improves the leakage situation, which is a good way to improve the quality of electrical energy.



5. Condensation treatment method

Condensation occurs more frequently in the north, where it is cold outdoors and the temperature inside the display screen is high after it works. After turning off the display screen, external cold air will enter the display screen and form water droplets. The processing method is to turn off the display screen and continue the fan to work for 1 hour to make the temperature inside and outside the display screen consistent.

6. How many types of lightning protection are there for display screens?

Commonly used ones include

1) power lightning protection, 2) signal lightning protection, and 3) lightning rod lightning protection. The latter is installed at the upper end of the display screen frame, and signal lightning protection refers to network cable signal lightning protection, 485 signal lightning protection, audio signal lightning protection, etc. Power lightning protection is generally C-level lightning protection, with a current capacity of 40KA.

PART8 Product Selection Table

series	model	Output modes	Main configuration	External reference image
Smart PLC	QN-SmartPLC/10KW	3	All in one model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (400 * 300 * 130)	
	QN-SmartPLC/20KW	6	All in one model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (400 * 300 * 130)	
	QN-SmartPLC/30KW	9	Integrated machine model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (600 * 400 * 160)	
	QN-SmartPLC/40KW	12	Integrated machine model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (600 * 400 * 160)	
	QN-SmartPLC/50KW	15	All in one model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (650 * 500 * 200)	
	QN-SmartPLC/60KW	18	All in one model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (650 * 500 * 200)	
	QN-SmartPLC/80KW	24	All in one model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (800 * 600 * 200)	
	QN-SmartPLC/100KW	30	Integrated machine model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (1200 * 600 * 350)	
	QN-SmartPLC/120KW	36	Integrated machine model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (1200 * 600 * 350)	
	QN-SmartPLC/150KW	45	All in one model: Ethernet port+serial port, automatic connection, emergency start, high temperature power-off+intrusion protection+fault warning (1500 * 700 * 350)	
PLC	QN-PLC/10KW	3	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (500 * 400 * 160)	
	QN-PLC/20KW	6	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (500 * 400 * 160)	
	QN-PLC/30KW	9	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (600 * 400 * 200)	
	QN-PLC/40KW	12	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (650 * 500 * 200)	
	QN-PLC/50KW	15	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (650 * 500 * 200)	
	QN-PLC/60KW	18	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (800 * 600 * 200)	
	QN-PLC/80KW	24	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (800 * 600 * 200)	
	QN-PLC/100KW	30	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (1200 * 600 * 350)	
	QN-PLC/120KW	36	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (1200 * 600 * 350)	
	QN-PLC/150KW	45	PLC model: Ethernet port+serial port, PLC+central control, high temperature power-off+smoke protection+fault warning (1500 * 700 * 350)	
Engineering Time control	QN-PRO-TIME/10KW	3	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (400 * 300 * 130)	
	QN-PRO-TIME/20KW	6	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (400 * 300 * 130)	
	QN-PRO-TIME/30KW	9	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (600 * 400 * 160)	
	QN-PRO-TIME/40KW	12	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (600 * 400 * 160)	
	QN-PRO-TIME/50KW	15	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (650 * 500 * 200)	
	QN-PRO-TIME/60KW	18	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (650 * 500 * 200)	
	QN-PRO-TIME/80KW	24	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (800 * 600 * 200)	
	QN-PRO-TIME/100KW	30	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (1200 * 600 * 350)	
	QN-PRO-TIME/120KW	36	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (1200 * 600 * 350)	
	QN-PRO-TIME/150KW	45	Economy model: manual+time control+60° high temperature power-off, equipped with a multifunctional card holder and 5V power supply (1500 * 700 * 350)	
Mini Electric box	QN-MINI/15KW	3	Quantitative version: Time control+central control+dry contact+remote control+antenna, neutral temperature, tea box size, 1.2KG (220 * 130 * 70)	
	QN-MINI/30KW	6	Quantitative version: Time control+central control+dry contact+remote control+antenna, neutral temperature, tea box size, 1.5KG (250 * 160 * 70)	
	QN-MINI/45KW	12	Quantitative version: Time control+central control+dry contact+remote control+antenna, neutral temperature, tea box size, 3.0KG (310 * 260 * 70)	
	QN-BOOK/10KW	3	Ultra thin model: time control+central control+remote control+antenna, zero line temperature, thin, A4 paper size, 1.5KG (300 * 210 * 36)	
	QN-BOOK/20KW	6	Ultra thin model: time control+central control+remote control+antenna, zero line temperature, thin, A4 paper size, 2.0KG (320 * 230 * 36)	

PART8 Product Selection Table

series	model	Output modes	Main configuration	External reference image
Ten layers security Electric box	ON-SAFETY/10KW	3	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (400 * 300 * 160)	
	QN-SAFETY/20KW	6	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (400 * 300 * 160)	
	QN-SAFETY/30KW	9	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (600 * 400 * 160)	
	QN-SAFETY/40KW	12	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (600 * 400 * 160)	
	QN-SAFETY/50KW	15	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (650 * 500 * 200)	
	QN-SAFETY/60KW	18	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (650 * 500 * 200)	
	QN-SAFETY/80KW	24	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (800 * 600 * 200)	
	ON-SAFETY/100KW	30	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (1200 * 600 * 350)	
	QN-SAFETY/20KW	36	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (1200 * 600 * 350)	
	QN-SAFETY/150KW	45	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (1500 * 700 * 350)	
	ON-SAFETY/200KW	60	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (1800 * 800 * 400)	
	QN-SAFETY/300KW	90	PLC+WIFI model: Ethernet port+serial port+WIFI+LCD touch, ten fold protection, smoldering protection, 4G (optional), (2000 * 1200 * 500)	
move lease	QN-YD/15KW	6	Leakage protection, aviation box, aviation head, portable (220V input)	
	QN-YD/30KW	12	Leakage protection, aviation box, digital display, equipped with 63A/5-core aviation head	
	QN-YD/50KW	18	Leakage protection, aviation box, digital display, equipped with 200A rhinoceros head, aviation head	
	QN-YD/70KW	27	Leakage protection, aviation box, digital display, equipped with 200A rhinoceros head, aviation head	
	QN-YD/90KW	36	Leakage protection, aviation box, digital display, equipped with 200A rhinoceros head, aviation head	
Global style	GL-BLADE/5KW	3	Time control+485+LORA (180mmx80mmx30mm)	
	GL-PRO-TIME/15KW	3	Time control+485+CARD+VOICE (330 x 224 x 56mm)	
	GL-PRO-TIME/30KW	6	Time control+485+CARD+VOICE (450 x 300 x 60mm)	
	GL-SmartS/20KW	6	Network port+serial port+WIFI+1P single step start stop sequence (400 x 280 x 100mm)	
	GL-SmartS/40KW	12	Network port+serial port+WIFI+1P single step start stop sequence (600 x 480 x 120mm)	
Zero line electric current Eliminator	QN-ZERO/30KW	-	35KG, eliminate 3rd harmonic, reduce 90% zero line current, copper bar (600 * 400 * 260)	
	QN-ZERO/50KW	-	40KG, eliminates 3rd harmonic, reduces 90% zero line current, copper bar (600 * 400 * 260)	
	QN-ZERO/100KW	-	60KG, eliminate 3rd harmonic, reduce 90% zero line current, copper bar (1200 * 600 * 400)	
	QN-ZERO/150KW	-	80KG, eliminate 3rd harmonic, reduce 90% zero line current, copper bar (1200 * 600 * 400)	
	QN-ZERO/200KW	-	140KG, eliminates 3rd harmonic, reduces 90% zero line current, copper bar (1200 * 600 * 400)	
Explanation:				
1. The main component defaults to Delixi				
2. Outdoor lightning protection is provided, while indoor lightning protection is available for 60KW and above. Outdoor waterproof electrical boxes, multifunctional cards, etc. are priced separately				
3. The order instructions for power, leakage, display parameters, etc. are not listed. Schneider's unit price is based on Delixi lightning protection				
4. Due to the presence of harmonics on the display screen, the zero line current is too high, posing a safety hazard. It is recommended to remove the 3rd harmonic from the large screen				
5. Characteristics of the Ten fold Safety Distribution Box:				
1) Control mode: Ethernet port+serial port+WIFI+touch screen				
2) WIFI status: mobile phone+tablet+central control				
3) Monitoring status: Real time display of electrical parameters, warning				
4) Central control status: serial port+network port (MODBUS-RTU+TCP)				
5) Internet status: support MQTT protocol				
6) Record monitoring: current, voltage, electricity consumption, neutral wire temperature, electrical box temperature and humidity, smoke status, door opening status				
7) Electrical box protection: overvoltage, undervoltage, overcurrent, phase loss, smoke (fire protection), zero line over temperature protection, electrical box over temperature protection, open door status, leakage protection, emergency stop/maintenance protection, burnt smell protection				
8) Group control status: Multiple mobile phone positioning, control, email				

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Let security and intelligence permeate every node