

# **Integrated Control Box User Manual V1.0.0**

Thank you for using Soft Stone Optoelectronics Technology products!

For your smooth and correct use of this product, please read the documentation carefully before use. Please contact us if you have any suggestions about the product or need technical support.

地址：北京市通州区中关村科技园通州园景盛南四街 17 号 65 号楼

电话：010-56370005

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## I、Introduction

This integrated control box is an intelligent control device developed by our company. It is equipped with two Huawei industrial-grade power modules and supports a stable output of 48V. It offers multiple power options: 3000W, 6000W, 9000W, and 12000W to meet the power supply requirements of different projects. The device has 8 independent output channels, each supporting up to 8192 channels of drive, and the output ports can directly supply power to the lamps and transmit control data. It supports independent address writing, single-lamp testing, parameter writing, etc. It is equipped with a 1.3-inch LCD screen that supports both Chinese and English display, is easy to operate, has simple wiring, and is widely applicable to various lighting control scenarios.

The integrated control box can be widely used in: architectural landscape, hotels and restaurants, supermarkets and department stores, government lighting projects, construction projects, commercial spaces, airports, subways, hospitals and other places. It provides a full range of technical solutions for architectural art visual dynamic color lighting for investment owners and professionals such as architects, designers, floodlighting contractors, and construction engineers.

The features and functions are as follows:

- Dual RJ45 Gigabit Ethernet interface: Supports redundant networking, enhances system stability and wiring flexibility.
- Independent IP address and network management: Supports ARP protocol and automatic IP assignment for efficient network monitoring and centralized management.
- No parameter writing and universal design: The controller is plug-and-play without configuration and supports hot replacement, significantly reducing maintenance complexity and downtime.
- Multi-protocol compatibility: A single firmware integrates mainstream protocols such as DMX512 and return code, supports single-wire/dual-wire serial interface chips, and reduces project deployment and maintenance difficulty.
- High precision image processing: 65,536-level grayscale control, combined with hardware-level three-color/four-color luminance control and gamma correction to ensure color reproduction and detail presentation.

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- Dynamic addressing and real-time monitoring: Supports online addressing and parameter writing of the DMX512 chip, and real-time monitoring of the controller's online status through software during operation.
- Large-scale engineering optimization: IP packet functionality enables collaborative management of multiple controllers to ensure the stability of complex engineering systems.
- RMD protocol extension: Supports the RMD protocol, capable of reading back the temperature, current, voltage, time and other information of our company's self-developed RDM05 chip, and supports the diagnosis of device health status.
- High-speed transmission adaptation: Supports transmission frequencies of 1MHz, 2MHz, 2.4MHz, and 3MHz, compatible with high refresh rates and complex data stream scenarios.
- Built-in Huawei Industrial power supply: Continuously and stably output 48V for lamps without the need for an external power supply system, improving deployment efficiency.
- Smart temperature control system: Built-in high-efficiency fan and temperature control module to adjust the chassis temperature in real time to prevent overheating damage to core components.
- 8 output integrated power supply: The device is equipped with 8 output channels, with a maximum drive of 8192 channels on a single port, and uses a 5-core waterproof aviation connector (wire gauge per core:  $2 \times 2.5\text{mm}^2 + 3 \times 0.3\text{mm}^2$ ) for simultaneous data transmission and power output. Single-channel power supply + data signal integration, no need for additional power supply for lamps, greatly simplifying wiring and construction processes, suitable for large-scale LED display scenarios.
- Industrial-grade aviation plug interface: With a 3-pin quick-connect aviation plug, it can withstand up to 1500V, has an IP67 protection level, and a rated current of 50A, ensuring stable operation in harsh outdoor environments.

## II、Specification parameters

### (I) Basic parameters

Shell	Cast iron; 304 Stainless steel
Display screen	A 1.3-inch 240×240 RGB dots LCD display
Communication interface	2 RJ45; 1 USB; 8 output ports
Network interface	1000Mbps Ethernet port
Weight	14kg

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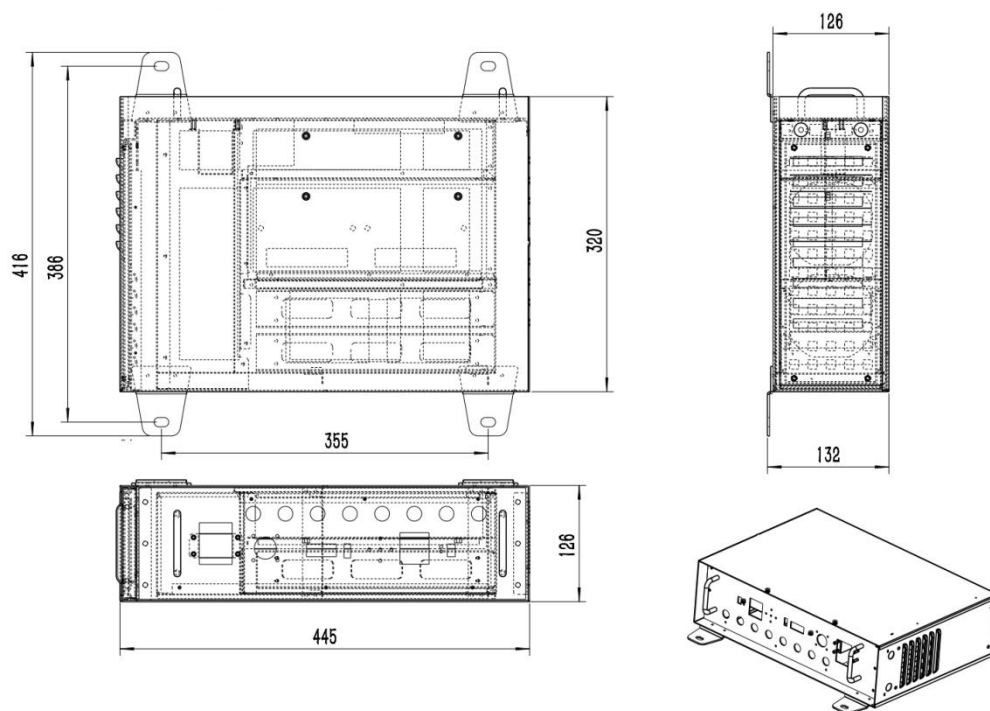
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Input voltage	85-300V
Output voltage	48V
Maximum output power	Optional 3000W/6000W/9000W/12000W

## (II) Size parameters



## III、 Product appearance

### (I) Appearance design concept

- **High strength metal shell:** Made of solid metal with good pressure resistance and impact resistance. Heat dissipation air holes are provided on the sides to enhance heat dissipation efficiency and ensure stable operation of the equipment.
- **1.3-inch LCD screen + five-key interaction design:** supports real-time parameter display and local setting debugging, basic configuration and operation status monitoring can be completed without peripheral devices such as a computer.
- **Network-level connection ports:** Supports cascading of multiple controllers in a network, simplifies wiring structure, and enhances system flexibility and fault tolerance.
- **Eight-channel output ports:** Each port can supply power to the lamp and transmit control data simultaneously, eliminating the need for additional power wiring and simplifying system

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setup.

- Integrated circuit breaker protection: The device comes with an air switch to integrate control and overload protection, enhancing usage safety and device stability.
- Easy installation: Equipped with four symmetrical installation ears, supporting fixed installation; It also features double metal handles for enhanced mobility and installation.

## (II) Product appearance



3-1 View of the product



3-2 Side view of the product

## IV、Instructions for Use

### (I) Interface operation Instructions



4-1 Product front label image

- |                                   |                     |
|-----------------------------------|---------------------|
| ① Power switch                    | ⑧ Right-click       |
| ② Power indicator light           | ⑨ USB port          |
| ③ LCD display                     | ⑩ Gigabit interface |
| ④ Left mouse button (back button) | ⑪ Power supply      |
| ⑤ Up key                          | ⑫ Air switch        |
| ⑥ Confirm key                     | ⑬ Output port       |
| ⑦ Down key                        |                     |

### (II) Output interface wire sequence

1. The output interface is 8 interfaces, namely PORT1-PORT8:



4-2 Interface sequence diagram

### (III) Main interface - Core running parameters display (connected to ES software control)

#### 1. Information Display Hierarchy

- **Device identification:** ID (device address ID), controller model (hardware version identification)

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- **Running configuration:** Chip protocol type, baud rate, GAMMA value, number of colors (3/4, etc.)
- **Real-time status:** Luminance value (0-100%), play status (stop/Play)
- **Network Diagnostics:** IP address, **network** rate mode (100M fixed / 100M/Gigabit adaptive)
- **Version traceability:** Boot firmware version, App application version (dual version independent verification)

## 2. Interaction logic

- **Primary Interface:** Default display of basic operating parameters (ID/controller/chip/Brightness/status /IP) at startup
- **Secondary Interface:** Switch to the extended parameters (GAMMA/ color count/network speed/version information) by pressing the ▼ key to achieve synchronous monitoring of hardware-software status

## (IV) Localized parameter configuration system

### 1. Core driver configuration module

- **Chip protocol library:** Integrates 12 major series of protocols such as DMX/SM/UCS/TM/GS, supports hot-swappable compatible design
- **Baud rate adaptive:** Automatically matches chip standard rates (250Kbps-3Mbps), supports manual forced locking
- **Pixel Engine setup:**
  - Port pixel: Preset 5 standard values (256-3172) + custom extension (1-8192, step ±1)
  - Topology management: Reserved DMX address function interface (Firmware upgrade extension)

### 2. Image processing parameter layer

- **Color architecture:** Eight color sequence combinations such as RGB/RBG/BGR + RGBW/WBGR mixing mode
- **Gamma correction:** Hardware-level adjustment (1.0-3.0, step 0.1), preset value quick call (▲/▼ keys)

### 3. Port and ID management

- **Controller ID:** Automatically assigned or statically assigned (1-999), supports offline addressing
- **Multilingual engine:** Seamless switching between Chinese and English system menus



## 4. Debug interface

- **LED Test Kit:**
  - **Port selection + Rate Adjustment**
  - Test mode: Auto Point Test/Manual Point Test/Gradient Color Test/Color Test

## V、 Safety Tips

- Ensure that the power is turned off during installation and operation to avoid the risk of electric shock.
- Do not disassemble the controller by yourself to avoid damaging the equipment or causing safety risks.
- Use the specified power adapter to avoid damage to the device caused by the use of non-original accessories.
- Do not expose the controller to extreme temperatures or humidity.

## VI、 Maintenance and troubleshooting

- **Regular cleaning:** Clean the controller surface with a clean soft cloth.
- **Check connections:** Regularly check all connections for firmness and reliability.
- **Troubleshooting:** If the device fails to work properly, refer to the troubleshooting guide or contact technical support.

## VII、 Version Notes

Version number	Date	Notes
V1.0.0	2025/06/20	Initial version

## VIII、 Technical support

For further assistance please contact our customer service team:

- Telephone: 010-56370005
- Working hours: Monday through Friday 9:00 am to 5:30 PM (UTC+8)

**Note:** This manual is for reference only. Actual product features and operations may be subject to software updates. During use, please ensure compliance with all applicable laws and safety standards.