itC

Programmable Center Control System

USER MANUAL

TS-9100N

Please read this manual carefully before using the system

Notification

⚠ Caution

To ensure the reliability of the equipment and the safety of personnel, please observe the following when installing, using and maintaining:

● If any of the following conditions are found, please immediately turn off the power, plug out and quickly contact your nearest dealer. Do not continue using this unit, which may cause a fire or electric shock.

- ● If you find smoke or have a strange taste from the machine.
- ● If water or metal falls into the machine.
- ● If the unit is dropped or the case is damaged.
- ● If the wire is damaged (wire core exposure, broken wire, etc.).

● If the machine contains high-pressure parts, in order to avoid the fire or electric shock, absolutely don't open the case, if any questions please inform your nearest dealer.
● Do not place cups, bowls, vases or metal and other water-filled substances on the unit. Serious spilled liquid may cause a fire or electric shock.

● Never expose the unit to rain and any moisture or water, which may cause electric shock or fire.

● Do not place metal objects or flammable materials from the vents on the machine cover, nor place coins, which may cause fire or electric shock.

● Do not place heavy objects on the unit to avoid personal injury or property damage when the unit is slipping.
● Make sure that the volume is turned on at the beginning of the boot, and the high volume of the boot may cause hearing problems.

● Make sure that the volume is turned on at the beginning of the boot, and the high volume of the boot may cause hearing problems.

● For long-term accumulation of dust to be cleaned, please inform your dealer to regularly clean the machine, so as to avoid damage to the machine or cause a fire.

● The battery must be replaced with the same type of product and the correct installation should be made in order to avoid electrical damage and explosion hazard.

● The product is a Class I device. The device must be well connected to ground. The power plug must be connected to a power outlet with a grounding device to ensure that the equipment is fully grounded.

● This product uses a power plug or appliance input socket as a disconnecting device with the power supply, and must be disconnected if necessary for safety reasons.

● This equipment is only suitable for safe use at altitudes under 2000 meters.

Precautions

1. The installation environment

When installing the unit, in order to ensure the normal cooling of the host, should avoid the poor ventilation of the place or high temperature environment, to avoid direct sunlight.

Recommend to install cabinet or other well-ventilated place indoor. If you use the machine in the outdoors, please pay attention to waterproof, moisture, lightning protection measures.

Avoid installing in a violent place of vibration; do not place other equipment on the machine.

2. To avoid electric shock and fire

Do not touch the hands and the source with wet hands

Do not spill liquid on the machine, so as to avoid short-circuit or fire inside the machine.

Do not place other equipment directly on the top of the unit.

Non-professional service personnel Do not disassemble the unit yourself to avoid damage and electric shock.

3. Transport and handling

The packaging of the machine is designed and tested to ensure that the host will not be accidentally damaged during transport. It is best to use the original packaging when handling the unit.

Do not move the host device between the place or cold or over hot to avoid condensation inside the machine, affecting equipment life.

4. Please follow the warning instructions on this product, the warning signs on behalf of:

	Applicable to 2000 meters above sea level and below
	Safe use only in non-tropical climates

5. Agreement

Please strictly follow the instructions in this manual. The software, hardware and appearance of this product will be upgraded and updated continually. The above changes will be made without notice.

Non-professional maintenance personnel, do not remove the product, to avoid damage and electric shock.

Foreword

This user manual mainly introduces the operation method of Statement Programmable Center Controller TS-9100N, main performance parameters and common troubleshooting methods.

This manual is intended only as a user instruction and is not intended for use as a service. From the date of issue, if there are any changes to the functions or related parameters thereafter, additional instructions will be provided. For details, please contact the manufacturer or distributor.

This manual is copyrighted by the company,no part or all of this manual may be used for commercial purposes without permission.

The copyright of this manual is protected by *Copyright Law of the People's Republic of China* and other intellectual property laws. Copying or distribution without written permission is prohibited.

Directory

1. Overview of Interactive Programmable Center Control System

1.1 System Overview

This product is an interactive network control host based on iOS/Android platform handheld terminal,it supports network cascading, realizes intelligent control network, has a luxurious and beautiful appearance,it will be the representative of the new generation of intelligent central control host, leading the development trend in the field of central control.

1.2 Features

1. Full support for remote network control, built-in network interface, support network cascading, support Ipad, Android handheld terminal, communicate with the host via Wifi;

2. Programmable control platform, Chinese and English programmable interface, interactive control structure;

3. 32-bit Cortex-A8 ARM architecture embedded processor, processing speed up to 720MHZ;

4. Highly integrated co-processing chip, the elegant layout makes the system run very stable and smooth;

5. The host has 256MB of internal memory and 8GB EMMC's large-capacity FLASH memory;

6. Ipad/Android human-machine interface programming is fully compatible with traditional touch screen programming, no need to re-learn new programming methods, extremely convenient to upgrade and replace;

7. 8-way independent programmable RS-232 control interfaces,can send and receive RS232,RS485,RS422 format data;

8. The host can serially ring out, serial port 1-8, any input can be looped out from another serial port;

9. 8-way independent programmable IR infrared emitters;

10. 8-way digital I/0 input and output control port with protection circuit;

11. 8-way weak current relay control interface;

12. Full support for remote network control, built-in network interface, no need for an expansion card;

13. 1 network control interface, which can connect up to 256 network devices;

14. Any control protocol or control code that is programmable by the customer;

15. Embedded intelligent IR learning function module, no need to configure professional learner;

16. Support hardware learning infrared function, customers can easily replace infrared devices in the field without reprogramming;

17. The infrared code library of various commonly used electrical equipment can be downloaded from the Internet;

18. The system software transmission interface is on the rear panel;

19. International popular SMT full-chip production process;

20. Standard 19-inch cabinet design, 2U height, black oxidized wire drawing process on the front panel

21. Full-standard environmentally friendly power supply (110V-240V), suitable for any area.

1.3 Control Port

1. COM port: 8 phoenix terminal sockets,can transmit RS-232,RS-485 and RS-232 signals in both directions;

2. Infrared IR port: 8 phoenix terminal sockets;

3. Input I/O port: 8 terminal blocks with protection circuit, support 0-5V digital input signal;

4. Weak relay port: 8 terminals, normally open independent relay, rated 1A/5V digital signal;

5. NET port: 1 terminal module supporting NET control bus;

6. Network interface: A network interface.

1.4 Main Technical Parameters

CPU: 32-bit Cortex-A8 ARM architecture microprocessor

Processor: up to 720MHZ

Standard memory: 256MB DDR3 RAM, 8GB EMMC large capacity FLASH memory

1.5 Specifications

Package: Metal chassis, support standard 19-inch rack mount, 2U height

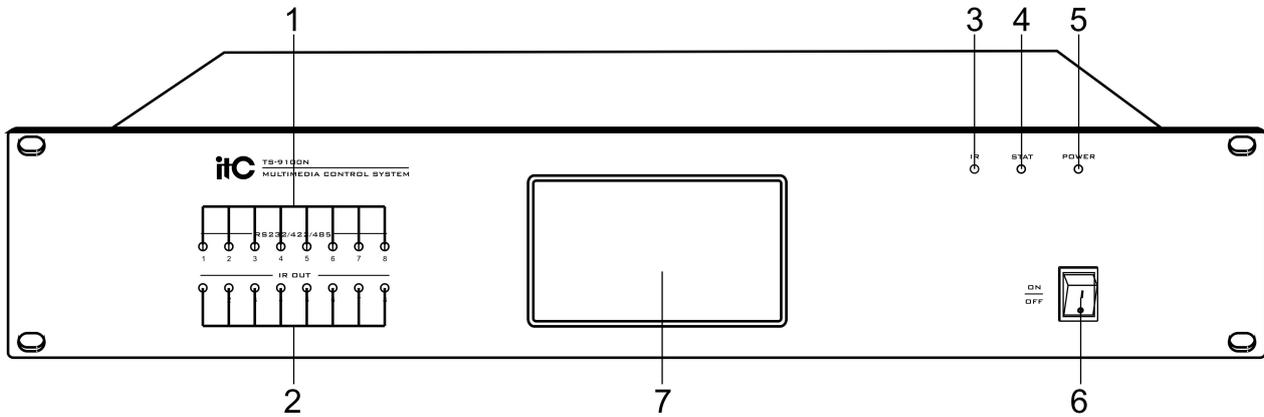Dimensions: 484 (length) × 236 (width) × 88 (height) mm

Power supply: Wide voltage universal power supply (110V - 240V)

Weight: 4.3Kg

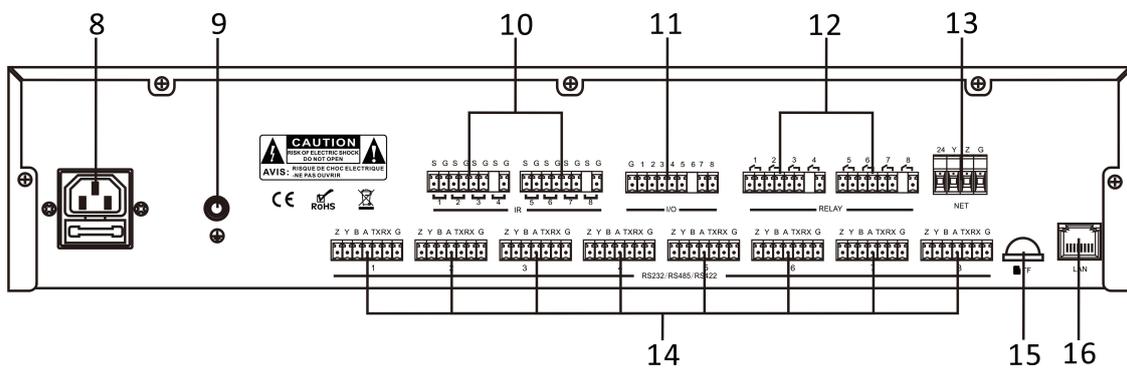Software: MKControlV1.0.1, Chinese and English interface

2. Product parts function description

2.1 Front panel

1. Serial port communication indicator;

2. Infrared transmission indicator;

3.IR infrared learning port;

4. Status indicator;

5. Power supply indicator;

6. Power switch;

7. Display

2.2 Rear panel

8. Power supply port and power fuse;

The wide voltage is 110V-240V, and the power supply interface has its own fuse to prevent the voltage from being suddenly too high and damage the device.

9. Grounding

10.8 channelsinfrared emitting port;

A. Support 8pcs infrared devices at the same time. Each infrared device is connected to any one of the 8 channels of infrared emitting ports of the device through the infrared emitter, and realizes the function of intelligently controlling the infrared device through infrared learning programming.

B. There are two interfaces per emitting port: S, G. S is connected to the positive electrode of the infrared emitter (white black line), and G is connected to the negative electrode (black line) of the infrared emitter.

11. 8 channels digital IO ports;

A variety of devices can be controlled according to different external methods. It can be specifically defined as the action that causes the I/O port to act when a series of instructions inside the system is triggered, thus controlling the device connected to the I/O port.

12. 8 channels weak current relay;

The external load can be up to: DC 5V / 1A, which can be used to control the projector hanger lifting and others

13. 1 NET bus communication port:

A NET bus communication interface based on the 485 protocol uses four-wired communication, two of which transmit signals and the other two supply power to devices that are connected to the bus. A maximum of 256 devices compatible with NET communication rules can be connected to the bus. Each device can set a different ID number, and the device communicates with the corresponding device according to different ID numbers. The device scans the devices on the bus in real time, constantly monitoring the status of all devices on the entire bus, and responds according to the special status to achieve perfect control effect.

14. 8 channels serial port;

Compatible with RS232, RS422, and RS485 communication protocols, and enable to bidirectional control. Each interface has a baud rate of 1200 to 115200, and can be connected with 8 kinds of interface devices with RS232, RS422, and RS485 communication protocols. Each interface can be independently transmitted/received without interference, and each serial port can be connected to multiple devices, realize separate control or synchronous control, but it requires the same baud rate, only the code is different. Controllable equipment such as: various matrix equipments, projectors, PTZ and a series of equipment with RS232, RS422, RS485 communication protocol.

15. 1 TF card port:

The TF card can be inserted through this port to import and export user programs.

16. 1 Ethernet RJ45 port.

The device can be connected to an Ethernet or WIFI to implement IPAD/Android wireless control or remotely control the entire system through the device, and the user program can be downloaded through the network port.

3. Installation connection explanation

## 3.1 Serial control port connection details

The serial control port is a phoenix tail terminal socket. The interface diagram is as follows:
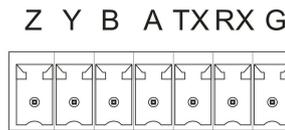
seen from the interface schematic diagram above , the device serial port supports full duplex RS-232

protocol communication and two-way RS-422, RS-485 protocol communication.F ull duplex RS-232

communication occupies TX ,RX ,G with three legs; Two-way RS-422, RS -485 communication occupies

Y,Z,A,B four pins, A B is the receiving pin and Y Z is the sending pin

RS-232 connection method

In general, a standard RS-232 through wire can be used to connect the controlled device.As shown in the figure
below:
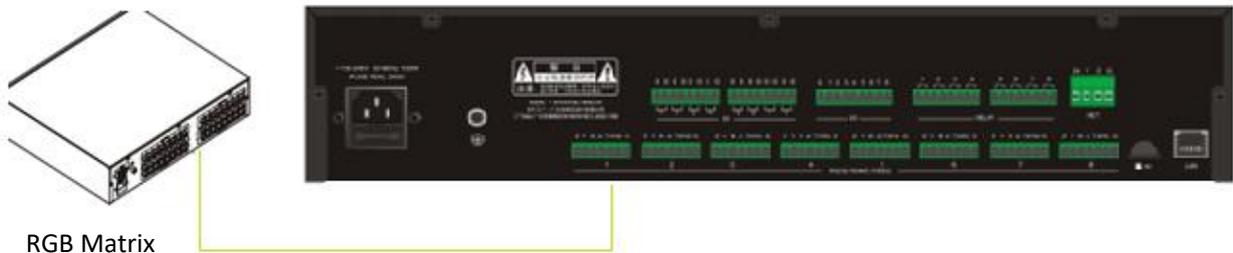
RGB Matrix

The above is the connection diagram to control the RGB matrix through the device serial port.

RS-422 and RS-485 connection method

When RS-422 or RS-485 protocols are used for communication, user-made cables are required. If you only
need to send data in one direction, use pin Y and Z; If full duplex communication is required, in addition to
sending data with Y and Z pins, A and B pins are also used to receive data.

The following is the connection diagram of the four-way relay module controlled by the RS-485 protocol.

Light modulator
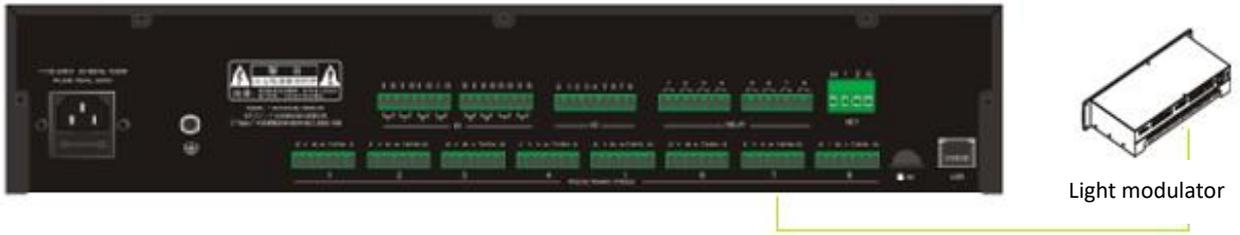
In the figure on the above page, Through serial communication port 7 to control four dimming four channels relay module. It only needs to send instructions to the dimming module, so one-way communication will satisfy the requirement. Therefore, only Pin Y Z, which occupies the serial communication port 7, can supply the power (24V) and ground of the dimming module through the NET port (24V and ground). The specific connection diagram is shown in the following figure

Central control host serial port   Connecting Light modulator
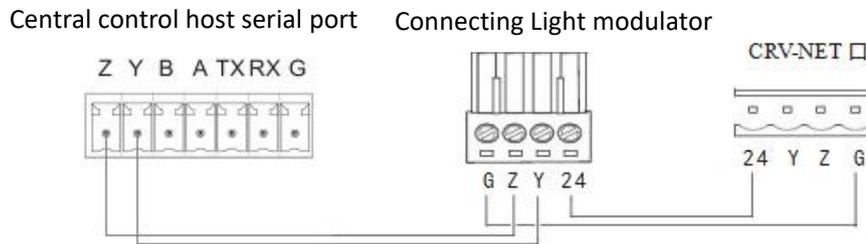
3.2 Infrared emitter connection

The equipment provides 8 infrared emission ports, which can connect 8 devices at the same time, as shown in the figure below：
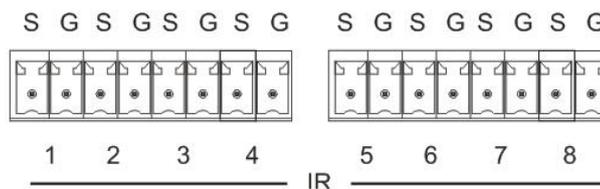

As seen from the figure above, each infrared emitter is composed of two pins :S G, S means positive and G means ground, infrared emitter is composed of white -black and black lines, white-black lines are positive and black lines are negative. The connection is shown in the figure below：


12
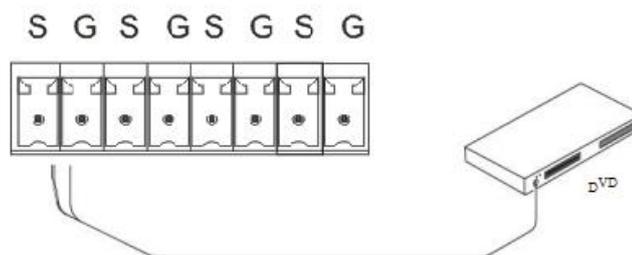
3.3 NET port connection

The device provides a NET network port which support RS-485 protocol so that totally 256 devices can be hooked up on the network bus.The TS-9101, RF receiver, and so on can be hooked up to the network. NET network power supply, the equipment on the network no need be connected to another power source (except when the network equipment is too much, the power is too large).Interface definition is shown in the following page diagram:
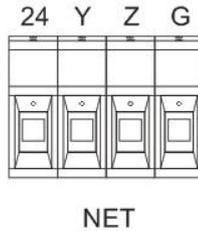
As seen from the figure above, the NET network bus is composed of four wires, the middle two walking signals, and the left and right two are 24V DC power supply and ground. The following is the interconnection diagram between one central control equipment and three TS-9101.
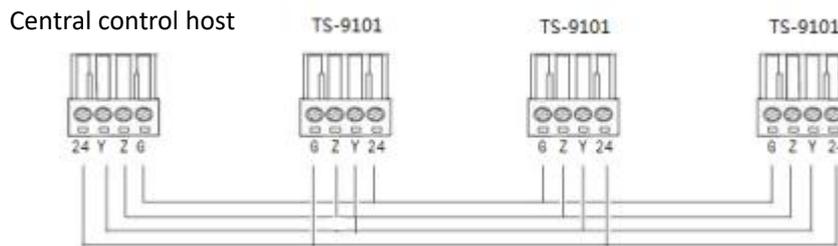

As seen from the figure above, Just connect these four wires one by one

Note: before power on, be sure to check whether the wiring sequence is connected correctly and whether each connector corresponds to each other, otherwise the power may damage the equipment!

3.4 NET weak current relay port connection

The equipment provides 8 channels 5V/1A weak current relay interfaces, as shown in the figure below
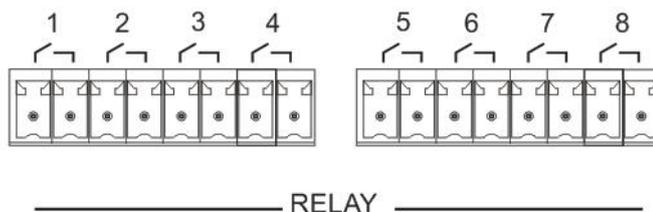
These interfaces can be used to control the projector hanger lift, or other weak current switch equipment, below is the projector hanger control　connection diagram.

Connected to the weak current relay port of the central control host

Lifting of hanger
Public end
Drop of hanger
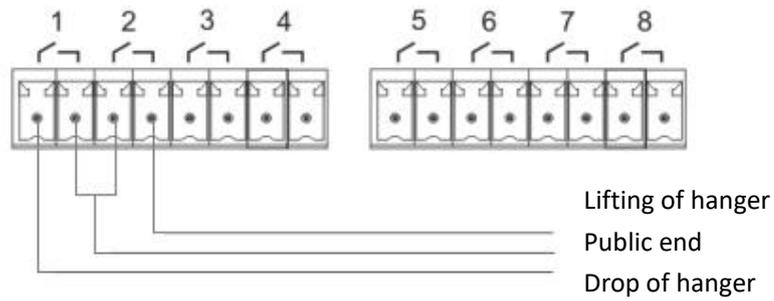
As seen from the figure above, the control projector hanger is realized by two relays. When the 2 relay is got through, the projector hanger rises; When the relay 1 is got through, the projector hanger drops; When 1, 2 relay Pop open at the same time, that is, the projector suspension.

3.5 Detailed wireless routing connection

The device provides one Ethernet RJ45 network interface, which can be directly connected to the wireless router by using a cat5e or cat6e parallel network cable. As shown below:

Router

3.6 Network IP setting method

By operating the display on the front panel of the central control controller, select Network Configuration -> Host IP Settings. After entering the IP Settings interface, you can select the IP setting mode (static IP setting and DHCP). When selecting the static IP setting, the user needs to manually set the IP address, subnet mask and gateway to the corresponding location. After the setting is completed, click Save.

4. Common problems and solutions

1. Why is the device ID light on the NET network not lit?

A: The reasons are:

(1) The location of the ID dialing is incorrect;

(2) The ID code on the device is inconsistent with the setting of the software;

(3) The wiring of the network is incorrect;

(4) The network chip burned out.

In the first three cases, the customer can check and solve it by themselves. In the fourth case, it is usually caused by mistakes. At this time, it is necessary to contact the manufacturer.

2. Why does the host not respond to the IPAD/Android tablet?

A: Check the following steps:

(1) In the tablet setting, whether the IP of the central control host is set correctly, whether the PaneID is added in the program;

(2) Check whether the network connected to the tablet is connected to the network connected to the central control;

3. The host user program is downloaded, but why can't all the devices be controlled?

A: Double check the user program, modify it and then try to download it.

Programmable Center Control System