Honeywell

X-618 Public Address and Voice Alarm System

Installation Manual

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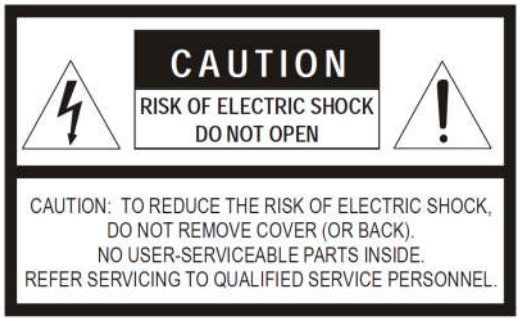
Safety Guidelines



Danger

This sign reminds users of “dangerous voltage” on the product.

Caution

This sign reminds users of important instructions attached to the product.

Safety guideline	In order to prevent electric shock, this equipment plug shall not be used as conductor to extend power supply line. Do not block the equipment’s ventilation opening or put other equipment on it.
Safety guideline	Protect this equipment against rainwater or moisture so as to avoid fire or electric shock.

Safety Precautions

Please carefully read and observe the following precautions before installing, operating or using this product.

Electricity Utilization Safety

- Local electrical safety regulations must be observed for product installation and operation.
- The Company shall not be liable for fire or electric shock accidents caused by incorrect installation and mistake.

Transportation Safety

- The product shall be protected against impact, violent vibration or liquid erosion during transportation, storage and installation.

Environmental Requirements

- Do not install the product within the environment of extreme temperature or dust and mechanical vibration.
- This equipment shall be well ventilated and protected against dust, moisture, direct sunshine and violent during the use. It shall be kept away from radiating objects or heat sources and well ventilated. The optimum working environment temperature is 5-28ºC and relative

humidity <95%. If the equipment is in operation for a long time and ambient temperature is too high, it is recommended that effective measures should be taken to reduce temperature.

- Requirements on grid power supply voltage by the equipment: AC 220V (-15% to +10%) 50-60Hz. In case of too high, too low voltage or that fluctuating greatly, it is recommended that AC regulated power supply should be installed.
- As the product is not waterproof, do not expose it to rainwater or liquid environment so as to avoid damaging it.
- Put the equipment on solid level plane or install it on a rack.
- Do not put other articles on the equipment top.

Safe Use Precautions

- The equipment shall be installed under the direction of professionals.
- Please carefully check power supply lines for damage prior to use. The lines must be connected to the equipment in strict accordance with identifications.
- Power supply plugs and sockets shall match each other. Otherwise, suitable sockets must be provided. Human damage to the sockets shall be prohibited.
- Power supply for the equipment shall be provided with sufficient capacity and independent and reliable grounding lines.
- Please ensure the equipment power supply grounding lines interconnected and connected with the ground. Otherwise, it will cause it abnormal, even damaged.
- There are HV lines within it. When turn on the power, do not open the equipment cover without permission so as to prevent electric shock.
- Prior to the first energization to start equipment, please check its external wiring for correctness so as to avoid damage.
- During the energization, please do not touch wiring terminals identified with “lightning” at random so as to avoid electric shock.
- Please do not change equipment connection circuits at random during energization so as to avoid damage.
- In case of failure to the equipment, please ask professional repair personnel to repair it. Otherwise, the Company shall neither dispose of any problems nor undertake relevant responsibilities.

Label and User’s Manual

- Please pay attention to information on the product label such as type and power supply.
- Please carefully read the user’s manual and operate according to the instructions. The user’s manual is for reference for operation of products of different types. Specific operations of products of different types are not listed herein. In case of any problem, please contact the Company.
- Please maintain this Manual for future reference.

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Preface

Thank you for purchasing the X-618 Public Address and Voice Alarm System. Please carefully read this manual prior to system use so as to ensure correct use of the system.

Brief Introduction

This manual describes the appearance, installation, and wiring of the X-618 Public Address and Voice Alarm System equipment. The manual includes the following chapters:

Chapter 1: System Overview

Describes the X-618 Public Address and Voice Alarm System structure and product assembly

Chapter 2: Preparation for Installation

Describes preparing to install the X-618 Public Address and Voice Alarm System

Chapter 3: System Installation

Describes installing the X-618 Public Address and Voice Alarm System along with related precautions

Chapter 4: Installation Inspection

Describes inspecting the installation of the X-618 Public Address and Voice Alarm System and system commissioning

Intended Audience

This manual is mainly for personnel who are to install, operate, and maintain the X-618 Broadcasting and Voice Alarm System.

Relevant Documents

The following documents can be used as a reference when reading this manual:

- X-618 Public Address and Voice Alarm System Product Description
- X-618 Public Address and Voice Alarm System Configuration Manual
- X-618 Public Address and Voice Alarm System Operation Manual

Use Instructions

- All content including figures in this manual are to be used only for reference.
- The product may be subject to change from time to time without notice.
- Users of this product are recommended to carefully read all warnings and precautions in this manual.
- Carefully read this manual before using the product and keep it as a reference for future use.
- This manual has been reviewed with its accuracy is ensured. In case of any doubt or dispute of the product description, the final interpretation given by the Life Safety A/V (Guangzhou) Co., Ltd. shall prevail.

- The Life Safety A/V (Guangzhou) Co., Ltd is not liable for any consequences caused by user mistakes when using the product or user misunderstandings of the manual content.

1 System Overview

The X-618 Public Address and Voice Alarm System provides a complete multiple sound source public audio management solution. Centralized network management is achieved through the system software, and all system states are monitored. The X-618 Public Address and Voice Alarm System is hereby referred to as the “X-618” throughout the remainder of this manual.

The X-618 includes the following product components:

- X-DCS2000 Digital Integrated System Manager

  The X-DCS2000 Digital Integrated System Manager is hereinafter referred to as the “DCS” or “X-DCS2000”.

  The DCS is X-618 control equipment designed for expanding the number of loudspeaker zones, and can support multiple sound source files for broadcasting. The system integrates with functions such as the sound source file storage system, the network audio broadcasting system, the loudspeaker zone control system, and the system for monitoring and diagnosing faults.

- X-DA2250 High Efficiency Power Amplifier

  The X-DA2250 High Efficiency Power Amplifier is hereinafter referred to as the “DA” or “X-DA2250”.

  In the X-618 system, the DA is used to amplify audio signal power and drive many broadcasting loudspeakers.

- X-NPMI Configurable Network Paging Console

  The X-NPMI Programmable Network Paging Console is hereinafter referred to as the “NPM” or “X-NPMI”.

  The NPM is used to page zones and control broadcasts for the X-618 on an Ethernet network.

Figure 1 shows the schematic diagram of the X-618 system structure.

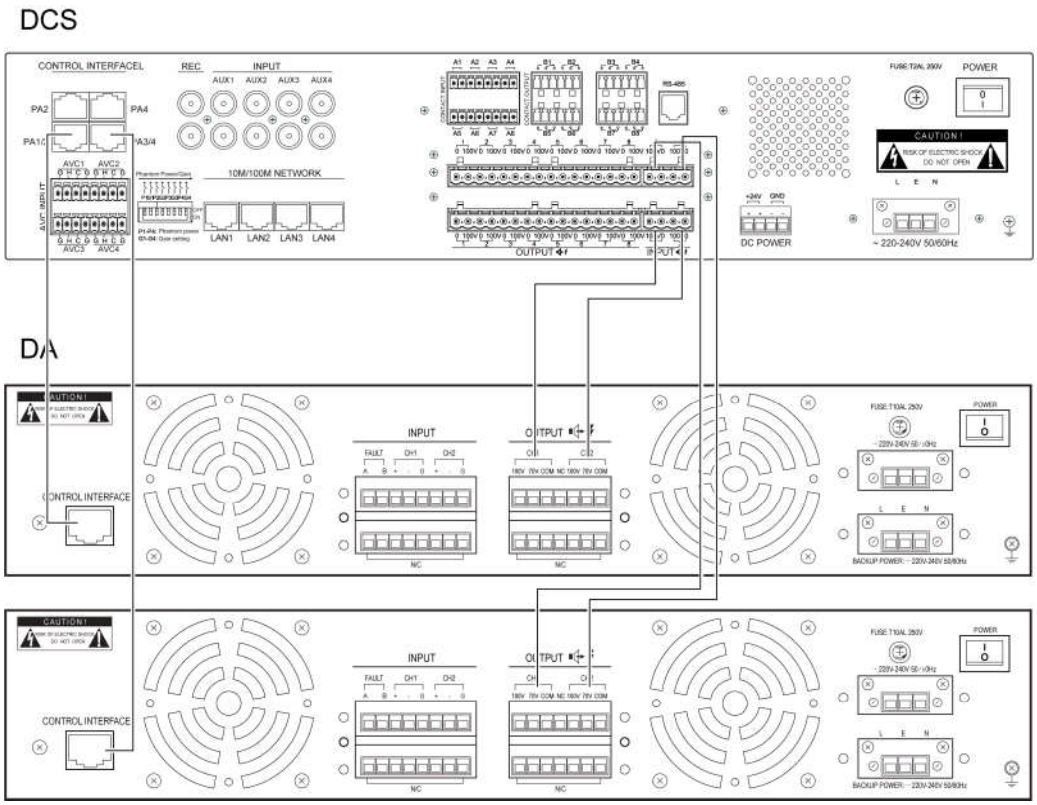


Figure 1 Schematic Diagram of the X-618 System

2 Preparation for Installation

Before installing the system, appropriate preparation is required to ensure a smooth installation process.

- Gathering Information
- Preparing Tools
- Preparing Auxiliary Materials
- Preparing Cables and Auxiliary Equipment
- Packing List Inspection

Gathering Information

Installation personnel are required to be familiar with functional components of the X-618 product equipment. It is recommended to first read the product information found in the X-618 Public Address and Voice Alarm System Product Description.

Preparing Tools

Prepare the following tools before installing the system equipment:

- Electrostatic proof wrist band
- Electrostatic proof gloves

- Wire stripping pliers
- Wire cutting pliers
- RJ45 crimp tool
- Slotted screwdriver (M2)
- Phillips screwdriver (P1)

Preparing Auxiliary Materials

Prepare the following auxiliary materials before installing the system equipment:

- Insulating tape
- Wire buckles
- Cable labels
- Plastic ties

Preparing Cables and Auxiliary Equipment

Note:

It is recommended to select high quality and professional-grade transmission cables for large scale loudspeaker systems.

The longer the distance, the thicker the cable must be used, as more power is required to transmit the data. Please select appropriate cables according to the distances involved.

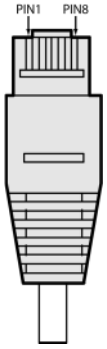
Prepare the following cables and auxiliary equipment before installing the system equipment:

- CAT-5 Ethernet cable

  Cables are required to be no longer than 100m with diameters of 0.51mm (wire gauge of 24AWG). Shielded twisted pair cables are recommended.

  Refer to Table 1 for the Ethernet pin types.

  Table 1 RJ45 Cable Pin Definition Descriptions

PIN	Type	Legend
1	TX+	
2	TX-	
3	RX+	
4	No pin	
5	No pin	
6	No pin	
7	RX-	
8	No pin	

- 100V audio connection cable

This cable is used to connect the DCS to the DA as well as the DCS to the loudspeakers in the broadcasting zones. Shielded cables with a cross-section of 1.3mm^2 (wire gauge of 16AWG) are recommended to connect the external sound source devices, such as CD/DVD players and tuners.

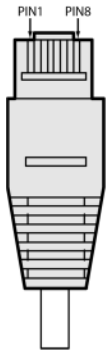
- DA standby power supply cable

  The DA standby power supply cable specification is required to be the same as that of the main power supply line.

- Power amplifier audio input cable

  Audio input cables are provided in the package containing the DA, but the lengths of these cables are limited. If these cables cannot meet the requirements of the system wiring situation, users need to obtain or create appropriate cables themselves. Please create such audio input cables with the specifications as listed in Table 2.

Table 2 Power Amplifier Input Cable Pin Definition Descriptions

PIN	Type	Legend
1	Audio positive pole of Channel 2	
2	Audio negative pole of Channel 2	
3	Power amplifier failure signal	
4	Audio positive pole of Channel 1	
5	Audio negative pole of Channel 1	
6	Signal grounding (0V))	
7	DC 24V power supply	
8	Self-test signal	

- Power amplifier output cables

  Unshielded cables with a cross-section of 1.3mm^2 (wire gauge of 16AWG) are recommended for the power amplifier output.

Table 3 Power Amplifier Output Cable Pin Definition Descriptions

PIN	Type
1	100V output of audio negative pole of Channel 2
2	Audio positive pole of Channel 2
3	Power amplifier failure signal
4	100V output of audio negative pole of Channel 1
5	Audio positive pole of Channel 1

- Dry contact input/output cables and related external equipment (optional)

  The necessity of dry contact connections depends on the system situation. If the DCS and external equipment, such as three-wire volume controllers and four-wire single-channel controllers, must be connected through dry contacts, this equipment and the appropriate cables must be prepared beforehand.

- Noise detector (optional)

  When needing to collect environmental noise and automatically control the volume of broadcasts, a noise detector and appropriate cables must be prepared. The maximum cable distance between the DCS and noise detector is required to be no more than 250m, and shielded twisted pair cables must be used.

Packing List Inspection

Please check the external packages for intactness before unpacking them for content inspection. Use the “Packing list” to check the package contents. Contact the carrier or supplier promptly in case of any package or package content problems.

3 System Installation

This chapter describes the system equipment installation, cable connections, and relevant precautions.

- Installing the NPM on a Fixed Surface (Optional)
- Connecting the Protective Grounding Cabinet Wires
- Installing the DCS and DA in the Appliance Cabinet
- Connecting the Protective Grounding
- Connecting the X-618 System Components
- Connecting the Power Supply

 **Note:**

The electricity and power sources must be turned off when performing the following tasks to avoid electric shocks and damage to the equipment.

Turn off all equipment power supply switches prior to wiring.

Correctly connect the wiring terminals and tighten the screws.

The power supply cables and signal data lines must be separated, and cannot be laid in the same slot or piping.

Control signal cables must be positioned away from 100V audio or power supply cables to avoid signal interference.

Appropriate materials, such as plastic ties, must be used for all connection cables for reinforcement to avoid looseness. When moving the cables, prevent the power supply cables from coming in contact with the signal data cables.

Install appropriate electrical cables bushings at the cabinet opening before installing the cables in the appliance cabinets.

Appropriate materials must be used to block the spaces reserved for the cables at the cabinet opening if these spaces are not used.

Installing the NPM on a Fixed Surface (Optional)

If it is unnecessary to move the NPM often, embed the NPM in a fixed surface, such as a desk. The installation steps are as follows:

1. Cut a slot for the NPM to fit in on the desk surface. The slot is required to be 198mm long and 100mm wide, as shown in Figure 2.

Figure 2 Schematic Diagram of Creating a Slot for Seating the NPM (Level Surface)

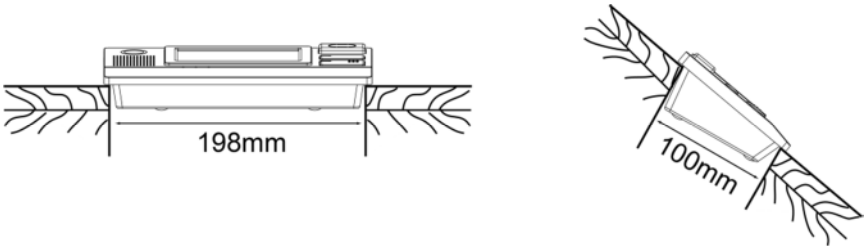


Figure 3 Schematic Diagram of Creating a Slot for Seating the NPM(Slanted Surface)

2. Adequate space for wires connecting to the NPM must be reserved on the rear side of the unit. If the surface thickness is greater than 10mm, the space reserved for the wires must be about 80mm long and 10mm wide, as shown in Figure 4.

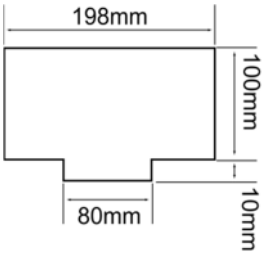


Figure 4 Schematic Diagram of the Reserved Space for the Rear Panel Wire Connections

3. Installing the Microphone Pole

   Connect the microphone pole at one end in the gooseneck microphone socket of the NPM, and tighten the pole, as show in Figure 5.

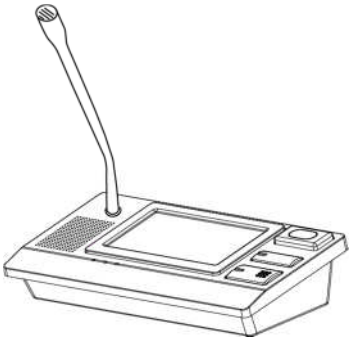


Figure 5 Microphone Pole Installation Diagram

Connecting the Protective Grounding Cabinet Wires

The cabinet door shaft contains one yellow grounding wire as shown in Figure 6, identified with a ①. Figure 6, marker ②, represents another grounding terminal in the same position in the cabinet. Connect the grounding wire to the two terminals.

Caution:

To prevent a grounding loop, be careful to not let a short-circuit occur over the grounding wires.

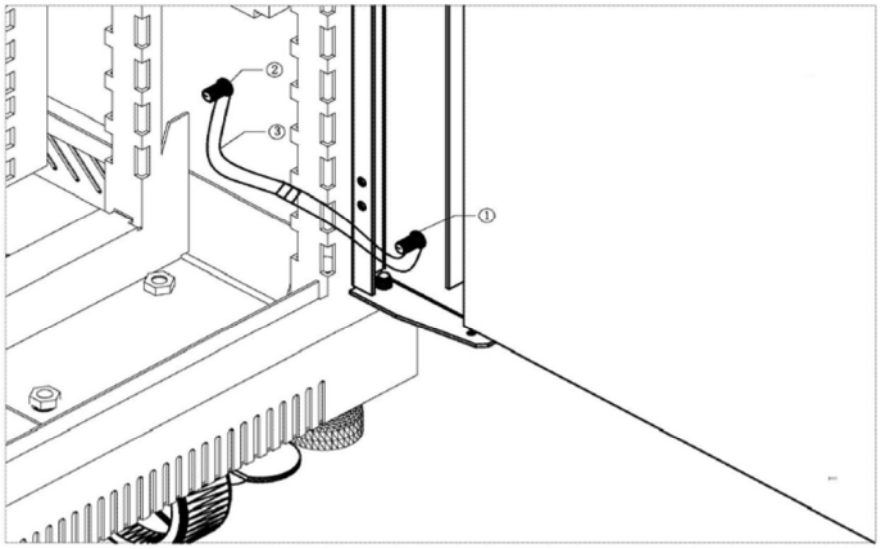


Figure 6 Schematic Diagram of Cabinet Grounding

Installing the DCS and DA in the Appliance Cabinet

Install the DCS and DA into the associated appliance cabinet. This process is described in the following steps:

1. Connect and hang the emergency microphone in place on the front panel of the DCS. An installed emergency microphone is shown in Figure 7.

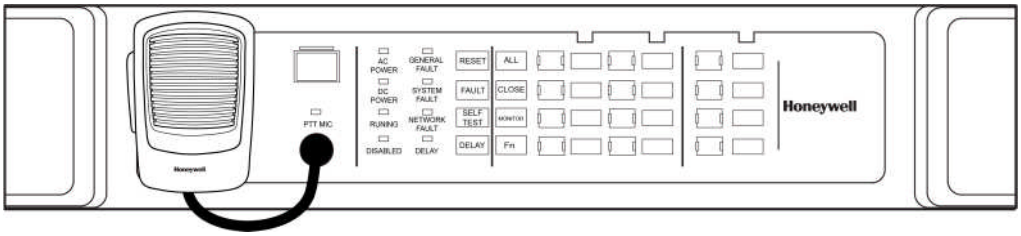


Figure 7 PTT Microphone Installation Diagram

2. Install brackets on the left and right sides of the DCS, as shown in Figure 8.

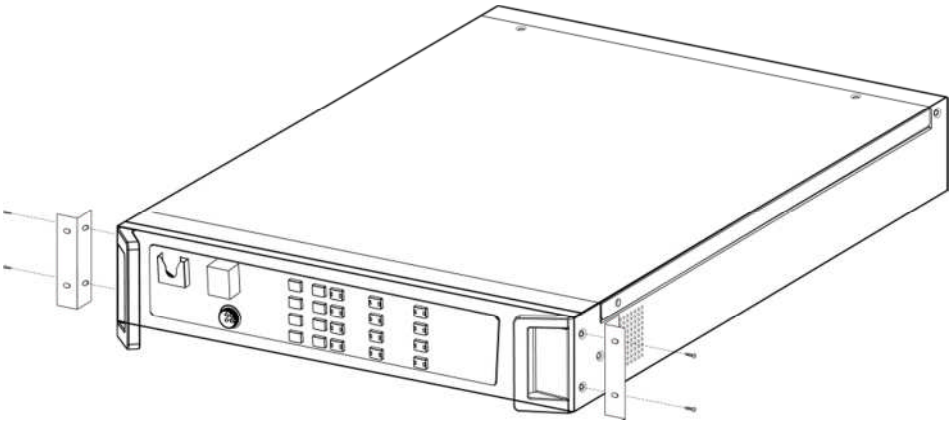


Figure 8 Schematic Diagram of the DCS Bracket Installation

3. Put the DCS appliance into the cabinet, and tighten the screws to secure the unit, as shown in Figure 9.

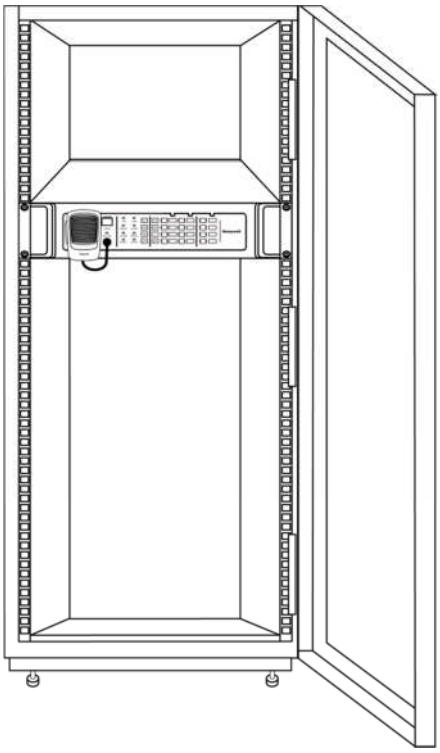


Figure 9 Schematic Diagram of Installing the DCS in the Cabinet

4. Install brackets on the left and right sides of the DA, as shown in Figure 8.
5. Install the DA appliance into the cabinet, and tighten the screws to secure the unit, as shown in Figure 9.

Note:

1U (1U=44.45mm) of space is required right above the DA to allow for proper appliance ventilation.

It is recommended to use an empty panel to close and open the installation space of the cabinet.

Connecting the Protective Grounding Appliance Wires

The DCS and DA grounding terminals must be connected to the terminal blocks through flexible cables with a cross-section of 1.5mm^2 within the cabinet, as shown in Figure 6.

Notice:

Do not connect the grounding output cable with the grounding input cable as a short circuit can occur.

Connecting the X-618 System Components

This section describes the connections between the following X-618 system components:

- Connecting the Sound Source Equipment to the DCS

- Connecting the DCS to the DA
- Connecting the DCS to the NPM
- Connecting the Dry Contacts (Optional)
- Connecting the Dry Contacts (Optional)
- Connecting the Noise Detector (Optional)

Connecting the Sound Source Equipment to the DCS

Connect the external sound source equipment to the DCS appliance as necessary.

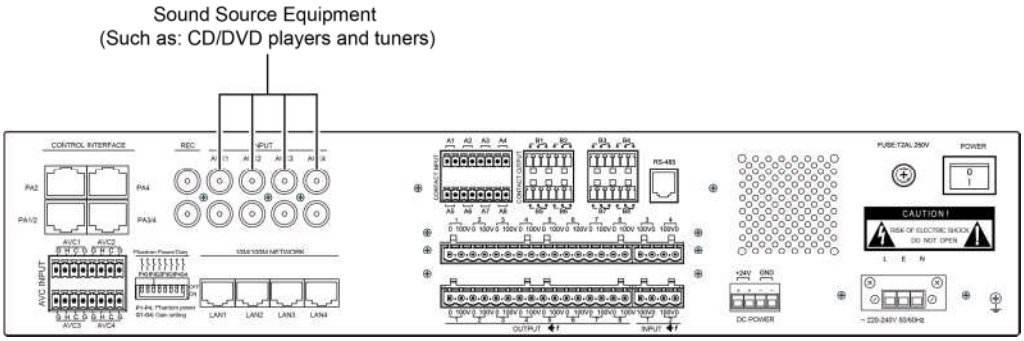


Figure 10 Schematic Diagram of Connecting the DCS External Sound Source Equipment

Connecting the DCS to the DA

Note：

The DCS can be connected to the power amplifier in the following configurations:

- Connect the **PA1/2** and **PA2** port of the single-channel power amplifier to the DCS control port using two network cables.
- Connect the **PA1/2** port of the two-channel power amplifier to the DCS control port using one network cable. Refer to Figure 11.
- Connect the **PA1/2** and **P3/4** port of the four-channel power amplifier to the DCS control port using two network cables.

1. Connect the DA RJ45 port to the DCS control port using the audio input lines that are included in the package containing the DA, as shown in Figure 11.

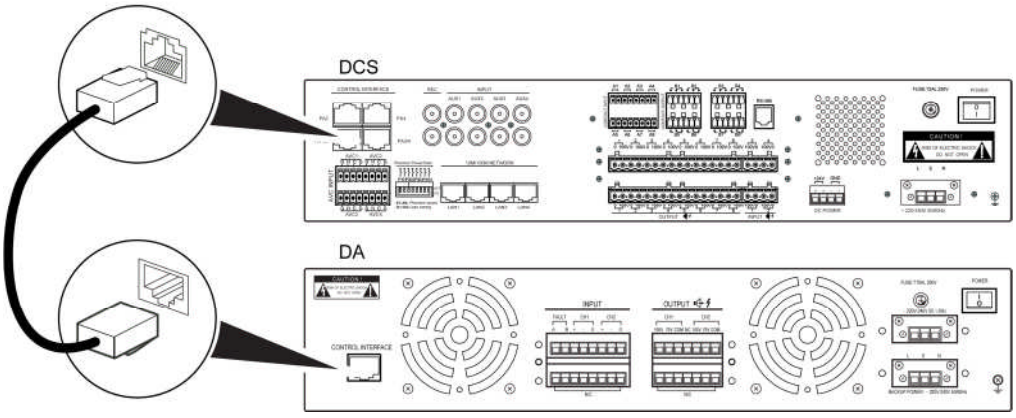


Figure 11 Connecting the RJ45 Audio Cable to the DCS and DA

2. Connecting the DA audio output to the DCS

   a. Strip one end of the prepared audio output cable jacket by 10mm, and feed the cable through the DCS protective cover of the terminal, as shown in Figure 12.

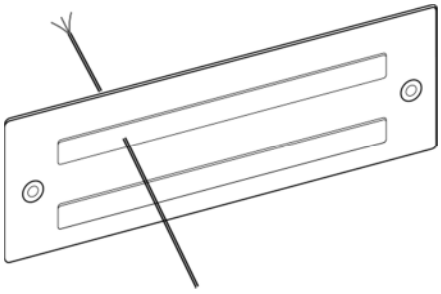


Figure 12 Schematic Diagram of a Feeding the Audio Output Cable Through the Protective Terminal Cover

   b. Take the end of the cable that was fed through the protective cover of the DCS wiring terminal connect the cable to the power amplifier output wiring terminal (7P green phoenix tail seating 5.08mm), and tighten the screws. Refer to Figure 13.

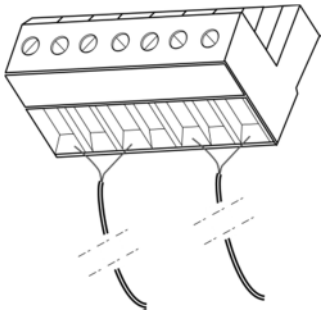


Figure 13 Connecting the Audio Output Cable to the Power Amplifier Input Wiring Terminal

   c. Feed the other end of the audio output cable through the protective cover of the power amplifier. Refer to Figure 12.

   d. Connect the end of the cable that was fed through the protective cover of the power amplifier to the power amplifier input wiring terminal (4P green phoenix tail seating 5.08mm), and tighten the screws. Refer to Figure 13.

   e. Insert the power amplifier audio output wiring terminal of the installed audio output cable into the DA audio output port, as shown in Figure 14.

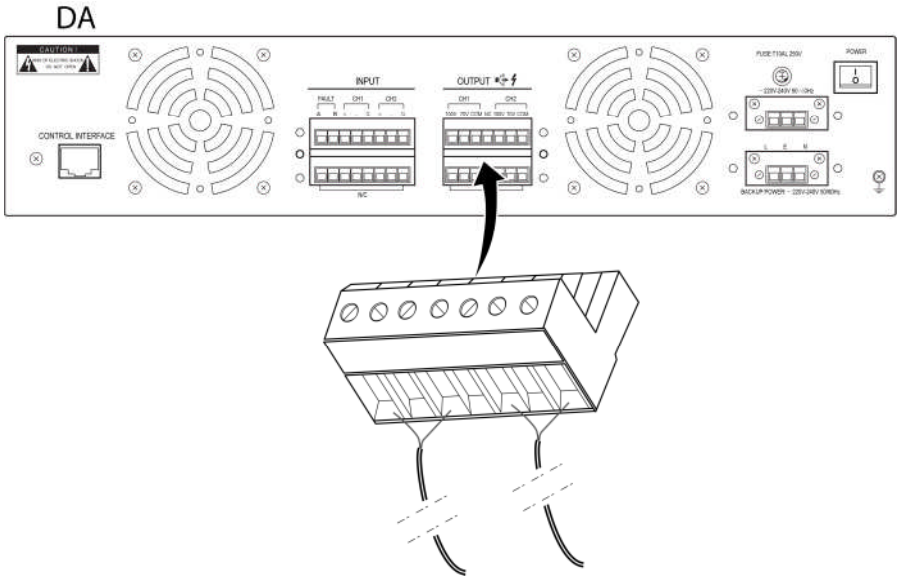


Figure 14 Schematic Diagram of the Audio Output Wiring Terminal Installation

f. Insert the power amplifier input wiring terminal of the installed audio output cable into the DCS PA audio input port, as shown in Figure 15.

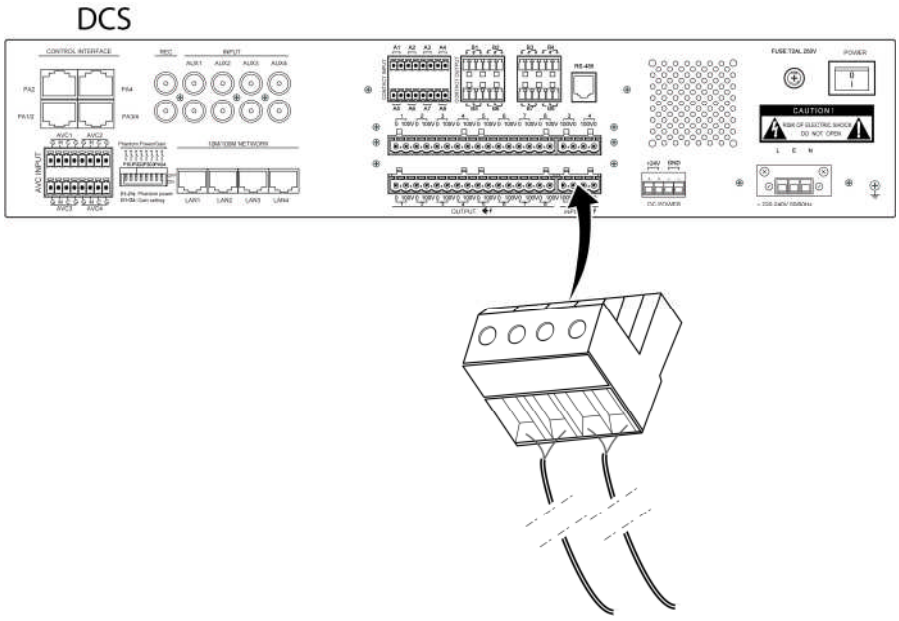


Figure 15 Schematic Diagram of the Audio Input Wiring Terminal Installation

g. Cover the power amplifier terminal with the protective terminal cover and tighten the screws, as shown in Figure 16. This same operation applies to the DCS terminal and related protective cover.

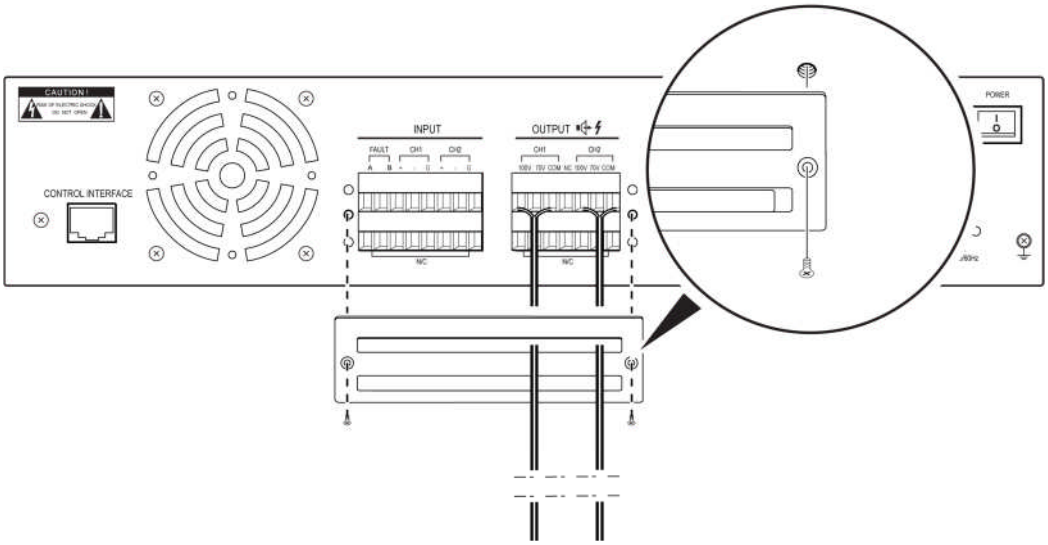


Figure 16 Schematic Diagram of the Protective Audio Input Terminal Cover

Connecting the Dry Contacts (Optional)

This section describes connecting the external equipment or switch through the dry contacts.

Dry Contact Input Preparation

1. Connect the dry contact cable to the dry contact input terminal.

   Strip the wire jacket off one end of the prepared dry contact connection cable by about 10mm, insert the wires into the dry contact wiring terminal (8P green phoenix tail seating 3.81mm), and tighten the screws. Refer to Figure 13 for more information.

2. Insert the dry contact input wiring terminal of the installed input cable into the DCS dry contact port. Refer to Figure 14.

3. Connect the external dry contact equipment or switch to the other end of the dry contact input cable, as shown in Figure 17.

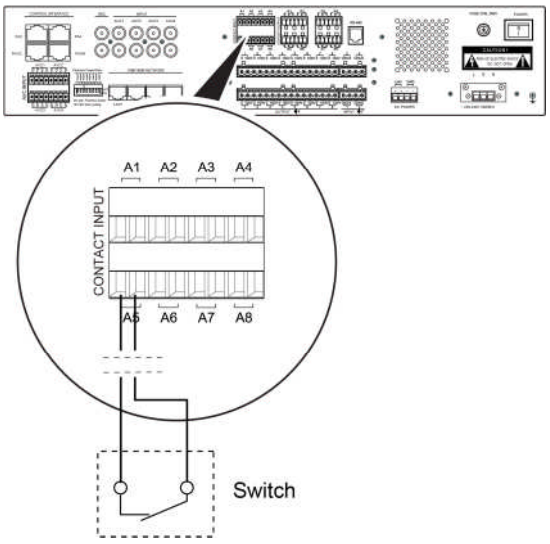


Figure 17 Connect External Dry Contact or Switch

Dry Contact Output Preparation

1. Strip off the wire jacket of one end of prepared dry contact output cable by about 10mm, insert dry contact wiring terminal (8P green phoenix tail seating 3.81mm), and tighten the screws. Refer to Figure 13.
2. Insert the dry contact output wiring terminal of the installed output cable into the DCS dry contact port. Refer to Figure 13.
3. Connect the external equipment or switch to the other end of the dry contact output cable. Figure 18 is schematic diagram of the DCS and three-line audio controller connection configuration. Figure 19 is schematic diagram of the DCS and four-line audio controller connection configuration.

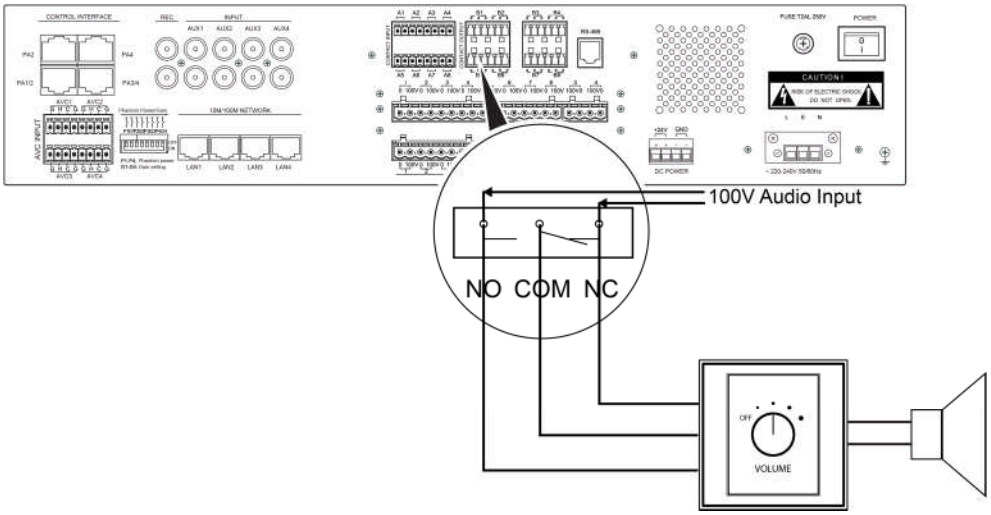


Figure 18 Schematic Diagram of the DCS and Three-Line Audio Controller Connection Configuration

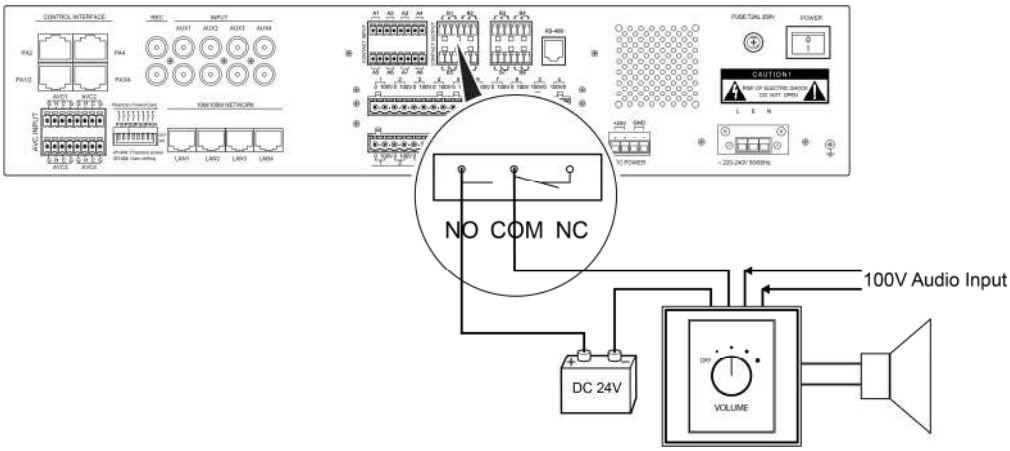


Figure 19 Schematic Diagram of the DCS and Four-Line Audio Controller Connection Configuration

Connecting the Noise Detector (Optional)

If detecting the environmental noise is required, the noise detector can be connected through the AVC port.

1. Insert the prepared AVC connection cable into the AVC input wiring terminal and tighten the screws. Refer to Figure 13.
2. Insert the AVC wiring terminal of the installed cable into the DCS AVC port. Refer to Figure 14.
3. Install the noise detector on the other end of the AVC cable, as shown in Figure 20.

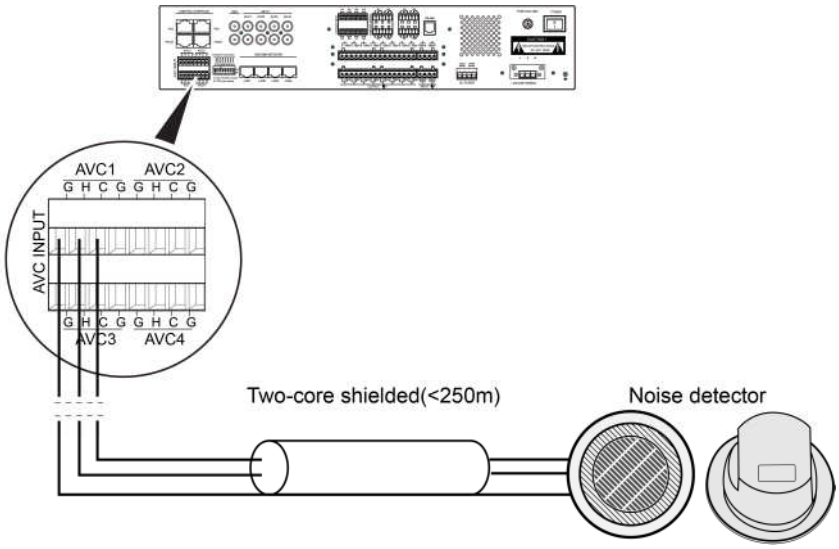


Figure 20 Schematic Diagram of the Noise Detector Connection

Connecting the Loudspeakers

The DCS can be directly connected to loudspeakers. The following steps describe this process:

1. Strip off the wire jacket of one end of the prepared audio cable by about 10mm, insert the loudspeaker wiring terminal, and tighten the screws. Refer to Figure 13.
2. Insert the loudspeaker wiring terminal of the installed audio cable into the DCS loudspeaker port. Refer to Figure 14.
3. Connect the loudspeaker to the other end of the audio cable, as shown in Figure 21.

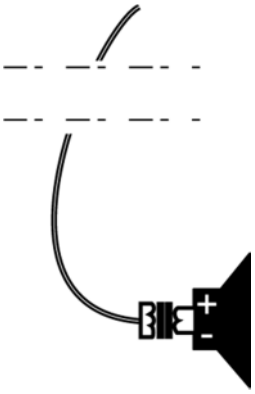


Figure 21 Schematic Diagram of the Loudspeaker and Audio Cable Connection

Connecting the DCS to the NPM

The DCS and NPM can be connected in the following two ways:

- Directly connecting the DCS to the NPM
- Connecting the DCS to the NPM through a network switch

Directly Connecting the DCS to the NPM

Connect the DCS to the NPM using the RJ45 cable. The following describes this process:

Insert one end of the prepared RJ45 cable into the network port located on the rear panel of the DCS, and the other end of the cable into the RJ45 port located on the rear panel of the NPM, as shown in Figure 22.

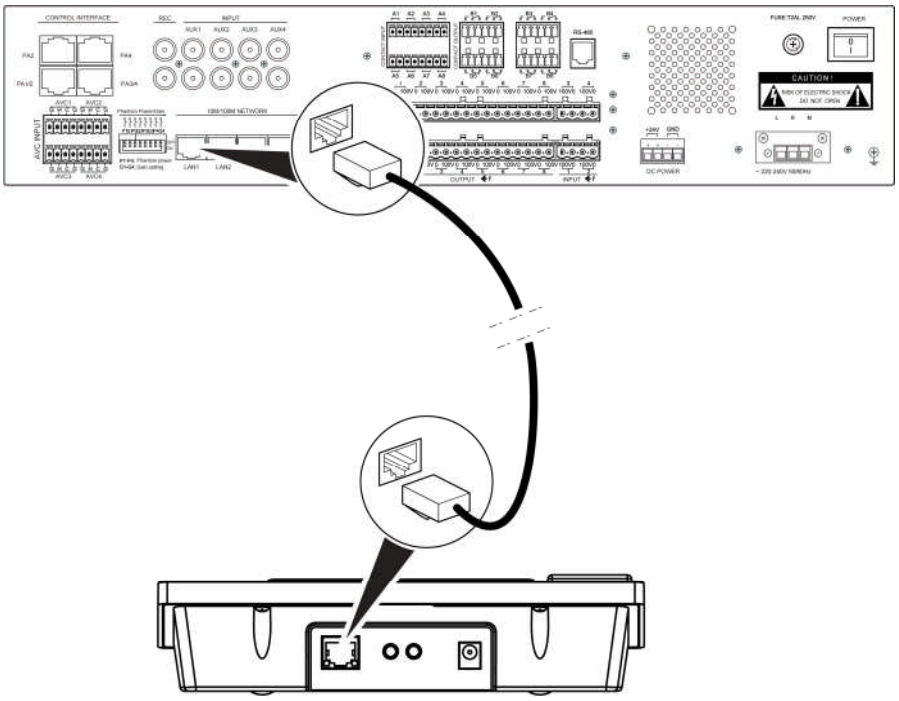


Figure 22 Schematic Diagram of Connecting the DCS to the NPM

Connecting the DCS to the NPM through a Network Switch

Connect the DCS to the NPM through a network switch. The DCS and network switch must be on the same network. Refer to Figure 23.

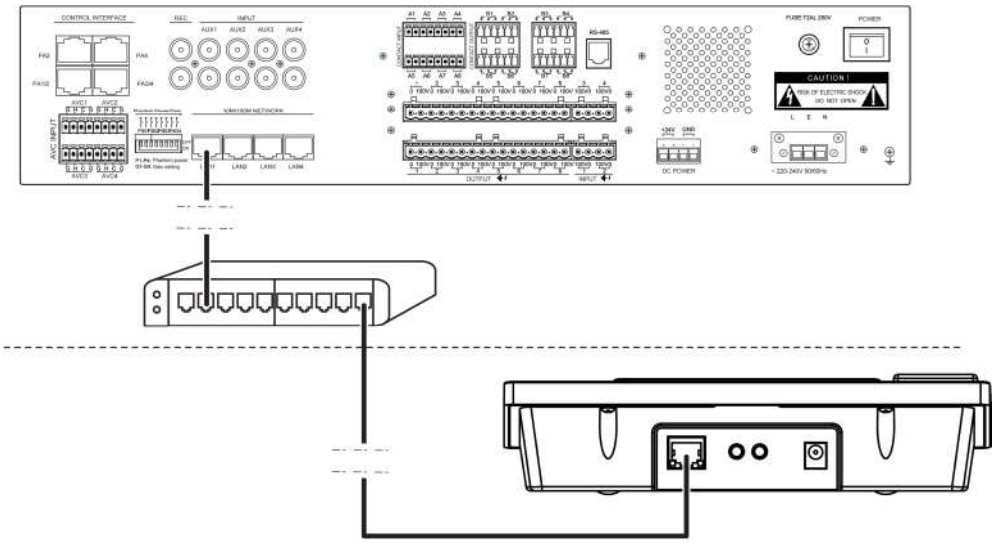


Figure 23 Schematic Diagram of Connecting the DCS to the NPM Through a Network Switch

Connecting the Power Supply Cables

The power supply cables for the main X-618 system components include the following items:

- DCS Main and Standby Power Supply Cables
- DA Main and Standby Power Supply Cables
- NPM Power Supply Cable

DCS Main and Standby Power Supply Cables

Connecting the Main Power Supply Cable

1. Strip off the wire jacket of one end of the AC power supply cable by 20mm and connect the cable to the main power supply wiring terminal, as shown in Figure 24.

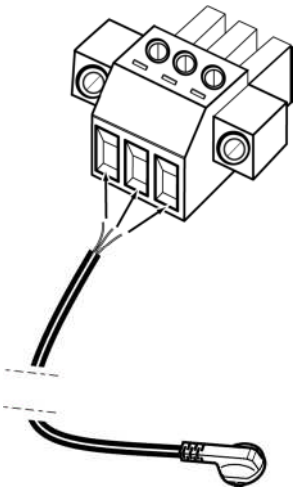


Figure 24 Schematic Diagram of the DCS Main Power Supply Cable Connection

Note:

The wires are identified as L (live wire), N (null wire), and E (grounding wire).

2. Tighten the screws to prevent the power supply cable from coming loose, and cover the power supply interface set.
3. Insert the wiring terminal of the installed power supply cable into the main power supply input port of the DCS, and tighten the screws at both ends.
4. Insert the other end of the power supply cable into the main power supply equipment.

Connecting the Standby Power Supply Cable

Connect one end of the prepared standby power supply cable to the DCS standby power supply input port, and the other end of the cable to the emergency power supply (such as the fire alarm system power supply). The power supply cable must support DC 24V. Pay special attention to the connections of the positive and negative poles of the power supply. Refer to Figure 25.

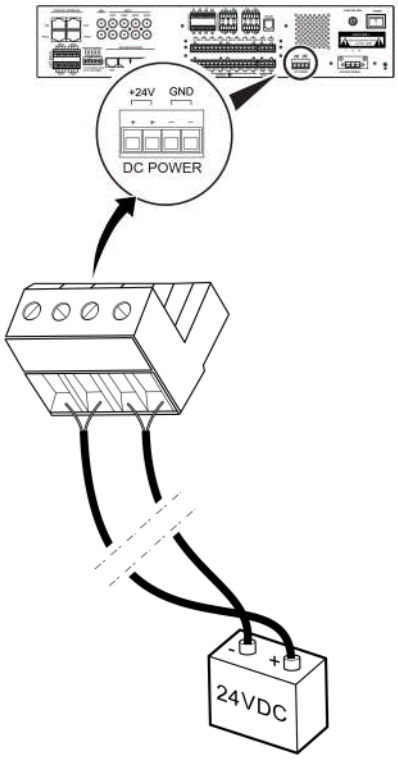


Figure 25 Schematic Diagram of the DCS Standby Power Supply Cable Connection

DA Main and Standby Power Supply Cables

Connecting the Main Power Supply Cable

1. Strip off the wire jacket of one end of the AC power supply cable by 20mm and connect the cable to the main power supply wiring terminal, as shown in Figure 24.
2. Tighten the screws to prevent the power supply cable from coming loose, and cover the power supply interface set.
3. Insert the wiring terminal of the installed power supply cable into the main power supply input port of the DA, and tighten the screws at both ends.
4. Insert the other end of the power supply cable into the main power supply equipment.

Connecting the Standby Power Supply Cable

1. Strip off the wire jacket of one end of the prepared standby power supply cable by 20mm and connect the cable to the standby power supply wiring terminal, as shown in Figure 24. The installation procedure is similar to that of installing the main power supply cable.
2. Tighten the screws to prevent the power supply cable from coming loose, and cover the power supply interface set.
3. Insert the wiring terminal of the installed power supply cable into the standby power supply input port of the DA, and tighten the screws at both ends.
4. Insert the other end of the standby power supply cable into the standby power supply equipment, such as the Uninterrupted Power Supply (UPS).

NPM Power Supply Cable

Insert one end of the power supply adapter into the NPM power supply input port, and connect the other end of the power supply adapter cable to the power supply equipment, as shown in Figure 26.

Figure 26 Schematic Diagram of the NPM Power Supply Cable Connection

4 Installation Inspection

This section describes conducting a series of inspections after completing the system installation procedure so as to ensure that the installation was done correctly.

Inspection

Inspect the following items after installing the X-618 system and before turning the system on:

- Check if sufficient heat ventilation space is left above the DA appliance.
- Check the protective grounding cables to make sure they were correctly connected.
- Check the consistency of the power supply to which the power supply cables are connected.
- Check the connection relationship between system components for correctness.

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