LDC600XX-COB-V

User Manual

V1.1

Safety Notice

Thanks for using our company's products. If this manual helps you understand and use the product, we are deeply gratified. We strive for accuracy and reliability when drafting documents, and content may be modified or changed at any time without further notice. If you encounter any problems during use, or have good suggestions, please contact us. We will do our best to support you with any problems you encounter during use, and we sincerely thank you for your suggestions, which we will evaluate and adopt as soon as possible.

I. Guiding Principles:

1. Ensure the display is installed based on reading and understanding the user manual.
2. Under no circumstances should the company's products be repaired by personnel unauthorized by the factory.
3. The installation address must be secure, with no sinking, tilting, or falling, and the environment must be free from excessive weight, radioactivity, pollution, corrosiveness, or toxic gases, etc.
4. All components can only be provided by the original factory or suppliers certified by the original factory.
5. Without the original manufacturer's consent, do not arbitrarily repair or replace components;
6. Please operate under the guidance of the product manual; if there are any problems, please contact the partner.

II. Safety Instructions:

1. Personnel:
   - When working at heights, protective measures must be taken. Workers need to wear qualified safety helmets, safety belts, and other necessary personal protective equipment.
   - A single display unit weighs 1.6KG. During operation, it is necessary to pay close attention to personal safety. The tools and materials used must not be thrown. When it is necessary to work across the upper and lower main bodies, isolation facilities must be set up in the middle.
2. Products:
   - All products must be well protected and securely packaged during processes such as

transportation or storage, and there must not be any external pressure on the products that exceeds specifications.

- The product must not come into contact with rainwater before installation or during the installation process; ensure operations are carried out in a dry and clean environment.
- All parts must not be trampled on, knocked, or dropped; please follow the instructions when moving or handling the product.
- Flammable materials: Keep flammable materials away from the equipment. When the equipment is operating, a large amount of energy is converted into heat. The equipment operation requires a certain amount of air flow to avoid heat jeopardizing safe operation. Therefore, appropriate ventilation must be provided, and air conditioning should be installed at the back of the equipment for cooling if necessary.

3. Installation:

- The screen shipment comes with an installation manual. Please read it carefully before installing the screen, and arrange for someone with experience in installing displays to carry out the installation.
- All parts must not be trampled on, knocked, or dropped; please follow the instructions when moving or handling the product.
- All flammable parts must not be trampled on, knocked, or dropped; please follow the instructions when moving or handling the product.
- The bottom of the cabinet must have load-bearing cross beams to ensure it is level and normal, used to support the weight of the screen, preventing the screen from sinking, tilting, or falling during installation or use.
- During installation, work according to the installation specifications. The screws of the cabinet installation connection piece cannot be omitted and must be locked on the load-bearing bracket. The bottom cabinet must have a load-bearing beam to bear the force. Ensure the bottom level is normal before proceeding with the cabinet installation; otherwise, there will be structural problems such as individual cabinets or modules sliding down due to gravity.
- For the products that are installed by lifting, the operator must strictly follow the manual instructions, including where there should be lifting brackets, the crane must have enough strength to lift the product, and the operating ground must have enough bearing capacity to support the crane.
- All structural components must be securely connected to fasteners, with no loose or

wobbly structures allowed.

4. Power supply:

- Provide power supply and distribution cabinet according to power consumption, all distribution systems must have enclosure protection and comply with local circuit safety standards.
- The power distribution system is installed near the display, and the power cables and data cables must not be pulled or damaged.
- Confirm whether the voltage input to the screen locally matches the screen power supply. Please ensure the settings are correct before connecting the power cord.
- Do not attempt to install a damaged wire, please replace it with a new one.
- When the display is powered on, the instantaneous current is relatively large, choose an appropriate air switch, such as a Type D air switch.

5. Grounding

- The display must be grounded with a separate grounding wire.

6. Precautions during use:

- The LED on the display screen cannot be subjected to excessive external pressure or impact, otherwise it will be damaged;
- When cleaning the front of the display, please follow the manual specifications. During the cleaning process, a lint-free cloth can be dipped in water to wipe and clean; do not use alcohol or other chemical solvents to wipe the screen to avoid contamination of the module by chemical solutions, leading to abnormal display.
- Before disassembling the display, the power must be turned off;
- The design of all installation accessories should only be used for the installation and connection of this LED display.
- Modification or replication of any components is prohibited. This display uses special materials and production processes to achieve component strength.
- Adhere to the installation instructions, and if you have any questions about safety applications, you can consult the factory. The manufacturer does not bear any legal responsibility for consequences caused by incorrect, incomplete, irresponsible, or unsafe use of the installation system.
- During installation, handle with care to avoid bumps and collisions. If physical damage occurs, repair must be done at the factory as on-site repair is not possible due to the product process.

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Chapter I Display Installation

I. Installation Requirements

1.1 Installation and Usage Environment Requirements

Before installing the LED display, it is necessary to confirm the site environment. The site should be renovated and the ground cleaned, reaching a cleanroom environment before installation can proceed.

1. Temperature requirements

Storage temperature range: -40℃ - +60℃, exceeding this requires cooling treatment.

Operating temperature range: -10℃ - +40℃, for other temperature ranges, temperature control equipment needs to be installed.

Unit operating lamp surface temperature: ≤40℃, temperature exceeding the standard requires additional temperature control equipment.

2. Humidity requirements

Storage humidity range: 10%RH - 60%RH (when not lit and not installed), humidity exceeding 60%RH requires dehumidification treatment.

Dehumidification treatment method:

2.1 Environmental dehumidification, air conditioning dehumidification, and dehumidifying equipment control the environmental humidity to below 60% RH.

2.2 Screen moisture protection: The screen should maintain a certain frequency of use, with the screen being used at least 2-3 times per week; close the windows on rainy days; if the screen is not used for a long time and the humidity is high, it is recommended to keep the screen powered on, only disconnecting the signal input.

2.3 Screen dehumidification: Close the correction and keep the white screen on for 8-10 hours to observe the screen. Without closing the correction, keep the white screen on for 12 hours to observe the screen.

The operating humidity range is 10%RH - 90%RH. If the humidity exceeds this range, the use environment must be dehumidified before normal use can resume.

3. Handling for overdue storage

If the product has been stored for more than a month, it needs to undergo 6 hours of aging before it can be used normally. Aging method: Full brightness set as 10% 1hrs, full brightness set as 30% 1hrs, full brightness set as 60% 2hrs, full brightness

set as 80% 1hrs, full brightness set as 100% 1hrs (aging with brightness gradually increasing)

4. Dust protection requirements

No protection level. The display shall not be exposed to environments with a lot of dust, as dust entering the enclosure can cause components to short circuit and other malfunctions. For instance, during on-site renovations or modifications when there is a lot of dust, the screen needs to be covered for protection.

5. Corrosive gas protection

Corrosive gases in environments containing salt or acidic vapors in the air can cause corrosion of electronic components, crystallization, and leakage of electricity.

6. Others

The surface of the screen must not be wiped with alcohol or other organic solvents; it is recommended to use a lint-free cloth with water for wiping. Do not touch the surface of the screen directly with hands; wear rubber gloves when disassembling and assembling.

1.2 Mechanical Requirements

1. Before installation, please first confirm the total weight of the LED display (cabinet + mounting structure) to ensure that the mounting frame has a designed load-bearing pole. Before installation, it is essential to adjust the load-bearing bar to be level, and the mounting frame and load-bearing bar can withstand 3 times or more of the display's weight, to prevent risks such as the screen body sinking and misalignment due to weight.

2. The display installed on the ground must ensure that the bottom of the installation structure is level.

3. During product installation, it is necessary to install as required, handle gently, and avoid damage caused by external forces or collisions between products.

1.3 Electrical Requirements

1. The single product cabinet requires an input current of about 0.6A to 20A for different product specifications under AC220V, 60Hz mains electricity.

2. The on-site alternating current power capacity needs to be greater than the peak total capacity of the screen. Please consult our professional technical staff before construction. At the

main distribution cabinet, it is necessary to protect the LED display by installing switches, circuit breakers, overvoltage protectors, and ground fault circuit interrupters.

3. The display power distribution must be well grounded, and the steel structure must have a good grounding wire.

II. Installation of Display Frame Structure

2.1 Installation Tools

Hex wrench M5/M6 and cross, flathead screwdrivers, and other tools;

Tools required for structural frame inspection and verification include: tape measure, spirit level, cotton thread, plumb bob, laser level, etc.

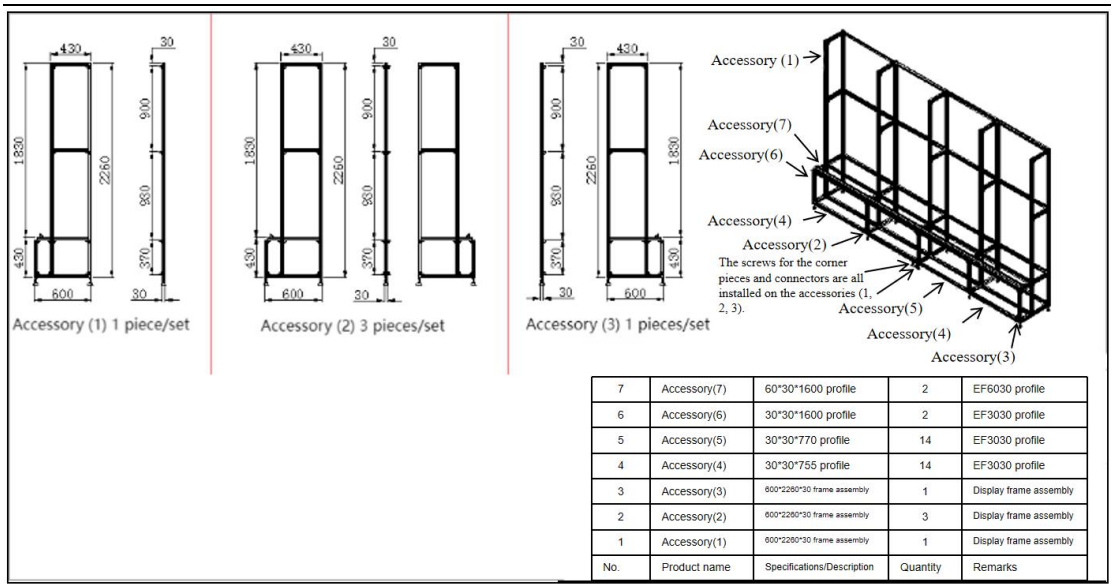
Figure 2-2-1 Laser Level

2.2 Necessary Accessories

When installing the display frame, you need M6 combination screws, T-nuts, and 30-degree angle brackets, etc.

2.3 Installation and Leveling of Floor-Mounted Display Frame Structure

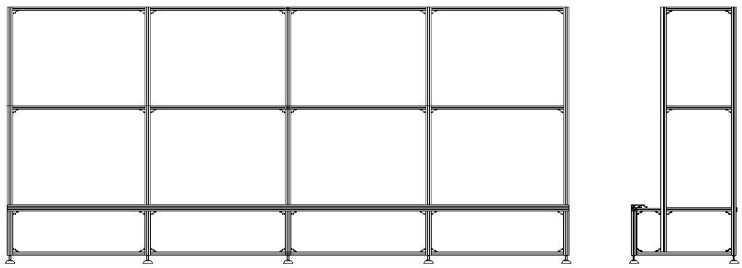
1. Manufacture the display frame according to the blueprint and on-site requirements. First, break down the blueprint of the display frame into the simplest way for production, to facilitate installation. As shown below, it is broken down into main components 1 to 7.



No.	Product name	Specifications/Description	Quantity	Remarks
7	Accessory(7)	60*30*1600 profile	2	EF6030 profile
6	Accessory(6)	30*30*1600 profile	2	EF3030 profile
5	Accessory(5)	30*30*770 profile	14	EF3030 profile
4	Accessory(4)	30*30*755 profile	14	EF3030 profile
3	Accessory(3)	600*2260*30 frame assembly	1	Display frame assembly
2	Accessory(2)	600*2260*30 frame assembly	3	Display frame assembly
1	Accessory(1)	600*2260*30 frame assembly	1	Display frame assembly

Diagram of Floor-Mounted Display Frame

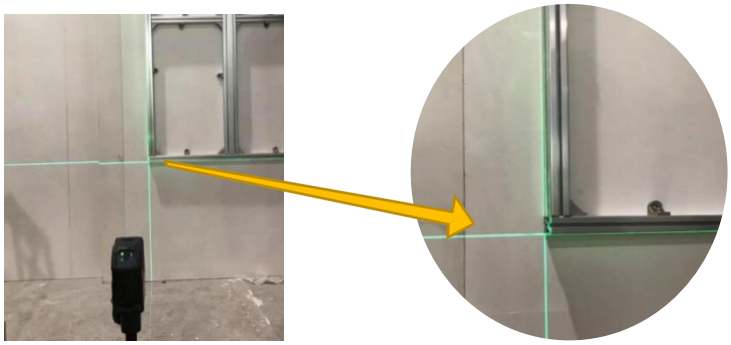
2. At the project site, determine the position, combine the pre-prepared accessory (2) with accessory (5) at the center and tighten the screws, then combine them with accessory (1) and accessory (3) using accessory (4), respectively. Finally, combine the horizontal bar accessory (6) and accessory (7) into their respective positions, and then check against the drawings to see if all accessories have been assembled in their correct locations.



Front view and right side view of assembled display frame

3. Level adjustment

1. After the display frame installation is completed. Adjust the rack to be level (both the load-bearing bar and the vertical bar must be tested to the optimal level, with left-right and up-down laser measurement deviations within 1mm); first, use a laser level to check the front verticality of the display frame accessories, and adjust for any deviations; then check the levelness of the display frame's load-bearing bar and horizontal bar accessories, ensuring that the horizontal bars are on the same level line; as shown in the figure below, the green line represents the vertical and horizontal baseline.



Vertical and horizontal level adjustment

III. Wall-Mounted Installation of Display Screen

3.1 Installation of Wall-Mount Strips

① Based on the on-site environment and the height of the display from the ground, determine the drilling positions for the upper and lower wall-mount strips. Use a spirit level to ensure they are level;

② The upper and lower wall-mount strips are each composed of wall-mount strip 1 and wall-mount strip 2, connected by a connector, which is fixed using six M6*14 countersunk head screws;

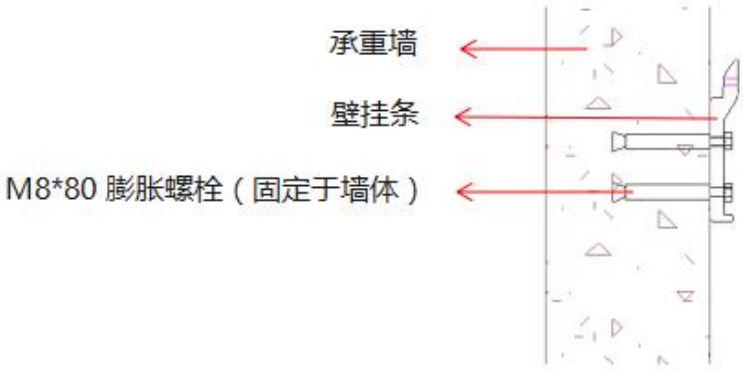
CN	EN
壁挂条 1	Wall-mount strip 1
壁挂条 2	Wall-mount strip 2

③ The drilling positions for the wall-mount strip 1 and wall-mount strip 2 are as shown in the diagram;

④ Use M8*80 expansion bolts to install at the corresponding holes, as shown in the diagram;

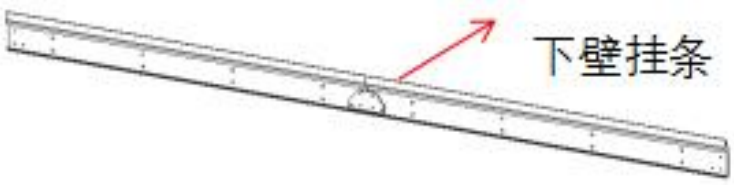
CN	EN
外六角螺丝	Hex head screw
加厚套管	Thickened sleeve
加厚垫片	Thickened washer
防滑螺母	Anti-slip nut

⑤ Side cross-sectional view of the wall-mount strips after installation;

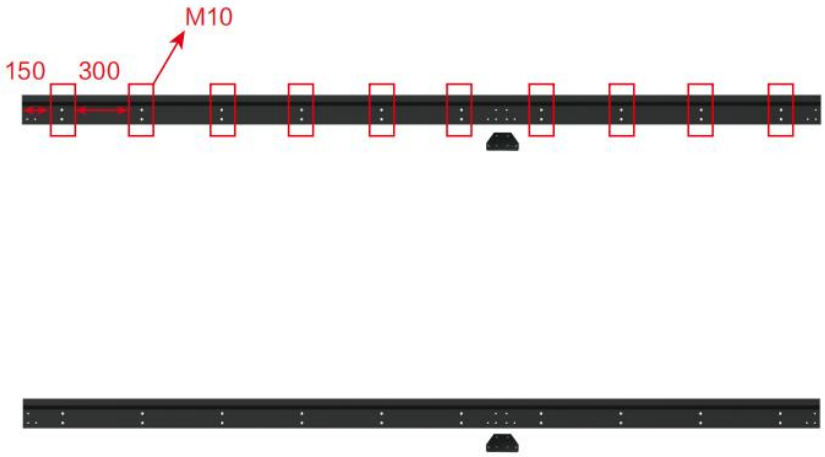


CN	EN
承重墙	Load-bearing wall
壁挂条	Wall-mount strip
M8*80 膨胀螺栓(固定于墙体)	M8*80 expansion bolt (fixed to wall)

⑥ Front views of the wall-mount strips after installation are as shown below;



CN	EN
上壁挂条	Upper wall-mount strip
下壁挂条	Lower wall-mount strip



⑦ Mark the positions of the holes at the corresponding points, use tools to drill holes at the marked points, each with a diameter of 10mm;

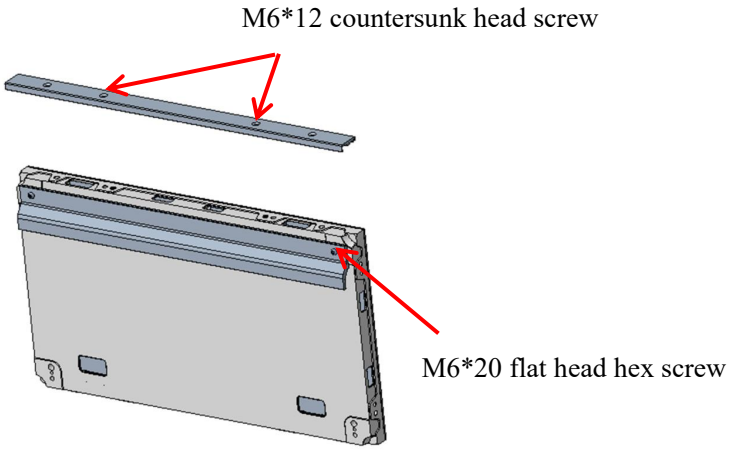
⑧ Check whether the wall-mount strips are installed correctly, ensuring: 1) they are level; 2) the distance between the upper and lower wall-mount strips is correct. Check and adjust as follows:

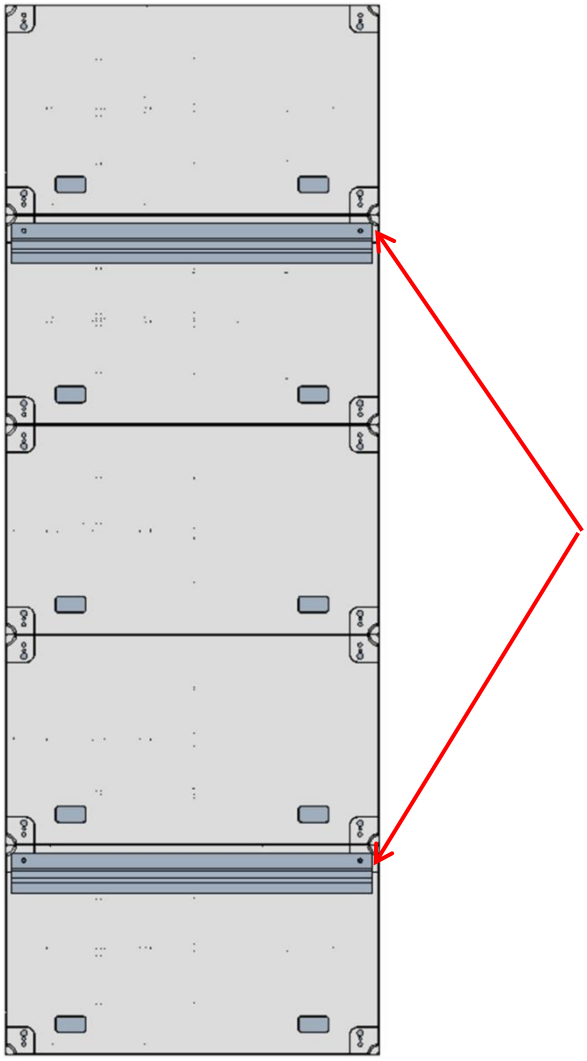
1) Use a spirit level to check if the wall-mount strips are level. If not, adjust by loosening the expansion bolts, gently pushing to level, and then tightening the bolts;

2) Use a tape measure to check if the distance between the upper and lower wall-mount strips is correct. If not, adjust by loosening the expansion bolts, gently pushing to fine-tune the distance, and then tightening the bolts.

3.2 Installation of Hooks

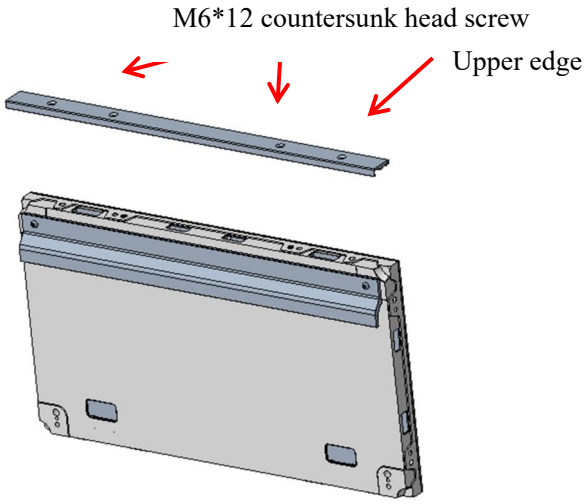
Use two M6*20 flat head hex screws to install the hooks on the corresponding cabinet. The positioning posts on the top cabinet need to be removed. Determine the installation position of the hooks on the single-row cabinet according to the installation schematic, as shown in the diagram:



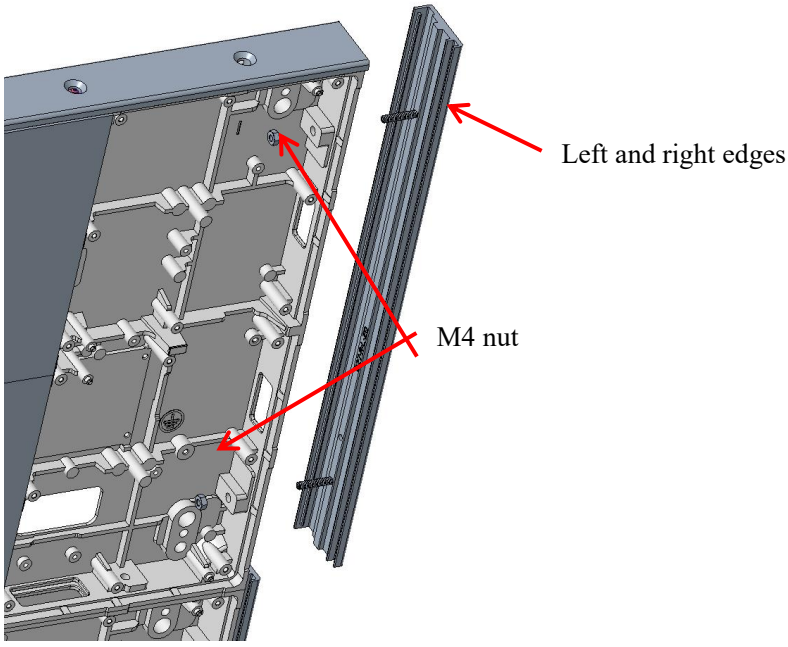


3.3 Installation of Edges

To install the upper edges, the positioning posts on the top cabinet need to be removed. Use two M6*12 countersunk head screws to fix the upper edges to the cabinet as shown in the diagram:



Use M4 nuts to fix the left and right edges, as shown in the diagram:

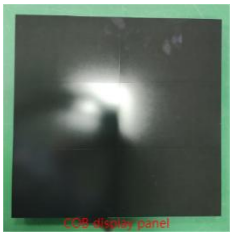


III. Display Module Installation

3.1 Install Components

Warm reminder: Please read the content of the safety notice carefully before installation. Close off the installation area in advance to ensure that all the installation requirements mentioned in the

previous section are fully implemented. After unpacking, please confirm the quantity, specifications, and whether the packaging of the product on site is intact.



Display panel

Cabinet

T-type power cord

Connector

Main power cord

M6×6 positioning screw

M8×12 bolt

M8×20 bolt

Note: M8×20 bolts are suitable for profile installation, such as the installation of 40*40 square tubes, using M8×60 bolts.

3.2 Rules for the Construction Sequence of Cabinet and Panel

As shown in the figure, the cabinet and display panel must be installed strictly in accordance with the coding and rules during installation, otherwise, it will cause abnormal screen display effects.
3.2.1 The cabinet construction is as follows: the bottom left corner is 1-1, the bottom right corner is 1-N, the second layer on the left side is 2-1....

Diagram of cabinet position for 3X3 screen

3.2.2 The panel construction rules are as shown in the figure below (different product models have different panel installation rules, as explained in the figure below):

Single cabinet 8-panel installation method:

Panel numbering principle 3-1-3 refers to the panel in the No. 3 position in the cabinet of 1st column and 3rd row

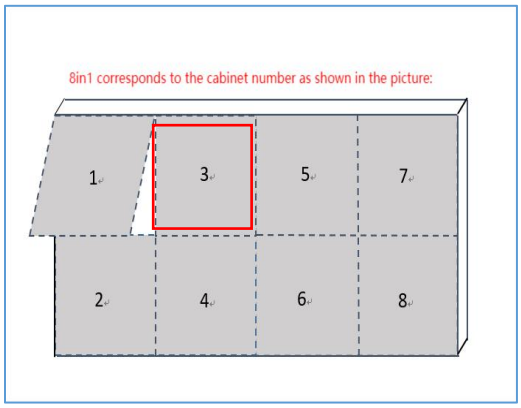


Diagram of the panel positions of a single cabinet

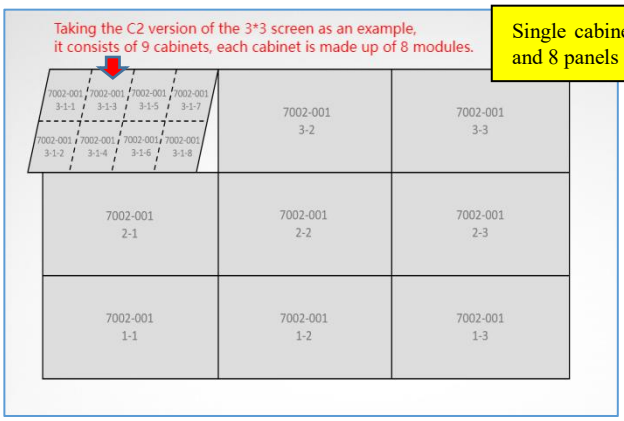


Diagram of the panel positions of a 3X3 screen

3.3 Cabinet Installation (This article is a demonstration of profile design and installation)

1. Install the spring clip nuts into the profile groove, placing two spring clip nuts for each connector.

2. Secure the connectors with M8*12 screws, which should be arranged according to the actual height intervals of the cabinets.

3. Remove the screws from the power cables of the first row of cabinets, and connect the cables with heads outward. Install the cabinets from the central position of the structure to both sides. Adjust the connectors to align with the cabinet mounting hole positions, and use a level to measure in the XYZ directions, to ensure the cabinet is correctly positioned.

Note: The original connectors must be directly locked on the cabinet to ensure the flatness of the cabinet and the overall assembly strength. If the steel structure on site does not allow use of the clip nut, it is recommended to purchase straight connectors or U-shaped connectors for combined

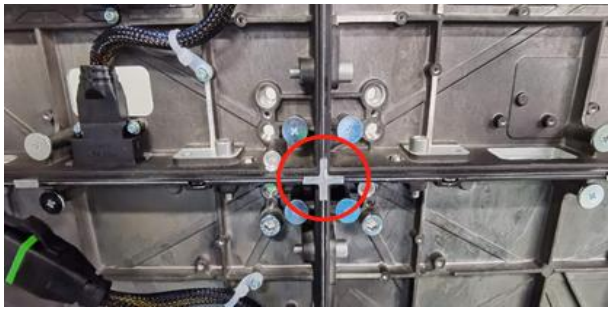
use, as shown in the figure below:




4. The cabinets are fixed together with M6X6 hex socket screws. Tighten them just enough to lock them in place. Tightening them too much will make it impossible to install the brackets later, and forcing the installation will damage the panel. If too loose, gaps will appear. The cabinets between the two units should remain on a flat plane without any obvious concave or convex phenomena.


5. Adjust the flatness of the top of the first row of cabinets, use the laser level to test the levelness again, and after confirming there are no abnormalities, proceed to install the second row of cabinets. From the second row upwards, the installation sequence of the cabinets is always from the middle position towards both sides.

6. The cross lines at the junction of the four cabinets must be vertical, and the contact surface must be flat with no unevenness felt by hand.



7. The full screen installation is completed, with no obvious misalignment between the cabinets on both sides. Then, use a level to measure, ensuring consistency front and back, horizontally and vertically. Connect the Ethernet cables and power cables according to the wiring diagram. After connecting the power cable, use a multimeter to measure whether there is continuity, and if there are any abnormalities, deal with them promptly before powering on.

3.4 Display Panel Installation

Before installing the panel, please check the panel number first (the panel installation must strictly follow the coding and coding rules, otherwise, it will cause abnormal screen display), usually facing the front of the display screen, the lower left corner is 1-1. First, install the bottom row of modules of the screen. The installation of the first row of modules should proceed from the middle to both sides. Use a laser level to adjust the horizontal direction of the first row of modules, ensuring that the modules are on the same line. Install the second and third row of modules in sequence, also following the order from the middle to the sides.

Note: When installing the panel, check if the power and signal cables on the cabinet are well connected before placing it on the cabinet. Then, adjust the gap between the modules. If there is any unevenness on the surface, it is necessary to use a magnetic suction tool to remove the panel again, check and adjust the cabinet and bracket, check for interference and remove any foreign objects, and after leveling, put the panel back on the cabinet. Repeat until leveled.

Installation steps:

1. Put on rubber gloves and then hold the bracket, to avoid leaving marks on the surface of the module. Since the screen has undergone chromatic calibration at the factory, and there is a

corresponding code on the back of the bracket, install from the middle to both sides according to the principle of mounting 1 on the left and 2 on the right.

2. The poor flatness of bracket panel due to physical errors can be addressed by adjusting the flatness of cabinet and the bracket accordingly to meet the requirements.

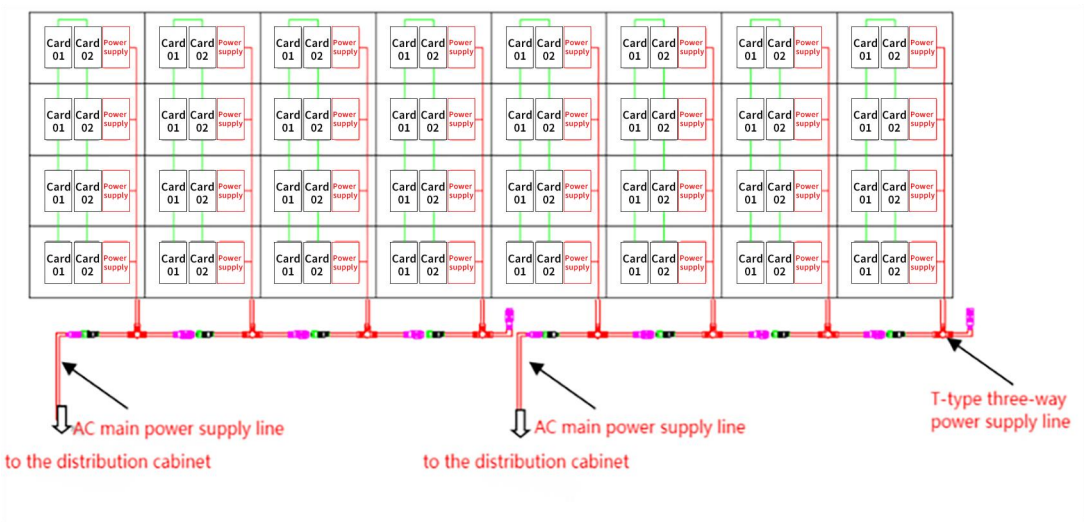
3. Make sure the edge brackets are not misplaced when the entire screen is installed to achieve the desired installation effect.


Chapter II. Display Power Supply and System Wiring

I. Module AC Power Cable Connection

Connect the power cables according to the rules shown in the image example. The input for each column is connected with a T-type three-way cable, with one end of the three-way cable receiving input from the main line, another end outputting to the next three-way cable, and the middle output connecting to the vertical module. Adjacent vertical modules are connected with the corresponding power cables.

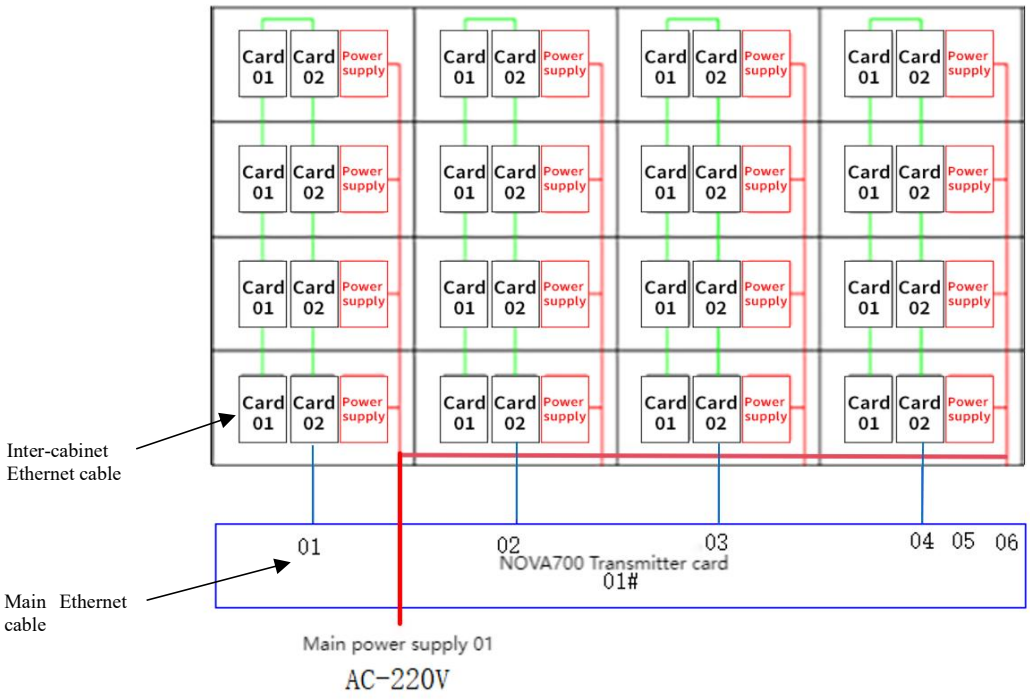
Note: The T-type three-way power cable can carry up to 15 cabinets, and the main power cable can carry up to 30 cabinets. The current of the single-phase air switch must be above 40A.



Module AC power cable connection diagram

II. Module Signal Cable Connection

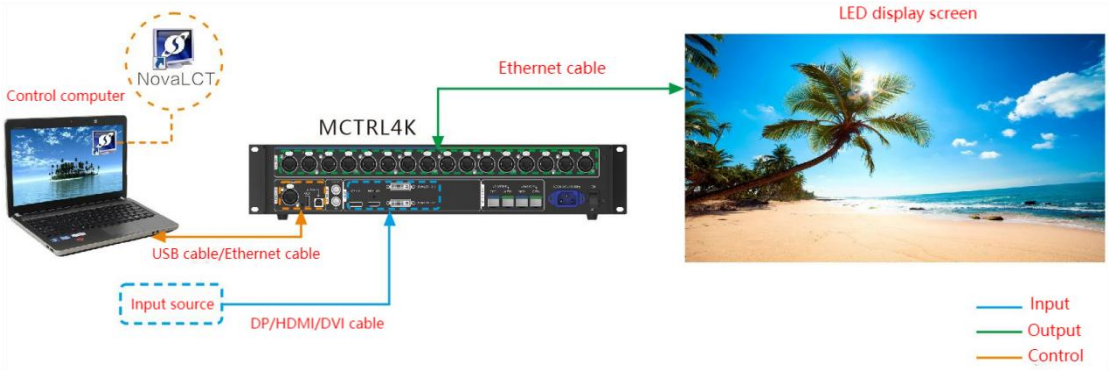
As shown in the figure below, the main Ethernet cable and the cascading signal Ethernet cable are connected according to the diagram.



Screen module Ethernet cable connection diagram

Note: The above diagram of the controller is for reference only, subject to the actual factory configuration.

III. System Framework Diagram



3-3 system framework diagram

Note: The above connections are for reference only, subject to the actual controller configuration.

Chapter III. Maintenance and Cleaning of LED Display

I. Precautions for Display

Small pitch LED displays are high-precision, high-density electronic products, belonging to precision-protected products. In daily use, they need special protection, especially against static electricity, dust, moisture, and physical impact.

1. Static electricity

LED devices are electroluminescent devices, very sensitive to electric current. Human body static electricity can directly break through the internal PN junction, so electrostatic protection is the most important part. Please do not touch the LED directly with your hands during use.

2. Dust

The screen is designed according to the indoor IP3X standard, and the interior of the cabinet is a high-density electronic circuit. Small-pitch LED displays should be dust-proof and undergo regular dust cleaning.

3. Moisture, cooking fumes

Due to their high density and ultra-small size, LED lights cannot be waterproofed. Moisture easily causes short circuits in electronic products, leading to product failures. Therefore, LED displays need to be protected against moisture and splashing water; otherwise, they may malfunction or even catch fire and burn out the display screen.

4. Physical impact

The display screen cannot withstand the impact of metal objects. An accidental collision can

damage or even break the LED or circuit board, resulting in dead LEDs or damaged circuit boards causing the entire module to not light up. Therefore, it is very important to guard against physical impacts.

II. Display Maintenance

1. Control PCs, video processors, and other devices should be placed in a dry, ventilated, and clean environment, avoiding direct sunlight on the equipment. The ambient temperature is best maintained between 18°C and 25°C.
2. Do not place containers filled with water on the machine enclosure, to prevent water from flowing into the machine and causing damage. Do not let any foreign objects fall into the machine case.
3. When plugging or unplugging the power cord and each signal cable, the power of the corresponding device should be turned off first to prevent burning out the interface components.
4. Control equipment should avoid interference from electromagnetic fields (such as non-magnetic speakers, loudspeakers, etc.)
5. Regularly clean the exterior of the equipment and remove dust from the inside, which can be done at certain intervals, and it is recommended to do it at least once a week.
6. When starting the computer, it is required to first turn on the monitor's power switch and then turn on the host’s power switch to prevent the instantaneous current pulse from affecting the host. When shutting down, it is exactly the opposite.
7. It's important to keep backups of some important data or files.
8. Do not plug or unplug various communication connectors at will to prevent damage.
9. Protective measures should be taken when laying communication lines.
10. On-site air conditioning control: The outlets of on-site cooling equipment must not blow directly at the product, to both the front and back of the product (it is recommended to use cabinet air conditioners), and the air conditioning temperature should be set at 25±1 ℃.
11. Product Usage Frequency: Use the product at least twice a week, with each usage lasting no less than 2 hours. It is recommended that the product can also be powered on in a black screen state during normal times.
12. The ventilation inside the display should be good, and the temperature and humidity difference between inside and outside the display must not exceed 5 degrees.

III. Maintenance of the Power System

1. Conduct daily inspections of the power distribution system and solve problems promptly upon discovery.
2. Regularly clean the inside of the distribution cabinet with a dust blower or air gun, and tighten

all the terminal screws inside the distribution cabinet. It is recommended to do this once a month.
3. During the thunderstorm season or when not in use for a long period, disconnect the system's power supply.
4. The maintenance of the power system should be carried out by certified electricians and live maintenance is not allowed.

IV. Cleaning of the Display

1. Display Cleaning Method

1. First, gently wipe the display screen with a soft cloth, without applying too much force. The main purpose is to wipe off the dust on the surface of the display screen.
2. Directly and evenly spray clean water onto a soft cleaning cloth, then use the cloth to wipe the display screen in a fixed direction.
3. Once again, gently wipe the surface of the display screen with a dry soft cloth.

2. Screen Cleaning Precautions

1. Use a soft cloth to wipe the screen. You must absolutely not use rough cloth or paper towels to wipe the screen.
2. Do not clean the screen with alcohol and other chemical organic solvents. COB packaging screens are coated with a special coating on the screen. Once the screen is wiped with alcohol, it will dissolve this special coating, causing adverse effects on the display or even damage.
3. When there is a lot of dust on the screen, use a dry cleaning cloth to flick the dust away. The force used for cleaning and wiping should not be too strong.

Chapter IV. Common Display Faults and Troubleshooting Methods

Phenomenon	Fault	Solution
No display on the whole screen	AC power not turned on	Turn on the power
	Computer not turned on	Turn on the computer and launch the control software
	Communication line disconnected	Check the communication line and reconnect correctly
	Transmitter box damaged	Replace the transmitter box
	Software settings incorrect	Change the software settings to match the control system

		again
	No DVI signal output from PC	No DVI/HDMI signal output to the controller
	Components inside distribution cabinet damaged	Check and replace faulty components
Screen flickering	Control system malfunction	Replace the control system
	Loss of certain signal in communication line	Check the communication line and reconnect correctly
	Abnormal voltage of control system	The control system voltage is 3.75V
	Software settings incorrect	Change the software settings to match the control system again
Multiple consecutive cabinets not lit	No AC power source	Check if the 3-core aviation plug is securely connected; Check if the 3-core cable is broken
	No signal input	Check the green light on the receiver card. If it does not blink: 1. Check if the Ethernet cable plug is securely connected; 2. Check if the Ethernet cable is open or short-circuited. 3. Check the 3.75V power supply of the receiver card;
Single cabinet with no display	Power not connected / Power supply damaged	Check the power cable/ Replace the power supply
	Signal line between cascaded screens not connected	Connect the signal line between cascaded screens
	Receiver card damaged	Replace the receiver card
	HUB board malfunction	Replace the HUB board
Software	Software cannot be opened	Reinstall the software
LED module display abnormal	LED light not on	Replace the module
	LED strip or rectangular display abnormal	Replace the module
Image distortion	The screen is normal, only the image display is disordered	Incorrect connection sequence of Ethernet cables, ensure correct mapping connection.