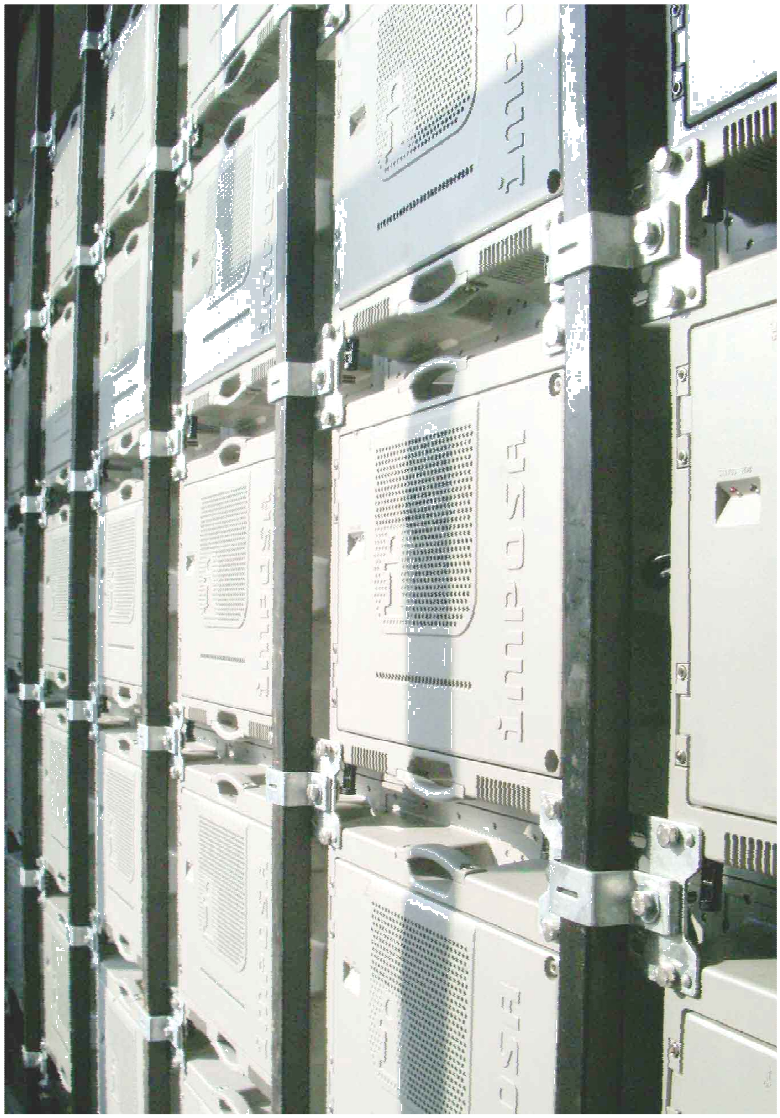

IMPOSA® LED Display

Installation and Maintenance

MANUAL

Version: V1.7

Special Notes

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Revision History

Revision	Date of Revision	Description	Revised by
1.0	2006-12-27	First Edition	Sureone
1.3	2007-4-14	Add trouble shooting.	Sureone
1.4	2007-11-9	Modified new color software to be Imposa Tools. Add version history.	Sureone
1.5	2008-01-08	RS485 GND; 5002 SW1 function	GWQ
1.6	2008-04-30	QS5002L	GWQ
1.7	2009-10-22	PSU， the serial number on the cabinets	GWQ

Table of Contents

Outline

This manual consists of 3 parts:

Part 1: Design of the frame. Users can find the introductions about the cabinet, use of the accessories, ways of installation, design of the main frame and the other issues that need attention.

Part 2: Connection of the display. This part tells the users how to install the cabinets, and how to connect the signal and power wires and cables.

Part 3: Commissioning and Maintenance. In this part, users will be able to find out how to set up, test and maintain the display. Daily maintenance tips are also given. They will also find the explanations for the functions and usage of the control boards.

Part 1 Design of the Frame

1. The cabinet and the display

Dimension for the Imposa® cabinet (as shown in Figure 1): 480mm X640mmX150mm：

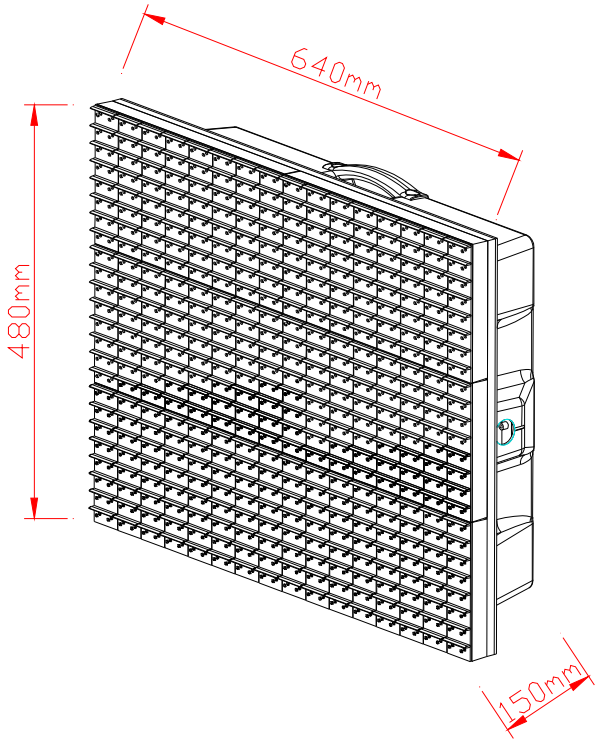


Figure 1

As can be seen in the following Figure 2, a LED display screen comprises “m” rows and “n” columns of the Imposa® cabinets. The front sizes of the cabinet are : 480*m X 640*n：

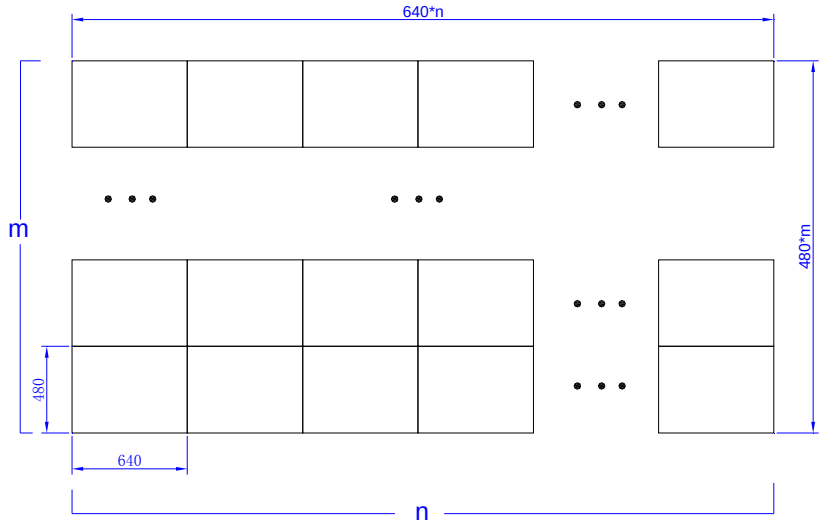


Figure 2

In order to make the installation work much easier and more convenient, we strongly recommend the users assemble the cabinets according to the serial number that we had put on the cabinets. As the following drawing shows, we have put the number label A (0,0) at the upper right corner of the back cabinet. Other cabinets are numbered incrementally on the row and column in the same way. Figure 3：

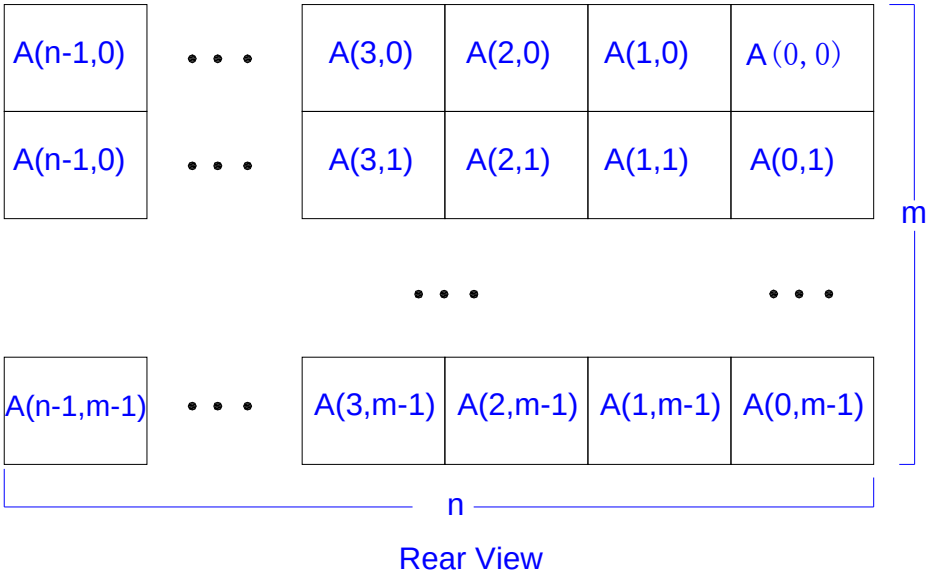


Figure 3

2. Use of installation accessories

2.1 The connection bracket

To ensure the correct installed position, the 4 adjacent cabinets are fixed with a bracket, as the following drawing shows.

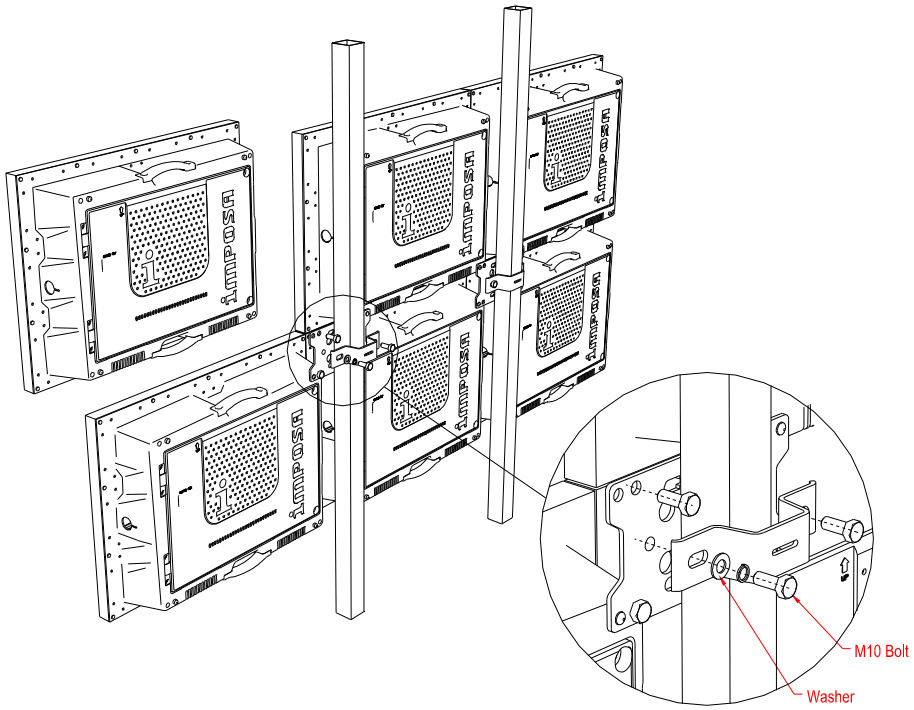


Figure 4

Drawing of the backboard:

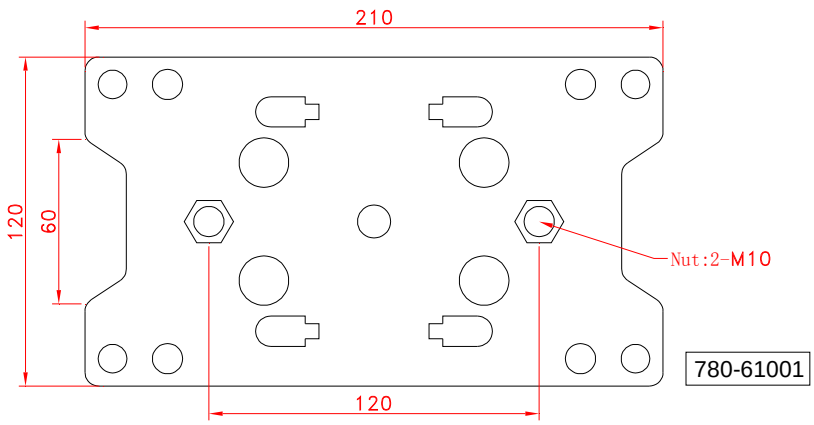


Figure 5

2.2 The Bracket

As shown in Figure 4, the bracket is used for fixing the installation plate to the pre-designed column bar.

The bracket and installation plate are installed onto the square bar. When the screws are not fastened, the bracket and the installation plate can slide in four directions. This is to allow precise positioning of cabinets.

Drawing of the bracket:

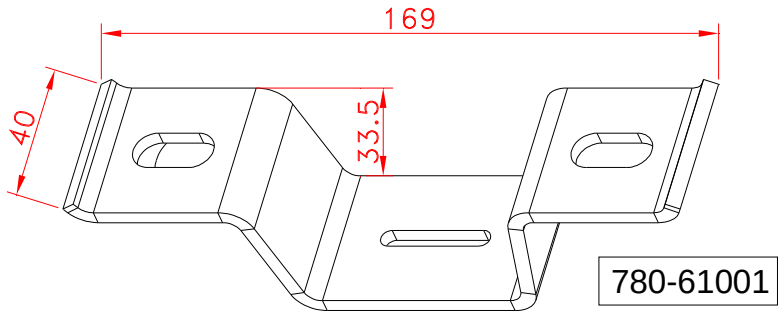


Figure 6

2.3 To install the positioning bar

Before installing any cabinet to the support structure, a positioning bar must be installed first so

as to guarantee the horizontal level of the screen. This positioning bar is installed at the bottom of the support structure.

There are two types of positioning connecting bars: 1920mm long & 1280mm long. 1920mm is for connecting 3 cabinets in a string, while 1280mm is for 2 cabinets in a string.

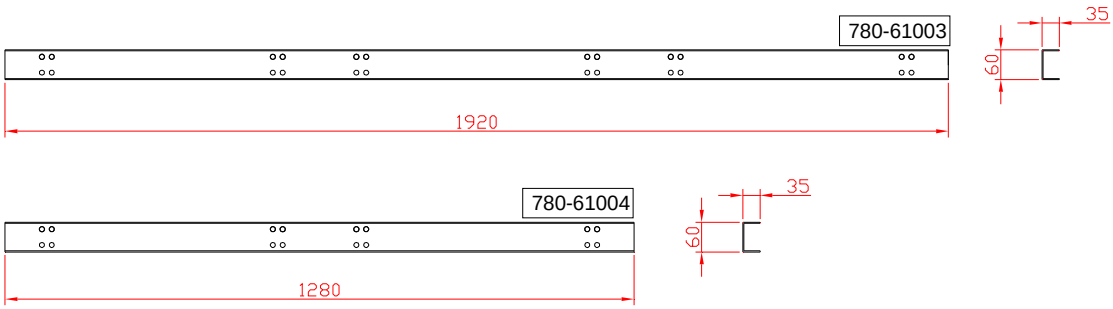
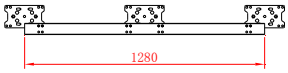


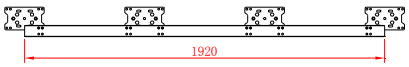
Figure 7

Users can choose either type of the bars according to the number of the cabinets and dimension of the display for positioning and connecting. For example：

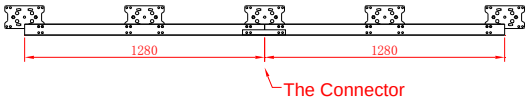
2 rows of cabinets



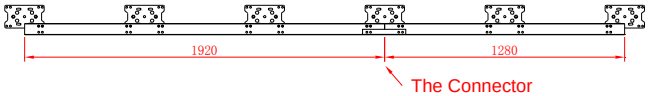
3 rows of cabinets



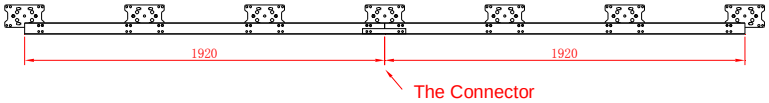
4 rows of cabinets



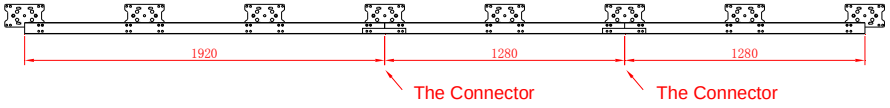
5 rows of cabinets



6 rows of cabinets



7 rows of cabinets



-
-
-

Figure 8

2.4 The fastener

To fix the brackets: bolt M10X50, SpacerΦ10, Washer Φ10

To fix the cabinet: bolt M10X25, SpacerΦ10, Washer Φ10

To fix the positioning bracket: bolt M10X25, SpacerΦ10, Washer Φ10

Note: Metric system is used for all the thread and size of the bolts.

2.5 Water proof seal pipe

The water proof seal pipe is used to seal the connection hole that is used as a passage for the power and control cables.

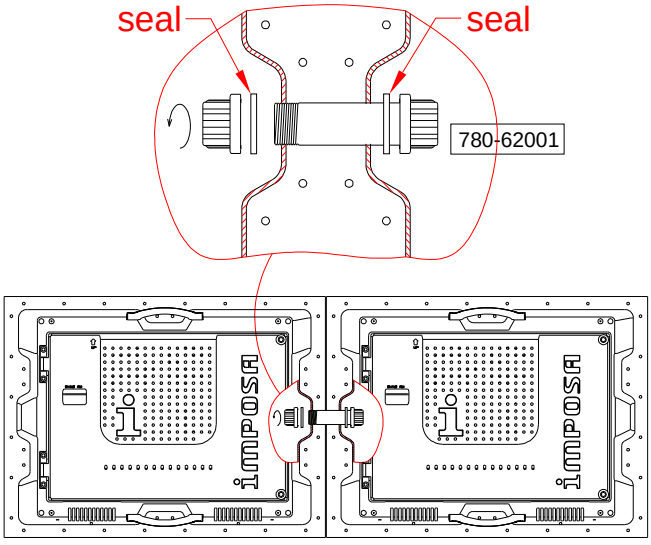


Figure 9

2.6 Input cable seal pipe

Usually, the protecting input seal pipe is on the right side of the cabinet if you look from the back side. When the screen is very wide and there are many cabinets in a row, such seal pipes are found on both sides. These seal are used for protecting the power cords and the input signal wires from the signal distributor LDU 3000.

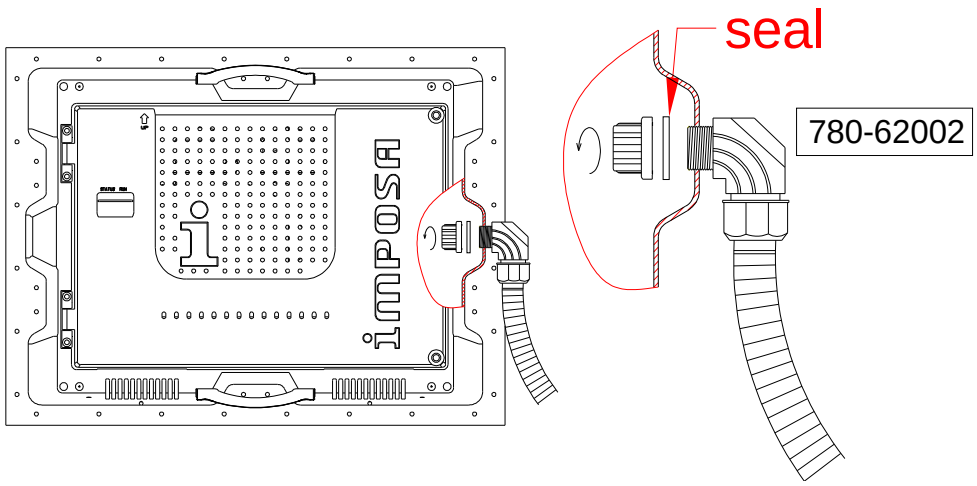


Figure 10

2.7 Signal wires (for the convenience of user installation, these cables are often packed inside the cabinets when leaving the factory)

Signal connection between the cabinets.

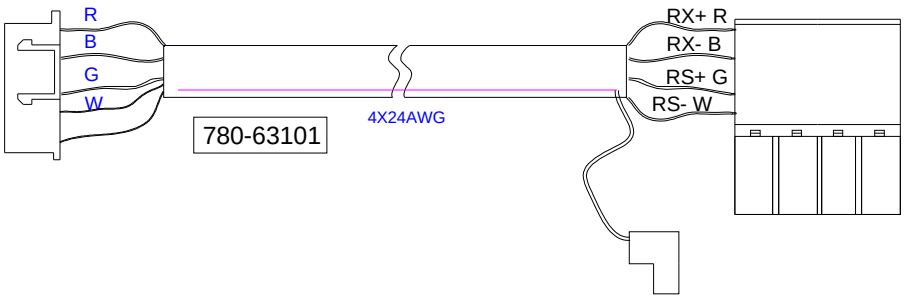


Figure 11

Note: The signal wires from LDU3000A HUB to the 1st column cabinets are usually packed in the HUB box.

2.8 Power cord.

Used to connect power between cabinets: 3X12AWG， L=1500mm

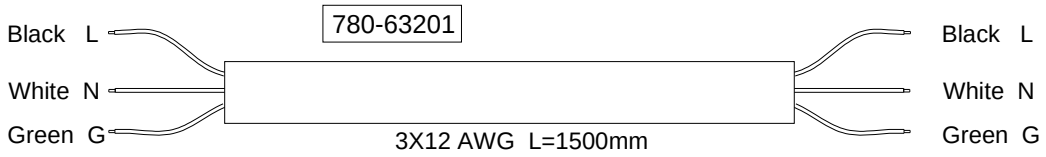


Figure 12

Notes: Power cables from the power distributor to the cabinets are not provided by the LED screen factory. Users have to prepare them according to the installation location.

3. Ways of installation

3.1 Single pole supporting

Single pole supporting is ideal for the open area, which is flexible in installation and neat in appearance. This way of installation is less likely to be restricted by the location of installation or by the size of the display.

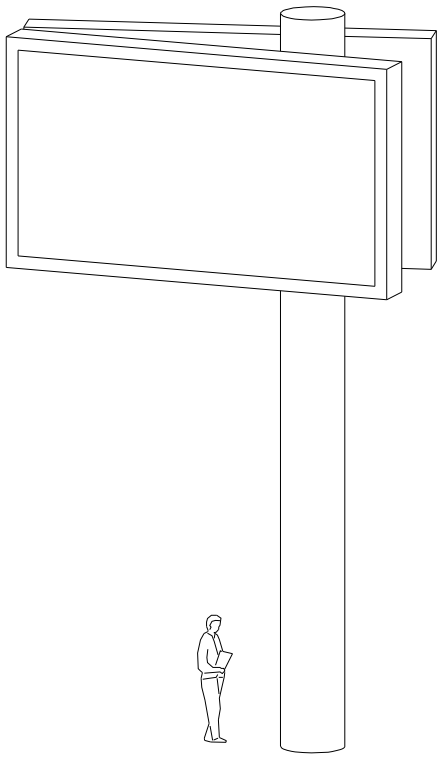


Figure 13

3.2 Two poles supporting

Two poles supporting can be considered if the display is large. This way of installation is not restricted by the location or the size, either. Usually, the display will be put together with other signs and have housing and border decorations.

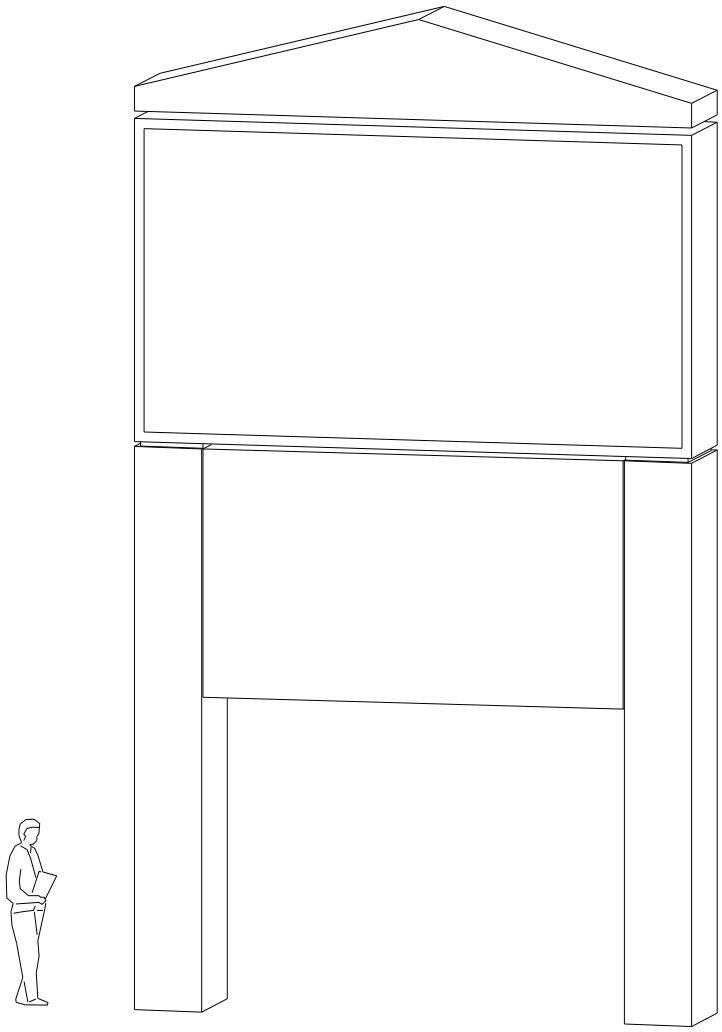


Figure 14

3.3 Installed on a platform

In such way of installation, the screen is seated on a platform on a building. Under this circumstance, users have to consider the weight of the sign, wind area and the loading rate of the building.

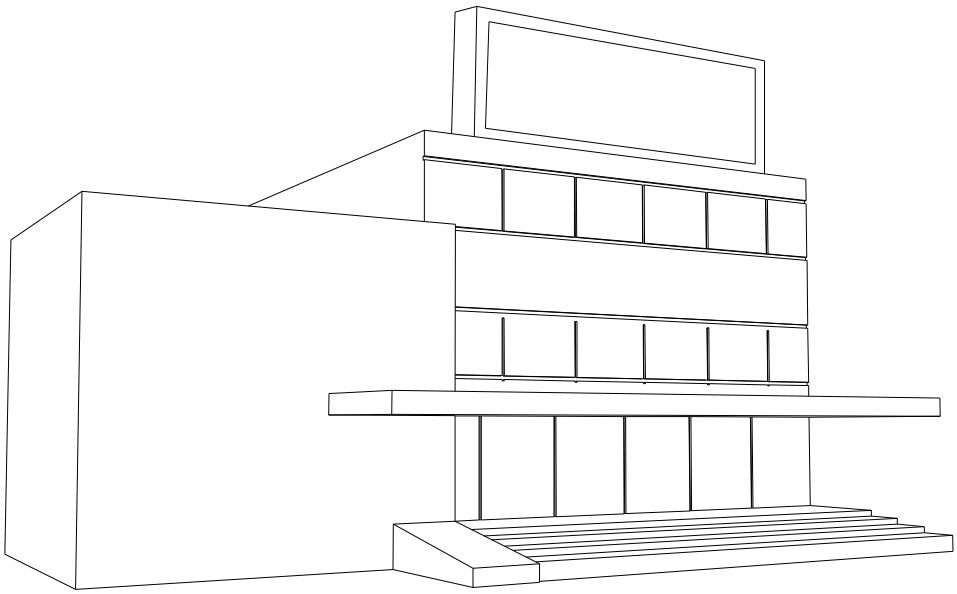


Figure 15

3.4 Wall mounting

In this method of installation, the LED screen is attached to the wall of the building. Users need to pay attention to the loading rate of the wall.

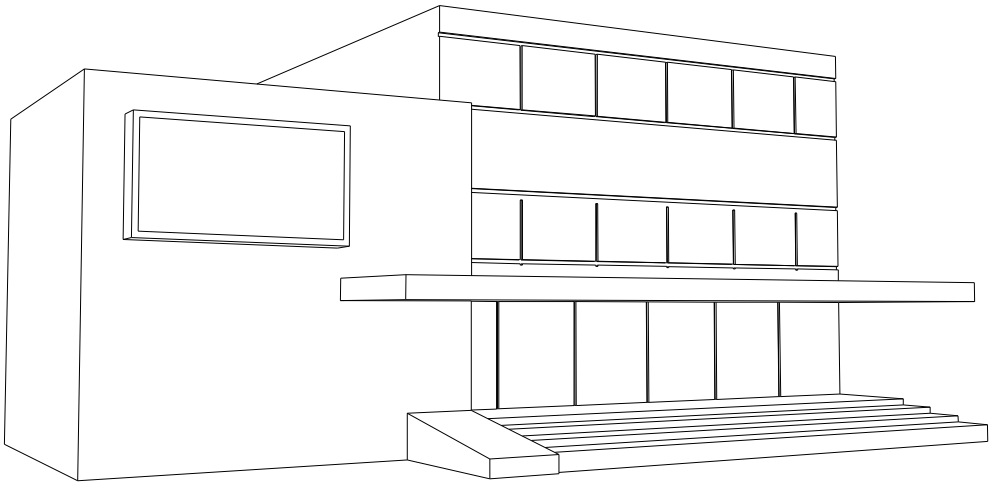


Figure 16

4. Design of the main frame

4.1 Confirmation for the measurements of the display and size of the frame.

The dimensions of the display are determined by the resolution of the display or by the numbers

of the modules (W X H). For the convenience of installation and housing or decorative structure, the size of the frame is usually built larger than the dimensions of the display *（(W+230）X (H+210mm)）, as the following drawing shows.*

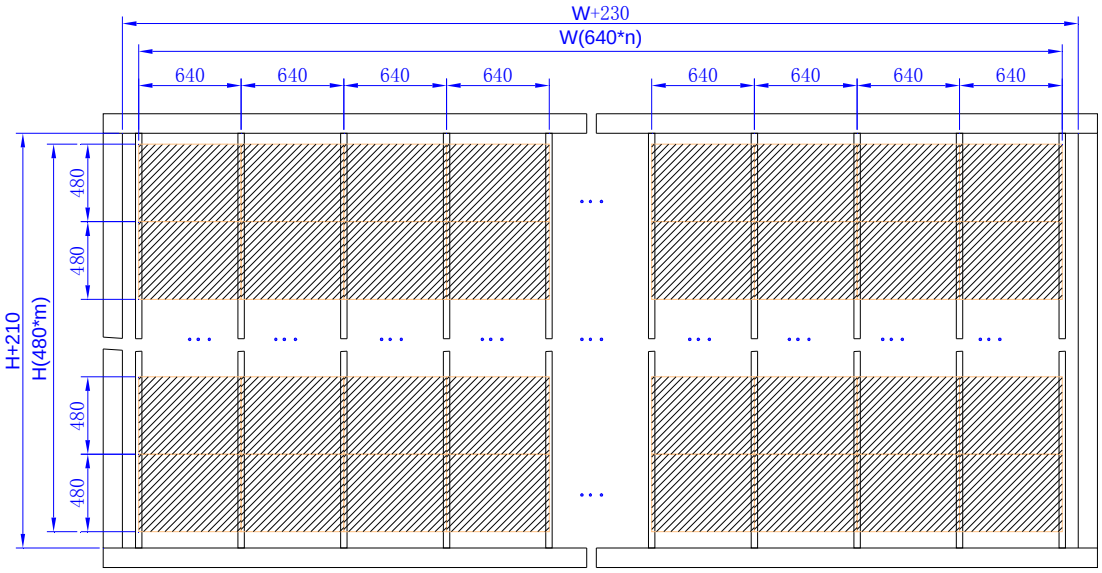


Figure 17

4.2 Example of the design for the main frame:

The main frame refers to the frame structure for supporting and assembling the Imposa® cabinets.

4.2.1 Materials of the main frame

Under usual circumstance, the material and size of the main frame need to be determined at the installing location. In order to make the welding easier, we suggest the client use square pipes as the material.

The size of the vertical installing bar is determined by the size of the cabinet fixation bracket. The size should be moderate, neither too large nor too small. We suggest the size of 45mm X 45mm X 4mm (1 3/4” X 1 3/4” X0.16”) for these square pipes.

4.2.2 Since the front face of the main frame is the surface for attaching the display cabinets, users should pay attention to the horizontal distance (640mm) between the two vertical installing bars. Users should assure that the bars are perpendicular or parallel to each other. What is

more, attention should be paid to the welding strength of the upper and lower beams.

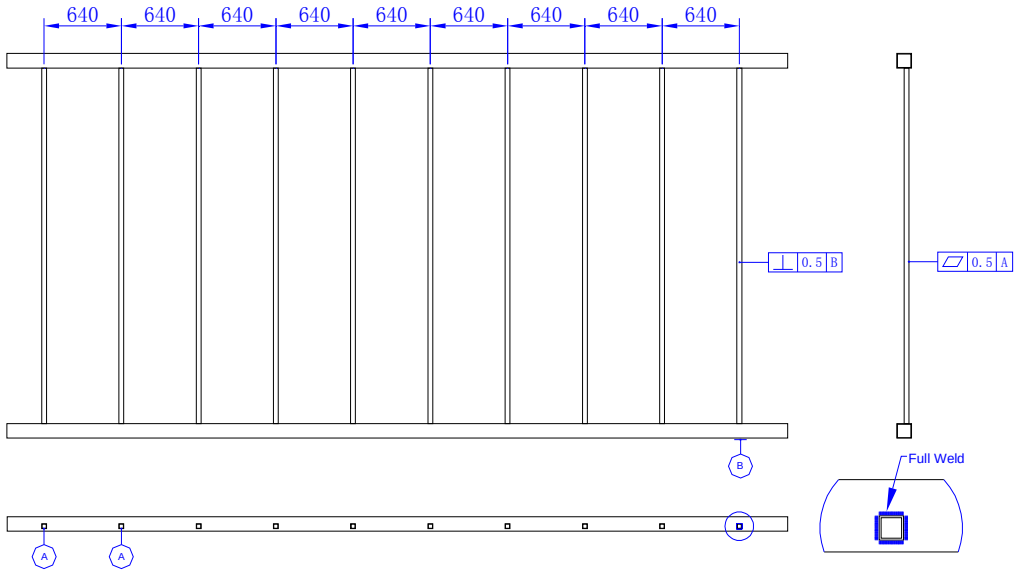
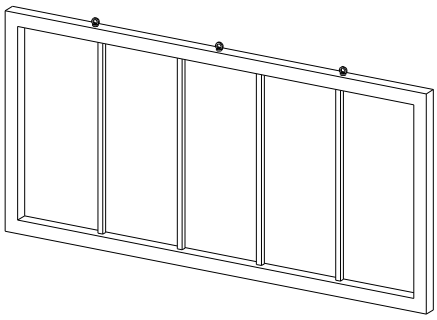


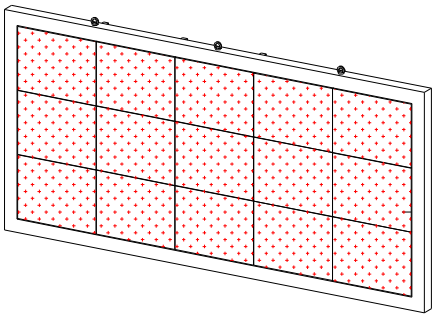
Figure 18

4.2.3 Generally, the main frame will be assembled together with the display in house or in the factory. After testing, the frame and the display attached to it, shall be transported to the installation site. Then the whole structure shall be hung up, seated and welded to the site supporting structure.



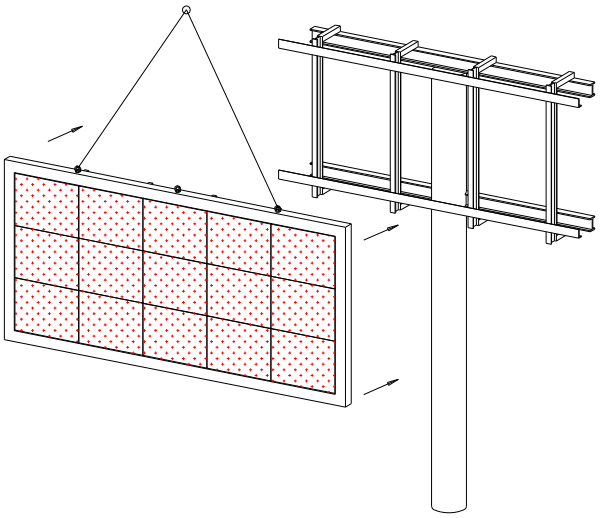
Main frame

Figure 19



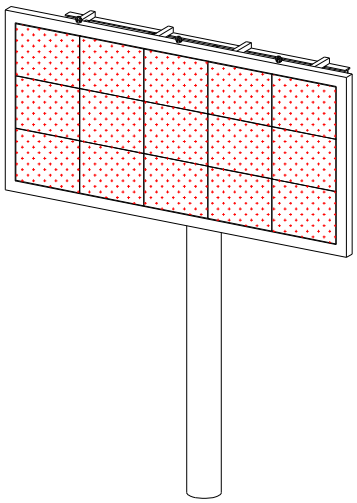
Assemble and commission in factory

Figure 20



Hoisted at site

Figure 21



Overall effect

Figure 22

4.2.4 If the display is a large one, for example, using more than 10X6 Imposa® cabinets, we suggest that a thicker main frame be used. Necessary reinforcement is also desirable. Consulting an architect for professional advice on structure strength and construction is very important. Otherwise, the screen may be deformed during or after hoisting and installation.

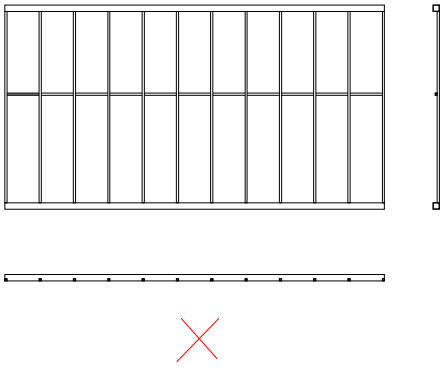


Figure 23

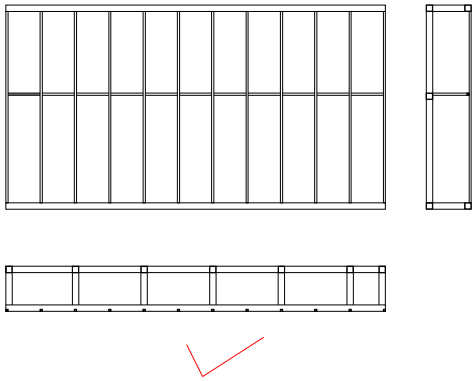


Figure 24

4.3 Decorating the borders

If there is any decorating border or housing around the display, the separation gap between the

cabinet and the wrapped border should be not less than 10mm.

If the user has no plan to build any decorating border for the display, we recommend that the user take the frame that provided by the factory as the decorating boarder to cover the installation connecting bar.

4.4 Air flow and the heat radiation problem

Generally, a display with a simple structure which is exposed to the open air without a housing or enclosure is better for dissipating heat.

When a display is built inside a wall or similar surface, or is enclosed in a housing, it will be necessary to consider dissipating heat from the structure.

Shutter louvers, exhaust fans, or even air conditioners can be used for heat radiation.

As is known to all, the hot air flows from below to the top. In this case, the air intake is designed at the bottom of the display, while the air outlet is on the top.

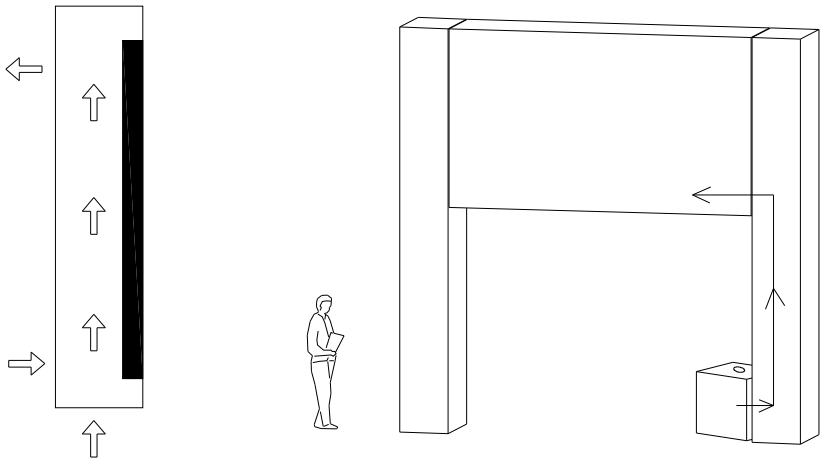


Figure 25

Users will be able to read the temperature of the display through the software. When the temperature of the display is up to 60□, the control system will automatically turn the display to under the 50% brightness status. When the temperature reaches 70□, the display will automatically turn to the black screen protection status.

4.6 Viewing angle of the display

Usually, the surface of the display is perpendicular to the horizontal plane.

Figure 26

In order to guarantee the viewing effect, sometimes the display needs to be tilted towards the front, especially under the following 2 circumstance: 1)When the location of the display is far too high for the viewer, and the viewing angle is beyond 25°; 2) The viewing distance is restricted due to the limited space. Users need to create a viewing angle between the display and the ground. A slanting angle installation can greatly increase the viewing effect.

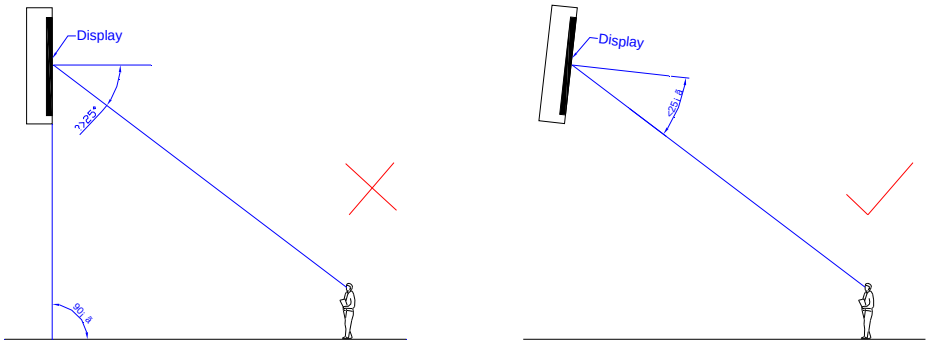


Figure 27

4.7 Maintenance access

If the height of the display exceeds, for example, 5 stacks of cabinets (2400mm), we will have to think of making a maintenance access to make the service job easier.

The maintenance access, with the width of over 600mm, should be designed exactly in the middle of the two rows of the cabinets. To make the connection of the installation plate much easier to fix, the distance between the maintenance platform and the installation plate should be at least 100mm apart. See figure below：

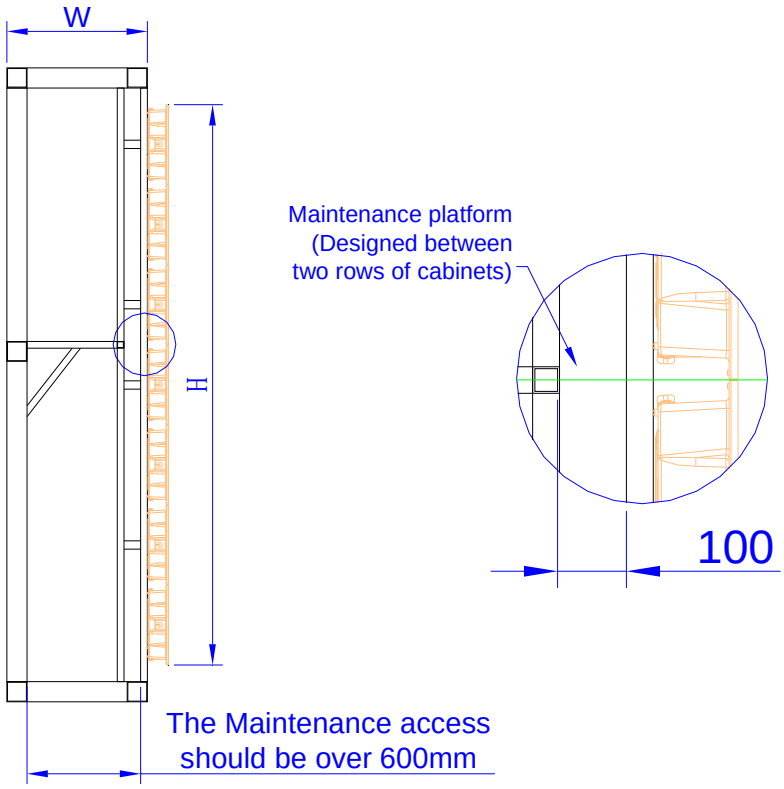


Figure 28

Part 2 Installing and Connecting the Display

1. Install the horizontal fastener

First of all, the client should make sure that the fastener itself is positioned horizontally. Then fix the installation plates to the fastener.

The installation starts with the 1st row of the cabinets from the bottom. It is important to confirm the horizontal level and the bottom position of the 1st row.

Users can get the bottom position according to the dimensions of the frame structure or through calculation of the size of the display.

It is better that we fasten the steel bar with the installation plate at the bottom of the 1st row of cabinets. By doing so, we can be sure that the 1st row of the cabinets are horizontal.

□Fasten the bar steel with the installation plate on the bottom of the cabinets

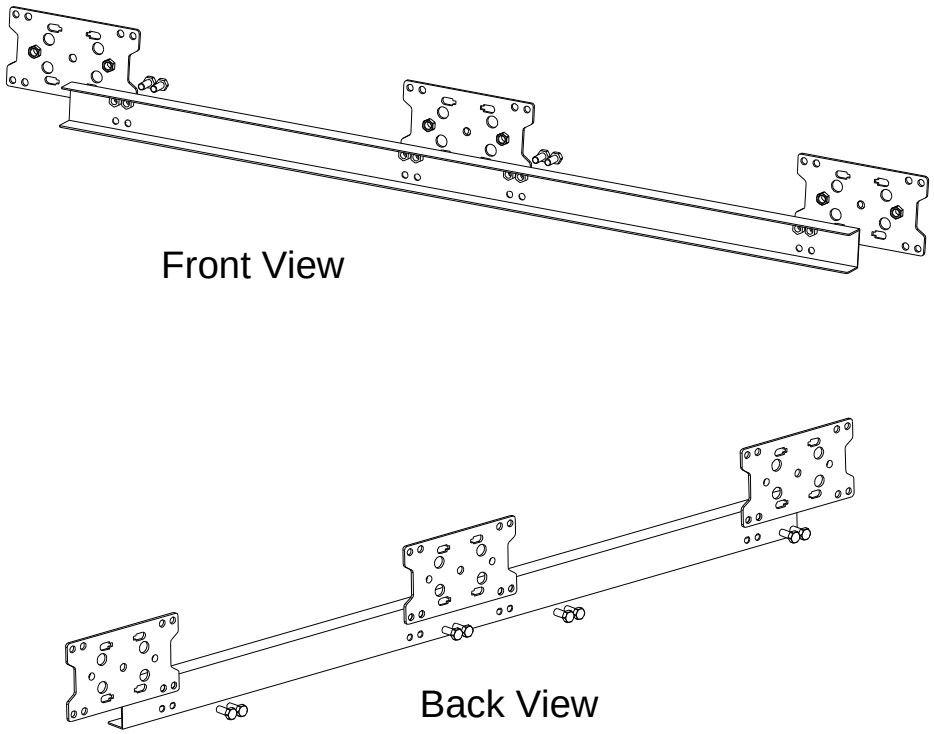
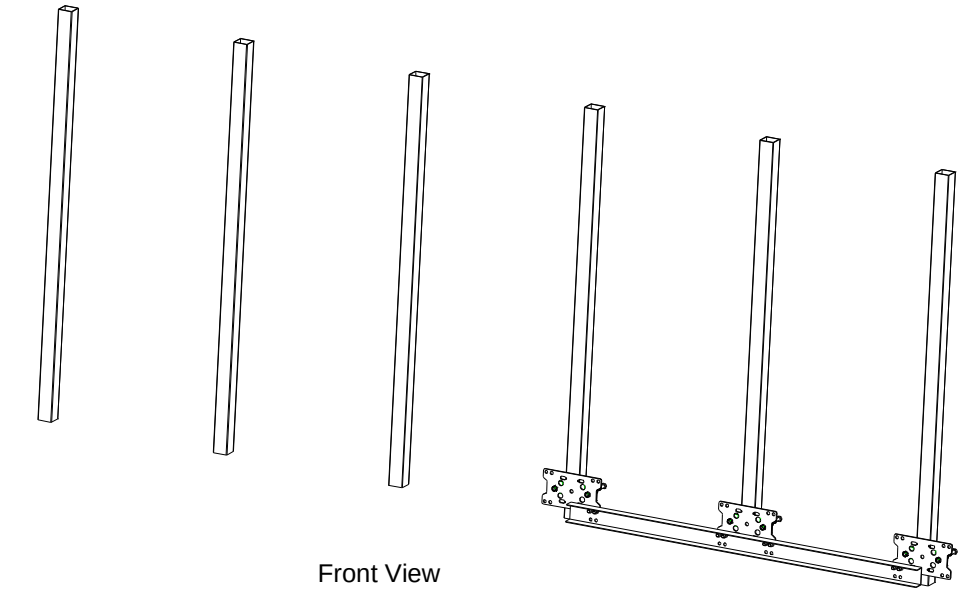
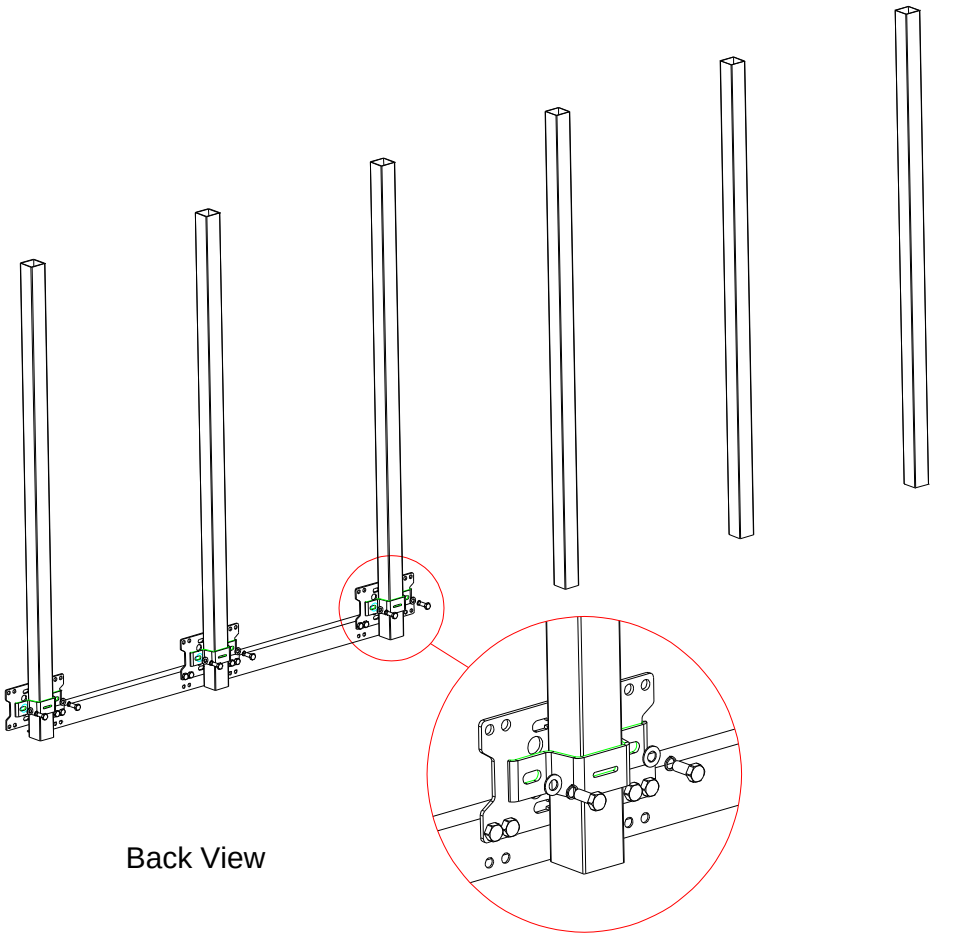


Figure 29

- Fix to the frame. Be sure the connecting bars are level.



Front View



Back View

Figure 30

Connection of the bars

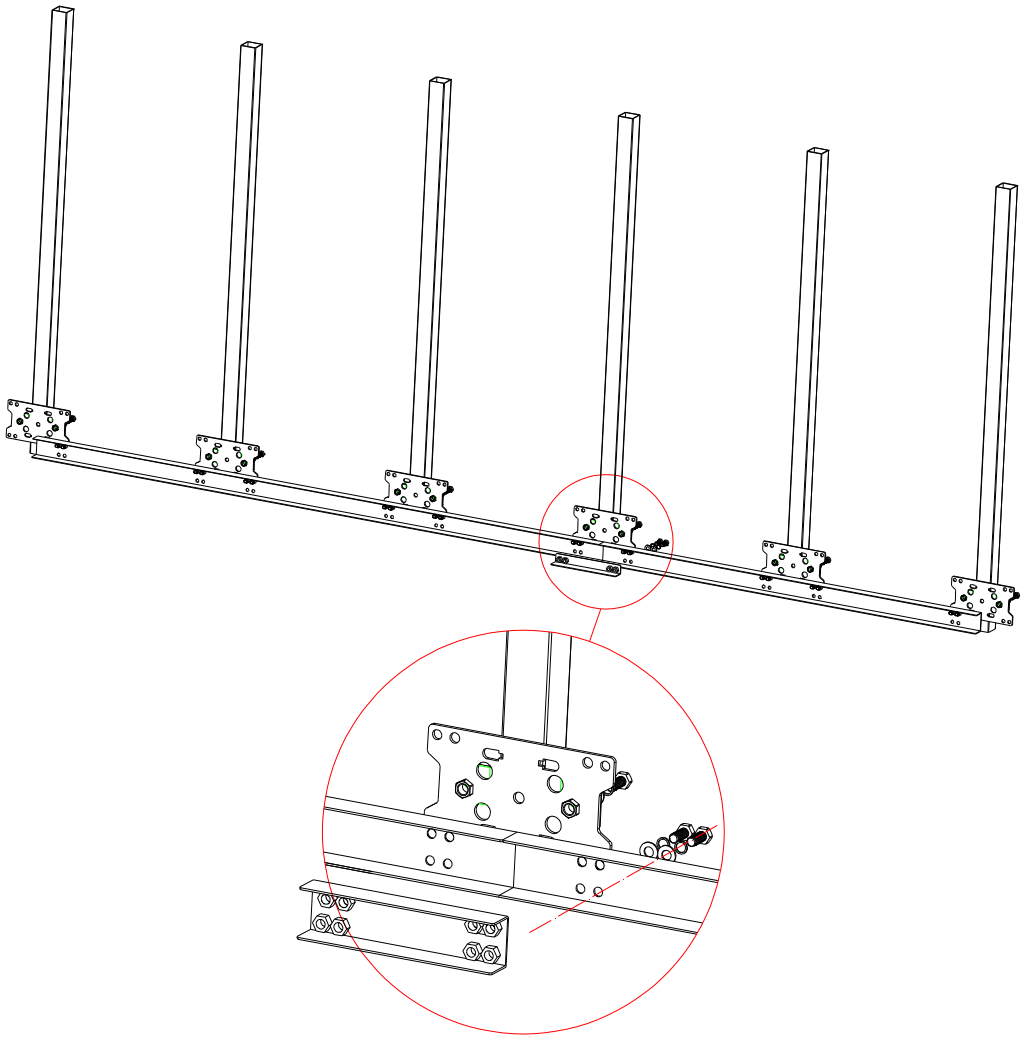


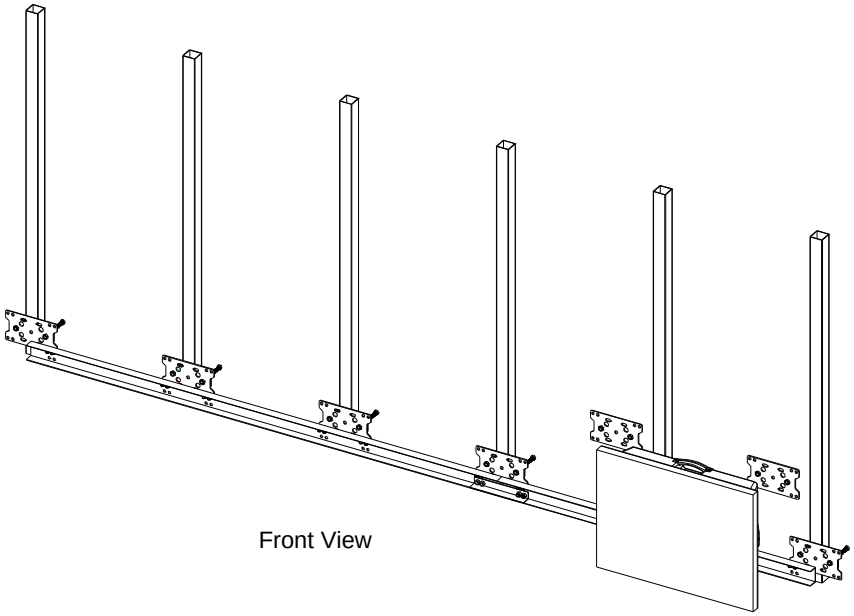
Figure 31

Users should make sure that all fastener and the connectors are vertical and horizontal before they can go on with the next step.

2. Install the 1st cabinet

The principle of installing the cabinets: from the bottom to the top. From left to right or from the right to the left if the cabinets are in the same row..

As the following drawing shows, when installing, first of all, put the Am-n cabinet on the left side of the frame. Make sure that it is horizontal and fix the two installation plates on the top.



Front View

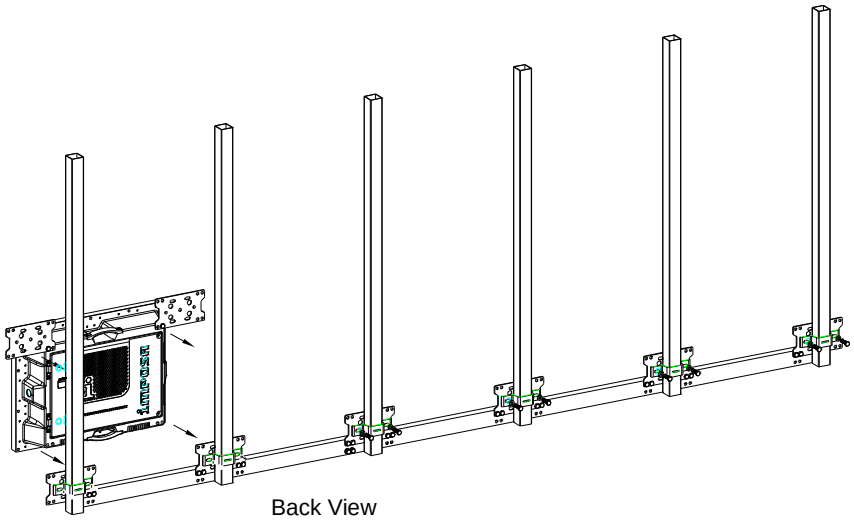


Figure 32

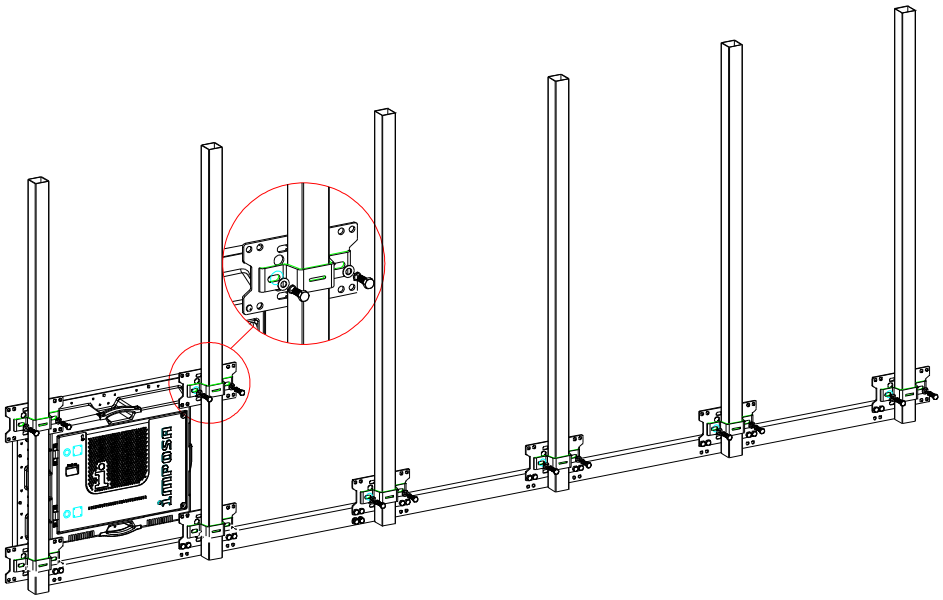


Figure 33

Users should make sure that the cabinet is vertical and horizontal before they can go on with the next step.

3. Install the cabinets of the 1st row

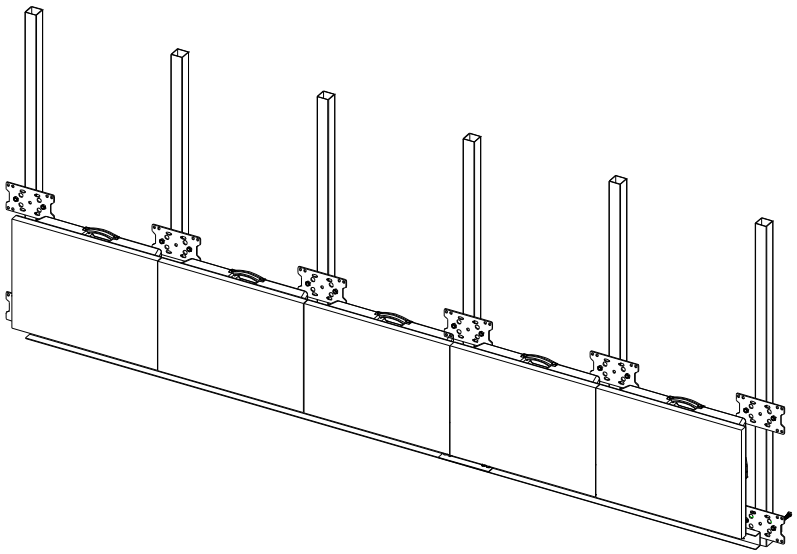


Fig 34

Users should make sure that the cabinets are vertical and horizontal before they can go on with the next step.

4. Install the other cabinets

Users can install the other cabinets in the same way as they install the 1st row.

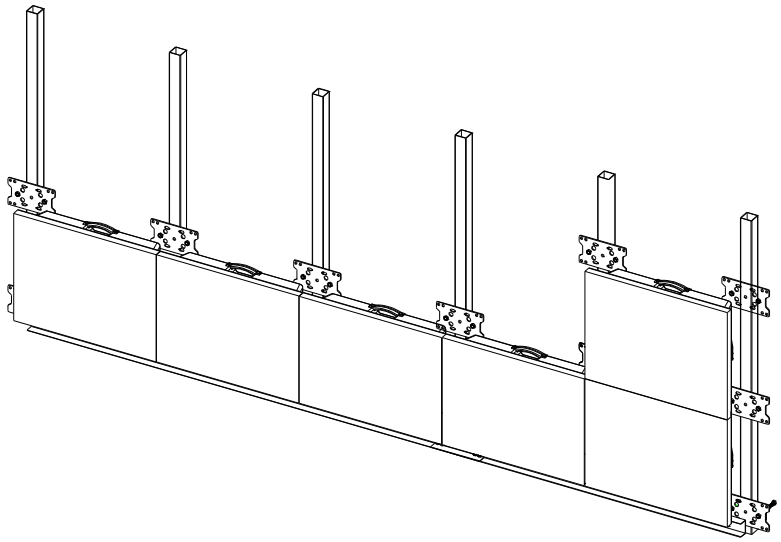


Figure 35

5. Install the water-proof seal pipe among the cabinets

The drawing of the seal is shown below：

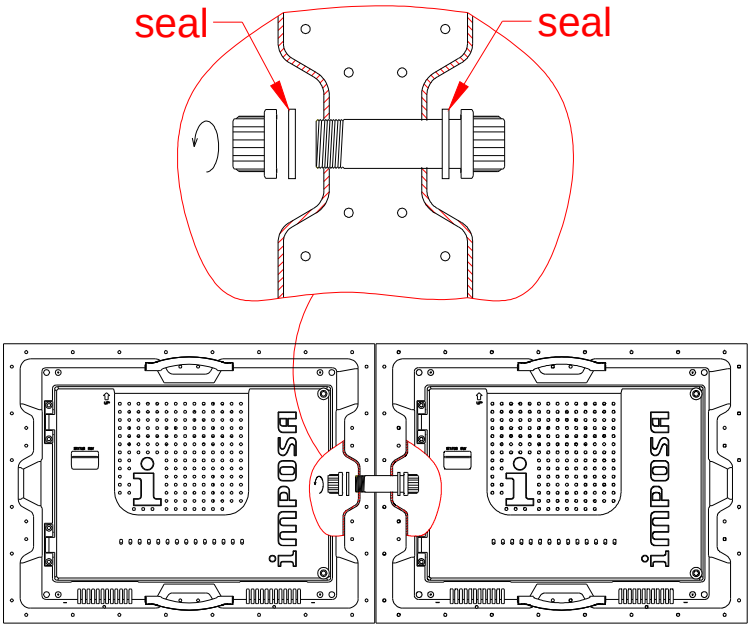


Figure 36

6. Connect the Signal Cables

6.1 Signal wiring block diagram

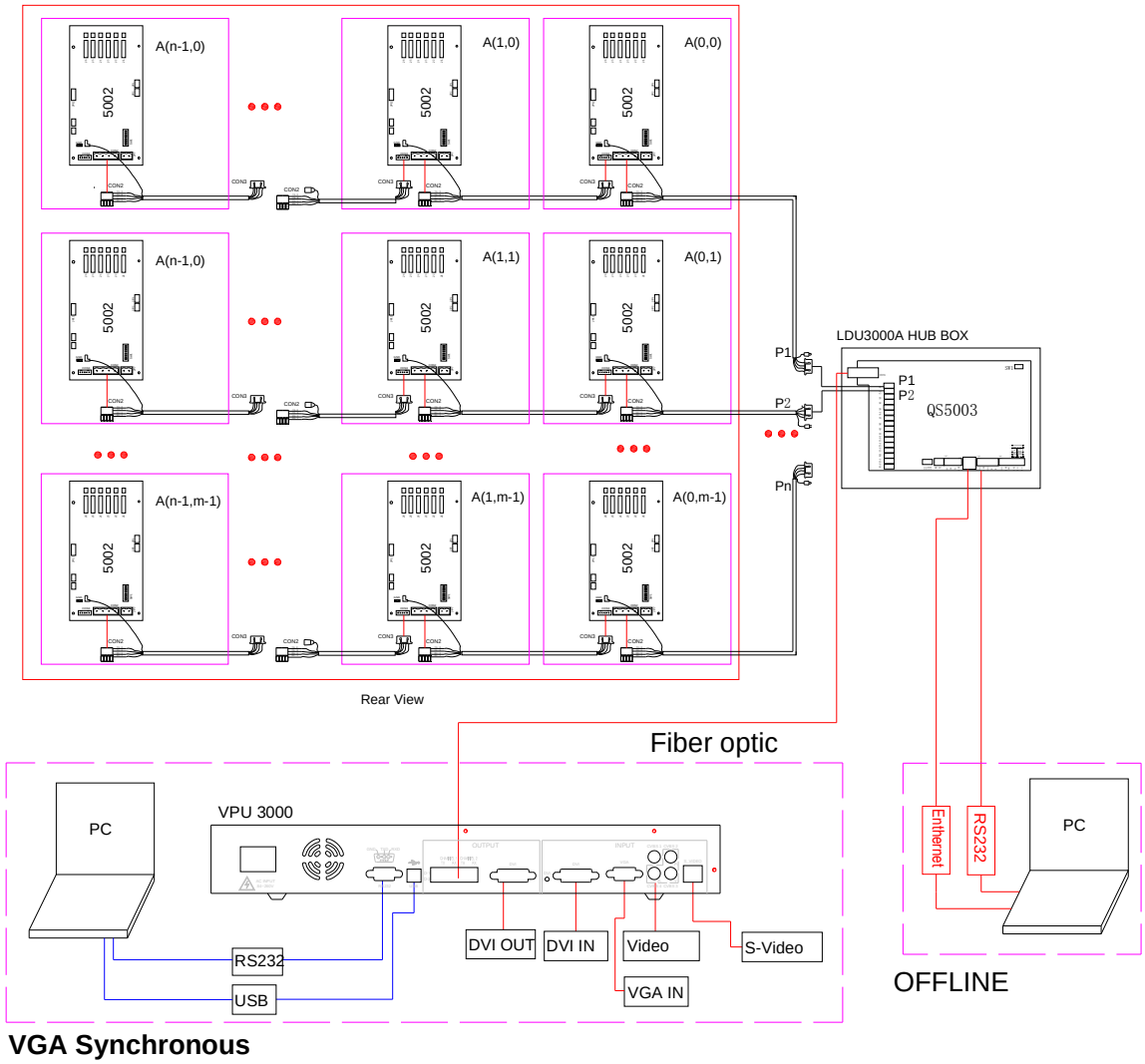


Fig .37

6.2 Instructions and Installation for LDU3000 /LDU3000A

LDU3000 is not a water-proof product. It can only be used indoor.

Figure 38

LDU3000A is built as a water proof instrument and can be used in the outside environment. It is usually placed at the mid-right position if you look from back of the screen.）

LDU3000A is endowed with the structure of water-proof, and can be installed outside. It should be fixed at the central of the display's right side (viewed from the back)

LDU3000A can be fixed to the frame directly. The fixing size is as follows:

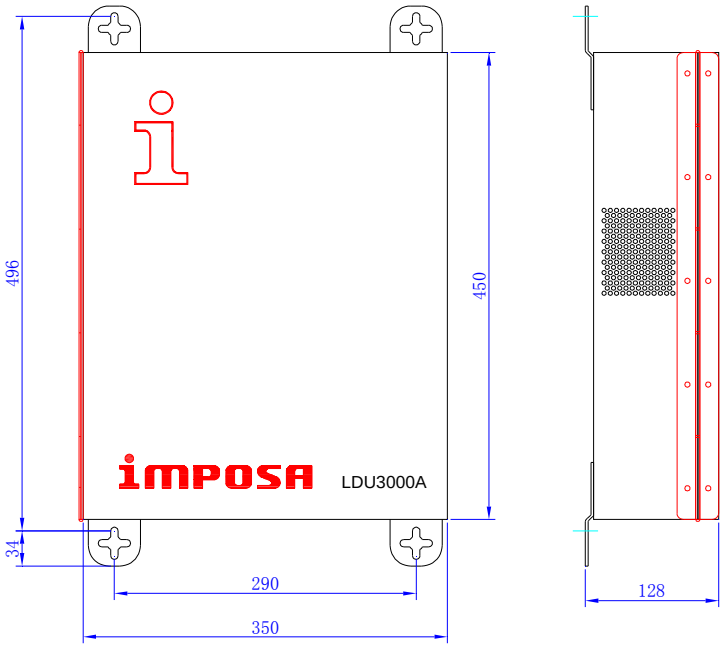


Figure 39

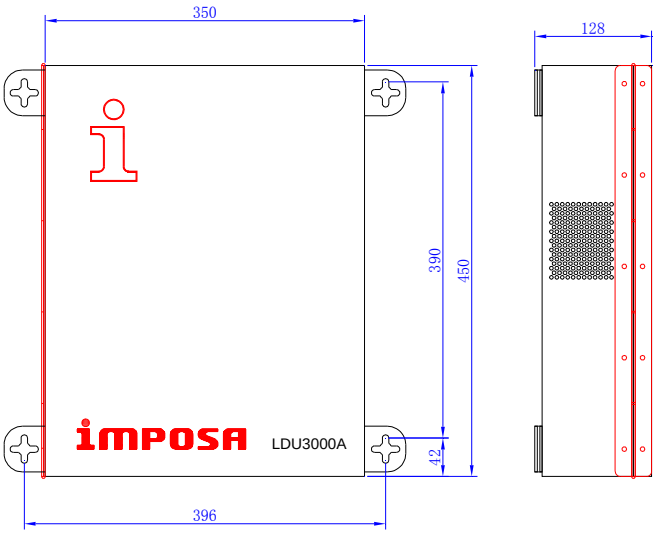
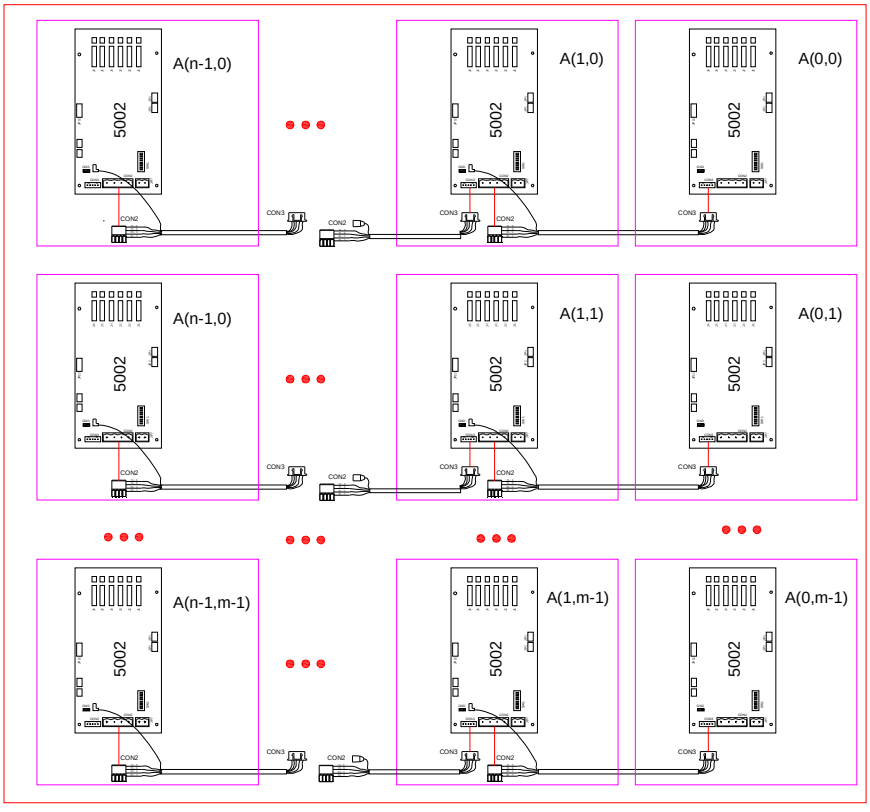


Figure 40

6.3 Signal Wire Connection among Cabinets

Signal wires are transmitted in the direction of row. Viewed from the back of the display, the signal wire begins with the first cabinet in the right, and concatenated to the left.



Rear View

Figure 41

To make the wire-connection easier, we can start with the first cabinet in the left. The signal wire is of 4P single head. Users are required to lead it from the control board QS5002 CON3, cross the water-proof cannula and then insert it onto the adjacent cabinet's control board CON2.

6.4 LDU3000/LDU3000A-Display Connection

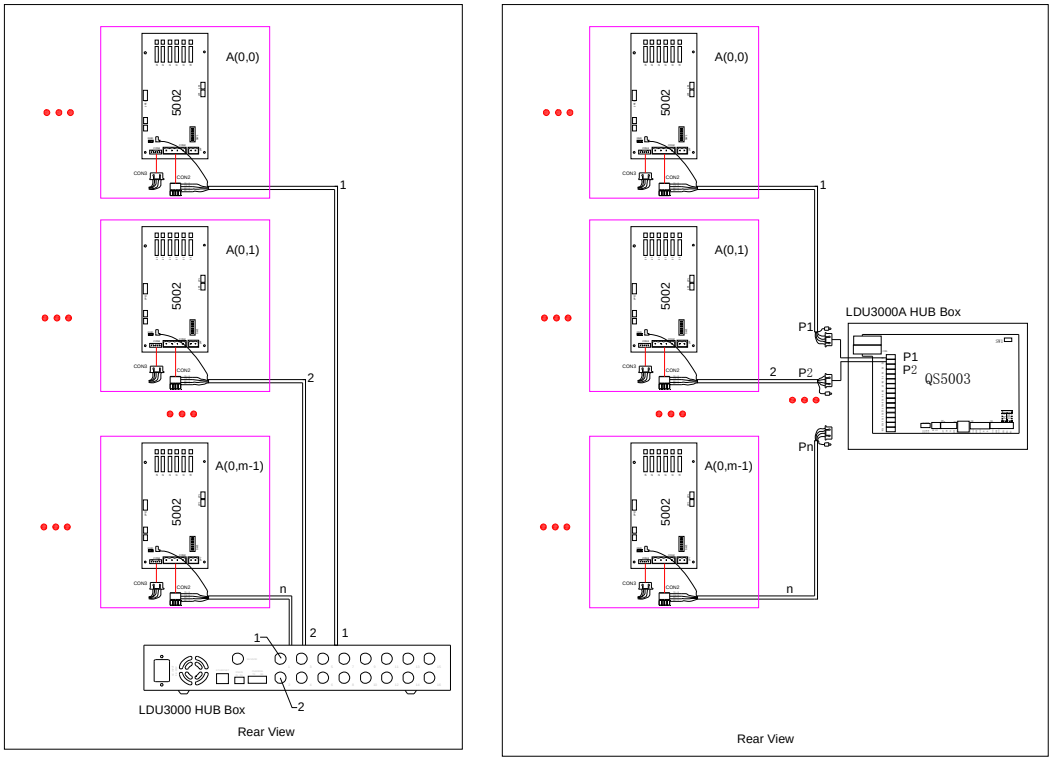


Figure 42

As can be seen in the above figure:

1）When connecting the LDU3000 HUB to the display, the right cabinet in the first row on top of the display (viewed from the back) should be connected with LDU3000's Interface 1. Similarly, we can conclude that the input of the cabinet's control board in the second row should be connected with LDU3000's interface 2.

2）When connecting the LDU3000A HUB to the display, the right cabinet in the first row on top of the display(viewed from the back) should be connected with the output interface P1 of QS5003,the interior control board of LDU3000A. Similarly, we can conclude that the input of the cabinet's control board in the second row should be connected with QS5003A's output interface P2…

Note: For the detailed instructions of QS5003, please consult the instructions in the appendix.

6.5 Connection between LUD3000/LDU3000A and Light Sensor

1) Light Sensor

Figure .43

2) LUD3000

Insert the provided light sensor directly to the Sensor socket behind LDU3000. As shown in the following figure.

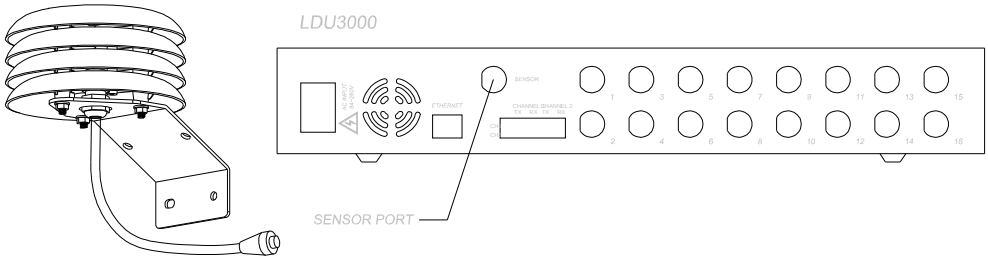


Figure.44

3) LUD3000A

Insert the provided light sensor directly to the Sensor socket behind LDU3000A. As shown in the following figure.

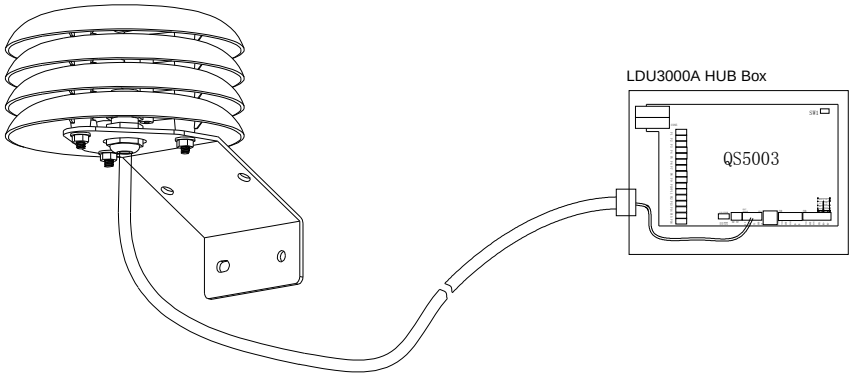
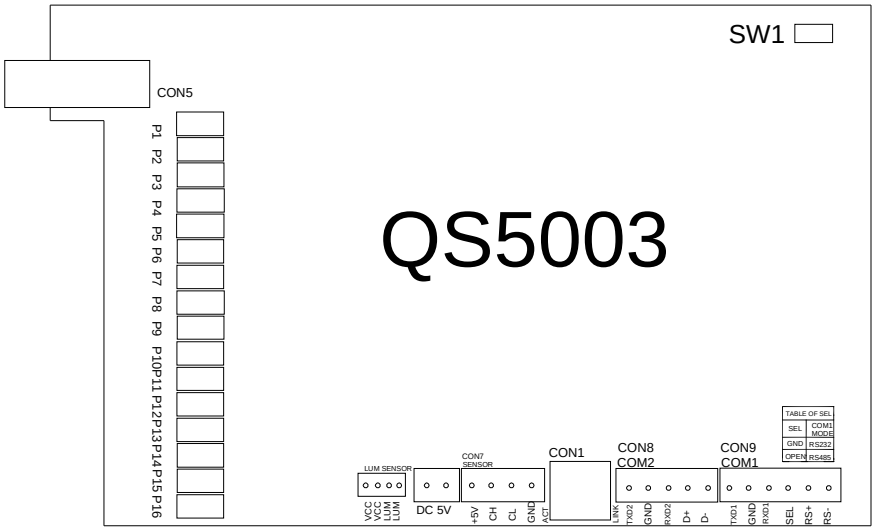


Figure 45

6.6 The communication between LDU3000/A and the PC



- LDU3000/A' mainboard-QS5003.There are two separate COM ports in the mainboard

COM1: RS232&RS485; If a user chooses SEL for communicating (SEL connects to GND), the user choose RS232 communication; If SEL is not chosen, then the user

use RS 485 for communication. Communication RS232/RS485 can't be used at the same time

COM2: RS232

- LDU3000/A's mainboard -QS5003

CON1: Ethernet

Please refer to more detailed information of QS5003 in the following chapters.

6.6.1 RS232 communication

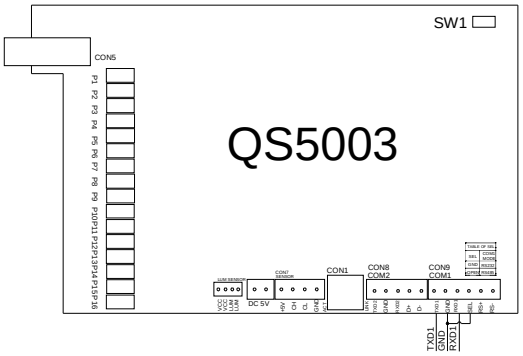
1) Under the offline system, users should use RS232 to communicate with teh LDU3000/A to change the message and setting.

2）Under the VGA system, users should use RS232 to communicate the updated CPU version.

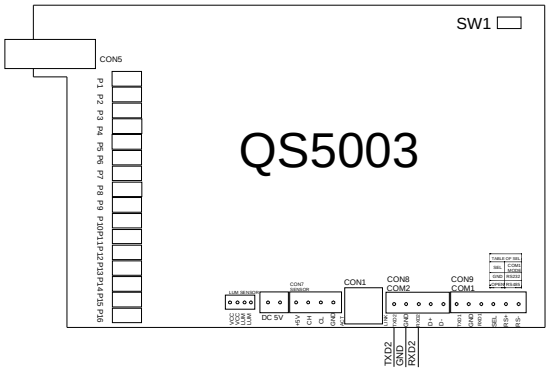
Note: Please pay attention to the RS232 wiring when you communicating or programming, no matter the sign is under offline system or VGA system. Due to the limit communicating distance of RS232, we suggest the users lead the RS232 wire from the button of the sign. In this case, users can easily connect the PC to the com port.

3） RS232 connection

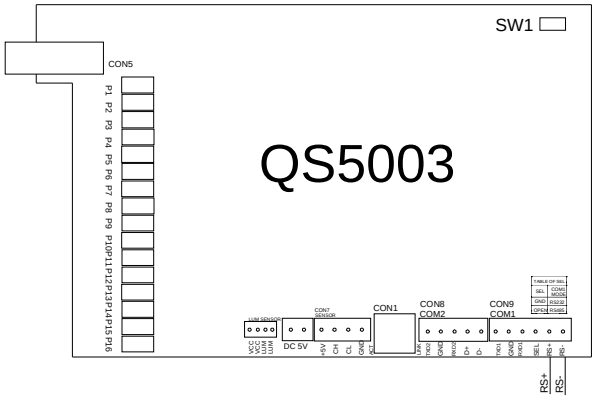
This drawing shows the RS232 connection by using COM 1：



This drawing shows the RS232 connection by using COM 2：



6.6.2 RS485 Communication



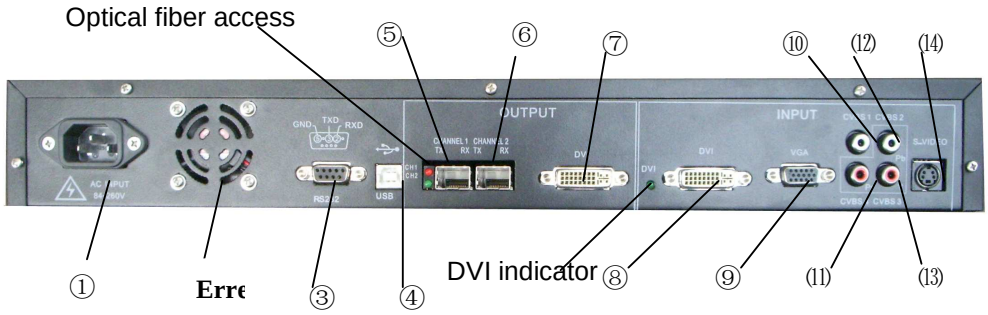
6.6.3 Ethernet Communication

Under the off line system, users can connect the Ethernet wire to the CON1 in mainboard 5003 of LDU300/A.

The Following Signal Connection is for VGA Synchronous System

6.7 Instructions and Connection for VPU3000

Illustration of the Back Connection for VPU3000



1	Power supply input: AC110V/220V		
2	Ventilation fan outlet		
3	RS232 port to the PC		
4	USB port to the PC		
5	Data output		“CHANNEL1”: Optical fiber output port. It is connected to LDU3000 for data transmission.
6			“CHANNEL 2”: Optical fiber output interface. It is connected to LDU3000 for data transmission.
7			“DVI”，DVI output port. It can be connected to the LCD or any other display as the monitor in the control room.
8	Video data	Passage 1	“DVI”: DVI video input
9		Passage 2	“VGA”: VGA video input

10	input		“Y”/“CVBS4” video input
11			“Pr”/“CVBS3” video input
12			“Pb ”/“CVBS2” video input
13			“CVBS1” video input
14			“S-Video” video input

Notes:

1）There are two video input channels in VPU 3000. Each channel accepts one video signal input. When different video signals are fed to the processor at the same time, the user can get the function of “Picture In Picture” VPU3000.

2）There are two optical fiber interfaces for the data output. One is for data transmission, while the other is for hot back-up.

3) Optical fiber access indicator: When the indicator is on, the access is under stable working status

4) DVI indicator: When the indicator is on, the DVI is under stable working status

6.7.1 Optic Fiber Connection between VPU3000 and LDU3000

For the data output, there are two optic fiber interfaces. One is for data sending, and the other is for hot backup.

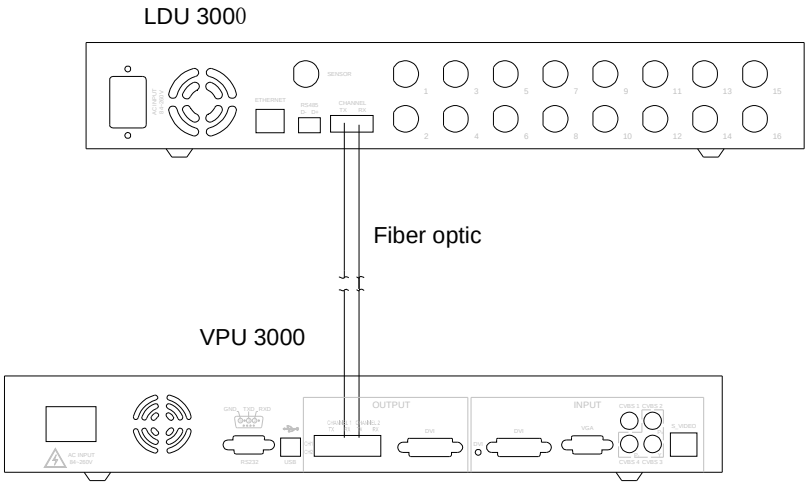


Figure 47

6.7.2 Connection between VPU3000 and PC DVI

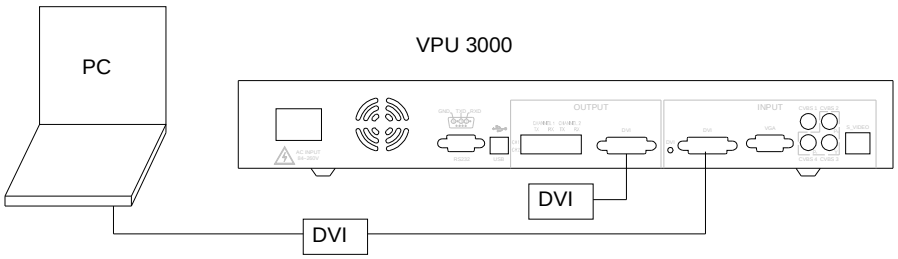


Figure 48

6.7.3 Connection between VPU3000 and PC COM

USB:

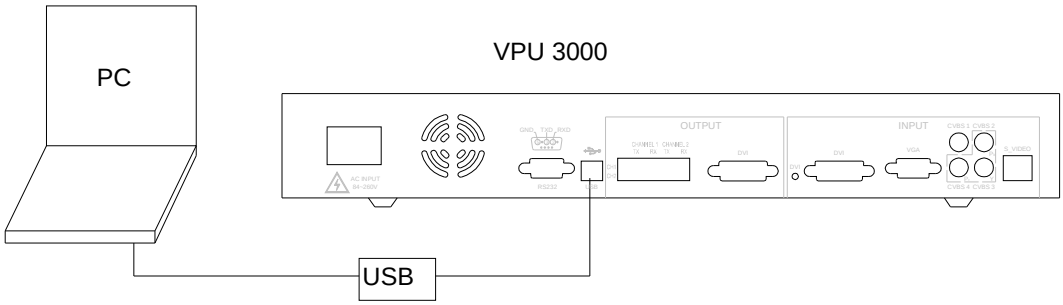


Figure 49

RS232:

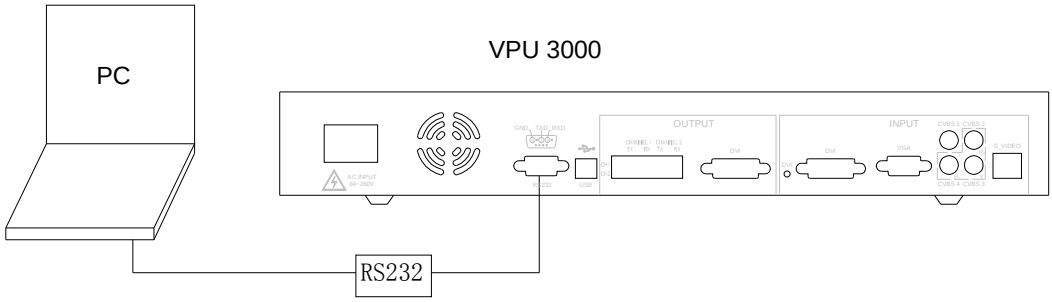


Figure 50

6.7.4 Connection between VPU3000 and Video Sources

For VPU3000, there are two video input channels, each of which has one video signal input. When the two video signals are input at the same time, the function of picture in picture can be realized.

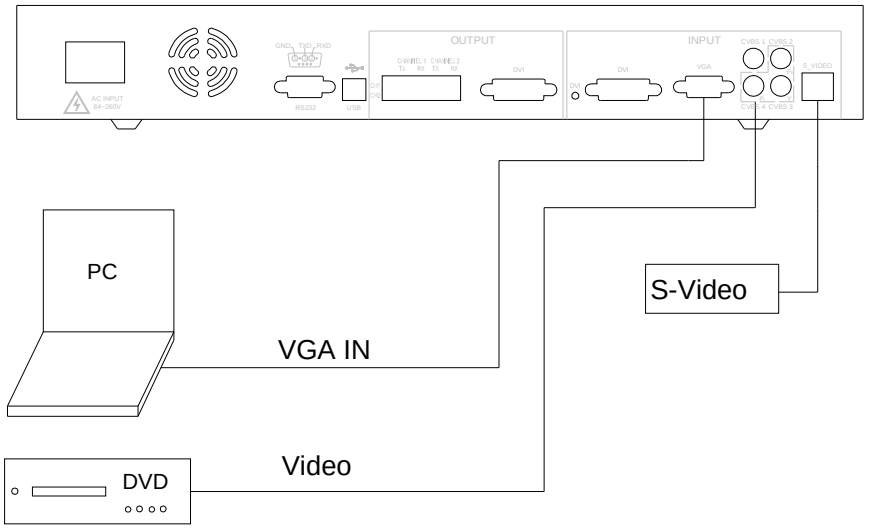


Figure 51

7. Connection of Power Cords

7.1 General Block Diagram of Power Cable Connections

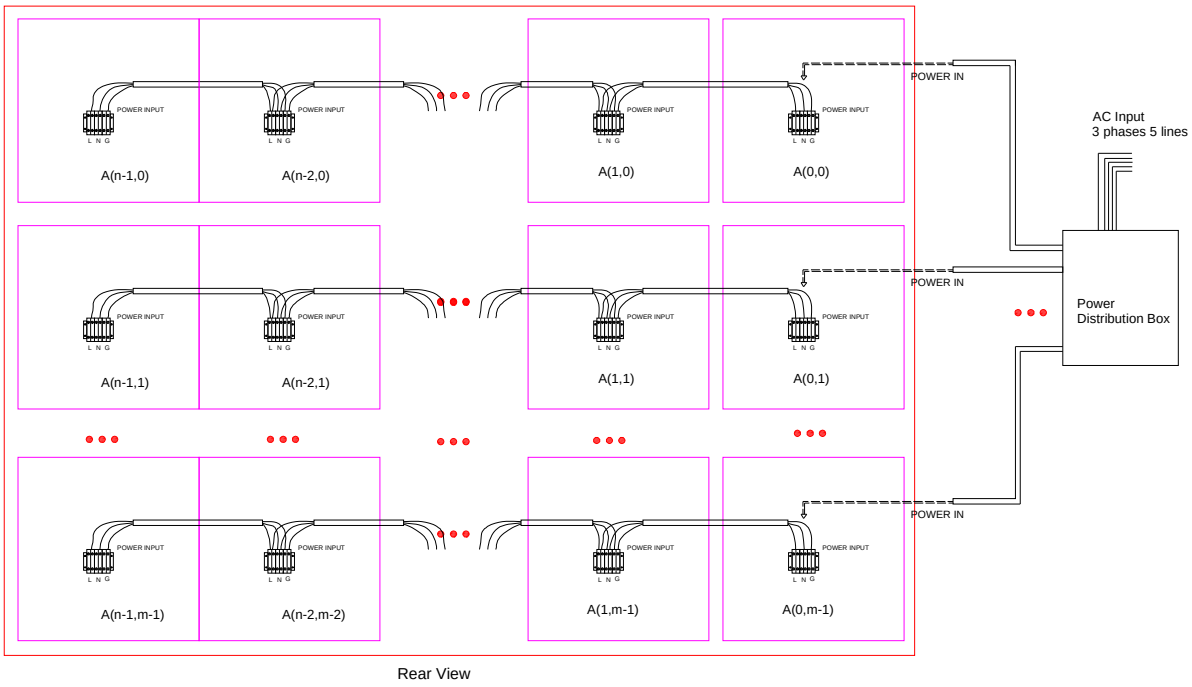


Figure 52

The above graph is sighted from the back of the display.

Cables from AC input to the distribution box should be prepared by the customers, and the grounding should be guaranteed. The resistance should be less than 4Ω.

The diameter of the cables is determined by the distribution box's power rating. It must meet the maximum power rating.

7.2 Installation and Principle of Distribution Box

Generally speaking, the distribution box is fixed at the central of the display's right side (viewed from the back) so as to make the arrangement of wires and maintenance more convenient.

We can choose distribution boxes with different specifications according to the power rating of the display. Depending on the maximum output of it, the distribution box has two specifications: 25KW and 40KW. Usually, the input of the distribution box is three phase five lines.

Principle Chart of the 25KW Distribution Box:

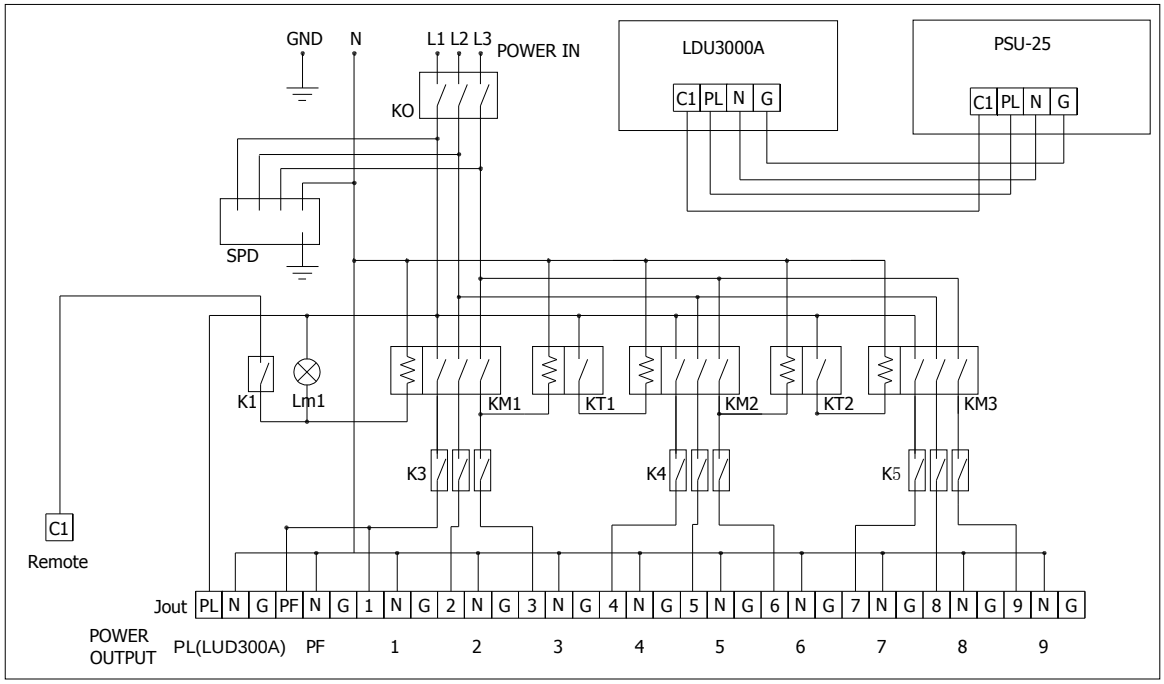


Figure 53

Instructions:

POWER IN：power input，25KW, 3 phases 5 lines

POWER OUTPUT: power output

PL: to provide power for LDU3000A；illumination；Maximum power output 1KW;

PF: to provide power for exhaust fan；Maximum power output 1KW;

1~9: to provide power for the modules of the cabinet; Maximum power for each output 2.5KW

Technical Parameters' of the Distribution Box (25KW)

Total input power	25KW	3 phases 5 lines
Maximum input current for each phase	38A	AC220V
	76A	AC110V
Maximum outputs of distribution box	9 outputs	
Maximum power for each output	2.5KW	
Maximum current for each output	12A	AC220V
	24A	AC110V

Principle Chart of the 40KW Distribution Box:

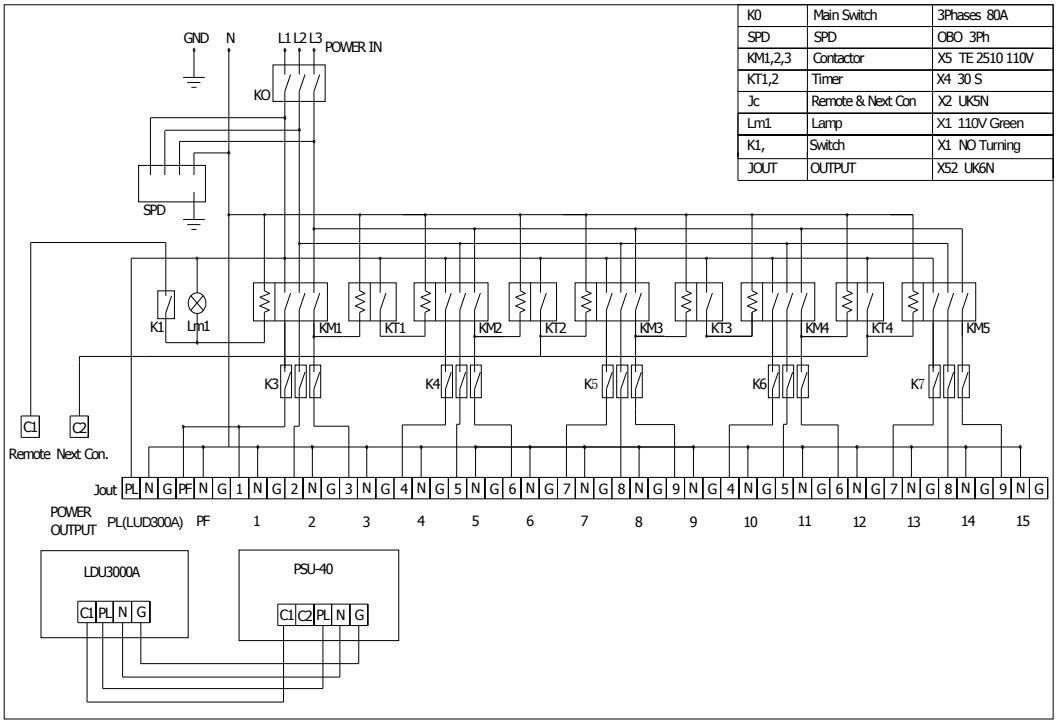


Figure 54

Instructions:

POWER IN：power input， 40KW, 3 phases 5 lines

POWER OUTPUT: power output

PL: to provide power for LDU3000A；illumination；Maximum power output 1KW;

PF: to provide power for exhaust fan；Maximum power output 1KW;

1~9: to provide power for the modules of the cabinet；Maximum power for each output 2.5KW

Technical Parameter of the Distribution Box (40KW)

Total input power	40KW	3 phases 5 lines
Maximum input current for each phase	60A	AC220V
	120A	AC110V
Maximum outputs of distribution box	15	
Maximum power for each output	2.5KW	
Maximum current for each output	12A	AC220V

	24A	AC110V

Power rating for each output of the distribution box is 2.5KW.

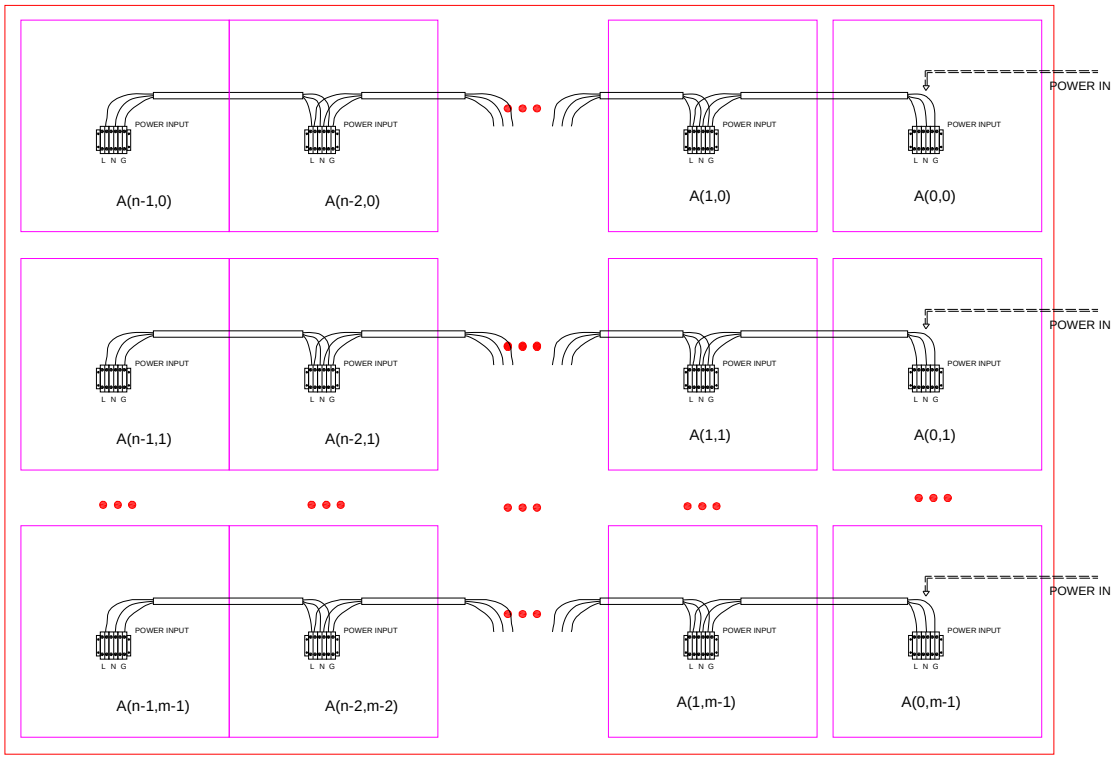
"N" Imposa® cabinets can be connected to the distribution box. As the following table shows:

Table 2

pitch / parameter	10mm	13.3mm	16mm	17.7mm	20mm	26.7mm	32mm	40mm
pixels on each standard cabinet	48X64	36X48	30X40	27X36	24X32	18X24	15X20	12X16
Maximum power per cabinet	360W	500W	430W	360W	290W	160W	150W	150W
Number of driven cabinets for each output	5	4	5	5	8	12	12	12
Number of driven cabinets of 25KW distribution box	45	36	45	45	72	108	108	108
Number .of driven cabinets of 40KW distribution box	75	60	75	75	120	180	180	180

7.3 Connection of Cabinets

Connection of the power cables of the cabinet are transmitted in the direction of row. Generally speaking, if viewed from the back of the display, the power cables begin with the last cabinet (in the left) in each line, and concatenated to the right. If the total power of each row's cabinet is too large as to exceed the endurance of the power cable, the way of connecting from both sides of each row to the midst can be tried. When connecting, just put the power cable across the water-proof cannula and join the L N G separately. That is OK.

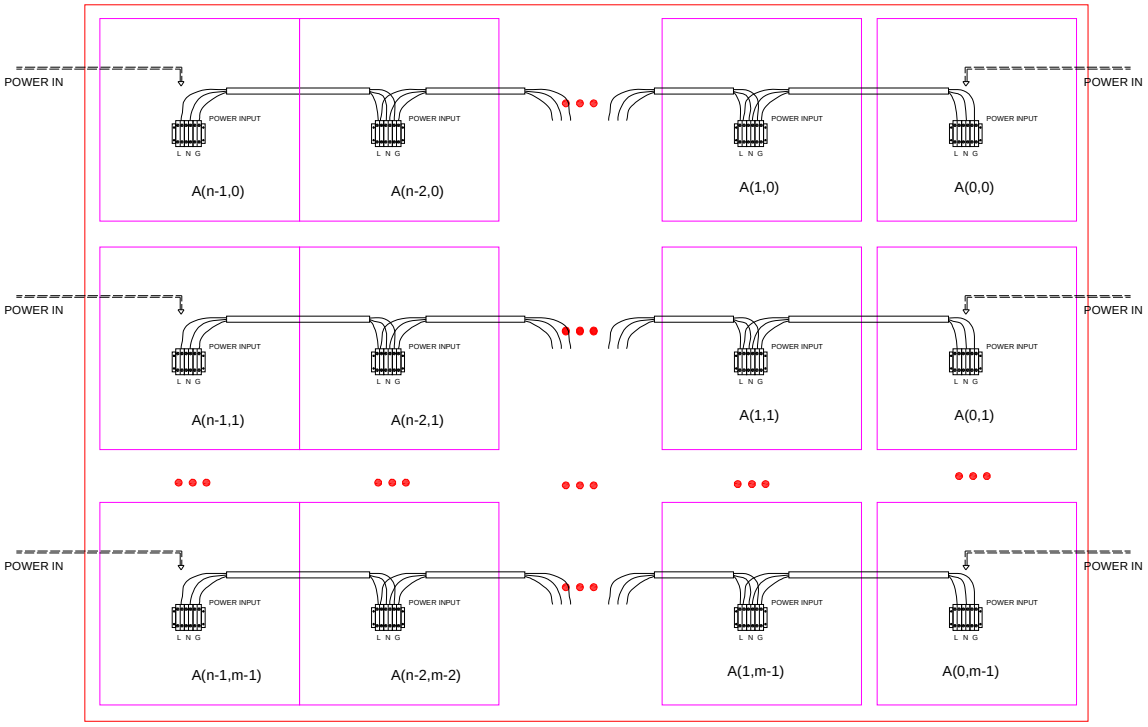


Rear View

Figure 55

Due to the different pitches of each cabinet, the power consumption of each cabinet is different accordingly. For the number of allowed concatenated cabinet please consult the number of driven cabinets for each output of the distribution box.

If the number of cabinet in row is more than that of the above mentioned, then one should lead the wires from both sides of the cabinet and cascade them toward the midst.



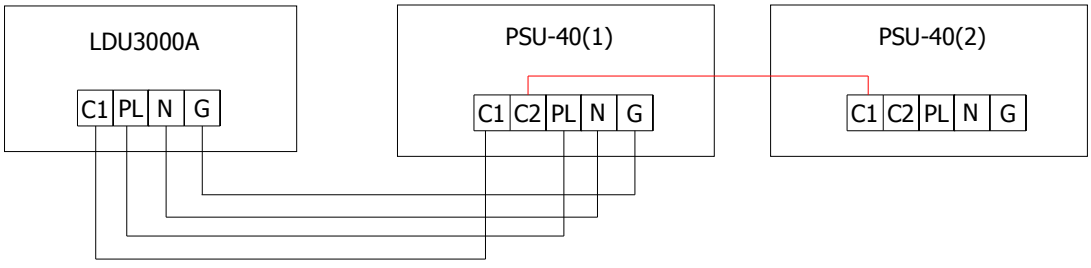
Rear View

Figure 56

If the power consumption of a full color display exceeds 40KW, we suggest the user connect the power distributors in series. That is, when a user turns on a full color display, the 1st distributor will be turned on first, then the 2nd one, the 3rd... The way of connection is explained below:

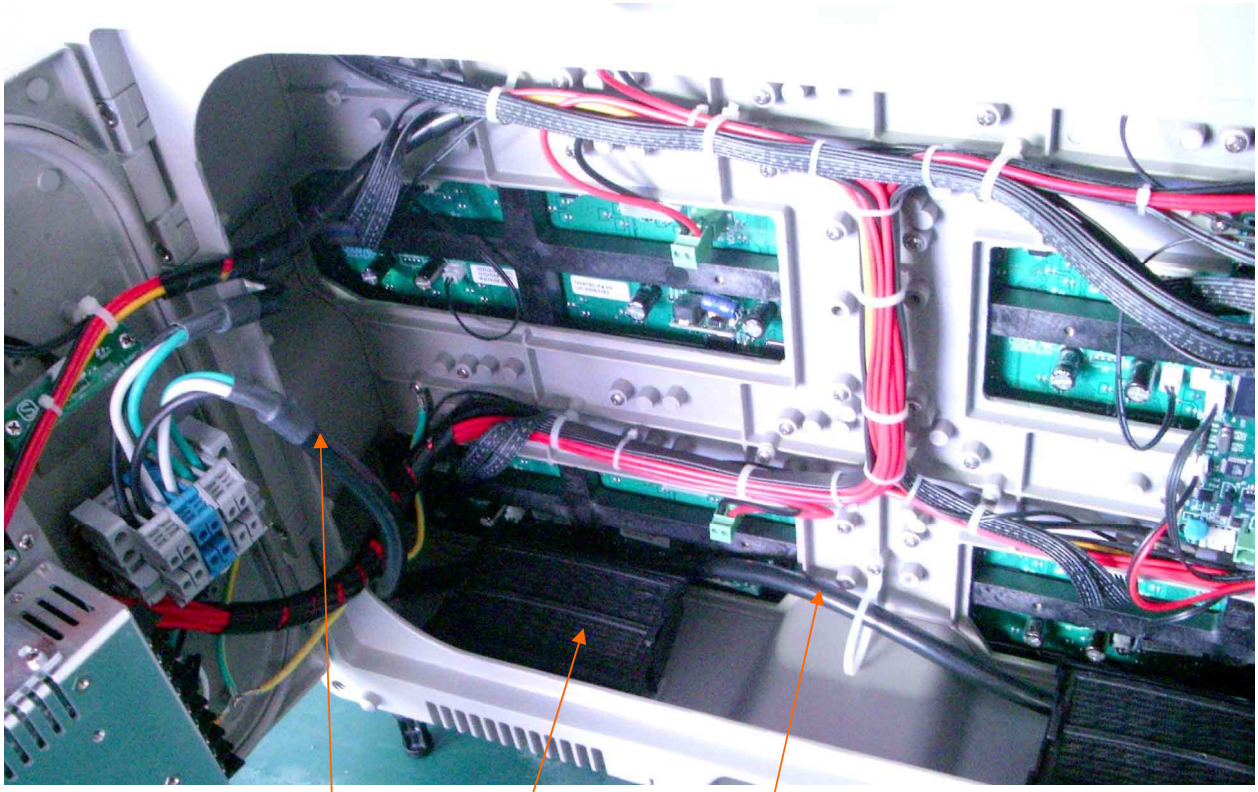
1) Lead a wire out from the C2 cable connector in Distributor 1;

2) Connect the wire to the C1 wire connector in Distributor 2, as shown in the following drawing.



When we are leading the power supply cables from one cabinet to another, we must make sure that the cables do not block the closure of the cabinets. The cables should be led from the air

intake hood in the bottom part of the cabinets,. It is better to sheaf the cable with the binding-wire in the middle, as the following photo shows.



8. Connection Check

8.1 Electrical Check

Check if there is short circuit among L N G.

Check if there is open circuit among all wires.

Check if the maximum current of the cascaded power cables exceeds the endurance of the cable.

8.2 Signal Check

Communication connection

Video sources connection

Signal wire connection of cabinets

PART 3 Commissioning and Maintenance of the Display

□. Commissioning the Synchronous Display

Status	Check
Before power is applied to all the equipment	Connections of power supply for the screen, LDU, VPU and video sources equipment
	Signal sources connected to VPU
	Monitor
	Optic fiber
	Wire connections among cabinets
	Wire connections between LDU and cabinets
	Wire connections between VPU and computer
Start up the computer and VPU	If VPU and video sources are electrified
	Communications between computer and VPU
	Seek effective video sources
	Switch to different video sources and examine the display effect from monitor
Switch on the screen	If the cabinets and LDU are electrified
	Communications between computer and LDU
	Read the parameters of LDU
	Find all the cabinets
	Basic test
	Check the screen's displaying effect
	Adjust abnormal modules or cabinets
Back up	From LDU to computer
	From VPU to comouter

TABLE 1.1 Procedures for the commissioning of the display

1. Check before All the Equipments Are Switched On

Before powering all the equipment, users should connect the whole system according to the instruction manual so as to guarantee the correctness of the system's hardware. Please do the check according to Table 1.2

	Items	Note
1	Connections of power supply for the screen, LDU, VPU and video sources	Check if there is short circuit among L N G and open circuit among all wires
2	Signal sources connected to VPU	DVI, CVBS, S-Video, YPrPb, VGA. For details please consult Table 1.3. Please check according to the required signals
3	Monitor	When VPU is attached with a DVI monitor
4	Optic fiber	There is a pair of optic fiber inputs for LDU. Check if there is damage to the joints and if the joints are inserted into the socket correctly.
5	Wire connections among cabinets	The same with item 1, please pay attention to the direction of signal wires
6	Wire connections between LDU and cabinets	Please connect according to the instruction manual
7	Wire connections between VPU and computer	If USB and RS232 are connected between VPU and computer at the same time, then only USB is effective. RS232 needs one-to-one-correspondence signal wires

TABLE 1.2 Check before all the equipments are electrified

Item	Connect to	I/O
DVI	DVI output of computer	Input
	DVI input of monitor	Output
VGA	VGA output of computer	Input
CVBS	CVBS output of video sources	Input
S-Video	S-Video output of computer or video sources	Input
YPrPb	Y, Pr, Pb output of video sources	Input

TABLE 1.3 Video sources connected to VPU

2. Start up Computer and VPU

2.1 Check if VPU and video source equipment are switched on.

- Consult the related instruction manuals to check if the video source equipment are working
- After being switched, the light of VPU's power switch will be illuminated and there will be contents shown on LCD. When the"+" or"-" on the panel is pressed, the background light of LCD will shine.

2.2 Check communication between computer and VPU 2.2

VPU3000 control software is required. For details please consult *User's Manual for VPU3000 Control Software*, 4.2 Start-up and Communication Settings.

2.2.1 Start up VPU3000 control software

2.2.2 Set communication parameters

2.2.3 VPU3000 control software will read VPU's configuration automatically and enter the software interface successfully, as long as there is no clues for mistake. The software interface is as FIGURE2.1 shows.

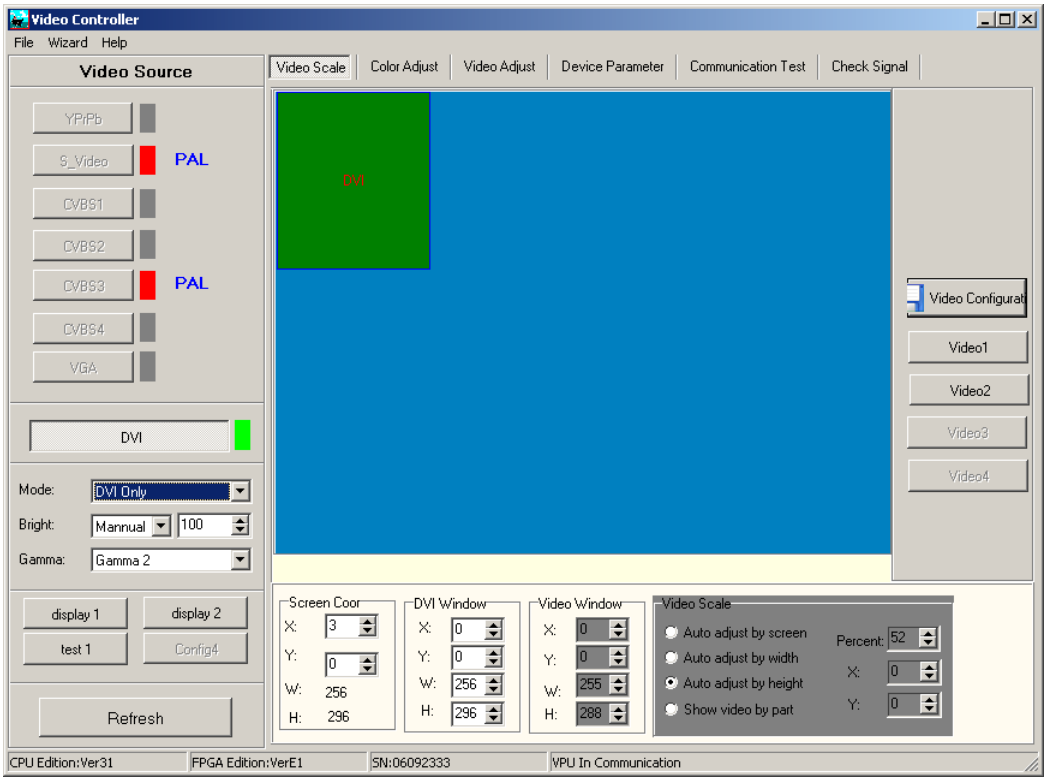


FIGURE2.1 VPU3000 control software's operation interface

2.3 Search for valid video sources

VPU3000 control software is required. For details please consult *User's Manual for VPU3000 Control Software*,6.2.1 Search Signal.

2.3.1 Click the "Search Signal" button in advanced setting to switch to the signal search interface.

2.3.2 Click "Start" button to search video signal. The LED sign will flash when searching video

signal. After searching, you will find a window Figure2.2. The valid video sources are S-video, CVBS3 and DVI.

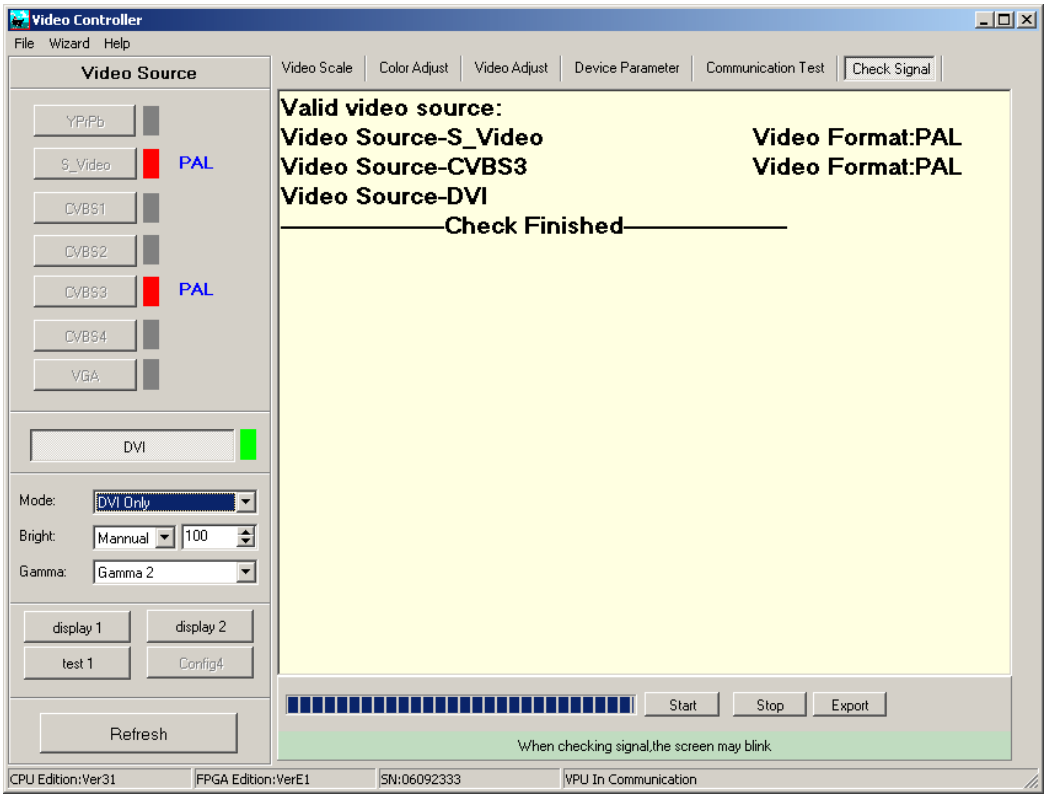


Figure2.2 Search Signal input result interface,

2.4 Switch to different video sources and examine the display effect from monitor

VPU3000 control software is required. For details please consult *User's Manual for VPU3000 Control Software*, 6.1.2 Select the Video Source and Display Mode.

2.4.1 Choose DVI only in display mode, check the display

2.4.2 Choose AV only in display mode, and click the button in Video Source Bar, and check each valid video source. Please play some programs in the video source before checking the display.

3. Power up the Screen

3.1 Check if the cabinets and LDU are powered up, see TABLE 3.1

Item	Check
Cabinets are electrified	If the red and green LED indicators (STATUS and RUN) at the back of the cabinets are twinkling If the indicators of the switch inside the cabinets are lighted
LDU is electrified	If the red indicators beside optic fiber port at the back of VPU is lighted If the green indicator in the exterior of LDU is lighted If the indictor light for switch power supply in LDU is lightened

TABLE 3.1 Check if the cabinets and LDU are powered

3.2 Check communication between computer and LDU

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting Up Software of Standard Cabinet,* 6.1 Managing LDU, 6.5, Setting up LDU parameters.

3.2.1 Run Imposa Tools software.

3.2.2 Add a new LDU in LDU manager bar, via the COM port for VPU (USB or RS232).

3.2.3 Press “Read back” button in the LDU setting window, and the value in the window will be refreshed.

3.3 Read back the parameters of LDU

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting Up Software of Standard Cabinet,* 6.6 Setting up the display’s parameters.

3.3.1 Choose View\Screen setting or press “Screen Setting” button to view the Screen Setting window.

3.3.2 The software will read back the parameter of the sign automatically, then press “Read back” button to refresh the window again.

3.3.3 Check if the value in the window is set according to the sign.

3.4 Find all the cabinets

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting Up Software of Standard Cabinet,* 6.7 Basic information of LDU, Adjusting of Basic Color and Testing for Displaying.

3.4.1 Choose View\View\Tile Information or press “View\Tile Information” button to view the View\Tile

Information window

3.4.2 Press the  button to refresh the tile information, and count the number of the green cell after refreshing back.

3.5 Basic test

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting Up Software of Standard Cabinet,* 6.7.4 Basic test. Select all of the tiles, and do the Row scan and the Column scan test.

3.6 Check the screen's displaying

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting Up Software of Standard Cabinet,* 6.7.4 Basic test.

Stop the basic test, and play some pictures on the sign to see if there is abnormal displaying.

If in need, please operate as Figure 3.7 shows.

3.7 Adjusting abnormal modules or cabinets

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting Up Software of Standard Cabinet,* 6.7.3, Adjusting of Basic Color

3.7.1 Keep playing the screen. In the layout viewing window, select 

to adjust basic colors.

3.7.2 Select the mode of synchronous display and choose the cabinets to be adjusted.

3.7.3 Move the slide bar or adjust the value in the input bar to produce an ideal displaying effect..

3.7.4 Save the setting and send it to LDU.

3.7.5 Check and see if the display after automatically recovering is satisfactory.

4 Back up

4.1 From LDU to computer

Imposa Tools software is required. For details please consult *User's Manual for Advanced Setting-up Software of Standard Cabinet,* 7.1.1.2 Save to Computer.

4.1.1 Select Tool\Backup LDU date\Save to Computer.

4.1.2 Determine the location of back up files and name them.

4.1.3 Press" Backup" button to start the back-up and wait until it is finished.

4.2 From VPU to computer

VPU3000 control software is required. For details please consult *User's Manual for VPU3000 Control Software*, 6.1.4.2 Save Parameter Settings to a File.

4.2.1 Start up VPU3000 control software.

4.2.2 Click the menu: File / File Settings to a File.

4.2.3 Name the file and save the file to the PC.

4.2.4 Click "Save" button to finish saving setting file.

□ Troubleshooting of the Synchronous Display

1. Common Malfunctions List

1.1 When communication part

Phenomena	Solution	
PC can't communicate with LDU	PC can't communicate with VPU	
	VPU can't communicate with LDU	
PC can't communicate with VPU	VPU hasn't be started	Start up VPU, and check the power supply for VPU.
	Serial port connected with VPU is not selected.	Select the correct serial port.
	When USB and RS232 are used at the same time for communication, RS232 can't work.	It is normal. USB has priority over RS232. When using RS232 please remove USB.
	USB can't work.	The driving program of USB isn't set up, so set it up first.
		USB port is damaged. Choose another port or use RS232.
	The port of computer's RS232 or USB is damaged.	Choose another port.
		Select USB or RS232.
		Repair the computer.
	Communication wires of RS232 or USB is damaged.	Change other communication wires.
	VPU is broken.	Change another VPU, and input the saved files to the new one.
VPU can't communicate with LDU	LDU is not started	Start LDU, and check the power supply of it.
		LDU's switch power supply is broken. Use a new one.
	Optic fiber isn't inserted well.	Insert the optic fiber tightly and make sure that the red light beside the optic fiber joint is lightened.
		Optic fiber A1 and B1 are reverse. Transfer them and make sure that the red light beside the optic fiber joint is lightened.
	Optic fiber joint is broken.	Change the joint.
	Optic fiber is broken.	Change optic fiber.
	The mother board of LDU is broken.	Change QS5003D,and resend the back-up files in computer to LDU.
	VPU is damaged.	Change VPU, and input the saved configuration files to VPU.

TABLE 4.1 Cumming malfunctions when communicating

1.2 The LED Display Screen Body

Phenomena	Solution		
There is no display on the screen	VPU or LDU can't work.	Check VPU or LDU.	
	No input signals.	Check the input signals.	
	The communication of video data is abnormal.	Check the video data communication. See " VPU can't communicate with LDU".	
	Send the order of "clear" to the screen.	Restart LDU or choose the order of Stop in Basic test.	
No video signal input	No DVI signal	Check the input and output of DVI	
	No other signals	Check the input and output of other video signals.	
	LDU is in the mode of off-line	Set the LDU to be in the mode of synchronous	
No show of DVI	VPU's setting.	VPU can't find DVI input when started.	Restart VPU.
			Research the efffective video sources.
		DVI window is too small	Set the window bigger.
		PIP-Vid on top mode, and video's window is bigger than that of DVI.	Switch to the mode of DVI only or PIP-DVI on top.
	No output of computer's DVI	The DVI output of computer is not opened	Open DVI output.
		Video card's DVI output is broken	Change video card.
	DVI cable is broken.	Change it .	
	VPU is broken.	Change VPU, and send the saved configuration files to VPU.	
No show of other video signals	Video equipment isn't started	Turn on the equipment.	
	Setting problem of VPU	VPU can't find DVI input when started.	Restart VPU.
			Reseek the effective video sources.
		Video window is too small.	Set the window bigger.
		PIP-DVI on top mode, and DVI window is bigger than that of Video.	Switch to the mode of AV only or IP-Vid on top.
	Video source equipment is not connected to VPU correctly	Check the wires between video source equipment and VPU.	

	The video signal wires are damaged	Change other signal wires.
	VPU is broken	Change VPU, and send the saved configuration files to VPU.
Show of DVI is abnormal	Video window is too small	Set it bigger.
	VPU select the mode of POP-DVI on top.	It is normal. The content of DVI and video will overlay with each other. Adjust the window's site or choose other mode.
	DVI output of video card is broken	Change video card.
	DVI cable is broke	Change DVI cable.
	VPU is broken	Change VPU, and send the saved configuration files to VPU.
Show of other video sources is abnormal	Video window is too small	Set it bigger.
	VPU select the mode of POP-DVI on top.	It is normal. The content of DVI and video will overlay with each other. Adjust the window's site or choose other mode.
	Video equipment isn't connected to VPU correctly	Check the communication wires between video equipment and VPU.
	Video signal wire is broken	Change video signal wire.
	VPU is broken	Change VPU, and send the saved configuration files to VPU.

TABLE 4.2 common malfunctions' of display's screen

1.3 Cabinets of the display

Phenomena	Solution		
No display on several neighboring cabinets in a row	These cabinets are powered.	Look from the back side. Check power supply of dark cabinet and its right side neighboring cabinet.	
No display on a whole row of cabinets	Cabinets are not powered.	Check the power supply of the first cabinet in the left (viewed from front).	
	Setting problem of LDU.	The number of cabinets set for LDU is not correct.	Send the number of cabinets to LDU according to the reality of the display.
		Setting parameters for the display is too small	Set the display's parameter bigger.
	The displaying	Move VPU's window coordinates, and enlarge VPU's	

	window of VPU is too small.	displaying window.	
No display on a whole column's cabinets	The displaying window of VPU is too small.	Move VPU's window coordinates, and enlarge VPU's displaying window.	
No display on a single cabinet	Cabinets are not powered.	Check the power supply for the cabinets.	
	The control board is not powered.	Check the power input and power supply of mother board.	
	Power supply for the control board is down.	Change the switching power supply.	
	Control board is down	Change the control board.	
	Power supply for the modules is down.	Change the power supply.	
Only image "X" or unbalanced color is shown on a whole row's cabinets	Communication wires between LDU and cabinets are loose.	Insert the signal wires securely.	
	Communication wires between LDU and cabinets are broken.	Change signal wires.	
	The control board of the first cabinet connected to LDU is broken.	Change this control board.	
	LDU's control board is broken.	Change QS5003D, and send the back-up files in computer to LDU.	
Only image "X" or unbalanced color is shown on several neighboring cabinets in a row	The control board of the first cabinet in the left is broken.	There is something wrong with the control board, change it with a good one.	
	The problem lies in the last cabinet to its right.	Signal wire connected to this cabinet is loose.	Insert the wire tightly
		Signal wire connected to this cabinet is damaged.	Change signal wire.
		The control board is broken.	Change control board.
Only image "X" or unbalanced color is shown on a whole column's cabinets	The displaying window of VPU is too small.	Move VPU's window coordinates, and enlarge VPU's displaying window.	
	The displaying	Set it bigger.	

	window of LDU is too small.		
Abnormal show of cabinets	Unconformity of brightness.	Setting for the cabinet's brightness is wrong.	Set the cabinet's brightness in LDU.
		Power supply for the modules is broken.	Change the power supply.
	Signal wire connected to this cabinet is damaged.	Change the signal wire.	
	Control board is broken.	Change the control board.	
	No show on a certain module.	See "No show on a certain module".	
	Abnormal show on a certain module.	See "Abnormal show on a certain module".	

TABLE 4.3 Common malfunctions of cabinets

1.4 Maintenance

Phenomena	Solution	
No show on a certain module	Power cable connected to this module is loose	Insert the joint tightly.
	Power cable input of this module isn't connected well	Connect the power cable.
	Signal wire from the control board to this module is loose	Insert the signal wire tightly.(12Pin and 2Pin)
	Signal wire from the control board to this module is damaged.	Change signal wire.
	Brightness setting for this module is wrong.	Send the correct brightness value to LDU or recover the module's default value .
	The module is broken.	Change this module.
Abnormal show on a certain module	Signal wire from the control board to this module is loose.	Insert the signal wire tightly.(12Pin and 2Pin).
	Signal wire from the control board to this module is damaged.	Change signal wire.
	Brightness setting for this module is wrong.	Send the correct brightness value to LDU or recover the module's default value.
	Some pixel is dark or some LED is dark.	Change this module.

TABLE 4.4 common malfunctions for maintenance

2. Trouble shooting

2.1 The data communication of the system control

2.1.1 USB & RS232 communication

If you are not able to communicate the software by the RS232 COM port, please check the com port and the baud rate first. The software of the video processor will work properly and normally at the baud rate 19200 bps. If USB & RS232 are used at the same time, the system gives priority to USB over RS232. RS232 communication will be ineffective automatically. Second, check if the communicating wire is correct or not. You should use the extension cable of RS232 for communicating the video processor.

It is necessary to set the allocation of the com port and the baud rate correctly, because under the USB communication, the video processor changes the USB communication to COM port communication. You should install the driver of USB first.

2.1.2 RS485 network communication

RS485 network communication refers to the network communication between LDU3000 and the scanning control board.

You can find out the specific trouble in “Advanced Setting for Full Color LED Displays” of the software. Under the sub-menu of “Advanced Setting” –“Basic information,” you choose the operation “Refresh”, you can get the “layout” and “tabulate” information of the cabinets. You can interpret the problem from the “Address” in the “List”, checking out if the address and the amount of the cabinets are correct or not. The correct address of the cabinets should be continuous in number, ranging from 1, 2, 3……n-1. If you find that the amount of the number in the software is less than the actual cabinets, you can refer to “Layout” to find out the position of the faulty cabinets.

Usually, the problem of RS485 network communication may be caused by the following reasons: wrong connection of the positive and negative polarities, wrong address or repetition of address in the scanning control board, communicating IC problem in the main board, or incorrect setting of the total cabinets. Usually, we suggest you exclude the problem by analyzing the problem under the normal working status. For example, right now, we find that there are two continuous cabinets missing. We can find the cabinets whose control board is faulty by the

software. Once you find out the 1st faulty board, you can skip it. Try to see if you can find the next board or not so as to judge if there is any problem with it or not.

Common problems:

a) Single cabinet missing: This problem may be caused by the wrong or if the address is overlapping another address (which means you have the same address for more than one board. We call it repletion of address), or there is some problem with the communicating IC in the main board.

b) All cabinets missing after a certain cabinet: When you find that all the cabinets are missing after a certain cabinet, you should first check the 1st missing cabinets. The positive and the negative poles of the communication wire may be connected oppositely.

c) Missing all the cabinets in the one channel: There may be some problem with the communicating IC in the HUB board, or the connection of the wire is wrong.

d) Check the terminus resistance of RS485, because this resistance is used for the beginning and the ending of RS485 networking.

2.1.3 Optical fiber communication

Open the software of the video processor, in the interface “Communication testing”, choose “Start” to check if the optical fiber communication works normally or not and if the information showed in LDU 3000 is correct or not. The loose connection between the optical fiber and the optical module can cause the communicating problem. Or the problem may be caused by the sending and receiving problem of a single communicating access. You can check the LED indicating lamps to find out what is the exact problem.

2.2 Video data communication

2.2.1 Connection of the video source

You can pick out the problem of the video source by using the software of the video processor or by the front panel in VPU 3000.

DVI signal: Open the “Attribute” of the PC table top. Check if the driver of the display card is well installed, or if DVI output is used.

S-Video、CVBS、YPrPb signal: Check the equipment of the video source –DVD. Find out if the DVD is under progressive mode or not. If you find there is some problem with the picture or the color, check if Y、Pr、Pb are connected correspondingly or not.

2.2.2 Optical fiber communication of the video data

Open the software of the video processor, in the interface “Communication testing”, choose “Start” to check if the optical fiber communication works normally or not and if the information showed in LDU 3000 is correct or not. The loosen connection between the optical fiber and the optical module can cause the communicating problem. Or the problem may be caused by the sending and receiving problem of a single communicating access. You can check the LED indicating lamps to find out what is the exact problem.

2.2.3 PHY Physical network

You can test the problem by using the software--- “Advanced Setting of Full Color LED Display”. After you run this software, under the sub-menu of “advanced setting” –“Basic information,” choose the operation “Refresh”, then you will get the “layout” and “List” information of the cabinets. You can interpret the problem from the “network connecting status” in the “List”, checking if there is any problem with the network connection. As it may be known to the user, the PHY network of the same row is transmitted from one cabinet to another. If once cabinet can’t receive the signal, all the cabinets after it receive no signal, either. In this case, when you find the cabinet that has a problem, you should skip this faulty one first and go to the next cabinet. In this way, you can find out whether it is the transmitting problem of the previous cabinet, or is it the receiving problem of the next cabinet.

2.3 Abnormality of the display

2.3.1 The problem of broken pixels

Usually, we will check the “Red”、“Green”、“Blue”、“White” status of the pixels under the full screen testing status. You can change the broken pixels with the spare pixels and the drive boards. Please refer to “Module replacement” in “Daily maintenance of the full color display”.

2.3.2 One driver board is black or dim

There is a brightness parameter setting for all the driver boards in the cabinets. If a driver board is dimmer or un-displayed, the problem may be caused by the setting of the parameter.

You can check if the value of the setting is H"00" or less than H"FF".

In the software of "Advanced Setting of a Full Color LED Display", there is an option of "Brightness control of t he cabinet". You can find the setting for the single cabinet and the setting for the 6 drive boards of each cabinet. The setting ranges from 64~255. After the setting, press "Save" to save the value in LDU and the scanning control board.

For detailed information, please refer to the user's manual "Brightness adjustment of the drive board of the cabinet" in "Advanced Setting of a Full Color LED Display"

2.3.3 The problem of inconsistent brightness ,dimness or total blackness on a cabinet

If the brightness of one cabinet is inconsistent form the others, the reason may be that its brightness setting is different from the others. Or the GAMMA of this cabinet is different from the others. If you want to check the GAMMA, you can use either the "γ correction" in the "video controller", or the front panel of VPU 3000 to check the setting. If the cabinet is not well restored, we can come to the conclusion that its Gamma setting is different from other cabinets.

In this case, you can use the software-"Advanced setting of a full color display" to restore the setting. Click on the menu "Update & renovate", choose "Renovate" to restore the setting. Under the interface of "Update & renovate", choose the address of the main board that needs renovating from the address column, and the data of γ correction. For detailed information, please refer to the user's manual "Update and renovate"

2.3.4 The problem of wrong display sequence on a particular cabinet

This problem can be caused by the wrong connection of the control board to the driver boards. Please refer to the right way of connection in the "Instruction manual for cabinet and screen installation". Or you can see the right connection of the two neighbor cabinets.

2.3.5 The problem of chaotic display on one cabinet or certain pixels being out of control

When this problem occurs, it can be caused by the incorrect data of the driver board in the cabinets. You should check the DIP switch (SW1) in the control board of the cabinet first. Check if the "Driver board" in Pin 5~8 is correct or not. After checking the DIP switch, if you are still not able to solve the problem, you can use the software-"Advanced Setting of a Full Color LED Display" to restore the setting. Click the menu "Update & Repair", choose "Repair" to restore the setting. Under the interface of "Update & Repair", choose the address of the main board that needs

renovating from the address column, and the data of γ correction. For detailed information, please refer to the user's manual "Update and Repair"

2.3.6 The problem of chaotic display on the whole screen or some pixels out of control on every cabinet

If you can't find the video data, check the video source and the communication of the video data. If every cabinet has the same uncontrolled pixels at the same location, we can conclude that the setting of the cabinet model is incorrect. You should open the software –"Advanced Setting of a Full Color Display". Choose the right cabinet model in the area of "LDU setting".

2.3.7 Whole screen completely black

If the display is black, there may be no Gamma parameters in all the control boards. In this case, you should open "Advanced Setting of a Full Color Display". Choose the function --f" Update and Repair" to download the correct Gamma or renovate the Gamma parameters. For detailed information, please refer to the user's manual "Update and Repair"

3. Repair and maintenance

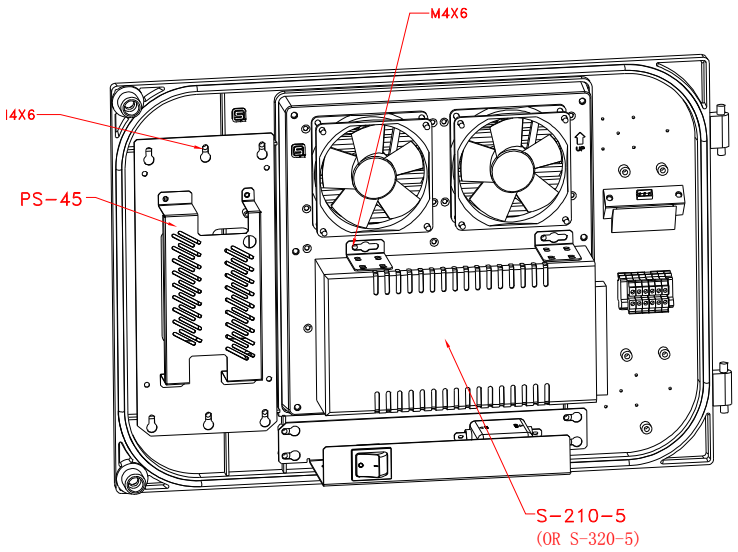
3.1 Replace the power supply and the related components

3.1.1 Turn off the power. Unfasten the AC input wire and DC output wire of the power supply.

3.1.2 Loosen the thumb-screw, then take out the old power supply

3.1.3 Put in the new power supply and fasten the fixing screw.

3.1.4 Connect the AC wire and DC wire again.



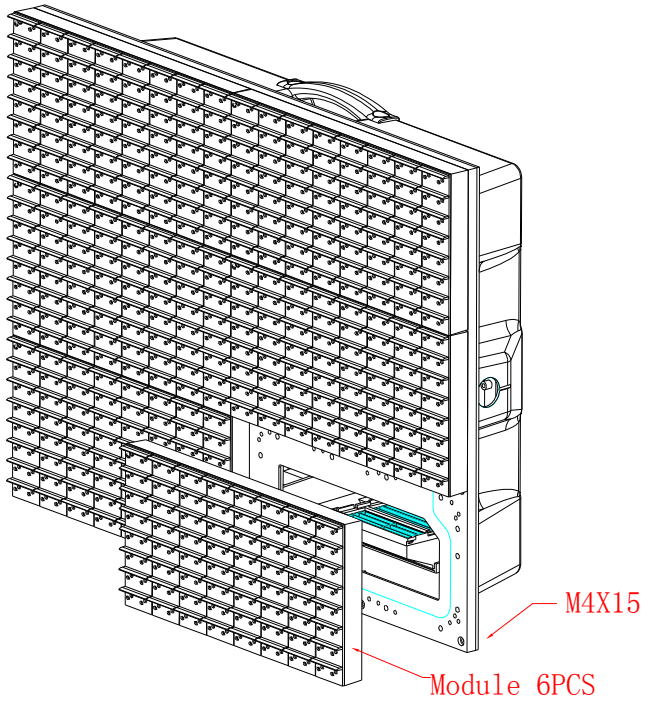
3.2 Replace the modules

3.2.1 Turn off the power. Pull out the signal cable and the DC connector.

3.2.2 Loosen the installation screws of the module then take these old modules out.

3.2.3 Put the new modules in. Fasten the screws again.

3.2.4 Connect the DC cable and the signal cables again.



3.3 Replace the control board

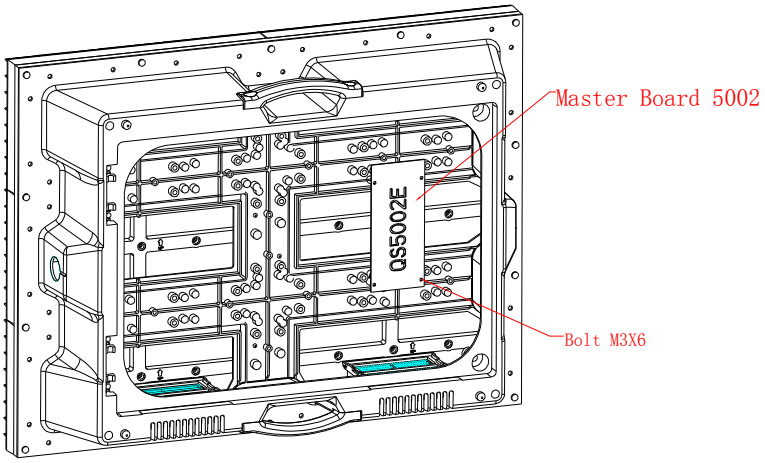
3.3.1 Replace the control board

3.3.1.1 Turn off the power. Pull out the signal cable, the wire of the fan, and the power cable. Please mark the sequence of these cables.

3.3.1.2 Loose the screws. Take out the old control board.

3.3.1.3 Put in the new board. Fasten the screws again.

3.3.1.4 Connect the signal wire, the wire of the fan, and the DC power back according to the original sequence.



3.3.2 Set the address and the model of the driver board. You can refer to the old control board to set the correct DIP switch and the driver board number. The setting will be explained in the following chapter.

3.3.3 Turn on LDU 3000 again. LDU 3000 will self-detect if the data is correct or not. If not, LDU 3000 will update the data that is saved in LDU3000 to the control board.

3.3.4 Check if the display works normally or not.

3.4 Replace LDU

3.4.1 Replace the old main board in LDU with a new one. Please note that when you re-connect the power cable, the communicating wire and the optical fiber, you should connect them according to the original connecting sequence.

3.4.2 Parameter setting. Open the software" Advanced Setting of a Full Color LED Display. Press Tool\Recover\Recover from computer. Confirm the indicating information. Then open the back file (backup.LDU) in LDU, which is saved in your computer. Press Backup and wait till the

process is over. You can operate in the same way for the other updating operation in LDU.

3.4.3 Repeat this updating process on all of the LDUs. Check if all of them work properly or not.

3.5 Replacing the VPU

3.5.1 Replacing VPU. Please make sure that all the equipments are powered off when you are doing the replacing job. Connect the power cable, communicating wire and the video source signal. In this case you can have the normal operation.

3.5.2 Open the software of the video processor. Find out the pre-saved file and import it file in VPU.

3.5.3 Check if VPU works properly or not.

3.6 Replacing the optical fiber and the optical fiber connector

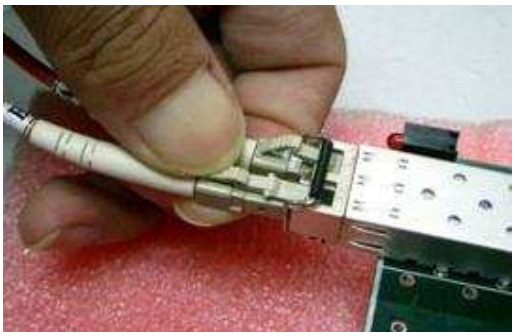
The optical fiber used in the system is multi-modal

If the optical fiber communication is for outdoor use, under usual circumstances, the optical fiber connecting work should be executed by trained personnel and the optical fiber connection should be performed at the installation site. There is no need to do any replacement. The fiber cable is connected by melting and fixing.

For the indoor used optical fiber, you should pay great attention to the connector when you are pulling the connector out. This is because the optical fiber has been already melted and fixed to the optical fiber connector.

Pulling out the optical fiber connector, Step by the follow

Step 1



Step 2

Step 3

Step 4

Step 5

Step 6

Inserting in the connector, Step by the follow

Step 1

Step 2

Step 3

□. Commissioning an Off-line LED Display

Phenomena	Checking steps
Turn on the power of all equipments	Power supply of the display. LDU power supply
	Wire connection among the cabinets
	Wire connection between the computer and LDU
Turn on the computer	Check if the cabinets and LDU are powered or not
	Check if the communication between the computer and LDU is normal or not
	Read back the LDU parameter
	Find the cabinets
	Primary commissioning
	Send some message to the display to check the displaying effect
	Make adjustment where modules or cabinets are not displaying normally
Back up	Back up from LDU to the computer

TABLE 5.1 Off-line commissioning steps

1. Check all the equipment before they are powered

Before you turn on the power, you should make sure that you have connected the whole system correctly according to the user's manual. Please do all the checking steps that listed in TABLE 5.2.

	Items to Check	Note
1	Power supply, LDU power supply, VUP power supply, the power supply connection of the video processor	Please pay attention to the power supply input. Check if there is short circuit among LNG is and if all the wire connections are of open circuit
2	Connection between the cabinets	The checking of the power cable is the same as step 1. Please pay attention to

		the direction of the signal cables.
3	Wire connection from LDU to the cabinet	Please connect the two parts according to the sequence in the user's manual
4	Wire connection from LDU to the computer LDU	Please refer to TABLE 5.3 for the communicating wire connection

TABLE 5.2 Check all the equipment before they were powered

Connector on LDU main board	Kind of link	Note
COM1	RS232	
COM2	RS232	When "SEL" connect to GND
	RS485	When "SEL" open
CON8(RJ45 interfacing)	Ethernet	10M/100M auto switch

TABLE 5.3 Communicating cable that connects to LDU

2. Turn on the computer and the display

2.1 Check if all the cabinets are powered or not. Please refer to TABLE 5.4.

Items	Checking steps
All cabinets are powered	Check if the red and green lamps on the back of the cabinets are flashing or not (STATUS & RUN) Check if the lamp on the power supply is on or not
LDU is powered	Check if the exterior green lamps in LDU is on or not LDU Check if the interior lamp in LDU is on or not

TABLE 5.4 Check if the cabinets and the LDU are powered

2.2 Checking communication between the computer and LDU

You need to use the software of "Imposa Tools software". Please refer to the user's manual of "Advanced Setting of a Full Color LED Display" Chapter 6.1 LDU management; Chapter 6.5 LDU parameter setting

2.2.1 Run Imposa Tools software

2.2.2 Add an new LDU in LDU manager bar, via the RS232/485 Serial port or Ethernet

2.2.3 Press "Read back" button in the LDU setting window, and you will find the value in the window has been refreshed

2.3 Read back the LDU parameter

Please use the" Imposa Tools software" and refer to the user's manual of "Advanced Setting of a Full Color LED Display" Chapter 6.1 Parameter setting of the display

2.3.1 Choose View\Screen Setting or press "Screen Setting" button to view the Screen Setting window

2.3.2 The software will read back the parameter of the sign automatically, then press "Read back" button to refresh the window again.

2.3.3 Check that the value in the window is according to your sign

2.4 Find all the Cabinets

Please use the" Imposa Tools software" and refer to the user's manual of "Advanced Setting of a Full Color LED Display", Chapter 6.7 LDU basic information, adjustment of color tone, and display commissioning.

2.4.1 Choose View\View\Tile Information or press "View\Tile Information" button to view the View\Tile Information window

2.4.2 Press  button to refresh the tile information, and count the number of the green cell after refreshing back

2.5 Basic test

Please use the" Imposa Tools software" and refer to the user's manual of "Advanced Setting of a Full Color LED Display" Chapter 6.74 Basic test

Select all of the tiles, and do the Row scan and the Col scan test.

2.6 Sending the information to the screen to check the screen

Please use the" Imposa Tools software" and refer to the user's manual of "Advanced Setting of a Full Color LED Display" Chapter 6.74 Basic test

Please use Sigma 3000 V3.10 and refer to " Sigma Play ver3.10 user's manual" Part 2 Sigma Editor

Stop the basic test, and send some messages to the sign. Check if there is any problem

with the display effect. You can refer to the operation in 2.7 if it is necessary.

Stop the basic test, and send some message to the sign

2.7 Chaotic modules and adjustment of the whole screen

Please use the" Imposa Tools software" and refer to the user's manual of "Advanced Setting of a Full Color LED Display", Chapter 6.7.3 adjustment of color tone

2.7.1 Under the display status, choose 

in the layout to adjust the color tone.

2.7.2 Choose the synchronous adjustment and the module that needs adjustment

2.7.3 By using the slide bar or directly inputting the value in the input box, you can adjust the display effect to your desired effect.

2.7.4 Save the setting and send the setting to LDU

2.7.5 Check if the display effect is OK or not after the auto resetting.

3. Back Up (LDU to PC).

Imposa Tools software is required. For more details, please refer to <<Software Instruction for Standard Cabinet Advanced Setting>>, 7.1.1.2 Save to Computer

3.1 Choose Tool\Backup LDU date\Save to Computer

3.2 Choose the location for saving the Backup File and name the saved file

3.3 Click "Backup" button and wait for it to finish

□. Trouble Shooting of the Off-line (asynchronous) Display

1. A quick check list for common problems

Communication

Phenomena	Solution		
PC can not communicate with VPU	VPU doesn't start	Turn on VPU, and check the Power Input of VPU	
	User didn't choose the correct com port for communicating with VPU.	Choose the correct com port	
	When USB and RS232 signal cable are used at the same time, RS232 can not be connected.	This is normal; USB has priority when they are used at the same time. When you need to use RS232, please remove USB cable.	
	Only USB can not be used	The drive program of USB hasn't been installed, please install it.	
		The port of USB is damaged, please choose another port or use RS232.	
	The RS232 com port or USB port is damaged	Change another port.	
		Choose USB or RS232.	
		Repair the PC.	
	RS232 or USB signal cable has problem.	Change the signal cable	
	VPU is not working.	Change the VPU, and Lead In the saved setting file to VPU.	
The PC can not communicate with LDU	LDU hasn't been started	Start LDU, check the Power Input of LDU	
		The switching power supply of LDU is broken and need to be changed.	
	Com port can not communicate	User didn't choose the correct com port or baud rate	Choose the correct com port and baud rate
		RS232 or RS485 signal cable is broken	Change the signal cable

		COM2 232 or 485 can not communicate	SEL is not dealt with, deal with SEL as TABLE 5.3
		When the LDU com port which communicates with the PC is broken	Change another com port or use Ethernet
			Change LDU.
		The com port of the PC is broken	Change another com port
			Repair the PC
	The Ethernet can not communicate	There is no network card in the PC	Install the network card
		The IP address of the PC and LDU are not in the same network field	Change the IP address of the PC, so that it can be in the same network area with the LDU
			Change the IP address of LDU through the com port, and make it in the same network area with the PC
		The Ethernet cable is broken	Change the Ethernet cable.
		LDU is broken	Change LDU.
	The main board inside the LDU is broken	Change QS5003D, and recover the back up file in the PC to the LDU.	

TABLE 6.1 The common problem in communication part

Display Screen Body

Phenomena	Solution	
No content on the LED screen	LDU is not working.	Check LDU.
	Send the command “Clear” to the LED screen	Re-start LDU or send the command “Stop” in basic test.
	LDU is set to VGA mode	Set the LDU to Off-line mode
Chaotic display in the full screen	LDU is set to VGA mode	Set the LDU to Off-line mode

TABLE 6.2 Common problems in the display part of the screen

Display part of the cabinet (Display module)

Phenomena	Solution		
Several continuous cabinets in the same row don't display anything	No power to the cabinets.	Check the power of cabinets, especially the first Black cabinet from the right side(looked from the back of the screen) and the cabinet on the right of it	
All the cabinets in one row don't display anything	No power to the cabinets	Check the power of the cabinets, especially the first cabinet(looked from the front of the screen)	
	Some problem of the settings of LDU	The quantity of cabinets is not corresponding to the setting of LDU.	Send the quantity information to the LDU
		The setting of the display area is too small (this is common along the borders of the screen).	Set the display area to be bigger.
A single cabinet doesn't display anything	No power to the cabinet.	Check the power of the cabinet.	
	No power to the control card	Check the power input and power supply of the main board.	
	The power supply of the control card is broken.	Change the power supply.	
	The control card is broken	Change the control card.	
	The power supply of the display module is broken.	Change the power supply.	
All the cabinets in a row just show "X" or chaotic display	The signal cable from LDU to the cabinet is loose	Connect the signal cable well.	
	The signal cable from LDU to the cabinet is broken	Change the signal cable	
	The control card in the first cabinet which connects to LDU is broken	Change that control card	
	The main board	Change QS5003D, and recover the back up file	

	in LDU is broken	(when adjusting) to LDU.	
Several continuous cabinets in a row just show ”X” or chaotic display	The control card in the good cabinet on the left side beside the defective cabinet is broken.	The output of that control card has some problem, please change that control card.	
	Problem lies in the first defective cabinet from the right side.	The signal cable to this cabinet is loose.	Connect the signal cable well.
		The signal cable to this cabinet is broken.	Change the signal cable.
		The control card of that cabinet is broken.	Change that control card
All the cabinets in a vertical column just show ”X” or chaotic display	The setting of display area in LDU is too small (this is common along the borders).	Make the corresponding in the LDU to be bigger.	
Abnormal display of the cabinet	Inconsistent brightness	The brightness setting of the cabinet is not correct	Set the cabinet brightness in LDU
		The power supply of the display module is broken	Change the power supply.
	The signal cable connected to the cabinet is broken.	Change that signal cable	
	Control card is broken	Change that control card	
	Some display module doesn’t show anything	Refer to ”” some display module doesn’t work”	
	Some display module show abnormally	Refer to ””some display module work abnormally”	

TABLE 6.3 Common problems in display part of cabinet

Maintenance

Phenomena	Solution	
Certain display module doesn't work	The power supply leading to that module is not connected well.	Connect it well.
	The Power Input cable of that display module is not connected well	Connect that cable well
	The signal cable from the control card to the module is loose.	Connect the signal cable well.(12Pin and 2Pin)
	The signal cable from the control card to the module is broken.	Change the signal cable
	The brightness of that module is set incorrectly.	Send the correct brightness value to LDU or recover the default value of that cabinet
	The module is broken	Change that module
some display module work abnormally	The signal cable form the control card to the module is loose	Connect the cable well.(12Pin and 2Pin)
	The signal cable from the control card to the module is broken.	Change the signal cable
	The brightness of that module is set incorrectly.	Send the correct brightness value to LDU or recover the default value of that cabinet
	Some pixel are not on or some LED are not on.	Change that module

TABLE 6.4 The common problem in Maintenance part

2. Trouble-shooting instruction

2.1 System control data communication

2.1.1 RS232/485 communication

If user uses RS232 to communicate, but the communication fails, please check the Com port and the baud rate, whether the signal cable is correct or whether it is broken.

Especially, COM2 in LDU is selectable. Please refer to TABLE5.3 for the connection of SEL

2.1.2 RS485 communication network

RS485 communication network means the network between LDU3000 and the control scanner

The mistakes and the location of the mistakes can be inspected through "RGB full color display

advanced setting" software. Choose "Refresh" in the "Basic information" interface of "RGB full color display advanced setting" software. Refer to the "Layout" and "List" information of the cabinet, judge the cabinet address and cabinet quantity correct or not according to the "Address" in "List". The correct cabinet address is continuously from 1 to (total quantity - 1); If the cabinet quantity in cabinet address is less than the actual cabinet quantity, please find out the wrong cabinet location according to "Layout".

The main problems include: the Positive end and Negative end of the communication cable are connected wrongly; the address of the control scanner is incorrect or repeated; the communication IC in the main board has problems; the setting of the total cabinet quantity is not correct. We can exclude some problems with a normal working condition, for example, if two continuous cabinets can not be found, after the wrong cabinets are found through the software, we can skip over the first wrong cabinet, and connect to the next cabinet directly and see whether the "lost" cabinet can be found, then we can judge whether there is problem with the second cabinet.

The main problems cover:

a) A single cabinet is lost：the address is wrong or repeated, or the communication IC of the main board has some problem;

b) All the cabinets except the first cabinet are lost：the positive end and negative end of the communication cable in the first cabinet are connected oppositely;

c) All the cabinets in a channel are lost：the communication IC for this channel in the HUB has some problem, or the connection cables are not correct;

d) Check the end resistor of RS485 is correct or not. That resistor is used in the beginning and end of RS485 network;

2.1.3 Ethernet communication

Only when the IP address of LDU and the PC are in the same network field, the Ethernet can work. If they are not in the same network field, user can change the IP address of the PC or of the LDU.

Please refer to TABLE6.5 for the usage of CAT5 cable

Item	Type of Network cable
Computer connected to LDU directly	Twisted network cable
Computer connected to Switch or HUB before linked to LDU	Straight through network cable

TABLE 6.5 Usage of CAT5 cable

2.2 Display data communication

PHY Physical network

The errors and their locations can be inspected and found through “RGB Full Color Display Advanced Setting” software. In the “Basic Information” interface of “RGB Full Color Display Advanced Setting” software, choose “Refresh”. Refer to “Layout” and “List”, judge whether the connection in cabinet PHY physical communication is correct or not according to “Ethernet connection condition” in the “List”. The PHY physical communication in the same channel is transferred downward “daisy-chained”, that means when one cabinet cannot receive the signal, the cabinets after it will have no signal either, so after the PHY physical communication problem in some cabinet is confirmed, user must skip over this cabinet and connect directly to the next one, so that he can make the judgment the problem lies in the receiving of this cabinet but not the sending of last cabinet. With this method, user can also judge the problems of the cabinets afterward.

2.3 Abnormal Display of the LED screen

2.3.1 Pixel is broken

Make the full screen to display “Red”, “Green”, “Blue” and “White” under the test condition and check out the bad pixels; user can change the dot or driver board. Refer to “Display module replacement” in “Maintenance for Single Cabinet of Full Color Display”.

2.3.2 A single driver board (display module) is dim or doesn’t display

The main cause is that in “Cabinet driver board brightness”. This driver board’s brightness parameter is H”00” or smaller than H”FF”. In “Cabinet brightness adjustment” of “Full color

display advanced setting", there is a Cabinet Brightness Adjustment and Drive Board Individual Brightness Adjustment. The adjusting range is 64~255. After the adjustment, click "setting" and the adjustment will be saved in LDU system and Scan control card. Please refer to "Cabinet drive board brightness adjustment" in "Full color display advanced setting"

2.3.3 Inconsistent brightness of single cabinet, or the whole cabinet is dim, or the whole cabinet is black

The problem may be caused by the inconsistent brightness setting between this cabinet and other cabinets or the GAMMA parameter of this cabinet and of other cabinets are not corresponding. GAMMA parameter, firstly choose "γ correction" in "Video controller" or set "Gamma correction" through VPU3000 operation interface. Check the effect, and if no recovery happens, it means the Cabinet's Gamma parameter is different from other cabinets, then user can achieve it through the "recover" function in "Upgrade and recover" of "Full color display advanced setting". In "Upgrade and recover" of "Full color display advanced setting" software, choose the address of the cabinet which needs recovery, "control board address" and "Recover γ data of control board", then click "Recover", and the recovery process is finished. For more detail, please refer to "Upgrade and recover" function of "Full color display advanced setting".

2.3.4 Incorrect display order of single cabinet

Incorrect connection order between the control card and drive board, please refer to the correct connection in other cabinet or "Instruction of full color display single cabinet hardware connection".

2.3.5 Chaotic display in single cabinet or some pixels are out of control

The cabinet drive board data may be wrong. Firstly, check the switch of the cabinet's control card, from 5—8 of SW1, the correct switch should be corresponding to the parameter of drive board；if the problem is still there, the drive board's data may be damaged, solve the problem through "recover" function in "Upgrade and recover" of "full color display advanced setting". In "Upgrade and recover" of "Full color display advanced setting", choose the address of the cabinet which needs recovery, "control board address" and "Recover control card drive board data", then click "Recover". For more detail, please refer to "Upgrade and recover" function of "Full color display advanced setting".

2.3.6 Chaotic display of the whole screen or some pixels in every cabinet are out of control

The display was set to be VGA mode, change it to be Off-line mode. Some pixels of every cabinet are out of control especially the same part of every cabinet, the problem may lies in the incorrect setting in “Screen model”，please choose the correct “Screen model” in “LDU setting” of “ Full color display advanced setting” software.

2.3.7 The whole screen is black

Maybe all control cards have no Gamma parameter, download the correct Gamma or recover Gamma parameter through “Upgrade and recover” in “Full color display advanced setting” software. For more detail, please refer to “Upgrade and recover” function of “Full color display advanced setting”.

3. Recovery and maintenance.

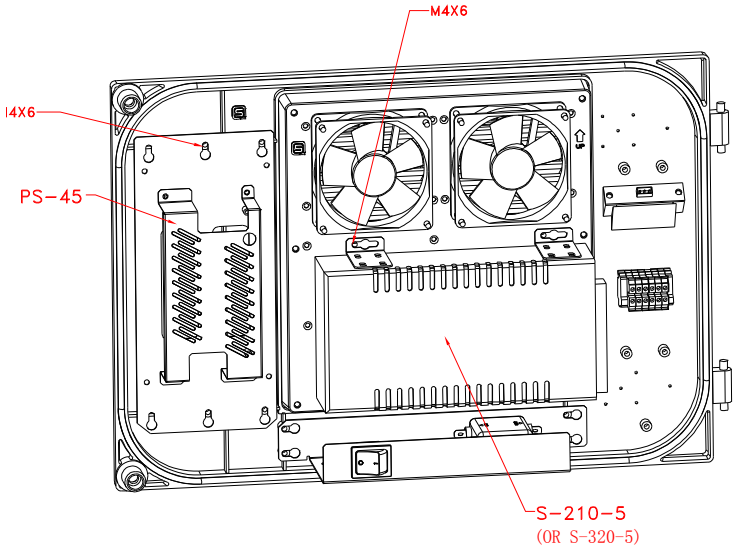
3.1 Replacement of power supply or other spare parts

3.1.1 Cut the power of the LED screen, drag out the AC input power cable and the DC output cable of the power supply

3.1.2 Loosen the screws of the power supply, take out the old power supply

3.1.3 Put the new power supply to the right place and fasten the screws

3.1.4 Connect the AC power cable and DC power cable



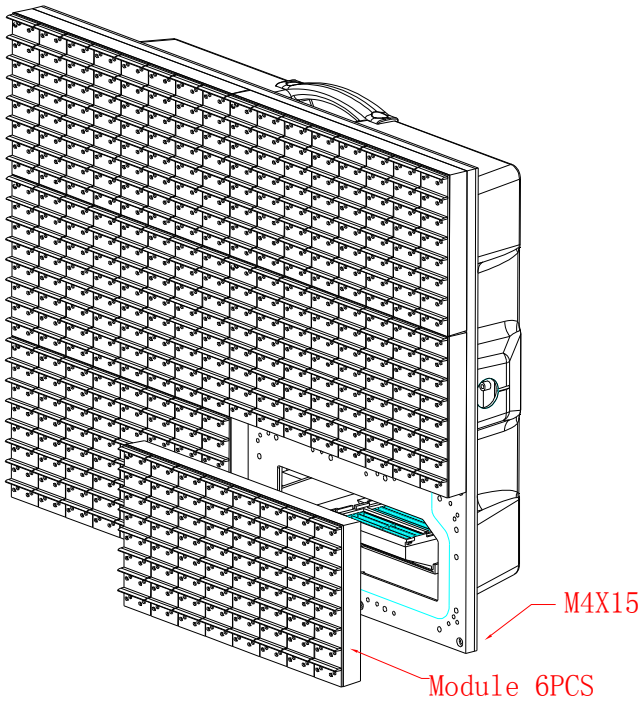
3.2 Replacement of the display module

3.2.1 Cut the power of the LED screen, drag out the signal cable and DC power cable of the bad display module

3.2.2 Loosen the screws and take out the bad display module

3.2.3 Put the new display module to the right place and fasten the screws

3.2.4 Connect the DC power cable and signal cable



3.3 Replacement of the control card

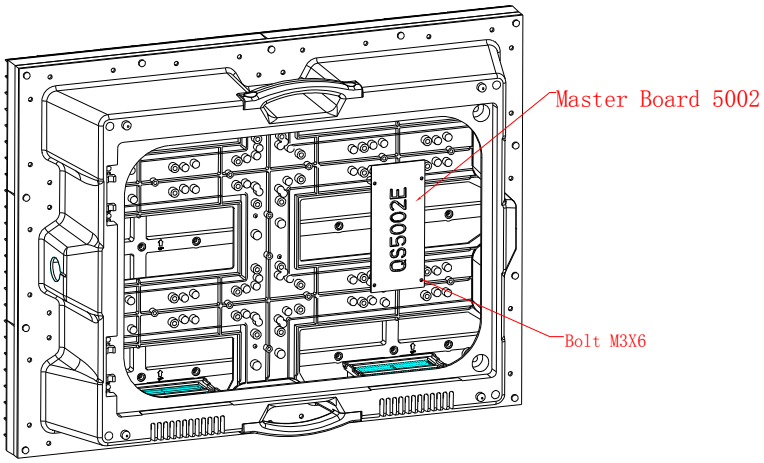
3.3.1 Change the control card

3.3.1.1 Cut the power of the LED screen, drag out the signal cable, Fan control cable and power cable, and make the label of their locations

3.3.1.2 Loosen the screws of the control card, take out the old control card

3.3.1.3 Replace the new control card and fasten the screws

3.3.1.4 Connect the signal cable, FAN cable and DC power cable to the right connector



3.3.2 Set the address and drive board model. Set the correct switch and drive board model according to the drive board which has been replaced. Please refer to the afterward instruction for address and switch settings.

3.3.3 Restart LDU3000. LDU3000 will inspect whether the data in the control card is normal or not automatically; if it is abnormal, the data saved in LDU3000 will be automatically upgraded to the control card.

3.3.4 Check whether the performance is normal

3.4 Replacement of LDU3000

3.4.1 Change the main board of LDU3000. Replace a new LDU main board; connect the power, signal cable and optic fiber. Please do the connection according to the previous correct one.

3.4.2 Parameter settings. Press Tool\Recover\Recover from computer in “Full color display advanced setting” software, confirm the indication information, open the LDU back up file

which has been saved in the PC, for example: backup. LDU3000, click Backup, and wait till it finishes. Upgrade all the LDU with the same method(if there are more than one LDU3000)

3.4.3 Recycle the power of the LDU, and check whether it can work and display normally.

□. Appendix: Instructions for the Function of the Main Control Board

1 Instructions for the control board QS5002L in the Imposa ® cabinet

1.1 Layout

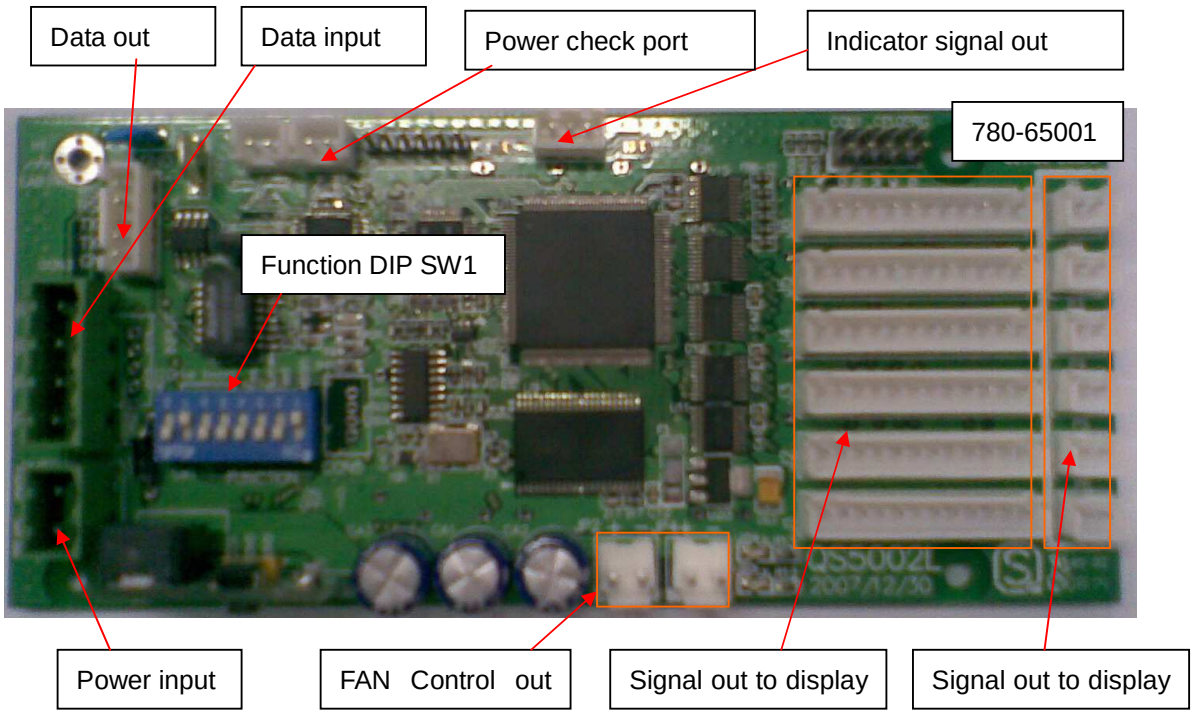


Fig 57

1.2 Instructions for the Interface Functions of the Control Board QS5002

P1~P6: VCC output, connected with LED board, provides power to IC on LED PCB

CON2: digital signal input

CON3: digital signal output

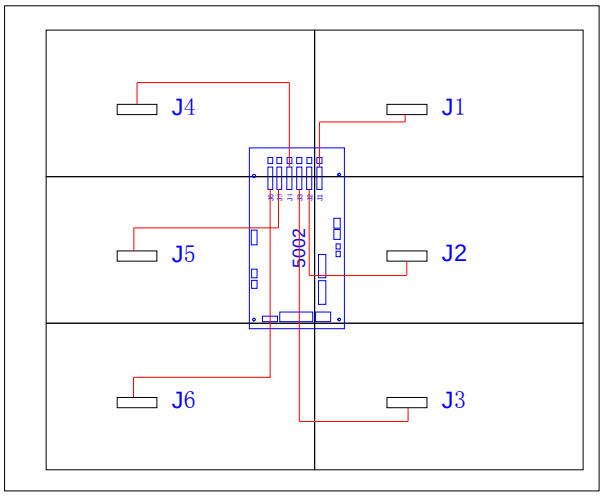
JP7: power input, 5-12V

JP2 JP4: FAN port

JP12: signal output of the indicator lamp

J7：Power check port

J1~J6: signal output (drive board), each cabinet has 6 modules. Sighted from the back, the order of the connection is as below:



Rear View

Fig 58

1.3 SW1: Functional DIP Switch SW1:

DIP1=OFF, RS485 matching resistance. Matching resistance is usually used at the two sides of the RS485 network, instead of in the midst.

DIP2=OFF, off line check. Red, green, blue and white alternatively scan horizontally and vertically.

DIP3=OFF, all-white off line burn-in. Instructions：Burn-in priority selection

DIP4=OFF, pixels be checked function; DIP4=ON, NO checked function;

DIP8~DIP5: models of the drive board

Note：When the DIP switch is ON, it means “0”; when it is OFF, it means “1”.

DIP8~DIP4	Models of the Drive Board
0000	5X10 driver board（32 mm）
0001	6X12 driver board（26.7 mm）
0010	8X16 driver board（20 mm）
0011	10X20 driver board（16 mm）
0100	12X24 driver board（13.3 mm）
0110	9X18 driver board（17.7 mm）
0111	7X14 driver board (22.7mm)
1000	4X8 driver board（40mm）
0101	16X32 driver board（10mm）
1001	16X32 driver board（12.5mm）

2 Instructions for the LDU3000 HUB Board QS5003

2.1 Layout

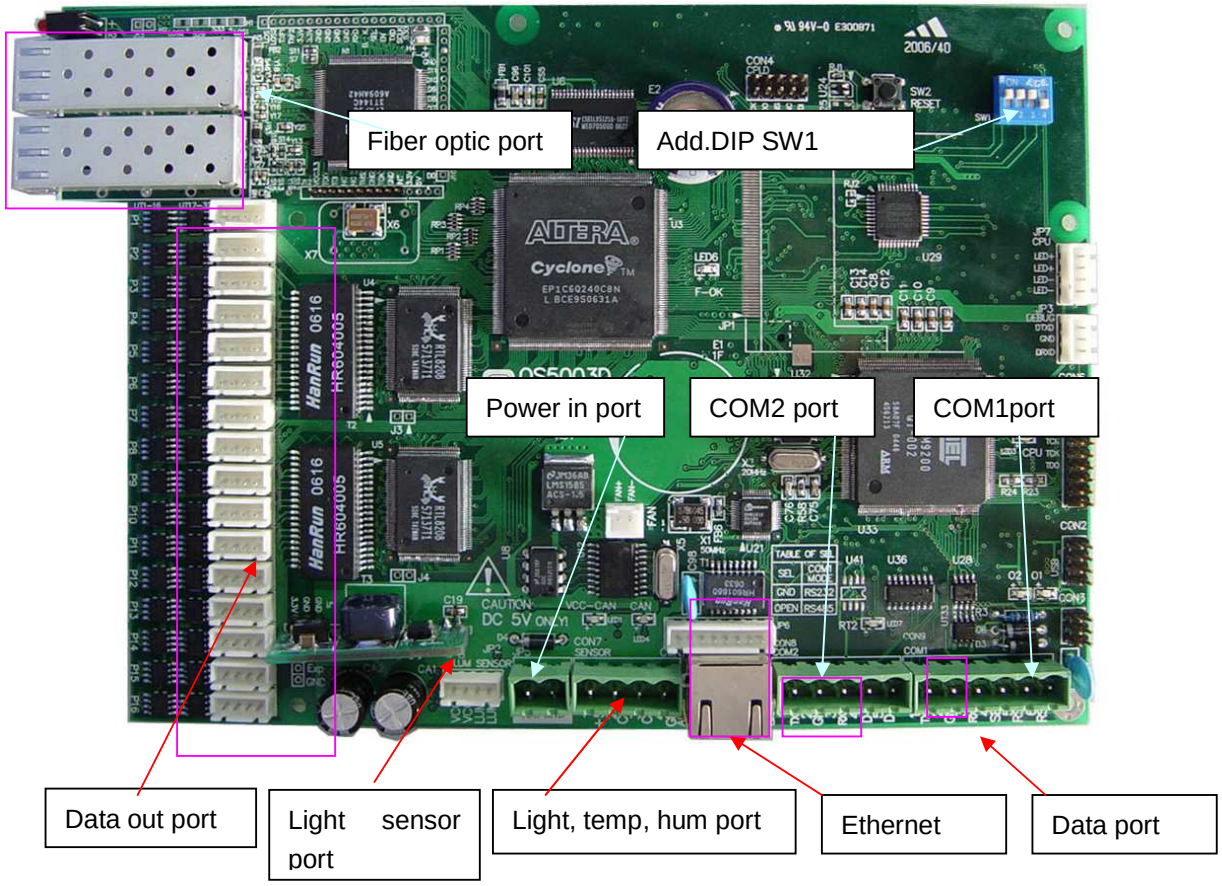


Fig 59

2.2 Instructions for the Interface ports

P1-P16: Data output interfaces，connect respectively with the input signal of the control board of the first cabinet in each of the display's row. From the top to the bottom, the cabinets are P1, P2, P3 … …

COM1: RS232or RS485; If we choose SEL(SEL connected with GND), then RS232；If SEL is suspended，then RS485. .

COM2: RS232

CON7: Sensor Light control, temperature, humidity CAN bus interface

2.3 Functions of the DIP Switch SW1

DIP1~DIP4=AD (4 ….0) address range：0~7

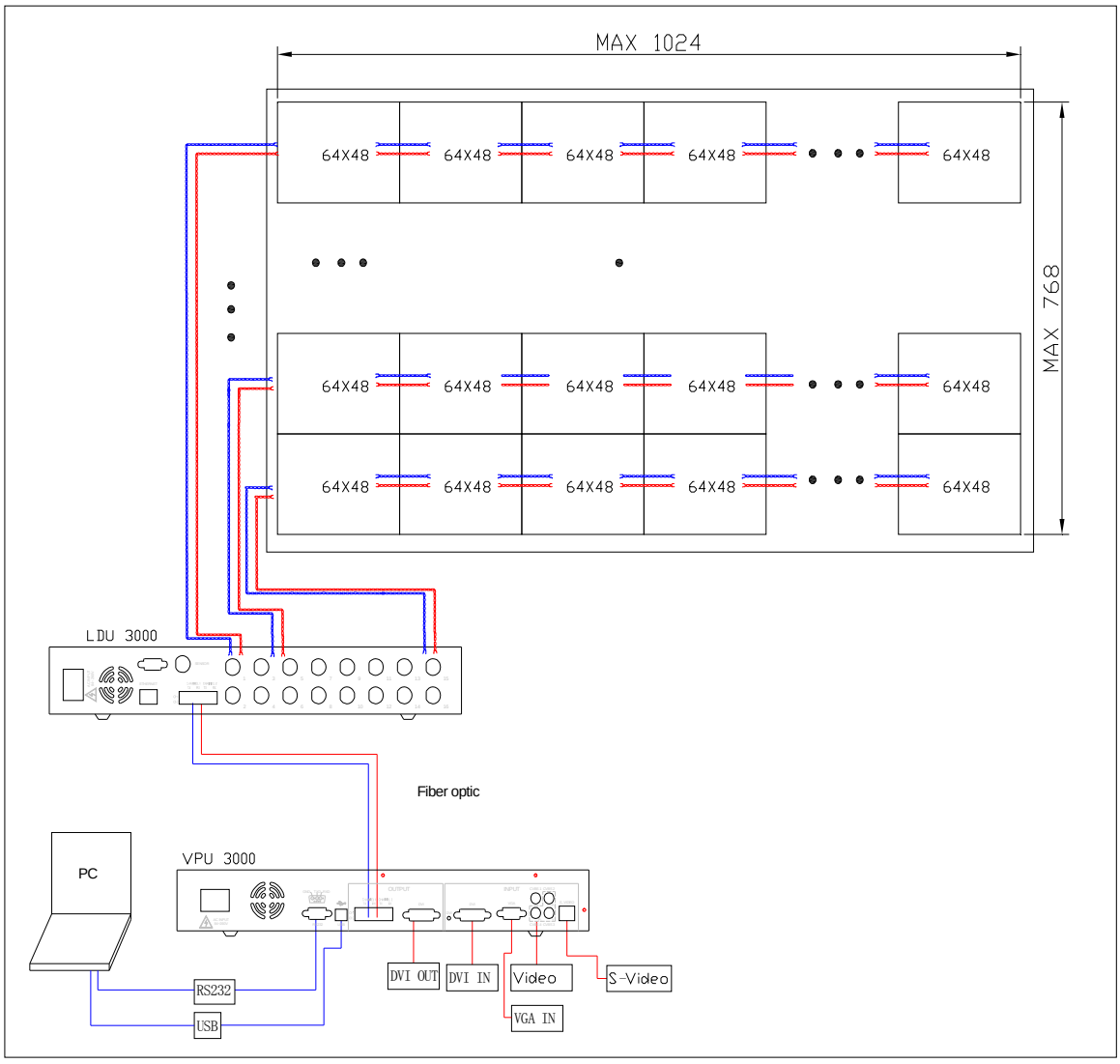
Note：When the DIP switch is ON, it means "0"; when it is OFF, it means "1".

3. Annexed Table: Technical Parameters of the Cabinet Imposa®

Pitch / Parameter	10mm	13.3mm	16mm	17.7mm	20mm	26.7mm	32mm	40mm
Composition of LED	1R1G1B						2R1G1B	4R2G2B
Size of module(mm)	160X320							
Pixels on one module	16X32	12X24	10X20	9X18	8X16	6X12	5X10	4X8
Pixels on one standard module	48X64	36X48	30X40	27X36	24X32	18X24	15X20	12X16
Resolution	10000	5625	3906	3164	2500	1406	976	625
Brightness （cd/m^2）	5000	5000	5000	5000	5000	5000	5000	5000
Maximum power of one cabinet	360W	500W	430W	360W	290W	160W	150W	150W
Viewing angle	110°/45°					90°/40°		

Size of one cabinet	480mm(H) X640mm（W）X160 mm(D)
Packaging size of one cabinet	560mm(H X 715mm（W） X 235mm(D)
Weight	20KG

4. Annexed Graph: System Block Diagram



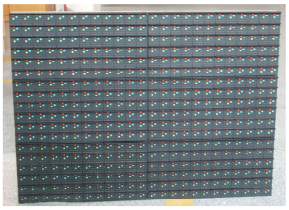
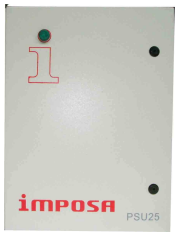
Instructions:

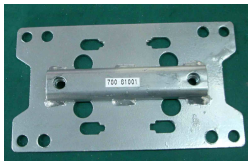
In the graph, there are 64X48 pixels on one cabinet. Due to different pitches, the pixels on the Imposa® cabinet are different accordingly.

When USB and RS232 are connected concurrently, the priority is given to the USB for communication.

In the graph, the red line represents the flow direction of data, and blue represents the flow direction of communication.

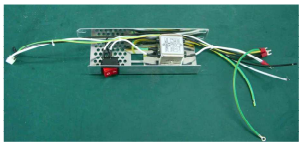
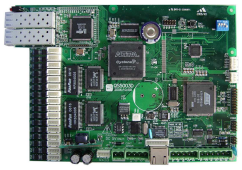
5 Items and Part Numbers

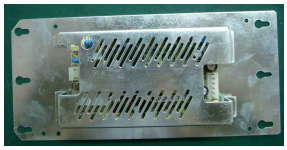
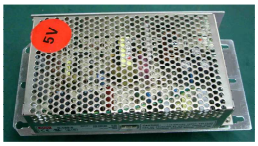
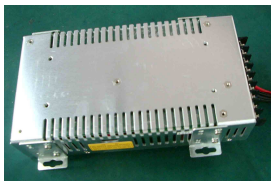
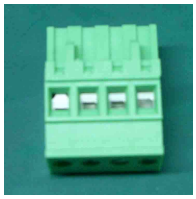
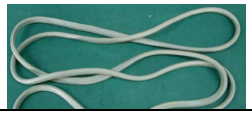
Item	Figure	Model	Part No	Remark
Cabinet Display	 	MD10-48X64-1R1G1B	781-01000	Pitch 10mm
		MD13-36X48-1R1G1B	781-01300	Pitch 13.3mm
		MD16-30X40-1R1G1B	781-01600	Pitch 16mm
		MD17-27X36-1R1G1B	781-01700	Pitch 17.7mm
		MD20-24X32-1R1G1B	781-02000	Pitch 20mm
		MD26-18X24-1R1G1B	781-02600	Pitch 26.7mm
		MD32-15X20-2R1G1B	781-03200	Pitch 32mm
		MD40-12X16-4R2G2B	781-04000	Pitch 40mm
LDU3000		LDU3000	781-10001	
LDU3000A		LDU3000A	781-10002	
VPU3000		VPU3000	781-10003	
Distribution Box 25KW PSU-25		PSU-25A	781-10004	AC110V Output
		PSU-25B	781-10005	AC220V Output

Distribution Box 40KW PSU-40		PSU-40A	781-10006	AC110V Output
		PSU-40B	781-10007	AC220V Output
Distribution Box 10KW PSU-10		PSU-10A	781-10008	AC110V Output
		PSU-10B	781-10009	AC220V Output
USB to RS485 converter		USB-RS485	781-10010	
imposa Tile		MO10-10-1R1G1B	780-01002	Pitch 10mm
		MO13-13-1R1G1B	780-01302	Pitch 13.3mm
		MO13-16-1R1G1B	780-01602	Pitch 16mm
		MO13-17-1R1G1B	780-01702	Pitch 17.7mm
		MO13-20-1R1G1B	780-02002	Pitch 20mm
		MO13-26-1R1G1B	780-02602	Pitch 26.7mm
		MO13-32-2R1G1B	780-03202	Pitch 32mm
		MO10-40-4R2G2B	780-04002	Pitch 40mm
Installation plate of cabinet			780-61001	
Installation bracket			780-61002	

Connection bar 1 for the installation			780-61003	L=1920mm
Connection bar 2 for the installation			780-61004	L=1280mm
Connection bar			780-61005	
Water-proof cannula pipe		QS-PG21	780-62001	
Water-proof cannula pipe(stright)		EH-PG21	780-62002	
Water-proof cannula pipe(elbow)		KW-PG21	780-62003	
4P Signal wire 1（L=1m）		4X24AWG	780-63101	
4P Signal wire 2（L=10m）		4X24AWG	780-63102	
4P Signal wire 3（L=10m,with joint）		4X24AWG	780-63103	
Power cable1（L=1.5m）		3X12AWG	780-63201	
Power cable 2（L=10m）		3X12AWG	780-63202	

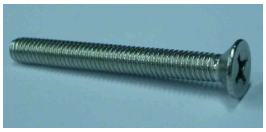
Power cable 3（L=20m）		3X12AWG	780-63203	
2P Signal wire		L=180	780-63301	
		L=220	780-63302	
		L=480	780-63303	
		L=530	780-63304	
		L=600	780-63305	
		L=700	780-63306	
12P Signal wire		L=150	780-63401	
		L=250	780-63402	
		L=500	780-63403	
		L=600	780-63404	
3P Signal wire		L=900	780-63501	
Cat.5		L=10m	780-63601	
RS232 Cable		L=5m	780-63602	
Indoor Optic		L=50m	780-63603	

Light sensor component		L-150	780-64006	
Light sensor component			781-64006	
Fan component		AVP-925H12	780-64007	
Power input component 1		YC10T1	780-64008	Connect to (PS-45) +(S-210(320))
Power input component 2		YC10T1	780-64009	Connect to S-150 +(S-210(320))
Power input component 3		YC10T1	780-64010	Connect to S-150
Indicator component		QS5099	780-64011	
Main board QS5002		QS5002L	780-65001	
Main board QS5003		QS5003	780-65002	
Switch power supply component		PS-25-12	780-66012	(Only Switch)

		PS-45-12	780-66112	
		PS-45-12	780-66112	(Only Switch)
		S-150-5	780-66205	
		S-150-12	780-66212	
		S-210-5	780-66305	
		S-320-5	780-66405	
2P Direct plug		MSTBVA2.5/2-G-5.08	780-67001	
4P Direct plug		MSTBVA2.5/4-G-5.08	780-67002	
Sealing strip for cabinet		L=2000mm	780-67003	

Sealing strip for back cover		L=1390mm	780-67004	
Keys		M6	780-67005	

6. Bolts Used in Imposa® box

Ser No	Description	Drawing	Usage
1	M3x6 Cruciform slot cone head screw		Stainless. For the installation of the air outtake hood
2	Cross recessed pan head crew with flake		Stainless. For the fixation of the 2 air outtake hoods together, main board, PS-45 power supply, power supply hood.
3	M4x4 Cross recessed pan head screw		Stainless. For the installation of the filter.
4	M4X8 Cross recessed pan head screw		Stainless. For assembling of the front panel, the inner components,
5	M4X15 Cross recessed pan head screw		Stainless. For the back assembling of the mated pixels.
6	M4X35 Cruciform slot cone head screw		Stainless. For the fixation of the fan.

7	M6X15 Hexagon socket set screws		Stainless. For the hinge blade
8	M8x16 Hexagon socket set screws		Stainless. For the lifter of the cabinets
9	Hexagon socket stainless stud bolt Φ10 stainless washer Φ10 stainless pan washer		Horizontal connector. For the fixation of the cabinets and positioning and connecting bars. Horizontal connector
10	M10x50 Hexagon socket stainless stud bolt Φ10 stainless washer Φ10 stainless washer		Fixer for the bracket and the positioning and connecting bars.