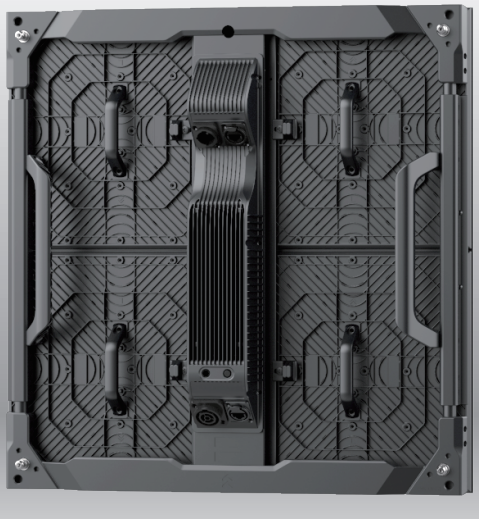
ROE
CREATIVE DISPLAY

Diamond 2.6
User Manual



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Warranty Policy

ROE Visual Co., Ltd. is pleased to offer a 2-year warranty on all standard products[1] against manufacturers' defects, covering parts and labors. ROE will provide both factory technical support and field service engineering when required during this period. Exclusion are listed below.

(1) If replacement parts required, customer will ship defective parts at their cost. ROE will ship replacement parts at our cost, during the warranty period.
(2) In the case of special product[2] or custom systems[3], each will be handled on an individual basis and specified as such in any agreement or contract.
(3) After expiration of the 2-year warranty, service/ repair charges will be the responsibility of the customer at standard industry rates.
(4) The warranty will be voided in the case of:
    a) Accidents or human error.
    b) Any modifications, disassembly, repairs, maintenance or testing unauthorized by ROE.
    c) The product series number is broken (including SN/ESN/MEID/IMEI).
    d) Gross negligence.

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[1] Standard products refer to products officially launched by ROE.
[2] Customized products refer to ROE standard products which are partially or totally designed in line with customers' requirements and demands.
[3] Customized systems refer to products with special systems required by customers.

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1 Safety

1.1 Safety Guidelines

Personal Protection

	**CAUTION:** Risk of electric shock.
	**CAUTION:** Be aware of flammable materials.
	**WARNING:** Ensure you understand and follow all safety guidelines, instructions, warnings, and cautions mentioned in this manual.
	**WARNING:** Read this manual before the installation and keep this manual.
	**WARNING:** Be careful of hazardous emission.
	**WARNING:** Mind your fingers when working with heavy loads.
	**WARNING:** Pay attention to the hot surface.

Installation Personnel

The installation must be performed by authorized and qualified technical personnel only.

Product Care

All components should be kept dry, clean, lubricated (only of recommended), coated properly, and otherwise maintained in a manner consistent with the part design. ROE products must be used in a manner consistent with their design and inspected on a routine basis for security, wear, deformation, corrosion and any other circumstances that may affect the loading capacity.

1.2 Safety Instructions

(1) The product is only for professional use.

(2) Please read the User Manual carefully and understand all safety information mentioned before installing, powering, operating or servicing the product.

(3) Please follow all instructions of the User Manual during installing, powering, operating or servicing the product.

(4) The installation should be performed after you are thoroughly familiar with all safety guidelines, instructions, warnings and cautions. Otherwise, it may increase risks of hazards and injury to the user.

(5) Please install and/or keep this product away from flammable materials, heat sources, water, high-power electrical devices and dangerous chemicals.

(6) Please use and/or store this product in proper temperature and humidity.

(7) Please earth this product against the risk of electric shock.

(8) Please make sure power and data cables are in a sound condition.

(9) Please do not use the product near the sea and/or other places with corrosive environment.

(10) The installation must be performed by authorized and qualified technical personnel only.

2 General Introduction

2.1 Features

The lightweight Diamond 2.6(DM2.6) small-pitch LED tile incorporates the magnesium alloy frame design for an easy-to-assembly solution. It's available in both flat or curved configurations. The DM2.6 is the ideal cost-effective LED display solution for rental, stage and fixed applications.

2.1.1 Ultra-lightweight

The DM2.6 is 500 x 500 mm, but its weigh less than 5.5kg per tile. The lightweight magnesium alloy frame ensures the extreme durability.

2.1.2 Superb Visual

The sleek design with black LEDs highlights its high contrast and brightness for a vivid visual effect.

2.1.3 Curving Options

Concave and convex curving options enable you to realize the unique and creative stage design.

2.1.4 Magnet-assisted Assembly

Magnets are integrated into the tile frame, enabling the easy setup in both hanging and stacking systems.

2.2 Specifications

Pixel Pitch	2.604 mm
Pixel Density	147,456 pixels / m^2
Resolution (H x V)	192 x 192 pixels
LED Configuration	Black SMD 1515
Max. Brightness (Calibrated)	1,500 nits
Gray Scale (Input to Output)	16 bit
Refresh Rate	1,920 HZ
Scan	1 / 16
Viewing Angle (Hor. / Vert.)	140° / 140°
Dimensions (W x H x D)	500 x 500 x 81 mm / 19.7” x 19.7” x 3.2”
Frame Material	Magnesium Alloy
Weight / Tile	5.5 kg
Max Hanging	20 tiles
Max Stacking	8 tiles
Max Power Consumption	180W
Curve (Max)	Concave 10° / Convex 5°
IP Rate	IP 40 Indoor only
Lifetime	≥ 50,000 hours
Control System	Evision / Brompton
Operating Temperature	-20 °C to 45 °C / -4 °F to 113 °F
Storage Temperature	-40 °C to 60 °C / -40 °F to 140 °F
Operating / Storage Humidity	10 – 90% RH

3 Installation Requirements

3.1 Mechanical Requirements

3.1.1 Weight

Do not underestimate the weight of tiles and frames. Please make sure the floor or truss on which ROE tiles and frames will be installed is capable of handling five times the complete weight of tiles and frames.

Do not forget to take into consideration the ballast weight required by the stacking system.

3.1.2 Levelling

The surface on which tiles and frames will be installed must be levelled. Never install ROE tiles and frames on an inclined surface.

3.1.3 Ballast

In consideration of the expected wind load, the height and position of the LED wall upon the stacking system, the additional weight (ballast) should be required. The detailed information how to calculate the ballast weight refers to Ballast Weight Calculation.

3.2 Electrical Requirements

3.2.1 Power

ROE tiles require 110-240 VAC, 50-60 Hz and should be less than or equal to16A.

This equipment MUST be earthed. To protect against risk of electric shock, the installation should be properly grounded. Defeating the purpose of the grounding type plug will expose you to the risk of electric shock.

3.3 System Requirements

3.3.1 Operating System

ROE tiles support Mac OS and Windows.

3.3.2 Control System

ROE tiles support Brompton, Evision and Nova.

4 Components

4.1 Overview

A DM2.6 tile consists of modules, tile frame and power box.

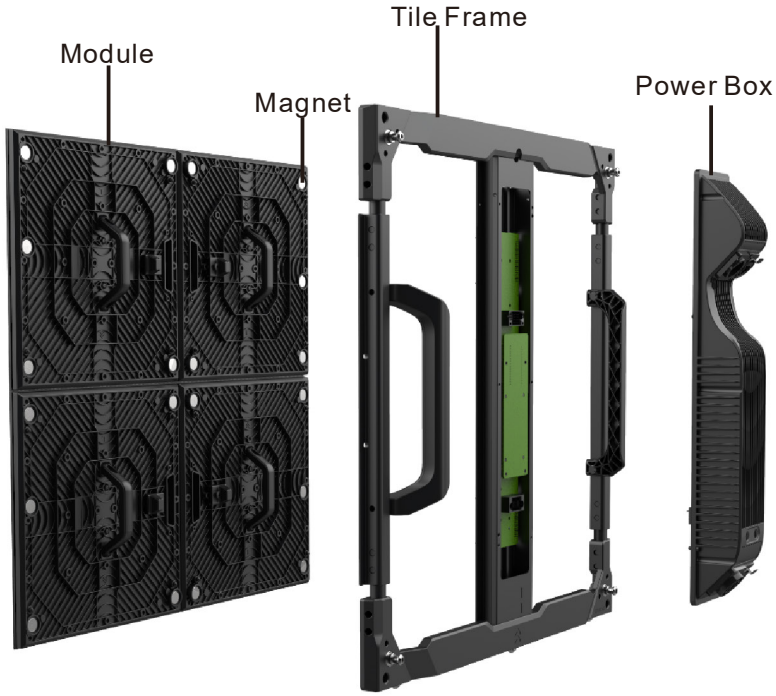


Figure 4-1. DM2.6 Components

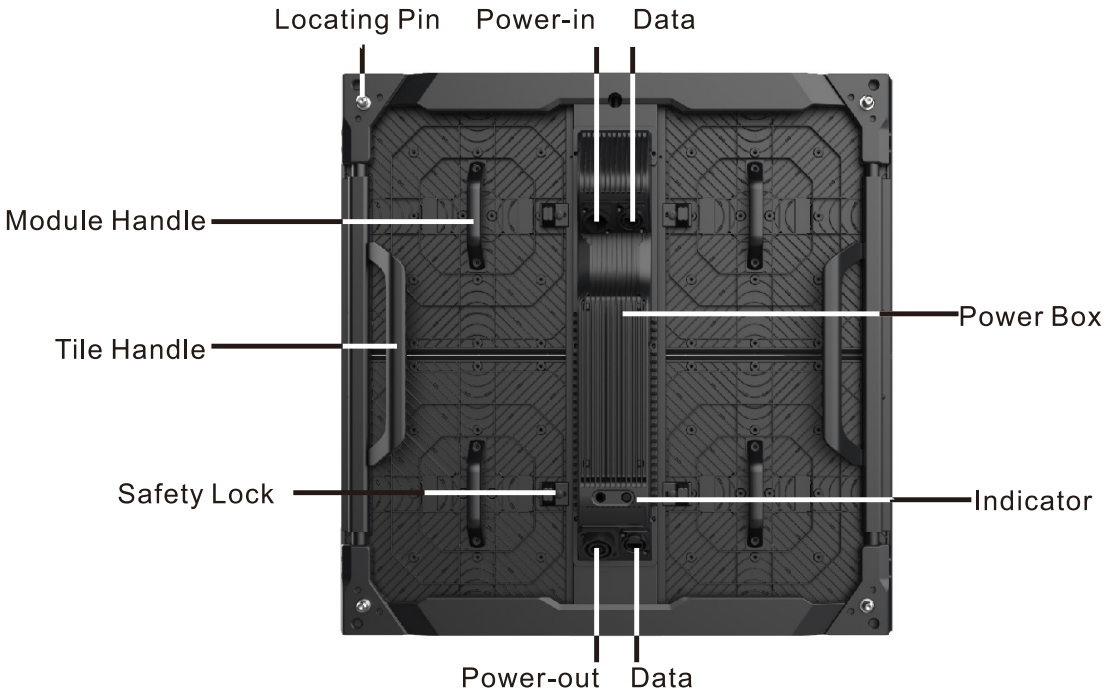


Figure 4-2. DM2.6 Parts Information

4.2 Module

A DM2.6 tile consists of 4 pcs modules.

Dimensions: 250 x 250 mm

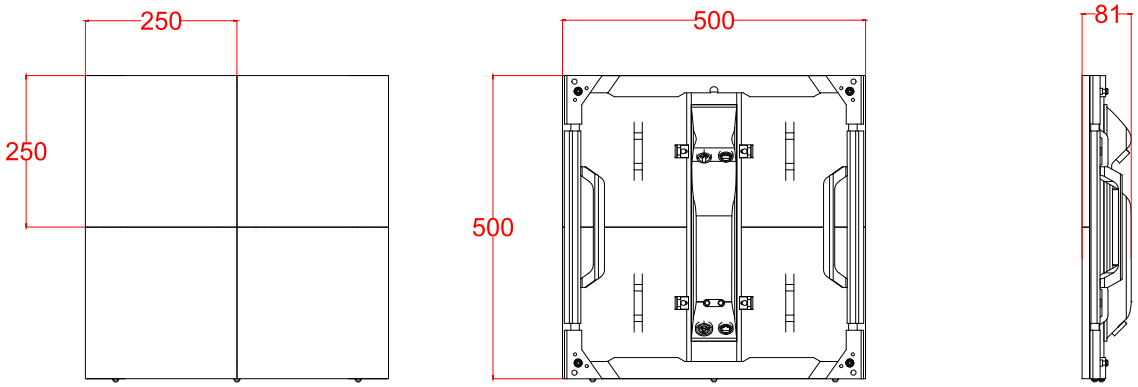


Figure 4-3. Module Dimensions

4.3 Power Box

Dimensions: 75 x 390 x 45 mm

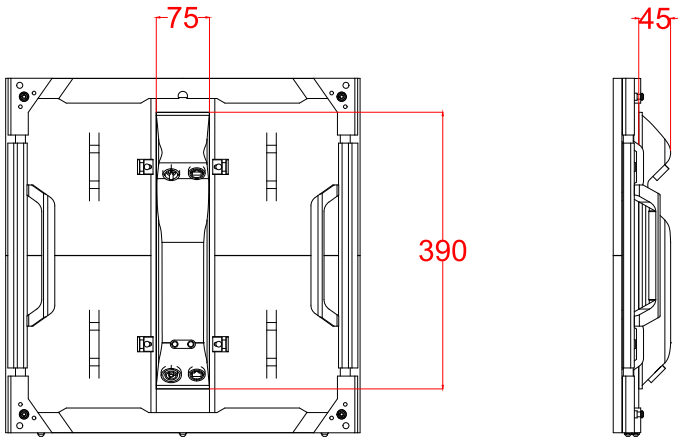


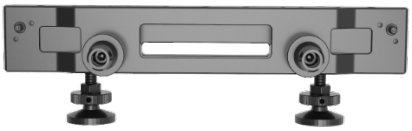
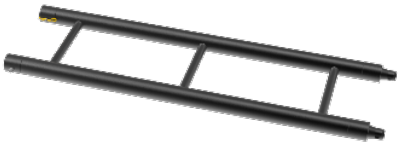
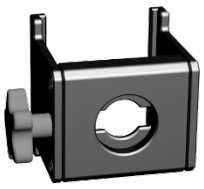
Figure 4-4. Power Box Dimensions

5 Accessories

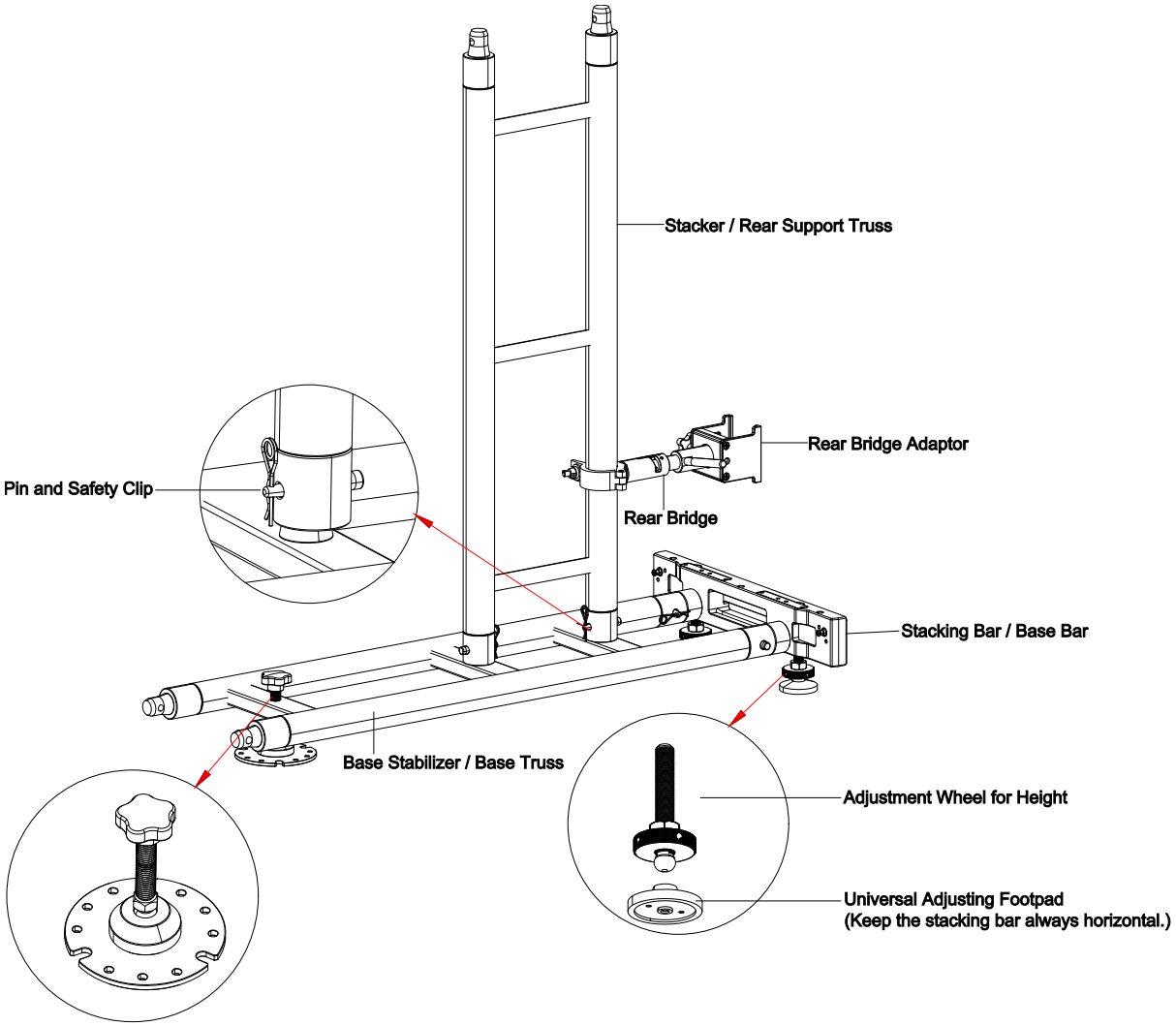
5.1 For Hanging

	**Hanging Bar_Clamp_0.5m** SAP: 207002S0212 Weight: 5.2 kg Dimensions: 484 x 80 x60 mm
	**Hanging Bar_Clamp_1.0m** SAP: 207002S0211 Weight: 8.6 kg Dimensions: 993 x 80 x 60mm
	**Hanging Bar_Shackle_0.5m** SAP: 304010-00275 Weight: 5.2 kg Dimensions: 484 x 80 x60 mm
	**Hanging Bar_Shackle_1.0m** SAP: 304010-00276 Weight: 8.6 kg Dimensions: 993 x 80 x 60mm

5.2 For Stacking

	**Stacking Bar_0.5m** SAP: 304010-00278 Weight: 4.5 kg Dimensions: 493 x 80 x 110
	**Stacking Bar_1.0m** SAP: 304010-00277 Weight: 8.3 kg Dimensions: 993 x 80 x 110 mm
	**Base Stablizer** SAP: 304012-01526 Weight: 8.0 kg Dimensions: 1040.5 x 293 x 90 mm
	**Stacker** SAP: 304012-00504 Weight: 4.65 kg Dimensions: 1040.5 x 290 x 50 mm
	**Rear Bridge** SAP: 206002S0178 Weight: 1.02 kg Dimensions: 232 x 106.5 x 35 mm
	**Rear Bridge Adaptor** SAP: 304012-01857 Weight: 0.4 kg

5.3 A Complete Stacking System



Note: The stacking system should be used every two-tile wide at least and it's will be better to be used every one-tile wide when necessary.

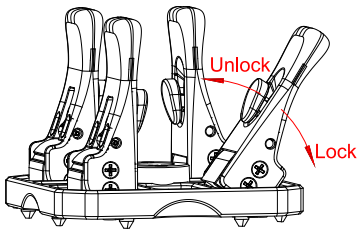
5.4 Locking Plate & Curving Plate

5.4.1 Types

	**Two-way Locking Plate** SAP: 304014-00010 Weight: 125g		**Four-way Locking Plate** SAP: 304014-00009 Weight: 240g
	**Two-way Curving Plate** SAP: 304012-01853 Weight: 288g		**Four-way Curving Plate** SAP: 304012-01852 Weight: 376g

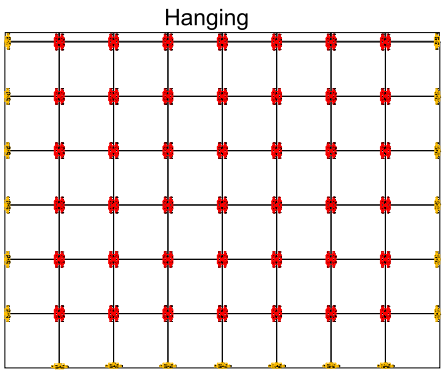
Note: The curving plate can achieve concave 15° and convex 10°, but DM2.6 tiles can only achieve concave 10° and convex 5°.

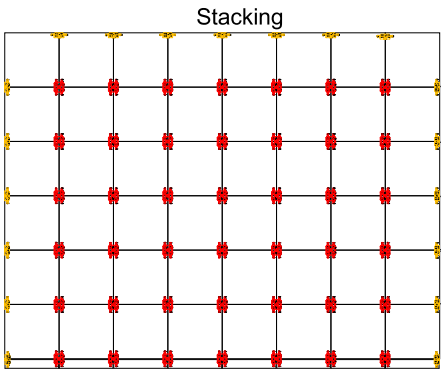
5.4.2 How to Use the Locking Plate



Press the button to unlock and lock it.
The direction is shown on the left.

5.4.3 How to Calculate How Many Locking Plates You Need





Project: m (W) x n (H)

4-way Locking Plate: (m-1) x n

2-way Locking Plate: 2 x n + m - 1

5.5 Cables

5.5.1 Cable Types

	**① Main Power Cable_10m (Max. 16A)** SAP: 208001S1214 Weight: 1.60kg Weipu_Neutrik(Female) Connectors (Neutrik_Neutrik Connectors) Connect the power and tiles.
	**② Power Cable_0.43m** SAP: 208001S1354 Weight: 0.11 kg Neutrik_Neutrik Connectors Connect neighboring tiles (vertical).
	**③ Power Cable_2.4m** SAP: 208001S1194 Weight: 0.4 kg Neutrik_Neutrik Connectors Connect tiles in neighboring columns.
	**④ Main Data Cable_30m** SAP: 208004S0506 Weight: 1.2 kg Neutri_Neutrik Connectors Connect the processor and tiles.
	**⑤ Data Cable_0.43m** SAP: 208004S0529 Weight: 0.075 kg Neutri_Neutrik Connectors Connect neighboring tiles (vertical).
	**⑥ Data Cable_0.75m** SAP: 208004S0407 Weight: 0.09 kg Neutri_Neutrik Connectors Connect tiles in neighboring columns.

5.5.2 Power Cable

Plug in the power cable, turn the power cable clockwise until you feel a “click”.	
Pull back the button on the plug, turn the power cable anti-clockwise and plug it out.	

5.5.3 Data Cable

Plug in the data cable and you feel a “click”.	
Press the button on the socket and plug the data cable out.	

6 Package

6.1 Flight Case

6.1.1 Standard

SAP: 309003-00470
Dimensions: 1167 x 619 x 835 mm
Capacity: Every flight case can carry 10 pcs tiles.

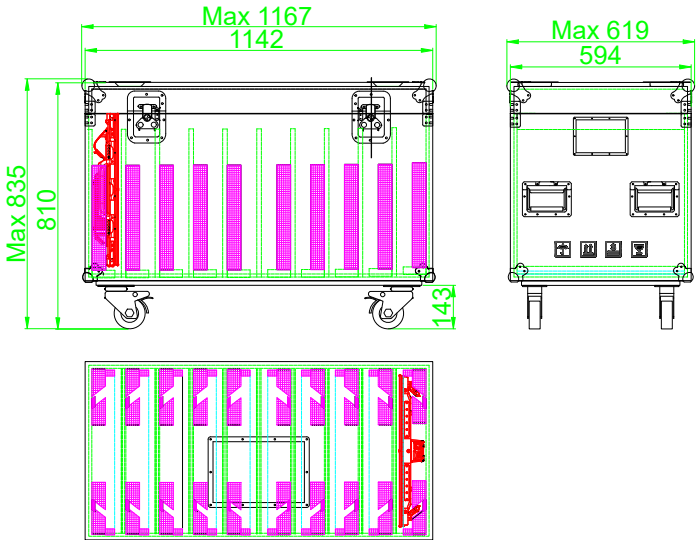


Figure 6-1. DM2.6 Flight Case

6.1.2 Optional

SAP: 309003-00390
Dimensions: 1167 x 619 x 835 mm
Capacity: Every flight case can carry 8 pcs tiles.

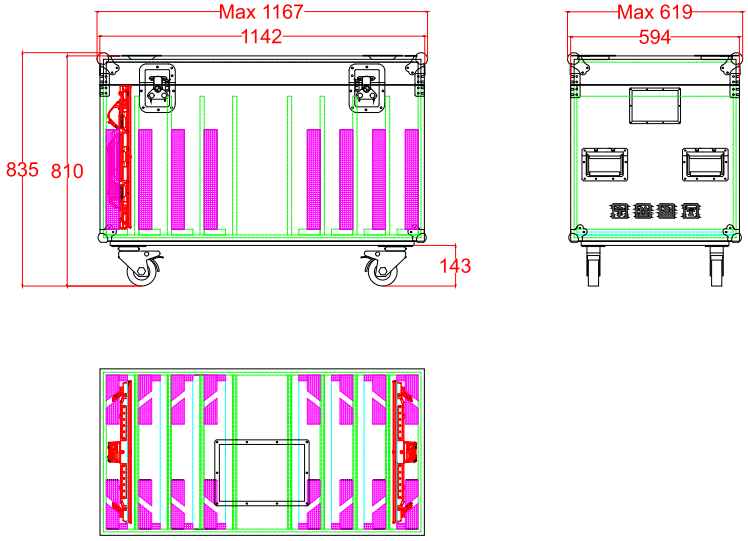


Figure 6-2. DM2.6 Flight Case

Note: The left space in the middle of the flight case is designed for cables and / or accessories.

6.1.3 Labels on the Flight Case

	**Warning:** Indoor use.
	**Warning:** Keep the flight case upwards.
	**Warning:** Maximum stack 3 flight cases.
	**Warning:** Fragile

7 Installation Overview

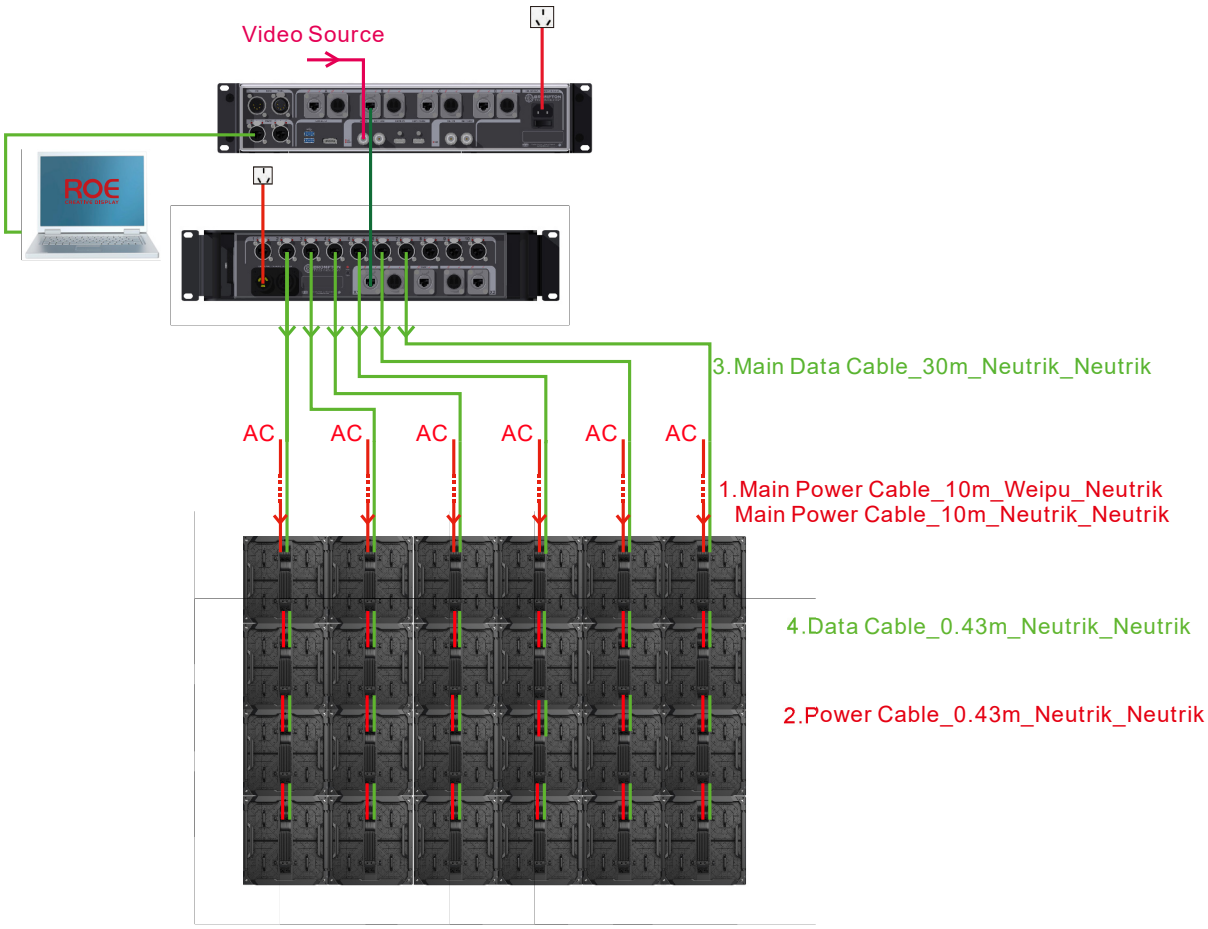


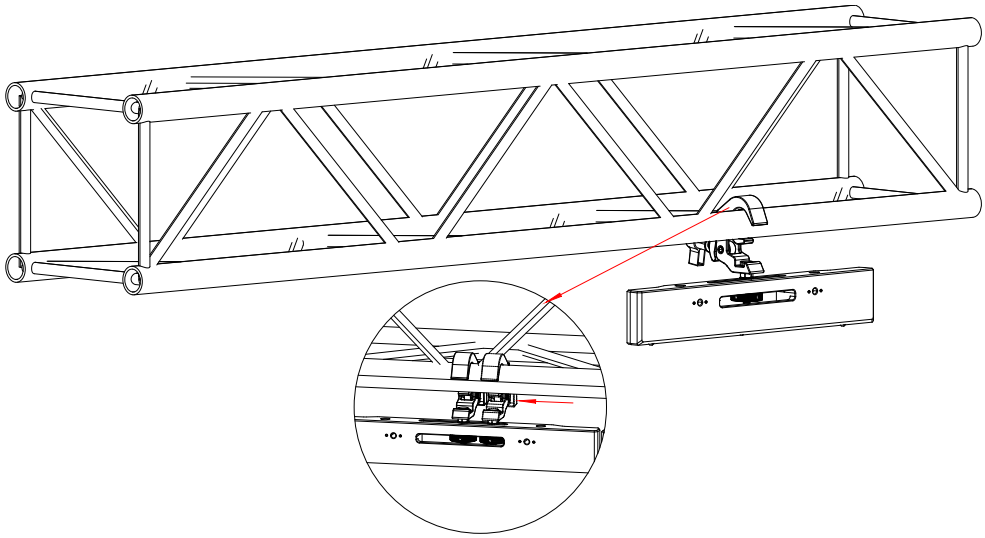
Figure 7-1. DM2.6 Cabling

8 Quick-start Guide

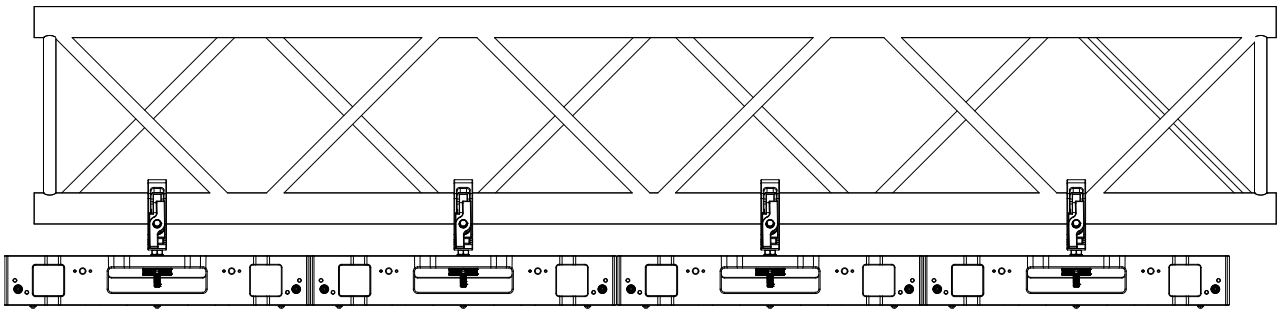
DM2.6 tiles support both hanging and stacking.
Take out DM2.6 tiles from flight cases.

8.1 Hanging System

(1) Fix the hanging bar on the truss, close the G-clamp and adjust the position of G-clamps to avoid the truss.

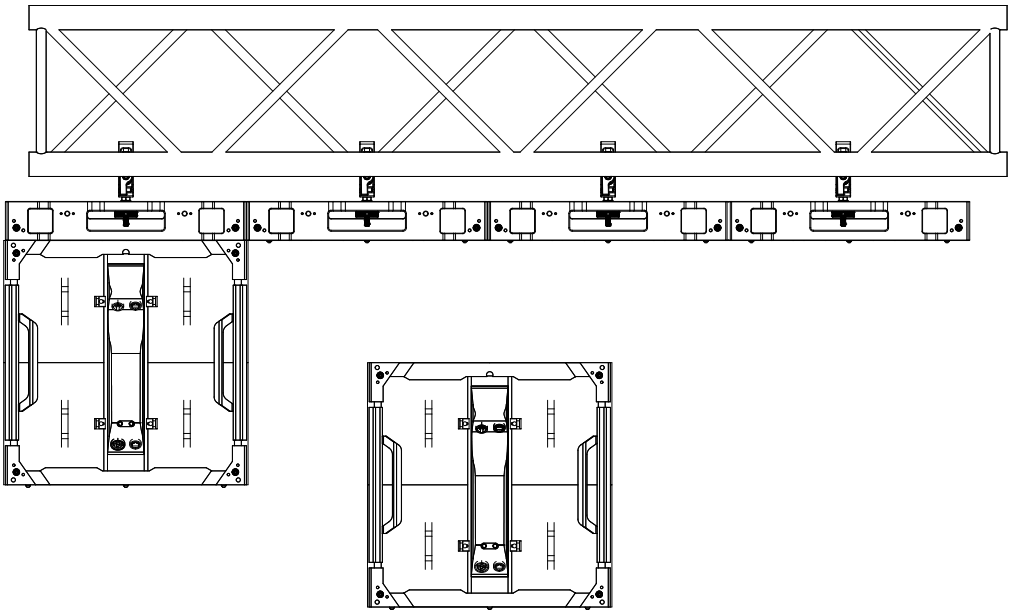


(2) Fix more hanging bars and keep them at the same horizontal level through the adjustment wheel.



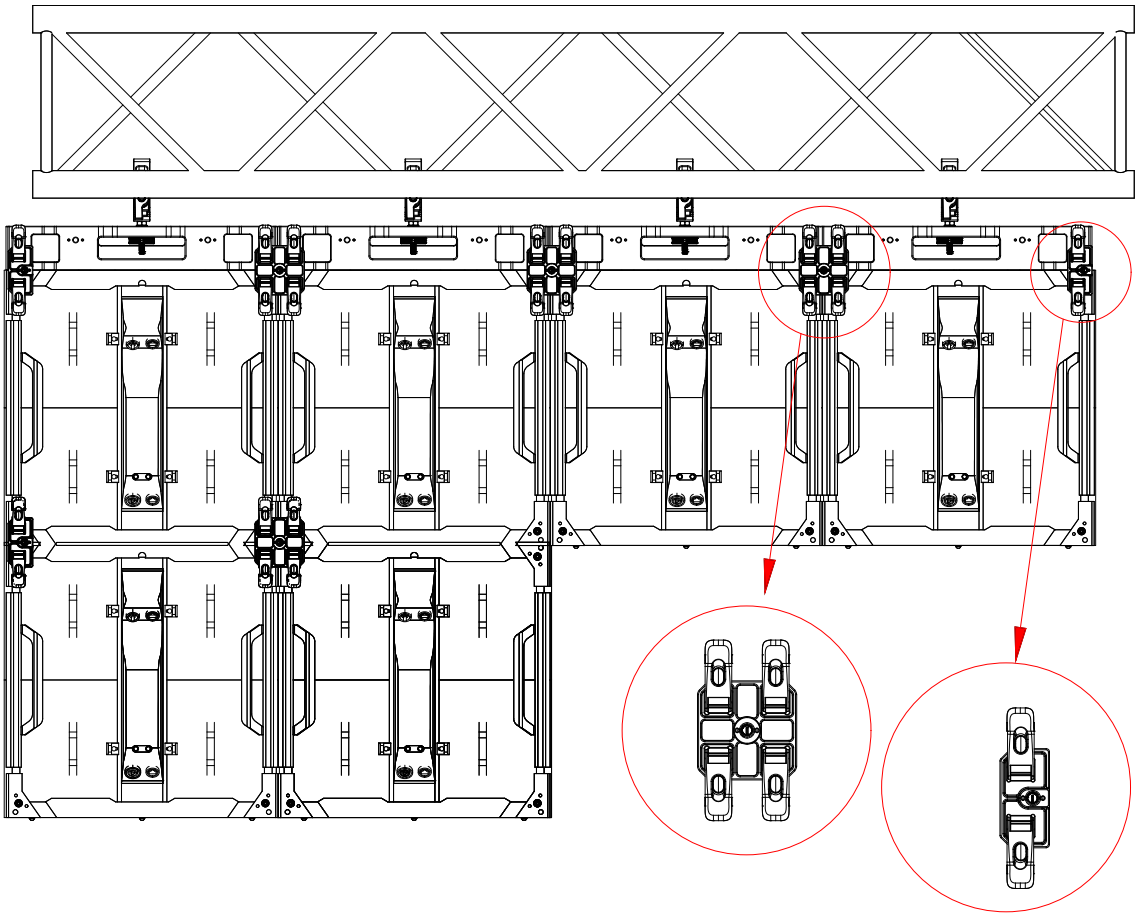
Note: The adjusting range of the adjustment wheel is 13.9mm (vertical) and 157mm (horizontal) respectively.

(3) Install tiles on hanging bars. Hanging bars will attract tiles to correct target position automatically with magnets.



(4) Before installing more panels, fix hanging bars and tiles with locking plates.

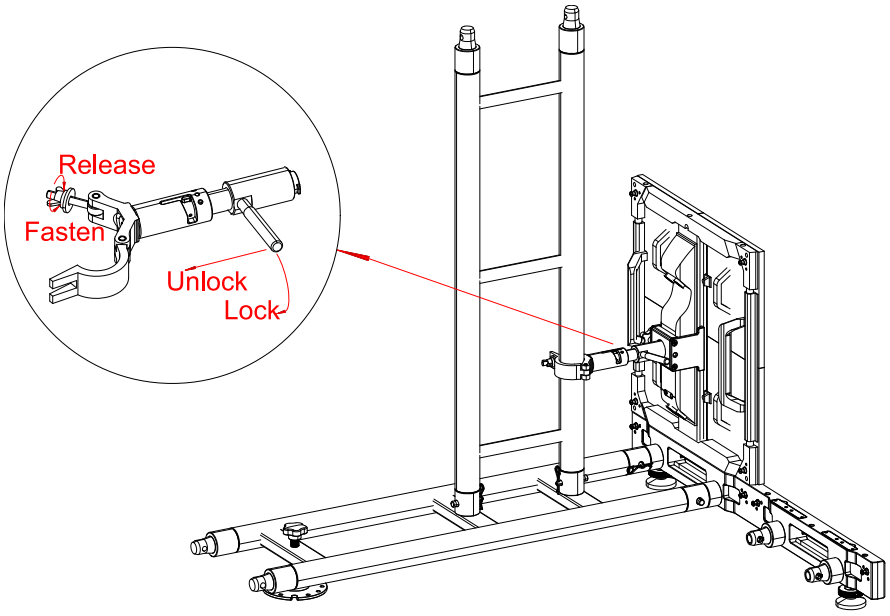
(5) Before installing more tiles, fix neighboring tiles with locking plates.



8.2 Stacking System

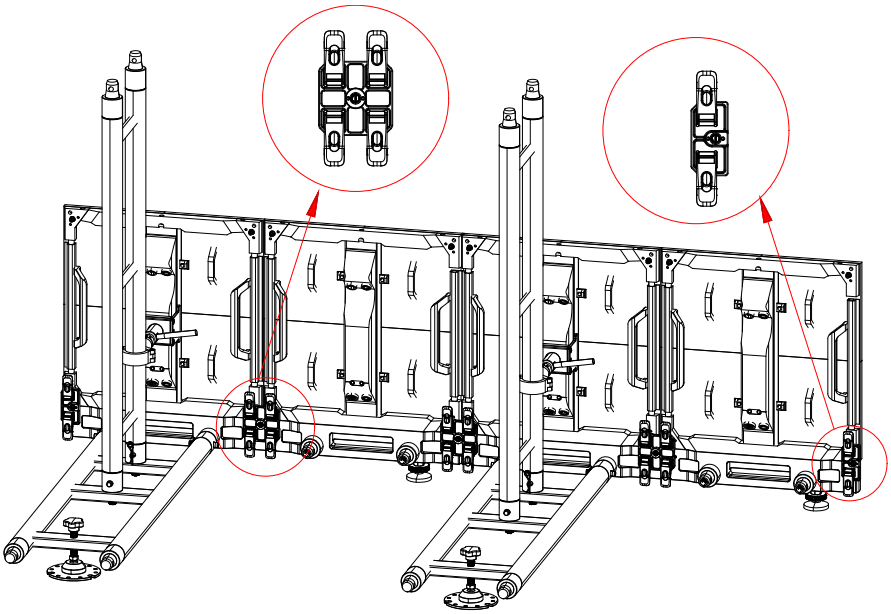
(1) Connect the stacking bar, stacker and base stabilizer, using pins and safety clips, according to the complete stacking system. (See 4.2.)

(2) Install two tiles on the stacking bar, which will attract tiles to the target position automatically with magnets. And lock the rear bridge.



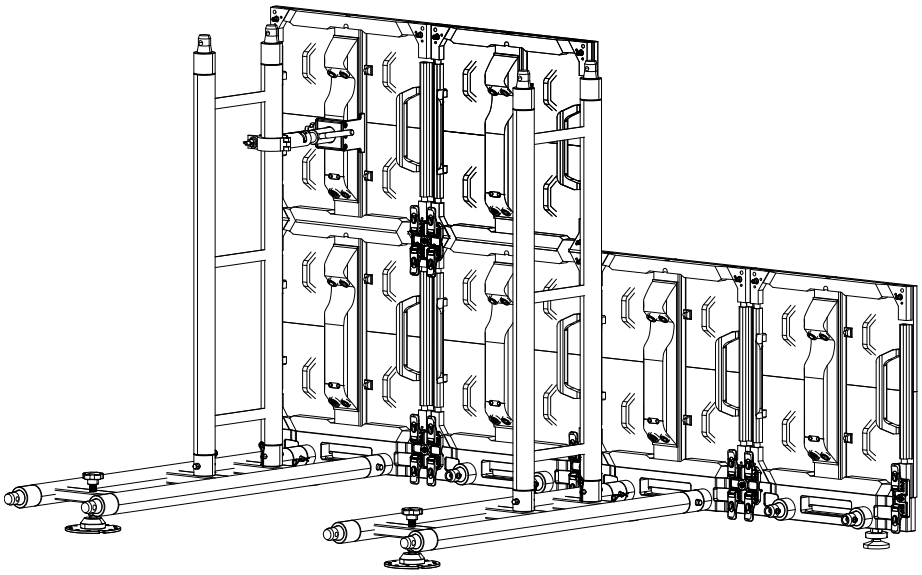
(3) Install the second stacking system, close to the first stacking system and keep them at the same horizontal level through the adjustment wheel.

(4) Install tiles on the second stacking system and fix them with 4-way locking plates.



(5) Repeat Step 3 to 4 until installing all stacking systems and keep them at the same horizontal level through the adjustment wheel.

(6) Install more tiles and fix them with locking plates.



Note: The adjusting range of the feet (stacking bar) is 48mm.

8.3 Ballast Weight Calculation

Hallen Wind: 125N / m^2

Safety Factor: 1.5

The following table shows the ballast in KG per tile width. The ballast should be distributed evenly.

H \ W	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
2	9	17	25	34	42	50	58	67	75	83	91	100	108	116	124
3	19	38	56	75	93	112	131	149	168	186	205	223	242	261	279
4	34	67	100	133	166	199	232	265	298	331	364	397	430	463	496
5	52	104	155	207	259	310	362	413	465	517	568	620	671	723	775
6	75	149	223	298	372	446	521	595	669	744	818	892	967	1041	1115
7	102	203	304	405	506	607	709	810	911	1012	1113	1214	1315	1417	1518
8	133	265	397	529	661	793	925	1057	1189	1322	1454	1586	1718	1850	1982

H \ W	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62
2	133	141	149	157	166	174	182	190	199	207	215	223	232	240	248
3	298	316	335	353	372	391	409	428	446	465	484	502	521	539	558
4	529	562	595	628	661	694	727	760	793	826	859	892	925	958	991
5	826	878	929	981	1033	1084	1136	1187	1239	1291	1342	1394	1445	1497	1549
6	1189	1264	1338	1412	1487	1561	1635	1710	1784	1858	1933	2007	2081	2156	2230
7	1619	1720	1821	1922	2023	2125	2226	2327	2428	2529	2630	2731	2833	2934	3035
8	2114	2246	2378	2511	2643	2775	2907	3039	3171	3303	3435	3567	3700	3832	3964

Note: H refers to DM2.6 tiles height, W refers to DM2.6 tiles width in the above table. (Unit: piece)

Formula:

Base Stabilizer Length (1m) x Ballast Weight (N) = Half of the tile height (m) x Tile Area (㎡) x 125N/㎡ x Safety Factor (1.5)

9 Cabling

9.1 Power Cabling

Connect neighboring tiles (in the vertical direction) with 0.4m power cables from the power-in port to the power-out port.

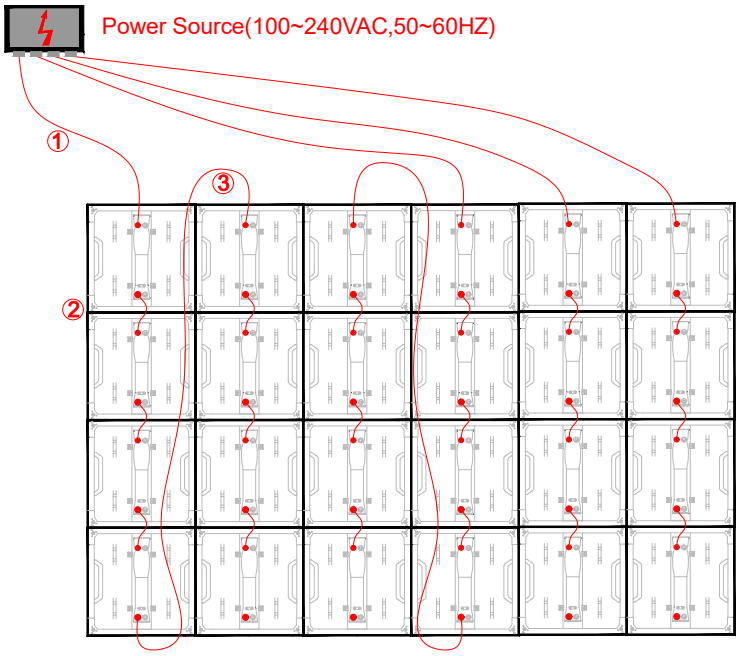
Connect the first power-in port and power source with one 10m main power cable.

How to calculate the power cable capacity

Formula: Voltage * Current * Safety Factor (0.8) / Power

If the voltage is 220V, one power cable can load 15 pcs DM2.6 tiles.

If the voltage is 110V, one power cable can load 7 pcs DM2.6 tiles.



NOTES:

1. Main Power Cable_10m_Weipu_Neutrik
   (Main Power Cable_10m_Neutrik_Neutrik)
2. Power Cable_0.43m_Neutrik_Neutrik
3. Power Cable_2.4m_Neutrik_Neutrik
4. Main Data Cable_30m_Neutrik_Neutrik
5. Data Cable_0.43m_Neutrik_Neutrik
6. Data Cable_0.75m_Neutrik_Neutrik

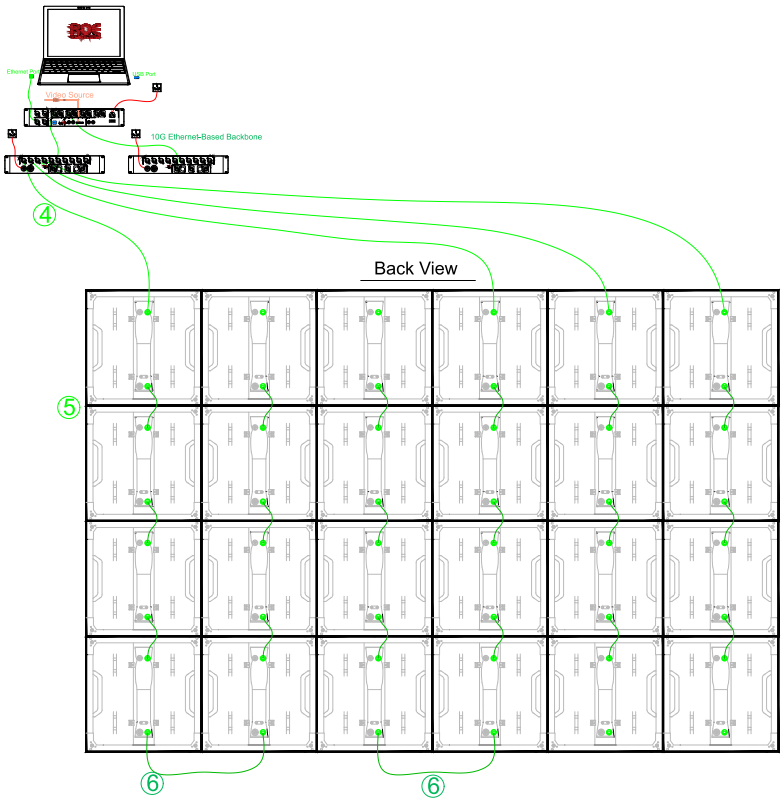
Note: The number in cabling is in line with that of in cables. (See 4.3 Cables.)

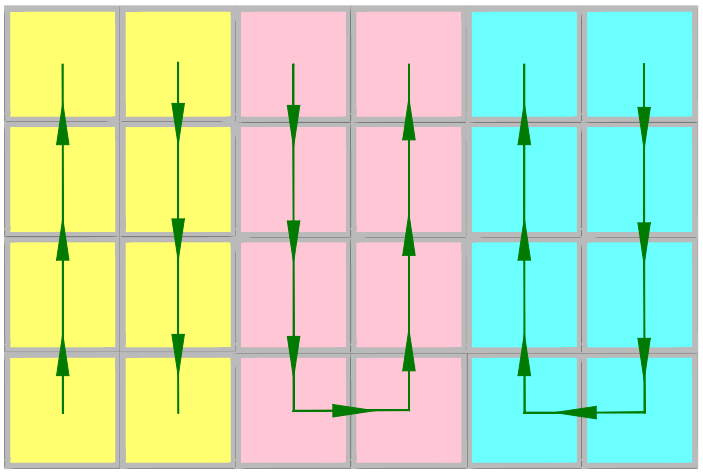
9.2 Data Cabling

Connect neighboring (vertical) tiles with 0.4m data cables.

9.3 Others

Connect tiles with the processor through 30m data cables.
Connect the processor with a PC / laptop via the Ethernet port.
Connect the video source.





Notes:

(1) The front view is for the setting in the control system.
(2) The cascade control data cables should not be more than 100 meters. When it's over 100 meters, please switch to fiber cables.

10 Control System

DM2.6 tiles support both Brompton and Evision.

10.1 Processor Port Capacity

10.1.1 Brompton

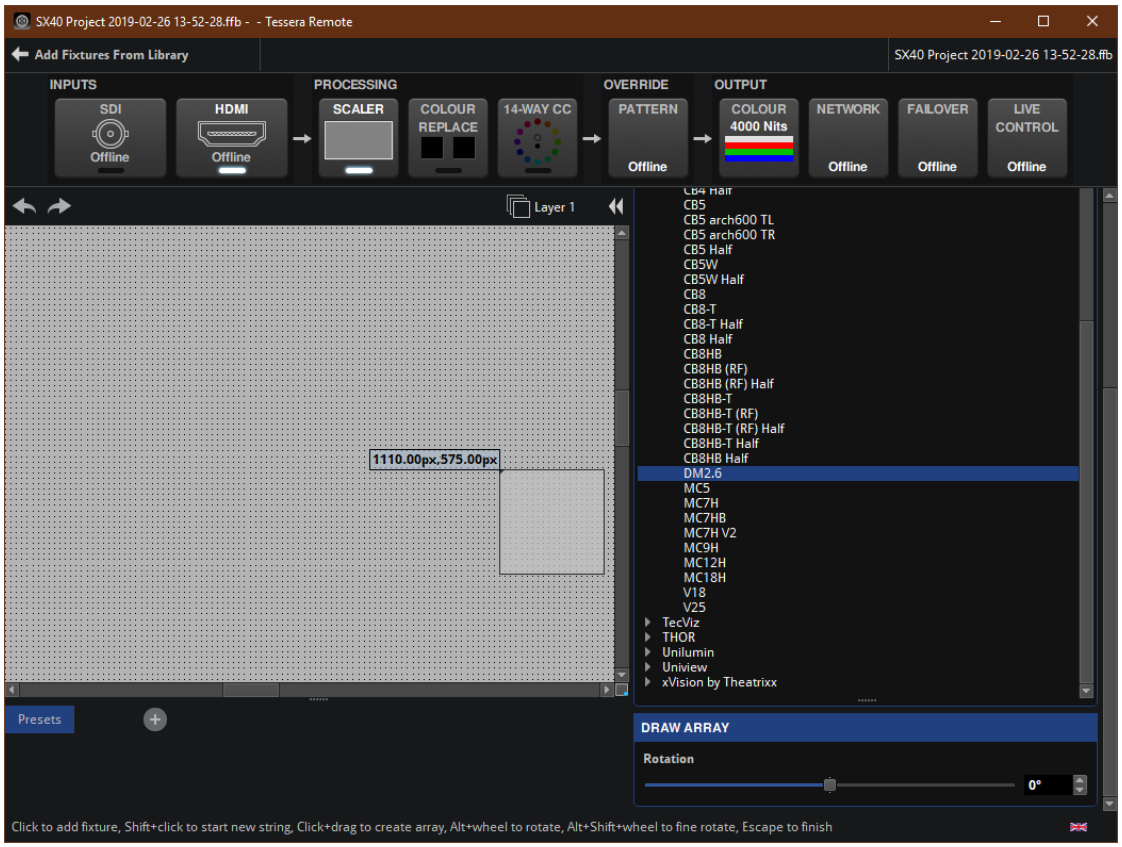
Color Depth / Frame Rate	8 bit	10 bit	12 bit
24 Hz	35	28	23
25 Hz	34	27	22
30 Hz	28	22	18
50 Hz	17	13	11
60 Hz	14	11	9

10.1.2 Evision

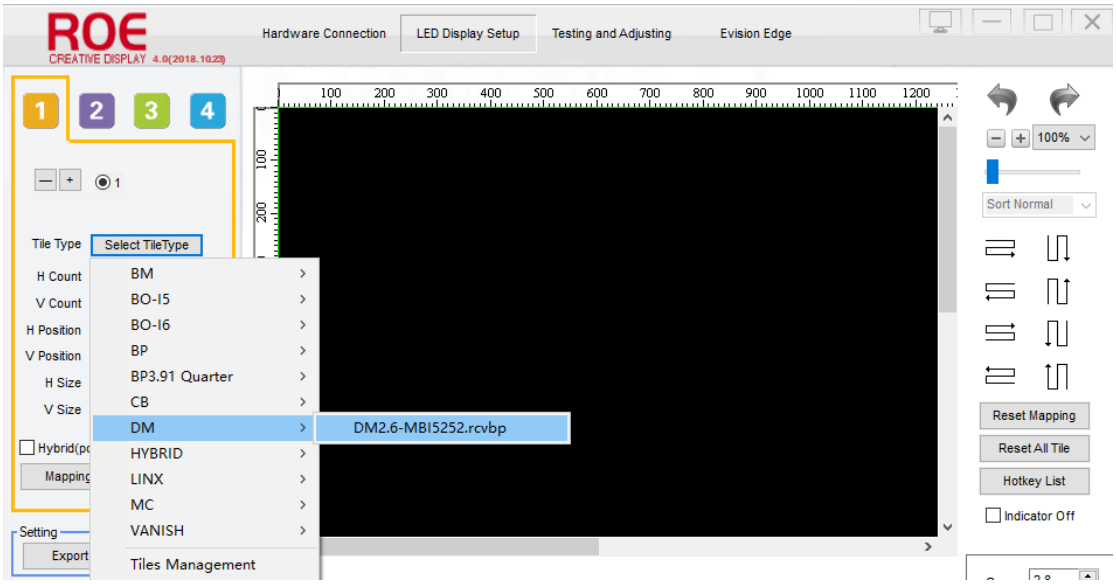
Color Depth / Frame Rate	8 bit	10 bit	12 bit
24 Hz	17	17	17
25 Hz	17	17	17
30 Hz	17	17	17
50 Hz	17	15	14
60 Hz	17	13	11

10.2 Tile Type

10.2.1 Brompton



10.2.2 Evision



Note: More information about Brompton & Evision, please refer to the control system user manual.

11 Service Manual

11.1 Cleaning Tiles

11.1.1 Needed Tools

	**Detergent -- Pow-R-Wash PR** You can buy it from ROE or from the supplier. https://www.chemtronics.com/pow-r-wash-pr
	**Dust-free Cloth for LEDs**

11.1.2 Steps

Step 1: Spray a little detergent on the cloth and clean the tile gently.

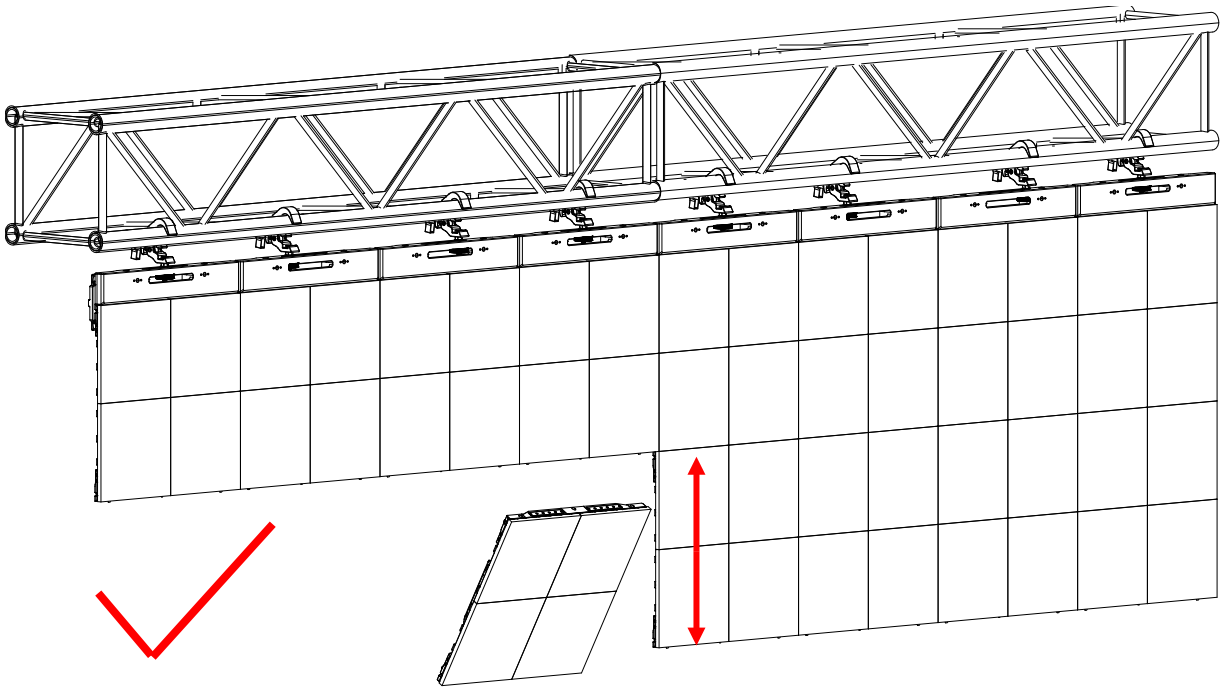
Step 2: Spray more and keep cleaning until the tile is clean.

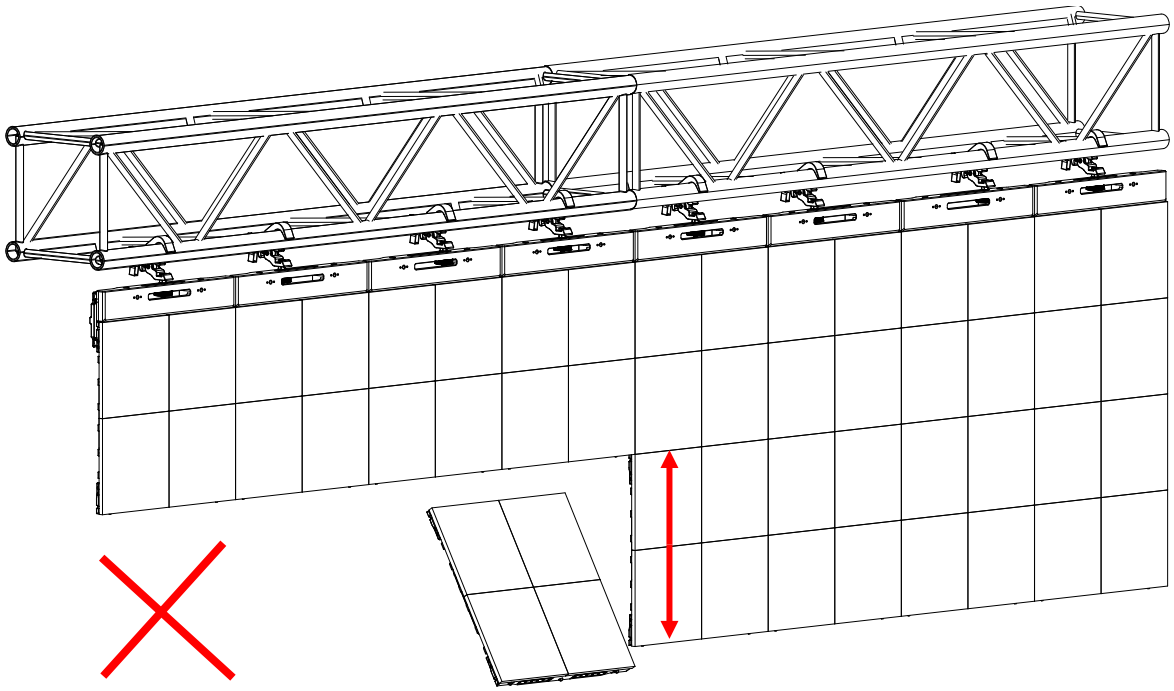
Note: In terms of the cleaning frequency, it depends on the actual situation.

11.2 Installing Tiles

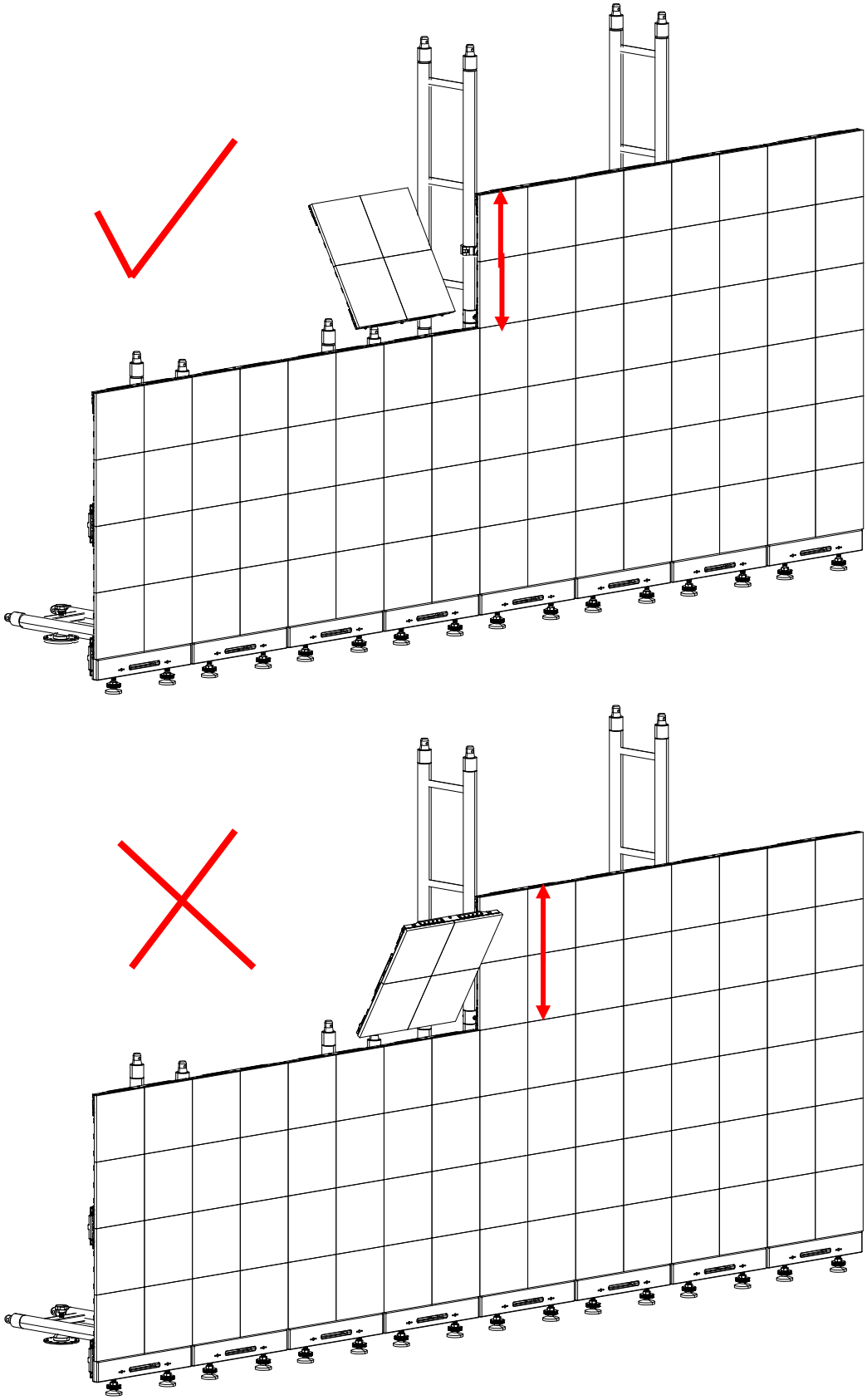
In order to protect LEDs on tile edges from damage, the tile frame should be attracted by magnets first then modules (with LEDs mounted on).

11.2.1 Hanging





11.2.2 Stacking

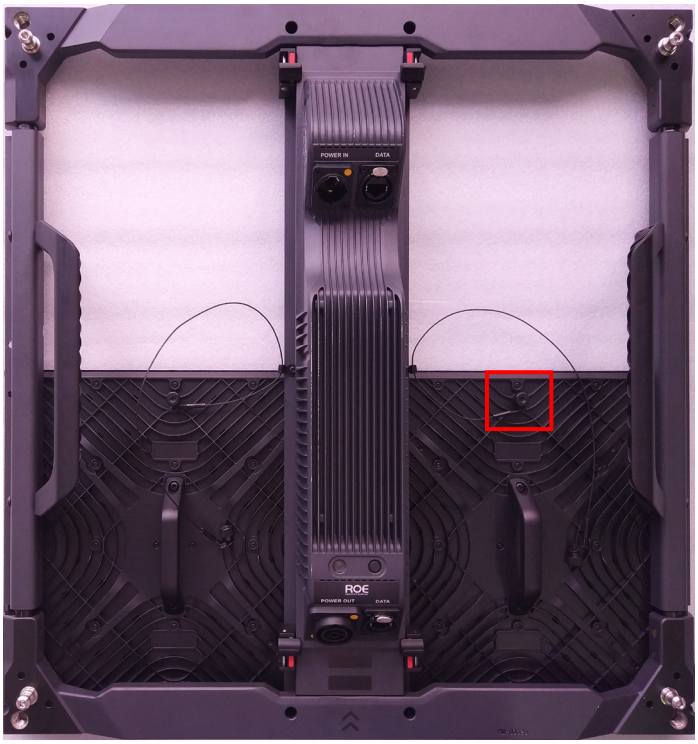


11.3 Replacing the Module

11.3.1 Steps

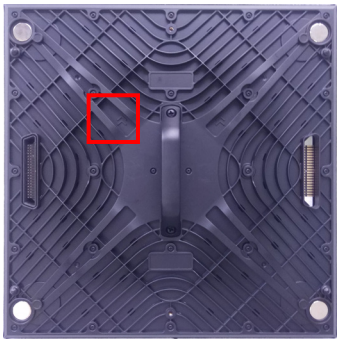
Step 1: Take down the defective module and unscrew the safety rope.

Note: It's recommended to push out the module with your thumb at the top left of the module where the magnet locates.



Step 2: Take a new module, install it and tighten the safety rope.

Note: Please note the direction of the module.



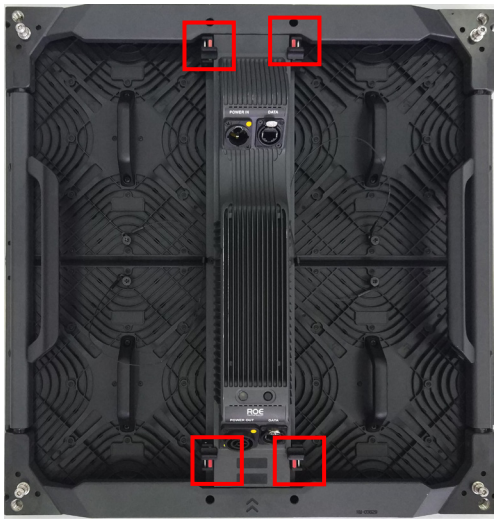
11.4 Tools Needed

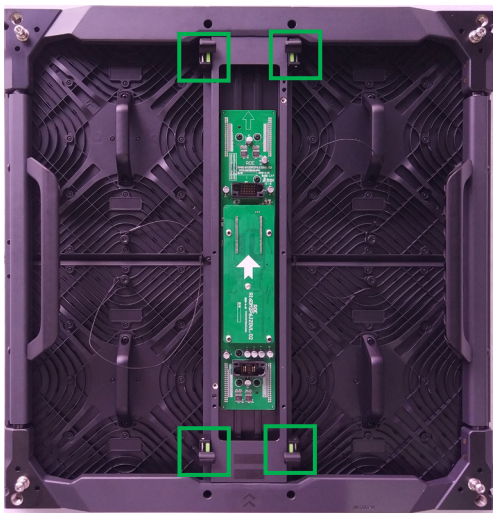
Electric screwdriver, screwdriver set head and tweezers.

Screw Size	Location	Screwdriver Set Head Size	Twisting Force
M3x8mm	Power Unit	Φ4.0 x 25 x 2 #	4.0 ± 0.3 kg / cm
PM3x6mm	Electric Coupler	Φ4.0 x 25 x 2 #	4.0 ± 0.3 kg / cm
CM2x10mm	Hub Board	Φ2.0 x 25 x 0 #	1.5 ± 0.3 kg / cm
PWM2x4mm	Receiving Card	Φ2.0 x 25 x 0 #	1.5 ± 0.3 kg / cm
PM5x26mm	Tile Handle	Φ4.0 x 25 x 2 #	5.0 ± 0.3 kg / cm
PM4x8mm	Module Handle	Φ4.0 x 25 x 2 #	4.0 ± 0.5 kg / cm

11.5 Replacing the Power Unit

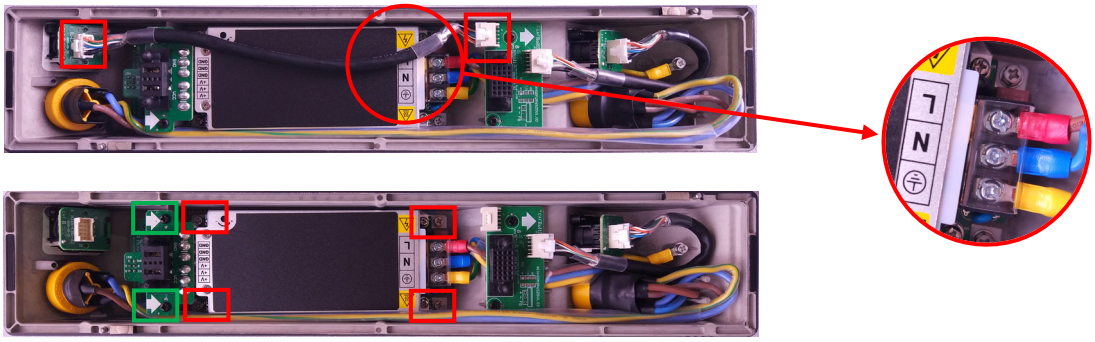
Step 1: Unlock four safety locks and open the power box housing



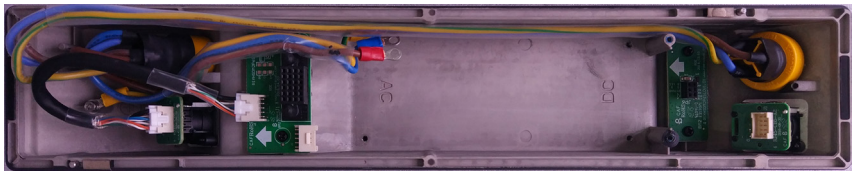


Step 2: Plug the data cable out and unscrew four M3x8mm screws, two PM3x6mm and three terminals which are used to fix and connect the power unit.

Note: It's recommended to take down the transparent cover over terminals by the tweezers.



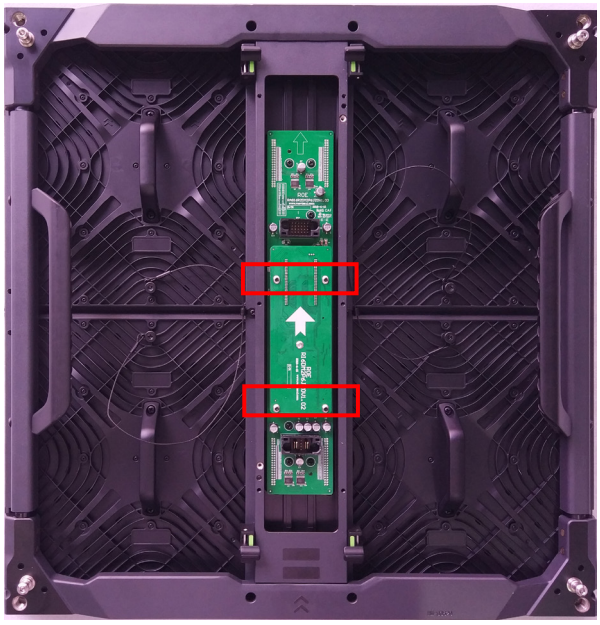
Step 3: Take down the electric coupler with the tweezers and take out the power unit.



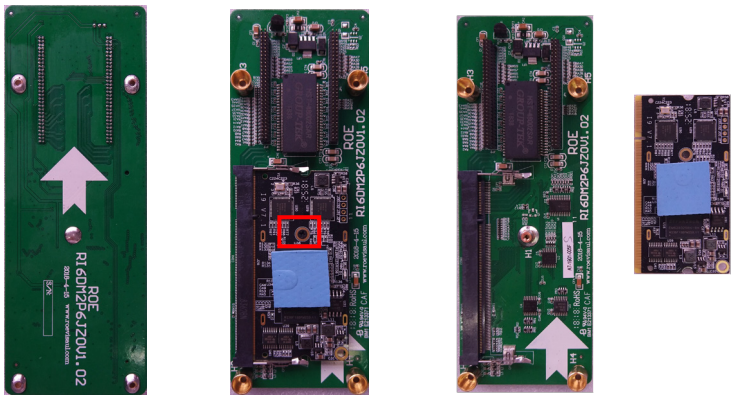
Step 4: Take a new power unit, place and fix it and the electric coupler back with screws.
Note: Please note the location of yellow, blue and red terminals.

11.6 Replacing the Receiving Card

Step 1: Unlock four safety locks and open the power box housing



Step 2: Unscrew four CM2x10mm screws and take down the hub board. The receiving card is fixed at the back of the hub board.



Step 3: Unscrew one PWM2x4mm screw and take down the receiving card.

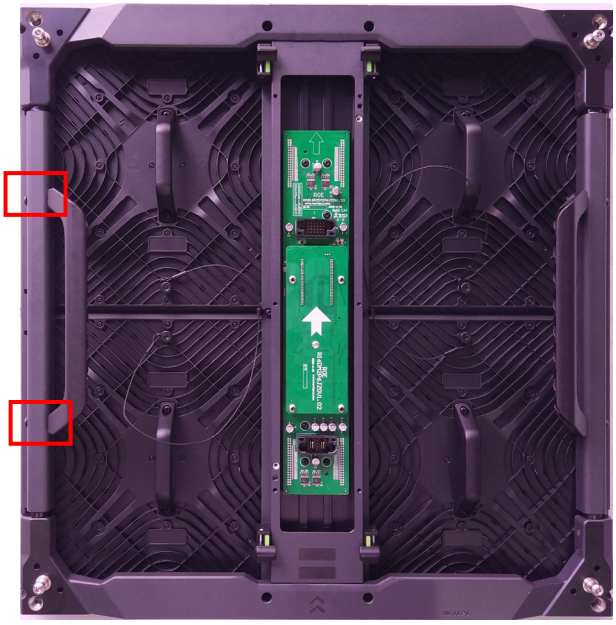
Step4: Take a new receiving card, place it back and tighten it

Step 5: Place back the hub board and tighten it.

Step 6: Place back the power box housing and lock four safety locks.

11.7 Replacing the Tile Handle

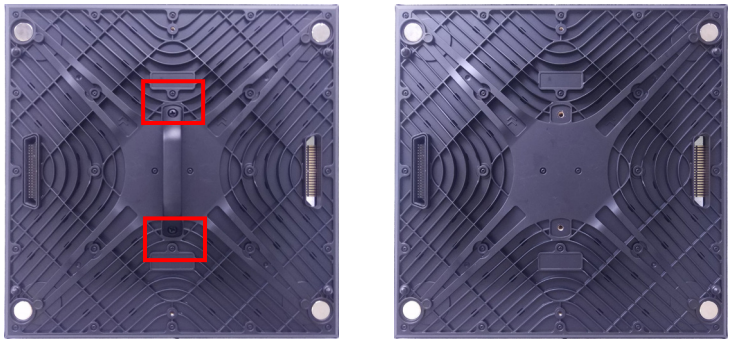
Step 1: Unscrew two PM5x26mm screws and take down the tile handle.



Step 2: Take a new tile handle, place it back and tighten it.

11.8 Replacing the Module Handle

Step 1: Unscrew two screws and take down the module handle.



Step 2: Take a new module handle, place it back and tighten it.