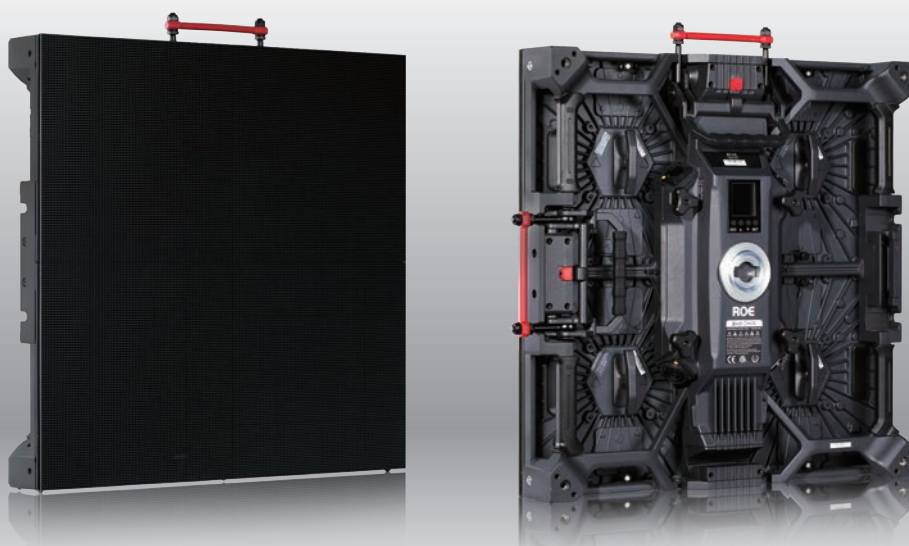


# BO

## User Manual



# Table of Contents

Safety Information	03
Specification	06
Connection	07
Accessories	09
Assembly	10
Physical Connection	15
Control System	17
Service and Maintenance	18
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# Safety Information:



## WARNING!

**Read the safety precautions in this section before installing, powering, operating or servicing this product.**

The following symbols are used to identify important safety information on the product and in this manual:



### WARNING!

Safety hazard.  
Risk of severe injury or death.



### WARNING!

Refer to manual before installing, powering or servicing.



### WARNING!

Hazardous voltage.  
Risk of lethal or severe electric shock.



### WARNING!

Hot surface.  
Do not touch.



### WARNING!

Fire hazard.



### WARNING!

Emission hazardous to eyesight.



- This product is for professional use only. It is not for household use.
- This product presents risks of severe injury or death due to fire hazards, electric shock and falls.



- Read this manual before installing, powering or servicing this product, follow the safety precautions listed below and observe all warnings in this manual and printed on the product.
- If you have questions about how to operate the tile safely, please contact your ROE supplier.



## PROTECTION FROM ELECTRIC SHOCK

- Connect the product to AC mains power within the range 100-240V nominal at 50 or 60 Hz only.
- Disconnect the product from power when not in use.
- Always ground (earth) the product electrically.
- Before using the product, check that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices.
  - Do not use the product if the power cable or a power plug is in any way damaged, defective or showing signs of overheating.
- Do not attempt to open any cover.
- Refer any service operation not described in this manual to a qualified technician.



## PROTECTION FROM FIRE

- Do not stick filters, masks or other materials directly onto LED modules.
- Do not modify the product in any way not described in this manual.
- Install only genuine ROE parts in or on the product unless an alternative is described in this manual.
- Do not operate the product full load if the ambient temperature of power units (Ta) exceeds 50°C (122° F) or less than -20°C(-4° F).



## PROTECTION FROM INJURY

- Create an installation by installing tiles at the top and working downwards. Disassemble an installation by removing tiles at the bottom and working upwards.
- Check that all external covers and rigging hardware are securely fastened.
- Block access below the work area and work from a stable platform whenever installing, servicing or moving the product.

## Important warnings

### Maximum and minimum ambient temperature:

The maximum ambient temperature for the LED wall is 50 °C; the minimum temperature is (-20°C.)

### High leakage current:

The combination of power boxes in an installation results in increased levels of Leakage current. In order to avoid risk of electric shock due to high leakage current, proper grounding of the installation is required.

### This equipment **MUST** be earthed:

In order 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.

## Power system

### Mains cords:

The power cords delivered with this system have special properties for safety. They are not user Serviceable. If the power cords are damaged, replace them only with new ones. Never try to repair a power cord.

### Data cables:

The data cables provided with this system have special properties for safety. They are not user serviceable. If the data cables are damaged, replace them only with new ones. Never try to repair a data cable. Per requirements of the National Electrical Code® in the USA, the length of a data cable must not exceed 100 m (332 feet). Avoid exposure of data cables to accidental contact with lightning or power conductors.

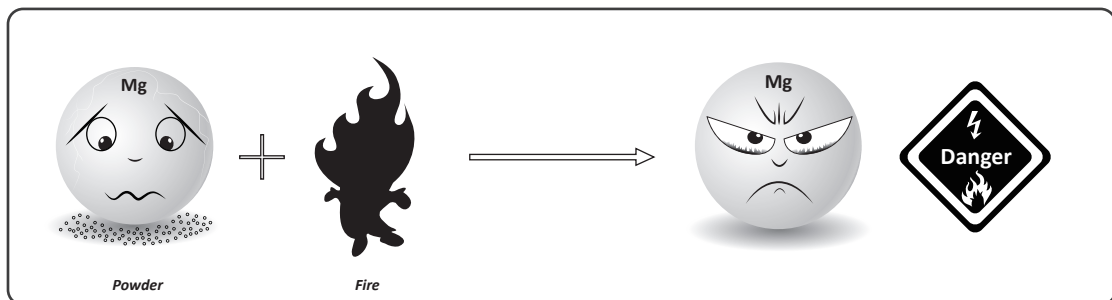
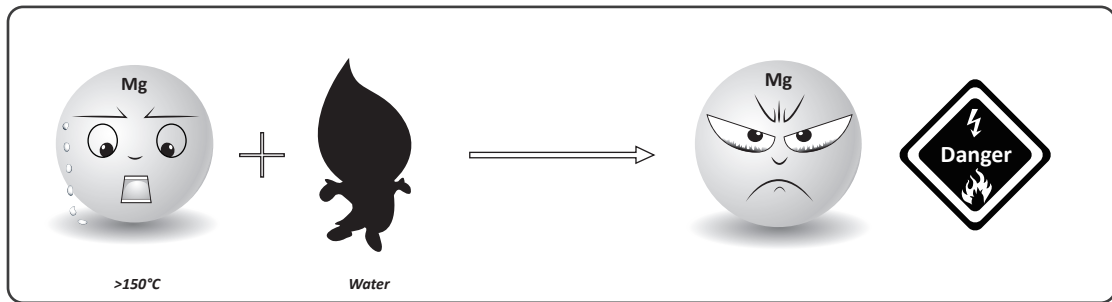


Black OnyX tiles cannot be hot swapped:

Always disconnect the power cord from the control box before connecting or disconnecting the cable string or one of Black OnyX tiles.



## FRAME PROTECTION



Note: At normal temperature environment, Magnesium alloy is absolutely stable and safe.  
It's dangerous only in:

1. Temperature higher than 150°C with water;
2. Powder with fire.

## Certification

### POWER SUPPLY

HWA200-4V6

INPUT

100-240V~, 50/60HZ

OUTPUT

POWER CONSUMPTION: 160W



CONFORMS TO UL STD.60950-1  
CERTIFIED TO CSA STD.

C22.2 NO.60950-1-07

ROE Visual Co.,Ltd

Pn=160W Un=4.6V In=35A

Max.Operating temperature is 50°C.



# Specification:

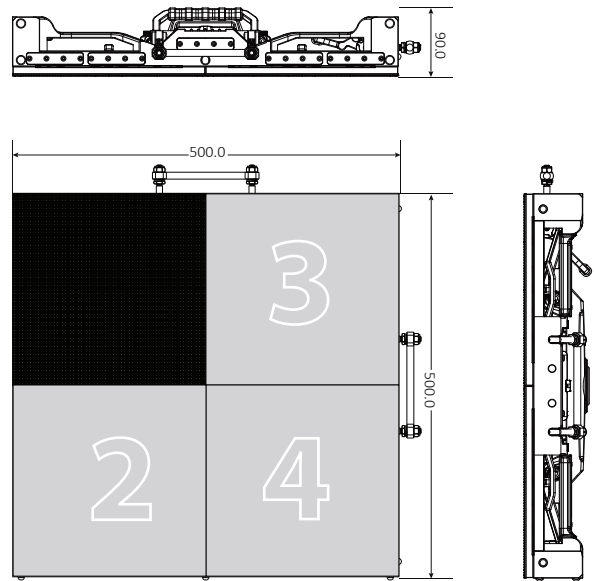
The Black Onyx is ROE Visual's new high-performance indoor HD LED display incorporating professional industrial design. Since Black Onyx emerges, it has successively won many famous design awards including IF Gold Award, Reddot Award, G-Mark Design Award, Design For Asia Award.

The innovative and friendly design supports a fast and simple setup for both flown and ground-supported setups well suited to the needs of large events, concerts and exhibitions. Featuring a HD pixel pitch and outstanding color processing, the product also promises high-end performance in TV studios and lecture halls.

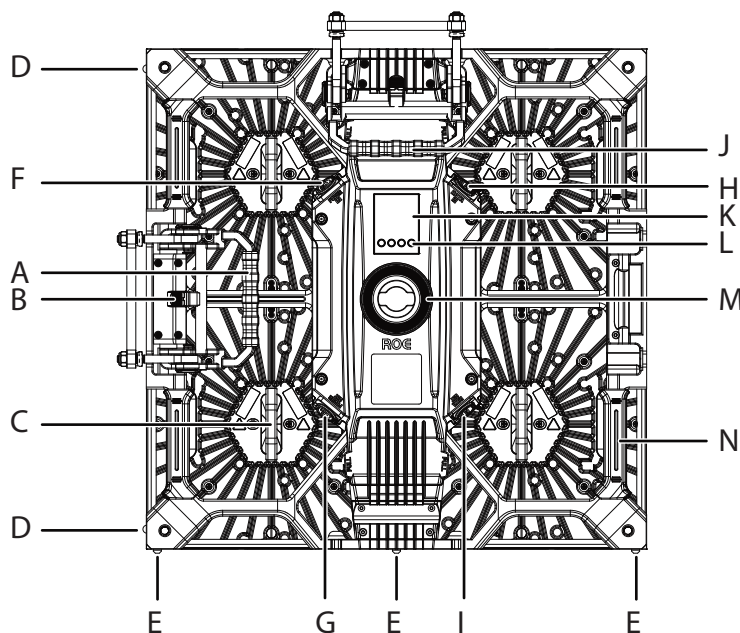
## Black Onyx Specification:

Black Onyx	BO2	BO3
Pixel Pitch	2.84mm	3.47mm
Pixel Density	123904/sqm	82944/sqm
Brightness(After calibration)cd/sqm	1800 Multicolor 1515	1500 NationStar 2020
Refresh Rate	1920Hz	1920Hz
Scan	1/11	1/12
Power Consumption(Max./average)	640/290W/sqm	640/290W/sqm
LED Configuration	Black SMD 3-in-1	
Viewing Angle	110H/100V degrees	
Contrast	5000:1	
Gray Scale	16bit	
Tile Dimension(W×H×D)	500.0×500.0×90.0(mm) 19.7"×19.7"×3.5"	
Tile Material	Magnesium Alloy	
Tile Weight	9.4kg/20.7lbs	
Operating Temp/Humidity	-20°C~50°C, 10~90%RH	
Storage Temp/Humidity	-40°C~60°C, 10~90%RH	
Lifetime	≥50000h	
Max. Stacking	12 tiles	
Max. Hanging	20 tiles	
Curve(optional)	Concave(0~10)	
3D Ready(optional)	Yes	

## Black Onyx Dimensions:



(Unit: mm)

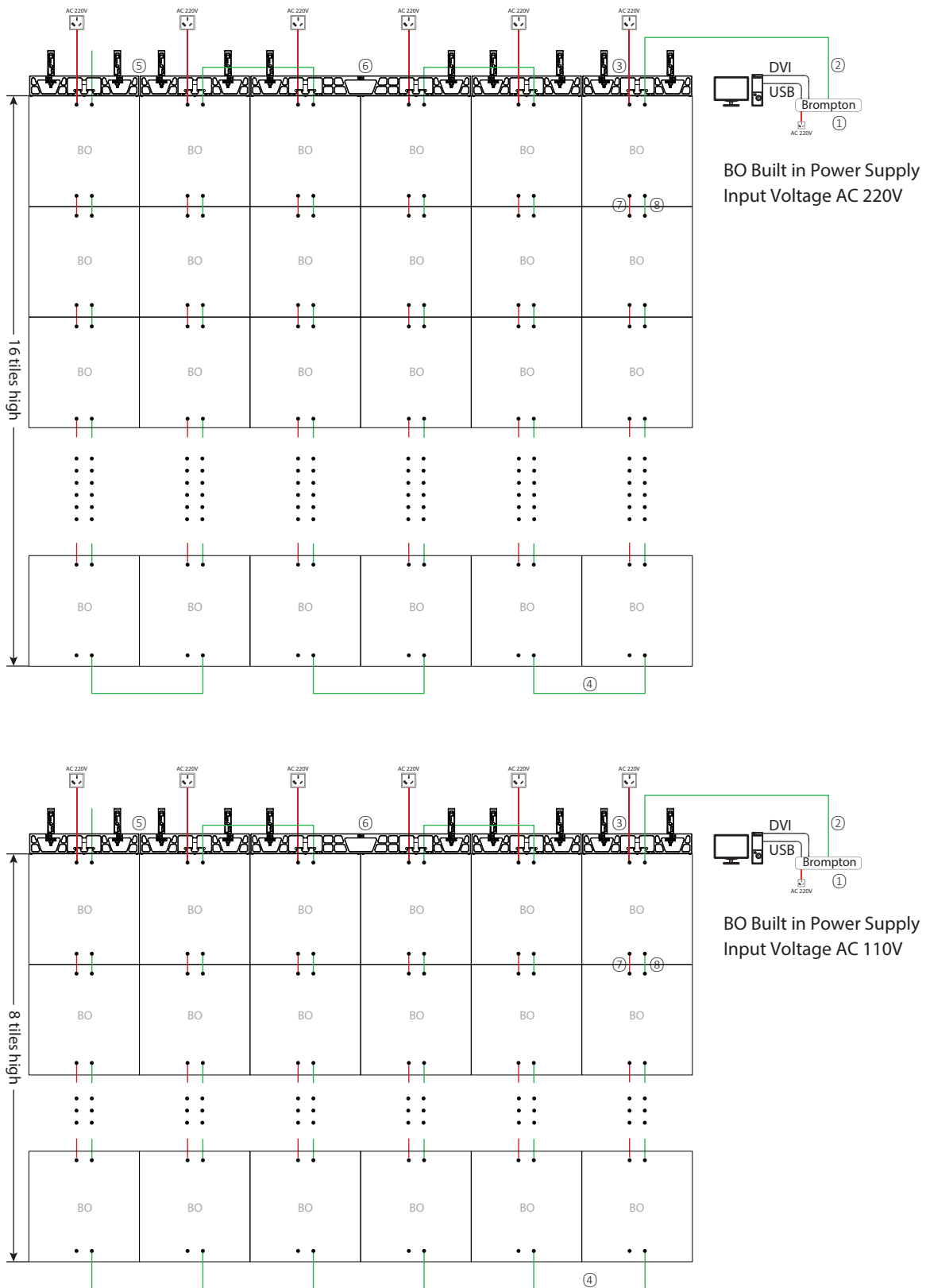


## BO tiles rear components

- A. Horizontal Connector
- B. Control Button
- C. Handle
- D. Horizontal Assistant Position bead
- E. Vertical Assistant Position bead
- F. Power In
- G. Power Out
- H. Data In
- I. Data Out
- J. Vertical Connector
- K. LCD Screen
- L. Function Button
- M. Hole-Assisted for stacking system
- N. Rubber Grip

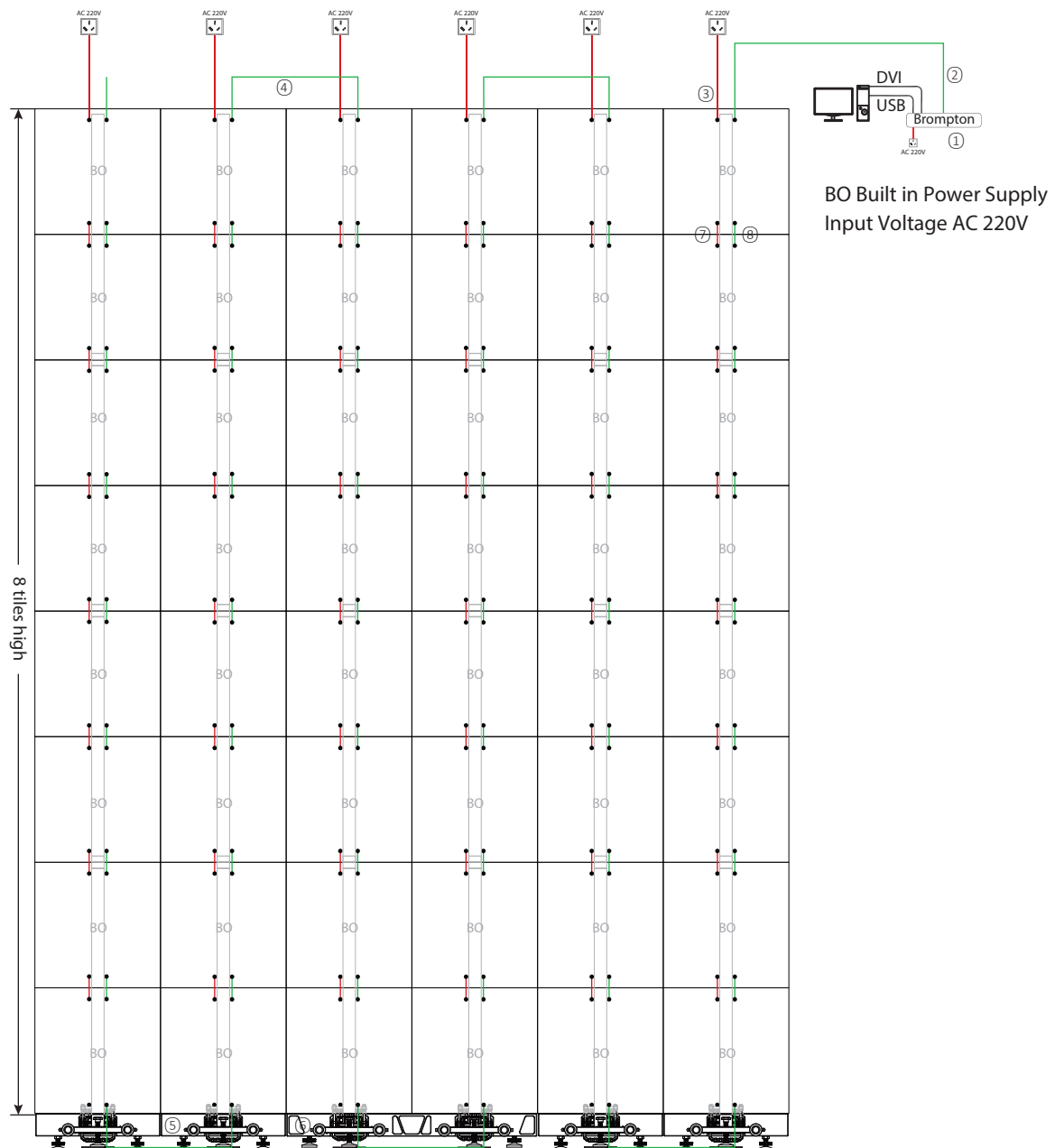
# O3 Connection

## Hanging System



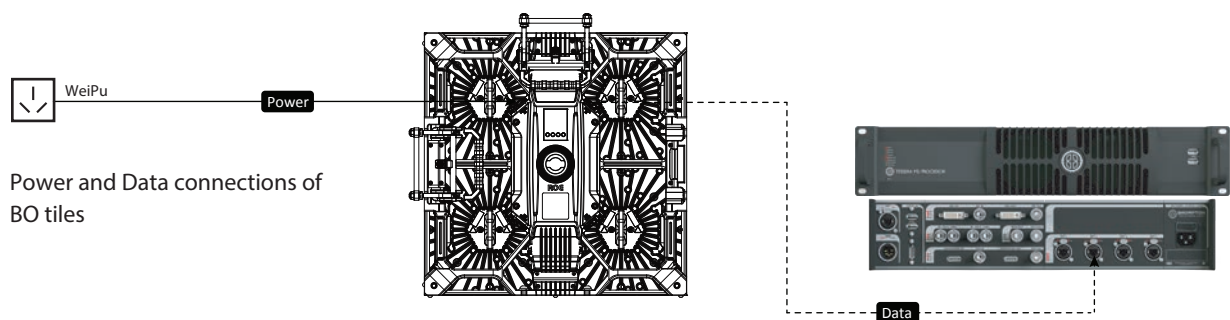
- Notes:**
1. Neither Header nor Connector can load more than 20 tiles of BO.
  2. When the Input Voltage is 220V, one Power Cable can load 16 tiles of BO; and the Input Voltage is 110V, one Power Cable can load 8 tiles of BO.

## Stacking System



**Notes:** 1. Base Bar can load no more than 12 tiles of BO.

2. When the Input Voltage is 220V, one Power Cable can load 16 tiles of BO; and the Input Voltage is 110V, one Power Cable can load 8 tiles of BO.



# 04

## Accessories

①



Name : Brompton  
SAP No. : 311003-00010  
Dimension: W508×H432×D89mm  
Weight : 12.0kg

②



Name : Data Cable  
SAP No. : 208004S0242  
Dimension : 30m  
Weight : 1.42kg  
Max Length : 100m

③



Name : Power Cable  
SAP No. : 208001S0754  
Dimension : 10m  
Weight : 1.60kg  
Max Current : 16A

④



Name : Data Cable  
SAP No. : 201000S0243  
Dimension : 0.75m  
Weight : 0.16kg

⑤



Name : Hanging Bar  
SAP No. : 207002S0046  
Dimension: W494×H158×D205mm  
Weight : 4.50Kg  
Material : Aluminium 6063

⑥



Name : Hanging Bar  
SAP No. : 207002S0047  
Dimension: W94×H158×D205mm  
Weight : 7.70Kg  
Material : Aluminium 6063

⑤



Name : Stacking Bar  
SAP No. : 207002S0057  
Dimension: W494×H60×D135mm  
Weight : 7.90Kg  
Material : Aluminium 6063

⑥



Name : Stacking Bar  
SAP No. : 207002S0058  
Dimension: W994×H60×D135mm  
Weight : 11.87Kg  
Material : Aluminium 6063

⑦



Name : Power Cable  
SAP No. : 208001S0862  
Dimension : 0.35m  
Weight : 0.1kg

⑧



Name : Data Cable  
SAP No. : 208004S0244  
Dimension : 0.35m  
Weight : 0.08kg

⑧



Name : Base Truss  
SAP No. : 304012-00503  
Dimension: W1000×H290×D50mm  
Weight : 7.40Kg  
Material : Aluminium 6063

⑧



Name : Rear Support Truss  
SAP No. : 304012-00504  
Dimension: W1000×H290×D50mm  
Weight : 4.35Kg  
Material : Aluminium 6063

⑧



Name : Rear Bridge  
SAP No. : 206002S0178  
Dimension: W182×H133×D35mm  
Weight : 0.93Kg  
Material : Aluminium 6063

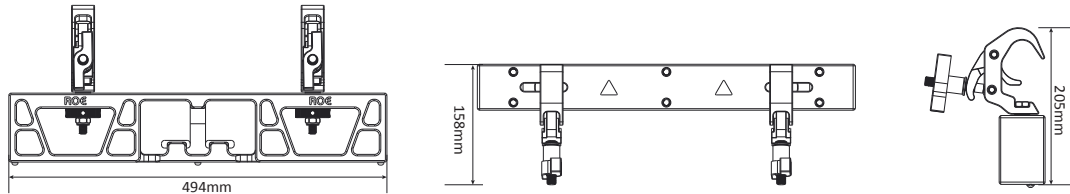
⑧



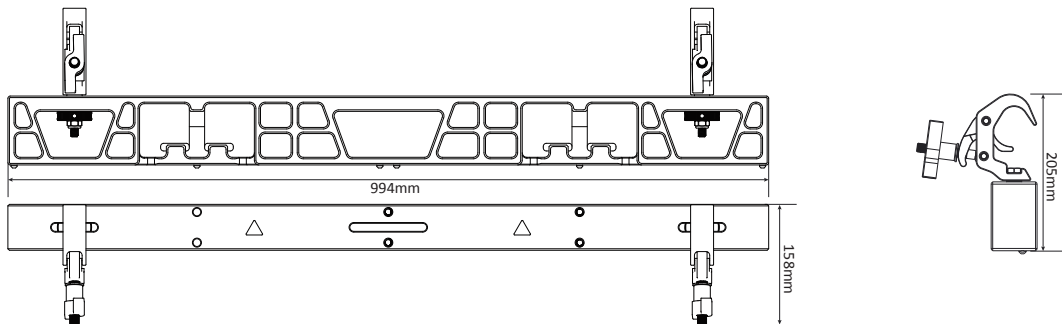
Name : Flightcase  
SAP No. : 309003-00106  
Dimension : W1165×H835×D617mm  
Max.Capacity: 8 tiles of BO

## Hanging System

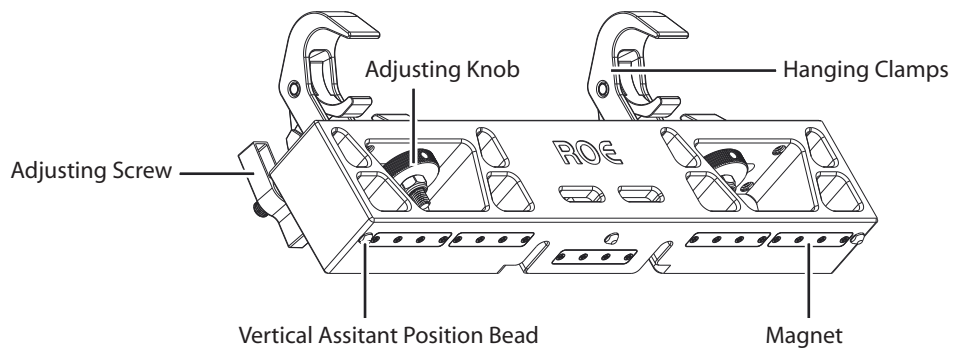
0.5m Hanging bar Dimensions:



1m Hanging bar Dimensions:



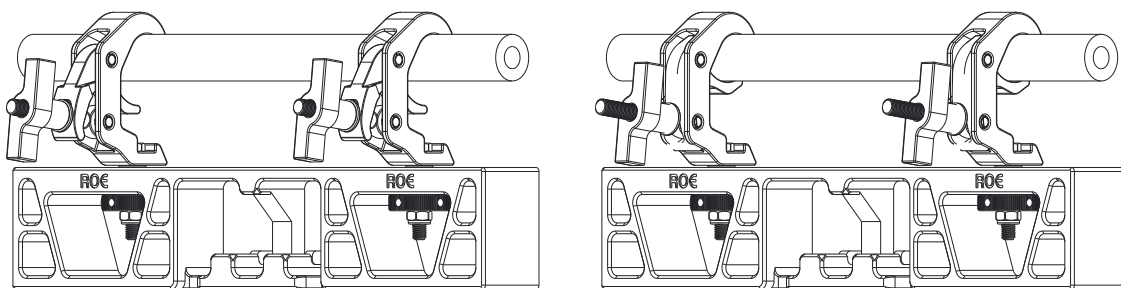
Hanging bar components:



## Hanging Installation

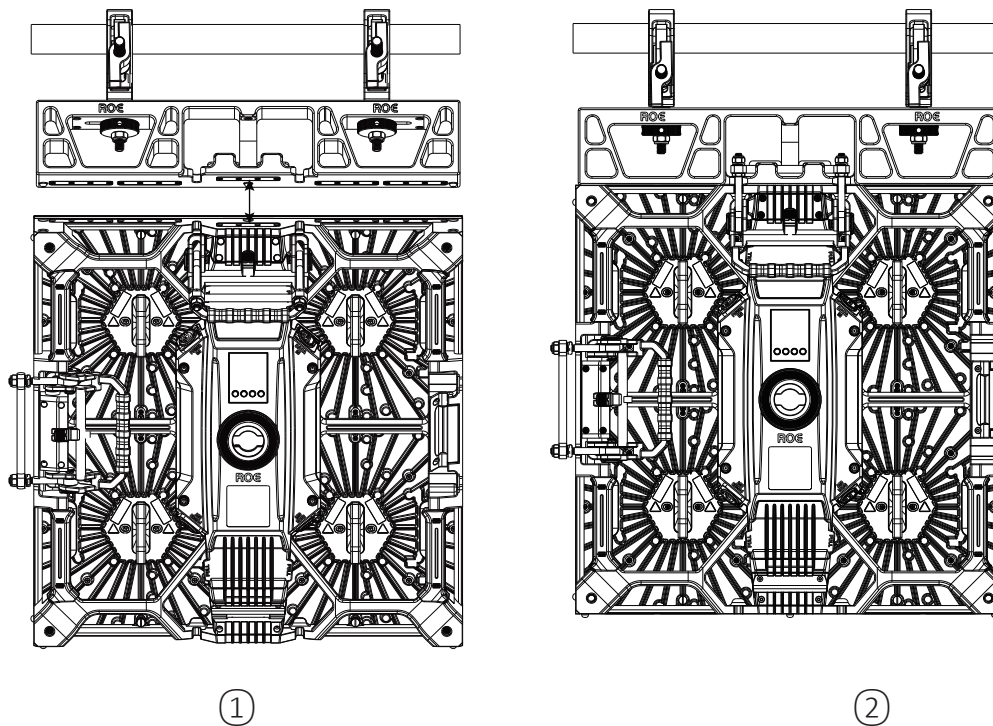
### 1. Fix the Hanging Bar on the Truss

Just turn the Adjusting Screw, to make the Clamps close, the Hanging Bar will be fixed on the Truss safely.



## 2. Connect BlackOnyX tiles with the hanging bar

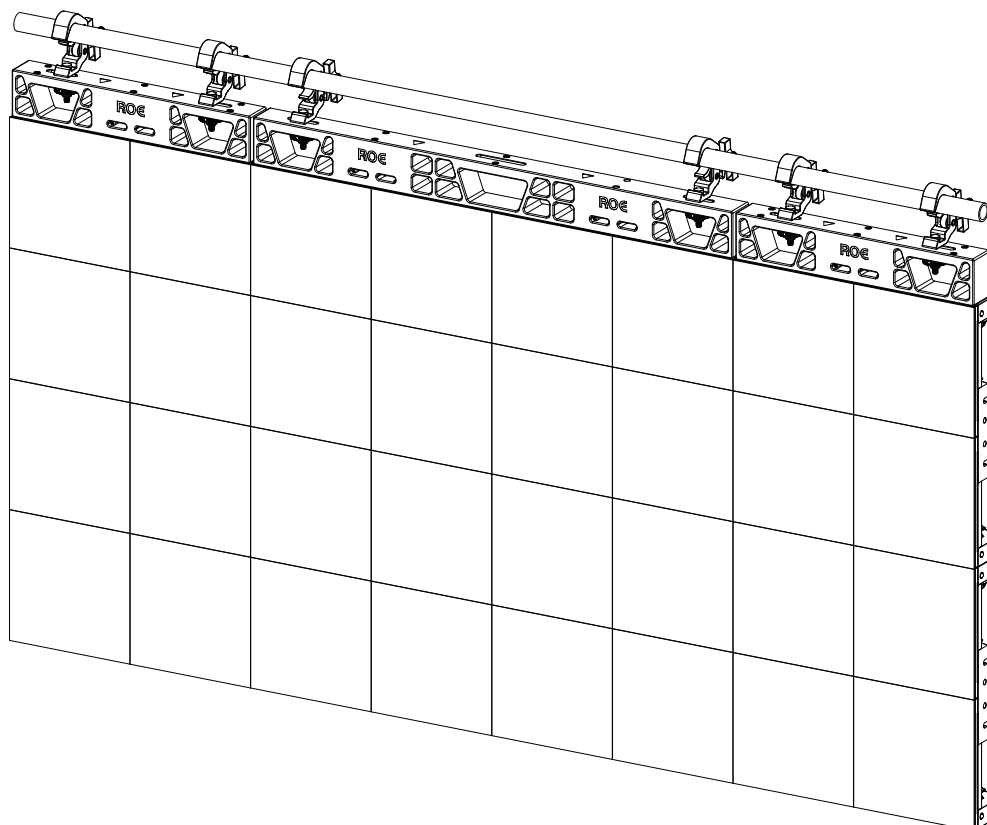
- ① Tiles will be attached to the hanging bar by Magnets automatically.
- ② Press the red button and lock the tiles by Vertical Connector.



**Notes: (For Safety)** Please do this by two persons.

## 3. Hanging Installation

Tile(2x4)

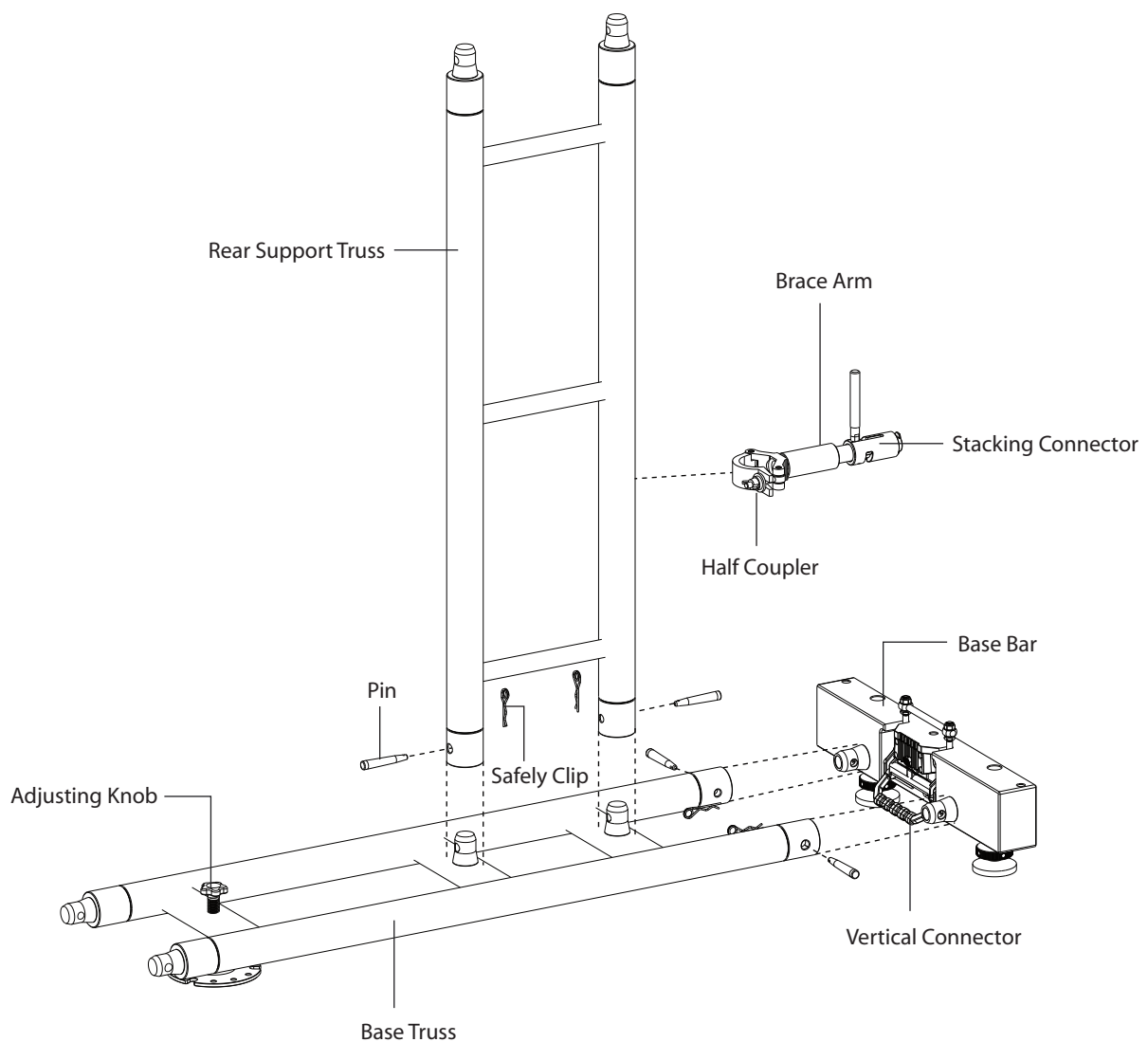


# Stacking System

## Stacking System Support Components

Major components of the Stacking System support assembly are:

1. Base Bar
2. Base Truss
3. Rear Support Truss
4. Rear Bridge(Half Coupler, Brace Arm, Stacking Connector)



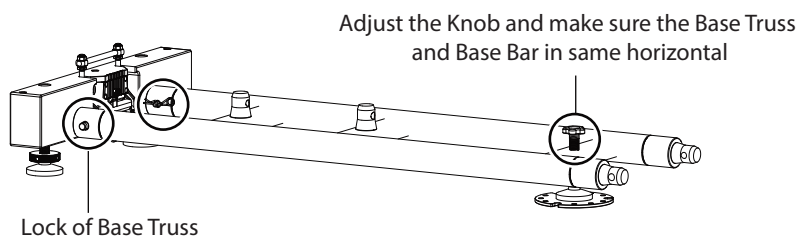
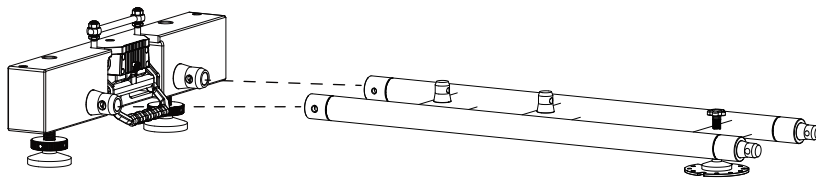
Stacking system assembly exploded diagram.



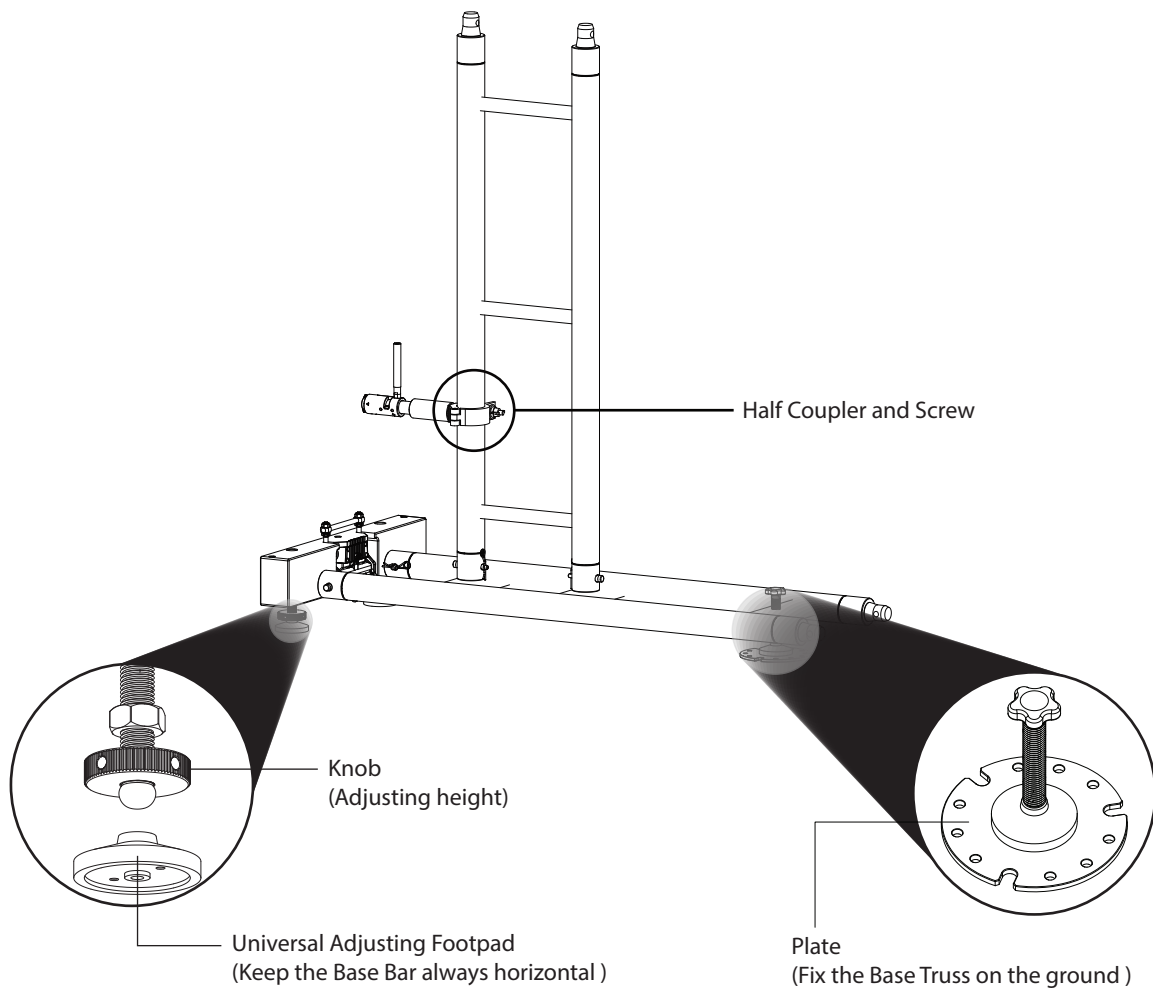
## Stacking Installation

### 1. Base Bar connection with Base Truss

Connect the Base Bar and Base Truss by Pin and Safely Clip.

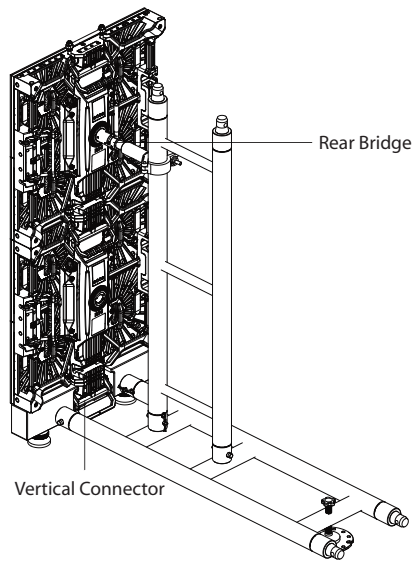


### 2. Rear Support Truss and Rear Bridge installation



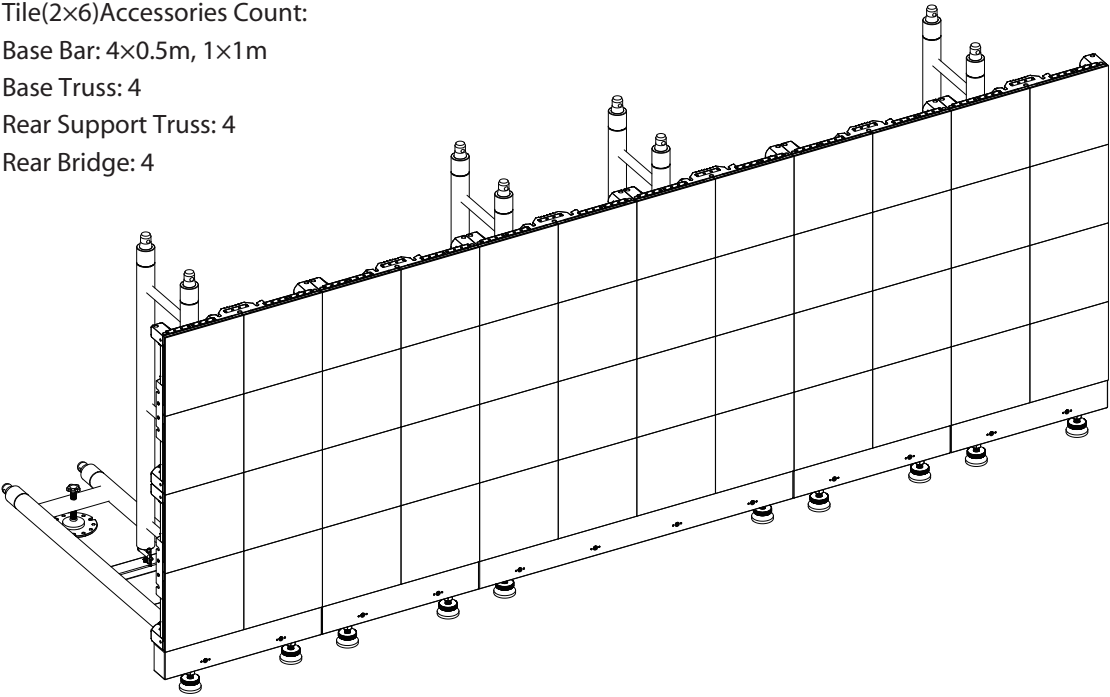
3. Tiles Installation

Connect the tiles and Base Bar by Vertical Connector, and Rear Support Truss by Rear bridge.



4. Stacking Installation

- Tile(2x6)Accessories Count:
- Base Bar: 4x0.5m, 1x1m
- Base Truss: 4
- Rear Support Truss: 4
- Rear Bridge: 4



Black Onyx Ballastconfigurator v1

Global truss ROE version  
Hallenwind:125N/m2  
Table shows ballast in KG per tilewidth.  
Lenghtfactor:2.5

		Width Tiles Black Onyx																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Height Tiles Black Onyx	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
	2	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200	208	216	223	231	239
	3	18	36	54	72	90	108	126	144	162	180	198	216	233	251	269	287	305	323	341	359	377	395	413	431	448	466	484	502	520	538
	4	32	64	96	128	160	192	223	255	287	319	351	383	415	446	478	510	542	574	606	638	669	701	733	765	797	829	861	892	924	956
	5	50	100	150	200	249	299	349	399	448	498	548	598	648	697	747	797	847	896	946	996	1046	1096	1145	1195	1245	1295	1344	1394	1444	1494
	6	72	144	216	287	359	431	502	574	646	717	789	861	932	1004	1076	1147	1219	1291	1362	1434	1506	1577	1649	1721	1792	1864	1936	2007	2079	2151
	7	98	196	293	391	488	586	683	781	879	976	1074	1171	1269	1366	1464	1561	1659	1757	1854	1952	2049	2147	2244	2342	2439	2537	2635	2732	2830	2927
	8	128	255	383	510	638	765	892	1020	1147	1275	1402	1530	1657	1784	1912	2039	2167	2294	2421	2549	2676	2804	2931	3059	3186	3313	3441	3568	3696	3823
	9	162	323	484	646	807	968	1129	1291	1452	1613	1774	1936	2097	2258	2420	2581	2742	2903	3065	3226	3387	3548	3710	3871	4032	4193	4355	4516	4677	4839
	10	200	399	598	797	996	1195	1394	1593	1792	1991	2191	2390	2589	2788	2987	3186	3385	3584	3783	3982	4182	4381	4580	4779	4978	5177	5376	5575	5774	5973
	11	241	482	723	964	1205	1446	1687	1928	2169	2410	2650	2891	3132	3373	3614	3855	4096	4337	4578	4819	5060	5300	5541	5782	6023	6264	6505	6746	6987	7228
	12	287	574	861	1147	1434	1721	2007	2294	2581	2867	3154	3441	3728	4014	4301	4588	4874	5161	5448	5734	6021	6308	6595	6881	7168	7455	7741	8028	8315	8601

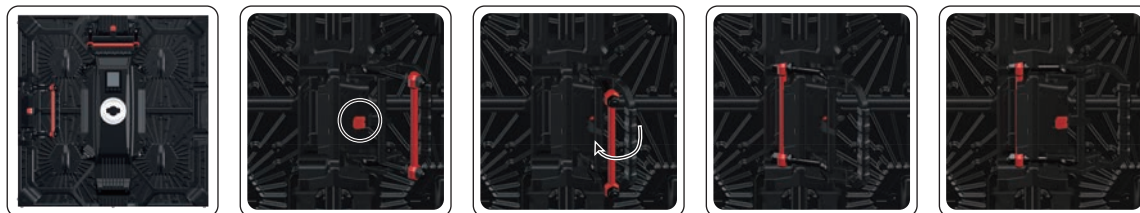
100 cm stackingdepth, Lenghtfactor is 1,5;      60 cm stackingdepth, Lenghtfactor is 2,5.

Notes:From a height of 4.0m (8 tiles) an additional 48x3 mm tube should be used to stabilize the truss towers.

# 06 Physical Connection:

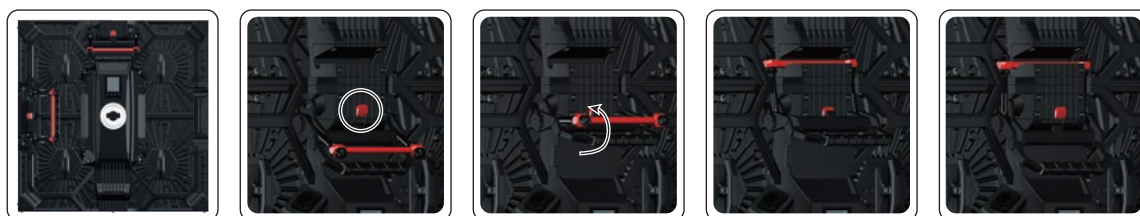
## Straight Installation

Horizontal connector operation



- Picture 1      Picture 2      Picture 3      Picture 4      Picture 5
1. Press the horizontal red button to loosen the handle.(pic2)
  2. Pull the handle to turn the connecting bar.(pic3)
  3. Connect two tiles and align them.(pic 4)
  4. Push handle back for locking.(pic5)

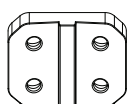
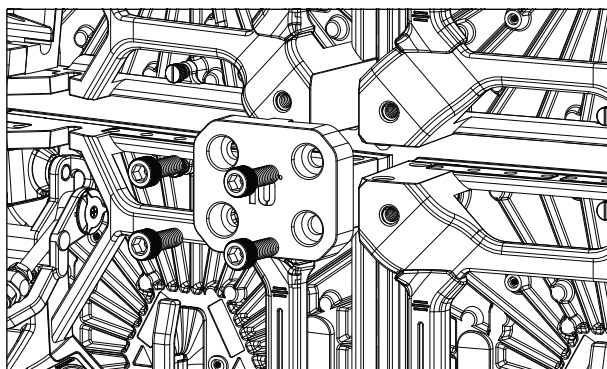
Vertical connector operation



- Picture 1      Picture 2      Picture 3      Picture 4      Picture 5
- Tiles will be attached together by magnets automatically.(pic1)
2. Press the vertical red button to loosen the handle.(pic2)
  3. Pull the handle to turn the connecting bar.(pic3)
  4. Connect two tiles and align them.(pic 4)
  5. Push handle back for locking.(pic5)

## Curve Installation

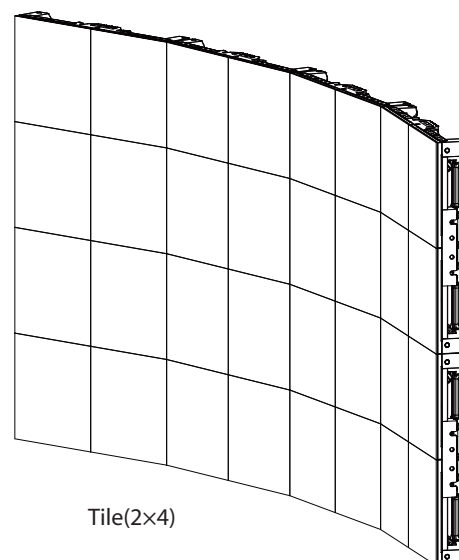
The range of curve: 0~10°(horizontally inner arc).



Concave Connector



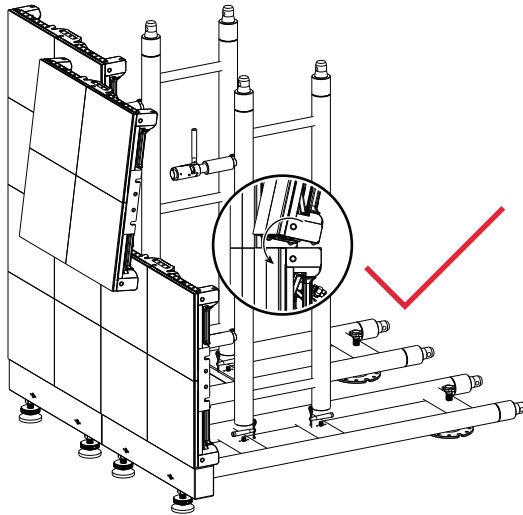
M10 Hex Socket head cap screws



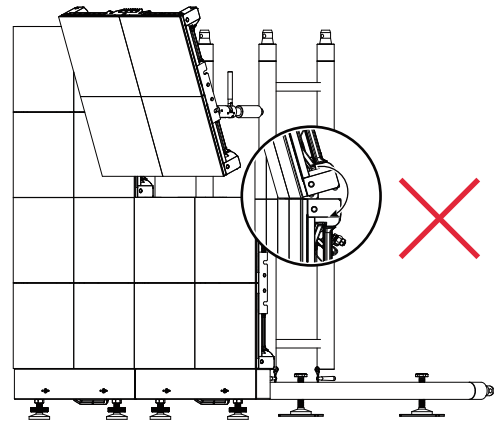
Tile(2x4)

**Notes:** To keep the lights which on the edge of the module from damaging, please operate it as follows.

## Stacking Installation

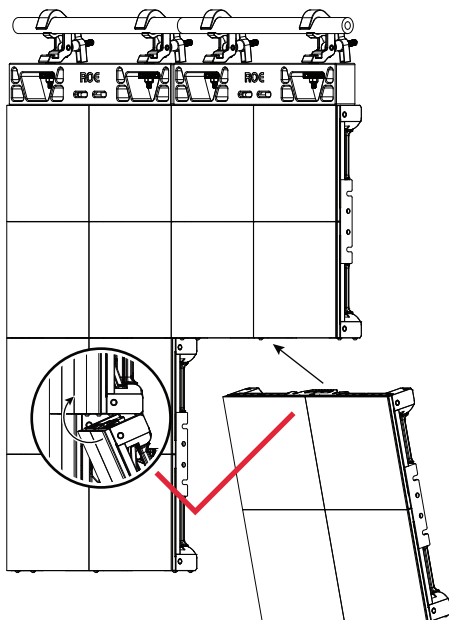


The Correct way

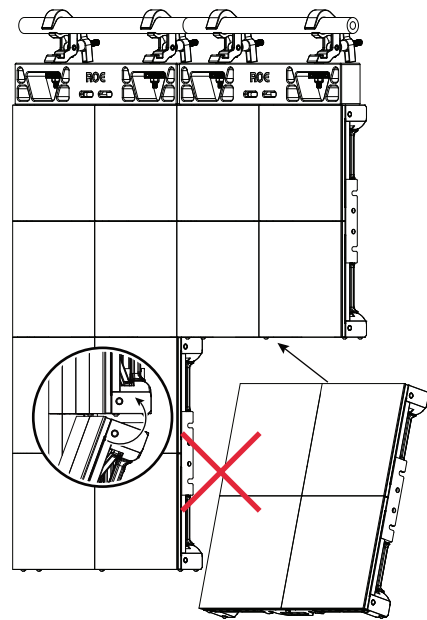


The Wrong way

## Hanging Installation



The Correct way



The Wrong way



# Control System:

SMART / REALTIME / SOPHISTICATED COLOUR MANAGEMENT / REMOTE

## Specifications

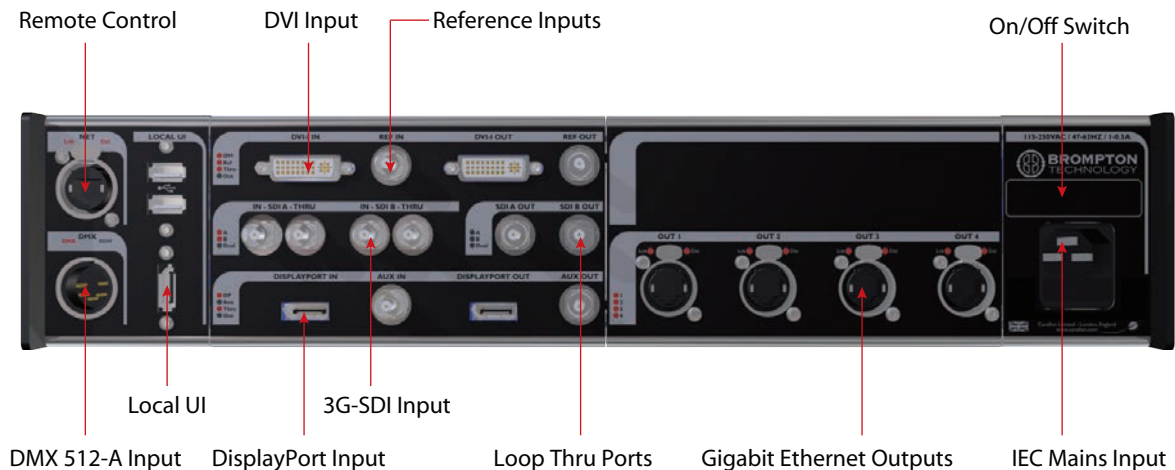
Electrical	100 - 240V AC, 47Hz - 60Hz, 1- 0.5A Autoranging power supply.
Input ports	2 × SD/HD/3G-SDI, DVI-I, Bi-/Tri-level Reference Sync
Output ports	4 × Tesseract Protocol (Neutrik Ethercon)
Max. capacity	2 Million Pixels (60Hz 24bit)
Internal processing quality	12bits per colour
Canvas size	1920 × 1080 pixels
Remote control	Support for control via eDMX (ArtNet) and DMX512 (on XLR 5-pin)
Dimensions	508mm × 89mm × 432mm 20" × 3.5" × 19"
Weight	9.0kg/20.0lbs
Certification	CE, ETL/cETL



Brompton(311003-00010)

All specifications are believed to be correct at time of writing.  
Specifications are not guaranteed to be free from errors, and are subject to change at any time.

## Rear Panel Connections

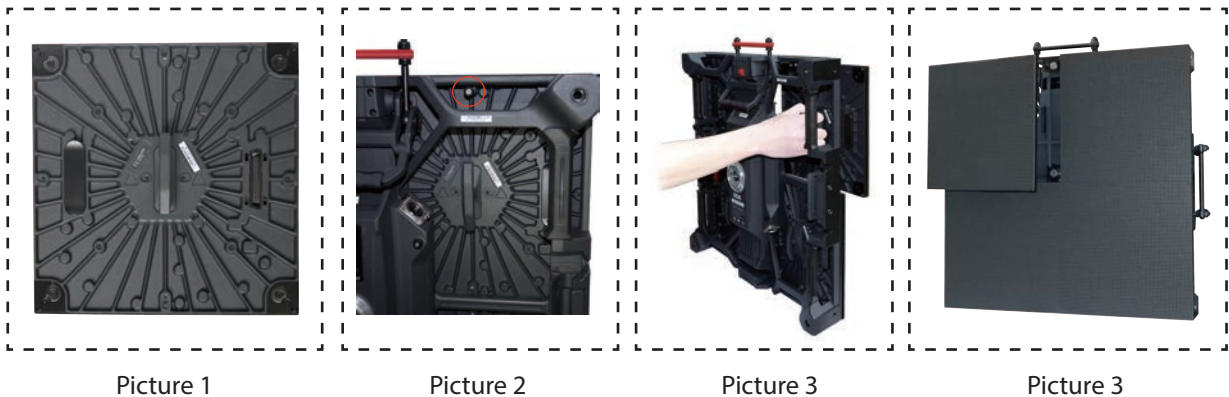


## Software

Please read software manual firstly, (download link as below): [Http://www.roevisual.com/how-to-make-led-display](http://www.roevisual.com/how-to-make-led-display).

## 08 Service and Maintenance:

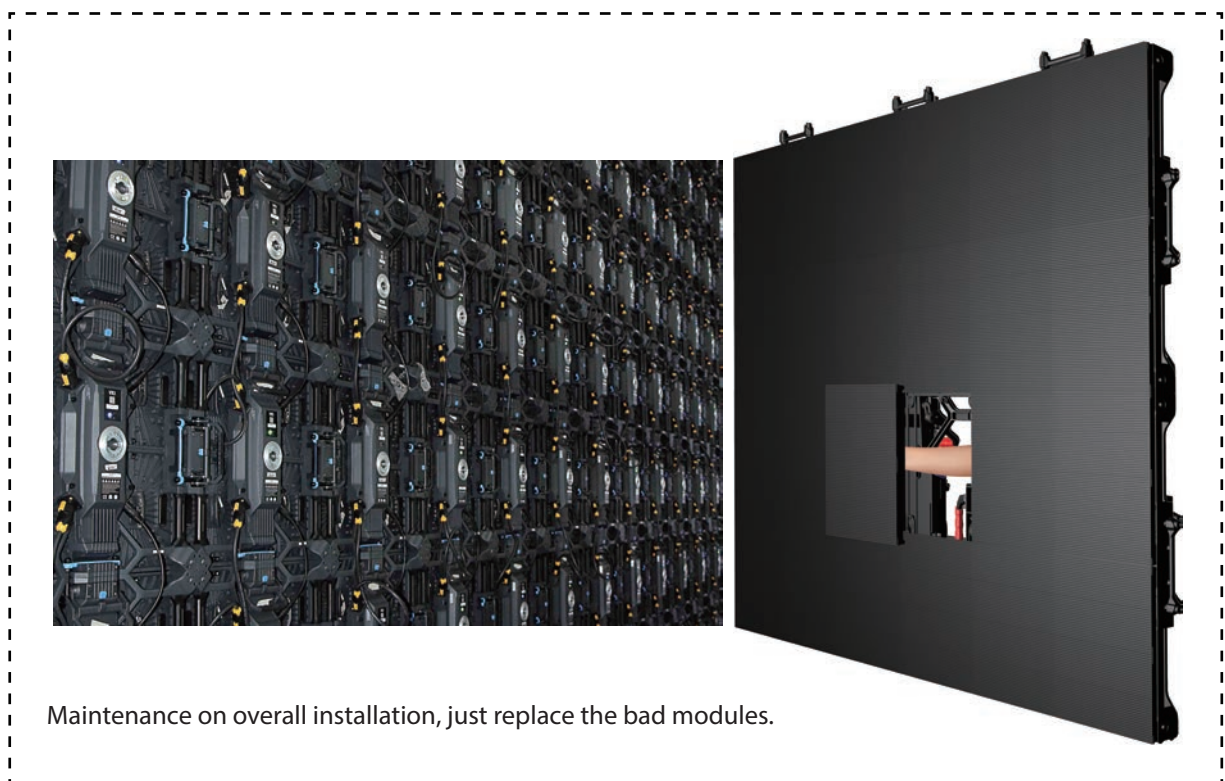
### Rear Maintenance



Easy Maintenance with push-out module and all the modules are the same design.

1. A single modules.(Picture 1)
2. Remove the screw in red.(Picture 2)
3. Hold the handle and push the module.(Picture 3)

### Application example

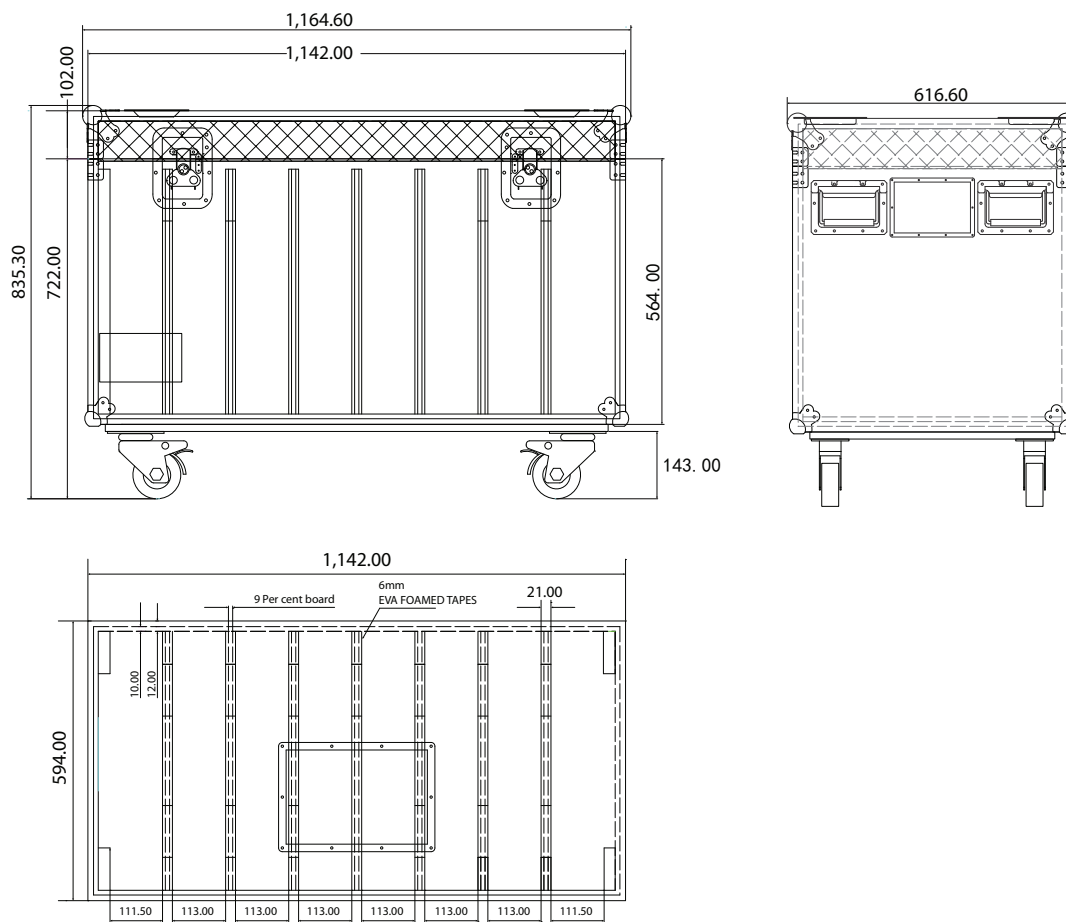


Maintenance on overall installation, just replace the bad modules.



# 09 Package

## Flightcase Dimensions:



**8 pcs LED tiles per Flightcase**



**ROE Visual Europe B.V**

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