RIDGE v²

User Guide

Document reference: RIDGE v² User Guide 25.9v3
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THOR:

RIDGE v^2 LED PANEL INSTRUCTIONS

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated and/or potentially dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT SAFETY INSTRUCTIONS

1. Intended use for the RIDGE series is for indoor applications.
2. Inspect all products and perform safety related checks before deployment.
3. Read and understand this entire manual.
4. Keep this manual available for reference.
5. Heed all warnings and precautions in this manual and notices marked on the product.
6. Do not use this product near water or damp environments.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Provide for proper airflow around product. Do not install near products that produce high levels of heat. Do not expose the unit to direct sun light or heating units as the internal components' temperature may rise and shorten the life of the components.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they connect to the product. Do not use the unit if the electrical power cord is frayed or broken.
11. THOR AV products must be used in accordance with local, state, federal and industry regulations. The responsibility to evaluate the reliability of any rigging or mounting method for their application is solely the user's responsibility. Rigging is to be carried out by experienced professionals.
12. Abide by the Working Load Limit (WLL) of third party equipment for suspension points, chain hoists and additional rigging hardware.
13. Verify structural integrity meets engineering requirements for flying, ground stacking and wall mounting applications.
14. THOR AV is not responsible for any rigging, attachments and accessories provided by third party manufacturers.
15. Utilize safety measures at all times, including safety slings and cables.
16. Unplug this product during lightning storms or when unused for long periods of time.
17. Refer all servicing to qualified service personnel. There are no user serviceable components inside the product.
18. The product shall not be exposed to moisture. Do not touch the unit with wet hands. Do not handle the unit or power cord when your hands are wet or damp.
19. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

CARE

- From time to time you should wipe off the front and side panels and the cabinet with a dry soft cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since this may damage the finish or remove the panel lettering.
- The manufacturer cannot be held responsible for damages caused to persons, personal possessions, or data due to an improper or missing ground connection.

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THOR LIMITED WARRANTY

All THOR AV LED products are warranted to the original purchaser to be free of defects in materials and workmanship for a period of three years from date of purchase. During this period, THOR AV will, at its discretion, repair the defective unit or replace it with a new or rebuilt one.

The warranty does NOT cover:

- Damages caused by abuse, accident, improper use, improper handling, improper operation, improper installation/disassembly of the display or any other customer misconduct.
- Damages due to installation of any unauthorized hardware, accessories, consumable parts or components.
- Defects, malfunctions or damages caused during transportation.
- Units on which the product serial number has been removed or altered.
- Units that have been serviced by unauthorized personnel.

All implied warranties, including warranties on merchantability and fitness, are limited in time to the length of this warranty. Some states do not allow time limitations on implied warranties, so this limitation may not apply to you. THOR AV's liability is limited to the repair or replacement of its product. THOR AV shall in no way be held liable for incidental or consequential damages resulting from the use of their product or its software, including, without limitation, damages from loss of business profits, business interruption, loss of business information or other pecuniary loss. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

REPAIR POLICY
Please contact support@thorav.us to obtain an RMA number prior to returning your product to THOR AV. Do not return the product to the place of purchase. Write the RMA number on the outside of the shipping carton. Any product sent to us without a valid RMA number will be refused.

Shipping Address:
THOR AV
Attn: RMA Number
8821 Zealand Ave. N
Brooklyn Park, MN 55445 USA

Include the following with the product: a brief description of the problem, your name, return shipping address, phone number and the RMA number. Do not include any accessories. THOR AV is not responsible for any damage to or loss of the product during transit. We recommend that customers obtain a receipt and tracking number for all packages shipped to us. Turnaround time on repairs is generally ten business days. If you live outside of the United States, please contact your local distributor for warranty service.

WARRANTY SERVICE
You will be responsible for shipping charges to THOR AV and the product will be returned by THOR AV. We reserve the right to inspect any product that may be the subject of any warranty claim before repair is carried out. To qualify for warranty service, documentation showing the date of purchase may be required. Final determination of warranty coverage lies solely with THOR AV.

NON-WARRANTY SERVICE
If it is determined that the product does not meet the terms of our warranty, you will be billed for labor, materials, return shipping and insurance. There is a $100 USD minimum charge for materials and labor. Appropriate shipping charges will be applied. We require payment in advance of repair by credit card; we accept Visa and Master Card. In the event the charges are over the minimum charge, THOR AV will contact you and inform you of the cost of the repair before any work is completed.

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RIDGE v² LED PANEL

INDOOR LED WALL PANEL

RIDGE v² LED wall panels offers outstanding performance with flexible install options. RIDGE v² can be installed in ground stack, flown, or wall mounted configurations. This LED panel series is ideal for Live Events, Fixed Installations, Virtual Production, and Signage.

- 1.2mm, 1.5mm 1.8mm, 2.5mm, and 3.7mm pixel pitches
- Brompton and NovaStar processing options
- Easy servicing from front or back
- Best-in-class on-camera performance
- Easily visible in all levels of ambient light

THOR:

SPECIFICATIONS

	1.2 Brompton 1.2 NovaStar	1.5 Brompton 1.5 NovaStar	1.8 Brompton 1.8 NovaStar	2.5 Brompton 2.5 NovaStar	3.7 Brompton 3.7 NovaStar
Pixel Pitch	1.2mm	1.5mm	1.8mm	2.5mm	3.7mm
Calibrated Brightness	1000 nits	1000 nits, 800 nits*	1100 nits, 1200 nits**	1100 nits, 1200 nits**	1100 nits, 1200 nits**
Viewing Angle	160° x 160°	140° x 140°* 160° x 160°	160° x 160°	140° x 140°	140° x 140°
Closest Viewer	6 FT / 1.8M	7.25 FT / 2.25M	8.5 FT / 2.7M	12 FT / 3.7M	24 FT / 7.4M
LED Module	FlipChip 1010	4in1 gold wire* FlipChip 1010	SMD 1010**	SMD 2020**	SMD 2020**
LED Driver IC	MBI IC with S-PWM	MBI IC with S-PWM	MBI IC with S-PWM	MBI IC with S-PWM	MBI IC with S-PWM
Serviceability	Front / Rear	Front / Rear	Front / Rear	Front / Rear	Front / Rear
Panel Dimensions	600 x 337.5 x 58mm (23.62" x 13.29" x 2.29")	600 x 337.5 x 58mm (23.62" x 13.29" x 2.29")	600 x 337.5 x 58mm (23.62" x 13.29" x 2.29")	600 x 337.5 x 58mm (23.62" x 13.29" x 2.29")	600 x 337.5 x 58mm (23.62" x 13.29" x 2.29")
Hardware Options	Fly, Ground Stack, & Wall Mount	Fly, Ground Stack, & Wall Mount	Fly, Ground Stack, & Wall Mount	Fly, Ground Stack, & Wall Mount	Fly, Ground Stack, & Wall Mount
Receiving Card	Brompton R2+	Brompton R2+	Brompton R2+	Brompton R2+	Brompton R2+
	NovaStar A8s-Pro	NovaStar A8s-Pro	NovaStar A8s-Pro	NovaStar A8s-Pro	NovaStar A8s-Pro
Driving Method	1/27 scan	1/18 scan* 1/27 scan	1/15 scan	1/15 scan	1/15 scan
Grayscale	15 bit +	15 bit +	16 bit +	16 bit +	14 bit
Refresh Rate	3,840 Hz	3,840 Hz	7,680 Hz	7,680 Hz	3,840 Hz, 7,680 Hz*
Pixel Configuration	480 x 270 (w x h) 129,600	384 x 216 (w x h) 82,944	320 x 180 (w x h) 57,600	240 x 135 (w x h) 32,400	160 x 90 (w x h) 14,400
Chassis	Straight***	Straight***	Straight***	Straight***	Straight***
Operating Temperature	-10° to 40° C	-10° to 40° C	-10° to 40° C	-10° to 40° C	-10° to 40° C
Operating Humidity	Up to 80% RH	Up to 80% RH	Up to 80% RH	Up to 80% RH	Up to 80% RH
Power Input	120/240 Volt at 50/60 Hz	120/240 Volt at 50/60 Hz	120/240 Volt at 50/60 Hz	120/240 Volt at 50/60 Hz	120/240 Volt at 50/60 Hz
Power Consumption	150W max. 50W avg.	150W max. 50W avg.	150W max. 50W avg.	150W max. 50W avg.	150W max. 50W avg.
BTU/hr	437 max. 137 avg.	437 max. 137 avg.	437 max. 137 avg.	437 max. 137 avg.	437 max. 137 avg.
Electrical Circuits 120V/20A	16 panels	16 panels	16 panels	16 panels	16 panels
Flown Max Rigging Height	8M (26.25')	8M (26.25')	8M (26.25')	8M (26.25')	8M (26.25')
Ground Stacked Max Height	5M (16.4')	5M (16.4')	5M (16.4')	5M (16.4')	5M (16.4')
Chassis Material	Die Cast Aluminum	Die Cast Aluminum	Die Cast Aluminum	Die Cast Aluminum	Die Cast Aluminum
Weight	7.8 kg (17.2 lbs)	7.8 kg (17.2 lbs)	7.8 kg (17.2 lbs)	7.8 kg (17.2 lbs)	7.8 kg (17.2 lbs)
IP Rating	IP31	IP31	IP31	IP31	IP31
Certifications	FCC, ETL, UL	FCC, ETL, UL	FCC, ETL, UL	FCC, ETL, UL	FCC, ETL, UL
Life Span	100,000 Hours	100,000 Hours	75,000 Hours 100,000 Hours**	75,000 Hours 100,000 Hours**	75,000 Hours 100,000 Hours**
Limited Warranty	3 years	3 years	3 years	3 years	3 years

* Brompton
** Gold wire option (Brompton only)
*** Curvable with optional hardwarve

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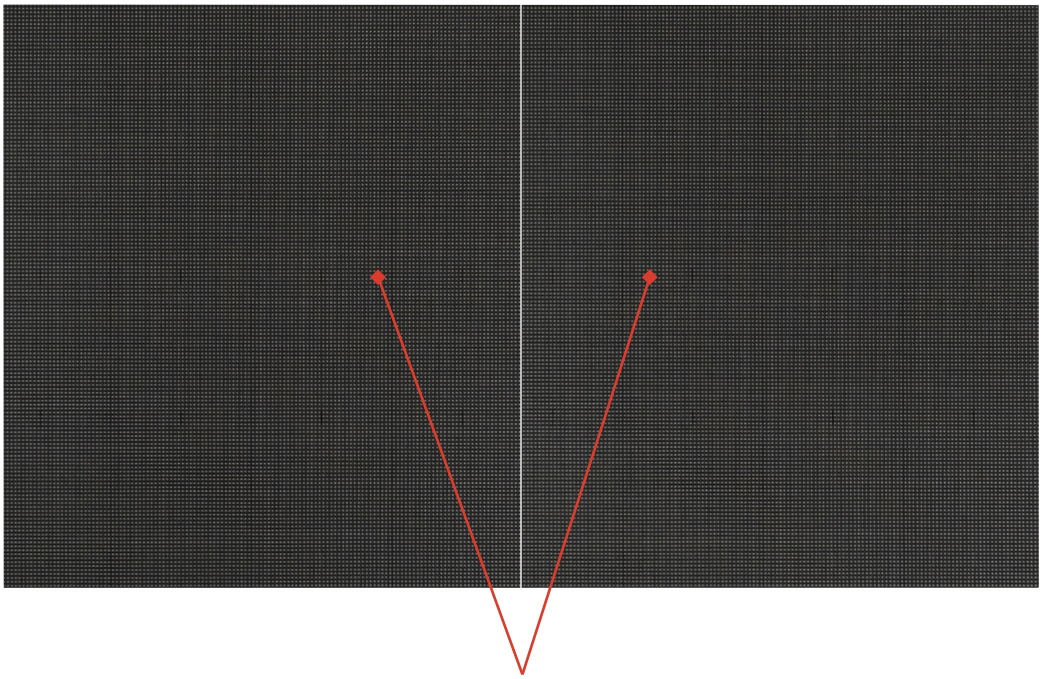
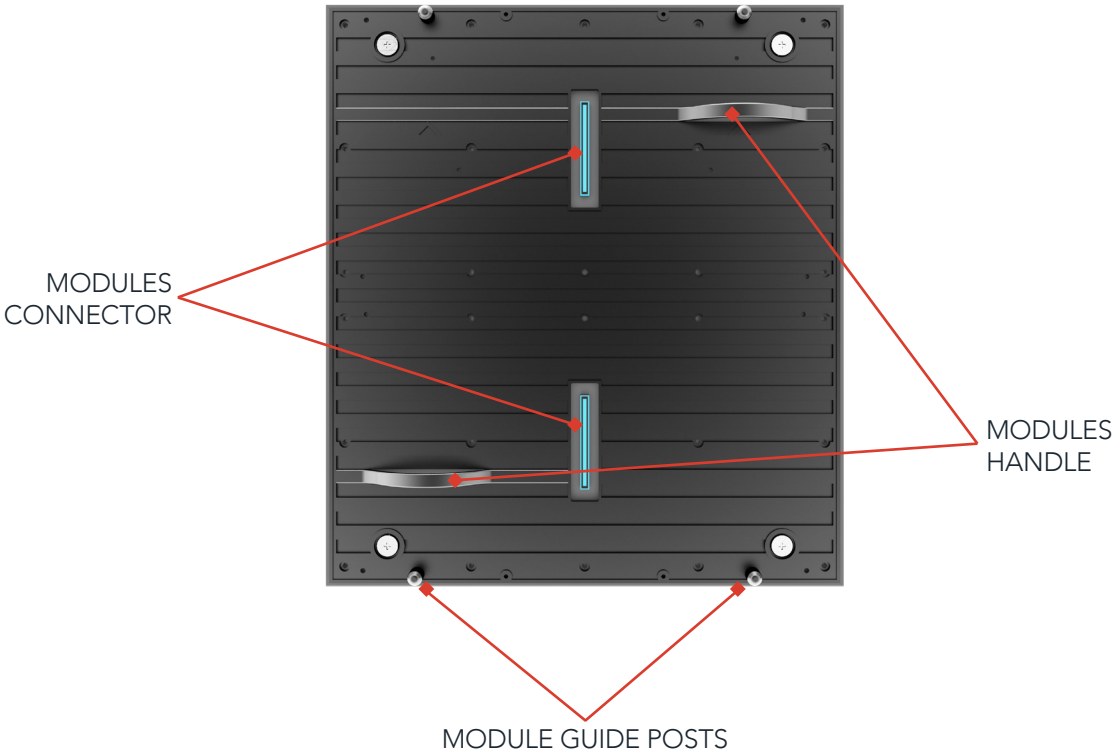
Intertek
LISTED
E498026

THOR:

FRONT VIEW





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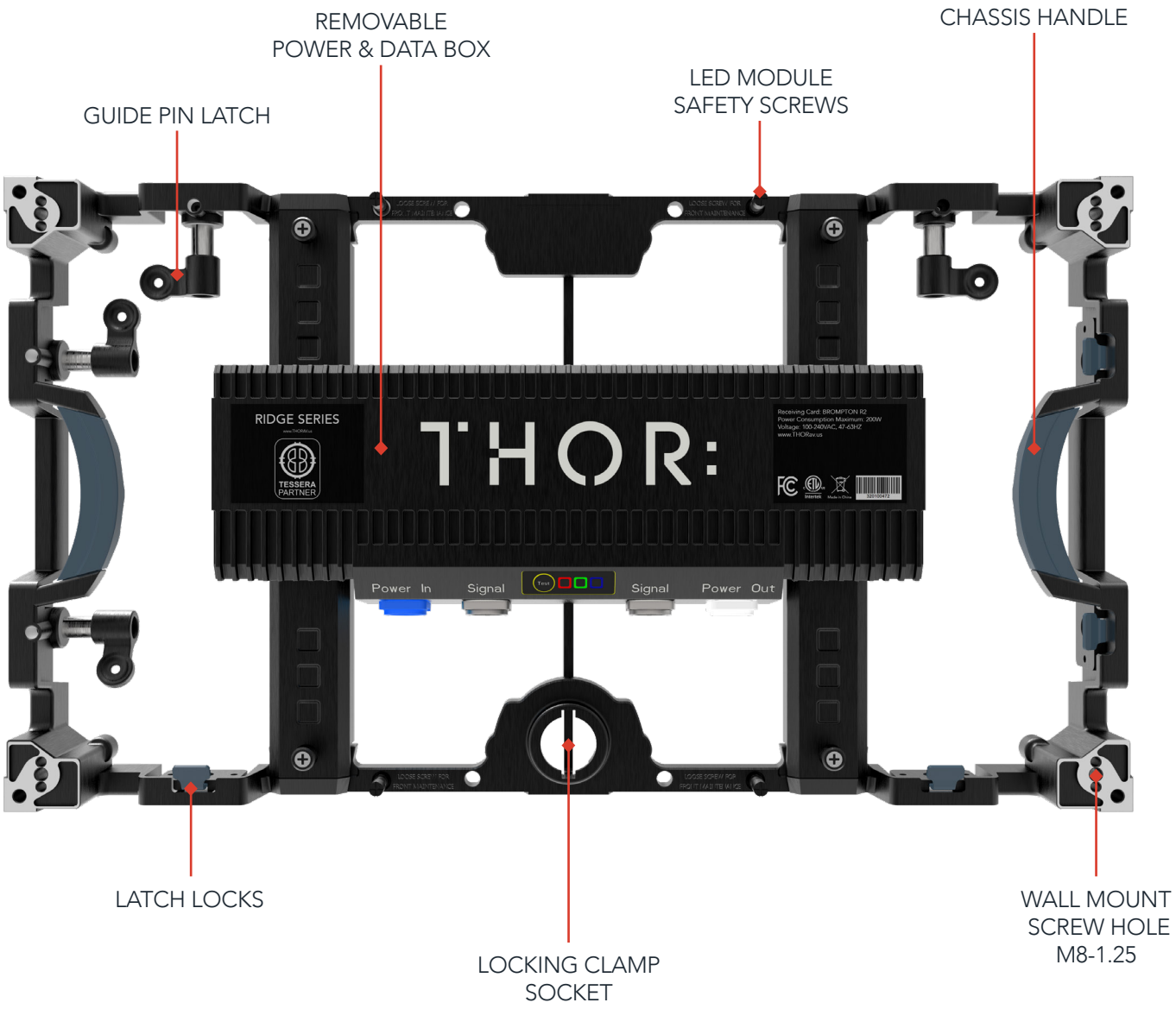
REAR VIEW



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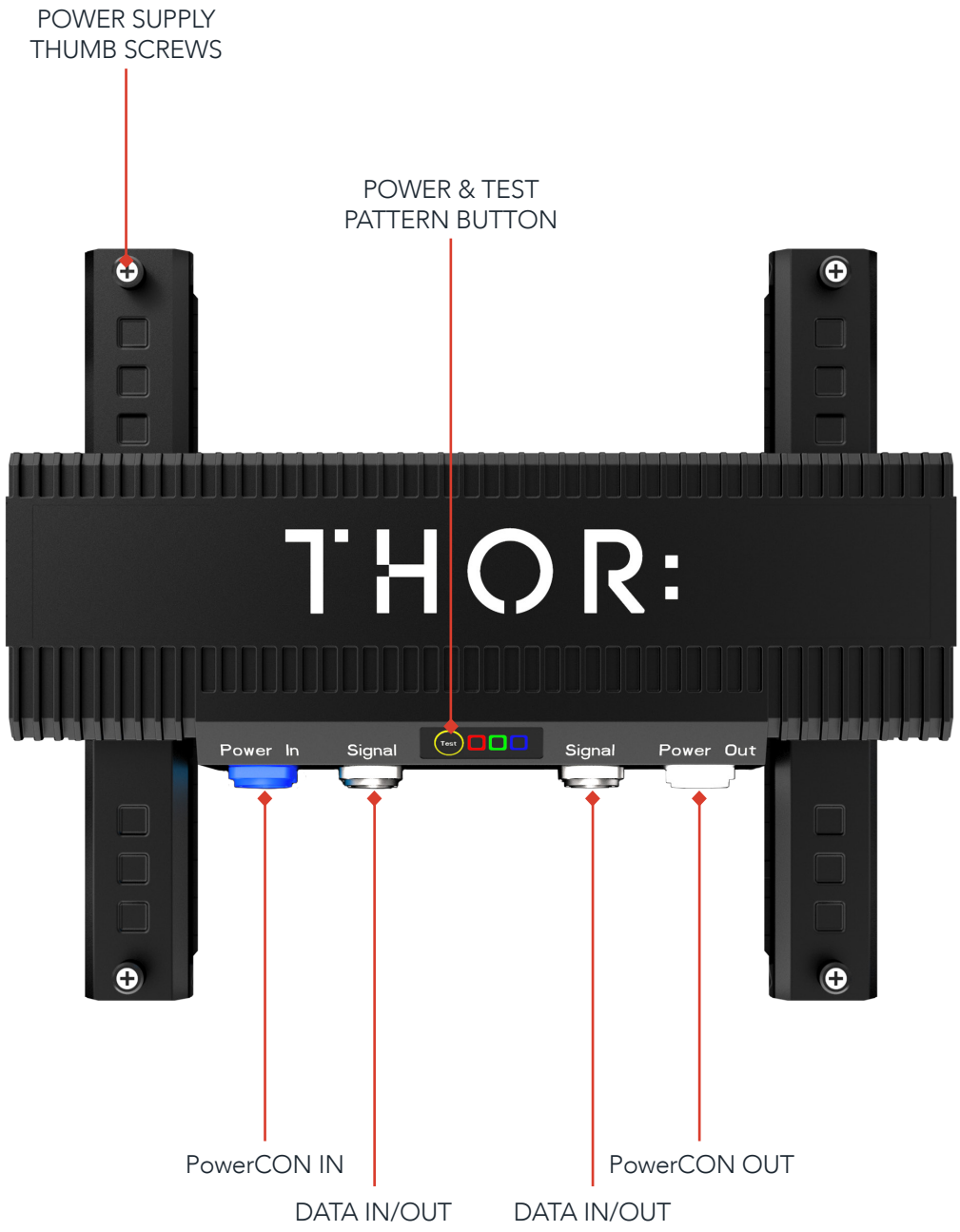
POWER DATA BOX



Flown Install

Flybar 600mm

600mm x 66.67mm x 4.69mm
23 5/8" x 2 5/8" x 4 11/16"
4.5 kg / 9.92 lbs

Flybar 1200mm

1200mm x 66.67mm x 119mm
47 1/4" x 2 5/8" x 4 11/16"
8.5 kg / 18.74 lbs

Flybar Bracket

98mm x 75mm x 10mm
3 7/8" x 2 15/16" x .39"
.18 kg / .34 lbs

Flybar Endcap

75mm x 48mm x 10mm
2 15/16" x 1 7/8" x 3/8"
.09 kg / .12 lbs

Flybar 2.5° Curve Bracket

98mm x 75mm x 10mm
3 7/8" x 2 15/16" x .39"
.18 kg / .34 lbs

Flybar 5° Curve Bracket

98mm x 75mm x 10mm
3 7/8" x 2 15/16" x .39"
.18 kg / .34 lbs

Flybar 7.5° Curve Bracket

98mm x 75mm x 10mm
3 7/8" x 2 15/16" x .39"
.18 kg / .34 lbs

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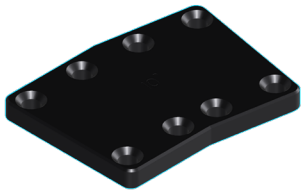
Flybar 10° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

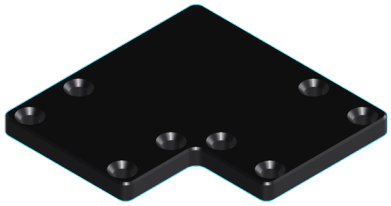


Flybar 45° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

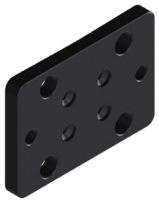
Flybar 90° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs



Chassis Alignment Bracket (optional)

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs



Ground and Flown Install

Panel 2.5° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Panel 5° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Panel 7.5° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Panel 10° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Panel 45° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Panel 90° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Ground Mount Install

Ground/Flybar 600mm

600mm x 80mm x100mm
23 5/8" x 3 ⅛" x 3 15/16"
4.63 kg / 10.1 lbs

Ground and Flown Install

Ground/Flybar 1200mm

1200mm x 80mm x 100mm
47 ¼" x 3 ⅛" x 3 15/16"
9.53 kg / 21 lbs

Ground and Flown Install

Rear Ground Truss 850mm

850mm x 160mm x 105mm
33 7/16" x 6 5/16" x 4 ⅛"
3.76 kg / 8.3 lbs

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Ladder Truss 765mm

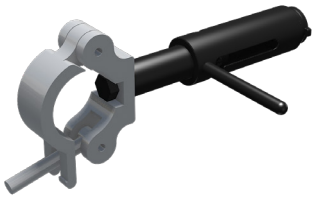
675mm 240mm x 50mm
26 9/16"x 9 7/16" x 1 15/16"
2.5 kg / 5.5 lbs

Ladder Truss 1010mm

1010mm x 240mm x 50mm
39 ¾" x 9 7/16" x 1 15/16"
3.18 kg / 7 lbs

Locking Clamp

240mm x 105mm x 116mm
9 7/16" x 4 ⅛" x 4 9/16"
.64 kg / 1.4 lbs



Rear Drawbar 1200mm

1200mm x 50mm x 30mm
47 ¼" x 1 15/16" x 1 3/16"
1.81 kg / 4 lbs

Ground/Flybar 2.5° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

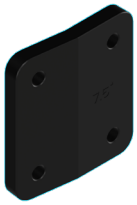
Ground/Flybar 5° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Ground/Flybar 7.5° Curve Bracket

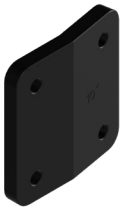
98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs



Ground and Flown Install

Ground/Flybar 10° Curve Bracket

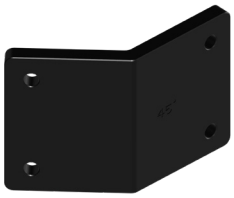
98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs



Ground and Flown Install

Ground/Flybar 45° Curve Bracket

98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs



Ground and Flown Install

Ground/Flybar 90° Curve Bracket

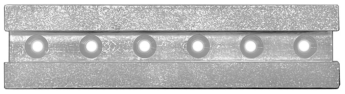
98mm x 75mm x 10mm
3 ⅞" x 2 15/16" x .39"
.18 kg / .34 lbs

Ground and Flown Install

Wall Mount Install

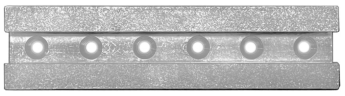
Wall Mount 1800mm Track

1800mm x 38.1mm x 25.4mm
70 ⅞" x 1 ½" x 1"
2.45 kg / 5.4 lbs



Wall Mount 2400mm Track

2400mm x 38.1mm x 25.4mm
94 ½" x 1 ½" x 1"
1.8 kg / 4 lbs



Wall XYZ Mount

114.3mm x 63.5mm x 38.1mm
4 ½" x 2 ½" x 1 ½"
.36 kg / .8 lbs

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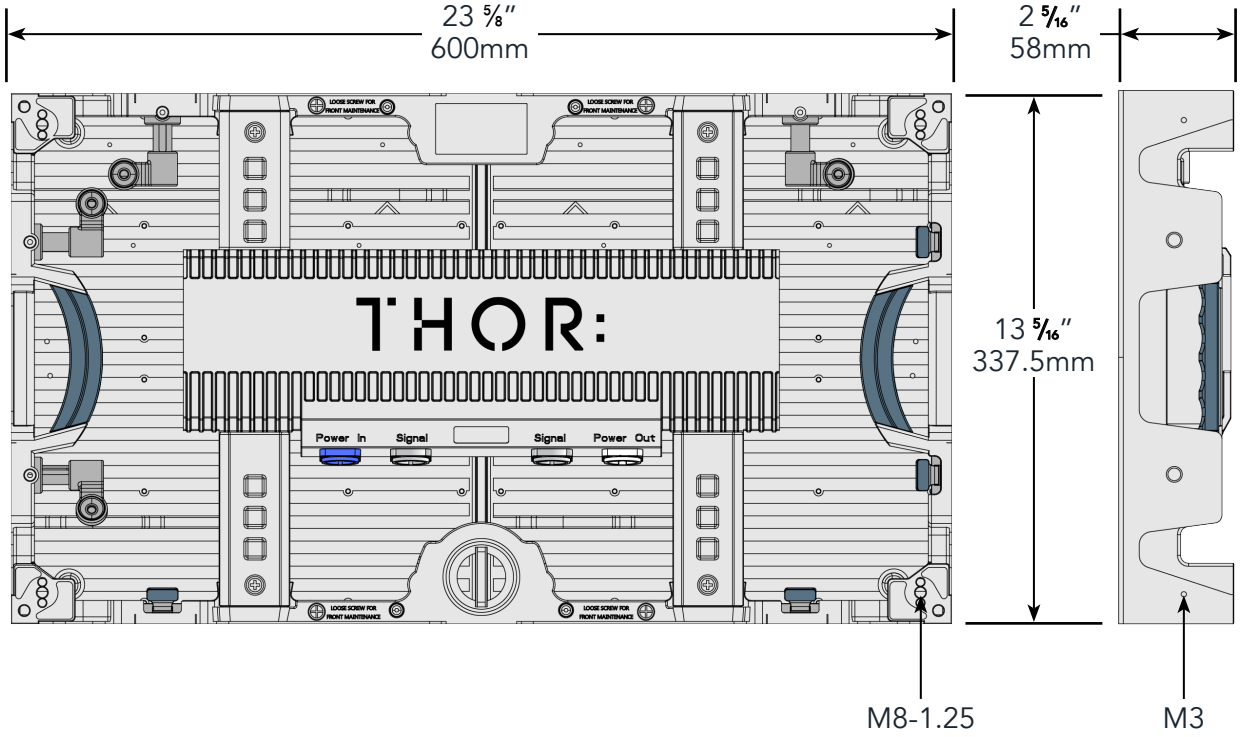
DIMENSIONS



THOR:

MECHANICAL

See Important Safety Considerations on page 13.

STRUCTURAL

Structural integrity for all types of LED wall installation applications (Flown, Ground Stack abd Wall Mount) is required for each site and verified by a structural engineer.

RIGGING

Verify the mounting structure load capacity (truss, purlins, schedule 80 pipe, unistrut, etc). Determine adequate amount of pick points for stabilizing LED wall.

BALLASTING

Ground Stack LED walls require ballasting a percentage of the total weight. Ballast the LED wall by distributing evenly on the Rear Ground Bars.

Ballast Weight Calculator
Wall Height, 1-3 meters — 50% of wall weight
Wall Height, 4 meters — 75% of wall weight
Wall Height, 5 meters — 100% of wall weight
Wall Height, 6 meters — 100%* of wall weight

If a wall weighs 3,300lbs., then the total ballasting weight is 1650lbs. If there are 12 Rear Ground Bars for this LED wall, 137.5lbs. is needed for each Rear Ground Bar.

*At 6 meters we recommend adding another row of Rear Ground Bar and another set of Rear Ground Truss.

ELECTRICAL

POWER

RIDGE Panels require 110-240 VAC, 50-60 Hz and should be 16A or less. Proper grounding is required.

VIDEO SYSTEM

PROCESSING

THOR LED Panels are available with Brompton and NovaStar processing. Contact THOR for specifics.

LED PANELS PER PROCESSOR PORT

Pixel capacity per port may vary based on LED wall mapping configuration,pixel pitch, bit depth, and refresh rate.

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IMPORTANT SAFETY CONSIDERATIONS

THOR AV products must be used in accordance with local, state, federal and industry regulations. In addition to this, THOR AV is not responsible for any rigging, attachments and accessories provided by third party manufacturers.

INTENDED USE
The RIDGE v^2 series LED panels are for indoor applications only. Installations require professionally trained personnel.

Do not use this product near water or damp environments. Do not expose the unit to direct sun light or heating units as the internal components' temperature may rise and shorten the life of the components. Provide for proper airflow around product. Do not install near products that produce high levels of heat.

INSPECT PRODUCT
Inspect all products and perform safety related checks before deployment. Heed all warnings and precautions in this manual and notices marked on the product.

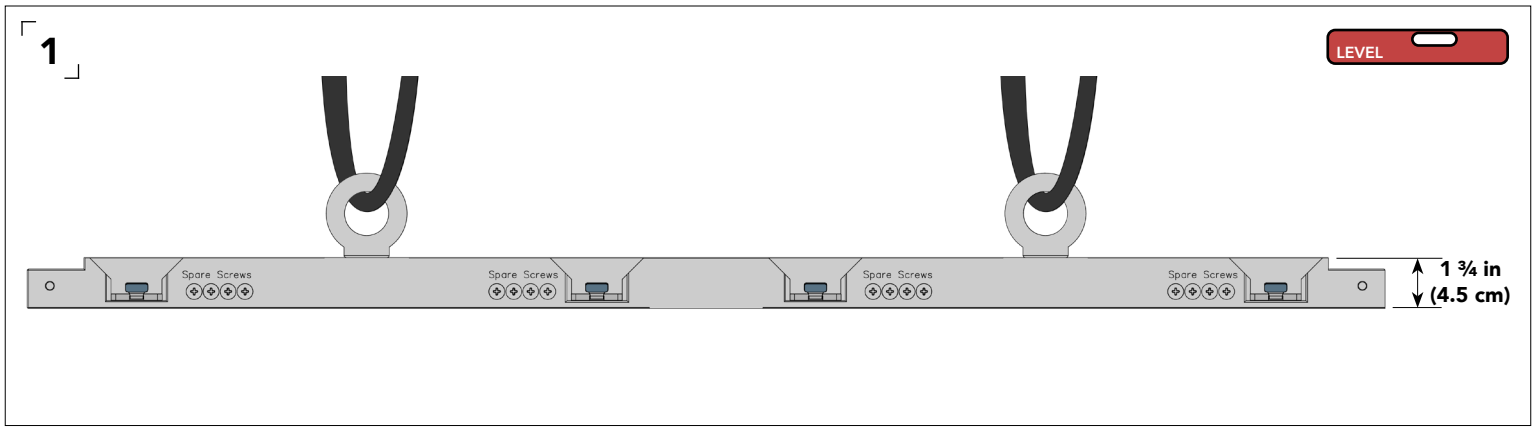
Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they connect to the product. Do not use the unit if the electrical power cord is frayed or broken.

INSTALLATION GUIDELINES
The responsibility to evaluate the reliability of any rigging or mounting method for their application is solely the user's responsibility. Rigging is to be carried out by experienced professionals. Abide by the Working Load Limit (WLL) of third party equipment for suspension points, chain hoists and additional rigging hardware.

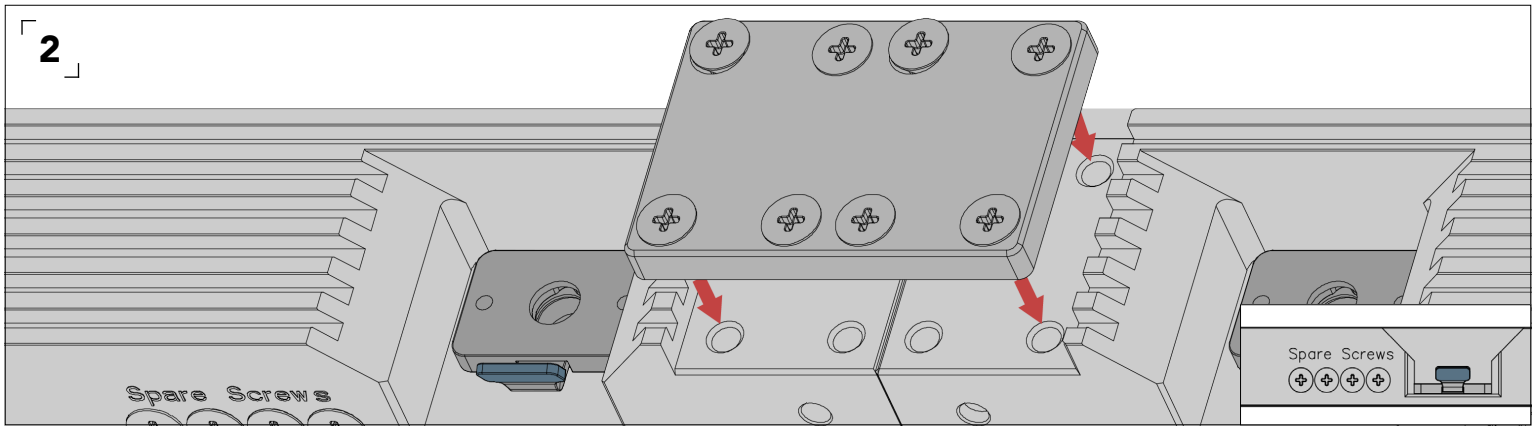
Verify structural integrity meets engineering requirements for flying, ground stacking and wall mounting applications. Utilize safety measures at all times, including safety slings and cables.

THOR:

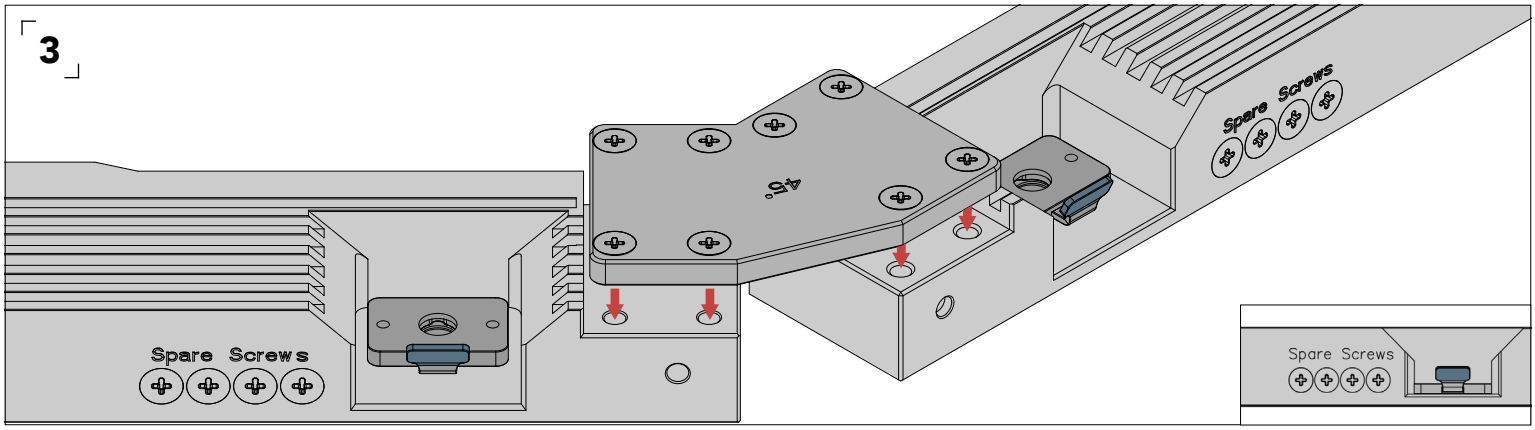
FLOWN APPLICATION - USING FLYBAR



Secure and level Flybars to weight bearing structure using Eyebolt. Eyebolts are removable. Use a thin wall 1-5/32" socket on under side of Flybar.



Loosely secure Flybars together with Flybar Bracket. Use large (PH03 or PH02) Phillips screwdriver and spare screws on Flybar.



For curved option, loosely secure Flybars together with Curved Flybar Bracket (2.5°, 5°, 7.5°, 10°, 45°, 90°). Use large (PH03 or PH02) Phillips screwdriver and spare screws on Flybar.

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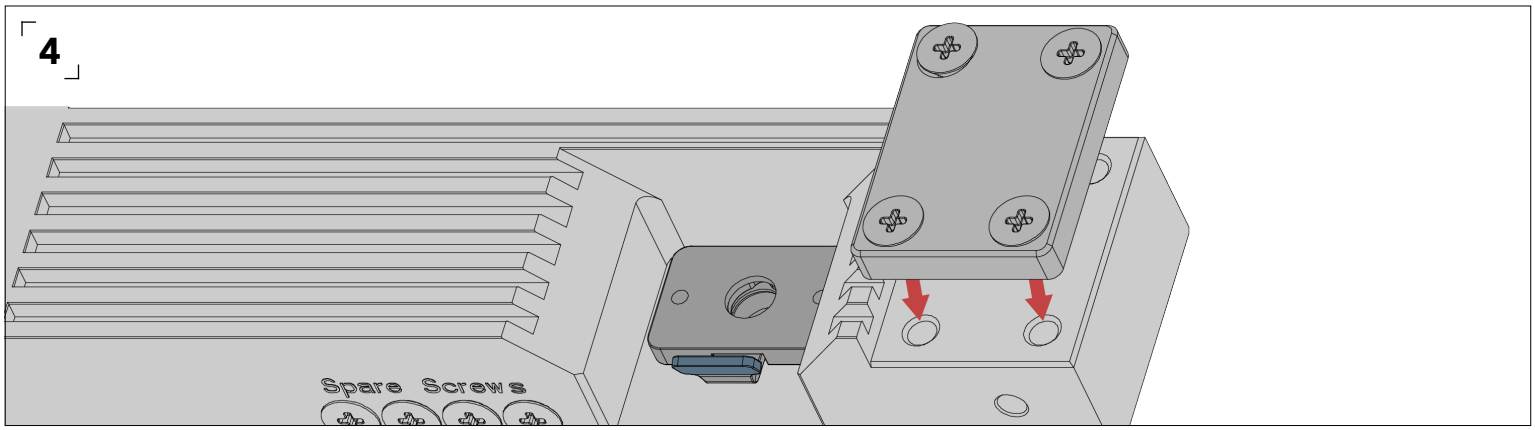
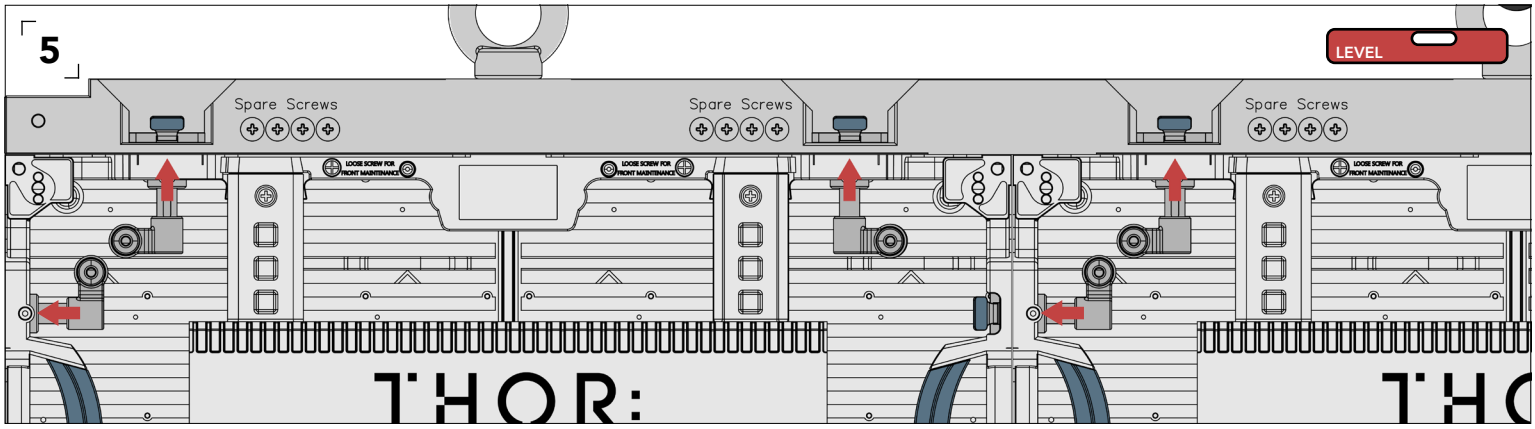
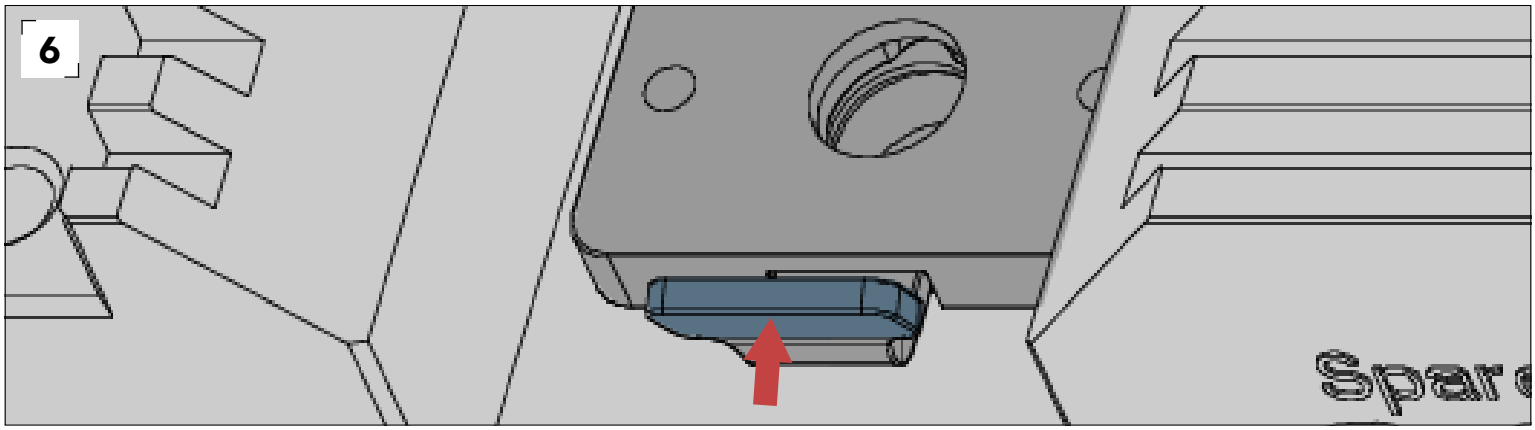
FLOWN APPLICATION - USING FLYBAR



Attach aesthetic End Cap to either end of Flybar assembly.

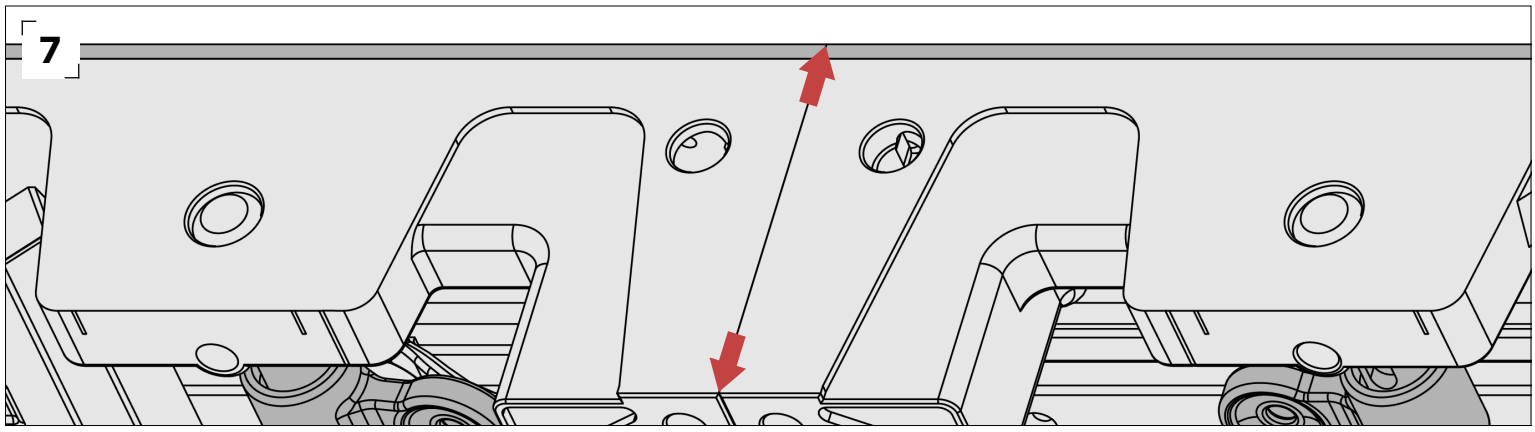


Insert Latch Guide Pins into receiving holes on Flybar and adjacent panels. Align panels and lock into position by twisting the Latch Guide Pin. Do not over tighten. Continue until first row is complete. For additional rows, align panels and lock into position.

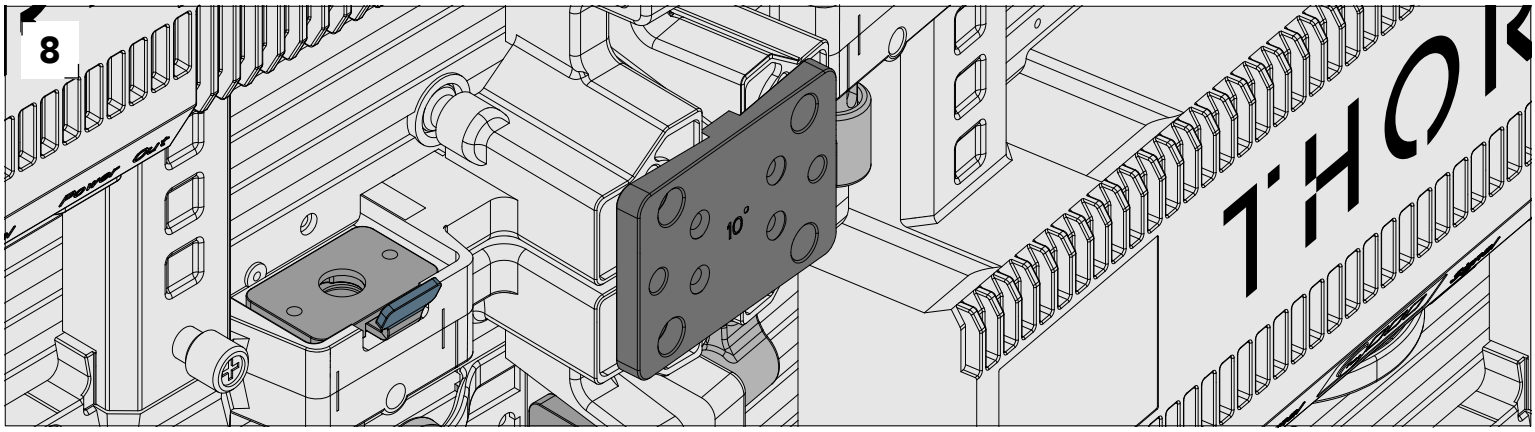


Push latch lever, on Flybar or panel, to lock or release Latch Guide Pins. New Latch lever may need to be pushed in and out a few times for Latch Guide Pins to properly secure into place.

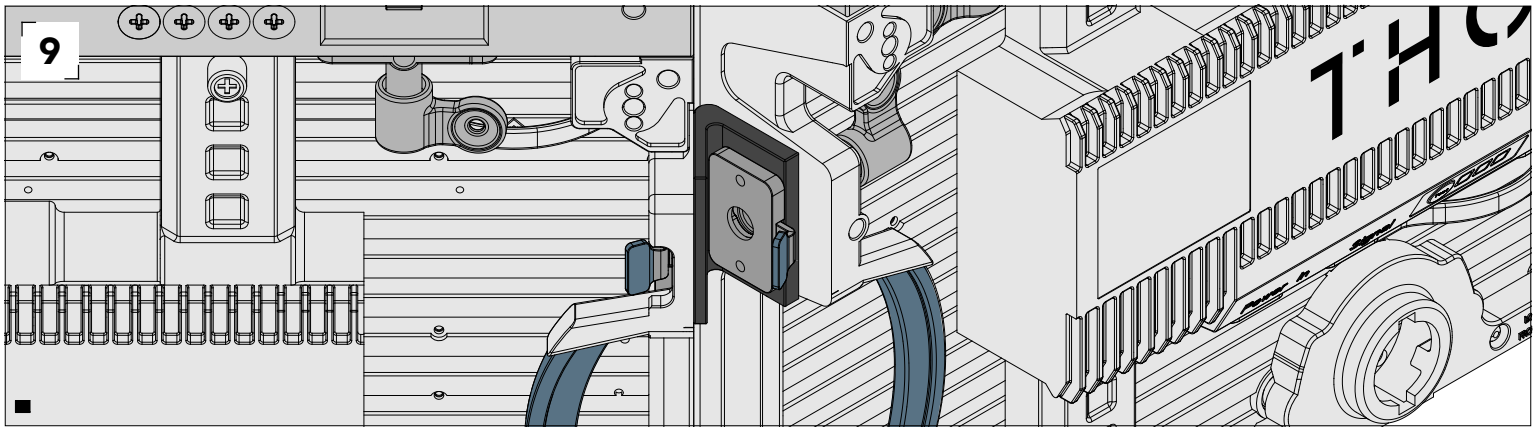
FLOWN APPLICATION - USING FLYBAR



Verify LED panels are aligned before tightening into place.
NOTE: It is recommended, when flying a wall that is 7 or more panels high, to use the optional Chassis Alignment Bracket to improve structural stability.



For curved option, secure panels together using Curved Panel Bracket (2.5°, 5°, 7.5°, 10°) and M8 bolts.



For curved option, secure panels together using Curved Panel Bracket and Latches (45° and 90°).

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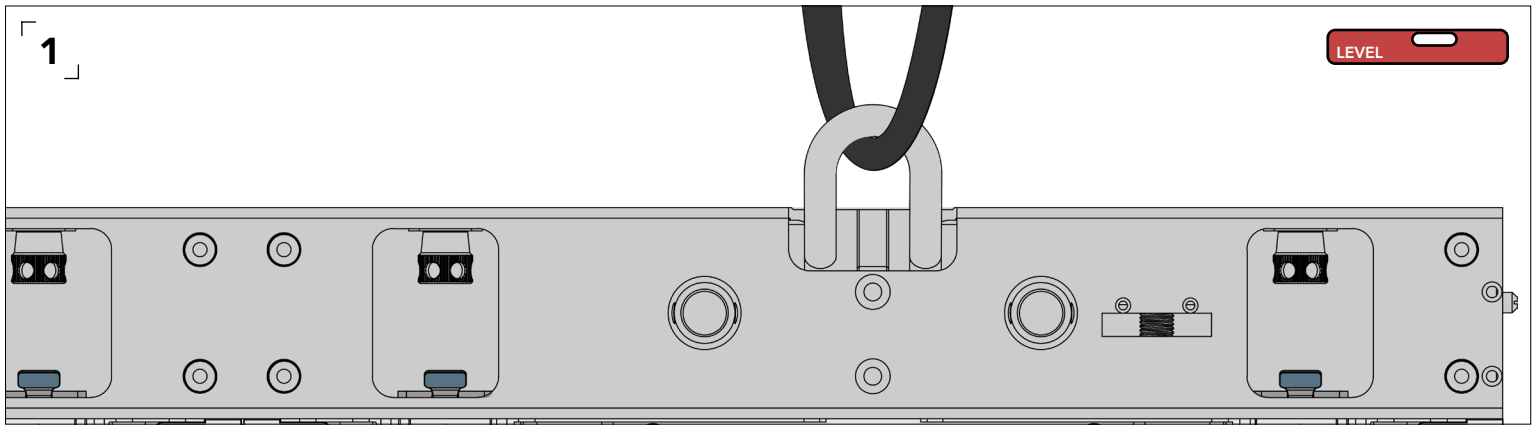
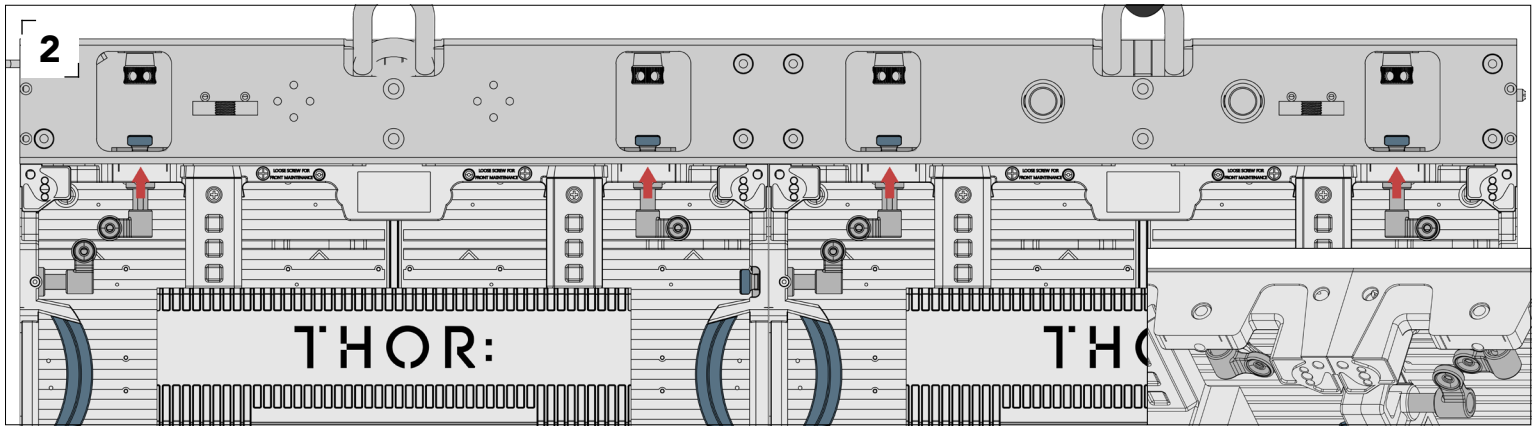
THOR:

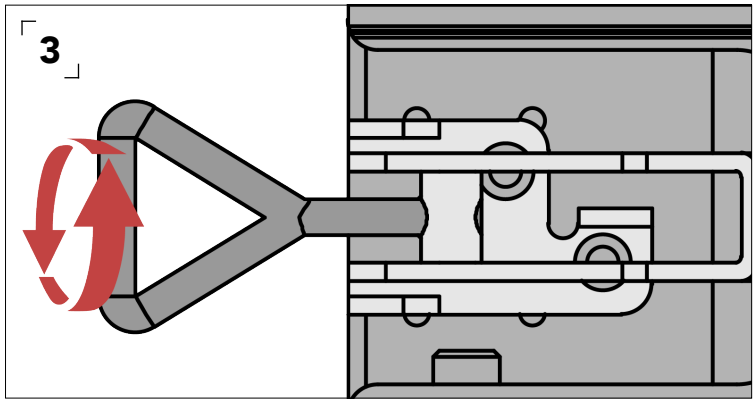
FLOWN APPLICATION-USING GROUND/FLYBAR



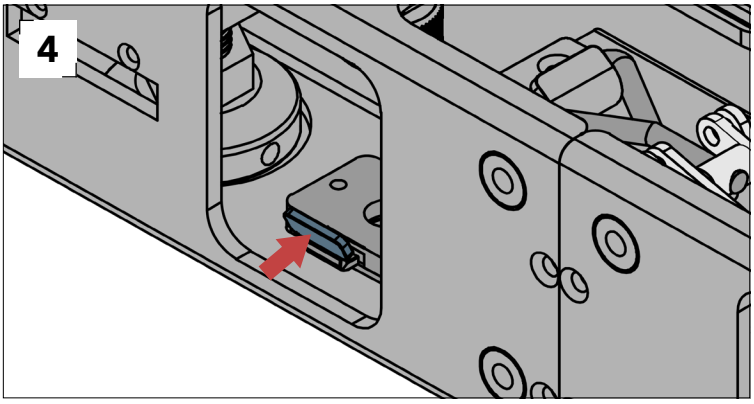
Secure and level Ground/Flybars to weight bearing structure using Eyebolt.



Insert Latch Guide Pins into receiving holes on Ground/Flybar and adjacent panels. Align panels and lock into position by twisting the Latch Guide Pin. Do not over tighten. Continue until first row is complete. For additional rows, align panels and lock into position.

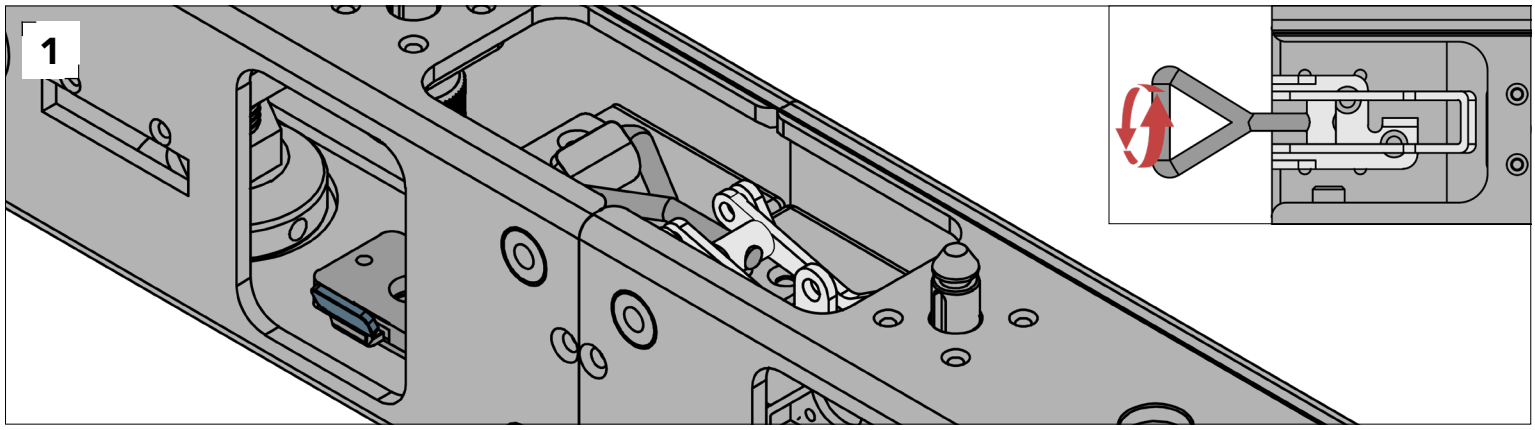


Attach Ground/Flybar Locking Triangle Eyebolt to adjacent Ground/Flybar and tighten or loosen as needed. Do not over tighten. Not used for curved option, see Step 2 of Ground Stack install (pg18).

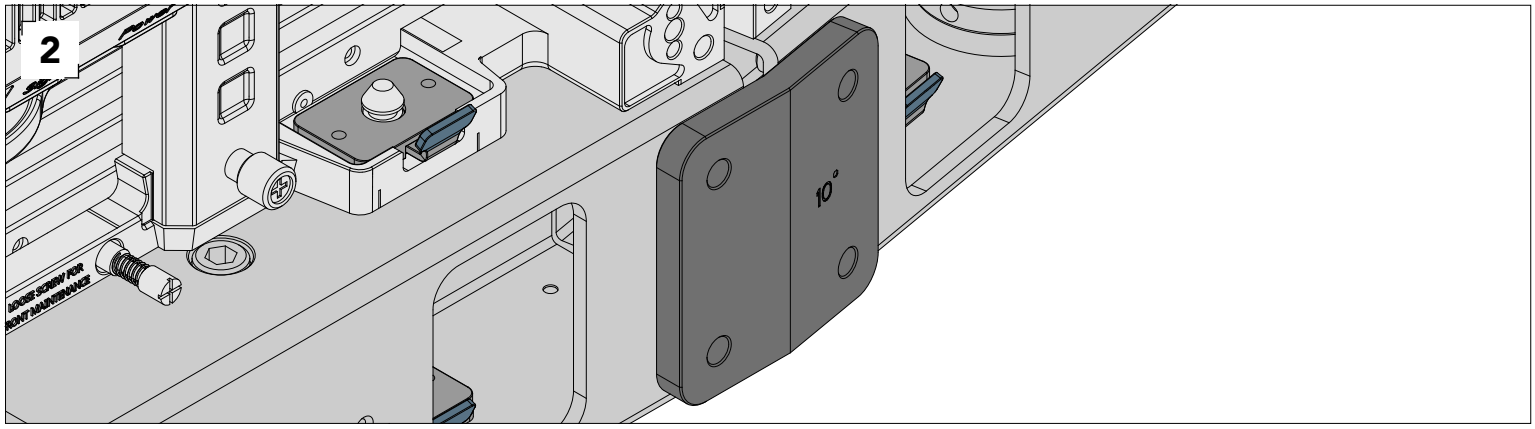


The receiving hole for the Latch Guide Pin locks panels into position. Push to lock or release.

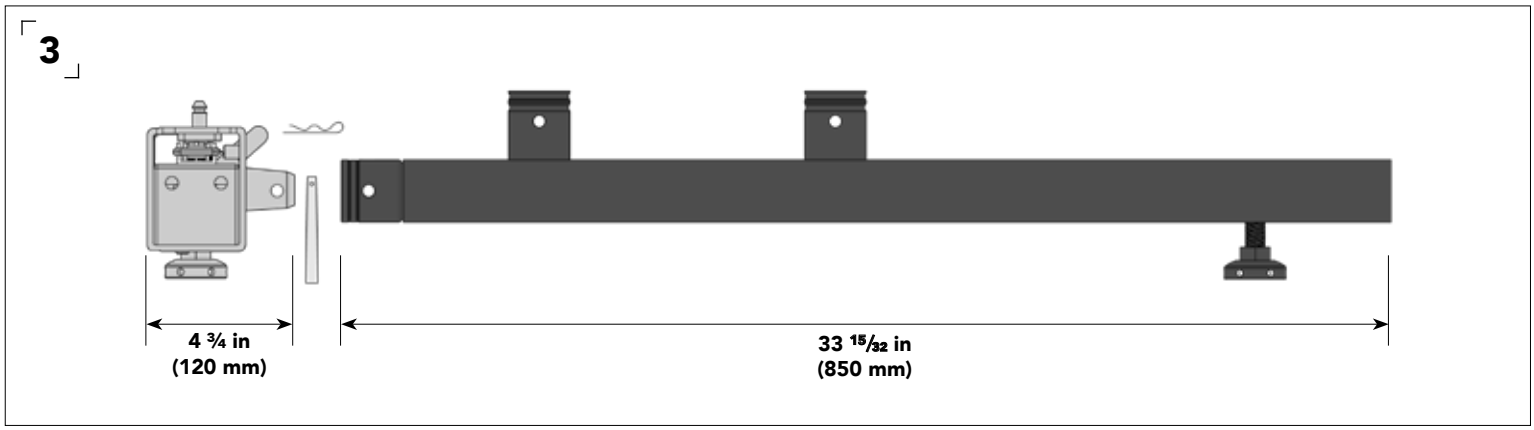
GROUND STACKED LED WALL



Attach Ground/Flybar Locking Triangle Eyebolt to adjacent Ground/Flybar and tighten or loosen as needed. Do not over tighten. Not used for curved option, see Step 2.



Attach Ground/Flybar with Curved Ground/Flybar Bracket (2.5°, 5°, 7.5°, 10°, 45°, 90°) to adjacent Ground/Flybar with M8 bolts and tighten or loosen as needed. Do not over tighten.



Connect Rear Ground Truss to Ground/Flybar using truss bolt and cotter pin. Truss Bolt can only be inserted one direction. Use rubber mallet to insert truss bolt completely before inserting Cotter Pin.

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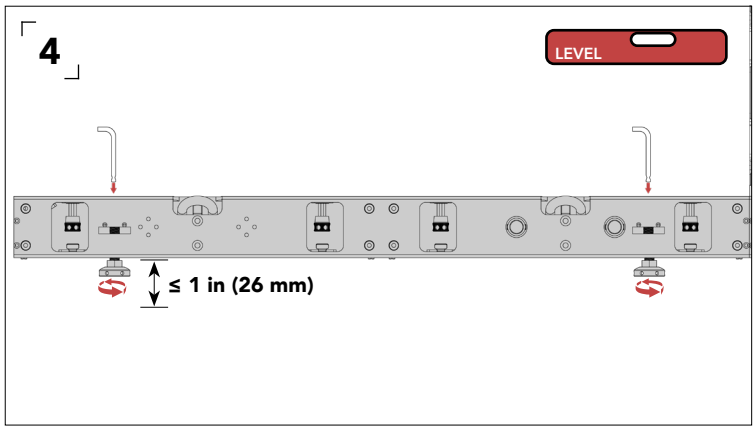
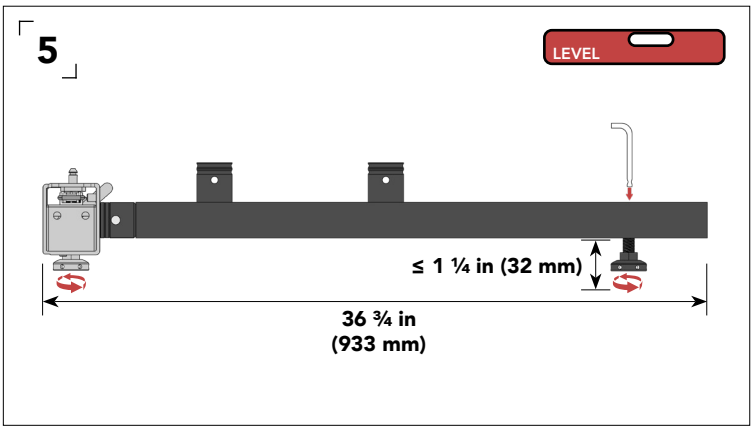
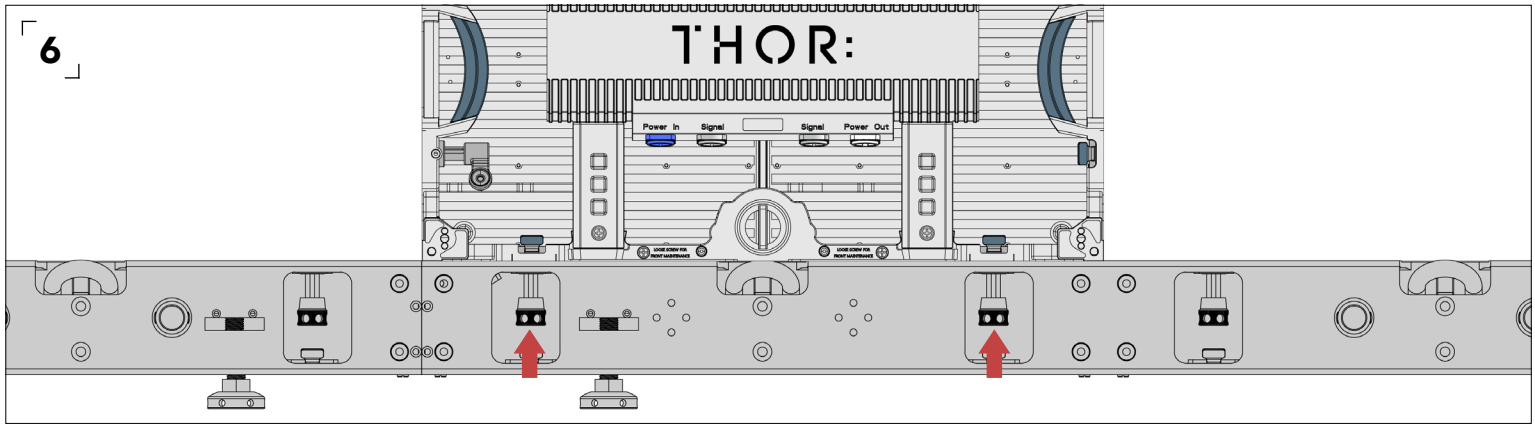
GROUND STACKED LED WALL



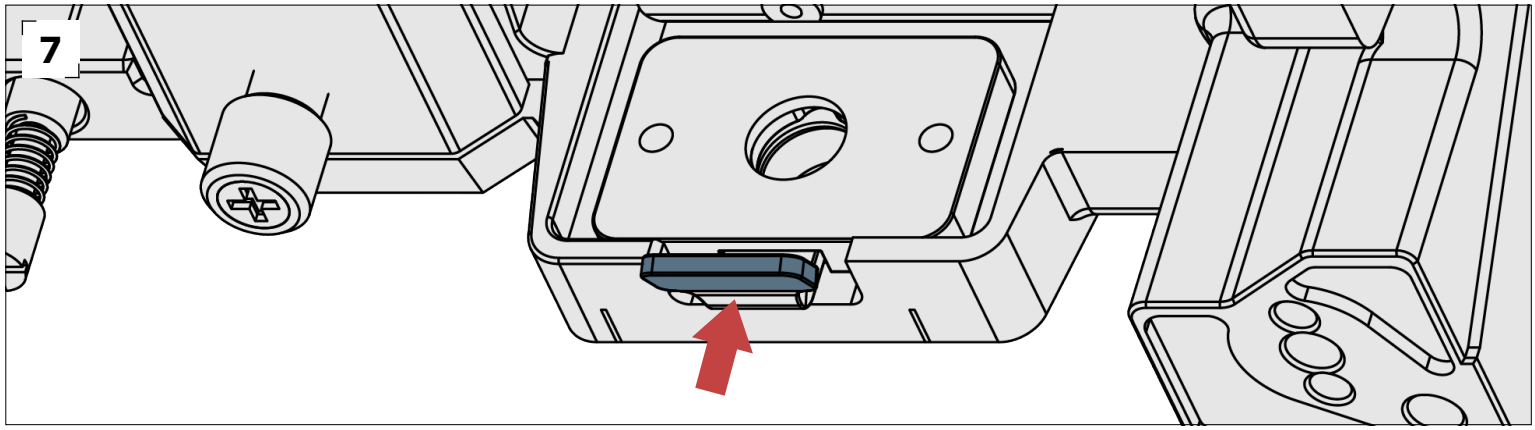
Level Ground/Flybars by adjusting attached feet with 8mm hex key. Extends from 0-1 inch.



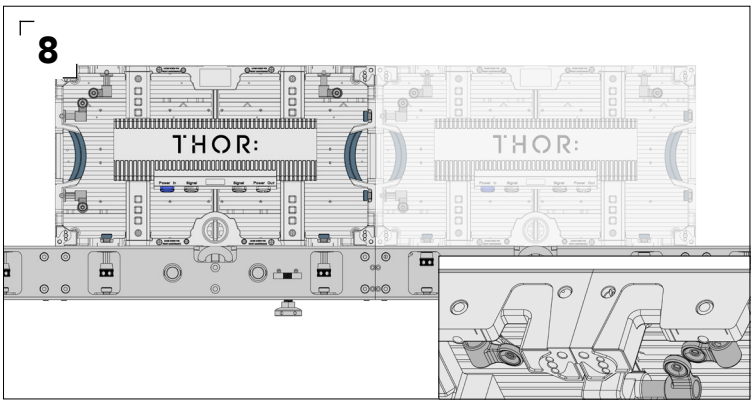
To eliminate seams in the LED wall, level Ground Stack hardware. Adjust using 8mm hex key.



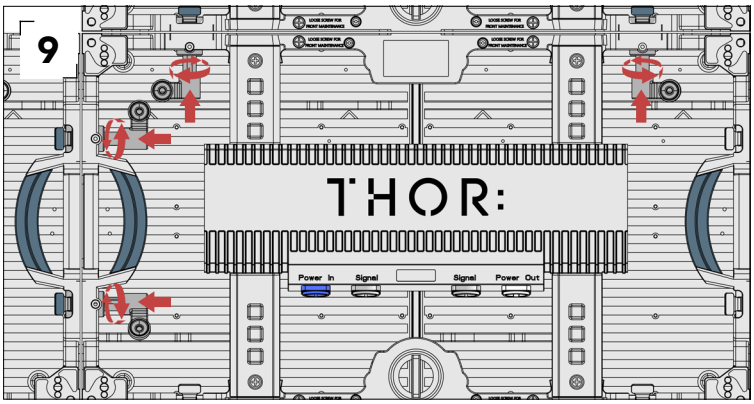
Insert Latch Guide Pins into receiving holes on panel and twist to lock into place.



The receiving hole on panel, locks the Ground/Flybar Guide Pins into position. Push to lock or release.

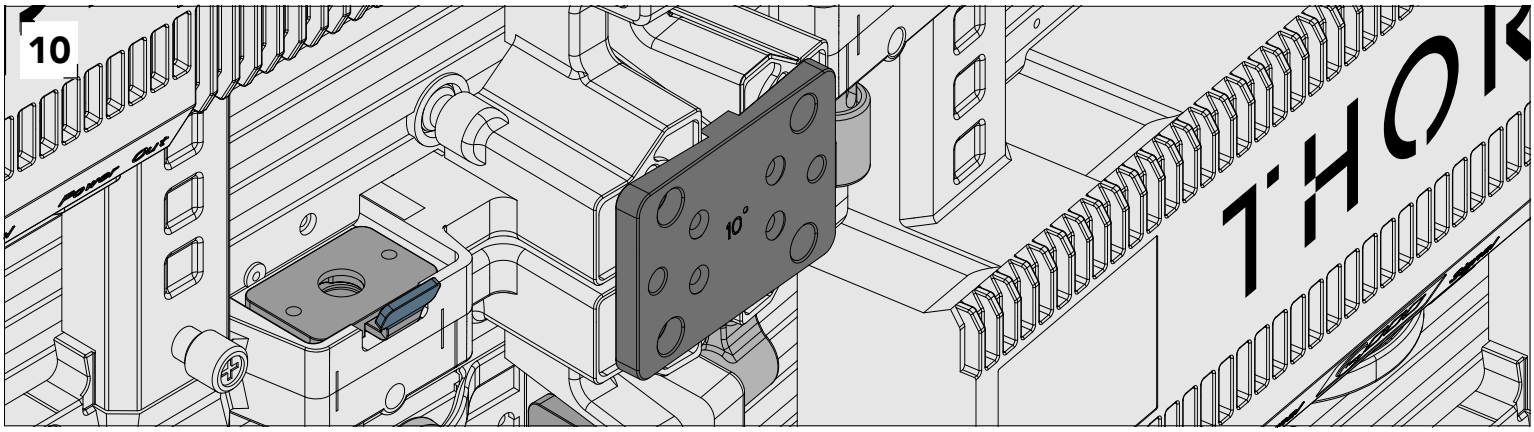


Place other panels next to each other and insert Latch Guide Pins into receiving holes on panel and twist to lock into place. Verify LED panels are aligned before tightening into place.

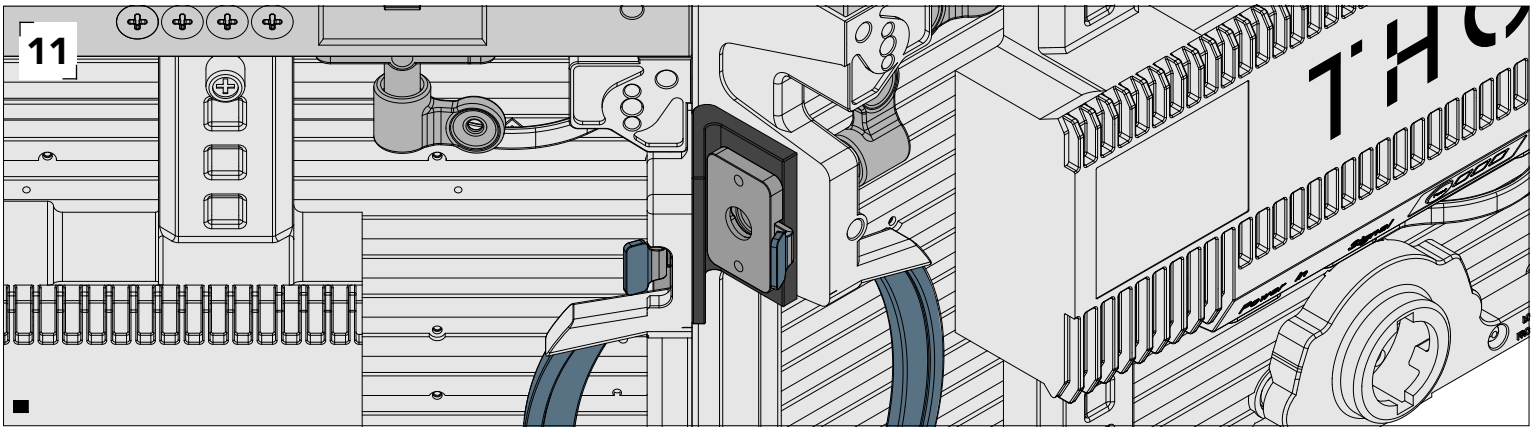


Insert Latch Guide Pins into adjacent panel and secure. Do not over tighten. Continue steps 7-8 until first row is complete. Adjust leveling feet if necessary as more weight is added to each row. For additional rows, align panels and lock into position.

NOTE: It is recommended, when stacking a wall that is 7 or more panels high, to use the optional Chassis Alignment Bracket to improve structural stability.



For curved option, secure panels together using Curved Panel Bracket (2.5°, 5°, 7.5°, 10°) and screws.



For curved option, secure panels together using Curved Panel Bracket and Latches (45° and 90°).

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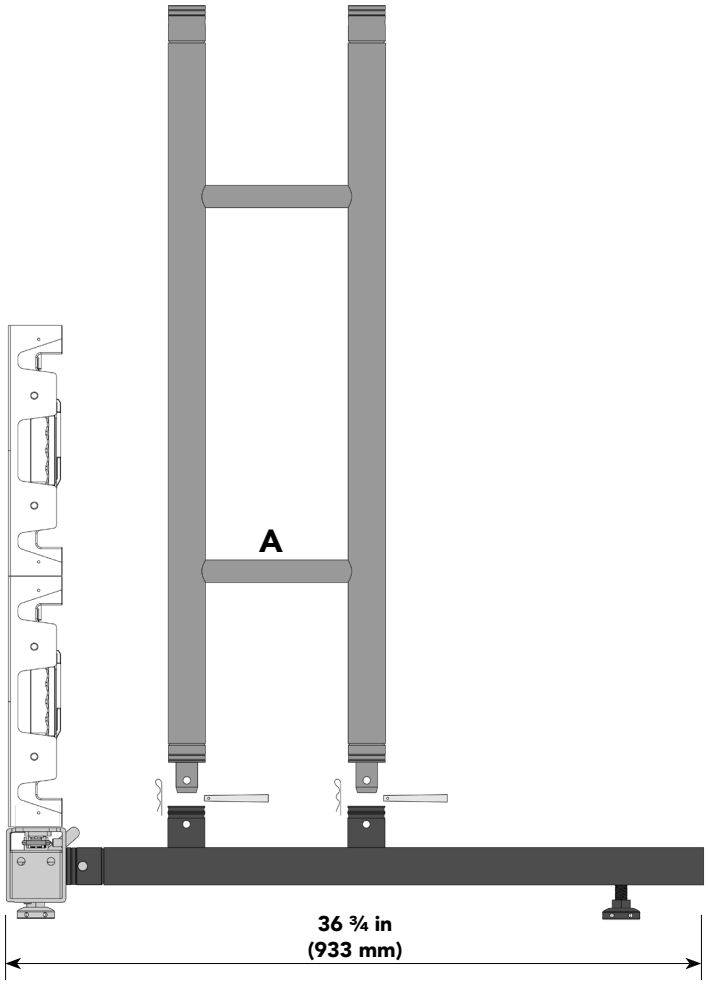
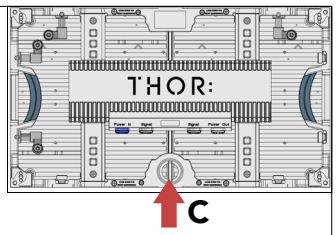
GROUND STACKED LED WALL

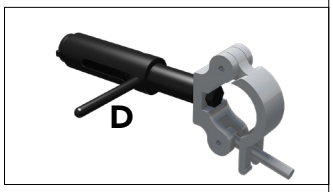
12

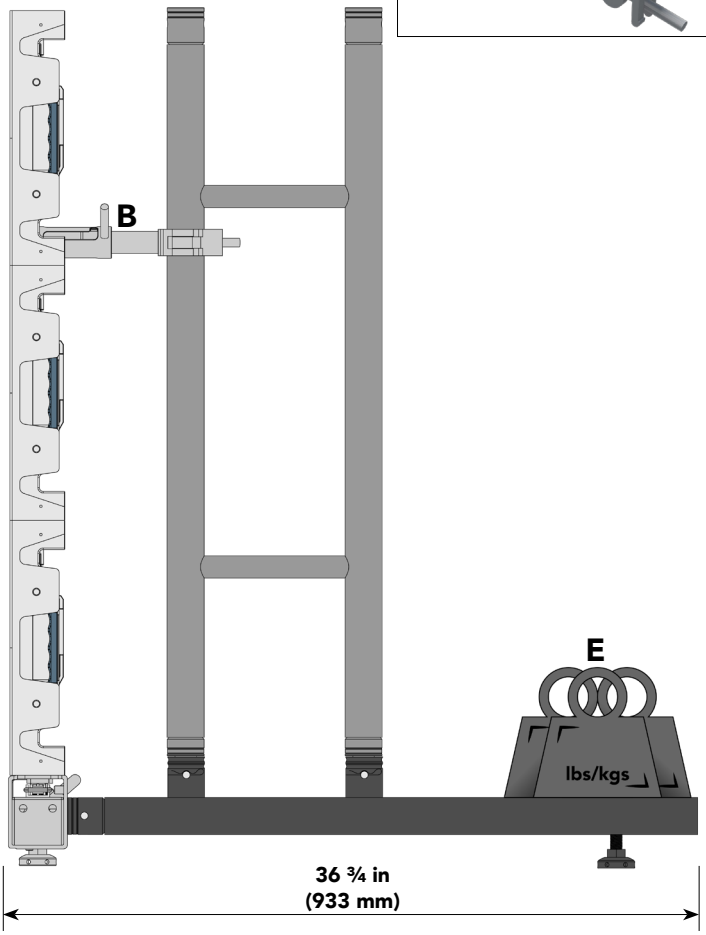


Connect Ladder Truss to Rear Ground Truss. Insert truss bolts and cotter pins into Rear Ground Truss holes. Holes are tapered.
Ladder Truss - Triple *(Reference A)*.

13

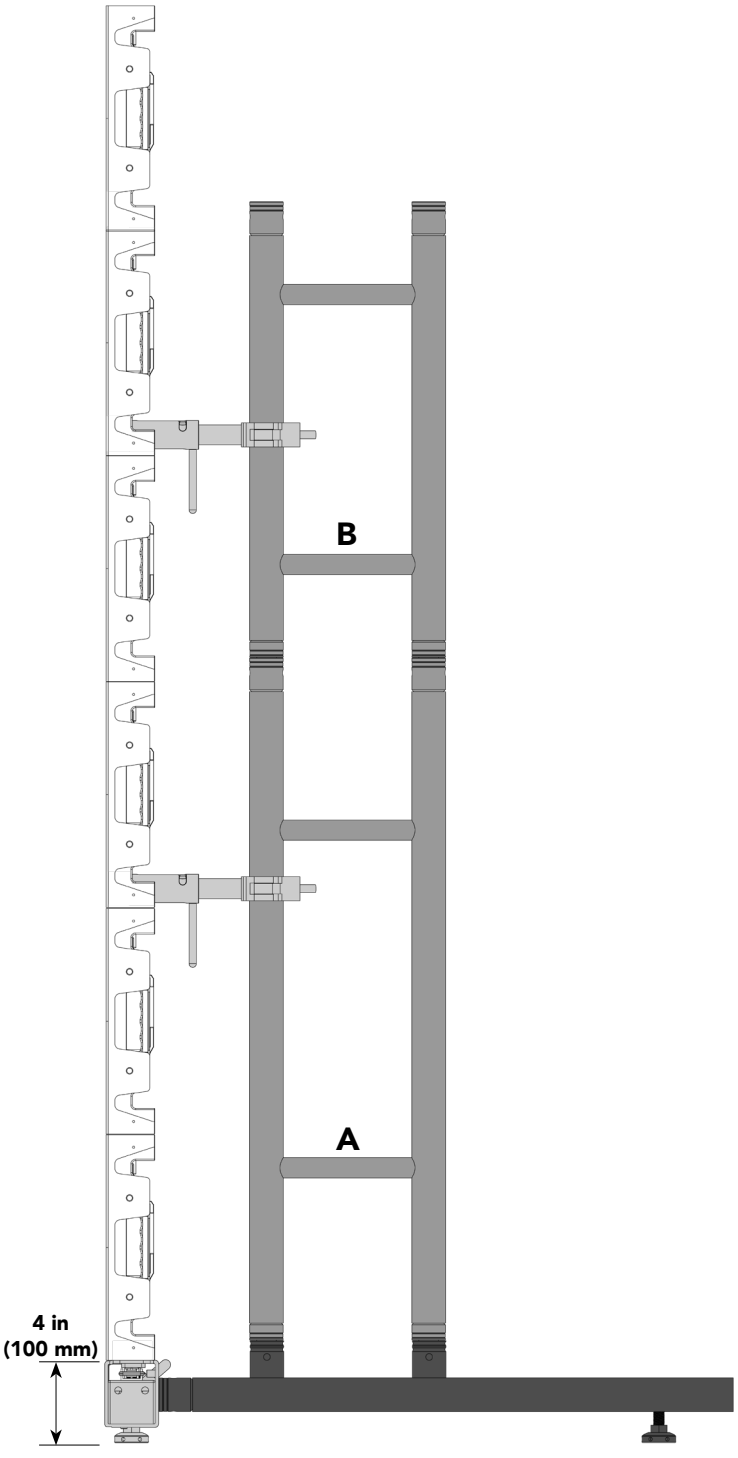






Loosely attach Locking Clamp to Ladder Truss. *(Reference B)*
Align and insert Locking Clamp with locking clamp socket on panel. *(Reference C)*
Use handle to twist and lock into position. *(Reference D)*
Tighten Locking Clamp to Ladder Truss. Add ballasting or anchoring. *(Reference E)*

14



Repeat steps 9-10 for each Ground/Flybar section.
Ladder Truss - Triple *(Reference A)*
Ladder Truss - Double *(Reference B)*

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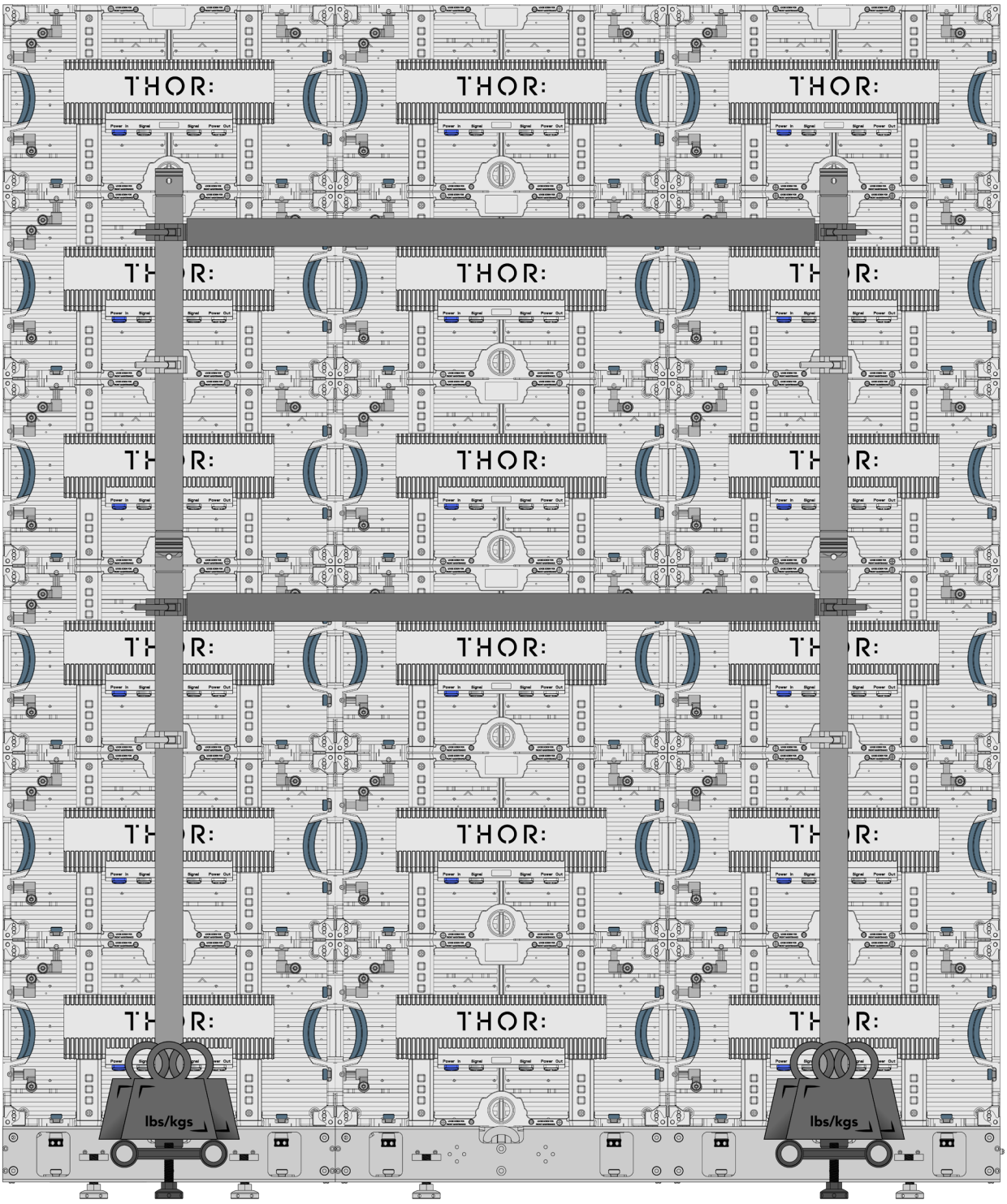
15

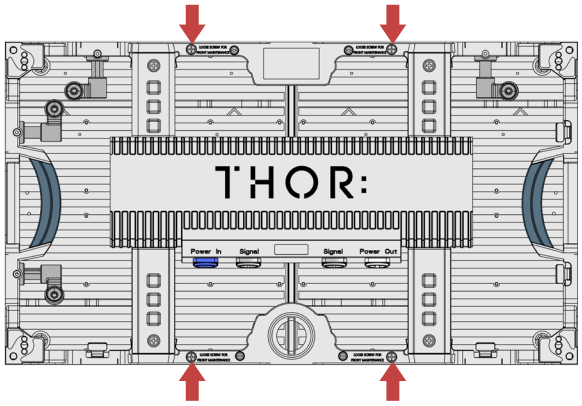


Attach Draw Bars to Ladder Truss columns. (Rear view)

THOR:

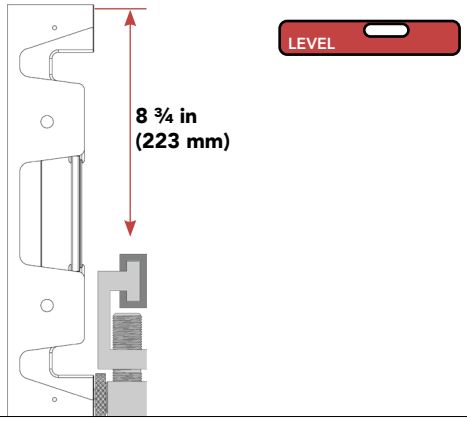
WALL MOUNTED LED WALL

1



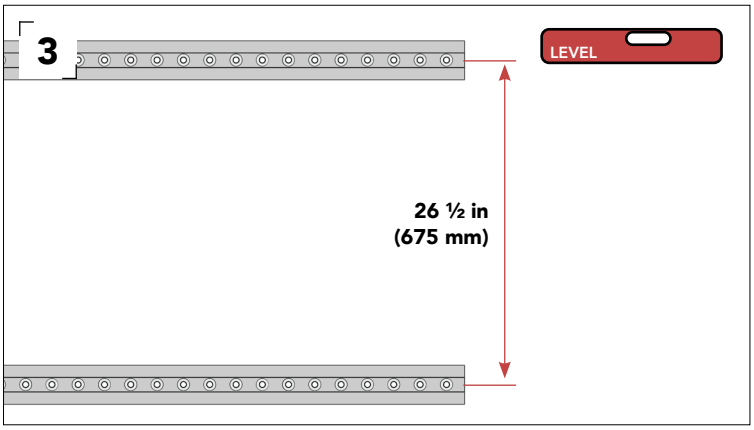
Carefully remove modules from panel chassis by loosening thumb screws and safety cable. Use Module Removal Tool or firmly push on rear side of module. Set aside.

2



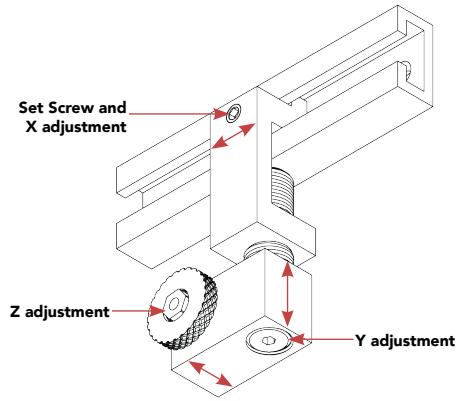
Wall mount track has ¼" holes every 1". Attach first wall mount track to weight bearing wall 8 ¾" (22.23cm) below top of LED Wall using drill. Add additional tracks to first row. Verify row is level.

3



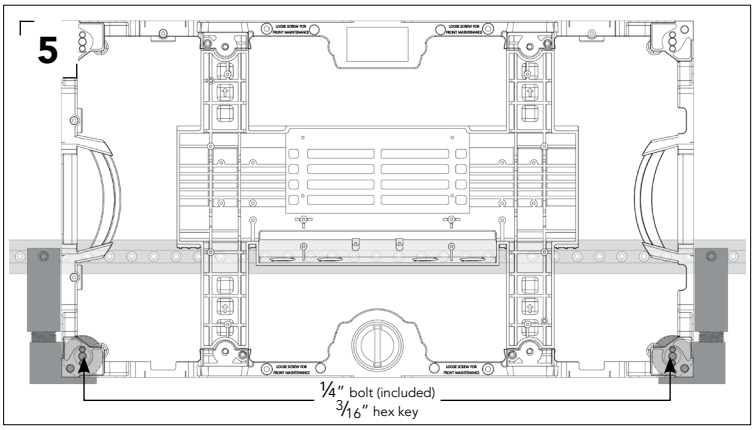
Attach second wall mount track 26 ½" (67.5cm) below the top wall mount track with drill. Add additional tracks to second row. Verify row is level. Repeat for additional track row.

4



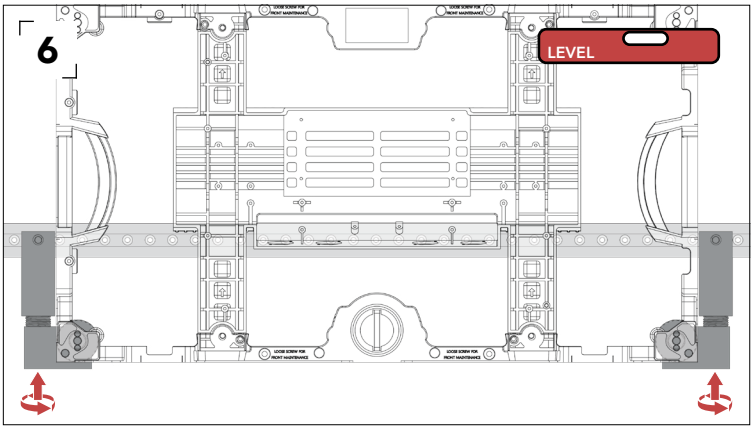
Add two XYZ Mounts to the top wall mount track (for first panel). Each XYZ Mount supports four LED panels. The XYZ Mount is added for every other panel. Adjust XYZ Mount with 3/16" hex key. The Y adjusts up to 1" vertically. The Z adjusts forward and backwards.

5



Attach the first panel to the XYZ Mounts by inserting a ¼" bolt into the corner of the panel chassis and threading with 3/16" hex key into the XYZ Mount. Position the panel near the center of LED wall.

6



The Y adjustment raises or lowers the panel chassis. Adjust to make level using 3/16" hex key.

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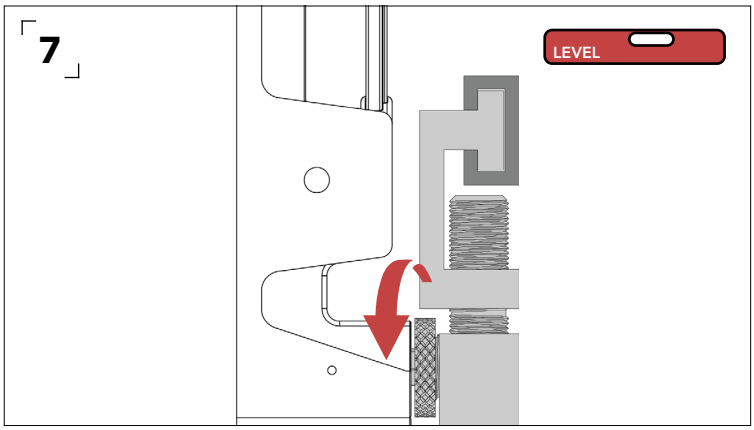
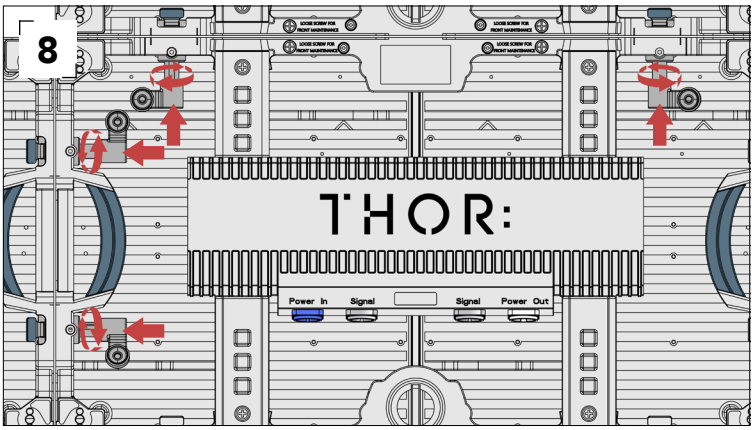
7

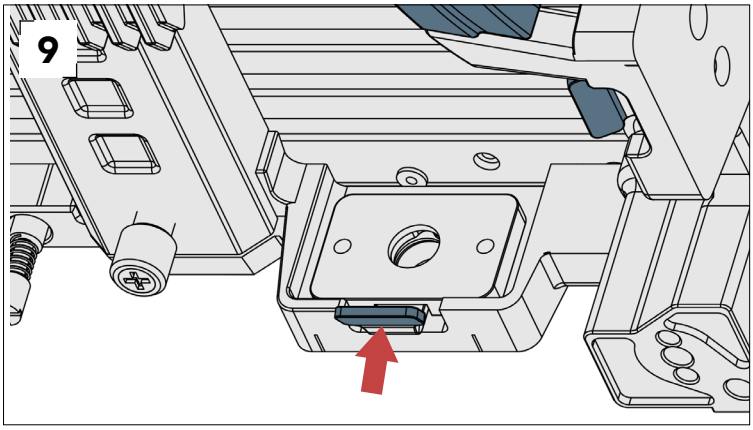


The Z adjustment moves panel chassis forward or backward. Adjust as needed.

8

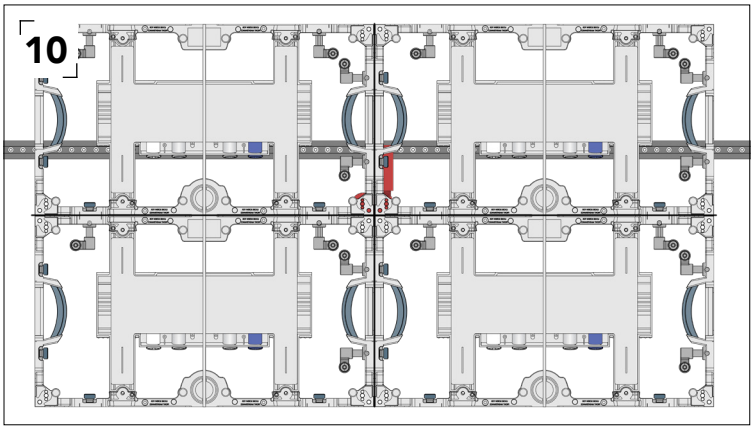


9



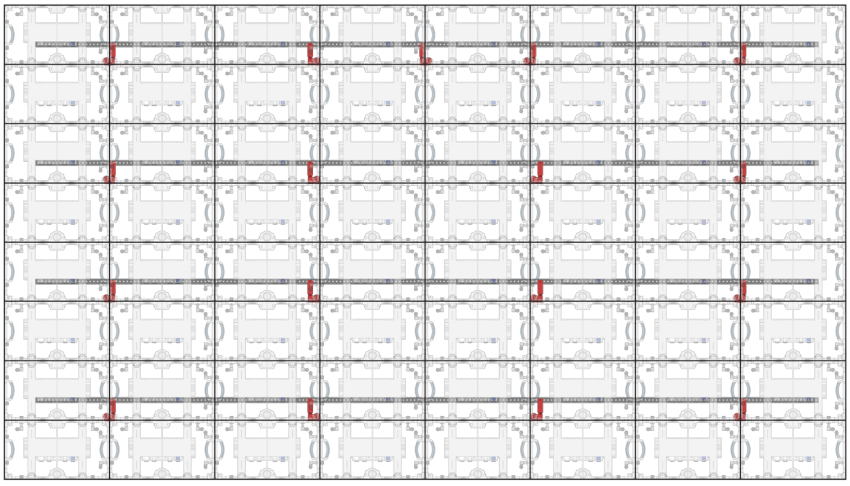
The receiving hole on the panel locks the Latch Guide Pins into position. Push to lock or release.

10



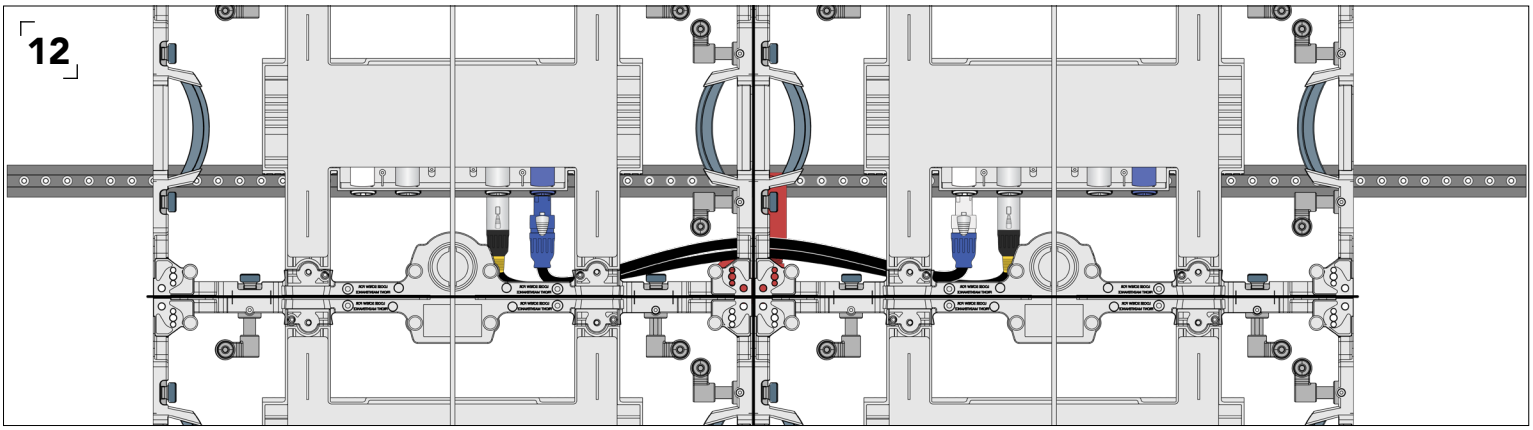
Each XYZ Mount supports four panels. Add additional XYZ Mounts as needed and continue adding panels to complete top two rows. Repeat with additional rows.

11



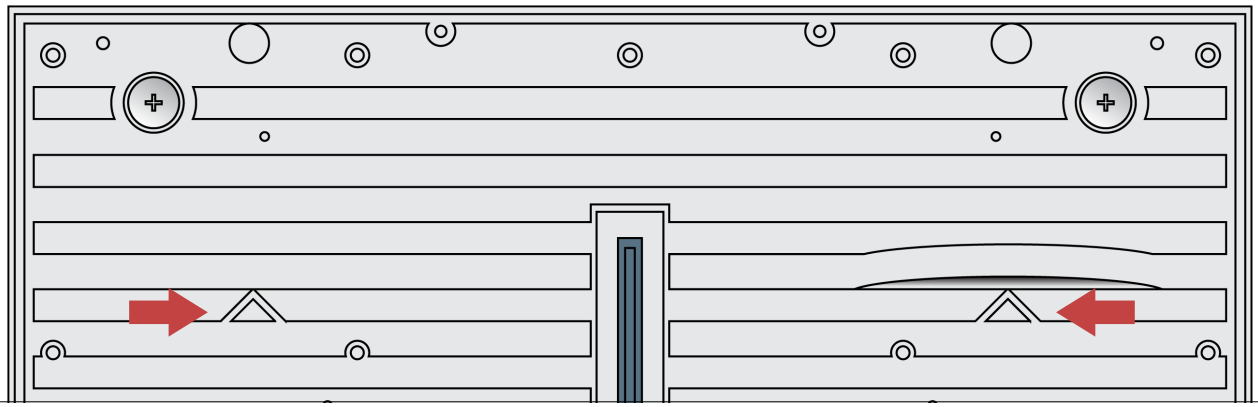
Front view

12



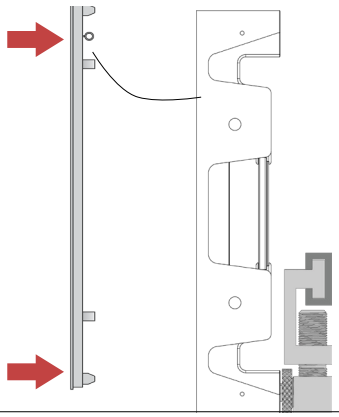
Connect power and data cable to Power & Data Box. Feed cables through to the next Power & Data Box. Repeat as necessary.

13



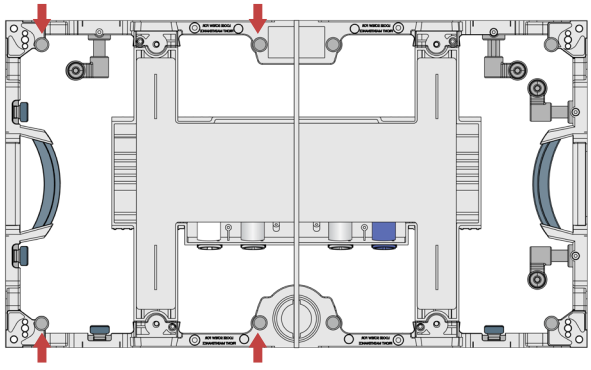
Each module has arrows pointing up to indicate proper installation onto panel chassis.

14



Carefully align modules with panels. Reattach safety cable and verify area is clear for attaching module.

15



Four magnets hold each module in place. If needed, magnets are adjustable for additional alignment purposes.

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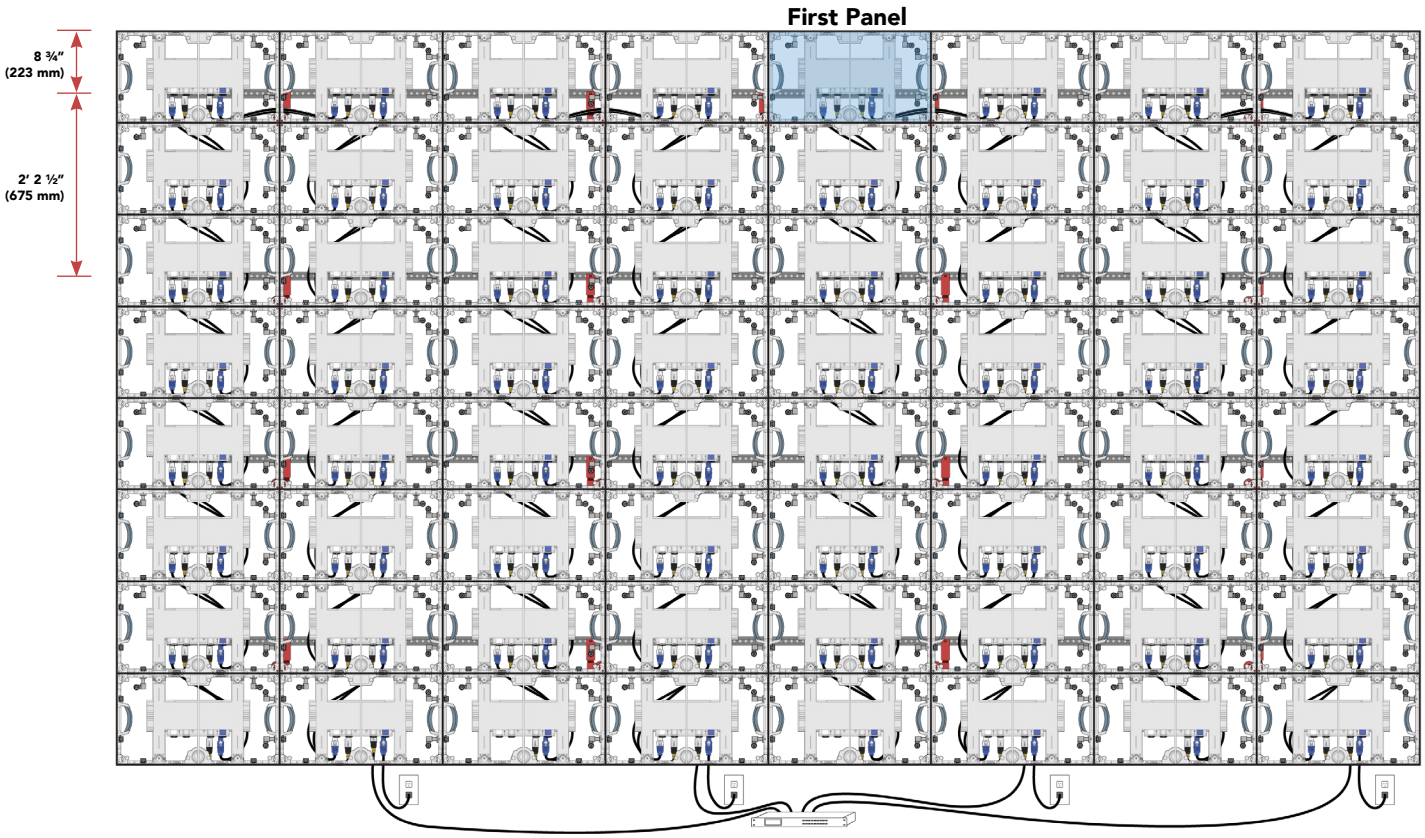
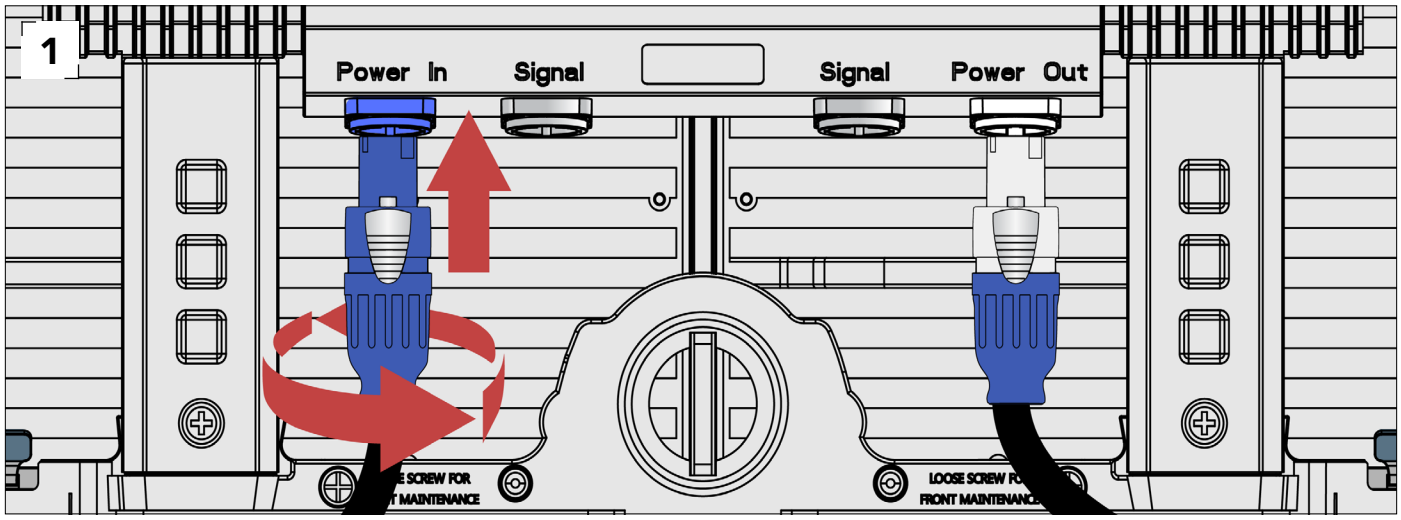
16



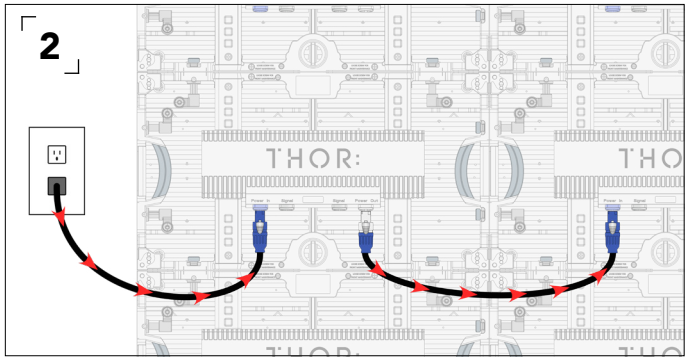
Front view

POWER CONNECTION

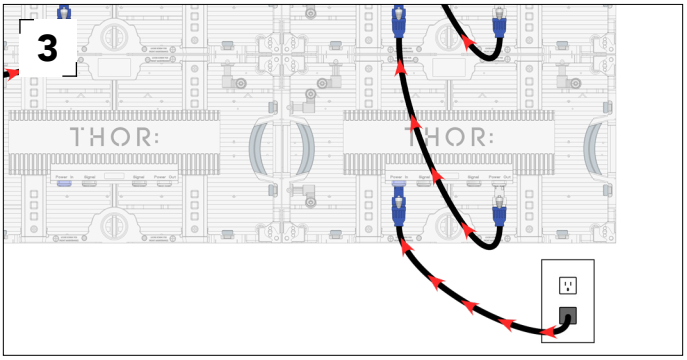
Power can run either horizontally or vertically. Connect adjacent panels with jumper cables. Power is directional, Blue is IN and White is OUT. Connect electrical circuit power cable to first LED panel. See data sheet (pg 2) for load capacity.



Insert power cable and twist clockwise.
To disconnect power cable, pull back release button on the connector, twist counter-clockwise and remove.



LED panels chain together both horizontally or vertically. Power enters from Left Side (facing rear) or Right Side (facing front).



For LED panels chained, power enters from Left Side (facing rear) or Right Side (facing front).

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DATA CONNECTION

Generally, one data port on the processor supports up to about 525,000 pixels, depending on system solution.

If data redundancy is required, each Primary Data Run needs an additional (redundant) data cable; using two data ports on the processor.

When mapping the processor, verify the perspective view defined by the software. With a different perspective selected, the mapping direction will be reversed.

PRO TIP

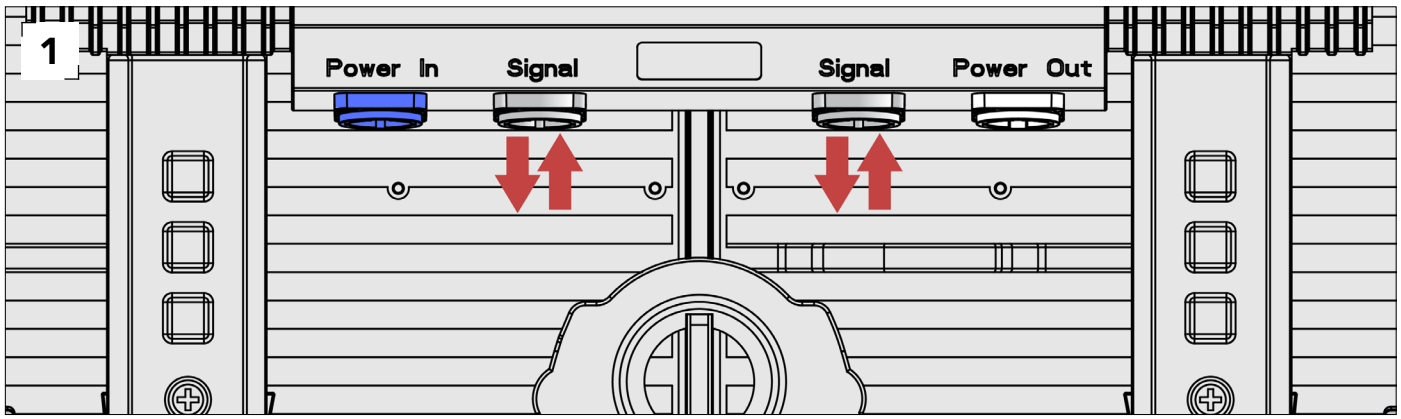
Pixel capacity per port may vary based on LED wall mapping configuration, pixel pitch, bit depth, and refresh rate.

Maximum recommended CAT6 cable length is 100 meters. Fiber transport is utilized for distances exceeding 100 meters.

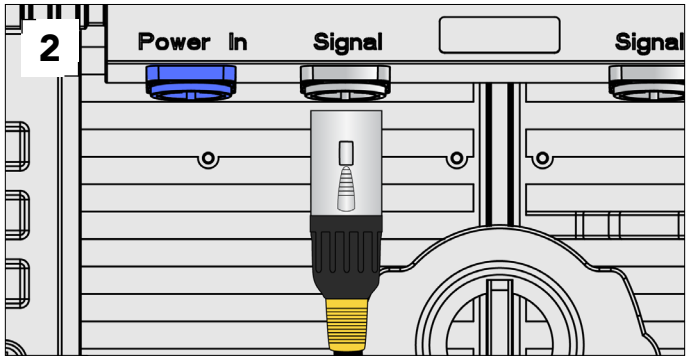
Connect LED panels to the processor data ports with cables provided.
Connect control PC / laptop to the processor via the Ethernet / USB port
Connect a video source to the processor's video input.

Data Redundancy

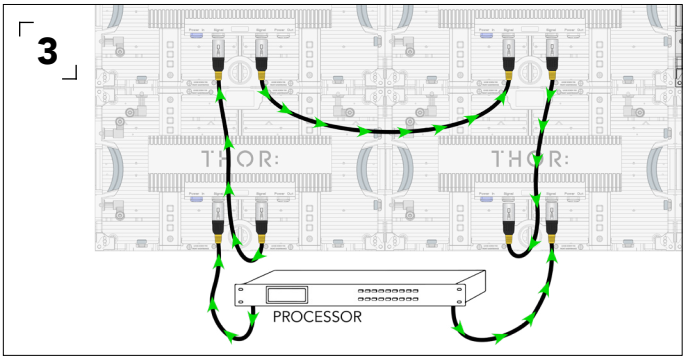
LED panels have two data ports. Redundancy auto switches to receive data from a secondary port on the processor to ensure data connectivity. One port is required for the primary data feed and an additional port is required for the secondary data feed. Verify LED wall configuration is supported by the processor.



Each data port is bidirectional.



Plug in CAT6 data cable: Push cable into data port until it clicks. Unplug data cable: Push connector button to release cable and remove.



LED panels can be chained vertically or horizontally. Be sure each LED panel only has one signal in and one signal out.

Redundancy: When connecting for redundancy, the feed from the secondary port on the processor connects to the last LED panel in the signal chain.

THOR:
PROCESSORS

THOR AV partners with Brompton Technology and Novastar processor manufacturers.

BROMPTON TECHNOLOGY

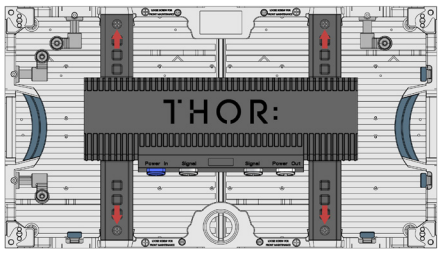
For more information on LED wall setup using Brompton processors, refer to: www.bromptontech.com.

NOVASTAR

For more information on LED wall setup using Novastar processors, refer to: www.novastar.tech.

SERVICE AND REPAIR
Refer servicing to qualified service personnel. There are no user serviceable components inside the product.

REPLACING POWER DATA BOX

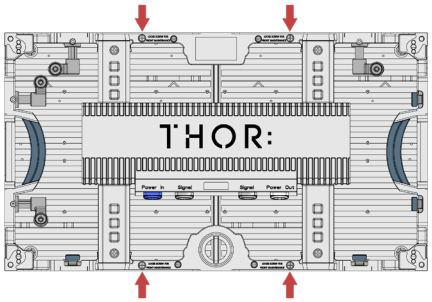


Unscrew the four thumb screws that hold the Power Data Box onto the panel, pull it off, and replace.

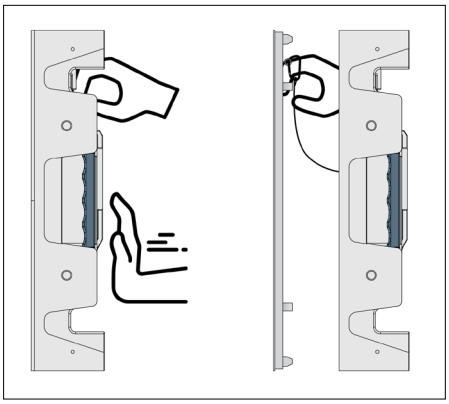
CLEANING MODULES

Use a dry microfiber towel to wipe the face of the LED wall or very soft toothbrush.

REMOVING MODULES

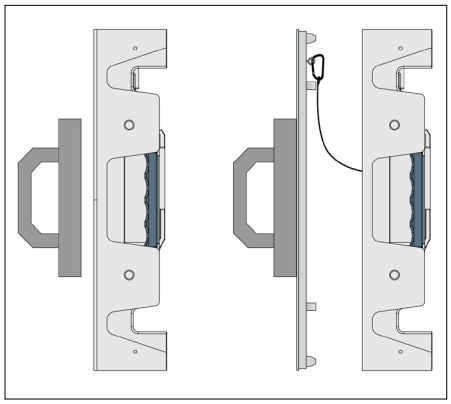


Unscrew the four thumb screws that hold the modules onto the panel.



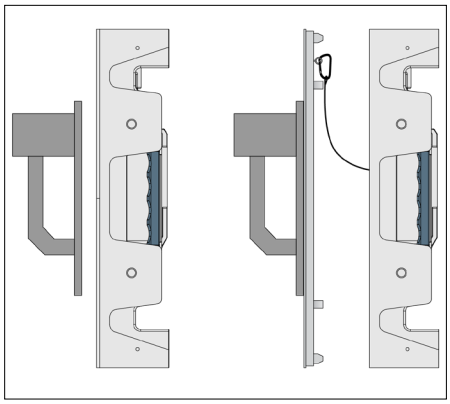
While holding the Module Handle, push module to separate it from the panel chassis magnets. Apply some force.

Disconnect Safety Carabiner from module.



Position Module Removal Tool Magnet on the front of the module. Using some force, pull the module toward you.

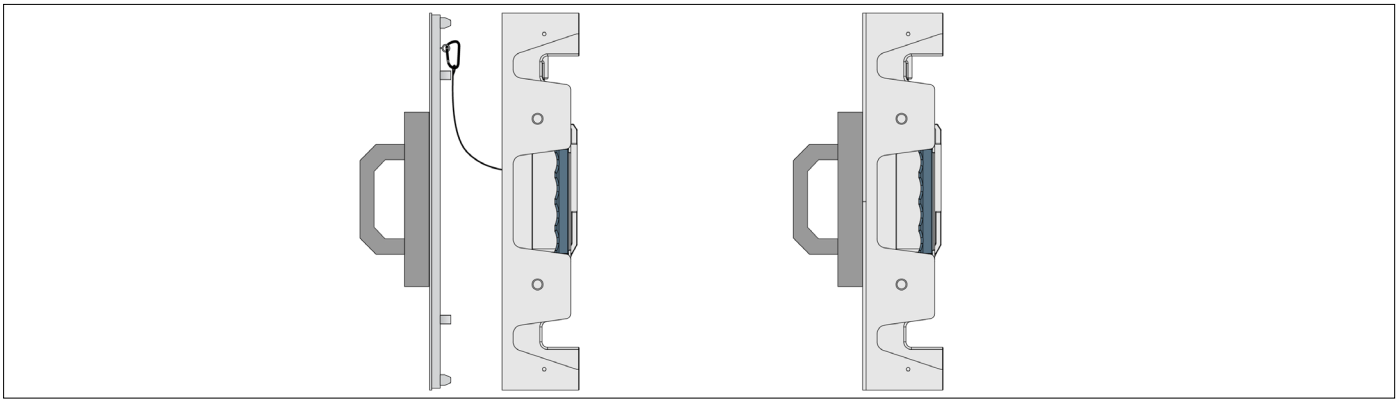
Disconnect Safety Carabiner from module.



Position vacuum onto module. Turn on and wait for suction to build. Carefully pull module toward you.

Disconnect Safety Carabiner from module.

REPLACING MODULES



Modules can be reattached from the front (using Module Removal Tool Magnet) or rear (using module handles).

Align module with Power & Data Box (PDB). Module will snap into place.

Connect Safety Carabiner to module.

Brompton Product:
Depending on PDB firmware, power cycle may be required.
Contact your THOR dealer for support.

NovaStar Product:
Depending on PDB firmware, power cycle and/or module flash may be required.
Contact your THOR dealer for support.

TROUBLESHOOTING

What if a block of my LED panels aren't working right?	Try replacing a data cable. Usually between the last panel that is working and the first panel that has stopped working.
How do I flash the receiving card and why?	Please contact your dealer for more information and instructional guides.
Is there a reason why power cables connect stage left to right?	Yes. Power is not bi-directional.
Are the RIDGE v^2 power data boxes "hot swappable"?	No. The power data boxes are not hot swappable on RIDGE v^2 LED panels.
My display has moiré issues.	Wavy lines! Moiré is an image artifact that appears when two fine patterns overlap at an angle. One of the easiest ways to reduce the moiré effect is to soften its direct focus by focusing on something else, like an individual. Slightly soften the focus on the screen itself to reduce the on-camera moiré effect with LED screens. Focus points matter when using cameras. Focusing on the LED wall creates moiré no matter what your camera resolution is set to. Another way is to use shallow depth of field if your subject is in front of the LED screen; the subject will be in focus and the background LED screen will be softly blurred. Image sensors found in digital cameras have their pixels arranged in a very fine pattern; when videoing an LED display, the camera's fine patterns will not line up with the fine pattern of the LED's.

Why do I have to reconfigure the LED wall every time I restart the system?	When changing settings in the processor, all settings need to be “Saved to Hardware”. If this has not happened, the wall will return to the state of the last saved setting. This applies to every setting in the software, including: brightness, color temperature, wire flow, and calibration settings.
How do I remove a module if there are faulty pixels?	Each module on an LED panel has magnets to keep them in the proper position. Use the included RIDGE v^2 Module Removal Tool. RIDGE v^2 LED panels — Verify that the module’s safety cable is detached. Carefully insert the module removal tool into the top front of the module via the thin slots and then slide the tool upwards to secure. While holding onto the removal tool, place forearm parallel against the module and use a curling motion (think lifting weights in the fitness room) to pull the top of the module toward you. This separates the module and panel chassis magnets. Some force will be needed.

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SUPPORT PROCESS INFORMATION

All LED orders ship with Advanced Replacements.

Please contact support@thorav.us to obtain an RMA number prior to returning your product to THOR AV. Do not return the product to the place of purchase. Write the RMA number on the outside of the shipping carton. ***Any product sent to us without a valid RMA number will be refused.***

Shipping Address:
THOR AV
Attn: RMA Number
8821 Zealand Ave. N
Brooklyn Park, MN 55445 USA

Include the following with the product: a brief description of the problem, your name, return shipping address, phone number and the RMA number. Do not include any accessories. THOR AV is not responsible for any damage to or loss of the product during transit. We recommend that customers obtain a receipt and tracking number for all packages shipped to us. Turnaround time on repairs is generally ten business days. If you live outside of the United States, please contact your local distributor for warranty service.

WARRANTY SERVICE
You will be responsible for shipping charges to THOR AV and the product will be returned by THOR AV. We reserve the right to inspect any product that may be the subject of any warranty claim before repair is carried out. To qualify for warranty service, documentation showing the date of purchase may be required. Final determination of warranty coverage lies solely with THOR AV.

NON-WARRANTY SERVICE
If it is determined that the product does not meet the terms of our warranty, you will be billed for labor, materials, return shipping and insurance. There is a $100 USD minimum charge for materials and labor. Appropriate shipping charges will be applied. We require payment in advance of repair by credit card; we accept Visa and Master Card. In the event the charges are over the minimum charge, THOR AV will contact you and inform you of the cost of the repair before any work is completed.

GLOSSARY

Aspect Ratio	The ratio of width to height of an image or a screen. Typical video aspect ratios are 16:10 and 16:9.
Bit Depth	The higher the bit depth of an LED panel, the more colors it is capable of reproducing. Bit depth quantifies how many unique colors an LED panel is capable of or are available in an LED panels color palette. The higher the bit depth, the greater level of color precision. For a grayscale video content, the bit depth quantifies how many unique shades are available.
Brightness	Brightness in an LED wall refers to how much illumination comes from the LED panels. There is a difference between the Maximum Brightness which is the brightest possible setting and the Calibrated Brightness which is the maximum setting at which all LEDs are the same brightness. With Maximum brightness, it is possible that not ALL the LEDs will be at that brightness level, it is the brightest that some LEDs in the panel will display. Brightness is particularly important if you will use LED walls in high ambient light such as sunlight or heavily lit venues.
BTU	The British Thermal Unit is a measurement of how much heat is emitted from a device.
Certification	Certifications verify that an LED wall has been tested and complies with emissions, power, and safety regulations. Look for the following certifications to ensure your LED walls meet all necessary standards: • FCC (Federal Communications Commission) *Description:* Verifies that LED walls comply with U.S. regulations on radio frequency emissions, preventing interference with other devices and communication networks. www.fcc.gov • ETL (Electrical Testing Laboratories) *Description:* Verifies that LED walls have been independently tested to meet North American safety standards, including electrical and other safety aspects. www.intertek.com/marks/etl • EMC (Electromagnetic Compatibility) *Description:* Verifies that LED walls operate without causing or being affected by electromagnetic interference, maintaining optimal performance. www.emcstandards.co.uk • UL (Underwriters Laboratories) *Description:* Verifies that LED walls meet extremely stringent safety standards, including electrical and fire safety, with thorough and periodic audits. www.ul.com

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GLOSSARY

Chassis	The frame that holds LED modules, the power supply, and receiving card in an LED panel is the chassis.
Closest Viewer	The closest viewer specification is an estimation by the manufacturer of LED panels that describes how far the LED wall should be mounted from the closest viewer. Ideally, this rating is the distance from which a viewer will not be able to see the individual pixels in a video wall.
Color Correction	Color correction is part of customizing an LED walls color by using a video processor. Adjustments to the color, contrast, and exposure enables video content to appear lifelike — natural and unprocessed.
Contrast	The difference in appearance between the lightest part of an image and the darkest part of an image.
Curving Radius	Some LED panels can have a slight curve for use in studios, corporate offices or other applications where a flat wall is not desirable.
Distance from Presenter to LED wall	Refers to the distance of the subject on the stage and the LED wall behind them. This is important for the camera setting needed to have the correct depth of field, minimizing moiré.
Driving Method	Sometimes referred to as Scan Mode, the driving method tells you how many LEDs are active at one time. LEDs are turning off and on at a visually imperceptible speed, this is what helps control the perceived brightness. If a Driving Method is 1/15 scan, that means that at any given time only 1/15th of the LEDs are active. This happens so fast however that it will not be detected by the eye.
Gray Scale	A bit of a misnomer, Gray Scale refers to the color depth, or simply (perhaps too simply), the number of available colors. • A 12-bit gray scale will have a potential of 4096 colors (2^{12}) • A 14-bit gray scale will have a potential of 2^{14} color or 16,384 • A 16-bit gray scale offers a 2^{16} color potential or 65,536 colors
HDR – High Dynamic Range	HDR is a series of technologies that improve the range of color and contrast in a video image. By offering higher brightness, wider color ranges, more detail and higher headroom, HDR provides more lifelike depth and image quality.
IC Driver	The IC Driver controls the state of each individual LED in the LED panel. It controls the on-off state through Pulse Width Modulation (PWM) or the more advances Scrambles Pulse Width Modulation (S-PWN). The refresh rate of each LED panel is determined by the IC Driver.
IP Rating	Ingress Protection rating provides a range for the level of protection from solid objects or liquid for electrical enclosures or mechanical casings.
Mask	Masks are an extra layer of protection for LED pixels. They also significantly improve the overall image quality and create a more efficient display. Also known as louvers or shaders, masks are black plastic screens that cover the face of the module.

GLOSSARY

Module	A module in an LED panel houses the LED's themselves. Often two or more modules will be a part of a single LED Panel.
Moiré	Wavy lines! Moiré is an image artifact that appears when two fine patterns overlap at an angle. One of the easiest ways to reduce the moiré effect is to soften its direct focus by focusing on something else, like an individual. Slightly soften the focus on the screen itself to reduce the on-camera moiré effect with LED screens. Focus points matter when using cameras. Focusing on the LED wall creates moiré no matter what your camera resolution is set to. Another way is to use shallow depth of field if your subject is in front of the LED screen; the subject will be in focus and the background LED screen will be softly blurred. Image sensors found in digital cameras have their pixels arranged in a very fine pattern; when videoing an LED display, the camera's fine patterns will not line up with the fine pattern of the LED's.
Nit	A nit is the measurement of the intensity of a visible light source. Brightness is measured in nits.
Pixel Pitch	Pixel Pitch is the distance between two LED's in an LED panel. It is measured from the center of one LED to the center of the adjacent LED horizontally or vertically. Usually measured in millimeters, a smaller pixel pitch generally allows the viewer to be closer to the LED wall.
Power Supply	Power to the LED wall is provided in a pass-through daisy chain configuration. Power enters the wall at one of the LED panel's Power Data Boxes and then each subsequent panel receives power from the panel before it.
Processor	The Processor takes your video image, applies filters and adjustments, and outputs to the video wall. The processor also formats the output so that it displays correctly across multiple LED panels.
Receiving Card	The receiving card is the part of the LED panel that receives a signal from the sending card in the Processor. The "first" LED panel in the LED wall connects directly to the processor via a CAT5 or CAT6 cable and then each subsequent LED panel (up to the maximum pixel count on the channel) is connected in a daisy chain fashion.
Refresh Rate	The refresh rate is how often the image is redrawn on the screen. The images on a screen are redrawn many times per second. The refresh rate is particularly important when using a camera that captures the LED wall in the video feed. If the refresh rate is not high enough, or if the camera is configured improperly, the refresh or scan lines can be caught on the camera.
Resolution	Resolution is the number of pixels in a digital display. It is measured as width by height. There are a number of standard resolutions such as 1080p, WUXGA, 4K, etc. Each resolution will have an aspect ratio which is the ratio of pixels in the format width:height.

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GLOSSARY

Rigging	Rigging is the frame system that holds up and supports the LED wall. Rigging can be used on the ground, hung from a ceiling, mounted on a wall or constructed into a frame depending on the stage requirements.
Sending Card	A sending card is a part of the Processor that outputs a "channel" of video content to the receiving card on the back of the LED panel. Each processor can have multiple sending cards to output multiple channels of content.
Viewing Angle	The viewing angle specifies the maximum angle an LED panel is viewable; with 90° being a front view and 180° being parallel with the LED panel on either side.

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