

U-FLEX EXTREME INSTALLATION MANUAL



ENGINEERED STRUCTURAL CEILING SYSTEM

Overhead Infrastructure Solution for Futureproofing
Data Centers & Critical Applications





THANK YOU

for choosing **U-Flex Extreme Structural Load-bearing Ceiling Grid Solution**. The intent of this guide is to provide you with a reference for typical installation situations.

If you have any installation related queries, please email at

✉ projects@united-group.in

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Abbreviations

(RH and LH)	: Right Hand and Left Hand
GI	: Galvanized Iron
PPE	: Personal protective equipment
CNC	: Computer numerical control
Lbs	: Libra pondo
GFC	: Good for the Construction
O.C.	: Occupancy Certificate
CSK	: Countersunk (head rivet)
CL3	: Cover level 3
Mtr	: Meter
Thk	: Thick/Thickness
mm	: Millimeter
(W)	: Width
(H)	: Height
kN	: Kilonewton
kg	: Kilogram
Max	: Maximum
D	: Dimension
L	: Length

Component Sheet

1. Main Runner 3600 mm
2. Cross Runner 1200 mm
3. Cross Runner 600 mm
4. X Connector (L) x 144 (W) x 54 (H) x 5 (T)
5. T Connector (perimeter connector) 144 (W) x 86.5 (L) x 54 (H) x 5 (T)
6. L Connector 88.5 (W) x 88.5 (L) x 54 (H) x 5 (T)
7. I Connector 144 (W) x 33 (L) x 54 (H) x 5 (T)
8. Turnbuckle M10 x 1.5 X 180 (L)
9. M10 x 1.5 x 25 mm flat head hexagonal allen screws
10. M10 x 1.5 Lock Nut (RH and LH)
11. M10 x 1.5 LH/RH x 150 mm Stud for Turnbuckle
12. M10 x 1.5 Threaded stud/rod (Length as per site)
13. Mechanical anchor fastener
14. Beam clamps
16. Sprint nut
15. Metal Ceiling tile 0.60/0.70 thickness GI pre-coated/powder-coated
(Optional as per client's requirement)
 - a. Hold down clip
 - b. Suspension Components
 - c. Clamps - Pipe and U clamp
16. Seismic Components
 - a. (4mm dia steel wire rope)
 - b. Turnbuckle M8
 - c. Bracing angle 25 x 25 x 1 mtr
 - d. M8 x 1.25 x 25 mm eyebolt
 - e. M10 x 1.50 x 16 mm eyebolt
 - f. Steel wire rope
 - g. Thimble
 - h. (40 x 40 x 3 thk) L cleat

Note: Seismic components vary as per the option selected.

Tools Required

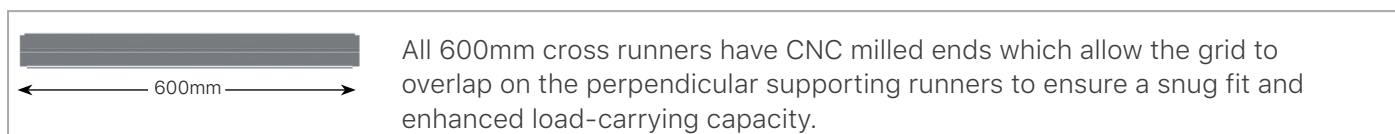
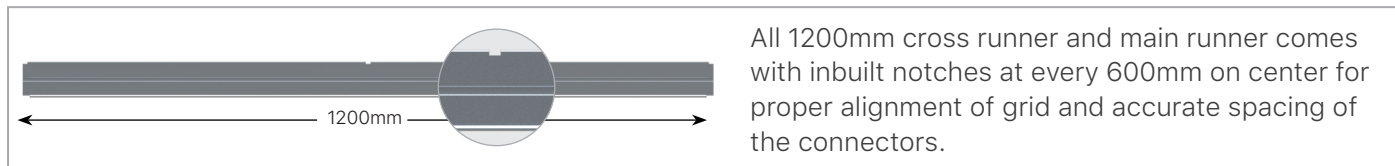
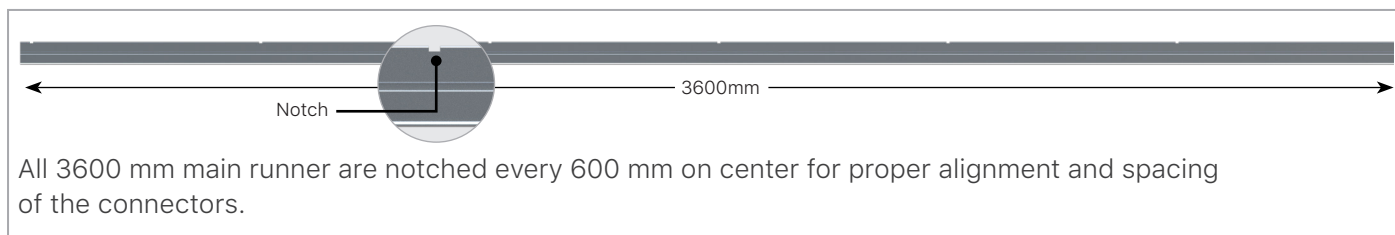
List of the most common tools needed for installing a suspended ceiling. Required tools and materials may vary based on job-specific conditions:

- Measure tape
- Chalk line
- Tool for the spring nut
- String line: control/ dry line
- Carpenter Pencil
- Ladders, rolling scaffold
- Lasers: horizontal line leveling, vertical alignment, point
- Cordless drill with screw tips and drill bits, hammer drill machine
- Metal cutting circular saw
- PPE: Cut-resistant gloves, safety glasses, safety helmet, safety shoes, reflective jackets, ear plugs and nose mask.

Below tools required if in case if metal ceiling is included in the scope of work:

- Snips: metal cutting tin snips
- Pop riveter, aluminum white pop rivets
- Rubber mallet

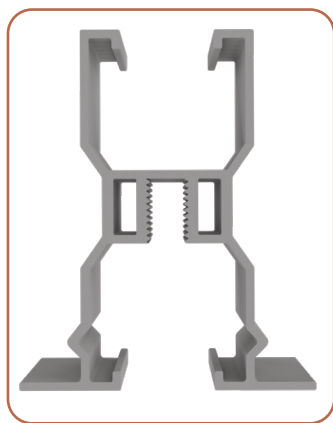
RUNNER SPECIFICATIONS:



The mains are notched every 600 mm to help with alignment of the cross runner at every intersection. For 600 x 600 mm grids, the 1200 mm runners will have a notch in the middle.

EXTRUSION PROFILES:

(All dimensions in mm)



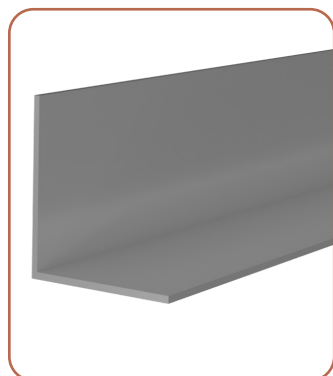
Main Extrusion

3600 / 1200 / 600
70.60 (W) X 85.60 (H)

MOC: Special grade structural aluminum alloy extrusion

Top: Continuous C slot for spring nut locking

Bottom: Continuous C Slot for accommodating- M8 / M10 / M12 nut locking as per requirement with additional M10 threaded portion



L Wall Angle

For perimeter support

OTHER COMPONENT SPECIFICATIONS:



Turnbuckle

Product code 112359

M10 x 1.5 X 180 (L)

Made from zinc-plated cast steel alloy, the turnbuckle serves as a connector between threaded rods to provide structural support to the grid.

Threaded Rod

Product code 112356

M10 x 1.5 (Length as per site)



Zinc electroplated threaded rod used for ceiling suspension. One end is fixed to a structural surface (e.g., concrete or steel), while the other connects to the ceiling frame.

Turnbuckle Stud

Product code 112358



Zinc electroplated turnbuckle stud used where additional length and rigidity are required to securely fasten the turnbuckle and the runner together.

Mechanical Anchor Fastener

Product code 112546

7.5 (D) x 55 (L) with M10 x 1.5 boss for suspension



Steel alloy zinc-plated mechanical anchor fastener designed to fix threaded rods in suspended ceilings to concrete structures.

Beam Clamp

Product code 112547

M10 x 1.5



Zinc-plated cast steel alloy beam clamp used for steel-to-steel connections between structural beams. Eliminates the need for drilling, welding, or additional fabrication.

Ultra Low Head Allen Socket Screws

Product code 113133

M10 x 1.5 x 25 (L)



Allen socket screws used to fix connectors and services within the structural system.

Lock Nut

Product code: LH - 112669

RH - 112545

M10 x 1.5



LH Nut



RH Nut

Zinc electroplated lock nut used to fasten and secure the turnbuckle to the structural grid, ensuring a stable assembly.

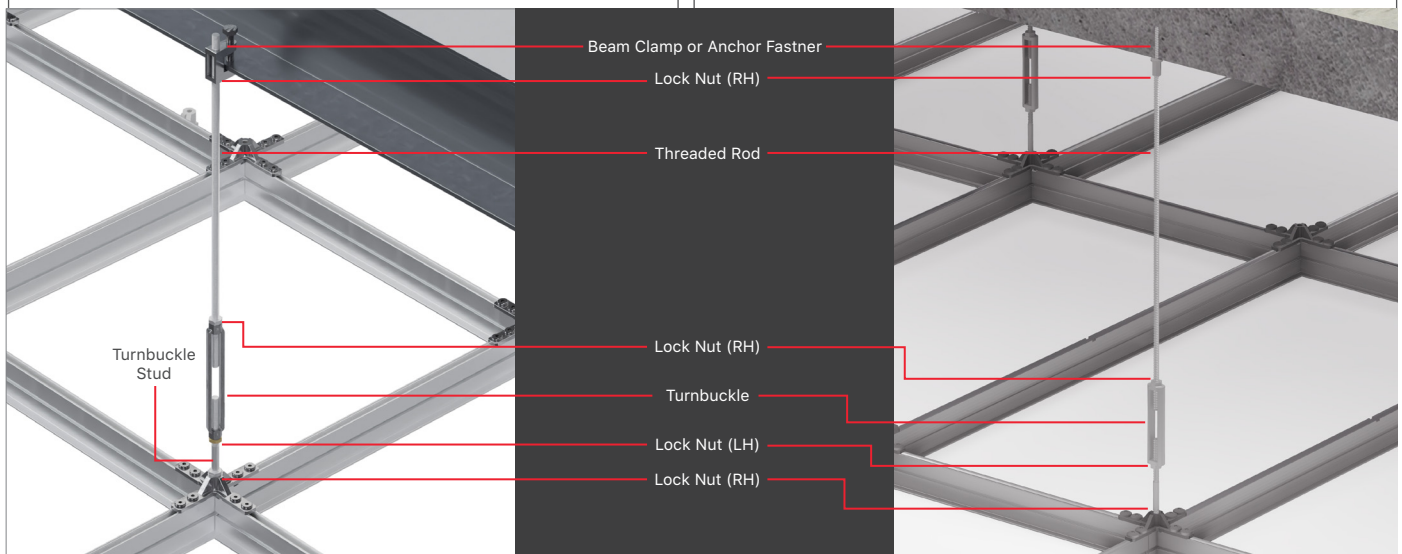
SCOPE OF SUPPLY:

Installation on structural beam

Die casted bracket or beam clamp support from a steel structure on ceiling slab.

Installation on concrete

Anchor fastener hanging method from a concrete slab structure.



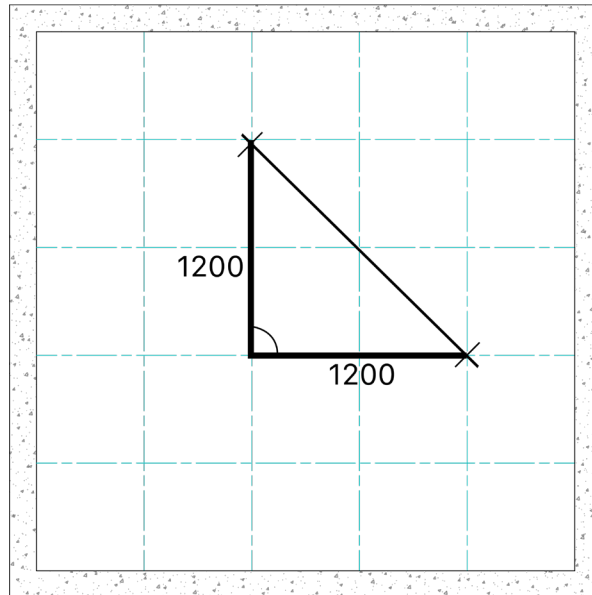
IMPORTANT POINTS TO CONSIDER BEFORE INSTALLATION:

1. Exceeding the values mentioned in the loading chart will decline the integrity of the system.
2. Do not apply circulatory force on the threaded rod or bolts above 7Nm. This will damage the threaded part of the spring nut reducing the load capacity.
3. Avoid using any other screws than those that are supplied by us in the kit.
4. Do not impose a dynamic load on the connection system during installation of supported services, bracing is required to prevent dynamic load.
5. U-Flex Extreme is not a walk-on ceiling.
6. Ensure 4 threads are exposed inside the turnbuckle from the ceiling rod drop. Failure to do so can compromise the integrity of the system.
7. Wear personal protective equipment (PPE) when drilling, cutting, or installing. PPE includes gloves, safety eyeglasses, hard hats, etc.

Note: For structural load data please refer to the U-Flex structural ceiling technical specification sheet.

Steps of Installation

Step 1: Marking of grid



This step is crucial prior to initiating the actual grid installation. It involves determining the grid layout based on room dimensions (length, breadth, height) and the client's specified starting point from the approved GFC drawing. Using a laser leveling machine, mark 1200 x 1200 mm according to the client's starting point, and trim the threaded rod to match the ceiling height specified by the client.

For instance:

The total ceiling area is 221 square meters, including 600 x 600, 600 x 1200, and 1200 x 1200 mm grids. The plenum height is 645 mm, and the system height from the top of the turnbuckle to the bottom of the runner is 350 mm.

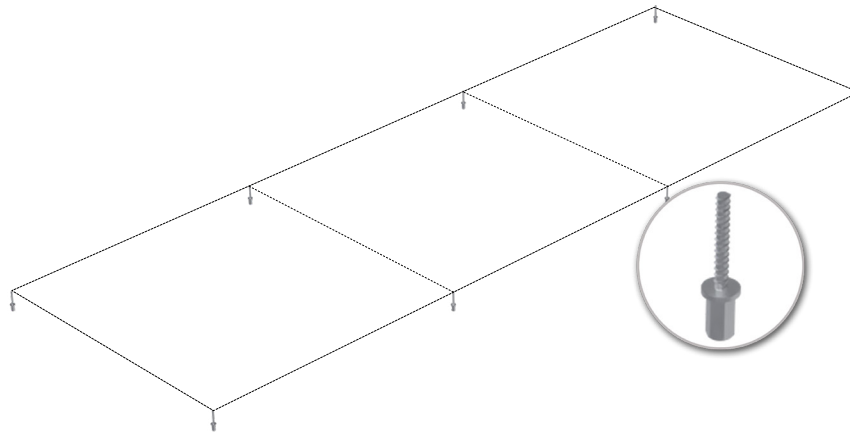
Step 2: Perimeter Installation



Marking perimeter trim lines and installing perimeter wall angles.

Steps of Installation

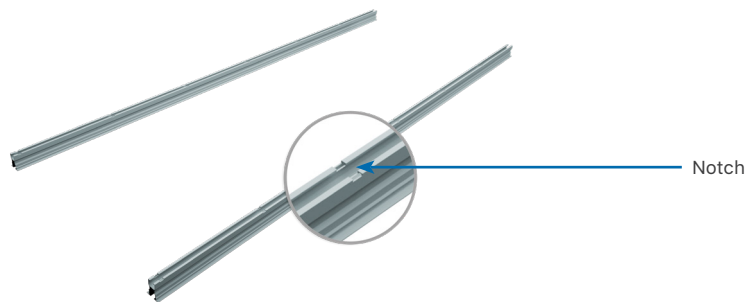
Step 3: Installing the suspension rods



Drilling the Fasteners on the marked location at every 1200 mm center to center.

Step 4: Forming the grid assembly

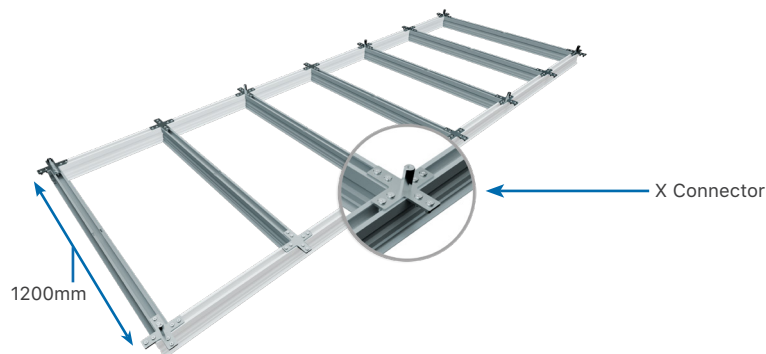
Step 4.1: Laying the main runner



To assemble the grid module, use the designated Jig table or a assembly space in the facility.

- Equally space the main runners (3600 mm) every 1200 mm
- All main runners are notched at every 600 mm for proper alignment

Step 4.2: Laying the 1200 mm cross runner at every 600 mm on the notches

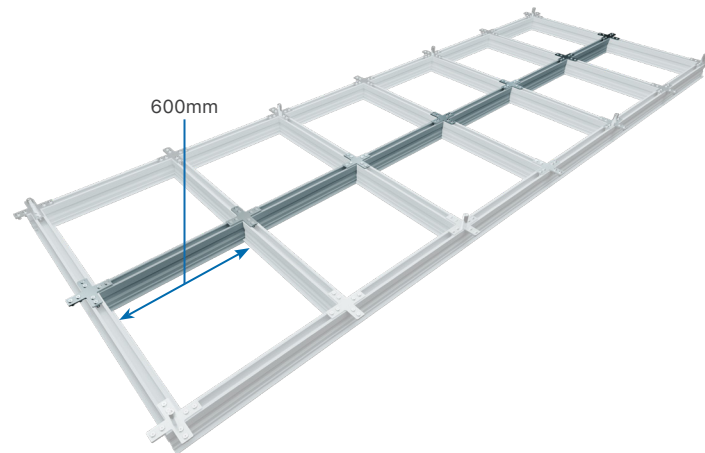


Cross runner placement (1200)

Place cross runners (1200 mm) at every 600 mm along the main runner, ensuring precise grid alignment by adjusting the grooves on the main runner's top edge.

Steps of Installation

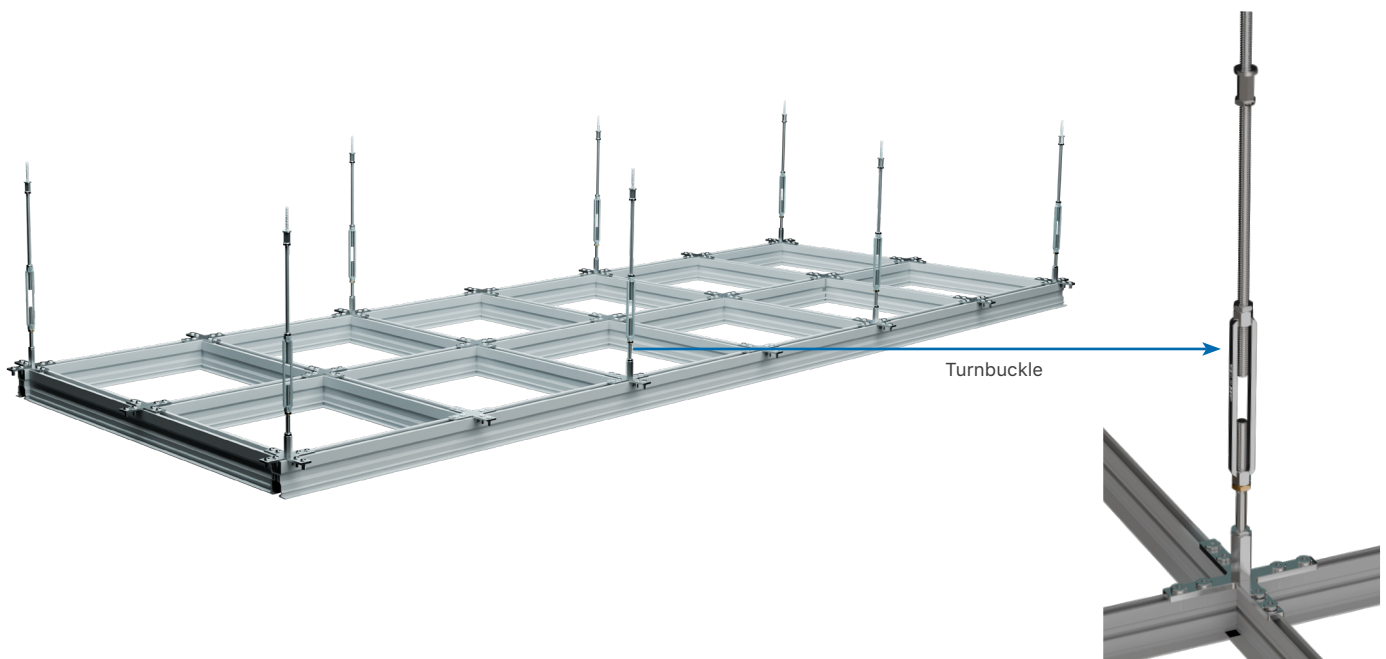
Step 4.3: Further segmenting with 600mm cross runners to form 600 x 600 mm grid



Cross runner placement (600)

For a ceiling designed on a 600 mm grid, insert a 600 mm cross runner between the existing 1200 mm cross runners using connectors. Align the connectors with the factory-cut groove on the top edge of the 1200 mm cross runner.

Step 4.4: Installing threaded rod and turnbuckle in U-Flex X-Connector



Installing Turnbuckle Rod Assembly

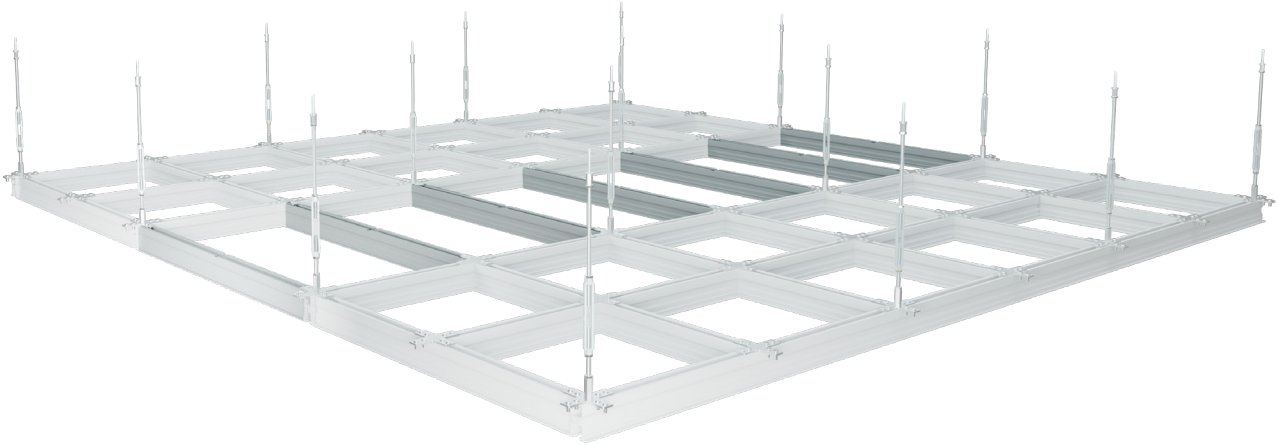
Position the turnbuckle rod assembly at every 1200 x 1200 mm. Lift each module to the specified threaded rod (M10 x 1.5) with lengths adjusted as per site requirements, then fasten them using turnbuckles. The ceiling height can be modified by twisting the turnbuckles. Once the desired height is achieved and levelled, secure the turnbuckle in place using the nut on the threaded rod.

Note: The 3600mm x 1200mm modules are directional, with turnbuckles at the alternate ends (as shown in the image). Check the modules before suspending to ensure proper suspension. Ensure 4 threads are exposed inside the turnbuckle from the ceiling rod drop. Failure to do so can compromise the integrity of the system

Steps of Installation

Step 5. Connecting modules

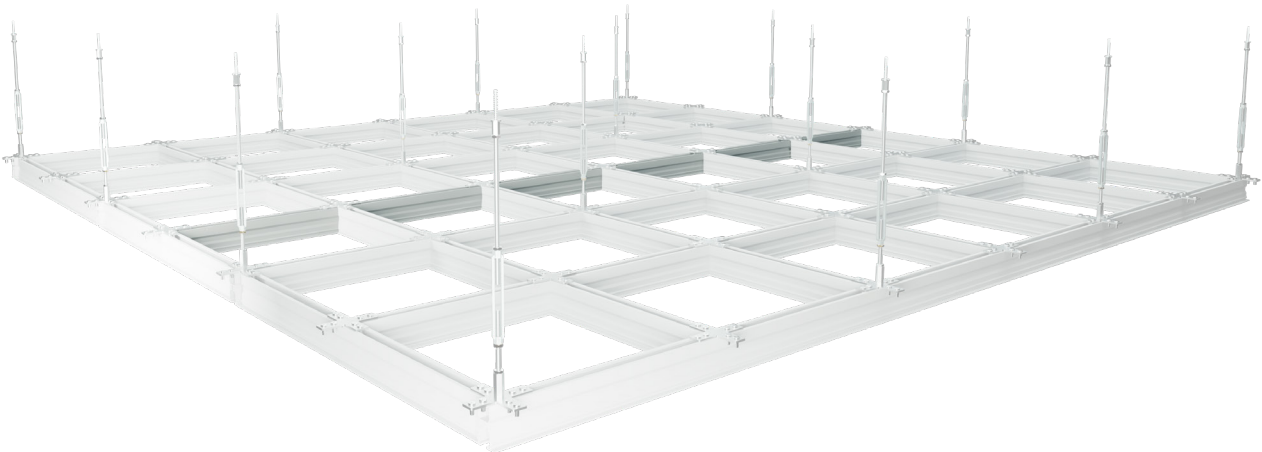
Step 5.1: Connecting cross runner (1200 mm) between two modules



Module Run Installation (1200)

Space each run of modules 1200 mm apart, connecting them with 1200 cross runners. Insert the 1200 mm cross runner in between the modules and orient it to align with the notches on the main runners. Secure it in an upright position and slide it under the U-Flex X-Connector at each intersection using M10 x 1.5 X 25 mm flat head hexagonal screws.

Step 5.2: Connecting cross runner (600 mm) between two modules



Module Run Installation (600)

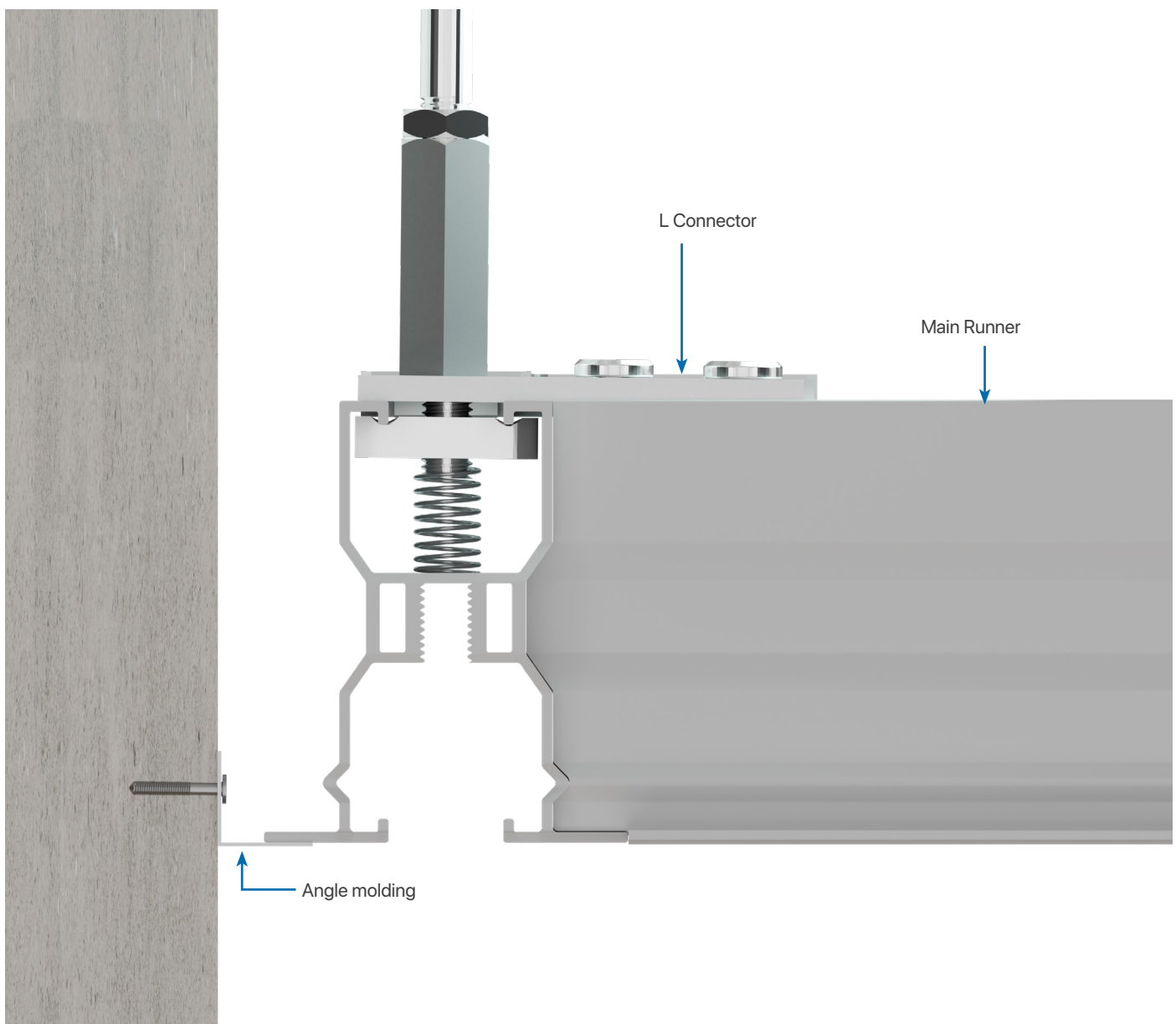
Space each run of modules 600 mm apart, connecting them with 1200 cross runners. Insert the 600 mm cross runner in between the modules and orient it to align with the notches on the main runners. Secure it in an upright position and slide it under the U-Flex X-Connector at each intersection using M10 x 1.5 X 25 mm flat head hexagonal screws.

Steps of Installation

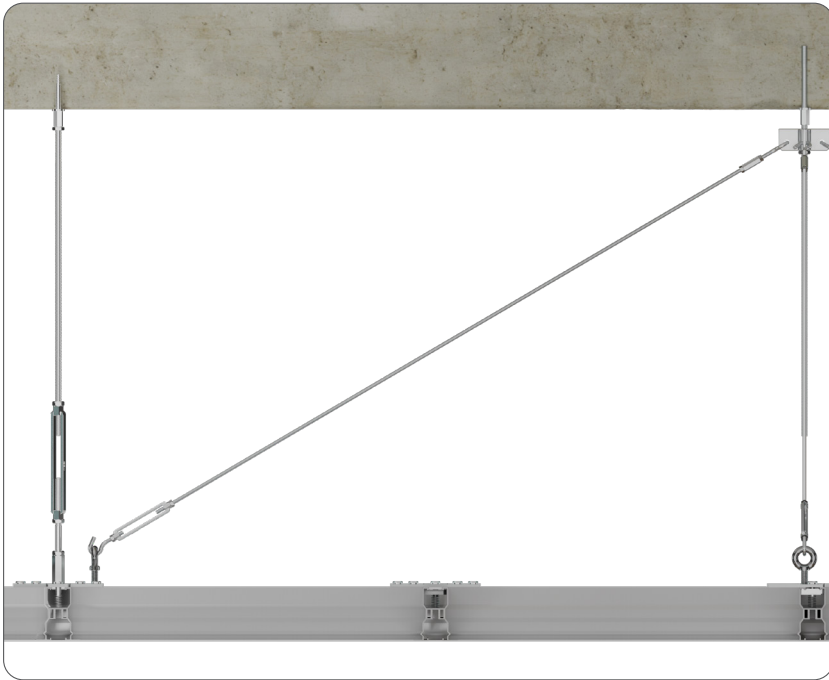
Step 6. Installation at Perimeter

Perimeter Fixation

Secure the ceiling's perimeter to studs or structure. Pre-drill holes in the periphery at intervals of 500 mm or a maximum of 600 mm from the center to allow screws to pass. For added stability in case of applied loads, ensure wall molding has threaded rods (4' O.C. max). If not, screws in the perimeter slot can aid in drilling.

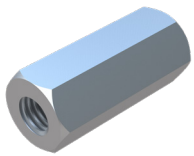


Seismic Considerations



These are options/suggestions if lateral bracing is needed. Cable trays need to be independently designed & braced for seismic zone areas.

Support Components



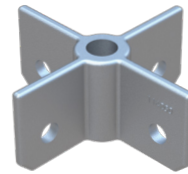
Hexagonal Boss

Product code: 114267



Threaded Turn Buckle

Product code: 114265



Seismic Support Bracket

Product code: 114260
(80 x 80 x 35 x Ø11)



Threaded Rod

Product code: 114266
(M6 x 1.00 RH)



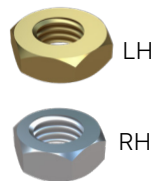
Eye Bolt

Product code: 112884
M10 x 1.50 x 25.00 mm



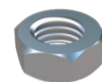
Long Screw Hook

M6 x 1.0 x 75 mm
Product code:
LH: 114261 RH: 114262



Check Nut

M6 x 1.00 mm
Product code:
RH: 114263 LH: 114264



Lock Nut

M10 X 1.50 mm
Product code: 112545

Safety & Precautions

Personal protective equipment (PPE):

To advocate a strong safety policy, all installers MUST wear PPE consisting of hard hat, rubberized gloves, jacket, steel toes and glasses during installation of the ceiling system.



Safety Helmet

Prevents injury to the head from small falling objects at construction site.



Jacket

Provides better visibility at low visibility construction site.



Rubberized Gloves (CL3)

Prevents injury to the hand from flared edges.



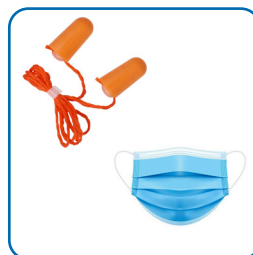
Glasses

Prevents small particles while cutting from entering into the eyes and causing injury.



Safety Shoe

Prevents toe injury due to sharp or obstructive objects laying on the floor.



Safety Gears

Safety masks to protect the contact of mouth droplets, and dust and ear plugs for passive noise cancellation.



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