Facade PRO

Installation Manual
Open Joint System

MITREX™


Mitrex Solar Facade

Table Of Contents

Safety Precautions & Handling Of Modules

The following instructions relate to the safety and intended use of PV modules. Failure to comply with any instructions below may result in PRODUCT DAMAGE, PHYSICAL INJURY AND/OR DEATH.

Manual Disclaimer

The information presented in this manual is subject to change by Mitrex without prior notice. Mitrex gives no warranty of any kind whatsoever, either explicitly or implicitly, with respect to the information herein. In the case of any inconsistency between different language versions, the English version shall overcome and take control in all respects.

- **All electrical connections must be handled by licensed electricians** in accordance with the applicable geographic electrical codes and standards.
- Always use appropriate Personal Protective Equipment when installing PV modules.
- Always use electrically insulated tools to reduce the risk of electric shock.
- The PV module does not contain any serviceable parts.
- Do not attempt to modify or repair any part of the module.
- Perform all work in safe and dry conditions.
- External or artificially concentrated sunlight shall not be directed onto the PV module.
- Do not use or install damaged modules.
- Do not connect or disconnect modules when current from the modules or an external source is present.
- Modules should be stored in a dry and ventilated environment to avoid direct sunlight and moisture.

WARNING: If modules are stored in an uncontrolled environment, the storage time should be less than 3 months and extra precautions should be taken to prevent connectors from being exposed to moisture or sunlight, like using connector endcaps.

- Modules must always be handled and installed by two people.
- Handle the module in a way that avoids breakage, scratching, bending of the glass and backsheet.
- Do not carry the module by its cables.
- Do not stand, step, walk and / or jump on modules under any circumstances.
- Do not drop or place objects (such as tools) on the modules.
- Do not use sharp instruments on the modules.
- Particular care should be taken to avoid module backsheets being damaged by sharp objects, as scratches may directly affect product safety.
- Do not lift modules by their wires or junction box.
- Do not place excessive loads on the module.
- Do not leave modules unsupported or unsecured.
- Keep all connectors clean and dry at all times.
- Do not expose the modules and its connectors to any unauthorized chemical substance (e.g. oil, lubricant, pesticide, etc.).

Limitation Of Liability

Mitrex shall not be held responsible for damages of any kind, including – without limitation – bodily harm, injury or damage to property, in connection with handling PV modules, system installation, or compliance or non-compliance with the instructions set forth in this manual.

Product Certifications

Mitrex products meet and/or exceed the requirements set forth by UL 61730, UL 61215, CSA C22.2 NO. 61730, CSA C22.2 NO. 61215, IEC 61730 and IEC 61215 for PV modules.

These UL, CSA and IEC to be freestanding. To satisfy the listing for this product the modules must be mounted with a rack or standoff structure. The module is considered to be in compliance with UL 61215/61730, CSA 61215/61730 and/or IEC 61215/61730 only when the module is mounted in the manner specified by the mounting instructions contained in this document.

eFacade PRO

eFacade PRO by Mitrex is a high-performance solar facade solution that blends aesthetics with cutting-edge building-integrated photovoltaic (BIPV) technology. This ventilated rainscreen system features an invisible extruded aluminum profile encasing high-efficiency solar cells, paired with a customizable facing available in 48 colors.

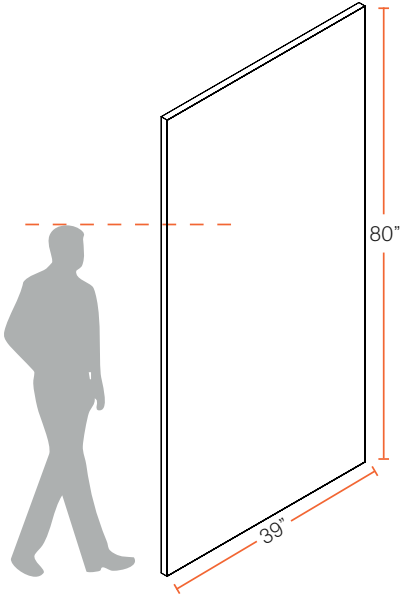
Now available in sizes up to 39×80 inches for optimal cost efficiency, eFacade PRO is engineered for durability, energy performance, and architectural versatility. The facing acts as a design canvas—allowing your building to come to life—seamlessly integrating solar power into your building envelope.

For even more customization, including unlimited sizes, colors, and textures, explore Mitrex eFacade PRO+.

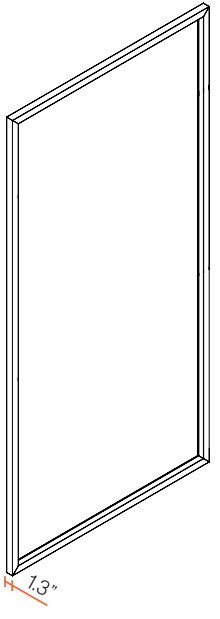
eFacade PRO Backing

eFacade PRO features an aluminum extruded profile as its structural backing, providing a durable, lightweight, and corrosion-resistant foundation for the module system. This precision-engineered profile ensures structural integrity while facilitating easy integration with interlocking channels and anchor plates for secure installation. Its design supports both mechanical performance and long-term durability, making it ideal for high-performance building envelope applications.

Front View



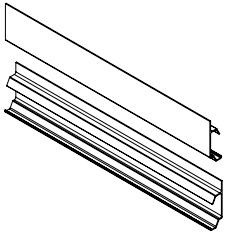
Back View



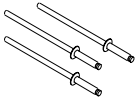
Material Needed

For Interlocking (IL) Channel Installation

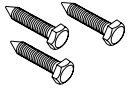
Interlocking Channel



Butterfly Rivets



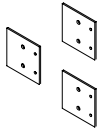
Self-Drilling Screws



Scenario	Attachment Method
Extruded Aluminum Profile to Interlocking Channel	Butterfly rivet 3/16”
Interlocking Channel to Sub-framing	#10 × 3/4” self-drilling hex head stainless steel

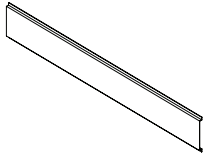
For Anchor Plate (AP) Installation

Anchor Plate

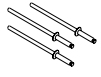


Anchor Plate for Extruded Aluminum Profile

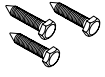
Hat Channel (Optional)



Butterfly Rivets



Self-Drilling Screws



Scenario	Attachment Method
Extruded Aluminum Profile to Anchor Plate	Butterfly rivet 3/16”
Anchor Plate to Sub-framing	#10 × 3/4” self-drilling hex head stainless steel
Hat Channel to Sub-framing	#10 × 3/4” self-drilling hex head stainless steel

Tools Needed

The following tools are required to install Mitrex eFacade PRO.

Impact Tool

Rivet Gun

Hex Socket

Measuring Tape

Level

T-Square Ruler

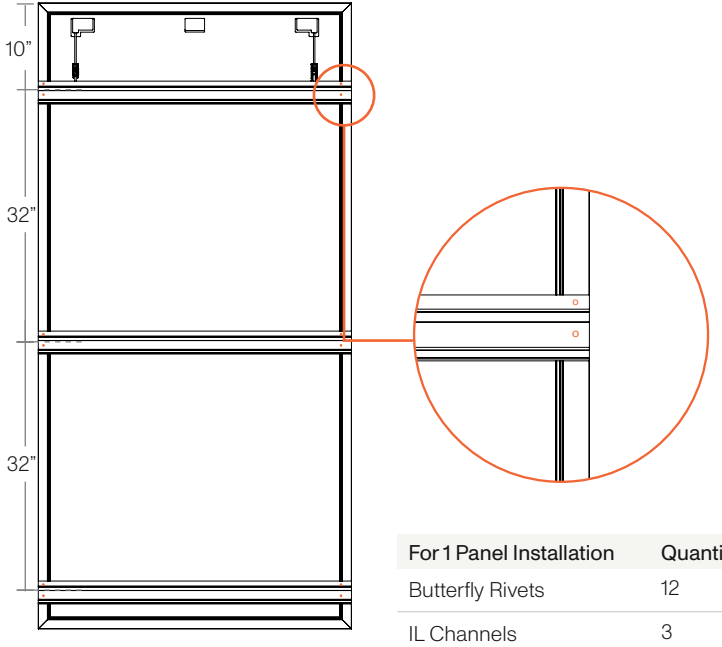
Cloth

Protective Foam

Fastener Information - For a 80” x 39” module

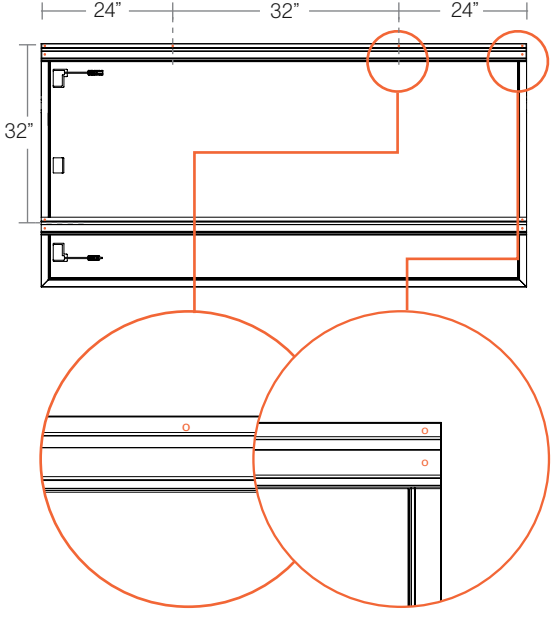
Extruded Aluminum Profile - Interlocking (IL) Channel

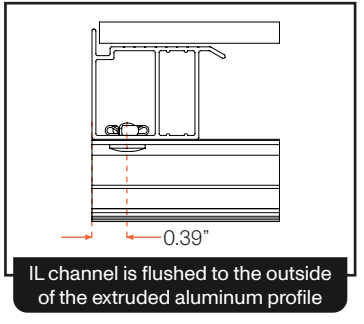
Portrait Installation



For 1 Panel Installation	Quantity
Butterfly Rivets	12
IL Channels	3

Landscape Installation





IL channel is flushed to the outside of the extruded aluminum profile

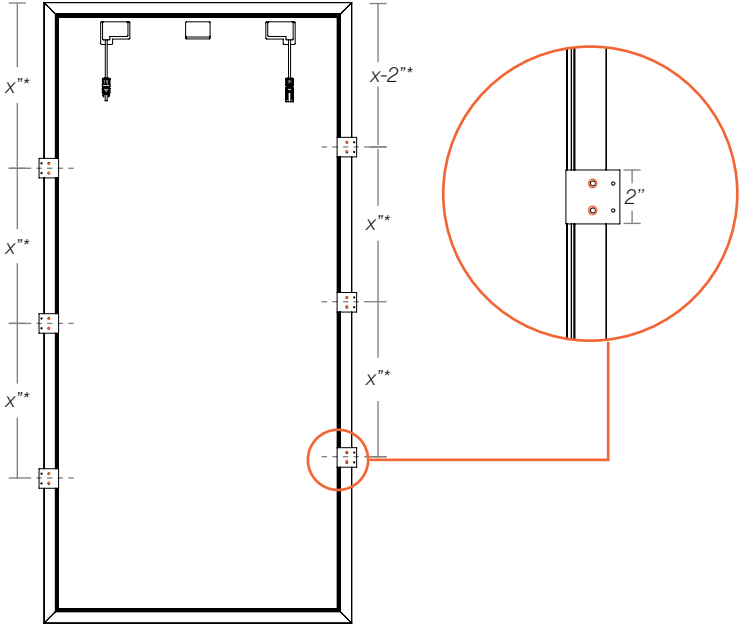
For 1 Panel Installation	Quantity
Butterfly Rivets	10
IL Channels	2

Note: Measurements consider a tolerance of ±0.06”.

Fastener Information - For a 80” x 39” module

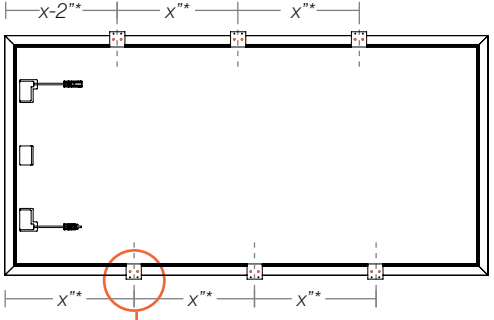
Extruded Aluminum Profile - Anchor Plate (AP)

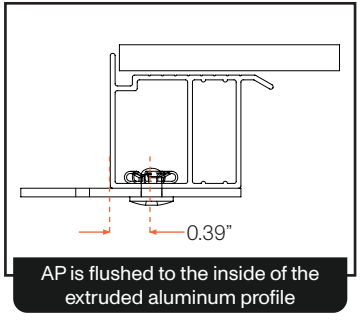
Portrait Installation - Recommended with horizontal sub-framing

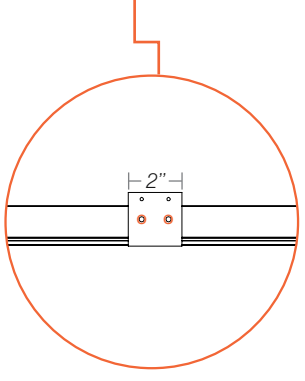


*Anchor plates location should match site sub-framing spacing.

Landscape Installation Recommended with vertical sub-framing







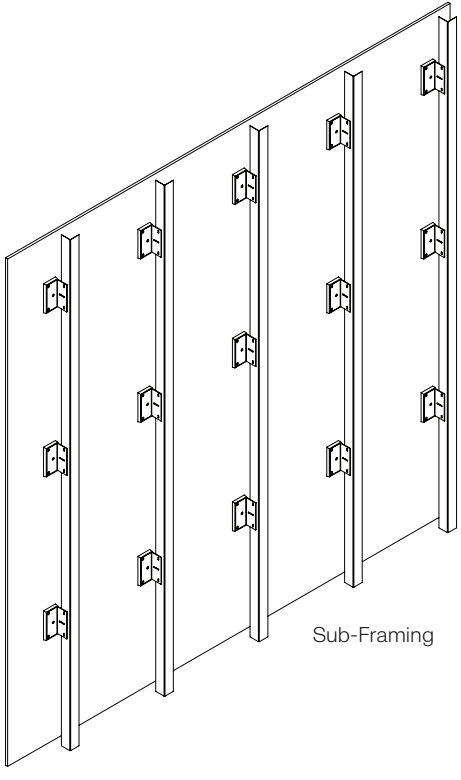
Fastening Material	Quantity
Butterfly Rivets	1 per 2 SQFT
Anchor Plate	1 per 4 SQFT

Note: Minimum 4 anchor plates and 8 butterfly rivets per module.

Product Installation - Extruded Aluminum Profile

Interlocking (IL) Channel

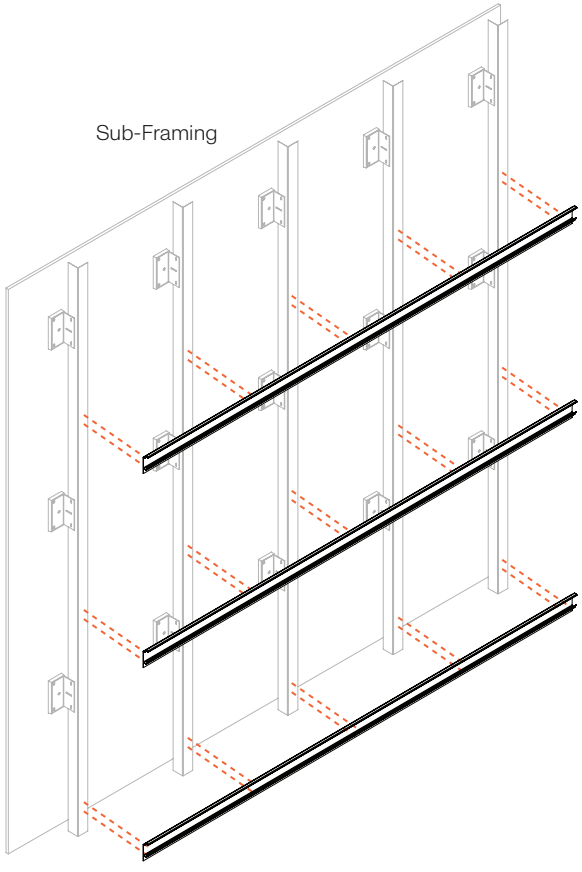
For a 80” x 39” module



Sub-Framing

Portrait Installation
Cladishield system (Sub-Framing)

1. To install Mitrex eFacade PRO with the Cladishield system, the complete sub-framing assembly—including insulation, thermal brackets, and the L-angle structure—must be fully installed beforehand.



Portrait Installation

Prepare the IL channels for the sub-framing attachment

2.

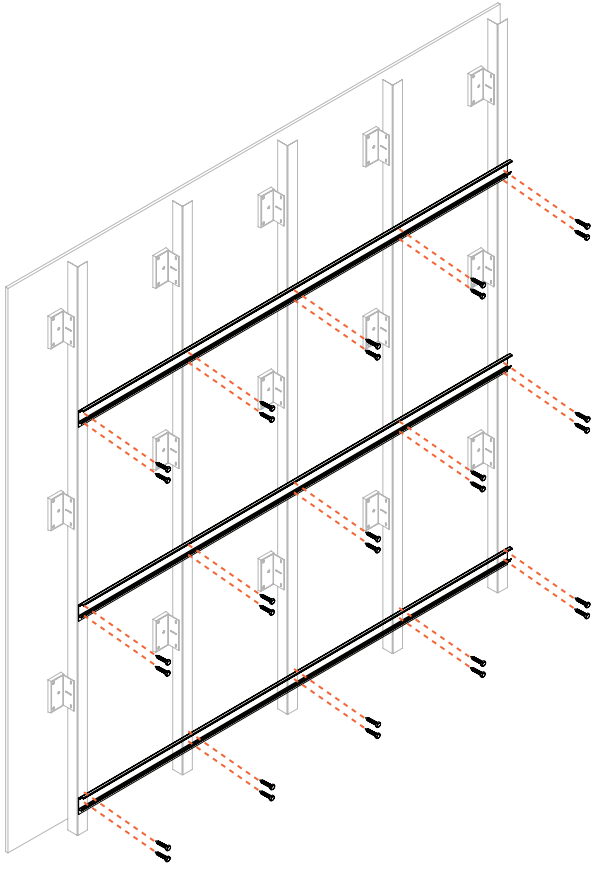
Interlocking (IL) Channel

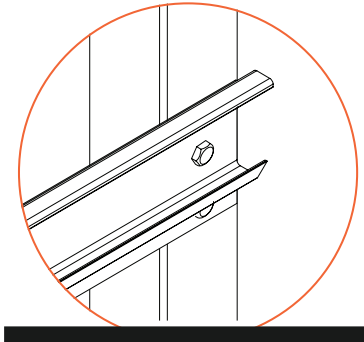
Measuring Tape

T-Square Ruler

Measure the attachment points for the IL channels on the L-angle structure, ensuring proper spacing based on the location of the interlocking channels on the panel. Refer to page 10 for guidance.

Mark the interlocking channel at the points where the screws will be secured. Ensure the interlocking channels are properly aligned with the L-angle structure, and that all screw holes correspond accurately.





Detail IL channel secured with screws

Portrait Installation

Attach the interlocking channels in the L-angle.

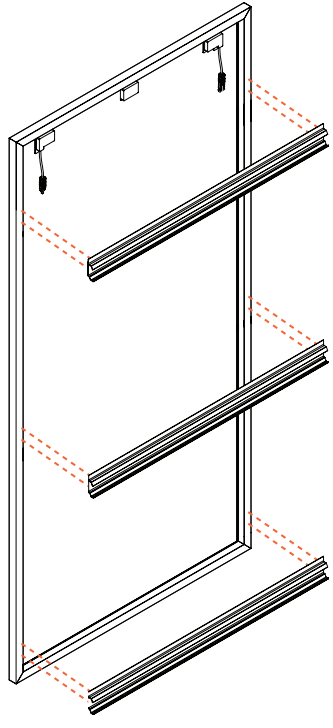
3.

Self-drill Screw

Impact Tool

Hex Socket

Screw the interlocking channels into the L-angle structures



Portrait Installation

Prepare the interlocking channels for the module.

4.

Interlocking (IL) Channel

Measuring Tape

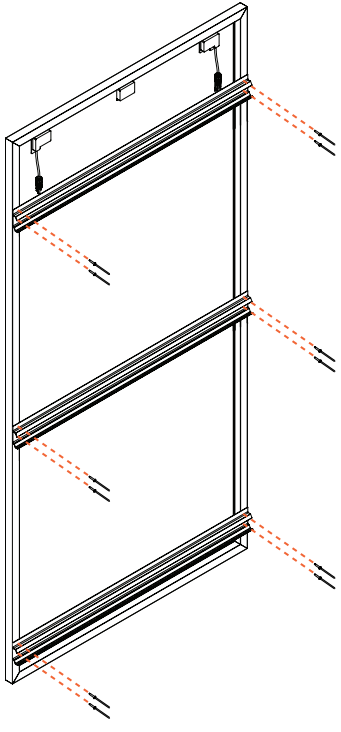
T-Square Ruler

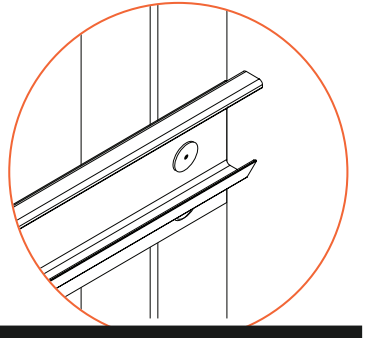
Protective Foam

Mark the interlocking channels and the extruded aluminum profile with the place where the rivet will be secured. Ensure you follow the correct measurement. Check page 10.

Make sure that you lay the module on a protective foam to ensure it does not get damaged.

NOTE: For landscape module installation, follow the same steps, utilizing the measurements for the landscape module (found on page 10).



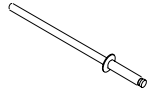


Detail IL channel secured with rivets

Portrait Installation

Fasten the interlocking channels to the modules.

5.



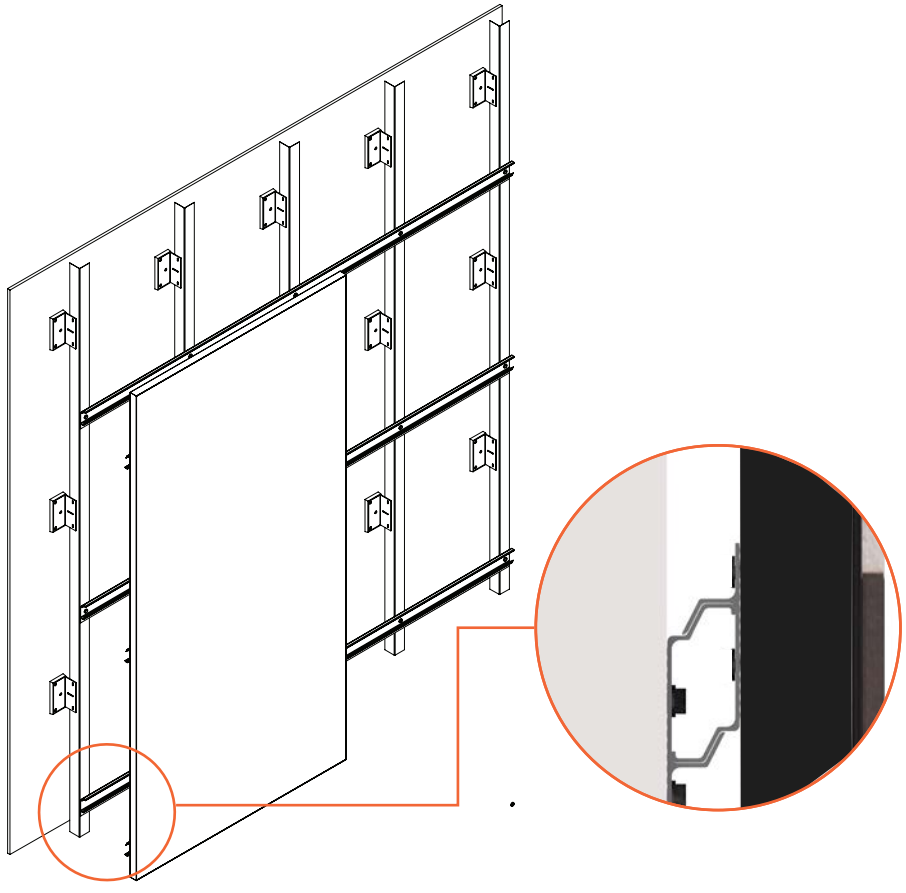
Butterfly Rivet

Rivet Gun

Fasten the interlocking channels into the module with the butterfly rivets.

NOTE: For landscape module installation, follow the same steps, utilizing the measurements for the landscape module (found on page 10).

Ensure that you install **one butterfly rivet** for every 2 SQFT of surface area.



Portrait Installation
Mounting of the module.

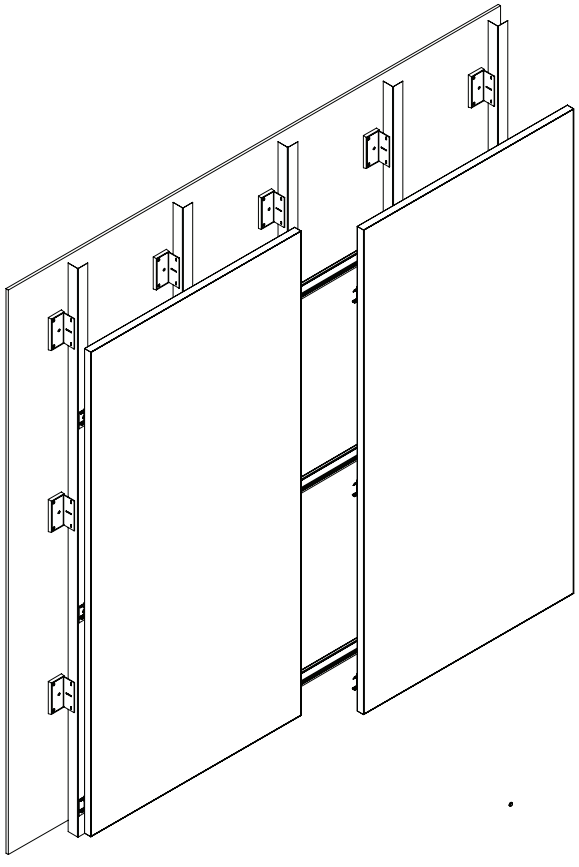
6.

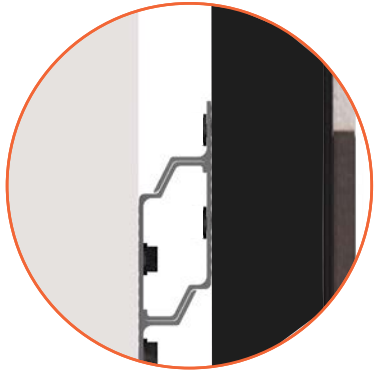
Cloth

Mount the module onto the sub-framing by hooking the module channels onto the interlocking channels on the sub-framing. Ensure the modules are cleaned of dirt and dust.

WARNING: Ensure each solar module is grounded. Work with a certified electrician.

NOTE: For landscape module installation, follow the same steps, utilizing the measurements for the landscape module (found on page 10).

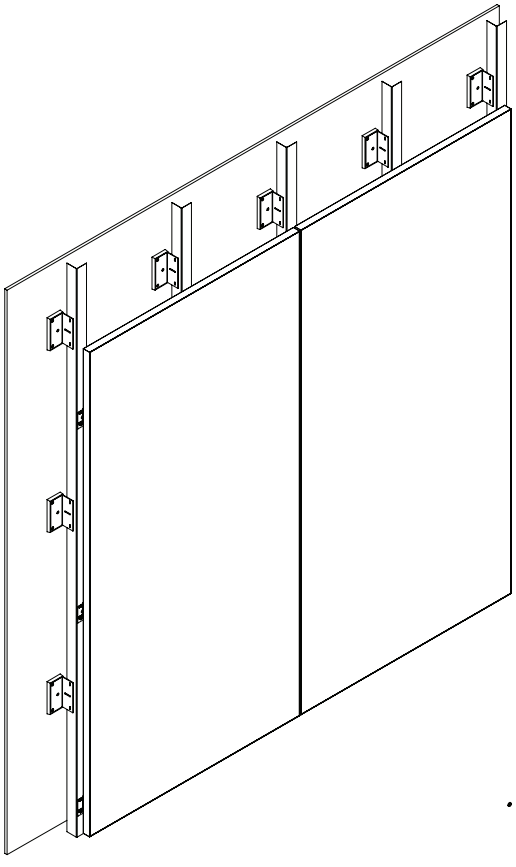




Portrait Installation
Installing more modules

7. Repeat steps 1-6 for all remaining panels.

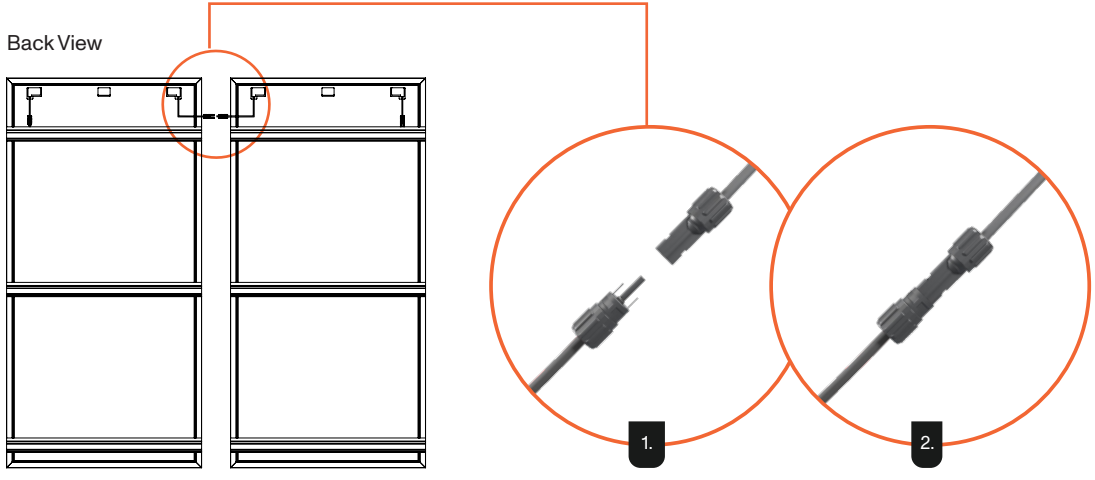
NOTE: For landscape module installation, follow the same steps, utilizing the measurements for the landscape module (found on page 10).



Portrait Installation
Power Connection

8. Make sure to connect the wires in a sequence and based on a string layout with a certified installer.

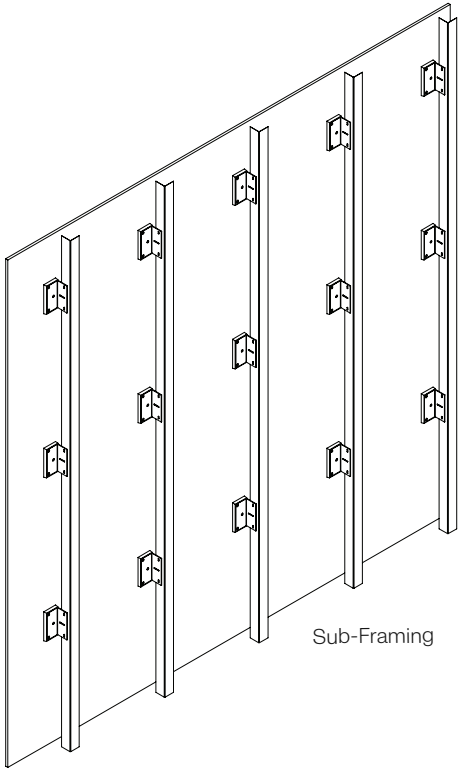
Back View



Product Installation - Extruded Aluminum Profile

Anchor Plate (AP) (Landscape installation recommended)

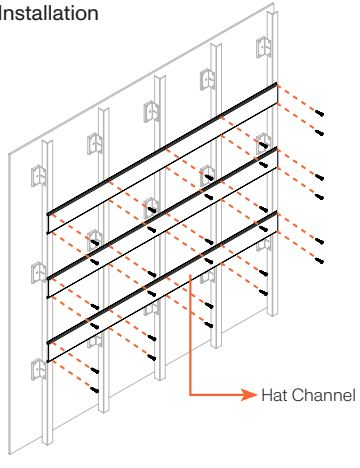
For a 80” x 39” module



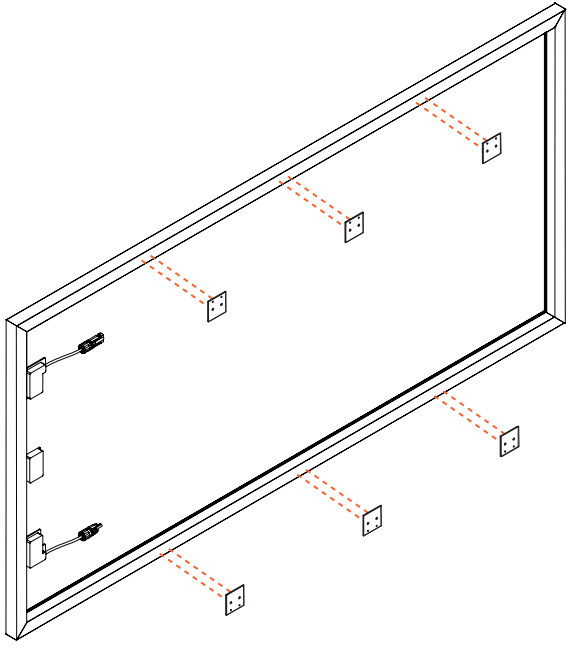
Lanscape Installation
Cladishield system sub-framing

1. To install Mitrex eFacade PRO with the Cladishield system, the complete sub-framing assembly—including insulation, thermal brackets, and the L-angle structure—must be fully installed beforehand.

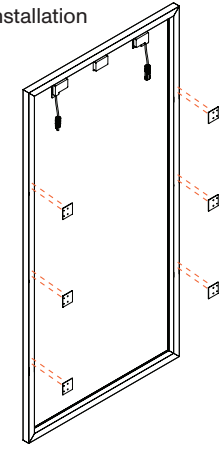
Portrait Installation



Attach the hat channel onto the sub-framing by screwing it in the L-angle. Ensure the hat channels are aligned with the L-angle.



Portrait Installation



Lanscape Installation

Prepare the anchor plate for the module.

2.

Anchor Plate (AP)

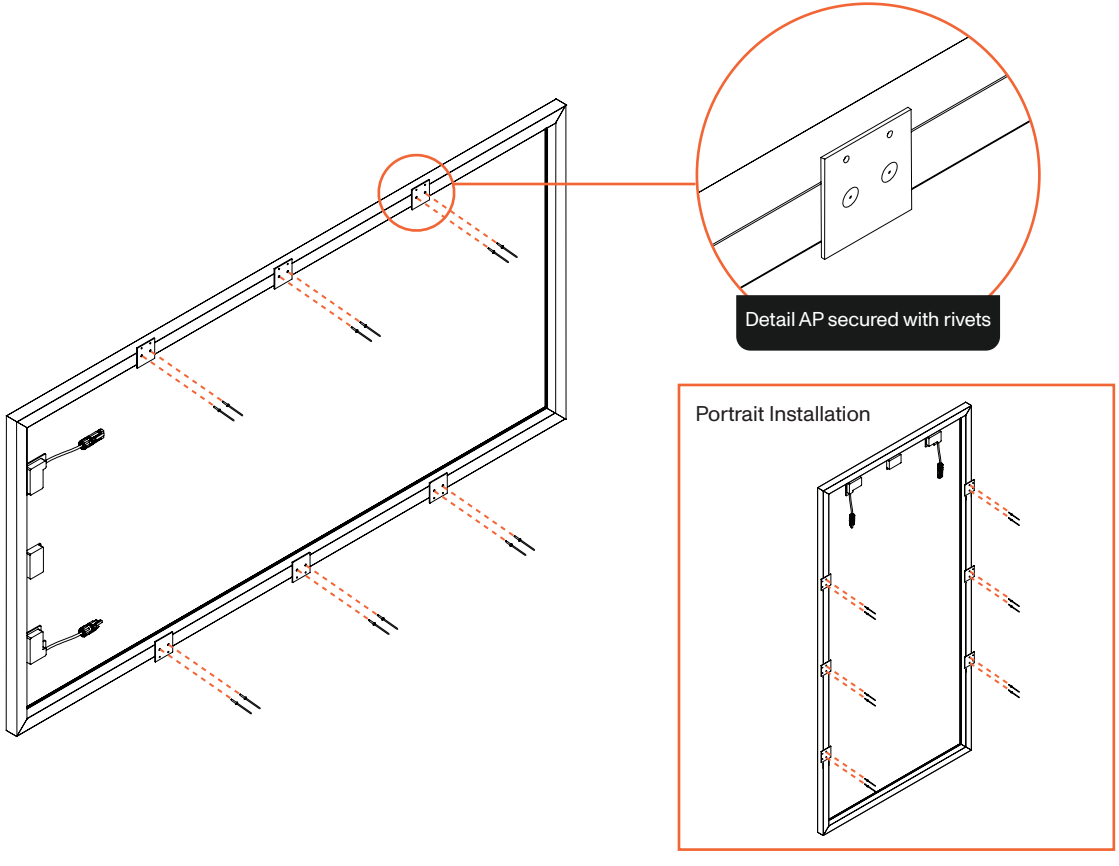
Measuring Tape

T-Square Ruler

Protective Foam

Mark the anchor plate and the extruded aluminum profile with the place where the rivet will be secured. Ensure the anchor plates are aligned with the sub-framing.

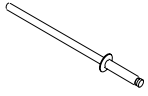
Make sure that you lay the module on a protective foam to ensure it does not get damaged.



Lanscape Installation

Attach the anchor plate to the modules.

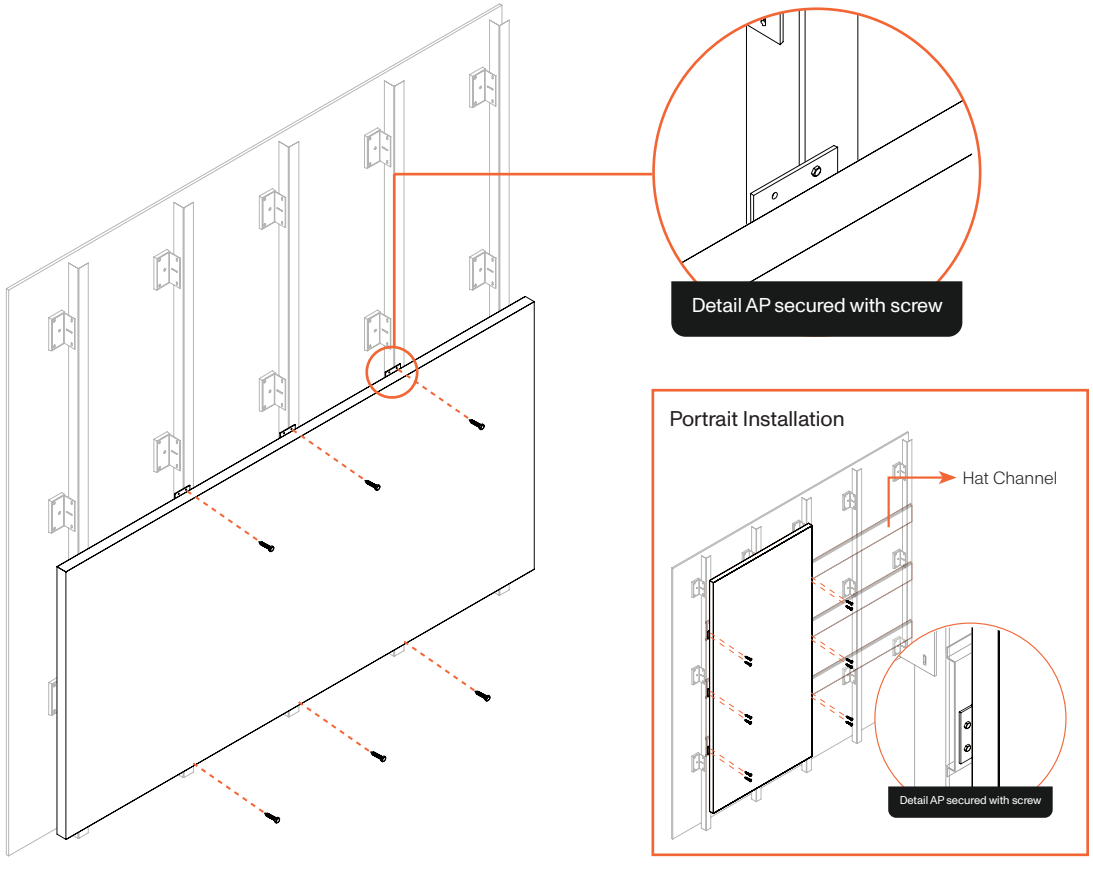
3.



Butterfly Rivet

Rivet Gun

Fasten the anchor plate into the module with the butterfly rivets.



Lanscape Installation
Mounting of the module.

4.

Self-drill Screw

Impact Tool

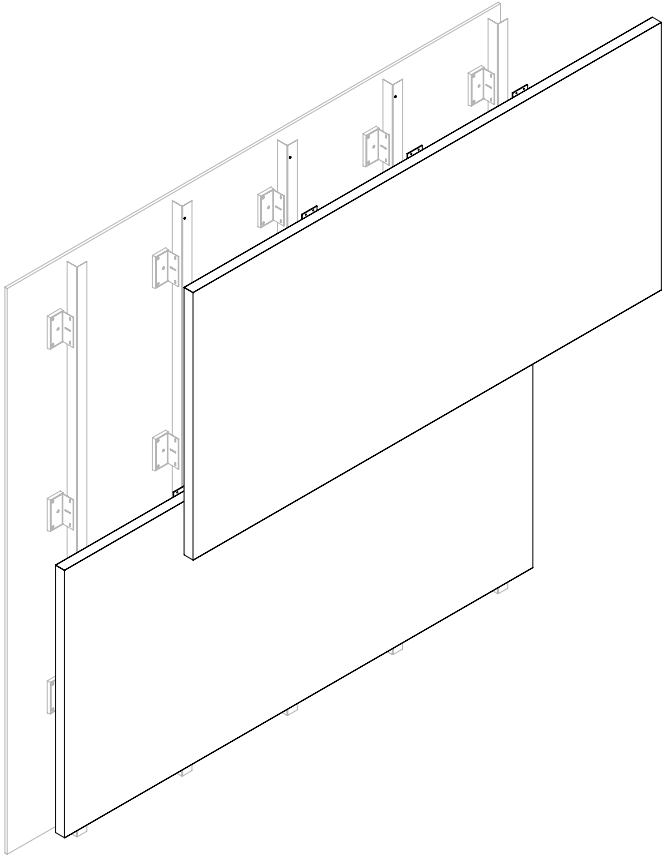
Hex Socket

Cloth

Mount the module onto the sub-framing by screwing the module anchor plate onto L-angle. Ensure the modules are cleaned of dirt and dust.

WARNING: Ensure each solar module is grounded. Work with a certified electrician.

NOTE: For portrait module installation, the installation of hat channels is required. After this, follow the same steps, utilizing the measurements for the portrait panels (found on page 11).

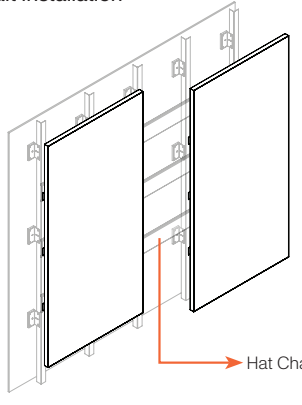


Lanscape Installation
Installing more modules.

5. Repeat steps 1-6 for all remaining panels.

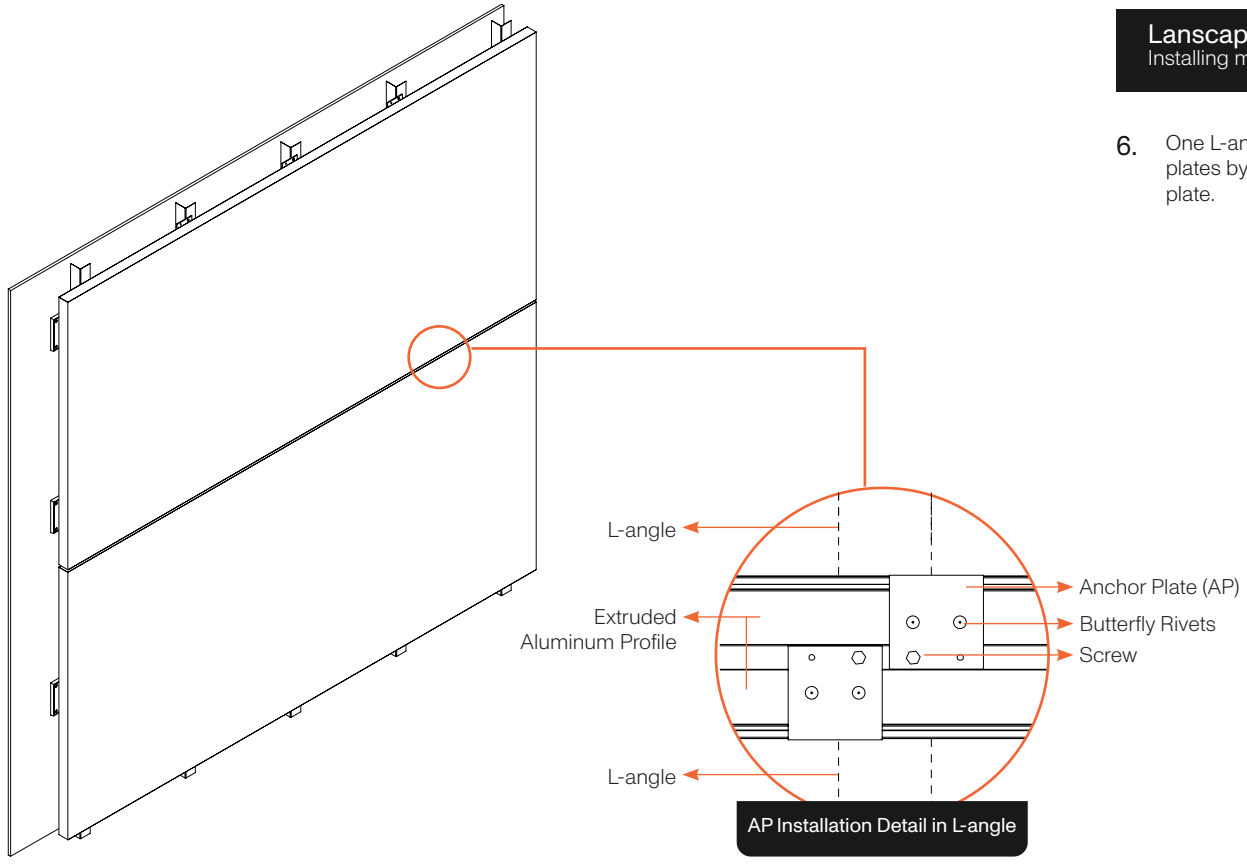
NOTE: For portrait module installation, the installation of hat channels is required. After this, follow the same steps, utilizing the measurements for the portrait panels (found on page 11).

Portrait Installation

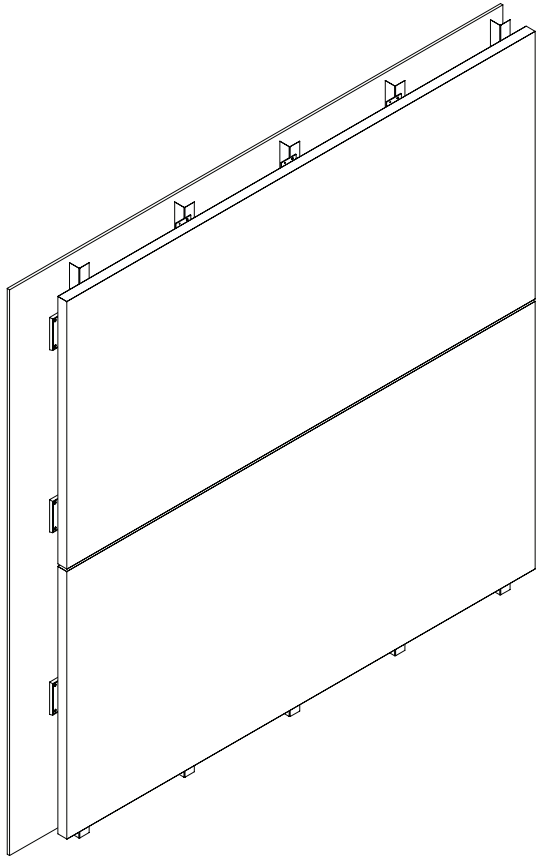


Lanscape Installation
Installing more modules.

6. One L-angle shares positioning with 2 anchor plates by screwing only one side of the anchor plate.



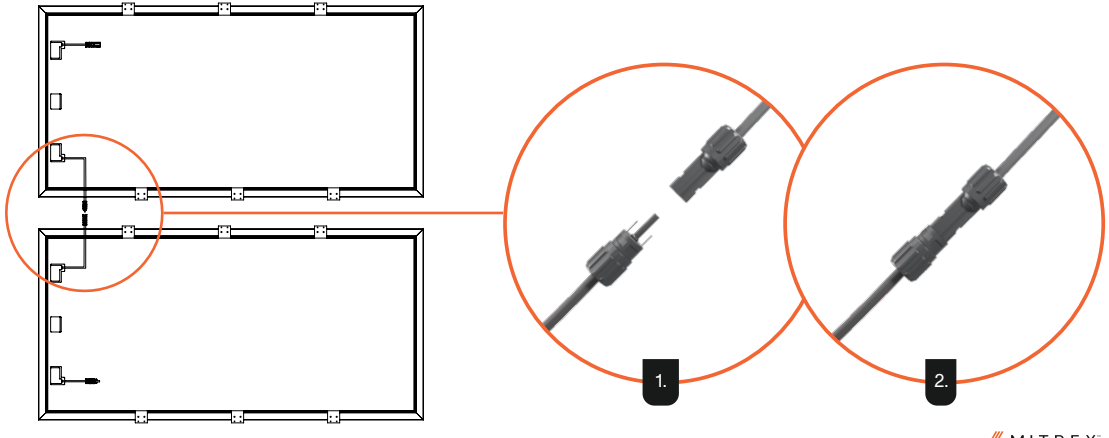
AP Installation Detail in L-angle



Lanscape Installation
Power Connection

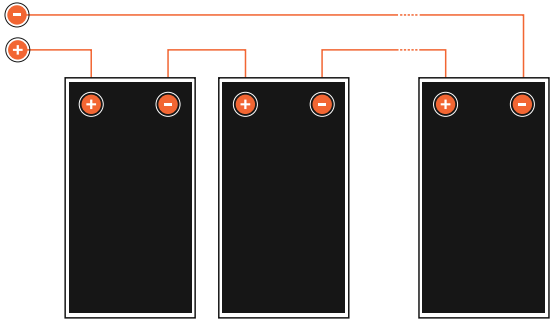
7. Make sure to connect the wires in a sequence and based on a string layout with a certified installer.

Back View



Electrical Installation

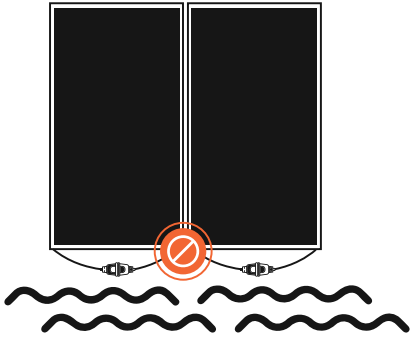
WARNING: Ensure correct polarity when connecting PV modules.



Make sure that all connections are safe and properly mated. An audible click should be heard when mating connectors. The PV connector should not be subjected to stress from the exterior. Connectors should only be used to connect the circuit. They should never be used to turn the circuit on and off.

Connectors are not waterproof when unmated. When installing modules, connector should be connected to each other as soon as possible or appropriate measures should be taken to avoid moisture and dust penetrating into the connector.

Ensure that plug connections are secured away from any water-accumulating surfaces. Use UV-resistant cable ties to secure cables to the mounting system. Cables should avoid exposure to direct sunlight.



Only use dedicated solar cable and suitable connectors (wiring should be sheathed in a sunlight-resistant conduit or, if exposed, should be sunlight-resistant itself) that meet local fire, building and electrical regulations. Please ensure that all wiring is in perfect electrical and mechanical condition.

WARNING: Ensure cabling is adequately protected from direct sunlight, dirt, debris, moisture, and mechanical friction.

General Wiring Requirements

- Mitrex recommends that all wiring be double insulated with a minimum rating of 90°C (194°F).
- All wiring should use a flexible copper conductor.
- Minimum size should be determined by applicable codes.
- Mitrex recommends a minimum size of 10AWG.

PV Connection

- All Mitrex eFacade PRO modules are connected via MC4 connectors.

Series Connection

- The eFacade PRO modules may be wired in series to produce the desired voltage output.
- The current of each module connected in series should be the same.

- The maximum PV system voltage for that circuit shall be calculated as the sum of the rated open-circuit voltage of the series-connected PV modules corrected for the lowest expected ambient temperature.

Parallel Connection

- The solar modules may be combined in parallel to produce the desired current output.
- When modules are combined in parallel, the total current is equal to the sum of currents from each module.
- The voltage of each module connected in parallel should be the same.
- When connecting plural strings of modules in parallel every series string or solar module must be fused prior to combining with other strings.
- Abide with all applicable federal, state, and local codes for additional fusing requirements and limitations on the maximum number of solar modules in parallel.
- Depending on national directives, additional safety factors might be applicable for over current protection.

Note: A multiplying factor is required for increased output of the PV modules. Under normal conditions, a PV module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions.

The requirements of the National Electrical Code (NEC) in Article 690 shall be followed to address these increased outputs. In installations not under the requirements of the NEC, the values of Isc and Voc marked on this PV module should be multiplied by a factor of 125% when determining component voltage ratings, conductor ampacities, fuse sizes, and size of controls to the PV output.

Electrical Grounding

- All work must be conducted in conformance with all Federal, State, and local codes and standards.
- Grounding connections should be performed by a qualified electrician for the safety and maintenance of the system in accordance with all national, state and local electrical codes and regulations and standards.
- All relevant hardware should be made of stainless steel, unless otherwise specified.

WARNING: Where common grounding hardware (nut, bolts, washers) is used to attach a listed grounding device, the attachment must be made in conformance with the grounding device manufacturer's instructions.

- Connect the extruded aluminum profile of the modules together using adequate grounding cables: Mitrex recommends using 14 mm^2 (AWG 6) copper wire.
- A module with exposed conductive parts is considered to be in compliance with UL only when is electrically grounded in accordance with the instructions presented below and the requirements of the National Electrical Code.

WARNING: Any parts of the aluminum honeycomb at the back of the module can be used as a grounding point of connection.

Site Considerations

Mitrex eFacade PRO modules should be mounted in a location that meets the following requirements.

- The module is intended for use in general open-air climates, as defined in IEC 60721-2-1 Classification of environmental conditions Part-2-1: Environmental conditions appearing in nature - Temperature and humidity.
- Please consult the Mitrex technical support department for more information on the use of modules in special climates, such as an altitude greater than 2000m.
- Do not operate solar modules near highly flammable substances.

- Modules should be installed as to minimize shading.
- Note the operating temperature listed in page 35.
- Exposing modules to salt (i.e. marine environments) or sulfur (i.e. sulfur sources, volcanoes) incurs the risk of module corrosion. Special considerations should be made for installations with increased salt content in the air.
- Do not expose modules and their connectors to any unauthorized chemical substances (e.g. oil, lubricant, pesticide, etc.), as modules may incur damages.
- Do not install modules in an enclosed space.
- Failure to comply with these instructions will void Mitrex limited warranty.

Module Mounting

- The mounting design must be certified by a registered professional engineer. The mounting design and procedures must comply with all applicable local codes and requirements from all relevant authorities.
- PV modules should be oriented to maximize sunlight exposure.
- The fire rating of this module is valid only when mounted as specified in the mechanical mounting instructions.
- The PV module is considered to be in compliance with UL61730 only when the module is mounted in the manner specified by the mounting instructions.

Warranty

Mitrex eFacade PRO modules physically last the lifetime of the building and beyond as a building envelope product.

The warranty guarantees that the energy generation will have a minimum energy output of 80% by year 25. However, energy generation will continue after the warranty period ends for as long as the panels are on the wall.

Mitrex lifetime warranty ensures reliable, durable facades as the panels require minimal maintenance and there is zero panel replacement needed for the building lifetime.

If you have any questions or are experiencing issues with your eFacade PRO modules, Please reach out us at:

Phone Number: +1 (416) 497 7120
Email: warranty@mitrex.com

Or visit our website for more information www.mitrex.com

Appendix

Technical Specifications

List of mechanical and electrical technical specifications. Electrical test data as per standard test conditions (IEC 60904-3).

For 1 Panel Installation	Solar Facade
Length (mm)	2034 (80")
Width (mm)	994 (39.1")
Thickness (mm)	34 (1.3")*
Weight (kg)	36 kg
Max System Voltage (V SYS)	1000 V
Voltage At Short-Circuit (Voc)*	48.3 V - 48.8 V
Voltage At Short-Circuit (Isc)*	6.66 A - 8.32 A
Max Power (Pmax)*	250 W - 320 W
Voltage At Max Power (Vmax)*	42.7 V - 41.9 V
Current At Max Power (Imax)*	5.85 A - 7.64 A
Max Overcurrent Protection Rating	20 A
Operating Temperature °C	-40 To +85
Junction Box Protection Class	≥ IP67
Connector Protection Class	IP68
Application	Class A

Under normal conditions, a photovoltaic module is likely to experience conditions that produce higher current and/or voltage than reported at standard test conditions.

Accordingly, the values of Isc and Voc marked on this PV module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor current ratings, and size of controls (e.g. inverter) connected to the PV output.

Temperature correction coefficients for Voc, Isc, Pmax

Temperature Coefficient	All Above Modules
Temperature Coefficient (Voc)	-0.27 %/ °C
Temperature Coefficient (Isc)	-0.036 %/ °C
Temperature Coefficient (Pmax)	-0.36 %/ °C

* Range depending on the pattern of the panel.

A more accurate correction factor can be calculated using the equation below:

$$C = 1 - \boldsymbol{\alpha} \times (25 - T)$$

C: Correction factor
T (°C): Ambient temperature
α (%/°C): Temperature coefficient of the selected module

Electrical sizing and design must be performed by a competent engineer.

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