

# FLUSHMOUNT<sup>®</sup>

TILTED ROOF MOUNTING SYSTEM



# FLUSHMOUNT<sup>®</sup> RESIDENTIAL MOUNTING SYSTEM



## FLUSHMOUNT<sup>®</sup> EXTRUSION



### Uniform, engineered design

Opsun's proprietary FlushMount<sup>®</sup> mounting solution introduces an aesthetical, fully-engineered commercial technology to the residential market.

- Designed to create a sleek, uniform visual appearance that blends with its environment.
- Opsun's FlushMount<sup>®</sup> extrusion composes the entire system.
- Panels are supported by the horizontal rails themselves and are locked into place by a full-length top rail.
- Highest amount of aluminum per Watt in the market, for similar designs.

## FLEXIBLE LAYOUT



### Maximize roof coverage

Every aspect of Opsun's FlushMount<sup>®</sup> is designed to help installers achieve better installations with more panels on any roof.

- Horizontal rails allow to shift each row of panels left and right independently, allowing to fit more panels on odd-shaped roofs.
- Panels can be seamlessly spaced apart or omitted from any part of the array to avoid obstacles and optimize string sizing while maximizing roof coverage.
- High flexibility of the system allows installer to adapt the design of the mounting system at the last minute, on the roof if necessary.
- Compatible with most other standing seam roof fixtures and other flashings.

## HEAT EVACUATION



### Designed to stay cool

The operating temperature of a solar system dramatically affects performance.

The Opsun's FlushMount<sup>®</sup> system is optimized for maximum heat evacuation and air cooling.

- Air gap up to 8.5 inches between the roof and panels allows air to flow freely underneath the system.
- System allows to add narrow or large gaps in the array to facilitate heat evacuation and maintenance.



### EASY INSTALLATION

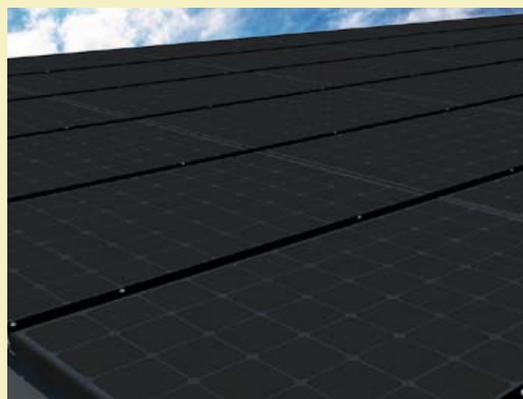


#### Completely intuitive

Opsun's FlushMount® is extremely simple and flexible, making it a product of choice for an easy DIY installation.

- Fast and seamless installation with few different components for an experience without hiccups.
- Roof fixtures allow up and down adjustments to ensure a level installation, even when the roof is uneven.
- Channels along the rails allow precise adjustments and compensate for slight inaccuracies in fixture placement.
- Proper sealing on each flashing is ensured by Opsun's adhesive membrane, or silicone caulking and self-sealing stainless steel washers with bonded EPDM rubber seals.

### BIPV : ROOF AND WALL



#### Simple and effective

Opsun's FlushMount® can be easily sealed and provide a BIPV roof or wall.

- Rails act as a structure, replacing a wall or a roof.
- Several adjustment possibilities allow for an elegant uniform design.
- Very versatile, the Opsun FlushMount® can seamlessly adapt to a wide array of projects.
- Black anodization creates an elegant, uniform visual appeal.

### DESIGN AND AESTHETICS

- System can be anodized on demand in black, clear or colour.
- Top-grade aluminum components are durable and look great for a long time.
- Top rails hide the gap between rows of panels, prevent debris accumulation and help snow slide down the array.

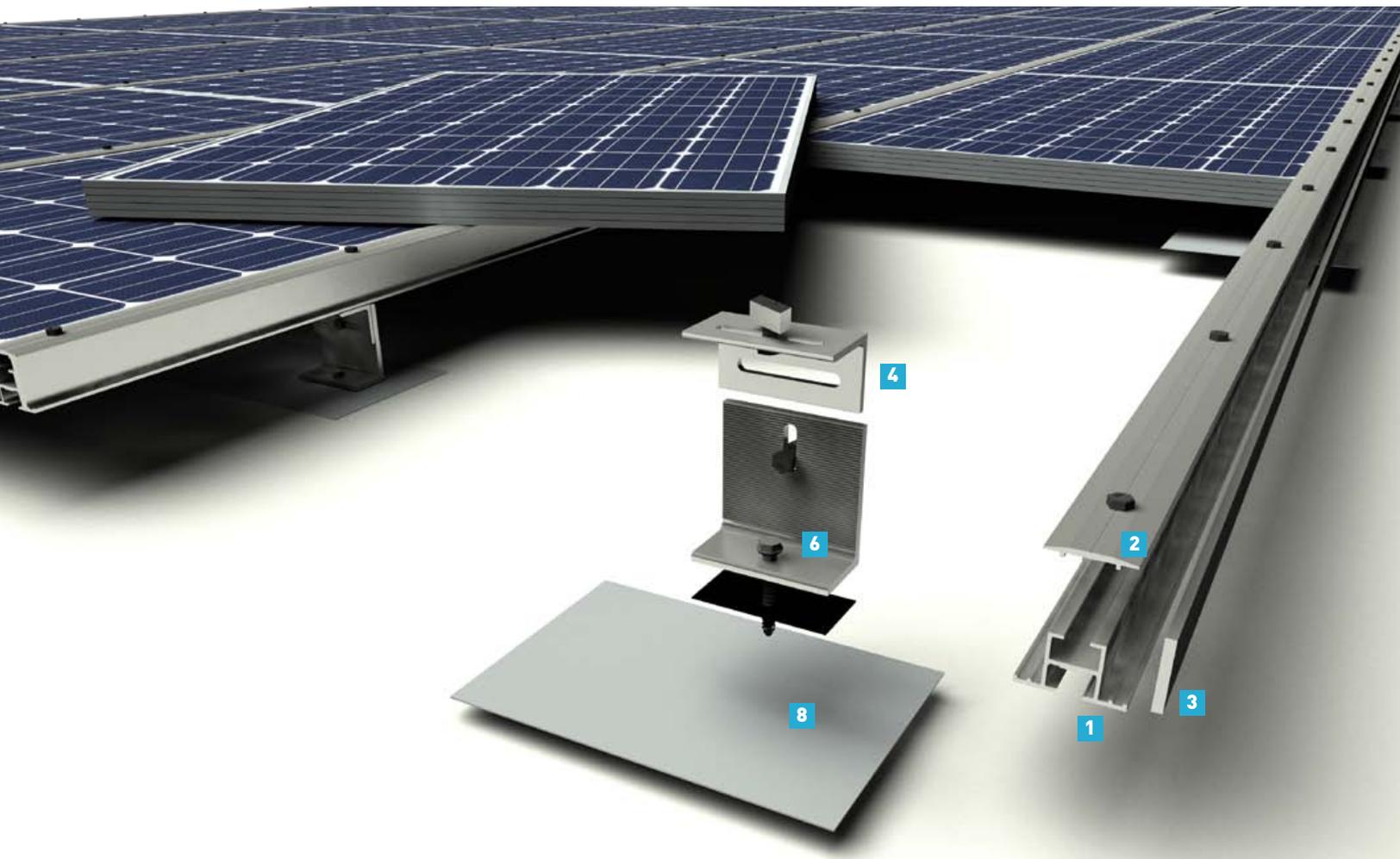
#### Form meets function

Homeowners who install a solar system on their roof expect performance, limited maintenance and neat visual appearance, but most importantly they expect flawless operation for many years.

The Opsun FlushMount® is designed to be easy to install, visually appealing, high performance and very low-cost.

**Conforms to most Building Code.**

# FLUSHMOUNT® RESIDENTIAL MOUNTING SYSTEM



## SPECIFICATIONS

- Structural engineer stamped.
- Made in Ontario to meet OPA domestic content requirement.

**Typical weight per surface:** Mounting only: 2-4 kg/m<sup>2</sup> (0.4-0.8 lb/ft<sup>2</sup>)  
With PV: 12-15 kg/m<sup>2</sup> (2.5-3.0 lb/ft<sup>2</sup>)

Bottom rail weight: 1.408 kg per meter  
Top rail weight: 0.612 kg per meter

Panel layout: Landscape and portrait  
PV panel compatibility: Any panel with a 38-50mm frame  
Maximum rail length: 24ft

Rail material: 6005-T5 aluminium with mill finish  
Clamp material: 6005-T5 and 6061-T6 aluminum  
Bolt material: Stainless steel  
Finish: Mill finish or anodised (black or color)

Maximum wind load: 130mph  
Panel height from roof: Up to 8.5" air gap  
Contact surface: Flashing and adhesive membrane

## Required Tools

- 9/16 socket wrench
- Impact drill
- 5/16 socket wrench for drill
- Number 19 drill bit
- Heavy duty cutter
- Trestles
- Chopsaw with aluminum blade

COMPONENT LIST



**OPSUN FLUSHMOUNT™**

All ordered clamps come with their respective bolts and locks.  
 Roof fixtures come with pre-applied adhesive membrane.

- |           |                      |   |
|-----------|----------------------|---|
| <b>1</b>  | <b>FM-R-18ft</b>     | FM (FlushMount) rail                        |
| <b>2</b>  | <b>FM-TR-18ft</b>    | FM top rail                                 |
| <b>3</b>  | <b>FM-ER50</b>       | FM End Row Plate; 50mm                      |
| <b>4</b>  | <b>SRL-AC1</b>       | Flush mount fixture; type 1                 |
| <b>5</b>  | <b>SRL-AC2</b>       | Flush mount fixture; type 2                 |
| <b>6</b>  | <b>SRL-AC4T</b>      | Flush mount fixture; type 4T                |
| <b>7</b>  | <b>SRL-AC6T</b>      | Flush mount fixture; type 6T                |
| <b>8</b>  | <b>SRL-RL5</b>       | SRL Rail Link; Type 5                       |
| <b>9</b>  | <b>SRL-FL1</b>       | Aluminum flashing (8"x12")                  |
| <b>10</b> | <b>LB-SS-5/16-4</b>  | Lag bolt with self-sealing washer           |
| <b>11</b> | <b>BL-SS-0.75</b>    | Stainless steel 3/4" bolt with Loctite      |
| <b>12</b> | <b>BL-SS-1</b>       | Stainless steel 1" bolt with Loctite        |
| <b>13</b> | <b>LN1-SS</b>        | Stainless steel lock nut                    |
| <b>14</b> | <b>SDS-SS-12-1in</b> | Stainless steel self drilling screw 12 x 1" |
| <b>15</b> | <b>OPS-M1</b>        | Opsun sealing membrane                      |

## OPSUN CLICLOC<sup>®</sup>



### SAVE MONEY AND TIME

Integrated grounding is the future. Opsun now has a fully custom ClicLoc that makes grounding a simple, easy task.

- **UL and CSA** approved
- **Clicks** on the rail and slides into place
- **Completely grounds** the panel to the rail
- **One piece** serves as both the clamp and the grounding solution
- **Fully tested** to be as strong as all other Opsun components
- **One tool** fixes into place
- **Requires less copper** conductor overall

### OPSUN WEEBS ALSO AVAILABLE

The Opsun WEEB brings many benefits to a mounting system, while being low-cost:

- **UL and CSA** approved
- **Engineered** for outdoor use over long periods of time
- **Prevents** galvanic corrosion
- **Requires less copper** conductor overall
- **Easy to use**



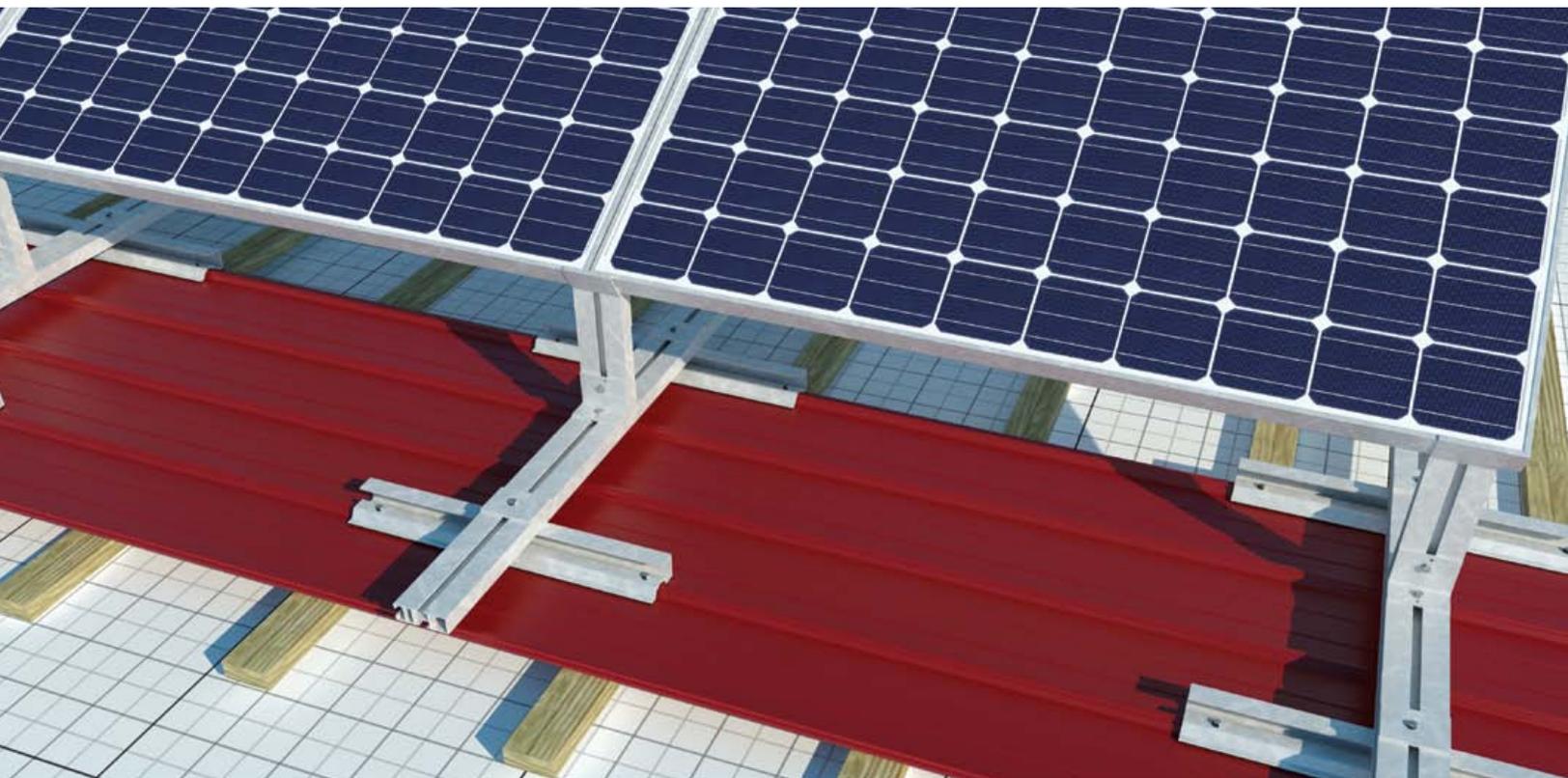
### Project success with three simple steps.

1. Obtain full engineering support
2. Install solid, structural rails
3. Fasten panels with self grounding clamps

Accomplish reliable results fast and at a low cost

\*ClicLoc is a Trademark from Fath PV Tech inc.

# TOTAL ENGINEERING SUPPORT



## FLEXIBLE DESIGN

Opsun does not only sell a product: each project is tailored to fit on the ground or on any structure perfectly. Optimal layout and configuration of the mounting system is determined by an engineer and a custom solution is proposed.

- **Engineers** are appointed to work on each design, customizing it to the needs of the client.
- **Electrical string design** can be done by our engineers to optimize electrical wiring.
- **Accurate configuration drawings** of the array are done and are supplied with each quote, assuring clear visual presentation of the custom design.

## FULL ENGINEERING SUPPORT

Our engineers work extensively on each project to perform all the work required to certify that the system will meet any legal or engineering standards. Plans that Opsun supply are virtually the only ones required to construct a project.

- **Simulations and engineering calculations** are performed by engineers to verify the structural integrity of the system. Wind tunnel tests are used to validate that ballast calculation is compliant with the Building Code.
- **Supplied plans are ready for engineer stamping.** Opsun's plans contain almost every element required to obtain a building permit, streamlining the process, saving time and avoiding costs. Fully stamped plans can even be supplied upon request.
- **Project-specific technical drawings** with precise measurements to facilitate installation are supplied, reducing on-site costs, avoiding unexpected issues and limiting any risks to a minimum.
- Opsun's total service is a company vision, so its always **free!**

## KNOWLEDGE IS POWER

Opsun's staff is comprised of solar energy experts. We can accompany any developer through the whole process of creating a solar power plant. Our team is skilled in:

- Rapid estimation of the PV potential of a site.
- 3D rendering for astonishing project presentations.
- PVSyst simulations and projections of electricity generation.
- Optimization of system efficiency.
- Geolocalization tools can be used to assess shading issues and to quickly determine building characteristics.
- Feasibility assesment.

## TECHNICAL SOLUTIONS

Opsun's technological innovations are customer demand-driven. Opsun's well-developed solutions to structural challenges increase the range of feasible projects.

Ask us a custom solution, and we will design it for you!

Examples of specialized applications:

- Building Integrated Photovoltaics (BIPV).
- Tilt panels on a sloped roof.
- Installation of panels on a low-pitched East-West roof.
- Minimizing ballasting, but still avoid using anchors.

## INSTALLATION SUPPORT

Opsun's engineering staff is expert on everything related to solar equipment and the installation of a solar power plant.

Call us and we will lend you a hand:

- Training of installation teams and maintenance staff.
- Coaching of early installations to ensure flawless execution.
- Expert, personalized phone support for technical assistance during installations to help resolve issues when they arise.