

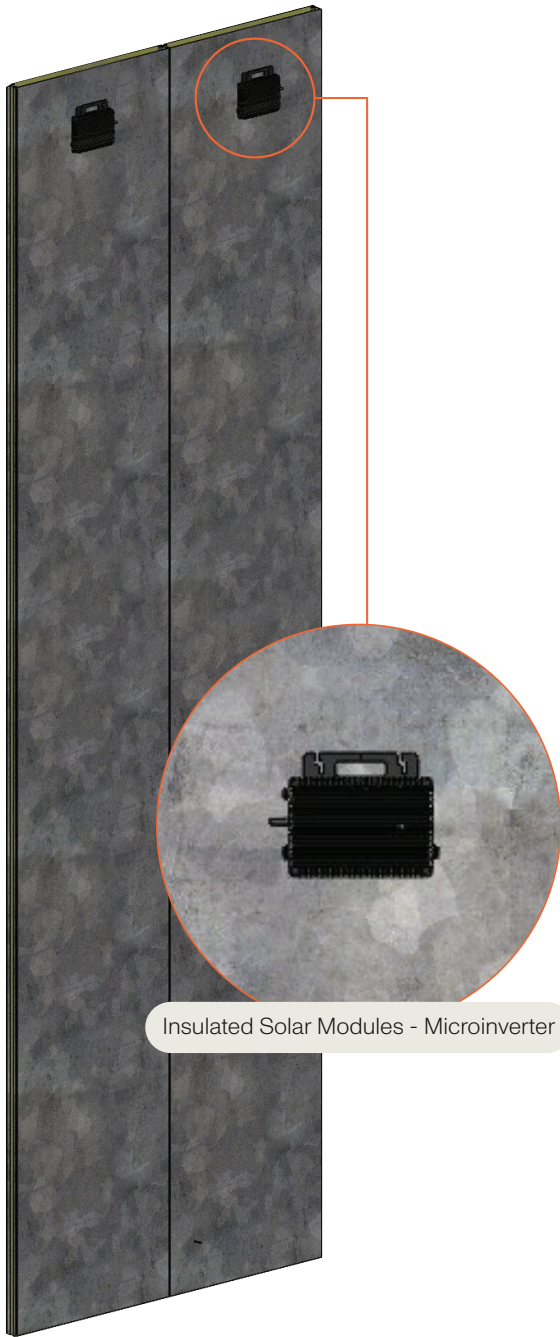


Insulated Solar Panel



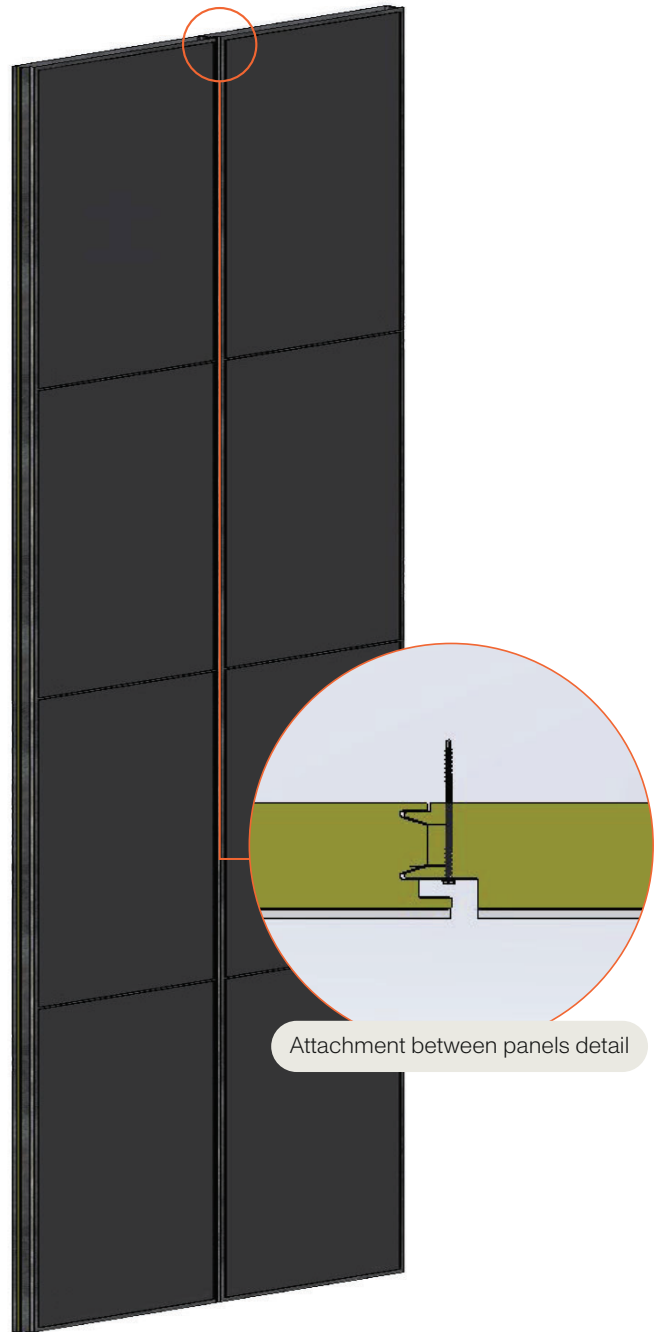
## Insulated Solar Panel (ISP)

Insulated Solar Modules - Back View



Insulated Solar Modules - Microinverter

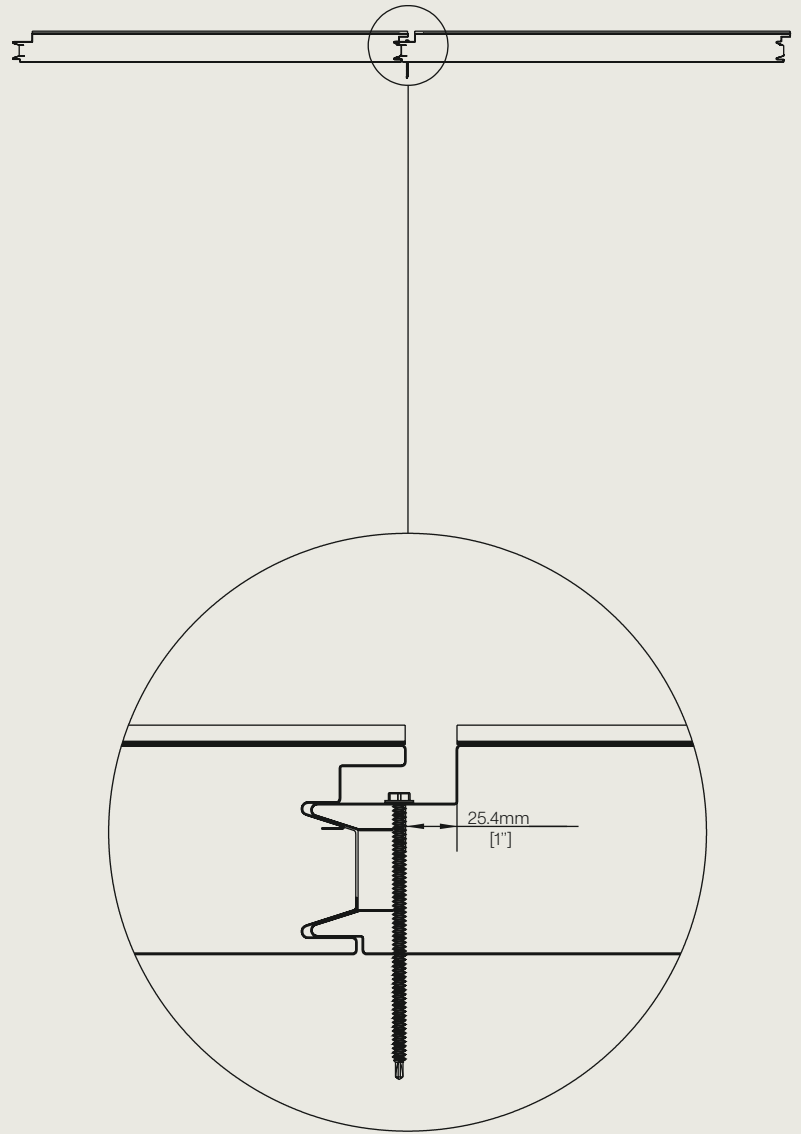
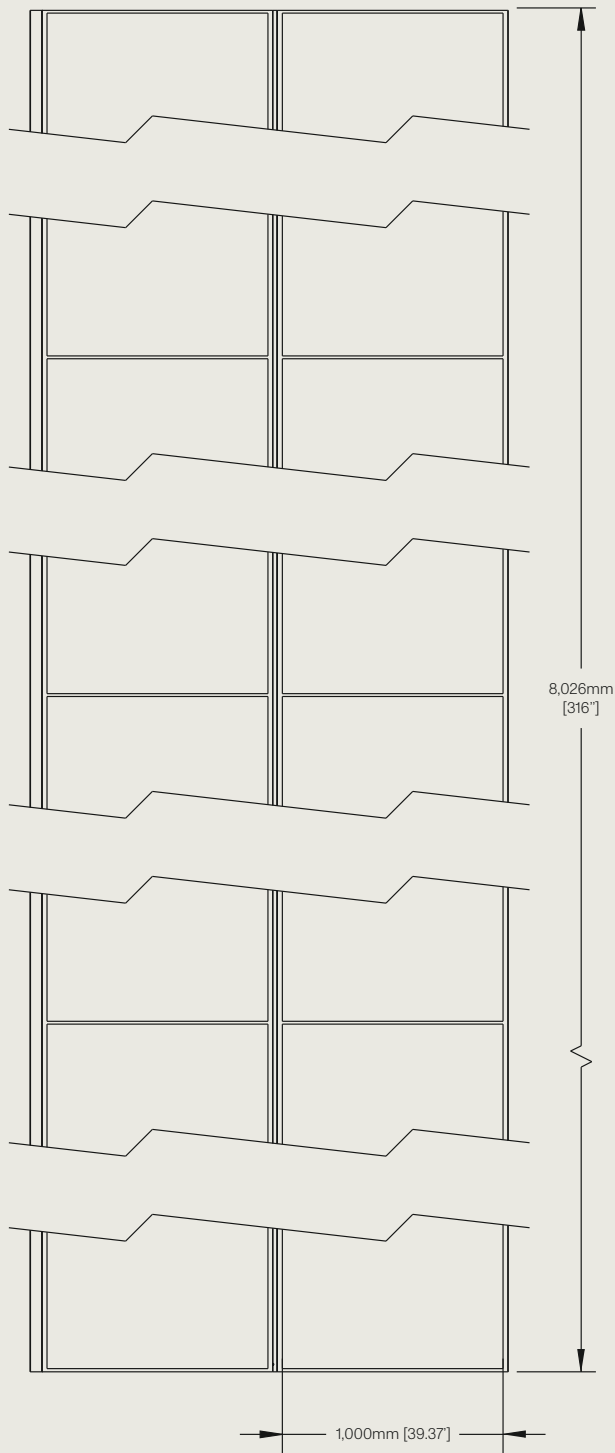
Insulated Solar Modules - Front View



Attachment between panels detail

- An energy-efficient solution.
- Unlimited facing options.
- Code compliant and safety-tested.

## Technical Drawings



## Mechanical Data

The Insulated Solar Panel can be used in a variety of applications including industrial and commercial buildings, cold-storage and controlled-environment buildings, sports centers, and more.

### Installation Features

- Superior fastening system.
- Wider girt spacing reduces costs.
- Fast, simple & economical installation.

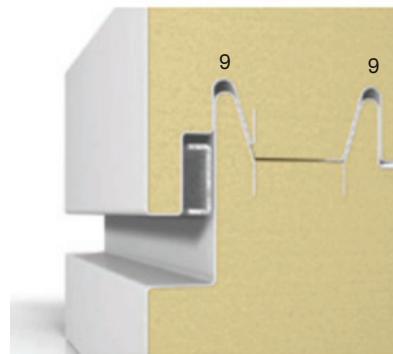
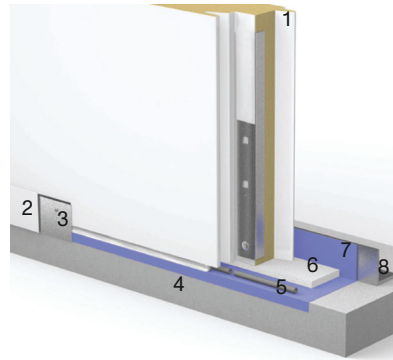
### Sustainability Features

- The materials are environmentally friendly.
- Contribute to obtaining LEED certification.
- **Integrated solar technology that allows energy generation.**

### Material Features

- No moisture penetration, risk of interstitial condensation, or lack of insulation.
- The pressure-equalized rainscreen joint ensures that the building envelope is well sealed.
- Factory-applied butyl joint sealer ensures maximum seal.

## Technical Details



1. Fastener
2. Trim
3. Trim Hanger
4. Foundation
5. Weep Hole
6. Polyethylene
7. Vapor Barrier
8. Structural Angle
9. Butyl

Images sourced from norbec.com

### ● Specifications

### ● Insulated Solar Panel

Description

- Insulated architectural panels with an integrated solar solution designed for building envelopes.
- Horizontal & vertical mounting.
- Applications: outdoor wall.

Overall Panel Width	40"		
Overall Panel Length	26' 4" / 52' 6"		
Panel Thickness	3" and 4"		
R-Value	R7.41/in (ASTM C-518)		
Steel Inner Face	0.019" (0.483mm) Standard Thickness - 26 Ga 0.023" (0.584mm) Optional - 24 Ga		
Steel Outer Face	0.0285" (0.724mm) - 22Ga		
Insulated Panel Weight	Thickness(in)	3"	4"
	Weight(lb/ft <sup>2</sup> )	2.44	2.66

## Physical Properties & Tests

● Method	● Specifications	● Results
ASTM C518	R Value/in. of Thickness	7.41
ASTM D1622	Density (lb/ft <sup>3</sup> )	Density (pcf) 2.29 Std Dev 0.01
ASTM 1621	Compressive Strength (PSI)	13.7 PSI (3" Thick Sample)
ASTM C203	Flexural Strength	25 - 30
ASTM E96/E96M	Permeability to water vapor (perms/in)	< 2.0
ASTM D2842	Water Absorption (Max.)	< 1.5%
ASTM 2126	Dimensional Stability (Max.)	Dimensional Stability Std. Dev. 0.2 7 Day Vol Chg @ 70°C/97% R.H 4.3
ASTM D696	Linear Thermal Dilation Coefficient (in/in/°F)	35.47 X 10 <sup>-6</sup>

### Fire Test Canada

● Procedure	● Description	● Results
CAN / ULC - S101	Fire endurance test of building construction and materials.	Meets 10 minutes stay-in-place requirements.
CAN / ULC - S102	Surface burning characteristics of building materials and assemblies.	Meets the National Building Code of Canada requirements.
CAN / ULC - S134	Fire test of exterior wall assemblies.	Complies with the fire-spread and heat-flux limitations required by the National Building Code of Canada.
CAN / ULC - S138	Fire growth of insulated building panels in a full-scale room configuration.	Test requirements have been met.
CAN ULC - S126	Fire spread under roof deck assembly.	Test requirements have been met.

### Fire Test USA

● Procedure	● Description	● Results
ASTM E84	Surface burning characteristics of building materials.	Flame Spread is <25, Smoke Developed <450
FM 4880	Class 1 fire rating of insulated wall, ceiling and roof panels.	Meets the requirements.
NFPA 259	Standard test method for potential heat of building materials.	Product tested.
NFPA 286	Standard test method for evaluating contribution of wall and ceiling interior finish room fire growth.	Test requirements have been met.
NFPA 285	Standard test method for evaluation of fire propagation characteristics of exterior non-load-bearing wall assemblies containing combustible components.	Test requirements have been met.

## Physical Properties & Tests

### Structural

● Procedure	● Description	● Results
ASTM E72	Deflection tests of panels for building construction.	See load chart (Page 7).

### Air Infiltration

● Procedure	● Description	● Results
ASTM E283	Rate of air leakage through curtain walls under specified pressure differences.	Test requirements have been met.
ASTM E330	Structural performance of exterior walls by uniform static air pressure difference.	Test requirements have been met.

### Thermal Performance

● Procedure	● Description	● Results
ASTM C518	Steady-state thermal transmission properties by means of heat-flow meter apparatus.	R 7.41 - Value 35/13°C k factor ( W/m2 - K/m ) 19.5 R 7.69 - Value 18/-4°C k factor ( W/m2 - K/m ) 18.8.
CAN / ULC - S 770 - 09	Long term thermal resistance.	Testing requirements have been met per CAN/ULC-S704-11.

### Water Infiltration

● Procedure	● Description	● Results
ASTM E331	Water penetration of exterior walls by uniform static air pressure differences.	Test requirements have been met.
AAMA 501.1	Water penetration of exterior walls by dynamic air pressure.	Testing requirements have been met per CAN/ULC-S704-11.



## Physical Properties & Tests

### Load Chart

● Single Span, L/180 (PSF)			● Multiple Span, L/180 (PSF)			● Single Span, L/240 (PSF)		
Span (FT)	Thickness		Span (FT)	Thickness		Span (FT)	Thickness	
	3"	4"		3"	4"		3"	4"
6	68	81	6	68	81	6	68	81
7	58	70	7	58	70	7	58	70
8	51	61	8	51	61	8	51	61
9	45	54	9	45	54	9	36	54
10	35	49	10	41	49	10	26	49
11	26	44	11	37	44	11	20	44
12	20	41	12	34	41	12	15	40
13	16	38	13	31	38	13	12	31
14	13	33	14	29	35	14	10	25
15	10	27	15	25	33	15	8	20
16	9	22	16	21	31	16	6	17
17	7	19	17	17	29	17	5	14
18	6	16	18	15	27	18	5	12
19	5	13	19	12	26	19	-	10
20	-	11	20	11	24	20	-	9
21	-	10	21	9	23	21	-	7
22	-	9	22	8	21	22	-	6
23	-	8	23	7	18	23	-	6
24	-	7	24	6	16	24	-	5
25	-	6	25	5	14	25	-	-
26	-	5	26	5	13	26	-	-
27	-	5	27	-	11	27	-	-
28	-	-	28	-	10	28	-	-
29	-	-	29	-	9	29	-	-
30	-	-	30	-	8	30	-	-

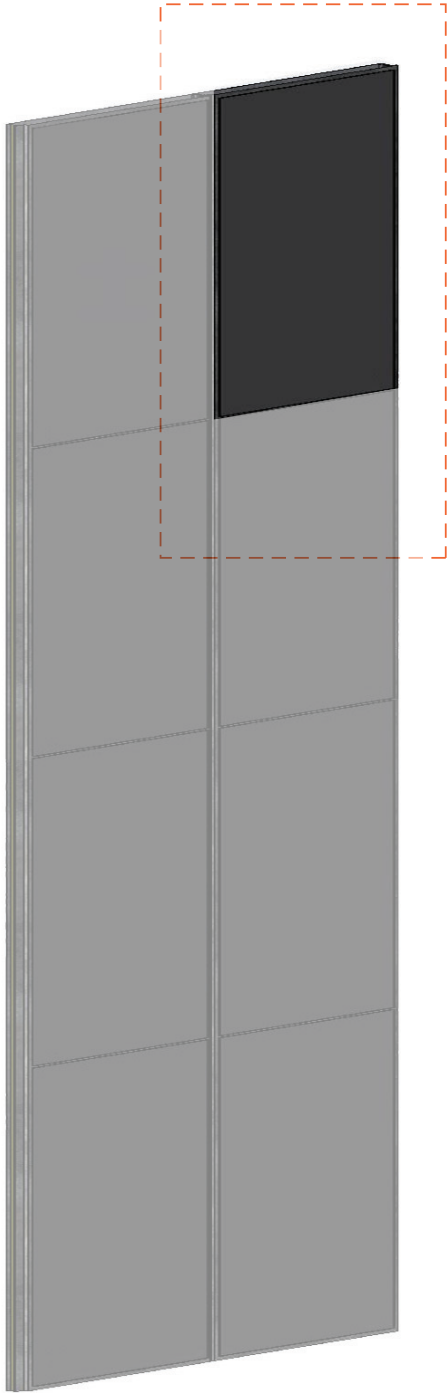
## Physical Properties & Tests

### Load Chart

● Multiple Span, L/240 (PSF)			● Single Span, L/360 (PSF)			● Multiple Span, L/360 (PSF)		
Span (FT)	Thickness		Span (FT)	Thickness		Span (FT)	Thickness	
	3"	4"		3"	4"		3"	4"
6	68	81	6	68	81	6	68	81
7	58	70	7	51	70	7	58	70
8	51	61	8	34	61	8	51	61
9	45	54	9	24	54	9	45	54
10	41	49	10	18	46	10	41	49
11	37	44	11	13	35	11	32	44
12	34	41	12	10	27	12	25	41
13	29	38	13	8	21	13	19	38
14	23	35	14	6	17	14	15	35
15	19	33	15	5	14	15	13	33
16	16	31	16	-	11	16	10	27
17	13	29	17	-	9	17	9	23
18	11	27	18	-	8	18	7	19
19	9	24	19	-	7	19	6	16
20	8	21	20	-	6	20	5	14
21	7	18	21	-	5	21	5	12
22	6	16	22	-	-	22	-	10
23	5	14	23	-	-	23	-	9
24	5	12	24	-	-	24	-	8
25	-	11	25	-	-	25	-	7
26	-	9	26	-	-	26	-	6
27	-	8	27	-	-	27	-	6
28	-	8	28	-	-	28	-	5
29	-	7	29	-	-	29	-	5
30	-	6	30	-	-	30	-	-



## Electrical Data (Single Solar Panel)



### ● Specifications

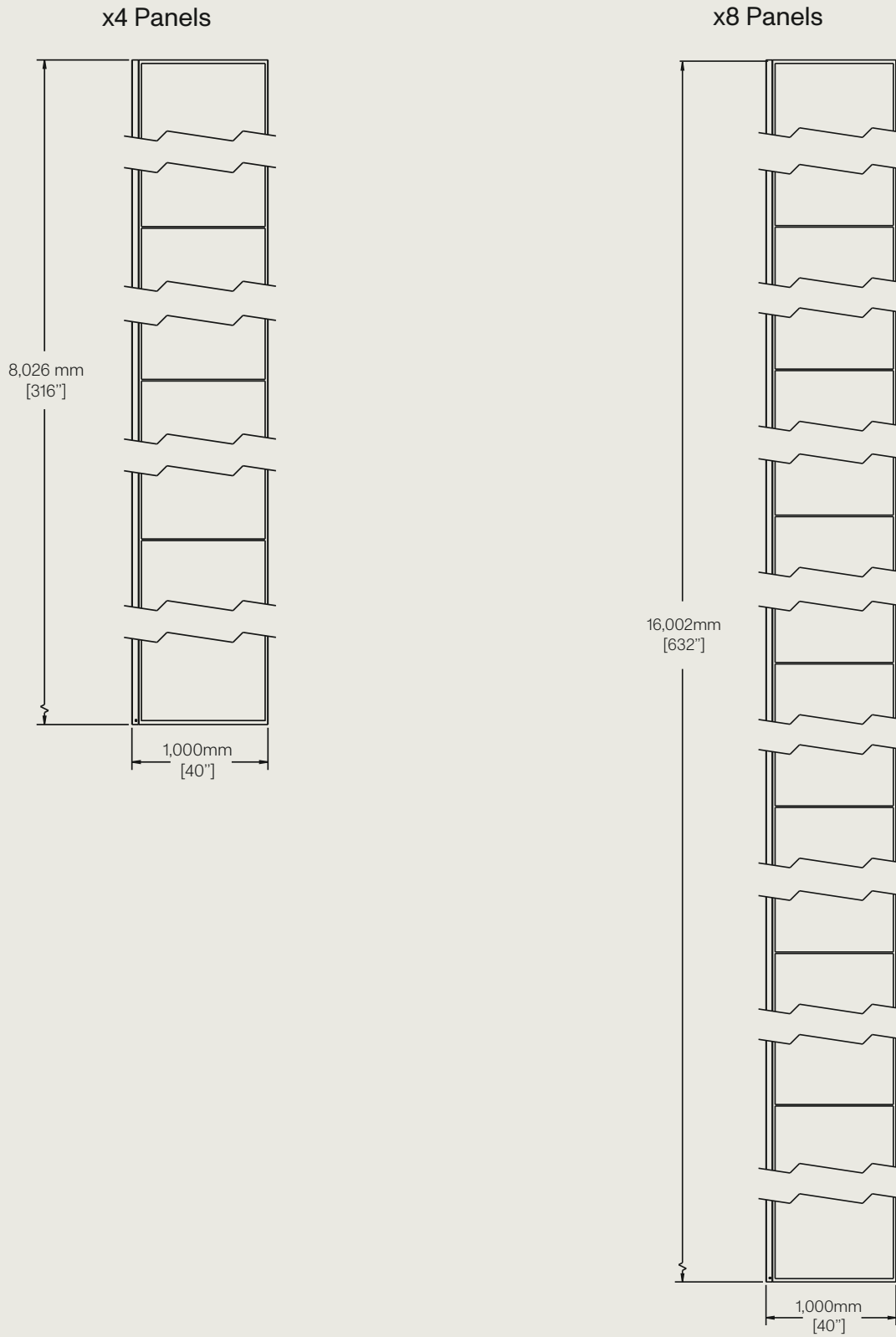
### ● Module

Cell Type	Mono-Crystalline
Cell Arrangement	72 [(12X6)]
Width	1,000mm (39.4")
Length	2,002mm (78.8")
Thickness	3mm (0.12")
Weight	6kg (13.2lbs)
J-Box Protection Class	≥ IP67
Connector Protection Class	IP68
Max. Power (P <sub>MAX</sub> )	370W +/- 5%
Open Circuit Voltage (V <sub>oc</sub> )	48.4V +/- 5%
Short Circuit Current (I <sub>sc</sub> )	9.81A +/- 5%
Max. Power Voltage (V <sub>PM</sub> )	39.9V +/- 5%
Current at Max Power (I <sub>PM</sub> )	9.28A +/- 5%
Max. Series Fuse Rating	20A
Max. System Voltage	1000V
Fire Protection Class	C / Type 1
Operating Temperature (°C)	-40° - +85° [-40°F - 185°F]

### ● Height Options For Solar IMPs

	4 Panels	8 Panels
ISP Minimum Length	316"	630"
ISP Width	40"	40"
ISP Weight (ISP Thickness of 3")	210lbs	420lbs
Overall System Weight (ISP Thickness of 3")	258lbs	516lbs

## Height Variations (Visualization)



## Microinverter Data

● Mechanical Data			● Efficiency	
	Imperial	Metric	Model 480V	
Ambient Temperature Range	-40 to +149 F°	-40 to +65 C°	CEC Peak Efficiency	>= 96.5%
Enclosure Rating	Outdoor - IP67 (NEMA6)		Normal MPPT Efficiency	>= 99.7%
Cooling	Natural Convection - No Fans		Night Power Consumption (mW)	< 50

● Input Data (DC)		● Output Data (AC)	
	Model 450V	Model 480V	
Commonly Used Module Power (w)	50 to 1000 +	Peak Output Power	1900
Maximum Input Voltage (V)	65	Maximum Continuous Output Power (A)	1900
MPPT Voltage Range (V)	16 - 60	Maximum Continuous Output Current (A)	2.28
Start-up Voltage (v)	22	Normal Output Voltage/Range (V) <sup>1</sup>	480/422 - 528
Maximum Input Current (A)	4 x 30	Nominal Frequency/Range (Hz)	60/55 - 65
Maximum Input Short Circuit Current (A)	4 x 40	Power Factor (Adjustable)	> 0.99 default 0.8 leading ... 0.8 lagging
Number Of MPPTs	4	Total Harmonic Distortion	< 3%
Number Of Inputs Per MPPT	1	Maximum Units Per 4AWG Branch (45A) <sup>2</sup>	15

<sup>1</sup> Nominal voltage/frequency range can depending on local. <sup>2</sup> Refer to local requirements for exact number of microinverters per branch

## Available Colours

### ⚡ Solar Solid Colours



Core Black  
⚡ 17W/SQFT



Blackout  
⚡ 15W/SQFT



Star Dust  
⚡ 11W/SQFT



Ash Grey  
⚡ 10W/SQFT

### ● System Size Per Color

	4 Panels	8 Panels
Core Black	1.4 kW	2.8 kW
Blackout	1.3 kW	2.6 kW
Star Dust	0.9 kW	1.8 kW
Ash Grey	0.8 kW	1.6 kW

Note: The product comes with a 10 Year module warranty

Insulated Solar Panel

- **Toll Free**

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- **Learn More**

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