PROJECT DETAILS	
PV Modules	36 x Solaria PowerXT-360R-PD
Optimizers	36 x P370
Inverter	1 x SE11400H-US (Built in Cons. Meter)
Roof Type	Shingles
Racking	IronRidge XR10
Mounting Type	FlashFoot 2
DC SIZE	12.96 kW
AC SIZE	11.4 kVA

DRAWING INDEX			
Item	Drawing #	Rev	Description
1	2082JR00-0	A	Drawing Index
2	2082JR00-1	A	Site Layout
3	2082JR00-2	A	String Mapping
4	2082JR00-3	A	Electrical One Line Diagram
5	2082JR00-4	A	Detailed Electrical Wiring Schematic
6	2082JR00-5	A	PV Labels
7	2082JR00-6	A	Bill of Materials

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NABCEP CERTIFIED
PV Installation Professional
Ali Buttar
PVIP #031310-32

TOP VIEW OF BUILDING

FRONT VIEW OF BUILDING

DRAWING INDEX
SCALE: NTS

N

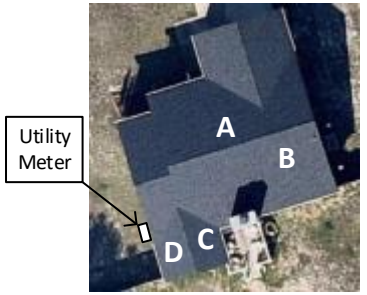
1	A	06/22/2020

JOB NUMBER
20-82-JR00
DATE ISSUED
06/22/2020
PROJECT STATUS
PERMITTING
SHEET
DRAWING INDEX

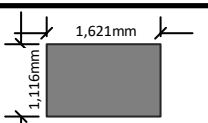
JR
2082JR00-0

PV System Dead Load
(Panel + Racking weight) / PV System Area
(36 modules x 46 lbs./panel + 302 ft. of racking x 1.15 lb.ft) / (36 panels x 63.8" x 44") = 2.85 psf

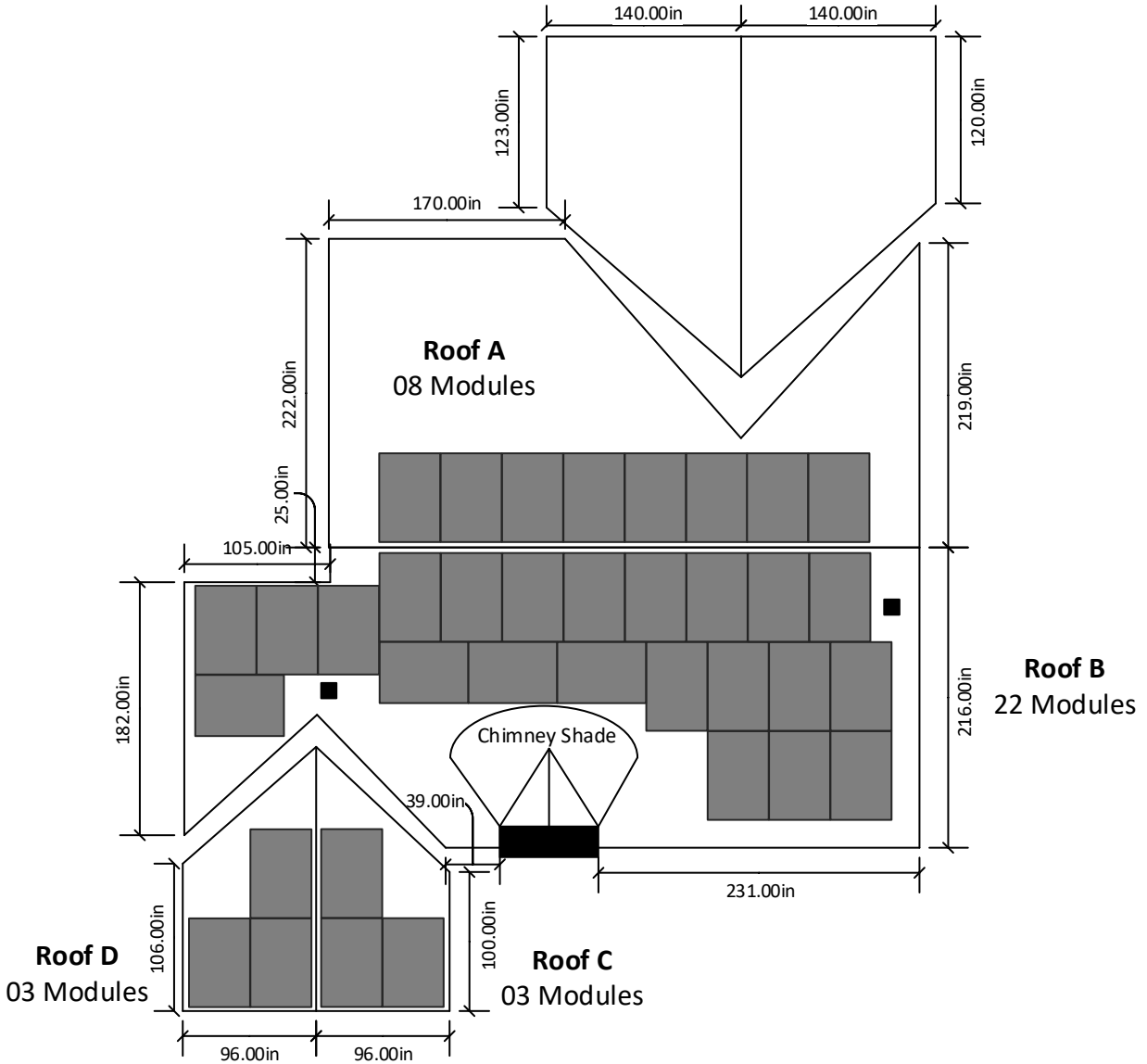
The roof is located in 115mph wind zone	There is one layer of shingles Roofing material is asphalt shingles



Module Dimension



Roofs	Pitch	Azimuth
A	26°	343°
B	26°	163°
C&D	26°	73°



Roof A
08 Modules

Roof B
22 Modules

Roof C
03 Modules

Roof D
03 Modules

SYSTEM DETAILS

NUMBER OF PANELS : 36
PANELS MODEL : Solaria PowerXT-360R-PD
DC SIZE : 12.96 kW
AC SIZE : 11.4 kVA

SITE LAYOUT
SCALE: 3/32" - 1' 0"

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1	A	06/22/2020

JOB NUMBER
20-82-JR00
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06/22/2020
PROJECT STATUS
PERMITTING
SHEET
SITE LAYOUT

JR
2082JR00-1

String Layout					
Strings #	No. of Modules	Color Code	Strings #	No. of Modules	Color Code
String A	**14**				
String B	**14**				
String C	**8**				

Module Dimension		
1,621mm / 1,116mm		
Roofs	Pitch	Azimuth
A	26°	343°
B	26°	163°
C&D	26°	73°

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SYSTEM DETAILS

NUMBER OF PANELS : 36
PANELS MODEL : Solaria PowerXT-360R-PD
DC SIZE : 12.96 kW
AC SIZE : 11.4 kVA

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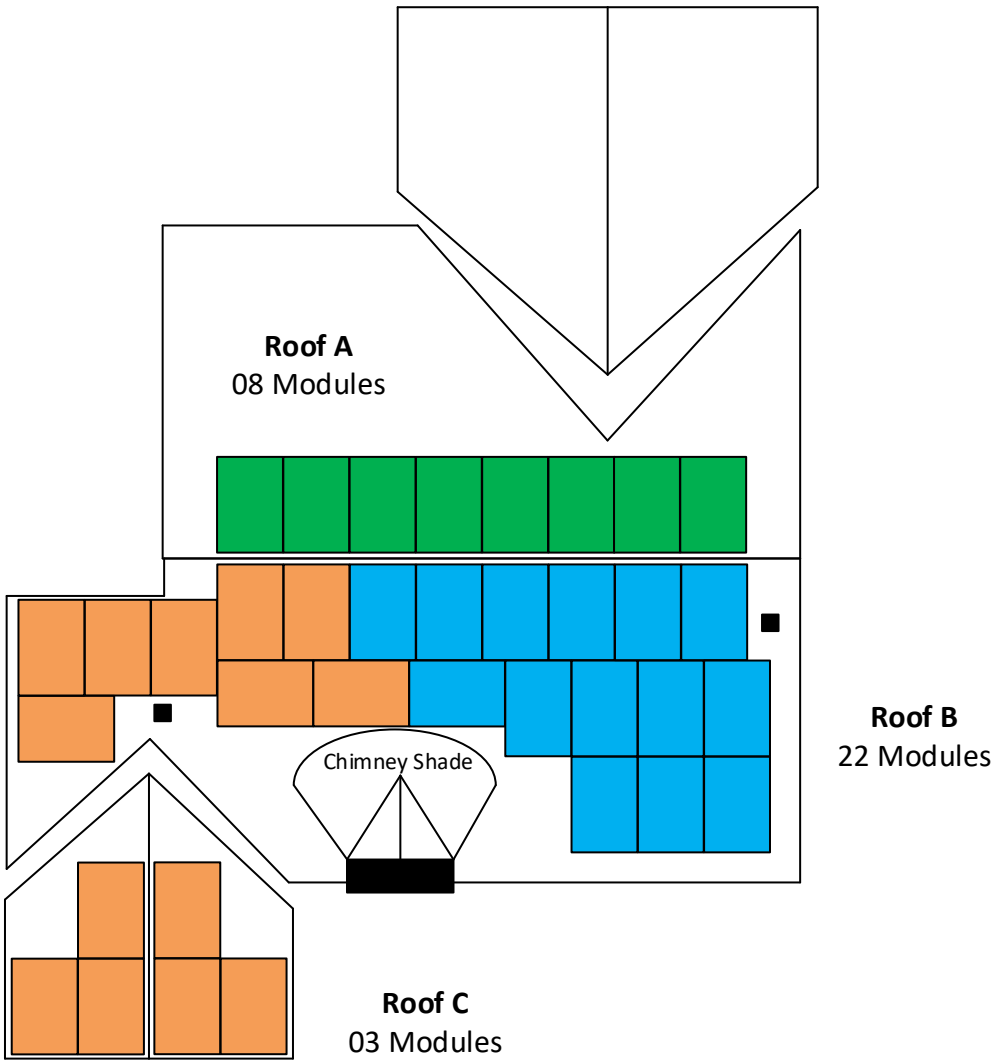

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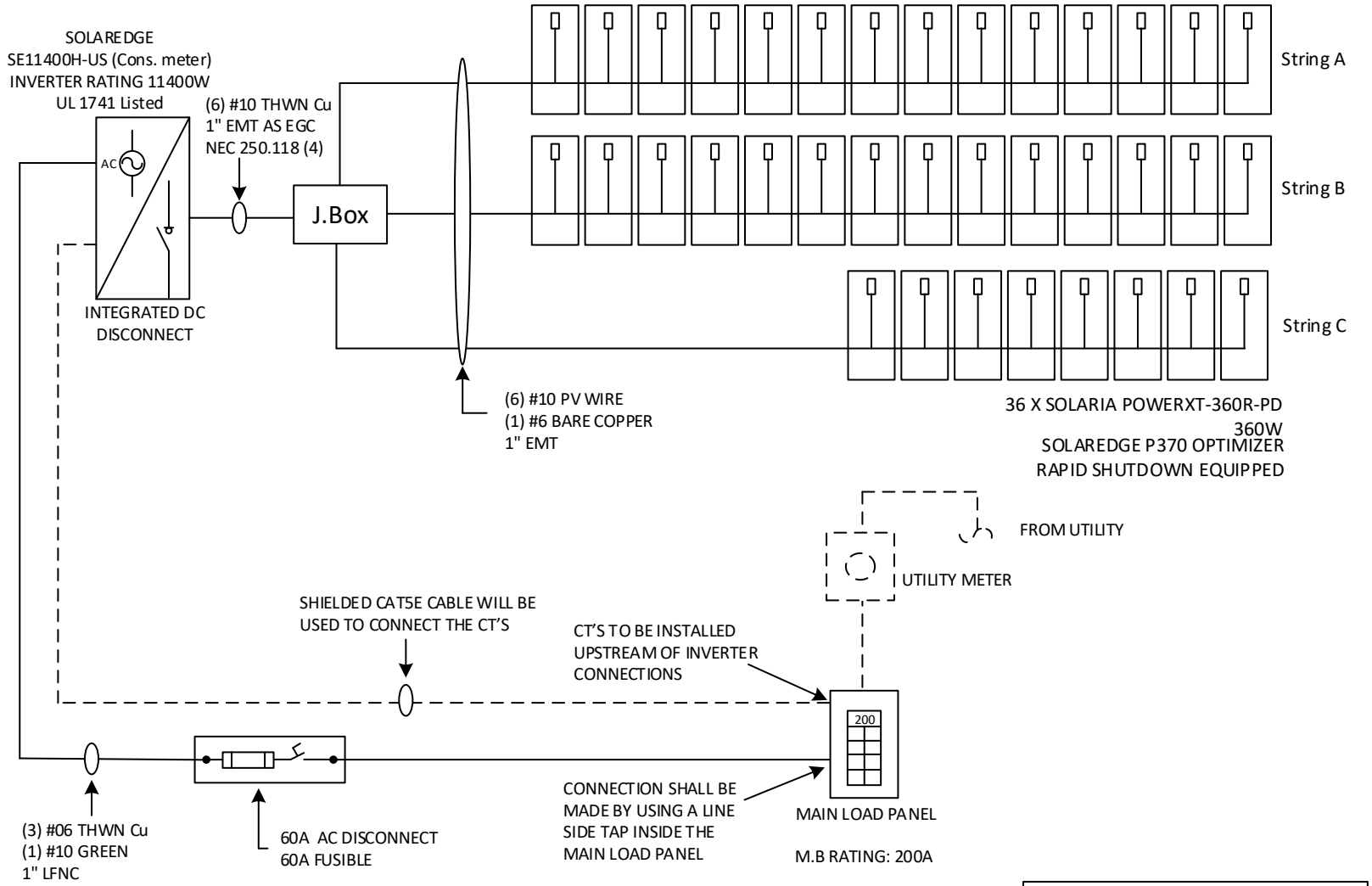
PVIP #031310-32

1	A	06/22/2020

JOB NUMBER 20-82-JR00
DATE ISSUED 06/22/2020
PROJECT STATUS PERMITTING
SHEET **STRING MAPPING**

STRING MAPPING
SCALE: 3/32" - 1' 0"

JR
2082JR00-2



ELECTRICAL NOTES

• System Size: 12,960 W DC • (36) Solaria PowerXT-360R-PD 360W • (36) SOLAREDGE P370 OPTIMIZERS • (01) SOLAREDGE SE11400H-US (Includes Consumption Monitoring Inverter) • Inverter Output: 47.5A max @ 240 VAC • 11.4 kVA AC output max	STRING A: 14 X 360W = 5,040W ea I mpp = 12.6 Adc I max = 23.4 Adc V mpp = 400 Vdc V oc = 14 Vdc	STRING B: 14 X 360W = 5,040W ea I mpp = 12.6 Adc I max = 23.4 Adc V mpp = 400 Vdc V oc = 14 Vdc	STRING C: 08 X 360W = 2,880W ea I mpp = 7.2 Adc I max = 23.4 Adc V mpp = 400 Vdc V oc = 08 Vdc

EGC – EQUIPMENT GROUNDING CONDUCTOR
EMT IS GROUND, NO SEPARATE WIRE NEEDED AS GROUNDING CONDUCTOR

- Grounding will be done via IronRidge grounding mid-clamps and WEEB bonding jumpers to ensure the rail and panels are continuously grounded.
- Rapid Shutdown is included in the Inverter, refer to inverter & optimizer attached datasheets.
- The load center / disconnect will be visible, lockable accessible to utility linesmen and will be properly labelled as per NEC requirements. It will be located on the exterior wall of the building, next to the utility meter.

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1	A	06/22/2020

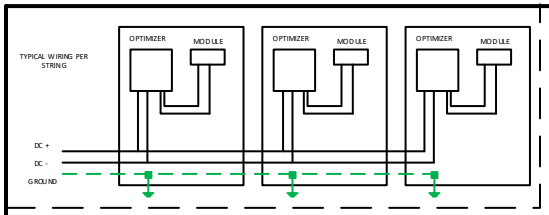
JOB NUMBER
20-82-JR00

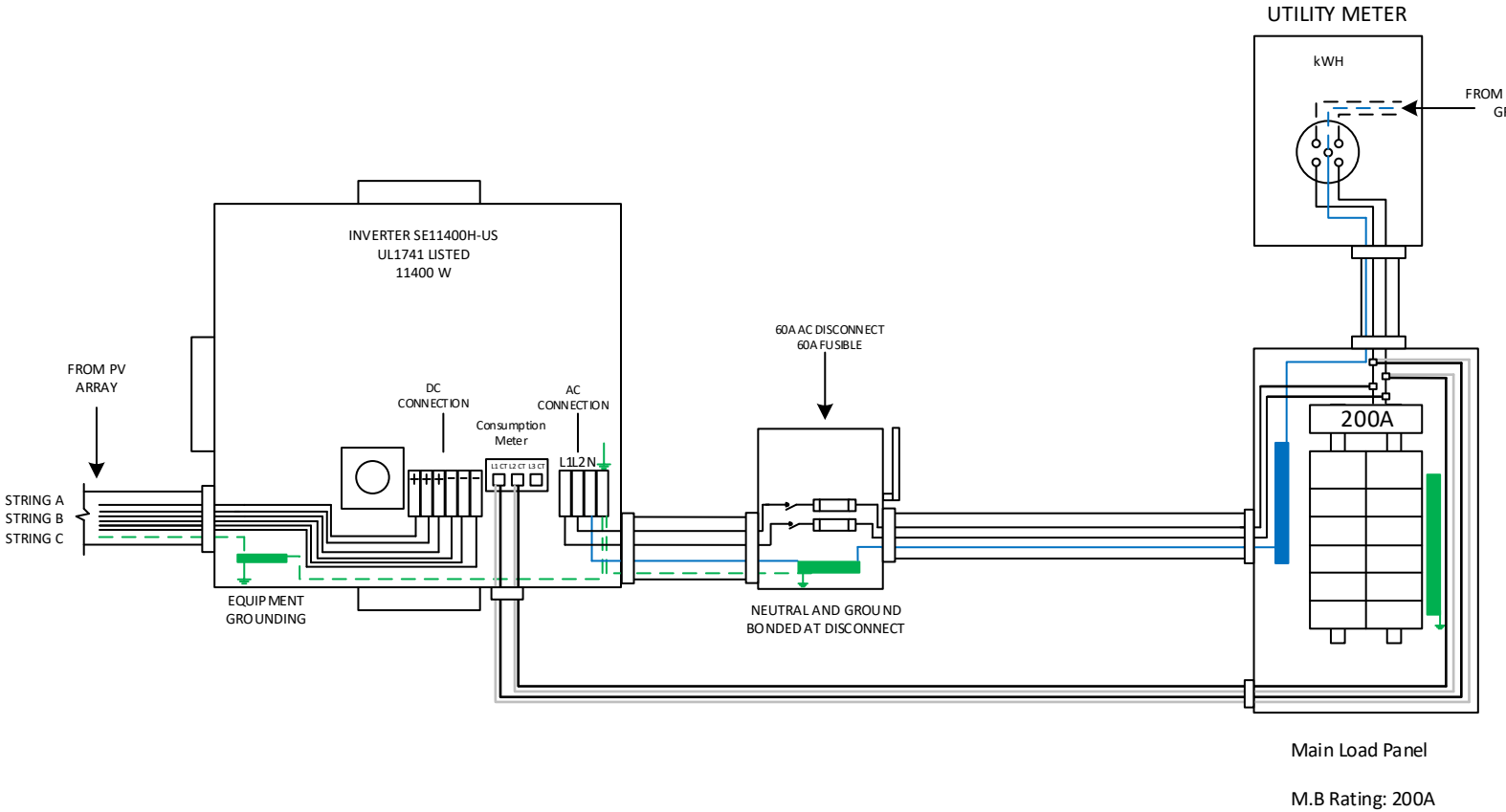
DATE ISSUED
06/22/2020

PROJECT STATUS
PERMITTING

SHEET
ELECTRICAL ONE LINE DIAGRAM

JR
2082JR00-3





Main Load Panel

M.B Rating: 200A

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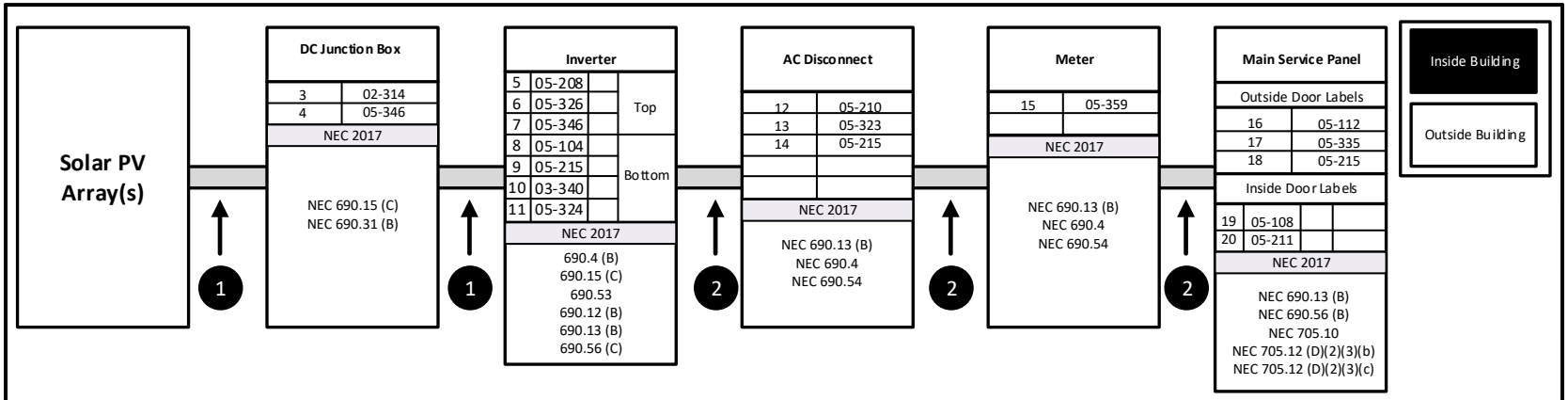
DATE ISSUED
06/22/2020

PROJECT STATUS
PERMITTING

SHEET
DETAILED ELECTRICAL WIRING SCHEMATIC

JR
2082JR00-4



CONDUIT AND RACEWAYS LABELS

1	02-314	WARNING: PHOTOVOLTAIC POWER SOURCE
2	05-329	CAUTION SOLAR CIRCUIT

DC JUNCTION BOXES

3	02-314	WARNING: PHOTOVOLTAIC POWER SOURCE
4	05-346	WARNING ELECTRIC SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

INVERTER

5	05-208	DIRECT CURRENT PHOTOVOLTAIC POWER SOURCE — MAXIMUM VOLTAGE VDC — MAX CIRCUIT CURRENT AMPS
6	05-326	WARNING DO NOT DISCONNECT UNDER LOAD
7	05-346	WARNING ELECTRIC SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED
8	05-104	WARNING ELECTRIC SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED
9	05-215	WARNING ELECTRIC SHOCK HAZARD TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
10	03-340	PV SYSTEM DISCONNECT
11	05-324	DC DISCONNECT

AC DISCONNECT

12	05-210	PHOTOVOLTAIC SYSTEM AC DISCONNECT — RATED AC OUTPUT CURRENT A — NOMINAL OPERATING AC VOLTAGE V
13	05-323	AC DISCONNECT
14	05-215	WARNING ELECTRIC SHOCK HAZARD TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

Meter

15	05-359	WARNING THIS SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

MAIN SERVICE PANEL

16	05-112	SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN — TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY
17	05-335	CAUTION SOLAR ELECTRIC SYSTEM CONNECTED
18	05-215	WARNING ELECTRIC SHOCK HAZARD TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
19	05-108	WARNING THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.
20	05-211	WARNING DUAL POWER SUPPLY SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

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1	A	06/22/2020

JOB NUMBER 20-82-JR00
DATE ISSUED 06/22/2020
PROJECT STATUS PERMITTING
SHEET **PV LABELS**

JR
2082JR00-5

Rails and Splices : XR10	Roof Attachment : FlashFoot2
There is one layer of shingles Roofing material is asphalt shingles	The roof is located in 115mph wind zone
Attachment Span: 4ft	

Module Dimension	1,621mm × 1,116mm

Roofs	Pitch	Azimuth
A	26°	343°
B	26°	163°
C&D	26°	73°

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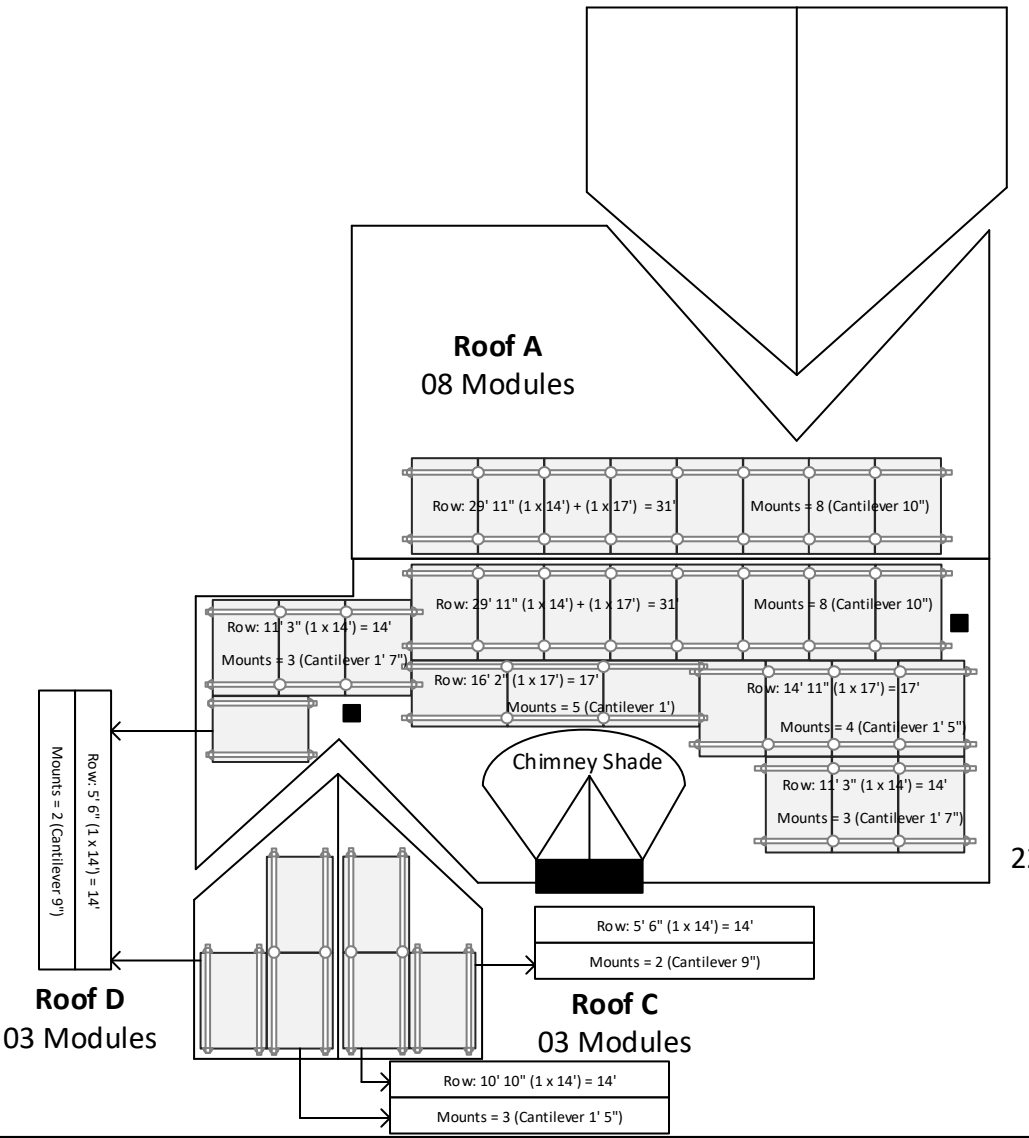

RAILS AND SPLICES
- 08 x XR-10-204B: XR10, Rail 204" (17 Feet) Black
- 15 x XR-10-168B: XR10, Rail 168" (14 Feet) Black
- 04 x XR-10-SPLC-M1: XR10 Bonded Splice (Incl. Self-tapping Screws)

CLAMPS & GROUNDING
- 52 x UFO-CL-01-B1: Universal Module Clamp, Black
- 40 x CAMO-01-M1: Hidden End Cam (universal clamp)
- 10 x XR-LUG-03-A1: Grounding Lug, Low Profile

ATTACHMENTS
- 84 x FF2-01-M2: FlashFoot2, Mill
- 84 x BHW-SQ-02-A1: Square-Bolt Bonding Hardware

ACCESSORIES
- 02 x XR-10-CAP: Kit, End Cap XR10 (10 sets per bag)
- 36 x BHW-MI-01-A1: Microinverter Bonding Hardware, T-Bolt

SOLAR MODULES
- 36 x Solaria PowerXT-360R-PD

INVERTER & SUPPORTING ITEMS
- 01 x SolarEdge SE11400H-US (with Cons. Meter SE11400H-US000BNI4)
- 36 x SolarEdge Power Optimizer P370
- 02 x 200A SolarEdge CTs

WIRE & DISCONNECTS
- 500 ft x PV WIRE BLK (Cu)

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1	A	06/22/2020

JOB NUMBER
20-82-JR00

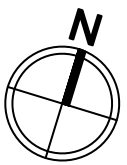
DATE ISSUED
06/22/2020

PROJECT STATUS
PERMITTING

SHEET
BILL OF MATERIAL

JR
2082JR00-6

BILL OF MATERIAL
SCALE: 3/32" - 1' 0"



SOLARIA®

Solaria PowerXT® | DC Panel

Solaria PowerXT®-360R-PD

Achieving 20% efficiency, Solaria PowerXT solar panels are one of the highest power panels in the residential and commercial solar market. Compared to conventional panels, Solaria PowerXT panels have fewer gaps between the solar cells; this leads to higher power and superior aesthetics. Solaria PowerXT Pure Black™ panels are manufactured with black backsheet and frames, enhancing a home or building's architectural beauty.

Higher Efficiency, Higher Power

Solaria PowerXT panels achieve up to 20.5% efficiency; conventional panels achieve 15% – 17% efficiency. Solaria PowerXT panels are one of the highest power panels available.

Lower System Costs

Solaria PowerXT panels produce more power per square meter area. This reduces installation costs due to fewer balance of system components.

Improved Shading Tolerance

Sub-strings are interconnected in parallel, within each of the four panel quadrants, which dramatically lowers the shading losses and boosts energy yield.

Improved Aesthetics

Compared to conventional panels, Solaria PowerXT panels have a more uniform appearance and superior aesthetics.

Durability and Reliability

Solder-less cell interconnections are highly reliable and designed to far exceed the industry leading 25 year warranty.

PID Resistant

Solaria PowerXT panels are PID resistant. This insures stable and predictable energy production over time.

About Solaria

Established in 2000, The Solaria Corporation has created one of the industry's most respected IP portfolios, with over 250 issued and pending patents in PV solar cell and module technology. Headquartered in Oakland, California, Solaria has developed a technology platform that unlocks the potential of solar energy.

TOP PERFORMER 2018 DNV·GL PV MODULE RELIABILITY SCORECARD

TÜVRheinland® Precisely Right.

SOLARIA®

Solaria PowerXT®-360R-PD

Performance at STC (1000W/m², 25° C, AM 1.5)

Solaria PowerXT-		**360R-PD**
Max Power (Pmax)	[W]	360
Efficiency	[%]	19.9
Open Circuit Voltage (Voc)	[V]	47.7
Short Circuit Current (Isc)	[A]	9.56
Max Power Voltage (Vmp)	[V]	39.5
Max Power Current (Imp)	[A]	9.13
Power Tolerance	[%]	-0/+3

Performance at NOCT (800W/m², 20°C Amb, Wind 1 m/s, AM 1.5)

Max Power (Pmax)	[W]	265
Open Circuit Voltage (Voc)	[V]	44.8
Short Circuit Current (Isc)	[A]	7.71
Max Power Voltage (Vmp)	[V]	36.3
Max Power Current (Imp)	[A]	7.30

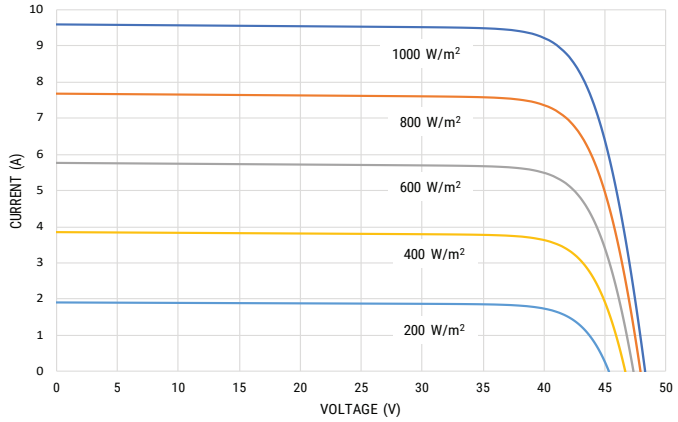
Temperature Characteristics

NOCT	[°C]	45 +/-2
Temp. Coeff. of Pmax	[% / °C]	-0.39
Temp. Coeff. of Voc	[% / °C]	-0.29
Temp. Coeff. of Isc	[% / °C]	0.04

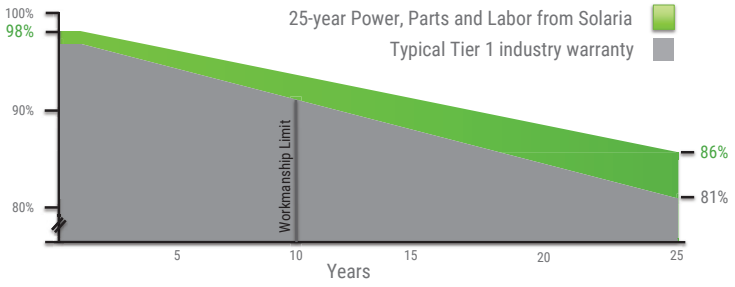
Design Parameters

Operating temperature	[°C]	-40 to +85
Max System Voltage	[V]	1000
Max Fuse Rating	[A]	15
Bypass Diodes	[#]	4

IV Curves vs. Irradiance (370W Panel)



Comprehensive 25-Year Warranty



Mechanical Characteristics

Cell Type	Monocrystalline Silicon
Dimensions (L x W x H)	63.8" x 43.9" x 1.57" 1621mm x 1116mm x 40mm
Weight	21 kg / 46 lbs
Glass Type / Thickness	AR Coated, Tempered / 3.2mm
Frame Type	Black Anodized Aluminum
Cable Type / Length	12 AWG PV Wire (UL) / 1000mm
Connector Type	MC4
Junction Box	IP67 / 4 diodes
Front Load	5400 Pa / 113 psf*
Rear Load	3600 Pa / 75 psf*

* Refer to Solaria Installation Manual for details

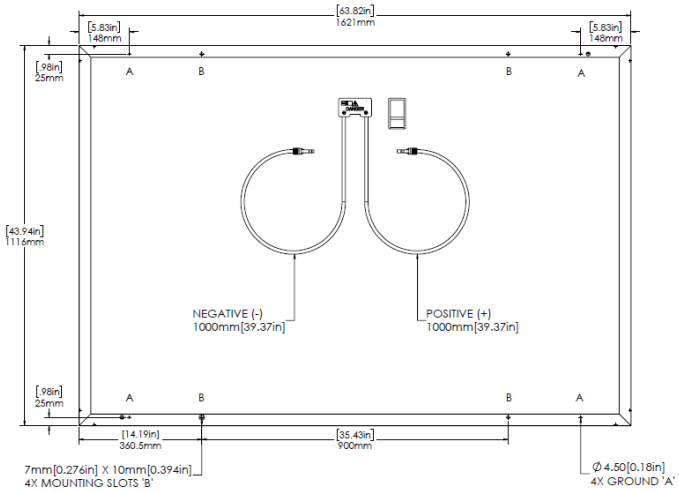
Certifications / Warranty

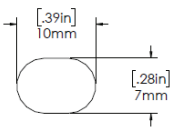
Certifications	UL 1703/IEC 61215/IEC 61730/CEC CAN/CSA-C22.2
Fire Type (UL 1703)	1
Warranty	25 years*

* Warranty details at www.solaria.com

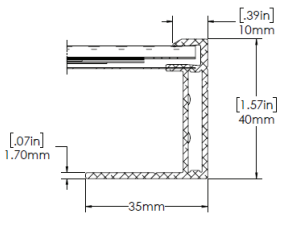
Packaging

Stacking Method	Horizontal / Palletized
Panels/ Pallet	25
Pallet Dims (L x W x H)	65.7" x 45.3" x 48.4" 1668mm x 1150mm x 1230 mm
Pallet Weight	590 kg / 1300 lbs
Pallets / 40-ft Container	28
Panels / 40-ft Container	700





MOUNTING SLOT 'B'



FRAME PROFILE

INVERTERS

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, Adjustable - 0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

[1] For other regional settings please contact SolarEdge support
[2] A higher current source may be used; the inverter will limit its input current to the values stated

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

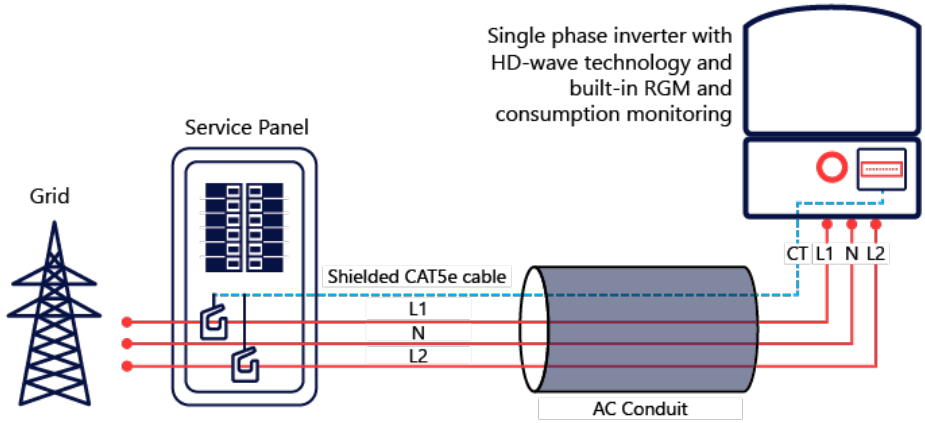
MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Metering, ANSI C12.20	Optional[3]							
Consumption metering								
Inverter Commissioning	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG					1" Maximum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG					1" Maximum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25				<50			dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -40 to +60[4]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

[3] Inverter with Revenue Grade Meter P/N: SExxxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxxH-US000BNI4 . For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20. 20 units per box

[4] Full power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



RoHS

Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge

/ Power Optimizer
For North America
P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT									
Rated Input DC Power[1]	320	340	370	400		405	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125[2]		83[2]	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105		12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11			10.1	11.75	11		14	Adc
Maximum DC Input Current	13.75			12.5	14.65	12.5		17.5	Adc
Maximum Efficiency	99.5								%
Weighted Efficiency	98.8							98.6	%
Overvoltage Category	II								
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)									
Maximum Output Current	15								Adc
Maximum Output Voltage	60					85			Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)									
Safety Output Voltage per Power Optimizer	1 ± 0.1								Vdc
STANDARD COMPLIANCE									
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3								
Safety	IEC62109-1 (class II safety), UL1741								
Material	UL94 V-0 , UV Resistant								
RoHS	Yes								
INSTALLATION SPECIFICATIONS									
Maximum Allowed System Voltage	1000								Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters								
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1			129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 /5.1 x 6 x 1.16	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9		129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	655 / 1.5	845 / 1.9		1064 / 2.3	gr / lb
Input Connector	MC4[3]						Single or dual MC4[3][4]	MC4[3]	
Input Wire Length	0.16 / 0.52								m / ft
Output Wire Type / Connector	Double Insulated / MC4								
Output Wire Length	0.9 / 2.95		1.2 / 3.9						m / ft
Operating Temperature Range[5]	-40 - +85 / -40 - +185								°C / °F
Protection Rating	IP68 / NEMA6P								
Relative Humidity	0 - 100								%

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) NEC 2017 requires max input voltage be not more than 80V
(3) For other connector types please contact SolarEdge
(4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.
(5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

PV System Design Using a SolarEdge Inverter[6][7]		Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400, P401	8		10	18	
	P405, P485, P505	6		8	14	
Maximum String Length (Power Optimizers)		25		25	50[8]	
Maximum Power per String		5700 (6000 with SE7600-US - SE11400-US)	5250	6000[9]	12750[10]	W
Parallel Strings of Different Lengths or Orientations		Yes				

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
(7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string
(8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(9) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W
(10) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

Intertek RoHS

Intertek
3933 US Route 11
Cortland, NY 13045
Telephone: 607-753-7311
www.intertek.com

Subject: ETL Evaluation of SolarEdge Products to NEC 2017 Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

The testing done has verified that controlled conductors are limited to:

- Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or – if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

Applicable products:

(1) Power optimizers:

PB followed by 001 to 350; followed by -AOB or -TFI.
OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
P followed by 001 to 860.
SP followed by 001 to 350.
When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019, modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs.

(2) 1 -PH Inverters

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:

Inverter part number may be followed by a suffix.

(3) 3 -PH Inverters

SE9KUS / SE10KUS / SE14.4KUS / SE20KUS / SE30KUS / SE33.3KUS /SE43.2KUS / SE66.6KUS / SE100KUS; when the following label is labeled on the side of the inverter:

Please note, this Letter Report does not represent authorization for the use of any Intertek certification marks.

Intertek
3933 US Route 11
Cortland, NY 13045
Telephone: 607-753-7311
www.intertek.com

Brand Name(s)	SolarEdge
Relevant Standard(s)	UL 1741, UL 1741 CRD for rapid shutdown National Electric Code, 2017, Section 690.12 requirement for rapid shutdown
Verification Issuing Office	3933 US Route 11, Cortland, NY 13045

Signature:

Name: Mukund Rana
Position: Engineering Team Leader
Date: 2/11/2020

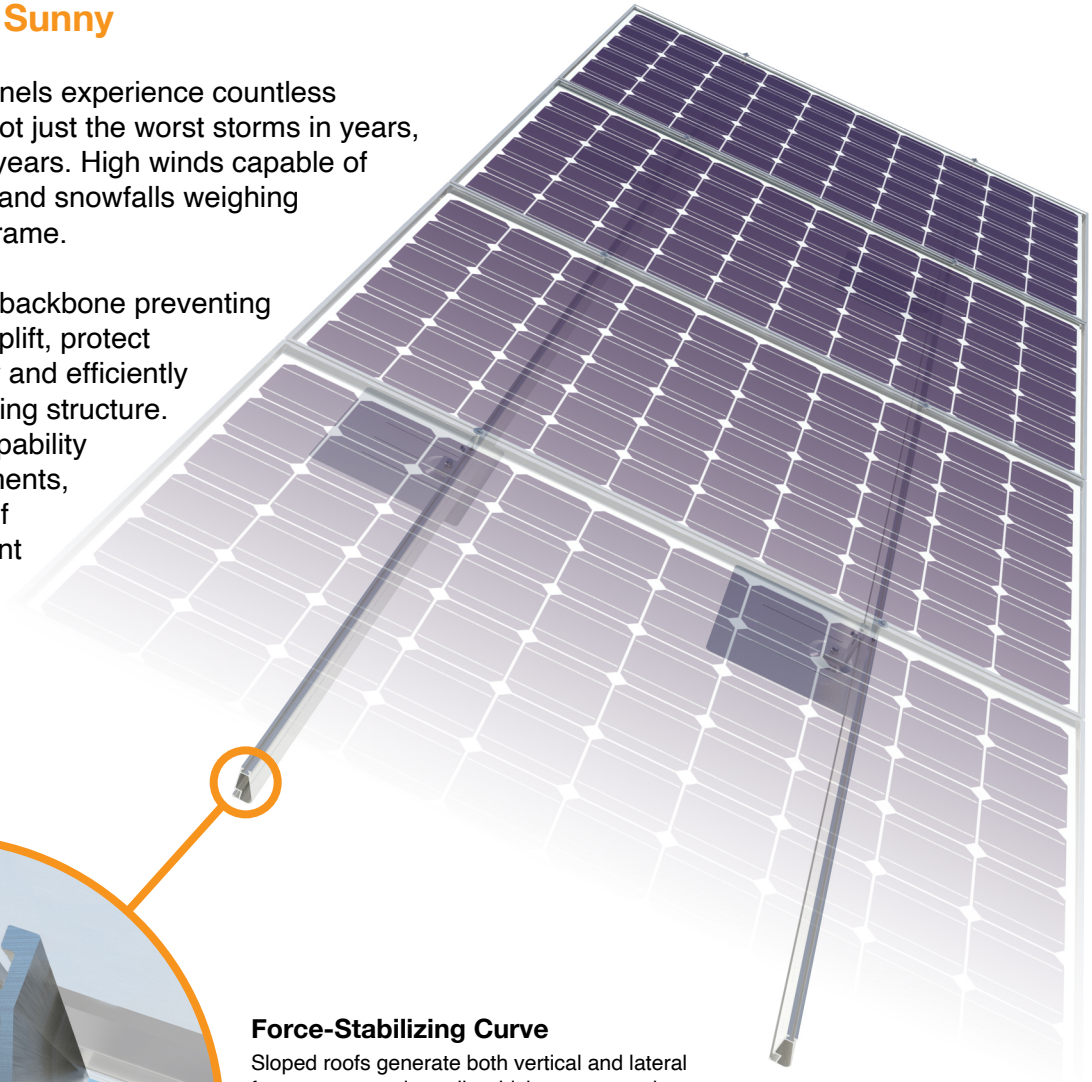
IRONRIDGE

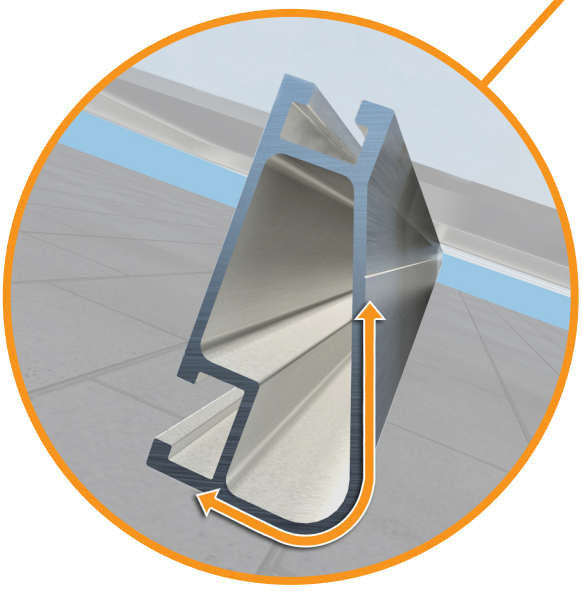
XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.





Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

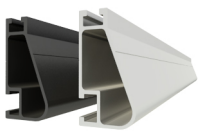
Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

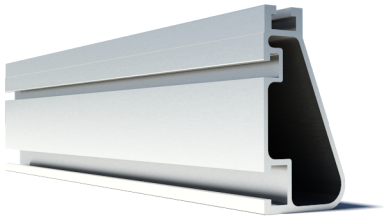
XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available



XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

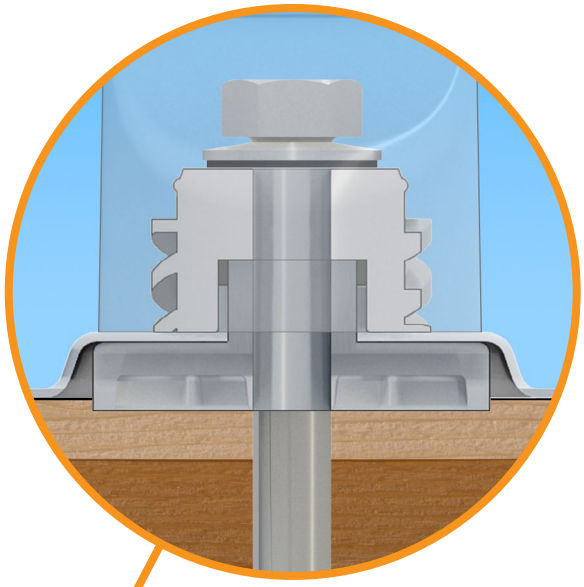
*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

IRONRIDGE

FlashFoot2

The Strongest Attachment in Solar

IronRidge FlashFoot2 raises the bar in solar roof protection. The unique water seal design is both elevated and encapsulated, delivering redundant layers of protection against water intrusion. In addition, the twist-on Cap perfectly aligns the rail attachment with the lag bolt to maximize mechanical strength.

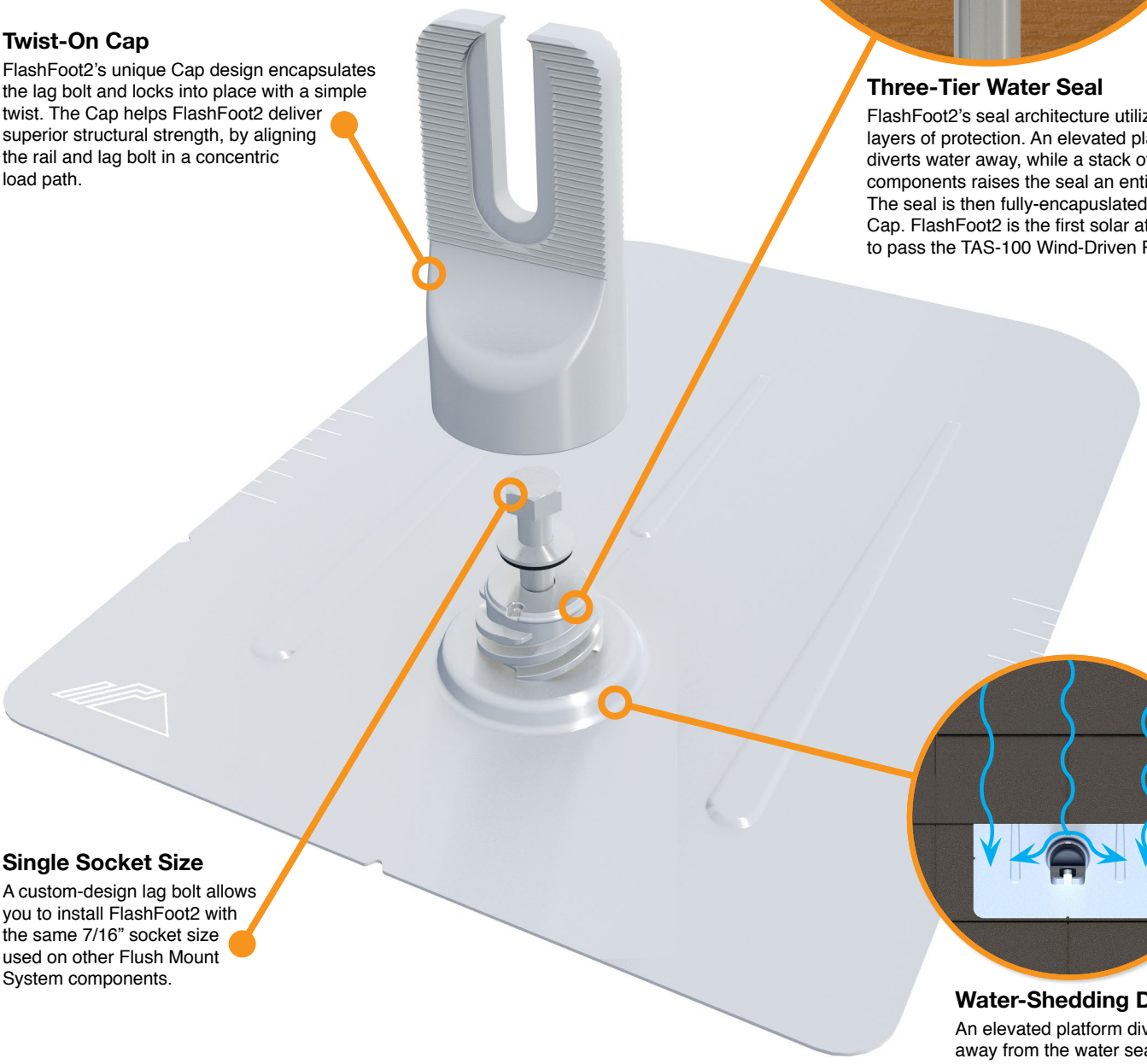


Twist-On Cap

FlashFoot2's unique Cap design encapsulates the lag bolt and locks into place with a simple twist. The Cap helps FlashFoot2 deliver superior structural strength, by aligning the rail and lag bolt in a concentric load path.

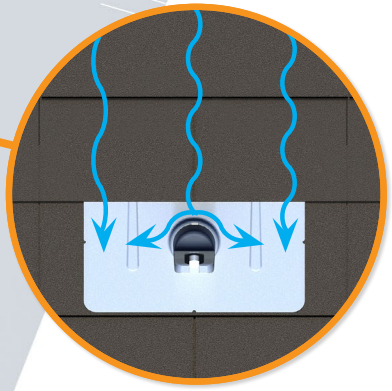
Three-Tier Water Seal

FlashFoot2's seal architecture utilizes three layers of protection. An elevated platform diverts water away, while a stack of rugged components raises the seal an entire inch. The seal is then fully-encapuslated by the Cap. FlashFoot2 is the first solar attachment to pass the TAS-100 Wind-Driven Rain Test.



Single Socket Size

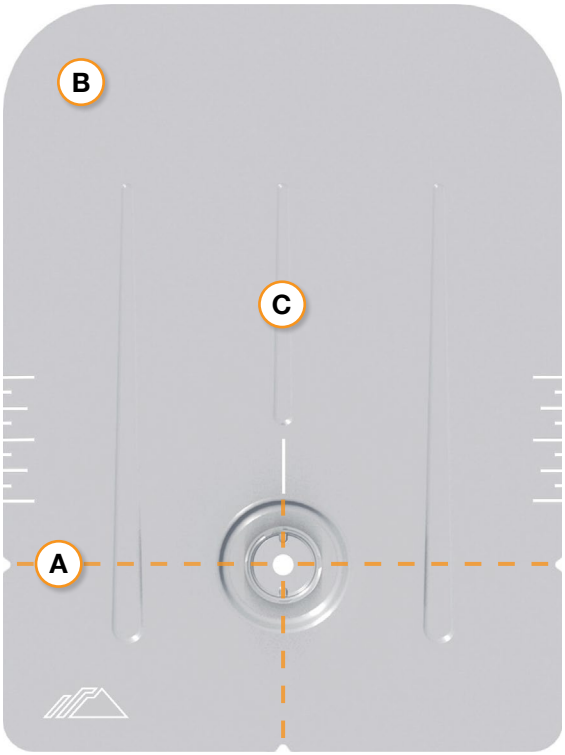
A custom-design lag bolt allows you to install FlashFoot2 with the same 7/16" socket size used on other Flush Mount System components.



Water-Shedding Design

An elevated platform diverts water away from the water seal.

Installation Features



A Alignment Markers

Quickly align the flashing with chalk lines to find pilot holes.

B Rounded Corners

Makes it easier to handle and insert under the roof shingles.

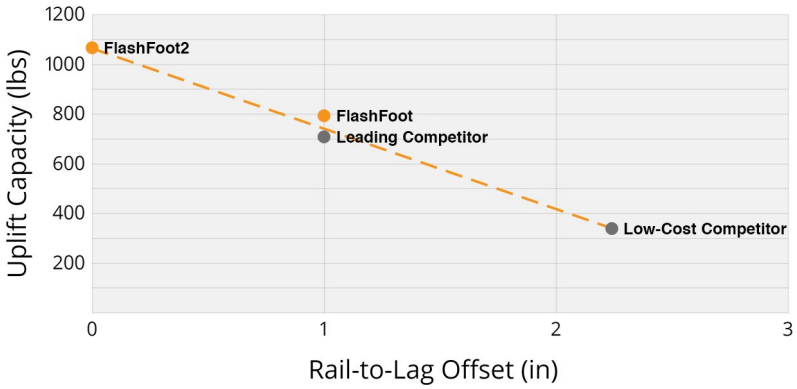
C Reinforcement Ribs

Help to stiffen the flashing and prevent any bending or crinkling during installation.

Benefits of Concentric Loading

Traditional solar attachments have a horizontal offset between the rail and lag bolt, which introduces leverage on the lag bolt and decreases uplift capacity.

FlashFoot2 is the only product to align the rail and lag bolt. This concentric loading design results in a stronger attachment for the system.



Testing & Certification

Structural Certification

Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7.

Water Seal Ratings

Water Sealing Tested to UL 441 Section 27 “Rain Test” and TAS 100-95 “Wind Driven Rain Test” by Intertek. Ratings applicable for composition shingle roofs having slopes between 2:12 and 12:12.

UL 2703

Conforms to UL 2703 Mechanical and Bonding Requirements. See Flush Mount Install Manual for full ratings.

CHECKLIST

PRE-INSTALLATION

☐ Verify module compatibility. See Page 13 for info.

TOOLS REQUIRED

☐ Cordless Drill (non-impact)

☐ Impact Driver (for lag bolts)

☐ Torque Wrench (0-250 in-lbs)

☐ 5/16” Socket

☐ 7/16” Socket

☐ 1/2" Socket

☐ String Line

TORQUE VALUES

☐ FlashFoot2 Lag Bolts (7/16" Socket): Fully Seat

☐ Bonded Splice Screws (5/16" Socket): 20 in-lbs

☐ Grounding Lug Nuts (7/16" Socket): 80 in-lbs

☐ Grounding Lug Terminal Screws (7/16" Socket): 20 in-lbs

☐ Universal Fastening Object (7/16" Socket): 80 in-lbs

☐ Expansion Joint Nuts (7/16" Socket): 80 in-lbs

☐ Flush Standoffs (1/2" Socket): 132 in-lbs

☐ Microinverter Kit Nuts (7/16" Socket): 80 in-lbs

☐ Frameless Module Kit Nuts (7/16" Socket): 80 in-lbs

☐ 3/8" Bonding Hardware Nuts (7/16" Socket): 250 in-lbs

☐ All Tile Hook Lags (7/16" Socket): Fully Seat

☐ All Tile Hook Carriage Bolts (7/16" Socket): 132 in-lbs

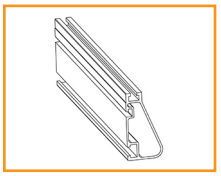
☐ Knockout Tile Lags (1/2" Socket): Fully Seat

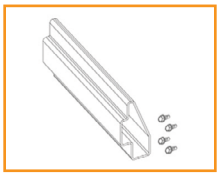
☐ Knockout Tile Nuts (1/2" Socket): 132 in-lbs

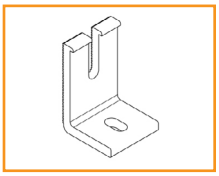
☐ Flat Roof Attachment Nuts (9/16” Socket): 250 in-lbs

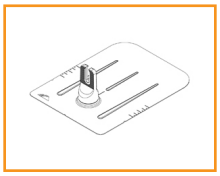
If using FlashVue or previous version of: FlashFoot, Integrated Grounding Mid Clamps, Grounding Lug, End Clamps, and Expansion Joints please refer to Alternate Components Addendum (Version 1.3).

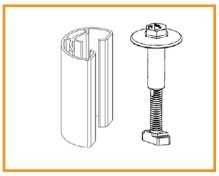
IRONRIDGE COMPONENTS

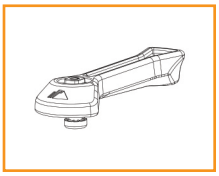

XR Rail

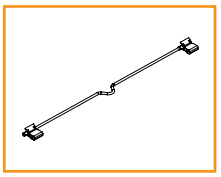

Bonded Splice

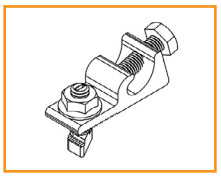

L-Foot

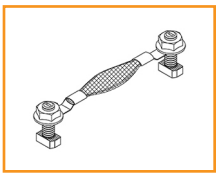

FlashFoot2


UFO and Stopper Sleeve


CAMO

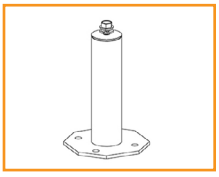

8" Bonding Jumper

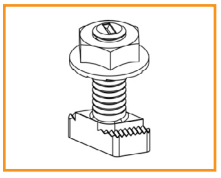

Grounding Lug

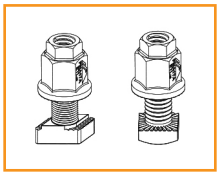

Expansion Joint

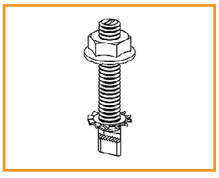
End Cap

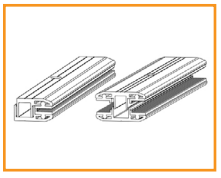

Wire Clip

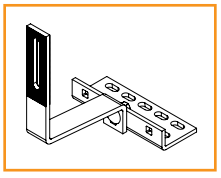

Flush Standoff

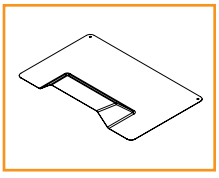

Microinverter Kit

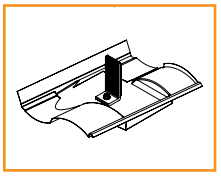

3/8" Bonding Hardware

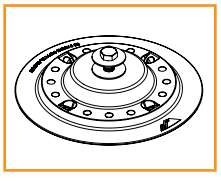

Frameless Module Kit

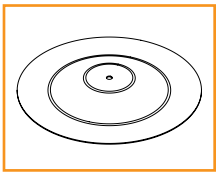

Frameless End/Mid Clamp


All Tile Hook


All Tile Hook Flashing


Knockout Tile


Flat Roof Attachment


Membrane Flashing