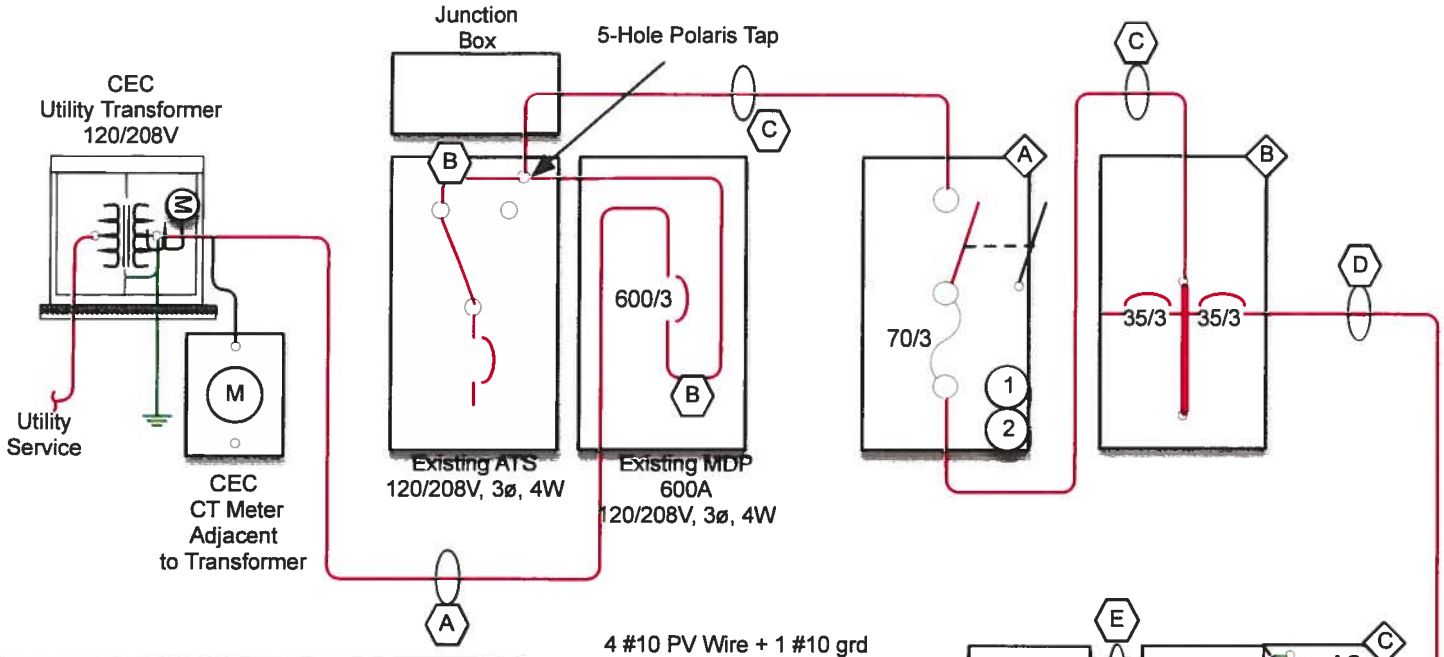
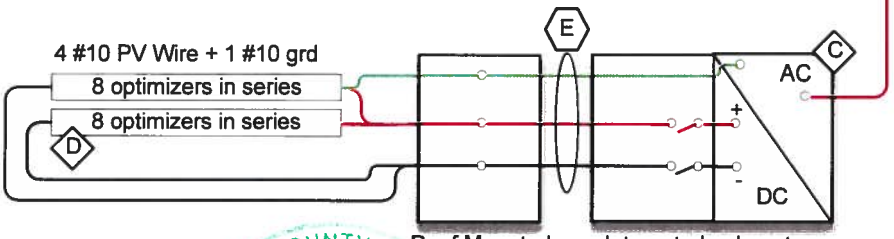
Solar Impact, Inc.
4509 NW 23rd Ave, Suite 20
Gainesville, FL 32606
352-338-8221

Clay Electric Cooperative,
Lake City Branch
1797 SW SR-47
Lake City, FL 32606
NET-METERED SYSTEM

20.48 kW PV Grid-Tied System
64x Q.Cells 320W Modules
2x SolarEdge SE9KUS Inverters
120/208V





Conductor Sizes

- (A) (2 Sets) 4X 350kcmil CU IN 3"C.
- (B) (2 Sets) 4X 350kcmil CU + 1x #1/0 CU Ground IN 3"C.
- (C) *(1 Set) 3X #4 CU + 1X #8 CU Neutral + #8 CU Ground IN 4"C.
- (D) (1 Set) 4X #10 CU+ 1X #8 CU Ground IN 0.75"C.
- (E) (1 Set) 2X #10 CU+ 1X #10 CU Ground IN 0.75"C.

Required Placards

1. "Auxiliary Generation Disconnect."
2. "Warning: electric shock hazard. Do not touch terminals. Terminals on both the line and load sides may be energized in the open position."

Equipment Schedule

- (A) Solar Disconnect, Lockable, Fused, min 100A, 120/208V, 3ø, 4W
- (B) PV Panelboard, min 100A busbar, 120/208V, 3ø, 4W
- (C) SolarEdge SE9KUS Inverter
- (D) SolarEdge P850 Optimizer - 2 modules in series per optimizer

Panelboard and Inverter Schedule

Inverter	Breaker	Module Type	String Lengths
1	35/3	REC 320W	String 1A - 8 Optimizers/16 Modules
			String 1B - 8 Optimizers/16 Modules
2	35/3	REC 320W	String 2A - 8 Optimizers/16 Modules
			String 2B - 8 Optimizers/16 Modules

*Note: NEC 705.95(B) says "**Neutral Conductor for Instrumentation, Voltage Detection or Phase Detection.** A conductor used solely for instrumentation, voltage detection, or phase detection and connected to a single-phase or 3-phase utility-interactive inverter, shall be permitted to be sized at less than the ampacity of the other current-carrying conductors and shall be sized equal to or larger than the equipment grounding conductor."

One-Line Diagram developed by Barry M Jacobson, PhD, PE, CV (licenses PE51402, CVC56761) July 10, 2019

Developed by Barry Jacobson, PhD, PE, CV (license #s PE51402 and CVC56761)
June 20, 2019
Project: Clay Electric Cooperative, Lake City Branch, 1797 SW SR-47, Lake City, FL 32606

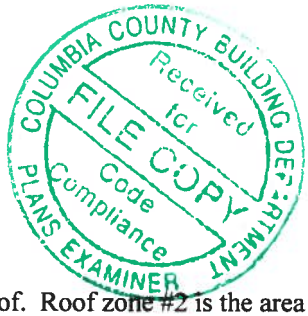
The structure has a 24-gauge ribbed metal roof with rolled ribs 16 inches on center. The metal roof clips are attached to the underlying 5/8-inch thick plywood decking with two 2-inch long #10 wood screws.

Based on a specific gravity of plywood of 0.57, each metal roof clip has an allowable design load of 408 lbs. Each solar racking roof attachment will be secured with an S-5 U or S-5 S mini clamp. S-5 provided test data has a minimum of 715 lbs of allowable design load normal to the seam for 24-gauge metal roofs using a safety factor of 3. This well exceeds the design requirements for this project's design.

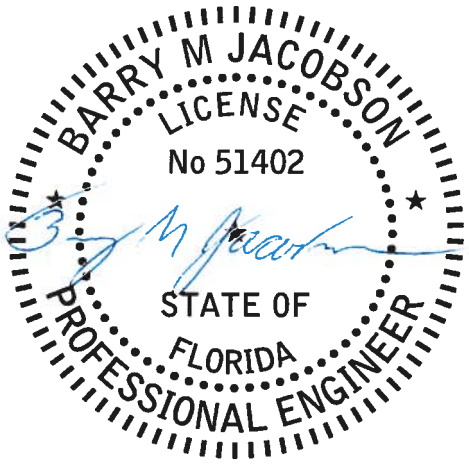
The building is hipped with a roof slope of 4:12. The "Components & Cladding" analysis was used.

Table 1. Hipped roof section

Roof Zone	Max Force (psf)	Attachment Spacing (in)	# Rails per Module
1	27.82	64	2
2	48.44	32	2
3	48.44	32	2



Roof zone #3 is a 8.4 ft x 8.4 ft square at the lower corners of the roof. Roof zone #2 is the area within 8.4 ft of any roof edge that is not within zone #3. Roof zone #1 is the interior area of the roof that is not within zones # 2 and #3.



This item has been electronically signed and sealed by BARRY M JACOBSON using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.
2019.07.28 17:38:18 -05'00'

Installation Requirements

If IronRidge XR-10 or XR-100 rails are used, install attachment feet at most 72-inches apart. Additional manufacturers may be used with written confirmation from the engineer of record.

Attachments between solar modules and racks must be 9.84 - 17.72 inches from the end of the modules.

Solar modules shall not be cantilevered on the rail past the last roof attachment support more than 24-inches in zone 1, 16-inches in zone 2, and 8-inches in zone 3.

Splice joints shall be placed on the rails in accordance with the following requirements:

	Splice Joint Placement		
Zone	Cantilever	End Span*	Interior Span
#1	No Splice	>= 32.0 in	No Restriction
#2	No Splice	>= 21.3 in	No Restriction
#3	No Splice	>= 10.7 in	No Restriction

*Distance from last support towards interior

S-5 Connector Calculations Details

Variable	Value	Units	Description
P roof max	121.75	psf	max roof pressure
W panel	16	in	width of metal roof panel between fasteners
W fasten	5.125	in	width between fasteners
A roof contrib	=W_panel*W_fasten/144	ft2	roof contributing area per fastener
F fasten	=P_roof_max*A_roof_contrib	lbf	tension force per connector
P up	24.2	psf	design uplift pressure
L mod	65.75	in	solar module length
W mod	39.37	in	solar module width
N rails	2		rails per module
P dead	3	psf	dead weight pressure of modules and racking
W con	=F_fasten/(-0.6*P_dead*L_mod/N_rails+0.6*P_up*L_mod/N_rails)*144	in	max allowable roof connector spacing
W nom con	=IF(F_con<W_panel,W_panel,INT(F_con/W_panel)*W_panel)	in	nominal max allowable roof connector spacing

S-5 Connector Calculations for Zone #1

Variable	Value	Units	Description
P roof max	51.0	psf	max roof pressure
W panel	16	in	width of metal roof panel between fasteners
W fasten	48	in	width between fasteners
A roof contrib	5.33	ft2	roof contributing area per fastener
F fasten	272.0	lbf	tension force per fastener
P up	27.82	psf	design uplift pressure
L mod	65.94	in	solar module length
W mod	37.64	in	solar module width
N rails	2		rails per module
P dead	3	psf	dead weight pressure of modules and racking
W con	79.77	in	max allowable roof connector spacing
W nom con	64	in	nominal max allowable roof connector spacing
F s5n	715.0	lbf	max allowable tension S5 S connector
UC s5n	0.380		S5 S unicity code

S-5 Connector Calculations for Zone #2 & #3

Variable	Value	Units	Description
P roof max	51.0	psf	max roof pressure
W panel	16	in	width of metal roof panel between fasteners
W fasten	48	in	width between fasteners
A roof contrib	5.33	ft2	roof contributing area per fastener
F fasten	272.0	lbf	tension force per fastener
P up	48.44	psf	design uplift pressure
L mod	65.94	in	solar module length
W mod	37.64	in	solar module width
N rails	2		rails per module
P dead	3	psf	dead weight pressure of modules and racking
W con	43.57	in	max allowable roof connector spacing
W nom con	32	in	nominal max allowable roof connector spacing
F s5n	715.0	lbf	max allowable tension S5 S connector
UC s5n	0.380		S5 S unicity code

MecaWind v2316
www.meca.biz

Calculations Prepared by:
Date: Jul 26, 2019

File Location:
Z:\barry On My Mac\Dropbox (Solar Impact)\teams\customers\customersCurrent\Clay RFP\
03 - Project Management\01 - Construction Docs\02 - Clay Lake City\ClayLakeCity.wnd

Basic Wind Parameters

Wind Load Standard	= ASCE 7-10	Exposure Category	= B
Wind Design Speed	= 130.0 mph	Risk Category	= II
Structure Type	= Building	Building Type	= Enclosed

General Wind Settings

= ASCE 7-10 Wind Parameters		=
Incl_LF = Include ASD Load Factor of 0.6 in Pressures		= False
DynType = Dynamic Type of Structure		= Rigid
N1 = Natural Frequency of Structure (Mode 1)		= 1.000 Hz
Nm = Natural Frequency of Structure		= 1.000 Hz
Zg = Altitude (Ground Elevation) above Sea Level		= 100.000 ft
Bdist = Base Elevation of Structure		= 0.000 ft
GenElev = Specify the Elevations for Wind Pressures		= Mean Roof Ht
SDB = Simple Diaphragm Building		= False
MWFRS = Analysis Procedure being used for MWFRS		= No Analysis
C&C = Analysis Procedure being used for C&C		= Ch 30 Pt 1
Reacs = Show the Base Reactions in the output		= False
MWFRSType = MWFRS Method Selected		= No Analysis

Topographic Factor per Fig 26.8-1

Topo = Topographic Feature	= None
Kzt = Topographic Factor	= 1.000

Building Inputs

RoofType: Building Roof Type	= Hipped		: Hipped	=	
W : Width Perp to Ridge	= 63.500 ft	L	: Length Along Ridge	= 63.500 ft	
EHt : Eave Height	= 10.000 ft	Hip	: Ridge Hipped Length	= 1.000 ft	
RH : Roof Entry Method	= Slope	Slope	: Slope of Roof	= 4.0 :12	
OH : Specify Roof to Wall Intersection and Overhang	= Sofit	Theta	: Roof Slope	= 18.43 Deg	
Par : Is there a Parapet	= False	OH_ALL	: Sofit	= 3.000 ft	

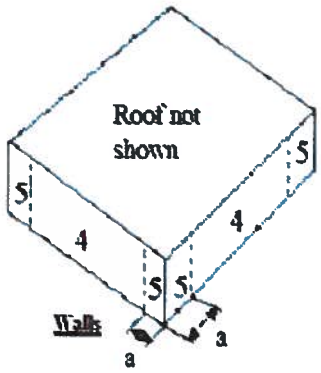
Exposure Constants per Table 26.9-1:

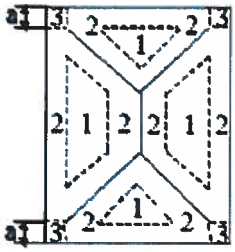
Alpha: Const from Table 26.9-1	= 7.000	Zg: Const from Table 26.9-1	= 1200.000 ft
At: Const from Table 26.9-1	= 0.143	Bt: Const from Table 26.9-1	= 0.840
Am: Const from Table 26.9-1	= 0.250	Bm: Const from Table 26.9-1	= 0.450
C: Const from Table 26.9-1	= 0.300	Eps: Const from Table 26.9-1	= 0.333

Overhang Inputs:

Std	= Overhangs on all sides are the same	= True
OHType	= Type of Roof Wall Intersections	= Sofit
OH	= Overhang of Roof Beyond Wall	= 3.000 ft

Components And Cladding (C&C) Calculations per Ch 30 Part 1:





Hip Roof 7 < θ <= 27

EHt	= Eave Height	= 10.000 ft
RHt	= Ridge Height	= 23.917 ft
h	= Mean Roof Height: 0.5*(EHt+RHt)	= 16.958 ft
Zh	= Shall not be less than 30 ft in Exp B [Table 30.3-1 Note 1]	= 30.000 ft
Kh	= Since 15 ft [4.572 m] < Zh < Zg --> 2.01 * (Zh/zg)^(2/Alpha)	= 0.701
Kzt	= Topographic Factor is 1 since no Topographic feature specified	= 1.000
Kd	= Wind Directionality Factor per Table 26.6-1	= 0.85
GCPi	= Ref Table 26.11-1 for Enclosed Building	= +/-0.18
LF	= Load Factor based upon STRENGTH Design	= 1.00
qh	= (0.00256 * Kh * Kzt * Kd * V^2) * LF	= 25.76 psf
LHD	= Least Horizontal Dimension: Min(B, L)	= 83.500 ft
a1	= Min(0.1 * LHD, 0.4 * h	= 6.783 ft
a	= Max(a1, 0.04 * LHD, 3 ft [0.9 m])	= 6.783 ft

Wind Pressures for C&C Ch 30 Pt 1
All wind pressures include a load factor of 1.0

Description	Zone	Width ft	Span ft	Area sq ft	1/3 Rule	Ref Fig	GCp Max	GCp Min	p Max psf	p Min psf
Zone 1	1	3.000	3.000	9.00	No	30.4-2B	0.500	-0.900	17.52	-27.82
Zone 2	2	3.000	3.000	9.00	No	30.4-2B	0.500	-1.700	17.52	-48.44
Zone 3	3	3.000	3.000	9.00	No	30.4-2B	0.500	-1.700	17.52	-48.44

Area = Span Length x Effective Width
1/3 Rule = Effective width need not be less than 1/3 of the span length
GCp = External Pressure Coefficients taken from Figures 30.4-1 through 30.4-7
p = Wind Pressure: qh*(GCp - GCpi) [Eqn 30.4-1]*
*Per Para 30.2.2 the Minimum Pressure for C&C is 16.00 psf [0.766 kPa] {Includes LF}
For hip roofs with 7 Deg < Theta <= 27 Deg, edge strip and ridge press apply to each hip
Per Fig 30.4-2B Note 6, Hip roofs with <= 25 Deg, Zone 3 shall be treated as Zone 2

Tech Brief

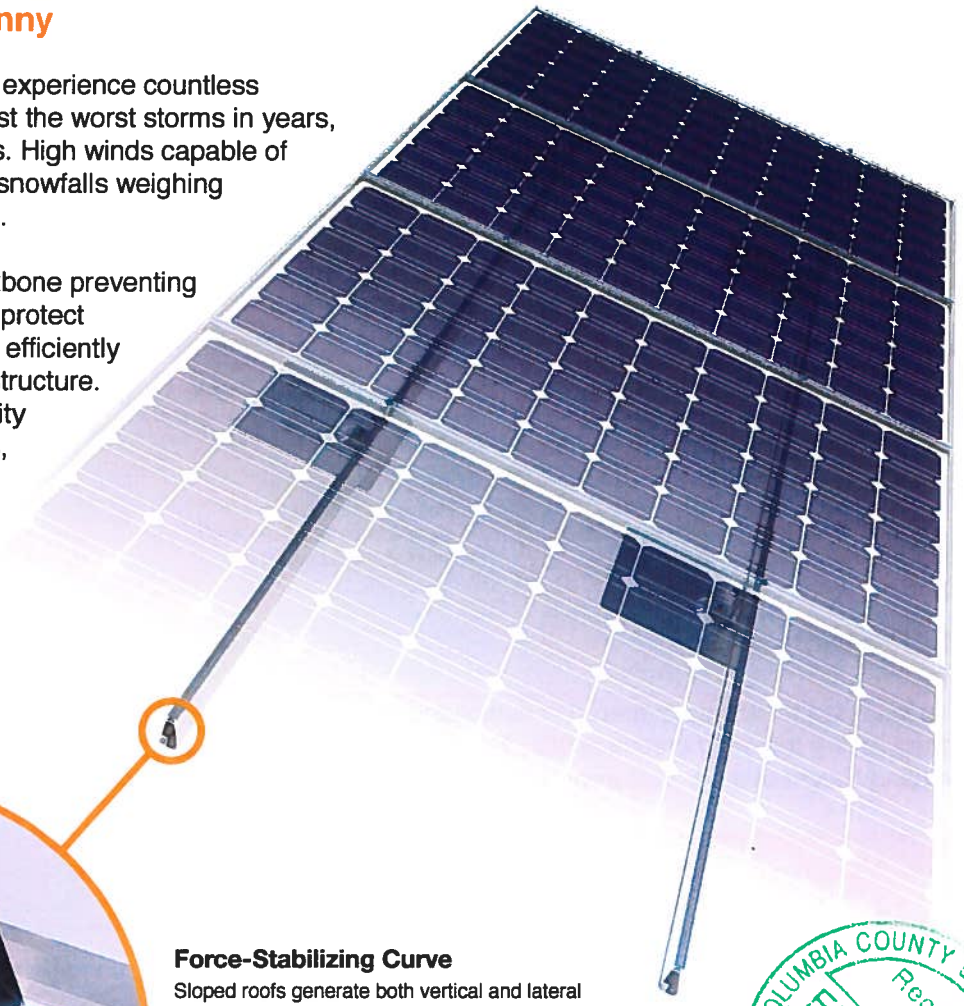
IRONRIDGE

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.

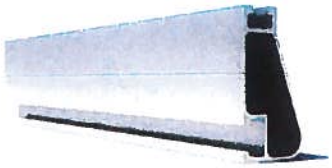
XR Rail Family

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 6 foot spans, while remaining light and economical.

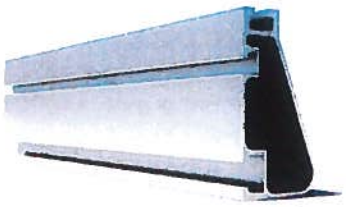
- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available



XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' 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 12 feet or more for commercial applications.

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

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

INVERTERS

Three Phase Inverters

For the 208V Grid for North America

SE9KUS / SE14.4KUS

The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- 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
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Small, lightweight, and easy to install outdoors or indoors on provided bracket
- Fixed voltage inverter for longer strings
- Integrated Safety Switch
- Supplied with RS485 Surge Protection, to better withstand lightning events

solaredge

/ Three Phase Inverters

For the 208V Grid for North America

SE9KUS / SE14.4KUS

	SE9KUS	SE14.4KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	**SEXXK-XXXXXNXXX**		
OUTPUT			
Rated AC Power Output	9000	14400	VA
Maximum AC Power Output	9000	14400	VA
AC Output Line Connections	4-wire WYE (L1-L2-L3-N) plus PE or 3-wire Delta		
AC Output Voltage Minimum-Nominal-Maximum[1] (L-N)	105-120-132.5		Vac
AC Output Voltage Minimum-Nominal-Maximum[1] (L-L)	183-208-229		Vac
AC Frequency Min-Nom-Max[2]	59.3 - 60 - 60.5		Hz
Max. Continuous Output Current (per Phase)	25	40	A
GFDI Threshold	1		A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes		
INPUT			
Maximum DC Power (Module STC)	12150	19400	W
Transformer-less, Ungrounded	Yes		
Maximum Input Voltage DC to Gnd	250	300	Vdc
Maximum Input Voltage DC+ to DC-	500	600	Vdc
Nominal Input Voltage DC to Gnd	200		Vdc
Nominal Input Voltage DC+ to DC-	400		Vdc
Maximum Input Current	26.5	38	Adc
Maximum Input Short Circuit Current	45		Adc
Reverse-Polarity Protection	Yes		
Ground-Fault Isolation Detection	1MΩ Sensitivity	350kΩ Sensitivity	
CEC Weighted Efficiency	96.5	97	%
Nighttime Power Consumption	< 3	< 4	W
ADDITIONAL FEATURES			
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional)		
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect		
RS485 Surge Protection	Supplied with the inverter		
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 part15 class B		
INSTALLATION SPECIFICATIONS			
AC output conduit size / AWG range	3/4" minimum / 12-6 AWG	3/4" minimum / 8-4 AWG	
DC input conduit size / AWG range	3/4" minimum / 12-6 AWG		
Number of DC inputs	2 pairs	3 pairs[4]	
Dimensions (H x W x D)	21 x 12.5 x 10.5 / 540 x 315 x 260		in / mm
Dimensions with Safety Switch (H x W x D)	30.5 x 12.5 x 10.5 / 775 x 315 x 260		in / mm
Weight	73.2 / 33.2	99.5 / 45	lb / kg
Weight with Safety Switch	79.7 / 36.2	106 / 48	lb / kg
Cooling	Fans (user replaceable)		
Noise	< 50	< 55	dBA
Operating Temperature Range	-40 to +140 / -40 to +60[5]		°F / °C
Protection Rating	NEMA 3R		

[1] For 277/480V inverters refer to: https://www.solaredge.com/sites/default/files/se-three-phase-us-inverter-datasheet.pdf
[2] For other regional settings please contact SolarEdge support
[3] Where permitted by local regulations
[4] Field replacement kit for 1 pair of inputs P/N: DCD-3PH-1TBK, Field replacement kit for 3 pairs of fuses and holders P/N: DCD-3PH-6FHK-ST
[5] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

CE RoHS

SOLAR'S MOST TRUSTED

REC

REC N-PEAK SERIES

PREMIUM MONO N-TYPE SOLAR PANELS WITH WORLD-CLASS PERFORMANCE

MONO N-TYPE: THE MOST EFFICIENT C-SI TECHNOLOGY

NO LIGHT INDUCED DEGRADATION

SUPER-STRONG FRAME UP TO 7000 PA SNOW LOAD

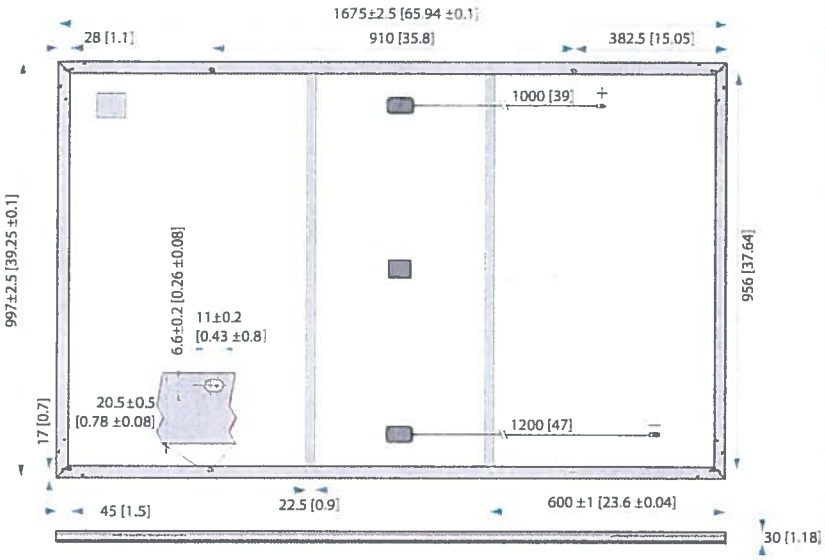
FLEXIBLE INSTALLATION OPTIONS

IMPROVED PERFORMANCE IN SHADED CONDITIONS

GUARANTEED HIGH POWER OVER LIFETIME

330 Wp	POWER
20	YEAR PRODUCT WARRANTY
25	YEAR POWER OUTPUT WARRANTY

REC N-PEAK SERIES



Measurements in mm [in]

GENERAL DATA

Cell type:	120 half-cut mono c-Si n-type cells 6 strings of 20 cells in series
Glass:	3.2 mm solar glass with anti-reflection surface treatment
Backsheet:	Highly resistant polymeric construction
Frame:	Anodized aluminum (black)
Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790
Cable:	4 mm² solar cable, 1.0 m + 1.2 m in accordance with EN 50618
Connectors:	Stäubli MC4-PV-KBT4/KST4 (4 mm²) in accordance with IEC 62852 IP68 only when connected
Origin:	Made in Singapore

MECHANICAL DATA

Dimensions:	1675 x 997 x 30 mm
Area:	1.67 m²
Weight:	18 kg

ELECTRICAL DATA @ STC

Product code*: RECxxxNP	310	315	320	325	330
Nominal Power - P_{MPP} (Wp)	310	315	320	325	330
Watt Class Sorting - (W)	-0/+5	-0/+5	-0/+5	-0/+5	-0/+5
Nominal Power Voltage - V_{MPP} (V)	33.6	33.9	34.2	34.4	34.6
Nominal Power Current - I_{MPP} (A)	9.24	9.31	9.37	9.46	9.55
Open Circuit Voltage - V_{OC} (V)	40.2	40.5	40.8	41.0	41.3
Short Circuit Current - I_{SC} (A)	10.01	10.09	10.18	10.27	10.36
Panel Efficiency (%)	18.6	18.9	19.2	19.5	19.8

Values at standard test conditions (STC: air mass AM 1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a tolerance of V_{OC} & I_{SC} ±3% within one watt class. * Where xxx indicates the nominal power class (P_{MPP}) at STC above

MAXIMUM RATINGS

Operational temperature:	-40 ... +85°C
Maximum system voltage:	1000 V
Design load (+): snow Maximum test load (+):	4666 Pa (475 kg/m²)* 7000 Pa (713 kg/m²)*
Design load (-): wind Maximum test load (-):	1600 Pa (163 kg/m²)* 2400 Pa (245 kg/m²)*
Max series fuse rating:	25 A
Max reverse current:	25 A

*Calculated using a safety factor of 1.5
*See installation manual for mounting instructions

ELECTRICAL DATA @ NMOT

Product code*: RECxxxNP	234	238	241	245	249
Nominal Power - P_{MPP} (Wp)	234	238	241	245	249
Nominal Power Voltage - V_{MPP} (V)	31.1	31.4	31.7	31.9	32.1
Nominal Power Current - I_{MPP} (A)	7.51	7.56	7.62	7.69	7.76
Open Circuit Voltage - V_{OC} (V)	37.3	37.5	37.8	38.0	38.3
Short Circuit Current - I_{SC} (A)	8.01	8.07	8.14	8.22	8.29

Nominal module operating temperature (NMOT: air mass AM 1.5, irradiance 800 W/m², temperature 20°C, windspeed 1 m/s)
*Where xxx indicates the nominal power class (P_{MPP}) at STC above

TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P_{MPP}:	-0.35 %/°C
Temperature coefficient of V_{OC}:	-0.27 %/°C
Temperature coefficient of I_{SC}:	0.04 %/°C

*The temperature coefficients stated are linear values

CERTIFICATIONS

IEC 61215, IEC 61730 & UL 1703; MCS 005
IEC 62804, IEC 61701, IEC 62716, IEC 62782
ISO 9001: 2015, ISO 14001: 2004, OHSAS 18001: 2007

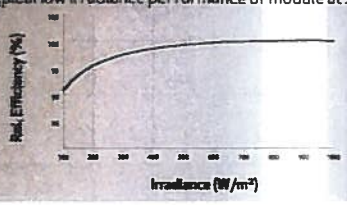
take-e-way WEEE-compliant recycling scheme

WARRANTY

20 year product warranty
25 year linear power output warranty, maximum degression in performance of 0.5% p.a., giving 86% at end of year 25.
See warranty conditions for further details.

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Specifications subject to change without notice.
Ref: NE-05-11-Rev-B 0119

Founded in Norway in 1996, REC is a leading vertically integrated solar energy company. Through integrated manufacturing from silicon to wafers, cells, high-quality panels and extending to solar solutions, REC provides the world with a reliable source of clean energy. REC's renowned product quality is supported by the lowest warranty claims rate in the industry. REC is a Bluestar Elkem company with headquarters in Norway and operational headquarters in Singapore. REC employs more than 2,000 people worldwide, producing 1.5 GW of solar panels annually.

REC
www.recgroup.com

S-5!®

The Right Way!

S-5-U Clamp

The S-5-U clamp is by far our most popular and most versatile clamp. It fits about 85% of the standing seam profiles manufactured in North America—including most structural and architectural profiles. It can be used on vertically oriented seams and, by rotating the clamp 90 degrees, it can also be used on most horizontal 2" seam profiles.

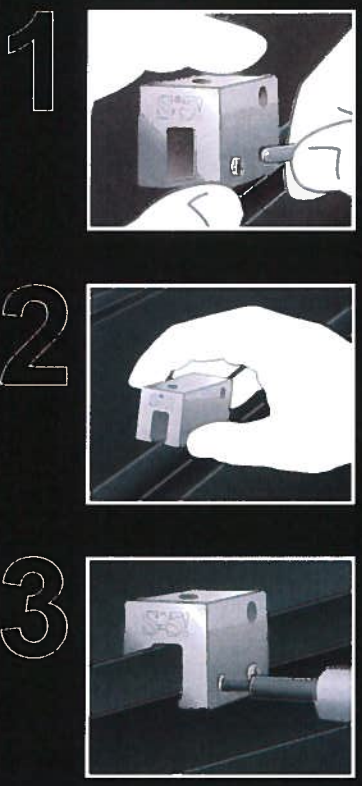
Its simple design, generous dimensioning and multiple hole orientations are what make the S-5-U clamp so versatile for use with the S-5!® snow retention products, such as ColorGard®, as well as with other heavy-duty applications.

Installation is as simple as setting the specially patented round-point setscrews into the clamp, placing the clamp on the seam, and tightening them to the specified tension. Then, affix ancillary items using the bolt provided with the product. Go to www.S-5.com/tools for information and tools available for properly attaching and tensioning S-5! clamps.

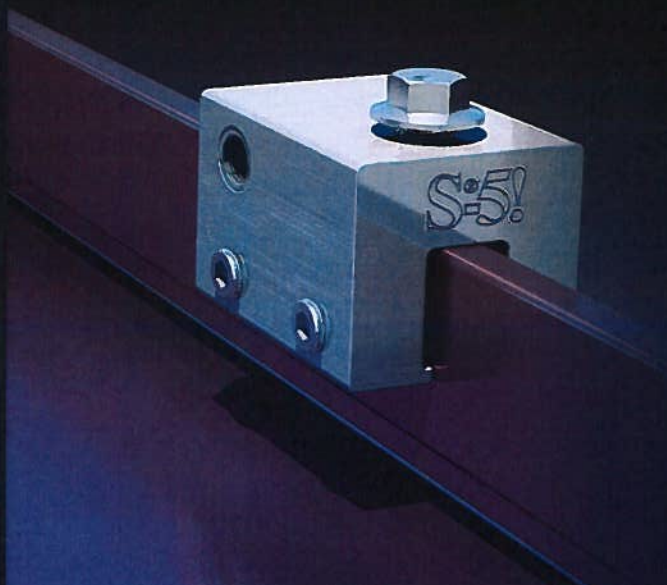
S-5-U Mini Clamp

The S-5-U Mini is a bit shorter than the S-5-U and has one setscrew rather than two. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!*

*S-5! mini clamps are not compatible with, and should not be used with S-5! SnoRail™/SnoFence™ or ColorGard™ snow retention systems.



S-5-U and S-5-U Mini



The S-5-U clamp is our most popular and versatile clamp, fitting about 85% of the standing seam profiles in North America.

The right way to attach almost anything to metal roofs!

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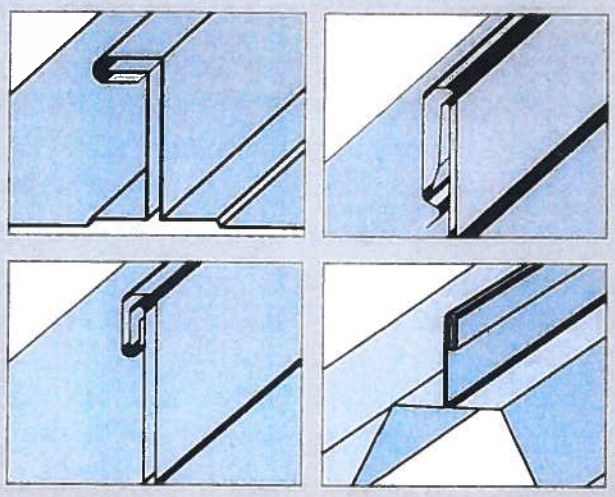
S-5!®
The Right Way!

The strength of the S-5-U clamp is in its simple design. The patented setscrews will slightly dimple the metal seam material but not pierce it—leaving roof warranties intact.

The **S-5-U and S-5-U Mini clamps** are each furnished with the hardware shown to the right. Each box also includes a bit tip for tightening setscrews using an electric screw gun. A structural aluminum attachment clamp, the S-5-U is compatible with most common metal roofing materials excluding copper. All included hardware is stainless steel. Please visit **www.S-5.com** for more information including CAD details, metallurgical compatibilities and specifications.

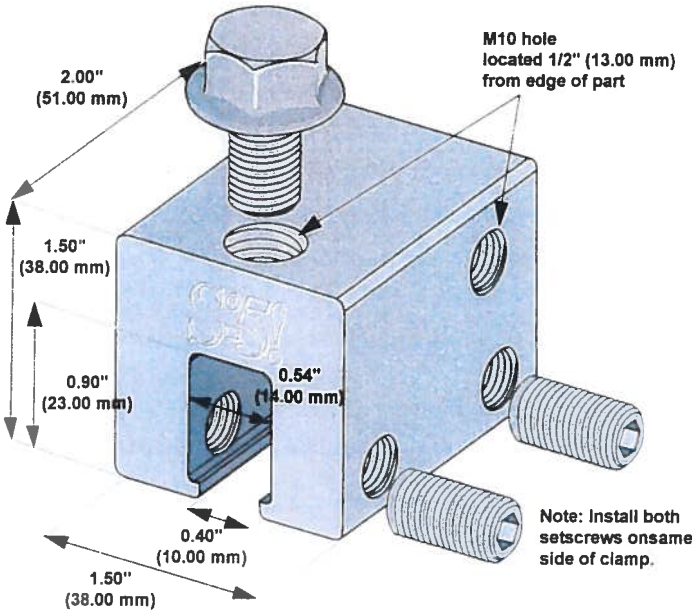
The S-5-U clamp has been tested for load-to-failure results on most major brands and profiles of standing seam roofing. The independent lab test data found at www.S-5.com can be used for load-critical designs and applications. S-5!® holding strength is unmatched in the industry.

Example Profiles

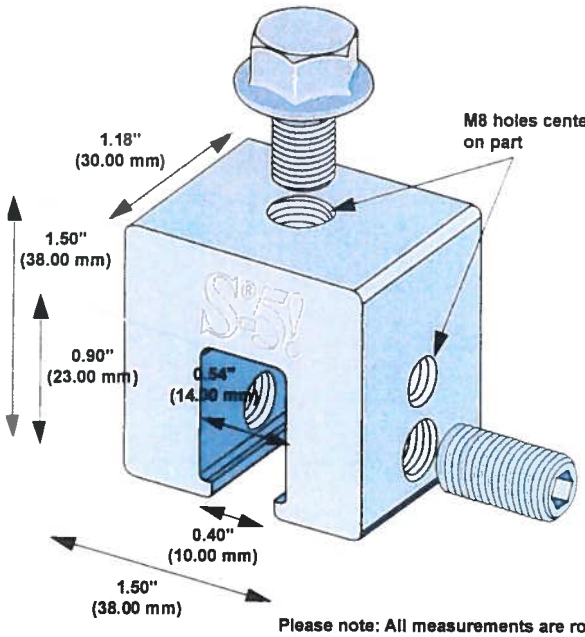


For horizontal seams under 0.65" do not use this clamp. Visit www.S-5.com for more detailed information and proper clamp to use.

S-5-U Clamp



S-5-U Mini Clamp



Please note: All measurements are rounded to the second decimal place.

Distributed by

S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at www.S-5.com for published data regarding holding strength.