

alt# 2396

Columbia County Remodel Permit Application

For Office Use Only	Application # <u>1706-87</u>	Date Received <u>6/27</u>	By <u>[Signature]</u>	Permit # <u>35579</u>
Zoning Official <u>T.C.</u>	Date <u>7-10</u>	Flood Zone <u>N/A</u>	Land Use <u>AG</u>	Zoning <u>A-3</u>
FEMA Map # <u>N/A</u>	Elevation <u>N/A</u>	MFE <u>N/A</u>	River <u>N/A</u>	Plans Examiner <u>T.C.</u>
Date <u>7-10-17</u>				
Comments <u>No structure Roof Mounted Solar</u>				
☒ NOC ☒ Deed or PA ☐ Dev Permit # ☐ In Floodway ☒ Letter of Auth. from Contractor				
☐ F W Comp. letter ☐ Owner Builder Disclosure Statement ☐ Land Owner Affidavit ☐ Ellisville Water ☒ App Fee Paid				
☐ Site Plan ☐ Env. Health Approval ☐ Sub VF Form				

Fax 386-218-6935

Applicant (Who will sign/pickup the permit) Ben Adams

Phone 407-879-5803

Address 379 SW LACROSSE CT LAKE CITY, FL 32024

Owners Name Darryl Duffe

Phone 904-557-6855

911 Address 379 SW LACROSSE CT LAKE CITY, FL 32024

Contractors Name Steven Lorenz

Phone 954-295-8190

Address 1060 E Industrial Dr Suite A Orange City FL 32763

Contractor Email SteveLorenz@AllAmericanSolarLLC.com

***Include to get updates on this job.

Fee Simple Owner Name & Address _____

Bonding Co. Name & Address _____

Architect/Engineer Name & Address Jeffrey Torres 950 Sunshine Lane Altamonte Springs FL 32714

Mortgage Lenders Name & Address _____

Circle the correct power company ☒ FL Power & Light ☐ Clay Elec. ☐ Suwannee Valley Elec. ☐ Duke Energy

Property ID Number 31-3S-16-02417-000

Estimated Construction Cost 11,000

Subdivision Name _____ Lot _____ Block _____ Unit _____ Phase _____

Driving Directions from a Major Road Head north on NE Hernando Ave 13 ft Turn left toward N Marion Ave 223 ft Turn left onto N Marion Ave 144 ft

Turn right at the 1st cross street onto US-90 W/W Duval St Continue to follow US-90 W 6.8 mi

Turn left onto S W Thomas Rd 0.4 mi Turn right onto S W Arbor Ln 0.9 mi Turn left .3 mi

Construction of 2.2KW Solar Photovoltaic System Ground Rack

Commercial OR XXXX Residential

Type of Structure (House; Mobile Home; Garage; Exxon)

Use/Occupancy of the building now RESIDENTIAL

Is this changing _____

If Yes, Explain, Proposed Use/Occupancy SOLAR SYSTEM

Is the building Fire Sprinkled? _____ If Yes, blueprints included _____ Or Explain _____

Entrance Changes (Ingress/Egress) _____ If Yes, Explain _____

Zoning Applications applied for (Site & Development Plan, Special Exception, etc.) _____

See sent with loan 6.27.17 + See sent email 7.17.17

Columbia County Building Permit Application

CODE: Florida Building Code 2014 and the 2011 National Electrical Code.

Application is hereby made to obtain a permit to do work and installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work be performed to meet the standards of all laws regulating construction in this jurisdiction.

TIME LIMITATIONS OF APPLICATION : An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless pursued in good faith or a permit has been issued.

TIME LIMITATIONS OF PERMITS: Every permit issued shall become invalid unless the work authorized by such permit is commenced within **180** days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time work is commenced. A valid permit receives an approved inspection every 180 days. Work shall be considered not suspended, abandoned or invalid when the permit has received an approved inspection within 180 days of the previous approved inspection.

FLORIDA'S CONSTRUCTION LIEN LAW: Protect Yourself and Your Investment: According to Florida Law, those who work on your property or provide materials, and are not paid-in-full, have a right to enforce their claim for payment against your property. This claim is known as a construction lien. If your contractor fails to pay subcontractors or material suppliers or neglects to make other legally required payments, the people who are owed money may look to your property for payment, even if you have paid your contractor in full. This means if a lien is filed against your property, it could be sold against your will to pay for labor, materials or other services which your contractor may have failed to pay.

NOTICE OF RESPONSIBILITY TO CONTRACTOR AND AGENT: **YOU ARE HEREBY NOTIFIED** as the recipient of a building permit from Columbia County, Florida, you will be held responsible to the County for any damage to sidewalks and/or road curbs and gutters, concrete features and structures, together with damage to drainage facilities, removal of sod, major changes to lot grades that result in ponding of water, or other damage to roadway and other public infrastructure facilities caused by you or your contractor, subcontractors, agents or representatives in the construction and/or improvement of the building and lot for which this permit is issued. No certificate of occupancy will be issued until all corrective work to these public infrastructures and facilities has been corrected.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOU PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

OWNERS CERTIFICATION: I CERTIFY THAT ALL THE FOREGOING INFORMATION IS ACCURATE AND THAT ALL WORK WILL BE DONE IN COMPLIANCE WITH ALL APPLICABLE LAWS REGULATING CONSTRUCTION AND ZONING.

NOTICE TO OWNER: There are some properties that may have deed restrictions recorded upon them. These restrictions may limit or prohibit the work applied for in your building permit. You must verify if your property is encumbered by any restrictions or face possible litigation and or fines.

Darryl Duffe
Print Owners Name

[Signature]
Owners Signature

****Property owners must sign here before any permit will be issued.**

****If this is an Owner Builder Permit Application then, ONLY the owner can sign the building permit when it is issued.**

CONTRACTORS AFFIDAVIT: By my signature I understand and agree that I have informed and provided this written statement to the owner of all the above written responsibilities in Columbia County for obtaining this Building Permit including all application and permit time limitations.

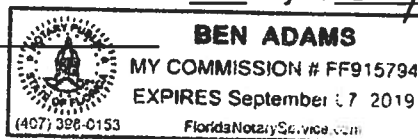
[Signature]
Contractor's Signature

Contractor's License Number CVC56961
Columbia County
Competency Card Number 19066

Affirmed under penalty of perjury to by the Contractor and subscribed before me this 25 day of JULY 2017.
Personally known [Signature] or Produced Identification [Signature]

[Signature]
State of Florida Notary Signature (For the Contractor)

SEAL:



Columbia County Property Appraiser

Jeff Hampton

2016 Tax Roll Year

updated: 6/6//2017

Parcel: << 31-3S-16-02417-000 >>

Owner & Property Info

Result: 4 of 6

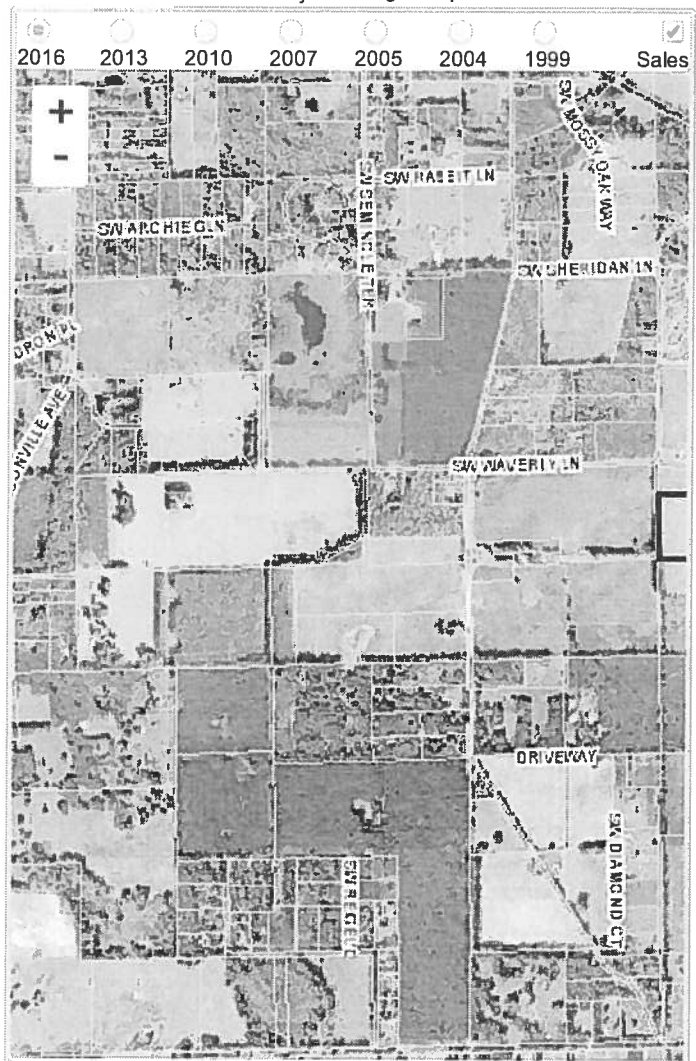
Owner	DUFFE' DARRYL SUCCESSOR TRSTEE THE FAYE R KIRKLAND LIVING TRU 379 SW LACROSSE CT LAKE CITY, FL 320242906		
Site	379 LACROSSE CT, LAKE CITY		
Description *	N1/2 OF SW1/4 & S1/2 OF NW1/4. ORB 533-409, EX 58.82 AC DESC ORB 996-765. ORB 757-1645, QCD 1259-1139,		
Area	111.5 AC	S/T/R	31-3S-16
Use Code *	IMPROVED A (005000)	Tax District	3

* The Description above is not to be used as the Legal Description for this parcel in any legal transaction. The Use Code is a FL Dept. of Revenue (DOR) code. Please contact the Columbia County Planning & Development office for specific zoning information.

Property & Assessment Values

2016 Certified Values		2017 Working Values	
Mkt Land (8)	\$123,932	Mkt Land (8)	\$123,932
Ag Land (2)	\$14,700	Ag Land (2)	\$15,130
Building (3)	\$114,458	Building (3)	\$115,628
XFOB (4)	\$3,130	XFOB (4)	\$3,130
Just	\$358,358	Just	\$359,528
Class	\$256,220	Class	\$257,820
Appraised	\$256,220	Appraised	\$257,820
Exempt	\$0	Exempt	\$0
Assessed	\$256,220	Assessed	\$257,820
Total Taxable	county:\$256,220 city:\$256,220 other:\$256,220 school:\$256,220	Total Taxable	county:\$257,820 city:\$257,820 other:\$257,820 school:\$257,820

Aerial Viewer Pictometry Google Maps



Sales History

Sale Date	Sale Price	Book/Page	Deed	V/I	Quality (Codes)	RCode
7/30/2013	\$100	1259/1139	QC	I	U	11

Building Characteristics

Bldg Sketch	Bldg Item	Bldg Desc	Year Blt	Base SF	Actual SF	Bldg Value
Sketch	1	SINGLE FAM (000100)	1952	1224	1939	\$48,337
Sketch	2	SINGLE FAM (000100)	1957	1693	2645	\$62,566
Sketch	3	MOBILE HME (000800)	1975	924	1068	\$4,725

Extra Features & Out Buildings (Show Codes)

Code	Desc	Year Blt	Value	Units	Dims	Condition (% Good)
0040	BARN,POLE	0	\$1,530.00	1.000	53 x 77 x 0	(000.00)
0294	SHED WOOD/	0	\$200.00	1.000	0 x 0 x 0	(000.00)
0190	FPLC PF	0	\$1,200.00	1.000	0 x 0 x 0	(000.00)
0166	CONC,PAVMT	2014	\$200.00	1.000	0 x 0 x 0	(000.00)

Land Breakdown

Land Code	Desc	Units	Adjustments	Eff Rate	Land Value
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AFTER RECORDING - RETURN TO:

All American Solar LLC
1060 E Industrial Dr Suite A
Orange City FL 32763

PERMIT NUMBER: _____

Inst: 201712012053 Date: 06/27/2017 Time: 4:41PM
Page 1 of 1 B: 1339 P: 1740, P. DeWitt Cason, Clerk of Court
Columbia, County, By: PT
Deputy Clerk

NOTICE OF COMMENCEMENT

The undersigned hereby gives notice that improvement will be made to certain real property, and in accordance with Chapter 713, Florida Statutes, the following information is provided in this Notice of Commencement.

1. DESCRIPTION OF PROPERTY (Legal description of the property & street address, if available) TAX FOLIO NO.: 31-3S-16-02417-000

SUBDIVISION _____ BLOCK _____ TRACT _____ LOT _____ BLDG _____ UNIT _____
N1/2 OF SW1/4 & S1/2 OF NW1/4. ORB 533-409, EX 58.82 AC DESC ORB 996-765. ORB 757-1645, QCD 1259-1139,

2. GENERAL DESCRIPTION OF IMPROVEMENT:

2.2KW Solar Photovoltaic System

3. OWNER INFORMATION OR LESSEE INFORMATION IF THE LESSEE CONTRACTED FOR THE IMPROVEMENT:

a. Name and address: DARRY L DUFFE SUCCESSOR TRSTEE THE FAYE R KIRKLAND LIVING TRUST 379 SW LACROSSE CT LAKE CITY, FL 32024

b. Interest in property: OWNER

c. Name and address of fee simple titleholder (if different from Owner listed above): N/A

4. a. CONTRACTOR'S NAME: Steven Lorenz of All American Solar LLC

Contractor's address: 1060 E Industrial Dr Suite A Orange City FL 32763 b. Phone number: 954-295-8190

5. SURETY (if applicable, a copy of the payment bond is attached):

a. Name and address: N/A

b. Phone number: N/A

c. Amount of bond: \$ N/A

6. a. LENDER'S NAME: Service Finance Company

Lender's address: 555 S Federal Highway Boca Raton FL

b. Phone number: 866-254-0497

7. Persons within the State of Florida designated by Owner upon whom notices or other documents may be served as provided by Section 713.13 (1) (a) 7., Florida Statutes:

a. Name and address: N/A

b. Phone numbers of designated persons: N/A

8. a. In addition to himself or herself, Owner designates Steven Lorenz of All American Solar LLC to receive a copy of the Lienor's Notice as provided in Section 713.13 (1) (b), Florida Statutes.

b. Phone number of person or entity designated by Owner: 954-295-8190

9. Expiration date of notice of commencement (the expiration date will be 1 year from the date of recording unless a different date is specified): _____, 20____

WARNING TO OWNER: ANY PAYMENTS MADE BY THE OWNER AFTER THE EXPIRATION OF THE NOTICE OF COMMENCEMENT ARE CONSIDERED IMPROPER PAYMENTS UNDER CHAPTER 713, PART I, SECTION 713.13, FLORIDA STATUTES, AND CAN RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE COMMENCING WORK OR RECORDING YOUR NOTICE OF COMMENCEMENT.

[Signature]
(Signature of Owner or Lessee, or Owner's or Lessee's Authorized Officer/Director/Partner/Manager)

State of Florida

County of Columbia

L. DARRY DUFFE
(Print Name and Provide Signatory's Title/Office)

The foregoing instrument was acknowledged before me this 27 day of OWN, 2017

by Lindsay Darryl Duffe as owner & Trustee

for Lindsay Darryl Duffe (name of party on behalf of whom instrument was executed),
(name of person) (type of authority, ...e.g. officer, trustee, attorney in fact)

Personally Known _____ or Produced Identification ☒ Type of Identification Produced Florida Power License

Notary

[Signature]
(Signature of Notary Public)
(Print, Type, or Stamp Commissioned Name of Notary Public)



Photovoltaic System Approval Certificate

UM-16-0200A

Awarded to:

UMA Solar

950 Sunshine Lane

Altamonte Springs, FL 32714

For The Photovoltaic System Designated:

1-11 kW – SW290 – ENPHASE S280-IG MICROINVERTER**PV Modules and Array**

PV Module Manufacturer: SolarWorld
PV Module Model Number: Sunmodule Plus SW290 Mono
FSEC Module Registration Number: SW15-ACTL-0429
Listing to UL 1703 Verified: Yes

Array Configuration

Total Number of PV Modules: 1-40
Series Strings/Branch Circuits: 1-3
Modules Per Series String/Branch Circuit: 1-14
Array Nameplate Power Rating: 290 to 11,600 W

Power Conditioning Equipment (Inverter)

Inverter Manufacturer: Enphase
Inverter Model Number: S280
Listing to UL 1741 Verified: Yes

Inverter DC Voltage Window: 16 V to 48 V
AC Power Rating: 280 W
AC Nominal Voltage Output: 208 / 240 V
Max PV Array Power Per Inverter: 365 W

Charge Controller and Batteries

Charge Controller Manufacturer: N/A
Charge Controller Model Number: N/A
Listing to UL 1741 Verified: N/A

Battery Manufacturer: N/A
Battery Model Number: N/A
Battery Type: N/A
Battery Capacity (C/20 rate): N/A

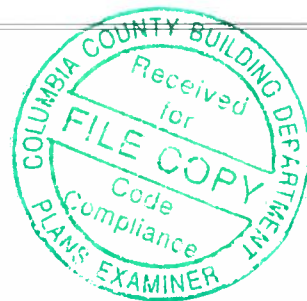
Battery Bank Configuration

Number in Each Series String: N/A

Total Number of Batteries: N/A
Number of Series Strings: N/A

Comments**Electrical Design** (Verify the following items for agreement between the installed components and the supplied electrical schematic.)

- ☐ Size, type and location of all conductors in the PV system;
- ☐ Conduit, raceways, junction boxes, and combiner boxes;
- ☐ Size, current rating, voltage ratings, and location of all over-current protection devices;
- ☐ Rating and location of all disconnects;
- ☐ Point of connection to the utility;
- ☐ PV module and equipment grounding system (including conductor size);
- ☐ PV DC circuit and system grounding (including grounding electrode conductor size);
- ☐ Ground fault detection & interrupter (GFDI) rating and location;
- ☐ Battery wiring and cable sizes (if applicable).

**Inspection**

Inspector Name (printed)

Inspector Signature

Date

Installer Information and Certification

Company Name:

Website:

Address 1:

Address 2:

City:

State:

Zip:

Phone Number:

Fax Number:

Florida Contractor License Number:

Florida Contractor License Type: () Solar () Electrical () Other, please specify:

I hereby certify that this PV system has been installed in full accordance with the National Electrical Code.

Installer Name (printed)

Installer Signature

Date

Note: FSEC approvals do not replace or exempt any requirements of electrical utilities or local jurisdiction authorities in matters such as permitting, inspections, or utility interconnection agreements as required for PV system installations. When referring to FSEC approvals in any documentation produced by the supplier, including technical or marketing information, the following statement shall be included:

"The photovoltaic system design described in this manual, when properly installed and maintained, meets the minimum recommended practices established by the Florida Solar Energy Center. This 'approval' does not imply endorsement or warranty of this product by the Florida Solar Energy Center or the State of Florida."

Provided by:

Solar Testing & Certification Coordinator

2016-07-12

Date



NEC 2011 LABELING REQUIREMENTS

PHOTOVOLTAIC AC DISCONNECT

MAXIMUM AC OPERATING CURRENT 1-45.2 A
MAXIMUM AC OPERATING VOLTAGE 240 V
(PER NEC 690.54 - PROVIDE AT EXTERNAL AC
DISCONNECT/MAIN SERVICE PANEL/NEW SERVICE
PANEL FOR SOLAR PV IF APPLICABLE)

LABEL NOTE: THIS LABEL IS SUBJECT TO
CHANGE BASED ON SIZE OF INSTALLED SYSTEM.
FOR EXAMPLE, IF 24 MICROINVERTERS ARE
INSTALLED, MAXIMUM AC OPERATING
CURRENT SHALL BE 3.3A x 24 = 79.2A
MICROINVERTERS, WHICH IS 27.12A

WARNING

**DUAL POWER SOURCE
SECOND SOURCE IS PV SYSTEM**

LABEL PER NEC 705.12(D)(4) - PROVIDE AT MAIN
SERVICE PANEL OR TAP BOX LOCATION

**MAIN PV SYSTEM
DISCONNECT**

PER NEC 690.14(2) - PROVIDE AT MAIN
SERVICE PANEL OR NEW SERVICE PANEL FOR
SOLAR PV FOR SUPPLY SIDE CONNECTION

PHOTOVOLTAIC

(TYPE INFORMATION HERE)

AC DISCONNECT

PER NEC 690.14(C)(2) & 690.15 - PROVIDE AT EITHER
EXTERNAL AC DISCONNECT OR PV SYSTEM BREAKER
IN SERVICE PANEL

CIRCUIT PANEL DIRECTORY

NO.	SIZE	CIRCUIT IDENTIFICATION	NO.	SIZE	CIRCUIT IDENTIFICATION
1	20A	BRANCH CIRCUIT A	1	20A	BRANCH CIRCUIT C
1	20A	BRANCH CIRCUIT C			SPARE
					SPARE
		SPARE			SPARE
		SPARE			SPARE

CIRCUIT DIRECTORY SUBJECT TO CHANGE BASED ON SITE SPECIFIC
REQUIREMENTS BUT DIRECTORY REQUIRED PER NEC 705.10

WARNING

**ELECTRIC SHOCK HAZARD. DO NOT TOUCH
TERMINALS. TERMINALS ON BOTH THE LINE
AND LOAD SIDES MAY BE ENERGIZED IN THE
OPEN POSITION**

LABEL PER NEC 690.27 - PROVIDE AT MAIN SERVICE PANEL

WARNING

**INVERTER OUTPUT CONNECTION - DO NOT
RELOCATE THIS OVERCURRENT DEVICE**

LABEL PER NEC 705.12(D)(7) - PROVIDE AT MAIN SERVICE PANEL

Sunmodule[®] Plus

SW 285-300 MONO (33mm frame, 5 busbar)



TUV Power controlled:
Lowest measuring tolerance in industry



Every component is tested to meet
3 times IEC requirements



Designed to withstand heavy
accumulations of snow and ice



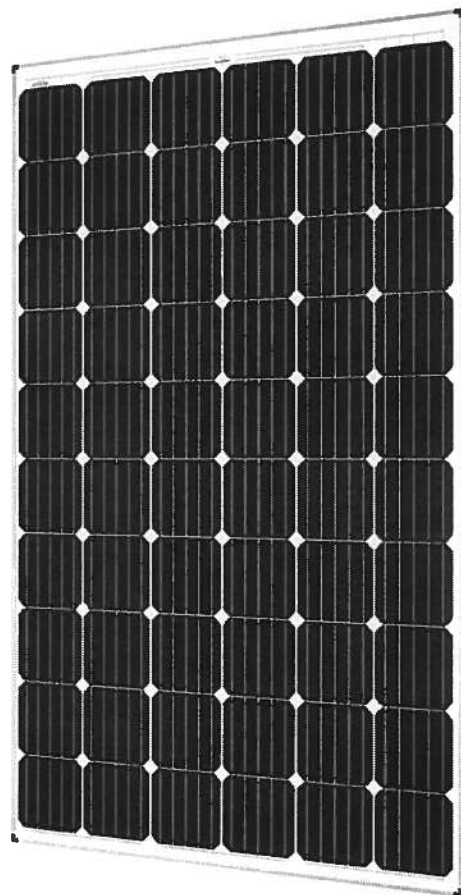
Sunmodule Plus:
Positive performance tolerance



25-year linear performance warranty
and 10-year product warranty



Glass with anti-reflective coating



World-class quality

Fully-automated production lines and seamless monitoring of the process and material ensure the quality that the company sets as its benchmark for its sites worldwide.

SolarWorld Plus-Sorting

Plus-Sorting guarantees highest system efficiency. SolarWorld only delivers modules that have greater than or equal to the nameplate rated power.

25-year linear performance guarantee and extension of product warranty to 10 years

SolarWorld guarantees a maximum performance digression of 0.7% p.a. in the course of 25 years, a significant added value compared to the two-phase warranties common in the industry, along with our industry-first 10-year product warranty.*

*in accordance with the applicable SolarWorld Limited Warranty at purchase.
www.solarworld.com/warranty



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Blowing sand resistance, IEC 60068-2-68
- Ammonia resistance, IEC 62716
- Salt mist corrosion, IEC 61701
- Periodic inspection



- Periodic inspection
- Power controlled



Sunmodule[®] Plus

SW 285-300 MONO (33mm frame, 5 busbar)



PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

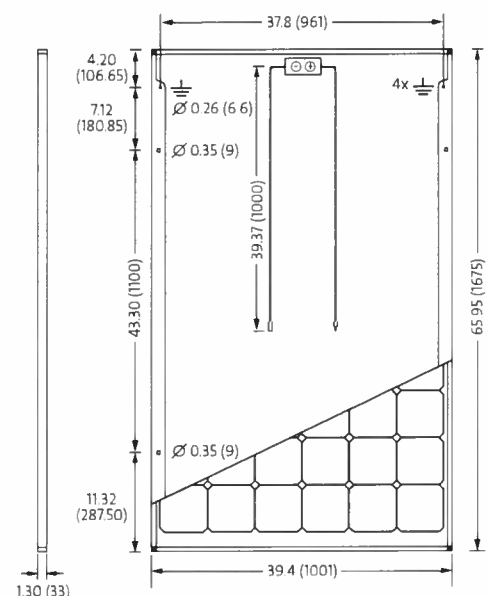
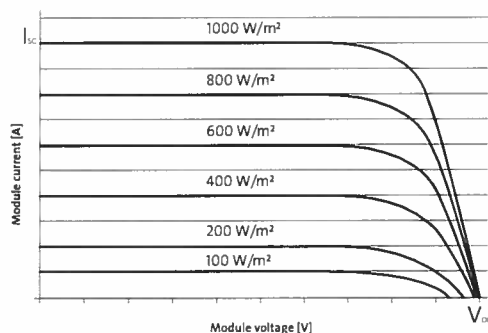
		SW 285	SW 290	SW 295	SW 300
Maximum power	P_{max}	285 Wp	290 Wp	295 Wp	300 Wp
Open circuit voltage	V_{oc}	39.7 V	39.9 V	40.0 V	40.1 V
Maximum power point voltage	V_{mpp}	31.3 V	31.4 V	31.5 V	31.6 V
Short circuit current	I_{sc}	9.84 A	9.97 A	10.10 A	10.23 A
Maximum power point current	I_{mpp}	9.20 A	9.33 A	9.45 A	9.57 A
Module efficiency	η_m	17.00 %	17.30 %	17.59 %	17.89 %

*STC: 1000W/m², 25°C, AM 1.5

PERFORMANCE AT 800 W/M², NOCT, AM 1.5

		SW 285	SW 290	SW 295	SW 300*
Maximum power	P_{max}	213.1 Wp	217.1 Wp	220.5 Wp	224.1 Wp
Open circuit voltage	V_{oc}	36.4 V	36.6 V	36.7 V	36.9 V
Maximum power point voltage	V_{mpp}	28.7 V	28.8 V	28.9 V	31.1 V
Short circuit current	I_{sc}	7.96 A	8.06 A	8.17 A	8.27 A
Maximum power point current	I_{mpp}	7.43 A	7.54 A	7.64 A	7.75 A

Minor reduction in efficiency under partial load conditions at 25° C: at 200 W/m², 100% of the STC efficiency (1000 W/m²) is achieved.
*Preliminary values, subject to change.



COMPONENT MATERIALS

Cells per module	60	Front	Low-iron tempered glass with ARC (EN 12150)
Cell type	Mono crystalline 5 bus bar	Frame	Clear anodized aluminum
Cell dimensions	6.17 in x 6.17 in (156.75 x 156.75 mm)	Weight	39.7 lbs (18.0 kg)

THERMAL CHARACTERISTICS

NOCT	46°C
TCI_{sc}	0.04 %/K
TCV_{oc}	-0.30 %/K
TCP_{mpp}	-0.41 %/K
Operating temp	-40° C to +85° C

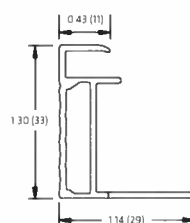
ADDITIONAL DATA

Power sorting	-0 Wp/+5 Wp
J-Box	IP65
Connector	PV wire per UL4703 with H4 connectors
Module fire performance	(UL 1703) Type 1

PARAMETERS FOR OPTIMAL SYSTEM INTEGRATION

Maximum system voltage SC II / NEC		1000 V
Maximum reverse current		25 A
Number of bypass diodes		3
Design loads*	Two rail system	113 psf downward, 64 psf upward
Design loads*	Three rail system	178 psf downward, 64 psf upward
Design loads*	Edge mounting	178 psf downward, 41 psf upward

* Please refer to the Sunmodule installation instructions for the details associated with these load cases.



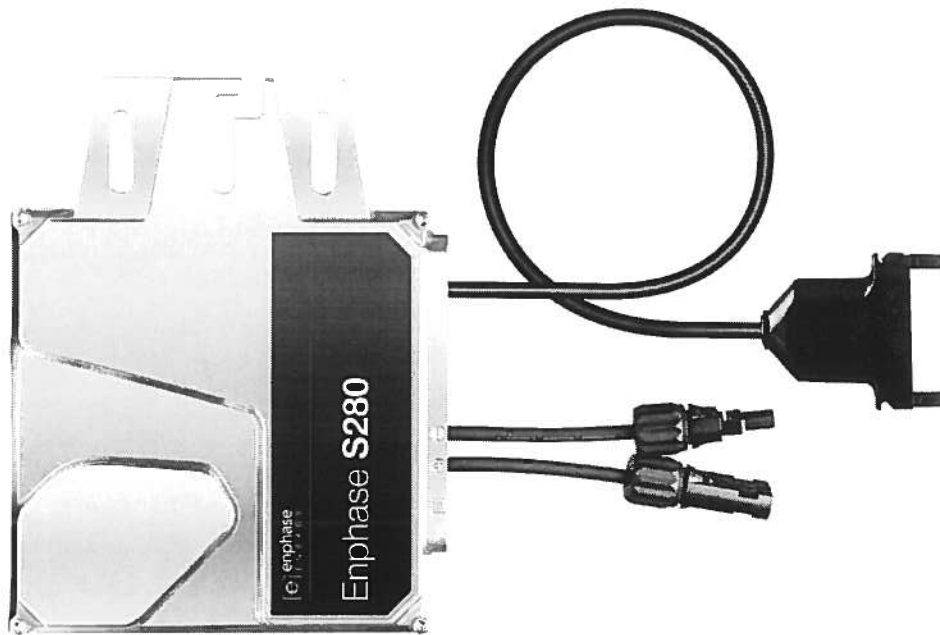
- Compatible with both "Top-Down" and "Bottom" mounting methods
- ⚡ Grounding Locations:
- 4 locations along the length of the module in the extended flange.

All units provided are imperial. SI units provided in parentheses.
SolarWorld AG reserves the right to make specification changes without notice.

SW-01-7510US 07-2015

Enphase **Microinverters**

Enphase **S280**



Designed for high-powered, 60-cell modules, the advanced grid-ready Enphase S280 Microinverter™ is built on the fifth-generation platform and achieves the highest efficiency for module-level power electronics along with cost per watt reduction. With its all-AC approach, the S280 simplifies design and installation for 280 VA installations, and delivers optimal energy harvest. The S280 is compatible with storage systems, including battery management systems.

The Enphase S280 integrates seamlessly with the Enphase Envoy-S™ communications gateway, and Enphase Enlighten™ monitoring and analysis software.

PRODUCTIVE

- Optimized for higher-power, 60-cell modules
- Maximizes energy production
- Minimizes impact of shading, dust, and debris

SIMPLE AND RELIABLE

- No GEC needed for microinverter
- No DC design or string calculation required
- More than 1 million hours of testing
- Industry-leading warranty, up to 25 years

ADVANCED GRID READY

- Complies with fixed power factor, voltage and frequency ride-through requirements
- Remote updating to respond to changing grid requirements
- Configurable for variable grid profiles like Hawaiian Electric Company (HECO) Rule 14H, California Rule 21

Enphase S280 Microinverter // DATA

INPUT DATA (DC)		S280-60-LL-2-US, S280-60-LL-5-US	
Commonly used module pairings ¹	235 W - 365 W		
Maximum input DC voltage	48 V		
Peak power tracking voltage	27 V - 37 V		
Operating range	16 V - 48 V		
Min/Max start voltage	22 V / 48 V		
Max DC short circuit current	15 A		
OUTPUT DATA (AC)		208 VAC	240 VAC
Peak output power	280 VA	280 VA	
Maximum continuous power	270 VA	270 VA	
Nominal voltage/range ²	208 V / 183-229 V	240 V / 211-264 V	
Nominal output current	1.30 A	1.13 A	
Nominal frequency/range	60 / 57 - 61 Hz	60 / 57 - 61 Hz	
Extended frequency range	57 - 63 Hz	57 - 63 Hz	
Power factor at rated power	1.0	1.0	
Maximum units per 20 A branch circuit	21 (three phase, balanced)	14 (single phase)	
Maximum output fault current	663 mA rms, 100 ms	663 mA, 100 ms	
Power factor (adjustable)	1 / 0.7 leading ... 0.7 lagging	1 / 0.7 leading ... 0.7 lagging	
EFFICIENCY		208 VAC	240 VAC
CEC weighted efficiency	96.5 %	97.0 %	
Peak inverter efficiency	96.8 %	97.3 %	
MECHANICAL DATA			
Ambient temperature range	-40°C to +65°C		
Connector type	S280-60-LL-2-US: MC4 S280-60-LL-5-US: Amphenol H4		
Dimensions (WxHxD)	172 mm x 175 mm x 35 mm (without bracket)		
Weight	1.8 kg (4 lbs)		
Cooling	Natural convection - No fans		
Enclosure environmental rating	Outdoor - NEMA 6		
FEATURES			
Compatibility	60-cell PV modules		
Communication	Power line		
Integrated ground	The DC circuit meets the requirements for ungrounded PV arrays in NEC 690.35. Equipment ground is provided in the Engage Cable. No additional GEC or ground is required. Ground fault protection (GFP) is integrated into the microinverter.		
Monitoring	Enlighten Manager and MyEnlighten monitoring options		
Compliance	UL1741/IEEE1547, FCC Part 15 Class B, CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01		

1. Suggestion only, inverter self limits DC inputs

2. Nominal voltage range can be extended beyond nominal if required by the utility

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