



28.8 kW System for:
Jonathan Benloulou
361 FM 3227
Canton, TX 75103



April 2, 2022

Jonathan Benloulou
361 FM 3227
Canton, TX 75103

Thanks for the opportunity to demonstrate the outstanding economics of harvesting your power from the sun.

We guarantee the system being proposed demonstrates the highest financial return available in residential solar, while utilizing the most bankable components in the industry.

How do we do this?

Our long-standing vendor relationships result in volume discounts, while our company structure eliminates the expense of commissioned salespeople. Additionally, Eastex Solar installs your system, while many `competitors` subcontract the entire design, procurement and installation process.

Your confidence in Eastex Solar is appreciated,

Cal Morton

Cal Morton

Eastex Solar TECL#33539

819 County Road 446

Palestine, TX 75803

Phone: 903.805.1849 | Email: cal@eastexsolar.com



Performance & Financial Analysis

29.40kW Ground Mount

Prepared April 2, 2022 for

Jonathan Benloulou

361 FM 3227, Canton, TX 75103

Phone: 646.233.6197

Email: jsbenloulou@gmail.com



Prepared by Cal Morton

Eastex Solar TECL#33539, 819 County Road 446, Palestine, TX 75803

Phone: 903.805.1849 | Email: cal@eastexsolar.com



Executive Summary

29.40kW Ground Mount

Electric Utility Savings: Anticipate a savings of approximately \$4,390 in electric bills (107%) at current utility rates in the first year. Savings will grow as electric utility rates are expected to rise 3.00% a year. The purchase of electric energy (kWh) from your utility is expected to be reduced by 116%.

Over 25 years, annual utility savings are anticipated to average \$6,561, for a total utility savings of \$164,016.

Performance Summary

Solar Electric (PV) System: 29.4 kW DC producing 45,366 kWh/Year.

Purchase Price & Net Cost

Contract Price: \$58,000

Incentives to Customer: (\$15,080)

Net Purchase Cost: \$42,920

Financial Ratios

Customer's Profitability Index: 2.5

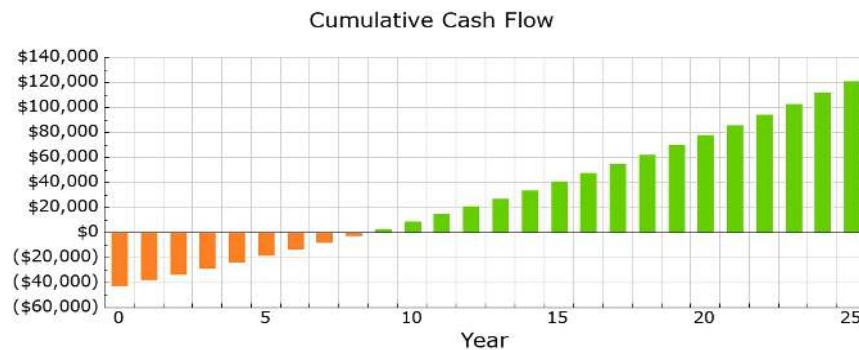
Cashflow Payback: 8.5 years

Internal Rate of Return (IRR): 12.3%

Cash Gained over Life: \$121,096

- CO2 Saved over System Life: 930 tons. Equivalent to driving 1,860,000 auto miles

Finance: Cash

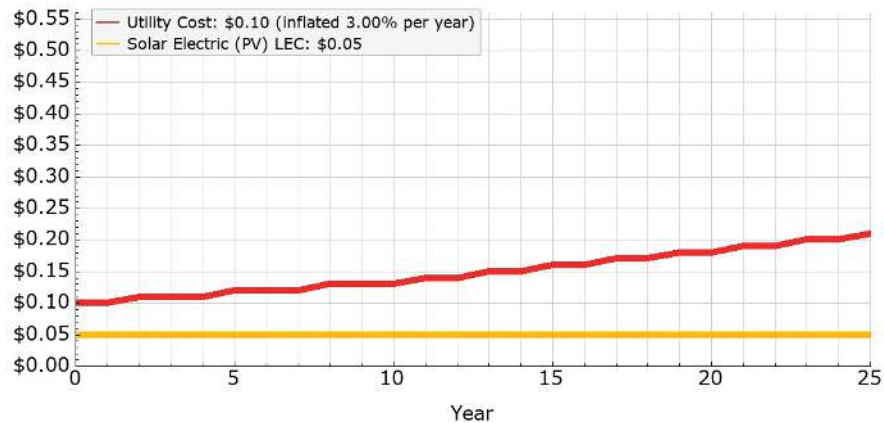


Levelized Energy Cost (LEC)

Your Hedge Against Utility Inflation: Your investment in this project will protect you from utility rate inflation. Levelized Energy Cost (LEC) analysis provides us with a "hurdle rate" (the levelized energy cost) which can be compared to the expected change in utility rates (by way of utility rate inflation). LEC is the average lifetime cost of energy produced by a particular system. We can compare the LEC to the current utility rate and its expected change in price as time goes on. In this manner one can judge the investment as a "better bet" than utility rates to contain energy costs. Represented below is the average cost of utility energy versus the cost of energy produced (LEC) by your system over time.

Electric: Levelized Energy Cost (LEC)

\$/kWh: Utility vs. System Levelized Energy Cost (LEC)



Carbon Footprint

Your carbon footprint will be reduced. Over the life of your system 930 tons of carbon dioxide (CO₂) will be eliminated from your footprint. Equivalent to:



Planting 21,669 trees.



Driving reduced by 1,860,000 auto miles, or 94,860 gallons of gasoline.



Recycling 2,939 tons of waste instead of sending it to landfill.



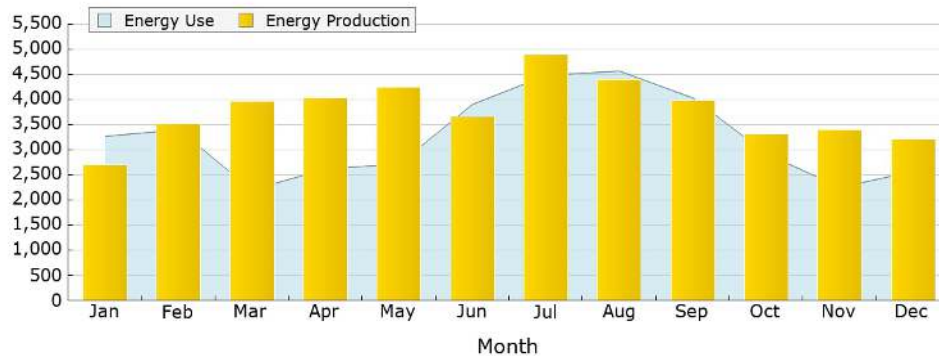
906,212 pounds (453.1 tons) of coal burned.



and you will help avoid the use of up to **22,683,000 gallons of water by Thermoelectric Powerplants.**

Solar Electric (PV) System Summary

Solar Electric (PV) kWh Production by Month (typical)



Tilt: 23° Azimuth: 180° Rack/Gnd/Pole
Mount

Shade reduces production: 0%

PV Panels: 70 x Mission Solar Energy, Model: MSE420

Inverters: 2 x Fronius USA, Model: Fronius Primo
15.0-1 240Vac

Total Panel Area: 75,347 sq-ft

System Peak Power: 29.4 kW DC

Annual Production: 45,366 kWh. Supplying 116% of annual electric use

Contract Price Summary: Solar Electric (PV) System

Contract Amount: \$58,000 (\$1.97 per watt DC)

Incentives available to Customer in 1st Year

Federal Tax Credit: Year 2020 (26% of Gross Cost at Installation): (\$15,080)

Net Cost at Install (after incentives): \$42,920

Net Installed Price per Watt: \$1.46 per watt DC



Sales & Service Contract

This Contract is made by and between Eastex Solar TECL#33539 located at 819 County Road 446, Palestine, TX 75803 with Licenses: TECL #33539 (Contractor) and:

Customer

Correspondence & Work Location

Jonathan Benloulou
361 FM 3227
Canton, TX 75103
Phone: 646.233.6197
Email: jsbenloulou@gmail.com

Major Equipment to be Installed

Solar Electric (PV) System

Array #1

PV Panels: 70 x Mission Solar Energy, Model: MSE420

Inverters: 2 x Fronius USA, Model: Fronius Primo 15.0-1 240Vac

Changed to 80x REC Solar
360AA Black Modules

Payment Schedule

Equipment Order As Per Customer Instructions \$29,000

System Installation Completion \$29,000

Contract Total \$58,000



Sales & Service Contract

General Terms and Conditions of Sale

Our business relationships with our customers shall be based on our General Terms and Conditions of Sale, as defined below:

1. Turn Key Service: Unless otherwise stated, Eastex Solar LLC is providing a "turn key" system which includes all applicable standard hardware, materials, supplies and services required to provide a fully-operational PV system.

2. Compliance to Building Codes: All work shall be completed in a workmanship like manner and in compliance with all local building codes and applicable interconnection requirements.

3. License Status: To the extent required by law, all work shall be performed by individuals duly licensed and authorized to perform said work.

4. Liability Waiver: Contractor warrants it is adequately insured for damages to customer property, and for injury to its employees, subcontractors and others, in the act of performing their duties related to customer project.

5. Permits and Approvals: Contractor shall at its own expense obtain all permits necessary for the work to be performed.

6. Dispute Resolution: All disputes here-under shall be resolved by binding arbitration in accordance with the rules of the American Arbitration Association.

7. Materials and Labor Warranty: All materials shall be new, in compliance with all applicable laws and codes, and shall be covered by a manufacturer's warranty.

Contractor warrants that the labor, and balance of system materials provided as part of the specified work will be free from defects for a period of ten (10) years from the date of completion.

Equipment as supplied by manufacturers shall be warranted in accordance with that manufacturer's warranty.

8. Additional Provisions: (i) Contractor responsible for any damage to customer property that may occur during installation process. (ii) Panel layout may be adjusted following physical site survey, any adjustment will require customer approval.

9. Right of Cancellation: Customer may cancel this Contract, without penalty or obligation, within three (3) business days from effective date. To cancel this contract, please send notice to Eastex Solar LLC via admin@eastexsolar.com.

10. Other Terms: Customer and Contractor additionally agree that:

All agreements between Customer and Contractor related to the specified work are incorporated in this Contract. There can be NO modification to the Contract without prior approval being received from admin@eastexsolar.com.

I have read and agree to the above Sales Contract:

CUSTOMER:

Signature

Jonathan Benloulou

04/02/2022

Date

CONTRACTOR:

Signature

Cal Morton

04/03/2022

Date

JONATHAN BENLOULOU RESIDENCE : 361 FM3227, CANTON, TX 75103
28.8 kW DC GROUND MOUNTED PHOTOVOLTAIC SYSTEM

EQUIPMENT SUMMARY :

80 QTY - REC SOLAR REC360AA BLACK 360W MODULES
02 QTY - FRONIUS PRIMO 15.0-1 INVERTER

SHEET INDEX :

- T-01 COVER SHEET
- G-01 ELECTRICAL CONSTRUCTION GENERAL NOTES
- PV-01 PROPERTY MAP & PROPERTY LAYOUT
- PV-02 PV LAYOUT
- PV-03 STRING LAYOUT
- PV-04 GROUND MOUND DETAILS- TOP VIEW
- PV-05 GROUND MOUNT DETAILS- ELEVATION VIEW
- PV-06 ELECTRICAL SINGLE LINE DIAGRAM
- PV-07 ELECTRICAL CALCULATIONS
- PV-08 SYSTEM LABELING DETAILS
- PV-09 MODULE DATA SHEET
- PV-10 INVERTER DATA SHEET
- PV-11 MOUNTING ATTACHMENT DATA SHEET-1
- PV-12 MOUNTING ATTACHMENT DATA SHEET-2

TYPE OF UTILITY CONNECTION :

LINE SIDE CONNECTION

OWNER :

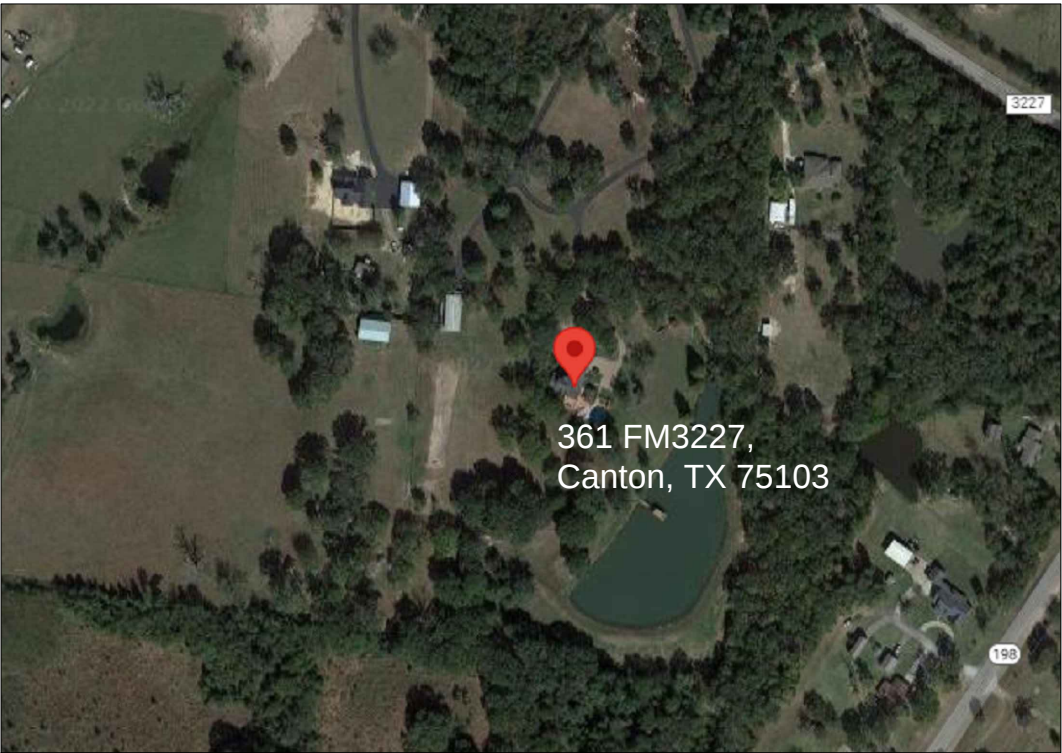
JONATHAN BENLOULOU
361 FM3227,
CANTON, TX 75103

INSTALLER:

EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539



VICINITY MAP



SINGLE FAMILY RESIDENCE

INSTALLER:
EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539

OWNER:
JONATHAN BENLOULOU
361 FM3227,
CANTON, TX 75103

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ELECTRICAL CONSTRUCTION GENERAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC (NATIONAL ELECTRIC CODE), NFPA (NATIONAL FIRE PROTECTION ASSOCIATION), AND ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS.
2. ALL WORK SHALL CONFORM TO APPLICABLE STATE AND FEDERAL SAFETY CODES INCLUDING OSHA . NO 'HOT' WORK IS AUTHORIZED. ALL 'HOT WORK SHALL BE APPROVED IN WRITING WITH THE GENERAL CONTRACTOR AND OWNER.
3. WORK UNDER THIS CONTRACT SHALL INCLUDE, BUT NOT BE LIMITED TO, FURNISHING, INSTALLING AND CONNECTION OF ALL ELECTRICAL EQUIPMENT AND TESTING OF ALL SYSTEMS AND SUB-SYSTEMS WITHIN THE SCOPE OF THIS CONTRACT. ANY ERRORS, OMISSION, OR UNCERTAINTY SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND OR OWNER PRIOR TO CONSTRUCTION.
4. COORDINATE ALL WORK WITH ARCHITECTURAL, MECHANICAL AND STRUCTURAL DRAWINGS. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL AND STRUCTURAL MEMBERS. NO ITEM SUCH AS PIPE, DUCT, ETC. SHALL BE IN CONTACT WITH ANY ELECTRICAL EQUIPMENT.
5. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY AND SECURITY OF THE WORKSITE. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
6. DO NOT SCALE DRAWINGS. LARGER SCALE DRAWINGS HAVE PRECEDENCE OVER SMALL SCALE DRAWINGS. SPECIFICATIONS HAVE PRECEDENCE OVER DRAWINGS. NOTIFY THE PRIME CONTRACTOR IMMEDIATELY AFTER DISCOVERY OF ANY DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS OR FIELD CONDITIONS.
7. NOTIFY THE PRIME CONTRACTOR OR OWNER IMMEDIATELY AFTER DISCOVERING ANY HAZARDOUS MATERIAL.
8. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. VERIFY THE EXACT LOCATIONS AND CONDITIONS OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS PRIOR TO ANY WORK. LOCATIONS FOR EQUIPMENT SHALL BE TAKEN FROM THE OTHER SHEETS WHERE THEY OCCUR. EXTEND WIRING FROM ALL JUNCTION BOXES, CONTROL PANELS, PUMPS, RECEPTACLES, SWITCHES, ETC. AND MAKE ALL FINAL CONNECTIONS TO EQUIPMENT AS REQUIRED.
9. THE INTENT OF THESE DRAWINGS IS FOR A COMPLETE ELECTRICAL SYSTEM. ANY ERRORS OR UNCERTAINTY SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND ENGINEER AS SOON AS FOUND.
10. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE TESTED AS A COMPLETE WORKING SYSTEM.
11. RESTORE ALL DAMAGES RESULTING FROM WORK AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK.
12. ALL TYPES OF SWITCHES, RECEPTACLES, WALL PLATES AND LIGHTING FIXTURES SHALL BE AS APPROVED BY PRIME CONTRACTOR OR OWNER. VERIFY MATERIALS AND COLOR AND LOCATIONS, SUBMIT CATALOG CUTS OR SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT.
13. ALL ITEMS ARE NEW UNLESS NOTED AS EXISTING (E).
14. REMOVE ALL INDICATED ITEMS. REMOVE ALL EXPOSED CONDUITS. REMOVE WIRES TO NEAREST CONCEALED JUNCTION BOX OR PANEL. ABANDON IN PLACE EXISTING UNUSED CONCEALED CONDUITS NOT EXPOSED BY CONSTRUCTION.
15. ALL EQUIPMENT SHALL BE SECURED IN ACCORDANCE WITH GOVERNING SEISMIC REGULATIONS. PROVIDE EXPANSION AND DEFLECTION FITTINGS IN CONDUITS REQUIRED BY CEC (CALIFORNIA ELECTRIC CODE).
16. FIRE STOP ALL PENETRATIONS THROUGH FIRE RATED SURFACES. SEE DETAIL D/E5.
17. PROVIDE GROUND ROD, GROUNDING ELECTRODE AND BONDING FOR ALL SERVICE ENTRANCE EQUIPMENT, BUILDING STRUCTURAL STEEL, COLD WATER PIPE AND TRANSFORMER PER CEC (CALIFORNIA ELECTRIC CODE) 6' MIN. APART.
18. ALL NEW CIRCUIT BREAKER SHALL BE RATED 10,000 AIC OR HIGHER UNO.
19. ALL CONDUITS SHALL BE EMT, INTERMEDIATE METAL CONDUIT, OR RIGID STEEL. MINIMUM SIZE SHALL BE 1/2". ALL CONDUIT, BOXES AND ELECTRICAL FITTINGS SHALL BE STEEL.
20. DO NOT USE THE WORKING SPACE WITHIN ANY EXIT SIGN OR ASSOCIATED JUNCTION BOX FOR ANY OTHER CIRCUIT.
21. PROVIDE EXPANSION AND DEFLECTION FITTINGS IN CONDUITS CROSSING BUILDING EXPANSION AND SEISMIC JOINTS. SEE DETAIL E/E5.
22. PROVIDE JUNCTION AND/OR PULL BOXES WHEN NECESSARY OR REQUIRED BY CEC.
23. ALL CONDUCTORS SHALL BE COPPER, THHN, #12 AWG MINIMUM. UNLESS IN A WET LOCATION IN WHICH CASE THWN SHALL BE USED.
24. INSTALL GREEN INSULATED GROUND WIRE IN ALL CIRCUITS. SIZE PER NEC REQUIREMENTS OR THE SAME AS PHASE CONDUCTORS WHICH EVER IS LARGER. UNLESS INDICATED OTHERWISE.
25. ALL NEW WIRING, CONDUIT, AND JUNCTION BOXES SHALL BE CONCEALED WITHIN NEW WALLS, CEILINGS OR FLOOR SPACES. SURFACE MOUNT CONDUIT ON OLD WALLS AND CEILINGS. RUN ALL SURFACE RACEWAY TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES.
26. PAINT ALL EXPOSED ELECTRICAL CONDUITS AND BOXES, PATCH AND PAINT ALL SCUFF MARKS AND/OR DAMAGE RESULTING FROM CONSTRUCTION. SELECT NEW PAINT COLOR TO MATCH EXISTING PAINT COLOR.
27. NO FOREIGN EQUIPMENT SHALL BE LOCATED WITHIN THE SPACE ABOVE OR BELOW ELECTRIC PANELS

28. PROVIDE SIGNAGE ON ALL ELECTRIC PANELS TO KEEP THE SPACE 36" IN FRONT OF THE PANELS FREE OF OBSTRUCTIONS.
29. PROVIDE WARNING LABEL ON ALL PANELS "WARNING, ELECTRICAL ARC FLASH HAZARD, PERSONAL PROTECTION, EQUIPMENT REQUIRED, FAILURE TO COMPLY CAN RESULT, IN INJURY OR DEATH, REFER TO NFPA 70E."
30. UPDATE PANEL BOARD DIRECTORY AS CIRCUITS ARE INSTALLED. PREPARE NEW TYPE WRITTEN PANEL SCHEDULES.
31. ALL EXTERIOR EQUIPMENT SHALL BE IN WEATHERPROOF (NEMA 3R) ENCLOSURES. ALL NEW WIRING SHALL BE IN CONDUIT, SUITABLE FOR SUN EXPOSURE AND WET LOCATIONS. FIELD APPLIED COATING ARE NOT ACCEPTABLE.
32. DC SOLAR POWER SHALL BE NEGATIVELY GROUNDED.
33. ALL MARKING SHALL BE PER CODE REQUIREMENTS.
34. INVERTERS MUST COMPLY WITH UL 1741 TO PREVENT ISLANDING ON POWER FAILURE. THE INVERTER SHALL PUT NOT POWER ON TO THE GRID IF THE GRID IS OFF-LINE.
35. NOTHING IN THESE PLANS SHALL BE CONSTRUED TO CONTRADICT NEC, UL OR LOCAL CODES.
36. ALL SYSTEM COMPONENTS (MODULES AND INVERTERS ETC) SHALL BE UL LISTED.
37. MARK THE NEC REQUIRED CLEAR SPACE ON THE FLOOR IN FRONT OF ALL DEVICES BEING INSTALLED.
- 38.OBTAIN THE BEST INFORMATION ON UNDERGROUND UTILITIES IN AREAS BEING TRENCHED. USE 'DIG ALERT' OR OTHER LOCATING SERVICE BEFORE DIGGING.
- 39.REMOVAL OF INVERTER, METER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTOR.
- 40.All PV MODULES AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED FROM ANY PHYSICAL DAMAGE, AND ACCESS BY UNQUALIFIED PERSONS.

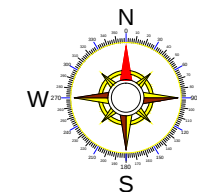
STORM WATER PREVENTION NOTES:

- STORM WATER POLLUTION PREVENTION DEVICES AND PRACTICES SHALL BE INSTALLED AND/OR INSTITUTED AS NECESSARY TO ENSURE COMPLIANCE WITH THE CITY WATER QUALITY STANDARDS CONTAINED IN LOCAL REGULATIONS, FEDERAL REGULATIONS AND ANY EROSION CONTROL PLAN ASSOCIATED WITH THIS PROJECT. ALL SUCH DEVICES AND PRACTICES SHALL BE MAINTAINED, INSPECTED AND/OR MONITORED TO ENSURE ADEQUACY AND PROPER FUNCTION THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT.
- COMPLIANCE WITH THE WATER QUALITY STANDARDS AND ANY EROSION CONTROL PLAN ASSOCIATED WITH THIS PROJECT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
1. ALL POLLUTANTS SHALL BE RETAINED ON SITE UNTIL PROPERLY DISPOSED OF, AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEET FLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR WIND.
2. STOCKPILES OF CONSTRUCTION-RELATED MATERIALS SHALL BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY FORCES OF WIND OR WATER FLOW.
3. TRASH AND CONSTRUCTION SOLID WASTES SHALL BE DEPOSITED INTO COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.

INSTALLER:
EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539

OWNER:
JONATHAN BENLOULOU
361 FM3227,
CANTON, TX 75103

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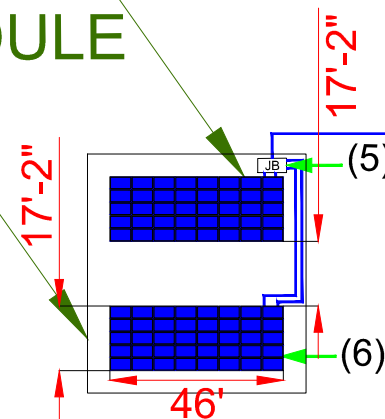
LEGEND:-

- (1) - Utility Meter
- (2) - Main Service Panel
- (3) - AC Disconnect
- (4) - Inverter
- (5) - Junction Box
- (6) - Solar Module
- (7) - Automatic Transfer Switch
- (8) - Production Meter
- (9) - Main Lug Panel

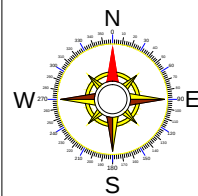
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180° AZIMUTH TILT 25°
80 QTY 360W MODULE

ARRAY CLEARANCE - 6'

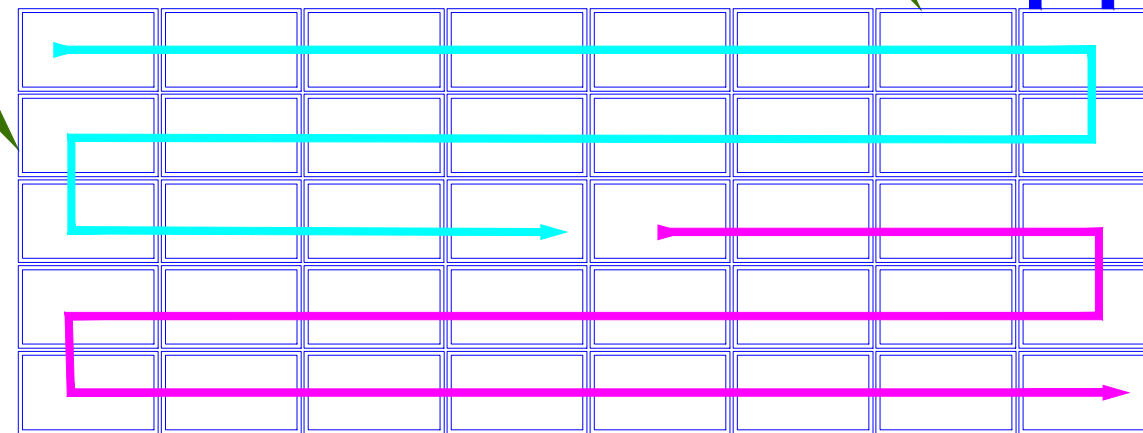


PV LAYOUT



180° AZIMUTH TILT 25°
80 QTY 360W MODULE

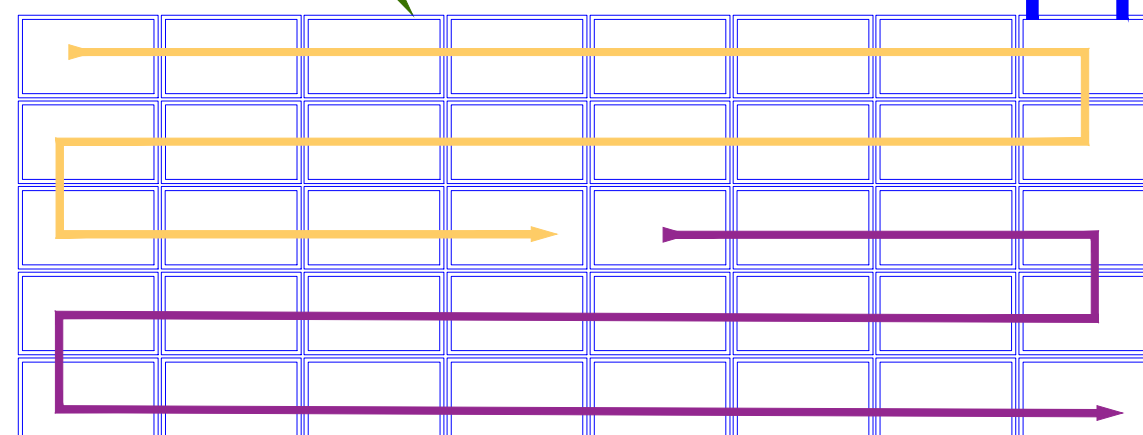
ARRAY - 1



JB

(5)

ARRAY - 2



(6)

LEGEND:-

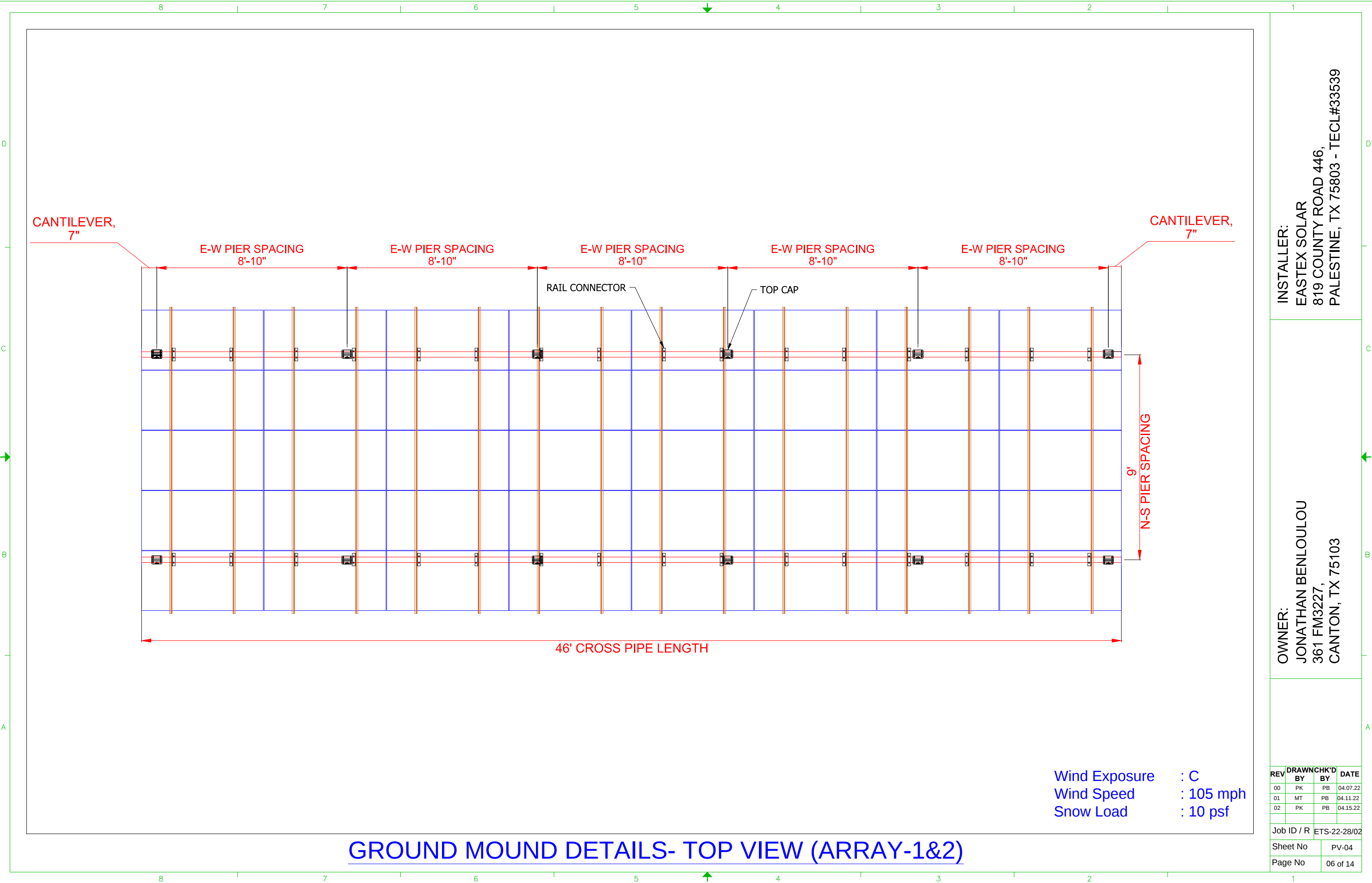
(1) - Utility Meter
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(3) - AC Disconnect
(4) - Inverter
(5) - Junction Box
(6) - Solar Module
(7) - Automatic Transfer Switch
(8) - Production Meter
(9) - Main Lug Panel

STRING LAYOUT

INSTALLER:
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819 COUNTY ROAD 446,
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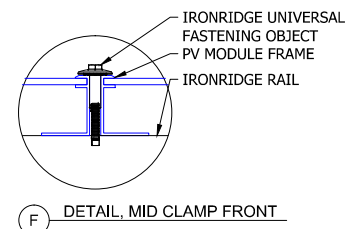
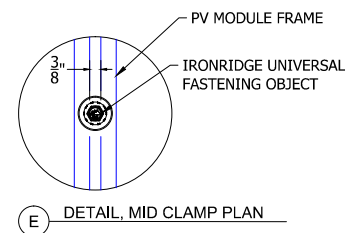
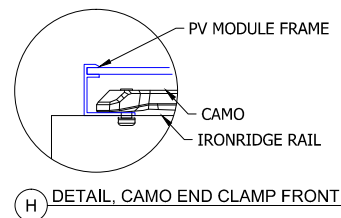
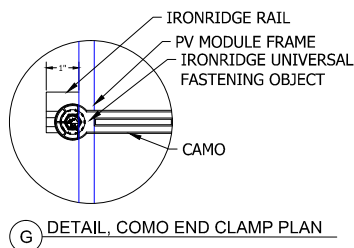
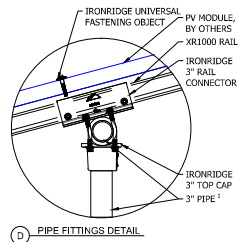
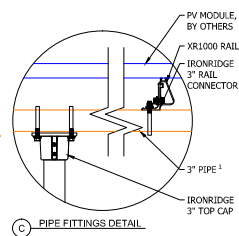
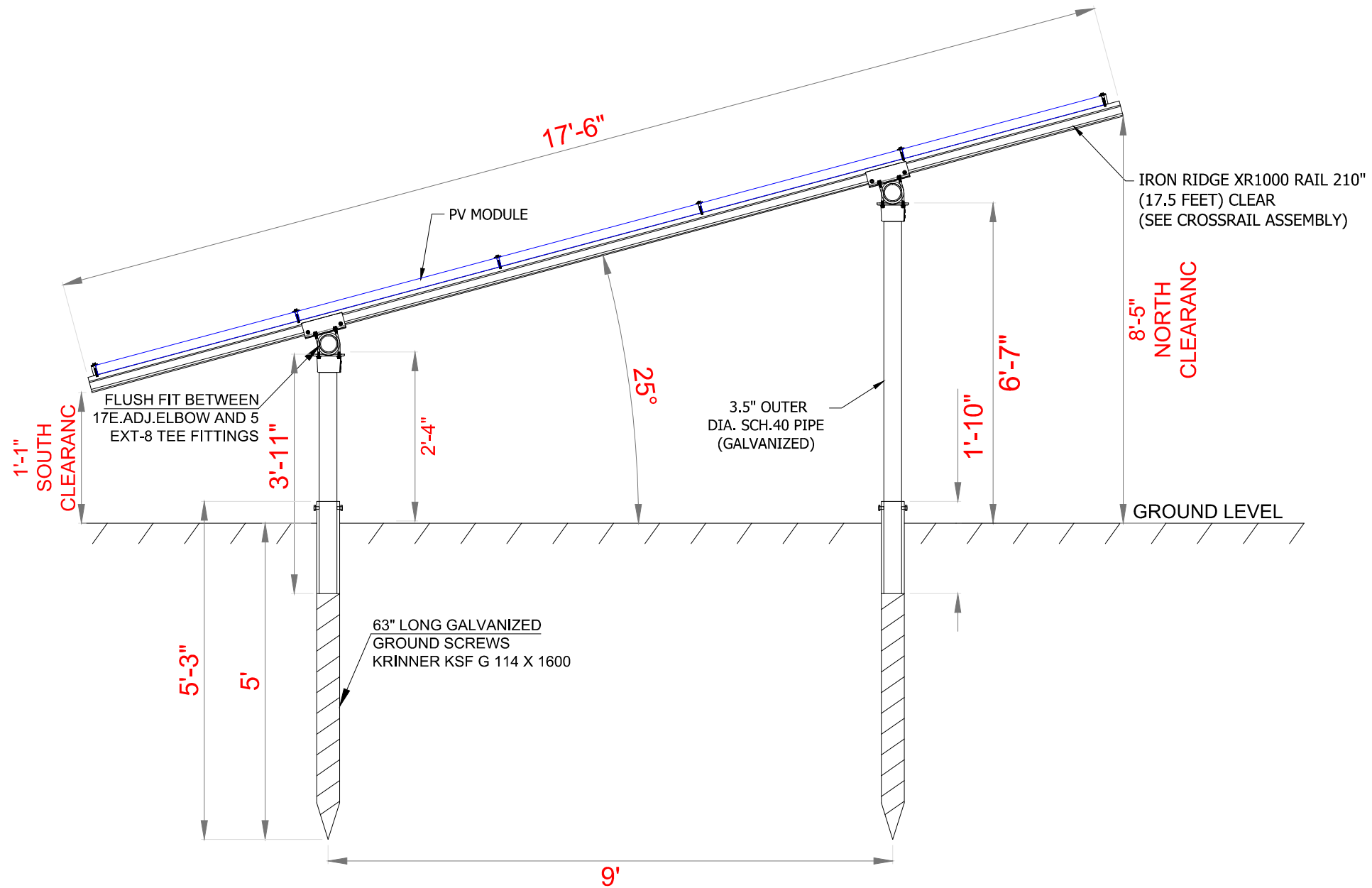
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Wind Exposure : C
Wind Speed : 105 mph
Snow Load : 10 psf

GROUND MOUND DETAILS- TOP VIEW (ARRAY-1&2)



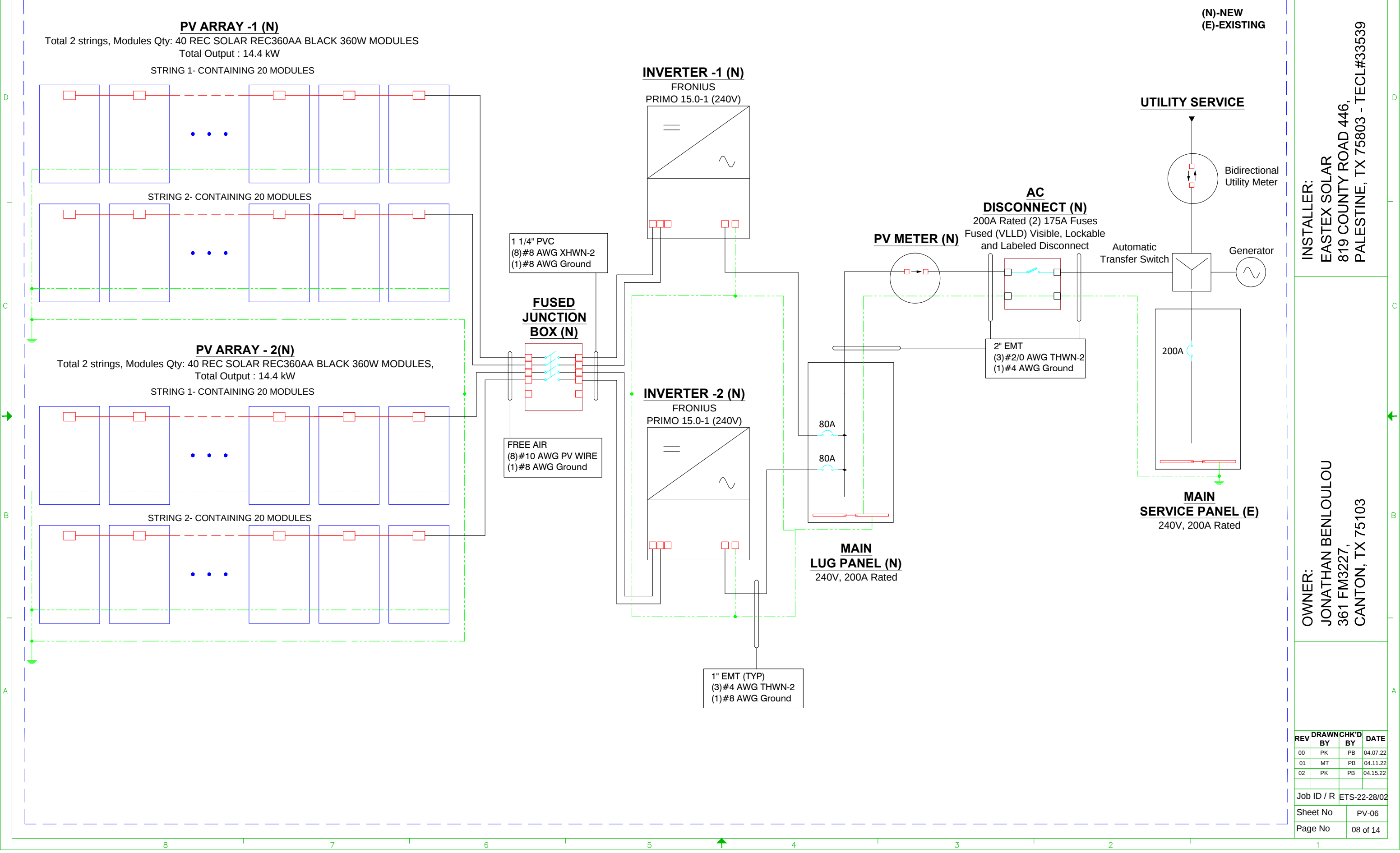
GROUND MOUNT DETAILS- ELEVATION VIEW (ARRAY-1&2)

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28.8 kW DC PROPOSED PV SYSTEM SINGLE LINE DIAGRAM



WIRING AND CONDUIT SCHEDULE																											
DC SCHEDULE																											
ITEM		DESCRIPTION	ID	QTY	Voc (V)	Vmpp (V) STC	Imp (A) STC	ISC (A) STC	Max Circuit current (A)	Nominal Power	Minimum Ampacity (A)	Adjusted Ampacity (A)	OCPD rating (A)	Multiple conductor Derate	Temperature Derate	Max ONE WAY LENGTH (ft)	WIRE SIZE	Wire Ampacity (A)	Derated Ampacity (A)	GROUND	WIRE TYPE	R/1000FT	V LOSS %	TEMP MAX	TOTAL NO OF CONDUCTORS	NO. OF CURRENT CARRYING CONDUCTORS	CONDUIT
1	MODULE	REC SOLAR		80	43.9	36.7	9.82	10.49	13.11	360	16.4	17.4	20	1.00	0.76	3.9	#12 AWG	30	22.8	#6 BARE	PV	1.98	0.02%	52 C	2	2	N/A
2	STRING WIRING	MODULE TO JUNCTION BOX (e.g: PV MODULES CONNECTED IN SERIES FOR ONE STRING)	A	2	878	734	9.82	10.49	13.11	7200	16.4	17.4	20	1.00	0.76	15	#10 AWG	40	30.4	#8 AWG	PV	1.24	0.10%	52 C	5	4	N/A
3		FUSED JUNCTION BOX TO INVERTER	B	1	878	734	9.82	10.49	13.11	7200	16.4	21.8	20	0.80	0.76	440	#8 AWG	55	33.44	#8 AWG	XHWN-2	0.78	0.92%	52 C	5	4	1 1/4"PVC Min
							Total Nominal Power			28800												DC DROP	1.04%				
AC SCHEDULE																											
ITEM		DESCRIPTION	ID	QTY	VOLTAGE (V)	Max Circuit Current (A)			Power	Minimum Ampacity (A)	Adjusted Ampacity (A)	OCPD rating (A)	Multiple conductor Derate	Temperature Derate	Max ONE WAY LENGTH (ft)	WIRE SIZE	Wire Ampacity (A)	Derated Ampacity (A)	GROUND	WIRE TYPE	R/1000FT	V LOSS %	TEMP MAX	TOTAL NO OF CONDUCTORS	NO. OF CURRENT CARRYING CONDUCTORS	CONDUIT	
4	AC WIRING	INVERTER TO MAIN LUG PANEL	C	2	240	62.5			15000	78.1	83.1	80	1.00	0.96	5	#4 AWG	95	91.2	#8 AWG	THWN-2	0.31	0.04%	33 C	4	2	1" EMT Min	
5		MAIN LUG PANEL TO PRODUCTION METER TO AC DISCONNECT TO AUTOMATIC TRANSFER SWITCH TO MAIN SERVICE PANEL	D	1	240	125			30000	156.3	166.2	175	1.00	0.96	30	#2/0 AWG	195	187.2	#4 AWG	THWN-2	0.10	0.15%	33 C	4	2	2" EMT Min	
						Total Nominal Power			30000												AC DROP	0.19%					

BILL OF MATERIAL													
REF. DES.	QTY.	MANUFACTURER	MODEL NUMBER	DESCRIPTION									
SOLAR MODULES	80	REC SOLAR	REC360AA BLACK	SOLAR PANEL				360	W	1000	V (UL)		
		NOTES: 1. TYPE-1 UL 1703 class C											
INVERTER	2	FRONIUS PRIMO	PRIMO 15.0-1	INVERTER				15	Kw	NEMA 4X		240	V AC
		NOTES: 1. UL1741, UL 1998, UL 1699B, IEE1547 2. DC INPUT WIRE RANGE (2) #12 to #2											
MSP	1	TBD	TBD	MAIN SERVICE PANEL, NEMA 3R ENCLOSURE				200	A	1	Ph	240	V AC
AC DISCONNECT	1	TBD	TBD	AC DISCONNECT				200	A				
		NOTES: 1. USED AS PV UTILITY/SERVICE DISCONNECT 2. LOCKABLE HEAVY DUTY SWITCH WITH VISIBLE CONTACTS, UL LISTED											
FUSED JUNCTION BOX	1	TBD	TBD	FUSED JUNCTION BOX				1000	V DC				
MAIN LUG PANEL	1	TBD	TBD	MAIN LUG PANEL, NEMA 3R ENCLOSURE				200	A	1	Ph	240	V AC

System Configuration		
Number of strings	2	QTY
Number of Modules	80	QTY
Modules Per string	4 X 20	
Number of Inverter	2	QTY
Module Model	REC360AA BLACK	
Inverter Model	PRIMO 15.0-1	
PV Service Disconnect	-	A
DC Watts STC	28800	W
Max AC output Current	125	A
Operating AC Voltage	240	V

Inverter Rating Specs					
FRONIUS PRIMO		PRIMO 15.0-1			
Nominal Input		51		A DC	
Max.Short Circuit I/P		63.75		A DC	
Output Voltage		240		V AC	
Imax		62.5		A AC	
Inec		78.125		A (@125%)	
Outdoor		NEMA 4X		Enclosure	
UL1741 / IEEE 1547					
PV System DC Disconnect					
Operating Current		2	X	9.82	A DC
Operating Voltage		734			V DC
Max.System Voltage		1000			V DC
Short Circuit Current		2	X	13.11	A DC
Label Located on Inverter / DC Disconnect					

Module Rating Specs			
REC SOLAR			
REC360AA BLACK			
Pmax -	360	Wp	
Vmp -	36.7	V	
Imp -	9.82	A	
Voc -	43.9	V	
Isc -	10.49	A	

INSTALLER:
EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539

OWNER:
JONATHAN BENLOULOU
361 FM3227,
CANTON, TX 75103

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SYSTEM LABELING DETAIL:

All Plaques and signage required by the 2017 edition of NEC will be installed as required. Placards consist of white lettering on red background with text written in capitol lettering a minimum of 3/8" in height on plastic Engraved placards.

Alternate Power Source Placard shall be metallic or plastic with engraved or machine printed letters in a contrasting color to the plaque, include the location of meter, disconnects, inverter, the array and a footprint of the entire building and site. This plaque will be attached by pop rivets, screws or other approved fasteners. If exposed to sunlight, it shall be UV resistant.

Photovoltaic DC conductors entering the building shall be installed in a metallic raceway and shall be identified every 5 feet -- and within 1 foot of turns or bends and within 1 foot above and below penetrations of roof/ceiling assemblies, walls, or barriers labeled

“Caution Solar Circuit” or equivalent Examples of all required warning labels per NEC and CEC 690 below:

SIGNAGE REQUIREMENT :

RED BACKGROUND .WHITE LETTERING. ("WARNING"-3/8" LETTERS).ALL CAPITAL LETTERS.ARIAL OR SIMILAR FONT . WEATHER - RESISTANT MATERIAL,UL 969.

DC DISCONNECT WARNING	AC DISCONNECT WARNING		
PHOTOVOLTAIC SYSTEM DC DISCONNECT OPERATING VOLTAGE 734 Vdc OPERATING CURRENT 19.64 Adc MAX SYSTEM VOLTAGE 1000 Vdc SHORT CIRCUIT CURRENT 26.22 Adc WARNING ELECTRIC SHOCK HAZARD TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION PER NEC 680.14(C)(2), 680.17(4),680.54 Per NEC 690.53 operating voltage, operating current, max system voltage short circuit current and maximum output current of the charge controller if one is installed PLACE ON : Main Solar Disconnect PHOTOVOLTAIC SYSTEM DISCONNECT "PV System Disconnect" label NEC 690.14(C)(2) Required Disconnect Markings	PHOTOVOLTAIC SYSTEM AC DISCONNECT OPERATING VOLTAGE 240 VAC OPERATING CURRENT 125 Amps WARNING ELECTRIC SHOCK HAZARD TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION PER NEC 680.14(C)(2), 680.17(4),680.54 Per NEC 690.54 operating voltage,operating current PLACE ON: Inverter Breaker Panel if sum of breaker exceeds panel rating WARNING INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVER CURRENT DEVICE Inverter output connection *label NEC 705.12(7) Point Of Connection	CAUTION SOLAR ELECTRIC SYSTEM CONNECTED WITH SOURCE AND DISCONNECTS AS SHOWN Must show drawing of the property and equipment layout .per NEC 690.56	WARNING INVERTER OUTPUT CONNECTION SOURCES : UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM "Dual Power Supply" label NEC 690.64,705.12(4) point of connection WARNING ELECTRIC SHOCK HAZARD TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION "Do Not Touch terminals" labels NEC 690.17(4) Switch or Circuit Breaker THIS ELECTRIC SYSTEM IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM
DC LABELS	OTHERS		
PLACE ON 1.DC Junction Boxes 2.DC Combiner Boxes WARNING ELECTRIC SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDING AND MAY BE ENERGIZED "Electric Shock Hazard" label NEC 690.35(F) ungrounded PV system PLACE ON 1.DC Junction Boxes 2.DC Combiner Boxes PHOTOVOLTAIC POWER SOURCE "PV Power Source " Label. NEC 690.31(E)(3) DC-PV Source Conductor	PLACE ON:All DC Source Markings and System Output Conductor Raceways CAUTION SOLAR CIRCUIT "Caution Solar Circuit "Label NEC 690.4(F),690.31(E)(4) place on conduit every 10 feet IFC 605.11.1.1 & IFC 605 .11.2 *MUST BE REFLECTIVE IF INDOORS OR IN ATTIC	PLACE ON : Next to inverter interconnection Breaker,Load center & Service Panel PV SOLAR BREAKER DO NOT RELOCATE THIS OVER CURRENT DEVICE	PLACE ON : Inverter PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN Label NEC 690.56(C) PLACE ON : Next GFI Reset WARNING ELECTRIC SHOCK HAZARD IF GROUND FAULT IS INDICATED ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDING AND ENERGIZED "Ground Fault Indicated" label Nec 690.5(C) Ground Fault Protection

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SOLAR'S MOST TRUSTED





REC ALPHA
BLACK SERIES

375
WP
POWER

PRODUCT
LABOR

REC
25 YEAR
PROTRUST
WARRANTY

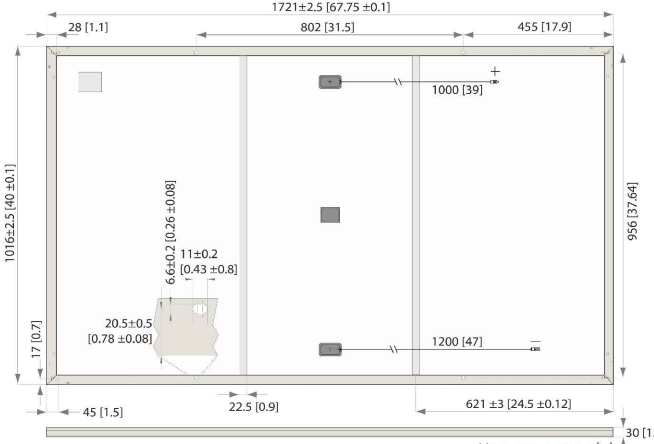
PERFORMANCE

ELIGIBLE FOR

EXPERIENCE
α
PERFORMANCE

REC ALPHA BLACK SERIES

PRODUCT DATASHEET



Measurements in mm [in]

GENERAL DATA

Cell type:	120 half-cut cells with REC heterojunction cell technology 6 strings of 20 cells in series	Connectors:	Stäubli MC4 PV-KBT4/KST4, 12 AWG (4 mm ²) in accordance with IEC 62852 IP68 only when connected
Glass:	0.13 in (3.2 mm) solar glass with anti-reflection surface treatment	Cable:	12 AWG (4 mm ²) PV wire, 39+47 in (1+1.2 m) in accordance with EN 50618
Backsheet:	Highly resistant polymeric construction (black)	Dimensions:	678 x 40 x 1.2 in (1721 x 1016 x 30 mm) 18.8 sq ft (1.75 m ²)
Frame:	Anodized aluminum (black)	Weight:	43 lbs (19.5 kg)
Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790	Origin:	Made in Singapore

ELECTRICAL DATA

	355	360	365	370	375
Power Output - P _{max} (Wp)	355	360	365	370	375
Watt Class Sorting - (W)	-0/+5	-0/+5	-0/+5	-0/+5	-0/+5
Nominal Power Voltage - V _{MPP} (V)	36.4	36.7	37.1	37.4	37.8
Nominal Power Current - I _{MPP} (A)	9.77	9.82	9.85	9.9	9.94
Open Circuit Voltage - V _{OC} (V)	43.6	43.9	44	44.1	44.2
Short Circuit Current - I _{SC} (A)	10.47	10.49	10.52	10.55	10.58
Power Density (W/sq ft)	202.9	19.15	19.41	19.68	19.94
Panel Efficiency (%)	20.3	20.6	20.9	21.2	21.4

STC

	271	274	278	282	286
Power Output - P _{max} (Wp)	271	274	278	282	286
Nominal Power Voltage - V _{MPP} (V)	34.3	34.6	35.0	35.2	35.6
Nominal Power Current - I _{MPP} (A)	7.89	7.93	7.96	8.00	8.03
Open Circuit Voltage - V _{OC} (V)	41.1	41.4	41.5	41.6	41.6
Short Circuit Current - I _{SC} (A)	8.46	8.47	8.50	8.52	8.55

NMOT

Power Output - P _{max} (Wp)	271	274	278	282	286
Nominal Power Voltage - V _{MPP} (V)	34.3	34.6	35.0	35.2	35.6
Nominal Power Current - I _{MPP} (A)	7.89	7.93	7.96	8.00	8.03
Open Circuit Voltage - V _{OC} (V)	41.1	41.4	41.5	41.6	41.6
Short Circuit Current - I _{SC} (A)	8.46	8.47	8.50	8.52	8.55

Values at standard test conditions (STC: air mass AM1.5, irradiance 10.75 W/sq ft (1000 W/m²), temperature 77°F (25°C), based on a production spread with a tolerance of P_{max}, V_{MPP} & I_{SC} ±3% within one watt class, Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m², temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). *Where xxx indicates the nominal power class (P_{max}) at STC above.

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 1703, UL 61730

IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
UL 1703	Fire Type Class 2
IEC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
AS4040.2 NCC 2016	Cyclic Wind Load
ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007, IEC 62941	



WARRANTY

	Standard	REC ProTrust
Installed by an REC Certified Solar Professional	No	Yes
System Size	All	≤25 kW 25-500 kW
Product Warranty (yrs)	20	25
Power Warranty (yrs)	25	25
Labor Warranty (yrs)	0	10
Power in Year 1	98%	98%
Annual Degradation	0.25%	0.25%
Power in Year 25	92%	92%

See warranty documents for details. Conditions apply.

MAXIMUM RATINGS

Operational temperature:	-40...+85°C
Maximum system voltage:	1000 V
Design load (+): snow	4666 Pa (97.5 lbs/sq ft)*
Maximum test load (+):	7000 Pa (146 lbs/sq ft)*
Design load (-): wind	2666 Pa (55.6 lbs/sq ft)*
Maximum test load (-):	4000 Pa (83.5 lbs/sq ft)*
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

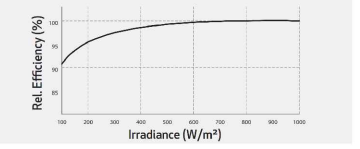
TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P _{max} :	-0.26 %/°C
Temperature coefficient of V _{OC} :	-0.24 %/°C
Temperature coefficient of I _{SC} :	0.04 %/°C

*The temperature coefficients stated are linear values

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Ref: PM-D5-12-02-Rev-D 03/20

FOUNDED IN NORWAY, 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 AROUND 2,000 PEOPLE WORLDWIDE, PRODUCING 1.5 GW OF SOLAR PANELS ANNUALLY.


www.recgroup.com



MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL/STRUCTURAL DIRECTIONS.

INSTALLER:
EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539

OWNER:
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/ Perfect Welding / Solar Energy / Perfect Charging

FRONIUS PRIMO



/ SnapInverter
mounting system



/ Wireless
monitoring



/ Open data
communication



/ Smart Grid
Ready



/ Arc Fault Circuit
Interruption



The transformerless Fronius Primo is the ideal compact single-phase inverter for residential and small-scale commercial applications with power categories from 3.8 to 8.2 kW. In accordance with ESA rules for residential applications, the Fronius Primo can operate efficiently at a maximum input voltage of 600 V. And for increased efficiency and additional cost savings for commercial applications, the Fronius Primo can operate at the maximum input voltage of 1,000 V. Industry-leading features now come standard with the Fronius Primo, including: dual maximum power point tracking, arc fault protection, integrated wireless monitoring and SunSpec Modbus interfaces for seamless monitoring and datalogging via Fronius' online and mobile platform, Fronius Solar.web.

TECHNICAL DATA FRONIUS PRIMO

GENERAL DATA	FRONIUS PRIMO 3.8 - 8.2	FRONIUS PRIMO 10.0-15.0
Dimensions (width x height x depth)	16.9 x 24.7 x 8.1 in. / 42.9 x 62.7 x 20.6 cm	20.1 x 28.5 x 8.9 in. / 51.1 x 72.4 x 20.6 cm
Weight	47.4 lb. / 21.5 kg	82.5 lbs. / 37.4 kg
Degree of protection	NEMA 4X	
Night time consumption	< 1 W	
Inverter topology	Transformerless	
Cooling	Controlled forced ventilation, variable speed fan	
Installation	Indoor and outdoor installation	
Ambient operating temperature range	-40 to 131 F / -40 to 55 C	-40 to 140 F / -40 to 60 C
Permitted humidity	0 - 100 %	
DC connection terminals	2x DC+1, 2x DC+2 and 4x DC- screw terminals for solid: copper and aluminium stranded / fine stranded: copper and aluminium	4x DC+1, 2x DC+2 and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminium (solid / stranded)
AC connection terminals	Screw terminals 12 - 6 AWG	
Revenue Grade Metering	Optional (ANSI C12.1 accuracy)	
Certificates and compliance with standards	UL 1741-2015, UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2014 Article 690, C22.2 No. 107.1-01 (September 2001), UL1699B Issue 2-2013, CSA TIL M-07 Issue 1-2013	UL 1741-2015, UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC Article 690-2014, C22.2 No. 107.1-01 (September 2001), UL1699B Issue 2-2013, CSA TIL M-07 Issue 1-2013

PROTECTIVE DEVICES	STANDARD WITH ALL PRIMO MODELS
AFCI	Yes
Ground Fault Protection with Isolation Monitor Interrupter	Yes
DC disconnect	Yes
DC reverse polarity protection	Yes

INTERFACES	AVAILABILITY	AVAILABLE WITH ALL FRONIUS PRIMO MODELS
USB (A socket)	Standard	Datalogging and inverter update via USB
2x RS422 (RJ45 socket)	Standard	Fronius Solar Net, interface protocol
Wi-Fi*/Ethernet/Serial/Datalogger and webserver	Optional	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU
6 inputs or 4 digital inputs/outputs	Optional	External relay controls

*The term Wi-Fi® is a registered trademark of the Wi-Fi Alliance.

TECHNICAL DATA FRONIUS PRIMO 3.8-1 TO 8.2-1

INPUT DATA	PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Max. permitted PV power (kWp)	5.7 kW	7.5 kW	9.0 kW	11.4 kW	12.3 kW
Max. usable input current (MPPT 1/MPPT 2)	18 A / 18 A	18 A / 18 A	18 A / 18 A	18 A / 18 A	18 A / 18 A
Total max. DC current	36 A				
Max. admissible input current (MPPT 1/MPPT 2)	27 A				
Operating voltage range	80 V - 1,000 V				
Max. input voltage	1,000 V				
Nominal input voltage	410 V	420 V	420 V	420 V	420 V
Admissible conductor size DC	AWG 14 - AWG 6				
MPP voltage range	200 - 800 V	240 - 800 V	240 - 800 V	250 - 800 V	270 - 800 V
Number of MPPT	2				

OUTPUT DATA	PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Max. output power	240 V 3,800 W 208 V 3,800 W	5,000 W 5,000 W	6,000 W 6,000 W	7,600 W 7,600 W	8,200 W 7,900 W
Max. output fault current / Duration	240 V 584 A Peak / 154 ms 240 V 15.8 A	584 A Peak / 154 ms 20.8 A	584 A Peak / 154 ms 25.0 A	584 A Peak / 154 ms 31.7 A	584 A Peak / 154 ms 34.2 A
Max. continuous output current	208 V 18.3 A	24.0 A	28.8 A	36.5 A	38.0 A
Recommended OCPD/AC breaker size	240 V 20 A 208 V 25 A	30 A 30 A	35 A 40 A	40 A 50 A	45 A 50 A
Max. efficiency (Lite version)	97.9 %				
CEC efficiency (Lite version)	240 V 95.5 %	96.5 %	96.5 %	97.0 %	97.0 %
Admissible conductor size AC	AWG 14 - AWG 6				
Grid connection	208 / 240 V				
Frequency	60 Hz				
Total harmonic distortion	< 5.0 %				
Power factor (cos φ _{ac,i})	0.85 - 1 ind./cap				

TECHNICAL DATA FRONIUS PRIMO 10.0-1 TO 15.0-1

INPUT DATA	PRIMO 10.0-1	PRIMO 11.4-1	PRIMO 12.5-1	PRIMO 15.0-1
Max. permitted PV power (kWp)	15.00 kW	17.10 kW	18.75 kW	22.50 kW
Max. usable input current (MPPT 1/MPPT 2)	33.0 A / 18.0 A			
Total max. DC current	51 A			
Max. admissible input current (MPPT 1/MPPT 2)	49.5 A / 27.0 A			
Operating voltage range	80 V - 1,000 V			
Max. input voltage	1,000 V			
Nominal input voltage	655 V	660 V	665 V	680 V
Admissible conductor size DC	AWG 14 - AWG 6 copper direct, AWG 6 aluminium direct, AWG 4 - AWG 2 copper or aluminium with optional input combiner			
MPP Voltage Range	220 - 800 V	240 - 800 V	260 - 800 V	320 - 800 V
Number of MPPT	2			

OUTPUT DATA	PRIMO 10.0-1	PRIMO 11.4-1	PRIMO 12.5-1	PRIMO 15.0-1
Max. output power	240 V 9,995 W 208 V 9,995 W	11,400 W 11,400 W	12,500 W 12,500 W	15,000 W 13,750 W
Max. output fault current / Duration	240 V 916 A Peak / 6.46 ms 240 V 41.6 A	916 A Peak / 6.46 ms 47.5 A	916 A Peak / 6.46 ms 52.1 A	916 A Peak / 6.46 ms 62.5 A
Max. continuous output current	208 V 48.1 A	54.8 A	60.1 A	66.1 A
Recommended OCPD/AC breaker size	240 V 60 A 208 V 60 A	60 A 70 A	70 A 80 A	80 A 90 A
Max. efficiency (Lite version)	97.9 %			
CEC efficiency (Live version)	240 V 96.5 %	96.5 %	96.5 %	97.0 %
Admissible conductor size AC	AWG 10 - AWG 2 copper (solid / stranded / fine stranded) , AWG 6 - AWG 2 copper (solid / stranded)			
Grid connection	208 / 240 V			
Frequency	60 Hz			
Total harmonic distortion	< 2.5 %			
Power factor (cos φ _{ac,i})	0-1 ind./cap.			

December 12, 2016

Fronius Canada Ltd. / 2875 Argentia Road, Units 3 - 6 / Mississauga, ON L5N 8G6 / www.fronius.ca / 905-288-2100

MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL/STRUCTURAL DIRECTIONS.

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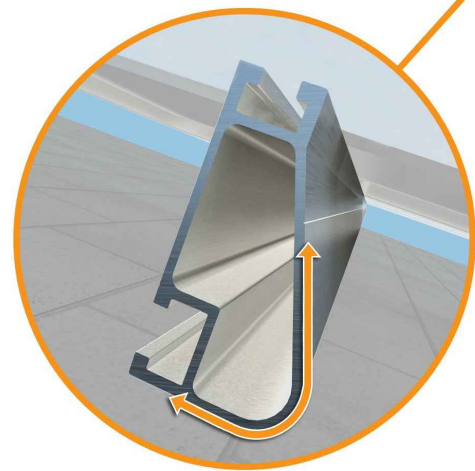


XR Rail Family

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.



Tech Brief

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.

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INSTALLER:
EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539

OWNER:
JONATHAN BENLOULOU
361 FM3227,
CANTON, TX 75103

REV	DRAWN	CHK'D	DATE
00	BY PK	BY PB	04.07.22
Job ID / R		ETS-22-28/02	
Sheet No		PV-11	
Page No		13 of 14	

MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL/STRUCTURAL DIRECTIONS.



Ground Mount System

Datasheet



Mount on all terrains, in no time.

The IronRidge Ground Mount System combines our XR1000 rails with locally-sourced steel pipes, or mechanical tubing, to create a cost-effective structure capable of handling any site or terrain challenge. Installation is simple with only a few structural components and no drilling, welding, or heavy machinery required. In addition, the system works with a variety of foundation options, including concrete piers and driven piles.



Rugged Construction
Engineered steel and aluminum components ensure durability.



PE Certified
Pre-stamped engineering letters available in most states.



Simple Assembly
Just a few simple components and no heavy equipment.



Design Software
Online tool generates engineering values and bill of materials.



Flexible Architecture
Multiple foundation and array configuration options.



20 Year Warranty
Twice the protection offered by competitors.

MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL/STRUCTURAL DIRECTIONS.

Datasheet



360° Product Tour
Visit ironridge.com

Substructure

Top Caps



Connect vertical and cross pipes.

Rail Connectors



Attach Rail Assembly to horizontal pipes.

Diagonal Braces



Optional Brace provides additional support.

Cross Pipe & Piers



Steel pipes or mechanical tubing for substructure.

Rail Assembly

XR1000 Rails



Curved rails increase spanning capabilities.

Top-Down Clamps



Secure modules to rails and substructure.

Under Clamps



Alternative clamps for pre-attaching modules to rails.

Accessories



Wire Clips and End Caps provide a finished look.

Resources



Design Assistant
Go from rough layout to fully engineered system. For free.
Go to ironridge.com/gm



NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to ironridge.com/training

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INSTALLER:
EASTEX SOLAR
819 COUNTY ROAD 446,
PALESTINE, TX 75803 - TECL#33539

OWNER:
JONATHAN BENLOULOU
361 FM3227,
CANTON, TX 75103

REV	DRAWN	CHK'D	DATE
00	BY PK	BY PB	04.07.22
Job ID / R		ETS-22-28/02	
Sheet No		PV-12	
Page No		14 of 14	

INVOICE

Eastex Solar LLC
819 An County Road 446
Palestine, TX 75803

admin@eastexsolar.com
903.805.1849
www.eastexsolar.com



Jonathan Benloulou

Bill to

Jonathan Benloulou
361 FM 3227
Canton, TX 75103

Ship to

Jonathan Benloulou
361 FM 3227
Canton, TX 75103

Invoice details

Invoice no. : 1310
Invoice date : 04/02/2022
Terms : Net 10
Due date : 04/12/2022

Product or service	Amount
1. Equipment Order As Per Customer Request	1 unit × \$29,000.00 \$29,000.00

Ways to pay

BANK

Total	\$29,000.00
Payment	-\$29,000.00
Balance due	\$0.00

Paid in Full

INVOICE

Eastex Solar LLC
819 An County Road 446
Palestine, TX 75803

admin@eastexsolar.com
903.805.1849
www.eastexsolar.com



Jonathan Benloulou

Bill to

Jonathan Benloulou
361 FM 3227
Canton, TX 75103

Ship to

Jonathan Benloulou
361 FM 3227
Canton, TX 75103

Invoice details

Invoice no. : 1321
Invoice date : 04/28/2022
Terms : Due in 3 Days
Due date : 05/01/2022

Product or service	Amount
1. System Installation Completed	1 unit × \$29,000.00
Service date: 04/28/2022	\$29,000.00
Final Invoice Upon Completed Installation	

Ways to pay

BANK

Total	\$29,000.00
Payment	-\$29,000.00
Balance due	\$0.00

Paid in Full

SOLAR'S MOST TRUSTED



REC ALPHA BLACK SERIES



375 W_P POWER

20 YEAR PRODUCT WARRANTY

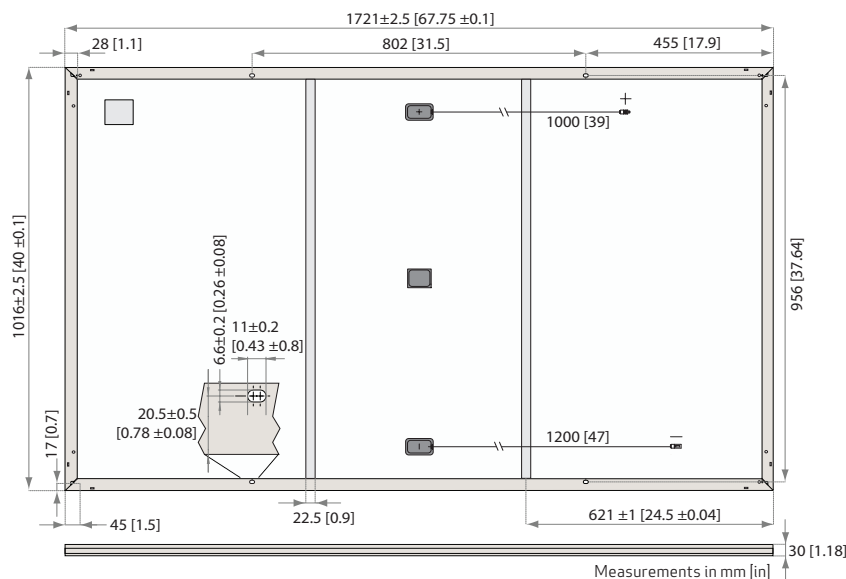
25 YEAR POWER OUTPUT WARRANTY



recgroup.com/alpha

REC ALPHA BLACK SERIES

PRODUCT DATASHEET



GENERAL DATA

Cell type:	120 half-cut cells with REC heterojunction cell technology 6 strings of 20 cells in series	Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790
Glass:	0.13 in (3.2 mm) solar glass with anti-reflection surface treatment	Cable:	12 AWG (4 mm ²) PV wire, 39 + 47 in (1 + 1.2 m) in accordance with EN 50618
Backsheet:	Highly resistant polymeric construction	Connectors:	Stäubli MC4 PV-KBT4/KST4, 12 AWG (4 mm ²) in accordance with IEC 62852 IP68 only when connected
Frame:	Anodized aluminum (black)	Origin:	Made in Singapore

ELECTRICAL DATA @ STC

Product Code*: RECxxxAA Black

Nominal Power - P _{MPP} (Wp)	355	360	365	370	375
Watt Class Sorting - (W)	-0/+5	-0/+5	-0/+5	-0/+5	-0/+5
Nominal Power Voltage - V _{MPP} (V)	37.4	37.7	38.0	38.3	38.7
Nominal Power Current - I _{MPP} (A)	9.50	9.55	9.60	9.66	9.72
Open Circuit Voltage - V _{OC} (V)	44.0	44.1	44.3	44.5	44.6
Short Circuit Current - I _{SC} (A)	10.19	10.23	10.26	10.30	10.40
Panel Efficiency (%)	20.3	20.6	20.9	21.2	21.4

Values at standard test conditions (STC: air mass AM 1.5, irradiance 10.75 W/sq ft (1000 W/m²), temperature 77°F (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.

ELECTRICAL DATA @ NMOT

Product Code*: RECxxxAA Black

Nominal Power - P _{MPP} (Wp)	270	274	278	282	286
Nominal Power Voltage - V _{MPP} (V)	35.2	35.5	35.8	36.1	36.4
Nominal Power Current - I _{MPP} (A)	7.67	7.71	7.76	7.80	7.85
Open Circuit Voltage - V _{OC} (V)	41.4	41.6	41.7	41.9	42.0
Short Circuit Current - I _{SC} (A)	8.23	8.26	8.29	8.32	8.40

Nominal module operating temperature (NMOT: air mass AM 1.5, irradiance 800 W/m², temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). * Where xxx indicates the nominal power class (P_{MPP}) at STC above.

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 1703, UL 61730

IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
UL 1703	Fire Type Class 2
IEC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
AS4040.2 NCC 2016	Cyclic Wind Load

ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007



WARRANTY

20 year product warranty
25 year linear power output warranty
Maximum annual power degradation of 0.25% p.a.
Guarantees 92% of power after 25 years
See warranty conditions for further details.

MECHANICAL DATA

Dimensions:	67.8 x 40 x 1.2 in (1721 x 1016 x 30 mm)
Area:	18.8 sq ft (1.75 m ²)
Weight:	43 lbs (19.5 kg)

MAXIMUM RATINGS

Operational temperature:	-40 ... +85°C
Maximum system voltage:	1000 V
Design load (+): snow	4666 Pa (97.5 lbs/sq ft)*
Maximum test load (+):	7000 Pa (146 lbs/sq ft)*
Design load (-): wind	2666 Pa (55.6 lbs/sq ft)*
Maximum test load (-):	4000 Pa (83.5 lbs/sq ft)*
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

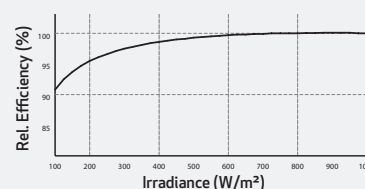
TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P _{MPP} :	-0.26 %/°C
Temperature coefficient of V _{OC} :	-0.24 %/°C
Temperature coefficient of I _{SC} :	0.04 %/°C

*The temperature coefficients stated are linear values

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



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 around 2,000 people worldwide, producing 1.5 GW of solar panels annually.

REC
www.recgroup.com



/ Perfect Welding / Solar Energy / Perfect Charging



FRONIUS PRIMO

/ Solutions for a brighter tomorrow.



/ PC board replacement process



/ SnapINverter mounting system



/ Wi-Fi®* interface



/ Design Flexibility



/ Smart Grid Ready



/ Arc Fault Circuit Interruption



/ With power categories ranging from 3.8 kW to 15.0 kW, the transformerless Fronius Primo is the ideal compact single-phase inverter for residential applications. The sleek design is equipped with the SnapINverter hinge mounting system which allows for lightweight, secure and convenient installation. The Fronius Primo has several integrated features that set it apart from competitors including dual powerpoint trackers, high system voltage, a wide input voltage range, Wi-Fi* and SunSpec Modbus interface, and Fronius' online and mobile monitoring platform Fronius Solar.web. The Fronius Primo also works seamlessly with the Fronius Rapid Shutdown Box as a reliable rapid shutdown solution outside the PV Array boundary.

TECHNICAL DATA FRONIUS PRIMO

GENERAL DATA	FRONIUS PRIMO 3.8 - 8.2	FRONIUS PRIMO 10.0-15.0
Dimensions (width x height x depth)	16.9 x 24.7 x 8.1 in.	20.1 x 28.5 x 8.9 in.
Weight	47.29 lb.	82.5 lbs.
Protection Class	NEMA 4X	
Night time consumption	< 1 W	
Inverter topology	Transformerless	
Cooling	Variable speed fan	
Installation	Indoor and outdoor installation	
Ambient operating temperature range	-40 - 131°F (-40 - 55°C)	-40 - 140°F (-40 - 60°C)
Permitted humidity	0 - 100 %	
Elevation	4000m (13123 ft)	
DC connection terminals	4x DC+ and 4x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)	4x DC+1, 2x DC+2 and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)
AC connection terminals	Screw terminals 12 - 6 AWG	
Revenue Grade Metering	Optional (ANSI C12.1 accuracy)	
Certificates and compliance with standards	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22. 2 No. 107.1-16, UL1699B Issue 2 -2013, CSA TIL M-07 Issue 1 – 2013	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22. 2 No. 107.1-16, UL1699B Issue 2 -2013, CSA TIL M-07 Issue 1 -2013

PROTECTIVE DEVICES	STANDARD WITH ALL PRIMO MODELS
DC reverse polarity protection	Yes
Anti Islanding	Internal; in accordance with UL 1741-2016-09, IEEE 1547-2003 and NEC 2017
Over temperature protection	Output power derating/ Active cooling
AFCI	Yes
Rapid shutdown compliant	Per Sect. 690.12 of 2014 (of NEC 2017 prior to Jan 2019)
Ground Fault Protection with Isolation Monitor Interrupter	Yes
DC disconnect	Yes
INTERFACES	STANDARD WITH ALL PRIMO MODELS
USB (A socket)	Datalogging and inverter update possible via USB
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol
Wi-Fi*/Ethernet LAN	Wireless standard 802.11 b/g/n/Fronius Solar.web, SunSpec Modbus TCP, JSON
Datalogger and Webserver	Included
Serial RS485	SunSpec Modbus RTU or meter connection
6 inputs or 4 digital inputs/outputs	Load management; signaling, multipurpose I/O

*The term Wi-Fi® is a registered trademark of the Wi-Fi Alliance.

TECHNICAL DATA FRONIUS PRIMO

INPUT DATA		PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Recommended PV power (kWp)		3.0 - 6.0 kW	4.0 - 7.8 kW	4.8 - 9.3 kW	6.1 - 11.7 kW	6.6 - 12.7 kW
Max. usable input current (MPPT 1/MPPT 2)		18 A / 18 A				
Max. usable input current (MPPT 1+MPPT 2)		36 A				
Max. array short circuit current (1.5* I _{max}) (MPPT1/MPPT2)		27 A / 27 A				
Nominal input voltage		410 V	420 V	420 V	420V	420 V
Operating voltage range		80 V - 600 V				
DC startup voltage		80 V				
MPP Voltage Range		200-480 V	200-400 V	240-480 V	250-480 V	270-480 V
Max. input voltage		600 V (1000 V optional ¹)				
Admissible conductor size DC		AWG 14 - AWG 6 copper (solid / stranded / fine stranded)(AWG 10 copper or AWG 8 aluminium for overcurrent protective devices up to 60A, from 61 to 100A minimum AWG 8 for copper or AWG 6 aluminium has to be used) , AWG 6 - AWG 2 copper(solid / stranded) MultiContactWiringable with AWG 12				
Number of MPPT		2				
OUTPUT DATA		PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Max. output power	208 V/240 V	3800 VA/3800 VA	5000 VA/5000 VA	6000 VA/6000 VA	7600 VA/7600 VA	7900 VA/8200 VA
Output configuration		208/240 V				
Frequency range (adjustable)		45.0 - 55.0 Hz / 50 - 66 Hz				
Operating frequency range default for CAL setups		-/ 58.5 - 60.5 Hz				
Operating frequency range default for HI setups		-/ 57.0 - 63.0 Hz				
Nominal operating frequency		60 Hz				
Admissible conductor size AC		AWG 14 - AWG 6				
Total harmonic distortion		< 5.0 %				
Power factor range		0.85-1 ind./cap				
Max. continuous output current	208 V	18.3 A	24.0 A	28.8 A	36.5 A	38.0 A
	240 V	15.8 A	20.8 A	25.0 A	31.7 A	34.2 A
OCPD/AC breaker size	208V	25 A	30 A	40 A	50 A	50 A
	240 V	20 A	30 A	35 A	40 A	45 A
Max. Efficiency		96.7 %	96.9 %	96.9 %	96.9 %	97.0 %
CEC Efficiency		95.0 %	95.5 %	96.0 %	96.0 %	96.5 %
INPUT DATA		PRIMO 10.0-1	PRIMO 11.4-1	PRIMO 12.5-1	PRIMO 15.0-1	
Recommended PV power (kWp)		8.0 - 12.0 kW	9.1 - 13.7 kW	10.0 - 15.0 kW	12.0 - 18.0 kW	
Max. usable input current (MPPT 1/MPPT 2)		33.0 / 18.0 A				
Max. usable input current (MPPT 1+MPPT 2)		51 A				
Max. array short circuit current (1.5 * I _{max})		49.5 A/ 27.0				
Nominal input voltage		655 V	660 V	665 V	680 V	
Operating voltage range		80 V - 1,000 V				
DC startup voltage		80 V				
MPP Voltage Range		220-800 V	240-800 V	260-800 V	320-800 V	
Max. input voltage		1000 V				
Admissible conductor size DC		AWG 14 - AWG 6 copper direct, AWG 6 aluminum direct (AWG 10 copper or AWG 8 aluminium for overcurrent protective devices up to 60A, from 61 to 100A minimum AWG 8 for copper or AWG 6 aluminium has to be used), AWG 4 - AWG 2 copper or aluminium with optional input combiner				
Number of MPPT		2				
Integrated DC string fuse holders		4- and 4+ for MPPT 1 / no fusing required on MPPT 2				
OUTPUT DATA		PRIMO 10.0-1	PRIMO 11.4-1	PRIMO 12.5-1	PRIMO 15.0-1	
Max. output power	208 V/240 V	9995 VA/9995 VA	11400 VA/11400 VA	12500 VA/12500 VA	13750 VA/15000 VA	
Output configuration		1-NPE 208/240 V				
Frequency range (adjustable)		45-55 Hz / 50-66 Hz				
Operating frequency range default for CAL setups		-/ 58.5 - 60.5 Hz				
Operating frequency range default for HI setups		-/ 57.0 - 63.0 Hz				
Nominal operating frequency		60 Hz				
Admissible conductor size AC		AWG 10- AWG 2 copper (solid/stranded/fine stranded)(AWG 10 copper or AWG 8 aluminum for overcurrent protective devices up to 60 A, from 61 to 100A minimum AWG 6 aluminium has to be used), AWG 6-AWG 2 copper (solid/stranded) Multi Contact Wiringable with AWG 12				
Total harmonic distortion		< 2.5 %				
Power factor range		0-1 ind./cap.				
Max. continuous output current	208 V	48.1 A	54.8 A	60.1 A	66.1 A	
	240 V	41.6 A	47.5 A	52.1 A	62.5 A	
OCPD/AC breaker size	208 V	70 A	70 A	80 A	90 A	
	240 V	60 A	60 A	70 A	80 A	
Max. Efficiency		96.7 %				
CEC Efficiency 600 V/ 1000 V	240 V	96.0 % / 96.5 %			96.5 % / 97.0 %	

¹ inverter rated for up to 1000 V open-circuit. Nominal, Operating, and MPP voltages based on 600 V system design. Actual DC system voltage is dependent on PV string-sizing, not inverter input capacity.

/ Perfect Welding / Solar Energy / Perfect Charging

THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 3,800 employees worldwide and 1,242 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

v08 Aug 2017 EN

Fronius USA LLC

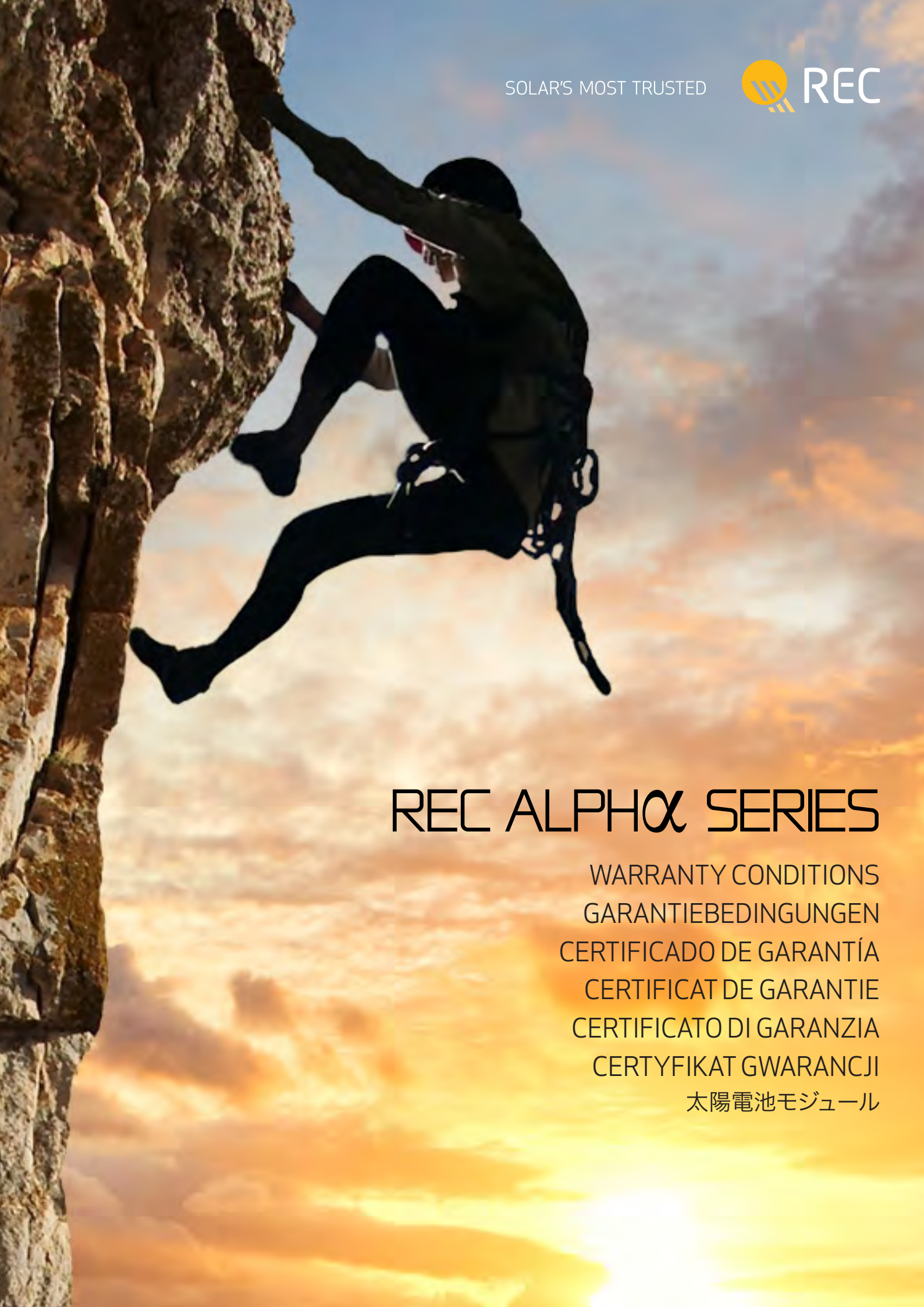
6797 Fronius Drive

Portage, IN 46368 USA

pv-support-usa@fronius.com

www.fronius-usa.com



A person is shown in silhouette, climbing a vertical rock face. The climber is positioned on the left side of the frame, with their body angled towards the right. They are wearing a helmet and a harness. The background is a dramatic sky with warm, orange and yellow hues, suggesting a sunset or sunrise. The rock face is rugged and textured.

SOLAR'S MOST TRUSTED



REC ALPHOX SERIES

WARRANTY CONDITIONS

GARANTIEBEDINGUNGEN

CERTIFICADO DE GARANTÍA

CERTIFICAT DE GARANTIE

CERTIFICATO DI GARANZIA

CERTYFIKAT GWARANCJI

太陽電池モジュール

Limited Warranty Certificate for REC Alpha solar panels¹ (Limited Warranty) (valid as of January 1, 2019)

This Limited Warranty covers all the above named REC solar panels (as defined above¹) delivered to REC customers on or after January 1, 2019, and is valid in all member states of the Organization of American States (OAS) only.

REC SOLAR PTE. LTD. (hereafter the 'Warrantor' or 'REC') issues the following voluntary warranty to the end-user who purchased the Product in one of the states mentioned above and put the Product into use for the first time (the 'Original End-User'). In addition to the rights under this Limited Warranty, the Original End-User may be entitled to statutory warranty rights under applicable national laws which shall not be affected or limited in any way by this Limited Warranty.

I. Product Warranty

Subject to the terms and conditions of this Limited Warranty, for a period of 20 years² from the date of purchase by the Original End-User (not exceeding a maximum period of 20.5 years³ from the date of production as identified on the Product), REC warrants that the Products:

- Are free from defects in material and workmanship if installed and used in accordance with the installation instructions available to download from www.recgroup.com; and
- Will remain safe and operational if cable and connector plugs are installed professionally and are not permanently positioned in water; provided however, that damage to the cable caused by abrasion on a rough surface due to insufficient fixing or to unprotected running of the cable over sharp edges is excluded. Damage caused by animals is also excluded; and
- Will not experience freezing up of the aluminum frames if installed correctly.

The outer appearance of the Product, including scratches, stains, rust, mould, discoloration and other signs of normal wear and tear, which occurred after delivery or installation, do not constitute defects, provided the functionality of the Product is not affected. Glass breakage constitutes a defect only if not caused by any external influence.

If a defect (or serial defect⁴) occurs during the Warranty Period affecting the functionality of the Product, REC will, at its sole option:

- Repair the defective Product; or
- Replace the Product with an equivalent product; or
- Refund the current market price of an equivalent product at the time of the claim.

II. Performance Warranty

Subject to the terms and conditions of this Limited Warranty, REC warrants that the actual power output (performance) of the Product will reach at least 98% of the nameplate power output specified on the Product during the first year (calculated from the date of production as identified on the Product). From the second year, the actual power output will decline annually by no more than 0.25% for a period of 24 years, so that by the end of the 25th year, an actual output of at least 92% of the nameplate power output specified on the Product will be achieved.

This Performance Warranty covers only reduced performance due to natural degradation of the glass, the solar cell, the embedding foil, the junction box and interconnections under normal use.

If the Product does not reach the warranted power output levels set out above when measured by the Warrantor or by an accredited independent measuring institute⁵ agreed to prior to testing by the Warrantor, under standard test conditions (IEC 61215) and taking into account a $\pm 3\%$ tolerance range, then REC will, at its sole option:

- Repair the Product; or
- Replace the Product with an equivalent product or to supply additional panels as necessary to achieve the warranted percentage of specified power output; or
- Refund the current market price of an equivalent product at the time of the claim.

¹ Including product variants with one or more of the suffixes: Black, 72, Q2, and excluding panels showing Q3, as part of the product name.

² This may be extended for additional 5 years subject to the prevailing conditions of the REC Certified Solar Professional Program. For more information on products, installation types & installers qualified for that extension see: www.recgroup.com/rec-certified-solar-professional-program-installers.

³ 25.5 years in the case of prevailing footnote ².

⁴ Serial defects can only be confirmed by REC as a serial defect event in accordance with REC standards of serial defects.

⁵ Examples: Fraunhofer ISE, TÜV Rheinland, UL or equivalent as discussed and agreed by REC prior to testing.

III. Warranty Conditions, Limitations and Exclusions

1. This Limited Warranty is not transferable by the Original End-User, except to a subsequent owner of the solar power facility at which the Product was originally installed and remains installed, provided that this solar power facility has not been altered in any way or moved from the structure or property at which it was originally installed.
2. Notification of a warranty claim hereunder must be given without undue delay after detection of the defect and prior to the expiration of the applicable Warranty Period and in accordance with the procedure as set out in section IV below.
3. **Please note that this Limited Warranty does not cover, nor will the Warrantor reimburse, any on-site labor or other costs incurred in connection with the de-installation or removal of defective Products, transport or the re-installation of replaced or repaired Products or any components.⁶**
4. The Warrantor may use remanufactured or refurbished parts or products when repairing or replacing any Products under this Limited Warranty. Any exchanged or replaced parts or Products will become the property of REC. The Warranty Periods set out in sections I. and II. above will not be extended in any way in the event of a replacement or repair of a Product.
5. This Limited Warranty requires that the Product is installed according to the latest safety, installation and operation instructions provided by REC and does not apply to damage, malfunction, power output or service failures which have been caused by: (a) repair, modifications or removal of the Product by someone other than a qualified service technician; (b) any improper attachment, installation or application of the Product or (c) abuse, misuse, accident, negligent acts, power failures or surges, lightning, fire, flood, accidental breakage, actions of third parties and other events or accidents outside REC's reasonable control and/or not arising under normal operating conditions.
6. This Limited Warranty is provided voluntarily and free of charge and does not constitute an independent guarantee. Therefore, if any defect materially affects the functionality of the Product or results in a power output below the warranted levels, the Original End-User's remedies are limited exclusively to the remedies set out under sections I. and II. in the warranty cases specified herein. **REC ASSUMES NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THE WARRANTIES MADE HEREIN AND SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. REC EXCLUDES ALL LIABILITIES FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES FROM THE USE OR LOSS OF USE OF THE PRODUCTS TO PERFORM AS WARRANTED; INCLUDING BUT NOT LIMITED TO DAMAGES FOR LOSS OF POWER, LOST PROFITS OR SAVINGS NOR EXPENSES ARISING FROM THIRD-PARTY CLAIMS.** This does not apply to the extent the Warrantor is liable under applicable mandatory product liability laws or in cases of intent or gross negligence on the part of the Warrantor.
7. This Limited Warranty shall be governed by and construed in accordance with the laws of the State of California without giving effect to its conflict of laws provision. The United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply to or govern this Limited Warranty or any aspect of any dispute arising there from.

IV. Warranty Claim Procedure

Claims under this Limited Warranty must be made by notifying the authorized distributor or seller where the Product was first purchased. A claim may be registered at:

www.recgroup.com/claims

Contact details for REC global distribution partners can be found at:

www.recgroup.com/distributors

Once a claim has been submitted, it will be handled by the REC Regional Office, details of which can be found at:

www.recgroup.com/contact

For a warranty claim to be processed, proof of the original purchase of the Product and any subsequent sales including transfer of this Warranty need to accompany the claim. The claim must include a description of the alleged defect(s) as well as the Product's serial number(s). Prior to returning any Products or components to REC, an RMA (Return Merchandise Authorization) number is required, which may be obtained by contacting REC via the aforesaid address.

This warranty is valid for Products delivered to REC customers on or after January 1, 2019.

⁶ Further warranty extensions may be given through REC Certified Solar Professional installers according to the conditions of the REC ProTrust Warranty package. See www.recgroup.com/protrust for further details.



LIMITED WARRANTY CONDITIONS FOR FRONIUS INVERTERS, FRONIUS RAPID SHUTDOWN BOXES, FRONIUS SMART METER AND THE FRONIUS DATAMANAGER

FOR THE FRONIUS WARRANTY AND FRONIUS WARRANTY PLUS

(Valid from: 01/01/2020)

Fronius International GmbH ("Fronius") grants a limited warranty (referred to herein as either the "Fronius Warranty" or "Fronius Warranty Plus" as is applicable to the Warranty Product, as defined herein) for the Fronius Warranty Products.

For more information about the Fronius Warranty please visit: www.fronius.com/solar/warranty-usa

Warranty Products

This warranty applies exclusively to Fronius inverters, Fronius Rapid Shutdown Boxes, Fronius Smart Meter and Fronius Datamanagers (individually, the "Warranted Product") and only to the extent that these products are first installed in the United States of America and uniquely identified by their serial number for the Warranty Period as defined below. Fuses and other wearing parts are excluded from the warranty together with other components of the photovoltaic system as well as system add-ons, components for system monitoring and data communication, accessories and pre-production devices.

Warranty holder

Only the owner of the Warranty Product is entitled to exercise the terms and conditions herein stated. No other person or entity holds a right or claim under these warranty terms and conditions. Warranty Product that has had a proper change in ownership, which can be evidenced with documentation, will be eligible to receive warranty benefits under these terms and conditions.

Warranty claim

A warranty claim exists in the event that a Warranty Product has a defect in materials and workmanship for which Fronius is responsible within the Warranty Period.

Warranty exclusions

The warranty does not apply if

- / the fault is the result of improper installation, operation, commissioning or transport; failure to comply with the installation, preventive maintenance and/or operating instructions; insufficient ventilation; work performed on the Warranty Product by a third party not authorised by Fronius; failure to heed the safety rules, operating instructions and installation standards; modifications; unauthorized repair, normal wear and tear; force majeure (storm, lightning, overvoltage, fire, etc.); external causes such as accidents, abuse or other actions or events beyond Fronius Reasonable care;
- / the fault has been caused by another component in the warranty holder's photovoltaic system;
- / Fronius could not identify a fault upon examination of the product;
- / the damage does not impair the function of the Fronius inverter ("cosmetic flaws"); or
- / the full purchase price of the Warranty Product has still not been paid to Fronius;
- / Fronius Product which has been disassembled and rebuilt, excluding refurbished units which are provided by Fronius under Warranty terms.

Warranty services

Fronius grants the Fronius Warranty Plus, as described below, to the original purchaser for a period of ten years from shipment from the Fronius factory.

/ Fronius Warranty

- **Material warranty:** Fronius will not cover any removal and installation costs, labour costs, transport costs or costs for any other service. Fronius will provide the relevant replacement part or a replacement device. The warranty holder does not have to pay for the replacement part. In the event of replacement with an equivalent replacement device, Fronius will charge for the labour costs (time) of repairing the original device.
- **Service:** Fronius will not pay the labour costs for removing and installing the replacement part or replacement device, or costs for any other service.
- **Transport:** Fronius will not pay any shipping and transport costs incurred in relation to the Material and Service under this Fronius Warranty

/ Fronius Warranty Plus

- **Material:** Fronius will provide a replacement part or an equivalent replacement device at no cost to the warranty holder.
 - **Service:** Fronius will pay the labour costs for removing and installing the replacement part or replacement device, provided this work is undertaken by Fronius or a third party approved by Fronius. Due to technological progress, the replacement part or replacement device provided may not be compatible with the system monitoring or other components installed on-site (e.g. Fronius DATCOM). Costs incurred as a result of any incompatibility are not part of this warranty service and will not be paid by Fronius.
- Other costs, such as travel expenses, installation costs, customs duties, etc., will not be paid by Fronius. These services do not include modifications to the existing photovoltaic system of the warranty holder, the warranty holder's building wiring or other devices.



The warranty holder must provide unrestricted access to the device(s) affected and provide all necessary equipment to comply with any applicable health and safety regulations free of charge.

- **Transport:** Fronius will pay any national shipping and transport costs incurred which are approved by Fronius in relation to the Material and Service described above under this Fronius Warranty Plus, as necessary. Any requested express delivery costs will not be paid by Fronius.

Warranty Period

The Warranty Period for all levels of warranty begins when the Warranty Product is shipped by Fronius and lasts for the period as described below, depending on the Warranty Product and whether the warranty is a Fronius Warranty or a Fronius Warranty Plus. The precise expiration date of the warranty for the specific Warranty Product can be checked by entering the serial number at www.solarweb.com. If the device is registered on www.solarweb.com within 30 months of dispatch from the Fronius factory, the warranty period begins from the installation date entered during the product registration process. This applies to all devices dispatched from 1 October 2018. Fronius may change the availability of this limited warranty at Fronius' discretion, but any changes will not be retroactive.

Where parts or devices are replaced, the remaining warranty period is transferred to the replacement part or replacement device. This transfer will be registered by Fronius automatically and the warranty holder will not receive a new certificate.

Overview of Warranty Product, warranty service and warranty period:

	String inverters (wall-mounted)	Fronius Rapid Shutdown Box (Single / Multi)	Fronius Smart Meter	Fronius Datamanager
Warranty services from shipment from Fronius factory	Fronius Warranty Plus	Fronius Warranty Plus	Fronius Warranty	Fronius Warranty Plus
Warranty services from shipment from Fronius factory	10 years	5 years	5 years	Is covered by the warranty period of the inverter in which the Datamanager has been installed.
Warranty extension can be purchased from your installer within 30 months of shipment from the Fronius factory	Fronius Warranty or Fronius Warranty Plus ✓ to 15, 20 years	Fronius Warranty ✓ to 10 years	No warranty extension possible	Is covered by the warranty period of the inverter in which the Datamanager has been installed.

Making a claim under the warranty, return of parts and devices – to be observed without exception:

In the event of a warranty claim, the warranty holder must first notify the installer of the Warranty Claim, who will then submit the claim to Fronius.

In the event of a warranty claim Fronius must verify the validity of the claim, as this is the only way to ensure that the warranty services can be provided. Warranty claims must be accompanied with the purchase invoice, the serial number of the Warranty Product, the commissioning report (handover date, commissioning date, report from the power supply company) and, where necessary, proof of payment of the warranty extension fee.

The warranty holder must return parts or devices in the original packaging or equivalent. If the faulty part or device is not received by Fronius within 60 days of Fronius providing instructions to the warranty holder, the warranty holder will be charged for the part/device at the current price for such new part/device. Faulty parts and devices returned to Fronius become the property of Fronius upon receipt; until they are received, Fronius retains ownership of the corresponding replacement parts and devices.

It is the responsibility of the warranty holder to substantiate the warranty claim and show that the conditions are met. Fronius reserves the right to inspect the original installation site and request such additional information as it deems necessary.

A claim for compensation cannot be made for energy of any type or nature.

Other legal information

SELLER DISCLAIMS ALL IMPLIED WARRANTIES AND SIMILAR OBLIGATIONS (OTHER THAN THAT THE WARRANTY PRODUCT WILL BE NEW AND GOOD TITLE) INCLUDING BUT NOT LIMITED TO THOSE OF FITNESS FOR A PARTICULAR PURPOSE, AND MERCHANTABILITY, WHETHER OTHERWISE ARISING BY LAW, CUSTOM, USAGE, TRADE PRACTICE, COURSE OF DEALING, OR COURSE OF PERFORMANCE. There are no warranties which extend beyond those express warranties contained in the limited warranty. Warranty holder affirms that it has not relied upon Fronius' skill nor judgment to select or furnish the Warranty Products for any particular purpose beyond the specific express warranties in the limited warranty. Fronius does not warrant the Warranty Product will comply with the requirements of any safety or environmental code or regulation of any federal, state, municipality or other jurisdiction beyond the specific express warranties in the limited warranty. Fronius does not warrant that the Warranty Product will operate with any accessories or within any system not sold under the limited warranty and Fronius' warranty is limited to the operation of the Warranty Product in a stand-alone mode. Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers, or the limitation of liability for personal injury, so such limitations and exclusions may be limited in their application to an end user and others.



When the implied warranties are not allowed to be excluded in their entirety, they will be limited to the duration of the applicable written warranty. The warranty gives the warranty holder specific legal rights and such warranty holder may also have other rights, which may vary depending on local law.

FRONIUS` RESPONSIBILITY FOR DEFECTIVE PRODUCTS IS LIMITED TO REPAIR OR REPLACEMENT AS DESCRIBED HEREIN.

THE REMEDIES DESCRIBED ABOVE ARE THE WARRANTY HOLDER`S SOLE AND EXCLUSIVE REMEDIES AND FRONIUS` ENTIERE LIABILITY FOR ANY BREACH OF THIS LIMITED WARRANTY. FRONIUS` LIABILITY SHALL UNDER NO CIRCUMSTANCES EXCEED THE ACTUAL AMOUNT PAID BY WARRANTY HOLDER FOR THE DEFECTIVE PRODUCT, NOR SHALL FRONIUS UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL OR PUNITIVE DAMAGES OR LOSSES, WHETHER DIRECT OR INDIRECT, INCLUDING, BUT NOT LIMITED TO, CLAIMS RELATING TO PERSONAL INJURY OR LOSS OF LIFE.

**TRINITY VALLEY ELECTRIC COOPERATIVE, INC.
AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF DISTRIBUTED
GENERATION**

**SHORT FORM CONTRACT
APPLICABLE FOR LOADS LESS THAN OR EQUAL TO 50 KW IN SIZE AND OF STANDARD
MANUFACTURE AND DESIGN**

This Interconnection Agreement ("Agreement") is made and entered into this 14 day of April, 2022, by Trinity Valley Electric Cooperative, Inc., ("Cooperative"), a corporation organized under the laws of the State of Texas, and Jonathan Benloulou ("DG Owner/Member"), each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties". In consideration of the mutual covenants set forth herein, the Parties agree as follows:

The provisions of the Cooperative's Distributed Generation Manual shall be considered to be a part of this contract; a copy of which has been provided to the DG Owner/Member.

This agreement provides for the safe and orderly operation of the electrical facilities interconnecting the DG Owner/Member's facility at _____
361 FM 3227, Canton, TX 75103

_____ (as further described in Exhibit A) and the electrical distribution facility owned by the Cooperative.

This Agreement does not supersede any requirements of any applicable tariffs in place between the DG Owner/Member and the Cooperative.

1. **Intent of Parties:** It is the intent of the DG Owner/Member to interconnect an electric power generator to the Cooperative's electrical distribution system.

It is the intent of the Cooperative to operate the distribution system to maintain a high level of service to their customers and to maintain a high level of power quality.

It is the intent of both parties to operate the facilities in a way that ensures the safety of the public and their employees.

2. **Establishment of Point of Interconnection** - The point where the electric energy first leaves the wires or facilities owned by the Cooperative and enters the wires or facilities provided by DG Owner/Member is the "Point of Interconnection." Cooperative and DG Owner/Member agree to interconnect the Facilities at the Point of Interconnection in accordance with the Cooperative's Rules and Regulations and DG Manual relating to interconnection of Distributed Generation (the "Rules") and as described in the attached Exhibit A. The interconnection equipment installed by the customer ("Interconnection Facilities") shall be in accordance with the Rules as well.

3. **Operating authority:** The DG Owner/Member is responsible for establishing operating procedures and standards within their organization. The operating authority for the DG Owner/Member shall ensure that the Operator in Charge of the generator is competent in the operation of the electrical generation system and is aware of the provisions of any operating agreements and regulations relating to the safe operation of electrical power systems.

The operating authority for the DG Owner/Member is:

Name or title of operating authority Jonathan Benloulou

Address 361 FM 3227, Canton, TX 75103

Phone number 646-233-6197

4. **Operator in Charge:** The operator in charge is the person identified by name or job title responsible for the real time operation of all electrical facilities related to the interconnection and owned by their organization.

The operator in charge for the DG Owner/Member is:

Name or Operator in Charge Jonathan Benloulou

Address 361 FM 3227, Canton, TX 75103

Phone number 646-233-6197

5. INDEMNIFICATION: DG OWNER/MEMBER ASSUMES ENTIRE RESPONSIBILITY AND LIABILITY FOR ANY CLAIM OR ACTIONS BASED ON OR ARISING OUT OF INJURIES, INCLUDING DEATH, TO PERSONS OR DAMAGES TO OR DESTRUCTION OF PROPERTY, SUSTAINED OR ALLEGED TO HAVE BEEN SUSTAINED IN CONNECTION WITH OR TO HAVE ARISEN OUT OF OR INCIDENTAL TO THE PERFORMANCE OF THIS CONTRACT BY DG OWNER/MEMBER, ITS AGENTS AND EMPLOYEES, AND ITS SUBCONTRACTORS, THEIR AGENTS AND EMPLOYEES, REGARDLESS OF WHETHER SUCH CLAIMS OR ACTIONS ARE FOUNDED IN WHOLE OR IN PART UPON ALLEGED NEGLIGENCE OF OWNER, TRINITY VALLEY ELECTRIC COOPERATIVE INC., TRINITY VALLEY ELECTRIC COOPERATIVE'S REPRESENTATIVE, OR THE EMPLOYEES, AGENTS, INVITEES, OR LICENSEES THEREOF. DG OWNER/MEMBER, FURTHER AGREES TO INDEMNIFY AND HOLD HARMLESS OWNER, TRINITY VALLEY ELECTRIC COOPERATIVE AND ITS REPRESENTATIVES, AND THE EMPLOYEES, AGENTS, INVITEES AND LICENSEES THEREOF IN RESPECT OF ANY SUCH MATTERS AND AGREES TO DEFEND ANY CLAIM OR SUIT OR ACTION BROUGHT AGAINST OWNER, TRINITY VALLEY ELECTRIC COOPERATIVE, INC.'S, IT'S REPRESENTATIVES, AND EMPLOYEES, AGENTS, INVITEES, AND LICENSEES THEREOF.

6. **Metering:** Metering shall be accomplished as described in the Cooperative's DG Manual.

7. **Insurance:** Insurance shall be required as described in the Cooperative's DG Manual.

8. **Suspension of Interconnection:** It is intended that the interconnection should not compromise the Cooperative's protection or operational requirements. The operation of the DG Owner/Member's System and the quality of electric energy supplied by the DG Owner/Member

shall meet the standards as specified by the Cooperative. If the operation of the DG Owner/Member's system or quality of electric energy supplied (in the case of power export) does not meet the standards as specified, then (the Cooperative) will notify the DG Owner/Member to take reasonable and expedient corrective action. The Cooperative shall have the right to disconnect the DG Owner/Member's System, until compliance is reasonably demonstrated. Notwithstanding, the Cooperative may in its sole discretion disconnect the DG Owner/Member's generating plant from the Distribution Facility without notice if the operating of the Generating Plant may be or may become dangerous to life and property.

9. **Compliance with Laws, Rules and Tariffs:** Both the Cooperative and the DG Owner/Member shall be responsible for complying with all applicable laws, rules and regulations, including but not limited to the laws of the state of Texas, and the Cooperative's DG Manual, Tariffs, Rules and Regulations, By-Laws and other governing documents. The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the tariff schedules, rules of the Cooperative as applicable to the electric service provided by the Cooperative and the Cooperative's DG Manual which are hereby incorporated into this Agreement by this reference. The Cooperative shall have the right to publish changes in rates, classification, service or rule, with the proper notification to all DG owners/operators and Cooperative members.

10. **Maintenance Outages:** Maintenance outages will occasionally be required on the Cooperative's system, and the Cooperative will provide as much notice and planning as possible to minimize downtime. It is noted that in some emergency cases such notice may not be possible. Compensation will not be made for unavailability of Cooperative's facilities due to outages.

11. **Access:** Access is required by the Cooperative to the DG Owner/Member's plant site for maintenance, operating and meter reading. The Cooperative reserves the right, but not the obligation, to inspect the DG Owner/Member's facilities.

12. **Force Majeure:** For the purposes of this Agreement, a Force Majeure event is any event: (a) that is beyond the reasonable control of the affected party; and (b) that the affected party is unable to prevent or provide against by exercising reasonable diligence, including the following events or circumstances, but only to the extent that they satisfy the preceding requirements: acts of war, public disorder, rebellion or insurrection; floods, hurricanes, earthquakes, lighting, storms or other natural calamities; explosions or fires; strikes, work stoppages or labor disputes; embargoes; and sabotage. If a Force Majeure event prevents a party from fulfilling any obligations under this agreement, such party will promptly notify the other party in writing and will keep the other party informed on a continuing basis as to the scope and duration of the Force Majeure event. The affected party will specify the circumstances of the Force Majeure event, its expected duration and the steps that the affected party is taking to mitigate the effect of the event on its performance. The affected party will be entitled to suspend or modify its performance of obligations under this Agreement but will use reasonable efforts to resume its performance as soon as possible.

13. **Assignment:** At any time during the term of this Agreement, the DG Owner/Member may assign this Agreement to a corporation, an entity with limited liability or an individual (the "Assignee"), provided that the DG Owner/Member obtains the consent of the Cooperative in advance of the assignment. The Cooperative's consent will be based on a determination that the Assignee is financially and technically capable to assume ownership and/or operation of the DG unit. The company or individual to which this Agreement is assigned will be responsible for

the proper operation and maintenance of the unit, and will be a party to all provisions of this Agreement.

14. Effective Term and Termination Rights: This Agreement becomes effective when executed by both Parties and shall continue in effect until terminated. This agreement may be terminated as follows: (a) DG Owner/Member may terminate this Agreement at any time by giving the Cooperative sixty days' written notice; (b) Cooperative may terminate upon failure by the DG Owner/Member to generate energy from the Facilities in parallel within six (6) months after completion of the interconnection; (c) either Party may terminate by giving the other Party at least thirty (30) days prior written notice that the other Party is in default of any of the terms and conditions of the Agreement or the Rules or any rate schedule, tariff, regulation, contract, or policy of the Cooperative, so long as the notice specifies the basis for termination and there is opportunity to cure the default; (d) Cooperative may terminate by giving DG Owner/Member at least sixty (60) days written notice in the event that there is a material change in an applicable law, or any requirement of the Cooperative's wholesale electric suppliers or any transmission utility, independent system operator or regional transmission organization having responsibility for the operation of any part of the System.

AGREED TO BY

DG Owner/Member

Jonathan Benloulou

Trinity Valley Electric Cooperative, Inc.

Name

Name

DG Owner/Member

Title

Title

04/14/2022

Date

Date

60232740-004

TVEC Account Number

EXHIBIT A
DESCRIPTION OF FACILITIES AND POINT OF INTERCONNECTION

DG Owner/Member will, at its own cost and expense, operate, maintain, repair, and inspect, and shall be fully responsible for its Facilities, unless otherwise specified on Exhibit A

TRINITY VALLEY ELECTRIC COOPERATIVE, INC.**Application for Operation of Customer-Owned Generation**

This application should be completed as soon as possible and returned to the Cooperative Customer Service representative in order to begin processing the request. See *Distributed Generation Procedures and Guidelines Manual for Members* for additional information.

INFORMATION: *This application is used by the Cooperative to determine the required equipment configuration for the Customer interface. Every effort should be made to supply as much information as possible.*

PART 1**MEMBER/APPLICANT INFORMATION**

Member: Jonathan Benloulou
Mailing Address: 361 FM 3227
City: Canton County: Fort Bend State: TX Zip Code: 75103
Phone Number: 646-233-6197 TVEC Account #: 60232740-004
Representative: Jonathan Benloulou

PROJECT DESIGN/ENGINEERING (as applicable)

Company: EasTex Solar
Mailing Address: 819 AN County Rd 446
City: Palestine County: Anderson State: TX Zip Code: 75803
Phone Number: 903-805-1849 Representative: Cal Morton

ELECTRICAL CONTRACTOR (as applicable)

Company: EasTex Solar TECL#33539
Mailing Address: SAME AS ABOVE
City: _____ County: _____ State: _____ Zip Code: _____
Phone Number: _____ Representative: _____

TYPE OF GENERATOR (as applicable)

Photovoltaic x Wind _____ Microturbine _____
Diesel Engine _____ Gas Engine _____ Turbine Other _____

80 REC 360W panels connected to 2 Fronius 15,000 inverter 240V

PART 2

(Complete all applicable items. Copy this page as required for additional generators.)

SYNCHRONOUS GENERATOR DATA

Unit Number: _____ Total number of units with listed specifications on site: _____

Manufacturer: _____

Type: _____ Date of manufacture: _____

Serial Number (each): _____

Phases: Single ____ Three ____ R.P.M.: _____ Frequency (Hz): _____

Rated Output (for one unit): _____ Kilowatt _____ Kilovolt-Amper _____

Rated Power Factor (%): _____ Rated Voltage (Volts) _____ Rated Amperes: _____

Field Volts: _____ Field Amps: _____ Motoring power (kW): _____

Synchronous Reactance ($X'd$): _____ % on _____ KVA base

Transient Reactance ($X'd$): _____ % on _____ KVA base

Subtransient Reactance ($X'd$): _____ % on _____ KVA base

Negative Sequence Reactance (X_s): _____ % on _____ KVA base

Zero Sequence Reactance (X_o): _____ % on _____ KVA base

Neutral Grounding Resistor (if applicable): _____

I_2^2t of K (heating time constant): _____

Additional Information: _____

INDUCTION GENERATOR DATA

Rotor Resistance (R_r): _____ ohms Stator Resistance (R_s): _____ ohms

Rotor Reactance (X_r): _____ ohms Stator Reactance (X_s): _____ ohms

Magnetizing Reactance (X_m): _____ ohms Short Circuit Reactance (X_d''): _____ ohms

Design letter: _____ Frame Size: _____

Exciting Current: _____ Temp Rise (deg C°): _____

Reactive Power Required: _____ Vars (no load), Vars _____ (full load)

Additional Information: _____

PRIME MOVER (Complete all applicable items)

Unit Number: _____ Type: _____

Manufacturer: _____

Serial Number: _____ Date of manufacturer: _____

H.P. Rates: _____ H.P. Max.: _____ Inertia Constant: _____ lb.-ft²

Energy Source (hydro, steam, wind, etc.) _____

GENERATOR TRANSFORMER (Complete all applicable items)

TRANSFORMER (between generator and utility system)

Generator unit number: _____ Date of manufacturer: _____

Manufacturer: _____

Serial Number: _____

High Voltage: _____ KV, Connection: delta wye, Neutral solidly grounded? _____

Low Voltage: _____ KV, Connection: delta wye, Neutral solidly grounded? _____

Transformer Impedance (Z): _____ % on _____ KVA base

Transformer Resistance (R): _____ % on _____ KVA base

Transformer Reactance (X): _____ % on _____ KVA base

Neutral Grounding Resistor (if applicable): _____

INVERTER DATA (if applicable)

Manufacturer: Fronius Model: 15,000

Rate Power Factor (%): _____ Rated Voltage (Volts): 240 Rated Amperes: 62.5

Inverter Type (ferroresonant, step, pulse-width modulation, etc.): _____

Type commutation: forced line

Harmonic Distortion: Maximum Single Harmonic (%) _____

Maximum Total Harmonic (%) _____

Note: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.

POWER CIRCUIT BREAKER (if applicable)

Manufacturer: _____ Model: _____

Rated Voltage (kilovolts): _____ Rated ampacity (Amperes) _____

Interrupting rating (Amperes): _____ BIL Rating _____

Interrupting medium / insulating medium (ex. Vacuum, gas, oil) _____/_____

Control Voltage (Closing): ____ (Volts) AC DC

Control Voltage (Tripping): ____ (Volts) AC DC Battery Charged Capacitor

Close energy: Spring Motor Hydraulic Pneumatic Other: _____

Trip energy: Spring Motor Hydraulic Pneumatic Other: _____

Bushing Current Transformers: _____ (Max. ratio) Relay Accuracy Class: _____

Multi Ratio? No Yes: (available taps) _____

ADDITIONAL INFORMATION

In addition to the items listed above, please attach a detailed one-line diagram of the proposed facility, all applicable elementary diagrams, major equipment (generators, transformers, inverters, circuit breakers, protective relays, etc.), specifications, test reports, etc., and any other applicable drawings or documents necessary for the proper design of the interconnection.

SIGN OFF AREA

The customer agrees to provide the Cooperative with any additional information required to complete the interconnection. The customer shall operate his equipment within the guidelines set forth by the Cooperative.

Jonathan Benloulou

Applicant

04/14/2022

Date

60232740-004

TVEC Account Number

ELECTRIC COOPERATIVE CONTACT FOR APPLICATION SUBMISSION AND FOR MORE INFORMATION:

Cooperative contact: _____

Title: _____

Address: _____

Phone: _____

Fax: _____

Distributed Generation Interconnection Process

Interested in solar or wind power? TVEC is ready to help!

Whether you are installing a system yourself or using the service of a solar or wind company, please contact us before you get started. By following the guidelines in this document we can help ensure that your system meets safety and technical requirements before connecting to the TVEC system so that you can be up and running as soon as possible.

01 Interconnection Application:

The TVEC Distributed Generation Procedures and Guidelines Manual for any system below 50kW may be requested by contacting TVEC Member Services or downloaded from tvec.net. Contact TVEC for information regarding systems over 50kW.

- The primary TVEC account holder's name must be listed on the application.
- Pages 15-18 and 27-31 must be completed and submitted to TVEC.

02 Interconnection application submission:

- The Interconnection Application must be submitted to TVEC (email energymanagement@tvec.coop) along with a wiring diagram of the proposed system to be installed.
- Allow 5-7 business days for the review process
- TVEC personnel will contact you with any corrections that need to be addressed concerning the wiring diagram or Interconnection Application.

03 Completion of the install:

- It is the duty of the installer to notify TVEC that the installation has been completed and is ready for inspection. Email energymanagement@tvec.coop or contact TVEC Member Services at (800) 766-9576.
- Allow 5-7 business days for system inspection to be completed. The installer and member will be notified of any items that do not pass inspection.
- Additional fees may be assessed to the installer for additional inspections until all requirements are met.

04 Inspection & Permission to Operate (PTO):

- During the inspection, TVEC will be assessing the size of system, proper disconnects, labeling and means of interconnection.
- When the system meets TVEC requirements & coincides with the information submitted in the Interconnection Agreement and wiring diagram, the system will be approved.
- TVEC will install a billing meter that registers DG excess production, and a separate meter for total production of the DG system.
- Approved installs will then be sent a formal PTO & the member's billing information will be updated to reflect the DG installation.

Residential Distributed Generation Installation Requirements

NOTE: Generation system documentation including a line drawing/diagram and a completed TVEC Interconnection Agreement must be submitted before installation.

1. TVEC requires a meter socket to be installed on the output of the solar/wind distributed generation system. The system will not be approved if this meter socket is not in place and wired correctly. TVEC will provide and install this total output meter at no cost upon system approval.
 2. A Visible Lockable Labeled Disconnect (VLLD) switch must be installed within 10 feet of the utility meter with no barrier between them, or a placard no smaller than 5"x5" must be placed on the meter base with a map and description to locate the VLLD switch.
 3. Appropriate signage and warning labels must be in place signifying that there is on-site generation.
-



Residential Distributed Generation Frequently Asked Questions

Does TVEC offer any rebates or incentives?

- TVEC does not offer any direct rebates or incentives for DG installations. Consult with your installer regarding tax incentives or other rebate programs.

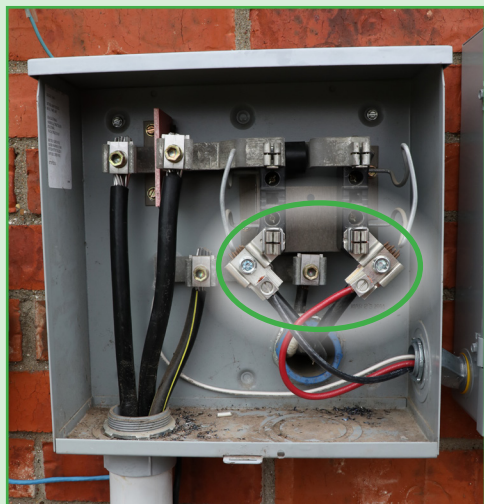
How much does TVEC pay for my excess Solar/Wind production?

- Excess energy (kWh, not consumed by the member) generated by the member's qualifying facility during the billing period and delivered back to the Cooperative is credited to the member at the Co-op's avoided cost, defined as the prior year average wholesale energy and fuel component. This is currently \$0.054403 per kWh as of February 1, 2022.
- If credits for excess energy are greater than the member's monthly bill, the credit will be carried forward to the following billing period. If a credit balance remains in an excess of \$250 at the end of the calendar year, a refund of the entire credit balance will be provided to the member.

Are there any fees for installing a DG/Solar-Wind system?

- TVEC assesses an application fee for qualifying DG/Solar or Wind facilities. This fee varies with system size and will be determined based on installer plan documents.
- One trip to the location for the final inspection and DG meter installation is provided at no cost. If the installation fails to meet safety requirements or does not align with the TVEC installation processes & guidelines, a \$250 fee will be assessed to the Company/Installer (not the member). **All fees must be paid in full before permission to operate will be granted by TVEC.**

Acceptable line-side tap interconnection

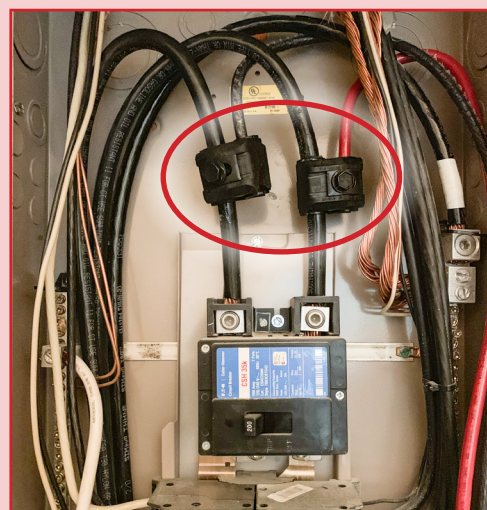


PLEASE WORK SAFE!

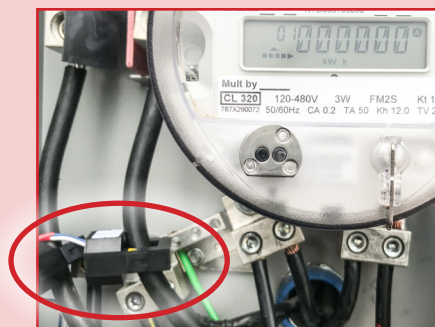
For the safety of installing personnel, please contact TVEC Member Services to schedule a temporary power disconnect by calling (800) 766-9576.

(Must be requested by TVEC Member)

Unacceptable line-side tap interconnection



System monitoring devices may not be placed in the meter base.

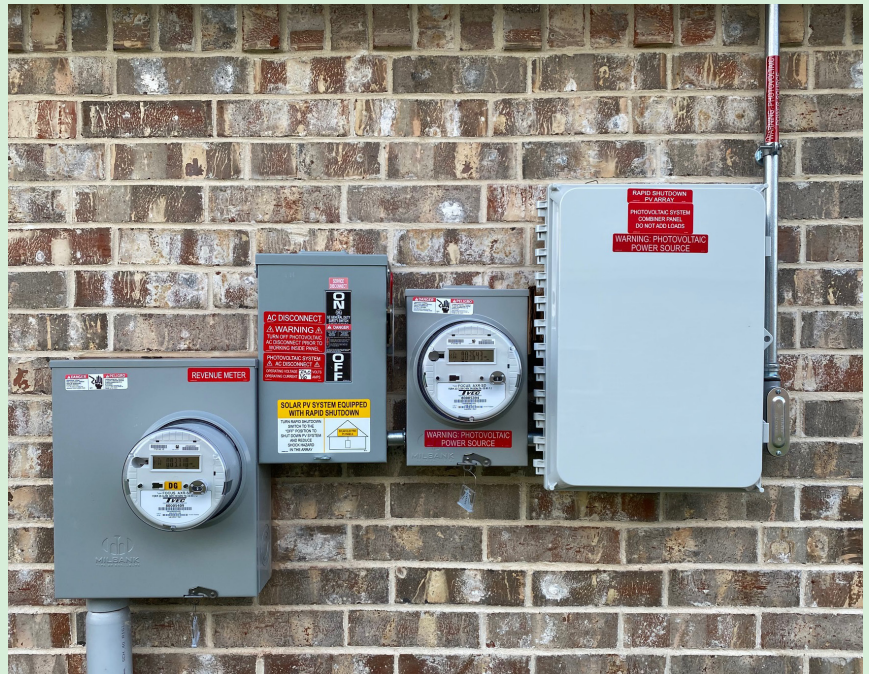


Acceptable DG System Labeling

All solar facility equipment must be labeled, including the system output meter, inverter, VLLD etc.

Example: This installation includes proper labeling and ideal layout of components.

Meters and switches should be no lower than 4' above ground level, and no higher than 6'.



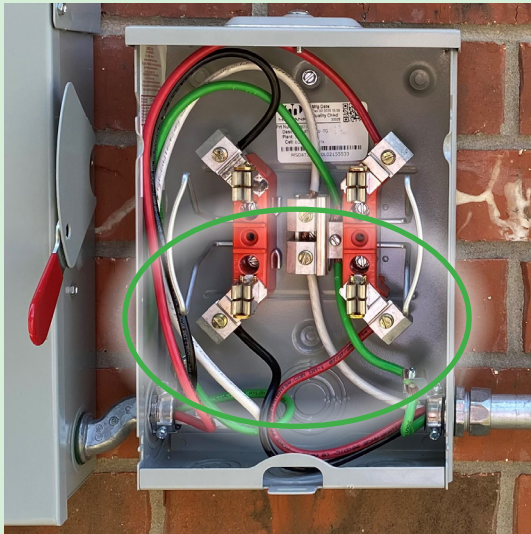
System warning labeling indicating DG system type and VLLD. VLLD must be blade type with handle.



System map showing system details and VLLD location is required when the VLLD is more than 10 feet from the utility meter or at the request of TVEC.

Production Meter Wiring / Example Layout

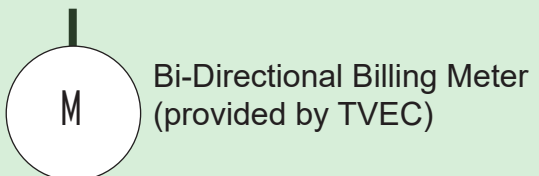
DG system total output meter base must be labeled, with DG output connected to the bottom (load side) meter connection points.



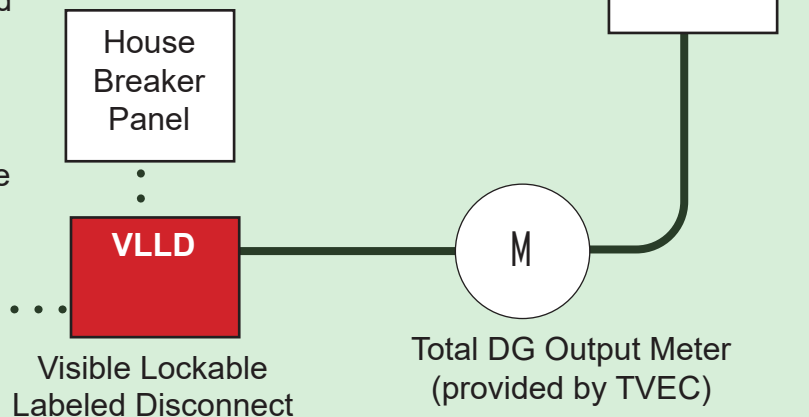
DG total output meter labeling



Electrical Grid Connection



- DG system may be connected by either:
- A) Back-fed breaker setup through house breaker panel.
- B) Line-side tap in meter base (No jacket-piercing wire connections allowed)





Distributed Generation Bill Example

The TVEC bill for members with Distributed Generation systems contains additional information pertaining to the DG system and detailing the excess energy production credited to the member during the billing period.

Member Usage:

This line indicates the total power (kWh) purchased from TVEC for the billing period.

Member Generated Excess Buyback:

This line indicates the total excess power (kWh) received by TVEC from the member's DG system, and the credit amount at the current buy back rate.

How much does TVEC pay for my excess Solar/Wind production?

- Excess energy (kWh, not consumed by the member) generated by the member's qualifying facility during the billing period and delivered back to the Cooperative is credited to the member at the Co-op's Avoided Cost, defined as the prior year average wholesale energy and fuel component. This is currently \$0.054403 per kWh as of February 1, 2022.

7009

TRINITY VALLEY ELECTRIC COOPERATIVE
A Touchstone Energy® Cooperative

PO Box 888
Kaufman, TX 75142-0888

Please see reverse side for explanation of
PCRF and customer charges

24 Hour Outage System - (800) 967-9324
24 Hour Automated Service - (800) 720-3584
Office - (972) 932-2214 or (800) 766-9576
Web Site - www.tvec.net

ACCOUNT NUMBER		ACCOUNT NAME		RATE	CLASS	SERVICE ADDRESS		METER NUMBER
0000000001		SAMPLE		78	2	HSE		132283198
SERVICE	FROM	TO	NO. DAYS	RDG CODE	PREVIOUS	PRESENT	MULTIPLIER	BASE RATE
								KWH
CUSTOMER CHARGE (REVERSE SIDE)								
01/11/20		02/11/20		31	2	4038	5790	1
								0.104848 x
								1752
								183.68
PCRF ADJUSTMENT (REVERSE SIDE)								
								-0.010000 x
								1752
								-17.52
MEMBER GENERATED EXCESS BUYBACK 2793 3035								
								0.056295 x
								-242
								-13.62
OPERATION ROUND UP								
								0.46
TOTAL CURRENT CHARGES DUE 03/09/20								
								173.00
PREVIOUS AMOUNT DUE								
								112.00
THANK YOU FOR YOUR PAYMENT 02/06/20								
								-112.00
PLEASE MAIL YOUR PAYMENT 5 BUSINESS DAYS PRIOR TO DUE DATE TO ENSURE TIMELY DELIVERY AND POSTING OF PAYMENT.								
TOTAL DUE								\$ 173.00
COMPARISONS		DAYS SERVICE	TOTAL KWH	AVG. KWH/DAY	COST PER DAY		Disconnect Date/Amount	
CURRENT BILLING PERIOD		31	1752	57	6.01		CURRENT BILL	
PREVIOUS BILLING PERIOD		31	1421	46	5.22		Paid By	
SAME PERIOD LAST YEAR		31	3242	105	11.09		Paid After	
							03/09/20	
							03/09/20	
							173.00	
							183.00	

Your Electricity Use Over The Last 13 Months

Track usage, pay bills and set alerts and reminders at TVEC.NET or on the myTVEC app, available for iOS and Android devices. Join the conversation with TVEC on Facebook, Twitter, YouTube and Instagram.

TO BE PAID BY DRAFT

Co-op News

Stay on track with your energy savings goals for 2020 with TVEC email and text alerts. Find daily usage alerts, high usage alerts, bill reminders and more at TVEC.net.

KEEP
SEND
TX0 1620F

PLEASE DETACH AND RETURN THIS PORTION WITH PAYMENT

PO Box 888
Kaufman, TX 75142-0888
(972) 932-2214 or (800) 766-9576
www.tvec.net
ADDRESS SERVICE REQUESTED

ACCOUNT NUMBER	CYCLE	AMOUNT DUE
0000000001	171	173.00
BILLING DATE	DUE DATE	AFTER DUE DATE PAY
02/18/20	03/09/20	183.00
ENTER AMOUNT PAID		

TO BE PAID BY DRAFT

23
5870

TRINITY VALLEY ELECTRIC COOPERATIVE INC
PO BOX 1228
KAUFMAN TX 75142-5403



Distributed Generation Installation Requirements

Acknowledgment Form

TVEC will provide appropriate meters and monitoring for members to benefit from excess production of distributed generation installations at no additional charge to the member. This includes one dual-register billing meter and one DG system production meter.

Installations must meet the specifications and safety standards established by TVEC.

TVEC will conduct one inspection of the DG installation at no charge. **If the installation does not meet installation requirements at the initial inspection, TVEC will charge the system installer \$250 for each additional trip/inspection.**

Member

- ☒ I have received the TVEC Distributed Generation Installation Requirements form.
- ☒ I understand that the completed installation must conform to the requirements listed. Failure to do so may cause delays and additional costs to the system installer.
- ☒ I understand that the TVEC Permission to Operate documentation will not be provided until all installation requirements are met.

Member Name: Jonathan Benloulou TVEC Account Number: 60232740-004
Phone: 646-233-6197 Email Address: jsbenloulou@gmail.com
Service Address: Jonathan Benloulou 361 FM 3227, Canton, TX 75103
Signature: _____ Date: 04/14/2022

Installer (if other than member)

- ☒ I have received the TVEC Distributed Generation Installation Requirements form.
- ☒ I understand that the completed installation must conform to the requirements listed. Failure to do so may cause delays and additional costs to the system installer.
- ☒ I understand that the TVEC Permission to Operate documentation will not be provided until all installation requirements are met.

Name: Cal Morton Title: Owner/President
Installation Company Name: EasTex Solar LLC
Business Address: 819 AN County Rd 446, Palestine TX 75803
Phone : 903-805-1849 Email Address: admin@eastexsolar.com
Signature: Cal Morton Date: 04/14/22