

Town of Erwin Zoning Application & Permit

Permit #

Planning & Inspections Department

Rev Sep2014

Each application should be submitted with an attached plot/site plan with the proposed use/structure showing lot shape, existing and proposed buildings, parking and loading areas, access drives and front rear

dimensions.	oposed build	rigs, pa	arid 10	auı	nig are	eas, acce	ess arry	es a	na iront, re	ear, a	ina siae y	ara
Name of Applicant	Sigora Sola	rIIC		_	Pro	perty O	wner	Ma	onica Park	/Or		
Home Address	P.O. Box 7543				Home Address							
City, State, Zip	Charlottesville, VA 22906				City, State, Zip		15 Bridgewater Drive					
Telephone								Erwin, NC 28339				
Email	(434) 996-6			_		ephone		+	19) 820-1	_		
Emaii	permitting@	sigora	isolar.com	_	Ema	ail ————		mo	onicaleigh	0314	1@gmai	.com
Address of Proposed	Property	15 Br	idgewater E	Driv	ve En	win, NC	2833	9				
Parcel Identification	Number(s) (P	(N)	586-97-964	5.0	000		Estima	ted F	roject Cost	\$2	8,550	
What is the applicant				lr	nstall	of a flus	h roof r	nour	nted solar p	ohoto	o-voltaic s	ystem.
the proposed use of t	he subject pro	perty?	Be specific.	S	system	n Capac	ity: 5.6	00 k	Wp DC			
Description of any prop to the building or prope		nents	SEE ABC	V	E							
What was the Previou		subject	property?		Single	Family I	Dwelling	J				
Does the Property Ac				_	YES							
Number of dwelling/structures on the property already 1 Property/Parcel size												
Floodplain SFHA	_Yes ✓ No	Water	shedYes	V	No	Wetlar	ıds	Yes	√No			
MUST circle one that a	pplies to prope		isting/Propo					Or				
			isting/Propos		-				Existing \	Wate	er & Se	wer
The undersigned propert answers, statements, and and belief. The undersign application. Upon issuan regulations, and the laws The undersigning party a to this application as app	other informat ning party und- nce of this perm of the State of I uthorizes the T	ly autho ion here erstands it, the u North C	with submitte that any incor ndersigning pa arolina regula	pred a arty	esentat are in a ct infor y agree g such	ive there Il respect rmation s es to conf work an	of certifes true a submitted form to a	nd co ed m all ap spec	orrect to the ay result in oplicable tov difications of	best of the re vn ord f plans	of their kr evocation o dinances, as herein s	owledge of this zoning abmitted.
			11 4	_	4/							
Henry Keith (Sigora Solar LLC	5)		Henry K						08/30/	2022	=	
Print Name		Si	gnatur of Own	er o	r Repre	esentative			Date			
For Office Use				_								
Zoning District	R15		ng Nonconfor									
Front Yard Setback		_	Permits Requ						Building _			
011 24 10 4 1			ires Town Zor		g Insp			_	ndation	_Prio	r to C. of	Э.
Side Yard Setback			ng Permit Statu	IS			roved	_	Denied			
Rear Yard Setback		Fee Pa	aid: 25		Date	Paid:			Staff Initia	ls:		
Comments No C	thanges t	0	hone-	1	کری	-Jap	راص	i.	-			
Signature of Town Repr	esentative:	2 -	B- 1				Data A	1	Donied	0	(2)	

Please Contact Hainett County Development Service to 05thin electrical /france paraits 925-893-7525





76 North Meadowbrook Drive Alpine, UT 84004 office (201) 874-3483 swyssling@wysslingconsulting.com

September 22, 2022

Sigora Solar LLC 490 Westfield Road STE A Charlottesville, VA 22901

Re: Engineering Services (Post-Install)
Parker Residence
15 Bridgewater Drive, Erwin NC
5.600 kW System

To Whom It May Concern:

I certify that Jairo A. Rios has surveyed the rafters/trusses at 15 Bridgewater Drive, Erwin NC. There are no broken rafters or trusses, and appear to be in good condition. As you are aware, this office initially prepared a structural assessment, dated July 28, 2022, of the solar panel installation. This installation was inspected and found to be in compliance with the layout plan as specified in our report, product installation criteria, and the requirements of the current building code. We have determined that the equipment will not create a negative impact on the building's structural design, including any additional loads imposed (dead, snow, wind).

This letter pertains only to the panel support attachments to the roof framing and not the engineered photovoltaic panel products, components, or electrical-related installations/connections.

Should you have any questions regarding the above or if you require additional information do not hesitate to contact me.

Kez-Ph)

Scott E. Wyssling, PE North Carolina License No. 46546

THIS PLAN HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY SCOTT WYSSLING, PE USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

SEA SEA WYSSLING CONSULTING PLLC

Wyssling Consulting, PLLC 76 N Meadowbrook Drive Alpine UT 84004 COA # P-2308 Date Signed 9/22/2022



76 North Meadowbrook Drive Alpine, UT 84004 office (201) 874-3483 swyssling@wysslingconsulting.com

July 28, 2022

Sigora Solar LLC 490 Westfield Road STE A Charlottesville, VA 22901

Scott Wyssling,

Digitally signed by Scott Wyssling, PE
DN: C=US, S=Utah, L=Alpine, O=Wyssling
Consulting, OU=Owner, CN="Scott
Wyssling, PE",
E=swyssling@wysslingconsulting.com
Reason: I am the author of this document
Location: your signing location here
Date: 2022.07.28 15:52:49-06'00'
Foxit PDF Editor Version: 11.1.0

Re: Engineering Services
Parker Residence
15 Bridgewater Drive, Erwin NC
5.600 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

- 1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
- Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

B. Description of Structure:

Roof Framing: Prefabricated wood trusses at 24" on center. All truss members are

constructed of 2x4 dimensional lumber.

Roof Material: Composite Asphalt Shingles

Roof Slope: 34 degrees
Attic Access: Accessible
Foundation: Permanent

C. Loading Criteria Used

Dead Load

- Existing Roofing and framing = 7 psf
- New Solar Panels and Racking = 3 psf
- TOTAL = 10 PSF
- Live Load = 20 psf (reducible) 0 psf at locations of solar panels
- Ground Snow Load = 15 psf
- Wind Load based on ASCE 7-10
 - Ultimate Wind Speed = 120 mph (based on Risk Category II)
 - Exposure Category C

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the North Carolina Residential Code (2018), including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

D. Solar Panel Anchorage

- 1. The solar panels shall be mounted in accordance with the most recent Unirac installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
- 2. The maximum allowable withdrawal force for a 5/16" lag screw is 235 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of 2½", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one 5/16" diameter lag screw with a minimum of 2½" embedment will be adequate and will include a sufficient factor of safety.
- 3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on centers.
- 4. Panel supports connections shall be staggered to distribute load to adjacent framing members.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the North Carolina Residential Code, current industry standards, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to

contact me.

Strat P. h.

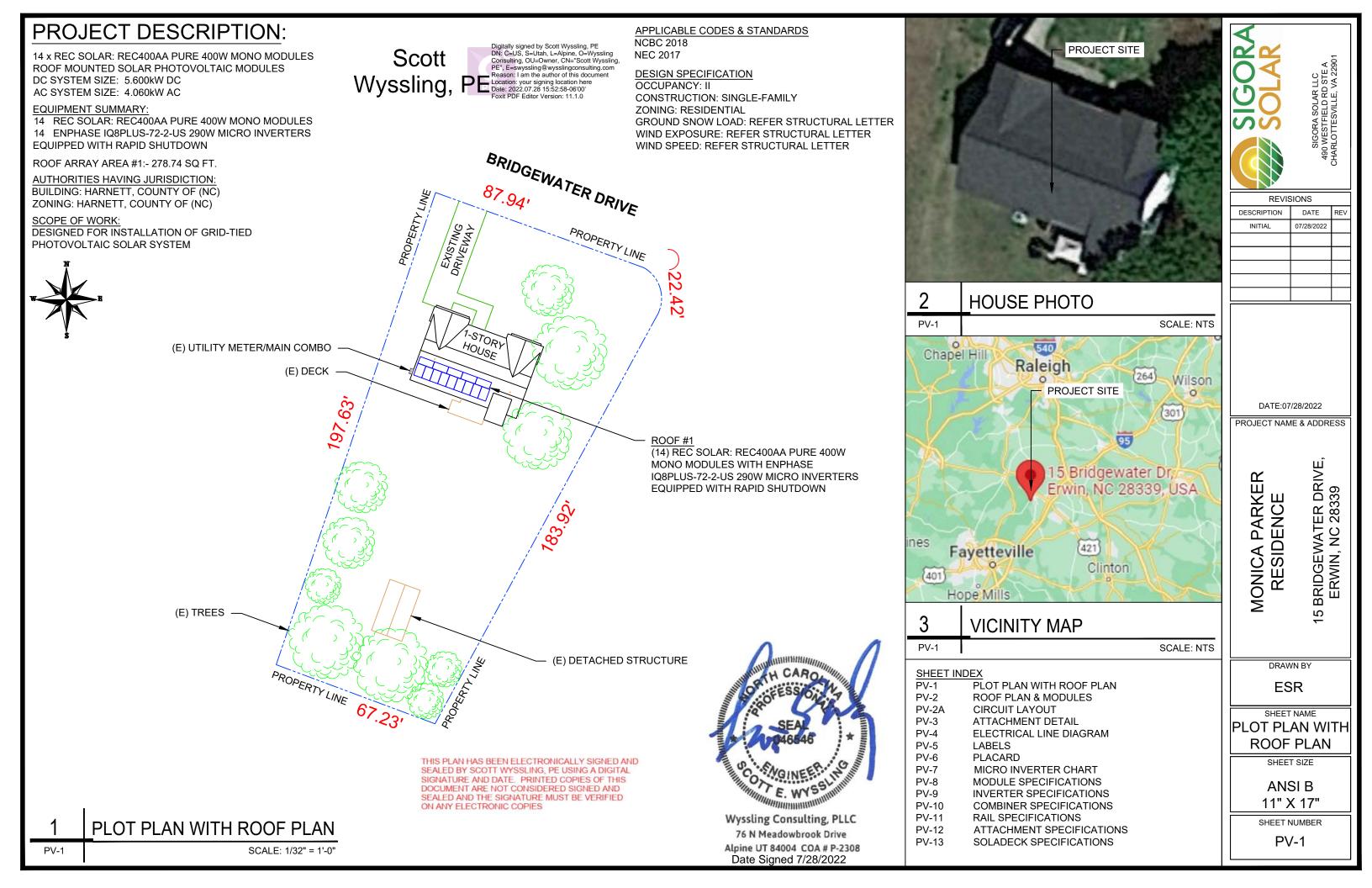
Scott E. Wyssling, PE North Carolina Licence 3. 46546

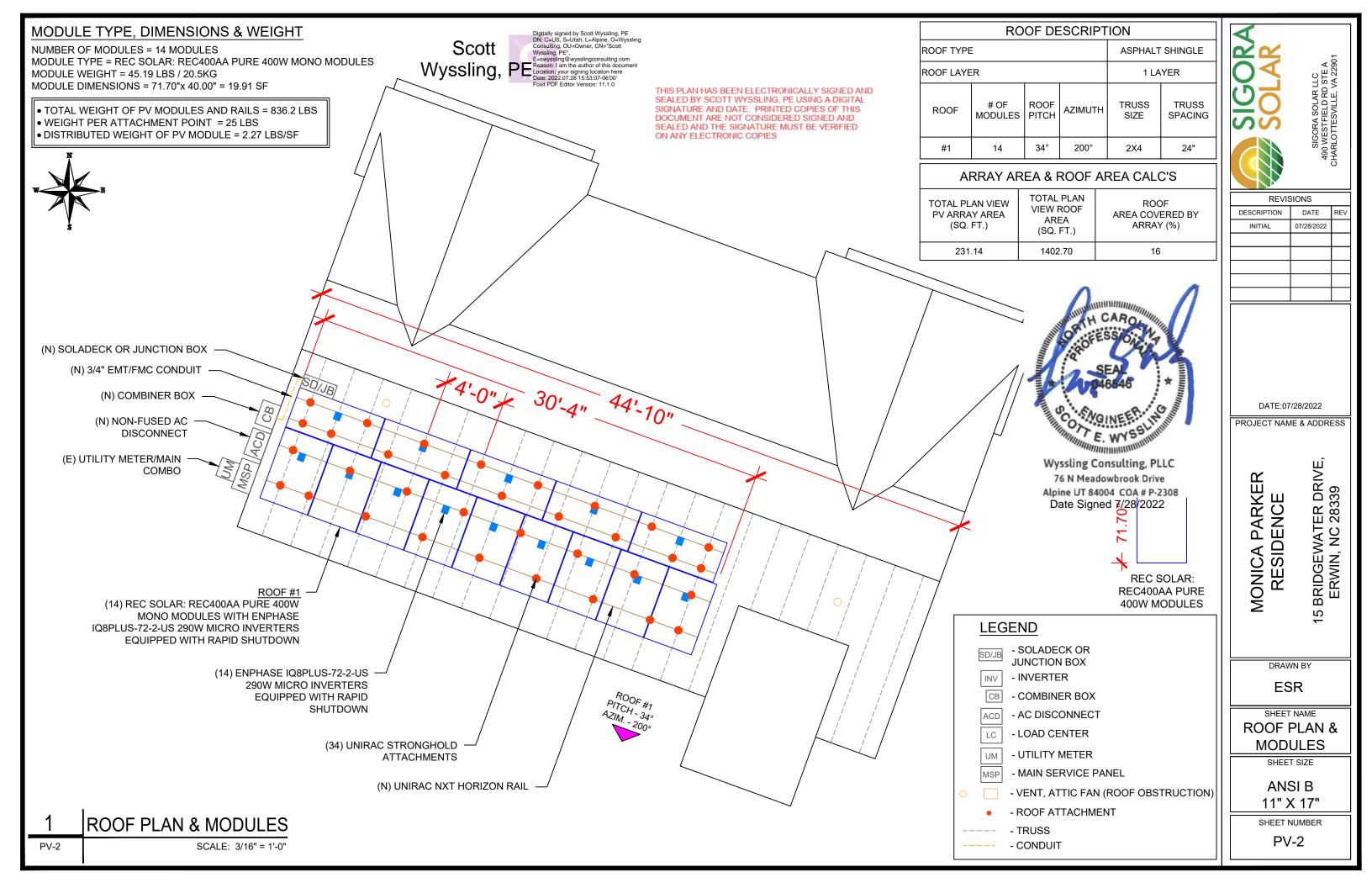
THIS PLAN HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY SCOTT WYSSLING, PE USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

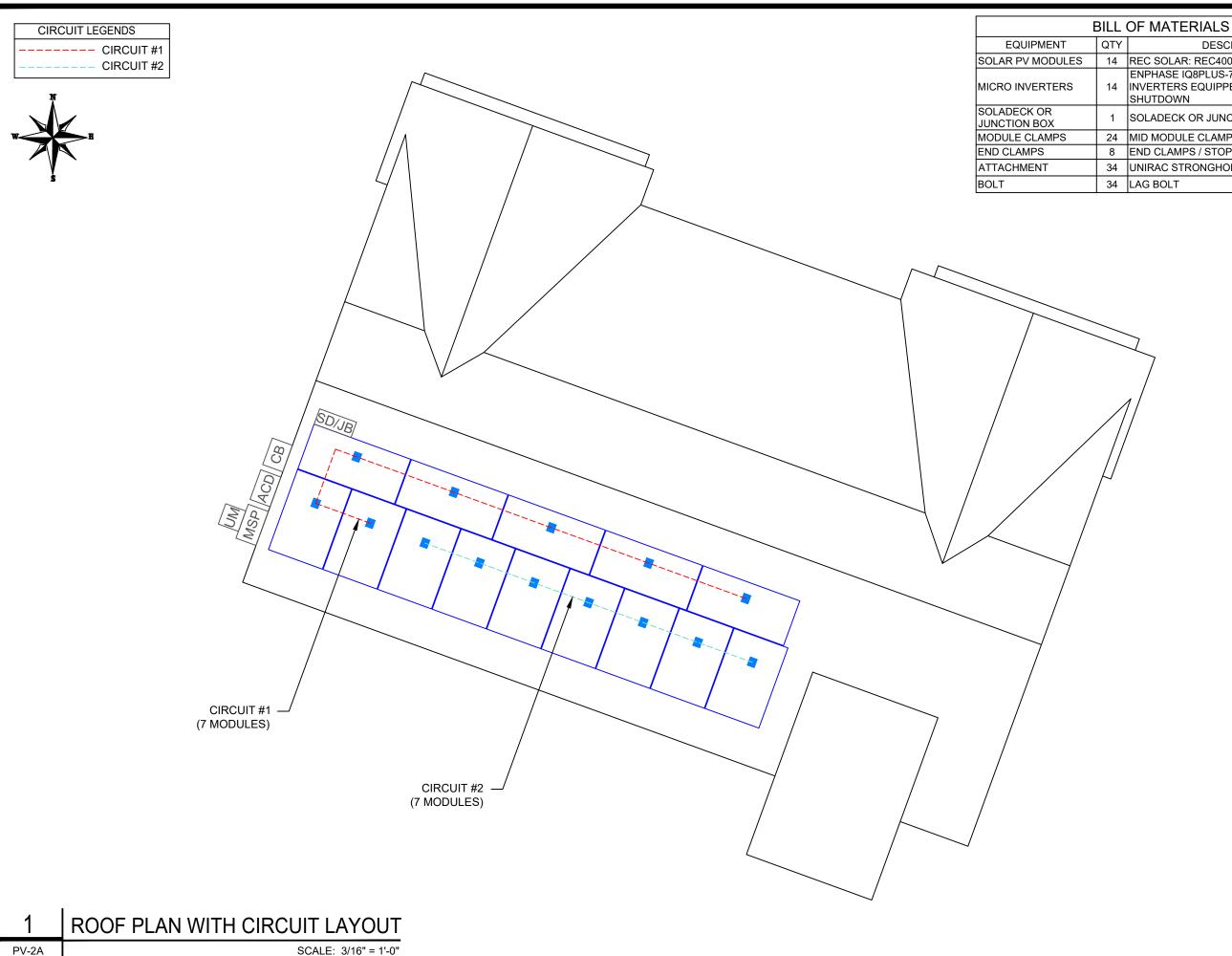
Wyssling Consulting, PLLC

Alpine UT 84004 COA # P-2308 Date Signed 7/28/2022









DESCRIPTION REC SOLAR: REC400AA PURE 400W ENPHASE IQ8PLUS-72-2-US 290W MICRO INVERTERS EQUIPPED WITH RAPID SOLADECK OR JUNCTION BOX 24 MID MODULE CLAMPS 8 END CLAMPS / STOPPER SLEEVE 34 UNIRAC STRONGHOLD ATTACHMENT





REVISIONS DATE DESCRIPTION 07/28/2022 INITIAL

SIGORA SOLAR LLC 490 WESTFIELD RD STE A CHARLOTTESVILLE, VA 22901

DATE:07/28/2022

15 BRIDGEWATER DRIVE, ERWIN, NC 28339

PROJECT NAME & ADDRESS

MONICA PARKER RESIDENCE

DRAWN BY

ESR

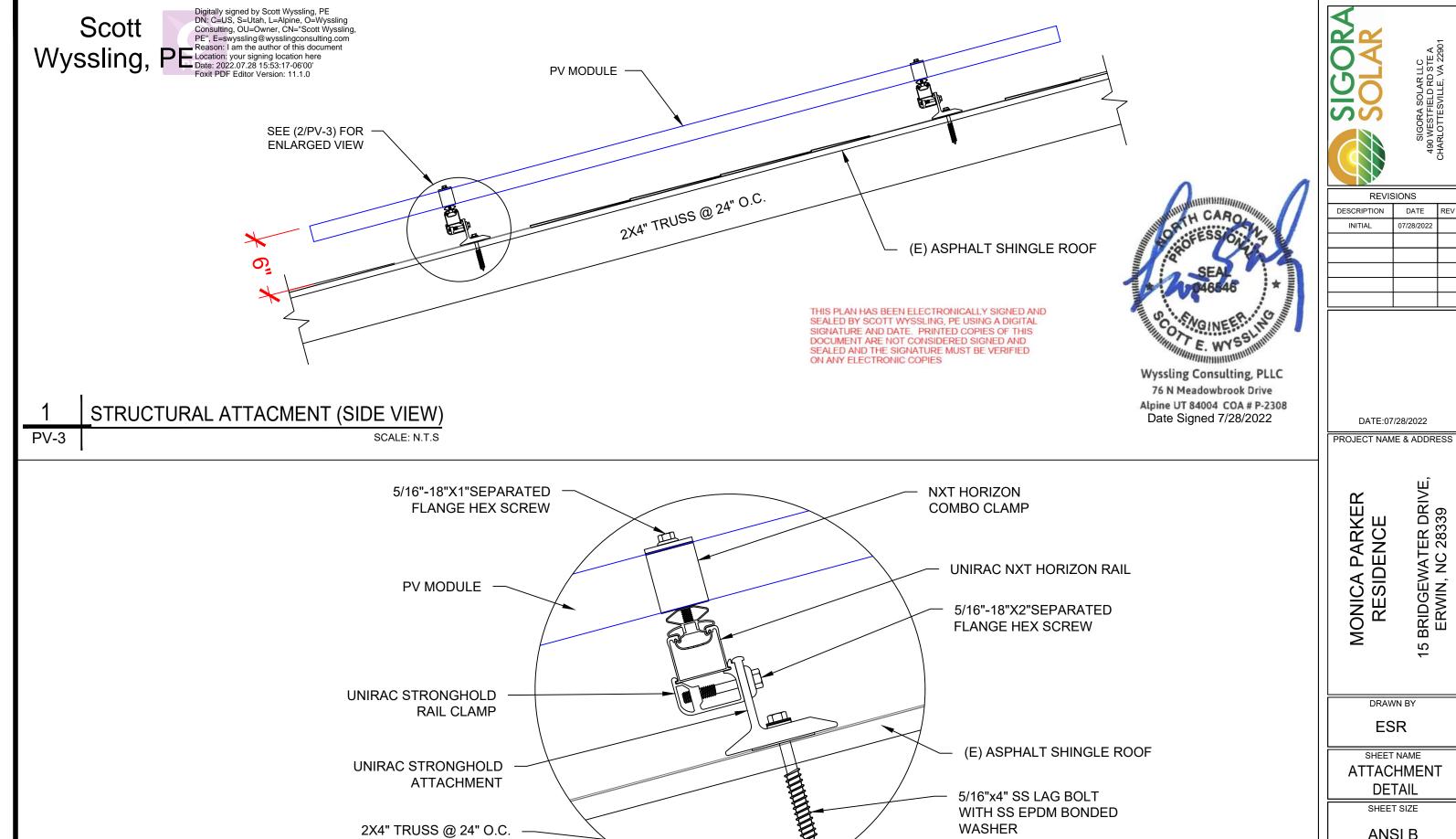
SHEET NAME **CIRCUIT LAYOUT**

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER

PV-2A



ATTACHMENT DETAIL (enlarged view)

PV-3

SCALE: N.T.S

SIGORA SOLAR LLC 490 WESTFIELD RD STE A CHARLOTTESVILLE, VA 22901

REVIS	SIONS		
SCRIPTION	DATE	REV	
INITIAL	07/28/2022		

ATTACHMENT

ANSIB 11" X 17"

SHEET NUMBER PV-3

DC SYSTEM SIZE: 5.600 kW DC AC SYSTEM SIZE: 4.060 kW AC

(14) REC SOLAR: REC400AA PURE 400W MONO MODULES WITH (14) ENPHASE IQ8PLUS-72-2-US 290W MICRO INVERTERS EQUIPPED WITH RAPID SHUTDOWN

(2) BRANCH CIRCUITS OF 7 MODULES CONNECTED IN PARALLEL

GROUNDING & GENERAL NOTES:

- 1. A SECOND FACILITY GROUNDING ELECTRODE IS NOT REQUIRED PER [NEC 690.47(C)(3)]
- 2. PV INVERTER IS UNGROUNDED, TRANSFORMER-LESS TYPE.
- 3. DC GEC AND AC EGC TO REMAIN UNSPLICED, OR SPLICED TO EXISTING ELECTRODE
- 4. ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION.
- 5. SOLADECK OR JUNCTION BOX QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD SOLADECK OR JUNCTION BOX DEPICTED ON ELECTRICAL DIAGRAM REPRESENT WIRE

TYPE TRANSITIONS.

6. AC DISCONNECT NOTED IN EQUIPMENT SCHEDULE OPTIONAL IF OTHER AC DISCONNECTING MEANS IS LOCATED WITHIN 10' OF SERVICE DISCONNECT 7. RACEWAYS AND CABLES EXPOSED TO SUNLIGHT ON ROOFTOPS SHOULD BE INSTALLED MORE THAN 7/8" ABOVE THE ROOF USING CONDUIT SUPPORTS.

8. TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR

INTERCONNECTION NOTES:

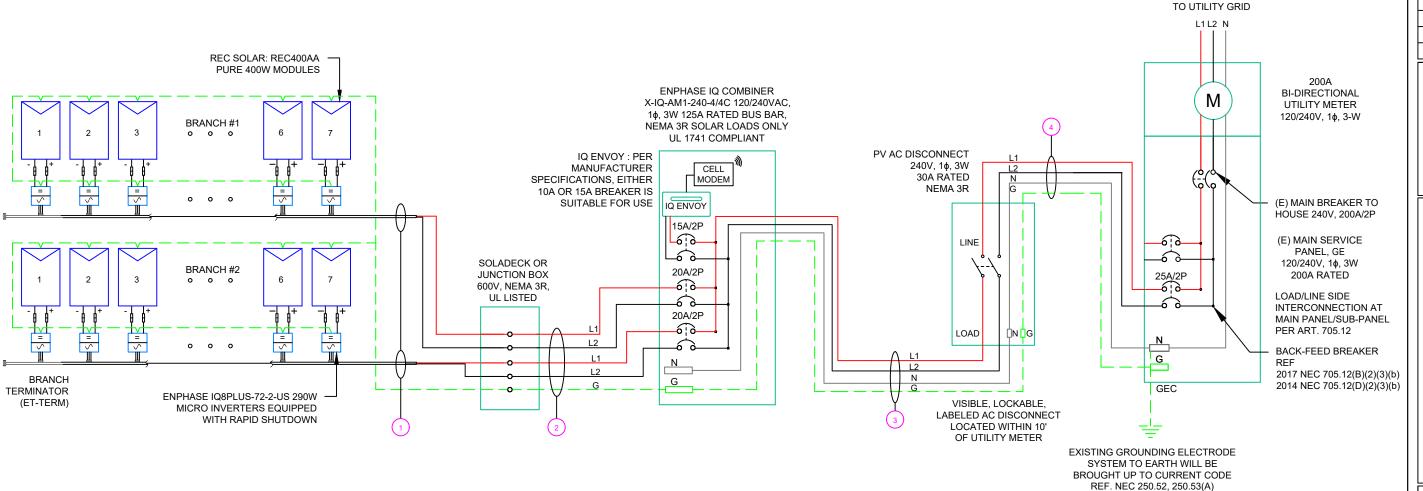
- 1. INTERCONNECTION SIZING, LIMITATIONS AND COMPLIANCE DETERMINED IN ACCORDANCE WITH [NEC 705.12], AND [NEC 690.64].
 2. GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9], [NEC 230.95] AND [NEC 690.5]
- 3. ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.
- 4. PV BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUSBAR RELATIVE TO THE MAIN BREAKER.

DISCONNECT NOTES:

- 1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
- 2. AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH

RACKING NOTE:

1. BOND EVERY RAIL WITH #6 BARE COPPER



	QTY	CONDUCTOR INFORMATION		MATION CONDUIT TYPE		
1	(4)	#12AWG - ENPHASE ENGAGE CABLE (L1 & L2 NO NEUTRAL)		N/A	N/A	
	(1)	#6AWG -	BARE COPPER IN FREE AIR			
(₂)-	(4)	4) #10AWG - CU,THWN-2		EMT OR FMC IN ATTIC	3/4"	
\mathcal{L}	(1)	#10AWG -	CU,THWN-2 GND	EWIT OR FINC IN AT TIC	3/4	
	(2)	#10AWG -	CU,THWN-2			
(3)-	(1)	#10AWG -	CU,THWN-2 N	EMT,LFMC OR PVC	3/4"	
_	(1)	#10AWG -	CU,THWN-2 GND			
	(2)	#10AWG -	CU,THWN-2			
(4)-	(1)	#10AWG -	CU,THWN-2 N	EMT, LFMC OR PVC	3/4"	
)	(1)	#10AWG -	CU,THWN-2 GND			

SIGORA SOLAR

SIGORA SOL 490 WESTFIELD CHARLOTTESVILI

REVIS	SIONS	
DESCRIPTION	DATE	REV
INITIAL	07/28/2022	

DATE:07/28/2022

PROJECT NAME & ADDRESS

BRIDGEWATER DRIVE, ERWIN, NC 28339

5

MONICA PARKER RESIDENCE

DRAWN BY

ESR

SHEET NAME

ELECTRICAL LINE DIAGRAM

SHEET SIZE

ANSI B

11" X 17"
SHEET NUMBER

PV-4

1 ELECTRICAL LINE DIAGRAM
PV-4 SCALE: NTS

WARNING:PHOTOVOLTAIC POWER SOURCE

LABEL 1

AT <u>DIRECT-CURRENT</u> EXPOSED RACEWAYS, CABLE TRAYS, COVERS AND ENCLOSURES OF JUNCTION BOXES, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.

NEC 690.31(G)(3&4)
(NOT USED FOR ENPHASE MICROINVERTERS)

PHOTOVOLTAIC

DCDISONNECT

LABEL 2

AT EACH PV DISCONNECTING MEANS
NEC 690.13(B)
(NOT USED FOR ENPHASE MICROINVERTERS)



LABEL 3

AT DC PV SYSTEM DISCONNECT NEC 690.53 (NOT USED FOR ENPHASE MICROINVERTERS)



LABEL 4

AC DISONNECT

AT AC DISCONNECT NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 16.94A

NOMINAL OPERATING AC VOLTAGE: 240V

LABEL 5

AT AC DISCONNECT NEC 690.54

14 MICROS X 1.21 AMP/MICRO = 16.94AMP

LABELING NOTES:

- 1. LABELS CALLED OUT ACCORDING TO ALL COMMON CONFIGURATIONS. ELECTRICIAN TO DETERMINE EXACT REQUIREMENTS IN THE FIELD PER CURRENT NEC AND LOCAL CODES AND MAKE APPROPRIATE ADJUSTMENTS.
- 2. LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.
- 3. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- $4.\ \mathsf{LABELS}\ \mathsf{TO}\ \mathsf{BE}\ \mathsf{OF}\ \mathsf{SUFFICIENT}\ \mathsf{DURABILITY}\ \mathsf{TO}\ \mathsf{WITHSTAND}\ \mathsf{THE}\ \mathsf{ENVIRONMENT}\ \mathsf{INVOLVED}\ [\mathsf{NEC}\ 110.21]$
- 5. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [IFC 605.11.1.1]

INVERTER OUTPUT CONNECTION

DO NOT RELOCATE
THIS OVERCURRENT
DEVICE

LABEL 6

PLACED ADJACENT TO THE BACK-FED BREAKER FROM THE INVERTER IF TIE IN CONSISTS OF LOAD SIDE CONNECTION TO BUSBAR.

NEC 705.12(D)(2)(3)(B)



LABEL 7

SIGN LOCATED AT LOAD CENTER NEC 705.12(B)(3-4) & NEC 690.59

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

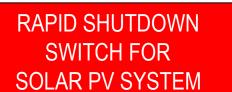


LABEL 8

FOR PV SYSTEMS THAT SHUT DOWN THE ARRAY AND CONDUCTORS LEAVING THE ARRAY:

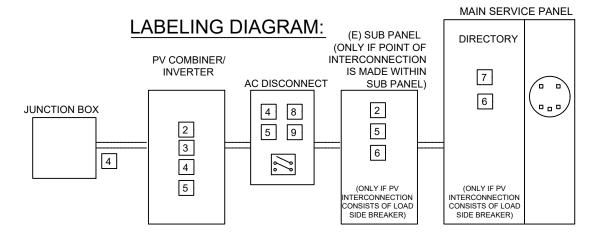
SIGN TO BE LOCATED ON OR NO MORE THAN 3 FT AWAY FROM SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATION OF ALL IDENTIFIED RAPID SHUTDOWN SWITCHES IF NOT AT THE SAME LOCATION.

[NEC 690.56(C)(1)(A)]



LABEL 9

AT AC DISCONNECT NEC 690.56(C)(3)



** ELECTRICAL DIAGRAM SHOWN ABOVE IS FOR LABELING PURPOSES ONLY. NOT AN ACTUAL REPRESENATION OF EQUIPMENT AND CONNECTIONS TO BE INSTALLED. LABEL LOCATIONS PRESENTED MAY VERY DEPENDING ON TYPE OF INTERCONNECTION METHOD AND LOCATION PRESENTED ELECTRICAL DIAGRAM PAGE. **

SIGORA

SIGORA SOLAR 490 WESTFIELD RC CHARLOTTESVILLE,

REVISIONS					
DESCRIPTION	DATE	REV			
INITIAL	07/28/2022				

DATE:07/28/2022

BRIDGEWATER DRIVE, ERWIN, NC 28339

15

PROJECT NAME & ADDRESS

MONICA PARKER RESIDENCE

DRAWN BY

ESR

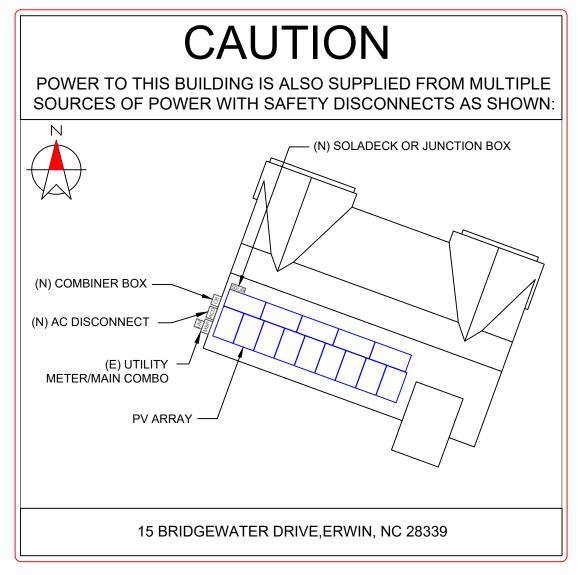
SHEET NAME

LABELS

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER



DIRECTORY

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM.

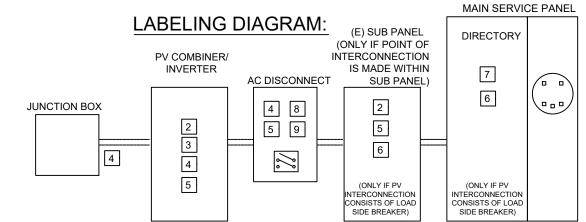
(ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS OUTLINED WITHIN: NEC 690.56(B)&(C), [NEC 705.10])

LABELING NOTES:

REQUIREMENTS IN THE FIELD PER CURRENT NEC AND LOCAL CODES AND MAKE APPROPRIATE ADJUSTMENTS. 2. LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.

1. LABELS CALLED OUT ACCORDING TO ALL COMMON CONFIGURATIONS. ELECTRICIAN TO DETERMINE EXACT

- 3. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- 4. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED INEC 110.211
- 5. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [IFC 605.11.1.1]



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REVISIONS						
DATE	REV					
07/28/2022						
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15 BRIDGEWATER DRIVE, ERWIN, NC 28339

MONICA PARKER RESIDENCE

DRAWN BY

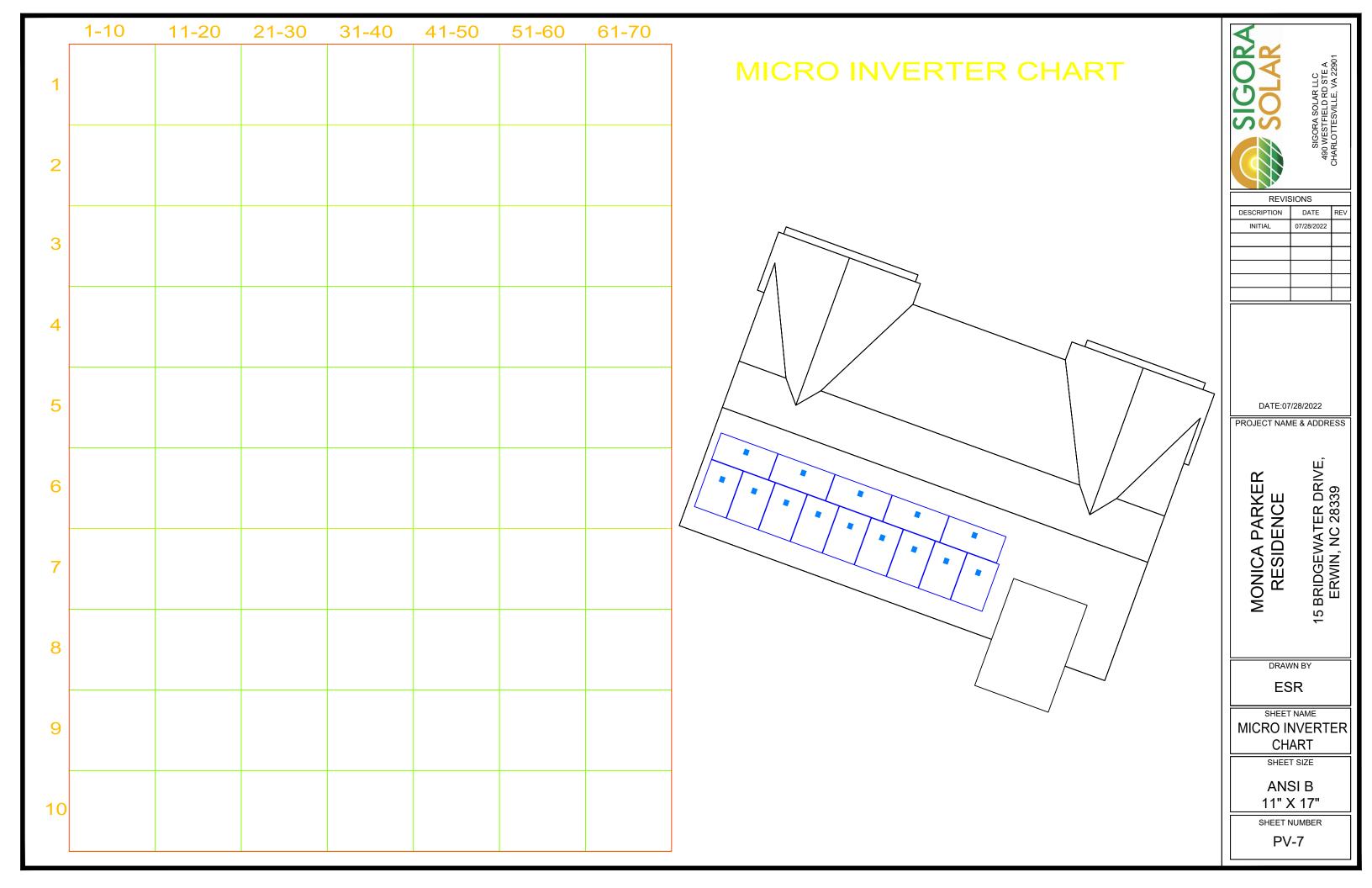
ESR

SHEET NAME **PLACARD**

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER

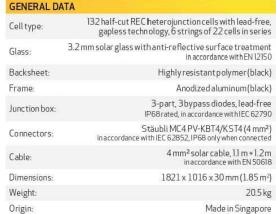


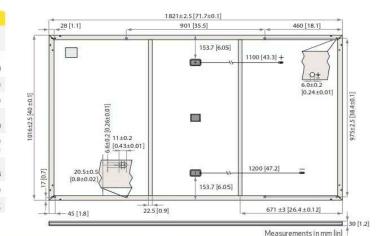


REC ALPHA PURE SERIES

PRODUCT SPECIFICATIONS







ELECTRICAL DATA		Pro	duct Code*:	RECXXXAA	Pure	
Power Output - P _{MAX} (Wp)	385	390	395	400	405	410
Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5	0/+5	0/+5
Nominal Power Voltage - V _{MPP} (V)	41.2	41.5	41.8	42.1	42,4	42.7
Nominal Power Current - I _{MPP} (A)	9.35	9.40	9.45	9.51	9.56	9.61
Open Circuit Voltage - V _{oc} (V)	48.5	48.6	48.7	48.8	48.9	49.0
Short Circuit Current-I _{SC} (A)	10.18	10.19	10.20	10.25	10.30	10.35
Power Density (W/m²)	208	211	214	216	219	222
Panel Efficiency (%)	20.8	21.1	21.4	21.6	21.9	22.2
Power Output - P _{MAX} (Wp)	293	297	301	305	309	312
Nominal Power Voltage - V _{MPP} (V)	38.8	39.1	39.4	39.7	40.0	40.2
Nominal Power Current - I _{MPP} (A)	7.55	7.59	7.63	7.68	7.72	7.76
Open Circuit Voltage - V _{oc} (V)	45.7	45.8	45.9	46.0	46.1	46.2
Short Circuit Current - I _{sc} (A)	8.16	8.20	8.24	8.28	8.32	8.36

ues at standard test conditions (STC: air mass AM 1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a
rance of P_{MW} V_{cc} & I_{cc} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m²,
perature 20° C, windspeed1 m/s).* Where xxx indicates the nominal power class (P_{total}) at STC above.
Exercise the second sec

MAXIMUM RATINGS		
Operational temperature:	-40+85°C	
Maximum system voltage:	1000 V	
Maximum test load (front):	+7000 Pa (713kg/m²)*	
Maximum test load (rear): -4000 Pa (407 kg/m		
Maxseries fuse rating:	25A	
Maxreverse current:	25 A	
"See installation m	anual for mounting instructions id = Test load /15 (safety factor	

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

IEC 61215:2016, IEC	. 61730:2016, UL 61730
IEC 62804	PID
EC 61701	Salt Mist
EC 62716	Ammonia Resistance
ISO11925-2	Ignitability (Class E)
EC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
IEC 62321	Lead-free acc. to RoHS EU 863/2015
ISO 14001, ISO 9001	I, IEC 45001, IEC 62941



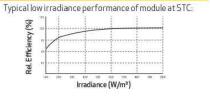




TEMPERATURE RATINGS	
Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P _{MAX} :	-0.26 %/°C
Temperature coefficient of V_{oc} :	-0.24 %/°C
Temperature coefficient of I _{sc} :	0.04%/°C
'The temperature coefficients state	d are linear values

DELIVERY INFORMATION	
Panels per pallet:	33
Panels per 40 ft GP/high cube container:	792 (24 pallets
Panels per 13.6 m truck:	924 (28 pallets
Panels per 53 ft truck:	891 (27 pallets

LOW LIGHT BEHAVIOUR



SHEET NAME MODULE

SHEET SIZE

ANSIB 11" X 17"

PV-8

Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.



SIGORA SOLAR LLC 490 WESTFIELD RD STE A CHARLOTTESVILLE, VA 22901

REVISIONS				
DESCRIPTION	DATE	REV		
INITIAL	07/28/2022			

DATE:07/28/2022

PROJECT NAME & ADDRESS

15 BRIDGEWATER DRIVE, ERWIN, NC 28339 MONICA PARKER RESIDENCE

DRAWN BY

ESR

SPECIFICATION

SHEET NUMBER







IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, softwaredefined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industryleading limited warranty of up to 25 years.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

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IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- · Lightweight and compact with plug-n-play connectors
- · Power Line Communication (PLC) between components
- · Faster installation with simple two-wire cabling

High productivity and reliability

- · Produce power even when the grid is down*
- · More than one million cumulative hours of testing
- · Class II double-insulated enclosure
- · Optimized for the latest highpowered PV modules

Microgrid-forming

- · Complies with the latest advanced grid support**
- · Remote automatic updates for the latest grid requirements
- · Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements
- * Only when installed with IQ System Controller 2,
- ** IQ8 and IQ8Plus supports split phase, 240V installations only.

IO8 and IO8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings ¹	W	235 - 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	٧	27 - 37	29 – 45
Operating range	V	25 - 48	25 - 58
Min/max start voltage	٧	30/48	30 / 58
Max input DC voltage	V	50	60
Max DC current ² [module lsc]	A	15	
Overvoltage class DC port			II.
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side prote	ection required; AC side protection requires max 20A per branch circuit
OUTPUT DATA (AC)		108-60-2-US	198PLUS-72-2-US
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range ³	V	240 / 211 – 264	

Peak output power	VA	245	300	
Max continuous output power	VA	240	290	
Nominal (L-L) voltage/range ³	V		240 / 211 - 264	
Max continuous output current	A	1.0	1.21	
Nominal frequency	Hz		60	
Extended frequency range	Hz		50 - 68	
AC short circuit fault current over 3 cycles	Arms		2	
Max units per 20 A (L-L) branch circ	uit ⁴	16	13	
Total harmonic distortion			<5%	
Overvoltage class AC port			Ш	
AC port backfeed current	mA		30	
Power factor setting			1.0	
Grid-tied power factor (adjustable)			0.85 leading - 0.85 lagging	
Peak efficiency	%	97.5	97.6	
CEC weighted efficiency	%	97	97	
Night-time power consumption	mW		60	

MECHANICAL DATA		
Ambient temperature range	-40°C to +60°C (-40°F to +140°F)	
Relative humidity range	4% to 100% (condensing)	
DC Connector type	MC4	
Dimensions (HxWxD)	212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight	1.08 kg (2.38 lbs)	
Cooling	Natural convection - no fans	
Approved for wet locations	Yes	
Pollution degree	PD3	
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating	NEMA Type 6 / outdoor	

Cooling	Natural convection – no fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
Environ. category / UV exposure rating	NEMA Type 6 / outdoor
COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (2) Maximum continuous input DC current is 10.6Å (3) Nominal voltage range can be extended beyond nominal if required

by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17



DESCRIPTION DATE 07/28/2022 INITIAL

DATE:07/28/2022

BRIDGEWATER DRIVE, ERWIN, NC 28339

5

PROJECT NAME & ADDRESS

ONICA PARKER RESIDENCE MONICA

DRAWN BY

ESR

SHEET NAME **INVERTER**

SPECIFICATION SHEET SIZE

ANSI B

11" X 17" SHEET NUMBER

Data Sheet Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4 X-IO-AM1-240-4C



The Enphase IQ Combiner 4/4C with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- · Includes IQ Gateway for communication and control
- · Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- · Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- · Flexible networking supports Wi-Fi, Ethernet, or cellular
- · Optional AC receptacle available for PLC bridge
- · Provides production metering and consumption monitoring

Simple

- · Centered mounting brackets support single stud mounting
- · Supports bottom, back and side conduit entry · Up to four 2-pole branch circuits for 240 VAC
- plug-in breakers (not included) · 80A total PV or storage branch circuits

Reliable

- · Durable NRTL-certified NEMA type 3R enclosure
- · Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- · UL listed



MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (AN C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system a IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20+/-0.5%) and consumption monitoring (+/-2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect he
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	 Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites 4G based LTE-M1 cellular modem with 5-year Sprint data plan 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating Max. continuous current rating (input from PV/storage)	65 A 64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	$37.5 \times 49.5 \times 16.8 \text{ cm} \big(14.75 \text{"} \times 19.5 \text{"} \times 6.63 \text{"}\big). \text{ Height is } 21.06 \text{"} \big(53.5 \text{ cm}\big) \text{ with mounting brackets}.$
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors 60 A breaker branch input: 4 to 1/0 AWG copper conductors Main lug combined output: 10 to 2/0 AWG copper conductors Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1



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DATE DESCRIPTION 07/28/2022 INITIAL

DATE:07/28/2022

BRIDGEWATER DRIVE, ERWIN, NC 28339

15

PROJECT NAME & ADDRESS

ONICA PARKER RESIDENCE MONICA

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ESR

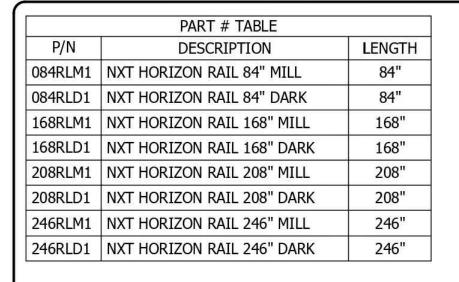
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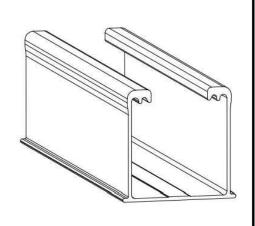
SHEET SIZE

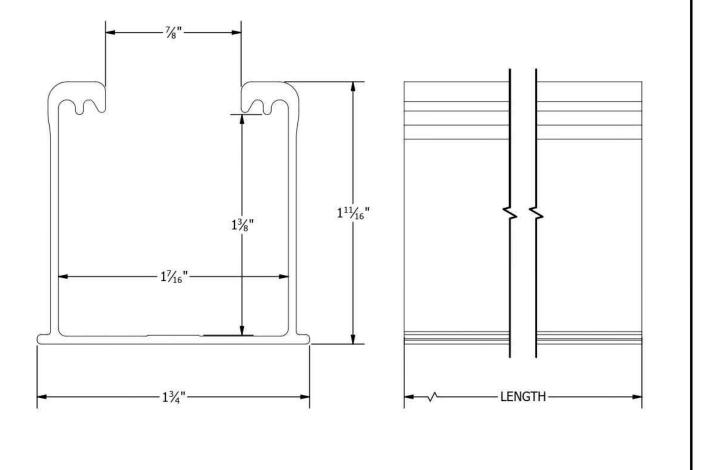
ANSIB 11" X 17"

ENPHASE.

SHEET NUMBER









1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM

PRODUCT LINE:	NXT HORIZON
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	RAIL
REVISION DATE:	9/13/2021

DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE

SHEET

NH-P01





REVISIONS			
DESCRIPTION	DATE	REV	
INITIAL	07/28/2022		

SIGORA SOLAR LLC 490 WESTFIELD RD STE A CHARLOTTESVILLE, VA 22901

DATE:07/28/2022

PROJECT NAME & ADDRESS

MONICA PARKER RESIDENCE

15 BRIDGEWATER DRIVE, ERWIN, NC 28339

DRAWN BY

ESR

SHEET NAME
RAIL
SPECIFICATION

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER

NXT HORIZON

:::UNIRAC

DATE DESCRIPTION INITIAL 07/28/2022

SIGORA SOLAR LLC 490 WESTFIELD RD STE A CHARLOTTESVILLE, VA 2290

DATE:07/28/2022

PROJECT NAME & ADDRESS

MONICA PARKER RESIDENCE

BRIDGEWATER DRIVE, ERWIN, NC 28339

DRAWN BY

ESR

SHEET NAME **ATTACHMENT**

SPECIFICATION SHEET SIZE

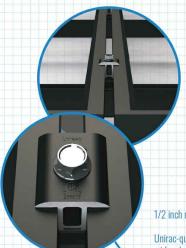
ANSIB 11" X 17"

SHEET NUMBER

PV-12

DISCOVER YOUR **NXT** HORIZON[®]

The culmination of over two decades of experience. Thoughtful design, rigorous engineering, world-class support, and a reliable supply chain are the foundation of what makes us confident that NXT HORIZON is the NXT Level of DESIGN, SIMPLICITY, and VALUE.



NXT HORIZON COMBO CLAMP

DARK: CCLAMPD1 MILL: CCLAMPM1

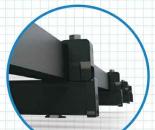
Clicks into rail anywhere (even where there are cables!) Self-standing clamp with spring combines as both mid and end clamp. Clamps 30-40 mm modules





1/2 inch module spacing for efficiency

Unirac-quality bonding that works both as mid and end clamps.



CAP KIT

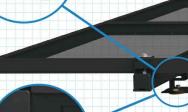
ENDCAPD1

Make the install look clean with the end cap kit designed to complement the module end clamp and rail ends.



DARK: SHCLMPD1 MILL: SHCLMPM1

Adaptable rail connection to attachments allows click-in feature compatibility with almost all of Unirac's attachments



FlashLoc technology combined with new features: click-in rail & open slot L-Foot for

NXT HORIZON RAII

MILL: 168RLM1

Strong, lightweight open channe rail with invisible, easy, unfailing and integrated wire managemen

NXT HORIZON RAIL SPLICE



WIRE MANAGEMENT OPTONS

NXT HORIZON MLPE & LUG CLAMP

LUGMLPE1

Works as either MLPE Mount or Grounding Lug connection to the rail. Why source two parts when one can do the job?



NXT HORIZON WIRE MANAGEMENT CLIP

WRMCLPD1

Aesthetic, yet functional accessory that works to help installers keep wires inside the rail. No zip-ties required. Optional zip tie loop for extra wire management capabilities



NXT HORIZON NORTH/SOUTH WIRE

WRMCNSD1

An elegant solution to help installers get to the home run. The same hardware works to provide both easy entry to rail and adjustability for cable

STRONGHOLD™ ATTACHMENT KIT

DARK: SHCPKTD MILL: SHCPKTM1

Rail clicks into the clamps attached to the Stronghold™ base. Open slot in L-foot allows drop-in rail clamp.



RLSPLCM1

Structural internal splice that does not interfere with roof connection nor module connection. Pre-assembled thread cutting bolts

ALL NXT HORIZON° SYSTEMS INCLUDE A FREE PERMITTING PLANSET DESIGN - FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR EMAIL NXTPERMITS@UNIRAC.COM



Basic Features

- · Stamped Seamless Construction
- 18 Gauge Galvanized Steel
- Powder Coated Surfaces
- · Flashes into the roof deck
- 3 Roof deck knockouts .5", .75", 1"
- 5 Centering dimples for entry/exit fittings or conduit
- · 2 Position Ground lug installed
- Mounting Hardware Included



SolaDeck Model SD 0783



SolaDeck UL50 Type 3R Enclosures

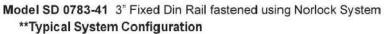
Available Models:

Model SD 0783 - (3" fixed Din Rail) Model SD 0786 - (6" slotted Din Rail)

SolaDeck UL 1741 Combiner/Enclosures

Models SD 0783-41 and SD 0786-41 are labeled and ETL listed UL STD 1741 according to the UL STD 1741 for photovoltaic combiner enclosures.

Max Rated - 600VDC, 120AMPS



- 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
- 1- Power Distribution Block 600VDC 175AMP
- 1- Bus Bar with UL lug

Model SD 0786-41 6" Slotted Din Rail fastened using steel studs

**Typical System Configuration

- 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
- 4- Din Rail Mounted Terminal Blocks Bus Bars with UL lug

**Fuse holders and terminal blocks added in the field must be UL listed or recognized and meet 600 VDC 30 AMP 110C for fuse holders, 600V 50 AMP 90C for rail mounted terminal blocks and 600 V 175 AMP 90C for Power Distribution Blocks. Use Copper Wire Conductors.



Cover is trimmed to allow conduit or fittings, base is center dimpled for fitting locations.



Model SD 0783-41, wired with Din Rail mounted fuse holders, bus bar and power distribution



Model SD 0786-41, wired with Din Rail mounted fuse holders, terminal blocks and bus bars.

RSTC Enterprises, Inc • 2219 Heimstead Road • Eau Cliare, WI 54703 For product information call 1(866) 367-7782





REVISIONS			
DESCRIPTION	DATE	REV	
INITIAL	07/28/2022		

DATE:07/28/2022

BRIDGEWATER DRIVE, ERWIN, NC 28339

15

PROJECT NAME & ADDRESS

MONICA PARKER RESIDENCE

DRAWN BY

ESR

SHEET NAME
SOLADECK
SPECIFICATION

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER















