SHEET INDEX:

SHEET NO. SHEET TITLE S-01 ARRAY A LAYOUT S-02 ARRAY B LAYOUT S-03 **ASSEMBLY DETAILS**

R-01 **RESOURCES RESOURCES** R-02

AUTHORITIES HAVING JURISDICTION:

BUILDING: HARNETT COUNTY ZONING: HARNETT COUNTY **ELECTRICAL: HARNETT COUNTY** UTILITY: CENTRAL EMC

REFERENCE CODES:

ELECTRICAL CODE: 2017 NEC

BUILDING CODE(S): 2018 IRC WITH NORTH CAROLINA AMENDMENTS 2018 IFC WITH NORTH CAROLINA AMENDMENTS FIRE CODE:

ASCE 7-10 **ENGINEERING:**

DESIGN CRITERIA:

GROUND SNOW LOAD: 10 PSF 120 MPH DESIGN WIND SPEED:

DESIGN EXPOSURE CATEGORY: В

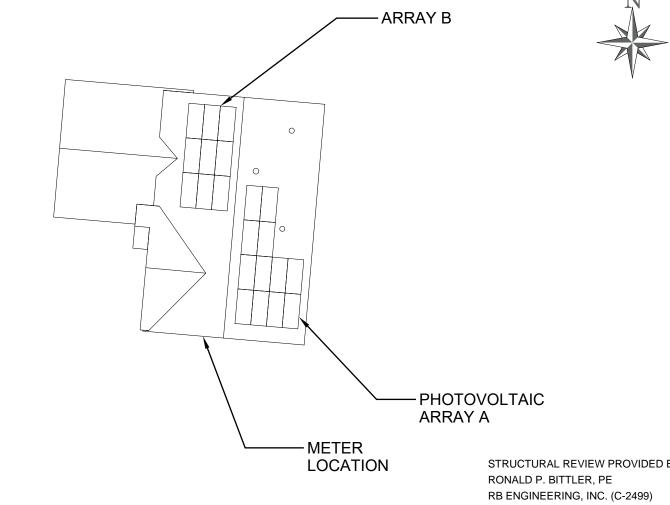
DEAD LOAD: 2.97 PSF AVERAGE HIGH TEMPERATURE: 34°C ASHRAE LOW TEMPERATURE: -9°C

SYSTEM ATTRIBUTES	QTY
Trina 420	21
TESLA 7.6KW SOLAR INVERTER	1

SYSTEM SIZE

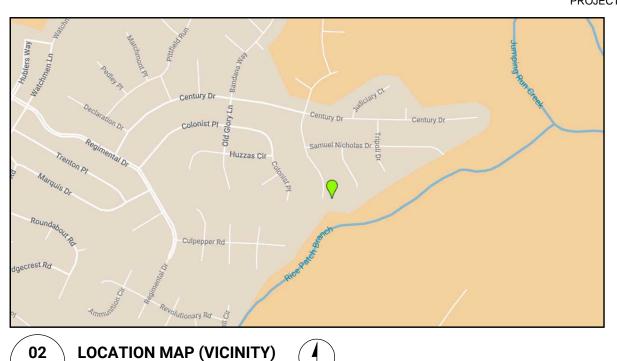
7.600 kW-AC/ 8.820 kW-DC

NAME	EMAIL	PHONE	TITLE
ROBERT PARKER	ROBERT.PARKER@CAPEFEARSOLARSYSTEMS.COM	910-232-6288	CHIEF OPERATING OFFICER
DANIEL CAVANAGH	DANIEL.CAVANAGH@CAPEFEARSOLARSYSTEMS.COM	910-599-0428	RESIDENTIAL PROJECT MANAGER
WILLIAM PARKER	WILLIAM.PARKER@CAPEFEARSOLARSYSTEMS.COM	910-777-3749	COMMERCIAL PROJECT ASSOCIATE
MICHAEL HORAN	MICHAEL.HORAN@CAPEFEARSOLARSYSTEMS.COM	336-404-0511	PROJECT DEVELOPMENT COORDINATOR
JOHN NOVAK	JOHN.NOVAK@CAPEFEARSOLARSYSTEMS.COM	910-622-7361	SOLAR DESIGNER
DEREK MADRID	DEREK.MADRID@CAPEFEARSOLARSYSTEMS.COM	910-574-4229	SOLAR SITE SURVEYOR





STRUCTURAL REVIEW PROVIDED BY: 168 QUADE DRIVE CARY, NC 27513 919-677-9662 PROJECT #RB-25332R1



CAPE **FEAR SOLAR SYSTEMS**

910 S. 2nd St. Wilmington, NC 28401 910-409-5533



GC LIC. NO.: 65677 ELEC. LIC. NO.: U-33321

Tun Tavern Dr, Cameron, NC 28326 8.82 kW DC PV SYSTEM **REUBEN FORNAH**

183

COVER



	<u>RE</u>	VISION LIST 🛕	
#	REV. DATE	DESC.	

March 6, 2025 DATE: DRAWN BY: JPN

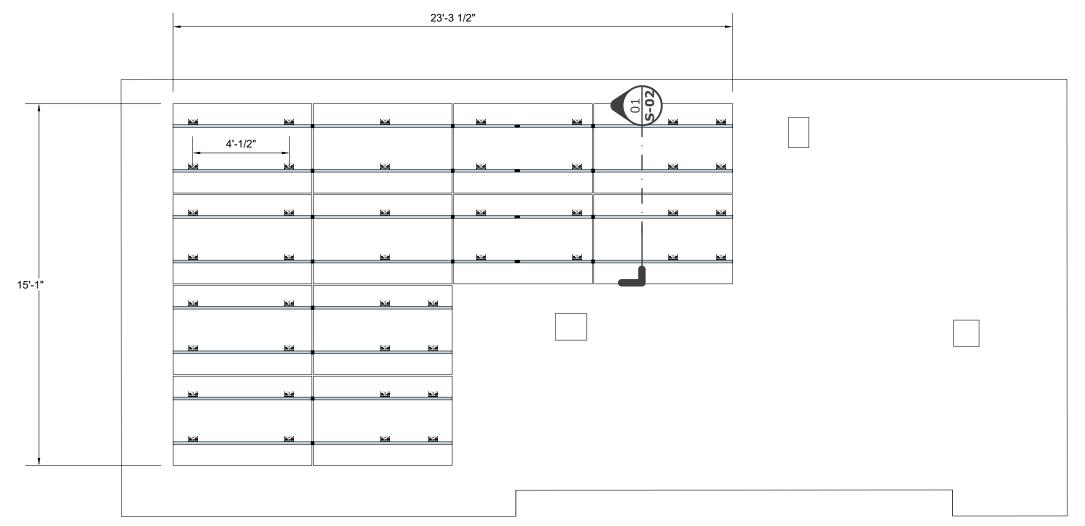
Sheet No.

G-01

G-01

STRUCTURAL NOTES

- 1. ROOF MOUNT RACKING SYSTEM & PV ARRAY TO BE INSTALLED IN STRICT ACCORDANCE WITH THESE DRAWINGS & MFG'S RECOMMENDATIONS. MINOR SPACING MODIFICATIONS ARE ACCEPTABLE TO ACCOMODATE EXISTING ROOF STRUCTURE MEMBERS
- 2. EXISTING ROOF STRUCTURE HAS BEEN INCLUDED IN THE STRUCTURAL EVALUATION AND FOUND SUITABLE FOR THIS INSTALLATION
- 3. ALL ATTACHMENT BOLTS SHALL BE INSTALLED IN THE MIDDLE THIRD OF THE RAFTER (OR TRUSS) THICKNESS



PLAN - ARRAY A LAYOUT 01 S-01 **SCALE:** 1/4" = 1'

CAPE **EXECUTE** FEAR **SOLAR SYSTEMS**

910 S. 2nd St. Wilmington, NC 28401 910-409-5533



GC LIC. NO.: 65677 ELEC. LIC. NO.: U-33321

8.82 kW DC PV SYSTEM LAYOUT

Tun Tavern Dr, Cameron, NC 28326 **REUBEN FORNAH**

4

ARRAY

183

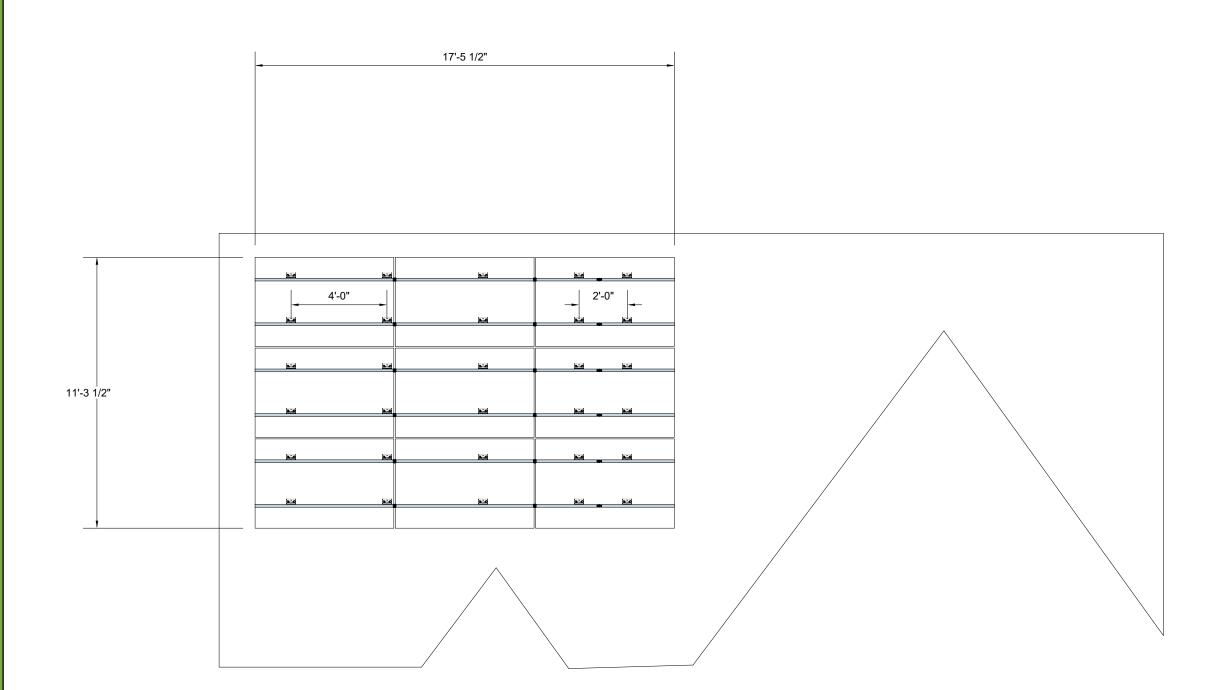
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March 6, 2025 DATE: DRAWN BY:

Sheet No.

S-01



CAPE **EFEAR** 910 S. 2nd St.
Wilmington, NC 28401
910-409-5533



GC LIC. NO.: 65677 ELEC. LIC. NO.: U-33321

ARRAY B LAYOUT

183 Tun Tavern Dr, Cameron, NC 28326 8.82 kW DC PV SYSTEM **REUBEN FORNAH**



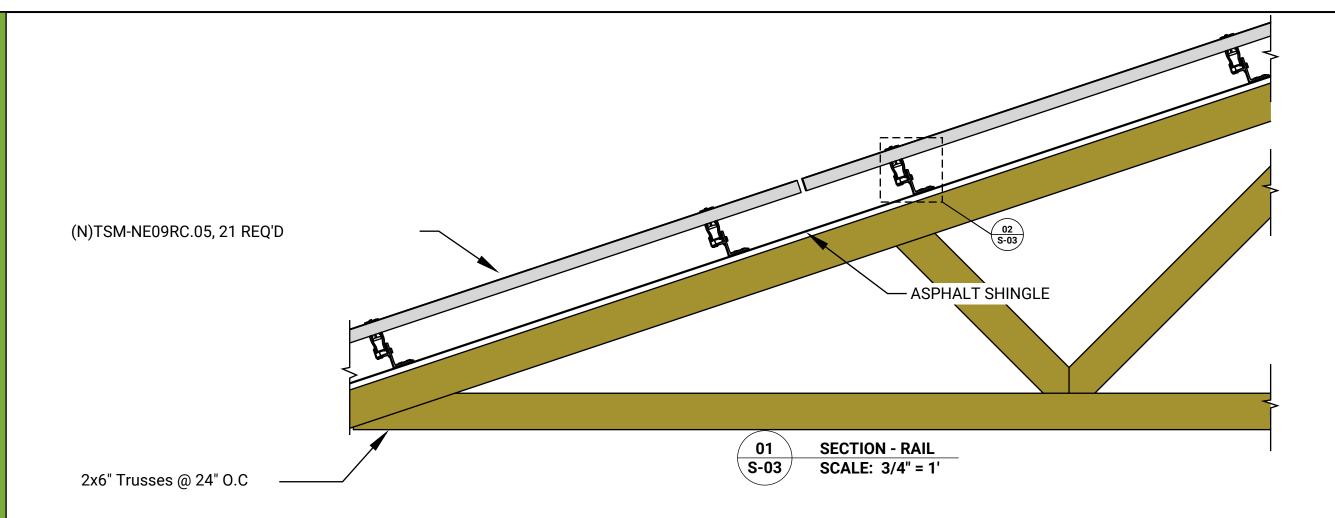
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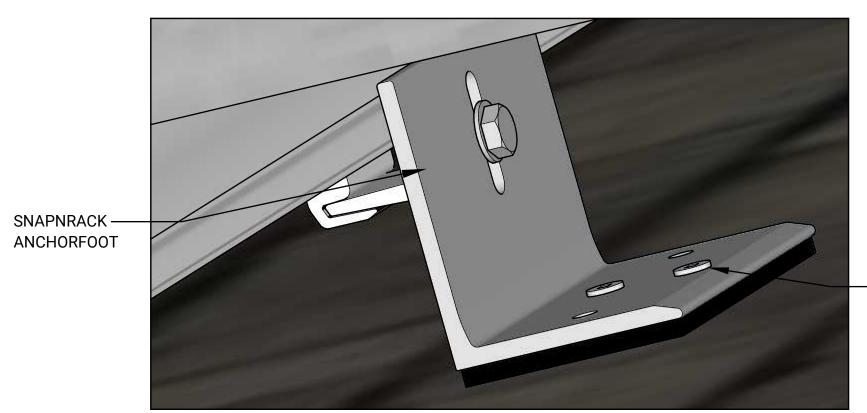
March 6, 2025 DATE: DRAWN BY: JPN

Sheet No.

S-02

01 PLAN - ARRAY B LAYOUT S-02 SCALE: 1/4" = 1'





-#14 WOOD SCREW MOUNTED INTO TRUSS (QTY. 2 PER ATTACHMENT)

02 DETAIL - ANCHORFOOT S-03 SCALE: 3" = 1' SOLAR SYSTEM

910 S. 2nd St. Wilmington, NC 28401 910-409-5533



GC LIC. NO.: 65677

ELEC. LIC. NO. : U-33321

ASSEMBLY DETAILS

8.82 kW DC PV SYSTEM
REUBEN FORNAH
183 Tun Tavern Dr, Cameron,
NC 28326

SEAL 025511

03.06.2025

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DATE: March 6, 2025

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Sheet No.

S-03

BACKSHEET MONOCRYSTALLINE MODULE

PRODUCT: TSM-NE09RC.05 PRODUCT RANGE: 400-430W

430W MAXIMUM POWER OUTPUT

0~+5W POSITIVE POWER TOLERANCE MAXIMUM EFFICIENCY



Small in size, bigger on power

• Up to 430W, 21.5% module efficiency with high density interconnect technology

Interconnect technology

Reduce installation cost with higher power bin and efficiency
Boost performance in warm weather with low temperature
coefficient and operating temperature

High Reliability
Innovative non-destructive cutting
for improved mechanical resistance and strength
Excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance which is fully applicable in coastal, high temperature, humidity area and harsh environment

Ultra-low Degradation, longer warranty, higher output First-year degradation 1% and annual degradation at 0.4%

Up to 25 years product warranty and 25 years power warranty

Universal solution for residential and C&I rooftops Easy for integration, designed for compatibility with existing

mainstream inverters and diverse mounting systems Perfect size and low weight for handling and installation

Most Valuable solution on low load capacity rooftops (weight similar to backheet version)

Mechanical performance up to 6000 Pa positive load and 4000 Pa

Trina Solar's Vertex Bifacial Backsheet Performance Warranty

Total Equivalent power - Pmx (Wp)	426	431	437	442	447	453	45
Maximum Power Voltage-Vren (V)	41.3	41.7	42.1	42.5	42.8	43.2	43
Maximum Power Current-IHPP (A)	10.31	10.34	10.36	10.41	10.44	10.48	10.
Open Circuit Voltage-Voc (V)	49.2	49.6	50.1	50.5	50.9	51.4	51
Short Circuit Current-Isc (A)	10.97	11.00	11.04	11.08	11.11	11.15	11.
Irradiance ratio (rear/front)				10%			
Power Bifuciality/65130%.							
ELECTRICAL DATA (NOCT)							
Maximum Power-Pnax (Wp)	312	308	312	316	319	324	32
Maximum Power Voltage-V+FF (V)	38.6	39.0	39.3	39.7	40.0	40.4	40
Maximum Power Current-IHPP (A)	7.88	7.91	7.93	7.95	7.98	8.01	8.
Open Circuit Voltage-Voc (V)	45.5	47.0	47.5	47.8	48.2	48.7	45

Vertex 5-1 BACKSHEET MONOCRYSTALLINE MODULE

ELECTRICAL DATA (STC)								MECHANICAL DATA		
Peak Power Watts-Price (Wp)*	400	405	410	415	420	425	430	Solar Cells	Topcon Bifacial	
Power Tolerance-PMAX (W)				0~+5				No. of cells	144cells	
Asximum Power Voltage-Verr (V)	41.3	41.7	42.1	42.5	42.8	43.2	43.6	Module Dimensions	1762*1134*30r	nm (69.37×44.65×1.18 inches)
								Weight	21.3kg (47.0 lb)	
Haximum Power Current-IHPP (A)	9.68	9.71	9.73	9.77	9.80	9.84	9.87	Front Glass	3.2 mm (0.12inch	es), High Transmission, Tempered Glass
Ipen Circuit Voltage-Voc (V)	49.2	49.6	50.1	50.5	50.9	51.4	51.8	Encapsulant material	POE/EVA	
hort Circuit Current-Isc (A)	10.30	10.33	10.37	10.40	10.43	10.47	10.50	BackSheet	Black Grid Transp	arent Backsheet
Hodule Efficiency nm (%)	20.0	20.3	20.5	20.8	21.0	21.3	21.5	Frame	30mm (1.18 inche	es) Anodized Aluminium Alloy, Black
STC Indiano (000W/m2, Cell Temperature 25*	C, Air Misss Air	15.5 "More	ring tolerand	ec 23%.				J-Box	IP 68 rated	
lectrical characteristics with d								Cables		nnology Cable 4.0mm² (0.005 inches²) 0 mm/ P1100 mm(43.31/43.31 inches)
otal Equivalent power -PMX (Wp)	426	431	437	442	447	453	458	Connector	MC4 EVOZ	
aximum Power Voltage-V+FF (V)	41.3	41.7	42.1	42.5	42.8	43.2	43.6			
faximum Power Current-IMPP (A)	10.31	10.34	10.36	10.41	10.44	10.48	10.51	Fire Type	Type 1 or Type2	
Ipen Circuit Voltage-Vcc (V)	49.2	49.6	50.1	50.5	50.9	51.4	51.8			
hort Circuit Current-Isc (A)	10.97	11.00	11.04	11.08	11.11	11.15	11.18	TEMPERATURE RATINGS		MAXIMUM RATINGS
rradiance ratio (rear/front)				10%				NOCT (Nominal Operating Cell Temperature) Temperature Coefficient of Press.	43°C(±2°C) - 0.30%/°C	Operational Temperature -40~+85*1 Maximum System Voltage 1500V DC

TEMPERATURE RATINGS		MAXIMUM RATINGS			
NOCT (Nominal Operating Cell Temperature)	43°C(±2°C)	Operational Temperature	-40~+85°C		
Temperature Coefficient of Prex	- 0.30%/*C	Maximum System Voltage	1500V DC (IEC)		
Temperature Coefficient of Voc	- 0.2456/°C	Max Series Fuse Rating	25 A		
Temperature Coefficient of Isc	0.04%/°C				
WARRANTY		PACKAGING CONFIGURAT	TON		
25 year Product Workmanship Warranty		Modules per bax: 36 pieces			

В		
7	WARRANTY	PACKAGING CONFIGURATION
4	25 year Product Workmanship Warranty	Modules per box: 36 pieces
	25 year Power Warranty	Modules per 40' container: 792 pieces
	1% first year degradation	Pallet dimensions (L x W x H): 1800 x 1135 x 1259 n
5	0.4% Annual Power Attenuation	Pallet weight: 829 kg (1827 lb)
	(Hease refer to product warranty for details)	

SOLAR INVERTER

KEY FEATURES

MODEL

Internet Connectivity

AC Remote Metering Support

- No neutral wire simplifies installation

ELECTRICAL SPECIFICATIONS MECHANICAL SPECIFICATIONS

MODEL NUMBER	1534000-xx-y	1538000-xx-y	Dimensions	660 mm x 411 mm x 158 mm (26 in x 16
OUTPUT (AC)	3.8 kW	7.6 kW	Weight	52 lb ³
Nominal Power	3,800 W	7,600 W	Mounting options	Wall mount (bracket)
Maximum Apparent Power	3,328 VA at 208 V 3,840 VA at 240 V	6,656 VA at 208 V 7,680 VA at 240 V	³ Door and bracket can	be removed for a mounting weight of 37 lb.
Maximum Continuous Current	16 A	32 A	1	88
Breaker (Overcurrent Protection)	20 A	40 A		188
Nominal Power Factor	1 - 0.9 (leadi	ng / lagging)		T = L F
THD (at Nominal Power)	</td <td>5%</td> <td></td> <td>.88</td>	5%		. 88
INPUT (DC)			660 mm	
MPPT	2	4	000 111111	
Input Connectors per MPPT	1-2	1-2-1-2		
Maximum Input Voltage	600	VDC		
DC Input Voltage Range	60 - 55	50 VDC		
DC MPPT Voltage Range	60 - 48	0 VDC1	*	
Maximum Current per MPPT (I _{mp})	13	S A		411 mm 158
			4	411 mm = 100 =

PERFORMANCE SPECIFICATIONS

Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G)²

Wi-Fi (2.4 GHz, 802.11 b/g/n), RS-485

Operating Temperature	-30°C to 45°C (-22°F to 113°F)*
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD2 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 db(A) nominal, < 50 db(A) maximum

COMPLIANCE INFORMATION

Grid Certifications	UL 1741, UL 1741 SA, IEEE 1547, IEEE 1547.1
Safety Certifications	UL 1741 PVRSS, UL 1699B, UL 1998 (US), UL 3741
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

SOLAR SHUTDOWN DEVICE

ELECTRICAL SPECIFICATIONS



MECHANICAL S	SPECIFICATIONS	
Electrical Connections	MC4 Connector	
Housing	Plastic	

ircuit Current (I _{sc}) 15 A					
de de	600 V DC	- Housing	Plastic		
		Dimensions	125 mm x 150 mm x 22 mm (5 in x 6 in x 1 in)		
		Weight 350 g (0.77 lb)			
PERFORMA	NCE	Mounting Options	ZEP Home Run Clip		
evices per String	5		M4 Screw (#10) M8 Bolt (5/16")		
	Power Line Excitation		Nail / Wood screw		
	Normally open				

COME

PLIANCE INFO	RMATION	棉	+		
tions	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)	650 mm	150 mm		
iation Method	PV System AC Breaker or Switch	韻			
ible Equipment	See Compatibility Table below	1) House	
		1		T	

UL 3741 PV HAZARD CONTROL (AND PVRSA) COMPATIBILITY

Inverter and Solar Shutdown Devices, See the Tesia Solar inverter Installation Manual for detailed instructions and for guidance on installing Tesia Solar Inverter and Solar Shutdown Devices with other modules.			
Brand	Model	Required Solar Shutdown Devices	
Tosla	Solar Roof V3	1 Solar Shutdown Device per 10 modules	
Tesla	Tesla TxxxS (where xxx = 405 to 450 W, increments of 5)	1 Solar Shutdown Device per 3 modules ¹	
Testa	Testa Txxxi-I (where xxx = 395 to 415 W. increments of 5)	1 Solar Shutdown Device per 3 modules	

GC LIC. NO.: 65677 ELEC. LIC. NO.: U-33321 Tavern Dr, Cameron, NC 28326

CAPE * FEAR

SOLAR SYSTEMS

910 S. 2nd St.

Wilmington, NC 28401

910-409-5533

8.82 kW DC PV SYSTEM

REUBEN FORNAH

Tun

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RESOURCE

pe.eaton.com

Trinasolar

Eaton general duty cartridge fuse safety switch

DG222NRB

UPC:782113144221

Comprehensive Products and System Certificates

EC61215/EC61730/EC61701/EC62716/UL61730
S0 9001: Qualify Management System
S0 140001: Environmental Management System
S014064: Greenhouse Cases Emissions Verification
S014064: Greenhouse Cases Emissions Verification
S0140001: Occupational Health and Safety Managem

Dimensions: • Height: 14.37 IN

• Length: 7.35 IN Width: 8.4 IN

Weight:10 LB

Notes:Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

Warranties: • Eaton Selling Policy 25-000, one (1) year from

eighteen (18) months from the date of shipment of the Product, whichever occurs first. Specifications:

the date of installation of the Product or

- Type: General duty, cartridge fused
- Amperage Rating: 60A
- Enclosure: NEMA 3R
- Enclosure Material: Painted galvanized steel
- Fuse Class Provision: Class H fuses
- Fuse Configuration: Fusible with neutral
- Number Of Poles: Two-pole · Number Of Wires: Three-wire
- Product Category: General duty safety switch
- Voltage Rating: 240V

Supporting documents:

- Eatons Volume 2-Commercial Distribution
- Eaton Specification Sheet DG222NRB

Certifications:

Product compliance: No Data



REVISION LIST \triangle # REV. DATE DESC.

March 6, 2025 DRAWN BY:

Sheet No.

R-01



Ultra Rail



SnapNrack Ultra Rail System

A sleek, straightforward rail solution for mounting solar modules on all roof types. Ultra Rail features two rail profiles; UR-40 is a lightweight rail profile that is suitable for most geographic regions and maintains all the great features of SnapNrack rail, while UR-60 is a heavier duty rail ofile that provides a larger rail channel and increased span capabilities. Both are compatib with all existing mounts, module clamps, and accessories for ease of install.

The Entire System is a Snap to Install • New Ultra Rail Mounts include snap-in brack

- for attaching rail
- Compatible with all the SnapNrack Mid Clamps
- and End Clamps customers love

 Universal End Clamps and snap-in End Caps provide a clean look to the array edge





Unparalleled Wire Management

- · Open rail channel provides room for running wires resulting in a long-lasting quality instal
- Industry best wire management offering includes Junction Boxes, Universal Wire Clamps, MLPE Attachment Kits, and Conduit
- system is fully bonded and listed to UL 2703

Heavy Duty UR-60 Rail

- UR-60 rail profile provides increased span capabilities for high wind speeds and snow
- Taller, stronger rail profile includes profile-
- specific rail splice and end cap

 All existing mounts, module clamps, and accessories are retained for the same great install experience



The Ultimate Value in Rooftop Solar

Industry leading Wire

Management Solutions

Single Tool Installation

RESOURCES snapnrack.com/resources **DESIGN** snapnrack.com/configurator WHERE TO BUY snapnrack.com/where-to-buy

Mounts available for all

All SnapNrack Module

Clamps & Accessories are compatible with

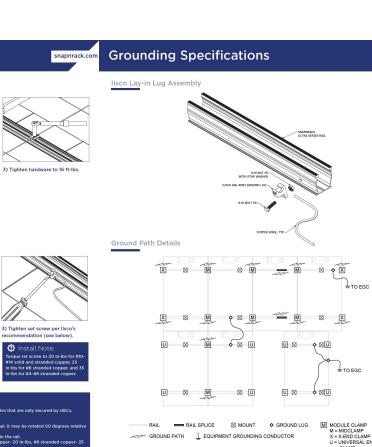
both rail profiles

roof types

Quality. Innovative. Superior.

SnapNrack Solar Mounting Solutions are engineered to optimize material use and labor resources and improve overall installation quality and safety. 877-732-2860 www.snapnrack.com contact@snapnrack.com

Grounding Specifications





910 S. 2nd St. Wilmington, NC 28401 910-409-5533



GC LIC. NO.: 65677 ELEC. LIC. NO.: U-33321

8.82 kW DC PV SYSTEM

Tavern Dr, Cameron, NC 28326 **REUBEN FORNAH** . Lm_

83

ESOURCE

SnapNrack®

Ultra Rail

AnchorFoot™



SnapNrack AnchorFoot™ & DeckAnchor™

are the latest innovation designed to reduce the number of roof fasteners when mounting direct to deck and provide maximum flexibility to mount anywhere on the roof. Engineered with butyl, now installers do not have to add sealant to the bottom of the mount, simplifying the installation process and further protecting the roof.

AnchorFoot™

- Pre-installed butyl for easy peel & stick installation allows for no disruption to composition shingles
- Industry-leading .200" thick butyl allows
- installation over shingles without cutting pieces
- Flexible direct to deck mounting options with (2) DeckAnchors or (4) #14 wood screws
- Flexible rafter mounting options with (1) 5/16" lag or (2) #14 wood screws
- Ships pre-assembled with Ultra Rail Mounting Clamp for easy rail attachment
- Rated for UL2703 Bonding & Grounding with TAS 100A Wind Driven Rain Testing for waterproof certification



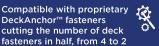
Deck Mounting, re-imagined.



DeckAnchor™ fasteners



Compatible with proprietary Single Tool installation &



snap-in features as with all SnapNrack products

Start Installing AnchorFoot™ Today!

- Proprietary fastening technology to reduce the number of screws for direct to deck mounting
- Familiar $\frac{1}{2}$ " hex head to maintain the SnapNrack tradition of a single tool install
- Wide threads securely grip the wood deck and
- significantly reduces the potential for over-tightening
- TAS 100A Wind Driven Rain Testing + ASTM D1761 Screw

Quality. Performance. Innovation.

SnapNrack solutions are focused on simplifying the installation experience through intuitive products and the best wire management in the industry.

SnapNrack*

877-732-2860 www.snapnrack.com contact@snapnrack.com

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March 6, 2025

DRAWN BY: Sheet No.

R-02

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