



Town of Erwin
Zoning Application & Permit
 Planning & Inspections Department

Permit #
 24-0079

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, and side yard dimensions.

Name of Applicant	Palmetto Solar, LLC	Property Owner	Eduardo Carranza
Home Address	997 Morrison Drive Ste 200	Home Address	94 Mary Robertson Street
City, State, Zip	Charleston, SC 29403	City, State, Zip	Dunn, NC 28334
Telephone	774-503-1264	Telephone	(915) 502-4573
Email	permitting_sc@palemto.com	Email	Eddycarr008@gmail.com

Address of Proposed Property	94 Mary Robertson Street Dunn, NC 28334		
Parcel Identification Number(s) (PIN)	0596-94-6308.000	Estimated Project Cost	\$12,150.00
What is the applicant requesting to build / what is the proposed use of the subject property? Be specific.	Exiting single family - Solar install		
Description of any proposed improvements to the building or property	Install roof mounted solar pv system of 15 panels @ 6.075 kW DC		
What was the Previous Use of the subject property?	Residential		
Does the Property Access DOT road?	No		
Number of dwelling/structures on the property already	1	Property/Parcel size	.46 acres
Floodplain SFHA <u>Yes</u> <input checked="" type="checkbox"/> <u>No</u>	Watershed <u>Yes</u> <input checked="" type="checkbox"/> <u>No</u>	Wetlands <u>Yes</u> <input checked="" type="checkbox"/> <u>No</u>	
MUST circle one that applies to property	Existing/Proposed Septic System <input type="checkbox"/> Or Existing/Proposed County/City Sewer <input checked="" type="checkbox"/>		

Owner/Applicant Must Read and Sign

The undersigned property owner, or duly authorized agent/representative thereof certifies that this application and the forgoing answers, statements, and other information herewith submitted are in all respects true and correct to the best of their knowledge and belief. The undersigning party understands that any incorrect information submitted may result in the revocation of this application. Upon issuance of this permit, the undersigning party agrees to conform to all applicable town ordinances, zoning regulations, and the laws of the State of North Carolina regulating such work and to the specifications of plans herein submitted. The undersigning party authorizes the Town of Erwin to review this request and conduct a site inspection to ensure compliance to this application as approved.

Russell Kill		12/5/23
Print Name	Signature of Owner or Representative	Date

For Office Use

Zoning District	B-D	Existing Nonconforming Uses or Features	NA
Front Yard Setback	NA	Other Permits Required	<input type="checkbox"/> Conditional Use <input type="checkbox"/> Building <input type="checkbox"/> Fire Marshal <input checked="" type="checkbox"/> Other
Side Yard Setback	NA	Requires Town Zoning Inspection(s)	<input type="checkbox"/> Foundation <input type="checkbox"/> Prior to C. of O.
Rear Yard Setback	NA	Zoning Permit Status	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied
Fee Paid: 25		Date Paid:	Staff Initials: DME

Comments	Electrical permit required
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Signature of Town Representative:	Date Approved/Denied: 12/6/23
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SCOPE OF WORK

- (N) 6.075kW DC / 5.000kW AC ROOF MOUNT PV SYSTEM
- (15) HANWHA QCELLS Q.PEAK DUO BLK ML-G10+ 405 (405W) MODULES
- (1) SOLAREGE TECHNOLOGIES SE5000H-US (240V) INVERTER
- (15) SOLAREGE S440 POWER OPTIMIZERS
- TOTAL ARRAY AREA = 316.81 SQ.FT
- TOTAL ROOF AREA = 1570 SQ.FT
- % ARRAY AREA IN ROOF = 20.17%

LEGEND

- PROPERTY LINE
- FENCE AND GATE LINE

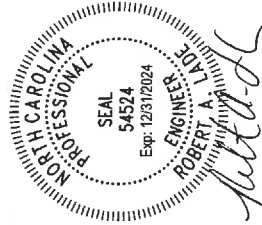
CONTRACTOR INFORMATION



PALMETTO SOLAR
 ADDRESS: 997 MORRISON DRIVE,
 SUITE 200, CHARLESTON, SC 29403
 PHONE NUMBER: (855) 339-1831

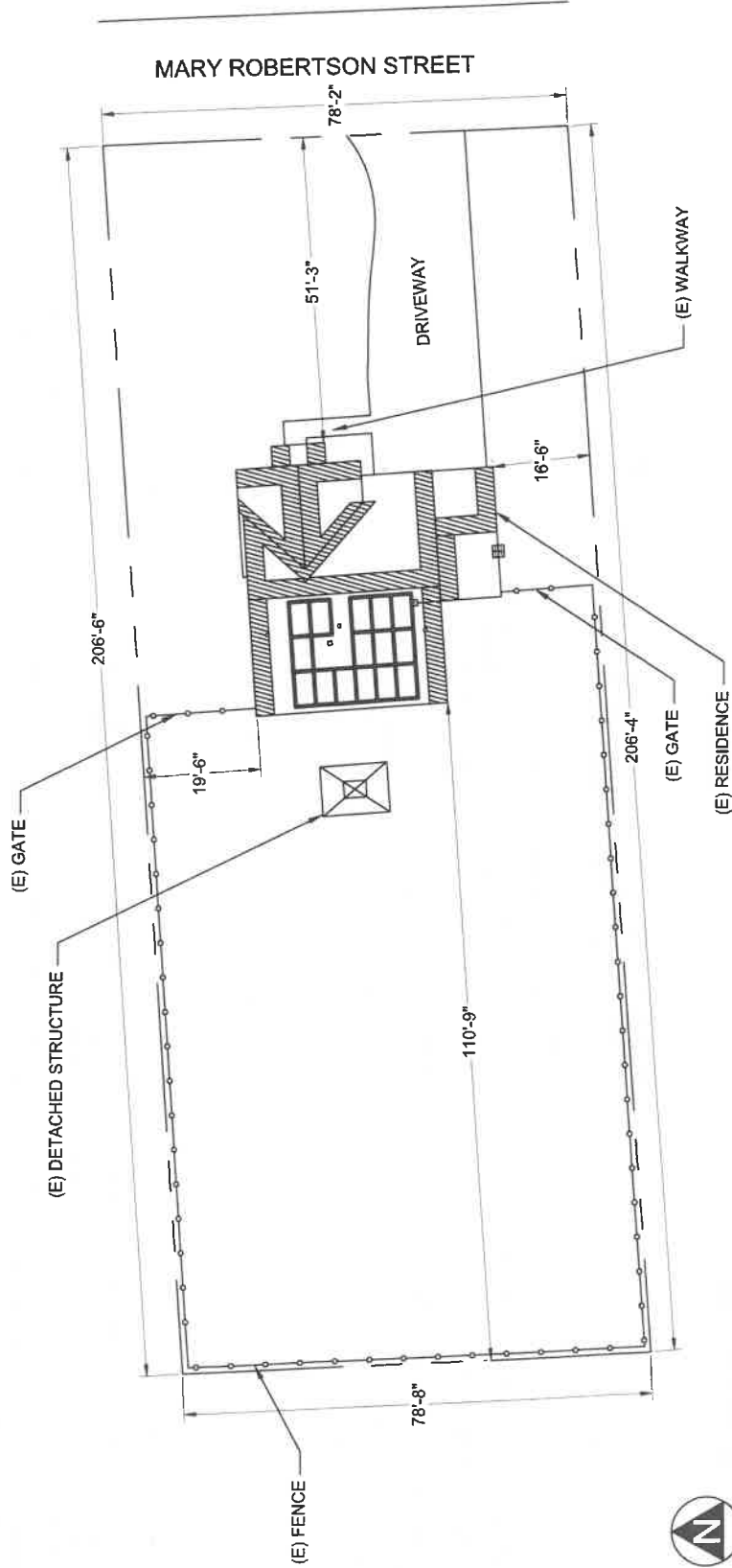
CUSTOMER INFORMATION

NAME: EDUARDO CARRANZA
 ADDRESS: 94 MARY ROBERTSON
 STREET, DUNN, NC 28334
 COORDINATES: 35.300304, -78.666147
 APN: 0596946308000
 6.075kW DC / 5.000kW AC ROOF
 MOUNT PV SYSTEM



Stamped 10/17/2023

PROJECT ID	AUR-87459
DATE	10/17/2023
CREATED BY	NC
SIGNATURE	
SITE PLAN-1	
PV-2	



SCALE: 1"=20'-0"

NEW PHOTOVOLTAIC SYSTEM 6.075kW DC / 5.000kW AC
94 MARY ROBERTSON STREET, DUNN, NC 28334

AHJ

NC-COUNTYOFHARNETT

UTILITY

DUKEENERGY(PROGRESSENERGYCAROLINASINC)

CODESANDSTANDARDS

ELECTRICCODE:NEC2017WITHNCAMENDMENTS
 FIRECODE:NCFC2018
 BUILDINGCODE:NCBC2018
 RESIDENTIALCODE:NCRC2018
 WIND SPEED: 120 MPH
 SNOWLOAD:20 PSF

SCOPE OF WORK

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 (15) HANWHA QCELLS Q.PEAK DUO BLK ML-G10+ 405 (405W) MODULES
 (1) SOLAREEDGE TECHNOLOGIES SE5000H-US (240V) INVERTER
 (16) SOLAREEDGE S440 POWER OPTIMIZERS
 STRUCTURAL NOTES :1. THESE PLANS ARE STAMPED FOR STRUCTURAL CODE COMPLIANCE OF THE ROOF FRAMING SUPPORTING THE PROPOSED PV INSTALLATION ONLY.2. THESE PLANS ARE NOT STAMPED FOR WATER LEAKAGE.3. PV MODULES, RACKING, AND ATTACHMENT COMPONENTS MUST FOLLOW MANUFACTURER GUIDELINES AND REQUIREMENTS.4. PLEASE SEE THE ACCOMPANYING STRUCTURAL CALCULATIONS REPORT FOR ADDITIONAL INFORMATION.5. PRIOR TO COMMENCEMENT OF WORK, THE SOLAR INSTALLER SHALL VERIFY THE ROOF FRAMING INFO BEFORE INSTALLATION AND NOTIFY THE E.O.R. IF THERE IS ANY INCONSISTENCY BETWEEN SITE VERIFICATION AND FOLLOWING: 2x4 RAFTERS @ 24" OC SPACING WITH IMAX UNSUPPORTED SPAN EQUAL OR LESS THAN 10 FT.

VICINITY MAP



GENERAL NOTES

1. MODULES ARE LISTED UNDER UL 1703 / UL 61730 AND CONFORM TO THE STANDARDS.
2. INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
3. DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM. ACTUAL SITE CONDITIONS MAY VARY.
4. WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT SHALL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
5. ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL / SERVICE EQUIPMENT.
6. ALL CONDUCTORS SHALL BE 600V, 90°C STANDARD COPPER UNLESS OTHERWISE NOTED.
7. WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
8. THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM UTILITY IS RECEIVED.
9. ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.

SHEET CATALOG

- | | |
|---------------|-------------------------|
| PV-1 | COVER SHEET |
| PV-2 | SITE PLAN-1 |
| PV-2.1 | SITE PLAN-2 |
| PV-3 | MOUNTING DETAILS |
| PV-3.1 | STRUCTURAL DETAILS |
| PV-4 | SINGLE LINE DIAGRAM |
| PV-4.1 | ELECTRICAL CALCULATIONS |
| PV-5 | PLACARDS |
| SS | SPEC SHEETS |

METER NUMBER: 348 794 779

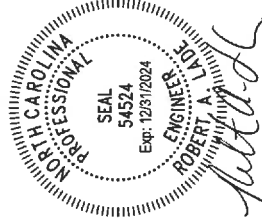
CONTRACTOR INFORMATION



PALMETTO SOLAR
 ADDRESS: 997 MORRISON DRIVE,
 SUITE 200, CHARLESTON, SC 29403
 PHONE NUMBER: (855) 339-1831

CUSTOMER INFORMATION

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APN: 0596946308000
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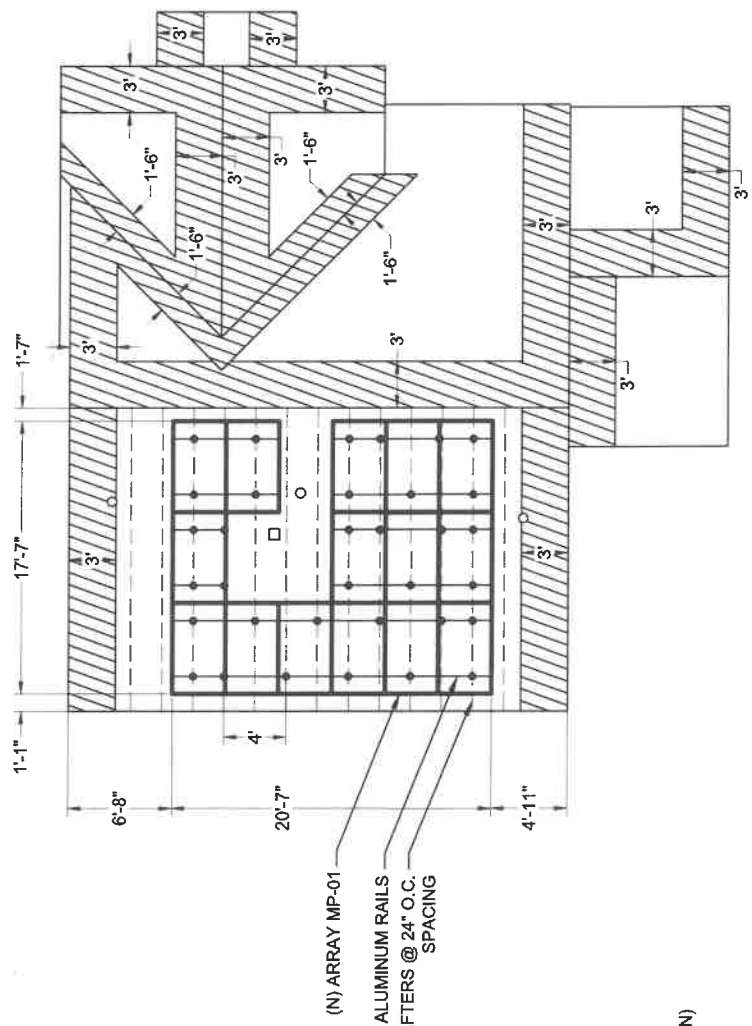
Stamped 10/17/2023

PROJECT ID	AUR-87459
DATE	10/17/2023
CREATED BY	NC
SIGNATURE	
COVER SHEET	PV-1

WIND SPEED: 120 MPH AND SNOW LOAD: 20 PSF

S.NO	AZIMUTH	PITCH	NO. OF MODULES	ARRAY AREA (SQ.FT)	ROOF TYPE	ATTACHMENT	ATTACHMENT QUANTITY	ROOF EXPOSURE	FRAME TYPE	FRAME SIZE	FRAME SPACING	MAX ATTACHMENT SPACING	MAX OVER HANG
MP-01	266°	18°	15	316.81	COMPOSITION SHINGLE	IRONRIDGE QUICKMOUNT L-MOUNT	34	ATTIC	RAFTERS	2" X 4"	24" O.C.	4'-0"	1'-6"

NOTE:
 1. PENETRATIONS ARE STAGGERED.
 2. TOTAL ATTACHMENTS: 34.



- LEGEND
- SETBACK
 - (N) ARRAY MP-01
 - (N) ALUMINUM RAILS
 - (E) 2" X 4" RAFTERS @ 24" O.C. SPACING
 - MODULE
 - RAIL
 - ATTACHMENT
 - ROOF FRAME
 - VENT (ROOF OBSTRUCTION)



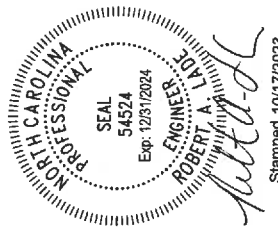
SCALE: 1/8" = 1'-0"

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Palmetto
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SIGNATURE	
MOUNTING DETAILS	PV-3

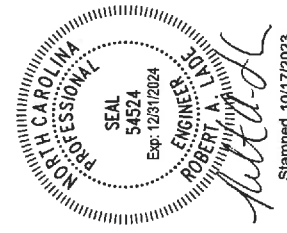
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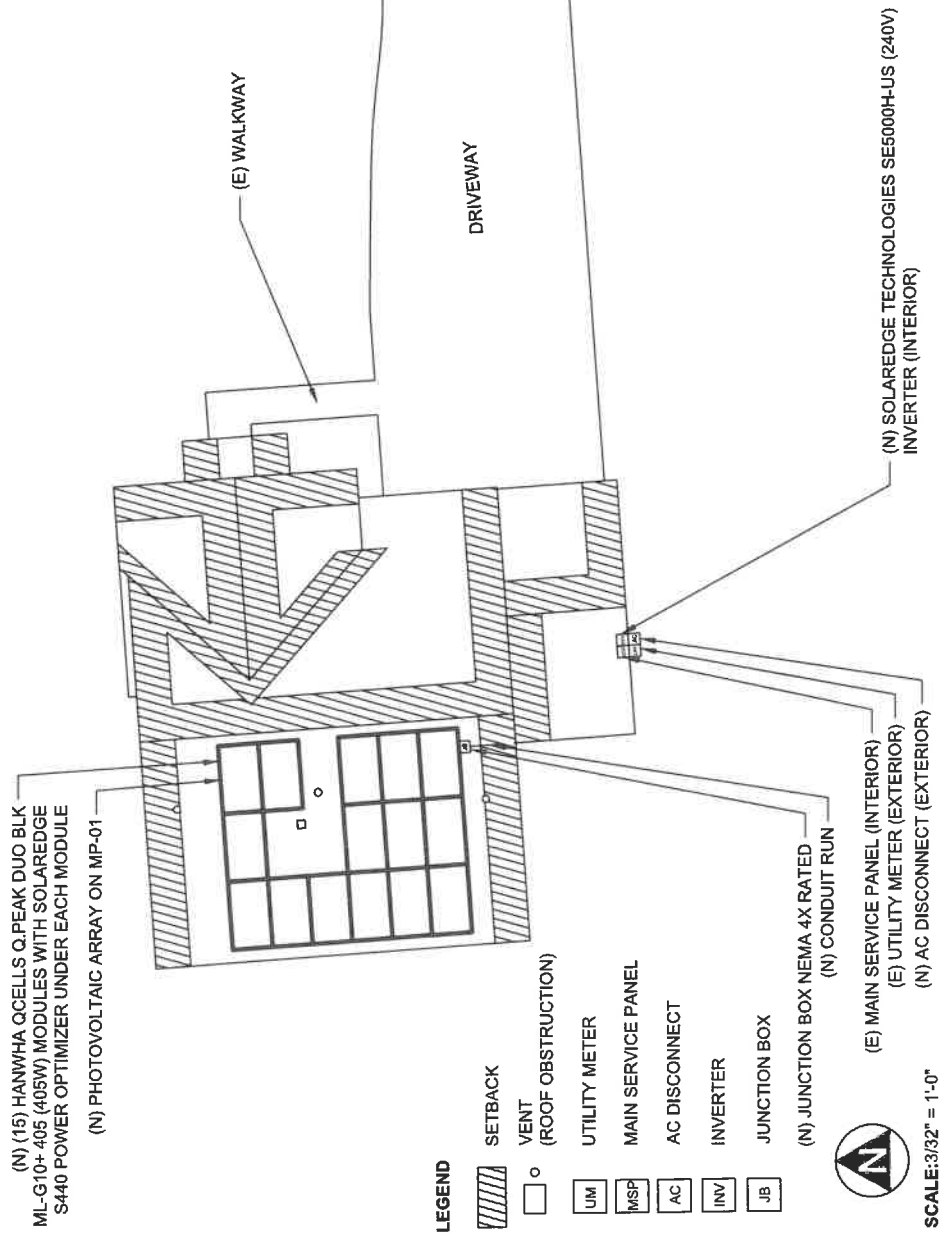


PROJECT ID	AUR-87459
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SIGNATURE	
SITE PLAN-2	PV-2.1

SCOPE OF WORK

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- (15) HANWHA QCELLS Q.PEAK DUO BLK ML-G10+ 405 (405W) MODULES
- (1) SOLAREEDGE TECHNOLOGIES SE5000H-US (240V) INVERTER
- (15) SOLAREEDGE S440 POWER OPTIMIZERS
- TOTAL ARRAY AREA = 316.81 SQ.FT
- TOTAL ROOF AREA = 1570 SQ.FT
- % ARRAY AREA IN ROOF = 20.17%

- (N) 15 HANWHA QCELLS Q.PEAK DUO BLK ML-G10+ 405 (405W) MODULES WITH SOLAREEDGE S440 POWER OPTIMIZER UNDER EACH MODULE
- (N) PHOTOVOLTAIC ARRAY ON MP-01



LEGEND

- SETBACK
- VENT (ROOF OBSTRUCTION)
- UTILITY METER
- MAIN SERVICE PANEL
- AC DISCONNECT
- INVERTER
- JUNCTION BOX
- (N) JUNCTION BOX NEMA 4X RATED
- (N) CONDUIT RUN
- (E) MAIN SERVICE PANEL (INTERIOR)
- (E) UTILITY METER (EXTERIOR)
- (N) AC DISCONNECT (EXTERIOR)



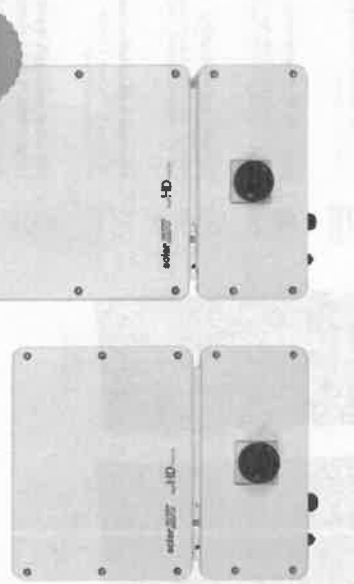
SCALE: 3/32" = 1'-0"

SolarEdge Home Wave Inverter

For North America

SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

12-25
YEAR
WARRANTY



Optimized installation with HD-Wave technology

- / Specifically designed to work with power optimizers
- / Record-breaking 99% weighted efficiency
- / Quick and easy inverter commissioning directly from a smartphone using SolarEdge SetApp
- / Fixed voltage inverter for longer strings
- / Integrated arc fault protection and rapid shutdown for NEC 2014-2023 per articles 690.11 and 690.12
- / UL1741 SA certified, for CPUC Rule 21 grid compliance
- / Small, lightweight, and easy to install both outdoors or indoors
- / Built-in module-level monitoring
- / Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com



/ SolarEdge Home Wave Inverter

For North America

SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

Output	5000W	5000W	5000W	7600W	10000W	10000W	10000W	10000W	10000W
Rated AC Power Output	5000	5000	5000	7600	10000	10000	10000	10000	10000
Maximum AC Power Output	5000	5000	5000	7600	10000	10000	10000	10000	10000
AC Output Voltage @240V	✓	✓	✓	✓	✓	✓	✓	✓	✓
AC Output Voltage @208V	✓	✓	✓	✓	✓	✓	✓	✓	✓
AC Frequency (Nominal)	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3	59.3 - 60.3
Maximum Continuous Output Current @240V	16	21	25	32	42	47.5	47.5	47.5	47.5
Maximum Continuous Output Current @208V	16	21	24	32	42	47.5	47.5	47.5	47.5
Power Factor	1	1	1	1	1	1	1	1	1
CEM (EMC)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UL9540 (Fire Resistant)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UL9540 (Fire Resistant) - 10000W	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UL9540 (Fire Resistant) - 10000W (208V)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Minimum DC Power @240V	500	500	500	500	500	500	500	500	500
Minimum DC Power @208V	500	500	500	500	500	500	500	500	500
Transformerless (No Lead)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maximum DC Input Voltage	480	480	480	480	480	480	480	480	480
Maximum Input Current @240V	10.5	13.5	16.5	20	27	27	27	27	27
Maximum Input Current @208V	9	11.5	14.5	18	24	24	24	24	24
Maximum Output Current	16	21	25	32	42	47.5	47.5	47.5	47.5
Overcurrent Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ground Fault Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maximum Inverter Efficiency	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2
CEC Weighted Efficiency	99	99	99	99	99	99	99	99	99
Nighttime Power Consumption	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%

1. For more detailed information, please contact your local distributor.
2. Inverter output is limited by the ambient temperature of the inverter.

CONTRACTOR INFORMATION



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6.075KW DC / 5.000KW AC ROOF
MOUNT PV SYSTEM

PROJECT ID AUR-87459

DATE 10/17/2023

CREATED BY INC

SIGNATURE

INVERTER SPEC SHEET

SS

Q.PEAK DUO BLK ML-G10+ SERIES

385-410 Wp | 132 Cells
20.9% Maximum Module Efficiency

MODEL Q.PEAK DUO BLK ML-G10+



Breaking the 20% efficiency barrier
QJANTUM DUO Z technology with zero gap cell layout boosts module efficiency up to 20.9%.



A reliable investment
Inclusive 25-year product warranty and 25-year linear performance warranty



Enduring high performance
Long-term yield security with Anti-LEID Technology, Anti-PID Technology, and Hot-Spot Protect



Extreme weather rating
High-tech aluminum alloy frame, certified for high snow (5400-Pa) and wind loads (4000-Pa).



Innovative all-weather technology
Optimal yields, whatever the weather, with excellent low-light and temperature behaviour.



The most thorough testing programme in the industry
Ocelis is the first solar module manufacturer to pass the most comprehensive quality programme in the industry. The new QJANTUM DUO Z is certified PV of the independent certification institution TÜV Rheinland.

* See the product data sheet for further information
** All test conditions according to IEC TS 61646-1:2016, module at 1500V, 80%

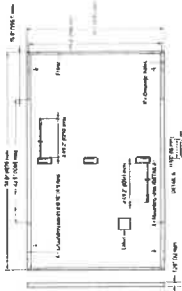


The ideal solution for:
Rooftop arrays on residential buildings

Q.PEAK DUO BLK ML-G10+ SERIES

Mechanical Specification

- Format: 74.0in x 41.1in x 1.28in (including frame) (1879mm x 1043mm x 32mm)
- Weight: 48.5lbs (22.0kg)
- Front Cover: 1.0mm thick, tempered, processed glass with anti-reflection technology
- Back Cover: Composite film
- Frame: Black anodized aluminum
- Cell: 61-22 monocrystalline QJANTUM solar half cells
- Junction box: 209.37mm x 76.27mm x 0.59in (0.7in x 3.0in x 1.5in) with typeless diodes
- Cable: 4mm² solar cable: (1) x 40.2in (1020mm), (2) x 49.2in (1250mm)
- Connector: Staubli MCA IP67



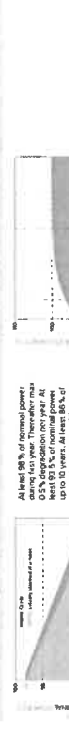
Electrical Characteristics

POWER CLASS		385	395	400	405	410
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC (POWER TOLERANCE ±5W, -0W)						
P _{max} at MPPT	[W]	385	395	400	405	410
Short Circuit Current I _{sc}	[A]	11.04	11.00	11.14	11.17	11.20
Open Circuit Voltage V _{oc}	[V]	45.59	45.27	45.30	45.34	45.37
Current at MPPT I _{mp}	[A]	10.59	10.65	10.77	10.83	10.89
Voltage at MPPT V _{mp}	[V]	36.36	36.62	36.98	37.13	37.64
Efficiency η	[%]	21.95	22.01	22.04	22.06	22.09

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS (NMOT)

P _{max} at MPPT	[W]	288.8	292.6	296.3	300.1	303.8
Short Circuit Current I _{sc}	[A]	8.90	8.92	8.95	8.97	9.00
Open Circuit Voltage V _{oc}	[V]	42.62	42.65	42.69	42.72	42.79
Current at MPPT I _{mp}	[A]	8.26	8.41	8.46	8.51	8.62
Voltage at MPPT V _{mp}	[V]	34.59	34.81	35.03	35.25	35.46
Module efficiency at P _{max}	[%]	15.5%	15.5%	15.5%	15.5%	15.5%

Ocelis PERFORMANCE WARRANTY



All data with measurement tolerance (10% maximum) unless otherwise stated. All data subject to the terms and conditions of the Ocelis sales agreement. All data subject to the terms and conditions of the Ocelis sales agreement.

Temperature Coefficient of P_{max} [W/K]: -0.34
Temperature Coefficient of V_{oc} [V/K]: -1.04
Temperature Coefficient of I_{sc} [A/K]: 0.27

Temperature Coefficient of P_{max} [W/°C]: -0.34
Temperature Coefficient of V_{oc} [V/°C]: -1.04
Temperature Coefficient of I_{sc} [A/°C]: 0.27

Temperature Coefficient of P_{max} [W/°F]: -0.61
Temperature Coefficient of V_{oc} [V/°F]: -1.87
Temperature Coefficient of I_{sc} [A/°F]: 0.48

Temperature Coefficient of P_{max} [W/°K]: -0.34
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Temperature Coefficient of I_{sc} [A/°K]: 0.27

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PHONE NUMBER: (855) 339-1831

CUSTOMER INFORMATION

NAME: EDUARDO CARRANZA
ADDRESS: 94 MARY ROBERTSON
STREET, DUNN, NC 28334
COORDINATES: 35.300304, -78.666147
APN: 0596946308000
6.075KW DC / 5.000KW AC ROOF
MOUNT PV SYSTEM

PROJECT ID	AUR-87459
DATE	10/17/2023
CREATED BY	NC
SIGNATURE	

MODULE SPEC SHEET
SS

WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.13

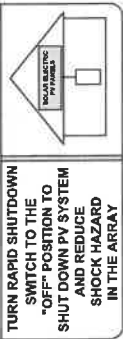
WARNING:PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION
CONDUIT, INVERTER DC DISCONNECT
PER CODE: NEC 690.31(G)(3)

PHOTOVOLTAIC AC DISCONNECT

LABEL LOCATION
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.13(B)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN



LABEL LOCATION
AC DISCONNECT, INVERTER DC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.56(C)(1)(e)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION
INVERTER DC DISCONNECT
PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH
RATED AC OPERATING CURRENT 21.00 AMPS AC
AC NOMINAL OPERATING VOLTAGE 240 VAC

LABEL LOCATION
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.54

WARNING
DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION
POINT OF INTERCONNECTION
PER CODE: NEC 705.12(B)(3)

INVERTER-1

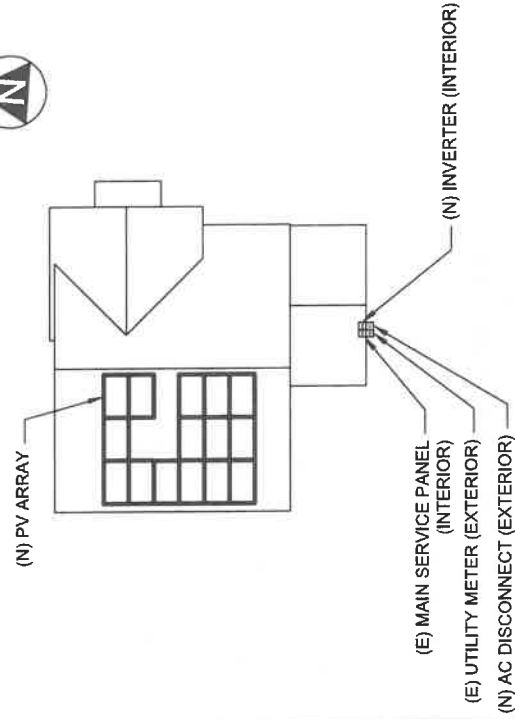
MAXIMUM SYSTEM VOLTAGE(Vac)	480	V
MAXIMUM CIRCUIT CURRENT(Isc)	15	A
MAXIMUM RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER (Isc)	15	A

MAXIMUM RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER (Isc) CONVERTER INSTALLED

LABEL LOCATION
INVERTER DC DISCONNECT
PER CODE: NEC 690.53

CAUTION: MULTIPLE SOURCES OF POWER

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



94 MARY ROBERTSON STREET, DUNN, NC 28334

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

NOTES

1. PLACARDS SHALL MEET THE REQUIREMENTS OF ARTICLES 690 AND 705, UNLESS OTHERWISE SPECIFIED PER LOCAL AHJ REQUIREMENTS.
2. PLACARDS SHALL MEET THE REQUIREMENTS OF SECTION 110.21(B) AS REQUIRED AND SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS.
3. PLACARDS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD.
4. PLACARDS SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED AND SHALL BE HANDWRITTEN.
5. PLACARDS SHALL NOT COVER EXISTING MANUFACTURER LABELS.
6. WARNING SIGNAGE TEXT SHALL BE MINIMUM 3/8" TALL.

CONTRACTOR INFORMATION



PALMETTO SOLAR
ADDRESS: 997 MORRISON DRIVE,
SUITE 200, CHARLESTON, SC 29403
PHONE NUMBER: (855) 338-1831

CUSTOMER INFORMATION

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COORDINATES: 35.300304, -78.666147
APN: 05996946308000
6.075kW DC / 5.000kW AC ROOF MOUNT PV SYSTEM

PROJECT ID AUR-87459

DATE 10/17/2023

CREATED BY NC

SIGNATURE

PLACARDS
PV-5

SYSTEM CHARACTERISTICS

DC SYSTEM SIZE	6075W
INVERTER STRING VOLTAGE:Vmp	380V
MAX INVERTER SYSTEM VOLTAGE:Voc	480V
MAX SHORT CIRCUIT CURRENT	15A
OPERATING CURRENT	15.98A

OCPD CALCULATION

ALLOWABLE BACKFEED:
 MAIN PANEL RATING = 200A
 MAIN BREAKER RATING = 200A
 LINE SIDE TAP 100% OF ALLOWABLE BACKFEED = 200A

INVERTER OVERCURRENT PROTECTION:
 INVERTER O/P CURRENT * CONTINUOUS LOAD (1.25)
 = 21 * 1.25
 = 26.25A
 PV OVERCURRENT PROTECTION = 30A ≥ 26.25A

PV BACKFEED ≤ 30A PV OVERCURRENT PROTECTION

ELECTRICAL NOTES

- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.10(D).
- CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.10(C).
- MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
- ALL CONDUCTORS SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED.
- BREAKER/FUSE SIZES PER NEC 240.
- AC EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC 250.122.
- AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 310.15(B)(2)(a).
- MAX. SYSTEM VOLTAGE COEFFICIENT IS FROM MODULE MANUFACTURER OR NEC 690.7
- WHEN MANUFACTURER COEFFICIENT UNAVAILABLE.
- CONDUCTORS ARE SIZED PER NEC TABLE 310.15(B)(16).
- CONDUIT SHALL BE INSTALLED MINIMUM 7/8" FROM ROOF SURFACE.

DC WIRE SIZING CALCULATIONS BASED ON FOLLOWING EQUATIONS

REQUIRED CONDUCTOR AMPACITY:
 $I_{sc}(A) * \# \text{ OF PARALLEL STRINGS} = \text{MAX CURRENT PER } 690.8(A)(5) * 125\%$
 = MAX CURRENT PER 690.8(B)(1)

CORRECTED AMPACITY CALCULATIONS:

DERATED CONDUCTOR AMPACITY PER 690.8(B)(2) = AMPACITY * TEMPERATURE DERATE FACTOR * CONDUIT FILL DERATE
 DERATED CONDUCTOR AMPACITY CHECK : MAX CURRENT PER 690.8(B)(1) < DERATED CONDUCTOR AMPACITY

AC WIRE SIZING CALCULATIONS BASED ON FOLLOWING EQUATIONS

REQUIRED CONDUCTOR AMPACITY:
 INVERTER OUTPUT CURRENT * # OF INVERTERS = MAX CURRENT PER 690.8(A)(3) * 125%
 = MAX CURRENT PER 690.8(B)(1)

CORRECTED AMPACITY CALCULATIONS:
 DERATED CONDUCTOR AMPACITY PER 690.8(B)(2) = AMPACITY * TEMPERATURE DERATE FACTOR * CONDUIT FILL DERATE
 DERATED CONDUCTOR AMPACITY CHECK : MAX CURRENT PER 690.8(B)(1) < DERATED CONDUCTOR AMPACITY

CONTRACTOR INFORMATION



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 SUITE 200, CHARLESTON, SC 29403
 PHONE NUMBER: (855) 339-1831

CUSTOMER INFORMATION

NAME: EDUARDO CARRANZA
 ADDRESS: 94 MARY ROBERTSON
 STREET, DUNN, NC 28334

COORDINATES: 35.300304, -78.666147
 APN: 0596946308000

6.075kW DC / 5.000kW AC ROOF
 MOUNT PV SYSTEM

WIRE SIZE CALCULATIONS

AMBIENT TEMPERATURE @ 36°C

TAG 1: (DC)
 REQUIRED CONDUCTOR AMPACITY (15 * 1.25)
 CORRECTED AMPACITY CALCULATION (0.91 * 1 * 40)
 18.75A < 36.40A (#10 AWG PV WIRE)

TAG 2: (DC)
 REQUIRED CONDUCTOR AMPACITY (15 * 1.25)
 CORRECTED AMPACITY CALCULATION (0.91 * 1 * 40)
 18.75A < 36.40A (3/4" EMT, #10 AWG THHN/THWN-2, Cu)

TAG 3: (AC)
 REQUIRED CONDUCTOR AMPACITY (21 * 1 * 1.25)
 CORRECTED AMPACITY CALCULATION (0.88 * 1 * 35)
 26.25A < 30.80A (3/4" EMT, #10 AWG THHN/THWN-2, Cu)

TAG 4: (AC)
 REQUIRED CONDUCTOR AMPACITY (21 * 1 * 1.25)
 CORRECTED AMPACITY CALCULATION (0.88 * 1 * 65)
 26.25A < 57.20A (3/4" EMT, #6 AWG THHN/THWN-2, Cu)

PROJECT ID AUR-87459

DATE 10/17/2023

CREATED BY NC

SIGNATURE

ELECTRICAL CALCULATIONS

PV-4.1

MODULE SPECIFICATIONS

MODEL	HANWHA QCELLS Q.PEAK DUO BLK ML-G10+ 405 (405W)
MODULE POWER @ STC	405W
OPEN CIRCUIT VOLTAGE:Voc	45.34V
MAX POWER VOLTAGE:Vmp	37.39V
SHORT CIRCUIT CURRENT:isc	11.17A
MAX POWER CURRENT:Imp	10.83A
TEMPERATURE COEFFICIENT:Voc	-0.27%/K
MODULE DIMENSIONS: L x W x H	74" x 41.1" x 1.26"
NUMBER OF MODULES	15

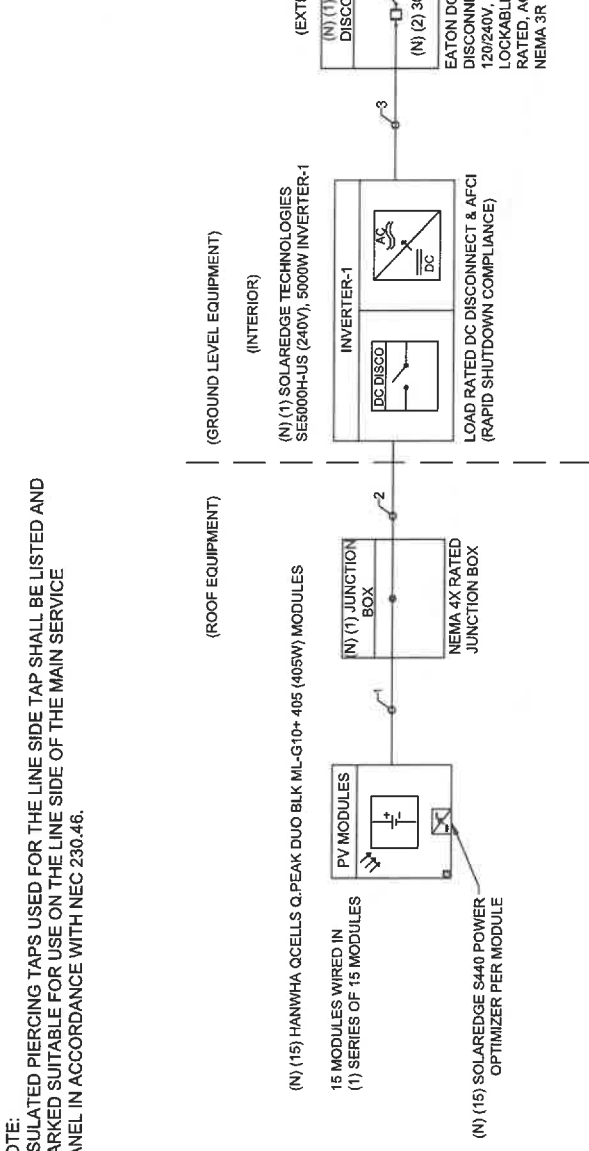
INVERTER-1 SPECIFICATIONS

MODEL	SOLAREEDGE TECHNOLOGIES SE5000H-US (240V)
POWER RATING	5000W
MAX OUTPUT CURRENT	21A
CEC WEIGHTED EFFICIENCY	99%
MAX INPUT CURRENT	13.5A
MAX DC VOLTAGE	480V
NUMBER OF INVERTER	1

OPTIMIZER CHARACTERISTICS

MODEL	SOLAREEDGE S440 POWER OPTIMIZER
MIN INPUT VOLTAGE	8VDC
MAX INPUT VOLTAGE	60VDC
MAX INPUT CURRENT	14.5ADC
MAX OUTPUT CURRENT	15ADC
NUMBER OF OPTIMIZERS	15

NOTE:
INSULATED PIERCING TAPS USED FOR THE LINE SIDE TAP SHALL BE LISTED AND
MARKED SUITABLE FOR USE ON THE LINE SIDE OF THE MAIN SERVICE
PANEL IN ACCORDANCE WITH NEC 230.46.



CONDUCTOR SCHEDULE

TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(2) 10 AWG PV WIRE	NONE	(1) 6 AWG BARE COPPER, EGC
2	3/4" EMT	(2) 10 AWG THHN/THWN-2, Cu	NONE	(1) 10 AWG THHN/THWN-2, EGC
3	3/4" EMT	(2) 10 AWG THHN/THWN-2, Cu	(1) 10 AWG THHN/THWN-2, Cu	(1) 10 AWG THHN/THWN-2, EGC
4	3/4" EMT	(2) 6 AWG THHN/THWN-2, Cu	(1) 6 AWG THHN/THWN-2, Cu	(1) 10 AWG THHN/THWN-2, EGC

CONTRACTOR INFORMATION



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APN: 0596946308000
6.075KW DC / 5.000KW AC ROOF
MOUNT PV SYSTEM

PROJECT ID	AJR-87459
DATE	10/17/2023
CREATED BY	NC
SIGNATURE	
SINGLE LINE DIAGRAM	PV-4

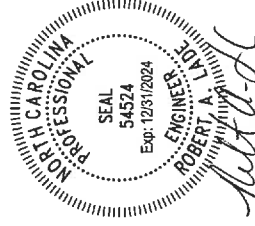
CONTRACTOR INFORMATION



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 SUITE 200, CHARLESTON, SC 29403
 PHONE NUMBER: (855) 339-1831

CUSTOMER INFORMATION

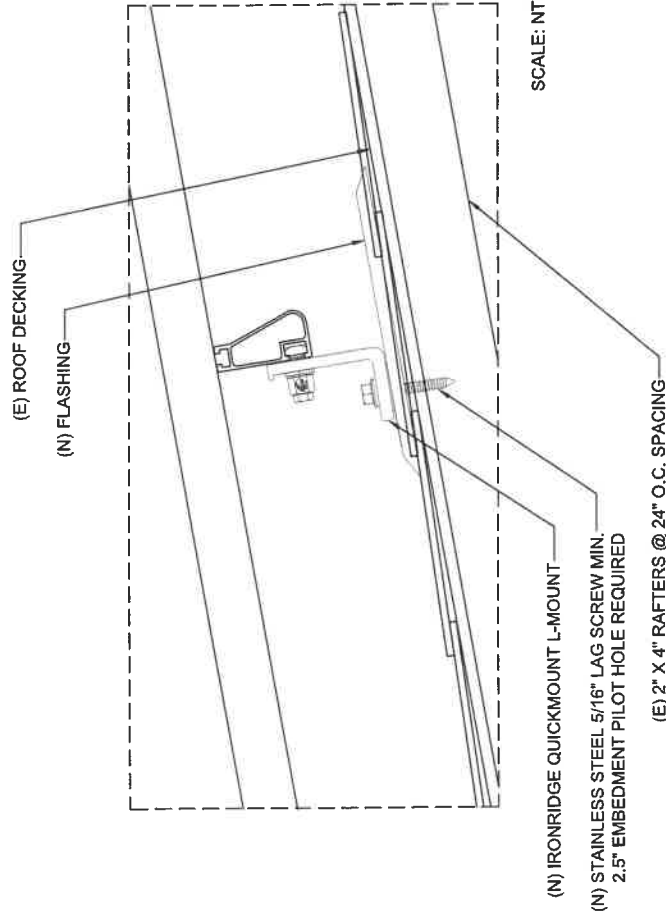
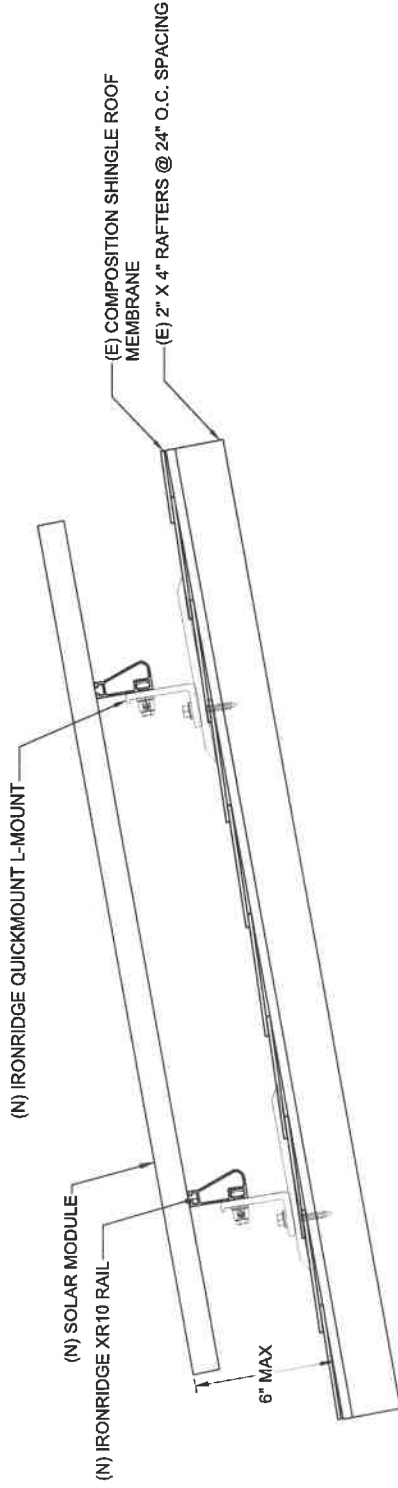
NAME: EDUARDO CARRANZA
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 COORDINATES: 35.300304, -78.686147
 APN: 0596946308000
 6.075KW DC / 5.000KW AC ROOF
 MOUNT PV SYSTEM



Robert A. Lape
 Stamped 10/17/2023

PROJECT ID	AUR-87459
DATE	10/17/2023
CREATED BY	NC
SIGNATURE	

**STRUCTURAL DETAILS
 PV-3.1**



DEAD LOAD CALCULATIONS			
BOM	QUANTITY	LBS/UNIT	TOTAL WEIGHT (LBS)
MODULES	15	48.5	727.5
MID-CLAMP	20	0.05	1
END-CLAMP	20	0.05	1
RAIL LENGTH	107	0.43	46.01
SPLICE BAR	2	0.36	0.72
IRONRIDGE QUICKMOUNT L-MOUNT	34	0.7565	25.72
OPTIMIZER	15	1.58	23.7
TOTAL WEIGHT OF THE SYSTEM (LBS)			825.65
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			316.81
WEIGHT PER SQ. FT. (LBS)			2.6
WEIGHT PER PENETRATION (LBS)			24.28

CONTRACTOR INFORMATION



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 MOUNT PV SYSTEM

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 SIGNATURE

UL CERTIFICATION
 SS

System Diagram

UL Certification

The IronRidge® Flush Mount®, Tilt Mount®, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

9 Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails*	✓	✓	XR100 & XR1000
UFO/Stopper	✓	✓	✓
BOSS® Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Compatible with most MLPE manufacturers. Refer to system installation manual.		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules. Refer to installation manuals for a detailed list.		

IRONRIDGE

UFO® Family of Components

Simplified Grounding for Every Application

The UFO® family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge® XR Rails®. All system types that feature the UFO® family—Flush Mount®, Tilt Mount® and Ground Mount®—are fully listed to the **UL-2703** standard.

UFO® hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

Only for installation and use with IronRidge products in accord with written instructions. See IronRidge.com/UFO

Stopper Sleeve
The Stopper Sleeve snaps onto the UFO®, converting it into a bonded end clamp.

BOSS® Splice
Bonded Structural Splice connects rails with built-in bonding teeth. No tools or hardware needed.

Grounding Lug
A single Grounding Lug connects the rail to a row of PV modules and the grounding conductor.

Bonded Attachments
The bonding bolt attaches the rail to the module. The rail is installed with the same socket as the rest of the system.

Universal Fastening Object (UFO®)
The UFO® securely bonds solar modules to XR Rails®. It comes assembled and lubricated, and can fit a wide range of module heights.

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RAIL SPEC SHEET
SS

Pitch Based

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, Cable Roof Flush Mount, Roof Zones 1 & 2a, 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				
	4'	5'-4"	6'	10'	12'
Snow (P-SF)					
Wind (W-MPH)					
90					
120					
None					
140					
150					
20					
90					
120					
140					
160					
30					
90					
160					
40					
160					
80					
160					
120					

* Values are based on the following criteria: ASCE 7-16, Cable Roof Flush Mount, Roof Zones 1 & 2a, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Pitch Based

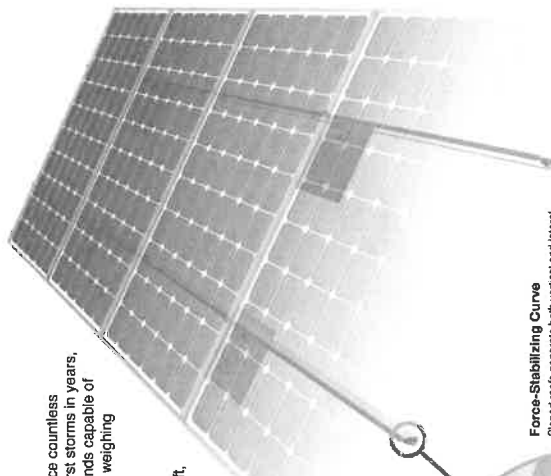
XR Rail® Family



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, resulting in a stronger rail that can better secure your system during extreme weather and a longer system lifetime.



Compatible with Flat & Pitched Roofs

XR Rails® are compatible with Pitch-roof and other pitched roof attachments.



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.



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CONTRACTOR INFORMATION



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MOUNT SPEC SHEET
SS

THIS EDGE TOWARDS ROOF RIDGE

ITEM NO	DESCRIPTION
1	LAG SCREW, HEX HEAD 5/16"x4", 1/2" HEAD
2	WASHER, SEALING, EPDM BONDED SS
3	L-FOOT, 2"x3.3"
4	FLAMING, ROUNDED CORNERS
5	STRUCTURAL SCREW, T-30 HEX WASHER HEAD, 5/16"x4.5"

REV	A	DO NOT SCALE DRAWING	DATE	01
PROJECT		03410a	L-Mount MAIN Rev. 1.12	

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MOUNT SPEC SHEET
 SS

Tech Brief

L-Mount® Installation Instructions

Installation Tools Required: tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" or 1/8" bit, drill or impact gun with 1/2" socket.

1 Locate, choose, and mark centers of rafters to be mounted. Select the courses of shingles where mounts will be placed.

2 Carefully lift composition roof shingle with roofing bar, just above placement of mount. Remove nails as required and backfill flutes with approved sealant. See "Proper Flashing Placement" on next page.

3 Insert flashing between 1st and 2nd course. Slide up so top edge of flashing is at least 4" higher than the butt-edge of the 3rd course and 4" lower than the butt-edge of 1st course. Mark center for drilling.

4 If attaching with lag bolt, use a 5/8" bit (tag). Use a 1/2" drill bit for the hole. Drill into the rafters and drill pilot hole into roof and rafter. Label center to drill square to the roof. Do not use mount as a drill guide. Drill a 2" deep hole into rafter.

5 Clean off any sawdust, and fill hole with sealant compatible with roofing materials.

6 Place L-foot onto elevated flute and rotate L-foot to desired orientation.

7 Press lag bolt or structural screw with sealing washer. Using a 3/4 inch socket on an impact gun, drive prepared lag bolt through L-foot until L-foot can no longer easily rotate. DO NOT over-torque. NOTE: Structural screw can be driven with 1-30 hex head bit.

8 All roofing manufacturers' written instructions must also be followed by anyone modifying a roof system. Consult the roof manufacturer's specs and instructions prior to working on the roof.

Tech Brief

QuickMount™ L-Mount®



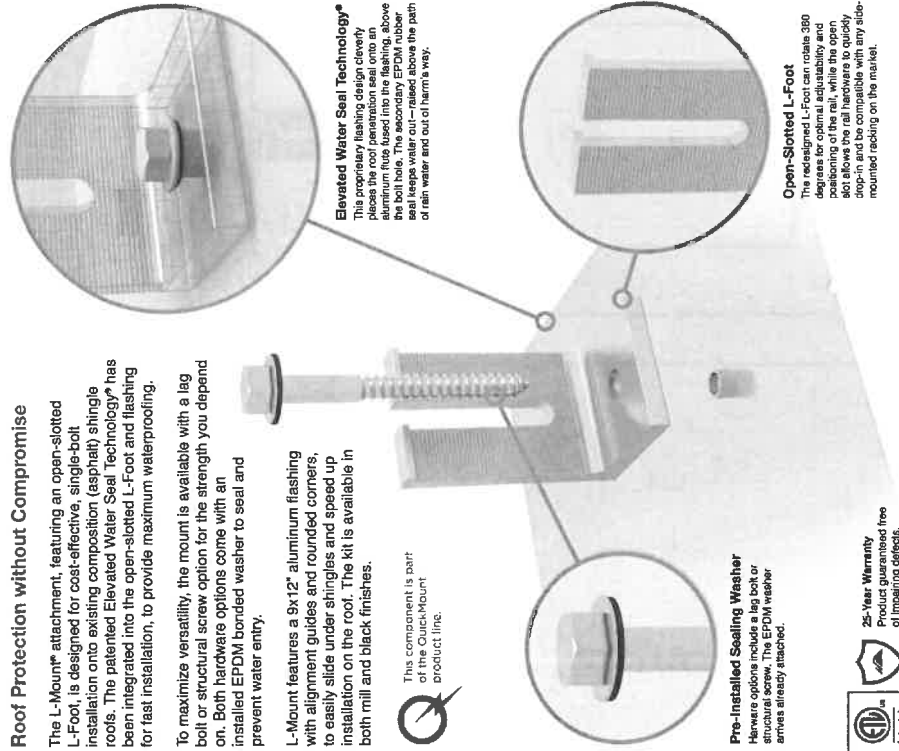
Roof Protection without Compromise

The L-Mount® attachment, featuring an open-slotted L-Foot, is designed for cost-effective, single-bolt installation onto existing composition (asphalt) shingle roofs. The patented Elevated Water Seal Technology® has been integrated into the open-slotted L-Foot and flashing for fast installation, to provide maximum waterproofing.

To maximize versatility, the mount is available with a lag bolt or structural screw option for the strength you depend on. Both hardware options come with an installed EPDM bonded washer to seal and prevent water entry.

L-Mount features a 8x12" aluminum flashing with alignment guides and rounded corners, to easily slide under shingles and speed up installation on the roof. The kit is available in both mill and black finishes.

This component is part of the QuickMount product line.



Elevated Water Seal Technology®
 This proprietary flashing design cleverly places the roof penetration seal onto an elevated surface, away from the hole. The secondary EPDM rubber seal keeps water out—raised above the path of rain water and out of harm's way.

Open-Slotted L-Foot

The redesigned L-Foot can rotate 360 degrees for optimal alignment and installation. The open-slotted design also allows the rail hardware to quickly drop-in and be compatible with any slide-mounted racking on the market.

Pre-Installed Sealing Washer
 Hardware options include a lag bolt or structural screw. The EPDM washer arrives already attached.

25-Year Warranty
 Protection against 25 years of impairing defects.



/ SolarEdge Home Wave Inverter

For North America

SE3800H-US / SE5000H-US / SE6000H-US /

SE7600H-US / SE10000H-US / SE11400H-US

Application Inverters with part number	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
Application Inverters with part number	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US

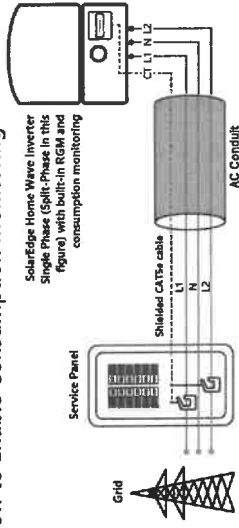
ADDITIONAL FEATURES	Optional
Supported Communication Interfaces	RS485, Ethernet, ZigBee, optional wireless, SolarEdge Home Network (optional), Wi-Fi (optional), Cellular (optional)
Revenue Grade Metering	Optional
ANSI C12.20	Optional
Consumption Metering	Optional
Inverter Commissioning	With the SolarEdge mobile application using Built-in Wi-Fi Access Point for Local Commissioning
Rapid Shutdown - NEC 2014 -602.2 per	Automatic Rapid Shutdown upon AC Grid Disconnect

STANDARD COMPLIANCE	
Safety	UL1741, UL1741 SA, UL1741 SB, UL1699B, CSA C22.2, Canadian MEG according to T1, M-D7
Grid Connection Standards	IEEE1547-2008, Rule-21, Rule 14 (HR), CSA C22.2 No. 9
Emissions	FCC Part 15, Class B

INSTALLATION SPECIFICATIONS	
DC Input Conductor Size / # of Strands / AVG Range	T: Minimum / 14 - 6 AWG T: Maximum / 1 - 2 Strips / 14 - 6 AWG
Dimensions with Safety Switch (H x W x D)	17.2 x 14.6 x 6.81 / 4.50 x 3.70 x 1.74
Weight with Safety Switch	22.7 / 10 - 25 / 11.4 - 26.2 / 11.9
Cooling	Natural Convection
Operating Temperature Range	-40 to +150 / -40 to +60*
Protection Rating	NEMA 4X (Inverter with Safety Switch)

* In the case of operation in the T1 or T2 mode, the inverter will operate at a maximum temperature of 150°C. For more information, please refer to the SolarEdge Home Wave Inverter User Manual. For more information, please refer to the SolarEdge Home Wave Inverter User Manual. For more information, please refer to the SolarEdge Home Wave Inverter User Manual. For more information, please refer to the SolarEdge Home Wave Inverter User Manual. For more information, please refer to the SolarEdge Home Wave Inverter User Manual.

How to Enable Consumption Monitoring



By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills.

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CONTRACTOR INFORMATION

Palmetto
PALMETTO SOLAR
ADDRESS: 997 MORRISON DRIVE,
SUITE 200, CHARLESTON, SC 29403
PHONE NUMBER: (855) 339-1831

CUSTOMER INFORMATION

NAME: EDUARDO CARRANZA
ADDRESS: 94 MARY ROBERTSON
STREET, DUNN, NC 28334
COORDINATES: 35.300304, -78.666147
APN: 0596946308000
6.075kW DC / 5.000kW AC ROOF
MOUNT PV SYSTEM

PROJECT ID	AUR-87459
DATE	10/17/2023
CREATED BY	NC
SIGNATURE	
INVERTER SPEC SHEET	SS