

PHOTOVOLTAIC ROOF MOUNT SYSTEM

26 MODULES-ROOF MOUNTED - 10.400 kW DC, 7.540 kW AC

231 SE GOLF CLUB AVE, LAKE CITY, FL 32025



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

PROJECT DATA

PROJECT ADDRESS: 231 SE GOLF CLUB AVE, LAKE CITY, FL 32025

OWNER: DEBORAH L SHORT

CONTRACTOR: LUNEX POWER,
4721 N GRADY AVE
TAMPA FL 33614
PHONE: 813-540-8807

DESIGNER: ESR

SCOPE: 10.400 KW DC ROOF MOUNT SOLAR PV SYSTEM WITH 26 HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W PV MODULES WITH 26 ENPHASE: IQ8PLUS-72-2-US (240V) MICROINVERTERS (COMPLIANT WITH RAPID SHUTDOWN)

AUTHORITIES HAVING JURISDICTION:
BUILDING: COLUMBIA COUNTY
ZONING: COLUMBIA COUNTY
UTILITY: FPL

SHEET INDEX

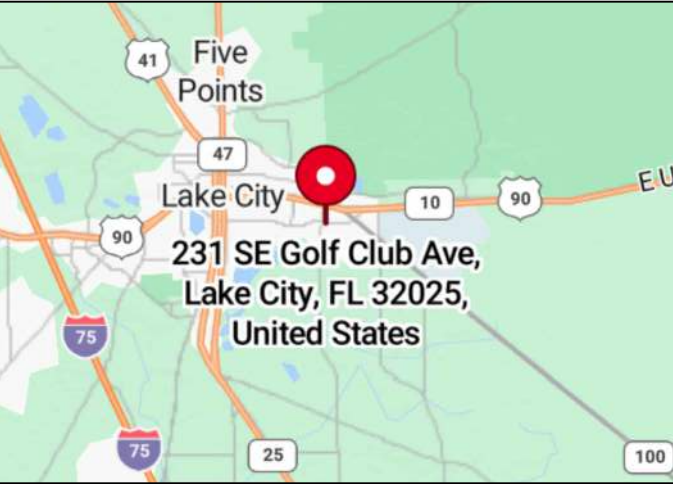
PV-1 COVER SHEET
PV-2 SITE PLAN
PV-3 ROOF PLAN
PV-4 ELECTRICAL PLAN
PV-5 STRUCTURAL PLAN
PV-6 ELECTRICAL PLAN
PV-7 WIRING DIAGRAM
PV-8 LABELS
PV-9 PLACARDS
PV-10 MICROCIRCUITRY
PV-11+ EQUIPMENT SPECIFICATIONS



GENERAL NOTES

- ALL COMPONENTS ARE UL LISTED AND CEC CERTIFIED, WHERE WARRANTED.
- THE SOLAR PV SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH ARTICLE 690 OF THE NEC 2020.
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
- ALL CONDUCTORS OF A CIRCUIT, INCLUDING THE EGC, MUST BE INSTALLED IN THE SAME RACEWAY, OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THEY LEAVE THE VICINITY OF THE PV ARRAY.
- WHERE METALLIC CONDUIT CONTAINING DC CONDUCTORS IS USED INSIDE THE BUILDING, IT SHALL BE IDENTIFIED AS "CAUTION: SOLAR CIRCUIT" EVERY 10FT.
- HEIGHT OF THE AC DISCONNECT SHALL NOT EXCEED 6'-7" PER NEC CODE 240.24.
- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 2020 690.47 AND 250.50 THROUGH 60 AND 250-166 SHALL BE PROVIDED. PER NEC GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE OR INADEQUATE A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT. GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO LARGER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
- PHOTOVOLTAIC MODULES ARE TO BE CONSIDERED NON-COMBUSTIBLE.
- PHOTOVOLTAIC INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF THE ROOF SURFACE.
- ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH THE LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
- INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE UL 1741 LISTED.
- THE INSTALLATION OF EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS [NEC 690.4(C)]
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED (OR BETTER), INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
- ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
- SYSTEM GROUNDING SHALL BE IN ACCORDANCE WITH NEC 690.41.
- PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION IN ACCORDANCE WITH NEC 690.12
- DISCONNECTING MEANS SHALL BE LOCATED IN A VISIBLE, READILY ACCESSIBLE LOCATION WITHIN THE PV SYSTEM EQUIPMENT OR A MAXIMUM OF 10 FEET AWAY FROM THE SYSTEM [NEC 690.13(A)]
- ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC 690.31
- WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) AND 110.26(A)(3).
- ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED & IDENTIFIED IN ACCORDANCE WITH UL1703
- ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

VICINITY MAP



HOUSE PHOTO



CODE REFERENCES

PROJECT TO COMPLY WITH THE FOLLOWING:

FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA PLUMBING CODE, 8TH EDITION 2023 (FPC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 EDITION (FBC)
FLORIDA MECHANICAL CODE, 8TH EDITION 2023 (FMC)
2020 NATIONAL ELECTRICAL CODE
FLORIDA FIRE PREVENTION CODE, 8TH EDITION 2023 (FFPC)

Andrew D.
Leone

Digitally signed by
Andrew D. Leone
Date: 2024.05.06
23:45:57 -04'00'

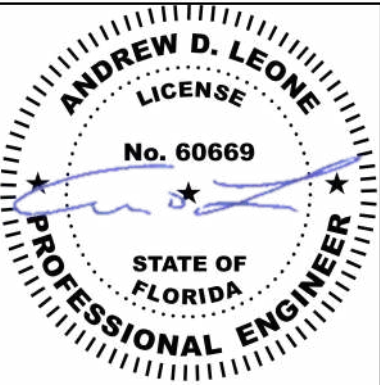
PROFESSIONAL ENGINEER SEAL

This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

REVISIONS

DESCRIPTION	DATE	REV



05/06/2024
DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY

ESR

SHEET NAME

COVER SHEET

SHEET SIZE

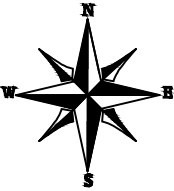
ANSI B
11" X 17"

SHEET NUMBER

PV-1

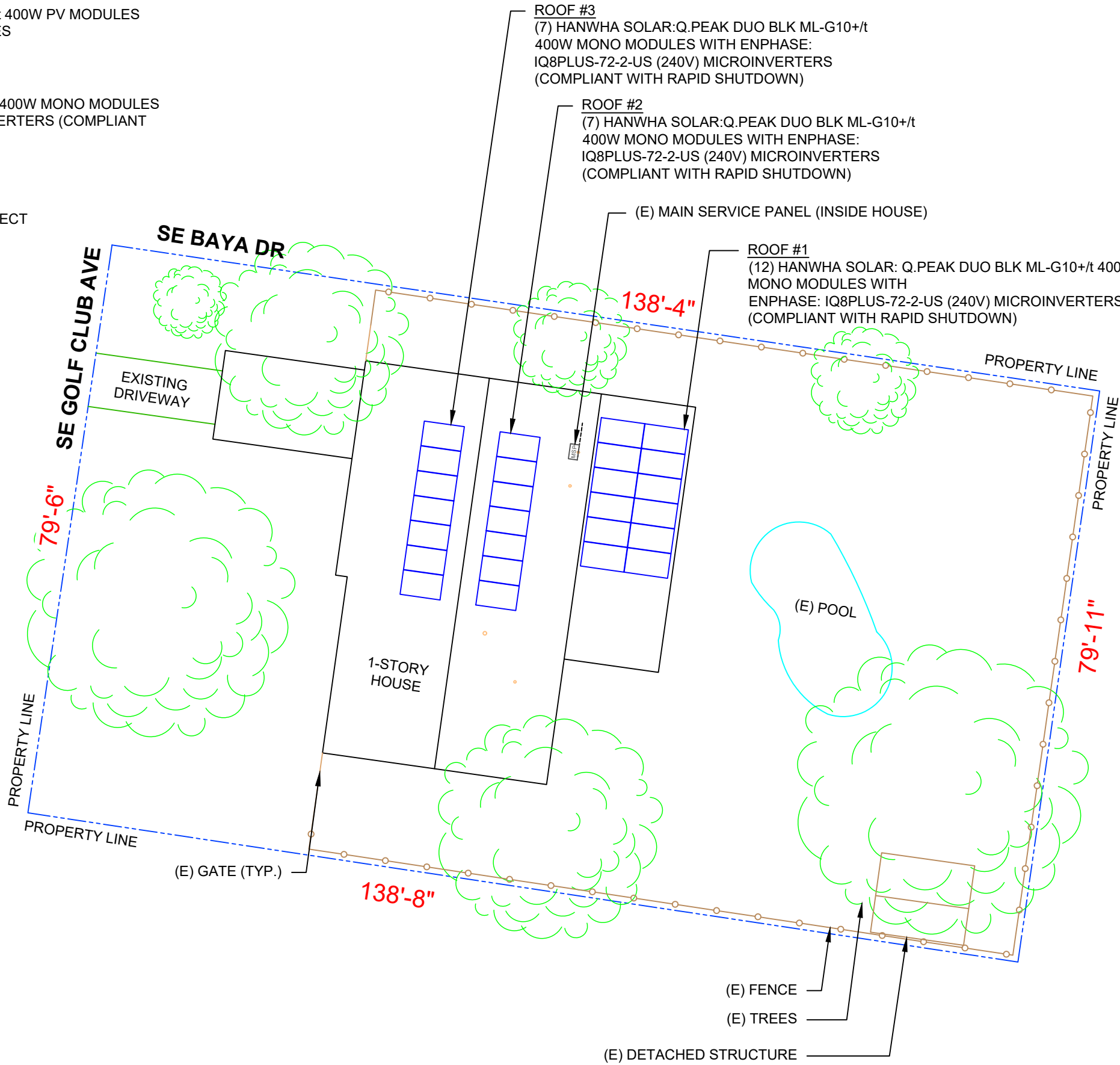
PROJECT DESCRIPTION:

26 X HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W PV MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
DC SYSTEM SIZE: 26 x 400 = 10.400KW DC
AC SYSTEM SIZE: 26 x 290 = 7.540KW AC
EQUIPMENT SUMMARY
26 HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W MONO MODULES
26 ENPHASE: IQ8PLUS-72-2-US (240V) MICROINVERTERS (COMPLIANT WITH RAPID SHUTDOWN)
ROOF ARRAY AREA #1:- 253.44 SQ FT.
ROOF ARRAY AREA #2:- 147.84 SQ FT.
ROOF ARRAY AREA #3:- 147.84 SQ FT.
NOTE: VISIBLE, LOCKABLE, LABELED AC DISCONNECT LOCATED WITHIN 10' OF UTILITY METER



This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

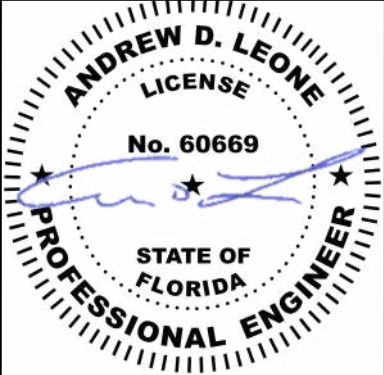
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.





LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



05/06/2024
DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

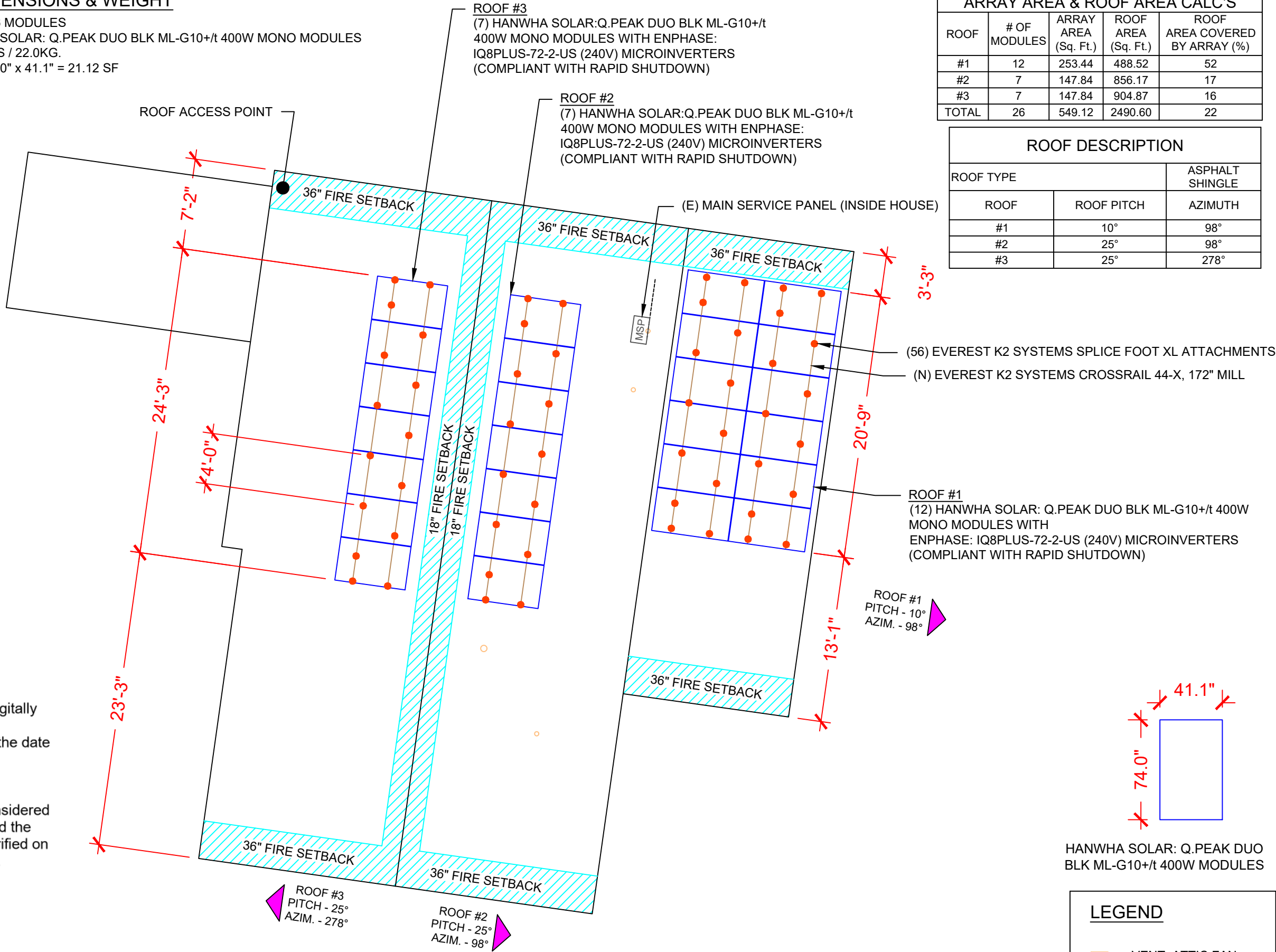
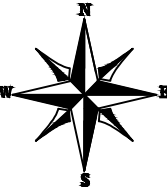
SHEET NAME
SITE PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 26 MODULES
MODULE TYPE = HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W MONO MODULES
MODULE WEIGHT = 48.5 LBS / 22.0KG.
MODULE DIMENSIONS = 74.0" x 41.1" = 21.12 SF



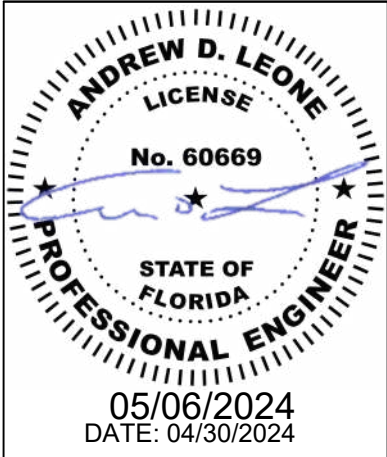
ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	12	253.44	488.52	52
#2	7	147.84	856.17	17
#3	7	147.84	904.87	16
TOTAL	26	549.12	2490.60	22

ROOF DESCRIPTION		
ROOF TYPE		ASPHALT SHINGLE
ROOF	ROOF PITCH	AZIMUTH
#1	10°	98°
#2	25°	98°
#3	25°	278°



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
ROOF PLAN &
MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

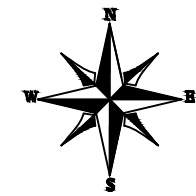
1 ROOF PLAN & MODULES

PV-3

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

LEGEND	
	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
	- ROOF ATTACHMENT
	- MAIN SERVICE PANEL

CIRCUIT LEGENDS	
---	CIRCUIT #1
---	CIRCUIT #2

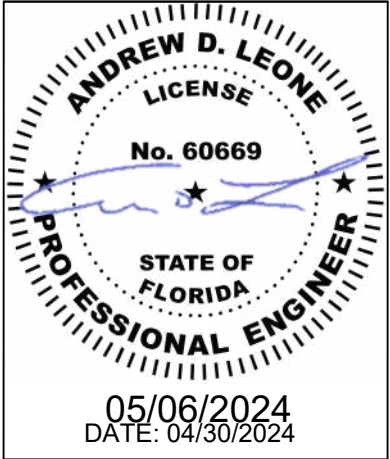


BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULES	26	HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W MODULE
MICROINVERTERS	26	ENPHASE: IQ8PLUS-72-2-US (240V) MICROINVERTERS (COMPLIANT WITH RAPID SHUTDOWN)
SOLADECK	3	SOLADECK
RAILS	13	EVEREST K2 SYSTEMS CROSSRAIL 44-X, 172" MILL
SPLICES	8	SPLICE KIT
MID MODULE CLAMPS	44	MID MODULE CLAMPS
END CLAMPS	16	END CLAMPS / STOPPER SLEEVE
ATTACHMENTS	56	EVEREST K2 SYSTEMS SPLICE FOOT XL ATTACHMENTS



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
ELECTRICAL PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

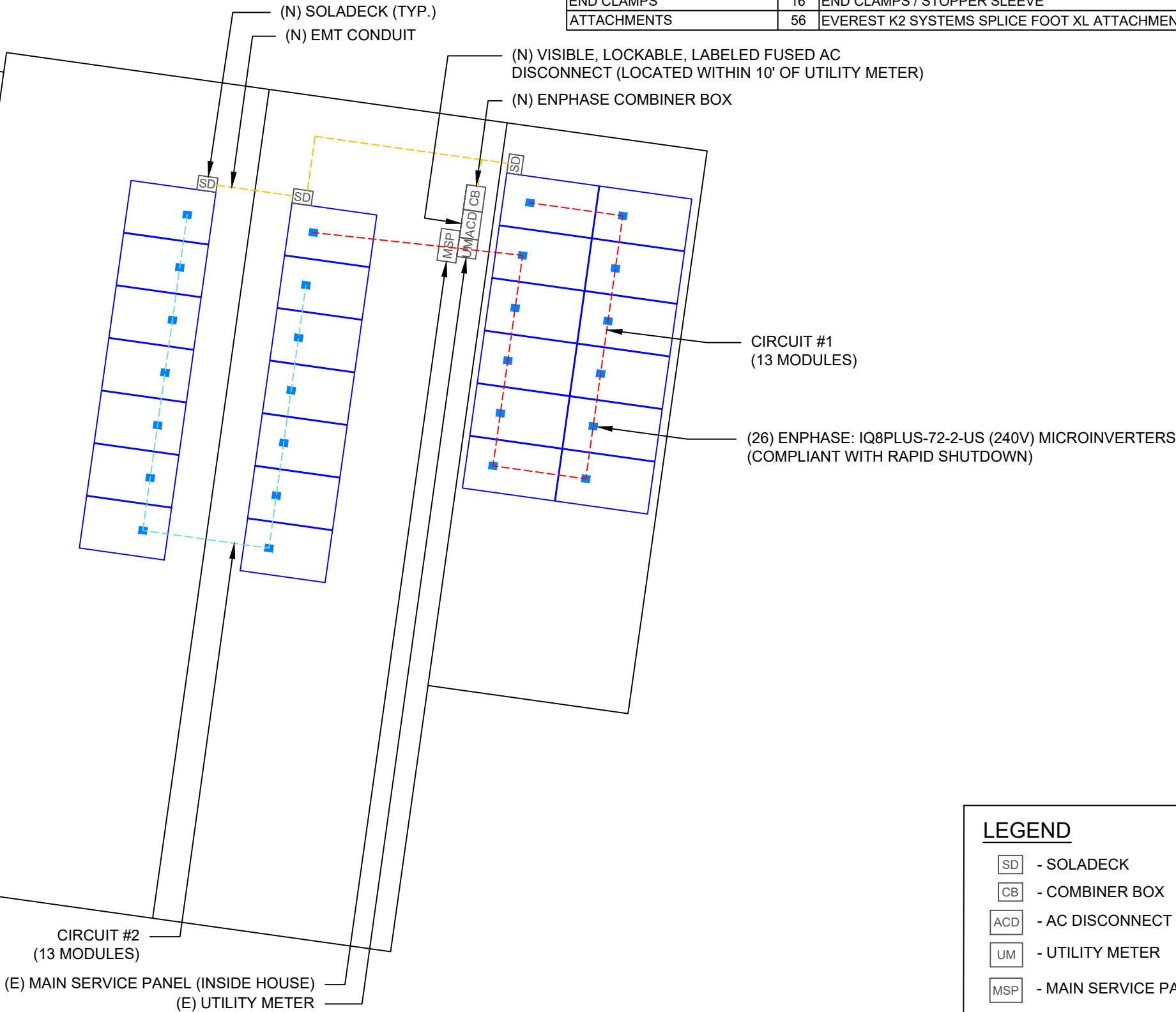
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

1

ELECTRICAL PLAN

PV-4

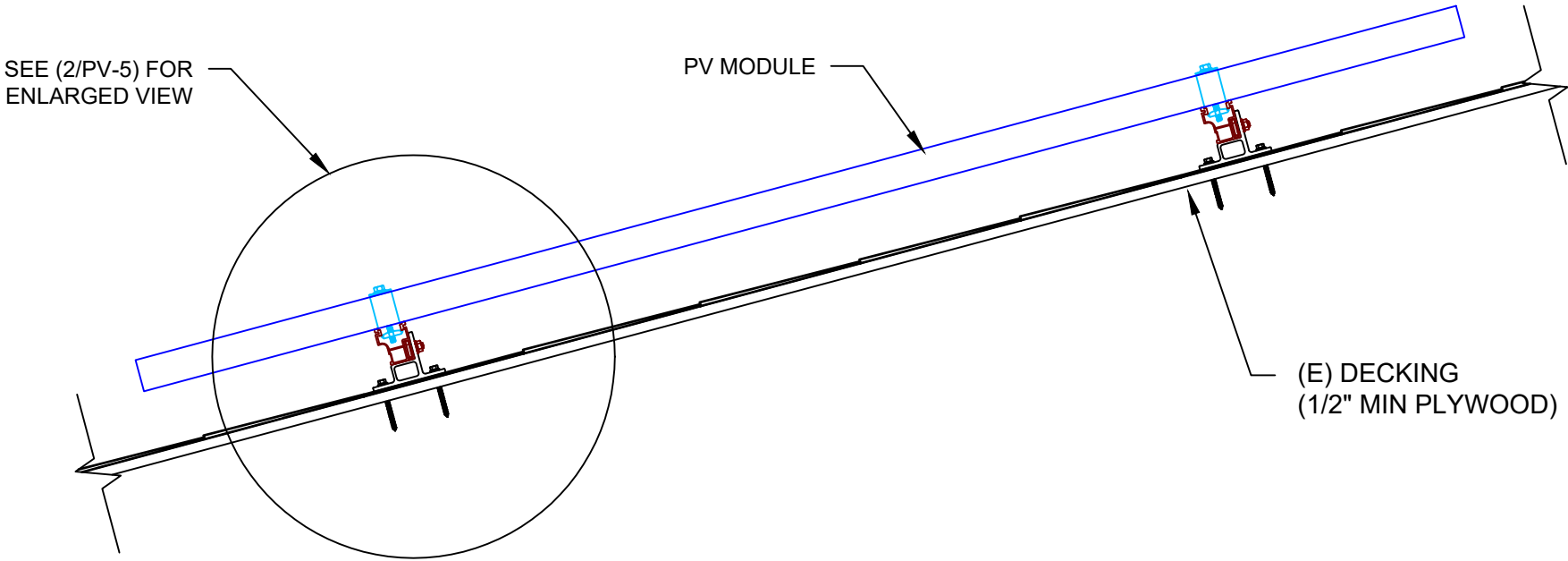
SCALE: 1/8" = 1'-0"



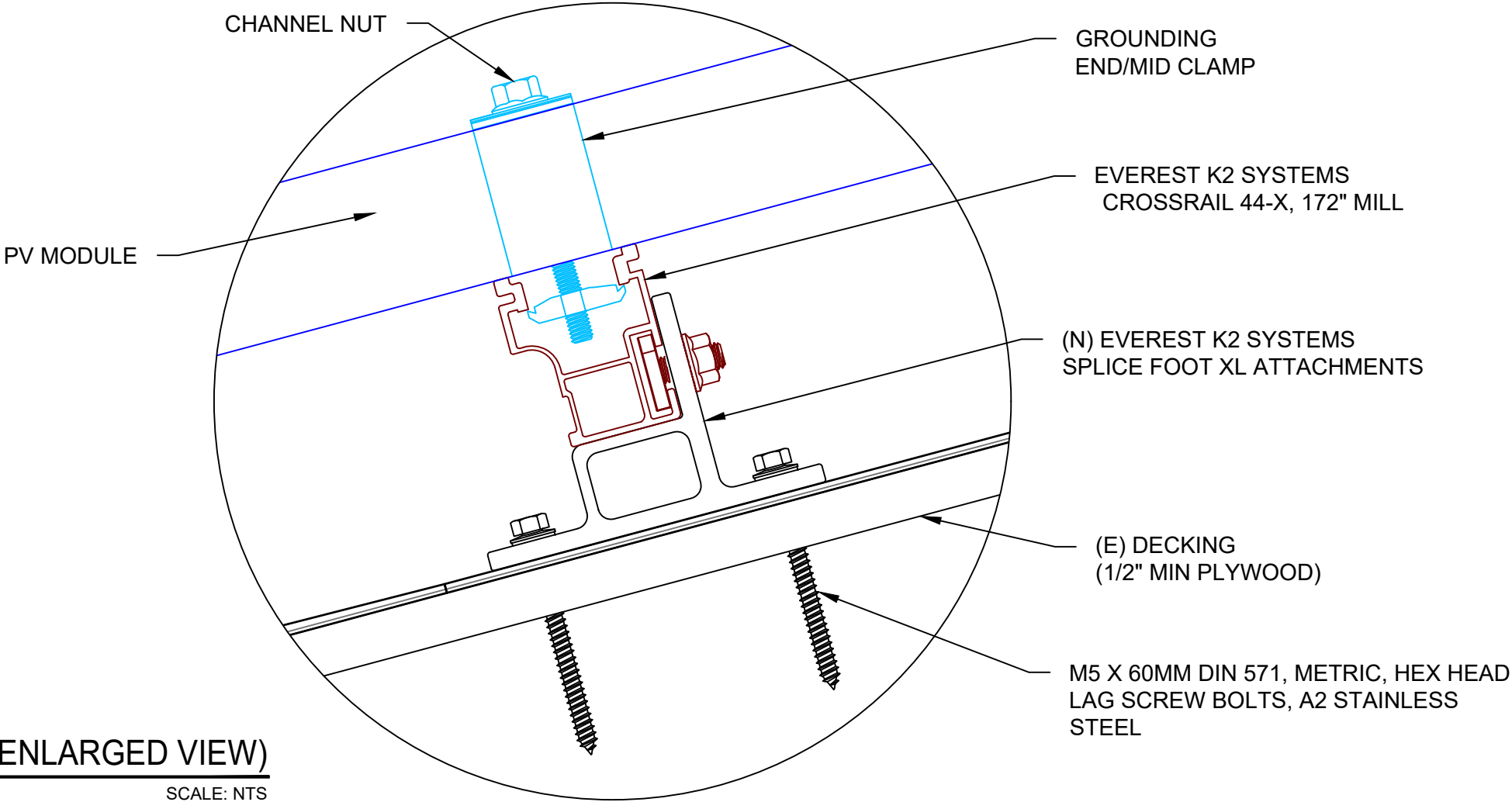
LEGEND

- SD - SOLADECK
- CB - COMBINER BOX
- ACD - AC DISCONNECT
- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- - CONDUIT

DESCRIPTION: CANTILEVER
CANTILEVER CONSIDER 1/3RD OF ROOF ATTACHMENT SPACING.
ATTACHMENT SPACING= 48" O/C
CANTILEVER = 16"



1 ATTACHMENT DETAIL
PV-5 SCALE: NTS



This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

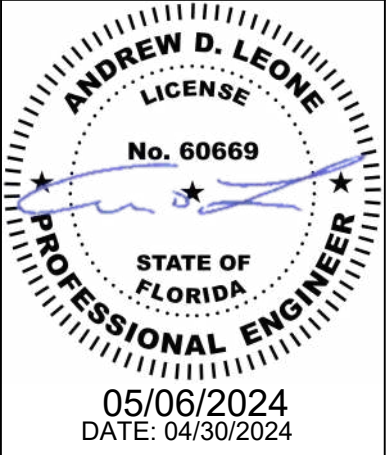
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

2 ATTACHMENT DETAIL (ENLARGED VIEW)
PV-5 SCALE: NTS



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
STRUCTURAL DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

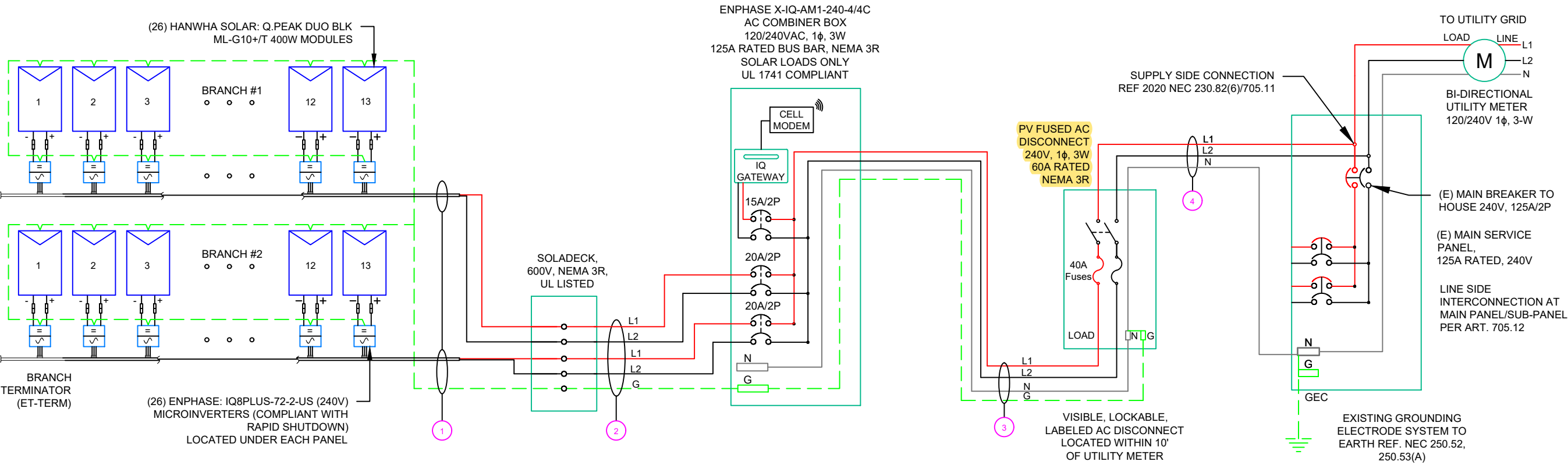
DC SYSTEM SIZE: 26 X 400 = 10.400KW DC
AC SYSTEM SIZE: 26 X 290 = 7.540KW AC

(26) HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W MONO MODULES WITH (26) ENPHASE: IQ8PLUS-72-2-US (240V) MICROINVERTERS (COMPLIANT WITH RAPID SHUTDOWN)

(2) BRANCH CIRCUITS OF 13 MODULES ARE CONNECTED IN PARALLEL

- INTERCONNECTION NOTES:**
1. INTERCONNECTION SIZING, LIMITATIONS AND COMPLIANCE DETERMINED IN ACCORDANCE WITH [NEC 705.12], AND [NEC 690.59].
 2. GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9], [NEC 230.95].
 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
 3. DISCONNECT MEANS AND THEIR LOCATION SHALL BE IN ACCORDANCE WITH [NEC 225.31] AND [NEC 225.32].
- RACKING NOTES:**
1. BOND EVERY OTHER RAIL WITH #6 BARE COPPER

- GROUNDING & GENERAL NOTES:**
1. **GROUNDING ELECTRODES AND GROUNDING ELECTRODE CONDUCTORS.** ADDITIONAL GROUNDING ELECTRODES SHALL BE PERMITTED TO BE INSTALLED IN ACCORDANCE WITH 250.52 AND 250.54. GROUNDING ELECTRODES SHALL BE PERMITTED TO BE CONNECTED DIRECTLY TO THE PV MODULE FRAME(S) OR SUPPORT STRUCTURE PER [NEC 690.47(B)]
 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 QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD - SOLADECK 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.



This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

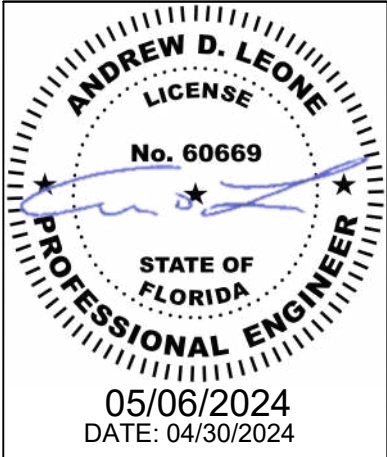
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

QTY	CONDUCTOR INFORMATION		CONDUIT TYPE	CONDUIT SIZE
1	(4)	CU#12AWG - Q CABLE (L1 & L2 NO NEUTRAL)	N/A	N/A
	(1)	CU#6AWG - BARE COPPER IN FREE AIR		
2	(4)	CU#10AWG - THWN-2 (L1,L2) (EXTERIOR) / #10/2 ROMEX IN ATTIC	EMT OR LFMC IN ATTIC	3/4"
	(1)	CU#10AWG - THWN-2 GND		
3	(2)	CU#6AWG - THWN-2 (L1,L2)	EMT, LFMC OR LFNC	3/4"
	(1)	CU#6AWG - THWN-2 N		
4	(1)	CU#6AWG - THWN-2 GND	EMT, LFMC OR LFNC	3/4"
	(2)	CU#6AWG - THWN-2 (L1,L2)		
	(1)	CU#6AWG - THWN-2 N		



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE: IQ8PLUS-72-2-US (240V) MICROINVERTERS (COMPLIANT WITH RAPID SHUTDOWN)
MIN/MAX DC VOLT RATING	22V MIN/ 58V MAX
MAX INPUT POWER	235W-440W
NOMINAL AC VOLTAGE RATING	240V/ 211-264V
MAX AC CURRENT	1.21A
MAX MODULES PER CIRCUIT	13 (SINGLE PHASE)
MAX OUTPUT POWER	290 VA

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA SOLAR: Q.PEAK DUO BLK ML-G10+/t 400W MODULE
VMP	38.09V
IMP	10.50A
VOC	45.55V
ISC	11.07A
TEMP. COEFF. VOC	-0.27%/K
MODULE DIMENSION	74.0"L x 41.1"W x 1.26"D (In Inch)

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-6°
AMBIENT TEMP (HIGH TEMP 2%)	35°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/K

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

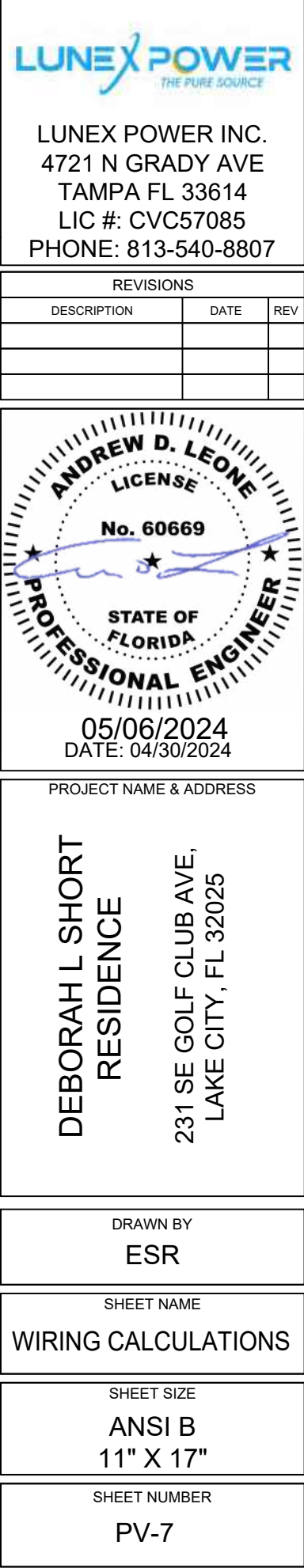
AC CALCULATIONS																							
CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	OCPD SIZE (A)	NEUTRAL SIZE	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPACITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(2)(a)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(B)(3)(a)	90°C AMPACITY DERATED (A)	AMPACITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)	
CIRCUIT 1	SOLADECK	240	15.73	19.6625	20	N/A	BARE COPPER #6 AWG	CU #12 AWG	25	PASS	35	2	30	0.96	1	28.8	PASS			0.76	N/A	#N/A	
CIRCUIT 2	SOLADECK	240	15.73	19.6625	20	N/A	BARE COPPER #6 AWG	CU #12 AWG	25	PASS	35	2	30	0.96	1	28.8	PASS			0.76	N/A	#N/A	
SOLADECK	COMBINER BOX	240	15.73	19.6625	20	N/A	CU #10 AWG	CU #10 AWG	35	PASS	35	4	40	0.96	0.8	30.72	PASS	16	1.24	0.250	3/4" EMT	19.79362	
COMBINER BOX	AC DISCONNECT	240	31.46	39.325	40	CU #6 AWG	CL #6 AWG	CL #6 AWG	65	PASS	35	2	75	0.96	1	72	PASS	5	0.491	0.054	3/4" EMT	38.04878	
AC DISCONNECT	POI	240	31.46	39.325	40	CU #6 AWG	N/A	CL #6 AWG	65	PASS	35	2	75	0.96	1	72	PASS	5	0.491	0.054	3/4" EMT	28.53659	
																				Circuit 1 Voltage Drop		1.149	
																				Circuit 2 Voltage Drop		1.149	

This item has been digitally signed and sealed by Andrew D. Leone on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

ELECTRICAL NOTES

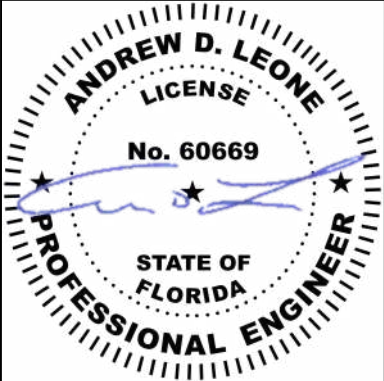
1. ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2. ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3. WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4. WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6. WHERE SIZES OF SOLADECK, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7. ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8. MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9. MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10. TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS

DESCRIPTION	DATE	REV



05/06/2024
DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY

ESR

SHEET NAME

WIRING CALCULATIONS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7

CAUTION:
AUTHORIZED SOLAR
PERSONNEL ONLY!

LABEL-1:
LABEL LOCATION:
AC DISCONNECT

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

LABEL- 2:
LABEL LOCATION:
AC DISCONNECT
COMBINER
MAIN SERVICE PANEL
SUBPANEL
MAIN SERVICE DISCONNECT
CODE REF: NEC 690.13(B)

⚠ WARNING DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL- 3:
LABEL LOCATION:
PRODUCTION METER
UTILITY METER
MAIN SERVICE PANEL
SUBPANEL
CODE REF: NEC 705.12(C) & NEC 690.59

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC
DISCONNECT PRIOR TO
WORKING INSIDE PANEL

LABEL- 4:
LABEL LOCATION:
MAIN SERVICE PANEL
SUBPANEL
MAIN SERVICE DISCONNECT
COMBINER
CODE REF: NEC 110.27(C) & OSHA 1910.145 (f) (7)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS
BACKFEED

LABEL- 5:
LABEL LOCATION:
MAIN SERVICE PANEL (ONLY IF SOLAR IS BACK-FED)
SUBPANEL (ONLY IF SOLAR IS BACK-FED)
CODE REF: NEC 705.12(D) & NEC 690.59

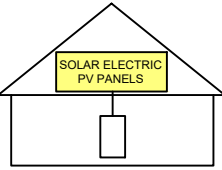
⚠ WARNING

POWER SOURCE OUTPUT
CONNECTION. DO NOT
RELOCATE THIS
OVERCURRENT DEVICE

LABEL- 6:
LABEL LOCATION:
MAIN SERVICE PANEL (ONLY IF SOLAR IS BACK-FED)
SUBPANEL (ONLY IF SOLAR IS BACK-FED)
CODE REF: NEC 705.12(B)(3)(2)

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- 7:
LABEL LOCATION:
AC DISCONNECT
CODE REF: IFC 605.11.3.1(1) & NEC 690.56(C)

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LABEL- 8:
LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.56(C)(2)

PHOTOVOLTAIC

AC DISCONNECT

LABEL- 9:
LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.13(B)

PHOTOVOLTAIC
AC DISCONNECT

NOMINAL OPERATING AC VOLATGE 240 V

RATED AC OUTPUT CURRENT 31.46 A

LABEL- 10:
LABEL LOCATION:
MAIN SERVICE PANEL
SUBPANEL
AC DISCONNECT
CODE REF: NEC 690.54

MAIN PHOTOVOLTAIC
SYSTEM DISCONNECT

LABEL- 11:
LABEL LOCATION:
MAIN SERVICE DISCONNECT (ONLY IF MAIN SERVICE DISCONNECT IS PRESENT)
CODE REF: NEC 690.13(B)

PRODUCTION
METER

LABEL- 12:
LABEL LOCATION:
PRODUCTION METER (ONLY IF PRODUCTION METER IS USED)

CAUTION: PHOTOVOLTAIC SYSTEM
FOR SERVICE : LUNEX POWER
813-540-8807

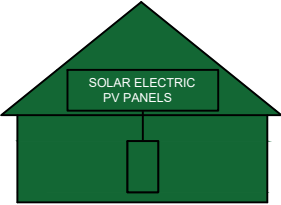
LABEL-13:

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL-14:
LABEL LOCATION:
EMT/CONDUIT RACEWAY
SOLADECK/JUNCTION BOX
CODE REF : NEC 690.31 (D) (14)

EMERGENCY RESPONDER
THIS SOLAR PV SYSTEM EQUIPPED
WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN
SWITCH TO THE 'OFF'
POSITION TO SHUTDOWN
ENTIRE PV SYSTEM.



THE LABEL SHALL BE REFLECTIVE, WITH ALL LETTERS CAPITALIZED AND HAVING
A MINIMUM HEIGHT OF 3/8 IN. (9.5 MM), IN WHITE ON A RED BACKGROUND.

LABEL- 15:
LABEL LOCATION:
AC DISCONNECT
CODE REF:NFPA 1 (11.12.2.1.1.1.1)
1. THE RAPID SHUTDOWN LABEL SHALL BE LOCATED ON OR NO MORE
THAN 3 FT (1 M) FROM THE SERVICE DISCONNECTING MEANS
2. (HEIGHT OF LABEL IS 3/8 IN. (9.5 MM), IN WHITE ON A RED BACKGROUND)

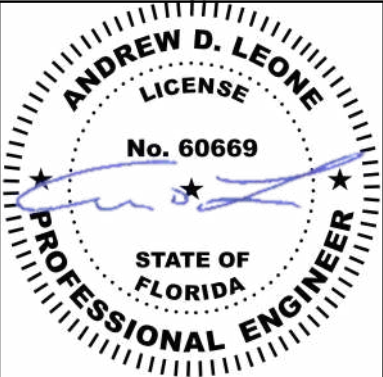
This item has been digitally
signed and sealed by
Andrew D. Leone on the date
adjacent to the seal.

Printed copies of this
document are not considered
signed and sealed and the
signature must be verified on
any electronic copies.



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

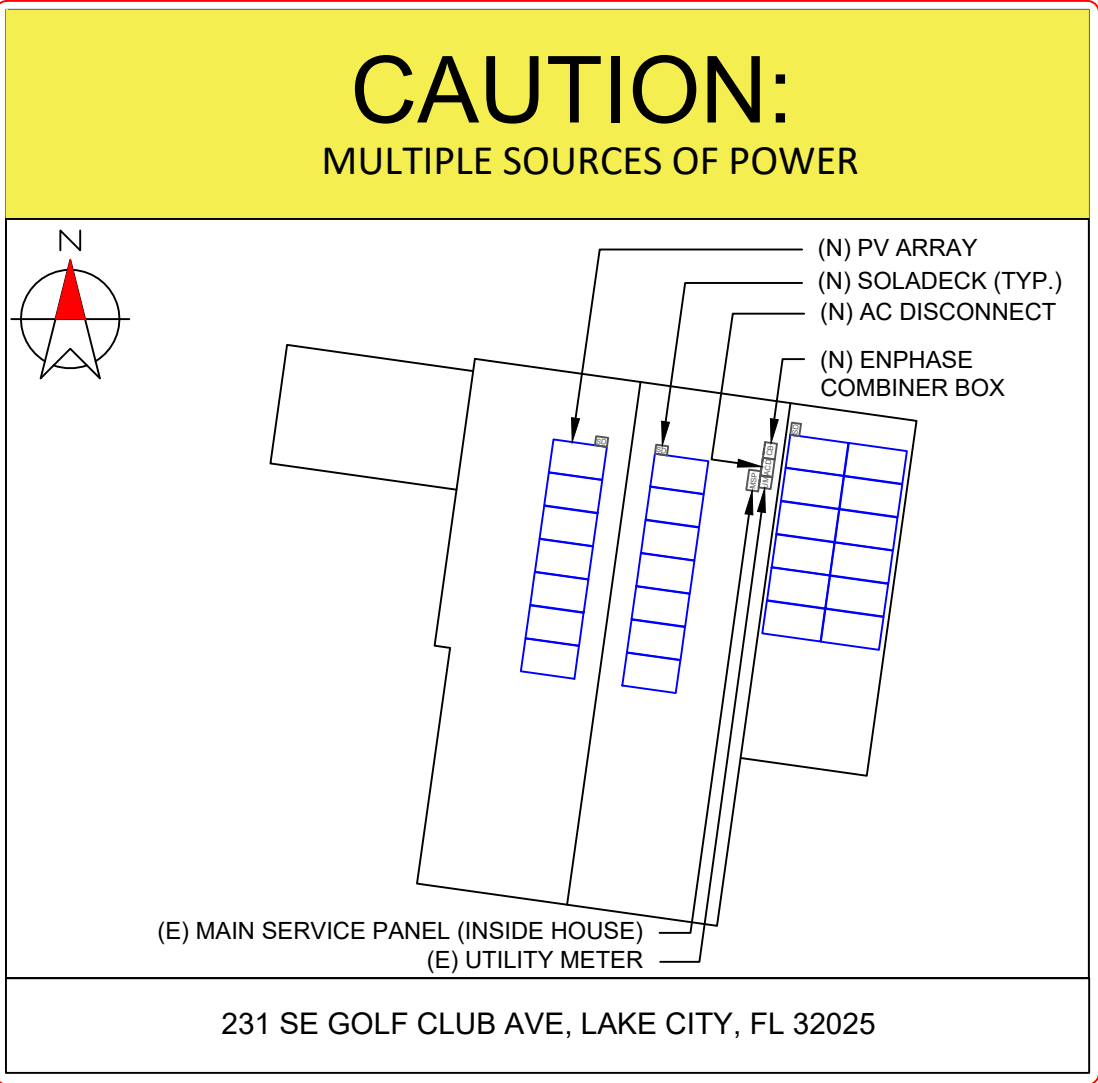


05/06/2024
DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY ESR
SHEET NAME LABELS
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-8



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])

This item has been digitally
signed and sealed by
Andrew D. Leone on the date
adjacent to the seal.

Printed copies of this
document are not considered
signed and sealed and the
signature must be verified on
any electronic copies.

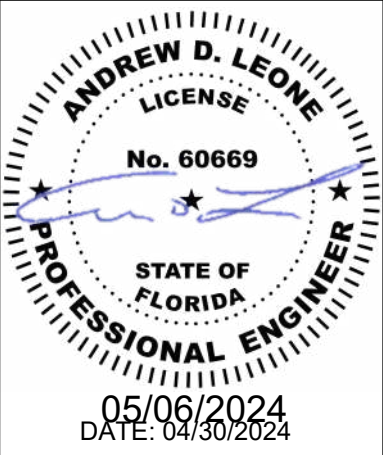
LABELING NOTES:

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 2020 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.
3. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
4. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED [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]



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



PROJECT NAME & ADDRESS

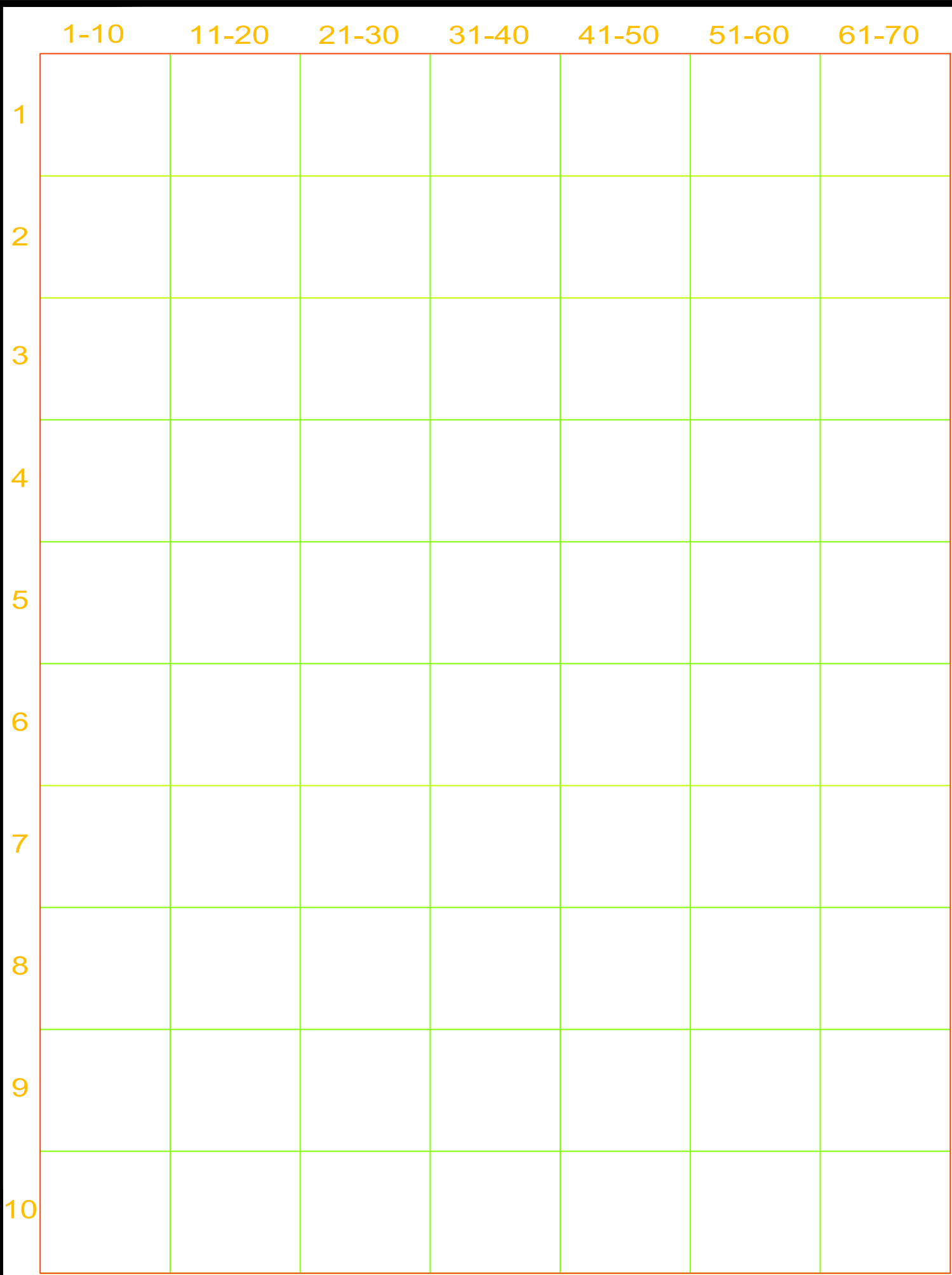
DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

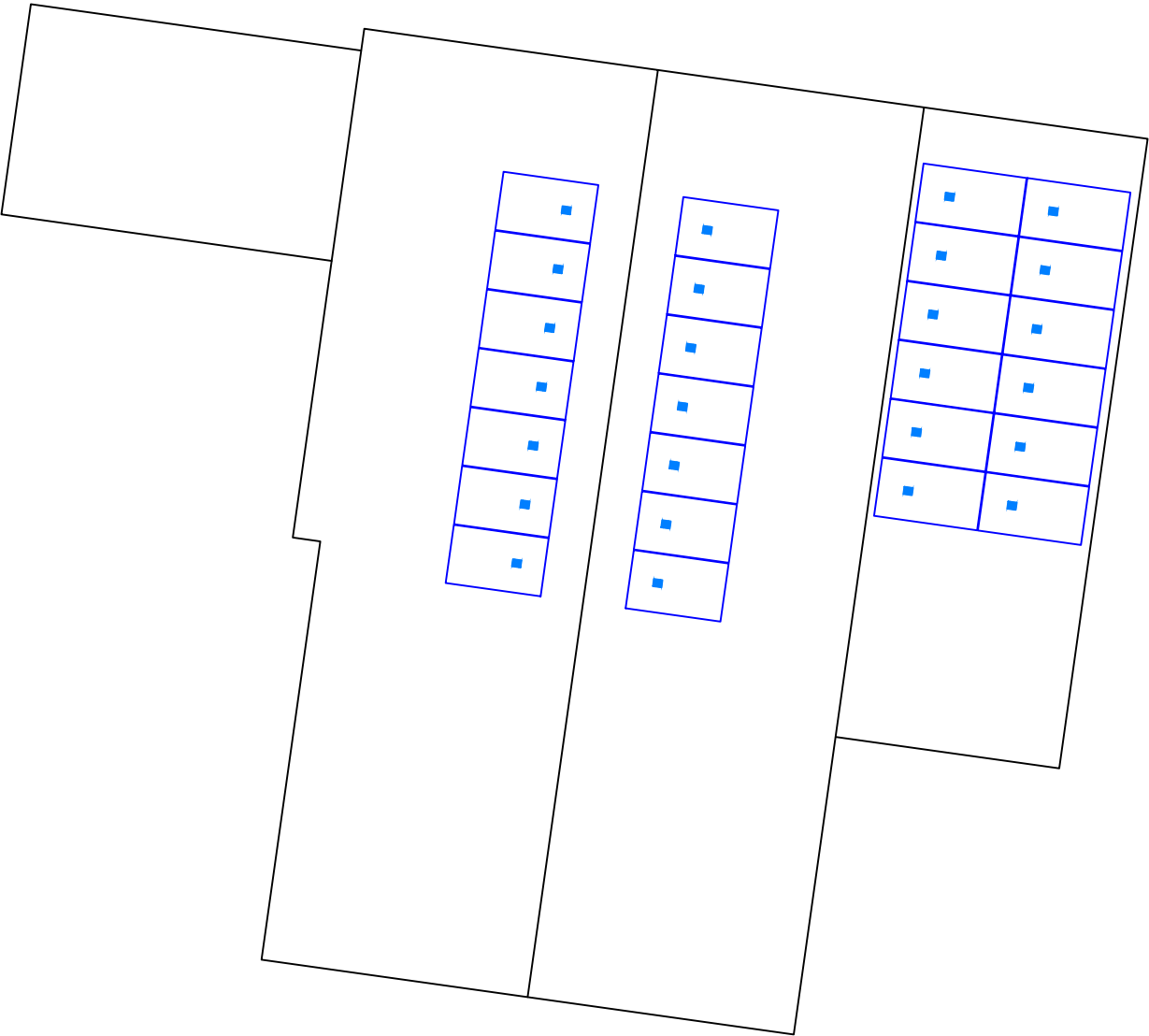
SHEET NAME
PLACARD

SHEET SIZE
ANSI B 11" X 17"

SHEET NUMBER
PV-9



MICRO INVERTER CHART





LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE

231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY

ESR

SHEET NAME

MICRO INVERTER CHART

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

Q.PEAK DUO BLK ML-G10+ SERIES

390-410 Wp | 132 Cells
20.9% Maximum Module Efficiency

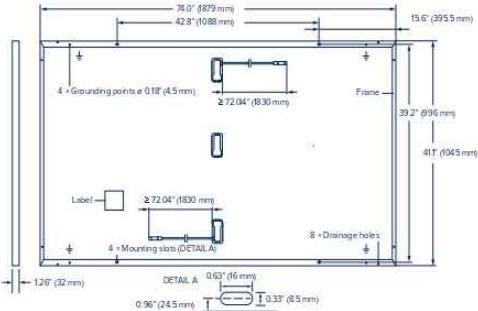
MODEL Q.PEAK DUO BLK ML-G10+/t



Q.PEAK DUO BLK ML-G10+ SERIES

Mechanical Specification

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Transparent composite film with black grid
Frame	Black anodised aluminium
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 72.04 in (1830 mm), (-) ≥ 72.04 in (1830 mm)
Connector	Stäubli MC4; IP68



Electrical Characteristics

POWER CLASS			390		395		400	405		410		
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W/-0 W)												
Minimum			BSTC ²		BSTC ²			BSTC ²		BSTC ²		
	Power at MPP ¹	P _{MPP} [W]	390	426.6	395	432.1	400	437.5	405	443.0	410	448.5
	Short Circuit Current ¹	I _{SC} [A]	11.01	12.05	11.04	12.08	11.07	12.11	11.10	12.15	11.13	12.18
	Open Circuit Voltage ¹	V _{OC} [V]	45.49	45.65	45.52	45.68	45.55	45.72	45.59	45.75	45.62	45.78
	Current at MPP	I _{MPP} [A]	10.39	11.37	10.45	11.43	10.50	11.49	10.56	11.55	10.61	11.61
	Voltage at MPP	V _{MPP} [V]	37.54	37.53	37.81	37.81	38.09	38.08	38.36	38.35	38.63	38.62
	Efficiency ¹	η [%]	≥19.9		≥20.1		≥20.4	≥20.6		≥20.9		

Bifaciality of P_{MPP} and I_{SC} 70% ± 10% • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1 according to IEC 60904-3

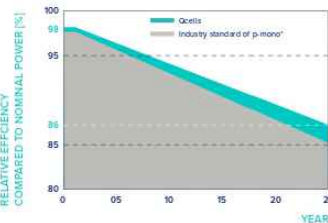
¹Measurement tolerances P_{MPP} ± 3%; I_{SC}, V_{OC} ± 5% at STC: 1000 W/m²; *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70% ± 10%, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²

	P _{MPP}	[W]	292.6		296.3		300.1		303.8		307.6
Power at MPP	P _{MPP}	[W]	292.6		296.3		300.1		303.8		307.6
Short Circuit Current	I _{SC}	[A]	8.87		8.89		8.92		8.94		8.97
Open Circuit Voltage	V _{OC}	[V]	42.90		42.93		42.96		42.99		43.03
Current at MPP	I _{MPP}	[A]	8.16		8.21		8.26		8.31		8.36
Voltage at MPP	V _{MPP}	[V]	35.86		36.10		36.33		36.57		36.80

¹Measurement tolerances P_{MPP} ± 3%; I_{SC}, V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • ²800 W/m², NMOT, spectrum AM 1.5

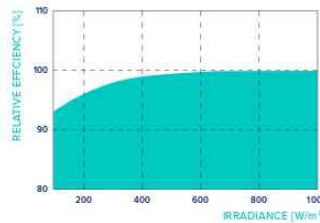
Qcells PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Qcells sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.34	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

Properties for System Design

Maximum System Voltage	V _{sys}	[V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]		20	Fire Rating based on ANSI/UL 61730	TYPE 2
Max. Design Load, Push/Pull ³	[lbs / ft ²]		75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push/Pull ³	[lbs / ft ²]		113 (5400 Pa) / 84 (4000 Pa)		

³ See Installation Manual

Qualifications and Certificates

UL 61730, CE-compliant,
Quality Controlled PV - TÜV Rheinland,
IEC 61215:2016, IEC 61730:2016,
U.S. Patent No. 9,893,215 (solar cells),



Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product.
Hanwha Q CELLS America Inc. 400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL: +1 949 748 59 96 | EMAIL: hqc-inquiry@qcells.com | WEB: www.qcells.com



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS

DESCRIPTION	DATE	REV

DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

The ideal solution for:
Rooftop arrays on
residential buildings



Specifications subject to technical changes © Qcells Q.PEAK DUO BLK ML-G10+ L-Series 390-410_2022-10_Rev01_VA



DATA SHEET



IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined 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 using advanced 55-nm technology with high-speed digital logic and has superfast 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 IQ Battery, 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-and-play MC4 connectors.

*Meets UL 1741 only when installed with IQ System Controller 2.
**IQ8 and IQ8+ support split-phase, 240 V installations only.



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



IQ8 Series Microinverters are UL Listed as PV rapid shutdown equipment and conform with various regulations, when installed according to the manufacturer's instructions.

© 2023 Enphase Energy. All rights reserved. Enphase, the e and CC logos, IQ, and certain other marks listed at <https://enphase.com/trademark-usage-guidelines> are trademarks of Enphase Energy, Inc. in the US and other countries. Data subject to change.

Easy to install

- Lightweight and compact with plug-and-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 high-powered PV modules

Microgrid-forming

- Compliant with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meet CA Rule 21 (UL 1741-SA) and IEEE® 1547:2018 (UL 1741-SB 3rd Ed.)

NOTE:

- IQ8 Microinverters cannot be mixed with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, and so on) in the same system.
- IQ Gateway is required to change the default grid profile at the time of installation to meet local Authority Having Jurisdiction (AHJ) requirements.

IQ8SP-12A-DSH-00207-2.0-EN-US-2023-10-13

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings ¹	W	235-350	235-440
Module compatibility	—	To meet compatibility, PV modules must be within maximum input DC voltage and maximum module I _{sc} listed below. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator	
MPPT voltage range	V	27-37	27-45
Operating range	V	16-48	16-58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	12
Maximum input DC short-circuit current	A	25	
Maximum module I _{sc}	A	20	
Overtoltage class DC port	—	II	
DC port backfeed current	mA	0	
PV array configuration	—	1 × 1 ungrounded array; no additional DC side protection required; AC side protection requires maximum 20 A per branch circuit.	
OUTPUT DATA (AC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage ²	V	211-264	
Maximum continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	47-68	
AC short-circuit fault current over three cycles	Arms	2	
Maximum units per 20 A (L-L) branch circuit ³	—	16	13
Total harmonic distortion	%	<5	
Overtoltage class AC port	—	III	
AC port backfeed current	mA	30	
Power factor setting	—	1.0	
Grid-tied power factor (adjustable)	—	0.85 leading ... 0.85 lagging	
Peak efficiency	%	97.7	
CEC weighted efficiency	%	97	
Nighttime power consumption	mW	23	25
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 (H × W × D)		212 mm (8.3 in) × 175 mm (6.9 in) × 30.2 mm (1.2 in)	
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	
Environmental category/UV exposure rating		NEMA Type 6/Outdoor	

(1) No enforced DC/AC ratio.
(2) Nominal voltage range can be extended beyond nominal if required by the utility.
(3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-12A-DSH-00207-2.0-EN-US-2023-10-13

IQ8 and IQ8+ Microinverters

COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, IEEE® 1547:2018 (UL 1741-SB 3 rd Ed.), 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 shutdown equipment and conforms with NEC 2014, NEC 2017, NEC 2020, and NEC 2023 section 690.12 and C22.1-2018 Rule 64-218 rapid shutdown of PV Systems, for AC and DC conductors, when installed according to the manufacturer's instructions.



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/30/2024		
------------------	--	--

PROJECT NAME & ADDRESS		
DEBORAH L SHORT RESIDENCE	231 SE GOLF CLUB AVE, LAKE CITY, FL 32025	

DRAWN BY ESR

SHEET NAME EQUIPMENT SPECIFICATION
--

SHEET SIZE ANSI B 11" X 17"

SHEET NUMBER PV-12

Enphase IQ Combiner 4/4C

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



X-IQ-AM1-240-4C

X-IQ-AM1-240-4

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

Enphase IQ Combiner 4/4C

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 (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and 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 heat.
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	65 A
Max. continuous current rating (input from PV/storage)	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 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) 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

To learn more about Enphase offerings, visit enphase.com

© 2022 Enphase Energy. All rights reserved. Enphase, the Enphase logo, IQ Combiner 4/4C, and other names are trademarks of Enphase Energy, Inc. Data subject to change. 02-14-2022



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/30/2024		

PROJECT NAME & ADDRESS		
DEBORAH L SHORT RESIDENCE	231 SE GOLF CLUB AVE, LAKE CITY, FL 32025	

DRAWN BY ESR

SHEET NAME EQUIPMENT SPECIFICATION
--

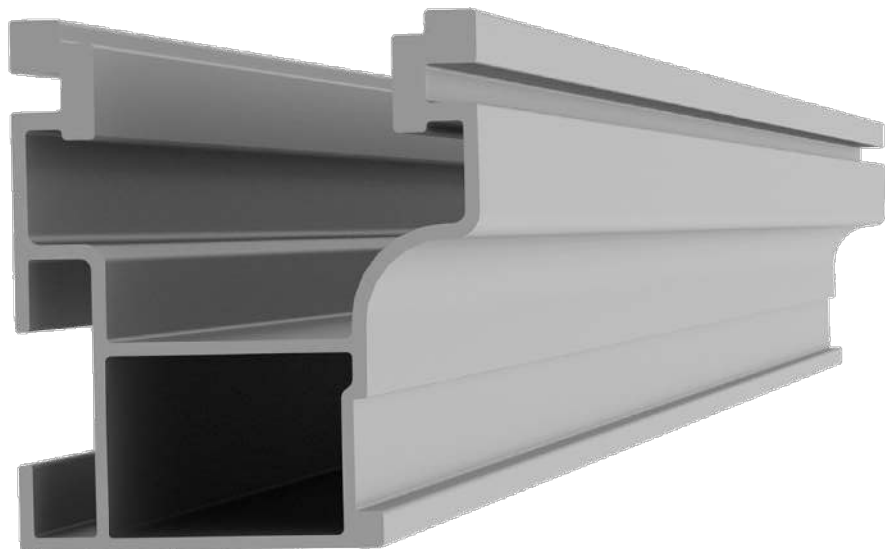
SHEET SIZE ANSI B 11" X 17"

SHEET NUMBER PV-13

CrossRail 44-X



DATA SHEET



Part Number	Description
4000019	CrossRail 44-X 166", Mill
4000020	CrossRail 44-X 166", Dark
4000021	CrossRail 44-X 180", Mill
4000022	CrossRail 44-X 180", Dark
4000719	CrossRail 44-X 172", Mill
4000720	CrossRail 44-X 172", Dark
4000721	CrossRail 44-X 185", Mill
4000722	CrossRail 44-X 185", Dark
4000143	SPO CrossRail 44-X 86", Mill

TECHNICAL DATA



Mechanical Properties

	CrossRail 44-X
Material	6000 Series Aluminum
Ultimate Tensile Strength	37.7 ksi (260 MPa)
Yield Strength	34.8 ksi (240 MPa)
Weight	.47 lbs/ft (0.699 kg/m)

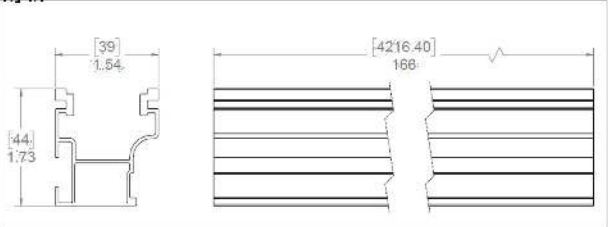
Sectional Properties

	CrossRail 44-X
Sx	0.149 in3 (0.3785 cm3)
Sy	0.145 in3 (0.3683 cm3)
A (X-Section)	0.405 in2 (1.0287 cm2)

LOAD		RAIL SPAN									
SNOW (psf)	WIND (mph)	32"	4'	64"	6'	80"	8'	112"	10'	12'	
0	120										
0	140										
0	160										
10	120										
10	140										
10	160										
20	140										
20	160										
30	160										
40	160										
80	160										
100	160										
		44X/MAX	48X	48XL	CR80						

2

Units: [mm] in



Notes:

- Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- UL2703 Listed System for Fire and Bonding



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS

DESCRIPTION	DATE	REV

DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY

ESR

SHEET NAME

EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14

We support PV systems
Formerly Everest Solar Systems



Splice Foot XL

Patent Pending

TECHNICAL SHEET

Item Number	Description	Part Number
1	Splice Foot XL	4000162 Splice Foot XL Kit, Mill
2	K2 EverSeal	
3	M5 x 60 lag screws	
4	T-Bolt & Hex Nut Set	

Technical Data

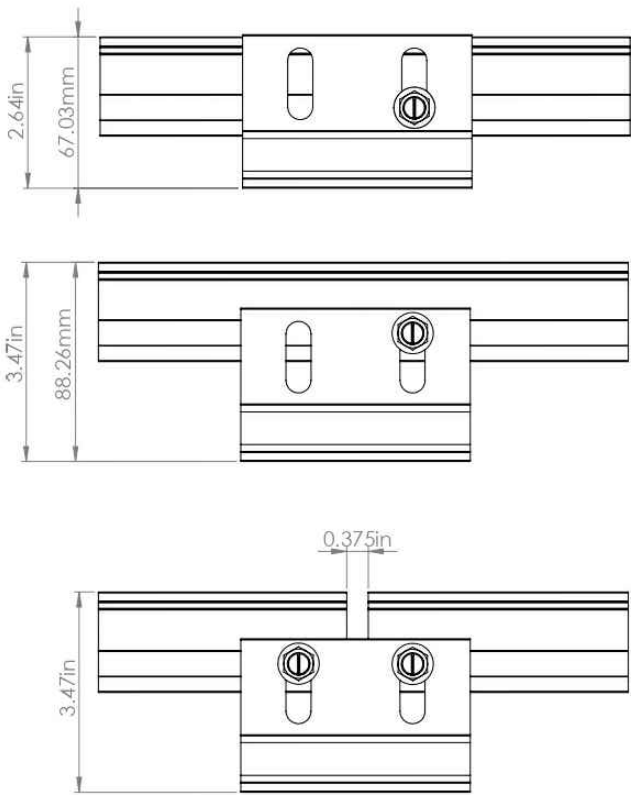
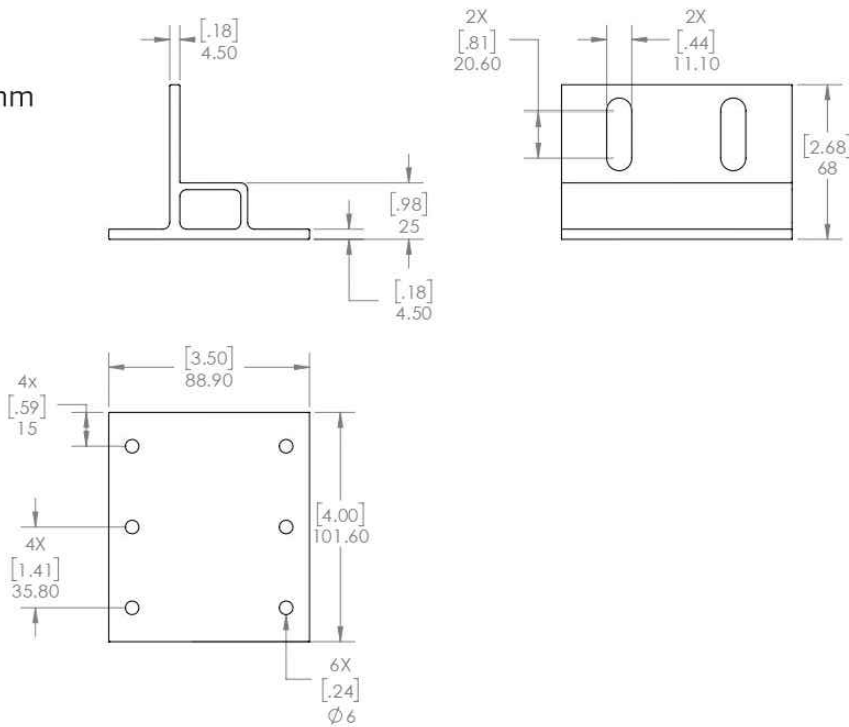
	Splice Foot XL
Roof Type	Composition shingle
Material	Aluminum with stainless steel hardware
Finish	Mill
Roof Connection	M5 x 60 lag screws
Code Compliance	UL 2703
Compatibility	CrossRail 44-X, 48-X, 48-XL, 80

k2-systems.com

We support PV systems
Formerly Everest Solar Systems



Units: [in] mm



k2-systems.com



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

SolaDeck

FLASHED PV ROOF-MOUNT COMBINER/ENCLOSURE

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

Model SD 0783-41 3" Fixed Din Rail fastened using Norlock System

**Typical System Configuration

- 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 block.



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

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



LUNEX POWER INC.
4721 N GRADY AVE
TAMPA FL 33614
LIC #: CVC57085
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/30/2024

PROJECT NAME & ADDRESS

DEBORAH L SHORT
RESIDENCE
231 SE GOLF CLUB AVE,
LAKE CITY, FL 32025

DRAWN BY
ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-16