



**SCOPE OF WORK:**  
TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 1108 NORTHWEST ASHLEY ST, LAKE CITY, FL 32055.

SYSTEM DC RATING: 8.80 KWDC  
SYSTEM AC RATING: 6.39 KWAC

- GENERAL NOTES:**
- THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS.
  - CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.
  - THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK WITH APPROVED MATERIALS.
  - THE EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE INSTALLED ONLY BY QUALIFIED PEOPLE. A QUALIFIED PERSON IS ONE WHO HAS SKILLS AND KNOWLEDGE RELATED TO THE CONSTRUCTION AND OPERATION OF THE ELECTRICAL EQUIPMENT AND INSTALLATIONS AND HAS RECEIVED SAFETY TRAINING TO RECOGNIZE AND AVOID THE HAZARDS INVOLVED. (NEC 690.4(C), NEC 2017).
  - NEW CONDUIT ROUTING SHOWN IS ESSENTIALLY SCHEMATIC. CONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES.
  - ARRAY WIRING SHOULD NOT BE READILY ACCESSIBLE EXCEPT TO QUALIFIED PERSONNEL.
  - THE AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.

| SHEET INDEX |                             |
|-------------|-----------------------------|
| CS-0        | COVER SHEET & BOM           |
| E-1         | STRING LAYOUT & SIGNAGE     |
| E-2         | ELECTRICAL DIAGRAM & CALCS. |
| E-3+        | EQUIPMENT SPECIFICATIONS    |

| GOVERNING CODES                                        |                         |
|--------------------------------------------------------|-------------------------|
| 2018 NFPA 1 (FIRE CODE)                                | 2020 FFPC (7TH EDITION) |
| 2017 NATIONAL ELECTRICAL CODE                          |                         |
| 2020 FLORIDA BUILDING CODE (7TH EDITION)               |                         |
| AUTHORITY HAVING JURISDICTION (AHJ): CITY OF LAKE CITY |                         |

| BILL OF MATERIALS |     |                                                       |
|-------------------|-----|-------------------------------------------------------|
| EQUIPMENT         | QTY | DESCRIPTION                                           |
| SOLAR PV MODULE   | 22  | Q.PEAK DUO BLK ML-G10+ 400                            |
| MICROINVERTER     | 22  | ENPHASE IQ8PLUS-72-2-US                               |
| JUNCTION BOX      | 1   | JUNCTION BOX, NEMA 3R, UL LISTED                      |
| COMBINER BOX      | 1   | ENPHASE IQ COMBINER 4/4C W/ IQ ENVOY (X-IQ-AM1-240-4) |
| AC DISCONNECT     | 1   | 60A NON-FUSED AC DISCONNECT, 240V, NEMA 3R, UL LISTED |
| POWER PERFECT BOX | 1   | (ES1PN), 120V/240V, NEMA 3X                           |



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY OMAR TIRADO ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT VCONSIDERED SIGNED AND SEAL, AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

2023.01.11  
16:24:18  
-05'00'



**ATLANTIC KEY ENERGY LLC**  
12600 CHALLENGER PARKWAY  
SUITE 200  
ORLANDO, FL 32826  
1 (407) 988-0273



PROJECT NAME & ADDRESS

ASHLEY DULL  
RESIDENCE  
PROJECT # P-0065449  
1108 NORTHWEST ASHLEY ST  
LAKE CITY, FL 32055

SIGNATURE WITH SEAL

| REVISIONS   |      |     |
|-------------|------|-----|
| DESCRIPTION | DATE | REV |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |

Drawn by: N.R.  
Date: 1/10/2023

| SHEET NAME        |
|-------------------|
| COVER SHEET & BOM |
| SHEET NUMBER      |
| CS-0              |

LEGEND

X

(E)

(N)

M

MSP

ACD

CB

- MODULE STRING ID

- EXISTING

- NEW

- UTILITY METER

- MAIN SERVICE PANEL

- AC DISCONNECT

- COMBINER BOX

LC

SP

JB

SCT

- CONDUIT

BAT

ICD

BUL

- LOAD CENTER

- SUBPANEL

- JUNCTION BOX

- STRING CENTER TAP

- ENERGY STORAGE

- INTERCONNECTION DEVICE

- BACK UP LOADS PANEL

**ADHESIVE FASTENED SIGNS:**

- ANSI Z535.4-2011 PRODUCT SAFETY SIGNS AND LABELS, PROVIDES GUIDELINES FOR SUITABLE FONT SIZES, WORDS, COLORS, SYMBOLS, AND LOCATION REQUIREMENTS FOR LABELS. NEC 110.21(B)(1).
- THE LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. NEC 110.21(B)(3).
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT.
- ALL LABELS AND MARKINGS FOR PHOTOVOLTAIC SYSTEMS WILL BE REFLECTIVE AND MEET ALL REQUIREMENTS.

⚠

WARNING

⚠

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS  
TERMINALS ON BOTH THE LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

LABEL LOCATION:  
COMBINER BOX/ EMT  
ENCLOSURES/ AC DISCONNECT/  
MAIN SERVICE PANEL  
PER CODE: NEC 2017, 690.13(B)

EMERGENCY RESPONDER

SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN  
SWITCH TO THE "OFF"  
POSITION TO SHUT  
DOWN THE ENTIRE PV  
SYSTEM



LABEL LOCATION:  
RAPID SHUTDOWN (AC DISCONNECT)  
PER CODE: NEC 690.56 (C)(1) &  
NFPA1 11.12.2.1.1.1.1, 11.12.2.1.4  
SHALL BE REFLECTIVE, WITH ALL  
LETTERS CAPITALIZED AND HAVING A  
MINIMUM HEIGHT OF 3/8 IN. (9.5 MM), IN  
WHITE ON RED BACKGROUND.

⚠

WARNING: PHOTOVOLTAIC  
POWER SOURCE

⚠

LABEL LOCATION:  
CONDUIT/ RACEWAY/ ENCLOSURES/  
COMBINER BOX/ AC DISCONNECT  
PER CODE: NEC2017, 690.31(G)(3)(4)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:  
AC DISCONNECT/ BREAKER/  
POINTS OF CONNECTION  
PER CODE: NEC2017, 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT 65.8 A

NOMINAL OPERATING AC VOLTAGE 240 V

LABEL LOCATION:  
AC DISCONNECT  
PER CODE: NEC2017, 690.54

RAPID SHUTDOWN  
SWITCH FOR  
SOLAR PV SYSTEM

⚠

WARNING

⚠

DUAL POWER SOURCE

SOURCES: UTILITY GRID AND  
PV SOLAR ELECTRIC SYSTEM

LABEL LOCATION:  
RAPID SHUTDOWN  
(AC DISCONNECT)  
PER CODE: NEC 690.58 (C)(3)

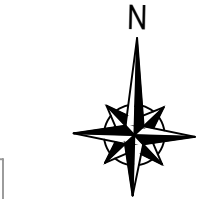
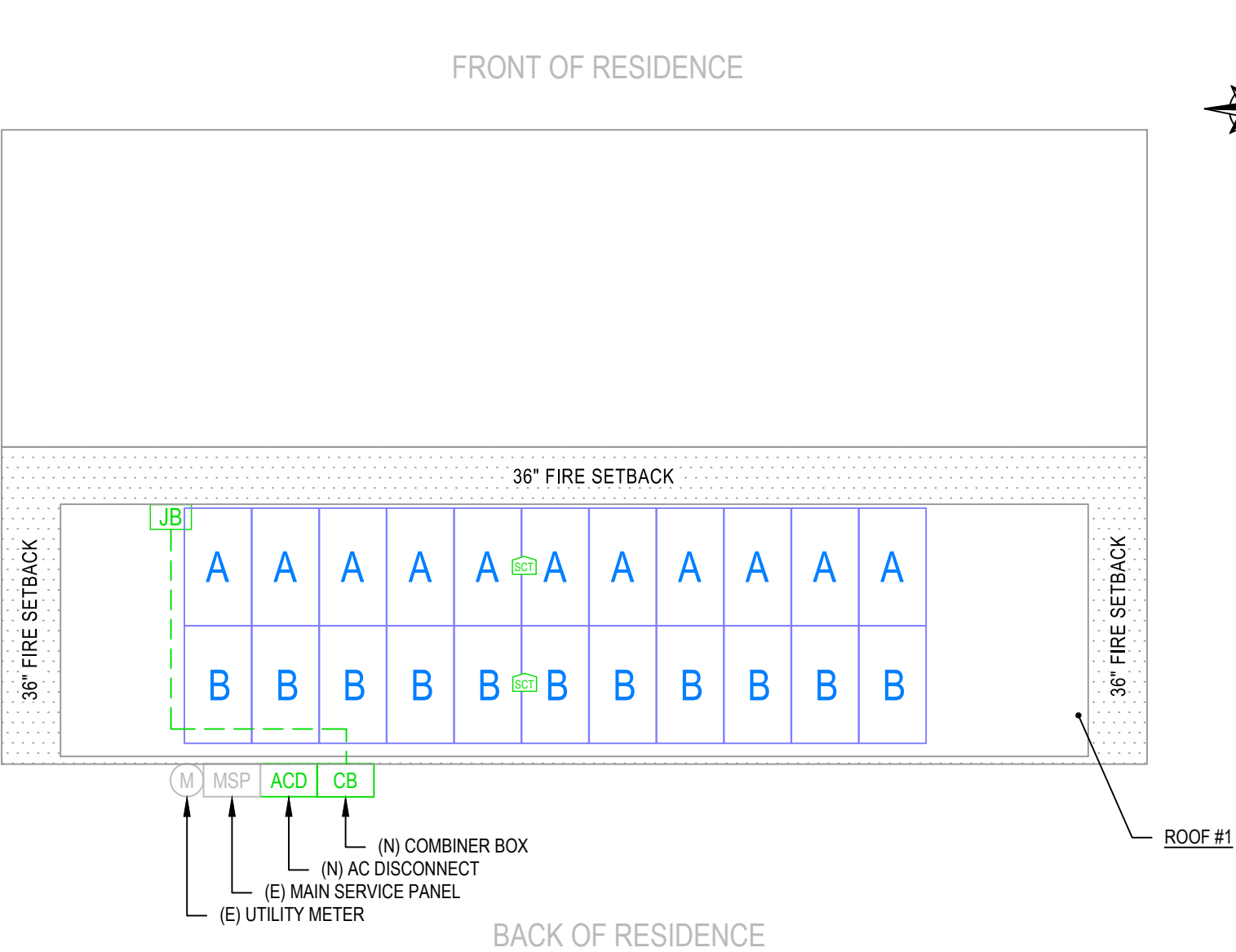
! WARNING !

INVERTER OUTPUT CONNECTION. DO NOT  
RELOCATE THIS OVERCURRENT DEVICE.

LABEL LOCATION:  
POINT-OF-INTERCONNECTION OR AT  
MAIN SERVICE DISCONNECT (MSP)  
PER CODE: NEC 705.12(B)(2)(3)(b)



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY OMAR TIRADO ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEAL, AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES



ROOF #1



ATLANTIC KEY ENERGY LLC  
12600 CHALLENGER PARKWAY  
SUITE 200  
ORLANDO, FL 32826  
1 (407) 988-0273

Lumio

PROJECT NAME & ADDRESS

ASHLEY DULL  
RESIDENCE  
PROJECT # P-0065449  
1108 NORTHWEST ASHLEY ST  
LAKE CITY, FL 32055

SIGNATURE WITH SEAL

| REVISIONS   |      |     |
|-------------|------|-----|
| DESCRIPTION | DATE | REV |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |

Drawn by: N.R.  
Date: 1/10/2023

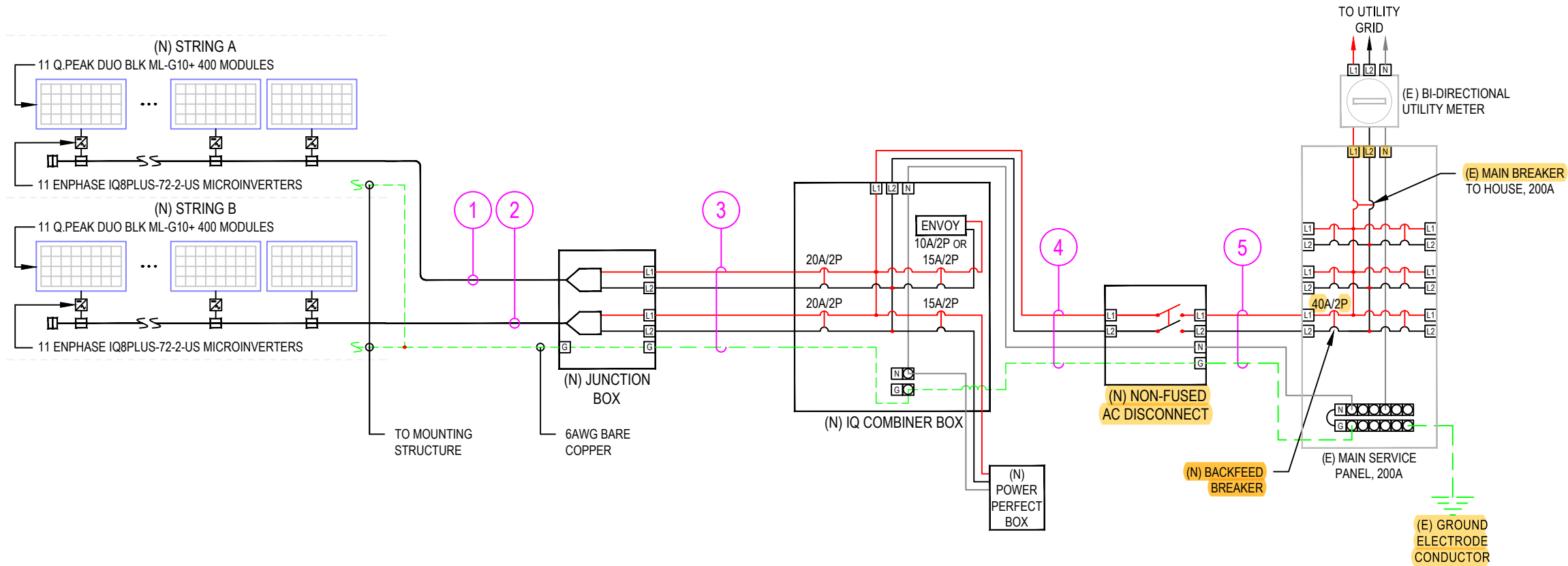
SHEET NAME

STRING LAYOUT &  
SIGNAGE

SHEET NUMBER

E-1

| ID | INITIAL CONDUCTOR LOCATION | FINAL CONDUCTOR LOCATION | MIN. CONDUCTOR SIZE (AWG) |               | MIN. DIA CONDUIT SIZE (IN.) | # OF PARALLEL CIRCUITS | CURRENT-CARRYING CONDUCTORS IN CONDUIT | OCPD (A) | MIN. EGC SIZE (AWG) |               | TEMP. CORR. FACTOR |      | CONDUIT FILL FACTOR | CONT. CURRENT (A) | MAX. CURRENT (A) | BASE AMP. (A) | DERATED AMP. (A) | TERM. AMP. RATING (A) | LENGTH (FT) | VOLTAGE DROP (%) |
|----|----------------------------|--------------------------|---------------------------|---------------|-----------------------------|------------------------|----------------------------------------|----------|---------------------|---------------|--------------------|------|---------------------|-------------------|------------------|---------------|------------------|-----------------------|-------------|------------------|
| 1  | STRING A                   | JUNCTION BOX             | 12                        | Q CABLE       | N/A                         | 1                      | 2                                      | N/A      | 6                   | BARE COPPER   | 0.76               | 55°C | N/A                 | 13.31             | 16.64            | 30            | N/A              | N/A                   | 40.00       | 0.88             |
| 2  | STRING B                   | JUNCTION BOX             | 12                        | Q CABLE       | N/A                         | 1                      | 2                                      | N/A      | 6                   | BARE COPPER   | 0.76               | 55°C | N/A                 | 13.31             | 16.64            | 30            | N/A              | N/A                   | 50.00       | 0.45             |
| 3  | JUNCTION BOX               | COMBINER BOX             | 10                        | THWN-2 COPPER | 0.75 LTNM                   | 2                      | 4                                      | 20       | 10                  | THWN-2 COPPER | 0.76               | 55°C | 0.8                 | 13.31             | 16.64            | 40            | 24.3             | 35                    | 35.00       | 0.48             |
| 4  | COMBINER BOX               | AC DISCONNECT            | 8                         | THWN-2 COPPER | 0.75 LTNM                   | 1                      | 3                                      | N/A      | 10                  | THWN-2 COPPER | 0.96               | 34°C | 1                   | 26.62             | 33.28            | 55            | 52.8             | 35                    | 5.00        | 0.09             |
| 5  | AC DISCONNECT              | MSP                      | 8                         | THWN-2 COPPER | 0.75 LTNM                   | 1                      | 3                                      | 40       | 10                  | THWN-2 COPPER | 0.96               | 34°C | 1                   | 26.62             | 33.28            | 55            | 52.8             | 35                    | 5.00        | 0.09             |



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY OMAR TIRADO ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEAL, AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

NOTE:  
1. LTNM OR EQUIVALENT TYPE CONDUIT

LEGEND  
(E) - EXISTING  
(N) - NEW

| DESIGN TEMPERATURE SPECIFICATIONS |      |
|-----------------------------------|------|
| RECORD LOW TEMP                   | 1°C  |
| AMBIENT TEMP. (HIGH TEMP. 2%)     | 34°C |
| CONDUIT HEIGHT                    | 1.0" |
| CONDUCTOR TEMP. RATE (ROOF)       | 55°C |

ATLANTIC KEY ENERGY LLC  
12600 CHALLENGER PARKWAY  
SUITE 200  
ORLANDO, FL 32826  
1 (407) 988-0273

PROJECT NAME & ADDRESS

ASHLEY DULL  
RESIDENCE  
PROJECT # P-0065449  
1108 NORTHWEST ASHLEY ST  
LAKE CITY, FL 32055

SIGNATURE WITH SEAL

| REVISIONS   |      |     |
|-------------|------|-----|
| DESCRIPTION | DATE | REV |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |

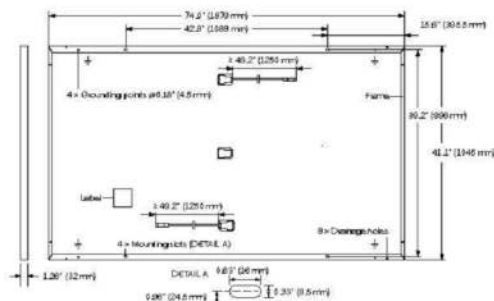
Drawn by: N.R.

Date: 1/10/2023

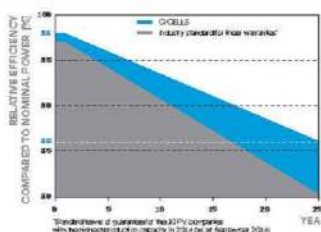
| SHEET NAME                          |
|-------------------------------------|
| ELECTRICAL LINE<br>DIAGRAM & CALCS. |
| SHEET NUMBER                        |



|              |                                                                                                           |
|--------------|-----------------------------------------------------------------------------------------------------------|
| Format       | 74.0 in x 41.1 in x 1.26 in (including frame)<br>(1879 mm x 1045 mm x 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   | Composite film                                                                                            |
| Frame        | Black anodized aluminum                                                                                   |
| Cell         | 6 x 22 monocrystalline Q.ANTUM solar half cells                                                           |
| Junction Box | 2.09-3.98 in x 1.26-2.36 in x 0.59-0.71 in<br>(53-101 mm x 32-60 mm x 15-18 mm), IP67, with bypass diodes |
| Cable        | 4 mm <sup>2</sup> Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)                           |
| Connector    | Stäubli MC4, IP68                                                                                         |

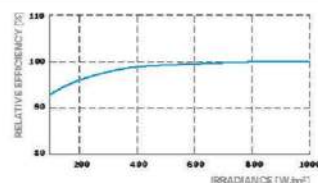


| POWER CLASS                                                                                     |                                    |                      | 385   | 390   | 395   | 400   | 405   |
|-------------------------------------------------------------------------------------------------|------------------------------------|----------------------|-------|-------|-------|-------|-------|
| MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5 W / -0 W) |                                    |                      |       |       |       |       |       |
| Minimum                                                                                         | Power at MPP <sup>1</sup>          | P <sub>MPP</sub> [W] | 385   | 390   | 395   | 400   | 405   |
|                                                                                                 | Short Circuit Current <sup>1</sup> | I <sub>SC</sub> [A]  | 11.04 | 11.07 | 11.10 | 11.14 | 11.17 |
|                                                                                                 | Open Circuit Voltage <sup>1</sup>  | V <sub>OC</sub> [V]  | 45.19 | 45.23 | 45.27 | 45.30 | 45.34 |
|                                                                                                 | Current at MPP                     | I <sub>MPP</sub> [A] | 10.59 | 10.65 | 10.71 | 10.77 | 10.83 |
|                                                                                                 | Voltage at MPP                     | V <sub>MPP</sub> [V] | 36.36 | 36.62 | 36.88 | 37.13 | 37.39 |
|                                                                                                 | Efficiency <sup>1</sup>            | η [%]                | ≥19.6 | ≥19.9 | ≥20.1 | ≥20.4 | ≥20.6 |
| MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>1</sup>                           |                                    |                      |       |       |       |       |       |
| Minimum                                                                                         | Power at MPP                       | P <sub>MPP</sub> [W] | 288.8 | 292.6 | 296.3 | 300.1 | 303.8 |
|                                                                                                 | Short Circuit Current              | I <sub>SC</sub> [A]  | 8.90  | 8.92  | 8.95  | 8.97  | 9.00  |
|                                                                                                 | Open Circuit Voltage               | V <sub>OC</sub> [V]  | 42.62 | 42.65 | 42.69 | 42.72 | 42.76 |
|                                                                                                 | Current at MPP                     | I <sub>MPP</sub> [A] | 8.35  | 8.41  | 8.46  | 8.51  | 8.57  |
|                                                                                                 | Voltage at MPP                     | V <sub>MPP</sub> [V] | 34.59 | 34.81 | 35.03 | 35.25 | 35.46 |



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 Q CELLS sales organisation of your respective country.



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m<sup>2</sup>)

| TEMPERATURE COEFFICIENTS             |          |       |       |                                      |         |       |                  |
|--------------------------------------|----------|-------|-------|--------------------------------------|---------|-------|------------------|
| Temperature Coefficient of $I_{SC}$  | $\alpha$ | [%/K] | +0.04 | Temperature Coefficient of $V_{OC}$  | $\beta$ | [%/K] | -0.27            |
| Temperature Coefficient of $P_{MPP}$ | $\gamma$ | [%/K] | -0.34 | Nominal Module Operating Temperature | NMOT    | [°F]  | 109±5.4 (43±3°C) |

|                                          |                        |                            |                                                    |                                             |
|------------------------------------------|------------------------|----------------------------|----------------------------------------------------|---------------------------------------------|
| Maximum System Voltage $V_{sys}$         | [V]                    | 1000 (EC)/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 <sup>3</sup> | [lbs/ft <sup>2</sup> ] | 75 (3600 Pa)/55 (2660 Pa)  | Permitted Module Temperature<br>on Continuous Duty | -40°F up to +185°F<br>(-40 °C up to +85 °C) |
| Max. Test Load, Push/Pull <sup>3</sup>   | [lbs/ft <sup>2</sup> ] | 113 (5400 Pa)/84 (4000 Pa) |                                                    |                                             |

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



|                         |                  |                  |                  |                  |               |               |               |
|-------------------------|------------------|------------------|------------------|------------------|---------------|---------------|---------------|
| Horizontal<br>packaging | 76.4in<br>1940mm | 43.3in<br>1100mm | 48.0in<br>1220mm | 1656lbs<br>751kg | 24<br>pallets | 24<br>pallets | 32<br>modules |
|-------------------------|------------------|------------------|------------------|------------------|---------------|---------------|---------------|

**Note:** Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use 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 [inquiry@us.q-cells.com](mailto:inquiry@us.q-cells.com) | WEB [www.q-cells.us](http://www.q-cells.us)

| INPUT DATA (DC)                          |    | I08-60-2-US                                                                                                                                                                                                                                                                                                                                                                                            | I08PLUS-72-2-US                                 |
|------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Commonly used module pairings¹           | W  | 235 – 350                                                                                                                                                                                                                                                                                                                                                                                              | 235 – 440                                       |
| Module compatibility                     |    | 60-cell/120 half-cell                                                                                                                                                                                                                                                                                                                                                                                  | 60-cell/120 half-cell and 72-cell/144 half-cell |
| MPPT voltage range                       | V  | 27 – 37                                                                                                                                                                                                                                                                                                                                                                                                | 29 – 45                                         |
| Operating range                          | V  | 25 – 48                                                                                                                                                                                                                                                                                                                                                                                                | 25 – 58                                         |
| Min/max start voltage                    | V  | 30 / 48                                                                                                                                                                                                                                                                                                                                                                                                | 30 / 58                                         |
| Max input DC voltage                     | V  | 50                                                                                                                                                                                                                                                                                                                                                                                                     | 60                                              |
| Max DC current² [module Isc]             | A  | 15                                                                                                                                                                                                                                                                                                                                                                                                     |                                                 |
| Overvoltage class DC port                |    | II                                                                                                                                                                                                                                                                                                                                                                                                     |                                                 |
| DC port backfeed current                 | mA | 0                                                                                                                                                                                                                                                                                                                                                                                                      |                                                 |
| PV array configuration                   |    | 1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit                                                                                                                                                                                                                                                                                |                                                 |
| OUTPUT DATA (AC)                         |    | I08-60-2-US                                                                                                                                                                                                                                                                                                                                                                                            | I08PLUS-72-2-US                                 |
| Peak output power                        | VA | 245                                                                                                                                                                                                                                                                                                                                                                                                    | 300                                             |
| Max continuous output power              | VA | 240                                                                                                                                                                                                                                                                                                                                                                                                    | 290                                             |
| Nominal (L-L) voltage/range³             | V  | 240 / 211 – 264                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |
| Max continuous output current            | A  | 1.0                                                                                                                                                                                                                                                                                                                                                                                                    | 1.21                                            |
| Nominal frequency                        | Hz | 60                                                                                                                                                                                                                                                                                                                                                                                                     |                                                 |
| Extended frequency range                 | Hz | 50 – 68                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |
| Max units per 20 A (L-L) branch circuit⁴ |    | 16                                                                                                                                                                                                                                                                                                                                                                                                     | 13                                              |
| Total harmonic distortion                |    | <5%                                                                                                                                                                                                                                                                                                                                                                                                    |                                                 |
| Overvoltage 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                          | %  | 97.5                                                                                                                                                                                                                                                                                                                                                                                                   | 97.6                                            |
| CEC weighted efficiency                  | %  | 97                                                                                                                                                                                                                                                                                                                                                                                                     | 97                                              |
| Night-time power consumption             | mW | 60                                                                                                                                                                                                                                                                                                                                                                                                     |                                                 |
| MECHANICAL DATA                          |    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |
| Ambient temperature range                |    | -40°C to +60°C (-40°F to +140°F)                                                                                                                                                                                                                                                                                                                                                                       |                                                 |
| Relative humidity range                  |    | 4% to 100% (condensing)                                                                                                                                                                                                                                                                                                                                                                                |                                                 |
| DC Connector type                        |    | MC4                                                                                                                                                                                                                                                                                                                                                                                                    |                                                 |
| Dimensions (HxWxD)                       |    | 212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")                                                                                                                                                                                                                                                                                                                                                         |                                                 |
| Weight                                   |    | 1.08 kg (2.38 lbs)                                                                                                                                                                                                                                                                                                                                                                                     |                                                 |
| Cooling                                  |    | Natural convection – no fans                                                                                                                                                                                                                                                                                                                                                                           |                                                 |
| Approved for wet locations               |    | Yes                                                                                                                                                                                                                                                                                                                                                                                                    |                                                 |
| Acoustic noise at 1 m                    |    | <60 dBA                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |
| Pollution degree                         |    | PD3                                                                                                                                                                                                                                                                                                                                                                                                    |                                                 |
| Enclosure                                |    | Class II double-insulated, corrosion resistant polymeric enclosure                                                                                                                                                                                                                                                                                                                                     |                                                 |
| Environ. category / UV exposure rating   |    | NEMA Type 6 / outdoor                                                                                                                                                                                                                                                                                                                                                                                  |                                                 |
| COMPLIANCE                               |    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |
| Certifications                           |    | CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 1071-01<br><br>This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions. |                                                 |

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2021-10-19

**ATLANTIC KEY ENERGY LLC**  
12600 CHALLENGER PARKWAY  
SUITE 200  
ORLANDO, FL 32826  
1 (407) 988-0273

# Lumio\*

PROJECT NAME &amp; ADDRESS

ASHLEY DULL  
RESIDENCE  
PROJECT # P-0065449  
1108 NORTHWEST ASHLEY ST  
LAKE CITY, FL 32055

SIGNATURE WITH SEAL

## REVISIONS

| DESCRIPTION | DATE | REV |
|-------------|------|-----|
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |

Drawn by: N.R.

Date: 1/10/2021

SHEET NAME

## EQUIPMENT SPECIFICATIONS

SHEET NUMBER

E-3

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<br>COMMS-CELLMODEM-M1-06<br>CELLMODEM-M1-06-SP-05<br>CELLMODEM-M1-06-AT-05            | - Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites<br>- 4G based LTE-M1 cellular modem with 5-year Sprint data plan<br>- 4G based LTE-M1 cellular modem with 5-year AT&T data plan                                                                                                                                                                                                                                                                                                                                                              |
| Circuit Breakers<br>BRK-10A-2-240V<br>BRK-15A-2-240V<br>BRK-20A-2P-240V<br>BRK-15A-2P-240V-B<br>BRK-20A-2P-240V-B | Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers.<br>Circuit breaker, 2 pole, 10A, Eaton BR210<br>Circuit breaker, 2 pole, 15A, Eaton BR215<br>Circuit breaker, 2 pole, 20A, Eaton BR220<br>Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support<br>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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 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<br>- 60 A breaker branch input: 4 to 1/0 AWG copper conductors<br>- Main lug combined output: 10 to 2/0 AWG copper conductors<br>- Neutral and ground: 14 to 1/0 copper conductors<br>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<br>Production metering: ANSI C12.20 accuracy class 0.5 (PV production)<br>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](https://enphase.com)

© 2021 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. 10-21-2021





ATLANTIC KEY ENERGY LLC  
12600 CHALLENGER PARKWAY  
SUITE 200  
ORLANDO, FL 32826  
1 (407) 988-0273

Lumio

PROJECT NAME & ADDRESS

ASHLEY DULL  
RESIDENCE  
PROJECT # P-0065449  
1108 NORTHWEST ASHLEY ST  
LAKE CITY, FL 32055

SIGNATURE WITH SEAL

REVISIONS

| DESCRIPTION | DATE | REV |
|-------------|------|-----|
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |
|             |      |     |

Drawn by: N.R.  
Date: 1/10/2023

SHEET NAME

EQUIPMENT SPECIFICATIONS

SHEET NUMBER

E-4