GHES GREEN HYBRID ENERGY SOLUTIONS

Inexhaustible Energy Solutions for the 21st Century

March 26, 2024

Town of North Castle
Planning Board
17 Bedford Road
Armonk, NY 10504Redding, CT 06875

Re: DNV INC Julio Rizo
126 Lafayette Avenue
White Plains, NY 10603-1602

To Whom It May Concern,

Per the attached plans, a 23.28 Kw DC (17.30 Kw AC) is proposed to be installed on the steel roof of a commercial warehouse located at the above captioned address. The system will consist of 48 Hanwha Q-Peak 485W solar panels and 1 Solar Edge 17.3Kw AC inverter. The warehouse has a flat roof and the panels will not be visible from the street.

Very truly yours,

Janet E. Glover, Owner/COO
Green Hybrid Energy Solutions, Inc.

11 Washington Place East White Plains, New York 10603
(844) SOLAR-NOW
jglover@ghessolar.com 914-539-5984
eglover@ghessolar.com 914-299-9552
Office 914-949-4900
FAX 914-949-4904

Town of North Castle
17 Bedford Road
Armonk, NY 10504

To whom it may concern,
This is to authorize Janet E. Glover to act on my behalf with respect to filling of a permit for a solar system on the roof of 126 Lafayette Avenue, White Plains, NY 10603.

Sincerely-

Julio Rizo
DNV Inc DBA D&C Auto

I. IDENTIFICATION OF PROPERTY OWNER, APPLICANT AND PROFESSIONAL REPRESENTATIVES

Name of Property Owner: Julio Rizo

Mailing Address: 126 Lafayette Ave, White Plains NY

Telephone: 914.384.9414 Fax: _____ e-mail juliorimpalass@aol.com

Name of Applicant (if different): JANET E. GLOVER - Green Hybrid ENERGY Solutions Inc

Address of Applicant: 11 WASHINGTON PLACE EAST, WHITE PLAINS NY 10603

Telephone: 914-299-9552 Fax: _____ e-mail eglover@ghessolar.com

Interest of Applicant, if other than Property Owner:
REPRESENTATIVE OF PROPERTY OWNER

Is the Applicant (if different from the property owner) a Contract Vendee?

Yes ☑ No ☐

If yes, please submit affidavit sating such. If no, application cannot be reviewed by Planning Board

Name of Professional Preparing Site Plan:
SUNIL SAIGAL P.E. - ENTHINK ENGINEERING LLC

Address: 1266 RAHWAY Ave, Westfield, NJ 07090

Telephone: (646) 632-7738 Fax: _____ e-mail enthinkllc@gmail.com

Name of Other Professional: GREEN Hybrid ENERGY Solutions

Address: 11 WASHINGTON PLACE EAST White Plains NY 10603

Telephone: 914.949-4900 Fax: _____ e-mail eglover@ghessolar.com

Name of Attorney (if any): _____

Address: _____

Telephone: _____ Fax: _____ e-mail _____

II. IDENTIFICATION OF SUBJECT PROPERTY

Street Address: 126 Lafayette Ave White Plains NY 10603

Location (in relation to nearest intersecting street):

_____ feet (north, south, east or west) of _____

Abutting Street(s): _____

Tax Map Designation (NEW): Section 122.12 Block 1 Lot 7

Tax Map Designation (OLD): Section _____ Block _____ Lot _____

Zoning District: _____ Total Land Area _____

Land Area in North Castle Only (if different) _____

Fire District(s) _____ School District(s) _____

Is any portion of subject property abutting or located within five hundred (500) feet of the following:

The boundary of any city, town or village?
No ✓ Yes (adjacent) _____ Yes (within 500 feet) _____
If yes, please identify name(s): _____

The boundary of any existing or proposed County or State park or any other recreation area?
No ✓ Yes (adjacent) _____ Yes (within 500 feet) _____

The right-of-way of any existing or proposed County or State parkway, thruway, expressway, road or highway?
No ✓ Yes (adjacent) _____ Yes (within 500 feet) _____

The existing or proposed right-of-way of any stream or drainage channel owned by the County or for which the County has established channel lines?
No ✓ Yes (adjacent) _____ Yes (within 500 feet) _____

The existing or proposed boundary of any county or State owned land on which a public building or institution is situated?
No ✓ Yes (adjacent) _____ Yes (within 500 feet) _____

The boundary of a farm operation located in an agricultural district?
No ✓ Yes (adjacent) _____ Yes (within 500 feet) _____

Does the Property Owner or Applicant have an interest in any abutting property?
No ✓ Yes _____

If yes, please identify the tax map designation of that property:

_____

III. DESCRIPTION OF PROPOSED DEVELOPMENT

Proposed Use: NO CHANGE

Gross Floor Area: Existing _____ S.F. Proposed _____ S.F.

Proposed Floor Area Breakdown:

Retail _____ S.F.; Office _____ S.F.;

Industrial _____ S.F.; Institutional _____ S.F.;

Other Nonresidential _____ S.F.; Residential _____ S.F.;

Number of Dwelling Units: _____

Number of Parking Spaces: Existing _____ Required _____ Proposed _____

Number of Loading Spaces: Existing _____ Required _____ Proposed _____

Earthwork Balance: Cut _____ C.Y. Fill _____ C.Y.

Will Development on the subject property involve any of the following:

Areas of special flood hazard? No ✓ Yes _____
(If yes, application for a Development Permit pursuant to Chapter 177 of the North Castle Town Code may also be required)

Trees with a diameter at breast height (DBH) of 8" or greater?

No ✓ Yes _____
(If yes, application for a Tree Removal Permit pursuant to Chapter 308 of the North Castle Town Code may also be required.)

Town-regulated wetlands? No ✓ Yes _____
(If yes, application for a Town Wetlands Permit pursuant to Chapter 340 of the North Castle Town Code may also be required.)

State-regulated wetlands? No ✓ Yes _____
(If yes, application for a State Wetlands Permit may also be required.)

Applicant Acknowledgement

By making this application, the undersigned Applicant agrees to permit Town officials and their designated representatives to conduct on-site inspections in connection with the review of this application.

The Applicant also agrees to pay all expenses for the cost of professional review services required for this application.

It is further acknowledged by the Applicant that all bills for the professional review services shall be mailed to the Applicant, unless the Town is notified in writing by the Applicant at the time of initial submission of the application that such mailings should be sent to a designated representative instead.

Signature of Applicant: _____ Date: 4/10/2024

Signature of Property Owner: _____ Date: 4/15/2024

MUST HAVE BOTH SIGNATURES

617.20
Appendix B
Short Environmental Assessment Form

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information

Name of Action or Project:
DNV INC JULIO RIZO

Project Location (describe, and attach a location map):
126 Lafayette Ave. White Plains NY 10603

Brief Description of Proposed Action:
Installation of a 17.300 kW AC Solar Photovoltaic System on the roof consisting of 48 Hanwha Q-Cell panels and 1 SolarEdge 17.3 208v Inverter mounted on a ballasted racking system.

Name of Applicant or Sponsor:	Telephone: (914) 299-9552
Janet E. Glover- Green Hybrid Energy Solutions, Inc.	E-Mail: eglover@ghessolar.com

Address:
11 Washington Place East

City/PO:	State:	Zip Code:
White Plains	NY	10603

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☒	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval:	☒	☐

3.a. Total acreage of the site of the proposed action? _____ acres
b. Total acreage to be physically disturbed? 0 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____acres

4. Check all land uses that occur on, adjoining and near the proposed action.
☐ Urban ☐ Rural (non-agriculture) ☒ Industrial ☒ Commercial ☐ Residential (suburban)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____
☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☒	☐
b. Consistent with the adopted comprehensive plan?	☐	☒	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☒
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	☒	☐
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☒	☐
b. Are public transportation service(s) available at or near the site of the proposed action?	☒	☐
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	☒	☐
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____	☐	☒
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____	☒	☐
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	☒	☐
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?	☒	☐
b. Is the proposed action located in an archeological sensitive area?	☒	☐
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☒	☐
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____	☒	☐

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional
☐ Wetland ☒ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☒	☐
16. Is the project site located in the 100 year flood plain?	☒	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☐ NO ☐ YES	☒	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: ☐ NO ☐ YES _____		

	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	☒	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☒	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☒	☐

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: Julio Rizo - DNV INC Date 4/11/2024

Signature: _____

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☐	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☐	☐
3. Will the proposed action impair the character or quality of the existing community?	☐	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☐	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☐	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☐	☐
7. Will the proposed action impact existing: a. public / private water supplies?	☐	☐
b. public / private wastewater treatment utilities?	☐	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☐	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☐	☐

	No, or small impact may occur	Moderate to large impact may occur
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?	☐	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☐	☐

Part 3 - Determination of significance. The Lead Agency is responsible for the completion of Part 3. For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.

☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.

Name of Lead Agency	Date
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (if different from Responsible Officer)

PRINT

1266 Rahway Avenue, Westfield, NJ 07090

Enthink Engineering LLC enthinkllc@gmail.com (646) 632-7738

March 29, 2024

Town of North Castle
Building Department
17 Bedford Road
Armonk, NY 10504

Re: DNV Inc.
126 Lafayette Avenue
White Plains, NY 10603

To Whom It May Concern,

The existing roof structure of the above captioned property is made of EPDM membrane with plywood, insulation board then q-decking underneath. This is supported with 2' I Beams spaced 16' apart with 2' trusses on top of that spaced 5.5' apart. This will support the additional load of the solar panels of 4.54 PSF under the required loads of 125 MPH wind speed, and 30 PSF ground snow load without additional structural supports.

I have determined that the installation will meet the requirements of the 2020 IECC, 2020 NYS Uniform Code Supplement, NYS Energy Construction Code 2020, NEC 2018, IBC 2018 and Town of North Castle building codes, when installed in accordance with the manufacturer's instructions.

If you have any further questions or require addition information, feel free to contact me.

Very truly yours,

PHOTOVOLTAIC ROOF MOUNT SYSTEM

48 MODULES-SYSTEM SIZE STC (23.28 kW DC / 17.30 kW AC)
126 LAFAYETTE AVE, WHITE PLAINS, NY 10603, USA (41.0642809, -73.7718078)

SYSTEM SUMMARY STC (23.28 kW DC / 17.30 kW AC)

STC DC : (N) (48) 485 W = 23.28 kW
STC AC : (N) (1) 17300 W = 17.30 kW

- (N) (48) HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485 MODULES
- (N) (1) SOLAREDGE TECHNOLOGIES LTD. SE17.3KUS (208V) INVERTER
- (N) (24) SOLAREDGE P1101 OPTIMIZERS
- (N) 2 STRINGS OF 24 MODULES CONNECTED IN SERIES (12 SOLAREDGE P1101 OPTIMIZERS PER STRING)

GOVERNING CODES
ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
2020 BUILDING CODE OF NEW YORK STATE
[2020 NYSFC] 2020 NEW YORK STATE FIRE CODE
[2017 NEC] 2017 NFPA 70 - NATIONAL ELECTRICAL CODE
2020 MECHANICAL CODE OF NEW YORK STATE
2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE
AS ADOPTED BY NORTH CASTLE (TOWNSHIP OF), NEW YORK

CONEDISON
METER NO: #009963961
ACCOUNT NO: #02650-31000-2

NORTH CASTLE PARCEL ID 122.12-1-7

GENERAL NOTES

SITE NOTES
1. A LADDER WILL BE IN PLACE FOR INSPECTION IN ACCORDANCE WITH OSHA REGULATIONS.
2. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
3. THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
4. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED IN ACCORDANCE WITH SECTION NEC 110.26.
5. ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

EQUIPMENT LOCATIONS
1. ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS IN ACCORDANCE WITH NEC 110.26.
2. WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).
3. JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES IN ACCORDANCE WITH NEC 690.34.
4. ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
5. ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL IN ACCORDANCE WITH NEC APPLICABLE CODES.
6. ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

STRUCTURAL NOTES
1. RACKING SYSTEM & PV ARRAY WILL BE INSTALLED IN ACCORDANCE WITH THE CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, IN ACCORDANCE WITH RAIL MANUFACTURER'S INSTALLATION PRACTICES.
2. JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
3. ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
4. ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER OR PROFESSIONAL ENGINEERING GUIDANCE.
5. WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

WIRING & CONDUIT NOTES
4. ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2. CONDUCTORS SIZED IN ACCORDANCE WITH THE NEC.
3. AC CONDUCTORS TO BE COLORED OR MARKED PER NEC.
4. LISTED OR LABELED EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING PER NEC.

GROUNDING NOTES
1. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2. PV EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH NEC 690.43 AND NEC TABLE 250.122.
3. METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A).
4. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC 690.45 AND INVERTER MANUFACTURER'S INSTALLATION PRACTICES
5. EACH MODULE WILL BE GROUNDED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.
6. THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
7. GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #6 AWG OR SMALLER PER NEC 250.119
8. THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED IN ACCORDANCE WITH NEC 250, NEC 690.47 AND THE AHJ.
9. GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

DISCONNECTION AND OVERCURRENT PROTECTION NOTES
1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2. DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
3. PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR FIREFIGHTERS IN ACCORDANCE WITH 690.12(A) THROUGH (D).
4. ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
5. INVERTER ON-GRID BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OR GROUPED FUSE DISCONNECT(S) IN ACCORDANCE WITH NEC 110.3(B).
6. IF REQUIRED BY THE AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION IN ACCORDANCE WITH NEC 690.11 AND UL1699B.

INTERCONNECTION NOTES
1. LOAD SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.12.
2. THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120 PERCENT OF BUSBAR RATING PER NEC 705.12.
3. THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD IN ACCORDANCE WITH NEC 705.12.
4. AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT PROTECTION DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE MAIN OVERCURRENT PROTECTION DEVICE MAY BE EXCLUDED IN ACCORDANCE WITH NEC 705.12.
5. FEEDER TAP INTERCONNECTION (LOAD SIDE) IN ACCORDANCE WITH NEC 705.12.
6. SUPPLY SIDE TAP INTERCONNECTION IN ACCORDANCE WITH TO NEC 705.12 WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42.
7. BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING PER NEC 705.12.

SHEET INDEX

PV-0.0	COVER SHEET
PV-1.0	SITE PLAN WITH MODULES
PV-2.0	STRING DETAIL
PV-3.0	ATTACHMENT PLAN
PV-3.1	ATTACHMENT DETAIL & SPECS HEETS
PV-3.2	DISTRIBUTED LOAD CALCULATIONS & SPEC SHEETS
PV-4.0	ELECTRICAL 3LD, WIRING CALCULATION AND VOLTAGE DROP CALCULATION
PV-5.0	PLACARDS AND EQUIPMENT SPECIFICATION
PV-6.0	EQUIPMENT SPECIFICATION

AHJ: NORTH CASTLE (TOWNSHIP OF), NEW YORK
UTILITY: CONSOLIDATED EDISON CO-NY INC

BUILDING PHOTO
SCALE: NTS

VICINITY MAP
SCALE: NTS

GHES GREEN HYBRID ENERGY SOLUTION

CONTRACTOR:
GREEN HYBRID ENERGY SOLUTIONS, INC. (14606)
ADDRESS:
11 WASHINGTON PLACE E, WHITE PLAINS, NY 10603
PHONE: 9143467588
LICENSE #: WC-24683-H11
EMAIL #:
AWGLOVER@GHESSOLAR.COM

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	2/29/2024	0

SIGNATURE & SEAL
STATE OF NEW YORK
SUNIL SAIGAL
088728
LICENSED PROFESSIONAL ENGINEER
BUILDING DESIGNER

DNV INC.
126 LAFAYETTE AVE,
WHITE PLAINS, NY 10603, USA

APN: 122.12-1-7
EMAIL: julioimpalass@aol.com
PHONE: 9143849414

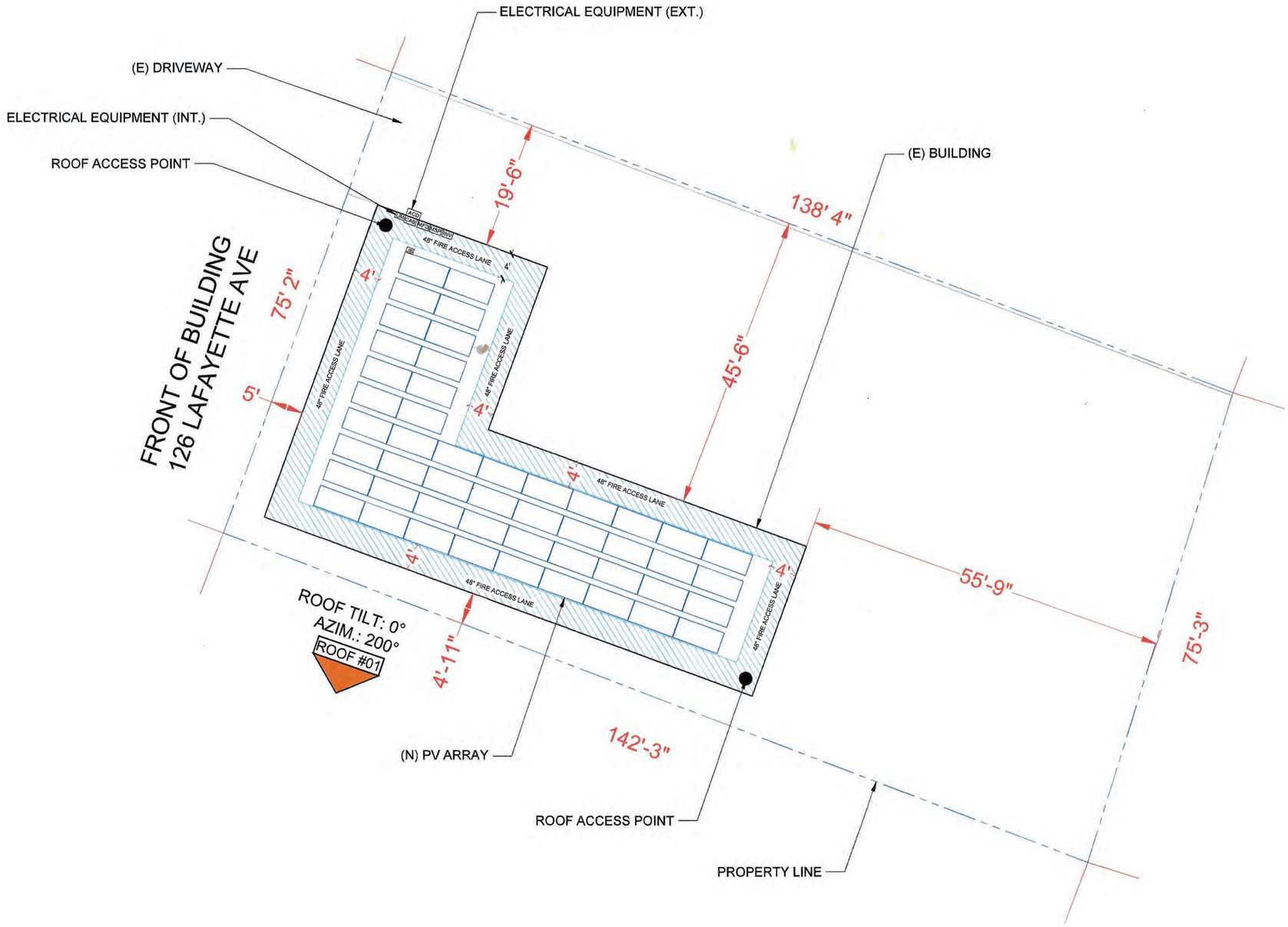
SHEET NAME
COVER SHEET

SHEET SIZE
ANSI D
24" X 36"

SHEET NUMBER
PV-0.0

NORTH CASTLE PARCEL ID 122.12-1-7

CONEDISON
METER NO: #009963961
ACCOUNT NO: #02650-31000-2



SITE PLAN WITH MODULES

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

SYSTEM SUMMARY STC (23.28 kW DC / 17.30 kW AC)

STC DC : (N) (48) 485 W = 23.28 kW
STC AC : (N) (1) 17300 W = 17.30 kW

- (N) (48) HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485 MODULES
- (N) (1) SOLAREDGE TECHNOLOGIES LTD. SE17.3KUS (208V) INVERTER
- (N) (24) SOLAREDGE P1101 OPTIMIZERS
- (N) 2 STRINGS OF 24 MODULES CONNECTED IN SERIES (12 SOLAREDGE P1101 OPTIMIZERS PER STRING)

FIRE SETBACK
NEW PV MODULE
OPTIMIZER
MICRO-INVERTER
ROOF ATTACHMENT
ROOF ACCESS POINT
STRING
CONDUIT RUN
DIMENSIONS
PROPERTY LINE
RAFTER/TRUSS
RAIL
FENCE
GATE

LEGEND

MSP	MAIN SERVICE PANEL (EXISTING)	MFD	MAIN FUSED DISCONNECT (EXISTING)	TFO	TRANSFORMER (N/A)
UM	UTILITY METER (EXISTING)	INV	INVERTER (NEW)	ACD	AC DISCONNECT UNFUSED (NEW)
PM	PRODUCTION METER (N/A)	CB	COMBINER PANEL (N/A)	ACD	AC DISCONNECT FUSED (N/A)
BAT	BATTERY (N/A)	SM	SOLAREDGE METER (N/A)	JB	JUNCTION BOX (NEW)
		BLP	BACKUP LOAD PANEL (N/A)	CAB	CT CABINET (EXISTING)

GHES GREEN HYBRID ENERGY SOLUTION

CONTRACTOR:
GREEN HYBRID ENERGY SOLUTIONS, INC. (14606)
ADDRESS:
11 WASHINGTON PLACE E, WHITE PLAINS, NY 10603
PHONE: 9143467588
LICENSE #: WC-24683-H11
EMAIL #:
AWGLOVER@GHESSOLAR.COM

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	2/29/2024	0

SIGNATURE & SEAL

STATE OF NEW YORK
SUNIL SAIGAL
088723
LICENSED PROFESSIONAL ENGINEER

BUILDING OWNER INFO

DNV INC.
126 LAFAYETTE AVE,
WHITE PLAINS, NY 10603, USA

APN: 122.12-1-7
EMAIL: julioimpalass@aol.com
PHONE: 9143849414

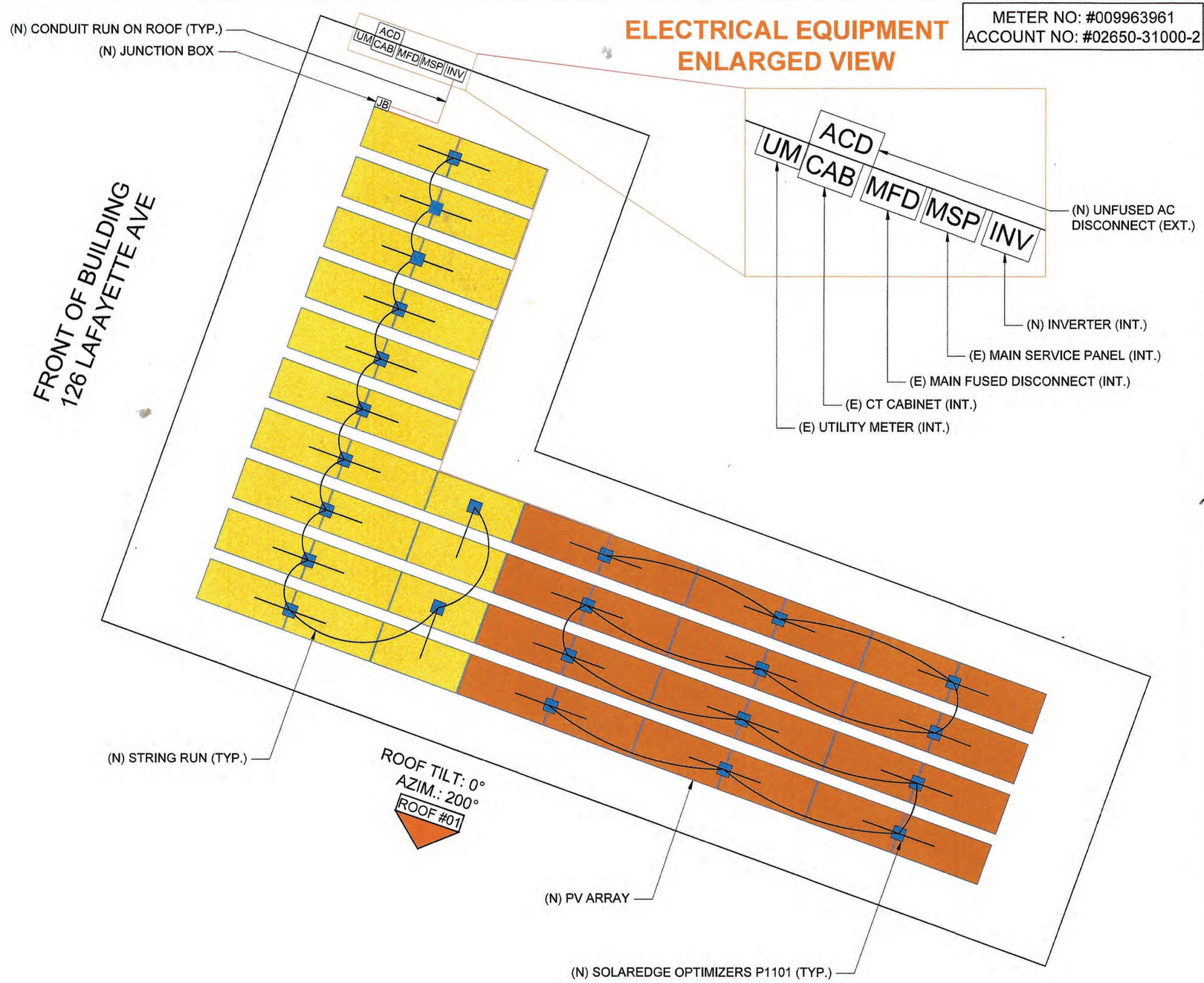
SHEET NAME
SITE PLAN WITH MODULES

SHEET SIZE
ANSI D
24" X 36"

SHEET NUMBER
PV-1.0

STRING # 1

STRING # 2



ELECTRICAL EQUIPMENT ENLARGED VIEW

METER NO: #009963961
ACCOUNT NO: #02650-31000-2

STRING DETAIL

SCALE: 1/4" = 1'-0"

SYSTEM SUMMARY STC (23.28 kW DC / 17.30 kW AC)

STC DC : (N) (48) 485 W = 23.28 kW
STC AC : (N) (1) 17300 W = 17.30 kW

- (N) (48) HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485 MODULES
- (N) (1) SOLAREDGE TECHNOLOGIES LTD. SE17.3KUS (208V) INVERTER
- (N) (24) SOLAREDGE P1101 OPTIMIZERS
- (N) 2 STRINGS OF 24 MODULES CONNECTED IN SERIES (12 SOLAREDGE P1101 OPTIMIZERS PER STRING)

LEGEND

FIRE SETBACK	STRING	MSP	MAIN SERVICE PANEL (EXISTING)	MFD	MAIN FUSED DISCONNECT (EXISTING)	TFO	TRANSFORMER (N/A)
NEW PV MODULE	CONDUIT RUN	UM	UTILITY METER (EXISTING)	INV	INVERTER (NEW)	ACD	AC DISCONNECT UNFUSED (NEW)
OPTIMIZER	DIMENSIONS	PM	PRODUCTION METER (N/A)	CB	COMBINER PANEL (N/A)	ACD	AC DISCONNECT FUSED (N/A)
MICRO-INVERTER	PROPERTY LINE	BAT	BATTERY (N/A)	SM	SOLAREDGE METER (N/A)	JB	JUNCTION BOX (NEW)
ROOF ATTACHMENT	RAFTER/TRUSS			BLP	BACKUP LOAD PANEL (N/A)	CAB	CT CABINET (EXISTING)
ROOF ACCESS POINT	RAIL						
	FENCE						
	GATE						

GREEN HYBRID ENERGY SOLUTIONS

CONTRACTOR:
GREEN HYBRID ENERGY SOLUTIONS, INC. (14606)
ADDRESS:
11 WASHINGTON PLACE E, WHITE PLAINS, NY 10603
PHONE: 9143467588
LICENSE #: WC-24683-H11
EMAIL #:
AWGLOVER@GHESSOLAR.COM

REVISIONS

DESCRIPTION	DATE	REV
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SIGNATURE & SEAL

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SUNIL SAIGAL
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LICENSED PROFESSIONAL ENGINEER

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APN: 122.12-1-7
EMAIL: julioimpalass@aol.com
PHONE: 9143849414

SHEET NAME

STRING DETAIL

SHEET SIZE

ANSI D
24" X 36"

SHEET NUMBER

PV-2.0

MODULE AREA & WEIGHT CALCULATIONS

BALLAST BLOCK COUNT: 78
TOTAL ROOF AREA: 2682 SF
TOTAL STRUCTURE AREA: 1570 SF

NEW MODELS:

- TOTAL PV AREA: (48) 87.24" x 41.14" = 1196.4 SF
- MODULES AND OPTIMIZER WEIGHT: (48) 64.2 + (24) 2.34 = 3137.76 LB
- RACKING WEIGHT: 1500 LB
- BALLAST WEIGHT: 2496 LB
- DISTRIBUTED LOAD: 7131.36LB / 1570SF= 4.54 PSF
- ROOF AREA COVERED: 1570 / 2682 = 58.53%
- AVERAGE PSF: 4.54 PSF

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULES	48	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485
INVERTER	1	SOLAREDGE TECHNOLOGIES LTD. SE17.3KUS INVERTER
OPTIMIZERS	24	SOLAREDGE OPTIMIZERS P1101
JB	1	JUNCTION BOX 600V, NEMA 3R UL LISTED
AC DISCONNECT	1	100A PV VISIBLE LOCKABLE LABELED UNFUSED AC DISCONNECT (240V 3PH 4W)
BALLAST BLOCK	78	BALLAST BLOCK
BALLAST BAY	125	RM5 BAY
WIND DAM	67	RM5 98" WIND DEFLECTOR
WIND DAM CLIP	296	KIT, WIND DEFLECTOR ATTACHMENT
END CLAMPS	437	RM END CLAMP 30-40MM
NUT	733	KIT 1/4 20 CLIP ON NUT SS 18-8
WIRE MANAGEMENT	48	RM WIRE MGMT CLIP
WIRE MANAGEMENT	48	RM WD WIRE MGMT CLIP
GROUNDING LUG (WEEB)	1	GROUND WEEBLUG #1
GROUNDING LUG	1	ILSCO LAY IN LUG (GBL4DBT)
WIRE MANAGEMENT	48	MLPE TIGER CLIP

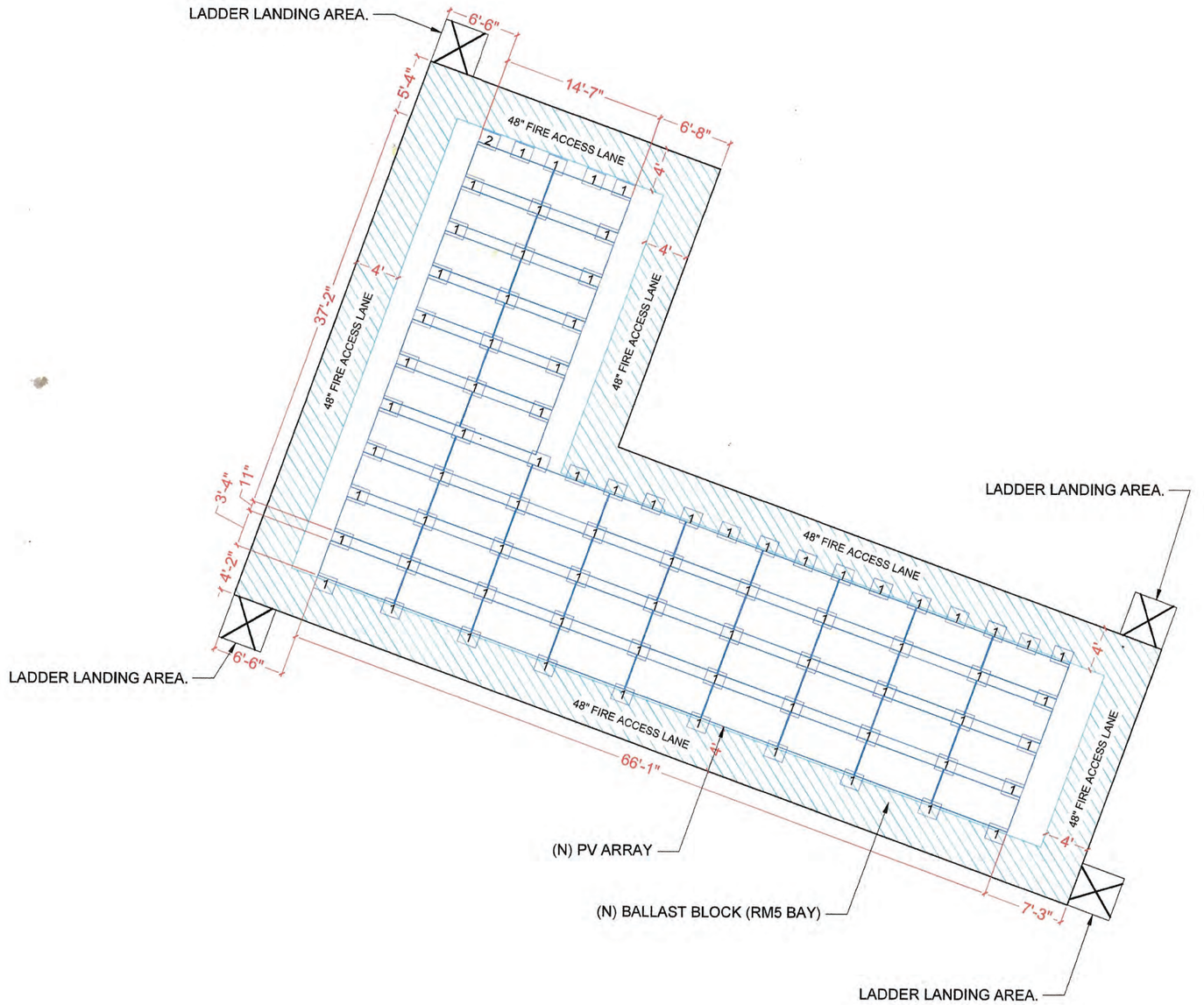
ROOF DESCRIPTION TABLE					
ROOF PLAN	ROOF PITCH	ROOF AZIMUTH	TRUSS SIZE	TRUSS SPACING	ROOF MATERIAL
PV ARRAY	0°	200°	4"X12"	16" O.C.	MEMBRANE

ROOF ACCESS POINT

- SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

DESIGN CRITERIA
ROOF TYPE: MEMBRANE
ROOF FRAMING: 4"X12" TRUSSES @ 16" OC
BUILDING STOREY: 1 STOREY
GROUND SNOW LOAD: 54 PSF
WIND SPEED: 115 MPH
EXPOSURE CATEGORY: B

METER NO: #009963961
ACCOUNT NO: #02650-31000-2



ATTACHMENT PLAN

SCALE: 3/16" = 1'-0"

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FIRE SETBACK
NEW PV MODULE
OPTIMIZER
MICRO-INVERTER
ROOF ATTACHMENT
ROOF ACCESS POINT
STRING
CONDUIT RUN
DIMENSIONS
PROPERTY LINE
RAFTER/TRUSS
RAIL
FENCE
GATE

LEGEND

MSP	MAIN SERVICE PANEL (EXISTING)	MFD	MAIN FUSED DISCONNECT (EXISTING)	TFO	TRANSFORMER (N/A)
UM	UTILITY METER (EXISTING)	INV	INVERTER (NEW)	ACD	AC DISCONNECT UNFUSED (NEW)
PM	PRODUCTION METER (N/A)	CB	COMBINER PANEL (N/A)	ACD	AC DISCONNECT FUSED (N/A)
BAT	BATTERY (N/A)	SM	SOLAREDGE METER (N/A)	JB	JUNCTION BOX (NEW)
		BLP	BACKUP LOAD PANEL (N/A)	CAB	CT CABINET (EXISTING)

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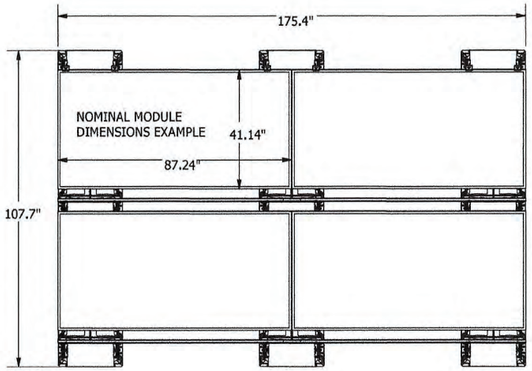
SHEET NAME
ATTACHMENT PLAN

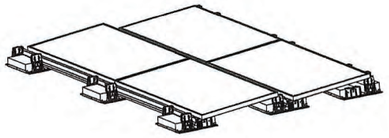
SHEET SIZE
ANSI D
24" X 36"

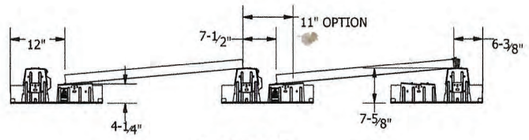
SHEET NUMBER
PV-3.0

NOTES:
1. ARRAY DIMENSIONS WILL VARY BASED ON MODULE WIDTH & LENGTH.



TOP

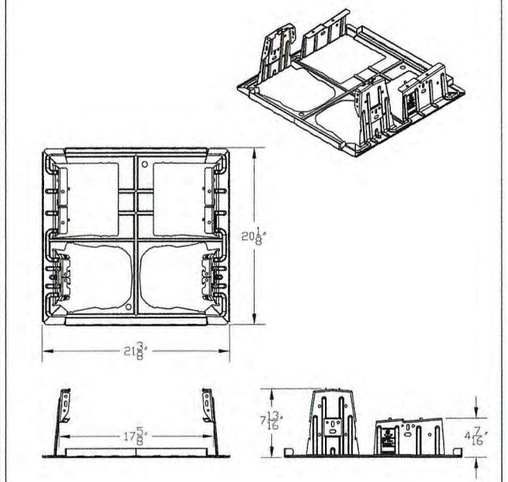




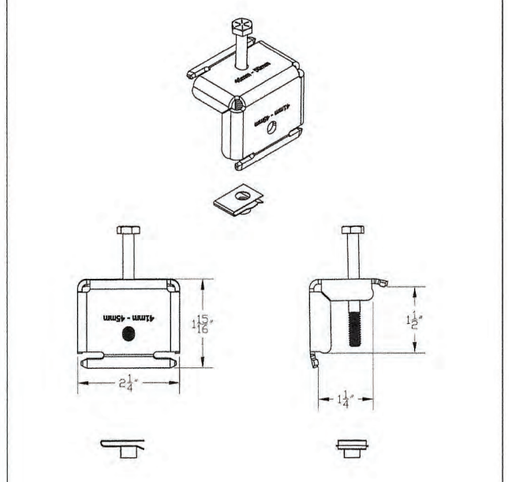
RIGHT SIDE

ATTACHMENT DETAIL

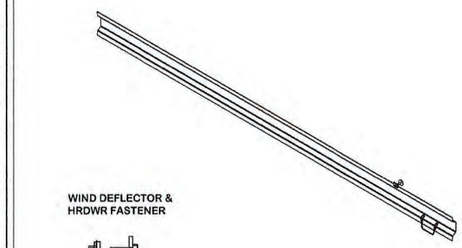
SCALE: NTS



UNIRAC 1411 BROADWAY BLVD NE ALBUQUERQUE, NM 87102 USA WWW.UNIRAC.COM	PRODUCT LINE: RM5 DRAWING TYPE: PART DESCRIPTION: RM5 BAY REVISION DATE: October_2016	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	RM5-P01 SHEET

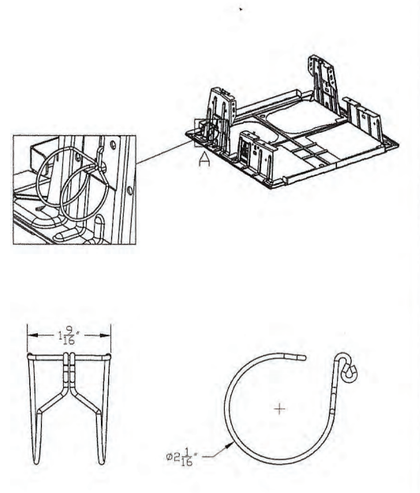


UNIRAC 1411 BROADWAY BLVD NE ALBUQUERQUE, NM 87102 USA WWW.UNIRAC.COM	PRODUCT LINE: RM5 DRAWING TYPE: PART DESCRIPTION: RM5 CLAMP REVISION DATE: October_2016	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	RM5-P02 SHEET



Standard Trim Length: 84 inch

UNIRAC 1411 BROADWAY BLVD NE ALBUQUERQUE, NM 87102 USA WWW.UNIRAC.COM	PRODUCT LINE: RM5 DRAWING TYPE: PART DESCRIPTION: RM5 WIND DEFLECTOR & WIRE CLIP REVISION DATE: October_2016	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	RM5-P03 SHEET

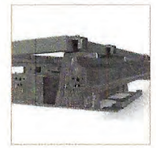


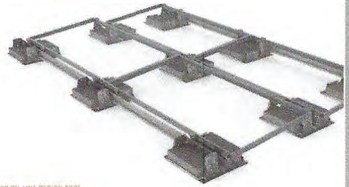
UNIRAC 1411 BROADWAY BLVD NE ALBUQUERQUE, NM 87102 USA WWW.UNIRAC.COM	PRODUCT LINE: RM5 DRAWING TYPE: PART DESCRIPTION: RM5 WIRE CLIP REVISION DATE: October_2016	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	RM5-P04 SHEET

ROOFMOUNT | RM5 — UNIRAC
SOUTH FACING 5 DEGREE TILT — BETTER SOLAR STARTS HERE

OPTIMIZE ARRAY LAYOUT
MAXIMUM LAYOUT FLEXIBILITY WITH TWO ROW SPACING OPTIONS

- 5 Degree Tilt with 7" / 11" Row Spacing Options
- Set, Then Clamp Feature, Provides Better Construction Sequencing for Rapid Installation
- Simplified Wire Management, with Two (2) Optional Unirac Clips
- Wind Deflector for Ballast Reduction & Fire Mitigation
- Optional Roof Attachment Meets a Variety of Project Requirements
- MPLE Mount with Engage Trunk Cable Wire Management Clip
- 6235 Steel - Double the Corrosion Protection of other Industry Products
- Compact Packaging - Up to 1 MW / Truck





GENERATE LAYOUTS IN MINUTES WITH U BUILDER ON-LINE DESIGN TOOL
INDUSTRY LEADING PROJECT SUPPORT
GUARANTEED PERMIT APPROVAL
FASTEST DELIVERY IN THE INDUSTRY
WORLD CLASS INSTALLATION TRAINING & SUPPORT

MAXIMIZE PROFITABILITY AT EVERY STEP
FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

GHES GREEN HYBRID ENERGY SOLUTION

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REVISIONS

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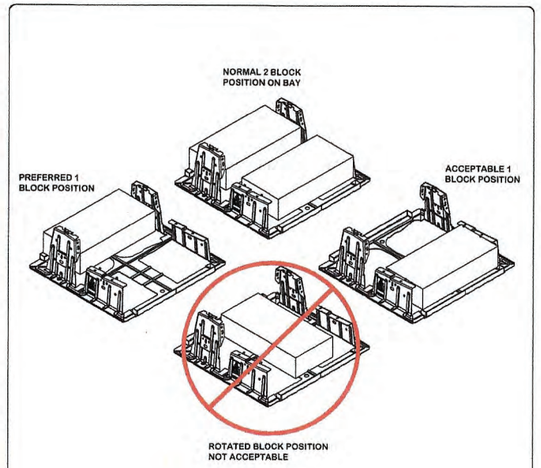
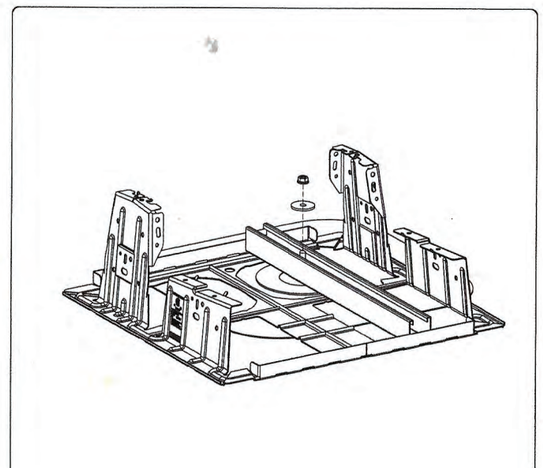
SHEET NAME
ATTACHMENT DETAIL & SPECSHEETS

SHEET SIZE
ANSI D
24" X 36"

SHEET NUMBER
PV-3.1



UNIRAC 1411 BROADWAY BLVD NE ALBUQUERQUE, NM 87102 USA WWW.UNIRAC.COM	PRODUCT LINE: RM5 DRAWING TYPE: ASSEMBLY DESCRIPTION: BLOCKS & HRDWR REVISION DATE: October_2016	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	RM5-A02 SHEET



UNIRAC 1411 BROADWAY BLVD NE ALBUQUERQUE, NM 87102 USA WWW.UNIRAC.COM	PRODUCT LINE: RM5 DRAWING TYPE: ASSEMBLY DESCRIPTION: RM5 ATTACHMENT REVISION DATE: October_2016	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	RM5-A03 SHEET

UNIRAC

U-BUILDER PROJECT REPORT
APPLICATION VERSION: 0.4.0
PROJECT VERSION: 0.0.47

PROJECT TITLE	PROJECT ID	LAST UPDATED	ORIGINALLY CREATED
ROOFMOUNT RM5	026C9D62	Feb. 23, 2024	Feb. 23, 2024

NAME	DNV Inc.	Designed by ak6bardwaj@enphaseenergy.com	
ADDRESS	126 Lafayette Ave, White Plains, NY 10603, USA	ROOFMOUNT RM5	
CITY, STATE	White Plains, NY	HanwhaQ CELLS	
MODULE	HanwhaQ CELLS Q.Peak DUO XL G10.3/BFG 485	48 - Q.Peak DUO XL G10.3/BFG 485	
		1570 ft²	
		23.28 kW	

NOTE: Installation of the project is intended to happen within the year of project designed in UBuilder. If it's past one year please rerun the design or contact Unirac Engineering Services.

BILL OF MATERIALS

LEGEND: ■ Base System Part ■ Accessory

PART NUMBER	PART TYPE	DESCRIPTION	QUANTITY	SUGGESTED QUANTITY	UNIT PRICE (USD)	TOTAL LIST PRICE (USD)
User Supplied	Ballast Block	Ballast Block	78	78	0.00	0.00
310800	Ballast Bay	RM5 Bay	125	125	49.27	6158.75
310811	Wind Dam	RM5 93" WIND DEFLECTOR	67	67	27.80	1862.60
310861	Wind Dam Clip	Kit, Wind Deflector Attachment	296	296	0.40	118.40
310820	End Clamp	RM End Clamp 30-40mm	437	437	3.32	1450.84
310860	Nut	Kit 1/4-20 Clip On Nut SS 18-8	733	733	0.52	381.16
310850	Wire Management	RM Wire Mgmt Clip	48	48	2.00	96.00
310851	Wire Management	RM WD Wire Mgmt Clip	48	48	1.67	80.16
008992S	Grounding Lug (Weeb)	GROUND WEEBLUG #1	1	1	9.08	9.08
008999P	Grounding Lug	BLSCO LAY IN LUG (GBL-4DBT)	1	1	7.54	7.54
008115M	Wire Management	MLPE Tiger Clip	48	48	2.73	131.04

BASE SYSTEM PRICE	ACCESSORIES PRICE	TOTAL PRICE
$9971.75	$323.82	$10295.57
$0.428 PER WATT	$0.014 PER WATT	$0.442 PER WATT

This design is to be evaluated to the product appropriate Unirac Code Compliant Installation Manual which references International Building Code 2009, 2012, 2015, 2018 and ASCE 7-05, ASCE 7-10, ASCE 7-16, ASCE-7-22 and California Building Code 2010, 2016. The installation of products related to this design is subject to requirements in the above mentioned installation manual.

ENGINEERING REPORT

Plan Review

AVERAGE PSF	4.51 psf
TOTAL NUMBER OF MODULES	48
TOTAL KW	23.28 KW
TOTAL STRUCTURE AREA	~1570 ft²
TOTAL WEIGHT ON ROOF	7078 lbs
RACKING WEIGHT	1503 lbs
MODULE WEIGHT	3082 lbs
BALLAST WEIGHT	3496 lbs
MAX BAY LOAD (DEAD)	118 lbs
TOTAL ATTACHMENT COUNT	0

Loads Used for Design

BUILDING CODE	ASCE 7-16
WIND SPEED	115.00 mph
GROUND SNOW LOAD	54.00 psf
SEISMIC, S_s	0.270
ELEVATION	236.00 ft
WIND EXPOSURE	B
MRI	50
RISK CATEGORY	II
VELOCITY PRESSURE, Q_z	17.80 psf
DEAD LOAD FACTOR MODIFICATION	1.0

Inspection

PRODUCT	ROOFMOUNT RM5
MODULE MANUFACTURER	HanwhaQ CELLS
MODEL	Q.Peak DUO XL G10.3/BFG 485
MODULE WATTS	485 watts
MODULE LENGTH	87.20"
MODULE WIDTH	41.10"
MODULE THICKNESS	1.38"
MODULE WEIGHT	64.20 lbs
ADD SUPPLEMENTAL BAYS	Yes
SETBACK DISTANCE	4.0 ft
HALF BLOCK ALLOWED	No
BALLAST BLOCK (CMU) WEIGHT	32.0 lbs
MAX BLOCKS PER BAY	2
BUILDING HEIGHT	20.0 ft
ROOF TYPE	OTHER
LONGEST BUILDING LENGTH	80.00 ft
SHORTEST BUILDING LENGTH	25.0 ft
PARAPET HEIGHT	<= 1/2 Array Height (<= 4 inches)
WIND DEFLECTORS	EVERYWHERE
DEAD LOAD FACTOR	1.0
ATTACHMENTS OPTIMIZATION CRITERIA	Maximize Ballast
ATTACHMENT TYPE	UNIRAC FLASHLOC RM
ASD ALLOWABLE UPLIFT	359.0 lbs
ASD ALLOWABLE SHEAR	194.0 lbs
CONTROLLING COMPONENT UPLIFT CAPACITY	RACKING
CONTROLLING COMPONENT SHEAR CAPACITY	RACKING

DISTRIBUTED LOAD CALCULATIONS

SCALE: NTS

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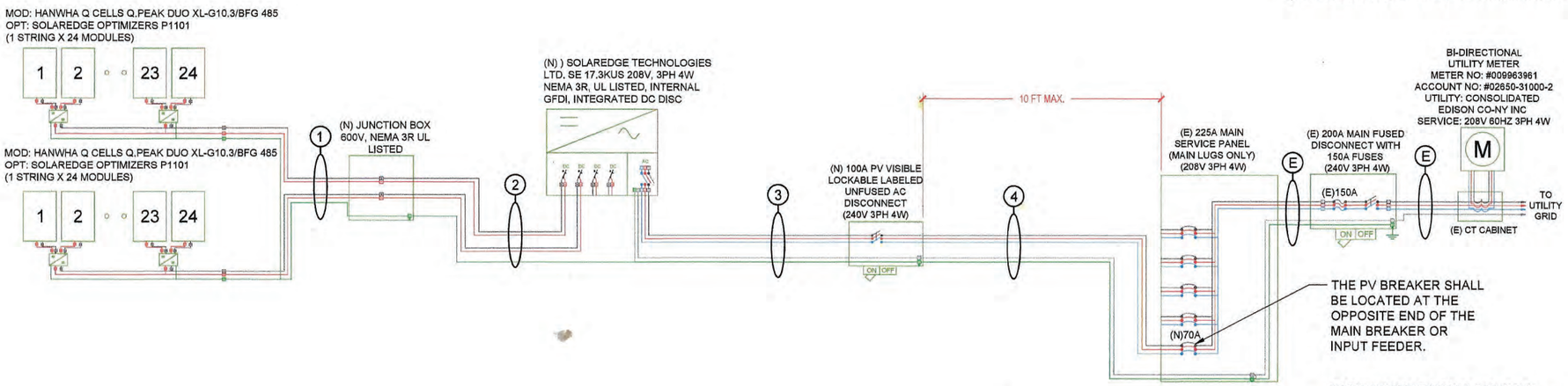


EXTREME CASE MODULE OUTPUT
(HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485)

Isc(25°C) = 11.16A, Tisc = +0.04%/°C
Isc(T) = Isc(25°C) x [1 + Tisc x (T-25°C)]
Isc(-16°C) = 10.98A, Isc(31°C) = 11.19A

Voc(25°C) = 53.63V, Tvoc = -0.27%/°C
Voc(T) = Voc(25°C) x [1 + Tvoc x (T-25°C)]
Voc(-16°C) = 59.57V, Voc(31°C) = 52.76V

INTERCONNECTION 120% RULE
(MAIN PANEL)

UTILITY FEED + TOTAL BACKFEED
150A + 60.31A = 210.31A

LESS OR EQUAL TO
BUS RATING x 120%
225A x 120% = 270A

CALCULATION ENSURES BUS IS SAFE REGARDLESS OF LOADS

WIRE DETAILS

WIRE TAG #	WIRE FROM	CONDUIT	WIRE QTY	WIRE/ CONDUIT	WIRE GAUGE	WIRE TYPE	TEMP RATING	WIRE AMP	TEMP DE-RATE	CONDUIT FILL	WIRE OCPD	TERMINAL 75°C RATING	OUTPUT CURRENT / PHASE	NEUTRAL SIZE	GRND SIZE	GRND WIRE TYPE
1	ARRAY TO JUNCTION BOX	AIR	4	-	10 AWG	PV WIRE	90°	40 x 0.96 x - = 38.4A				35A	18 X 1.25 = 22.5A	-	6 AWG	BARE CU
2	JUNCTION BOX TO INVERTER	1/2" EMT	4	4	10 AWG	THWN-2	75°	35 x 0.94 x 0.8 = 26.32A				35A	18 X 1.25 = 22.5A	-	10 AWG	THWN-2
3	INVERTER TO ACD TO POI	1" EMT	4	4	6 AWG	THWN-2	75°	65 X 0.94 X 1 = 61.1A				55A	(48.25 X 1.25) = 60.31A	6 AWG	8 AWG	THWN-2
E	MAIN SERVICE PANEL TO FUSED DISCONNECT TO CT CABINET															

SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485
MAX. POWER-POINT VOLTAGE (VMP)	45.63V
MAX. POWER-POINT CURRENT (IMP)	10.63A
OPEN-CIRCUIT VOLTAGE (VOC)	53.63V
SHORT-CIRCUIT CURRENT (ISC)	11.16A
MODULE DIMENSION	87.24"L x 41.14"W x 1.38"D

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL	SOLAREDGE TECHNOLOGIES LTD. SE17.3KUS
MAX. INPUT POWER (MODULE STC)	30275W
MAX. CONTINUOUS OUTPUT POWER	17300VA
MAX INPUT VOLTAGE	600V
MAX. AC OUTPUT CURRENT	48.25 A
MAX. OCPD RATING	70A

OPTIMIZER SPECIFICATIONS

MANUFACTURER / MODEL	SOLAREDGE P1101
MAX. INPUT DC POWER	1100W
MAX. OUTPUT VOLTAGE	80V
MAX. INPUT VOLTAGE	125V
MAX. OUTPUT CURRENT	18A
MAX. SHORT CIRCUIT CURRENT(DC)/INPUT	14.1A

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

DC VOLTAGE DROP PERCENTAGE FROM STRING TERMINATION TO JUNCTION BOX

10 AWG					
STRING TERMINATION TO JB	MAX O/P CURRENT OF OPTIMIZER	MAXIMUM INPUT VOLTAGE OF INVERTER	RESISTANCE IN OHM/FT	1 WAY WIRE LENGTH (FT)	V DROP(%)
STRING # 1	18	600	0.00124	8	0.08 %
STRING # 2	18	600	0.00124	56	0.42 %
MAX V DROP(%)					0.42 %

TOTAL DC VOLTAGE DROP PERCENTAGE

MAX. VOLTAGE DROP PERCENTAGE FROM STRING TERMINATION TO JUNCTION BOX	0.42%
MAX. VOLTAGE DROP PERCENTAGE FROM JUNCTION BOX TO INVERTER	0.21%
TOTAL SYSTEM VOLTAGE DROP	0.63%

TOTAL AC VOLTAGE DROP PERCENTAGE

MAX. AC VOLTAGE DROP PERCENTAGE FROM INVERTER TO ACD	0.20 %
MAX. AC VOLTAGE DROP PERCENTAGE FROM ACD TO POI	0.16 %
TOTAL SYSTEM VOLTAGE DROP	0.36 %

Ground conductor ampacities designed in compliance with art. 690.8, Tables 310.15(B)(2)(a), 310.15(B)(3)(a), 310.15(B)(3)(c), 310.15(B)(16), Chapter 9 Table 4, 5, & 9. Location specific temperature obtained from ASHRAE 2020 data tables.

DC VOLTAGE DROP PERCENTAGE FROM JUNCTION BOX TO INVERTER

10 AWG					
JB TO INVERTER	MAX O/P CURRENT OF OPTIMIZER	MAXIMUM INPUT VOLTAGE OF INVERTER	RESISTANCE IN OHM/FT	1 WAY WIRE LENGTH (FT)	V DROP(%)
JB TO INVERTER	18	600	0.00124	28	0.21%

AC VOLTAGE DROP PERCENTAGE FROM INVERTER TO POI

6 AWG	VOLTAGE- 208				
INVERTER TO POI	AMP/INV/ PHASE	NO. OF INVERTERS	RESISTANCE IN OHM/FT	1 WAY WIRE LENGTH (FT)	V DROP(%)
INVERTER TO ACD	48.25	1	0.000491	10	0.20%
ACD TO POI	48.25	1	0.000491	8	0.16%

RECORD LOW TEMP	-16°
AMBIENT TEMP (HIGH TEMP 2%)	31°
CONDUCTOR TEMPERATURE RATE	90°

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 600V AND 90°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 JUNCTION BOXES, 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) PV EQUIPMENT SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NEC 690.
11) EXACT LOCATION OF AUXILIARY GROUNDING TO BE DETERMINED AT TIME OF INSTALL.
12) EXISTING WIRES MUST BE REPLACED IF SMALLER THAN LISTED MINIMUM SIZES PER NEC 310.15(B)(16).

ELECTRICAL 3LD, WIRING CALCULATION AND VOLTAGE DROP CALCULATION

GREEN HYBRID ENERGY SOLUTION

CONTRACTOR:
GREEN HYBRID ENERGY SOLUTIONS, INC. (14606)
ADDRESS:
11 WASHINGTON PLACE E, WHITE PLAINS, NY 10603
PHONE: 9143467588
LICENSE #: WC-24683-H11
EMAIL #:
AWGLOVER@GHESSOLAR.COM

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	2/29/2024	0

SIGNATURE & SEAL

BUILDING DESIGNED

DNV INC.
126 LAFAYETTE AVE,
WHITE PLAINS, NY 10603, USA

APN: 122.12-1-7
EMAIL: julioimpalass@aol.com
PHONE: 9143849414

SHEET NAME
ELECTRICAL 3LD, WIRING AND VOLTAGE DROP CALCULATION

SHEET SIZE
ANSI D
24" X 36"

SHEET NUMBER
PV-4.0

⚠WARNING

ELECTRICAL SHOCK HAZARD

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

LABEL LOCATION:
INVERTER(S), AC/DC DISCONNECT(S), AC COMBINER PANEL (IF APPLICABLE).
PER CODE(S): NEC 2017: 690.13(B)

⚠WARNING

PHOTOVOLTAIC SYSTEM COMBINER PANEL

DO NOT ADD LOADS

LABEL LOCATION:
PHOTOVOLTAIC AC COMBINER (IF APPLICABLE).
PER CODE(S): NEC 2017: 705.12(B)(2)(3)(c)

⚠WARNING

POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
ADJACENT TO PV BREAKER (IF APPLICABLE).
PER CODE(S): NEC 2017: 705.12(B)(2)(3)(b)

⚠WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

LABEL LOCATION:
UTILITY SERVICE METER AND MAIN SERVICE PANEL.
PER CODE(S): NEC 2017: 705.12(B)(3)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
INSTALLED WITHIN 3' OF RAPID SHUT DOWN SWITCH PER CODE(S): NEC 2017: 690.56(C)(3), IFC 2012: 605.11.1, IFC 2018: 1204.5.3

PHOTOVOLTAIC DC DISCONNECT

RATED MAXIMUM POWER-POINT CURRENT	38.8
RATED OPERATING VOLTAGE	370
MAXIMUM SYSTEM VOLTAGE	600
MAXIMUM SHORT CIRCUIT CURRENT	36

LABEL LOCATION:
INVERTER(S), DC DISCONNECT(S).
PER CODE(S): NEC 2017: 690.53

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
INTERIOR AND EXTERIOR DC CONDUIT EVERY 10 FT, AT EACH TURN, ABOVE AND BELOW PENETRATIONS, ON EVERY JB/PULL BOX CONTAINING DC CIRCUITS.
PER CODE(S): NEC 2017: 690.31(G)(3), 690.31(G)(4), IFC 2012: 605.11.1.4

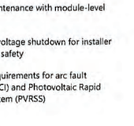
PHOTOVOLTAIC AC DISCONNECT

MAXIMUM AC OPERATING CURRENT: 48.25 AMPS
NOMINAL OPERATING AC VOLTAGE: 208 VAC

LABEL LOCATION:
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.
PER CODE(S): NEC 2017: 690.54

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN CONDUCTORS OUTSIDE THE ARRAY. CONDUCTORS WITHIN ARRAY REMAIN ENERGIZED IN SUNLIGHT.

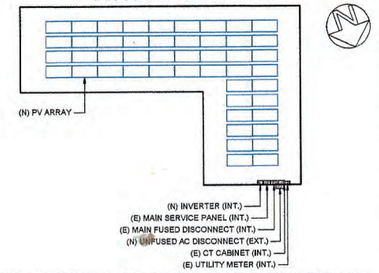


LABEL LOCATION:
ON OR NO MORE THAT 1 M (3 FT) FROM THE SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED. PER CODE(S): NEC 2017: 690.56(C)(1)(a)

NOTES AND SPECIFICATIONS:
- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE NEC 2017 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
- SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
- LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
- LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
- DO NOT COVER EXISTING MANUFACTURER LABELS.

CAUTION:

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



126 LAFAYETTE AVE, WHITE PLAINS, NY 10603, USA

LABEL LOCATION: MSP
CODE REF: NEC 2017 - 705.10

powered by Q.ANTUM DUO Z

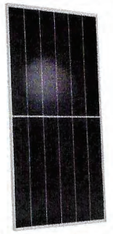
Q.PEAK DUO XL-G10.3 / BFG

470-485

BIFACIAL DOUBLE GLASS MODULE WITH EXCELLENT RELIABILITY AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULE EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:
Ground-mounted solar power plants

BIFACIAL ENERGY YIELD GAIN OF UP TO 20 %
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2 %.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

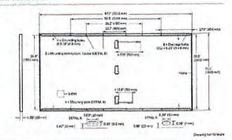
[1] APT test conditions according to IEC/TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1:Ed. 2.0:CD)
[2] See data sheet on rear for further information.

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	67.1in × 41.1in × 1.38in (including frame) (1216mm × 1045mm × 35mm)
Weight	64.2lbs (29.1kg)
Front Cover	0.08in (2.0mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08in (2.0mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09–3.98in × 1.26–2.36in × 0.59–0.71in (53–101mm × 32–60mm × 15–18mm), IP67, with bypass diodes
Cable	4mm² Solar cable; (+) ≥ 27.6in (700mm), (-) ≥ 11.8in (300mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND NOCT[2] (POWER TOLERANCE +5 W / -0 W)				NOCT[2]		NOCT[2]		NOCT[2]		NOCT[2]
Minimum	Power at MPP	P_{MPP} [W]	470	354.1	475	357.9	480	361.7	485	365.5
	Short Circuit Current	I_{SC} [A]	11.04	8.91	11.08	8.94	11.12	8.97	11.16	9.01
	Open Circuit Voltage	V_{OC} [V]	52.91	49.10	53.15	49.34	53.39	49.58	53.63	49.82
	Current at MPP	I_{MPP} [A]	10.51	8.27	10.55	8.30	10.59	8.34	10.63	8.37
	Voltage at MPP	V_{MPP} [V]	44.73	42.79	45.03	43.02	45.33	43.26	45.63	43.52
	Efficiency	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

Bifaciality of P_{max} min. 70 % ±5% • Bifaciality given for rear side irradiation on top of STC front side • According to IEC 60904-1-2

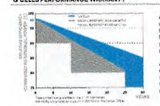
[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m² • at NOCT: 800 W/m² • ϕ < 236 W/m², ϕ > 70 % ± 5 %, 20 ± 2 °C, AM 1.5 according to IEC 60904-3

[2] NOCT = Nominal Operating Cell Temperature

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP} [W]	353.8		357.6		361.4		365.1	
	Short Circuit Current	I_{SC} [A]	8.89		8.92		8.96		8.99	
	Open Circuit Voltage	V_{OC} [V]	50.04		50.27		50.49		50.72	
	Current at MPP	I_{MPP} [A]	8.27		8.30		8.34		8.37	
	Voltage at MPP	V_{MPP} [V]	42.77		43.06		43.35		43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

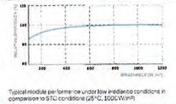
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.96 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 20 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization 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]	108 ± 9.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire rating based on ANSI/UL 61730	TYPE 29*
Max. Design Load, Push / Pull*	[lbs/ft²]	75 (3600Pa)/33 (1600Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull*	[lbs/ft²]	113 (5400Pa)/50 (2400Pa)		

* See Installation Manual

* New Type is similar to Type 3 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61215 CE-compliant
IEC 61215(ED2); IEC 61730 (ED1; U.S. Patent No. 9,893,215 (solar cells); Certification in process.

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 | WEB: www.q-cells.us

GHES GREEN HYBRID ENERGY SOLUTIONS

CONTRACTOR:
GREEN HYBRID ENERGY SOLUTIONS, INC. (14606)

ADDRESS:
11 WASHINGTON PLACE E, WHITE PLAINS, NY 10603

PHONE: 9143467588

LICENSE #: WC-24683-H11
EMAIL #: AWGLOVER@GHESSOLAR.COM

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	2/29/2024	0

STATE OF NEW YORK
SIGNATURE & SEAL
SUNIL SAIGAL
088728
LICENSED PROFESSIONAL ENGINEER
BUILDING OWNER

POWER OPTIMIZER

Power Optimizer
For North America
P1101

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction: 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

solaredge.com

solaredge

Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)	P1101 (For up to 2 x high power or bi-facial modules)	Units
INPUT		
Rated Input DC Power[(3)]	1100	W
Connection Method	Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)	125	Vdc
MPPT Operating Range	12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)	14.1	Adc
Maximum Short Circuit Current per input (Isc)	11	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.6	%
Overvoltage Category	II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)		
Maximum Output Current	15	Adc
Maximum Output Voltage	80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1 ± 0.1	Vdc
STANDARD COMPLIANCE		
Photovoltaic Rapid Shutdown System	Compliant with NEC 2014, 2017, 2020	
EMC	FCC Part 15 Class A, ICES-003 Class A, IEC61000-6-2, IEC61000-6-3	
Safety	IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material	UL94 V-0, UV resistant	
RoHS	Yes	
INSTALLATION SPECIFICATIONS		
Compatible SolarEdge Inverters	All commercial three phase inverters	
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight	1064 / 2.34	gr / lb
Input Connector	MC4[(4)]	
Input Wire Length Options (1 / 2 / 3)	1.6 / 5.2	m / ft
Output Wire Type / Connector	Double insulated; MC4	
Output Wire Length	2.4 / 7.8	m / ft
Operating Temperature Range[(5)]	-40 to +85 / -40 to +185	°C / °F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 – 100	%

(3) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(4) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note
(5) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(6)(7)]		208V Grid: 1Ø/3W	208V Grid: 3Ø/4W	277/480V Grid: 1Ø/3W	277/480V Grid: 3Ø/4W	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	38	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8650	15300	15300	W
Maximum Allowed Connected Power per String[(8)]		1 string – 8400 2 strings or more – 9800	1 string – 10200 2 strings or more – 12023	1 string – 17550 2 strings or more – 20300	2 strings or less – 17550 3 strings or more – 21300	W
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for tyhering units of equivalent power ratings that are part of the modular Synergy Technology inverter.
(6) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a dual PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(7) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(8) To connect more STC power per string, design your project using SolarEdge Designer.

RoHS

INVERTERS

Three Phase Inverters for the 120/208V Grid
For North America
SE10KUS / SE17.3KUS

The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Quick and easy inverter commissioning directly from a smartphone using SolarEdge SetApp
- Fixed voltage inverter for superior efficiency and longer strings
- Built-in type 2 DC and AC Surge Protection, to better withstand lightning events
- Small, lightest in its class, and easy to install outdoors or indoors on provided bracket
- Integrated arc fault protection and rapid shutdown for NEC 2014, 2017, and 2020, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet, wireless or cellular communication for full system visibility
- Integrated Safety Switch
- UL1741 SA and SB certified, for CPUC Rule 21 grid compliance

solaredge.com

solaredge

Three Phase Inverters for the 120/208V Grid[(1)]
For North America
SE10KUS / SE17.3KUS

Model Number	SE10KUS	SE17.3KUS	
Applicable to inverters with part number	SExxK-USx2IXXXX		
OUTPUT			
Rated AC Power Output	10000	17300	W
Maximum Apparent AC Output Power	10000	17300	VA
AC Output Line Connections	3W – PE, 4W + PE		
AC Output Voltage Minimum-Nominal-Maximum[(2)] (L-N)	105 – 120 – 132.5		Vac
AC Output Voltage Minimum- Nominal- Maximum[(2)] (L-L)	183 – 208 – 229		Vac
AC Frequency Minimum-Nominal-Maximum[(2)]	59.3 – 60 – 60.5		Hz
Continuous Output Current (per Phase)	27.8	48.25	Aac
GFDI Threshold	1		A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes		
THD	< 5		%
Power Factor Range	+/- 0.85 to 1		
INPUT			
Maximum DC Power (Module STC)	17500	30375	W
Transformer-less, Ungrounded	Yes		
Maximum Input Voltage DC – to DC-	600		Vdc
Operating Voltage Range	370 – 600		Vdc
Maximum Input Current	27.9	48.25	Adc
Maximum Input Short Circuit Current	55		Adc
Reverse-Polarity Protection	Yes		
Ground- Fault Isolation Detection	167kΩ Sensitivity[(3)]		
CEC Weighted Efficiency	97	97.5	%
Night time Power Consumption	< 4		W
ADDITIONAL FEATURES			
Supported Communication Interfaces	2 x RS485, Ethernet, Cellular (optional)		
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection		
Rapid Shutdown	NEC2014, NEC2017 and NEC2020 compliant/certified		
RS485 Surge Protection (Type)	Supplied with the inverter, Built-in		
AC, DC Surge Protection	Type II, field replaceable, Built-in		
DC Fuses (Single Pole)	25A, Built-in		
Smart Energy Management	Export Limitation		
DC SAFETY SWITCH			
DC Disconnect	Integrated		
STANDARD COMPLIANCE			
Safety	UL1741, UL1741 SA, UL1741 SB, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07		
Grid Connection Standards	IEEE1547-2018, Rule 21, Rule 14 (HI)		
Emissions	FCC part15 class A		
INSTALLATION SPECIFICATIONS			
AC Output Conduit size / AWG range	1/2" or 1" / 6 - 10 AWG		
DC Input Conduit size / AWG range	1/2" or 1" / 6 - 12 AWG		
Number of DC inputs pairs	4		
Dimensions with Safety Switch (H x W x D)	31.8 x 12.5 x 11.8 / 808 x 317 x 300		in / mm
Weight with Safety Switch	78.2 / 35.5		lb / kg
Cooling	Fans (user replaceable)		
Noise	< 60		dBA
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]		°F / °C
Protection Rating	NEMA 3R		
Mounting	Bracket provided		

(1) For 277/480V inverters refer to the Three Phase Inverters for the 277/480V Grid for North America datasheet
(2) For other regional settings please contact SolarEdge support.
(3) Where permitted by local regulations.
(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America).

CE

DNV INC.
126 LAFAYETTE AVE,
WHITE PLAINS, NY 10603, USA

APN: 122.12-1-7
EMAIL: julioimpalass@aol.com
PHONE: 9143849414

SHEET NAME
PLACARDS AND EQUIPMENT SPECIFICATION

SHEET SIZE
ANSI D
24" X 36"

SHEET NUMBER
PV-5.0

Product data sheet

Specifications

Safety switch, general duty, non fusible, 100A, 3 pole, 3 wire, 30hp, 240VAC, NEMA 3R, bolt on hub provision

DU323RB

Product availability: Stock - Normally stocked in distribution facility

Price*: 816.00 USD

Main

Product	Single Throw Safety Switch
Duty Rating	General duty
Device Application	Residential
Disconnect Type	Non-fusible disconnect switch
Factory Installed Neutral	None
Phase	3 phase
Number Of Poles	3
Current Rating	100 A
Voltage Rating	240 V AC
Enclosure Rating Nema	NEMA 3R
Motor Power Hp	15 hp at 240 V AC 60 Hz for 1 phase motors 30 hp at 240 V AC 60 Hz for 3 phase motors

Complementary

Mounting Type	Surface
Electrical Connection	Lugs
Wiring Configuration	3-wire
Wire Size	AWG 14...AWG 1 copper AWG 12...AWG 1 aluminium
Tightening Torque	35 lbf.in (3.95 N.m) 0.00...0.01 in² (2.08...5.26 mm²) (AWG 14...AWG 10) 35 lbf.in (3.95 N.m) (AWG 14...AWG 10) 40 lbf.in (4.52 N.m) 0.01 in² (8.37 mm²) (AWG 8) 45 lbf.in (5.08 N.m) 0.02...0.03 in² (12.3...21.12 mm²) (AWG 6...AWG 4) 50 lbf.in (5.65 N.m) (AWG 3...AWG 1)
Depth	6.5 in (165.10 mm)
Width	10.5 in (266.70 mm)
Height	17.5 in (444.50 mm)
Net Weight	15.43 lb(US) (7 kg)

Environment

Certifications	UL listed file E2875

Ordering and shipping details

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Category	00105-D & DU SW,NEMA3R, 30-200A
Discount Schedule	DE1A
Gtin	785901491828
Returnability	Yes
Country Of Origin	US

Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	7.30 in (18.542 cm)
Package 1 Width	10.50 in (26.67 cm)
Package 1 Length	19.90 in (50.546 cm)
Package 1 Weight	14.78 lb(US) (6.704 kg)
Unit Type Of Package 2	PAL
Number Of Units In Package 2	40
Package 2 Height	40.00 in (101.6 cm)
Package 2 Width	40.00 in (101.6 cm)
Package 2 Length	48.00 in (121.92 cm)
Package 2 Weight	632.00 lb(US) (286.67 kg)

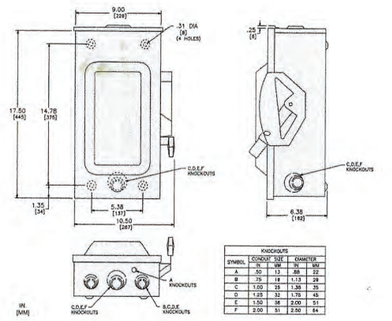
Contractual warranty

Warranty	18 months

Product data sheet DU323RB

Technical illustration

Dimensions



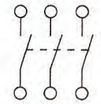
KNOCKOUTS			
SYMBOL	CONDUIT SIZE IN	MM	DIAMETER IN	MM
A	.50	12	.88	22
B	.75	18	1.13	29
C	1.00	25	1.38	35
D	1.25	32	1.75	45
E	1.50	38	2.00	51
F	2.00	51	2.50	64

WHEN MOUNTING, ALLOW 4.00[102] MIN. CLEARANCE BETWEEN ENCLOSURES FOR OPENING OF SIDE HINGED DOOR.
TOP OF NEMA TYPE 3R DEVICES HAVE PROVISIONS FOR MAX 2.50[64] BOLT-ON HUB.
DU323RB REQUIRES FIELD INSTALLATION OF EQUIPMENT GROUNDING KIT GTK0510 WHEN USED AS SERVICE EQUIPMENT.
ALL DIMENSIONS ARE APPROXIMATE. REFER TO TECHNICAL DRAWINGS AND DOCUMENTATION FOR COMPLETE DETAILS.

Wiring diagram

Product data sheet DU323RB

Technical illustration



DU323RB

GREEN HYBRID ENERGY SOLUTION

CONTRACTOR:
GREEN HYBRID ENERGY SOLUTIONS, INC. (14606)
ADDRESS:
11 WASHINGTON PLACE E, WHITE PLAINS, NY 10603
PHONE: 9143467588
LICENSE #: WC-24683-H11
EMAIL #:
AWGLOVER@GHESSOLAR.COM

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	2/29/2024	0

STATE OF NEW YORK
SUNIL SAIGAL
088728
LICENSED PROFESSIONAL ENGINEER

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