

PHOTOVOLTAIC ROOF MOUNT SYSTEM
10.580kWDC, 8.740kWAC
28 BIRCHMEADOW RD, AMESBURY, MA
01913

AHJ:
CITY OF AMESBURY

UTILITY:
CUSTOM UTILITY (MA)

GOVERNING CODES:

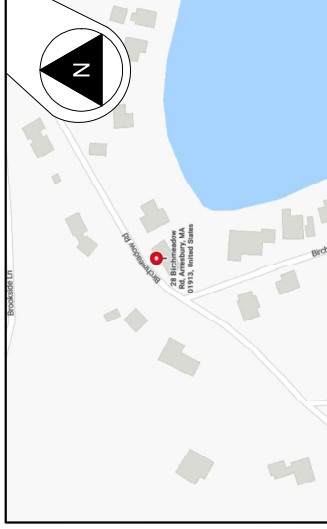
2023 NATIONAL ELECTRICAL CODE (NEC)
2021 INTERNATIONAL BUILDING CODE (IBC)
2021 INTERNATIONAL RESIDENTIAL CODE (IRC)
2021 NFPA 1

WIND SPEED: 116 MPH
SNOW LOAD: 50 PSF

SCOPE OF WORK

(N) 10.580kWDC, (N) 8.740kWAC ROOF MOUNTED PV SYSTEM
(N) (23) REC 460AA PURE-RX SOLAR MODULES
(N) (23) ENPHASE IQ8X-80-M-US (240V) MICRO INVERTERS
(N) (1) 125A ENPHASE COMBINER BOX 5
(N) (1) PV SMART METER

VICINITY MAP



GENERAL NOTES

1. MODULES ARE LISTED UNDER UL 61730 / UL 1703 AND CONFORM TO THE STANDARDS.
2. INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
3. DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITIONS MAY VARY.
4. WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT SHALL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
5. ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/ SERVICE EQUIPMENT.
6. ALL CONDUCTORS SHALL BE 600V, 90°C STANDARD COPPER UNLESS OTHERWISE NOTED.
7. WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
8. THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE UTILITY IS RECEIVED.
9. ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
10. PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING.
11. RACKING SYSTEM SHALL BE LISTED TO UL 2703.
12. FIRE RATING OF EXISTING ROOF ASSEMBLY SHALL BE MAINTAINED WITH ADDITION OF PHOTOVOLTAIC SYSTEM.

SHEET INDEX

- PV-1 COVER SHEET
- PV-2 SITE PLAN
- PV-3 PROPERTY PLAN
- PV-4 ROOF PLAN
- PV-5 ATTACHMENT DETAIL
- PV-6 SINGLE LINE DIAGRAM
- PV-7 ELECTRICAL CALC. AND NOTES
- PV-8 LABELS & PLACARD
- PV-9 TO PV-13 SPEC SHEETS

CONTRACTOR INFORMATION



NEW ENGLAND CLEAN ENERGY
577 MAIN STREET, HUDSON, MA
01749

PHONE: +1 978 830 3181

LICENSE#

CS-102855 TYPE-CSL

**PHOTOVOLTAIC ROOF
MOUNT SYSTEM**

10.580 kW DC, 8.740 kW AC
LINDA GIUNTA RESIDENCE
28 BIRCHMEADOW RD,
AMESBURY, MA 01913



Wyssling Consulting, PLLC
76 N Meadowbrook Drive, Alpine UT 84004
Massachusetts COA #001629764
Signed 5/18/2026

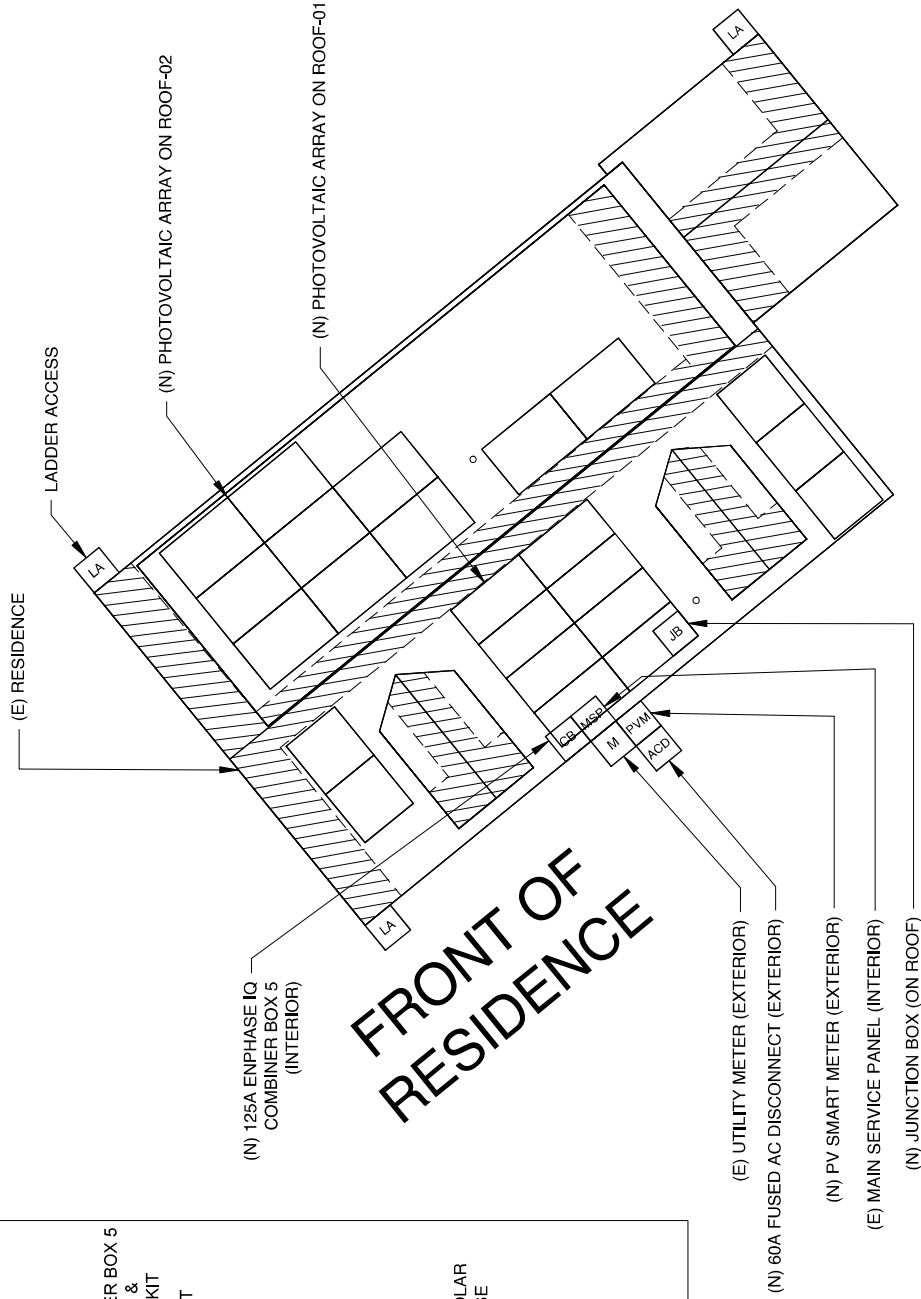
DATE	5/15/2026
CREATED BY	ART
SCALE	NTS

COVER SHEET

PV-1

LEGEND

	(E) UTILITY METER
	(E) 200A MAIN SERVICE PANEL (E) 200A MAIN BREAKER
	(N) 125A ENPHASE IQ COMBINER BOX 5 WITH ENVOY IQ, CELL MODEM, & WIRELESS COMMUNICATIONS KIT
	(N) 60A FUSED AC DISCONNECT VISIBLY OPEN, LOCKABLE 240V NEMA-3R
	LADDER ACCESS
	(N) (1) PV SMART METER
	(N) JUNCTION BOX 240V, NEMA 4X (ON ROOF)
	(N) 23 REC 460AA PURE-RX SOLAR MODULES WITH (N) 23 ENPHASE IQ8X-80-M-US (240V) MICRO INVERTER
	FIRE SETBACKS
	(E) ROOF OBSTRUCTIONS



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SCALE	1/8" = 1'-0"
SITE PLAN	
PV-2	

CONTRACTOR INFORMATION

New England Clean Energy
Expert Solar Installer Since 2006

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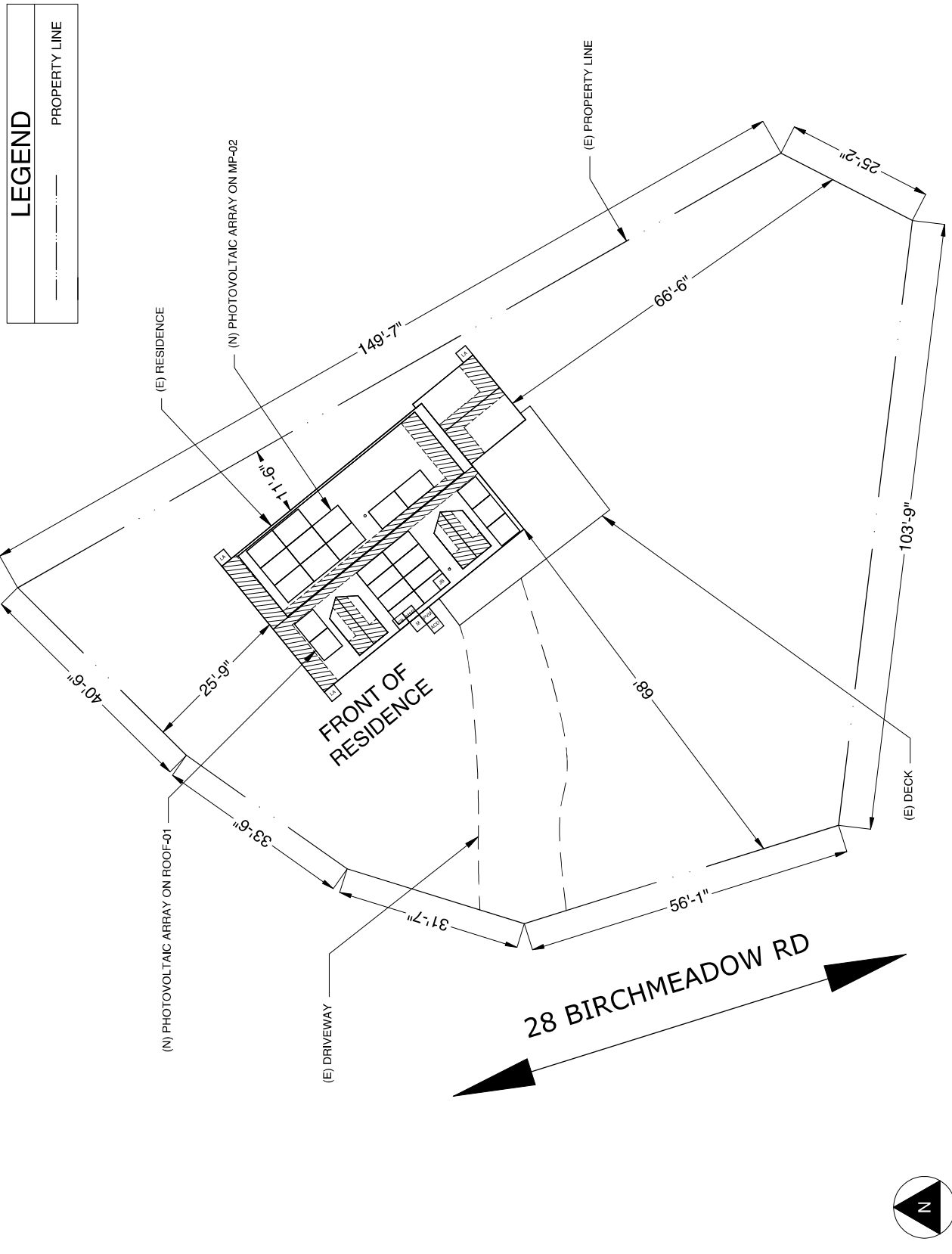
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SCALE	1/16" = 1'-0"
PROPERTY PLAN	

PV-3

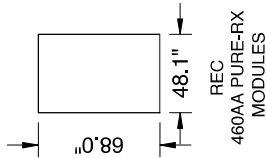


LEGEND
——— PROPERTY LINE

MODULE TYPE, DIMENSION & WEIGHT

NUMBER OF MODULES = 23 MODULES
MODULE TYPE = REC : 460AA PURE-RX MODULES
MODULE WEIGHT = 51.2 LBS / 23.22KG
MODULE DIMENSIONS = 68.0"X 48.1" = 22.71 SF

95 ATTACHMENTS INSTALLED @ 48" O.C. MAX (TYP)
NOTE: ATTACHMENTS ARE STAGGERED.



FRONT OF RESIDENCE

ARRAY & ROOF AREA CALC'S

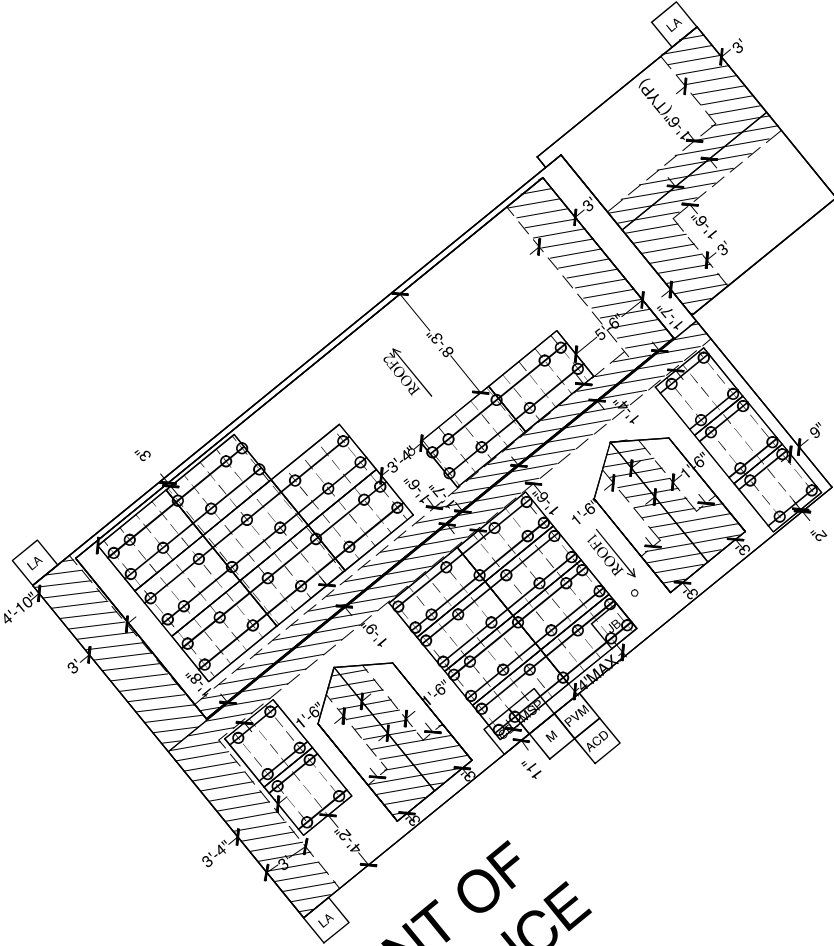
TOTAL PV ARRAY AREA (Sq. Ft.)	TOTAL ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
522.42	1696.99	30.79

ROOF DESCRIPTION

ROOF LAYER		1 LAYER			RAFTER		RAFTER		ROOF TYPE	
ROOF	# OF MODULES	ROOF PITCH	AZIMUTH	SIZE	SPACING	16"	16"	COMPOSITION SHINGLE	COMPOSITION SHINGLE	
1	13	45°	231°	2" X 10"	16"					
2	10	20°	51°	2" X 10"	16"					

LEGEND

M	(E) UTILITY METER
MSP	(E) 200A MAIN SERVICE PANEL
CB	(E) 200A MAIN BREAKER
ACD	(N) 125A ENPHASE IQ COMBINER BOX 5 WITH ENVOY IQ, CELL MODEM & WIRELESS COMMUNICATIONS KIT
LA	(N) 60A FUSED AC DISCONNECT VISIBLY OPEN, LOCKABLE 240V NEMA-3R
PVM	LADDER ACCESS
JB	(N) (1) PV SMART METER
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	(N) 23 REC 460AA PURE-RX SOLAR MODULES WITH (N) 23 ENPHASE IQ8X-80-M-US (240V) MICRO INVERTER
	FIRE SETBACKS
	(E) ROOF OBSTRUCTIONS
	(N) ROOF ATTACHMENTS
	(E) RAFTER
	(N) RAIL



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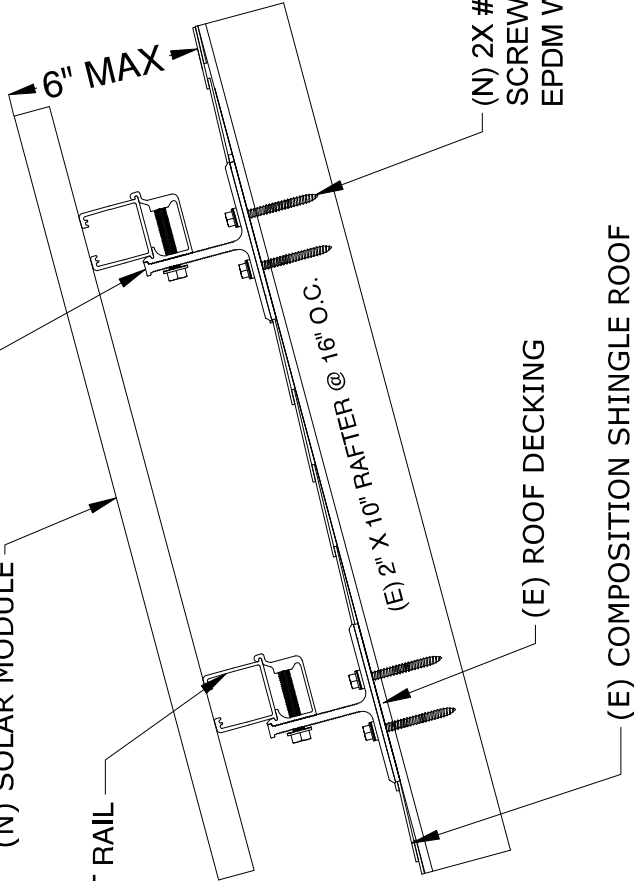
ROOF PLAN

PV-4

(N) UNIRAC STRONGHOLD BUTYL DARK

(N) SOLAR MODULE

(N) UNIRAC NXT UMount RAIL



(E) COMPOSITION SHINGLE ROOF

(N) 2X #14-14 TYPE AB
SCREW, HWH, SS W/ #14
EPDM WASHER

DEAD LOAD CALCULATION			
BOM	QUANTITY	LBS/UNIT	TOTAL WEIGHT (LBS)
MODULES	23	51.2	1177.60
MID-CLAMP	20	0.14	2.80
END-CLAMP	52	0.24	12.48
RAIL LENGTH	244.08	0.56	136.68
SPLICE BAR	4	0.56	2.24
ATTACHMENT	95	0.38	36.10
MICRO-INVERTER	23	2.43	55.890000
TOTAL WEIGHT OF THE SYSTEM (LBS)			1423.79
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			522.42
WEIGHT PER SQ. FT.(LBS)			2.73
WEIGHT PER PENETRATION (LBS)			14.99

ATTACHMENT DETAIL:
SCALE: NTS

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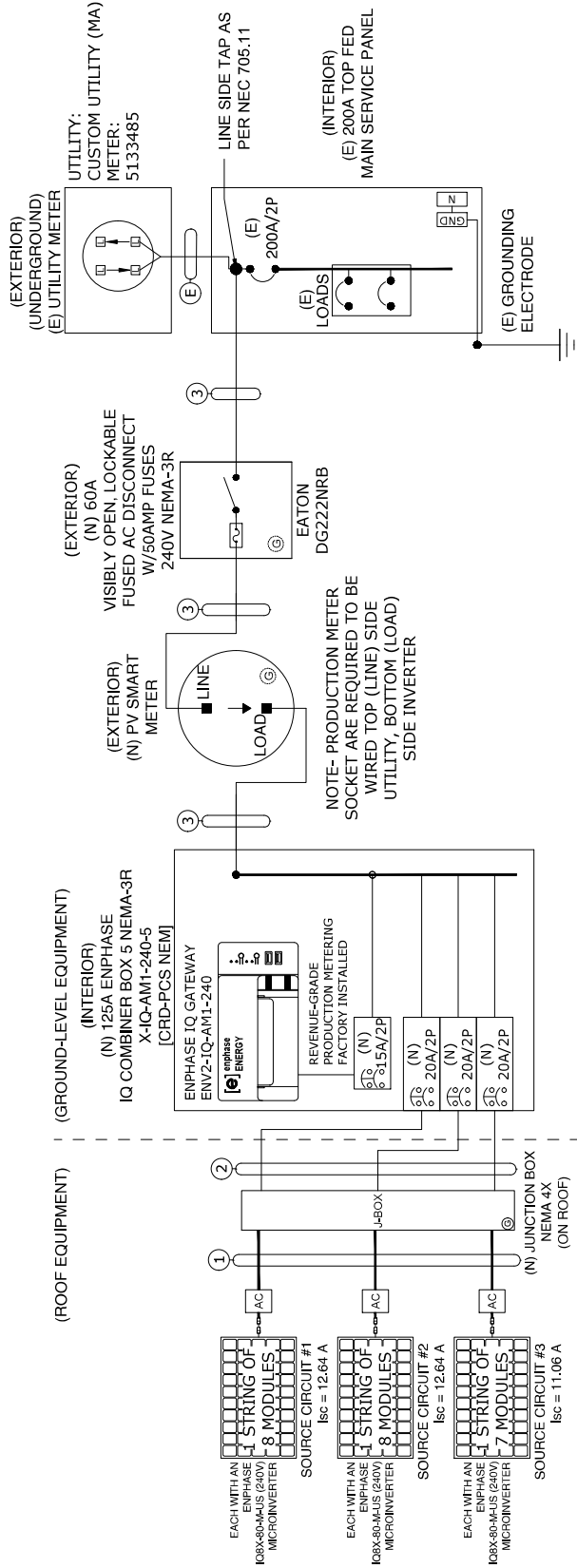
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ATTACHMENT DETAIL	
PV-5	

(N) DC SYSTEM SIZE: 10.580kW DC
(N) AC SYSTEM SIZE: 8.740kW AC

(N) (23) REC : 460AA PURE-RX MODULES
(N) (23) ENPHASE IQ8X-80-M-US (240V) MICRO-INVERTERS
EQUIPPED WITH RAPID SHUTDOWN

BRANCHES
(2) BRANCH CIRCUIT OF 8 MODULES CONNECTED IN PARALLEL
(1) BRANCH CIRCUIT OF 7 MODULES CONNECTED IN PARALLEL

MODULE SPEC		INVERTER SPEC	
MODEL: 460AA PURE-RX	MODEL:	IQ8X-80-M-US (240V)	
QTY: 23	WATT.: 460	MAX O/P VOLTAGE:	240V
Voc: 65.30	Isc: 8.88	MAX O/P CURRENT:	1.58A
Vmp: 54.90	Imp: 8.38	POWER RATING:	380W
CEC EFF:		97.2% QTY:	23



CONDUCTOR SCHEDULE			
TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL
1	OPEN AIR	(2) 12 AWG ENPHASE Q CABLE PER BRANCH CIRCUIT	NONE
2	3/4" EMT	(6) 10 AWG THHN/THWN-2, Cu	NONE
3	3/4" EMT	(2) 6 AWG THHN/THWN-2, Cu	(1) 6 AWG THHN/THWN-2, Cu
E	EXISTING	EXISTING	EXISTING

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SINGLE LINE DIAGRAM

PV-6

WIRE SIZE CALCULATION	
MAX BRANCH AC REQUIRED CONDUCTOR AMPACITY (8)(1.58)(1.25) = 15.80A	
AWG #10, DERATED AMPACITY: (35)(0.94)(0.8) = 26.32A	
FROM TABLE 310.16, 75°C COLUMN	
26.32A > 15.80A , THEREFORE AC WIRE SIZE IS VALID	
COMBINED SYSTEM AC REQUIRED CONDUCTOR AMPACITY (23)(1.58)(1.25) = 45.43A PER NEC §690.8(A)	
AWG #6, DERATED AMPACITY: (65)(0.94)(1) = 61.10A	
FROM TABLE 310.16, 75°C COLUMN	
61.10A > 45.43A , THEREFORE AC WIRE SIZE IS VALID	
NOTE: CONDUIT SHALL BE INSTALLED MIN 7/8" ABOVE ROOF SURFACE	

OCPD CALCULATION	
ALLOWABLE BACKFEED: MAIN SERVICE PANEL RATING = 200A MAIN BREAKER RATING = 200A	
INVERTER OVERCURRENT PROTECTION: INVERTER OVERCURRENT PROTECTION = INVERTER OIP CURRENT * CONTINUOUS LOAD(1.25) = 36.34 * 1.25 = 45.43 A = 50A	
PV OVERCURRENT PROTECTION	
THE DESIGNED INTERCONNECTION MEETS THE NEC 705.11 REQUIREMENTS.	

ASHRAE 2021 -
HIGHEST MONTHLY 2% D.B. DESIGN TEMP.: 32.7°C
LOWEST MIN. MEAN EXTREME D.B.: -18.3°C

INTERCONNECTION NOTES:

- INTERCONNECTION SIZING, LIMITATIONS AND COMPLIANCE DETERMINED IN ACCORDANCE WITH [NEC 705.11], AND [NEC 690.64].
- GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9], [NEC 230.95] AND [NEC 690.5]
- ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.

DISCONNECT NOTES:

- DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
- AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH

RACKING NOTE:

- BOND AND GROUND RACKING AND MODULES IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. MINIMUM ONE CONNECTION PER ARRAY

GROUNDING & GENERAL NOTES:

- A SECOND FACILITY GROUNDING ELECTRODE IS NOT REQUIRED PER [NEC 690.47(C)(3)]
- PV INVERTER IS UNGROUNDED, TRANSFORMER-LESS TYPE.
- DC GEC AND AC EGC TO REMAIN UNSPLICED, OR SPLICED TO EXISTING ELECTRODE
- ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION.
- SOLADECK OR JUNCTION BOX QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD - SOLADECK OR JUNCTION BOX DEPICTED ON ELECTRICAL DIAGRAM REPRESENT WIRE TYPE TRANSITIONS.
- AC DISCONNECT NOTED IN EQUIPMENT SCHEDULE OPTIONAL IF OTHER AC DISCONNECTING MEANS IS LOCATED WITHIN 10' OF SERVICE DISCONNECT
- RACEWAYS AND CABLES EXPOSED TO SUNLIGHT ON ROOFTOPS SHOULD BE INSTALLED MORE THAN 7/8" ABOVE THE ROOF USING CONDUIT SUPPORTS.
- TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.
- WIRE IS SIZED PER NEC 310.16, 310.15(B)(1)(1) AND NEC 310.15(C)(1)
- ALL ROOF CONDUIT WILL HAVE A HEIGHT OF 7/8"

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ELECTRICAL CALC. AND NOTES	
PV-7	

PHOTOVOLTAIC

AC DISCONNECT

LABEL 1
AT AC DISCONNECT
MEANS NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 35.34A

NOMINAL OPERATING AC VOLTAGE: 240V

LABEL 2
AT AC DISCONNECTING
MEANS NEC 690.54

23 INVERTER X 1.58 AMP/INVERTER = 36.34AMP

WARNING

INVERTER OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL 3
PLACED ADJACENT TO THE BACK-FED BREAKER FROM THE INVERTER IF TIE IN CONSISTS OF LOAD SIDE CONNECTION TO BUSBAR. NEC 705.12(B)(2)

WARNING DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL 4
NEC 705.12(C) & NEC 690.59
(AT MAIN SERVICE PANEL)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

LABEL 5
FOR PV SYSTEMS THAT SHUT DOWN THE ARRAY AND CONDUCTORS LEAVING THE ARRAY: SIGN TO BE LOCATED ON OR NO MORE THAN 3 FT AWAY FROM SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATION OF ALL IDENTIFIED RAPID SHUTDOWN SWITCHES IF NOT AT THE SAME LOCATION. [NEC 690.56(C)(1)(A)]

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

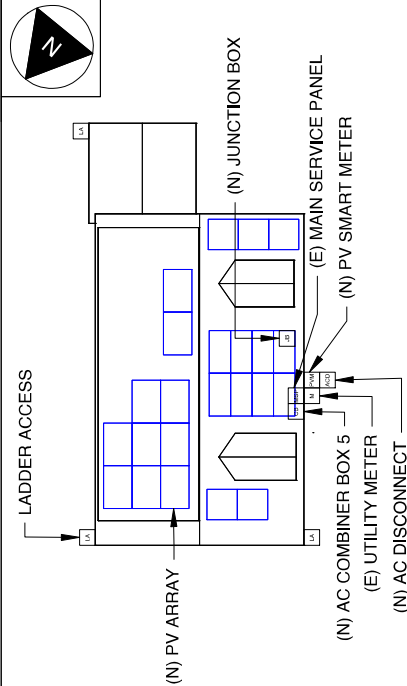
LABEL 6
AT AC DISCONNECT
NEC 690.56(C)(3)

PHOTOVOLTAIC PRODUCTION METER

LABEL LOCATION: DEDICATED KWH METER [PER CODE: NEC 690.4(B) UTILITY]

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM MULTIPLE SOURCES OF POWER WITH SAFETY DISCONNECTS AS SHOWN:



28 BIRCHMEADOW RD, AMESBURY, MA 01913

DIRECTORY
PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM. (ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS OUTLINED WITHIN: NEC 690.56(B)&(C), [NEC 705.10])

CAUTION:

MULTIPLE SOURCES OF POWER
PV SYSTEM DISCONNECTING MEANS LOCATED RIGHT TO THE MSP

IN CASE OF PV SYSTEM EMERGENCY
CALL NEW ENGLAND CLEAN ENERGY
AT +1 978 830 3181

LABEL 7
NEC 705.10 (AT MAIN SERVICE PANEL)

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LABELS AND PLACARD

PV-8

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MODULE SPEC SHEET		
PV-9		



IQ8X Microinverter

Our newest IQ8 Series Microinverters are the industry's first microgrid-forming*, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. IQ8X Microinverter is the latest addition to the family, designed to support AC power efficiently. The IQ8X Microinverter is designed to support AC power efficiently, with a built-in DC input and output, and a built-in AC output. The IQ8X Microinverter is designed to support AC power efficiently, with a built-in DC input and output, and a built-in AC output. The IQ8X Microinverter is designed to support AC power efficiently, with a built-in DC input and output, and a built-in AC output.



Part of the Enphase Energy System, the IQ8 Series Microinverters redefine reliability standards with over 20 million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



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



Connect PV modules quickly and easily to the IQ8 Series Microinverters that have integrated MC4-connectors.



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

*Only when installed with IQ System Controller 2, meets UL 1741.

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PRELIMINARY DATA SHEET

IQ8X Microinverter

INPUT DATA (AC)		600 V-10-PH-US	
Commonly used module ratings ¹		W	320-540
Module compatibility			
To meet compatibility, PV modules must be within Max. Input DC voltage and Max module V_{oc} listed below. Module compatibility cannot be checked at https://enphase.com/module-compatibility-checker .			
MPPT voltage range	V	41-60	
Operating voltage range	V	25-79.5	
Minimum and Maximum start voltage	V	30-79.5	
Max. input DC voltage	V	79.5	
Max. continuous operating DC current	A	10	
Max. input DC short-circuit current	A	16	
Max. module I_{sc}	A	13	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration	Ungrounded array; no additional DC-side protection required; AC-side protection requires max 20 A per branch circuit		
OUTPUT DATA (AC)		100-80-H-US @248 VAC	100-48-H-US @218 VAC
Peak output power	W	364	360
Max. continuous output power	W	360	360
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	208 single-phase (L-L), 120°
Minimum and Maximum grid voltage ²	V	211-264	183-228
Max. continuous output current	A	1.58	1.73
Nominal frequency	Hz	60	
Extended frequency range	Hz	47-68	
AC short-circuit fault current over three cycles I_{sc}	A	2.70	
Max. amps per 20 A (L-L) branch circuit ³		10	9
Total harmonic distortion	%	< 5	
Overvoltage class AC port		III	
AC port backfeed current	mA	18	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading...0.85 lagging	
Peak efficiency	%	97.6	97.4
CEC weighted efficiency	%	97.2	96.9
Nighttime power consumption	mW	22	29
MECHANICAL DATA			
Ambient temperature range	-40°C to 65°C (-40°F to 149°F)		
Relative humidity range	4% to 100% (condensing)		
DC connector type	Standard MC4		
Dimensions (H x W x D), Weight	212 mm (8.37" x 30.2 mm (1.27"; 11 kg (24.3 lb)		
Cooling	Natural convection - no fans		
Approved for wet locations; Pollution degree	Yes PDS		
Enclosure	Class II double-insulated, corrosion-resistant polymeric enclosure		
Environment category; UV exposure rating	NEMA Type 6 outdoor		
COMPLIANCE			
Certifications	CA Rule 21 (UL 1741-SA), UL 5209-1, IEEE 1547-2018 (UL 1741-SB), FCC Part 15 Class B, IEC 60335 Class E, CAN/CSA-C22.2 NO. 1071-01 This product is UL Listed as PV rapid shutdown 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 the manufacturer's instructions.		

IQ8X-MC4-DSH-0086-10-PH-US-2023-08-21

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PHOTOVOLTAIC ROOF MOUNT SYSTEM

10.580 kW DC, 8.740 kW AC
LINDA GIUNTA RESIDENCE
28 BIRCHMEADOW RD,
AMESBURY, MA 01913

DATE 5/15/2026

CREATED BY ART

SCALE NTS

INVERTER SPEC SHEET

PV-10



IQ Combiner 5/5C

The IQ Combiner 5/5C consolidates interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications. IQ Combiner 5/5C uses wired control communication and is compatible with IQ System Controller 3/3G and IQ Gateway 3P.

The IQ Combiner 5/5C, IQ Series Microinverters, IQ System Controller 3/3G, and IQ Gateway 3P provide a complete grid-agnostic Enphase Energy System.



IQ Series Microinverters

The high-powered smart grid-ready IQ Series Microinverters (IQ6, IQ7, and IQ8 Series) simplify the installation process.



IQ System Controller 3/3G

The IQ System Controller 3/3G provides microgrid interconnection device (MID) functionality by automatically detecting grid status and adjusting the home energy system from grid power to backup power.



IQ Load Controller

Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life.



IQ Battery 3P

Fully integrated AC battery system. Includes six field-replaceable IQ60-BAT Microinverters.



5-year limited warranty



*For country-specific warranty information, see the <https://enphase.com/installers/resources/warranty> page.

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DATA SHEET

IQ Combiner 5/5C

MODEL NUMBER	
IQ Combiner 5 (X-IQ-AMI-240-5C / X-IQ-AMI-240-5C-HDK)	IQ Combiner 5 with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%), and IQ battery monitoring (±2.5%). Includes a silver solar shield to deflect heat. The IQ-AMI-240-5C-HDK includes a factory installed hold-down kit compatible with all the circuit breakers mentioned in the Accessories and Replacement Parts section.
IQ Combiner 5C (X-IQ-AMI-240-5C / X-IQ-AMI-240-5C-HDK)	IQ Combiner 5C with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%), and IQ battery monitoring (±2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-MI-06-SP-05). Includes a silver solar shield to deflect heat. The IQ-AMI-240-5C-HDK includes a factory installed hold-down kit compatible with all the circuit breakers mentioned in the Accessories and Replacement Parts section.
WHAT'S IN THE BOX	
IQ Gateway printed circuit board	IC Gateway is the platform for total energy management for comprehensive, remote maintenance, and management of the Enphase Energy System
Busbar	80 A busbar with support for one IQ Gateway breaker and four 20 A breakers for installing IQ Series Microinverters and IQ Battery 3P
IQ Gateway breaker	Circuit breaker, 2-pole, 10 A/15 A
Production CT	Pre-wired revenue-grade solid-core CT, accurate up to ±0.5%
Consumption CT	Two consumption metering clamp CTs, shipped with the box, accurate up to ±2.5%
IQ Battery CT	One battery metering clamp CT, shipped with the box, accurate up to ±2.5%
CTRL board	Control board for wired communication with IQ System Controller 3/3G and the IQ Battery 3P
Enphase Mobile Connect (only with IQ Combiner 5C)	4G-based LTE-M cellular modem (CELLMODEM-MI-06-SP-05) with a 3-year T-Mobile data plan
Accessories kit	Spare control headers for the COMMS-KIT-2 board
ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
CELLMODEM-MI-05-SP-05	4G-based LTE-M cellular modem with a 5-year T-Mobile data plan
CELLMODEM-MI-05-AT-05	4G-based LTE-M cellular modem with a 5-year AT&T data plan
Circuit breakers (off-the-shelf)	Supports Eaton BR2XX, Siemens Q2XX, and GE/ABB THQL21XX Series circuit breakers (X represents 10, 15, 20, 30, 40, 50, or 60). Also supports Eaton BR220B, BR230B, and BR240B circuit breakers compatible with the hold-down kit.
Circuit breakers (provided by Enphase)	BRK-10A-2-240V, BRK-15A-2-240V, BRK-20A-2P-240V, BRK-15A-2P-243V-B, and BRK-20A-2P-340V-B (more details in the "Accessories" section)
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 5/5C
XA-ENW2-PCBA-5	IQ Gateway replacement printed circuit board (PCB) for IQ Combiner 5/5C
X-IQ-NA-HD-125A	Hold-down kit compatible with Eaton BR-B Series circuit breakers (with screws). Not required for X-IQ-AMI-240-5C-HDK/X-IQ-AMI-240-5C-HDK.
XA-COMMS2-PCBA-5	Replacement COMMS-KIT-2 printed circuit board (PCB) for IQ Combiner 5/5C
ELECTRICAL SPECIFICATIONS	
Rating	80 A
System voltage and frequency	120/240 VAC or 120/208 VAC, 60 Hz
Busbar rating	125 A
Fault current rating	10 kAIC
Maximum continuous current rating (input from PV/storage)	64 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR, Siemens Q, or GE/ABB THQL Series distributed generation (DG) breakers only (not included)
Maximum total branch circuit breaker rating (input)	80 A of distributed generation/95 A with IQ Gateway breaker included
IQ Gateway breaker	10 A or 15 A rating GE/Siemens/Eaton included
Production metering CT	202 A solid core pre-installed and wired to IQ Gateway

*A plug-and-play industrial-grade cell modem for systems of up to 60 microinverters. Available in the United States, Canada, Mexico, Puerto Rico, and the US Virgin Islands. Where there is adequate cellular service in the installation area.

ICC-5-5C-D8H-00007-6.0-EN-US-2024-09-30

CONTRACTOR INFORMATION



NEW ENGLAND CLEAN ENERGY
577 MAIN STREET, HUDSON, MA 01749

PHONE: +1 978 890 3181

LICENSE#

CS-102855 TYPE-CSL

PHOTOVOLTAIC ROOF MOUNT SYSTEM

10.580 kW DC, 8.740 kW AC
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COMBINER SPEC SHEET

PV-11

Accessories

ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
Consumption monitoring CT (CT-200-CLAMP)	A pair of 200 A clamp-style current transformers is included with the box
IQ Battery metering CT	200 A clamp-style current transformer for IQ Battery metering, included with the box
MECHANICAL DATA	
Dimensions (W × H × D)	37.5 cm × 49.5 cm × 19.8 cm (14.75" × 19.5" × 6.63") Height is 53.5 cm (2106") with mounting brackets.
Weight	7.5 kg (16.5 lb)
Ambient temperature range	-40°C to 46°C (-40°F to 115°F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA Type 3R, polycarbonate construction • 20 A to 50 A Breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lugs combined output: 1/0 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors • Always follow local code requirements for conductor sizing
Wire sizes	
Communication (in-premise connectivity)	Built-in CTRB board for wired communication with the IQ Battery SP and the IQ System Controller 3/3G. Integrated power line communication for IQ Series Microinverters.
Altitude	Up to 2,660 meters (8,530 feet)
COMMUNICATION INTERFACES	
Integrated Wi-Fi	802.11b/g/n (dual band 2.4 GHz/5 GHz) for connecting the Enphase Cloud through the internet.
Wi-Fi range (recommended)	10 m (32.8 feet)
Bluetooth	BLE4.2, 10 m range to configure Wi-Fi SSID
Ethernet	Optional, 802.3, Cat5E for Cat 6) UTP Ethernet cable (not included) for connecting to the Enphase Cloud through the internet.
Cellular/Mobile Connect	CELLMODEM-MT-06-SP-05 or CELLMODEM-MT-06-AT-05 (included with the IQ Combiner 5C)
Digital I/O	Digital input/output for grid operator control
USB 2.0	Mobile Connect, COMMS-KIT-01 for IQ Battery 3/3T/10/10T, COMMS-KIT-02 for IQ Battery SP
Access point (AP) mode	For connection between the IQ Gateway and a mobile device running the Enphase Installer App
Metering ports	Up to two Consumption CTs, one IQ Battery CT, and one Production CT
Power line communication	90–110 kHz
Web API	See https://developer-v4.enphase.com
Local API	See Guide for Local API
COMPLIANCE	
UL 1741, CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003, NOM-2008-SCFI-2016, ILL 81010-1, CAN/CSA 22.2 No. 81010-1, IEEE 1547-2018 (UL 1741-SB, 3rd Ed.), IEEE 2030.5/CSIP Compliant, Production metering, ANSI C12.20 accuracy class 0.5 (PV production)	

IQ Combiner with IQ Gateway

COMPATIBILITY	
PV	Microinverters IQ8, IQ7, and IQ6 Series Microinverters EP200G101-W240US00 EP200G101-W240US01
COMMS-KIT-02 ¹	IQ System Controller IQ System Controller 2 IQ Battery ENCHARGE-3-IP-NA, ENCHARGE-10-IP-NA, ENCHARGE-3T-IP-NA, ENCHARGE-IOT-IP-NA
COMMS-KIT-02 ³	IQ System Controller 3 IQ Battery SC200D11C240US01, SC200G11C240US01 IQBATTERY-SP-IP-NA

¹ For information about IQ Combiner 5/5C compatibility with the 2nd generation batteries, refer to the [compatibility matrix](#).
² IQ Combiner 3/3C comes pre-equipped with COMMS-KIT-02.

IQG-5-5C-DSH-00007-6-0-EN-US-2024-09-30

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Circuit breakers

BRK-10A-2-240V Circuit breaker, 2-pole, 10 A, Eaton BR210
BRK-15A-2-240V Circuit breaker, 2-pole, 15 A, Eaton BR215
BRK-20A-2P-240V Circuit breaker, 2-pole, 20 A, Eaton BR220
BRK-15A-2P-240V-B Circuit breaker, 2-pole, 15 A, Eaton BR215B with hold-down kit support
BRK-20A-2P-240V-B Circuit breaker, 2-pole, 20 A, Eaton BR220B with hold-down kit support



Mobile Connect

4G-based LTE-MT cellular modem with a 5-year data plan (CELLMODEM-MT-06-SP-05 for T-Mobile and CELLMODEM-MT-06-AT-05 for AT&T)



CT-200-CLAMP

200 A clamp-style consumption and battery metering CT with ±2.5% error rate (replacement SKU)



CT-200-SOLID

200 A revenue-grade solid-core production CT with ±0.3% error rate (replacement SKU)



IQG-5-5C-DSH-00007-6-0-EN-US-2024-09-30

DATE	5/15/2026
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SCALE	NTS
COMBINER SPEC SHEET	
PV-11.1	

STRONGHOLD™ | BUTYL



Unirac's STRONGHOLD® Butyl is efficient, dependable, and optimized for UNIRAC's NXT UMOUNT® system.

The pre-applied butyl pad removes the need for additional flashing. Just peel the liner, place the attachment, and fasten it to the roof. In addition, the butyl, used throughout the roofing and solar industries for its reliability, conforms to the screws and roof for a robust, dependable seal with no extra work! Couple this with the NXT UMOUNT® system, and you have a highly reliable, easy-to-install system with integrated wire management.



KITTED WITH

- ONE (1) STRONGHOLD® Butyl direct-to-deck attachment with pre-applied butyl patch (Extra patches for shimming available.)
- TWO (2) screws for rafter installation (Additional screws for direct-to-deck applications available.)
- ONE (1) NXT Rail Clamp

STRONGHOLD™ | BUTYL



SIMPLIFIED FLASHLESS SOLUTION

- One-step Butyl application
- Reliable waterproofing without messy sealant
- Eliminate roof disturbance
- Minimize labor

OPTIMIZED FOR NXT UMOUNT UNIRAC'S OPEN CHANNEL RAIL SYSTEM

- Open sld design for ease of rail connectivity with included STRONGHOLD® NXT rail clamp
- STRONGHOLD® Butyl combined with the NXT UMOUNT system make installation and wire management a breeze
- UL Certified with NXT UMOUNT

DUAL MOUNTING OPTIONS

- Pre-attached butyl pad: Simply peel, stick, and fasten with the two (2) included screws for rafter mount
- For direct-to-deck applications, additional decking screws are available

ADDITIONAL BENEFITS

- Mill and Dark Finishes
- Option for extra cross-course butyl patches
- Competitively priced with standard rafter attachments



UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT



TECHNICAL SUPPORT

UNIRAC's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

UNIRAC is the only PV mounting vendor with ISO certifications for 9001:2015, 14001:2015 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to best class business practices.

BANKABLE WARRANTY

Don't leave your project to chance. UNIRAC has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are receiving products of exceptional quality. STRONGHOLD® products are covered by a twenty five (25) year limited product warranty.

CONTRACTOR INFORMATION



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01749

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FOR QUESTIONS OR CUSTOMER SERVICE CONTACT: 508-242-6411 | SALES@UNIRAC.COM | WWW.UNIRAC.COM

PROTECT YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

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MOUNT SPEC SHEET

PV-12

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LICENSE#
CS-102855 TYPE-CSL

**PHOTOVOLTAIC ROOF
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10.580 kW DC, 8.740 kW AC
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CREATED BY ART
SCALE NTS

MOUNT SPEC SHEET

PV-12.1

PART # TABLE	
P/N	DESCRIPTION
SHBUTYLM2	STRONGHOLD BUTYL ATT KIT #14S MILL
SHBUTYLD2	STRONGHOLD BUTYL ATT KIT #14S DARK
003251W	DTD #14-14 X 3.0 TYPE AB

2X #14-14 TYPE AB SCREW,
HWH, SS W/ #14 EPDM WASHER

4X OPTIONAL SCREWS

DTD BUTYL ASSY

SHOWN WITH ADDITIONAL SCREWS FOR DTD;
OPTIONAL SCREWS NOT INCLUDED IN ATTACHMENT KIT;

1411 BROADWAY BLVD. NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

PRODUCT LINE: NXT UNMOUNT

DRAWING TYPE: PARTS

DESCRIPTION: SH BUTYL ATTACHMENT

REVISION DATE: 2/29/2024

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE
NOMINAL

PRODUCT PROTECTED BY
ONE OR MORE US PATENTS

LEGAL NOTICE

NU-A10-2

SHEET

PART # TABLE	
P/N	DESCRIPTION
SHBUTYLM2	STRONGHOLD BUTYL ATT KIT #14S MILL
SHBUTYLD2	STRONGHOLD BUTYL ATT KIT #14S DARK

RAIL CLAMP ASSY

2X #14-14 TYPE AB SCREW,
HWH, SS W/ #14 EPDM WASHER

DTD BUTYL ATT ASSY

SHOWN WITH ADDITIONAL SCREWS FOR DTD;
OPTIONAL SCREWS NOT INCLUDED IN ATTACHMENT KIT;

1411 BROADWAY BLVD. NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

PRODUCT LINE: NXT UNMOUNT

DRAWING TYPE: PARTS

DESCRIPTION: SH BUTYL ATTACHMENT

REVISION DATE: 7/14/2023

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE
NOMINAL

PRODUCT PROTECTED BY
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LEGAL NOTICE

NU-A10-1

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CONTRACTOR INFORMATION

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Expert Solar Installer Since 2006

NEW ENGLAND CLEAN ENERGY

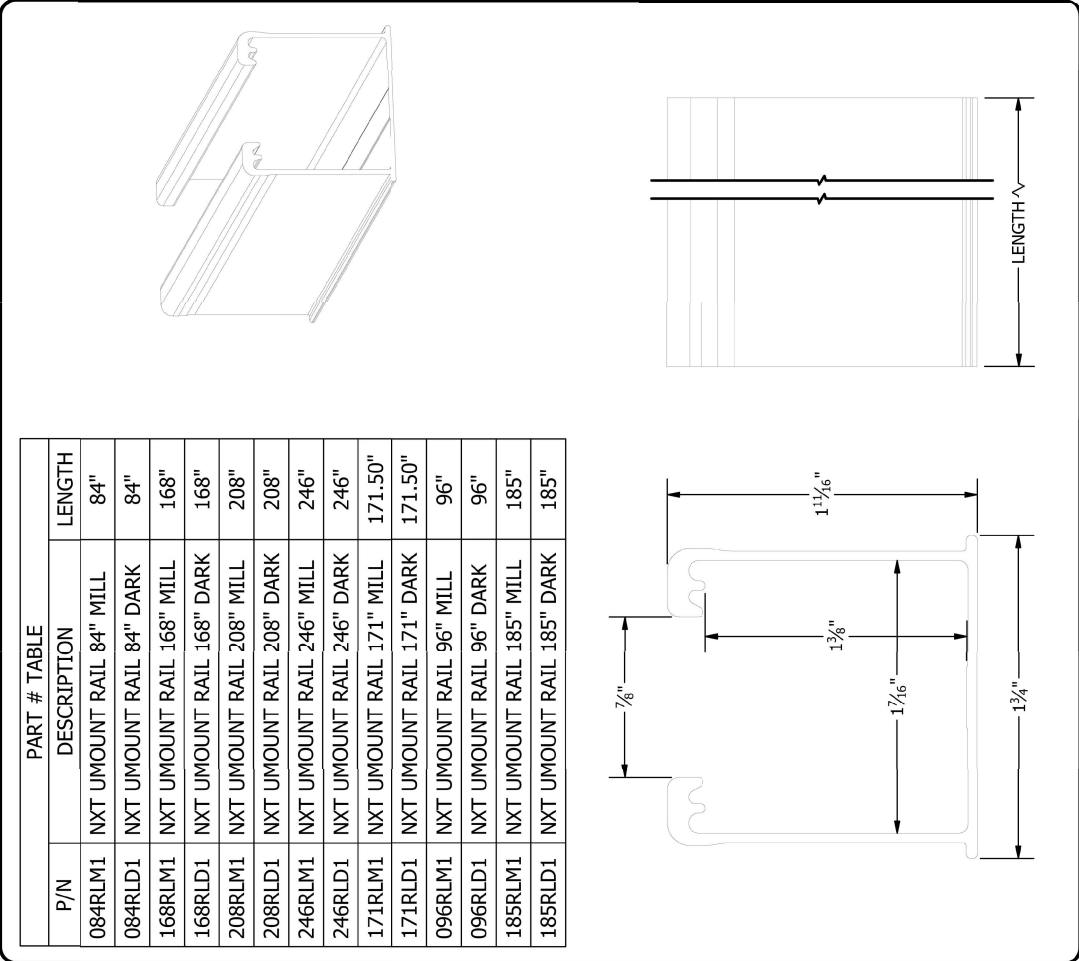
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PV-13	



1411 BROADWAY BLVD. NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

PRODUCT LINE: NXT UMOUNT

DRAWING TYPE: PART DETAIL

DESCRIPTION: RAIL

REVISION DATE: 2/29/2024

DRAWING NOT TO SCALE
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NU-P01

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