



# CAMBRIDGE HISTORICAL COMMISSION

831 Massachusetts Avenue, 2<sup>nd</sup> Fl., Cambridge, Massachusetts 02139  
Telephone: 617 349 4683 TTY: 617 349 6112  
E-mail: histcomm@cambridgema.gov URL: www.cambridgema.gov/Historic

## APPLICATION FOR CERTIFICATE

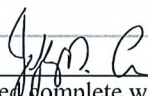
1. The undersigned hereby applies to the Cambridge Historical Commission for a Certificate of (check one box):  Appropriateness,  Nonapplicability, or  Hardship, in accordance with Chapter 40C of the Massachusetts General Laws and/or Chapter 2.78 of the Municipal Code.

2. Address of property:  , Cambridge, Massachusetts

3. Describe the proposed alteration(s), construction or demolition in the space provided below: (An additional page can be attached, if necessary).

Install a photovoltaic solar array on the roof of the building. Detailed plans will be submitted at a later date.

I certify that the information contained herein is true and accurate to the best of my knowledge and belief. The undersigned also attests that he/she has read the statements printed on the reverse.

Name of Property Owner of Record: <input type="text" value="Plympton Collective LLC (Jeffrey Lee)"/>	
Mailing Address: <input type="text" value="6 Willard St, Cambridge MA 02138"/>	
Telephone/Fax: <input type="text" value="650-906-2016"/>	E-mail: <input type="text" value="jeffdlee@gmail.com"/>
Signature of Property Owner of Record: 	
<small>(Required field; application will not be considered complete without property owner's signature)</small>	
Name of proponent, if not record owner: <input type="text"/>	
Mailing Address: <input type="text"/>	
Telephone/Fax: <input type="text"/>	E-mail: <input type="text"/>

<small>(for office use only):</small>			
Date Application Received: _____	Case Number: <u>5218</u>	Hearing Date: <u>11/7/24</u>	
Type of Certificate Issued: _____	Date Issued: _____		



**DEVILIN CONTRACTING & MAINTENANCE**  
 2 KEITH WAY  
 HINGHAM, MA 02043  
 TEL: (781) 512-0240  
 info@devilinc.com

VERSION	DATE	REV
DESCRIPTION	DATE	UR
INITIAL RELEASE	08/13/2023	

PROJECT NAME

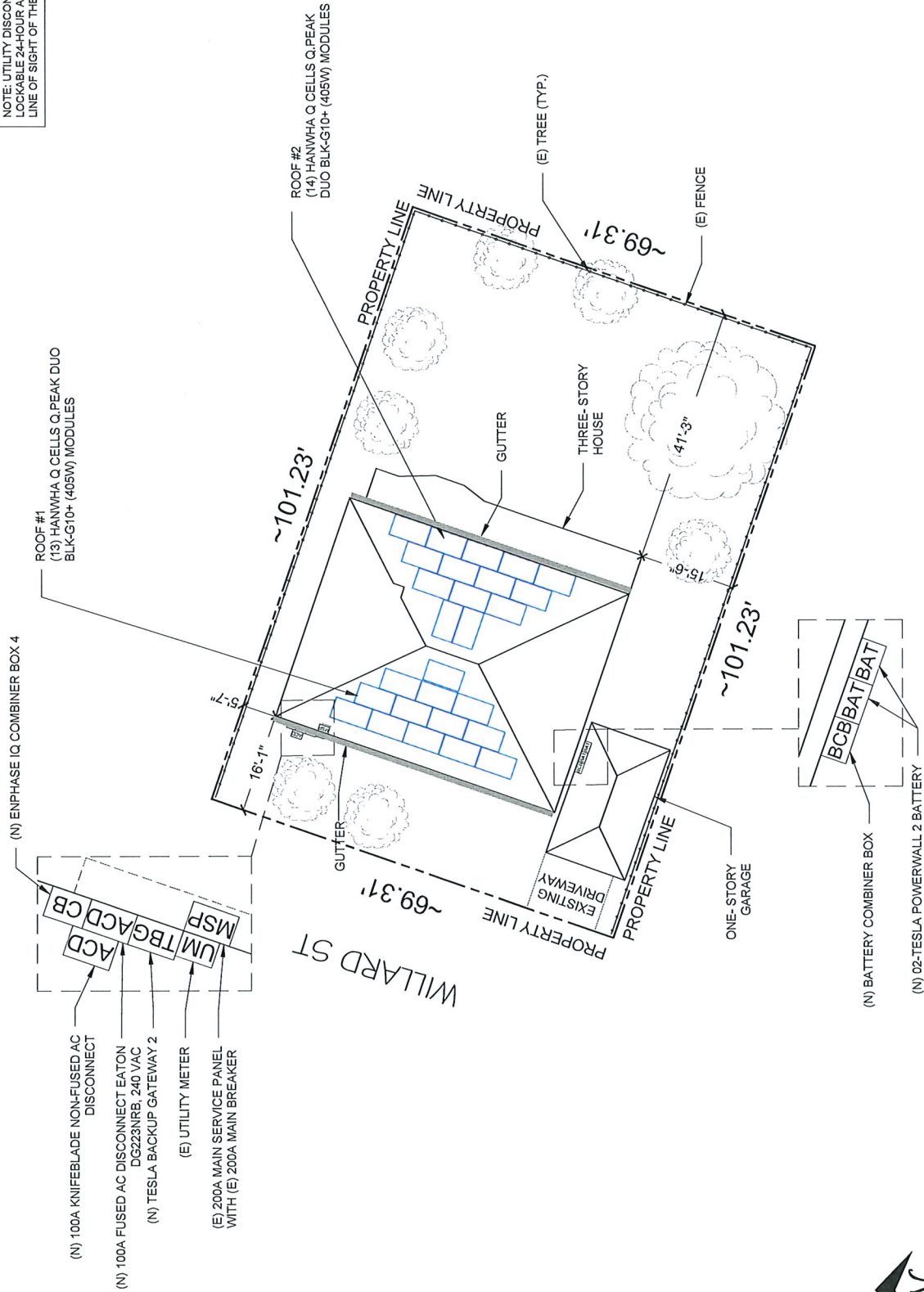
JEFFREY LEE  
 4 WILLARD ST,  
 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 SITE PLAN WITH  
 ROOF PLAN

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-1

NOTE: UTILITY DISCONNECT EXTERNAL LOCKABLE 24-HOUR ACCESSIBLE, WITHIN LINE OF SIGHT OF THE UTILITY METER.



**1 SITE PLAN WITH ROOF PLAN**

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



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VERSION	DATE	REV
DESCRIPTION	09/19/2023	UR
INITIAL RELEASE		

PROJECT NAME

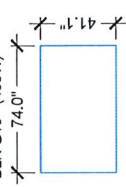
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 APN# 415853  
 UTILITY: EVERSOURCE  
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SHEET NAME  
 ROOF PLAN WITH  
 MODULES & BRANCH  
 LAYOUT

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-2

PHOTOVOLTAIC MODULES  
 HANWHA Q CELLS Q.PEAK DUO  
 BLK-G10+ (405W)



ROOF #2  
 (14) HANWHA Q CELLS Q.PEAK DUO  
 BLK-G10+ (405W) MODULES

**LEGEND**

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- CB - COMBINER BOX 4
- JB - JUNCTION BOX
- BAT - TESLA POWERWALL 2 BATTERY
- BCB - BATTERY COMBINER BOX
- TBG - TESLA BACKUP GATEWAY
- ACD - KNIFEBLADE NON-FUSED AC DISCONNECT
- CONDUIT
- CHIMNEY
- FIRE PATHWAY

(N) ENPHASE IQ COMBINER BOX 4  
 ROOF #1  
 (13) HANWHA Q CELLS Q.PEAK DUO  
 BLK-G10+ (405W) MODULES

- (N) 100A KNIFEBLADE NON-FUSED AC DISCONNECT
- (N) 100A FUSED AC DISCONNECT EATON D6223NFB, 240 VAC
- (N) TESLA BACKUP GATEWAY 2 (E) UTILITY METER
- (E) 200A MAIN SERVICE PANEL WITH (E) 200A MAIN BREAKER

GUTTER

ROOF #1  
 TILT - 27°  
 AZIMUTH - 299°

WILLARD ST  
 FRONT YARD

**NOTE:** ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

**NOTE:** ALL ELECTRICAL EQUIPMENT, INVERTERS, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

GUTTER

ROOF #2  
 TILT - 27°  
 AZIMUTH - 109°

REAR YARD

**1 ROOF PLAN WITH MODULES & BRANCH LAYOUT**  
 SCALE: 1/8" = 1'-0"

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

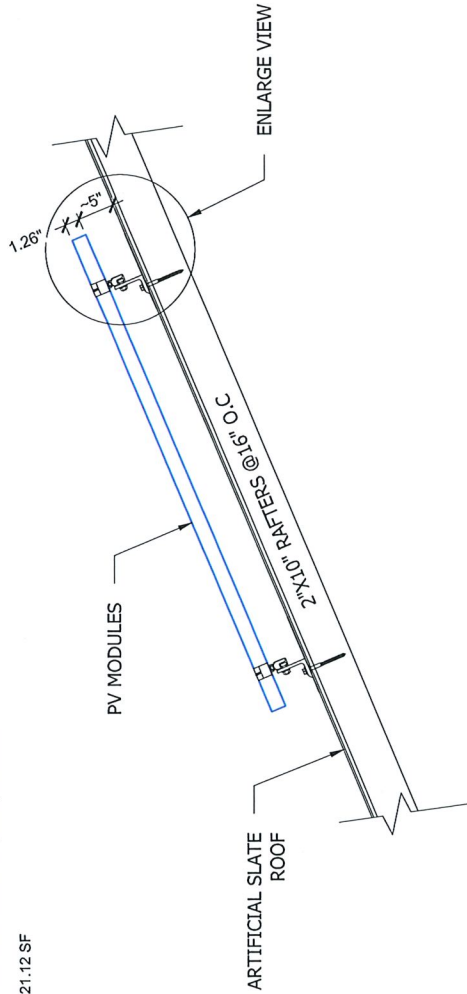
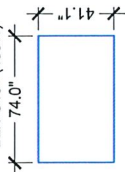




**MODULE TYPE, DIMENSIONS & WEIGHT**

NUMBER OF MODULES = 41 MODULES  
 MODULE TYPE = HANWHA Q CELLS Q.PEAK DUO BLK-G10+ (405W) MODULES  
 MODULE WEIGHT = 48.5 LBS / 22.0 KG.  
 MODULE DIMENSIONS = 74.0" X 41.1" = 21.12 SF  
 UNIT WEIGHT OF ARRAY = 2.30 PSF

PHOTOVOLTAIC MODULES  
 HANWHA Q CELLS Q.PEAK DUO  
 BLK-G10+ (405W)

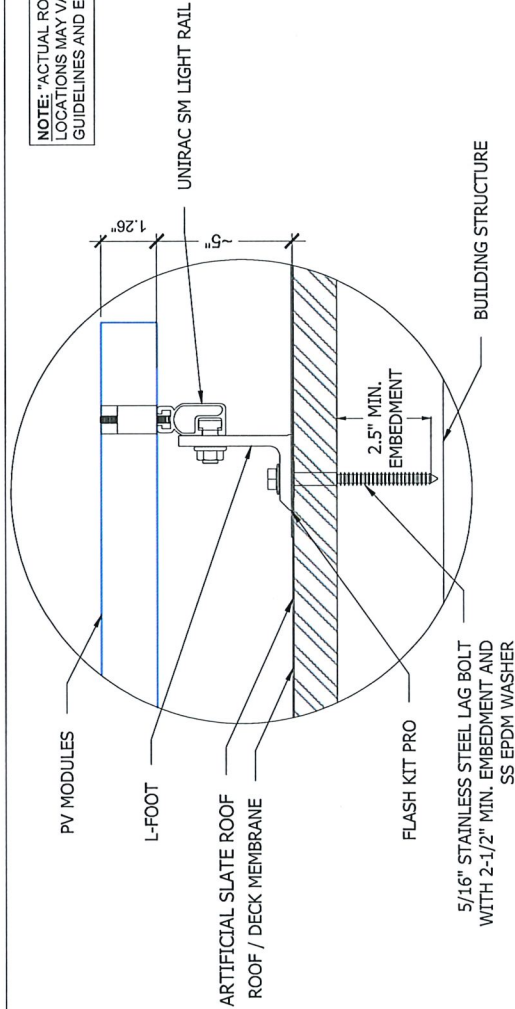


ROOF DESCRIPTION		
ROOF TYPE	ARTIFICIAL SLATE ROOF	RAFTERS SPACING
#1	27°	288°
#2	27°	109°
#3	27°	189°
#4	27°	19°

ARRAY AREA & ROOF AREA CALC'S			
ROOF #	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	14	295.69	487.66
#2	14	295.69	485.23
#3	06	126.73	335.02
#4	07	147.85	332.06

BILL OF MATERIALS	
EQUIPMENT	DESCRIPTION
RAIL	32 UNIRAC SM LIGHT RAIL, 168" DARK
SPLICE	18 BND SPLICE BAR PRO SERIES DRK
MID CLAMP	54 UNIVERSAL AF SERIES MID CLAMP
END CLAMP	56 UNIVERSAL AF SERIES END CLAMP
ATTACHMENT	142 UNIRAC FLASH KIT PRO ATTACHMENT
GROUNDING LUG	14 GROUNDING LUG

**1A ATTACHMENT DETAIL**  
 SCALE: NTS



**1B ATTACHMENT DETAIL (ENLARGED VIEW)**  
 SCALE: NTS

NOTE: "ACTUAL ROOF CONDITIONS AND RAFTERS/TRUSSES (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS."

**DEVILIN**  
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JEFFREY LEE  
 4 WILLARD ST.  
 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 ATTACHMENT  
 DETAIL

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-2.1





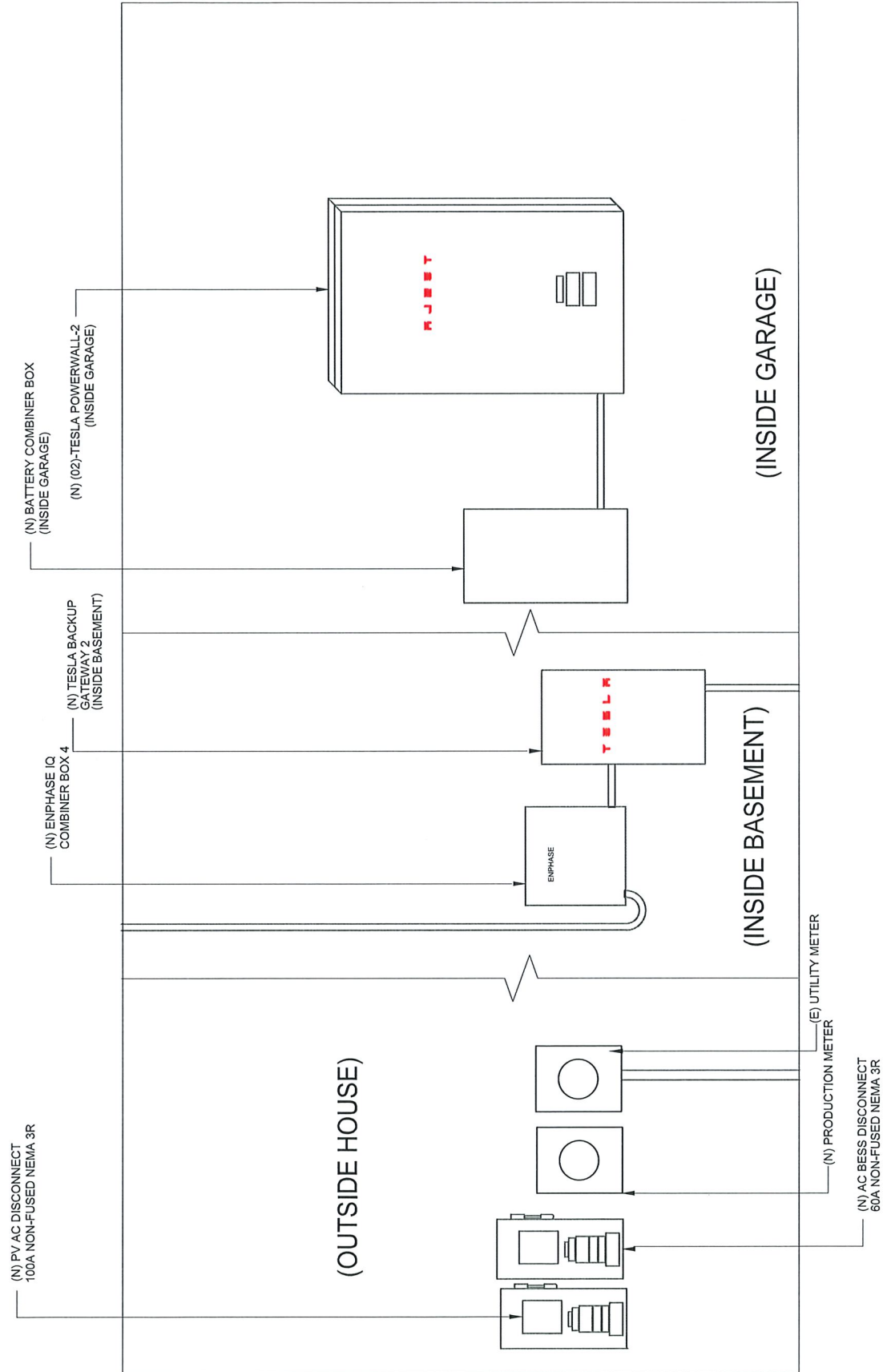
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VERSION	DATE	REV
DESCRIPTION	09/19/2023	UR
INITIAL RELEASE	10/02/2023	DE
REV1		



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 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 EQUIPMENT LOCATION  
 SHEET SIZE  
 ANSIB  
 11" X 17"  
 SHEET NUMBER  
 PV-3.1



**1** EQUIPMENT ELEVATION  
 SCALE: NTS



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VERSION	DATE	REV
DESCRIPTION		
INITIAL RELEASE	09/12/2023	UR



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 CAMBRIDGE, MA 02138 USA  
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 UTILITY: EVERSOURCE  
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SHEET NAME

FLOOR PLAN

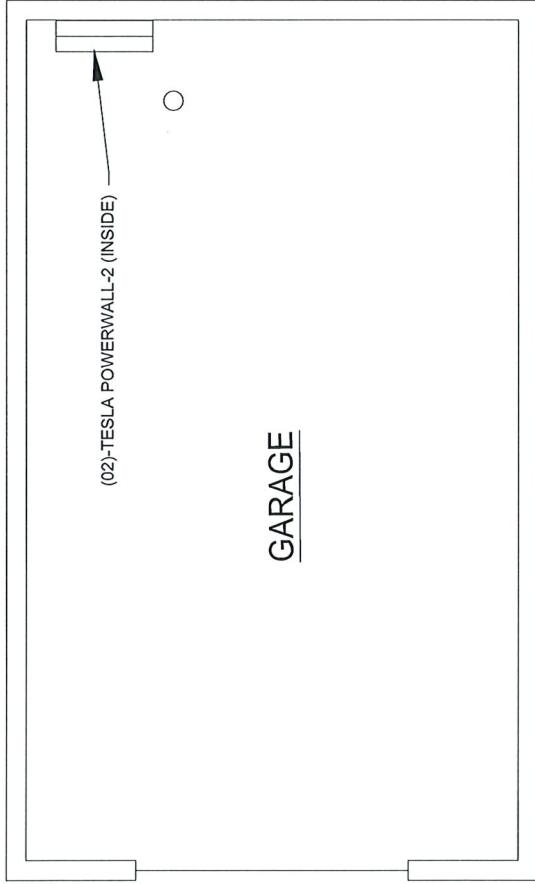
SHEET SIZE

ANSI B

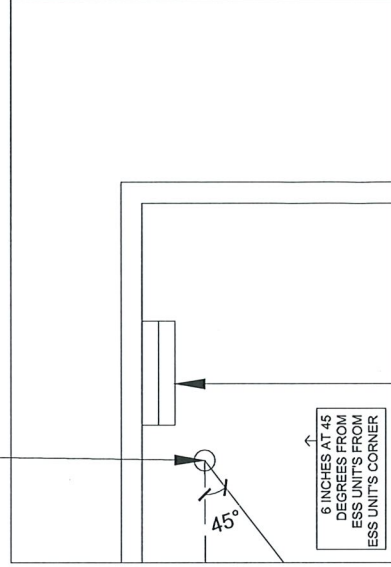
11" X 17"

SHEET NUMBER

PV-3.2



(N) 1 - BOLLARDS



02 - TESLA POWERWALL 2 BATTERY

BOLLARD DETAIL



**1** FLOOR PLAN  
 SCALE: NTS





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VERSION	DATE	REV	UR
DESCRIPTION			
INITIAL RELEASE	08/13/2023		



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 4 WILLARD ST,  
 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 BATTERY  
 LOCATION

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-3.3



NOTES: BATTERY INSTALLED IN DETACHED GARAGE. BOLLARDS WILL BE INSTALLED AS BARRIER PROTECTION. BATTERY TO BE PLACED MINIMUM 3' AWAY FROM DOORS & WINDOWS

**1** BATTERY LOCATION  
 SCALE: NTS



VERSION	DESCRIPTION	DATE	REV	UR
INITIAL RELEASE		09/19/2023		UR
REV1		10/02/2023	DE	DE



JEFFREY LEE  
4 WILLARD ST,  
CAMBRIDGE, MA 02138 USA  
APN# 415853  
UTILITY: EVERSOURCE  
AHJ: CITY OF CAMBRIDGE

SHEET NAME	ELECTRICAL LINE DIAGRAM
SHEET SIZE	ANSI B 11" X 17"
SHEET NUMBER	PV-4

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	41	HANWHA Q CELLS Q.PEAK DUO BLK-G10+ (405W)MODULES
INVERTER	41	ENPHASE ENERGY IQ8PLUS-72-US MICRO-INVERTERS
JUNCTION BOXES	1	600V, 55A MAX., 4 INPUTS, MOUNTED ON ROOF FOR WIRE & CONDUIT
PRODUCTION METER	1	MA SMART METER
AC DISCONNECT	1	60A KNIFE BLADE NON-FUSED AC DISCONNECT, 240 VAC
COMBINER BOX	1	70A/2P PV BREAKER
PV BREAKER	1	TESLA POWERWALL-2 BATTERY
TESLA POWERWALL	2	TESLA POWERWALL 240VAC, 200A, 10KA, SCOR, NEMA 3R
TESLA GATEWAY	1	100A KNIFE BLADE NON-FUSED AC DISCONNECT, 240 VAC
AC DISCONNECT	1	60A LOAD CENTER, MIN. 4 SPACES, MIN. NEMA TYPE 3R, MIN.
BATTERY COMBINER BOX	1	225A SPAN PANEL WITH 200A MAIN BREAKER
SPAN PANEL	1	

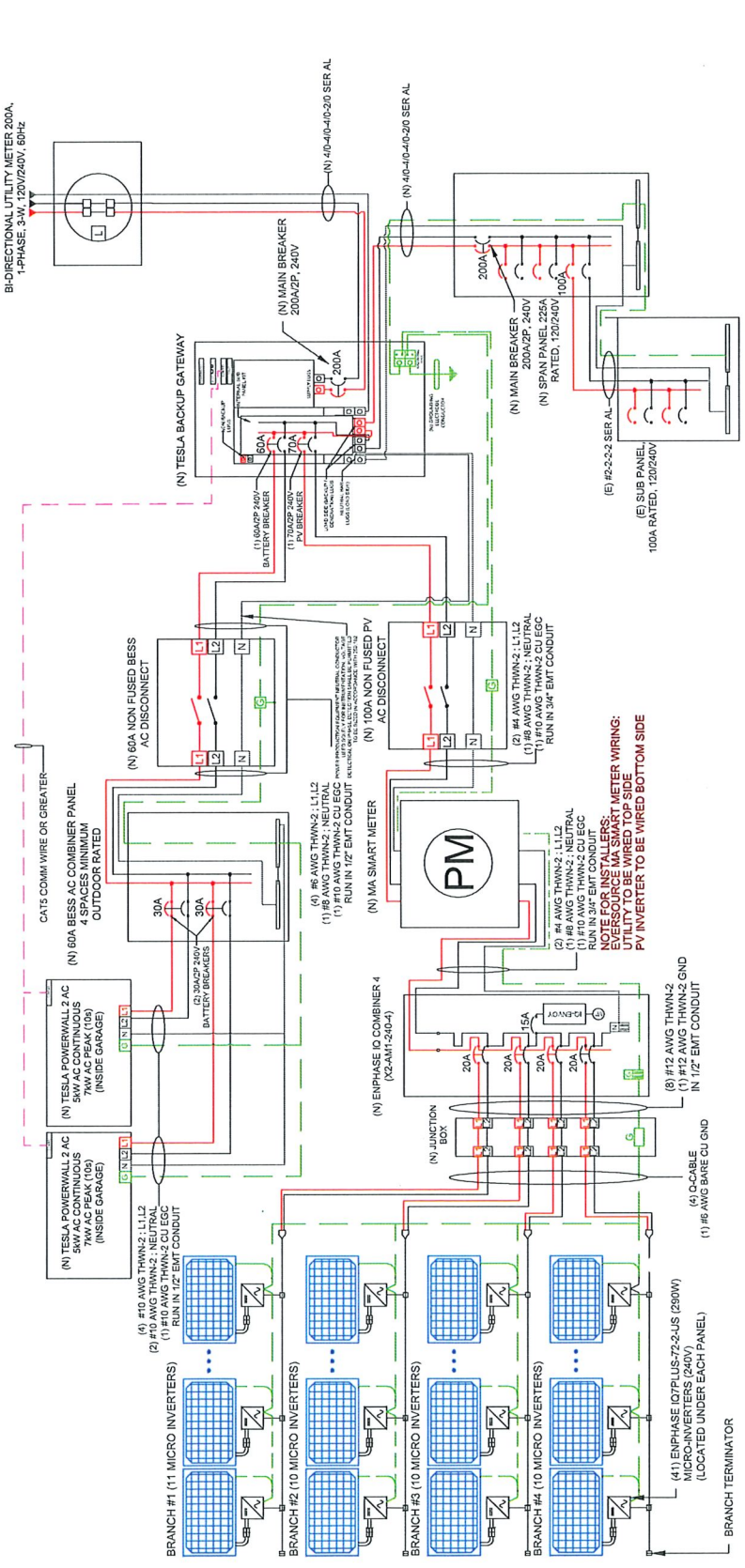
**BILL OF MATERIALS**

SYSTEM SIZE:- 41 x 405W = 16.61 kWDC  
SYSTEM SIZE:- 41 x 290W = 11.89 kWAC

METER NO. : 2690793

(41) HANWHA Q CELLS Q.PEAK DUO BLK-G10+ (405W) MODULES  
(41) ENPHASE ENERGY IQ8PLUS-72-US MICRO-INVERTERS  
(01) BRANCH OF 11 MODULES &  
(03) BRANCHES OF 10 MODULES CONNECTED IN PARALLEL PER BRANCH

NOTES:- SINGLE UNIT OF ESS SYSTEM  
THE MAX CONTINUOUS CHARGE AND DISCHARGE VALUE IS 5 KW.  
THE PEAK (10S, OFF-GRID/BACKUP) CHARGE AND DISCHARGE  
VALUE IS 7 KW WITH 13.5KWH OF STORAGE CAPACITY  
NOTES:- NEW TOTAL ESS (NUMBER OF BATTERY 2)  
THE MAX CONTINUOUS CHARGE AND DISCHARGE VALUE IS 10 KW.  
THE PEAK (10S, OFF-GRID/BACKUP) CHARGE AND DISCHARGE  
VALUE IS 14 KW WITH 27KWH OF STORAGE CAPACITY.



**SERVICE INFO.**  
UTILITY PROVIDER: EVERSOURCE  
MAIN SERVICE VOLTAGE: 240V  
MAIN PANEL BRAND: EATON  
MAIN SERVICE PANEL RATING: (E) 200A  
MAIN CIRCUIT BREAKER RATING: (E) 200A

NOTE: GROUNDING SYSTEM IF INTERSYSTEM BONDING KIT IS NOT PRESENT. THE INSTALLER SHALL ADD AN INTERSYSTEM BONDING KIT.

NOTE: UTILITY DISCONNECT EXTERNAL LOCKABLE 24H-FOUR ACCESSIBLE. WITHIN LINE OF SIGHT OF THE UTILITY METER.

**1 ELECTRICAL LINE DIAGRAM**  
SCALE: NTS

**SOLAR MODULE SPECIFICATIONS**

MANUFACTURER / MODEL #	HANWHA Q CELLS Q.PEAK DUO BLK-G10+ (405W)MODULES
VMP	37.39
IMP	10.83
VOC	45.34
ISC	11.17
MODULE DIMENSION	74.0" L x 41.1" W x 1.26" D (In Inch)

**INVERTER SPECIFICATIONS**

MANUFACTURER / MODEL #	ENPHASE ENERGY IQ8PLUS-72-US
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	1.21A

**AMBIENT TEMPERATURE SPECS**

WEATHER STATION: BOSTON LOGAN INT'L ARPT	
RECORD LOW TEMP	-17°
AMBIENT TEMP (HIGH TEMP 2%)	32°
CONDUIT HEIGHT	0.5'
CONDUCTOR TEMPERATURE RATE(ON ROOF)	90°
CONDUCTOR TEMPERATURE RATE(OFF ROOF)	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

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

**ELECTRICAL NOTES**

- 1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- 3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- 4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS, CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULLY 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.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

**1 ELECTRICAL CALCULATION**  
SCALE: NTS

**AC CONDUCTOR AMPACITY CALCULATIONS:  
FROM JUNCTION BOX TO COMBINER BOX:**

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT PER NEC 310.15(B)(2): + 33°  
 EXPECTED WIRE TEMP (°C): 32° + 33° = 65°  
 TEMP CORRECTION PER TABLE 310.15(B)(1): 0.96  
 # OF CURRENT CARRYING CONDUCTORS: 8  
 CONDUIT FILL CORRECTION PER NEC 310.15(C)(1): 0.70  
 CIRCUIT CONDUCTOR SIZE: 12 AWG  
 CIRCUIT CONDUCTOR AMPACITY: 30A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):  
 1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT  
 1.25 X 11 X 1.21A = 16.64A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(1)  
 TEMP CORR. PER NEC TABLE 310.15(B)(1) X  
 CONDUIT FILL CORR. PER NEC 310.15(C)(1) X  
 CIRCUIT CONDUCTOR AMPACITY =  
 0.96 X 0.70 X 30 = 21.00A

RESULT SHOULD BE GREATER THAN (16.64A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

**AC CONDUCTOR AMPACITY CALCULATIONS:  
FROM COMBINER BOX TO INTERCONNECTION GATEWAY:**

# OF INVERTERS: 41  
 EXPECTED WIRE TEMP (°C): 32°  
 TEMP CORRECTION PER TABLE 310.15(B)(1): 0.94  
 # OF CURRENT CARRYING CONDUCTORS: 3  
 CONDUIT FILL PER NEC 310.15(C)(1): 1.0  
 CIRCUIT CONDUCTOR SIZE: 4 AWG  
 CIRCUIT CONDUCTOR AMPACITY: 85 A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):  
 1.25 X # MICRO-INVERTERS X MAX OUTPUT CURRENT =  
 1.25 X 1.21 X 41 = 62.01A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:  
 TEMP CORR. PER NEC TABLE 310.15(B)(1) X  
 CONDUIT FILL CORR. PER NEC 310.15(C)(1) X  
 CIRCUIT CONDUCTOR AMPACITY =  
 0.94 X 1.0 X 85 = 79.9A

RESULT SHOULD BE GREATER THAN (62.01A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

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 APN# 415853  
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 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 ELECTRICAL  
 CALCULATION

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-5



DESCRIPTION	DATE	REV	UR
INITIAL RELEASE	09/13/2023		



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 AHJ: CITY OF CAMBRIDGE

SHEET NAME	WARNING LABELS
SHEET SIZE	ANSI B 11" X 17"
SHEET NUMBER	PV-6

**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 1**  
 AT RAPID SHUTDOWN SYSTEM  
 [NEC 690.56(C)]

**DIRECTORY**

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION [NEC 690.56(B)]  
 WHERE THE INVERTERS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE INSTALLED AT EACH DC PV SYSTEM DISCONNECTING MEANS, AT EACH AC DISCONNECTING MEANS, AND AT THE MAIN SERVICE DISCONNECTING MEANS, SHOWING THE LOCATION OF ALL AC AND DC PV SYSTEM DISCONNECTING MEANS IN THE BUILDING. [NEC 690.4(H)]

**PHOTOVOLTAIC AC DISCONNECT**

OPERATING CURRENT: 48.81A  
 OPERATING VOLTAGE: 240V

**LABEL 4**  
 AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS [NEC 690.54]

**PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

**LABEL 9**  
 AT RAPID SHUTDOWN SWITCH  
 [NEC 690.56(B)].  
 LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE [IFC 605.11.1.1]

INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED

**LABEL 8**  
 AT UTILITY METER  
 [NEC 690.56(B)]

**PHOTOVOLTAIC AC DISCONNECT**

**LABEL 11**  
 AT EACH AC DISCONNECTING MEANS  
 [NEC 690.13(B)]

**LABELING NOTES**

- 1.1 LABELING REQUIREMENTS BASED ON THE 2023 NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535
- 1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- 1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- 1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
- 1.5 ALERTING WORDS TO BE COLOR CODED. "DANGER" WILL HAVE RED BACKGROUND; "WARNING" WILL HAVE ORANGE BACKGROUND; "CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]

**! CAUTION !**

PHOTOVOLTAIC SYSTEM SOURCE ○  
 CIRCUIT IS BACKFED

**LABEL 6**  
 AT POINT OF INTERCONNECTION; [NEC 705.12(D) & NEC 690.59]

**! WARNING !**

POWER SOURCE OUTPUT CONNECTION - DO NOT RELOCATE THIS OVERCURRENT DEVICE

**LABEL 12**  
 AT POINT OF INTERCONNECTION OVERCURRENT DEVICE  
 NEC 705.12 (B)(3)(2)

INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED ○  
 PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED ○  
 WEST SIDE OF THE HOUSE

**PLAQUE**

**! WARNING: PHOTOVOLTAIC POWER SOURCE**

**LABEL 10**  
 AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS. [NEC 690.31(D)(2)]

**! WARNING !**

ELECTRICAL SHOCK HAZARD. TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

**LABEL 3**  
 AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT [NEC 706.15(C)(4) and NEC 690.13(B)]

**! WARNING !**

DUAL POWER SOURCES. SECOND SOURCE IS PV SYSTEM

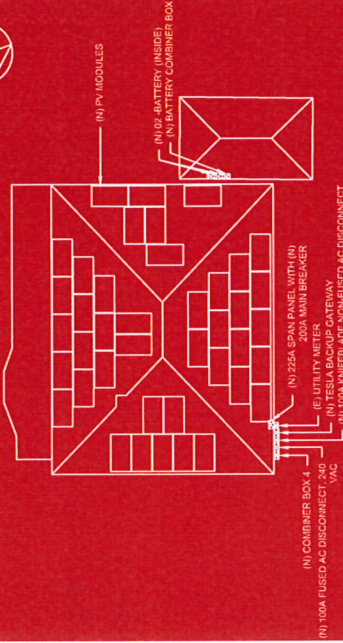
**LABEL 5**  
 AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 5 OR LABEL 6 MUST IDENTIFY PHOTOVOLTAIC SYSTEM [NEC 705.12(B)(3)(3) & NEC 690.59]



1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.
3. AC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION AC CIRCUIT" OR EQUIV. EVERY 5 FT.
4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A).
5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.
6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.
7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.
8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

# CAUTION!

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN AT:  MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & COMBINER BOX & TESLA POWERWALL 2 & TESLA BACKUP GATEWAY, BATTERY COMBINER BOX

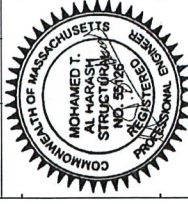


4 WILLARD ST



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VERSION	DATE	REV	UR
DESCRIPTION			
INITIAL RELEASE	08/13/2023		



JEFFREY LEE  
4 WILLARD ST.  
CAMBRIDGE, MA 02138 USA  
APN# 415853  
UTILITY: EVERSOURCE  
AHJ: CITY OF CAMBRIDGE

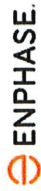
SHEET NAME  
**ADDITIONAL NOTES  
& PLACARD**

SHEET SIZE  
**ANSI B  
11" X 17"**

SHEET NUMBER  
**PV-7**







DATA SHEET



# IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC with a split-phase output. The IQ8+ Microinverter is designed for use in applications with application-specific integrated circuit (ASIC), which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built using advanced 55-nm technology with high-speed digital logic and has superfast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the IQ Gateway, IQ Gateway, and the Enphase App monitoring and analysis software.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included G-CCC-2 adapter cable with plug-and-play MCA connectors.



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



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

**Easy to install**

- Lightweight and compact with plug-and-play connectors
- Power line communication (PLC) between components
- Faster installation with simple two-wire cabling

**High productivity and reliability**

- Produce power even when the grid is down\*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

**Microgrid-forming grid support\*\***

- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meet CA Rule 21 (UL 1741-SA) and IEEE 1547-2018 (UL 1741-SB 3P-EE)

**NOTE:**  
IQ8 Microinverters cannot be mixed with previous generations of Enphase microinverters (IQ1, IQ2, IQ3 Series, and so on) in the same system.  
IQ Gateway is required to change the default grid profile at the time of installation to meet local Authority Having Jurisdiction (AHJ) requirements.

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# IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8 (UL 1741-SB)	IQ8+ (UL 1741-SB 3P-EE)
Commonly used module ratings <sup>1</sup>	W	235-350	230-440
Module compatibility	-	To meet compatibility, PV modules must be within maximum input DC voltage and maximum module L <sub>mpoc</sub> listed below. Module compatibility can be checked at <a href="https://enphase.com/resources/compatibility-checker">https://enphase.com/resources/compatibility-checker</a> .	
MPPT voltage range	V	27-37	27-45
Operating range	V	16-48	16-58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	12
Maximum input DC short-circuit current	A	25	25
Maximum module L <sub>mpoc</sub>	A	20	20
Overvoltage class DC port	-	I	I
DC port backfeed current	mA	0	0
PV array configuration	-	1-1 (ungrounded array), no additional DC side protection required; AC side protection required; maximum 20 A per branch circuit	1-1 (ungrounded array), no additional DC side protection required; AC side protection required; maximum 20 A per branch circuit

OUTPUT DATA (AC)	UNITS	IQ8 (UL 1741-SB)	IQ8+ (UL 1741-SB 3P-EE)
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	120	240, split-phase (L-L), 190 <sup>2</sup>
Minimum and Maximum grid voltage <sup>3</sup>	V	210-264	210-264
Maximum continuous output current	A	10	12.1
Nominal frequency	Hz	60	60
Extended frequency range	Hz	47-68	47-68
AC short-circuit fault current over three cycles	Amps	2	2
Maximum units per 20 A (L-L) branch circuit <sup>4</sup>	-	16	13
Total harmonic distortion	%	<5	<5
Overvoltage class AC port	-	II	II
AC port backfeed current	mA	30	30
Power factor setting	-	1.0	1.0
Grid-tied power factor (adjustable)	-	0.85 leading - 0.85 lagging	0.85 leading - 0.85 lagging
Peak efficiency	%	97.7	97.7
CEC weighted efficiency	%	97	97
Nighttime power consumption	mW	23	23

GENERAL (UL 1741)	UNITS	IQ8 (UL 1741-SB)	IQ8+ (UL 1741-SB 3P-EE)
Ambient temperature range	-	-40°C to 60°C (-40°F to 140°F)	-40°C to 60°C (-40°F to 140°F)
Relative humidity range	-	4% to 100% (condensing)	4% to 100% (condensing)
DC connector type	-	MCA	MCA
Dimensions (H x W x D)	-	22 mm (0.8 in.) x 175 mm (6.9 in.) x 30.2 mm (1.2 in.)	22 mm (0.8 in.) x 175 mm (6.9 in.) x 30.2 mm (1.2 in.)
Weight	-	108 kg (2.38 lb)	108 kg (2.38 lb)
Cooling	-	Natural convection-no fans	Natural convection-no fans
Approved for wet locations	-	Yes	Yes
Pollution degree	-	P3	P3
Enclosure	-	Class II double-insulated, corrosion-resistant polymeric enclosure	Class II double-insulated, corrosion-resistant polymeric enclosure
Environmental category/UV exposure rating	-	NEMA Type 6P outdoor	NEMA Type 6P outdoor

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VERSION	DATE	REV
DESCRIPTION	09/12/2023	UR
INITIAL RELEASE	09/12/2023	UR

PROJECT NAME

JEFFREY LEE  
4 WILLARD ST,  
CAMBRIDGE, MA 02138 USA  
APN# 415853  
UTILITY: EVERSOURCE  
AHJ: CITY OF CAMBRIDGE

SHEET NAME  
SPEC SHEETS

SHEET SIZE  
ANSI B  
11" X 17"

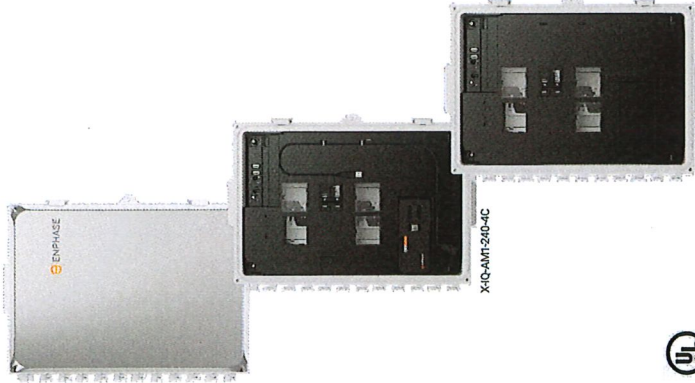
SHEET NUMBER  
PV-9





# Enphase IQ Combiner 4/4C

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



To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

### Smart

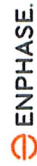
- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

### Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKUs
- UL listed



To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

## Enphase IQ Combiner 4/4C

### MODEL NUMBER

IQ Combiner 4 (X-IQ-AM1-240-4)  
IQ Combiner 4C (X-IQ-AM1-240-4C)

IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI CT120 V-0.5%) and consumption monitoring (V-2.5%), includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.

IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI CT120 V-0.5%) and consumption monitoring (V-2.5%), includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05) for cellular communication. The cellular modem is pre-installed and pre-configured for use in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area. Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat. (not included, order separately)

### ACCESSORIES AND REPLACEMENT PARTS

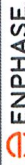
- Enphase Communications Kit
  - COMMS-CELLMODEM-M1-06
  - CELLMODEM-M1-06-SP-05
  - CELLMODEM-M1-06-AT-05
  - Circuit Breakers
  - BRK-10A-2P-240V
  - BRK-15A-2P-240V
  - BRK-20A-2P-240V-B
  - BRK-20A-2P-240V-B
  - EPCL-01
  - YASOLARSHIELD-ES
  - XX-PLUG-120-3
  - XA-ENV-PCBA-3
  - X-IQ-NH-HD-125A
- Includes COMMS-WT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Enphase sales  
-4C based LTE-M1 cellular modem with 5-year Sprint data plan  
-4C based LTE-M1 cellular modem with 5-year AT&T data plan  
Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers.  
Circuit breaker, 2 pole, 10A, Eaton BR210  
Circuit breaker, 2 pole, 15A, Eaton BR215  
Circuit breaker, 2 pole, 20A, Eaton BR220  
Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support  
Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support  
Power line carrier (communication bridge pair), quantity - one pair  
Replacement solar shield for IQ Combiner 4/4C  
Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPCL-01)  
Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C  
Hold down kit for Eaton circuit breaker with screws.

### ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	94 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (feeder and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Energy breaker	10A or 15A, rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption metering CT (CT-200-SPLIT)	A pair of 200 A split core current transformers

### MECHANICAL DATA

Dimensions (WxHxD)	37.5" x 49.5" x 16.8 cm (14.77" x 19.5" x 6.65") Height is 21.06" (83.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> <li>• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors</li> <li>• 60 A breaker branch input: 10 to 19 AWG copper conductors</li> <li>• 80 A breaker branch input: 10 to 19 AWG copper conductors</li> <li>• Neutral and ground: 14 to 1/0 copper conductors</li> </ul> Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
<b>INTERNET CONNECTION OPTIONS</b>	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05; CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Enphase installations.
Ethernet	Optional, RJ45, Cat5E (or Cat 6) UTP Ethernet cable (not included)
<b>COMPLIANCE</b>	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, -47 CFR, Part 15, Class B, ICES 003
Compliance, IQ Gateway	Production metering: ANSI CT120 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5 UL 6891-1/UL6891A.2.2.2 No. 610701



To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

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VERSION	DATE	REV
INITIAL RELEASE	09/12/2023	JR

### PROJECT NAME

JEFFREY LEE  
4 WILLARD ST,  
CAMBRIDGE, MA 02138 USA  
APN# 415853  
UTILITY: EVERSOURCE  
AHJ: CITY OF CAMBRIDGE

### SHEET NAME

SPEC SHEETS

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-10



## Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.



### Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste



### Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

## Enphase Q Cable Accessories

### Q CABLE SPECIFICATIONS

Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60320-1-2

### Q CABLE TYPES / ORDERING OPTIONS

Model Number	Max Nominal Voltage	Amperity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

### ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (female)	Q-CONN-3P-10M	Make connections from any Q Cable (single-phase)
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (three-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Q Cable sealing caps (female)	Q-DISC-3P-10	Disconnect tool for three-phase Field-wireable connectors
Terminator (single-phase)	Q-TERM-R-10	One needed to cover each unused connector on the cabling
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused single-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	Terminator cap for unused three-phase cable ends
		DC adaptor to MC4 (max voltage 100 VDC)



### TERMINATOR

Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10)



### SEALING CAPS

Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)



### DISCONNECT TOOL

Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)  
 Three-phase model (Q-DISC-3P-10)



### CABLE CLIP

Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)



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INITIAL RELEASE	09/12/2023	UR

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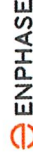
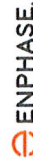
SHEET NAME  
 SPEC SHEETS

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-11

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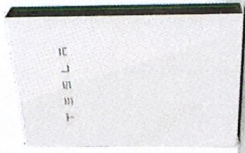




## POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light-commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.



### PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-in Type	Split Phase
Grid Frequency	60 Hz
Total Energy	14 kWh <sup>1</sup>
Usable Energy	13.5 kWh <sup>1</sup>
Real Power, max continuous	5 kW (charge and discharge)
Real Power, peak (10% off-grid/backup)	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10% off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Continuous Current	24 A
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Load Start Capability	88% 100 A LRA <sup>2</sup>
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	-/-, 1.0 adjustable
Power Factor Range (full-rated power)	-/-, 0.85
Internal Battery DC Voltage	50 V
Maximum Supply Fault Current	10 kA
Round Trip Efficiency	90% <sup>3</sup>
Warranty	10 years

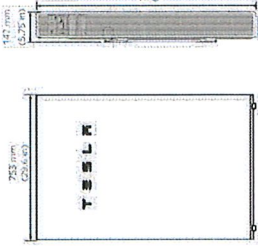
<sup>1</sup>Values provided for 25°C (77°F), 3.3 kW charge/discharge power.  
<sup>2</sup>Load start capability may vary.  
<sup>3</sup>AC to battery to AC, at beginning of life.

### COMPLIANCE INFORMATION

Certifications	UL 1642, UL 1741, UL 1741 SA, UL 1741 SB, UL 1972, UL 9540, IEEE 1547-2018, UN 28.3
Grid Connection	Worksense Compatibility
Emissions	FCC Part 15 Class B, ICES 005
Environmental	RoHS Directive 2011/65/EU
Safety	ACT150, IEEE 693-2005 (Type)
Fire Testing	Meets the Unit level performance criteria of UL 9540A.

### MECHANICAL SPECIFICATIONS

Dimensions	1150 x 753 x 147 mm (45.3 x 29.6 x 5.75 in) <sup>1</sup>
Weight	114 kg (251.3 lbs) <sup>2</sup>
Mounting options	*Floor or wall mount <small><sup>1</sup>Dimensions and weight differ slightly if manufactured before March 2019.          Contact Tesla for additional information.</small>



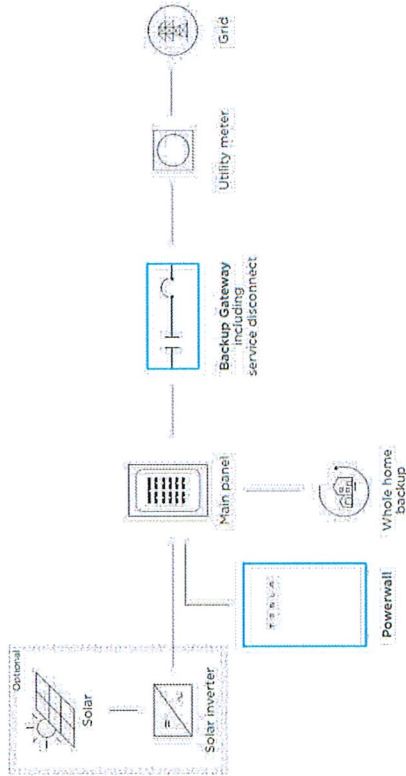
### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F) <sup>1</sup>
Operating Humidity (RH)	Up to 100% non-condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SOE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP57 (Battery & Power Electronics), IP55 (Wiring Compartments)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 20°C (68°F) <sup>2</sup>

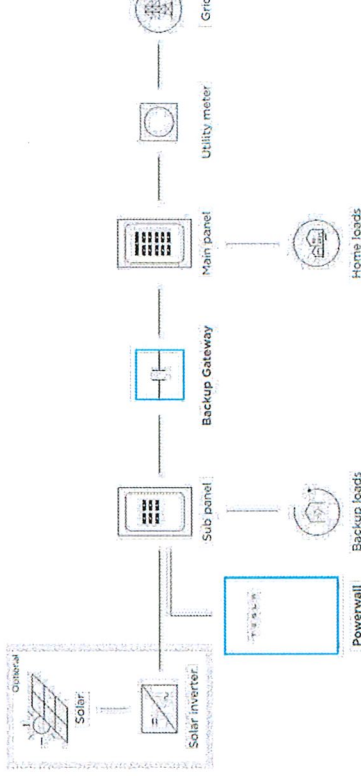
<sup>1</sup>Temperature may be exceeded at connecting temperatures below 16°C (60°F) or greater than 43°C (109°F).

## TYPICAL SYSTEM LAYOUTS

### WHOLE HOME BACKUP



### PARTIAL HOME BACKUP



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VERSION	DATE	REV
DESCRIPTION	09/12/2023	UR
INITIAL RELEASE		

**PROJECT NAME**  
 JEFFREY LEE  
 4 WILLARD ST,  
 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

**SHEET NAME**  
 SPEC SHEETS

**SHEET SIZE**  
 ANSI B  
 11" X 17"

**SHEET NUMBER**  
 PV-12

TESSA.COM/ENERGY

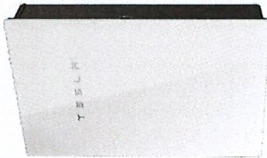
TESSA.COM/ENERGY

TESSA.COM/ENERGY

TESSA.COM/ENERGY

## POWER WALL Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall provides energy management and monitoring for solar self-consumption, time-based control, and backup. The Backup Gateway 2 controls connection to the grid, automatically detecting outages and providing a seamless transition to backup power. When equipped with a main circuit breaker, the Backup Gateway 2 can be installed at the service entrance. When the optional internal panelboard is installed, the Backup Gateway 2 can also function as a load center. The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage backup energy reserves from any mobile device with the Tesla app.



### PERFORMANCE SPECIFICATIONS

Model Number	1232100-xxx-y
AC Voltage (Nominal)	120/240V
Feed-in Type	Split-Phase
Grid Frequency	60 Hz
Current Rating	200 A
Maximum Input Short Circuit Current	10 kA <sup>1</sup>
Overcurrent Protection Device	100-200A, Service Entrance Rated <sup>2</sup>
Overvoltage Category	Category IV
Internal Primary AC Meter	Revenue accurate (+/- 0.2%)
Internal Auxiliary AC Meter	Revenue accurate (+/- 2%)
Primary Connectivity	Ethernet, Wi-Fi
Secondary Connectivity	Cellular (3G, LTE/4G) <sup>3</sup>
User Interface	Tesla App
Operating Modes	Support for solar self-consumption, time-based control, and backup
Backup Transition	Automatic disconnect for seamless backup
Modularity	Supports up to 10 AC-coupled Powerwalls
Optional Internal Panelboard	200A, 6-space / 12 circuit breakers; Siemens GCP or Square D HOM breakers rated 10 - 80A, or Eaton BR breakers rated 10 - 125A
Warranty	10 years <sup>4</sup>

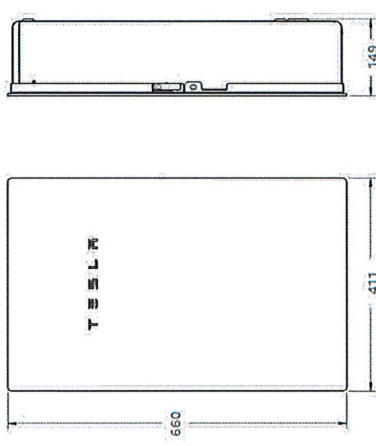
<sup>1</sup>When protected by Class 2 fuses, Backup Gateway 2 is suitable for up to 10 kA fault currents, capable of delivering not more than 20kA symmetrical amperes.  
<sup>2</sup>The customer is expected to provide internet connectivity for Backup Gateway 2. Cellular should not be used as the primary mode of connectivity. Cellular connectivity is subject to network, operator service coverage and signal strength.

### COMPLIANCE INFORMATION

Certifications	UL 67, UL 865A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
Emissions	FCC Part 15, ICES 003

### MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 149 mm (26 in. x 16 in. x 6 in.)
Weight	20.4 kg (45 lb)
Mounting options	Wall mount, Semi-flush mount



### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Operating Humidity (RH)	Up to 100% condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R



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 HINGHAM, MA 02043  
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 info@devilinc.com

VERSION	DATE	REV
DESCRIPTION		
INITIAL RELEASE	08/12/2023	UR

#### PROJECT NAME

JEFFREY LEE  
 4 WILLARD ST,  
 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
**SPEC SHEETS**

SHEET SIZE  
**ANSI B  
 11" X 17"**

SHEET NUMBER  
**PV-13**





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VERSION	DATE	REV
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INITIAL RELEASE	09/10/2023	

PROJECT NAME

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 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 SPEC SHEETS

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-14

P/N	DESCRIPTION	LENGTH
315168M	SM LIGHT RAIL 168" MILL	168"
315168D	SM LIGHT RAIL 168" DRK	168"
315240M	SM LIGHT RAIL 240" MILL	240"
315240D	SM LIGHT RAIL 240" DRK	240"

**UNIRAC**  
 1411 BROADWAY BLVD, NE  
 ALBUQUERQUE, NM 87102 USA  
 PHONE: 505-242-6411  
 WWW.UNIRAC.COM

PRODUCT LINE: SOLARMOUNT  
 DRAWING TYPE: PART DETAIL  
 DESCRIPTION: LIGHT RAIL  
 REVISION DATE: 9/11/2017

DRAWING NOT TO SCALE  
 ALL DIMENSIONS ARE NOMINAL  
 PRODUCT PROTECTED BY ONE OR MORE US PATENTS  
 LEGAL NOTICE

SM-P02 SHEET

P/N	DESCRIPTION
302035M	ENDCLAMP PRO
302030M	MIDCLAMP PRO - MILL
302030D	MIDCLAMP PRO - DRK

**UNIRAC**  
 1411 BROADWAY BLVD, NE  
 ALBUQUERQUE, NM 87102 USA  
 PHONE: 505-242-6411  
 WWW.UNIRAC.COM

PRODUCT LINE: SOLARMOUNT  
 DRAWING TYPE: PART & ASSEMBLY  
 DESCRIPTION: PRO SERIES BONDING CLAMPS  
 REVISION DATE: 10/26/2017

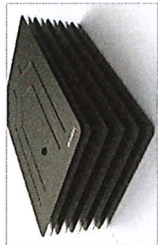
DRAWING NOT TO SCALE  
 ALL DIMENSIONS ARE NOMINAL  
 PRODUCT PROTECTED BY ONE OR MORE US PATENTS  
 LEGAL NOTICE

SM-A01 SHEET

# FLASHKIT PRO



FLASHKIT PRO is the complete attachment solution for composition shingle roofs. Featuring Unirac's patented SHED & SEAL technology, a weather proof system which provides the ultimate protection against roof leaks. Kitted in 10 packs for maximum convenience, flashings and hardware are available in Mill or Dark finishes. With FLASHKIT PRO, you have everything you need for a quick, professional installation.



**TRUSTED WATER SEAL FLASHINGS**  
FEATURING SHED & SEAL TECHNOLOGY



**YOUR COMPLETE SOLUTION**  
Flashings, legs, continuous slot L-Foot and hardware



**CONVENIENT 10 PACKS**  
Packaged for speed and ease of handling

# FLASHKIT PRO



## INSTALLATION GUIDE

FLASHKIT PRO IS THE COMPLETE FLASHING AND ATTACHMENT SOLUTION FOR COMPOSITION ROOFS.



INSTALL FLASHKIT PRO FLASHING

INSTALL L-FOOT

ATTACH L-FOOT TO RAIL

### PRE-INSTALL

- Locate roof rafters and snap chalk lines to mark the installation point for each roof attachment.
- Drill a 7/32" pilot hole at each roof attachment. Fill each pilot hole with sealant.

### STEP 1 INSTALL FLASHKIT PRO FLASHING

- Add a U-shaped bead of roof sealant to the underside of the flashing with the open side of the U pointing down the roof slope. Slide the aluminum flashing underneath the row of shingles directly up slope from the pilot hole as shown. Align the indicator marks on the lower end of the flashing with the chalk lines on the roof to center the raised hole in the flashing over the pilot hole in the roof. When installed correctly, the flashing will extend under the two courses of shingles above the pilot hole.

### STEP 2 INSTALL L-FOOT

- Fasten L-foot and Flashing into place by passing the included lag bolt and pre-installed stainless steel-backed EPDM washer through the L-foot EPDM grommet, and the raised hole in the flashing, into the pilot hole in the roof rafter.

- Drive the lag bolt down until the L-foot is held firmly in place. It is normal for the EPDM on the underside of the stainless steel backed EPDM washer to compress and expand beyond the outside edge of the steel washer when the proper torque is applied.

#### TIP:

- Use caution to avoid over-torquing the lag bolt if using an impact driver.
- Repeat Steps 1 and 2 at each roof attachment point.

### STEP 3 ATTACH L-FOOT TO RAIL

- Insert the included 3/8"-16 T-bolts into the lower slot on the Rail (sold separately), spacing the bolts to match the spacing between the roof attachments.
- Position the Rail against the L-Foot and insert the threaded end of the T-Bolt through the continuous slot in the L-Foot. Apply anti-seize to bolt threads to prevent galling of the T-bolt and included 3/8" serrated flange nut. Place the 3/8" flange nut on the T-bolt and finger-tighten. Repeat STEP 3 until all L-Feet are secured to the Rail with a T-bolt. Adjust the level and height of the Rail and torque each bolt to 30ft.-lbs.



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INITIAL RELEASE	09/12/2023	UR

#### PROJECT NAME

JEFFREY LEE  
4 WILLARD ST,  
CAMBRIDGE, MA 02138 USA  
APN# 415853  
UTILITY: EVERSOURCE  
AHJ: CITY OF CAMBRIDGE

SHEET NAME  
SPEC SHEETS

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-15

## THE COMPLETE ROOF ATTACHMENT SOLUTION

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

## FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702





**DEVILIN CONTRACTING & MAINTENANCE**  
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 HINGHAM, MA 02043  
 TEL: (781) 812-0240  
 info@devlininc.com

DESCRIPTION	DATE	REV	UR
INITIAL RELEASE	09/19/2023		

PROJECT NAME

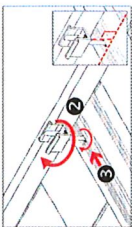
JEFFREY LEE  
 4 WILLARD ST,  
 CAMBRIDGE, MA 02138 USA  
 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 SPEC SHEETS

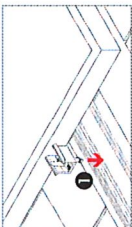
SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-16

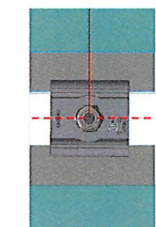
**BONDING MIDCLAMP**  
 INSTALLATION GUIDE : PAGE



**MIDCLAMP:** Place midclamp assembly next to side rail. Engage serrated tab into side rail until clamp is against module frame. Do not tighten nut until next module is in position. Ensure bolt is perpendicular to rail.

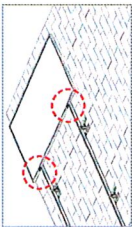


**INSERT MIDCLAMP ASSEMBLY:** Insert 1/4" T-Bolt into top slot of rail.

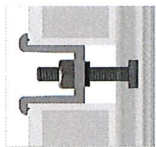


**POSITION INDICATOR - SERRATED TAB:** Position indicator is perpendicular to the rail.

**SM SOLAR MOUNT**



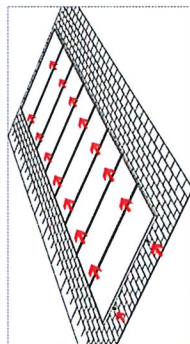
**INSTALL MIDCLAMP:** Midclamp is bonded to an assembly with a T-bolt for production installation. Clamp assemblies may be positioned in rail near point of use prior to module placement.



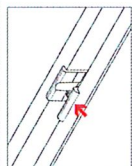
**PLACE ADJUNCT MODULE AGAINST CLAMP:** Place module against clamp with no gaps. Tighten nut to required torque.

**TORQUE VALUE (See table and notes on PG. A)**  
 11 ft-lbs. No anti-seize.

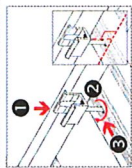
**REMAINING MODULES**  
 INSTALLATION GUIDE : PAGE



**FINISH MODULE INSTALLATION:** Proceed with module installation. Engage each module with the previously positioned clamp assembly.



**POSITION FRONT ALIGNMENT MARKS:** Verify that the position indicator(s) & T-bolt shaft(s) are angled in the correct position. Tighten to final torque value. (See table and notes on PG. A) 11 ft-lbs. No anti-seize.



**INSTALL REMAINING MID-CLAMPS:** Proceed with module installation. Engage each module with previously positioned Midclamp assemblies.

**STANDARD SYSTEM GROUNDING** : PAGE  
INSTALLATION GUIDE : J

**WEELUG CONDUCTOR - UNIRAC P/N 080005:** The WEELUG conductor is supplied with the stainless steel fast washer. Place the stainless steel fast washer on the bolt and stainless steel flat washer. Insert stainless steel flat washer into the rail and lug. See product data sheet for more details, Model No. WEELUG-6-47

**WEELUG LUG CONDUCTOR - UNIRAC P/N 080009 - Alternate Grounding Lug**  
See product data sheet for more details, Model No. GIL-4987.

**GROUNDING LUG MOUNTING DETAILS:** Details are provided for both the WEELUG and LUGO products. The WEELUG has a grounding symbol located on the lug assembly. The LUGO lug has a green colored grounding symbol. See Page E for additional details required for expansion joints.

GROUNDING LUG	BOUL SIZE	DRILL SIZE
WEELUG	1/4"	7/32"
LUGO Lug	#10-32	7/32"

• Torque value depends on conductor size.  
• See product data sheet for torque value.

**NOTE: ISOLATE COPPER FROM ALUMINUM CONTACT TO PREVENT CORROSION**

**CODE COMPLIANCE NOTES** : PAGE  
INSTALLATION GUIDE : C

**SYSTEM LEVEL FIRE CLASSIFICATION:** The system fire class rating requires installation in the manner specified in the SOLAR MOUNT Installation Guide. SOLAR MOUNT has been classified to the system level fire portion of UL 703. This UL 703 classification has been incorporated into our UL 2703 product certification. SOLAR MOUNT has achieved system level performance for steep sloped roofs. System level fire performance is inherent in the SOLAR MOUNT design and no additional mitigation measures are required. The fire classification is based on the system level fire performance of the SOLAR MOUNT system. The system level fire performance is based on the system level fire performance of the SOLAR MOUNT system. The system level fire performance is based on the system level fire performance of the SOLAR MOUNT system.

Module Type	System Level Fire Rating	Module Orientation	Mitigation Required
Standard Rail	Class A, Class B & Class C	East-West North-South	None Required
Light Rail	Class A, Class B & Class C	East-West North-South	None Required

**UL 703 CERTIFICATION MARKING LABELS:** The existing system may be used to ground and/or mount a PV module complying with UL 703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

**UL 703 CERTIFICATION MARKING LABELS:** Certification markings for modules are provided on the back of the module. After the existing system is fully assembled, a single label should be applied to the SOLAR MOUNT rail at the edge of the array. Before applying the label, the corners of the label that do not pertain to the system being installed must be removed so that only the UL 703 certification marking is visible. The label should be placed such that it is visible, but not obstructive.

**BONDING CONNECTION GROUND PATHS** : PAGE  
INSTALLATION GUIDE : 0

**BONDING MIDCLAMP ASSEMBLY:** Aluminum mid-clamp with stainless steel bonding pins that pierce module frame. Connectors steel rail bonds aluminum clamp to stainless steel 'foot' of module to SH rail.

**BONDING RAIL SPICE BAR:** Aluminum splice bar between array rail and SH rail. Connectors steel rail bonds aluminum splice bar to stainless steel 'foot' of module to SH rail.

**RAIL TO U-FOOT WELDING T-BOLT:** Stainless steel rail bonds aluminum splice bar to stainless steel 'foot' of module to SH rail.

**BONDING MICROINVERTER MOUNT:** Microinverter frame is attached to SH rail. Connectors steel rail bonds aluminum splice bar to stainless steel 'foot' of module to SH rail.

**BACK SYSTEM GROUND:** Solid copper wire connected to SH rail to ground. Connectors steel rail bonds aluminum splice bar to stainless steel 'foot' of module to SH rail.

**ENDCLAMP, FIRST MODULE** : PAGE  
INSTALLATION GUIDE : K

**INSTALL END CLAMP ON RAIL:** Slide end clamp on to rail by top edge of rail. Engage with end of rail. End clamp is positioned on rail prior to the first end module.

**POSITION END CLAMP:** Side end clamp assembly is positioned on rail by top edge of rail. Engage with end of rail. End clamp is positioned on rail prior to the first end module.

**ENGAGE CLAMP:** White holding module in position and with clamp engages with flange to provide clamp force. To ensure bolt is not over-torqued, use low torque setting on drill or if using an impact driver, stop rotation as soon as torque value (See cable and notes on P.C.A.)

**INSTALL FIRST MODULE:** White holding module in position and with clamp engages with flange to provide clamp force. To ensure bolt is not over-torqued, use low torque setting on drill or if using an impact driver, stop rotation as soon as torque value (See cable and notes on P.C.A.)

**WEELUG OR LUGO LUG:** WEELUG OR LUGO LUG is positioned on rail by top edge of rail. Engage with end of rail. End clamp is positioned on rail prior to the first end module.

**CODE COMPLIANCE NOTES** : PAGE  
INSTALLATION GUIDE : C

**SYSTEM LEVEL FIRE CLASSIFICATION:** The system fire class rating requires installation in the manner specified in the SOLAR MOUNT Installation Guide. SOLAR MOUNT has been classified to the system level fire portion of UL 703. This UL 703 classification has been incorporated into our UL 2703 product certification. SOLAR MOUNT has achieved system level performance for steep sloped roofs. System level fire performance is inherent in the SOLAR MOUNT design and no additional mitigation measures are required. The fire classification is based on the system level fire performance of the SOLAR MOUNT system. The system level fire performance is based on the system level fire performance of the SOLAR MOUNT system.

Module Type	System Level Fire Rating	Module Orientation	Mitigation Required
Standard Rail	Class A, Class B & Class C	East-West North-South	None Required
Light Rail	Class A, Class B & Class C	East-West North-South	None Required

**UL 703 CERTIFICATION MARKING LABELS:** The existing system may be used to ground and/or mount a PV module complying with UL 703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

**UL 703 CERTIFICATION MARKING LABELS:** Certification markings for modules are provided on the back of the module. After the existing system is fully assembled, a single label should be applied to the SOLAR MOUNT rail at the edge of the array. Before applying the label, the corners of the label that do not pertain to the system being installed must be removed so that only the UL 703 certification marking is visible. The label should be placed such that it is visible, but not obstructive.





# APPENDIX A

System Certification

## Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the SOLARMOUNT system.

Manufacturer	Module Model / Series	Manufacturer	Module Model / Series	Manufacturer	Module Model / Series	
LG Electronics	LGxxx(E1C/E1K/N1C/N1K/N2/N2W/S1C/S2W/Q1C/Q1K)-A5	Panasonic	VBHNxxxSA06/SA06B/SA11/SA11B	Q_Cells (cont.)	Q PEAK DUO L-68.3 (BFF/BFG/BGT)	
	LGxxx(A1C/M1C/M1K/M1K/N1C/N1K/Q1C/Q1K/Q4C/Q4K)-A6		VBHNxxxSA15/SA15B/SA16/SA16B		Q PEAK DUO (BLK) ML-G9(+)	
	LGxxxN2T-B5		VBHNxxxKA.VBHNxxxKA03/04		Q PEAK DUO XL-G9/G9.2/G9.3	
	LGxxxN1K-B6		VBHNxxxSA17/SA17G/SA17E/SA18/SA18E		Q PEAK DUO XL-G9.3/BFG	
	LGxxx(N1C/N1K/N2/N2W)-E6		VBHNxxxZA01/ZA02/ZA03/VBHNxxxZA04		Q PEAK DUO-G10+	
LONGI	LR4-60(HPB)/HPH	Peimar	EVPxxx(H/K/PK)	REC	Q PEAK DUO BLK G10(+)	
	LR4-72(HPH)		SGxxxM (FB/BF)		Q PEAK DUO BLK G10+/AC	
	LR6-60		SMxxxM		Q PEAK DUO (BLK) ML-G10(+)	
	LR6-60(BK)/HPB/HPH/HV/HPB/PE/PH		PSxxxM1-20/U		Q PEAK DUO XL-G10/G10.2/G10.3/G10.4/G10.d	
	LR6-72(BK)/HV/HPB/PE/PH		PSxxxM1H-20/U		Q PEAK DUO XL-G10.3/BFG	
	Meyer Burger	RealBlack LR4-60HPB	Phono Solar	PSxxxM1-20UH	Renesola	Q PEAK DUO XL-G11.3/BFG
		RealBlack LR6-60HPB		PSxxxM1H-20UH		RECxxxxA (BLK/Pure)
		Meyer Burger Black, Meyer Burger White		PSxxxM1H-20UH		RECxxxxNP (N-PEAK)
		MSE Mono, MSE Perc		PSxxxM-24/T		RECxxxxNP2 (Black)
		MSExxx(SR8T/SR8K/SR95/SXST)		PSxxxMH-24/T		RECxxxxPE, RECxxxxPE72
Mission Solar Energy	MSExxx(SX5K/SX6W)	Prism Solar	PSxxxM-24/TH	Risen	RECxxxxTP2(M/BLK2)	
	MIE & MLE Series		P72 Series		RECxxxxTP3M (Black)	
	NE Solar		Plus, Pro, Peak, G3, G4		RECxxxxTP4 (Black)	
Neo Solar Power Co.	NESE xxx-72MHB-M10	Q_Cells	Plus, Pro, Peak L-G2, L-G4, L-G5	S-Energy	All 60-cell modules	
	D6M Series		Peak L-G5, L-G6, L-G7, L-G8(BFF)		RSM Series, RSM110-8-xxxBMDG	

- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Listed models can be used to achieve a Class A fire system rating for steep slope applications. See Appendix A, page A

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PROJECT NAME  
JEFFREY LEE  
4 WILLARD ST,  
CAMBRIDGE, MA 02138 USA  
APN# 41583  
UTILITY: EVERSOURCE  
AHJ: CITY OF CAMBRIDGE

SHEET NAME SPEC SHEETS
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-18



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VERSION	DATE	REV
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INITIAL RELEASE	08/10/2023	

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 APN# 415853  
 UTILITY: EVERSOURCE  
 AHJ: CITY OF CAMBRIDGE

SHEET NAME  
 SPEC SHEETS

SHEET SIZE  
 ANSIB  
 11" X 17"

SHEET NUMBER  
 PV-19

Master Contract: 266909  
 Date Issued: 2023-06-16



Certificate: 70131735  
 Project: 80173532

Models:	SM	- SOLARMOUNT Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.
	ULA	Unirac Large Array is a ground mount system using the SolarMount (SM) platform for the bonding and grounding of PV modules.

**Solarmount**

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with stainless steel or aluminum mid clamps and Aluminun end clamps. The modules are bonded to the racking system with the stainless-steel bonding mid clamps with piercing points. The system is grounded with 10 AWG copper wire to bonding/grounding lugs. Fire ratings of Class A with Type 1, 2, 3 (with metallic frame), 4 (with trim), 5 (with trim), 10 (with metallic frame), 19, 22, 25, 29, or 30 for steep slope. Class A with Type 1, 2, 29 or 30 for low slope. Tested at 5" interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

The system may employ optimizers/micro-inverters and used for grounding when installed per installation instructions.

UL 2703 Mechanical Load ratings:

Module Area up to 22.2 sq ft	
Downward Design Load (lb/ft <sup>2</sup> )	113.5
Upward Design Load (lb/ft <sup>2</sup> )	50.7
Down-Slope Load (lb/ft <sup>2</sup> )	16.13
Module Area up to 27.12 sq ft	
Downward Design Load (lb/ft <sup>2</sup> )	33.9
Upward Design Load (lb/ft <sup>2</sup> )	33.9
Down-Slope Load (lb/ft <sup>2</sup> )	16.5



# Certificate of Compliance

Master Contract: 266909

Date Issued: 2023-06-16

Certificate: 70131735

Project: 80173532

Issued To:  
 Unirac  
 1411 Broadway, NE  
 Albuquerque, New Mexico, 87102  
 United States

Attention: Rob D'Anastasio

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.*

Issued by: *Michael Hoffmagle*  
 Michael Hoffmagle



**PRODUCTS**

CLASS - C531302 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems  
 CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems - Certified to US Standards