EXISTING STRING CALCULATION

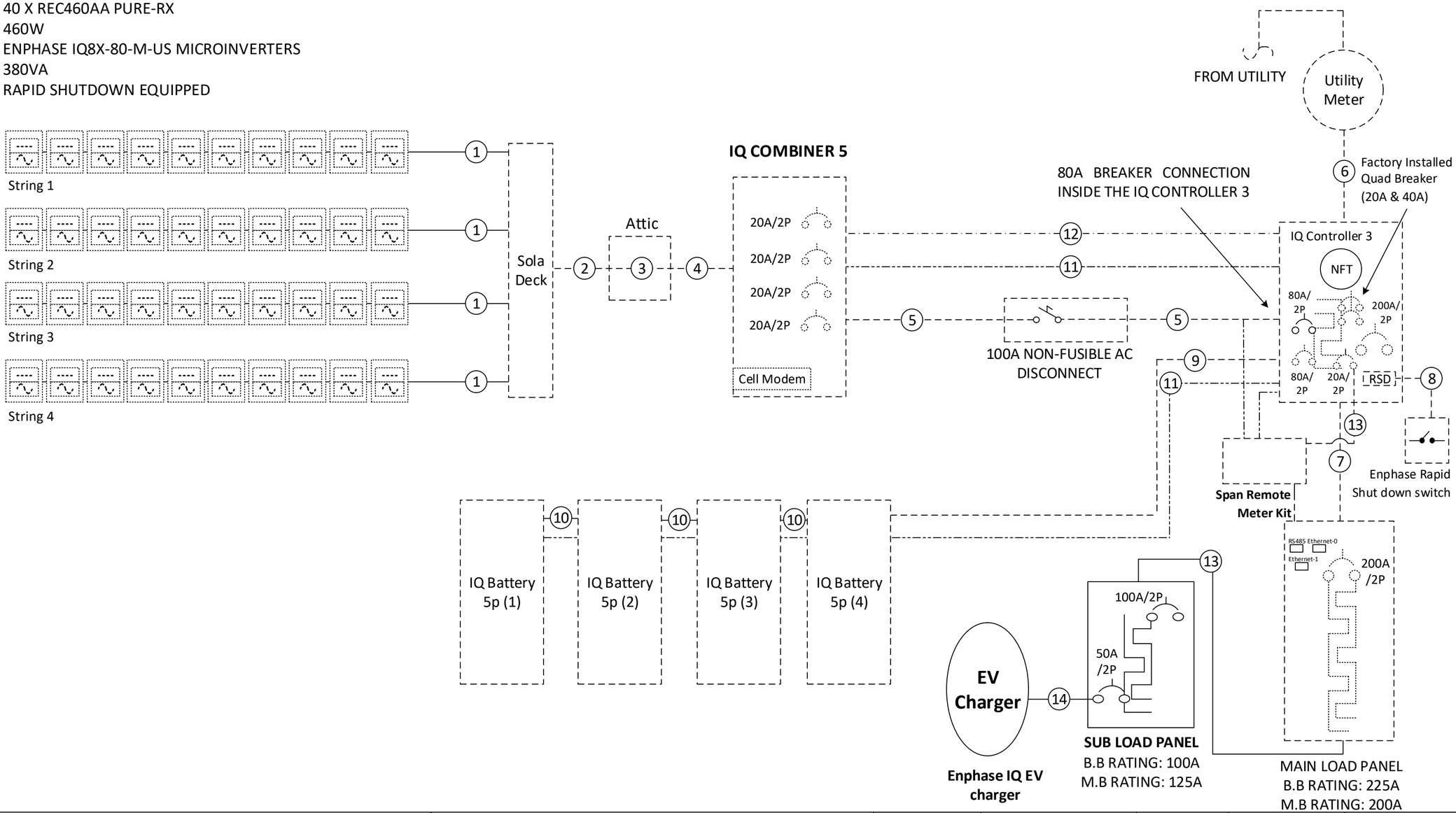
String #	No of Modules	Estimated Power	Imax	Voc	Vmpp	Vrise (<= 2%)
1	10	4,600 W	19.75 AC	<30	240V AC	1.35+0.62 = 1.97
2	10	4,600 W	19.75 AC	<30	240V AC	1.18+0.62 = 1.8
3	10	4,600 W	19.75 AC	<30	240V AC	1.24+0.62 = 1.86
4	10	4,600 W	19.75 AC	<30	240V AC	1.18+0.62 = 1.8

NEC Code (2020) and UL Standard Refrences

Rapid Shut Down	NEC 690.12 (A-D), UL1741	Grounding	NEC Article 250.30(A)
Disconnecting Means	NEC 690.13	Conduit Fill	NEC Table C.9, 310.15(B)(3)(a)
Feeder Sizing	NEC Table 310, 15(B)(16, 17)	Interconnection	NEC 705.12
Over current Protection	NEC 690.9		

EXISTING SYSTEM DETAIL

40 X REC460AA PURE-RX
460W
ENPHASE IQ8X-80-M-US MICROINVERTERS
380VA
RAPID SHUTDOWN EQUIPPED



Existing System Detail:

- System Size: 18,400W DC
- Battery Total Energy: 20.0 kWh
- (40) REC460AA Pure-RX
- (40) ENPHASE IQ8X-80-M-US MICROINVERTERS
- 04 x IQBATTERY-5P-1P-NA: IQ Battery 5P
- Inverter Output: 1.58A max @ 240 VAC (each microinverter)
- 380 VA AC output max (each micro inverter)
- 15.2 kVA AC output max

- The load center/disconnect will be visible, lockable, accessible to utility linesmen, and properly labeled per NEC requirements. It will be located on the exterior wall next to the utility meter.
- Prepare cable in usual manner.
- Stretch tape and apply half-lapped to form void-free joint. Degree of stretch is not critical and may vary in different sections of joint to accomplish void-free application.
- Protect the joint with two half-lapped layers of any scotch vinyl plastic electrical tape.

Sr.No	#Wire	Conduit Size	Ground Wire	Amperage
1	1 x #12 Q Cable		#10 Bare Cu	20
2	4 x #10 MC Cable			20
3	8 x #10 THHN Cu	3/4" LFMC	#10 Green Cu	20
4	8 x #10 THHN Cu	3/4" EMT	#10 Green Cu	20
5	3 x #4 THHN Cu	1" LFNC	#6 Green Cu	80
6	3 x #3/0 THHN Cu	2" PVC		200
7	3 x #3/0 THHN Cu	2" PVC	#6 Green Cu	200
8	4 x #12 THHN Cu	3/4" LFNC	#10 Green Cu	16
9	2 x #4 THHN Cu	1" EMT	#8 Green Cu	80
10	2 x #4 THHN Cu	1" LFNC	#8 Green Cu	80
11	Enphase Control Cable (4 conductors)			
12	Lead Wire 18AWG, PVC Extruded			
13	3 x #3 THHN Cu	1.25" EMT	#6 Green Cu	100
14	2 x #8 THHN Cu	3/4" EMT	#10 Green Cu	50

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Bonnes John

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Customer Signature:

Sheet Name:

Electrical One Line Diagram

JOB NUMBER:

25-222-JB

Date:

06/23/2025

Revision:

A

Sheet Size:

ANSI C
17" X 22"

Sheet Number:

PV1

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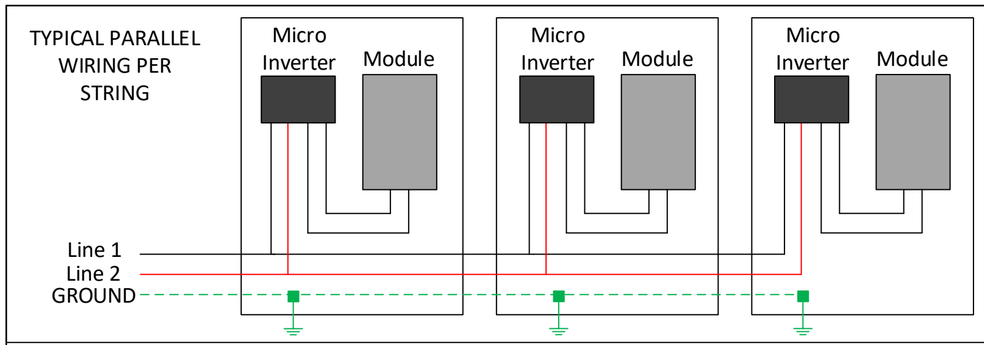
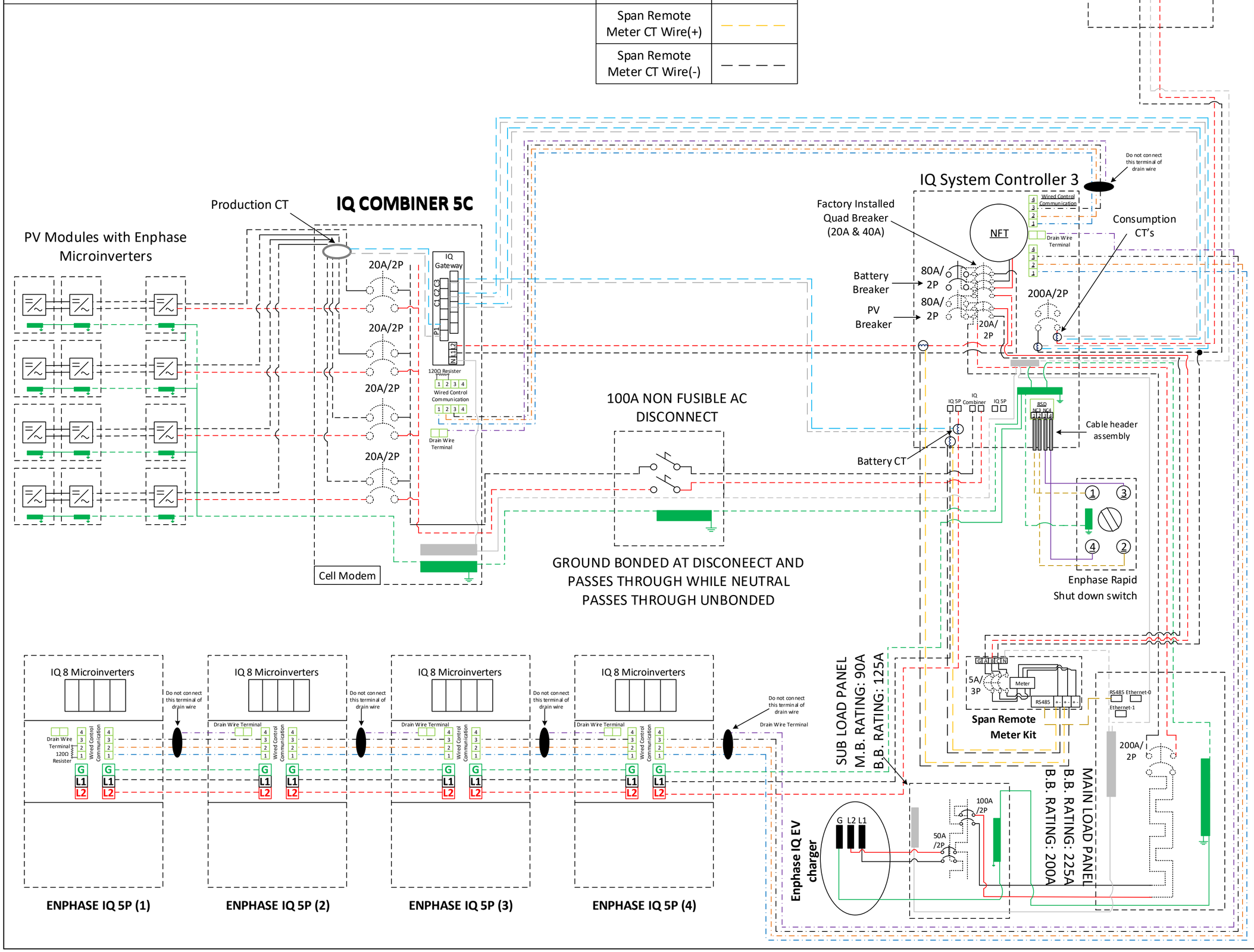
PV Installation Professional
Ali Buttar
PVIP #031310-32



Line 1	
Line 2	
Neutral	
Ground	
ENPHASE CT Wire	
Span Remote Meter CT Wire(+)	
Span Remote Meter CT Wire(-)	



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Sheet Name:

Detailed Electrical Diagram

JOB NUMBER:

25-222-JB

Date:	**Revision:**
06/23/2025	A
Sheet Size: ANSI C 17" X 22"	**Sheet Number:** PV2

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LABELING AND WARNING SIGNS: NEC 2020

A. PURPOSE
PROVIDE EMERGENCY RESPONDERS WITH APPROPRIATE WARNING AND GUIDANCE WITH RESPECT TO ISOLATING THE SOLAR ELECTRIC SYSTEM. THIS CAN FACILITATE IDENTIFYING ENERGIZED ELECTRICAL LINES THAT CONNECT THE SOLAR PANELS TO THE INVERTER, AS SHOULD NOT BE CUT WHEN VENTING FOR SMOKE REMOVAL.

B. MAIN SERVICE DISCONNECT:

1. RESIDENTIAL BUILDINGS- THE MARKING MAY BE PLACED WITHIN THE MAIN SERVICE DISCONNECT. THE MARKING SHALL BE PLACED ON THE OUTSIDE COVER IF THE MAIN SERVICE DISCONNECT IS OPERABLE WITH THE SERVICE PANEL CLOSED.

2. COMMERCIAL BUILDINGS- THE MARKINGS SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECTCLEARLY VISIBLE FROM THE LOCATION WHERE THE LEVER IS OPERATED

3. MARKINGS, VERBIAGE, FORMAT AND TYPE OF MATERIAL

a. VERBIAGE: CAUTION; SOLAR ELECTRIC SYSTEM CONNECTED
b. FORMAT:

(1) WHITE LETTERING ON A RED BACKGROUND
(2) MINIMUM 3/8 INCH LETTER HEIGHT
(3) ALL LETTERS SHALL BE CAPITALIZED
(4) ARIAL OR SIMILAR FONT, NON-BOLD

c. MATERIAL:

(1) REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (USE UL-969) AS STANDARD FOR WEATHER RATING): DURABLE ADHESIVE MATERIALS MEET THIS REQUIREMENT.

C. MARKING REQUIREMENTS ON CONDUIT, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, COMBINERS AND JUNCTION BOXES;

1. MARKING: PLACEMENT, VERBIAGE, FORMAT AND TYPE OF MATERIAL.

a. PLACEMENT: MARKINGS SHALL BE PLACED EVERY 10 (TEN) FEET ON ALL INTERIOR AND EXTERIOR DC CONDUITS, RACEWAYS, ENCLOSURES AND CABLE ASSEMBLIES, AT TURNS ABOVE AND/OR BELOW PENETRATIONS, ALL COMBINERS AND JUNCTION BOXES.
b. VERBIAGE: CAUTION SOLAR CIRCUIT
c. THE FORMAT AND TYPE OF MATERIAL SHALL ADHERE TO SECTION B-3.B & C ABOVE

D. INVERTERS ARE NOT REQUIRED TO HAVE CAUTION MARKINGS

Sub Load Panel
#1
#2
NEC 2020

#1

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES.TOTAL RARTING OF ALL OVERCURRENT DEVICES,EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE,SHALL NOT EXCEED
AMPACITY OF BUSBAR

#2

WARNING

ELECTRIC SHOCK HAZARD
TERMINAL ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

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PV Labels

JOB NUMBER:

25-222-JB

Date:	**Revision:**
06/23/2025	A
Sheet Size: ANSI C 17" X 22"	**Sheet Number:** PV3

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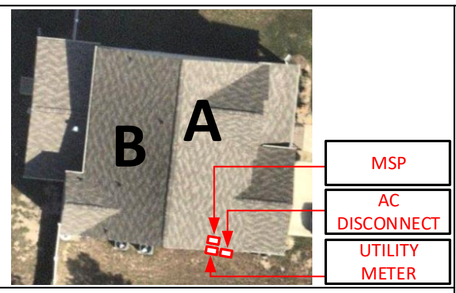
PV Installation Professional
Ali Buttar
PVIP #031310-32



ELECTRICAL ITEMS

- 01 x IQ-EVSE-NA-1050-0101-0100 : IQ 50 EV Charger with NACS Connector
- 01 x BR816L125RP: Load Center (EATON) MLO (NEMA 3R)
- 01 x BR2100: Eaton 100amp BR type Branch breaker
- 01 x BR250: Eaton 50amp BR type Branch breaker for Enphase IQ EV Charger

PV LABELS

Sr No	Code	Qty
01	05-108	01
02	05-211	01

BILL OF MATERIAL
SCALE: 1/8" - 1'

N

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Sheet Name:

Bill of Material

JOB NUMBER:

25-222-JB

Date:	**Revision:**
06/23/2025	A

Sheet Size:	**Sheet Number:**
ANSI C 17" X 22"	PV4

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ENPHASE

DATA SHEET

IQ 50 EV Charger with NACS connector

The IQ 50 EV Charger with the NACS connector is a rugged, intelligent, and reliable EV charger that combines safety and intelligence to provide seamless 9.6 kW EV charging capabilities for residential and commercial establishments. This charger works seamlessly with all EVs equipped with NACS charge ports, including Tesla model EVs. Your EV charge port door can be opened by clicking the button on the connector handle when in proximity to each other.

It integrates flawlessly with an Enphase Energy System, and installation is simple with the Enphase Installer Network.

The tough NEMA 4-rated weatherproof enclosure and 25-foot charging cable allow for flexible indoor or outdoor installation. The rugged design of the charging cables helps the charger resist everyday wear and tear. The charger also comes with an industry-leading 5-year limited warranty.

Rugged

- Fully sealed NEMA 4 enclosure allows for indoor or outdoor installation
- Includes a wall-mounted connector holster and 25-foot cable with an impact and crush-resistant NACS connector

Intelligent

- Maximize savings by using the combination of solar, battery power, and off-peak schedules to charge your EV
- Customized settings support different energy goals: Savings, self-consumption, and full backup
- Charge EV on clean energy from the sun by using excess solar power with an Enphase Energy System
- Storm Guard protects against inclement weather by keeping EV and home battery fully charged
- Monitor and fully control EV charging using the Enphase App

Reliable

- Comprehensive safety and efficiency compliance, including ENERGY STAR® and ETL
- Industry-leading 5-year warranty
- Backed by an outstanding customer service experience with Enphase
- Extensively tested for seamless use with all NACS-compatible EVs

IQ 50 EV Charger with NACS connector

PRODUCT SKUs	
SKU number	IQ-EVSE-NA-1050-0101-0100
ELECTRICAL SPECIFICATIONS	
Input voltage/Input voltage range	208/240 VAC (L-L), single-phase/185 VAC–264 VAC
Input voltage frequency	50/60 Hz
Circuit breaker requirement	Dedicated, 2-pole 50 A
Input cable type	Pre-wired with: (L1, L2, Gnd) 8 AWG service whip
Input cable length	3' (914.4 mm)
Maximum output current/Output power	40 A continuous/9.6 kW
Output cable/Cable length	Pre-wired with NACS connector/25' (7.62 m)
MECHANICAL DATA	
Enclosure dimensions (L × W × D)	19.7" × 8.9" × 5.3" (500 mm × 226 mm × 135 mm)
Weight	13.4 lb (6.1 kg)
Enclosure mounting	Wall or pedestal mounted (pedestal sold separately)
ENVIRONMENTAL SPECIFICATIONS	
Environment rating	Indoor and outdoor
Enclosure rating	NEMA Type 4, watertight
Operating/Storage temperature	–22°F to 122°F (–30°C to 50°C)/–40°F to 176°F (–40°C to 80°C)
COMPLIANCE SPECIFICATIONS	
Codes and standards	NEC Article 625, SAE J1772, NACS, ENERGY STAR®, UL
Safety compliance	UL 2594, UL 2251, UL 2231-1, UL 2231-2, UL 1998, UL 991 C22.2 No. 280-13, CSA C22.2 No. 282, CSA C22.2 No. 281.1, CSA C22.2 No. 281.2, CSA C22.2 No. 0.8
EMC compliance	FCC Part 15 Class B
Short-circuit protection	5000 RMS Symmetrical Amps at 240 VAC
Open safety ground detection	Features a continuous earth ground monitor to ensure consistent connection to good earth ground
Ground fault detection	Ground fault protection integral, CCID 20 mA, auto reset
Auto-reclosure	System will automatically resume standard operation after a minor power fault has cleared
FEATURES	
Four LED indicators	Amber LED: Power, Green LED: Charging, 1st red LED: Power fault, 2nd red LED: Charging fault
Smart scheduling	Take advantage of time-of-use energy savings from your utility
Self-consumption	Charge EVs on clean energy from the sun by using excess solar power with an Enphase Energy System
Main panel upgrade avoidance	EVSE dynamic power management[1] with PCS-LC and UL 3141 certified
Storm Guard	Ensure the EV is fully charged and ready when there is a storm alert in the area
Remote start/stop	Use the app to remotely control your EV charger with start and stop functions
Connectivity	Wi-Fi 2.4 GHz and Bluetooth
Integration support	OCPP 1.6 and Enphase APIs
Limited warranty	5-year

[1]The dynamic power management feature is supported only for Enphase Energy Systems with IQ Gateway.

NOTE: For EVs with J1772 charge ports, use a NACS to J1772 adapter.

Revision history

REVISION	DATE	DESCRIPTION
DSH-00486-4.0	September 2024	Updated the introduction and "Compliance specifications" sections.
DSH-00486-3.0	August 2024	Updated the introduction.
DSH-00486-2.0	June 2024	Updated the “Features” section.
DSH-00486-1.0	May 2024	Initial release.