

Equinox™ & SunVault™ Storage

SunPower Job Close-Out (JCO) Photo Checklist Examples

July 2022 – v5.1

What is the Job Close-Out Checklist (JCO)?



SUNPOWER®

Required Photos for Job Close-Out

PURPOSE
Lease and Loan installations require photos to be uploaded to their respective Account in the Dealer Portal. Below is a list of the photos required in order to close out an installation. To upload photos to the Dealer Portal, refer to Uploading Invoice Compliance Documents and the Job Close-Out Template in SunPower University.

INSTRUCTIONS

- Every photo listed is required. If a photo cannot be provided, include a detailed explanation; forgetting to take a particular photo is not a sufficient reason. For example, a valid reason photo #7 might not be provided could be because there was no conduit penetration because the conduit wraps around the cable end. (State that, if so.)
- To expedite the review, please upload the photos in the order listed below.
- Save the document as a PDF, using the following naming convention:
Client LAST NAME - *DATE OF INSTALLATION* - SunPower JCO
Example: O'LEARY - 04072019 - SunPower JCO
- Verify the file size (all photos combined) is 10MB or less

Photos Required for ALL Projects

1	Physical address (number) with the home in the background
2	All installed modules in the entire system (multiple photos may be required)
3	Show All J-Boxes with completed wiring
4	Wire management under ALL arrays
5	Bonding of all rows of modules (bare copper or row-to-row ground clips)
6	All conduit penetrations showing flashing
7	Wide angle shot of ALL electrical equipment
8	Solar subpanel wiring, breakers (including PVs breaker), and production CT (if applicable)
9	AC Disconnect: Complete wiring and fuses (if installed)
10	Interconnection: (e.g. in main panel) wide angle with dead front removed
11	Interconnection: Close up of solar breakers or piercing taps
12	Array layout diagram with PVs wiring and microinverter serial numbers (stickers)

Additional Photos for SunPower New Home Communities

A Lot name and community name

Additional Photos for Projects Featuring Storage

B	Plan set (electrical schematic)
C	Interconnection point w/ Hub+ and possibly ESS (Energy Storage System) (wide angle)
D	Mounted ESS and possibly Hub+ (wide angle)
E	Point of interconnection: Breakers & Labels (dead front on, with labels visible) and wiring (dead front off)
F	Hub+ with dead front on: labels visible
G	Hub+ with dead front off: wiring visible
H	Close-up of DC wiring at battery in ESS: 1 photo per battery
I	All AC and DC wiring termination in ESS (torque marks visible)
J	All Hub+ serial numbers (ESS, PVs6 and Inverters)

Jan 2021 | 1

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- Essential to provide you competitive financial products
- As-built photos
- For quality verification & long-term O&M
- You are likely already taking these pics

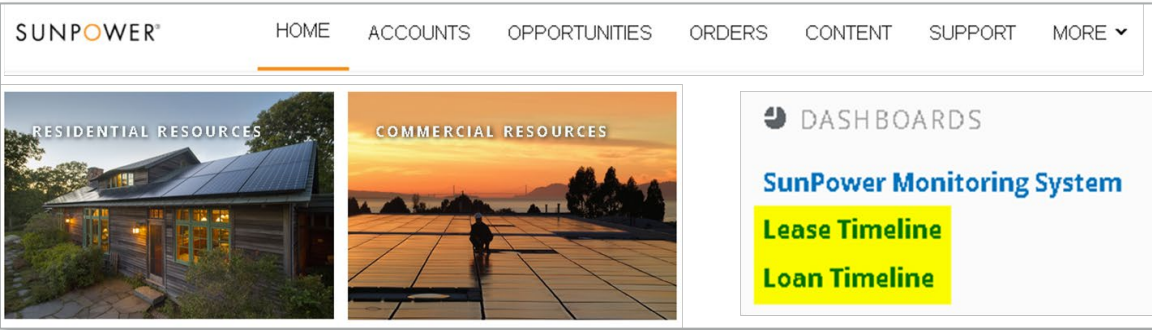
Submission Guidelines

- All photos are required.
- If you can't submit a photo because the required information doesn't apply, provide an explanation. All photos are required.
- Save photos in the same order as listed in the checklist for faster approval.
- Save the document as a .pdf, 10M or less.
- File name convention:
 - *Client LAST NAME* - *DATE OF INSTALLATION* - SunPower JCO
 - For example: SMITH – 03252019 – SunPower JCO



How is the JCO submitted?

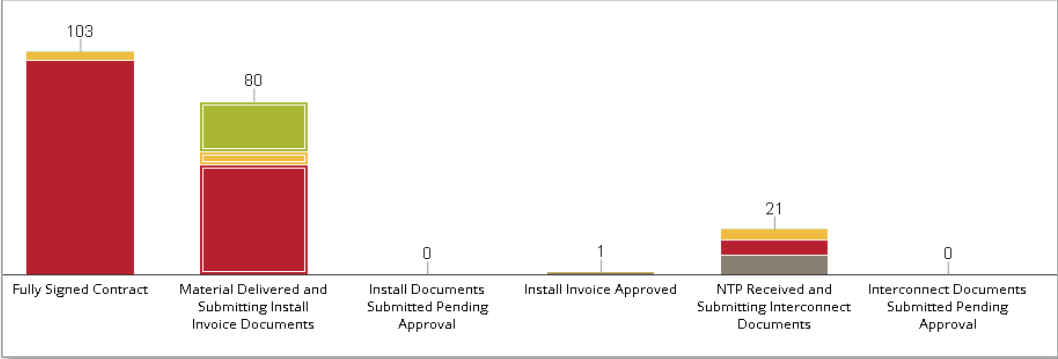
1 Select the project timeline.



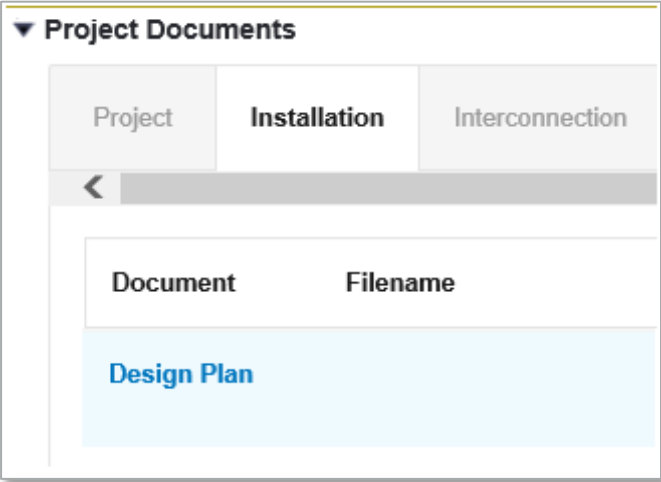
3 Scroll to desired project and click UPLOAD DOCUMENT.

Bruce Banner	1074727	USD 11,923.00	21	29	29	15	Upload Document
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2 Select the desired bucket

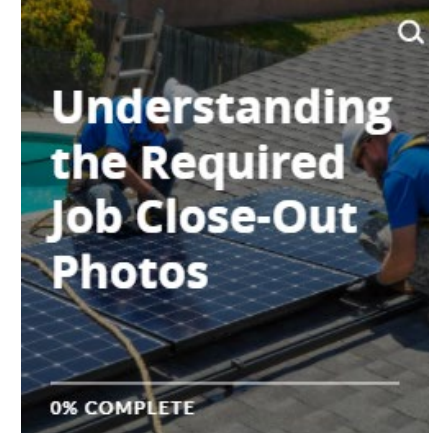


4 Click UPLOAD FILE next to the Document you wish to submit



JCO Training

For detailed training on the JCO requirements, please go to SunPower University for the online course *Understanding the Required Job Close-Out Photos*.



☰ JCO Checklist	🔄
☰ JCO Equinox™ Photo Examples	○
☰ JCO SunVault™ Photo Examples	○
☰ OneRoof™ Photo Examples	○
☰ Wallbox Photo Examples	○
☰ JCO Complete Plan Sets	○
☰ JCO Photo Submission Guidelines	○
☰ FAQs	○
☰ Next Step	○



Equinox™ PV Systems

Photo examples
in order of JCO Checklist
for Equinox™ System
(if applicable)

- Minimum of **11-19 total photos**, depending on system
- Minimum of **5 roof photos**, depending on system
- Minimum of **6-10 ground photos**, depending on system
- SunPower's minimum NEC code requirement year is 2017
- Reference SunPower's 2022 Installation Requirements

Photo: Physical Address

Confirm home site in background



Photo Tip: For homes hidden by a long driveway, provide photo of street address and a second photo of house at end of driveway.

Photo: Modules

Show all installed modules on-site

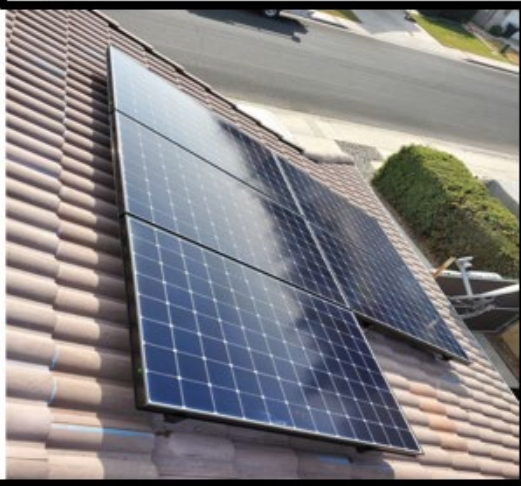


Photo Tip: For long arrays, use a panoramic feature from middle of the array or take multiple photos from both sides of the array.

Photo: Roof/Attic Solar J-Box

Sample photo of rooftop J-box installed on-site

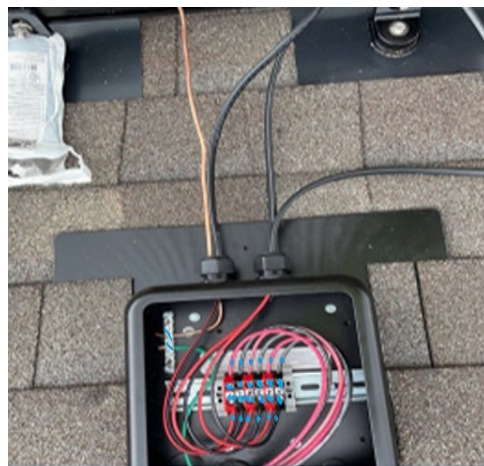


Photo Tips:

- Photo must show completed work with the lid off and wiring complete.
- Capture the rail ground lug in photo, if applicable.
- Show all torque marks on ground lug.
- Use camera flash if it's dark out.
- Reference SunPower's installation requirements regarding disallowed circuit wire splicing methods.
- ★ Make sure all grounding terminations are also torqued and marked.
- If using a DIN rail, ensure torque marks can be seen for wiring terminations.

TORQUE TABLE	
Lug Range	Tightening Torque
14 - 4	35 in-lb
8 - 2/0	100 in-lb
6 - 4/0	175 in-lb

RAIL GROUND LUG



An assembly that fits securely into the top rail channel and accommodates the equipment grounding conductor.

- For M6 bolt:
- 10 mm deep socket
 - 85 +5/-0 in-lb
 - ½" socket
 - 35 +5/-0 in-lb

Photo: Wire Management

Sample photo of wire management under the arrays



Photo Tip: Take this photo from between the top and bottom rail of the row. This photo is not allowed to be taken from ground level.

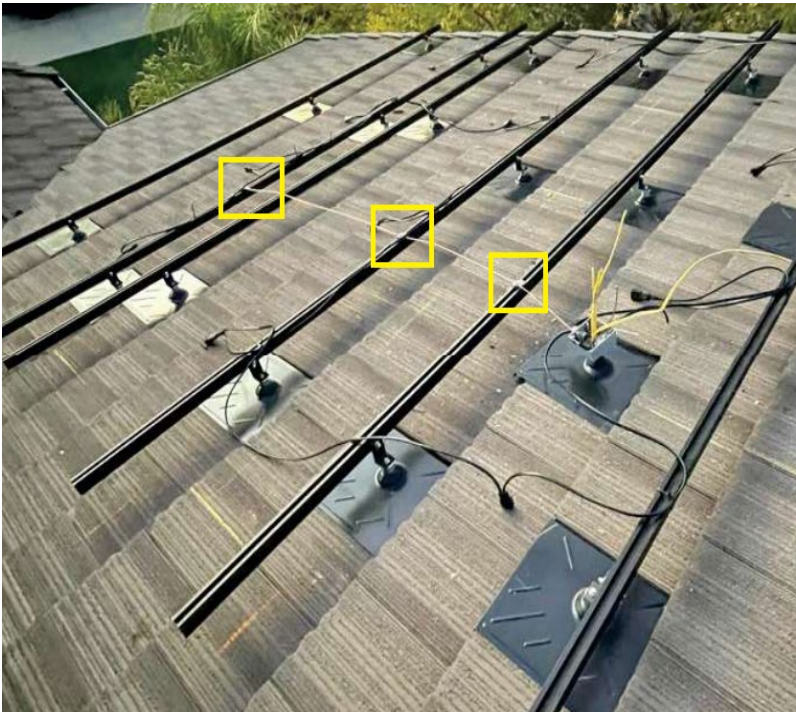
Photo: Array Bond

Sample of row-to-row grounding clip or sample of grounding lugs



Sample photo confirming the use of torqued row-to-row grounding clips on-site.

or



If row-to-row clips aren't used, show sample of racking before modules were laid down to confirm bonding.



Row-to-row (R2R) grounding clip		Attaches between module rows and enables the ground path to continue from one row to the adjacent row.	<ul style="list-style-type: none">• 10 mm deep socket• 85 +5/-0 in-lb (9.6 N-m)
Ground lug assembly		An assembly that fits securely into the top rail channel and accommodates the equipment grounding conductor (EGC).	For M6 bolt: <ul style="list-style-type: none">• 10 mm deep socket• 85 + 5/-0 in-lb (9.6N-m)• ½" socket• 35 +5/-0 in-lb (4 N-m)

Photo: Conduit Penetration

Sample photo of site roof penetration taken from rooftop

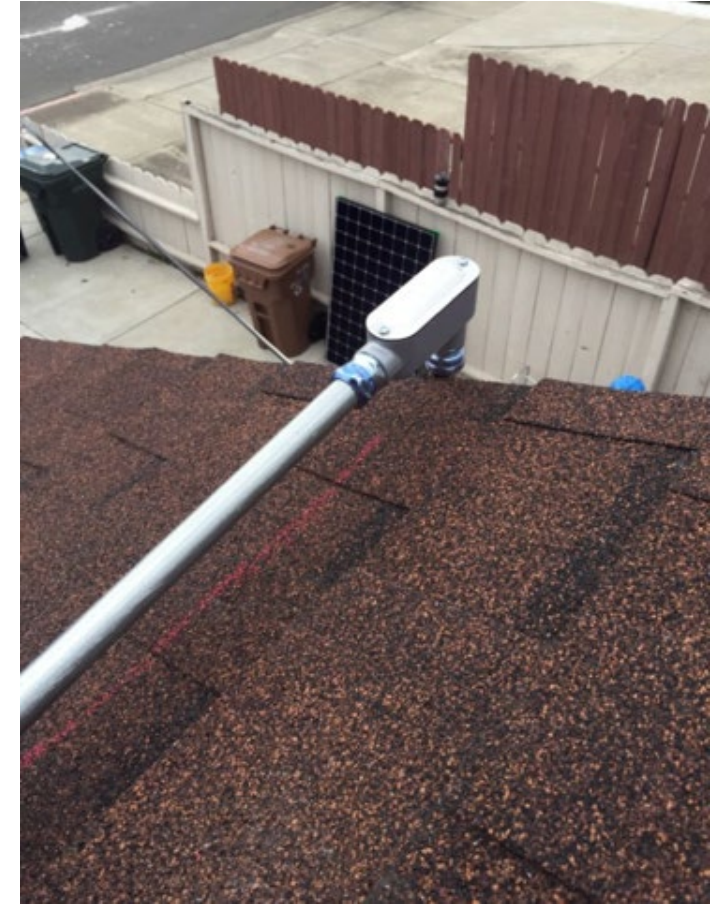


Photo Tip: A J-box with flashing incorporated into the design counts as both J-box wiring photo and conduit penetration photo.
If no roof penetration, show the conduit going off the roof edge.

Photo: Electrical Equipment

Wide-angle shot of all indoor and outdoor ground-level electrical equipment on-site



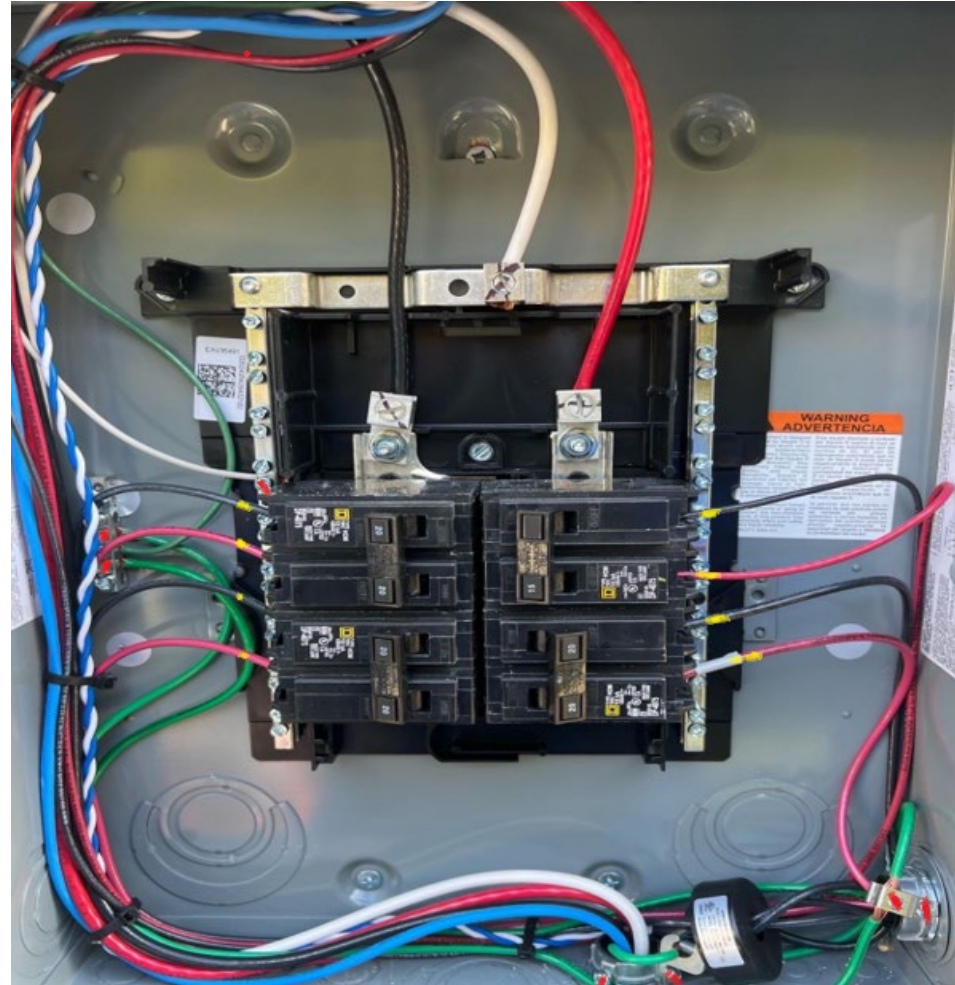
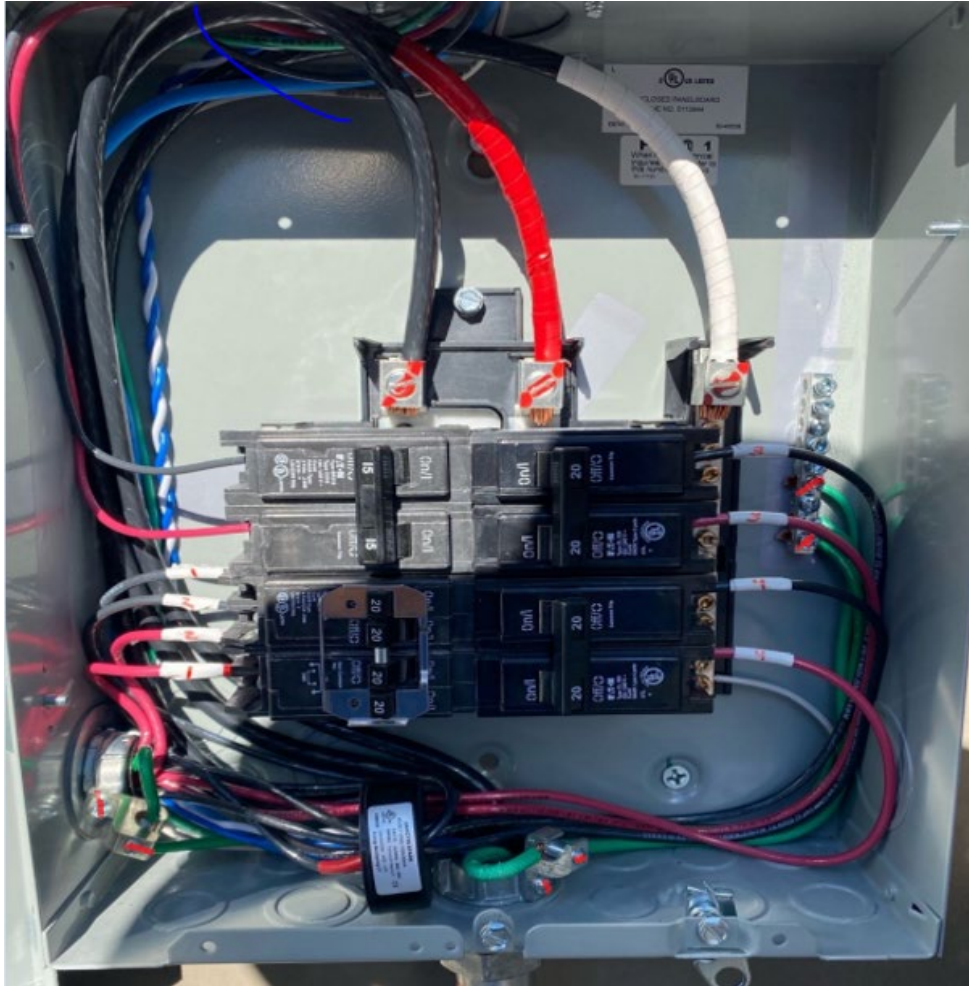
May require multiple photos:

- Meter or meter/main service panel
- Solar load centers (if applicable)
- AC disconnects (if applicable)
- PVS device



Photo: Solar Circuit Load Center (If Applicable)

Cover removed, showing wiring



Make sure all grounding terminations are also torqued and marked

Photo Tip: Ensure breaker sizes are legible. Ensure torque marks for field wiring terminations can be seen.

Photo: AC Disconnect (If Applicable)

Cover removed, showing wiring

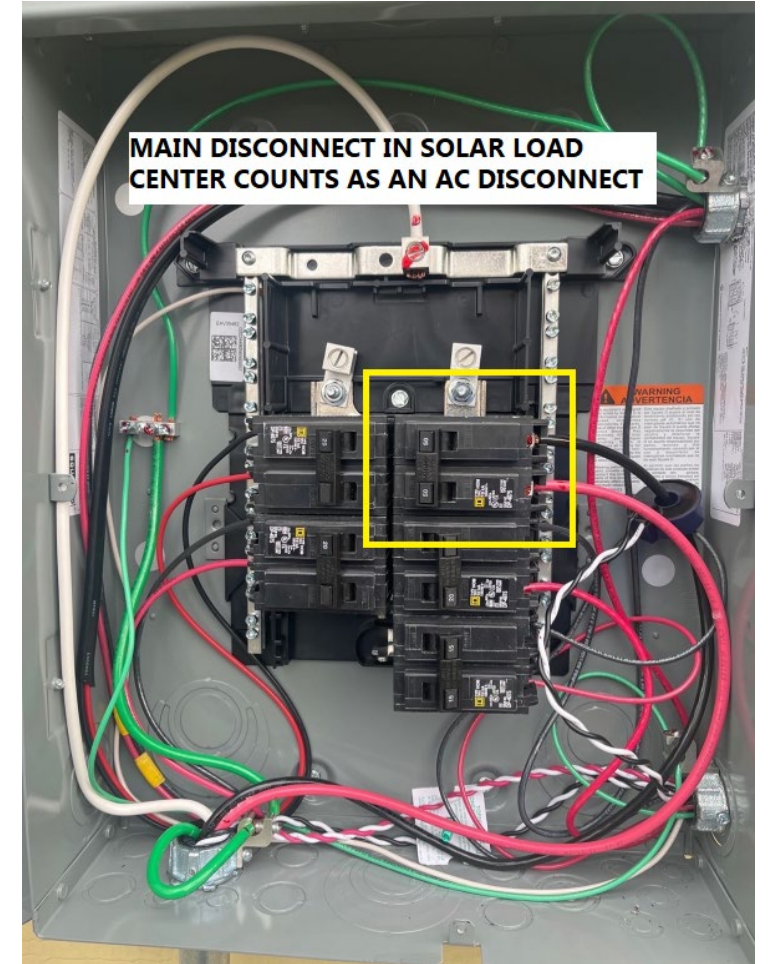
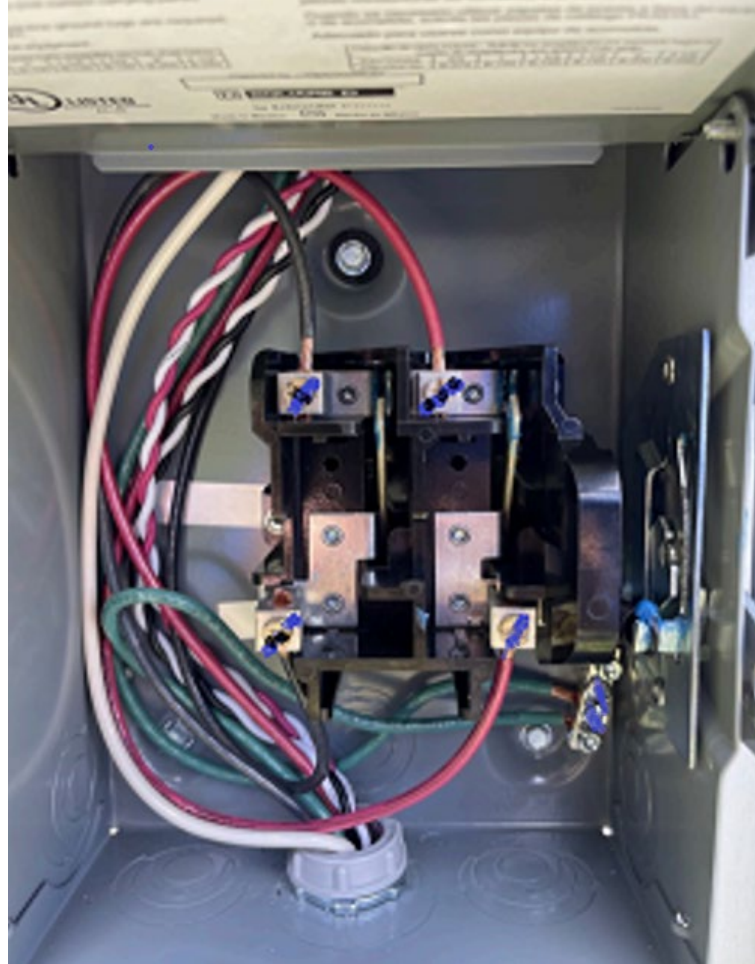
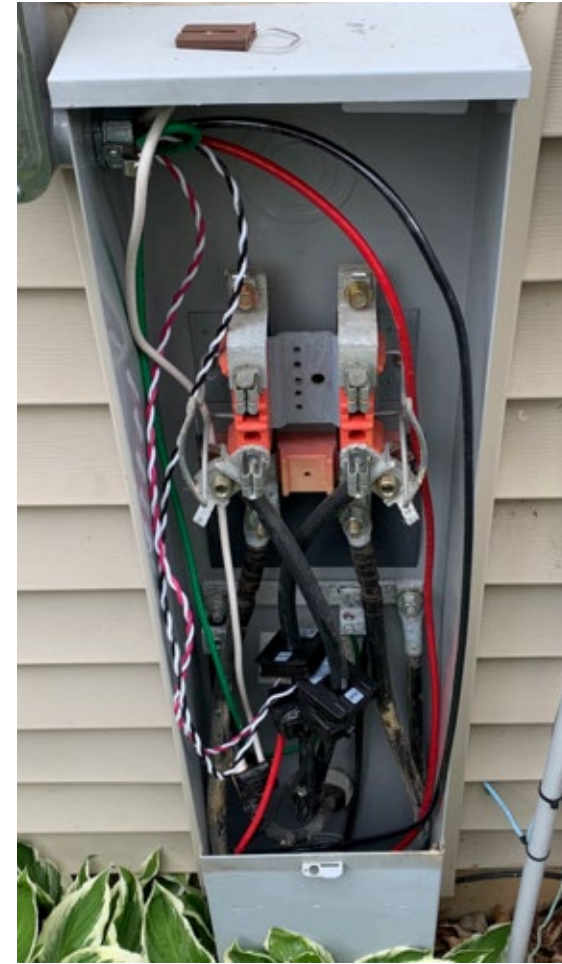
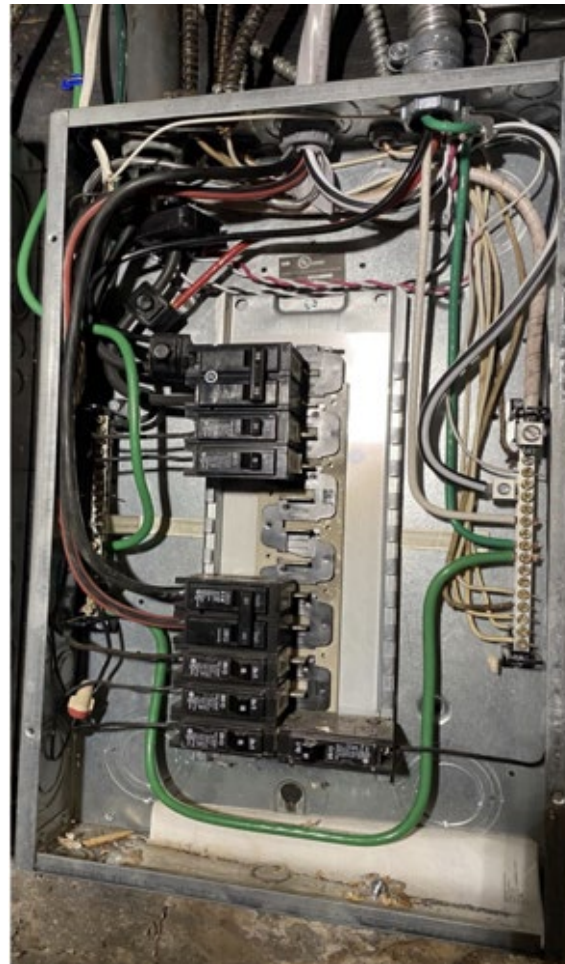
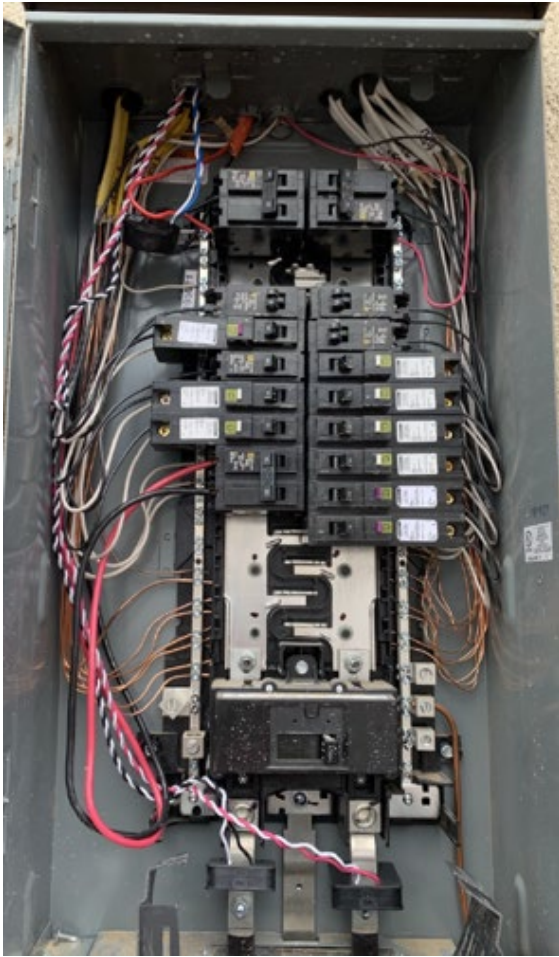


Photo Tip: Ensure torque marks can be seen for field wiring terminations. And remember, a main disconnect breaker in a solar load center also counts as the AC disconnect photo.

Photo: Interconnection – Entire Utility

Wide-angle of entire enclosure for the utility interconnection point (cover removed)



Make sure all grounding terminations are also torqued and marked

Photo Tip: Ensure breaker sizes are legible. Ensure torque marks for field wiring terminations can be seen.

Photo: Interconnection Method

Close-up of the method of interconnection (solar breaker, disconnect fuse, line taps, etc.)

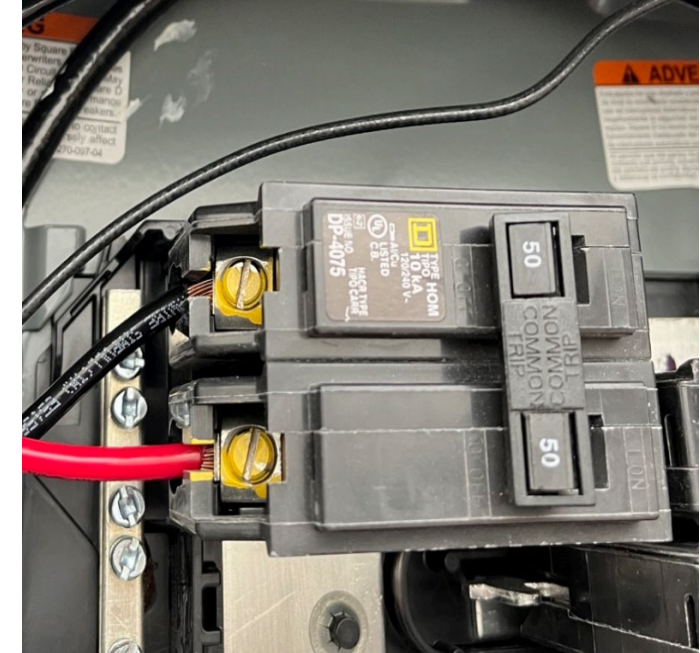
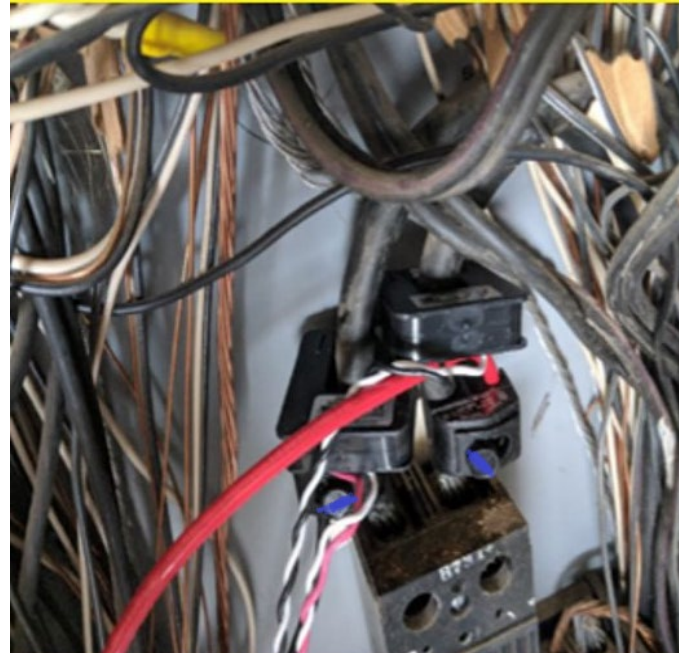


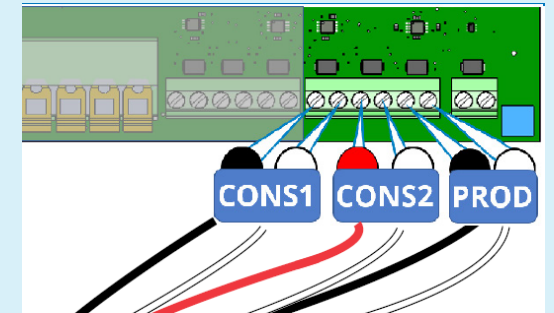
Photo Tip:

- Close-up photos of solar breakers need to clearly show breaker size
- **For line or load-side taps**, photos need to show both the taps' main panel and the fuses in the disconnect
- Remember, close-up photo of the **main disconnect breaker** for a solar load center also counts as a fuse
- Ensure all torque marks can be seen for field-wiring terminations



Photo: PVS

PVS wiring and serial number, lid removed

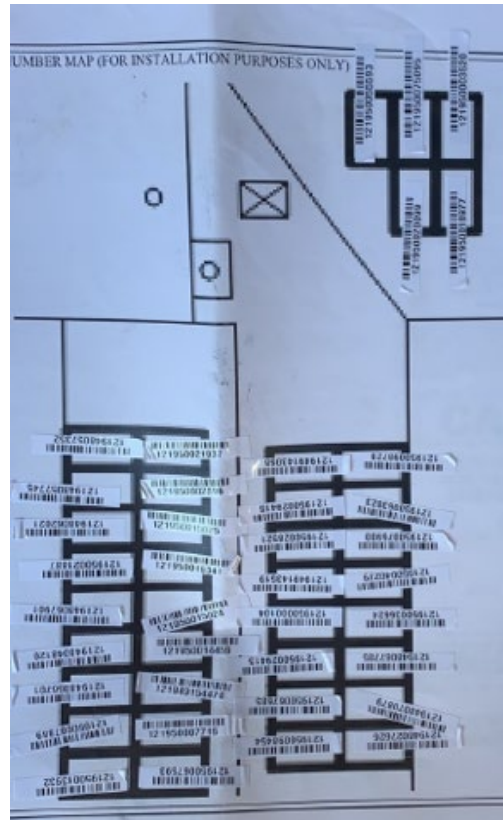
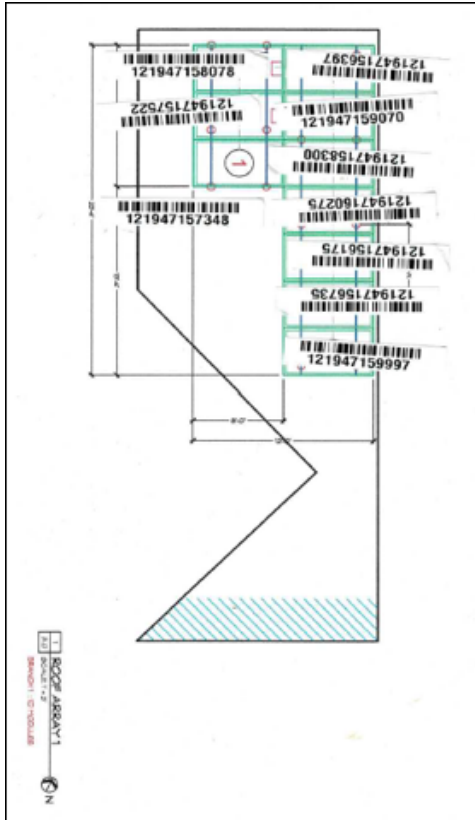


CAUTION
Tighten all terminals
to 0.5–0.6 Nm
(4.4–5.3 in-lb).
DO NOT overtighten.

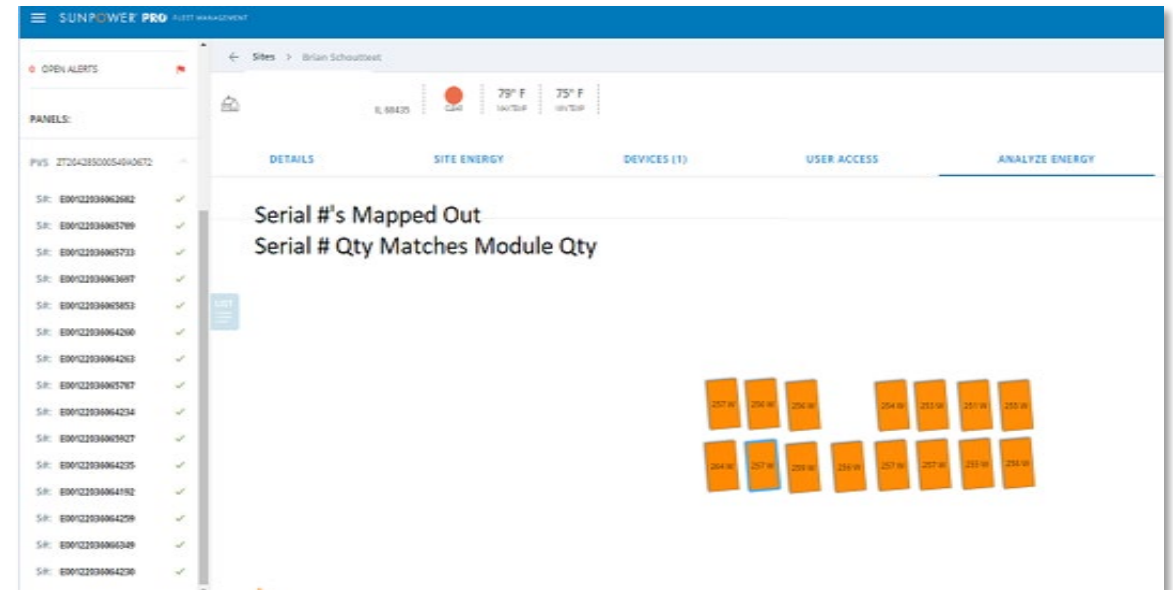
Photo: Array Map

Microinverter serial number array map

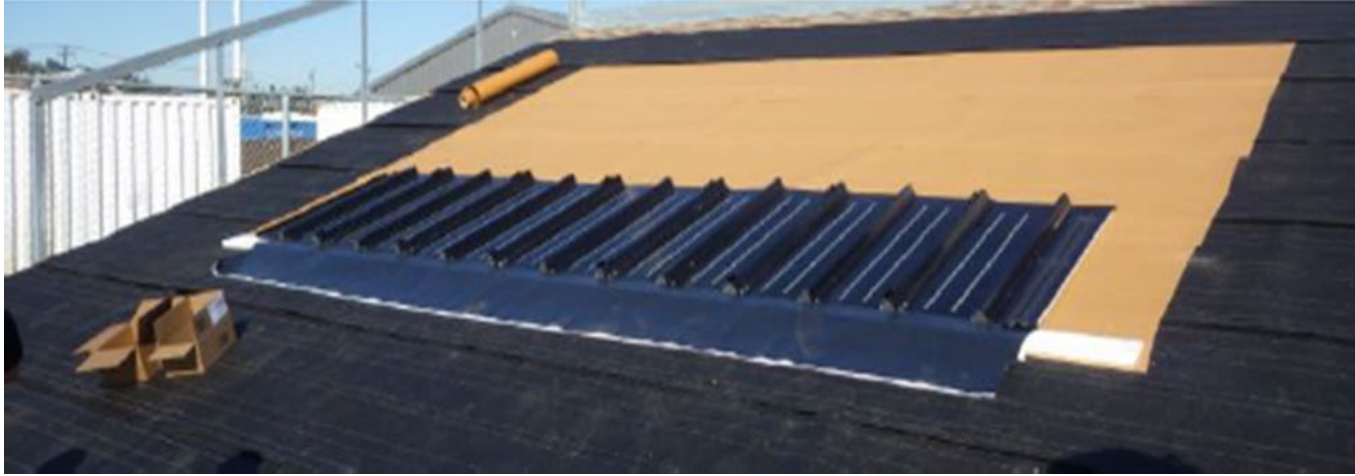
- Using the microinverter serial number stickers located on the back of the solar modules, create a map of the array where the serial number represents the location of that module on the roof
- A screen shot of a completed map in the SunPower Pro Fleet Management or SunPower Pro Connect also works



or



OneRoof® Installations (Only if Applicable)



- Showing underlayment in place and binned
- Showing bottom panel row and flashing



- Showing top flashing installed and binned/sealed

SunVault™ Storage

Photo examples
in order of JCO Checklist
for SunVault™ System
(if applicable)

- Minimum of **15-22 photographs** depending on system
- SunPower's Minimum NEC code requirement year is 2017
- Reference SunPower's 2022 installation requirements

Photo: Outdoor and Indoor Electrical Work

Wide-angle of all electrical work done outside and inside home



Photo Tip: The meter or meter/main service panel must always be in a photo.

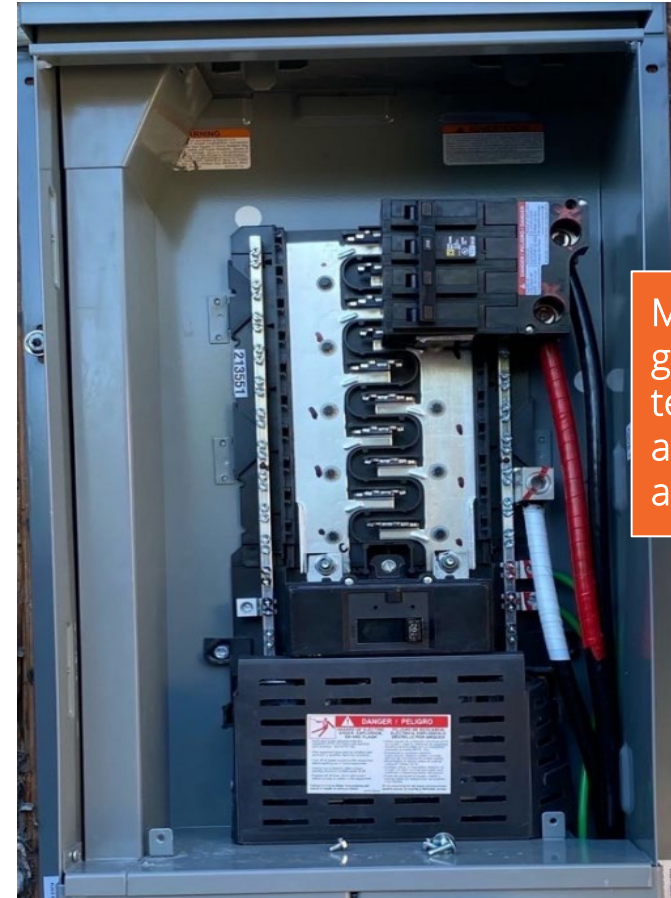
Photo: Indoor Electrical (If Applicable)

Wide-angle of all SunVault-related electrical enclosures, including new and existing subpanels



Photo: Meter/Main Service Panel (MSP) or Home Main Load Center

Cover removed and show interconnection wiring



Make sure all grounding terminations are also torqued and marked

Photo Tip: Ensure torque marks can be seen for field wiring terminations.

Photo: System Forms for Hub+ and ESS Units

All fields completed and voltage values filled in to confirm Pre-Commission Checklist was completed

Form for Hub+ unit. Fields include: Total Number of Equinox AC Modules, Module SKU, Feeder circuits, Communication cables, Consumption CTs (pairs), Production CTs, Line voltage into Hub+, and Voltage on all branch circuit breakers verified. The form is signed by the installing technician.

Total Number of Equinox AC Modules:		Module SKU (e.g. A400-G4C)	
Verify electrical and wiring terminations, then check each box:			
<input checked="" type="checkbox"/> Feeder circuits		<input checked="" type="checkbox"/> Overcurrent protective devices	
<input type="checkbox"/> Optional Hub+ CSR main breaker		<input checked="" type="checkbox"/> Generation pan and capacity	
<input checked="" type="checkbox"/> Communication cables		<input checked="" type="checkbox"/> All re-located circuits labeled	
RPO switch installed? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N			
Consumption CTs (pairs)		In Hub+ : 1	In MSP: 1
Total Consumption CT pairs:		2	
Consumption CTs (pairs):	All line loads included	L1 CT(s) on phase A	L2 CT(s) on phase B
Production CT(s):	Hub+ factory	Added to Hub+ :	Added to MSP: 1
Total Production CTs:		2	
Line voltage into Hub+ (MID line-side busbar):		L1-G	L1-N
		120	121
		Ø	Ø
		120	121
		242	242
MID contactor verified		Generation pan L1-L2 voltage: 242	
Voltage on all branch circuit breakers verified		Non-backup pan L1-L2 voltage: 242	
Installing Technician: [Signature]		Date: 02/28/2021	Time: 5:59 PM
Commissioning Technician: [Signature]		Date: / /	Time: : : AM/PM

Located inside the door of the Hub+

- Signed by installing technician
- Completed label signifies that ALL voltage and system checks described in **Section 1.11 Testing and Commissioning** on page 101 of the **SunVault Installation Guide**

Form for BASE ESS unit. Fields include: Instructions for use as BASE ESS, Step, and Voltage readings. The form is signed by the installing technician.

Instructions for use as BASE ESS		Step	Instructions for use as BASE X ESS	
1. Verify electrical and wiring terminations, then check each box:		1	1. Verify electrical and wiring terminations, then check each box:	
<input checked="" type="checkbox"/> Feeder circuits		2	<input checked="" type="checkbox"/> Overcurrent protective devices	
<input type="checkbox"/> Optional Hub+ CSR main breaker		3	<input checked="" type="checkbox"/> Generation pan and capacity	
<input checked="" type="checkbox"/> Communication cables		4	<input checked="" type="checkbox"/> All re-located circuits labeled	
RPO switch installed? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N		5		
Consumption CTs (pairs)		6	In Hub+ : 1	
Total Consumption CT pairs:		7	In MSP: 1	
Consumption CTs (pairs):	All line loads included	8	L1 CT(s) on phase A	
Production CT(s):	Hub+ factory	9	L2 CT(s) on phase B	
Total Production CTs:		10	2	
Line voltage into Hub+ (MID line-side busbar):		11	L1-G	
		12	L1-N	
		13	Ø	
		14	120	
		15	121	
		16	242	
MID contactor verified		17	Generation pan L1-L2 voltage: 242	
Voltage on all branch circuit breakers verified		18	Non-backup pan L1-L2 voltage: 242	
Installing Technician: [Signature]		19	Date: 02/28/2021	
Commissioning Technician: [Signature]		20	Time: 5:59 PM	

Located inside the doors of the BASE ESS and BASE X ESS

- Signed by installing technician
- If only a **BASE ESS** on-site, just one form photo needed

Photo: Hub+ Dead Front

Dead front cover showing clear photo of Hub+ circuits

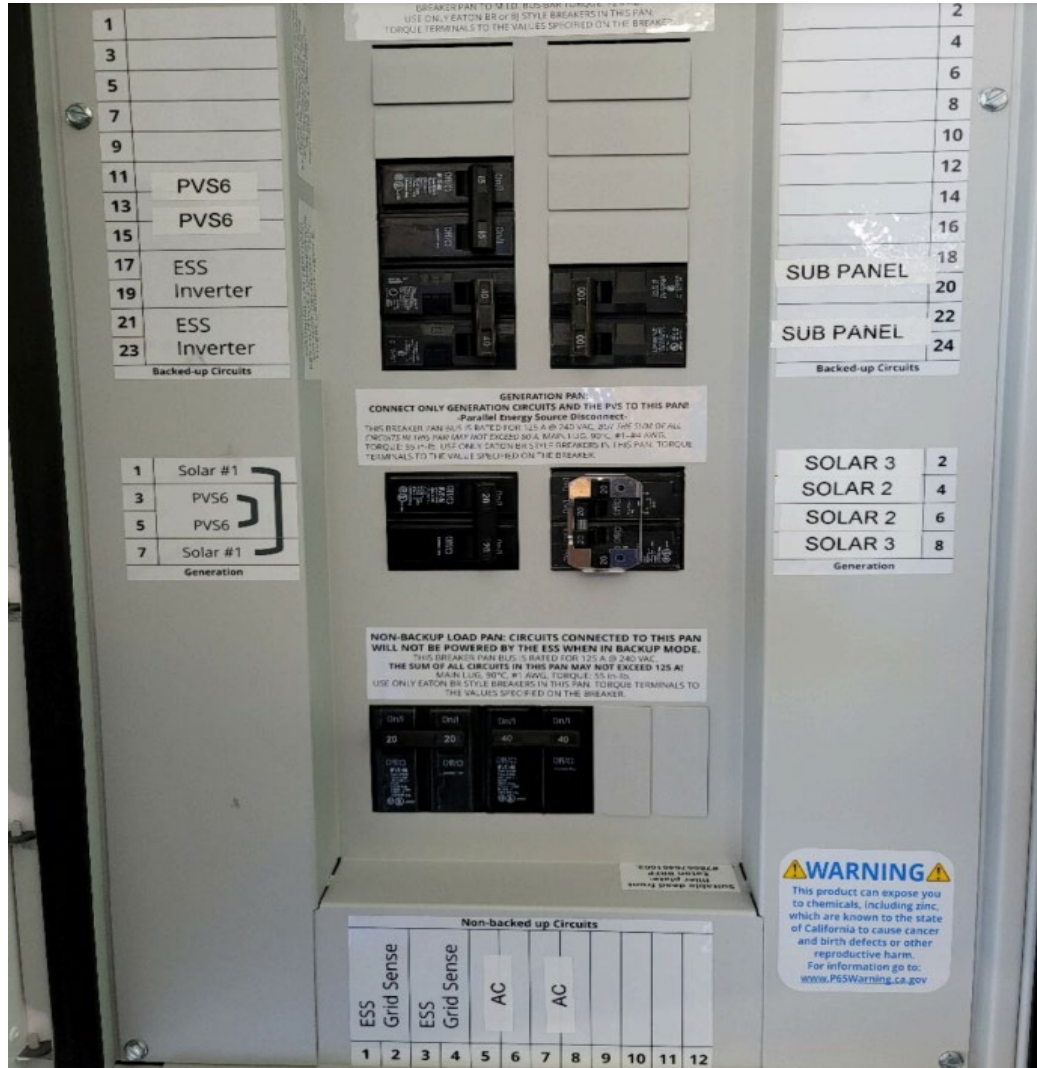


Photo Tips:

- Use a label maker for legible circuit labels
- Use "medium" or "high" photo size to show breaker sizes
- Use the flash function on the camera accordingly

Photo: Inside the Hub+

Dead front cover removed, PVS door open, TOP HALF of the Hub+ w/ elements outlined below

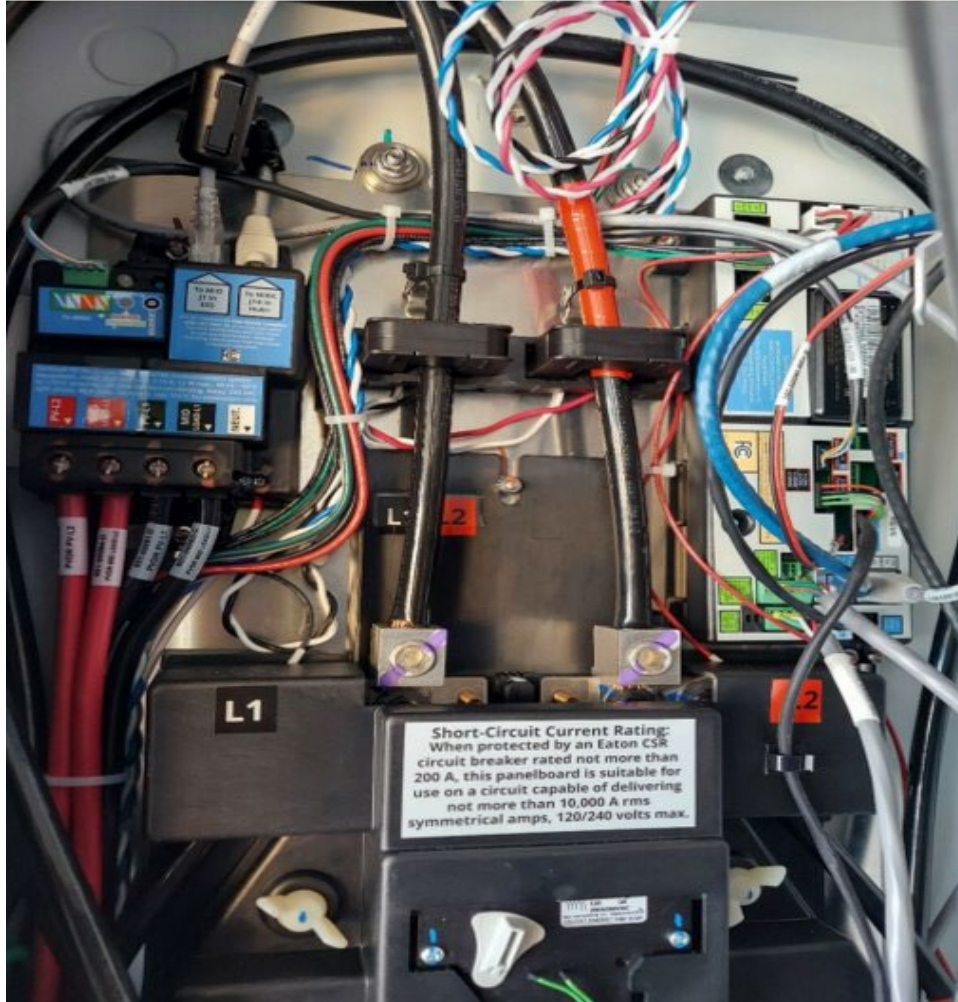


Photo Tips:

- Photograph the **top half** of the Hub+
- Show the wiring behind the PVS door
- Ensure the feeder circuits and MIDC are captured in the photo
- Ensure torque marks can be seen on field wiring terminations

Photo: Inside the Hub+

Dead front cover removed, showing BOTTOM HALF of the Hub+

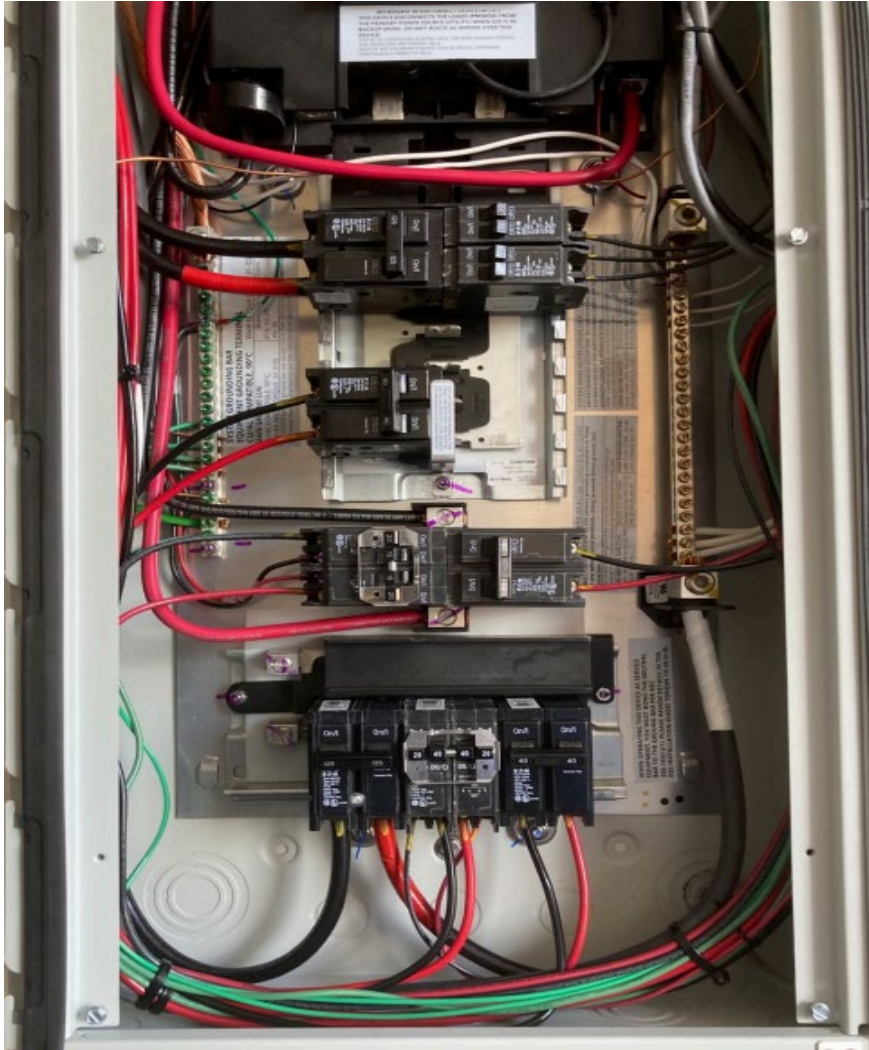
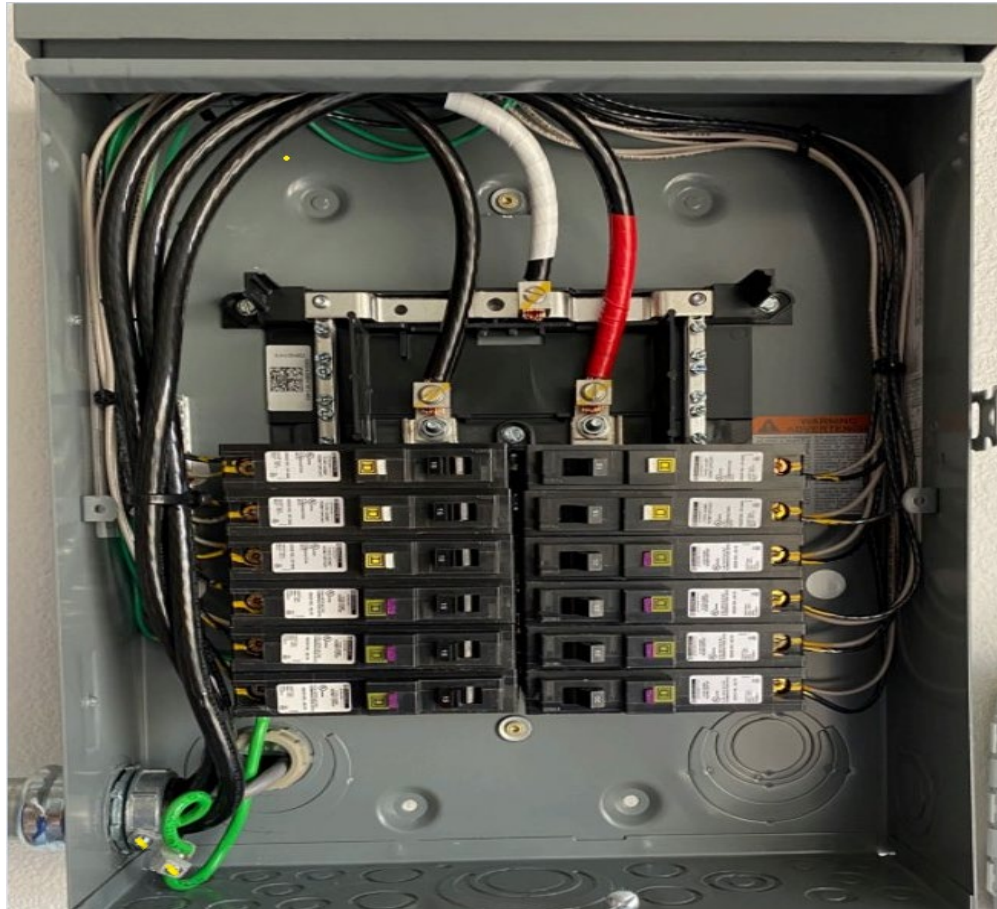


Photo Tips:

- Photograph the **bottom half** of the Hub+
- Ensure the backup pan, generation pan, and non-backup pan are all captured in the photo
- Ensure torque marks can be seen for field wiring terminations (torque paint marks on the wire next to wire termination is okay, too)
- Make sure all grounding terminations are also torqued and marked
- If used, ensure the maximum 125 A breaker protecting the non-back up pan uses a screw-down kit

Photo: Field-Installed Load Centers (If Applicable)

Cover removed and showing wiring of all field-installed backup and non-backup load centers



Make sure all grounding terminations are also torqued and marked

Photo Tips: Ensure torque marks can be seen for field wiring terminations. Torque paint marks on the wire next to termination are accepted.

Photo: MIDC Communication Wiring

Photograph of the ENTIRE MIDC

Photo Tip:

Show all data terminations
for the MIDC in one photo.

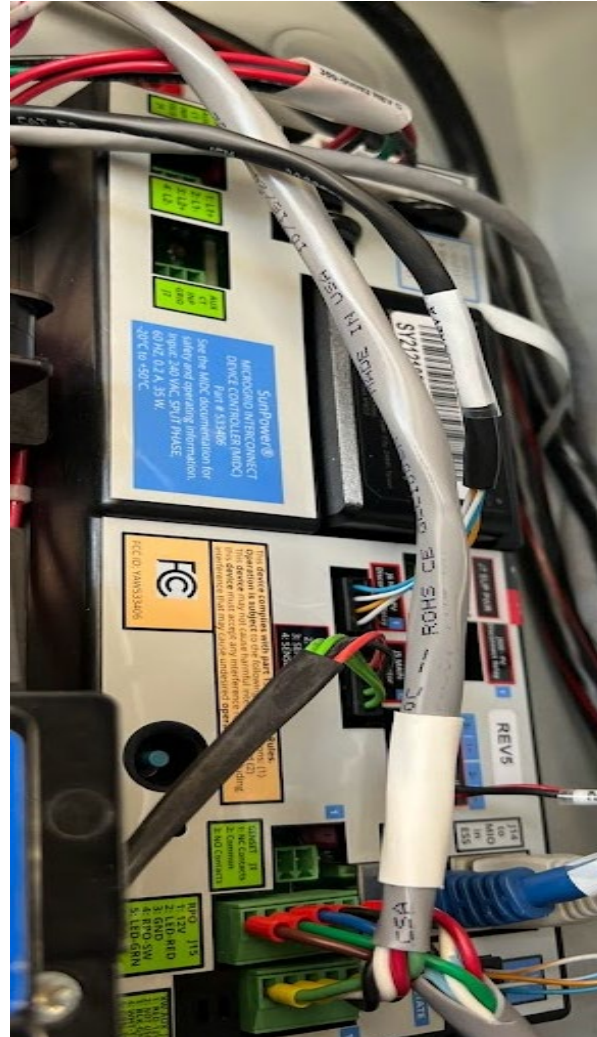


Photo: Consumption CTs

Show ALL consumption CTs used on-site, including factory installed CTs

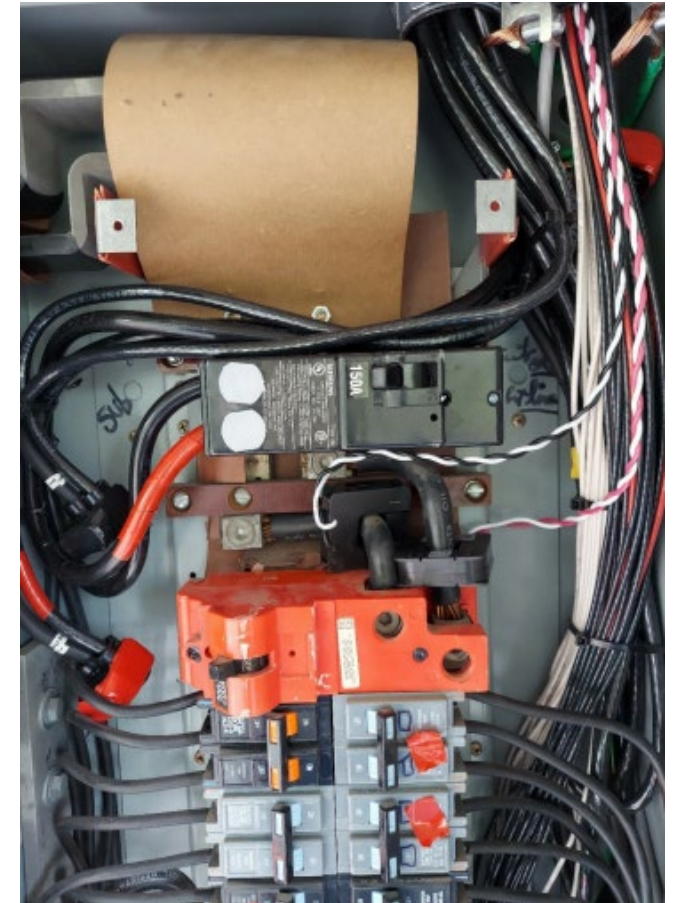
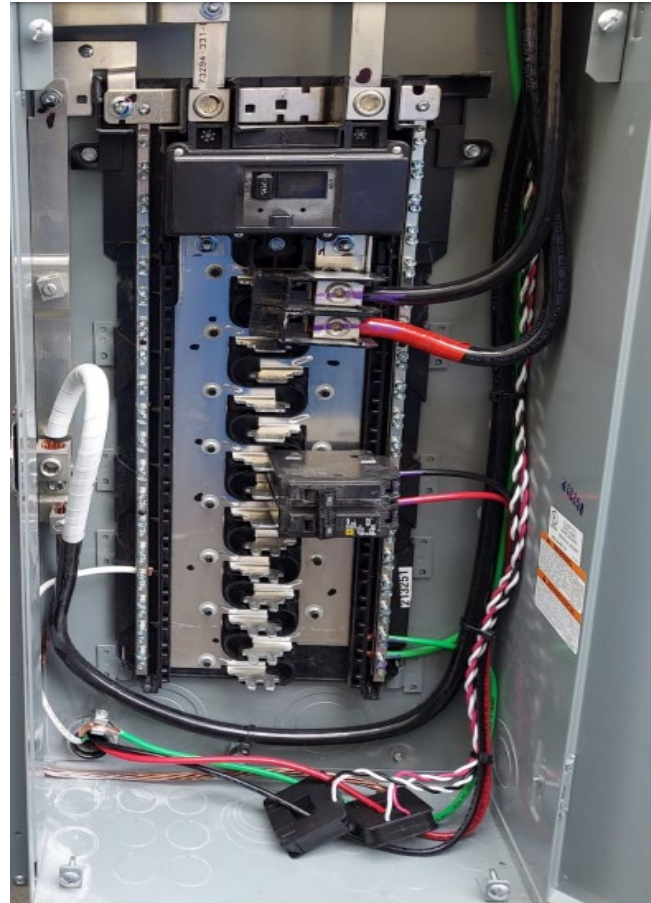


Photo Tip: Make sure every circuit in the home is measured with a consumption CT.

Photo: Production CTs

Show ALL production CTs used on-site, including factory installed CTs



Photo Tip: Make sure every PV circuit not installed in the generation panel has a production CT measuring output. Ensure labels of additional production CTs face the same direction as the factory-installed production CT.

Photo: BASE ESS Communications

Close-up of comm and power wiring in the Base ESS

Photo Tip:

Stand in front of the Gateway. Capture Inverter AC terminations and communication connections **in one photo**.

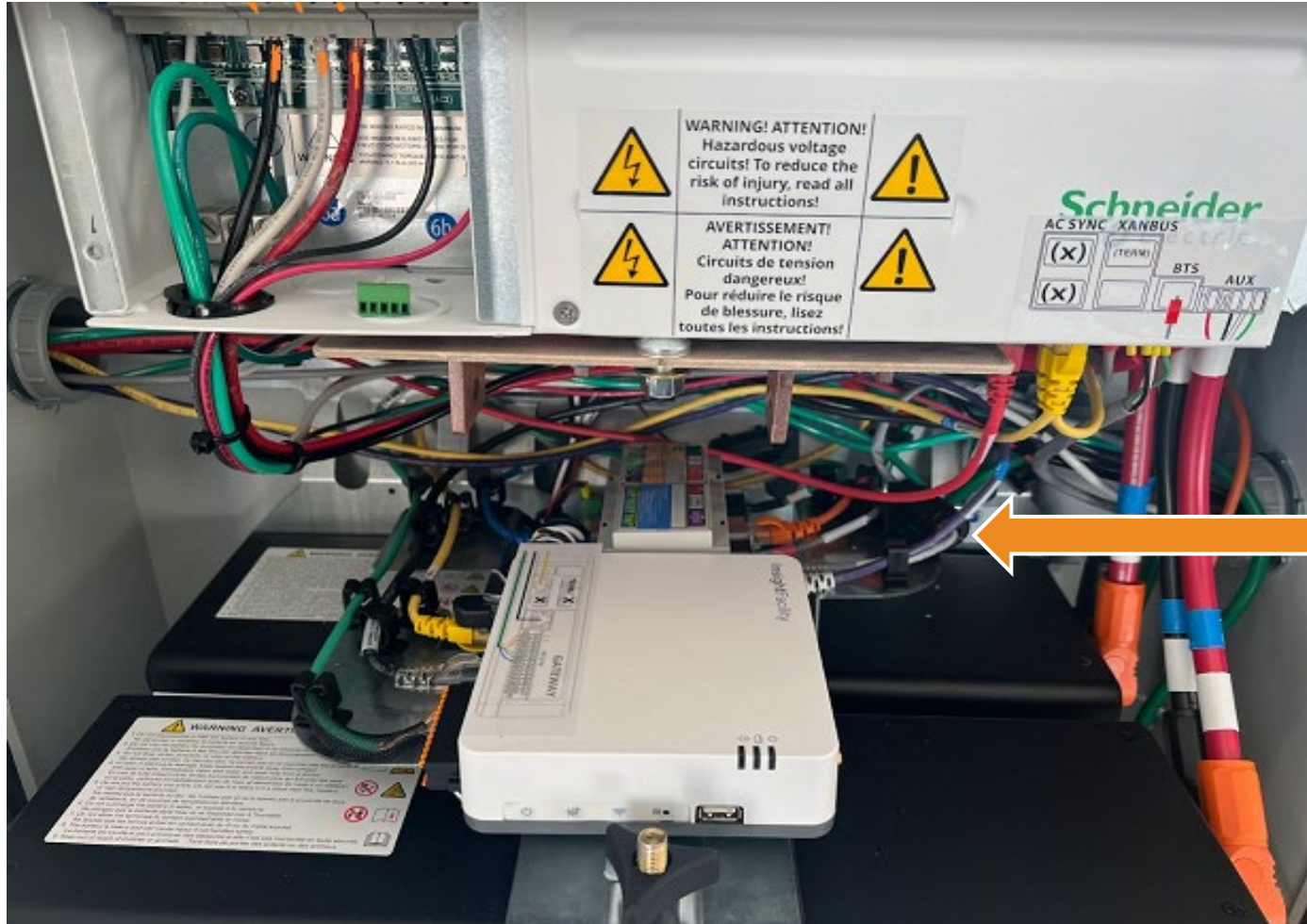


Photo Tip:

Ferrite core snapped on the gray communication cable and plugged into the J1 port of the MIO.

Photo Tip: Ensure torque marks can be seen for field power conductor terminations in AC1 and AC2.

Photo: ESS Multi-Inverter – Second Enclosure

Close-up required for the multi-inverter second unit

Photo Tip:

Stand in front of the Gateway. Capture Inverter AC terminations and communication connections **in one photo**.

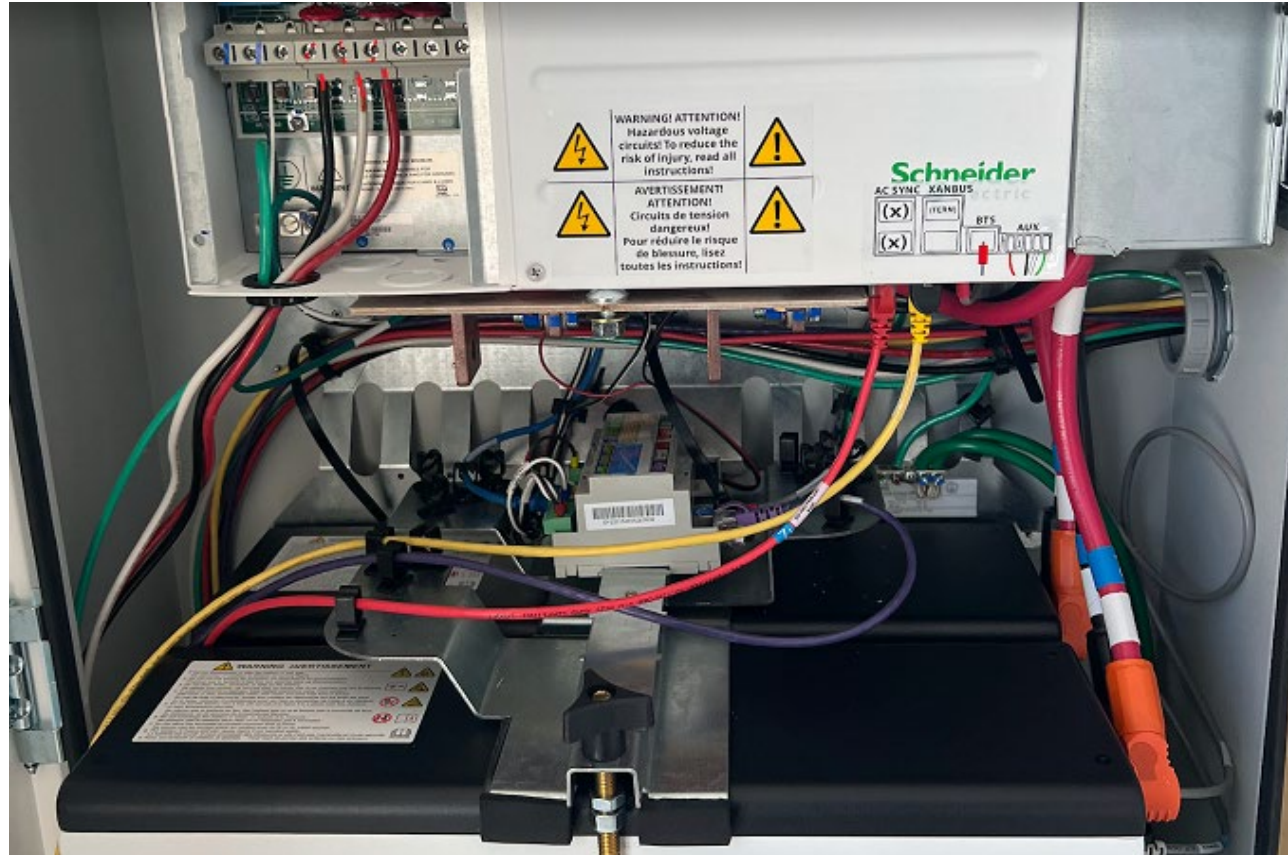


Photo Tip: Ensure torque marks can be seen for AC wiring terminations. Torque paint marks on the wire next to termination are also ok.



Wallbox™ for EV Charger

Photo examples
in order of JCO Checklist
for Wallbox for electric vehicle charger
(if applicable)

- Photos only if applicable
- Minimum of **5 photographs**, depending on system

Photo: Wallbox™ (If Applicable)

Wide-angle and close-up of wiring



Photo Tip: For close-up wiring photo, make sure terminations are torqued.

Photo: Wallbox™ (If Applicable)

Wiring of circuit breaker + wiring of plug 240 V outlet

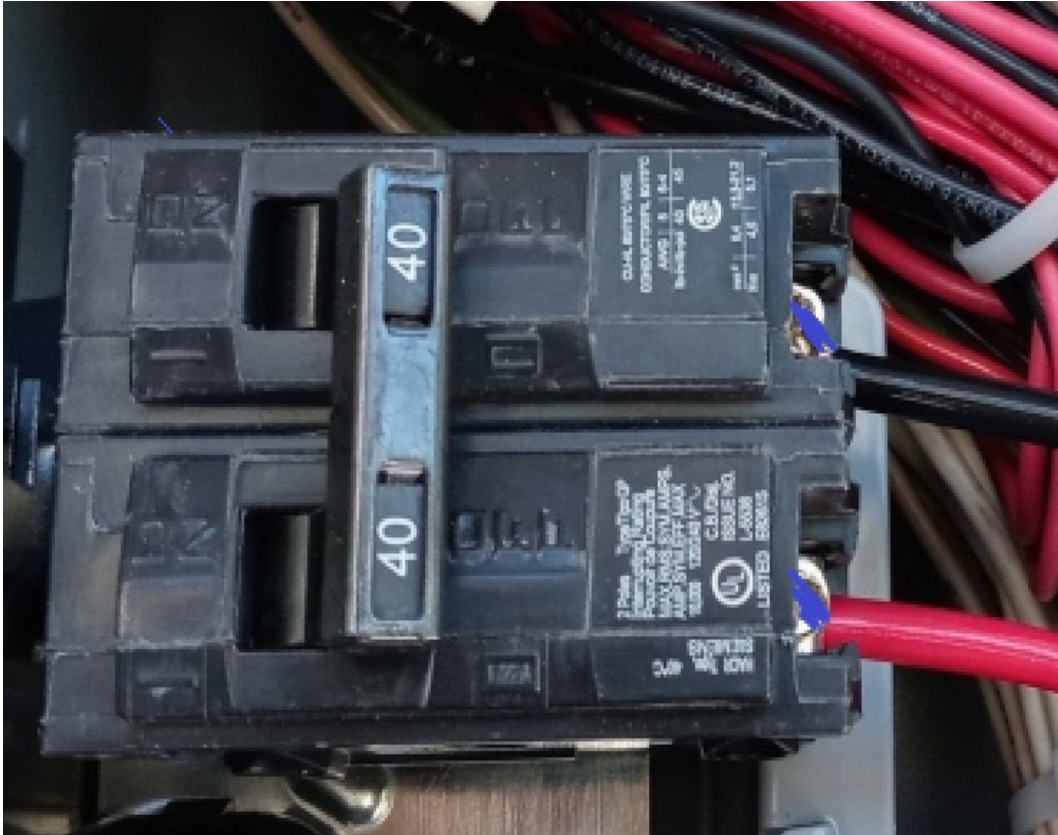


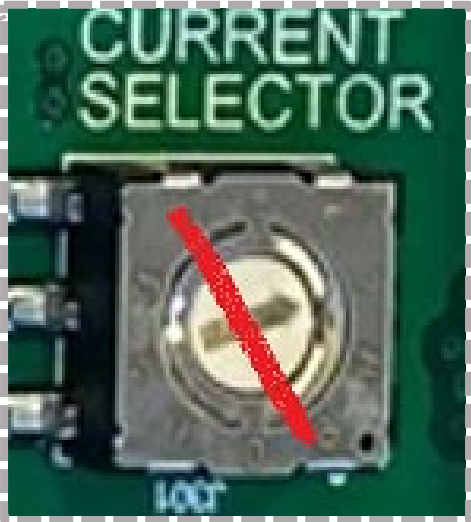
Photo Tip: Ensure torque marks can be seen for field power conductor terminations.

Photo: Wallbox™ (If Applicable)

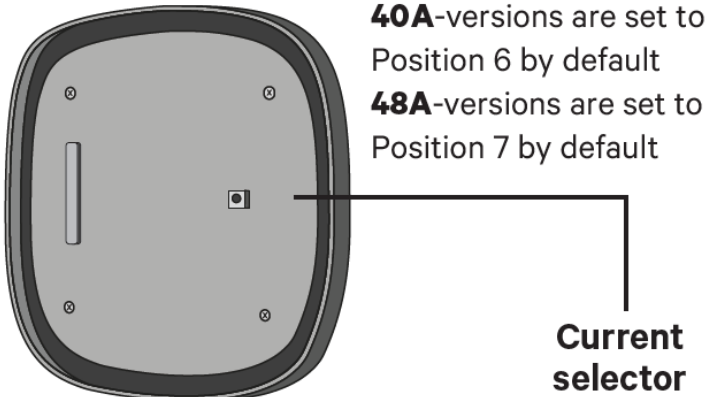
Close-up of the current selector



Reference photo



Put a line or dab with a pen to confirm this task was executed correctly



Selecting a switch position exceeding the rated current will not exceed the rated current.



Circuit Breaker Rating		
Position	Amps	Rating
2	16A	20A
3	20A	25A
4	24A	30A
5	32A	40A
6	40A	50A
7	48A	60A

Thank You

Changing the way our
world is powered