PowerNode™

POWERNODE™ NEXUS COMMISSION, OPERATION, AND DECOMMISSION MANUAL

V2.2.0

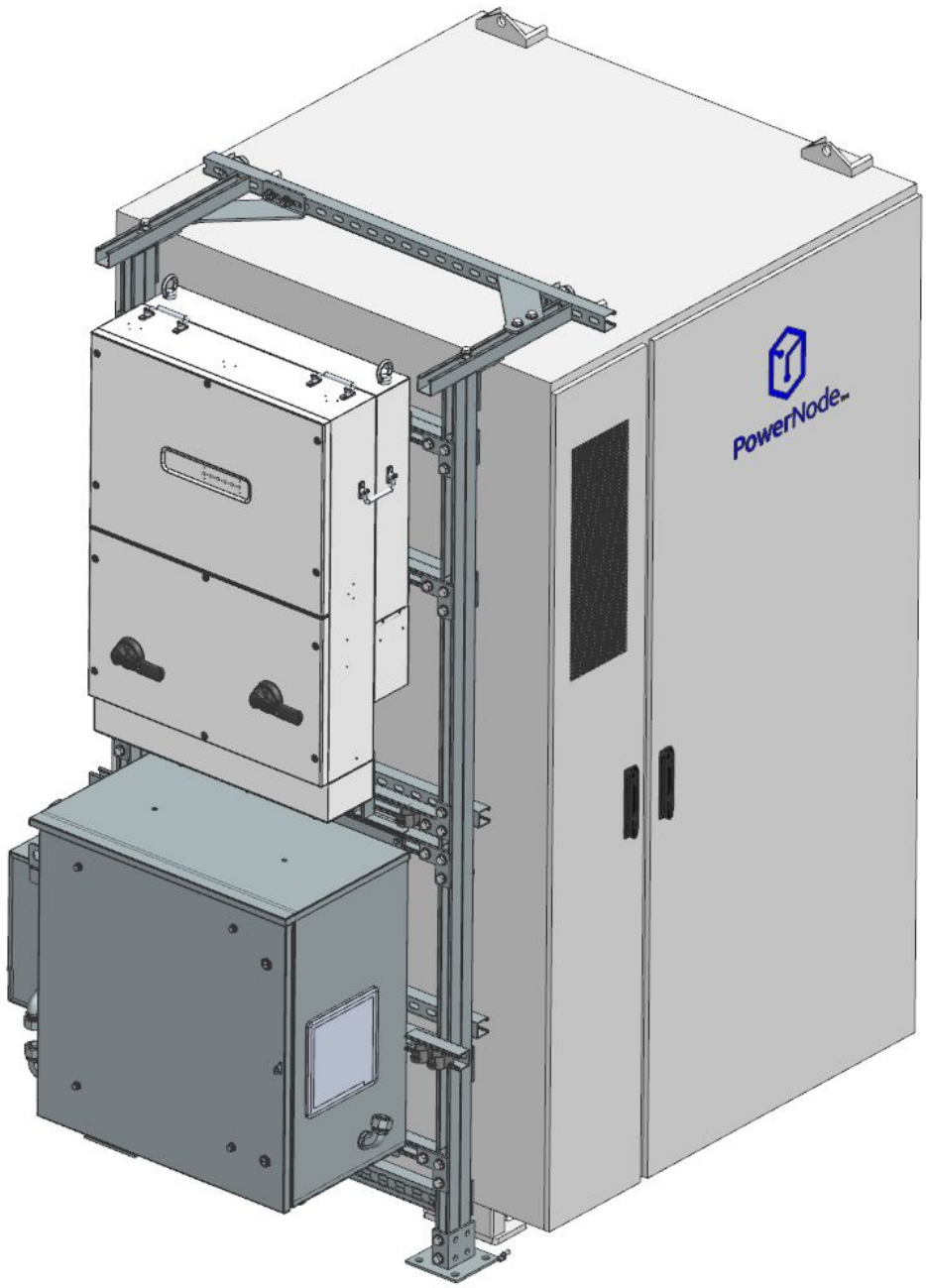


TABLE OF CONTENTS

TABLE OF CONTENTS

OVERVIEW

GENERAL PRECAUTIONS (1/3)

The precautions in this section must be followed at all times.

⚠ **DANGER!** Indicates a hazardous situation which, if not avoided, will result in injury or death.

⚠ **WARNING!** Indicates a hazardous situation which, if not avoided, may result in injury or death.

⚠ **WARNING!** All instructions in this document must be performed by qualified Electric Era staff or qualified personnel authorized by Electric Era, with training dealing with high voltage equipment and lifting machinery where relevant.

⚠ **WARNING!** Read all relevant information from this manual, the CATL 280 Ah Liquid Cooling Rack User's Manual (for model numbers containing V2.3) or CATL EnerOne+ User's Manual (for model numbers containing V2.2), and the PowerNode Nexus Site Design Guide before performing any actions on the PowerNode Nexus (PN Nexus). Any warnings found in those documents are also applicable when performing actions instructed in this document. Do not perform any action on the unit without having all of those documents.

⚠ **WARNING!** PN Nexus must be installed in accordance with requirements in this document and in accordance with local electrical, building, fire, and other codes or utility requirements as applicable to the installation and equipment, by qualified service personnel in accordance with the installation instructions and appropriate practices.

⚠ **WARNING!** In cases of uncertainty with regard to instructions, contact Electric Era with any questions. Do not proceed by guessing or trial-and-error.

⚠ **WARNING!** Damage to unit may cause explosion and fire hazards. Fire may release toxic gas. Keep fire or sources of heat away from PowerNode Nexus. Batteries may reignite after being extinguished. Keep fire, heat sources, corrosive agents, flammable gas, and conductive fluids and gas away from energy storage system. Refer to Safety Data Sheet for the following CATL model names for further instructions on response to battery fire.

- For Nexus PN-NEXUS-V2.2S: R05285P05L31
- For Nexus PN-NEXUS-V2.3S: O552280-P

OVERVIEW

GENERAL PRECAUTIONS (2/3)

⚠ **WARNING!** For all electrical connections: ensure the connection is correct, is reliable (will not be loosened), has good contact, and creates no short circuit.

⚠ **DANGER!** Before connecting or disconnecting any electrical connections, first de-energize and lock out/tag out (LOTO) the system as per the "System and Source Shutdown" section of this document, and close and lock the Battery Rack right-side door.

⚠ **DANGER!** Always test to verify de-energization according to regulations & best practices before performing any action that requires the system to be de-energized.

⚠ **DANGER!** Stored energy is present in the inverters. After shutting down PN Nexus according to the "System and Source Shutdown" section of the PowerNode Nexus Commission, Operation, and Decommission Manual, do not remove the inverter front panel until 5 minutes have passed, and test exposed conductors for voltage to ensure internal capacitors have discharged.

⚠ **DANGER!** When MSD covers (for model numbers containing V2.3) or HV DC link cable (for model numbers containing V2.2) are removed, do not open the Battery Rack right-side door without first shutting down & LOTO PN Nexus according to "System and Source Shutdown" section of this document.

⚠ **DANGER!** If opening the Battery Rack right-side door when the MSD covers (for model numbers containing V2.3) or HV DC link cable (for model numbers containing V2.2) are removed, or when making HV connections, in addition to any other PPE required at the site, at minimum wear PPE for shock and arc flash according to the hazards listed below. Where more recently updated hazards at the site are available, wear PPE for actual site conditions. Do not wear metal jewelry.

- 11 inches - Arc Flash Protection Boundary
- 0.95 cal/cm^2 Incident Energy Flash Risk at 18 inches
- 1500 VDC - Shock Risk- Covers/Doors Open
- 0 - Glove Class
- 60 inches - Limited Approach Boundary
- 20 inches - Restricted Approach Boundary

⚠ **DANGER!** Do not service equipment within the Battery Rack left-side door without first shutting down PN Nexus according to the "System and Source Shutdown" section of this document.

OVERVIEW

GENERAL PRECAUTIONS (3/3)

⚠️ **WARNING!** Do not attempt to climb on or step on the top of the Battery Rack.

⚠️ **WARNING!** Follow safe lifting practices according to regulations and these instructions.

⚠️ **WARNING!** Lifting operator must be trained to use lifting equipment.

⚠️ **WARNING!** Do not stand under lifting equipment or the equipment being lifted.

⚠️ **WARNING!** Clear and block off the area before using lifting equipment.

⚠️ **WARNING!** Use lifting equipment rated for the intended loads.

⚠️ **WARNING!** When lifting the Battery Rack or Ancillary Rack, at least two people must support both sides of the Battery Rack/Ancillary Rack.

⚠️ **WARNING!** At minimum wear hard hats, reflective vests, and steel-toed shoes when performing any lifting operation, as well as any other personal protective equipment required at the site. The operator of the lifting machinery must also wear high-grip gloves and safety goggles.

⚠️ **WARNING!** The tilt angle should be less than 5° while hoisting the Battery Rack.

⚠️ **WARNING!** Do not hit anybody while lowering equipment.

⚠️ **WARNING!** Place PN Nexus and its components on level ground to ensure that it is stable without shaking or tilting.

⚠️ **WARNING!** Handle Battery Rack and Ancillary Rack with care. Do not impact, pull, drag, or step on Battery Rack/Ancillary Rack. Do not subject Battery Rack/Ancillary Rack to any strong force. To help prevent damage, leave Battery Rack/Ancillary Rack in their shipping packaging until they are ready to be installed.

⚠️ **WARNING!** Do not allow precipitation such as rain, snow, or dusty/sandy wind to enter PN Nexus through open doors or removed covers. Do not let unmated connectors get wet or dirty.

⚠️ **WARNING!** Do not immerse PN Nexus or its components in fluids.

OVERVIEW

SCOPE

This document includes information needed to commission, operate, and decommission PowerNode Nexus. References to supplementary documents are listed for any information not directly included in this document.

Note that “PowerNode Nexus” refers to the mechanically and electrically integrated set of CATL EnerOne or EnerOne+ Battery Rack, Dynapower MPS-125 EHV inverter, and PowerNode Control Enclosure.

This document pertains to the following model numbers, as listed on the product nameplate:

- PN-NEXUS-V2.2-S
- PN-NEXUS-V2.3-S

BATTERY RACK DETAILS AND INSTRUCTIONS

For any details and instructions not included in this document that pertain to the Battery Rack (CATL EnerOne or EnerOne+) in its standalone state without integration of the complete PowerNode Nexus, refer to:

- For high-level specs for model numbers containing V2.2, see “Enerone+ 285 (1C) Product Specification_20230323”, and for model numbers containing V2.3, see “Product Specification: Outdoor Liquid Cooling Rack”
- For all other details & instructions for model numbers containing V2.2, see “CATL EnerOne+ User’s Manual”, and for model numbers containing V2.3, see “CATL 280 Ah Liquid Cooling Rack User’s Manual”

Where there is conflict between any of these documents, contact Electric Era.

ELECTRIC ERA CONTACT INFORMATION

Electric Era general support phone number: 1-(507)-702-0312

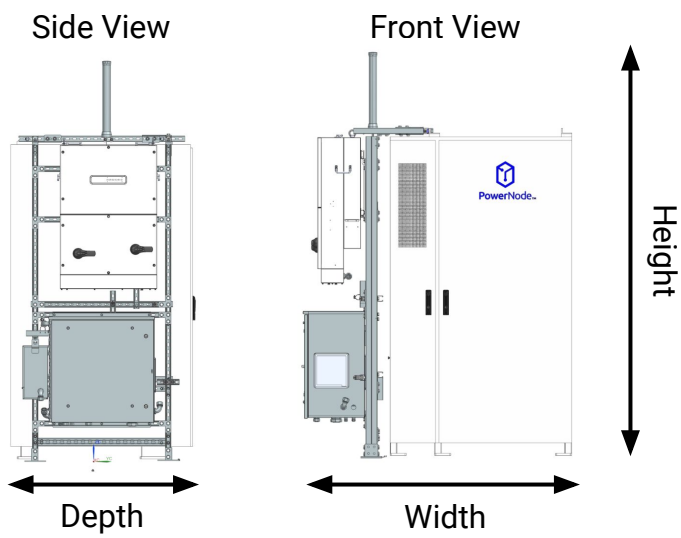
Contact Electric Era with any questions in cases of uncertainty with regard to instructions.

OVERVIEW

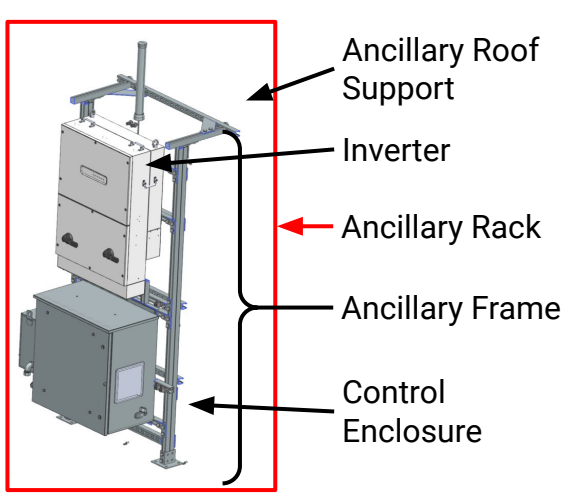
BASIC DIMENSIONS & WEIGHT

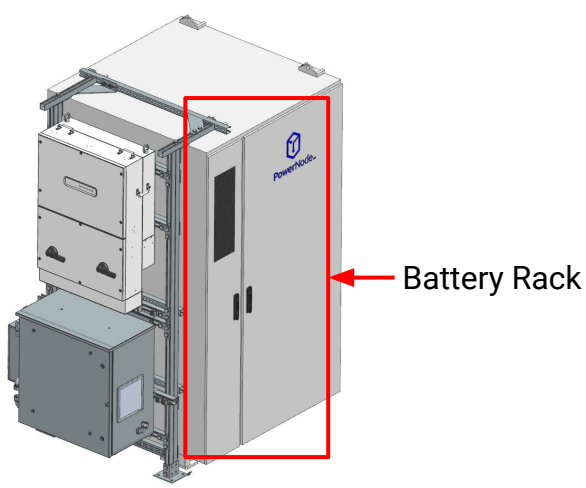
Overall Height:	114 ½" (2,905 mm)
Overall Width:	76 ⅛" (1,933 mm)
Overall Depth:	51 ¼" (1,300 mm)
Total Mass:	6,526 lbs (2,960 kg)

Note: The Battery Rack alone, without the Ancillary Rack, weighs 5,864 lb (2,660 kg).



SUBCOMPONENTS





COMMISSIONING

COMMISSIONING INSTRUCTIONS (1/9)

⚠️ **WARNING!** *All instructions below are to be performed in order by qualified Electric Era staff or qualified personnel authorized by Electric Era, with training dealing with high voltage equipment and lifting machinery where relevant, and coordinated with a remote Electric Era battery system operator.*

⚠️ **WARNING!** *Whenever instructed to perform actions according to the CATL 280 Ah Liquid Cooling Rack User's Manual (for model numbers containing V2.3) or CATL EnerOne+ User's Manual (for model numbers containing V2.2) or the PowerNode Nexus Site Design Guide (SDG) or involving the Battery Rack, follow the appropriate preconditions, precautions, and warnings found in the relevant sections of those manuals (including general warnings and precautions from those documents that apply to all situations) as well as those found in this manual and the signage on the unit.*

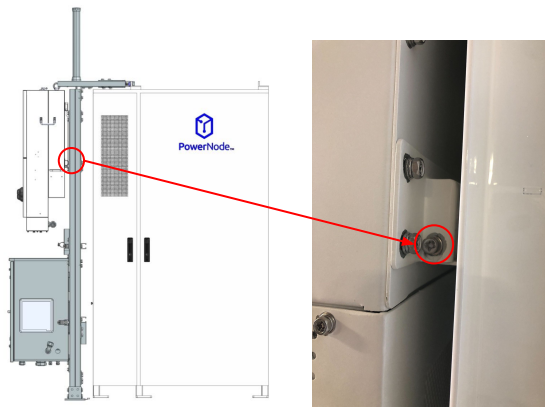
⚠️ **WARNING!** *Always follow the precautions in the "General Precautions" section of this manual.*

Pre-energization steps: may be completed prior to energizing AC power on site

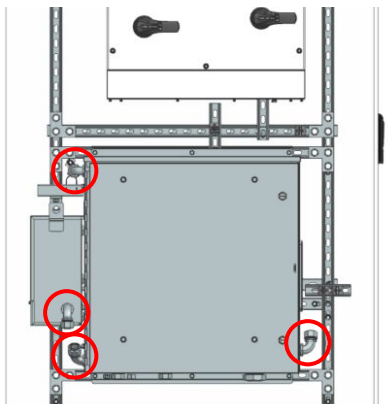
1. Before installation, prepare a concrete pad according to step 1 of the "PowerNode Nexus Mechanical Installation Instructions" section of the PowerNode Nexus Site Design Guide (SDG).
2. Site-dependent: before installation, when required by the site plans, prepare guard posts according to step 2 of the SDG's "PowerNode Nexus Mechanical Installation Instructions" section.
3. Store keys for the following doors on-site in a secure lockbox that is inaccessible to the public but can be readily accessed only by authorized personnel in accordance with regulations and best practices. Record the location of the keys/lockbox, and share the location with an Electric Era representative. Keep the keys in the lockbox when not in use.
    a. Battery Rack doors
    b. Control Enclosure padlock
    c. Fire panel door
    d. Security Cage door (site-dependent)
    e. Padlocks for electrical equipment (site-dependent)
    f. Charger dispensers (site-dependent)
4. Unpack Battery Rack per CATL 280Ah Liquid Cooling Rack User Manual or CATL EnerOne+ User's Manual section 5.3.1 "Unpacking."
5. Perform visual inspection of the Battery Rack:
    a. Check that the Battery Rack enclosure is flat, undeformed, has a uniform color, and has no damage to the enclosure body or exterior coating.
    b. Check that logos, labels, and indications are clear and not faded or damaged.
6. Unpack the Ancillary Rack (Frame and Roof Support).

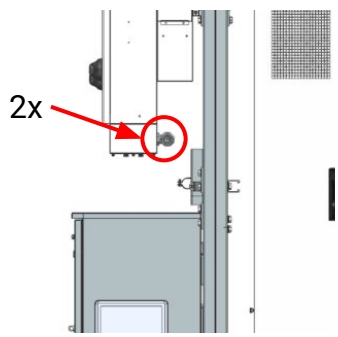
COMMISSIONING

COMMISSIONING INSTRUCTIONS (2/9)



7. Perform visual inspection of the Ancillary Rack:
   a. Check that there is no damage or deformation to the body or coating of the Control Enclosure, Inverter, and the Ancillary Rack's structural members.
   b. Check that the two screws on the Ancillary Rack shown here (one on each side) are not loose, damaged, etc.
   c. Check that the logos and labels are clear.
   d. Check that all 6 conduit fittings shown are tight at their interfaces to the conduits and enclosures. If any are loose, retighten and maintain uniform gasket compression.





⚠ **WARNING!** *Do not proceed if damage to the Battery Rack or Ancillary Rack is found. Contact Electric Era at 1-(507)-702-0312 to determine next steps if damage is found.*

8. Check that signage is applied to the Battery Rack and Ancillary Rack according to the "Signage" section of this document, and apply the signage if it is not. Also apply any other signage not covered in this document, required by the site according to regulations, best practices, and site-specific plans.

COMMISSIONING

COMMISSIONING INSTRUCTIONS (3/9)

9. ⚠ **WARNING!** *Follow safe lifting practices with trained personnel according to regulations and the instructions in this document.*
    a. Drill holes and install all 9x Battery Rack anchors and 8x Ancillary Rack anchors according to step 3 of the SDG's "PowerNode Nexus Mechanical Installation Instructions" section.
    b. Site-dependent: If a PN Nexus Security Cage is chosen to be installed, drill holes and install 6x Security Cage anchors according to step 3 of the SDG's "PowerNode Nexus Mechanical Installation Instructions" section.
10. ⚠ **WARNING!** *Follow safe lifting practices with trained personnel according to regulations and the instructions in this document.*
    Perform mechanical installation of the Battery Rack according to step 4 of the SDG's "PowerNode Nexus Mechanical Installation Instructions" section.
11. ⚠ **WARNING!** *Follow safe lifting practices with trained personnel according to regulations and the instructions in this document.*
    Perform mechanical installation of the Ancillary Rack according to steps 5 and up of the SDG's "PowerNode Nexus Mechanical Installation Instructions" section.
12. Ensure all power is shut down:
    a. Open the Battery Rack left door and move the Battery Rack Isolating Switch QS1 to the "Off" Position and lock out/tag out.
    b. Move inverter AC switch & DC switches to the "OFF" position, and lock out/tag out both.
    c. De-energize and lock out/tag out the 480V AC 3-phase source that feeds the inverter.
    d. De-energize and lock out/tag out the 480V AC 1-phase source that feeds the Control Enclosure.

COMMISSIONING

COMMISSIONING INSTRUCTIONS (4/9)

13. ⚠ **DANGER!** *Do not proceed with this step or any later step until system and source are de-energized and LOTO as per the previous step.*
Perform the actions instructed in the SDG's "Connect 480V AC 3-phase Power to Inverter" section. Check the following:
    a. 480V AC power has been connected properly: as per SDG, check torque on 480V ground lug and 3 phase lugs at inverter, and check phase rotation is clockwise.
    b. Conduit is properly connected to inverter.
14. Perform the actions instructed in the SDG's "Connect 480V AC 1-Phase Power To Control Enclosure" section. Check the following:
    a. 480V AC power has been connected properly to terminal blocks in Control Enclosure per SDG and terminals are fully tightened (pull-test wires to confirm).
    b. Conduit is properly connected to Control Enclosure.
15. Perform the actions instructed in the SDG's "Connect Ethernet Cables from Site Power Meter, Dispensers, & Site" section. Check the following, and close and lock the Control Enclosure when finished:
    a. Ethernet cables from dispensers are connected to proper locations in Control Enclosure's ethernet switch.
    b. Conduit is properly connected to Control Enclosure.
16. Perform the actions instructed in the SDG's "Connect Auxiliary Power & Comms Cables from Control Enclosure to Battery Rack" section. Check the following:
    a. Precut grommet is applied to Battery Rack right cable entry hole.
    b. Cable harnesses are pulled through conduit & secured with cable ties to tie points in Battery Rack left-hand bay.
    c. Auxiliary power & communications cables JXH1 & JX1 (for model numbers containing V2.2) or JX3 (for model numbers containing V2.3) are connected to proper locations and locked in place.
17. Perform the actions instructed in the SDG's "Connect High-Voltage DC Power Cables from Inverter to Battery Rack" section. Check the following:
    a. Precut grommet is applied to Battery Rack's left cable entry slot.
    b. Inverter's ground cable lug is routed behind Battery Rack's foot & through Battery Rack's left cable entry slot, & is torqued to spec in proper location on Battery Rack as per SDG.
    c. High-voltage DC power cables HV+ & HV- are pulled through conduit and connected to proper locations at Battery Rack, and locked in place.
    d. High-voltage DC power cables HV+ & HV- have compression lugs installed and torqued to HV DC bus bars in inverter per SDG, with small ring terminals included.
    e. Both Battery Rack cable entry ports are sealed from ingress with sealing compound.
    f. Inverter safety shield is installed.
    g. Inverter front panel is installed & torqued to spec as per the SDG.

COMMISSIONING

COMMISSIONING INSTRUCTIONS (5/9)

18. ⚠ **DANGER!** *For this step, in addition to any other personal protective equipment (PPE) required at the site, at minimum wear PPE for shock and arc flash according to the hazards listed below. Where more recently updated hazards at the site are available, wear PPE for actual site conditions. Do not wear metal jewelry.*
    - 11 inches - Arc Flash Protection Boundary
    - 0.95 cal/cm2 Incident Energy Flash Risk at 18 inches
    - 1500 VDC - Shock Risk- Covers/Doors Open
    - 0 - Glove Class
    - 60 inches - Limited Approach Boundary
    - 20 inches - Restricted Approach Boundary

For model numbers containing V2.2: Open the Battery Rack right-side door. Remove the HV DC link cable from the chiller handle in the Battery Rack left-hand bay and remove packaging. Remove the black rubber covers from the open HV ports on the top two battery modules in the Battery Rack right-hand bay. Install link cable to these ports. Push in fully and lock the two connectors. Pull-test the connectors to ensure they are locked. Close and lock the Battery Rack right-side door when finished.

⚠ **WARNING!** *Ensure that the HV DC link cable connectors are locked.*

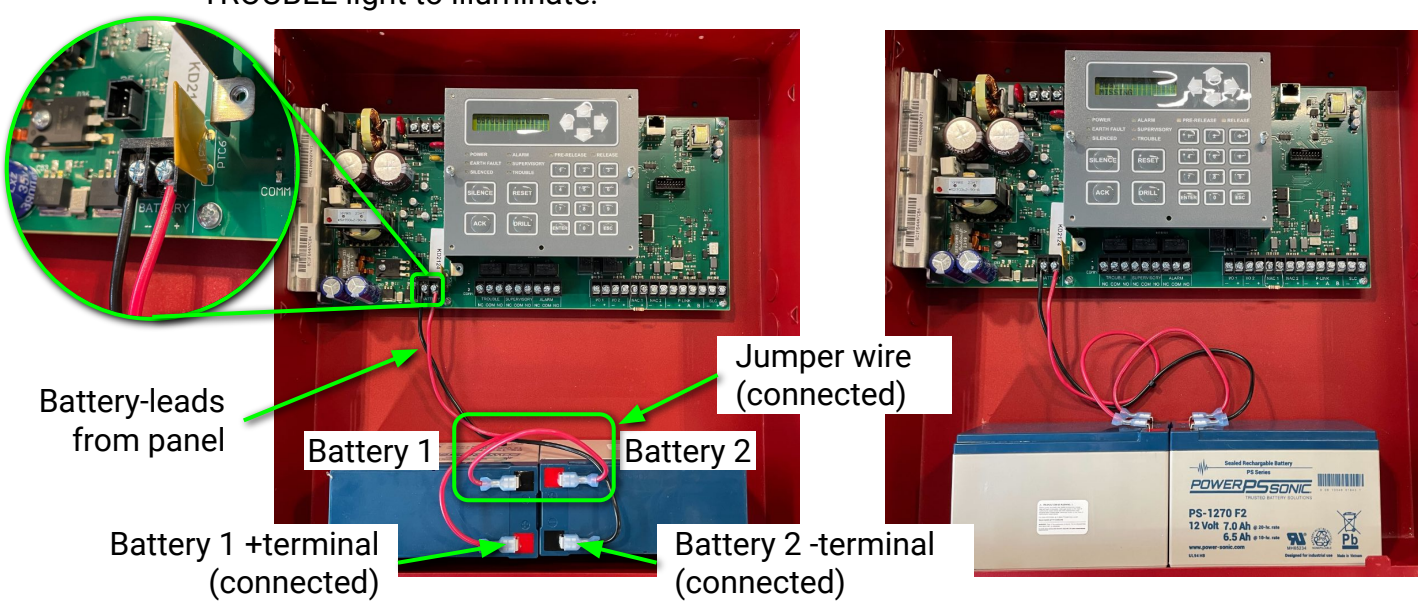
For model numbers containing V2.3: Open the Battery Rack right-side door. Remove the black rubber covers on each MSD before performing the actions instructed in the CATL 280 Ah Liquid Cooling Rack User's Manual section 5.7 "MSD Installation" to install and lock each MSD for 5 modules. Close and lock the Battery Rack right-side door when finished.
Note: the CATL User Manual refers to 8 modules/MSDs even though there are only 5 in PN Nexus.

⚠ **WARNING!** *Ensure that the MSDs are locked.*

COMMISSIONING

COMMISSIONING INSTRUCTIONS (6/9)

19. ⚠ **WARNING!** *Only use the fire panel batteries specifically approved by Electric Era; risk of explosion if using the incorrect battery type.*
To test the fire panel and reconnect backup batteries:
    a. Contact an Electric Era remote operator at 1-(507)-702-0312 and request that they put the fire system in “test” mode. Wait for their confirmation before proceeding.
    b. Open the Control Enclosure door to allow access to the fire panel located on the door. Using the fire panel door key, unlock and open the fire panel door. Using a Philips screwdriver, unscrew the two screws holding the fascia plate to the fire panel and remove the fascia plate.
    c. Place two fire panel batteries provided (Electric Era P/N 301-01263) in the bottom of the fire panel and connect fire panel’s black battery-lead between the negative terminal of Battery 2 (right battery) and the negative battery input terminal on the fire panel.
    d. Connect fire panel’s red battery-lead between the positive terminal of Battery 1 (left battery) and the positive battery input terminal on the fire panel.
    e. Connect the jumper-lead from the negative terminal of Battery 1 to the positive terminal of Battery 2, to supply battery power to the fire panel. Wait for the fire panel’s TROUBLE light to illuminate.

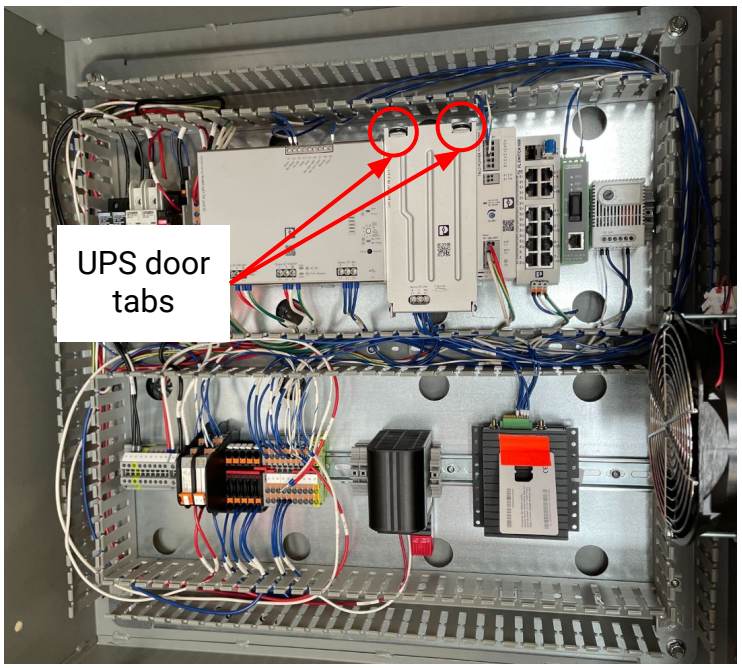


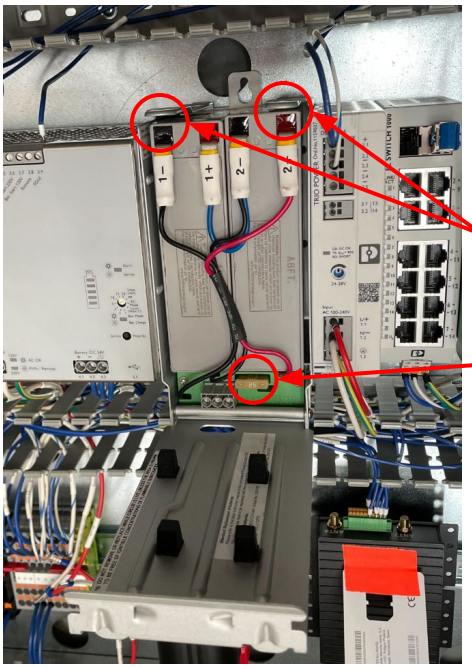
    f. Contact an Electric Era remote operator at 1-(507)-702-0312 and confirm that the fire communicator is online.
    g. Orient both batteries in the fire panel with the battery terminals on top of the batteries, as shown to the right. Mark a visible “placed into service” date on the batteries. Close and lock the fire panel door using the fire panel door key.

COMMISSIONING

COMMISSIONING INSTRUCTIONS (7/9)

20. In the lower right corner of the Control Enclosure, open the door to the UPS battery by squeezing the tabs at the top. Insert the fuse attached to the UPS battery into the fuse socket at the base of the battery. Ensure the fuse is fully inserted into the socket. Close the UPS battery door so the tabs at the top re-latch. Close and lock the Control Enclosure door.





21. **WARNING!** *Follow safe lifting practices with trained personnel according to the instructions in this document, PowerNode Nexus Security Cage Manual instructions, regulations, and best practices.*
Site-dependent: If a PN Nexus Security Cage is chosen to be installed, close and lock both Battery Rack doors and then install the Security Cage as per the “PowerNode Nexus Security Cage Installation Instructions” section of the PowerNode Nexus Security Cage Manual.

COMMISSIONING

COMMISSIONING INSTRUCTIONS (8/9)

Post-energization steps: may be completed after energizing AC power on site

22. ⚠️ **DANGER!** *Do not proceed until the Battery Rack right-side door and Control Enclosure door are closed & locked, and the inverter front panel is installed.*
    a. Remove lock out/tag out from the Battery Rack Isolating Switch QS1, and move QS1 to the "ON" Position.
    b. Remove lock out/tag out from 480V 1-phase control power at source, and energize it.
    c. Remove lock out/tag out from 480V 3-phase power at source, and energize it.
    d. Remove lock out/tag out for inverter AC & inverter DC disconnect switches, and move both switches to ON. Wait 3 minutes, and then check that the Battery Rack indicator lights are as shown below before proceeding.

System status	Indicator light for secondary circuit 🟢	Indicator light for primary circuit 🔴	Alarm indicator light 🟡
Power ON	Green light is ON	Red light is OFF	Yellow light is OFF

23. Contact an Electric Era remote battery system operator at 1-(507)-702-0312 and request that they provide measurements of the following system parameters. Record the parameters provided where applicable:
    a. Maximum temperature: _____
    Minimum temperature: _____
    Confirm that the difference between the maximum and minimum temperatures is ≤5° C before proceeding.
    b. Maximum voltage: _____
    Minimum voltage: _____
    Confirm that the difference between the maximum and minimum voltages is ≤20mV before proceeding.
    c. Confirm the bus voltage is in the normal range (728V - 936V).
    d. Request that the remote operator remotely perform an end-to-end alert test, check that the alert system is operational for the unit, and confirm that no unexpected alerts are firing from the system.
24. Close and lock the left Battery Rack door. Check that all PN Nexus doors are now closed & locked.

COMMISSIONING

COMMISSIONING INSTRUCTIONS (9/9)

Full system test steps: completed after all prior steps

25. *Prerequisite:* If not done already, complete any installation steps required to bring the rest of the charging station site to full operability.
When charging station installation is complete, request that an Electric Era remote operator at 1-(507)-702-0312 remotely send PowerNode Nexus into normal running mode with site power limit set to minimum to do initial power testing. Pre-condition and fast-charge an EV at a minimum power of 30 kW for 10 minutes at minimum. When instructed by the Electric Era remote operator, stop charging the EV and allow the PN Nexus battery to recharge for 10 minutes minimum. After letting the PN Nexus battery recharge for that duration, confirm with the Electric Era remote operator that there were no generated faults.
26. Contact an Electric Era remote operator at 1-(507)-702-0312 and request that they take the PN Nexus fire system out of “test” mode. Wait for their confirmation.

COMMISSIONING

COMMISSIONING CHECKLIST (1/7)

The checklist below contains critical checkpoints in the commissioning process. One column is provided to record any measured values/recorded data where applicable and/or any errors as they arise. See “Commissioning Instructions” for detailed instructions corresponding to these steps.

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
1	Concrete pad preparation	Concrete Pad is prepared per Site Design Guide’s (SDG) Mechanical Installation Instructions step 1; conduits & anchors installed	☐ OK ☐ NG	
2	Guard post installation	If required by site-specific plans, guard posts are installed per SDG’s Mechanical Installation Instructions step 2	☐ OK ☐ NG ☐ N/A	
3	Key storage	Battery Rack, Fire Panel, Control Enclosure padlock, and other applicable keys stored in secure lockbox on-site, readily accessible only by authorized personnel; key location recorded & shared with Electric Era representative	☐ OK ☐ NG	
4	Battery Rack unpacking	Battery Rack is unpacked from packaging	☐ OK ☐ NG	
5a	Battery Rack enclosure inspection	Battery Rack enclosure is flat, undeformed, has a uniform color, and has no damage to the enclosure body or exterior coating	☐ OK ☐ NG	
5b	Battery Rack graphics inspection	Battery Rack logos, labels, and indications are clear and not faded or damaged	☐ OK ☐ NG	
6	Ancillary Rack unpacking	Ancillary Rack (Frame & Roof Weldment) is unpacked	☐ OK ☐ NG	

COMMISSIONING

COMMISSIONING CHECKLIST (2/7)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
7a	Ancillary Rack enclosure inspection	No damage or deformation to body or coating of Control Enclosure, Inverter, and Ancillary Rack's structural members	☐ OK ☐ NG	
7b	Ancillary Rack screws inspection	The two Ancillary Rack screws indicated in instructions are not loose, damaged, etc.	☐ OK ☐ NG	
7c	Ancillary Rack label inspection	Ancillary Rack logos & labels are clear	☐ OK ☐ NG	
7d	Ancillary Rack conduit fitting inspection	All (6x) Ancillary Rack conduit fittings are tight at interface to both conduits and enclosures	☐ OK ☐ NG	
8	Signage	All signage is applied according to "signage" section and other site requirements	☐ OK ☐ NG	
9a	Battery Rack & Ancillary Rack anchors installed	9x Battery Rack anchors installed; 8x Ancillary Rack anchors installed	☐ OK ☐ NG	
9b	Security Cage anchors installed	Site-dependent: where applicable, 6x Security Cage anchors installed	☐ OK ☐ NG ☐ N/A	
10	Battery Rack mechanically installed	Battery Rack mechanically installed; 9x Battery Rack anchor nuts tightened to spec	☐ OK ☐ NG	
11	Ancillary Rack mechanically installed	Ancillary Rack installed per SDG's Mechanical Installation Instructions steps 5 & up; nuts torqued to spec	☐ OK ☐ NG	

COMMISSIONING

COMMISSIONING CHECKLIST (3/7)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
12a	Battery Rack QS1 switch OFF	Battery Rack QS1 switch is set to OFF and locked out/tagged out (LOTO)	☐ OK ☐ NG	
12b	Inverter AC & DC disconnect switches OFF	Inverter AC & DC switches are set to OFF and LOTO	☐ OK ☐ NG	
12c	Main 480V source de-energized	480V AC 3-phase source de-energized & LOTO	☐ OK ☐ NG	
12d	Control 480V source de-energized	480V AC 1-phase source de-energized & LOTO	☐ OK ☐ NG	
13a	480V AC 3-phase power to inverter connection complete	480VAC power & 480VAC ground connected properly; phase rotation is clockwise per SDG; lugs torqued to spec as per SDG	☐ OK ☐ NG	
13b	480V AC 3-phase power to inverter conduit connected	Conduit connected to inverter	☐ OK ☐ NG	
14a	480V AC 1-phase power to Control Enclosure connection complete	480VAC power & 480VAC ground connected properly; terminals tightened and pull-tested	☐ OK ☐ NG	
14b	480V AC 1-phase power to inverter conduit connected	Conduit connected to Control Enclosure	☐ OK ☐ NG	
15a	Ethernet cables from dispensers to control enclosure connection complete	Ethernet cables from dispensers are connected to correct locations on Ethernet switch	☐ OK ☐ NG	
15b	Ethernet cables from dispensers to control enclosure conduit connected	Conduit connected to control enclosure	☐ OK ☐ NG	

COMMISSIONING

COMMISSIONING CHECKLIST (4/7)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
16a	Battery Rack right cable entry hole grommet applied	Precut grommet is applied to Battery Rack right cable entry hole	☐ OK ☐ NG	
16b	Auxiliary power & communications cables from control enclosure to Battery Rack conduit secured	Cable harnesses are pulled through conduit & secured with cable ties to tie points	☐ OK ☐ NG	
16c	Auxiliary power & communications cables from control enclosure to Battery Rack connection complete	Auxiliary power & communications cables JXH1 & JX1/JX3 from control enclosure to Battery Rack are connected in correct locations	☐ OK ☐ NG	
17a	Battery Rack left cable entry slot grommet applied	Precut grommet is applied to Battery Rack left cable entry slot	☐ OK ☐ NG	
17b	Ground cable from inverter to Battery Rack connection complete	Inverter ground cable is routed behind Battery Rack foot & through Battery Rack left cable entry slot, and is connected in correct location & torqued to spec as per SDG	☐ OK ☐ NG	
17c	High-voltage DC power cables connected to Battery Rack	High-voltage DC power cables HV+ & HV- are pulled through conduit and connected to proper locations at Battery Rack, and locked in place	☐ OK ☐ NG	
17d	High-voltage DC power cables connected to inverter	High-voltage DC power cables HV+ & HV- have compression lugs installed and torqued to HV DC bus bars in inverter per SDG, with small ring terminals included	☐ OK ☐ NG	
17e	Battery Rack cable entry ports sealed	Both Battery Rack cable entry ports sealed with sealing compound	☐ OK ☐ NG	

COMMISSIONING

COMMISSIONING CHECKLIST (5/7)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
17f	Inverter safety shield installation	Inverter safety shield is installed.	☐ OK ☐ NG	
17g	Inverter front panel installation	Inverter front panel is installed & torqued to spec as per the SDG.	☐ OK ☐ NG	
18	MSD/DC link cable installation	1 DC link cable installed and locked in Battery Rack (for model numbers containing V2.2) *or* 5 MSDs installed and locked in Battery Rack (for model numbers containing V2.3)	☐ OK ☐ NG	
19a	Fire system in test mode	Fire system is in test mode, confirmed by remote operator	☐ OK ☐ NG	
19c	Fire panel black battery lead connected	Fire panel's black battery-lead connected to Battery 2's negative terminal	☐ OK ☐ NG	
19d	Fire panel red battery lead connected	Fire panel's red battery-lead connected to Battery 1's positive terminal	☐ OK ☐ NG	
19e	Fire panel battery jumper leads connected	Fire panel battery's jumper leads connected from Battery 1's negative terminal to Battery 2's positive terminal; fire panel's TROUBLE light is illuminated	☐ OK ☐ NG	
19f	Fire communicator is online	Remote operator confirms that fire communicator is online	☐ OK ☐ NG	

COMMISSIONING

COMMISSIONING CHECKLIST (6/7)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
19g	Fire panel batteries positioned & marked	2 fire panel batteries inserted into fire panel in correct orientation & marked with “placed into service” date	☐ OK ☐ NG	
20	UPS battery fuse installed	UPS battery fuse installed; UPS battery door closed & latched	☐ OK ☐ NG	
21	Security Cage installed	Site-dependent: where applicable, PN Nexus Security Cage installed per Security Cage Manual’s Installation Instructions; concrete anchors & cage bolts torqued to spec	☐ OK ☐ NG ☐ N/A	
22a	Battery Rack primary circuit energized	Battery Rack QS1 switch set to ON & LOTO removed	☐ OK ☐ NG	
22b	Control power source energized	480V 1-phase power energized & LOTO removed	☐ OK ☐ NG	
22c	Main power source energized	480V 3-phase power energized & LOTO removed	☐ OK ☐ NG	
22d	Inverter AC & DC switches energized	Inverter AC & DC switches set to ON & LOTO removed; Battery Rack indicator lights match green ON, red OFF, yellow OFF	☐ OK ☐ NG	

COMMISSIONING

COMMISSIONING CHECKLIST (7/7)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
23a	System parameter check temperature	Max & Min temperature recorded; difference between max & min temperature ≤5°C as indicated by remote supervising station	☐ OK ☐ NG	
23b	System parameter check voltage	Max & Min voltage recorded; difference between max & min voltage ≤20mV as indicated by remote supervising station	☐ OK ☐ NG	
23c	Battery Rack bus voltage check	Battery Rack bus voltage between 728V-936V	☐ OK ☐ NG	
23d	Remote manual alert & system health check	Remote operator confirms alert system is operational & no unexpected alerts from system	☐ OK ☐ NG	
24	Doors locked	All PN Nexus doors are closed & locked	☐ OK ☐ NG	
25	Test with electric vehicle	Remote operator confirms no faults generated after PN Nexus discharge/charge performed as per instructions	☐ OK ☐ NG	
26	Fire system out of test mode	Remote operator confirms that fire system is taken out of test mode	☐ OK ☐ NG	

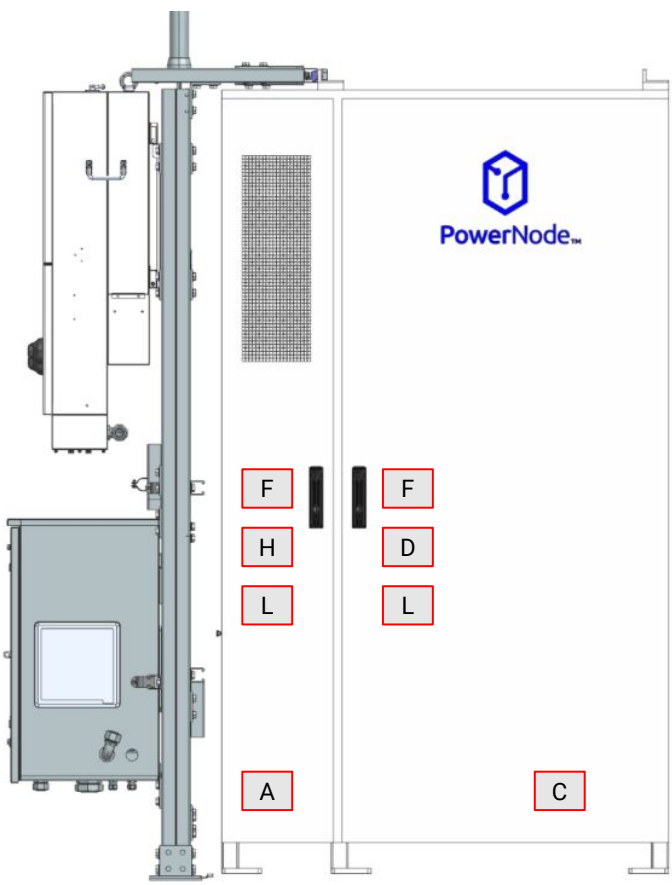
COMMISSIONING

SIGNAGE (1/4)

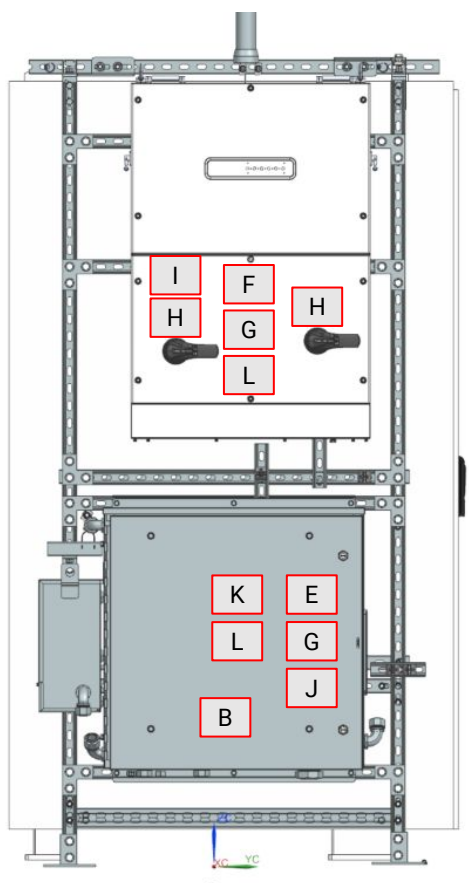
See below for content and location that signage must be placed on PowerNode Nexus.

Note that additional signage not covered in this document may also need to be labeled in the field according to regulations and site-specific plans.

Front View



Side View



COMMISSIONING

SIGNAGE (2/4)

Label ID	Label Text
A	[See following image]
B	[See following image]
C	ENERGY STORAGE SYSTEM TYPE OF TECHNOLOGY: Lithium Iron Phosphate SPECIAL HAZARDS: Fire, Explosion, Reignition, Toxic Fumes from Fire/Damage EMERGENCY CONTACT: 1-229-696-4312 SUPPRESSION SYSTEM: Automatic Aerosol Extinguisher
D	DANGER ARC FLASH HAZARD 22 inches Arc Flash Protection Boundary 2 cal/cm^2 Incident Energy Flash Risk at 16 inches SHOCK RISKS 1000 V DC - Shock Risk- Door Open & MSD Removed 0 - Glove Class 42 inches - Limited Approach Boundary 12 inches - Restricted Approach Boundary APPROPRIATE PPE REQUIRED FOR BOTH ARC FLASH AND SHOCK RISKS LOCATION: Calculated 12/11/2023
E	WARNING ARC FLASH HAZARD 27 inches Arc Flash Protection Boundary 9 cal/cm^2 Incident Energy Flash Risk at 8 inches SHOCK RISKS 480 V AC - Shock Risk- Covers/Doors Open 00 - Glove Class 42 inches - Limited Approach Boundary 12 inches - Restricted Approach Boundary APPROPRIATE PPE REQUIRED FOR BOTH ARC FLASH AND SHOCK RISKS LOCATION: Calculated 12/11/2023
F	DANGER Hazardous voltage will cause severe injury or death. LOCK OUT POWER before servicing.
G	DANGER Hazardous voltage. Devices inside this panel contain stored electrical energy. Make sure devices are properly discharged before servicing.
H	ENERGY STORAGE SYSTEM DISCONNECT NOMINAL OUTPUT VOLTAGE 832VDC AVAILABLE FAULT CURRENT 12.2kADC

COMMISSIONING

SIGNAGE (3/4)

Label ID	Label Text
I	WARNING: ELECTRIC SHOCK HAZARD TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
J	WARNING HAZARDOUS VOLTAGE FED BY TWO SOURCES DISCONNECT ALL SOURCES OF POWER BEFORE SERVICING
K	WARNING Authorized personnel only.
L	[See following image]

COMMISSIONING

SIGNAGE (4/4)

Label “A” (adhesive-backed aluminum plate):
Note: Model Number, Serial Number, & Date of Manufacture may vary for each unit.

PowerNode™

Model Number	
Serial Number	
Max Input Current	Inverter: 150 A Control Enclosure: 20 A
Max Output Current	Inverter: 150 A
Max Input & Output Voltage	504 VAC
Min Input & Output Voltage	456 VAC
Max Input Power	Inverter: 125 kW Control Enclosure: 7.5 kW
Max Output Power	Inverter: 125 kW
Max Output Energy	237 kWh
Number of Phases	3
Frequency	60 Hz
Short Circuit Current Rating	100 kA
Operating Ambient Temperature	-4°F to 113°F (-20°C to 45°C)
Storage Temperature	-4°F to 104°F (-20°C to 40°C)
Ingress Rating	Battery: IP66 Inverter: NEMA 3R Control Enclosure: NEMA 3R DC Combiner: NEMA 4 / IP66
Weight	6,526 lb. (2,960 kg)
Fire Suppression System	Automatic Aerosol Extinguisher
Type of Technology	Lithium Iron Phosphate
Emergency Contact Information	1-229-696-4312
Date of Manufacture	
Do Not Use In Residential Dwellings	

ELECTRIC ERA
Technologies, Inc.
Seattle, WA

Label “B” (adhesive-backed aluminum plate):

PowerNode™

Max Input Current	20 A
Input Voltage	480 VAC
Max Input Power	7.5 kW
Number of Phases	1
Frequency	60 Hz
Short Circuit Current Rating	200 kA RMS SYM @ 600 VAC
Operating Ambient Temperature	-4°F to 113°F (-20°C to 45°C)
Storage Temperature	-4°F to 104°F (-20°C to 40°C)
Weight	200 lb.
Ingress Rating	NEMA 3R
Electrical Wiring Diagram ID	920-01598

ELECTRIC ERA
Technologies, Inc.
Seattle, WA

Label “L”:

OPERATION

MAIN OPERATIONAL FUNCTIONALITY

- The Energy Storage Management System (ESMS) can automatically detect power draw at the site and battery status such as state of charge (SoC), temperature, etc., in order to to determine whether to discharge into the local grid to bring down the realized power draw to the grid, or to recharge below an economic set point and a safety set point.
- The ESMS can detect errors such as battery overtemperature, undertemperature, overcharge, overdischarge, and failure or loss of communication between various components and systems in order to protect the system, typically by opening the battery contactors and notifying the operator in order to troubleshoot or initiate safety procedures.
- The battery system has functions such as insulation detection, high-voltage sampling, and status check of safety devices such as MSD and fuse. When the battery fails, the system will report and limit the charge or discharge current or power, delay the opening of the contactor, and protect the safety of the power system.
- The battery system can control the cooling, heating, and temperature settings of the liquid cooling unit.
- The Battery Rack is equipped with a fire extinguishing system which can detect the temperature and smoke status in the Battery Rack in real time, sound an alarm inside the enclosure, and automatically dispense an extinguishing aerosol after a time delay if both smoke and heat detectors are triggered, to prevent fire safety accidents such as accidental battery fire. The alarm is also transmitted to an approved remote supervising station in compliance with NPFA 72 to facilitate further response as needed.
    - Extinguisher: Stat-X Fire Suppression System part no. 15120 - see “Stat-X Fire Suppression Systems Design, Installation, Operation, and Maintenance Manual” for details
    - Smoke detector: Apollo Series 65a Photoelectric Smoke Detector with Flashing LED and magnetic test (Part No. 55000-326), UL 268 listed
    - Heat detector: Apollo Series 65a Heat Detector - 170°F with Flashing LED (Part No. 55000-142USA), UL 521 listed, 135°F alarm threshold, 1 second RTI
    - Fire control panel & alarm: Potter ARC-100 - includes secondary power supply for 24 hours in standby and 2 hours in alarm- see “Sigma A-XT Releasing Fire Control Panel Installation and Operation Manual” for details
- The ESMS’s functions can be controlled manually and remotely by an Electric Era operator if needed to perform non-automated tasks.

OPERATION

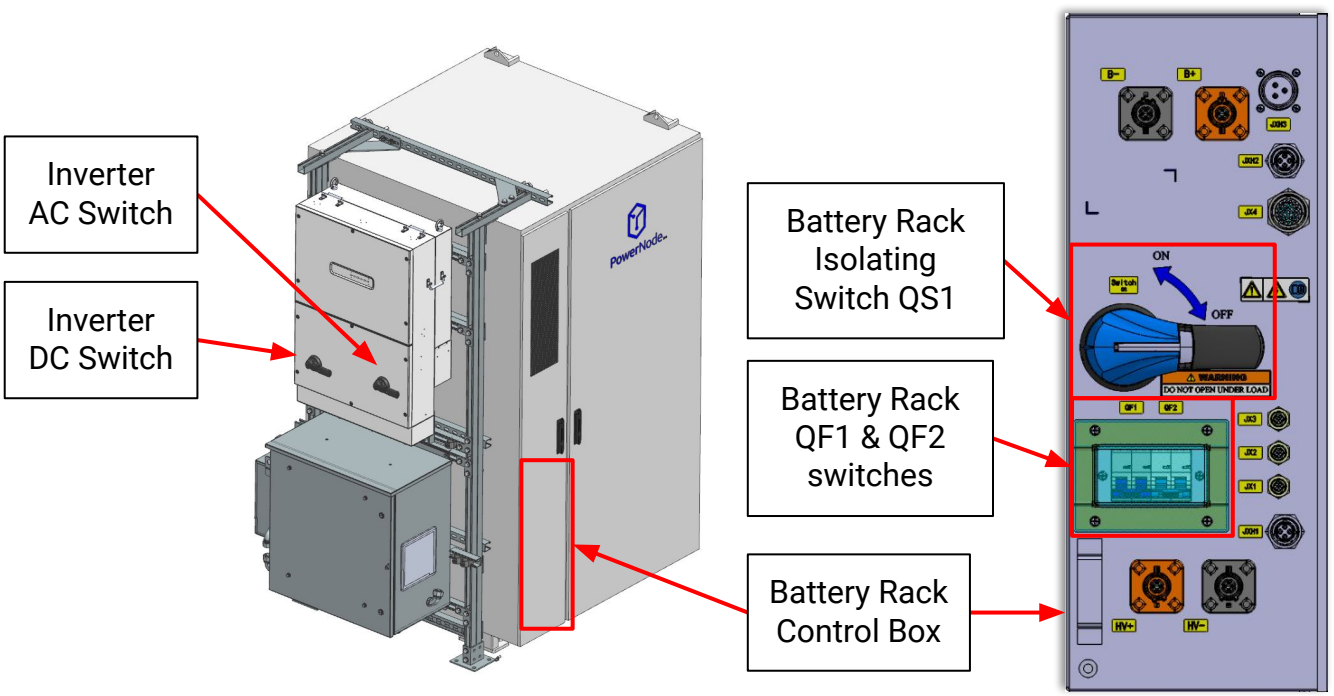
SYSTEM OPERATING SWITCHES AND DISCONNECTS

Main power is supplied to PowerNode Nexus from a 480V AC 3-phase source, and controls power is supplied from a 480V AC 1-phase source, both of which must be installed with a disconnecting means.

The Battery Rack secondary/low-voltage circuit is controlled by the QF1 & QF2 switches on the Battery Rack control box. QF1 controls the Battery Rack control system, and QF2 controls the chiller. The QF1 & QF2 switches are “On” when up, and “Off” when down. Accessing the QF1 & QF2 switches requires temporarily removing a moisture-protection metal cover with Phillips-head screws, which must be reinstalled after completing work.

The Battery Rack primary/high-voltage DC isolating switch QS1 is on the Battery Rack control box as shown below. The QS1 switch disconnects the Battery Rack from the inverter, and cannot be operated under load. The QS1 switch is “On” when in the vertical position, and “Off” when in the horizontal position.

The inverter’s AC switch and DC switch locations are shown below. The AC switch controls the connection between the inverter and its 480V AC 3-phase power source. The DC switch controls the inverter’s connection to the Battery Rack. Both inverter switches are “On” when in the vertical position and “Off” when in the horizontal position.



OPERATION

SYSTEM AND SOURCE STARTUP (1/2)

WARNING! *Always follow the precautions in the "General Precautions" section of this manual.*

To start up/energize PowerNode Nexus, perform the following steps in order:

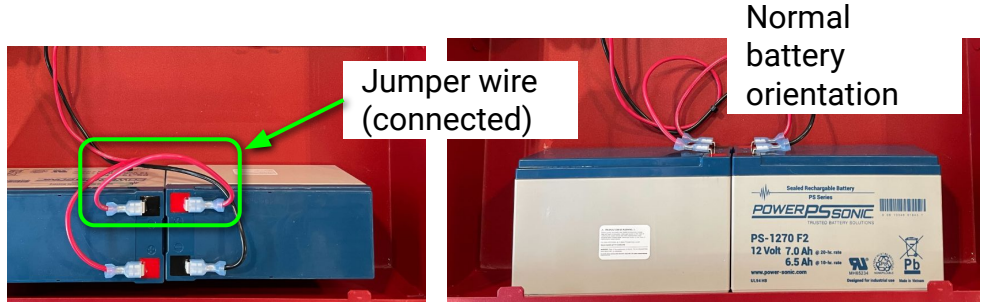
1. Ensure that the right-side Battery Rack door is closed and locked.

DANGER! *Do not proceed until the right-side Battery Rack door is closed and locked.*

2. Check that the Battery Rack indicator lights are as shown below. If indicator lights do not match, shut the system down according to the "System and Source Shutdown" instructions of this document, and restart the procedure.

System status	Indicator light for secondary circuit 🟢	Indicator light for primary circuit 🔴	Alarm indicator light 🟡
Power OFF	Green light is OFF	Red light is OFF	Yellow light is OFF

3. Contact an Electric Era remote operator at 1-(507)-702-0312 and request that they put the fire system in "test" mode. Wait for their confirmation before proceeding.
4. If the fire panel batteries in the Control Enclosure were disconnected when the system was shut off (e.g. when system is shut down for >24 hours), perform the following actions. If the fire panel batteries were not disconnected, skip to the next step.
   a. Open the Control Enclosure door to allow access to the fire panel located on the door. Using the fire panel door key, unlock and open the fire panel door. Use a Philips screwdriver to remove the two screws holding the fascia plate to the panel and remove the fascia plate. Shift the two batteries near the bottom of the panel to expose their terminals. Connect the jumper-lead from the negative terminal of Battery 1 to the positive terminal of Battery 2 to supply battery power to the fire panel. Wait for the fire panel's TROUBLE light to illuminate.
   b. Contact an Electric Era remote operator at 1-(507)-702-0312 and confirm that the fire communicator is online. Shift the batteries back into normal position in the panel with the terminals on top of the batteries. Reinstall the fascia plate.
   c. Close and lock the fire panel door using the fire panel door key. Close and lock the Control Enclosure door.



OPERATION

SYSTEM AND SOURCE STARTUP (2/2)

5. Remove lock out/tag out from the Battery Rack Isolating Switch QS1, and move QS1 to the "On" position.
6. Remove lock out/tag out from the 480V AC 1-phase source that feeds control power to the Control Enclosure, and energize the source.
7. Remove lock out/tag out from the 480V AC 3-phase source that feeds the inverter, and energize the source.
8. Remove lock out/tag out from the inverter AC switch and DC switch, and move both inverter switches to the "On" position. Wait 3 minutes, and then check that the Battery Rack indicator lights are as shown below.
   If the indicator lights do not match, contact an Electric Era remote operator at 1-(507)-702-0312 to troubleshoot.
   If the indicator lights do match, contact an Electric Era remote operator at 1-(507)-702-0312 and request that they set the system to "Active" mode and that they confirm the system is operating normally with no unexpected alarms before proceeding.

System status	Indicator light for secondary circuit 🟢	Indicator light for primary circuit 🔴	Alarm indicator light 🟡
Power ON	Green light is ON	Red light is OFF	Yellow light is OFF

9. ⚠️ **WARNING!** *Do not proceed until the remote operator confirms there are no alarms in the previous step.*
   Contact an Electric Era remote operator at 1-(507)-702-0312 and request that they take the fire system out of "test" mode. Wait for their confirmation before proceeding.
10. Close and lock the Battery Rack left-side door. PowerNode Nexus is now ready for operation.

OPERATION

SYSTEM AND SOURCE SHUTDOWN (1/2)

Note: When there is charging and discharging flow in the main circuit of the battery system, the system will not be able to carry out the system shutdown operation.

⚠ **WARNING!** *Always follow the precautions in the "General Precautions" section of this manual.*

To shut down PowerNode Nexus, perform the following steps in order:

1. Ensure that the right-side Battery Rack door is closed and locked. Open the left-side Battery Rack door.

⚠ **DANGER!** *Do not proceed until the right-side Battery Rack door is closed and locked.*

2. Contact an Electric Era remote operator at 1-(507)-702-0312 and request that they put the system in "Standby" mode. Then check that the Battery Rack indicator lights are as shown below before proceeding. If the indicator lights do not match, request that the remote operator troubleshoot until the lights do match before proceeding.

System status	Indicator light for secondary circuit 🟢	Indicator light for primary circuit 🔴	Alarm indicator light 🟡
Standby	Green light- any status ok	Red light is OFF	Yellow light- any status ok

3. Contact an Electric Era remote operator at 1-(507)-702-0312 and request that they put the fire system in "test" mode. Wait for their confirmation before proceeding.
4. Move the Battery Rack Isolating Switch QS1 to the "Off" Position and lock out/tag out.
5. Close and lock the Battery Rack left-side door. Both Battery Rack doors should now be closed and locked.
6. Move the inverter AC switch and DC switch to the "Off" position, and lock out/tag out both switches.
7. De-energize and lock out/tag out the 480V AC 3-phase source that feeds the inverter.
8. De-energize and lock out/tag out the 480V AC 1-phase source that feeds control power to the Control Enclosure.

OPERATION

SYSTEM AND SOURCE SHUTDOWN (2/2)

⚠ **DANGER!** *The inside of the Control Enclosure still has hazardous voltage from the UPS. Wait 30 minutes for the UPS to shut off its 230V AC output before opening the Control Enclosure.*

9. Check that the Battery Rack indicator lights are as shown below before proceeding.

System status	Indicator light for secondary circuit 🟢	Indicator light for primary circuit 🔴	Alarm indicator light 🟡
Power OFF	Green light is OFF	Red light is OFF	Yellow light is OFF

10. ⚠ **DANGER!** *Do not perform this step until 30 minutes after de-energizing the system.*
If the system is going to be shut down for 24 hours or more, then perform the following actions to disconnect the fire panel batteries. If the system is not going to be shut down for 24 hours or more, skip this step.
    a. Open the Control Enclosure door to allow access to the fire panel located on the door. Using the fire panel door key, unlock and open the fire panel door. Using a Philips screwdriver, remove the two screws securing the fascia plate, and remove the fascia plate.
    b. Shift the two batteries near the bottom of the panel to expose their terminals. To remove battery power from the fire panel, disconnect the jumper wire that connects the terminals of the two batteries together.
    c. Reinstall the fascia plate. Close and lock the fire panel door using the fire panel door key. Close and lock the Control Enclosure door.

OPERATION

OPERATING MODES

Mode	Description	Indicator	Set By	Function
Active	All circuits closed, all devices on, batteries ready to charge or discharge	Command Console reports “OK” battery status	Remote command from Electric Era operator	Ready to autonomously charge or discharge
Standby	Contactors open, safety & control computing devices active	Command Console reports “Out of Service” battery status	Remote command from Electric Era operator	Troubleshooting, adjusting parameters
Faulted	Contactors open, safety & control computing devices active	Command Console reports “Faulted” battery status	Automatically by health-check software on PowerNode in the event of a fault Requires remote command from Electric Era operator to exit	Automatic safe mode to await operator troubleshooting

OPERATION

POTENTIAL OPERATING ERRORS (1/3)

Condition	System Automated Response	Operator Alerting Method	Equipment Host Alerting Method	Operator Response	Equipment Host Response
The fire suppression system's heat OR smoke detector reports an active condition.	The inverter is commanded to stop all operation. The fire suppression system produces an alarm signal received at an approved remote supervising station for fire monitoring.	Signal issued to the approved remote supervising station and alert issued to the operator on call.	Remote supervising station contacts equipment host promptly in an approved fashion. Status is updated in the browser-accessed command console to indicate the battery is not operational.	Trained remote supervising station operator evaluates signal for false alarm and notifies emergency communication center in an approved fashion.	Follow fire emergency procedures if instructed by operator.
The fire suppression system's heat AND smoke detector reports an active condition.	The inverter is commanded to stop all operation. The fire suppression system activates and produces an alarm signal received at an approved remote supervising station for fire monitoring.	Signal issued to the approved remote supervising station and alert issued to the operator on call.	Remote supervising station contacts equipment host promptly in an approved fashion. Status is updated in the browser-accessed command console to indicate the battery is not operational.	Trained remote supervising station operator evaluates signal for false alarm and notifies emergency communication center in an approved fashion.	Follow fire emergency procedures if instructed by operator.
The MBMU reports an overvoltage or undervoltage condition while the system is live.	The battery contactors are opened by the MBMU automatically via its built-in sequence, terminating all battery activity.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the battery is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to close contactors (go live) and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.

OPERATION

POTENTIAL OPERATING ERRORS (2/3)

Condition	System Automated Response	Operator Alerting Method	Equipment Host Alerting Method	Operator Response	Equipment Host Response
The MBMU reports an over-temperature or under-temperature while the system is live.	The battery contactors are opened by the MBMU automatically via its built-in sequence, terminating all battery activity.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the battery is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to close contactors (go live) and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.
The MBMU reports a failure while transitioning to a live state (i.e. closing contactors through its internal process).	The MBMU returns to a state where the contactors are open, automatically.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the battery is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to close contactors (go live) and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.
The MBMU does not receive a command from the EMS for more than 3 seconds while the contactors are closed (live).	The battery contactors are opened via the MBMU's built-in watchdog capability.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the battery is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to close contactors (go live) and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.

OPERATION

POTENTIAL OPERATING ERRORS (3/3)

Condition	System Automated Response	Operator Alerting Method	Equipment Host Alerting Method	Operator Response	Equipment Host Response
The EMS does not receive inverter telemetry for more than 3 seconds while the contactors are closed (live).	The battery contactors are opened via a command to the MBMU.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the energy storage system is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to close contactors (go live) and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.
The EMS does not receive MBMU telemetry for more than 3 seconds while the contactors are closed (live).	The inverter is commanded to disengage DC, which will prevent any activity to the non-responsive HV system.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the energy storage system is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to reset and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.
The MBMU reports an overcurrent condition while the system is live.	The battery contactors are opened the MBMU automatically via its built-in sequence, terminating all battery activity.	Alert issued to the operator on call.	Status is updated in the browser-accessed command console to indicate the energy storage system is not operational.	The operator uses telemetry delivered over the system's Internet connection to diagnose the issue. If the issue can be fixed remotely via remote command, the operator performs it and then commands the unit to close contactors (go live) and return to regular operation. Otherwise the operator contacts operations and maintenance (O&M) personnel as necessary to visit the site for electrical or mechanical repair work.	No response required.

EMERGENCY OPERATIONS

FIRE / EXPLOSION

⚠️ **WARNING!** *This entire section is inherently hazardous. Follow instructions in this manual in compliance with regulations and instructions from local authorities where applicable.*

1. Evacuate the area to safety.
2. Delimit the safety isolation zone.
3. Call emergency services.
4. If you were exposed to smoke/vapors/battery contents or experienced burns, seek medical attention immediately. See Safety Data Sheet for the relevant CATL Battery Rack model for first-aid measures depending on the level of exposure.
5. If you inhaled or contacted aerosol from the Battery Rack's fire extinguishing system, refer to MSDS for "Stat-X Fire Suppression Aerosol Generators - Models 30 thru 2500" (which is a subsection in the document "Stat X Fire Suppression Systems Design, Installation, Operation, and Maintenance Manual") for first aid measures.
6. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to notify them of the situation.
7. When it is safe to do so without coming near the dangerous area around the battery system, authorized personnel should move the disconnect switch to "Off" on the 480V AC 3-phase source that feeds the Battery Rack from a remote panel, and lock out/tag out the switch. Do not approach the battery unit itself to use any of its built-in disconnect switches.
8. Emergency personnel should refer to the "Fire fighting measures" section of the Safety Data Sheet for the relevant CATL Battery Rack model for fire fighting measures for the batteries.
9. If a wire harness is smoking or on fire, emergency personnel should use carbon dioxide or dry powder fire extinguisher to extinguish the fire.
10. If the liquid coolant is on fire, emergency personnel should refer to the Safety Data Sheet for the coolant in the system (see "coolant fluid leak" section of this document for details) for fire fighting, first aid measures, and containment/cleanup measures.
11. Once the fire is extinguished, do not restart or approach the system. The batteries can potentially reignite. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to determine next steps in compliance with local authorities.

EMERGENCY OPERATIONS

FLOODING

⚠️ **WARNING!** *This entire section is inherently hazardous. Follow instructions in this manual in compliance with regulations and instructions from local authorities where applicable.*

If flooding is predicted but has not yet begun, and only if it is safe to do so, authorized personnel should shut off the source and system by following the instructions in the “System and Source Shutdown” section of this manual. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to notify them of the situation. The following steps apply after flooding begins.

1. Evacuate the area to safety, regardless of whether the system is powered on.
2. Delimit the safety isolation zone.
3. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to notify them of the situation.
4. Do not restart or approach the system until the Electric Era emergency contact representative confirms the system’s safety.

EMERGENCY OPERATIONS

COOLANT FLUID LEAK

⚠️ **WARNING!** *This entire section is inherently hazardous. Follow instructions in this manual in compliance with regulations and instructions from local authorities where applicable.*

The following steps are for situations where the module's coolant fluid leaks.

1. For instructions on accidental release measures of coolant fluid, including personal precautions, first aid measures in response to accidental release/exposure, and containment/clean up by authorized personnel, refer to Material Safety Data Sheet (MSDS) for the relevant coolant below depending on conditions. Note that these MSDSs are for fully concentrated ethylene glycol, but the actual system contains a diluted mixture of approximately 50% ethylene glycol/50% water.
    - If no coolant replacement has been done in the field so that the Battery Rack is in as-built condition from the manufacturer, refer to MSDS for "Monoethylene Glycol" from Revlogi Materials / Lopaltech JSLP L70-45. The coolant is pink in color.
    - If the coolant was replaced in the field with "BASF GLYSANTIN G30 Pink," refer to "Safety Data Sheet BASF GLYSANTIN G30 Pink." The coolant is pink in color.
    - If the coolant was replaced with something else, refer to the MSDS for the coolant that is actually in the system.
2. Authorized personnel should move the disconnect switch to "Off" on the 480V AC 3-phase source that feeds the Battery Rack from a remote panel, and lock out/tag out the switch. Do not approach the battery unit itself to use any of its built-in disconnect switches.
3. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to notify them of the issue. Do not restart or approach the system until the Electric Era emergency contact representative confirms the system's safety.

EMERGENCY OPERATIONS

BATTERY ELECTROLYTE LEAKAGE

⚠️ **WARNING!** *This entire section is inherently hazardous. Follow instructions in this manual in compliance with regulations and instructions from local authorities where applicable.*

The following steps are for situations where the internal contents of the battery (electrolyte) leak. Be sure not to mistake coolant fluid leak (see the “coolant fluid leak” section of this document) or water intrusion for a battery electrolyte leak. If there is uncertainty as to whether a battery is leaking, call an Electric Era emergency contact representative at 1-(229)-696-4312 to troubleshoot.

1. Evacuate the area to safety.
2. Delimit the safety isolation zone.
3. Call emergency services.
4. If you were exposed to the battery contents (including through vapor inhalation), seek medical attention immediately. See Safety Data Sheet for the relevant CATL Battery Rack model for first-aid measures depending on the level of exposure.
5. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to notify them of the situation.
6. When it is safe to do so without coming near the dangerous area around the battery system, authorized personnel should move the disconnect switch to “Off” on the 480V AC 3-phase source that feeds the Battery Rack from a remote panel, and lock out/tag out the switch. Do not approach the battery unit itself to use any of its built-in disconnect switches.
7. Refer to the “Accidental Release Measures” section of the Safety Data Sheet for the relevant CATL Battery Rack model for further emergency procedures, measures to be taken by emergency personnel, and clean-up methods to be followed by emergency personnel.
8. Once the leakage is contained, do not restart or approach the system. Call the Electric Era emergency contact representative at 1-(229)-696-4312 to determine next steps in compliance with local authorities.

DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (1/10)

⚠️ **WARNING!** *The following instructions apply to decommissioning an undamaged PowerNode Nexus. If PowerNode Nexus is damaged, the decommissioning steps must be reevaluated with Electric Era and relevant authorities depending on the situation.*

⚠️ **WARNING!** *All instructions below are to be performed in order by qualified on-site personnel from Electric Era staff, or personnel appointed by Electric Era, with training dealing with high-voltage equipment, and coordinated with a remote Electric Era battery system operator.*

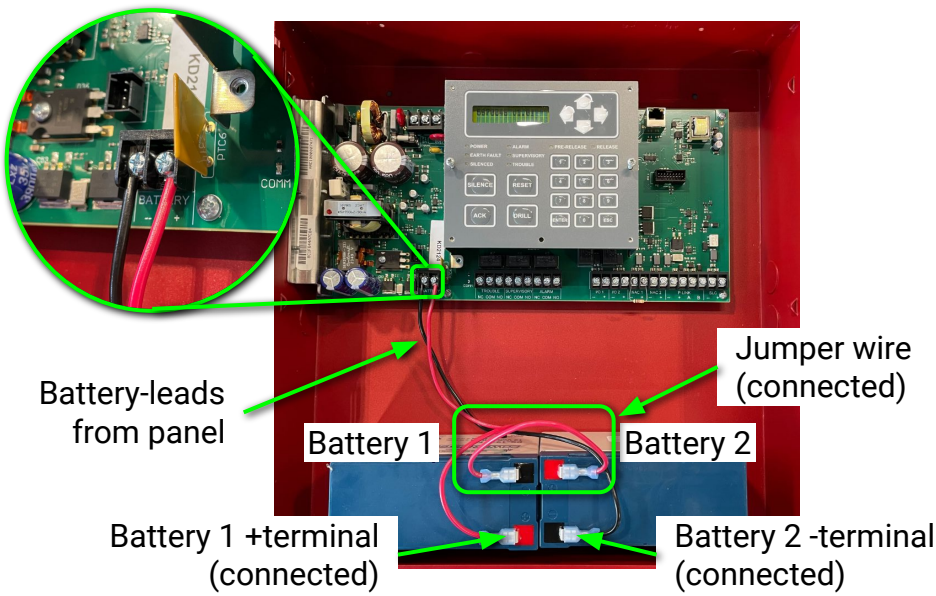
⚠️ **WARNING!** *Always follow the precautions in the "General Precautions" section of this manual.*

1. Perform the actions from the "System and Source Startup" section of this document to energize the system and source. Call an Electric Era remote operator at 1-(507)-702-0312 and request that the system be charged/discharged to 25%-30% SoC, and wait for their confirmation that the system is within 25%-30% SoC and not under load before proceeding.
2. Perform all actions from the "System and Source Shutdown" section of this document to de-energize and lock out/tag out the system, but skip the final step in that section involving disconnection of the fire panel batteries.

DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (2/10)

3. ⚠ **DANGER!** *Do not proceed with this step or any later steps until system and source have been de-energized and locked out/tagged out for at least 30 minutes.*
To remove the fire panel backup batteries:
   a. Open the Control Enclosure door to allow access to the fire panel located on the door. Using the fire panel door key, unlock and open the fire panel door. Using a Philips screwdriver, remove the two screws holding the fascia plate to the fire panel and remove the fascia plate.
   b. Shift the batteries to expose the battery terminals, and disconnect the jumper-lead that connects the negative terminal of Battery 1 (left battery) to the positive terminal of Battery 2 (right battery).
   c. Disconnect the fire panel's red battery-lead from the positive terminal of Battery 1.
   d. Disconnect the fire panel's black battery-lead from the negative terminal of Battery 2.
   e. Remove the two batteries from the fire panel and temporarily store them in a dry location. Do not throw away fire panel batteries. Reinstall the fascia plate. Close and lock the fire panel door using the fire panel door key.

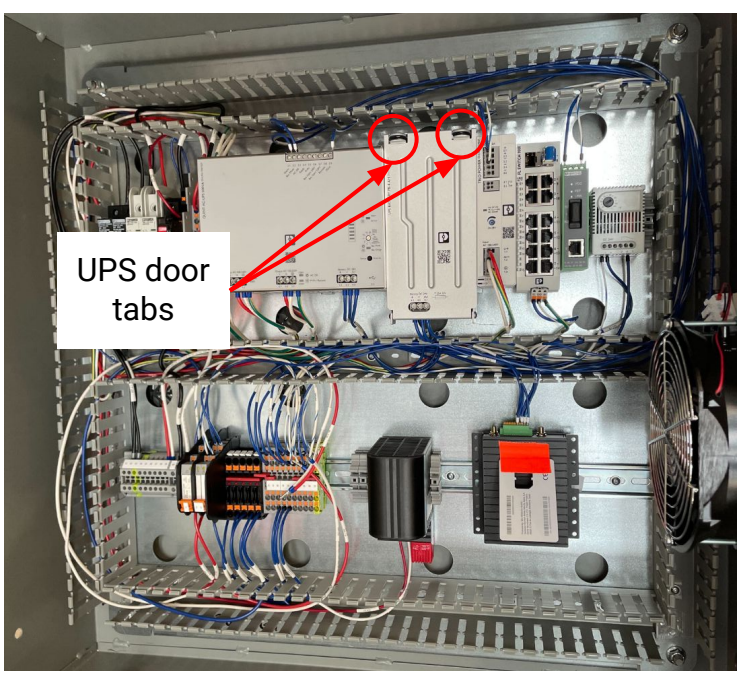


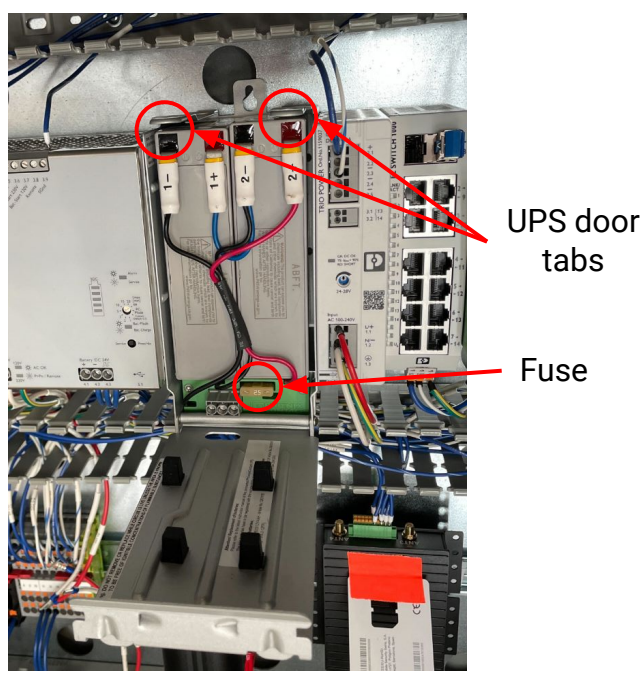
DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (3/10)

4. ⚠ **DANGER!** *Do not proceed until system and source are locked out/tagged out as per the previous step.*

   ⚠ **DANGER!** *Do not proceed with this step or any further steps until system has been de-energized for 30 minutes.*
   In the lower right corner of the Control Enclosure, open the door to the UPS battery by squeezing the tabs at the top. Remove the fuse from the fuse socket at the base of the UPS battery. Retain and securely store the fuse if the system is intended to be reused or reinstalled after decommissioning. Close the UPS battery door so the tabs at the top re-latch. Close and lock the Control Enclosure door.





5. ⚠ **WARNING!** *Follow safe lifting practices with trained personnel according to the instructions in this document, PowerNode Nexus Security Cage Manual instructions, regulations, and best practices.*
   Site-dependent: If a PN Nexus Security Cage is installed, uninstall the Security Cage as per the “PowerNode Nexus Security Cage Removal Instructions” section of the PowerNode Nexus Security Cage Manual, and place the Security Cage in a designated location.

DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (4/10)

6. ⚠ **DANGER!** *For this step, in addition to any other personal protective equipment (PPE) required at the site, at minimum wear PPE for shock and arc flash according to the hazards listed below. Where more recently updated hazards at the site are available, wear PPE for actual site conditions. Do not wear metal jewelry.*
    - 11 inches - Arc Flash Protection Boundary
    - 0.95 cal/cm2 Incident Energy Flash Risk at 18 inches
    - 1500 VDC - Shock Risk- Covers/Doors Open
    - 0 - Glove Class
    - 60 inches - Limited Approach Boundary
    - 20 inches - Restricted Approach Boundary

For model numbers containing V2.2: Open the Battery Rack right-side door. Pull out the locking tabs on the positive and negative connectors of the topmost HV DC link cable connecting the top two battery modules as shown. Remove the cable and secure behind the handle on the chiller in the left-hand Battery Rack bay. Cover the exposed HV DC connectors with electrical tape. Close and lock the Battery Rack right-side door when finished.

For model numbers containing V2.3: Open the Battery Rack left-side door, and then the Battery Rack right-side door. Remove the 5 MSDs in the locations shown here. Refer to the CATL 280 Ah Liquid Cooling Rack User's Manual section 5.7 "MSD Installation" for detailed instructions for this step. Put electrical tape over the MSD openings to completely cover and insulate their connectors. Close and lock the Battery Rack right-side door when finished.

DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (5/10)

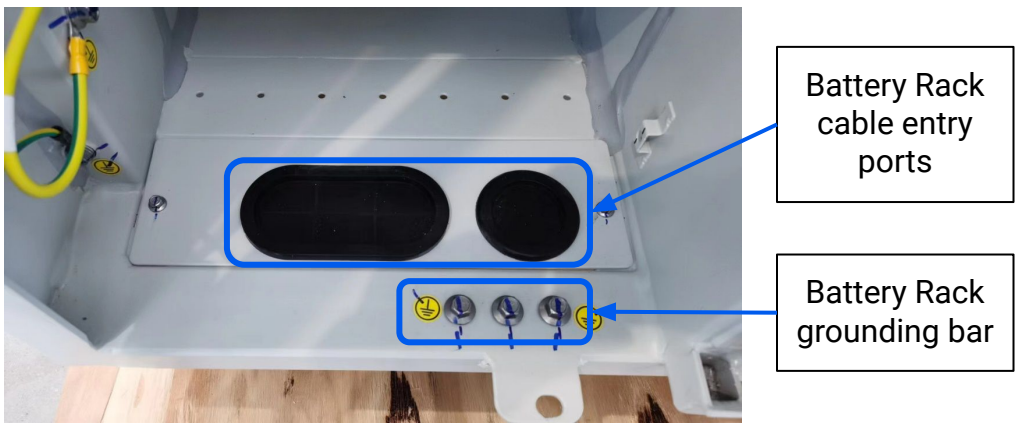
7. In order to disconnect the high-voltage DC power cables from the inverter to the Battery Rack (refer to the "Connect High-Voltage DC Power Cables from Inverter to Battery Rack" section of the PowerNode Nexus Site Design Guide (SDG) for details):
    a. Open Battery Rack left door & remove sealing compound from the Battery Rack cable entry ports.
    b. Disconnect the HV- connector from the Battery Rack control box, and then disconnect the HV+ connector from the Battery Rack control box. Pull out the red locking tab on each prior to removing the connector.
    c. Remove the front panel of the inverter and remove the interior plastic safety shield.
    d. Disconnect the compression lugs on the other end of the power cables from the inverter's HV DC bus bars. Re-fasten the screws with small ring terminals attached to the bus bars.
    e. Pull the power cables through the conduit connecting the inverter and the Battery Rack.

8. In order to disconnect the auxiliary power and communication cables & ground cable from control enclosure to the Battery Rack, and to disconnect the ground cable from inverter to the Battery Rack:
    a. **For model numbers containing V2.2:** Disconnect the JXH1 and JX1 connectors (by pulling the locking tab/sheath) from the Battery Rack control box. **For model numbers containing V2.3:** Disconnect the JXH1 and JX3 connectors (both twist-lock) from the Battery Rack control box. Refer to the "Connect Auxiliary Pwr & Comms Cables from Control Enclosure to Battery Rack" section of the SDG for details.

DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (6/10)

a. Remove the JXH1 & JX1/JX3 cables from the conduit that connects the Control Enclosure and Battery Rack.
b. Disconnect the inverter's ground cable from the grounding bar at the bottom of the Battery Rack bay, & remove the ground cable out of the Battery Rack through the Battery Rack cable entry slot. Reinstall & torque its screw to the Battery Rack grounding bar. Refer to the SDG section "Connect High-Voltage DC Power Cables from Inverter to Battery Rack" for details. Close and lock the left-side Battery Rack door. Both Battery Rack doors should now be closed and locked.

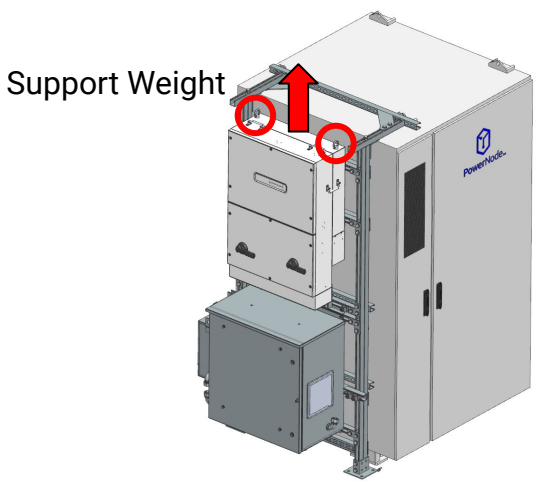


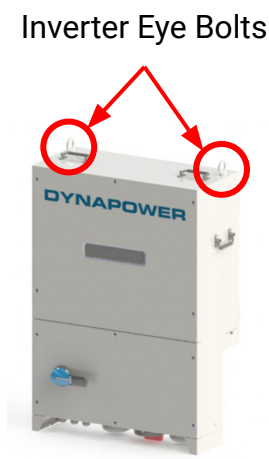
9. In order to disconnect the ethernet cables from the dispensers to the Control Enclosure (refer to the "Connect Ethernet Cables from Site Power Meter, Dispensers, & Site" section of the SDG for details):
   a. Open the Control Enclosure door. Disconnect dispensers' ethernet cables from from the ethernet switch in the Control Enclosure.
   b. Disconnect the conduit fitting from the Control Enclosure.
   c. Pull the ethernet cables back through the conduit or cut flush with conduit opening.
10. In order to disconnect the 480V AC 1-phase control power to the Control Enclosure:
   a. Disconnect Line 1, Line 2, and Ground wires from their respective terminal blocks.
   b. Disconnect the conduit fitting from the Control Enclosure.
   c. Pull wires back through the conduit or cut flush with conduit opening.

DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (7/10)

11. In order to disconnect the 480V AC 3-phase power cables from the inverter (refer to the "Connect 480V AC 3-phase Power to Inverter" section of the SDG for details):
    a. Remove inverter front panel & interior safety shield. Disconnect 3 power cables' lugs from inverter terminal, and then disconnect 480V ground lug from inverter ground terminal.
    b. Disconnect conduit fitting from the inverter.
    c. Pull the cables back through the conduit or cut flush with the conduit opening.
    d. Reattach inverter interior safety shield and front panel. Torque front panel to 3.6 ft-lbs.
12. ⚠ **WARNING!** *Follow safe lifting practices with trained and authorized personnel according to the instructions in this document, regulations, and best practices.*
In order to remove the Ancillary Rack from the Battery Rack:
    a. Stabilize the Ancillary Rack by hand with 2 people until instructed otherwise. Use lifting machinery rated for at least 700 lbs weight to securely support the weight of the Ancillary Rack by the inverter eye bolts, such that it will not fall, slip, or cause any other risk to safety or equipment damage when all the bolts that connect it to the Battery Rack and concrete pad are removed. Take care not to apply a lifting force strong enough to damage those bolted connections.

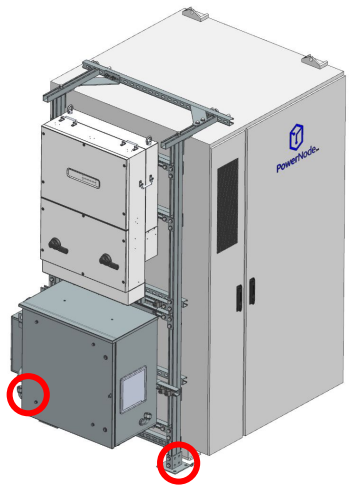


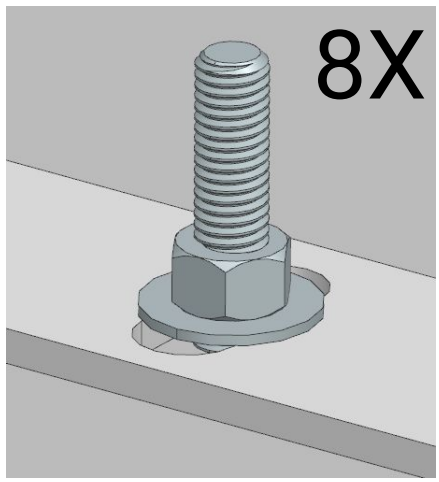


DECOMMISSIONING

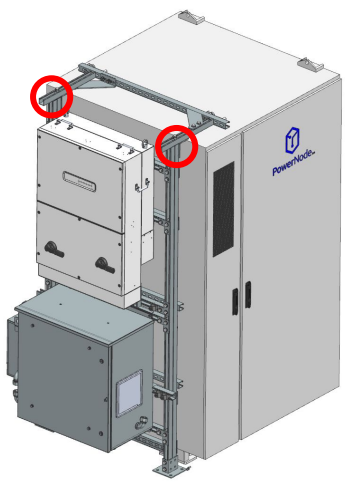
DECOMMISSIONING INSTRUCTIONS (8/10)

12. (continued)
    b. With the Ancillary Rack's weight supported, unscrew and remove the nuts and washers from the eight 1/2" concrete anchors in the concrete pad.





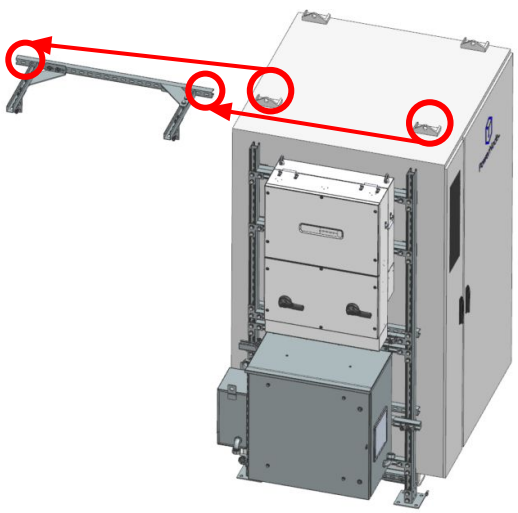
    c. With the Ancillary Rack's weight supported, unscrew and remove the two 1/2" screws that connect the Ancillary Rack's vertical members to the Ancillary Roof Support. This will cause the Ancillary Rack's vertical members and all connected equipment to be supported only by the lifting machinery.

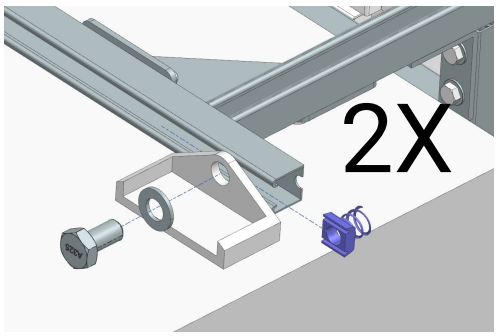


DECOMMISSIONING

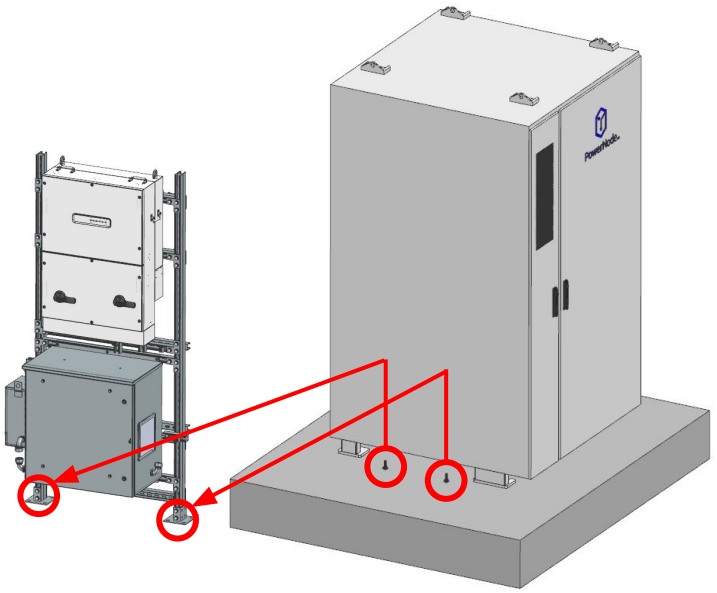
DECOMMISSIONING INSTRUCTIONS (9/10)

12. (continued)
    d. Unscrew the two 1/2” screws that attach the Ancillary Roof Support to the Battery Rack lifting eyes, and remove the Ancillary Roof Support.





    e. Use the lifting machinery to move the rest of the Ancillary Frame straight up over the protruding concrete anchors in the pad, then back out away from the Battery Rack, and finally lower the Ancillary Frame horizontally down on a flat surface (preferably padded) in a designated location. Once the Ancillary Frame is secured, it no longer needs to be stabilized by hand, and the lifting machinery can be removed.

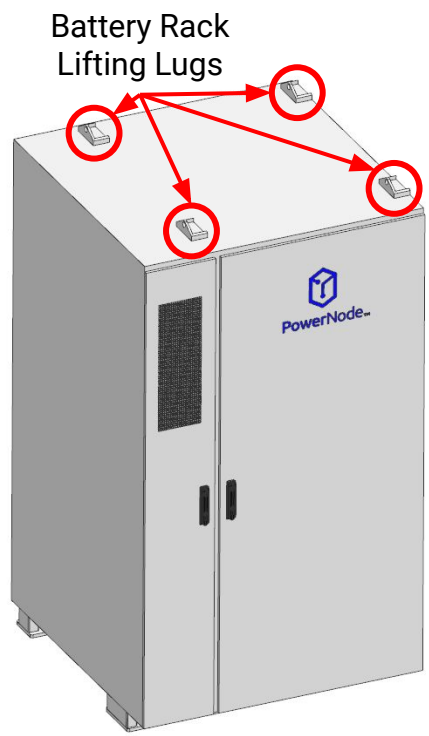


DECOMMISSIONING

DECOMMISSIONING INSTRUCTIONS (10/10)

13. Unscrew the 9 nuts that fasten the Battery Rack to the concrete pad's anchors. Refer to the instructions found in the CATL 280 Ah Liquid Cooling Rack User's Manual (for model numbers containing V2.3) or CATL EnerOne+ User's Manual (for model numbers containing V2.2) section 5.2 "Foundation Requirement" step 2 for details on the anchor/nut locations, depending on the mounting configuration.

14. ⚠ **WARNING!** *Follow safe lifting practices with trained and authorized personnel according to regulations, this document's instructions, the CATL 280 Ah Liquid Cooling Rack User's Manual (for model numbers containing V2.3) or CATL EnerOne+ User's Manual (for model numbers containing V2.2), and best practices.*



⚠ **WARNING!** *Always follow the precautions in the "General Precautions" section of this manual.*

a. Contact Electric Era in advance to coordinate any transportation packaging needed and prepare for receipt of materials. When ready, transfer the Battery Rack and Ancillary Rack individually to a designated location by means of forklift transfer or hoisting. If the Battery Rack enclosure is intended to be reused after decommissioning, the Battery Rack lifting lug should be repainted after lifting. Pack and prepare the Battery Rack for transportation as per the instructions in the CATL 280 Ah Liquid Cooling Rack User's Manual (for model numbers containing V2.3) or CATL EnerOne+ User's Manual (for model numbers containing V2.2) section 4 "Transportation and Storage."
b. Pack and prepare the Ancillary Rack for transportation.
c. Pack and prepare the keys for all PN Nexus doors (Battery Rack, fire panel, Control Enclosure padlock, and site-dependent Security Cage) for transportation.
d. Pack and prepare the two fire panel batteries for transportation.

15. Coordinate with Electric Era staff for shipment of decommissioned materials to Electric Era headquarters for inspection, disposal, recycling (especially of batteries), and/or reuse, depending on the situation. Do not throw away lithium iron phosphate battery modules. For Battery Rack transportation requirements, refer to the CATL User's Manual section 4 "Transportation and Storage."

DECOMMISSIONING

DECOMMISSIONING CHECKLIST (1/5)

The checklist below contains critical steps/checkpoints/tests in the decommissioning process. One column is provided to record any measured values where applicable and/or any errors as they arise. See “Decommissioning Instructions” for detailed instructions corresponding to these steps.

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
1	Charge/discharge system to 25%-30% SoC	Electric Era operator confirms Battery Rack at 25%-30% SoC and not under load	☐ OK ☐ NG	
2	Source & system shutdown	Remote operator confirms fire system is in test mode; Battery Rack QS1 switch set OFF & LOTO; Battery Rack indicator lights show green OFF, red OFF, yellow OFF; both Battery Rack doors closed & locked; Inverter AC & DC switches set OFF & LOTO; 480V AC 3-phase and 1-phase sources de-energized & LOTO	☐ OK ☐ NG	
3b	Fire panel battery jumper leads disconnected	Fire panel battery’s jumper leads between batteries disconnected	☐ OK ☐ NG	
3c	Fire panel red battery lead disconnected	Fire panel’s red battery-lead disconnected from Battery 1’s positive terminal	☐ OK ☐ NG	
3d	Fire panel black battery lead disconnected	Fire panel’s black battery-lead disconnected from Battery 2’s negative terminal	☐ OK ☐ NG	
3e	Fire panel batteries removed	Both fire panel batteries removed from fire panel & safely stored	☐ OK ☐ NG	
4	UPS battery fuse removed	Fuse removed from UPS battery; fuse retained & stored (optional); UPS battery door closed & latched; control enclosure door closed & locked	☐ OK ☐ NG	

DECOMMISSIONING

DECOMMISSIONING CHECKLIST (2/5)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
5	Security Cage removal	Site-dependent: PN Nexus Security Cage removed per Security Cage Manual, where applicable	☐ OK ☐ NG ☐ N/A	
6	MSD/DC Link cable removal	1 DC link cable uninstalled from Battery Rack (for model numbers containing V2.2) or 5 MSDs uninstalled from Battery Rack (for model numbers containing V2.3); electrical tape applied covering entire MSD or HV DC connector	☐ OK ☐ NG	
7a	Battery Rack cable entry ports unsealed	Battery Rack cable entry port's sealing compound removed	☐ OK ☐ NG	
7b	High-voltage DC power cables from inverter to Battery Rack connectors disconnected	HV- and HV+ cable connectors disconnected from Battery Rack control box	☐ OK ☐ NG	
7d	High-voltage DC power cables disconnected from inverter	High-voltage DC power cable compression lugs disconnected from inverter and bolts/ring terminals re-fastened	☐ OK ☐ NG	
7e	High-voltage DC power cables removed from conduit	Cables removed from conduit connecting inverter to Battery Rack	☐ OK ☐ NG	
8a	Aux power & comms cables from control enclosure to Battery Rack disconnected and removed	Auxiliary power & communications cables (JXH1 & JX1/JX3) disconnected from Battery Rack control box and removed from conduit	☐ OK ☐ NG	
8b	Ground cable from inverter to Battery Rack disconnected & removed from Battery Rack	Ground cable from inverter to Battery Rack is disconnected from grounding bar & pulled out; bolt reinstalled & torqued	☐ OK ☐ NG	

DECOMMISSIONING

DECOMMISSIONING CHECKLIST (3/5)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
9a	Ethernet cables from dispensers to control enclosure disconnected	Ethernet cables from dispensers are disconnected from ethernet switch in control enclosure	☐ OK ☐ NG	
9b	Conduit for ethernet cables from dispensers to control enclosure disconnected	Conduit for ethernet cables from dispensers to control enclosure is disconnected from control enclosure	☐ OK ☐ NG	
9c	Ethernet cables from dispensers to control enclosure removed from control enclosure	Ethernet cables from dispensers to control enclosure are retracted from control enclosure or cut flush with conduit	☐ OK ☐ NG	
10a	480V AC 1-phase control power & ground wires disconnected	Line 1, Line 2, and Ground wires are disconnected from terminal blocks in Control Enclosure	☐ OK ☐ NG	
10b	Conduit for 480V AC 1-phase control power disconnected	Conduit for 480V AC 1-phase control power is disconnected from Control Enclosure	☐ OK ☐ NG	
10c	480V AC 1-phase control power wires removed	480V AC 1-phase control power wires are retracted from conduit or cut flush with conduit	☐ OK ☐ NG	
11a	480V AC 3-phase power & ground cables to inverter disconnected	480V AC 3-phase power cables & 480V AC ground cable to inverter are disconnected from inverter terminal	☐ OK ☐ NG	
11b	Conduit for 480V AC 3-phase power cables to inverter disconnected	Conduit for 480V AC 3-phase power cables is disconnected from inverter	☐ OK ☐ NG	

DECOMMISSIONING

DECOMMISSIONING CHECKLIST (4/5)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
11c	480V AC 3-phase power & ground cables to inverter removed	480V AC 3-phase power & ground cables to inverter are retracted from inverter or cut flush with conduit	☐ OK ☐ NG	
11d	Inverter front cover & inverter safety shield reinstalled	Inverter front cover & inverter safety shield are reinstalled; front cover torqued to 3.6 ft-lbs	☐ OK ☐ NG	
12a	Ancillary Rack weight supported	Ancillary Rack weight is securely supported by lifting machinery	☐ OK ☐ NG	
12b	Ancillary Rack-to-concrete pad hardware disconnected	8 nuts that connect the Ancillary Rack to the concrete pad's anchors are removed	☐ OK ☐ NG	
12c	Ancillary Rack vertical members-to-Ancillary Roof Support hardware disconnected	2 screws that connect the Ancillary Rack vertical members to the Ancillary Roof Support are removed	☐ OK ☐ NG	
12d	Ancillary Roof Support removal	Ancillary Roof Support's two screws are disconnected from Battery Rack lifting eyes and Roof Support is removed	☐ OK ☐ NG	
12e	Ancillary Frame removal	Ancillary Frame removed from Battery Rack & placed down on flat surface	☐ OK ☐ NG	
13	Battery Rack anchor nuts removal	All 9 nuts that fasten the Battery Rack to the concrete pad's anchors are removed	☐ OK ☐ NG	
14a	Packing & transportation preparation: Battery Rack	Battery Rack is packaged & ready for transport per CATL User Manual section 4; lifting lugs are repainted (situation-dependent); Electric Era is notified of imminent shipment	☐ OK ☐ NG	

DECOMMISSIONING

DECOMMISSIONING CHECKLIST (5/5)

No.	Item	Pass Criteria	Result (OK / No-Go)	Measured Value & Description of Error (Where Applicable)
14b	Packing & transportation preparation: Ancillary Rack	Ancillary Rack is packaged & ready for transport	☐ OK ☐ NG	
14c	Packing & transportation preparation: Keys	All PN Nexus keys (Battery Rack, fire panel, Control Enclosure padlock, and site-dependent Security Cage) are packaged and ready for transport	☐ OK ☐ NG	
14d	Packing & transportation preparation: fire panel batteries	Both fire panel batteries are packaged & ready for transport	☐ OK ☐ NG	
15	Battery Rack & Ancillary Rack shipment	Battery Rack & Ancillary Rack are shipped to Electric Era headquarters per CATL User Manual section 4; handling of decommissioned materials coordinated with Electric Era	☐ OK ☐ NG	

DOCUMENT INFO

REFERENCED DOCUMENTS

DOCUMENT NAME
PowerNode Nexus Site Design Guide
PowerNode Nexus Maintenance Guide
PowerNode Nexus Specifications
CATL 280 Ah Liquid Cooling Rack User's Manual *or* CATL EnerOne+ User's Manual
Safety Data Sheet (for CATL Model Names O552280-P *or* R05285P10L31)
Product Specification: Outdoor Liquid Cooling Rack *or* Enerone+ 285 (1C) Product Specification_20230323
Safety Data Sheet Revlogi Materials MONOETHYLENE GLYCOL
Safety Data Sheet BASF GLYSANTIN G30 Pink
PowerNode Nexus Security Cage Manual

DOCUMENT INFO

CHANGELOG

Version ID	Date Released	Summary of Changes
V2.1.0	2/5/2024	Full document release for PN Nexus V2.1
V2.1.1	3/4/2024	Added commissioning check for conduit fitting tightness
V2.2.0	11/1/2024	Full document release for PN Nexus V2.2 and V2.3