Infinity S

Quick Start Guide

NES48-23-AC1-PS4-DC1E-LVBD

- **19”/23” wide**
- **AC input**
  - **AC1 - Molex**
  - **AC2 - IEC 3 20 C 19**
  - **AC5H - Term Block**
  - **AC6 - 3 phase delta Term Block (19”only)**
  - **AC7 - 3 phase wye Term Block (19” only)**
- **# of Power Slots**
- **# of Distribution Panels**
- **LVBD option**

Read and follow all safety statements and precautions in this guide.

Tools Required:

Cable Crimpers
Screw Drivers (#1 Flat & #2 Phillips)
Torque Wrench (0-240 in-lb. / 28Nm)
Wire cutters and strippers
5/16”, 7/16” and ½” nut drivers

Step 1 - Mount the System

Mount the system with a minimum gap of 3 inches behind the system to allow proper airflow.

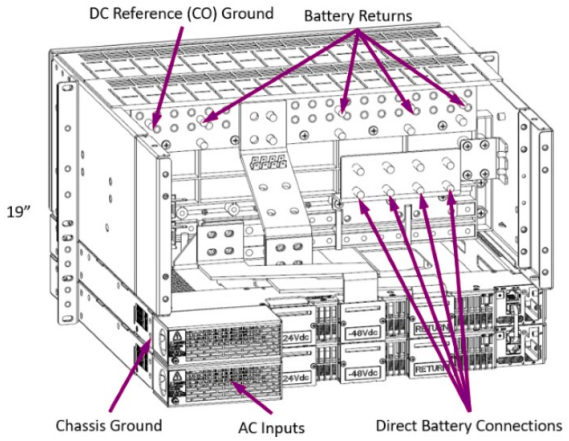
1. Attach the system to the frame using a minimum of twelve (six on each side) 12-24 screws (provided).
   Torque to 35 in-lb (4 Nm) - 5/16” socket.

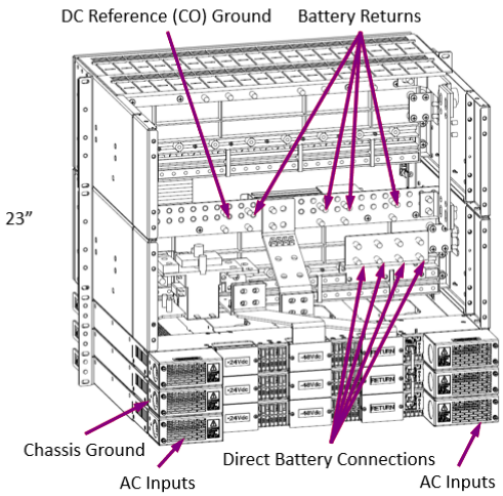
Step 2 – Connect Chassis and DC reference (CO) ground

Chassis Ground lug - #10 or 1/4” on 5/8” centers (not provided).
Minimum 10 AWG recommended.
Torque to 10-32 screws to 30 in-lb (3.4 Nm) – 5/16” Socket.

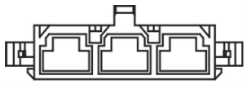
DC reference ground lug - 5/16” or 3/8” on 1” centers (not provided).
Torque to 160 in-lb.

Note: If connecting chassis ground to frame surface remove non-conductive frame coating and apply antioxidant for connection.

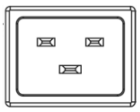




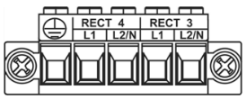
Step 3 – Connect AC inputs



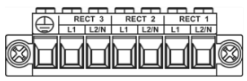
AC1 – Molex



AC3 - IEC



AC5 – TB 23”



AC5 – TB 19”

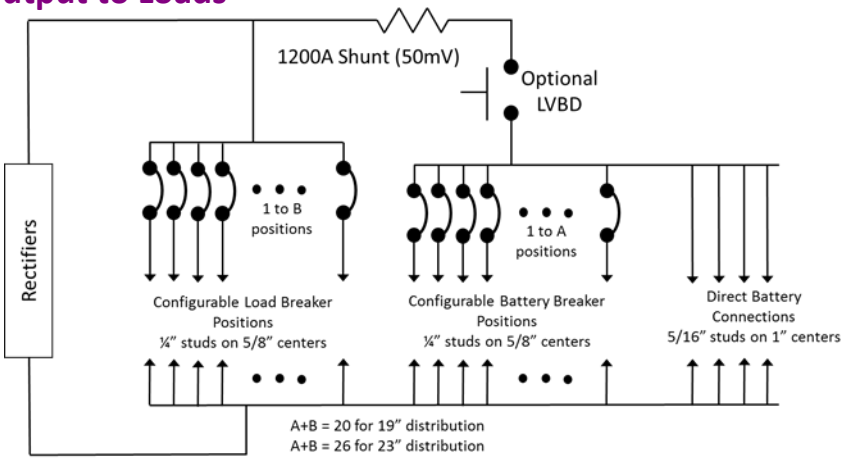
AC6 – TB 19”
3 ΦDelta

AC7 – TB 19”
3 ΦWye

The figure to the right shows the DC circuit of the system.
Battery connections may be made to bullet-style distribution positions configured as Battery Breaker Positions or direct to the battery bus.
Danger: Turn OFF and lock-out tag-out the AC source before making AC connections. When connecting to AC mains, follow all local and national wiring rules.
Caution: When routing AC ensure cables do not come in contact with sharp or rough surfaces that may damage insulation and cause a short circuit.
Rectifiers numbers are labeled at each AC input.
AC terminal connections are labeled at each position (L1, L2/N, and Gnd).
AC Terminal Block is in the AC box on the rear of the rectifier shelf
Connect AC input cord to the detachable input terminal block in the wiring box – knock out for ¾” conduit or cord grip. Strip and torque per the table. Pull on wire to verify secure connection.

AC Input	Rectifiers per Feed	19”	23”	AWG max	Strip Wire (mm)	Torque In-lb(Nm)
AC1 - Molex mini-fit SR	2		Yes	8	n/a	-
AC3 - IEC-320 C19	1	Yes	Yes	12	n/a	-
AC5 - Terminal Block	1	Yes	Yes	10	10	7 (0.75)
AC6 - Terminal Block 3-phase Delta	3	Yes		6	12	16 (1.75)
AC7 – Terminal Block 3-phase Wye	3	Yes		6	12	16 (1.75)

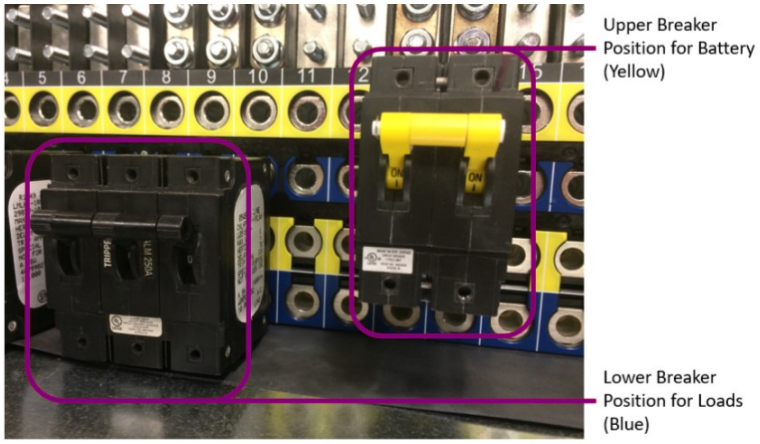
Step 4 – Connect Batteries and DC Output to Loads

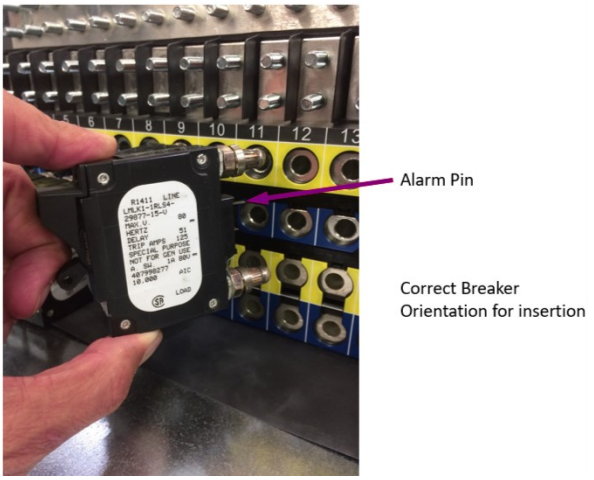


CAUTION: Verify battery voltage and polarity with a voltmeter before connecting.
Load connections are made to bullet-style distribution positions configured as Load Breaker Positions.

Distribution panels are each equipped with 20 (19” panel) or 26 (23” panel) bullet-style distribution positions. Each position is selectable between battery input or load output.
Breaker sizes up to 250A, TPS fuses to 70A and GMT fuses to 12A are available.

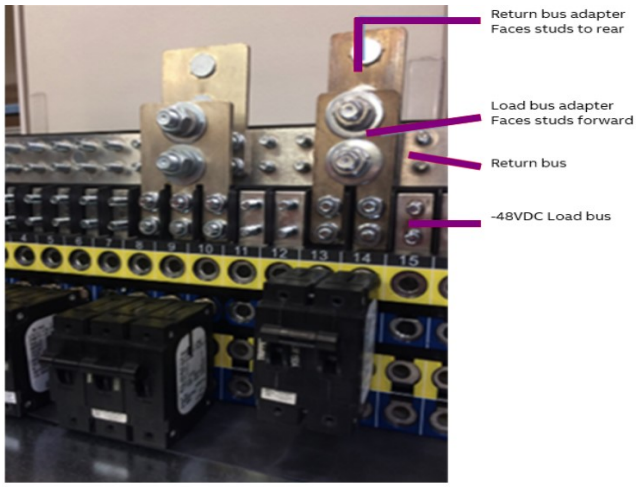
Lug Landings		
	Distribution	Battery Bus
Landings	1/4-20 studs on 5/8” centers Lug tongue width 0.68” max	5/16-18 studs on 1” centers
Torque	65 in-lb - 7/16” socket	160 in-lb - 1/2” socket





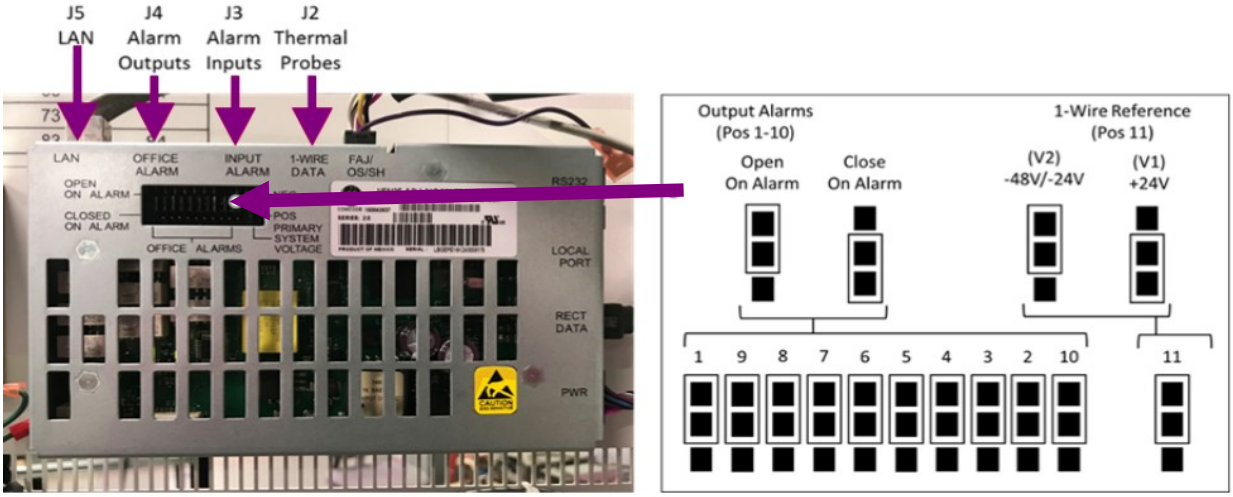
Two multi-pole adapters required for each
Multi-pole breaker - see illustration, right

Multi-Pole Adapter Kits - 2 required per breaker			
	CC848756916 	850021775 	850021955 
Poles	2	2	3
Lug Landings	1/4" x 5/8"	3/8" x 1"	3/8" x 1"



Step 5 – Set Controller alarm relay jumpers

Pulsar Plus
Set jumpers 1 thru 10 for the ten alarm relays as Close on Alarm or Open on Alarm; Factory default setting is Open on Alarm.



Step 6 - Connect Controller Signals

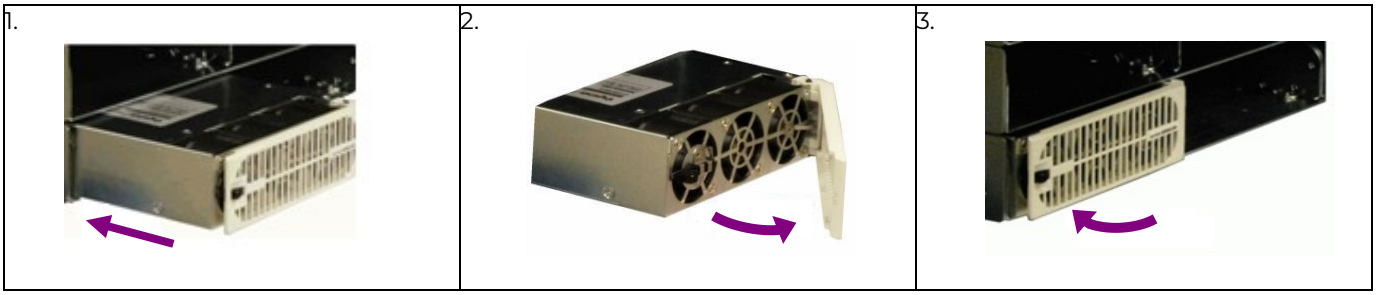
Connect per site engineering instructions.

Pulsar Plus - Connect to J2, J3, J4, and J5.
See Information Controller Connections & Information Battery Connections.

Step 7 – Rectifier Installation

Caution: The rectifier latch is not a carrying handle.

1. Slide the rectifier into the rectifier slot approximately ¾ of the way.
2. Open the faceplate by sliding the latch to the left until the faceplate releases and swings outward.
3. Slide the rectifier into the slot until it engages with the back of the shelf. Swing the faceplate closed to fully seat the rectifier. Verify the faceplate is latched.
4. Correct insertion of the rectifier will automatically add the unit to the controllers' inventory of units.



To remove a rectifier:

A. Open latch fully to release and remove.
B. Enter Inventory section of controller and remove hardware to clear alarm.

Step 8 – Initial Startup

Verify that all AC, DC and Controller connections are complete and secure. Turn on AC input breakers. If there are no alarms, make required adjustments to the default settings on the controller for this installation.

Step 9 - Configure Controller

Verify and edit controller basic configuration parameters per site engineering instructions.

Refer to Galaxy Pulsar Plus Product Manual for additional information.

Information: Controller Default Voltage Settings

Parameter	Range	Valve-Reg (Default)	Flooded	NiCd
Rectifier Float Selective High Voltage Shutdown	-50 to -60V	59.00	58.50	58.50
High Float Voltage Major Alarm	-50 to -60V	57.00	57.00	57.00
High Float Voltage Minor Alarm	-50 to -60V	56.00	56.00	56.00
Rectifier/System Float Voltage	-42 to -60V	54.48	52.08	54.40
Battery on Discharge Float Alarm	-46 to -55V	51.00	50.00	51.00
Very Low Float Voltage Alarm	-40 to -51V	46.00	46.00	46.00
Rectifier On Threshold	-40 to -51V	44.00	44.00	44.00

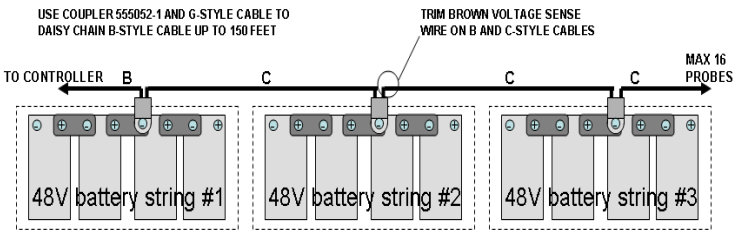
Information: AC Cord Options

IEC-Style, 8ft, 12AWG		
Part Number	**Plug**	**Length**
CC848847368	No plug	8 ft
CC848850792	5-15P	8 ft
CC848850801	5-20P	8 ft
CC848850826	6-15P	8 ft
CC848850834	6-20P	8 ft
CC848850842	L6-20P	8 ft
850044361	L5-15P	15 ft
850044362	L5-20P	15 ft
CC848895961	L6-20P	15 ft

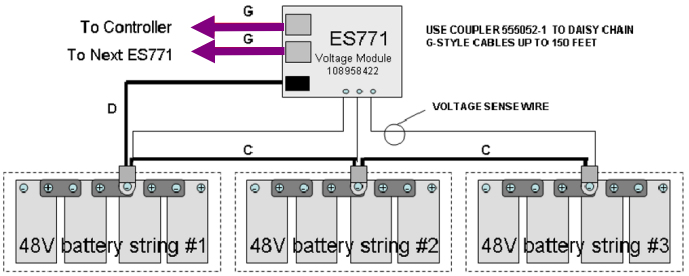
Molex mini-fit SR-Style, No Plug	
CC848822420	(2) 15 ft., 3X8AWG
848710711	(2) 10 ft., 3X8AWG
CC848830522	(2) 4 ft., 3X8AWG
CC848773515	15 ft., 10AWG SO Cord
CC848906586	10 ft., 8AWG, SO Cord

Information: Battery Monitoring Connections

Battery Monitoring is accomplished with a “Daisy Chained” series of probes connected to J2. The Probes monitor battery temperature and voltage (ES771 required to monitor voltage). Bolt the Probe under the negative terminal connector hardware; NOT under the connecting lug.



Temperature Measurement



Temperature and Voltage Measurement

Information: Battery Monitoring Connections - cables

Order Codes	Descriptions	Order Codes	Descriptions
CC109142980	QS873A Thermal Probe	108958422	ES771A Voltage Monitor Card
CC848817024	**B** 10’ controller to thermal probe wireset	CC848791517	**D** 2 ½’ ES771A to probe wireset
CC109157434	**B** 20’ controller to thermal probe wireset	CC848797290	**D** 6’ ES771A to probe wireset
CC848822560	**C** 1’ thermal probe to thermal probe wireset	848719829	**D** 10’ ES771A to probe wireset
848719803	**C** 5’ thermal probe to thermal probe wireset	CC848791500	**G** 4’ ES771A to ES771A or controller wireset
CC848822321	**C** 10’ thermal probe to thermal probe wireset	848652947	**G** 10’ ES771A to ES771A or controller wireset

Temperature Measurement

Temperature and Voltage Measurement

Information: Controller Connections

Alarm Outputs

Alarm relays are factory set to Open On Alarm. If Close On Alarm is desired adjust controller alarm jumpers. See diagram in step 5 for the location of the controller alarm jumpers.

Connector J4 provides access to the primary customer alarm outputs. J4 is a 20-pin latching connector.

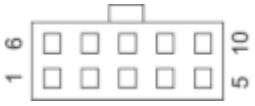
Alarm Output Cables	
CC848890137	5 ft.
CC109157442	15ft
CC848817635	50 ft
CC848817643	150 ft

Standard Controller Alarm Output Defaults		Pin	Color Option 1	Color Option 2
PCR	Power Critical	1	BL	BL
PCR_C	Power Critical_C	11	W	BL/BK
PMJ	Power Major	2	O	O
PMJ_C	Power Major_C	12	W	O/BK
PMN	Power Minor	3	G	G
PMN_C	Power Minor_C	13	W	G/BK
R1	Battery On Discharge	4	BR	W
R1_C	Battery On Discharge_C (BD_C)	14	W	W/BK
R2	Very Low Voltage (VLV)	5	S	BK
R2_C	Very Low Voltage_C (VLV_C)	15	W	BK/W
R3	Fuse Alarm Major (FAJ)	6	BL	BL/W
R3_C	Fuse Alarm Major_C (FAJ_C)	16	R	BL/R
R4	AC Fail (ACF)	7	O	O/R
R4_C	AC Fail_C (ACF_C)	17	R	R
R5	Rectifier Fail (RFA)	8	G	G/W
R5_C	Rectifier Fail_C (RFA_C)	18	R	R/G
R6	Mult. Rectifier Fail (MRFA)	9	BR	W/R
R6_C	Mult. Rectifier Fail_C (MRFA_C)	19	R	R/W
R7	High Voltage (HV)	10	S	BK/R
R7_C	High Voltage_C (HV_C)	20	R	R/BK

Alarm Inputs

Default alarm descriptions may be changed as needed using web pages or Easyview2.

J4 IS A 10- Pin latching connector.



Alarm Input Cables	
CC848890153	5 ft.
CC848865980	15 ft.
CC848817651	50 ft.
CC848817668	150 ft.

Standard Controller Alarm Input Defaults	J3 Pin	Color
Air Con Fail	1	BK
Air Con Fail_Return	8	V
Door Open	2	BR
Door Open_Return	8	V
Aux PMJ Input	3	R
Battery Test/GSTR	4	O
Battery Test_Return	9	S
EPO	5	Y
EPO_Return	10	W
Hi ext. Temp.	6	G
Hi ext. Temp._Return	8	V
Low ext. Temp.	7	BL
Low ext. Temp._Return	8	V

Information: Controller Basic Operation

View and change system parameters from the factory defaults via:
A) Controller Display
B) Craft Port on front of controller using a laptop with EasyView2 software or HyperTerminal.
EasyView2 (GUI) software can be downloaded from **omnionpower.com**,
C) J5 LAN port web pages using a laptop with browser. LAN port Server mode is for local laptop connection. Set the LAN port to Server:

Controller Alarm Status: The display changes colors; Green = Normal, Amber = Minor Alarm, Red = Critical/Major Alarm

Some alarms may occur during initial installation; eg: thermal probe fail or Major/Minor communication fail.

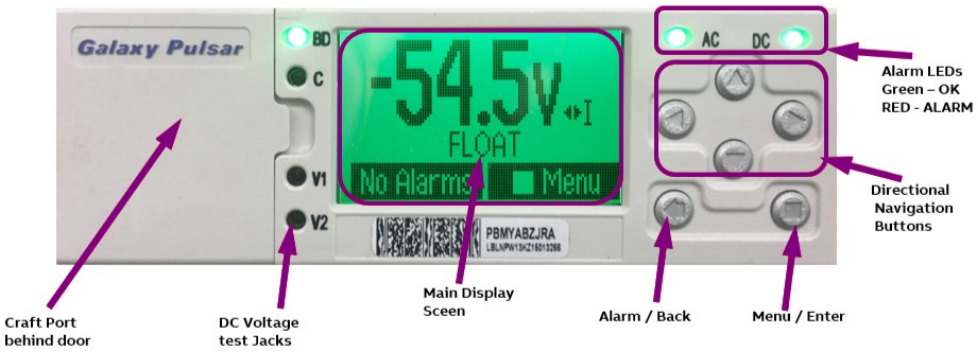
Clear these alarms: Via Controller Display: follow the menu path;

Menu > Control/Operation > Clear Events or Uninstall Equipment.

Verify Basic Installation Settings: Date, Time, Battery Type, number of strings and float voltage
Menu > Configuration > System Settings and Menu > Configuration > Batteries.

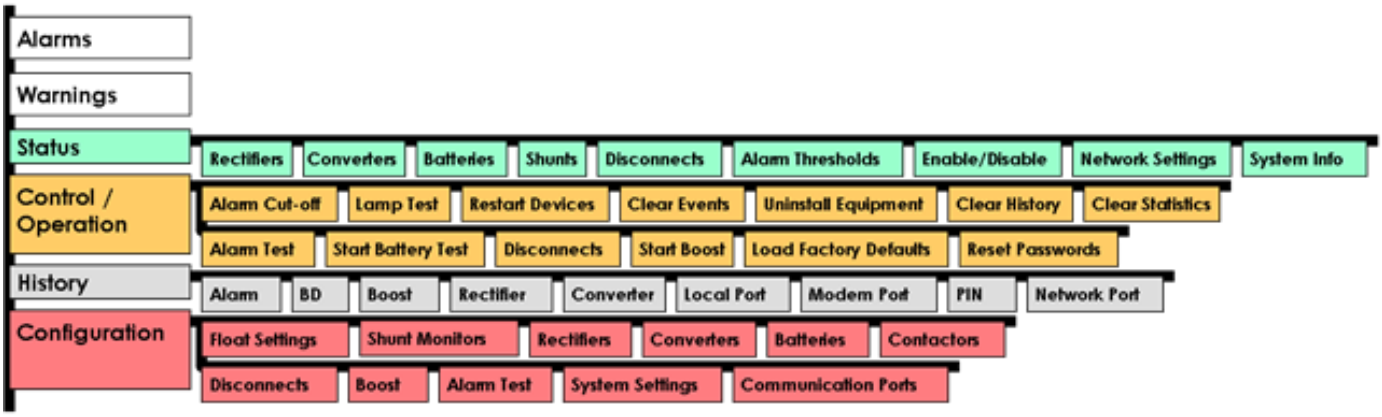
Front Panel

View and change system parameters from the factory defaults via the front panel:



Controller Front Panel Display and Controls

The main menu can be accessed using the Menu / Enter button
The basic menu structure for navigation is shown below:

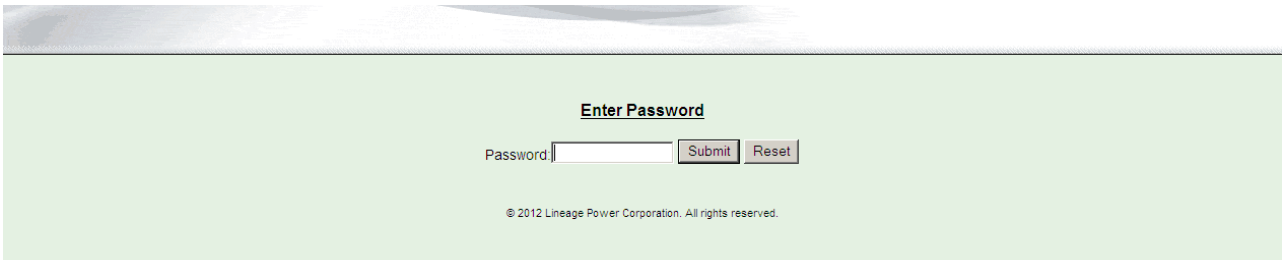


Front Panel Menu Structure – Overview

Information – Controller Basic Operation – continued

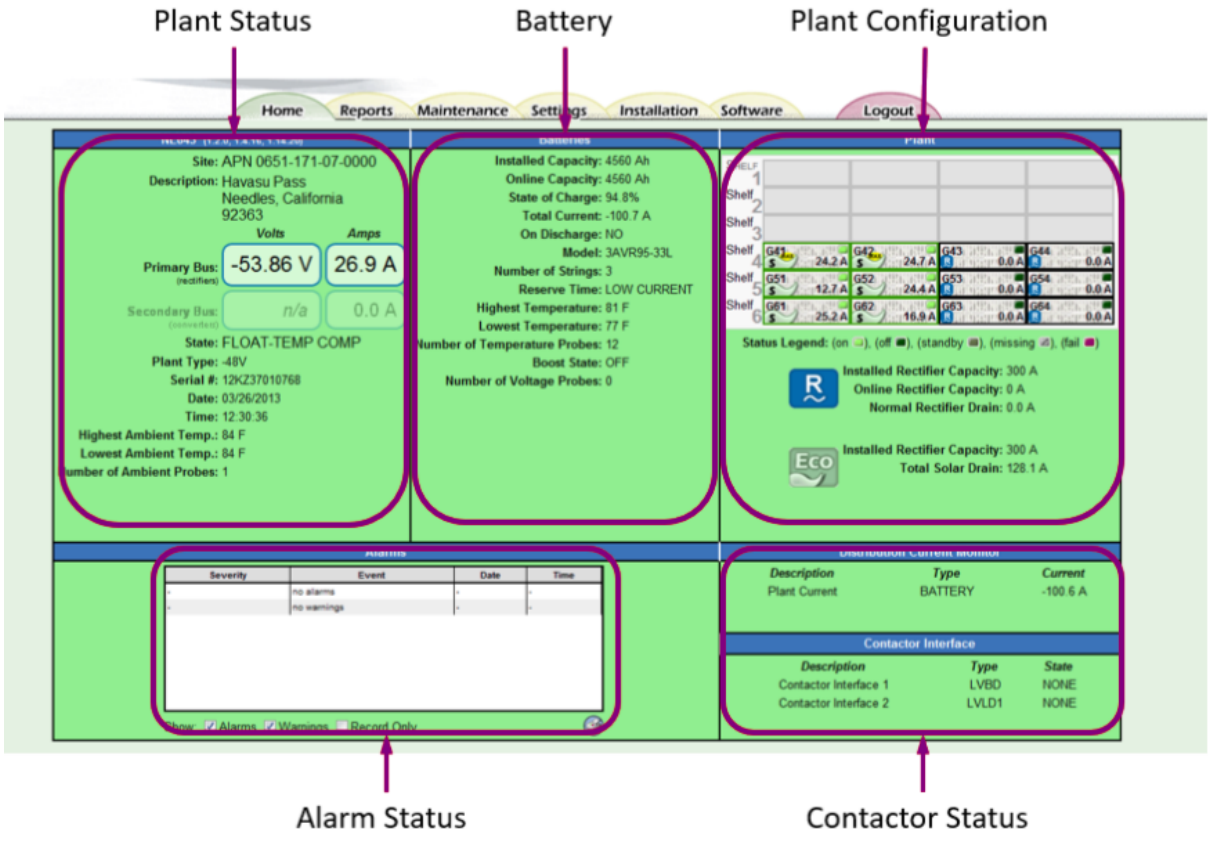
All user configurable parameters can be accessed from the front panel, however user convenience and visibility is enhanced by access through the LAN port using the built-in web pages.
Configuration > Communication Ports > Network Settings > DHCP > mode, to SERVER
Once the LAN port is configured as a server, the laptop can be connected to the LAN port, using a standard ethernet cable. Use a standard web browser to access the controller web pages at default IP address: 192.168.2.1
Warning: Do not connect LAN port to a network when set to Server mode. Set the controller LAN port to Client or Static before connecting to the network. Static is the factory default setting and the typical setting for most networks.

Once connected to the controller web server a log on screen should be visible:



Logon Screen – web view

Factory Default password is "Administrator" and should be used for initial logon. It is highly recommended that one of the first activities should be to change the default password(s).



Home Page – Web View

Information – Rectifiers

Rectifier		Input	DC Output		Recommended AC Breaker 1-Phase			3-Phase	
			volts	amps	AC1 (2 rects per feed)	AC3	AC5	AC6	AC7
R ECO	NE050ECO48ATEZ	200-400Vac	48V	50A	40A	20A	20A	40A	20A
		100-120Vac	48V	22A	40A	20A	20A		
		60-300Vdc, 11A max	48V	50A					
R ~	NE075AC48ATEZ	200-277Vac	48V	75/50A[1]	40A	20A	30A	50A	30A
		100-120Vac	48V	25A	40A	20A	20A		
	NE050AC48ATEZ	208-240Vac	48V	50A	40A	20A	20A	40A	20A
		100-120Vac	48V	22A	40A	20A	20A		
	NE050AC48A	200-240Vac	48V	50A	40A	20A	20A	40A	20A

[1] 75A with AC5 and AC6, 50A with AC1 and AC3.

Information: Rectifier Status LEDs

Power Unit LEDs	
LED	Description
Norm	Normal – Green
ACF	AC Input Failure – Red
Fail	Rectifier Failure – Red
Fail	Com. Failure – Blinking Red

Specifications and Application

Specifications and ordering information are in the *Infinity S Ordering Guide* available at **omnionpower.com**

External Surge Protective Device (SPD) is required on all AC inputs.

Equipment and subassembly ports:

1. are suitable for connection to intra-building or unexposed wiring or cabling;
2. can be connected to shielded intra-building cabling grounded at both ends.

Grounding / Bonding Network – Connect to an Isolated Ground Plane (Isolated Bonding Network) or an Integrated Ground Plane (Mesh-Bonding Network or Common Bonding Network).

Installation Environment - Install in Network Telecommunication Facilities, OSP, or where NEC applies.

Battery return may be either Isolated DC return (DC-I) or Common DC return (DC-C).

Reference Documents

These documents are available at **omnionpower.com**

Document	Title
CC848815341	Galaxy Pulsar Plus Product Manual
CC848908475	Infinity S Dish Network Quick Start Guide

Safety Statements

Do not install this equipment over combustible surfaces.
Rules and Regulations - Follow all national and local rules and regulations when making field connections.
Compression Connectors

- U. S. or Canada installations - use Listed/Certified compression connectors to terminate Listed/Certified field-wire conductors.
- All installations - apply the appropriate connector to the correct size conductor as specified by the connector manufacturer, using only the connector manufacturer's recommended or approved tooling for that connector.

Electrical Connection Securing: Torque to the values specified on labels or in the product documentation.
Cable Dress - dress to avoid damage to the conductors and undue stress on the connectors.
Circuit Breakers and Fuses.

- Use only those specified in the equipment ordering guide.

Size as required by the National Electric Code (NEC) and/or local codes.
Safety Tested Limits - Refer to the equipment ratings to assure current does not exceed.

- Continuous Load (List 1) - 60% of protector rating.
- Maximum Load (List 2 - typically end of discharge) - 80% of protector rating.

GMT Style Fuses - Use only fuses provided with safety caps.
Field-wired Conductors - Follow all National Electric Code (NEC) and local rules and regulations.

- Insulation rating: 90°C minimum; 105°C (minimum) if internal to enclosed equipment cabinets.
- Size AC field-wired conductors with 75°C ampacity (NEC) equal to or greater than their panel board circuit breaker rating.

AC and DC input disconnect/protection - Provide accessible devices to remove input power in an emergency.
Alarm Signals - Provide external current limiting protection. Rating 60V, 0.5A unless otherwise noted.
Grounding - Connect the equipment chassis directly to ground. In enclosed equipment cabinets connect to the cabinet AC service ground bus. In huts, vaults, and central offices connect to the system bonding network.

Precautions

Install, service, and operate equipment only by professional, skilled and qualified personnel who have the necessary knowledge and practical experience with electrical equipment and who understand the hazards that can arise when working on this type of equipment.
Disconnect batteries from outputs and/or follow safety procedures while working on equipment. Batteries may be connected in parallel with the output of the rectifiers. Turning off the rectifiers will not necessarily remove power from the bus.
Do not disconnect permanent bonding connections unless all power inputs are disconnected.
Verify that equipment is properly safety earth grounded before connecting power. High leakage currents may be possible.
Exercise care and follow all safety warnings and practices when servicing this equipment. Hazardous energy and voltages are present in the unit and on the interface cables that can shock or cause serious injury. When equipped with ringer modules, hazardous voltages will be present on the ringer output connectors.
Use the following precautions in addition to proper job training and safety procedures:

- Use only properly insulated tools.
- Remove all metallic objects (key chains, glasses, rings, watches, or other jewelry).
- Follow Lock Out Tag Out (LOTO) procedures: customer specified, site specific, or general as appropriate.
  Disconnect all power input before servicing the equipment. Check for multiple power inputs.
- Wear safety glasses.
- Follow Personal Protective Equipment requirements: customer specified, site specific, or general as appropriate.
- Test circuits before touching.
- Be aware of potential hazards before servicing equipment.
- Identify exposed hazardous electrical potentials on connectors, wiring, etc.
- Avoid contacting circuits when removing or replacing covers.
- Use a personal ESD strap when accessing or removing electronic components.

Personnel with electronic medical devices need to be aware that proximity to DC power and distribution systems, including batteries and cables, typically found in telecommunications utility rooms, can affect medical electronic devices, such as pacemakers. Effects decrease with distance.

Customer Service and Technical Support Contact Information

Email: **epis.IDCP-techsupport@omnionpower.com**
Web site: **omnionpower.com**

For material availability, order status, shipping info, missing or damaged materials, please contact Customer Service.

For equipment failures, troubleshooting or other technical issues, contact Technical Support
24/7 Phone: 1.877.546.3243 option 1, 2 for Customer Service.

OmniOn Power Inc.
601 Shiloh Rd.
Plano, TX USA

omnionpower.com