



Vortex®

Ethernet Card Web Interface

for NetSure™ Power Systems and Vortex® Power Systems

User Manual (Section 5982), Revision J

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ADMONISHMENTS USED IN THIS DOCUMENT



DANGER! Warns of a hazard the reader **will** be exposed to that will **likely** result in death or serious injury if not avoided. (ANSI, OSHA)



WARNING! Warns of a potential hazard the reader **may** be exposed to that **could** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)



CAUTION! Warns of a potential hazard the reader **may** be exposed to that **could** result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)



ALERT! Alerts the reader to an action that **must be avoided** in order to protect equipment, software, data, or service. (ISO)



ALERT! Alerts the reader to an action that **must be performed** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)



FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)



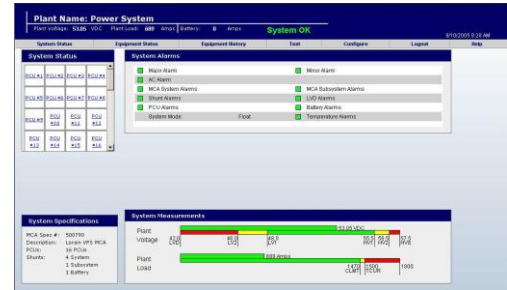
SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

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DESCRIPTION

The Vortex® Ethernet Card (VEC) provides comprehensive remote monitoring, control, and data processing functions for your Vortex or NetSure™ Power System via an Ethernet port. In addition to access by means of an SNMP option and a Web Interface, the VEC now provides a Modbus® TCP Interface. With the VEC installed, a PC equipped with an Ethernet card and Internet Explorer is all you need to access the Vortex Web Interface over your company's network.

This document describes the Web pages provided by the VEC's Web Interface.



NOTE! This document applies to both $-48V$ and $+24V$ Power Systems. Values in the example Web page illustrations may not match your system.

SPECIFICATIONS

Connection: Ethernet, RJ 45 10BaseT jack. This jack has a standard Ethernet pin configuration scheme, twisted pair.

Users: 64, maximum

Security:

- **Password Protection:** When logging onto the system, the user is prompted to enter a "User Password".
- **Page Access Levels:** User configurations provide a "Page Access Level" which can be used to limit the functions available to a particular user. Eight Page Access Levels are available.

PC Requirements:

- **Web Browser:** Microsoft® Internet Explorer 5.0 or newer
- **Screen Resolution:** 1024 x 768 or greater

Vortex MCA Compatibility: MCA firmware version 5.2.0 or newer required.

INITIALLY SETTING UP ETHERNET ACCESS

The Vortex Ethernet Card IP parameters must be set to match your company's network settings. This can be done via the Web Interface.

Configuring the Network Address via the Web Interface

The following procedure sets the MCA's Ethernet IP parameters via the Web Interface. It requires that you temporarily change the IP setup on your computer (PC). Windows 98 or later is required to set up the network connection.

This procedure requires a Permission Level of 8. The factory default user name and password provide Level 8 access. (For information about Permission Levels, see "Using the WEB Interface" on page 12.)

Procedure

Step 1. Record your PC's Network Settings

Record your current network settings for the computer you will be using to set the Vortex Ethernet Card's IP parameters. You will use these values in step 4.

Step 2. Change your PC's Network Settings

Change your computer's IP parameters to talk to the Vortex Ethernet Card using the card's default parameters.

- a) 192.168.1.1, set your computer to 192.168.1.2 (IP Address).
- b) 255.255.255.0, set your computer to the same (Subnet Mask).
- c) 192.168.1.1, set your computer to the same (Gateway).

Step 3. Change the VEC's Network Settings

Connect the Vortex Ethernet Card into your company's network. Use Internet Explorer to change the Vortex Ethernet Card's default IP parameters to the parameters issued by your IT department.

If your PC cannot access the Vortex Ethernet Card, it may be necessary to bypass your company network by using a "crossover" cable connected directly between your PC and the Vortex Ethernet Card.

Step 4. Reset your PC's Network Settings

Reset your computer's IP parameters back to their original values noted in step 1. If using a crossover cable, first reconnect your computer to your company's network and connect the Vortex Ethernet Card to your company's network.

Step 1: Record your PC's Network Settings

1. Open the **Control Panel** on your computer.
2. Select **Network Connections**.
3. Select **Local Area Connection**.
4. Select **Properties**.
5. Highlight **Internet Protocol (TCP/IP)**.
6. Select **Properties**.
7. Record the current settings, these may be specific parameters or your computer may be set to automatically obtain these parameters from your company's network.

Obtained IP Address Automatically _____
 or
 Use the following...
 IP Address: _____
 Subnet Mask: _____
 Default Gateway: _____

8. Select **Cancel**.

Step 2: Change your PC's Network Settings

1. Open the **Control Panel** on your computer.
2. Select **Network Connections**.
3. Select **Local Area Connection**.
4. Select **Properties**.
5. Highlight **Internet Protocol (TCP/IP)**.
6. Select **Properties**.
7. Select **"Use the following IP Address"**.
8. Enter the following.
 - a) 192.168.1.2, as the IP Address.
 - b) 255.255.255.0, as the Subnet Mask.
 - c) 192.168.1.1, as the default Gateway.
9. Select **OK**. Note that you may have to reboot your computer for the settings to take effect. Follow any instructions you see on the screen.

Step 3: Change the Ethernet Card Network Settings

1. Connect the Vortex Ethernet Card port to your company's network.
2. Power up the MCA, if not already powered.
3. Open your Web Browser. Type **192.168.1.1** in the Address box. Press **Enter**. The logon window will open. See **Figure 1**.

Figure 1: Logon Window

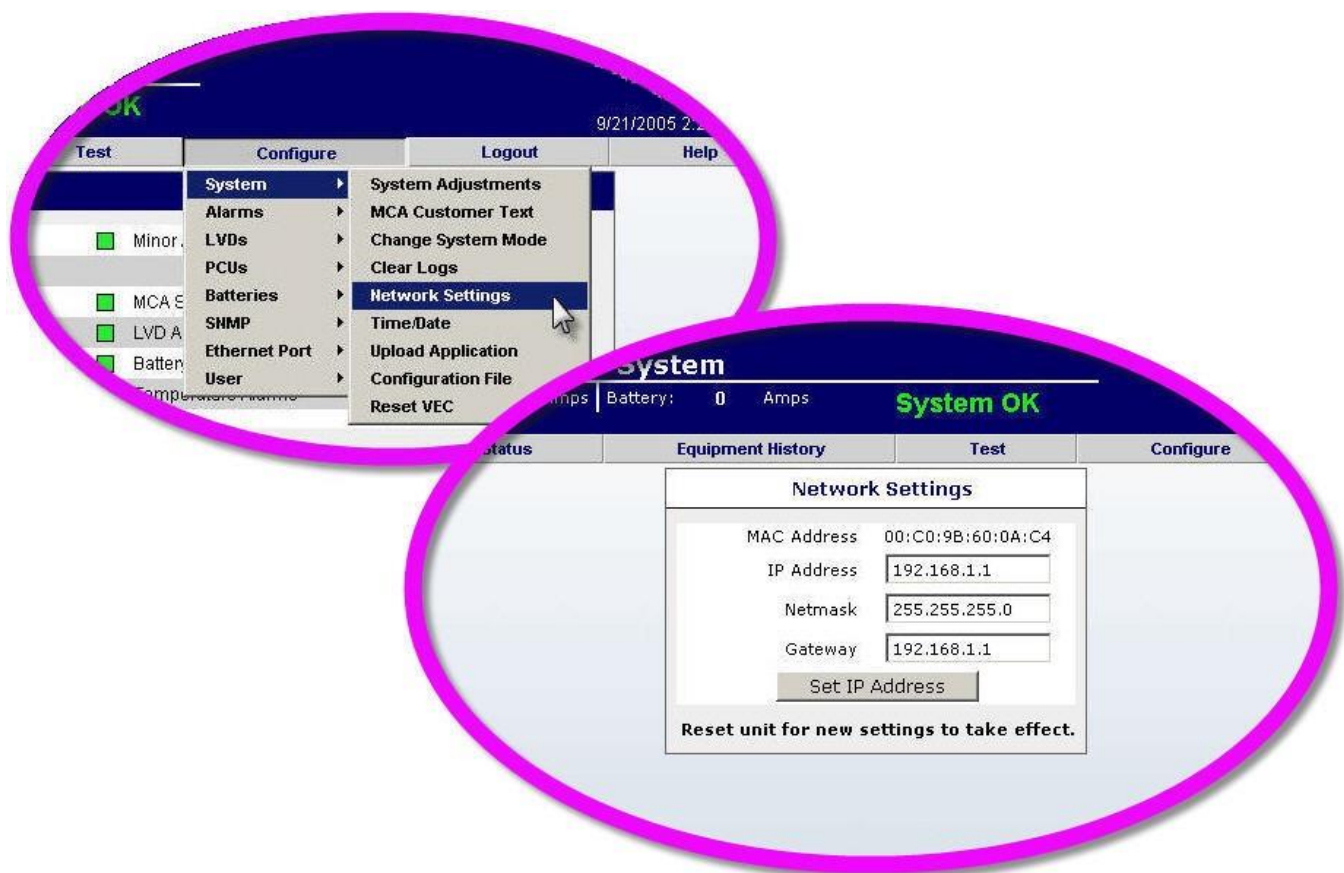


4. Type the default user name and password, then press **Enter**.
 User Name: **llp_admin**
 Password: **llp_admin**

NOTE! The user name and password are case-sensitive. For security, the password is not displayed on the computer's screen. You have three (3) attempts to enter a valid user name and password. If both are not entered correctly after three attempts, the browser is redirected to a "Protected Object" message page. A link is provided on that page that will return you to the logon window.

5. If a valid user name and password are entered, the System Status page opens.
6. On the toolbar near the top of the web page, select **Configure→System→Network Settings**. The **Network Settings** page opens. See **Figure 2**.

Figure 2: Opening the Network Settings Page

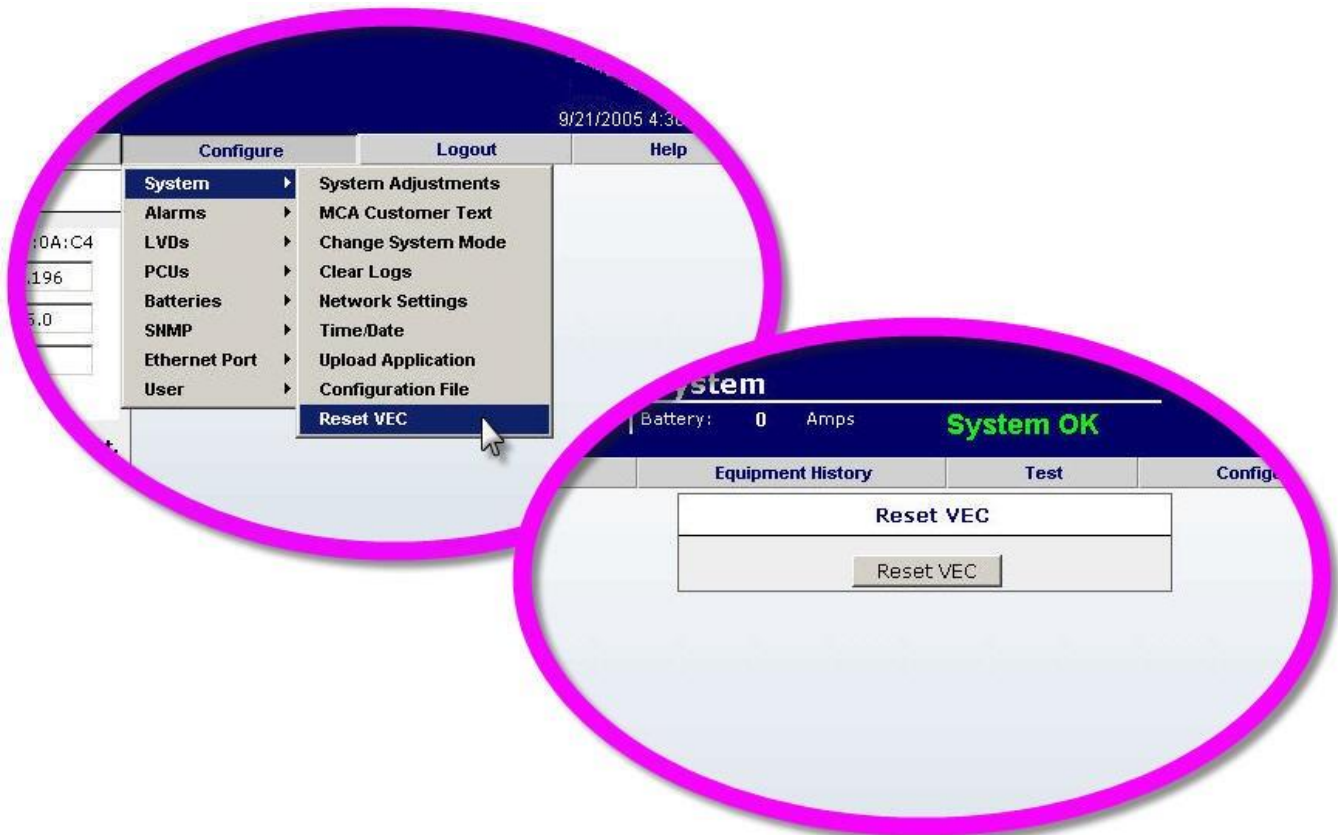


7. Enter the parameters issued by your IT department. When the required IP Address, Subnet Mask, and Gateway have been entered, click the **Set IP Address** button. **VERIFY WHAT YOU HAVE TYPED—IF IT IS ENTERED INCORRECTLY, YOU MAY NOT BE ABLE TO COMMUNICATED WITH THE VEC.** Is displayed.

NOTE! If a new value is unacceptable, an "Invalid Entry" message is displayed.

8. On the toolbar, select **Configure**→**System**→**Reset VEC**. The **Reset VEC** page opens. See **Figure 3**.
9. Click the **Reset VEC** button. Close your Web Browser.

Figure 3: Opening the Reset VEC Page



Step 4: Reset your PC's Network Settings

1. If you were using a crossover cable, reconnect your computer to your company's network and connect the Vortex Ethernet Card's port to your company's network.
2. Open the **Control Panel** on your computer.
3. Select **Network Connections**.
4. Select **Local Area Connection**.
5. Select **Properties**.
6. Highlight **Internet Protocol (TCP/IP)**.
7. Select **Properties**.
8. Set the IP parameters to the original settings recorded in step 1.
9. Check the new address settings by opening your Web Browser and entering the new IP address.

Final Step

You are now ready to access the power system over your company's network, as described in the next section.

USING THE WEB INTERFACE

Accessing the Power System

Users can access the VEC through a PC's Web Browser via the Ethernet port. The default IP Address is 192.168.1.1.

Passwords and Permission Levels

General: Up to 64 separate users can be configured to access the system. Each user is assigned a password and an access permission level.

Passwords: The password assigned to a user must be entered for that user to log onto the system.

Permission Levels: The Permission Level (1-8) assigned to a user determines which Web pages that specific user can access. Page accessibility defines which operations a user can perform. A user with a Permission Level of 1 can execute all Level 1 operations only. A user with a Permission Level of 2 can perform all Level 2 or Level 1 operations, and so forth. A user with a Permission Level of 8 (Administrator) can perform all operations available at all levels.

Table 1 lists the access rights for each Permission Level. See **Table 2** for a list of available Web pages and the minimum permission level required to access each.

Table 1: *Permission Levels and Rights*

Permission Level	Rights
1	View
2	View Details
3	Test
4	Configure Alarms
5	Configure System Settings
6	Configure PCU/LVD
7	SNMP
8	Administrator

Table 2: Web Pages and Minimum Required Permission Levels (cont'd on next page)

Toolbar Button	Navigation from Tool Bar Button	Web Page Name	Level
System Status	→System Status	System Status	1
Equipment Status	→MCA System	MCA Summary	1
	→MCA Subsystem	MCA Subsystem	1
	→PCU	PCU Summary	1
	→PCU →PCU Details	PCU Details	1
	→PCU Slots	Available PCU Slots	1
	→Shunt	Shunt Summary	1
	→LVD	LVD Summary	1
	→Temperature	Temperature Summary	1
	→Battery	Battery Summary	1
	→Battery Reserve	Battery Reserve Summary	1
Equipment History	→Alarm Log	Alarm Log	1
	→User List	User List	2
Test	→Battery Discharge Results	Battery Test Results	3
	→Relay Test	Relay Test	3


Table 2: Web Pages and Minimum Required Permission Levels (cont'd from previous page)

Toolbar Button	Navigation from Tool Bar Button	Web Page Name	Level
Configure	→System→System Adjustments	System Adjustments	5
	→System→MCA Customer Text	MCA Customer Text	5
	→System→Change System Mode	Set MCA Mode	5
	→System→Clear Logs	Clear Logs	8
	→System→Network Settings	Network Settings	8
	→System→Time/Date	Change Time/Date	8
	→System→Upload Application	Upload VEC Application	8
	→System→Configuration File	Configuration File Operations	8
	→System→ Reset VEC	Reset VEC	8
	→Alarms→Plant Load	Plant Load Alarm Settings	4
	→Alarms→Plant Voltage	Plant Voltage Alarm Settings	4
	→Alarms→Subsystem	Subsystem Alarm Settings	4
	→Alarms→Battery Charge Current	Battery Charge Current Alarm Settings	4
	→Alarms→Battery Reserve	Battery Reserve	4
	→Alarms→Temperature	System Temperature Alarm Settings	4
	→LVD→LVD Settings	LVD Settings	6
	→LVD→Manual Reconnect	Manual LVD Reconnect	6
	→PCUs →PCU On/Off	TR PCUs	6
	→PCUs →PCU Settings	PCU Settings	6
	→PCUs →PCU Customer Text	PCU Customer Text	6
	→Batteries→Battery Discharge Graphs	Battery Test Results	5
	→Batteries→Clear Battery Health Alarm	Clear Battery Health Alarm	8
	→SNMP→SNMP Settings	SNMP Settings	8
	→Ethernet Port→Ethernet Port Settings	Ethernet Settings	8
	→User→Add/Remove Users	User List	8
	→User→Add/Remove Users→ Add User	Add User	8
	→User→Add/Remove Users→ Edit User	Edit User	8
→User →Update Password	Change Password	1-8	
Help	→About VEC	About VEC	1

Logging onto The System

Procedure

1. Open your Web Browser. If not already done, enter the network's IP Address in the browser's Address window, then press **Enter**. The logon window opens. See example in **Figure 4**.
2. Type the correct user name and password, then click **OK**. For security, the password is not displayed on the computer's screen while you log on. You have three (3) attempts to enter a valid user name and password. If both are not entered correctly after three attempts, the browser is redirected to a "Protected Object" message page. A link is provided on that page that will return you to the logon window.

 **NOTE!** User names and passwords are case-sensitive, and must be 6-10 characters long, with no spaces. Both alpha and numeric characters may be used.

3. When a valid user name and password are entered, the System Status page opens. You are now logged on to the system.
4. When you wish to log off the system, click the **Logout** button on the toolbar.

Figure 4: Logging On



Viewing the System Status Page

Requires a Permission Level of 1 or higher.

The System Status page is the VEC's home page. **Figure 5** shows the following components of the System Status page. Many of these features are common to other pages of the VEC Web Interface.

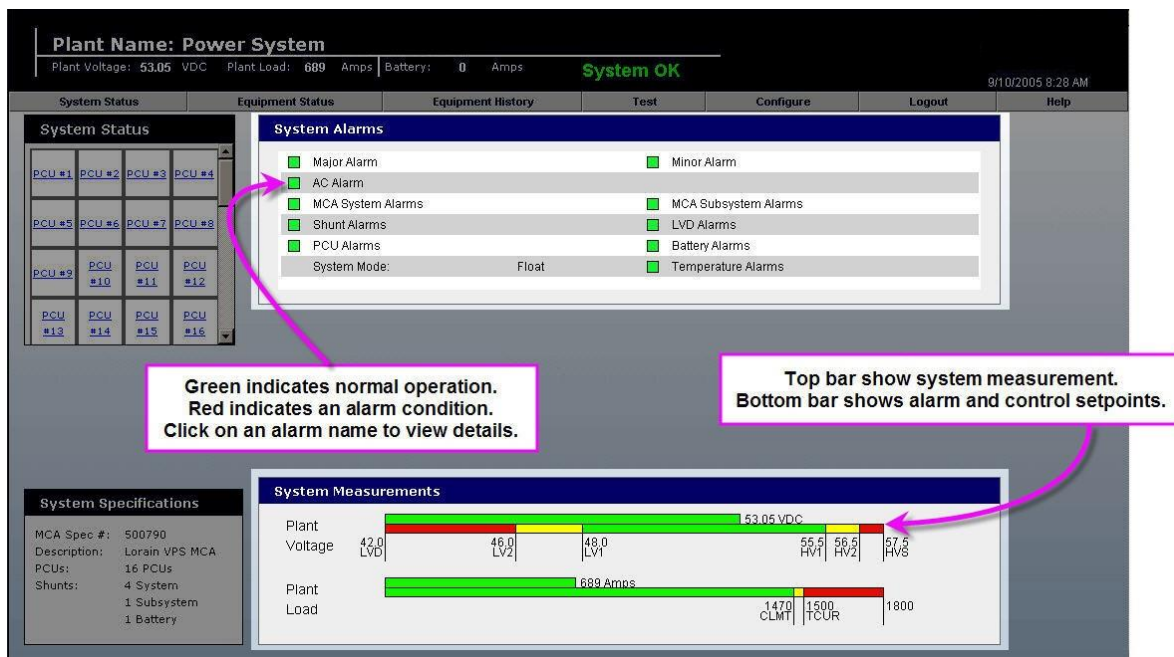
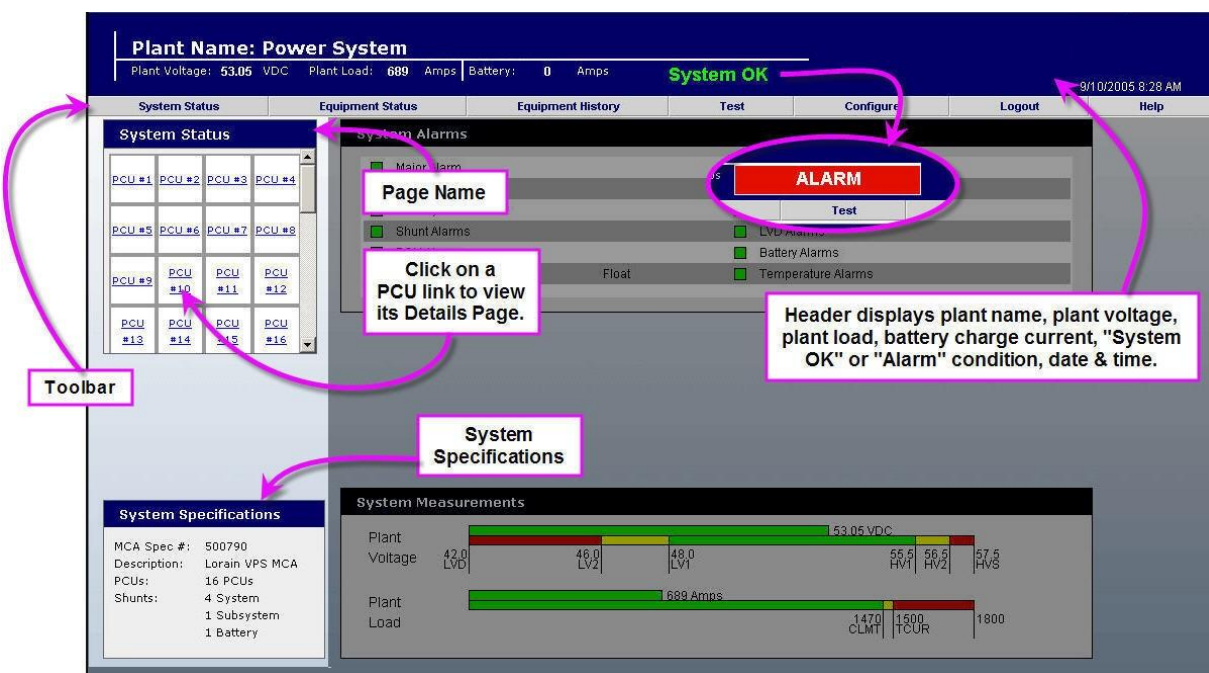
- **Header:** The header appears on all VEC Web pages. It displays the plant name (user-configurable), plant voltage, load current, battery charge current (if the system includes a battery shunt), a **“System OK”** or **“ALARM”** indication, and the date and time. On any page, clicking on the **“ALARM”** indicator will open the **System Status** page so that system alarms can be viewed.
- **Toolbar:** The toolbar appears on all VEC Web pages. Buttons on the toolbar provide access to all status, history, test and configuration pages described in this section.
- **Page Name & Graphic Interface:** The name of the Web page is displayed in the top bar of this pane. A graphical representation of the system shows all PCUs in your specific system. Clicking on a PCU opens the detailed status page for that component.



NOTE! *The actual physical arrangement of PCUs in your system may not be as depicted in the graphic interface.*

- **System Specifications:** This pane provides identifying information including MCA specification number and description, the number of PCUs and number of system, subsystem and battery shunts in the Power System.
- **System Alarms:** This pane displays the name and status of all system alarms. Clicking on an alarm name opens an MCA summary page that provides alarm details. Also shown in this pane is the System Mode of operation (Float, Equalize or Test). Clicking on the System Mode text opens the Set MCA Mode page, from which the mode can be changed.
- **System Measurements:** This pane displays the plant voltage and plant load measurements. In each case, the top bar shows the actual measurement, while the bottom bar show alarm and control setpoints.

Figure 5: System Status Page Components

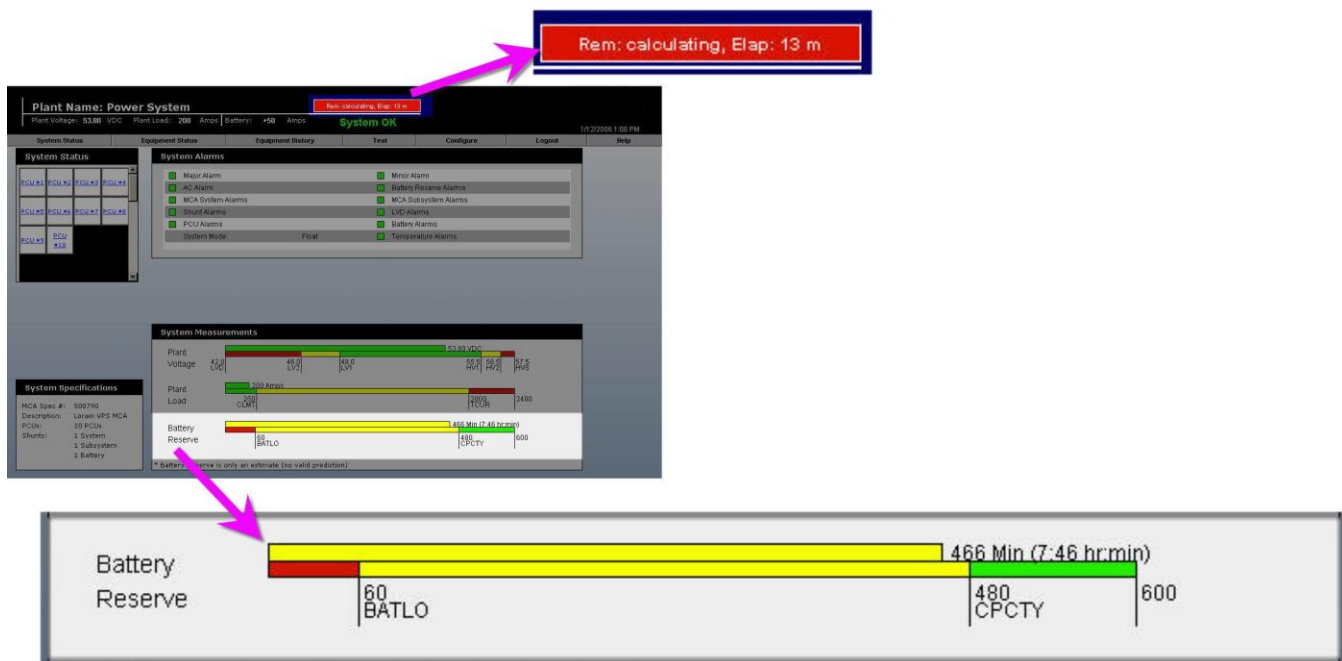


If the VEC is equipped with the Battery Reserve Time Prediction Option, additional information is provided on the System Status page whenever the system batteries are discharging. **Figure 6** shows the following additional components on the System Status page.

- **Battery Discharge Alarm:** Red indicator shows batteries are discharging. Text within the indicator shows the elapsed discharge time (Elap:). After sufficient discharge time has elapsed for the MCA to perform a calculation, the predicted time remaining before battery voltage decreases to the Battery End of Reserve setpoint is also displayed (**Rem:**).
- **Battery Reserve Measurements:** This pane displays the battery reserve measurements. The top bar shows the remaining reserve time as calculated by the VEC, while the bottom bar shows the Battery Expected Reserve (CPCTY in the example) and Battery End of Reserve (BATLO in the example) setpoints.

NOTE! See “Viewing the Battery Reserve Page (If Provided)” on page 32 for more information regarding Battery Reserve and Battery Health.

Figure 6: System Status Page with Batteries Discharging



Viewing Equipment Status

You can view the status of all major components of the power system. Pages are provided for the MCA System, MCA Subsystem, PCUs, PCU slots (mounting positions), shunts, LVDs, temperature, batteries, and battery reserve (if the Battery Reserve Time Prediction Option is installed).

Viewing the MCA System Summary Page

Requires a Permission Level of 1 or higher.

On this page, you can view the following information about the MCA.

- **MCA Specifications:** Includes the MCA's Spec. Number, serial number, firmware revision number, description, and a user-configurable text line.
- **MCA Modes:** Shows Float, Equalize and Test Mode parameters. The active mode is checked and boldfaced. The Equalize Time and Equalize Multiplier are also displayed, as well as the End-Test voltage, Test-Sample Interval and Test Time.



NOTE! MCA version 5.1.0 or later is required for the Test Mode function.

- **MCA Systems Alarms:**

Displays status of following alarms: All AC Off, High AC Line, System Fuse, No PCUs Installed, Emergency Stop, Board Fail, Display Fail, Sense Lead Fuse, System Voltage Fuse, Sense Voltage Error, No System Voltage Input, No Sense Voltage Input, MCA Communication Error, Load Share Alarm, High Voltage Shutdown.

Displays status and setpoints of following alarms: High Voltage 1 & 2, Low Voltage 1 & 2, and Total Current.

Procedure

1. On the toolbar, select **Equipment Status**→**MCA System**. The **MCA System Summary** page opens. See example in **Figure 7**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition.

Figure 7: MCA System Summary Page

The screenshot shows the MCA System Summary Page for a 'Power System'. It is divided into several sections:

- MCA Modes:** A table showing operational parameters.

<input checked="" type="checkbox"/> Float Voltage	50.50 VDC	<input type="checkbox"/> Equalize Voltage	54.48 VDC
<input type="checkbox"/> Test - End Voltage	46.00 VDC	Equalize - Time	1 hrs
Test - Sample Interval	60 Sec	Equalize - Multiplier	Disabled
Test - Time	1:00 hr:min		
- MCA System Alarms:** A list of system alarms, each with a green status indicator.

<input type="checkbox"/> All AC Off	<input type="checkbox"/> Board Fail
<input type="checkbox"/> High AC Line	<input type="checkbox"/> Display Fail
<input type="checkbox"/> High Voltage #1	<input type="checkbox"/> Sense Lead Fuse
<input type="checkbox"/> High Voltage #2	<input type="checkbox"/> System Voltage Fuse
<input type="checkbox"/> Low Voltage #1	<input type="checkbox"/> Sense Voltage Error
<input type="checkbox"/> Low Voltage #2	<input type="checkbox"/> A-D No System Voltage Input
<input type="checkbox"/> System Fuse	<input type="checkbox"/> A-D No Sense Voltage Input
<input type="checkbox"/> Total Current	<input type="checkbox"/> Shunt A-D No Reply
<input type="checkbox"/> Battery Charge Current Alarm	<input type="checkbox"/> Shunt A-D Bad Type
<input type="checkbox"/> Load Share Alarm	<input type="checkbox"/> MCA Communication Error
<input type="checkbox"/> No PCUs Installed	<input type="checkbox"/> Battery Current Limit Inhibited
- MCA Specifications:** A box containing system identification information.

MCA Spec #:	500790
MCA S/N:	321140038
MCA Ver:	5.1.0
Description:	Lorain VPS MCA
Customer Text:	Lorain Vortex MCA v5.1.0.

Viewing the MCA Subsystem Summary Page

Requires a Permission Level of 1 or higher.

On this page, you can view the following information about the MCA.

- **MCA Specifications:** Includes the MCA's specification number, serial number, firmware revision number, description, and a user-configurable text line.
- **MCA Modes:** Shows Subsystem voltage and Subsystem current.
- **MCA Subsystems Alarms:**

Displays status of following alarms: Subsystem Major, Subsystem Minor, Subsystem Fuse, and No Subsystem Voltage Input.

Displays status and setpoints of following alarms: Subsystem High Voltage, Subsystem Low Voltage, and Subsystem Current.

Procedure

1. On the toolbar, select **Equipment Status**→**MCA Subsystem**. The **MCA Subsystem Summary** page opens. See example in **Figure 8**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition. The alarm label is boldfaced during an alarm condition.

Figure 8: MCA Subsystem Page

The screenshot shows the MCA Subsystem Summary page with three callout boxes highlighting key information:

- MCA Specifications:**
 - MCA Spec #: 500790
 - MCA S/N: 321140038
 - MCA Ver: 5.1.0
 - Description: Lorain VPS MCA
 - Customer Text: Lorain Vortex MCA v5.1.0.
- MCA Modes:**
 - Subsystem Voltage: 24.44 VDC
 - Subsystem Current: 46 Amps
- MCA Subsystem Alarms:**
 - Subsystem Major (Green)
 - Subsystem Minor (Green)
 - Subsystem High Voltage: 25.00 VDC (Green)
 - Subsystem Low Voltage: 23.00 VDC (Green)
 - Subsystem Current: 300 Amps (Green)
 - Subsystem Fuse (Green)
 - A-D No Subsystem Voltage Input (Green)

Viewing the PCU Summary Page

Requires a Permission Level of 1 or higher.

On this page, you can view the following information about each PCU in the system.

- **PCU ID Number and Status:** Identifies the PCU position in the system. PCUs are numbered per switch settings within each PCU Mounting Shelf. The status indicator shows an alarm in the event of a failure condition in the PCU.
- **PCU Load:** PCU load current in amps.

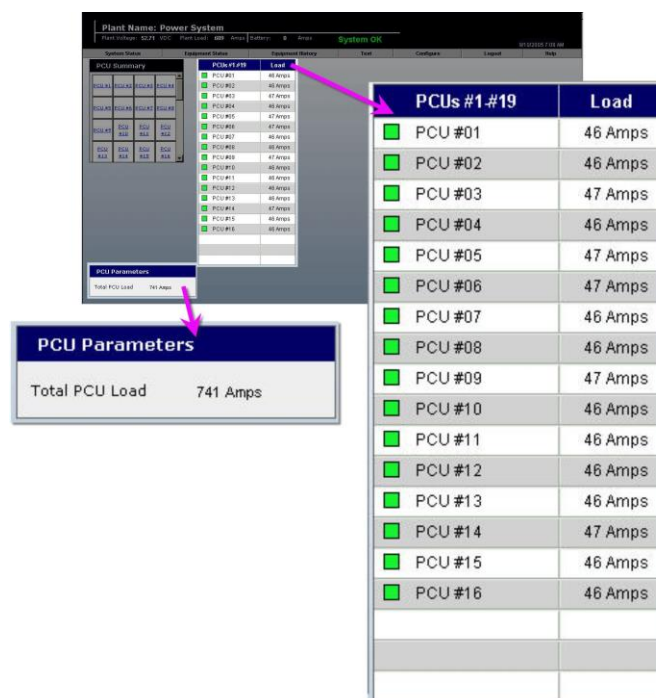
You can also view the following information about all PCUs in the system.

- **Total PCU Load:** Total output current in amps of all PCUs in the system.

Procedure

1. On the toolbar, select **Equipment Status**→**PCU**. The **PCU Summary** page opens. See example in **Figure 9**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition. The alarm label is boldfaced during an alarm condition.
3. Clicking on a PCU's ID number will open a **PCU Details** page for that specific PCU. (See “Viewing the PCU Details Pages” next.)

Figure 9: PCU Summary Page



Viewing the PCU Details Pages

Requires a Permission Level of 1 or higher.

From the **PCU Summary Page**, you can open a **PCU Details Page** for each PCU in the system. On this page, you can view the following additional information about the PCU.

PCU Specifications: Specification number, serial number, firmware revision level, rated input and rated output in volts, capacity in amps, and user configurable text.

PCU Load: PCU load current in amps.

TR Status: Whether or not the PCU output is inhibited by application of a remote TR signal.

PCU Alarms: The status of the following alarms: Emergency Stop, HVS (High Voltage Shutdown) Active, Open Sense Lead, Input Switch Off, High AC Line, AC Fail, A-D Failed, Converter Element, High Temperature, (output) Breaker Off, Fan Fail, Off by MCA, and No Response.

Procedure

1. On the toolbar, select **Equipment Status**→**PCU**. The **PCU Summary** page opens.
2. Click on the desired PCU identification number. The **PCU Details** page for that PCU opens. See example in **Figure 10**.
3. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition. The alarm label is boldfaced during an alarm condition.

Figure 10: PCU Details Page

The screenshot displays the 'PCU #04 Details' page with three callout boxes highlighting key information:

- PCU #04 Specifications:**
 - Spec #: A486526800
 - S/N: 17
 - F/W Rev: 0.1.0.0
 - Rated In: 110 Volts
 - Rated Out: -48 Volts
 - Capacity: 25 Amps
 - Customer Text: Now testing customer's text.
- PCU #04 Details:**
 - PCU Load: 46 Amps
 - TR Status: Not TR'd
- PCU #04 Alarms:**
 - Emergency Stop
 - HVS Active
 - Open Sense Lead
 - Input Switch Off
 - High AC Line
 - AC Fail
 - A-D Failed
 - Converter Element
 - High Temperature
 - Breaker Off
 - Fan Fail
 - Off By MCA
 - No Response

Viewing the Available PCU Slots Page

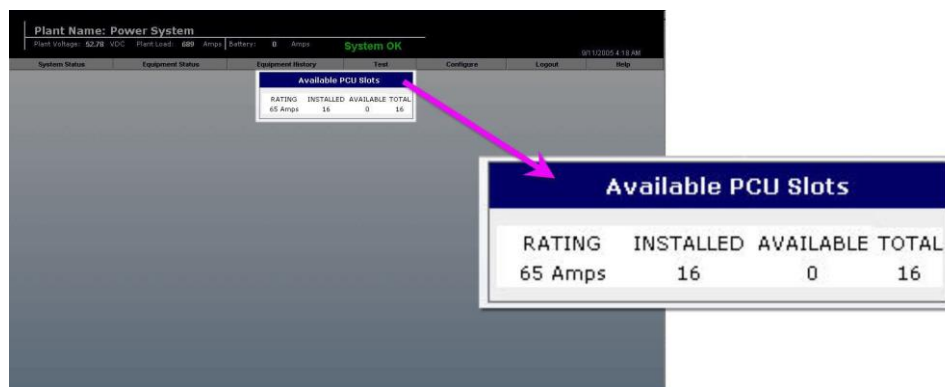
Requires a Permission Level of 1 or higher.

On this page, you can view the following information about the PCU Mounting Slots in your power system: current rating, number of slots filled, slots available, and total slots, for each available full current rating.

Procedure

1. On the toolbar, select **Equipment Status**→**PCU Slots**. The **Available PCU Slots** page opens. See example in **Figure 11**.

Figure 11: Available PCU Slots



Viewing the Shunt Summary Page

Requires a Permission Level of 1 or higher.

The MCA can manage up to 16 shunts. On this page, you can view the following information about each shunt in the Power System.

- Type of shunt: System, Subsystem or Battery.
- Current measured by the shunt. A **battery** shunt value is preceded by a “+” if the battery is charging, and a “-” if the battery is discharging.
- An alarm if shunt response is lost or shunt is a bad type.



NOTE! Shunts are monitored serially. Loss of response from one shunt will result in loss of response from all following shunts, as shown in the inset in **Figure 12**.

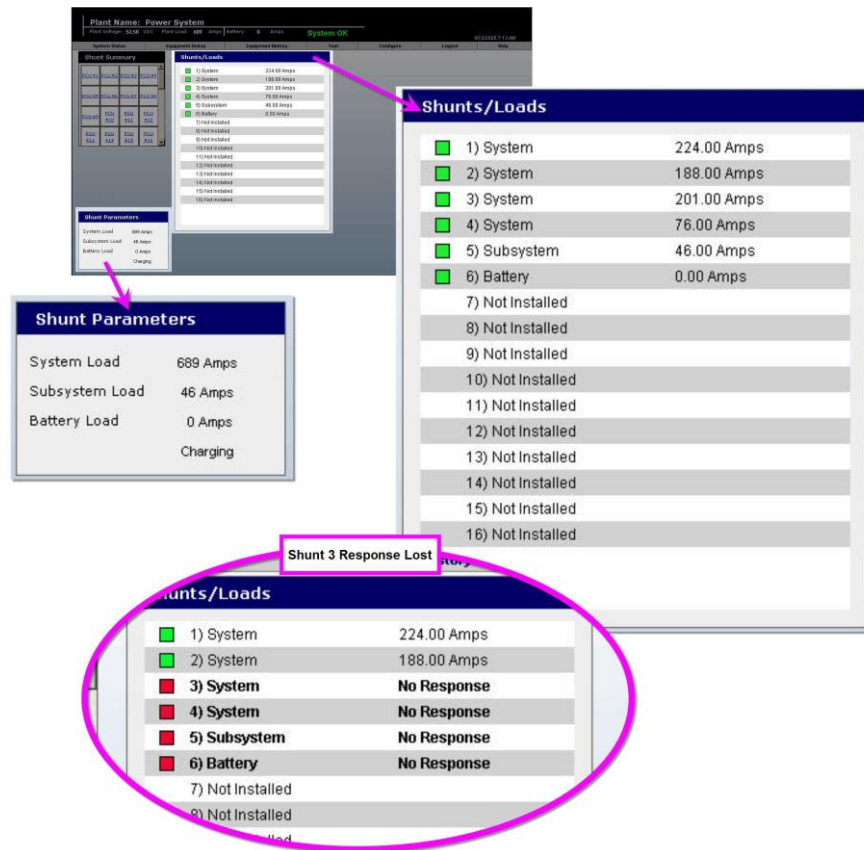
On this page, you can view the following information about all shunts in the Power System.

- Total system load.
- Total subsystem load.
- Total battery load, and whether the battery is charging or discharging.

Procedure

1. On the toolbar, select **Equipment Status→Shunt**. The **Shunt Summary** page opens. See example in **Figure 12**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition.

Figure 12: Shunt Summary Page



Viewing the LVD Summary Page

Requires a Permission Level of 1 or higher.

The LVD circuit card provides three separate control circuits. Each can be programmed with its own disconnect voltage setpoint and one global reconnect setpoint.

One of the three pairs of LVD levels (1, 2 and 3) may be assigned to any LVD card, which consists of two individual battery voltage monitors (A and B), both of which must sense low system voltage before disconnection can occur. The Quad LVD board can control four LVD contactors, each of which may be assigned to any one of the three LVD levels. Use of redundant voltage monitor circuits prevents a circuit failure from unnecessarily disconnecting loads or battery.

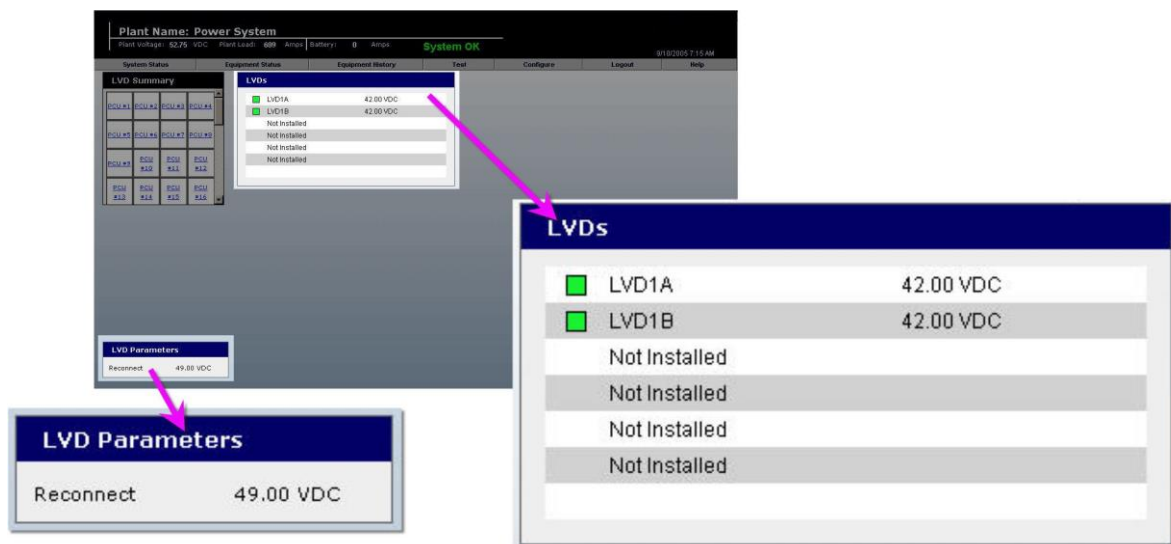
On this page, you can view the following LVD information.

- The Disconnect setpoint for each LVD circuit.
- An alarm if system voltage decreases below an LVD Disconnect setpoint.
- The global Reconnect setpoint for all LVD circuits.

Procedure

1. On the toolbar, select **Equipment Status**→**LVD**. The **LVD Summary** page opens. See example in **Figure 13**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition. The alarm label is boldfaced during an alarm condition.

Figure 13: LVD Summary Page



Viewing the Temperature Summary Page

Requires a Permission Level of 1 or higher.

The MCA accepts the input from one temperature probe, and provides temperature-related system functions, including battery charge temperature compensation, and high and low temperature alarms. When furnished with an optional Temperature Concentrator Module (TXM), the system can support up to eight temperature probes.

On this page, you can view the following temperature compensation information:

- **Compensation Mode:** Displays mode of battery charge temperature compensation; either digital, analog or none.

You can also view the following temperature compensation information when **digital** temperature compensation is active:

- **Compensation Source:** For TXM probes only, displays whether compensation is based on the average temperature of all connected probes, the temperature of Probe 1, or the highest temperature reported.
- **Compensation Temperature:** Compensation source temperature value.
- **Temp Comp Slope:** Programmed temperature-driven change to output voltage.
- **Temp Comp Min:** Lower limit for temperature-compensated output voltage.
- **Temp Comp Max:** Upper limit for temperature-compensated output voltage.

You can view the following temperature compensation information when **analog** temperature compensation is active:

- **Analog Temp Comp:** Battery Charge Temperature Compensation Module calibration voltage setting.

In addition, you can also view the following information relating to each of the Temperature Probes connected to the system.

- **Temp:** Temperature the probe is reporting.
- **High:** Setpoint and status of the High Temperature alarm. If probe temperature rises above the setpoint, a red indicator lights next to the setpoint value.
- **Low:** Setpoint and status of the Low Temperature alarm. If probe temperature falls below the setpoint, a red indicator lights next to the setpoint value.
- **Status Indicator:** Indicates OK during normal operation, or No Response if a probe is disconnected.

Procedure

1. On the toolbar, select Equipment Status Temperature. The Temperature Summary page opens. See example in **Figure 14**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition.

Figure 14: Temperature Summary Page

The screenshot displays the Temperature Summary Page with several callouts highlighting specific features:

- Digital Probe(s) Installed:** Points to the Digital Temperature Compensation section.
- Analog Probe Installed:** Points to the Analog Temperature Compensation section.
- MCA Specifications:** Points to the MCA Specifications section.
- Probe 1 Temperature Exceeds High Temp Setting:** Points to the Temperature Status table where Probe #1's temperature (32 C) is highlighted in red because it exceeds its high limit (30 C).

Temperature Compensation (Digital)

Compensation mode:	Digital	Temp Comp Slope	0.200 V per C
Compensation source:	Highest	Temp Comp Min	50.00 VDC
	33 C	Temp Comp Max	56.50 VDC

Temperature Compensation (Analog)

Compensation mode:	Analog	Analog Temp Comp	47.50 VDC
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MCA Specifications

MCA Spec #:	500790
MCA S/N:	305419896
MCA Ver:	5.1.0
Description:	Lorain VPS MCA

Temperature Status

Probe	Temp	High	Low	Status
Probe #1	26 C	30 C	0 C	OK
Probe #2	27 C	28 C	0 C	OK
Probe #3	28 C	29 C	0 C	OK
Probe #4	29 C	30 C	0 C	OK
Probe #5	30 C	31 C	0 C	OK
Probe #6	31 C	32 C	0 C	OK
Probe #7	32 C	33 C	0 C	OK
Probe #8	33 C	34 C	0 C	OK

Temperature Status (Callout)

Probe	Temp	High	Low	Status
Probe #1	32 C	30 C	0 C	OK
Probe #2	Not Installed			

Viewing the Battery Summary Page



NOTE! The Power System must be equipped with a battery shunt for the Battery Charge Current Alarm and Battery Charge Current Limit circuit to function.

Requires a Permission Level of 1 or higher.

On this page, you can view the following battery-related information:

Battery Parameters: This pane displays **Total Battery Current**, and whether the battery is **Charging** or **Discharging**. **CL** is displayed when battery charge current is being limited.

Battery Summary: This pane displays the following:

Battery Charge Current Alarm: Setpoint and status of the Battery Charge Current Alarm.

Battery Charge Current Limit: (See examples in Error! Reference source not found.)

The MCA's Battery Charge Current Limit feature can be manually enabled or disabled by the user. If the feature is enabled, the setpoint and status are displayed.

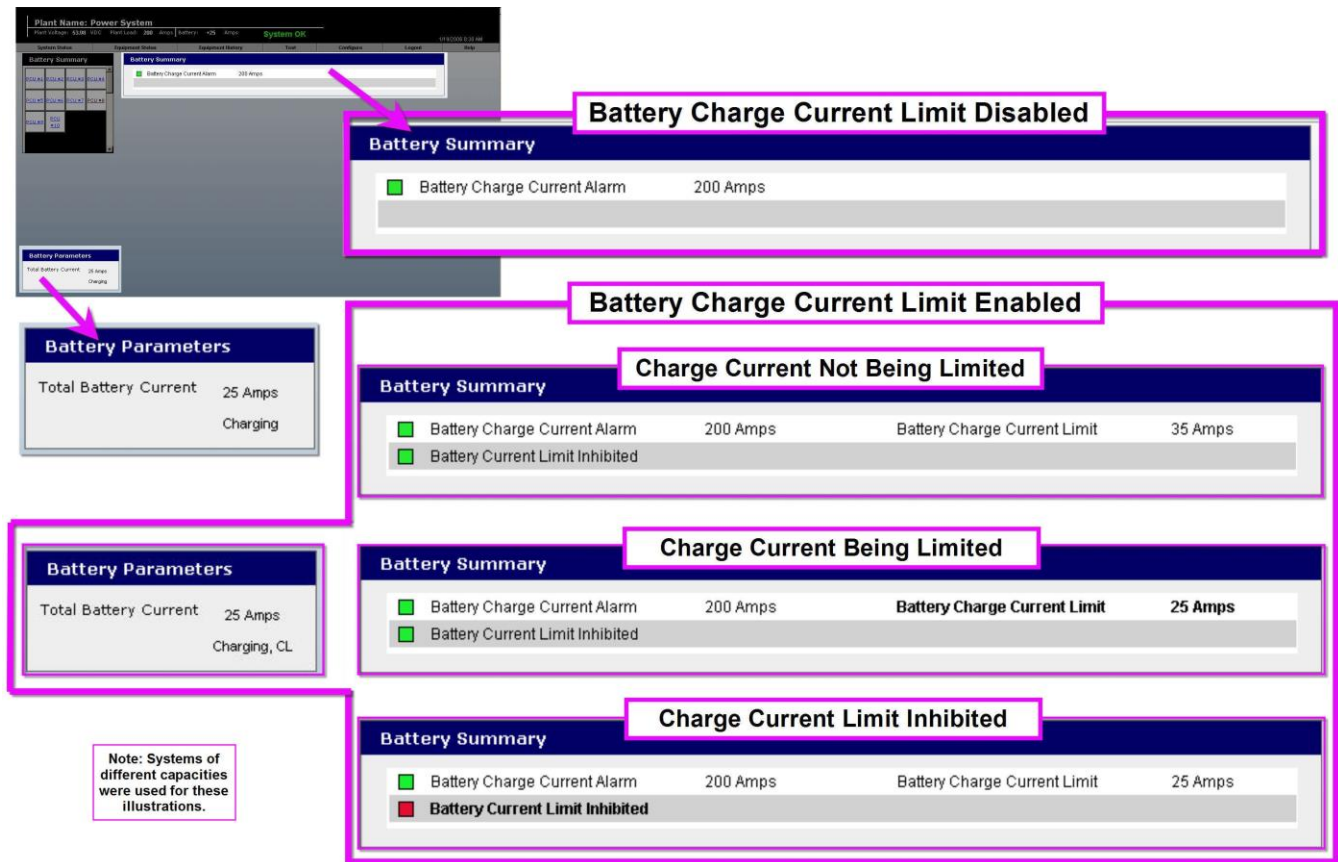
Whenever the MCA is limiting the battery charge current, the displayed text appears in boldface.

A **Battery Current Limit Inhibited** alarm is displayed if the MCA is placed in a state in which it can no longer control the battery current. The Current Limit feature will automatically be inhibited if a Shunt Type alarm or Shunt No Reply alarm is present, or if the sum of system load current and battery charge current is less than 90% of total PCU output capacity.

Procedure

1. On the toolbar, select **Equipment Status**→**Battery**. The **Battery Summary** page opens. See example in **Figure 15**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm. The alarm label is boldfaced during an alarm condition.

Figure 15: Battery Summary Page



Viewing the Battery Reserve Page (If Provided)



NOTE! The VEC must be equipped with the Battery Reserve Option.

Requires a Permission Level of 1 or higher.

On this page, you can view the following information relating to battery reserve and battery health.

When Batteries Are Not Discharging:

- **Batteries been charging for xx:xx hr:min:** Shows amount of time batteries have charged since last on discharge. Elapsed charging time is shown until the Battery Recharge Time setting is reached (See Configuring Battery Reserve Settings). Once the Battery Recharge Time setting is reached, the displayed message switches to **Batteries have charged for at least xx:xx hr:min.** Note that the batteries must complete an entire recharge if the Battery Health Alarm is to be enabled.

When Batteries Are Discharging:

- **Battery End of Reserve Voltage:** This user-adjustable setpoint specifies the voltage at which the batteries are considered fully discharged. Used by the VEC to calculate the following battery reserve parameters: Battery Health, Remaining Time, Target End Time, Total Capacity and Total Capacity %.
- **Start Time:** Time at which the batteries started discharging.



NOTE! Batteries are considered to have begun discharging when battery voltage has decreased to 0.5V below the nominal system float voltage setting.

- **Elapsed Time:** Amount of time for which the batteries have been discharging. This value also appears in the red battery discharge alarm in the page header. Elapsed time will continue until system voltage returns to within 0.5V of the float voltage settings.
- **Valid Prediction (Yes/No):** Signals whether the calculated Remaining Time, Target End Time, Total Capacity, and Total Capacity % predictions are considered accurate. (A certain amount of discharge history is required to provide accurate predictions. Until a valid prediction has been established, estimates are provided for Remaining Time, Target End Time, Total Capacity and Total Capacity %.)
- **Remaining Time:** Predicted time remaining before battery voltage decreases to the Battery End of Reserve setpoint. This value also appears in the red battery alarm in the page header. Note that this value is recalculated and updated every five minutes.
- **Target End Time:** Predicted time at which battery voltage will decrease to the Battery End of Reserve setpoint.
- **Total Capacity:** Sum of Elapsed Time and Remaining Time.
- **Total Capacity %:** Calculated capacity divided by expected capacity.

This page also displays the status and setpoints of following alarms:

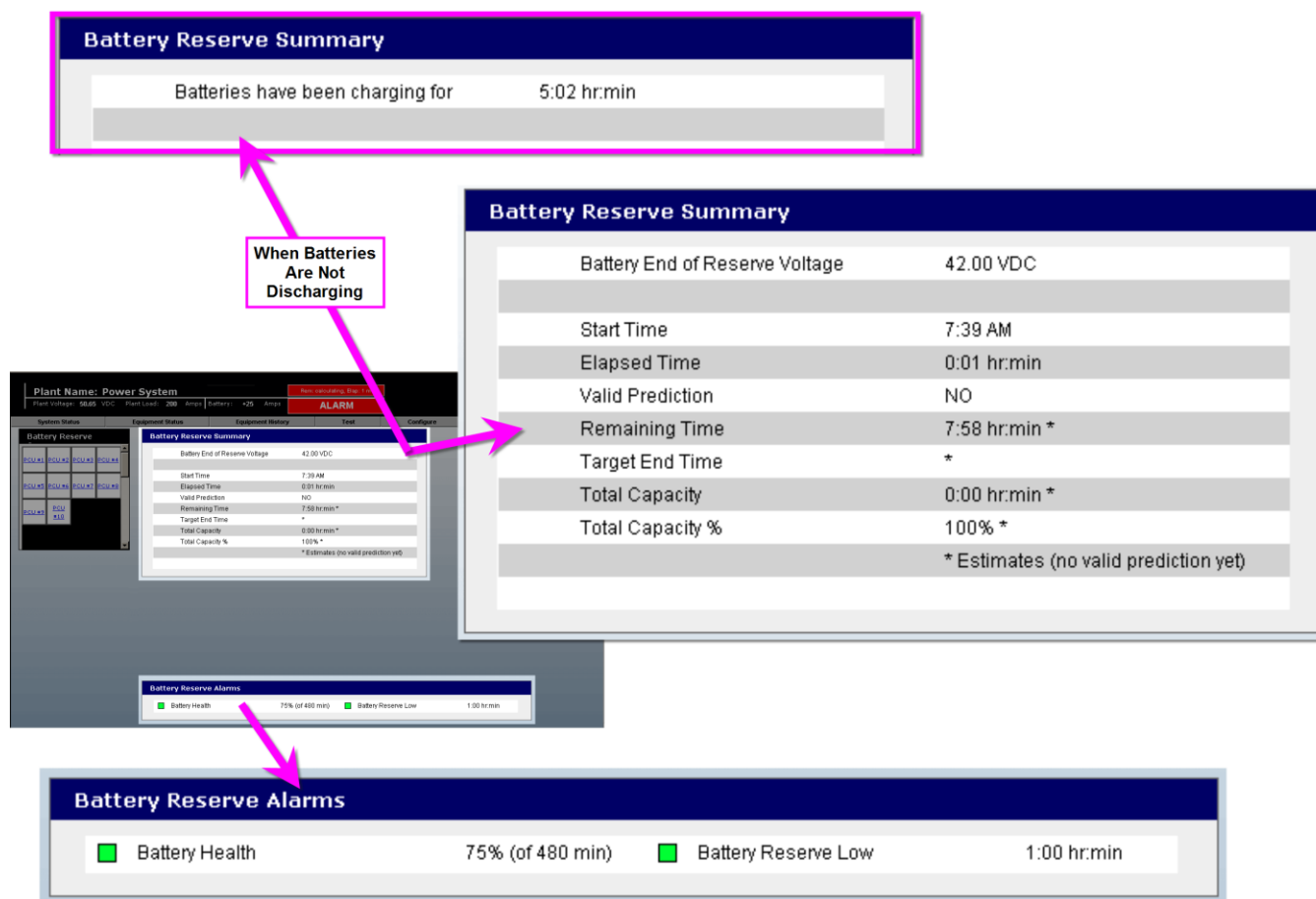
- **Battery Health Alarm:** Activates when the calculated capacity is less than the Battery Health Alarm setpoint.

- **Battery Reserve Low Alarm:** Activates when the calculated Remaining Battery Reserve Time decreases below the Battery Reserve Low Alarm setpoint.

Procedure

1. On the toolbar, select **Equipment Status**→**Battery Reserve**. The **Battery Reserve** page opens. See example in **Figure 16**.
2. Alarms are as follows: RED = Alarm, GREEN = No Alarm

Figure 16: Battery Reserve Page



Viewing Equipment History

Viewing the Alarm Log

Requires a Permission Level of 1 or higher.

On this page, you can view the record of all alarms that have occurred since the last time the alarm log was cleared. Up to 500 alarm entries are stored for viewer display. The following information is provided.

- **Entry Number:** Sequential number automatically assigned to alarms as they occur. Numbering restarts at 1 when the alarm log is cleared.
- **Description:** Shows the type of alarm.
- **Occurred:** Shows the date and time at which the alarm event occurred.
- **Cleared:** Shows the date and time at which the alarm was cleared.

Procedure

1. On the toolbar, select **Equipment History->Alarm Log**. The **Alarm Log** page opens. See example in **Figure 17**.
2. Scroll to display entire alarm log contents.

Figure 17: Alarm Log Page

Entry	Description	Occurred	Cleared
1	Sense voltage error	01/13/06 11:46:45	01/13/06 11:48:48
2	System minor	01/13/06 11:46:45	01/13/06 11:48:47
3	System major	01/13/06 11:45:12	01/13/06 11:45:16
4	No response from Temperature Probe 1	01/13/06 11:45:09	01/13/06 11:45:16
5	High temperature Probe 1	01/13/06 11:40:17	01/13/06 11:42:09
6	System major	01/13/06 11:40:17	01/13/06 11:42:09
7	No response from Temperature Probe 8	01/13/06 11:27:09	01/13/06 11:45:57
8	No response from Temperature Probe 7	01/13/06 11:27:09	01/13/06 11:45:49
9	No response from Temperature Probe 6	01/13/06 11:27:08	01/13/06 11:45:43
10	No response from Temperature Probe 5	01/13/06 11:27:08	01/13/06 11:45:43
11	No response from Temperature Probe 4	01/13/06 11:27:08	01/13/06 11:45:36
12	No response from Temperature Probe 3	01/13/06 11:27:08	01/13/06 11:45:36

Viewing the User List

Requires a Permission Level of 2 or higher.

On this page, you can view the information entered for each user. Included is the following information.

- **Users:** User name assigned for logging onto the system
- **Name:** Name of the user
- **Phone:** User's primary telephone number
- **Alt. Phone:** User's alternate telephone number
- **E-mail:** User's primary E-mail address
- **Alt. E-mail:** User's alternate E-mail address


Procedure

1. On the toolbar, select **Equipment History**→**User List**. The **User List** page opens. See example in **Figure 18**.
2. Up to 20 users will be displayed at a time. You can scroll to view any additional users (64 max.).


Figure 18: User List Page

User List					
Users	Name	Phone	Alt. Phone	Email Address	Alt. Email Address
llp_admin	administrator	---	---	---	---
llp_user7	User #07	---	---	---	---
llp_user6	User #06	---	---	---	---
llp_user5	User #05	---	---	---	---
llp_user4	User #04	---	---	---	---
llp_user3	User #03	---	---	---	---
llp_user2	User #02	---	---	---	---
llp_user1	User #01	---	---	---	---

Working with Battery Discharge Test Results

 **NOTE!** Discharge data lasting less than ten minutes is discarded and the original graph in that location is restored. This avoids the loss of previous discharge data due to short power interruptions. Note that discharge graphs can also be locked to avoid loss.

Viewing Test Results

 **NOTE!** MCA firmware version 5.1.0 or newer is required to perform a manual Battery Discharge Test. To perform a manual test, refer to the following in this section:

- To Set Test Parameters: See *Changing System Adjustments*.
- To Start a Manual Test: See *Changing the System Mode*.
- To View Test Results: See *Viewing Battery Discharge Results*.
- To Configure Test Results: See *Configuring Battery Discharge Graphs*.

Requires a Permission Level of 3 or higher.

On this page, you can view the results of completed Battery Discharge Tests. The results of up to 12 tests can be stored. Included for each test is the following information:

- **Test Name:** Name of test. A default name is automatically assigned. The name may be changed at any time by a user. (See “Configuring Battery Discharge Graphs” in this section.)
- **Start Time:** Time at which the test started.
- **Start Date:** Date on which the test started.
- **Test Type:** Manual or Opportunistic.
- **Lock Status:** Locked or unlocked. Determines whether file can be overwritten. The lock status may be changed at any time by a user. (See “Configuring Battery Discharge Graphs” in this section.)
- **Start Interval:** Sample interval over initial 5 minutes of discharge.
- **End Interval:** Sample interval over remainder of test.
- **Test Duration:** Length of test.
- **Data Points:** Number of samples collected.

Procedure

1. On the toolbar, select **Test→Battery Discharge Results**. The **Battery Test Results** page opens. See example in **Figure 19**.
2. In the Battery Test Results pane, click on the name of the plot you wish to view. The screen refreshes, and the plot is displayed.
3. Note the red line at the 5-minute mark; this identifies the point at which the test sample interval changes from the Start Interval to the End Interval.
4. You can zoom in on any portion of the plot. To do so, left-click and drag over the area you wish to magnify. The magnified view is displayed. Note that the Battery Voltage and Elapsed Time scales are also expanded. See example in **Figure 20**.
5. To return to the normal view, right-click anywhere in the plot area. The normal view is redisplayed.

NOTE! Clicking anywhere outside of the plot may cause a short delay when magnifying or returning to the normal view.

Figure 19: Battery Test Results Page

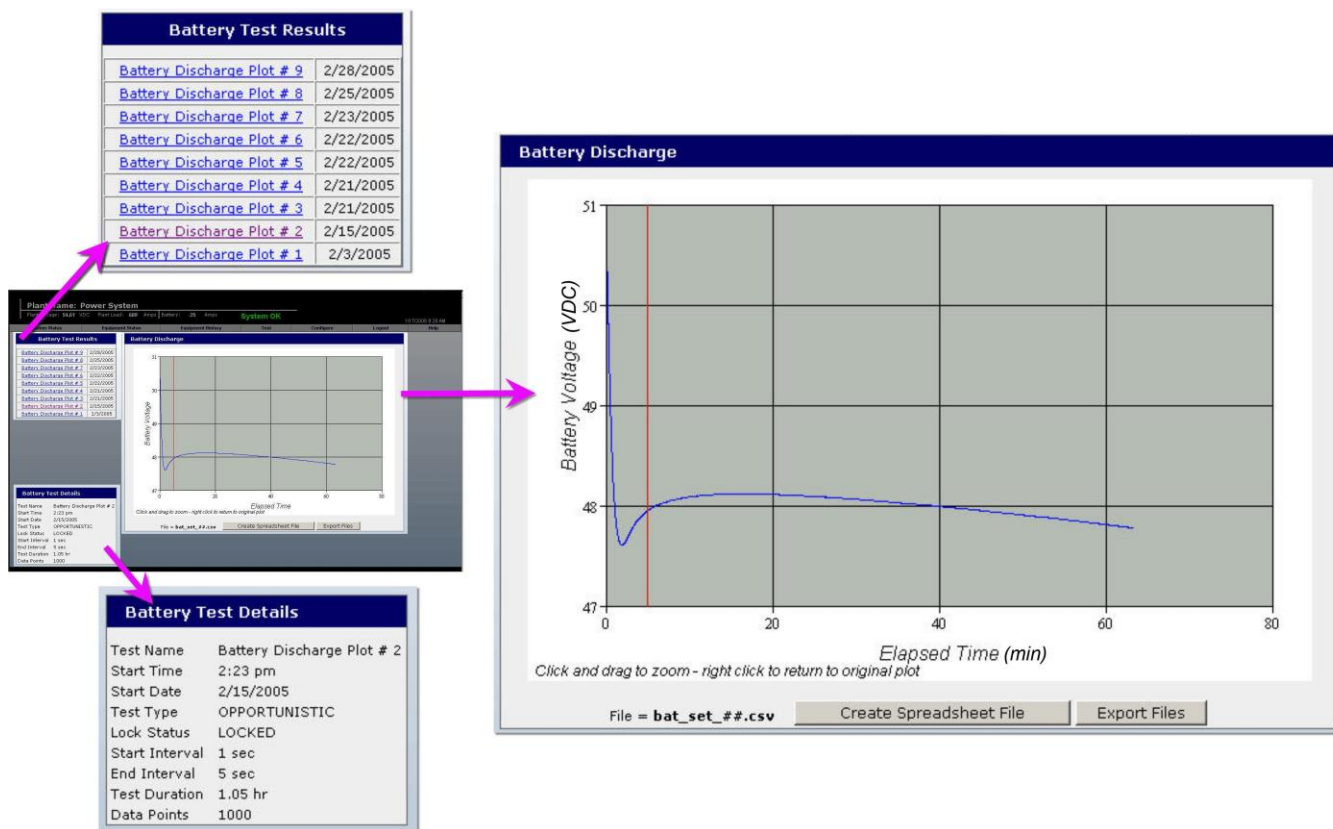


Figure 20: Magnifying an Area of the Plot



Exporting Plot Data

From the **Battery Test Results** page, you can create a plot data file for any displayed plot. The file will automatically be stored in the user FTP directory. You can open the FTP directory to transfer the file from the VEC.

Procedure

1. On the toolbar, select **Test** → **Battery Discharge Results**. The **Battery Test Results** page opens.
2. **To Create a Plot File:** With the desired plot displayed, click **Convert Data to Spreadsheet File**. A Comma Separated Values format (CSV) data file will be created and placed in a local FTP directory.
3. **To Access a Stored Plot File:** With the **Battery Test Results** page open, click **Export Converted Files**. A **Login As** window opens. Enter your **User name** and **Password**, and then click the **Login** button. A window will open displaying the directory contents. See **Figure 21**. You can cut, copy, or delete any file within the directory, or the file may be dragged and dropped onto the viewing computer.

Figure 21: Exporting a Plot Data File

Plant Name: Power System
 Plant Voltage: 54.60 VDC | Plant Load: 689 Amps | Battery: -25 Amps | System OK | 1/17/2006 10:17 AM

Name	Size	Type	Modified
bat_set_01.csv	10.7 KB	Microsoft Excel Comma Separated Values File	2/3/2005 9:59 AM
bat_set_02.csv	11.1 KB	Microsoft Excel Comma Separated Values File	2/15/2005 4:17 PM
lxc300.cfg	9.83 KB	CFG File	2/3/2005 3:31 PM
opt_key	4.73 KB	File	2/28/2005 11:19 AM

Battery Test Details

Test Name	Battery Discharge Plot # 2
Start Time	2:23 pm
Start Date	2/15/2005
Test Type	OPPORTUNISTIC
Lock Status	LOCKED
Start Interval	1 sec
End Interval	5 sec
Test Duration	1.05 hr
Data Points	1000

File = bat_set_#.csv | Create Spreadsheet File | **Export Files**

Using the Virtual Keypad Feature

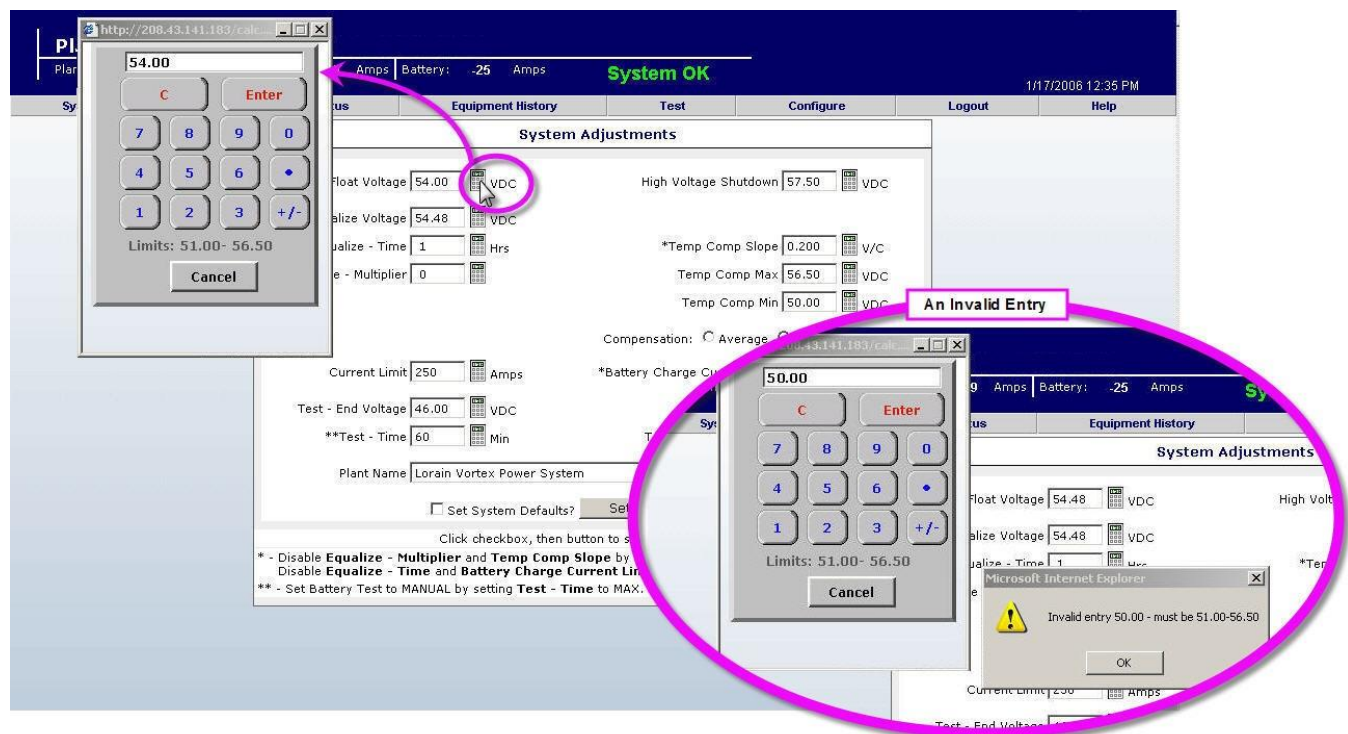
When changing many of the setpoints described in this section, you can use the virtual keypad feature to enter a value. For convenience, the virtual keypad shows the limits of the adjustment range.

To Use the Keypad Feature

1. With the desired page displayed, click on the keypad icon next to the value you wish to change. The virtual keypad opens. See example in **Figure 22**.
2. Type in the new value and press Enter. The screen refreshes and the new value is automatically entered in the system.

NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.

Figure 22: Using the Virtual Keypad



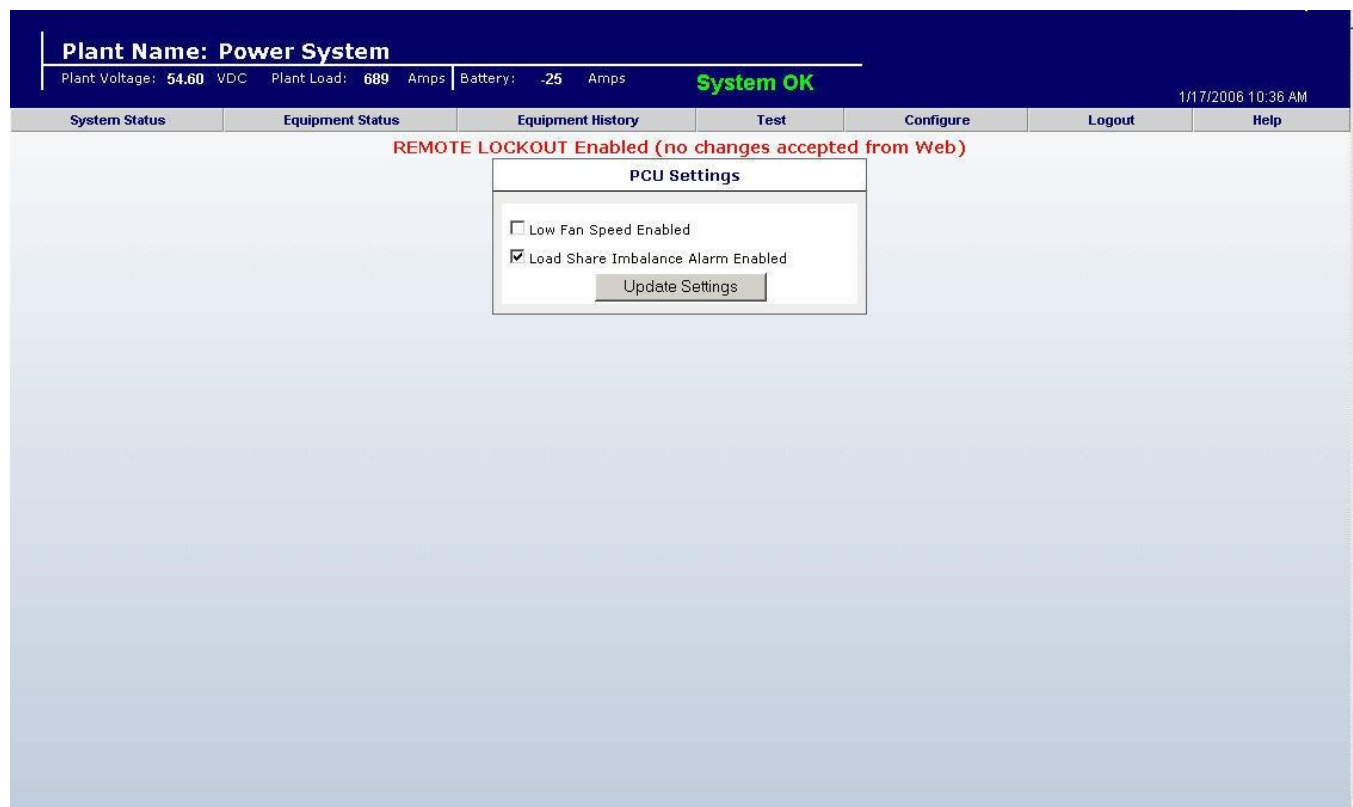
Remote Access Lockout Feature

A switch on the MCA can be set to either enable or prohibit changing configuration items via the Web interface. If the switch is set to prohibit remote access, the following message will appear on each configuration page:

REMOTE LOCKOUT Enabled (no changes accepted from Web). See example in **Figure 23**.

Enabling remote access to configuration items requires a site visit to set the MCA switch. See your Vortex or NETSURE Power System Installation Manual for a switch adjustment procedure.

Figure 23: Remote Lockout Enabled Message



The screenshot displays the Vortex web interface for a power system. At the top, a dark blue header contains the plant name 'Power System' and various status indicators: Plant Voltage: 54.60 VDC, Plant Load: 689 Amps, Battery: -25 Amps, and System OK. A navigation menu below the header includes System Status, Equipment Status, Equipment History, Test, Configure, Logout, and Help. A prominent red message reads 'REMOTE LOCKOUT Enabled (no changes accepted from Web)'. Below this message is a 'PCU Settings' dialog box with two checkboxes: 'Low Fan Speed Enabled' (unchecked) and 'Load Share Imbalance Alarm Enabled' (checked). An 'Update Settings' button is located at the bottom of the dialog box.

Performing a Relay Test

Requires a Permission Level of 3 or higher.

On this page, you can test the operation of the system's external alarm relays.

Procedure


1. On the toolbar, select **Test**→**Relay Test**. The **Relay Test** page opens. See example in **Figure 24**.
2. To set the duration of the test for each relay, click the keypad icon next to the **Seconds per Relay** value shown. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered in the system.

 **NOTE!** *If the new value is unacceptable, an "Invalid Entry" message is displayed.*

3. When ready to start the test, click **Start**. A window with the following message will be displayed.

"Are you sure you wish to start the relay test?"

4. To start the test, click **OK**. The screen refreshes and the test starts. (To cancel the operation, click **Cancel**.) While the test is underway, "Test in Progress" will be displayed.

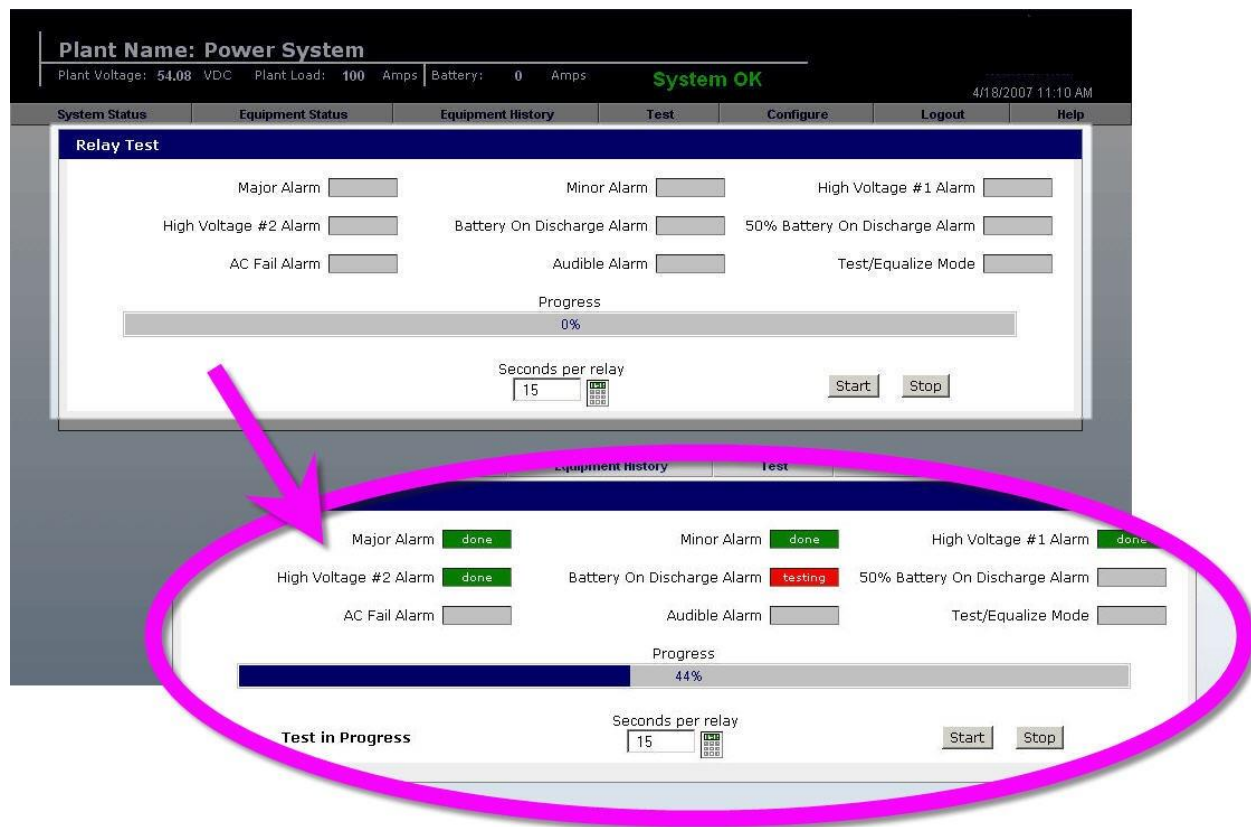
 **NOTE!** *If one or more alarms are already active, the relay test will not start. "No test while Alarms are active" will be displayed.*

5. One at a time, each relay is placed in the alarm state for the time period selected. A red window indicates the relay currently under test. A green window indicates the test is complete for that relay. The percentage of the test completed is shown on the **Progress** bar. Check your external alarms for proper operation as the test progresses.
6. When the test is complete, "Test Complete" will be displayed.
7. You can terminate the test at any time. To terminate the test, click **Stop**. A window with the following message will be displayed.

"Are you sure you wish to stop the relay test?"

8. To stop the test, click **OK**. The screen refreshes and the test is terminated. (To cancel the operation, click **Cancel**.)

Figure 24: Relay Test Page (Your Page May Display Different Alarms)



Configuring System Settings

Changing System Adjustments

Requires a Permission Level of 5 or higher.

On this page, you can view and change the following System Adjustments.

- **Float Voltage:** PCU output voltage during normal operation.
- **Equalize Voltage:** PCU output voltage for equalizing the charge on battery cells.
- **Equalize – Time:** Duration of a manually started Timed Equalize Cycle. Range is 1-100 Hours. For manually terminated equalize, set value to maximum.
- **Equalize – Multiplier:** Multiple of LV1 Alarm duration for which Auto Equalize Cycle lasts. Range is 1-15. To disable auto equalize, set time value to 0.
- **High Voltage Shutdown:** Output voltage value at which PCUs shut down to protect customer loads.
- **Current Limit:** Maximum system output current.
- **Battery Charge Current Limit:** Maximum recharge current following battery discharge. To disable, set value to maximum.
- **Plant Name:** Name appearing on each Web page & in the alarm log.

On this page, you can view and change the following System Adjustments if your MCA is firmware version 5.1.0 or later.

- **Test – End Voltage:** Value at which Voltage-Terminated Battery Test ends. (The PCU output voltage during a battery test is automatically set to 0.2 volt below the “End Battery Test” setting.)
- **Test – Time:** Duration of Timer-Terminated Battery Test. Range is 1-6000 minutes. For manually terminated battery test, set value to maximum.
- **Test – Sample Interval:** Time (in seconds) between battery voltage samples during a Battery Discharge Test after the initial 5 minutes. (The sample interval during the first 5 minutes is automatically set at one second.)

On this page, you can view and change the following System Adjustments if digital Battery Charge Temperature Compensation is enabled.

- **Temp Comp Slope:** Temperature compensation slope in V/°. Range is 0.001-0.200 V /°C. To disable temperature compensation, set value to 0.000.
- **Temp Comp Min:** Minimum temperature compensation voltage.
- **Temp Comp Max:** Maximum temperature compensation voltage.
- **Compensation:** Selects whether compensation is based on the average temperature of all connected probes, the temperature of Probe 1, or the highest temperature reported. (MCA version 5.0.0 or newer required.)

On this page, you can view and change the following System Adjustments if analog Battery Charge Temperature Compensation is enabled.

- **Analog Temp Comp:** Battery Charge Temperature Compensation Module calibration voltage setting.

Procedure

1. On the toolbar, select **Configure**→**System**→**System Adjustments**. The **System Adjustments** page opens. See example in **Figure 25**.
2. Click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered in the system.

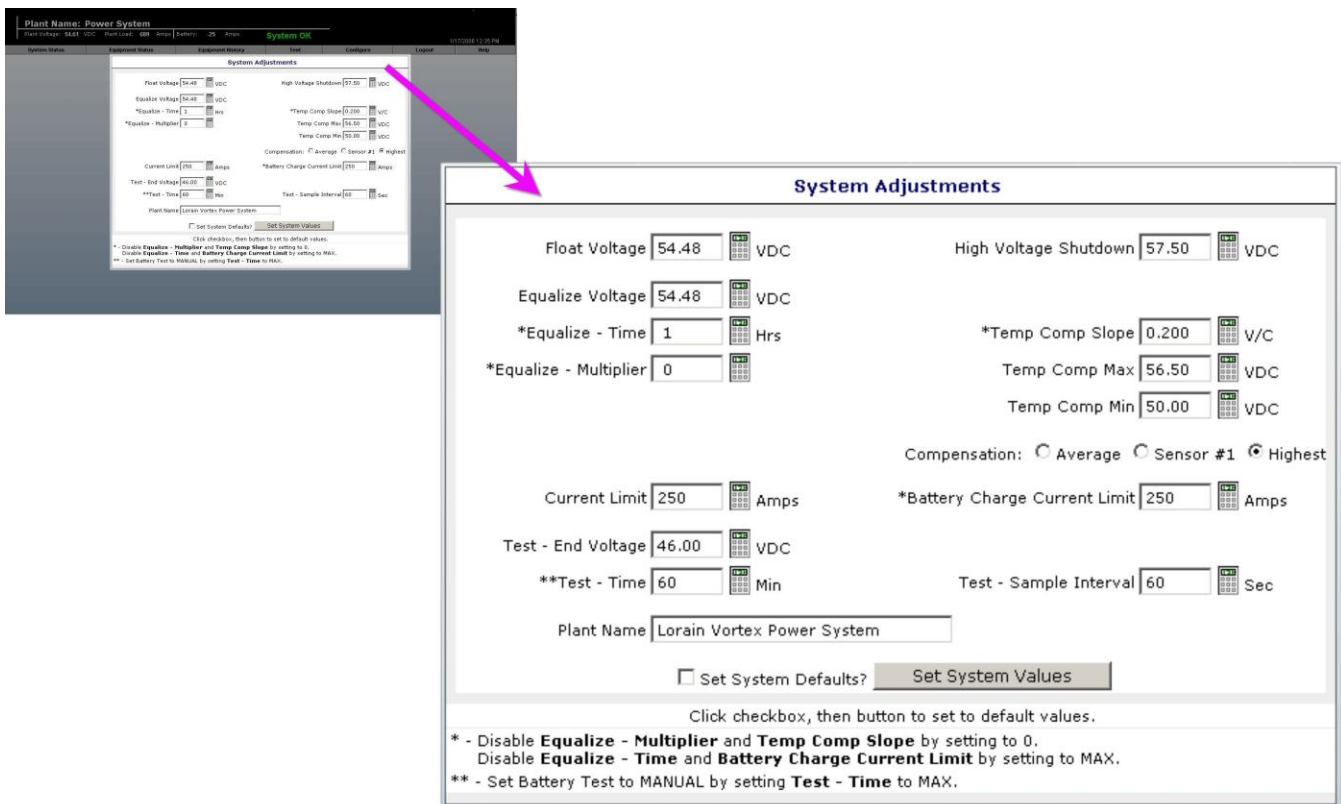


NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set System Defaults?** checkbox to enter a check mark, then click the Set System Values button.

Figure 25: System Adjustments Page



Changing MCA Customer Text

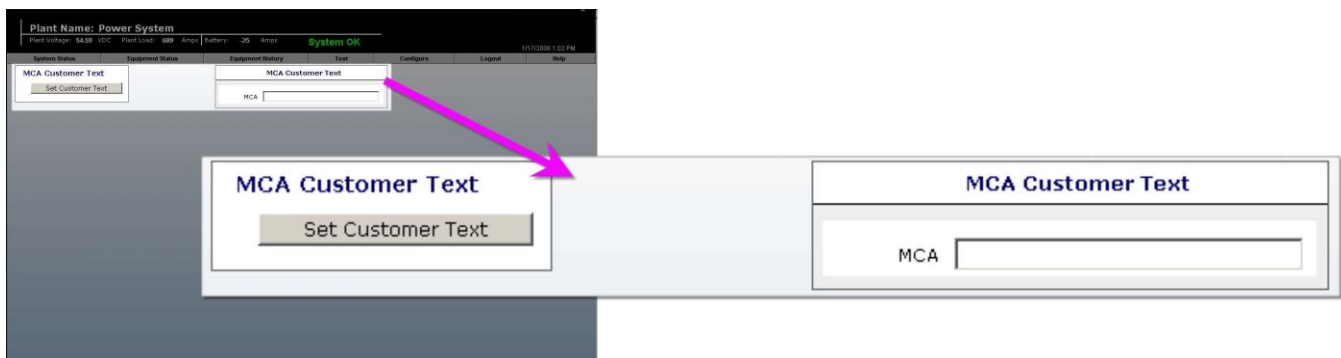
Requires a Permission Level of 5 or higher.

On this page, you can enter a custom name for the MCA.

Procedure

1. On the toolbar, select **Configure**→**System**→**MCA Customer Text**. The **MCA Customer Text** page opens. See example in **Figure 26**.
2. Enter a custom name as required. A custom name may consist of alpha and/or numeric characters, and may be up to 30 characters long.
3. Click the **Set Customer Text** button. The screen refreshes and the new settings take effect.

Figure 26: MCA Customer Text Page



Changing the System Mode

Requires a Permission Level of 5 or higher.

On this page, you can view and change the system output voltage mode. The system can operate in the Float mode, Equalize mode, or in the Battery Discharge Test mode. For a complete description of these modes, see “Output Voltage Mode of Operation Selection” in “Operating Procedures” in the Power System User Manual.



NOTE! The Battery Discharge Test Mode is available only for MCA software version 5.1.0 or later

Procedure

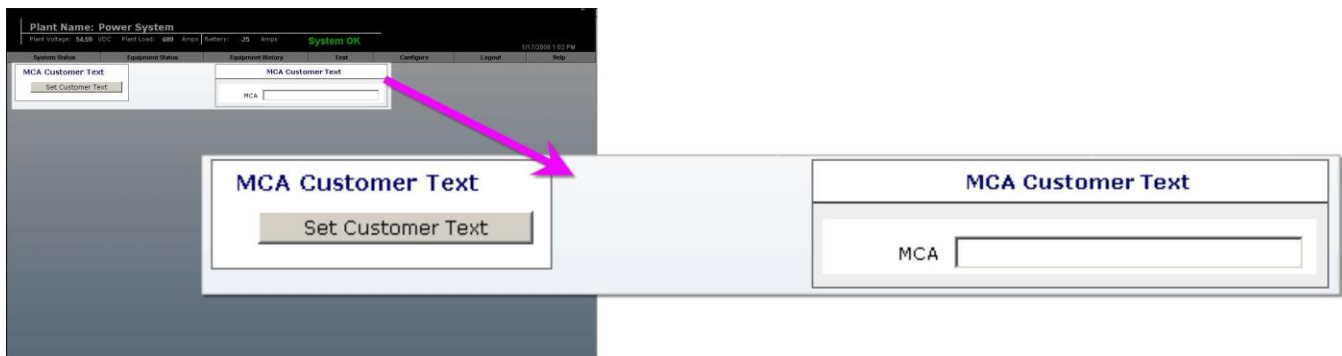
1. On the toolbar, select **Configure**→**System**→**Change System Mode**. The **Set MCA Mode** page opens. See example in **Figure 27**. The available modes are shown, along with their setpoints. The mode in which the system is currently operating is indicated.
2. To change the operating mode, select the desired mode. Press **Enter**. The screen refreshes and the system switches to the new operating mode.



NOTE! To perform a Battery Discharge Test, refer to the following in this section:

1. **To Set Test Parameters:** See Changing System Adjustments.
2. **To Start the Test:** See Changing the System Mode.
3. **To View Test Results:** See Viewing Battery Discharge Results.
4. **To Configure Test Results:** See Configuring Battery Discharge Graphs.

Figure 27: Set MCA Mode Page



Clearing Alarm Logs

Requires a Permission Level of 8.

On this page, you can clear the alarm log.

Procedure

1. On the toolbar, select **Configure**→**System**→**Clear Logs**. The **Clear Logs** page opens. See example in **Figure 28**.
2. To clear the alarm log, click the **Clear Alarm Log** button. A window with the following message will be displayed.

"Are you sure you wish to clear the log?"
3. To clear the log, select **OK**. The screen refreshes, and the alarm log is cleared.


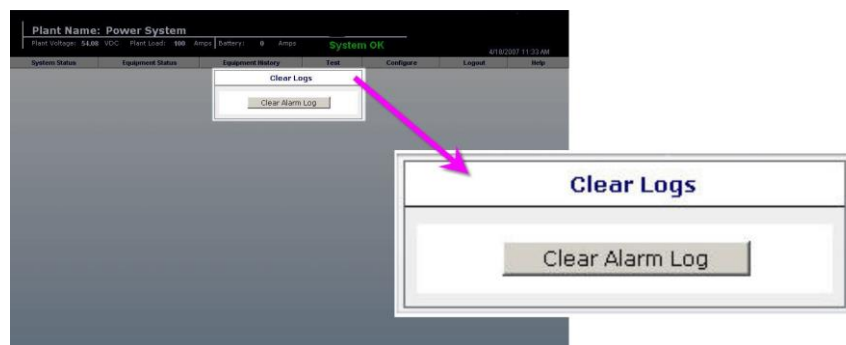
 **NOTE!** New alarm log entries will be generated for any alarms that are active when the alarm log is cleared.

Figure 28: Clear Logs Page



Changing Network Settings

Requires a Permission Level of 8.

On this page, you can set the Network IP Address, Subnet Mask, and Gateway.

NOTE! For further information, see “Initially Setting Up Ethernet Access”.

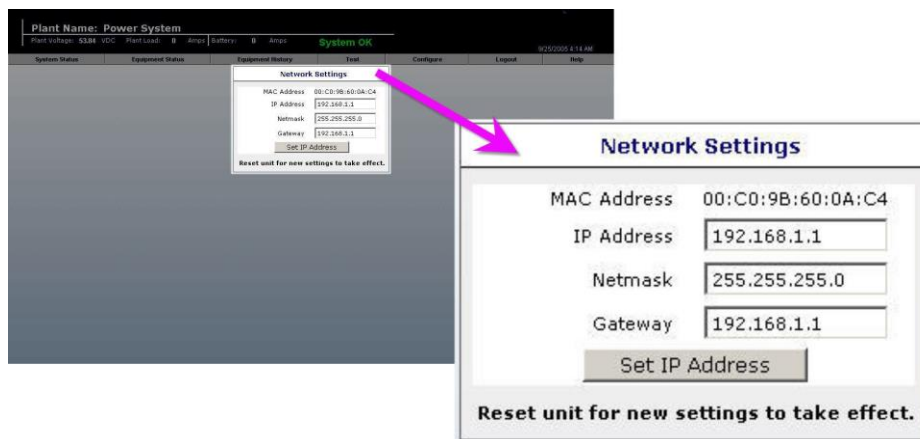
Procedure

1. On the toolbar, select **Configure**→**System**→**Network Settings**. The **Network Settings** page opens. See example in **Figure 29**.
2. Before making changes to the Network IP Address, Subnet Mask, and Gateway, carefully record the intended new settings.
3. To change a setting, highlight the text you wish to change. Type in the new characters in the format shown below. When the required IP Address, Netmask, and Gateway have been entered, click the **Set IP Address** button.

NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.

4. For the changes to take effect, the VEC must be reset. See “Resetting the VEC” on page 56 for a procedure.

Figure 29: Network Settings Page



Changing the Time And Date

Requires a Permission Level of 8.

On this page, you can set the system time and date.

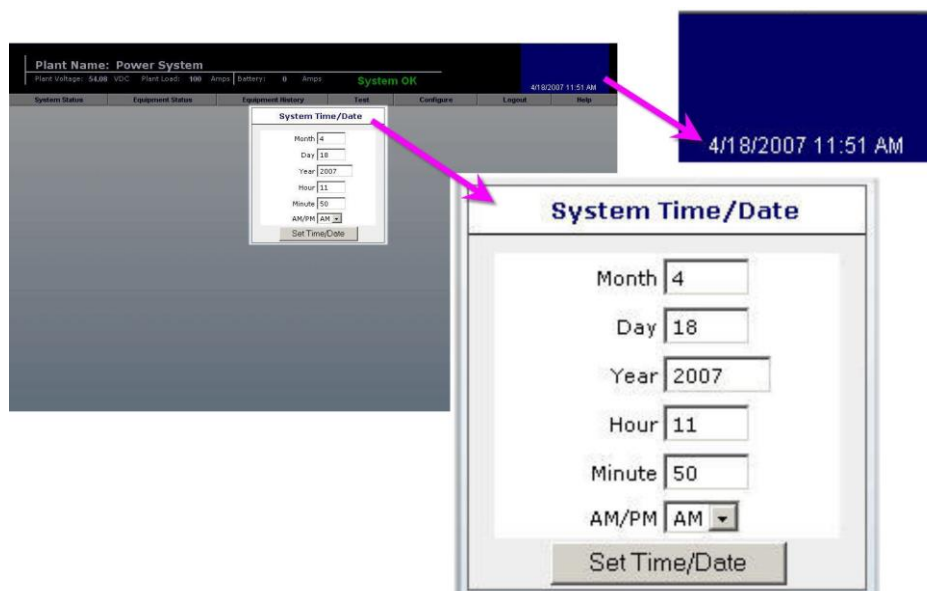
Procedure

1. On the toolbar, select **Configure**→**System**→**Time/Date**. The **System Time/Date** page opens. See example in **Figure 30**.
2. To change a setting, highlight the text you wish to change. Type in the new characters. When the required time and date have been entered, click the **Set Time/Date** button. The screens refreshes, and the new date and time appear in the header.



NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.


Figure 30: System Time/Date Page



Upgrading an Application

Requires a Permission Level of 8.

On this page, the VEC has the capability of performing an application upgrade. The only requirement is that the information transfer is done using the FTP protocol via the Ethernet port.

 **NOTE!** To obtain a VEC upgrade file, contact your Vertiv Co. sales representative, or visit the Vertiv Co. website.

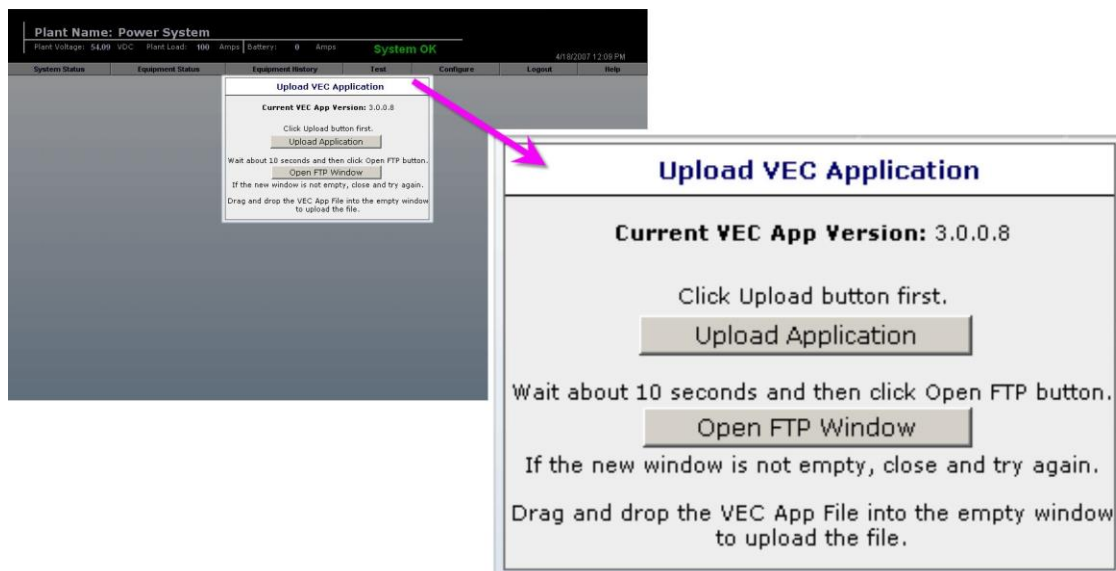
Procedure

Upload VEC Application Page

1. On the toolbar, select **Configure**→**System**→**Upload Application**. The **Upload VEC Application** page opens. See example in **Figure 31**.
2. Click the Upload Application button. A window with the following message will be displayed.


"Are you sure you wish to attempt uploading a new application (selecting yes causes the VEC to reboot)?"
3. To upload the application, select **OK**.
4. Continue with one of the procedures detailed below and then the last procedure.

Figure 31: Upload Application Page



Via Internet Explorer version 6, or earlier

1. Click the **Open FTP Window** button. A **Login As** window opens. Enter your **User name** and **Password**, and then click the **Login** button. A second browser window opens.

 **NOTE!** If the new browser window is not empty, close the window and repeat step 4. When an empty browser window opens, continue.

2. Drag the provided file into the second browser window that was opened in the previous step. The file transfer will start. The VEC will automatically reboot approximately one minute after the file transfer is complete.
3. Close the FTP window.

Via Internet Explorer Version 7



NOTE! Do not use the OPEN FTP WINDOW button.

1. Open **Windows Explorer**.
2. In the Windows Explorer address bar type **ftp://VEC IP ADDRESS**
(where VEC IP ADDRESS is the IP address of the VEC card, in the format of nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255).
3. Drag the provided file into the second browser window that was opened in the previous step. The file transfer will start. The VEC will automatically reboot approximately one minute after the file transfer is complete.
4. When finish, close Windows Explorer.

Check Procedure

1. Log onto the system (VEC).
2. Check all MCA system settings.

Configuration File Operations

Requires a Permission Level of 8.

A configuration file stores all of a Vortex or NETSURE Power System's user-configurable information, including alarm and control setpoints and user information. You can create configuration files using the VEC. You can also copy the configuration files from the VEC to a PC for storage. You can also copy a configuration file back into the VEC and then have the VEC process the file to restore an MCA configuration or to create an identical MCA configuration. Information transfer is done using the FTP protocol via the Ethernet port.

Creating a Configuration File

1. On the toolbar, select **Configure**→**System**→**Configuration File**. The **Configuration File Operations** page opens. See **Figure 32**.
2. Enter a name (with an extension of .cfg) in the field above the **Create Configuration File** button (or use the default name). Click the **Create Configuration File** button. A window with the following message displays.

"Are you sure you wish to create the configuration file?"

3. To create the file, select **OK**. The screen refreshes and a file is created and stored in a directory in the VEC.



NOTE! If a file with the same name already exists in the VEC's directory, it will be overwritten by the new file.

Processing a Configuration File

1. On the toolbar, select **Configure**→**System**→**Configuration File**. The **Configuration File Operations** page opens. See **Figure 32**.
2. Select a configuration file from the drop-down list box located above the Process Configuration File button. Click the **Process Configuration File** button. A window with the following message displays.

"Are you sure you wish to process the configuration file?"

3. To process the file, select **OK**. When the file has been processed, the window will refresh, and the new configuration information will take effect.

Figure 32: Configuration File Operations Page

Configuration File Operations

Create a Configuration File for Download
 Enter name for new Configuration File:

Maximum filename length is 32 characters. Valid filename characters are alphanumeric, _ (underscore), or .(period).

Process an Uploaded Configuration File
 Select Configuration File to process:


Last File Processed:
 user/vec.cfg

Press the **Open FTP Directory** button to access the directory to transfer configuration files to or from the VEC. Refresh this page if new files are transferred so the dropdown can be updated.

To Copy a Configuration File from and to the VEC

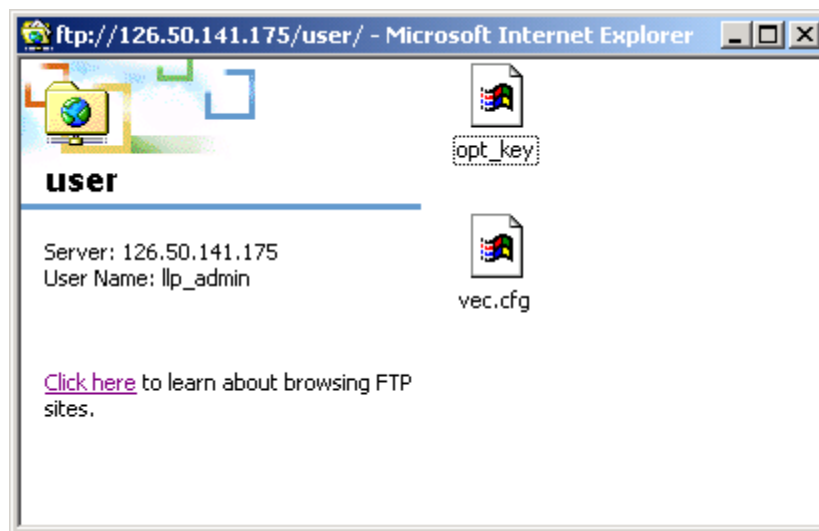
Via Internet Explorer version 6, or earlier

1. On the toolbar, select **Configure**→**System**→**Configuration File**. The **Configuration File Operations** page opens. See **Figure 33**.
2. On the Configuration File Operations page, click the **Open FTP Directory** button. A **Login As** window opens. Enter your VEC **User Name** and **Password**, and then click the **Login** button. A window opens that contains all the configuration files stored in the VEC. See Figure 33.

 **NOTE!** Other files such as *Battery Discharge Test files (.csv filename extension)* may also be present in this window.

3. Copy a configuration file from the VEC (files in the FTP Directory Window) to your PC for storage, or from your PC to the VEC (files in the FTP Directory Window) for processing, as required.
4. When finish, close the FTP Directory Window.

Figure 33: FTP Directory Window



Via Internet Explorer Version 7



NOTE! Do not use the **OPEN FTP DIRECTORY** button.

1. Open Windows Explorer.
2. In the Windows Explorer address bar type **ftp://VEC IP ADDRESS/User** (where VEC IP ADDRESS is the IP address of the VEC card, in the format of nnn.nnn.nnn.nnn, where $0 \leq nnn \leq 255$).
3. A Log On As window opens. Enter your VEC User Name and Password, and then click the Log On button. All configuration files in the VEC are displayed in Windows Explorer.



NOTE! Other files such as *Battery Discharge Test files (.csv filename extension)* may also be present

4. Copy a configuration file from the VEC (files displayed in Windows Explorer) to your PC for storage, or from your PC to the VEC (files displayed in Windows Explorer) for processing, as required.
5. When finish, close Windows Explorer.

Resetting the VEC

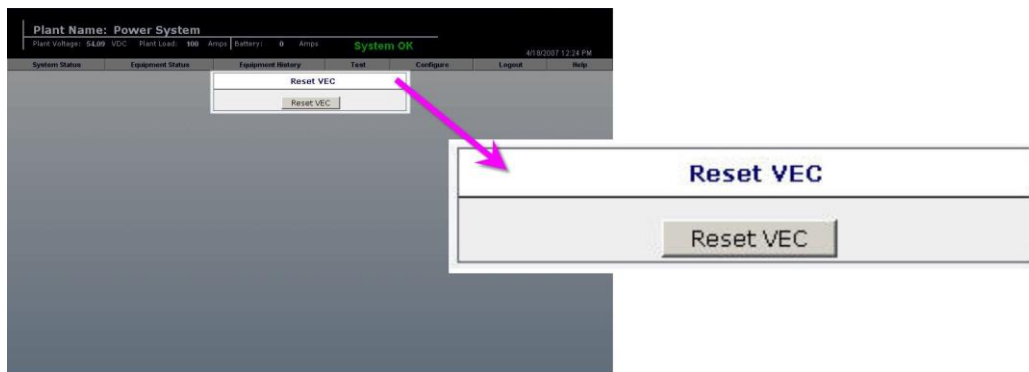
Requires a Permission Level of 8.

On this page, you can reset the Vortex Ethernet Card after making changes to the network settings. Resetting the VEC is necessary for the new network settings to take effect.

Procedure

1. On the toolbar, select **Configure**→**System**→**Reset VEC**. The **Reset VEC** page opens. See **Figure 34**.
2. Click the **Reset VEC** button.
3. Wait approximately 30 seconds for the application to restart.
4. Log onto the system.
5. To verify the new network settings, on the toolbar select **Configure**→**System**→**Network Settings**. The **Network Settings** page opens. See **Figure 29**. Verify the new network settings.

Figure 34: Reset VEC Page



Configuring Alarms

Configuring Plant Load Alarms

Requires a Permission Level of 4 or higher.

On this page, you can view and change the following Plant Load Alarm settings.

- **Total Load Current Alarm (TCUR):** Alarm activates if plant current increases above the alarm setpoint. You can also change the reference designation for this setting. A reference designation must be five characters or less.
- **Current Limit (CLMT):** This is the maximum available system output current, and is only displayed here. (For adjustment, see “Changing System Adjustments” in the “Configuring System Settings” section.) You can change the reference designation for this value on this page. A reference designation must be five characters or less.

Procedure

1. On the toolbar, select **Configure**→**Alarms**→**Plant Load**. The **Plant Load Alarm Settings** page opens. See example in **Figure 35**.
2. To change the Total Load Current Alarm value, click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired value. Press **Enter**. The screen refreshes and the new value is automatically entered in the system.



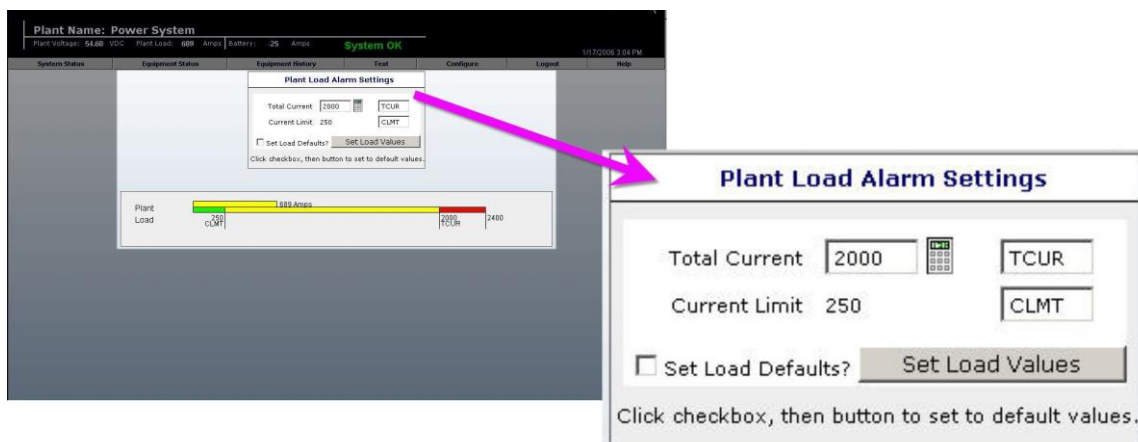
NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set Load Defaults?** check box to enter a check mark, then click the **Set Load Values** button.

3. To change any reference designation, highlight the text you wish to change. Type in the new characters (alpha-numeric, 5-character limit). Press **Enter**. The screen refreshes and the new reference designation is entered into the system.

Figure 35: Plant Load Alarm Settings



Configuring Plant Voltage Alarms

Requires a Permission Level of 4 or higher.

On this page, you can view and change the following settings. You can also change the reference designation for any setting. A reference designation must be five characters or less.

- **Low Voltage (Alarm) #1 (LV1):** Plant voltage at which the LV1 alarm activates.
- **Low Voltage (Alarm) #2 (LV2):** Plant voltage at which the LV2 alarm activates.
- **High Voltage (Alarm) #1 (HV1):** Plant voltage at which the HV1 alarm activates.
- **High Voltage (Alarm) #2 (HV2):** Plant voltage at which the HV2 alarm activates.
- **High Voltage Shutdown (HVS):** Output voltage at which PCU shuts down to protect load. Value is only displayed here. (For adjustment, see Changing System Adjustments in the Configuring System Settings section.) You can change the reference designation for this value on this page. A reference designation must be five characters or less.

Procedure

1. On the toolbar, select **Configure→Alarms→Plant Voltage**. The **Plant Voltage Settings** page opens. See example in **Figure 36**.
2. To change a value, click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered into the system. The bottom bar of the bar graph displays the new settings.



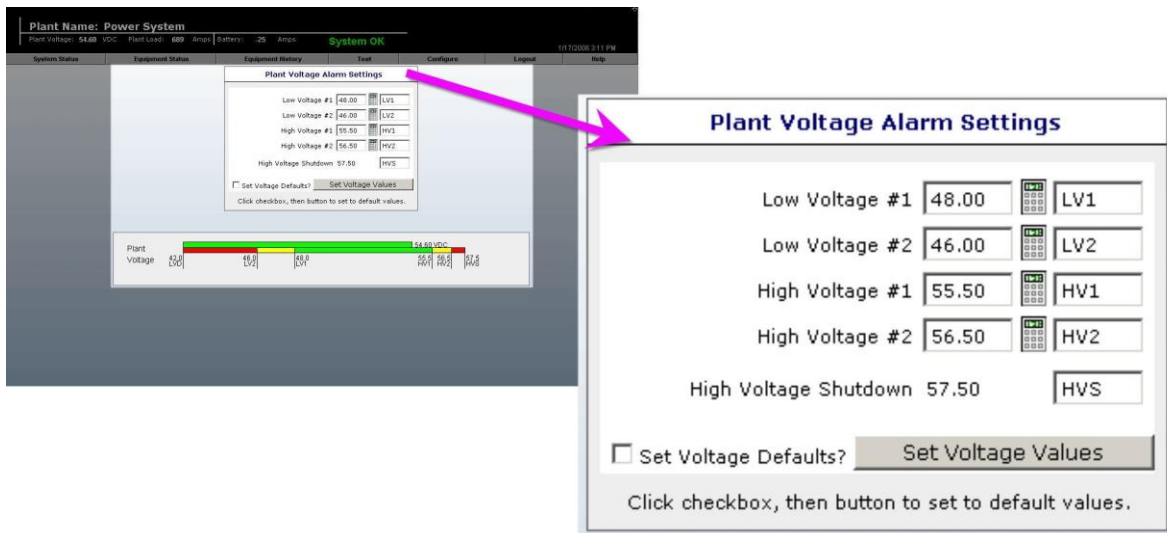
NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set Voltage Defaults?** check box to enter a check mark, then click the **Set Voltage Values** button.

3. To change a reference designation, highlight the text you wish to change. Type in the new characters (alpha-numeric, 5-character limit). Press **Enter**. The screen refreshes and the new reference designation is entered in the system.

Figure 36: Plant Voltage Alarm Settings Page



Configuring Subsystem Alarms

Requires a Permission Level of 4 or higher.

On this page, you can view and change the following settings.

- **Subsystem Low Voltage (Alarm):** Subsystem voltage at which the Subsystem Low Voltage alarm activates.
- **Subsystem High Voltage (Alarm):** Subsystem voltage at which the Subsystem High Voltage activates.
- **Subsystem Current (Alarm):** Subsystem voltage at which the Subsystem Current alarm activates.

Procedure

1. On the toolbar, select **Configure->Alarms->Subsystem**. The **Subsystem Alarm Settings** page opens. See example in **Figure 37**.
2. To change a value, click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered into the system. The bottom bar of the bar graph displays the new settings.

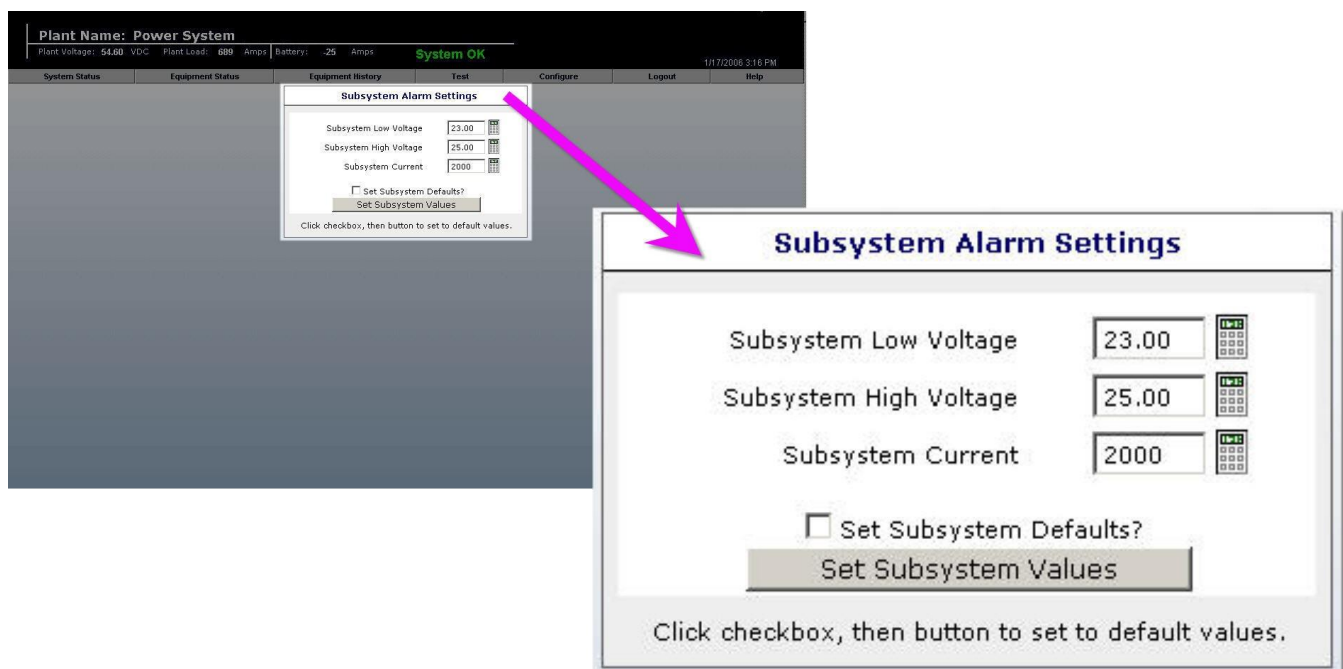


NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set Subsystem Defaults?** check box to enter a check mark, then click the **Set Subsystem Values** button.

Figure 37: Subsystem Alarm Settings Page



Configuring the Battery Charge Current Alarm Setpoint

Requires a Permission Level of 4 or higher.

On this page, you can view and change the Battery Charge Current Alarm setpoint. An alarm will activate if the monitored battery charge current exceeds this value. To view or change the monitored current source, see “Changing System Adjustments” under “Configuring System Settings” in this section.

NOTE! *The Power System must be equipped with a battery shunt for the Battery Charge Current Alarm to function.*

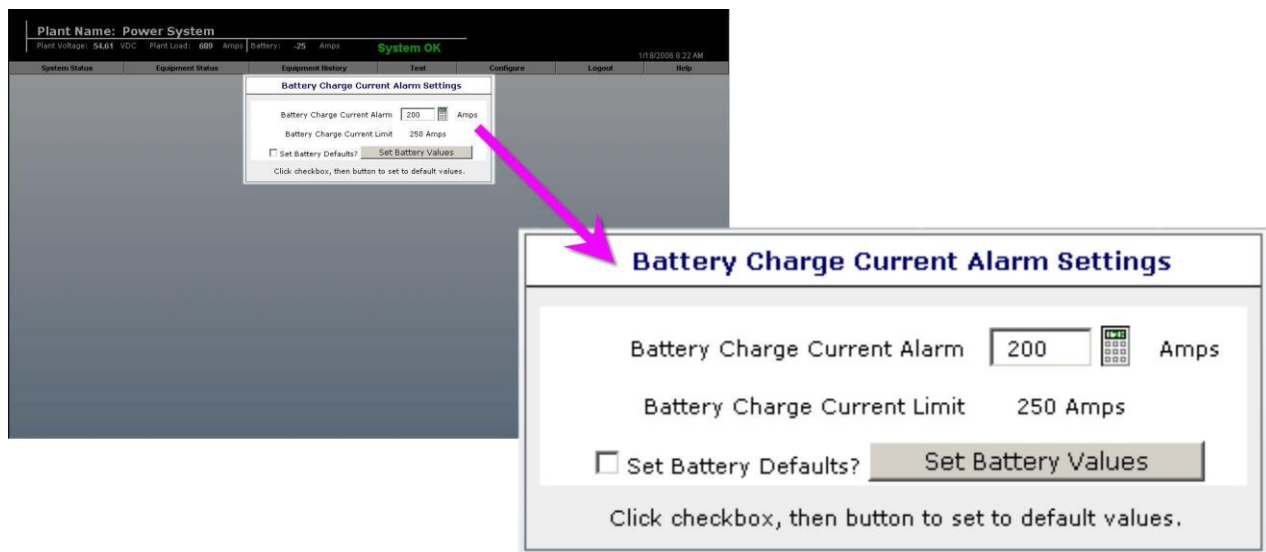
Procedure

1. On the toolbar, select **Configure**→**Alarms**→**Battery Charge Current**. The **Battery Charge Current Alarm Settings** page opens. See example in **Figure 38**.
2. To change the alarm setpoint, click the keypad icon next to the value displayed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered into the system.

NOTE! *If the new value is unacceptable, an “Invalid Entry” message is displayed.*

NOTE! *You can enter factory default values for all settings on the screen. To enter default values, click the **Set Battery Defaults?** check box to enter a check mark, then click the **Set Battery Values** button.*

Figure 38: Battery Settings Page



Configuring Battery Reserve Alarms (If Provided)



NOTE! The VEC must be equipped with the Battery Reserve Option.

Requires a Permission Level of 4 or higher.

On this page, you can view and change the following battery reserve alarm and battery health alarm settings.

- **Battery End of Reserve Voltage:** This setpoint specifies the voltage at which the batteries are considered fully discharged. Used by VEC to calculate battery health remaining reserve time.
- **Battery Health:** This alarm threshold indicates the total calculated battery reserve time (health) is low. The alarm activates when the calculated total battery reserve time, as a percentage of the user-specified EXPECTED RESERVE time, is less than the percentage Battery Health setpoint.
- **Battery Health Value:** This value is displayed only. It is equal to the Battery Expected Reserve setting times the Battery Health setting, and represents the Battery Health threshold in minutes.
- **Battery Reserve Low:** This alarm threshold indicates the remaining battery reserve time is low. The alarm activates when the calculated remaining reserve time decreases below this threshold. You can also change the reference designation for this value on this page. A reference designation must be five characters or less.
- **Battery Expected Reserve:** Specifies the expected total battery reserve backup time. Determined by site conditions such as battery capacity and expected load. Used by MCA to calculate Battery Health Alarm. You can also change the reference designation for this value on this page. A reference designation must be five characters or less.
- **Battery Recharge Time:** Recharge time required to enable the Battery Health Alarm. The system must remain in the float or equalize mode for this time-period to ensure batteries are fully recharged for accurate Battery Health Alarm operation.

Procedure

1. On the toolbar, select **Configure**→**Alarms**→**Battery Reserve**. The **Battery Reserve Settings** page opens. See example in **Figure 39**.
2. To change a value, click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered into the system. The bottom bar of the bar graph displays the new settings.

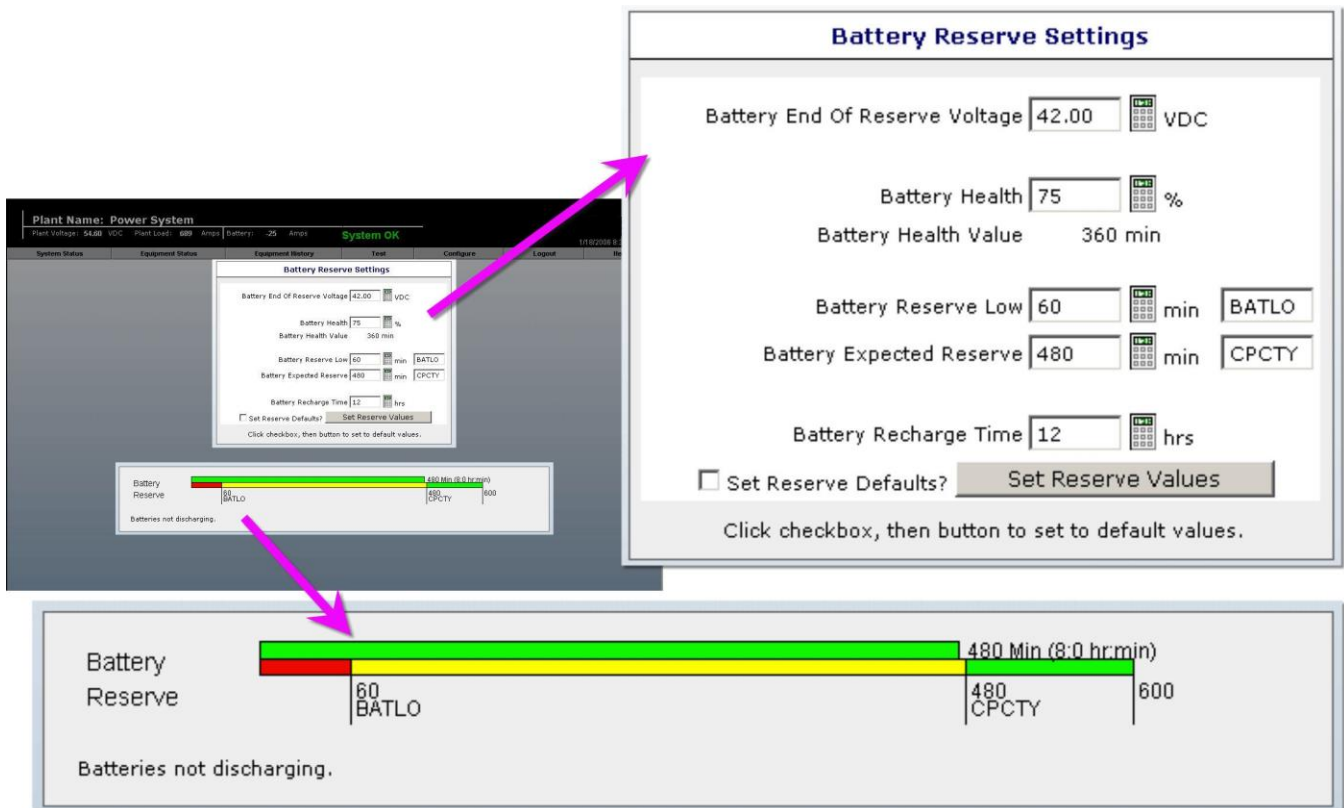


NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set Reserve Defaults?** check box to enter a check mark, then click the **Set Reserve Values** button.

Figure 39: Battery Reserve Settings Page



Configuring Temperature Alarms

Requires a Permission Level of 4 or higher.

On this page, you can view and change the following settings associated with each of up to eight connected temperature probes.

- **High Temperature:** Temperature at which the High Temp alarm activates. Setting this value at maximum (100°C) disables the alarm.
- **Low Temperature:** Temperature at which the Low Temp #1 alarm activates. Setting this value at minimum (-50°C) disables the alarm.

Procedure

1. On the toolbar, select **Configure**→**Alarms**→**Temperature**. The **System Temperature Alarm Settings** page opens. See example in **Figure 40**.
2. To change a value, click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered into the system. The bottom bar of the bar graph displays the new settings.



NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set Temp Defaults?** check box to enter a check mark, then click the **Set Temp Values** button.

Figure 40: System Temperature Alarm Settings Page

Probe #	* Hi Temperature	** Lo Temperature
Probe #1	30	0
Probe #2	28	0
Probe #3	29	0
Probe #4	30	0
Probe #5	31	0
Probe #6	32	0
Probe #7	33	0
Probe #8	34	0

Set Temp Defaults? **Set Temp Values**

Click checkbox, then button to set to default values.

* - Disable **Hi Temperature** by setting to MAX.
 ** - Disable **Lo Temperature** by setting to MIN.

Configuring LVDs

Configuring LVD Settings

Requires a Permission Level of 6 or higher.

The LVD circuit card provides three separate control circuits. Each can be programmed with its own disconnect voltage setpoint and one global reconnect setpoint.

One of the three pairs of LVD levels (1, 2 and 3) may be assigned to any LVD card, which consists of two individual battery voltage monitors (A and B), both of which must sense low system voltage before disconnection can occur. The Quad LVD board can control four LVD contactors, each of which may be assigned to any one of the three LVD levels. Use of redundant voltage monitor circuits prevents a circuit failure from unnecessarily disconnecting loads or battery.

On this page, you can view and change the following:

- The Disconnect setpoint for each LVD circuit
- The global Reconnect setpoint for all LVD circuits

Procedure

1. On the toolbar, select **Configure→LVDs→LVD Settings**. The **VEC LVD Settings** page opens. See example in **Figure 41**.
2. Click the keypad icon next to the value being changed. A keypad is displayed. Type in the desired characters. Press **Enter**. The screen refreshes and the new value is automatically entered in the system.



NOTE! To set for manual reconnect, adjust the Reconnect value to minimum.

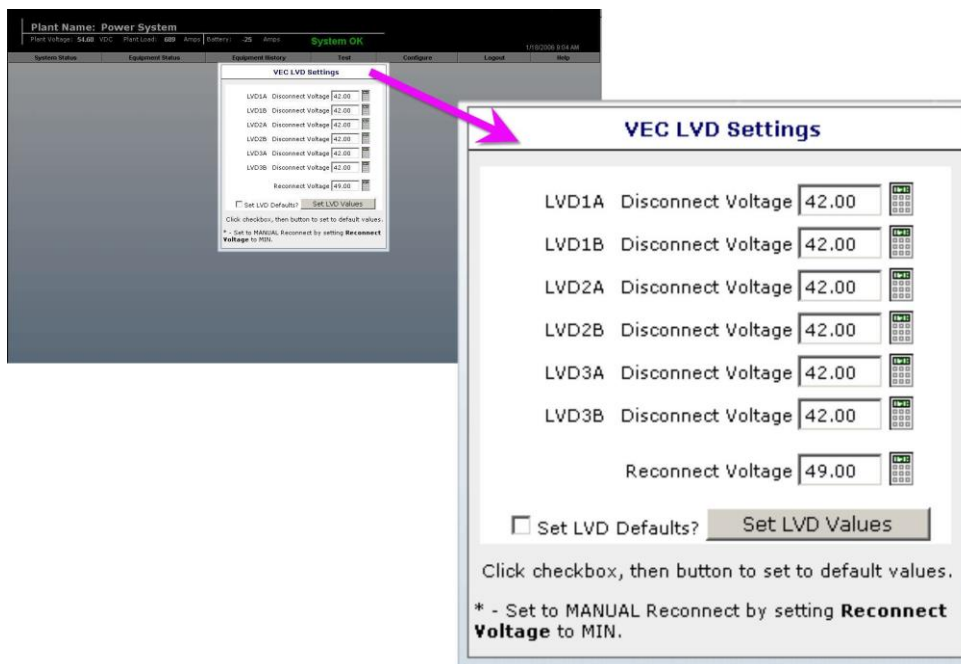


NOTE! If the new value is unacceptable, an “Invalid Entry” message is displayed.



NOTE! You can enter factory default values for all settings on the screen. To enter default values, click the **Set LVD Defaults?** check box to enter a check mark, then click the **Set LVD Values** button.

Figure 41: LVD Settings Page



Manually Reconnecting After a Low Voltage Disconnect

Requires a Permission Level of 6 or higher.

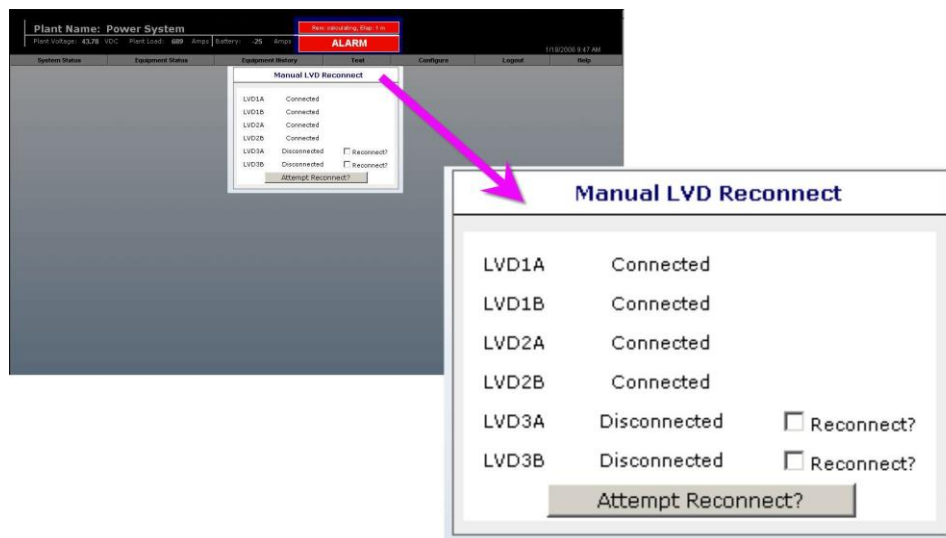
On this page, you can reconnect battery or load to the power system following a Low Voltage Disconnect, if the MCA is configured for Manual Reconnect.

Procedure

1. On the toolbar, select **Configure**→**LVD**→**Manual Reconnect**. The **Manual LVD Reconnect** page opens. See example in **Figure 42**.
2. Click the checkbox for each LVD circuit you wish to reconnect.
3. Click on the **Attempt Reconnect?** button. A window with the following message will be displayed.
 "Are you sure you wish to attempt reconnecting the selected LVD(s)?"
4. To reconnect, select **OK**. The screen refreshes and the LVD status for all Distribution Cabinets in the system is redisplayed. (To cancel the operation, click **Cancel**.)

NOTE! Plant voltage must be at or above the Reconnect voltage setpoint for a successful reconnection to occur.

Figure 42: Manual LVD Reconnect Page



Configuring PCUs

Turning PCUs Off or On

Requires a Permission Level of 6 or higher.

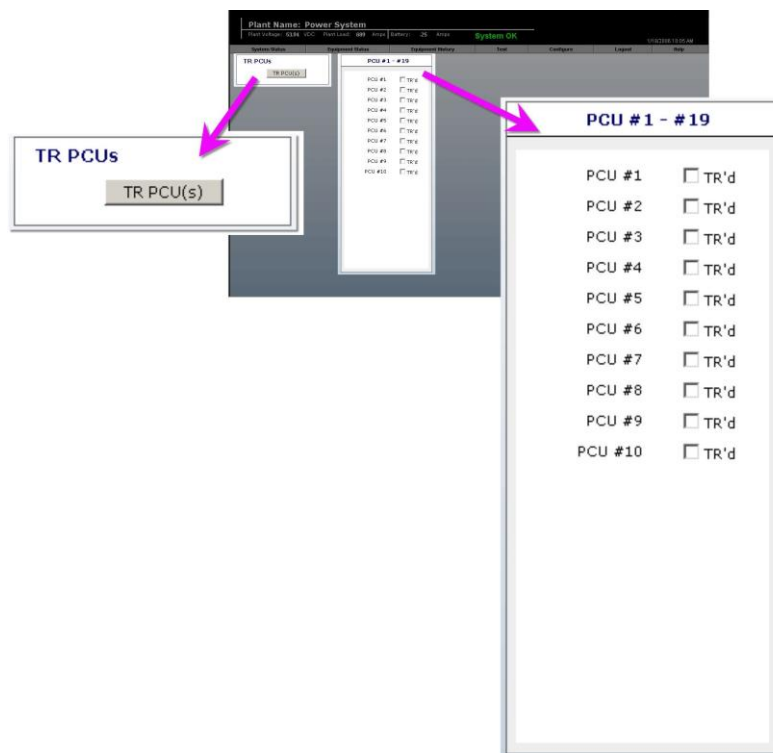
On this page, you can turn individual PCUs off (TR). You can also turn the PCUs back on.

NOTE! When a PCU is shut down via the TR Shutdown feature, it does not restart automatically under any circumstances. It must be manually restarted via this Web page or locally at the MCA control panel.

Procedure

1. On the toolbar, select **Configure**→**PCUs**→**PCUs On/Off**. The **TR PCUs** page opens. See example in **Figure 43**.
2. To select a PCU to turn off, check the **TR'd** box next to the PCU identification number. To turn a PCU back on, clear the check box next to the PCU identification number.
3. When all PCUs have been selected or deselected as required, click the **TR PCU(s)** button. A window opens displaying the message, “Are you sure you wish to change the selected PCUs?” Click **OK** to change the mode, or click **Cancel** to cancel the operation.

Figure 43: TR PCUs Page



Configuring PCU Settings

Requires a Permission Level of 6 or higher.

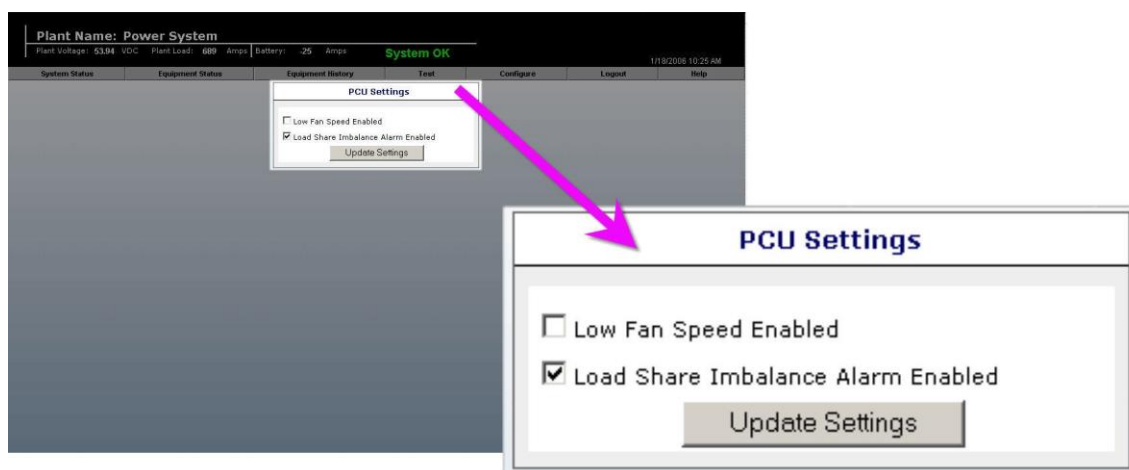
On this page, you can do the following:

- Enable or disable low speed operation of the cooling fans in all PCUs. When the low-speed fan feature is enabled, the PCUs individually use their internal temperatures to control fan speed. Fan speed is reduced whenever a PCU's internal temperature drops below a preset value. When the temperature rises above this preset value, normal fan speed is resumed. This feature is designed to reduce noise and increase fan life.
- Enable or disable the Load Share Imbalance alarm. When enabled, the alarm activates if PCUs are not sharing the load properly. (MCA version 5.0.0 or newer required.)

Procedure

1. On the toolbar, select **Configure→PCUs→PCU Settings**. The **PCU Settings** page opens. See example in **Figure 44**.
2. To enable a feature, check the box next to the feature name. To disable a feature, clear the check box next to the feature name.
3. When all features have been selected or deselected as required, click the **Update Settings** button. The screen refreshes and the new settings take effect.

Figure 44: PCU Settings Page



Configuring PCU Customer Text

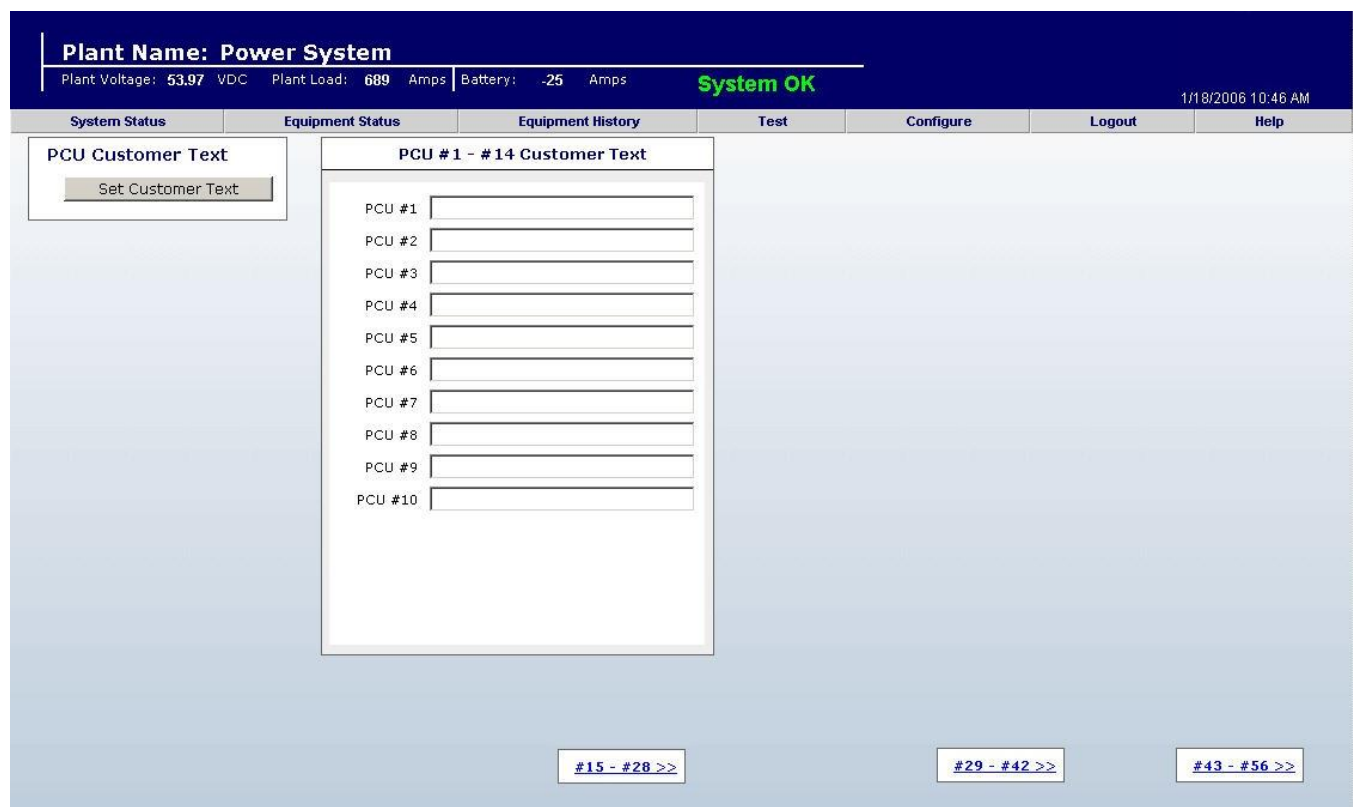
Requires a Permission Level of 6 or higher.

On this page, you can enter a custom name for each PCU in the Power System.

Procedure

1. On the toolbar, select **Configure**→**PCUs**→**PCU Customer Text**. The **PCU Customer Text** page opens. See example in **Figure 45**.
2. Enter a custom name for each PCU as required. A custom name may consists of alpha and/or numeric characters, and may be up to 30 characters long.
3. Click the **Set Customer Text** button. The screen refreshes and the new settings take effect.

Figure 45: PCU Customer Text Page



Plant Name: Power System
 Plant Voltage: 53.97 VDC | Plant Load: 689 Amps | Battery: -25 Amps | **System OK** | 1/18/2006 10:46 AM

System Status | Equipment Status | Equipment History | Test | Configure | Logout | Help

PCU Customer Text
 Set Customer Text

PCU # 1 - # 14 Customer Text

PCU #1
 PCU #2
 PCU #3
 PCU #4
 PCU #5
 PCU #6
 PCU #7
 PCU #8
 PCU #9
 PCU #10

#15 - #28 >> | #29 - #42 >> | #43 - #56 >>

Configuring Battery Test Results



NOTE! To perform a Battery Discharge Test, refer to the following in this section:

1. **To Set Test Parameters:** See Changing System Adjustments.
2. **To Start the Test:** See Changing the System Mode.
3. **To View Test Results:** See Viewing Battery Discharge Results.
4. **To Configure Test Results:** See Configuring Battery Discharge Graphs.

Requires a Permission Level of 5 or higher.

On this page, you can change the following:

- **Test Name:** For each completed battery discharge test, a default name is automatically assigned. You can change the name of any test.
- **Lock Status:** The MCA can store the results of up to 12 tests. As additional tests are performed, the oldest available test files are overwritten. Locking the results of a test prevents that file from being overwritten.

Procedure

1. On the toolbar, select **Configure→Batteries→Battery Discharge Graphs**. The **Battery Test Results** page opens. See example in **Figure 46**.
2. Change test names as required. Names can be up to 30 characters in length.
3. To lock the results of a test click in the **Locked** box to place a checkmark. To unlock a locked test, click in the **Locked** box to remove the checkmark.
4. When all changes have been made, click the **Update Battery Graph Settings** button. The screen refreshes and the new settings take effect.

Figure 46: Configuring Battery Test Results Page

Battery Test Results

Plot #	Battery Discharge Plot #	Time	Date	Status
1	Battery Discharge Plot # 1	1:57 pm	12/9/2005	<input checked="" type="checkbox"/> Locked
2	Battery Discharge Plot # 2	11:47 am	12/27/2005	<input checked="" type="checkbox"/> Locked
3	Battery Discharge Plot # 3	10:30 am	7/24/2005	<input type="checkbox"/> Locked
4	Battery Discharge Plot # 4	5:31 am	7/29/2005	<input type="checkbox"/> Locked
5	Battery Discharge Plot # 5	10:54 am	8/12/2005	<input type="checkbox"/> Locked
6	Battery Discharge Plot # 6	5:45 am	8/13/2005	<input type="checkbox"/> Locked
7	Battery Discharge Plot # 7	5:49 am	8/18/2005	<input type="checkbox"/> Locked
8	Battery Discharge Plot # 8	9:39 am	9/5/2005	<input type="checkbox"/> Locked
9	Battery Discharge Plot # 9	11:26 am	12/2/2005	<input type="checkbox"/> Locked
10	Battery Discharge Plot #10	8:39 am	12/5/2005	<input type="checkbox"/> Locked
11	Battery Discharge Plot #11	10:24 am	12/8/2005	<input type="checkbox"/> Locked
12	Battery Discharge Plot #12	10:27 am	12/9/2005	<input type="checkbox"/> Locked

Battery Test Results

1	Battery Discharge Plot # 1	1:57 pm	12/9/2005	<input checked="" type="checkbox"/> Locked
2	Battery Discharge Plot # 2	11:47 am	12/27/2005	<input checked="" type="checkbox"/> Locked
3	Battery Discharge Plot # 3	10:30 am	7/24/2005	<input type="checkbox"/> Locked
4	Battery Discharge Plot # 4	5:31 am	7/29/2005	<input type="checkbox"/> Locked
5	Battery Discharge Plot # 5	10:54 am	8/12/2005	<input type="checkbox"/> Locked
6	Battery Discharge Plot # 6	5:45 am	8/13/2005	<input type="checkbox"/> Locked
7	Battery Discharge Plot # 7	5:49 am	8/18/2005	<input type="checkbox"/> Locked
8	Battery Discharge Plot # 8	9:39 am	9/5/2005	<input type="checkbox"/> Locked
9	Battery Discharge Plot # 9	11:26 am	12/2/2005	<input type="checkbox"/> Locked
10	Battery Discharge Plot #10	8:39 am	12/5/2005	<input type="checkbox"/> Locked
11	Battery Discharge Plot #11	10:24 am	12/8/2005	<input type="checkbox"/> Locked
12	Battery Discharge Plot #12	10:27 am	12/9/2005	<input type="checkbox"/> Locked

Update Battery Graph Settings

Clearing the Battery Health Alarm (If Provided)



NOTE! The VEC must be equipped with the Battery Reserve Option.

Requires a Permission Level of 8.

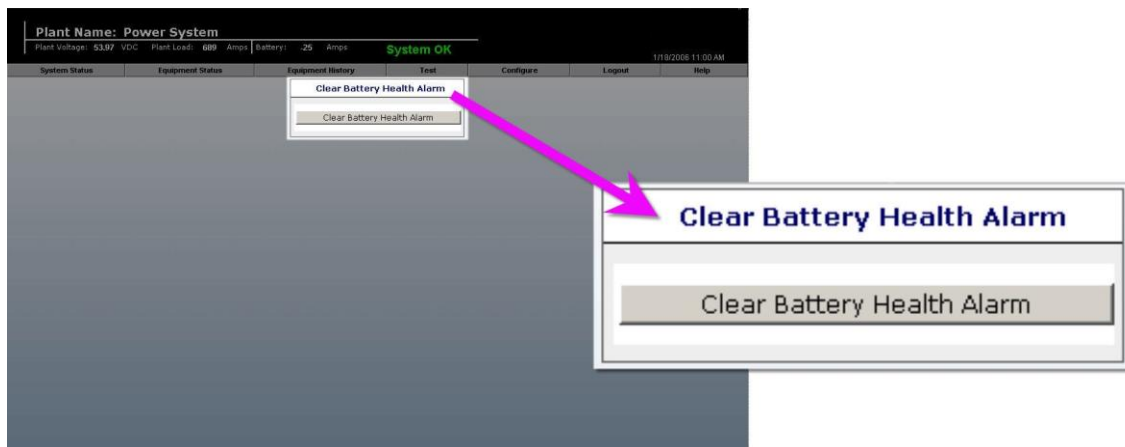
On this page, you can clear the Battery Health Alarm. (See “Viewing the Battery Reserve Page” in this section for alarm description.)

Procedure


1. On the toolbar, select **Configure**→**Batteries**→**Clear Battery Health Alarm**. The **Clear Battery Health Alarm** page opens. See example in **Figure 47**.
2. Click the **Clear Battery Health Alarm** button. A window with the following message will be displayed.

"Are you sure you want to clear the Battery Health Alarm?"
3. To clear the alarm, select **OK**. The screen refreshes. If there are no other system alarms, the ALARM indicator in the header is replaced with System OK.

Figure 47: Clear Battery Health Alarm




Configuring SNMP Settings

 **NOTE!** The VEC must be equipped with the SNMP Option.

Requires a Permission Level of 8.


If the SNMP option is installed, on this page you can set the SNMP parameters. The SNMP Option provides...

- Support for SNMP v2 (Simple Network Management Protocol). Communications to and from the MCA is accomplished via a MIB (Management Information Browser).
- SNMP Traps for alarms listed on the MCA Menu Tree under the "Alarms Menu".

 **NOTE!** Users must be familiar with their Management Information Base (MIB) browser and know how to access the information in the LXP SNMP Interface using their browser. They must also be able to obtain a TCP/IP address for the interface and obtain at least one TCP/IP address to which SNMP traps are sent.

Procedure

1. On the toolbar, select **Configure**→**SNMP**→**SNMP Settings**. The **SNMP Settings** page opens. See example in **Figure 48**.
2. Enter the following SNMP settings:
 - **Community string:** This text string acts as a password. It is used to authenticate messages that are sent between the SNMP manager and the MCA.
 - **System Name, System Location, System Contact:** Self-explanatory.
 - **Trap Interval:** As long as an alarm remains active, the MCA will continue to send a trap at periodic intervals. The Trap Interval specifies how frequently the MCA will send a persistent trap.
3. After entering all SNMP settings, press **Set SNMP Settings**. The screen refreshes and the new settings take effect.
4. Add and/or delete trap addresses as necessary. The maximum number of trap addresses the VEC will accept is 64.

 **NOTE!** Trap addresses are IP addresses to which SNMP Traps will be sent. Addresses are in the format of *nnn.nnn.nnn.nnn*, where $0 \leq nnn \leq 255$. The machine with this IP address must have appropriate SNMP browser running. SNMP Traps V2 are sent.

To add, type the Trap Address in Trap box and then press Add Trap Address. The screen refreshes and the new settings take effect.

To delete, select the Trap Address from the Trap List and then press Delete Trap Address. The screen refreshes and the new settings take effect.


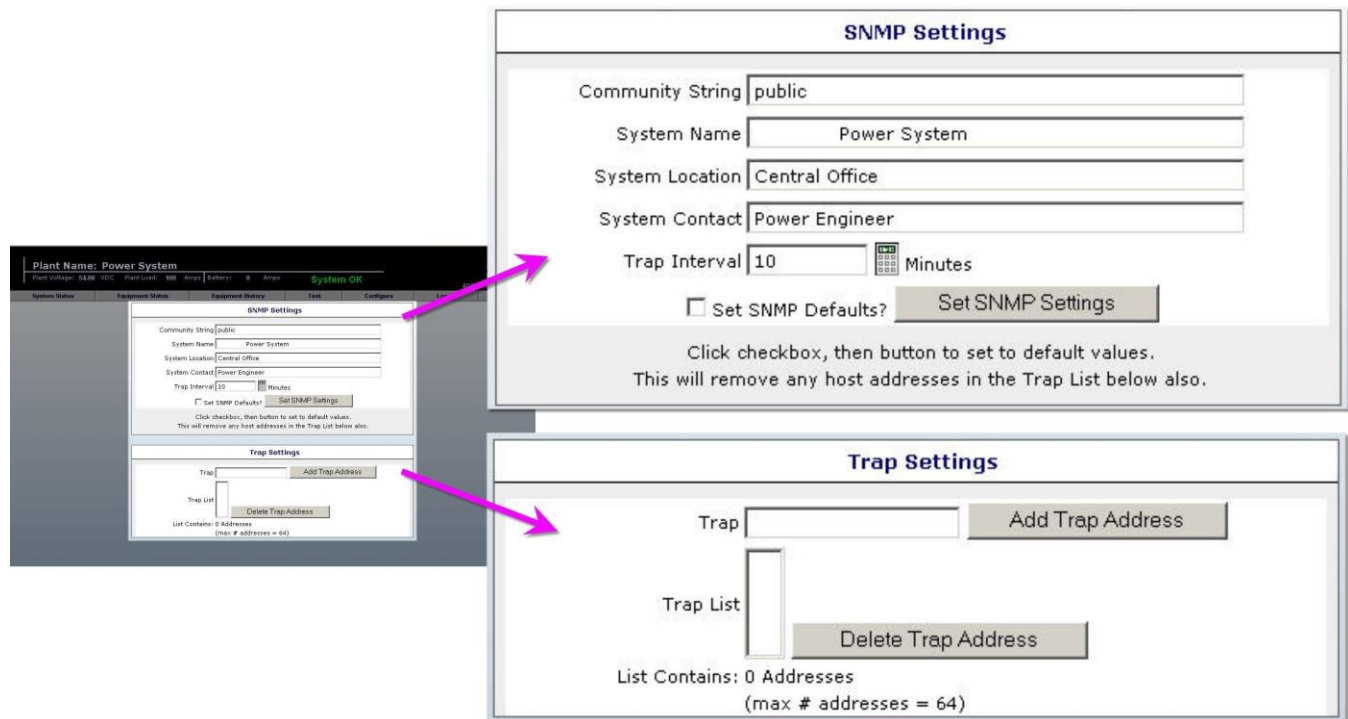
 **NOTE!** You can enter factory default values for all settings on the screen. To enter default values, click the Set SNMP Defaults? check box to enter a check mark, then click the Set SNMP Settings button. This will also remove all trap addresses from the Trap List.

Figure 48: SNMP Settings Page



NOTE! Operation of the SNMP interface is beyond the scope of this manual. Refer to other documentation for SNMP interface information, such as the following...

Relevant RFC's available from The Internet Engineering Task Force (IETF):

- 1901 Introduction to Community-based SNMPv2.
- 1902 Structure of Management Information for Version 2 of the Simple Network Management Protocol (SNMPv2).
- 1903 Textual Conventions for Version 2 of the Simple Network Management Protocol (SNMPv2).
- 1904 Conformance Statements for Version 2 of the Simple Network Management Protocol (SNMPv2).
- 1905 Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2).
- 1906 Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2).
- 1907 Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2).

Books:

- SNMP SNMPv2 and RMON, Practical Network Management, Second Edition, by William Stallings
- SNMP, A Guide to Network Management, by Dr. Sidnie Feit

Configuring Users

Adding, Removing Users and Editing User Information

Requires a Permission Level of 8.

From this page, you can add new users or remove existing users. You can also edit information about existing users.

Procedure


1. On the toolbar, select **Configure→User→Add/Remove Users**. The **User List** page opens. See example in **Figure 49**.

To Remove a User

1. For each name being removed, place a checkmark in the appropriate box in the column labeled Remove.
2. Click the **Remove Selected User(s)** button.
3. A window opens displaying the message, “Are you sure you wish to remove the selected User(s)?” To accept the change, click **OK**. The screen refreshes and the mode changes. To cancel the operation, click Cancel.

To Add a User


1. Click the **Add New User** button. The **Add User** page opens. See example in **Figure 50**.
2. Enter all applicable information. Note that, for security, the password and password confirmation entries will not be displayed on the screen.

 **NOTE!** User names and passwords are case-sensitive, and must be 6-10 characters long, with no spaces. Both alpha and numeric characters may be used.

3. When the information is complete, click the **Add User** button. The **User List** page opens and the new user is displayed.

To Edit a User’s Information

1. Click on the user name in the **Users** column. The **Edit User** page opens. See **Figure 51**.
2. Change the user information as required. Note that, for security, the password and password confirmation entries will not be displayed on the screen.

 **NOTE!** User names and passwords are case-sensitive, and must be 6-10 characters long, with no spaces. Both alpha and numeric characters may be used.

3. When the information is complete, click the **Edit User** button. The **User List** page opens, indicating the change was successful.

Figure 49: Add/Remove Users Page

Users	Name	Phone	Alt. Phone	Email Address	Alt. Email Address	Access Level	Remove
llp_admin	Administrator	---	---	---	---	8	
llp_user7	User #07	---	---	---	---	7	<input type="checkbox"/>
llp_user7	User #06	---	---	---	---	6	<input type="checkbox"/>
llp_user5	User #05	---	---	---	---	5	<input type="checkbox"/>
llp_user4	User #04	---	---	---	---	4	<input type="checkbox"/>
llp_user3	User #03	---	---	---	---	3	<input type="checkbox"/>
llp_user2	User #02	---	---	---	---	2	<input type="checkbox"/>
llp_user1	User #01	---	---	---	---	1	<input type="checkbox"/>

Buttons: Add New User, Remove Selected User(s)

Figure 50: Add User Page

Add User

Username:

Password:

Confirm Password:

Full Name:

Permission Level: 1 View

Primary Phone: Start: Sunday Midnight End: Saturday 11 PM

Alternate Phone:

Primary Email: Start: Sunday Midnight End: Saturday 11 PM

Alternate Email:

Add User

Figure 51: Edit User Page

Edit User

Username: llp_user7

Password:

Confirm Password:

Full Name: User #07

Permission Level: 7 Configure

Primary Phone: Start: Sunday Midnight End: Saturday Midnight

Alternate Phone:

Primary Email: Start: Sunday Midnight End: Saturday Midnight

Alternate Email:

Edit User

Updating a Password

Requires a Permission Level equal to or higher than that of the User whose password is being updated.

On this page, you can update your own password. You can also edit other user information about yourself.

NOTE! You cannot change your Permission Level on this page.

Procedure

1. On the toolbar, select **Configure**→**User**→**Update Password**. The **Change Password** page opens. See example in **Figure 52**.
2. Change the user information as required. Note that, for security, the password and password confirmation entries will not be displayed on the screen.

NOTE! User names and passwords are case-sensitive, and must be 6-10 characters long, with no spaces. Both alpha and numeric characters may be used.

3. When the information is complete, click the **Change Password** button. The screen refreshes and the information is updated.

Figure 52: Change Password Page

The screenshot shows a web interface for changing a password. The page title is "Change Password". The form contains the following fields and options:

- Username:** llp_admin
- Password:** [Redacted]
- Confirm Password:** [Redacted]
- Full Name:** Administrator
- Permission Level:** (8) Administrator
- Primary Phone:** [Redacted]
- Alternate Phone:** [Redacted]
- Primary Email:** [Redacted]
- Alternate Email:** [Redacted]
- Start Time:** Day: Thursday, Hour: Midnight
- End Time:** Day: Monday, Hour: Midnight

At the bottom of the form is a button labeled "Change Password".

Uploading Options

Requires a Permission Level of 1.

On this page, the VEC has the capability of uploading MCA option files. Information transfer is done using the FTP protocol via the Ethernet port.

NOTE! To upload system upgrades, see “Upgrading an Application” in this section.

NOTE! To obtain an MCA option file for field upgrade, contact your Vertiv Co. sales representative. You will need to provide the serial number of your MCA. To find the MCA serial number, on the toolbar select **Equipment Status** → **MCA System**. The **MCA System Summary** page opens. The serial number can be found in the **MCA Specifications** pane.

NOTE! The name of the provided option file cannot be changed.

To Copy an Options Key File to the VEC

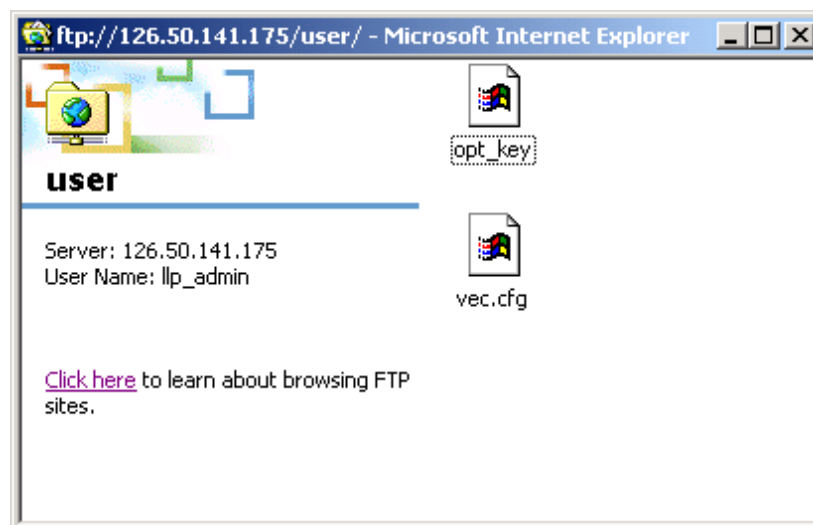
Via Internet Explorer version 6, or earlier

1. On the toolbar, select **Help** → **About VEC**. The **About VEC** page opens. See Figure 53.
2. On the **About VEC** page, click the **Import Files** button. A **Login As** window opens. Enter your **User Name** and **Password**, and then click the **Login** button. A window opens that contains all the configuration files stored in the VEC. See **Figure 53**.

NOTE! Other files such as *Battery Discharge Test files (.csv filename extension)* may also be present in this window.

3. Drag the provided option key file into the window that was opened in the previous step.
4. Close the window once the file transfer is complete.

Figure 53: FTP Directory Window



Via Internet Explorer Version 7



NOTE! Do not use the *Import Files* button.

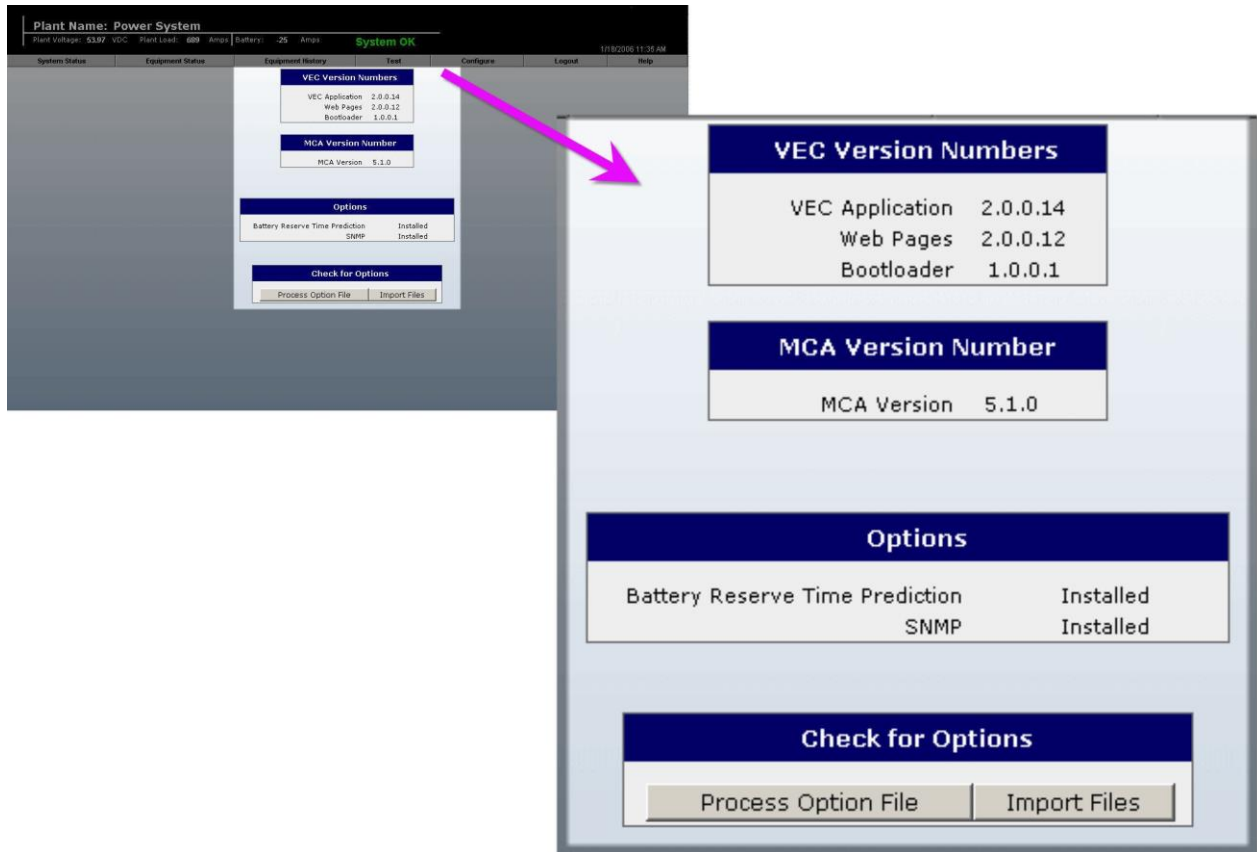
1. Open Windows Explorer.
2. In the Windows Explorer address bar type **ftp://VEC IP ADDRESS/User**
(where VEC IP ADDRESS is the IP address of the VEC card, in the format of nnn.nnn.nnn.nnn, where $0 \leq nnn \leq 255$).
3. A **Log On As** window opens. Enter your VEC **User Name** and **Password**, and then click the **Log On** button.
4. Drag the provided option key file (opt_key) into the window that was opened in the previous step.
5. Close the window once the file transfer is complete.

Process the Option Key File

1. Click the **Process Option File** button.
2. A window with the following message will be displayed.

"Are you sure you wish to process the option file?"
3. To upload the option, select **YES**. The screen refreshes.
4. Review the **Options** list to verify that the new option is installed.

Figure 54: About VEC Page



Modbus® Communications Protocol

This feature enables VEC communication of alarms and live signals using the Modbus® protocol.

A message is encoded in Remote Terminal Unit (RTU) data format and is communicated upon query via Ethernet TCP/IP to any Modbus® supervisor or master.

The VEC acts as a server on Ethernet networks known as Modbus® TCP RTU: TCP/IP over Ethernet, default TCP port = 502. The server is always up and running when the VEC starts up; ready to respond to a client query.

The VEC supports the following Modbus® protocol function code:

- 0x03 (Read Holding Registers)

Table 3: Modbus Address Definition for Function Code 0x03 (Read Holding Register)

Register	Bit	Signal	Units
40001		System Voltage	millivolts
40002		System Load	Amps
40003		Total PCU Output	Amps
40004		Battery Current	Amps
40005		Subsystem Voltage	millivolts
40006		Subsystem Current	Amps
40007		Sense Voltage	millivolts
40008		Number of PCUs Communicating	
40009		Battery Reserve Time	minutes
40010		Highest Alarm Severity Level	0:normal, 1:minor, 2:major
40011		Alarm Active	0:normal, 1:alarm is active
40012		Temperature Probe 1	Celsius
40013		Temperature Probe 2	Celsius
40014		Temperature Probe 3	Celsius
40015		Temperature Probe 4	Celsius
40016		Temperature Probe 5	Celsius
40017		Temperature Probe 6	Celsius
40018		Temperature Probe 7	Celsius
40019		Temperature Probe 8	Celsius
40020		Distribution 1 Current	Amps
40021		Distribution 2 Current	Amps
40022		Distribution 3 Current	Amps
40023		Distribution 4 Current	Amps
40024		Distribution 5 Current	Amps
40025		Distribution 6 Current	Amps
40026		Distribution 7 Current	Amps
40027		Distribution 8 Current	Amps
40028		Distribution 9 Current	Amps

Register	Bit	Signal	Units
40029		Distribution 10 Current	Amps
40030		Distribution 11 Current	Amps
40031		Distribution 12 Current	Amps
40032		Distribution 13 Current	Amps
40033		Distribution 14 Current	Amps
40034		Distribution 15 Current	Amps
40035		Distribution 16 Current	Amps
40036		PCU 1 Current	Amps
40037		PCU 2 Current	Amps
40038		PCU 3 Current	Amps
40039		PCU 4 Current	Amps
40040		PCU 5 Current	Amps
40041		PCU 6 Current	Amps
40042		PCU 7 Current	Amps
40043		PCU 8 Current	Amps
40044		PCU 9 Current	Amps
40045		PCU 10 Current	Amps
40046		PCU 11 Current	Amps
40047		PCU 12 Current	Amps
40048		PCU 13 Current	Amps
40049		PCU 14 Current	Amps
40050		PCU 15 Current	Amps
40051		PCU 16 Current	Amps
40052		PCU 17 Current	Amps
40053		PCU 18 Current	Amps
40054		PCU 19 Current	Amps
40055		PCU 20 Current	Amps
40056		PCU 21 Current	Amps
40057		PCU 22 Current	Amps
40058		PCU 23 Current	Amps
40059		PCU 24 Current	Amps
40060		PCU 25 Current	Amps
40061		PCU 26 Current	Amps
40062		PCU 27 Current	Amps
40063		PCU 28 Current	Amps
40064		PCU 29 Current	Amps
40065		PCU 30 Current	Amps
40066		PCU 31 Current	Amps
40067		PCU 32 Current	Amps
40068		PCU 33 Current	Amps

Register	Bit	Signal	Units
40069		PCU 34 Current	Amps
40070		PCU 35 Current	Amps
40071		PCU 36 Current	Amps
40072		PCU 37 Current	Amps
40073		PCU 38 Current	Amps
40074		PCU 39 Current	Amps
40075		PCU 40 Current	Amps
40076		PCU 41 Current	Amps
40077		PCU 42 Current	Amps
40078		PCU 43 Current	Amps
40079		PCU 44 Current	Amps
40080		PCU 45 Current	Amps
40081		PCU 46 Current	Amps
40082		PCU 47 Current	Amps
40083		PCU 48 Current	Amps
40084		PCU 49 Current	Amps
40085		PCU 50 Current	Amps
40086		PCU 51 Current	Amps
40087		PCU 52 Current	Amps
40088		PCU 53 Current	Amps
40089		PCU 54 Current	Amps
40090		PCU 55 Current	Amps
40091		PCU 56 Current	Amps
40092		PCU 57 Current	Amps
40093		PCU 58 Current	Amps
40094		PCU 59 Current	Amps
40095		PCU 60 Current	Amps
40096		PCU 61 Current	Amps
40097		PCU 62 Current	Amps
40098		PCU 63 Current	Amps
40099		PCU 64 Current	Amps
40100		PCU 65 Current	Amps
40101		PCU 66 Current	Amps
40102		PCU 67 Current	Amps
40103		PCU 68 Current	Amps
40104		PCU 69 Current	Amps
40105		PCU 70 Current	Amps
40106		PCU 71 Current	Amps
40107		PCU 72 Current	Amps
40108		PCU 73 Current	Amps

Register	Bit	Signal	Units
40109		PCU 74 Current	Amps
40110		PCU 75 Current	Amps
40111		PCU 76 Current	Amps
40112		PCU 77 Current	Amps
40113		PCU 78 Current	Amps
40114		PCU 79 Current	Amps
40115		PCU 80 Current	Amps
40116		Controller Communication Fail	
40117		Very Low Voltage Alarm	
40118		Battery On Discharge Alarm	
40119		Over Voltage 1 Alarm	
40120		Over Voltage 2 Alarm	
40121		System Fuse Alarm	
40122		System Over Current Alarm	
40123		Mains Failure Alarm	
40124		Rectifier Major Alarm	
40125		Rectifier Minor Alarm	
40126		System Major Alarm	
40127		System Minor Alarm	
40128		PCU Imbalance Alarm	
40129		PCU Emergency Stop	
40130		PCU High AC Line	
40131		PCU HVS Alarm	
40132		Controller Fail Alarm	
40133		Subsystem Major Alarm	
40134		Subsystem Minor Alarm	
40135		Subsystem Over Voltage Alarm	
40136		Subsystem Low Voltage Alarm	
40137		Subsystem Over Current Alarm	
40138		Subsystem Fuse Alarm	
40139		Remote Equalize Input Active	
40140		Remote HVS Input Active	
40141		Remote ESTOP Input Active	
40142		LVD Active	
40143		LVDs Inhibited	
40144		LVD Fail	
40145		Shunt Fail	
40146		Temperature Probe Fail	
40147		Recharge Over Current Alarm	
40148		Recharge Current Limit Inhibited	

Register	Bit	Signal	Units
40149		Poor Battery Health	
40150		Battery Reserve Low Alarm	
40151		Controller Display Alarm	
40152		Controller Is Initializing	
		PCU Alarm Data Format: Bit 15: TR'd Bit 14: High AC Line Bit 13: Reserved Bit 12: Controller Failure Bit 11: Reserved Bit 10: Fan slowed or stopped Bit 9: Inhibited Bit 8: Circuit Breaker Off Bit 7: Converter Fail Bit 6: Thermal Alarm or Current Limit Bit 5: Emergency Stop Bit 4: Input Switch Off Bit 3: High Voltage Shutdown Bit 2: AC Input Off or Low Bit 1: No Reply Bit 0: Sense Lead is Open	
40153		PCU 1 Alarms	
40154		PCU 2 Alarms	
40155		PCU 3 Alarms	
40156		PCU 4 Alarms	
40157		PCU 5 Alarms	
40158		PCU 6 Alarms	
40159		PCU 7 Alarms	
40160		PCU 8 Alarms	
40161		PCU 9 Alarms	
40162		PCU 10 Alarms	
40163		PCU 11 Alarms	
40164		PCU 12 Alarms	
40165		PCU 13 Alarms	
40166		PCU 14 Alarms	
40167		PCU 15 Alarms	
40168		PCU 16 Alarms	
40169		PCU 17 Alarms	
40170		PCU 18 Alarms	
40171		PCU 19 Alarms	
40172		PCU 20 Alarms	
40173		PCU 21 Alarms	
40174		PCU 22 Alarms	
40175		PCU 23 Alarms	

Register	Bit	Signal	Units
40176		PCU 24 Alarms	
40177		PCU 25 Alarms	
40178		PCU 26 Alarms	
40179		PCU 27 Alarms	
40180		PCU 28 Alarms	
40181		PCU 29 Alarms	
40182		PCU 30 Alarms	
40183		PCU 31 Alarms	
40184		PCU 32 Alarms	
40185		PCU 33 Alarms	
40186		PCU 34 Alarms	
40187		PCU 35 Alarms	
40188		PCU 36 Alarms	
40189		PCU 37 Alarms	
40190		PCU 38 Alarms	
40191		PCU 39 Alarms	
40192		PCU 40 Alarms	
40193		PCU 41 Alarms	
40194		PCU 42 Alarms	
40195		PCU 43 Alarms	
40196		PCU 44 Alarms	
40197		PCU 45 Alarms	
40198		PCU 46 Alarms	
40199		PCU 47 Alarms	
40200		PCU 48 Alarms	
40210		PCU 49 Alarms	
40202		PCU 50 Alarms	
40203		PCU 51 Alarms	
40204		PCU 52 Alarms	
40205		PCU 53 Alarms	
40206		PCU 54 Alarms	
40207		PCU 55 Alarms	
40208		PCU 56 Alarms	
40209		PCU 57 Alarms	
40210		PCU 58 Alarms	
40211		PCU 59 Alarms	
40212		PCU 60 Alarms	
40213		PCU 61 Alarms	
40214		PCU 62 Alarms	
40215		PCU 63 Alarms	

Register	Bit	Signal	Units
40216		PCU 64 Alarms	
40217		PCU 65 Alarms	
40218		PCU 66 Alarms	
40219		PCU 67 Alarms	
40220		PCU 68 Alarms	
40221		PCU 69 Alarms	
40222		PCU 70 Alarms	
40223		PCU 71 Alarms	
40224		PCU 72 Alarms	
40225		PCU 73 Alarms	
40226		PCU 74 Alarms	
40227		PCU 75 Alarms	
40228		PCU 76 Alarms	
40229		PCU 77 Alarms	
40230		PCU 78 Alarms	
40231		PCU 79 Alarms	
40232		PCU 80 Alarms	
		Distribution Alarm Data Format: Bit 15 - 8: Reserved Bit 7: No Reply Bit 6: Type Alarm Bit 0-5: Reserved	
40233		Distribution 1 Alarms	
40234		Distribution 2 Alarms	
40235		Distribution 3 Alarms	
40236		Distribution 4 Alarms	
40237		Distribution 5 Alarms	
40238		Distribution 6 Alarms	
40239		Distribution 7 Alarms	
40240		Distribution 8 Alarms	
40241		Distribution 9 Alarms	
40242		Distribution 10 Alarms	
40243		Distribution 11 Alarms	
40244		Distribution 12 Alarms	
40245		Distribution 13 Alarms	
40246		Distribution 14 Alarms	
40247		Distribution 15 Alarms	
40248		Distribution 16 Alarms	

Register	Bit	Signal	Units
		Temperature Probe Alarm Data Format: Bits 15 - 3: Reserved Bit 2: High Temperature Alarm Bit 1: Low Temperature Alarm Bit 0: No Reply	
40249		Temperature Probe 1 Alarms	
40250		Temperature Probe 2 Alarms	
40251		Temperature Probe 3 Alarms	
40252		Temperature Probe 4 Alarms	
40253		Temperature Probe 5 Alarms	
40254		Temperature Probe 6 Alarms	
40255		Temperature Probe 8 Alarms	
		LVD Alarm Data Format: Bit 15 - 8: Reserved Bit 7: Circuit B Active Bit 6: Circuit A Active Bit 5: Circuit B No Reply Bit 4: Circuit A No Reply Bit 3: Circuit B Board Fail Bit 2: Circuit A Board Fail Bit 1: Inhibited Bit 0: Reserved	
40256		LVD 1 Alarms	
40257		LVD 2 Alarms	
40258		LVD 3 Alarms	

