

# **QUANTUM - QSC1100L DIGITAL CONTROLLER OPERATION MANUAL**

Product Manual Part Number: 4380482PD  
Issue 1, July 2010

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# FACTORY DEFAULT SETPOINTS AND SETPOINT LIMITS

Factory defaults are user definable via QSC1100L front panel rotary control knob or Web interface

<b>-48V SYSTEMS</b>			
<b>Description</b>	<b>Default</b>	<b>Range</b>	<b>Resolution</b>
Battery on Discharge	48.0 VDC	40-60 VDC	100mV
Plant High Voltage Alarm	57.25 VDC	40-60 VDC	100mV
Plant Low Voltage Alarm	44.0 VDC	40-60 VDC	100mV
Low Voltage Load Disconnect (A B)	42.0 VDC	40-60 VDC	100mV
Low Voltage Reconnect (A B)	50.0 VDC	40-60 VDC	100mV
Low Voltage Disconnect Time	4 h	.1-10h	.1h
Total Current Alarm (% Applied Globally)	100%	0-100%	1%
Total Current Limit	2000A	0-10,000A	1A
Temperature Compensation (TCOMP)	36mA	0-240mV_C	1mV
TCOMP Normal Range	25C (77F)	20-30C(68-86F)	1°C
Low Ambient Temperature Alarm	10°C	0°C to 100°C	1°C
High Ambient Temperature Alarm	58°C	0°C to 100°C	1°C
Plant Float*	54.0 VDC	48.0 – 57.5 VDC	100 mV
Plant Equalize*	54.0 VDC	48.0 – 57.5 VDC	100mV
Rectifier Max Current	50 ADC	0 – 50 ADC	0.1 ADC
Rectifier HVSD	58.0 VDC	56.5 – 58.5 VDC	100mVDC
Temperature Compensation Slope	72mV per °C	0-120 mV per °C	1mV per °C
Distribution Current Alarm	80%	0-120%	1%
Battery Temperature Alarm (Threshold 1)	55°C	0°C to 100°C	1°C
Rectifier Current Imbalance	.25	.10 – 1.0	1%
Rectifier Temp Max	80°C	0-100°C	1°C
Limited Recharge Setting	80%	50-100%	1%
Max Alarm Test Time	15 Min.	1-15 Min.	1 Min.
Float Current Limit	750mADC	0-10000mADC	1mADC
Float Current Alarm Delay	12h	1-24h	1h
Plant Equalize Time Setting	N/A	N/A	N/A
Plant High Voltage Shutdown	58.0 VDC	55-59.5 VDC	100mV
Recharge Control Minimum	54 VDC	48.5 – 54.5 VDC	.1
Recharge Rate Factor	.20	.05 - .25	.01
Battery Current Variance	.20	0 - 1.0	.01
Variance Inhibit Minimum	.10	.05 – .25	.01
High Float Current Factor	.05	.02 – .25	.01

\*Actual setting will depend on type of batteries being used. Consult battery manufacturer's specifications.

## COMMON ACROYSMS

ABS	Alarm Battery Supply	LV	Low Voltage
ACF	AC Fail	LVD	Low Voltage Disconnect
ACO	(Audible) Alarm Cut Off	MJ	Major
ALM	Alarm	MN	Minor
AO	Analog Output	MP	Mid Point
AWG	American Wire Gauge	MON	Monitor
BAT	Battery	NC	Normally Closed (Open on Alarm)
BC	Battery Current	NO	Normally Open (Close on Alarm)
BCR	Battery Controlled Recharge	OC	Over Current
BCX	Battery Current (x represents any number)	PE	Power Earth (Earth Ground)
BD	Battery Disconnect	PL	Partial Load
BOD	Battery On Discharge	PMJ	Power Major
BS	Branch Shunt	PMN	Power Minor
BTC	Battery Temperature Compensation	PMNR	Power Minor Return
CBS	Control Battery Supply	PMJR	Power Major Return
CFA	Converter Fail Alarm	PNL	Panel
COF	Charger Off (GND Signal)	RCC	Remote Charger Control
COG	Central Office Ground	REMEQ	Remote Equalize
COM	Common	RFA	Rectifier Fail Alarm
CON	Charger On (GND Signal)	RFAM	Rectifier Fail Multiple
DCA	Distribution Current Alarm	RFAR	Rectifier Fail Alarm Return
DFA	Distribution Fuse Alarm	RS	Rectifier Restart
DO	Digital Output	RSR	Rectifier Restart Return
EBD	Emergency Battery Disconnect	RX	Receive
ECS	End Cell Switch	SG	Signal Ground
EPO	Emergency Power Off	SH	Shunt
EQ/EQL	Equalize	SHG	Shield Ground
FA	Fuse Alarm	TB	Terminal Block
GND	Ground	TCA	Total Current Alarm
HHVA	High High Voltage Alarm	TCOMP	Temperature Compensation
HVA	High Voltage Alarm	TR	Rectifier Turn On/Off
HVSD	High Voltage Shutdown	TRR	Rectifier Turn On/Off Return
LCA	Low Current Alarm	TS	Terminal Strip
LLV	Low Low Voltage	TX	Transmit
LMR	Limited Recharge	VM	Volt Meter
LOA	Low Output Alarm	VLV	Very Low Voltage
LOAR	Low Output Alarm return	WD	Watch Dog
LSO	Load Share Out		
LUD	Local User Display		

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# FOREWORD

This manual includes operational instructions for the QSC1100L digital controller. If you should have any questions or problems, please contact one of the following sources:

## CONTACT INFORMATION:

### REPAIRS AND EMERGENCY SERVICE: Field Service / After Market Services –

(419) 468-7700 or  
(888) 317-1216

### PARTS ORDERING - Replacement parts for power equipment may be obtained by forwarding a Purchase Order to:

Lineage Power  
P. O. Box 910  
Galion, Ohio 44833  
or  
Fax to: (419) 462-8180

Include the following information:

- A. Product part number and engineering level of equipment
- B. If part is electrical, give circuit reference numbers and Product part numbers.
- C. If part is mechanical in nature, give description as to where it is used.

### RETURN & REPAIR – For Lineage Power factory repaired and refurbished equipment

A. Call: (419) 468-7700 Field Service  
Or  
(888) 317-1216

B. Request a Returned Material Authorization (RMA) number for the defective equipment.

C. Return material prepaid to:

Lineage Power  
1376 State Route 598  
Galion, Ohio 44833

Attn: Field Service Dept

<h1>WARNINGS</h1>		<h1>CAUTIONS</h1>	
<p>1. Electrical shock hazard. Do not attempt to remove, maintain, or install this equipment with power applied. Personnel that attempt to work on this equipment with the power applied may subject themselves or others to electrical shock that may cause serious injury or death.</p> <p>Le danger électrique de choc. Pas la tentative pour enlever, maintenir, ou installer cet équipement avec le pouvoir appliqué. Le personnel qui tente traiter cet équipement avec le pouvoir appliqué peut s'exposer ou les autres au choc électrique qui peut causer la blessure ou la mort sérieuse</p> <p>2. The use of this equipment by unauthorized or untrained personnel should not be attempted. Personnel that work on this equipment without the proper training may subject themselves or others to electrical shock that may cause serious injury or death.</p> <p>L'usage de cet équipement par le personnel inautorisé ou sans formation ne devrait pas être tenté. Le personnel qui traite cet équipement sans l'entraînement correct peut s'exposer ou les autres au choc électrique qui peut causer la blessure ou la mort sérieuse</p> <p>3. Do not attempt to work on this equipment if it is, or has been, exposed to a high moisture condition. It is recommended the equipment be returned to Lineage Power to be properly tested. Working on this equipment during a high moisture condition subjects the user to electrical shock that may cause serious injury or death.</p> <p>Pas la tentative pour traiter cet équipement si c'est, ou a été, exposé à une haute condition d'humidité. Il est recommandé l'équipement s'est retourné à Lineage Power deux être convenablement essayé. Traiter cet équipement pendant une haute condition d'humidité expose l'utilisateur au choc électrique qui peut causer la blessure ou la mort sérieuse.</p> <p>4. Use of an attachment other than one approved by Lineage Power will void any and all warranties, implied or other, and will increase risk of fire, or may possibly cause electrical shock, injury, or death to personnel.</p> <p>L'usage d'un attachement autrement qu'un approuvé par Lineage Power annulera n'importe quel et toutes garanties, implicites ou autres, et augmentera le risque de feu, ou probablement peut causer le choc électrique, la blessure, ou la mort au personnel.</p> <p>5. Do not operate this equipment if it has been dropped or otherwise damaged. Trying to operate this equipment if it has been damaged subjects yourself or others to electrical shock that may cause serious injury or death.</p> <p>L'usage d'un attachement autrement qu'un approuvé par Lineage Power annulera n'importe quel et toutes garanties, implicites ou autres, et augmentera le risque de feu, ou probablement peut causer le choc électrique, la blessure, ou la mort au personnel.</p> <p>6. Before you proceed, ensure the input source is not live and the input circuit breaker(s)/fuse(s) has been tripped or removed. If these procedures have not been followed and the input/output power is live, serious personnel injury or death may occur.</p> <p>Avant que vous procédez, assurez que la source d'entrée n'est pas en vie et le circuit d'entrée breaker(s)/fuse(s) a été trébuché ou a été enlevé. Si ces procédures n'ont pas été suivies et le pouvoir input-output est la blessure de personnel ou la mort en vie et sérieux peut arriver</p> <p>7. A rack/shelf may contain several operating systems. If there is another system in the general area you want to install this system, be cautious of any exposed connectors or wires and, with permission, remove power to the other systems. Failure to take the necessary safety precautions subjects the installer or maintenance personnel to severe electrical shock that may cause serious injury or death.</p> <p>Une étagère/étagère peut contenir plusieurs systèmes d'exploitation. S'il y a un autre système dans le secteur général que vous voulez installer ce système, êtes prudent de connecteurs ou de fils exposés et, avec la permission, enlevez le pouvoir aux autres systèmes. L'échec pour prendre les précautions de sûreté nécessaires exposent le personnel d'installateur ou entretien au choc électrique sévère qui peut causer la blessure ou la mort sérieuse</p> <p>8. This equipment may connect to lead-acid batteries. Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. <b>Wash hands after touching batteries.</b></p> <p>Cet équipement peut connecter des piles mener-acides. Les postes de pile, les terminaux, et les accessoires apparentés contient l'avance et les premiers composés, les produits chimiques connus à l'état de Californie pour causer les défauts de cancer et naissance ou l'autre mal reproducteur. Laver des mains après avoir touché des piles.</p>	<p>1. Follow proper grounding instructions.</p> <p>Suivre fonder correctes les instructions.</p> <p>2. If connecting batteries, remove the battery-box-fuse or trip the circuit breaker. Check batteries and connections for proper polarity and power before connecting the batteries to the system.</p> <p>Si connectant des piles, enlever la pile-boîte-le fusible ou trébuché le disjoncteur. Vérifier des piles et des connexions pour la polarité et le pouvoir correcte avant de connecter les piles au système.</p> <p>3. To remove the circuit breakers or fuses, the DC and/or AC input to the system will need to be disconnected, thereby disabling the system output to the load(s). Take the necessary precautions and inform the plant engineer that the system output power to the loads will be disabled.</p> <p>Pour enlever les disjoncteurs ou les fusibles, les données de courant alternatif de et/ou de DC au système auront besoin d'être débranché, de cette façon rendant infirme la production de système au chargement (les chargements). Prendre les précautions nécessaires et informer l'ingénieur de plante que le pouvoir de production de système aux chargements seront rendus infirme.</p> <p>4. Before performing any maintenance, ensure AC or DC power is not applied to the system.</p> <p>Avant d'exécuter n'importe quel entretien, assurer que le pouvoir de courant alternatif ou DC n'est pas appliqué au système.</p> <p>5. Fuse holders, fuses, and circuit breakers are not to be loaded to more than 80 percent of their ampere rating.</p> <p>Fondez les supports, fusibles, et des disjoncteurs ne doivent pas être chargés à plus de 80 pour cent de leur estimation d'ampère.</p>		



# SECTION 1: GENERAL

## 1.1 QSC1100L SYSTEM CONTROLLER

The QSC1100L system controller provides an intuitive interface to the Quantum's extensive feature set. From the controller, the technician may interrogate alarms, review historical logs, view and change settings.

An RJ45 jack located on the side of the QSC1100L serves as both remote Ethernet and Craft access port. With a standard laptop PC, the installer can gain access to the embedded webpage for greater convenience and with the correct password level; the operator can access all screens and logs with standard PC software. No proprietary software is required.

Where added security is required, the QSC1100L is equipped with software protected, two-level passwords as well as a physical security lock out switch disabling Ethernet access. No matter what security mode the controller is placed in the user will always be allowed read-only access.

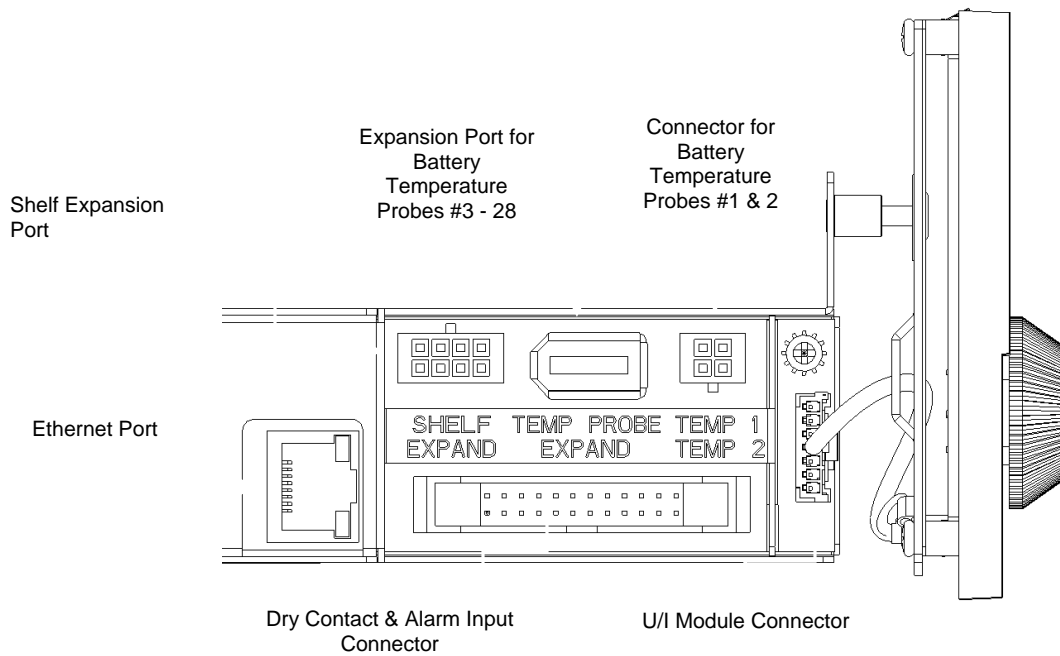
The controller is designed to retain all configuration settings and performance trend logs as needed for further analysis. The U/I can retain stored set points and alarm logs for up to 4 years after the loss of power. The design life of the Lithium battery is greater than 20 years.

**NOTE:** The host PC must have the Java™ application v 1.6 or later installed to view the QSC1100L web pages. Visit [www.java.com/en](http://www.java.com/en) to download this free application.

**NOTE:** A Quick Start Guide is provided that supports the most commonly used functions.



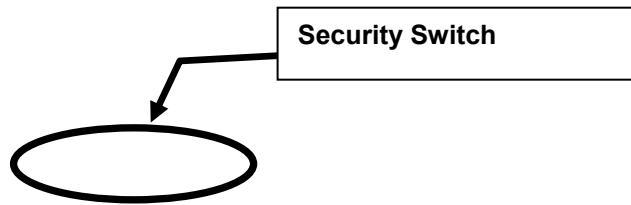
**FIGURE 1-1: QSC1100L CONTROLLER**



**FIGURE 1-2: QSC1100L CONTROLLER**

## 1.2 QSC1100L SYSTEM CONTROLLER SECURITY SWITCH

<p>SECURITY SW</p>	<p>Hardware security switch. Allows user to lockdown the UI controller from Ethernet intrusion allowing read only access.</p> <p>Range: On (Enabled) / Off (Disabled)</p> <p>"ON": Remote Admin User can not write or change system information. Read only function remains operable</p> <p>"OFF": Remote User/Admin can access the system information.</p> <p>Default: Off (Disabled)</p> <p>Available for U/I Module only</p> <p>Anytime this security function is used, the controller must be un-seated and re-seated to complete the process. The QPS System will continue to function normally through this change.</p> <p>As identified in the figure 1-3, this switch can be moved to either the on or off position. The use of a non metallic (orange stick) tool to perform this function will ensure proper performance.</p>
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**FIGURE 1-3: LOCATION OF THE SECURITY SWITCH**

### 1.3 QSC1100L CONTROLLER SHELF LIFE

Due to the characteristics of the aluminum electrolytic capacitors and the controller's lithium ion battery, the (not in service) shelf life of a QSC1100L is three years. Over time, the oxide film located on the anode foil of aluminum electrolytic capacitors may begin to deteriorate. If a QSC1100L has exceeded the manufacturing date printed on the box prior to being placed into service, the system must be sent back to Lineage Power for maintenance prior to being placed into service.

The QSC1100L has a Lithium battery installed to retain all configuration settings and performance trend logs for up to 4 years after all power has been removed from the system. The design life of the installed Lithium battery is greater than 20 years and requires no maintenance.

Store the QSC1100L in a location that does not have direct sunlight and in the following conditions:

**TABLE 1-1: STORAGE**

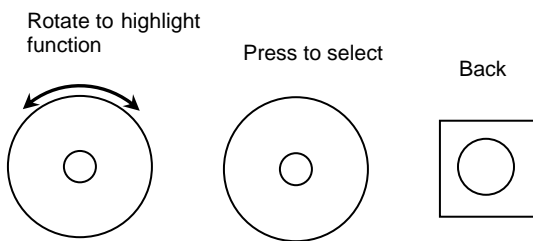
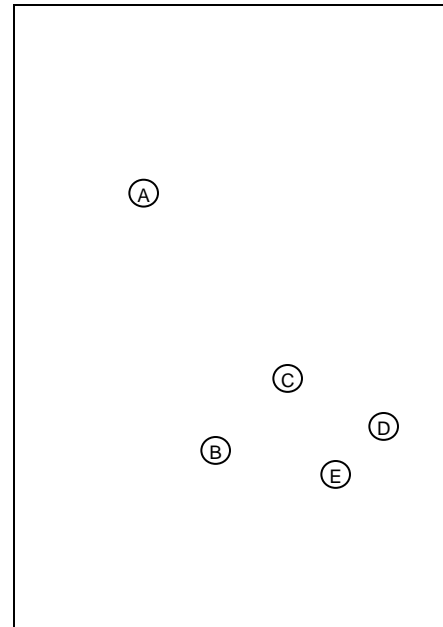
Normal temperature:	Temperature 5°C to 35°C
Normal humidity:	Humidity: 45% to 85%

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# SECTION 2: CONTROLLER NAVIGATION

## 2.1 BASIC FRONT PANEL NAVIGATION FOR THE QSC1100L

- A. 6 Line LCD screen displays the menu options
- B. Rotary / Push control knob to scroll and select menu items
- C. OK: System Status LCD, indicates SYS OK
- D. ALM: Illuminated during active alarm condition
- E. Back / Home and Cancel function request. Hold 2 seconds to return to main menu



- Rotate control knob either direction to the desired menu option.
- Press control knob to activate selection.
- Press the Back button once to go back one menu. Press and hold for 2 seconds to go back to the home screen

The Quick Start Guide supplied with every power plant provides navigation instructions to common status screens, setpoints, and functions. All functions are completed by scrolling and depressing the control knob.

PLANT VOLTAGE AND CURRENT	
<div style="border: 1px solid black; padding: 5px;">                     54.00 VDC                      43 ADC   <b>MAIN MENU</b>                      ALARM                 </div>	<div style="border: 1px solid black; padding: 5px;">                     48V readings                 </div>
Plant voltage and current are displayed on the Main menu screen.	

VIEW ACTIVE ALARMS	
<div style="border: 1px solid black; padding: 5px;">                     54.00 VDC                      43 ADC                       MAIN MENU  <b>ALARM</b> </div>	<div style="border: 1px solid black; padding: 5px;"> <b>MAJOR:</b>  <b>ACTIVE</b>  <b>MINOR: NO</b>  <b>ACTIVE: 1</b>                      Battery on Discharge                      1 of 1                 </div>
Scroll to highlight <b>Alarm</b> Depress control knob	Scroll to view all present alarms

**NOTE:** Any changes made to setpoints that are out of the range for the particular setpoint will not be accepted by the controller. Ranges are noted on the Web Pages and listed in the associated tables within this document.

## 2.2 FRONT PANEL DISPLAY

The following sections describe the navigation and features of the QSC1100L controller that are available through the front panel display.

The “walkup” front panel main page displays power plant Voltage, Current as well as 2 menu options MAIN and ALARM.

- By scrolling to and selecting ALARM, active plant alarms will be displayed.
- By scrolling to and selecting MAIN, Submenus are available for viewing and changing plant functions.

The ALARM selection displays all active alarms. Whenever alarms are cleared (retired), the change will be reflected in the Alarm Menu Screen as ALM CLR D.

The alarm conditions described in this section are displayed in the User Interface only if the alarm condition exists. Cleared alarms will not be visible from this view.

## 2.3 SYSTEM ALARMS / CONDITIONS / EVENTS

The distinction between Conditions, Events and Alarms is that a Condition or Event becomes an Alarm by virtue of mapping a condition or event to an “Alarm” extension device in the alarm configuration menu.

These devices include:

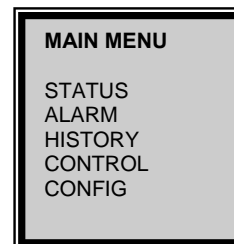
- Alarm relays
- Email (SMS)
- SNMP trap

The front panel display will give the user a visual alarm indication as listed in the table below. Illuminated Green SYSOK and FLOAT LEDs indicate normal plant operation. These indicators will illuminate when the condition or event occurs even if not mapped to an alarm output extension device.

## 2.4 MAIN MENU

The MAIN MENU provides access to the functional menus found in the controller interface.

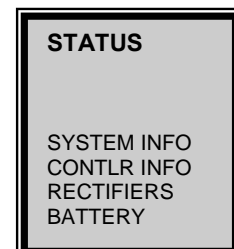
- STATUS
- ALARM
- HISTORY
- CONTROL
- CONFIG



## 2.5 STATUS MENU

The STATUS menu is the first available selection under the MAIN MENU; it provides status level information for the following second level menus: (Scroll controller knob to view menu choices)

- SYSTEM INFORMATION (SYSTEM INFO)
- CONTROLLER INFORMATION (CONTRLR INFO)
- RECTIFIERS
- BATTERY
- DISCONNECT
- NETWORK



- SECURITY
- ALARM SETPOINTS (AM SEPTS)
- ENABLE / DISABLE INFORMATION (ENA/DTS INFO)

**2.5.1 STATUS (SYSTEM INFORMATION SUBMENU)**

**TABLE 2-1: SYSTEM INFORMATION**

Menu Item	Specifications
SITE ID	Displays site name (Site ID can be established (webpage only))
VOLTAGE	Displays system output voltage.
CURRENT	Displays real time system output current.
AMBIENT TEMP	Displays temperature through the integrated sensor within the QSC1100L
DATE	Displays the current, MM/DD/YYYY, the format may be changed through the web interface or front panel display
TIME	Displays the current time, HH/MM/SS, the format may be changed through the web interface or front panel display
SYSTEM FW (firmware revision)	Displays the current firmware revision installed in the system

**2.5.2 STATUS (CONTROLLER INFORMATION SUBMENU)**

**TABLE 2-2: CONTROLLER INFORMATION**

Menu Item	Specifications
CONTROLLER REV	Displays current controller revision
PDU REV	Displays the distribution module circuit card revision
PDU BOOT REV	Displays the distribution module boot revision
U/I REV	Displays User Interface Version
U/I BOOT REV	Displays User Interface boot revision
WEB PAGE REV	Displays current web page revision

**2.5.3 STATUS (RECTIFIER INFORMATION SUBMENU)**

**TABLE 2-3: RECTIFIER INFORMATION**

Menu Item	Specifications
TOTAL USAGE	The total capacity of the installed rectifier modules displayed in percentage
TOTAL CAPACITY	The total capacity of the installed rectifier modules displayed in ADC
TOTAL CURRENT	Sum of all rectifier output current
RECT STATE	Per module position (1-48), capacity of the rectifier, output current, and if the rectifier is equipped or unequipped. Blank slots will be listed as unequipped
ENERGY MANAGEMENT	This selection displays if the Energy Management feature is Active or Inactive

**2.5.4 STATUS (BATTERY INFORMATION SUBMENU)****TABLE 2-4: BATTERY INFORMATION**

Menu Item	Specifications
BATTERY CURRENT	Total current that is flowing into the batteries
BATTERY TEMP	Displays battery string temperature using optional battery temp sensors
TCOMP	Displays if TCOMP is active or is inactive
HI BATT TEMP	Displays current battery temp if optional battery temp sensors are installed, or ambient temperature as monitored from the integrated temp sensor in the QSC1100L Controller
TCOMP ADJ	Displays the amount of TCOMP adjustment that is being applied
BCR	Displays if Battery Controlled Recharge is active or inactive
BCR ADJ	The QSC1100L controller can limit the battery current by clamping the voltage to the appropriate level. This feature displays the amount of the voltage has been changed.

**2.5.5 STATUS (DISCONNECT INFORMATION SUBMENU)****TABLE 2-5: DISCONNECT INFORMATION**

Menu Item	Specifications
LVD 1	Displays, vacant or installed, and if it is enabled or disabled
LVD 2	Displays, vacant or installed, and if it is enabled or disabled

**2.5.6 STATUS (NETWORK INFORMATION SUBMENU)****TABLE 2-6: NETWORK INFORMATION**

Menu Item	Specifications
IP ADDRESS	Current static address assigned to the Controller. Used for remote connectivity
SUBNET MASK	255.255.248.000
GATEWAY	010.001.001.001
DHCP	Displays current setting (Static, Server, or Client)

**2.5.7 STATUS (SECURITY SUBMENU)**

The QSC1100L controller is equipped with an added security feature that allows the user to grant or deny remote write/change access by enabling or disabling a physical switch found in the front panel Controller. This allows the user the ability to physically restrict the RJ45 access to read-only.

**TABLE 2-7: SECURITY**

Menu Item	Specifications
SECURITY SW	Displays current state of physical security switch. In the ON position, controller configuration <b>can not</b> be changed through the Ethernet connection. In the OFF position, the ability to change system configurations through the Ethernet connection is available. <b>(See section 1.2 for switch location and operation)</b>



**2.5.8 STATUS (ALARM SETPOINTS SUBMENU)****TABLE 2-8: ALARM SETPOINTS**

<b>Menu Item</b>	<b>Specifications</b>
HI AMB TEMP SETPOINT	Displays High System Temperature threshold
LO AMB TEMP SETPOINT	Displays Low System Temperature threshold
BOD	Displays Battery on Discharge threshold setpoint
HI BAT TEMP	Displays high battery temperature threshold setpoint
HIGH VOLT	Displays high voltage threshold setpoint
VERY LOW VOLT	Displays very low voltage threshold setpoint
PLT HVSD	Displays high voltage shutdown threshold setpoint
TCA SET	Displays total current alarm setpoint
DCA1 SET	Derived Channel 1 setpoint
DCA2 SET	Derived Channel 2 setpoint
DCA3 SET	Derived Channel 3 setpoint
DCA4 SET	Derived Channel 4 setpoint
DCA1 DELAY SET	Derived Channel 1 delay setpoint
DCA2 DELAY SET	Derived Channel 2 delay setpoint
DCA3 DELAY SET	Derived Channel 3 delay setpoint
DCA4 DELAY SET	Derived Channel 4 delay setpoint

**2.5.9 STATUS (ENABLE/DISABLE INFORMATION SUBMENU)****TABLE 2-9: ENABLE/DISABLE INFORMATION**

<b>Item</b>	<b>Specifications</b>
TCOMP	Displays Battery Thermal Compensation, ENABLED/ DISABLED Factory Default= DISABLED
BCR	Battery Controlled Recharged Factory Default= DISABLED
EPO1	Displays Emergency Power Off status, ENABLED/DISABLED Factory Default= DISABLED
EPO2	Displays Emergency Power Off status, ENABLED/DISABLED Factory Default= DISABLED
BATT PROBE 1	Displays if the optional external temp probe is ENABLED/DISABLED Factory Default= DISABLED
BATT PROBE 2	Displays if the optional external temp probe is ENABLED/DISABLED Factory Default= DISABLED
DERIVED CURRENT	Displays the current reading of shunts 1-4

## 2.6 ALARM MENU

The alarm menu can be accessed from either the front page screen or the MAIN Menu. The user can scroll through all active alarms. If there are no alarms present, the alarm screen will display ACTIVE: 0 and <none>.

**TABLE 2-10: ALARM**

ACTIVE ALARMS		

## 2.7 HISTORY MENU

The Alarm History menu recorded by the QSC1100L Controller is viewable through the front panel.

The QSC1100L Controller will maintain a log of all events that are mapped to an alarm extension device.

Once the maximum occurrences have been reached, the log will roll out (delete) the oldest entry. The alarm history log can maintain 100 records. Both the alarm and cleared condition are recorded separately as events.

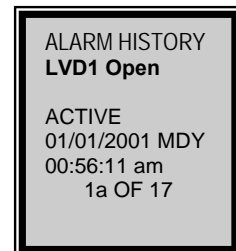
The most current event is listed at the top of the event register.

Alarm History can only be cleared by the ADMIN user and will create a latched event. To extinguish the condition the ADMIN must clear latched alarms (CLR LAT ALM)

### 2.7.1 HISTORY (ALARM HISTORY SUBMENU)

Table 2-11 provides examples of ALARM HISTORY events that would be logged with the associated event. The screen will display the alarm name, the condition of the alarm (Active or Alm Clrd) a date stamp (MM/DD/YY), a time stamp (HH:MM:SS) and the event number, based on the total of 100 recorded events (e.g. 1 of 100), in addition to the recorded event number it will be followed by a lower case letter #a or #c indicating the alarm activation (a) and when it was cleared (c), including the time and date stamp for each event. Assuming the condition is extinguished, both an ACTIVE and CLEARED event will be displayed in the history

The following table shows examples of alarm conditions that can occur and will be logged on the Alarm history screen of the User Interface.



**TABLE 2-11: ALARM LOG EXAMPLES**

<b>Alarm Log Examples</b>	
1. HI AMB TEMP	12. HI BATT TEMP
2. HI AMB TEMP CLRD	13. TEMP PROB 1 FAIL
3. AUX MJ ALM	14. BATT RESERVE LO
4. EPO	19. ACF SINGLE
5. COMMUNITATIONS FAILED	20. ACF MULTIPLE
6. PASSWORD DEFAULT	21. HVSD
7. PROCESSOR HALT	22. RFA SINGLE
8. SELF TEST FAIL	23. RFA MULTIPLE
9. RECT LOAD SHARE IMBALANCE	24. PMJ.
10. ALM TEST ACTIVE	25. PMN
11. FAN FAIL	

## 2.8 CONTROL MENU

The Control Menu allows the user to manage certain features as well as clear the various logs and stats.

The Control Menu has the following sub menus:

- RECT CONTROL
- LOAD DEFAULT
- CLR LAT ALM
- CLR HIS
- RELAY TEST
- DISCONNECT
- LAMP TEST

### 2.8.1 CONTROL (RECTIFIER CONTROL SUBMENU)

When entering the Rectifier Control sub menu, the user will see MODULE 1 through MODULE 48 listed. The associated Module slot is conveniently numbered on all installed power shelves.

The rectifier selection under the control menu allows the user to control the operation of each individual rectifier. The choices include Run or Standby. "RUN" indicates that a rectifier presently providing current and is part of the load share bus. "STANDBY" indicates that a rectifier is not providing current for the load, is not on the load share bus, but is connected to its AC feed. The green LED on the face of the rectifier will extinguish while in "STANDBY" mode.

**NOTE:** In the event, the remaining rectifiers are removed or fail to produce DC power, the standby unit will restore itself to "ON".

**TABLE 2-12: RECTIFIER CONTROL**

<b>Item</b>	<b>Specifications</b>
MODULE #1	
RUN	Command places Rectifier Module in the ON state and will be providing current for the load.
STANDBY	Command places the Rectifier in STANDBY, DC OK light will be extinguished while the rectifier is in standby. STANDBY removes the rectifier from the DC Bus but remains powered by the AC source.
MODULE #2 – MODULE # N	<b>Repeat for all rectifiers equipped in the system</b>
RUN	Command places Rectifier Module in the ON state and will be providing current for the load.
STANDBY	Command places the Rectifier in STANDBY, DC OK light will be extinguished while the rectifier is in standby. STANDBY removes the rectifier from the DC Bus but remains powered by the AC source.

**2.8.2 CONTROL (LOAD DEFAULT SUBMENU)****TABLE 2-13: LOAD DEFAULT**

<b>Item</b>	<b>Specifications</b>
LOAD DEFAULT	Allows the user to re-load the factory configuration.
ENABLE	Re-loads factory configurations. In approximately 30 seconds the reload will be completed. Do not attempt to make further configuration changes during this time period.
DISABLE	Cancels the command

**2.8.3 CONTROL (CLEAR LATCHED ALARM SUBMENU)**

**NOTE:** The QSC1100L latches the following alarms: **HVSD, excessive LOGIN attempts, CLOCK CHANGED, LIMITED RECHARGE and HIS CLR D.** This feature is to ensure these items are properly resolved or recognized prior to clearing the alarm. To clear a latched alarm the user must use the **CLR LAT ALM** feature.

**TABLE 2-14: CLEAR LATCHED ALARM**

<b>Item</b>	<b>Specifications</b>
CLR LAT ALM	Allows the user to clear all latched alarms
YES	Clears all latched alarms
NO	Cancels the command

**2.8.4 CONTROL (CLEAR HISTORY SUBMENU)**

The CLR HIS screen found in the CONTROL menu will allow the user to clear the various history logs. The CLEAR HISTORY requires Admin login privileges.

**TABLE 2-15: CLEAR HISTORY**

Item	Specifications
ALM HIS	Selecting YES in this menu will clear all records in this log Selecting NO cancels the command

**2.8.5 CONTROL (ALARM RELAY TEST SUBMENU)**

The alarm relay test exercises the alarm relay(s) using front panel controls. This test is designed to serve as a “handshake” test between the installed power plant and a remote alarm monitoring center.

The test feature has a settable “walk away” feature that will stop any alarm extension if left unattended during the test. The factory default for the walk away feature is 5 min.

**NOTE:** The alarm relay test **cannot** be exercised while the plant is in alarm. If the power plant goes into alarm during an alarm test, the test will be aborted.

**NOTE:** This test exercises the alarm relays and extends the wired alarms to the alarm center. This test does not create a real event condition.

**TABLE 2-16: ALARM RELAY TEST**

Item	Specifications
ALRM RELAY TST	<p><b>Test Steps:</b></p> <ul style="list-style-type: none"> <li>Scroll to Alarm Test (Off)</li> <li>Scroll to the relay to be tested</li> <li>Press Save</li> <li>The alarm will be extended</li> <li>Repeat for all relays to be tested</li> <li>After all alarms have tested, scroll to “OFF”</li> <li>Press Save (Alarm test will be stopped)</li> </ul> <p>The status LED for the relay being tested will illuminate when activated.                      The user may also watch the relay activate through the webpage.</p> <p><b>NOTE: The CPU FAIL LED does not illuminate during this test.</b></p>

### 2.8.6 CONTROL (DISCONNECT SUBMENU)

This function allows the user to control the state of the LVD, if equipped. The LVD must be ENABLED from the CONFIG menu to change the status of the LVD.

**TABLE 2-17: DISCONNECT**

Item	Specifications
LVD1	Allows access to control features of the LVD
OPEN	This command will force open the LVD, removing power from the DC output bus. An event (alarm) will be displayed regardless of the equipment configuration
CLOSE	This command will manually force close the LVD
AUTO	This command will allow the LVD to automatically open or close determined by the open and close set-point voltages established through the web page CONFIG screen
LVD2	Allows access to control features of the LVD 2
OPEN	This command will force open the LVD, removing power from the DC output bus. An event (alarm) will be displayed regardless of the equipment configuration
CLOSE	This command will manually force close the LVD
AUTO	This command will allow the LVD to automatically open or close determined by the open and close setpoint voltages established through the web page CONFIG screen

**CAUTION:** When configuring the LVD, ensure the control feature of the LVD is positioned in **AUTO** or **CLOSED**. If the LVD is set to **OPEN** in the **CONTROL** Menu, it will open immediately, once the **LVD CONFIG** has been accepted, energized equipment will be disconnected from the power system load center.

### 2.8.7 CONTROL (LAMP TEST SUBMENU)

**TABLE 2-18: LAMP TEST**

Item	Specifications
LAMP TEST	Illuminates all LEDS on the face of the system for a total of 10 seconds
YES	This command illuminates LEDS found on all active rectifiers and the controller
NO	Cancels test sequence

## 2.9 CONFIG (CONFIGURATION) MENU

The Configuration Menu allows the user to configure equipment, activate features and change set-points found in the power system. On screen confirmation will validate change made.

The Configuration menu consists of the follow menu options:

- FLOAT
- SHUNT MONITOR
- RECTIFIER
- BATTERY

- DISCONNECT
- ALARMS
- SYSTEM
- NETWORK
- CALIBRATION

There are 2 sub menus under Config Float:

- FLOAT VOLT
- FLOAT SETPTS

### 2.9.1 CONFIG (FLOAT SETTINGS SUBMENU)

**TABLE 2-19: FLOAT SETTINGS**

Item	Specifications
FLOAT VOLT	Allows the user to manually adjust system float voltage set-point. Range: 42.00 to 58.00 VDC in 0.01 VDC increments
FLOAT SETPTS	Float Setpts opens up additional setpoint adjustments listed below
PLT HVSD	High Voltage Shutdown. Allows the user to manually adjust the HVSD shutdown point Range: 40.00 to 60.00 VDC in 0.01 VDC increment
HIGH VOLT	High voltage alarm. This alarm indicates an abnormally high output voltage but does not shut the unit down. The user can manually adjust this value. Range: 40.00 to 60.00 VDC in 0.01 VDC increment
BOD	Battery on discharge. This alarm occurs when the system is operating either completely or partially on battery power. The user can manually adjust this value. Range: 40.00 to 60.00 VDC in 0.01 VDC increment
VERY LOW VOLT	Very low voltage alarm. Alarm indicates an imminent system shutdown due to discharging batteries or low output voltage. The user can manually adjust this value. Range: 40.00 to 60.00 VDC in 0.01VDC increment

### 2.9.2 CONFIG (SHUNT MONITORS SUBMENU)

The QSC1100L controller can monitor up to 2 shunts providing DC current values for each in a separate channel.

The QSC1100L controller sums the current output from all installed rectifiers that are in the RUN mode and supplies a total plant current reading without additional shunts. In this case, 2 external shunts can be monitored.

If the power plant is equipped with 2 optional Load Shunts, two external shunts can also be monitored.

If the Power Plant is equipped with the optional Battery shunt, 3 external shunts can be monitored.

The user can monitor specific distribution loads as part of the cumulative total of the system.

**TABLE 2-20: SHUNT MONITORS**

Item	Specifications
SHUNT A, B	The following features are available for each one of the 2 shunt monitoring positions. The default condition for Shunt A and B is NONE.
TYPE	The user may designate the SHUNT as a BATTERY, LOAD or NONE.

Item	Specifications
	Factory Default = BATTERY
AMPERAGE	Range: 0 to 9999 ADC in 1 ADC increment Factory Default = 1000 ADC
MILLIVOLT	The preset value is 50 millivolts. This feature allows the user to change the value. Mnemonic: SHUNT A, B, C or D Range: 0 to 200 mv in 1 mv increment Factory Default = 50 mv
DERIVED CURRENT	This submenu allows the user to assign the channel number to the appropriate shunt.

### 2.9.3 CONFIG (RECTIFIERS SUBMENU)

The rectifier configuration screen provides additional customizable features for the user.

The setpoint is the threshold percentage of all installed rectifiers. When this threshold is exceeded, the limited recharge (LMR) LED on the front panel will illuminate. If this event has been programmed to a relay, an alarm will be extended.

**TABLE 2-21: RECTIFIERS**

Item	Specifications
RECT CL	This feature displays the Total Current Limit of the power plant Factory Default = 2000A
LTG RCHG SETPT (REDUNDANCY LOSS)	This feature displays the limited recharge (Redundancy Loss) setpoint. The controller determines the total rectifier output current present compared to the total installed rectifier current capacity. If the percentage of rectifier current exceeds the user assigned percentage setpoint, the condition is activated. This condition is an indication the system is no longer operating as a redundant power system or that there are not enough rectifiers installed to meet recharge design criteria. This LMR condition will be expressed in the alarm menu. ENABLED: The setpoint is the threshold percentage of all installed rectifiers. When this threshold is exceeded, the "LMR" LED on the front panel will illuminate. If this event has been programmed to a relay, an alarm will be extended. Factory Default: 80%
IMB ALM ENA/DIS	This condition identifies rectifiers that are operating outside a given percentage from the other rectifiers in the system. Enabling this feature will identify the condition and the rouge rectifier. This feature enables or disables the current imbalance alarm feature Factory Default = DISABLED
IMB ALM SETPT	To identify a rouge rectifier, the user may adjust the imbalance feature in 1% increments. This is a threshold alarm event with the setpoint being designated as a percentage difference of the output current between rectifiers. Range: 5% to 10% in 1% increments Factory Default = 5%
RECTS PER SHELF	This setting tells the QSC1100L controller how many rectifiers per shelf may be equipped. Since the QPS system may be configured with shelves supporting 3 to 5 rectifiers, the factory default will be established with each system shipped based on the selected shelf. The number may be 3, 4 or 5.



Item	Specifications
RECT EQUIPED	<p>This feature allows the user to configure the power plant to extend an alarm if a rectifier is added or removed. By setting the number of equipped rectifiers to the actual number equipped in the power plant any addition or removal will create an alarm.</p> <p><b>A setting of 0 provides full plug and play module additions and removals with no additional controller configuration changes</b></p> <p>Range 0 – 48 in 1 module increments Factory Default = 0</p>
Energy Management	<p>This feature enables or disables the energy management feature.</p> <p>The purpose of this feature is to increase the overall efficiency of the power plant while maintaining the readiness of the plant to supply output to the load as needed. The QSC1100L calculates the number of rectifiers needed to satisfy the existing load and places the remaining rectifiers in hot standby. These rectifiers are still energized from their AC source but are not contributing output to the equipment load requirements.</p> <p>To maintain the readiness of the rectifiers, all rectifiers will be put in RUN mode for a 24 hour period every 30 days.</p> <p>In a BOD event, the feature is terminated and returned to a disabled condition.</p> <p>Factory Default = Disabled</p>

**2.9.4 CONFIG (BATTERIES SUBMENU)**

**TABLE 2-22: BATTERIES - TCOMP**

TCOMP Sub Menu	This selection opens up the following sub menu items
TYPE	<p>The user may elect to designate the type of battery in use. The choices are VRLA, FLOODED, NMH, NICAD, LITHIUM, GENERIC1, GENERIC2, and GENERIC3 Factory Default= VRLA</p>
TCOMP ENA/DIS	<p>When enabled, the QSC1100L controller will activate TCOMP using the <u>highest measured temperature</u> from either of the external temp probes. If no temperature probes are installed, the Integrated Ambient Temperature sensor measurement will be used.</p> <p>ENABLE activates the function while DISABLE will deactivate the function.</p> <p><b>Lineage Power does not recommend enabling TCOMP without battery temperature probes. .</b></p> <p>Factory Default = Disable</p>
TCOMP COEF	<p>Temperature Compensation. Coefficient is a change to the float voltage set point as a function of temperature. The amount of change is the coefficient. Approx 3mV per degree C per battery cell. These values may change per manufacturers' data tables.</p> <p>Range: 0 (0) to 133 (240)mV/°F (mV/°C) in 1 mV/°F (mV/°C) Increments Factory Default = 36 mV/°C for 24V battery strings</p>

TCOMP Sub Menu	This selection opens up the following sub menu items
NOMINAL TEMP	Nominal Battery Temperature. This value is a nominal value established by the battery industry to determine battery life expectancies. A degree change will change the amount of TCOMP. This value should not be changed without the consent or direction of the battery manufacturer. Range: 68°F (20°C) to 86°F (30°C) in 1° C/F increments Factory Default = 77°F (25°C)
HIGH TEMP SET	High temperature alarm. The alarm clears when the temperature drops to 20°F below the set threshold. Range: 86°F (30°C) to 185°F (85°C) in 1° C/F increments Factory Default = 131°F (55°C)

**TABLE 2-23: BATTERIES – CONTROLLER RECHARGE (BCR)**

Controlled Recharge Sub Menu	This selection opens up the following sub menu items
ENABLE / DISABLE	This feature enables or disables the controlled recharge function Factory Default = disabled
RECHARGE LIMIT	This feature allows the user to provide a total current limit to the amount of current flowing into the batteries. Range 0A – 1000A Factory Default = 500A
MIN V OUT	This feature allows the user to specify the lowest voltage that the power plant will supply while recharging the attached battery strings. Range 23V to 25V Range 47V to 49V Factory Default = 48V

**TABLE 2-24: BATTERIES – BATTERY PROBE 1 & 2**

BATT PROBE1	This feature enables or disables the controlled recharge function. Factory Default = disabled
BATT PROBE2	This feature enables or disables the controlled recharge function. Factory Default = disabled

**2.9.5 CONFIG (DISCONNECTS SUBMENU)**

The QSC1100L can be equipped with Low Voltage Disconnects (LVD) or battery disconnects (LVBD). The LVD option can be used to shed either Load A, Load B, or both to protect batteries from discharging to an unrecoverable level. The LVBD is intended for use in battery maintenance. Set-points can be established to allow the LVD to engage or disengage at certain voltage levels.

Additionally, the LVD's may also be configured for activation by a remotely mounted Emergency Power-Off (EPO) switch. The EPO feature is not available without the LVD option.

**CAUTION:** When configuring the LVD, ensure the control feature of the LVD is positioned in **AUTO** or **CLOSED**. If the LVD is set to **OPEN** in the **CONTROL** Menu, it will open immediately, once the **LVD CONFIG** has been accepted, dropping any energized equipment from that load center of the power plant.

**TABLE 2-25: DISCONNECTS**

Item	Specifications
<b>DISCONNECTS</b>	This selection opens up the following menu items:
LVD1	Mnemonic: LVD1 Range: Enable / Disable DISC SETPT RCNT SETPT Range: 40.00 to 60.00 VDC in 0.01 VDC increment Factory Default = Disable
LVD2	Mnemonic: LVD2 Range: Enable / Disable DISC SETPT RCNT SETPT Range: 40.00 to 60.00 VDC in 0.01 VDC increment Factory Default = Disable
EPO1 and EPO2	Emergency Power Off: The user may select to <b>ENABLE</b> or <b>DISABLE</b> the EPO switch from this menu. A customer provided external EPO switch must be installed for the feature to work as intended.  If the EPO is wired and the EPO is <b>ENABLED</b> in the controller, the EPO is the highest form of disconnect and will force the LVD disconnect open anytime the customer provided EPO switch is activated.  Factory Default = Disable See the installation manual for EPO wiring.
LVD DLY TIMER	The LVD Delay Timer settings delays the operation of the disconnect for a set amount of time to avoid inadvertent disconnects.  Factory Default = 30 seconds Range 5 – 60 seconds

### 2.9.6 CONFIG (ALARMS - SPECIAL CONDITIONS SUBMENU)

For a higher level of diagnostics the user may customize alarm events as “special conditions”. These conditions are considered Latched due to the event or “One-Shot” that will reset after the event. The “special condition” can be used with any recordable event found in the controller. Additionally, the user may customize each “special condition” with the feature set listed in table 2-27.

The following list is examples of conditions the user may elect to create “special condition” for:

- Battery Test Fail
- Clock Change
- High Voltage Shutdown
- Password Reset/Change

- Excess Login Attempts
- History Cleared
- Self Test Failed
- Alarm Test Abort
- Configuration Change

**TABLE 2-26: ALARMS**

Item	Specifications
ALM DLY TIMER	The Alarm Delay Timer function allows the user to determine how long an Event needs to be true before extending an alarm. The intent is to prevent short term conditions from generating “nuisance” alarms Factory Default = 5 seconds
ONE-SHOT TIMER	Allows the user to configure “special conditions” as a condition that is present on the system for a configurable time before self clearing. Range 1 to 60 minutes Factory Default = 5 minutes
RELAY TEST	This feature allows the user to set the allowable time for a relay test to remain active without user intervention. (Walk away protection) Range 1 to 60 minutes Factory Default = Time Out 5 minutes
ALM MODE	The Alarm Mode function allows the user to determine if the alarm state is Test mode or Normal Mode. Factory Default = Normal Mode
LAT ALM ENABLE	This feature allows the user to configure “special conditions” as either One shot or Latched Factory Default = ONESHOT

**2.9.7 CONFIG (SYSTEM SUBMENU)**

**TABLE 2-27: SYSTEM**

Item	Specifications
<b>SYSTEM</b>	This menu selection opens up the following menu options:
SYSTEM DATE	The DATE submenu allows the user to change the power plant to the current month / day/ and year.  After scrolling to the correct month and pausing for 5 seconds, the blinking selection positions itself over the next field. Scroll to SAVE to complete the change. System Format submenu allows the user to select the Day, Month, and Year display format. DD-MM-YYYY YYYY-DD-MM Factory Default = MM-DD-YYYY

Item	Specifications
TIME	<p>The Time submenu allows the user to adjust the power plant to the current time. After scrolling to the correct hour and pausing for 5 seconds, the blinking selection position itself over the next field. Scroll to SAVE to complete change.</p> <p>The Format submenu allows the user select the Hour, Minute, and Seconds display format between 12 and 24 hour formats.</p> <p>Factory Default = 12 HR</p>
TEMP UNIT	<p>The Temp unit submenu allows the user to select Celsius (degrees C) or Fahrenheit (degrees F) throughout the QSC1100L.</p> <p>Factory Default = F</p>
HI AMB T SET	<p>The High Ambient Temperature Set feature allows the user to select the high temperature threshold.</p> <p>Factory Default = 104°F</p>
LOW AMB T SET	<p>The Low Ambient Temperature Set feature allows the user to select the low temperature threshold.</p> <p>Factory Default = 50°F</p>
TCA SET	<p>The Total Current Alarm set point allows the user to select the total current threshold.</p> <p>Factory Default = is determined by the factory shipped system configuration</p>
DCA1 SET	<p>DCA1 sets the Derived Channel 1 shunt setting.</p> <p>Factory Default = 120A</p>
DCA2 SET	<p>DCA2 sets the Derived Channel 2 shunt setting.</p> <p>Factory Default = 120A</p>
DCA3 SET	<p>DCA3 sets the Derived Channel 3 shunt setting.</p> <p>Factory Default = 120A</p>
DCA 4 SET	<p>DCA4 sets the Derived Channel 4 shunt setting.</p> <p>Factory Default = 120A</p>
DCA1 DLY SET	<p>DCA1 Delay Set allows the user to set the delay setpoint for Derived Channel 1.</p> <p>Factory Default = 5 seconds</p>
DCA2 DLY SET	<p>DCA2 Delay Set allows the user to set the delay setpoint for Derived Channel 2.</p> <p>Factory Default = 5 seconds</p>
DCA3 DLY SET	<p>DCA3 Delay Set allows the user to set the delay setpoint for Derived Channel 3.</p> <p>Factory Default = 5 seconds</p>
DCA4 DLY SET	<p>DCA4 Delay Set allows the user to set the delay setpoint for Derived Channel 4.</p> <p>Factory Default = 5 seconds</p>
BRIGHTNESS	<p>Screen brightness. No password required. Available for U/I Module only.</p> <p>Range: 1 to 10 in 1 increment</p> <p>Factory Default = 5</p>
CONTRAST	<p>Screen contrast. No password required. Available for U/I Module only.</p> <p>Mnemonic: CONTRAST</p> <p>Range: 1 to 10 in 1 increment</p> <p>Factory Default = 5</p>

## 2.9.8 CONFIG (NETWORK SETTINGS SUBMENU)

**TABLE 2-28: NETWORK SETTINGS**

Item	Specifications
<b>NETWORK</b>	This selection opens up the following menu options.
IP ADDRESS	<p>Internet protocol address</p> <p>By scrolling to the current setting the first Octet will start blinking. Turn the rotary knob to the proper setting. By pausing for 5 seconds the blinking cursor will move to the next Octet. Scroll to SAVE and press to accept IP address.</p> <p>Range: 0.0.0.0 to 255.255.255.255</p> <p>Factory Default = 192.168.1.1</p>
SUBNET MASK	<p>By scrolling to the current setting the first Octet will start blinking. Turn the rotary knob to the proper setting. By pausing for 5 seconds the blinking cursor will move to the next Octet. Scroll to SAVE and press to accept SUBNET MASK.</p> <p>Range: 0.0.0.0 to 255.255.255.255</p> <p>Factory Default = 255.255.255.0</p>
GATEWAY	<p>By scrolling to the current setting the first Octet will start blinking. Turn the rotary knob to the proper setting. By pausing for 5 seconds the blinking cursor will move to the next Octet. Scroll to SAVE and press to accept the GATEWAY setting.</p> <p>Range: 0.0.0.0 to 255.255.255.255</p> <p>Factory Default = 0.0.0.0</p>
DHCP	<p>Range: STATIC / CLIENT / SERVER</p> <p>Factory Default = SERVER</p>
SERVER	<p>DHCP Server. While in SERVER mode, the RJ45 connector serves as the local Craft port and allows the user to access the web pages utilizing a standard web browser. To access the web pages, connect a CAT5 cable from the user's PC to the RJ45 connector clearly marked and located on the top center of the load distribution area. When choosing this, the user must also manually assign Subnet Mask and Gateway and IP address. <b><u>NOTE: To avoid network conflicts, do not connect the QSC1100L controller directly to the host while DHCP is set to Server.</u></b></p>
CLIENT	<p>Used when the QSC1100L controller would automatically ask and receive its IP address from the DHCP server.</p>
STATIC	<p>Used when the QSC1100L controller would have an IP address manually assigned. Most commonly used with this type of ancillary device when connected to an Ethernet network for remote access. When choosing this, user must also manually assign Subnet Mask and Gateway and IP address.</p>
APPLY NETWORK CFG	<p>This feature initiates a controller soft reboot to accept any changes to network settings. It does not affect output to equipment loads.</p>

**2.9.9 CONFIG (CALIBRATION SUBMENU)****TABLE 2-29: CALIBRATION**

<b>Item</b>	<b>Specifications</b>
PLANT VOLTAGE	Plant Voltage calibration function allows the user to adjust the displayed voltage value to a measured value. The CAL Value submenu shows the user the “offset” voltage that was used to adjust the displayed voltage with the measured voltage.
SHUNT A	The shunt calibration function allows the user to adjust the displayed voltage value to a measured value.
SHUNT B	The shunt calibration function allows the user to adjust the displayed voltage value to a measured value.
AMBIENT TEMP	This feature allows the user to adjust the ambient temperature reading to a measured value in the power plant location.
AMBIENT TEMP CAL VALUE	This features allows the user to see how many degrees the Ambient Temperature has been adjusted Factory Default = -8°C

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## SECTION 3: WEBPAGE NAVIGATION

### 3.1 ACCESSING THE QSC1100L CONTROLLER WEBPAGES

The Power Plant's RJ45 connection serves as both remote Ethernet and Craft access port to the QSC1100L controller. The QSC1100L web pages can be accessed via standard Internet browsers to provide the user graphical access to all QSC1100L features including alarm programming, alarm relay set up, password management, and battery configurations.

**CAUTION:** To avoid network conflicts, do not connect the QSC1100L controller directly to the host network while DHCP is set to Server.

**NOTE:** The host PC must have the Java™ application v 1.6 or greater installed to view the QSC1100L web pages. Visit [www.java.com/en](http://www.java.com/en) to download this free application.

**NOTE:** A Quick Start Guide is provided that supports the most commonly used functions.

**NOTE:** When changing set points, click on the set radio button. Depressing the Return key on the keyboard may give unexpected results.

#### 3.1.1 CONNECTING TO THE CONTROLLER LOCALLY WHEN THE QSC1100L IS NOT NETWORKED

- Navigate through the controller to ensure the unit is set to DHCP SERVER (MAIN MENU → CONFIG → NETWORK → DHCP select SERVER)
- Verify that the computer being used to connect to the QSC1100L controller is set to client mode. (This is the normal setting for most computers used on a Network.)
- Connect the PC to Power System's RJ45 (10/100 Base-T) connection using a standard or crossover CAT5 (or better) cable.
- Input the QSC1100L Factory default IP address 192.168.1.1 in the command line of Internet Explorer or other standard web browser.
- The webpage System Status screen will appear.

**NOTE:** The factory default setup is the RJ45 connector is configured as a local craft port.

#### 3.1.2 CONNECTING TO THE CONTROLLER LOCALLY WHEN THE QSC1100L IS NETWORKED ON THE ETHERNET

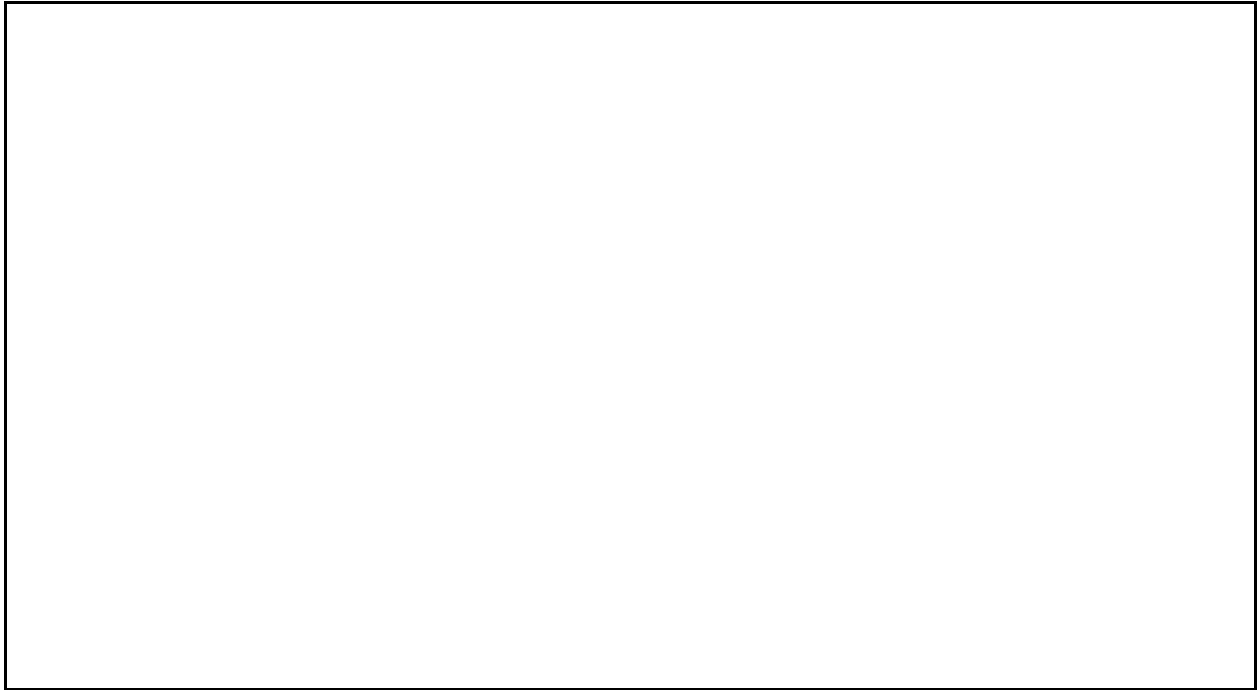
- Navigate through the controller to ensure the unit is set to STATIC (CONFIG./NETWORK/DHCP, select STATIC) and assign IP address.
- Through the controller screen on the front panel of the QSC1100L, validate the existing IP Address, (STATUS/NETWORK/IP ADDRESS), this will be the address to place in the browser on the PC to be connected to the controller. The Factory default IP address is 192.168.1.1.
- Input the QSC1100L IP address in the command line of Internet Explorer or standard web browser.
- The webpage welcome screen will appear.

### 3.2 LOG IN SCREEN

If no login is performed, the controller will be in view only mode. A user level and password are required to log into the QSC1100L controller's WebPages to perform any configuration changes.

<b>Default User Level: ADMIN (all capital letters)</b> <b>Default Password: 9999</b>
<b>Default User Level: USER(all capital letters)</b> <b>Default Password: 3333</b>

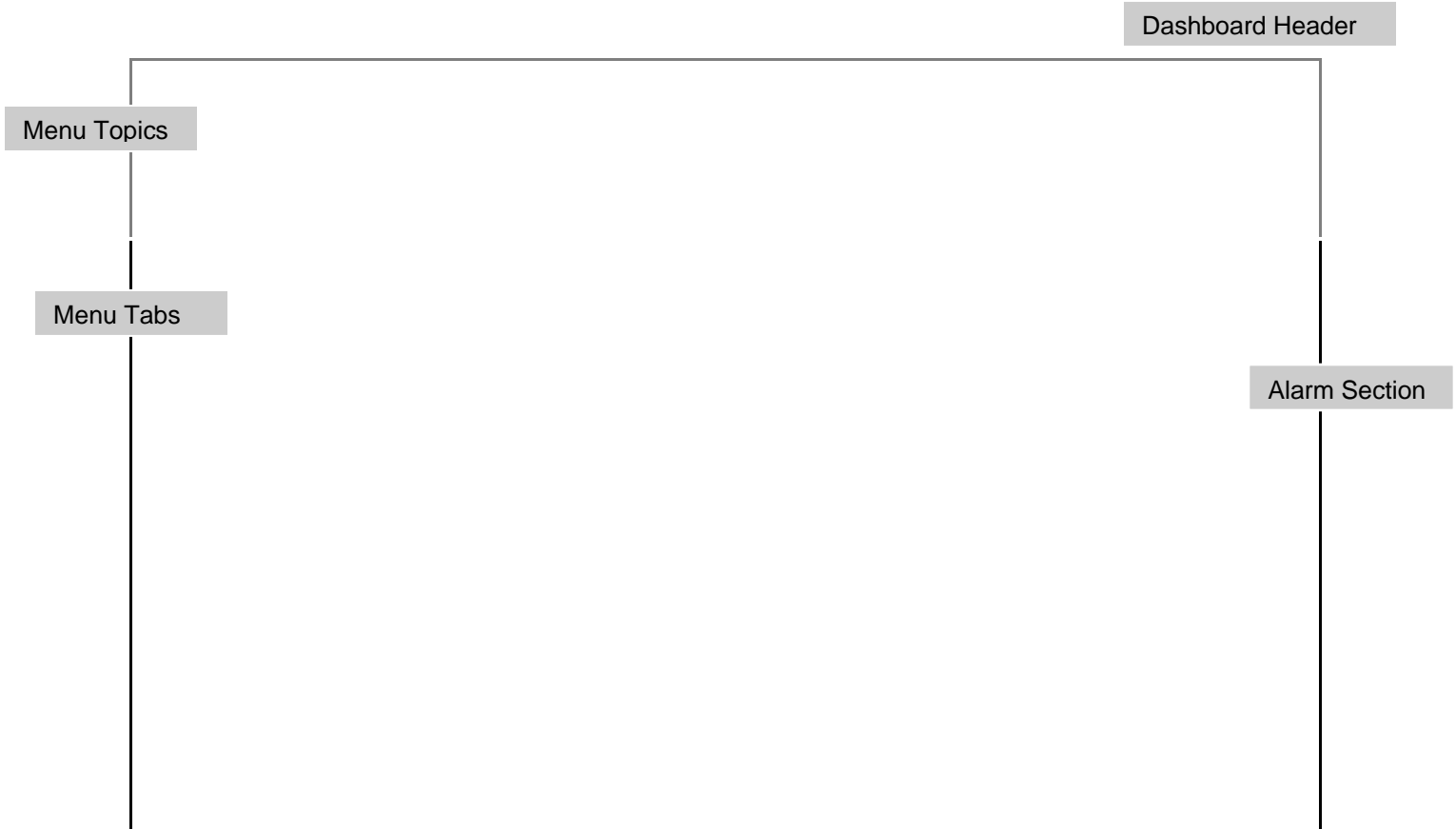
**NOTE: All user levels and passwords are case sensitive.**



**FIGURE 3-1: LOG IN SCREEN**

### 3.3 SYSTEM STATUS SCREEN

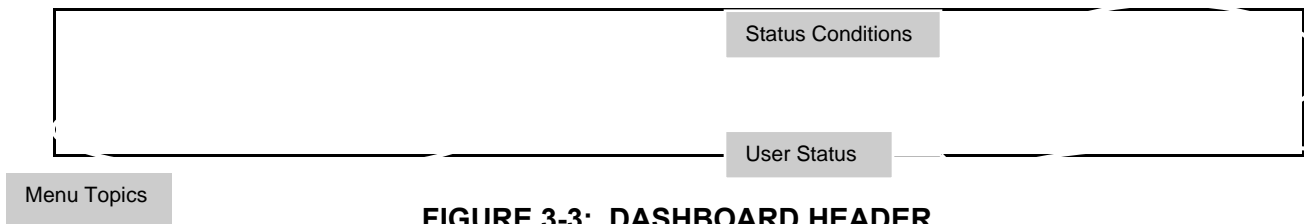
Once connectivity is established through the RJ45 jack the QSC1100L controller will open the primary webpage displaying the various screens and selections available to the user. The screen is an active display into the controller and provides real time information. The primary screen is divided into three specific areas; **Dashboard Header, Menu Topics, Menu Tabs and the Alarm Section.**



**FIGURE 3-2: SYSTEM STATUS SCREEN**

#### 3.3.1 DASHBOARD HEADER

Within any session, the dashboard header, Figure 3-3 will always be present. There are (5) five primary menu topics (**Status, History, Configuration, Events, and PM**). A red button will be displayed next to the menu topic currently being displayed. Each menu topic reveals a different set of menu tabs immediately below the menu topic. Using the cursor, the user may move throughout the web pages by selecting the appropriate menu topic and menu tabs. Additionally, within the dashboard header the user status includes a banner alerting the user of view only status and instant login access found below the status condition. Once the user has logged in, this banner will disappear. The dashboard header provides system status conditions on the right side of the display.



**FIGURE 3-3: DASHBOARD HEADER**

- **Menu Topics:** The menu topics section provides access to each of the 5 major topics found in the controller menu. Use the cursor to select the menu topic. After selecting a menu topic, a list of menu tabs display with additional sub-topics that are related to the main menu topic.
  - **Status:** The status section provides real time and conditional information.
    - System
    - Rectifiers
  - **History:** Provides an active alarm register of recorded alarm conditions.
    - Alarm History
  - **Configuration:** Each of the following menu tabs will display various conditions and options available to the user for configuration setup and monitoring.
    - System
    - Batteries
    - Communications
    - Capacity
    - Security settings
  - **Events:** Each screen allows customization of any reportable event.
    - System
    - Battery
    - Capacity
    - Power Modules
    - Security
  - **Preventative Maintenance (PM):**
    - Alarm Relay Test
- **User Status:** The user status is found in two parts on the dashboard header. A “View Only” flag will be displayed at the top of the dashboard until the login status is changed to “**USER**” or “**ADMIN**”. At any time the user may login or change their status by clicking the login button found below the status conditions. In addition to this login status, the controller time and date is displayed. This is the current time, and is refreshed every 7 seconds. This user status button may be used to log out at anytime.
- **Status Conditions:** This Dashboard display provides Status conditions provide a view of various system settings, configurations, and outputs giving the user a real-time view of the power plants operating condition.
  - **Plant:** Voltage and Current is displayed as a real time value
  - **Float/Equalize:** This indicator will toggle between one of the two values indicating this plant condition. (The equalize function is not currently available.)
  - **INACTIVE/TCOMP:** This indicator relates only to temperature compensation. TCOMP will be displayed when the feature is active, this feature will augment the system voltage based on temperature
- **Alarms:** The alarm window is part of the Dashboard screen and will be present in all sessions. Active alarms will be presented as shown in Figure 3-4. Using the Event History radio button, the user may review the history of current or previous alarm conditions, both active and cleared conditions.



**FIGURE 3-4: ALARMS**

### 3.4 STATUS (MENU TAB)

The STATUS menu tab consists of eight sub-menu topics. As an analytical tool, the user can review these various set points and configurations as a way to determine how the system reacted to existing conditions.

- System Information
- Batteries
- Disconnects
- Rectifiers
- Shunt Monitors
- Controller Information
- Network Security

All system status points can be viewed within the STATUS sub-menus



**FIGURE 3-5: STATUS MENU TOPIC**

#### 3.4.1 STATUS (SYSTEM TAB)

##### 3.4.1.1 STATUS (SYSTEM TAB - SYSTEM INFORMATION)

The system information provides **Ambient Temperature** at the system level. This value is based on a temperature sensor integrated into the QSC1100L controller.

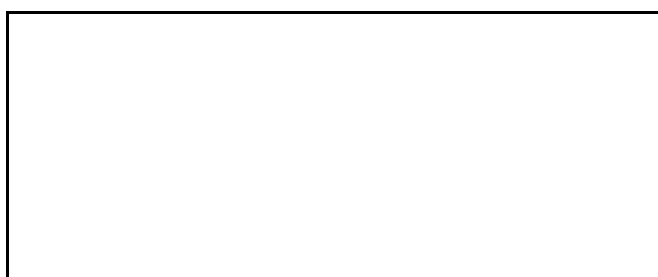


**FIGURE 3-6: SYSTEM INFORMATION**

**3.4.1.2 STATUS (SYSTEM TAB – BATTERIES)**

The battery status screen displays the condition of the batteries based on settings, values and test conditions.

Item	Specifications
HIGH BATT TEMP	This is a recorded value based on the highest battery temperature recorded by the system controller.
TOTAL BATTERY CURRENT	This is a summation value determined during the setup procedure based on total number of battery strings + battery AH. This feature is not currently in use.
BATTERY TEMPERATURE COMPENSATION (TCOMP)	<p>When enabled, the QSC1100L controller will activate TCOMP using the <u>highest active measured temperature</u> from either of the external temp probes. If no temperature probes are installed, the Integrated Ambient Temperature sensor measurement will be used.</p> <p>ENABLE activates the function while DISABLE will deactivate the function.</p> <p><b>Lineage Power does not recommend enabling TCOMP without battery temperature probes.</b> .</p> <p>Factory Default = Disable</p>
TCOMP ADJUST	<p>Displays the amount of TCOMP adjustment that is being applied. Coefficient Is a change to the float voltage set point as a function of temperature. The amount of change is the coefficient. Approx 3Mv per degree C per battery cell. These values may change per manufacturers' data tables.</p> <p>Range: 0 (0) to 133 (240)mV/°F (mV/°C) in 1 mV/°F (mV/°C) Increments</p> <p>Factory Default = 36 mV/°C for 24V battery strings</p>
BATT CTRL RECHG ADJ	<p>The QSC1100L controller limits the battery current by clamping the voltage to the appropriate level. This feature displays the amount of the voltage has been changed.</p> <p>Range = 0 mVDC to 1000 mVDC</p> <p>Factory Default = 0 mVDC</p>
BATT CTRL RECHARGE	<p>Displays if the Battery Controlled Recharge feature is Enabled or Disabled</p> <p>Factory default = Disabled</p>



**FIGURE 3-7: BATTERIES**

**3.4.1.3 STATUS (SYSTEM TAB – DISCONNECTS)**

Item	Specifications
LVD 1 STATE	Equipped or Not Equipped
LVD 2 STATE	Equipped or Not Equipped

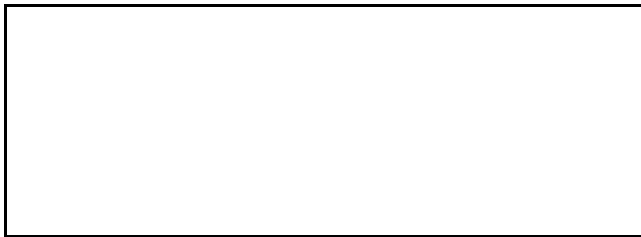


**FIGURE 3-8: DISCONNECTS**

**3.4.1.4 STATUS (SYSTEM TAB – RECTIFIERS)**

The rectifier status screen displays the rectifier values as equipped within this system configuration.

Item	Specifications
TOTAL RECTIFIER CUR	Displays total rectifier (system) output current
TOTAL RECTIFIER CAPACITY	Number of rectifier * Rectifier rating = total rectifier capacity
RECTIFIER % OR CAPACITY	Total rectifier Current/Total Rectifier Cap = % of available capacity
ENERGY MGMT	Displays if the Energy Management feature is enabled or disabled Factory Default = Disabled



**FIGURE 3-9: RECTIFIERS**

**3.4.1.5 STATUS (SYSTEM TAB – SHUNT MONITORS)**

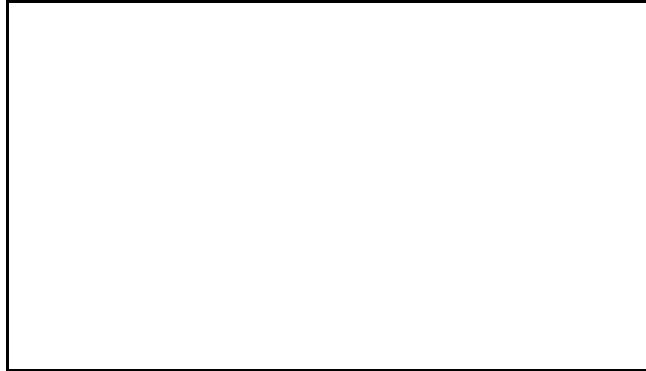
Item	Specifications
DERIVED CHANNEL 01	Displays current reading from shunt monitor labeled Channel 01
DERIVED CHANNEL 02	Displays current reading from shunt monitor labeled Channel 02
DERIVED CHANNEL 03	Displays current reading from shunt monitor labeled Channel 03
DERIVED CHANNEL 04	Displays current reading from shunt monitor labeled Channel 04



**FIGURE 3-10: SHUNT MONITORS**

**3.4.1.6 STATUS (SYSTEM TAB – CONTROLLER INFORMATION)**

The Controller information section of the status screen provides the listed versions, releases and revisions of both the controller software and hardware. This information is populated automatically by the controller. Anytime the controller is updated or replaced, these numbers will update accordingly.



**FIGURE 3-11: CONTROLLER INFORMATION**

**3.4.1.7 STATUS (SYSTEM TAB – NETWORK SECURITY)**

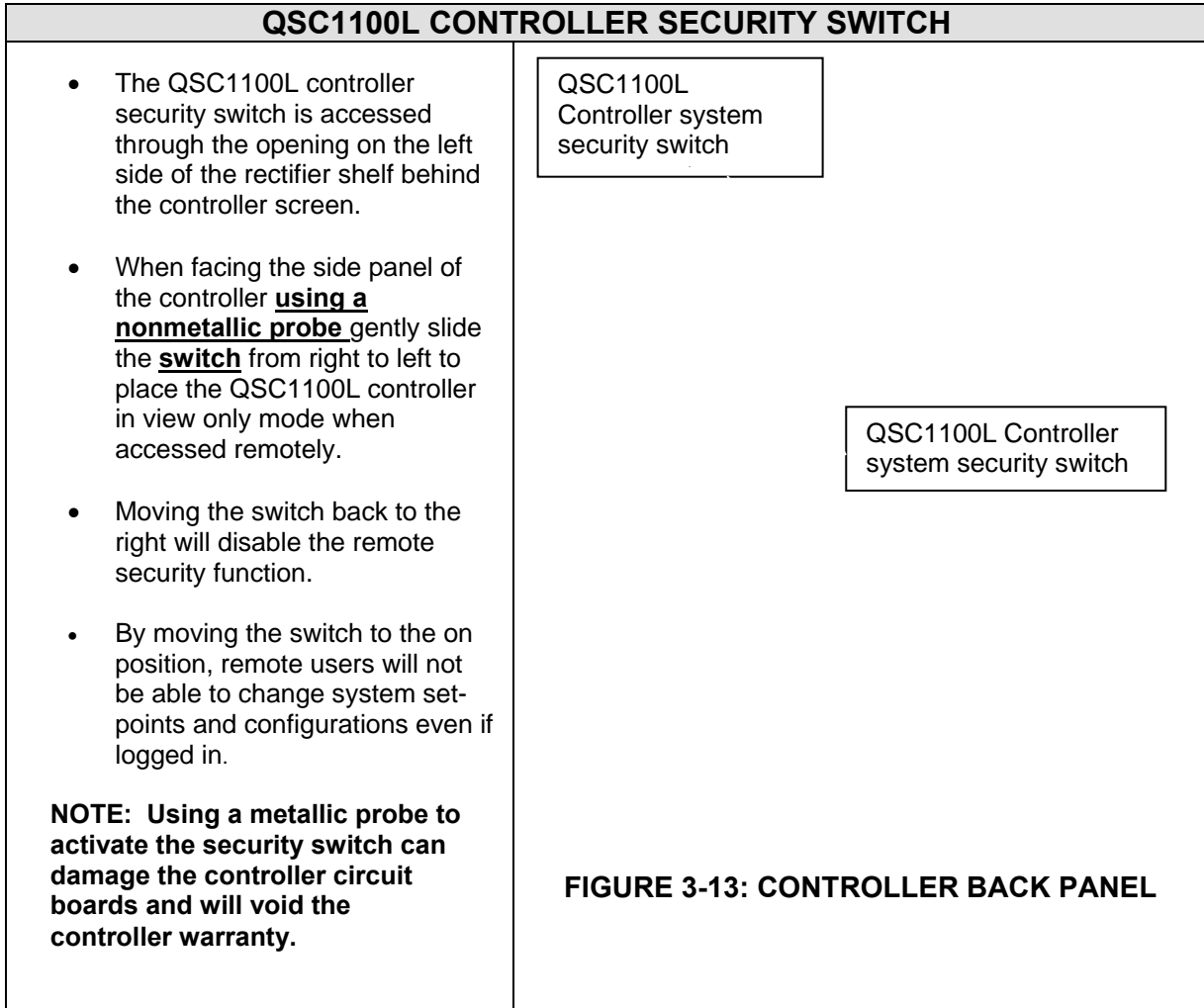
The QSC1100L controller is equipped with an added security feature that allows the user to grant or deny remote write/change access by enabling or disabling a physical switch found in the front panel Controller. This allows the user the ability to physically restrict the RJ45 access to read-only.



**FIGURE 3-12: NETWORK SECURITY**

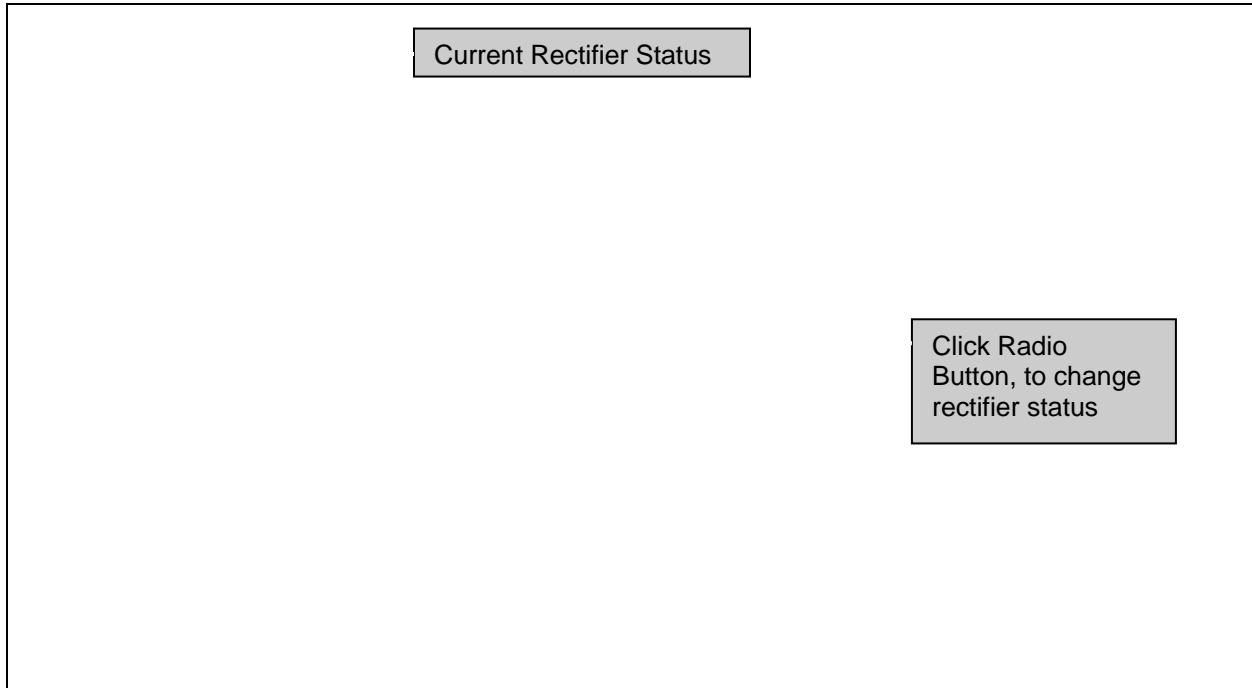


## 3.4.1.7A SECURITY SWITCH



### 3.4.2 STATUS (RECTIFIERS TAB)

The rectifier tab provides access to all rectifiers currently online and in service. From this screen, the user may elect to place any of the listed rectifiers in standby mode by selecting the STANDBY radio button, once selected the **Status** will change from RUN to STANDBY. While in STANDBY, the rectifier will still be energized from the AC circuit but will not be supplying DC output to the load bus.

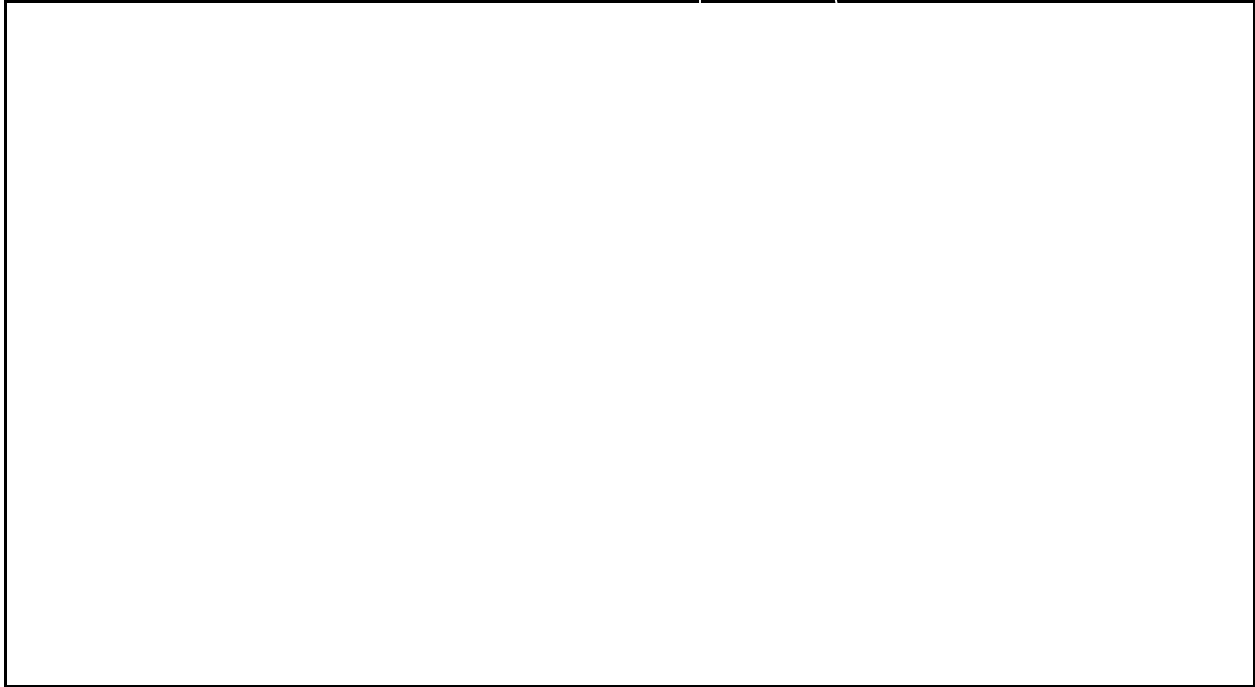


**FIGURE 3-14: RECTIFIERS**

### 3.5 HISTORY (MENU TAB)

Clears alarm log when logged in as User or Admin

Radio button downloads alarm history log to Microsoft Windows "Note Pad"



**FIGURE 3-15: ALARM HISTORY**

Item	Specifications
ACTIVE	Displays MM-DD-YYYY, HH:MM:SS that the alarm was initiated.
CLEARED	Displays MM-DD-YYYY, HH:MM:SS that the alarm was cleared.
ALARM TYPE	Displays the alarm type.
DURATION	Displays the HH:MM:SS that the alarm was active.
CLEAR LOG	Clicking the Clear Log radio button clears the log if logged in as either User or Admin.
DOWNLOAD LOG	This feature downloads the alarm log to windows Note Pad and is available for printing. The log can be downloaded in view only mode.

### 3.6 CONFIGURATION (MENU TAB)

The CONFIGURATION menu topic consists of five menu tabs. Each tab represents a section of the controller. Clicking on any one of the five tabs will display the current set points of the chosen tab. Configurations have been established by the manufacturer but are easily adjusted within the menu topic. USER or ADMIN access is required to edit any of these values.

- System
- Batteries
- Communications
- Capacity
- Security



**FIGURE 3-16: CONFIGURATION MENU TOPIC**

**NOTE:** When changing set points, click on the pop up radio button. Depressing the Return key on the keyboard of the computer may give unexpected results using certain browsers. The pop up button will appear when the cursor passes over the selections.

### 3.6.1 CONFIGURATION (SYSTEM TAB)

#### 3.6.1.1 CONFIGURATION (SYSTEM TAB - SYSTEM SETTINGS)

The SYSTEM SETTINGS allows the adjustments to the time format, date format, as well as changing the temperature scale between Centigrade and Fahrenheit. These are global settings; changes will be reflected throughout the QSC1100L controller.

Item	Specifications
TIME FORMAT	Both 12 and 24 hour clocks are available. Factory Default= 12H
DATE FORMAT	The user may change the date format from MM-DD-YYYY to DD-MM-YYYY. Factory Default= MM-DD-YYYY
TEMP UNITS	The user may choose between Centigrade and Fahrenheit. Factory Default= F
HIGH AMBIENT TEMP	Displays the High Ambient Temperature setpoint.
LOW AMBIENT TEMP	Displays the Low Ambient Temperature setpoint.

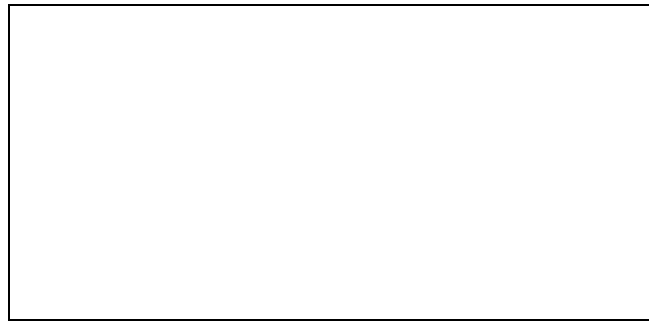


**FIGURE 3-17: SYSTEM SETTINGS**

**3.6.1.2 CONFIGURATION (SYSTEM TAB – RECTIFIERS)**

This rectifiers section allows for global changes to the all rectifiers currently online as well as future rectifiers as they are activated and placed on line.

Item	Specifications
RECTIFIERS	
RECT CL	<p>Current Limit. Controls the rectifier current limit values based on percentages. The user may adjust this limit to reduce rectifier output current.</p> <p>Range: 30 to 100 % in 1 % increments</p> <p>Factory Default = 110 %</p>
IMB ALM SETPT	<p>To identify a rouge rectifier, the user may adjust the imbalance feature in 1% increments. This is a threshold alarm event with the setpoint being designated as a percentage difference of the output current between rectifiers.</p> <p>Range: 5% to 15% in 1% increments</p> <p>Factory Default = 5%</p>
IMB ALM ENA/DIS	<p>This condition identifies rectifiers that are operating outside a given percentage from the other rectifiers in the system. Enabling this feature will identify the condition and the rouge rectifier.</p> <p>This feature enables or disables the current imbalance alarm feature.</p> <p>Factory Default = DISABLED</p>
RECTS PER SHELF	<p>This setting tells the QSC1100L controller how many rectifiers per shelf may be equipped. Since the QPS system may be configured with shelves supporting 3 to 5 rectifiers, the factory default will be established with each system shipped based on the selected shelf. The number may be 3, 4 or 5.</p>
RECT EQUIPPED	<p>This feature allows the user to configure the power plant to extend an alarm if a rectifier is added or removed. By setting the number of equipped rectifiers to the actual number equipped in the power plant any addition or removal will create an alarm.</p> <p>A setting of 0 provides full plug and play module additions and removals with no additional controller configuration changes.</p> <p>Range 0 – 32 in 1 module increments</p> <p>Factory Default = 0</p>
ENERGY MGMT	<p>This feature enables or disables the energy management feature.</p> <p>The purpose of this feature is to increase the overall efficiency of the power plant while maintaining the readiness of the plant to supply output to the load as needed. The QSC1100L calculates the number of rectifiers needed to satisfy the existing load and places the remaining rectifiers in hot standby. These rectifiers are still energized from their AC source but are not contributing output to the equipment load requirements.</p> <p>To maintain the readiness of the rectifiers, all rectifiers will be put in RUN mode for a 24 hour period every 30 days.</p> <p>In a BOD event, the feature is terminated and returned to a disabled condition.</p> <p>Factory Default = Disabled</p>



**FIGURE 3-18: RECTIFIERS**

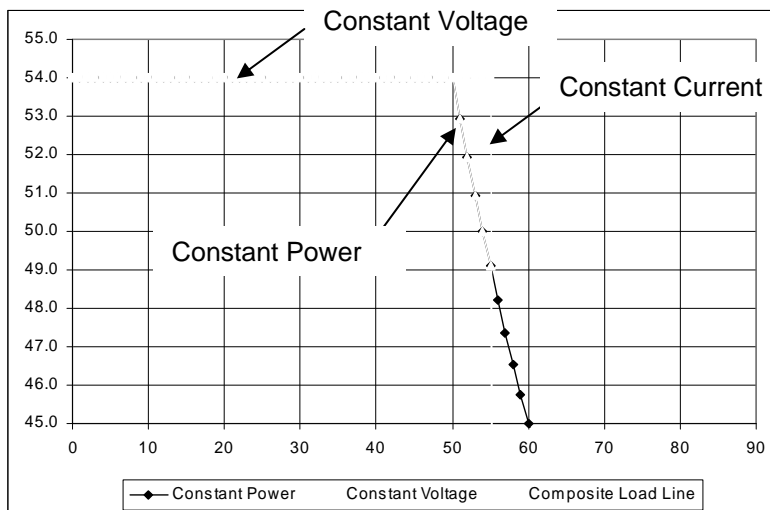
**3.6.1.2A CURRENT LIMIT / CONSTANT POWER RECTIFIERS**

All rectifiers used in this industry float charge stationary batteries. They spend >95% of their life providing a constant voltage to the load and the parallel-connected battery string(s).

The chart below shows a load line for a typical 50-amp rectifier and a load line for a constant power 2700W rectifier. The vertical axis is output (float) voltage; the horizontal axis is output current. As can be seen from the chart, the rectifier regulates its output (float) voltage at 54.0 volts for any output current up to 55 amps, thereby providing a constant voltage (pink plot line). If the load tries to draw more than 55 amps, the rectifier changes to constant current mode, meaning the rectifier will limit its output current to 55 amps, regardless of how low the load resistance becomes. In this example the rectifier has two modes, constant voltage and constant current.

The second plot on the chart below again shows the constant voltage mode; however, a 2700W constant power mode is added. As before, the output voltage is constant until the load attempts to draw more than 2700 watts (dark blue plot line). At this point the rectifier changes to a constant power mode. If the rectifier maintained a true constant power mode it would follow the dark blue plot line and produce 60 amps at 45 volts. Extending the plot below 45 volts, the rectifier would be capable of producing, say, 100 amps at 27 volts! (2700W) This output current would certainly stress the output connector and the output components in the rectifier!

A practical implementation of constant power actually incorporates all three modes discussed so far. As can be seen by the yellow plot line in the chart below, the rectifier changes from constant power to constant current at a level that protects the output components. In this example, the rectifier changes to constant current mode when the output current reaches 55 amps.



**FIGURE 3-19: CONSTANT POWER RECTIFIER OUTPUT**

### 3.6.2 CONFIGURATION (BATTERIES TAB)

The BATTERIES menu tab allows the configuration of battery settings. The user may customize these settings for specific applications or retain the factory defaults.

Consult the end users standards and conventions as well as battery manufacturer’s documentation to ensure that there are no battery warranty infringements.



**FIGURE 3-20: BATTERY MENU TAB**

**CAUTION:** Enabling the LVD selection radio button will open the corresponding load LVD dropping any attached equipment loads.

#### 3.6.2.1 CONFIGURATION (BATTERIES TAB - FLOAT SETTINGS)

The FLOAT SETTINGS window allows for customization of battery and system set points critical to proper battery operation.

Item	Specifications
FLOAT VOLT	Allows the user to manually adjust system float voltage set-point. Range: 42.00 to 58.00 VDC in 0.01 VDC increments
HVSD	High Voltage Shutdown. Allows the user to manually adjust the HVSD shutdown point. Range: 40.00 to 60.00 VDC in 0.01 VDC increment
HV	High voltage alarm. This alarm indicates an abnormally high output voltage but does not shut the unit down. The user can manually adjust this value. Range: 40.00 to 60.00 VDC in 0.01 VDC increment



Item	Specifications
BOD	Battery on discharge. This alarm occurs when the system is operating either completely or partially on battery power. The user can manually adjust this value. Range: 40.00 to 60.00 VDC in 0.01 VDC increment
VLV	Very low voltage alarm. Alarm indicates an imminent system shutdown due to discharging batteries or low output voltage. The user can manually adjust this value. Range: 40.00 to 60.00 VDC in 0.01VDC increment



**FIGURE 3-21: FLOAT SETTINGS**

**3.6.2.1A SELECTIVE HIGH VOLTAGE SHUTDOWN (HIGH VOLTAGE SHUTDOWN)**

As the controller recognizes the system is exceeding the HVSD threshold, the controller begins a shutdown sequence:

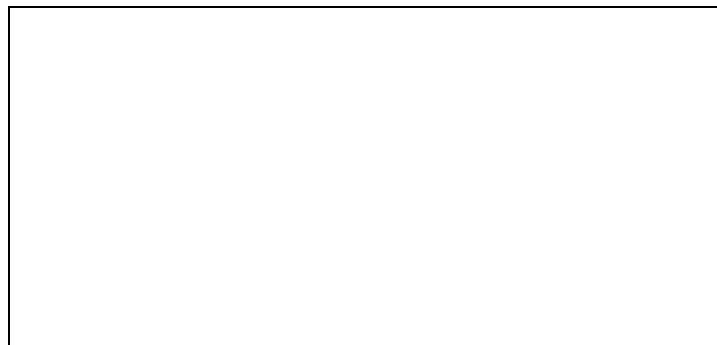
- Rectifier(s) carrying more than 10% of their rated capacity are identified (A rogue rectifier will ignore forced load share and attempt to consume the largest amount of plant load)
- The identified rectifier(s) are placed in standby mode.
- After a timeout of 5-10 seconds, it restarts the rectifier(s)
- After 2 attempts the rectifier(s) will latch in standby mode

**3.6.2.2 CONFIGURATION (BATTERIES TAB - DISCONNECTS (OPTIONAL))**

The QSC1100L Controller can monitor up to 2 Low Voltage Disconnects (LVD's). When the power system is equipped with a LVD, the DISCONNECT section provides disconnect and reconnect set points for each LVD. The LVD must be **enabled** within the QSC1100L Controller to allow for the disconnect feature to operate. When unequipped, the LVD(s) must remain in "DISABLE" as the "ENABLE" command will produce false alarm conditions including LVD Open, Power Major and LVD Fail.

Item	Specifications
LVD1 Enable	Functionally enables or disables the feature. When equipped, the LVD must be in enable mode to properly function based on voltage set points. ENABLE or DISABLE
LVD Disconnect	Allows access to adjust the disconnect features set points of the LVD 1. Factory Default= 42.00 Disconnect = 42.00 Range = 33.00 to 50.00

Item	Specifications
LVD1 Reconnect	Allows access to adjust the reconnect features set points of the LVD 1. Factory Default= 42.00 Reconnect = 50.00 Range = 39.00 to 55.00
LVD2 Enable	Allows access to control features of the LVD. ENABLE or DISABLE
LVD2 Disconnect	Allows access to adjust the disconnect features set points of the LVD 1. Factory Default= 42.00 Disconnect = 42.00 Range = 33.00 to 50.00
LVD2 Reconnect	Allows access to adjust the reconnect features set points of the LVD 1. Factory Default= 42.00 Reconnect = 50.00 Range = 39.00 to 55.00
AUTO	This command will allow the LVD to automatically open or close based on the open and close setpoint voltages established through the web page CONFIG screen USER or ADMIN access required for this feature to be available.



**FIGURE 3-22: DISCONNECTS**

**CAUTION:** When configuring the LVD, ensure the control feature of the LVD is in AUTO or CLOSED mode. If the LVD is set to OPEN in the CONTROL Menu, it will open immediately, once the LVD CONFIG has been accepted, energized equipment will be disconnected from the power system load center.

**3.6.2.3 CONFIGURATION (BATTERIES TAB - BATTERY TEMP PROBES)**

Menu Item	Specifications
BATTERY TEMP SENSOR PROBE 1 AND 2	Enables or disables Battery Temperature Probes 1 and 2.



**FIGURE 3-23: BATTERY PROBES**

**3.6.2.4 CONFIGURATION (BATTERIES TAB - BATTERY HIGH TEMP)**

Battery values may be adjusted in this section

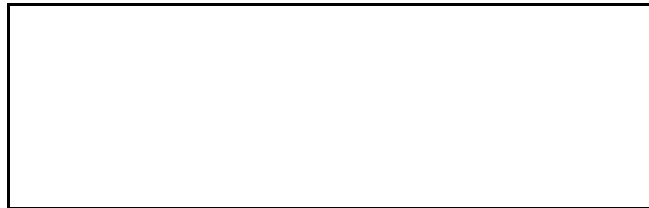
Menu Item	Specifications
HI BATT TEMP	Displays the High Battery Temperature set point.
BCR MIN CTRL VOLT	Adjust this value to impact the Controlled Battery Recharge Voltage. System Default: 48V DC Range: 47V to 49V DC



**FIGURE 3-24: BATTERY HIGH TEMP**

**3.6.2.5 CONFIGURATION (BATTERIES TAB - TEMPERATURE COMPENSATION)**

Menu Item	Specifications
TCOMP	Displays if Temperature Compensation is Enabled or Disabled.
TCOMP Nominal Temp	When TCOMP is enabled this feature dictates the temperature threshold that will allow TCOMP to provide automatic voltage adjustments based on increased battery temperature. <b>This feature is normally used with only VRLA battery products.</b> Factory Default = 25°C
TCOMP Slope	Displays the mV per cell of temperature compensation. The TCOMP Slope is a factory set value based on industry standards. <b>Lineage Power does not recommend adjusting the factory default configuration.</b>



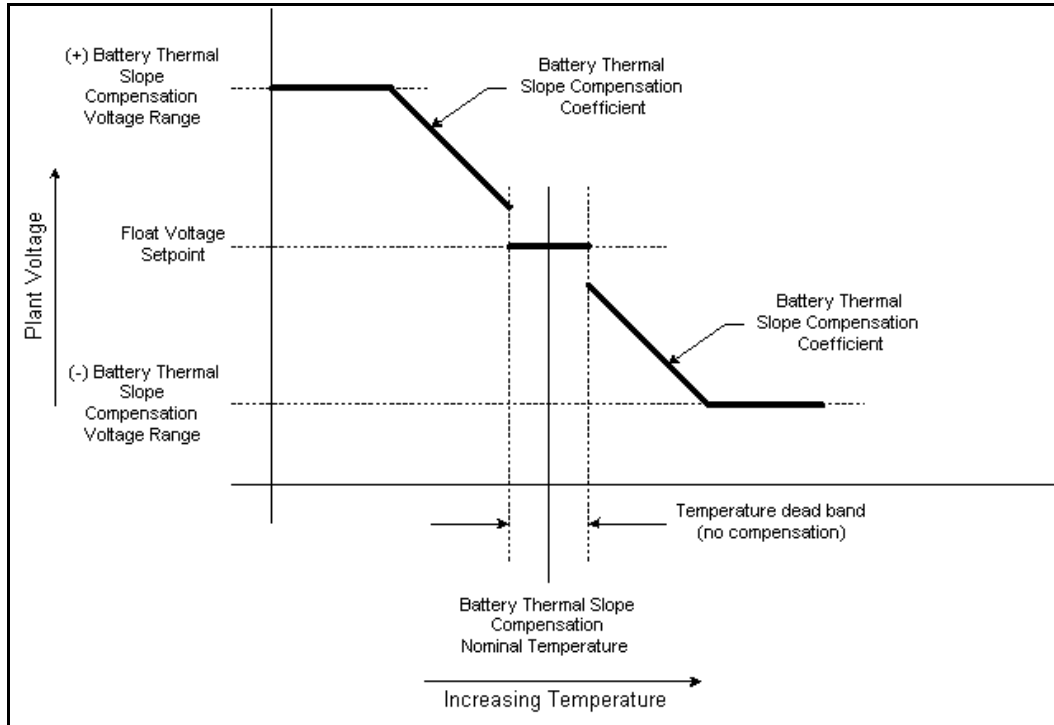
**FIGURE 3-25: TEMPERATURE COMPENSATION**

**3.6.2.5A TEMPERATURE COMPENSATION (TCOMP)**

TCOMP is designed to automatically adjust the plant's float voltage as an inverse function of the temperature of a (temp probe) reference cell in the battery string being charged or utilizing the ambient temperature measurement being monitored by the QSC1100L controller. The greater of the two temperatures will be used to initiate TCOMP.

Float voltage compensation is continuous for temperatures in the range of 10 to 65°C (50 to 149°F). Thermal compensation, in response to a measured temperature below this range, will not force the float voltage higher than one (1) volt above the uncompensated float voltage. In response to a measured temperature above this range, the battery thermal compensation will not force the float voltage lower than five (5) volts below the uncompensated float voltage.

When used, the optional battery temperature probe must be attached to the 2<sup>nd</sup> (numbered right to left) negative battery terminal. Refer to the Power Plant Installation Manual for temperature probe installation.



**FIGURE 3-26: BATTERY THERMAL SLOPE COMPENSATION**

**3.6.2.6 CONFIGURATION (BATTERIES TAB – BATTERY CONTROLLED RECHARGE)**

Menu Item	Specifications
BCR	Displays if the Battery controlled recharge feature is Enabled or Disabled. Factory Default = Disabled
BCR CURRENT LIMIT	This feature allows the user to establish the maximum amount of current that will be supplied to the batteries while recovering from a battery on discharge (BOD) event. Range = 1A to 1000A Factory Default = 500A



**FIGURE 3-27: BATTERY CONTROLLED RECHARGE (BCR)**

### 3.6.3 CONFIGURATION (COMMUNICATIONS TAB)

The communications tab provides access to all network connectivity settings.

**FIGURE 3-28: COMMUNICATIONS MENU TAB**

#### 3.6.3.1 CONFIGURATION (COMMUNICATIONS TAB - NETWORK SETTINGS)

The QSC1100L Controller's factory default IP address is 192.168.1.1. Network setting shall be adjusted by the user dependant on local network configuration. Setup and usage is explained in Section 3.1.

Menu Item	Specifications
IP ADDRESS	Factory Default = 192.168.1.1
SUBNET MASK	Factory Default = 255.255.255.0
GATEWAY	Factory Default = 0.0.0.0
APPLY NETWORK SETTINGS	This feature loads any changes to the factory default settings into the firmware. Changes will not take affect until the ACCEPT command has been accepted.



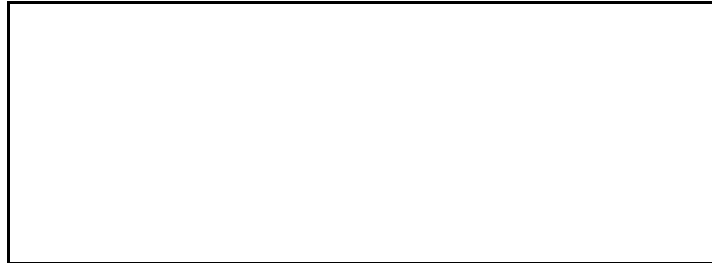
**FIGURE 3-29: NETWORK SETTINGS**

**CAUTION:** Any Network configuration changes will require the user to reinitiate WEB browser communication with the QSC1100L controller.

**3.6.3.2 CONFIGURATION (COMMUNICATIONS TAB - SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP) SETTINGS)**

SNMP settings define the destination location of where the SNMP trap will be sent.

- **SNMP Destinations 01-04:** Enter the user defined SNMP destination in each of the four fields; this will create the path and destination of the 4 SNMP events.



**FIGURE 3-30 SNMP SETTINGS**

**3.6.3.3 CONFIGURATION (COMMUNICATIONS TAB - DYNAMIC HOST CONFIGURATION PROTOCOL (DHCP) SETTING)**

DHCP determines the connectivity relation between the QSC1100L Controller and the network.

Menu Item	Specifications
DHCP MODE	DHCP determines the connectivity relation between the QSC1100L Controller and the network. STATIC: Allows the controller to be remotely accessible via the Ethernet connection and an IP address is being randomly assigned. SERVER: Used in stand alone mode when RJ45 jack is used as simply a craft access point. Factory Default = SERVER
SUBNET MASK	Factory Default = 255.255.248.0
GATEWAY	Factory Default = 10.1.1.1
APPLY NETWORK SETTINGS	This feature loads any changes to the factory default settings into the firmware. Changes will not take affect until the ACCEPT command has been accepted.



**FIGURE 3-31: DHCP SETTING**

**3.6.3.4 CONFIGURATION (COMMUNICATIONS TAB- SMTP/SMS SETTINGS)**

Simple Mail Transfer Protocol allows the user to define up to 2 locations to send email messages. (This feature is not available in the current release.)



**FIGURE 3-32: SMTP/SMS SETTINGS**

### 3.6.4 CONFIGURATION (CAPACITY TAB)

The CAPACITY screen allows adjustments to capacity alarm conditions, optional shunts and derived channels.



**FIGURE 3-32: CAPACITY MENU TAB**

#### 3.6.4.1 CONFIGURATION (CAPACITY TAB - CAPACITY ALARMS)

The CAPACITY ALARMS section allows an alert to be set indicating a capacity limitation or threshold as been reached.

Item	Specifications
TCA CURRENT LIMIT	<p>This feature displays the Total Current Limit of the power plant. System architecture may impact this value from system to system. This default value will be factory adjusted based on the system shipped.</p> <p>Factory Default = 300A or per System Architecture</p>
LTG RCHG SETPT (REDUNDANCY LOSS)	<p>This feature displays the limited recharge (Redundancy Loss) setpoint.</p> <p>The controller determines the number of rectifiers present compared to the actual DC load less one installed rectifier unit. If the DC current exceeds the N rectifier's capacity in excess of 1 minute, the alarm condition is activated and becomes a latched alarm. This alarm is an indication the system is no longer operating as a redundant power system or that there are not enough rectifiers installed to meet recharge design criteria. This LMR condition will be expressed in the alarm menu until latched alarms are cleared using the CLR LAT ALM function.</p> <p>Factory Default: 80%</p> <p>Range: 50% to 110%</p>



**FIGURE 3-33: CAPACITY ALARMS**

**3.6.4.2 CONFIGURATION (CAPACITY TAB - SHUNT MONITORS / DERIVED CHANNELS 1-4) (OPTIONAL EQUIPMENT)**

The QSC1100L controller can monitor up to 2 optional shunts providing DC current values for each channel. If the power plant is equipped with optional Load Shunts; one external shunt can also be monitored. If the Power Plant is equipped with the optional Battery shunt; one external shunt can also be monitored. The user can monitor specific distribution loads as part of the cumulative total of the system.

The following are configuration options:

1. Existing Main Shunts
  - Single Ended Current Measurement with high threshold and “condition true” delay
  - Sum to produce Load Current
2. Battery Charge/Discharge Currents
  - Double Ended Current Measurement with high threshold and “condition true” delay
  - Sum to produce Battery Current

This table defines measurement sources.

<ul style="list-style-type: none"> <li>• <math>I_{rectifier}</math> is the sum of currents reported by rectifiers</li> <li>• <math>I_{battery}</math> is the sum of currents measured by battery shunts</li> <li>• <math>I_{load} = I_{rectifier} - I_{battery}</math></li> <li>• When <math>I_{rectifier}</math> is zero, <math>I_{load} = -I_{battery}</math> <ul style="list-style-type: none"> <li>— (Follows the math)</li> </ul> </li> <li>• When <math>I_{battery}</math> is zero, <math>I_{load} = I_{rectifier}</math> <ul style="list-style-type: none"> <li>— (Follows the math)</li> </ul> </li> </ul>
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If the Load shunt or Battery shunt options are provided, the QSC1100L controller will be factory configured.

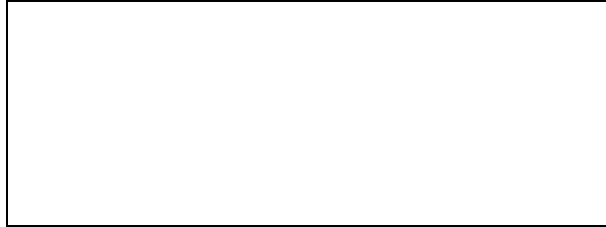
**3.6.4.3 CONFIGURATION (CAPACITY TAB - SHUNT A, B, C & D) (OPTIONAL)**

The optional SHUNT section allows profile definitions and set point adjustments. (X= Shunt A - D)

Item	Specifications
SHUNT TYPE	Options are: None, Battery, or Load Factory Default = None
SHUNT AMP	This is the size of the shunt that is to be monitored. The default will be based on the system configuration shipped. Range = 1A to 3000A



SHUNT mVDC	This is the output Voltage monitoring shunt. Range = 25mVDC to 80mVDC
ASSIGNED DER CH	This is the user assigned channel. Range = Chan 0 to Chan 4



**FIGURE 3-34: SHUNT A**

**3.6.4.4 CONFIGURATION (CAPACITY TAB - DERIVED CURRENT 1, 2, 3 & 4)**

The optional SHUNT section allows profile definitions and set point adjustments.

Item	Specifications
DER CH NAME	This is the channel name assigned by the user.
DER CH HIGH LIMIT	This the high Amperage limit of the shunt. Range = -5000A to 5000A
DER CH LIMIT DLY	This is the user defined time limit that is used in conjunction with the High Current Alarm set point. The delay time setting is utilities to avoid nuisance alarms. Range 0 seconds to 3600 seconds



**FIGURE 3-35: DERIVED CURRENT 1, 2, 3 & 4**

**3.6.5 CONFIGURATION (SECURITY TAB)**

The SECURITY Menu Tab allows for changes in password protection for webpage access. Admin privileges are required to make these changes.

Item	Specifications
VIEW ONLY	The View only mode does not require a password. In this mode the user can see all setpoints, login and related configuration information. No configuration management is available in this mode.
USER PASSWORD	The User Password grants write permissions for configuration and alarm setpoints. The password can consist of 4 numbers. <b>Factory Default USER Password = 3333</b>

Item	Specifications
ADMIN PASSWORD	The Administration Password grants write permissions for configuration and alarm setpoints, the ability to set passwords, and the ability to clear latched alarms and lots The password can consist of 4 numbers <b>Factory Default Admin Password = 9999</b>



**FIGURE 3-36: SECURITY PASSWORDS**

### 3.6.5.1 CONFIGURATION (SECURITY TAB – SESSION SETTINGS)

Item	Specifications
SYSTEM TIMEOUT	This feature allows the user to set a Login Timeout length. Range = 1 min to 20 min Factory Default = 20 min



**FIGURE 3-37: SESSION TIMEOUT**

## 3.7 CONDITIONS, EVENTS, AND ALARMS

### 3.7.1 EVENTS (SYSTEM TAB)

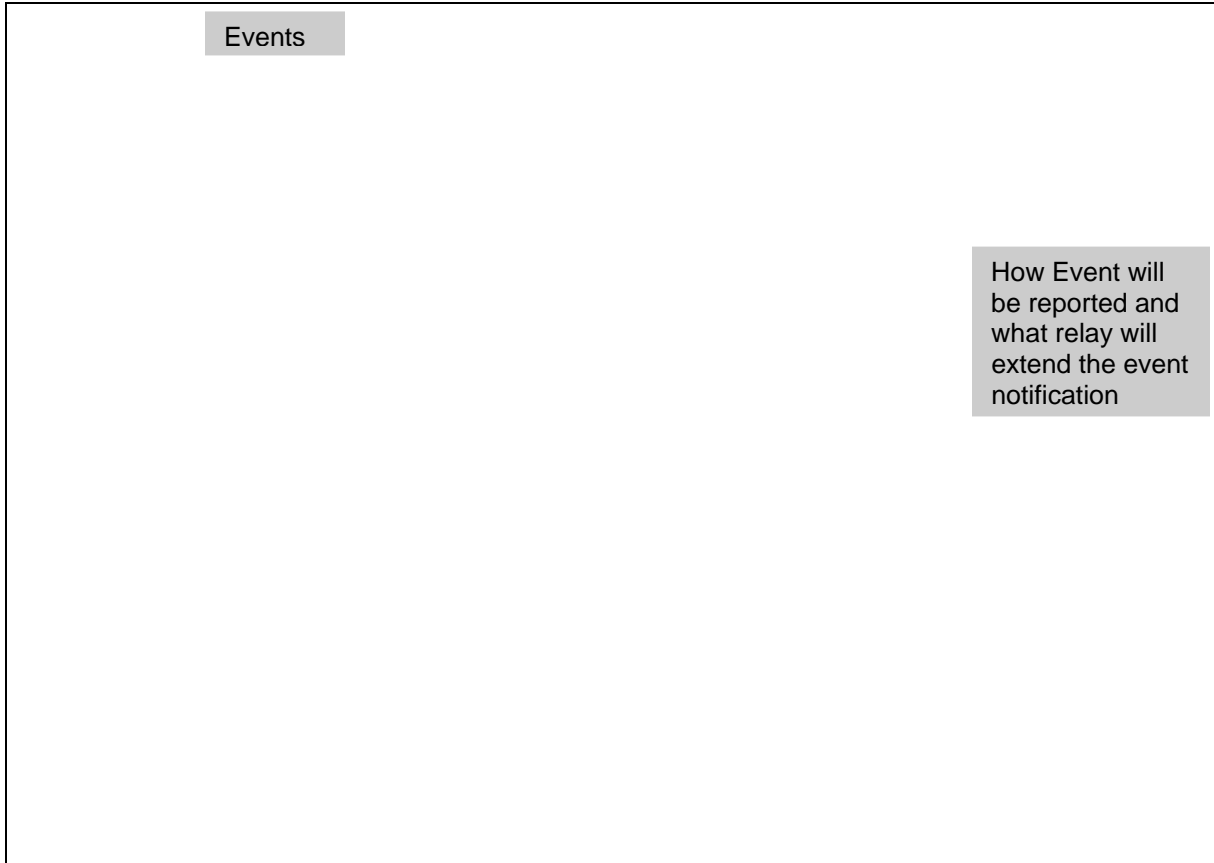
The EVENTS menu topic consists of five sub-menus. In the EVENTS menu the user can determine which events and/or condition are reported as alarms, the severity of these alarms, or if the event or condition is logged only. Each sub-menu provides a list of events. Events can be routed to Email, SNMP and relay outputs by placing a mark in the associated check box. Additionally the user will define the event as a major, minor, or critical. Events may also be routed to any of the 6 relay outputs. A check mark must be placed in the appropriate box to route the event.

Relays 1 and 2 are failsafe relays are held open and will close on alarm. Lineage Power recommends using these for power loss events like AC fail. Each relay can be field wired as close on alarm or open on alarm. See installation manual for alarm wiring.

Power Critical, Power Major, and Power Minor are summing alarms. Multiple events may be assigned via the check box (see below) to be extended as one or all if the assigned events become true.

Lineage Power recommends the following process.

- Determine severity of all events or conditions that will be extended to the Alarm Center (Critical, Major, Minor)
- Determine and assign all events or conditions that that will be extended as part of the three summing alarms. (Power Critical, Power Major, or Power Minor)
- Determine and assign all events or conditions that will be extended as discrete alarms
- Determine and assign all events or conditions that will not be extended as alarms but need to be recorded in event logs.



**FIGURE 3-38: EVENTS MENU TOPIC**

### **3.7.2 EVENTS (BATTERY TAB)**

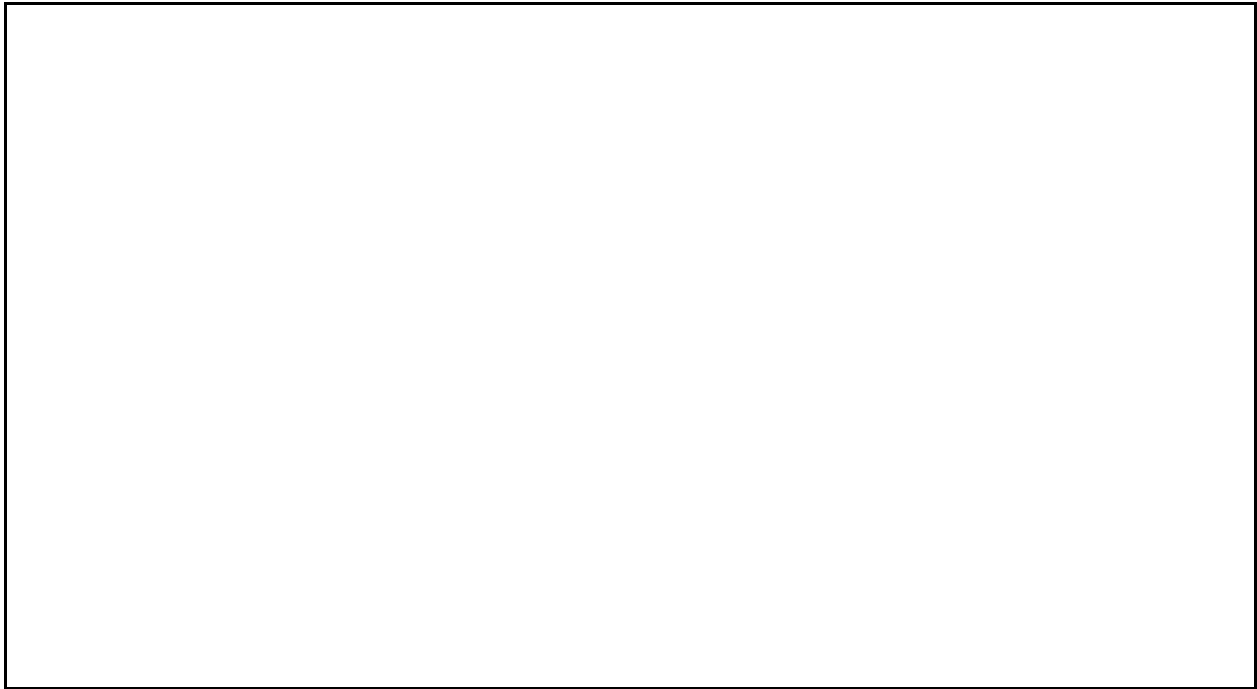
The BATTERY tab provides access to all battery related events.



**FIGURE 3-39: BATTERY**

**3.7.3 EVENTS (CAPACITY TAB)**

The CAPACITY tab provides access to all system capacity related events.



**FIGURE 3-40: CAPACITY**

**3.7.4 EVENTS (POWER MODULES TAB)**

The POWER MODULES tab provides access to rectifier and converter related events.



**FIGURE 3-41: POWER MODULES**

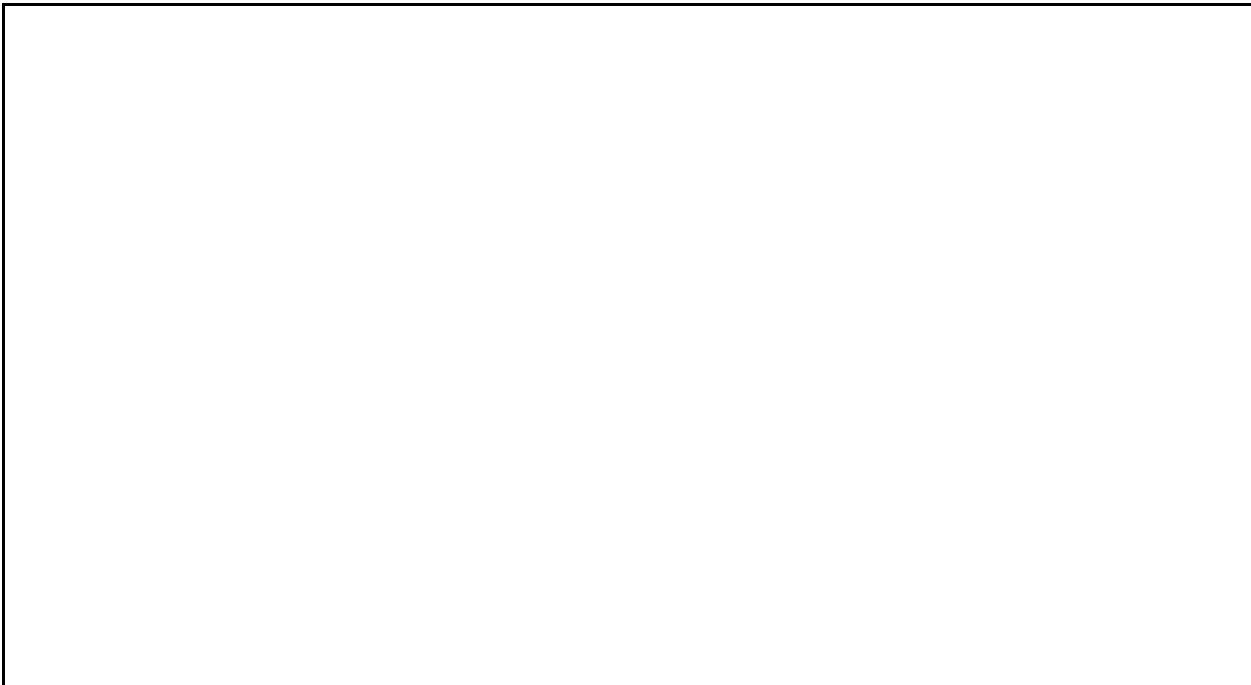
### 3.7.5 EVENTS (SECURITY TAB)

The SECURITY tab provides the user the ability to alarm a History Log Reset event.



**FIGURE 3-42: SECURITY**

### 3.8 PREVENTIVE MAINTAINENCE (PM)



**FIGURE 3-43: PREVENTIVE MAINTAINENCE**

### 3.8.1 PM (ALARM RELAY TEST TAB)

Item	Specifications
ALARM TEST TIMEOUT	The feature has a settable “walk away” feature that will stop any alarm extension if left unattended during the test. Range = 1 to 15 minutes
ALARM TEST	The alarm relay test exercises the alarm relay using web interface. This test is designed to serve as a “handshake” test between the installed power plant and a remote alarm monitoring center.  <b>User or Admin login is required to activate the alarm relay test.</b> Range = 0 to 6 Form C contacts



**FIGURE 3-44: ALARM RELAY TEST**

**NOTE:** The alarm relay test **cannot** be exercised while the plant is in alarm. If the power plant goes into alarm during an alarm test, the test will be aborted.

**NOTE:** This test exercises the alarm relays and extends the wired alarms to the alarm center. This test does not create a real event condition.

# **ATTACHMENTS**

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