



QS941A Controller User Interface

Product Manual
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Notice:

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QS941A Controller User Interface

This is an introduction to using the QS941 Front Panel Display only. The QS941 Front Panel Display provides complete information and on/standby control for each circuit. Special functions like grouping all circuits serving a particular node and alarming extraordinary behavior is provided through the WEB interface.

You will perform 11 tasks using the QS941 keypad. Many are specific to FTTN circuits.¹ These tasks are:

	Task
1.	Adjust the display for lighting conditions.
2.	Read FTTN -48V DC input current draw.
3.	Recognize and identify a minor alarm.
4.	Recognize and identify a major alarm.
5.	Use the menu to determine the output current of an individual FTTN circuit.
6.	Use the menu to locate all information about an FTTN circuit.
7.	Place an FTTN circuit in standby.
8.	Adjust FTTN alarm thresholds.
9.	Use the “uninstall equipment” feature to retire an alarm after components have been removed.
10.	Use the menu to clear History
11.	Use the menu to set time and date.

Other commands are shown in the menu tree that follows the step by step instructions.

¹ Note: Battery Plant functions are documented in the manual that is provided with the particular battery plant configuration purchased.

QS941 Front Panel

The QS941 FTTN Controller front panel looks like this:

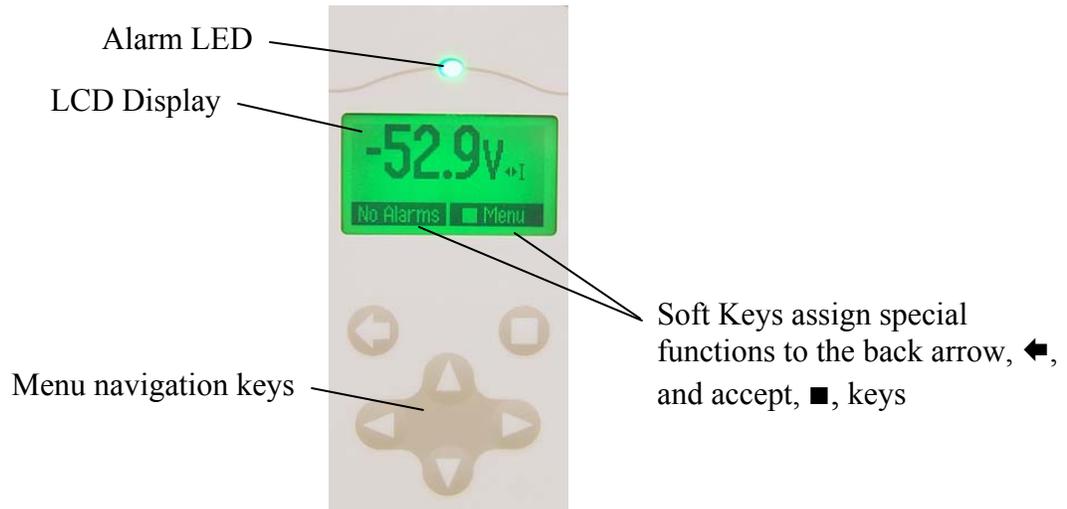


Figure 1: QS941 Controller Front Panel

Task Descriptions

Task 1: Adjust the contrast for the lighting conditions to read the input voltage.

Step	Action
1.	 <p data-bbox="680 604 1377 716">Press the up, ▲, and down, ▼, keypad arrows to adjust the contrast for best viewing. Make sure each of the text elements is clearly visible.</p>

Task 2: Read FTTN -48V DC input current draw.

Step	Action
1.	 <p data-bbox="680 1396 1442 1541">Press the right, ►, and left, ◀, keypad arrows to toggle between the voltage display and input current estimate for all FTTN elements. This screen indicates 4.8 Amps.</p>

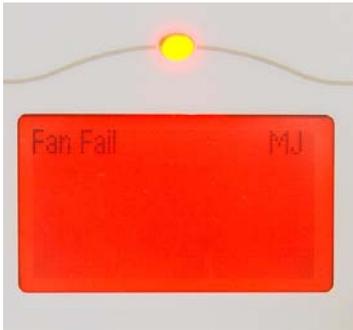
Task 3: Recognize and identify a minor alarm.

Step	Action
1.	 <p>Unlatch one of the redundant fan trays.</p> <p>Wait for the for the alarm to be recognized by the controller as indicated by the backlight and LED changing to yellow.</p> <p>The Alarm Status soft-key changes to show that Alarm information is available by pressing the Back Arrow, ◀, on the upper left corner of the keypad.</p>
2.	Press the Back Arrow, ◀, to view the alarm.
	 <p>The Fan Fail minor alarm screen.</p>
3.	Press the Back Arrow, ◀, to return to the default screen.

Task 4: Recognize and identify a Major alarm.

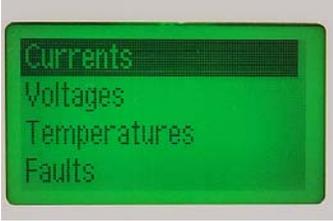
If the system is not providing service a power Major alarm can be caused by unlatching the remaining fan tray. The loss of fans will be recognized as a power major as indicated by the red backlight and red LED.

Warning: Only perform this test during initial turn-up and test. Unlatching the remaining fan tray in a working system will put service at risk.

Step	Action
1.	 <p>Disconnect the remaining fan tray. The backlight and LED will change to red.</p>
2.	Press the Back arrow,  , to view the alarm.
	 <p>The Fan Fail Major Alarm Screen.</p>
3.	Reseat both fan trays to restore normal operation.
	When the alarms retire the Screen and the LED will turn green. The text will state: "NO ACTIVE ALARMS."
4.	Press the Back Arrow,  , to return to the default screen.

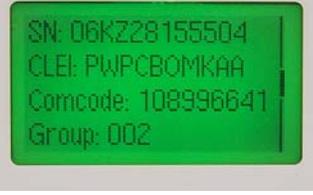
Task 5: Use the menu to determine the output current of an individual FTTN circuit.

Step	Action
1.	<p>Press the square key, ■, to access the main menu.</p> 
	<p>This is the main menu screen.</p> 
2.	<p>Press the down arrow twice, ▼, ▼, to select the Status menu item.</p>
	<p>The display will look like this:</p> 
3.	<p>Press the right arrow key, ► (or square “accept” key, ■) to advance to the status menu.</p>
	<p>This is the status menu screen:</p> 

Step	Action
4.	Press the right arrow key, ► (or square “accept” key, ■) to proceed to the FTTN Circuits menu.
	 <p data-bbox="740 390 1073 422">FTTN Circuits menu screen.</p>
5.	<p data-bbox="383 653 1446 716">Press the right arrow key, ► (or square “accept” key, ■) to read Output Current and status information for all FTTN circuits.</p> <p data-bbox="383 737 1235 768">Note: The 3 other menu items shown in this view operate in similar way.</p>
	 <p data-bbox="740 806 1089 837">FTTN Output Current screen.</p> <p data-bbox="740 858 1422 953">The first column is shelf and slot location. The second column is output current, or state information if the unit is in standby or alarmed.</p>
6.	Go to Task 6: Find all information about an FTTN circuit.

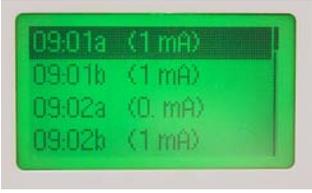
Task 6: Find all information about an FTTN circuit.

Starting from the FTTN Output Current screen,

Step	Action
1.	 <p>Press the right arrow key, ►, to show all information about a highlighted circuit.</p>
	 <p>FTTN Circuit Details – first page.</p>
2	<p>Press the down arrow, ▼ ..., to show more information about the circuit.</p>
	
3.	<p>Press the down arrow, ▼ ..., to continue to scroll down.</p>
	
4.	<p>Press the down arrow, ▼ ..., to continue to scroll down.</p>
	
5.	<p>Press the down arrow, ▼ ..., to continue to scroll down.</p>

	
6.	Press the down arrow, ▼ ..., to continue to scroll down.
	
	Note: Some features shown are not fully implemented. Others require web access.

Task 7: Place an FTTN circuit in standby.

Step	Action
1.	 <p>From the Main Menu, press the down arrow key three times to highlight “Control/Operations.” item and</p>
2.	<p>Press the right arrow key, ►, to advance to the “Control/Operations” menu.</p>
3.	 <p>Press the down arrow, ▼, three times to highlight “FTTN Circuit State”</p>
4.	<p>Press the right arrow key, ►, to advance to the “FTTN Circuit State” menu.</p>
	 <p>The “FTTN Circuit State” menu displays circuits and corresponding output currents.</p>
5.	<p>Press the right arrow key, ►, to select a circuit to place in standby.</p>
6.	 <p>Press the square accept key, ■, to put the selected circuit into standby.</p>
	 <p>The “FTTN Circuit State” screen shows the circuit in standby.</p>

Task 8: Adjust FTTN alarm thresholds.

The QS941 Controller allows you to adjust alarm thresholds to eliminate spurious alarms. Threshold adjustment is found under the Configuration option of the main menu.

Step	Action
1.	 Press the down arrow key, ▼, three times to highlight Configuration.
2.	Press the right arrow key, ►, to advance to the “Configuration” menu.
3.	 Press the down arrow key, ▼, to highlight “FTTN”.
4.	Press the right arrow key, ►, to advance to the “FTTN Configuration” menu.
	 The FTTN Configuration Screen.
5.	Press the down arrow key, ▼, to highlight “Load Drop”.
6.	Press the right arrow key, ►, to advance to the “Load Drop threshold adjust ” menu.
7.	 Press the right, ►, and left, ◀, arrow keys to move the cursor under the digit you would like to adjust.
8.	Press the up, ▲, and down, ▼, arrow keys to adjust to the desired value
9.	Press the square accept key, ■, to accept the new setting.

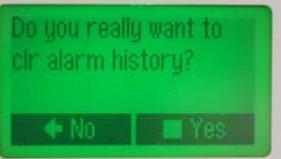
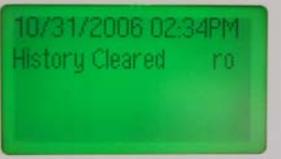
Task 9: Uninstall equipment to retire an alarm after physically reconfiguring the system.

The QS941 Controller alarms the loss of communication to a unit.

Step	Action
1.	Pull an unassigned unit out of the shelf to cause the alarm. After a few seconds delay the display and the LED above the display will turn amber.
2.	Press the Back arrow, ◀, from the default screen to view alarms.
	 <p data-bbox="727 590 946 625">Alarm page detail.</p>
3.	Press the Back arrow, ◀, to return to the default screen.
4.	Press the square button, ■, to go to the main menu.
5.	Press the down arrow key, ▼, three times to highlight “Control/Operations.”
6.	Press the right arrow, ▶, to advance to the “Control/Operations” menu.
7.	 <p data-bbox="727 1182 1365 1251">Press the down arrow key, ▼, three times to highlight “Uninstall Equipment.”</p>
8.	Press the right arrow, ▶, to advance to the “Uninstall Equipment” screen.
9.	 <p data-bbox="727 1472 1442 1541">Press the square accept key, ■, to accept the new equipment configuration.</p>

Task 10: Clear History

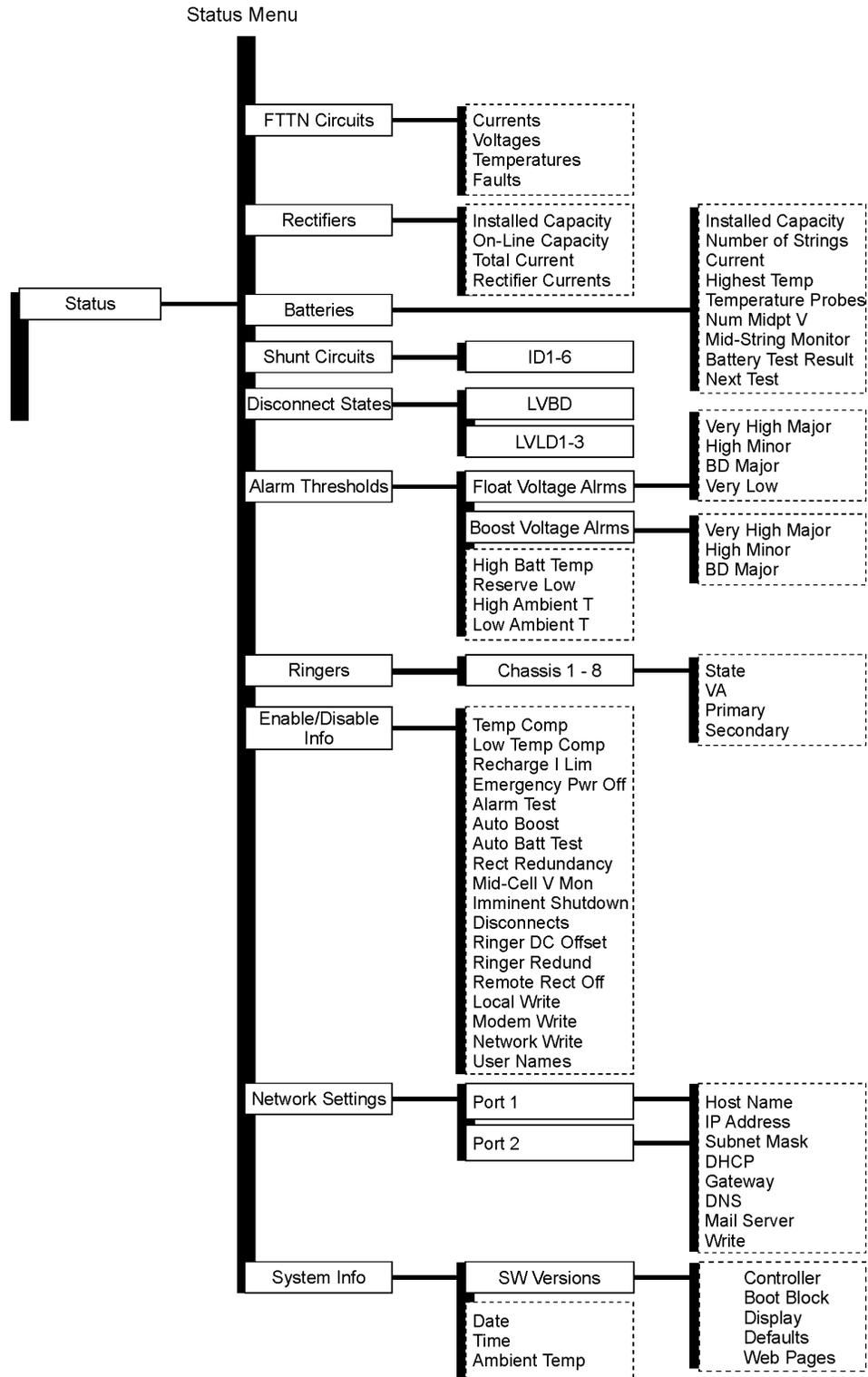
All the alarms generated during this procedure were stored in the alarm history. Before leaving the system clear these alarms.

Step	Action	
1.	Press the square key, ■, to access the “Control/Operations” menu. (Repeat steps 4, 5, and 6 of Task 9 if a review is needed.)	
2.		Press the down arrow key, ▼, five times to highlight “Clear History.”
3.	Press the right arrow, ►, to advance to the “Clear History” menu.	
4.		Press the right arrow, ►, to advance to the “Clr Alarm History” screen.
5.		Press the square key to clear alarm history, ■.
6.		Observe the confirmation screen.

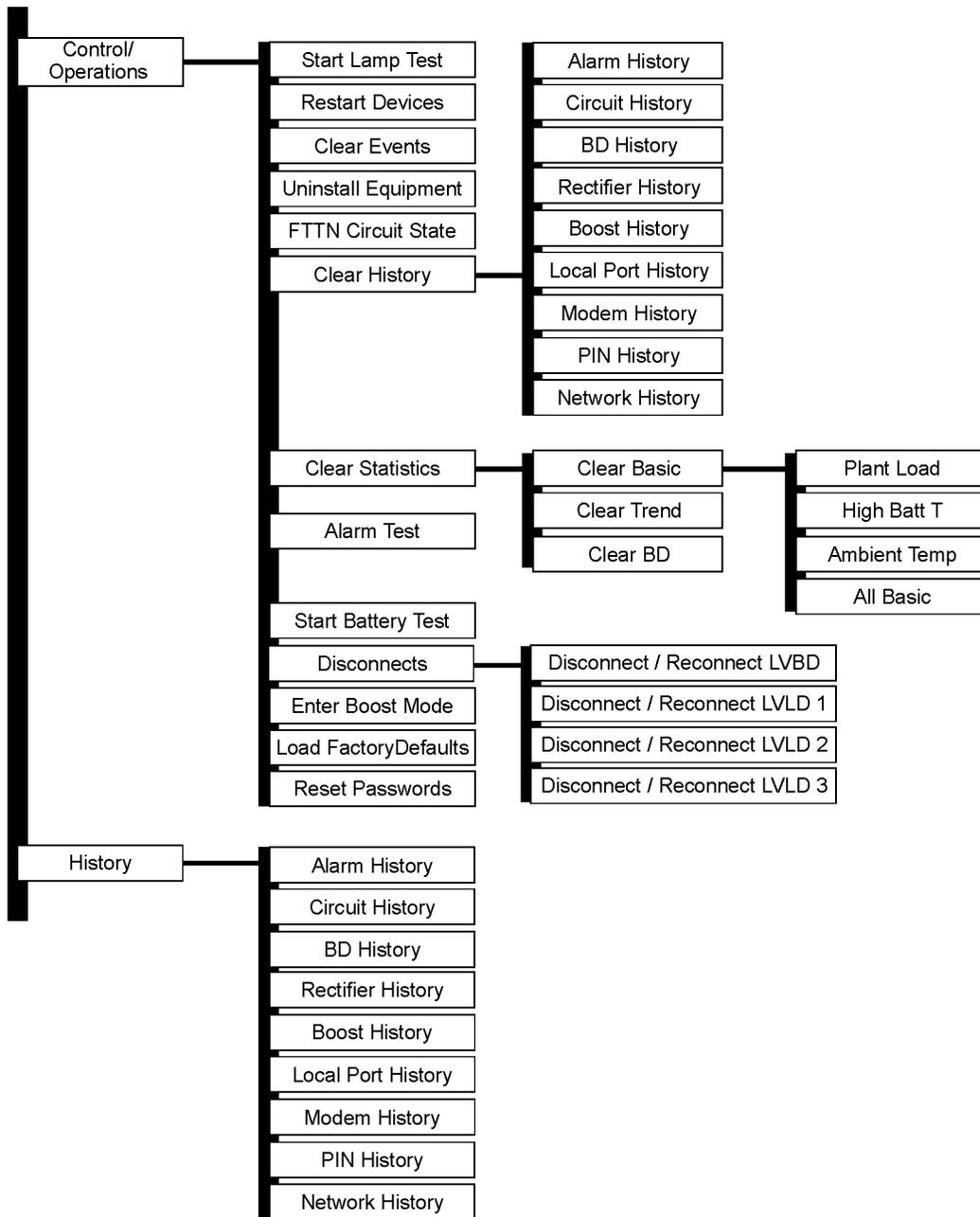
Task 11: Set time and date.

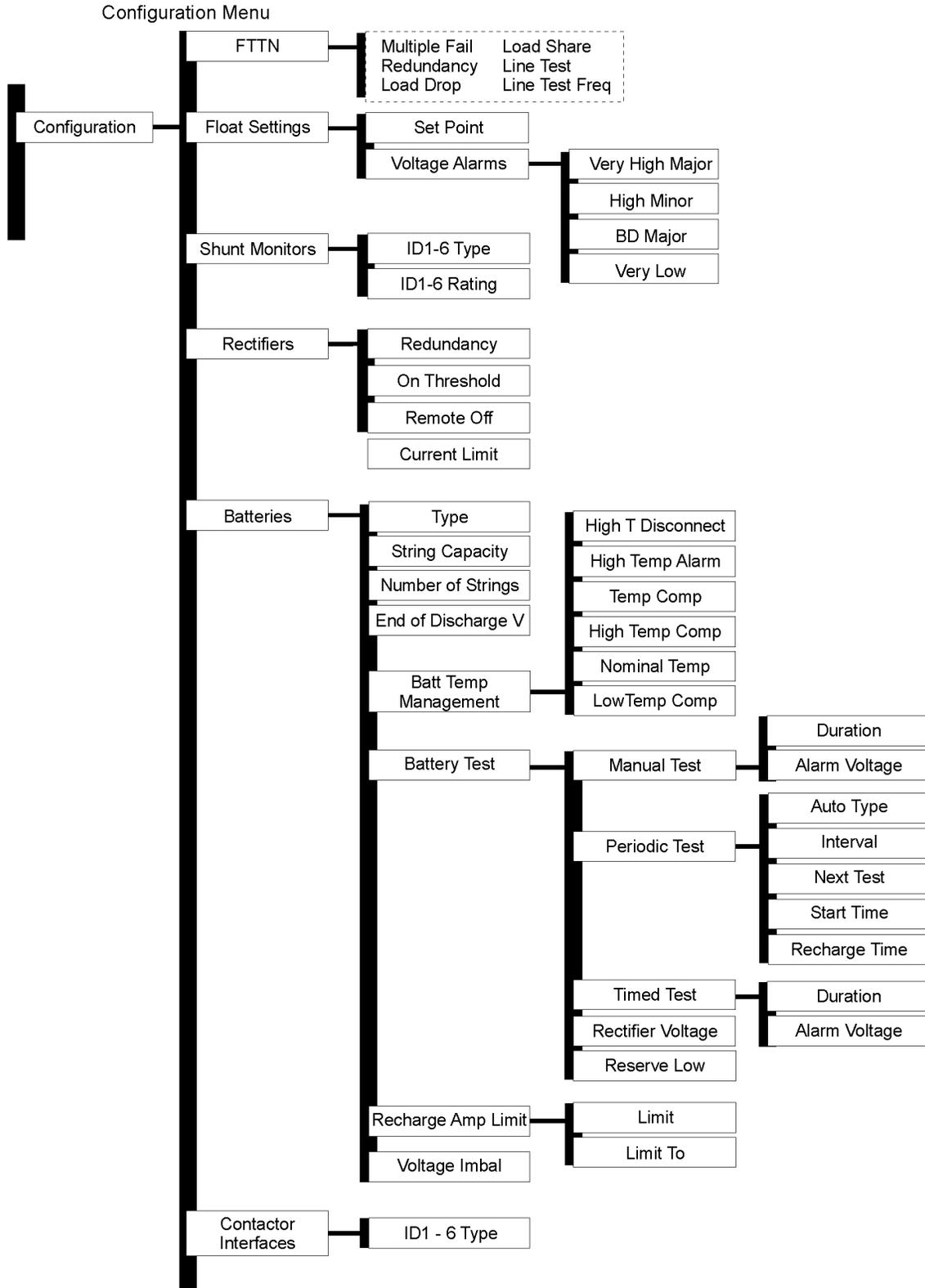
Step	Action
1.	Press the square key, ■, to access the “Configuration” menu.
2.	 Press the right arrow, ►, to advance to the “Configuration” menu.
3.	 Press the down arrow key, ▼, 10 times to highlight “System Settings.”
4.	Press the right arrow, ►, to advance to the “System Settings” Screen
5.	 Press the down arrow key, ▼, to highlight “Date.”
6.	Press the right arrow, ►, to advance to the “Date” Screen
7.	 Press the down arrow key, ▼, to highlight the current system settings for Date.
8.	Press the right arrow, ►, to advance to the “Edit Date” Screen
	 Press the right arrow, ►, to move the cursor under the item you want to edit.
9.	Press the up, ▲, and down, ▼, arrow keys to adjust the date.
10.	Press the Square key, ■, to save.
11.	Set Time in a similar manner.

Appendix A: Menu Tree for Other Commands



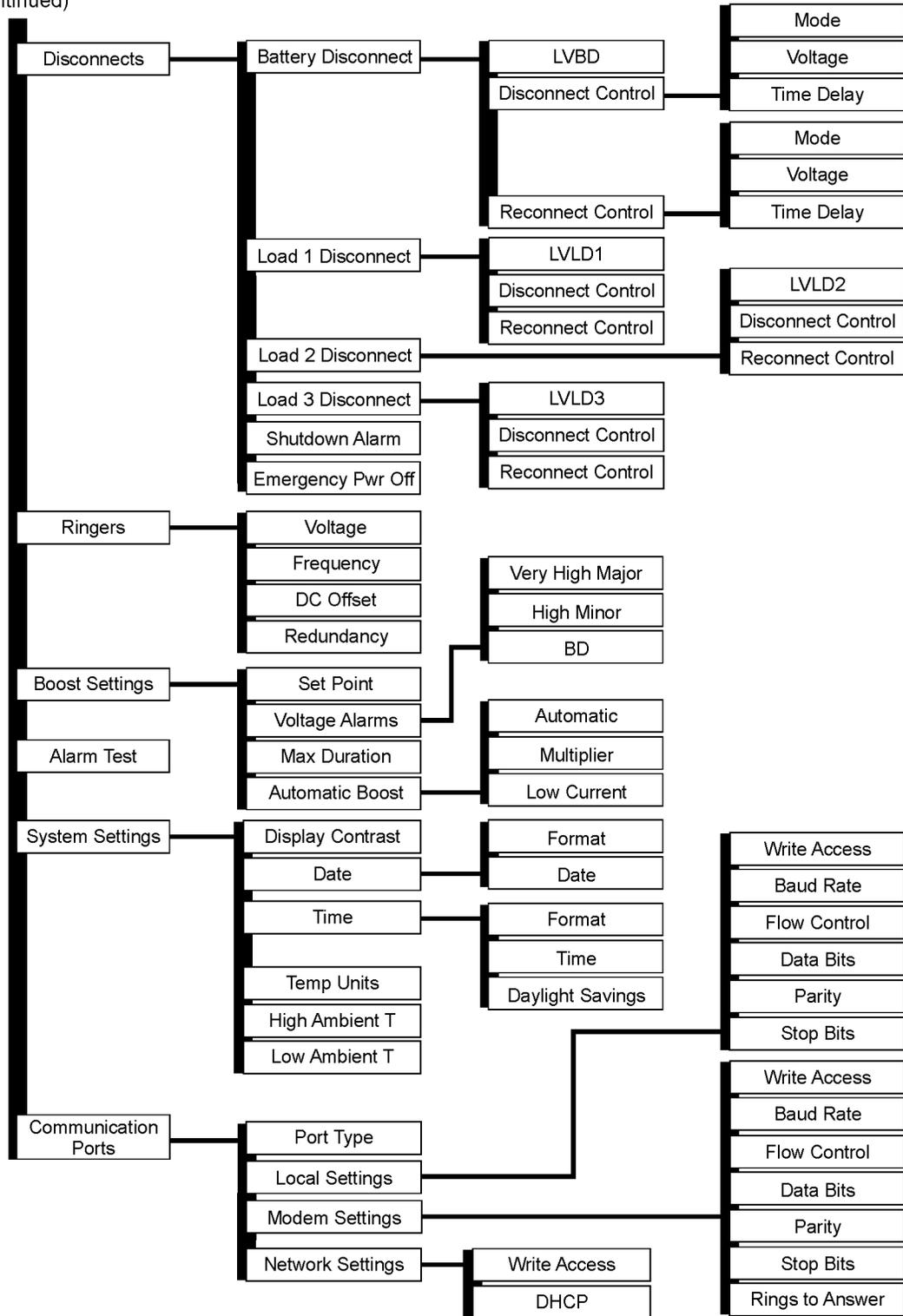
Control / Operation
and
History Menus





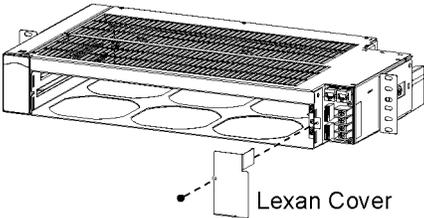
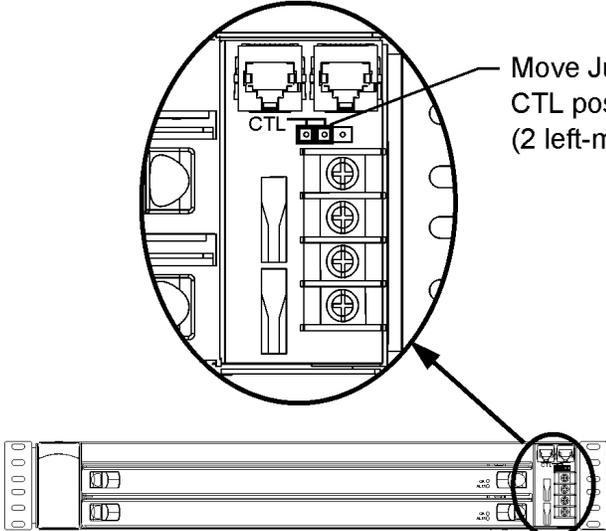
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Next Page

Configuration Menu
(continued)



Appendix B: Hardware Installation for QS941 Controller

To connect CPS2300U shelves to an IP Drop, follow these steps to install QS941A Ethernet module. If you installed a Bay, the QS941Controller may already be installed. If the controller is installed, skip to step 3.

Step	Action
1.	<p>Remove the cover from the right hand end of the fan shelf that will house the controller.</p>  <p>The diagram shows a perspective view of a fan shelf. A Lexan cover is shown being lifted away from the right-hand end of the shelf. The cover is labeled 'Lexan Cover'.</p>
2.	<p>Move the controller jumper on the selected fan shelf into the leftmost position.</p>  <p>The diagram shows a top-down view of the fan shelf's internal components. A circular callout highlights the controller jumper area. The jumper is being moved to the 'CTL' position, which is the leftmost position. The text 'Move Jumper to CTL position (2 left-most pins)' is shown with an arrow pointing to the CTL position. The fan shelf is labeled 'Fan Shelf'.</p>
3.	<p>Replace the cover over the right hand end of the shelf.</p>

4. Remove the faceplate on the left end of the fan shelf:

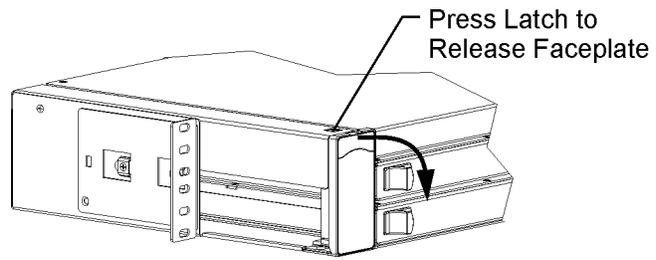


Figure 8-5: Preparing a Fan Shelf for a CPS Controller

5. Install the controller into the fan shelf:

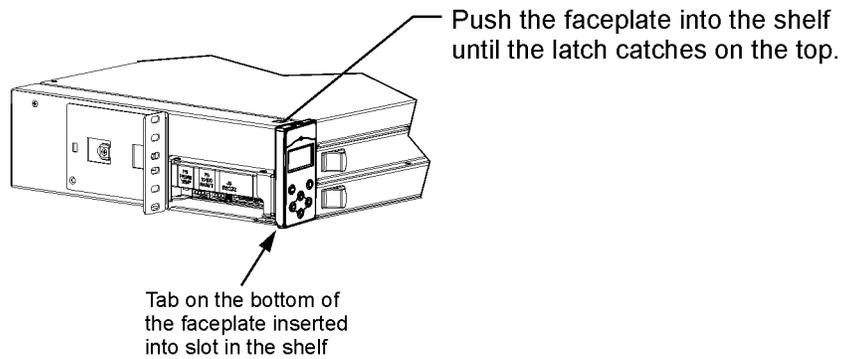
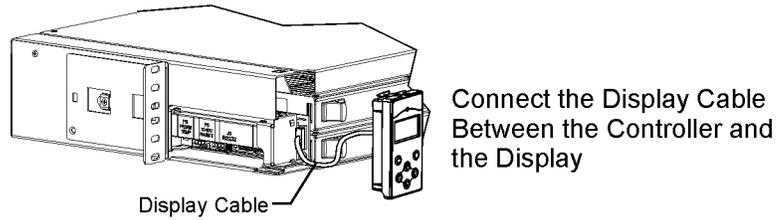
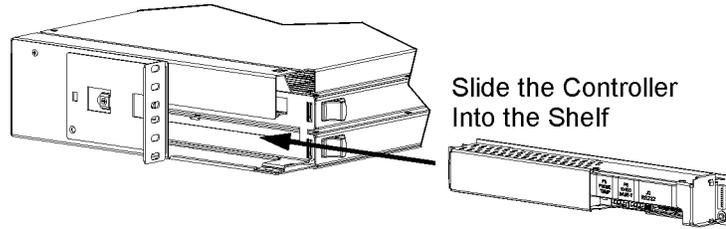
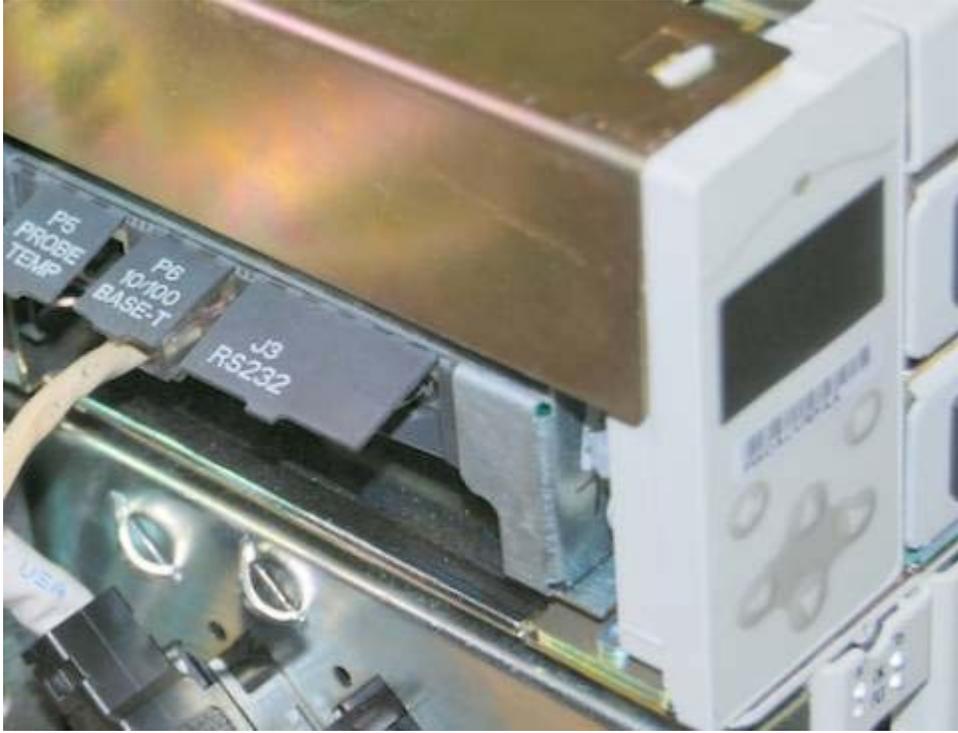


Figure 8-6: Installing the Controller

<p>6.</p>	<p>Attach signal wiring to the controller at connector P6. The Ethernet connection to the local network is made through the P6 RJ45 connector. Of the two RJ45s on the left side of the controller, P6 is the one more toward the front labeled: P6 10/100 Base-T. Plug the local network cable into P6. As shown here:</p> 
<p>7.</p>	<p>To check the network connection , use the controller display to determine what IP address has been assigned to the QS941 controller. Press the square key, ■, on the upper right hand corner of the keypad to display the menu.</p>
<p>8.</p>	<p>Press the down arrow key, ▼, 2 times to scroll down to the “Status” item on the menu.</p>
<p>9.</p>	<p>Press the right arrow, ►, to advance to the “Status” menu.</p>
<p>10.</p>	<p>Press the down arrow key, ▼, 8 times to scroll down to the “Network Settings” item and select by pressing the right arrow key.</p>
<p>11.</p>	<p>Press the right arrow, ►, to advance to the “Network Settings” menu.</p>
<p>12.</p>	<p>Press the right arrow, ►, to select Port 1. The J6 connector is Port 1.</p>
<p>13.</p>	<p>Read and record the network address for Port 1.</p>
	<p>When an IP address is listed connection to the server is confirmed.</p>

Appendix C: Alarm Reference Table

This Alarm Table shows how FTTN Alarms are categorized by the QS941 Controller. Details of non-FTTN Alarms can be found in the Plant Level product manuals. Many alarms are best processed at the converter shelf alarm card and converter card level.

Alarm Display	What it means	QS941		Alarm Card		Converter Card		Human Response
		LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
Circuit Fail	Short + to -	Yellow	Min	Yellow	Min	Green	Flashing Yellow	Make sure each converter has an independent isolated send and return path.
Circuit Fail	Short to Ground	Yellow	Min	Yellow	Min	Flashing Red	Flashing Red	Make sure each converter has an independent isolated send and return path.
Communication Fail	1 Card Removed	Yellow	Min	Yellow	Min	Green	Off	Check to see that all cards are seated. Replace non-functioning cards.
Communication Fail	2 Cards Removed	Red	Maj					Check to see that all cards are seated. Replace non-functioning cards.
Communication Fail	Communication Cable Removed	Red	Maj	Flashing Red		Green	Off	Check communication path from alarm cards to QS941 controller. If no controller is present, set alarm card rotary switch to position 0 for contact closures

Alarm Display	What it means	QS941		Alarm Card		Converter Card		Human Response
		LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
								only communication.
Communication Fail	Alarm Card Removed	Red	Maj			Green	Flashing Red	Replace Alarm card.
None	Standby	Green		Green			Yellow	Remove unit from standby if desired using QS941 or Ethernet interface
Circuit Fail	Open Fuse	Yellow	Min	Yellow	Min	Green	Flashing Yellow	Replace unit. Note: Restoring service to one line will interrupt service to the other line served by that card.
Circuit Fail	Under Voltage	Yellow	Min	Yellow	Min		Flashing Yellow	Replace unit. Note: Restoring service to one line will interrupt service to the other line served by that card.
Fan Fail	1 Fan Tray Failed	Yellow	Min	Yellow	Min	Green	Off	Replace fan tray.
Fan Fail	1 of 6 fans Failed on one Fan Tray	Yellow	Min	Yellow	Min	Green	Off	Replace fan tray.

Alarm Display	What it means	QS941		Alarm Card		Converter Card		Human Response
		LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
Fan Fail	2 Fan Trays Failed	Red	Maj	Red	Maj	Green	Off	Replace fan trays.
Input Power	A1-8 Power Fail	Yellow	Min	A Red	Min	Green	Off	Reconnect DC input power flowing to the A1-8 input terminal.
Input Power	B1-8 Power Fail	Yellow	Min	B Red	Min	Green	Off	Reconnect DC input power flowing to the B1-8 input terminal.
Input Power	A9-16 Power Fail	Yellow	Min	A Red	Min	Green	Off	Reconnect DC input power flowing to the A9-16 input terminal.
Input Power	B9-16 Power Fail	Yellow	Min	B Red	Min	Green	Off	Reconnect DC input power flowing to the B9-16 input terminal.
Input Power Mul Circuit Fail	A1-8 & B1-8 Power Fail	Red	Maj	A Red B Red	Maj	Green	Off	Reconnect DC input power flowing to the A1-8 input terminal and Reconnect DC input power flowing to the B1-8 input terminal.
Input Power Mul Circuit Fail	A9-16 & B9-16 Power Fail	Red	Maj	A Red B Red	Maj	Green	Off	Reconnect DC input power flowing to the A9-16 input terminal. Reconnect DC input power flowing to the B9-16 input terminal.

Alarm Display	What it means	QS941		Alarm Card		Converter Card		Human Response
		LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
Load Drop	Load Drop	Yellow	Min	A, B & OK Green		Green	Off	Check the integrity of the circuits going to the load. Or Adjust load drop threshold to 0 to disable this feature.
Load Share	As set of circuits assigned to one remote destination are not sharing current as would be expected .	Yellow	Min	A, B & OK Green		Green	Off	Check the integrity of the circuits going to the load. Or Adjust load share threshold to disable this feature.
Line Test	OK, Fail or Aborted			A, B & OK Green		Green	Off	Estimated line resistance has increased since last measurement.
Loss Of Redundancy		Yellow	Min	A, B & OK Green		Green	Off	The loss of n additional circuits will cause customers to lose service. Check redundancy threshold in the configuration.

Appendix D: Office Alarm Connector Pinouts

The office alarm connector is labeled J1. It provides access to the output of the alarm relays as indicated by the column labeled “QS941: Relay State.”

Description	Pin	Signal ¹	Wire Color		Pin 2	Pin 1
			Ribbon Cable	Discrete Wire		
Power Major Alarm Relay - PMJ	1	O	BR	R-W		
	2	R	R	R		
	3	C	O	R-BK		
Power Minor Alarm Relay - PMN	4	O	Y	O-W		
	5	R	G	O		
	6	C	BL	O-BK		
User Configurable Alarm Relay 1 - ALM1 (Default - BD)	7	O	V	BR-W		
	8	R	S	BR		
	9	C	W	BR-BK		
User Configurable Alarm Relay 2 - ALM2 (Default - ACF)	10	O	BK	BL-W		
	11	R	BR	BL		
	12	C	R	BL-BK		
User Configurable Alarm Relay 3 ALM3 (Default - RFA)	13	O	O	G-W		
	14	R	Y	G		
	15	C	G	G-BK		
User Configurable Alarm Relay 4 ALM4 (Default - Battery Test in Progress)	16	O	BL	S-W		
	17	R	V	S		
	18	C	S	S-BK		
Plant Battery Test Input	19	PBT IN	W	Y-W		
Protected Analog Ground	20	AGND	BK	Y		
Emergency Power Off	21	EPO	BR	Y-BK		
Protected Analog Ground	22	AGND	R	V-W		
Auxiliary Power Major Input	23	AUX PMJ	O	V		
Protected Analog Ground	24	AGND	Y	V-BK		

- Signal designations of O, C and R represent Form-C alarm contacts and signify the following:
 O - Open to R when alarm condition exists
 C - Closed to R when alarm condition exists
 R - Alarm Return

- Office Alarm Cables
 Discrete Wire 25 ft: 848748558
 Discrete Wire 150 ft: 848748566
 Ribbon Cable: 848719464

Office Alarm Connector

Revision History

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Added Appendix D Alarm Connector Pinouts

Issue 2: January 2008

Rebranding

Issue 1: January 2007

