

# Galaxy Rectifier Shelf Field Replacement

Model PWRSYS-RFK-A203

Installation Guide

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### Installation Guide, Part Number 139691-1

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# Chapter 1: Introduction

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## **!** ALERT

**ALERT!** Only qualified technicians may install and maintain this product.

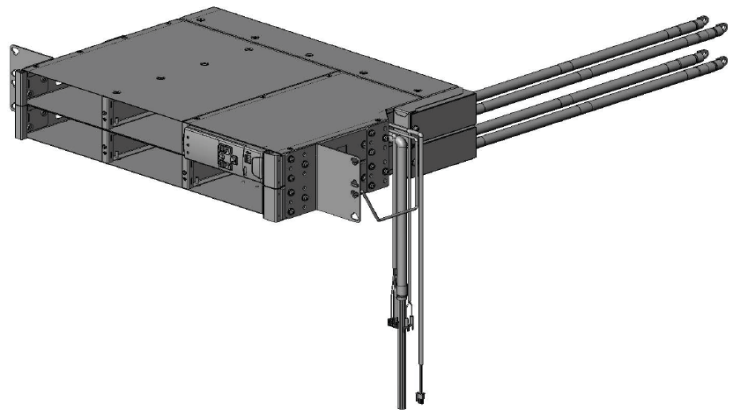
These instructions presume you have verified that the Telect equipment being installed is compatible with the rest of the system, including power, ground, circuit protection, signal characteristics, equipment from other vendors, and local codes or ordinances.

## 1.1 Installation Considerations

### 1.1.1 Unpacking the Kit

Make sure you have the following items in your replacement kit:

- 1 assembled rectifier shelf kit
- 1 alarm block assembly
- 8 12-24 mounting screws
- 1 Relay assembly
- 2 1/4-20; carriage bolts, KEPS nuts, washers
- 2 self-tapping screws
- 1 Resistor Assembly kit for 24V LVD
- 1 Black LVD wire



**Figure 1 - Assembled Kit**

### 1.1.2 Tools and Equipment Required

- #2 Phillips bit screwdriver regular shaft
- #2 Phillips bit screwdriver long shaft
- 7/16 nut driver or ratchet
- 1/8" tip flat blade screwdriver
- right-angle Phillips screwdriver
- 1/4" tip flat blade screwdriver
- drill with 5/16 hex bit to secure self-tapping screws

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# Chapter 2: Removing the Old Equipment

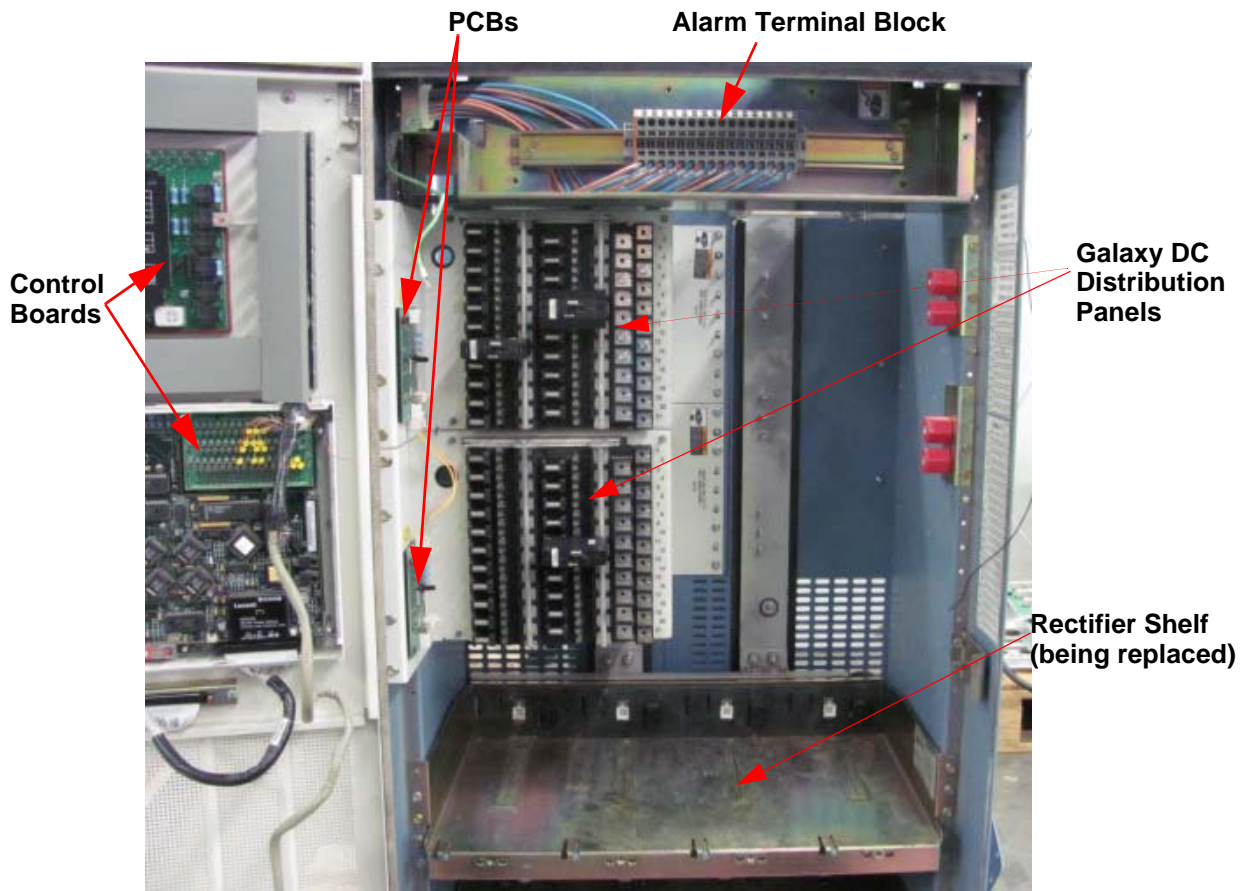


Figure 2 - Inside of Cabinet

## WARNING

**WARNING!** The power to the shelves is live. Turn OFF all AC electrical power feeding the power plant before you start the procedure.

## WARNING

**WARNING!** Make sure to perform your normal lock-out/tag-out operation before beginning this procedure.

## ALERT

**ALERT!** Depending on your site set-up, locate the feeding AC circuit breaker and turn it OFF. Follow your operating company MOPs and standard requirements for working power systems.





## WARNING

**WARNING!** Use insulated tools. DC parts are live.

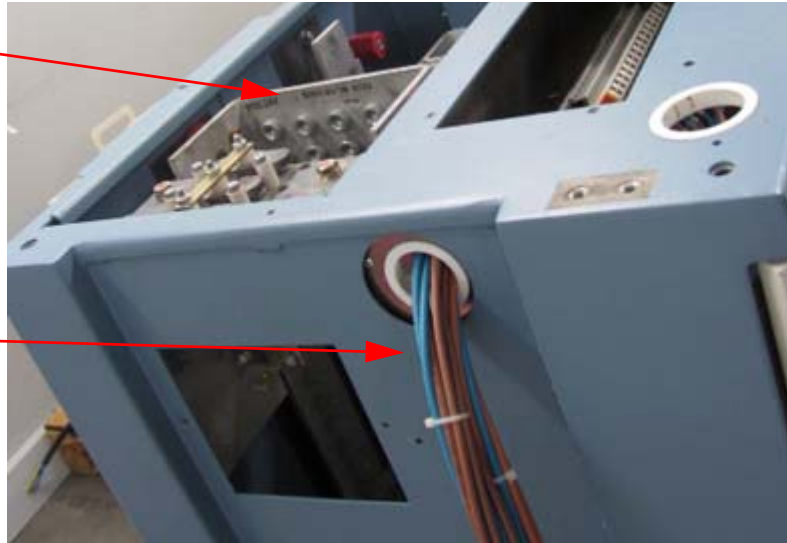
### 2.1 Removing the Rectifiers, Boards, and Cables

*Procedure steps:*

1. Open and secure the front door of the enclosure.

**DC Wires  
at LVD**

**AC Wire  
Bundle**



**Figure 3 - Access Panels Removed**

2. Inside the enclosure, loosen and remove the rectifier's AC wires from the terminal board. To loosen the wires, insert a small, flat screwdriver into the holes at the top and pull the corresponding wire straight out. (See Figures 3 & 4.)
3. Pull the wire bundle out from the side of the enclosure and discard.



**Figure 4 - Removing Rectifier's AC Wires**

4. On the inside of the door, disconnect the Cat5 cable from the top control board. See Figure 5.
5. Unscrew and discard the five nuts.

- Remove the board from the door and discard it. Leave the cable troughs.

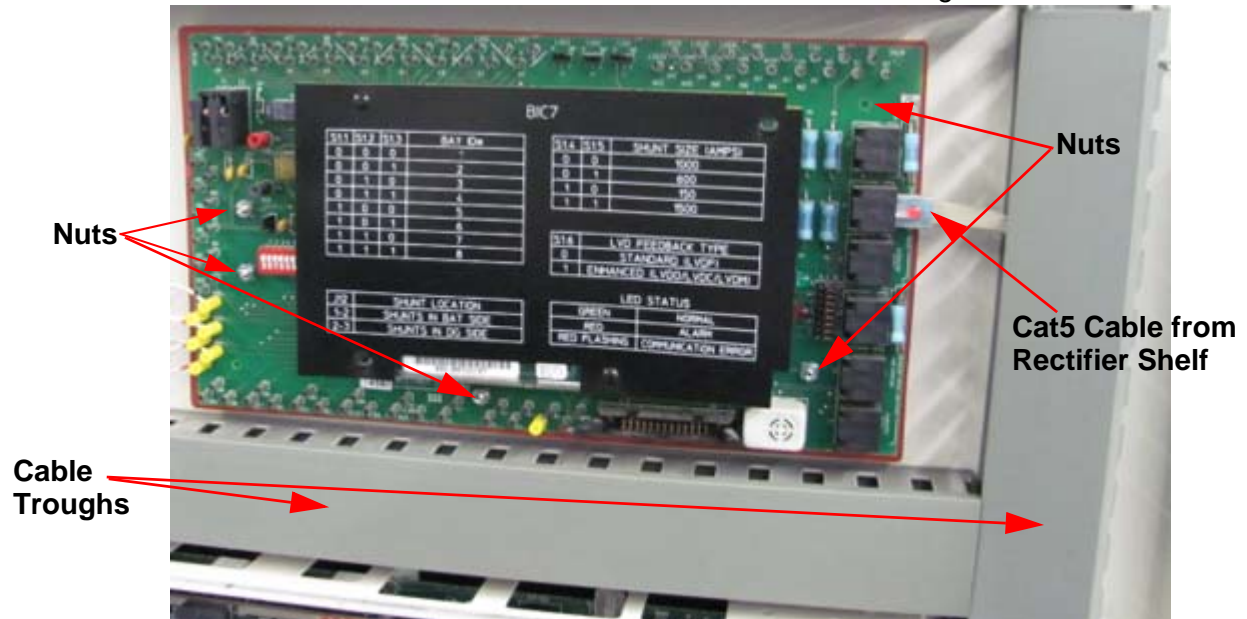


Figure 5 - Top Board

- Pull off and discard the red bracket adapter.

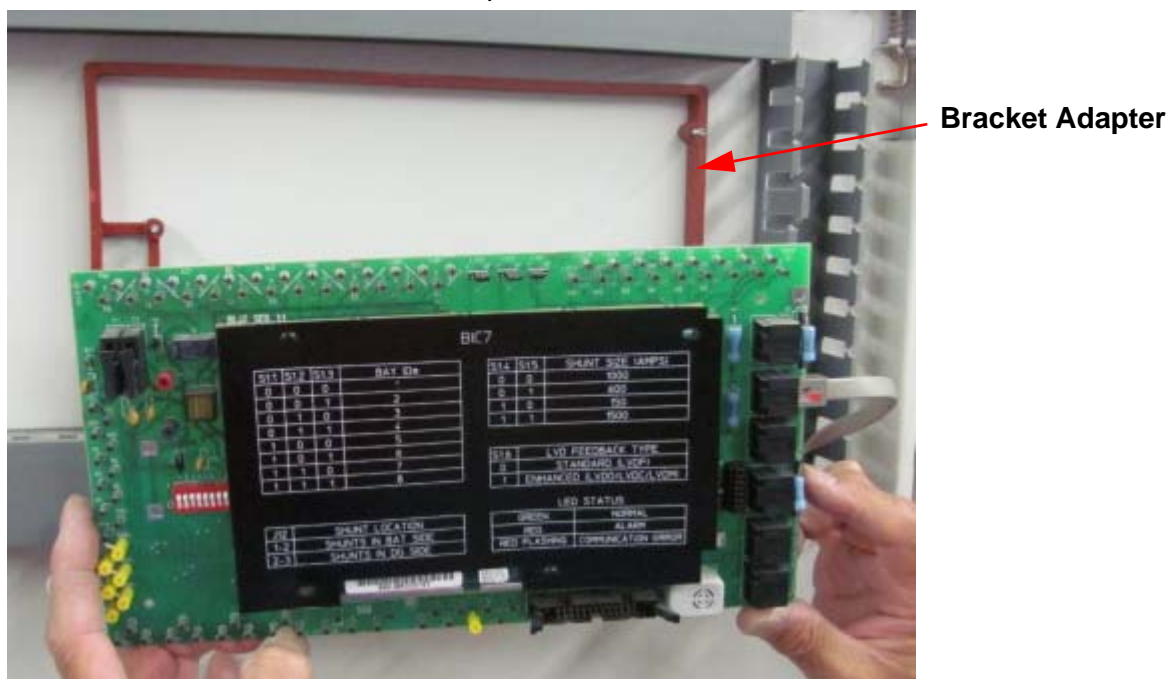


Figure 6 - Control Board and Bracket Adapter

8. Open the control door over the bottom board. (Figure 7.)
9. Unscrew the six nuts holding the bottom control board case and the two screws holding the wire harness bracket to the door. (See Figure 9.) Remove both case and harness bracket together. See Figures 8 and 9.



Figure 7 - Door



Figure 8 - Bottom Board

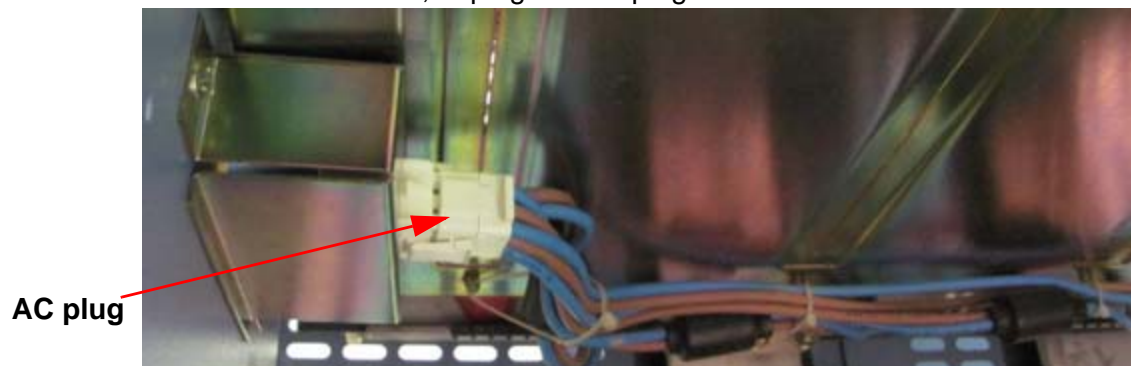


**Figure 9 - Bottom Board Removed from Door**

10. Remove the rectifier modules in accordance with your operating company's instructions. Store them in a safe location.
11. Disconnect the rectifier DZ cabling from the buss at the back of the enclosure. Keep the hardware for use in the installation procedure.
12. Remove the door in accordance with your operating company procedures. Set the door aside for reinstallation.

## **2.2 Removing the Top Rectifier Shelf**

1. Underneath the rectifier shelf, disconnect the daisy-chained Cat5 cables from both sides.
2. Underneath the rectifier shelf, unplug the AC plug.



**Figure 10 - Underneath Rectifier Shelf**

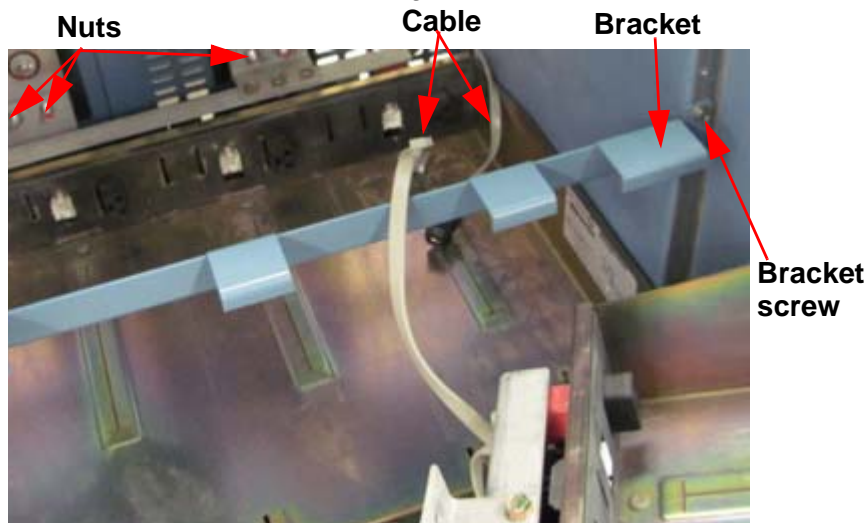


3. Using a 5/16 nut driver, remove the three screws from the side brackets on each side. Save four of the screws for mounting the new rectifier shelves. See Figure 11.
4. Using a 13-mm socket wrench, remove the four nuts from the rear brackets.
5. Pull out the shelf part way.
6. Disconnect any remaining cables from the shelf to the interior of the cabinet and remove the shelf.



**Figure 11 - Removing Screws from the Rectifier Shelf**

7. Unscrew the nuts from the shelf bracket/divider and remove the bracket. See Figure 12.



**Figure 12 - Removing the Rectifier Shelf and Divider**

## 2.3 Removing the Bottom Rectifier Shelf

1. Underneath the rectifier shelf, disconnect the daisy-chained Cat5 cables from both sides.  
You will have to lift the front edge of the shelf to unplug the cables.
2. Underneath the rectifier shelf, unplug the AC plug.

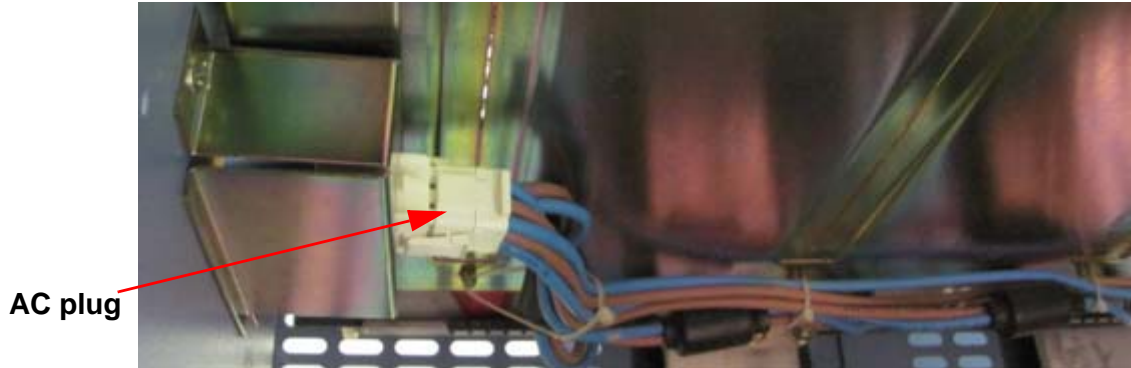


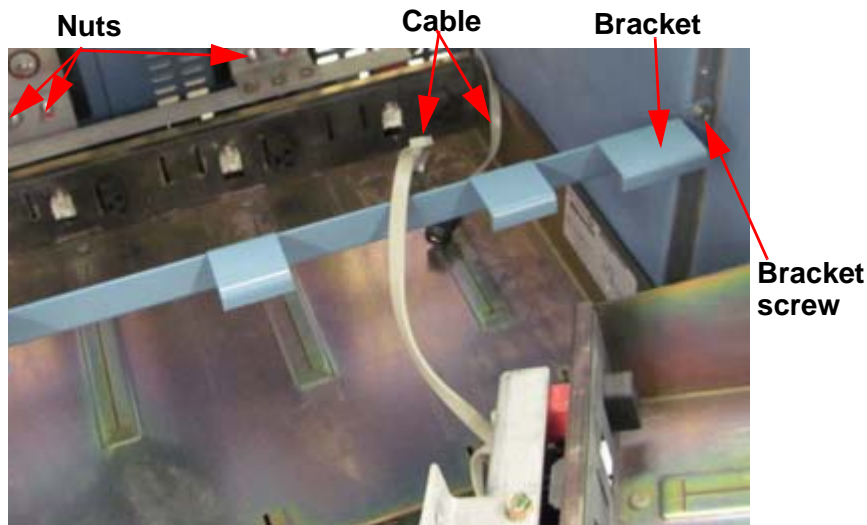
Figure 13 - Underneath Rectifier Shelf

3. Using a 5/16 nut driver, remove the three screws from the side brackets on each side. Save four of the screws for mounting the new rectifier shelves. See Figure 11.
4. Using a 13-mm socket wrench, remove the four nuts from the rear brackets.
5. Pull out the shelf part way.
6. Disconnect any remaining cables from the shelf to the interior of the cabinet and remove the shelf.



Figure 14 - Removing Screws from the Rectifier Shelf

7. Unscrew the nuts from the shelf bracket/divider and remove the bracket. See Figure 15.



**Figure 15 - Removing the Rectifier Shelf and Divider**

8. Using a small flat-tipped screwdriver, push in the fins on either side of the plug, as shown in Figure 16, and push the plug out through the hole.
9. Unscrew the two screws holding it to the wall and remove the casing, shown in Figure 10 and 16, from the left interior wall of the enclosure.
10. Cut the zip ties securing the AC harness cable bundle.
11. Remove the AC harness by pulling the rectifier cable bundle out through the hole in the outer wall. See Figure 16.



**Figure 16 - Removing the Casing and Plug**





12. Unplug the cables from the two PCBs on the left inside wall of the enclosure. See Figure 17.
13. Remove the two screws from each PCB and remove them from the distribution panels. See Figure 17.
14. To remove the distribution panels, first remove the internal hardware on the side (M8 screws with lock-washer and flatwasher) with a 13-mm socket. See Figure 18. Keep the hardware for reinstallation.

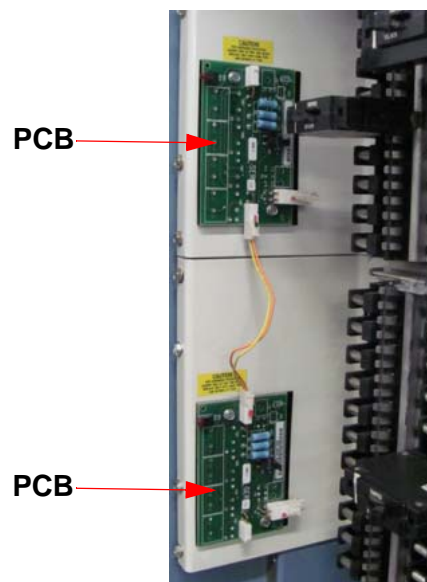


**Figure 18 - Removing Hardware from the Distribution Panel**

15. Unscrew and set aside the nuts from the back of the panels, as shown in Figure 19.



**Figure 19 - Unscrewing the Nuts from the Rear of the Distribution Panel**



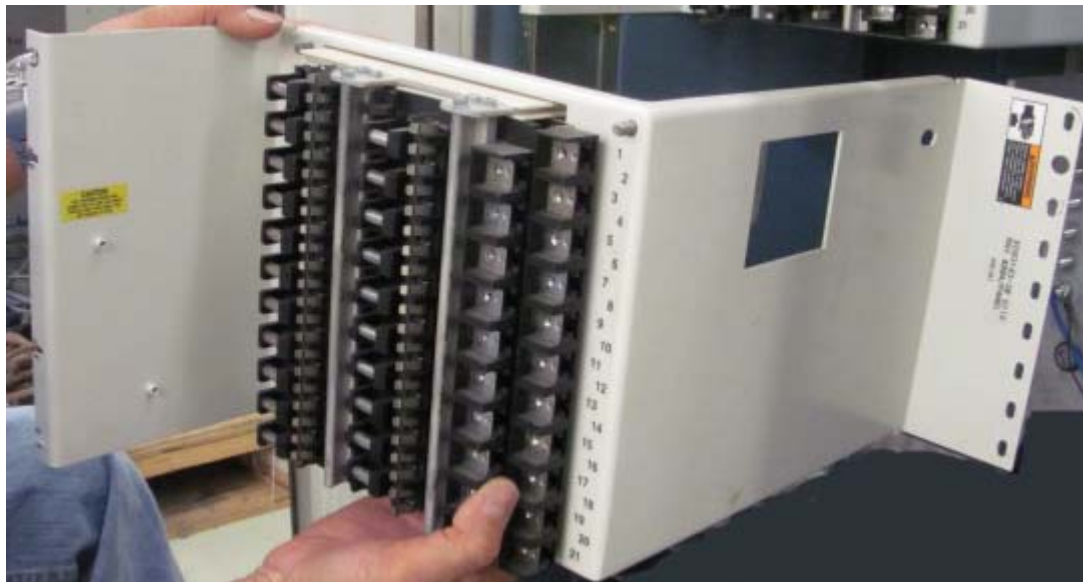
**Figure 17 - PCBs**

16. Unscrew and set aside the screws from the side of the panel(s), as shown in Figure 20.



**Figure 20 - Removing the Screws from the Side**

17. Slide the panel(s) out of the enclosure and set them aside.
18. Remove the screws holding the access panels onto the top and side of the enclosure. Keep the hardware in a safe location. (See Figure 3.)
19. Disconnect and remove the four DC control wires connected to the LVD.



**Figure 21 - Removing the Distribution Panel**

## Chapter 3: Installing the New Rectifier Shelves

**NOTE:** Due to the variety of rectifier shelves in the field, the following pictures are for illustration purposes ONLY.

### **(!) ALERT**

**ALERT!** Be aware that, when you change the assembly from +24 Vdc systems to -48 Vdc systems, the polarity for the supply and return busses will change.

The existing +24 vdc system uses the positive polarity as the supply side and the negative as the return side. When you convert this to -48 volt, the supply buss will become negative and the return buss will become positive.

The DC busses remain supply and return; in either case only the polarity is changed. Note that 24-volt batteries have to be reconnected for 48-volt operation and the battery string disconnect placed in the negative battery string wiring.

Improper connection of the polarities will cause equipment damage and can be dangerous to any persons in the area of the power plant when it is energized.

If you are not experienced in DC power plant installation and conversions do NOT attempt to convert +24 systems to -48 volt systems; seek trained and experienced help.

Before adding new equipment, make sure you change out the batteries to -48V. Use a voltmeter to check before starting the installation.

*Procedure steps:*

1. First, make sure the wires are securely connected to the resistor.

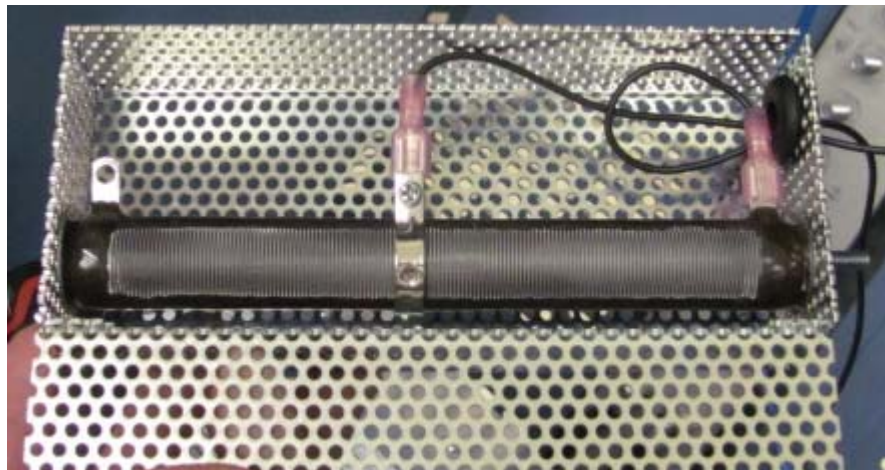
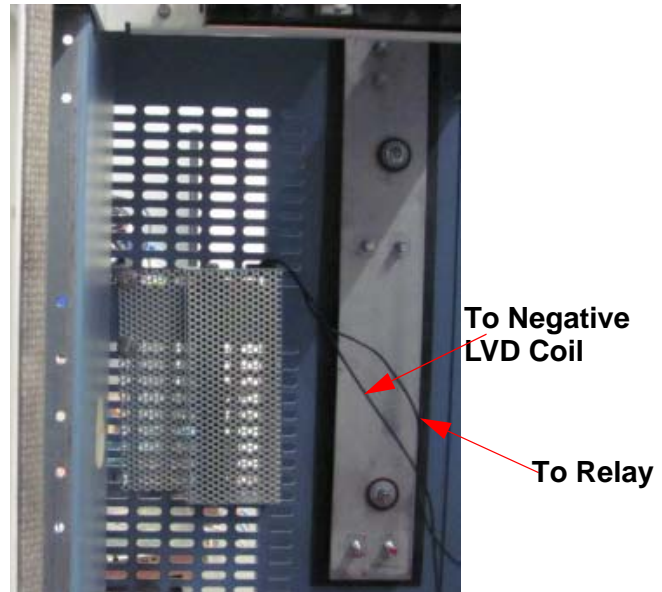


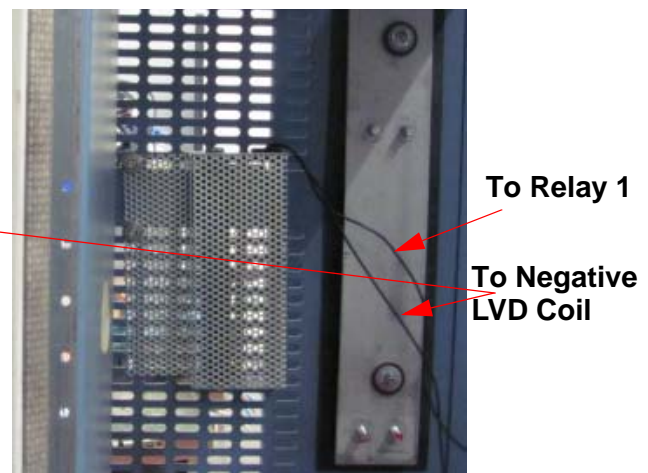
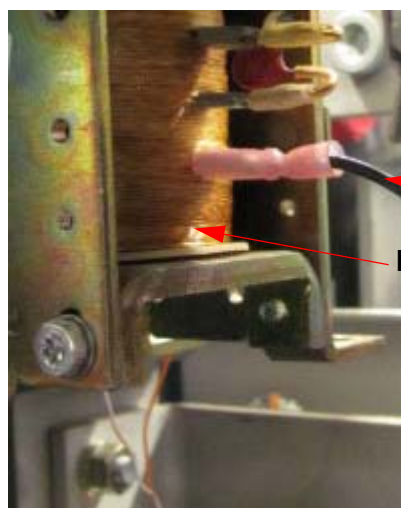
Figure 22 - Resistor Connections

2. Mount the resistor assembly onto the rear wall using two 1/4-20 carriage bolts inserted in from the back.
3. Insert the flatwasher and KEPS nut in front to secure the resistor. Have someone hold the bolt in securely from the back while you tighten the hardware.



**Figure 23 - Resistor Assembly**

4. Attach one of the two black wires, with the quick disconnect and labeled LVD COIL (-), from the resistor assembly to the negative LVD coil. See Figure 24.

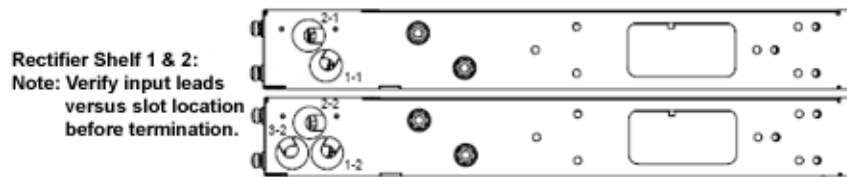


**Figure 24 - Resistor Assembly Connections**

5. Attach the second black wire (labeled R1-COM) from the resistor assembly to (COM) port 21 on relay 1.



6. Thread the rectifier stack's AC cables through the hole in the left side wall of the cabinet.
7. Lift the new rectifier assembly into the equipment mounting rails. Make sure to support the assembly until you have secured it.

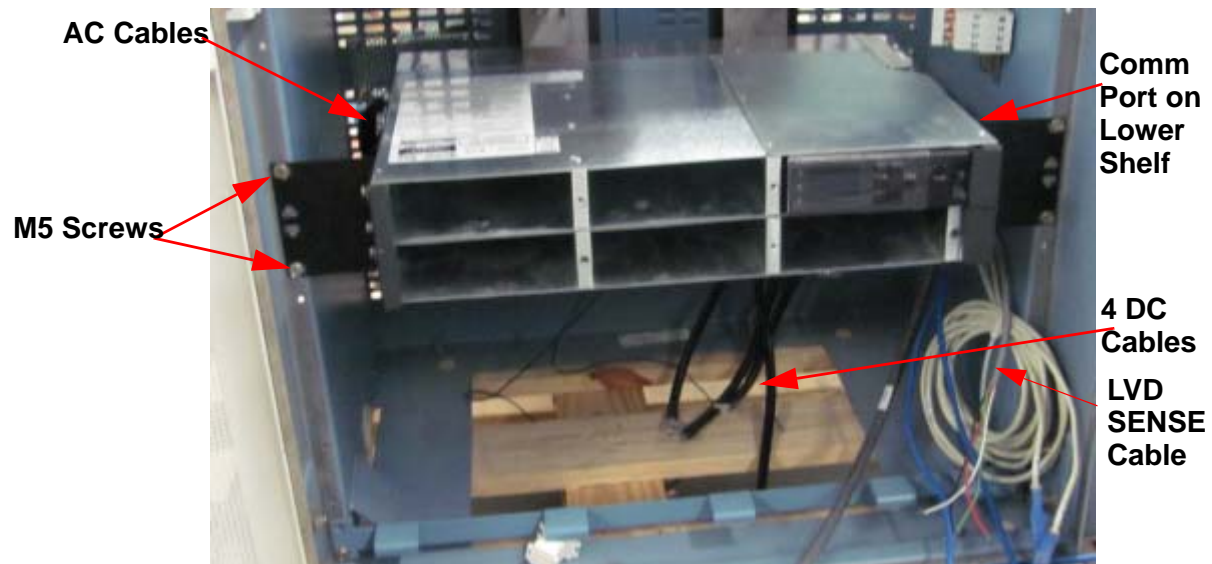


**Figure 26 - Shelf Assembly with Cables Labeled**



**Figure 25 - Threading AC Cables**

8. Secure the brackets to the rack re-using the M5 screws.



**Figure 27 - Rectifier Shelf**

9. Bring all of the cables up over the top of the rectifier shelf.
10. Look for the (-) and (+) labels on the four black DC power cables.
11. Attach the cables with (-) labels to the supply buss bar studs on the rear wall.  
  
Attach the cables with (+) labels to the return buss bar studs on the rear wall.
12. To fasten the lugs, use the flatwashers, lockwashers, and nuts previously remove in step 11 on page 7.



Figure 28 - Cables

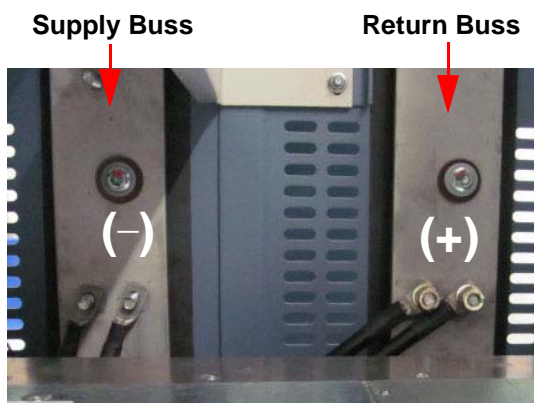


Figure 29 - DC Power Lugs

### CAUTION

**CAUTION!** Remember that the positive 24V is being converted to a negative 48V; therefore, the polarity is now **CHANGED**.

The Return is now a **POSITIVE** buss.  
The Supply is now a **NEGATIVE** buss.

Review all wiring to ensure proper location on the correct busses.

**NOTE:** The conversion is from a positive (+) 24 volt system to a negative (-) 48 volt setup. This means that the polarities will change relative to the supply and return buss. Therefore, the batteries have to be re-strapped for 48 volts.

To keep the grounding unchanged, the return and supply busses will remain return and supply as is, but the polarity of both busses will change. The return buss **MUST** be positive and the supply buss **MUST** be negative when converted to -48 volt.

13. Roll up and store the 4-ft blue cable (with RJ45) for future use.
14. Bring the blue cable with the fork lugs up to the shunt.
15. Attach the white wire with the fork lug to the left side of the shunt.
16. Attach the orange wire with the fork lug to the right side of the shunt.

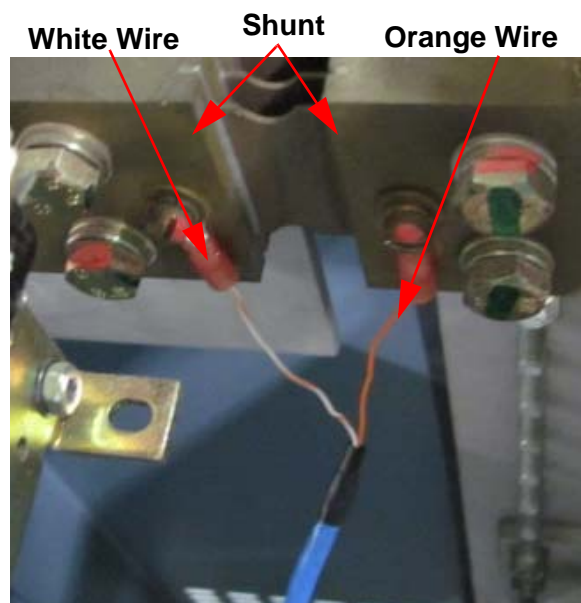


Figure 30 - Fork Lugs

17. Locate the wire labeled “LVD SENSE” coming out from the right side of the rectifier shelf assembly.



Figure 31 - LVD SENSE wires

18. Connect the four wires from the LVD sense cable to the relay assembly as shown below:
  - a. Attach the red wire to the A1 terminal.
  - b. Attach the green wire to the NC terminal (14).
  - c. Attach the white wire to the 11 terminal.
  - d. Attach the black wire to the A2 terminal.



Figure 32 - Relay 1

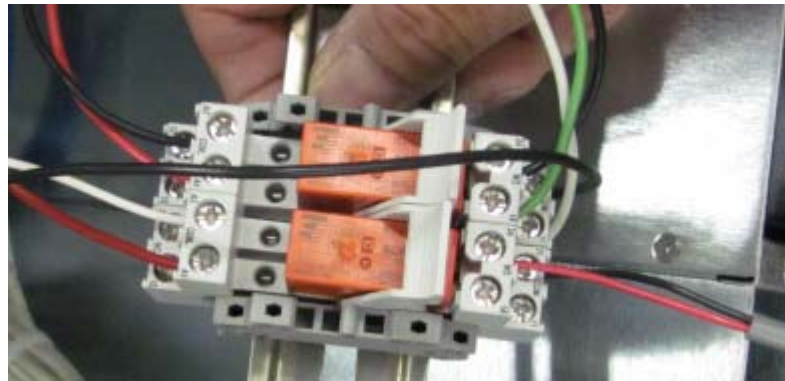


19. Find the loose, grey, 18" wire from the kit.
  - a. Attach the red cable at one end to the 24 port on Relay 2.
  - b. Attach the black cable to port 21 on Relay 2.
20. Attach the wire labeled RETURN from A1 on relay 2 (relay assembly) to the return buss on the right rear wall.
21. Locate the loose wire labeled LVD COIL (+) that came with the kit and connect it between the LVD Coil and the return buss on the right rear wall.
22. Attach the wire labeled SUPPLY from (NO) port 24 on relay 2 (relay assembly) to the supply buss on the left rear wall.



**Figure 33 - Attaching Loose Wires to Relay 2**

The completed relay assembly should now look like the one in Figure 34.



**Figure 34 - Wired Relays**

23. With all the wires attached, you can now attach the relay bracket to the right wall with the provided self-tapping screws as shown in Figure 35.



**Figure 35 - Attaching the Relays to the Wall**

24. You will only be replacing one distribution panel; hold the panel up to the top location from which you removed it.



**Figure 36 - Replacing the Distribution Panel**

25. First replace the internal hardware on the side (M8 screws with lockwasher and flatwasher) with a 13-mm socket. See Figure 37.



**Figure 37 - Securing the Hardware to the Distribution Panel**

26. Replace the nuts at the back of the panels, as shown in Figure 38.
27. Replace the screws on the side of the panel(s), as shown in Figure 39.



**Figure 38 - Screwing in the Nuts at the Rear of the Distribution Panel**



**Figure 39 - Securing the Screws on the Side**

28. Locate the daisy chain wire attached to the relay assembly.

29. Route the chain around the lower back of the breaker panel and up the left side as shown in Figure 40.

30. Attach the quick connects at the top of the panel as shown.

31. Refer to the wiring diagram in Figure 41 to verify installation.

#### Connection Points

Route up through here

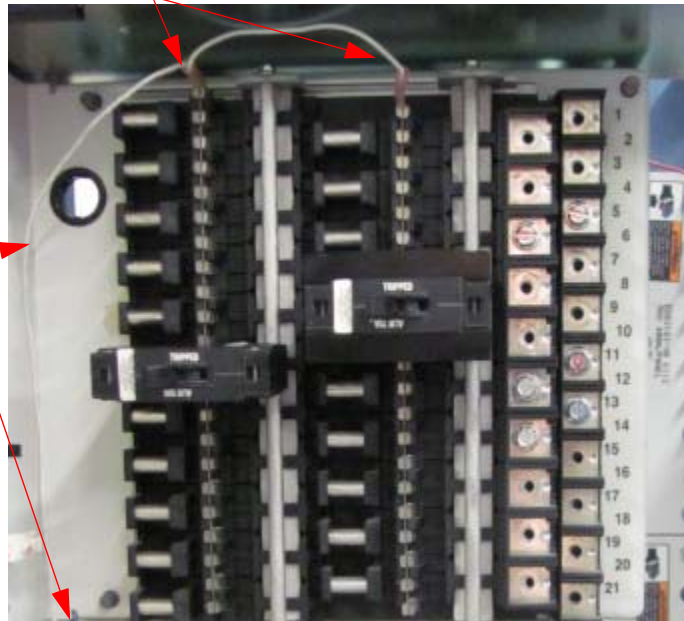


Figure 40 - Quick Connects

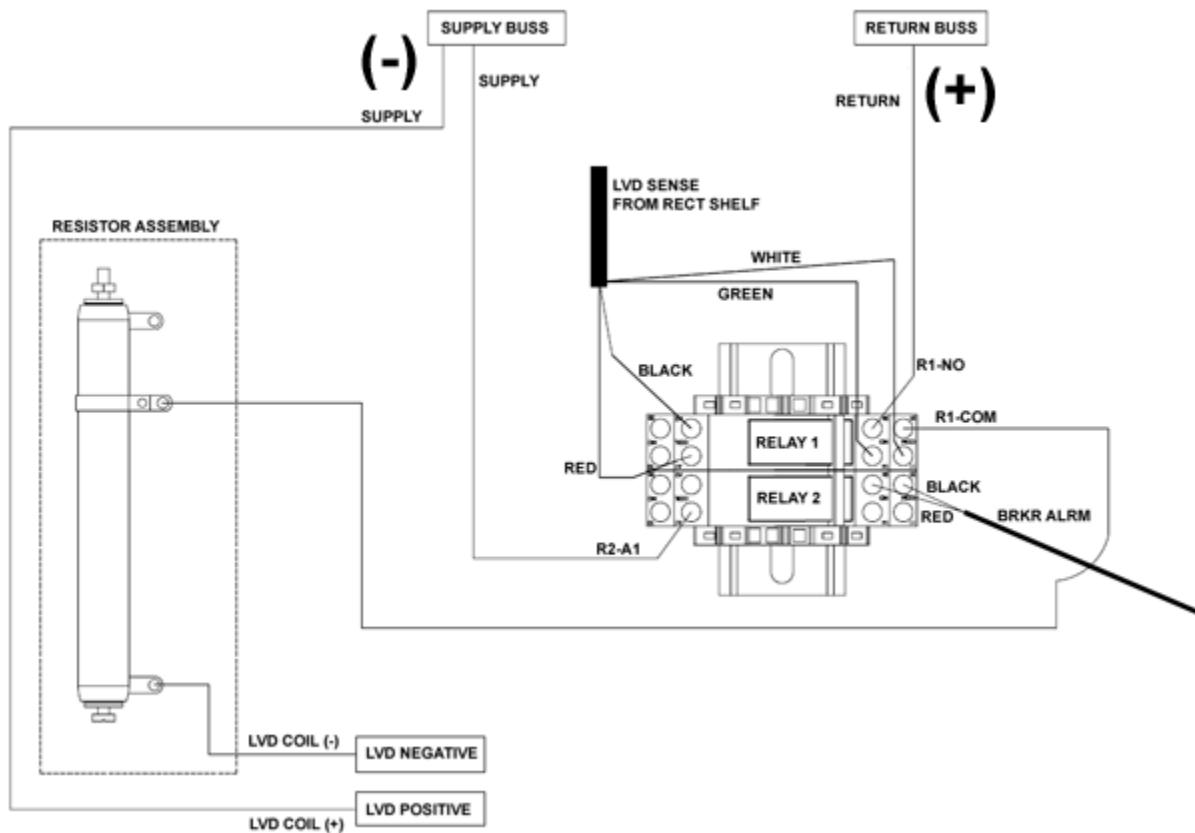


Figure 41 - Wiring Diagram for the Relay Assembly

32. Double check the correct connection of the new rectifier shelves as well as the batteries before closing any circuit breakers or powering up any rectifiers. For initial power up, close a single string of batteries to the bus, then, if all is correct, insert a single rectifier module, which should go to current limit due to the partially discharged battery being recharged. If it operated correctly and the LVD has closed, you can install the remaining rectifiers.

# Chapter 4: Installing the Alarm Block

Use the following procedure to install the alarm wires.

*Procedure steps:*

1. Connect 12-pair alarm cable from the new rectifier shelves to the left side of the alarm block — use the color guide provided.

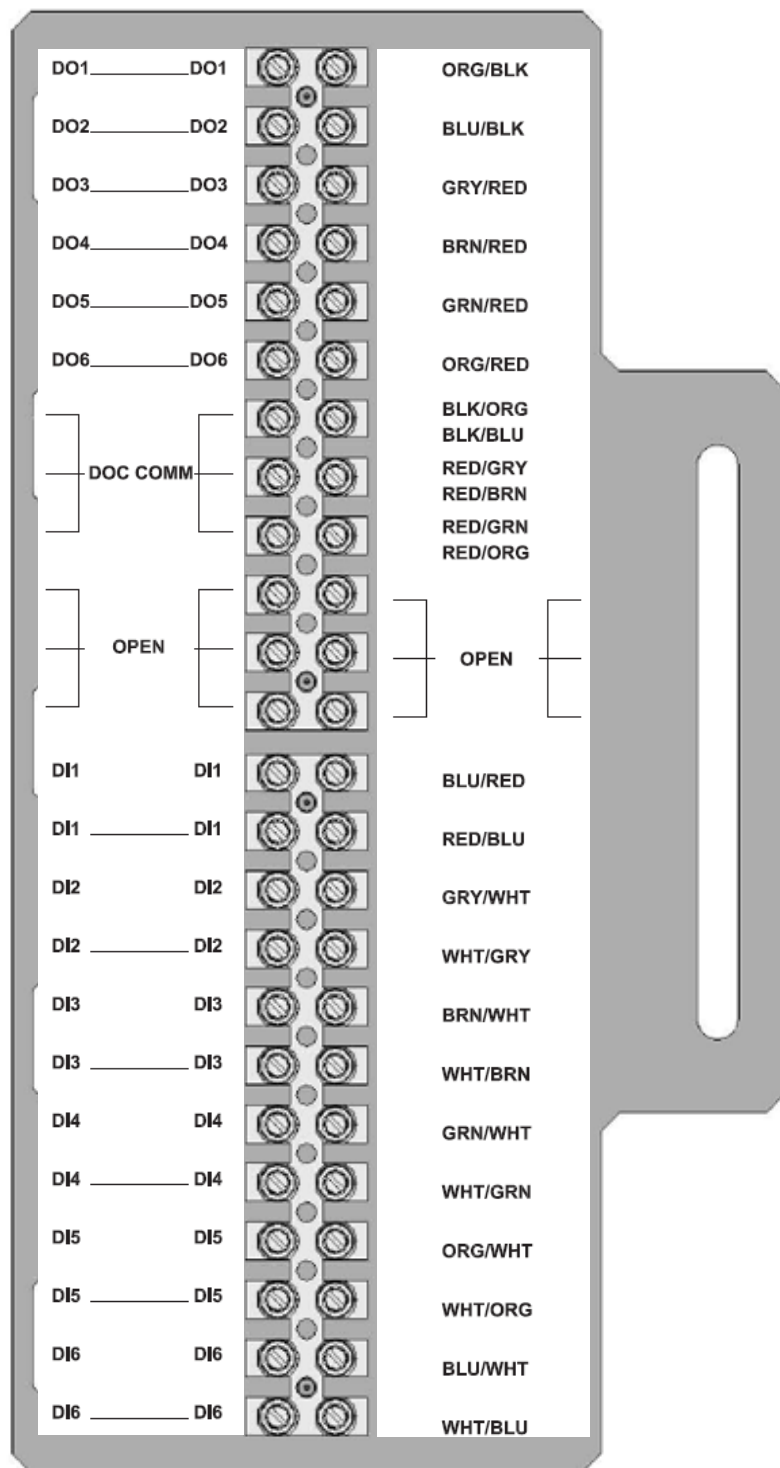


Figure 42 - Label

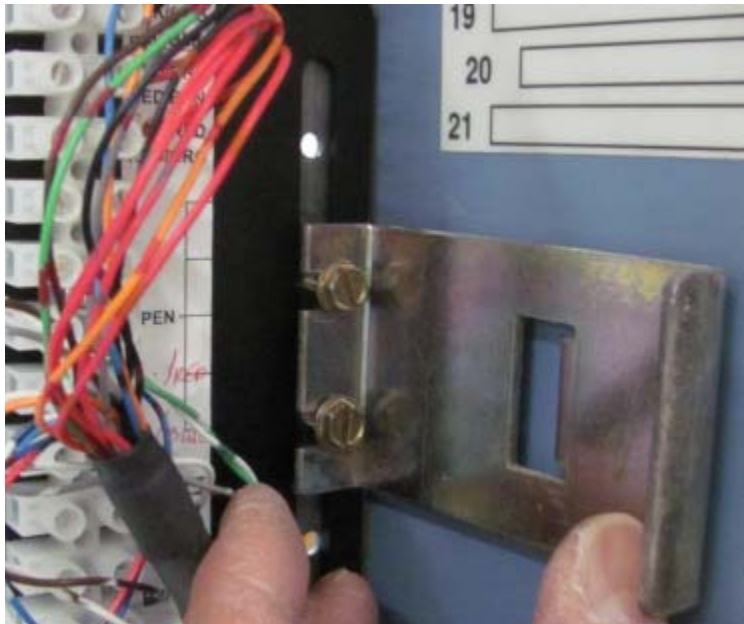


2. Remove the bracket from the right side of the frame.



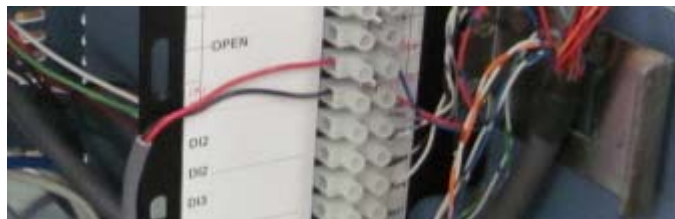
**Figure 43 - Removing Bracket**

3. Using with the same screws you just removed, loosely attach the alarm panel at the same location as shown in Figure 43.
4. Slide in the bracket, as shown.
5. Tighten the screws.
6. Tie back the loose wires.



**Figure 44 - Reattaching the Bracket on Top of the Alarm Panel**

7. Attach the other end of the grey wire from
  - step 19 in “Installing the New Rectifier Shelves” on page 13OR
  - step 19 in “Installing the New Rectifier Shelves (With Battery Management System)” on page 23to the D11 position, the black wire on top and the red wire below it. See Figure 45.
8. Tie back the loose wires.



**Figure 45 - Attaching the Wires to the D1 Positions**



9. Zip-tie the five black cables as tightly as possible against the side wall as shown in Figure 46.
10. Bring all the cables in through the hole at the top of the side wall and into the top compartment.

**Figure 46 -  
Threading the  
Power Cables**



11. Strip off about 8 inches from the cable jackets.
12. Cut the white fibers to the end so that the three wires are exposed and loose.



**Figure 47 - Cables Stripped**

13. Strip about 1/2" from the ends of the wires.

14. At the alarm terminal, use a flat screwdriver to push in the tab and insert the copper wires to the jacket. After you insert the copper wire, remove the screwdriver.



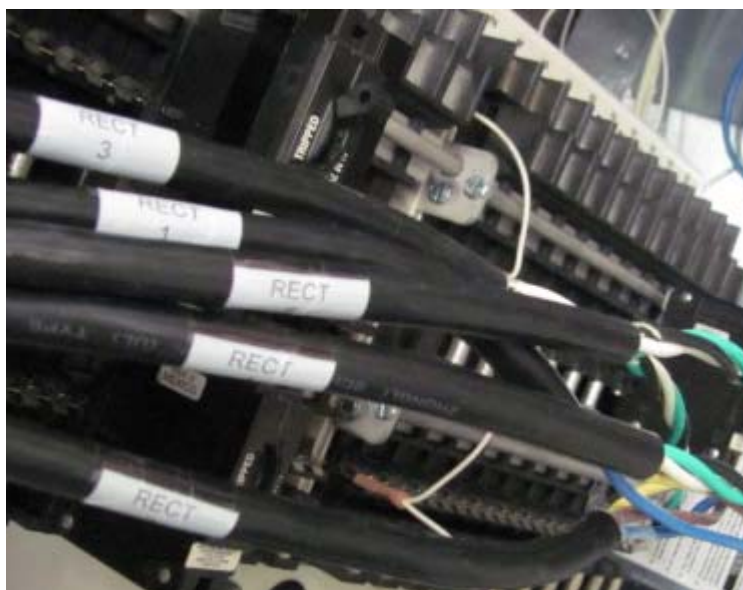
**Figure 48 - Attaching Alarm Wiring**



15. Insert all the wires as shown above, with the exception of the ground wires.

Wires from the cable labeled Rect 1 should go to terminal ports 1; the cable labeled Rect 2 to terminal ports 2, etc.

16. Connect the ground wires to lugs. The recommendation is to attach the two ground wires from shelf 1 to one lug and the three ground wires from shelf 2 to a second lug.



**Figure 49 - Rectifier Cables**

17. Ground the lugs anywhere on the frame.



**Figure 50 - Ground Lugs Connected to the Stud**



**Figure 51 - Ground Lugs**

18. Replace the door, top, and wall parts you previously removed for this installation. Your completed enclosure should look like that in Figure 52.

The controller software is pre-programmed during manufacture.

*This procedure is complete.*



**Figure 52 - Completed Enclosure**

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# Chapter 5: Software

## 5.1 Running DCTools

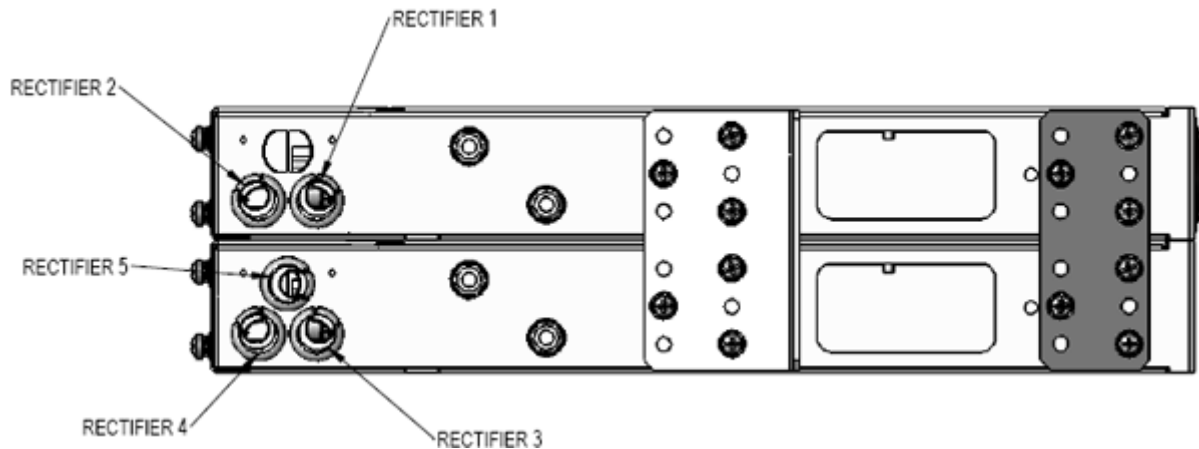


Figure 53 - Rectifier Connections

For other configuration issues, you can run DCTools in either of the following two ways:

- on a PC/laptop connected to the SC200's USB port  
Connect a USB A/B cable from a USB port on the PC/laptop to the USB port on the SC200.
- by using the manual input keys on the SC200  
For help using DCTools, press F1 or access the menu using the SC200.

## 5.2 Characterizing the SC200 System LVD

*Procedure steps:*

1. From the main screen on the front of the SC200, select **Menu**.

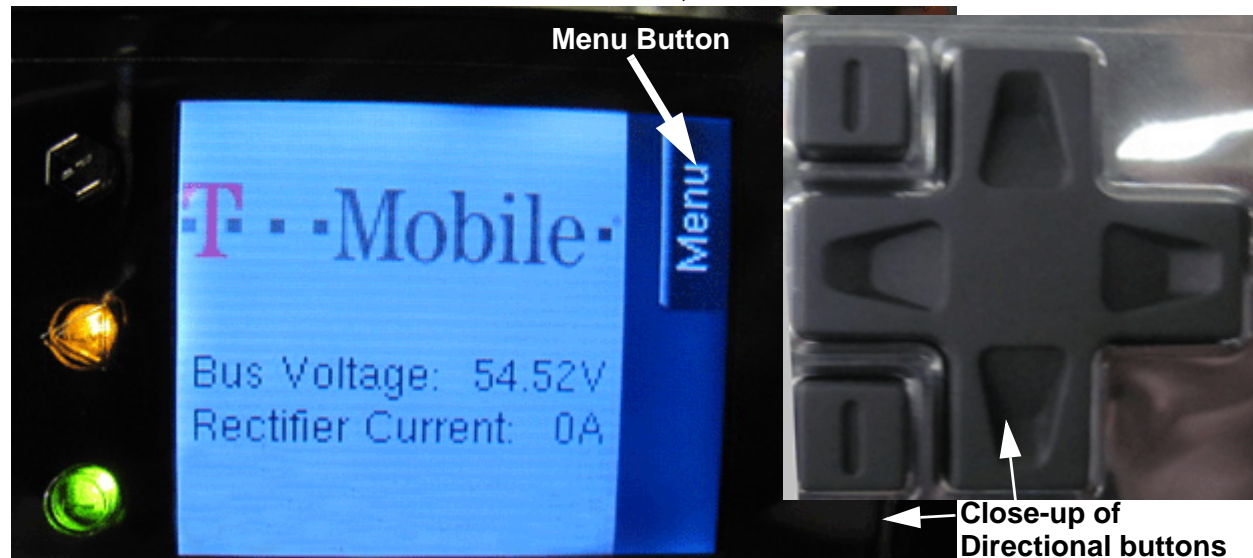


Figure 54 - Initial Screen



2. On the graphic screen, use the down and left arrows to find the **Battery** symbol and select **Enter**.

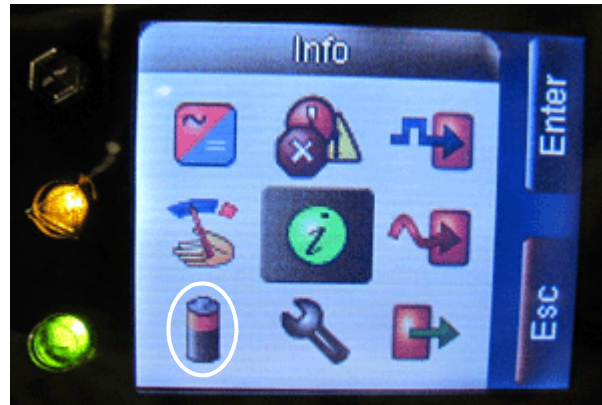


Figure 55 - Battery Symbol

3. Use the right arrow to get to the **LVD Menu**.
4. Use the down arrow to get to **LVD1**.
5. Select **Details**.
6. Use the down arrow to **Not Characterized**.
7. Select **Edit**. The screen should now show the selection **Characterization**.
8. Select **Enter**.
9. Use the down arrow to **Characterize Contactor**.
10. Select **Start**. You will see a Warning screen appear.

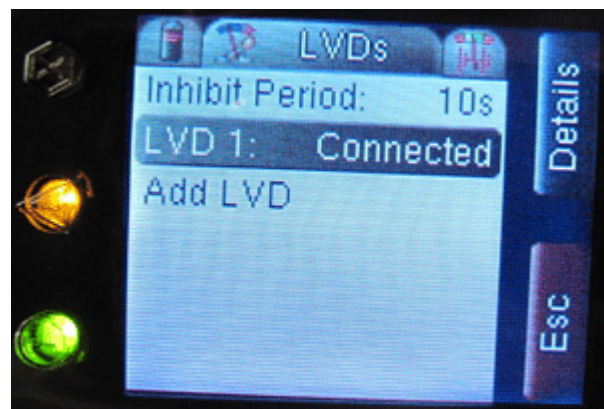


Figure 56 - LVD Menu

11. Select **OK**. The contactor will engage, disengage, and re-engage. You will hear clicking as each action occurs.

The following screen should say, "Finished. The contactor has been characterized successfully."

12. Select **OK**.

*This procedure is complete.*

# Chapter 6: Troubleshooting

The following tables contain possible troubleshooting issues and required actions.

**Table 1 - Troubleshooting issues and actions: System DC**

Problem	Possible cause	Required action
System has no DC output	Load fuse open.	Check for open fuse. (Rectifiers are on.)
	LVD contactor has disconnected the battery.	<p>Use <i>DCTools</i> to check LVD is enabled and set to correct values. (LVD status LED on the I/O board is on when contactor is energized.)</p> <p>Check that the I/O board is connected (Power LED is on).</p> <p>Check that the LVD control and power cables are connected.</p> <p>Check the connections from the battery bus to the LVD.</p>
System has no battery input	Battery fuse or MCB open.	Switch on the required battery fuse or MCB(s).
	LVD has disconnected the battery.	<p>Use <i>DCTools/Web</i> to check LVD is enabled and set to correct values. (LVD status LED on the I/O board is on when LVD is connected.)</p> <p>Check that the I/O board is connected (Power LED is on).</p> <p>Check that the LVD control and power cables are connected.</p> <p>Check the connections from the battery bus to the LVD.</p>



**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
SC200 displays a DC power system alarm message.		See "String Fail Alarm" on page 38.
SC200 LCD display is blank and green Power On LED is off.	RXP/power cable is disconnected from the SC200.	Connect cable from connector YS11 to the DC power system voltage feed module. Wait for start-up to complete.
	The AC supply is off and the batteries are not connected because the Low Voltage Disconnect (LVD) has disconnected.	None. The power system including the SC200 will return to normal operation when the AC supply is within its specified voltage range.
	Faulty Voltage Feed Module (VFM) or faulty SC200.	Replace faulty unit.
SC200 LCD display is blank and green Power On LED is on.	SC200 is in start-up mode.	Wait for start-up to complete.
	Faulty SC200	Replace faulty SC200.
SC200 Red LED or Yellow LED is on.	An alarm is active.	Check the type of alarm on the LCD display or with <i>DCTools/Web</i> or <i>PowerManager II</i> .

**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
Unable to change settings from SC200 keypad.	A previous setting change is still being updated.	Wait a short time then try again.
	Keypad access is set to <i>Protected</i> or <i>PIN Protected</i> .	<p>To temporarily enable keypad access when access is set to Protected:</p> <p>Press <i>Up</i> and <i>Down</i> keys together for approximately 10 seconds.</p> <p>NOTE: Keypad access is now temporarily enabled. Keypad access control reverts back to Protected mode after return to the Summary Screen (or after the display time-out period).</p> <p>To temporarily enable keypad access when access is set to PIN Protected:</p> <ol style="list-style-type: none"> <li>1. Press <i>Up</i> and <i>Down</i> keys together for approximately 10 seconds.</li> <li>2. Use the navigation keys to enter the correct 4-digit number.</li> </ol> <p>NOTE: Keypad access is now temporarily enabled. Keypad access control reverts back to PIN Protected mode after return to the Summary Screen (or after the display time-out period).</p>
Monitor OK relay (RLY6) is de-energized.	An active alarm, digital input or analog input is mapped to this relay.	Check relay mapping.
	SC200 or I/O board software corrupt or hardware fault.	Replace faulty unit.
Incorrect battery or load current readings.	Bus voltage sense polarity is incorrect.	Check the bus voltage sense polarity and correct if necessary.
	Incorrectly configured shunt inputs.	Check shunt mapping and gain is correct.
	Current is below the dead-band threshold (approximately 2% of full scale).	None, normal operation.

**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
SC200 or DCTools/ Web displays ??? or <b>N/A</b>	Failed, disconnected or unconfigured sensor.	Replace, connect or configure sensor.
	Faulty or disconnected volt- age feed module.	Replace or connect voltage feed module.
	Incorrect I/O board mapping.	<p>Check I/O board mapping.</p> <p>To re-map I/O boards,</p> <ol style="list-style-type: none"> <li>1. In DCTools/Web go to: <i>I/O Board &gt; I/O Board to Serial Number Mapping</i>.</li> <li>2. Copy the I/O board serial number(s) from the <i>RXP Bus Slaves</i> table to the <i>I/O Board to Serial Number Mapping</i> table to map an <i>IOB Number</i> to each I/O board. (Overwrite an existing serial number if required.)</li> </ol>
DCTools connection problem ( <i>Target Failed to Respond</i> error)	Connection problem	Refer to following communications problems.

**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
USB communications problem	Incorrect, disconnected or faulty cable.	Check a USB A/B cable is plugged into the USB port and a PC USB port. Replace faulty cable.
	SC200 serial communications are disabled.	Check that <i>S3P Access</i> is enabled. To Enable/Disable S3P access,  1. On the SC200 keypad go to <i>Settings &gt; Setup &gt; S3P Access</i> . Select <i>Enabled</i> or <i>Disabled</i> .  OR  1. Connect to the SC200 with a web browser. 2. Go to <i>Identity &gt; Communications &gt; Serial</i> . 3. Set S3P Access to <i>Enabled</i> or <i>Disabled</i> .
	DCTools not installed on PC or wrong version.	Install latest version of DCTools. Download from <a href="http://www.powerware.com/downloads">www.powerware.com/downloads</a> .
	Password required to change settings.	To set a Write Access Password,  1. Connect to the SC200 with DCTools/Web. 2. Go to <i>Configuration &gt; Communications</i> . 3. Type a password into the <i>Write Access Password</i> field.  <i>NOTE: Passwords are case sensitive, maximum 32 characters.</i> 4. Click <i>Apply Changes</i> .  To clear or change a Write Access Password,  1. Connect to the SC200 with DCTools/Web. 2. Go to <i>Configuration &gt; Communications</i> . 3. Type a new password into the <i>Remote Access Password</i> field or leave the field blank for no password control. 4. Click <i>Apply Changes</i> . 5. Enter the old password.
Serial communications are disabled	<i>S3P Access</i> is disabled.	Set <i>S3P Access</i> to Enabled.

**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
Ethernet communications problem	Incorrect, disconnected or faulty cable.	Check a network patch cable is connected from XS31 to a live network outlet.  Replace faulty cable.
	Ethernet link is not active.	On the Ethernet connector (XS31), check:  Yellow LED is continuously lit to show link is active.  Green LED flashes to show traffic is reaching the SC200.
	Incorrect communications settings.	Check that IP address and other settings in SC200 are correct.  Check that the correct IP address is used in the web browser address bar.  To configure an SC200 for Ethernet communications from the keypad, 1. Go to <i>Settings &gt; Setup</i> . 2. Enter the <i>IP Address</i> , <i>Subnet Mask</i> and <i>Gateway Address</i> assigned by the network administrator. 3. If required, set <i>HTTP Access</i> to <i>Enabled</i> for web browser access, or set <i>HTTPS Access</i> to <i>Enabled</i> for secure web access.  To configure an SC200 for Ethernet communications using <i>DCTools</i> , 1. Connect using a USB. 2. In <i>DCTools</i> go to <i>Configuration &gt; Communications</i> . 3. Under <i>Ethernet</i> , enter the <i>IP Address</i> , <i>Subnet Mask</i> and <i>Gateway Address</i> assigned by the network administrator. 4. If required, under <i>HTTP (Web)</i> , set <i>HTTP Access</i> to <i>Enabled</i> for web browser access, or set <i>HTTPS Access</i> to <i>Enabled</i> for secure web access.  Check that <i>HTTP Access</i> or <i>HTTPS Access</i> is enabled.
	SC200 serial communications are disabled.	See “Check that S3P Access is enabled.” on page 35
	Password required to change settings (using <i>DCTools</i> or <i>PowerManagerII</i> ).	See “To set a Write Access Password,” on page 35



**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
Web communications problem	Ethernet communications problem.	See previous entry.
	Cannot connect to web server.	See "Check that IP address and other settings in SC200 are correct." on page 36.  Check that <i>HTTP Access</i> or <i>HTTPS Access</i> is enabled.
	Cannot log on to the web server.	Incorrect Logon ID or Password, or no active users setup. Use DCTools to set up an active user.
	Web communications lost ( <i>Comms Lost</i> error message).	Refresh the browser. Check that the SC200 is operating. Check the Ethernet communications connections. See previous entry.
	Lost Logon ID and/or Password.	Use DCTools to set up a new Logon ID and/or Password.
	<i>Default User</i> log on is not available.	<i>Default User</i> is not setup or not active. Use DCTools to set up a <i>Default User</i> .
	A user cannot change settings, Backup or Restore, Execute Commands, Upgrade Firmware, or Edit User List.	Check the user's access levels.
SC200 time/date (in DCTools/Web) is incorrect	Time needs to be set.	To set the clock, 1. Connect to the SC200 via a web browser. 2. Go to <i>Configuration &gt; Time</i> . 3. Click on the time-date field to select the text. 4. Select the time or date text to be changed and type the correct time/date. 5. Press <i>Enter</i> on the keyboard. 6. Click <i>Apply</i> in the <i>Changes</i> window.
	SC200 time can be set, but is incorrect when SC200 restarts.	The internal battery is dead. Return the SC200 for service. (If removed, the battery must be disposed of according to the manufacturer's instructions.)
	Time/date for next start of <i>Equalize</i> or <i>Battery Test</i> is different on SC200 compared to DCTools/Web.	None. Time shown on SC200 is UTC. Time on PC running DCTools/Web is local time.

**Table 2 - Troubleshooting issues and actions: SC200**

Problem	Possible cause	Required action
String Fail Alarm	The Battery Mid-point Monitoring system has detected a voltage imbalance in one of the battery strings.	Have the batteries inspected by the manufacturer and follow their recommendations.
	A Battery Mid-point Monitoring sense wire is disconnected.	Check the sense wires.

**Table 3 - Troubleshooting issues and actions: LVD**

Problem	Possible cause	Required action
System has no DC output	Load fuse open.	Check for open fuse. (Rectifiers are on.)
	LVD contactor has disconnected the battery.	<p>Use <i>DCTools</i> to check LVD is enabled and set to correct values. (LVD status LED on the I/O board is on when contactor is energized.)</p> <p>Check that the I/O board is connected (Power LED is on).</p> <p>Check that the LVD control and power cables are connected.</p> <p>Check the connections from the battery bus to the LVD.</p>
LVD Status LED(s) (on I/O board) are on.	LVD contactor is energized.	None, this is normal operation.
LVD Status LED(s) are off (I/O board Power On LED is on).	LVD contactor is de-energized.	None, this is normal operation.
LVD Status LED(s) flashing.	The contactor is in the wrong state. (SC200 internal state does not match signal from contactor auxiliary switch.)	<p>Check the electrical and mechanical operation of the contactor and auxiliary switch.</p> <p>Check all wiring and connectors.</p>

**Table 3 - Troubleshooting issues and actions: LVD**

Problem	Possible cause	Required action
LVD contactor(s) not operating.	LVD settings are incorrect.	<p>Check that the LVD is enabled and set to correct values.</p> <p>Check that the LVD manual control is set to AUTO.</p> <p>Check that the contactor is correctly configured and mapped to the I/O board.</p>
	Contactor is disconnected.	Check the control and DC power cables are connected.

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