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1.2	CONFIGURATION SETTINGS	3
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1 Eltek Chargers Set-Up

1.1 Initial Set-Up Process

- 1.1.1 Connect an Ethernet Cable into the port on the controller card of the charger, the other end of the Ethernet cable must be attached to our internal network switch.
- 1.1.2 Run the Eltek Network Utility on the Desktop (Download this from Eltek if you do not have a copy) and click on the search key located on the top left hand corner of the application. See Figure 1. Eltek Network Utility Search Screen below.

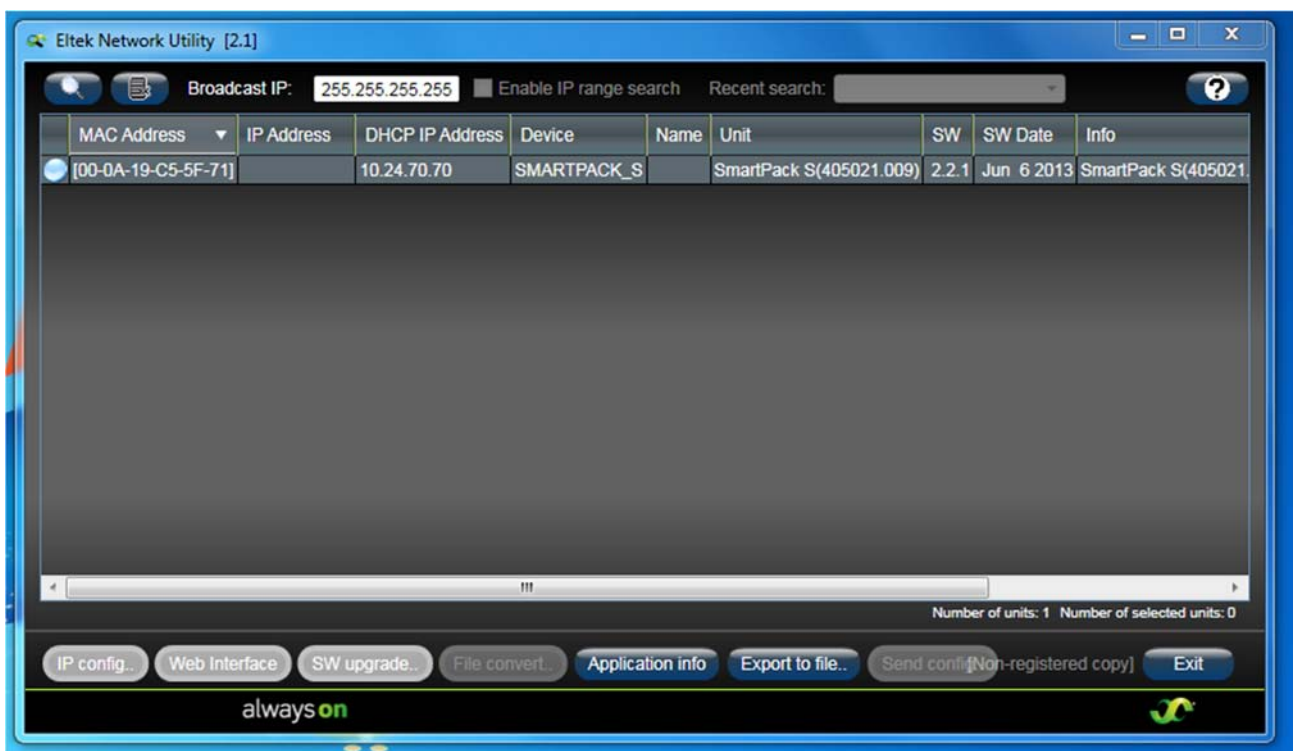


Figure 1. Eltek Network Utility Search Screen

- 1.1.3 Highlight the Controller and click on IP config button located on the bottom left hand corner and set the IP Address to 10.24.70.220, also click the DHCP box as shown in Figure 2. Eltek Network Utility IP Configuration.

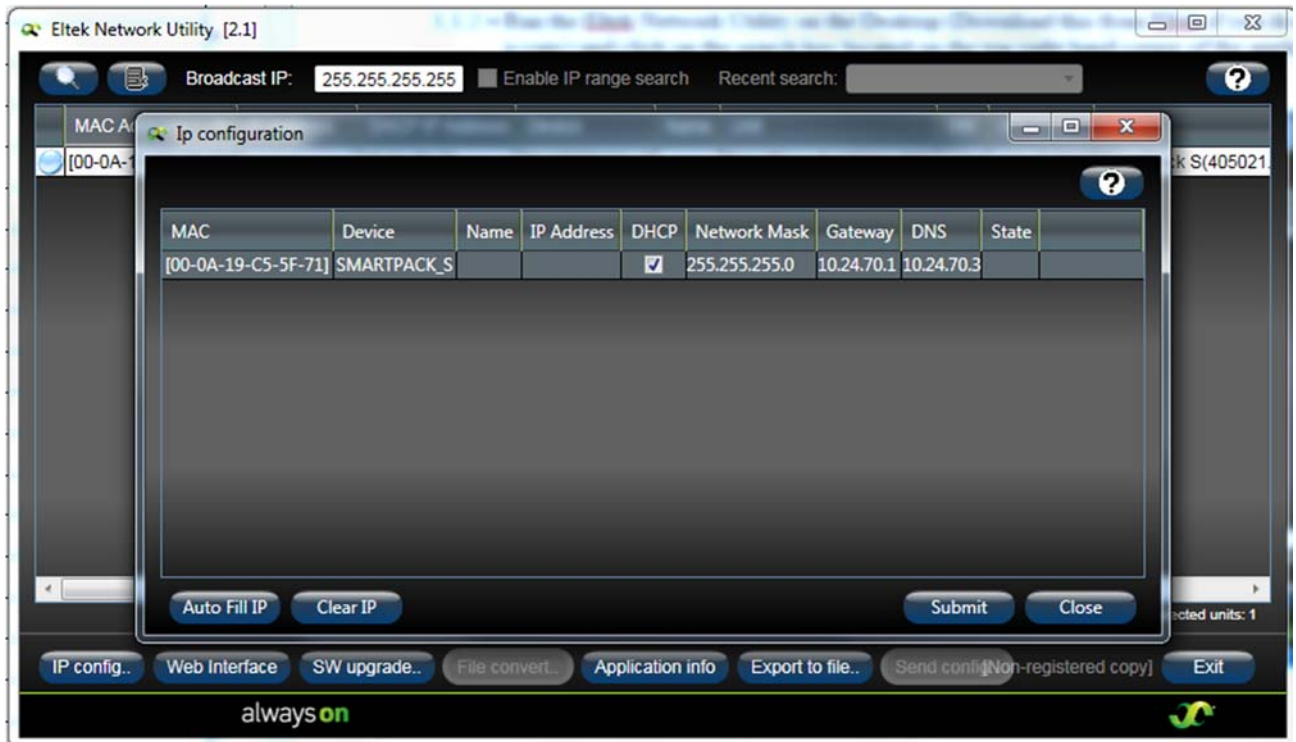


Figure 2. Eltek Network Utility IP Configuration

1.2 Configuration Settings

- 1.2.1 Close the application and reopen and search again for the controller, when it's found note the IP address and in any Internet Browser type this figure into the address bar, this will permit access to the controller settings the User Name and password is admin and the Password is admin.

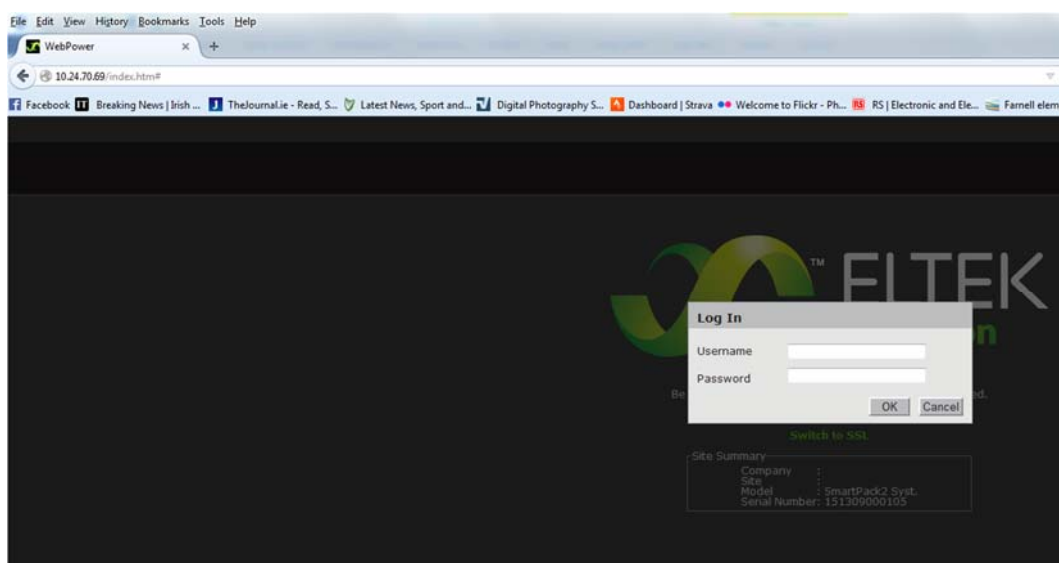


Figure 3. Log In Screen

1.2.2 On the System Configuration tab change the settings to those shown in Figure 4. Mains Configuration and Figure 5. System Voltages and make changes as per the other screen shots in:

Figure 6. System Global Settings

Figure 7. Rectifier Configuration

Figure 8. Battery Configuration

Figure 9. Battery Boost Settings

Figure 10. Battery Equalize Settings

Figure 11. Alarm Configuration SP2 Master 1. Rename Alarm A & B to Major and Minor Alarm respectively.

Figure 12. Mains Input Alarm Configuration

Figure 13. Rectifiers Alarm Configuration

Figure 14. Rectifiers Communication Alarm

Figure 15. Battery Voltage Alarm Settings

Figure 16. Battery Temperature Alarm Settings

Figure 17. Battery Quality Alarm Settings

Figure 18. Battery Output Alarm Settings

Figure 19. Battery Control Unit Alarm Settings

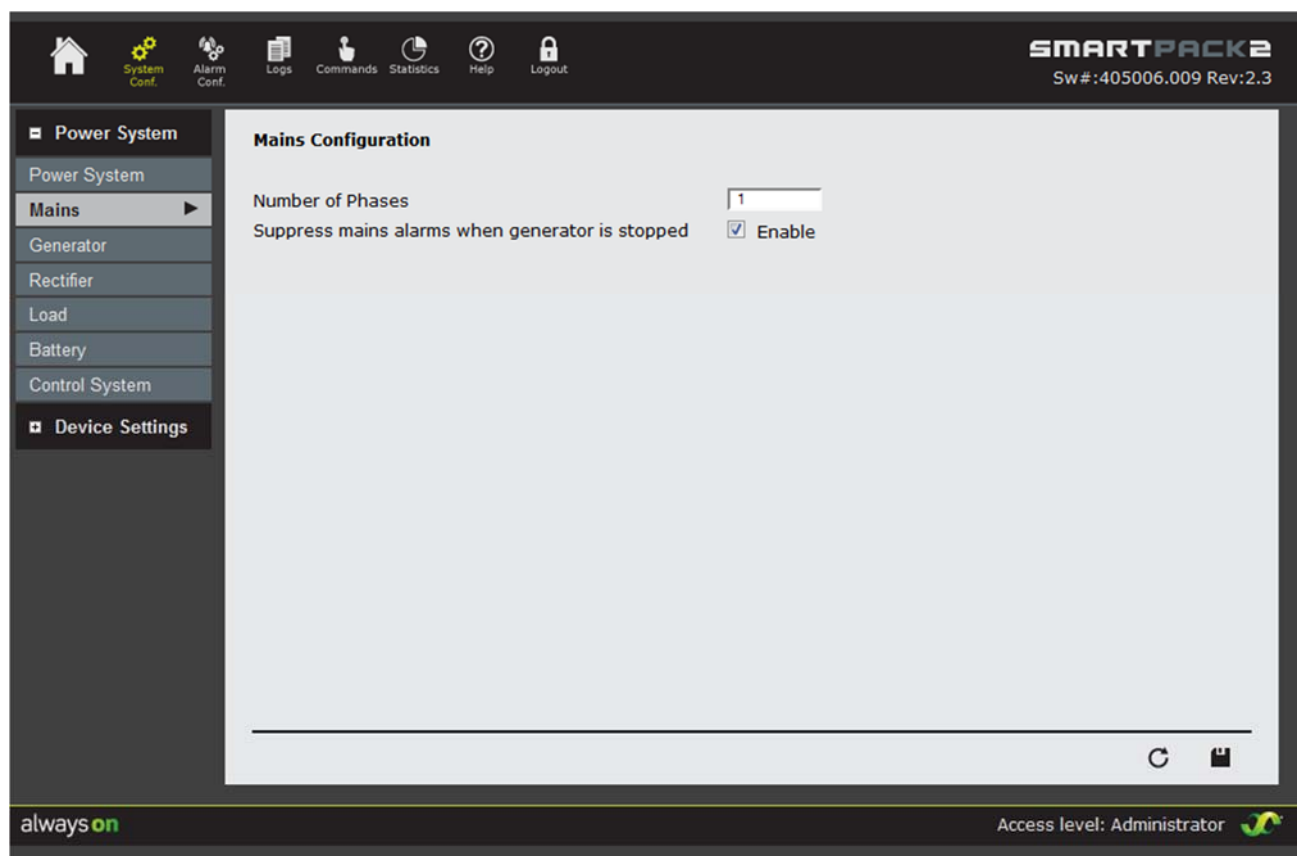
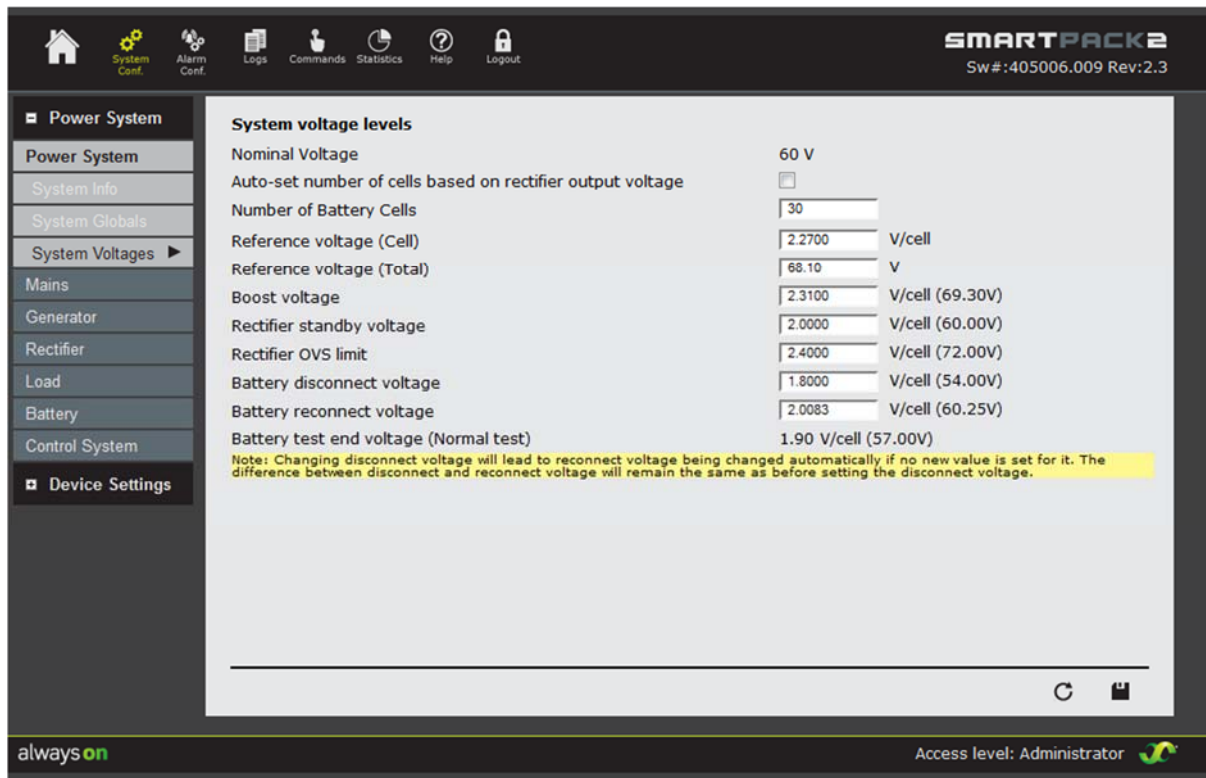


Figure 4. Mains Configuration



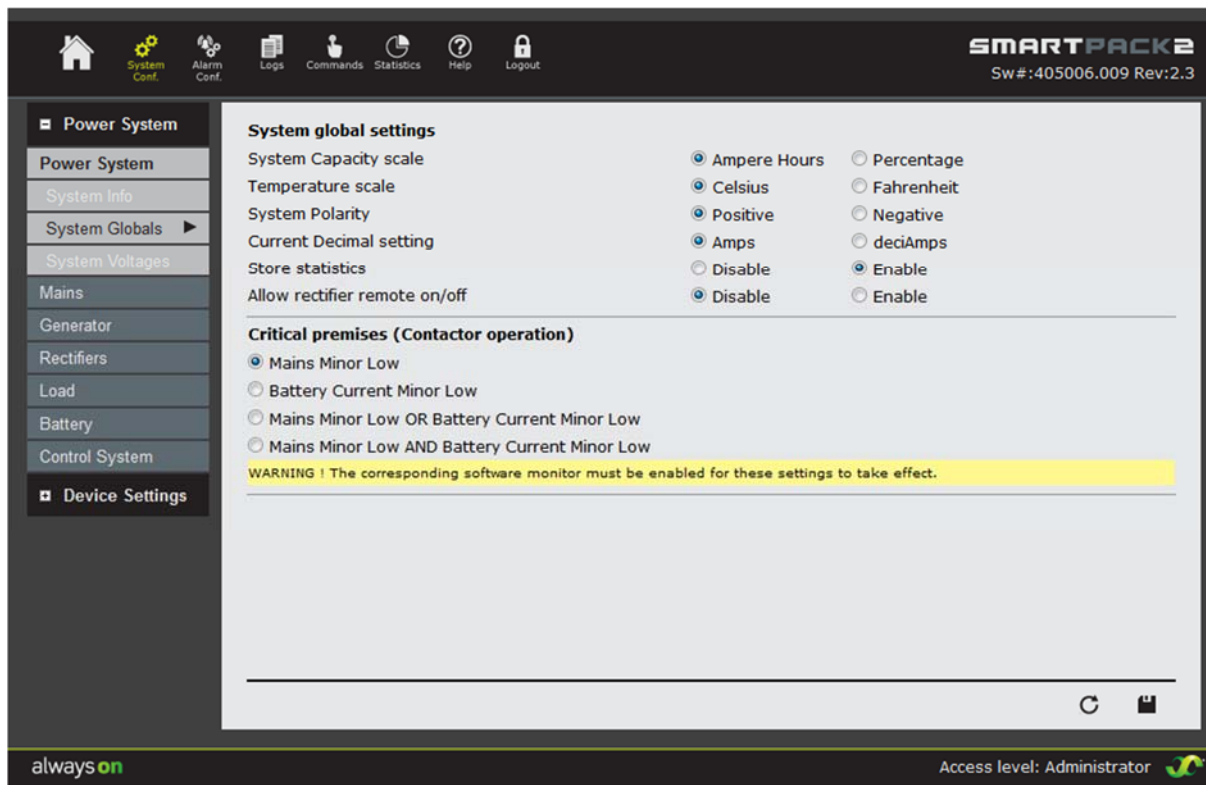
The screenshot shows the 'System Voltages' configuration page in the SMARTPACK2 interface. The left sidebar lists navigation options: Power System, System Info, System Globals, System Voltages (selected), Mains, Generator, Rectifier, Load, Battery, and Control System. The main content area is titled 'System voltage levels' and contains the following settings:

Nominal Voltage	60 V
Auto-set number of cells based on rectifier output voltage	<input type="checkbox"/>
Number of Battery Cells	<input type="text" value="30"/>
Reference voltage (Cell)	<input type="text" value="2.2700"/> V/cell
Reference voltage (Total)	<input type="text" value="68.10"/> V
Boost voltage	<input type="text" value="2.3100"/> V/cell (69.30V)
Rectifier standby voltage	<input type="text" value="2.0000"/> V/cell (60.00V)
Rectifier OVS limit	<input type="text" value="2.4000"/> V/cell (72.00V)
Battery disconnect voltage	<input type="text" value="1.8000"/> V/cell (54.00V)
Battery reconnect voltage	<input type="text" value="2.0083"/> V/cell (60.25V)
Battery test end voltage (Normal test)	<input type="text" value="1.90"/> V/cell (57.00V)

Note: Changing disconnect voltage will lead to reconnect voltage being changed automatically if no new value is set for it. The difference between disconnect and reconnect voltage will remain the same as before setting the disconnect voltage.

At the bottom of the page, it says 'always on' and 'Access level: Administrator'.

Figure 5. System Voltages



The screenshot shows the 'System Global Settings' configuration page in the SMARTPACK2 interface. The left sidebar lists navigation options: Power System, System Info, System Globals (selected), System Voltages, Mains, Generator, Rectifiers, Load, Battery, and Control System. The main content area is titled 'System global settings' and contains the following settings:

System Capacity scale	<input checked="" type="radio"/> Ampere Hours	<input type="radio"/> Percentage
Temperature scale	<input checked="" type="radio"/> Celsius	<input type="radio"/> Fahrenheit
System Polarity	<input checked="" type="radio"/> Positive	<input type="radio"/> Negative
Current Decimal setting	<input checked="" type="radio"/> Amps	<input type="radio"/> deciAmps
Store statistics	<input type="radio"/> Disable	<input checked="" type="radio"/> Enable
Allow rectifier remote on/off	<input checked="" type="radio"/> Disable	<input type="radio"/> Enable

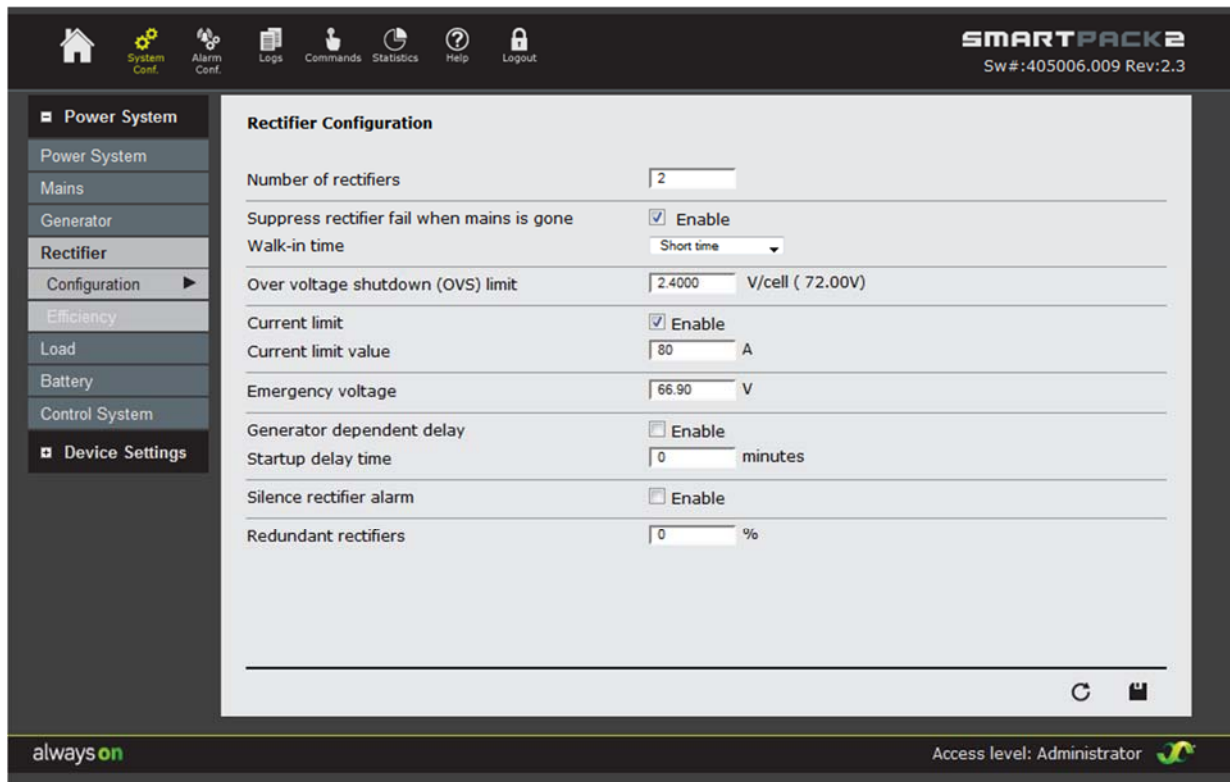
Critical premises (Contactor operation)

- Mains Minor Low
- Battery Current Minor Low
- Mains Minor Low OR Battery Current Minor Low
- Mains Minor Low AND Battery Current Minor Low

WARNING ! The corresponding software monitor must be enabled for these settings to take effect.

At the bottom of the page, it says 'always on' and 'Access level: Administrator'.

Figure 6. System Global Settings

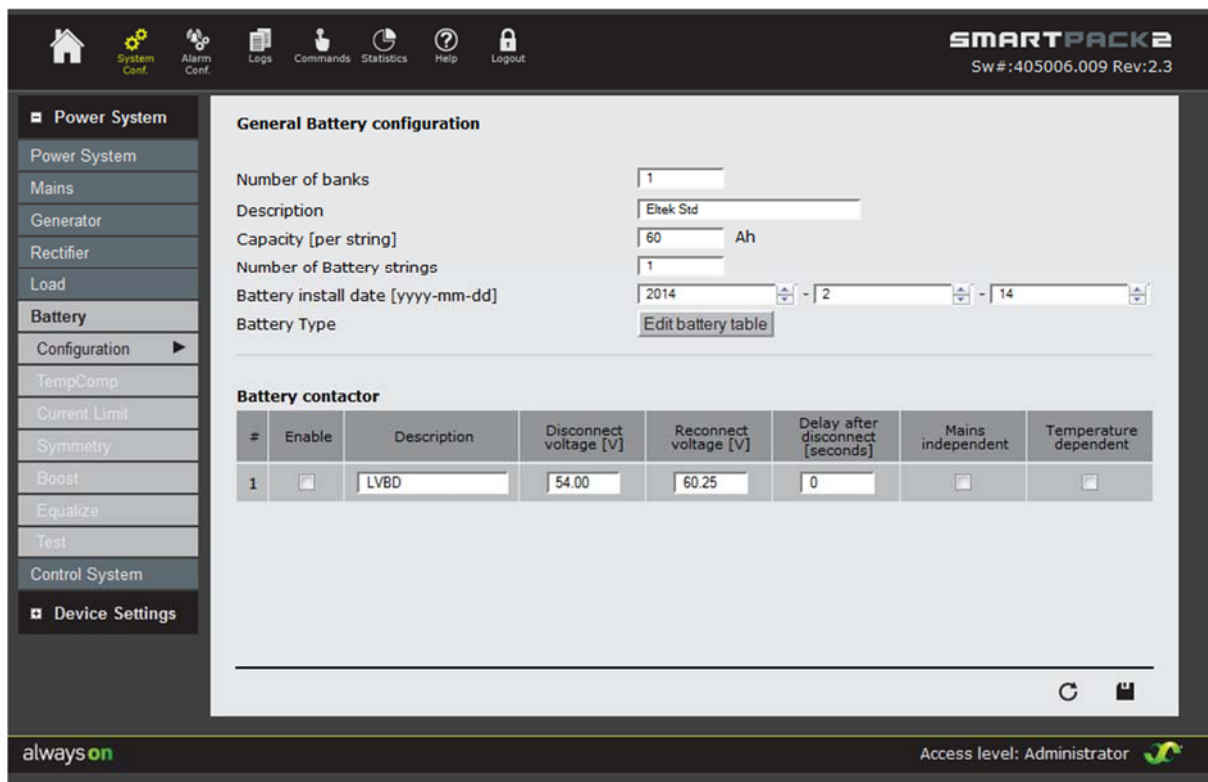


The screenshot shows the 'Rectifier Configuration' page in the SMARTPACK2 interface. The left sidebar lists navigation options under 'Power System' and 'Device Settings'. The main content area contains the following configuration fields:

- Number of rectifiers: 2
- Suppress rectifier fail when mains is gone: Enable
- Walk-in time: Short time
- Over voltage shutdown (OVS) limit: 2.4000 V/cell (72.00V)
- Current limit: Enable
- Current limit value: 80 A
- Emergency voltage: 66.90 V
- Generator dependent delay: Enable
- Startup delay time: 0 minutes
- Silence rectifier alarm: Enable
- Redundant rectifiers: 0 %

At the bottom right of the configuration area are refresh and save icons. The footer shows 'always on' and 'Access level: Administrator'.

Figure 7. Rectifier Configuration



The screenshot shows the 'General Battery configuration' page in the SMARTPACK2 interface. The left sidebar lists navigation options under 'Power System' and 'Device Settings'. The main content area contains the following configuration fields:

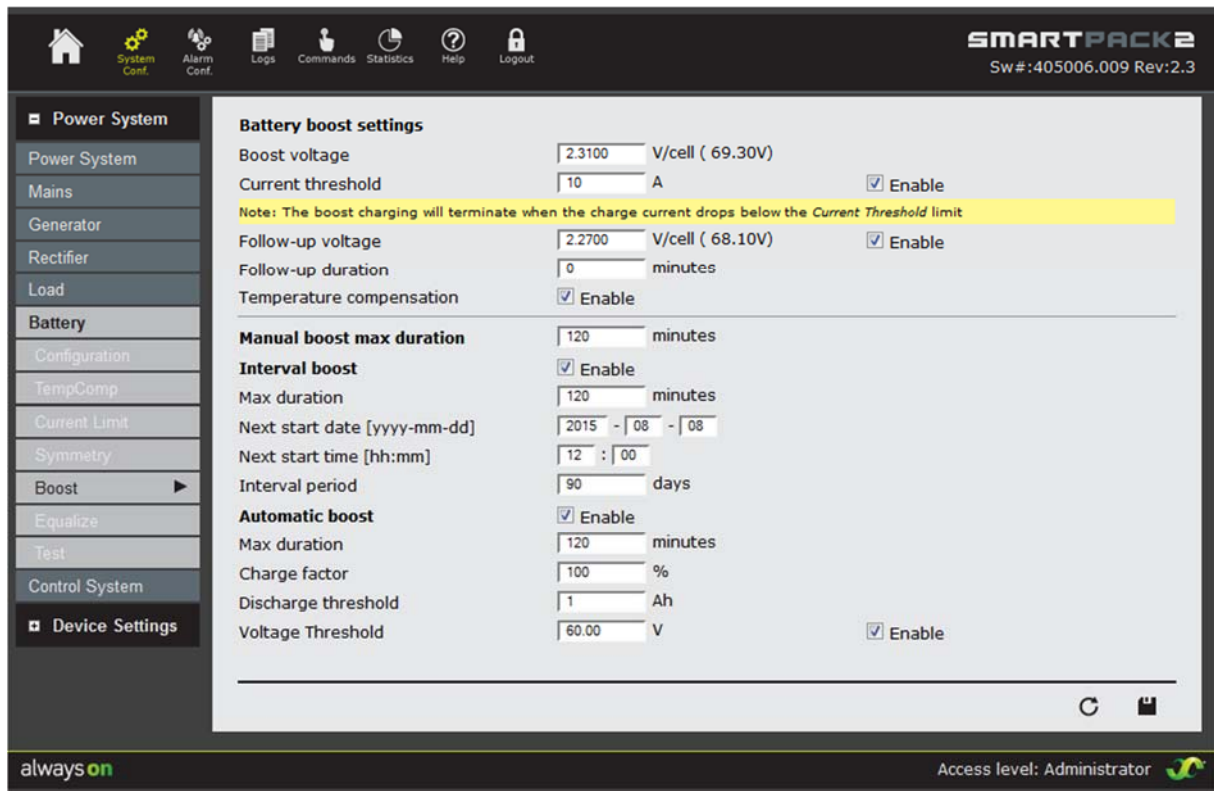
- Number of banks: 1
- Description: Eltek Std
- Capacity [per string]: 60 Ah
- Number of Battery strings: 1
- Battery install date [yyyy-mm-dd]: 2014 - 2 - 14
- Battery Type: Edit battery table

Below these fields is a table for 'Battery contactor' configuration:

#	Enable	Description	Disconnect voltage [V]	Reconnect voltage [V]	Delay after disconnect [seconds]	Mains independent	Temperature dependent
1	<input type="checkbox"/>	LVBD	54.00	60.25	0	<input type="checkbox"/>	<input type="checkbox"/>

At the bottom right of the configuration area are refresh and save icons. The footer shows 'always on' and 'Access level: Administrator'.

Figure 8. Battery Configuration

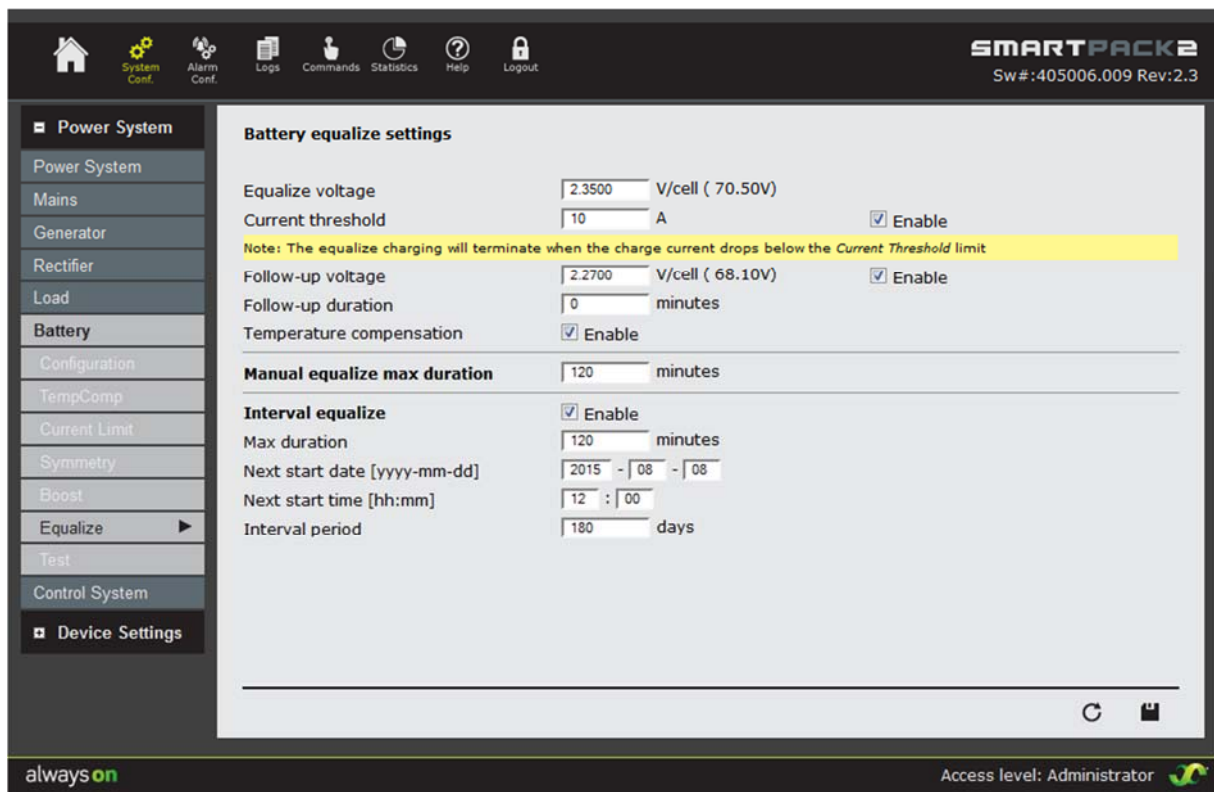


The screenshot shows the 'Battery boost settings' page in the SMARTPACK2 interface. The left sidebar lists navigation options: Power System, Mains, Generator, Rectifier, Load, Battery (selected), Configuration, TempComp, Current Limit, Symmetry, Boost, Equalize, Test, Control System, and Device Settings. The main content area is titled 'Battery boost settings' and contains the following configuration fields:

- Boost voltage:** 2.3100 V/cell (69.30V)
- Current threshold:** 10 A Enable
- Note:** The boost charging will terminate when the charge current drops below the Current Threshold limit
- Follow-up voltage:** 2.2700 V/cell (68.10V) Enable
- Follow-up duration:** 0 minutes
- Temperature compensation:** Enable
- Manual boost max duration:** 120 minutes
- Interval boost:** Enable
- Max duration:** 120 minutes
- Next start date [yyyy-mm-dd]:** 2015 - 08 - 08
- Next start time [hh:mm]:** 12 : 00
- Interval period:** 90 days
- Automatic boost:** Enable
- Max duration:** 120 minutes
- Charge factor:** 100 %
- Discharge threshold:** 1 Ah
- Voltage Threshold:** 60.00 V Enable

At the bottom of the interface, it shows 'always on' and 'Access level: Administrator'.

Figure 9. Battery Boost Settings



The screenshot shows the 'Battery equalize settings' page in the SMARTPACK2 interface. The left sidebar is identical to Figure 9, with 'Equalize' selected. The main content area is titled 'Battery equalize settings' and contains the following configuration fields:

- Equalize voltage:** 2.3500 V/cell (70.50V)
- Current threshold:** 10 A Enable
- Note:** The equalize charging will terminate when the charge current drops below the Current Threshold limit
- Follow-up voltage:** 2.2700 V/cell (68.10V) Enable
- Follow-up duration:** 0 minutes
- Temperature compensation:** Enable
- Manual equalize max duration:** 120 minutes
- Interval equalize:** Enable
- Max duration:** 120 minutes
- Next start date [yyyy-mm-dd]:** 2015 - 08 - 08
- Next start time [hh:mm]:** 12 : 00
- Interval period:** 180 days

At the bottom of the interface, it shows 'always on' and 'Access level: Administrator'.

Figure 10. Battery Equalize Settings

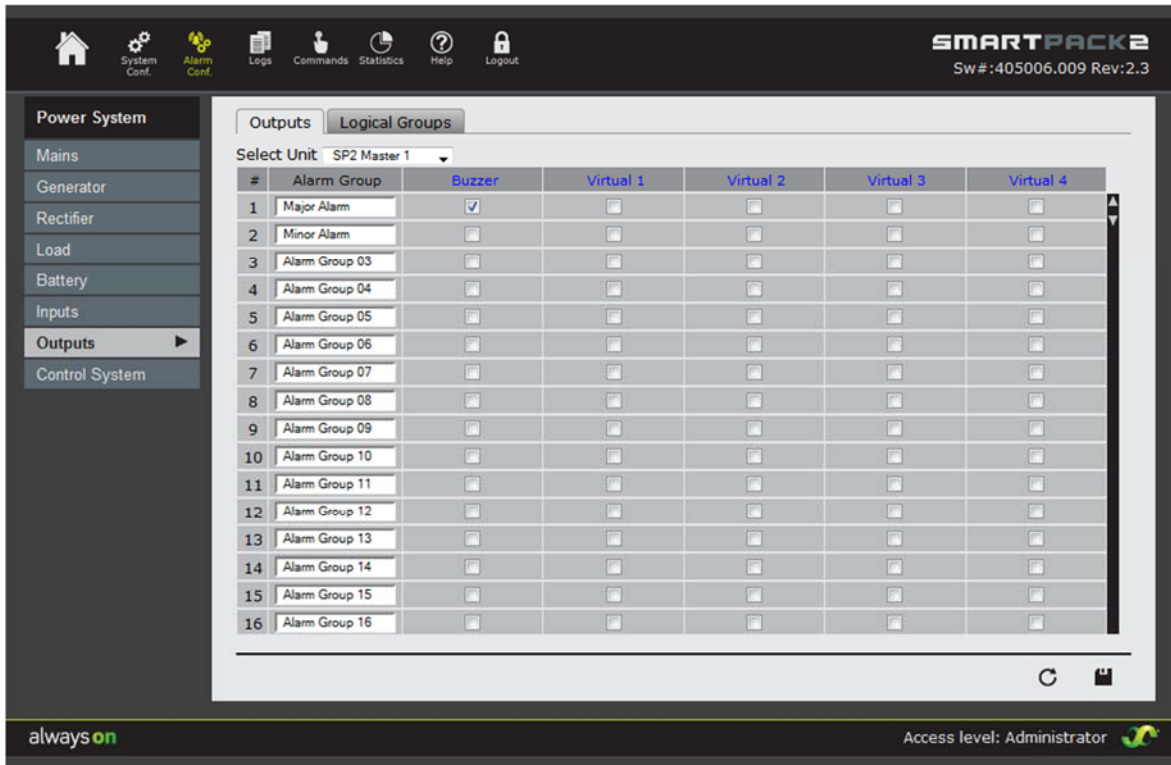


Figure 11. Alarm Configuration SP2 Master 1. Rename Alarm A & B to Major and Minor Alarm respectively.

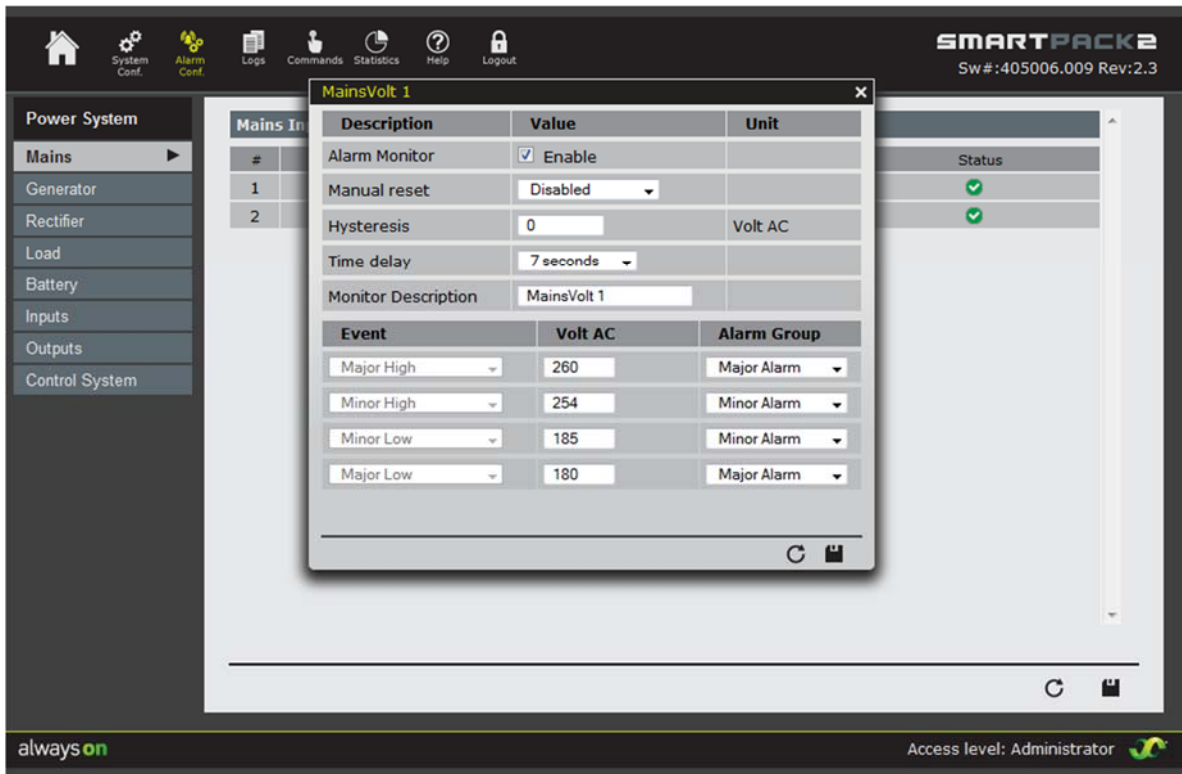


Figure 12. Mains Input Alarm Configuration

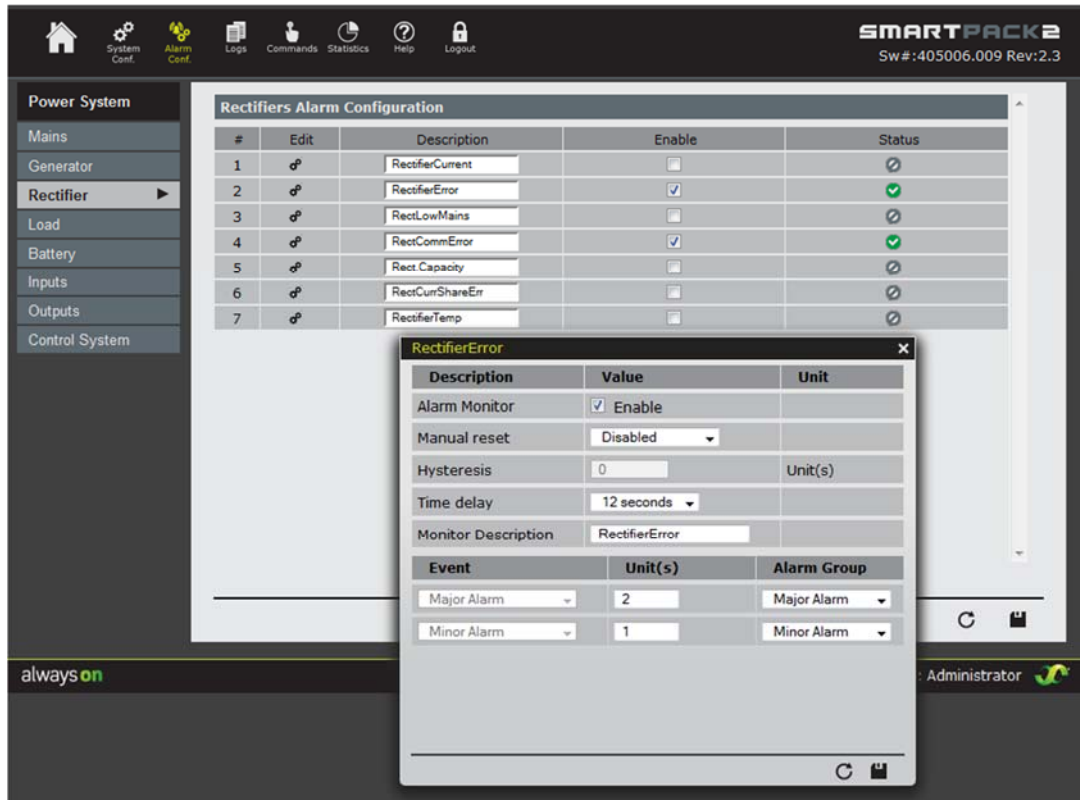


Figure 13. Rectifiers Alarm Configuration

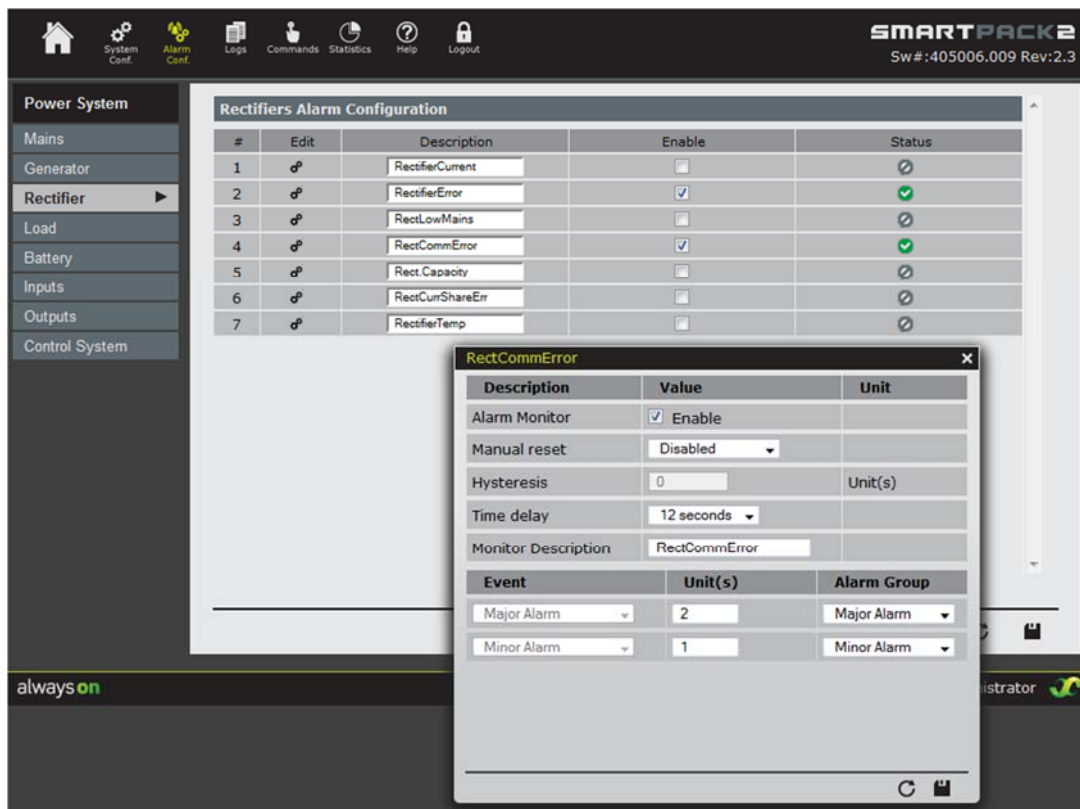
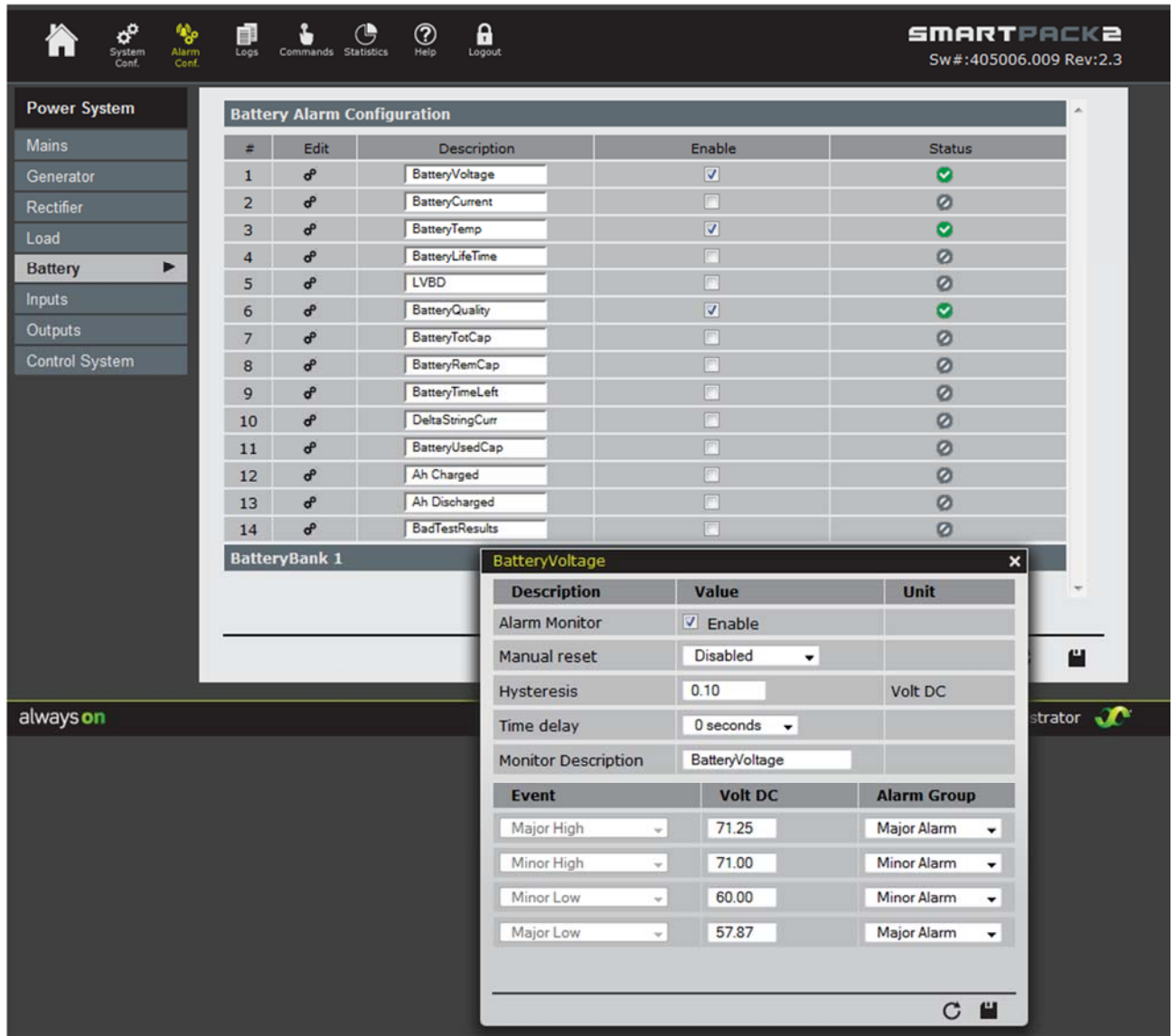


Figure 14. Rectifiers Communication Alarm



The screenshot displays the SMARTPACK2 software interface. The top navigation bar includes icons for Home, System Conf., Alarm Conf., Logs, Commands, Statistics, Help, and Logout. The main menu on the left lists Power System components: Mains, Generator, Rectifier, Load, Battery (selected), Inputs, Outputs, and Control System. The central panel shows the 'Battery Alarm Configuration' table for 'BatteryBank 1'.

#	Edit	Description	Enable	Status
1		BatteryVoltage	<input checked="" type="checkbox"/>	
2		BatteryCurrent	<input type="checkbox"/>	
3		BatteryTemp	<input checked="" type="checkbox"/>	
4		BatteryLifeTime	<input type="checkbox"/>	
5		LVBD	<input type="checkbox"/>	
6		BatteryQuality	<input checked="" type="checkbox"/>	
7		BatteryTotCap	<input type="checkbox"/>	
8		BatteryRemCap	<input type="checkbox"/>	
9		BatteryTimeLeft	<input type="checkbox"/>	
10		DeltaStringCurr	<input type="checkbox"/>	
11		BatteryUsedCap	<input type="checkbox"/>	
12		Ah Charged	<input type="checkbox"/>	
13		Ah Discharged	<input type="checkbox"/>	
14		BadTestResults	<input type="checkbox"/>	

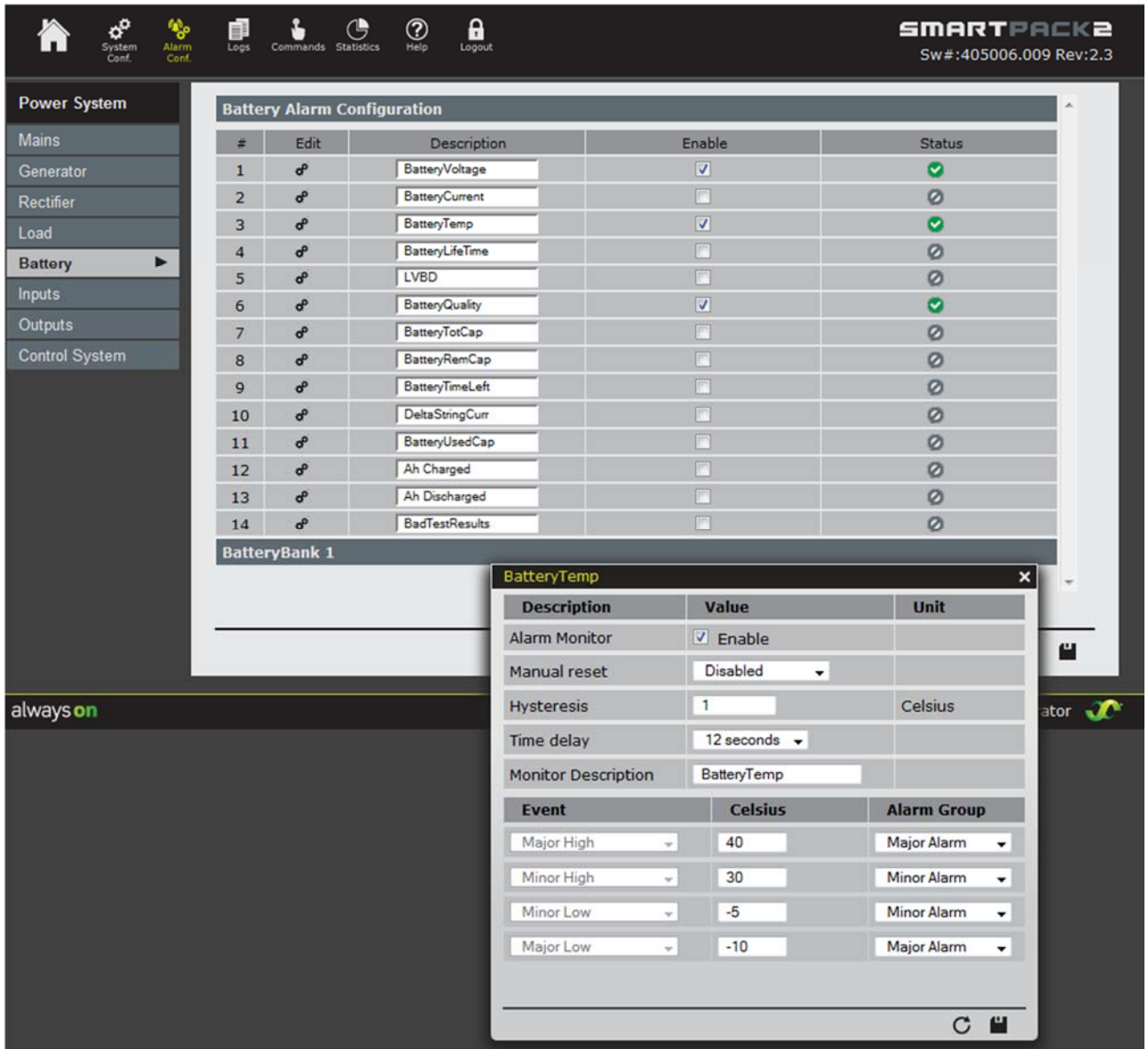
A modal window titled 'BatteryVoltage' is open, showing detailed settings:

Description	Value	Unit
Alarm Monitor	<input checked="" type="checkbox"/> Enable	
Manual reset	Disabled	
Hysteresis	0.10	Volt DC
Time delay	0 seconds	
Monitor Description	BatteryVoltage	

Below these settings is a table for alarm thresholds:

Event	Volt DC	Alarm Group
Major High	71.25	Major Alarm
Minor High	71.00	Minor Alarm
Minor Low	60.00	Minor Alarm
Major Low	57.87	Major Alarm

Figure 15. Battery Voltage Alarm Settings



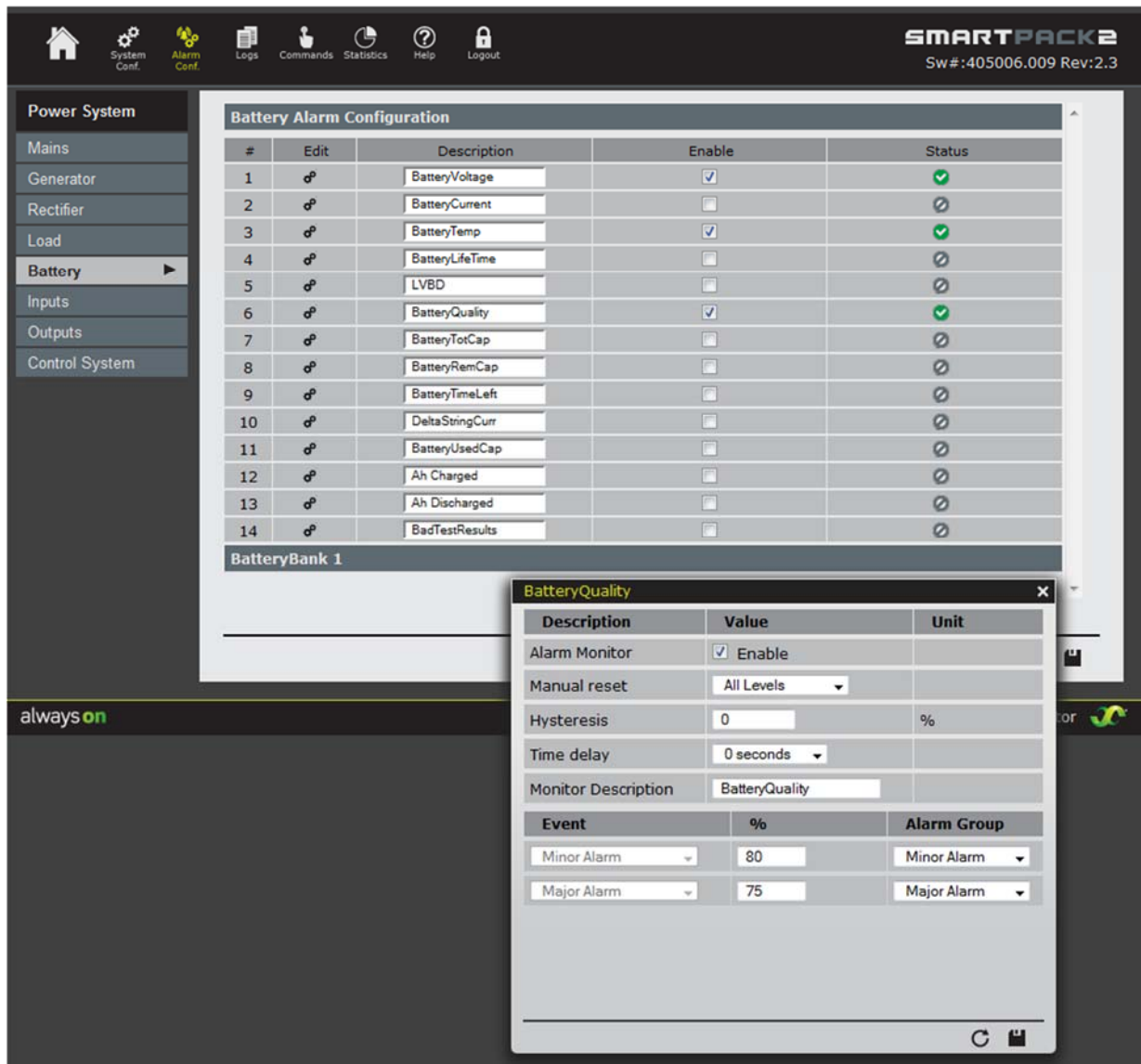
The screenshot displays the SMARTPACK2 web interface. The top navigation bar includes icons for Home, System Conf., Alarm Conf., Logs, Commands, Statistics, Help, and Logout. The main content area is titled "Battery Alarm Configuration" and contains a table with 14 rows of alarm settings. A modal window titled "BatteryTemp" is open, showing detailed configuration for the temperature alarm, including hysteresis, time delay, and event thresholds.

#	Edit	Description	Enable	Status
1		BatteryVoltage	<input checked="" type="checkbox"/>	
2		BatteryCurrent	<input type="checkbox"/>	
3		BatteryTemp	<input checked="" type="checkbox"/>	
4		BatteryLifeTime	<input type="checkbox"/>	
5		LVBD	<input type="checkbox"/>	
6		BatteryQuality	<input checked="" type="checkbox"/>	
7		BatteryTotCap	<input type="checkbox"/>	
8		BatteryRemCap	<input type="checkbox"/>	
9		BatteryTimeLeft	<input type="checkbox"/>	
10		DeltaStringCurr	<input type="checkbox"/>	
11		BatteryUsedCap	<input type="checkbox"/>	
12		Ah Charged	<input type="checkbox"/>	
13		Ah Discharged	<input type="checkbox"/>	
14		BadTestResults	<input type="checkbox"/>	

Description	Value	Unit
Alarm Monitor	<input checked="" type="checkbox"/> Enable	
Manual reset	Disabled	
Hysteresis	1	Celsius
Time delay	12 seconds	
Monitor Description	BatteryTemp	

Event	Celsius	Alarm Group
Major High	40	Major Alarm
Minor High	30	Minor Alarm
Minor Low	-5	Minor Alarm
Major Low	-10	Major Alarm

Figure 16. Battery Temperature Alarm Settings



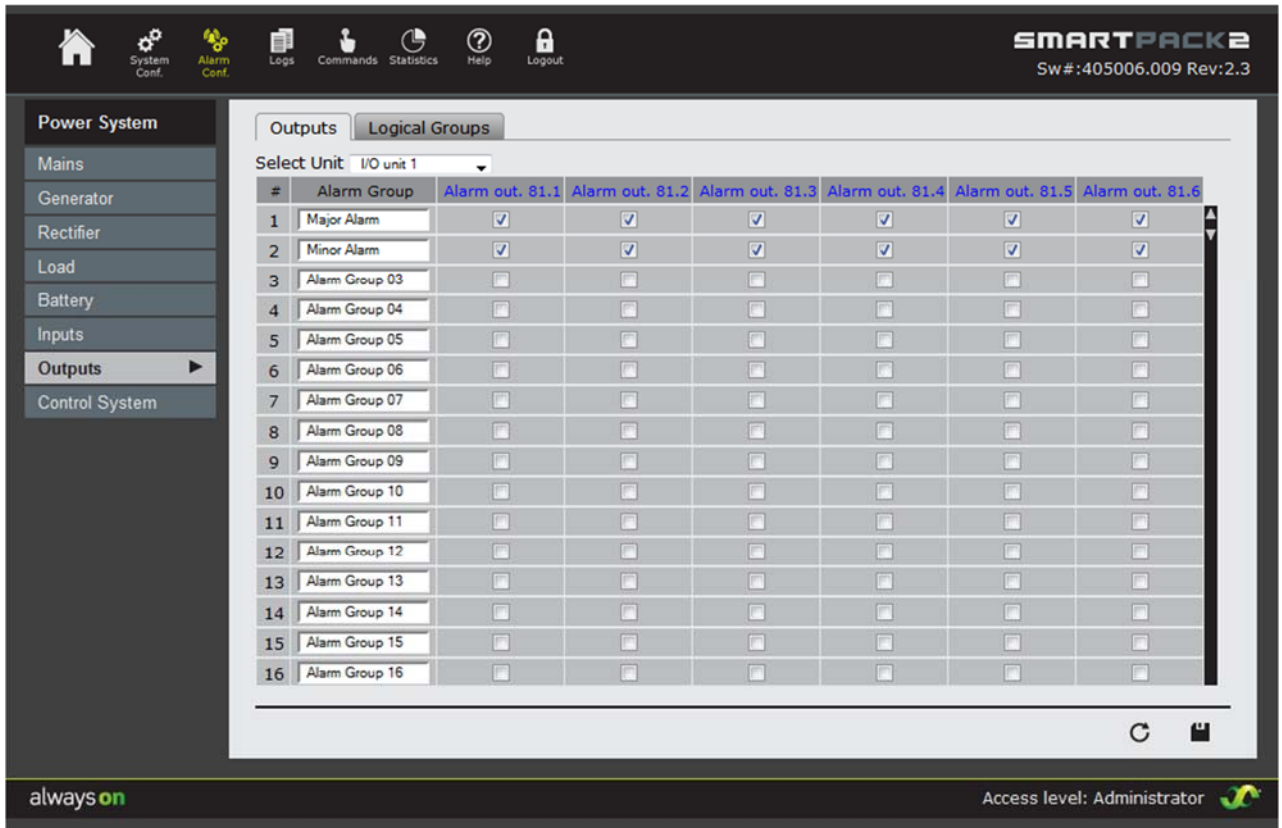
The screenshot shows the SMARTPACK2 software interface. The top navigation bar includes icons for Home, System Conf., Alarm Conf., Logs, Commands, Statistics, Help, and Logout. The main menu on the left lists Power System components: Mains, Generator, Rectifier, Load, Battery (selected), Inputs, Outputs, and Control System. The central panel displays the 'Battery Alarm Configuration' table for 'BatteryBank 1'.

#	Edit	Description	Enable	Status
1		BatteryVoltage	<input checked="" type="checkbox"/>	
2		BatteryCurrent	<input type="checkbox"/>	
3		BatteryTemp	<input checked="" type="checkbox"/>	
4		BatteryLifeTime	<input type="checkbox"/>	
5		LVBD	<input type="checkbox"/>	
6		BatteryQuality	<input checked="" type="checkbox"/>	
7		BatteryTotCap	<input type="checkbox"/>	
8		BatteryRemCap	<input type="checkbox"/>	
9		BatteryTimeLeft	<input type="checkbox"/>	
10		DeltaStringCurr	<input type="checkbox"/>	
11		BatteryUsedCap	<input type="checkbox"/>	
12		Ah Charged	<input type="checkbox"/>	
13		Ah Discharged	<input type="checkbox"/>	
14		BadTestResults	<input type="checkbox"/>	

The 'BatteryQuality' settings dialog box is open, showing the following configuration:

Description	Value	Unit
Alarm Monitor	<input checked="" type="checkbox"/> Enable	
Manual reset	All Levels	
Hysteresis	0	%
Time delay	0 seconds	
Monitor Description	BatteryQuality	
Event	%	Alarm Group
Minor Alarm	80	Minor Alarm
Major Alarm	75	Major Alarm

Figure 17. Battery Quality Alarm Settings



SMARTPACK2
Sw#:405006.009 Rev:2.3

Power System

Mains
Generator
Rectifier
Load
Battery
Inputs
Outputs
Control System

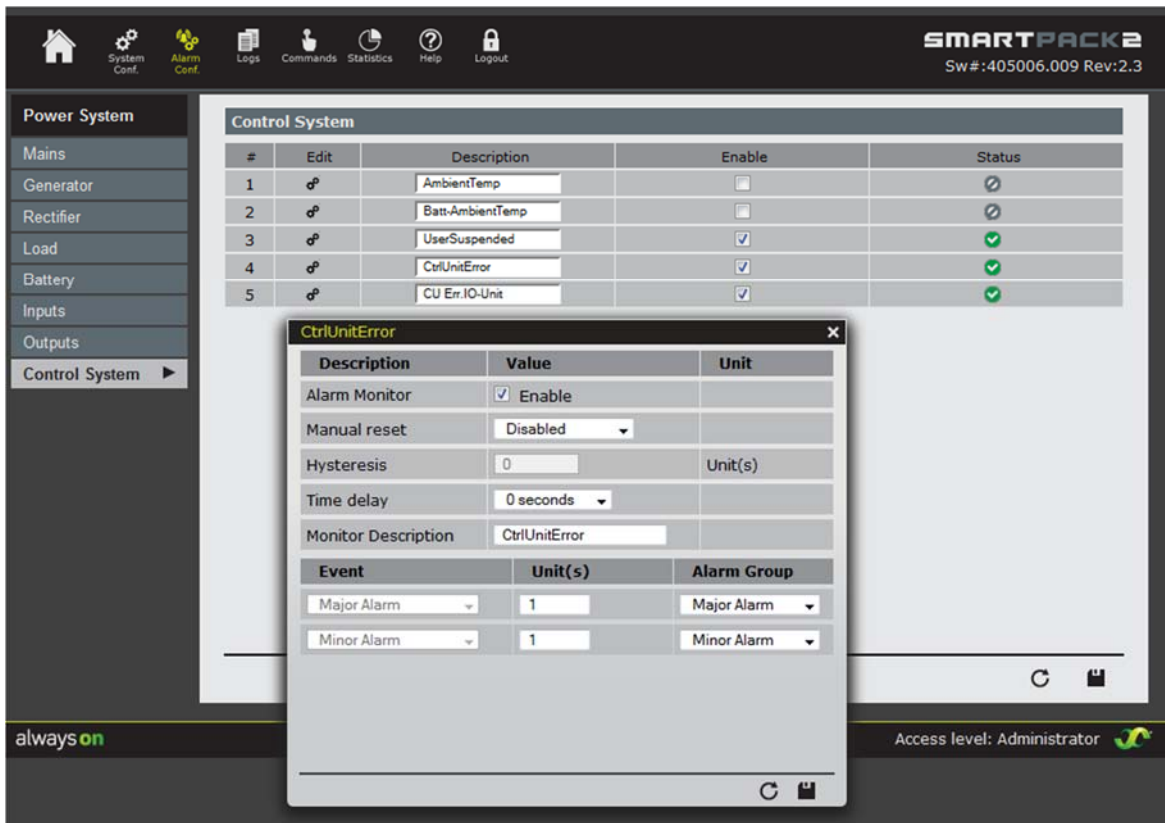
Outputs Logical Groups

Select Unit: I/O unit 1

#	Alarm Group	Alarm out. 81.1	Alarm out. 81.2	Alarm out. 81.3	Alarm out. 81.4	Alarm out. 81.5	Alarm out. 81.6
1	Major Alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Minor Alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Alarm Group 03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Alarm Group 04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Alarm Group 05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Alarm Group 06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Alarm Group 07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Alarm Group 08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Alarm Group 09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Alarm Group 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Alarm Group 11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Alarm Group 12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Alarm Group 13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Alarm Group 14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Alarm Group 15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Alarm Group 16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

always on Access level: Administrator

Figure 18. Battery Output Alarm Settings



SMARTPACK2
Sw#:405006.009 Rev:2.3

Power System

Mains
Generator
Rectifier
Load
Battery
Inputs
Outputs
Control System

Control System

#	Edit	Description	Enable	Status
1		AmbientTemp	<input type="checkbox"/>	
2		Batt-AmbientTemp	<input type="checkbox"/>	
3		UserSuspended	<input checked="" type="checkbox"/>	
4		CtrlUnitError	<input checked="" type="checkbox"/>	
5		CU Err.IO-Unit	<input checked="" type="checkbox"/>	

CtrlUnitError

Description	Value	Unit
Alarm Monitor	<input checked="" type="checkbox"/> Enable	
Manual reset	Disabled	
Hysteresis	0	Unit(s)
Time delay	0 seconds	
Monitor Description	CtrlUnitError	
Event	Unit(s)	Alarm Group
Major Alarm	1	Major Alarm
Minor Alarm	1	Minor Alarm

always on Access level: Administrator

Figure 19. Battery Control Unit Alarm Settings

2 Wiring and Cabling

2.1 Pre Installation Modifications

- 2.1.1 The following modifications must be completed before the unit is put into service, these modifications are necessary to isolate the DC terminals from the earth.
- 2.1.2 The first modification is to remove the two resistors shown in Figure 20. Remove Resistors The resistors are located beside the CAN Bus connection at the rear of the unit.

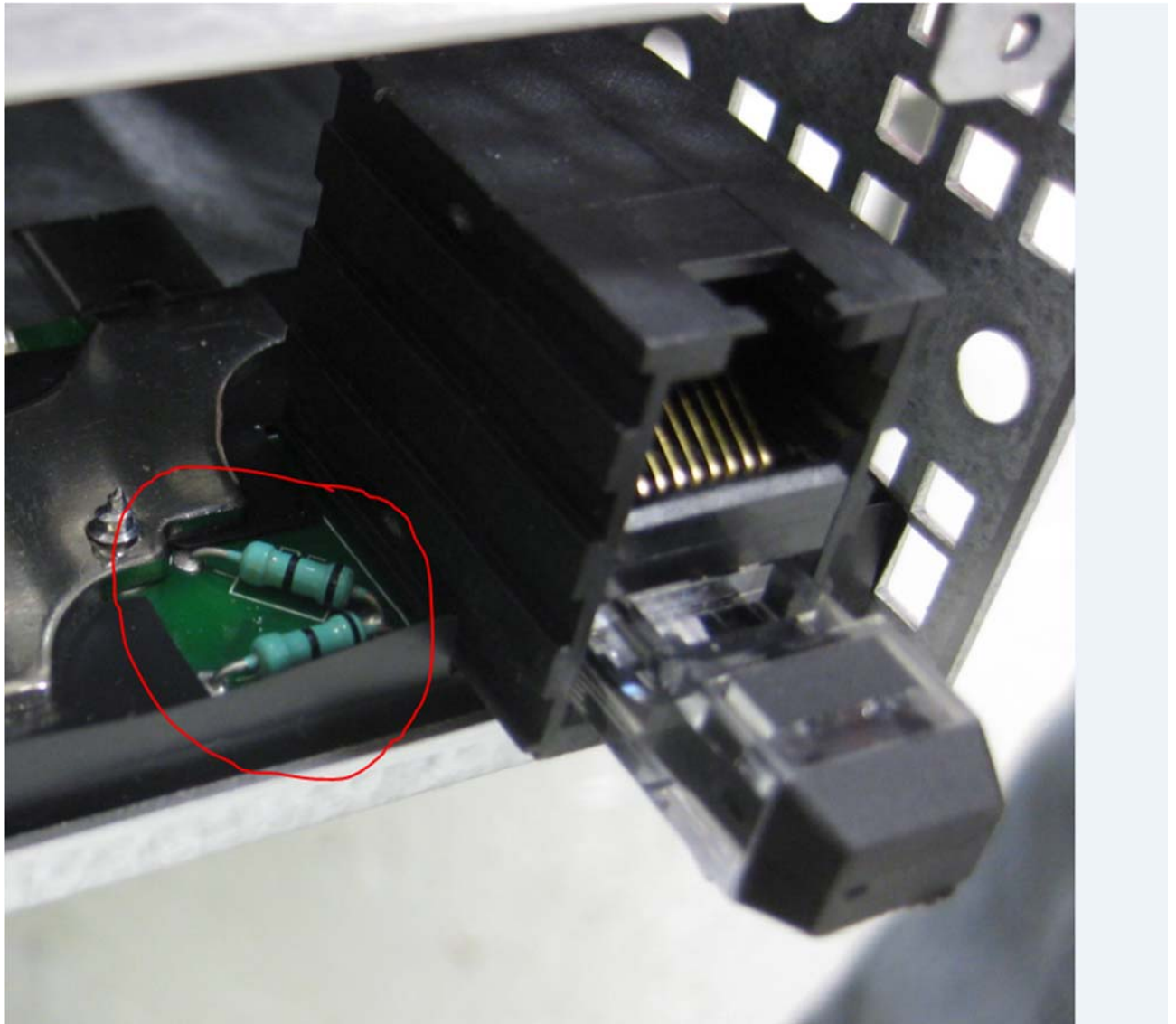


Figure 20. Remove Resistors

- 2.1.3 The second modification is to run an earth wire 4mm² from the terminal adjacent to the CAN Bus connector block on the rear (see Figure 21. Run Earth Wire) and connect it to the top of Terminal 1 as shown in Figure 24. AC Power Wiring.

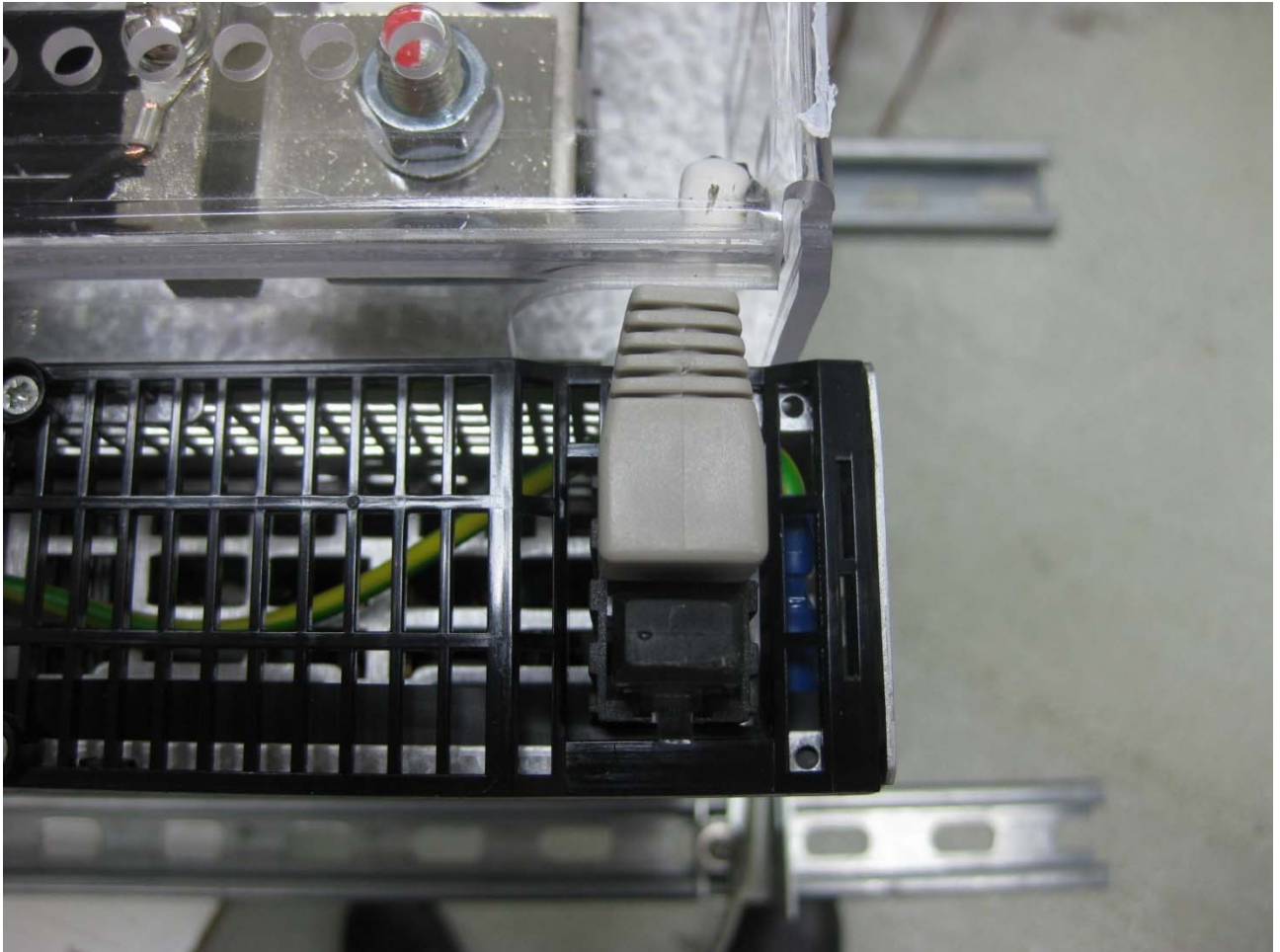


Figure 21. Run Earth Wire

- 2.1.4 The third modification is to remove the jumper link as shown in Figure 22. Remove Jumper. To access this link remove the green connector and open the screw as shown in Figure 23. Smartpack 2 Access Screw.



Figure 22. Remove Jumper



Figure 23. Smartpack 2 Access Screw

2.2 AC Power Wiring

2.2.1 Use the jumpers that come with the unit to connect 2, 3 & 4, and 5, 6 & 7 as shown in Figure 24. AC Power Wiring.

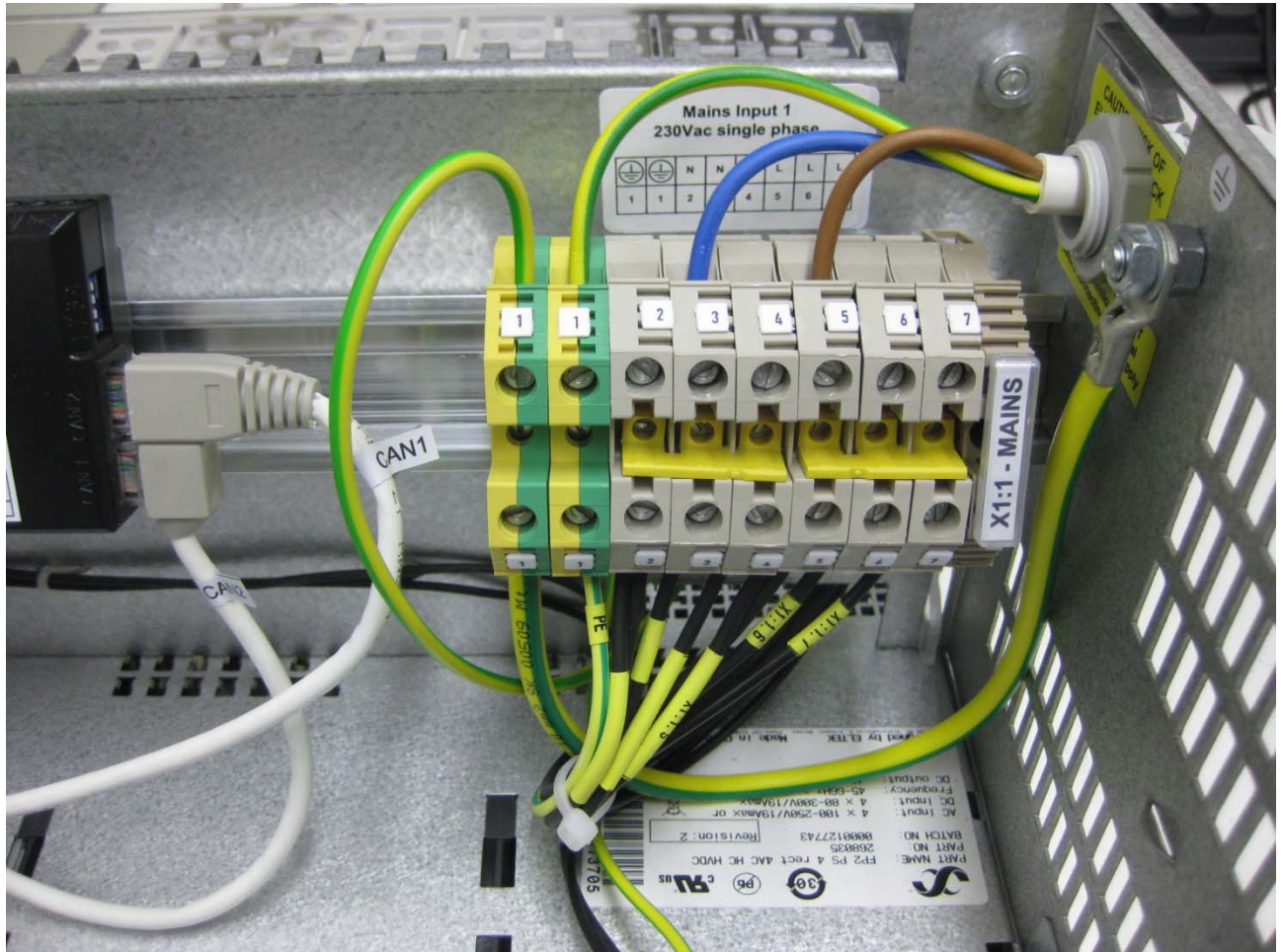


Figure 24. AC Power Wiring

2.3 DC Power Wiring

2.3.1 The DC Wiring is connected to the Load Terminals. It is shown in Figure 25. DC Wiring

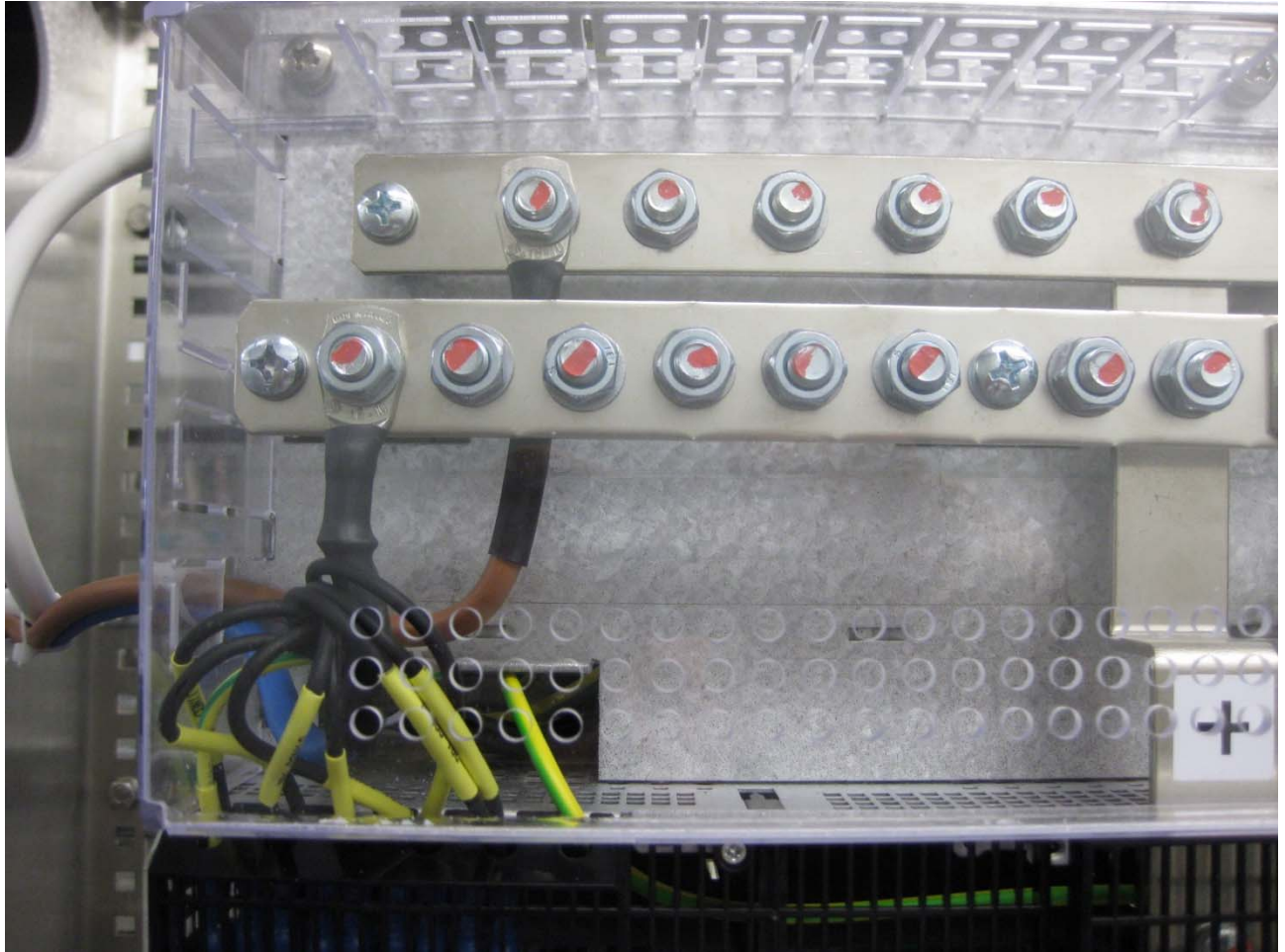


Figure 25. DC Wiring

2.4 Alarm & Temperature Probe Wiring

2.4.1 The temperature and alarm contact wiring are shown in Figure 26. Temperature Sensor Wiring and Figure 27. Alarm Wiring.

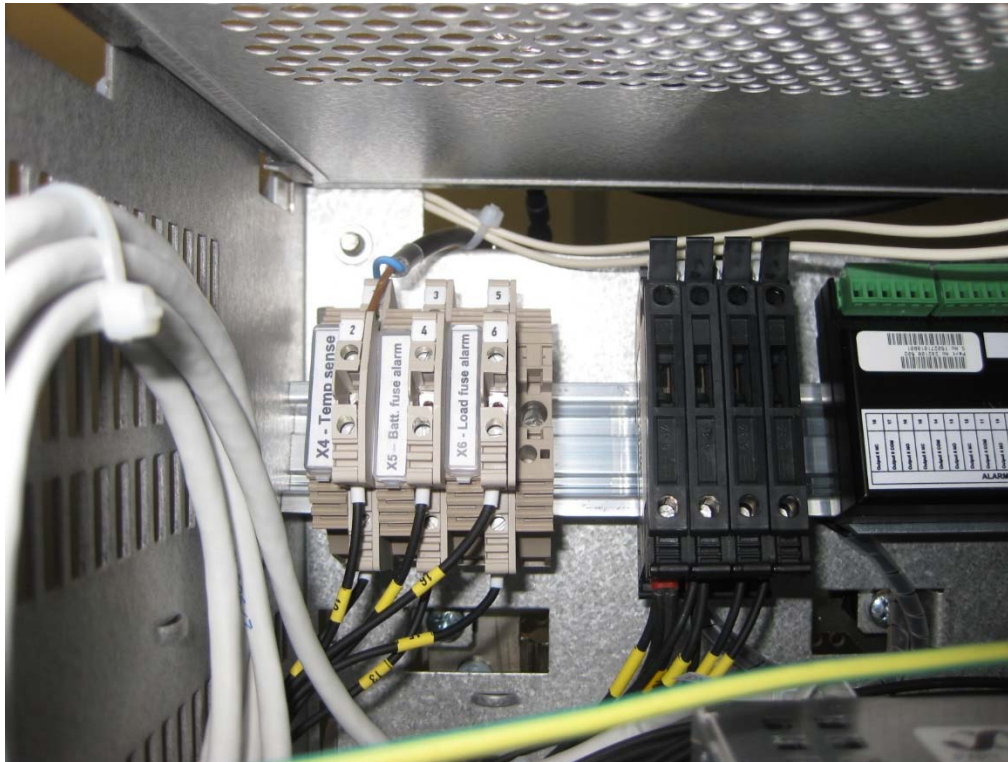


Figure 26. Temperature Sensor Wiring



Figure 27. Alarm Wiring

Figure 28. Chassis & DC Negative Earth