



C&C Power, Inc.

Commander Plus Controller

User's Guide & Programming Instructions for
System Current Equal to or Less than 1000
Ampères



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Introduction: Commander *Plus* Controller

The Commander *Plus* Controller is provided with two user accessible and one password protected programming selections for setting up the Controller. In addition to the programming selections, the Controller has an Event selection that stores alarm information, results of Battery Resistance tests, counts of discharge cycles and the date and duration information of the last Battery discharge that lasted more than 15 minutes. The Controller is universal in that it can be programmed for use with all C&C Power DC Systems to provide system Alarm and Control functions. The Controller is pre-programmed in the factory with settings that are optimal for the specific system. Further tailoring of the system can be performed by the user to set specific parameters as required.

The two user accessible programming selections are: Customer Adjustments, and Customer Settings. The third programming selection; Factory Settings is password protected and is not intended for user access. Selecting Customer Adjustments provides access to setting all of the Alarm and Control functions as identified below. Specific parameter values can be locally or remotely entered into the Customer Adjustment fields as long as the entered value is within the range that has been Factory set. Out of range values will not be accepted. The Customer Settings selection provides user access to the operational functions identified below. The user can program these functions as required; there are no restrictions on the selections. The Factory Settings selection is password protected. Programming of the acceptable ranges for all of the Customer Adjustment parameters has been performed in the factory to provide optimum performance of the specific system. Once these parameters have been set, there should not be any need to access this selection. Refer to the Settings Table that shows the range values for all of the Factory Settings and the default Customer Adjustments.

The Listing of the functions in each of the programming selections is followed by a brief description of each of the functions.

Customer Adjustments: Functions

1. Float Voltage
2. Low Voltage Disconnect 1
 - Disconnect Voltage
 - Reconnect Voltage
 - Disconnect Temperature
3. Low Voltage Disconnect 2
 - Disconnect Voltage
 - Reconnect Voltage
 - Disconnect Temperature
4. Low Voltage Disconnect 3
 - Disconnect Voltage
 - Reconnect Voltage
 - Disconnect Temperature
5. Equalize Voltage
 - Equalize Time
6. High Voltage Alarm
7. Low Voltage Alarm
8. Overload Current
9. Battery Float Current
10. Battery Resistance % Change
11. Test Interval (weeks)
12. Set Time and Date
13. Measure Battery Resistance?
14. Clear Events
15. Set Load Shed Events
 - Day of week and time Off and On for LVD 1, 2 and 3
16. Enable Load Shed?
17. Null I Load
18. Null I Battery

Customer Adjustments: Function Descriptions

1. Float Voltage:

This sets the desired output voltage of the Rectifiers. The set value is the desired nominal voltage at 25°C as recommended by the battery manufacturer. The Float Voltage will change as noted on the Controller Display if Temperature Compensation is activated in the Factory Settings and the temperature varies from 25°C (voltage is reduced as temperature increases). The typical Float Voltage setting is in the range from 2.25 to 2.27 Volts/cell.

2. Low Voltage Disconnect 1:

Disconnect Voltage sets the voltage at which Disconnect 1 will operate causing the load to be removed. This is normally set to a voltage that prevents the Batteries from experiencing a deep discharge. The voltage is typically set in the range of 1.67 to 1.75 Volts/cell.

Reconnect Voltage sets the voltage at which point Disconnect 1 is re-energized restoring power to the load. This setting is set to a voltage high enough to insure the batteries have received sufficient charge to prevent the disconnect from oscillating. A typical setting value is 2.0 Volts/cell.

Disconnect Temperature sets the temperature at which Disconnect 1 will operate causing the load to be removed. This is normally set to a temperature that the battery manufacturer specifies as the maximum operating temperature for the batteries. This will typically be in the range of 32 to 40°C.

3. Low Voltage Disconnect 2:

Disconnect Voltage sets the voltage at which Disconnect 2 will operate causing the load to be removed. This is normally set to a voltage that prevents the Batteries from experiencing a deep discharge. The voltage is typically set in the range of 1.67 to 1.75 Volts/cell.

Reconnect Voltage sets the voltage at which point Disconnect 2 is re-energized restoring power to the load. This setting is set to a voltage high enough to insure the batteries have received sufficient charge to prevent the disconnect from oscillating. A typical set value is 2.0 Volts/cell.

Disconnect Temperature sets the temperature at which Disconnect 2 will operate causing the load to be removed. This is normally set to a temperature that the battery manufacturer specifies as the maximum operating temperature for the batteries. This will typically be in the range of 32 to 40°C.

4. Low Voltage Disconnect 3:

Disconnect Voltage sets the voltage at which Disconnect 3 will operate causing the load to be removed. This is normally set to a voltage that prevents the Batteries from experiencing a deep discharge. The voltage is typically set in the range of 1.67 to 1.75 Volts/cell.

Reconnect Voltage sets the voltage at which point Disconnect 3 is re-energized restoring power to the load. This setting is set to a voltage high enough to insure the batteries have received sufficient charge to prevent the disconnect from oscillating. A typical setting value is 2.0 Volts/cell.

Disconnect Temperature sets the temperature at which Disconnect 3 will operate causing the load to be removed. This is normally set to a temperature that the battery manufacturer specifies as the maximum operating temperature for the batteries. This will typically be in the range of 32 to 40°C.

5. Equalize Voltage:

Sets the Rectifier output voltage to apply a higher Float Voltage to the batteries. The setting of the equalize voltage is per the battery manufacturers recommendation typically in the range from 2.29 to 2.34 Volts/cell. Included in this setting field is Equalize Time. This sets the duration the Equalize Voltage is applied. The Controller display shows the Equalize conditions both Voltage and remaining time.

6. High Voltage Alarm:

Sets the threshold voltage at which a High Alarm will be created. This setting is typically set to a value about 2% above the set Float Voltage.

7. Low Voltage Alarm:

Sets the threshold voltage at which a Low Voltage Alarm will be created. This setting is typically set to a value about 2% below the set Float Voltage.

8. Overload:

Sets the Load Current level which when exceeded will create an alarm. This current setting is generally used to indicate that the load current has reached a level that is greater than what can be supplied by the nth Rectifier should a rectifier failure occur.

9. Battery Float Current:

Sets a current threshold that when exceeded will create a Battery Float Current alarm. The alarm is an indicator that the charge current to the batteries has exceed the normally expected current for fully charged batteries indicating that a possible thermal runaway or high leakage condition may be starting. This setting is a function of the number of battery strings and the Amp Hour capacity rating of the batteries. Normal Float current is typically in the range of .001 to .005 CA. Note that after a discharge event, the Battery Float Current alarm is inhibited as the batteries are re-charging. The inhibit allows for one hour or recharge for each minute of discharge.

10. Battery Resistance % Change:

Sets a percentage value that when exceeded will create a Battery Alarm. The alarm indicates that the change in battery resistance has increased by at least the set percentage value over the previous reading. The increase may be due to either a

loose connection in the battery string wiring or a battery is well on its way to becoming defective.

11. Test Interval (weeks):

Sets the Battery Resistance test interval in terms of weeks. The first test after programming will commence at 24:00 xx weeks from the date programmed.

12. Set Time:

Sets the Controller real time clock and calendar. The clock is used for display, timing events and time stamping alarms.

13. Measure Battery Resistance?:

Enables the start of a Battery Resistance measurement. This is normally performed at the time of system start-up and whenever battery maintenance or replacement has occurred. The result of this initial measurement is used as the reference point for subsequent measurements. The results of the initial and the last measurement are viewable by selecting Battery Resistance in the EVENTS menu selection.

14. Clear Events:

This will clear the Event Log that contains the last 50 Alarm events and the Short Discharge counters.

15. Set Load Shed ?:

Sets the time of day and day of the week to activate Load Shedding. The programming field allows for selecting the day of the week and setting the time of day to perform the Load Shed and the time of day to reconnect the load. These settings are unique for all three of the systems disconnects. Setting the time On and OFF values to 24:00 is used as a null preventing a disconnect from occurring when Load Shed is enabled.

16. Enable Load Shed:

Provides an enable/disable toggle for the Load Shedding capability. When Load Shedding is enabled, the Controller display provides a visual indication.

17. Null I Load:

With no load on the System, the Load Current reading can be set to 0. This will improve the accuracy of Load Current reading by either adding or subtracting the offset value from the displayed value.

18. Null I Battery:

With no load or Batteries connected to the system, the Battery Current reading can be set to 0. This will improve the accuracy of the Battery Current reading by either adding or subtracting the offset value from the displayed value.

Note: See the Special Programming section for adjusting the Load and Battery Null functions

Customer Settings: Functions

1. Relay Normally Closed
2. Audible Alarm
3. Clear Battery Test Errors
4. Clear Battery Resistance
5. Alarm Test
6. Voltage Offset
7. IP Address
 - Subnet Mask
 - Gateway
 - Trap manager

Customer Settings: Function Descriptions

1. Relay Normally Closed:

Selects the state of the alarm relays as either normally open or normally closed. Normally open implies that the relay contacts will close on an alarm condition.

2. Audible Alarm:

Enables or disables the Audible Alarm from sounding on an alarm condition.

3. Clear Battery Test Errors:

During the Battery Testing routine, three Abort conditions can be encountered. These aborts are indicators of potential problems with the battery plant. The Clear Battery Test Errors resets the Alarm condition.

4. Clear Battery Resistance:

Clears the initial and last Battery Resistance values. This action is normally performed only when the Battery String has been replaced.

5. Alarm Test:

Enables a test routine that activates one at a time all of the Alarm Relays and Contactors to verify that they are operating properly. It is important to note that performing the Alarm Test will cause the loads to be momentarily disconnected if the LVD 1, 2, 3 Contactors are exercised.

6. Voltage Offset:

Enables the adjustment of the measured Float Voltage of the System. Using the scroll up and down buttons, the displayed voltage can be adjusted to match the actual Float Voltage as measured with an external Voltmeter.

7. IP Address:

Four fields of four octets each for programming the IP address of the optional SNMP Interface module. The first address is the assigned IP address of the interface, the second is the subnet IP, the third is the Gateway IP and the fourth address is the IP of the Traps Manager.

Factory Settings: Functions

1. Rectifier Voltage
2. Rectifier Watts
3. Float Voltage
4. Low Voltage Disconnect 1, 2, 3
 - Disconnect Voltage
 - Disconnect Temperature
 - Reconnect Voltage
5. Equalize Voltage
 - Equalize Time
6. High Voltage Alarm
7. Low Voltage Alarm
8. Overload Current
9. Battery Float Current
10. Battery Resistance % Change
11. Test Interval
12. Maximum Load Current (shunt setting)
13. Temperature Compensation
14. Clear Events

Factory Settings: Function Descriptions

1. Rectifier Voltage (24/48):

Selects the system operating voltage.
2. Rectifier Watts (1200, 2500):

Selects the Wattage rating of the system Rectifier type.
3. Float Voltage:

Sets the minimum and maximum value of the Float Voltage that can be programmed in the Customer Adjustments.
4. LVD 1, 2, 3:

Disconnect Voltage: Sets the minimum and maximum value of the Disconnect Voltage that can be programmed in the Customer Adjustments.

Disconnect Temperature: Sets the minimum and maximum value of the Disconnect Temperature that can be programmed in the Customer Adjustments.

Reconnect Voltage: Sets the minimum and maximum value of the Reconnect Voltage that can be programmed in the Customer Adjustments.

5. Equalize Voltage:

Voltage; sets the minimum and maximum value of the Equalize Voltage that can be programmed in the Customer Adjustments.

Time; sets the minimum and maximum value of the Equalize Time that can be programmed in the Customer Adjustments.

6. High voltage Alarm:

Sets the minimum and maximum value of the High Voltage Alarm that can be programmed in the Customer Adjustments.

7. Low Voltage Alarm:

Sets the minimum and maximum value of the Low Voltage Alarm that can be programmed in the Customer Adjustments.

8. Overload:

Sets the minimum and maximum value of load current that can be programmed in the Customer Adjustments to cause an Overload Alarm.

9. Battery Float Current:

Sets the minimum and maximum value of Battery Float Current that can be programmed in the Customer Adjustments to cause a Battery Float Current Alarm.

10. Battery Resistance % Change:

Sets the minimum and maximum percent value that can be programmed in the Customer Adjustments to cause a Battery Resistance % Change Alarm.

11. Test Interval:

Sets the minimum and maximum number of weeks between performing an automatic Battery Resistance test that can be programmed in the Customer Adjustments.

12. Maximum Load Current:

Sets the rated current of the system shunts or Hall Effect current sensors to establish the reference for all system current measurements.

13. Temperature:

Toggles the enable/disable of the Battery Temperature Compensation feature of the Controller

14. Clear Events:

Selection allows the clearing of the Event Log.

Programming the Commander *Plus* Controller:

Prior to attempting to program changes or activate services of the Commander *Plus* Controller it is necessary to have read and understood the functions and descriptions for all of the user selectable and programmable parameters.

Programming the Commander *Plus* Controller uses the four button keypad and the vacuum fluorescent display. The keypad has four functions, Scroll up, Scroll down, Menu and Enter. Using the four buttons as soft keys along with the display allows the user to program all of the accessible operational functions and parameters allowing the system to be optimized for the specific application.

When not in the programming mode, the display has four states. State 1 displays C&C Power Inc. Load Shed enable status, Float Voltage, and Battery Current. State 2 is the same as State 1 but instead of Battery Current, the Load Current is displayed. State 3 displays the time (24 Hr format), date, day, Float Voltage and Battery Current. State 4 is the same as State 3 except that Load Current is displayed instead of Battery Current and Battery Temperature is displayed instead of the week day. Each state is displayed for approximately 10 seconds before sequencing to the next state.

The Menu button is used to enter the programming mode. In the programming mode, the user can select Customer Adjustments, Events, Customer Settings or Factory Settings. (Note: Factory Settings are password protected and can only be accessed by authorized personnel).

Programming: Customer Adjustments

Refer to the list of Customer Adjustment parameters to determine if the parameter to be changed is contained within the choices of Customer Adjustments. See the section on Special Programming for more details on programming Load Shedding and performing Battery Resistance measurements.

Depressing and holding the Menu button will activate the programming selection display. Depress the scroll up button to select Customer Adjustments (AJST). The display will change and ask; Continue: NO YES. Depress the button under YES, the display will change to display the first programmable option. Depressing the button under NO will exit the programming mode. The display will also show NEXT that allows you to move to the next programmable option. To change the selected parameter, depress the button below change (CHG). If you do not want to make the change, depress the EXIT button to exit from the programming mode. If no selections or entries are made, the display will time out in approximately 30 seconds and return to the normal screen display.

The first Customer Adjustment is Float Voltage. To change the Float Voltage, proceed as above to the point of depressing the CHG button. The display will show the current set value in both the OLD and NEW fields. The cursor will line up under the first digit of the NEW field. To change the Float Voltage, using the scroll up and scroll down buttons change the first digit then depress the Enter button. The new value for the first digit is displayed and the cursor has moved to the second digit. Again using the scroll buttons set the second digit to the desired value and depress Enter. The cursor will move to the third digit. Use the scroll buttons to make any change to the third digit and depress Enter. If no change is required to any of the digits, depress Enter to move the cursor to the position where the change is to be made. Upon entering any digit, the display will ask Continue: NO YES. If a mistake is made in entering a value, depress the NO button and the cursor will restore to the position it left to allow a re-entry. Depressing the YES allows the programming to continue to either the next digit or to the next parameter.

For parameters that do not require the entry of a new value, but rather a toggle on or off to set a particular function, the toggle action to ON OFF or NO YES is accomplished with the scroll up button.

Using the above procedures, all of the Customer Adjustable parameters can be programmed. An attempt to enter a change that has a value outside of the Factory Set range will not be accepted.

Programming: Customer Settings

Refer to the list of Customer Settings to determine if the parameter to be changed is within the choices of Customer Settings. See the section on Special Programming for additional details for Alarm testing.

Customer Settings can be selected by entering the programming mode as described above. Changes to most of these settings does not involve the entry of new values but allow the user to enable or disable functions, make operational choices, and perform a test of the system alarms. The programmable functions within Customer Settings are the 4 IP addresses required for operation of the optional SNMP interface. Programming the Customer Settings uses the same procedure described for programming the Customer Adjustments. The difference is that there are no ranges associated with any of the parameters.

Programming: Events

Selecting EVENTS from the programming menu displays four choices: ALARMS, DISCHARGE, BATTERY R, and SHORT DSC. Using the Scroll up button, you can select the parameter to be viewed and depressing the Enter button will display the data. (Note: for some of the selections it may be necessary to use the Scroll up button to view all of the data).

ALARMS displays time stamped alarm events both on occurrence and upon clearing. Using the Scroll buttons it is possible to sequence through all of the system alarm events. When an alarm event is cleared, a log entry is made appended with OK. To clear the Event Log, enter the programming mode, select Customer Adjustments, scroll to the Clear Events selection and select YES.

DISCHARGE displays the time and date of the last 5 Battery Discharge that lasted longer than 15 minutes. This display will update each time a new discharge event greater than 15 minutes occurs.

BATTERY R displays the result of the initial and the last Battery Resistance measurement. The initial reading will remain unless cleared by selecting Clear Initial Battery R from the Customer Settings menu and selecting YES and depressing the Enter button. The only time this value should be cleared is when the Batteries have been replaced.

SHORT DSC displays the number of Battery Discharges that lasted less than 1 minute, between 1 and 5 minutes, between 5 and 15 minutes and greater than 15 minutes. The counters can be cleared by entering the programming mode, selecting Customer Adjustments, scrolling to Clear Events and selecting YES.

Special Programming: Load Shedding

Prior to programming the Load Shedding sequence, it is recommended that the programmer construct a table of the Off and On times for each of the Load Disconnects for each day of the week. This table will simplify the programming sequence. Note that programming an On time that is less than the Off time implies the disconnect is held Off until the next day.

Selecting Set Load Shed displays The day (starts with Sun.), the Load Disconnect number (starts with 1) and the Off and On time fields nulled at 24:00. If no load shedding is required for the day for any of the three Load Disconnects, depressing the NEXT button will sequence to the next day. If any of the three disconnects is to be set for the day, it is necessary to sequence through all three disconnects by depressing the Enter button without entering any values for the disconnects not to be programmed for the day. The Disconnect time is programmed one digit at a time followed by Enter that moves the cursor to the next digit to be programmed. Once the Off and On times have been programmed or left null for all three disconnects, the display choices are either Exit or Next. Exit will leave the Set Load Shed mode and display the Load Shed Enable choice. Using the scroll up button allows the programmer to enable the Load shed to occur, or Exit the screen without enabling Load Shedding. Depressing the Next button will sequence the display to the next day.

Having programmed the Load Disconnects for daily Off and On times and having enabled the Load Shedding function, the program will execute until a change is made to the programming or the Load Shed function is disabled. Note that loss of power to the Controller will not lose the settings.

Special Programming: Battery Resistance

There are several considerations for programming the Battery Resistance Test routine. First is setting the frequency of testing. Setting the Test Interval in the Customer Adjustment field provides a range from once per week to once every 52 weeks. Setting a value in this field will allow for automatic testing to be performed at the programmed time interval. Setting this value to 0 will inhibit automatic testing. Manual testing can be invoked by opening the Measure Battery R Test? display in the Customer Adjustments and using the scroll up button select YES. Pressing Enter will initiate the Resistance Test. The test will run until completion and the display will show the result at the conclusion of the test. The result is stored in the Battery R as either the initial reading or the last reading field of the display. If the test is not the initial test, the newest result will be compared to the initial result and determine if the resistance change is greater by more than the preprogrammed % change value. If the % change is greater, a Battery Alarm is generated.

Automatic testing is deferred for 24 hours after a discharge event that lasted longer than 15 minutes, or for 1 hour per minute of discharge for short duration discharges. This is to insure that the test results are not distorted by uncharged batteries.

There are Alarms generated during the Resistance Test that will cause the test to abort. These alarms result from the batteries inability to supply sufficient current to perform the test. There is also an alarm created should the measured resistance exceed the user programmed % change value. These Battery Test Alarms can be cleared by selecting and activating the Clear Battery Test Errors in the Customer Settings.

- Alarm ABORT 1:
Indicates that there may be an open Battery String due to an open cell or loose or broken connection.

- Alarm ABORT 2:
Indicates that the Battery String is not capable of supplying ½ of the total load current.

- Alarm ABORT 3:
Indicates that the Battery String is not capable of sustaining full load current to complete the test.

Special Programming: Alarm Test

The Alarm Test function is selectable from the Customer settings menu. Selecting Alarm Test allows the activation of each of the 23 alarm conditions generated by the Commander Plus Controller. Using the Scroll buttons, the Alarm choices are sequenced and by depressing the Enter button, the specific alarm is created. Depressing the Enter button again clears the alarm.

Warning: It should be noted that testing the Low Voltage disconnects will disconnect the associated load until the test alarm is cleared by the second push of the Enter button.

Special Programming: Load and Battery Current Null

These adjustments are to be made only at the time of system initialization when there is no load or batteries connected to the system. It necessary to null both the Load and Battery current readings if either displays a value greater than 0.

Always start with nulling the Load Current then the Battery Current. Using the Scroll Up button will move the cursor to Yes then depress the Enter Button. The Load Current display will change to show 0 Load Current. Perform the same operation for the Battery Current. The Battery Current will also display 0.

Commander *Plus*: Alarm Information

In addition to the Alarm conditions that appear on the Commander *Plus* display, there are 8 sets of relay contacts for connection to external devices as a means of providing an indication of an Alarm condition. The Customer Settings menu allows for selecting either Relay Normally Open or Normally Closed as the default state of the Alarm Relays. An audible alarm is also sounded for any alarm condition. Depressing the Enter button will silence the audible alarm. The audible Alarm can be turned off by selecting Audible Alarm in the Customer Settings menu. Using the Scroll up button, Off can be selected and depressing the Enter button will register the change.

External Alarm Relay Contacts Provided:

- Low Voltage Alarm
- High voltage Alarm
- Fuse Alarm
- Battery Disconnect Alarm
- Minor Alarm
- Major Alarm
- Rectifier Fail Alarm
- Breaker Alarm

Alarm conditions that will cause a Minor Alarm are as follows:

- Fuse Alarm
- Overload alarm
- Breaker Alarm
- AC Fail Alarm
- Fan Fail Alarm
- Rectifier Fail Alarm

Alarm conditions that will cause a Major Alarm are as follows:

- Low Voltage Disconnect 1, 2, 3 (temperature)
- Low Voltage Disconnect 1, 2, 3 (Voltage)
- High Voltage Alarm
- Low Voltage Alarm
- Battery Disconnect Alarm
- Battery Alarm
- More than 1 AC Fail Alarm
- More than 1 Fan Fail Alarm
- More than 1 Rectifier Fail Alarm
- Battery Float Current Alarm

Default Factory Settings

Parameter	Min.	Max.	Min.	Max.	Set
	24V System		48V System		
Rectifier Voltage					24/48
Rectifier Watts					1200/2500
Float Voltage	24.5	29	49	58	
LVD 1 Disconnect Voltage	18	24	36	48	
LVD 1 Disconnect Temperature		60		60	
LVD 1 Reconnect Voltage	19	27	38	54	
LVD 2 Disconnect Voltage	18	24	36	48	
LVD 2 Disconnect Temperature		60		60	
LVD 2 Reconnect Voltage	19	27	38	54	
LVD 3 Disconnect Voltage	18	24	36	48	
LVD 3 Disconnect Temperature		60		60	
LVD 3 Reconnect Voltage	19	27	38	54	
Equalize Voltage	27.5	28.5	55	57	
Equalize Time	0	9.9	0	9.9	
High Voltage Alarm	26	28	52	56	
Low Voltage Alarm	24	27	49	54	
Overload Current					System Unique
Battery Float Current	1	10	1	10	
Battery Resistance % Change	50	300	50	300	
Test Interval (weeks)	0	52	0	52	
Maximum Load Current					Shunt Value
Temperature Compensation					ON
Clear Events					YES

Default Customer Adjustments

Parameter	24 V System	48 V System	Comments
Float Voltage	27.2 V	54.5V	
LVD 1 Disconnect Voltage	20 V	40 V	
LVD 1 Disconnect Temperature	42	42	
LVD 1 Reconnect Voltage	24	48	
LVD 2 Disconnect Voltage	21 V	41 V	
LVD 2 Disconnect Temperature	41	41	
LVD 2 Reconnect Voltage	25	50	
LVD 3 Disconnect Voltage	22 V	42 V	
LVD 3 Disconnect Temperature	40	40	
LVD 3 Reconnect Voltage	26	52	
Equalize Voltage	28	56	
Equalize Time	0	0	
High Voltage alarm	27.7	55.6	
Low Voltage Alarm	26.6	53.4	
Overload Current	n(I rect) – I rect	n(I rect) – I rect	
Battery Float Current	2	2	
Battery Resistance % Change	100	100	
Test Interval	0	0	
Set Time and Date			Set at Install
Measure Battery Resistance?	NO	NO	
Clear Events	NO	NO	
Set Load Shed Events			Set at Install
Enable Load Shed	OFF	OFF	

