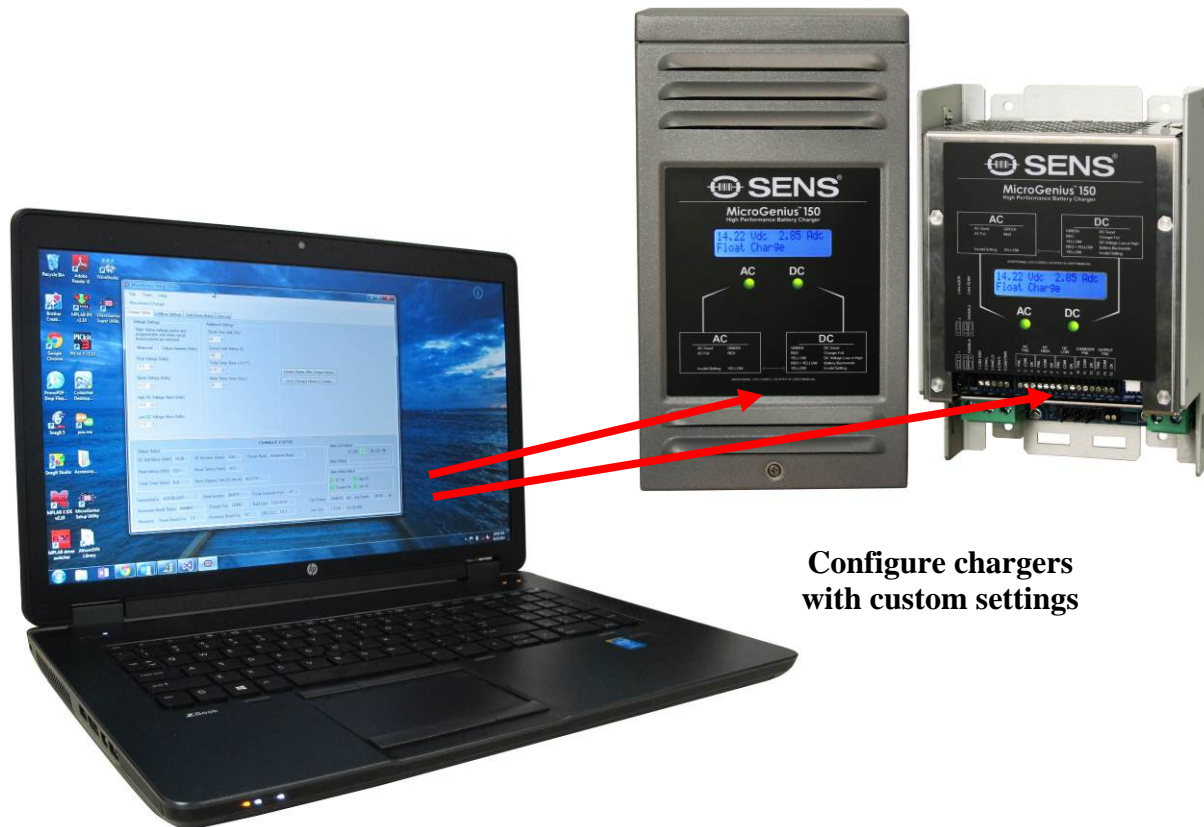


MicroGenius® Setup Utility

For the SENS MicroGenius® 150 Charger



**Configure chargers
with custom settings**

Operation Manual

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Installation or service questions?
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1 DESCRIPTION

Use the *MicroGenius® Setup Utility* to program MicroGenius® 150 battery chargers with custom settings. This feature enables an OEM or specially qualified distributor or packager to customize output voltage, alarms, temperature compensation, boost time limit, and current limit settings.

The *MicroGenius® Setup Utility* software operates on a Windows 7 or newer PC with a USB port.

2 SETUP

2.1. Copy Files

Copy all files from the media provided by SENS to a Windows 7 or newer PC.

2.2. Install USB Driver

Install the USB driver by double-clicking on the *FTDI USB DRIVER AUTO Install.exe* file.

2.3. Install Utility

Install the *MicroGenius® Setup Utility* by double-clicking the *MicroGeniusSetupUtilityInstaller.exe* file. Launch the utility if desired.

2.4. Power Off Charger

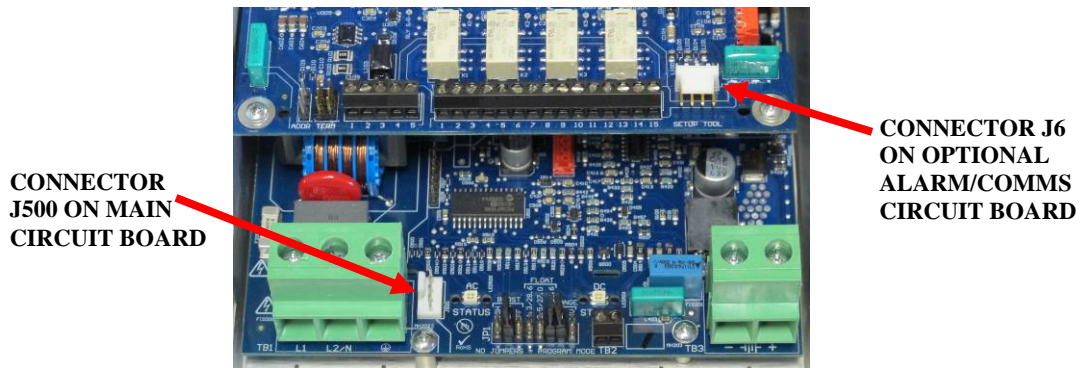
Disconnect AC and DC voltages from the charger before programming. The USB connection will provide the power necessary to program the charger.

2.5. Connect Programming Cable

Connect the programming cable provided by SENS from the USB port on a PC to main circuit board connector J500 (located near bottom left circuit board, just to right of AC connection terminal block) or optional alarm/communications circuit board connector J6 (located at bottom right circuit board and labeled “SETUP TOOL”) if the charger is equipped with the optional alarm/communications circuit board.

Figure 1 – Programming Cable Connection

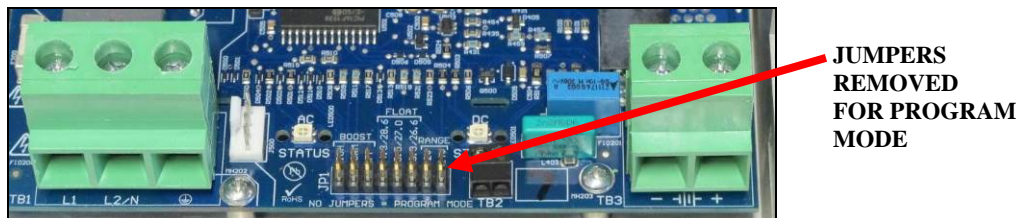
(fully enclosed model with optional alarm/communications circuit board shown)



2.6. Remove Jumpers

Remove all jumpers from JP1 on main circuit board to enable PROGRAM MODE. In PROGRAM MODE the charger output is determined by values programmed in the charger using the MicroGenius® Setup Utility. If the charger has not been previously programmed, removing all jumpers will result in an error state.

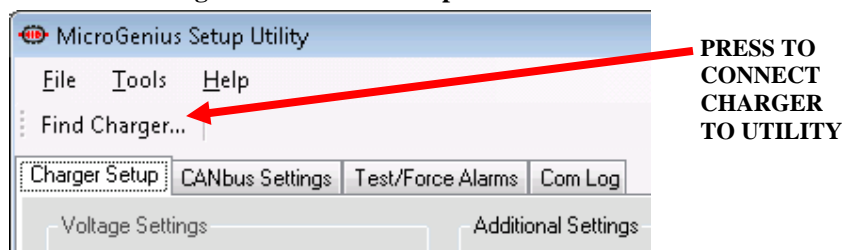
Figure 2 – Remove Jumpers



2.7. Connect Charger

If not already operating, launch the *MicroGenius® Setup Utility*. The utility may automatically find the connected charger or may need to be manually connected by clicking the *Find Charger...* button at top left of utility. Upon pressing this button, the charger will connect to the utility and the *Find Charger...* button will be replaced with a *Disconnect Charger* button.

Figure 3 – Remove Jumpers



3 OPERATING INSTRUCTIONS

Use the *MicroGenius® Setup Utility* to program the parameters listed in Table 1 and described below. The charger will immediately begin using custom programmed values upon saving to the charger. Screen captures of the *MicroGenius® Setup Utility* are provided in the appendix.

Table 1 – Programmable Parameters

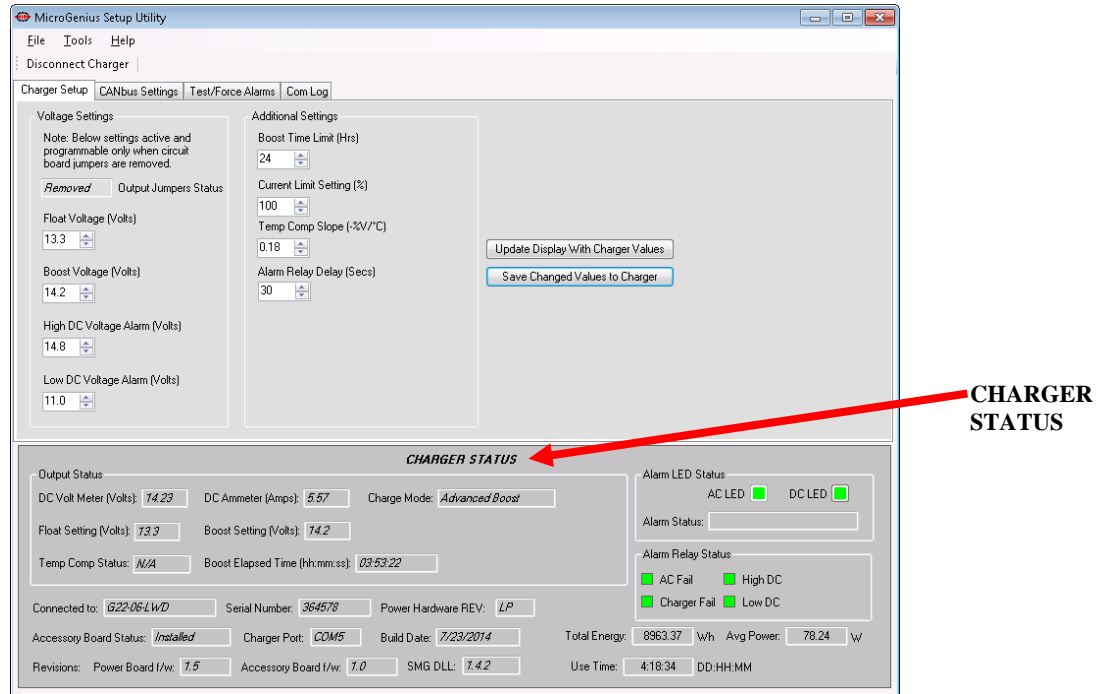
Parameter	Utility Tab	Access Via Utility and Details	Adjustment Range
Float Voltage	Charger Setup	READ/WRITE. Must remove circuit board JP1 jumpers to engage.	8-32V, must be less than 40% lower than Boost
Boost voltage	Charger Setup	READ/WRITE. Must remove circuit board JP1 jumpers to engage.	8-32V, must be same or higher than Float, must be less than 40% higher than Float
High DC Voltage Alarm Setpoint	Charger Setup	READ/WRITE. Must remove circuit board JP1 jumpers to engage.	0-35V, must be higher than Boost by 2% of Float voltage, must be less than 40% higher than Boost
Low DC Voltage Alarm Setpoint	Charger Setup	READ/WRITE. Must remove circuit board JP1 jumpers to engage.	0-35V, must be 2-40% lower than Float
Boost Charge Time Limit	Charger Setup	READ/WRITE	0-100 hours
Current Limit Setting	Charger Setup	READ/WRITE	25-100% of rated output current
Alarm Relay Delay*	Charger Setup	READ/WRITE	0-60 seconds
Temperature Compensation Slope	Charger Setup	READ/WRITE	0 to -0.30% V/°C
J1939 charger number*	CANbus Settings	READ/WRITE	1 or 2, zero indicates CANbus is disabled due to removed ADDR jumper on circuit board
J1939 baud rate*	CANbus Settings	READ/WRITE	31.25kbps-1Mbps
J1939 vehicle system instance*	CANbus Settings	READ/WRITE	0-15
J1939 function instance*	CANbus Settings	READ/WRITE	0-31
J1939 ECU instance*	CANbus Settings	READ/WRITE	0-7
J1939 ECU Location*	CANbus Settings	READ/WRITE	19 character customer defined label
SENS Extend Data Enabled*	CANbus Settings	Enable to receive extended J1939 data from the charger at the master	Check box to enable
Test/Force Alarm relays*	Test/Force Alarms	Force alarm relays ON or OFF	N/A
Com Log	Com Log	Log of communications status	N/A

*Only available when optional alarm/communications circuit board is included

3.1. Charger Status

The lower section of the *MicroGenius® Setup Utility* displays read-only charger status.

Figure 4 – Setup Utility Status



3.2. File Menu

Access file and save options by selecting the *File* pull-down menu.

3.2.1. Open Settings File...

Load/populate the *MicroGenius® Setup Utility* with settings from a file stored on the PC. Load SENS factory default settings provided with the utility by selecting the file with appropriate battery type and number of cells. For example, load file “FloodLeadAcid_6_Cell.uGdata” for a 6 cell/12V flooded lead acid battery application. Use this option to deploy default or custom settings to a fleet of chargers.

3.2.2. Save Settings File

Save settings displayed in the *MicroGenius® Setup Utility* to a file for later use. Saved settings files will have a .uGdata file extension. Use this option to create and deploy settings to a fleet of chargers.

3.2.3. Save Settings File As...

Save settings (select save directory) displayed in the *MicroGenius® Setup Utility* to a file for later use. Saved settings files will have a .uGdata file extension. Use this option to create and deploy settings to a fleet of chargers.

3.2.4. Exit

Exit the *MicroGenius® Setup Utility*.

3.3. Tools Menu

Access options to update charger firmware or connect charger to *MicroGenius® Setup Utility*.

3.3.1. Find Charger.../Disconnect Charger

Select *Find Charger...* to connect a charger to the *MicroGenius® Setup Utility*. Ensure the programming cable is already connected from the PC USB port to the charger. The utility may automatically find the connected charger or may need to be manually connected by selecting *Find Charger...*. Upon selecting, the charger will connect to the utility and *Find Charger...* will be replaced with *Disconnect Charger*. Select *Disconnect Charger* to disconnect the charger from the utility. The *Find Charger.../Disconnect Charger* button performs the same operation as this menu selection.

3.3.2. Update Firmware...

Select to update MicroGenius® 150 charger firmware. Updated firmware .hex files are available on the SENS website (www.sens-usa.com). Firmware for the MicroGenius charger is separated into one .hex file for each the power and optional alarms/communications accessory circuit boards. Upgrade code for each board independently. Press the *Load Charger Firmware* button, select the appropriate .hex firmware file and wait for firmware update to complete. The progress bar at the bottom of the window will display status.

Figure 5 – Updating Firmware



3.4. Help Menu

Access charger user manual, quick-start guide, SENS website, USB port driver and information about the utility.

3.5. Find Charger.../Disconnect Charger Button

Manually connect the charger to the *MicroGenius® Setup Utility* by clicking the *Find Charger...* button. Ensure the programming cable is already connected from the PC USB port to the charger. Upon pressing this button, the charger will connect to the utility and the *Find Charger...* button will be replaced with a *Disconnect Charger* button. Press the *Disconnect Charger* button to disconnect the charger from the utility.

3.6. Charger Setup Tab

Configure output voltage, alarms (available with optional alarm/communications circuit board), temperature compensation, boost time limit, and current limit settings.

Press the *Save Changed Values to Charger* button to load/save settings to the charger. The charger will immediately begin using custom programmed values. Press the *Update Display With Charger Values* button to refresh the utility display with charger values.

3.7. CANbus Settings Tab

Read and configure J1939 (CANbus) communication values when the charger is equipped with the optional alarm/communications circuit board. Configurable settings include charger number, baud rate, vehicle system instance, function instance, ECU instance, and the ability to enable extended data. Select the *SENS Extended Data Enabled* checkbox to enable receiving extended J1939 data from the charger at the J1939 master, including low cranking voltage alarm, low DC voltage alarm, high DC voltage alarm, battery temperature alarm, thermal limit alarm, invalid settings alarm. Refer to SENS Application Note 21 for information on using J1939 communications.

Press the *Save Changed Values to Charger* button to load/save settings to the charger. The charger will immediately begin using custom programmed values. Press the *Update Display With Charger Values* button to refresh the utility display with charger values.

3.8. Test/Force Alarms Tab

Test alarm relay operation when the charger is equipped with the optional alarm/communications circuit board. This feature allows forcing the alarm relays into an alarm state to ensure the relays are operating. Press the *Enable Testing* button to allow testing. Press each alarm's *Cycle* button to test one alarm at a time or the *Test All Alarms* button to test all alarms at the same time. Press the *Return to Normal* button when finished testing.

3.9. Com Log Tab

Displays real-time communications status.

APPENDIX

Screen captures of the *MicroGenius® Setup Utility* are provided below.

Charger Setup Tab:

The screenshot displays the 'MicroGenius Setup Utility' window with the 'Charger Setup' tab selected. The interface is divided into several sections:

- Voltage Settings:** Includes a note about settings being active only when jumpers are removed. It features a 'Removed' button for 'Output Jumpers Status' and five voltage settings: Float Voltage (13.3V), Boost Voltage (14.2V), High DC Voltage Alarm (14.8V), and Low DC Voltage Alarm (11.0V).
- Additional Settings:** Includes Boost Time Limit (24 Hrs), Current Limit Setting (100%), Temp Comp Slope (-0.18 %V/°C), and Alarm Relay Delay (30 Secs).
- Buttons:** 'Update Display With Charger Values' and 'Save Changed Values to Charger'.
- CHARGER STATUS:** A summary section showing:
 - Output Status:** DC Volt Meter (74.29V), DC Ammeter (5.57A), Charge Mode (Advanced Boost), Float Setting (13.3V), Boost Setting (14.2V), Temp Comp Status (N/A), and Boost Elapsed Time (03:53:22).
 - Alarm LED Status:** AC LED and DC LED (both green).
 - Alarm Status:** An empty text field.
 - Alarm Relay Status:** AC Fail, High DC, Charger Fail, and Low DC (all green).
 - System Info:** Connected to (G22-06-LWD), Serial Number (364578), Power Hardware REV (LP), Accessory Board Status (Installed), Charger Port (COM5), Build Date (7/23/2014), Total Energy (8963.37 Wh), Avg Power (78.24 W), Revisions (Power Board 1.5, Accessory Board 1.0, SMG DLL 1.4.2), and Use Time (4:18:34 DD:HH:MM).

CANbus Settings Tab:

The screenshot displays the MicroGenius Setup Utility software interface. The window title is "MicroGenius Setup Utility" and it includes a menu bar with "File", "Tools", and "Help". Below the menu bar is a "Disconnect Charger" button. The main interface is divided into several sections:

- Charger Setup** (selected tab)
- CANbus Settings** (active sub-tab)
- Test/Force Alarms**
- Com Log**

The CANbus Settings section is further divided into two panels:

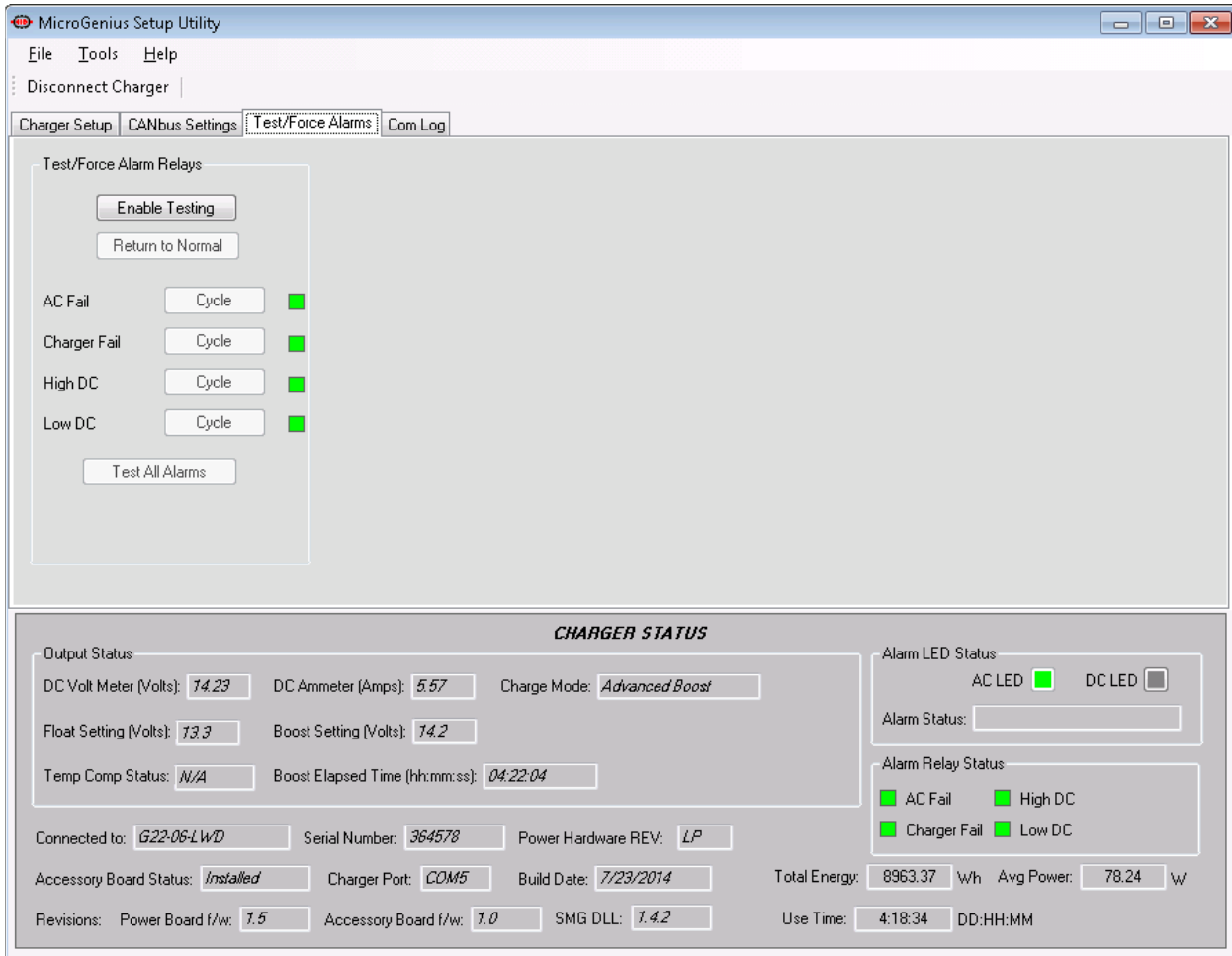
- CANbus Identification Data:**
 - J1939 Industry Group: *Preset*
 - J1939 Vehicle System: *Preset*
 - J1939 Function: *Preset*
 - J1939 Manufacturer Code: *Preset*
 - J1939 Identity Number: *Preset*
 - CANbus Address: *Preset*
- CANbus Settings:**
 - J1939 Charger Number (1 or 2): 1
 - J1939 Baud Rate: [Dropdown]
 - J1939 Vehicle System Instance: 0
 - J1939 Function Instance: 0
 - J1939 ECU Instance: 0
 - SENS Extend Data Enabled:

Buttons on the right side of the CANbus Settings section include "Update Display With Charger Values" and "Save Changed Values to Charger".

The bottom section of the interface is titled **CHARGER STATUS** and contains the following information:

- Output Status:**
 - DC Volt Meter (Volts): 14.29
 - DC Ammeter (Amps): 5.57
 - Charge Mode: *Advanced Boost*
 - Float Setting (Volts): 13.3
 - Boost Setting (Volts): 14.2
 - Temp Comp Status: *N/A*
 - Boost Elapsed Time (hh:mm:ss): 04:21:33
- Alarm LED Status:**
 - AC LED:
 - DC LED:
 - Alarm Status: [Text Field]
- Alarm Relay Status:**
 - AC Fail:
 - High DC:
 - Charger Fail:
 - Low DC:
- System Information:**
 - Connected to: G22-06-LWD
 - Serial Number: 364578
 - Power Hardware REV: LP
 - Accessory Board Status: *Installed*
 - Charger Port: COM5
 - Build Date: 7/23/2014
 - Total Energy: 8963.37 Wh
 - Avg Power: 78.24 W
 - Revisions: Power Board f/w: 1.5
 - Accessory Board f/w: 1.0
 - SMG DLL: 1.4.2
 - Use Time: 4:18:34 DD:HH:MM

Test/Force Alarms Tab:



Com Log Tab:

The screenshot displays the 'MicroGenius Setup Utility' window with the 'Com Log' tab selected. The log shows a series of successful read operations for various parameters over time. Below the log is a 'CHARGER STATUS' panel with several sub-sections:

- Output Status:** DC Volt Meter (Volts): 74.26, DC Ammeter (Amps): 5.58, Charge Mode: Advanced Boost, Float Setting (Volts): 73.3, Boost Setting (Volts): 74.2, Temp Comp Status: N/A, Boost Elapsed Time (hh:mm:ss): 04:27:55
- Alarm LED Status:** AC LED , DC LED
- Alarm Status:** [Empty text box]
- Alarm Relay Status:** AC Fail , High DC , Charger Fail , Low DC
- System Information:** Connected to: G22-06-LWD, Serial Number: 364578, Power Hardware REV: LP, Accessory Board Status: Installed, Charger Port: COM5, Build Date: 7/23/2014, Total Energy: 8963.37 Wh, Avg Power: 78.24 W, Revisions: Power Board f/w: 1.5, Accessory Board f/w: 1.0, SMG DLL: 1.4.2, Use Time: 4:18:34 DD:HH:MM