



## Gamatronic Power + PM Checklist

Values for all parameters checked and measurements taken during the service check shall be recorded in the form. The completed form or a copy of it shall be reviewed and given to the customer upon completion of the service call.

<b>Company : LA Mission College</b>	<b>Date: June 16, 2014</b>
<b>Type of visit: Annual</b>	<b>P+ Serial #: (bottom left side of base) : 0747-593423</b>

### 1 Visual inspection

1.1 Perform a general visual inspection of the UPS and its batteries.

OK	NOT OK	Comment
OK		

1.2 Use a flashlight to visually verify that the front four fans and the rear two fans of each module are operating. Note the Module and number of fans that are not functioning (replace module if more than 2 fans inoperable)

Module fans	OK	Mod/fans
	OK	

### 2 Environmental inspection:

2.1 Measure and record the environmental temperature.

72 °F
-------

2.2 Verify that the UPS is properly ventilated.

Ventilation		Air conditioning?		Comments:
OK	NOT OK	YES	NO	
OK		YES		

### 3 Display Panels

3.1 Verify that all LEDs and the LCD display panel are operating properly.

<b>OK</b>	<b>NOT OK</b>	<b>Comment:</b>	
<b>OK</b>			

**4 Alarms and History**

4.1 Use option 6 on the main menu to display the alarms. Active alarms have an asterisk (\*) to the right of the alarm name. Record below the names of any active alarms-troubleshoot and clear alarms as needed.

<b>Active alarms, and actions if any:</b>	<b>None</b>

4.2 Review history log (main menu, 4, scroll down through history log events). Note any frequently occurring alarms.

<b>Frequent alarms in history:</b>	<b>TO DATE EMPTY , 04.04.13 = 000 OUT&gt;UPS MAJ 255, 758.0V OUT&gt;AC BRN 254, 758.0V OUT&gt;ACFAIL 253, 759.0V OUT&gt;STSWRN 252</b>
--	--

4.3 Download the alarm history log and save to laptop. This can be accomplished in two ways:

1. Connect a null modem cable (crossover cable) between your laptop and the UPS Ethernet port. Change the computer TCPIP settings to match the UPS network settings. UPS network settings can be found in the esc menu, option 4. Open a web browser on the laptop and type the UPS IP address in the address bar. When the Gamatronic web browser opens, select Power+ Log button, Export to Excel Option. Save the file to laptop and include with the PM report. Reconnect UPS to the network if applicable.

2. If the UPS is connected to the network, get permission from the customer to open the Gamatronic web browser on a customer's computer on the same network. When the UPS web page opens, select Power+ Log button, Export to Excel Option to save to the desktop. Have the customer email the log file to you or use removable storage if permitted by the customer to save the file to a flash drive. Include the file with the PM report.

4.4 Clear history logs when complete. (main menu, 7, <<<<<<<, 9, reset log)

**5 Voltage, Current, and Power Readings**

- 5.1 Record the system input voltages, output voltages, dc voltages, and power measurements for the UPS system below. (Main menu,1, scroll down to system DC voltage readings, hit the right arrow for output power readings, hit the right arrow again for input power readings, return to the dc voltage screen and then hit the down arrow for system voltage/current readings)

System Parameter	Phase A	Phase B	Phase C	DC volt +/-
Output KVA/KW/ PF	005.7/005.7/1.00	005.6/005.6/1.00	005.4/005.4/1.00	+ 215V
Input KVA/KW/ PF	005.6/005.6/1.00	005.6/005.6/1.00	005.6/005.6/1.00	-215V
Input V/I	118V/046.0A	118V/046.0A	118V/046.0A	430VDC
Output V/I	119V/050.0A	118V/048.0A	118V/046.0A	

- 5.2 Record the dc voltages, rectifier input voltages/current, and inverter output voltages/current for each module below. (Main menu, 2, scroll down to so that the desired module is shown on the LCD. Record the voltages and currents for that module; hit the right arrow to display the DC voltage for that module. Repeat for each module.)

module		Phase A	Phase B	Phase C	DC volt +/-
1	Input V/I	118V/004.0A	118V/004.0A	117/004.0A	215/215
	Output V/I	119V/006.0A	119V/004.0A	118/004.0A	
2	Input V/I	117V/004.0A	118V/004.0A	117/004.0A	217 / 216
	Output V/I	120V/0006.0A	118V/006.0A	119V/006.0A	
3	Input V/I	117V/004.0A	117A/004.0A	116V/004.0A	216 / 215
	Output V/I	118V/004.0A	118V/004.0	118V/004.0A	
4	Input V/I	119V/004.0A	118V/004.0A	118V/004.0A	214 / 216
	Output V/I	120V/004.0	119V/006.0A	119V/004.0A	
5	Input V/I	119V/000.0A	119V/004.0A	119V/004.0A	215 / 216
	Output V/I	120V/004.0A	119V/004.0A	118V/004.0A	
6	Input V/I	117V/004.0A	117V/004.0A	117V/004.0A	216 / 216
	Output V/I	120V/006.0	118V/004.0A	119V/004,0A	
7	Input V/I	117V/004.0A	117V/004.0A	117V/004.0A	215 / 215
	Output V/I	119V/004.0A	119V/004.0A	119V/004.0A	
8	Input V/I	117V/004.0A	118V/004.0A	117/004.0A	215 / 215
	Output V/I	119V/004.0A	118V/004.0A	118V/004.0A	
9	Input V/I	120V/004.0A	120V/004.0A	120V/004.0A	216 / 215
	Output V/I	118V/006.0A	118V/006.0A	118V/006.0A	
10	Input V/I	117V/004.0A	118V/004.0A	117/004.0A	215 / 215
	Output V/I	120V/004.0A	118V/006.0A	118/006.0A	

- 5.3 On the system controller, verify that there is only a small difference between I-active and I-bus for each

OK	Unsatisfactory	Comment
✓		

**6 System Setting Information**

- 6.1 Verify that the UPS's system serial number is registered in the UPS controller memory. (Esc menu, 8, >, >) If it is not, enter the serial number into memory and save it. (Main menu, 7,<<<<<<<<,6)

DONE
N/A

- 6.2 Verify that the UPS clock and calendar show the right time and date (main LCD screen). If either the date or time is incorrect, enter the correct information and save it. (Main menu, 7, <<<<<<<< 5)

DONE
OK

- 6.3 Record the UPS network properties: (esc menu, 4)

IP Address: 172.20.2.42

Subnet Mask: 255.255.255.0

Gateway:172.20.2.254

Is the UPS connected to the customer's network? YES

- 6.4 Check the software version in the controller (esc menu, 3). Versions older than 0907 must be replaced. Refer to the Power+ technical guide's controller section if firmware replacement is necessary.

DONE	Comment
	N/A

**7 Customer Approval for UPS transfers**

- 7.1 **Obtain customer authorization before proceeding through section 7 and section 8 of this PM procedure. This includes transferring the UPS to static bypass, transferring the UPS system to maintenance bypass, performing applicable calibrations and returning the UPS system back to normal operation.**

Customer approval: NO CALIBRATION REQUIRED

- 7.2 Press the INV/BYPASS button twice to transfer the UPS to bypass mode. Verify that the transfer occurs normally and with no interruption of power to the load.

OK	NOT OK	Comment
		N/A

**8.0 Calibration procedures (if necessary):**

**Transfer the customers load to Maintenance Bypass via MBP or MBS in accordance with the site posted procedure. The UPS must be in Static bypass prior to transferring to Maintenance Bypass**

**After successfully transferring the system to Maintenance Bypass, the UPS must be transferred to inverter to perform the calibration procedures below.**

*\* Note: To make adjustments in the calibration screens, note that L2 and L3 are swapped. For example; to make an adjustments to L3, you must input the values to L2 in the controller and vice versa.*

*\*Note: Refer to the Power+ Technical Guide for additional technical information relating to calibration procedures.*

**1. AC Module Input Calibration:** *Performed with all modules in the system.*

Verify the rectifier AC input voltage on the incoming phase wires to the input voltages recorded in section 5.2. If the values do not match, perform this calibration. (Main Menu, 7, <<<<<<<, 2, 8, 1-calibrate input voltage, select a phase to adjust, enter selected value, hit enter, wait for the screen to time out(15 seconds), and then repeat the process for each phase) Verify successful calibration.

AC Module voltage calibration performed:     N/A    

**2. AC Module Output Calibration:** *Performed with only one module in the first shelf in the system.*

Verify the output voltage on the controller LCD display to a multimeter connected to system output. If the values do not match, then perform this calibration. (Main menu, 7, <<<<<<<, 2, 8, 2-calibrate output voltage- select module to calibrate, select a phase to calibrate, input a + or - value to adjust, enter) Repeat the process for addition phases as needed. Verify successful calibration. Repeat for additional modules as needed.

AC Module Output Calibration performed on modules:     N/A    

**3. AC Module Output Adjust Calibration:** *Performed with only one module in the first shelf in the system. Only does this calibration if module output voltages recorded in section 5.2 are >3 volts between phases or section 5.3 was unsatisfactory.*

Once the AC module output calibration has been verified, utilize the LCD system voltages to during this calibration. (Main menu, 7, <<<<<<<, 2, 5, select a module to adjust, enter, select phase to adjust, enter, select a value to adjust) Repeat the process for each phase.

*\*Note- Values entered need to be 2-3 time the desired voltage adjustment. For example, a 1volt increase requires a value of + 2-3 for that phase.*

AC Module Output Adjust Calibration performed on modules:     N/A    

**4. DC Module calibrations:** **These calibrations should not be performed without contacting technical support prior to approval.** Review the DC voltages recorded in section 3.3. If any modules + and – voltages are >12VDC, please make arrangements to replace the module. Please note that the DC voltage calibrations can only be done under load, one module at a time making them difficult to perform onsite.

DC Module replacement recommendations:     N/A

**9 Cleaning**

9.1 While the modules are removed from the system:

- Clean the exterior of each module including the rear contacts with compressed air if needed.
- Check the rear of each module for corrosion. It is not necessary to open the module.
- Blow compressed air into the module from front to back, then from back to front, to remove any accumulated dust from inside the module if needed.

DONE	Comment
N/A	

**10 Returning the UPS System to Normal Operating Condition**

- 10.1
1. Return the UPS modules to the UPS
  2. Transfer the UPS to static bypass
  3. Transfer the system back to UPS via the MBS or MBP. Follow all MBS/MBP posted instructions during the transfer.
  4. Transfer the customers load back to UPS inverter via the inv/bypass button on the ups controller. Verify the UPS is functioning normally

DONE	Comment
N/A	

**11 Voltage measurements:**

11.1 Measure voltage between Neutral and Ground at the bypass input. Value should be no greater than 1 Vac.

Measured Value
38 MV

11.2 Use a voltmeter to measure bypass input voltages as per table. Compare your measurements with the console display of the bypass input voltage. This is performed if there are dual inputs into the UPS.

Location	Phases	Voltmeter reading	Console reading	Readings match?	
				YES	NO
<b>Bypass input</b>	L1 – N	119	119	YES	
	L2 – N	119	118	YES	
	L3 – N	119	118	YES	

**12 Battery checks:**

Perform battery PM service and record on separate form. Attach battery pm reports with UPS PM Report.

**13 Technician Summary and Recommendations:**

**Arrived on site with UPS on line, no alarm. Performed Preventive Maintenance on UPS (with 10 power modules).**

**UPS Recommendation: UPS is in good operating condition at this time. Customer does not want transfer UPS to bypass to avoid any issues and to ensure back-up power during utility outage. All tests and measurements are within specification. No recommendations at this time.**

**Left UPS on line, no alarm.**

**NOTE: Replaced 32 VRLA batteries**

13.1 Review the service call with the customer.