g GE Energy	**Functional Testing Specification**
Inspection & Repair Services ***Louisville, KY***	**LOU-GEF-PWM50/99** **Hiak Drive**

Test Procedure for PWM50, 51, 91,and 99Drive Cards

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Functional test procedure for PWM 50, 51, 91,and 99 Drive cards

1. SCOPE

1.1 This specification provides the Engineering Requirements for testing PWM50, PWM51, PWM91, and PWM99 Drive cards. The process applies only to control cards model number 44A399749-G05, 44A99749-G08, 44A399749-G06, 44A399749-G07, and 44A99749-G02.

2. STANDARDS OF QUALITY

2.1 Refer to the current revision of the IPC-A-610 standard for workmanship standards.

3. APPLICABLE DOCUMENTS

3.1 The following document(s) shall form part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue shall apply.

3.1.1	**GEK-45659**	**Instruction Book PWM Servo Drives 3N2100SP107**
3.1.2	**44C283987**	**Schematic**
3.1.3	**44C285364**	**Schematic**
3.1.4	**44C288671**	**Schematic**
3.1.5	**44C717889**	**Schematic**
3.1.6	**44C283987**	**Schematic**

4. ENGINEERING REQUIREMENTS

4.1 Description

4.1.1 The PWM (Pulse Width Modulator) Servo is a velocity controller. A PWM Servo System is typically used in a position controller where the position loop is provided separately from the Servo system and the velocity command is provided from some type of position discriminator.
The Servo system requires an AC power input, logic interfacing signal inputs, analog command and actual velocity inputs. Its principle output is precisely controlled reversible drive current for DC motors.

4.2 Equipment Cleaning

4.2.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to the local documented procedures for cleaning guidelines.

4.3 Equipment Inspection

4.3.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:

4.3.1.1 Wires broken or cracked
4.3.1.2 Terminal strips / connectors broken or cracked
4.3.1.3 Loose wires
4.3.1.4 Components visually damaged
4.3.1.5 Capacitors leaking
4.3.1.6 Solder joints damaged or cold
4.3.1.7 Circuit board burned or de-laminated
4.3.1.8 Printed wire runs burned or damaged

5. EQUIPMENT REQUIRED

5.1 The following equipment is required to perform the process requirements. Equipment may be substituted provided that all accuracy's and test ratios are equivalent or better.

Qty	Reference #	Description
1	PWM 50-99 Tester	3N2100SP107 PWM 50-99 Servo Drive Tester
1	MC2000 PWM Drive Control	2000 Control with axis cart.
1	7.59MC Software	Resides on Bubble Board MB3:
1	Test Drive	3N2100SP107 Frame

6. TESTING PROCESS

6.1 Pre Test Requirement

6.1.1 Install board in 3N2100SP107 Series Test Drive
6.1.2 Connect PWM 50-99 Test Cables to TB1 and PL1 and PL4
6.1.3 Red Lead to TB2 the 90VDC Bus.
6.1.4 White Lead to 0 Volt Side of Large Cap.
6.1.5 Black Lead (Black Clip) to SO-E (Bottom Armature)
6.1.6 Black Lead (Red Clip) to HS1 or OL Relay Be sure heater element is installed in relay.

6.1.7 PWM 50-99 Tester Set -up

Knob position startup:

Disconnect	Off
Knob 1	90V only
Knob 2	Centered on mark
Knob 3	Not Used
Power Switch	Down
Inhibit Switch	Down
Velocity Enable Switch	Off
Burn In Switch	Off
50 – HCL – 99	does not matter

6.1.8 Power up

6.1.8.1 Breaker On--90VDC should come up immediately (seen on meter)

6.1.8.2 Turn **"Power Switch ON"** +12V, -12V, and 110VAC lights should come on.

6.1.8.3 Turn **"Inhibit Switch ON"** (Run) this should enable the drive. Balance the drive by adjusting the balance pot on the board. Motor should not be turning Turn **"Velocity Enable Switch ON"** you should now be able to adjust the motor's speed and direction via the pot.

6.1.8.4 Run Motors in both directions for 3-5 minutes.

END of Test Shut down

Remove PWM Drive Board from PWM50-99 Tester and Install it in MC2000 PWM Drive Control's Axis Cart.

6.2 MB3/Part Program Test

6.2.1 Before turning on control be sure proper boards have been inserted into the logic rack and CPU switch is in the middle position.

6.2.2 If everything is ready turn on control, pressing "ON".

6.2.3 It will take a minute or so for control to boot up. Once done the CRT should display a banner page for 7.59MC control. All LEDs should be lit on all board.

6.2.4 Once control is up and on line with the 7.59MC application, select "INDEX" on the white keys at the top of the keyboard. This should cause the control to display two or three part programs, select "MCLOOP Program" with the gray buttons, and then press POSN, one of the white keys. This should take you back to the position page.

6.2.5 Turn on axis cart and enable drives.

6.2.6 Press Control On again, this will lock in drives from control.

6.2.7 Press "Auto" and then "Cycle Start" and drive should begin to move and will continue until they are interrupted by pressing "Cancel or Clear" or removing power. Run Part Program Test for 4 to 6 hours.

6.2.8 When complete power down control.

6.3 ****TEST COMPLETE ****