g GE Energy	**Functional Testing Specification**
Parts a & Repair Services ***Louisville, KY***	**LOU-GEF-IC600xx915**

Test Procedure for a Series Six APM I Card

DOCUMENT REVISION STATUS: Determined by the last entry in the "REV" and "DATE" column

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	R. Duvall	10/9/03
B	Corrected spelling, grammar and missing steps that were previously assumed.	Cristyn Edlin	11/02/07
C	Took out a portion, which no longer applies. Header changed by C. Wade.	Cristyn Edlin	10/26/09

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
R. Duvall	Jeff Barton	Cristyn Edlin	Charlie Wade
DATE	**DATE**	**DATE**	**DATE**
10/9/03	10/10/03	10/26/09	10/26/09

Functional test procedure for a Card

1. SCOPE

1.1 This is a functional testing procedure for a Series Six APM I Card.

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-25368

4. ENGINEERING REQUIREMENTS

4.1 Equipment Cleaning
4.1.1 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.
4.2 Equipment Inspection
4.2.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:
4.2.1.1 Wires broken or cracked
4.2.1.2 Terminal strips / connectors broken or cracked
4.2.1.3 Loose wires
4.2.1.4 Components visually damaged
4.2.1.5 Capacitors leaking
4.2.1.6 Solder joints damaged or cold
4.2.1.7 Circuit board burned or de-laminated
4.2.1.8 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	H033868	APM I Test System

6. TESTING PROCESS

6.1 Setup

6.1.1 Set all jumpers to factory defaults. (JP1-JP5 = 1-2)

6.1.2 Verify that FU1 – FU5 are good using a DMM.

6.1.3 Push in the RED E-Stop button on the test panel.

6.1.4 Turn off power to the Series Six rack and install the UUT at address 97.

6.1.5 Set Thumbwheel switches to 0000.

6.1.6 Verify that all toggle switches on the fixture are in the Center position.

6.2 Testing Procedure

6.2.1 Turn on power to the Series Six rack.

6.2.2 Turn Analog Input Potentiometer fully counter clockwise.

6.2.3 Pull out the RED E-Stop button and verify that the AC ON and DC ON lights are illuminated.

6.2.4 Push down SW2 (RESET APM I) to reset the APM module.

6.2.5 Turn SW0 to Local.

6.2.6 Using the “DOWN” button to the right of SWO, JOG the table down about half way between the arrows (position switches 6 and 12).

6.2.7 Using the “UP” button to the right of SWO, JOG the table back up to the **TOP arrow** (position switch 6). **Be sure NOT to CLOSE position switch 6 OR go ABOVE it.**

6.2.8 Turn SWO to Remote.

6.2.9 Push down SW1 (Enable APM I) to enable the APM module.

6.2.10 Verify that the following lamps are illuminated.

Lamp 1	Heart Beat
Lamp 2	APM Enabled
Lamp 4	Servo Ready
Lamp 6	In Zone
Lamp 10	Servo Drive Enabled
Lamp 11	Preprocessing Complete
Lamp 16	Home Switch Open
Lamp 19	LP Relay
Lamp 20	EN Relay
Lamp 21	Negative Over Travel
Lamp 22	Positive Over Travel

6.2.11 Push down SW7 (Disable Servo) and verify that Lamp10 (Servo Drive Enabled) and Lamp 20 (EN Relay) go out.

6.2.12 Push down SW6 (Enable Servo) and verify that Lamp10 (Servo Drive Enabled) and Lamp 20 (EN Relay) illuminate.

6.2.13 Push down SW1 (Enable APM I) to enable the APM module.

6.2.14 Push down SW3 (Find Home) and verify that the APM returns the table to the home position (the TOP arrow/position switch 6).

6.2.15 Push down SW5 (Jog Down) and verify that the table moves down.

6.2.16 Push down SW4 (Jog Up) and verify that the table moves up. **Be sure NOT to CLOSE position switch 6 OR go ABOVE it.**

6.2.17 Set the thumbwheel switch to 4200 (Read Software Configuration).

6.2.18 Push down SW1 (Enable APM I) to enable the APM module.

6.2.19 Push down SW9 (Thumbwheel Command) and verify 0300 on the display.

6.2.20 Set the thumbwheel switch to 4205 (Read Analog Input).

6.2.21 Push down SW9 (Thumbwheel Command) and verify 0000 on the display and 0V on Meter 3 (Analog Input).

6.2.22 Turn the Analog Input Potentiometer clockwise and watch for linear movement on Meter 3 (Analog Input) and an incremental count on the display.

6.2.23 With the Analog Input Potentiometer fully clockwise, verify 0064 on the display and 10V on Meter 3 (Analog Input).

6.2.24 Turn the Analog Input Potentiometer counter-clockwise to bring the meter back down to 0V and the display to 0000.

6.2.25 Push down SW2 (RESET APM I) to reset the APM module.

6.2.26 Push down SW1 (Enable APM I) to enable the APM module.

6.2.27 Push down SW9 (Thumbwheel Command).

6.2.28 Push down SW10 (72 Move) this initiates a command 72 (Move at negative velocity). This should start the table moving downward.

6.2.29 Verify that when the table closes position switch 12 (the BOTTOM arrow), the table reverses direction and moves upward.

6.2.30 Verify that when the table closes position switch 6 (the TOP arrow), the table reverses direction and moves back down. This initiates a command 71 (Move at Positive velocity) This is hard wired to SW11 (71 Move)

6.2.31 Let the APM run in this mode for at least 10 minutes before stopping the APM. Note: the APM should continue in this mode indefinitely.

6.2.32 To stop the APM, Push down SW2 (RESET APM I) to reset the APM module.

6.2.33 Push in the RED E-Stop button.

6.2.34 Verify Lamp 17 (AC ON) goes out.

6.2.35 Turn SWO to the off position.

6.2.36 Turn off power to the Series Six rack.

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time

8. Oscilloscope Verification Examples:

8.1 None at this time