



GE Energy

Functional Testing Specification

Parts & Repair Services
Louisville, KY

LOU-GED-DS2020FEX

Test Procedure for a Static Break Control Card

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| A | Initial release | Lloyd Groves | 12-11-02 |
| B | Clarify Dip Switch Settings | Lloyd Groves | 10-11-06 |
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|-----------------------------|------------------------|-------------|---|
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| DATE 12-11-02 | 10-11-2006 | DATE | DATE 7 July 2007 |

Functional test procedure for a Card

1. SCOPE

1.1 This is a functional testing procedure for a: Test Procedure.doc

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 **GEI-100184**

3.1.2 **Documentation Folder for Model being Tested**

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 | | Fluke 85 DMM (or Equivalent) |
| 1 | <u>H033963 or H033814</u> | Inductive Load |
| 1 | <u>H033965</u> | 3-Phase variable AC supply cart |
| 1 | | Oscilloscope w/ X 100 probes |
| 1 | | DC Power Supply |

6. TESTING PROCESS

6.1 Setup

6.1.1 Switch Setup – See picture on last page.

| Switch | 1A | 1B | 2A | 2B |
|--------|----|----|----|----|
| 1 | C | C | O | O |
| 2 | O | O | O | O |
| 3 | O | O | O | O |
| 4 | C | C | O | O |

6.1.2 Jumper Setup

| JP1 | JP2 | JP3 | JP4 | JP5 | JP6 | JP7 |
|-----|-----|-----|-----|-----|-----|-----|
| 2-3 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 |

6.1.3 Special Note:

6.1.3.1 If you wash the unit prior to testing it is very important to let it bake for at least 24 hours

6.1.4 Connect 41-ohm inductive load to FP and FN.

6.2 Testing Procedure

6.2.1 Apply 115 VAC to TB1-1 & TB1-2.

6.2.2 Apply 500 VAC to AC4 & AC5 and verify that “FLT” and “PWR” LEDs illuminate.

6.2.3 Verify ± 15 VDC and ± 24 VDC at test pins on SBCA card.

6.2.4 Set scope for 2ms/Div and 5V/Div and make the following checks.

6.2.4.1 Verify a 25-30VPP square wave with a 50% duty cycle at pin 7 of U17.

6.2.4.2 Verify a 14-19V Peak with an on time of about .2 msec at pin 10 of U15.

6.2.4.3 Verify a 10V Peak sawtooth wave with a 4msec rise time at the cathode of D23.

6.2.4.4 Verify a 14-19V Peak signal with an on time of about .2 msec at test pin “OSC”.

6.2.5 Input 5VDC between TB1-7(-) and TB1-11(+) and make the following measurements.

6.2.5.1 Verify +5VDC(± 1 V) at test pin “REFX”.

6.2.5.2 Verify +2VDC(± 1 V) at test pin “REFB”.

6.2.5.3 Verify +5VDC(± 1 V) at test pin “REFA”.

6.2.5.4 Remove input from TB1-7 and TB1-11.

6.2.6 Remove applied power and place a jumper (JPa) between TB1-8 and TB1-11.

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- 6.2.7** Apply power and verify that all LED's illuminate, 430VDC on the output, and the "FLT" and "RLS" LEDs go out after about 5 seconds
- 6.2.8** Remove applied power and move jumper (JPa) to TB1-9 and TB1-11.
- 6.2.9** Apply power and verify that all LED's illuminate and stay on, and approximately 260VDC on output.
- 6.2.10** Using an Oscilloscope, verify output of unit at output terminals.
- 6.2.11** Remove applied power and move jumper (JPa) to TB1-10 and TB1-11.
- 6.2.12** Apply power and verify that "FLT" and "PWR" LEDs are on and "RLS" LED is off.
- 6.2.13** Starting with 0VDC apply a negative voltage to TB1-7.
- 6.2.14** Verify that "RLS" LED illuminates at -0.8VDC input.
- 6.2.15** Verify TB1-5 & TB1-6 are shorted.
- 6.2.16** Verify that "FLT" and "RLS" LEDs go out at -6VDC signifying a fault.
- 6.2.17** Verify TB1-5 & TB1-6 are now open.
- 6.2.18** Reduce input to 0VDC and remove power.
- 6.2.19** Remove applied power and connect 100X probes across load.
- 6.2.20** Apply power and verify smooth control of waveform while increasing and decreasing input on TB1-7.
- 6.2.21** To test crowbar circuit (246B2309DAG01), disconnect crowbar from the rest of the unit.
- 6.2.22** Apply 30VDC TO FN (+) AND FP (-).
- 6.2.23** Connect 10VDC power supply to 2TB-3(+) and FP (-).
- 6.2.24** Turn power supply slowly from 0 to 10 VDC, at approximately 10v power supply should go into overcurrent, which verifies the crowbar.
- 6.2.25** *****TEST COMPLETE** ***

7. NOTES

8. Oscilloscope Verification Examples:

Fig. 1

Fig. 2

Dip Switch Settings

