



GE Energy

Functional Testing Specification

*Parts & Repair Services
Louisville, KY*

LOU-GED-IC3600AFRA-A

Test Procedure for a

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A	Initial release	John Madden	12-6-07
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LOU-GED-IC3600AFRA REV. A	g GE Energy Parts & Repair Services Louisville, KY	Page 2 of 4
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1. SCOPE

1.1 This is a functional testing procedure for a Fault Relay 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 N:\Design Folders\IC\IC3600\IC3600A\AFRA

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, cracked, or loosely connected

4.2.1.2 Terminal strips / connectors - broken or cracked

4.2.1.3 Components - visually damaged

4.2.1.4 Capacitors - bloated or leaking

4.2.1.5 Solder joints - damaged or cold

4.2.1.6 Circuit board - burned or de-laminated

4.2.1.7 Printed wire runs / Traces - 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 87 DMM (or Equivalent)
1		2M20FC ribbon cable breakout connector (blue board) (optional)
1		Tenma Dual Power Supply or equivalent

6. TESTING PROCESS

6.1 Setup

- 6.1.1** Find the bag with all the blue ribbon cable breakout connectors. It's usually found in the cabinet that contains all the DS3800/Fluke fixtures. You'll need a 20-pin unit that has 2M20FC printed on it. You may wish to grab a longer 20-pin ribbon cable (p/n 36A358218XAG05) from the parts area to use temporarily for better ease of use. If you match the red line on the cable to pin 1 of the JA connector on the unit under test and to pin 1 of the breakout connector then you should be ok. Measure continuity from pin 1 of the AFRA to pin 1 of the connector to be sure that odds and evens didn't get switched before connecting power, which is as follows: COM to JA10, +15 to JA9, and -15 to JA11. Power unit up.



Note: On at least one occasion, the silk-screening under LED CR2 obscured the nomenclature markings on the right side of the JA connector so that they looked like 1 & 2 instead of 19 & 20. This caused confusion for the technician and subsequent incorrect power connection to the board, which blew out the op-amps (violently). When looking at the board from the component side, 1 & 2 are on the left side of the JA connector.

6.2 Testing Procedure

- 6.2.1** Grounding any one of JA1-JA8 should cause all four relays to engage and all four LEDs to illuminate. If you ground JA12, which controls the enable line, JA1-JA8 will not operate the relays or LEDs. If JA12 is grounded while any inputs are in operation, then the relays and LEDs will shut off.
- 6.2.2** There are four discrete control lines that operate each relay individually, along with its associated LED monitor. By grounding each of these lines, you should see their respective relays engage. There may be a slight delay if the JA12 Enable line has been activated/deactivated before relay operation can begin. Refer to the following table for inputs and relay output pins:

Relay & LED #	Input	N/O Outputs	N/C Outputs
K1 & CR1	JA14	PA2-4 & 8-10	PA4-6 & 10-12
K2 & CR2	JA15	PA14-16 & 20-22	PA16-18 & 22-24
K3 & CR3	JA16	PA26-28 & 32-34	PA28-30 & 34-36
K4 & CR4	JA17	PA38-40 & 44-46	PA40-42 & 46-48

- 6.2.3** That's it...

LOU-GED-IC3600AFRA REV. A	 GE Energy <i>Parts & Repair Services</i> <i>Louisville, KY</i>	Page 4 of 4
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6.3 Post Testing Burn-in

Required ☐ Yes ☒ No



Note:

6.3.1

6.4 *TEST COMPLETE *****

7. NOTES

7.1

8. ATTACHMENTS

8.1