



GE Energy

Functional Testing Specification

Parts & Repair Operations
Louisville, KY

LOU-GED-IS200GGXI-A

Test Procedure for a Main Drive Expander Card

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A	Initial release	John Madden	9/22/06
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DATE September 22, 2006	DATE	DATE	DATE 9/22/2006

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1. SCOPE

1.1 This is a functional testing procedure for an IS200GGXI 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 K:\IS2\IS200G\GGXI\GEI-100300.pdf

3.1.2 K:\IS2\IS200G\GGXI\ECN's

3.1.3 K:\IS2\IS200G\GGXI\AD (G1AD BOM & Prints)

3.1.4 K:\IS2\IS200G\GGXI\AE (G1AE BOM & Prints)

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		IS200GGXI Test kit w/12 output fiber optic transmitter (in brown cardboard box, often used partially for testing other boards)
1		DS200GDPA board
1		Tenma Dual Power supply
1		Card ID testing PC

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6. TESTING PROCESS

6.1 Setup

- 6.1.1 Connect the JGATE dual-ribbon cable loop back connector to the JGATE connector on the unit under test.
- 6.1.2 Connect the harness with all the white MOLEX plugs to the particular connectors labeled on each plug. This means on one end (the GGXI board) you should have J1-6 connected, and on the other side (the GDPA board) you should have 1GDPL-4GDPL, G1PL, & 1FAPL connected. Note J6 is an addendum to the harness, not actually wired into it. It's a loopback connector that has been tied to the harness via wire-ties so it doesn't get lost because of its size.
- 6.1.3 The GDPA card should be connected to 115VAC on its ACPL connector but do not apply power at this time. **(Be careful to follow any applicable NFPA-70E regulations while working around the 115VAC on the GDPA card)** The pinout on the ACPL connector is: 1 & 3 are AC, 2 is GND.
- 6.1.4 Connect the 12-output fiber optic board's 12VDC power leads to the dual supply and apply power to it. Connect fiber optic cables from each lit transmitter to a blue receiver on the GGXI unit under test.



Note: As of this writing, the 12-output fiber optic transmitter board has been duplicated at least once. This means there are two of these in the shop, if by chance someone happens to have the unit from the box removed to test another card. These transmitter boards are made from a cut-up DS200FCRR board, modified so that it will be powered from 12VDC and can be modulated with a 5VDC square-wave. Plans are to make more of these, time and parts availability permitting (requires the destruction of an FCRR card to make one...)

6.2 Testing Procedure

- 6.2.1 Testing this card is real simple: Apply 115VAC power to the GDPA card, and all the green LED's on the GGXI board (DS10-16) should light up. Pull the J6 connector and K1 should click. Re-install J6.
- 6.2.2 Look to observe that all the transmitters are lit on the GGXI unit under test. Note that because the loopback harness connected to JGATE was constructed in haste (it isn't actually quite finished yet), the receiver immediately adjacent to each transmitter isn't necessarily the one firing it. If for some reason you have a dead transmitter, look in the schematics and at the loopback connector to see which particular receiver is driving it

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before assuming anything. Remove 115VAC power from the GDPA since you are finished with it.

- 6.2.3** Connect the dual power supply to points J16-10 (POS) and J16-12 (NEG). Slowly raise the voltage up to around 15VDC, and you should see the red LED's DS17 (CAP-VP) and DS18 (CAP-VN) flash randomly. Do not exceed 30VDC during this test, as you may fry the two 15V zener diodes.
- 6.2.4** Perform component checks on all circuits related to the JFBK connector, except the Card ID. These will consist mostly of resistance checks.
- 6.2.5** Take the unit over to the Card Id PC, select the particular version of IS200GGXI that you have, and follow the instructions given to you by the program. If for some reason you don't see your particular revision on the menu, get with either myself (John Madden) or Monte Starling to have it added, if your board can't be upgraded to the next highest revision that is on the menu.
- 6.2.6 MAKE SURE TO SWAP OUT ANY AND ALL BLUE THREE LEGGED 100UF CAPS.**
These are notorious for shorting out, and tend to cause the majority of failures seen so far on these boards.

6.3 Post Testing Burn-in Required ☐ Yes ☒ No



Note: Do not forget to observe any applicable NFPA-70E regulations while testing this board.

6.4 *TEST COMPLETE *****

7. NOTES

7.1

8. ATTACHMENTS

8.1