

**g**

GE Energy

**Functional Testing Specification**

*Parts & Repair Services  
Louisville, KY*

**LOU-GED-IS200EXHSG1A-B**

**Test Procedure for IS200EXHSG#AAA Termination Board**

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	F. Howard	1/8/2009
B	Corrected connector location typo. Changed revision level to "B"	M. Starling	2/2/2009
C			

© COPYRIGHT GENERAL ELECTRIC COMPANY

Hard copies are uncontrolled and are for reference only.

PROPRIETARY INFORMATION – THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF GENERAL ELECTRIC COMPANY AND MAY NOT BE USED OR DISCLOSED TO OTHERS, EXCEPT WITH THE WRITTEN PERMISSION OF GENERAL ELECTRIC COMPANY.

<b>PREPARED BY</b> Frank Howard	<b>REVIEWED BY</b>	<b>REVIEWED BY</b>	<b>QUALITY APPROVAL</b> <i>Charlie Wade</i>
<b>DATE</b> 1/7/2009	<b>DATE</b>	<b>DATE</b>	<b>DATE</b> 1/19/2009

<p><b>LOU-GED-IS200EXHSG REV. B</b></p>	<p><b>g</b></p> <p><b>GE Energy</b> Parts &amp; Repair Services Louisville, KY</p>	<p><b>Page 2 of 5</b></p>
---------------------------------------------	--------------------------------------------------------------------------------------------	---------------------------

## 1. SCOPE

1.1. This is a functional testing procedure for an IGCT drive Exciter Bridge Interface Card.

1.2. Overview

1.2.1. The IS200EXHSG#AAA Termination Board supports redundant (TMR) applications via its G1 form and simplex applications via its G2 form. In combination with 1 or 3 EMIO cards, they form part of a family of modular rack based I/O interface cards being developed for the Next Generation Exciter Program for use in Exciter control systems. The EXHS interconnects via 25-pin cables with “D” connectors routed to EMIO cards through EBKP backplanes.

## 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\IS2\IS200E\EXHS**

## 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:

- 4.2.2. Wires - broken, cracked, or loosely connected
- 4.2.3. Terminal strips / connectors - broken or cracked
- 4.2.4. Components - visually damaged
- 4.2.5. Capacitors - bloated or leaking
- 4.2.6. Solder joints - damaged or cold
- 4.2.7. Circuit board - burned or de-laminated
- 4.2.8. 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
2		Fluke 85 DMM (or Equivalent)
1		5VDC Power Supply
1		24VDC Power Supply
1		70VDC Power Supply
1		125VDC Power Supply

## 6. TESTING PROCESS

### 6.1. Setup

- 6.1.1. Connect commons of the +5V and +24V power supplies. The commons of the +125V and +70V power supplies must not be connected together or to the +5V and +24V supplies.
- 6.1.2. Connect +24V to Pin-12 or Pin-13 of J505, J508, & J515. Common to any Pin-25 of J505, J508, or J515.
- 6.1.3. Each must have +24V, but only one common is needed.
- 6.1.4. Connect +70V to J12M1-1 or J12M2-1, common to J12M1-3 or J12M2-3.
- 6.1.5. Connect +125V to J9-1, common to J9-3.
- 6.1.6. Apply +24V, +70V and +125V at this time.

### 6.2. De-Excitation Pilot Relay

- 6.2.1. Verify a short between J8-1 and J8-3 and a short between J8-4 and J8-6.
- 6.2.2. Pin 8 of U13 should read approx 700mV using common of 125V PS.
- 6.2.3. J10-1 (+) and J10-2 (-) should read -400mV and J10-3 (+) and J10-4 (-) should read the same.
- 6.2.4. Ground any two of the Pin 21 of J505, J508, and J515 using the common of the +5V / +24V. J8-1 to J8-3 and J8-4 to J8-6 should now be an open.
- 6.2.5. Pin 15 of U4 and Pin 15 of U5 should read +5V to +6V, using common of +125V PS.
- 6.2.6. J10-1 (+) and J10-2 (-) should read +125VDC +/- 1VDC.
- 6.2.7. J10-3 (+) and J10-4 (-) should read +125VDC +/- 1VDC.

### 6.3. Flashing Relays

- 6.3.1. Verify an open between J7-9 and J7-12.
- 6.3.2. Using +24V PS, ground Pin 23 of J505 and K7 should energize.

<p><b>LOU-GED-IS200EXHSG REV. B</b></p>	<p><b>g</b></p> <p><b>GE Energy</b> Parts &amp; Repair Services Louisville, KY</p>	<p><b>Page 4 of 5</b></p>
---------------------------------------------	--------------------------------------------------------------------------------------------	---------------------------

- 6.3.3. Ground Pin 23 of J508, K10 should energize and J7-9 and J7-12 should show a short.
- 6.3.4. Remove J508-23 connection and J7-7 to J7-12 opens. Ground J515-23 and K12 energizes and J7-9 to J7-12 shorts again.
- 6.3.5. Pin 8 of J505, J508, and J515 should rise from 0V to +20-30mV whenever Pin 23 of that particular J connector is grounded.
- 6.3.6. Remove connections from Pin 23.
- 6.3.7. Verify an open between J7-3 and J7-6. Using common of +24V PS, ground J505-11 and K8 should energize. Ground J508-11, K11 energizes and J7-3 to J7-6 should now be a short.
- 6.3.8. Remove J505-11 and J7-3 to 6 opens.
- 6.3.9. Ground J515-11 and K13 energizes and J7-3 to 6 shorts.
- 6.3.10. Move J508-11 to J505-11 and J7-3 to 6 should open and short again.

#### **6.4. Contactor Status Feedback**

- 6.4.1. Connect +5V through a 10K ohm to J505-14.
- 6.4.2. Connect common to +24V common.
- 6.4.3. Connect voltmeter to same J505-14 point, apply power and meter reads +5V.
- 6.4.4. Short J7-4 to J7-10 and meters falls to <100mV.
- 6.4.5. Repeat with J508-14 and J515-14.
- 6.4.6. Move Pull-up and meter to J505-15.
- 6.4.7. Meter should reads +5V.
- 6.4.8. Short J6-2 and J6-3 and meter falls to <100mV.
- 6.4.9. Repeat with J508-15 and J515-15.
- 6.4.10. Move Pull-up and meter to J505-16.
- 6.4.11. Meter should reads +5V.
- 6.4.12. Short J7-2 and J7-5 and meter falls to <100mV.
- 6.4.13. Repeat with J508-16 and J515-16.
- 6.4.14. Remove Pull-up and meter connections.

#### **6.5. De-Excitation and Crowbar Status Feedback**

- 6.5.1. Using +24V common, verify +23V (+- 1V) at J505-17 & 18 and J508-17 & 18.
- 6.5.2. Input +5V at J8-2 and verify +5V at J505-5.
- 6.5.3. Move +5V input to J8-5 and verify +5V at J508-5
- 6.5.4. Move +5V input to J11-1 and verify +5V at J505-3
- 6.5.5. Move +5V input to J11-2 and verify +5V at J508-3

6.6. \*\*\*TEST COMPLETE \*\*\*

## **7. NOTES**

<b>LOU-GED-IS200EXHSG REV. B</b>	 <b>GE Energy</b> <i>Parts &amp; Repair Services</i> <i>Louisville, KY</i>	<b>Page 5 of 5</b>
--------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------

7.1 None at this time.