g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-IS200DTTC**

Test Procedure for an IS200DTTCH1A Simplex Thermo Couple Input Board

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1. SCOPE

1.1 This is a functional testing procedure for a simplex thermo couple input board.

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** Check board's electronic folder for more information

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 site specific SRA's 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	H188693	Tektronic TDS2012B Digital Oscilloscope (or equivalent)
1	H188535	Fluke 189 Digital Multimeter (or equivalent)
1	H188621	Power supply capable of +/-100mVDC to +/-5VDC (or equivalent)

6. Modifications/Upgrades

6.1 Check Orange Book for any modifications or upgrades.

7. Testing Process

7.1 Setup

7.1.1 The card consists of 12 identical thermo-couple (TC) inputs, one cold junction (CJ) compensator and ID chip. There will not be an operating voltage applied to the card. The signal applied to TC circuits will go through an amp meter to observe any undesired fluctuations and the outputs will be observed on an oscilloscope for any undesired spikes or other anomalies.

7.2 Testing Procedure

7.1.2 Each thermo-couple circuit will be tested identically for sensitivity and conditioning. All inputs to TC circuits are made through the TB1 connector and outputs are measured on the JA1 connector. Set PS to 0V, scope to 1V div, 50 micro sec time div. Set the reference trace towards bottom of screen so it doesn't go off the top when measuring. Set up the meter to read micro amps.

7.1.3 Connect TB1-2 to PS common, TB1-1 to common (black plug) of amp meter and PS output to micro amp plug on meter . Connect scope to JA1-4 (+) and JA1-3 (-). Turn on PS, increase output in 1V increments and observe amp meter and scope. The meter should be less than 6 micro amps at 5V and there should not be any spikes or distortion on reference trace. Return PS to 0V. Set volt division on scope to 100mV, input PS in 100mV increments to 500mV and observe meter and scope for the same result as before except meter will be less than .7 micro amps. Use the following chart to test remaining TC circuits and look for same results.

7.1.4	TC CIRCUIT	PS INPUT TB1	OUTPUT
	TC1	TB1-1 (+) TB1-2 (-)	JA1-4 (+) JA1-3 (-)
	TC2	TB1-5 (+) TB1-6 (-)	JA1-23 (+) JA1-22 (-)
	TC3	TB1-7 (+) TB1-8 (-)	JA1-6 (+) JA1-5 (-)
	TC4	TB1-11 (+) TB1-12 (-)	JA1-25 (+) JA1-24 (-)
	TC5	TB1-13 (+) TB1-12 (-)	JA1-8 (+) JA1-7 (-)
	TC6	TB1-17 (+) TB1-18 (-)	JA1-27 (+) JA1-26 (-)
	TC7	TB1-19 (+) TB1- 20 (-)	JA1-10 (+) JA1-9 (-)
	TC8	TB1-23 (+) TB1-24 (-)	JA1-29 (+) JA1-28 (-)
	TC9	TB1-25 (+) TB1-26 (-)	JA1-12 (+) JA1-11 (-)
	TC10	TB1-29 (+) TB1-30 (-)	JA1-31 (+) JA1-30 (-)
	TC11	TB1-31 (+) TB1-32 (-)	JA1-14 (+) JA1-13 (-)
	TC12	TB1-35 (+) TB1-36 (-)	JA1-33 (+) JA1-32 (-)

7.1.5 Set PS to 0V. Move PS positive lead to JA1-16 and negative lead to JA1-15. Observe meter while increasing output of PS in 1V increments and meter should climb to a reading between 290 – 320 micro amps.

7.2 ***TEST COMPLETE ***

8. Notes

8.1 None at this time.

9. Attachments

9.1 None at this time.