g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-118D1596G2**

Test Procedure for a Total Control Valve Signal card

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

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DATE	**DATE**	**DATE**	**DATE**
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1. SCOPE

1.1 This is a functional testing procedure for a Total Control Valve Signal 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** Check board's electronic folder for more information
- **3.1.2** Test Instructions – P3K-AL-0403-A01

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		Fluke 87 DMM (or Equivalent)
2		22VDC Power supplies
2		15VDC Power supplies
1		Resistor 2K ohm ½ watt

6. Testing Process

6.1 Setup

6.1.1 PS1

6.1.1.1 Connect +22VDC +/-0.002VDC to pin 37.

6.1.1.2 Connect -22VDC +/-0.002VDC to pin 41.

6.1.1.3 Connect common to pin 39.

6.1.2 PS2

6.1.2.1 Connect +15VDC +/-0.1VDC to pin 21

6.1.2.2 Connect -15VDC +/-0.1VDC to pin 37

6.1.2.3 Connect common to pin 25.

6.1.3 Connect a 2Kohm ½ watt load resistor between pins 22 and 23.

6.1.4 Connect pin 7 to pin 39.

6.1.5 Temporarily connect pins 9 and 11 to pin39 (PS1 common).

6.2 Testing Procedure

6.2.1 Connect negative lead of a DVM to pin 39.

6.2.2 Verify +15.7VDC +/- 1VDC at TP1.

6.2.3 Verify -15.7VDC +/- 1VDC at TP2.

6.2.4 Zero op amps:

6.2.4.1 When adjusting the potentiometers in the following steps verify smooth and linear operation from full CW to full CCW.

6.2.4.2 With the negative lead connected to pin 39, adjust VR50 for 0VDC +/- .001VDC at TP5.

6.2.4.3 With the negative lead connected to pin 39, adjust VR51 for 0VDC +/- .001VDC at TP50.

6.2.4.4 Move the negative lead of the DVM to pin25 and adjust VR52 for 0VDC +/-.001VDC at TP6.

6.2.5 Adjust gain and verify output:

6.2.5.1 Remove 9 and 11 from pin 39.

6.2.5.2 Using a precision voltage source, apply +10VDC +/- 1mV to input 1 (pin 8 with common to pin 39).

6.2.5.3 With negative of DVM connected to pin 39 adjust VR1 for -5VDC at TP5.

6.2.5.4 Verify -5VDC +/-20mV at output (pin22 with common to pin 25).

6.2.5.5 Reverse polarity of input 1 and verify +5VDC +/-20mv at output (pin22 with common to pin 25).

6.2.5.6 Move the input from input 1 (pin 8) to input 2 (pin 10).

6.2.5.7 With negative of DVM connected to pin 39 adjust VR2 for -5VDC at TP5.

6.2.5.8 Verify -5VDC +/-20mV at output (pin22 with common to pin 25).

6.2.5.9 Reverse polarity of input 2 and verify +5VDC +/-20mV at output (pin22 with common to pin 25).

6.3 Post Testing Burn-in **Required** ___ **Yes** ___ **No**

✍ **Note:** All MARK I, II, & III Turbine related cards require a post testing burn-in of 100 hours.

6.3.1 Apply BUS or Operational power to the card for a period of 100 hours.

6.3.2 Re-test card while warm using the above procedure.

6.4 ***TEST COMPLETE ***

7. Notes

7.1 None at this time.

8. Attachments

8.1 None at this time.