



GE Energy

Functional Testing Specification

Parts & Repair Services
Louisville, KY

LOU-GED-114D6065

Test Procedure for a turbine control card

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A	Initial release	G. Chandler	2/13/2014
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C			

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DATE 2/13/2014	DATE	DATE	DATE 2/13/2014

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1. SCOPE

1.1 This is a functional testing procedure for a relay driver-Opto Isolator 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

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)
1		125VDC Power Supply
1		24VDC Power Supply
1		Calibration Fluke capacitance meter or equivalent
1		500 ohm, min 5 Watt resistor
1		Lamp

6. Testing

6.1 Resistance Measurement Test

6.1.1 Verify > 1meg ohm between the following pins.

From	To
10	9
13	15
16	20
17	19
30	32
33	41
35	39
36	38

6.1.2 Verify 4.4k ohms +/-500 ohms between the following pins.

From	To
10	11
13	14
16	21
17	18
30	31
33	34
35	40
36	37

6.2 Relay Coil Current Test

Table 1								
	Circuits							
	1	2	3	4	5	6	7	8
+125VDC Input = A	10	13	16	17	30	33	35	36
125VDC Common = B	11	14	21	18	31	34	40	37
Normally Open Contact = C	8	6	1	4	29	27	25	23
Common Contact = D	9	15	20	19	32	41	39	38
Normally Closed Contact = E	7	5	3	2	28	26	24	22

6.2.1 Using the chart in table 1, apply +125vDC through a 500 ohm 5W 5% resistor to A of circuit 1.

6.2.2 Connect B of circuit 1 to common.

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6.2.3 Connect a volt meter across the 500 ohm resistor.

6.2.4 Verify 12.7VDC +/- 2VDC on the volt meter.

6.2.5 Repeat this procedure for all circuits 1-8.

6.2.6 Remove 125VDC supply.

6.3 Contact Test with Relays De-energized

6.3.1 Connect +24VDC through a 24 volt lamp to D of circuit 1. Connect E of circuit 1 to common.

6.3.2 Verify lamp is lit.

6.3.3 Move the common lead to C of circuit 1 and verify lamp is not lit.

6.3.4 Repeat this procedure for all circuits 1-8.

6.4 Contact Test with Relays Energized

6.4.1 Apply +125VDC to A of circuit 1.

6.4.2 Connect common of 125VDC to B of circuit 1.

6.4.3 Connect +24VDC through a 24 volt lamp to D of circuit 1. Connect E of circuit 1 to 24VDC common.

6.4.4 Verify lamp is not lit.

6.4.5 Move the common lead to C of circuit 1 and verify lamp is lit.

6.4.6 Repeat this procedure for all circuits 1-8.

6.4.7 Remove 125VDC and 24VDC supplies.

6.5 Contact Protection Circuit Test

6.5.1 Using a capacitance meter, verify .47uf +/-10% between C and D of each circuit 1-8.

6.5.2 Apply +70VDC to A. Connect common to B. Verify .47uf +/-10% between D and E of each circuit 1-8.

6.5.3 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.

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

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

1.2 *TEST COMPLETE*****

7. Notes

7.1 None at this time.

8. Attachments

8.1 None at this time.