| g GE Industrial Systems<br><br>*Renewal Services*<br>*Louisville,KY* | **Functional Testing Specification**<br><br>**LOU–GED-44C331878** |
|---|---|

# Test Procedure for a Control Signal Receiver Card

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

| REV. | DESCRIPTION | SIGNATURE | REV. DATE |
|---|---|---|---|
| A | Initial release | D. Laemmle | 4/14/03 |
| B | | | |
| C | | | |



| PREPARED BY | REVIEWED BY | REVIEWED BY | QUALITY APPROVAL |
|---|---|---|---|
| D. Laemmle | | | Robert Duvall |
| **DATE** | **DATE** | **DATE** | **DATE** |
| 4/14/03 | | | 4/23/03 |

**Functional test procedure for 44C331878G01**

## 1. SCOPE

**1.1** This is a functional testing procedure for a 44C331878G01 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.
**2.1.1 277A3836**

## 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 or cracked
**4.2.1.2** Terminal strips / connectors broken or cracked
**4.2.1.3** Loose wires
**4.2.1.4** Components visually damaged
**4.2.1.5** Capacitors leaking
**4.2.1.6** Solder joints damaged or cold
**4.2.1.7** Circuit board burned or de-laminated
**4.2.1.8** Printed wire runs 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 |
|---|---|---|
| 5 | | Power supply |
| 1 | | 28v Lamp |
| 1 | | 10K Resistor |
| 2 | Fluke 85 or Equiv. | DMM |
| 1 | Tektronix 2215 or Equiv. | Oscilloscope |

## 6. TESTING PROCESS

**6.1** Setup

**6.1.1**

**6.2** Testing Procedure

**6.2.1** Connect +15VDC to Pin 1 and –15VDC to Pin 5, using Pin 3 as common for both.

**6.2.2** Connect 24VDC – to Pin 10 and + to Pin 8.

**6.2.3** Connect a 28v lamp from Pin 13 to Pin 10. Place the ALO switch on the card faceplate in the down position.

**6.2.4** Power up card and jumper Pin 27 to Pin 29 and Jumper Pin 23 to Pin 25. Connect one lead of a 6.0VAC RMS 60 hz supply to the pin 27-29 jumper and the other AC lead to Pin 3.

**6.2.5** Connect an oscilloscope to Pin 18, com to Pin 3. Use AC coupling since the 60 hz waveform rides on a DC level. Adjust 2P on the circuit board for minimum AC (less than 10mvAC).

**6.2.6** Move the AC source lead from the Pin 27-29 jumper and connect it to the Pin 23-25 jumper. Leave the other lead on Pin 3. Adjust 3P on the circuit board for minimum 60 hz waveform (less than 10 mv AC). It may be necessary to repeat steps 6.2.5 and 6.2.6 to get both to specification.

**6.2.7** Remove AC source, Scope, and jumpers 27-29 and 23-25. Connect variable DC supply VS-1 to Pin 25, com to Pin 3. Jumper Pin 29 to Pin 23 to Pin 3.

**6.2.8** Adjust VS-1 for 5.00 VDC at Pin 25. Measure 3TP = -7.6 +/- .2VDC, 4TP = 7.6 +/- .2VDC, 9TP = 8.3 +/- .2VDC. All readings to Pin 3 Com.

**6.2.9** Disconnect VS-1 from Pin 25 and connect VS-2 to Pin 28, neg to Pin 3. Adjust VS-2 for 5.00VDC. Measure 2TP = -7.6 +/- .2VDC, 4TP = 7.6 +/- .2VDC, 8TP = 8.3 +/- .2VDC.

**6.2.10** Connect DC meter to Pin 18. Pin 18 = 7.6 +/- .2VDC. Disconnect VS-2 from Pin 28 and Reconnect VS-1 ( still at 5.00 VDC) to Pin 25. Pin 18 = 7.6 +/- .2 VDC.

**6.2.11** Leave VS-1 connected to Pin 25 and reconnect VS-2 ( still at 5.00 VDC ) back to Pin 28.Connect DC meter to TP11 (+) and TP1 (-). Adjust 1P on board CCW. TP11 = 0 VDC. Adjust 1P CW. TP11 = 15 VDC.

**6.2.12** Adjust VS-2 for 4.5 VDC on Pin 28. Connect meter from TP 13 (+) and TP12 (-). Slowly adjust 1P until meter suddenly drops from 24 VDC to 0 V. Return VS-

2 to 5.00 VDC at Pin 28. Press and release Reset button on cardfront. “Backup Failure” light on cardfront should be on. Meter reads 24VDC.

**6.2.13** Slowly decrease VS-2 and note that “Backup Failure” light goes out at 4.5 +/- .05VDC. If not in limits, readjust 1P.

**6.2.14** Connect a DC meter from Pin 11(+) to Pin 10 (-). Connect a 10K resistor from Pin 11 to Pin 9.Meter at Pin 11 should read 11.7 +/- .3VDC. Jumper Pin 12 to Pin 7. “Backup Failure” light should come on. Remove jumper 12-7 and light goes out.

**6.2.15** Move 10K resistor from Pin 11 and Pin 9 to Pin 15 and Pin 9. A meter connected from 13TP (+) to 12TP (-) should read 0 to 0.5 VDC.

**6.2.16** Increase VS-2 back to 5.00 VDC at Pin 28. Press and release Reset button. “Backup Failure” light should come on.

**6.2.17** Move the 10K resistor from Pin 15 and Pin 9 to Pin 11 and Pin 9. Pin 11 should read 0 to 0.5 VDC (Reset button may have to be pushed to get this reading). Lower VS-2 at Pin 28 to 4.00 VDC. Pin 11 should go to 11.7 +/- .3VDC.

**6.2.18** Move ALO switch on faceplate to “up” position. Lamp connected from Pin 13 to Pin 10 should light and Pin 11 should read 0 +/- .2VDC. Place ALO switch down and lamp should go out and Pin 11 should go back to 11.7 +/- .3VDC.

***6.3 ***TEST COMPLETE ******

## 7. NOTES