



GE Energy

## Functional Testing Specification

*Parts & Repair Operations  
Louisville, KY*

**LOU-GEF-IC600xx841/2/3  
Analog Input Card**

### Test Procedure for an IC600xx841/2/3 boards

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## 1. SCOPE

1.1 This is a functional testing procedure for a Series Six Analog Output 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 **GEK-83526**

3.1.2 **GEK-83525**

## 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, 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 and test ratios are equivalent or better.

Qty	Reference #	Description
1		Series Six CPU-1 Local rack
1		Series Six Calibration Interface Box
1		Series Six Work-Master Computer set up with the "Logic Master 6" system.
1		Fluke 8840a Bench-Top Multi-Meter

## 6. Testing Process

### 6.1 Setup

**6.1.1** Using the positions of the berg jumpers found on each card, each of the three card types can be converted from one to another. However, for the purpose of this test procedure, each card should be set up and tested according to the card type indicated within the model # (i.e. 841, 842, 843).

**6.1.2** The following chart shows the positions of the berg jumpers and the output ranges for each card type.

**6.1.3** Refer to GEK-83525 for further examination.

Card Type	Output Range	Jumper Positions
Xx841	0V to 10V	1-2, 7-10, 8-9, 6-11, 13-14, 21-22, 24-25
Xx842	-10V to 10V	1-3, 4-7, 8-9, 6-11, 13-14, 22-23, 25-26
Xx843	4mA to 20mA	1-2, 3-4, 5-6, 7-8, 12-13, 21-22, 24-25

**Chart 1**

**6.1.4** Proper addressing is acquired through the use of dipswitches, which are located on the back plane of the rack.

**6.1.5** The columns of the chart below indicate the dipswitch positions for the proper addressing of each card type and the address # of those positions.

Switch #	Xx841	Xx842	Xx843
7	Closed	Closed	Closed
6	Opened	Opened	Opened
5	Opened	Opened	Opened
4	Closed	Closed	Opened
3	Closed	Opened	Closed
2	Closed	Closed	Closed
1	Closed	Closed	Closed
Address # >>	385	417	449

**Chart 2**

**6.1.6** Using the keystroke ALT-1, ensure that the Work-Master is "offline".

**6.1.7** Connect the data cable from the Work-Master to the top connector of the I/O Control card of the CPU-1 MAIN rack.

**6.1.8** Ensure that SW1 on the Calibration Interface Box is set to Input.

## 6.2 TEST PROCESS

- 6.2.1 Ensure power to the CPU-1 LOCAL rack is off.
- 6.2.2 After berg jumpers and dipswitches are set properly according to charts 1 and 2 of section 6, insert the card into the configured slot of the rack.
- 6.2.3 Connect the input calibration connector to the exposed edge of the card.
- 6.2.4 Connect the multi-meter, via banana-plug leads, to the meter output of the Calibration Interface Box.
- 6.2.5 Using the STOP/RUN key switch on the CPU-1 MAIN rack, place the CPU-1 MAIN rack in STOP mode.
- 6.2.6 Turn the power to the CPU-1 LOCAL rack on.
- 6.2.7 Place the CPU-1 MAIN rack in RUN mode.
- 6.2.8 Verify that the power LED of the card under test becomes lit.
- 6.2.9 On the Calibration Interface Box, ensure that all the switches in the input section are set to calibration mode.
- 6.2.10 From the LM6 “supervisor menu”, press “F1” to display the CPU-1 program.
- 6.2.11 Within the program display screen, perform a search for the address, which corresponds to the card type in accordance with chart 2 in section 6.
  - 6.2.11.1 Press “-” (dash = input).
  - 6.2.11.2 Type the address #. **Note:** Since the # keys in the keypad to the right of the keyboard do not function with the LM6 system, use the # keys above the letter keys.
  - 6.2.11.3 Press “F2” for the search function.
  - 6.2.11.4 Press “F1” to begin the search. The CPU-1 program should display the output address.
- 6.2.12 Using the keystroke ALT-1, switch the Work-Master to “online”.
- 6.2.13 The following chart shows the correlation between the source outputs, which get displayed by the Work-Master screen and the input voltages, which get displayed by the multi-meter.

**6.2.14** Once the proper values are verified, allow the card to burn in for at least one hour.

CARD TYPE	LOW END		HIGH END	
	Source Output	Input Voltage	Source Output	Input Voltage
Xx841	00001	0.0024V	OFFE	9.9976V
Xx842	F801	-9.9951V	07FE	9.9902V
Xx843	00001	1.0010V	OFFE	4.9980V
Source outputs are displayed in hexadecimal format.				

**Chart 3**

**6.2.15** Each card has potentiometers for adjusting the high and low ends.

**6.2.16** If card is out of calibration, use R10 to adjust the high end and R11 to adjust the low end.

**6.2.17** Using the keystroke ALT-1, switch the Work-Master to “offline”.

**6.2.18** Place the CPU-1 MAIN rack in STOP mode.

**6.2.19** Turn the power to the CPU-1 LOCAL rack off.

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

## 7. NOTES

**7.1** None at this time.

## 8. ATTACHMENTS

**8.1** None at this time.