g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GEF-SINT3**

Test Procedure for SINT3 Printed Circuit Board

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Functional test procedure for SINT3 Printed Circuit Board

1. SCOPE

1.1 This specification provides the Engineering Requirements for testing the SINT3 printed circuit board. The process applies only to SINT3 boards model number 44A297027-G01.

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-25322**
- **3.1.2 GEK-25317**

4. ENGINEERING REQUIREMENTS

4.1 Description
- **4.1.1** The 1050 Control is a solid-state, integrated circuit controller/processor system using LSI circuits for data processing and control. The static logic circuits are arranged on modular, plug in, printed circuit boards, clearly identified by type. The circuit boards are mounted with functional grouping. In addition, a board identification number marks each rack slot. The backplane consists of printed conductors arranged in a busing structure so that each slot is universal and can accept any board type. The 1050 control uses the AXIS2 board for controlling two or more axis drives.

4.2 Equipment Cleaning
- **4.2.1** 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.

4.3 Equipment Inspection
- **4.3.1** Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:
  - **4.3.1.1** Wires broken or cracked
  - **4.3.1.2** Terminal strips / connectors broken or cracked
  - **4.3.1.3** Loose wires
  - **4.3.1.4** Components visually damaged
  - **4.3.1.5** Capacitors leaking
  - **4.3.1.6** Solder joints damaged or cold
  - **4.3.1.7** Circuit board burned or de-laminated
  - **4.3.1.8** 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
1	GE 1050MCCM	CPU3 Model
1	GE Computer Access Panel	External Interface
1	Diagnostic Tape Specific to Control	Diagnostic Tape
1	Executive Tape Specific to Control	Executive Tape
1	HUNTRON PROTACK 1	Component Tester.
1	1050 LAMP TEST BOX	Input Switches, Output Lamps
1	1050MCCM Adapter	LP Cable to Ribbon Cable

6. TESTING

6.1 General

Testing the SINT3 is done in two steps. The first step tests the digital portion of the SINT2 using diagnostic software tape 44S286980-X7C. The second step is to test I/O using Executive Tape and 1050 Control Panel.

6.2 Procedure

6.3 Test SINT3 Board With HUNTON PROTACK SINT3 Test.

6.4 Diagnostic Digital Test

6.4.1 Remove SINT3 test board from control panel and reconnect SINT3 to be tested. All cables are labeled.

6.4.2 Load Factory Diagnostic test tape 44S286980-X&C

6.4.3 After the Diagnostics has been loaded, the display should read "READY ENTER DATA".

6.4.4 On the control panel depress and release the following buttons;

6.4.4.1 "1"

6.4.4.2 "NEXT"

6.4.4.3 "CYCLE START". When cycle start is released the test starts.

6.4.5 If board passed display should read "TOTAL ERROR 00" "SERIAL INTERFACE TEST COMPLETE". Depress "OPTION STOP" Button.

6.5 INPUT TEST

6.5.1 Load Executive Tape.

6.5.2 After Exec is loaded shut down Control remove SINT3 IF Ribbon Cables, Install 1050 Lamp Box and 1050MCCM Adapter.

6.5.3 Connect IF ribbon cable to ICPL1 and OD ribbon Cable to ODPL1, connect Lamp Box +5V, -12V and 0V to power jacks on side of 1050MMC Control.

6.5.4 Turn on Control

6.5.5 Move Display to AUX Data, Depress "I" on control panel to test IF1.

6.5.6 Start with WORD 00

6.5.7 Using Switches on Lamp box test all 32 bit in.

6.5.8 Switch will turn on an element that will be displayed at Word Address.

6.5.9 To move to next Word Address depress NEXT on control panel. ****See Notes for Bit Word Addresses for each of the 32 input elements

6.5.10 After all 32 Element (input) are tested IF 1 test is completed.

6.6 OUTPUT TEST

6.6.1 Depress "O" on control panel to start Output Test for OD 1

6.6.2 Start with OD Word 00.

6.6.3 Turn on all 32 Lamps on LAMP BOX by setting WORD Bits to 1.

6.6.4 Follow OD 1 Word Chart ****See Notes for Bit Word Addresses for each of the 32 outputs.

6.6.5 Bits are set by entering in 1 or 0 in Bit location using Control panel depress 00 then depress $ to changed the Bits state from 0 to 1 corresponding lamp should light up as to Output Chart.

6.6.6 After all Lamps are turned you can turn off lamps by going back and setting Bits to 0.

6.6.7 The test is competed for OD1 and IF 1. Turn Control off Move IF ribbon Cable to ICPL2 and OD ribbon cable to ODPL2.

6.6.8 Turn on Control

6.6.9 Move Display to AUX Data, Depress "I" on control panel to test IF2.

6.6.10 Start with WORD 00

6.6.11 Using Switches on Lamp box test all 32 bit in.

6.6.12 Switch will turn on an element that will be displayed at Word Address.

6.6.13 To move to next Word Address depress NEXT on control panel. ****See Notes for Bit Word Addresses for each of the 32 input elements

6.6.14 After all 32 Element (input) are tested IF 2 test is completed.

6.6.15 Depress "O" on control panel to start Output Test for OD 1

6.6.16 Start with OD Word 00.

6.6.17 Turn on all 32 Lamps on LAMP BOX by setting WORD Bits to 1.

6.6.18 Follow OD 1 Word Chart ****See Notes for Bit Word Addresses for each of the 32 outputs.

6.6.19 Bits are set by entering in 1 or 0 in Bit location using Control panel depress 00 then depress $ to changed the Bits state from 0 to 1 corresponding lamp should light up as to Output Chart.

6.6.20 After all Lamps are turned you can turn off lamps by going back and setting Bits to 0.

6.6.21 The test is competed for OD2 and IF 2. Turn Control off Move IF ribbon.

6.6.22 Turn off Control remove SINT3 board.

6.7 ***TEST COMPLETE *

7. NOTES

IF #1

WD 00
SW 20-----EL08
SW 21-----EL07
SW22------EL02
SW24------EL10

WO 01
SW 12---EL06
SW 13---EL05
SW14----EL01
SW15----EL02
SW16----EL03
SW23----EL04

WD 02
SW9-----EL06
SW10---EL03
SW11---EL09
SW19---EL01

WD03
SW18---EL16

WD 04

SW25---EL05
SW26---EL06
SW27---EL04
SW28---EL03
SW29---EL02
SW30---EL01
SW31---EL08
SW32---EL07

WD 05

SW1---EL09
SW2----EL10
SW3----EL11
SW4---EL12
SW5---EL13
SW6---EL14
SW7---EL15
SW8---EL06
SW17---El06

IF #2

WD 00

SW24---EL06
SW25---EL05
SW26---EL04
SW27---EL03

WD 01

SW17---EL02

WD 03

SW18---EL14
SW19---EL04
SW20---EL12
SW21---EL11
SW22---EL10
SW28---EL13
SW29---EL09
SW30---EL08
SW31---EL07
SW32---EL06

WD 04

SW5---EL12
SW6---EL11
SW7---EL10
SW8---EL09

WD05

SW1---EL07
SW2---EL08
SW3---EL03
SW9---EL03
SW10---EL04
SW11---EL01
SW12---EL02

WD 07

SW4---EL16
SW13---EL15
SW14---EL14

WD08

SW15---EL07
SW16---EL06

OD #1

WD00

EL09---LAMP 1
EL13---LAMP 3

WD 01

EL01---LAMP 4
EL15---LAMP 2

WD02

EL00---LAMP25
EL01---LAMP 26
EL02---LAMP 27
EL03---LAMP 28
EL04---LAMP 29
EL05---LAMP30
EL06---LAMP 31
EL07---LAMP 32
EL08---LAMP 6
EL09---LAMP 7
EL10---LAMP 8
EL11---LAMP 9
EL12---LAMP 10
EL13---LAMP 11
EL14---LAMP 12
EL15---LAMP 13

WD03

EL00---LAMP 15
EL01---LAMP 16
EL02---LAMP 17
EL03—LAMP 18
EL04---LAMP 19
EL05---LAMP 20
EL06---LAMP 21
EL07---LAMP 22
EL08---LAMP 23
EL10---LAMP 5
EL11---LAMP 24

OD #2

WD00

EL08---LAMP 32
EL07---LAMP 23

WD01

EL03---LAMP 30
EL04---LAMP 29
EL05---LAMP 28
EL06---LAMP 27
EL07---LAMP 3
EL08---LAMP 26
EL09---LAMP 25
EL10---LAMP 24
EL14---LAMP 31
EL00---LAMP 2

WD03

EL12---LAMP 22
EL13---LAMP 21
EL14---LAMP 20
EL15---LAMP 19

WD04

EL03---LAMP 4
EL04---LAMP 7
EL05---LAMP 8
EL06---LAMP 9
EL07---LAMP 10
EL08---LAMP 11
EL09---LAMP 12
EL10---LAMP 13
EL11---LAMP 14
EL12---LAMP 15
EL13---LAMP 16
EL14---LAMP 17
EL15---LAMP 18

WD05

EL13---LAMP 5
EL12---LAMP 6

WD07

EL15---LAMP 1

8. REFERENCES

8.1.1 None at this time.