g GE Energy *Parts& Repair Services* *Louisville, KY*	**Functional Testing Specification** **LOU-GEF-SINT2**

Test Procedure for SINT2 Printed Circuit Board

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Functional test procedure for SINT2 Printed Circuit Board

1. SCOPE

1.1 This specification provides the Engineering Requirements for testing the SINT2 printed circuit board. The process applies only to SINT2 boards model number 44A294555-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 the local documented procedures 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	H188722	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

6. Testing

6.1 General

6.1.1 Testing the SINT2 is done in two steps. The first step tests the digital portion of the SINT2 using diagnostic software tape 44S286980-X7C. The second step tests the A/D converter using an auxiliary test tape label "SINT2 – A/D Converter Test".

6.2 Procedure

6.2.1 Diagnostic Digital Test

6.2.1.1 Remove SINT2 test board from control panel and reconnect SINT2 to be tested. All cables are labeled.

6.2.1.2 On production board to be tested, set switch 1 pack N9 as follows;

6.2.1.2.1 1 & 3 = Open

6.2.1.2.2 4 thru 7 = Closed

6.2.1.2.3 8 = Open

6.2.1.2.4 9-10 = Closed

6.2.1.2.5 Set Switch 2 all open.

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

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

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

6.2.4.1 "1"

6.2.4.2 "NEXT"

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

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

6.2.6 Test I/O Device Test.

6.2.7 Start with READY ENTER DATA

6.2.8 Enter 44 from keyboard.

6.2.9 Depress "Next". The display then shows: INPUT DEVICES, DEPRESS NEXT.

6.2.10 Depress "Next" and the display indicates the first input device.

6.2.11 Test all input device until the completion of input device then the display will show OUTPUT DEVICES, DEPRESS NEXT.

6.2.12 Test all Output Devices by depressing the NEXT Button, Each time you depress next you will test output device which is a LED on the Control station.

6.2.13 When output device test is completed the display should read "READY ENTER DATA"

6.2.14 Diagnostic test is done.

6.3 A to D Test

6.3.1 Load the SINT2 A/D Converter Test Tape onto tape reader, press and release the load tape switch.

6.3.2 If no test tape, load the following data into memory manually;

	ADRS	DATA	OP CODE	OPERAND
	6000	0002	WORD	INPUT SELECT
	6001	F470	WORD	SINT1 ADRS
	6002	7870	WORD	SINT2 ADRS
start	6003	8DFD	LD	3, SINT1 ADRS
	6004	81FB	LD	0, INPUT SELECT
	6005	0604	WB	
	6006	8DFB	LD	3, SINT2 ADRS
	6007	0407	RBD	
	6008	21FE	JMP	-1

6.3.3 Program starts at 6003. This program should only have to be loaded once or after loss of memory.

6.3.4 Turn display selector switch to register 0. The upper two digits of the DATA DISPLAY will indicate the output of the A/D Converter.

6.3.5 With the spindle speed pot at 0% the data display upper two digits should be 00XX. If not, adjust P5 on SINT2 board to obtain 00XX at the data display.

6.3.6 Turn the spindle speed pot slowly clockwise and observe the data display, the upper digits data display should increment smoothly with no more then + or – 1 count of jitter.

6.3.7 At 120% spindle speed, the upper two digits of display should be F5 or greater, + or – 1 count of jitter.

6.3.8 At this point the test is complete.

6.4 Test Exec Test.

6.4.1 Load EXEC Tape when tape is load depress "CONTROL ON" this will take Control out of "E-STOP" e-stop lamp should turn off.

6.4.2 Turn off Control and remove SINT2 and replace Control's SINT2.

6.5 ******TEST COMPLETE ******

7. NOTES

7.1 None at this time

8. REFERENCES

8.1 None at this time