g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-DS200SDCC**

Test Procedure for a AC/DC 2000 Main Control Card

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	D. Smith	01/11/99
B	Added initial column to section 5, revised procedure number, Incorporated both the DC2000 and 531X style cards.	R. Duvall	6/14/02
C	Changed DAC test steps.	L Groves	6/20/02
D	Converted procedure to new format.	R. Duvall	6/21/02
E	Corrected header, removed comment "Replace U7 & U77 RAM Chips", added a picture of H033760 test fixture to section 7.	C. Wade	8/30/06
F	Clarify steps 6.1.8, 6.2.3.1, & 6.2.35	K. Greenwell	12/2/2010
G	Edited a copy of the original LOU-GED-531X301DCC-F procedure used to test both 531X301DCC and DS200SDCC boards and modified it into this procedure for specifically testing DS200SDCC boards.	E Rouse	12/08/2010

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
David Smith	Kenny Greenwell	K. Greenwell	Charlie Wade
DATE	**DATE**	**DATE**	**DATE**
1/11/1999	1/11/1999	12/2/2010	6/6/2007

1. SCOPE

1.1 This is a functional testing procedure for a DC2000 Main Control 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-85730 FOR 531X style cards

3.1.2 GEH-6005 for DS200 style cards

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	H033758 or H033762	Drive Test Fixture (For DS200 style cards)

6. TESTING PROCESS

6.1 Setup

6.1.1 Visually inspect U7 & U77 on UUT and if made by Samsung, then replace.

6.1.2 Remove DCC card from drive.

6.1.3 Install latest firmware version available (Firmware versions can be identified on the Salem MRP system).

6.1.4 Install EEPROM U9 from test board.

6.1.5 Set all the jumpers on the UUT in the 1-2 position except for JP1 which needs to be in the 2-3 position.

6.1.6 Install board into drive ***DO NOT APPLY POWER***

6.1.7 On Control Panel measure from COM to all red test jacks and verify no shorts are on the power supplies. If any shorts or readings less than 10 ohms are found, correct before powering up the drive.

6.2 Testing Procedure

6.2.1 Apply power by pulling out the E-Stop button while watching the LCC display.

6.2.2 Verify LCC display reads “INITIALIZATION” then “MS 0% I 0%”.

6.2.3 Power supply verification.

6.2.3.1 Check power supply voltage at Control Panel and verify the following;

+5VDC +/- 0.25

+15VDC +/- 0.5

-15VDC +/- 0.5

+24VDC + 25-28

-24VDC – 25-28

6.2.4 Adjust the REFP-63 control through it’s range from 00 to 99 to verify DAC1and DAC2 panel meters go from 0-125%.

6.2.5 Adjust the FDBP-69 control through a range from 00 to 99 to verify IMET1, IMET2, IMET3 and IMET4 panel meters go from 0-125%.

6.2.6 Execute Test 12 “SCR Test”.

6.2.7 This can be done by entering the following in on the programmer; ([set], [drv], [7], [7], [Enter], [Reset], [Reset], [Test], [1], [2], [Enter].

6.2.8 This should place the drive in DIAGNOSTIC mode and the LCC should display “Cell Test Passed”

6.2.9 Press RESET on the Control Panel, which should take you out of DIAGNOSTIC MODE.

6.2.10 On Control Panel press IN 1-8, yellow lamps above IN 1-8 PB will change to red.

6.2.11 On Control Panel press CI 1-8, yellow lamps above CI 1-8 PB will change to red.

6.2.12 Push RUN switch up on Control Panel to enter run mode.

6.2.13 Verify MACPL 1-2 illuminates on control panel.

6.2.14 Increase and decrease REFP-63 (RUN REF) control through it's range. The motor should increase and decrease in speed and the LCC display MS % should match the REFP-63 switch reading on control panel (+/-5%).

6.2.15 Set REFP-63 (RUN REF) switch to 10.

6.2.16 The LCC display should read MS 10% I 12% (+/-2%)

6.2.17 Push POL (REVERSE) switch on Control Panel up to reverse motor direction.

6.2.18 The LCC display should now show a negative reading of MS -10% I -12%. (+/-2%)

6.2.19 Push POL (REVERSE) switch on Control Panel down to exit reverse mode.

6.2.20 Push RUN switch down on Control Panel to exit run mode.

6.2.21 Push JOG switch up on Control Panel to enter jog mode.

6.2.22 Increase and decrease FDBP-69 (JOG REF) control. Motor should increase and decrease in speed and LCC display MS % will match FDBP-69 control reading(+/-10%).

6.2.23 Push JOG switch down on Control Panel to exit jog mode.

6.2.24 Push RUN switch up to enter run mode.

6.2.25 Push XSTOP switch down; motor will brake to a stop.

6.2.26 LCC display should show the flashing error measge "ST 17__XSTOP".

6.2.27 Push XSTOP switch up to remove XSTOP input.

6.2.28 Push RUN switch down to exit run mode.

6.2.29 Push the RESET button un the UUT to unlatch the XSTOP condition.

6.2.30 After initialization, push RUN switch up, motor will restart.

6.2.31 Press CTLN 42/44 push button switch on Control Panel which should cause the motor to stop and cause the flashing error message "ST 29__CNTRL ON" on the LCC display.

6.2.32 Push RUN switch down to exit run mode.

6.2.33 Press RESET on the UUT to unlatch the Fault 29 condition.

6.2.34 Using the trend recorder in GE TOOLBOX software view the analog input levels on the PC screen. Verify the table below by changing the value of the ANALOG INPUTS control on the Control Panel.

NOTE: If this test will not run the serial port on the drive is bad!!

Analog	VAR\P1	VAR\P2	VAR\P3	VAR\P4	VAR\ASPO	VAR\DVM	VAR\SPA1	VAR\SPA2	VAR\V3	VAR\V4
Inputs									VCOVAR	VCOVAR
Control	10% tol	10% tol	10% tol	10% tol	10% tol	10% tol	20% tol	20% tol	20% tol	20% tol
10	71	71	71	71	71	7	71	71	52	52
20	117	117	117	117	117	12	117	117	117	117
30	156	156	156	156	156	15	156	156	137	137
40	194	194	194	194	194	19	194	194	174	174
50	236	236	236	236	236	23	236	236	216	216
60	286	286	286	286	286	28	286	286	280	280
70	351	351	351	351	351	35	351	351	330	330
80	442	442	442	442	442	44	442	442	421	421
90	511	511	511	511	511	51	511	511	562	562

6.2.35 Exit from Trend Recorder on the PC.

6.2.36 Set REFP-63 control for 03 on Control Panel

6.2.37 Run Test 11

6.2.38 This can be done by entering the following in on the programmer; ([set], [drv], [7], [7], [Enter], [Reset], [Reset], [Test], [1], [1], [Enter].

6.2.39 Push RUN up, motor will start.

6.2.40 With POL up LCC display will count down.

6.2.41 With POL down LCC display will count up.

6.2.42 Push RUN down, motor will stop.

6.2.43 Press RESET on Control Panel.

6.2.44 Set FDBP-69 control to 10 on the Control Panel.

6.2.45 To verify communication first check on IOS to see which test you are using, TEST TYPE will have either DLAN or ARCNET.

6.2.46 Press and hold JOG#_ pushbutton on IOS that matches drive you are using to test Drive should start and IOS will display in SPEED#_ the drives speed.

6.2.47 You have just tested only one of the communication tests.You must test both DLAN and ARCNET.

6.2.48 If IOS TEST TYPE is DLAN you need to load IOS with ARCNET.

6.2.49 If IOS TEST TYPE is ARCNET you need to load IOS with DLAN.

6.2.50 Refer to LOADING INSTRUCTION to test software in IOS.

6.2.51 Press and hold JOG#_ pushbutton on IOS that matches drive you are using to test Drive should start and IOS will display in SPEED#_ the drives speed.

6.2.52 Use the DMM to check for +14.25 - 15 VDC from EIV1 to COM on the control panel.

6.2.53 Use the DMM to check for +25 - 27 VDC from MSRF to COM on the control panel.

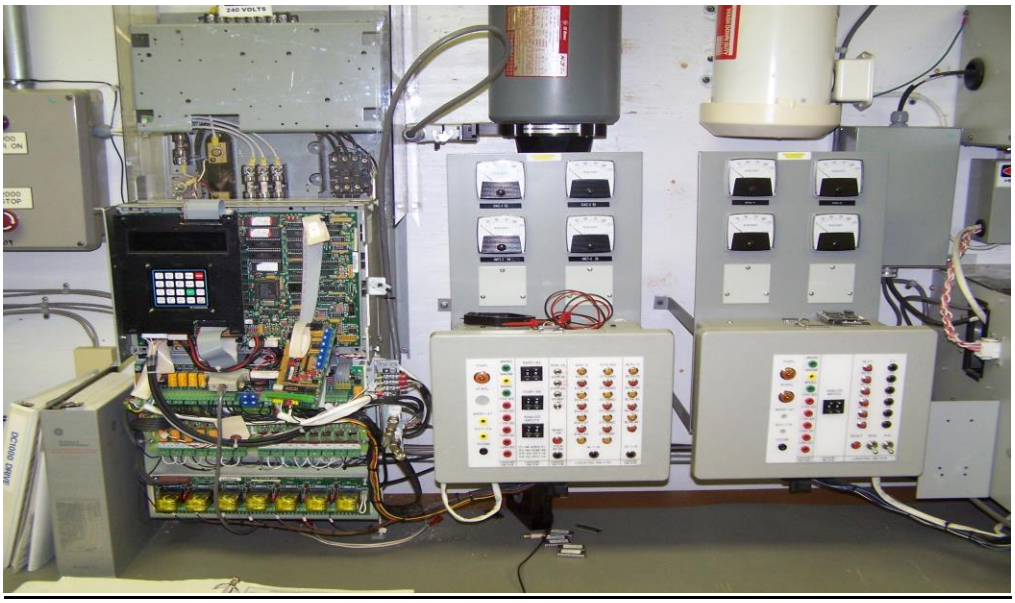
6.2.54 Verify the 1FAPL light on the control panel is illuminated.

6.3 Test Complete.

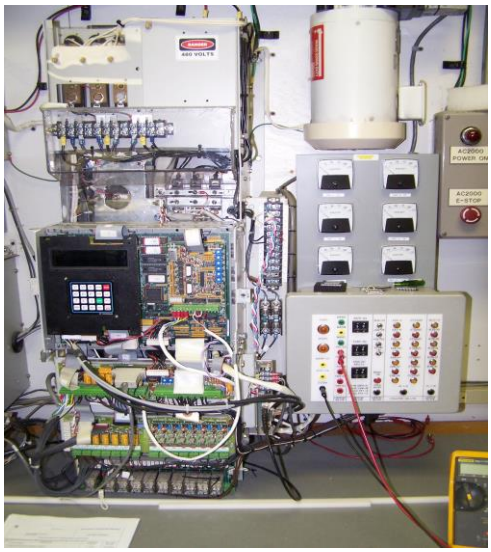
7. NOTES

7.1 None at this time.

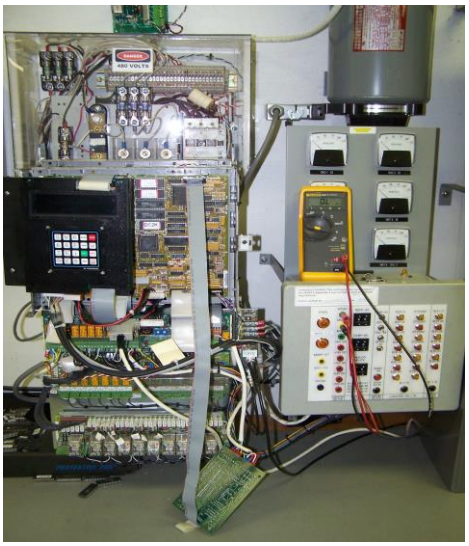
8. ATTACHMENTS



H033760 for testing 531X Series Cards



H033762 for testing DS200 Series Card



H033758 for testing DS200 Series Cards