g GE Industrial Systems	**Functional Testing Specification**
Renewal Services ***Louisville, KY***	**LOU–GED-DS200LDCC**

Test Procedure for an AC/DC-2000 SMT 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	LLOYD GROVES	6/20/02
B			
C			

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
Lloyd Groves	David Smith		Robert Dwall
DATE	**DATE**	**DATE**	**DATE**
6-20-02	6-22-02		6-25-02

Functional test procedure for

1. SCOPE

1.1 This is a functional testing procedure for a DS200LDCCH1Axx SMT 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 GEI-100216

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
1	H033758	DC2000
1		Fluke 85 DMM or equivalent

6. TESTING PROCESS

6.1 Setup

6.1.1 Remove DS200SDCC and DS200SLCC cards from Drive

6.1.2 Install DS200LDCC card(front) and DS200ADGI card(back) in Drive

6.1.3 Install EEPROM U9 “DC2K NEW” from test board

6.1.4 Connect GEN1 and 2PL cables to DS200ADGI card

6.1.5 Connect 7PL, ARCPL, 8PL, 10PL, 1PL, 2PL, 6PL, & 11PL(observe keying)

6.1.6 cables to DS200LDCC card.

6.1.7 Connect LNPL and COM1 cables between DS200LDCC and DS200ADGI cards.

6.1.8 Verify jumper settings: JP1”2-3” all others “1-2”

6.1.9 Install board into Drive *** **DO NOT APPLY POWER*****

6.1.10 On Control Panel measure from COM to all red test jacks and verify no shorts are on the Power Supplies. If any shorts or low ohm readings are found, correct before powering Drive.

6.1.11 NOTE : +5 VDC will read approx. 215 ohms in circuit at red test jack.

6.2 Testing Procedure

6.2.1 Apply power by pulling E-stop out

6.2.2 Verify LDCC card displays “INITIALIZATION” then “MS 0 % I 0 %”.

6.2.3 Check power supply voltage at Control Panel

+ 5 VDC	**+/- 0.1**
+ 15 VDC	**+/- 0.2**
- 15 VDC	**+/- 0.2**
+ 24 VDC	**+ 25-28**
- 24 VDC	**- 25-28**

6.2.4 Check with Multimeter on Control Panel that EIV1-74 is between +14.25 and 15.25 VDC

6.2.5 Check with Multimeter on Control Panel that MSRF-47 is between +25 and 27 VDC

6.2.6 DAC1 and 2 can be tested by changing **REFP-63** settings. Meters labeled DAC1 and DAC2 will increase and decrease from 0-125 % approx

6.2.7 IMET1 and 2 can be tested by changing **FDBP-69** Meters labeled IMET1 –IMET4 will increase and decrease from 0-125 % approx.

6.2.8 On Control Panel press **IN 1-8**, yellow lamps above IN 1-8 PB will Change to red

6.2.9 On Control Panel press **CI 1-8**, yellow lamps above CI 1-8 PB will Change to red.

6.2.10 Execute TEST 12 “SCR TEST”.

6.2.11 This can be done by entering the following in on the programmer: ([set], [drv], [7], [7], [Enter], [Reset],[Reset], [test], [1], [2], [Enter]

6.2.12 LCC will display ”CELL TEST PASSED”.

6.2.13 Press **RESET** on Control Panel, this will take you out DIAGNOSTIC MODE.

6.2.14 Push **RUN** switch up on Control Panel

6.2.15 Verify **MACPL 1-2** illuminates on control panel.

6.2.16 Increase and decrease **REFP-63** (RUN REF) switch. Motor should increase and decrease in speed and LCC display MS % will match **REFP-63** switch reading on Control Panel.

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

6.2.18 LDCC display will read MS xx% xx%

6.2.19 Push **POL** (REVERSE) switch on Control Panel up.

6.2.20 LDCC display will read MS - xxx% - xxx%

6.2.21 Push **POL** (REVERSE) switch on Control Panel down.

6.2.22 Push **RUN** switch down on Control Panel

6.2.23 Push **JOG** switch up on Control Panel.

6.2.24 Increase and decrease **FDBP-69** (JOG REF) switch. Motor should increase and decrease in speed and LCC display MS % will match **FDBP-69** switch reading.

6.2.25 Set **FDBP-69** (JOG REF) switch to 10.

6.2.26 LCC display will read MS xx% xx%

6.2.27 Push **JOG** switch down on Control Panel.

6.2.28 Push **RUN** switch up.

6.2.29 Push **XSTOP** switch down and motor will brake to a stop & cause fault 17.

6.2.30 Push **XSTOP** switch up.

6.2.31 Push **RUN** switch down.

6.2.32 On the DS200 series cards push the **RESET** button.

6.2.33 After Initialization, Push **RUN** switch up, motor will restart.

6.2.34 Press **CTLN 42/44 (e-stop)** pushbutton switch on Control Panel, motor will stop and cause ***Fault 29***.

6.2.35 Push **RUN** switch down.

6.2.36 Press **RESET** on L**DCC** card, Fault will clear.

6.2.37 Using the trend recorder in GE TOOLBOX software view the analog inputs on the PC screen. Verify the table below by changing switch labeled **ANALOG INPUTS** on Control Panel. Tolerances are +/- 5 .

NOTE : IF THIS TEST WILL NOT RUN THE SERIAL PORT ON DRIVE IS BAD !!

NOTE: The V ¾ VCO column is for the DS200 series cards and their values may vary slightly

SETTING	P1-46	P2-48	P3-50	P4-52	ASP0-51	DVM-49	PF1-8	PF2-10	V3/4VCO
10	71	71	71	71	71	71	71	71	71
20	117	117	117	117	117	12	117	117	117
30	156	156	156	156	156	15	156	156	156
40	194	194	194	194	194	19	194	194	194
50	236	236	236	236	236	23	236	236	236
60	286	286	286	286	286	28	286	286	286
70	351	351	351	351	351	35	351	351	351
80	442	442	442	442	442	44	442	442	442
90	511	511	511	511	511	51	511	511	511

6.2.38 Exit from Trend Recorder- ***Do not save changes***

6.2.39 Set **REFP-63** to 03

6.2.40 Verify EE 110 is 264

6.2.40.1.1 This can be done by entering the following in on the programmer: ([set], [drv], [7], [7], [Enter], [1], [1], [0], [Enter]

6.2.41 Run Test 11

6.2.41.1.1 This can be done by entering the following in on the programmer: ([set], [drv], [7], [7], [Enter], [Reset], [Reset], [test], [1], [1], [Enter]

6.2.42 Push **RUN** up, motor will start.

6.2.43 With **POL** up LCC display will count down.

6.2.44 With **POL** down LCC display will count up.

6.2.45 Push **RUN** down, motor will stop

6.2.46 Press **RESET** on Control Panel.

6.2.47 Set **FDBP-69** to 10 on Control panel

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

6.2.49 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.

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

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

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

6.2.53 Refer to LOADING INSTRUCTION to test software in to IOS.

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

6.2.55 Download Genius program to pc from Control System Toolbox. kylou01misge(S:)/FIELD TOOLS/abc123/cd001/cd001_genious.

6.2.56 Download to drive by clicking device/download to AcDcEx2000

6.2.57 After successfully downloading drive will automatically reset, display will read "INITIALIZATION" then "INIT GENIOUS" then "MS 0 % I 0 %".

6.2.58 Remove LNPL cable from DS200LDCC card, display should read "FL 437__LGENIRTM"

6.2.59 Push reset button display should read "FL 435 LGENINIT".

6.2.60 Reconnect LNPL cable to DS200LDCC & hit reset.

6.2.61 Execute TEST 13 "DISPLAY TEST".

6.2.61.1 This can be done by entering the following in on the programmer: ([set], [drv], [7], [7], [Enter], [Reset], [Reset], [test], [1], [3], [Enter]

6.2.62 Verify display visually and keypads by pushing each one individually:note exclude green shift button.

6.2.63 Verify that the 1FAPL light on the panel is illuminated.

6.3 ***TEST COMPLETE ***

7. NOT