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GE Energy

Functional Testing Specification*Parts & Repair Services
Louisville, KY***LOU-GED-IS200JPDCG1A****Test Procedure for an IS2020JPDCG01 Power Distribution Module.****DOCUMENT REVISION STATUS: Determined by the last entry in the "REV" and "DATE" column**

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	J. Francis	08/1/2012
B	Added step 6.2.4.12., Turn off 115 VAC power and disconnect from unit."	J. Francis	11/06/2013
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DATE 08/1/2012	DATE 11/06/2013	DATE	DATE 8/8/2012

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1. SCOPE

- 1.1 This is a functional testing procedure for an **IS200JPDCG1A** MARK VIe DC Power Distribution Module.

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 Check board's electronic folder for more information.

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
2		Fluke 87 DMM (or Equivalent)
2		Tenma Dual Output Power Supply (or Equivalent)

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6. TESTING PROCESS

6.1 Setup Procedure

- 6.1.1.1** Turn switches SW1R, SW1S, and SW1T off at this time.
- 6.1.1.2** Turn switches SW7A, SW7B, and SW7C off at this time.
- 6.1.1.3** Turn switch SWAC1 off at this time.
- 6.1.1.4** Remove all Fuses and Fuse Caps. While the Fuses are out, using Fluke 87 DMM (or Equivalent), set to measure Resistance, check to make sure that there is continuity across each Fuse.
- 6.1.1.5** Reinstall all Fuses and Fuse Caps in correct Fuse Holders.
- 6.1.1.6** Install jumper across JP2.
- 6.1.1.7** Connect TB3-1 and TB3-3 to JA1-1.
- 6.1.1.8** Connect +12 VDC to JA1-44 (DINPWR) and 12 VDC return to JA1-1. Do not apply power at this time.
- 6.1.1.9** Connect +28 VDC (28PR, 28PS, and 28PT) to TB1-1, TB1-2, and TB1-3. Connect 28 VDC return to TB1-4 and TB1-5. Do not apply power at this time.
- 6.1.1.10** Connect JDA-1 to JDA-2.
- 6.1.1.11** Connect JDB-1 to JDB-2.
- 6.1.1.12** Connect +125 VDC (Batt A) to JD1-1 and 125 VDC return to JD1-3. Do not apply power at this time.
- 6.1.1.13** Connect +125 VDC (Batt B) to JD2-1 and 125 VDC return to JD2-3. Do not apply power at this time.
- 6.1.1.14** Connect 120 VAC to JAC-1 and JAC-3. Do not apply power at this time.

6.2 Testing Procedure

6.2.1 Power checks

6.2.1.1 +12 (DINPWR) and Feedback Checks

- 6.2.1.1.1** Apply +12 VDC power. Current draw from power supply should be less than 20 mADC at this time.
- 6.2.1.1.2** Connect positive lead of Multimeter, set for DC Volts function, to P2-50 and connect negative lead of same Multimeter to P2-49. Reading should be +12 VDC +/-0.5 VDC.
- 6.2.1.1.3** Using Multimeter, set for DC Volts function, connect positive lead to JR-4 and negative lead to TB3-3. Reading should be +10 VDC +/-0.5 VDC.

6.2.1.1.4 Using Multimeter, set for DC Volts function, connect positive lead to JS-4 and negative lead to TB3-1. Reading should be +10 VDC +/-0.5 VDC.

6.2.1.1.5 Using Multimeter, set for DC Volts function, connect positive lead to JT-4 and negative lead to TB3-3. Reading should be +10 VDC +/-0.5 VDC.

6.2.2 28 VDC Power (Pack Power) and Feedback Checks

6.2.2.1 Apply +28 VDC power. Current draw from power supply should be less than 20 mADC at this time.

6.2.2.2 Connect positive lead of Multimeter, set for DC Volts function, to JA1-47 and connect negative lead of same Multimeter to JA1-45. Reading should be +4 VDC -/+0.5 VDC.

6.2.2.3 Connect positive lead of Multimeter, set for DC Volts function, to TB4-1 and connect negative lead of same Multimeter to JA1-45. Reading should be +4 VDC +/-0.5 VDC.

6.2.2.4 Connect positive lead of Multimeter, set for DC Volts function, to TB4-2 and connect negative lead of same Multimeter to JA1-45. Reading should be +4 VDC +/-0.5 VDC.


6.2.2.5 Connect positive lead of Multimeter, set for DC Volts function, to TB4-3 and connect negative lead of same Multimeter to JA1-45. Reading should be +4 VDC +/-0.5 VDC.

6.2.2.6 Connect positive lead of Multimeter, set for DC Volts function, to JA1-48 and connect negative lead of same Multimeter to JA1-45. Reading should be +4 VDC -/+0.5 VDC.

6.2.2.7 Connect positive lead of Multimeter, set for DC Volts function, to JA1-49 and connect negative lead of same Multimeter to JA1-45. Reading should be +4 VDC -/+0.5 VDC.

6.2.2.8 Use the following table to verify +28 VDC readings:

Positive Meter Lead	Negative Meter Lead	Expected Reading:
J1-4	J1-1	+28 VDC +/- 0.5 VDC
J1-5	J1-2	+28 VDC +/- 0.5 VDC
J1-6	J1-3	+28 VDC +/- 0.5 VDC
JCR-1	JCR-2	+28 VDC +/- 0.5 VDC
JRS-1	JRS-2	+28 VDC +/- 0.5 VDC
JSS-1	JSS-2	+28 VDC +/- 0.5 VDC
JTS-1	JTS-2	+28 VDC +/- 0.5 VDC
JP1-1	JP1-5	+28 VDC +/- 0.5 VDC

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JP1-2	JP1-4	+28 VDC +/- 0.5 VDC
JP1-3	JP1-4	+28 VDC +/- 0.5 VDC
P4-1	P4-2	+28 VDC +/- 0.5 VDC
Positive Meter Lead	Negative Meter Lead	Expected Reading:
TP6	TP5	+28 VDC +/- 0.5 VDC
TP7	TP5	+28 VDC +/- 0.5 VDC
TP8	TP5	+28 VDC +/- 0.5 VDC
JR-8	JR-1	+28 VDC +/- 0.5 VDC
JR-9	JR-2	+28 VDC +/- 0.5 VDC
JR-9	JR-3	+28 VDC +/- 0.5 VDC
JS-8	JS-1	+28 VDC +/- 0.5 VDC
JS-9	JS-2	+28 VDC +/- 0.5 VDC
JS-9	JS-3	+28 VDC +/- 0.5 VDC
JT-8	JT-1	+28 VDC +/- 0.5 VDC
JT-9	JT-2	+28 VDC +/- 0.5 VDC
JT-9	JT-3	+28 VDC +/- 0.5 VDC
JR1-1	JR1-2	+28 VDC +/- 0.5 VDC
JR2-1	JR2-2	+28 VDC +/- 0.5 VDC
JR3-1	JR3-2	+28 VDC +/- 0.5 VDC
JR4-1	JR4-2	+28 VDC +/- 0.5 VDC
JR5-1	JR5-2	+28 VDC +/- 0.5 VDC
JR6-1	JR6-2	+28 VDC +/- 0.5 VDC
JR7-1	JR7-2	+28 VDC +/- 0.5 VDC
JR8-1	JR8-2	+28 VDC +/- 0.5 VDC
JR9-1	JR9-2	+28 VDC +/- 0.5 VDC
JR10-1	JR10-2	+28 VDC +/- 0.5 VDC
JS1-1	JS1-2	+28 VDC +/- 0.5 VDC
JS2-1	JS2-2	+28 VDC +/- 0.5 VDC
JS3-1	JS3-2	+28 VDC +/- 0.5 VDC
JS4-1	JS4-2	+28 VDC +/- 0.5 VDC
JS5-1	JS5-2	+28 VDC +/- 0.5 VDC
JS6-1	JS6-2	+28 VDC +/- 0.5 VDC
JS7-1	JS7-2	+28 VDC +/- 0.5 VDC
JS8-1	JS8-2	+28 VDC +/- 0.5 VDC
JT1-1	JT1-2	+28 VDC +/- 0.5 VDC
JT2-1	JT2-2	+28 VDC +/- 0.5 VDC
JT3-1	JT3-2	+28 VDC +/- 0.5 VDC
JT4-4	JT4-2	+28 VDC +/- 0.5 VDC
JT5-1	JT5-2	+28 VDC +/- 0.5 VDC
JT6-1	JT6-2	+28 VDC +/- 0.5 VDC
JT7-1	JT7-2	+28 VDC +/- 0.5 VDC

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<p>JT8-1</p>	<p>JT8-2</p>	<p>+28 VDC -/+ 0.5 VDC</p>
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6.2.2.9 Turn off +28 VDC power and disconnect from unit.

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6.2.3 125 VDC Power (Battery), PDC, and Feedback Checks

- 6.2.3.1** Using Multimeter, set for DC Volts function, connect positive lead to JA1-46.
Connect negative lead of same Multimeter to JA1-45. Reading should be +0 VDC -
/+0.1 VDC.
- 6.2.3.2** Apply +125 VDC power to "Batt A" and "Batt B". Current draw from power supply
should be less than 20 mADC at this time.
- 6.2.3.3** LED's DS1 and DS2 should illuminate. Multimeter reading should be +0.6 VDC -
/+0.2 VDC.
- 6.2.3.4** Using Multimeter, set for DC Volts function, connect positive lead to JD1-2 and
negative lead to JD1-3. Reading should be +125 VDC +/-2 VDC.
- 6.2.3.5** Using Multimeter, set for DC Volts function, connect positive lead to JD2-2 and
negative lead to JD2-3. Reading should be +125 VDC +/-2 VDC.
- 6.2.3.6** Using Multimeter, set for DC Volts function, connect positive lead to TP3 and
negative lead to TP4. Reading should be +125 VDC +/-2 VDC.
- 6.2.3.7** Using Multimeter, set for DC Volts function, connect positive lead to JZ2-9 and
negative lead to JZ2-7. Reading should be +125 VDC +/-2 VDC.
- 6.2.3.8** Using Multimeter, set for DC Volts function, connect positive lead to JZ2-12 and
negative lead to JZ2-10. Reading should be +125 VDC +/-2 VDC.
- 6.2.3.9** Using Multimeter, set for DC Volts function, connect positive lead to JA1-56 and
negative lead to TB3-1. Reading should be +2 VDC +/-0.5 VDC.
- 6.2.3.10** Using Multimeter, set for DC Volts function, connect positive lead to TB2-1 and
negative lead to TB3-1. Reading should be +2 VDC +/-0.5 VDC.
- 6.2.3.11** Using Multimeter, set for DC Volts function, connect positive lead to JA1-57 and
negative lead to TB3-1. Reading should be -2 VDC +/-0.5 VDC.
- 6.2.3.12** Using Multimeter, set for DC Volts function, connect positive lead to TB2-2 and
negative lead to TB3-1. Reading should be -2 VDC +/-0.5 VDC.
- 6.2.3.13** Turn on switch SW1R.
- 6.2.3.14** Using Multimeter, set for DC Volts function, connect positive lead to JR1-1 and
negative lead to JR1-2. Reading should be +125 VDC +/-2 VDC.
- 6.2.3.15** Using Multimeter, set for DC Volts function, connect positive lead to JA1-59 and
negative lead to JA1-1. Reading should be +2.1 VDC +/-0.5 VDC.
- 6.2.3.16** Turn on switch SW1S.

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6.2.3.17 Using Multimeter, set for DC Volts function, connect positive lead to JS1-1 and negative lead to JS1-2. Reading should be +125 VDC +/-2 VDC.

6.2.3.18 Using Multimeter, set for DC Volts function, connect positive lead to JA1-59 and negative lead to JA1-1. Reading should be +3 VDC +/-0.5 VDC.

6.2.3.19 Turn on switch SW1T.

6.2.3.20 Using Multimeter, set for DC Volts function, connect positive lead to JT1-1 and negative lead to JT1-2. Reading should be +125 VDC +/-2 VDC.

6.2.3.21 Using Multimeter, set for DC Volts function, connect positive lead to JA1-59 and negative lead to JA1-1. Reading should be +3.4 VDC +/-0.5 VDC.

6.2.3.22 Turn off switches SW1R, SW1S, and SW1T.

6.2.3.23 Turn on switch SW7A.

6.2.3.24 Using Multimeter, set for DC Volts function, connect positive lead to J7A-1 and negative lead to J7A-2. Reading should be +125 VDC +/-2 VDC.

6.2.3.25 Using Multimeter, set for DC Volts function, connect positive lead to JA1-58 and negative lead to JA1-1. Reading should be +2.1 VDC +/-0.5 VDC.

6.2.3.26 Turn on switch SW7B.

6.2.3.27 Using Multimeter, set for DC Volts function, connect positive lead to J7B-1 and negative lead to J7B-2. Reading should be +125 VDC +/-2 VDC.

6.2.3.28 Using Multimeter, set for DC Volts function, connect positive lead to JA1-58 and negative lead to JA1-1. Reading should be +3 VDC +/-0.5 VDC.

6.2.3.29 Turn on switch SW7C.

6.2.3.30 Using Multimeter, set for DC Volts function, connect positive lead to J7C-1 and negative lead to J7C-2. Reading should be +125 VDC +/-2 VDC.

6.2.3.31 Using Multimeter, set for DC Volts function, connect positive lead to JA1-58 and negative lead to JA1-1. Reading should be +3.4 VDC +/-0.5 VDC.

6.2.3.32 Turn off switches SW7A, SW7B, and SW7C.

6.2.3.33 Turn off +125 VDC power and disconnect from unit.

6.2.4 AC Power and Feedback

6.2.4.1 Using Multimeter, set for DC Volts function, connect positive lead to JA1-46. Connect negative lead of same Multimeter to JA1-45. Reading should be +0 VDC +/-0.1 VDC.

6.2.4.2 Apply 120 VAC power to JAC. Current draw from source should be less than .2 Amps at this time.

6.2.4.3 Meter reading should be +1.2 VDC +/-0.5 VDC.

6.2.4.4 Using Multimeter, set for AC Volts function, connect positive lead to TP1. Connect negative lead of same Multimeter to TP2. Reading should be 115 VAC +/-5 VAC.

6.2.4.5 Using Multimeter, set for AC Volts function, connect positive lead to JZ2-1. Connect negative lead of same Multimeter to JZ2-3. Reading should be 120 VAC +/-2 VAC.

6.2.4.6 Using Multimeter, set for AC Volts function, connect positive lead to JAC2-1. Connect negative lead of same Multimeter to JAC2-2. Reading should be 120 VAC +/-2 VAC.

6.2.4.7 Using Multimeter, set for DC Volts function, connect positive lead to JA1-60. Connect negative lead of same Multimeter to JA1-55. Reading should be +2.3 VDC +/-0.5 VDC.

6.2.4.8 Using Multimeter, set for DC Volts function, connect positive lead to TB2-3. Connect negative lead of same Multimeter to JA1-55. Reading should be +2.3 VDC +/-0.5 VDC.

6.2.4.9 Turn on switch SWAC1.

6.2.4.10 Using Multimeter, set for AC Volts function, connect positive lead to JAC1-1. Connect negative lead of same Multimeter to JAC1-2. Reading should be 120 VAC +/-2 VAC.

6.2.4.11 Using Multimeter, set for DC Volts function, connect positive lead to JA1-46. Connect negative lead of same Multimeter to JA1-45. Reading should be +3 VDC +/-0.5 VDC.

6.2.4.12 Turn off 115 VAC power and disconnect from unit.

6.2.5 Static Checks

6.2.5.1 Using Multimeter, set for Resistance function, check points for the expected results in the following table:

From:	To:	Reading:
TP3	E1 Stab-on	30 K Ohms +/- 3 K Ohms
TP4	E3 Stab-on	30 K Ohms +/- 3 K Ohms
E2 Stab-on	J8A-1	< 1.0 ohm
E2 Stab-on	J8B-1	< 1.0 ohm
E2 Eyelet	J8C-1	< 1.0 ohm
E4 Stab-on	J8A-2	< 1.0 ohm
E4 Stab-on	J8A-2	< 1.0 ohm
E4 Stab-on	J8C-2	< 1.0 ohm
E7 Eyelet	E8 Eyelet	< 1.0 ohm
E7 Eyelet	E9 Eyelet	< 1.0 ohm

E7 Eyelet	E10 Eyelet	< 1.0 ohm
E7 Eyelet	E11 Eyelet	< 1.0 ohm
From:	To:	Reading:
E7 Eyelet	E12 Eyelet	< 1.0 ohm
E7 Eyelet	TP3	109 K Ohms +/- 5 K Ohms
E7 Eyelet	TP4	109 K Ohms +/- 5 K Ohms
E5 Eyelet	E6 Eyelet	< 1.0 ohm
E5 Eyelet	SWAC1 Gnd	< 1.0 ohm
E5 Eyelet	SW7A Gnd	< 1.0 ohm
E5 Eyelet	SW7B Gnd	< 1.0 ohm
E5 Eyelet	SW7C Gnd	< 1.0 ohm
E5 Eyelet	SW1R Gnd	< 1.0 ohm
E5 Eyelet	SW1S Gnd	< 1.0 ohm
E5 Eyelet	SW1T Gnd	< 1.0 ohm
E7 Eyelet	P2-49	< 1.0 ohm
TB3-3	JR-5	3.2 K Ohms +/-0.5 K Ohms
TB3-3	JS-5	3.2 K Ohms +/-0.5 K Ohms
TB3-3	JT-5	3.2 K Ohms +/-0.5 K Ohms
TB3-3	JA1-50	3.2 K Ohms +/-0.5 K Ohms
JA1-1	TB1-4	5 Ohms +/- 2 Ohms
JA1-33	P2-1	< 1.0 ohm
JA1-2	JA1-20	< 1.0 ohm
JA1-2	JA1-23	< 1.0 ohm
JA1-2	JA1-41	< 1.0 ohm
JA1-3	P2-25	< 1.0 ohm
JA1-4	P2-26	< 1.0 ohm
JA1-5	P2-27	< 1.0 ohm
JA1-6	P2-28	< 1.0 ohm
JA1-7	P2-29	< 1.0 ohm
JA1-8	P2-30	< 1.0 ohm
JA1-9	P2-32	< 1.0 ohm
JA1-9	P2-48	< 1.0 ohm
JA1-10	P2-31	< 1.0 ohm
JA1-10	P2-47	< 1.0 ohm
JA1-12	P2-17	< 1.0 ohm
JA1-13	P2-18	< 1.0 ohm
JA1-14	P2-19	< 1.0 ohm
JA1-15	P2-20	< 1.0 ohm
JA1-16	P2-21	< 1.0 ohm
JA1-17	P2-22	< 1.0 ohm
JA1-19	P2-23	< 1.0 ohm

JA1-18	P2-24	< 1.0 ohm
JA1-1	JA1-21	< 1.0 ohm
From:	To:	Reading:
JA1-1	JA1-22	< 1.0 ohm
JA1-1	JA1-42	< 1.0 ohm
JA1-24	P2-9	< 1.0 ohm
JA1-25	P2-10	< 1.0 ohm
JA1-26	P2-11	< 1.0 ohm
JA1-27	P2-12	< 1.0 ohm
JA1-28	P2-13	< 1.0 ohm
JA1-29	P2-14	< 1.0 ohm
JA1-30	P2-16	< 1.0 ohm
JA1-31	P2-15	< 1.0 ohm
JA1-34	P2-2	< 1.0 ohm
JA1-35	P2-3	< 1.0 ohm
JA1-36	P2-4	< 1.0 ohm
JA1-37	P2-5	< 1.0 ohm
JA1-38	P2-6	< 1.0 ohm
JA1-39	P2-8	< 1.0 ohm
JA1-40	P2-7	< 1.0 ohm

6.2.6 CHIP ID: The ID chip needs to be read to confirm that it has been programmed properly. Take the card over to the CHIP ID pc located in the MARK VI area of the shop and select the correct revision of IS200JPDC from the menu and follow the instructions given to you by the pc. When selecting which IS200JPDC to use, you may see a 5G or 7G next to the number. This refers to the serial number and whether it has 5 or 7 digits in it. Select the proper one, as you will be expected to type this number into the system at a given point. When entering this data, be sure to use all CAPITAL LETTERS as lower case might cause it not to agree with what's programmed in the chip. If the particular revision you need to select doesn't have a 5G or 7G next to it, get it added before proceeding.

6.3 *TEST COMPLETE *****

7. NOTES

7.1 None at this time.

8. ATTACHMENTS

8.1 None at this time.