



GE Energy

## Functional Testing Specification

*Parts & Repair Services  
Louisville, KY*

**LOU-GED-DSD3800HIOJ**

### Test Procedure for a DS3800HIOJ

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

| REV. | DESCRIPTION     | SIGNATURE     | REV. DATE  |
|------|-----------------|---------------|------------|
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| B    |                 |               |            |
| C    |                 |               |            |

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| <b>DATE</b><br>03/18/2010           | <b>DATE</b>        | <b>DATE</b>        | <b>DATE</b><br>3/18/2010                |

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## 1. SCOPE

1.1 This is a functional testing procedure for a DS3800HIOJ.

## 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                       |
|-----|-------------|-----------------------------------|
| 1   |             | Fluke 87 DMM (or Equivalent)      |
| 1   |             | Fluke 5500A Calibrator            |
| 1   |             | Rainbow Box                       |
| 1   |             | Standard connector box for DS3800 |
| 1   |             | DS3800 Power Supply               |
| 1   |             | Daughter Board Emulator           |

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## 6. TESTING PROCESS

### 6.1 Setup

- 6.1.1 Connect rainbow box to connector box and power supply
- 6.1.2 Connect PA1 to PA9
- 6.1.3 Connect fluke calibrator to JA1 (+) and JA8 (-)
- 6.1.4 Set for 60VAC at 60hz

### 6.2 Testing Procedure

- 6.2.1 Apply power to card
- 6.2.2 Apply power from fluke
- 6.2.3 Verify I1 is off
- 6.2.4 Verify PA23=0
- 6.2.5 Verify PA30=1
- 6.2.6 Set fluke to 85VAC
- 6.2.7 Verify I1 is on
- 6.2.8 Verify PA23=1
- 6.2.9 Verify PA30=0
- 6.2.10 Set fluke to 60VAC and put in standby mode
- 6.2.11 Move connections at JA1 to JA2
- 6.2.12 Apply power from fluke
- 6.2.13 Verify I2 is off
- 6.2.14 Verify PA32=1
- 6.2.15 Verify PA31=0
- 6.2.16 Set fluke to 85VAC
- 6.2.17 Verify I2 is on
- 6.2.18 Verify PA32=0
- 6.2.19 Verify PA31=1
- 6.2.20 Set fluke to 60VAC and put in standby mode
- 6.2.21 Move connections at JA2 to JA3
- 6.2.22 Apply power from fluke
- 6.2.23 Verify I3 is off
- 6.2.24 Verify PA33=1
- 6.2.25 Verify PA25=0
- 6.2.26 Set fluke to 85VAC

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- 6.2.27** Verify I3 is on
- 6.2.28** Verify PA33=0
- 6.2.29** Verify PA25=1
- 6.2.30** Set fluke to 60VAC and put in standby mode
- 6.2.31** Move connections at JA3 to JA4
- 6.2.32** Apply power from fluke
- 6.2.33** Verify I4 is off
- 6.2.34** Verify PA34=1
- 6.2.35** Verify PA27=0
- 6.2.36** Set fluke to 85VAC
- 6.2.37** Verify I4 is on
- 6.2.38** Verify PA34=0
- 6.2.39** Verify PA27=1
- 6.2.40** Set fluke to 60VAC and put in standby mode
- 6.2.41** Move connections at JA4 to JA5
- 6.2.42** Apply power from fluke
- 6.2.43** Verify I5 is off
- 6.2.44** Verify PA37=1
- 6.2.45** Verify PA28=0
- 6.2.46** Set fluke to 85VAC
- 6.2.47** Verify I5 is on
- 6.2.48** Verify PA37=0
- 6.2.49** Verify PA28=1
- 6.2.50** Set fluke to 60VAC and put in standby mode
- 6.2.51** Move connections at JA5 to JA6
- 6.2.52** Apply power from fluke
- 6.2.53** Verify I6 is off
- 6.2.54** Verify PA36=1
- 6.2.55** Verify PA26=0
- 6.2.56** Set fluke to 85VAC
- 6.2.57** Verify I6 is on
- 6.2.58** Verify PA36=0
- 6.2.59** Verify PA26=1
- 6.2.60** Set fluke to 60VAC and put in standby mode

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**6.2.61** Verify OR1, OR2, and OR3 = On

**6.2.62** Make the following connections

PA41-5VDC

PA44-5VDC

PA59-SW81

PA60-SW82

PA61-SW83

PA62-SW84

PA63-SW85

PA64-SW86

**6.2.63** Set SW81-SW86 to L

**6.2.64** Verify OR1 = Off

**6.2.65** Verify that OR1 turns on and off as each switch is set to H then L respectively

**6.2.66** Move connections

PA41-PA35

PA44-PA29

PA46-SW81

PA48-SW82

PA47-SW83

PA50-SW84

PA49-SW85

PA52-SW86

**6.2.67** Set SW81-SW86 to L

**6.2.68** Verify OR2 = Off

**6.2.69** Verify that OR2 turns on and off as each switch is set to H then L respectively

**6.2.70** Move connections

PA35-PA74

PA29-PA76

PA56-SW81

PA57-SW82

PA58-SW83

PA65-SW84

PA66-SW85

PA67-SW86

|                                       |  |                    |
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- 6.2.71** Verify OR3 = Off
- 6.2.72** Verify that OR3 turns on and off as each switch is set to H then L respectively
- 6.2.73** Connect Daughter Card emulator to DA
- 6.2.74** Set fluke calibrator to 1VDC
- 6.2.75** Connect fluke to PA22 (+) and PA1 (-)
- 6.2.76** Apply power from fluke
- 6.2.77** Verify approx –1VDC at PA18
- 6.2.78** Increase voltage from fluke to 5VDC in 1 volt increments
- 6.2.79** Verify PA18 follows with a negative output
- 6.2.80** Set fluke to 1VDC and put in standby mode
- 6.2.81** Move connection from PA22 to PA19
- 6.2.82** Apply power from fluke
- 6.2.83** Verify approx –1VDC at PA17
- 6.2.84** Increase voltage from fluke to 5VDC in 1 volt increments
- 6.2.85** Verify PA17 follows with a negative output
- 6.2.86** Set fluke to 1VDC and put in standby mode
- 6.2.87** Move connection from PA19 to PA24
- 6.2.88** Apply power from fluke
- 6.2.89** Verify approx –1VDC at PA20
- 6.2.90** Increase voltage from fluke to 5VDC in 1 volt increments
- 6.2.91** Verify PA20 follows with a negative output
- 6.2.92** Set fluke to 1VDC and put in standby mode
- 6.2.93** Move connection from PA24 to PA21
- 6.2.94** Apply power from fluke
- 6.2.95** Verify approx –1VDC at PA15
- 6.2.96** Increase voltage from fluke to 5VDC in 1 volt increments
- 6.2.97** Verify PA15 follows with a negative output
- 6.2.98** Set fluke to 1VDC and put in standby mode
- 6.2.99** Remove all connections from rainbow box except connection from PA1 to PA9
- 6.2.100** Make the following connections and set switches to L
  - PA72-SW81
  - PA40-SW82
- 6.2.101** Connect DMM to JA10 and JA11 and set for resistance
- 6.2.102** Verify short

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**6.2.103** Set SW82-H

**6.2.104** Verify DMM reads open and LED O1 = Off

**6.2.105** Set SW81-H

**6.2.106** Verify DMM reads short and LED O1 = On

**6.2.107** Make the following connections and set switches to L

PA55-SW81

PA70-SW82

**6.2.108** Connect DMM to JA12and JA13

**6.2.109** Verify short

**6.2.110** Set SW82-H

**6.2.111** Verify DMM reads open and LED O2 = Off

**6.2.112** Set SW81-H

**6.2.113** Verify DMM reads short and LED O2 = On

**6.2.114** Make the following connections and set switches to L

PA54-SW81

PA69-SW82

**6.2.115** Connect DMM to JA14and JA15

**6.2.116** Verify short

**6.2.117** Set SW82-H

**6.2.118** Verify DMM reads open and LED O3 = Off

**6.2.119** Set SW81-H

**6.2.120** Verify DMM reads short and LED O3 = On

**6.2.121** Make the following connections and set switches to L

PA42-SW81

PA68-SW82

**6.2.122** Connect DMM to JA16and JA17

**6.2.123** Verify short

**6.2.124** Set SW82-H

**6.2.125** Verify DMM reads open and LED O4 = Off

**6.2.126** Set SW81-H

**6.2.127** Verify DMM reads short and LED O4 = On

**6.3 \*\*\*TEST COMPLETE\*\*\***

## **7. NOTES & ATTACHMENTS**

**7.1** None at this time.