9g

GE Industrial Systems

Functional Testing Specification

Renewal Services
Louisville, KY

LOU-GE-Fluke1

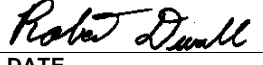### Test Procedure for cards tested with the Fluke 9010A troubleshooter.

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release, Obsoleted several other procedures and rolled them into this one. Obsoleted: LOU-GED-DS3800NFCB-B, LOU-GED-DS3800HFPC-B, LOU-GED-DS3800HIOC-B, LOU-GED-DS3800HSCA-B, LOU-GED-DS3800HXTA-B, LOU-GED-DS3800NBIA-B, LOU-GED-DS3800DOWC-B,	R. Duvall	07/02/02
B	Page 4 Section 6.3, Chip Orientation	C. Wade	9/6/2007
C	Updated table 1 and added Section 6.5	C. Wade	4/9/2009
D	Added DS3800HMIA to table one bottom of page 3	S. Pharris	3/29/2013

PREPARED BY R. Duvall	REVIEWED BY S. Pharris	REVIEWED BY	QUALITY APPROVAL *Robert Duvall*
DATE 07/02/02	DATE 3/29/2013	DATE	DATE 07/02/02

Functional test procedure for various cards tested with the Fluke 9010A

1. **SCOPE**

    1.1 This is a functional testing procedure for various cards tested with the Fluke 9010A Troubleshooter.

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 **Fluke 9010 Operations manual**
    3.1.2 **Documentation for card being tested**

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		Fluke 9010A Micro-system Troubleshooter connected to a PC that has a connection to the Louisville Server
1		2nd Fluke 9010A Micro-system Troubleshooter if required by test.
		Pod as called out in next table.

5.2 The following equipment is required to perform individual card tests. See table 1.

Card Tested	Test Setup	Fixture ID	Secondary Item	Additional Equipment	Primary Program	Secondary Program
DS3800DMPK					DMPK .S	
DS3800DOWC	Setup 1	H033518			DOWC .S	
DS3800HFPA		H033516			HFPA .S	
DS3800HFPC	Setup 2	H033521	2nd Fluke	8088 Pod	HFPCM.S	HFPCS.S
DS3800HIOC	Setup 1	H033511			HIOC.S	
DS3800HLNB					HLNB.S	
DS3800HLNC					HLNC.S	
DS3800HLNE					HLNE .S	
DS3800HLNF					HLNF .S	
DS3800HLPC					HLPC .S	
DS3800HRDA		H033514			HRDA .S	
DS3800HRRB	Setup 1	H033507			HRRB .S	HRRB1.S
DS3800HSAA	Setup 1	H033668			HSAA .S	
DS3800HSSP					HSSP .S	
DS3800HTCA		H033629			HTCA .S	
DS3800HTCB		H033629			HTCA .S	
DS3800HXTA	Setup 1	H033509			HXTA .S	
DS3800NBIA	Setup 1	H033510			NBIA .S	
DS3800NBIB		H033515			NBIB .S	
DS3800NCCD		H033509			NCCD .S	NCCD2.S
DS3800NFCB	Setup 3	H033505	H033506	Light Bulb Load	NFCB .S	
DS3800NLIC		H033660			NLIC .S	
DS3800NMEA		H033662			NMEA .S	
DS3800NOWA		H033519			NOWA1.S	NOWA2.S
DS3820PIMB		H033511			PIMB .S	
DS3820WGCB					WGCB1.S	WGCB2.S
DS3800NEPC					NEPC.S	
DS3800NEPD					NEPD.S	
DS3800HSCA					HSCA.S	
DS3800HMPF					HMPF.S	
DS3800HIOA					HIOA.S	
DS3800HFPG					HFPG.S	
DS3800HFPB					HFPB-HFX.S	
DS3800HFXA					HFPB-HFX.S	
531X210DMCA					DMCA.S	
DS200CDAA					CDAA.S	
DS3800HMIA				80186 POD	HMIA.S	

Table 1

6. TESTING PROCESS

6.1 Setup

6.1.1 Per requirements in section 5

6.2 Testing Procedure

6.2.1 Setup equipment per figure indicated in reference table.

6.2.2 Load test program indicated in table into Fluke 9010A.

6.2.3 Apply power to UUT.

6.2.4 Execute Program 0 on Fluke.

6.2.5 Follow instructions on terminal screen.

6.3 Chip Orientation

6.3.1 SPECIAL NOTE: **If firmware has to be checked outside of card and then reinstalled before sending back to customer, be sure to check orientation of all socketed chips.**

6.4 ***TEST COMPLETE unless the board is DS3800HFPB or some derivative of it.***

6.5 **For DS3800HFPB (DS3815PAGB & DS3815PDAA) cards. The DS3800HFPB & DS3800HFXA cards are both tested on this fixture and both must be in place to perform the test.**
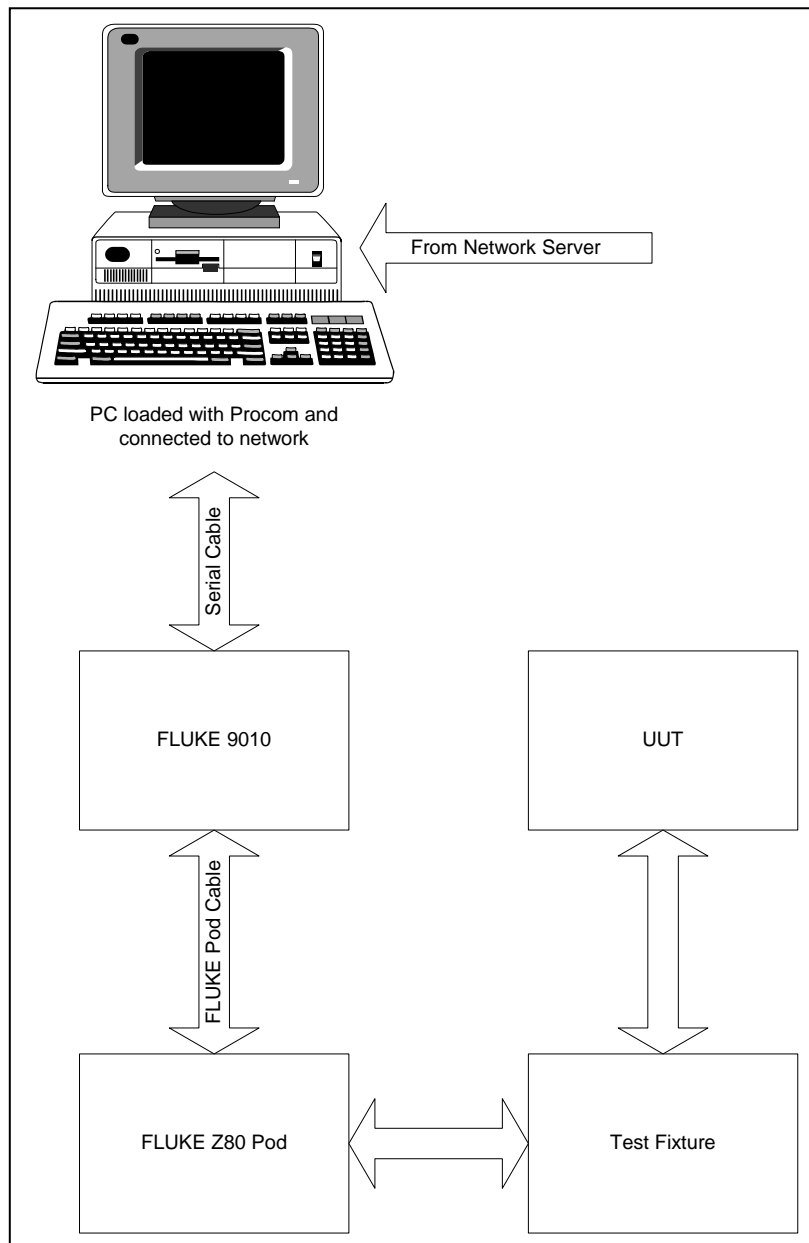
6.5.1 After Fluke test is completed and all Fluke tests have passed. Power down unit and perform the following steps to verify unit's power on self-test, reset and processor function.

6.5.2 If unit was received with customer firmware, verify customer firmware against shops known good set. If firmware fails, program a new set. After programming a new set or firmware is verified good, install firmware onto customer's board making sure to note proper orientation and location. If you need to know proper jumper settings for a particular unit model number, the proper jumper setting can be found on the MRP system by printing out an ENGCKLST for the DS3815 model number. If unit was received as a DS3800HFPB use the shop firmware you used for the fluke test.
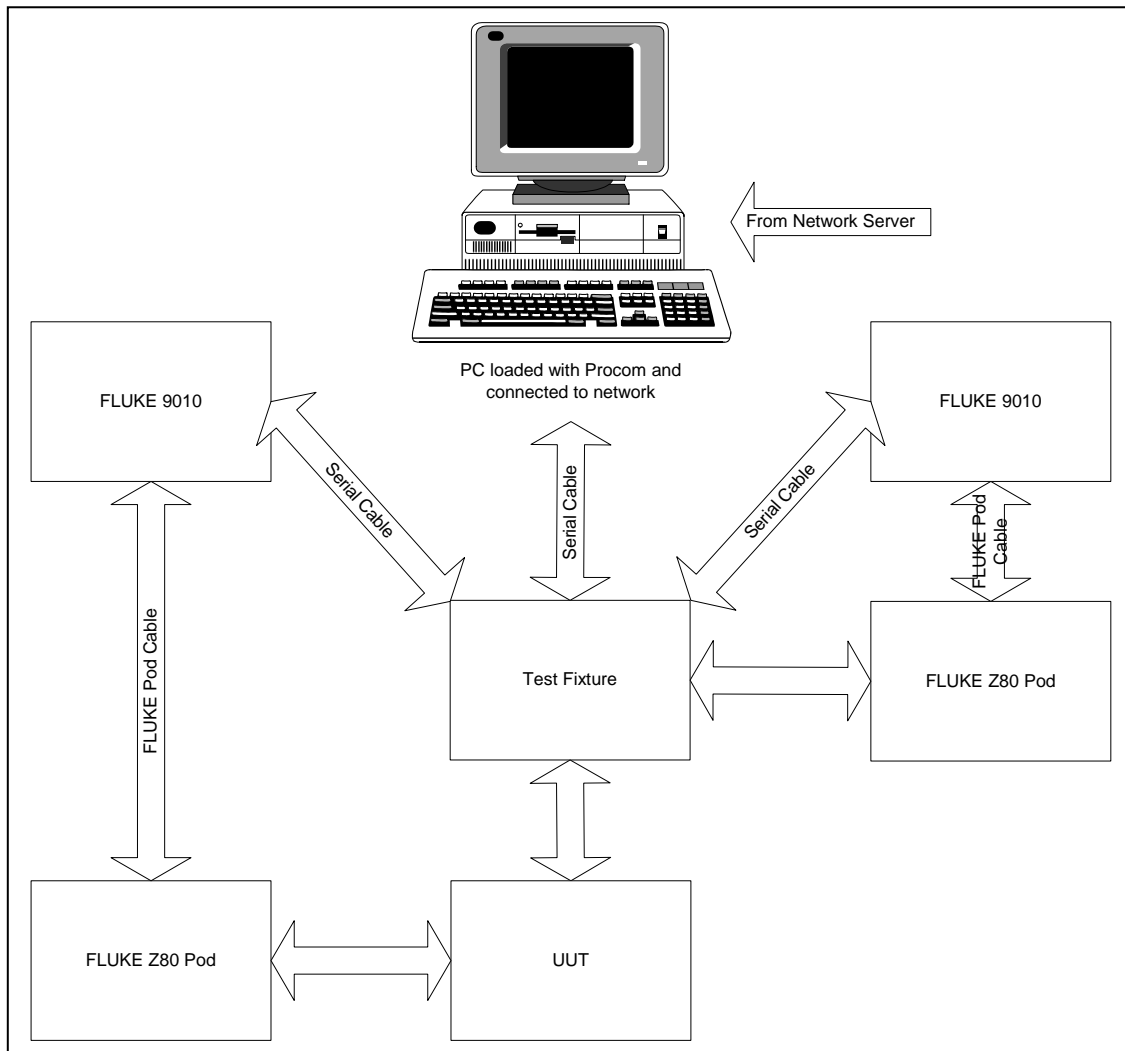
6.5.3 With unit installed on HFPB tester and fluke POD still connected to U1, push RUN UUT button, Fluke will display "RUN UUT @", press enter. Fluke will display "MAY NEED RESET" turn on fixture power and watch LED's on HFPB. The LED's will initialize and then one by one drop out, after all LED's have dropped out; the IMOK LED will come on. NOTE: Pattern may change slightly for different firmware sets, but the ideal is to receive an initialize, light pattern and IMOK. This verifies that the processor has communications with the firmware, and that the power on circuit is working. If you are this far along in the test, communications from the processor (FLUKE POD) have already been tested. So if this series of events did not happen, there is either a firmware problem bent pin, etc... or a problem in the power on reset circuit. (Q1 failing, seems to be a problem in the reset circuit)

6.5.4 If the unit passed the initialization, light pattern and IMOK tests above. Turn power off on fixture, remove fluke POD from processor socket and install the unit's processor. The initiation process should be identical to the process with the FLUKE running UUT. If the is identical with initialization, light pattern and IMOK, processor is good and test is complete. If any portion of the process is different, replace the processor and perform power on tests again.

6.5.5 End of Test for DS3800HFPB

7. NOTES
7.1 Setup 1

PC loaded with Procom and connected to network

From Network Server

Serial Cable

FLUKE 9010

FLUKE Pod Cable

FLUKE Z80 Pod

UUT

Test Fixture

7.2 <u>Setup 2</u>

7.3 Setup 3

FLUKE 9010

Serial Cable

From Network Server

PC loaded with Procom and
connected to network

FLUKE Pod Cable

FLUKE Z80 Pod

Test Fixture

UUT

Auxiliary Test Fixture