g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GE-PLZOOMG01**

Test Procedure for a Modbus Concentrator unit.

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	Roger Johnson	4/29/2014
B	Improved test fixture to monitor 8 MVT's simultaneously, eliminate the switch box, update test instructions.	Jimmy Morgan	5/22/2019
C			

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
Roger Johnson	Scott Cash	Glenn Chandler	Charlie Wade
DATE	**DATE**	**DATE**	**DATE**
4-29-2014	5/5/2014	5/5/2014	6/12/2014

1. SCOPE

1.1 This is a functional testing procedure for a Modbus Concentrator.

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 Modbus Concentrator'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 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, 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
8		Test (GOLD) MVT units
1		Mod bus test fixture

6. TESTING PROCESS

6.1 Setup Testing Procedure

6.1.1 Connect RS485 RTU IN (3 pin connector). See Figure 4.

6.1.2 Connect RS485 RTU OUT (3pin connector), with the 120 ohm termination resistor. See Figure 4.

6.1.3 Connect (UUT) COMMNET segments A to H (2 connectors). See Figure 4.

6.1.4 Connect 120v power connector.

6.1.5 Plug in test fixture, All MVT's should power on.

6.1.6 Verify the MVT addresses on the MVT's. They should read in order (301,302,303,304,305,306,307 and 308. If not, on each MVT press the function button until the setup menu is displayed on the LCD, then press the select button until the address is displayed. Then change the addresses to 301-308.

6.1.7 Power on the computer. The computer will auto load the test software and start the PLZOOM concentrator test screen as well as power the M-gate communications adapter. See Figure 3.

6.1.8 Wait until the computer has fully booted up and displays the test screen. See Figure 1.

6.1.9 Turn on the Mod Bus power switch located to the right of the UUT.

6.1.10 Next set the BAUD rate and address of the mod bus UUT to 19.200, press the select key on the Mod bus and verify the display shows CNFG.

6.1.11 Press the enter key and the display should read ADDR press the enter key again and set to 001 by using the up and down arrow keys.

6.1.12 Press the select key again and the ADDR should be displayed again press the up arrow key and display the BAUD press enter and set BAUD to 19.200 using the up or down arrow keys. Press the select key until the display is scrolling.

6.1.13 On the UUT, the only LED's that should be on at this time are the OPERATION on solid and the RS485 Mod bus RTU should be flashing. If so , skip to 6.1.14, else the following.

6.1.13.1 On the UUT press the Select Key, then UP arrow until SEGA is displayed.

6.1.13.2 Press enter and the display will show SAD1, press enter again.

6.1.13.3 Press either UP or DOWN until the address displays OFF, then press enter. The display will flash as its saving the value.

6.1.13.4 Repeat the process for SAD2-4 verifying the addresses are OFF or changing them to OFF.

6.1.13.5 Now repeat the above instructions for SEGB-SEGH. Once you have verified or turned them all OFF, verify the Status LED's for A-H are off.

6.1.14 Now we need to set up the UUT to read all 8 MVT units.

6.1.15 On the mod bus controller press the SELECT key then the UP arrow key and locate the SEGA.

6.1.16 Now press the ENTER key and the display shows SAD1 press the enter key again.

6.1.17 The display should display OFF press the UP arrow key and continue until the address 301 is displayed.

6.1.18 Press the ENTER key and the 301 should flash for a few seconds and when saved the unit will scroll the display.

6.1.19 When the unit connects to the computer the green led for comment Seg A will light.

6.1.20 Verify the data is displayed on the screen from the MVT in comment address 301 and the status is ok. (This may take up to 45 seconds, very slow refresh rate).

6.1.21 Now repeat steps 6.1.15 – 6.1.20 for channels B-H, the address should be as follows.

6.1.21.1 SEGA SAD1 address 301

6.1.21.2 SEGB SBD1 address 302

6.1.21.3 SEGC SCD1 address 303

6.1.21.4 SEGD SDD1 address 304

6.1.21.5 SEGE SED1 address 305

6.1.21.6 SEGF SEF1 address 306

6.1.21.7 SEGH SEH1 address 307

6.1.22 At this point you should have ALL status led's lit on the UUT with the operation led flashing. You should also see ALL green on the computer test screen for each commnet address.

6.1.23 Allow UUT to burn in for a minimum of 4 hours.

6.1.24 Verify no errors have occurred while running by clicking START on the computer test screen, (not the green windows start button), select Alarms, Historic Alarms. At the top of the page click "Event Log" this will change the button to read "Alarm Log". Then click Start Query to display a list of faults, if any.

6.2 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time

8. ATTACHMENTS

8.1 Figures 1 thru 4

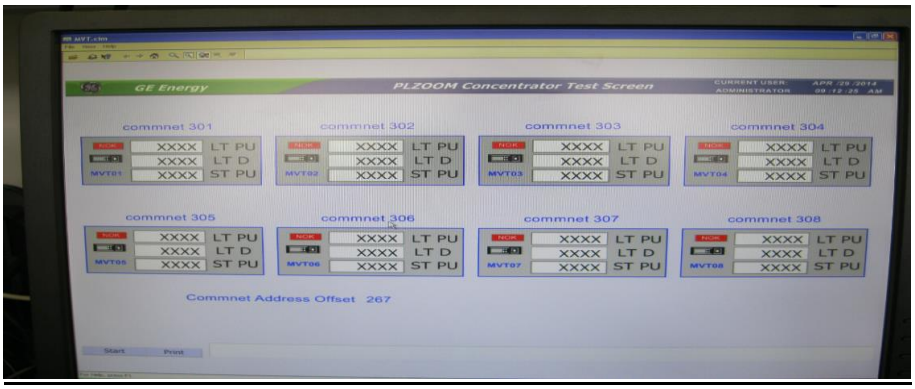

Figure 1

Figure 2

Figure 3

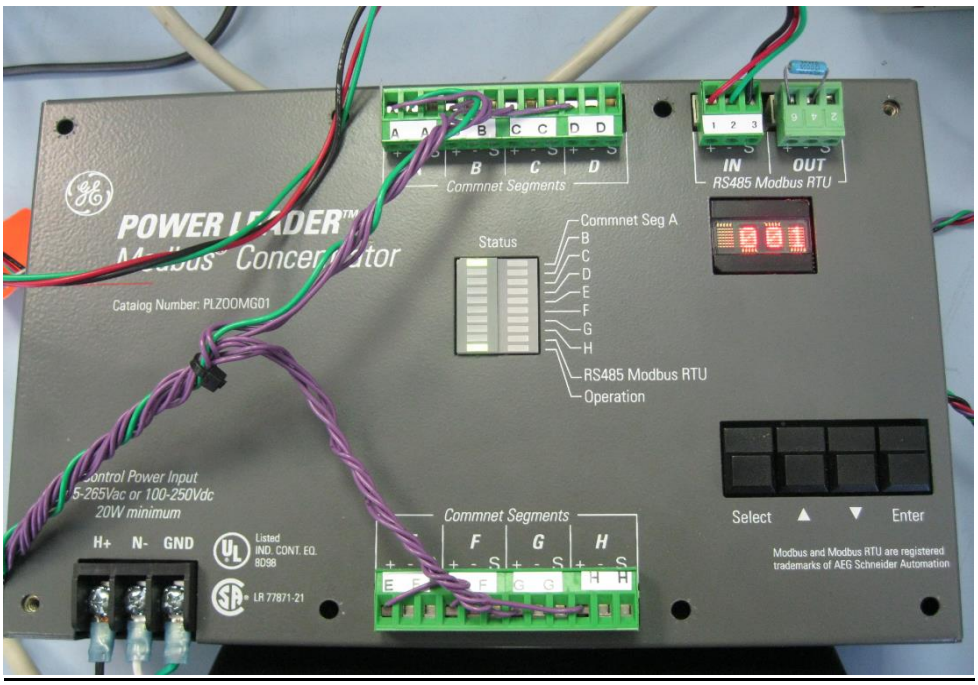

Figure 4