



GE Energy

## Functional Testing Specification

Parts & Repair Services  
Louisville, KY

LOU-GED-IS215UCVG

## Test Procedure for a Universal Controller Assembly, IS215UCVG

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A	Initial release	R. Johnson	9/23/2010
B	Made corrections concerning battery	M. Starling	12/18/2010
C	Added test steps for M09A option test	M. Starling	12/20/2010
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PREPARED BY Roger Johnson	REVIEWED BY Monte Starling	REVIEWED BY M. Starling	QUALITY APPROVAL <i>Charlie Wade</i>
DATE 9/23/2010	DATE 9/23/2010	DATE 9/5/2014	DATE 9/25/2010

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## 1. SCOPE

1.1 This is a functional testing procedure for an IS215UCVG 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 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 or equivalent
1	H188788	Mark VI Test Rack SIM74
1		UC Interface for M09A tests

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## 6. TESTING PROCESS

### 6.1 Setup

6.1.1 Setup is called out in each step.



**Note: This test currently covers only IS215UCVG and IS215UCVG with M09A ArcNet option.**

**If you are testing a UCVG with the M09A option, first test the board as a standard IS215UCVG, then follow M09A instructions at the end of this procedure.**

**Replace 3V Lithium battery with new before testing board. Disable battery jumper before replacing battery.**

### 6.2 Testing Procedure

#### 6.2.1 Initial Inspection:

6.2.1.1 Look the card over very closely. Physical damage & corrosion have been found on these units, along with missing hardware.

6.2.1.2 After the battery has been replaced.

To check the voltage on battery connect positive side of meter to top of battery holder, then connect the negative side of meter to P2 D31. Verify meter reads greater than 2.8Vdc.

#### 6.2.2 Typical current draw: **Note: B1 connects to both circuits.**

6.2.2.1 (B1) Place battery switch is in the off position, connect one lead of a current meter to the top of the battery cover, connect the other lead to the via on the ON side of S10 (same switch used to turn off battery). Current should read between **3uA to 5uA draw, typical**. If unit is 6uA or higher, the battery will not last for the advertised rated period. This must be corrected before continuing.

6.2.2.2 (GE Control Systems Solutions Toolbox, compact flash Core and TCP/IP. Remove the compact flash from the board, and set it up in the card reader. With Sim73 file of Toolbox opened up, select Device in the left of the upper toolbar, then Download, and Compact Flash. This sets up the TCP/IP address and core load for the next test step.

### 6.2.3 GE Control Systems Solutions Toolbox, card testing:

- 6.2.3.1 This test is performed when the unit is plugged into the rack, and includes the VCRC Graphic Test, which is performed simply as an exercise to get the UCVG to perform a task that might be asked of it in the field.
- 6.2.3.2 With rack power OFF, slide in the VCMI, VCRC and the UCVG connect the RED Ethernet cable to Lan1, connect the BLUE Ethernet cable to Lan2 then connect the mini D-shell connector to COM1. Power up the rack, and wait for it to finish booting up. Make sure the first word on the left-most menu, SIMPLEX, is highlighted.
- 6.2.3.3 Once it boots up, click on Device, then Download, and Product Code. When it's done, it will prompt you for a reboot.
- 6.2.3.4 Click NO and then cycle power to the rack. Once unit has finished booting up again, click on the button in the upper toolbar that has a checkmark on it. The window below should ultimately reflect "Validation complete with 0 errors & 0 warnings".
- 6.2.3.5 Next, click on the Build button, which has a hammer and ruler on it, and the lower window should display "xx records with 0 errors-SUCCESS" (xx records can be any number).
- 6.2.3.6 Go online by clicking the button on the upper right of the toolbar with two mating yellow plugs. You should see two small windows on the lower right side of the screen, one with UNKN and the other with NO CODE.
- 6.2.3.7 Now go to the Download button, the one with the red arrow pointing downward, click OK, then look for Download Complete.
- 6.2.3.8 Go Offline with the same button you went online with, cycle power to the unit, and wait for the reboot.
- 6.2.3.9 Once rebooted, look for the two windows in the lower right to now be Green and showing Control and Equal. NOTE: If by chance you end up with a red FAIL and green EQUAL lit up, try downloading the configurations to the VCMI and VCRC and rebooting.

### 6.2.4 ETHERNET TEST LAN1 and LAN2.

- 6.2.4.1 Once toolbox has **CONTROL, EQUAL** click on the VCMI to see live data. This verifies that LAN1 is connected and working. To test LAN2 open the command Prompt and type the following. Ping 192.168.101.75 this pings LAN2.

## 6.2.5 COM1 TEST

### 6.2.6 Power off the Rack then open the serial2 connection, power up the rack, on the Hyper Terminal the data on the screen will be like the example below.

```
CVG-7666 BIOS Revision 1.00
Copyright 2005 GE Fanuc Embedded Systems
Uuuld Time: 03/08/05 16:49:24

Mobile Intel(R) Celeron(TM) CPU 650MHz
639K System RAM Passed
11M Extended RAM Passed

126M Extended RAM Pa sed

          roc output to serial port 3f8 at 9600 baud
Press RETURN key within 2 SECONDS to ABORT uc2k startup
'platform' found - NORMAL startup

cd /usr/bin
platform -u &
platform  V02_04_01C - Apr 15 2010 02:22:54
ifconfig: ioctl (SIOCAIFADDR): File exists
UC2K_Start: Platform Registration After 6 Seconds.
en1: flags=8863<UP,BROADCAST,NOTRAILERS,RUNNING,SIMPLEX,MULTICAST>
    inet 192.168.101.73 netmask fffff00 broadcast 192.168.101.255

cd /usr/binto enter SETUP
sys &
*****
      MARK VI Runtime Version V05_13_04C
*****

sys_mk6  V05_13_04C - Apr 15 2010 02:26:33
V070300C FEB 2010

uc_idle  V05_00_01C - Apr 15 2010 02:18:17
bgnd     V06_06_00C - Apr 15 2010 02:14:03
heartbeat V06_04_01C - Apr 15 2010 02:21:39
diag     V06_00_05C - Apr 15 2010 02:14:34
sdi      V05_02_03C - Apr 15 2010 02:20:10
adl      V07_00_10C - Apr 15 2010 02:22:37
diag_alarm V01_00_01C - Apr 15 2010 02:23:11

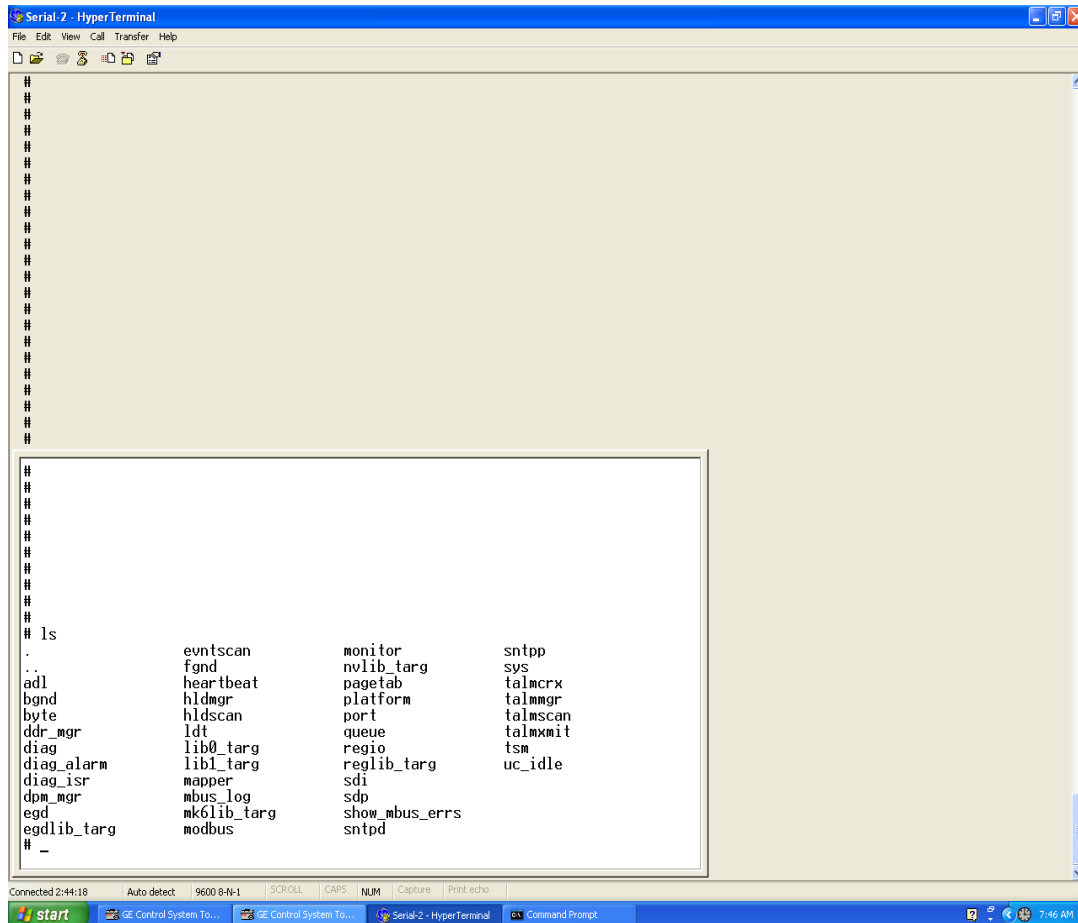
dpm_mgr  V01_10_01C - Apr 15 2010 02:23:32 - ECL 3.5 beta-D
login:    *** Expansion begun ***
mapper   V06_00_00C - Apr 15 2010 02:21:03
data_init_slave entering init loop...
data_init_slave found designated mode, exiting...
data_init_slave() completed successfully.
fgnd     V06_16_00C - Apr 15 2010 02:15:07 (40.0 mS)
fgnd     V06_16_00C - Apr 15 2010 02:15:07 (320.0 mS)
      *** Expansion completed successfully ***

***** Mark VI Initialization Completed *****
```

When the unit has completed the Initialization hit the Enter key

The Login prompt will appear. Type root hit enter then type ge all lower case

Login: root



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Type tsm at the command prompt this will connect to the VCMI through the Com1 port of the UCVG.

#tsm

channel? 1

module? 0

slot? 1

This will route to the VCMI once connected to the VCMI

Type A then

Type D this will display the RKPS power supply voltages.

**6.2.7 Reset Compact Flash to Default:** This is very important. The unit **MUST** be reset to factory default flash settings to prevent conflicts in the field, or possible corruption when the customer goes to set the unit up for their needs.

**6.2.8 Compact Flash:**

**6.2.8.1** There should be a compact flash card mounted into a slide holder/socket that needs to be flashed. This flash that needs to be performed is the default that, after you have finished testing later on, will once again be reloaded at the end of this test.

**6.2.8.2** Remove the compact flash card from the unit, and install it into the socket located behind the keyboard on the bench right below the Sim70 rack.

**6.2.8.3** Call up the compact flash program on your desktop. Select the file that most closely matches the one labeled on the card. I say most closely because the one in the computer may be a slightly newer revision than what's in the card. For example, your card may end with \*BWP3, but \*BWP4 is what's on the menu. Select \*BWP4 and remember to print a new label to place over top of the old one on the card.

**6.2.8.4** When you select the file you want, the next window that pops up has a button on the upper right that says, "**Write**". Click on it, and then once again select the file from the next menu. It'll be the same one. You should get a progress bar next, followed by another one, and then it is finished. After the next few steps, at the end of this test, you'll be prompted to repeat this step in order to send the unit out with the default settings, so the customer can set it up for their needs.

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**6.2.9 Jumpers for Battery:** Per Service Bulletin PSB25136, board jumpers shall be disabled for shipment. Estimated storage life can also be found in this bulletin.

**6.2.10 \*\*\*UCVG BASE BOARD TEST COMPLETE CONTINUE FOR M09A/B/C OPTION \*\*\***

### **6.3 IS200UCVG W/M09A/B/C OPTION TEST**

- 6.3.1** After completing the UCVG base board test, turn off rack power and remove the UCVG from the SIM73 rack.
- 6.3.2** Install applicable ArcNet DLAN+ card in unit. Place unit in SIM31 rack Slot 2.
- 6.3.3** For M09A (TMPC815-11 Ver. 1), for M09B (TMPC815-11 Ver. 2) and for M09C (IS200EARC).
- 6.3.4** In ToolBox and open SIMULATORS / UCVGM09(A/B/C) / UCVG9(A/B/C).UCB. Set the privilege level to 4. There will be a password box appear; type “gesalem9” and enter. In the next box type any three characters, initials or whatever.
- 6.3.5** Remove the CompactFlash from the UCVG and place it in the Flash Writer. In ToolBox select DEVICE / DOWNLOAD / COMPACTFLASH select WRITE and wait for the flash to write and verify. Place the CompactFlash back into the UCVG. Connect COM1 cable of computer, using the mini D shell adapter to COM1 on the UCVG. Insert the Ethernet cable into LAN 1.
- 6.3.6** Apply rack power and allow controller to boot. You can watch the boot process by opening the “SERIAL 1” HyperTerminal on the desktop.
- 6.3.7** Once controller has rebooted, download “Product Code (Runtime). When complete, reboot controller.
- 6.3.8** Once controller has rebooted, go online. You should see a No Code at the bottom right of the ToolBox screen. Download the Application code. (Red down arrow) When Application Code has finished downloading, reboot controller.
- 6.3.9** Once controller has rebooted, go online; you should now have “GREEN” CONTROL and EQUAL boxes at the bottom right of the ToolBox screen.
- 6.3.10** Connect a BNC cable from the BNC connector on the UCVG card, to the BNC connector on the OC1 unit above SIM31 rack.
- 6.3.11** In ToolBox, in the SIMULATORS / UCVGM09A/B/C Directory open UCVG9A.OCB and UCVG9A/B/C.GRW. Go to the UCVG9A/B/C.OC1 window and download the Application code. You should see the download as it occurs on the OC1 screen.



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**6.3.12** After download is complete, open the UCVG9A/B/C.GRW window. All buttons on this graphics screen should be green. Under DLAN+ TEST, click on the Start Test button. Follow the instructions.

**6.3.13** Click on the NVRAM TEST, Start Test button and follow the instructions. Go back online to complete the test. If DLAN+ TEST and NVRAM TEST pass, test is complete.

#### **6.4 \*\*TEST COMPLETE\*\***

### **7. NOTES**

**7.1** **Always re-flash Compact Flash with Core Load before returning to customer.**

### **8. ATTACHMENTS**

**8.1** None at this time.