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# **FSi 10 Software Upgrade**

## **Upgrading to v4.3.2**

### **Application Guide**

597-0542-006 Revision G  
6/16/11

## **FSi 10 Software Upgrade**

### **Upgrading to v4.3.2**

### **Application Guide**

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## 1. FSi 10 Software Upgrade v4.3.2 Overview

Included with this is a CD containing FSi 10 Software Upgrade v4.3.2. Please note that the I.P. Address, Call letters, System Settings, Sync to GPS, and Watchdog **MUST** all be re-entered in the FSi 10 after loading v4.3.2. The following steps **MUST** be followed closely to ensure a successful install.

### 1.1. Features

- Additional HD channel

### 1.2. Tools / Items Needed

- ☐ External Mouse
- ☐ External Keyboard

### 1.3. Estimated Time for Software Upgrade

It will take approximately 30 minutes to upgrade the software in the FSi 10. Please note that the FSi 10 will be off of the air during this process. If the transmitter is in FM+IBOC (Hybrid) Mode and audio is re-routed directly to the FXi, the transmitter will remain on the air in FM (Analog Signal only) operation.

## 2. Connect an External Mouse and Keyboard

**NOTE: On FSi 10 units that have an ITOX Brand Motherboard, a keyboard and mouse MUST both be connected to the appropriate "labeled" jacks (NOT USB ports) on the rear of the FSi 10 before the software upgrade process is started!**

To determine what type of Motherboard is installed in the FSi 10, go to the Main GUI and select **System**, then **Versions** and note the Motherboard type.

Please note that the ITOX **ONLY** recognizes the Mouse and Keyboard when the Operating System Boots up.

### 3. Record System Settings

#### 3.1. Record the I.P. Address and Subnet Mask

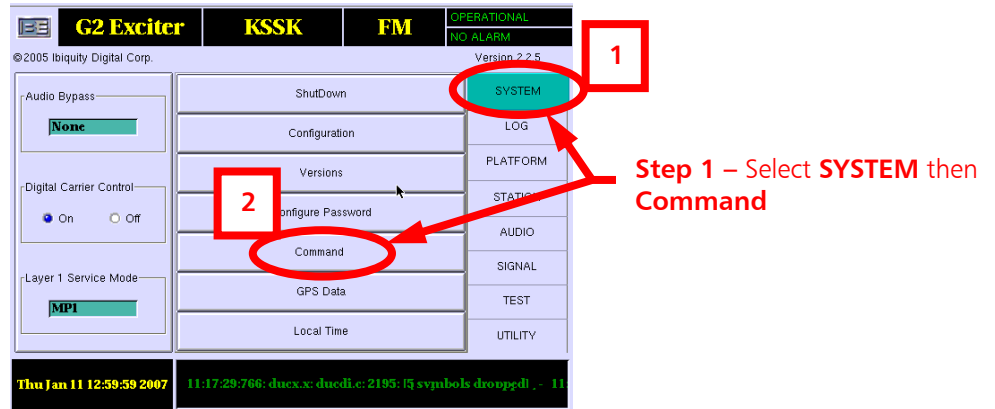


Figure 1 – Command Menu

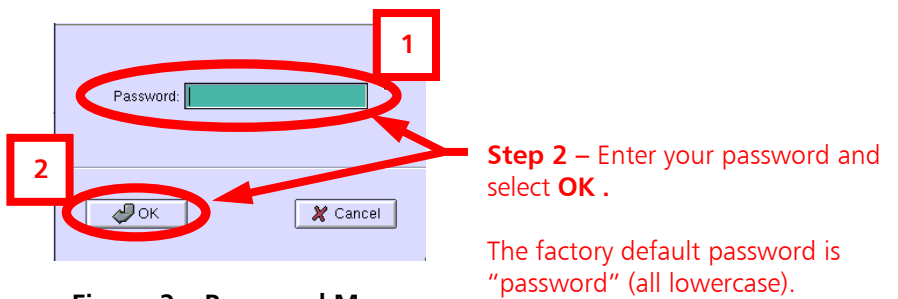


Figure 2 – Password Menu

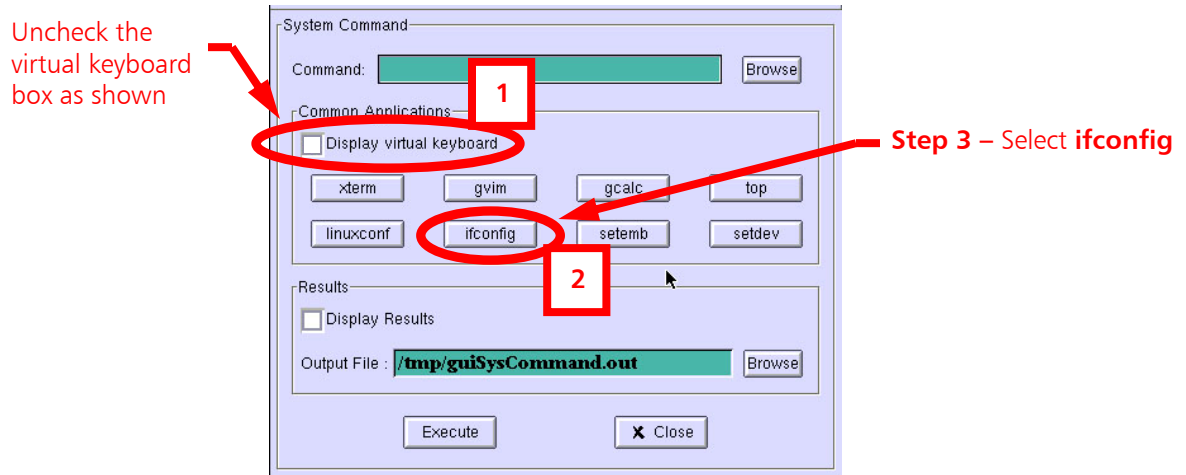
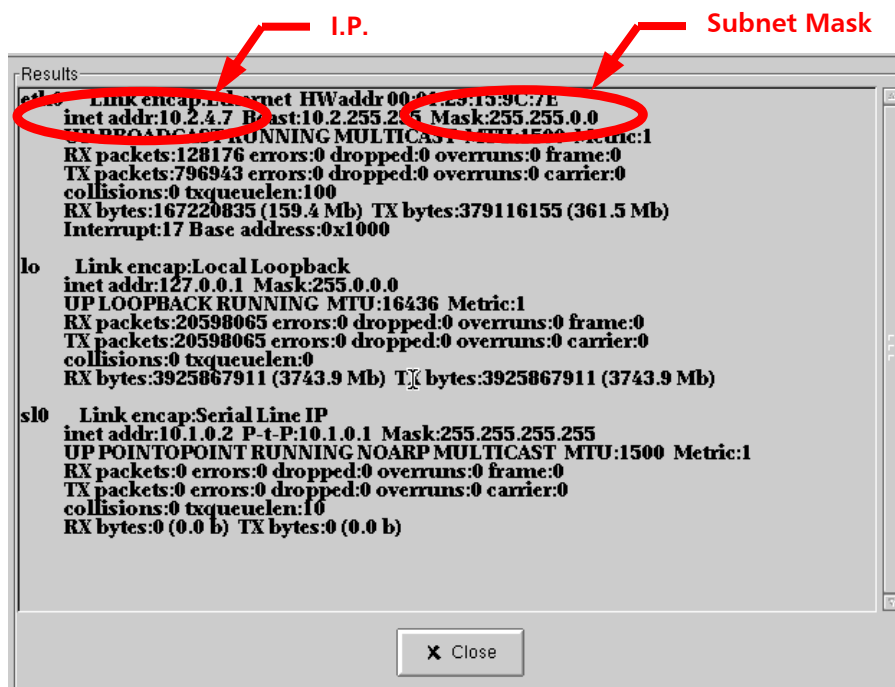


Figure 3 – ifconfig Menu



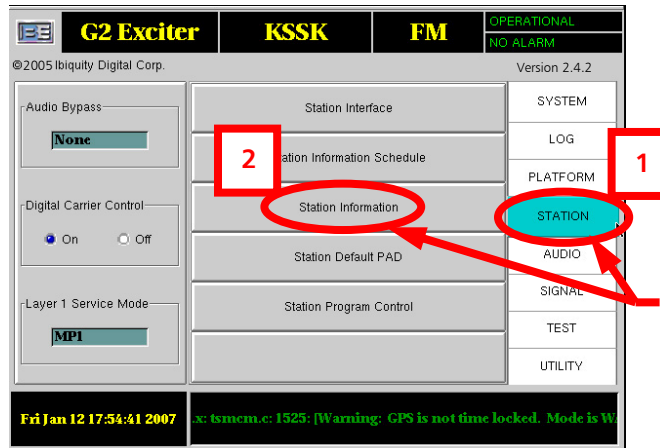
I.P. Address \_\_\_\_\_

Subnet Mask \_\_\_\_\_

Gateway \_\_\_\_\_

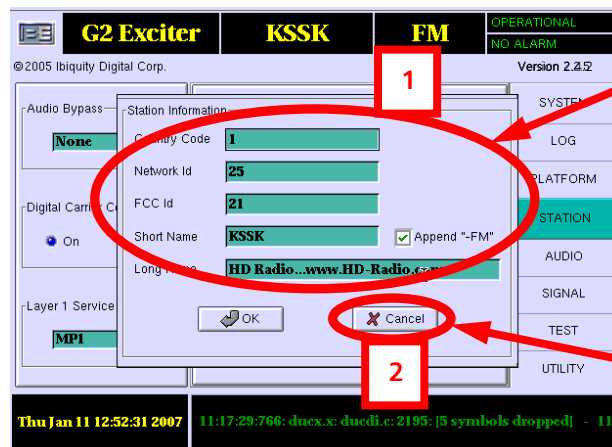
Figure 4 – Record the FSI's I.P. Address, Subnet Mask and Gateway

- 3.2. **Record the Station Information** (may not be available in version 2.4.2 but in earlier versions).



**Step 1 – Select STATION then Station Information**

**Figure 5 – Station Information**



**Step 2 – Record all Station Information**

**Step 3 – Select Cancel**

Country Code \_\_\_\_\_

Network I.D. \_\_\_\_\_

FCC I.D. \_\_\_\_\_

Short Name \_\_\_\_\_

Long Name \_\_\_\_\_





Figure 6 – FSi 10 Station Information Menu

### 3.3. Record the Station Default PAD

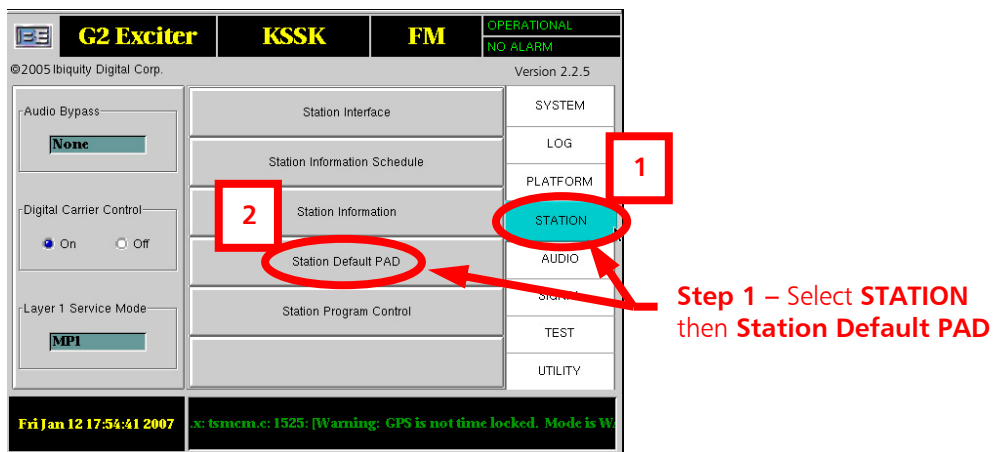
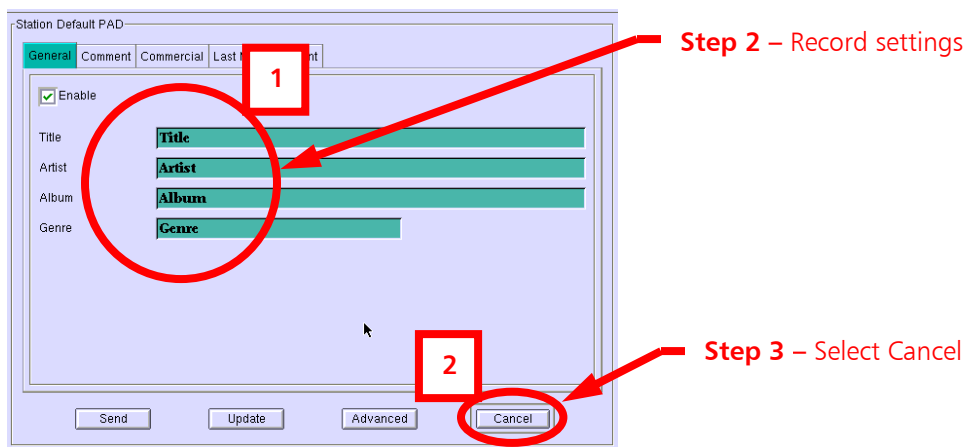


Figure 7 – Station Default PAD



Title \_\_\_\_\_

Artist \_\_\_\_\_

Album \_\_\_\_\_

Genre \_\_\_\_\_

Figure 8 – Station Default PAD Settings

### 3.4. Record the Station Program Control

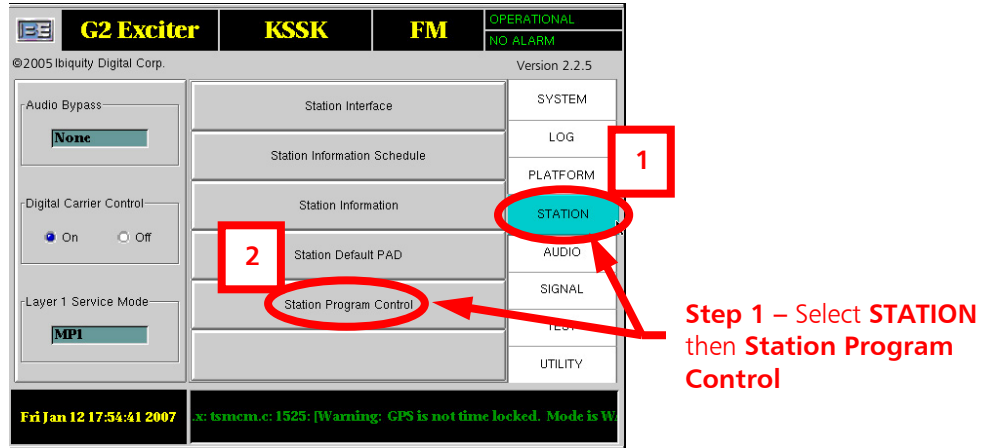
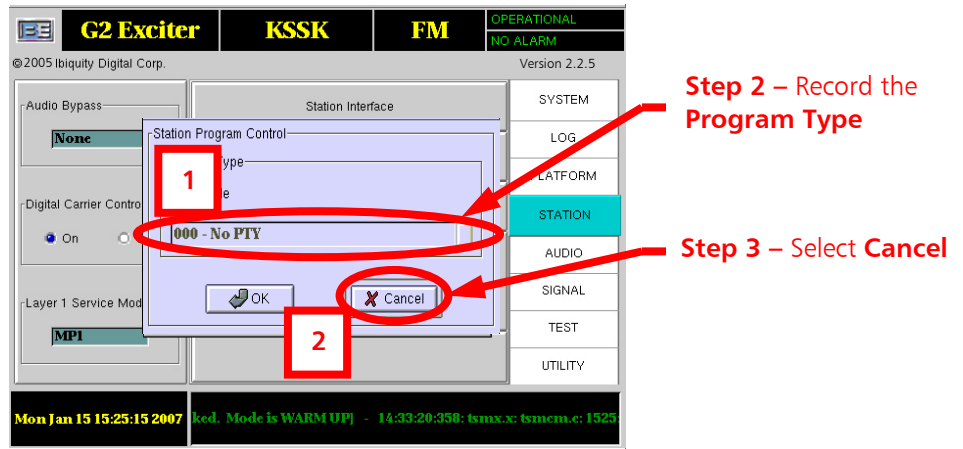


Figure 9 – Station Program Control



Program Type \_\_\_\_\_

Figure 10 – Station Program Control

### 3.5. Record Analog Audio Diversity Delay Value

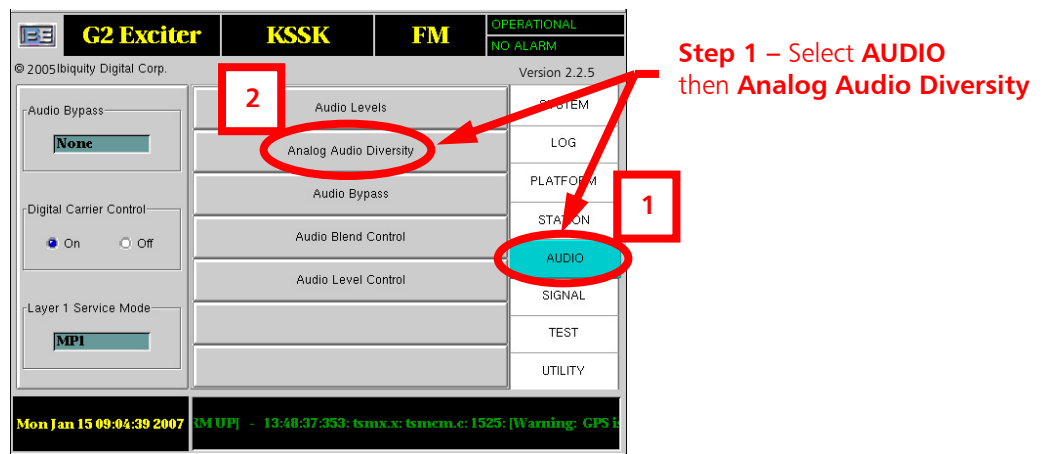
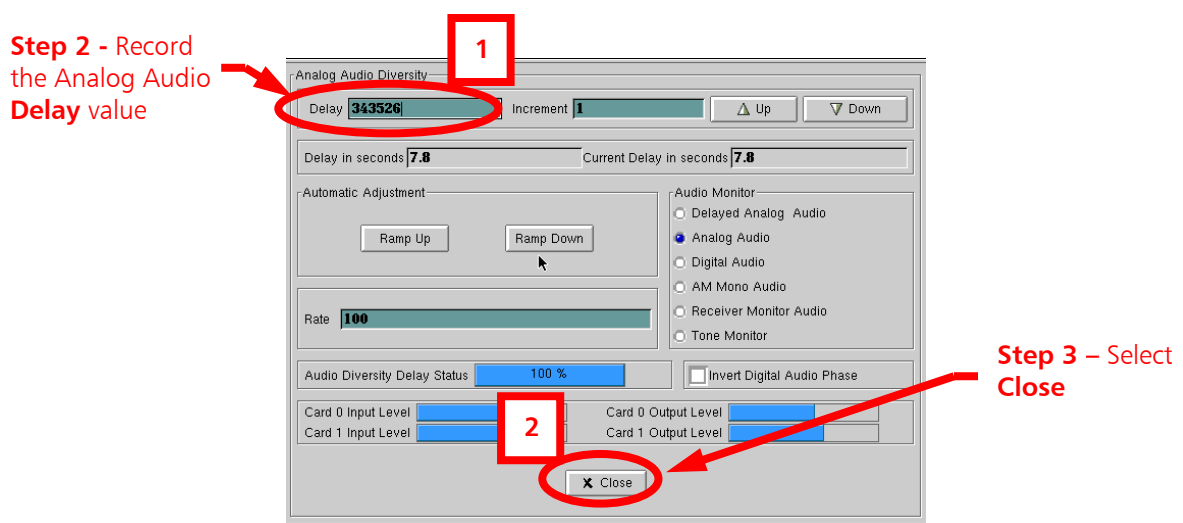


Figure 11 – Analog Audio Diversity



Delay Value \_\_\_\_\_

Figure 12 – Analog Audio Diversity

### 3.6. Record Audio Blend Control Settings

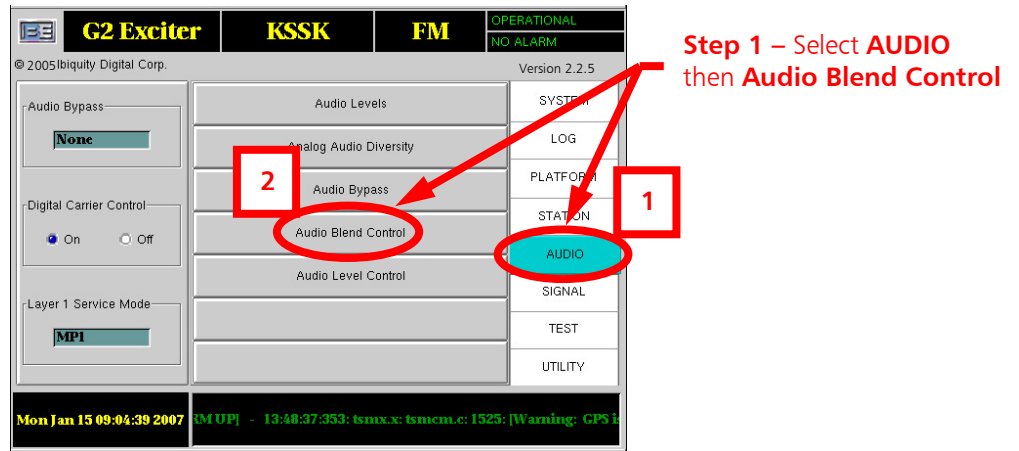
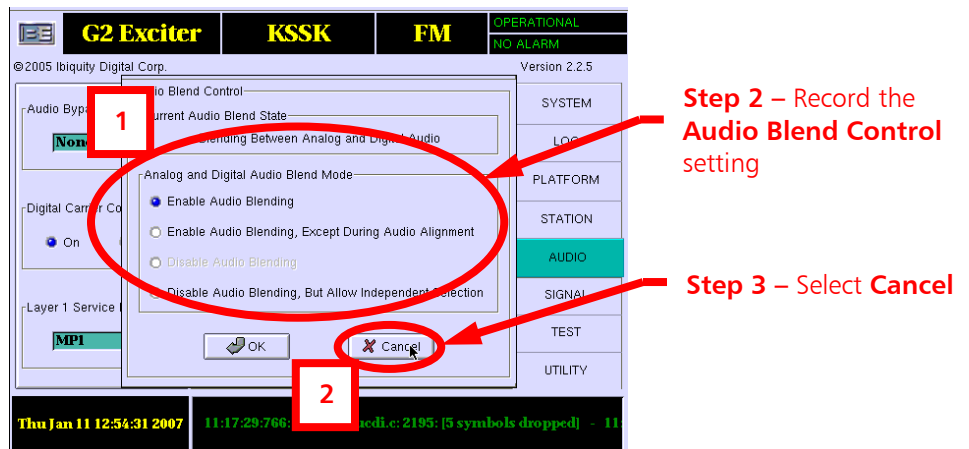


Figure 13 – Audio Blend Control



Audio Blend Control Setting \_\_\_\_\_

Figure 14 – Audio Blend Control

### 3.7. Record Audio Level Control Settings

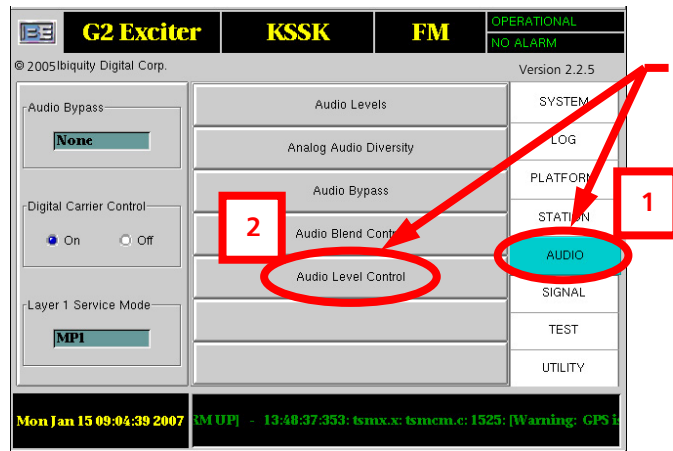
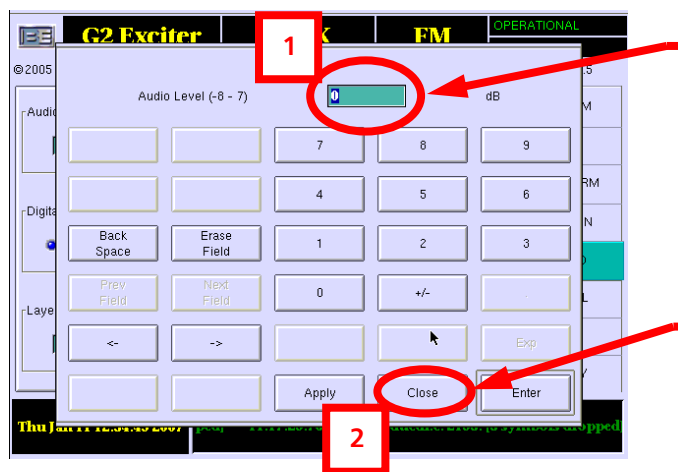


Figure 15 – Audio Level Control



Audio Level Setting \_\_\_\_\_

Figure 16 – Audio Level Control

### 3.8. Record I/Q Scale Factor Setting

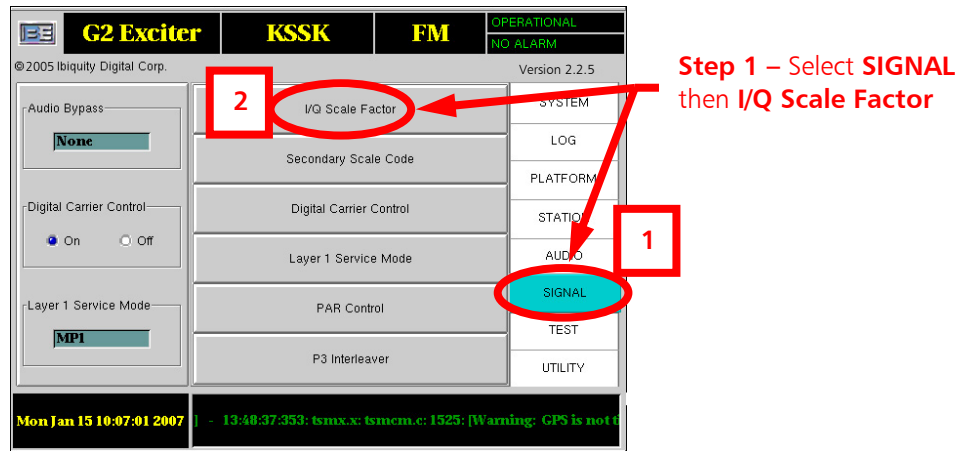
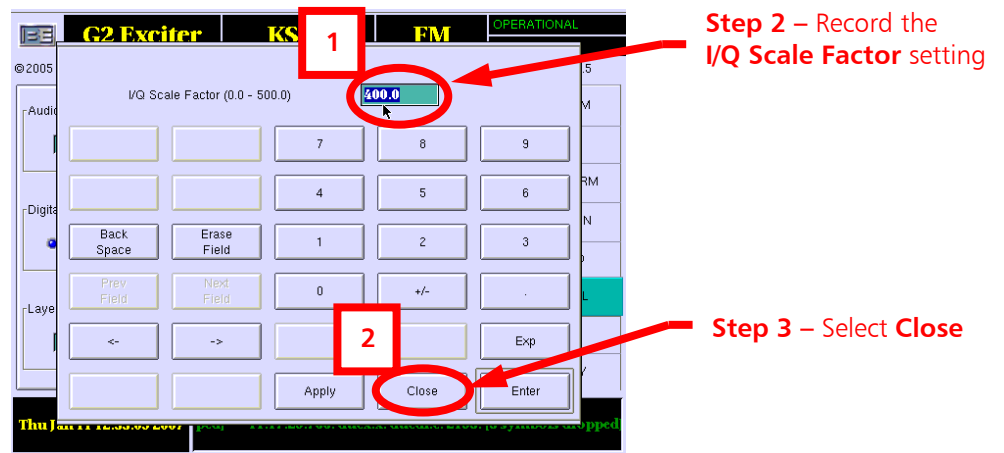


Figure 17 – I/Q Scale Factor



I/Q Scale Factor \_\_\_\_\_

Figure 18 – I/Q Scale Factor

### 3.9. Record Secondary Scale Code Setting

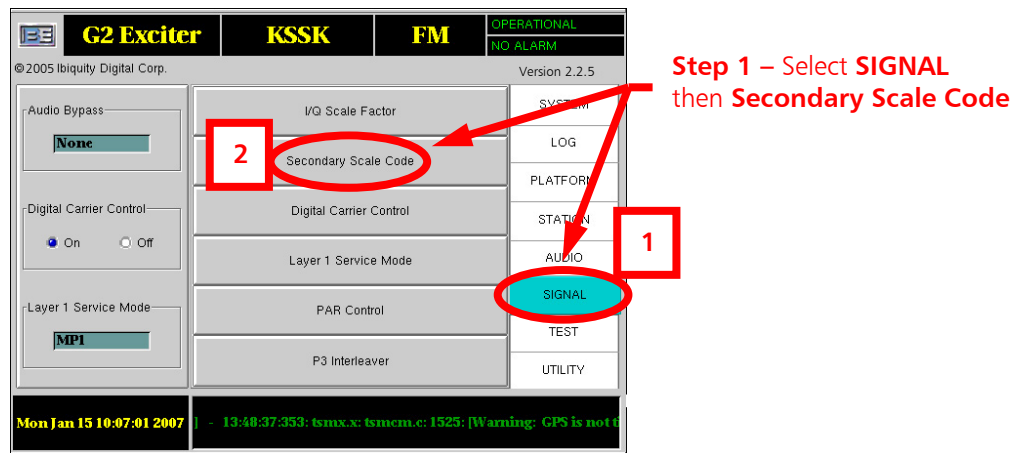
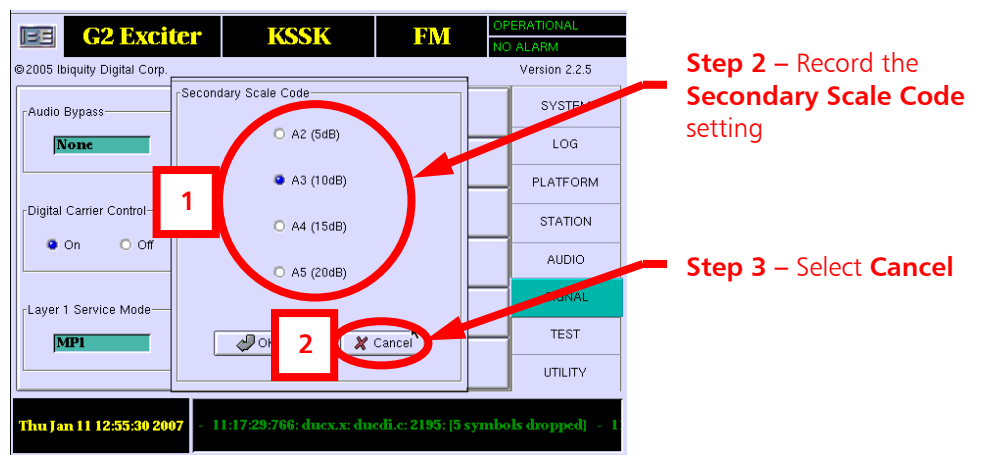


Figure 19 – Secondary Scale Code



Secondary Scale Code \_\_\_\_\_

Figure 20 – Secondary Scale Code

### 3.10. Record Digital Carrier Control

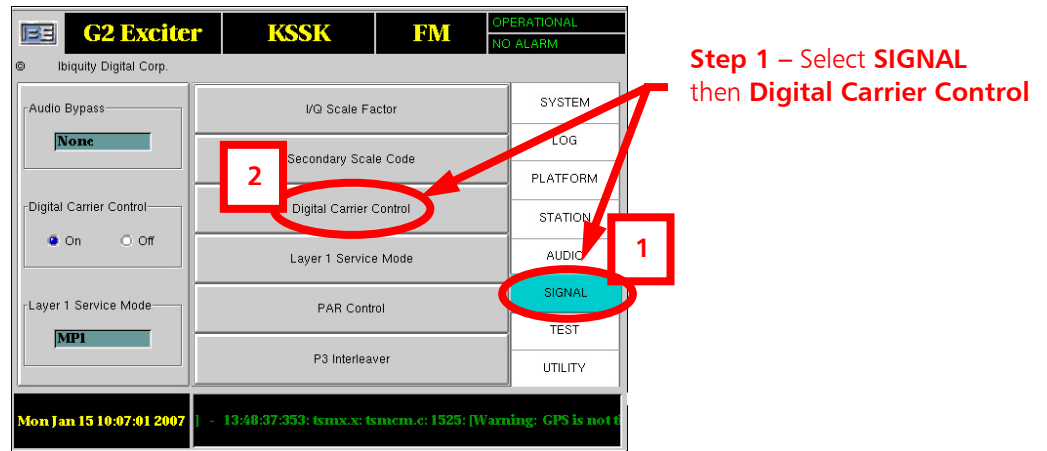


Figure 21 – Digital Carrier Control

Record selection ON or OFF.



### 3.11. Record PAR (Peak to Average Ratio) Control Setting

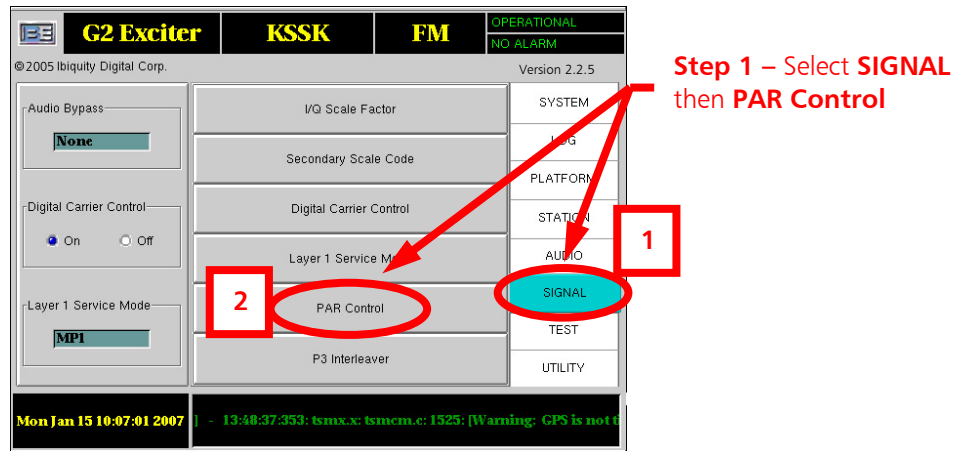
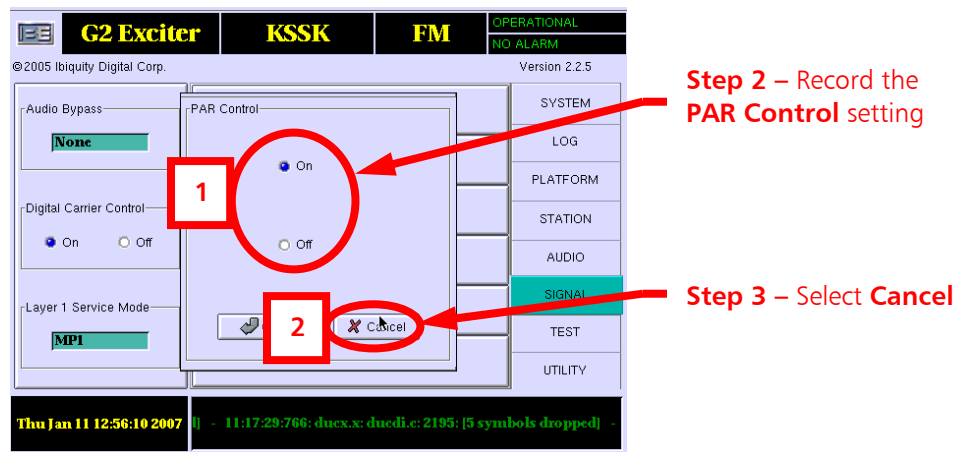


Figure 22 – PAR Control



PAR Control \_\_\_\_\_

Figure 23 – PAR Control

### 3.12. Record P3 Interleaver Setting

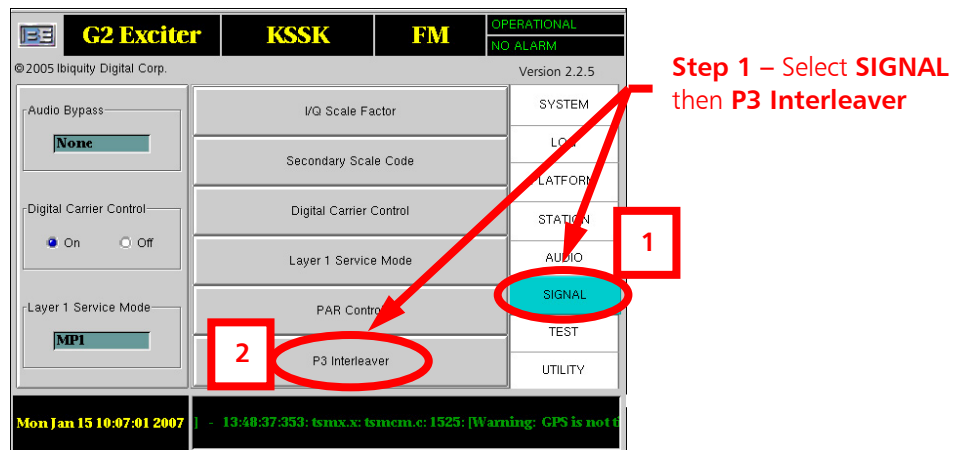
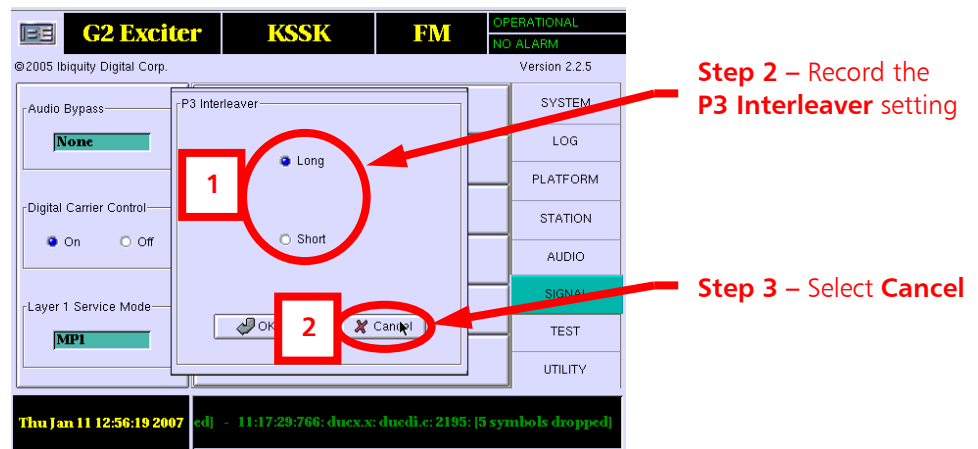


Figure 24 – P3 Interleaver



P3 Interleaver \_\_\_\_\_

Figure 25 – P3 Interleaver

## 4. Enable Audio Bypass During the Upgrade Process

### 4.1. Verify FXi 60/250 Exciter Internal Bypass Setting

**Step 1** – On the FXi's Main GUI Menu select **Audio Input**

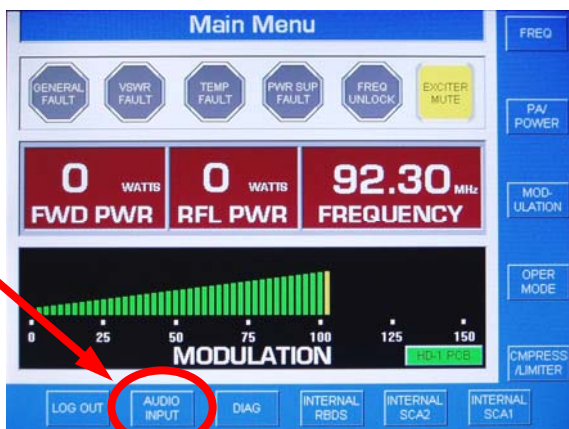
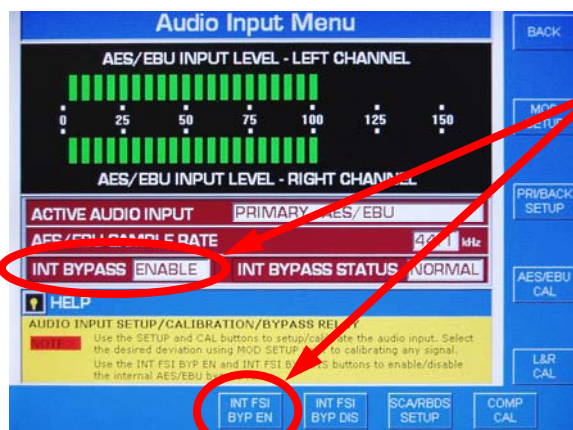
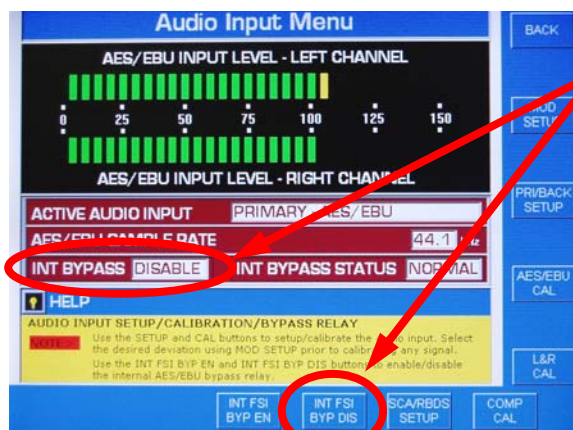


Figure 26 – FXi Main



**Step 2A** – If your system **DOES NOT** have an External Audio Switcher, then set the **INT BYPASS** to **ENABLE**.

Figure 27 – INT BYPASS ENABLED (System DOES NOT Have an External Audio Switcher)



**Step 2B** – If your system **DOES** have an External Audio Switcher, then set the **INT BYPASS** to **DISABLE**.

Figure 28 – INT BYPASS DISABLED (System DOES Have an External Audio Switcher)

## 4.2. Disconnect the Status Output Cable from the FSi

Disconnect the Status Output cable from the rear of the FSi

**Warning:** Please note that disconnection of the Status Cable will take HD off of the air until the Upgrade Process has been completed. If the transmitter is running in FM+IBOC (Hybrid) the Analog Signal will not be affected.

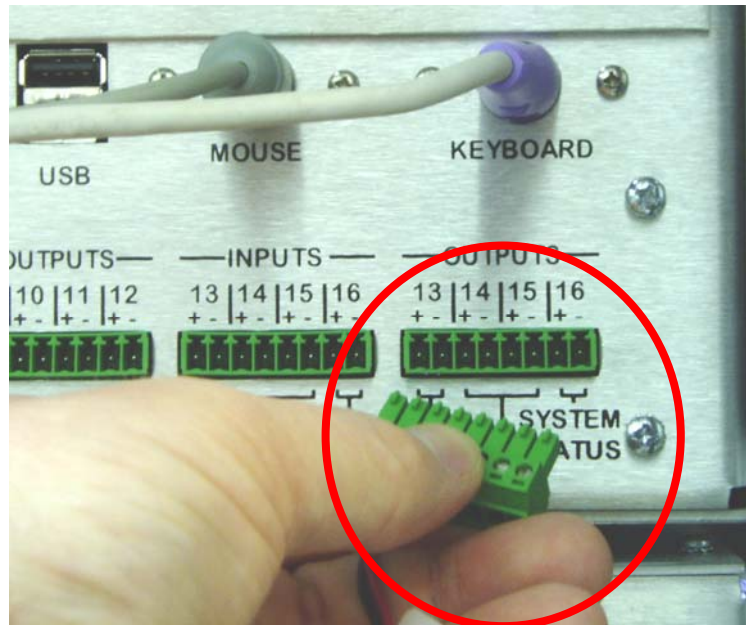


Figure 29 – Status Output Cable

## 5. Upgrading FSi 10 Software

**NOTE:** On FSi 10 units that have an ITOX Brand Motherboard, a keyboard and mouse **MUST** both be connected to the appropriate "labeled" jacks (NOT USB Ports) on the rear of the FSi 10 before the software upgrade process is started!

To determine what type of Motherboard is installed in the FSi 10, go to the Main GUI and select **System**, then **Versions** and note the Motherboard type.

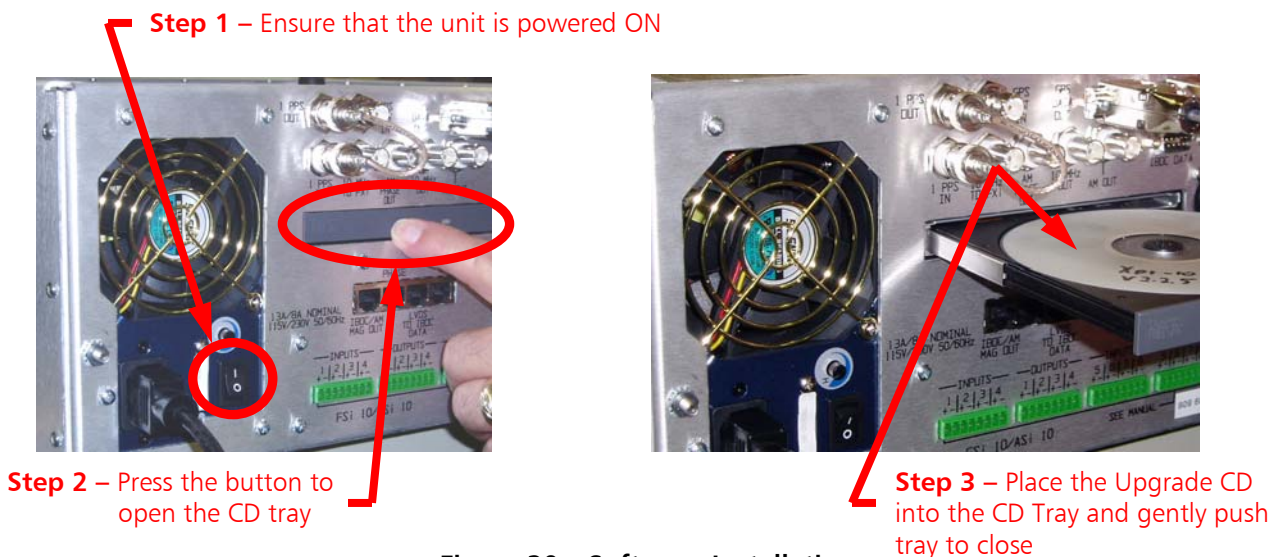


Figure 30 – Software Installation

**Step 4** – On the FSi Main GUI, go to **SYSTEM** then **Shutdown**. Next, select **OS Restart**, then **OK**. The FSi will now safely power down and boot from the upgrade CD.

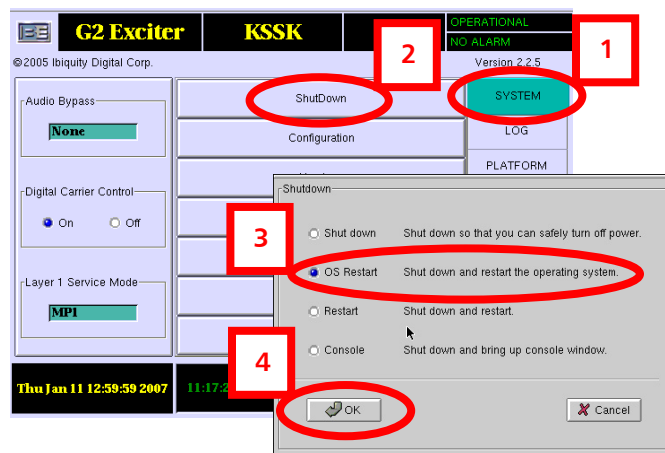


Figure 31 – OS Restart

**Step 5** – The FSi 10 will boot-up from the CD and the Software Upgrade Installation will begin.

**Step 6** – When the Software Upgrade Installation is complete, the CD tray will open.

**Step 7** – Remove the upgrade CD and close the tray.

**Step 8** – Once the FSi 10 boots up, verify the following:

- ☐ Version 4.3.2 should be displayed on the menu as shown below
- ☐ Operational block should be GREEN
- ☐ The ALARM block will be RED (since GPS is not connected or Locked at this point)
- ☐ The Alarm Log at the bottom of the screen should only contain warnings relating to GPS.

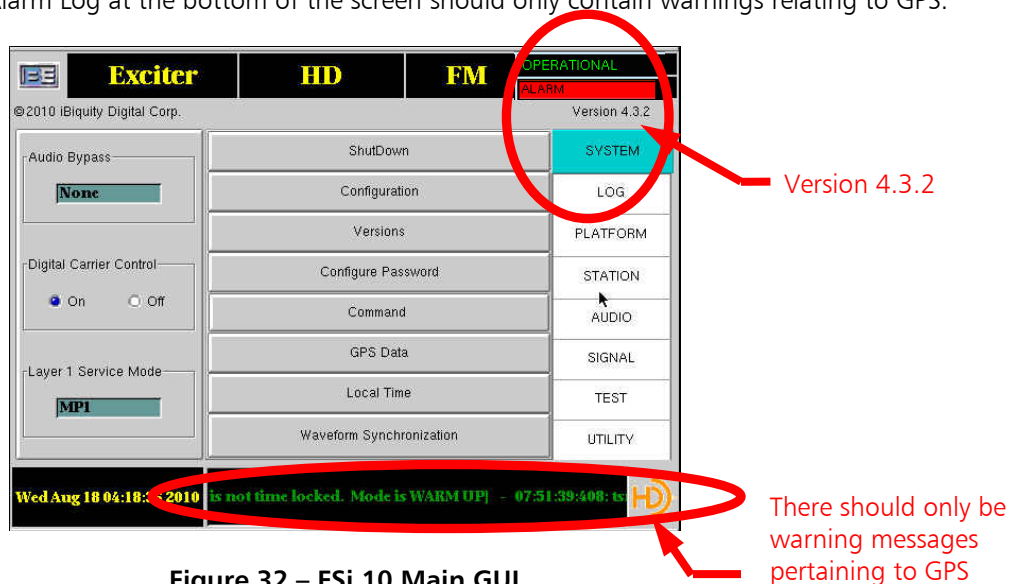


Figure 32 – FSi 10 Main GUI

**Step 9** – With no disk in the drive, perform an **OS RESTART** as directed in step 4 above.

## 6. Configure the FSi

After the software load has been successfully completed, it is necessary to configure the FSi's I.P. Address and System Settings. You may be asked for the password. The default word is "password" (all lower case).

### 6.1. Configure the I.P. Address and Subnet Mask of the FSi 10

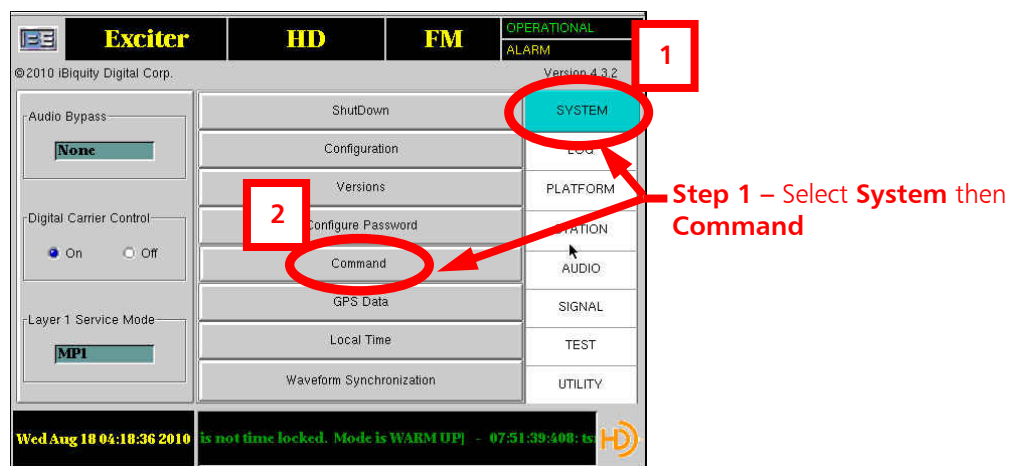


Figure 33 – FSi 10 Config / Control Menu



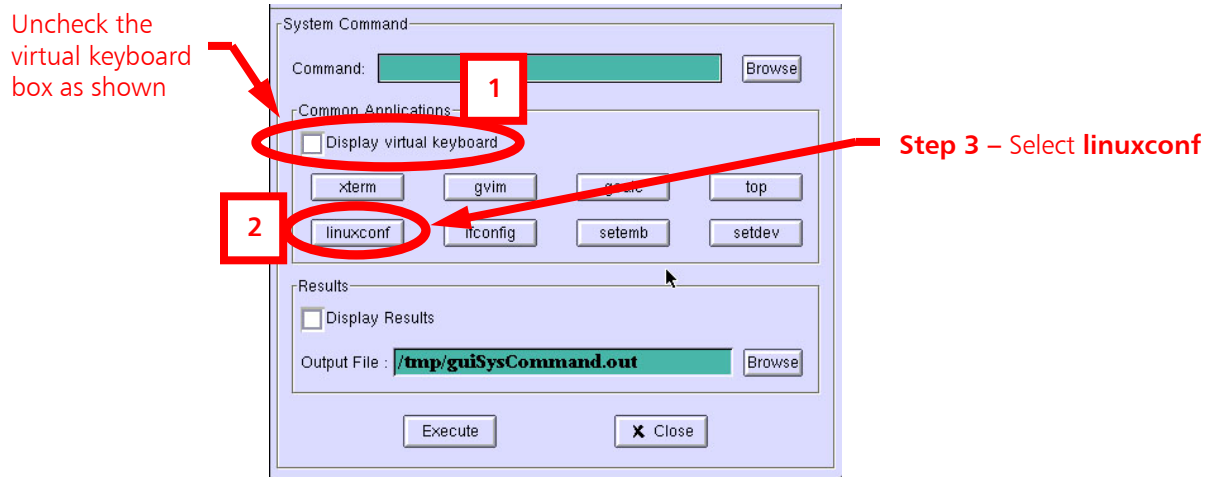


Figure 34 – FSi 10 Config / Control Menu

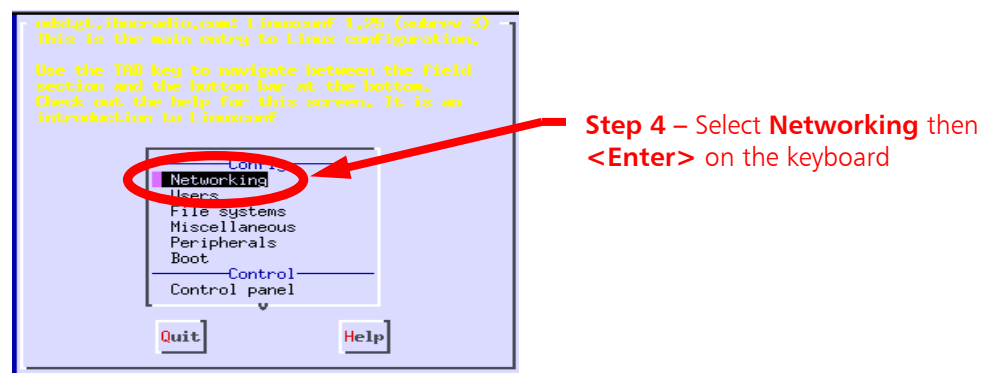


Figure 35 – FSi 10 Config / Control Menu

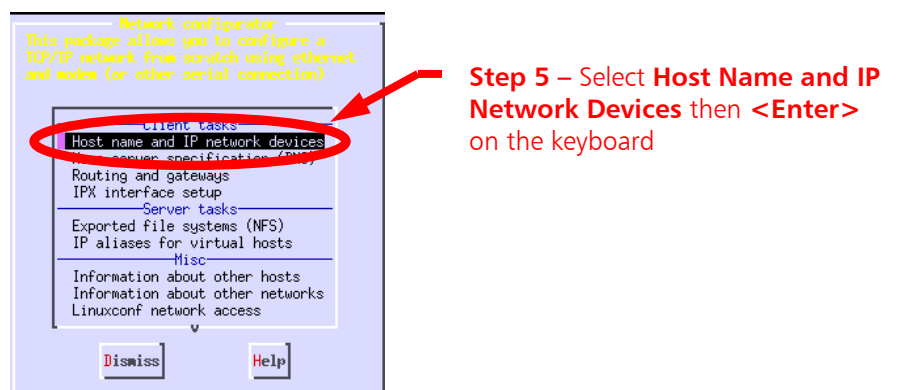
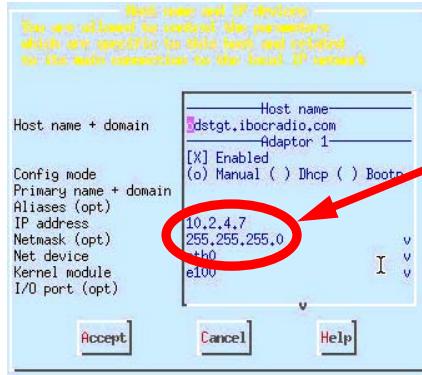


Figure 36 – FSi 10 Networking Menu

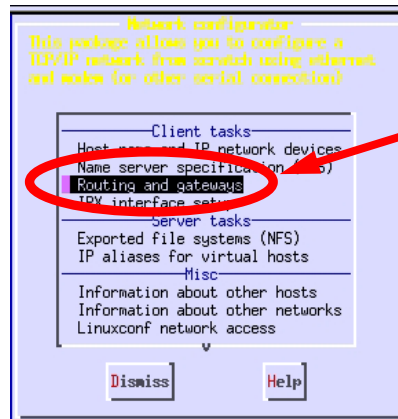




**Step 6** – Use arrows to go to the FSI 10's I.P. Address and Netmask. Change both to the desired values.

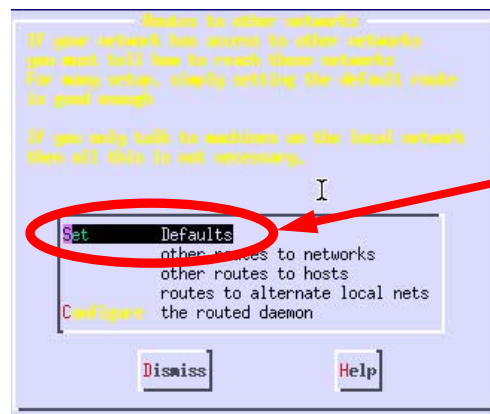
Hit **<TAB>** to accept (Accept will then highlight) then press **<ENTER>** on the keyboard.

Figure 37 – FSi 10 Networking Sub-Menu



**Step 7** – If you are using a Gateway, select **Routing and Gateways** then **<Enter>** on the keyboard

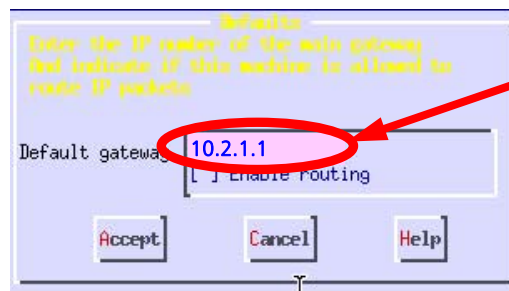
Figure 38 – FSi 10 Client , Server, and Misc Tasks Menu



**Step 8** – Select **Defaults** then **<Enter>** on the keyboard

Figure 39 – FSi 10 Client , Server, and Misc Tasks Menu





**Step 9** – Enter the Gateway Address for your network

**Figure 40 – Gateway Menu**

**Step 10** - Press <TAB>, type **A** to Accept, then press <Enter> on the keyboard.

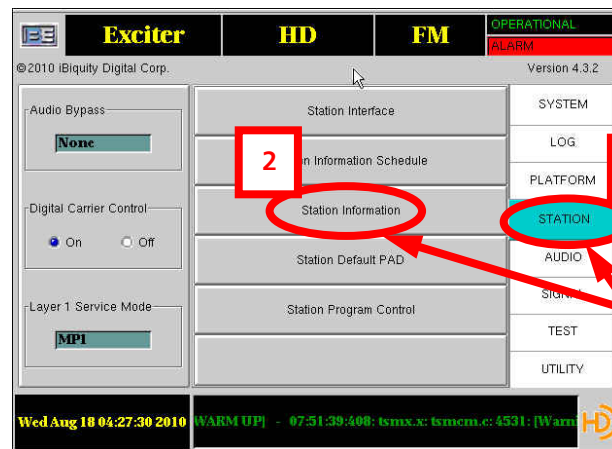
**Step 11** - Press <TAB>, type **D** to Dismiss, then press <Enter> on the keyboard.

**Step 12** - Press <TAB>, type **Q** to Quit, then press <Enter> on the keyboard.

**Step 13** - Press <TAB> twice to highlight **Do It**, type **D**, then press <Enter> on the keyboard.

**Step 14** - The System Command window should now be displayed, press<Close>.

## 6.2. Configure the Station Information



**Step 1** – Select **STATION** then **Station Information**

**Figure 41 – Station Information**

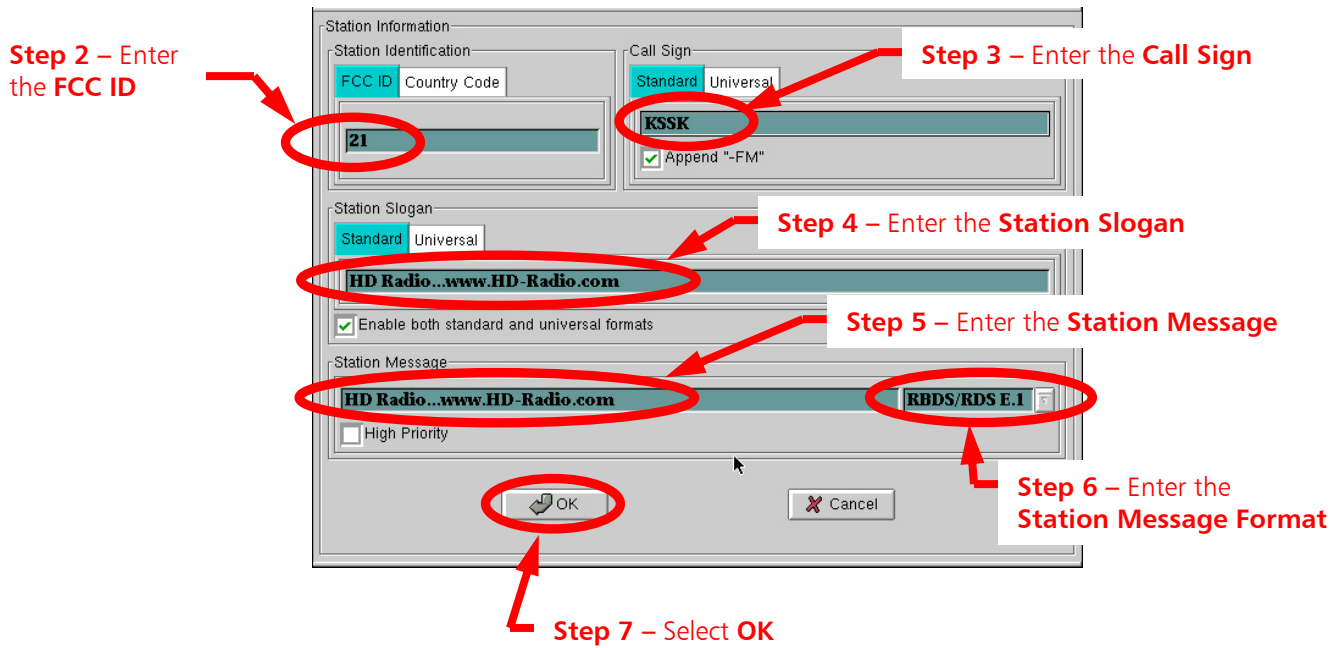


Figure 42 – Station Information Menu

### 6.3. Configure Station Default PAD

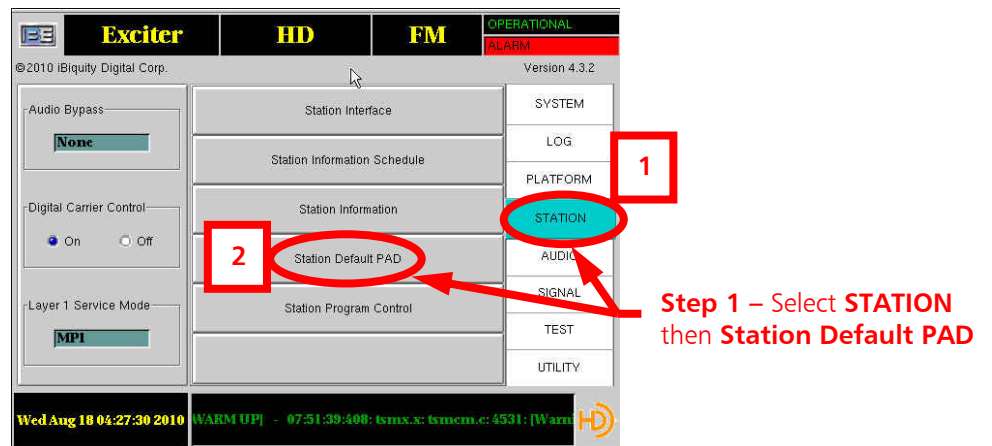


Figure 43 – Station Default PAD

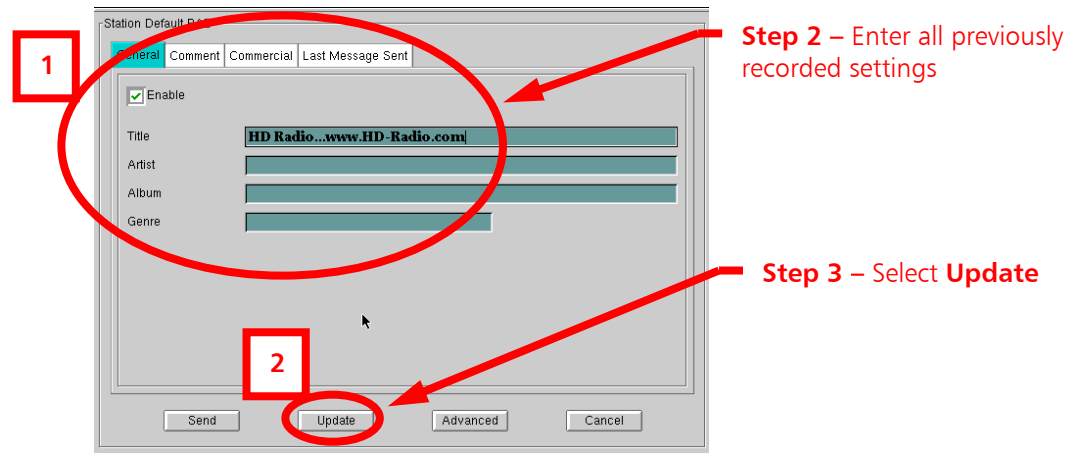


Figure 44 – Station Default PAD

#### 6.4. Configure Station Program Control

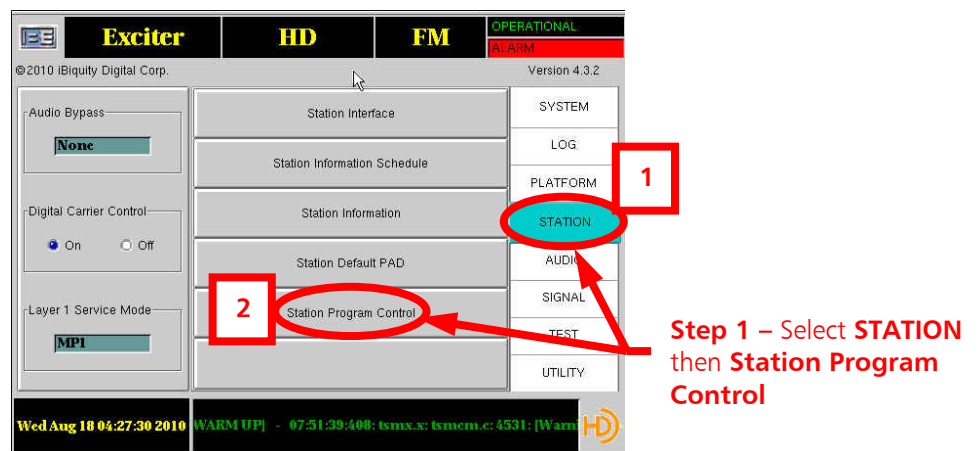


Figure 45 – Station Program Control

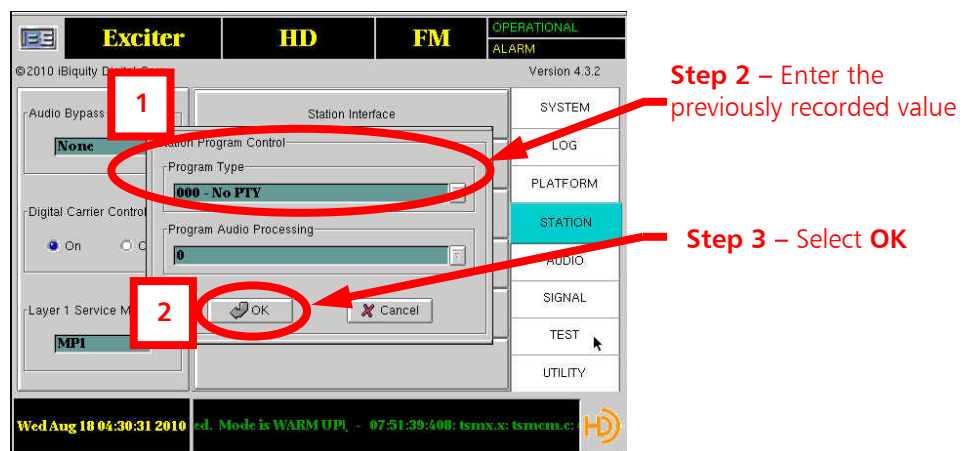
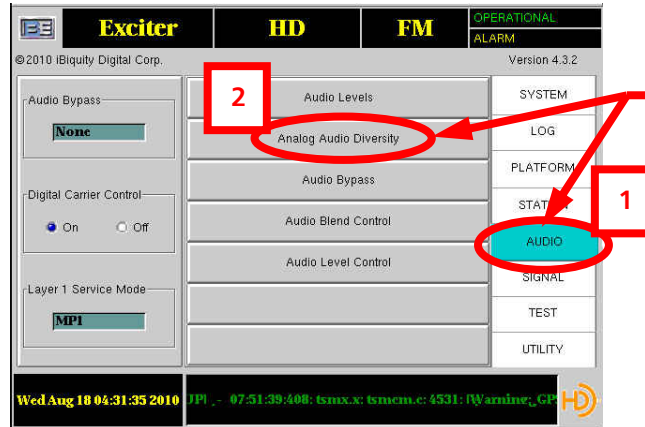


Figure 46 – Station Program Control

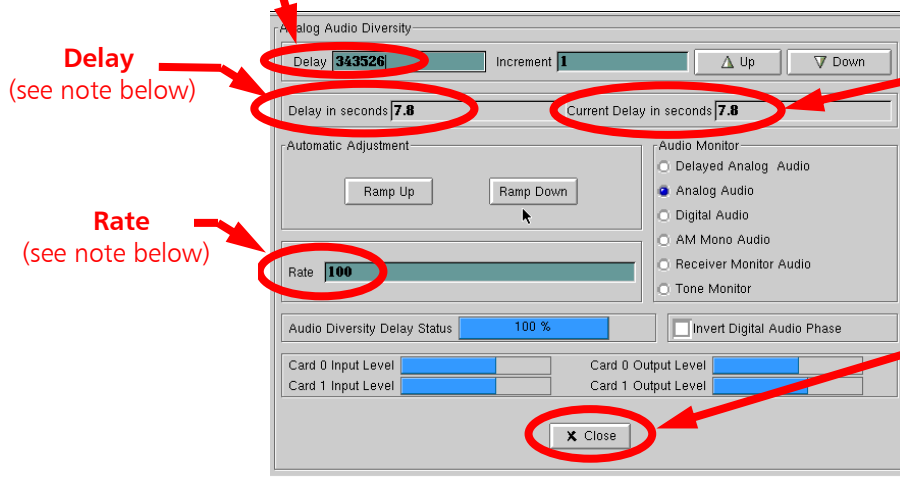
## 6.5. Configure the Analog Audio Diversity Delay Value



**Step 1 – Select AUDIO then Analog Audio Diversity**

**Step 2 -** Enter the previously recorded **"Delay Value"**. Please note that this value may change from software revision to software revision and need to be adjusted for optimum blend performance.

Figure 47 – Analog Audio Diversity



**"Current Delay"** will be **"0"** at startup and ramp to equal the **"Delay"** over the duration of the **"Rate"** (in seconds). (see note below)

**Note:** With the **"Rate"** set to **"100"**, it will take **100** seconds for the **"Current Delay"** and **"Delay"** to sync up after restarting the system. If you do not want to wait **100** seconds, change the **"Rate"** to **"0"** and then select **Close**.

Open the **Analog Audio Diversity Menu** again, ensure that the **"Current Delay"** and **"Delay"** values are equal. Next, change the **"Rate"** back to **"100"**, then select **Close**.

Figure 48 – Analog Audio Diversity

## 6.6. Configure the Audio Blend Control

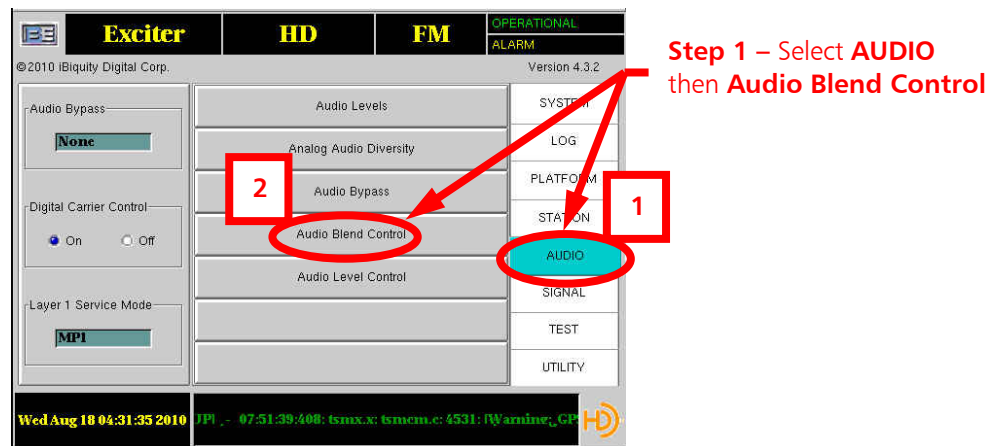


Figure 49 – Audio Blend Control

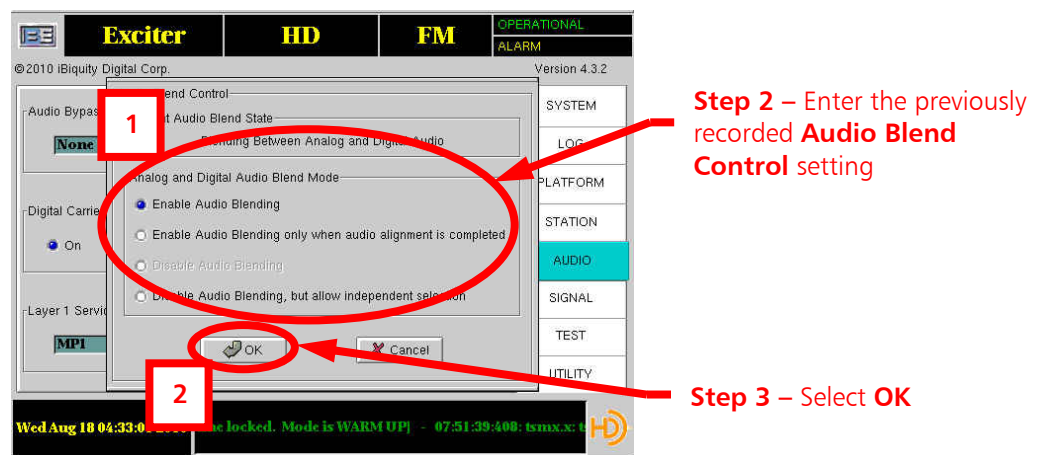


Figure 50 – Audio Blend Control

## 6.7. Configure the Audio Level Control

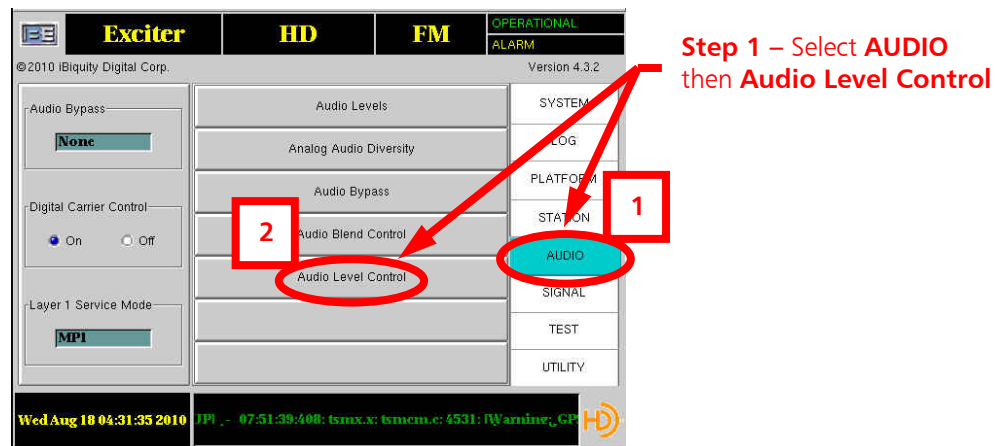


Figure 51 – Audio Level Control

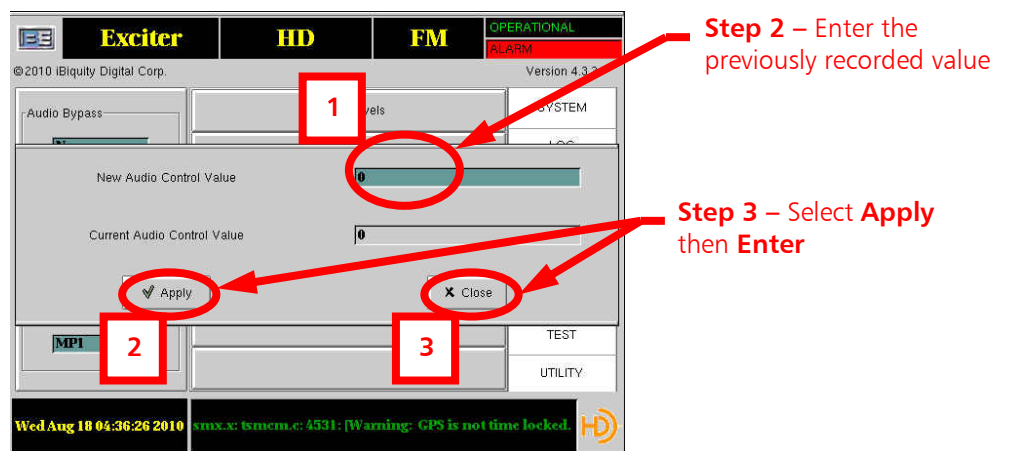


Figure 52 – Audio Level Control

## 6.8. Configure the I/Q Scale Factor

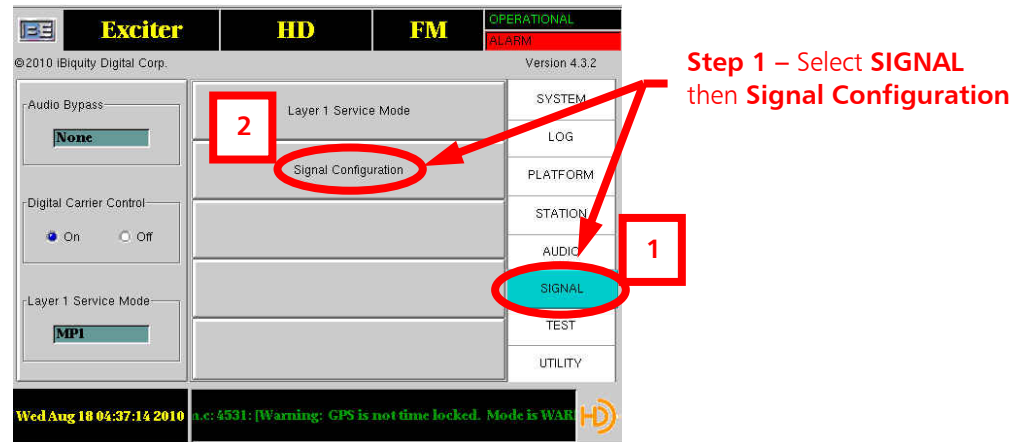


Figure 53 – I/Q Scale Factor

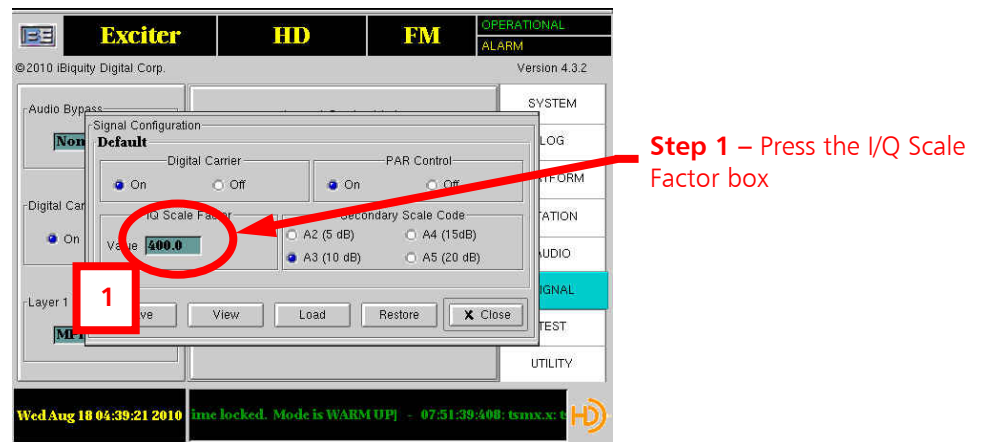


Figure 54 – Signal Configuration

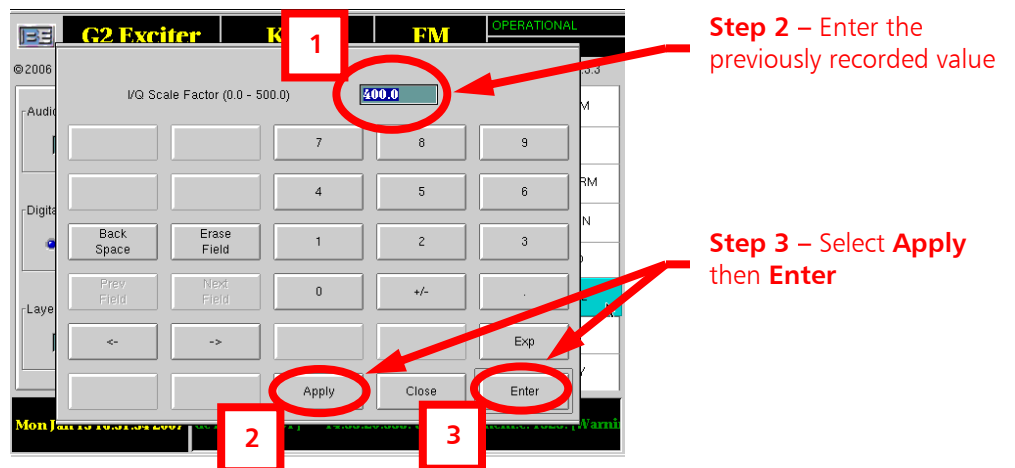


Figure 55 – I/Q Scale Factor

## 6.9. Configure the Secondary Scale Code

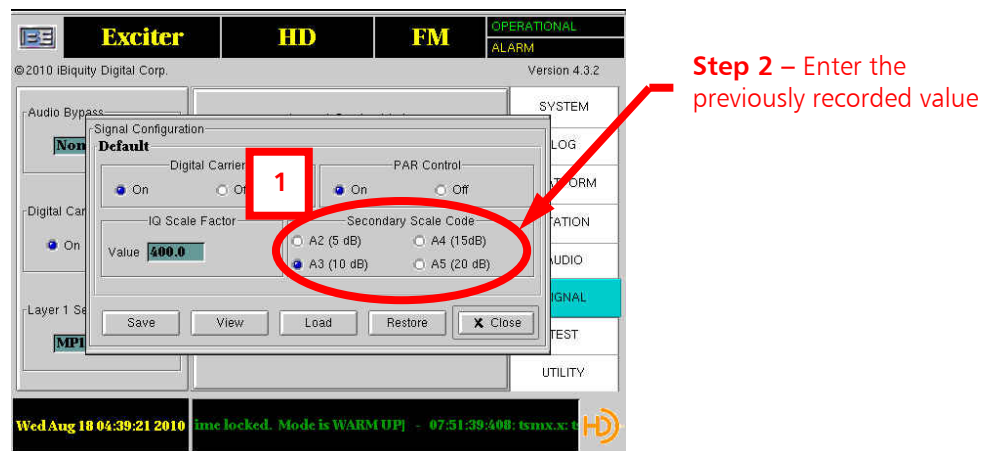


Figure 56 – Secondary Scale Code

## 6.10. Configure the PAR (Peak to Average Ratio) Control Setting

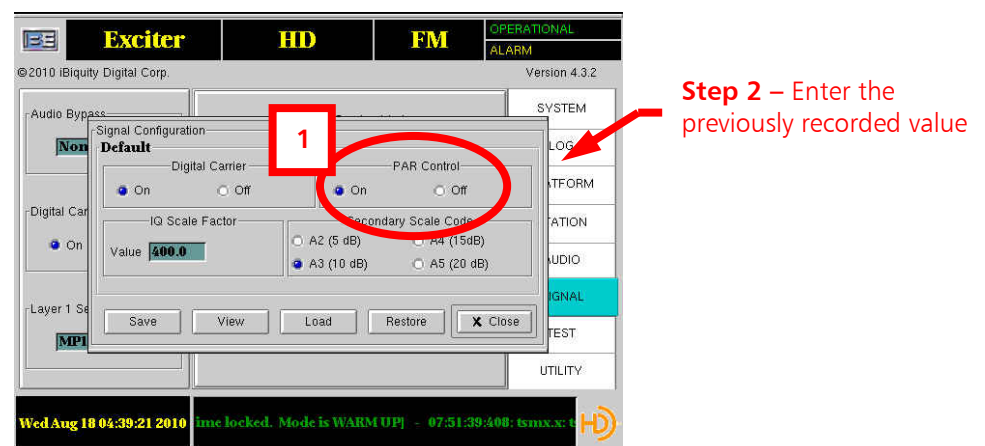


Figure 57 – PAR Control



## 6.11. Set Watchdog to Enabled

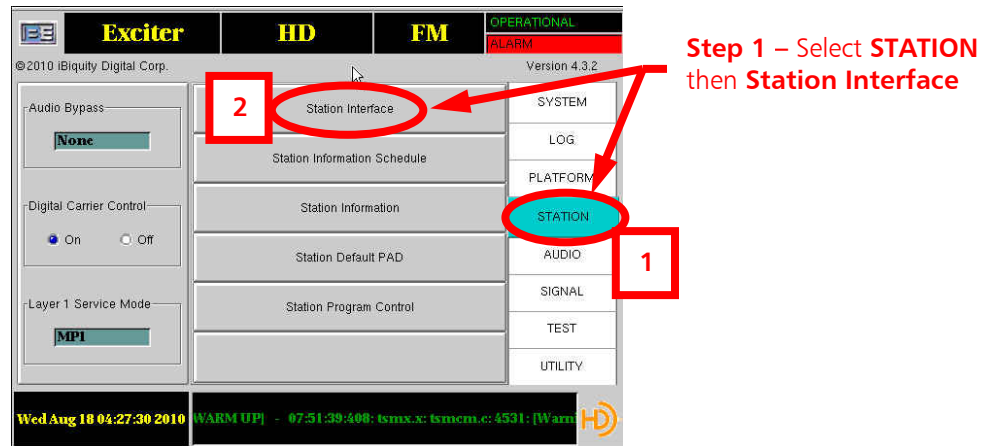


Figure 58 – Station Interface

Ensure that **Watchdog Enable** is selected. When Watchdog is Enabled, the Watchdog timer on the Station Interface Card (SIC) will be enabled. When it is enabled, the SIC will monitor the motherboard. If there is no activity for 1 second the host processor is assumed to be locked up. The Audio Bypass relays will be set to Bypass, the system operational relay will be opened, and the exciter will be re-booted. Enabling the Watchdog circuit may prevent a “DEAD AIR” situation if the motherboard or host processor locks up on the FS.

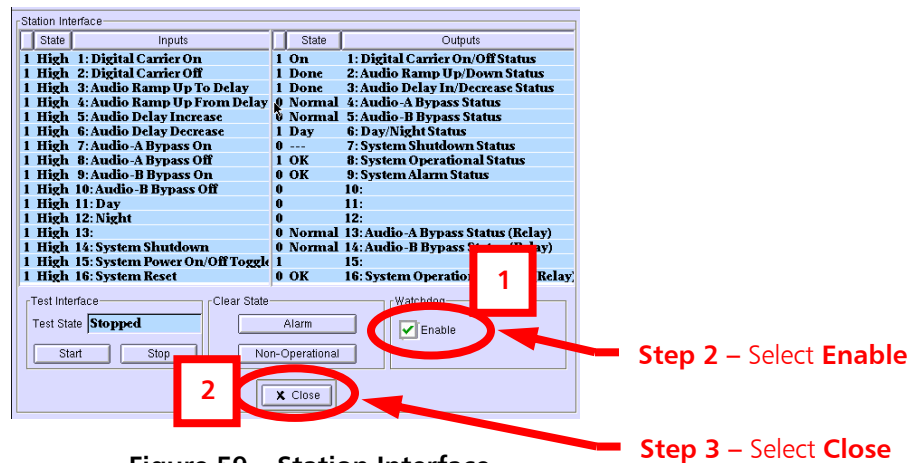


Figure 59 – Station Interface

## 6.12. Sync Local Time to GPS (only if a GPS Antenna is connected!)

“Sync Local Time to GPS” ONLY if a GPS Antenna is connected to the FS1.

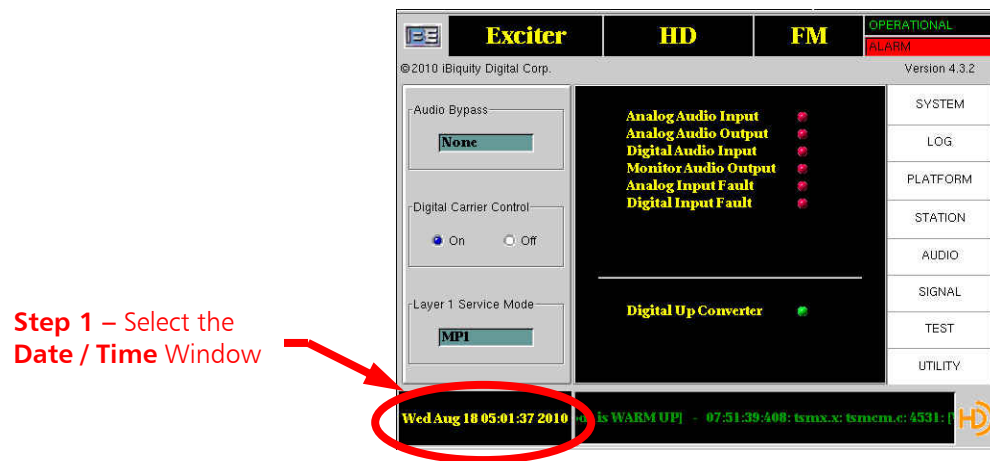


Figure 60 – Date / Time

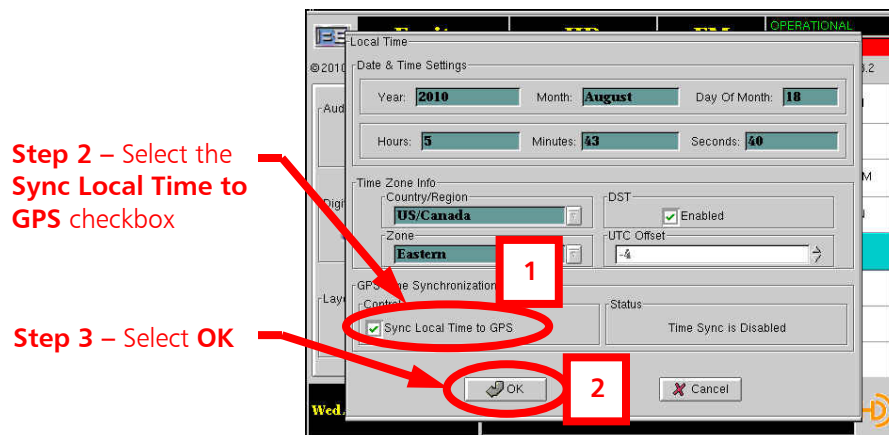


Figure 61 – Sync Local Time to GPS

**Step 4 – Acknowledge restart to expedite GPS synchronization.**

**Step 5 – Cycle the AC power (operate the power switch OFF, then ON) to restart the operating system on the new settings.**

## 7. Reset Synchronization in the IDi 20 Data Importer

After updating the Software in the FSi 10, it is necessary to **Reset Synchronization** in the **IDi 20 Data Importer**.

To synchronize the Importer, login to the IDi 20 Importer Web Admin page and press SET.

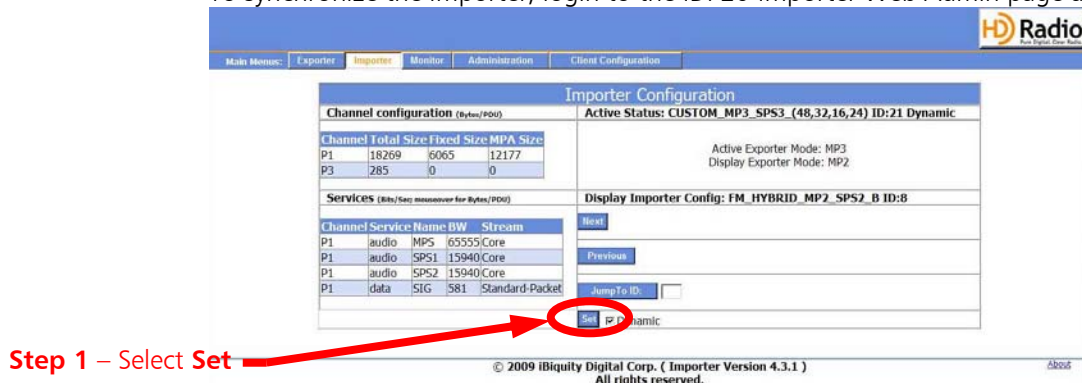


Figure 62 – IDi 20 Data Importer Web Admin page

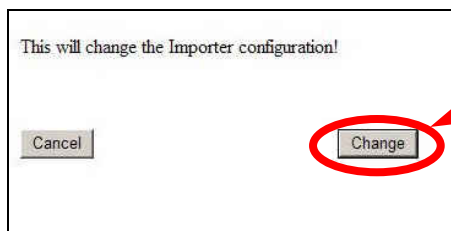
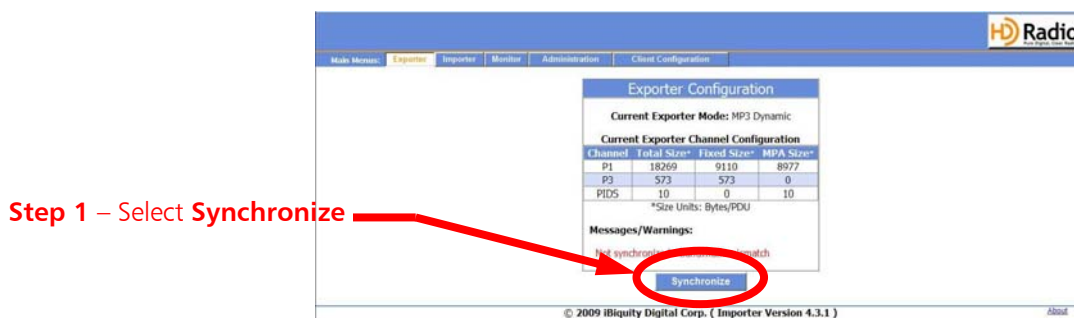


Figure 63 – IDi 20 acknowledgment



Double-check the correct configuration has been selected and press Synchronize.

**NOTE: This procedure will restart the FSi!**

Figure 64 – IDi 20 Synchronize

## 8. Disable Audio Bypass

After all FSi settings have been configured, re-connect the Status Output Cable. This will take the system out of audio bypass and put HD back on the air.

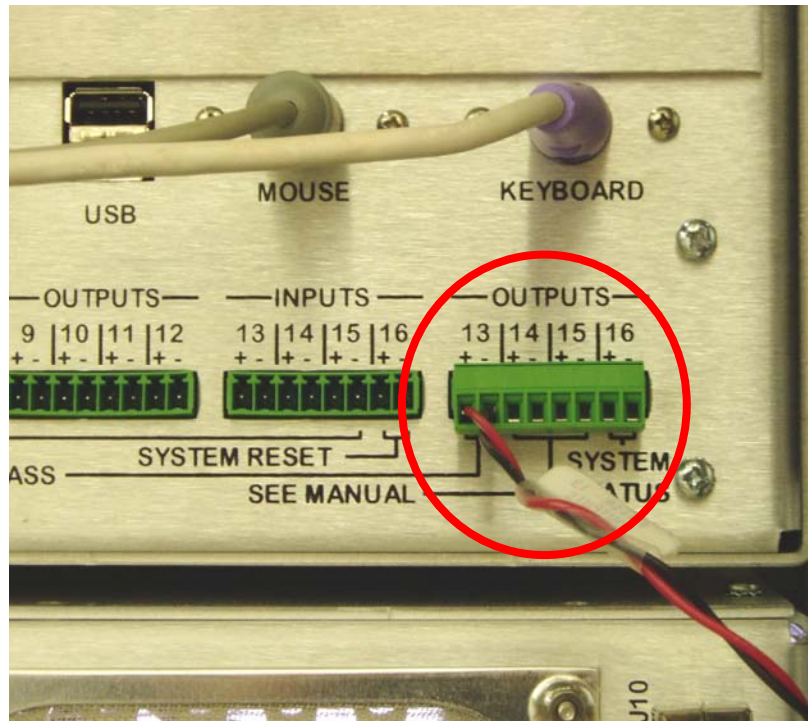


Figure – Status Output Cable

## 9. The System Should Now be Operational

## 10. Additional Documentation

Reference B.E. document **FSi 10 HD Radio Signal Generator Manual (597-0542-002)** for additional information regarding system Setup and Operation. This document was included in the shipment from B.E. and may also be found at [www.bdcaster.com](http://www.bdcaster.com) under the "Support" tab, then "all Product Manuals."

## 11. RF Technical Services Contact Information

RF Technical Services -

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