



S and FMi Series Transmitter

U7 & U107 Firmware v1.09 Upgrade Application Guide

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S and FMi Series Transmitter

U7 & U107 Firmware v1.09 Upgrade Application Guide

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1 Prepare to Upgrade U7 & U107

1.1 Overview

This document provides instructions for upgrading U7 and U107 on the Module Control Boards (919-0515) in a B.E. FM 10S / FMi 703 or FM 20S / FMi 1405 Transmitter.

These instructions include two options for upgrading U7 and U107. The first option (which is the preferred method) is to upload software to the existing U7 and U107 chips. This requires a Programming Kit (979-0515-107) which includes a Software CD. A Null Modem Cable, a Laptop PC with Windows HyperTerminal and a serial port are also required.

The second option is to replace U7 and U107 with factory programmed chips. If this option is chosen extreme care MUST be taken not to damage the sockets and/or the PLCC replacement chips.

Note: Smartcore Board Software v1.0.50 or newer for the FM10S / FMi703 or v2.1.20 or newer for the FM20S / FMi1405 MUST be installed prior to and in conjunction with this firmware upgrade. Please refer to the "S and FMi Series Transmitter Smartcore Board Software Upgrade Application Guide, 597-1012-006" before continuing.

1.2 Tools / Items Needed for U7 & U107 Upgrade (if uploading software)

- ☐ U7 & U107 Programming Kit (979-0515-107 supplied by B.E.)
- ☐ Laptop PC with Windows HyperTerminal, CD Drive, and Serial Port
- ☐ Null Modem Cable

1.3 Tools / Items Needed for U7 & U107 Upgrade (if replacing PLCC chips)

- ☐ PLCC Extraction Tool
- ☐ U7 & U107 Kit (979-0505, supplied by B.E. - Qty 1 for FM 10S/FMi 703; Qty 2 for FM 20S/FMi 1405)

1.4 ESD Awareness



During the upgrade process be sure to exercise ESD precautions.

1.5 Estimated Time for U7 & U107 Upgrade

Providing that you have the tools and items listed above, it will take approximately 10 -15 minutes to complete U7 and U107 upgrade.



2 Upgrade U7 & U107 (uploading software)

2.1 Ensure that the Transmitter's RF Output is OFF

Press the **OFF** button to turn the transmitter's **RF Output** to **OFF** (mute).

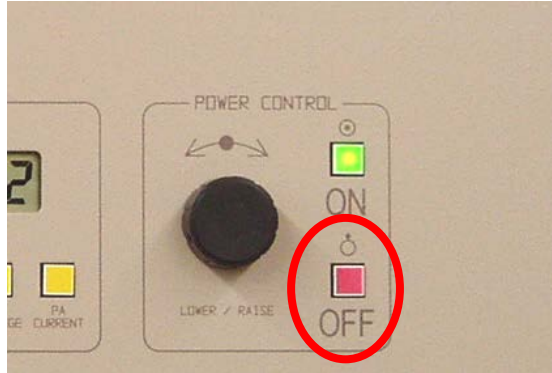


Figure 2-1: Turn Transmitter's RF Output to OFF

2.2 Turn the Transmitter's AC Breaker to OFF



Turn the AC
Breaker to the
OFF position

Figure 2-2: Turn AC Breaker to OFF

2.3 Open Transmitter Controller Access Door

Using a No. 2 Phillips Screw Driver remove the (6) screws that secure the transmitter's controller access door.



Figure 2-3: Open Controller Door

2.4 Disconnect Ribbon Cables From Supervisor Board

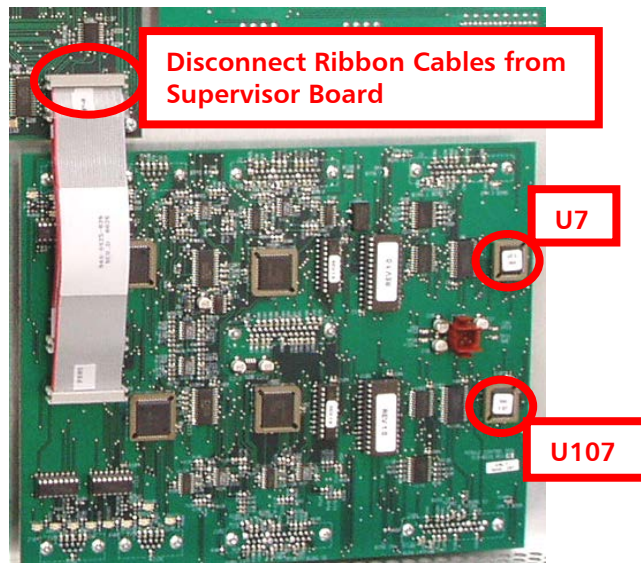


Figure 2-4: Disconnect Ribbon Cables from Supervisor Board

2.5 Install U7 and U107 Programming Board (919-0515-107)

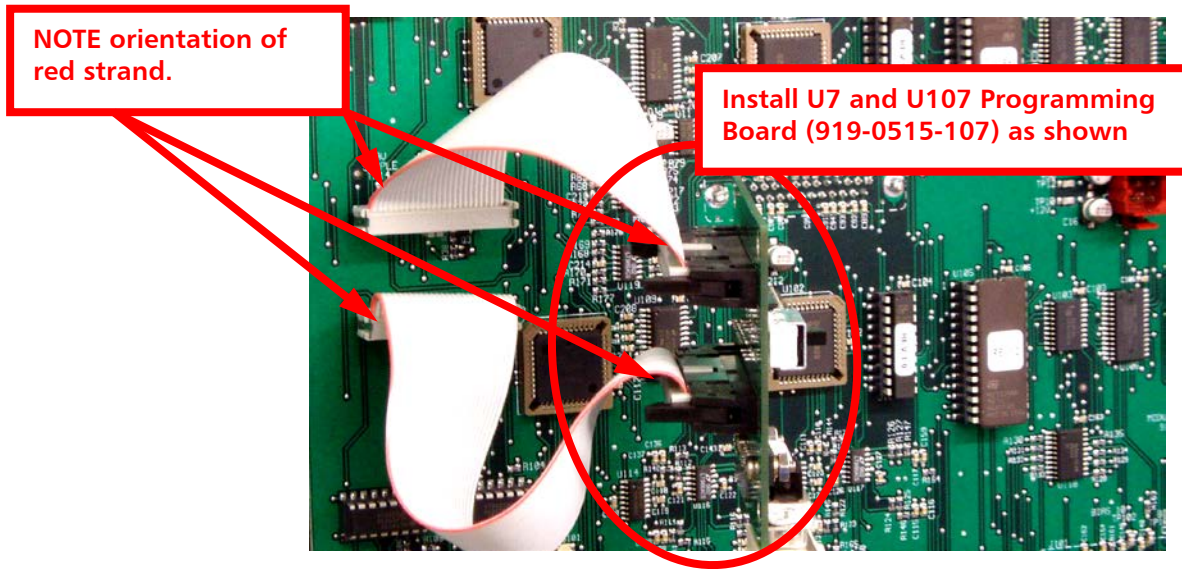


Figure 2-5: Disconnect Ribbon Cables from Supervisor Board

WARNING: U1 ON THE PROGRAMMING BOARD WILL BE DAMAGED IF CABLES ARE NOT PROPERLY CONNECTED.

Ensure the key pin on the cable is in the key slot on the programming board.

2.6 Connect Null Modem Cable to Programming Board

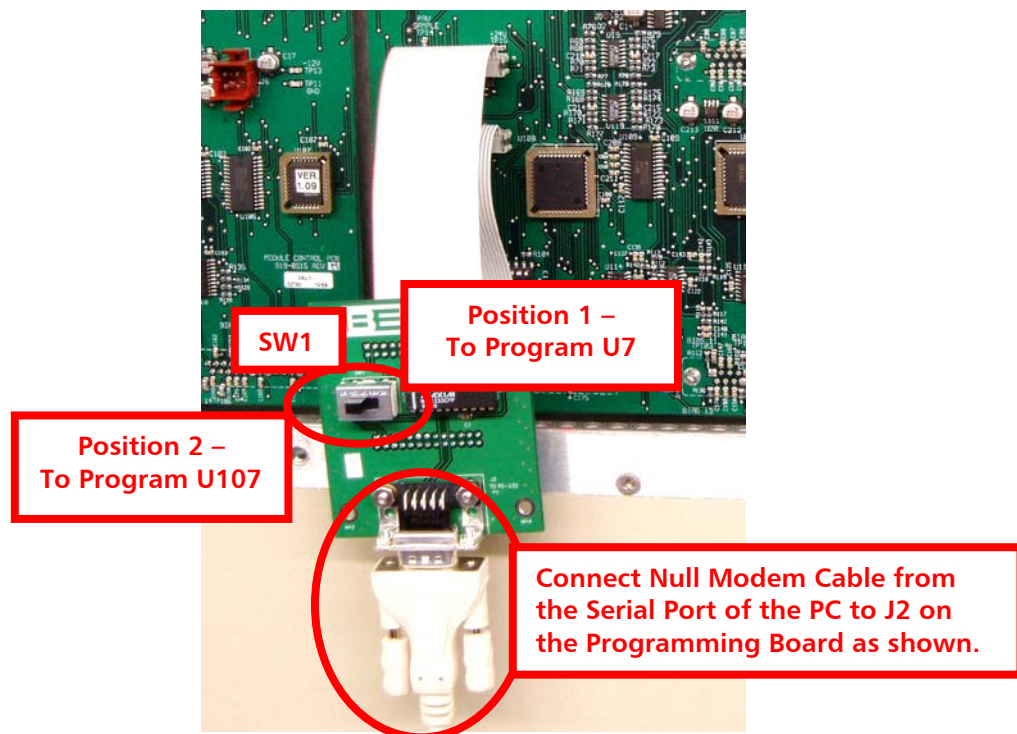


Figure 2-6 : Connect Null Modem Cable

2.7 Establish Communication and Upgrade

Step 1 – Set SW1 on the Programming Board to Position 1 to program U7.

Step 2 – Launch Windows HyperTerminal by going to Start -> All Programs -> Accessories -> Communications -> HyperTerminal. Name the connection and then select OK.

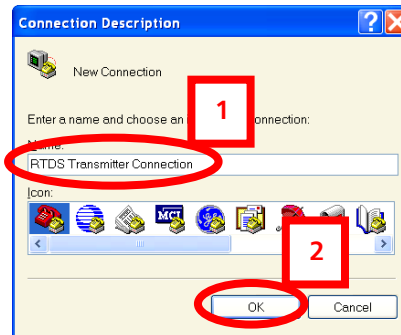


Figure 2-7:HyperTerminal Connection Description Menu

Step 3 – The default telnet question box may appear. Select **Yes** if you want HyperTerminal to be your default telnet program. Select **No** if you do not want it to be.

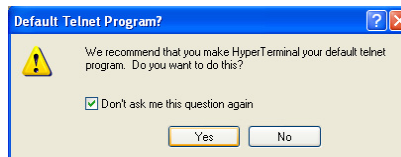


Figure 2-8: Default Telnet Program Menu

Step 4 – Select the appropriate connection port (**COM1** is the most common) from the pull down, then select **OK**.

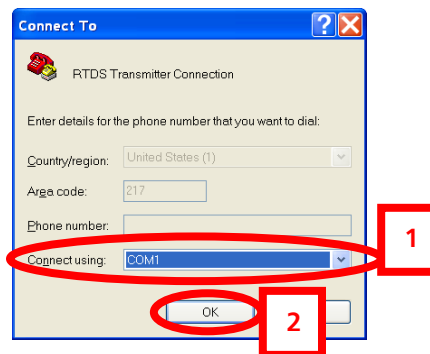


Figure 2-9:HyperTerminal Connect To Menu

Step 5 – Configure the **Port Settings** as shown below, select **Apply** then **OK**.

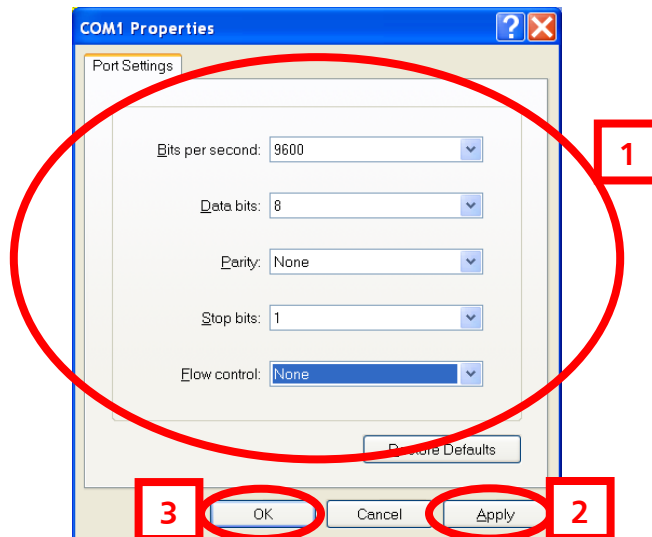


Figure 2-10: Port Settings Menu

Step 6 – Select **Auto Detect** Emulation, the OK

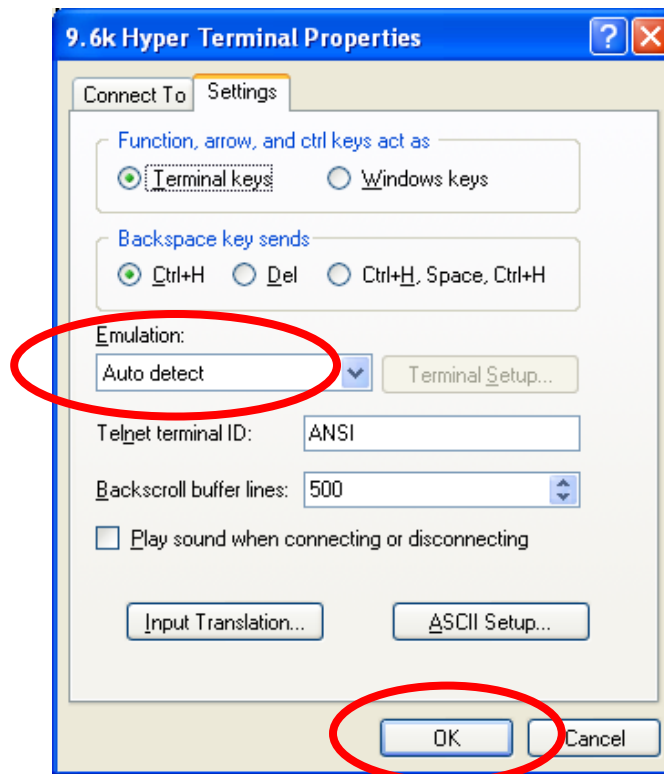


Figure 2-11: Auto Detect Emulation

Step 7 – Turn the Transmitter's AC Breaker to ON.



Figure 2-12: Turn AC Breaker to ON

Step 8 – As the Transmitter comes up, the HyperTerminal screen should fill in as shown below.

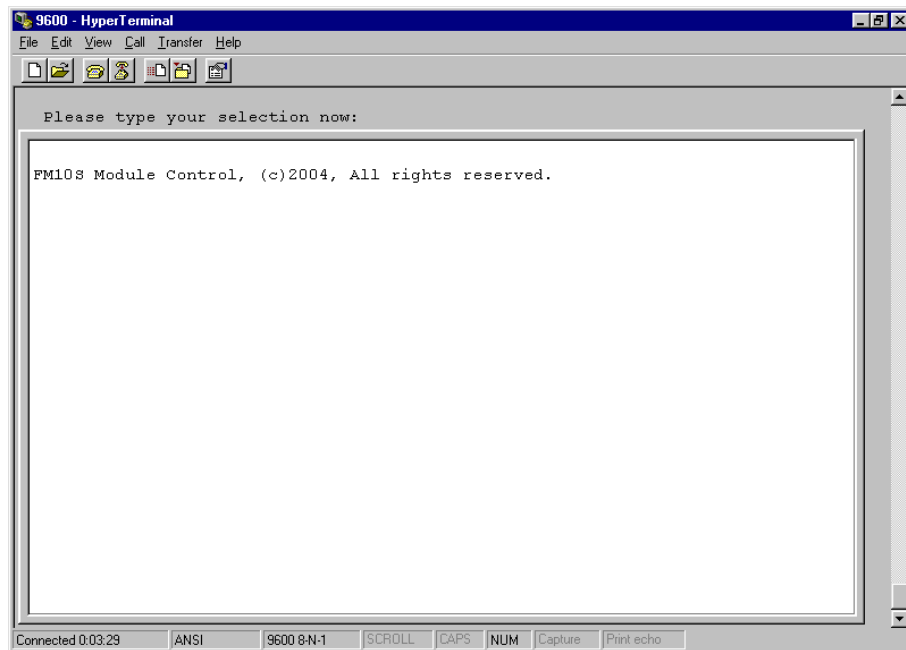


Figure 2-13: Initial HyperTerminal Screen

Step 9 – Type “I” on the keyboard to determine the revision level of U7 or U107 (depending upon which position the switch is in on the programming board).

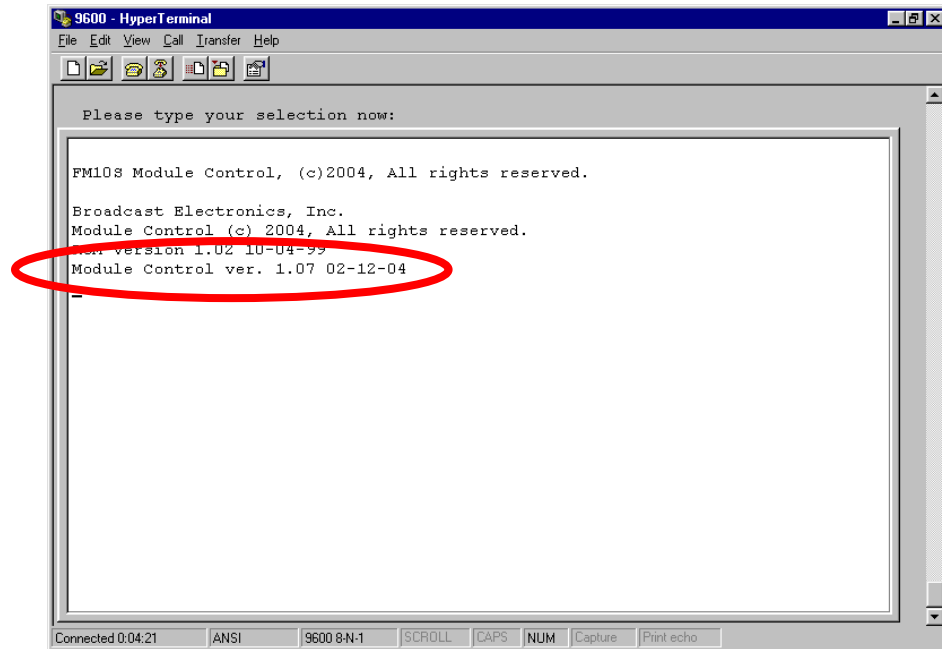


Figure 2-14: Module Control Version

Step 10 – Next, press “P” key twice (sometimes it has to be pressed more than twice because the program is in a loop and when “P” is pressed and how fast it is pressed twice makes a difference). Next, “TErase com1” will appear on the screen with scrolling characters. While this is in process proceed to **Step 10**.

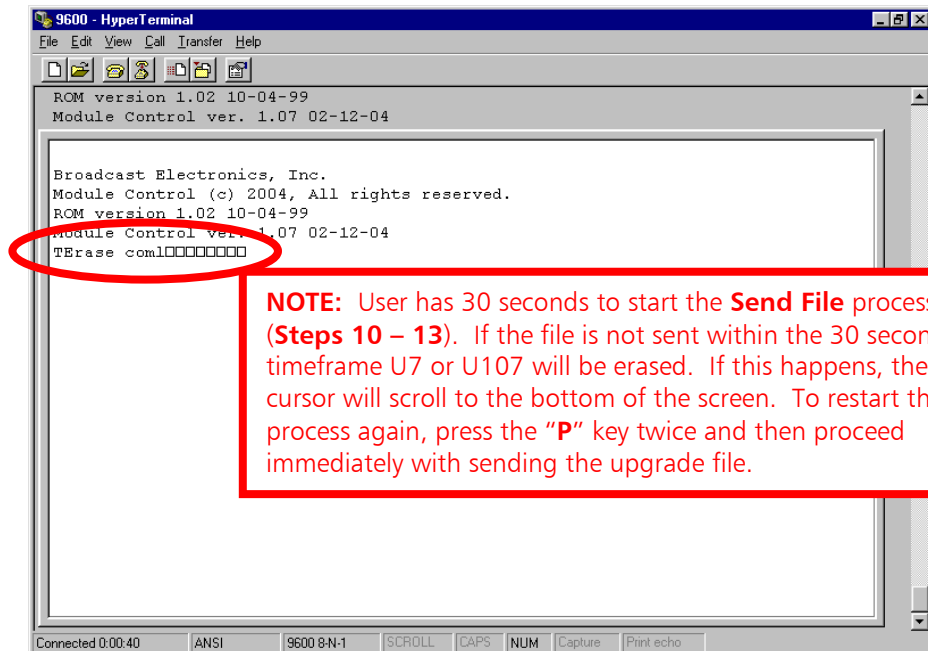


Figure 2-15: Module Control Version

Step 11 – Select **Transfer** -> **Send File**

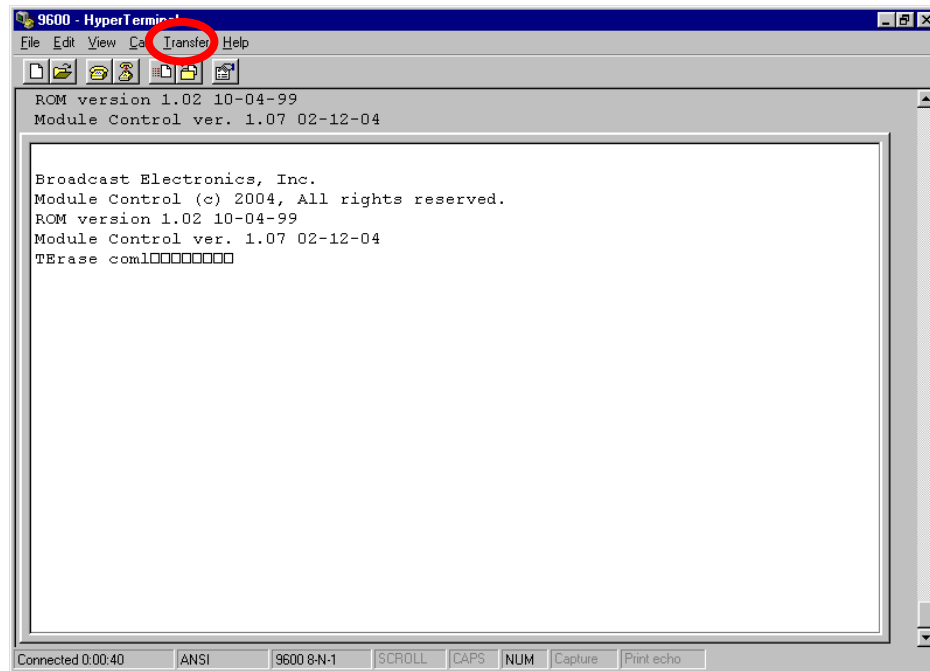


Figure 2-16: Module Control Version

Step 12 – Select **"Browse"** and navigate to the upgrade **"Mcf.bin"** file.

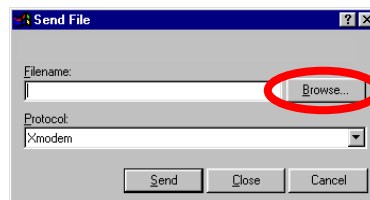


Figure 2-17: Send File Menu

Step 13 – Select **"Mcf.bin"**, then select **"Open"**.

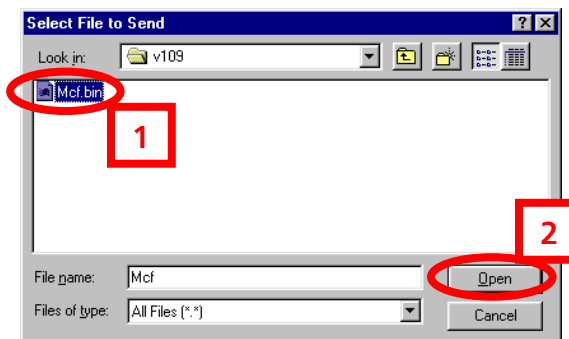


Figure 2-18: Select File Menu



Step 14 – Select “Send”.

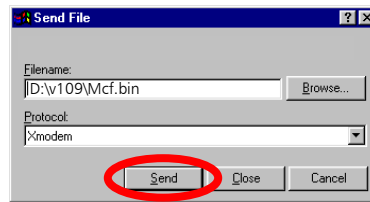


Figure 2-19: Send File Menu

Step 15 – The file should start to download (the download takes ≈ 80 seconds). While downloading to U7 DS9 will illuminate (if downloading to U107 DS101 will illuminate).

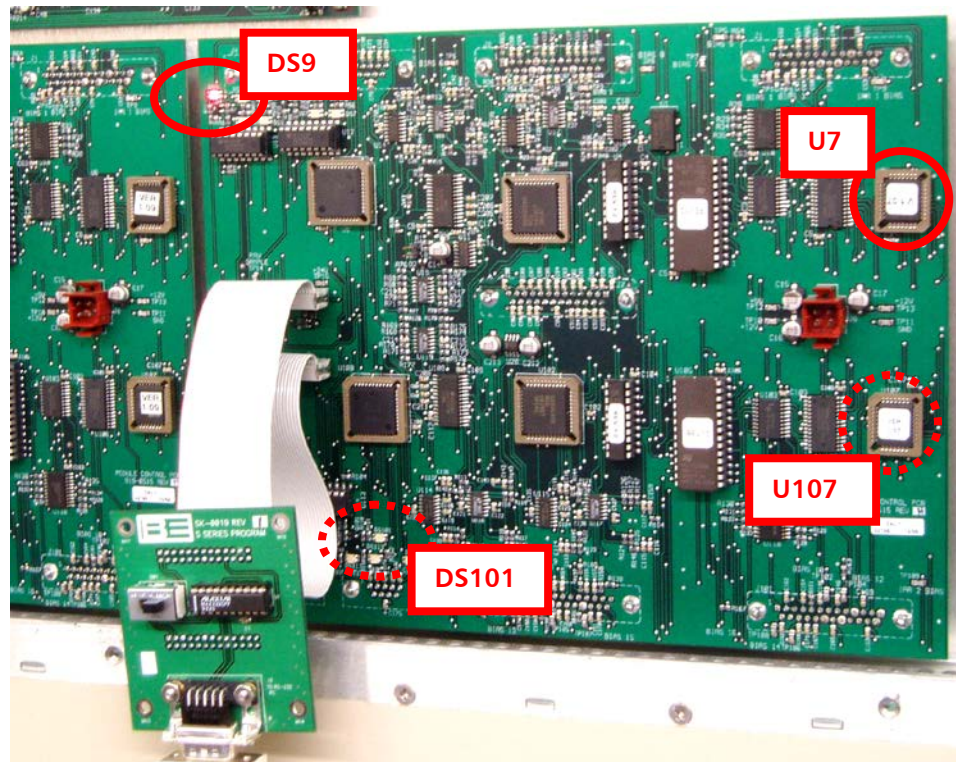


Figure 2-20: DS9 and DS101

Step 16 – Type “I” on the keyboard to verify that U7 or U107 was upgraded.

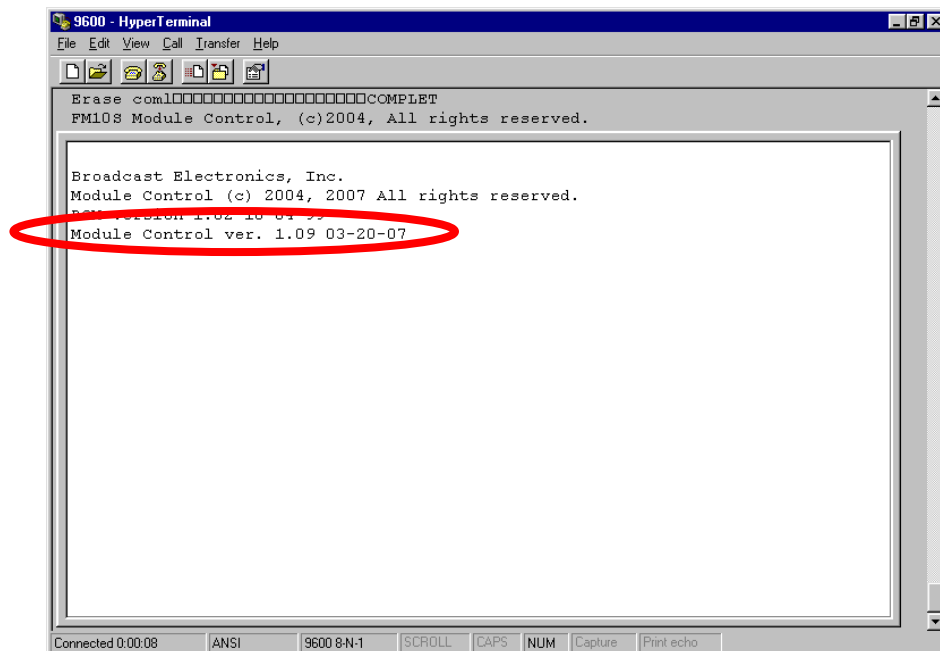


Figure 2-21: Module Control Version

Step 17 – Move **SW1** on the **Programming Board** to **Position 2** to program **U107**.

Step 18 – Repeat **Steps 8 – 16**.

Step 19 – If you are upgrading an FM 20S / FMi 1405 Transmitter, you **MUST** upgrade U7 and U107 on **BOTH** of the Module Control Boards. If this is the case, repeat **Steps 1 – 18** for the remaining Module Control Board.

2.8 Disconnect Programming Board

Step 1 – Turn the Transmitter's AC Power Breaker to OFF.



Figure 2-22: Turn AC Breaker to OFF

Step 2 – Disconnect the Ribbon Cables from the Programming Board.

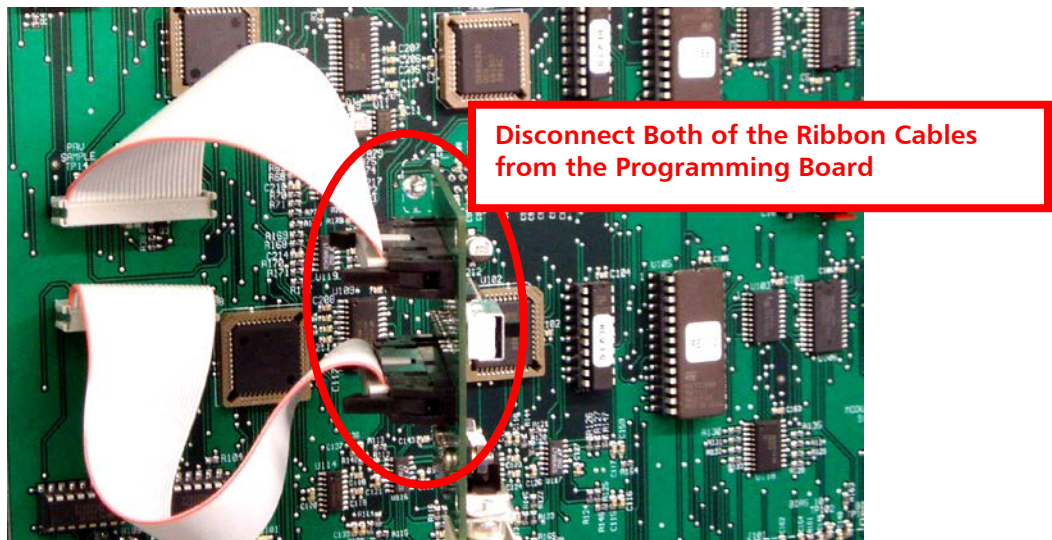


Figure 2-23: Disconnect Ribbon Cables from the Programming Board

Step 3 – Connect both the Ribbon Cables back to Supervisor Board.

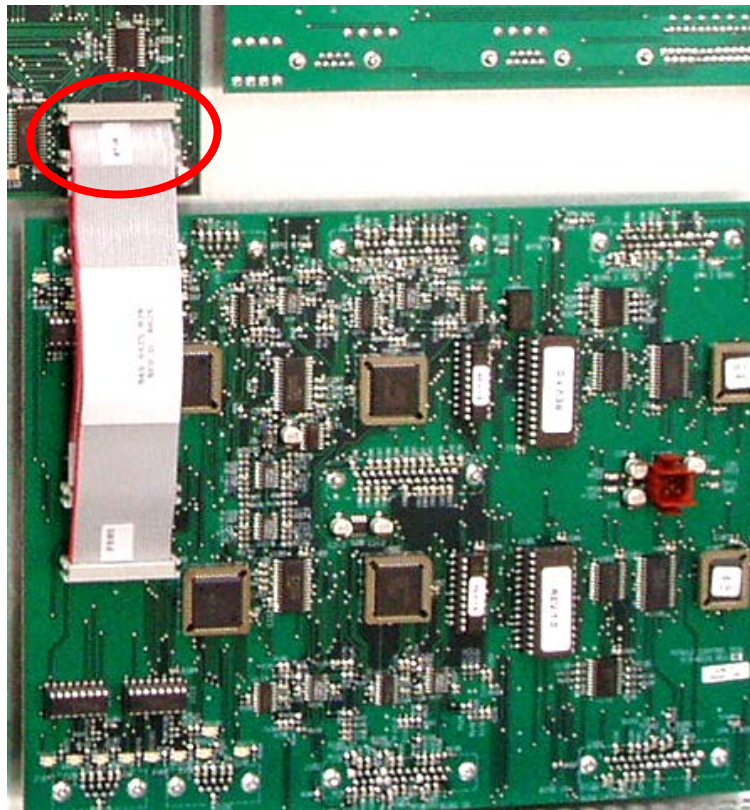


Figure 2-24: Connect Ribbon Cables back to the Supervisor Board

Step 4 – Turn the Transmitter's AC Power Breaker to ON.



Figure 2-25: Turn AC Breaker to ON

2.9 Smartcore Board Software Continuation

If performing this firmware upgrade in conjunction with upgrading the Smartcore Board Software to v1.0.50 or newer for the FM 10S / FMi 703 or v2.1.20 or newer for the FM 20S / FMi 1405, return to the Smartcore Board Software Upgrade Application guide (part number 597-1012-006). If not, proceed to Section 2.10 of this document.

2.10 Turn the Transmitter's RF Output ON

Press the **ON** button to turn the transmitter's **RF Output** to **ON** (un-mute).



Figure 2-26: Turn Transmitter's RF Output to ON

2.11 Verify Transmitter for Proper Operation

Verify that the transmitter is operating properly.

3 Upgrade U7 & U107 (replacing PLCC chips)

3.1 Ensure that the Transmitter's RF Output is OFF

Press the **OFF** button to turn the transmitter's **RF Output** to **OFF** (mute).



Figure 3-1: Turn Transmitter's RF Output to OFF

3.2 Ensure that the Transmitter's AC Breaker is OFF



Turn the AC
Breaker to the
OFF position

Figure 3-2: Turn AC Breaker to OFF

3.3 Remove Screws to Gain Access to Module Control Boards

Using a No. 2 Phillips Screw Driver remove the (6) screws that secure the transmitter's controller access door.



Figure 3-3: Open Controller Door

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3.4 Install U7 and U107

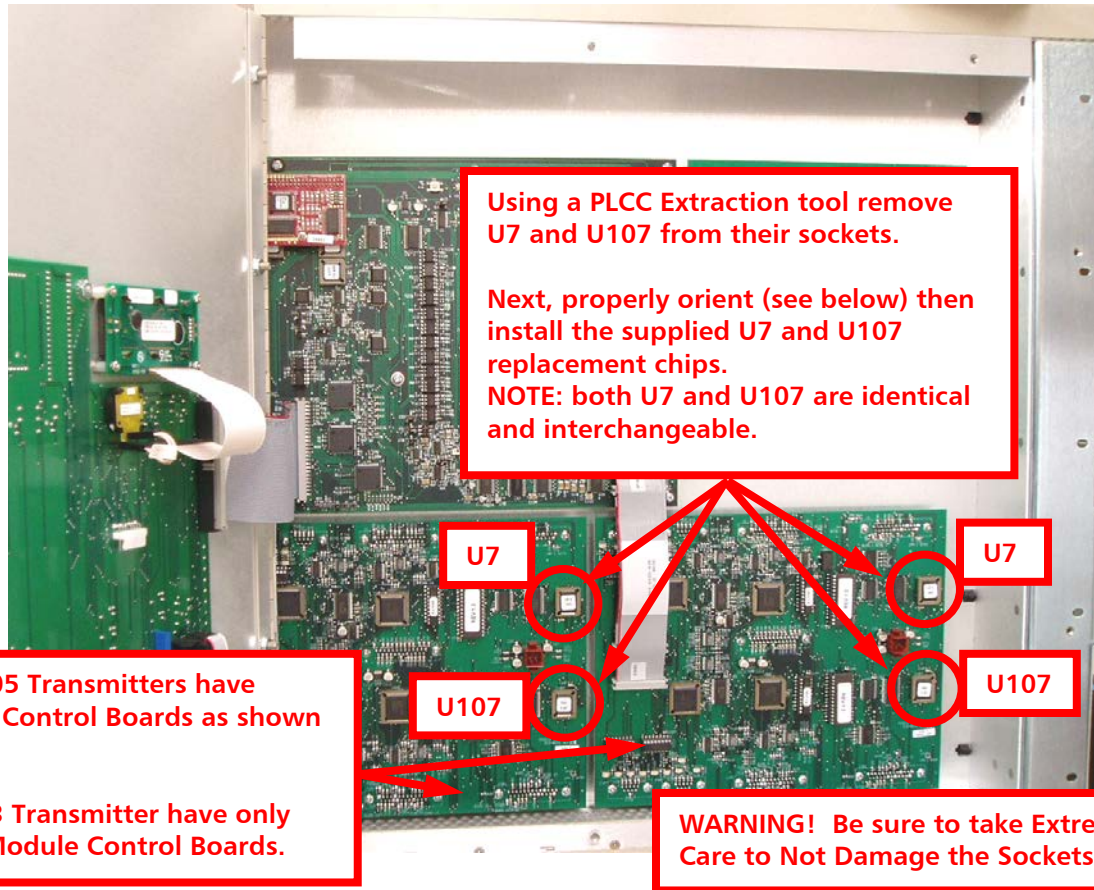


Figure 3-4: Control Board U7 & U107 Replacement

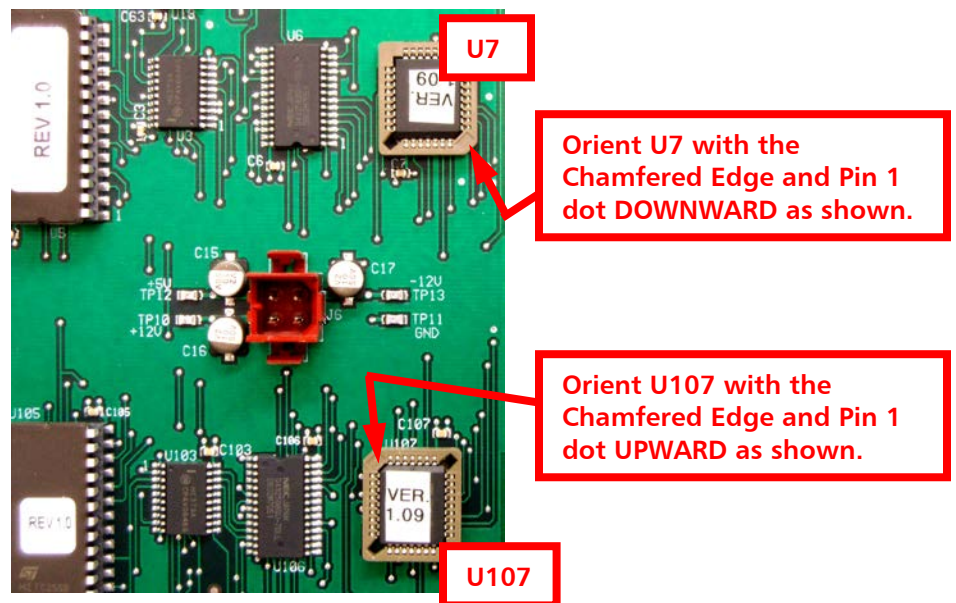


Figure 3-5: Module Control Board U7 & U107 Replacement

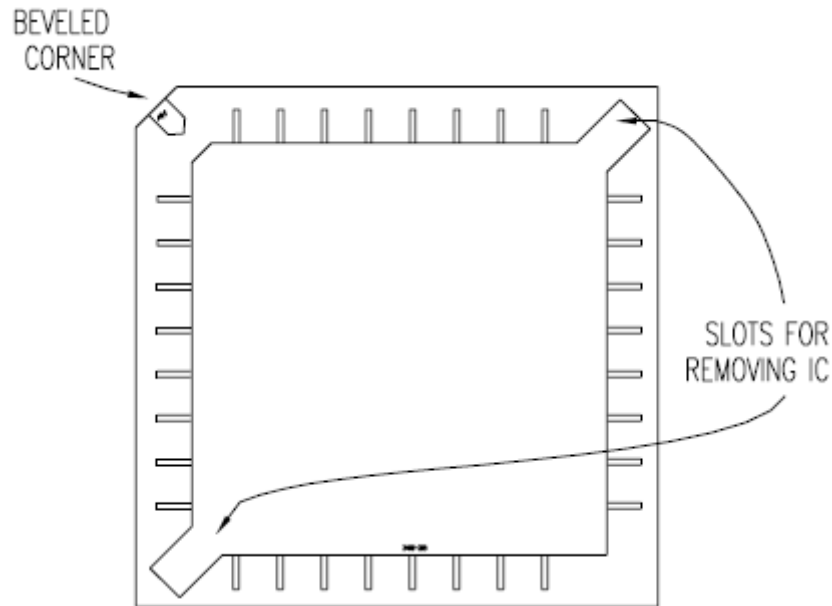


Figure 3-6: Socket detail showing chamfered corner

Ensure the chamfered beveled corner of the IC matches the chamfered beveled corner of the socket.

3.5 Smartcore Board Software Continuation

If performing this firmware upgrade in conjunction with upgrading the Smartcore Board Software to v1.0.50 or newer for the FM 10S / FMi 703 or v2.1.20 or newer for the FM 20S / FMi 1405, return to the Smartcore Board Software Upgrade Application guide (part number 597-1012-006). If not, proceed to Section 3.6 of this document.

3.6 Ensure that the Transmitter's AC Breaker is ON



Figure 3-7: Turn AC Breaker to ON

3.7 Turn the Transmitter's RF Output ON

Press the **ON** button to turn the transmitter's **RF Output** to **ON** (un-mute).



Figure 3-8: Turn Transmitter's RF Output to ON

3.8 Verify Transmitter for Proper Operation

Verify that the transmitter is operating properly.

4 RF Technical Service Contact Information

RF Technical Service -

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E-Mail: rfservice@bdcast.com

Fax: (217) 224-6258

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