

UPDATING FIRMWARE IN PRE VERSION 30 200e SYSTEMS

As you may have guessed, version 30 firmware represents a major improvement over earlier versions. But to implement it, we have to make some major changes. Normally transparent to the user, each module contains two pieces of software. One piece is a very small program called a code loader, which is used to load the main program, which gives a module all its characteristics. To effect the necessary changes, we must replace the code loaders. These recently available code loaders can load much larger programs, and they cannot be erased, either by intent, or accidentally. These are important improvements, and will increase the reliability of the system immensely, as well as paving the way for new features and substantially larger programs.

There are two caveats to the changes. One is the necessity of changing the microcomputer in the preset manager (either a 206e or a 225e). This requires that you return the preset manager to the factory, where we will install a new microcomputer. This computer was unavailable when these modules were designed, but is necessary to keep the system moving forward. Preset Managers containing the new computers can be identified by the startup message "Primo Version".

The other caveat is the fact that your old presets will not function with the new firmware. Hopefully, you noted the old patches, and won't have too great a difficulty recreating them.

These changes are one time only; never again will you need to make such a fundamental change. NOTE: Once you've updated to the new code, you cannot return to the old - the new code loaders are permanently locked in your modules.

We have expended a great deal of effort to make the version 30 upgrade process as safe and straightforward as possible. Conceptually, there are only three stages to the process for each module:

- 1) install a utility program that can replace a module's code loader
- 2) use the utility program to install a new code loader
- 3) use the new code loader to install new version 30 firmware.

It is unlikely but possible that you will encounter a problem with any one of these steps. As described in the instructions below, you should see the red LED on the USB firmware card blink quickly for a few seconds as a file is read from the firmware card into the 200e module's internal memory. If you have a 292e, the blue LED on its front panel will also remain illuminated during the time the file is being read. If the file doesn't appear to be loading as expected, the best course of action is to remove the module from the system immediately. You can then continue to upgrade the system and contact BEMI for further troubleshooting instructions after you have attempted the upgrade for all the modules in your system.

It's very important that you do not proceed to the next stage of the upgrade for a module unless the previous stage was successful. It's also important that you do not

attempt to continue upgrading other modules in the system with a partially upgraded module still installed.

Before you begin the upgrade process, it is vital that you verify the presence of working code loaders in all of the modules in your system. *A module must have a working code loader in order to perform the v30 upgrade.* If you have a 292e, the blue LED on the front panel can be used. First, make sure no card is in the system's memory receptacle. Power on the system with Remote Enable (or alternate) held down for the module in question. If the blue LED on the 292 blinks (296e, 251e, 257e, 267e) or remains illuminated (all other modules) this indicates the presence of a working code loader. If there is no LED activity at power on, contact BEMI. NOTE: This procedure will cause the module in question to appear to "hang". Do not expect normal operation until the next power cycle.

So now lets get down to the task at hand. You'll need a USB Firmware card and a Macintosh computer running OS 10.5 or higher.

Step 1) Download the Buchla Firmware Utility from the BEMI website. This save the USB Firmware Card programming application - packaged as a zip archive - to your computer. Double-click the zip archive to uncompress the application and then move the application to the Applications folder (or other preferred location).

Step 2) With the provided USB cable, plug the USB card into your computer, and right-click on the link in the Code Loader Loader column that corresponds to your module to save the hex file to your Mac. From the Finder, double-click the hex file. The Buchla Firmware Utility will launch and about 4 seconds later the card's LED will blink at about 1.5 cycles per second, indicating that the load is finished.

Step 3) Unplug the USB cable from the card and plug the card into the memory receptacle on your system, and while pressing the "remote enable" button (or its surrogate) on the module, turn on the power. **Hold the button down until you see the red LED on the firmware card flashing quickly** (1-3 seconds). A few seconds later the code will be transferred and the LED will again blink slowly. You have now loaded a special program called a code loader loader, which you will use to load the new code loader to your system. *The code loader loader temporarily takes the place of the module's firmware, so after it is loaded the module's front panel LEDs will illuminate randomly and the front panel will be unresponsive until step 7 when the version 30 firmware is installed.*

Step 4) Remove the card from the memory receptacle and return the card to your computer's USB connection. Control-click the link in the Code Loader column and save the hex file to your Mac. From the Finder, double-click the hex file. The Buchla Firmware Utility will launch and four seconds later, the LED will again blink.

Step 5) Unplug the USB cable and return the card to the system memory receptacle, and power on the system WITHOUT PRESSING ANY BUTTONS. The LED on the card will blink quickly while the code loader is being installed. When the load is complete, the LED will slowly blink.

Step 6) Now once again remove the card from the 200e and plug it into the computer. This time Control-click to download the Firmware using the link in the appropriate row. You are now loading the new version 30 firmware to the card. Four seconds later the card's LED will blink.

Step 7) Unplug the USB cable and move the card to the system memory receptacle, and while depressing the Remote Enable button (or its surrogate), power up the system. **Hold the button down until you see the red LED on the firmware card flashing quickly** (1-3 seconds). The LED will continue to flash rapidly while the firmware is loading; then blink slowly when the task is complete. This can take a minute or two, depending on the module. Some modules require a power cycle before they'll execute the new firmware. To cycle the power, turn off the system for at least 2 seconds before turning it back on.

Repeat steps 2 through 7 for each of the pre-version 30 modules in your system. A blank in the table means that the module is already provided with a functional code loader. Just jump to the step 6 to load its firmware. When you're finished, check the version number for each of the modules in your system. All should be version 30 (or higher). Version numbers are checked by depressing the module's "remote enable" switch (or its surrogate) for a couple seconds. The version number will appear in the preset manager's window.