

UltraMatrix firmware upgrade instructions

The UltraMatrix has flash programmable memory. This means its firmware may be reloaded, to support new features or fix any problems in its operation. This is the procedure to install new firmware in the UltraMatrix.

You will need the following items to complete the new firmware installation:

- A computer with a terminal emulator program. This computer must not be attached to the UltraMatrix that is being upgraded, because while the upgrade is in progress the UltraMatrix does not provide KVM signals. You can use a laptop or temporarily disconnect a computer from the switch and connect a keyboard, monitor, and mouse directly to the computer.
- The serial cable that came with the UltraMatrix. Hopefully you haven't discarded it in the UltraMatrix packing materials.
- The upgrade files retrieved from the Rose web site loaded on the computer. Read more in step 1 below.

The example below is given for Windows using the HyperTerminal terminal emulator that comes with Windows. However you may use any terminal emulator on any platform to get the same results.

1. Get the latest firmware file(s)

You can download them from the Download page. There are two program files, one a program (the UltraMatrix application) and the other a kernel (the UltraMatrix BIOS).

To check if you have the latest firmware You can read it from the top line of the UltraMatrix configuration menu accessed by using Left Control-F12. To read the kernel version you have to turn the switch off and back on and look at the power on diagnostics splash page from a monitor attached to the switch. The same information on the splash page is also sent to the serial port on power up. See Figure 1 below which shows a kernel version of KX19C and a program version of MX21A, these correspond to the file name MXK19C.HEX and MXP21A.HEX.

We recommend upgrading to the latest versions of both the kernel and program. You can upgrade one or both in the same session. When upgrading both files it is recommended to load the kernel file first and the program file second, but it really doesn't matter. That is the example given here. You don't ever have to reload the same version of the kernel or program when changing the other.

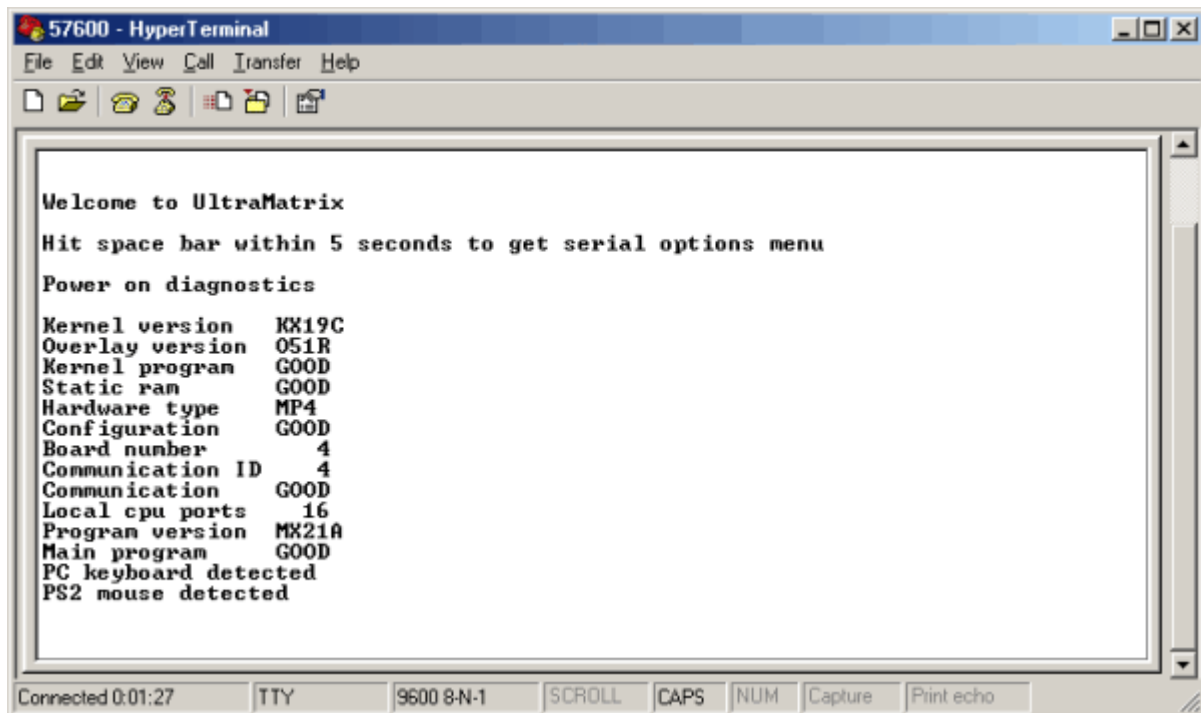


Figure 1. Power-on diagnostics from serial port

2. Connect the serial cable

Each card on the UltraMatrix has several small RJ-style serial ports on the rear connector panel of any UltraMatrix. The picture on the left shows one of the serial ports with a red circle around it. Your UltraMatrix model may look different. Connect the serial cable provided to any one of the RJ connectors and the DB9 female to the serial port on your PC. Observe if it is COM1 or COM2 because you will need to know in the next step.



Figure 2. Identifying the serial port

3. Run HyperTerminal

If you are not familiar with HyperTerminal, it is usually located in Program-Accessories-Communications. Run it and set the baud rate to 9600,N,8,1. Use the direct to COM1 or COM2 setting.

If you know how to use HyperTerminal go to step 4. Otherwise a quick refresher on HyperTerminal here may save you a little time. You can not configure HyperTerminal if a connection session is active, therefore you must first disconnect by using Call-Disconnect or the icon on the tool bar.

To set the baud rate use File-Properties and the Connect To tab. Set *Connect using:* to *Direct to COM1* or *Direct to COM2*. Then use Configure and set the *bits per second:* (baud rate) to *9600*, *Data bits:* to *8*, *Parity:* to *None*, *Stop bits:* to *1*, and *Flow control:* to *None*. In order to activate the setting you must reconnect using Call-Connect or the icon the tool bar. Other settings such as emulation are don't care.

4. Access the UltraMatrix serial options menu

To do this power off the switch and back on and hit the space bar within five seconds. The screen should look like figure 3 below. The UltraMatrix serial options menu is a straightforward simple menu to choose 8 possible options.

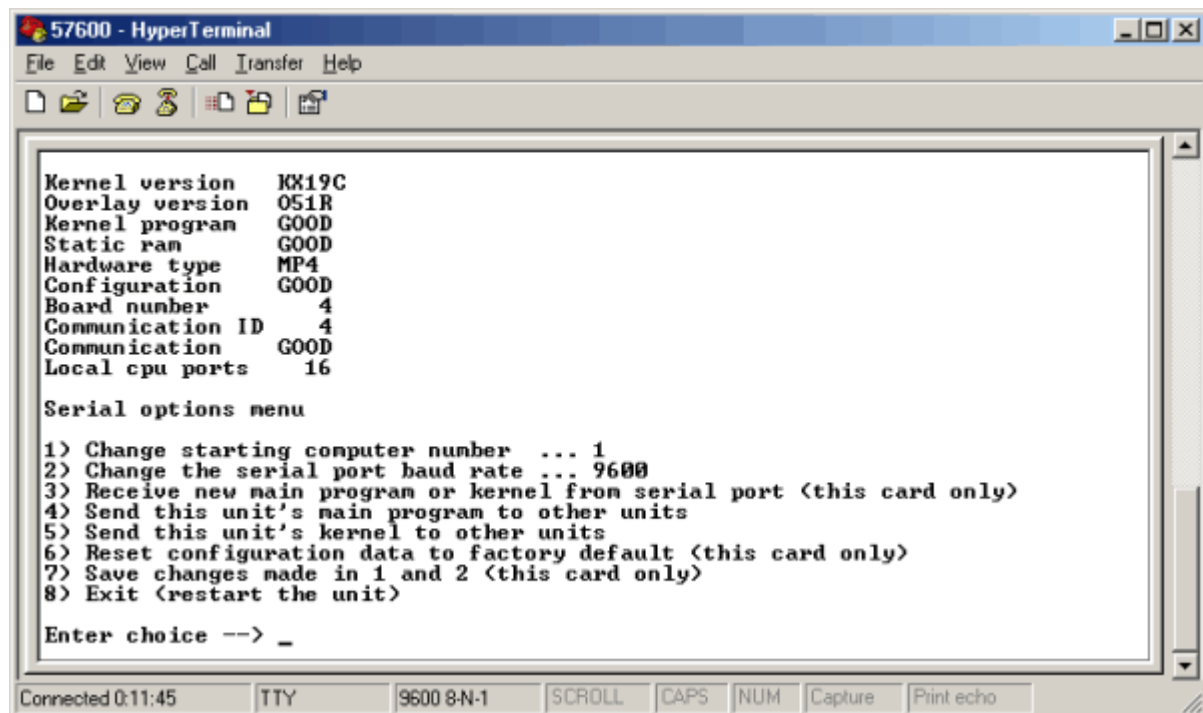


Figure 3. Accessing the serial options menu

5. Optional step - increase the baud rate

The serial options menu has two possible speeds of operation 9600 and 57600. If you don't like to wait while sending files then you should increase the baud rate. Choose 2) *Change the serial port baud rate*, and you will get the following message.

```
Enter choice --> 2
Baud rate changed to 57600
Set baud rate of your terminal to 57600 and press return
```

Now reconfigure HyperTerminal to 57600 baud by doing: Call-Disconnect-File-Properties-Configure-57600-OK-OK-Call-Call. Then hit the enter key and you will be back to the serial options menu at the new 57600 baud rate. Now file loading to the UltraMatrix will be six times faster. If you want to you can save this option with option 7 and the next time you access the options menu it will be at 57600 baud.

6. Send the file to the UltraMatrix

Finally we are ready to actually send the file to the UltraMatrix. We will be using option 3) *Receive new main program or kernel from serial port* to load the file to the UltraMatrix. Press 3 and you will see the following:

```
Enter choice --> 3
Flash download requested

Waiting for file
```

The switch is now waiting for the file and we must send the file from HyperTerminal. Go to Transfer-Send Text File. Change the *Files of type:* to *All files (*.*)* because the file name has a .hex extension and not a .txt extension. Browse for the file (wherever you

put it) and click on it. In this example we are using the kernel file. As HyperTerminal sends the file the UltraMatrix sends progress indicator dots. The number of dots is representative of the file size. The kernel file is shorter and is less dots

```
Waiting for file .....
```

The UltraMatrix is checking each line of the hex file for proper formatting and checksum errors. If it gets any it will report them, but this is rare. If you got errors, the most likely problem is a cable problem. Otherwise when the file is fully received the UltraMatrix reports what is received (kernel or program), programs the flash memory, reports the result, and returns to the Serial options menu.

```
Waiting for file .....  
Receive successful  
Downloaded kernel code  
Flash programming .....
```

```
Flash programming successful
```

7. Copy the file to the other cards

In this example we have just loaded a new kernel to the card to which the serial cable is attached. Now we are ready to load the new kernel from this card to all the other cards in the system including the cards in the unit's own box. We assume that the system had been functioning and all the other boxes are turned on. We use option 5) *Send this unit's kernel to other units*. Enter 5 and you will see the following message:

```
Enter choice --> 5
```

```
Boards to update = 7
```

```
You are about to copy the firmware from this board  
to all the other boards in the system.  
Are you sure ? Y/N
```

The card is identifying how many other cards are installed in the system and asking you to verify if this is the correct number of cards. This is the total number of cards minus 1. If the number is not correct say N for no and troubleshoot why the number is incorrect. Make sure all units are powered on. The flash load procedure should only be done on one card at a time. If the number is correct enter Y for Yes and you will get the following message:

```
Sending flash program code to other units .....
```

You are returned to the serial options menu. All other cards now are shut down for the flash procedure, If they have KVMs attached you can follow the progress as you see the message on the screen in Figure 4. The other cards are then rebooted.

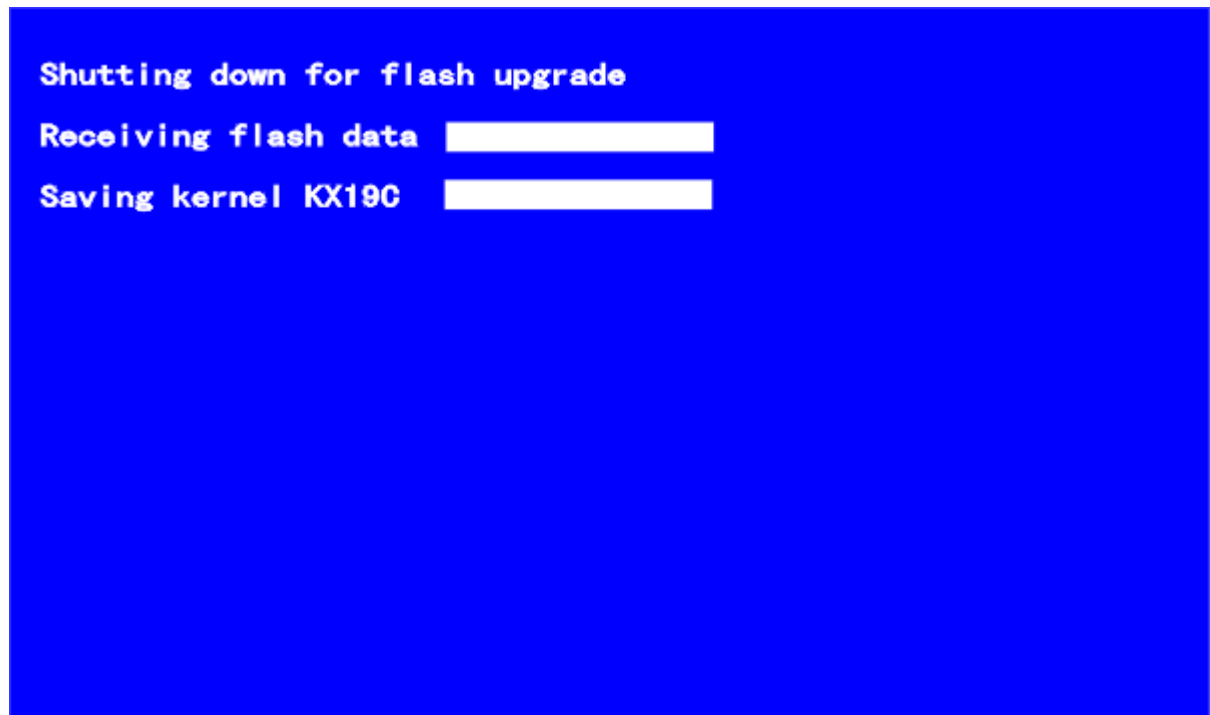


Figure 4. The other cards receive the new flash data

8. Flash the other file if needed

You have successfully loaded a new kernel file. If you need to load the program file, you need to repeat steps 6 and 7. Of course it could have been that you just loaded a new program file and the kernel remained the same in which case the flash procedure is complete. Enter option 8 to exit.

9. Verify the new firmware

You should verify that the new firmware has been loaded successfully. To do so, go to the System Status page from the Left Control-F12 menu. Look in the rev column and you should see the new firmware listed for all cards. Enjoy the new operation of the switch and let us know what other features you would like to see in the switch.