

Technical Note: KB1002 – HP3 Baud Rate Change

March 3, 2004

Overview:

The HP3 Controller supports many baud rates of communication. To decrease the time it takes to send a job to the HPGL controller the baud rate is now increased from 38400 to 57600.

All controllers manufactured after March 2, 2004 will be set to a baud rate of 57600. To facilitate support using the new baud rate release 03.01.04 of the APEX Product Software includes installation support for the new baud rate.

All HP2/HP3 controllers in the field set to 38400 can be changed in the field via Motion Mechanic. Changing the baud rate entails deleting all files in the controller, making the baud rate change and re-flashing the controller.

This knowledgebase article will describe the process of changing the baud rate on the HPGL controller.

Procedure:

1. Verify that the **Terminal applet is running** ("Motion Mechanic – Terminal" displayed in title bar). If it is not running, select the Terminal command from the Tools Menu
2. **It is important to determine the Model and revision of the processor board in the HPGL controller before flashing. Flashing the wrong firmware to the wrong controller board may render the HPGL controller inoperable.** To determine the model and revision press the [F9]. This should place a prompt. At the prompt type ".version". This command will display version information about the controller. The line that is of importance is the "Model" line.

The following table will show what firmware must be used with the particular model and version of the processor board.

Model K520 Rev x = k2c437f.bin. The Model K520 board firmware must start with k2xxxxx.bin.

Model H971 Rev 4x = h4k428f.bin. The Model H971 Rev 4x firmware must start with h4xxxxx.bin.

Model H971 Rev 3 = HTK354B.BIN. The Model H971 Rev 3 firmware must start with HTxxxxx.bin.

3. From the keyboard, press F9 on the keyboard followed by typing "**format_files**" and press [Enter]. This will erase any control files currently resident in the system.
4. From the keyboard, type "**format_params**" and press [Enter]. This will erase any machine setup parameters currently resident in the system.

5. Strike the **[F4] key on the keypad, then type "147"** and press [Enter] to invoke the "monitor mode". The terminal should respond with instructions that it you have "Entered H971 Monitor " and then the terminal should issue the ":" prompt.
6. Type **"e m "** and press [Enter]. This command will erase the controller's FLASH memory. The terminal should respond with instructions that it is "Erasing Firmware at Location 2000..." and so on. Watch the status bar for the progress indicator during the erase procedure.
7. At the prompt type **"b 6 1"** and press [Enter]. This command will set the baud rate to 57600.
8. Once the baud rate is change you will have to change motion mechanic to the new baud rate by pressing "CTRL + b" on the keyboard. You will see the baud rate change on the lower right corner of Motion Mechanic change to 57600.
9. Using the mouse, **click the "File Cabinet" button** on the toolbar to invoke the Store File dialog box.
10. **In the Controller Location field, select "F-Firmware"**. Locate and select the desired firmware (.BIN) file, such as h4k428f.bin, and click [Open]. Watch the status bar for the progress indicator during the download.
11. When finished, the controller will have firmware loaded, but no control files and no machine setup parameters.

Important: The latest HPGL K520 board no longer lets the user delete the firmware. The controller deletes firmware internally only when it receives its new firmware in memory and verifies its checksum.

12. Verify that the **Terminal applet is (still) running** ("Motion Mechanic – Terminal" displayed in title bar). If it is not running, select the Terminal command from the Tools Menu
13. Using the mouse, **click the "File Cabinet" button** on the toolbar.
14. **In the Controller Location field, select "P - Machine Parameters"**. Locate and select the desired machine setup (.UC) file, such as H0DPRAM.UC, and click [Open]. Machine Setup files always have "RAM" in their name. Watch the status bar for the progress indicator during the download. The following standard setup files are supplied:
 - H0DPRAM.UC- Models 240/300/400/600, no Datum's, Pneumatic spindle(s)
 - H2DPRAM.UC- Models 240/300/400/600, X/Y Datum's, Pneumatic spindle(s)
 - H3DZRAM.UC- Models 240/300/400/600, X/Y/Z Datum's, controlled-Z spindle
 - 53DZRAM.UC- Model 500, X/Y/Z Datum's, controlled-Z spindle
 - 73DZRAM.UC- Model 700, X/Y/Z Datum's, controlled-Z spindle
15. When finished, the controller will have the new machine setup (parameters) file loaded, but no control files.
16. Using the mouse, **click the "File Cabinet" button** on the toolbar.
17. **In the Controller Location field, select "U - User Init File"**. Locate and select the desired user INIT (.UC) file, such as HP4INI.UC, and click [Open]. Init files always have "INI" in their name. Watch the status bar for the progress indicator during the download.
18. When finished, the controller will re-boot with the control files loaded.

Exit / Power On Self Test

1. Watch the Terminal window to observe the boot-up sequence. This consists of a number of statements, including the firmware version number, available RAM memory, etc. This display completes with the "HPGL" command, which is an indication that the controller is now going into HPGL mode – no further messages should display. If the boot-up sequence displays errors, then one of the steps, above was not successful, or there is a mismatch between versions of the programmed files.
2. During the power-on-self-test (POST), the controller's LED indicators begin lighting with the right-most LED, and proceeding to the left. At the end of the POST, all the LED's will go out, and the Running LED should blink. This indicates that the controller is ready for operation, and the user should now be able to turn on drive power by pressing the [Drives] key.