



# Servo Firmware 4.12

## Update Procedure



Required files:       **ServoFirmware\_412.mcs**  
                          **EPSFirmware\_412.hex**  
                          **EPS\_LowSpeedMotors.hex**

To load this firmware upgrade, this file must be transmitted to the servo controller via the RS232 console, using Xmodem protocol. If you are using Windows Hyperterminal, this is the procedure:

- 1) Save the "ServoFirmware\_412.mcs", "EPSFirmware\_412.hex", and "EPS\_LowSpeedMotors.hex" files to a convenient location accessible to the machine running Hyperterminal. If the file is on floppy, we advise copying it to the hard disk and not trying to transmit it from the floppy to the servo board,
- 2) Power up the servo controller.
- 3) On the servo console, press control-D to bring up the diagnostics submenu.
- 4) Press shift-X, to select "Load servo firmware (XMODEM)" The servo controller will begin sending Xmodem protocol wakeup characters.
- 5) On the hyperterminal menu bar, select the "Transfer" menu, then "Send File...". A "Send File" dialog should come up.
- 6) Select Xmodem protocol, and specify the full path to the ServoFirmware\_412.mcs file in the "Filename" box (or use the "Browse" function to find it).
- 7) Click the "Send" button. Transmission should start promptly.
- 8) It is normal for there to be a delay of up to 15 seconds and an error or two at startup.
- 9) ***Do not interrupt the Xmodem transfer.*** If you do, the firmware will probably be corrupted and you will not be able to get the servo console back to try another load. If this happens you'll have to send the controller board back to MEII for reinitialization. This is one reason not to try to transfer the file directly from a floppy -- a read error on the floppy can kill the operation partway through.
- 10) When the operation completes, the servo console will display "Load status 0" and issue the diagnostics menu prompt "D>".
- 11) Still on the diagnostics menu, press shift-Y to select "Load EPS firmware (XMODEM)" The servo controller will begin sending Xmodem protocol wakeup characters again.



- 12) On the hyperterminal menu bar, select the "Transfer" menu, then "Send File....". A "Send File" dialog should come up.
- 13) Select Xmodem protocol, and specify the full path to the EPSFirmware\_412.hex file in the "Filename" box (or use the "Browse" function to find it).
- 14) Click the "Send" button. Transmission should start promptly. It is normal for there to be a delay of up to 15 seconds and an error or two at startup.
- 15) When transmission is complete, the servo controller will display the prompt "Program which motor? (S/T/L)". Respond by pressing "S" to program the supply motor.
- 16) When done, the servo controller will again display the prompt "Program which motor? (S/T/L)". Press "T" to program the takeup motor.

**Note: steps 17 through 23 can be skipped if you are updating from version 4.11 or later.**

- 17) When done, you will get the "Program which motor?" prompt again. Press ESC to exit to the diagnostics menu.
- 18) Once again on the diagnostics menu, press shift-Y to select "Load EPS firmware (XMODEM)". The servo controller will begin sending Xmodem protocol wakeup characters again.
- 19) On the hyperterminal menu bar, select the "Transfer" menu, then "Send File....". A "Send File" dialog should come up.
- 20) Select Xmodem protocol, and specify the full path to the EPS\_LowSpeedMotors.hex file in the "Filename" box (or use the "Browse" function to find it).
- 21) Click the "Send" button. Transmission should start promptly. It is normal for there to be a delay of up to 15 seconds and an error or two at startup.
- 22) When transmission is complete, the servo controller will display the prompt "Program which motor? (S/T/L)". Respond by pressing "L" to program the supply motor.
- 23) When done, you will get the "Program which motor?" prompt again. Press ESC to exit to the diagnostics menu.



- 24) Firmware update is complete. Power-cycle the machine to bring up the new version.
- 25) The new firmware contains several new parameters in flash. To be sure these are initialized properly, press control-D for the diagnostics menu, then lower-case 'f' for "Set parameters in flash". Press ENTER to step through the parameter list.
- 26) The "Idle delay" parameter is new with version 4.11. It allows the EPS motor drivers to be automatically shut down when the motors are inactive with no tension on the tape. When the motors are active but idle, the position-sensing currents cause a "singing" sound in the motors. After the "Idle delay" time has elapsed, the motors will be shut down and the "singing" will stop but rotational position sensing will also be disabled. If you wish the motor position sensing to stay active when tape tension is dropped, a value of greater than 32767 seconds will disable the idle-shutdown function.
- 27) The other new parameters with 4.11 are "Takeup reel EOT stop radius" and "Supply reel EOT stop radius". These control at what tape-radius the tape will stop to prevent running off the end of tape. These are normally around 22500 micrometers to allow a small safety margin above the 22000 micrometer hub. Reducing this value will allow you to use more tape at the risk of running off the end. Increasing the value will help if you have problems with running off the end of tape.