

Loading Firmware with MTool2

This document describes the process for loading new firmware into the MCA with the MTool2 software program.

1 The MTool2 Program

The MTool2 program is a free program provided to Diagraph Service Technicians and Customers to facilitate the storage and retrieval of system settings, gathering of informational data, and provide a method to load new firmware to the Main Controller Assembly, or MCA.

This program can be downloaded from the Diagraph website or [click here](#).

Once the program is installed, use the passcode of **2718** to access the program.

When the program is run, it will check to see if there is a companion hex file to use for downloading firmware to the system. The MTool2 program contains a recent copy of the mca_iii.hex file, which is used to load the firmware. If this file does not exist, MTool2 will create it.

2 Custom, Special, or Individual Firmware Files

If you are required to use a custom, special, or upgraded/downgraded version of MCA firmware, this can be performed by placing the mca_iii.hex in the same directory where the MTool2.exe program is located. There is usually a file already there, so rename the old file to mca_iii.hex.old before saving the new file to the directory. The default directory used by the installing program is:

C:\Program Files\Diagraph\MTool2

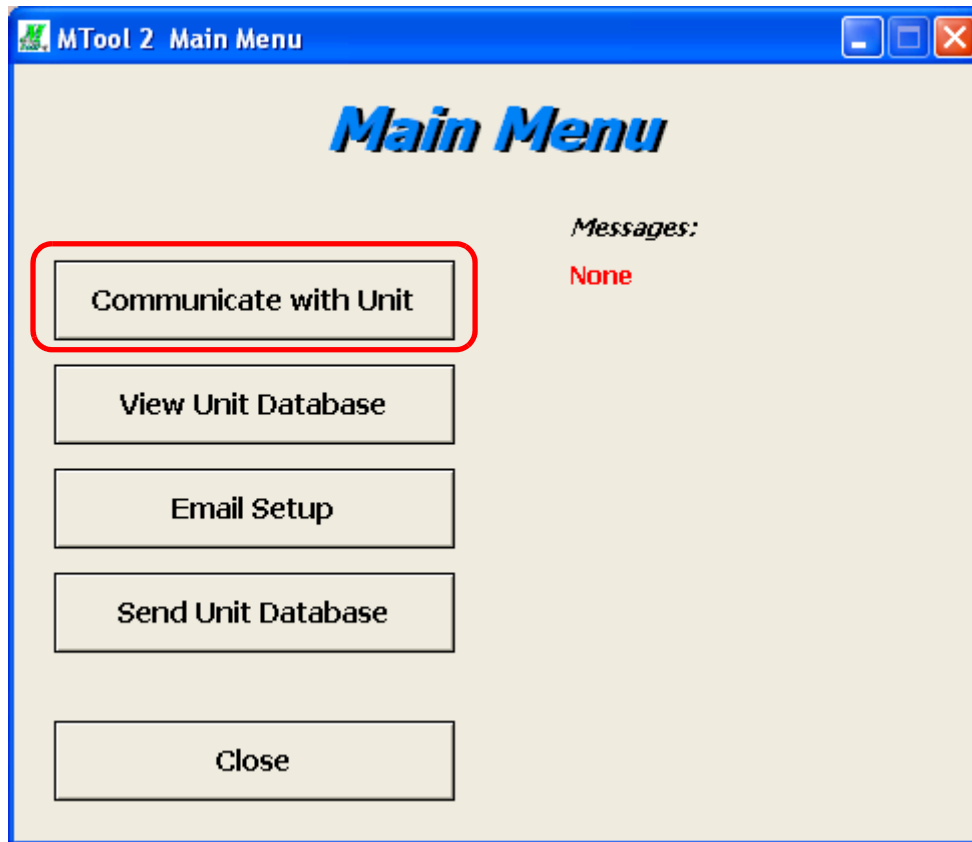
Once the file has been placed in the proper directory, the MTool2 program will load this file as the default when firmware downloads are performed.

3 Running the MTool2 for Firmware Downloads

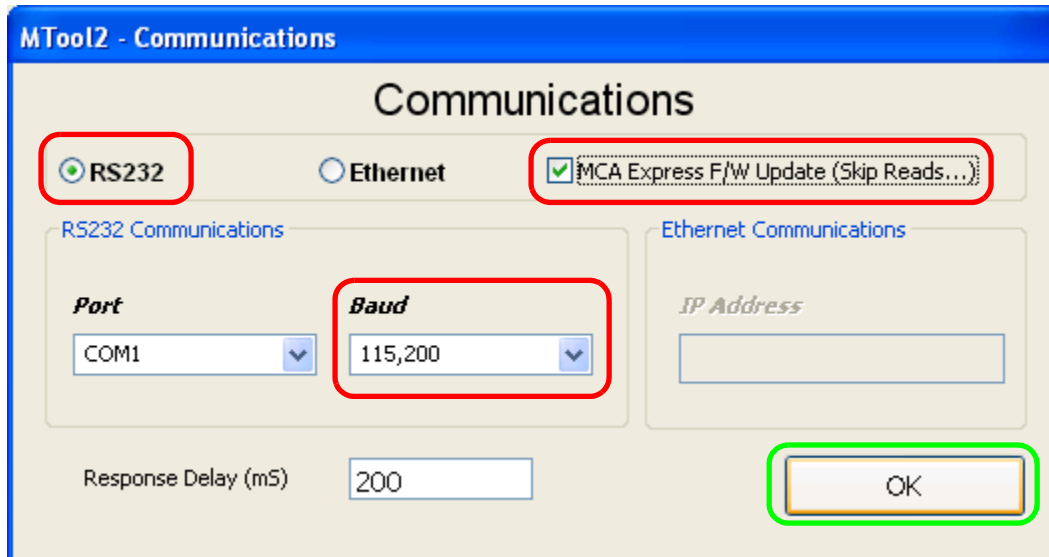
In order to perform a firmware download, serial communication must be used at 115,200 baud (8 bits, 1 stop, no parity is automatic).

Launch the MTool2's program icon to begin...

Main Menu:



After entering the passcode, select Communicate with Unit from the Main Menu. Next, select the choices of RS232, MCA Express F/W Update, and the Baud of 115,200. You will see a warning



message about verifying that the Display Module has the current version to be compatible with this firmware download. If it does not, do not continue with the firmware download by unselecting the MCA Express F/W checkbox.

If the connection to the system is at a distance greater than 50 feet, or the serial connection is virtual over an Ethernet link, the Response Delay (mS) will need to be increased beyond the default of 200 mS. This will allow for some propagation delays to be handled instead of erroring out the transmission.

When all of the settings are selected and the mca_iii.hex is determined to be correct, press “OK” to begin loading the system. This should take approximately 1.5 minutes.

Once the download is complete, the MTool2 program will read in all of the system settings and information. The load should be complete at this time, and MTool2 can be shutdown.

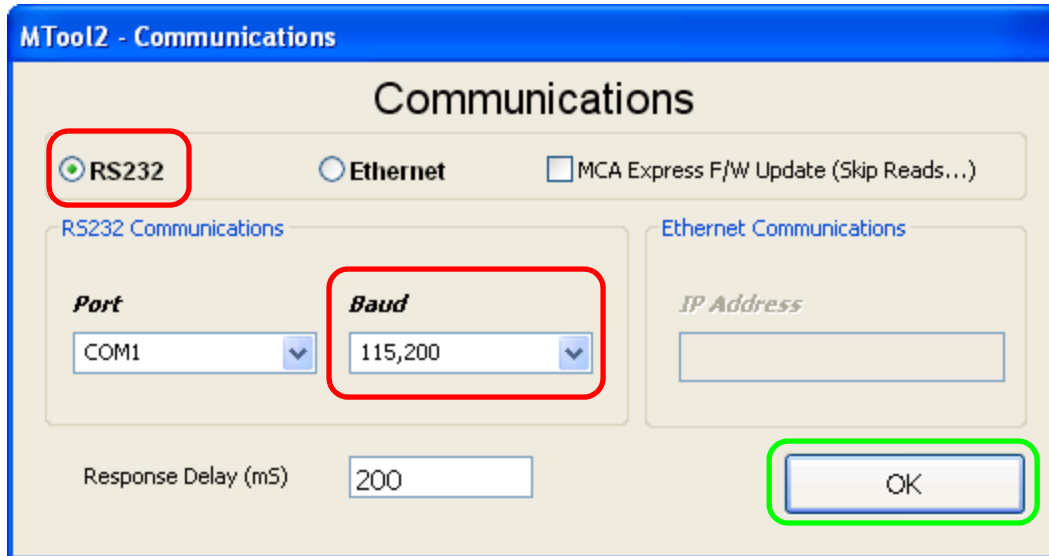
If the load didn't end successfully, the CPU board can (hopefully) be recovered using the Bootloader recovery method.

4 Using the Firmware Recovery Mode in the Event of Failure

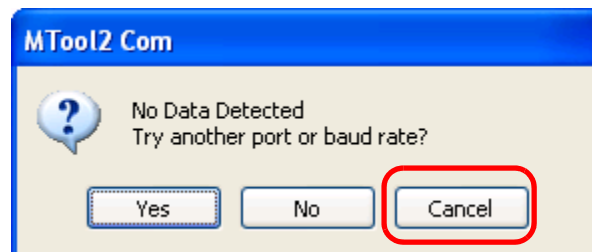
Most of the time, the firmware download method used above is successful. There are times when a lockup on the PC, a disconnection of the power cord or serial cable, or other phenomenon interrupt the download process. If this happens, the system can usually be restored through the Emergency Platinum Series Recovery method.

Begin by closing out MTool2 (if opened) and either restart the PC or check the Windows Task Manager that there are no other instances of MTool2.exe running. If there are, delete these instances.

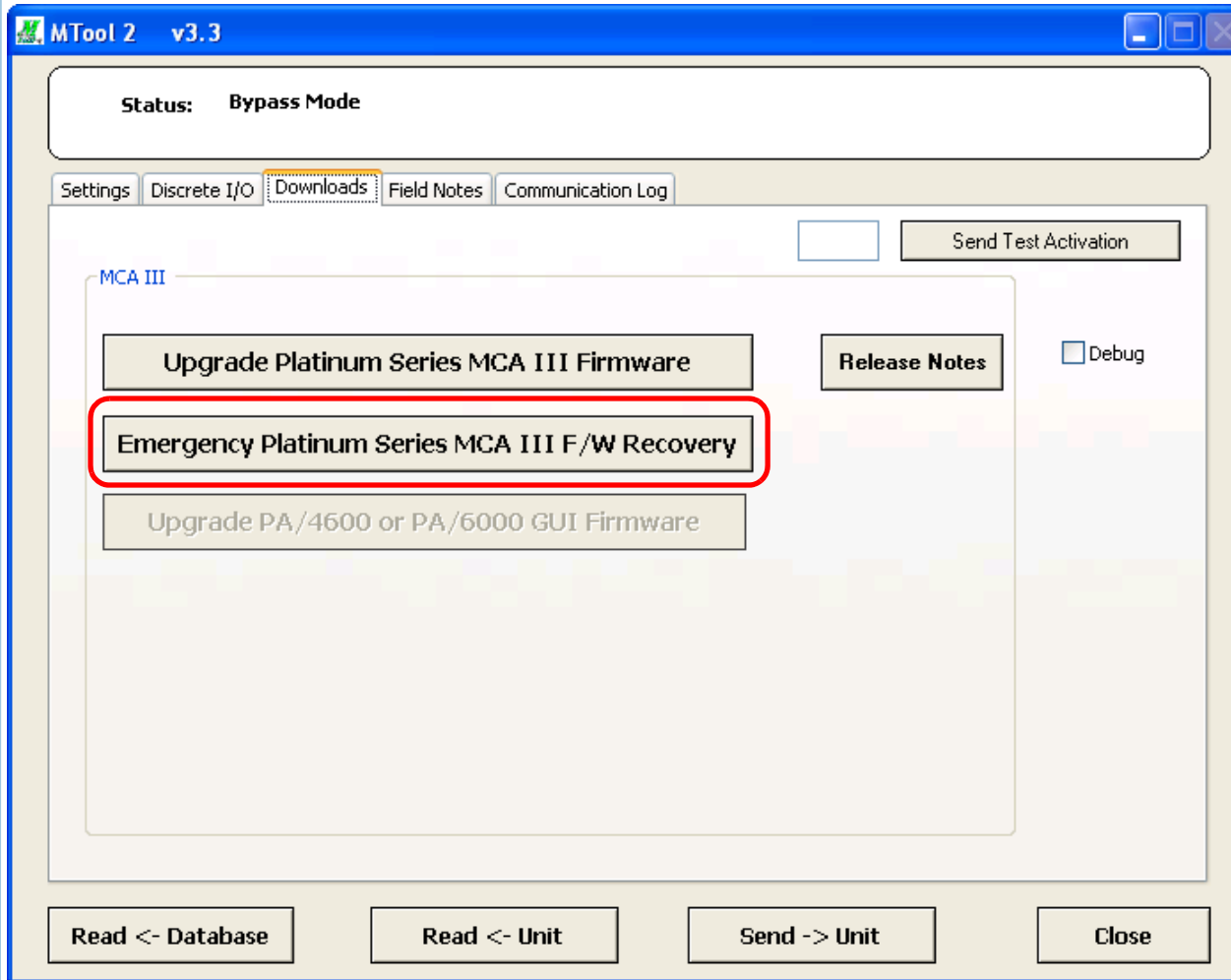
Launch MTool2 as before, but this time do not use the MCA F/W Express Update.



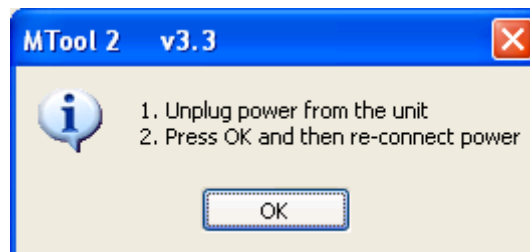
Press OK and the program will begin to try to connect to the system. After it is unsuccessful, this message will appear:



Select Cancel, which puts the MTool2 program into "Bypass Mode". Click on the tab for Downloads



Select the Emergency Platinum Series MCA III F/W Recovery. Follow the next instruction prompts EXACTLY as they describe. This will allow the MTool2 program to catch the MCA just as soon as it powers up, which is when the Bootloader is active. It is only active for 30 seconds after first power-up, so the sequence here is important.



If the CPU in the MCA can be recovered, the MTool2 program will begin to download the firmware to the unit showing the progress. If the board cannot be recovered, the MTool2 program will continue to wait for the connection message, so you can try to power off and power on the unit again (by unplugging power).