

AN2002: Synaptron Micro Firmware Upgrades / Bootloader



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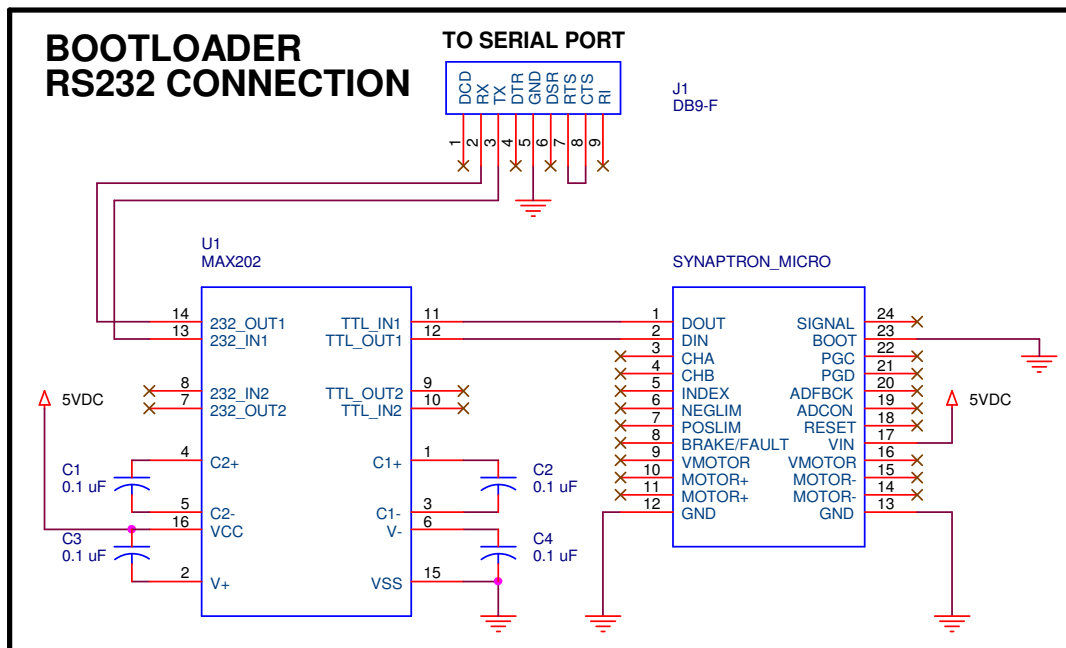
Overview- From time-to-time Solutions Cubed, LLC may make modifications to the firmware in this product. This may be to fix firmware problems, add features, or even to allow for custom designs for specific customers.

Hardware-

The new firmware is released in the form of text files which must be “bootloaded” into the device through the serial interface. To access the bootloader you’ll need to connect the Synaptron serial pins to a computer via a RS232 serial interface. You may use a USB-RS232 converter between the RS232 IC and a PC USB port. A sample connection is shown below.

Prior to applying power to the circuit you must also ground the BOOT pin (pin 23). The motor power connections (VMOTOR) may be powered or left disconnected as shown. All grounds should be common (connected) on the circuit.

When power is applied, if the controller is running its bootloader, the red LED will light and remain lit. This indicates that you are ready to upload a new operating system.

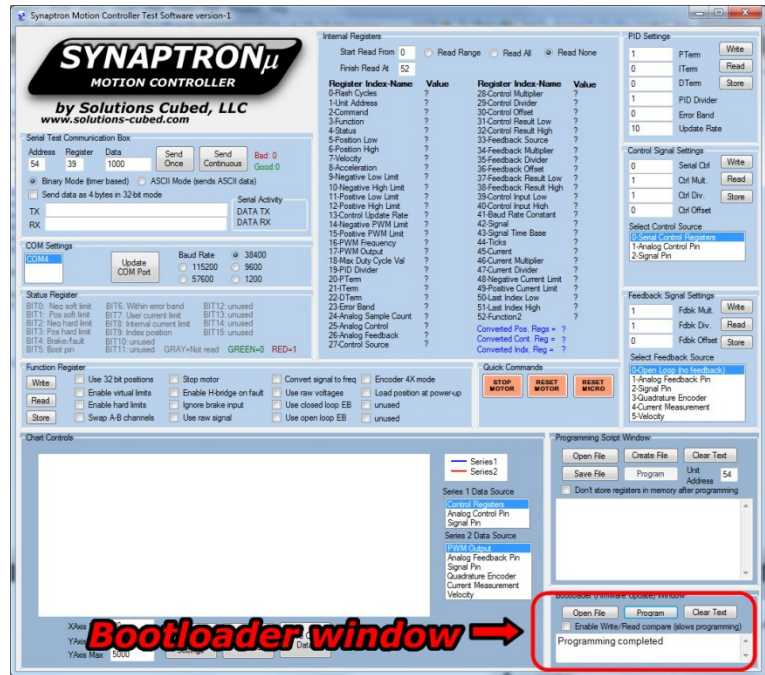


Software- You must successfully install and launch the Synaptron test software in order to upgrade the controller's firmware. Once installed follow these directions.

Note: The software interface may change over time. Screen captures are for reference and may differ from what you see.

Step 1: Click the "Open File" button in the bootloader window and navigate to the bootloader file. Open the file. If the file is in the correct format the "Program" button will become active.

Step 2: Press the "Program" button. The software will begin transferring the new operating system to the controller. If a communication error occurs during transfer, hit the "Program" button again to retry.



The software will display the memory block being programmed. When all memory is programmed the words "Programming completed" will be displayed.

Step 3: Remove power from the controller, and disconnect the BOOT pin (pin 23) from ground. Restore power and the red LED should blink briefly.

Step 4: Send the Read firmware command ("54,02,70"<cr><lf> shown here in ASCII mode) to determine which version of firmware the unit is running.

! **The controller has a limited number of program memory write cycles. The number allowed is stored in the *FlashCycles* register. When bootloading in new firmware the *FlashCycles* register will be reset to 9998. If necessary track the number of cycles remaining elsewhere.**