

Programming the MSC1210 by Using a Terminal Program

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ABSTRACT

Although a downloader program is available for Microsoft Windows[®], this application report outlines how to use a simple terminal program to perform the function of programming the flash memory in the MSC1210.

The Boot ROM includes a load command that will correctly interpret characters of an Intel Hex file and programs those bytes into flash memory. Using the register commands, it is fairly simple to program the MSC1210 with only a terminal program. The commands are described in the programming document SBAA076B.PDF located at www.ti.com.

These are the steps for programming the MSC1210 product:

1. Reset the MSC1210 into the program mode.
2. Hit the carriage return to initiate autobaud, receive message:
 - MSC1210 Ver:000303F10
 - >
3. Set the timing registers, USEC, MSECL, and MSECH.
4. Erase the flash memory (M0000).
5. Erase the configuration memory (M8000), if needed.
6. Turn off Echo (E).
7. Setup the terminal program for a delay after each line (10mS) and a delay after each character (1mS).
8. Enter the L command.
9. Send the HEX file.
10. Reset the processor and run the program.

The default values for the timing registers are set for a 4MHz crystal. Those values will work for slower crystals and step 3 can, therefore, be skipped. However, to assure that the flash is programmed correctly, step 3 can be included, and must be for higher frequency crystals.

Any terminal program that can transfer ASCII files can be used for programming the MSC1210. The Hyperterm[™] application that comes with Microsoft Windows[®] is one option. Another option is Tera Term (a freeware product), and there are many others that can be downloaded or purchased. This document shows the setup for HyperTerm[™].

As the MSC1210 programming software has to interpret the characters and then program the flash memory, the terminal program needs to have additional delays between characters and after each line so that the programming is able to finish and be ready for the next line of Intel Hex characters. Values that have been found to work well are 1ms character delay and 10ms line delay.

For HyperTerm, choose File → Properties, then select the SETUP tab and finally select the ASCII Setup button. That opens the following window, shown in Figure 1, where the values for the Line delay and Character delay can be set.

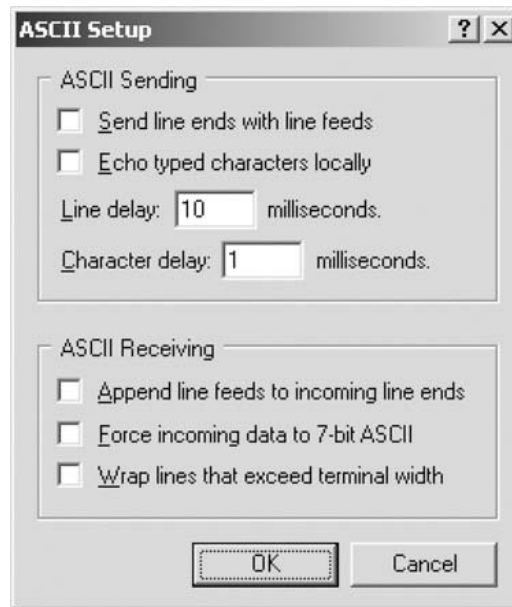


Figure 1. HyperTerm™ Setup

Once the terminal is setup, with a crystal frequency of 11.0592MHz, the setup and operation would be as follows:

- After powering up the EVM or pressing the PRG LD button, enter a carriage return to initiate the autobaud sequence to get the initial prompt.
 - MSC1210 Ver:000303F10
 - >RWFB0A USEC register set to 10
 - >RWFC32 MSEC registers set to 0x2B32 = 11058
 - >RWFD2B
 - >M0000 ok
 - >M8000 ok
 - >E
- Enter the `L` command, which will not be echoed because the echo has been turned off.
- Now send the text file with the terminal program. This shows the results for Helloworld.hex.
- >.....T
- Press the reset button (the button closest to the MSC1210 device). Use a carriage return to autobaud. The following should be observed:
 - MSC1210 Hello World

This is an example with the MSC1210–DAQ–EVM using the standard crystal of 1.8432MHz.

- MSC1210 Ver:000304F10
- >RWFB01 USEC register set to 1
- >RWFC32 MSEC registers set to 0x0732 = 1842
- >RWFD07
- >M0000 ok
- >E
- Enter the L command, which will not be echoed because the echo has been turned off.
- Now send the text file with the terminal program. This shows the results for Helloworld.hex.
- >.....T
- Press the reset button (the button closest to the MSC1210 device). Use a carriage return to autobaud. The following should be observed:
 - MSC1210 Hello World

CAUTION:

After the MSC1210 is completely erased and normally reset, if it then receives a carriage return, it will then return a response prompt that would seem to indicate that the part can be programmed; i.e., the following prompt is given:

MSC1210 Ver:000304F10

The command parser interprets the characters received, but the MSC1210 is not in programming mode. Some of the commands can be executed but not the flash programming commands. As the flash memory was completely erased, the MSC1210 starts executing code at location 0x0000 and continues all the way through the memory until it gets to the Boot ROM at address 0xF800 where it encounters a jump to the command parser. Since the part is not in programming mode, the mass erase command (M0000) will fail.

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