MINI-MAX/51-F Download Protocol

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Overview

This document is for advanced users who wish to implement their own COM port downloader for the MINI-MAX/51-F for different platforms such as Linux or Macintosh or to download firmware to the MINI-MAX/51-F from another microcontroller system.

Algorithm

In the instructions below, green characters are comments, red characters are reply that comes from the MINI-MAX/51-F board and blue characters show hexadecimal bytes.

Open COM port at 19200 baud with RTS and DTR set.

Clear RTS

Wait 100 milliseconds

Set RTS

Wait 100 milliseconds

Purge Receive Buffer

WRITE 0x0D
READ 0xA0x0DBoot Loader Ver:080780F130x0D0x0A>

// READ **HWPC1** (Hardware Product Code, this comes back as 08 typically, ignore this value)
WRITE RREA
READ RREA08x0D0x0A>

// USEC = 0x16 (One Microsecond Timer = 22)
WRITE RWFB16
READ RWFB16x0D0x0A>

// MSECL = 0x66 (One Millisecond Timer Low Byte = 102)
WRITE RWFC66
READ RWFC66x0D0x0A>
// MSECH = 0x56 ((One Millisecond Timer High Byte = 86)
// [MSECL and MSECH combined equal 22118]
WRITE RWFD56
READ RWFD56x0D0x0A>
// **FTCON** = 0xA6 (Flash Memory Timing Control)
WRITE RWEFA6
READ RWEFA6x0D0x0A>

// **HMSEC** = 0x63 (One Hundred Millisecond Timer=99)
WRITE RWFE63
READ RWFE63x0D0x0A>

// Mass Erase of Flash
WRITE M0000
READ M0000 okx0D0x0A>

// Toggle Echo
WRITE E
READ Ex0D0x0A>

// Send L command and then hex file one line at a time
WRITE L

While (not end of hex file)
{
WRITE <hex file contents on line at a time>
READ <data> (1byte)

Switch data
{

'.': SUCCESS
'X': Line write ERROR
'E': Line checksum ERROR
'T': Termination of transfer
Default: UNKNOWN ERROR

}
}

Appendix A: Register values effected by the loader

HWPC1 (Hardware Product Code, this comes back as 08 typically)

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[MSECL and MSECH combined equal 22118]

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