

Attiny Fuse Repair Instructions for Version 3 Firmware

To use this device, simply insert your avr in the correct socket and connect power. Within one second either the green or the yellow led will illuminate. Green LED indicates success, Yellow LED indicates failure. Failure can be caused by a number of reasons.

1. You do not have the correct power supply. Please use a 13 - 18 VDC power supply with positive centre on the plug.
2. You are not inserting the chip in the correct socket. Please see the instructions below.
3. The device signature cannot be read. Is the device damaged? Is it inserted correctly?
4. The device is not supported. Please check the device list (Table 1) below.

If the device does not reprogram your avr and there are no led's illuminated, perhaps you have a damaged power supply.

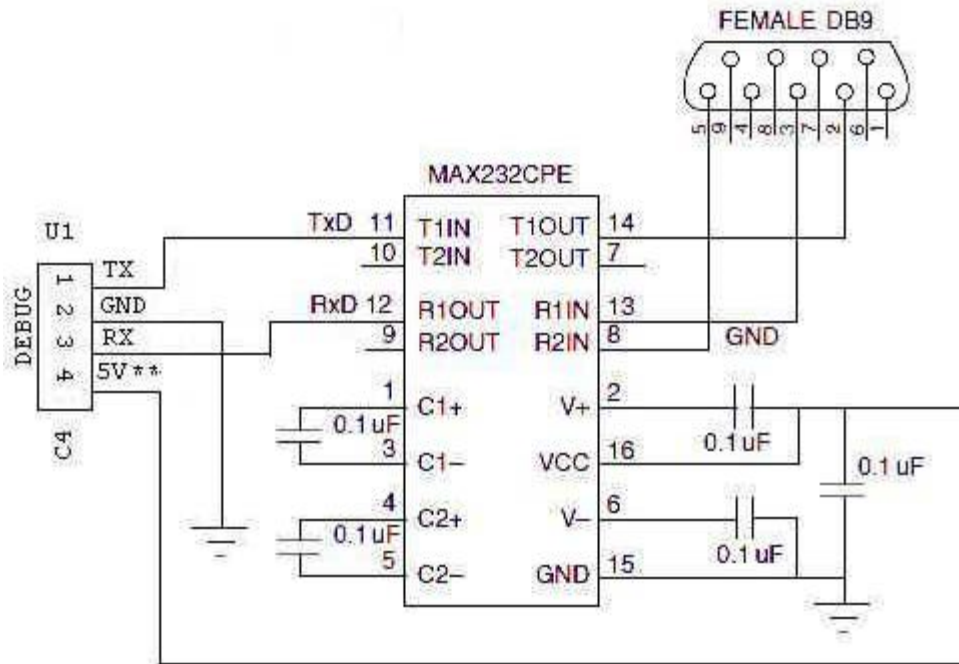
Once power is connected, the red led will illuminate to indicate power has been applied. If it does not, you are not using the correct power supply. If you are getting errors continuously (yellow LED illuminated) you can connect a MAX232 circuit to the debug port as shown in Fig 1 below.

PLEASE BE AWARE that in order to reprogram the fuses, the programmer must erase your avr device. This has recently been changed in firmware V2.0 and higher. If a jumper wire is installed on **pin 17 to GND (pin 10)** before the programmer is powered up, the erase operation will be bypassed, preserving the memory while restoring the fuses to factory defaults. (see Fig3 for jumper wire installation)

Please Remember: If the LOCK bits have been programmed in your device, the fuse restore operation will fail if the jumper wire is installed. This device is not designed to circumvent LOCK BITS!

New in Version 3, "advanced mode" or "terminal mode". This mode works with a terminal on your PC. It allows reading and writing of the fuse bytes. Also included is a new feature that disables signature verification, allowing the user to program fuses on avr devices that are not in the device list (Table 1).

WARNING: We are not responsible for damage caused by programming non standard fuse values.
KNOW WHAT YOU ARE DOING!



****The fuse programmer supplies the MAX232 with 5 Volts.**

Fig 1. Connecting the Programmer to the Computer's Serial Port

When connected, the circuit will display fuse information or error messages to a terminal at 9600 baud. Hyperterminal settings: Baud Rate: 9600, Data Bits: 8, Stop Bits: 1, Parity: None, Flow Control: None, Terminal Emulation: VT-100 (ANSI).

A low Cost Serial to TTL Converter can be found on our website [here](#).

If you do not have a serial port on your PC, the programmer can be connected to one of our low cost USB to TTL adapters found on our website [here](#). See Fig 2 for connection details.



Fig 2. Connecting the Programmer to the Computer's USB Port

The programmer supports the following devices:

<u>Socket U5</u>	<u>Socket U6</u>
ATtiny11***	ATtiny24
ATtiny12	ATtiny24V
ATtiny12V	ATtiny44
ATtiny12L	ATtiny44V
ATtiny13	ATtiny84
ATtiny13A	ATtiny84V
ATtiny13V	
ATtiny25	
ATtiny25V	
ATtiny45	
ATtiny45V	
ATtiny85	
ATtiny85V	

Table1. Device List

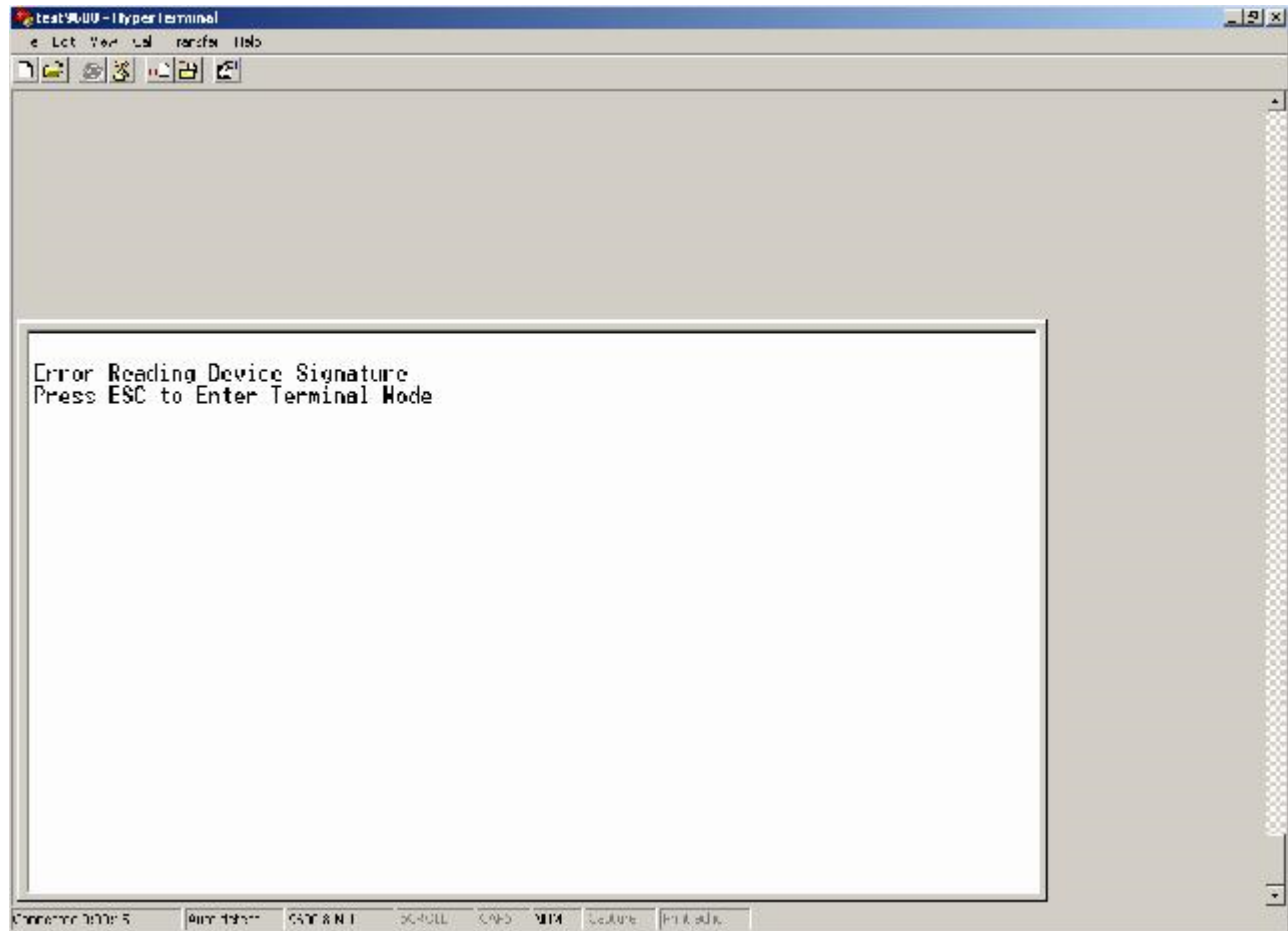
*****While the ATtiny11 does not support ISP programming, this programmer will restore the fuses back to factory settings.**



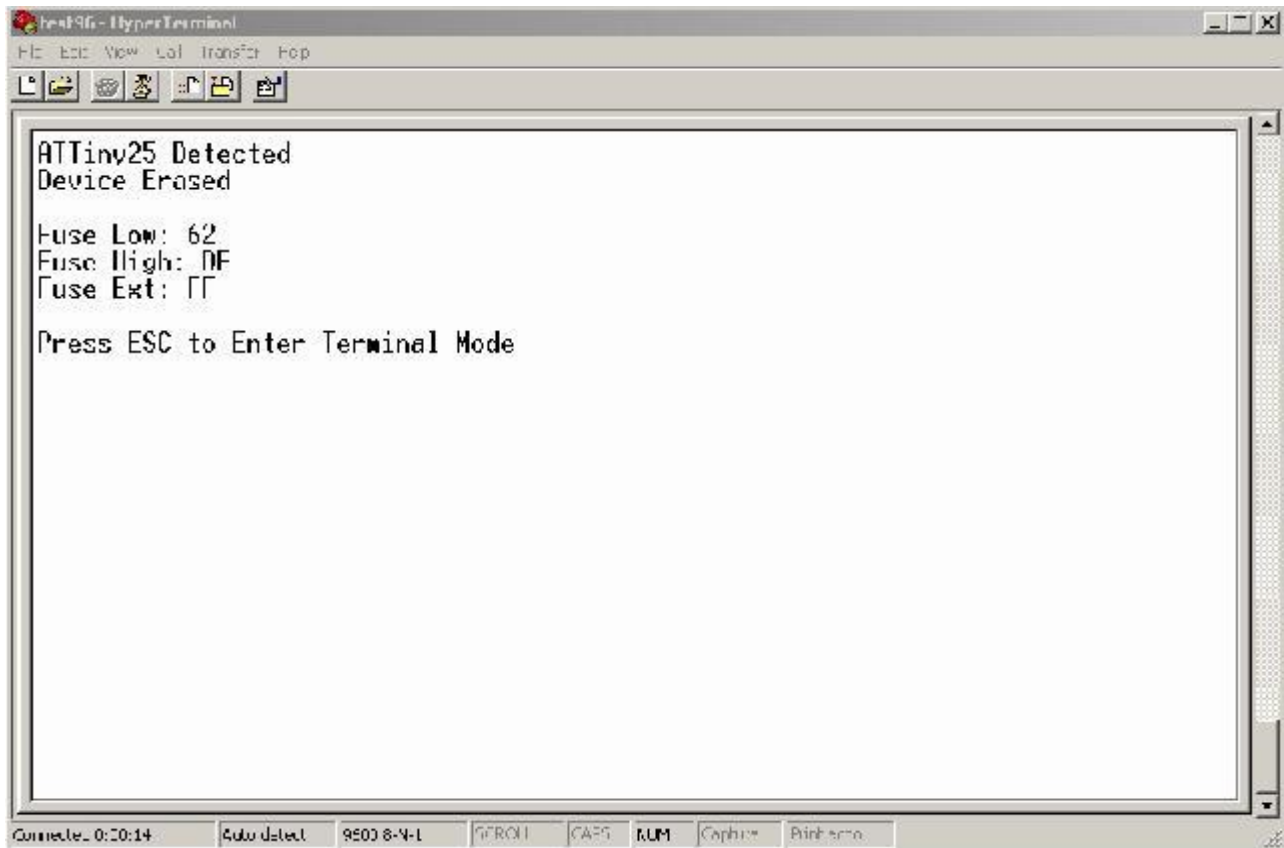
Fig. 3. Connect a jumper wire before the programmer is powered up, in order to ByPass the erase function. This will preserve the code in devices where the lock bits have not been programmed.

Using the Programmer

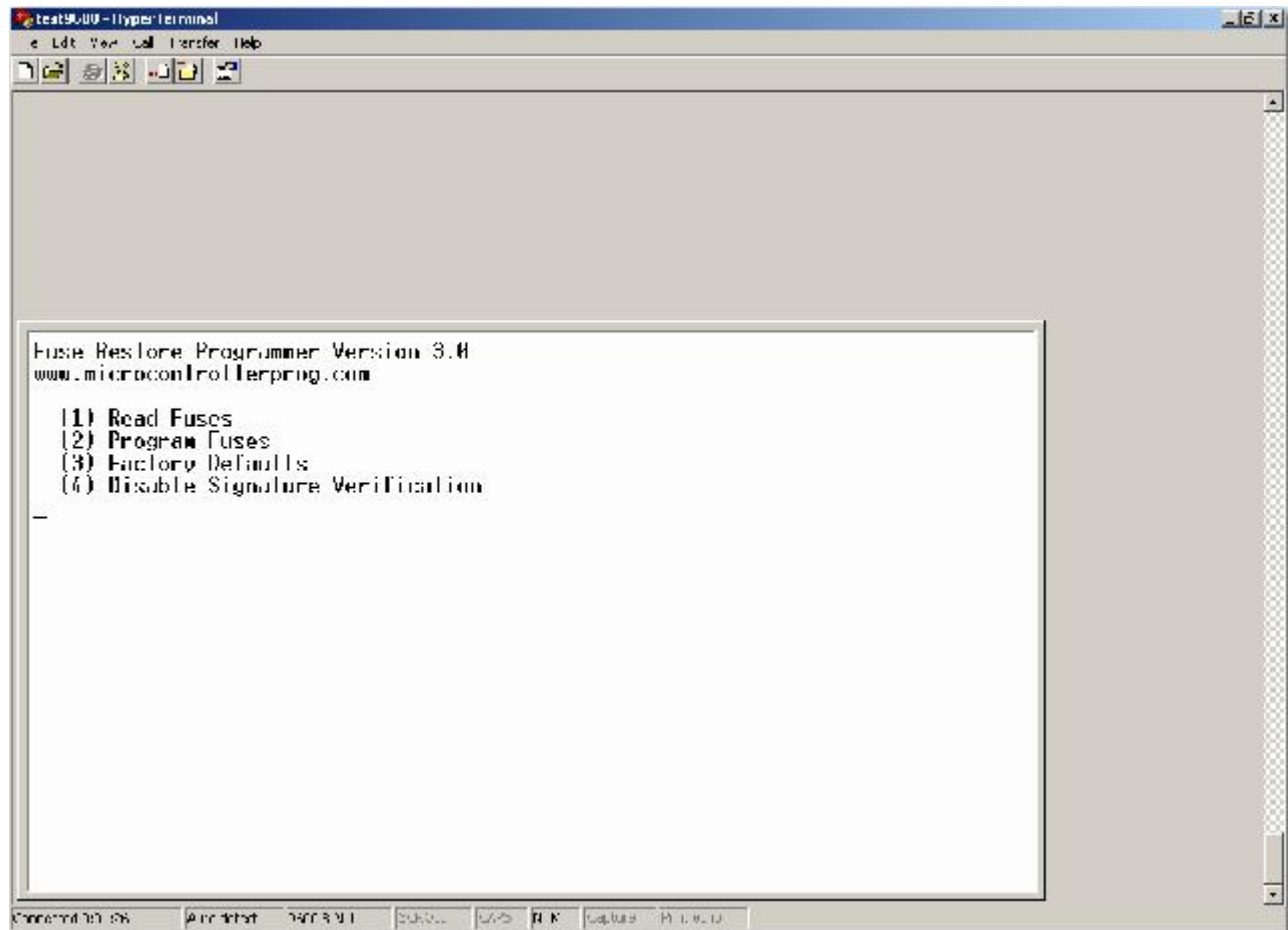
If the programmer is connected to the terminal, and it is powered up with no devices inserted, you will see a screen like this:



If a device was inserted, you will see this message:

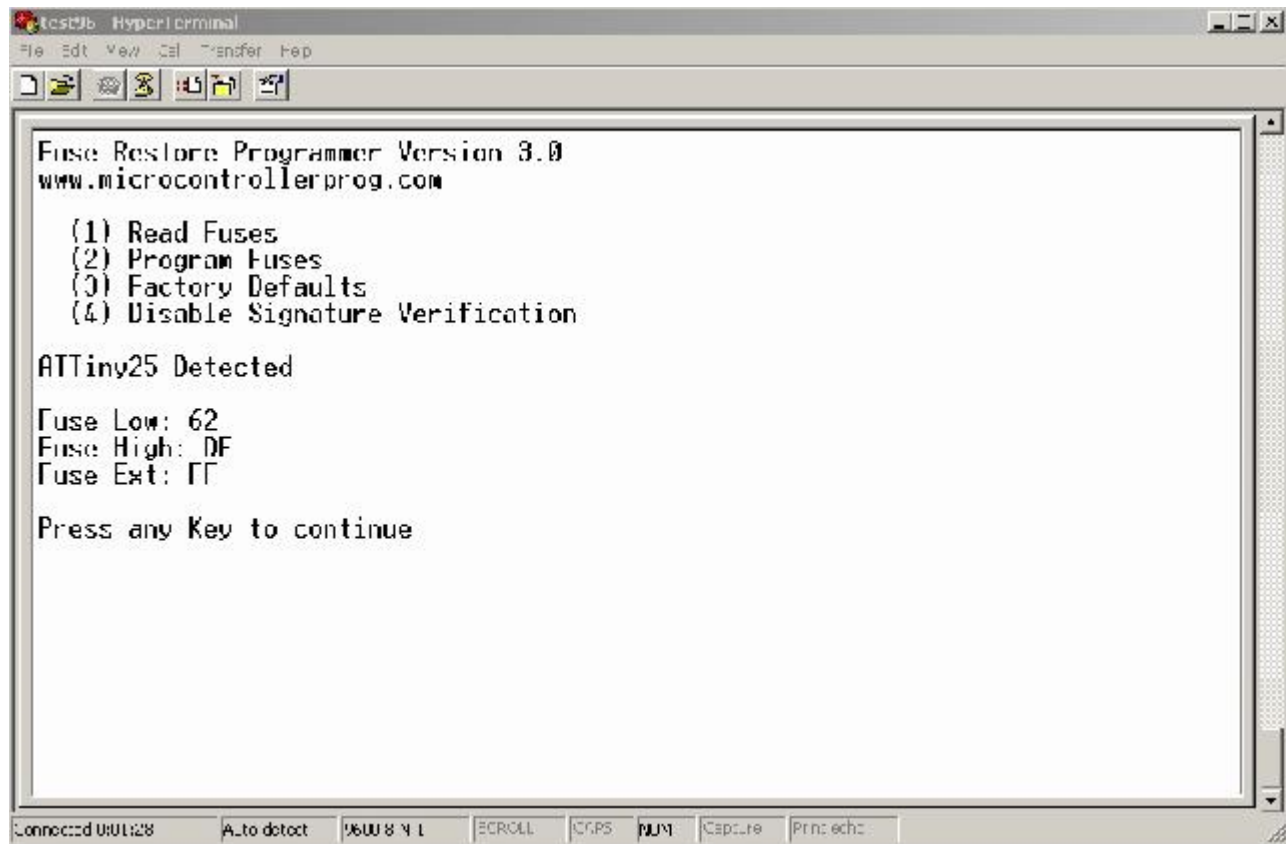


Pressing ESC gets you into MODE3 (Advanced Mode). You will then see a screen like this:



You now have Four Options.

1. **Read Fuses.** Have you ever been curious to know what the fuse values are when your avr has been corrupted by your ISP programmer? Pressing "1" will show you the fuses. See below:



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Fuse Restore Programmer Version 3.0
www.microcontrollerprog.com

(1) Read Fuses
(2) Program Fuses
(3) Factory Defaults
(4) Disable Signature Verification

ATTiny25 Detected

Fuse Low: 62
Fuse High: DF
Fuse Ext: FF

Press any Key to continue
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Pressing any key will always return you back to the main menu.

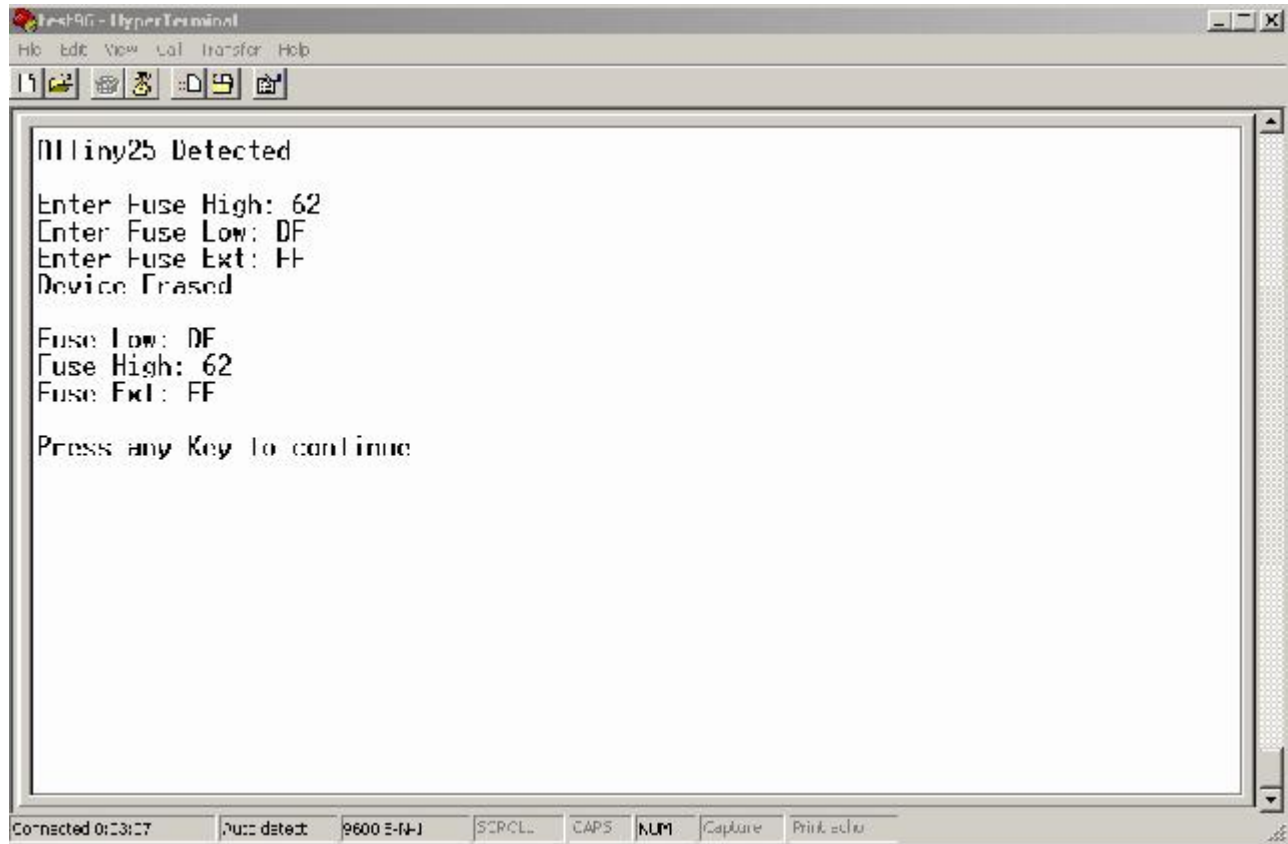
2. Pressing "2" will allow you to program the fuses on any of the devices in the device list. If you would like to program any device NOT in the device list, you must select "4" (Disable Signature Verification) before pressing "2", Program Fuses.

**AGAIN, PLEASE Be careful here! NON Standard fuse values may cause unknown results preventing your avr from entering programming mode, even with this programmer!!
BE SURE YOU KNOW WHAT YOU ARE DOING!!**

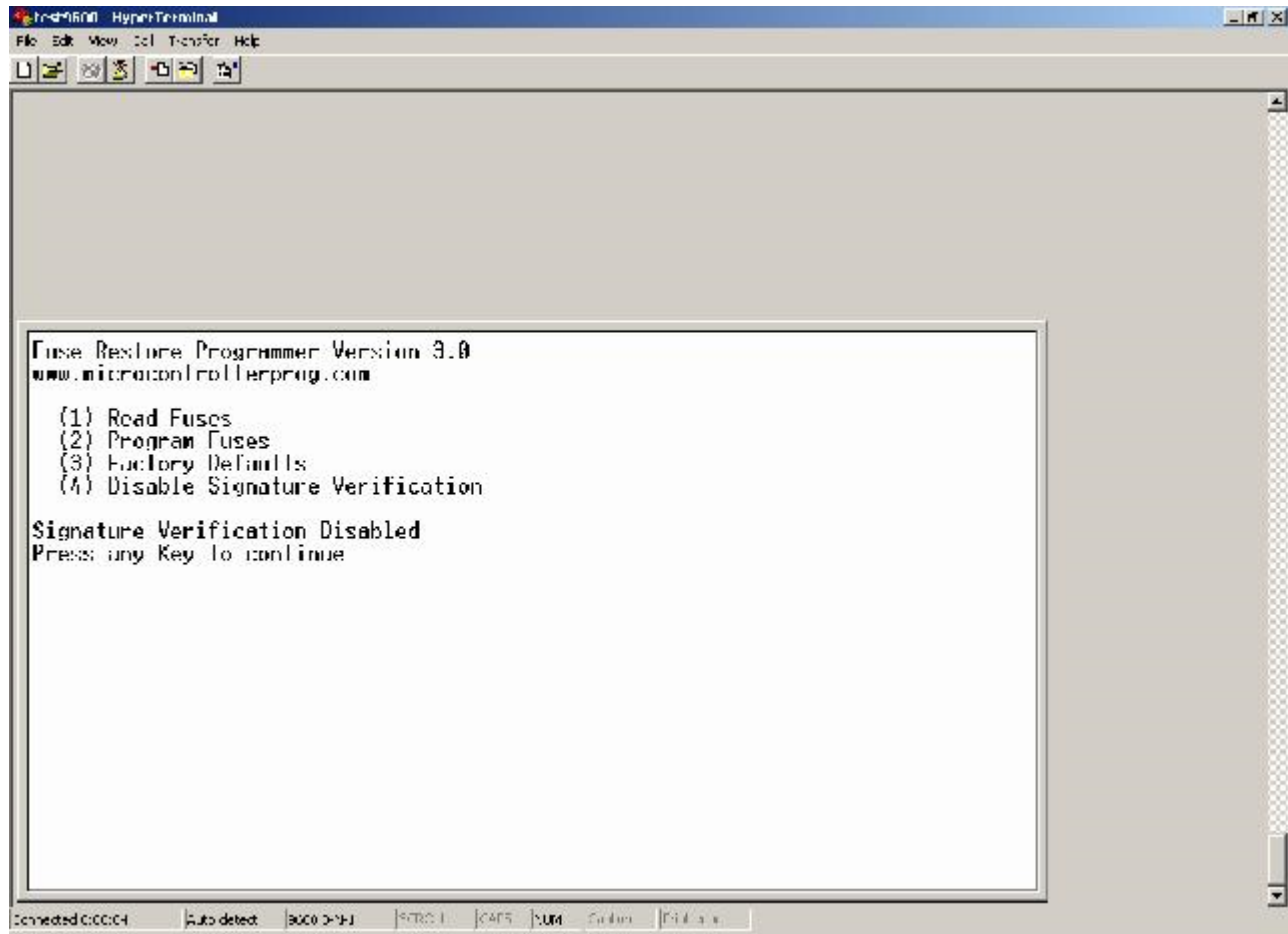
If signature verification is disabled, the programmer does not know any information about the device you are trying to program. (i.e. The default fuse values, whether or not the device has high, low or extended fuse bytes or all three). When programming a device (i.e. a mature avr device such as the 90S series) you will be asked for all three fuse bytes. Even though the device has only one fuse byte, you must enter the same fuse byte for all three fuse bytes.

For example, you want to restore the SPIEN fuse on a AT90S2323 and disable the FSTRT fuse at the same time, enter hex value DF (not case sensitive) for all three values (high fuse, low fuse, and extended Fuse bytes). The avr will ignore the extra fuse bytes. After programming, the programmer will read back three fuse bytes. This mode does not work for restoring factory defaults since the programmer must know what the default values are based on the device's signature.

This is what the screen will look like when programming fuses without disabling the signature verification:



The only way to Enable Signature Verification (if you disabled it) is to restart the programmer. (unplug power and reconnect). Signature verification is always enabled by default. When pressing "4" (Disable Signature Verification), you will see a screen like this:



Pressing "3" will restore the fuses to factory defaults, same as in standalone mode and will not be successful if signature verification has been disabled.

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Lest96 - HyperTerminal
File Edit View Call Transfer Help

Fuse Restore Programmer Version 3.0
www.microcontrollerprog.com

(1) Read Fuses
(2) Program Fuses
(3) Factory Defaults
(4) Disable Signature Verification

NTTiny25 Detected
Device Erased

Fuse Low: 62
Fuse High: 0F
Fuse Ext: FF

Press any Key to continue

Connected to: COM3  Auto connect  6-U8 N 1  SCRLL  CAFS  NUM  Capture  Print echo
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Factory Defaults selection "3". You can exit Advanced mode by powering off the programmer.

Any questions? Email us at: microcontrollerprog@yahoo.com