

There are two ways to get the latest firmware update for your Trigger Man: send it to us, or do it yourself.

1. Send your module to us.

- a. There is no charge for the upgrade. You pay only shipping costs.
- b. Package your module securely so that it is safe for the trip. Your packing materials will also be used to ship the module back to you.
- c. Include your return address on a piece of paper inside the box. Sometimes return addresses on the outside of the box get obscured during shipping. Also, please include your email address in case we need to contact you.
- d. Ship your module to:
Delptronics
11709 Larch Valley Drive
Austin, TX 78754
USA
- e. Pay for the return shipping. You can include a check drawn on a US bank, or an international money order in the box with your module. Or, you can send the funds via Paypal to sales@delptronics.com. Shipping rates are as follows:
 - United States: \$8 for priority mail
 - Canada: \$10 for First Class mail, \$28 for Priority Mail
 - All other countries: \$16 for First Class mail, \$38 for Priority Mail

2. Do it yourself.

- a. It's easy. This manual tells you how to do it.
- b. If you already own a PIC microcontroller programmer, and you know how to use it, then just download the HEX file, and update your module.
- c. If you do not have a PIC programmer, you can purchase one fairly cheaply. Details are on the next page.
- d. Note that if you live outside the United States, it will be cheaper and faster to buy a PIC programmer and do the update yourself, rather than to pay and wait for international shipping.

The latest Trigger Man firmware file can be downloaded from:

<http://delptronics.com/documents/triggerman.hex>

Terminology

Microcontroller: A single chip computer that contains the processor, memory, and the program all in one chip. The Trigger Man uses a microcontroller to do all the things it does.

PIC: The brand name of microcontrollers made by Microchip Technology Inc.

Firmware: The program that is embedded in the microcontroller chip inside of a device.

Programmer: A device that loads firmware into a microcontroller.

Get a PIC Microcontroller Programmer

Microchip makes programmers for their chips. They are called the PICkit2™ and PICkit3™. Either one will work. There are also quite a few cheap PICkit2 clones out there.

A PICkit2 clone can be purchased from FastTech for \$18, worldwide shipping included. It takes about a week to arrive. We have one of these and have successfully tested it with the Trigger Man.

<http://www.fasttech.com/products/0/10000018/1002200-pickit-2-compatible-programmer-debugger>

The FastTech programmer comes with software and documentation in Chinese. If that is not helpful to you, the PICkit2 software for Windows can be downloaded here:

<http://ww1.microchip.com/downloads/en/DeviceDoc/PICkit%20%20v2.61.00%20Setup%20A.zip>

If you are using Linux or Mac OS X, the software is not as easy to use as the Windows version. You will have to run it from a command prompt. You can find instructions and a software download link here:

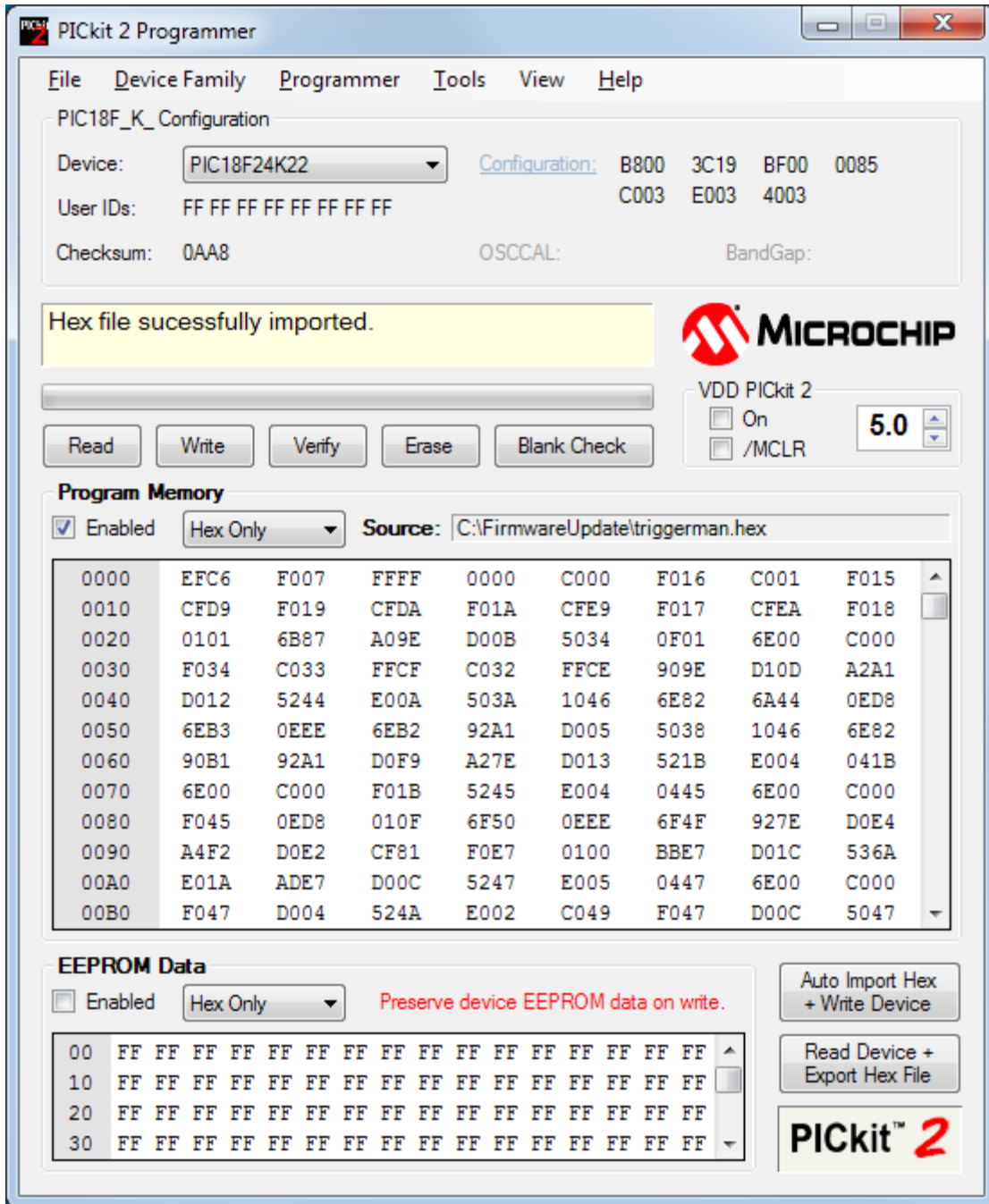
<http://www.piccircuit.com/shop/pic-code/115-tutorial-17-pic-programming-mac-os-x.html>

Update the Firmware

1. Run the PICkit2 software.
2. From the Device Family menu, select PIC18F_K_
3. From the Device pick list, select your chip (probably a PIC18F24K22, see page 4)
4. From the File menu, select Import Hex
5. Select the triggerman.hex file
6. Un-check the EEPROM Data check box (so your patterns don't get erased)
7. The screen will look like the picture below
8. Remove the Trigger Man from your rack
9. Remove the power cable from the Trigger Man
10. Connect the programmer to the module (as described on the following pages)
11. Click the Write button
12. Wait until the status box turns green and says "Programming Successful."

Screen Shot

This is what your screen should look like just before you click the Write button.
Do not worry if the checksum is different.



How to Tell Which PIC Chip You Have

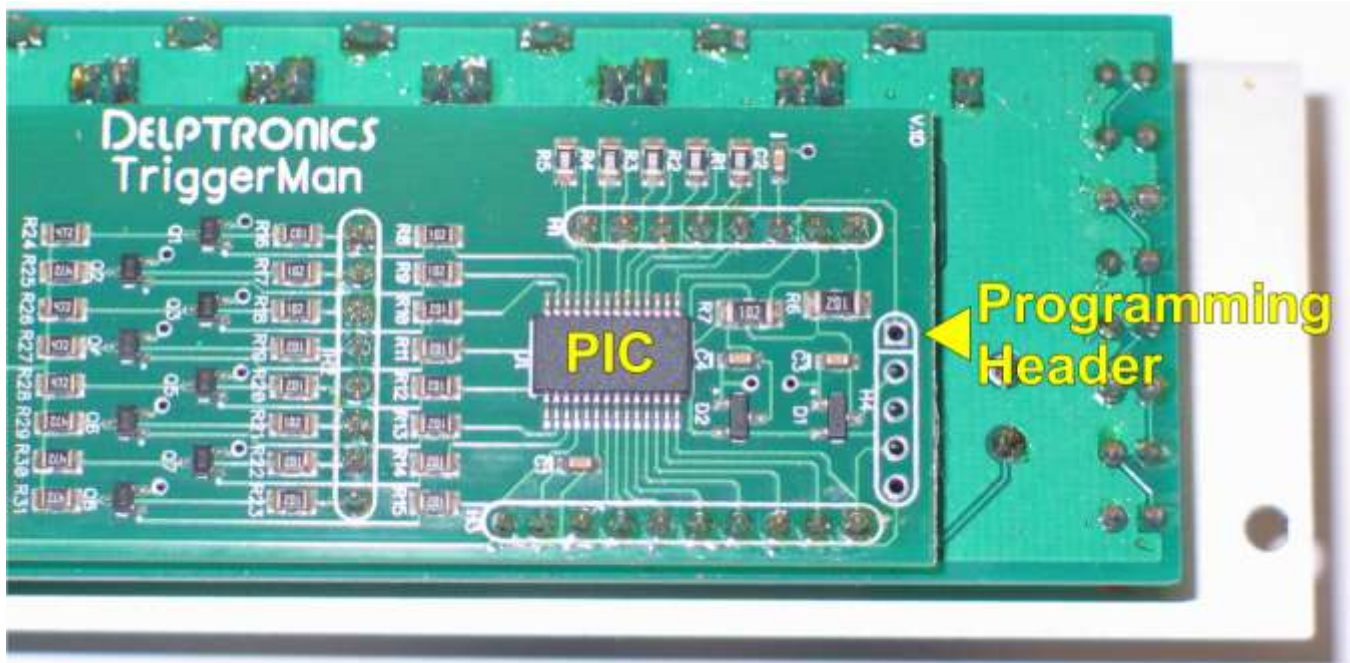
Most Trigger Man modules use the PIC18F24K22 microcontroller chip. Newer modules (sold after September 2014) use the PIC18F25K22 chip. The chip is very tiny and the name can be hard to read, especially without a magnifying glass.

If you assume that you have PIC18F24K22, you will probably be right. If you are wrong, nothing bad will happen. You will simply get the message "Selected device not detected. Detected a PIC18F25K22 instead." If that happens, start the programming steps over again, selecting the correct chip in step 2.

If the PIC18F24K22/PIC18F25K22 is not in the device list, then you will need to update your device file. That update can be downloaded here: <http://www.microchip.com/forums/m487219.aspx>

The Circuit Board

Refer to the picture below. It highlights the position of the PIC microcontroller and the programming header on the circuit board. The header is where you connect the PIC programmer to the module.

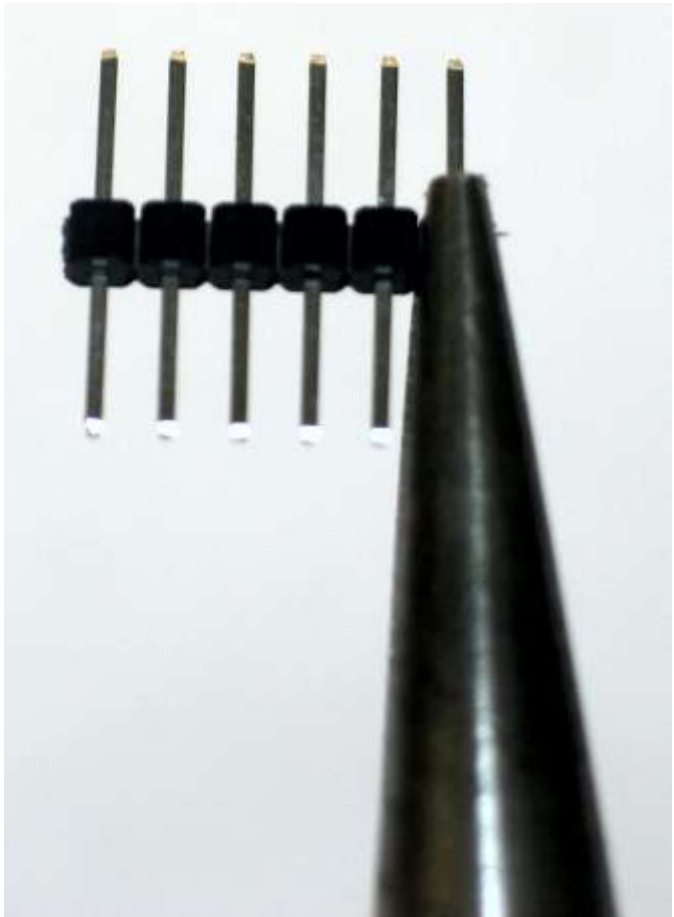
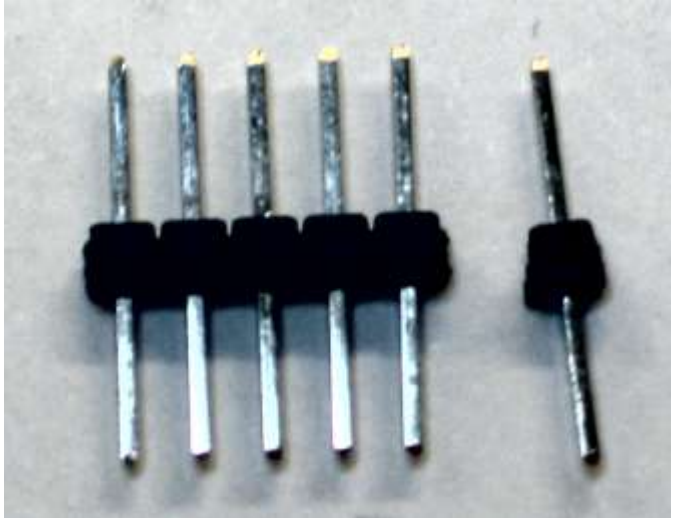


The 5-Pin Header

As you can see in the picture above, the programming header is 5 pins. Your programmer may have come with a 6-pin header. The sixth pin is not used. You will need to snap off the extra pin so that it looks like the picture to the right.

The pins on the header are designed to be snapped off. All of the pins are the same, so it does not matter which end you remove a pin from.

Hold the far right pin with needle nose pliers as shown. Hold the rest of the pins with your fingers right up against the pliers. Twist the pliers clockwise to snap off the extra pin.



Connecting the Programmer to the Module

The header does **not** have to be soldered onto the module's circuit board. Just insert the 5-pin header into the programmer, then insert the pins into the holes on the module. Hold the module vertically, and allow gravity to hold the programmer in place. The holes on the circuit board are plated. That is, they have metal around the inside of the hole. So, gravity will press the pins against the edges of the holes.

Make sure that the module and the programmer are oriented as shown in the pictures. The white arrow on the programmer must point to the left-most hole on the circuit board.

If you click the write button in the PICkit2 software, and get an error message saying that the chip is not found, that means that the pins are not making good contact with the holes. Perhaps you moved a bit during programming. Just click write again. You might also try pulling the programmer away from the circuit board a little bit. Just a bit, so that the pins are still in the holes and the programmer stays in place.

If you get a "Programming failed at Program Memory Address 0x000000" error message, even though you have done everything right, then you should try checking the "EEPROM Data Enabled" checkbox. It means that your saved patterns will be erased, but if all else fails, checking that box has been found to make the process work.

