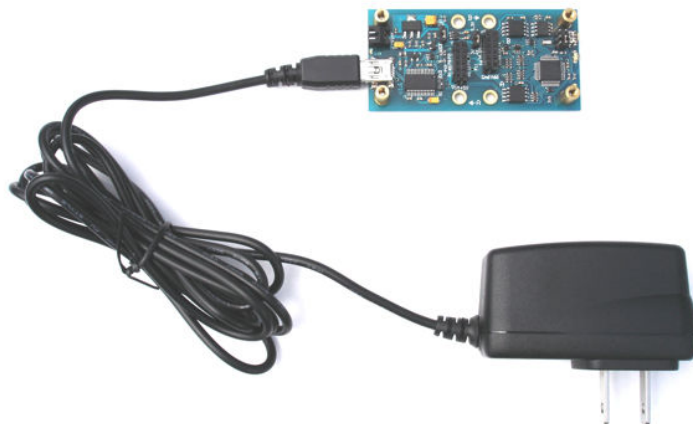


## App Note: *Standalone Power for Parallax Motherboards via the USB Connector*

### Introduction

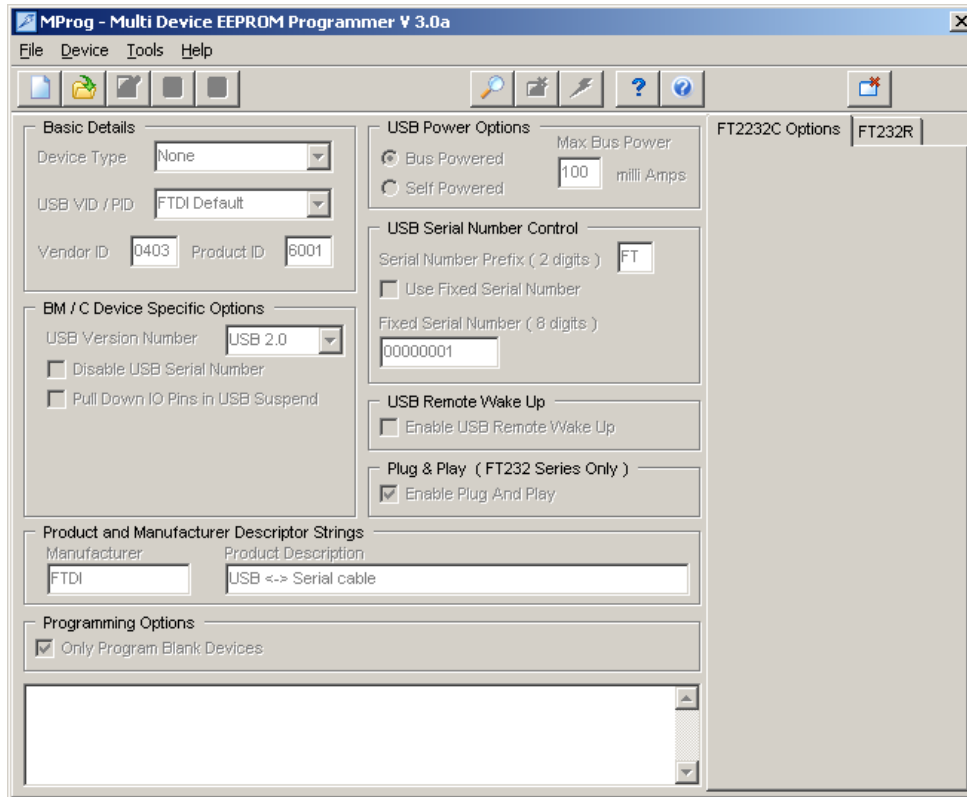
Parallax motherboards, like the MoBoStamp-pe (p/n 28300), along with some of their daughterboards, accommodate a variety of power sources. For example, they can be powered from a PC's USB port, from the onboard **Vin** connector via the MOBO Power Cable (p/n 800-28300), from an external RS232 device via the (upcoming) RS232-DB daughterboard (p/n 28315), or from a wall transformer via the PWR-I/O-DB daughterboard (p/n 28301). This application note describes yet another way: using a 5V regulated DC wall transformer that includes a USB mini-B connector. Such a power supply is made by Pihong (among others). The Pihong unit (p/n PSAA05A-050 for the U.S. model) may be obtained from Mouser Electronics ([www.mouser.com](http://www.mouser.com)). It is shown plugged into a MoBoStamp-pe in the photo below.



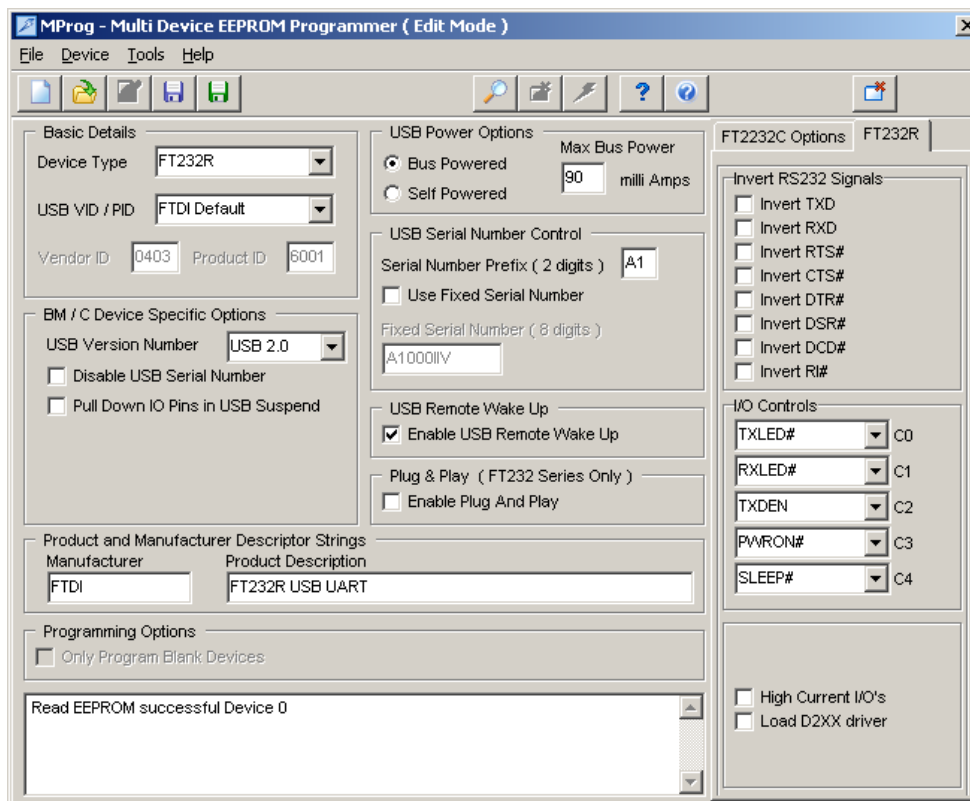
### Setup

For power from the USB port to be switched onto the motherboard's 5V supply rail, the onboard FTDI USB interface chip must undergo a handshaking transaction with an attached PC. Once this takes place, it will turn on the USB-supplied power to the rest of the board. Therefore, simply plugging one of the Pihong power supplies into the motherboard's USB port will not power up the board, since there's no PC with which to do the handshaking. But the FTDI chip can be configured (*i.e.* tricked) to bypass this important function and power up the downstream electronics whenever it receives power from the USB connector.

To configure the FTDI chip, you will need to obtain the **MPROG** utility from FTDI's website: <http://www.ftdichip.com/Resources/Utilities.htm>. Download and install the **MPROG** utility, then start it up. You will see a screen like the following:



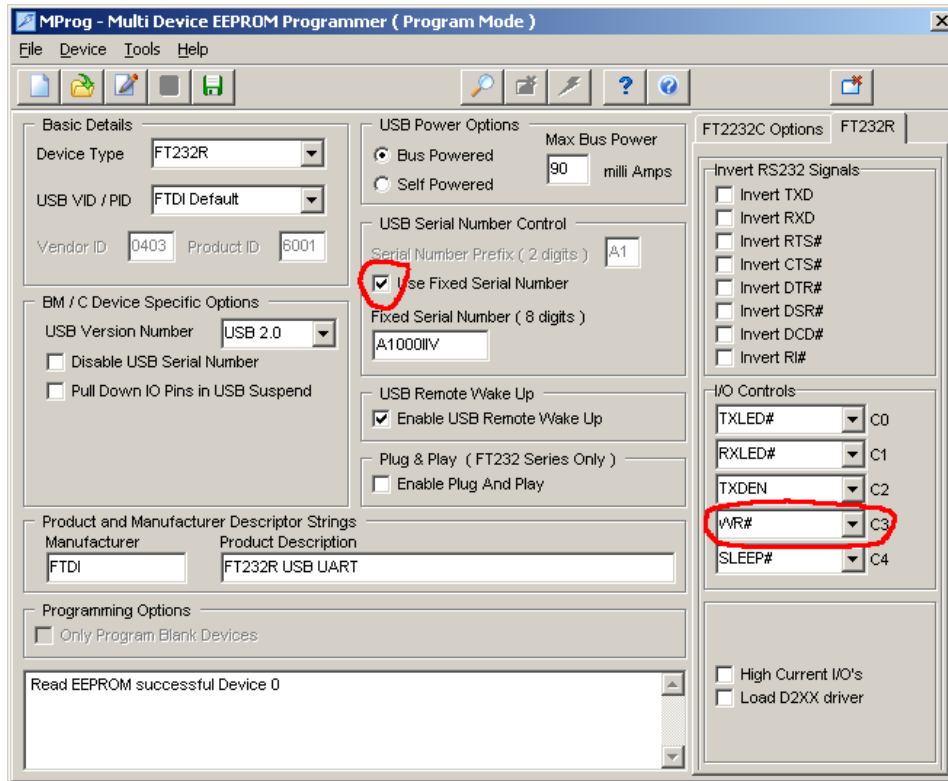
Now, connect your motherboard via the USB port. Then click **Tools -> Read and Parse**. You will see a screen that looks something like this:



There are two things you will need to set:

1. Check the box that says, "Use Fixed Serial Number". This will keep the serial number of your FTDI chip from changing. *Do not change the serial number in the "Fixed Serial Number (6 digits)" box.*
2. Under **C3** in the righthand column, select **WR#** instead of the default **PWRON#** setting.

Your screen will look like this:



Now do a **File -> Save As ...** and save your new settings under whatever filename you want. (This is necessary to enable **MProg** for programming.) Finally, to program the new settings, do a **Device -> Program**. At this point, your motherboard should be capable of receiving power from the Phihong wall transformer. (Be sure the EXT/USB jumper is set to USB.)

You will also be able to program the BASIC Stamp, as usual, via the USB port. However, before connecting the USB cable, it will be best to unplug any daughterboards that consume a lot of power, since the usual power-up sequence will not be followed.

It is also possible to allow the Phihong unit to power the system and to *prevent any further programming of the BASIC Stamp*. This can be useful when others are using your motherboard system and you don't want them to change the program. This is done simply by selecting **TXDEN** in the above screen for **C3**, instead of **WR#**. Of course, this will prevent *you* from reprogramming the BASIC Stamp, too. So, to reverse this lockout, you will need to run **MProg** again and restore **C3** to either **WR#** or **PWRON#**.