

FT8U232 / FT8U245

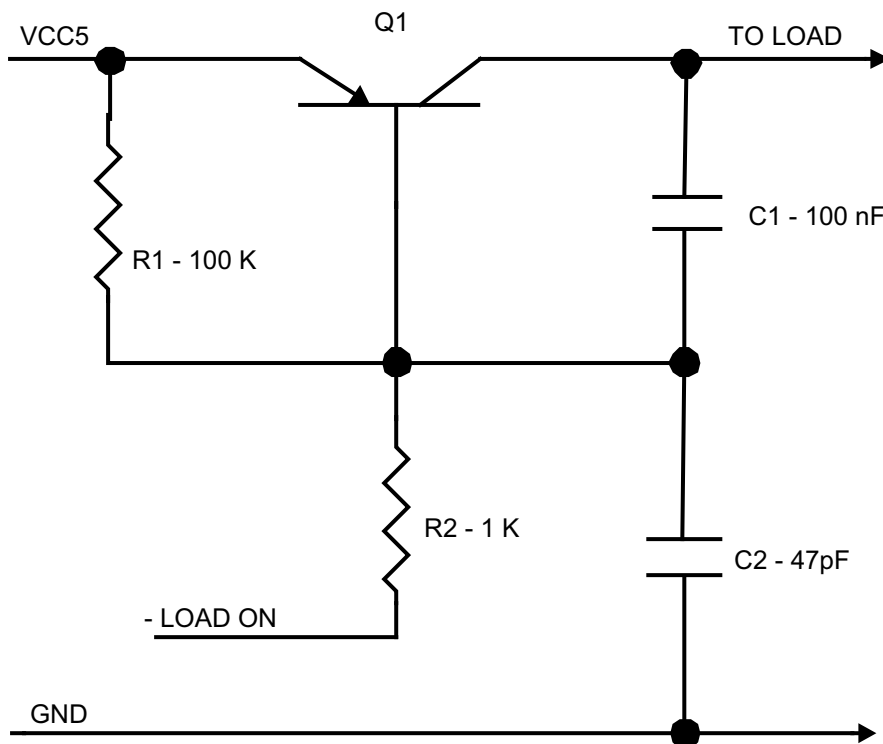
High-Current Bus-Powered Devices

There are several points to consider when designing a high current, bus powered device with the FT8U232 or FT8U245 chips:

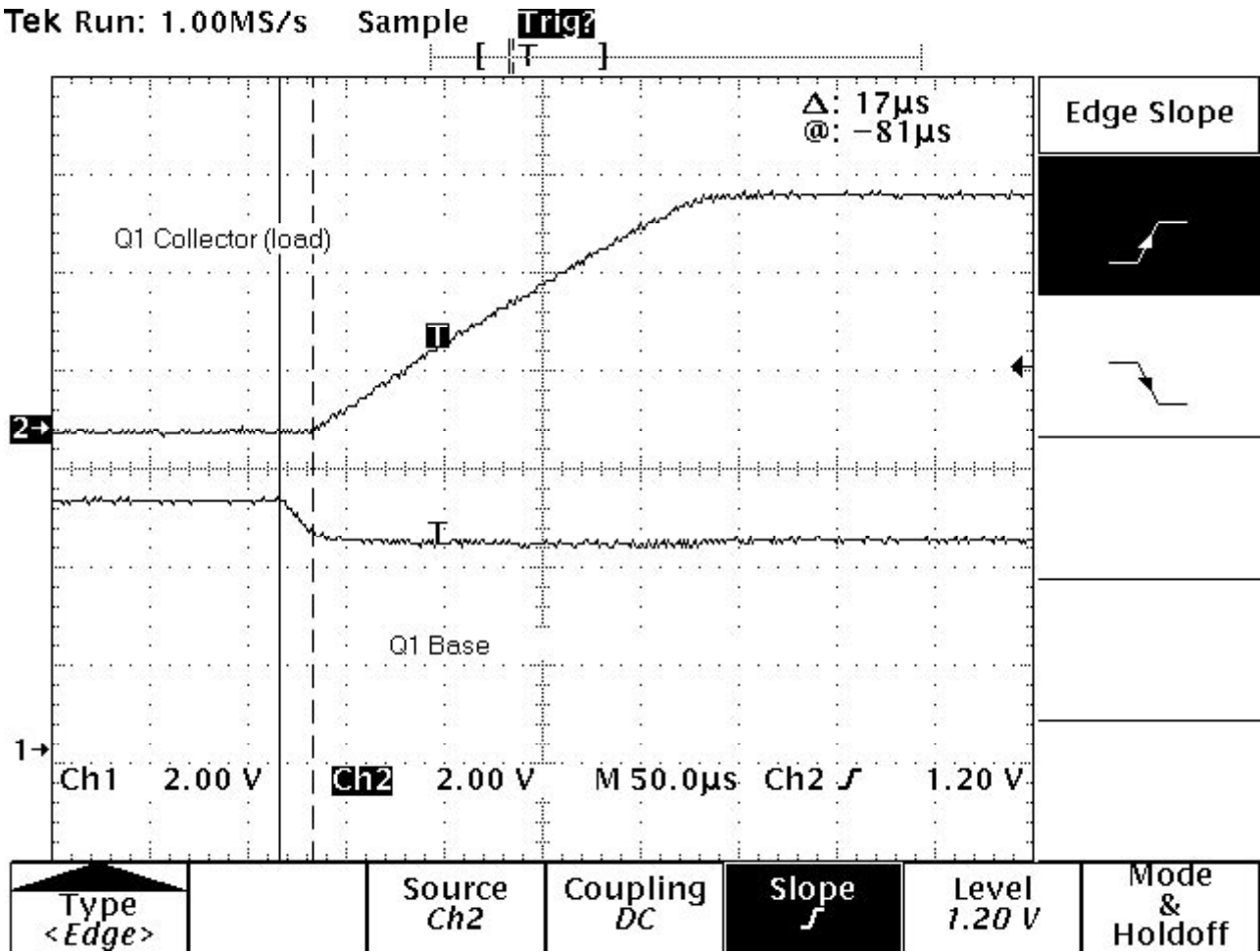
1. The high power logic can only be switched on if the device is configured by the system.

The power to the extra logic must be controlled to ensure the chip is powered off when the device is first plugged in. If you are plugged into a bus-powered hub and require more than 100mA, then you will not be configured. In addition, it is advisable to try to prevent sudden changes in power requirements. These can cause the voltage rail to drop down to 3 volts, although momentarily, and cannot be smoothed by capacitance alone.

The following circuit performs two functions; It allows the power to the load to be switched off and on, and it provides a 'slow start' feature to prevent glitches on VCC. For Q1 a BCP69 - SOT223, or a ZTX718 - E line, or similar can be used.

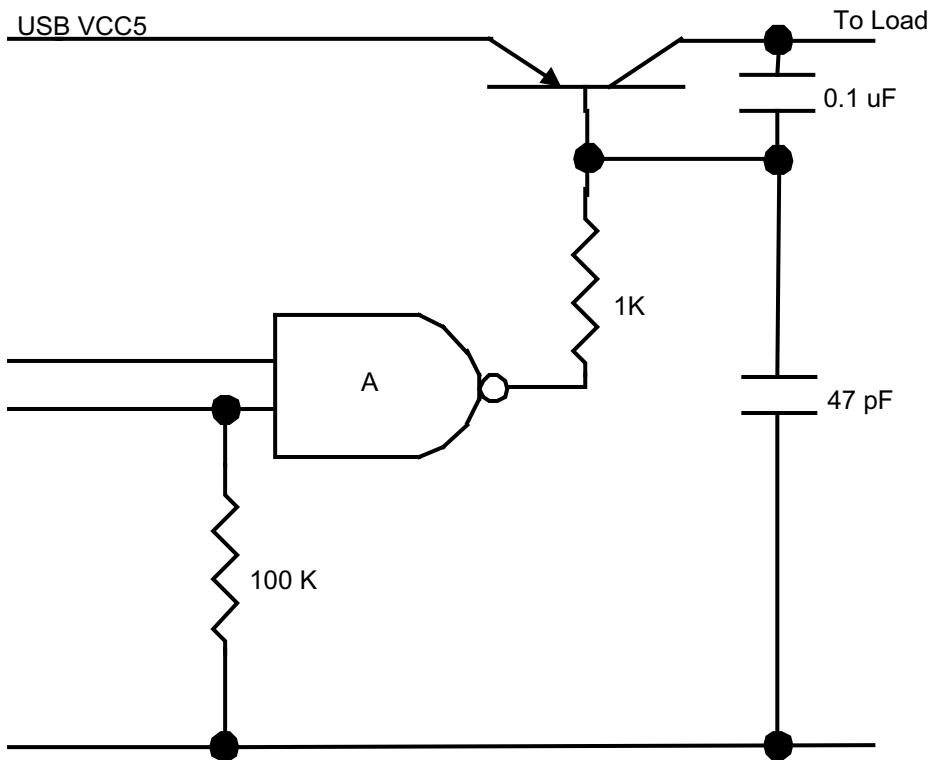


The following oscilloscope trace shows the circuit driving a 25 Ohm / 5uF load.



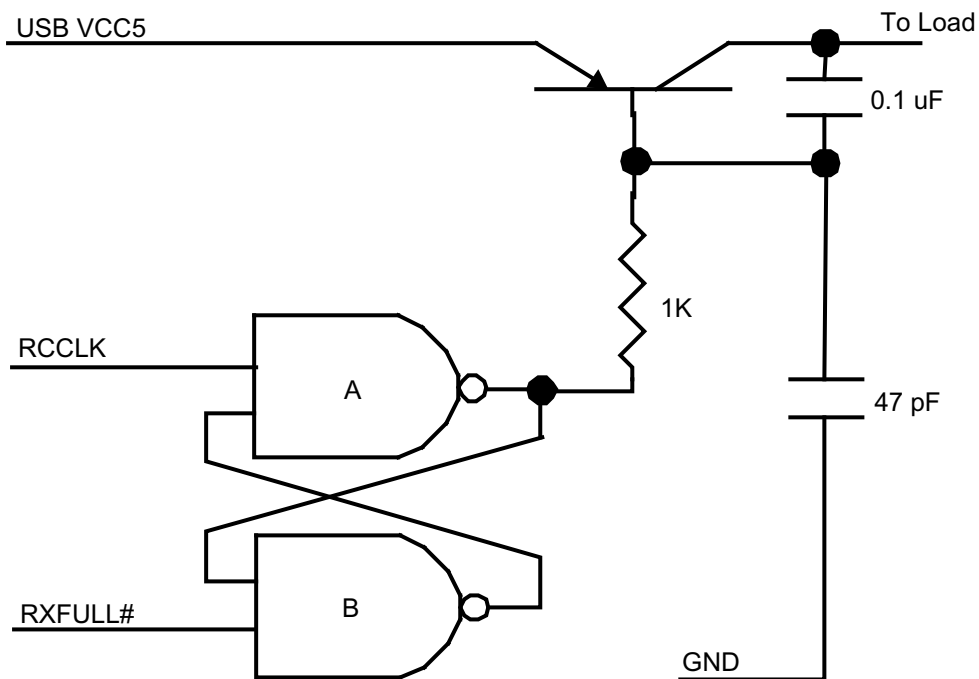
2. The high power part of the circuit must be powered down during suspend or reset.

For the FT8U232 device the -LOAD ON signal should be controlled by a CMOS 2 input NAND gate. The inputs used should be RCCLK (to indicate suspend) and USBEN (to indicate the configuration). The USBEN signal should be pulled down using a 100K resistor as it will tri-state during reset. If the Base of the transistor is being driven by CMOS logic, then it is not necessary to connect a resistor between the Base and Emitter. The high drive of the CMOS gate will ensure that the transistor is turned off



(a) Circuit for use with the FT8U232AM to control the power to a high power load

In the case of the FT8U245 device the design needs to be a bit more complex. In order to indicate that the device has been configured a latch arrangement should be used. If RESET# is used to pull up RCCLK instead of VCC, then RCCLK can be used to set the latch output high (OFF - The output of the NAND gate is driving -Load On). If RXFULL# goes low then this can be used to reset the latch output to low, and thus turn the power on. In this manner, the device is powered up by writing a byte to it.

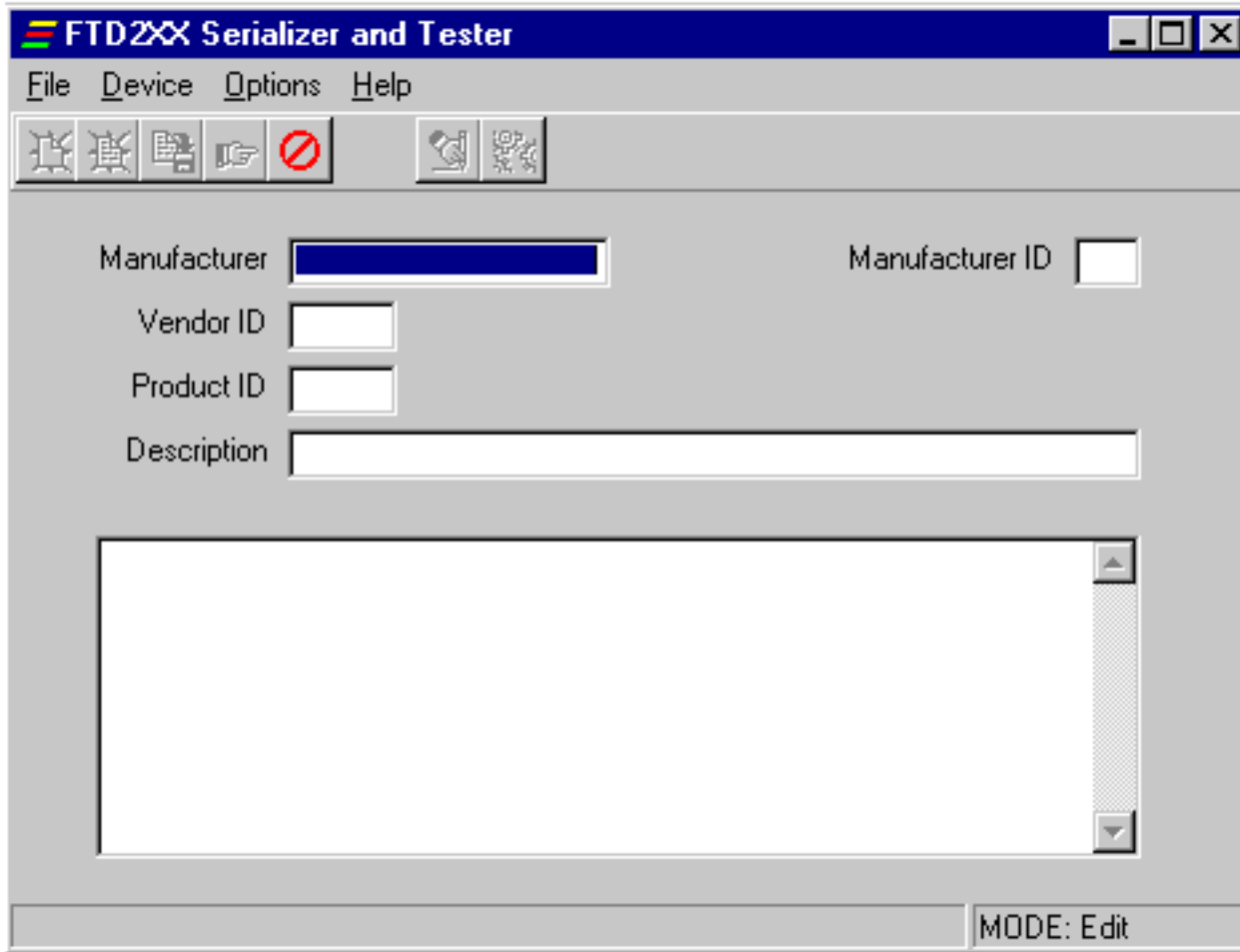


(b) Circuit for use with the FT8U245AM to control the power to a high power load

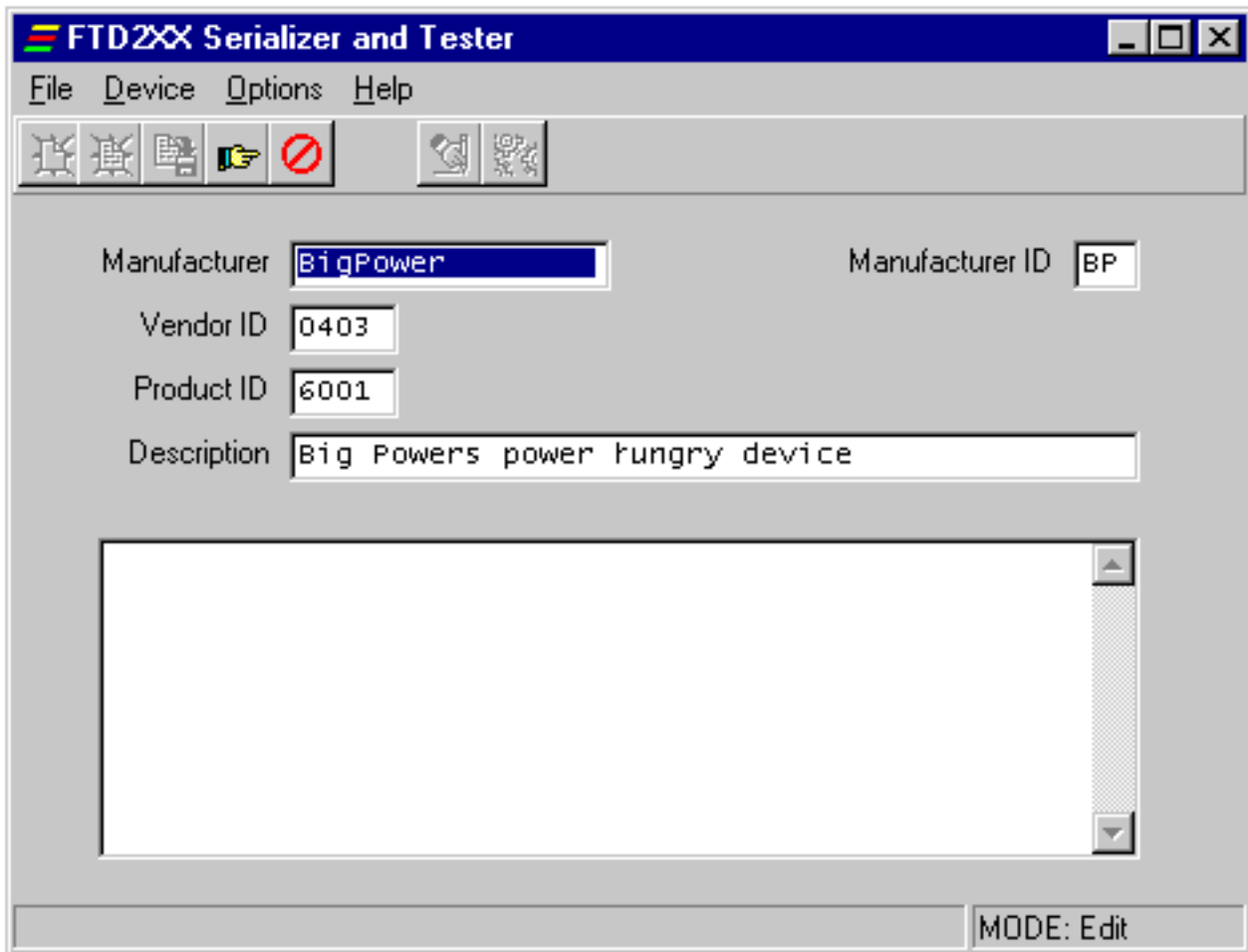
3. Telling the system that you need more than 100mA.

The system needs to be told that more than 100mA of current is required. This is done within the EEPROM using the application FTD2XXST.exe. A field is available which specifies the maximum number of milliamps required. An example of this is shown on the screenshots below.

Start the application and select "File / New". You should have an empty screen like the following:



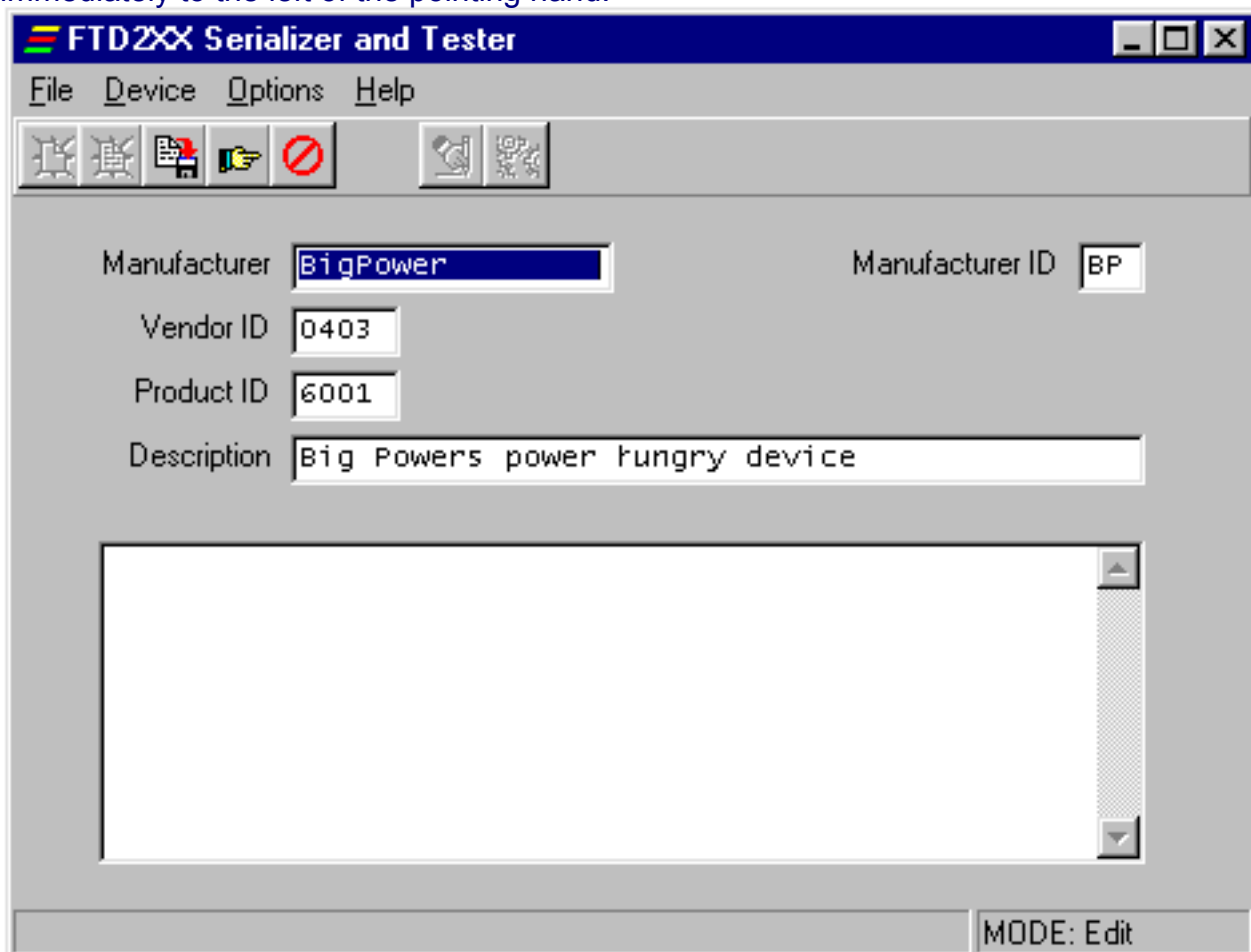
Next fill in the required fields. Use the TAB key to move between fields. You will notice that when you have filled in all the fields and gone back to the beginning, that the hand with pointing finger is highlighted in the toolbar. See the sample screenshot below:



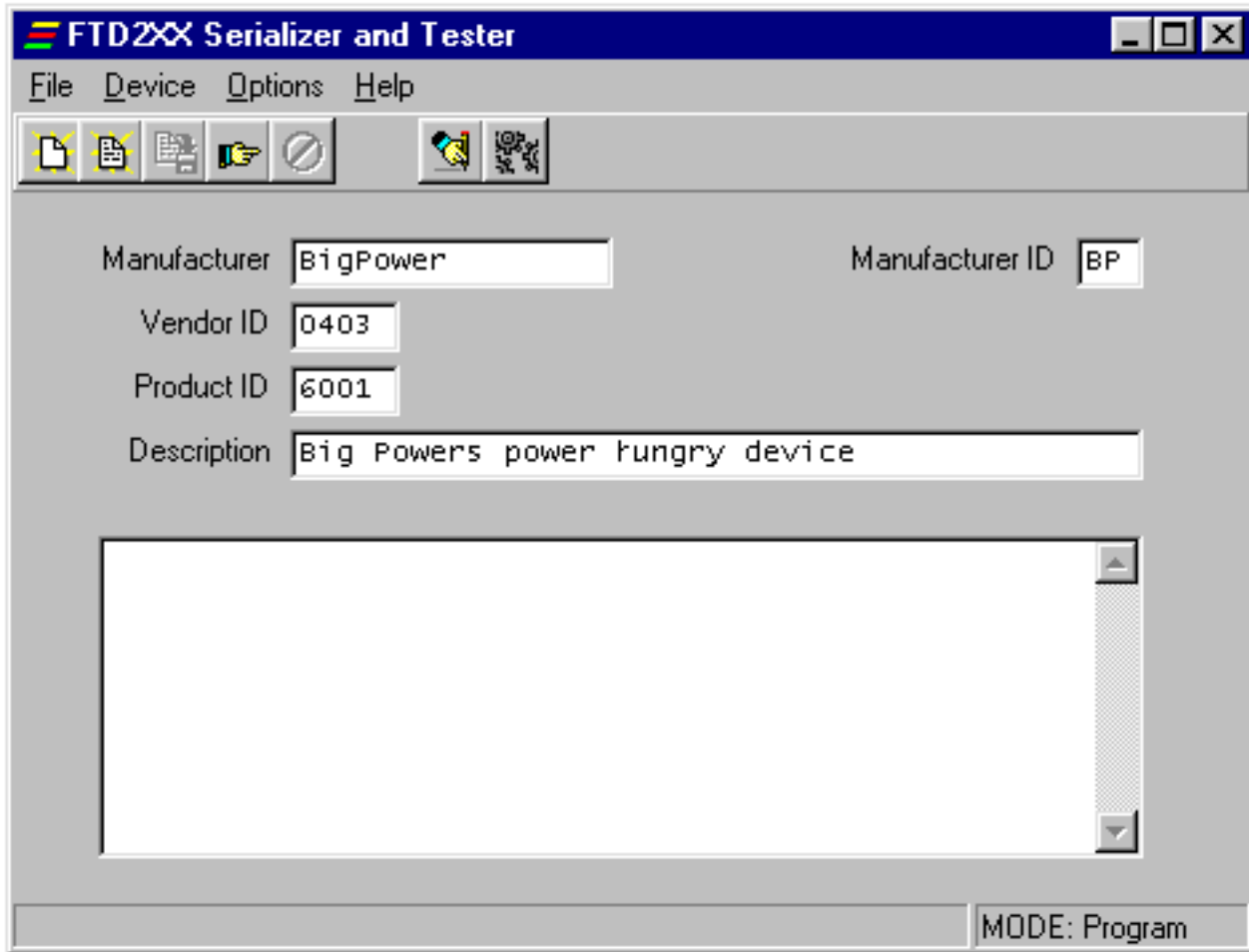


Next click on the hand in the toolbar and select the appropriate for your design. You should not make it “Self Powered” (don’t check the box) and put an appropriate amount into the “Max Power (mA)” field. The maximum amount allowed here is 500mA, but don’t specify this value. Use 490mA instead

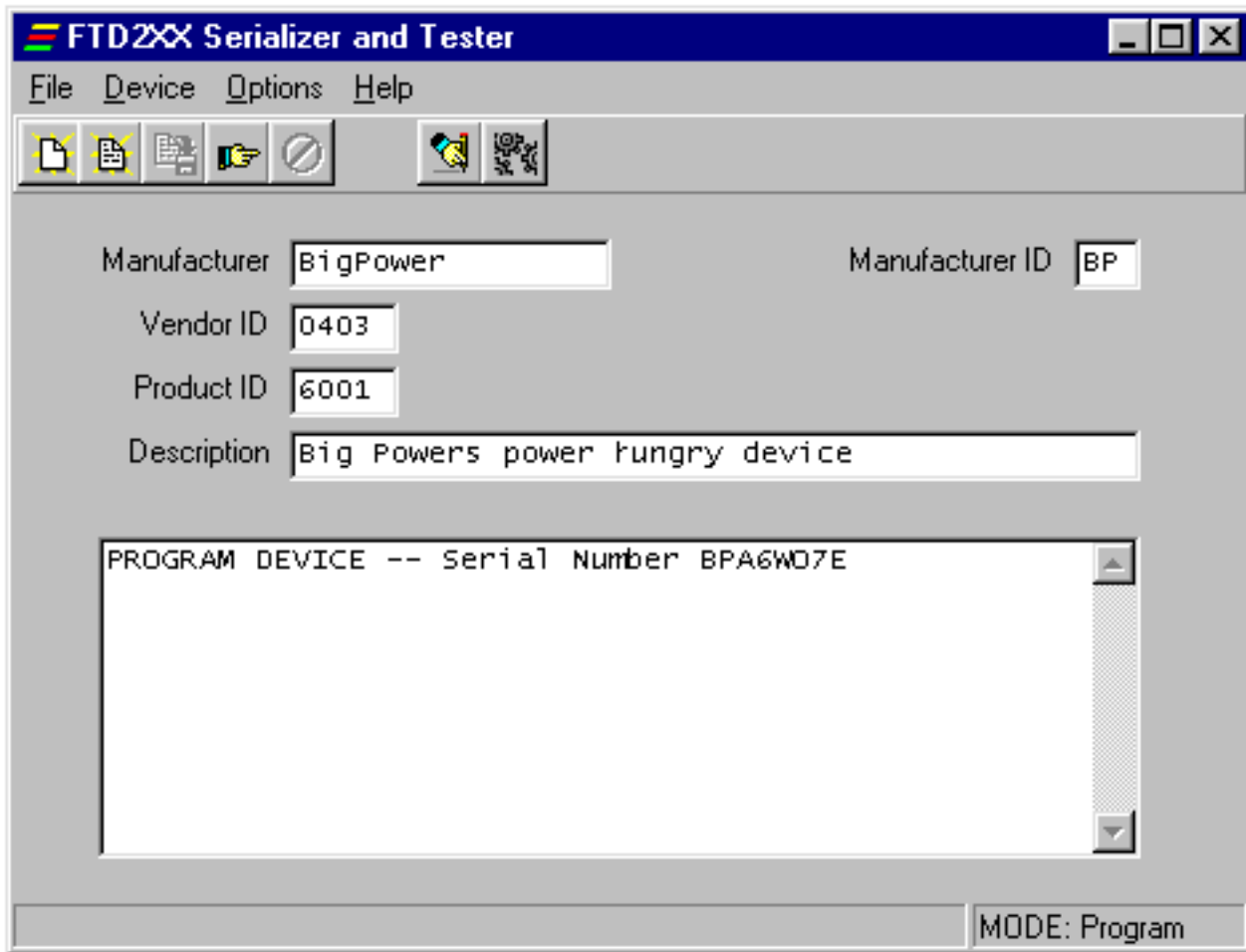
Click ‘OK’ to return to the main screen. A save option will now be highlighted on the toolbar, immediately to the left of the pointing hand.



Clicking here will save the information for you, and will then allow you advance to program the device. More options will be available on the toolbar as illustrated in the screenshot below:



Click the button with hand and pen icon. The following screen should be shown after you have successfully programmed a device. (Note: the serial number will be different.)



The device is now ready to use.