

AXE027 PICAXE USB CABLE

1) Introduction

The PICAXE USB download cable is used to download PICAXE programs into PICAXE chips. It can be used with any PICAXE chip or project board. The cable is compatible with any software application that supports programming of PICAXE chips.

The PICAXE USB download cable connects via the computer's USB port. However the cable contains a tiny circuit board, moulded into the compact USB connector. This circuit contains a USB to serial convertor chip, and so the actual data transfer to the PICAXE chip is via a 5V logic level serial connection.

When the AXE027 software driver is installed, the operating system automatically allocates the USB cable a 'COM port number' to be used within the PICAXE Programming Editor software. If you are not sure which COM port number has been allocated, click the View>Options menu, select the 'Serial Port' tab and then click the 'Setup' button. The Device Manager will then start - click the '+' symbol beside 'Ports (COM & LPT)' so that all the entries are visible. Beside the 'AXE027 PICAXE USB' entry will be the currently allocated COM port number. Section 4 of this manual explains how to change this COM port number if necessary.



2) Tips for using the AXE027 USB cable

Always plug in the USB cable *before* starting the Programming Editor software.

Always use the USB cable in the *same* USB port on your computer. The Windows operating system regards each individual USB port as a unique location. Therefore if you plug your cable into a different USB port you may be prompted by Windows to reinstall the driver files for this new location.

The USB cable's internal circuit board is powered by the computer's USB port. Therefore remove the cable from the PICAXE project when the USB end of the cable is not inserted into a computer, as the cable will not then be powered.



3) Installing the AXE027 PICAXE USB Cable Driver

The first time you connect the AXE027 PICAXE USB cable you will be automatically prompted to install the software driver files. These driver files can be found on the Programming Editor CDROM (in the USB_drivers_AXE027 folder) or downloaded free of charge from the software downloads section at the main PICAXE website (www.picaxe.co.uk).

Please ensure you are using the correct driver package for your operating system. The available Windows driver options are:

- Windows XP, XP (64 bit edition), 2003, 2000, ME, 98SE

There is no operating system support for USB within Windows 95 or NT. For these two old operating systems you must use the AXE026 serial cable instead.

If using the downloaded driver files from the website, unzip the downloaded files into a temporary folder (e.g. c:\temp) before proceeding.

On computers setup with user accounts (e.g. school networks) please ensure you are logged in as an administrator before proceeding.

Step 1

Plug the AXE027 USB cable into an available USB port on your computer. **Remember which port you have used as it is important to always use the same port in the future (to avoid having to reinstall the software drivers).**

After a few seconds Windows will recognise that the cable has been inserted and will automatically prompt you with the 'Found New Hardware Wizard'.

Step 2

If this is the first time the cable has been used, select 'Install from a list or specified location (Advanced)' and then click 'Next'

If you have previously already installed the drivers onto the computer, you can select 'Install the software automatically' instead, as the drivers will be ready to use.

Step 3

Select 'Search for the best driver in these locations' and browse to the drivers folder. This is either the appropriate folder within the 'USB_drivers_AXE027' folder on the Programming Editor CDROM or the temporary folder on your hard-drive where the website downloaded driver files have been saved (e.g. c:\temp).

Click 'Next'

Step 4

If a Windows logo testing warning is displayed click 'Continue Anyway'

Note that the generic FTDI software drivers to be installed during this process have already passed Windows logo testing. However due to legal reasons when distributed by a third party (e.g. Revolution) they cannot currently be marked as passed.

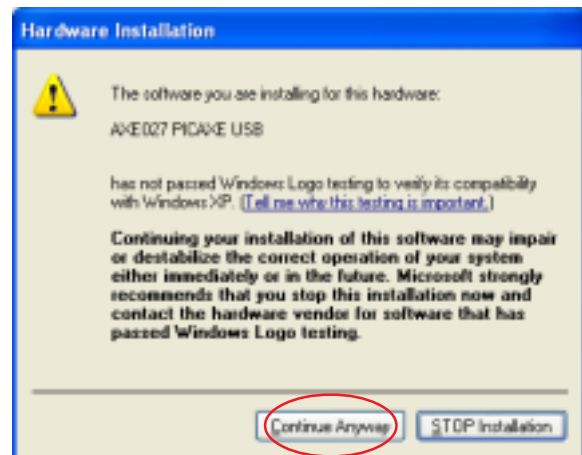
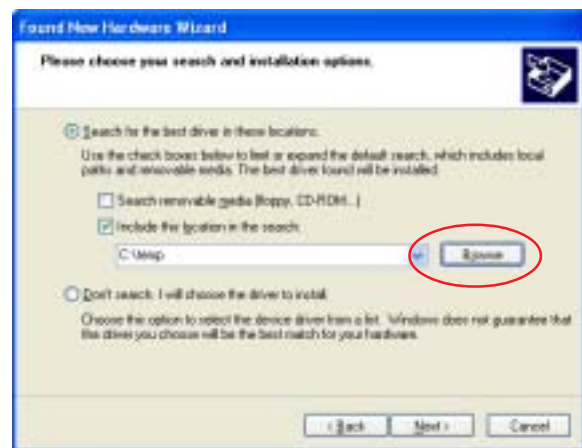
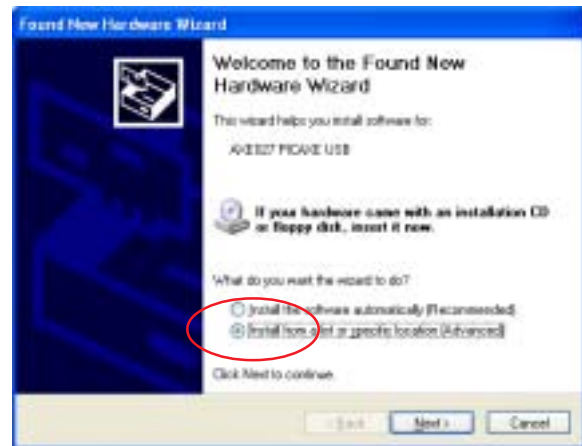
Step 5

Click 'Finish' when the installation completes.

Step 6

Please note the entire process (steps 2 to 5) will now repeat. This is completely normal as the Windows operating system requires two separate driver files for the AXE027 cable to operate.

The Windows operating system will now automatically allocate the AXE027 USB cable a default 'COM port number' to use within the Programming Editor software. However this automatically allocated COM port number may not be suitable (e.g. COM20) and may need to be re-assigning to another port (e.g. COM4).

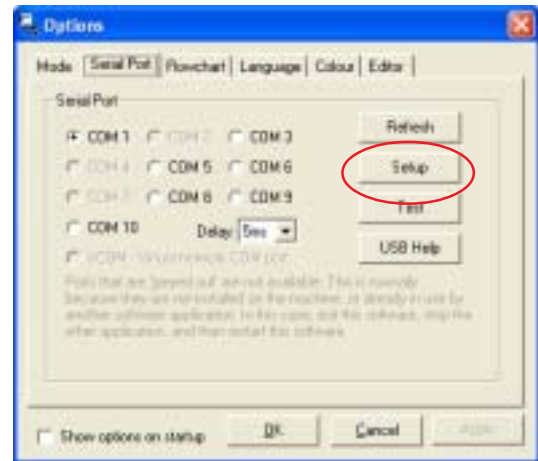


4) Changing the default 'COM Port Number'

After initial driver installation, the Windows operating system will automatically allocate the AXE027 USB cable a default 'COM port number' to use within the Programming Editor software. However this automatically allocated port number may not be suitable (e.g. COM20) and may need re-assigning to another COM port number (e.g. COM4).

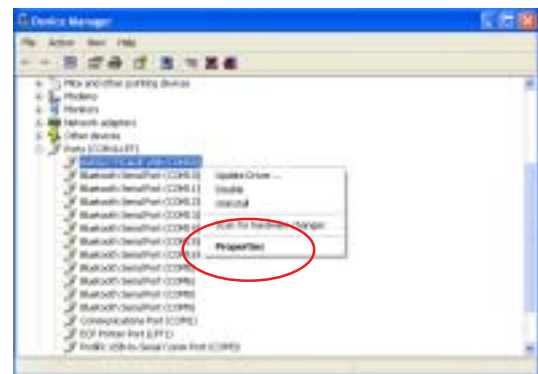
Step 1

Start the Programming Editor software.
Select the View>Options menu and click on the 'Serial Port' tab. Note which ports are greyed out (not used).
Select one of these greyed out port numbers (e.g. in this example COM4)
Click the 'Setup' button to launch Device Manager.



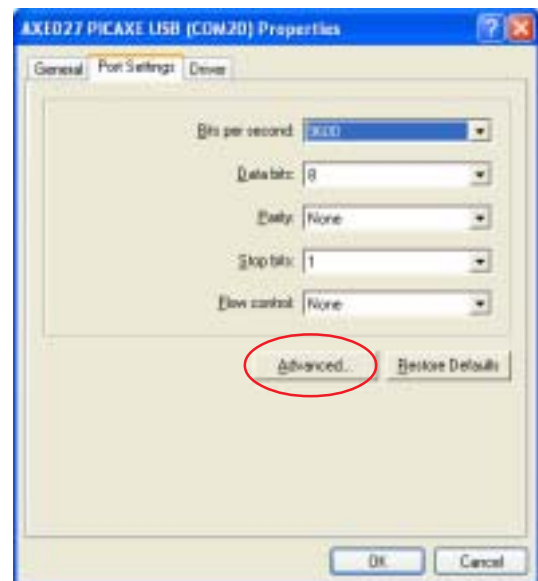
Step 2

Click on the '+' beside 'Ports (COM and LPT)' to browse the current ports. Select the 'AXE027 PICAXE USB' entry and right click the mouse. Select 'Properties'.



Step 3

Select the 'Port Settings' tab and then click the 'Advanced...' button



Step 4

The COM Port number currently allocated is shown on screen (COM20 in this example).

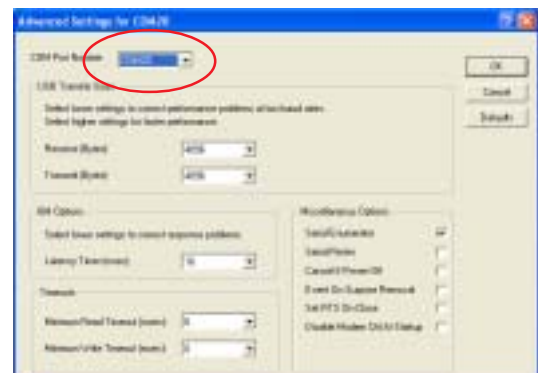
From the COM port number list select the desired new COM port number and then click 'OK' twice to save the new port number (none of the other settings need to be changed).

Note that sometimes the Windows operating system marks ports as 'in use', even though they are not actually in use at that time. This is because Windows is 'reserving' the COM port number for a particular device. This can occur, for instance, if you plug your AXE027 cable into a different USB port on the computer - Windows is expecting the cable to be inserted into the original USB port and so is reserving the COM number for that USB port. You may change to COM ports marked as 'in use' but will have to OK the extra Windows warning message.

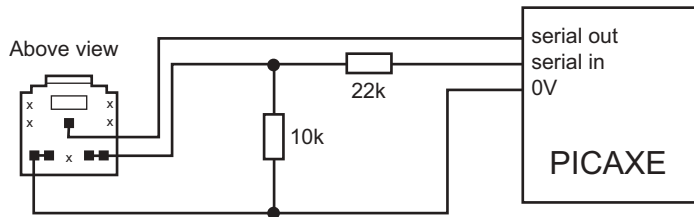
Step 5

In the Programming Editor now click the 'Refresh' button. The desired COM port should now become available. Select this port and then click 'OK'. The system is now ready for use.

This process is only required once as Windows automatically saves the COM port settings for this cable for future use (when used in this USB port location).



5) PICAXE Download Circuit



The standard PICAXE download socket (part CON039) and 10k/22k download circuit is unchanged for use with the AXE027 USB cable (ie the same circuit is used for both the AXE026 serial cable and the AXE027 USB cable).

As the AXE027 interfacing voltage is at true logic levels (5V, rather than RS232 voltage levels) it is theoretically permissible to reduce the value of the 22k resistor (e.g. to 1k), but only if a AXE026 serial cable is **never** to be used. However for maximum versatility it is recommended to leave the circuit unchanged.

There is no advantage to using the 'enhanced' download circuit (see main PICAXE manual) with the AXE027 USB cable, as the enhancements in this circuit are to compensate for negative variations in RS232 voltages (which do not apply when using the 5V logic level AXE027 USB cable). However, if already built into a project board, it is acceptable to continue to use the enhanced circuit.

The AXE027 USB cable may also be used to transmit/receive serial data from the PICAXE input/output pins (via serin and serout commands).

6) AXE027 Circuit Diagram

The miniature USB to serial circuit is built into the plastic moulding of the USB plug on the AXE027 cable. The circuit diagram is shown below.

