

BitBox USB Watchdog

Product Description

The BitBox USB watchdog receives commands from PC application software via a virtual COM port that tell it if the PC is running. When there has been no command from the PC for a user defined length of time the watchdog will reset the PC.

The watchdog is connected to the internal USB header and reset switch header on the majority of motherboards.

Installation – Hardware

Note: Before beginning the hardware installation please download and extract the relevant drivers for your system from www.bitbox.co.uk/drivers/

Power the PC down and install the watchdog making sure the USB header is connected with the correct orientation. This information should be available in the motherboard manual. The colour coding of the USB wires is shown in table 1 below.

Connector Pin	Wire Colour	Function
1.1	Red	+5v
1.2	Yellow	Data-
2.1	Grey	Data+
2.2	Black	Gnd

Table 1 – Watchdog USB Connector Pinout

It is critical that this is checked and verified correct before power is applied to the system

Connect the reset switch to the pin header on the pcb and connect the blue / white header to the pins for the reset switch on the PC motherboard. The orientation of this connector is not important.

Connector Pin	Wire Colour	Function
1	Blue	Shorted to reset
2	White	

Table 2 – Watchdog reset Connector Pinout

Installation – Software – Windows 2000

Once the PC has been powered up and windows has started it will automatically detect the new hardware with the box as shown in fig 1. The hardware wizard will then start as in fig 2.

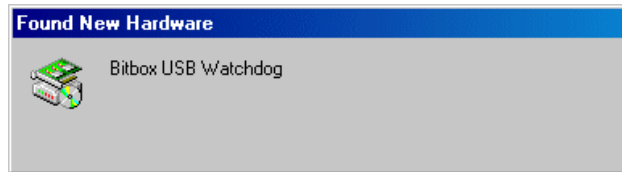


Fig 1 – Windows automatically finds the watchdog

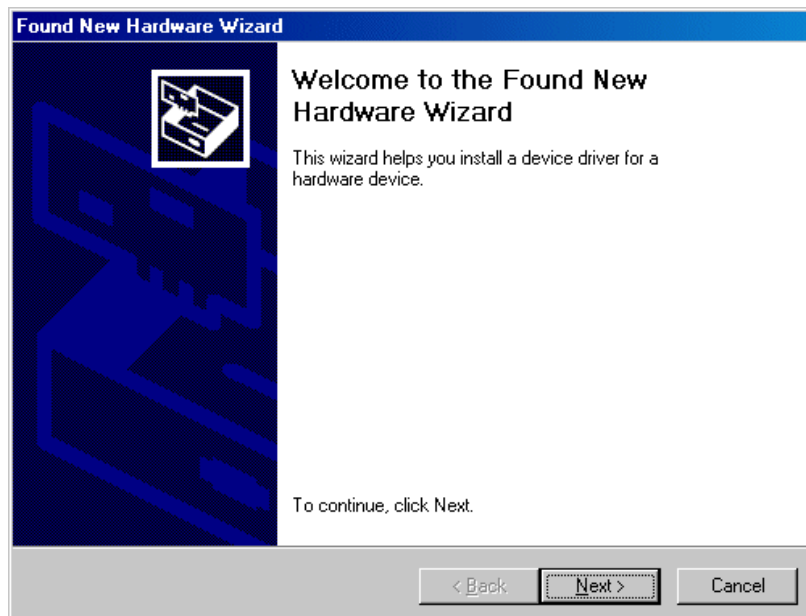


Fig 2 – Hardware wizard controls the installation

Next we need to locate the driver as shown in fig 3 to 5.



Fig 3 – Search for a suitable driver

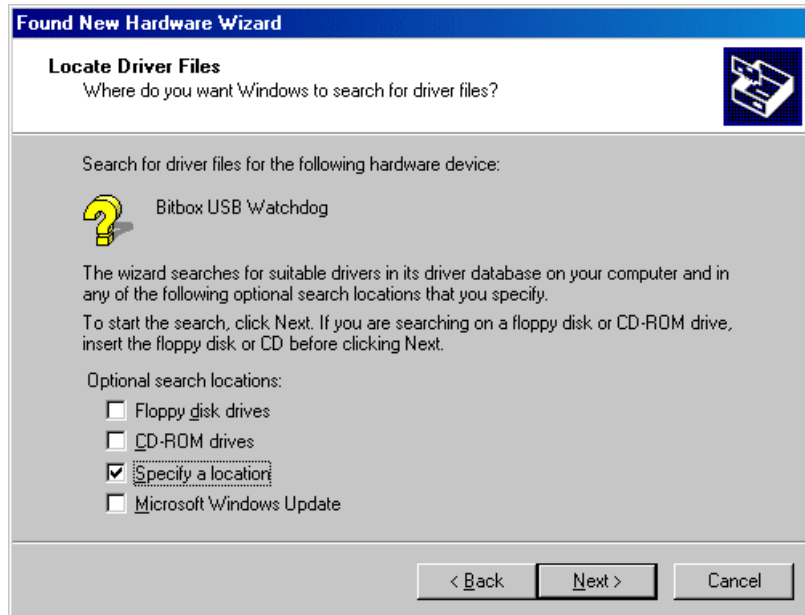


Fig 4 – Only look in a specified location

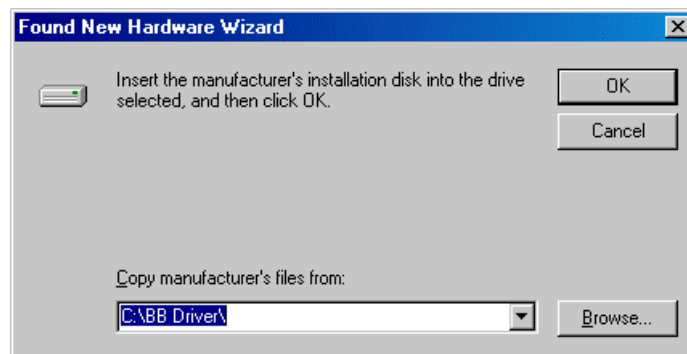


Fig 5 – Browse to the directory that the driver has been extracted to

The driver will have been located and windows should now show the window as in fig 6. Once you have confirmed that you wish to install the driver the window shown in fig 7 will be displayed. Simply click the “Finish” button and the watchdog driver will be installed.

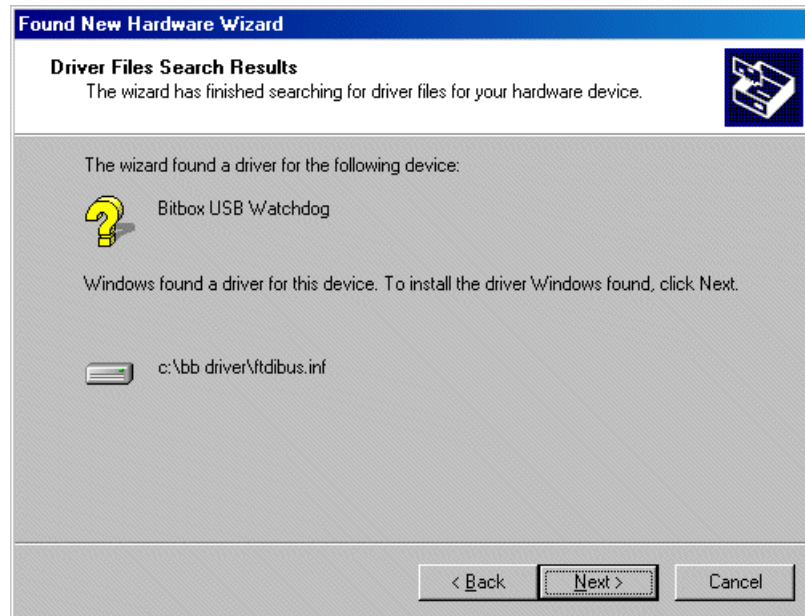


Fig 6 – Windows has found the driver

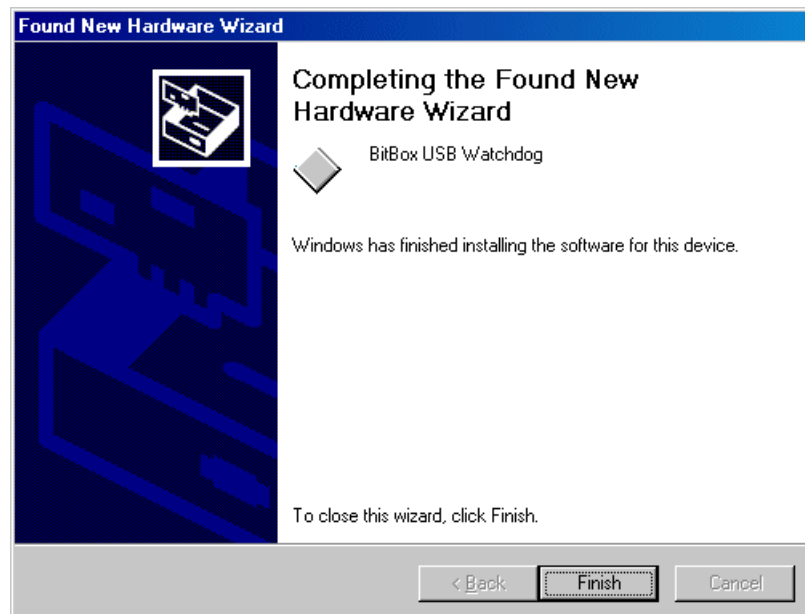


Fig 7 – Watchdog driver installed.

Now the virtual COM port driver will be installed to enable the application software to talk to the watchdog. This process should again be automatic. The window shown in fig 8 will be displayed to show that the hardware has been found.

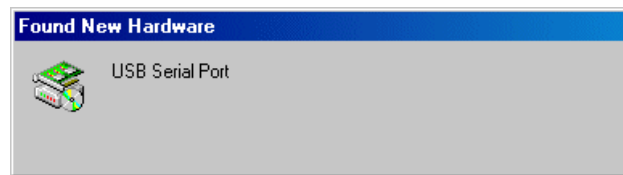


Fig 8 – Virtual COM port found

Repeat the steps in fig 2 to fig 7 above and the virtual COM port will be installed.

Once completed right click on *My Computer* and click *Properties*. Click the *Hardware* tab in the system properties box. Then click on the *Device Manager* button. Click on the + by the *Ports (COM & LPT)* and *Universal Serial Bus controllers* to open the groups as shown in fig 9.

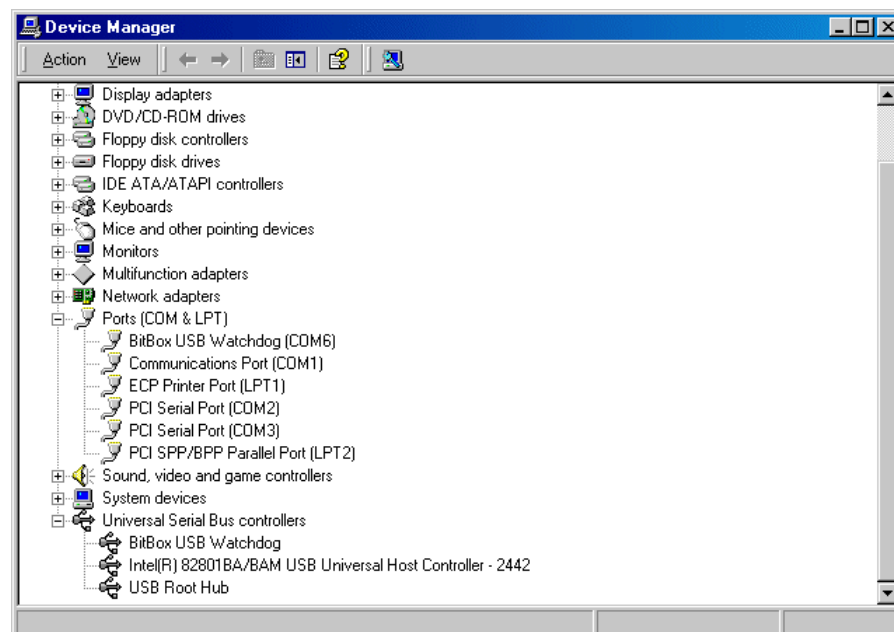


Fig 9 – Device manager showing the installed hardware and virtual COM port number

It is important to do this and record the COM port number, as this is the port any application software will talk to the watchdog through. In the example shown in fig 9 the COM port is number 6.

Installation – Software – Windows 98

Coming soon....

This should be very similar to the Windows 2000 installation process...

Installation – Software – Linux

Coming soon...

Operation

Communication

The watchdog communicates via a virtual COM port driver. The actual COM port number can be found by following the last few steps in the relevant installation section. The communication properties required are shown in table 3.

Bits per second	9600
Data bits	8
Parity	None
Stop Bits	1
Flow Control	None

Table 3 – Communication properties

The watchdog will respond with the character string “ACK” if it understands a command or with the character string “NAK” if it thinks there is an error.

All the commands that you send to or receive from the Watchdog are followed by ascii character code 0x0D (CR).

Power up and setup

The watchdog will be disabled when it is initially connected. To indicate the board is connected to the power there will be a red power indicator illuminated. The default maximum time between receiving commands from the PC before a reset occurs is 10 seconds and the default amount of time the reset switch is held closed is 5 seconds.

The time between receiving commands can be set by sending “pngXXX” to the watchdog where XXX is the time in seconds up to a maximum of 255 seconds. The reset time can be set by sending “rstXXX” to the watchdog where XX is the time in seconds up to a maximum of 255 seconds.

If you wish to check the timeout settings send “config” to the watchdog and it will respond with the settings for example “Config v3: Ping: 010s Reset: 005s”.

Use

To use the watchdog first it must be enabled by sending “enable”. This will cause the orange activity indicator to illuminate. The command “ping” must then be sent within the timeout set in the previous section to prevent the PC from being reset. Sending “disable” will disable the watchdog, this will cause the orange activity indicator to be distinguished.

If a “ping” is not received within the specified timeout the orange activity indicator will flash and the PC should reset. If the activity indicator flashes but the pc does not reset you must turn the reset header through 180 degrees as it is currently connected with the wrong polarity.

Once the PC is reset the watchdog enters disabled mode and awaits an “enable” command.

Command Summary

Command	Meaning
enable	Enable watchdog
disable	Disable watchdog
ping	Ping watchdog
rstXXX	Set time reset is held closed (XXX sec)
pngXXX	Set max time between ping's (XXX sec)
config	Get the current configuration

Table 4 – Commands to the watchdog

Response	Meaning
"ACK"	Command understood
"NAK"	Command error
"Config vX: Ping: YYs Reset: ZZs"	Current watchdog configuration

Table 5 – Responses from the watchdog

Revision History

1.00		Matt Garnett	mgarnett@bitbox.co.uk	Initial Release
1.10		Matt Garnett	mgarnett@bitbox.co.uk	Updated for issue 3 PCB
1.20	09/12/2003	Matt Garnett	mgarnett@bitbox.co.uk	Updated for longer timeouts
1.30	23/03/2009	Matt Garnett	mgarnett@bitbox.co.uk	Updated for string termination