
Bluetooth PC Card (BL500)

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Contents

Brain Boxes Information	1
Guarantee.....	1
Copyright.....	1
BRAIN BOXES Limited.....	1
ACKNOWLEDGEMENTS.....	1
Bluetooth Introduction	2
Introduction.....	2
What is Bluetooth?.....	2
Wireless Communications.....	2
History of Bluetooth.....	2
Technical Information.....	2
Small Size.....	2
International Operation.....	3
Easy Connection.....	3
Stable Connection.....	3
Audio and Data.....	3
Range.....	3
Bandwidth.....	3
Security.....	3
Low Power Usage.....	3
Interoperability.....	4
Device discovery.....	4
Wireless networks.....	4
Piconet.....	4
One master, up to 255 slaves.....	4
Bluetooth in action.....	5
Unlimited possibilites.....	5
Three-in-one phone.....	5
Wireless headset.....	5
Synchronization.....	5
Internet bridge.....	5
Glossary.....	5
Authentication.....	5
Device address.....	5
Device discovery.....	5
Device name.....	5
Encryption.....	6
Master.....	6
Park mode.....	6
Piconet.....	6
Profile.....	6
Slave.....	6
Setting up Your Card	7
Windows 2000.....	7
Installation.....	7
Uninstalling your card.....	9

My Bluetooth Devices

14

Windows 2000..... 14

Brain Boxes Information

Guarantee.

BRAIN BOXES LIMITED guarantee your Card for a full 36 months from purchase, parts and labour, provided it has been used in the specified manner. In the unlikely event of failure return your interface to BRAIN BOXES LIMITED or to your Dealer, with proof of purchase, who will determine whether to repair or replace this product with an equivalent unit.

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Bluetooth Introduction

Introduction

This guide will give you a short technical introduction to the Bluetooth™ technology. This is intended as a Bluetooth overview and you should refer to your product manuals for specific installation and operation instructions.

What is Bluetooth?

How does it work?

What do all the technical expressions really mean?

What is Bluetooth?

Wireless Communications

Bluetooth is a new technology that eliminates the need for cables between electronic devices: PCs, mobile phones, headsets, handheld computers, printers, local area networks, etc. The technology is based on short-range radio transmission on a globally available frequency. Bluetooth provides fast, reliable, and secure wireless communications.

History of Bluetooth

Originally invented in Scandinavia, the Bluetooth technology was named after the Danish Viking king Harold Bluetooth. However, when the technology was launched in 1998, it was very much an international initiative. A handful of leading companies within the computer and telecommunications industry formed the Bluetooth Special Interest Group (SIG). The goal was for devices from different manufacturers to be able to communicate with each other. Today, a great number of companies have joined the SIG as adopters of the Bluetooth technology, and the number is increasing all the time. The magnitude of industry involvement should ensure that Bluetooth becomes a widely adopted technology.

Technical Information

Small Size

Bluetooth does not require much space. In fact, the Bluetooth radio can be built into a small microchip and integrated in any electronic device where wireless operation would be an advantage.

International Operation

You can use Bluetooth almost anywhere. The radio operates in the 2.45 GHz band, which is licence-free and available to any radio system in the world

Easy Connection

You can establish a connection between two or more devices almost instantly. The connection will be maintained even if the devices are not within line of sight.

Stable Connection

Bluetooth provides a very stable connection. The technology ensures that, under normal circumstances, you will not be bothered by interference from other radio signals operating in the same frequency band.

Audio and Data

You can use a Bluetooth enabled device for data transfer or audio communication; or you can use it for both simultaneously.

Range

Bluetooth is based on short-range radio transmission. The normal range of the Bluetooth radio is either 10 meters or 100 meters, depending on your Bluetooth equipment.

Bandwidth

A Bluetooth radio link has a maximum data transfer rate of 724 kbit/s, or three voice channels; the data rate for a voice channel is 64 kbit/s.

Security

Two advanced security mechanisms ensure a high level of security: Authentication prevents access to critical data and makes it impossible to falsify the origin of a message.

Encryption prevents eavesdropping and maintains link privacy.

Low Power Usage

The Bluetooth radio is very economical, limiting its output power exactly to what is actually needed. For instance, when transmitting to a receiving radio that is only a couple of meters away, the radio immediately modifies its signal strength to suit the small distance. Bluetooth consumes only a tiny bit of the power that eg. a mobile phone needs.

Interoperability

Interoperability refers to the ability of two devices to communicate with each other. Now, any Bluetooth device features one or more applications, known as profiles. For one Bluetooth device to be able to communicate with another, the two devices must have at least one shared profile. If, for instance, your Bluetooth device features the profile object exchange, you can exchange business cards with any other Bluetooth device that has the object exchange profile. Some other examples of profiles are: file transfer, serial port, and network.

Device discovery

When two or more Bluetooth devices are within range, a link can be established. However, first of all a Bluetooth device needs to discover the other Bluetooth devices that are active within its range. This operation is called device discovery. When another Bluetooth device responds, it supplies necessary information, some of which concerns its identity: the device name (eg. Adam) or the unique device address (eg. 00:50:CD:3A:4B:69). A link can now be established to the discovered device.

Wireless networks

Piconet

At the very heart of the Bluetooth technology is the idea of forming small wireless networks known as piconets. When a Bluetooth device has established a link to one or more other devices, a piconet has been formed. The device that initiates a connection acts as the master. The other devices are slaves. The master controls all traffic in the piconet. Communication between slaves can only take place via the master. In the below example of a piconet, the laptop (master) transmits to the handheld computer (slave 1) and the mobile phone (slave 2):

One master, up to 255 slaves

As already mentioned, in a piconet there can only be one master. Furthermore, up to seven slaves can be active. However, there can be additional slaves which are not active but remain synchronized to the piconet. Such slaves are referred to as parked. A parked device can very quickly become active and begin communicating in the piconet. By swapping active and parked slaves, you can increase the number of slaves virtually connected to the piconet from seven to 255 devices

Bluetooth in action

Unlimited possibilities

A technology that, like Bluetooth, eliminates the need for cables offers a great number of potential applications. The possibilities are virtually unlimited. Nevertheless, in some areas it is particularly obvious that Bluetooth is an ideal solution. This section gives you a few examples.

Three-in-one phone

Use the three-in-one phone for different purposes – at the office, as an intercom; on the road, as a mobile phone; at home, as a portable phone

Wireless headset

Use the wireless headset for hands-free operation of a phone – in the car, in the office, or at home.

Synchronization

Automatic synchronization of eg. your PC, mobile phone, and handheld computer. An example: As soon as you enter the office, the calendar in your handheld computer is automatically updated to agree with the calendar in your office PC.

Internet bridge

Connect to the Internet no matter where you are, using a laptop and a mobile phone.

Glossary

Authentication

Security mechanism that prevents access to critical data and makes it impossible to falsify the origin of a message.

Device address

The unique address of a Bluetooth device.

Device discovery

Before a link can be established, a Bluetooth device needs to discover the other Bluetooth devices that are active within its range.

Device name

The name that a Bluetooth device presents itself with when supplying identity information to another device.

Encryption

Security mechanism that prevents eavesdropping and maintains link privacy.

Master

The device that initiates a connection and, during this connection, controls all traffic in a piconet.

Park mode

Economical, low-power "sub-mode" of standby. In park mode, a slave does not participate in the piconet but remains synchronized to it. Park mode is used to increase the number of slaves connected to a master.

Piconet

A wireless network formed by two or more Bluetooth devices.

Profile

Application that a Bluetooth device facilitates. For one device to communicate with another, the two devices must have a shared profile. For instance, to transfer files from one computer to another, both computers must feature the file transfer profile.

Slave

A device in a piconet controlled by another device (the master).

Setting up Your Card

Windows 2000

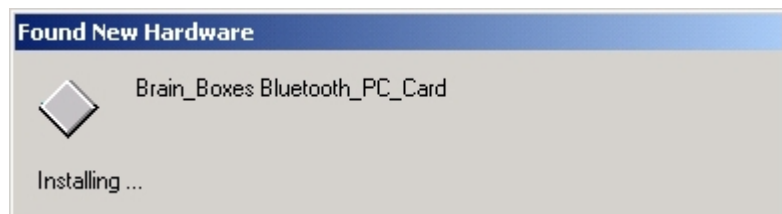
Installation

This section will give you all the information that is needed to install your Brain Boxes Bluetooth PC Card into your computer.

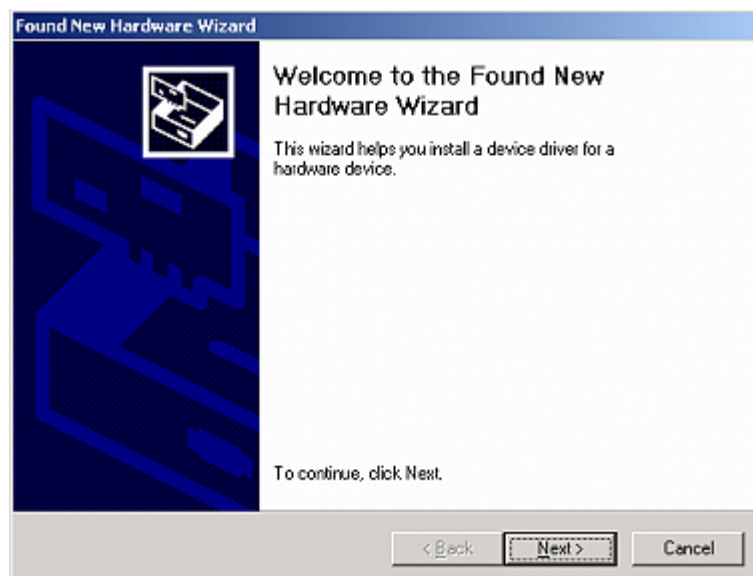
Insert the Bluetooth Product CD into your CDROM drive.



Insert the Card into a free PC Card Slot



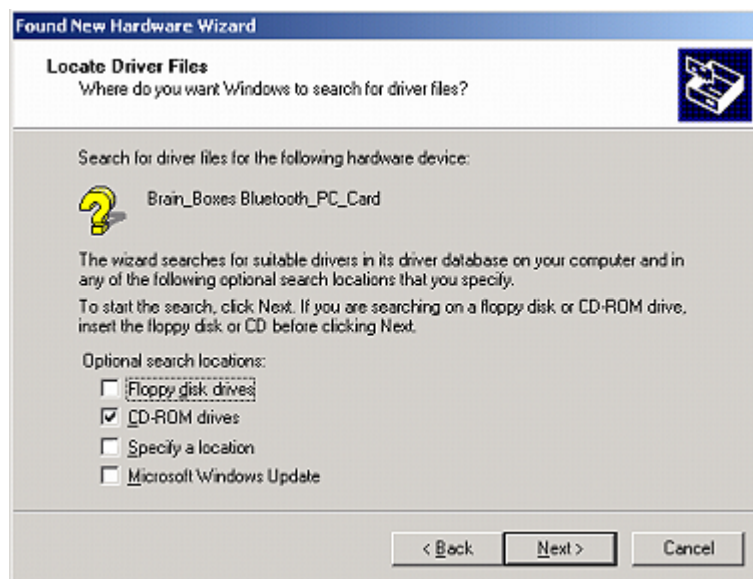
Windows 2000 will detect your card and start the **Found New Hardware Wizard**.



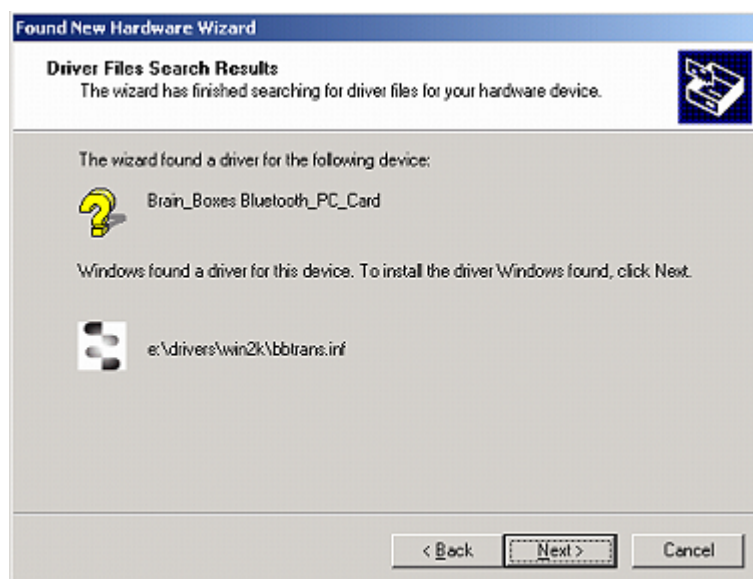
Click Next



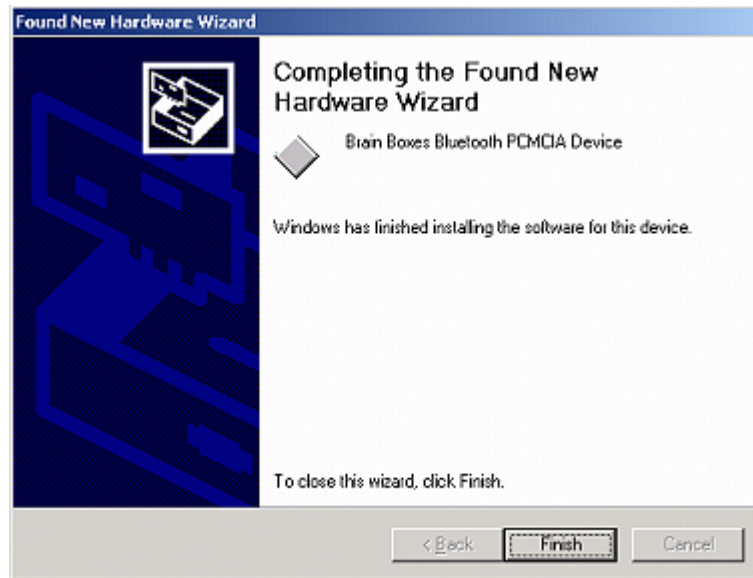
Select "Search for a suitable driver for my device". Click Next



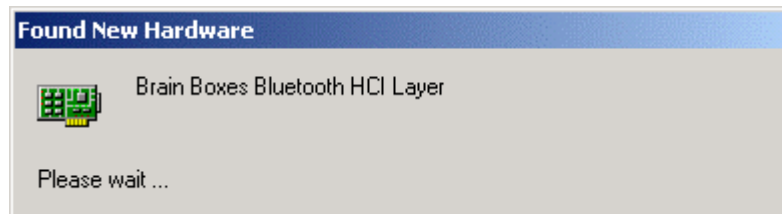
Select CD-ROM drives. Click Next



The Wizard has found the required software. Click Next



The software is now installed. Click **Finish**.



The **Found New Hardware** wizard will detect a number of devices on your card and install the drivers for them.



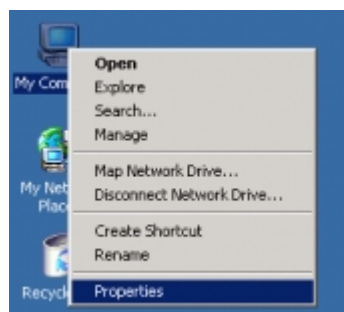
A My Bluetooth devices icon will now appear in the My Computer folder on your desktop. Double clicking on this icon will open the My Bluetooth Devices user interface which will enable you to configure your card and establish connections with other bluetooth enabled devices.



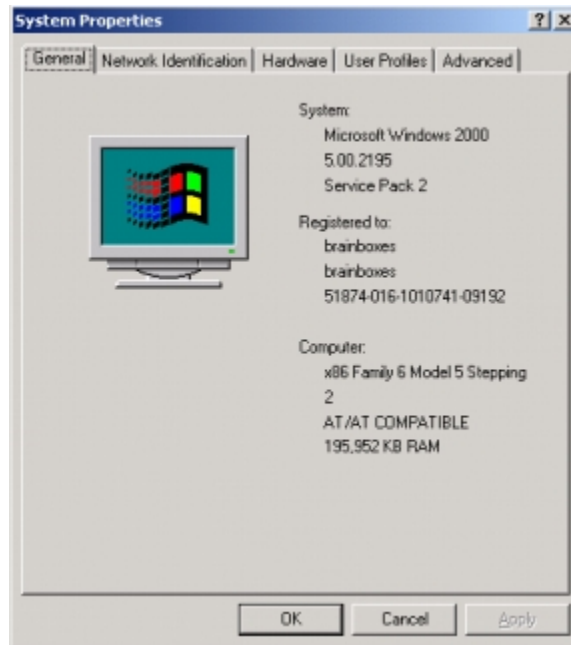
This user interface can also be accessed by clicking the Brain Boxes bluetooth icon found in the icon tray on your start bar.

Full details of the My Bluetooth Devices user interface can be found in the configuration section of this manual on page xxx

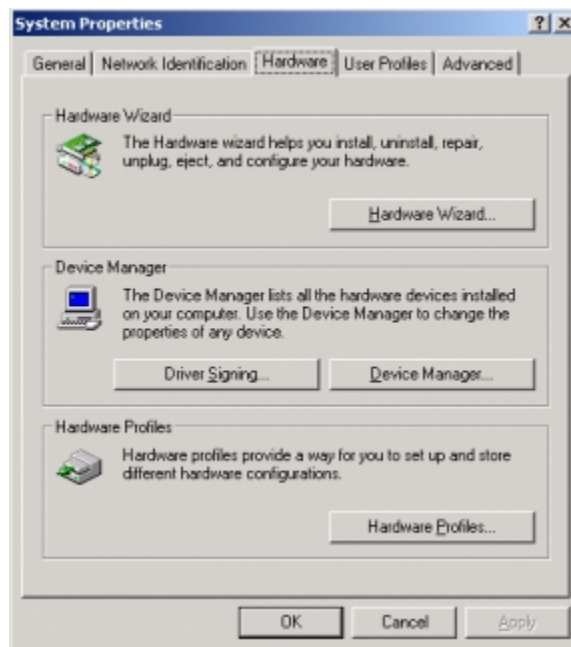
Uninstalling your card



Right Click **My Computer** on your desktop and select **Properties**.



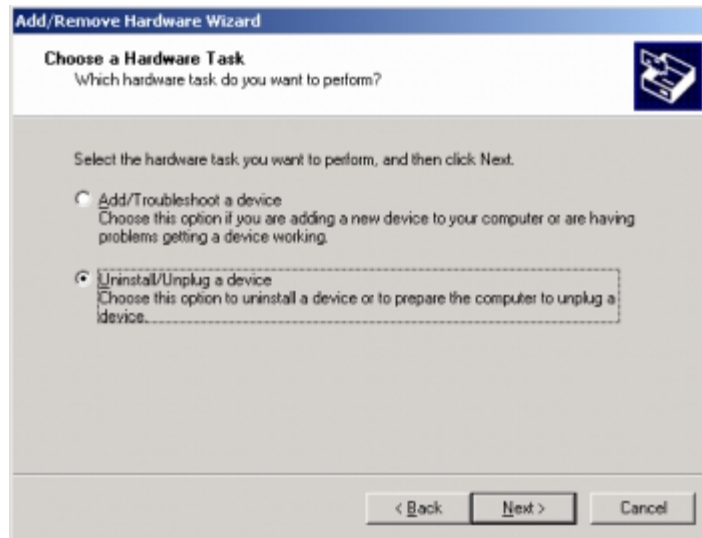
Select the **Hardware** tab



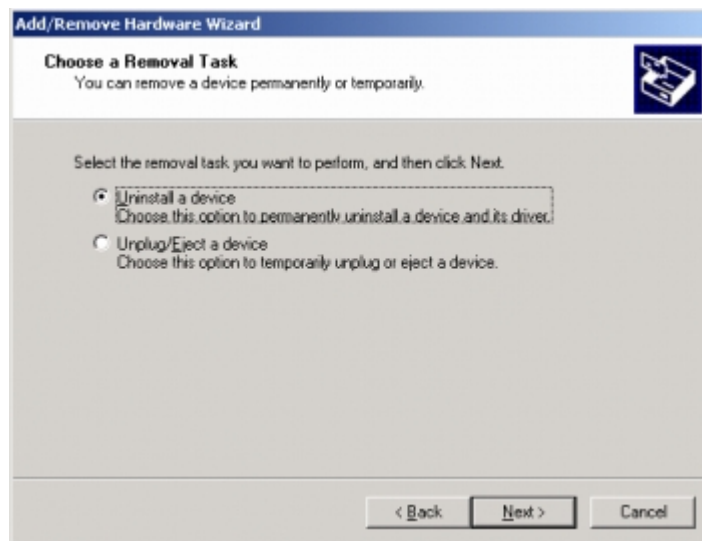
Click **Hardware Wizard**



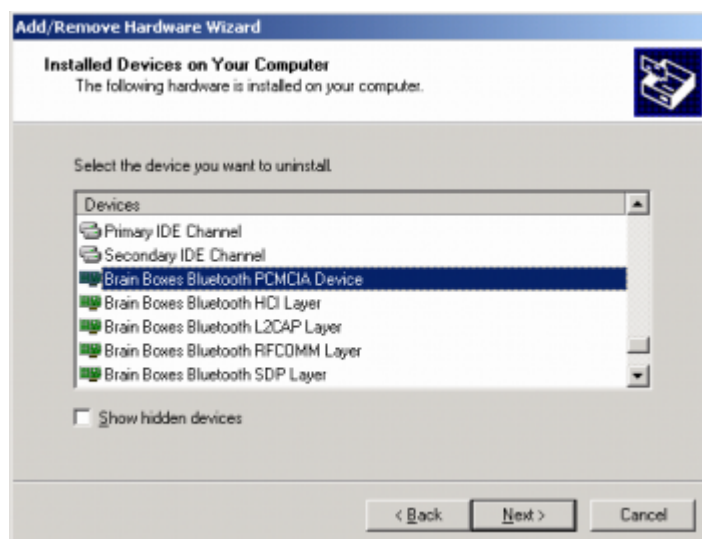
Click **Next**



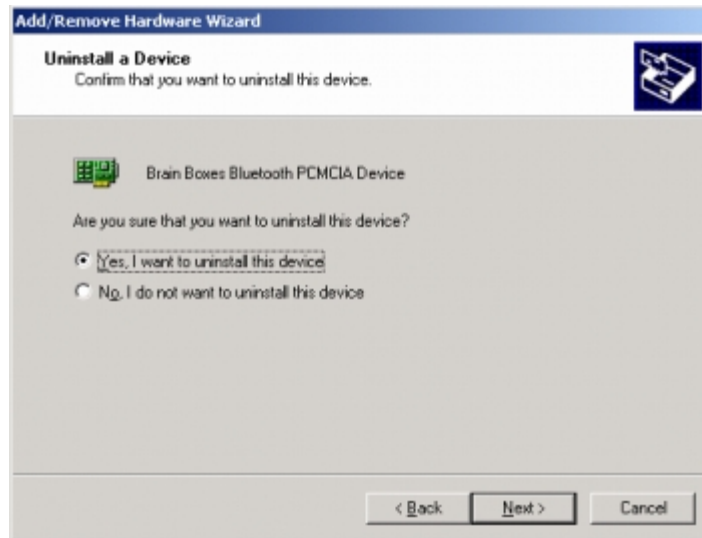
Select **Uninstall/Unplug a device**. Click **Next**



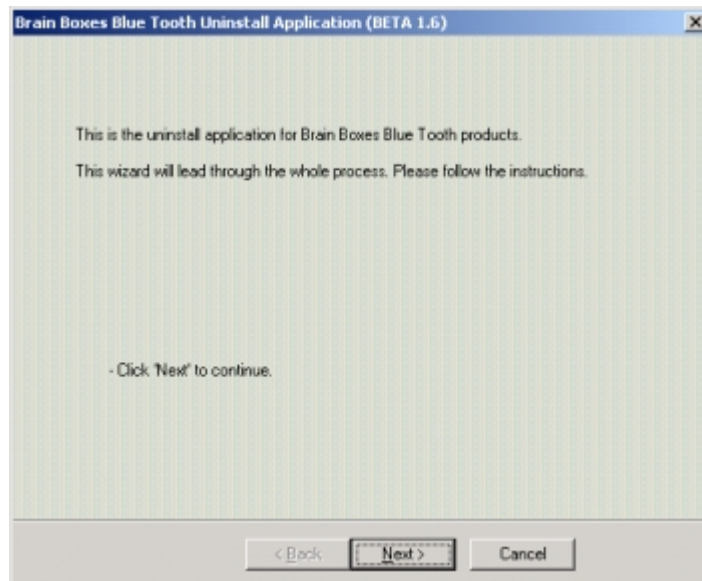
Select **“Uninstall a Device”**. Click **Next**



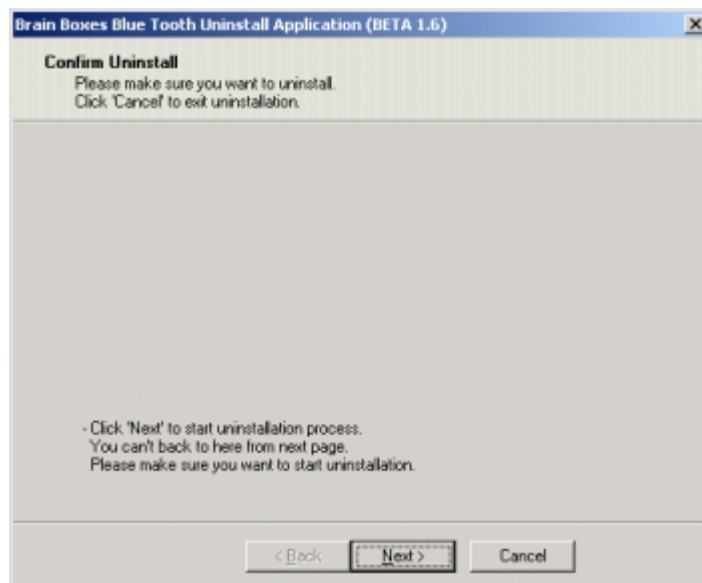
Scroll down the list of devices until you reach the **“Brain Boxes Bluetooth PCMCIA Device”**, select this device. Click **Next**



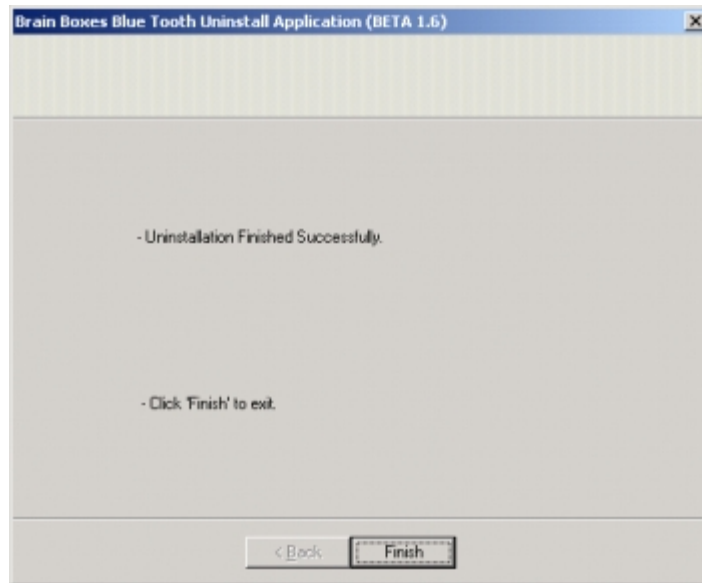
Select “Yes, I want to uninstall this device”. Click Next



Click Next



Click Next



Click **Finish**



Click **Finish**.

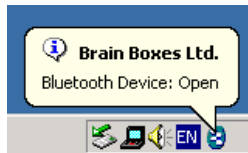
Both the hardware and software elements of your Brain Boxes have now been successfully uninstalled.

If you need to reinstall the software immediately then you will need to reboot your machine.

My Bluetooth Devices

Windows 2000

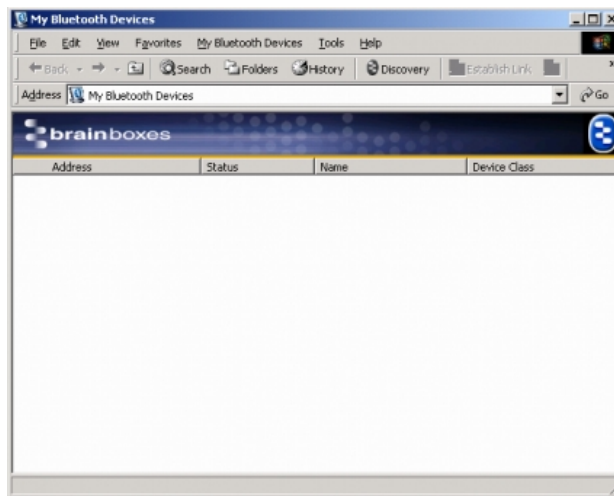
Connecting Devices



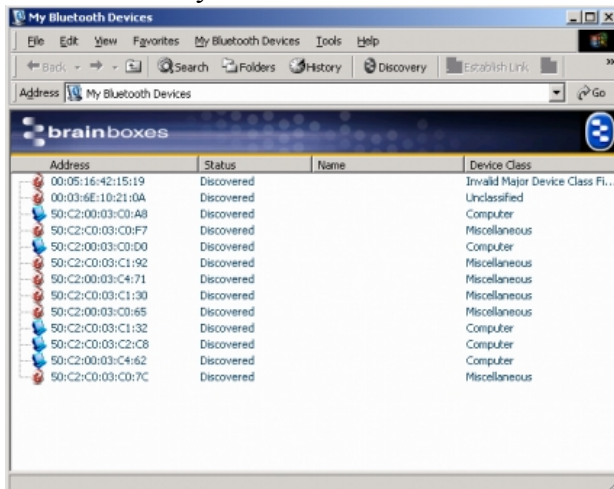
Click on the Brain Boxes Bluetooth icon in your icon tray or double click on the My Bluetooth devices icon on your desktop.



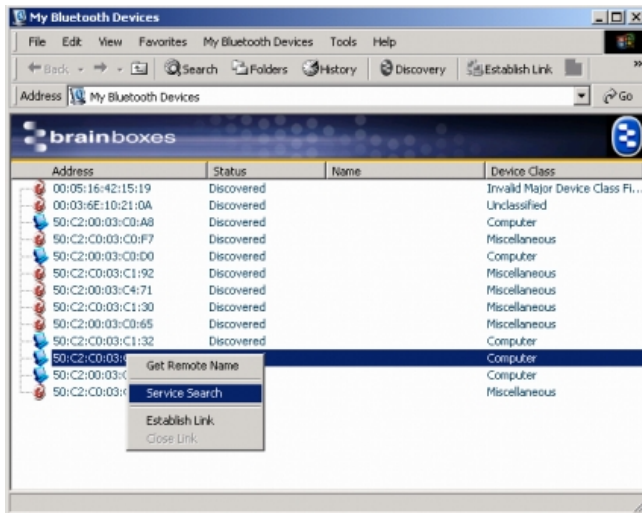
My Bluetooth Devices



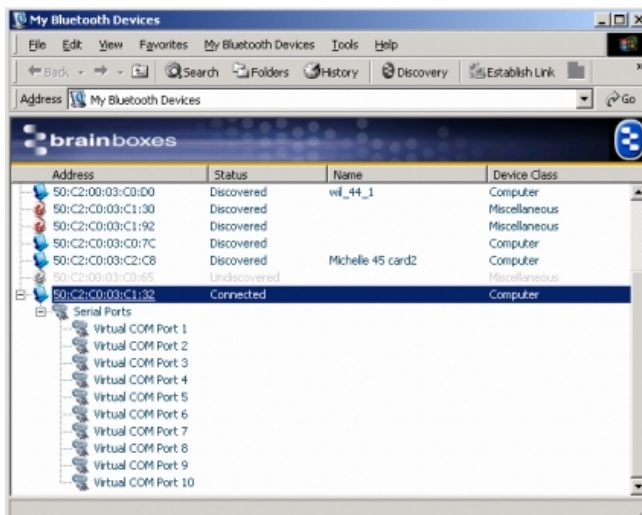
Click Discovery



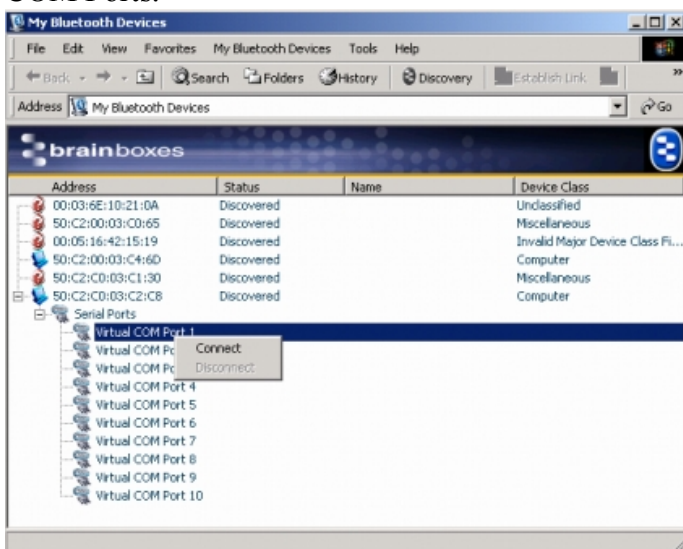
This will discover any other bluetooth enabled devices



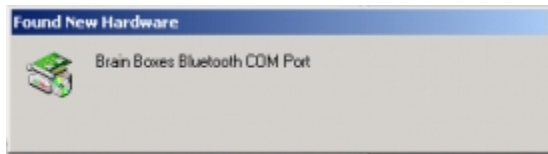
Right Click a discovered device and click ‘Service Search’ this will attempt to connect to the device chosen. The other device will need to allow the connection.



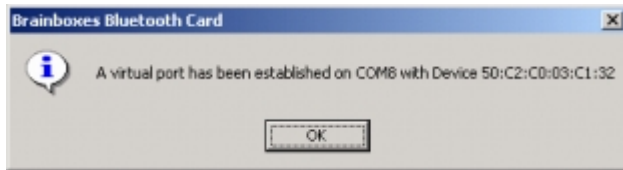
A number of virtual COM Ports will then appear under the device name. Select one of the virtual COM Ports.



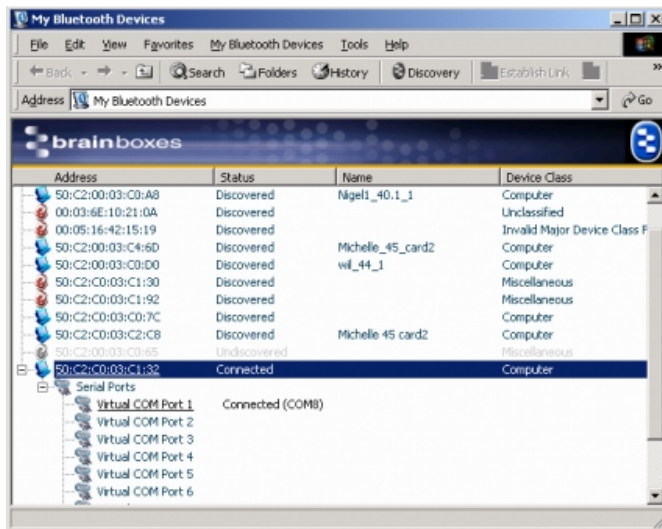
Right Click on the chosen Virtual COM Port.
Click **Connect**



A Brain Boxes Bluetooth COM port will be set up.



You will then be told that a virtual port has been established and given the COM number assigned.



The screen shot above shows how you're my Bluetooth Devices will look now that you are connected.

You will now be able to transfer data using hyperterminal or a similar program.

Devices Tested So Far

Device A	Device B	Interoperable	
Printers and Printer adapters			
Brainboxes PC card + CD51	HP995C	Yes	
Brainboxes PC card + CD51	MPI Printer adapter (version 020)		
Brainboxes PC card + CD51	MPI Printer adapter (version 030)		
Telephones			
			Upon Pairing to the phone a bluescreen occurred on the PC even though the phone said that the pairing was successful.
Brainboxes PC card + CD51	T39 Ericsson	No	
Brainboxes PC card + CD51	Nokia 6210		
Brainboxes BL631 + Extended Systems	Ericsson DBA-10	Yes	Can get dial up networking and serial port connections but the ISP phone number was engaged
Digianswer PC card	T39 Ericsson	Yes	
LAN access points			
Brainboxes PC card + CD51	AXIS 9010 (192.168.0.7)	No	Upon searching for services or just trying to connect directly to the AXIS, nothing happens
IBM PC Card (Digianswer)	AXIS 9010 (192.168.0.7)	No	Service Discovery failed and trying to connect directly also failed
Modems			
PC Cards			
Brainboxes PC card + CD51	TDK PC Card and software	No	Can't get the TDK card and stack to work in the first place!
Brainboxes PC card + CD51	Digianswer PC Card and software		Can connect with BL500 as master and operate normally but can only transfer data one way when Digianswer is master
Brainboxes PC card + CD51	IBM PC Card (Digianswer)	No	
CF Cards			
	Nokia FLA-15		
Headset			
	Ericsson Headset		
Vending Machines			

Authentication, 3, 5
Bluetooth Special Interest Group, 2
discovery, 4, 5
Encryption, 3, 6
headset, 5
Installation, 7
Interoperability, 4

master, 4, 6
Master, 6
Piconet, 4, 6
Slave, 6
slaves, 4
Uninstalling, 9
Windows 2000, 14