

PX-420, PX-431, PX-246, PX-235, PX-101, PX-257, PX-203

Product Manual



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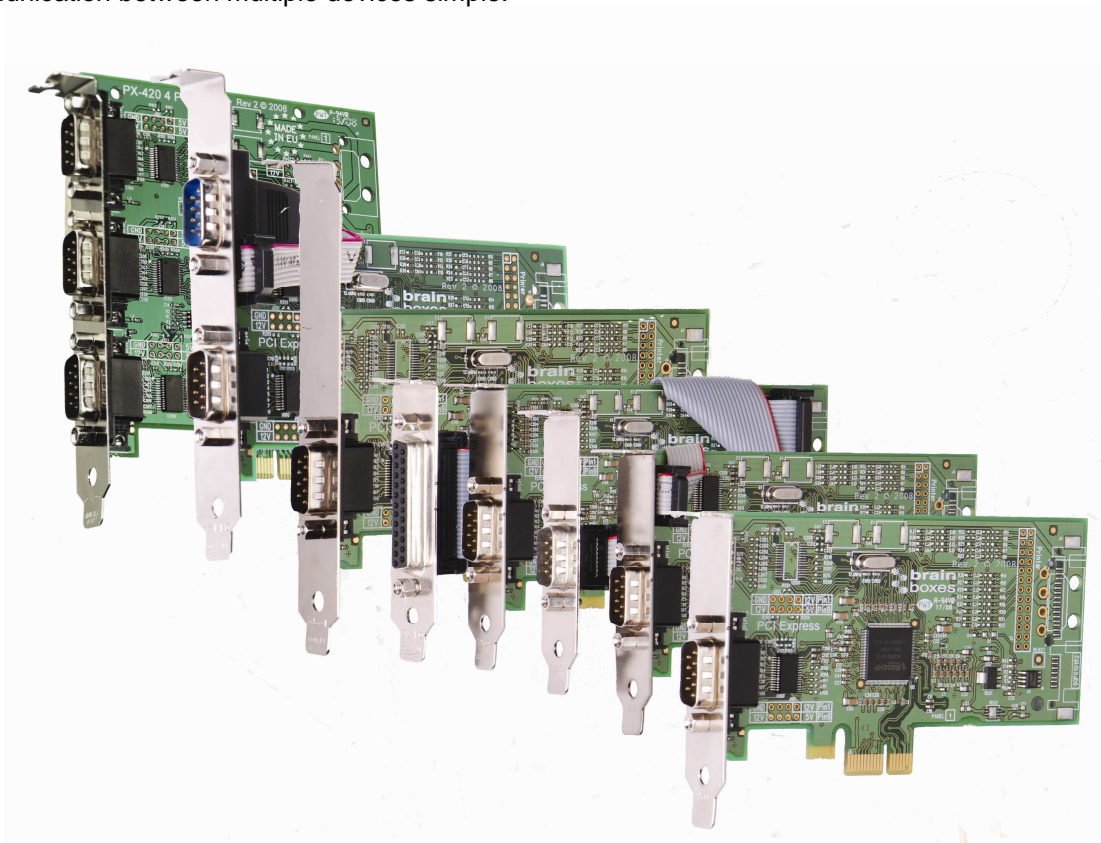
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1. Introduction

1.1. The PCI Express PX- Range

The PX-Range are PCI Express (PCIe) cards providing several RS232 9-pin COM ports (see datasheets for alternatives) to any computer with a PCIe Lane. The advantage of Brainboxes PCI Express cards is that they can fit into any standard 1x, 4x, 8x or 16x PCIe Lane.

Using the PCI Express card's COM ports, all supporting 921,600 Baud, makes fast and effective communication between multiple devices simple.



Supported Operating Systems

The PCI Express PX Range can be used with the following Microsoft Operating Systems with the supplied Boost.PCIE drivers;

- Windows 7
- Windows Server 2008 R2
- Windows Server 2008 32-bit
- Windows Server 2008 64-bit
- Windows Vista 32-bit
- Windows Vista 64-bit
- Windows Server 2003 32-bit
- Windows Server 2003 64-bit
- Windows XP 32-bit
- Windows XP 64-bit
- Windows 2000



Brainboxes PCI Express Drivers have undergone Microsoft testing. Upon passing these tests, the drivers were signed by Microsoft, as an indication of their quality and stability.

2. Quick Start Installation for Windows

2.1. Summary of Installation Steps: PX-420, PX-431, PX-246, PX-235, PX-101, PX-257, PX-203

For other cards please see "Product Support\ Product Manuals" folder on CD.

- Turn off the PC (unplug from power socket) and insert the PX card into any free 1x, 4x, 8x or 16x PCIe slot. Turn the PC on.
- When Windows detects the new hardware follow the prompts to install the driver from the Brainboxes CD ROM. Browse to the root of the CD and choose OK.
- Follow the Operating System specific instructions below for Windows XP, Server 2003, Vista and Server 2008
- See Sections 2.2 and 2.3 for detailed steps

If you have any issues with installation, please follow the steps in Section 3: Uninstallation, then attempt to install again. If you still have issues, see Section 5: Troubleshooting and Testing

2.2. Windows XP and Windows Server 2003 Installation

Note: Images below show a PX-431 3 Port RS232 device as an example. The same installation steps can be applied to all other products in the PX PCI Express range.

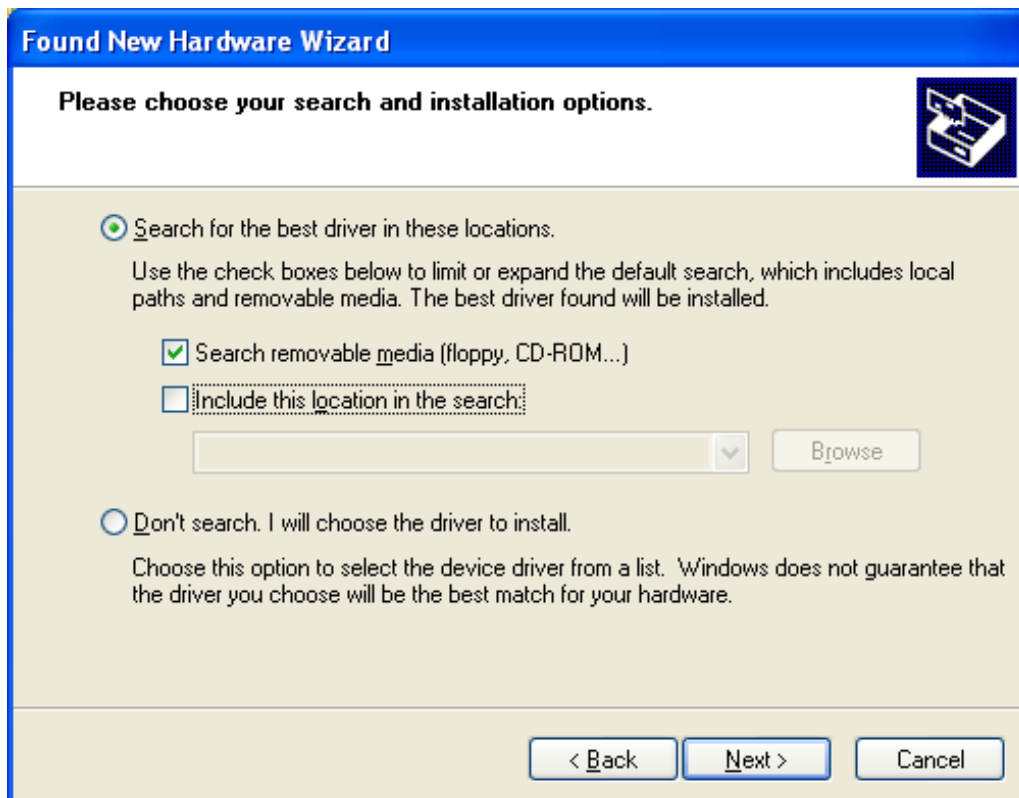
1. Turn off the PC (unplug from power socket) and insert the PCI Express Card into a free PCIe slot.
2. Turn the PC on.
3. Insert the CD
4. If you have Windows Update for drivers turned on, the first Found New Hardware Wizard screen will prompt you to check for drivers on the Internet. **Select 'No, not this time'** and click **next**.



5. The Found New Hardware Wizard will then ask you to locate the software drivers. **Select “Install from a list or specific location (Advanced)” and click next to point to the CD drive.**



6. **Select to ‘Search for the best driver in these locations’ and then ‘Search removable media’, as shown below. Click Next**



7. The Installer will copy across all the drivers and associated registry files. Click **Finish** when complete.



8. **If you are installing a multport card, you will need to repeat these steps for each of the ports.**
9. Once installed, you can check the COM Number of the Port, by opening Device Manager (See **Section 3.1: Finding your Brainboxes COM port**). If you need to change the COM port number, see **Section 3.2 Changing Your COM Label**.

2.3. Windows Vista & Windows Server 2008 64 & 32 bit Installation

Note: Images below show a PX-431 3 Port RS232 device as an example. The same installation steps can be applied to all other products in the PX PCI Express range.

1. Turn off the PC (unplug from power socket) and insert the PCI Express Card into a free PCIe slot.
2. Turn the PC on.
3. Insert the CD
4. The *Found New Hardware Wizard* will come up. If your computer is set to check Windows Update Automatically for a driver, then it could take longer for this screen to pop up.
5. **Select** '*Locate and install driver software*'.

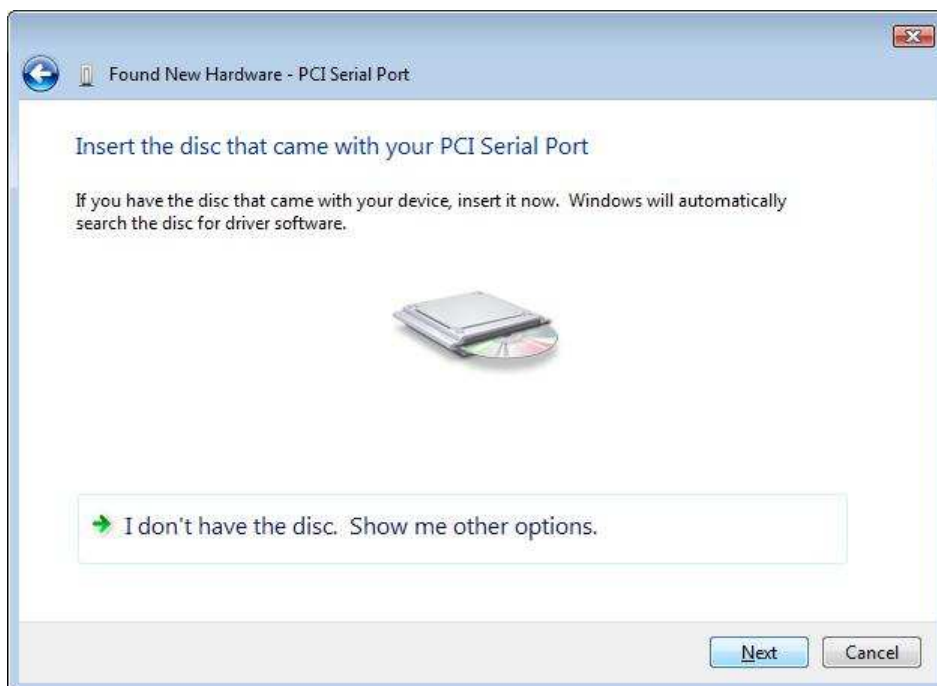


6. **NB** Vista will enter the Security Check to ensure that you have initiated the installation (and not some malicious program). Click **Continue**

7. On the next screen **select 'Don't search online'**.



8. Ensure that the CD is in the drive and click **Next**



9. Once the driver has been installed, click **Close**.



- **If you are installing a multport card, the Operating System will install each subsequent Serial Port automatically.**
- Once installed, you can check the COM Number of the Port, by opening Device Manager (See **Section 3.1: Finding your Brainboxes COM port**). If you need to change the COM port number, see **Section 3.2 Changing Your COM Label**.

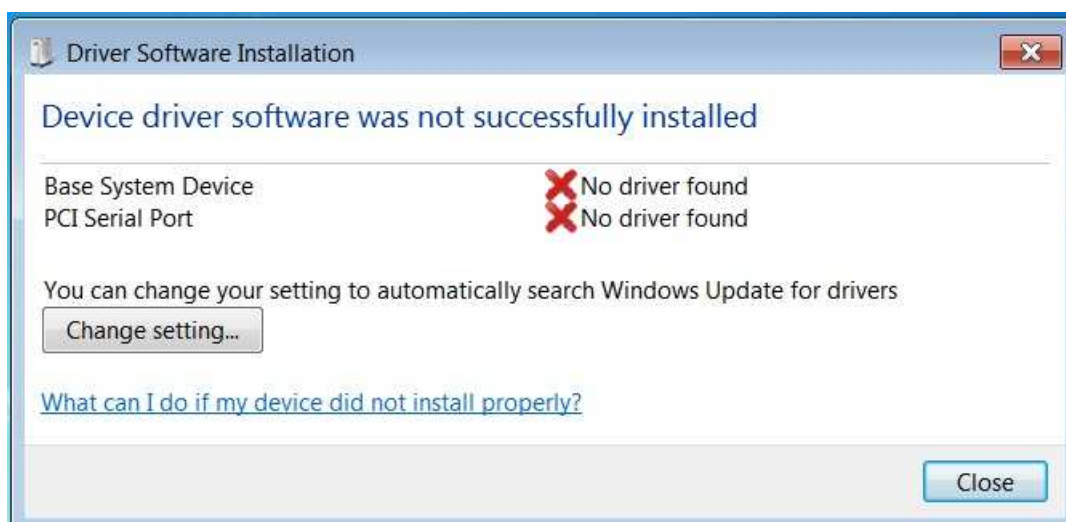
2.4. Windows 7 and Server 2008 R2

Note: The following installation instructions use a PX-346, but the installation instructions are the same for any PX card.

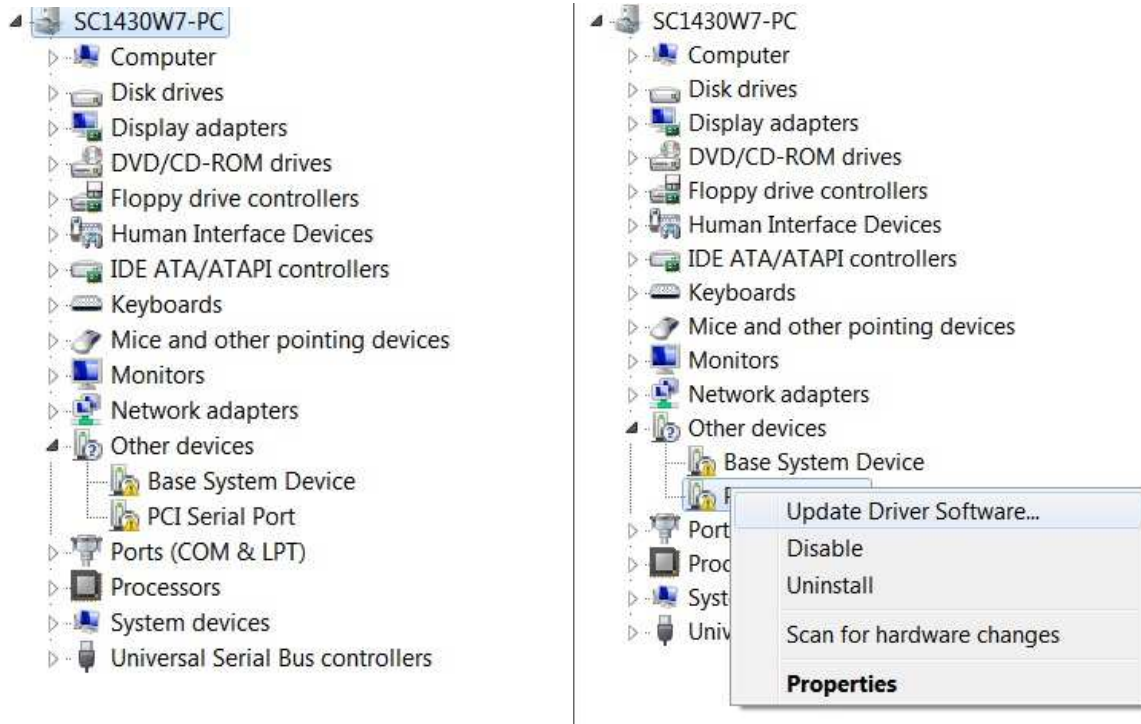
1. When you boot up your computer on Windows 7, Windows update will automatically search for the latest drivers. If you have a connection to the internet, the drivers will be installed and the device will be ready to use.



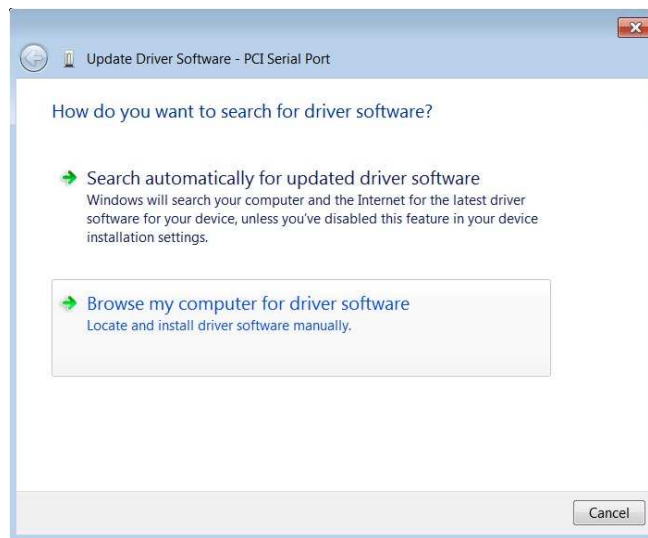
2. If there is no connection to the internet or the drivers can't be found, a message will appear to tell you that device driver software was not successfully installed.



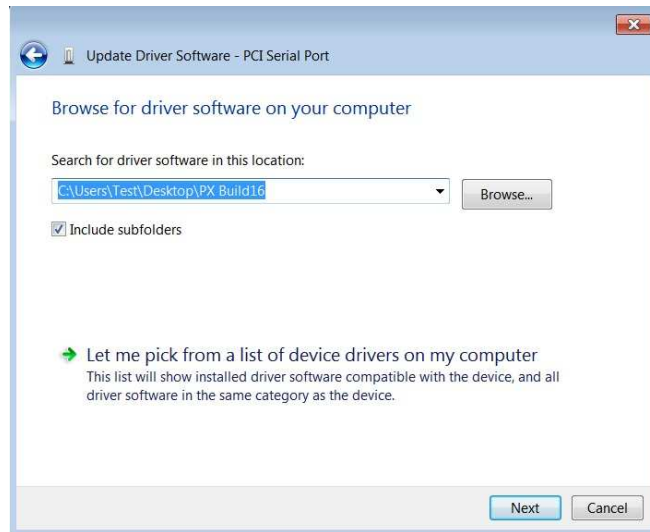
3. To install the drivers Device manager will need to be opened. To open device manager go to the control panel, system, hardware tab, then click on the device manager button.
4. Once this is open you will see the yellow ! icon in the other devices node. Right click on the device and click on update driver software.



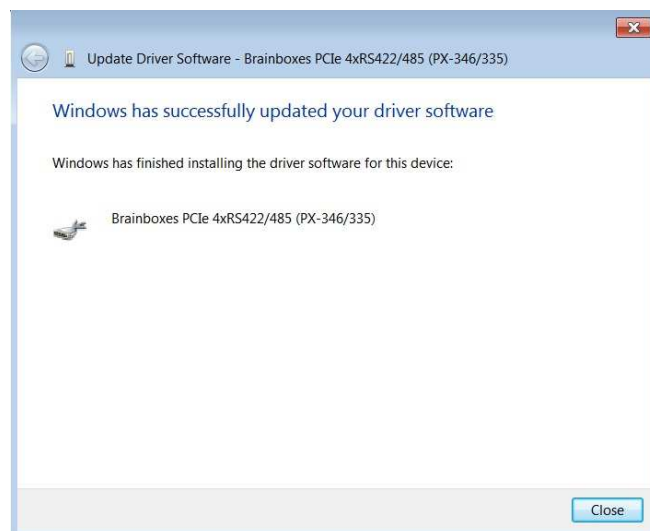
5. If your Brainboxes card came with a CD insert it now and select to search automatically and the driver software will be found and installed, then skip to step 7. If not and you have a folder with the drivers, select to browse your computer for the drivers.



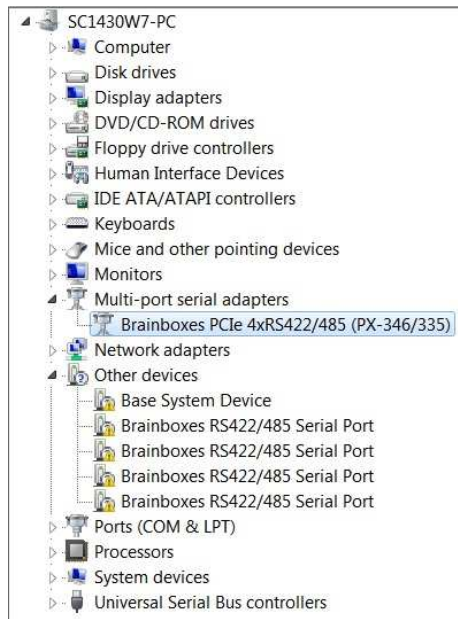
6. Select the folder which contains the drivers that you want to install for your device.



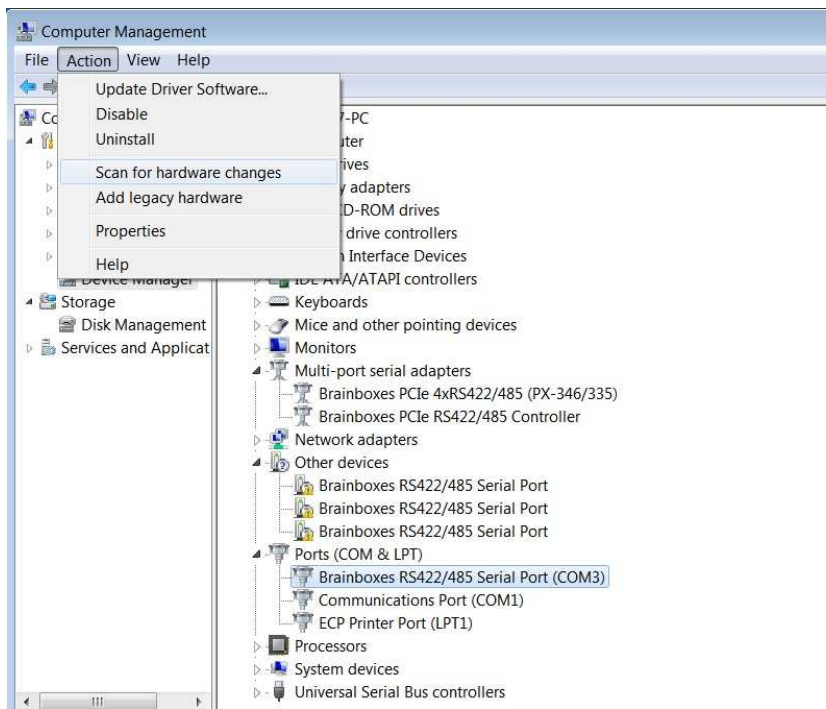
7. The drivers will then be installed for the card.



8. You will then need to install the Base System Device (RS422/485 devices only) and then install all of the Serial ports using the same steps as above.



9. Once you have installed one of the ports you can scan for hardware changes and the other Serial Ports will be installed automatically.

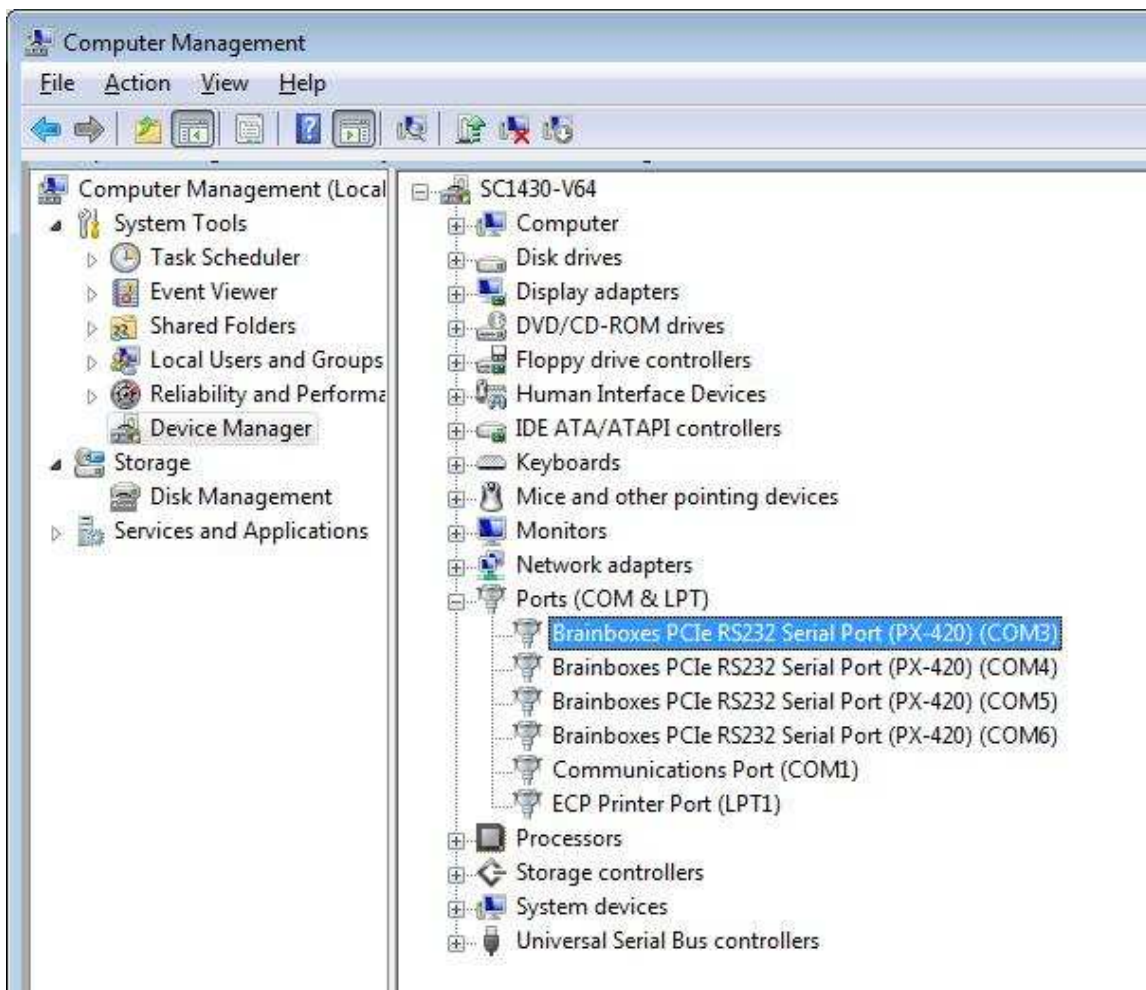


3. Product Configuration

Note: Images below show a PX-431 3 Port RS232 device as an example. The same steps can be applied to all other products in the PX PCI Express range.

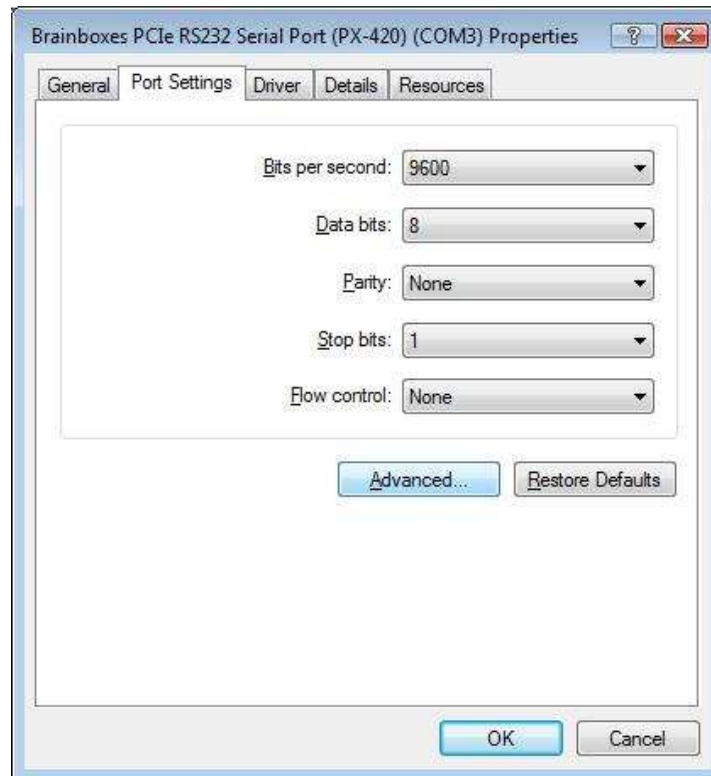
3.1. Finding your Brainboxes COM port.

- **Open** Device Manager (Found by Right Clicking on My Computer and clicking *Manage*. Then Select *Device Manager* from the left hand pane.) For Server 2008 users, Device Manager is found within Diagnostics in Server Manager.
- **Find** the Brainboxes Serial Port entry in Device manager. (Found under the 'Ports' section)
- The Brainboxes Serial Port entry displays the current COM number in brackets after the name. (This is usually COM3 following install, but may be different if other serial devices have been installed in the past)
- To change your COM label, see **Section 3.2: Changing your COM label**

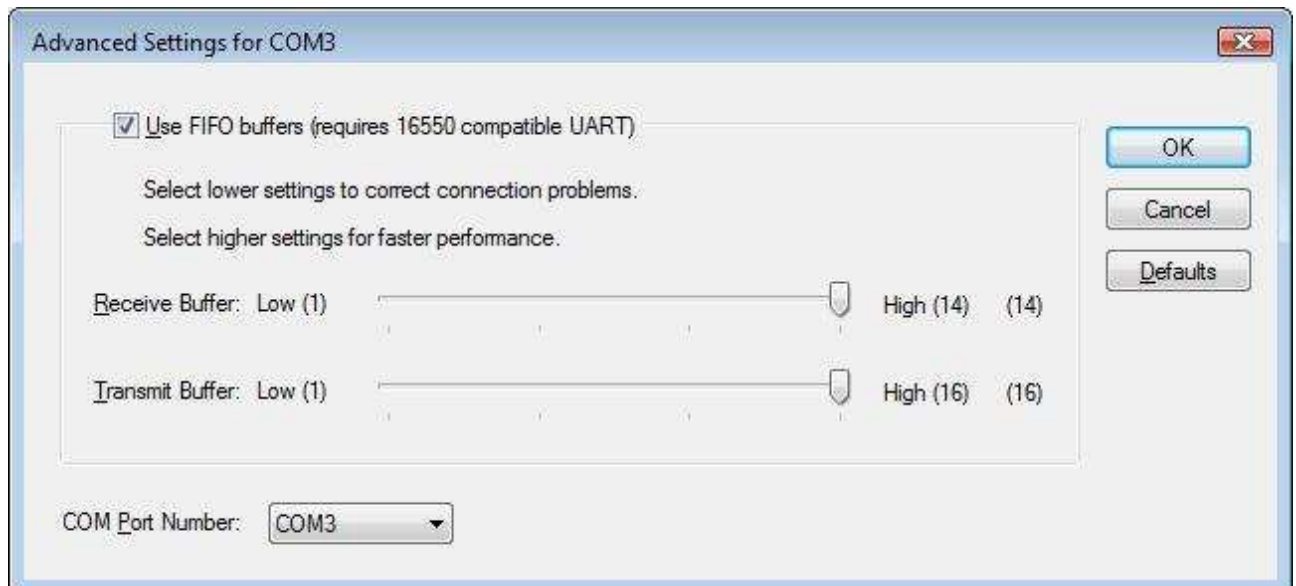


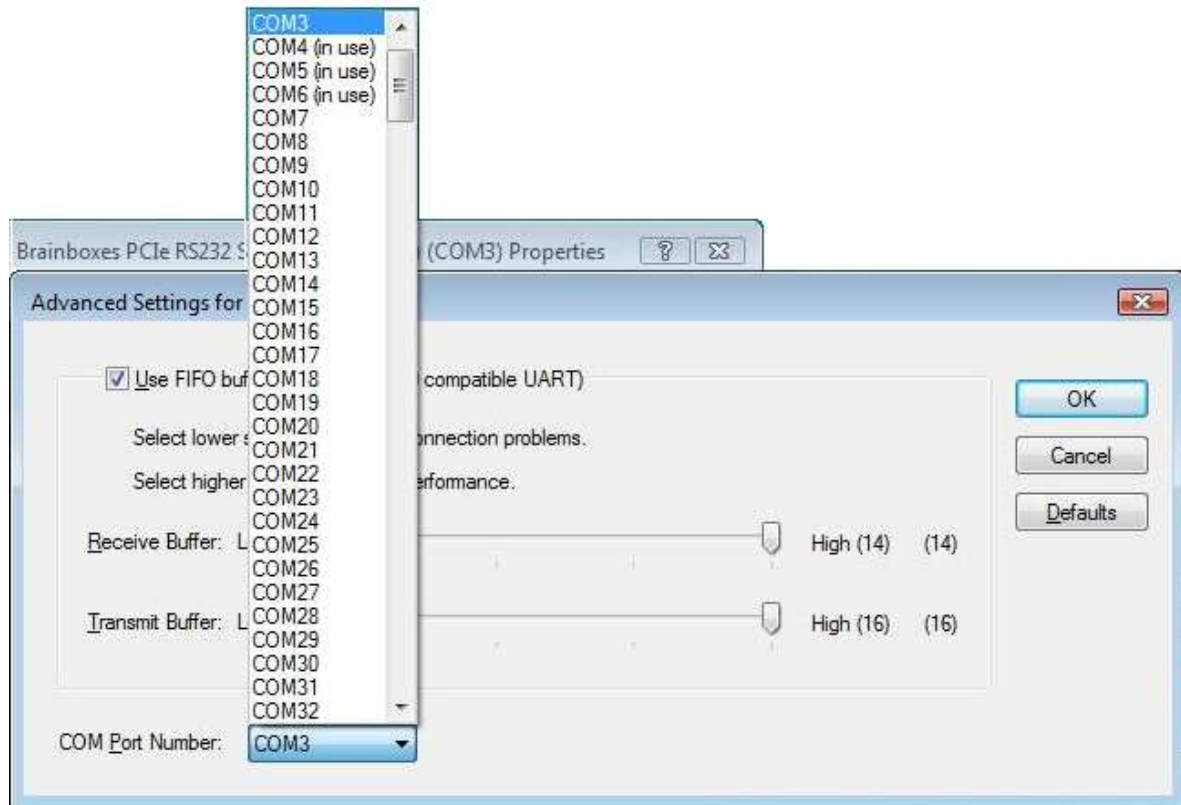
3.2. Changing your COM label

- If you need to change the COM label, **Double click** on the Port entry in Device Manager
- Click on the 'Port Settings' tab and click **Advanced**



- A new COM label can be selected from the dropdown menu.



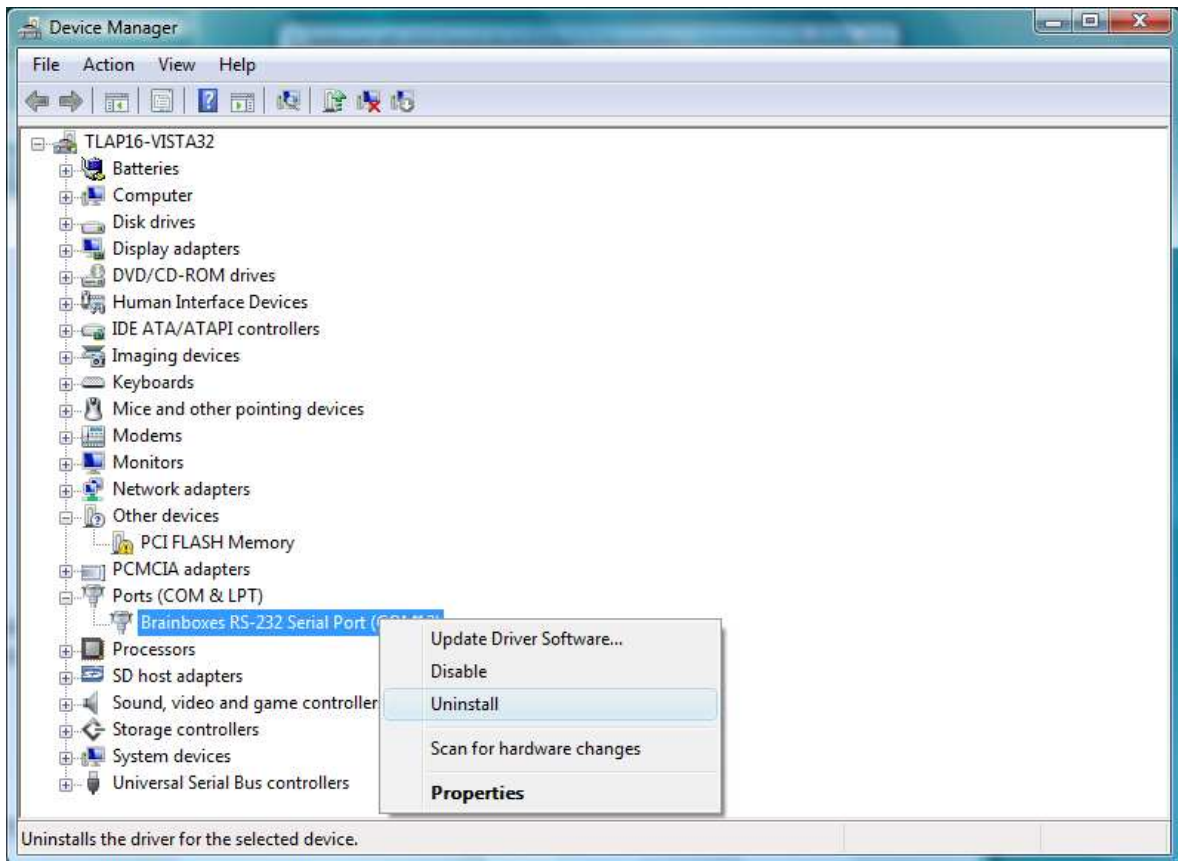


- Click **OK** to set the new COM Label.
- If the COM Port number is labelled "*in use*", it is either currently used by a COM Port present on the system, or is reserved for a device which is not currently present. It is possible to select this COM number and force the change, if you are sure it is not required by any other device.

4. Uninstallation – Windows 7/Server 2008/Vista/Server 2003/XP

To uninstall the device, please ensure the PCI Express Card is present on the PC.

- **Open** Device Manager and **Right Click** on the Brainboxes COM Port Entry under Ports. Select **Uninstall**.



- **XP & Server 2003 ONLY** → You will be presented with the following message. Press OK.



- **Windows 7, Server 2008 and Vista ONLY** → You will be presented with the following message. Select '*Delete the driver software for this device*' and click **OK**



- **Repeat the same process for the other Brainboxes Ports.**
- Once finished, check Device Manager to ensure all Ports have been removed from the system.
- **You may now power down the PC and unplug your PCI Express Card.**
- To reinstall the software,
 - Simply Right Click the "Ports" entry in Device Manager and select "Scan for Hardware Changes". Windows should find the ports and launch the Found New Hardware wizard. Follow the installation instructions as in Section 2 to reinstall
 - Alternatively, restart the PC to launch the Found New Hardware Wizard

5. Troubleshooting and Testing

5.1. Installation problems

- Check the PCI Express Card is correctly installed, and the Ports appear in Device Manager without any errors (Errors are indicated by a yellow exclamation mark)
- If the installation did not complete or shows any error messages then restart the computer.
- If Device Manager is still showing error messages, it is wise to uninstall and re-install. This should cure issues such as Resource Conflicts or failed installations. See **Section 4: Uninstallation and Section 2: Installation Instructions**.
- If the problem is still present after trying the above, try the following to help narrow down the problem.
 1. A different PCIe Slot
 2. A different PC
- Should the problem still persist, please contact [Brainboxes Technical Support](#)

5.2. Communication Problems

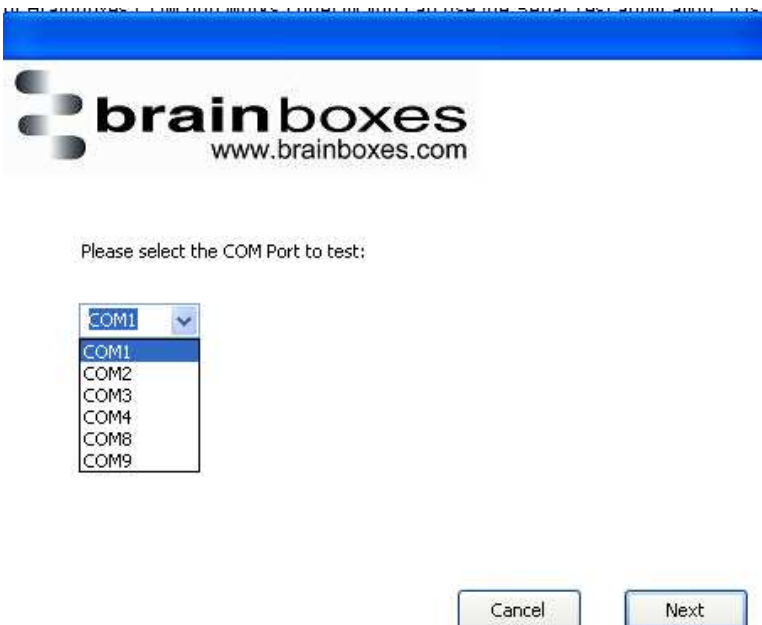
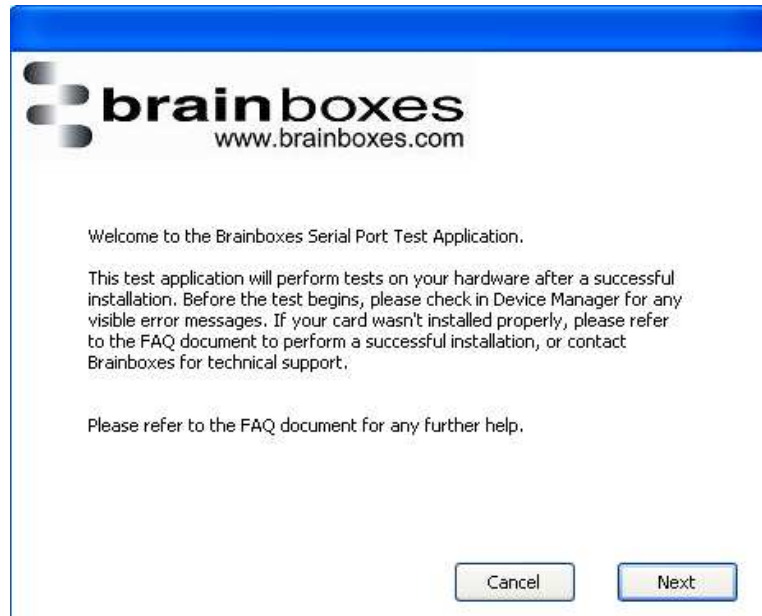
If you are experiencing communication problems:

- Check the PCI Express Card is correctly installed, and the Ports appear in Device Manager without any errors (Errors are indicated by a yellow exclamation mark). If there are any errors follow **Section 5.1**.
- Perform a loopback: A loopback test will verify that your card is able to Transmit and Receive Data. The Transmit and Receive lines will need to be connected so that any data sent out of the card is then received back on the same Port. For more information, please see the Testing Serial Cards document located in the Product support section of the CD to perform a loopback test.
- Please contact [Brainboxes Technical Support](#) with your Loopback test result should the problem still persist with your application.

5.3. Testing your Serial COM port

To test your Brainboxes COM port works correctly you can use the Serial Test application. It is a simple application which will guide you through the steps to check that your Brainboxes COM port is working correctly.

You will need to select the COM port you want to test, and connect a loopback connector to transmit and receive pins of the respected COM port. You will then be given a result as to whether the test has passed or failed.



6. Lifetime Warranty and Support

To receive the lifetime Warranty, you need to register your product with us using our online form.

NB: this must be done within 28 days of Purchase.

[Lifetime Warranty Sign up](#)

* Terms and Conditions are available online. Standard warranty period is 3 years if a product is not registered.



Since 1983, Brainboxes have designed, tested and manufactured our products all under one Roof. One of our greatest strengths is in after sales service. Technical Support is provided by members of our Test Team, who know our products inside out and have direct access to the chip and board designers as well as the technicians who built and tested your product.

If you have any issues, questions or suggestions about our Products and Services, then please contact us.

Technical Support is free*. As long as you have a Brainboxes Product we will be happy to help, even if it's discontinued or out of warranty. Excellent Customer Service, just as it should be.

For the quickest solution to your issue, if you email us, please include as much detail of your setup and the fault you are experiencing.

* Standard rate call charges for phone support apply.

Email

Technical Support: support@brainboxes.com

Sales Enquiries: sales@brainboxes.com

Telephone

You can speak to Brainboxes Support or Sales teams direct,

Monday – Friday, 9am to 5pm (UK time)

Tel: +44 (0)151 220 2500

7. Technical Specifications

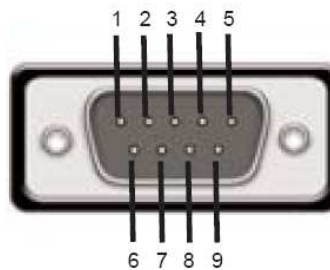
7.1. Supported Serial Settings

Serial Setting	
Baud Rate	Up to 921,600
Data Bits	5,6,7 or 8
Parity	None, Odd, Even, Mark & Space
Stop Bits	1, 1.5 or 2
Handshaking	RTS/CTS DTR/DSR Xon/Xoff
Break	Supported

7.2. Device Pin-out

DCD	Pin 1
RXD	Pin 2
TXD	Pin 3
DTR	Pin 4
GND	Pin 5
DSR	Pin 6
RTS	Pin 7
CTS	Pin 8
RI	Pin 9

RS232 Pinout (9 pin Male)



7.3. Storage and Operating Environment Guidelines

Storage

Temperature: -10°C to $+70^{\circ}\text{C}$
 Humidity: 8% to 95% non-condensing

Operational

Temperature : 0°C to $+70^{\circ}\text{C}$
 Humidity : 20% to 75% non-condensing

8. Regulatory Approvals / Compliance

For up to date details of global certifications, please check the product datasheet on the Brainboxes website.

8.1. Company Accreditation

Brainboxes achieved accreditation to the ISO14001 environmental standard early 2008. This globally recognised standard ensures Brainboxes can demonstrate effective management of all its environmental impacts, together with a process of continuous improvement.

Brainboxes have also been an ISO9001 registered company since 1994. This has ensured that Brainboxes products, right from design to manufacture, have been produced to the highest standards. We operate this Quality Management System through out the company, and it is subject to regular external surveillance visits.

Brainboxes have always been aware of the need to continually review company processes and has been working with National Quality Assurance (www.nqa.com) since 1994, helping the company to create and maintain internationally recognised accreditation standards.

Linked with our Lean and Six Sigma techniques, we believe we have the most reliable products on the market, and to back this up we are offering a Lifetime Warranty* on all our Serial Products.

8.2. Europe – EU Declaration of Conformity

The PX PCIe Card devices conform to the protection requirements of European Council Directive **2004/108/EC**

The products are designed to meet the standards detailed below. The Declaration of Conformity and supporting Technical Construction File is available by request from Brainboxes.

EN 55022:1998 A2:2003 Class A	Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement
EN 55024:1998 A2:2003 Class A	Information technology equipment — Immunity characteristics — Limits and methods of measurement

8.3. WEEE Directive (Waste Electrical and Electronic Equipment)

The WEEE Directive 2004/96/EC came into force, in the UK, at the beginning of 2007.

Customer Responsibilities

You are encouraged to dispose of WEEE in an environmentally friendly way.

This can be done through your local civic amenities site, an approved treatment facility or alternatively through a relevant compliance scheme.

Brainboxes' Responsibilities

Brainboxes has a legal responsibility, as producer, to provide a free of charge collection service to our customers for our obligated WEEE.

Brainboxes is defined as a producer under the WEEE Regulations because we sell own brand Electrical & Electronic Equipment (EEE) in the UK. Our WEEE **Producer Registration Number is WEE/AH0004XR**. For more information, [click here](#).

For details of our WEEE recovery service options, please see our Website, or email us at: weeerecovery@brainboxes.com

8.4. RoHS Compliance

All Brainboxes Serial and Bluetooth products are fully RoHS compliant.

Brainboxes identified at an early stage the importance of rapid compliance to RoHS guidelines and established a project team to actively manage the transition. The initial step in the process was to use our close relationships with suppliers to ensure early access to RoHS compliant components for all of our Bluetooth and Serial Products. In addition, the project team worked to ensure that our manufacturing processes meet all RoHS requirements well in advance of the deadline.



To verify supplier declarations on RoHS compliancy, we have also sent fully built products to an external test house for X-Ray Fluorescence testing on components, using the Fischerscope X Ray system XDAL. This technique is capable of determining percentages of different elements and is accurate to 0.1% Wt.

RoHS Compliant Brainboxes products have been available since January 2005.

What is the RoHS Directive?

The RoHS directive (2002/95/EC the Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment) prohibits the sale of electrical and electronic equipment containing hazardous substances. A list of these hazardous substances includes lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls and polybrominated diphenylethers. RoHS affects each and every electronics manufacturer, directly or indirectly, regardless of geographical location or the equipment they produce.

9. Copyright

Copyright © 1985-2010 Brainboxes Ltd

All rights reserved. No part of this hardware, circuitry or manual may be duplicated, copied, transmitted or reproduced in any way without the prior consent of the Manufacturer.

10. Version History

Version	Date	Author	Checked By	Comments
1.0	23/04/08	AH	PA, XS, PG	
1.0.1	08/05/08	AH		Typo Corrected and Stacked Image added
2.0	15/12/08	AH		Manual made product specific
2.1	09/02/09	AH		PX-431 added to product list
2.2	19/01/10	BH		Added Windows 7