

XC Range Product Manual

XC-157, XC-235 and XC-475



XC Range Product Manual V1.0

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1. Introduction to the XC range

Where absolute compatibility with classic desktop LPT parallel printer ports is a necessity, our XC range really does excel. With guaranteed low latency, memory mapped, no compromise high performance interface, there is no better option. Drivers for available for Windows 32 bit and 64 bit Operating Systems including Windows XP, Server 2003, Vista, Server 2008, Windows 7 and Windows 8.

Unlike the VX range which uses USB technology over ExpressCard; this uses PCI Express technology over ExpressCard. All Brainboxes XC cards are PCI Express Base Specification 1.1 Compliant.

ExpressCards are the new connect standard for laptops and can be found in most laptops supplied since 2006/07. ExpressCard slots come in 34mm and 54mm widths, all of Brainboxes ExpressCards will fit in either slot. Use our ExpressCard spacer in 54mm slots when you require added physical security.

The cards are hot swappable and can be added or removed without having to turn your PC on or off.

The ExpressCard standard define two form factors, the 34mm wide ExpressCard/34 and the 54mm wide ExpressCard/54.

Whilst the 34mm slot accepts only 34mm cards the 54mm slot accepts both 34mm and 54mm cards. Brainboxes ExpressCard range being 34mm wide will fit into any ExpressCard slot on your laptop computer. For a more secure connection into a 54mm slot a Brainboxes VX-056 ExpressCard spacer can be purchased in conjunction with the card.







2. Supported operating systems

The PCI Express XC Range can be used with the following Microsoft Operating Systems with the supplied Boost.PCIe drivers:



Microsoft Windows 2000



Windows XP 32 bit & 64 bit Editions



Windows Server 2003 32 bit & 64 bit Editions



Windows Vista 32 bit & 64 bit Editions



Microsoft Windows 7 32 bit & 64 bit Editions



Microsoft Windows 8 32 bit & 64 bit Editions



Windows Server 2008 32 bit & 64 bit Editions

Brainboxes PCI Express Drivers have undergone Microsoft testing with the XC RS-232 and LPT printer port family. Upon passing these tests, the drivers were signed by Microsoft, as an indication of their quality and stability.

3. Installation Instructions

To install the XC-157, XC-235 or XC-475, simply follow the step-by-step guide below.

- Insert your PCI ExpressCard in to a free ExpressCard slot.
- Insert your XC CD.
- Windows will detect the new hardware; follow the Found New Hardware Wizard prompts to install the driver from the correct location on the CD ROM.
- Alternatively, run the setup.exe file found in the **root** of the CD ROM.

If you are downloading drivers from <u>www.brainboxes.com</u> please follow the steps below to install the XC drivers.

- Unzip the driver folder.
- Uninstall any current XC driver software by using the BbPUn43.exe in the Exe's folder.
- Now go back to the main folder and select the setup.exe file.
- Click next and the device will install.

If any of the above fail to work, please contact support@brainboxes.com and we will assist you with product installation.





3.1 Windows XP and Windows Server 2003 installation

The literature below shows an XC-235 device in XP and Server 2003 as an example. The same installation steps can be applied to all other products in the XC range.

- 1. Insert the XC CD in to your laptop.
- 2. Insert the XC-235 in to an available ExpressCard slot on your laptop.
- 3. You will now see the below hardware wizard prompt, click on it.



4. You will now see the below window appear; select the 'Install from a list or specific location (Advanced) option.

Found New Hardware Wizard		
	Welcome to the Found New Hardware Wizard	
	This wizard helps you install software for:	
	PCI Serial Port	
	If your hardware came with an installation CD or floppy disk, insert it now.	
	What do you want the wizard to do?	
	 Install the software automatically (Recommended) Install from a list or specific location (Advanced) 	
	Click Next to continue.	
	< Back Next > Cancel	

5. Now select the 'Search removable media (floppy, CD-ROM...)' option as shown below.



Found New Hardware Wizard
Please choose your search and installation options.
 Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM)
Include this location in the search:
\\puma\Shared_CD Files for BrainBoxes\Boost.PCI 💽 Browse
O Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back Next > Cancel

6. Your laptop will now start to scan the CD-ROM and you will now see a window like this:

Found New Hardware Wizard	
Please wait while the wizard searches	
PCI Serial Port	S.
	<back next=""> Cancel</back>

7. After the CD-ROM has been scanned for the XC drivers, you will now see a window telling you that the driver installation has finished. It looks like this:



Found New Hardware Wiz	ard	
	Completing the Found New Hardware Wizard The wizard has finished installing the software for:	
	Brainboxes ExpressCard 1xRS232 (XC-235)	
	Click Finish to close the wizard.	
	< Back Finish Cancel	

8. Now that the installation has finished, you will see one final hardware wizard prompt which tells you that your hardware is now ready to be used.



9. In device manager, you can now see your XC-235 installed. It should look like this:





3.2 Windows Vista and Windows Server 2008 installation

The literature below shows an XC-235 device in Vista and Windows Server 2008 as an example. The same installation steps can be applied to all other products in the XC range.

- 1. Insert the XC CD in to your laptop.
- 2. Insert the XC-235 in to an available ExpressCard slot on your laptop.
- 3. 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.

Found New Hardware	
Windows needs to install driver software f Port	or your PCI Seria
Locate and install driver software (reco Windows will guide you through the process of in for your device.	ommended) stalling driver software
Ask me again later Windows will ask again the next time you plug in	your device or log on.
Don't show this message again for this Your device will not function until you install drive	s device er software.

- 4. Select 'Locate and install driver software'.
- 5. NB Vista will enter the Security Check to ensure that you have initiated the installation (and not some malicious program). Click Continue



6. If you would like to install via Windows Update, select "Yes, this time only". This will take you to Step 9. Otherwise select 'Don't search online' to install from the CD.

)	🔟 F	ound New Hardware - PCI Serial Port	
	Allow Windows to search online for driver software for your PCI Serial Port?		
	•	Yes, always search online (recommended) Windows will automatically search for the latest drivers and applications for your hardware and download them to your computer.	
	•	$\underline{Y}es, search online this time only Windows will search for the latest drivers and applications for this device and download them to your computer.$	
	•	\underline{D} on't search online Your device may not function properly until you get the latest software.	
	Pleas	e read Microsoft's privacy statement	
		Cancel	

7. The Found New Hardware Wizard will then ask you to locate the software drivers. Ensure that the CD is in the drive and click Next





8. Once the driver has been installed, click Close.



3.3 Windows 7 and Windows Server 2008 R2 installation

The literature below shows an XC-235 device in Windows 7 and Windows Server 2008 R2 as an example. The same installation steps can be applied to all other products in the XC range.

- 1. Insert the XC CD in to your laptop.
- 2. Insert the XC-235 in to an available ExpressCard slot on your laptop.
- 3. You will now see the below window appear. Click on the 'Open folder to view files' option.



4. Scroll down to the bottom of the list of files and select the setup.exe file as shown below.

🔄 bblogo.JPG	26/03/2012 16:46	JPEG image	41 KB	
bbpcie.cat	21/03/2012 16:45	Security Catalog	11 KB	
BbPCIe.inf	19/03/2012 14:17	Setup Information	7 KB	
bbpebus.cat	21/03/2012 16:45	Security Catalog	15 KB	
BbPeBus.inf	19/03/2012 14:17	Setup Information	34 KB	
bbpeio.cat	21/03/2012 16:45	Security Catalog	15 KB	
BbPeIo.inf	19/03/2012 14:17	Setup Information	6 KB _	
bbpelpt.cat	21/03/2012 16:45	Security Catalog	11 KB	1
BbPeLpt.inf	19/03/2012 14:17	Setup Information	3 KB	1
bbpeser.cat	21/03/2012 16:45	Security Catalog	15 KB	1
BbPeSer.inf	19/03/2012 14:17	Setup Information	10 KB	1
mvstcdxx.lst	23/03/2012 11:39	LST File	2 KB	
README.htm	17/09/2012 13:23	Chrome HTML Do	14 KB	-
README.txt	17/09/2012 13:26	Text Document	3 KB	1
📄 Revision.txt	19/03/2012 14:34	Text Document	1 KB	1
🎭 SerialTest.exe	09/05/2008 10:30	Application	474 KB	
🚝 Setup.exe	19/03/2012 14:34	Application	1,945 KB	

5. After clicking on the setup.exe file, you will now see this window. Click 'Next >'.





6. You will know see the drivers begin to install as pictured below.

Brainboxes Boost.PCIe Installation	X
Installing The installation process may take a while. Please wait	
Installing Boost.PCIe Driver Package	

7. After the drivers have installed, you will now be able to see the final installation window.



Brainboxes Boost.PCIe Installat	ion	X
	Installation process completed.	
	You have successfully installed your Brainboxes Boost.PCIe products.	
	To close this wizard, Click 'Finish'.	
[< Back Finish Cancel	

8. The following window will now appear showing you that the device has been successfully installed.

G 🛛 Update Driver Software - PCI	Serial Port
The best driver software	for your device is already installed
Windows has determined the driv	ver software for your device is up to date.
Brainboxes ExpressCar	d 1xRS232 (XC-235)
	Close

9. Now go to device manager, it will show that the XC-235 has installed. You can now use the card to transmit and receive data.



A Device Manager	
<u>File Action View H</u> elp	
(= -) 🖬 🛛 🖬 🛝	
▲ 📇 TM5720-WIN7-32	
👂 🌌 Batteries	
D 📲 Computer	
Disk drives	
🔉 📲 Display adapters	
DVD/CD-ROM drives	
IDE ATA/ATAPI controllers	
🔉 – 🚆 IEEE 1394 Bus host controllers	
🔉 🔚 Imaging devices	
Infrared devices	
Keyboards	
Mice and other pointing devices	
A I Modems	
HDAUDIO Soft Data Fax Modem with SmartCP	
Monitors	
Multi-port serial adapters	
🔤 🕎 Brainboxes ExpressCard 1xRS232 (XC-235)	
Network adapters	
PCMCIA adapters	
Ports (COM & LPT)	
Processors	
SD host adapters	
Sound, video and game controllers	
⊳ - 🖳 System devices	
🔈 🏺 Universal Serial Bus controllers	



3.4 Windows 8 installation

The literature below shows an XC-235 device in Windows 8 as an example. The same installation steps can be applied to all other products in the XC range.

- 1. Insert the XC CD in to your laptop.
- 2. Insert the XC-235 in to an available ExpressCard slot on your laptop.
- 3. You will now see the below window appear. Click on it and a menu will appear.



4. Now select the 'Open folder to view files' option from the below window:



5. Go to the bottom of the list of files and select the setup.exe file. This file will install the XC drivers.

	Name		Date modified	Туре	Size	
	Product Support		26/09/2012 11:10	File folder		
	🌗 Uninstall		26/09/2012 11:10	File folder		
	autorun		17/10/2007 12:34	Setup Information	n 1KB	
	BB		03/03/2006 16:13	lcon	3 KB	
	📥 bblogo		26/03/2012 16:46	JPG File	41 KB	
	🥥 bbpcie		21/03/2012 16:45	Security Catalog	11 KB	
	BbPCle		19/03/2012 14:17	Setup Information	n 7KB	
	bbpebus		21/03/2012 16:45	Security Catalog	15 KB	
	BbPeBus		19/03/2012 14:17	Setup Information	n 34 KB	
	🥥 bbpeio		21/03/2012 16:45	Security Catalog	15 KB	
	BbPelo		19/03/2012 14:17	Setup Information	n 6KB	
	🥑 bbpelpt		21/03/2012 16:45	Security Catalog	11 KB	
	BbPeLpt		19/03/2012 14:17	Setup Information	n 3 KB	
_	bbpeser		21/03/2012 16:45	Security Catalog	15 KB	
	Brair	nboxes Boost.PCIe	Installation	× o	n 10 KB	
					2 KB	
		Brainboxes Boos	st.PCIe Installation	D	o 14 KB	
		This mission will as take on			3 KB	
		Boost.PCle Products.	ou through the installation	process or	1 KB	
					474 KB	
					1,945 KB	
6. Now that you						have selected the
XC Range Product Mar						
Ac hange i roudet ividi						Page 17 of 38
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		To Continue : Click 'Ne	xt'.			

< Back Next > Cancel



setup.exe file, you will now see a window as shown below, click Next.

7. When the drivers are installing, the window will look like the one below.



8. When the drivers have been installed, you will then see a similar window as shown.



9. When the drivers have installed, Device Manager will now look like the below image. If there are any yellow exclamation marks over the Brainboxes products, please right click the device and then update the driver pointing to the files on the CD-ROM.

- Audio inputs and outputs
- Batteries D Computer
- Disk drives
 Display adapters
- DVD/CD-ROM drives
 Human Interface Devices
- DE ATA/ATAPI controllers
- IEEE 1394 host controllers
 Imaging devices
 Infrared devices
- Keyboards
- Memory technology devices
- Mice and other pointing devices
- Modems
 Monitors
- Multi-port serial adapters Therefore a main the serial adapters The serial adapters The serial adapters and the series of the s
- Network adapters

- ▶ Network adapters
 > PCMCIA adapters
 ↓ Ports (COM & LPT)
 ↓ Prots (COM & LPT)
 ↓ Print queues
 ▶ Processors
 > Dots adapters

- Sound, video and game controllers
- Storage controllers
- Image: System devices
- Universal Serial Bus controllers



4. Product Configuration

4.1 Finding your Brainboxes COM port

You will need to go to 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 or COM4 following install, but may be different if other serial devices have been installed in the past)





4.2 Changing the COM label

To change the COM label, Double click on the Port entry in Device Manager. You will then need to go to the Port Settings tab and click on the Advanced button.

Brainboxes RS-232 Serial Port (COM5) Properties 🛛 👔
General Port Settings Driver Details
Baud Rate: 9500 Verride
Data Bits: 8 🛛 Verride
Parity: None 🔽 🖸 Override
Stop Bits: 1 🔍 🗋 Override
Flow Control: None 🔽 🖸 Override
CTS Always True - hardware state ignored:
DSR Always True - hardware state ignored:
Need More Help? Click: 3 Advanced Restore Default
OK Cancel

You will now see the below window appear. You need to click on the COM port number drop down list and then select an available COM port.

Port Settings UART Settings About Drainboxes COM Number Change selection to use a different COM number for this port. COM Port Number: COM5 Information Interface Type: PCIe Receive FIFO Size: 128 bytes Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	Advanced Settings for COM5	Properties 🛛 🛛 🔀
COM Number COM Number COM Port Number: COM5 Information Interface Type: PCIe Receive FIFO Size: 128 bytes Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	Port Settings UART Settings Ab	out
COM Number Change selection to use a different COM number for this port. COM Port Number: COMS Information Interface Type: PCIe Receive FIFO Size: 128 bytes Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	brain b	oxes
COM Port Number: COM5	COM Number	a different COM number for this port
COM Port Number: COM5		a directive contribution for this port.
Information Interface Type: PCIe Receive FIFO Size: 128 bytes Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	COM Port Number:	СОМ5 🗸
Interface Type: PCIe Receive FIFO Size: 128 bytes Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	C Information	
Receive FIFO Size: 128 bytes Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	Interface Type:	PCle
Transmit FIFO Size: 128 bytes Maximum Baud Rate: 921600 baud	Receive FIFO Size:	128 bytes
Maximum Baud Rate: 921600 baud	Transmit FIFO Size:	128 bytes
	Maximum Baud Rate:	921600 baud
Need More Help? Click: 3	Need More <u>H</u> elp? Click: 🔇	



4.3 Changing the port settings

To change the card's port settings, you will need to open Device Manager and then go to the Port Settings tab. You can change the baud rate, data bits, parity, stop bits and flow control. You also have the ability to tick check boxes for CTS Always True and DSR Always True.

Brainboxes RS-232 Se	rial Port (COM5) Propertie	es 🛛 🥐 🔀	
General Port Settings [)river Details		
brainboxes			
Default / Override Settin	gs		
Baud Rate:	9600 🗸	Override	
Data Bits:	8 💌	🔲 Override	
Parity:	None 💙	🔲 Override	
Stop Bits:	1 🗸	🔲 Override	
Flow Control:	None 💌	Override	
CTS Always True - hardware state ignored:			
<u>D</u> SR Always	True - hardware state ignored:		
Need More <u>H</u> elp? Click:	ې <u>A</u> dvanced F	Restore Default	
		Cancel	

All options can be selected from the Dropdown Menus. In addition, you can enter a non-standard value into the Baud rate

NB – Once the desired settings have been achieved, you must click OK to activate them. At any time click the 'Restore Default' button to return to the original setup.

Default / Override Settings

- The "Default Settings" will be set if an application does not specify the serial settings when it opens the COM Port.
 - This is sometimes the case with old Legacy applications and you will need to choose these settings to match the communications that you wish to use.
 - The majority of Applications will specify what Serial Settings they wish to use. In this case, it will not matter what the Default settings are, as the Port will be opened with the Application's Settings.
- When the 'Override' box is checked next to the Default Setting, the Port will communicate at this setting whether an application has requested it or not.
 - For example, this will enable you to force baud rates that your application does not allow you to select. This can be useful for interfacing to equipment which uses higher baud rates or unusual baud rates, which your application does not support.
 - In a case where you want to use hardware handshaking, but your application is not capable, you can select RTS / CTS Always True – Hardware state ignored and choose to Override it.
 - NB with the use of Override Settings, you need to ensure that the equipment you are connecting to be setup to match the communications settings you are forcing.



CTS / DSR Always True

- CTS and DSR are incoming hardware handshaking lines. This means they receive signals from the connected device which tell the ExpressCard when it is and isn't OK to send data.
 - Sometimes these signals may want to be ignored. By forcing CTS or DSR True, the ExpressCard will ignore those signals and always send data.

These settings are especially helpful when CTS and DSR are not physically connected (such as in a 3 wire setup) and it is not acceptable for the data flow to stop and start due to arbitrary variances on the unconnected signal lines.



5. RS-232 Information

5.1 The RS-232 Standard

The RS-232 standard was introduced in 1962, it is now widely established. RS-232 is a slow speed, short distance, single ended transmission system (i.e. only one wire per signal). Typical RS-232 maximum cable length is 50 feet.

5.2 9 Pin D Serial Port RS-232 Cables

To connect to the RS-232 Serial Port you will need a cable terminating in a 9 way female D connector. It is sound practice to use cables with screws fitted that will allow you to fasten the cable securely to the PC card.

In general, you will need to make up a "cross-over" cable to correctly interface the PC to the RS-232 port of another computer or device. Provided you have the pin outs and handshake requirements of both sides of your RS-232 connection, the cross over cable becomes a matter of common sense. The cross-over cable is simply to ensure that the right signals going out of one RS-232 port go into the appropriate lines of the other RS-232 port.

5.3 Pin D serial port connection to another PC

Suppose we want to connect the Brainboxes Serial Port to the serial port of another PC. Connect the earth lines. Line 5 of Serial Port 2 to lines 1 & 7 of the other PC. This gives the two devices a common earth level.

Connect the Transmit and Receive lines together. Line 3, TXD, Port 2 goes to line 3, RXD, of the other PC. Line 2, RXD, Port 2 goes to line 2, TXD, of the other PC. This allows each to receive the data transmitted by the other.

Connect the Port 2 DTR line, pin 4 to the other PC DCD, pin 8 and CTS, pin 5, lines. Also, connect up the other PC DTR line, pin 20 to the Port 2 DCD, pin 1 and CTS, pin 8, lines.

This allows the receiving device to signal when it can no longer accept data. The receiving device sets DTR false when it is unable to receive any more data. The sending device reads DTR on its CTS and DCD pins. It should stop sending when CTS goes false.

Connect the Port 2 RTS line, pin 7, to the other PC DSR line, pin 6. Also, connect the other PC RTS line, pin 4, to the Port 2 DSR line, pin 6. This RTS line is used to let the other device know that it is ready for data exchange.

Schematic and Actual presentations are shown below.



SCHEMATIC REPRESENTATION:



ACTUAL REPRESENTATION:





6. LPT printer port information

Below is the pinout for the LPT printer port which is used on the XC-157 and XC-475 ExpressCard's.



When selecting the appropriate LPT port in your application, you will need to check device manager to see which LPT port you need to use. Please see below the LPT port in the red circle and then choose the correct port in your application for it to be used.





7. UART Settings

The UART settings for the Brainboxes COM Port allow you to get the best performance from your device and system. There are two choices, dependant on whether minimal CPU usage or Data Latency (delay) is the main concern.

The default settings have been carefully selected and should provide great performance for the majority of users. The UART Settings will help if you need to lower the CPU usage, or your application is timing critical and requires a lower Data Latency

- To open Advanced Settings, open the Port Settings and click the Advanced button
- Select the 'UART Settings' tab.

Advanced Settings for COM5 Properties	?	
Port Settings UART Settings About		
Change settings to optimise the UART E reception and transmission.	ehaviour for data	
Beceive Trigger Level (%):	75%	
	J <u> </u>	
I ransmit I rigger Level (%):	10%	
Flow Control Behaviour		Ϋ́ι Ι
Flow Control Trigger Level (%):	85%	
Need More <u>H</u> elp? Click: ③	Restore Defaul	ts
	OK Cance	el

7.1 Receive Trigger Level

This slider allows you to choose how much incoming data is stored in the Receive FIFO before it gets processed by the driver.

Processing the data takes a small amount of CPU time, so doing this frequently will increase CPU Usage, but it will also decrease the latency at which data is delivered to the application. Choosing the right value is a trade-off between CPU Usage and Latency.

Setting this value very low will result in a high number of interrupts, and therefore increased CPU Usage, as well as short latency times between the reception of the data by the UART chip and the delivery to the application. Choosing a high value has the opposite effect.

If the Receive Trigger Level is chosen very high, and data is continuously streaming into the UART's FIFO, then this might result in data getting lost due to a FIFO Overrun. This is caused by the reaction time of the Operating System and driver to the interrupt. If this reaction time is longer than it takes to fill up the remaining space in the FIFO, then overrun can occur. To prevent this, choose a slightly lower Receive Trigger Level, and use Flow Control.

7.2 Transmit Trigger Level

This slider allows you to choose when the Transmit FIFO is re-filled with data. If a low value is chosen, little or no data is left in the Transmit FIFO at the time of the re-fill. The higher the value, the more data will be in the FIFO.

Re-filling the Transmit FIFO before it runs empty has the advantage that the small processing time required to generate the interrupt notification to the driver and putting data into the FIFO will not have the effect of a gap appearing in the data stream on the transmission line.

It is not common to choose high values for this slider, as the potential transmission gap is easily bridged, even if values are chosen in the lower part of the slider. Higher levels increase the amounts of hardware interrupts generated, and hence increase CPU usage.

The slider allows choosing values from 0% to 100% of the Transmit FIFO size.

7.3 Flow Control Trigger Level

The slider only takes affect if any type of flow control was selected by the application that opened the COM port.

This slider allows you to choose when the flow control state changes (RTS, DTR, in-band flow control). If the amount of received data reaches the Flow Control Trigger Level, any active flow control mechanism is set to the 'do not send' state. Once the amount of received data falls again below this level, all active flow control mechanisms are returned to the 'send data' state.

Depending how handshaking is implemented on the device at the other side of the cable, it is possible that some data is still transmitted to our UART even after handshaking has been turned off. Setting very high Flow Control Trigger Levels might in this case result in a FIFO overrun, and hence the loss of data.

It is not common to choose low values for this slider, as this increases the amount of handshaking changes on the line. That might increase the processing overhead on the remote device, and result in gaps in the data stream, thus reducing data throughput. Usually values are chosen in the higher part of the slider.



The slider allows choosing values from 1% to 100% of the Receive FIFO size.

Pressing the "Restore Defaults" button will reset all settings on this Property Page to the factory defaults of this device.

The factory defaults are:

- Receive Trigger Level (%) = 75%
- Transmit Trigger Level (%) = 10%
- Flow Control Trigger Level (%) = 85%

8. Uninstallation instructions

8.1 Windows Server 2008/Vista/Server 2003/XP

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

Open Control Panel, and then open "Add or Remove Programs". In Vista, this will be called "Programs & Features".

🐻 Add or Re	move Programs			
5	Currently installed programs:	Show updates	Sort by: Name	*
Change or Remove	Adobe Reader X (10.0.1)		Size	112.00MB 🔷
Programs	🚱 Brainboxes Boost.LAN Suite 3.0		Size	13.02MB
Add <u>N</u> ew	Brainboxes Boost.PCIe 4.3 Device Driver Suite Click here for support information.	aa a		
Programs	To change this program or remove it from your compute	r, click Change/Remove.	Chang	e/Remove
F	🕞 Brainboxes Boost.Software Suite 3.1			
Add/Remove	🔯 Brainboxes RS-232 Bluetooth Adapter Configuration Too	ols (2.1.3)	Size	12.84MB
	Broadcom 440× 10/100 Integrated Controller		Size	0.13MB
components	🕞 Conexant HDA D110 MDC V.92 Modem		Size	0.55MB
	DTA Windows Test Client 2.0		Size	1.20MB
Set Program	alitComm		Size	7.61MB
Access and Defaults	Frontline Serialtest Async 11.9.14.1		Size	22.31MB
	👸 Intel(R) Graphics Media Accelerator Driver for Mobile			
	🛜 Intel(R) PROSet/Wireless Software		Size	36.20MB
	📳 LM Flash Programmer		Size	10.77MB
	🚜 Microsoft .NET Framework 1.1			
	🕞 Microsoft .NET Framework 2.0 Service Pack 2		Size	185.00MB
	Microsoft .NET Framework 3.0 Service Pack 2		Size	179.00MB 💌

The Brainboxes Uninstallation wizard will launch which will remove all driver files and associated registry entries. Just click Next on each page of the Wizard. When the drivers have been uninstalled, click Finish.



Once finished, check Device Manager to ensure all Ports have been removed from the system. XC Range Product Manual V1.0 Page 30 of 38

You may now power down the PC and unplug your XC 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 3 to reinstall.

Alternatively, restart the PC to launch the Found New Hardware Wizard.



9. Boost.PCIe Driver Upgrade / Rollback

There are several parts to the Boost.PCIe, driver:

For RS-232:

Example

- Card driver: "Brainboxes ExpressCard 1xRS-232 (XC-235)"
- Port driver: "Brainboxes RS-232 Serial Port (COM4)"

For LPT :

- Card driver: "Brainboxes ECP Parallel Port (XC-475) (LPT3)"
- Port driver : "Brainboxes RS-232 Serial Port (COM4)"

NB - If you need to upgrade or roll back the Boost.PCIe driver, we recommend to completely uninstall the existing drivers first, and then to install the new drivers from fresh. This will restore all settings to factory default. However, if you instead wish to retain your settings, you can use the 'Update Driver' or "RollBack" in Device Manager for upgrading/rolling back the Boost.PCIe driver.

9.1 Upgrading the Boost.PCIe Driver

i. Go to Device Manager and Right Click on the Serial Card entry (Found under Multiport Serial Adapters – see image below)

B Device Manager		
File Action View Help		
← → 🖪 🖆 🖨 😢 🖬 🗏 🛪 🗶 🖉	1	
 Disk drives Display adapters UVD/CD-ROM drives 		
Human Interface Devices IDE ATA/ATAPI controllers JEE ATA/ATAPI controllers Keyboards Moite and other pointing devices Monitors Monitors Multi-port serial adapters Metwork adapters		
 I394 Net Adapter Broadcom 440x 10/100 Integrated Controll Intel(R) PRO/Wireless 2200BG Network Coll Ports (COM & LPT) Brainboxes ECP Parallel Port (XC-475) (LPT) Brainboxes RS-232 Serial Port (COM4) Processors 	er nnection Update Driver Disable	
	Scan for hardware changes	~
Launches the Hardware Update Wizard for the selected de	Properties	

ii. Select Upgrade Driver. This will launch the Found New Hardware Wizard. Follow the on screen instructions and point to the location of the new driver package.

NB: It is only possible to upgrade the Boost.PCIe driver via the ExpressCard entry in Device Manager and not the Serial Port entry. The upgrade process will automatically upgrade the Port driver.



10. Troubleshooting and Testing

10.1 Installation problems

Check the XC is correctly installed, and the Ports appear in Device Manager without any errors (Errors are indicted 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 8: Uninstallation and Section 3: Installation Instructions.

If the problem is still present after trying the above, try the following to help narrow down the problem.

- 1. A different ExpressCard Slot
- 2. A different PC

Should the problem still persist, please contact Brainboxes Technical Support

10.2 Communication Problems

If you are experiencing communication problems:

Check the XC is correctly installed, and the Ports appear in Device Manager without any errors (Errors are indicted by a yellow exclamation mark).

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.

Here are two links to our website to help perform a loopback test:

http://www.brainboxes.com/faq/items/how-do-i-create-a-loop-back-connector

http://www.brainboxes.com/faq/items/how-to-user-hyperterminal-to-test-serial-cards

Should the problem still persist, please contact Brainboxes Technical Support

10.3 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.



Brainboxes www.brainboxes.com
Welcome to the Brainboxes Serial Port Test Application.
This test application will perform tests on your hardware after a successful installation. Before the test begins, please check in Device Manager for any visible error messages. If your card wasn't installed properly, please refer to the FAQ document to perform a successful installation, or contact Brainboxes for technical support.
Please refer to the FAQ document for any further help.
Cancel Next



Please select the COM Port to test:



Next

11. 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.

<u>Email</u>

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



12. Technical specification

12.1 Support 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 or 2
Handshaking	RTS/CTS DTR/DSR Xon/Xoff

12.2 RS-232 Pinout



12.3 LPT pinout





13. Regulatory Approvals / Compliance

For up to date details of global certifications, please check the product datasheet on the Brainboxes website: <u>www.brainboxes.com</u>

13.1 Company Accreditation

Brainboxes is accredited to internationally recognised standards for our Quality and Environmental Management Systems. Our ISO9001 Quality System was first accredited in 1994, followed by our ISO14001 Environmental System in 2008. These standards help ensure we can demonstrate effective management of all our quality systems and our environmental impacts, together with a process of continuous improvement.

All our Quality systems are subject to internal and external assessment on a regular basis. Copies of Certificates are available for download from our website: <u>www.brainboxes.com</u>

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.

13.2 Europe – EU Declaration of Conformity

Brainboxes products are designed to conform to the protection requirements of European Council Directive 2004/108/EC and its subsequent revisions.

A Declaration of Conformity and supporting Technical Construction File is available by request from Brainboxes, and will identify any updated legislation that may have been introduced since the publication of this Manual.

Warning: This is a Class A Product. In a domestic environment this product may cause interference in which case the user may be required to take adequate measures to address this.

13.3 WEEE Directive (Waste Electrical and Electronic Equipment)

The Waste Electric and Electronic Equipment (WEEE) Regulations 2013 became law in the UK on the 1st of January 2014 and replaced the 2006 Regulations. Brainboxes is fully compliant with this legislation.

Customer Responsibilities

You are encouraged to dispose of WEEE in an environment 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 details of our WEEE recovery service options, please see our Website, or email us at: <u>weeerecovery@Brainboxes.com</u>



13.4 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 **2011/6** 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 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 Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment (EEE) Directive (2011/65/EU) was transposed into UK law on 2 January 2013.

This legislation bans the placing on the EU market of new EEE containing more than the agreed levels of:

- lead (Pb)
- cadmium (Cd)
- mercury (Hg)
- hexavalent chromium (Cr6+)
- polybrominated biphenyls (PBB)
- polybrominated diphenyl ethers (PBDE)

Any future revisions to this legislation will be complied with, and identified in a Declaration of Conformity, available on request.

14. Copyright

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