

VXC-118U/148U

User Manual

Serial Communication Board with 8 RS-232/422/485 Ports

Version 1.1, Mar 2014

WARRANTY

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

WARNING

ICP DAS assumes no liability for damages consequent to the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

COPYRIGHT

Copyright © 2014 by ICP DAS. All rights are reserved.

TRADEMARKS

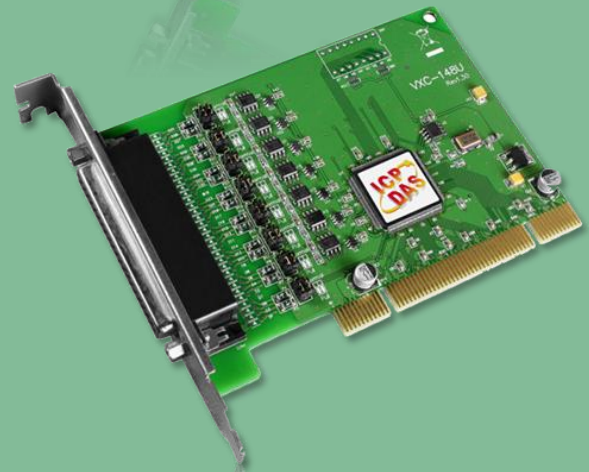
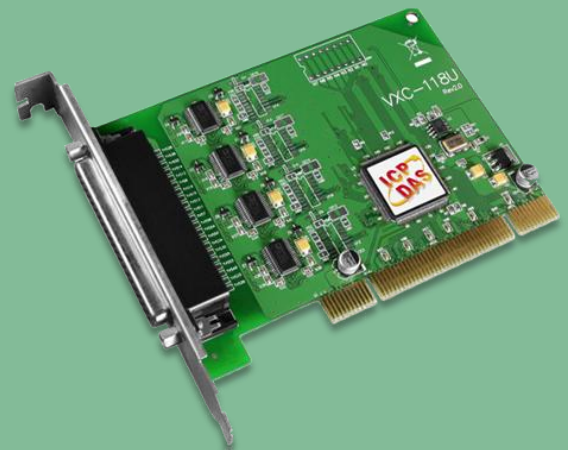
Names are used for identification purposes only and may be registered trademarks of their respective companies.

CONTACT US

If you have any questions, please feel free to contact us at:

Email: service@icpdas.com, service.icpdas@gmail.com

We guarantee to give you response within 2 working days.



ICP DAS CO., LTD. 

service@icpdas.com 

<http://www.icpdas.com> 



Table of Contents

PACKING LIST.....	3
MORE INFORMATION	3
1. INTRODUCTION.....	4
1.1 FEATURES	5
1.2 SPECIFICATIONS.....	6
1.2.1 VXC-118U.....	6
1.2.2 VXC-148U.....	7
1.3 OPTIONS	8
2. HARDWARE CONFIGURATION.....	9
2.1 VXC-1X8U BOARD LAYOUT	9
2.2 WIRING NOTES FOR RS-232/422/485	10
2.2.1 RS-232 Wiring	10
2.2.2 RS-485 Wiring	10
2.2.3 RS-422 Wiring	11
2.3 PIN ASSIGNMENTS	12
2.3.1 VXC-118U.....	12
2.3.2 VXC-148U.....	13
3. HARDWARE INSTALLATION	14
4. SOFTWARE INSTALLATION	18
4.1 OBTAINING THE DRIVER INSTALLER PACKAGE.....	18
4.2 INSTALLING VXC-1X8U SERIES DRIVER.....	19
4.3 PNP DRIVER INSTALLATION	22
4.4 VERIFYING THE INSTALLATION	24
4.4.1 How do I access Windows Device Manager?.....	24
4.4.2 Check the Configuration of the COM Port.....	26
4.5 MANUAL COM PORT CONFIGURATION	27
4.6 UNINSTALLING THE DEVICE DRIVER.....	28
5. TESTING THE VXC-1X8 SERIES CARD.....	29
5.1 VXC-1X8U SERIES CARD WIRING	29
5.2 SELF-TEST.....	31

Packing List

The shipping package includes the following items:



One VXC-118U or VXC-148U Card



One Quick Start Guide



One Software Utility CD



Note:

If any of these items are missing or damaged, please contact the local distributor for more information. Save the shipping materials and cartons in case you need to ship the card in the future.

More Information

Manual/DataSheet/QuickStart:

CD:\NAPDOS\multiport\document

<http://ftp.icpdas.com/pub/cd/iocard/pci/napdos/multiport/document/>

Software/Drivers:

CD:\NAPDOS\multiport\windows

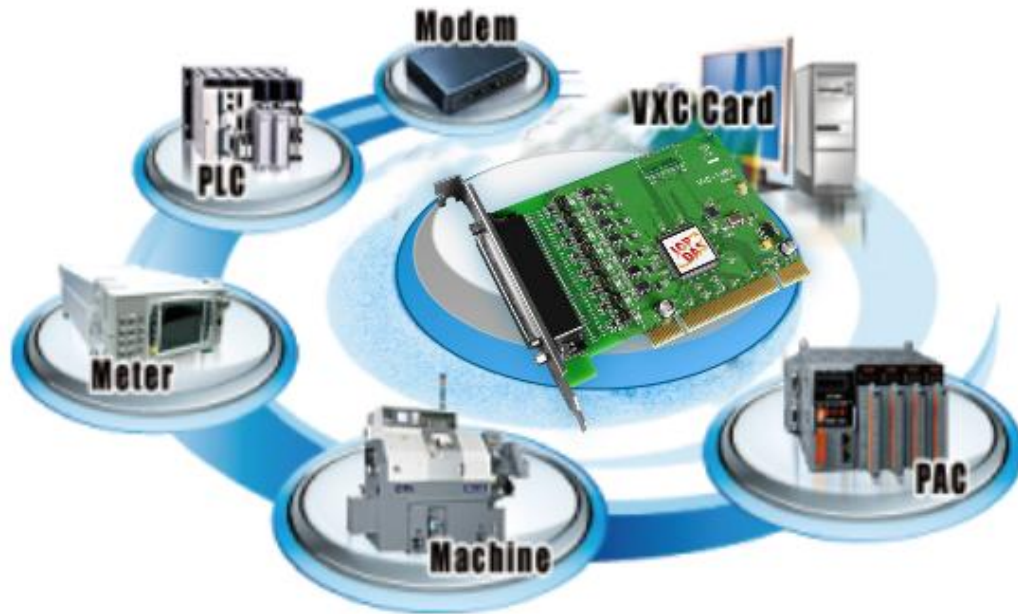
<http://ftp.icpdas.com/pub/cd/iocard/pci/napdos/multiport/windows/>

Software/Test2COM/Utility:

CD:\NAPDOS\multiport\utility

<http://ftp.icpdas.com/pub/cd/iocard/pci/napdos/multiport/utility/>

1. Introduction



The VXC multiport card is the foremost choice for PC-based communication solutions, ensuring smooth communication in both time-critical applications and industrial fields. Installing a VXC multiport card increases the number of serial ports available on the PC, meaning that it is much easier to integrate a PC with a large number of external devices, such as PLCs, meters, controllers, laboratory instruments, modems, card readers, serial printers, RFID readers, bar code readers, and sensors, etc.

Comparison Table for VXC-1x8U Series Cards:

Model	RS-232	RS-422/ RS-485	Self-Tuner	Isolation	ESD Protection	FIFO Size (bytes)	Connector
VXC-118U	8	-	-	-	-	256	Female DB-62
VXC-148U	-	8	Yes	-	-	256	Female DB-62

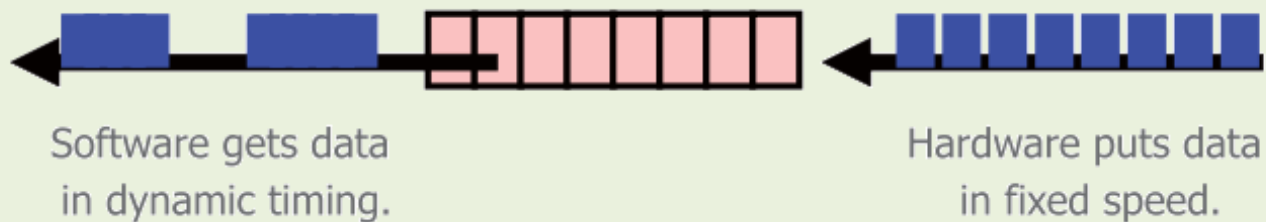
1.1 Features

Universal PCI (3.3 V and 5 V)

The Universal PCI card works with both newer 3.3 V PCI bus that is widely-used in servers, and the traditional 5 V PCI bus. The Universal PCI interface will be the standard for every card developed by ICP DAS in the near future.

Hardware FIFO up to 256 bytes

FIFO is an acronym for "First In, First Out", and is a method used for organizing and manipulating data relative to time and prioritization. FIFO is used for buffering and flow control while the data is transmitted from the hardware to the software. When using a hardware FIFO (buffer), a small delay in either the software or the operating system will not cause any data loss.



VXC-1x8U series cards are equipped with a large 256-byte hardware FIFO for each port. A large hardware FIFO is useful for preventing data loss if the loading on your system is heavy, e.g. while running a multi-task operating system, such as Windows, or Linux, etc.

Self-Tuner

The VXC-148U card is equipped with an internal "Self-Tuner" chip that is used to automatically control the direction of the transmission and receiving of signals on the RS-485 ports.

Without the help inclusion of the Self-Tuner, the RS-485 transmitter would need to be manually enabled before transmitting, and then disabled once the transmission is complete. The timing method that is used to enable and disable the transmitter (direction control) is major source of many communication problems, and is very difficult to rectify.

The built-in Self-Tuner embedded on the VXC-148U card can help effectively any issues related to direction control and also simplifies the software programming required for communication applications.

1.2 Specifications

1.2.1 VXC-118U

Models	VXC-118U
Communication Port	
COM1 - COM8	RS-232 (TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND)
UART	16c950 compatible
Baud Rate	50 - 115200 bps
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Parity	None, Even, Odd, Mark, Space
FIFO	Internal 256 bytes
General	
Bus Type	Universal PCI, 3.3 V/5 V, 33 MHz, 32-bit, Plug and Play
COM-Selector	No
Connector	DB-62 (Female)
Power Consumption	120 mA @ 5 V
Operating Temperature	0°C ~ +60°C
Storage Temperature	-20°C ~ +70°C
Humidity	0 ~ 90% RH, non-condensing
Dimensions (L x W x D)	132 mm x 121 mm x 22 mm

1.2.2 VXC-148U






Models		VXC-148U	
Communication Port			
COM1 - COM8	RS-422/485	The RS-422 and RS-485 Cannot be used simultaneously.	
	RS-422	RS-422 (TxD+, TxD-, RxD+, RxD-, GND)	
	RS-485	2-Wire	RS-485 (Data+, Data-, GND)
		Bias Resistor	Yes, 1 K Ω
	Nodes	256 (max.)	
UART		16c950 compatible	
Baud Rate		50 - 115200 bps	
Data Bits		5, 6, 7, 8	
Stop Bits		1, 1.5, 2	
Parity		None, Even, Odd, Mark, Space	
FIFO		Internal 256 bytes	
General			
Bus Type		Universal PCI, 3.3 V/5 V, 33 MHz, 32-bit, Plug and Play	
COM-Selector		No	
Connector		DB-62 (Female)	
Power Consumption		120 mA @ 5 V	
Operating Temperature		0°C ~ +60°C	
Storage Temperature		-20°C ~ +70°C	
Humidity		0 ~ 90% RH, non-condensing	
Dimensions (L x W x D)		128 mm x 121 mm x 22 mm	



Note:

The combination of 5 data bits and 1.5 stop bits is not supported for a Baud Rate of 921,600 bps.

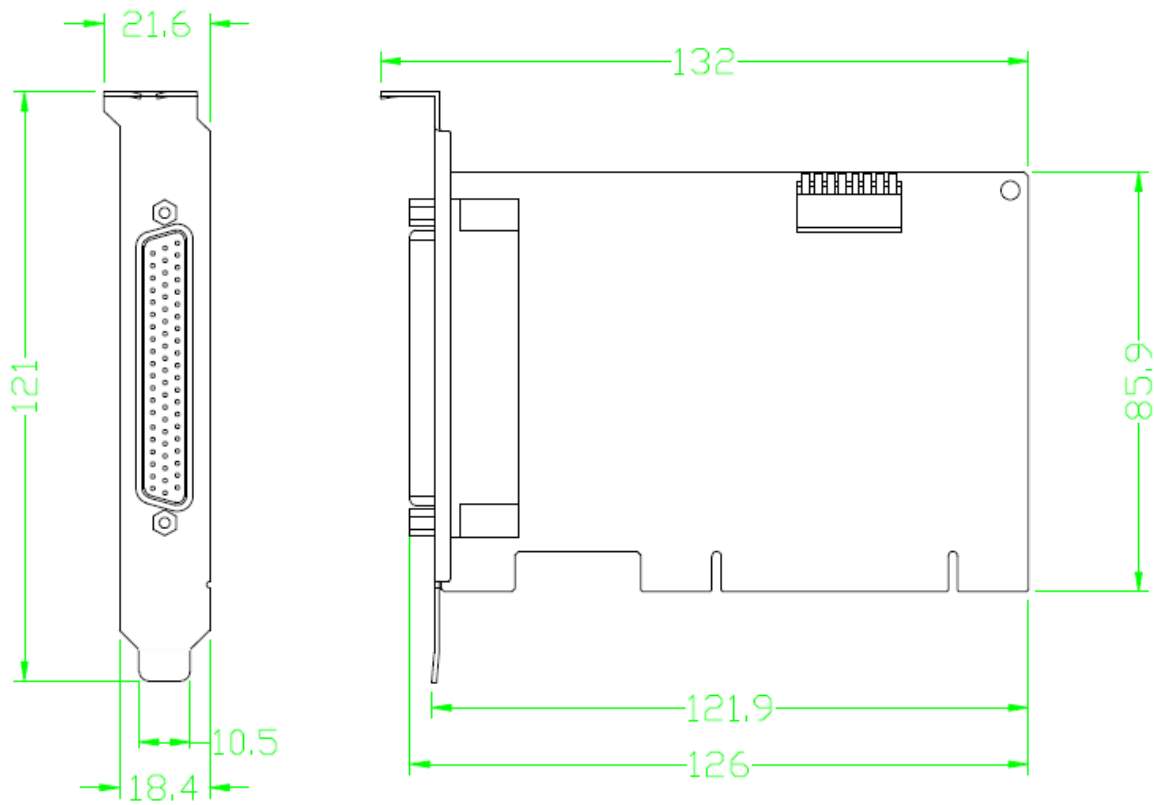
1.3 Options

Item & Description	VXC-118U	VXC-148U
 <p>CA-PC09F 9-pin Female D-sub Connector with Plastic Cover</p>	✓	✓
 <p>DN-09-2/DN-09-2F I/O Connector Block with DIN-Rail Mounting and two 9-pin Male Headers</p>	✓	✓
 <p>CA-0910F 9-pin Female-Female D-sub Cable, 1 m</p>	✓	✓
 <p>CA-0915 9-pin Male-Female D-sub Cable, 1.5 M</p>	✓	✓
 <p>CA-9-6210 DB-62 Male(D-sub) to 8-Port DB-9 Male(D-sub) Cable 1 m (180 °)</p>	✓	✓

2. Hardware Configuration

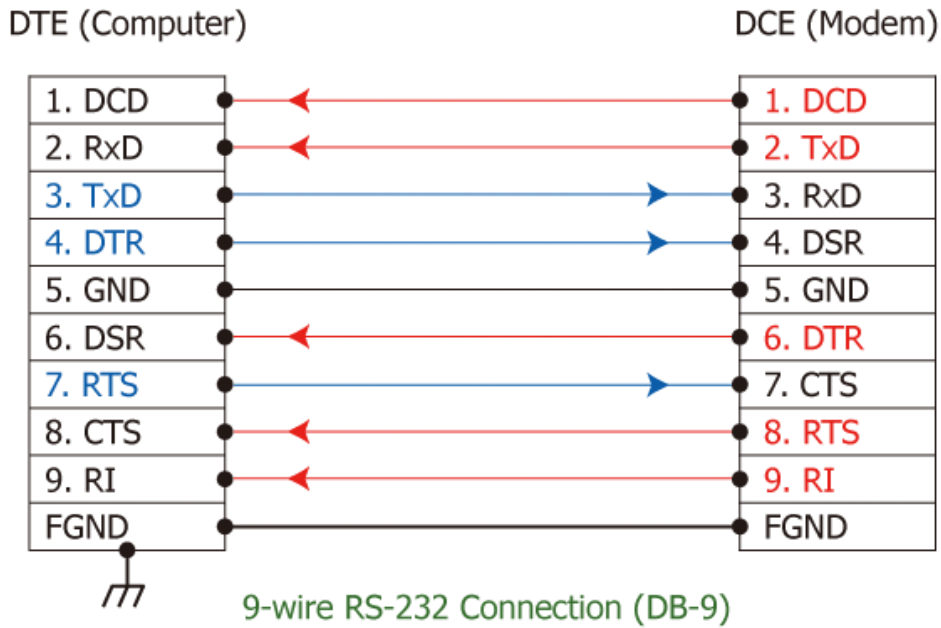
2.1 VXC-1x8U Board Layout

All dimensions are in millimeters.



2.2 Wiring Notes for RS-232/422/485

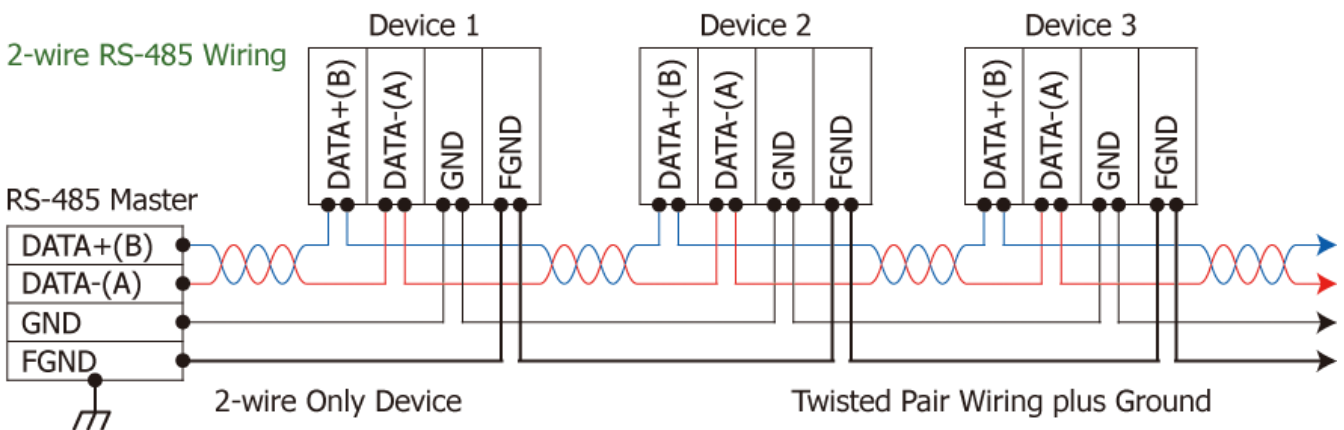
2.2.1 RS-232 Wiring



Note:

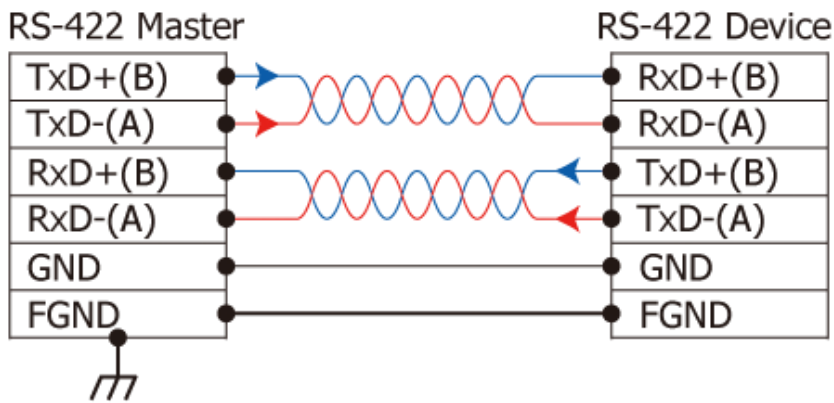
FGND is the frame ground that is soldered to the metal shield on the DB-9 cable.

2.2.2 RS-485 Wiring



2.2.3 RS-422 Wiring

4-wire RS-422 Wiring

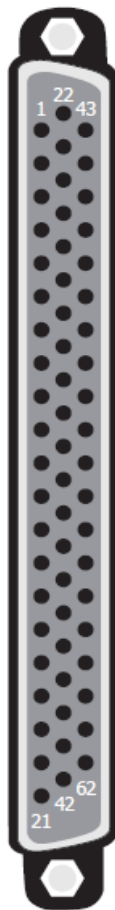


Note:

1. For non-isolated RS-422/485 ports, all signal grounds for RS-422/485 devices should be connected together as this reduces the common-mode voltage between devices.
2. A twisted-pair cable must be used for the Data+/- wires.
3. Both ends of the cable may require a termination resistor to be connected across the two Data+ and Data- wires. Typically, a 120 Ω resistor is used.


2.3 Pin Assignments

2.3.1 VXC-118U



Terminal No.	Pin Assignment	Terminal No.	Pin Assignment	Terminal No.	Pin Assignment
01	TxD_0	22	RxD_0	43	CTS_0
02	DTR_0	23	DSR_0	44	RTS_0
03	RxD_1	24	DCD_0	45	GND
04	DSR_1	25	TxD_1	46	CTS_1
05	DCD_1	26	DTR_1	47	RTS_1
06	TxD_2	27	RxD_2	48	CTS_2
07	DTR_2	28	DSR_2	49	RTS_2
08	RxD_3	29	DCD_2	50	GND
09	DSR_3	30	TxD_3	51	CTS_3
10	DCD_3	31	DTR_3	52	RTS_3
11	RxD_4	32	GND	53	CTS_4
12	DSR_4	33	TxD_4	54	RTS_4
13	DCD_4	34	DTR_4	55	GND
14	TxD_5	35	RxD_5	56	CTS_5
15	DTR_5	36	DSR_5	57	RTS_5
16	RxD_6	37	DCD_5	58	GND
17	DSR_6	38	TxD_6	59	CTS_6
18	DCD_6	39	DTR_6	60	RTS_6
19	RxD_7	40	GND	61	CTS_7
20	DSR_7	41	TxD_7	62	RTS_7
21	DCD_7	42	DTR_7		

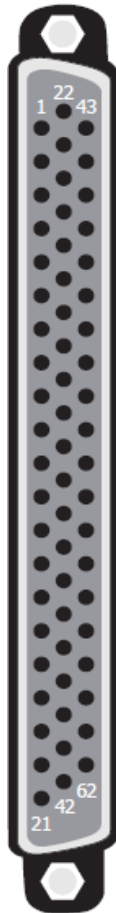
CON1



Terminal No.	Pin Assignment
01	DCD
02	RxD
03	TxD
04	DTR
05	GND
06	DSR
07	RTS
08	CTS
09	-

RS-232 Female DB-62 to Male DB-9 Connector

2.3.2 VXC-148U



Terminal No.	Pin Assignment	Terminal No.	Pin Assignment	Terminal No.	Pin Assignment
01	RxD0+	22	TxD0+/Data0+	43	-
02	RxD0-	23	-	44	-
03	TxD1+/Data1+	24	TxD0-/Data0-	45	GND
04	-	25	RxD1+	46	-
05	TxD1-/Data1-	26	RxD1-	47	-
06	RxD2+	27	TxD2+/Data2+	48	-
07	RxD2-	28	-	49	-
08	TxD3+/Data3+	29	TxD2-/Data2-	50	GND
09	-	30	RxD3+	51	-
10	TxD3-/Data3-	31	RxD3-	52	-
11	TxD4+/Data4+	32	GND	53	-
12	-	33	RxD4+	54	-
13	TxD4-/Data4-	34	RxD4-	55	GND
14	RxD5+	35	TxD5+/Data5+	56	-
15	RxD5-	36	-	57	-
16	TxD6+/Data6+	37	TxD5-/Data5-	58	GND
17	-	38	RxD6+	59	-
18	TxD6-/Data6-	39	RxD6-	60	-
19	TxD7+/Data7+	40	GND	61	-
20	-	41	RxD7+	62	-
21	TxD7-/Data7-	42	RxD7-		

CON1



Terminal No.	Pin Assignment
01	TxD-/Data-
02	TxD+/Data+
03	RxD+
04	RxD-
05	GND
06	-
07	-
08	-
09	-

RS-422/485 Female DB-62 to Male DB-9 Connector

3. Hardware Installation



Note:

1. As certain operating systems, such as Windows XP may require the computer to be restarted after a new driver is installed, it is recommended that the driver is installed first, which will reduce the installation time.
2. Static electricity can easily damage computer equipment. It is recommended that you ground yourself by touching the chassis of the computer before handling any of the boards.

Follow the process described below to install your VXC-1x8U series card:

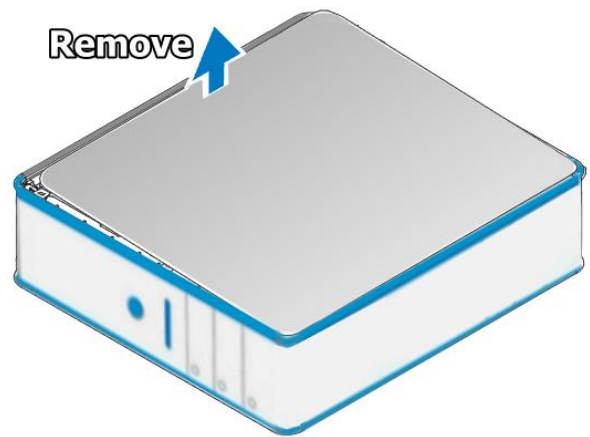
Step 1: Install the VXC-1x8U series card driver on your computer.

For detailed information regarding driver installation, refer to [Chapter 4 Software Installation](#).

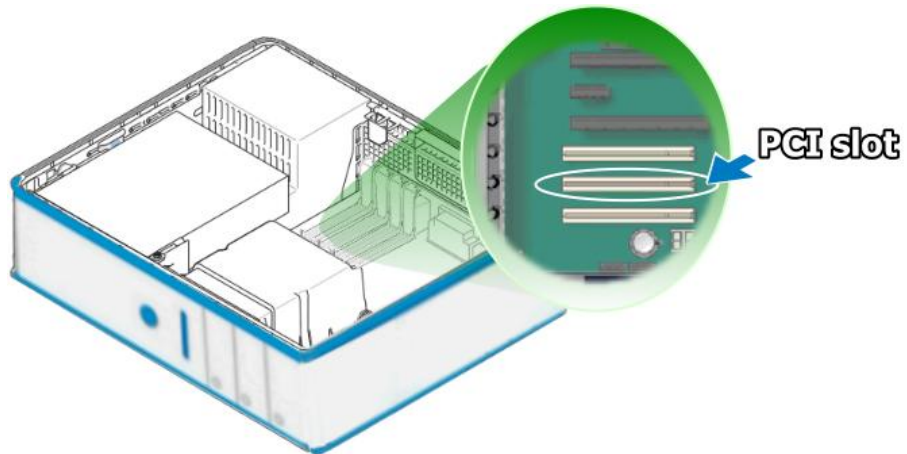


Step 2: Correctly shut down and power off your computer, and then disconnect the power supply.

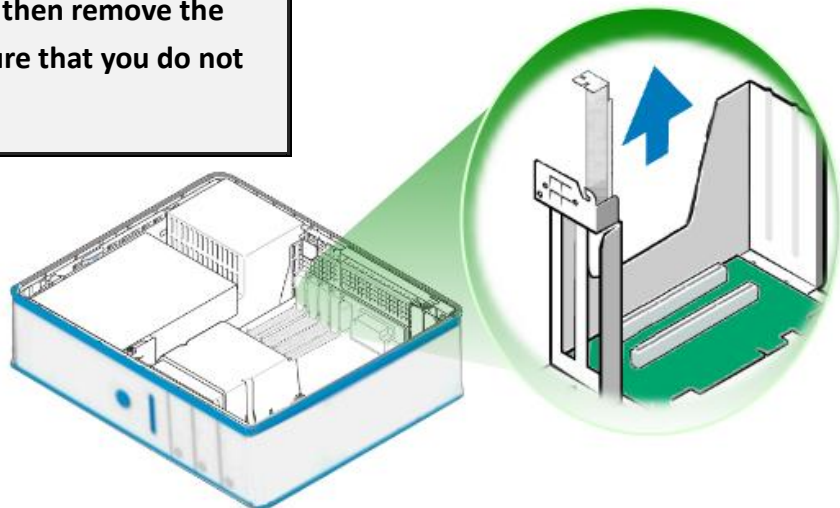
Step 3: Remove the cover from the computer.

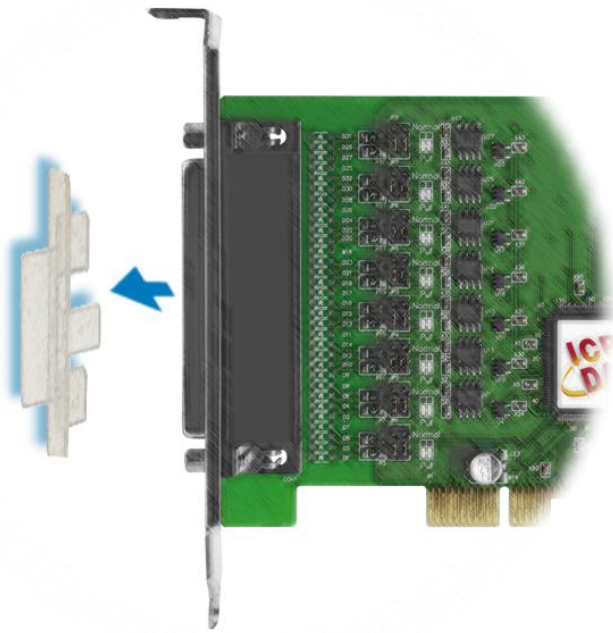


Step 4: Select an empty PCI slot.



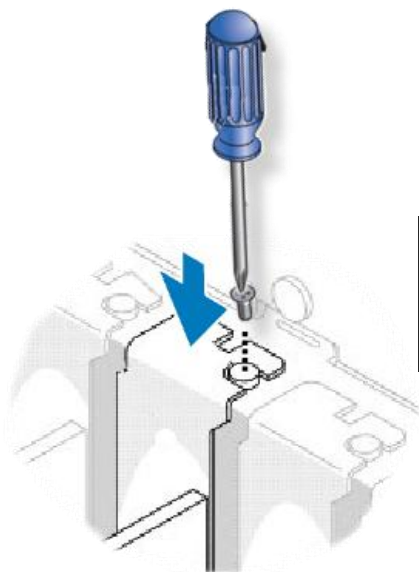
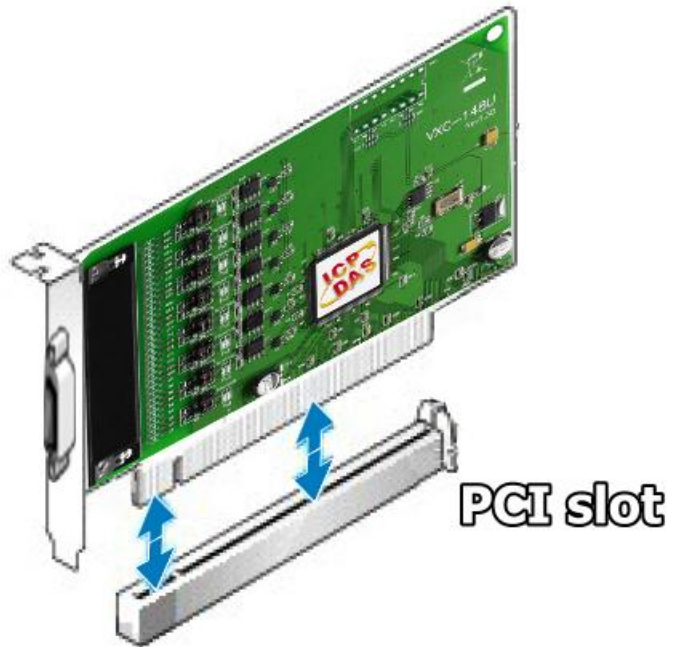
Step 5: Remove the screw holding the cover for the PCI slot in place and then remove the slot cover from the PC. Ensure that you do not misplace the screw.





Step 6: Remove the connector cover from the VXC-1x8U series card.

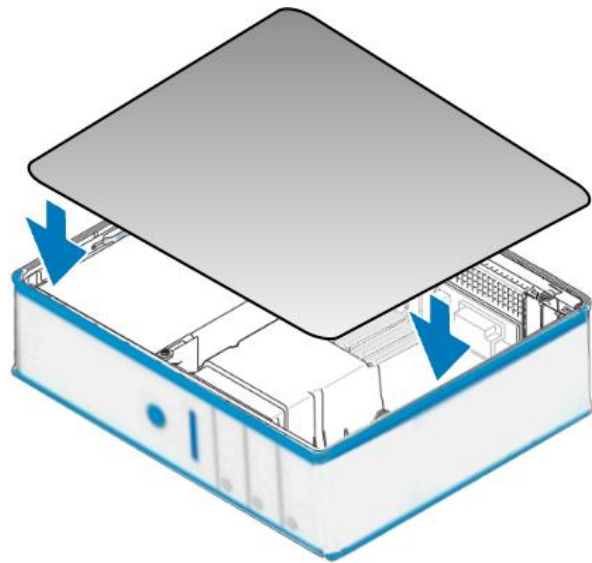
Step 7: Align the contacts of the PCI card with the open slot on your motherboard and carefully insert your VXC-1x8U series card into the PCI slot.



Step 8: Screw the mounting bracket screw removed in step 5 into the new PCI card bracket to secure the card in place.

Confirm that the VXC-1x8U series card is correctly mounted on the motherboard.

Step 9: Re-attach cover for the computer and reconnect the power supply.



Step 10: Power on the computer.

Once the computer reboots, follow the onscreen messages to complete the Plug&Play installation process. For more information, refer to [Chapter 4 Software Installation](#).



4. Software Installation

The VXC-1x8U series card can be used with both 32 and 64-bit Windows XP/2003/Vista/7/8 systems, and also supports Plug and Play (PnP) functions for easy installation. This chapter provides detailed description of how to install the drivers for the VXC-1x8U series card.

4.1 Obtaining the Driver Installer Package

The installer package for the ICP DAS VXC-1x8U series driver can be obtained from either the companion CD-ROM, the FTP site, or the ICP DAS web site. The locations and addresses are shown below:



CD:\\ NAPDOS\\MultiPort\\Windows\\



<ftp://ftp.icpdas.com/pub/cd/iocard/pci/napdos/multiport/windows/>

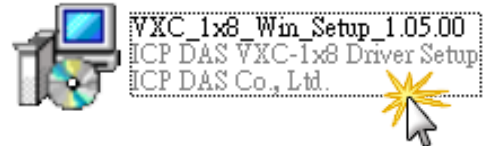


<http://ftp.icpdas.com/pub/cd/iocard/pci/napdos/multiport/windows/>

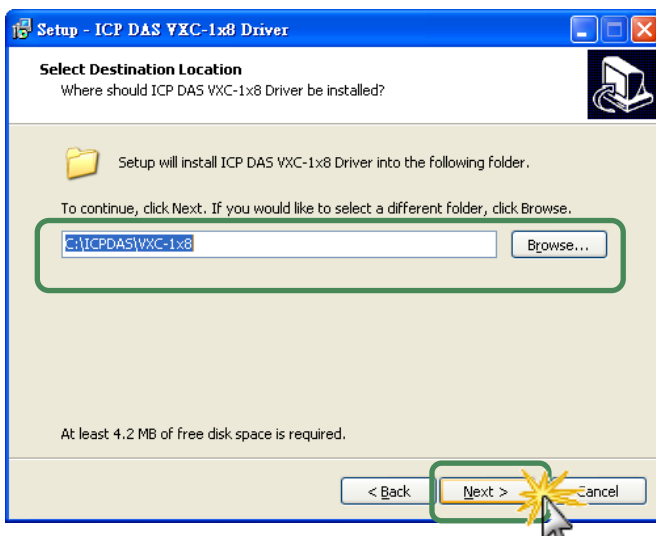
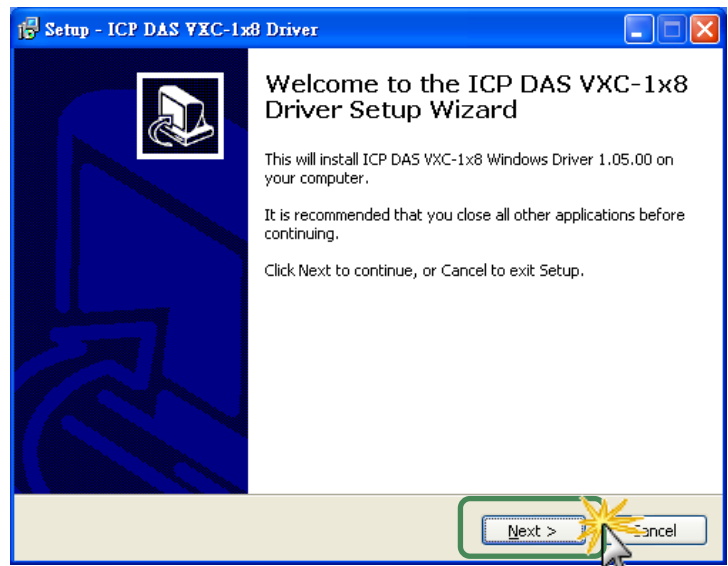
4.2 Installing VXC-1x8U Series Driver

Follow the process described below to set up the software for the VXC-1x8U series card:

Step 1: Double-click the “VXC_1x8_Win_Setup_xxxx” application to install the driver.



Step 2: When the Setup Wizard screen is displayed, click the “Next>” button to installation.



Step 3: Select the folder where the drivers are to be install. The default path is C:\ICPDAS\VXC-1x8. But if you wish to install the drivers to a different location, click the “Browse...” button and select the relevant folder and then click the “Next>” button.

Step 4: The Setup Wizard will then display a warning message asking you to confirm that you wish to install the device software. Refer to the figures below for details.

For Windows XP/2003 (32-/64-bit)

In the **“Hardware Installation”** dialog box, click the **“Continue Anyway”** button.



Note:

The warning will be displayed several times. In all cases, click the **“Continue Anyway”** button to proceed with the installation.

For Windows Vista/7/8 (32-bit/64-bit)

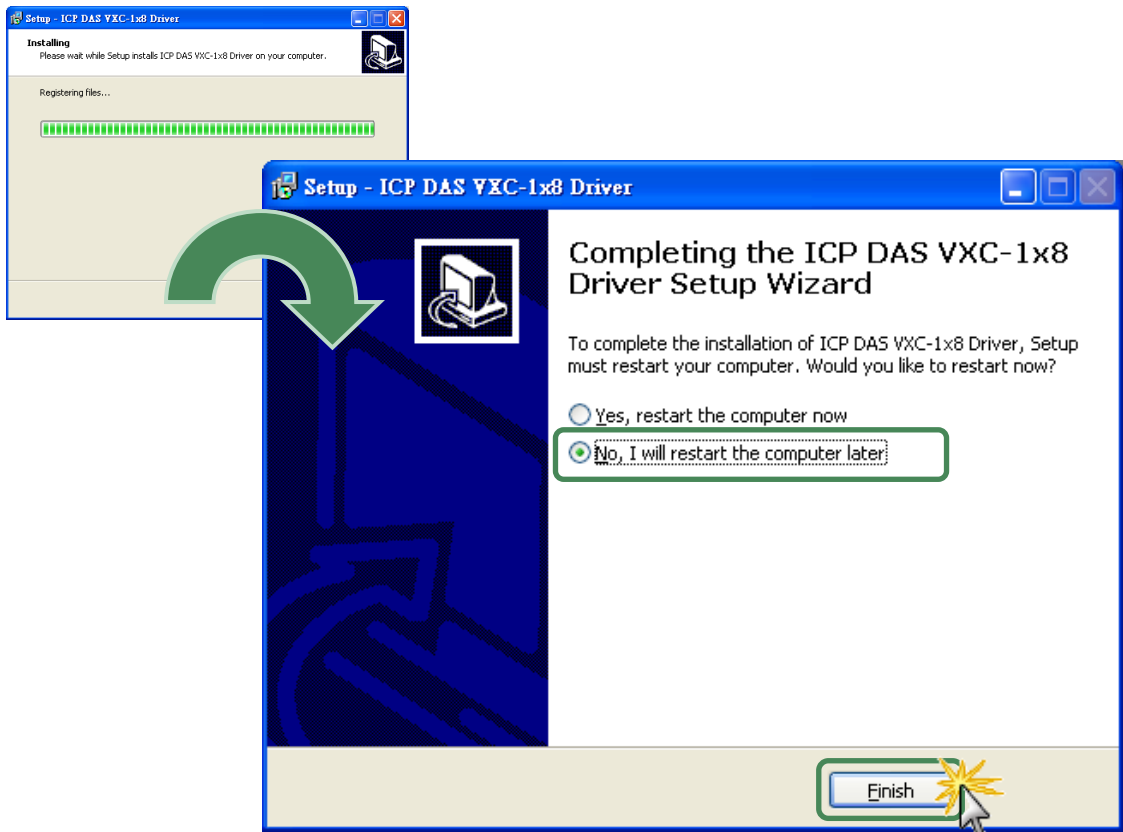
In the **“Windows Security”** dialog box, check the **“Always trust software from ICP DAS Co., Ltd.”** Checkbox and click the **“Install”** button.



Note:

This warning will be displayed several times. All cases, click the **“Install”** button to proceed with the installation.

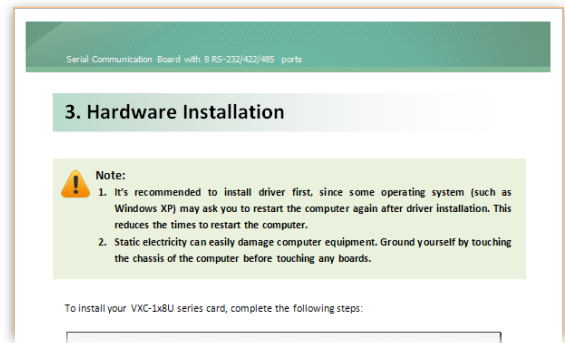
Step 5: Once the driver has been installed, the Setup Wizard will be displayed to advise that the computer must be restarted in order to complete the installation. Select the **“No, I will restart the computer later”** option, and then click the **“Finish”** button to exit the Wizard.



4.3 PnP Driver Installation

Step 1: Correctly shut down and power off your computer and disconnect the power supply, and then install the VXC-1x8U series card into the computer.

For detailed information regarding installation of the VXC-1x8U series card, refer to [Chapter 3 Hardware Installation](#).

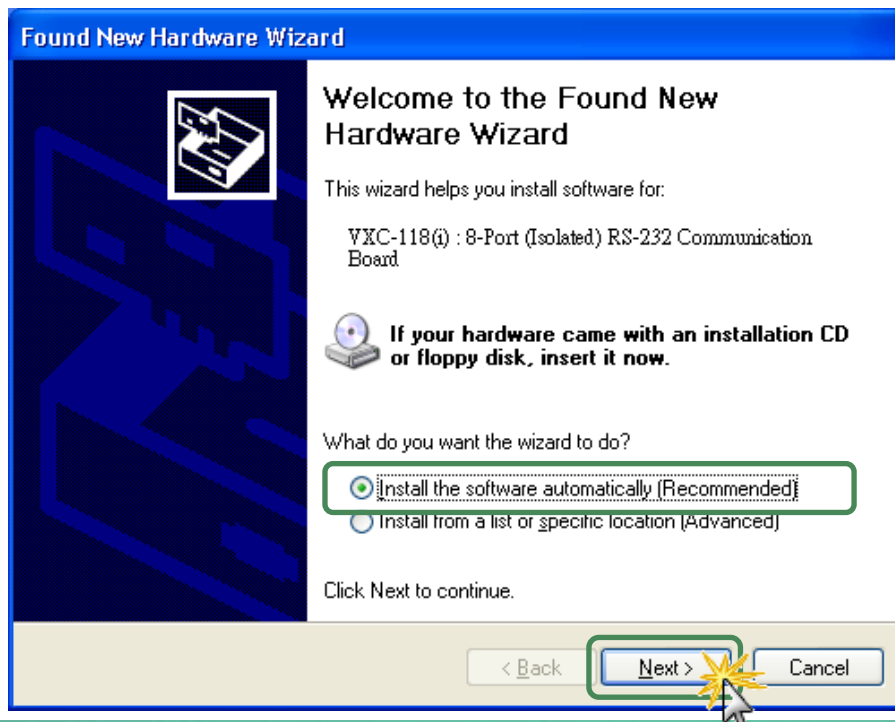


Step 2: Power on the computer and complete the Plug&Play installation.

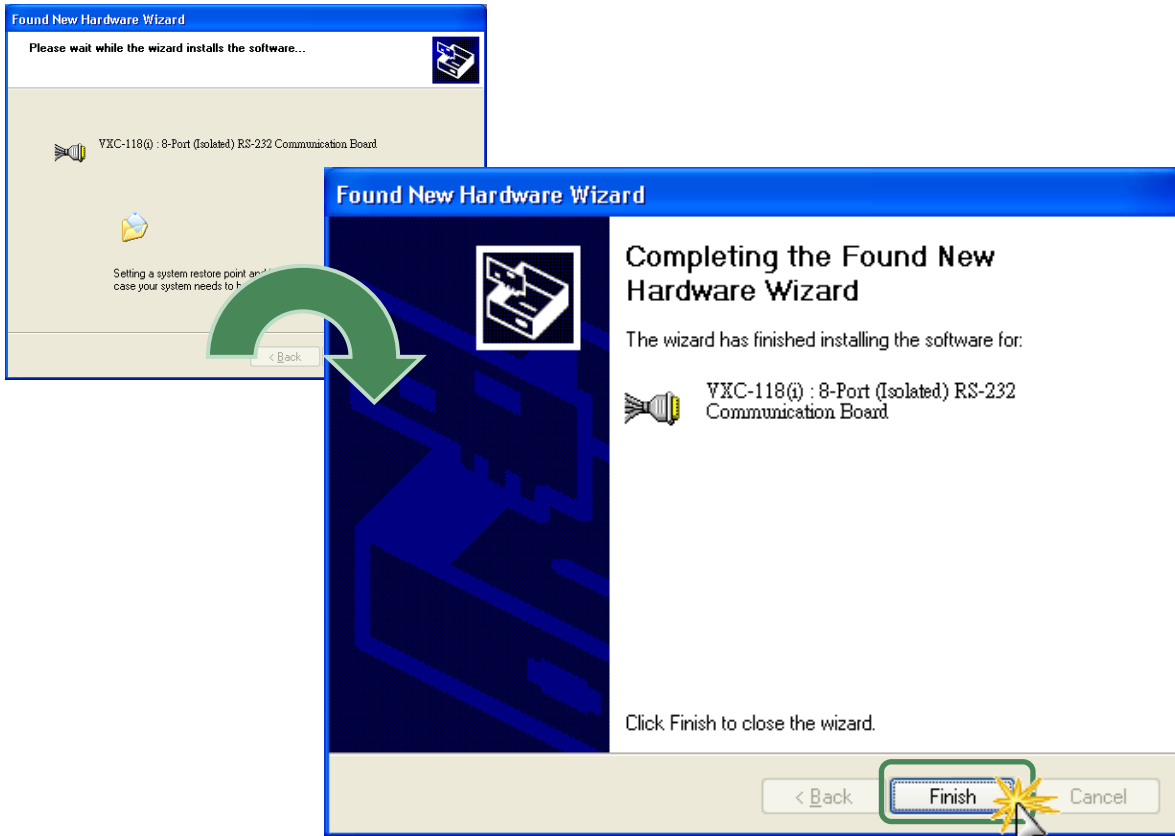


Note: More recent operating systems, such as Windows Vista/7/8 will automatically detect the new hardware and install the necessary drivers etc., so Steps 3 to 5 can be skipped.

Step 3: When the “Found New Hardware Wizard” is displayed, select “Install the software automatically [Recommended]” option and then click the “Next>” button.



Step 4: The “Found new Hardware Wizard” will be displayed to advise that the software installation has been completed. Click the “Finish” button to exit the Wizard.



Step 5: If the “Found New Hardware Wizard” dialog box is displayed again, repeat Steps 3 and 4 to complete the installation for all COM ports.



4.4 Verifying the Installation

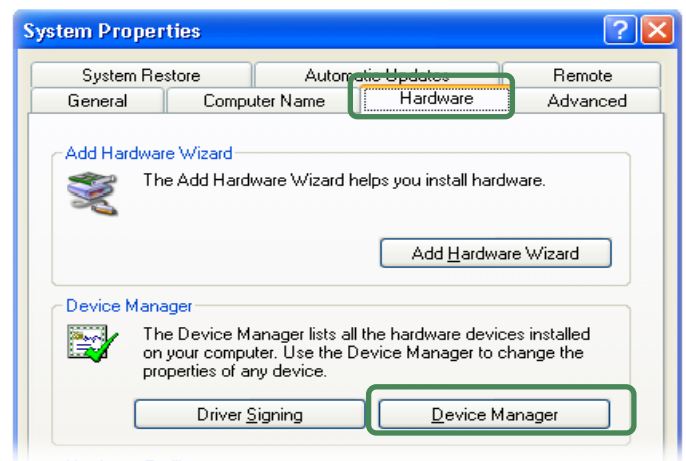
To verify the installation, use the Windows **Device Manager** to view and update the device drivers installed on your computer, and check to ensure that hardware is operating correctly. The following is a description of how access the Device Manager in each of the major versions of Windows. Refer to the appropriate description for your specific operating system to verify the installation.

4.4.1 How do I access Windows Device Manager?

■ Microsoft Windows XP

Step 1: Click “**Start**” → then point to “**Settings**” and click → “**Control Panel**”. Double-click the “**System**” icon to open the “**System Properties**” dialog box.

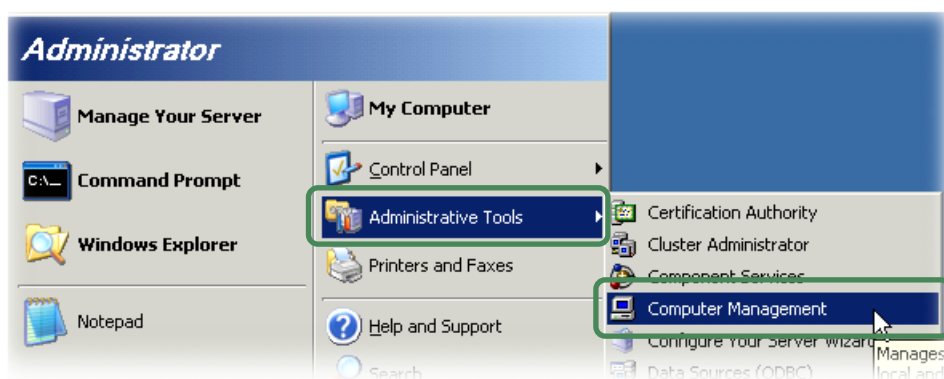
Step 2: Click the “**Hardware**” tab, and then click the “**Device Manager**” button.



■ Microsoft Windows Server 2003

Step 1: Click “**Start**” → point to “**Administrative Tools**”, and then click “**Computer Management**”.

Step 2: From “**System Tools**” in the console tree, click “**Device Manager**”.



■ Microsoft Windows Vista/7

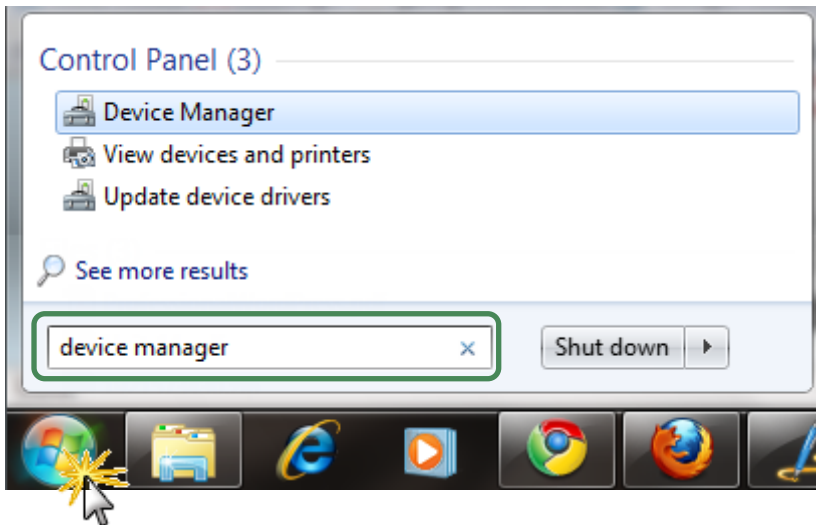
Step 1: Click “**Start**” button, and then click “**Control Panel**”.

Step 2: Click “**System and Maintenance**”, and then click “**Device Manager**”.

Alternatively,

Step 1: Click “**Start**” button.

Step 2: In the **Search field**, type **Device Manager** and the press Enter.



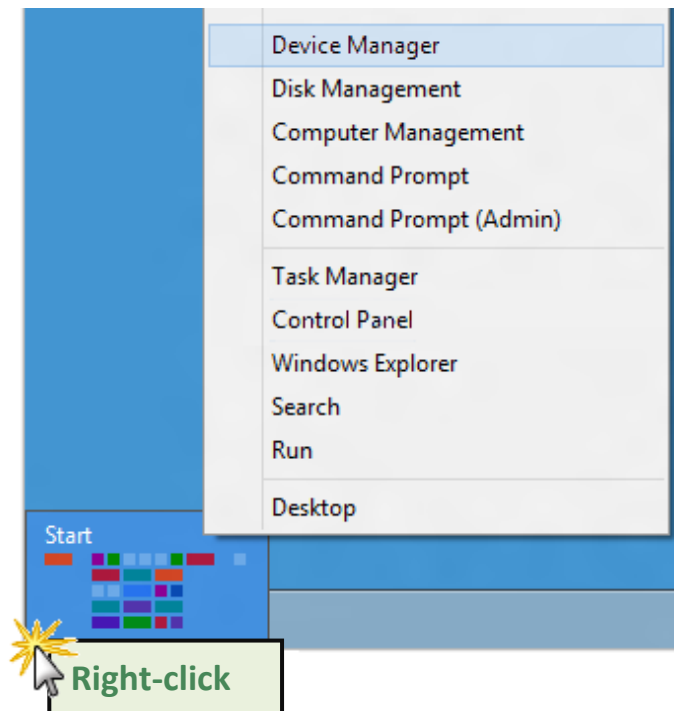
Note that Administrator privileges are required for this operation. If you are prompted for an administrator password or confirmation, type the password or provide confirmation.

■ Microsoft Windows 8

Step 1: To display the **Start screen icon** from the desktop view, simply hover the mouse cursor over the **bottom-left corner** of screen.

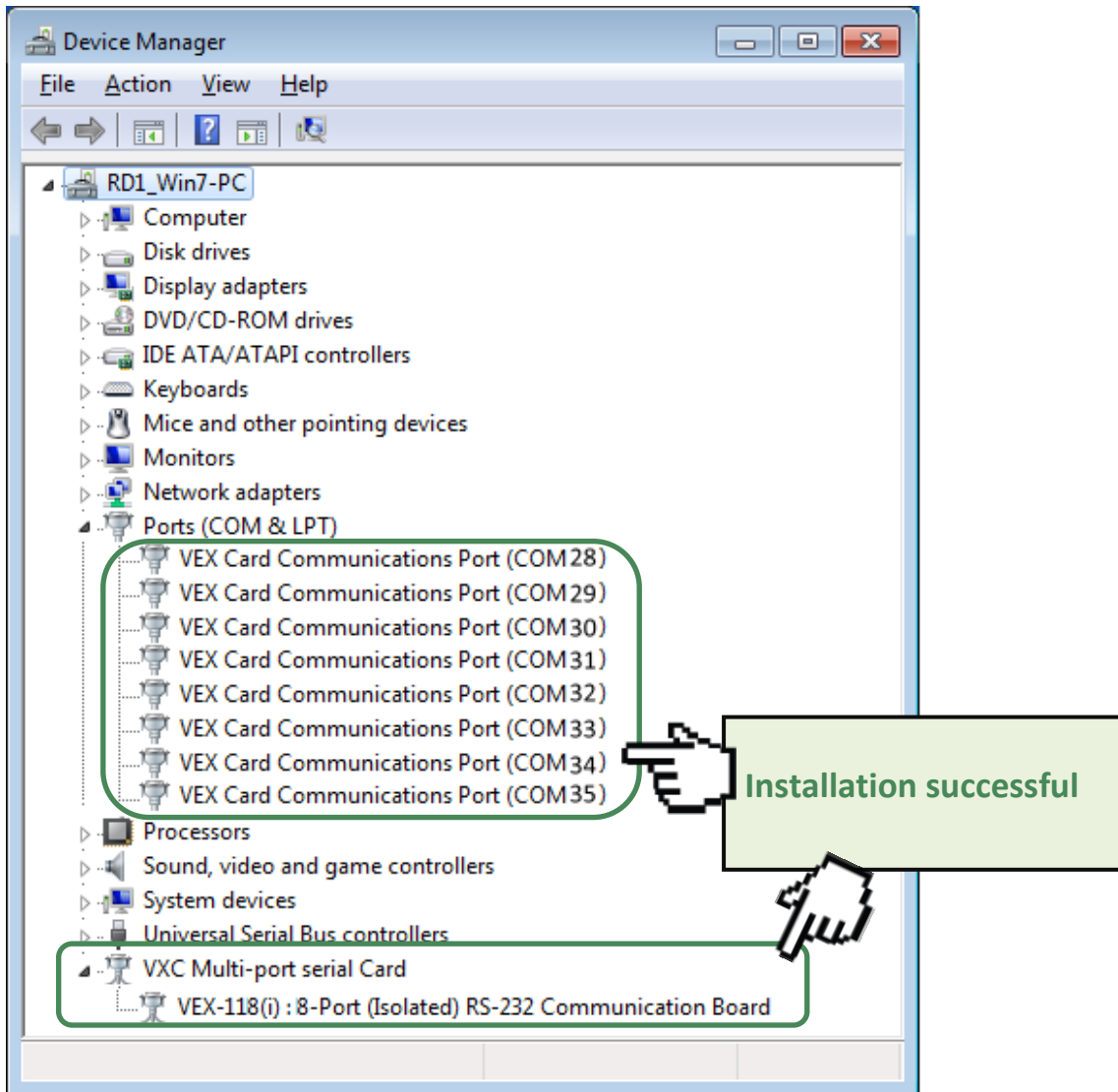
Step 2: **Right-click** the Start screen icon then click “**Device Manager**”.

Alternatively, press [**Windows Key**] + [**X**] to open the Start Menu, and select Device Manager from the options list.



4.4.2 Check the Configuration of the COM Port

Step 3: Verify that the COM Ports for the VXC-1x8 series card listed correctly.



Note:

Depending on the operating system, the COM port mapping may be applied automatically.

4.5 Manual COM Port Configuration

The VXC-1x8U series card supports 8 RS-232 or RS-422/485 serial ports. Depending on the operating system, COM port mapping may be applied automatically during the hardware and software installation. If necessary, the COM port mapping can be adjusted by using the “ComPortRemap.exe” application, which can be found in the driver installation folder, and then setting the “Select the start com port number” from the options. For detailed configuration steps, please refer to the following:

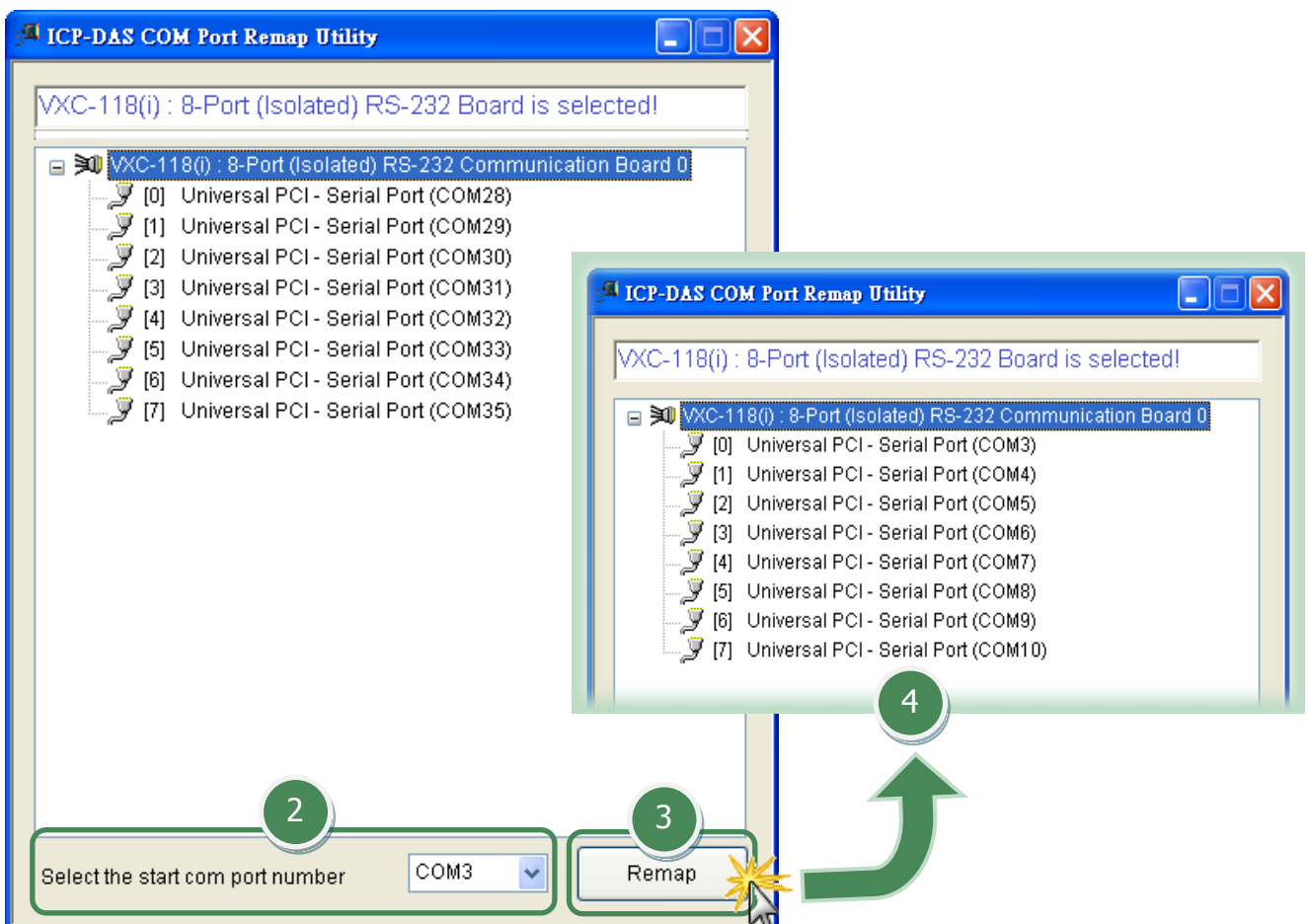
Step 1: Open the driver installation folder, for example `C:\ICPDAS\VXC-1x8\Driver\`, and launch the “ComPortRemap.exe” application.



Step 2: Select the starting COM Port number from the drop-down menu.

Step 3: Click the “Remap” button.

Step 4: Once the remapping has been completed, a window will be displayed indicating the new COM Port numbers.



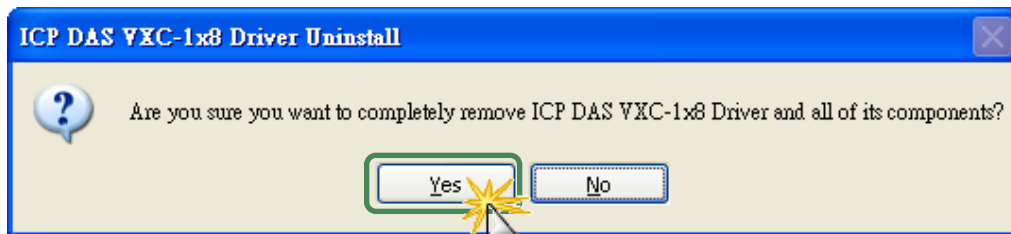
4.6 Uninstalling the Device Driver

The ICP DAS VXC-1x8U series card driver includes a utility that allows the software from your computer. To uninstall the software, follow the procedure described below:

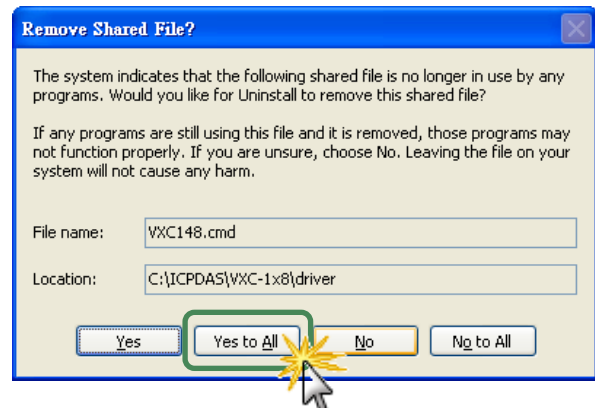
Step 1: Open the driver installation folder, for example `C:\ICPDAS\VXC-1x8`, and then double click the `unins000.exe` uninstaller application.



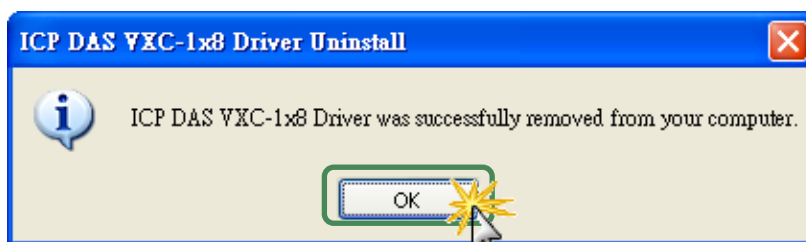
Step 2: The uninstaller application will then ask you to confirm that you want wish to remove the utility program. Click the “Yes” button to continue.



Step 3: The “**Remove Shared File?**” dialog box will be displayed asking whether you wish to remove the shared file. Click the “**Yes to All**” button to continue.



Step 4: After the uninstallation process is complete, a dialog box will be displayed to notify that the driver was successfully removed. Click the “**OK**” button to finish the uninstallation process.



5. Testing the VXC-1x8 Series Card

This chapter provides detailed information regarding the “self-test” process, which enables the user to confirm whether or not the VXC-1x8U series card is operating correctly. Before performing the “self-test”, the hardware and driver installation must be completed. For detailed information regarding hardware and driver installation, refer to [Chapter 3 Hardware Installation](#) and [Chapter 4 Software Installation](#).

Preparing the device

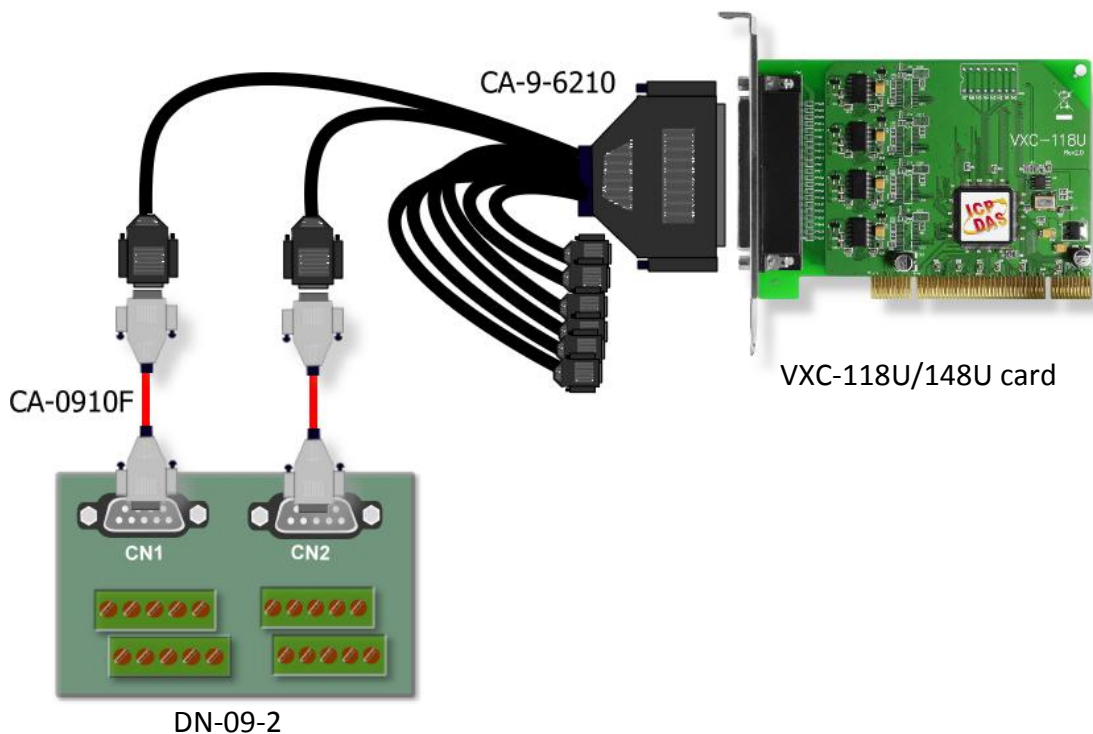
Before beginning the “self-test”, ensure that the following items are available:

- A DN-09-2 (optional) terminal board
- A CA-9-6210 (optional) cable
- A CA-0910F (optional) cable



5.1 VXC-1x8U Series Card Wiring

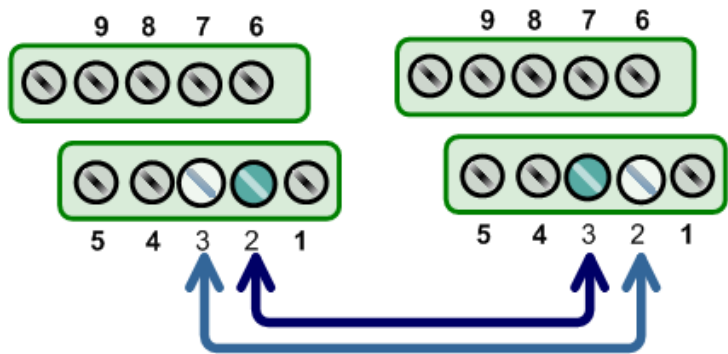
Step 1: Connect the DN-09-2 terminal board to the VXC-1x8U series card using the CA-9-6210 and CA-0910F cables.



■ VXC-118U Card (RS-232):

Pin Assignment	Pin No.		Pin No.	Pin Assignment
TxD0	3	↔	2	RxD1
RxD0	2	↔	3	TxD1

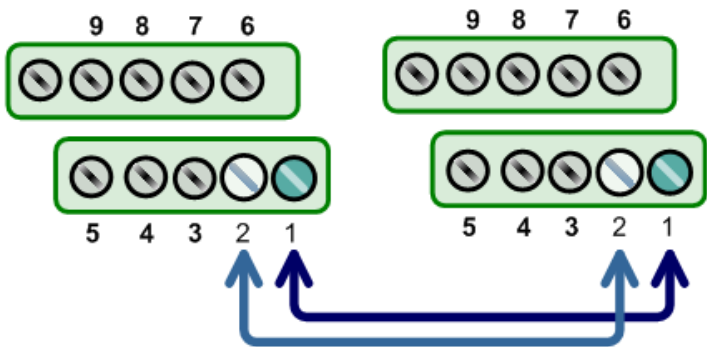
Step 2: Perform the “self-test” by shorting the RxD and TxD pins of both Port0 and Port1.



■ VXC-148U Card (RS-485):

Pin Assignment	Pin No.		Pin No.	Pin Assignment
Data0-	1	↔	1	Data1-
Data0+	2	↔	2	Data1+

Step 2: Perform the “self-test” by shorting both the Port0 Data+ and Port1 Data+ and the Port0 Data- and Port1 Data- pins.



Note:

For detailed information regarding wiring and pin assignments for the RS-232/422/485, refer to [Section 2.2 Wiring Notes for RS-232/422/485](#) and [Section 2.3 Pin Assignments](#).

5.2 Self-Test

Step 1: Execute the “Test2COM.exe” application, which can be found on the companion CD at:

CD\Napdos\multiport\utility

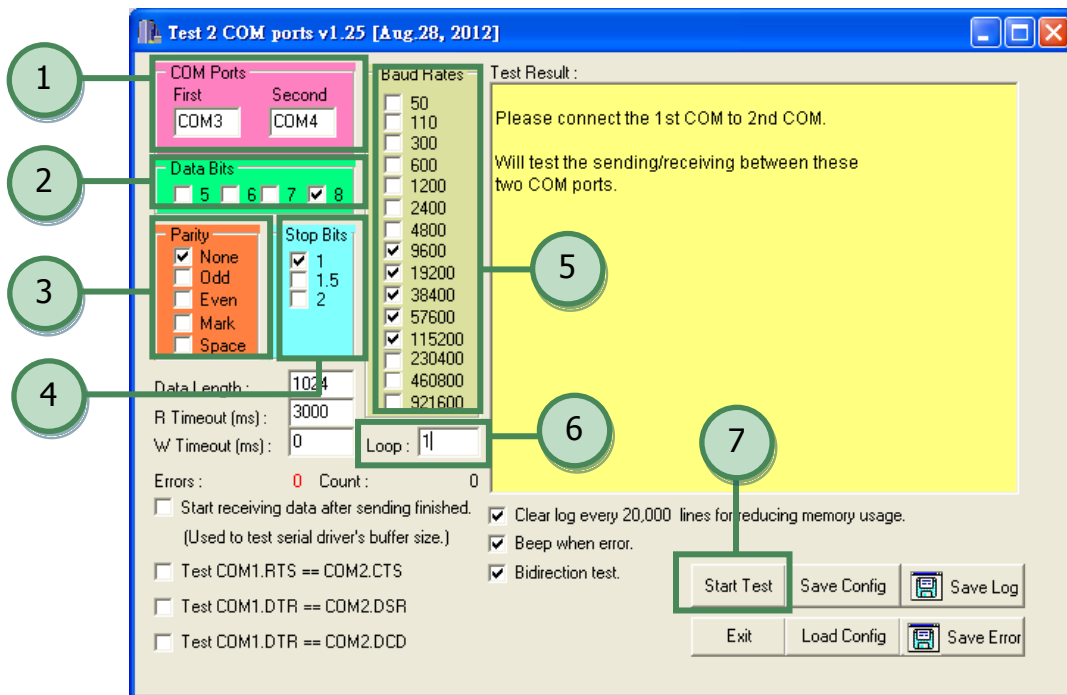
Or download it from:

<http://ftp.icpdas.com/pub/cd/iocard/pci/napdos/multiport/utility/>



Step 2: Set the appropriate COM Ports, Baud Rate and Data Format information to the values shown in the image below.

- 1: COM Ports: Enter COM3(First), COM4(Second).
- 2: Data Bits: Check “8”
- 3: Parity: Check “None”
- 4: Stop Bits: Check “1”
- 5: Baud Rates: Check values 9600 to 115200
- 6: Loop: Type “1”
- 7: Click the “Stat Test” button to begin the test.

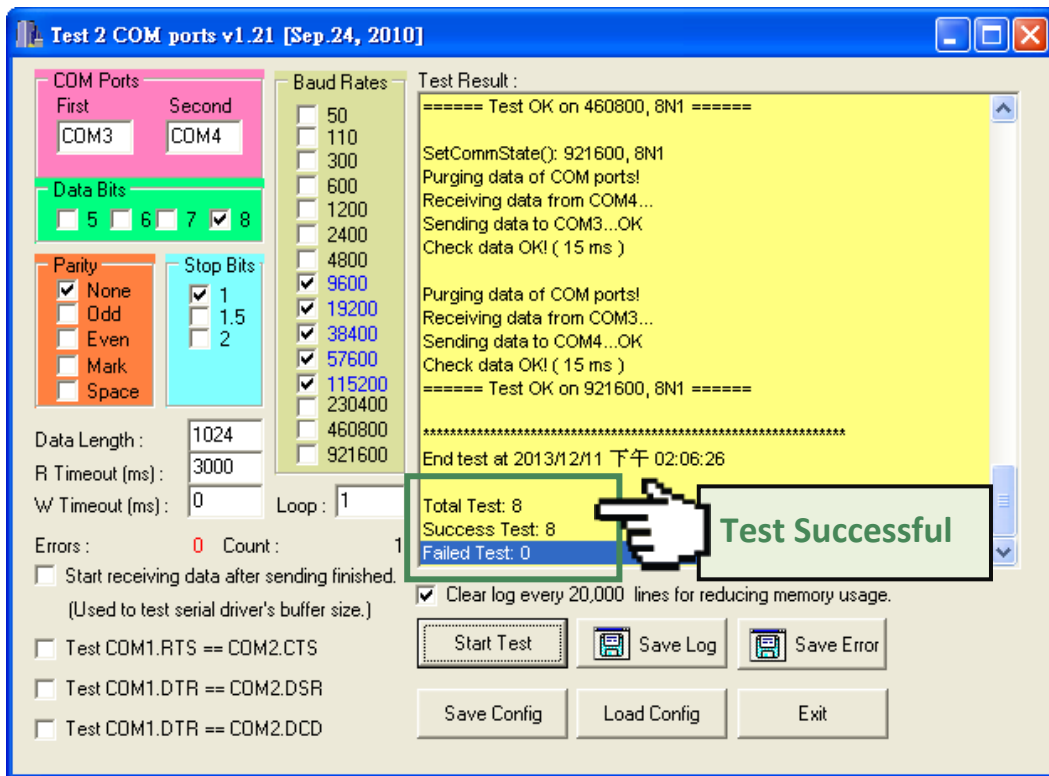




Notes:

1. Depending on the operating system, COM port mapping may be applied automatically. You should first confirm the number of the COM Port for VXC-1x8U card through Device Manager (see [Section 4.4 Verifying the Installation](#)) and then test this COM Port using the Test2COM.exe application.
2. The Baud Rate and Data Format settings used in the Test2COM application depend on the COM ports being used by the VXC-1x8U card. Refer to [Section 1.2 Specifications](#) for more detailed information.

Step 3: Refer to the test results. If the test was successful, the message “Failed Test:0” will be displayed.



Step 4: The “self-test” process is now complete and your COM port program can now be operated using this extended COM Port.

