

XBee USB Wireless Module



Introduction:

XBee USB wireless adaptor board is used for interfacing any of the series 1 XBee wireless modules with the PC. Using this USB adaptor board for XBee wireless modules you can communicate between PC to PC, PC to robot / embedded board with ease. You can also use this module to change configuration of the XBee devices using PC via USB port using XCTU software from Digi.

On the PC side this device is treated as the Communication Device Class (CDC) of USB family and it allows the user to treat USB port as a normal serial port (Virtual COM port).

XBee USB wireless adaptor board has five indicator LEDs which shows power, status of the data being transmitted or received, signal strength of the data reception and the association.

Although it can support any XBee module having similar pin configuration we have used this module extensively with the following XBee modules:

XBee Product ID	NEX Product ID	Description
XB24-ACI-001	NR-RF-02	XBee OEM RF module, 2.4GHz, Chip antenna
XB24-AWI-001	NR-RF-05	XBee OEM RF module, 2.4GHz, wire antenna
XBP24-ACI-001	NR-RF-04	XBee PRO OEM RF module, 2.4GHz, Chip antenna
XBP24-AWI-001	NR-RF-03	XBee PRO OEM RF module, 2.4GHz, wire antenna

Specification

- USB 2.0 compatible (No legacy RS232 required)
- USB powered
- RXD, TXD, RSSI, ASSOCIATE indicator LEDs
- Supports AT and API commands
- Achievable data rates: 2400-115200 bps
- Data output: CMOS(2.8-3.4V) UART interface
- Supported XBee wireless modules
 - Model code: XB24-ACI-001; Product ID: NR-RF-02;
 - Model code: XB24-AWI-001; Product ID: NR-RF-05;
 - Model code: XB24P-AWI-001; Product ID: NR-RF-03;

Supported operating systems:

- Windows Server 2008 R2
- Windows 7
- Windows 7 x64
- Windows Server 2008
- Windows Server 2008 x64
- Windows Vista
- Windows Vista x64
- Windows Server 2003
- Windows Server 2003 x64
- Windows XP
- Windows XP x64
- Windows 2000

XBee USB wireless module uses FT232 USB to serial converter to interface XBee module with the PC's USB port. In order to use XBee USB wireless adaptor board you need to install driver for FT232 USB to serial converter so that you can treat this XBee wireless module as connected to a virtual serial port (Virtual COM port).

Driver Installation:

1.1 Steps to install the drivers for USB to serial converter:

Step 1: Copy the driver installation folder on your PC from “Software and Drivers \ CDM 2.06.00 WHQL Certified” Folder in the CD.

Step 2: Connect the USB to serial converter with the PC using the USB cable

Step 3: On connecting the device “Found New Hardware” message will appear in the taskbar tray and the following window opens.



Figure 1.1

Step 4: Check on the radio button “No, not this time” and then click on the next button.



Figure 1.2

The following window will appear.

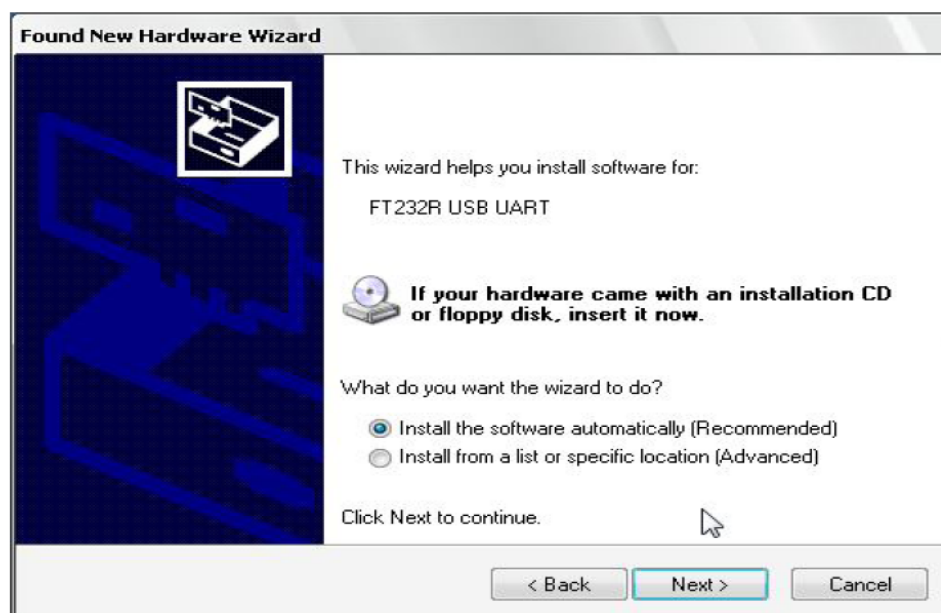


Figure 1.3

Select the second option manually to install the drivers and click on next button.

Step 5: Now check the second option and set the location of folder containing drivers E.g.(C:\CDM 2.06.00 WHQL Certified).



Figure 1.4

Step 6: On clicking next driver installation will begin.

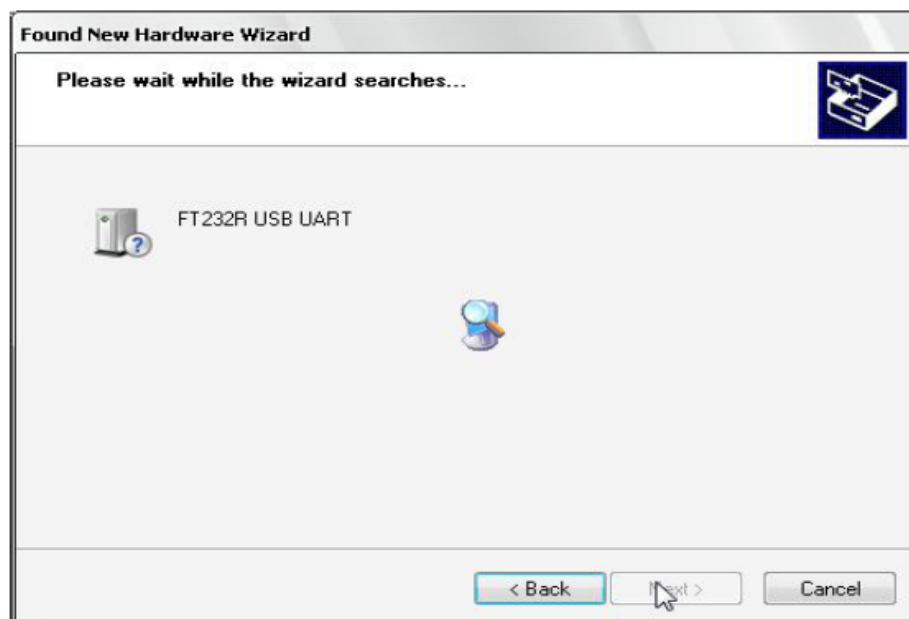


Figure 1.5

Step 7: On successfully installing the driver following window will appear. Click Finish to complete the installation.



Figure 1.6

After installation of FT232 USB UART software, PC may ask for USB serial port software. To install this software follow steps 1 to 7 of USB serial converter software installation.

1.2 Identifying COM Port number of the XBee wireless module

To use terminal.exe or any other serial program for robot control we need to first identify communication port which is generally referred as COM n, i.e. COM1 or COM2 etc. on which USB to serial converter or wireless device is connected. Follow these steps to identify your COM

Port number.

Step 1: Right Click My Computer and click on properties. System properties window will appear.

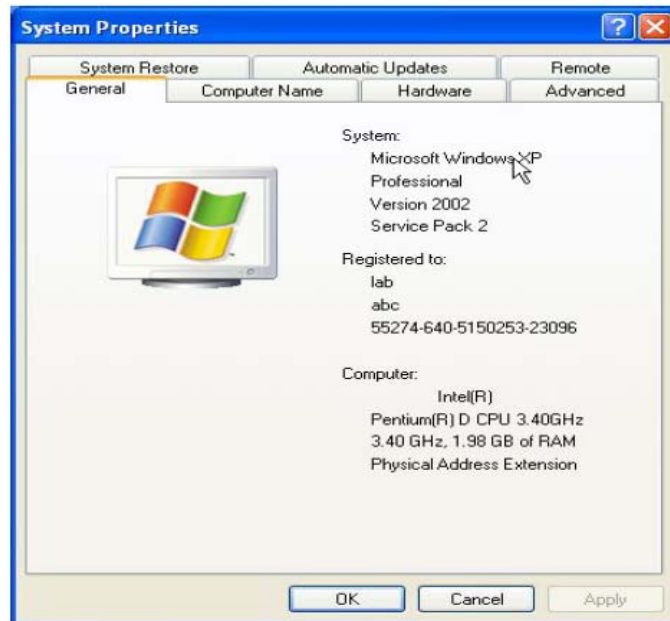


Figure 1.7

Step 2: Click on the Device manager in the Hardware tab.



Figure 1.8

Step 3: Expand Ports (Com & LPT) tree. COM Port number is mentioned in the parenthesis next to USB Serial Port.

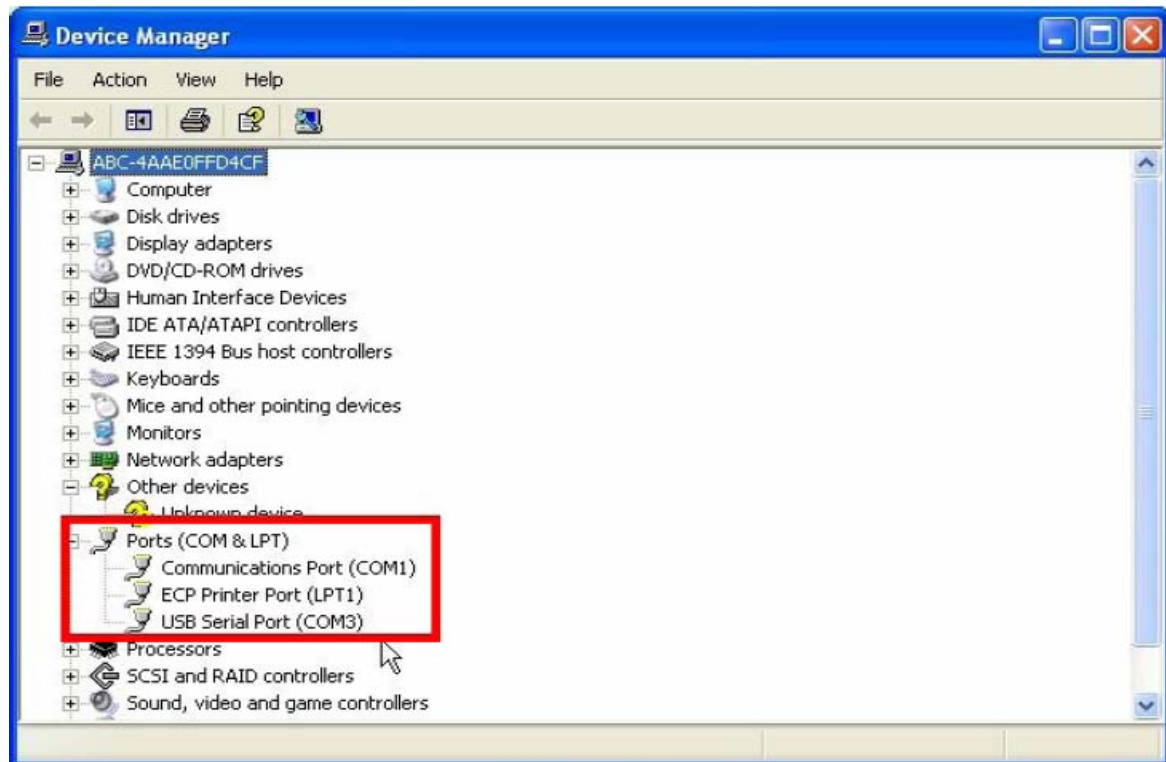


Figure 1.9

Step 4: If the COM port number is greater than 10 Terminal will not be able to detect it. To resolve this problem, change the port number by right clicking on “USB serial Port” and select properties.

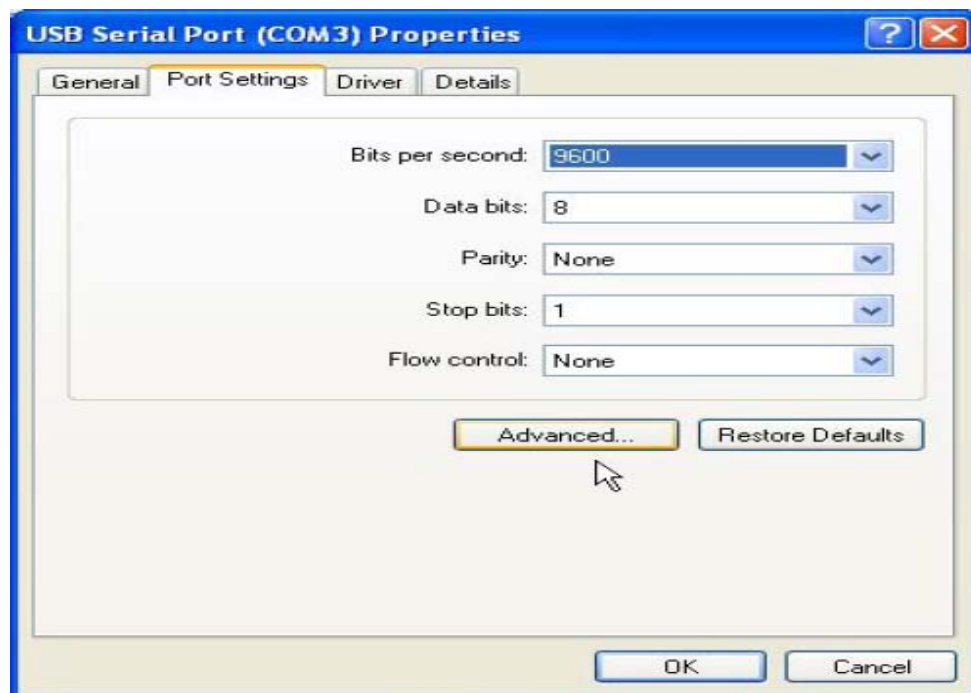


Figure 1.10

In the Port settings tab click on the Advanced button, the following window will appear.

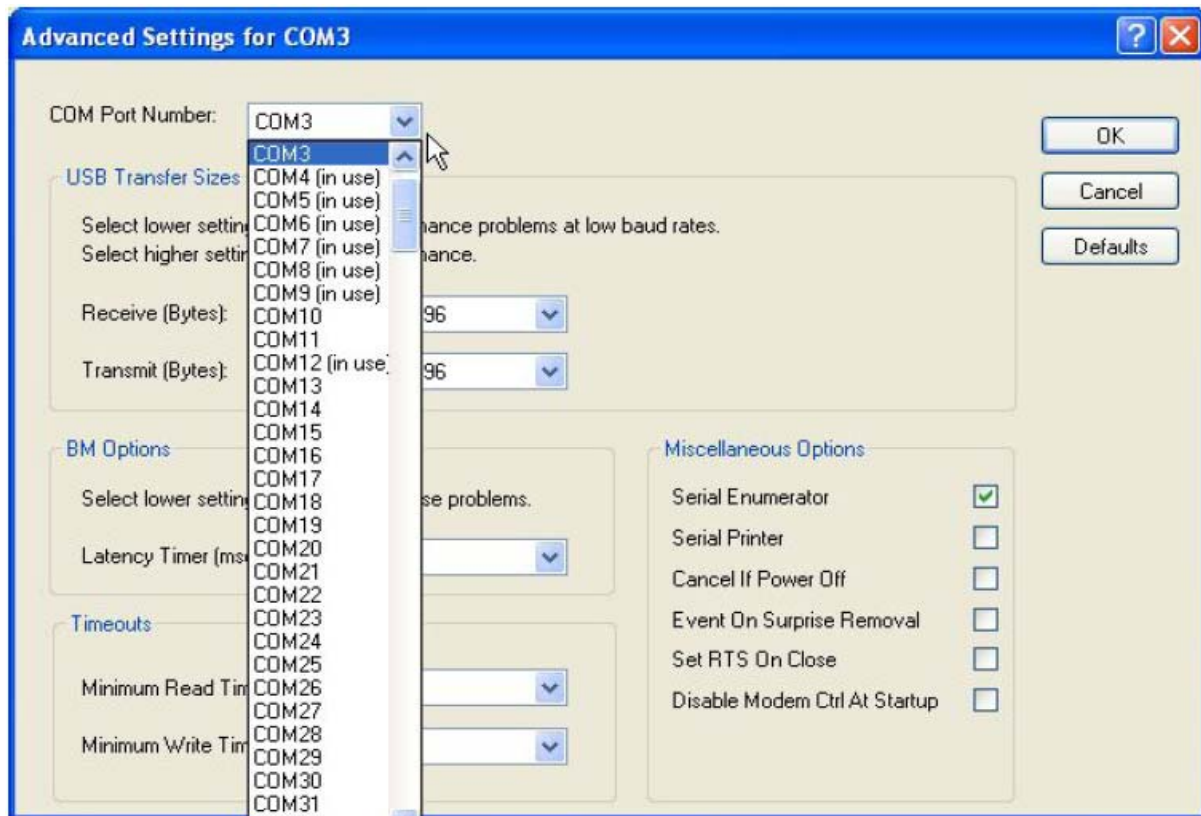


Figure 1.11

You can change the COM port number by clicking on the Com Port number drop down list and select the appropriate number. Make sure the new COM port is not being used by any other

1.3 Using Terminal software:

Terminal is easy to use free software for serial communication. It is located in the documentation CD. It can also be downloaded from

<http://hwserver.com/software/termv19b.html>

Step 1: Copy Terminal software on the PC from the from the documentation CD and double click on the terminal software. The terminal window will popup.

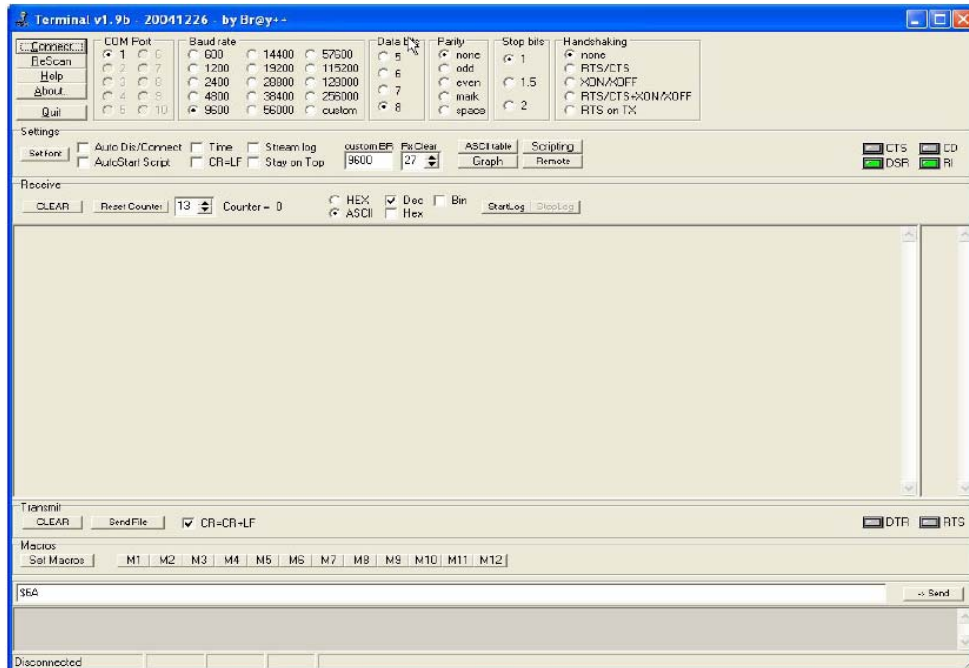


Figure 1.12

Step 2: Select the COM Port and set the baud rate and other settings as desired. Once all the settings are done click connect. Refer to section 1.2 for how to identify COM port. Set the baud rate at 9600 bps

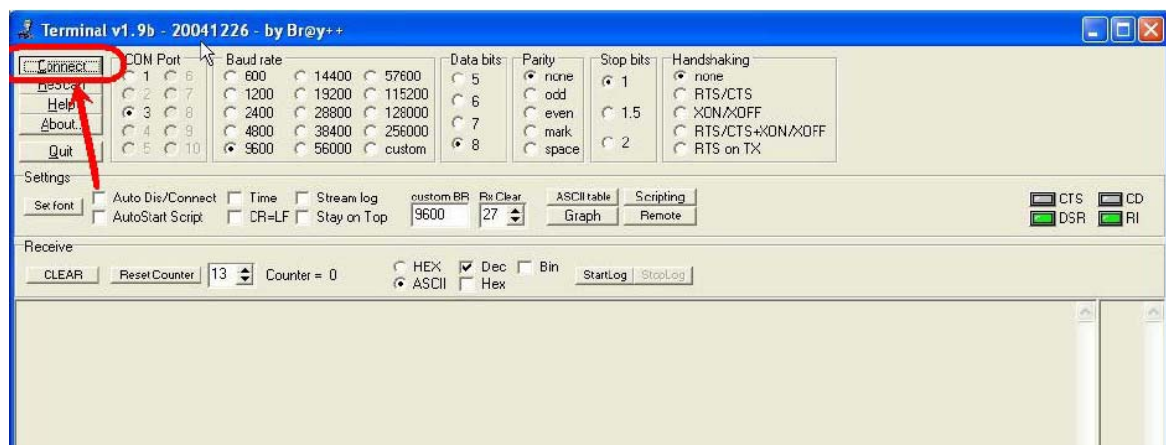


Figure 1.13

Step 3: Now you are ready to transmit the data. Type the data into the text box and click send.

For more information about using terminal software click help.

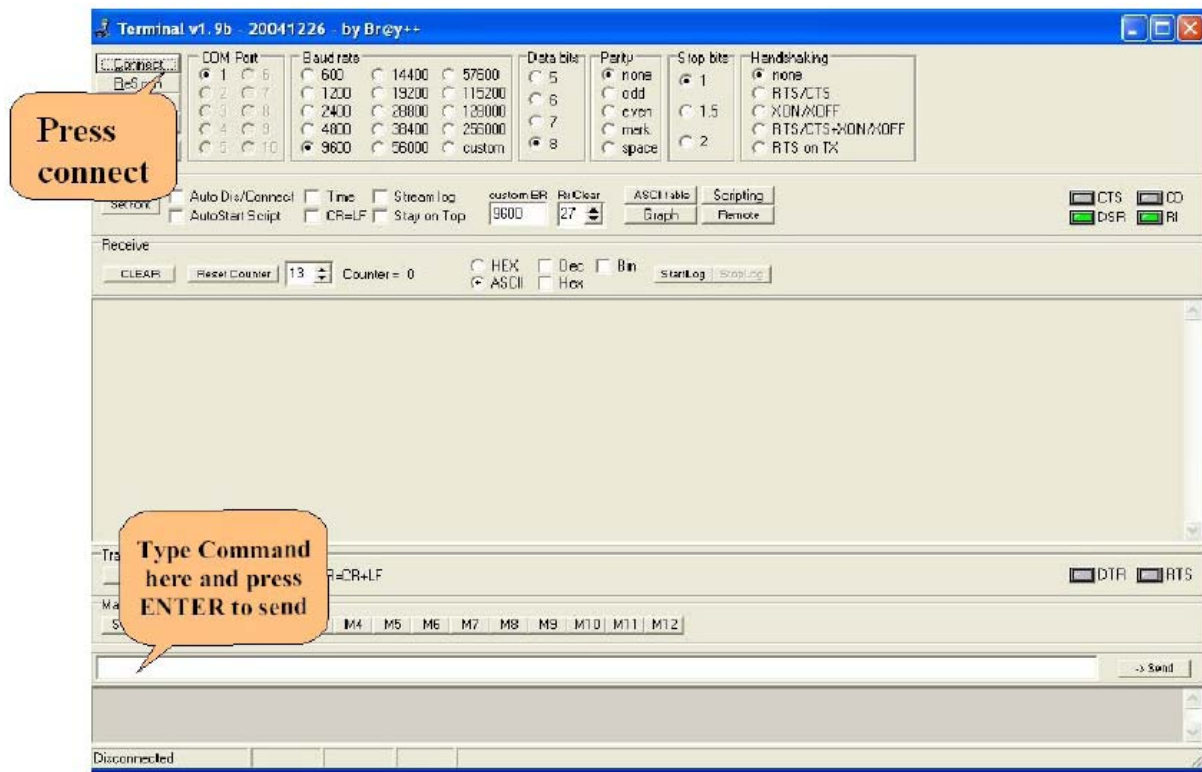


Figure 1.14

XBee and XBee-PRO Configuration:

All XBee and XBee-PRO modules are factory shipped at 9600 bps baud rate. We can configure the module's baud rate, channel number, and network ID etc. by sending the set of AT commands to the XBee Module using the XCTU software.

Mount the compatible XBee module on the XBee USB Wireless module while USB cable is not connected. Connect USB cable between PC and XBee USB Wireless module.

Step 1: Copy the XCTU folder from the Documentation CD or you can also download it from the Digi's website. Open the folder and run the application "40002637_c.exe" to install the XCTU terminal software.

Start the **XCTU** application. Following window appears on the screen.

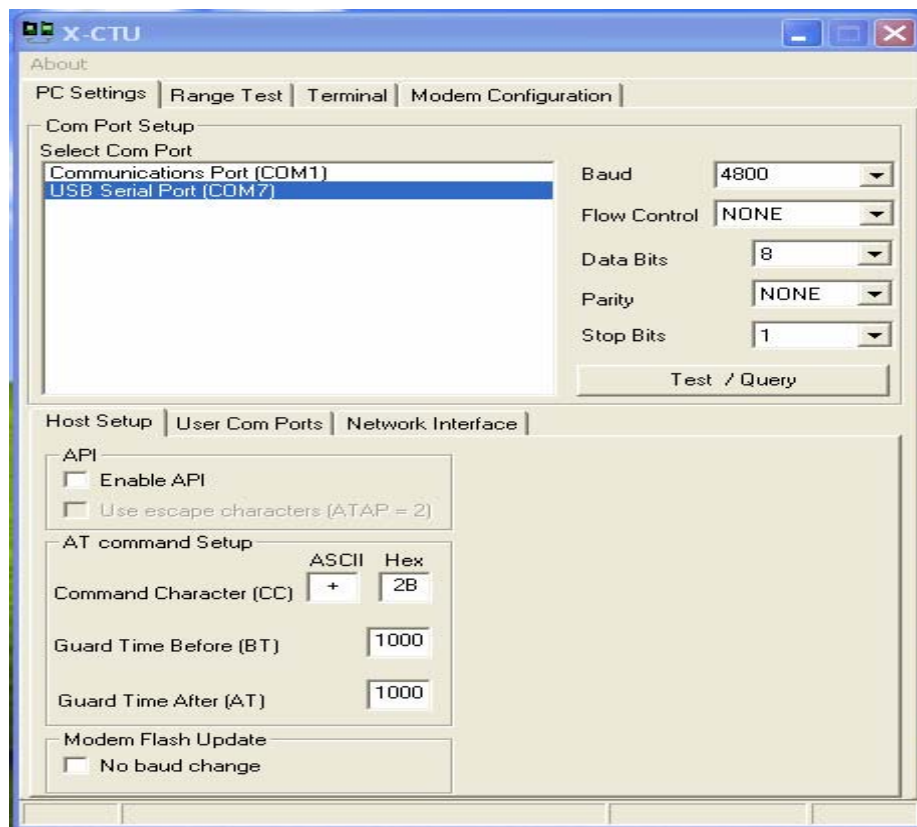


Figure 1.15

It will auto detect the virtual com port number of the XBee USB Wireless module and show in the "Select COM Port" window.

Select appropriate COM port number.

If you are using the XBee module for the first time then set the baud rate at 9600bps. If you have changed the baud rate earlier then you have to set the same baud rate else communication can not be established.

By selecting the proper comport no. (in this example as COM7), Baud rate (presently 4800) click on the “Test / Query” tab in the “PC Settings” tab at the top of X-CTU window. If communication is established correctly, then below response will be appeared.

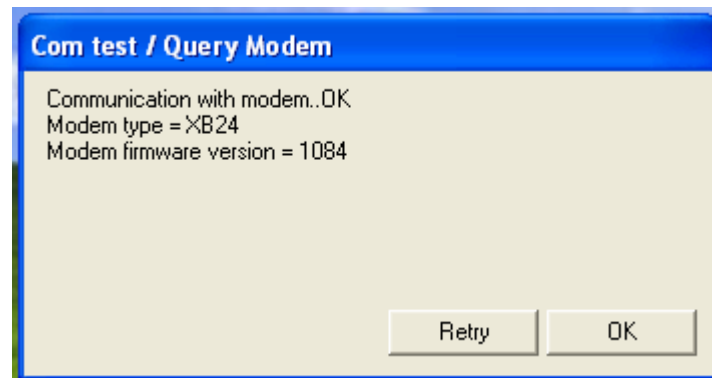


Figure 1.16

Press ok to continue.

If communication is not established, then retry with the proper baud rate and comport selection.

Step 2: Select the “**modem configuration**” tab, at the top. The following options appear.

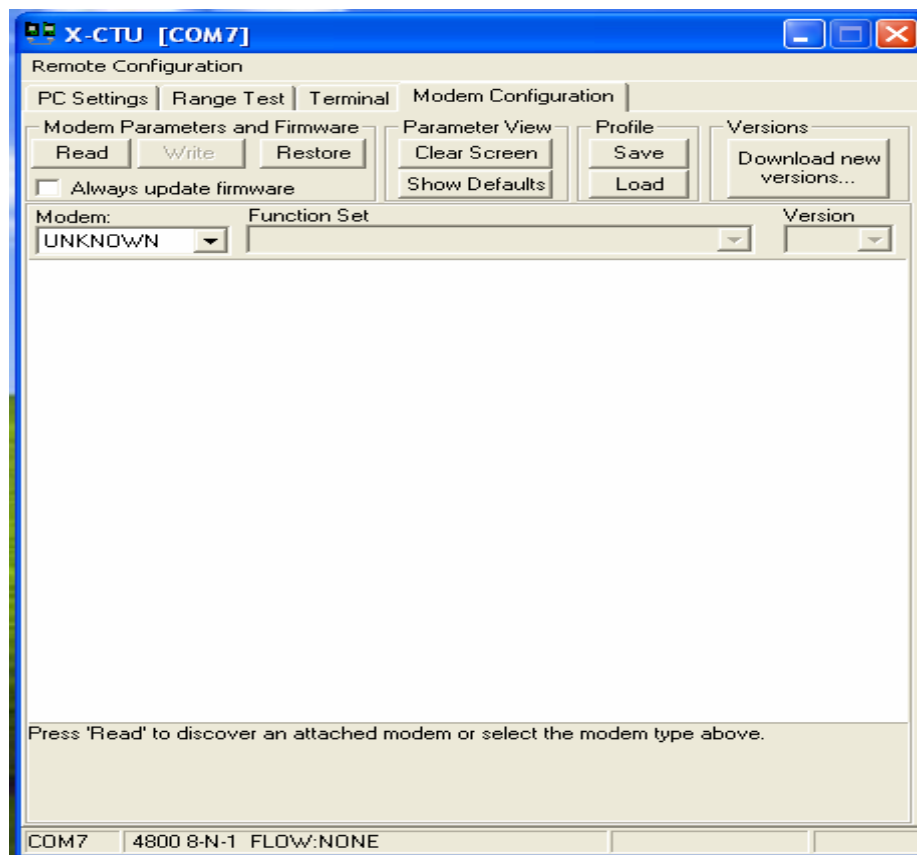


Figure 1.17

Click on the “**Read**” tab. Following option showing network and security, RF interfacing, sleep mode. serial interfacing, diagnostics will appear.

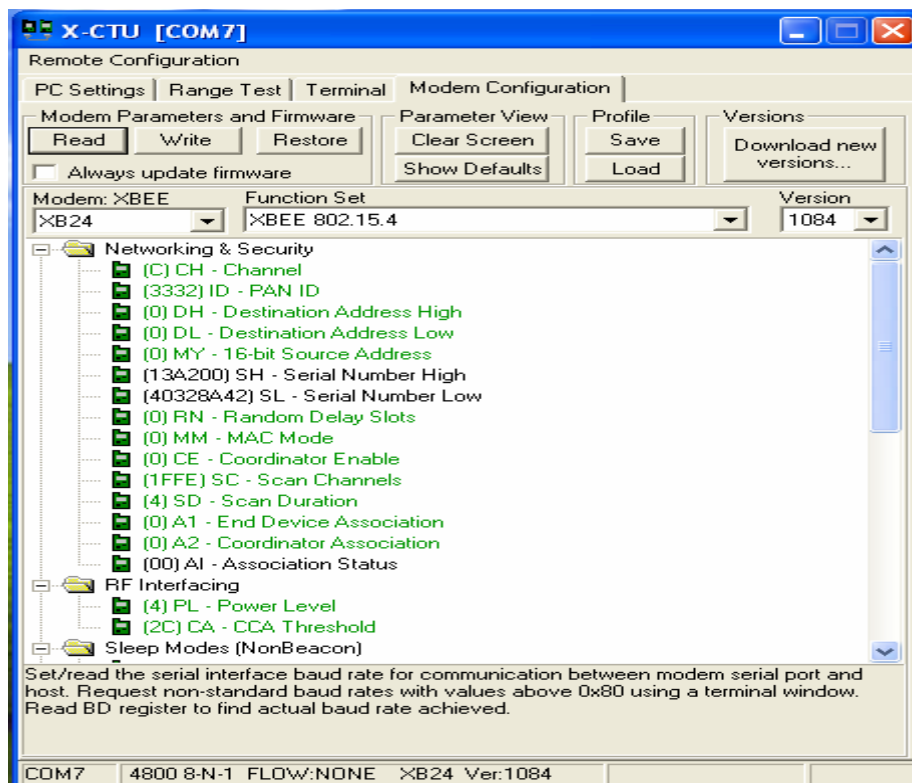


Figure 1.18

Using the side scroll, move the bar down till following “**serial interfacing**” option is seen.

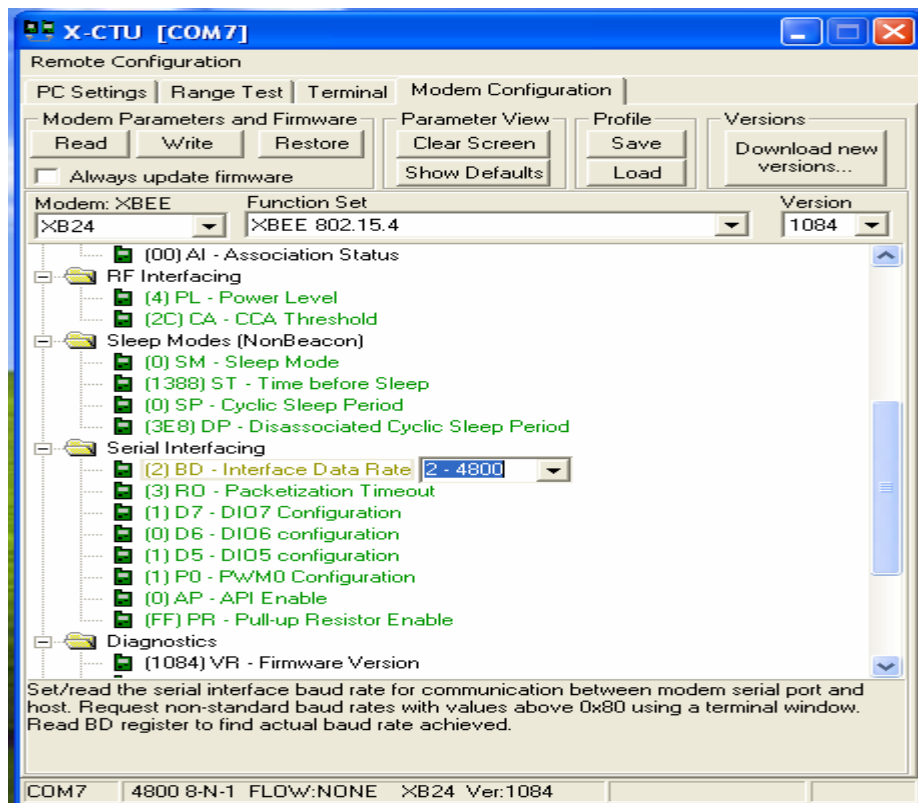


Figure1.19

Step 3: select Baud rate from the “**BD-Interface Data rate**” (say 9600) selection as shown.

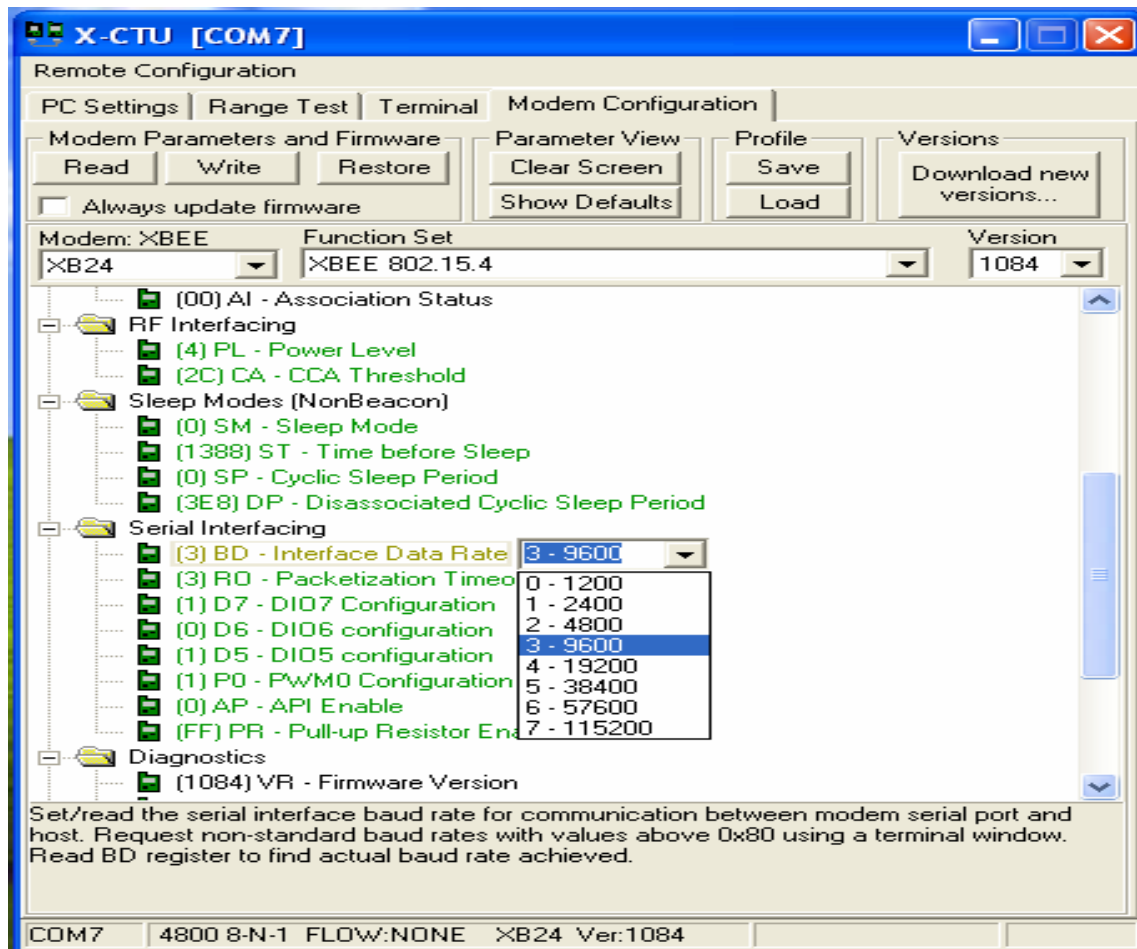


Figure 1.20

Click on the “write” tab to load the AT commands, After successful configuration the completion message will be shown at the bottom of window as “ Write Parameters...Complete.

We have observed that in some rear cases it says that verification failed but it actually changes the baud rate. In such case follow steps 1 and 2 again with the new baud rate to verify that baud rate is changed.

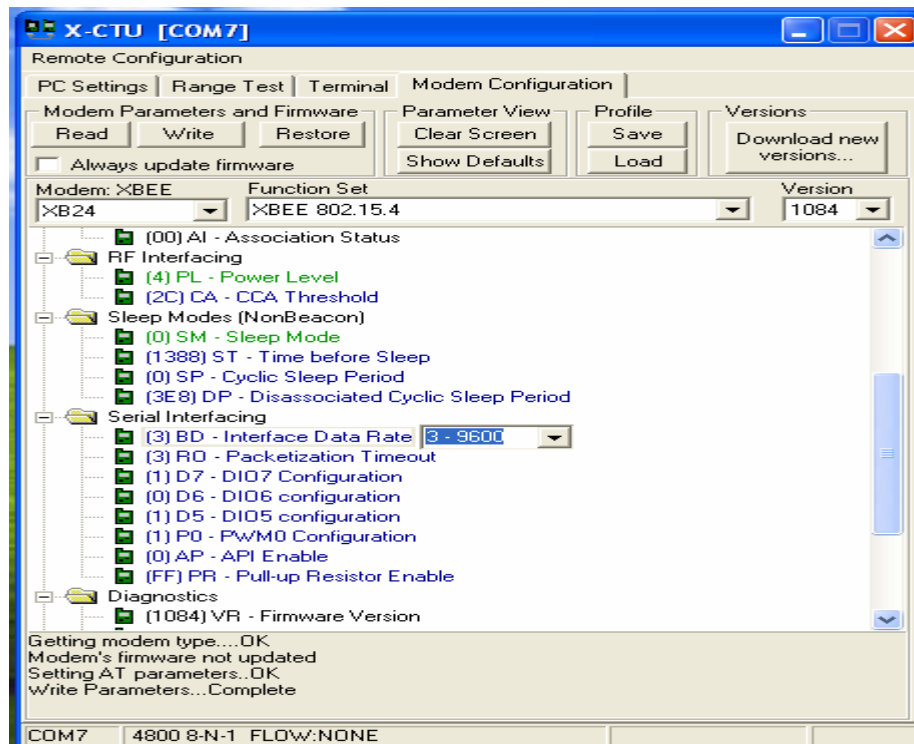


Figure1.21

XBee or XBee-PRO module configured at Baud rate - 9600.

Notice

The contents of this manual are subject to change without notice. All efforts have been made to ensure the accuracy of contents in this manual. However, should any errors be detected, NEX Robotics welcomes your corrections. You can send us your queries / suggestions at

info@nex-robotics.com



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- ⚠ **Product's electronics is static sensitive. Use the product in static free environment.**
- ⚠ **Read the user manuals completely before start using this product**



Recycling:

Almost all the part of this product are recyclable. Please send this product to the recycling plant after its operational life. By recycling we can contribute to cleaner and healthier environment for the future generations.