

## SERIAL PORTS AND WINDOWS 95

Windows 95 has overturned many of the serial communications barriers of earlier operating systems. However, some of its features may not be obvious to many users. This article will expose these useful new features to the casual user.

### *Lots of ports*

Gone are the two and four port serial port barriers. Windows 95 allows you to configure as many ports as you can find space for. Step-by-step installation instructions are included in this article.

### *Full 16550 UART support*

The user finally has control over UART FIFO settings. The popular 16550 UART (now standard on all B&B serial cards) has a 16-byte transmit and receive FIFO buffer - the interrupt trigger level of the receive buffer may be set to 1, 4, 8 or 14. These settings allow various levels of overflow buffering before data is lost. Setting the FIFO trigger to a higher level allows higher efficiencies, but multitasking environments may not allow enough overflow space for incoming characters if the machine is busy handling another task. In general, set the trigger level to the highest level that doesn't generate overrun errors. The transmit FIFO buffer can be set for a level of 16 (default), 11, 6 or 1. In most cases the default setting is the most efficient. If the receiving device is unable to keep up with the transmission, lowering the transmit FIFO buffer's trigger level may slow down the data stream.

### *Sharing IRQs!*

Perhaps the most exciting news - with special hardware you can share IRQ's among COM ports - conserving this precious resource. There are some stipulations - the programs sharing the IRQ's *must* be Windows applications, and the serial ports sharing IRQ's *must* have special circuitry to allow sharing. Do not attempt to share IRQ's without special hardware - at best, spotty communications will result, at worst, the hardware could be damaged. That said, sharing IRQ's in Windows 95 is as easy as setting the two or more ports for the same IRQ. No special setup required. B&B's models 3PXCC4A, 3PXSD4A and 3PXSD4B are four port serial cards that support shared IRQ's.

### *What about RS-485?*

Despite all of the improvements, promptly raising and lowering RTS to control the RS-485 driver enable remains a daunting task. Fortunately, this problem is solved in hardware with B&B's Automatic Send Data Control feature. By using an RS-485 serial port or converter with this feature, RS-485 programming is greatly simplified.

## INSTALLING SERIAL PORTS IN WINDOWS 95

Follow these instructions to add a serial port to a Windows 95 machine. This will configure the port for use with all Windows applications.

Configure and install the hardware - set the I/O address and IRQ of the serial port to the values you would like to use. Note that unless your serial card has special circuitry to support sharing IRQ's, you should set the IRQ to one not used by another device.

Run the Windows 95 **Add New Hardware** utility found in the control panel.

Click **Next**.

Select **No**, you do not want windows to search for your new hardware.

Click **Next**.

Select **Ports (COM & LPT)**. Click **Next**.

Select **(Standard port types)** and **Communications Port**. Click **Next**.

The next screen will show the address and interrupt request of the port. These may not match your configuration. For now, simply click **Next**, then click **Finish**.

If the address and IRQ information shown in the last step were incorrect, it needs to be corrected in the **Device Manager**. To open the **Device Manager**, double click the **System** icon in the Control Panel and click on the **Device Manager** tab.

Double click on **Ports (COM & LPT)**. The last Communications Port shown should be the one that was just added; select it and click the **Properties** button.

Next select the **Resources** tab. This is where the address and interrupt information can be changed. A set of “Basic Configurations” for serial ports is included with Windows 95 to help configure COM ports. Set the Basic Configuration to one from the table on page 3 which most closely matches your new hardware. To change the I/O address (Basic Configuration 8 only), double click on **Input/Output Range** and enter the correct I/O address. To set the IRQ, double click on Interrupt Request and select the proper IRQ. Note that the **Use automatic settings** checkbox must be off to make these changes.

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The following information on the Basic Configurations was taken from the Microsoft Knowledge Base, article Q123992.

*These Basic Configurations provide the following:*

- A default configuration for each COM port.  
*You cannot change this default setting.*
- Additional configurations for each port that let you edit the **IRQ** setting. *These configurations don't let you change I/O addresses.*
- Additional configurations for each port that let you edit both **IRQ** and **I/O** range.

Basic Configurations are determined by the following table:

<i>Basic Configuration</i>	<i>IRQ Setting</i>	<i>Editable?</i>	<i>I/O Setting</i>	<i>Editable?</i>
0	4	No	03F8-03FF	No
1	4	Yes	03F8-03FF	No
2	3	No	02F8-02FF	No
3	3	Yes	02F8-02FF	No
4	4	No	03E8-03EF	No
5	4	Yes	03E8-03EF	No
6	3	No	02E8-02EF	No
7	3	Yes	02E8-02EF	No
8	Variable	Yes	Variable	Yes

*COM 1 defaults to Basic Configuration 0.  
The IRQ can be changed by selecting Basic Configuration 1.*

*COM 2 defaults to Basic Configuration 2.  
The IRQ can be changed by selecting Basic Configuration 3.*

*COM 3 defaults to Basic Configuration 4.  
The IRQ can be changed by selecting Basic Configuration 5.*

*COM 4 defaults to Basic Configuration 6.  
The IRQ can be changed by selecting Basic Configuration 7.*

*Basic Configuration 8 can be used to configure additional COM ports because it lets you change the IRQ and the I/O address.*