



## 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 newsletter (see page 2).

### *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.

*Windows 95 has improved the serial port configuration shortcomings of the past - adding flexibility and reducing hardware and software connectivity headaches.*

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## K-TYPE THERMOCOUPLE AMPLIFIER



B&B Electronics announces the TCDA module, a two-channel, K-type thermocouple amplifier with cold junction compensation. This device amplifies the small voltage of the popular K-type thermocouple to a voltage between 0V and 5V so that data acquisition modules can monitor the thermocouple output. Thermocouple connections are made using terminal blocks while connections to data acquisition modules are made through a DB-25 (male) connector.

The TCDA is pin compatible with B&B Electronics' 232SDAXX, 485SDAXX, 232SPDA, 485SPDA, and ADIO12 modules. The standard TCDA can measure temperatures between -50°C and +200°C at a resolution of 20mV/°C. In addition, the TCDA can be modified at the factory to measure a higher range of temperatures. Temperature measurements have a maximum error of  $\pm 3^\circ\text{C}$  over the -50°C to +200°C temperature measurement range (TCDA @ 25°C). Model TCDA, \$89.95.

### MAKING CONNECTIONS WITH B&B ELECTRONICS

*A variety of ways to contact our technical support and sales staff*

Phone ..... (815) 433-5100  
8:00 am to 4:30 pm Mon-Fri  
Central Time USA

FAX ..... (815) 434-7094  
24-hour service

On the Internet  
B&B's Home Page  
<http://www.bb-elec.com>

FTP Site  
<ftp://ftp.bb-elec.com/bb-elec/>

Electronic Mailing List  
[majordomo@bb-elec.com](mailto:majordomo@bb-elec.com)

Other E-Mail Addresses  
Catalog Requests  
[catrqst@bb-elec.com](mailto:catrqst@bb-elec.com)  
Sales Department  
[sales@bb-elec.com](mailto:sales@bb-elec.com)

Technical Support  
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Postal Mail  
707 Dayton Road  
P.O. Box 1040  
Ottawa, IL 61350

### 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.

*(Continued on page 3)*

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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 do not 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:

Basic Configuration	IRQ Setting	Editable?	I/O Setting	Editable?
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.

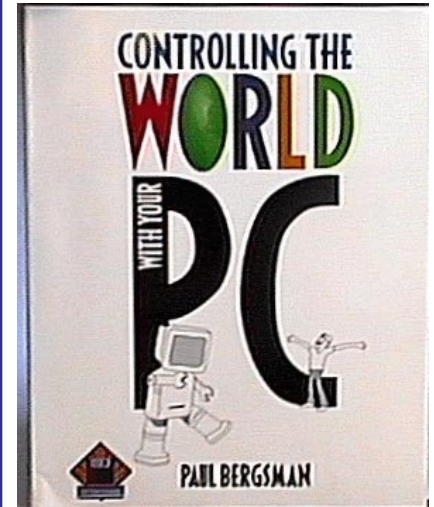
COM 4 defaults to Basic Configuration 6. The IRQ can be changed by selecting Basic Configuration 7.

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

### INFORMATION AVAILABLE

B&B Electronics offers a free Current Loop Application Note and a free RS-422 & RS-485 Application Note. Additionally, most B&B products have manuals and/or specification sheets available, including schematics and pinouts where applicable. This information is available on request from B&B Electronics and also on B&B's FTP site (see side bar on page 2).

## SUGGESTED READING

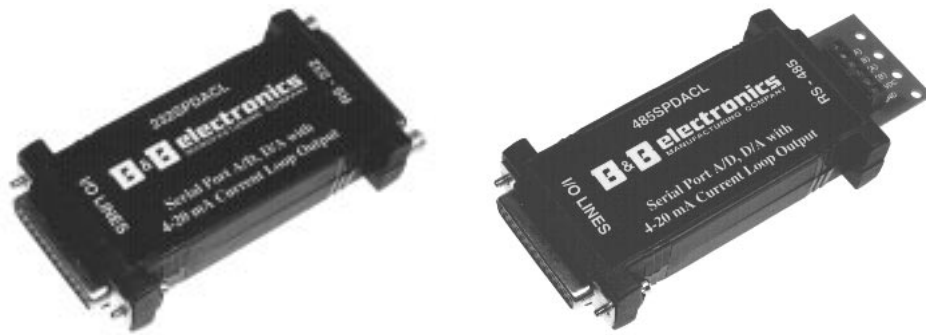


Control and monitor real world devices through your IBM compatible PC parallel printer port. Whether you're a student or an engineer you'll find these applications both practical and useful.

Controlling The World With Your PC by Paul Bergsman is a 257 page reference book that covers display devices, stepping and servo motors, analog and digital inputs, even switching appliances on and off! Other applications include generating audio tones and speech, converting input voltages and DTMF tones to binary values, driving high power loads and DC relays; using your PC's game port for input, expanding the parallel port for 24-bit I/O serial port interfacing, bidirectional printer port use, and more.

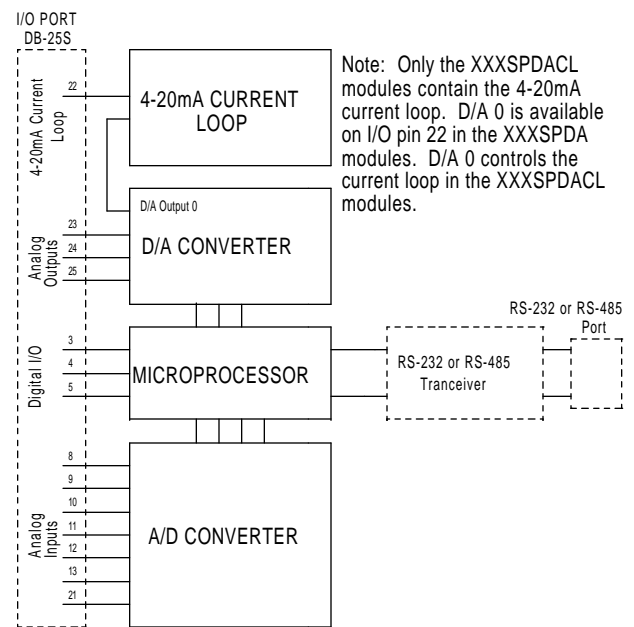
All the circuits in this book come with circuit diagrams and control software listings written in Pascal, C, and BASIC. An accompanying disk contains full source code in all languages plus compiled (.EXE) files.

## SERIAL PORT DATA ACQUISITION MODULES



B&B Electronics announces the 232SPDA and 485SPDA modules, simple serial port data acquisition modules that interface 7 A/D channels, 2 digital inputs, 1 digital output, and 4 D/A channels to an RS-232 or RS-485 port. These modules allow your PC to read and output analog voltages as well as monitor and set digital I/O lines.

In addition to these features, the 232SPDA and 485SPDA modules can output a 4-20mA current which is useful when long wire runs with analog signals are required. RS-485 connections are made using terminal blocks while RS-232 and I/O connections are made through DB-25S (female) connectors. Applications include: monitoring of various sensors, controlling process and test equipment, and monitoring and controlling ON/OFF states. 232SPDA and 485SPDA modules, \$89.95 each. 232SPDA and 485SPDA modules, \$99.95 each.



Block Diagram of XXXSPDA Module



**Connect With B&B  
on the World Wide Web**

<http://www.bb-elec.com>

B&B's World Wide Website offers technical support, product information, and more.

<ftp://ftp.bb-elec.com/bb-elec/>

Our FTP site contains data sheets with specifications, pinouts, and schematics on most B&B Electronics' products.

[majordomo@bb-elec.com](mailto:majordomo@bb-elec.com)

B&B's Electronic Mailing List is a forum of electronics industry experts for discussion of engineering topics, technical support issues, and product questions.

[sales@bb-elec.com](mailto:sales@bb-elec.com)

B&B customers can place or check on orders and request quotations conveniently.

[techsupt@bb-elec.com](mailto:techsupt@bb-elec.com)

Contact B&B's technical support staff with your product and installation questions.

CONNECTIONS

ADDRESS CORRECTION REQUESTED

**B&B electronics**  
MANUFACTURING COMPANY  
707 Dayton Road • P.O. Box 1040  
Ottawa, IL 61350

**BULK RATE**  
U.S. Postage  
**PAID**  
B&B Electronics  
Manufacturing Company