National Control Devices

Phone: 417-646-5644
Fax: 417-646-8302
Email: ncdryan@aol.com

P.O. Box 455
Osceola, MO 64776

Who's Controlling Your World?

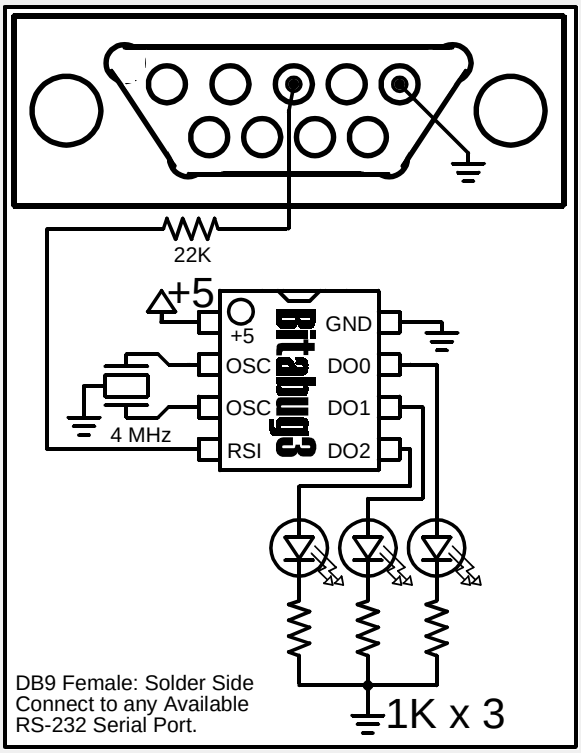
Device Description: NCD211

Bitabug3 is a 8-pin preprogrammed microcontroller based on the PIC12C671/672 core, and is available in DIP and SOIC packages. Bitabug3 was designed to provide 3 TTL outputs from an RS-232 serial port. Bitabug3 is an enhancement of Bitabug2 by adding E3C compliance, allowing 256 devices to share a single RS-232 serial port. Bitabug3 does not act as a 3-bit serial to parallel converter like the Bitabug2. Instead, output lines are completely command driven using simple E3C structured commands. Unlike the Bitabug2, Bitabug3 uses a command set for controlling each output individually or all outputs simultaneously. A customer-selected E3C device number of 0-255 must be programmed into the chip at the time of purchase.

Current Pricing in US Dollars: NCD211

Package Type	Qty 1-9	Qty 10-25	Qty 26-100	Qty 101+
DIP	**$10**	**$9.00**	**$8.10**	**MARKET PRICE**
SOIC	**$11**	**$10.00**	**$9.10**	**MARKET PRICE**

Example Device Wiring: NCD211



Bitabug3, shown at left, is easily connected to the serial port of your computer using only a 22K Ohm resistor. Bitabug3 requires a regulated +5 volt power supply. Bitabug3 has three TTL/CMOS (0/+5 volt) outputs, which are driven under computer control. Bitabug3 is shown with its digital outputs connected to three LEDs. When power is applied, Bitabug3 waits for E3C compliant commands for controlling the outputs on up to 256 chips. Note that an E3C device number of 0-255 must be programmed into the chip at the time of purchase.

Pin	Label	Function
1	+5	Connect to Regulated +5 Supply
2, 3	OSC	4 MHz Ceramic Resonator
4	RSI	RS-232 Data Input, 9600 bps, 8,N,1
5	DO2	Digital Output 3
6	DO1	Digital Output 2
7	DO0	Digital Output 1
8	GND	Ground

Recommended Usage

This device is provided with programming examples for the following systems. If programming examples are not provided for the Basic Stamp, then it is NOT RECOMENDED for use with this device at this time. E3C Compliance allows 256 Devices to interface to a single serial port.

QBasic	*Visual Basic 6 Pro*	*Basic Stamp II*	*Basic Stamp II SX*	*E3C Compliance*
Compatible	Yes	Compatible	Compatible	Yes

National Control Devices

Who's Controlling Your World?

Phone: 417-646-5644
Fax: 417-646-8302
Email: ncdryan@aol.com

P.O. Box 455
Osceola, MO 64776

Programmers Notes

Bitabug3 supports 13 commands for controlling 3 TTL outputs bits and controlling all network functions. Bitabug3 is designed to accept numeric ASCII character codes from 0 to 255, easily generated by any programming language that supports serial communications. To send a command to Bitabug3, you must first send ASCII character code 254 to place the device in command mode. Once in command mode, any of the commands listed in the table below may be issued. Some E3C commands have parameters, used to control which device you are speaking to. To turn on output DO1, ASCII character codes 254 and 4 must be received by the Bitabug3. To turn off output DO1, send ASCII character codes 254 and 1. It is also possible to set all three outputs bits by sending ASCII character codes 254, 6, and a value from 0 to 7. 0 turns all outputs off, 7 turns all outputs on, every number in between is written to the outputs in its binary equivalent value.

E3C compliance allows 256 devices to share a single serial port. Six commands are used to select which devices are active. Some E3C commands require a parameter, indicating a specific device number to speak to. In most applications, E3C command 252 will be the only command you will ever need. Command 252 is used to speak to an individual device, and turn all others off. This is what we call the "device selector" command. It is used to select a device from 0-255.

Command	Parameter	Description
0, 1, 2	**None**	**Turn Off Outputs 1, 2, & 3 respectively.**
3, 4, 5	**None**	**Turn On Outputs 1, 2, & 3 respectively.**
6	**0-7**	**Write Byte (0-7) to all outputs at once.**
248	**None**	**E3C: Enable All Devices**
249	**None**	**E3C: Disable All Devices**
250	**0-255**	**E3C: Enable Selected Device**
251	**0-255**	**E3C: Disable Selected Device**
252	**0-255**	**E3C: Enable Selected Device, Disable All Other Devices**
253	**0-255**	**E3C: Disable Selected Device, Enable All Other Devices**

Note that E3C device numbers are programmed into the chip at the time of purchase. Once programmed, they cannot be changed.

To send E3C command 252 to the Bitabug3, send ASCII character code 254 to put the Bitabug3 in command mode. Next send ASCII character code 252, followed by a third Parameter indicating which device should be active. All subsequent commands will only be acknowledged by the selected device.

Other E3C commands allow you to control multiple devices simultaneously. Any E3C compliant devices may share a single serial port in any combination.

Example Software Notes

Example communication software for this device was written under Visual Basic 6 Professional. Example source code can be downloaded from our web site at www.controleverything.com. If you are NOT a Visual Basic Programmer, Source code can be viewed using a text editor such as Notepad or WordPad. Source code is clearly commented for easy migration to other languages.

Programming Language	Program	Program Description
Basic Stamp II	**NONE**	Bitabug3 is compatible with the Basic Stamp II
Basic Stamp II SX	**NONE**	Bitabug3 is compatible with the Basic Stamp II SX
Visual Basic 6 Pro	**BUGS.ZIP**	Simple Program Graphically Controls the Status of all 3 Outputs

Availability

Bitabug3 will begin shipping March 1, 2000.