

NCD209

Who's Controlling Your World?

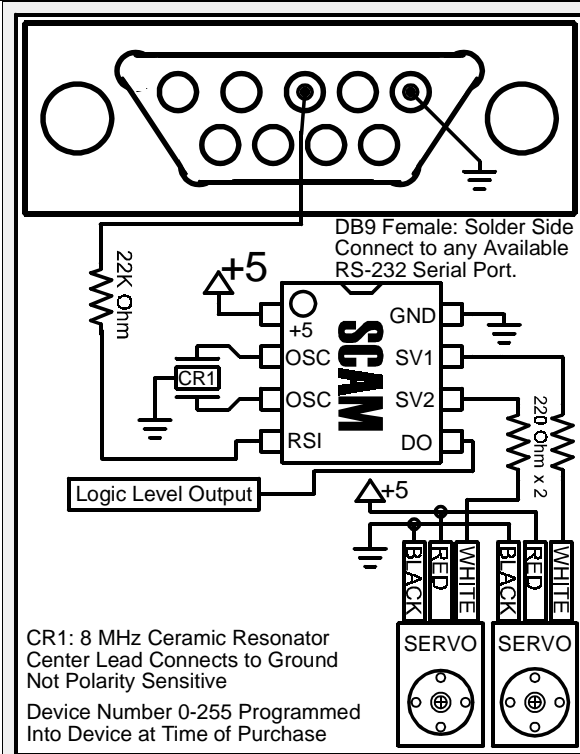
Device Description: NCD209

SCAM is a 8-pin preprogrammed microcontroller based on the PIC12C671/672 core, and is available in DIP and SOIC packages. SCAM is programmed to position two hobby servo motors and control a single logic-level output. SCAM accepts RS-232 commands at 9600 baud and is E3C compliant, allowing user-control of 256 different SCAM chips or other devices using a single RS-232 serial port.

Current Pricing in US Dollars: NCD209

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: NCD209



SCAM, shown at left, is easily connected to the serial port of your computer using only a 22K Ohm resistor. SCAM requires a regulated +5 volt power supply. SCAM has a single logic-level output (TTL/CMOS 0/+5 volt), and two servo motor outputs. A 220 Ohm current limiting resistor should be connected between the output of the chip and servo motor as show in the diagram. An 8 MHz ceramic resonator is connected to the OSC lines of the SCAM chip. When power is first applied, both motors are centered, and the processor waits for command packets while controlling the servos. The program within this CPU uses a time share algorithm for accepting commands and controlling the servo motors and the logic-level output. Because of this, it is possible for command packets to be missed. While infrequent, it may be necessary to duplicate the transmission of some commands before a reaction can be realized.

Pin	Label	Function
1	+5	Connect to Regulated +5 Supply
2,3	OSC	8 MHz Ceramic Resonator Connection
4	RSI	RS-232 Data Input, 9600 bps, 8,N,1
5	DO	TTL/CMOS Logic Level Output Bit
6	SV2	Servo Motor Control Output 2
7	SV1	Servo Motor Control 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

BYTE BUGS: SCAM

Programmers Notes

The SCAM chip supports eleven commands for controlling two servo motors, a logic level output, and all network communication functions. The SCAM chip is designed to accept ASCII character codes as commands, easily generated by any programming language that supports serial communications. To send a command to the SCAM chip, 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 set the position of servo motor 1, ASCII character codes 254 and 1 must be received by the SCAM chip, a Parameter is also required (0-255) to set the position of the Servo motor. To conclude transmission to the SCAM chip, a terminator byte, 85, must be received by the SCAM chip. You do NOT need to send ASCII character code 85 to terminate an E3C command (Commands 248-253).

Similarly, Command 2 is used to control the position of Servo motor 2. Command 0 is used to control the position of BOTH servo motors. Commands 3 and 4 set the status of the AUX output bit. The program within this CPU uses a time share algorithm for accepting commands and controlling the servo motors and the logic-level output. Because of this, it is possible for command packets to be missed. While infrequent, it may be necessary to duplicate the transmission of some commands before a reaction can be realized.

Command	Parameter	Description
0	0-255, 0-255	Set Both Servo Positions: Servo1, Servo2 Send TWO Parameters for This Command
1	0-255	Set Servo 1 Position
2	0-255	Set Servo 2 Position
3	None	Turn ON Aux Data Output Bit
4	None	Turn OFF Aux Data Output Bit
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

E3C compliance allows 256 devices to share a single serial port. 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. All other commands are provided for network compliance purposes only. Command 252 is used to speak to an individual device, and turn all others off.

To send E3C command 252 to the SCAM chip, send ASCII character code 254 to put the SCAM chip 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.

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

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	SCAM has not been tested with the Basic Stamp II
Basic Stamp II SX	NONE	SCAM has not been tested with the Basic Stamp II SX
QBasic	NONE	Coming Soon
Visual Basic 6 Pro	BUGS.ZIP	Simple Program Graphically Displays the Status of Servos and TTL.

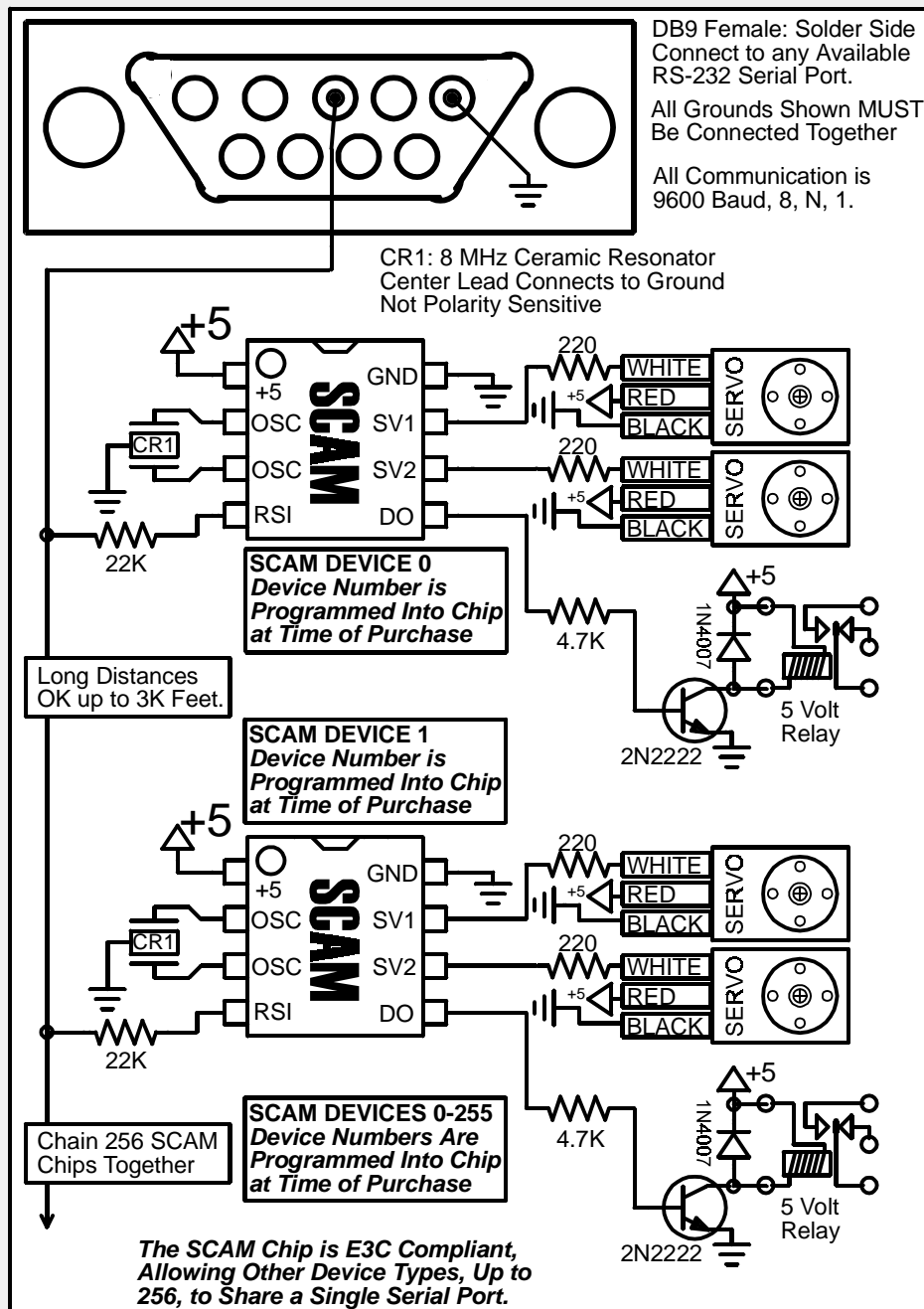
Availability

SCAM will begin shipping February 1, 2000.

Application Notes

The SCAM chip was designed to provide users with an easy way to control multiple hobby servo motors for camera positioning applications. The Servo CAMera (SCAM) can easily be integrated into large scale security system and is perfect for home/office security monitoring needs. Complete plans for this project can be found in the Feb. 2000 issue of Nuts & Volts magazine. In the diagram below, two SCAM chips are connected to a single RS-232 serial port.

Each SCAM chip has a different device number burned into the chip at the time of purchase. This device number allows 256 SCAM chips to share a single serial port. When ordering, you MUST specify a device number from 0-255.



Control 256 Relays & 512 Servos from a Single RS-232 Serial Port

APPLICATION SCAM