

ServoCenter3.1 Direct Serial I/O Examples – Turbo C

1. Overview

This document provides a simple C-language example program illustrating how to access the serial port and directly communicate with the ServoCenter 3.1 controller board to control a servo in the Turbo C environment. Note that the program is provided to illustrate simple raw serial communication using the ServoCenter 3.1 protocol and does not demonstrate the full feature set of the ServoCenter 3.1 controller. Refer to section 4.1 of the ServoCenter 3.1 manual for a description of the entire ServoCenter 3.1 protocol and feature set.

2. Sample Code

```

/*****\
* This demo program illustrates how to move servo motors *
* using raw serial communication access to the *
* Yost Engineering, Inc. ServoCenter 3.1 controller board. *
* This program was written and compiled in the Borland *
* Turbo C environment. *
* *
* (c) 2001-2004 Yost Engineering, Inc. *
* www.YostEngineering.com *
* *
\*****/

#include<stdio.h>
#include<dos.h>
#include<conio.h>

#define COM1 0x3f8
#define COM2 0x2f8
#define COM3 0x3e8
#define COM4 0x2e8

/* Set following line to desired port*/
#define COMPORT COM1
#define BAUDRATE 9600

void initcom(unsigned int);
void moveservo(int,int,int,int);

main()
{
    int board,servo,pos,speed;
    clrscr();
    printf(" \n");
    printf(" ServoCenter 3.1 Demonstration Program \n");
    printf(" (c)2000-2004 Yost Engineering, Inc. \n");
    printf(" www.YostEngineering.com \n");
}
    
```

```

printf("                                     \n");
initcom(BAUDRATE);
while (1)
{
    printf("Enter Board ID (0-15)\n");
    scanf("%d",&board);
    printf("Enter ServoID (0-15)\n");
    scanf("%d",&servo);
    printf("Enter Position (0-200)\n");
    scanf("%d",&pos);
    printf("Enter Speed (1-100)\n");
    scanf("%d",&speed);
    printf("Moving servo...\n");
    moveservo(board,servo,pos,speed);
    printf("Done!");
}
}

void moveservo(int BoardId,int ServoNum,int Position,int Speed)
{
    outportb(COMPORT,0xf0 + BoardId % 16);
    while((inportb(COMPORT+5)&0x20)==0){;}
    outportb(COMPORT,0x10);
    while((inportb(COMPORT+5)&0x20)==0){;}
    outportb(COMPORT,ServoNum % 16);
    while((inportb(COMPORT+5)&0x20)==0){;}
    outportb(COMPORT,Position % 201);
    while((inportb(COMPORT+5)&0x20)==0){;}
    outportb(COMPORT,Speed % 101);
    while((inportb(COMPORT+5)&0x20)==0){;}
    outportb(COMPORT,0);
    while((inportb(COMPORT+5)&0x20)==0){;}
}

void initcom( unsigned int BaudRate )
{
    outportb(COMPORT+3,0x83); //DLAB high, set format 8N1
    switch(BaudRate)
    {
        case 9600: outportb(COMPORT,0x0c); // set rate LSB
                  outportb(COMPORT+1,0x00); // set rate MSB
                  break;
        case 14400:outportb(COMPORT,0x08); // set rate LSB
                  outportb(COMPORT+1,0x00); // set rate MSB
                  break;
        case 19200:outportb(COMPORT,0x06); // set rate LSB
                  outportb(COMPORT+1,0x00); // set rate MSB
                  break;
        case 38400:outportb(COMPORT,0x03); // set rate LSB
                  outportb(COMPORT+1,0x00); // set rate MSB
                  break;
        default: //use 9600 as default baud rate
                 outportb(COMPORT,0x0c); // set rate LSB
                 outportb(COMPORT+1,0x00); // set rate MSB
                 break;
    }
}

```

```
    }  
    outportb(COMPORT+3,0x03); // DLAB now low  
    outportb(COMPORT+1,0x00); // Interrupts off  
}
```

3. Additional Information

This code is available in the TCServo.cpp file in the Examples directory of the ServoCenter3.1 CD or online at www.YostEngineering.com/ServoCenter.