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# Track Point

## Hid over I<sup>2</sup>C Protocol



## 1, Data Packet:

When track point device has a packet to send, it will pull low the interrupt pin to inform the master to read. At the end of reading, track point device will pull high the interrupt pin. The data packet is showed as below:

I2C Address 0x15 (7Bit)								
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	0x07							
Byte1	0x00							
Byte2	0x01							
Byte3	Reserve					Middle button	Right button	Left button
Byte4	X Delta Data							
Byte5	Y Delta Data							
Byte6	Reserve							

### Remark:

Byte0 must be equal to 0x07, otherwise, this packet may be an error packet.

## 2, Command:

Master is allowed to control the track point device through i2c command. The command and function are showed as below:

status	Command (HEX)	Remark
Sleep	22 00 01 08	
Wake up	22 00 00 08	Define
Enter idle mode	25 00 06 00 29 06 06 01	
Exit idle mode	25 00 06 00 29 06 06 00	Define
Reset	25 00 06 00 29 77 77 77	Reset track point
Set moving speed	25 00 06 00 29 42 xx yy	xx is up speed, yy is down speed,
Set moving speed	25 00 06 00 29 43 xx yy	xx is left speed, yy is right speed

### Remark:

The factory setting of moving speed is Default to "50", range from 1 to 100. When master set the moving speed, track point device will auto store this status to its rom, thus, even if power off, the track point device will still work on this status.

If you want to set any command to track point, please wait 100ms after power on.



### 3, Demo code:

```
#define TRACK_POINT_SCL          P0_0      //SCL needs pull high resistance
#define TRACK_POINT_SDA          P0_1      //SDA needs pull high resistance
#define TRACK_POINT_INT          P0_2      //INT needs pull high resistance
#define TRACK_POINT_SCL_OUTPUT() do{P0CON &= ~0x01;}while(0)
#define TRACK_POINT_SCL_INPUT()  do{P0CON |= 0x01;}while(0)
#define TRACK_POINT_SDA_OUTPUT() do{P0CON &= ~0x02;}while(0)
#define TRACK_POINT_SDA_INPUT()  do{P0CON |= 0x02;}while(0)
#define TRACK_POINT_INT_OUTPUT() do{P0CON &= ~0x04;}while(0)
#define TRACK_POINT_INT_INPUT()  do{P0CON |= 0x04;}while(0)
```

```
void WAIT_SCL_HIGH(void)
```

```
{
    uint16_t k;
    k = 0;
    while(1)
    {
        if(TRACK_POINT_SCL)
            break;
        if(k++ == 1000)    //1000-2.5ms //wait 2.5ms for scl high
            break;
    }
}
```

```
}
```

```
void I2C_Start(void)
```

```
{
    TRACK_POINT_SDA_INPUT();
    Delay_5us();
    TRACK_POINT_SCL_INPUT();
    WAIT_SCL_HIGH();
    Delay_5us();
    TRACK_POINT_SDA = 0;
    TRACK_POINT_SDA_OUTPUT();
    Delay_5us();
    Delay_5us();
    TRACK_POINT_SCL = 0;
    TRACK_POINT_SCL_OUTPUT();
    Delay_5us();
    Delay_5us();
    Delay_5us();
    Delay_5us();
}
```



uint8\_t I2C\_Write\_Byte(uint8\_t dat)

```
{
    uint8_t a = 0,b = 0;
    for(a=0; a<8; a++)
    {
        if((dat>>7) & 0x01)
            TRACK_POINT_SDA_INPUT();
        else
        {
            TRACK_POINT_SDA = 0;
            TRACK_POINT_SDA_OUTPUT();
        }
        dat = dat << 1;
        Delay_5us();
        TRACK_POINT_SCL_INPUT();
        WAIT_SCL_HIGH();
        Delay_5us();
        Delay_5us();
        TRACK_POINT_SCL = 0;
        TRACK_POINT_SCL_OUTPUT();
    }
    TRACK_POINT_SDA_INPUT();
    Delay_5us();
    Delay_5us();
    TRACK_POINT_SCL_INPUT();
    WAIT_SCL_HIGH();
    Delay_5us();
    while(TRACK_POINT_SDA)
    {
        b++;
        if(b > 20)
        {
            Delay_5us();
            TRACK_POINT_SCL = 0;
            TRACK_POINT_SCL_OUTPUT();
            Delay_5us();
            Delay_5us();
            Delay_5us();
            Delay_5us();
            return 0;
        }
    }
    Delay_5us();
}
```



```
TRACK_POINT_SCL = 0;
TRACK_POINT_SCL_OUTPUT();
Delay_5us();
Delay_5us();
Delay_5us();
Delay_5us();
return 1;
}
uint8_t I2C_Read_Byte(uint8_t ack)
{
    uint8_t a = 0, dat = 0;
    TRACK_POINT_SDA_INPUT();
    for(a=0; a<8; a++)
    {
        Delay_5us();
        TRACK_POINT_SCL_INPUT();
        WAIT_SCL_HIGH();
        Delay_5us();
        dat <<= 1;
        dat |= TRACK_POINT_SDA;
        Delay_5us();
        TRACK_POINT_SCL = 0;
        TRACK_POINT_SCL_OUTPUT();
        Delay_5us();
    }
    if(ack)
    {
        TRACK_POINT_SDA = 0;
        TRACK_POINT_SDA_OUTPUT();
    }
    Delay_5us();
    TRACK_POINT_SCL_INPUT();
    WAIT_SCL_HIGH();
    Delay_5us();
    Delay_5us();
    TRACK_POINT_SCL = 0;
    TRACK_POINT_SCL_OUTPUT();
    Delay_5us();
    Delay_5us();
    Delay_5us();
    Delay_5us();
    return dat;
}
```



```
void I2C_Stop(void)
{
    TRACK_POINT_SDA = 0;
    TRACK_POINT_SDA_OUTPUT();
    Delay_5us();
    TRACK_POINT_SCL_INPUT();
    WAIT_SCL_HIGH();
    Delay_5us();
    Delay_5us();
    TRACK_POINT_SDA_INPUT();
    Delay_5us();
    Delay_5us();
    Delay_5us();
}

void Set_Track_Point_Sleep(void)
{
    I2C_Start();
    I2C_Write_Byte((0x15<<1) | 0x01);
    I2C_Write_Byte(0x22);
    I2C_Write_Byte(0x00);
    I2C_Write_Byte(0x01);
    I2C_Write_Byte(0x08);
    I2C_Stop();
}

void Set_Track_Point_Wakeup(void)
{
    I2C_Start();
    I2C_Write_Byte((0x15<<1) | 0x01);
    I2C_Write_Byte(0x22);
    I2C_Write_Byte(0x00);
    I2C_Write_Byte(0x00);
    I2C_Write_Byte(0x08);
    I2C_Stop();
}

void Check_Track_Point(void)
{
    uint8_t a, b, c, d, e, f, g;
    TRACK_POINT_INT_INPUT();
    Delay_5us();
}
```



```
if(!TRACK_POINT_INT)
{
    I2C_Start();
    I2C_Write_Byte((0x15<<1) | 0x01);
    a = I2C_Read_Byte(1);
    b = I2C_Read_Byte(1);
    c = I2C_Read_Byte(1);
    d = I2C_Read_Byte(1);
    e = I2C_Read_Byte(1);
    f = I2C_Read_Byte(1);
    g = I2C_Read_Byte(0);
    I2C_Stop();
    if((a == 0x07) && (b == 0x00) && (c == 0x01))
    {
        Button = d & 0x07;
        Delta_x = e;
        Delta_y = f;
    }
}
```

### 3, Contact us:

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