

Control RS-232C devices from WindowsPhone7.5

2012.04.05 7M4MON



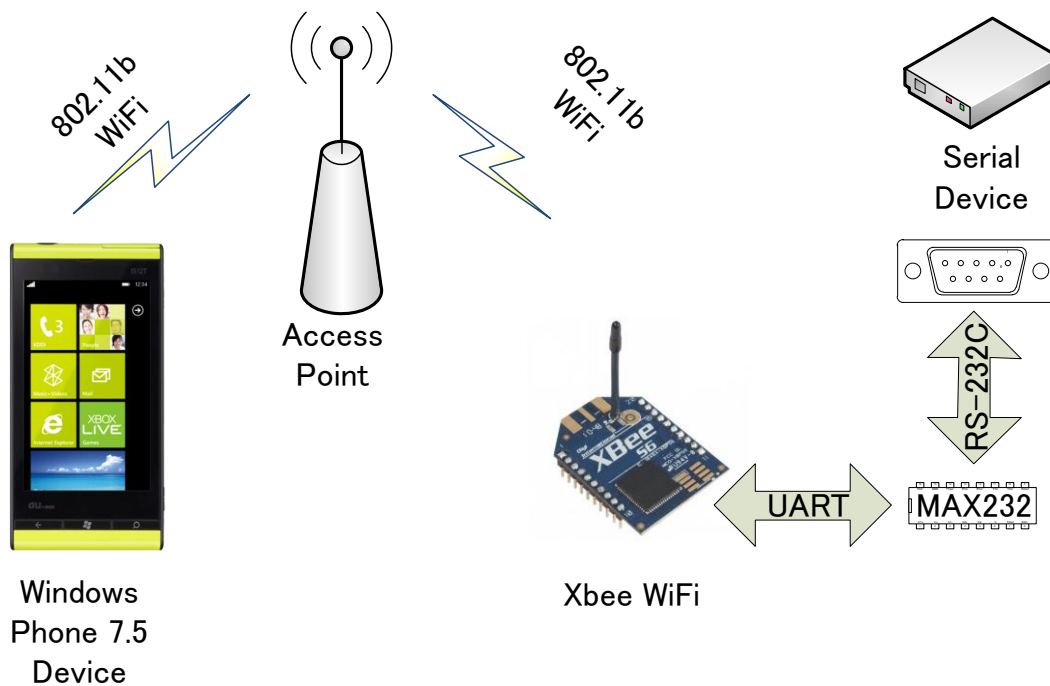
1. Overview

Windows Phone 7.5 doesn't support Bluetooth SPP Profile. So it cannot control RS-232C serial devices easily.

I made the controlling system using Ethernet-UART converter. ([XBee WiFi](#))

2. Connection

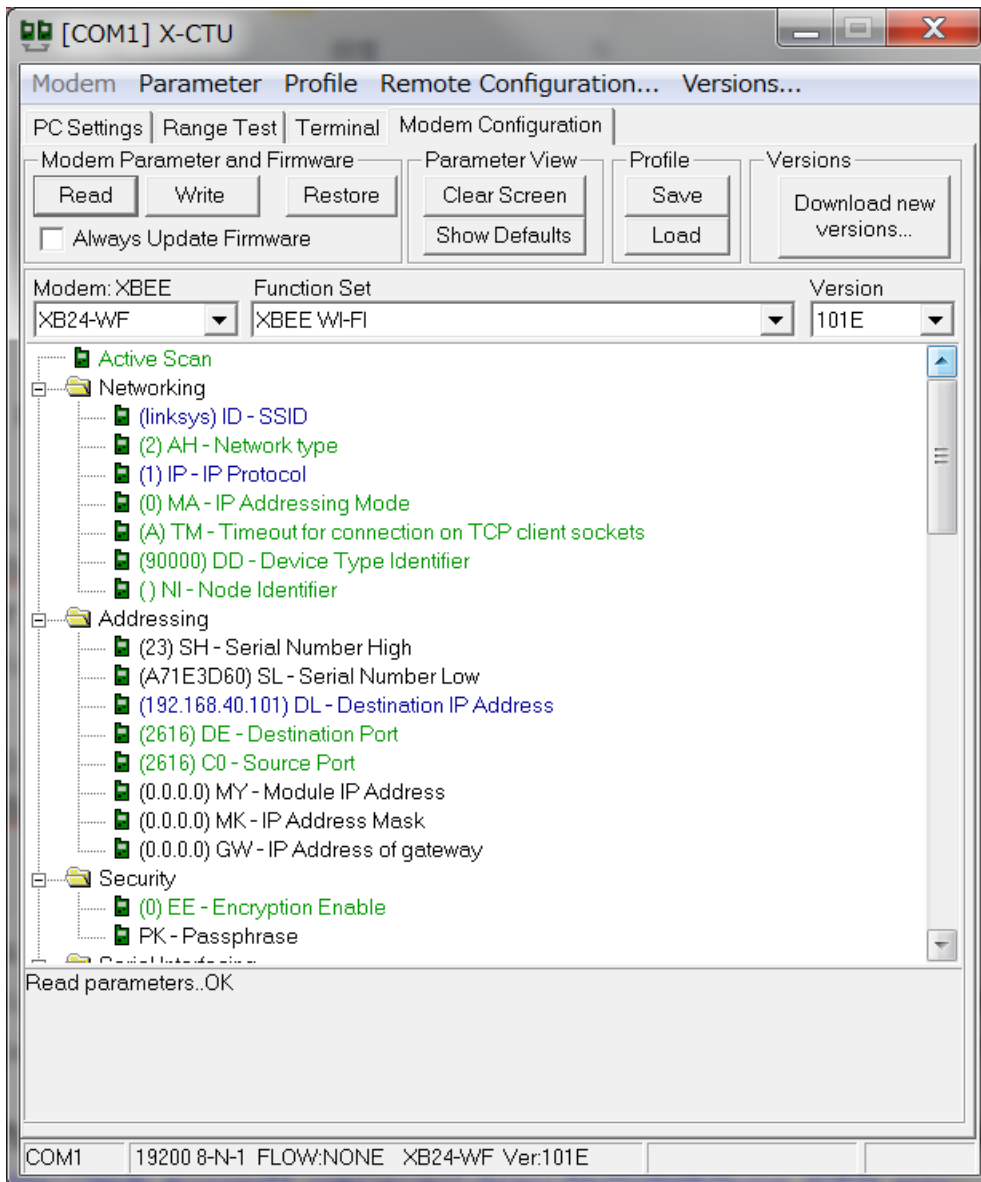
See this picture.



WindowsPhone7.5 device connects to XBee WiFi over TCP socket.

This system needs an access point, because Windows Phone 7.5 does not support adhoc mode.

3. Configuration of XBee WiFi (X-CTU)



This system uses not UDP but TCP, please change IP-Protocol to "1-TCP" .

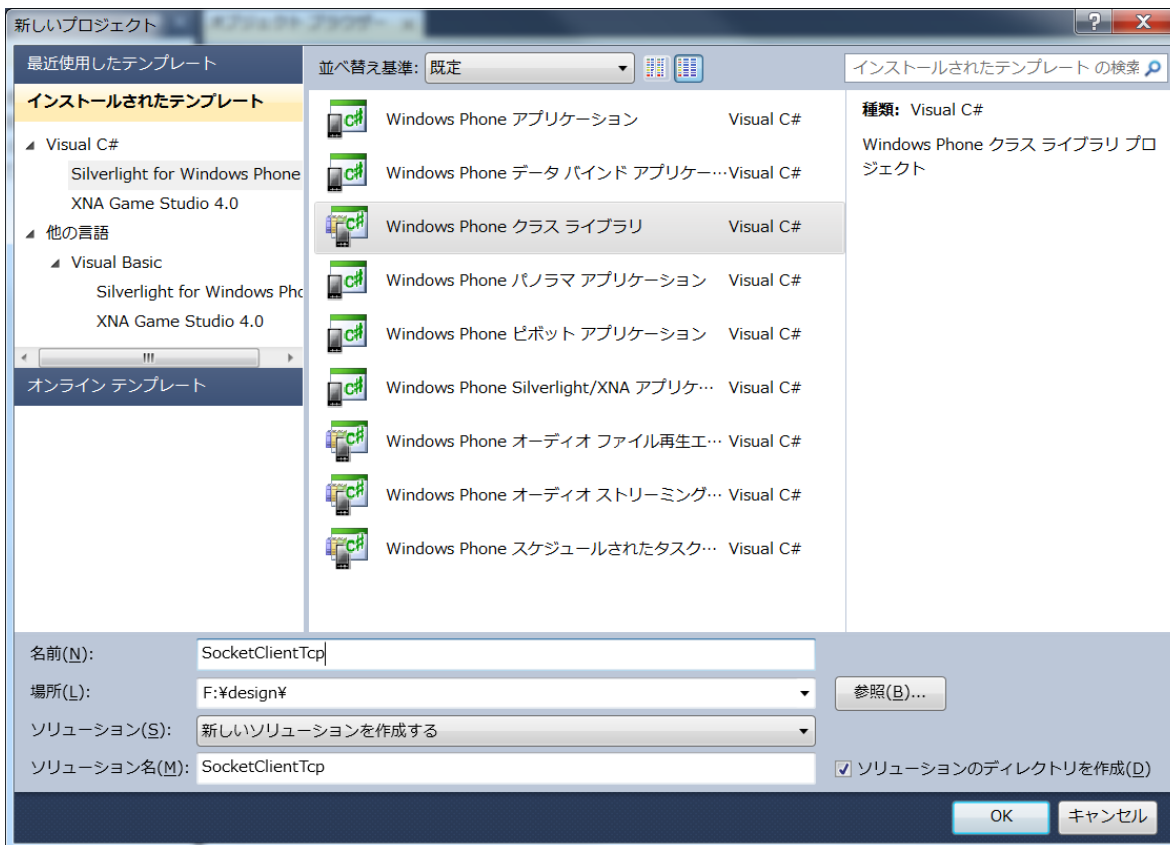
4. Make SocketClientTcp Library (DLL)

Make DLL for connect from WindowsPhone7.5 to XBee WiFi over TCP Socket connection.

Please refer to sample code by Microsoft.

[How to: Create and Use a TCP Socket Client Application for Windows Phone](#)

In Visual Studio 2010 Express for WindowsPhone, create a new project by selecting the New Project.



This sample's method is string data type, so it cannot handle byte array.

Modify the codes as follows:

Send method:

- `public string Send(string data) → public string SendByteArray(byte[] data)`
- `byte[] payload = Encoding.UTF8.GetBytes(data) → byte[] payload = data`

Receive method:

- `public string Receive() → public byte[] ReceiveByteArray()`
- `string response = "Operation Timeout" → byte[] response = null`
- `response = Encoding.UTF8.GetString(e.Buffer, e.Offset, e.BytesTransferred) → response = e.Buffer`
- `response = response.Trim(' ') →`

```
int i = response.Length;
while (response[i - 1] == 0 && i > 1) { i--; }
Array.Resize<byte>(ref response, i);
```

Comment out two sentences.

```
response = e.SocketError.ToString();
response = "Socket is not initialized";
```

Array of receive buffer of socket communication, it seems to be filled with zeros after the received data. So, there is a need to determine where in the buffer the received data has ended.

- Store in an array of local receive buffer,
- Determine whether the 0 contents of the array from the end of the array
- Considered the end of the received data points when any data expect 0 appears for the first time.

In this way, there is a problem. If the end of the received data is actually 0, it would be delete.

Because it cannot be distinguished between filled zero. (ex: 00-01-02-00 → 00-01-02)

However, the received data is composed of only 0, 0 is return value.

If there is no received data or socket is not initialize, this method returns “null” .

Build and make SocketClientTcp.dll

5. An application

I controlled the VFD Display GP1058A02, FUTABA electronics.

I used excellent code as follows:

<http://www.kosaka-lab.com/tips/2010/06/vfd-rsstwitter.php>

This program is controlling VFD by Desktop-Windows.

I changed this program for WindowsPhone.

- Changed interface serial port to Socket connection.
- Changed to alternatives method (XmlDocument, ArrayList) because it is not available in the framework for WindowsPhone
- Used [I18N.CJK](#) by Mr. [atsushieno](#) and [RssReader](#) by Mr. [okazuki](#)

Screen shot is here.



Video at the beginning of this chapter is appearing in the GP1058A02 [Asahi Shinbun news.](#)

6. At the end

Now, you can control serial device by using XBee WiFi from WindowsPhone.
WindowsPhone7.5 is great platform.

7. Bounus

Control your own devices from WindowsPhone7.5 using VisualBasic.

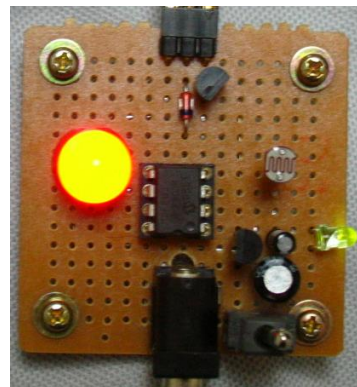
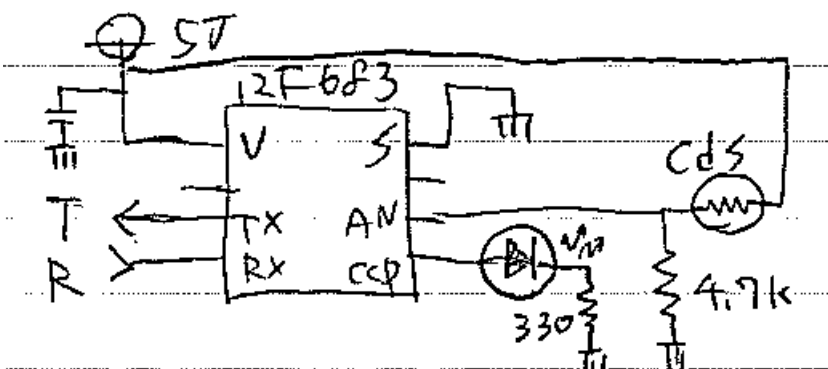


[Crick to move to YouTube video](#)

You can use SocketClientTcp.dll from VisualBasic.
This section describes own devise using XPort03R (Lantronix).

7.1 The HardWare

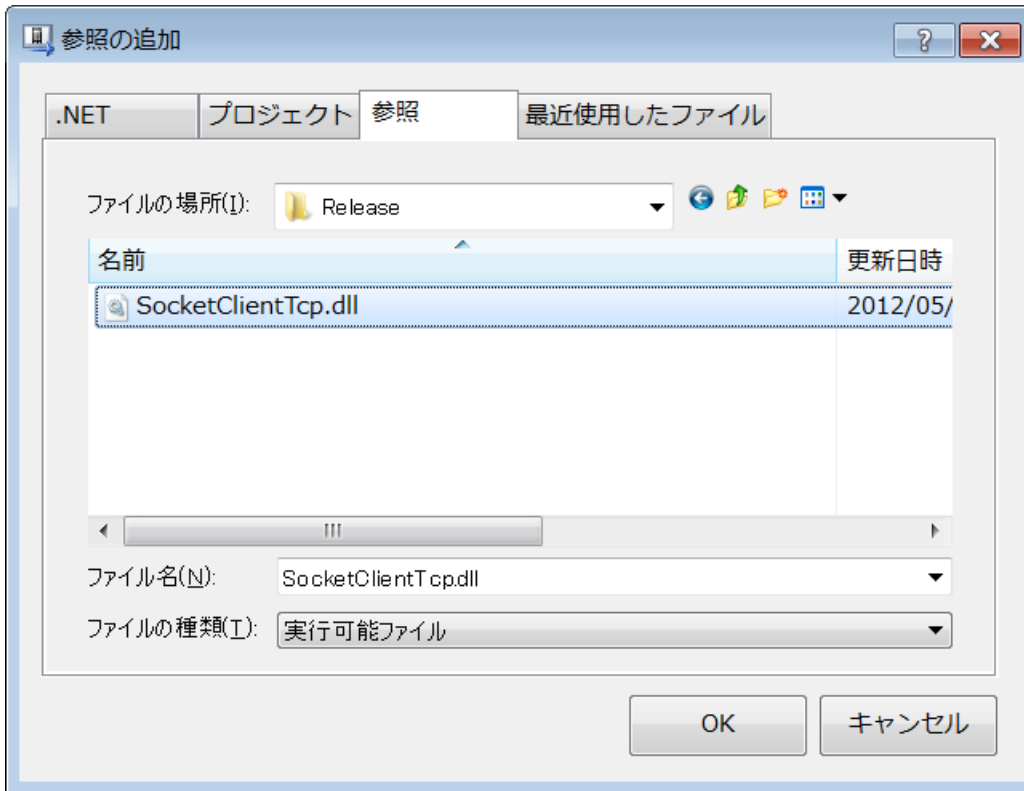
My hard ware has PIC12F683 with PWM controlled LED and CdS Cell (Bright Sensor).
Connect XPort 03R over TCP Socket, and control LED brightness by Slider and Shake Gestures,
Read brightness that detected CdS Cell, reading ADC on PIC12F683 sends to XPort 03R by UART.
Schematic is here.



Firmware is here ([Source](#), [HEX](#))

7.2 Make application

Please add reference to SocketClientTcp.dll.



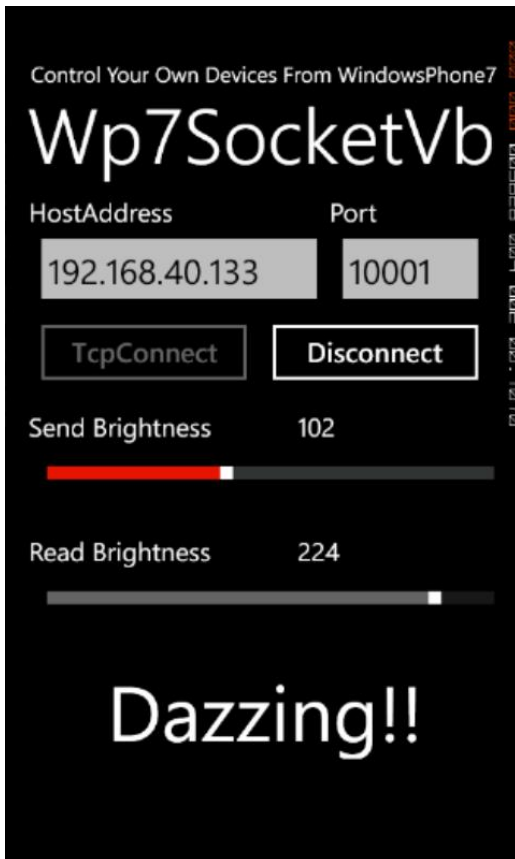
Import SocketClientTcp Class,

```
Imports SocketClientTcp
```

Create instance named client, then you can use SocketClientTcp.dll

```
client = New SocketClientTcp.SocketClient
```

Screen shot is here.



Controlling the brightness of the LED with the upper slide bar and showing under slide bar read brightness.

Thank you for reading.