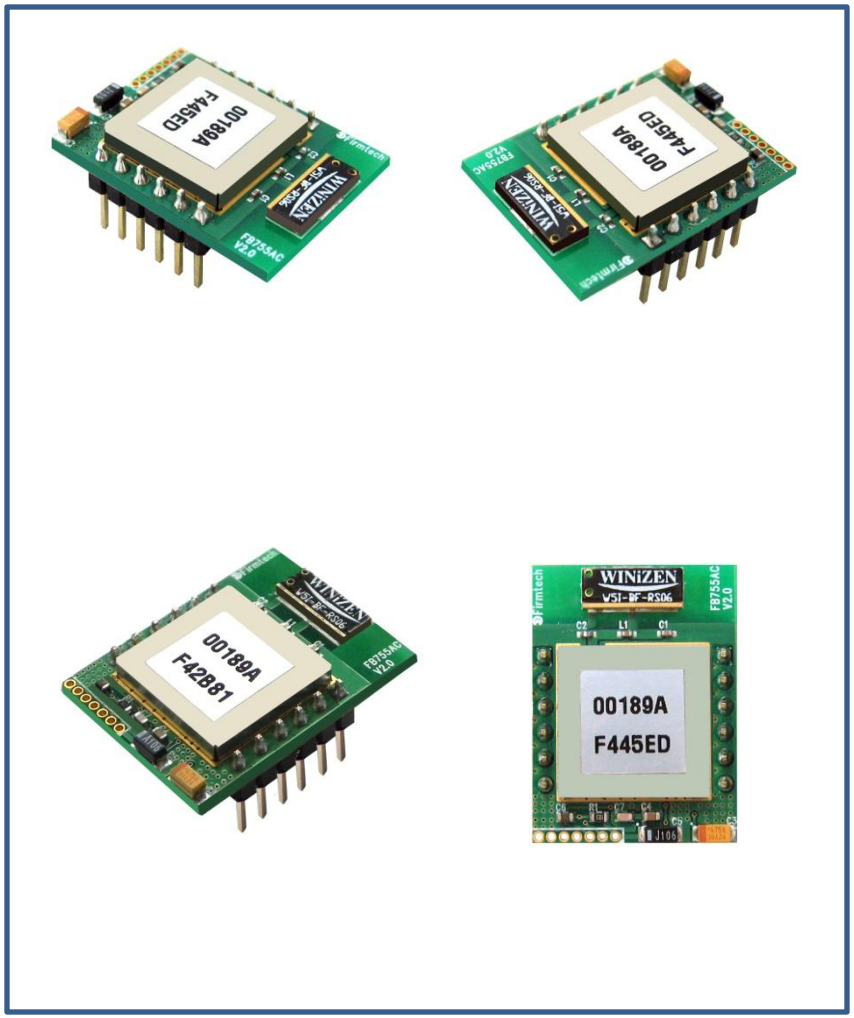
FB755AC/FB755AS

Quick Guide

Features of FB755AC / 755AS



< FB755AC >

< FB755AS >

* Before Getting Started...

- **Bluetooth is an international standard specification for near-distance /low-electricity/ high-reliability/low-price wireless communication**

- **Bluetooth uses the internationally permitted 2.4GHz ISM band(Industrial,Scientific,Medical).**

- **Bluetooth uses a 1Mbps ~ 3Mbps wireless transmission speed**

- **Bluetooth consists of Master/Slave configuration as the relation between Master and Servant and one bluetooth device can be connected to Maximum 7 devices on the basis of ACL.**

  (ACL : Asynchronous **C**onnection**l**ess**)**

- **Bluetooth guarantees a stable wireless connection even in much noise environment by using Frequency Hopping Method.**

* FB755AX Features

FB755AX

FB755AC (Chip Antenna)

12pin Header Type

FB755AS (Helical Antenna)

12pin Header Type

< FB755AX is>

- Based on Bluetooth Specification 2.0 Support
- Support AT command and AT command based control available
- Connect Bluetooth PDA, Bluetooth USB Dongle etc available & smoothly.
- Support stable data transmission & reception
- Maximum 1:7 communication available

* Functions of interface Board 1

Support of TTL Level Conversion Function

Note : UART : Universal Asynchronous Receiver Transmitter

EIA-232 Level⇔ TTL Level

Dedicated Driver IC

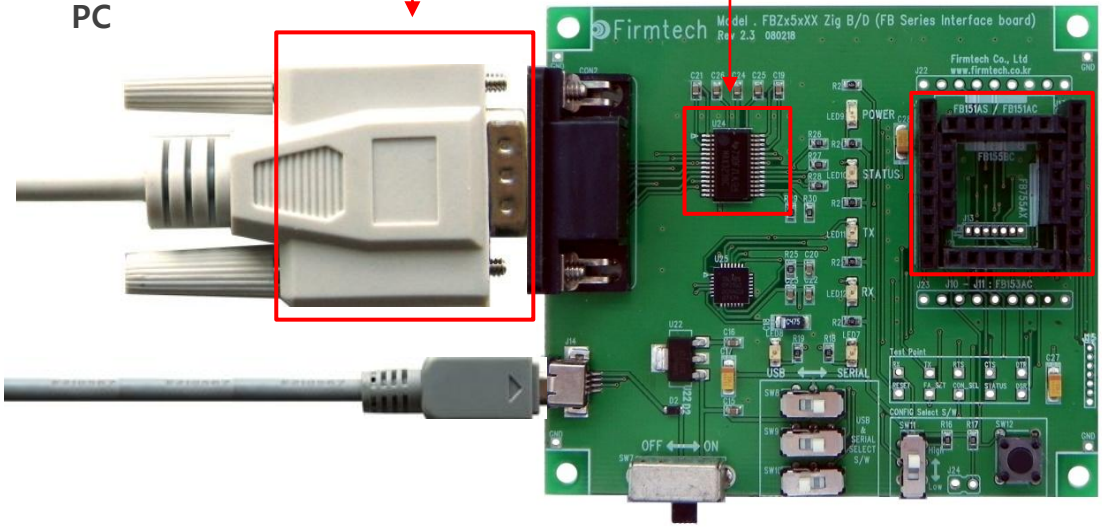
For Level Conversion

(예) MAX3238, MAX3232 등

PC

EIA 232 Level UART

TTL Level UART



Interface Board (FBZx5xXX)

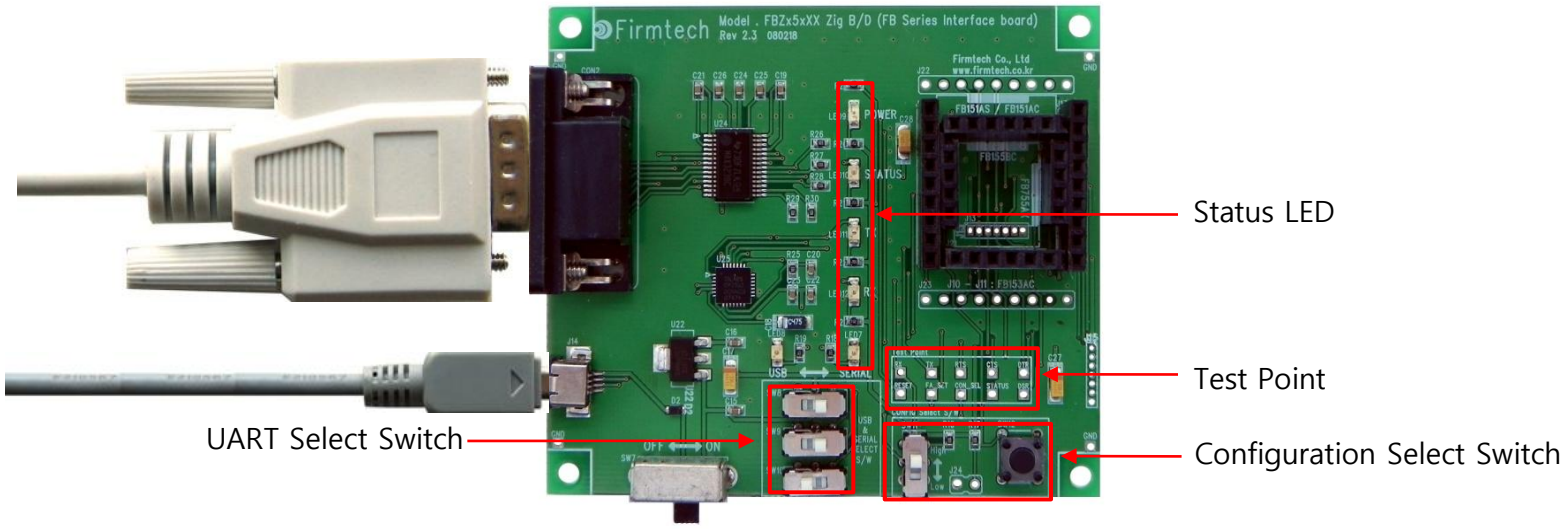
Application Device

FB755AC
FB755AS

FB155BC
FB155BS

* Functions of interface Board 2

Setup of **FB755AX** Environment and Monitoring & Basic Function Test of **FB755AX**



Interface Board (FBZx5xXX)

UART Select Switch	**Switch for UART Interface selection**
Status LED	LED that displays overall status
Test Point	Allows users to directly check the control signal line with an oscilloscope etc.
Configuration Select Switch	Entry-switch for environment setup

< “FB755AX Quick Guide”…>

1. Consists of eight chapters in total.
2. Even though it is divided into eight chapters, in some chapters it uses the setup values that were used in previous chapters.
3. In other words, the progressive method of this "FB755AX Quick Guide" guides the user in order from the start.
4. Thus, if you read this guide for the first time, you need to proceed chapter by chapter in order to correctly understanding its meaning.
5. It is better for a user to understand the overall functions of the FB755AX first and migrate to subsequent chapters to refer to the functions necessary for each chapter.

< Table of Contents >

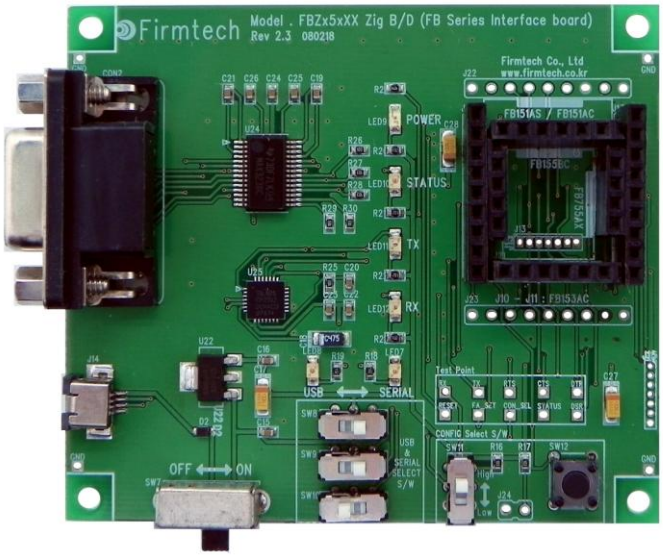
[0] Product Content

&

Installation

1. FB755AX Content

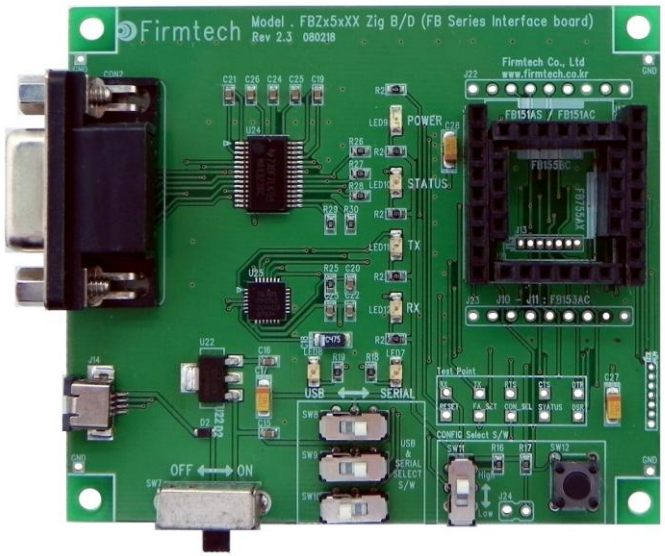
(1)Product Content in One Set of FB755AX-FB755AC-Type(1 Set)

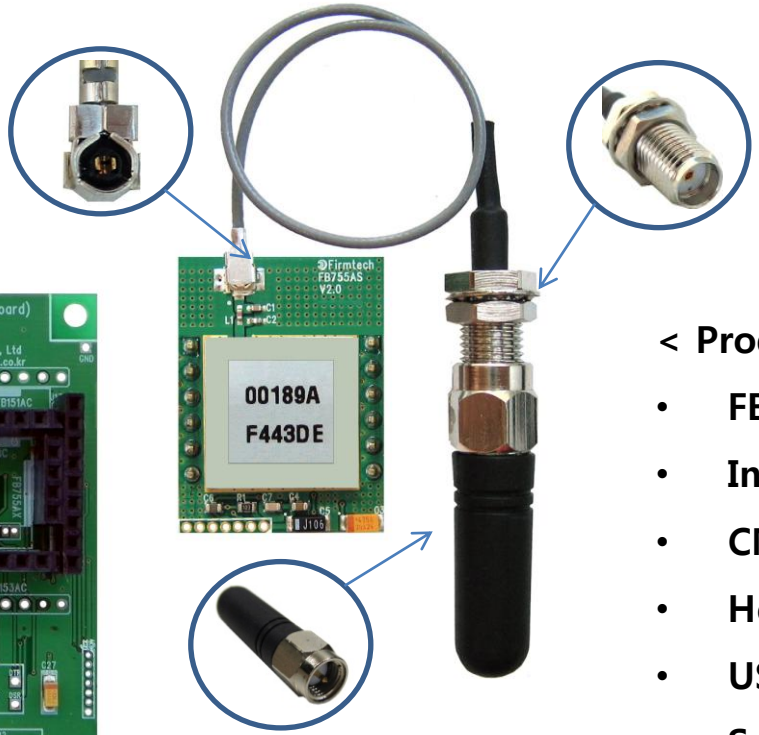


< Product Content in One Set >

- FB755AC
- Interface Board
- USB Power Cable
- Serial Cable

(2) Product Content in One Set of FB755AX-FB755AS-Type(1Set)

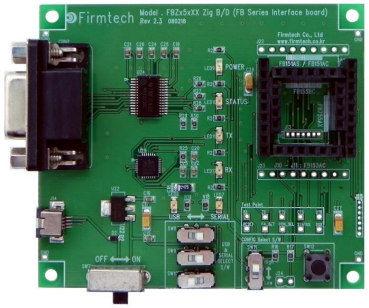




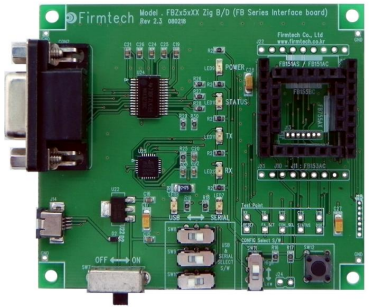
< Product Content in One Set >

- **FB755AS**
- **Interface Board**
- **CMP Cable**
- **Helical Antenna (1 dBi Gain)**
- **USB Power Cable**
- **Serial Cable**

(3) Configuration Using 2 Sets



1 Set for Master Setup

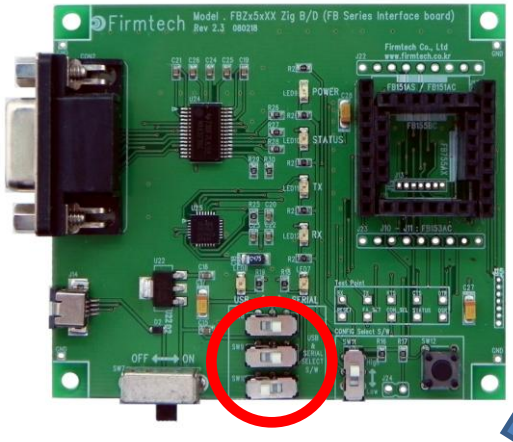


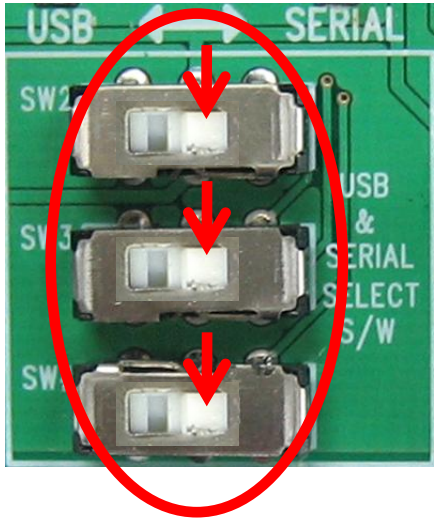
1 Set for Slave Setup

- **"FB755AX Quick Guide" uses two devices for explanation purpose.**

2. Checking Items Before Installing the FFB755AX Product Content

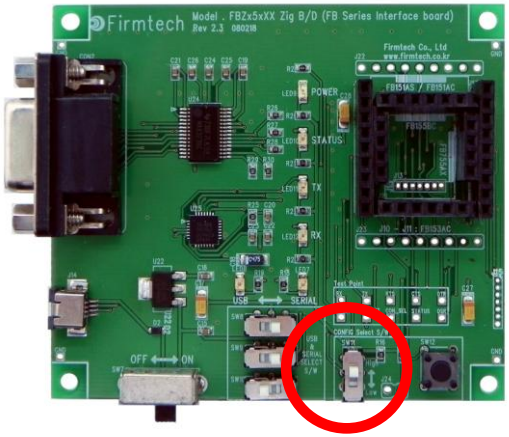
(1) UART Selection Switch

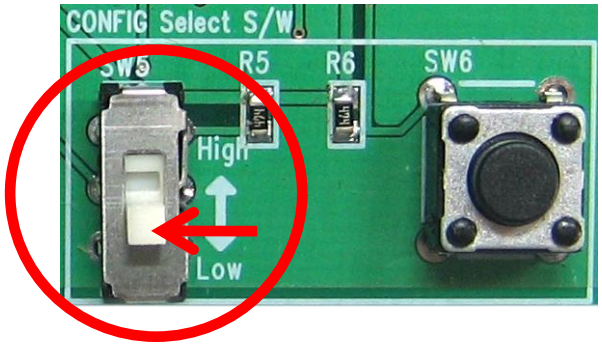




- Position the UART selection switch to Serial.
- Do the switch selection as above for all two interface boards.

(2) Configuration Selection Switch



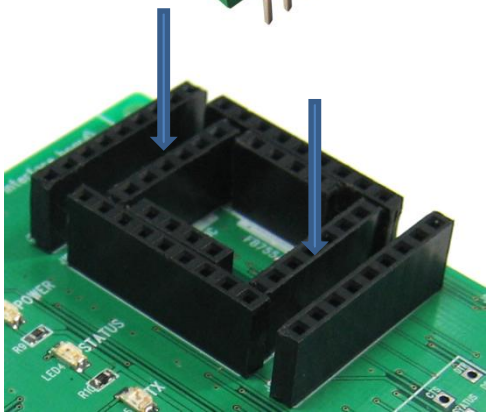


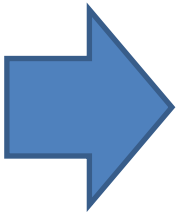
- **Position configuration selection switch to Low.**

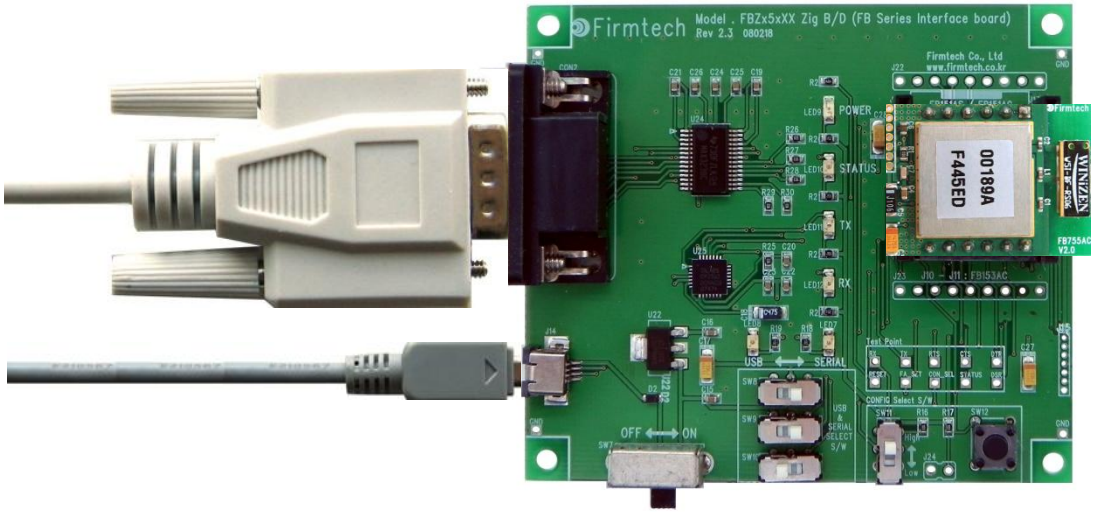
Do the switch selection as above for all two interface boards.

3. Installing the Product Content

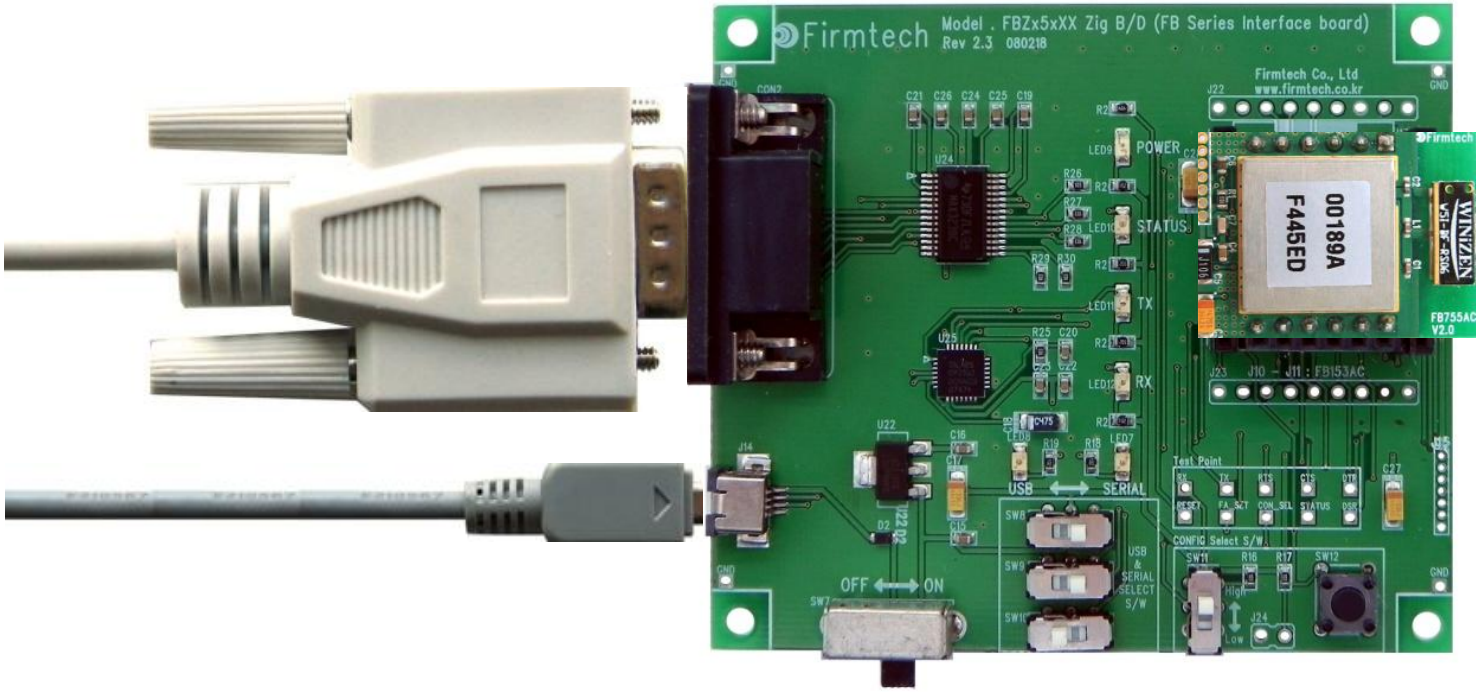
(1) FB755AX + Interface Board



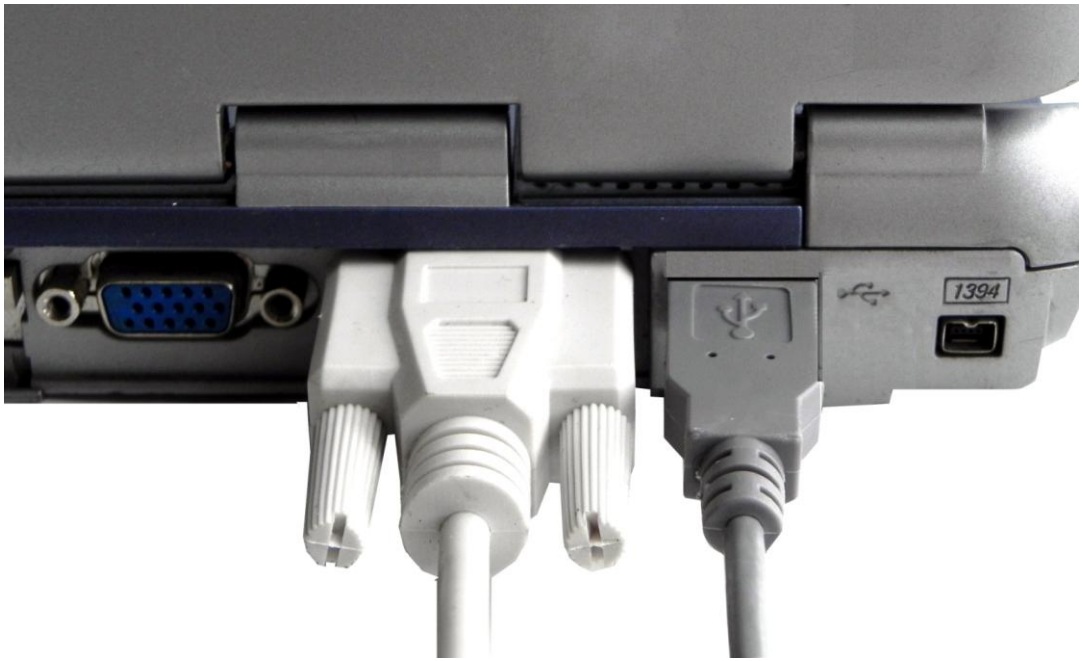




(2) Interface Board + USB Power Cable & Serial Cable



(3) PC + USB Power Cable & Serial Cable



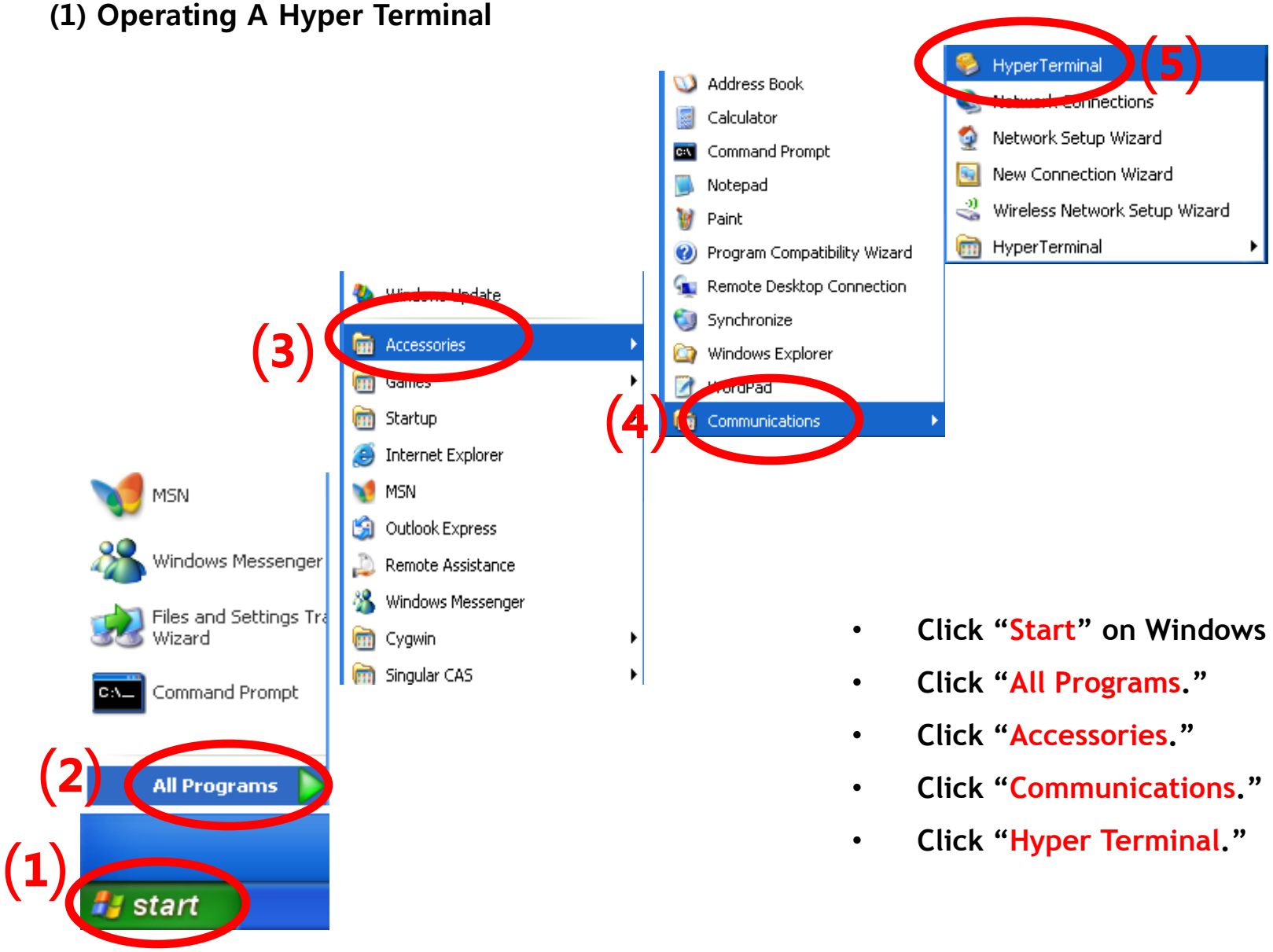
- **Connect all two FB755AX to a PC.**
- **In this "FB755AX Quick Guide,"two FB755AX are connected to one PC for convenient explanation.**

[1] Setup of Hyper Terminal

Checking the received data after progressing the setup by using hyper terminal.

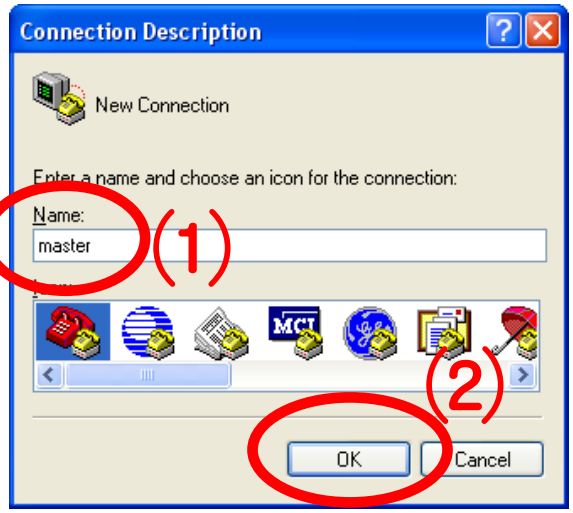
1. Running and Setup of Serial Communication Program(Hyper Terminal)

(1) Operating A Hyper Terminal



- Click “Start” on Windows Start menu.
- Click “All Programs.”
- Click “Accessories.”
- Click “Communications.”
- Click “Hyper Terminal.”

(2) Setup of Hyper Terminal-Name Setting

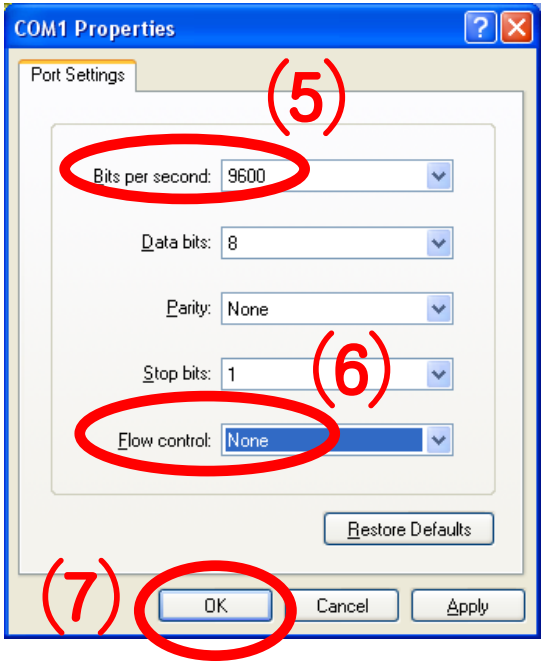


- Set up the hyper terminal connected to FB755AX to be set up to Master.
- Enter "Master" as a name.
- Click "OK" and proceed to the next step.

(3) Setup of Hyper Terminal- Port Setting

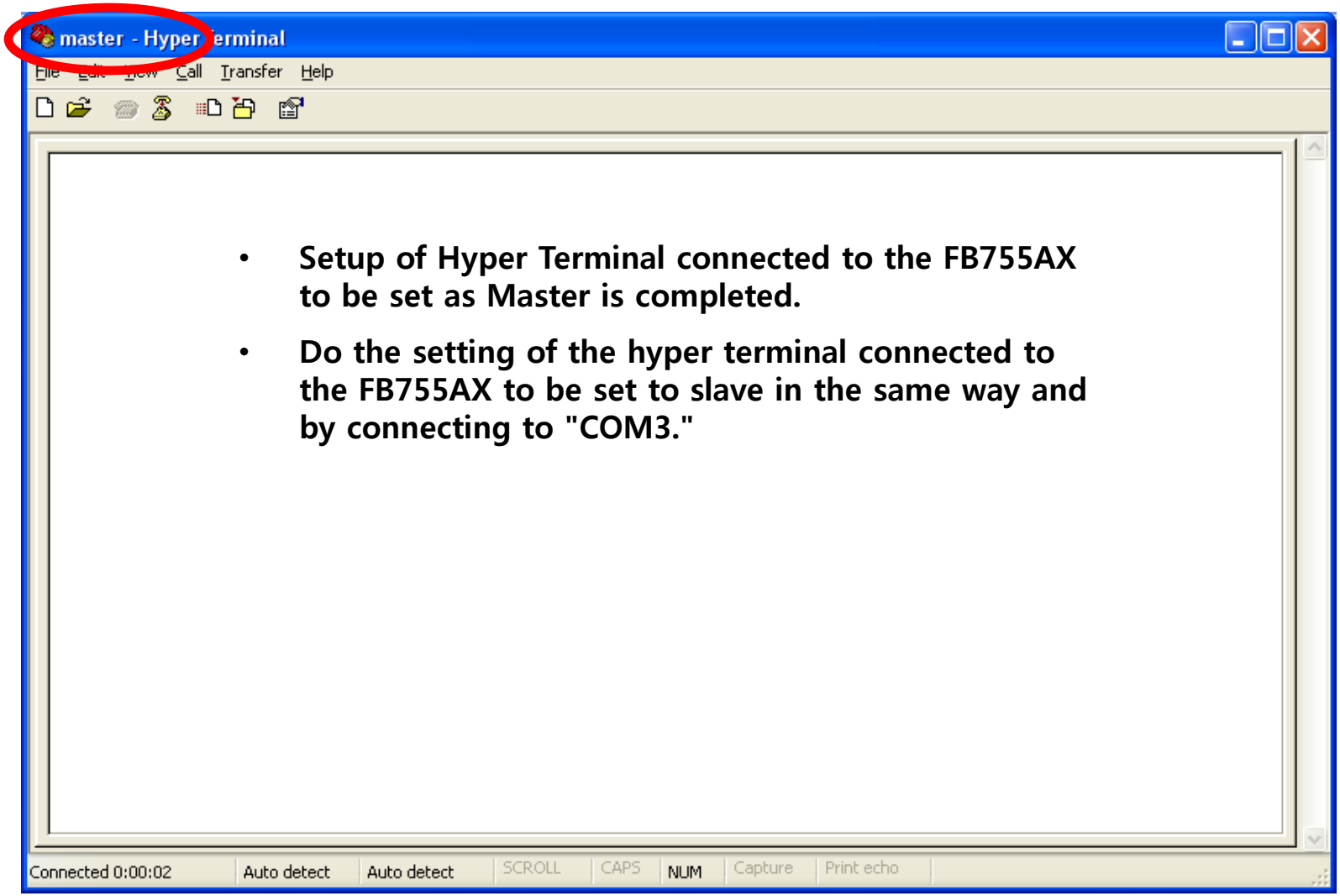
- Select a port to be connected to FB755AX set up to master. (Assumed here as 'COM1')
- Click "OK" and proceed to the next step.

(4) Setup of Hyper Terminal -Communication Speed, etc.



- Select "9600" for "Bits per Second".
- Select "None" for "Flow Control".
- No change for other items.
- Click "OK."

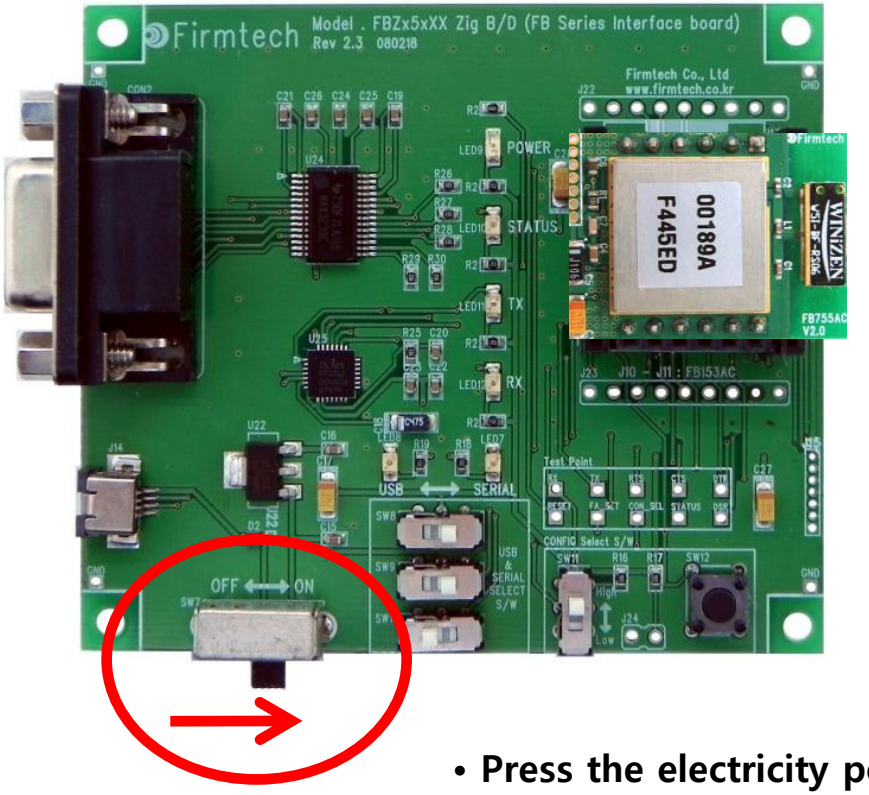
(5) Setup of Hyper Terminal - Finish



[2] Operating the FB755AX

1. Operating the FB755AX

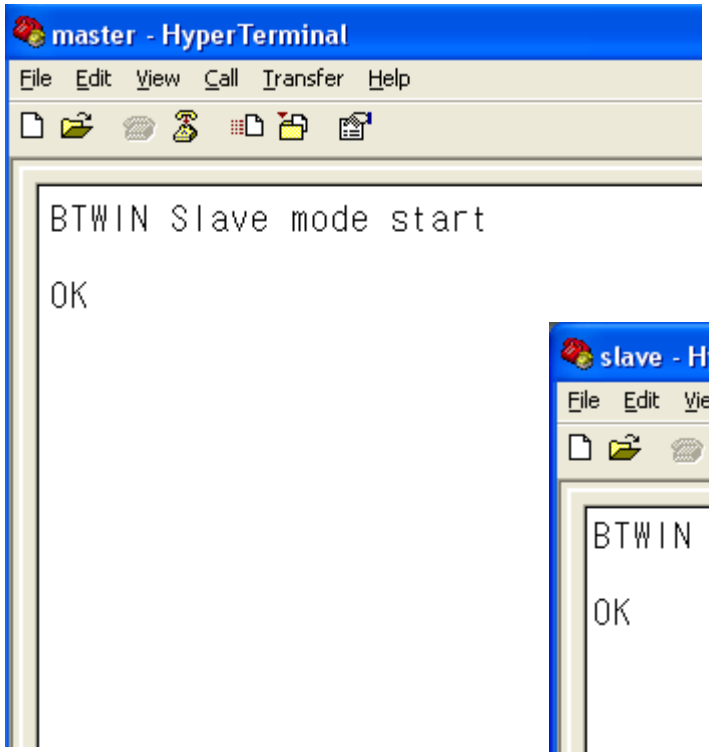
(1) Powering On the FB755AX

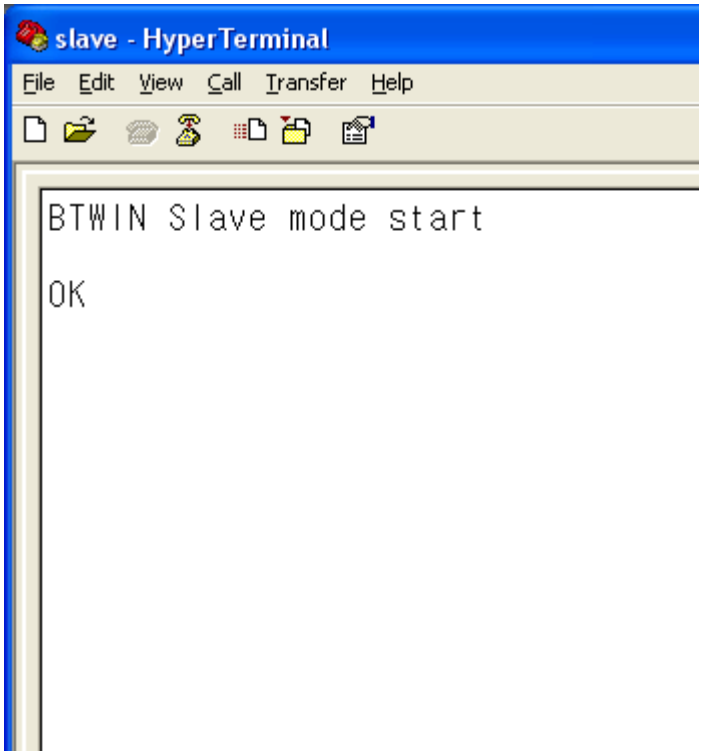


- Press the electricity power switch into ON.

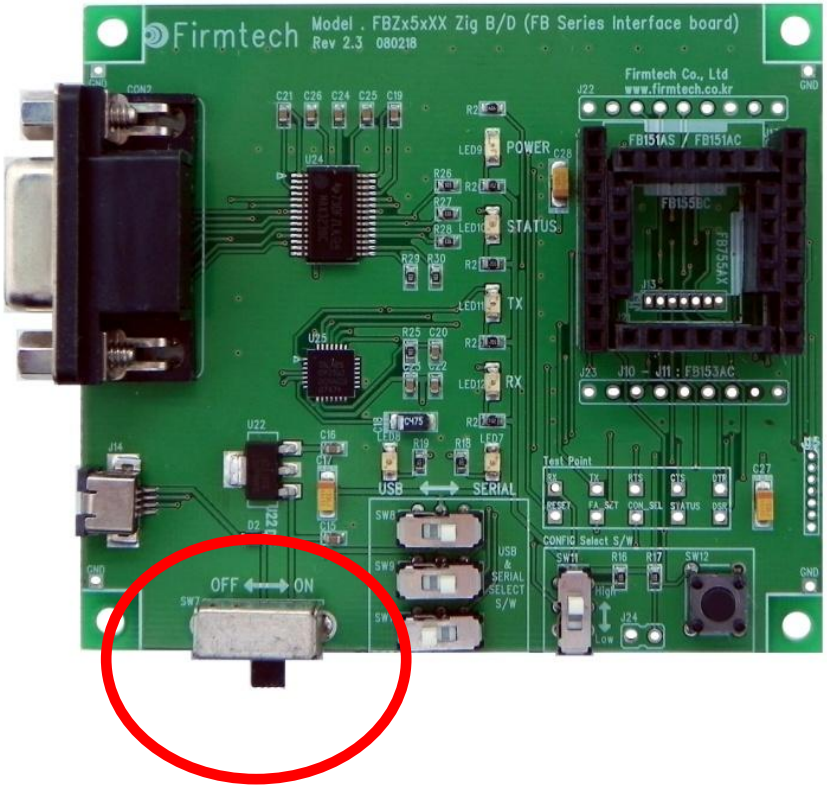
(2) Hyper Terminal Output Screen

- **Turn on the power switches of all two interface-boards.**
- **You can see “BTWIN Slave mode start” displayed on the screen.**
- **You can see "OK" message displayed on the screen.**



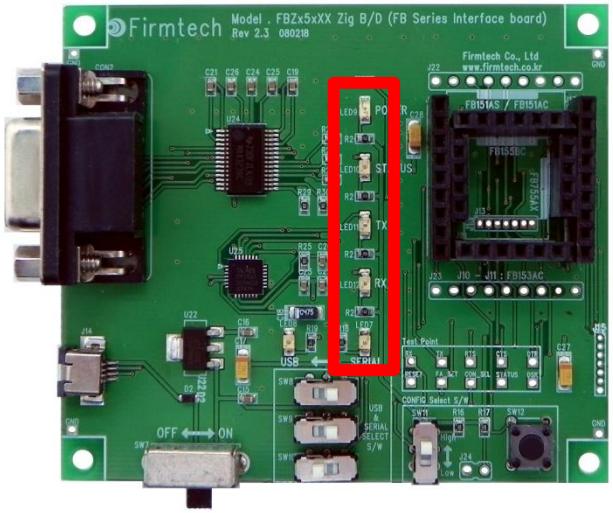


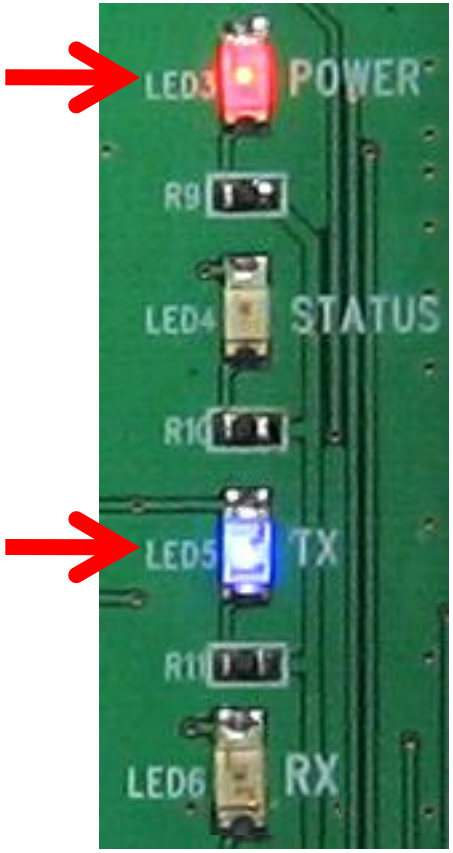
* Restarting the FB755AX



- If the FB755AX does not operate normally nor displayed any letter on the hyper terminal, restart the FB755AX.
- Restart the FB755AX by cycle-power(off and then on) on the interface board.
- Check the communication speed and other connection parameters as well.

* Normal Operating Status of POWER LED & TX LED

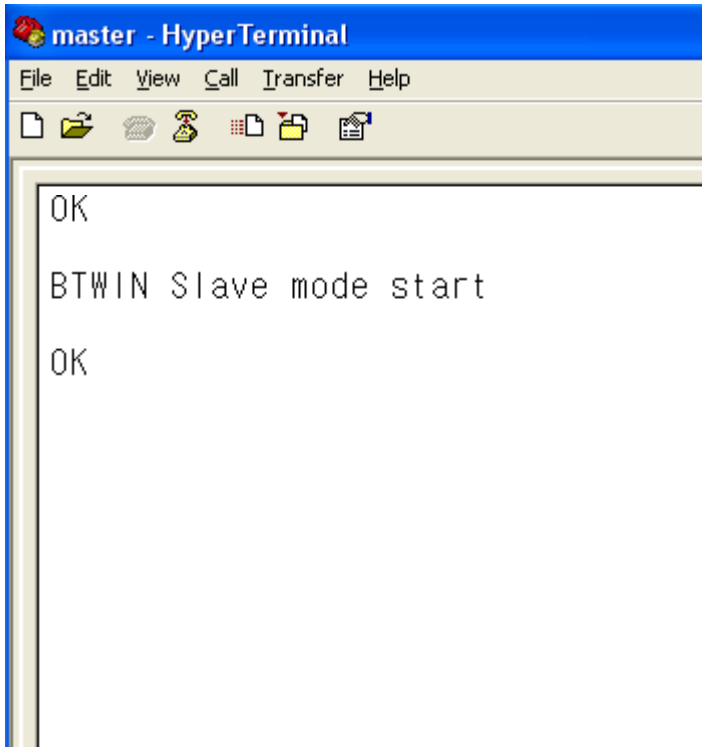




- If the electricity power is supplied normally, POWER LED remains to be ON.

- If operated normally, the TX LED blinks when a message is made from the FB755AX.

* Factory Reset Progress



Instructions Quick Guide is based on factory reset value.

If it is already used or in customized setting,

go to factory reset process as follows.

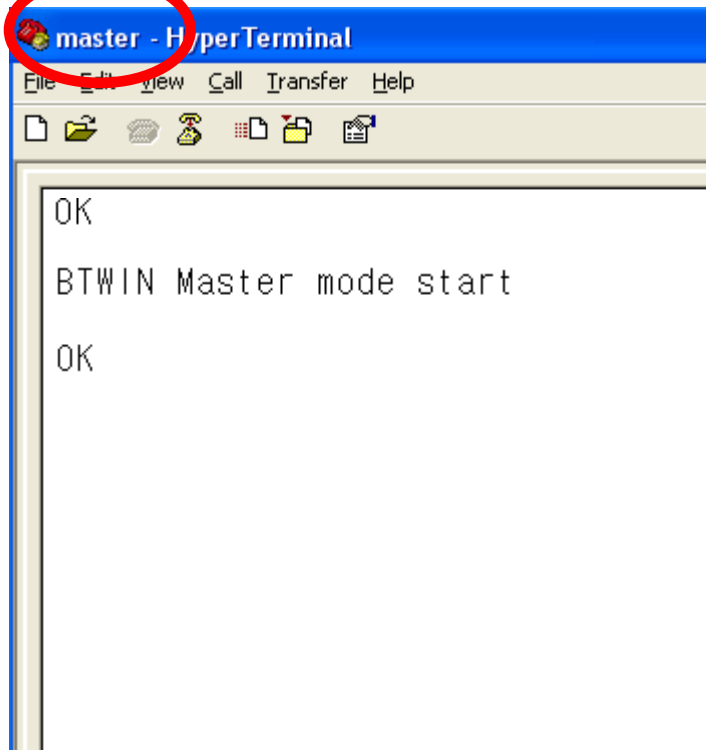
- **After entering "AT&F" on the hyper terminal, press enter-key.**
- **"OK" output is made from the FB755AX.**
- **FB755AX restarts.**
- **“BTWIN Slave mode start” output is made from FB755AX.**
- **"OK" output is made from the FB755AX.**

- **Factory Reset Process is now completed.**

[3] Setup of Master & Slave

1. Setup Progress Using AT Command

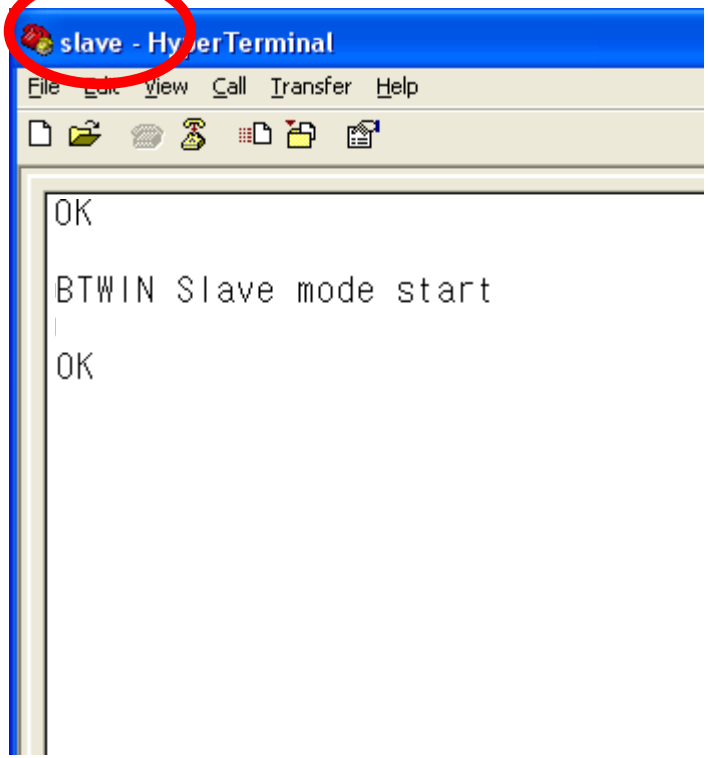
(1) FB755AX master setup



Enter the followig on the hyper terminal connected to the FB755AX set up to Master.

- After entering "AT+BTROLE=M" on the hyper terminal, press enter-key.
- "OK"output is made from the FB755AX.
- After entering "ATZ" on the hyper terminal, press enter-key.
- FB755AX restarts.
- “BTWIN Master mode start” output is made from the FB755AX.
- "OK" output is made from the FB755AX.
- Master setup is completed.

(2) FB755AX Slave Setup

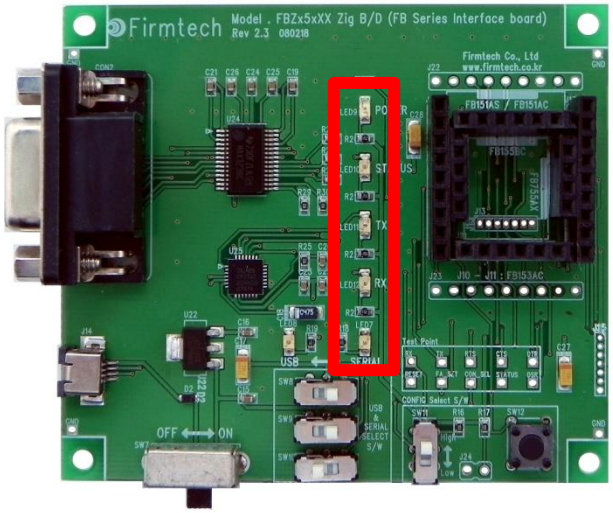


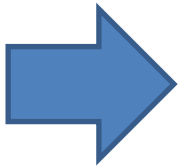
Enter the following on the hyper terminal connected to the FB755AX set up to Slave.

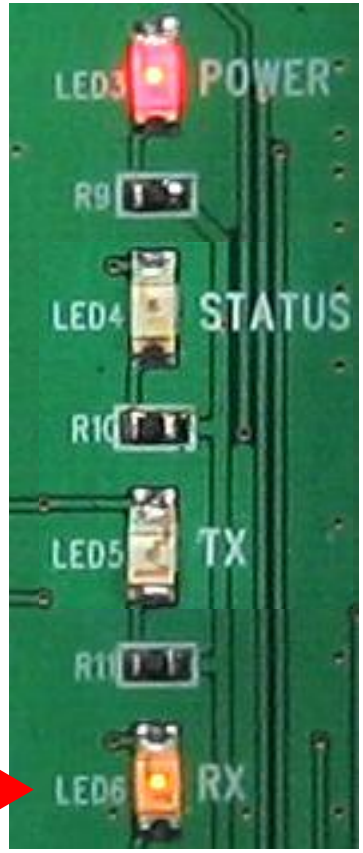
- After entering "AT+BTROLE=S" on the hyper terminal, press enter-key.
- "OK" output is made from the FB755AX.
- After entering "ATZ" on the hyper terminal, press enter-key.
- FB755AX restarts.
- "BTWIN Master mode start" output is made from the FB755AX.
- "OK" output is made from the FB755AX.

- Slave setup is completed.
- In case of factory reset value, slave is basically setup(No need to be changed here)

*** RX LED Condition**





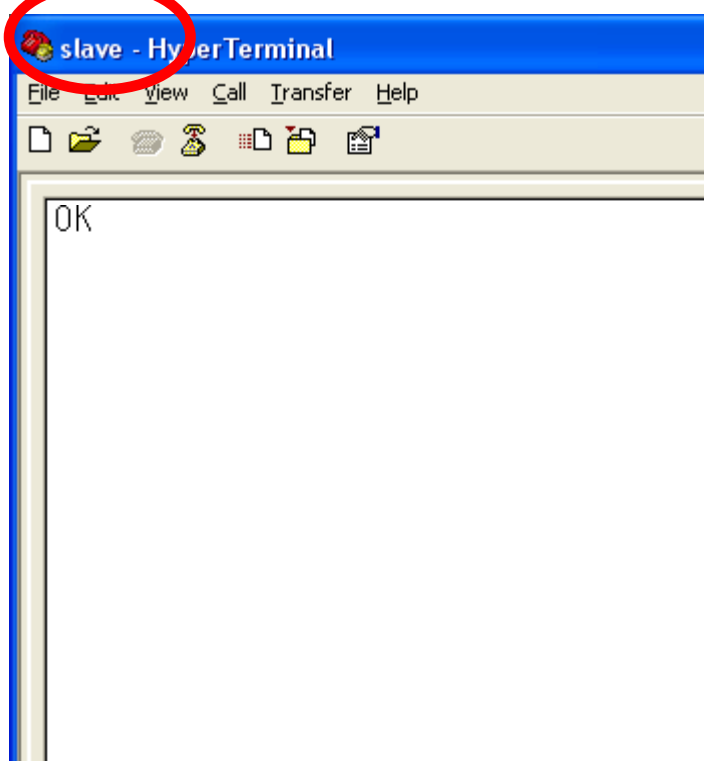


- **RX LED blinks when a serial data(AT Command) input is made from FB755AX.**

[4] Scan & Inquiry & Connect

1. Operation Progress Using AT Command

(1) Slave Scan Start



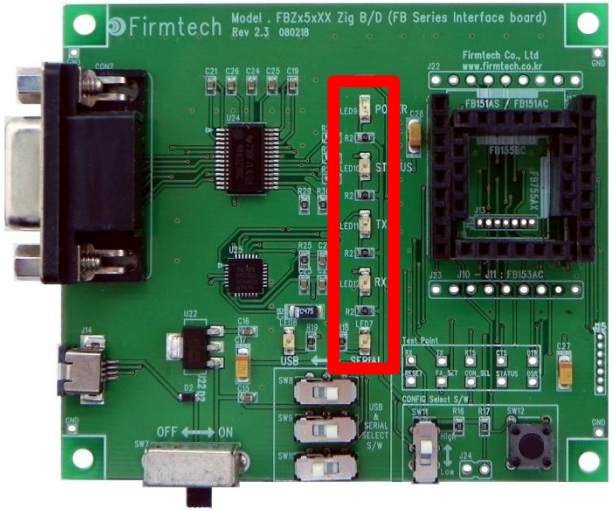
Enter the followig on the hyper terminal connected to the FB755AX set up to Slave.

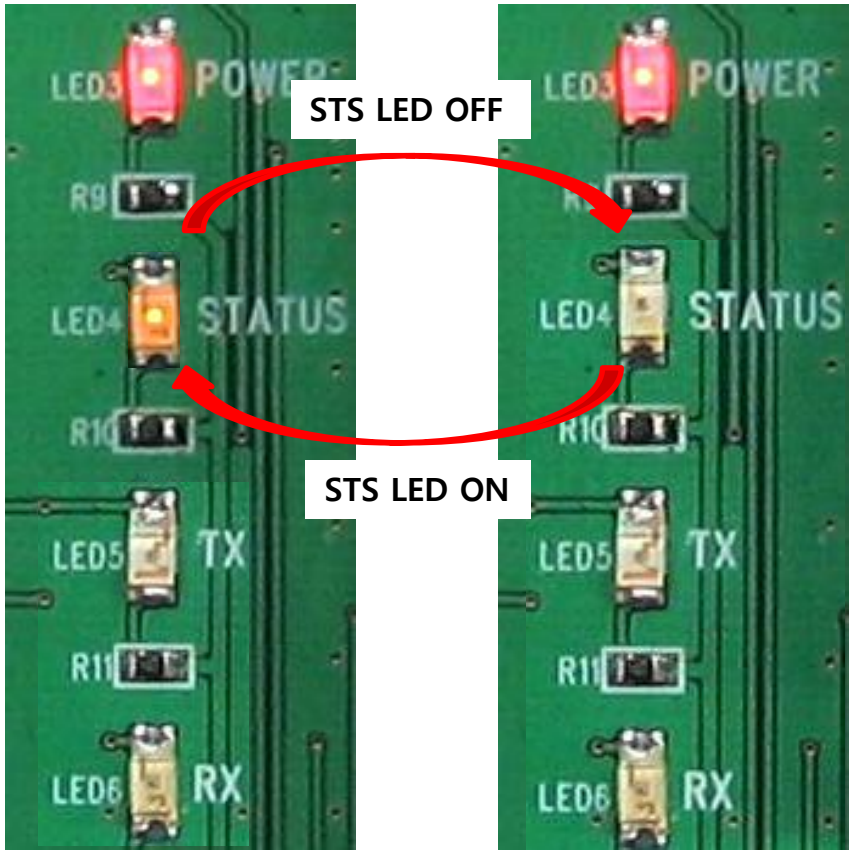
- After entering "AT+BTSCAN" on the hyper terminal, press enter-key.
- "OK"output is made from the FB755AX.

- Slave setup FB755AX transmits its information when a master scans.

- The slave does not send its information to the master unless the slave is in scanning. Namely, the master is not able to scan the slave -device in the condition.

* Status LED condition of slave in scanning

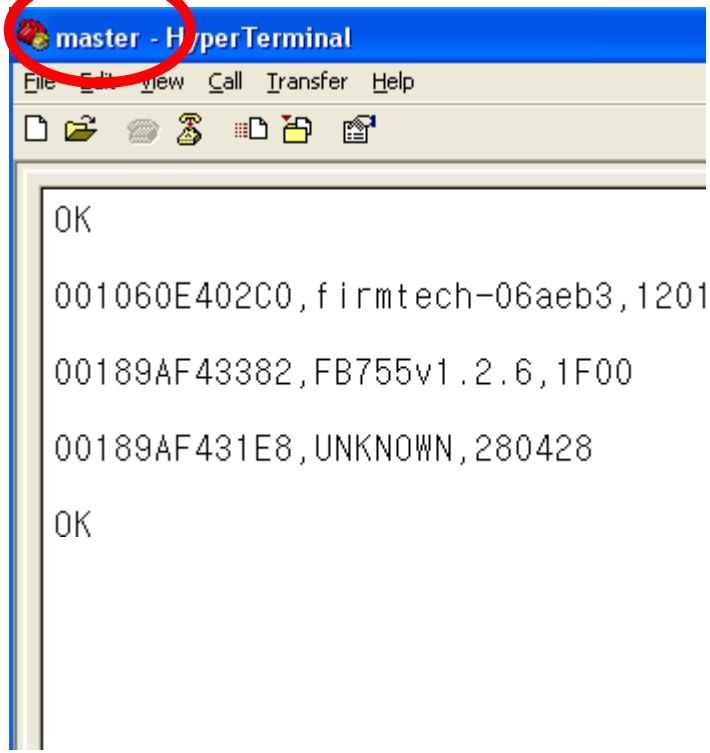




- If FB755AX is scanning, the status LED blinks once in every one second.

- The Status LED blinks continuously until Scan command is cancelled.

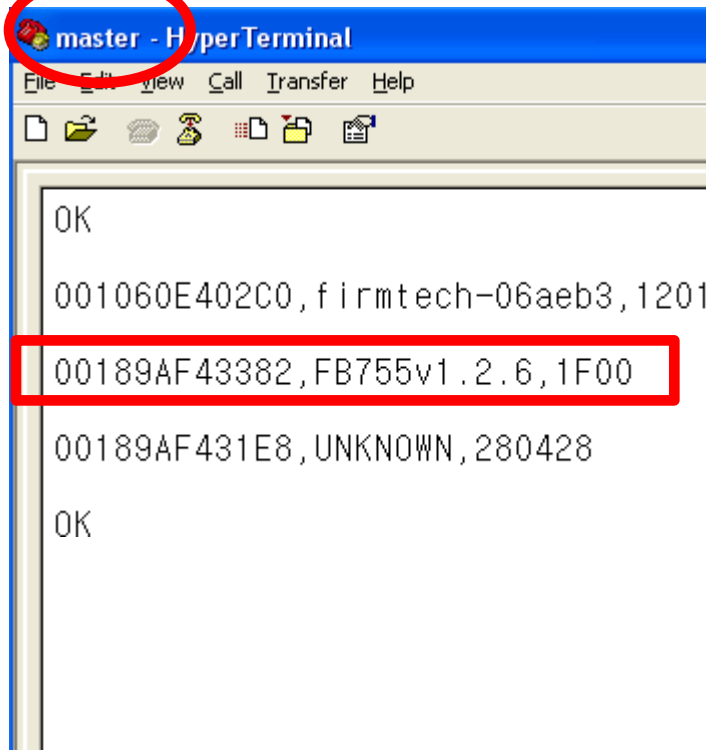
(2) Master Inquiry Start



Enter the following on the hyper terminal connected to the FB755AX set up to master.

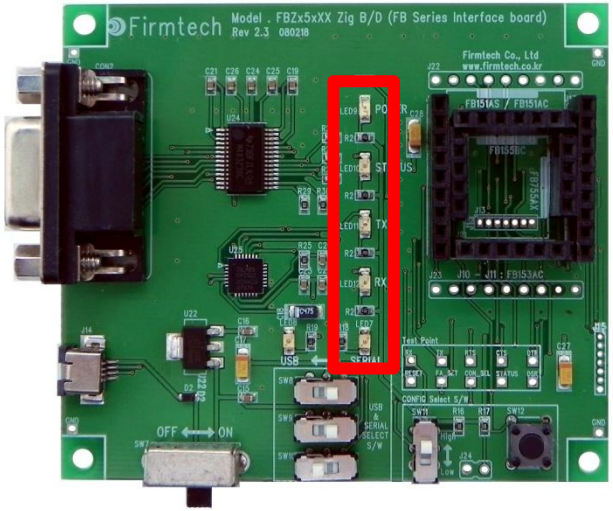
- **After entering "AT+BTINQ?" on the hyper terminal, press enter-key.**
- **"OK" output is made from the FB755AX.**
- **Soon, information-output of Bluetooth slave devices located close is made from FB755AX.**
- **"OK" output is made from the FB755AX.**
- **Output can be made from various kinds of devices as cellular phone, PC, PDA etc.**

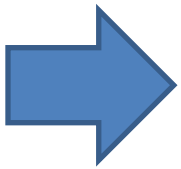
(3) Scan device output content

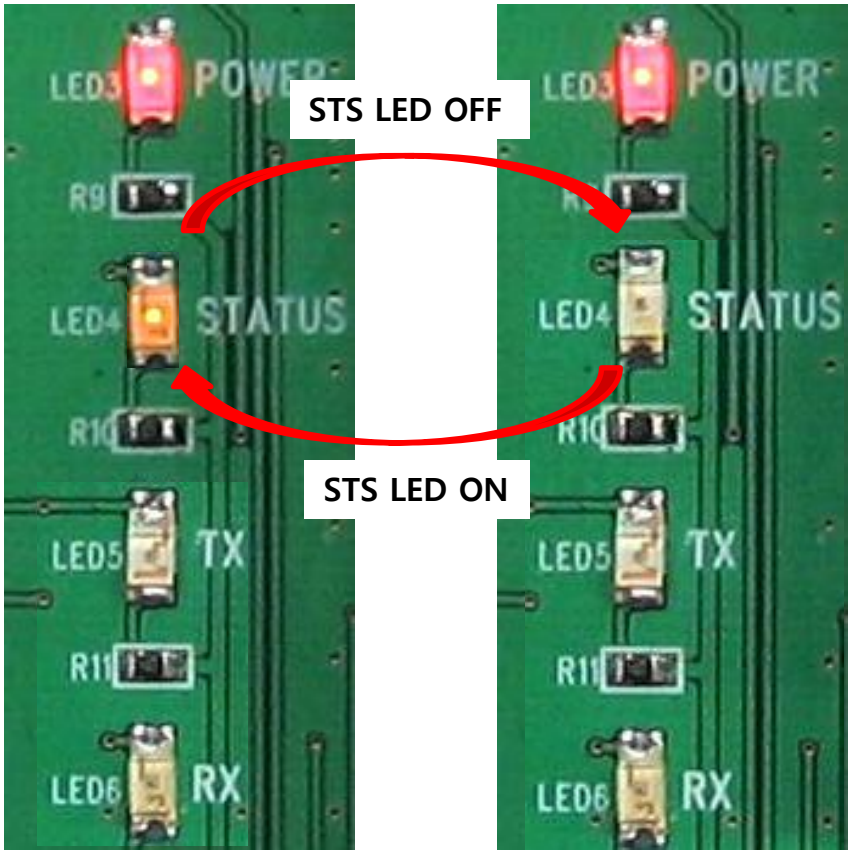


- "00189AF43382" means address of scanned device.
- "FB755v1.2.6" shows a name of scanned device.
- "1F00"show Class of Device.
- By using Bluetooth Address of "00189AF43382", the connection between devices can be progressed.
- Since device name, "FB755v1.2.6" supports SPP, it is regarded as a device capable for SPP connection.
- Whether other devices can be connected to it or not depends on recognizing profiles that are supported by the devices.

* **Status LED condition of master in inquiring**

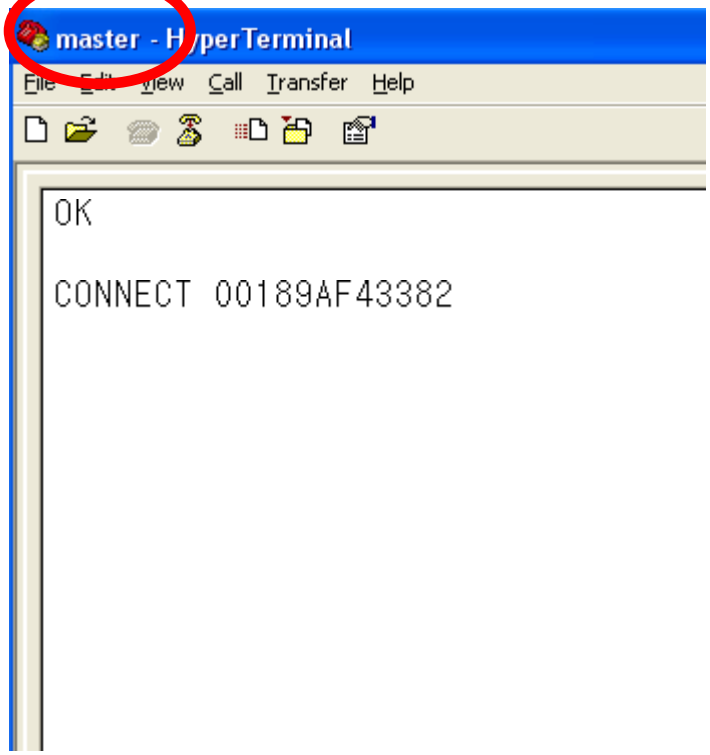






- **While FB755AX is inquiring, the status LED keeps blinking rapidly.**
- **Inquiry command is automatically cancelled after a certain time.**
- **When the inquiry command is cancelled, LED status keeps OFF.**

(3) Connect

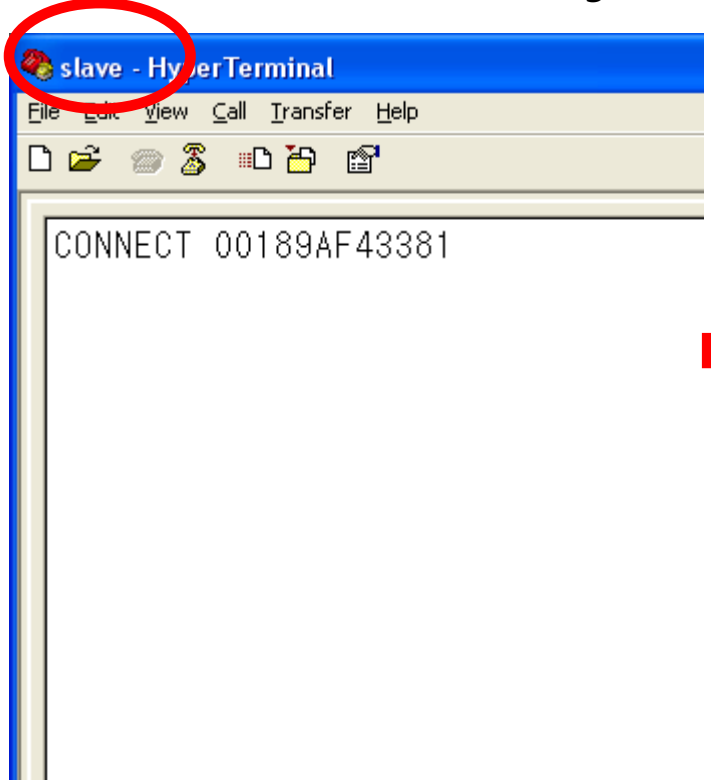


Enter the following on the hyper terminal connected to theFB755AX set up to master.

- After entering"ATD00189AF43382" on the hyper terminal, press enter-key.
- "OK"output is made from the FB755AX.
- "CONNECT 00189AF43382"output is made from the FB755AX.

- Bluetooth Address displays the connection with "00189AF43382" devices.
- master & slave connection is finished.

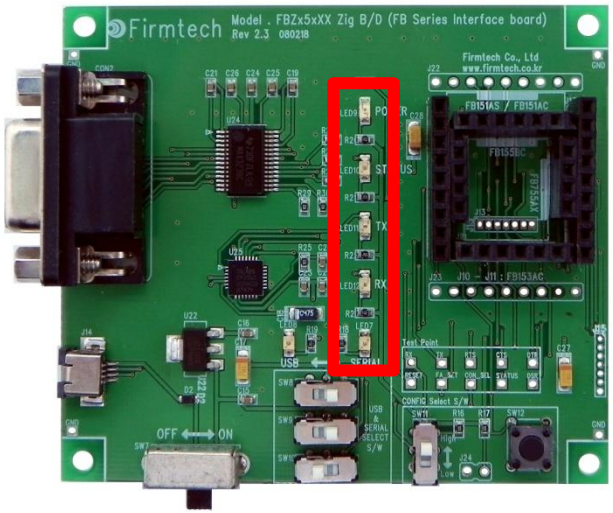
(4) slave Device Connect Message

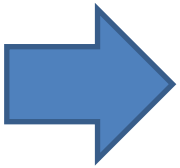


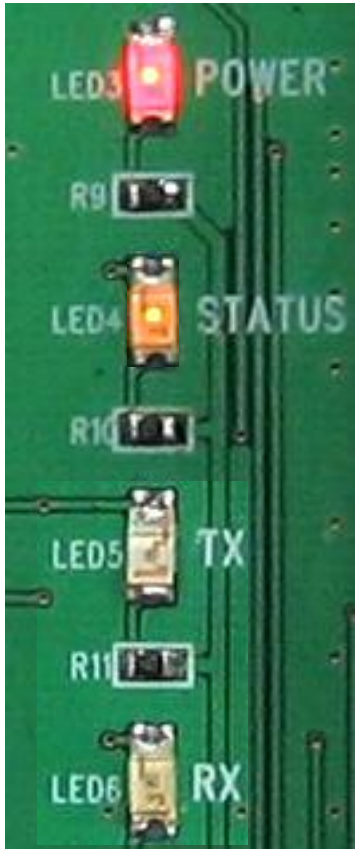
In case of master & slave connection, the following is displayed on the hyper terminals connected FB755AS set up to slave.

- "CONNECT 00189AF43381"output is made from the FB755AX.
- Bluetooth Address displays the connection with "00189AF43381"devices.

*** Connectted Status LED Condition**





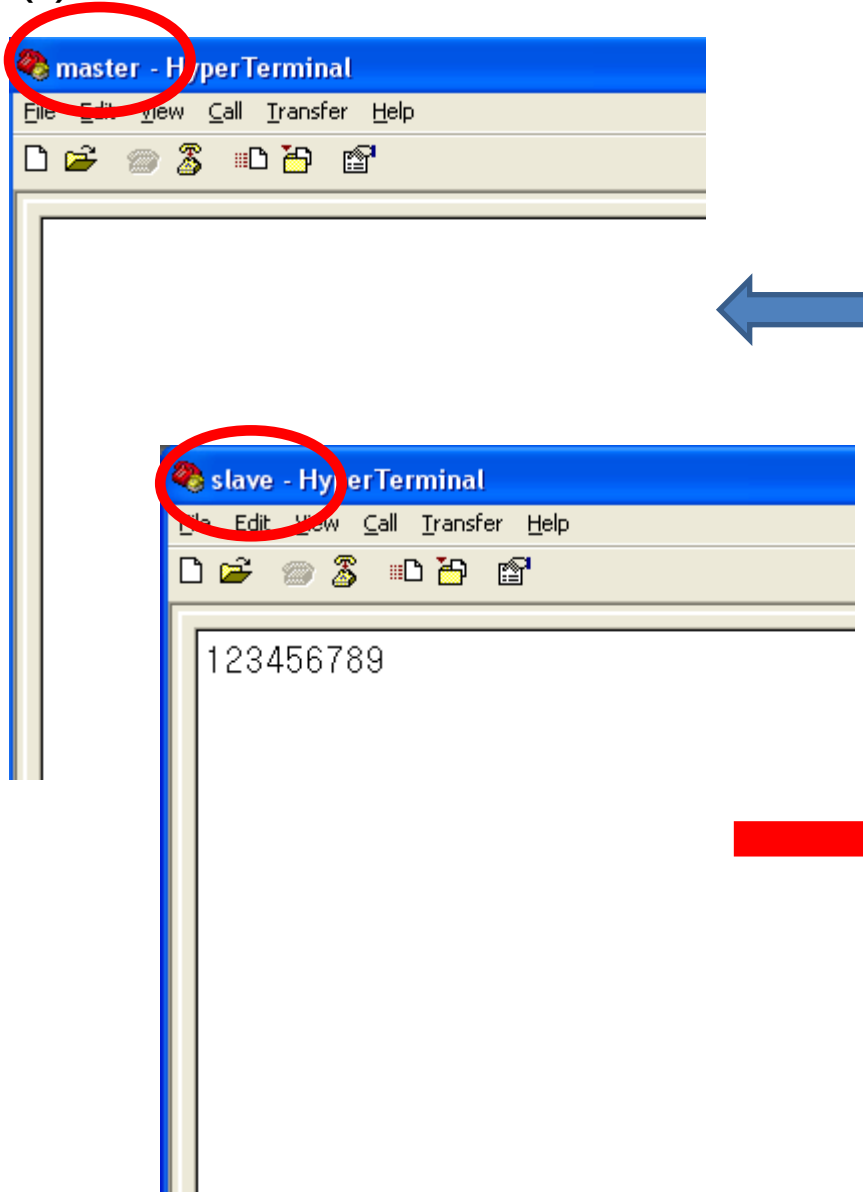


- **Status LED maintains ON condition when FB755AX master/slave is connected.**

[5] Serial Data Transmission

1. Serial Data Transmission

(1)Serial Data Transmission From Master => Received by slave



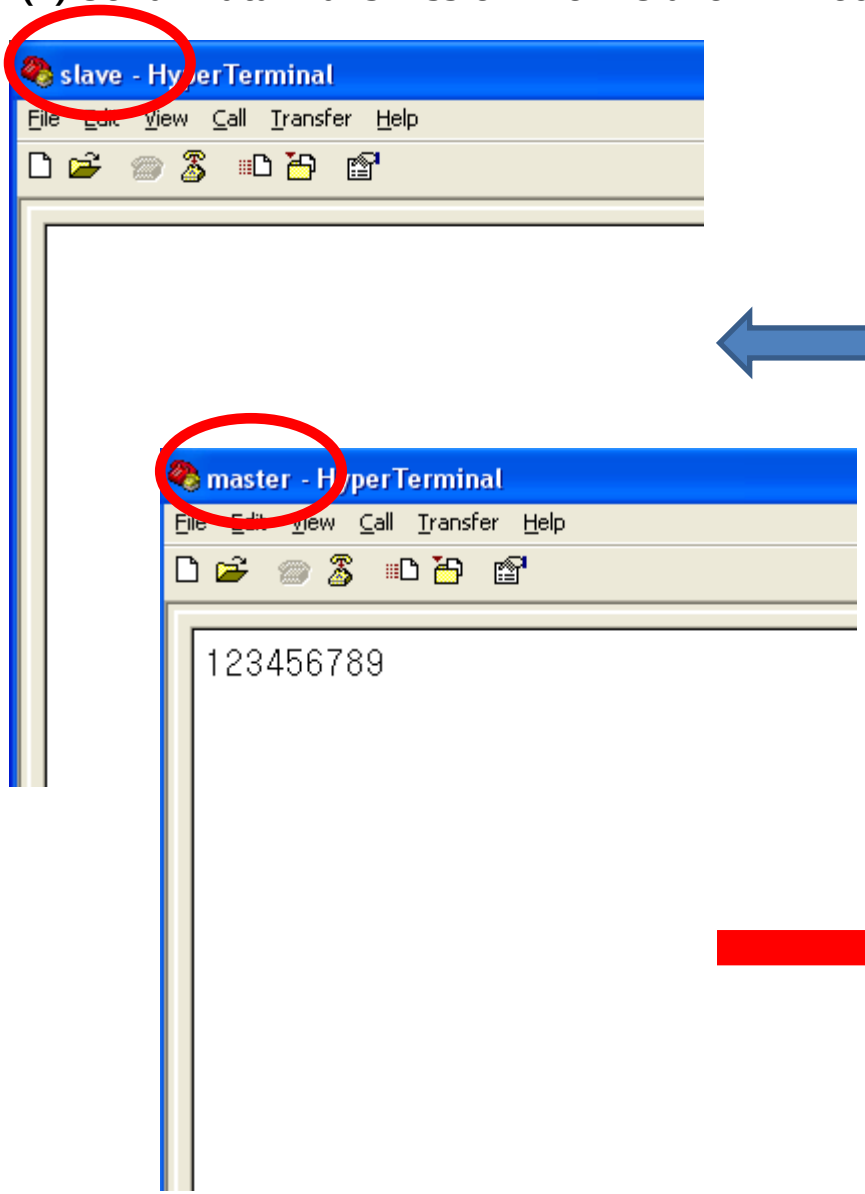
Enter as follows on the hyper terminal connected the FB755AX set up to master.

- Enter “123456789” on the hyper terminal.
- Input data is not displayed on the screen of the hyper terminal.

The following output is displayed on the hyper terminal connected to FB755AX set up to slave.

- “123456789”is displayed on the screen of the hyper terminal.

(2) Serial Data Transmission From Slave => Received by Master



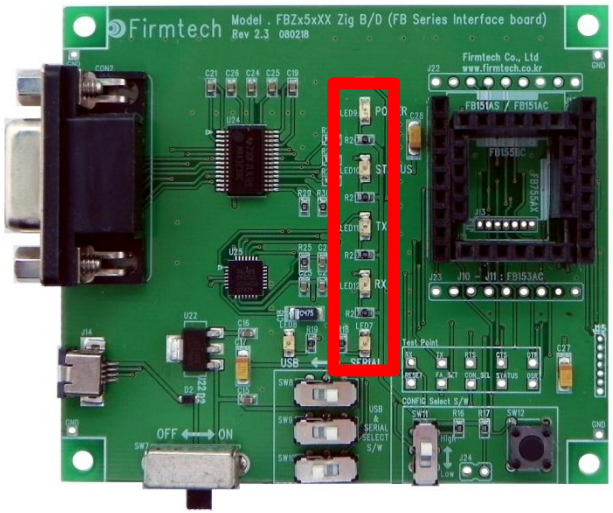
Enter as follows on the hyper terminal connected the FB755AX set up to slave.

- Enter “123456789” on the hyper terminal.
- Input data is not displayed on the screen of the hyper terminal.

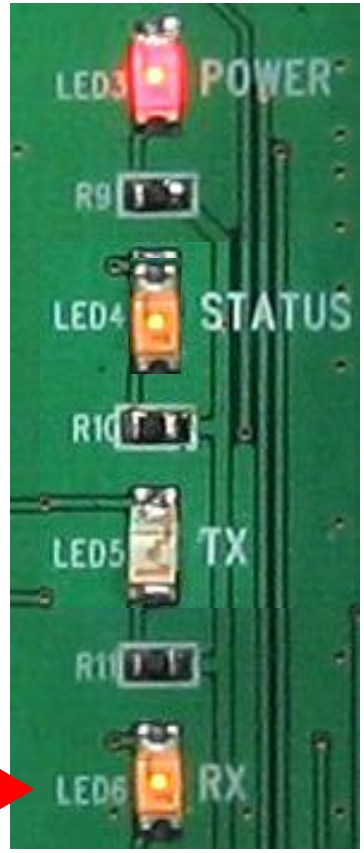
The following output is displayed on the hyper terminal connected to FB755AX set up to master.

- “123456789”is displayed on the screen of the hyper terminal.

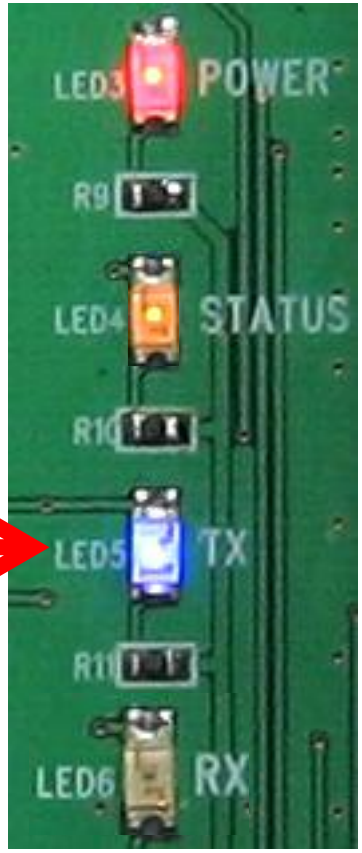
*** TX/RX LED Status on data transmission & reception**



- **STATUS LED is OFF when master & slave are connected.**
- **FB755AX RX LED blinks when a real data is enterred.**
- **FB755AX TX LED blinks when a serial data is output.**



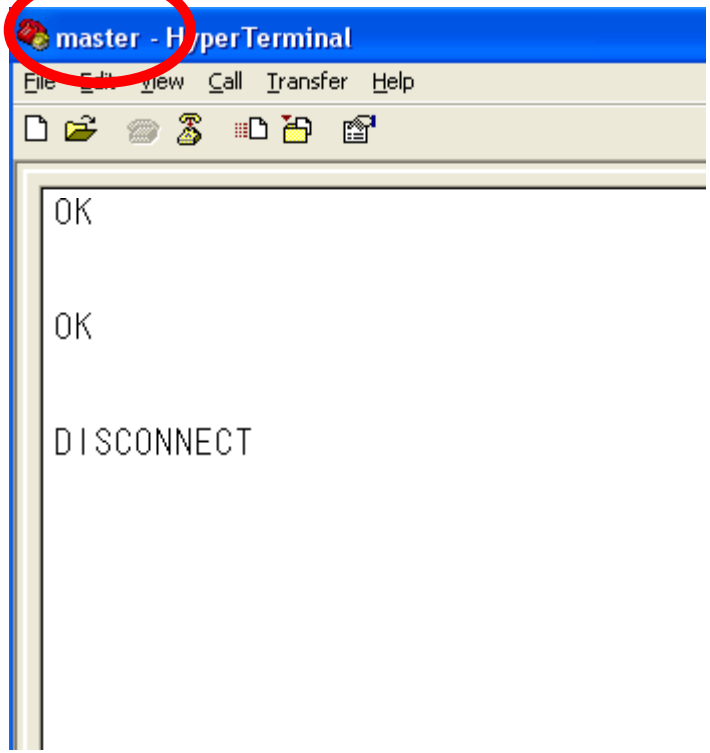
<Serial Data Input>



<Serial Data Output>

[6] Disconnect

(1) Operation Mode => AT Command Mode Conversion

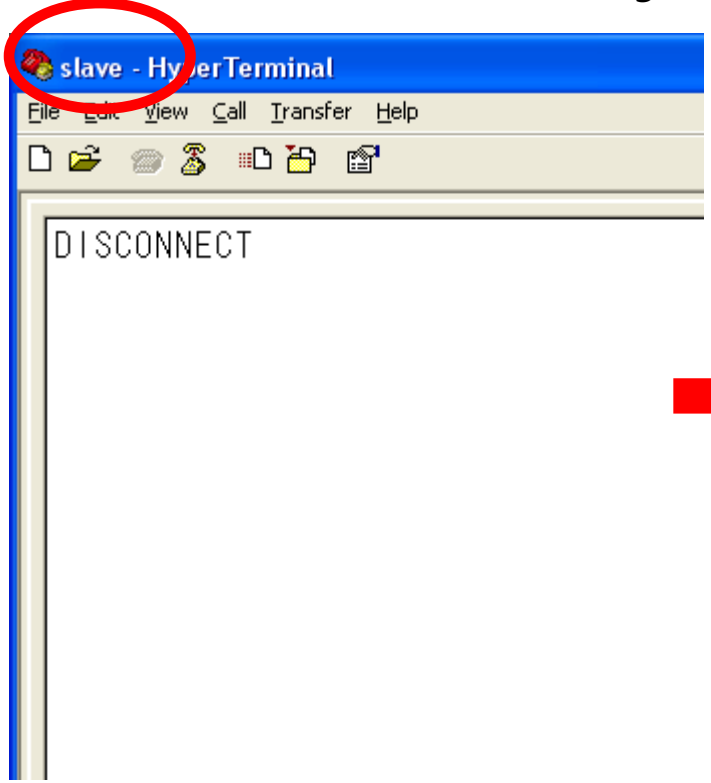


Enter as follows on the hyper terminal connected to the FB755AX set up to master

- Enter “+++” on the hyper terminal.
- "OK" output is made from the FB755AX.
- Enter “ATH” on the hyper terminal.
- "OK" output is made from the FB755AX.
- "DISCONNECT" output is made from the FB755AX.

- Conversion from Operation Mode to AT Command mode is possible only at master.
- Connection-finish by using a command is possible only at master.

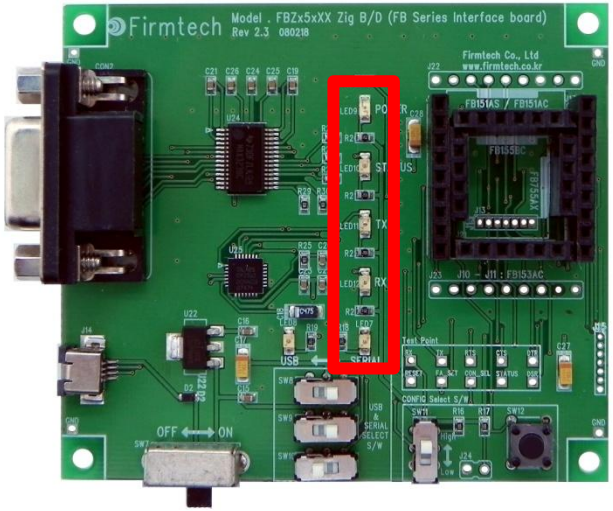
(2) slave Device Disconnect Message

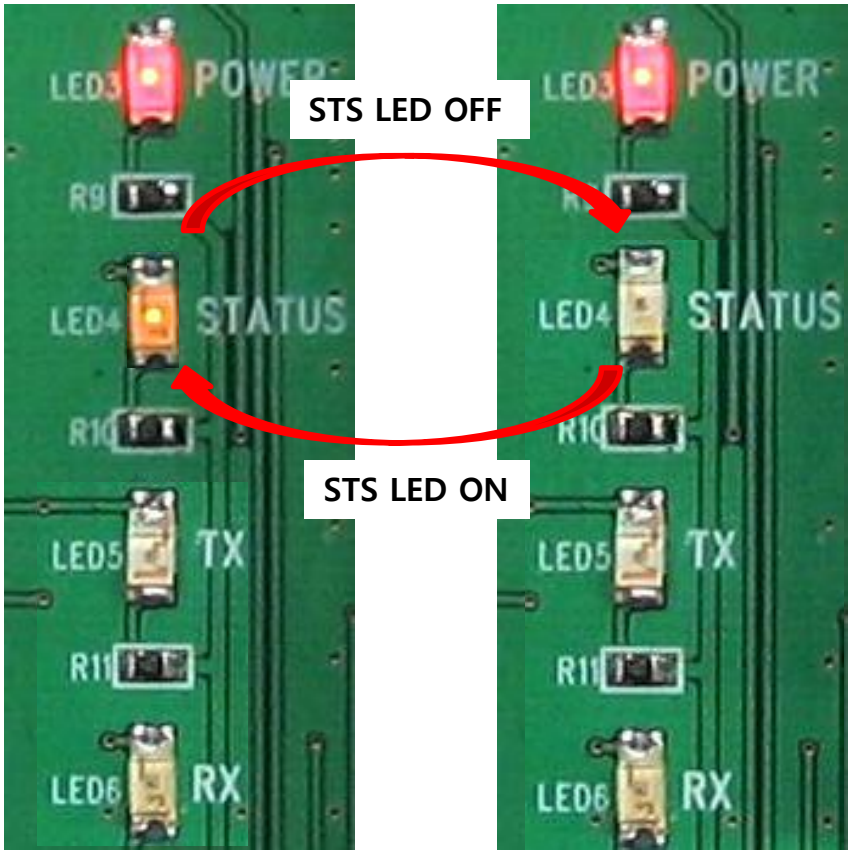


If master & slave connection is finished, the followings are displayed on the hyper terminals connected FB755AX set up to slave.

- **"DISCONNECT" output is made form the FB755AX.**
- **Input data is transmitted to master device and a serial output is made out from master device when enter "+++" or AT Command on FB755AX set up to slave under the condition of master & slave connection.**
- **Slave device can not use AT command mode under the condition of master & slave connection.**

* Status LED Condition After Disconnect



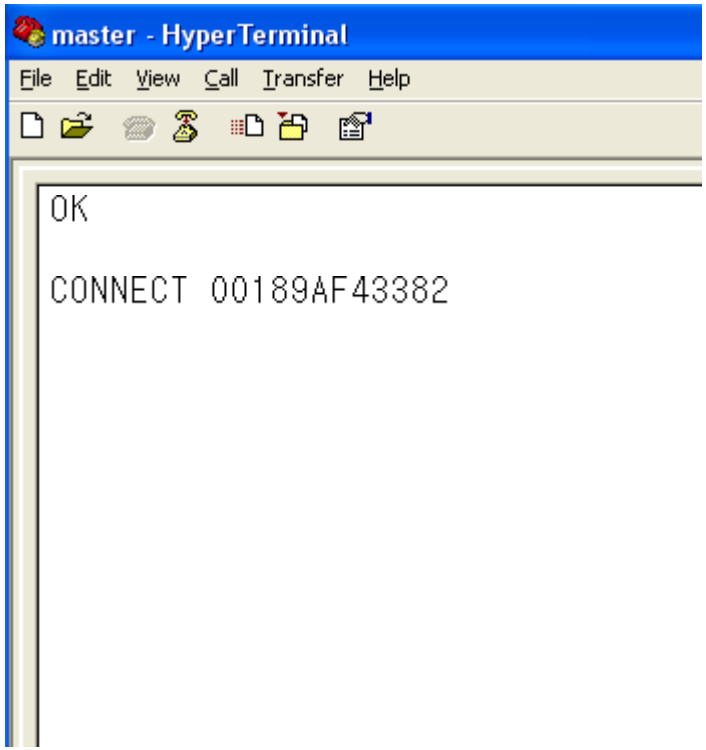


< STATUS LED condition of slave device >

- **STATUS LED is OFF when FB755AX master is disconnected.**
- **Status LED blinks once in every one second when FB755AX slave is disconnected. (on operating a scan-command)**

[7] Re-connect

(1) Re-connect



Enter the followings on the hyper terminal connected to FB755AX set up to master, in case of connecting previous connected device again.

- After entering “ATD” on the hyper terminal, press enter-key.
- "OK" output is made from the FB755AX.
- “CONNECT 00189AF43382” output is made from the FB755AX.
- Connected again with previous connected device

In case of connecting with a device connected more than once previously, it keeps a memory of Bluetooth Address for previous lastly connected device.
In case of connecting with new device, please do progress a connection as explained the above. However, in order to connect (reconnection) with previous connected device, the connection with previously memoried Bluetooth Address is progressed.

For even more details, please refer to FB755AX user mannual.

[x] USB2Serial Driver Installation

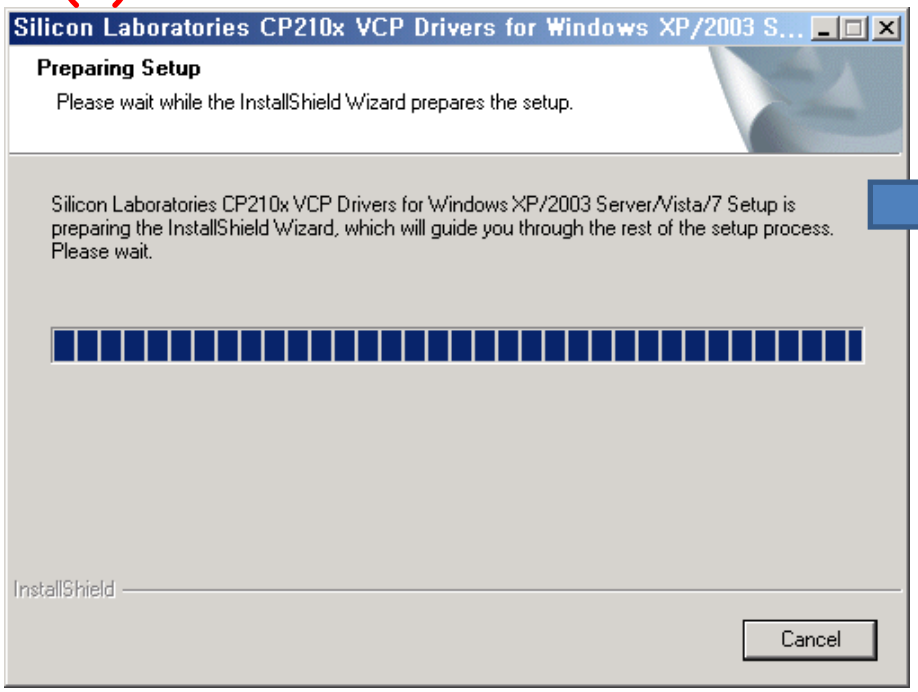
1. USB2Serial Driver Installation Setup

(1) Step 1

(1) CP210x_VCP_Win_XP_S2K3_Vista_7.exe

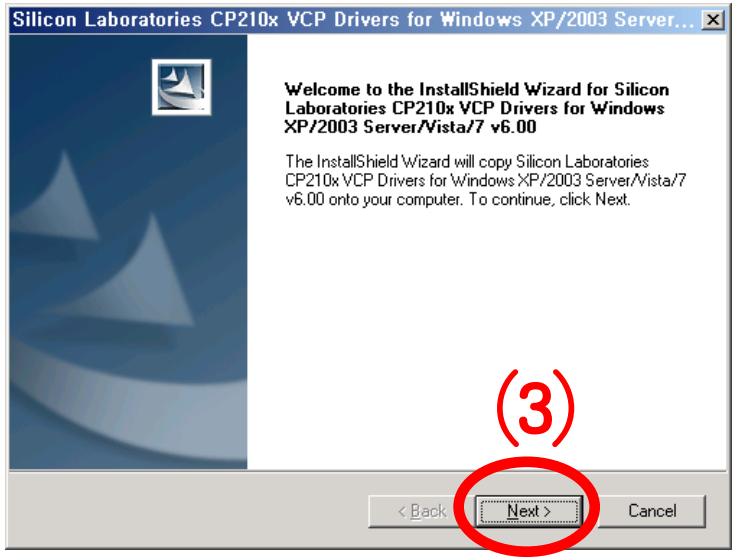
Doubleclick driver execution file.

(2)

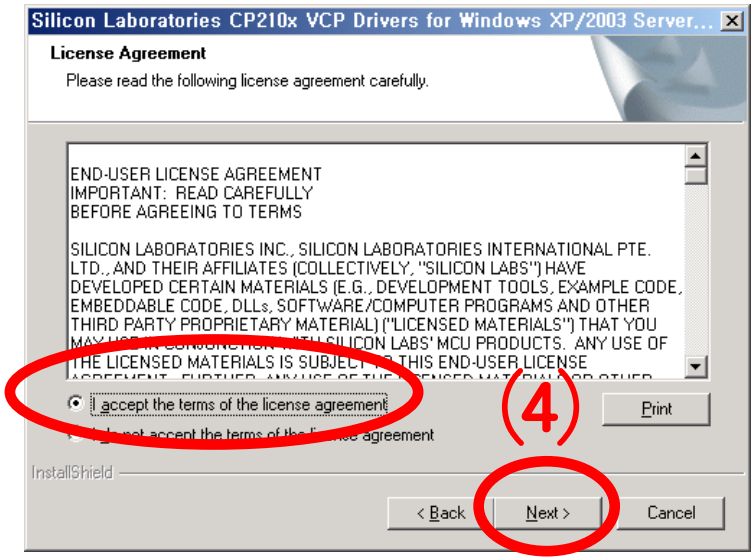


Reset for driver-setup is progressed

(2) Step 2



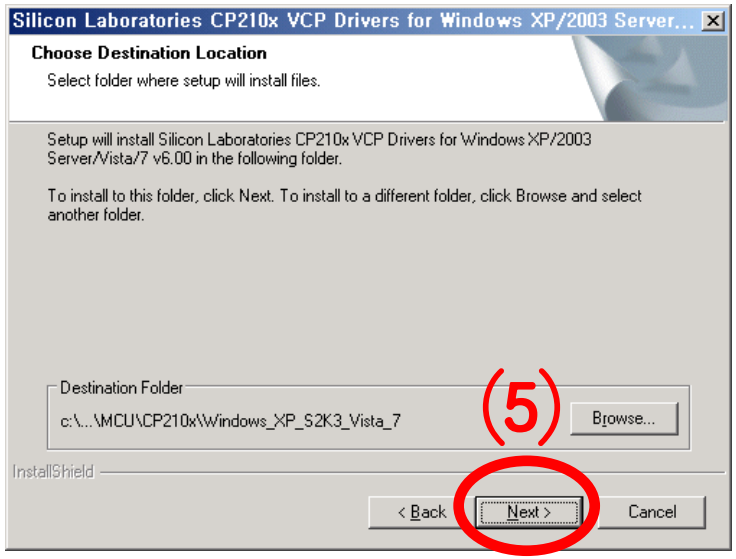
Click Next.

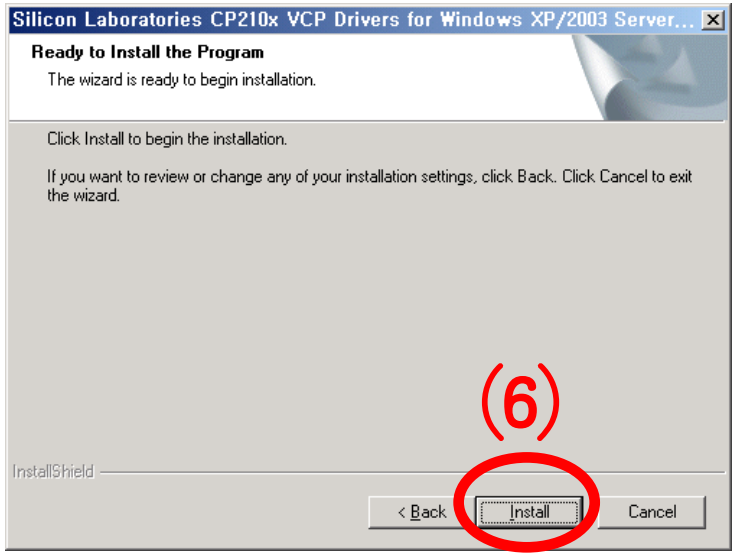


Choose Accept.

And then, Click Next.

(3) Step 3

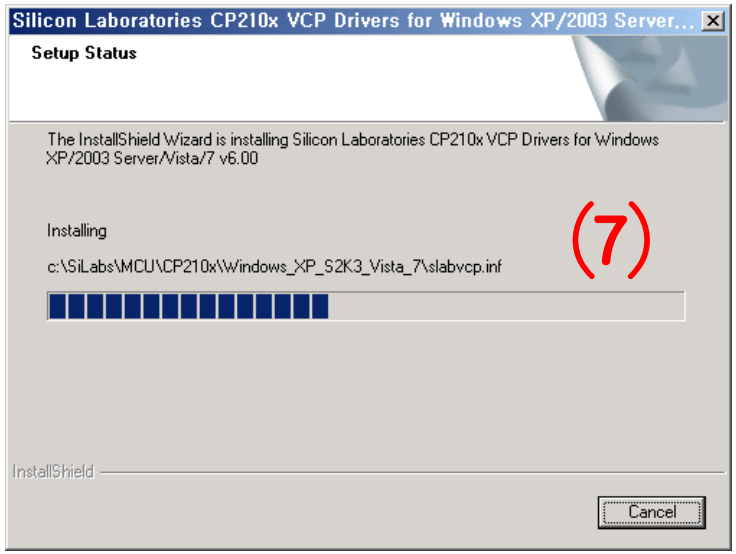


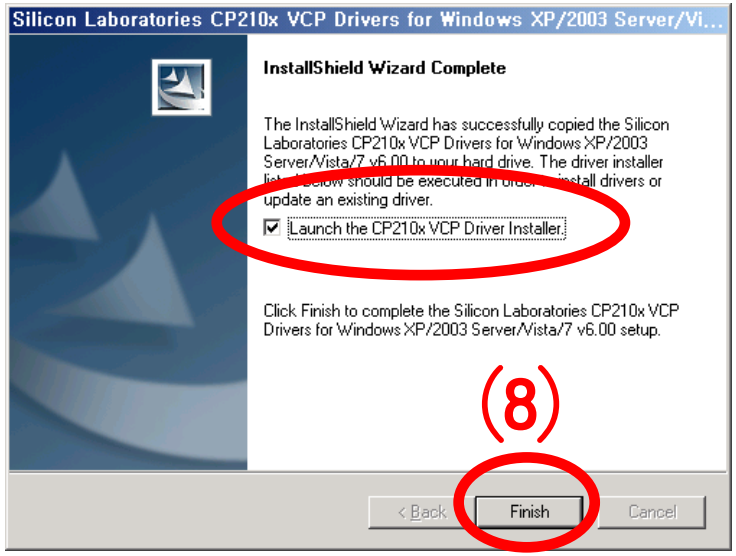


Click Next.

Click Install.

(4) Step 4

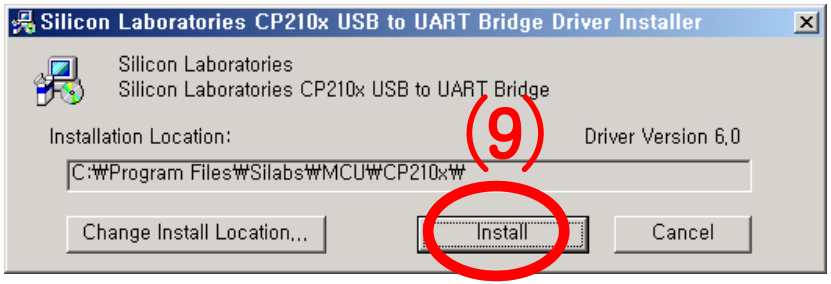




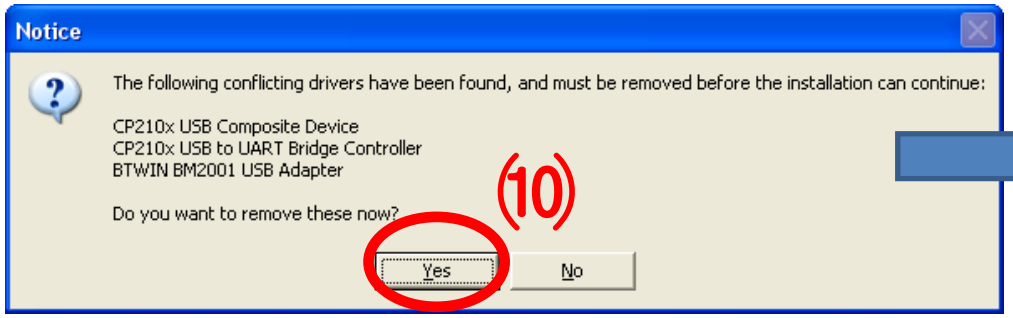
Install is progressing.

After checking Launch the CP210x VCP Driver Installer, click Finish.

(5) Step 5



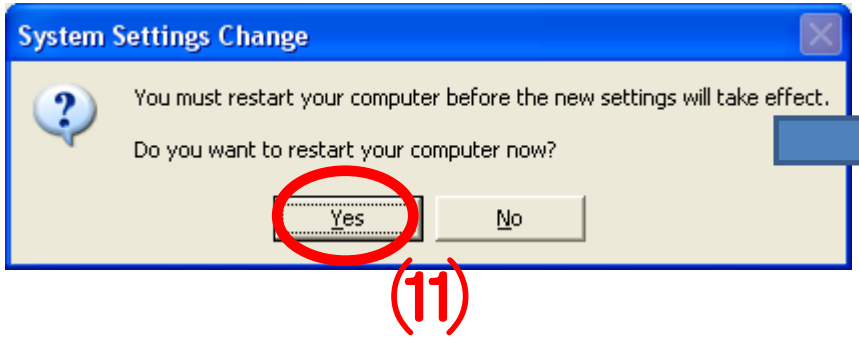
Click Install.



The left message is maded if the driver is already existed.

Click “Yes”. (the left message may not be made.)

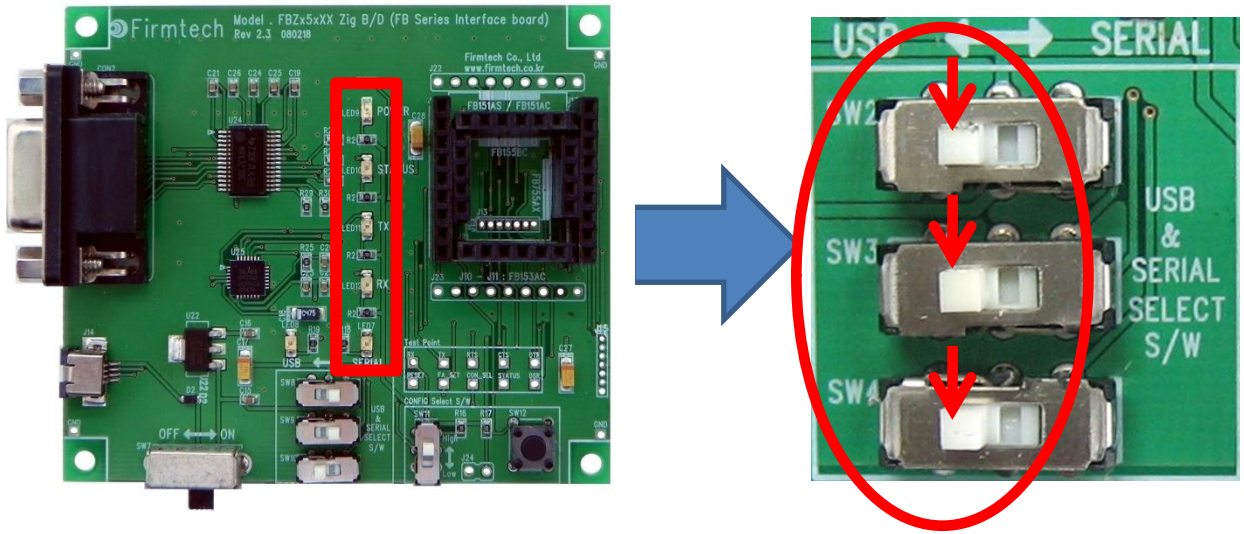
It may takes some time on deleting the existing driver.



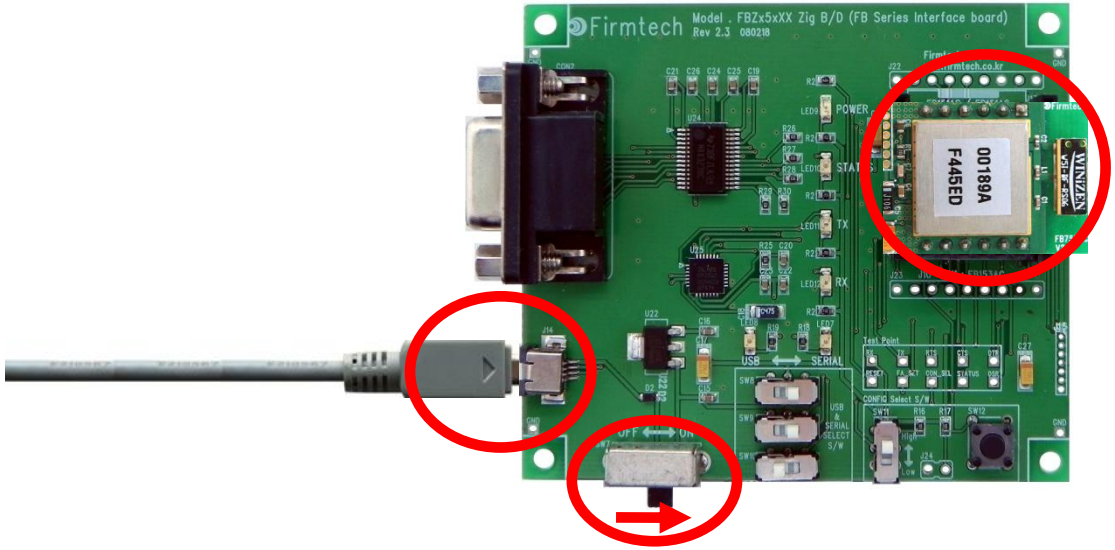
Window System-restart is progressed by clicking "Yes".

2. USB2Serial Driver Confirmation Method

(1) Interface Board Setup and Power-Supply ON

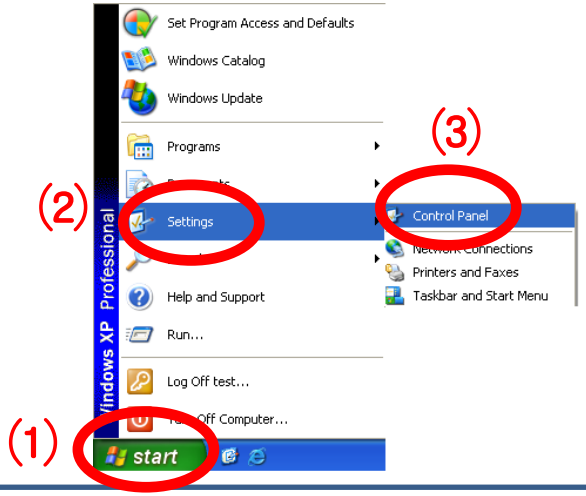


- Select USB as UART select switch.

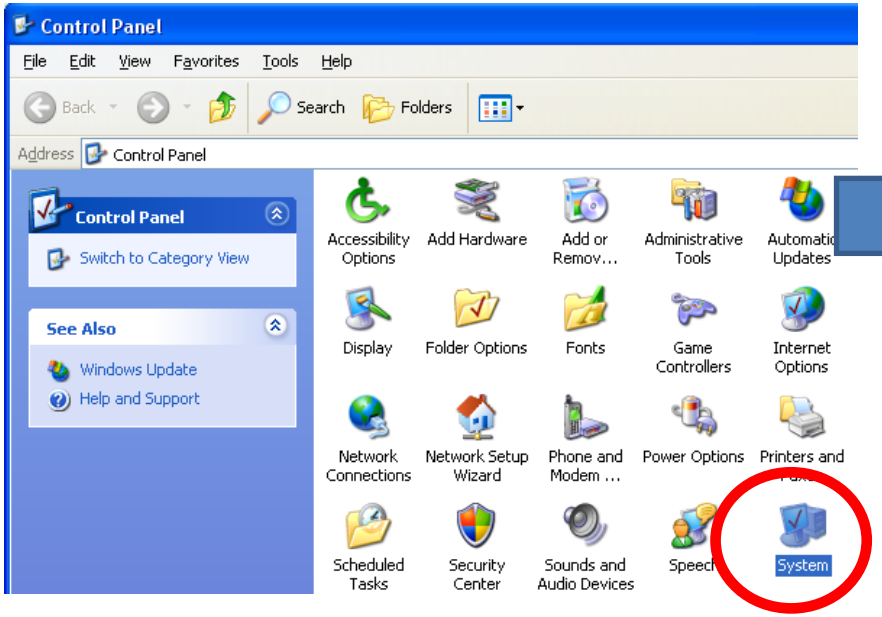


- Build a module.
- Build USB cable.
- Connect PC with USB cable.
- Power Supply ON of Interface Board

(2) “Control Panel” & “System” Execution



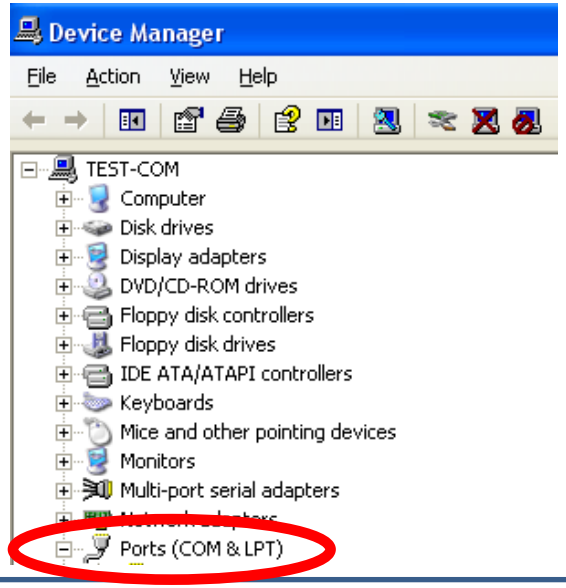
- Click “Start” on Windows Start menu.
- Click “Settings.”
- Click “Control Panel.”



- Execute "SYSTEM" in control Panel.

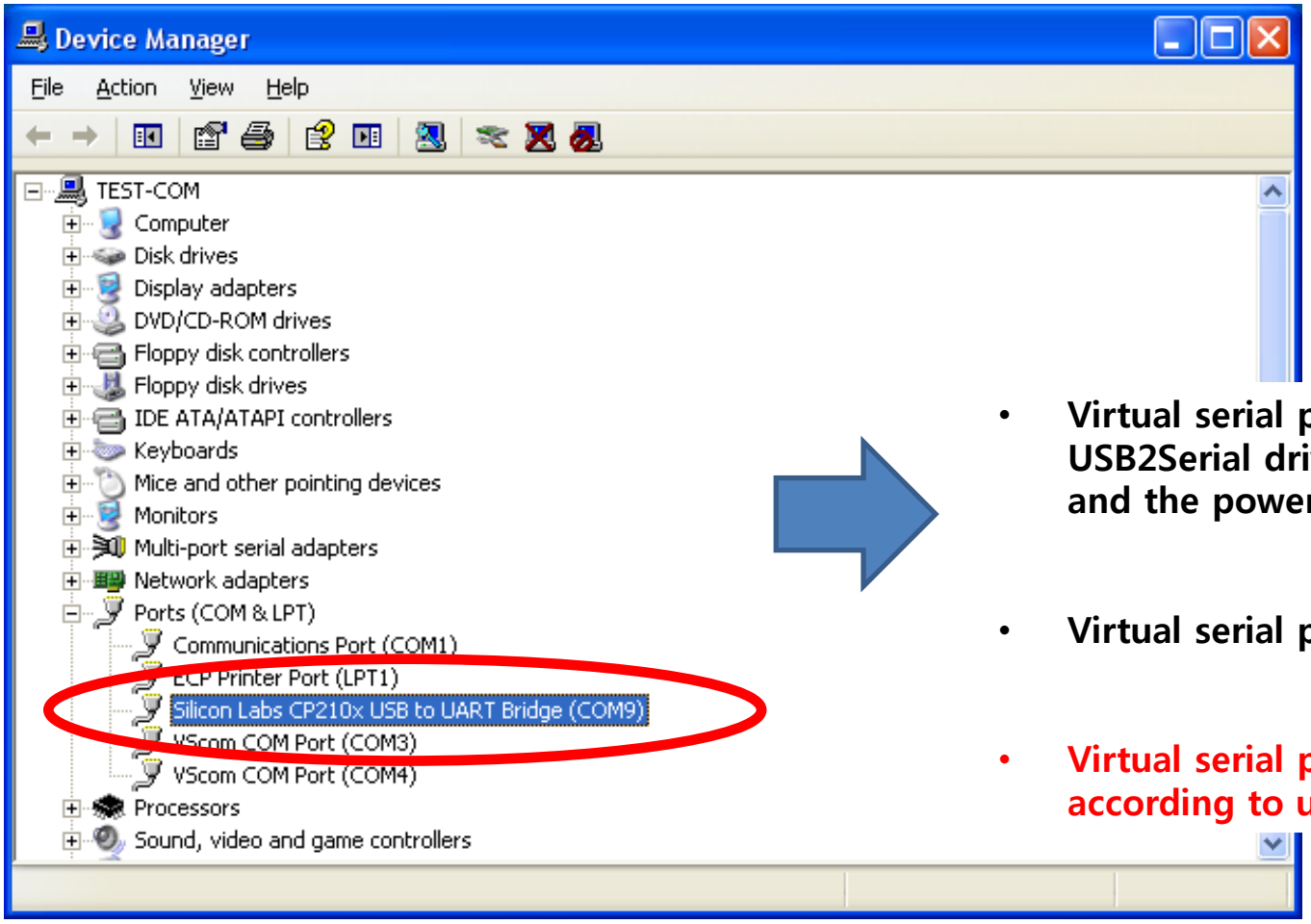
(3) “Device Manager” & “Port” Selection

- Select "Hardware" tab in system Properties window.
- Select “Device Manager.”



- Select "Port" in Device Manager."

(4) A created Virtual Serial Port Confirmation



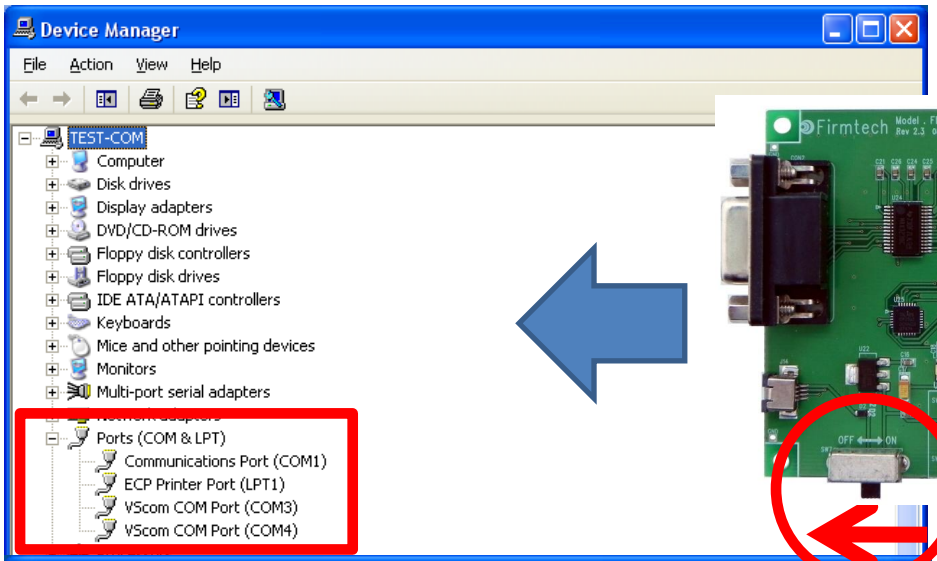
- **Virtual serial port is displayed if USB2Serial driver is installed normally and the power-supply is ON.**
- **Virtual serial port"COM9" is displayed**
- **Virtual serial port is made differently according to user's environment.**

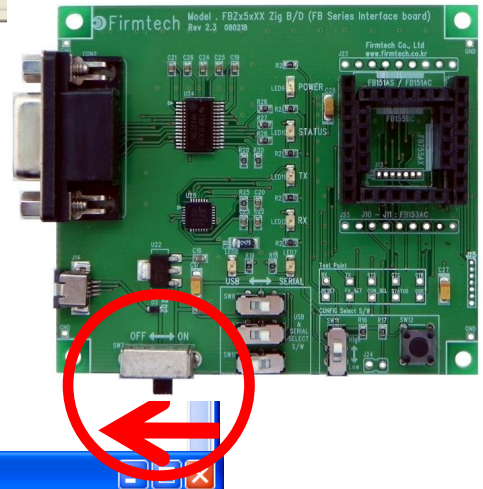
[x] Virtual Serial Port

Usage matters to be attended to

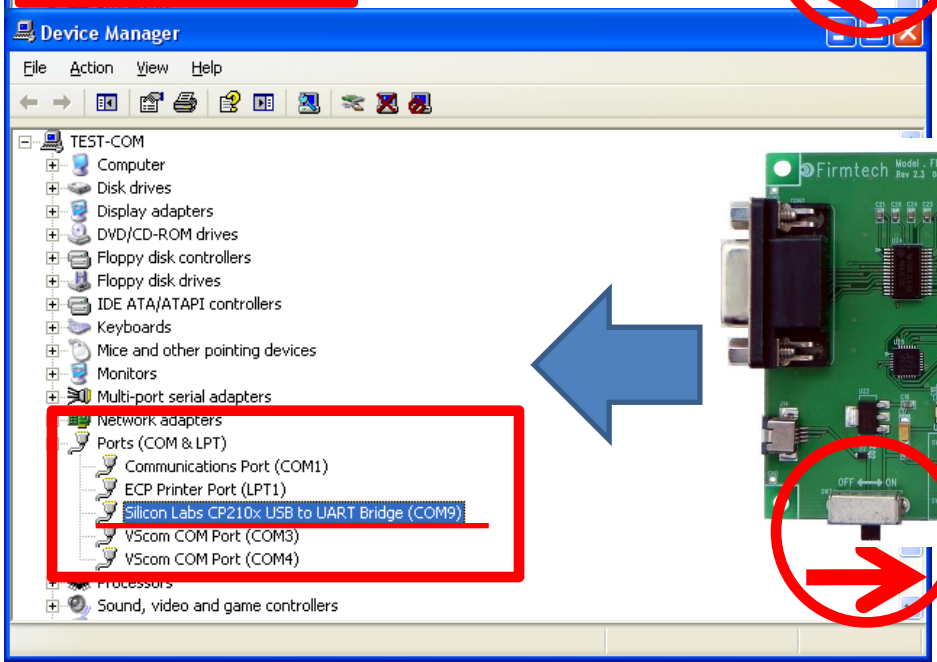
1. The Creation of Virtual Serial Port

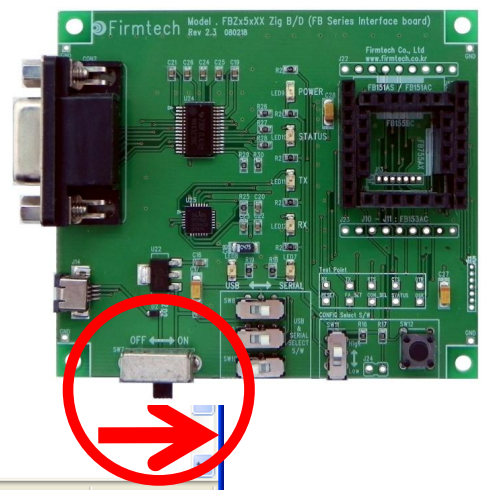
(1) Virtual Serial Port & Interface Board





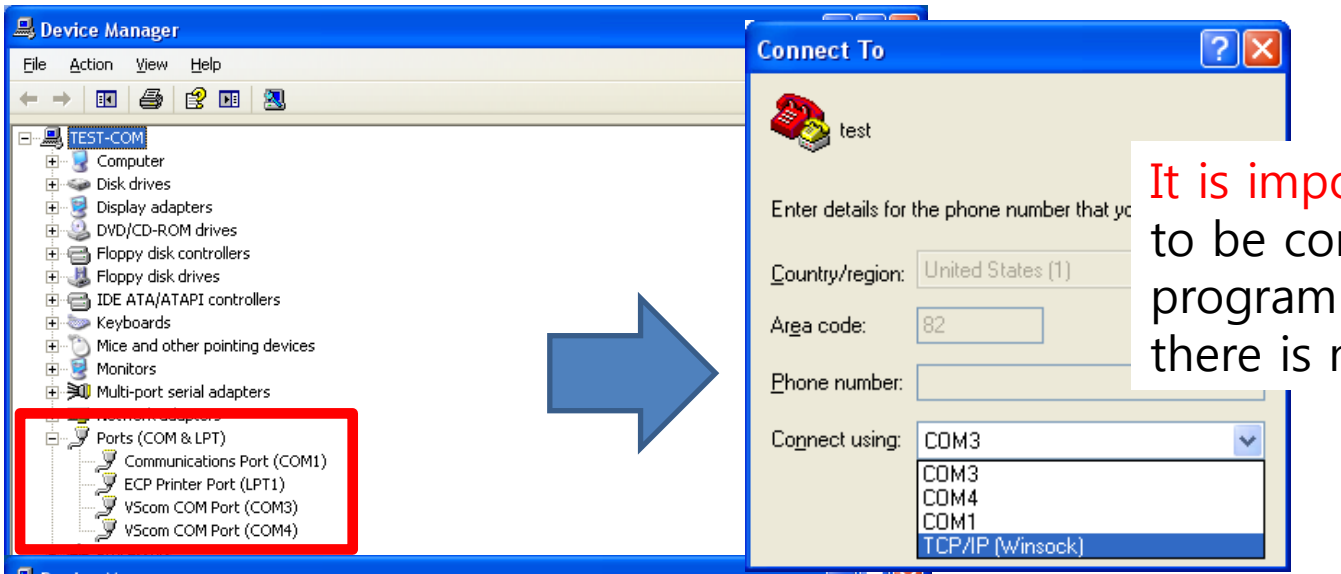
There is no a virtual serial port at "Port"clause if power-supply of ace board is OFF.



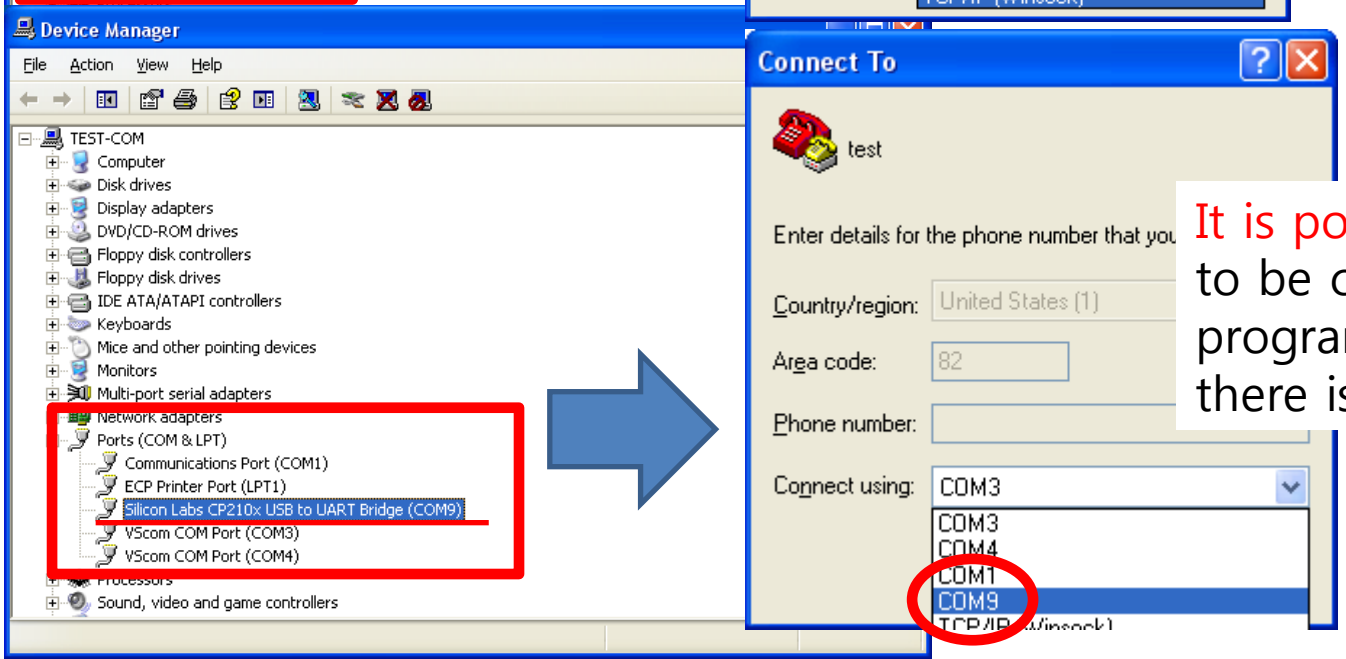


ere is virtual serial port at rt"clause if power-supply interface board is ON.

(2) Virtual Serial Port & Serial Communication Program



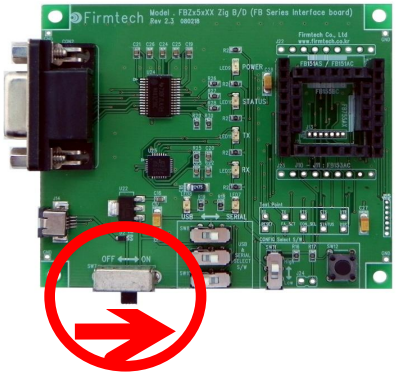
It is impossible for virtual port to be connectted to a serial program as hyper-terminal if there is no virtual serial port.



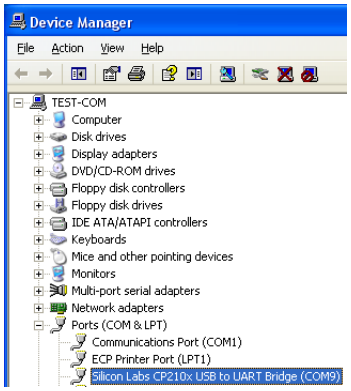
It is possible for virtual port to be connectted to a serial program as hyper-terminal if there is virtual serial port.

(3) Virtual Serial Port & Serial Communication Porgram & Interface Board

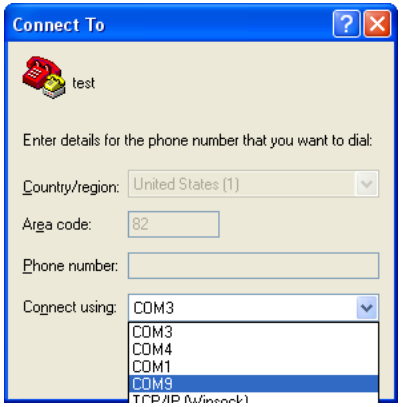
(1) Power Supply ON



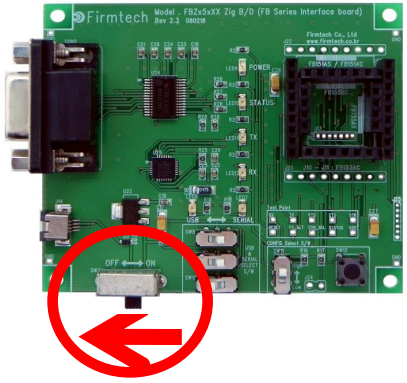
(2) Virtual Port Creation



(3) Virtual Port OPEN



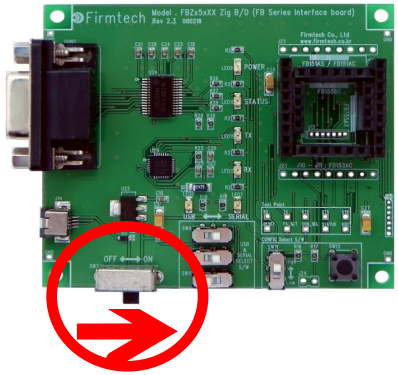
(4) Power Supply OFF



- A virtual port may be disappeared by power-supply OFF of interface board while using virtual serial port created at serial communication program.
- Even though a virtual serial port is disappeared by power-supply OFF of interface board, may not see virtual serial port disappearing at serial communication program.
- Communication is not available because of realistic port (Virtual port) disappearing even though serial communication program is operated normally.
- It may occur critical situation at OS if virtual port is disappeared under a serial communication program operating.
- Therefore, certainly, serial port communication should be finished before power-supply OFF of interface board. That is, the power-supply of interface board should be OFF under finishing virtual port.

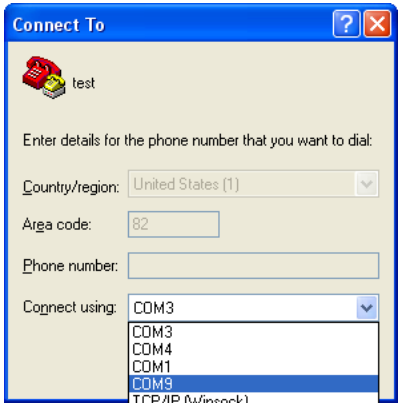
(4) Virtual Serial Port & Bluetooth Module

(1) Power-Supply ON

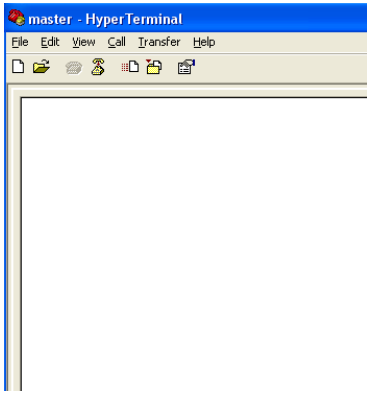


(2) Message Output

(3) Virtual Port OPEN



(4) No Message



- Start Message is made out by Bluetooth Module if power-supply of interface board is OFF.
- Virtual Port is created after power-supply of interface board is ON.
- Serial communication program is available after virtual port creation.
- Can not see operation-situation (Start Message etc) immediately just after ON of module power supply if serial communication program is used at virtual port.
- In case of using virtual port, a user makes appropriate action (System reset etc by using "ATZ" command after Bluetooth operation) for seeing general operation situation of Bluetooth Module.