

FB200AS

Quick Guide

Features of FB200AS



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

* FB200AS Feature



< FB200AS is >

- Bluetooth Specification 2.0 Support
- UART communication speed control possible by using Dip Switch
- Master/Slave setup possible by using Dip Switch
- Supports AT command and AT command based control available
- Connects smoothly with Bluetooth PDA, Bluetooth USB Dongle etc
- Supports stable data transmission & reception
- Stable data transmission & reception
- Maximum 1:7 communication available

< “FB200AS 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 “FB200AS 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 understand its meaning.
5. It is better for a user to understand the overall functions of the FB200AS first and migrate to subsequent chapters to refer to the functions necessary for each chapter.

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[0] Product Content & Installation

[1] Setup of FB200AS Driver

[2] Virtual Serial Port Agenda to be attended to

[3] FB200AS Operation & FB200AS Initialization

[4] Master & Slave Setup

[5] Serial Data Transmission

[6] Disconnect

[7] Re-connect

**[0] Product Content
&
Installation**

1. FB200AS Content

(1) Product Content in One Set of FB200AS - **FB200AS-Type** (1 Set)



<Product Content in One Set >

- FB200AS
- Antenna (4 dBi Gain)

(2) Configuration Using 2 Sets



1 set for master setup

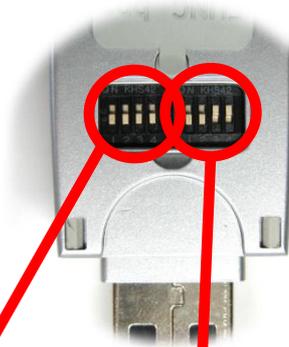
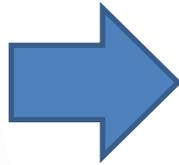


1 set for Slave setup

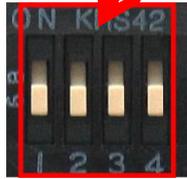
- “FB200AS Quick Guide” uses two devices for explanation purpose.

2. **Checking Items** Before FB200AS Operation

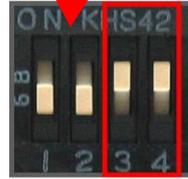
(1) Dip Switch Setup



- Dip Switch Number#1,2,3,4 OFF. (Basic Setup Agenda)



- Dip Switch Number#3,4 ON. (Basic Setup Agenda)
- UART communication speed setup to 9600bps.



For even more details of Dip Switch, please refer to user manual.

3. Product Installation

(1) FB200AS + Antenna + PC

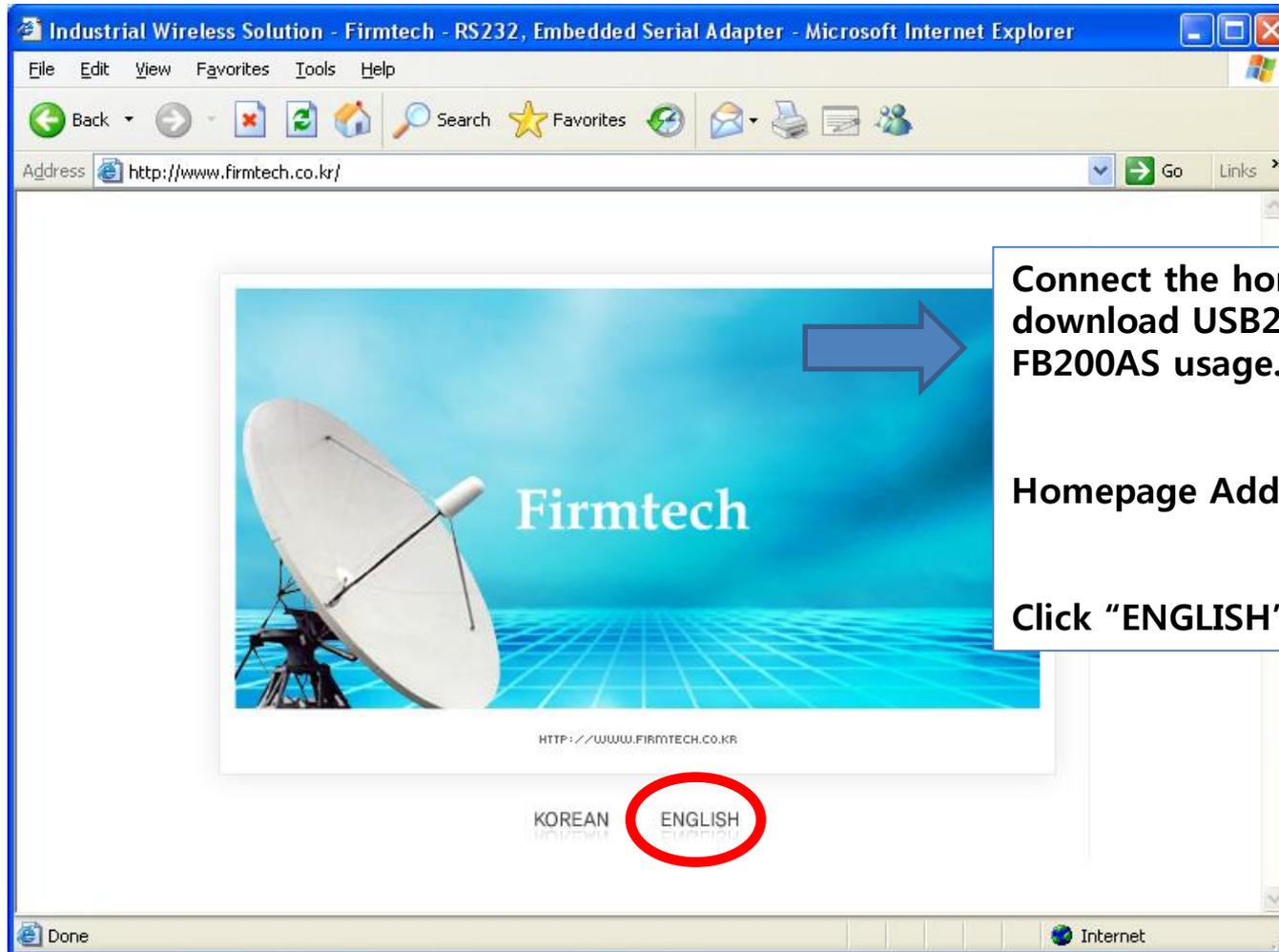


- Connect two FB200AS to a PC.
- In this "FB200AS Quick Guide" two FB200AS are connected to one PC for convenient explanation.

[1] FB200AS Driver Setup

1. Download for FB200AS Driver Installation

(1) Homepage Connection: www.firmtech.co.kr



Connect the homepage of firmtech to download USB2Serial Driver for FB200AS usage.

Homepage Address: www.firmtech.co.kr.

Click "ENGLISH".

(2) Download Location Selection

The screenshot shows the Firmtech website in Microsoft Internet Explorer. The browser's address bar displays http://www.firmtech.co.kr/main/main_eng.php. The website header includes the Firmtech logo and navigation links for "KOREAN SITE" and "CONTACT".

The main content area features a section titled "Bluetooth Module with Multi Profile" with sub-sections for "TARGET : AUDIO SYSTEM" and "TARGET : DATA SYSTEM". The audio system diagram shows a module with profiles SPP, HSP, HFP, HFPAG, and AVRCP. The data system diagram shows a module with profiles HID, SPP, and FTP. Below these diagrams are product models: MD-SXR(MP) - Class 2 Type and MD-4DR(MP) - Class 2 Type, MI-4DR(MP) - Class 1 Type.

The navigation menu on the right side of the page includes the following items:

- PRODUCT INFORMATION
- DOWNLOAD
- CUSTOMER SUPPORT
 - Datasheet & User Guide
 - Utility & Source
 - Diagram Document
- COMPANY INFORMATION
- WHERE TO BUY

A red circle highlights the "DOWNLOAD" link, and another red circle highlights the "Utility & Source" link. A large blue arrow points from the "DOWNLOAD" link to a text box containing the following instructions:

Click "DOWNLOAD" on the homepage of Firmtech.
Click "Utility & Source".

Below the navigation menu, there are sections for "PRODUCTS OVERVIEW" and "FIRMTECH NEW PRODUCT". The "PRODUCTS OVERVIEW" section includes details for Bluetooth (FB100AS and FB200AS) and Zigbee (RP-M100) products. The "FIRMTECH NEW PRODUCT" section features a "Zigbee Embedded Module (SMD TYPE) Mac Version".

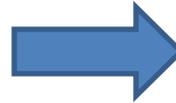
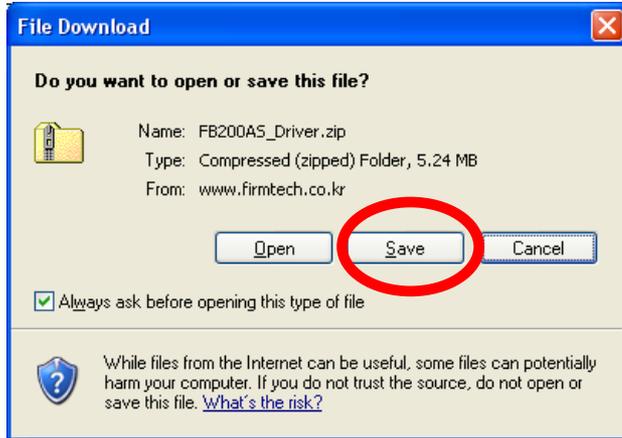
(3) "FB200AS Device Driver" Download

The screenshot shows a Microsoft Internet Explorer browser window with the address bar displaying http://www.firmtech.co.kr/02download/main_eng.php?index=2. The page content includes a navigation menu, a search bar, and a list of device drivers under the heading "Device Driver".

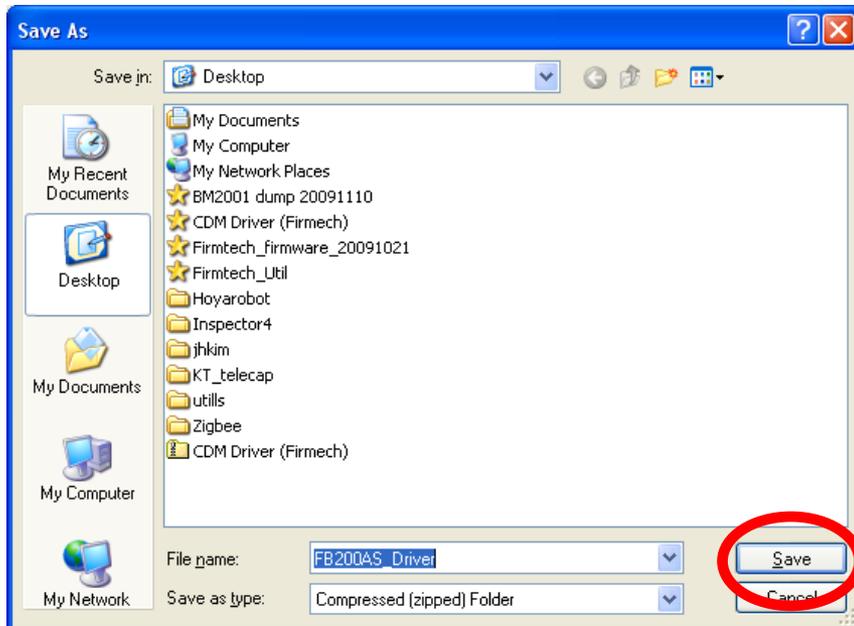
Device Driver	
1	▶ BM2001 & FBZx5xXX Device Driver - CP210x - windows 2000 / XP / Server / 2003 / Vista / Linux / Mac support
	Windows 2000 / XP / Server / 2003 DOWNLOAD
	Win Vista DOWNLOAD
	Windows 7 DOWNLOAD
	Linux 2.6 DOWNLOAD
	Linux 2.4 DOWNLOAD
	Macintosh OSX DOWNLOAD
Macintosh OS9 DOWNLOAD	
2	▶ CP210x - windows 2000 / XP / Server / 2003 / Vista support
	CP210x Device Customization Guide PDF DOWNLOAD
	CP210x Device Customization Utility DOWNLOAD
3	▶ <u>FB200AS Device Driver</u> Windows 2000, XP, Vista, Server 2003, Server 2008, Win7 DOWNLOAD

Click "DOWNLOAD" of FB200AS device driver agenda.

(4) File Download Window

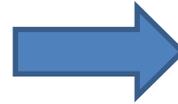
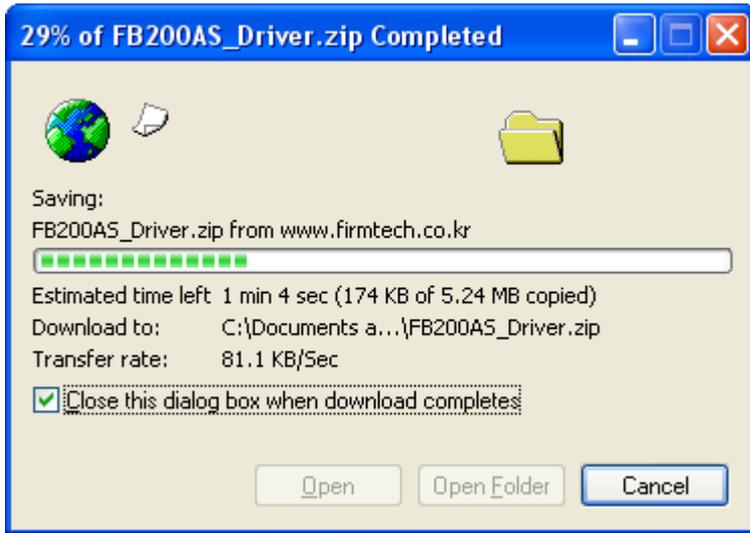


Click "Save" in file download window.



Position saving location and click "save".(assumption(left): save it in Desktop on the computer).

(5) Download Progress



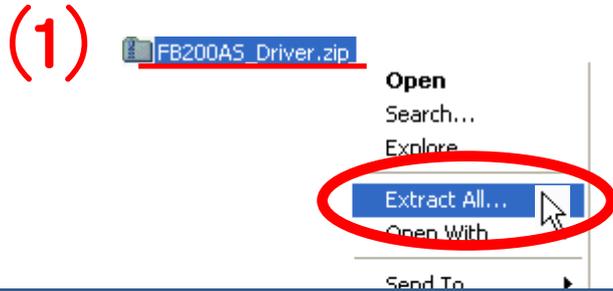
Wait until the download is completed.



"FB200AS_Driver.zip" file is displayed on the Desktop.

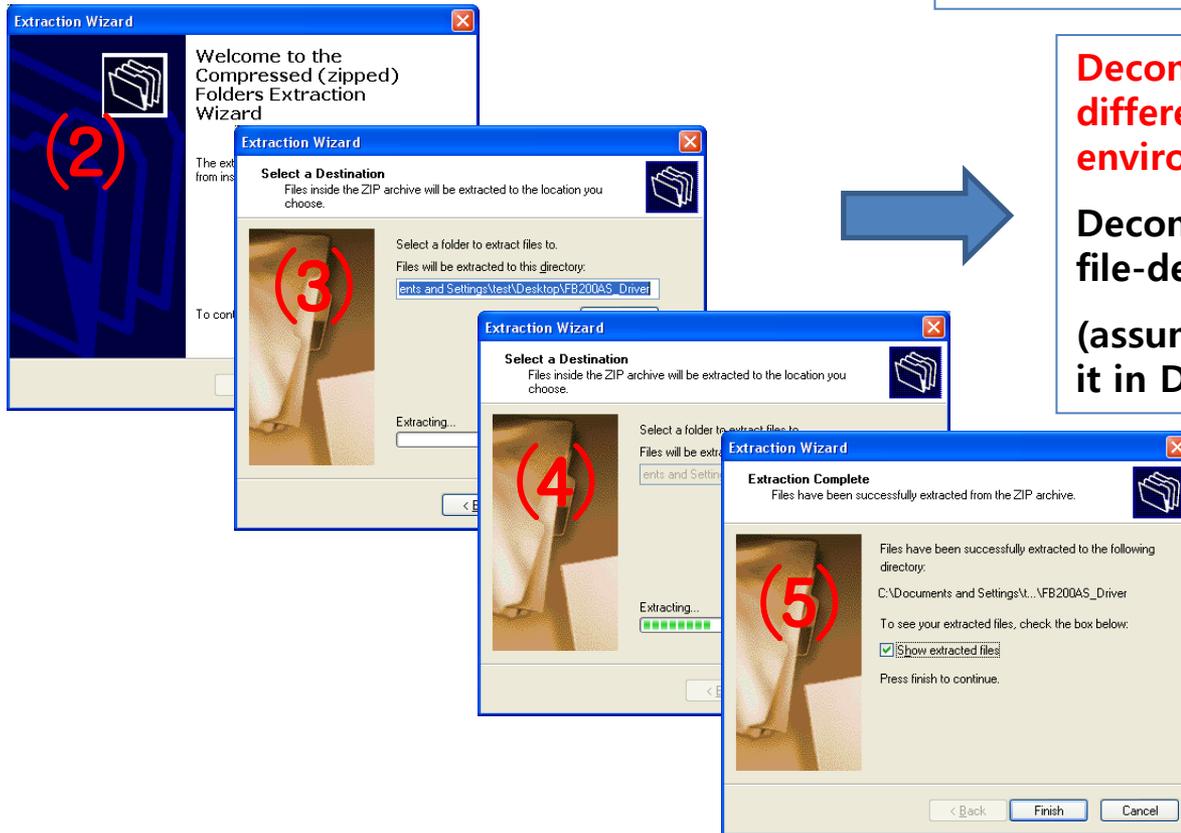
2. Downloaded File Copy

(1) Decompression



Decompress the FB200AS Driver.zip file by clicking the right mouse button

Basic assumption : A user makes use of decompressing program supported by Windows XP



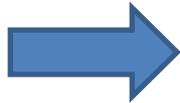
Decompressing program can be different according to user's environment.

Decompress a file by using a file-decompressing program.

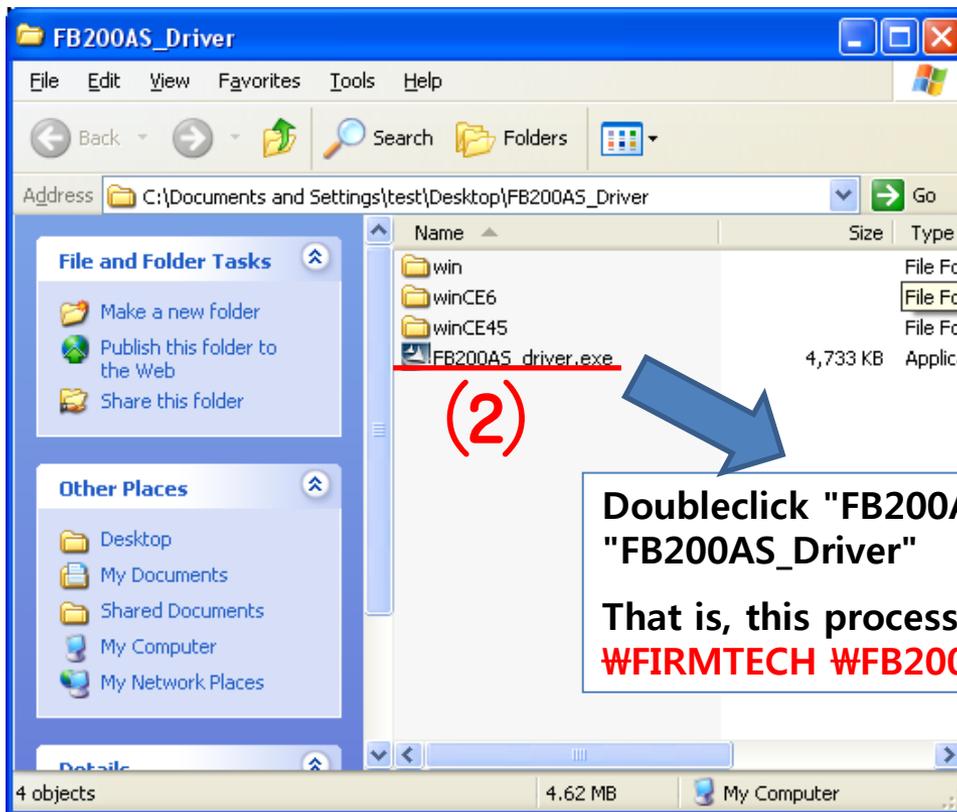
(assumption(left): Decompress it in Desktop on the computer)

(2) A created file by decompression

(1) FB200AS_Driver



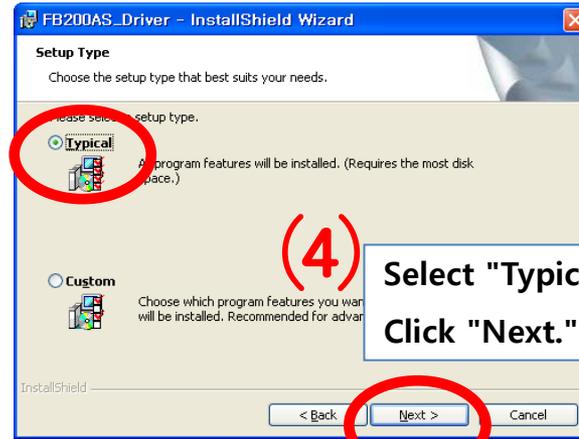
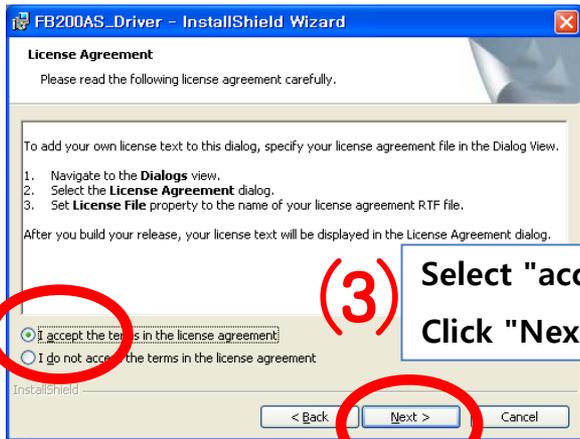
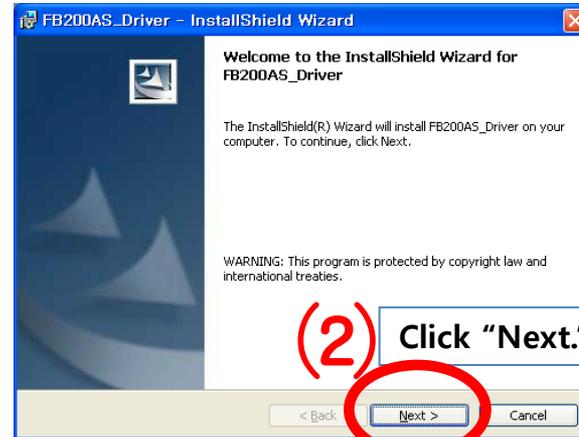
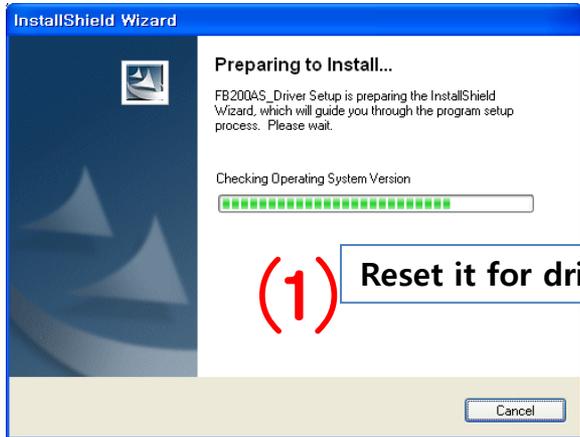
"FB200AS_Driver" folder is created on Desktop by decompressed file.



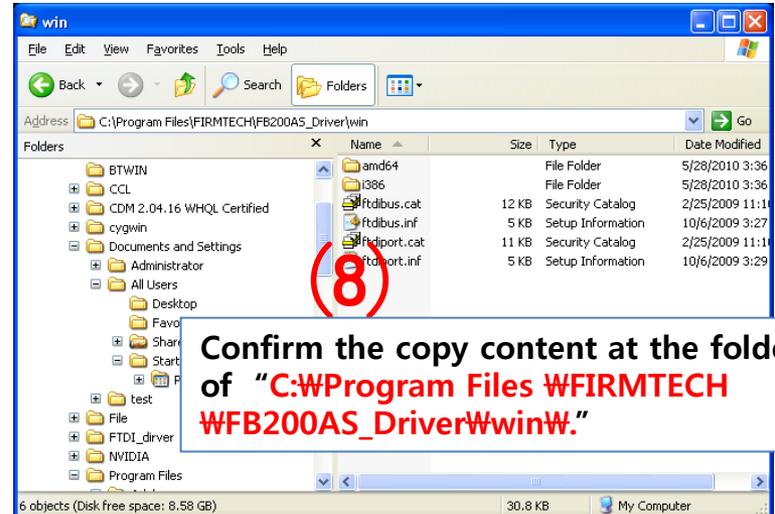
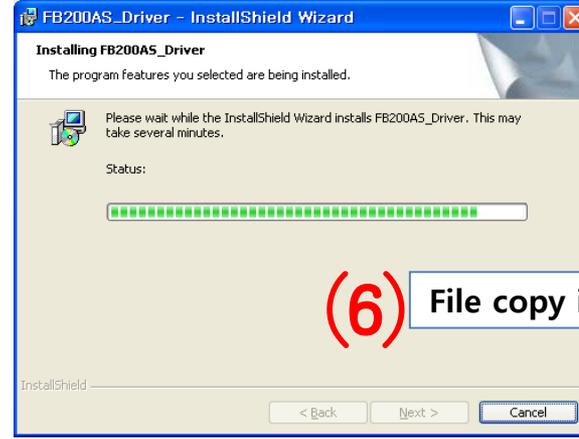
Doubleclick "FB200AS_driver.exe" out of the files of "FB200AS_Driver"

That is, this process is being copied at "**C:\Program Files** **WFIRMTECH** **WF200AS_DriverW**" of user's computer.

(3) Driver File Copy 1



(4) Driver File Copy 2



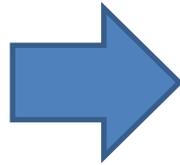
3. FB200AS_Driver Installation Setup

(1) FB200AS Power-Supply ON



- Install FB200AS at a PC.
- **Power Supply ON** of FB200AS.

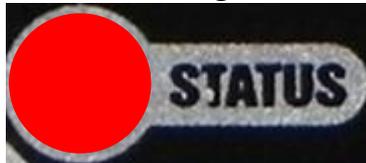
* FB200AS LED



- Status LED is displayed a green light if FB200AS is on Operation Mode.



- Status LED is displayed a red light if FB200AS is on configuration Mode.



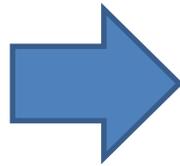
- The left of Power LED displays a red light if FB200AS power supply is ON.



- The right of Power LED displays a yellow light if PC identifies FB200AS USB Chip.



* FB200AS power supply ON & USB chip indentified FB200AS LED Condition



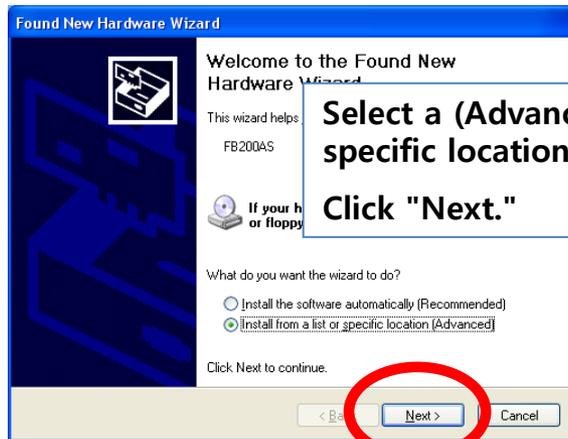
- Status LED is blink a green.



- The left of Power LED is ON a red.
- The right of Power LED is ON a yellow.



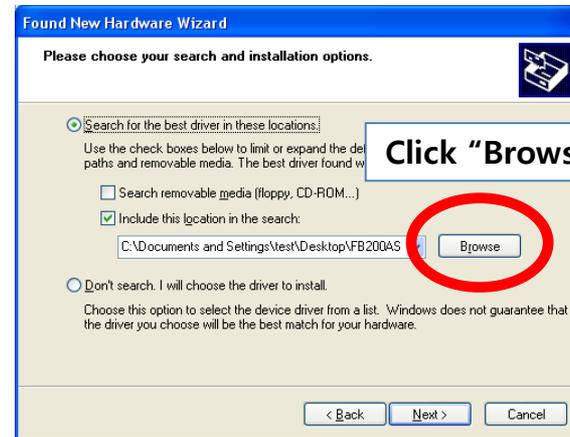
(2) Driver installation 1



Select a (Advanced) of list or specific location installation.

Click "Next."

(1)



Click "Browse".

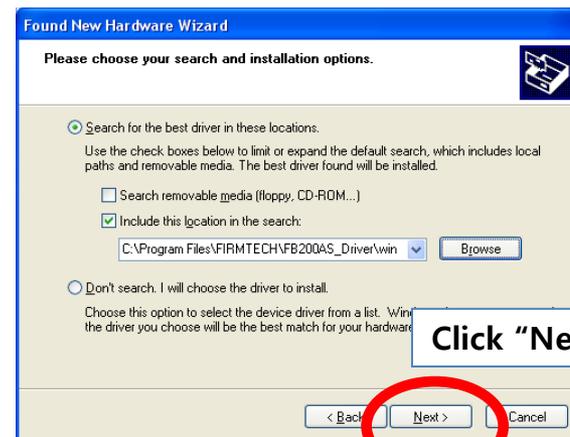
(2)



Select "C:\Program Files\FIRMTECH\FB200AS_Driver\win."

Click "OK".

(3)



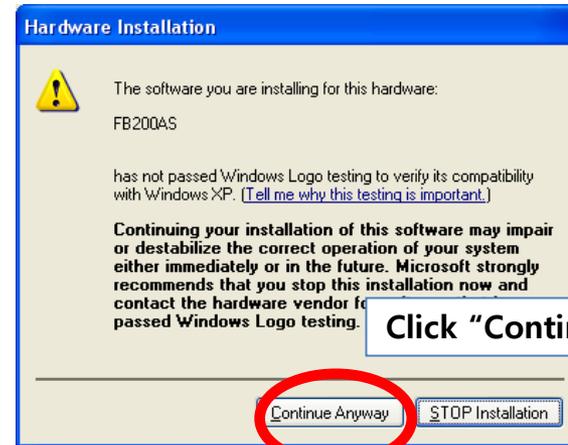
Click "Next"

(4)

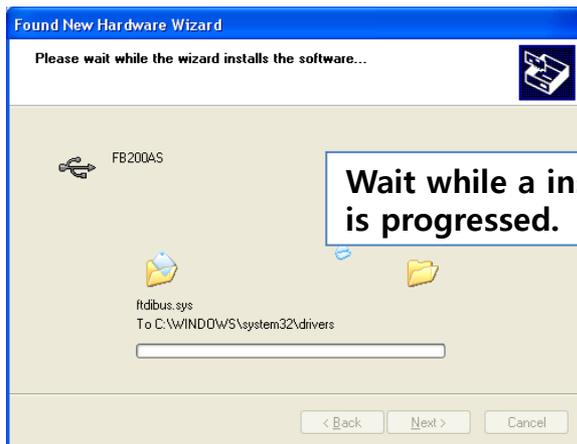
(3) Driver installation 2



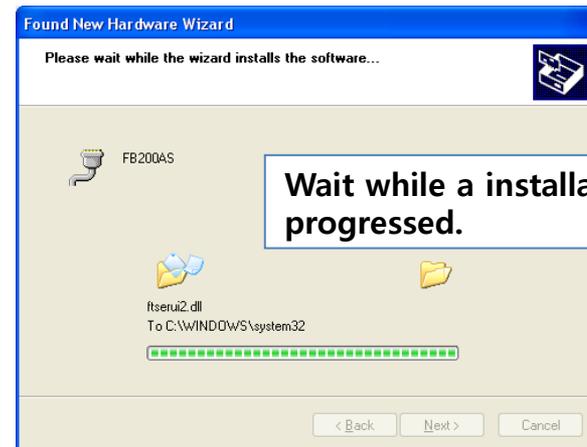
(5)



(6)



(7)



(8)

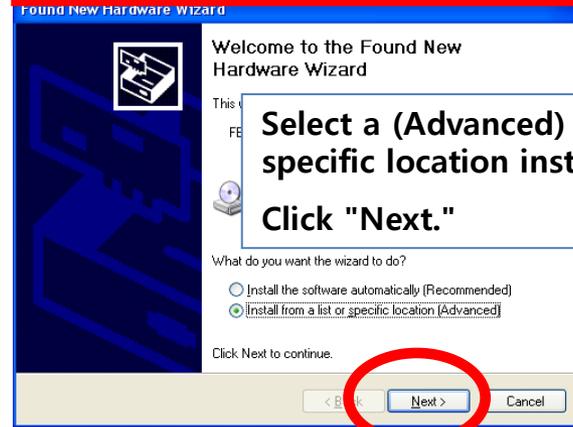
(4) Driver Installation 3

Soon, Driver installation will be processed once more.



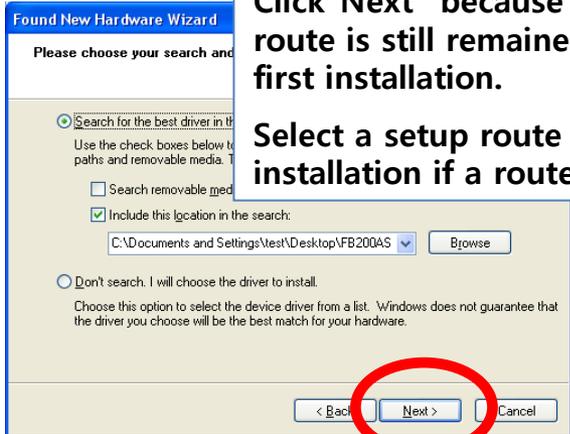
Click "finish."
Driver installation is not finished yet.

(9)



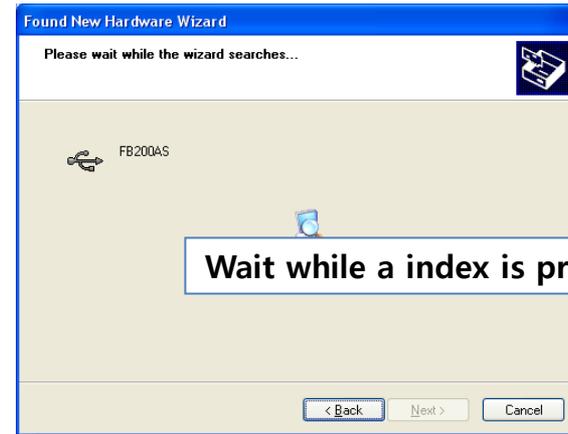
Select a (Advanced) of list or specific location installation.
Click "Next."

(10)



Click "Next" because a setup route is still remained at the first installation.
Select a setup route at the first installation if a route is wrong.

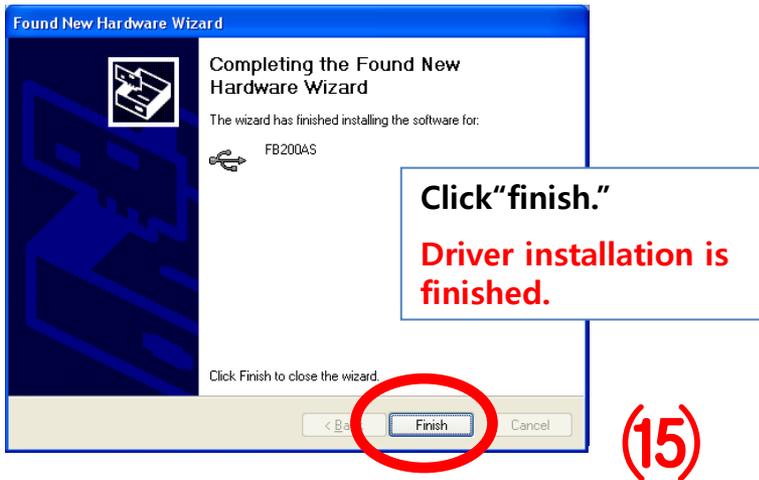
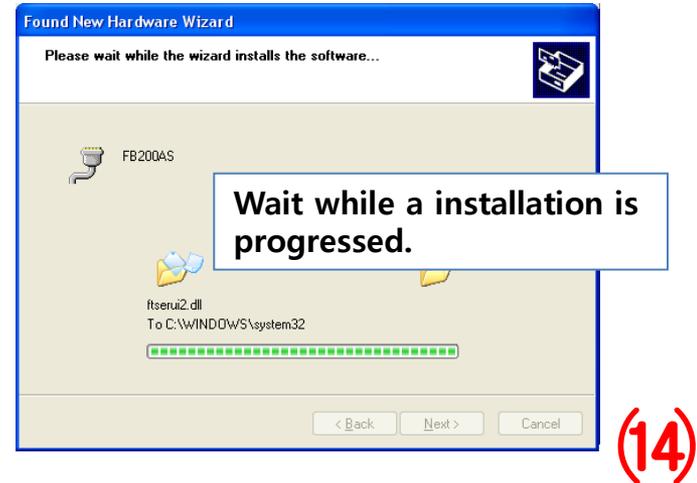
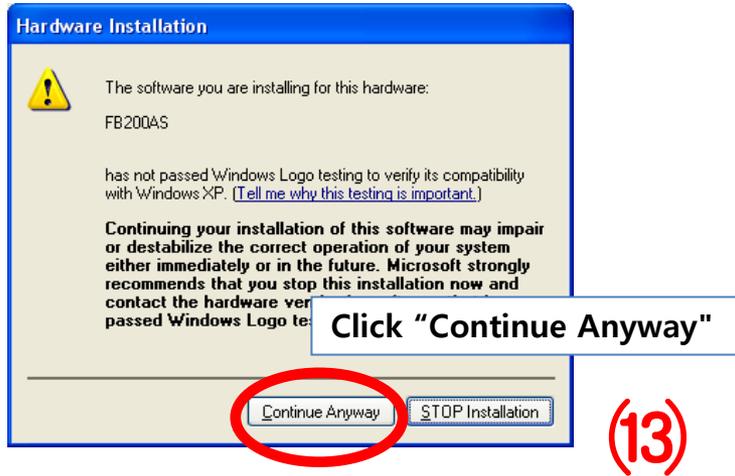
(11)



Wait while a index is progressed.

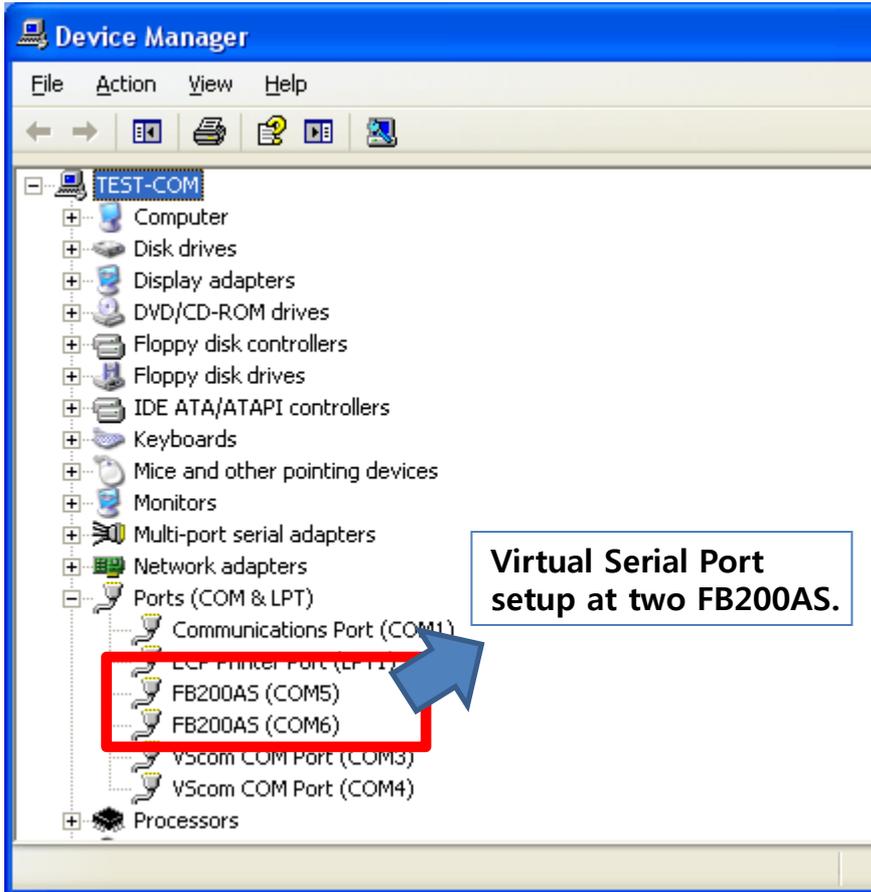
(12)

(5) Driver Installation 4



Power-supply of FB200AS remains ON.

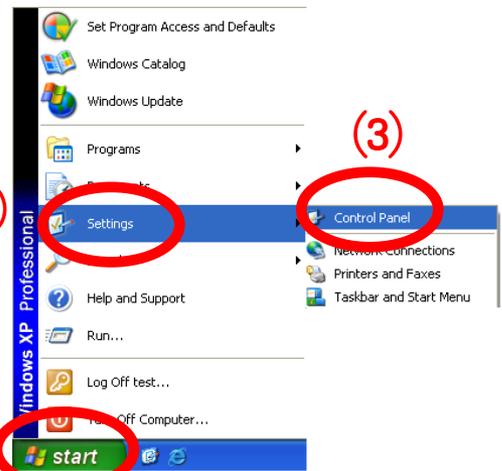
(6) Driver Installation Retrieval & Virtual Serial Port Number



- By using two FB200AS at FB200AS Quick Guide, **FB200AS driver installation** should be **progressed two times**.
- Two setup finished FB200AS is not progressed a installation any more if FB200AS Driver installation is progressed two times in order to use two devices of FB200AS.
- The first assigned virtual serial port is used as it is if two virtual serial port of FB200AS is assigned each and a registry of OS is not changed
- **Progress FB200AS Driver installation again in order to use other FB200AS besides previous installed FB200AS.**
- **Newly installed FB200AS should be assigned a virtual serial port of new number.**

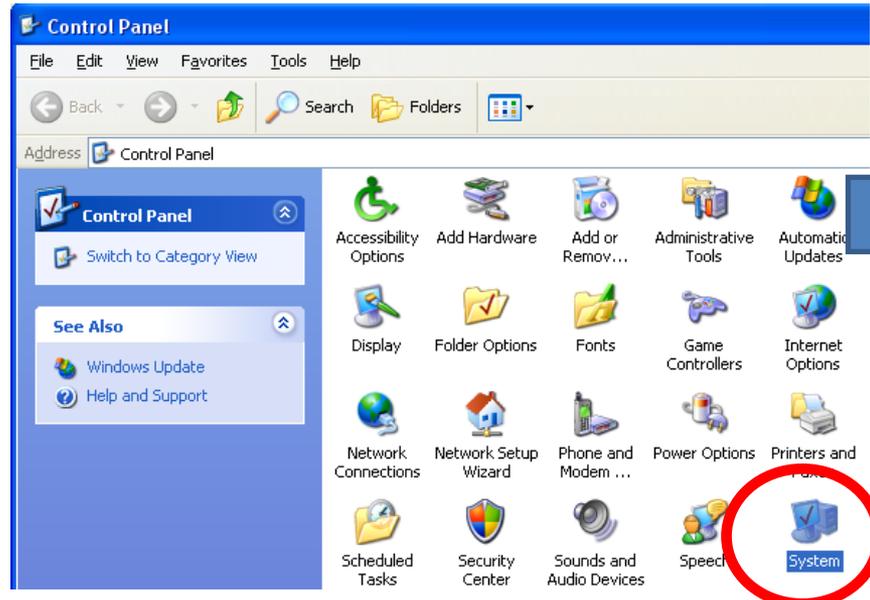
4. FB200AS Driver Confirmation Method

(1) "Control Panel" & "System" Execution



A screenshot of the Windows XP Start menu. The Start button is circled in red and labeled (1). The Settings option is circled in red and labeled (2). The Control Panel option is circled in red and labeled (3). A large blue arrow points from the Control Panel option to the right.

- Click **"Start"** on Windows Start menu.
- Click **"Settings."**
- Click **"Control Panel."**



A screenshot of the Windows Control Panel window. The window title is "Control Panel". The address bar shows "Control Panel". The main area displays a grid of icons for various system settings. The "System" icon is circled in red. A large blue arrow points from the System icon to the right.

- Execute **"SYSTEM"** in control Panel.

(2) "Device Manager" & "Port" Selection

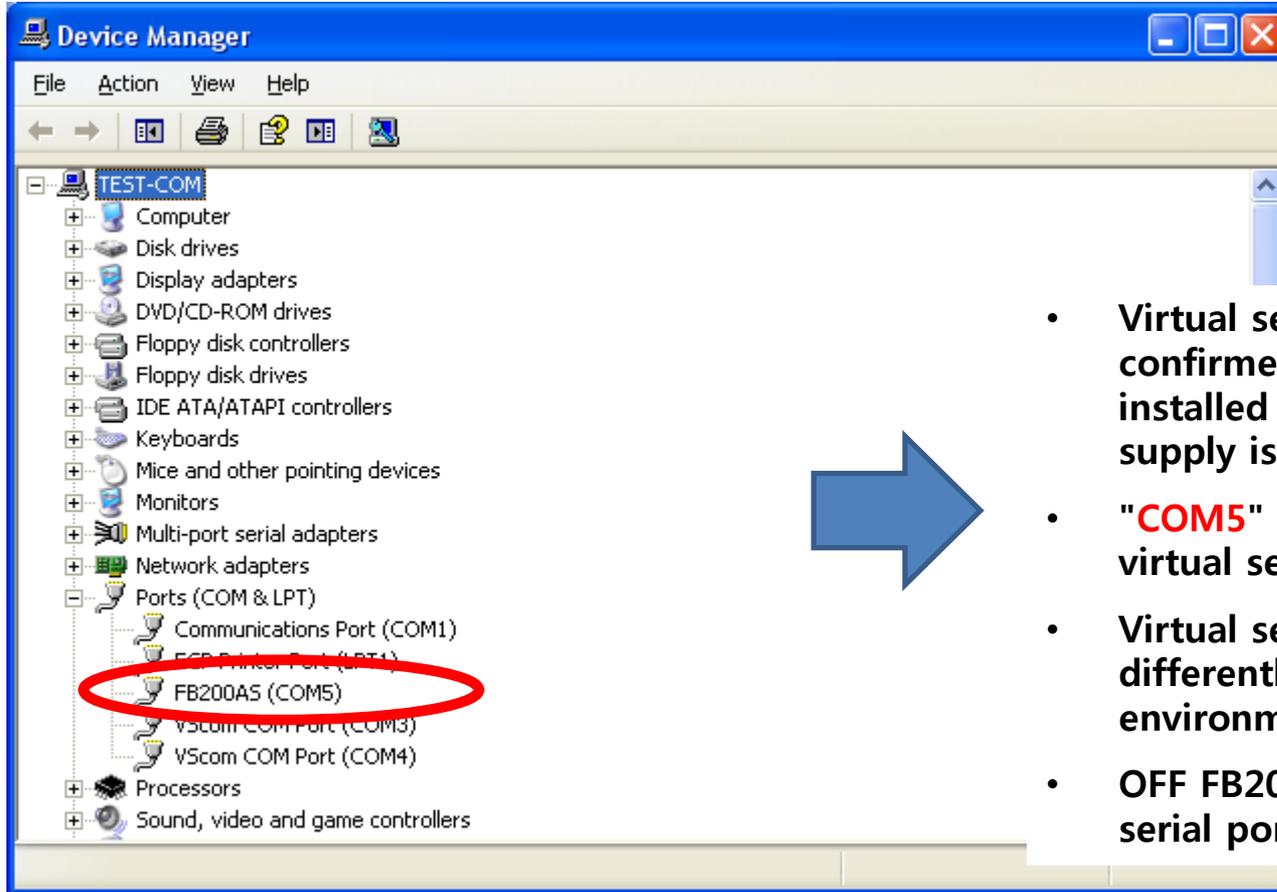


- Select "**Hardware**" tab in system Properties window.
- Select "**Device Manager.**"



- Select "**Port**" in Device Manager."

(3) A created Virtual Serial Port Confirmation

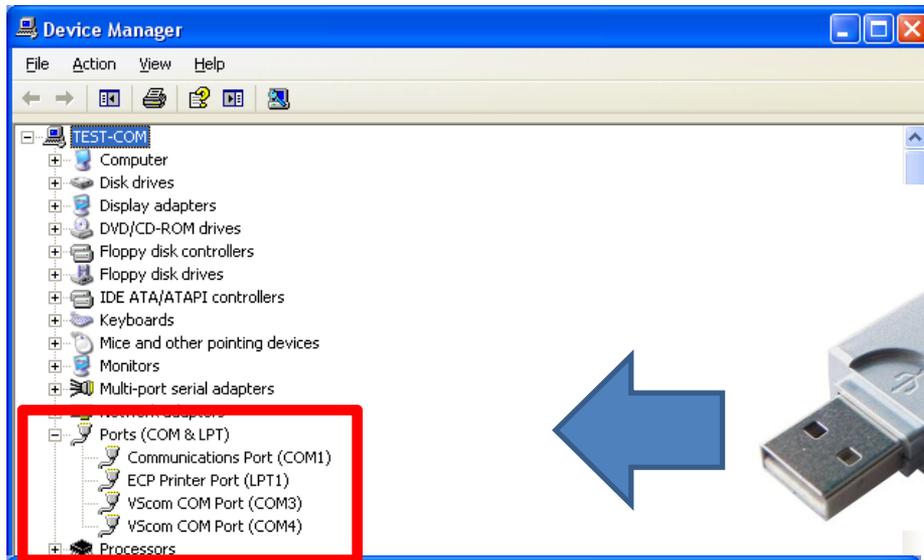


- Virtual serial port creation is confirmed if FB200AS Driver is installed normally and FB200AS power-supply is ON.
- "COM5" creation is confirmed in virtual serial port.
- Virtual serial port number is created differently according to user's environment.
- OFF FB200AS power-supply if a virtual serial port number is confirmed.

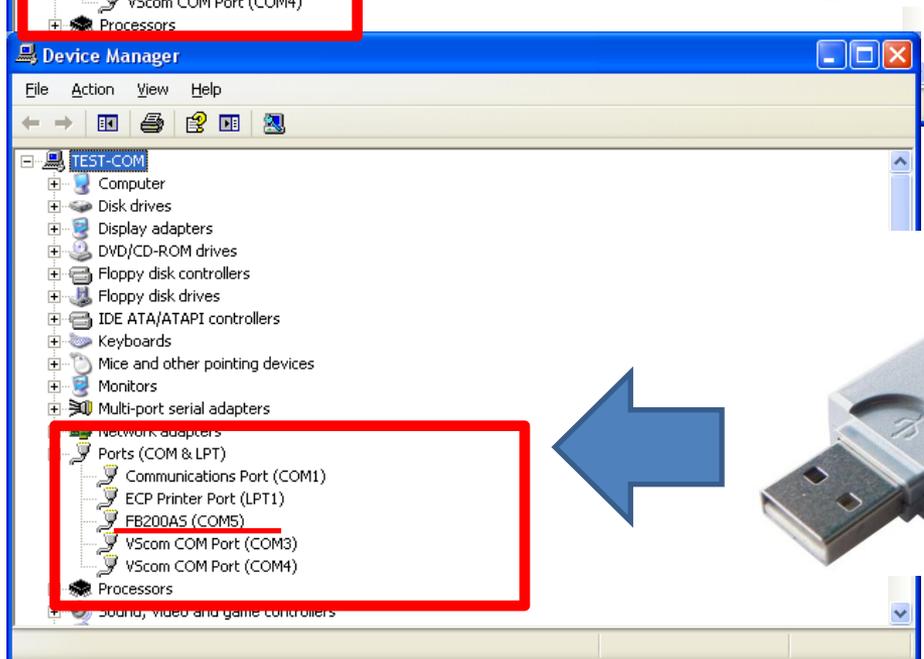
**[2] Virtual Serial Port
Matters to be attended to**

1. A creation of Virtual Serial Port

(1) Virtual serial port & FB200AS

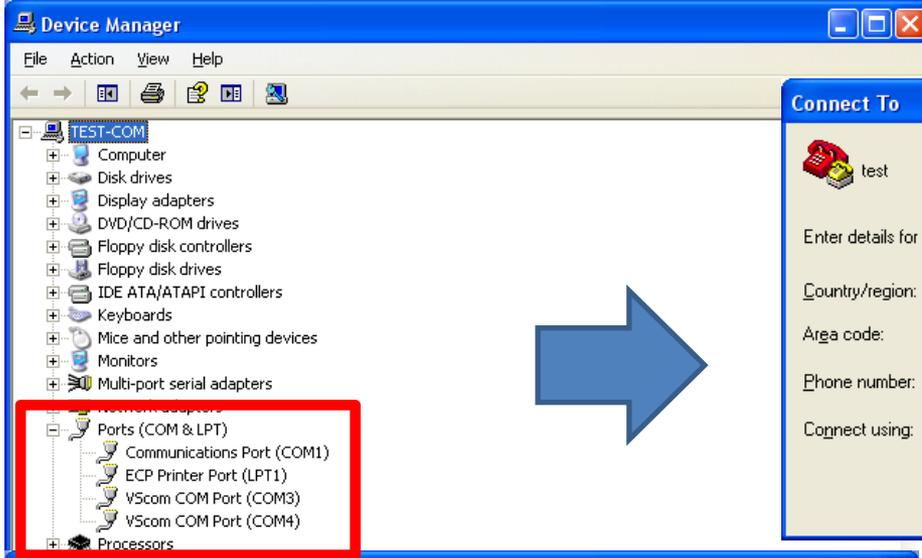


There is no "virtual serial port in "port agenda" if a power-supply of FB200AS is OFF.

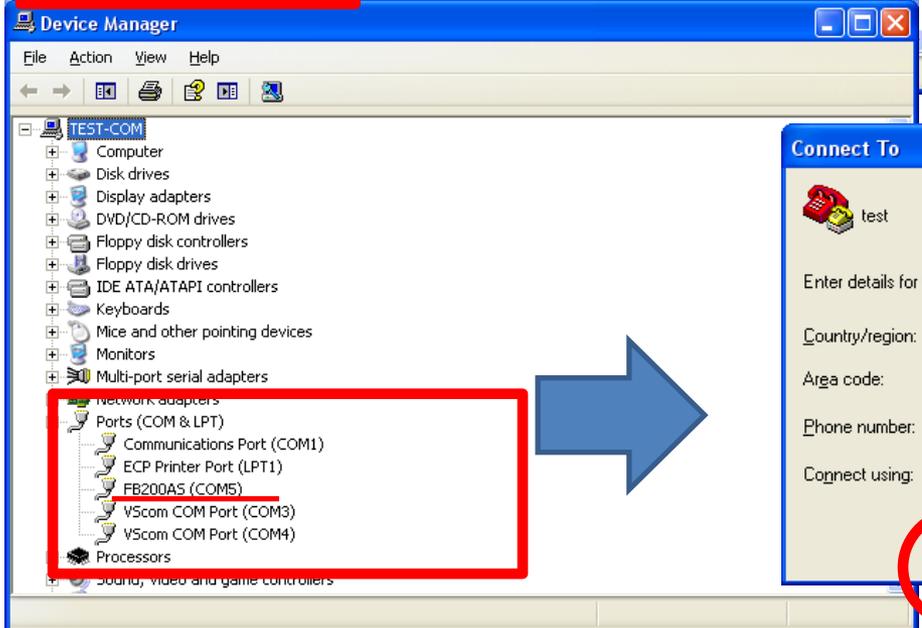


There is "virtual serial port in "port agenda" if a power-supply of FB200AS is ON.

(2) Virtual Serial Port & Serial Communication Program



Virtual port connection is impossible in serial program like the hyper terminal if there is no a virtual serial port.



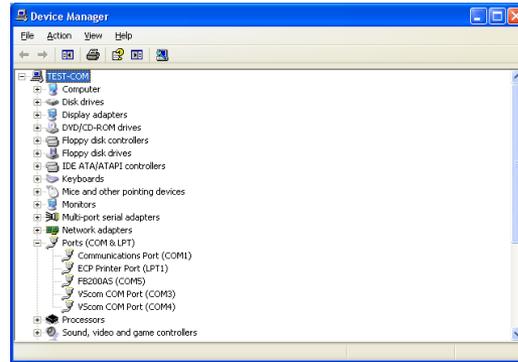
Virtual port connection is possible in serial program like the hyper terminal if there is a virtual serial port.

(3) Virtual Serial Port & Serial Communication Program & FB200AS

(1) Power Supply ON



(2) Virtual Port Creation



(3) Virtual Port OPEN



(4) Power Supply OFF



- Virtual port may be disappeared by power-supply OFF of FB200AS while using virtual serial port created at serial communication program.
- Even though a virtual serial port is disappeared by power supply OFF of FB200AS, 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.
- There 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 FB200AS. That is, the power supply of FB200AS should be OFF under finishing virtual port.

(4) Virtual Serial Port & FB200AS

(1) Power-Supply ON



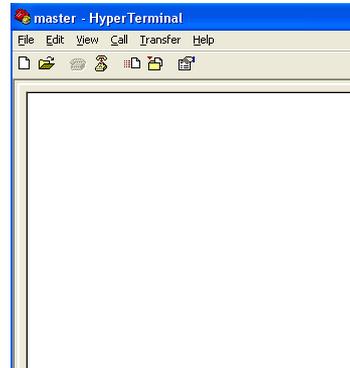
(2) Message Output



(3) Virtual Port OPEN



(4) No Message

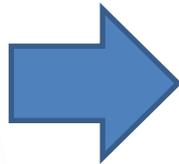


- Start Message is made out if power-supply of FB200AS is ON.
- Virtual Port is created after power-supply of FB200AS is ON.
- Serial communication program is available after virtual port creation.
- Can not see operation-situation (Start Message etc) immediately just after ON of module power supply if serial communication program is used a virtual port.
- In case of using a virtual port, a user can not see Start Message output of FB200AS immediately.

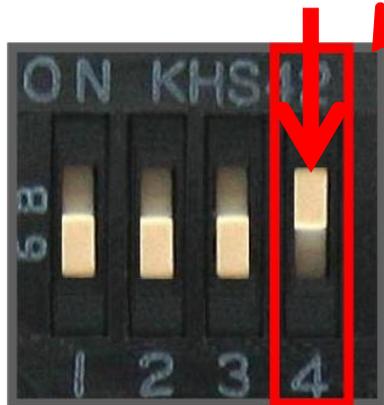
[3] Operating the FB200AS & FB200AS Setup

1. Operating the FB200AS

(1) Environment Setup Entry by using Dip Switch

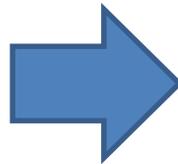


Setup Dip Switch of FB200AS as follows.



- Press ON of Dip Switch Number#4.
- Do not matter other Dip Switch condition.
- Power Supply ON of FB200AS

*** POWER LED & Status LED Condition Entered into Environment Setting Mode**



- Status LED is blink a red.

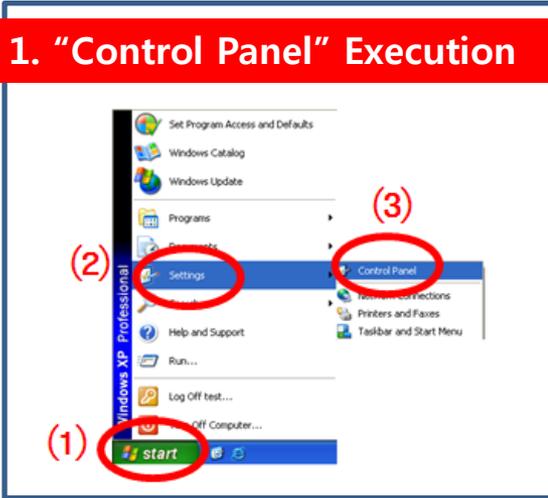


- The left of Power LED is ON a red.
- The right of Power LED is ON a yellow.

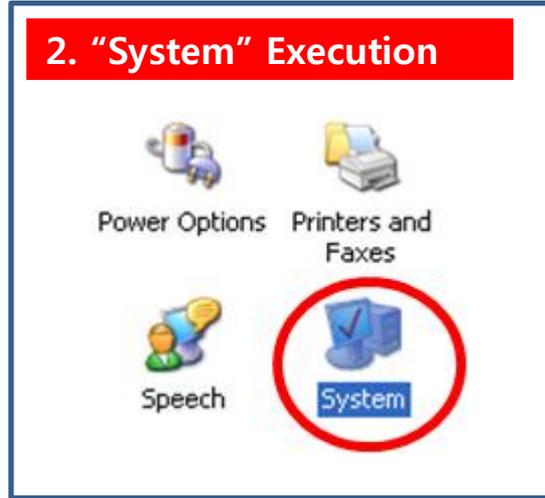


* Virtual Serial Port Number Confirmation

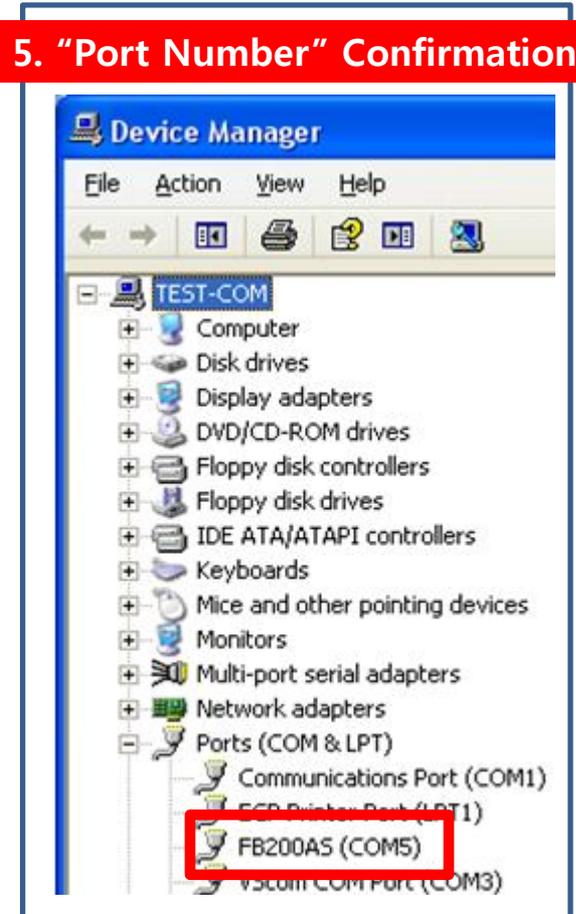
1. "Control Panel" Execution



2. "System" Execution



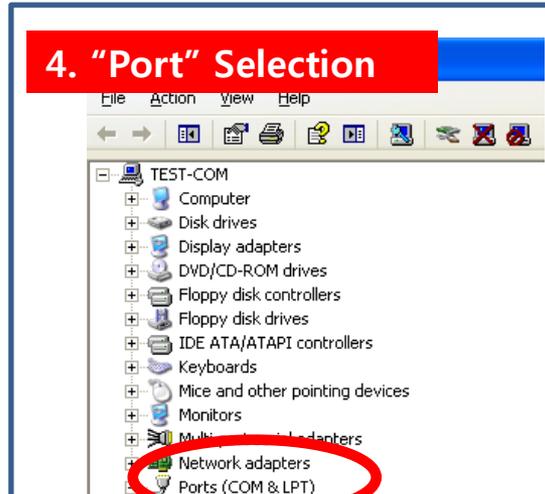
5. "Port Number" Confirmation



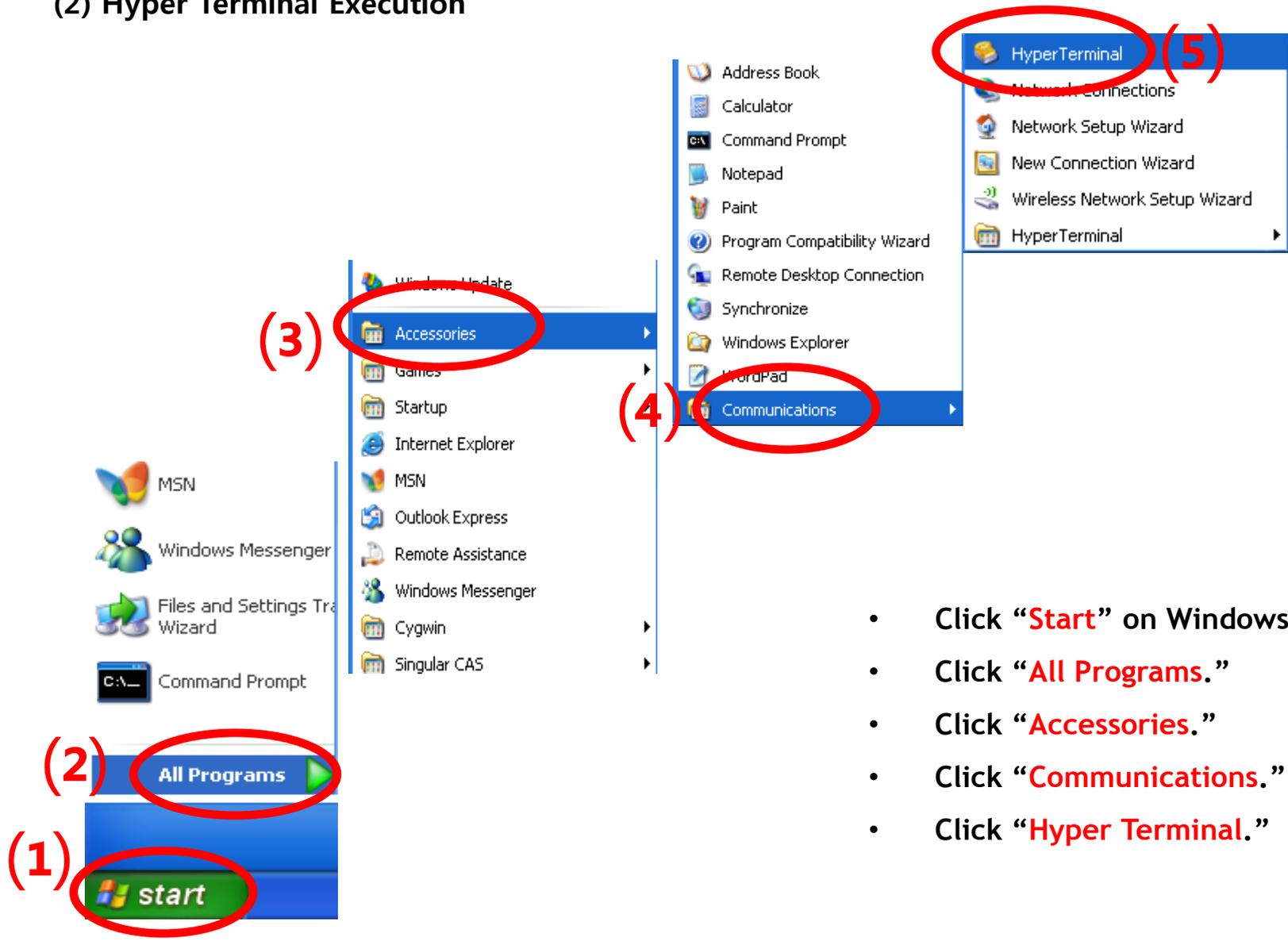
3. "Device Manager" Execution



4. "Port" Selection



(2) Hyper Terminal Execution



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

(3) Setup of Hyper Terminal - Name Setting



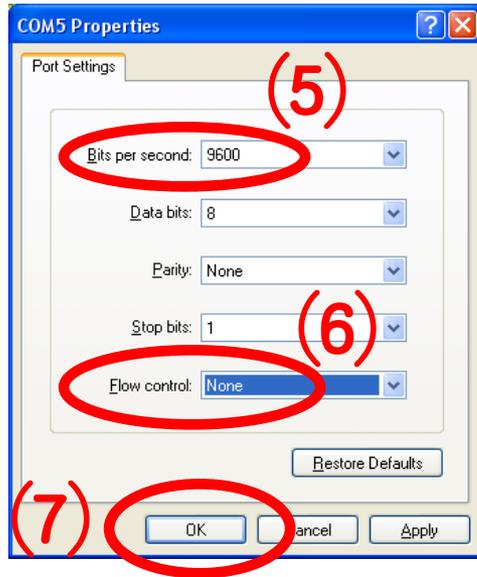
- Set up the hyper terminal connected to FB200AS.
- Enter "master" as a name.
(If assumes a name as master.)
- Click "OK" and proceed to the next step.

(3) Setup of Hyper Terminal - Port Setting



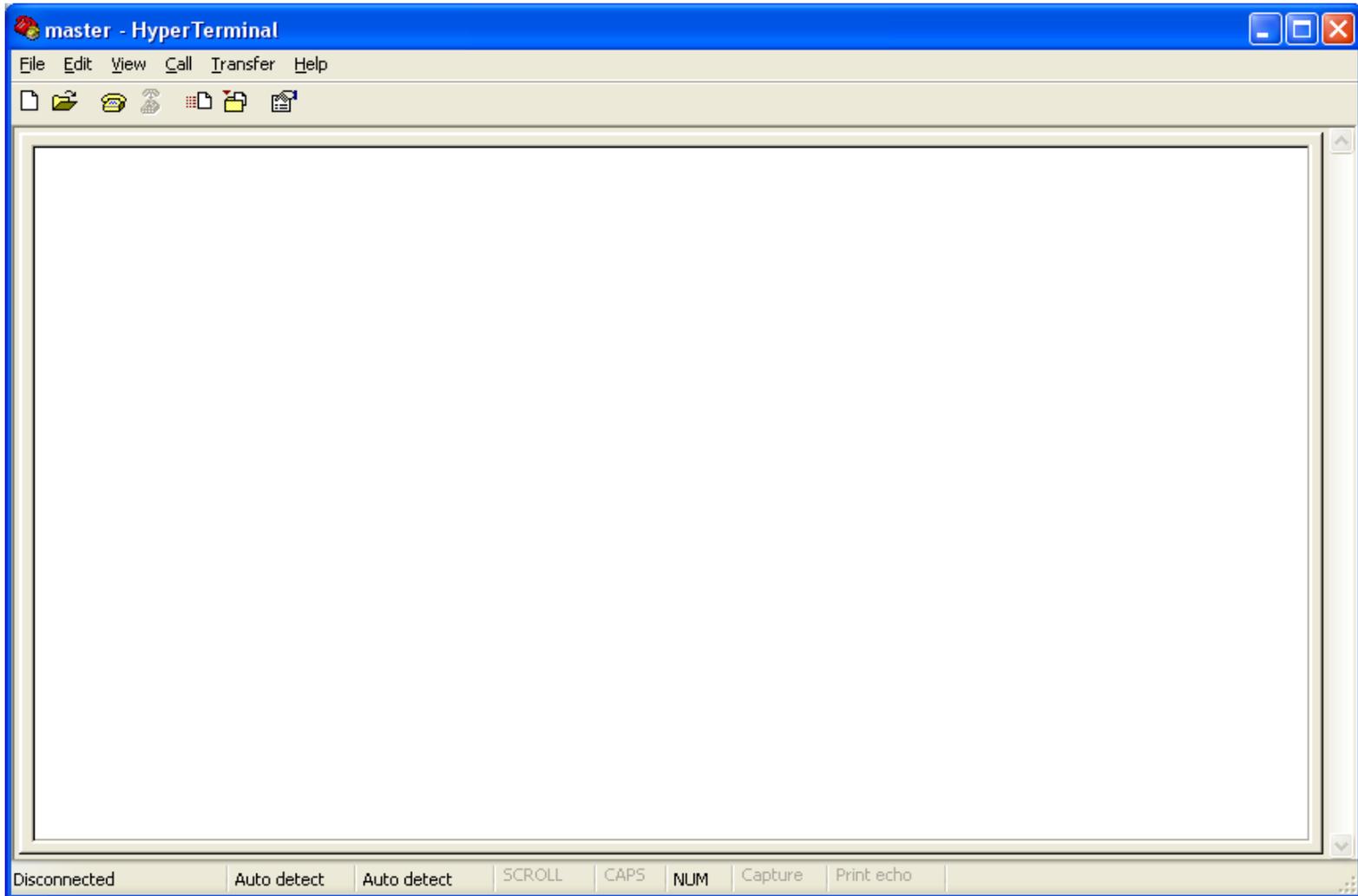
- Select a port to be connected to FB200AS
(Assumed here as 'COM5').
- Click "OK" and proceed to the next step.

(5) 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."

(6) Hyper Terminal Setup - Finish



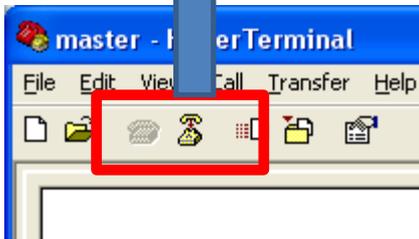
(7) Environment Setup Message Output

```
master - HyperTerminal
File Edit View Call Transfer Help
[Icons]
=====
Model name      : FBx00
S/W Version    : 1.0.2
Bluetooth Spec : 2.0
Local BD Addr  : 00189AF467E8
=====
===== MAIN MENU =====
1 => GO TO BLUETOOTH PARAMETER MENU
2 => GO TO SECURITY PARAMETER MENU
3 => GO TO SYSTEM PARAMETER MENU
4 => GO TO UART PARAMETER MENU
5 => GO TO 1:N COMMUNICATION PARAMETER MENU
=====
[ Back Space : Input data Cancel
[ t : Move top menu
=====
Select(1 ~ 5) >
=====
Disconnected Auto detect Auto detect SCROLL CAPS NUM Capt
```

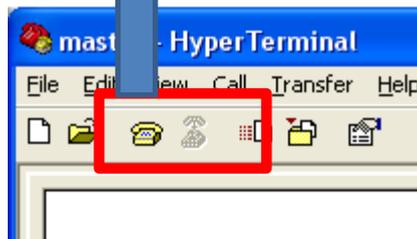
- After entering "t" or "T" on the hyper terminal, press enter.
- if an environment setup message output is made from hyper terminal, FB200AS is operated and connected with hyper terminal normally.
- **FB200AS uses virtual serial port. Therefore, FB200AS will be operated before serial communication program like hyper terminal.**
- **Here is all environment setup message output made before hyper terminal execution. Enter "t" or "T", in order to make an output of environment setup message again.**

* FB200AS connection condition check-sequence

Disconnected with virtual port on hyper terminal using virtual port by changing to () after clicking ().



< Condition using virtual serial port >



< Condition not using virtual serial port >

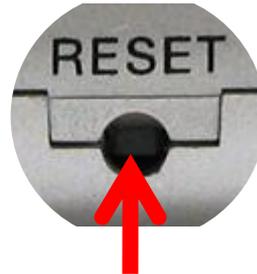
- Finish hyper terminal or the condition connected with virtual serial port, if FB200AS is not operated normally or any word output is not made from hyper terminal. (Please refer to the left in order to disconnect virtual serial port.)
- Restart FB200AS by pressing OFF and then ON switch of FB200AS power-supply.
- Confirm communication speed and other connection agendas.

(8) Factory Reset Progress

Quick Guide uses factory reset value of product for explanation purpose.

Progress factory-Reset as follows in case of used product or other setup product.

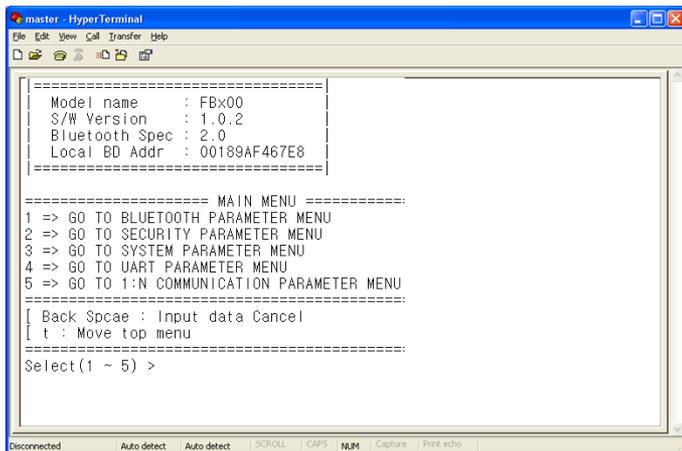
Confirm "RESET" of a side "FB200AS".



- Press a Reset Switch in hole by using tweezers.

- FB200AS is reset if environment setup message output is made from hyper terminal.

- **Reset Switch is operated only on environment setup-condition.**



* Factory Reset

- Should be connected automatically if FB200AS is setup into Master & Slave.
- Should reset FB200AS if Master or Slave is connected with new device again.
- Should be progressed again from the start after all FB200AS reset, if the connection of FB200AS Master & Slave is not progressed for a certain time.
- In case of many surrounding devices of Bluetooth, FB200AS Master devices can take many times to be connected with FB200AS Slave. In this case, the connection had better be progressed after OFF of other Bluetooth device power-supply except for FB200AS Slave.

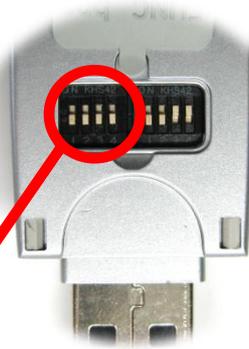
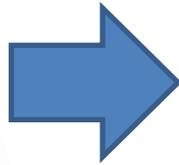
(9) Serial Communication Program Finish & FB200AS Power-Supply OFF

- **FB200AS uses virtual serial port.**
- **Therefore, it should be under virtual serial unused-condition ,which a serial communication program is finished before OFF of FB200AS power-supply.**
- **It may occur critical situation if the power-supply of FB200AS become OFF under the condition, which a serial communication program is not finished.**
- **Therefore, certainly, the power-supply of FB200AS should become OFF under virtual port unused-condition ,which a serial communication program is finished before OFF of FB200AS power-supply.**

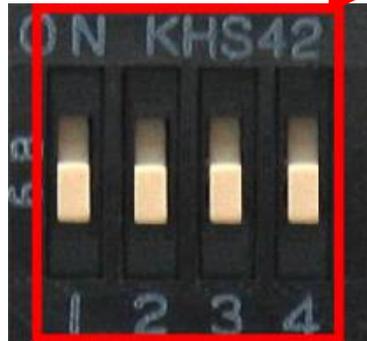
[4] Master & Slave Setup

1. Slave Setup Progress Using Dip Switch

(1) FB200AS **slave** Setup



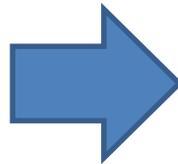
Dip Switch setup to be slave of FB200AS is setup as follows.



- Press OFF of Dip Switch Number#1,2,3,4.(Basic setup agendas).
- FB200AS electricity power ON.

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

* Status LED Condition Operated by Slave



- Status LED is blink a green.

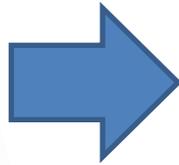


- The left of Power LED is ON a red.
- The left of Power LED is ON a yellow.

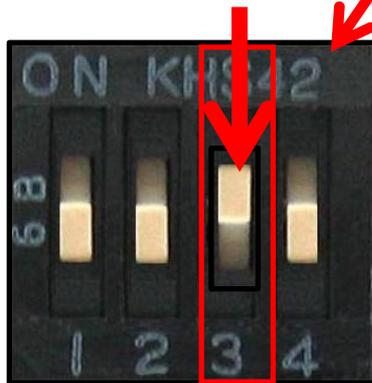


2. Master Setup Progress Using Dip Switch

(1) FB200AS **master** Setup

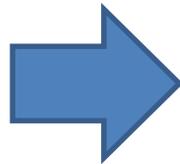


Dip Switch setup to be master of FB200AS is setup as follows.



- Press ON of Dip Switch Number#3.
- Press OFF of Dip Switch Number#1,2,4.
- FB200AS electricity-power ON.

*** Status LED Condition Operated By Master**



- Status LED is blink a green.

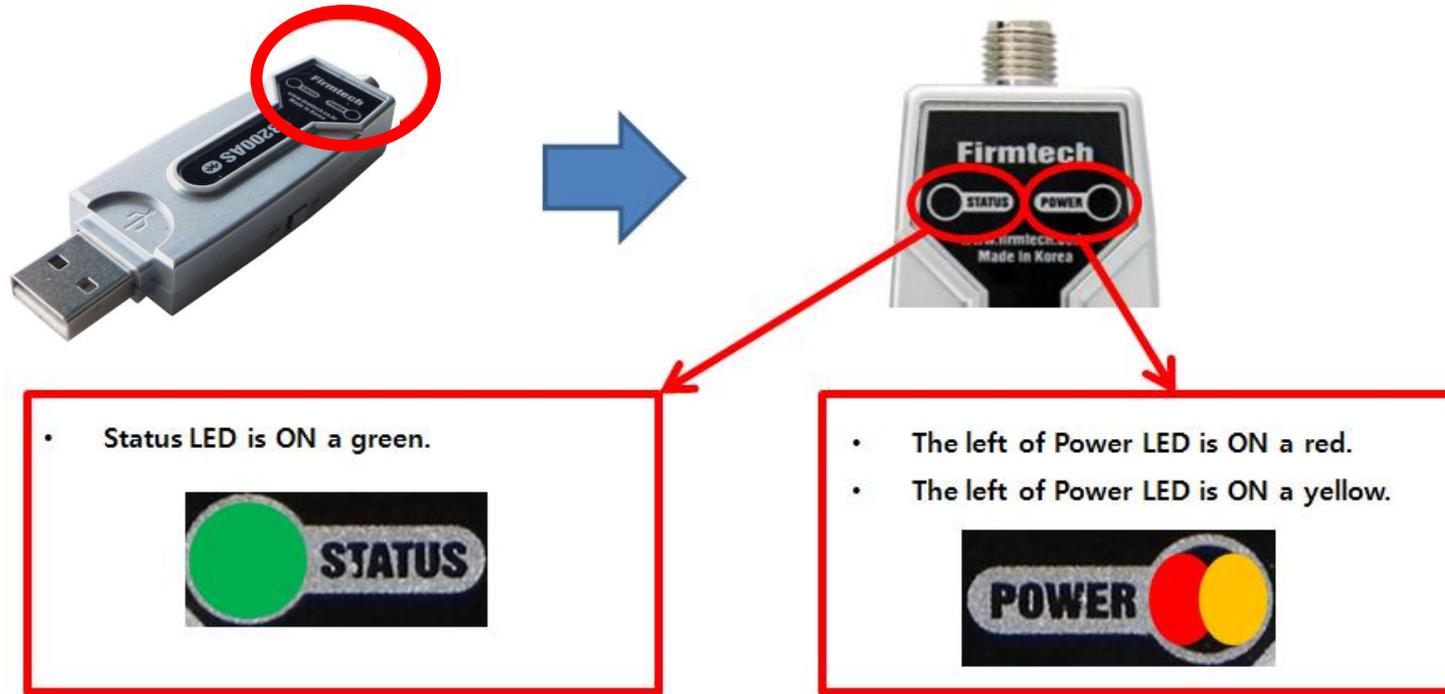


- The left of Power LED is ON a red.
- The left of Power LED is ON a yellow.



3. Auto Connect

(1) Connect



FB200AS is automatically connected in case of Master & Slave setup.

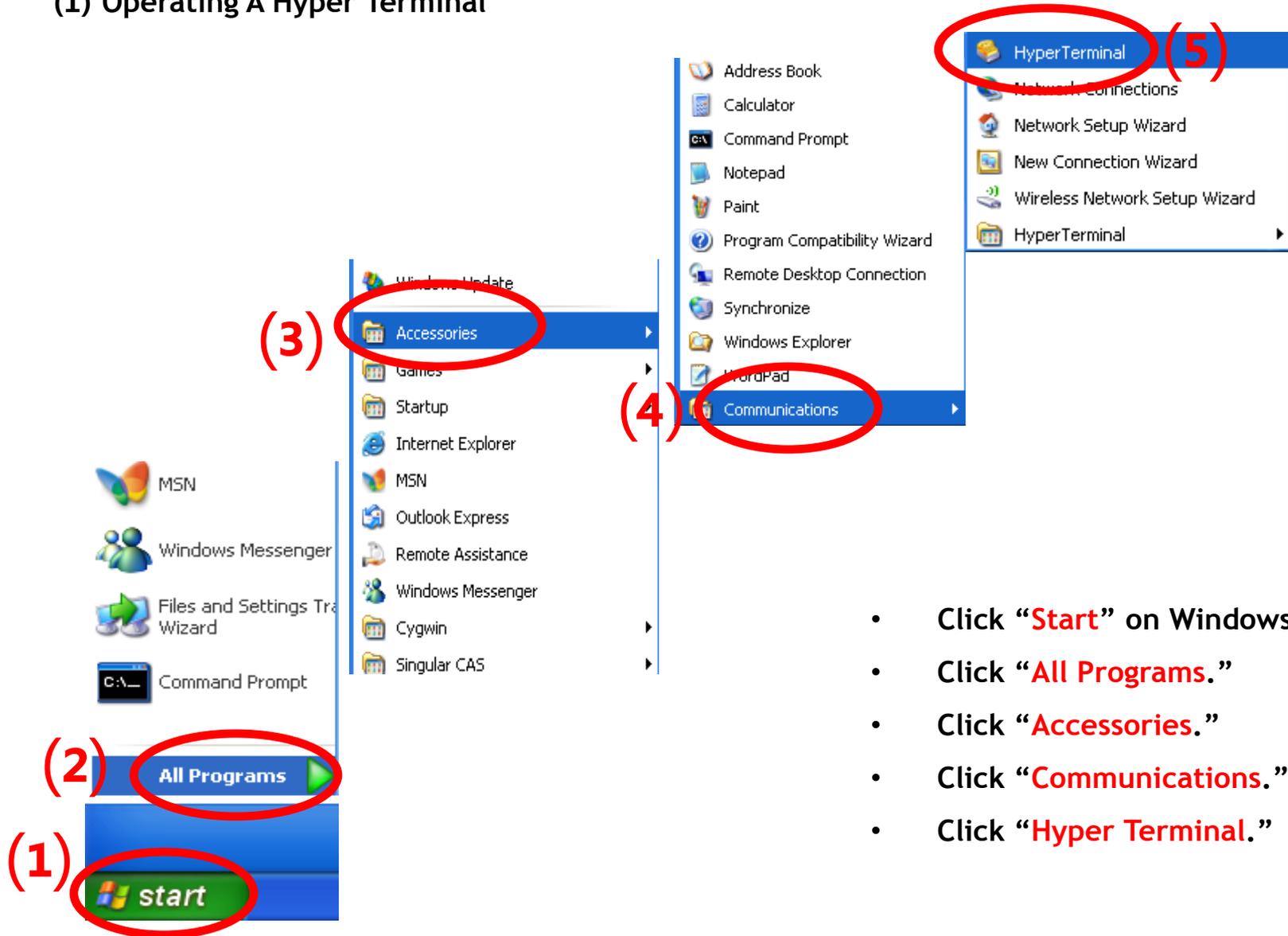
In case of a number of Bluetooth devices located close, it may take much time that FB200AS Master device is connected with FB200AS Slave device. If so, first, press OFF of the power-supply switch of Bluetooth device except for FB200AS Slave device and then the connection should be progressed.

FB200AS uses a virtual serial port. It is difficult to confirm Master & Slave connection condition as a message. Therefore, the connection condition should be confirmed by Status LED.

[5] Serial Data Transmission

1. Serial Communication Program(Hyper Terminal) Execution & Setup

(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



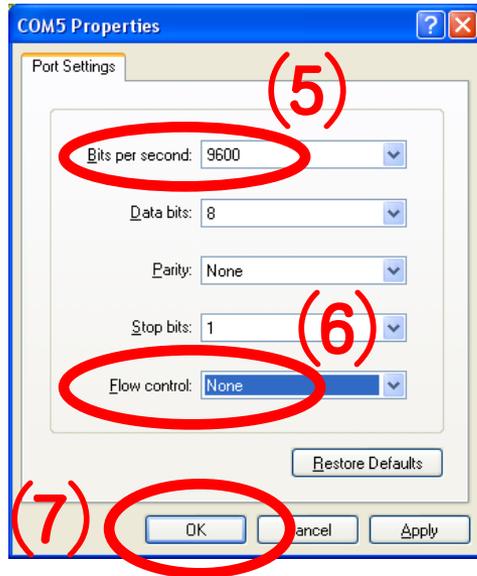
- Set up the hyper terminal connected to FB100AS to be set up to **Master**.
- Enter “Master” as a name.
- Click “OK” and proceed to the next step.

(3) Setup of hyper terminal - Port setting



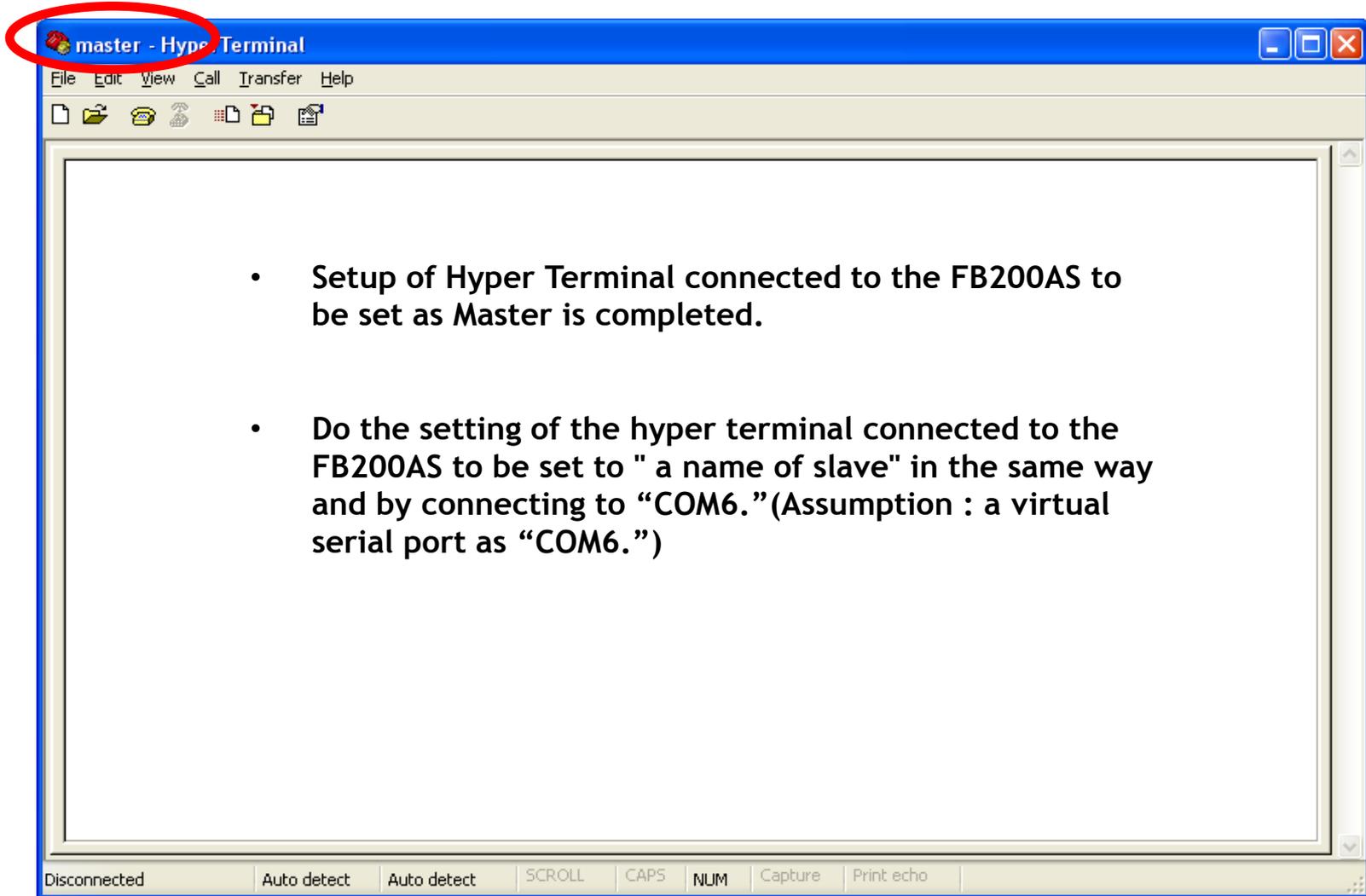
- Select a port to be connected to FB100AS set up to **Master**. (Assumed here as ‘COM5’)
- Click “OK” and proceed to the next step.

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



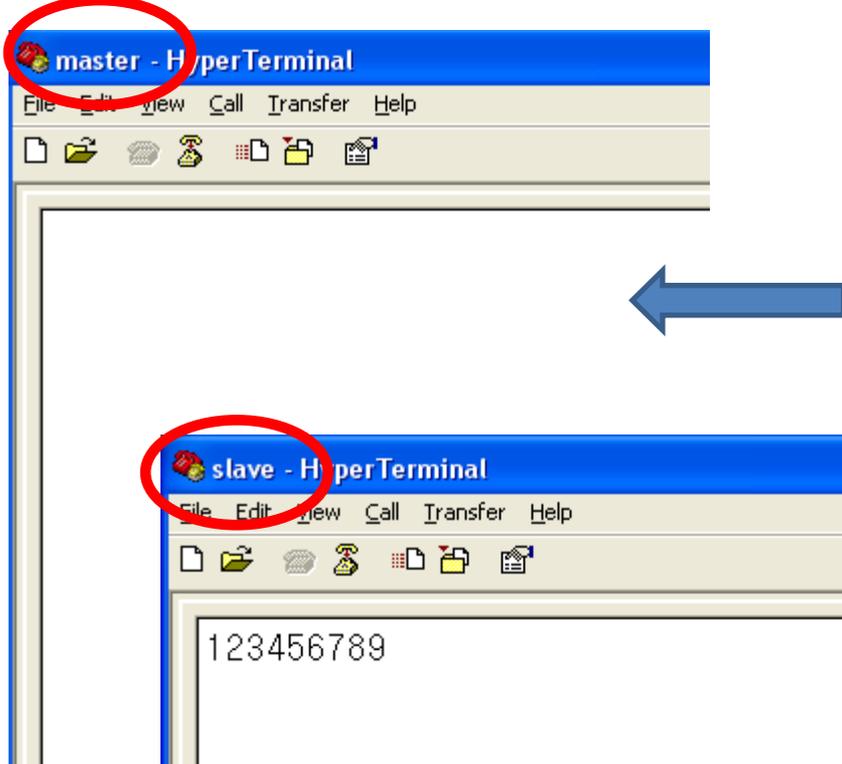
- Select “9600” for “Bits per Second”.
- Select “None” for “Flow Control”
- No change for other items.
- Click “OK.”

(5) Setup of Hyper Terminal- Finish



2. Serial Data Transmission

(1) Serial Data Transmission from master => Data reception from slave



Enter the followings on the hyper terminal connected to FB200AS setup to be **master**.

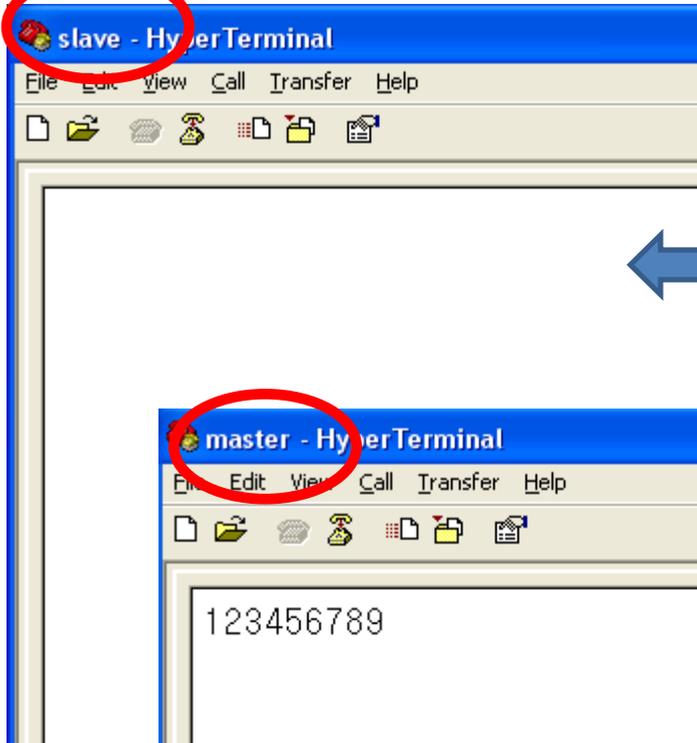
- After entering "123456789" on the hyper-terminal, press enter-key.

- Entered data is not shown on the hyper-terminal.

Displays the followings on the hyper terminal connected to FB200AS setup to be **slave**.

- "123456789" is shown on the hyper terminal.

(2) Serial Data Transmission From Slave => Received By master



Enter the followings on the hyper terminal connected to FB200AS setup to be **slave**.

- After entering "123456789" on the hyper-terminal, press enter-key.
- Entered data is not shown on the hyper-terminal.

Displays the followings on the hyper terminal connected to FB200AS setup to be **master**.

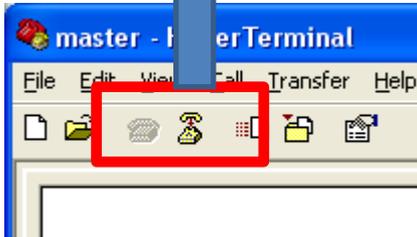
- "123456789" is shown on the hyper terminal.

[6] Disconnect

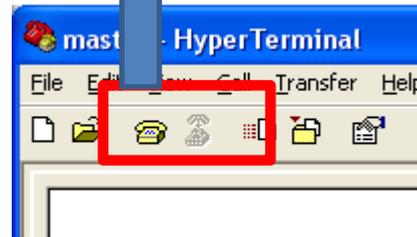
1. Disconnect

(1) Disconnect Method

Disconnected with virtual port on hyper terminal using virtual port by changing to () after clicking ().



< Condition using virtual serial port >



< Condition not using virtual serial port >

- Finish hyper terminal or the condition connected with virtual serial port in order to finish the connection of FB200AS. (Please refer to the left in order to disconnect virtual serial port.)
- The connection of FB200AS Master & Slave is automatically cut after a while, if one side power-supply of FB200AS is OFF after changing a virtual serial port into unused-condition on serial communication program.



FB200AS Power Supply OFF

[7] Re-connect

1. Reconnection

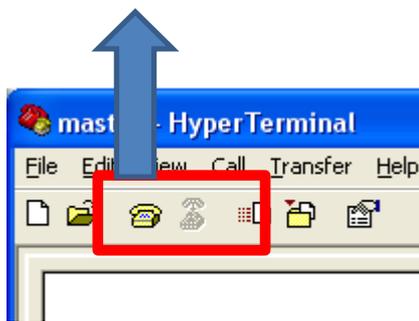
(1) Reconnection method



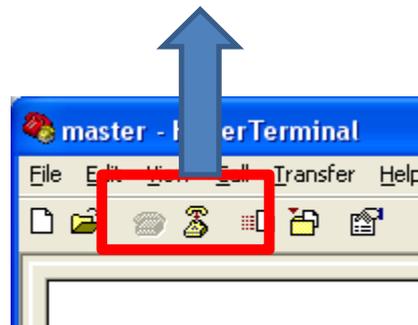
FB200AS Power Supply ON

- Reconnected automatically if press ON switch of power-supply of FB200AS Master & Slave device when FB200AS Master & Slave was progressed a connection previously,
- Reconnected a virtual serial port disconnected or executed on hyper terminal again to communicate after FB200AS Master & Slave are connected.

Reconnected with virtual port on hyper terminal by changing to () after clicking ().



< Condition not using virtual serial port >



< Condition using virtual serial port >

For even more details, please refer to FB200AS user manual.