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BM1001 (Bluetooth Serial Adapter) User's Guide

BTNetworks Co., LTD 2005 08.30 Ver 3.0

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1. Introduction (Model: BM1001)

Bluetooth Serial Adapter, BM1001 is product that is developed, designed and produced by BTNetworks. It can replacement standard RS232 cable perfectly.

- Bluetooth communication's security is very strong because it uses the frequency hopping and 128bit encryption in 2.4Ghz frequency range.

- Hardware setting is very easy and simple.
  - The maintenance is very convenience.
  - One pair of BM1001 will try to connect automatically whenever power up.

- It doesn't need the extra software.
  - Doesn't need to install the device driver.
  - Doesn't need to install the application software.

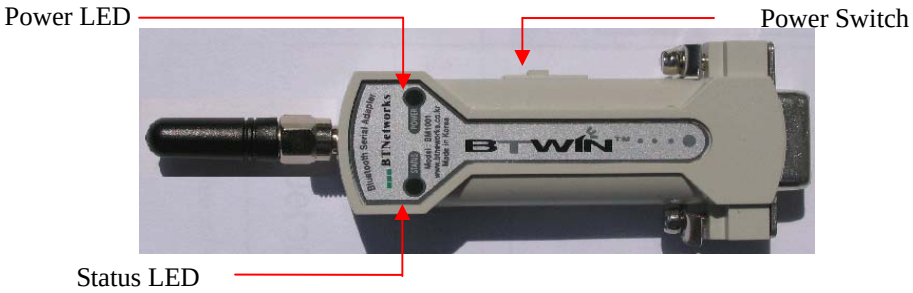
- You may select the various configurations with only DIP Switch. **(In DIP-Switch mode)**
  1. Baud Rate
  2. Power supply way. (USB power cable or D-SUB Connector)
  3. Role (MASTER or SLAVE)
  4. Mode Select:
     - DIP-Switch mode
     - PC configuration mode

- Power supplying method is user friendly.
  1. Power may be supplied via USB power cable. (Default Setting)
  2. It also may be supplied via Pin 9 of D-SUB Connector.

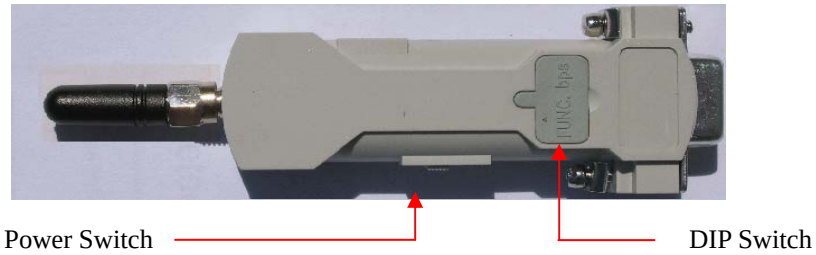
- **Default Setting & Each mode description**

Part	DIP Switch Configuration Mode	PC Configuration Mode
Set Values	Set Baud rate Select external power Select Role - Master - Slave Select Mode - DIP Switch Configuration Mode - PC Configuration Mode	Set Device name Set Pin Code View Local BD Address Set Remote BD Address Select Role (Master/ Slave) Search Bluetooth Devices Connect new Bluetooth Device Set Baud rate Select Stop bit Select Parity bit Select Hardware flow control
Remark	DIP Switch Configuration Mode is default.	- User can set up the value with HyperTerminal program of Windows. - When connect other Bluetooth device, Using this mode.
Default Setting	Baud rate = 9600 bps Data Bit = 8 Bit Stop Bit =1 Bit Parity Bit =No Parity Bit Hardware flow Control = None Role = MASTER or SLAVE	Device Name = BTNetworks PIN Code = BTWIN Operating Mode = MODE1 Baud rate = 9600 bps Data Bit = 8 Bit Stop Bit =1 Bit Parity Bit =No Parity Bit Hardware flow Control = None ROLE = MASTER

2. External View



<TOP View>



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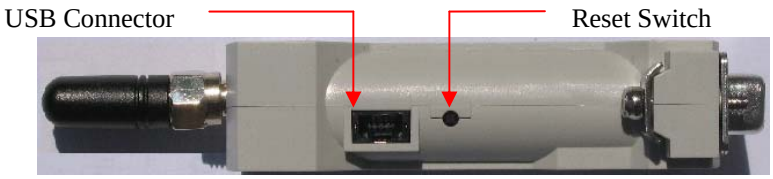
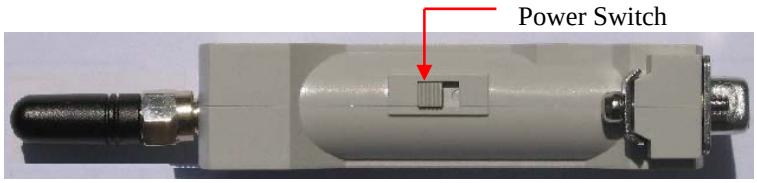


<Left View>



<Right View>

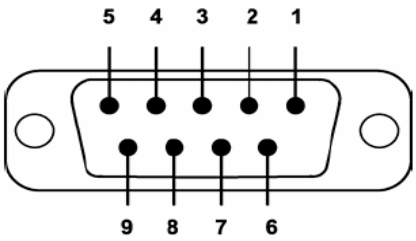
3. Contents of Package

No	Picture	Q'ty	Remark
1	BM1001	2	Default
2	External Antenna (2.5 dB)	2	
3	USB Cable for power supplying	2	
4	BTWIN™ BM1001 User's Guide CD	1	
6	DC Adapter for Power Supplying		Optional Buy

4. Specification

Part	Specification
Bluetooth Spec	Bluetooth Specification V1.1
Communication distance	100 M
Frequency Range	2.4 GHz ISM Band
Sensitivity	-83dBm (Typical)
Transmit Power	12dBm (Typical)
Size	66 * 31 mm
Support Bluetooth Profile	SPP
Input Power	4 - 12 V
Current Consumption	Max 100 mA
Operating Temperature	-10℃ ~ 70℃
Communication Speed	1200 bps ~ 115,200 bps
Antenna	Dipole Antenna (2.5 dB)
PC interface	9Pin D-SUB Connector (Female type)

5. Interface

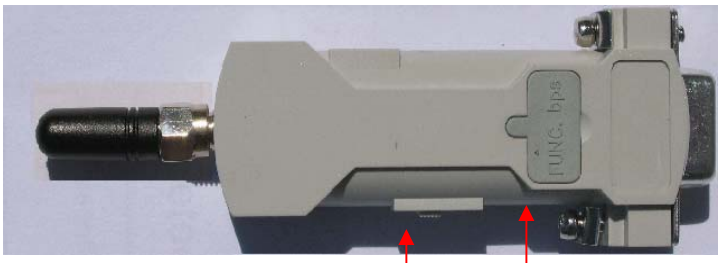


D-SUB 9 Pin Connector

Pin No	Signal Line	Description	Direction
1	**DCD**	Data Carrier Detect	Output
2	**TXD**	Transmit Data	Output
3	**RXD**	Receive Data	Input
4	**DSR**	Data Set Ready	Input
5	**GND**	Ground	-
6	**DTR**	Data Terminal Ready	Output
7	**CTS**	Clear To Send	Input
8	**RTS**	Ready To Send	Output
9	**VCC**	Power	Input

Power may be supplied via Pin 9 of D-SUB connector.

6. About the DIP-Switch

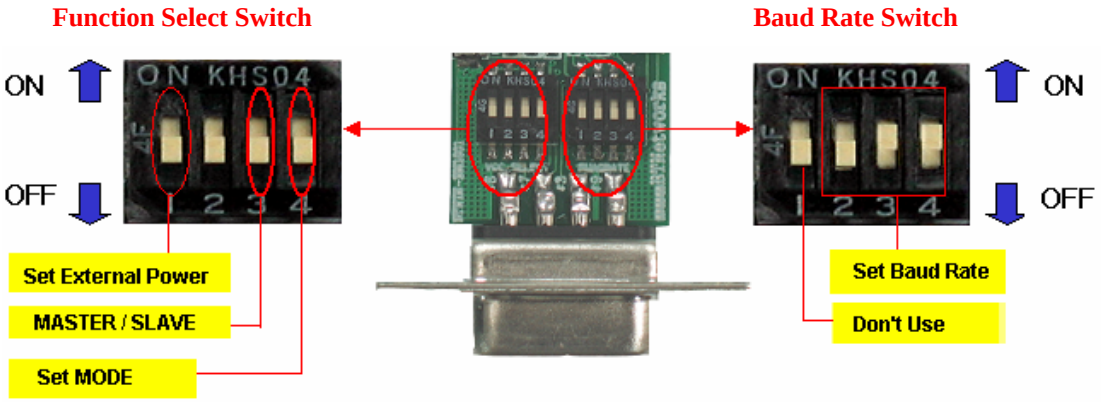


Power Switch

DIP Switch Cover

<Bottom View>

Open the DIP-Switch cover, and you may see below picture.



***Each DIP Switch's pin is able to move up and down.**

6.1 Function Select Switch

1) You may select the external power with pin#1of the function select switch.
2) You may select the Role with pin#3 of the function select switch.
3) You may select the Mode with pin #4 of the function select switch.

6.2 Baud Rate Switch

You may set the various baud rates with only the baud rate switch.
Pin#1 is not used. Pin#2,3,4 are used for the baud rate setting.
The baud rate settings are from 1,200 bps to 115,200 bps.

* In order to use this feature, pin#4 of the function select switch must be always up.

7. Function Select Switch

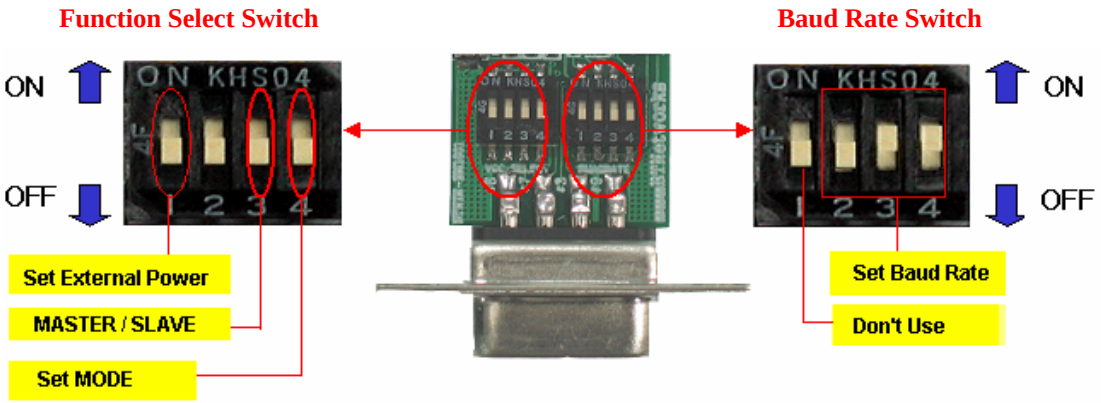
7.1 Select the external power

You can choice the power supplying method.

1) The power may be supplied via USB cable. **(Default Setting)**

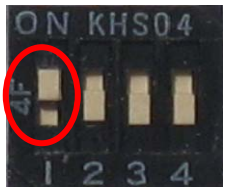
2) The power may be supplied via pin#9 of the D-Sub 9 pin Connector.

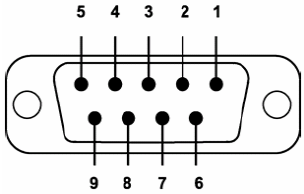
You may select the power supplying method with pin#1 of the function select switch.



You may select the external power supplying method with pin#1 of the function select switch.

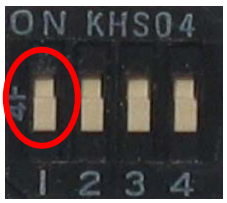
i) Via the pin#9 of D-SUB Connector





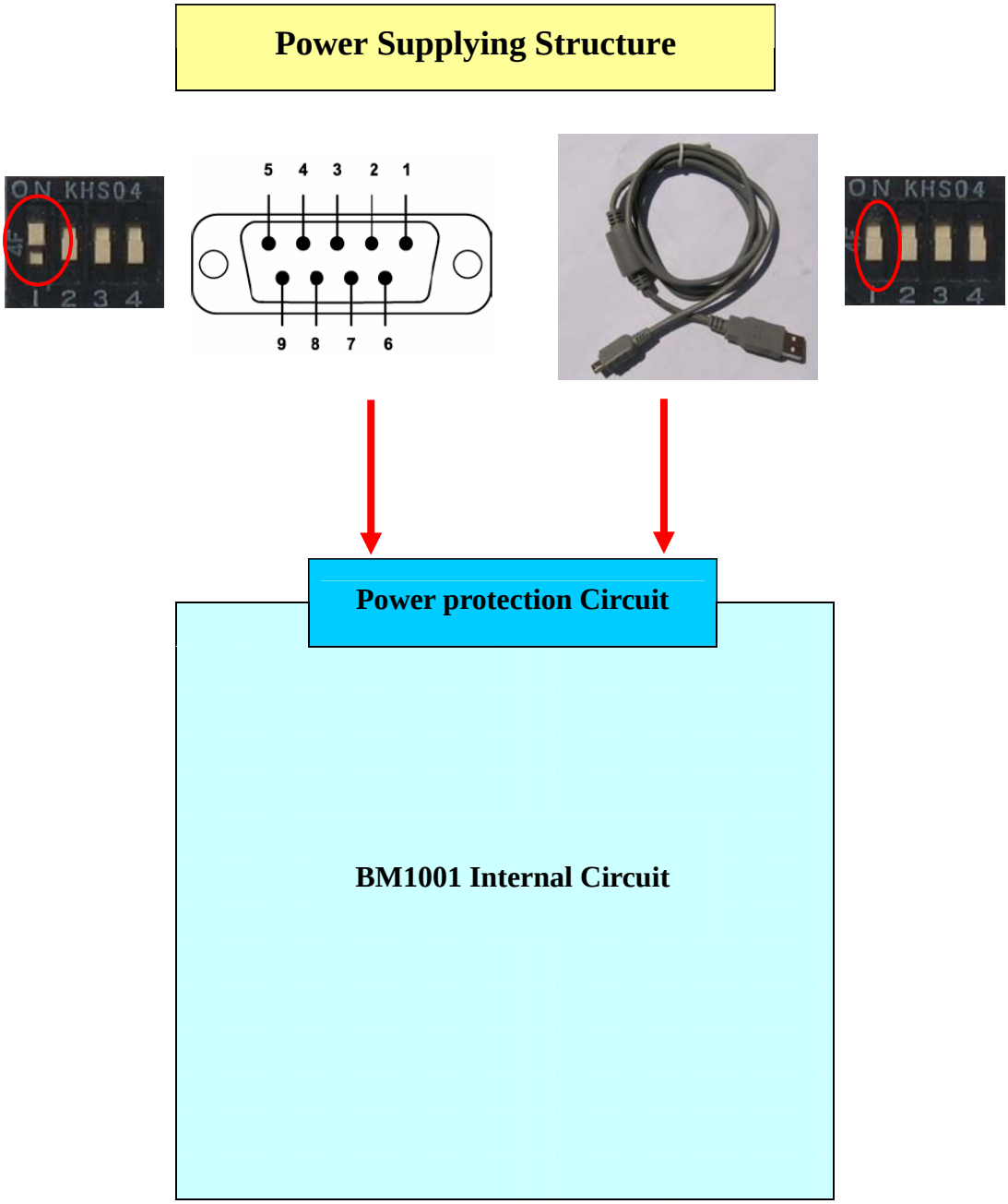
When pin#1 of the function select switch is high, the power is supplied via pin#9 of the D-SUB connector.

ii) Via the USB cable



When pin#1 of the function Select switch is low, the power is supplied via the USB cable.

iii) Power supplying block Diagram

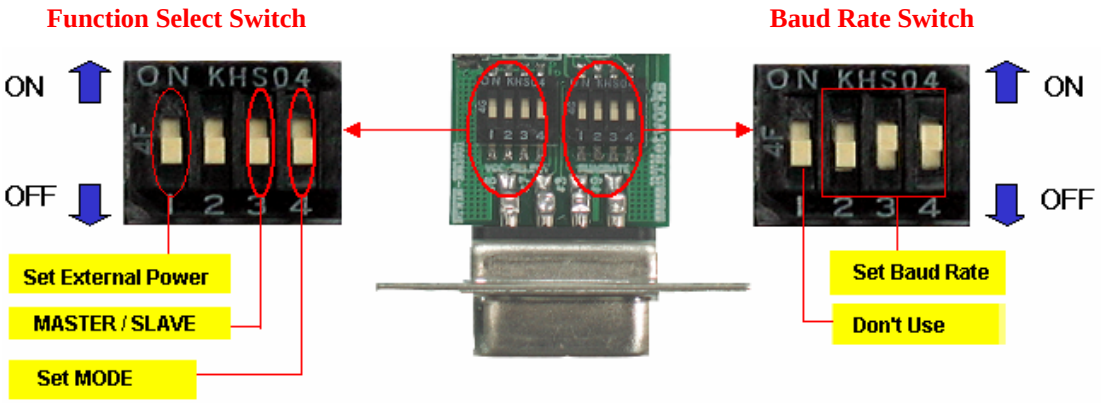


Pin#1 of the function select switch is up; the power will be supplied via pin#9 of D-SUB Connector.

Pin#1 of the function select switch is down; the power will be supplied via the USB cable.

7.2 Select the Role (MASTER / SLAVE)

In order to connect between two BM1001, one should be a MASTER and another should be a SLAVE. You may select the role with pin#3 of the function select switch.

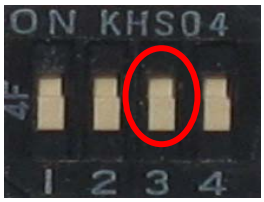


You may select the role with pin#3 of the function select switch.

i) As a MASTER

When pin#3 of the function select switch is up, BM1001 is a MASTER.

ii) AS a SLAVE



When pin#3 of the function select switch is down, BM1001 is a SLAVE.

***Caution.**

If BM1001's role select is wrong, BM1001 can't communicate between each other.

7.3 Select the Mode

BM1001 has two modes. One is a DIP Switch configuration mode and another is a PC configuration mode. You may select the mode with pin#4 of the function select switch.

1) DIP Switch Mode

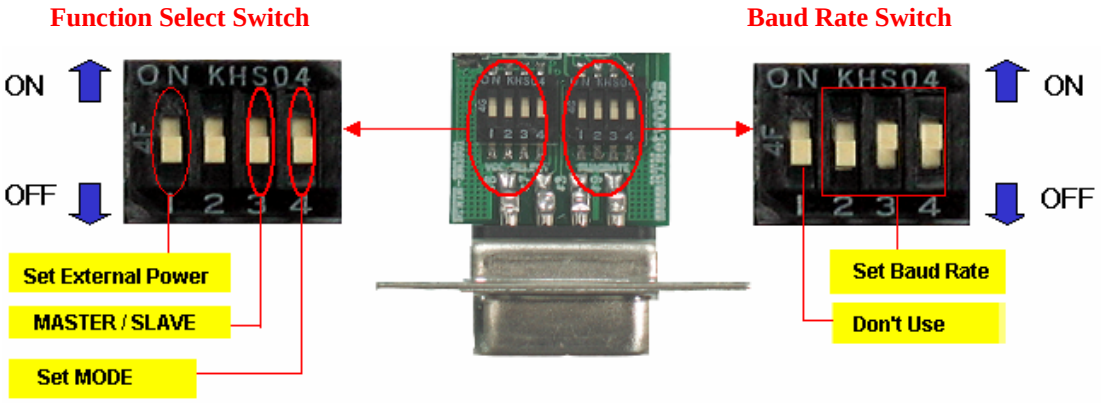
You can set the various features, like a baud rate setting and Role.

If you want to set the baud rate with only DIP-Switch, the Mode of the BM1001 must be a DIP Switch Mode.

2) PC Configuration Mode

You can set the features and parameters with HyperTerminal of the windows.

PC configuration mode provides the various features.



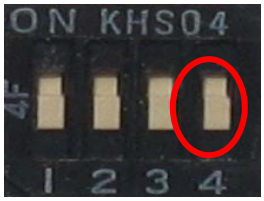
You can select the mode with pin#4 of the function select switch.

i) DIP Switch Mode

When pin#4 of the function select switch is up, BM1001's mode is DIP Switch Mode.

If you want to set the baud rate with only DIP-Switch, the mode of the BM1001 must be a DIP Switch Mode.

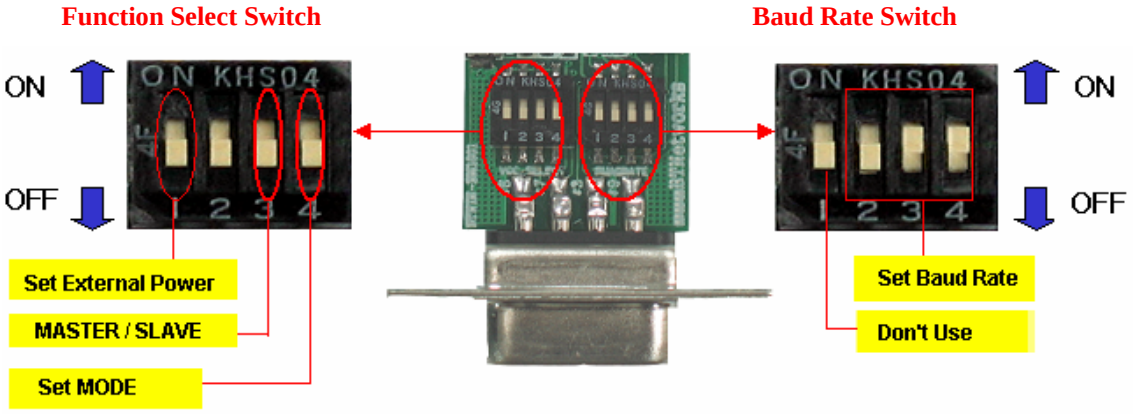
ii) PC Configuration Mode



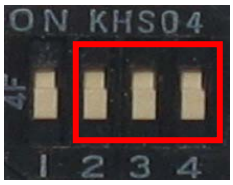
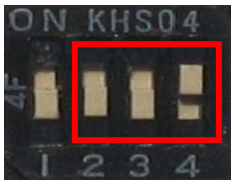
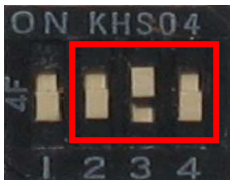
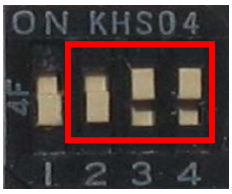
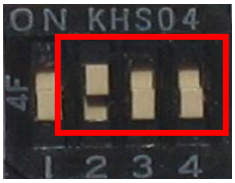
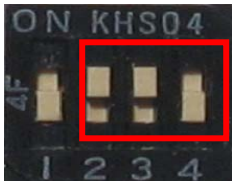
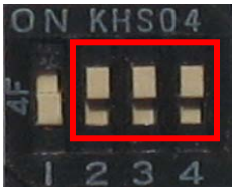
When pin#4 of the function select switch is down, BM1001's mode is a PC Configuration mode. If you want more flexible setting and to use the various features, you can select this mode.

8. Set the Baud Rate

BM1001 provide the various communication speeds from 1,200 bps to 115,200 bps.
You can set the baud rate of BM1001 with only the baud rate switch from 1,200 to 115,200 bps.
Check the Baud Rate Switch setting.



Set the Baud Rate

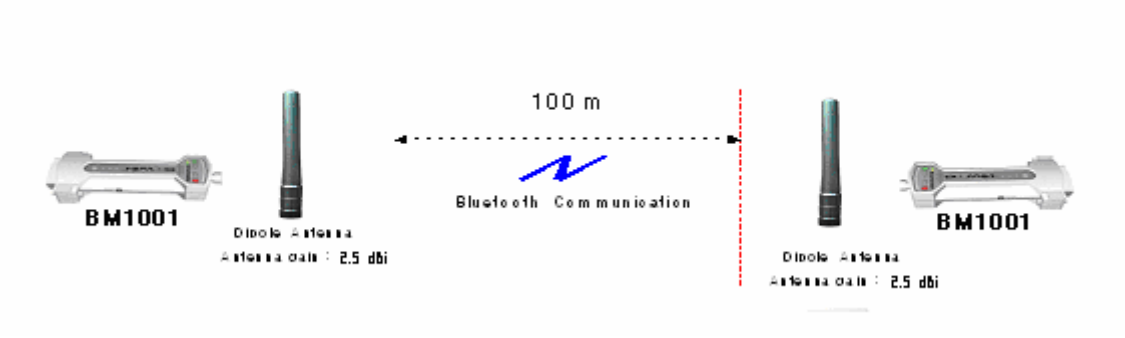
 1200 bps	 2400 bps	 4800 bps	 9600 bps
 19200 bps	38400 bps	 57600 bps	 115200 bps

** Caution **

- Pin#1 of the Baud Rate Switch doesn't use.
- Pin#4 of the function select switch must be high for DIP Switch Mode.
- If you want more high speed than 115,200 bps, Use the PC configuration mode.

9. Antenna Configuration Scenario

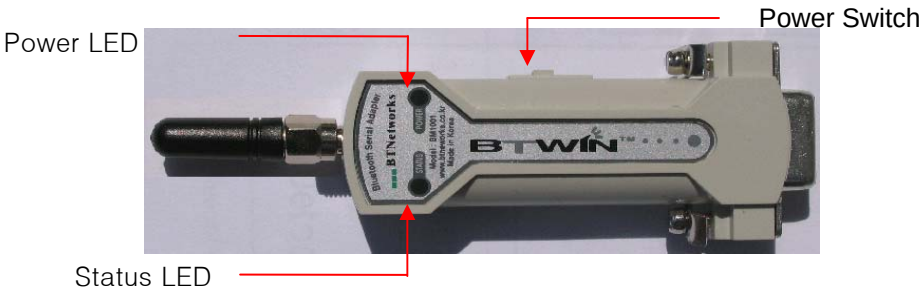
Wireless communication's performance depends on the antenna and the environment.



10. Power Consumption

Mode	Current	Remark
Standby	20 mA	Test Environment - Baud rate is 9600 bps. -Input Voltage is 5V. Power consumption depends on communication speed and the environment.
Device Searching	73 mA	
Pairing	55 mA	
Before Connection	73 mA	
After Connection	50 - 55 mA	

11. LED Indicator and Reset Switch



<TOP View>

11-1. Power indication LED / Status indication LED

You can find the status of BM1001 with Red and Green LED indicator

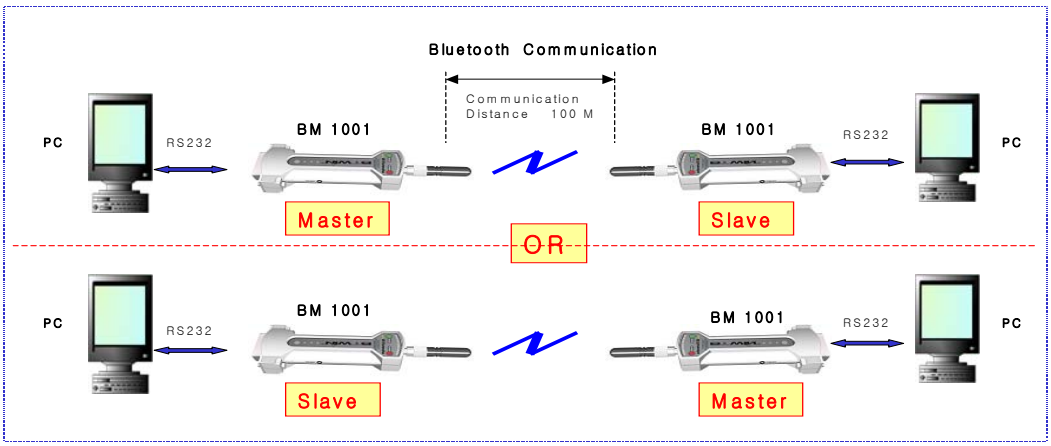
LED	Status	Description
Power LED	Power ON	Red LED is On (Stable)
Status LED	Connecting	Green LED is flashing twice per second.
	Connection	Green LED is On (Stable)
	Connection Error	Red LED is flashing every 0.05-second.
	Enter Configuration Mode	Red LED is flashing twice per second.
	Configuration Setting	Red LED is flashing three times per second.

11-2. Reset Switch

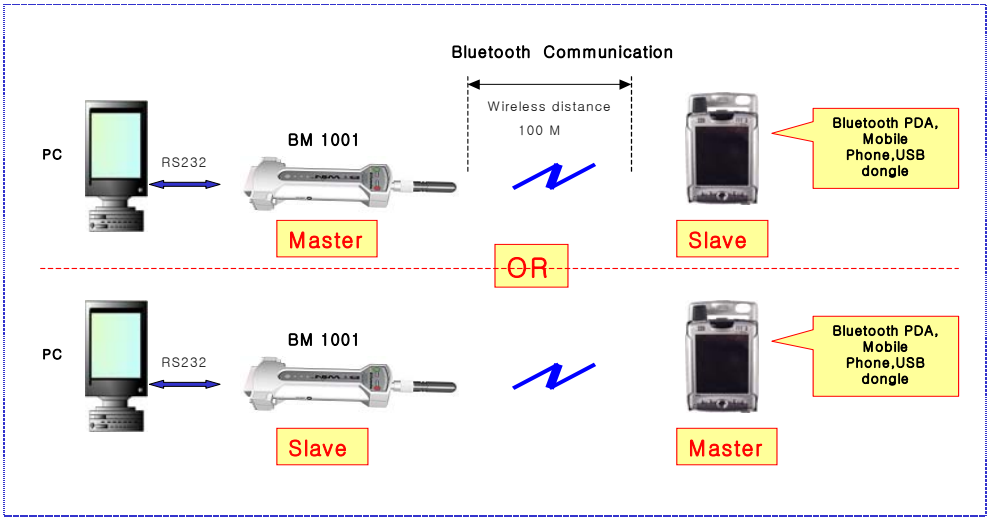
Status LED	Result After Reset
Green is On	Current connection will be disconnected and try reconnection.
Red is flashing	The setting will be a default setting.

12. The Bluetooth Communication with BM1001

In order to communicate between two BM1001, one should be a Master and another should be a Slave.



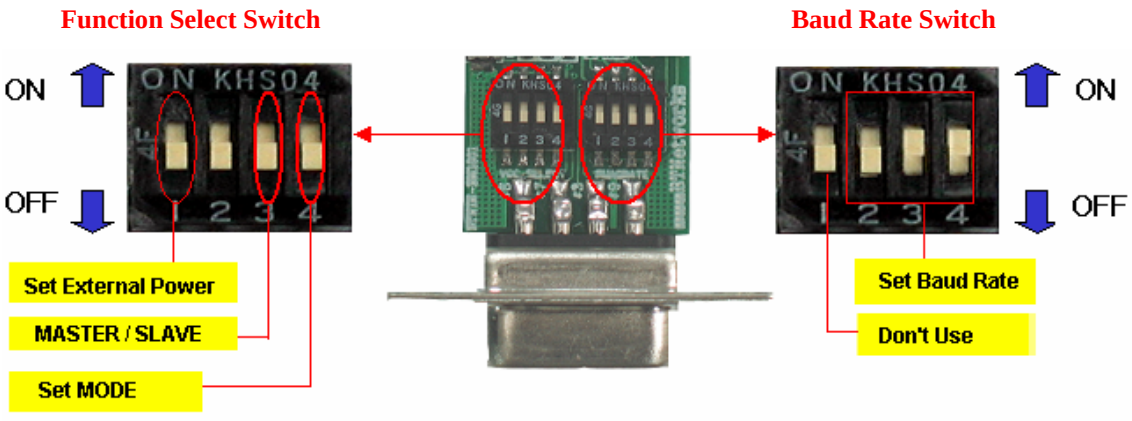
In order to communicate between BM1001 and the Bluetooth products that are able to support SPP profile like PDA, Mobile Phone, Bluetooth Dongle, BM1001 must be a Master or a Slave. And the other products must be opposite role. If BM1001 is a Master, other side product should be a Slave.



13.About the DIP Switch Mode

13.1 Check the default setting before testing BM1001

1) there are two BM1001s. One should be a Master and opposite side should be a Slave.
   - BM1001 is set either master or slave at factory.
2) Mode select is DIP-Switch Configuration mode.
3) Baud rate is 9600 bps.



i) Set as a MASTER

Function Select Switch

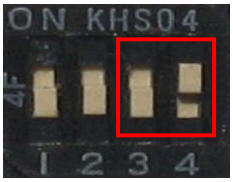
Baud Rate Switch

Setting

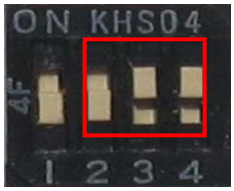
Role: Master
bps: 9600 bps
Mode: DIP Switch
Configuration Mode

ii) Set as a SLAVE

Function Select Switch



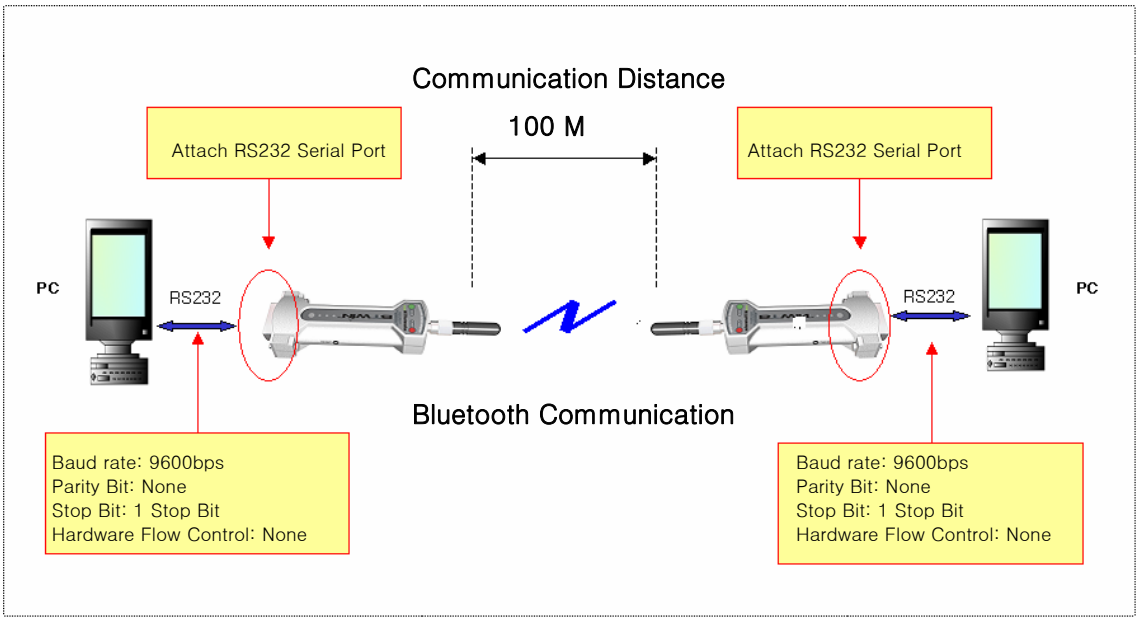
Baud Rate Switch



Setting

Role: Slave
bps: 9600 bps
Mode: DIP Switch
Configuration Mode

13-2. Communication Test at 9600 bps (default Setting)



Part	Description		
Requirement	• PC: 2ea , •BM1001: 2ea		
Test Environment	PC is power on and the OS is the Windows. Use COM 1 port of each PC.		
Setting Values	**Part**	**Default (Before change)**	**User Select (After Change)**
	External Power Select	Not Use	Not Use
	Select the Role (Master/Slave)	MASTER or SLAVE	MASTER or SLAVE
	Select the Mode	DIP-Switch Configuration Mode	DIP-Switch Configuration Mode
	Baud rate	9600 bps	9600 bps
	Parity	None	None
	Stop bit	1 bit	1 bit
	Hardware flow control	None	None
* If use Default setting, User don't have to change the setting.			

Test Scenario. Follow these procedures.

[1] Attach BM1001 to COM port of each PC.
- Desktop PC has two COM ports. (COM1 and COM2)

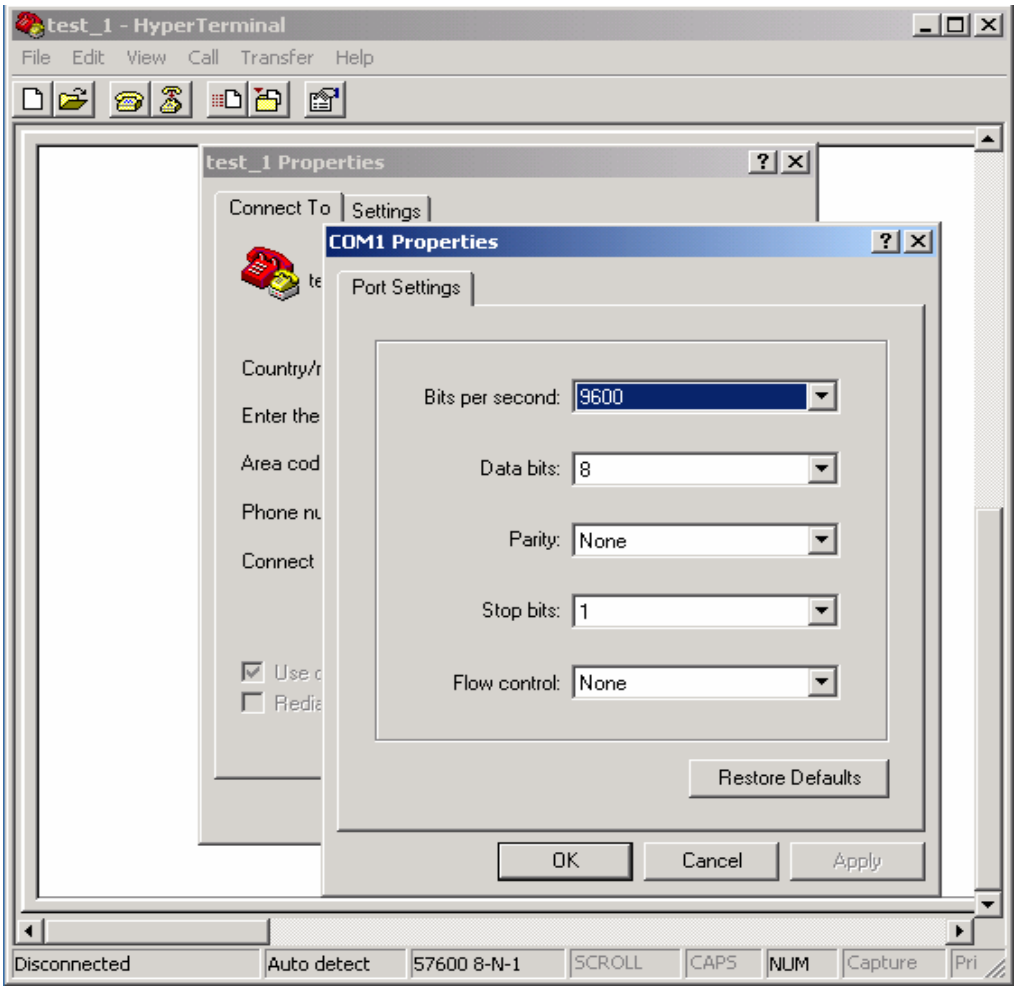
[2] Supply the power to BM1001 through USB power cable.
- USB power cable is just used for the power of BM1001.
- Don't use it for the data communication.

[3] Turn on the power switch.
- Whenever turn on the power switch, BM1001 will start working.

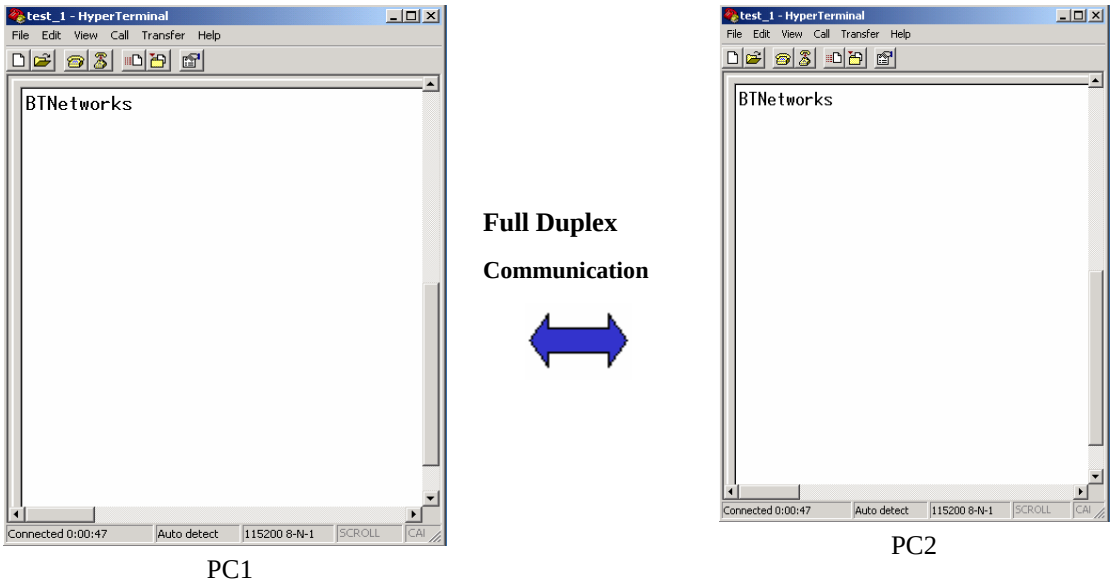
[4] Check on the power LED color is red.
- It means B1001 is supplied power stable.

[5] Check on status LED color is green.
- When Status LED is green, it means is established connection between two BM1001s.

[6] Run the hyper terminal at each PC. And then set the parameters as below picture.



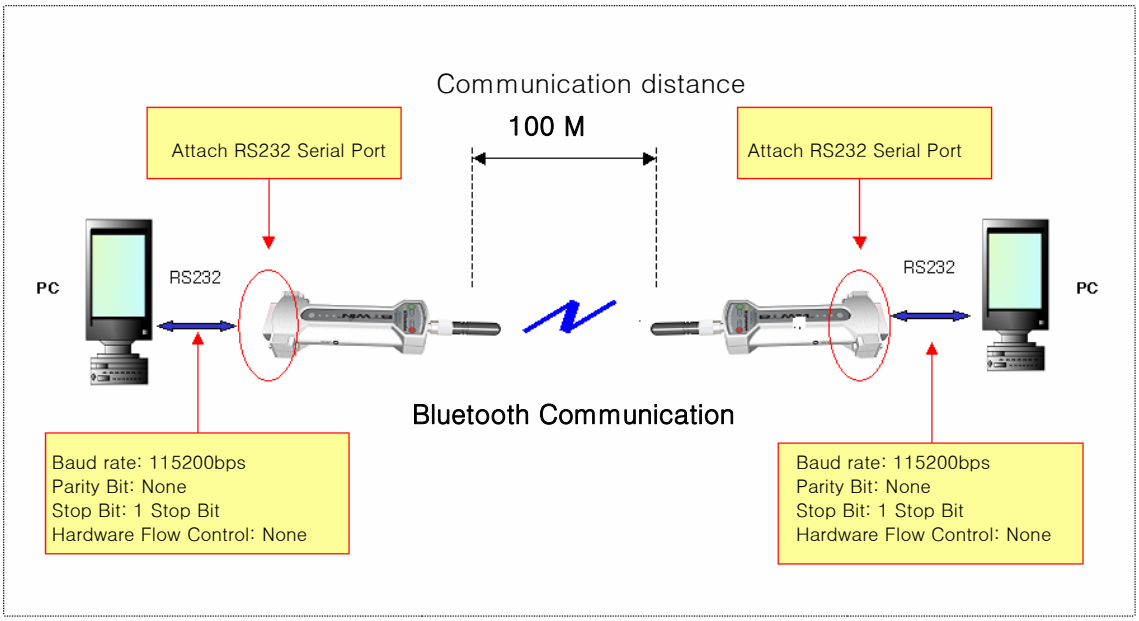
[7] Enter the characters via keyboard at each PC in order to transmit the data between two PCs.



PC1 PC2

[8] If displayed characters are right, it means both the data transmitting through BM1001 and setup is successful.

13-3. Communication Test at 115,200 bps (change the baud rate)



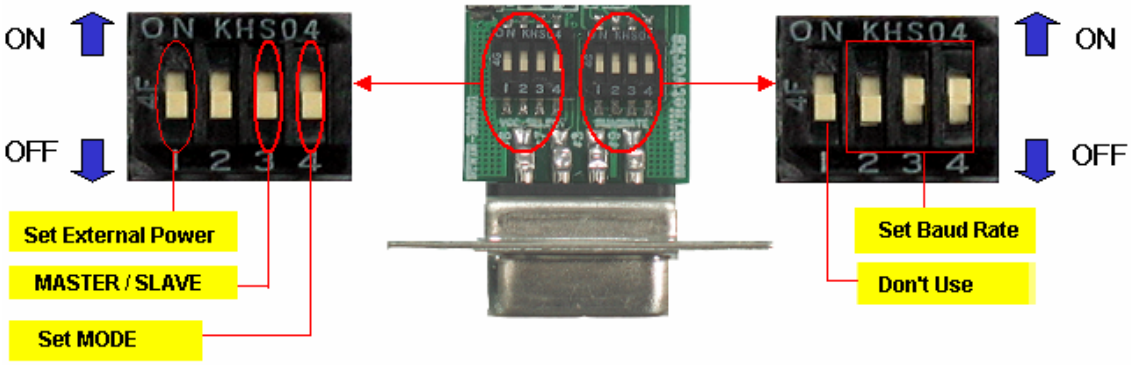
Part	Description		
Requirement	• PC: 2ea , •BM1001: 2ea		
Test Environment	PC is power on and the OS is the Windows. Use COM 1 port of each PC.		
Setting Values	**Part**	**Default (Before change)**	**User Select (After Change)**
	External Power Select	Not Use	Not Use
	Select the Role (Master/Slave)	MASTER or SLAVE	MASTER or SLAVE
	Select the Mode	DIP-Switch Configuration Mode	DIP-Switch Configuration Mode
	Baud rate	9600 bps	**115,200 bps**
	Parity	None	None
	Stop bit	1 bit	1 bit
	Hardware flow control	None	None
*** Only change the baud rate's value**			

Follow these procedures.

[1] Change the baud rate switch at 115,200 bps. Pin 2,3 and 4 are up.

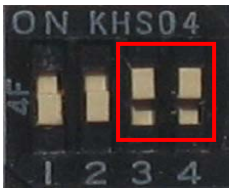
- BM1001 should be either master or slave. If one is a master, another should be a slave.

Function Select Switch **Baud Rate Switch**

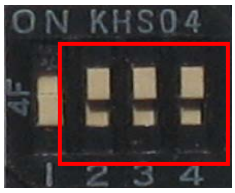


i) Set as MASTER

Function Select Switch



Baud Rate Switch

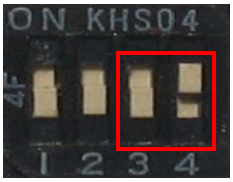


Setting

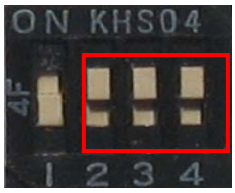
Role: Master
Bps: 115,200 bps
Mode: DIP Switch
Configuration Mode

ii) Set as SLAVE

Function Select Switch



Baud Rate Switch



Setting

Role: Slave
Bps: 115,200 bps
Mode: DIP Switch
Configuration Mode

[2] Attach BM1001 to COM port of each PC.

- Desktop PC has two COM ports. (COM1 and COM2)

[3] Supply the power to BM1001 through USB power cable.

- USB power cable just supplies the power to BM1001.
- Don't use it for the data communication.

[4] Turn on the power switch.

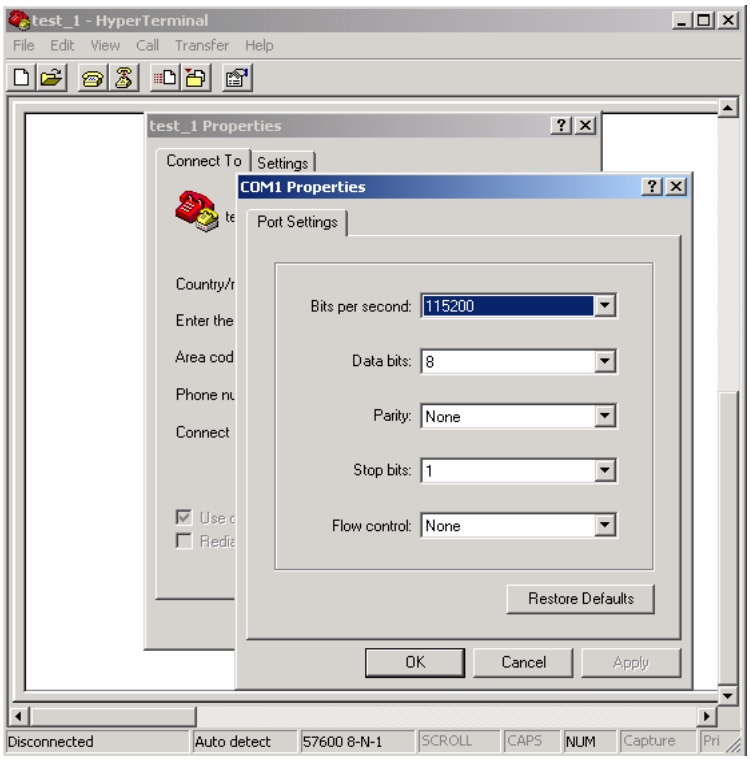
- Whenever turn on the power switch, BM1001 will start working.

[5] Check the power LED color is red.

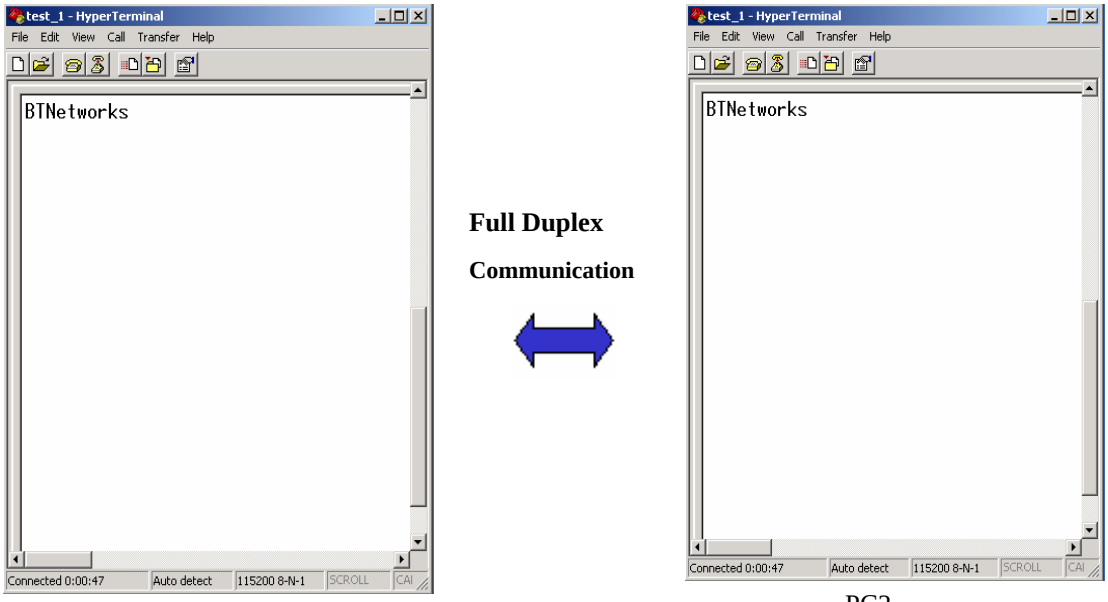
- It means B1001 is supplied power stable.

[6] Check the status LED color is green.
-When Status LED is green, it means is established connection between two BM1001s.

[7] Run the hyper terminal at each PC. And then set the parameters as below picture.



[8] Enter the characters via keyboard at each PC in order to transmit the data between two PCs.



PC1 PC2

[9] If displayed characters are right, it means both the data transmitting through BM1001 and setup is successful.

14. PC Configuration Mode

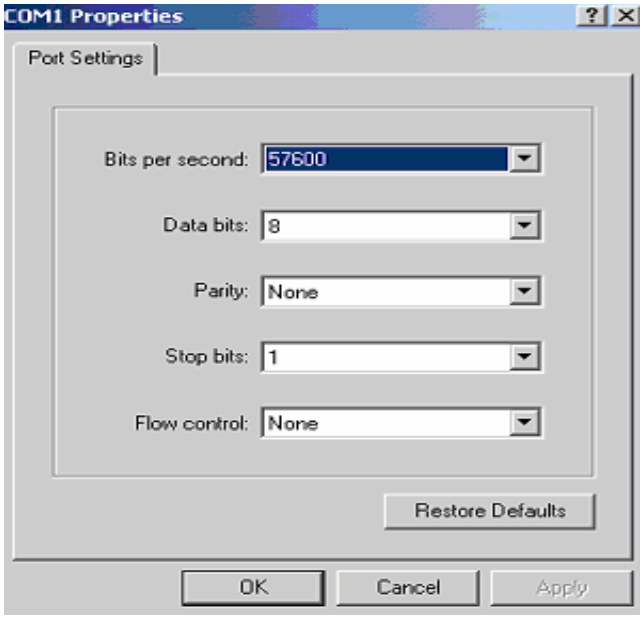
14-1. Pre Setting before using the PC Configuration Mode

You should below procedures in order to use the PC Configuration mode before turn on the BM1001.

[1] In order to use PC Configuration Mode, you need the serial communication software.
Here we explain the usage scenario with HyperTerminal of Windows.

[2] Run the Hyper Terminal and then disconnect current connection.

[3] Open the menu [File➔Property➔Configuration] at Menu Bar.

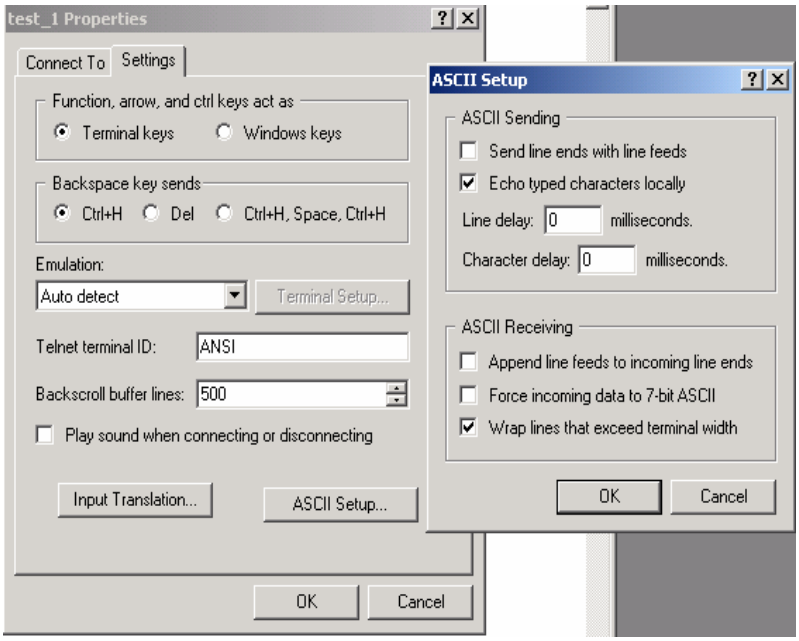


Port Setting

Communication Speed: Auto-Mode

Data Bit: 8

Parity Bit: None Parity
Stop Bit: 1
Flow Control: None



Click to “ASCII Setup” button of Setup tab in the properties to into ASCII setup mode.

Check the “Echo typed characters locally” box in the ASCII Sending.

```
|=============== BTWIN ==============|
|        Model name : BM1001         |
|        Version    : 3.0            |
|=====================================|
Press the enter key > 5
```

[4] Afterward above set up, click the connect button and turn on the BM1001.

It will appear the message like left picture then it will start the count down.

```
|=============== BTWIN ==============|
|        Model name : BM1001         |
|        Version    : 3.0            |
|=====================================|
Press the enter key > 5
BTWIN Setting Start


==================== TOP MENU ====================
0 => Device Name          : BTNetworks
1 => Authentication       : Enable PINCODE[BTWIN]
2 => Local BD Address     : 0011b1a10c71
3 => Remote BD Address    : 0011b1a10c7c
4 => Role                 : SLAVE
5 => Connection Mode      : MODE1
6 => RS-232(Baud Rate)    : 9600bps
7 => RS-232(Stop Bit)     : 1 bit
8 => RS-232(Parity Bit)   : None
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > _
```

[5] Press the enter key within 5 seconds, and appear the TOP menu to configure.

[6] If user does not press the enter key within 5 seconds, BM1001 will try to communicate at default setting.

[7] If you need more detail information for PC Configuration Mode, refer below documents.

14-2. How to use the PC Configuration Mode

```
7 => RS-232(Stop Bit)     : 1 bit
8 => RS-232(Parity Bit)   : None
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > t
==================== TOP MENU ====================
0 => Device Name          : BTNetworks
1 => Authentication       : Enable PINCODE[BTWIN]
2 => Local BD Address     : 0011b1a10c71
3 => Remote BD Address    : 0011b1a10c7c
4 => Role                 : SLAVE
5 => Connection Mode      : MODE1
6 => RS-232(Baud Rate)    : 9600bps
7 => RS-232(Stop Bit)     : 1 bit
8 => RS-232(Parity Bit)   : None
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > _
```

1) After enter the character, Press the enter key.

2) Small "**t**" always moves to TOP MENU.

3) Small "**x**" closes the PC configuration utility.

3) To move to other menu you should input the left first number of menus.

4) To cancel current input character use the "🡐" Back Space key and "**ESC**" key.

5) If the entered character is wrong, "**Retry** > " message will be displayed.

6) You can enter the character until maximum 12 characters.

If the entered characters exceed than 12 characters, it will display "**Overflow buffer**" message.

And then it will display "**Retry** > " message.

```
BTWIN Setting Start


==================== TOP MENU ====================
0 => Device Name          : BTNetworks
1 => Authentication       : Enable PINCODE[BTWIN]
2 => Local BD Address     : 0011b1a10c71
3 => Remote BD Address    : 0011b1a10c7c
4 => Role                 : SLAVE
5 => Connection Mode      : MODE1
6 => RS-232(Baud Rate)    : 9600bps
7 => RS-232(Stop Bit)     : 1 bit
8 => RS-232(Parity Bit)   : None
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > x
/************ BTWIN Setting complete! ************/


BTWIN Slave mode start
_
```

```
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > f
Retry Select(0~9) >
```

14.3 About the menu of the PC configuration mode

[1] Device Name: Bluetooth device's name

[1-1] You can change the device name within 12 characters.

[1-2] Afterward input the name then press the enter key.

Appear "Change Complete!!" message and then move to TOP MENU.

```
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > f
Retry Select(0~9) > 0
Change Device name
Within 12 character > BTtest
Change complete !!

==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[BTWIN]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 0011b1a10c7c
4 => Role                  : SLAVE
5 => Connection Mode       : MODE1
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > _
```

The device name is changed from BTNetworks to BTtest.

[1-3] You can see the changed device name at TOP menu,

[2] Authentication

To connect other bluetooth devices it needs an authentication, pin code, encryption.

User may set them in this menu.

```
1 => Authentication        : Enable
2 => Pin Code              : BTWIN
3 => Encryption            : Enable
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu                              ]
==================================================
Select Menu(1~3) > t
==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[BTWIN]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 0011b1a10c7c
4 => Role                  : SLAVE
5 => Connection Mode       : MODE1
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > _
```

Authentication is set as enable

Pin Code is set as BTWIN

[2-1] Authentication

[2-1-1] User may set to request the authentication procedure.

[2-1-2] When it is disable, the encryption feature is disable too.

[2-1-3] The default setting is enable.

```
1 => Authentication        : Enable PINCODE[BTWIN]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 0011b1a10c7c
4 => Role                  : SLAVE
5 => Connection Mode       : MODE1
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
================================================
[ Back Spcae : Input data Cancel                ]
[ t : Move top menu        x : EXIT(In top menu) ]
================================================
Select Menu(0~9) > 1

============= AUTHENTICATION SUB MENU ============
1 => Authentication        : Enable
2 => Pin Code              : BTWIN
3 => Encryption            : Enable
================================================
[ Back Spcae : Input data Cancel                ]
[ t : Move top menu                             ]
================================================
Select Menu(1~3) >
```

[2-2] Pin Code

[2-2-1] It is like a password.

[2-2-2] To connect between two devices, they have to have a same pin code.

[2-2-3] You can enter the pin code within 12 characters.

[2-2-4] After enter the pin code, “Change complete !!” message will be displayed.
And then move to AUTHENTICATION SUB MENU.

```
============= AUTHENTICATION SUB MENU ============
1 => Authentication        : Enable
2 => Pin Code              : BTWIN
3 => Encryption            : Enable
================================================
[ Back Spcae : Input data Cancel                ]
[ t : Move top menu                             ]
================================================
Select Menu(1~3) > 2
================================================
Change Pin Code
Within 12 character > TEST
Change complete !!

============= AUTHENTICATION SUB MENU ============
1 => Authentication        : Enable
2 => Pin Code              : TEST
3 => Encryption            : Enable
================================================
[ Back Spcae : Input data Cancel                ]
[ t : Move top menu                             ]
================================================
Select Menu(1~3) >
```

Pin code is changed.

[2-3] Encryption

[2-3-1] This encrypt the data between two bluetooth devices.

[2-3-2] The default setting is enable.

[2-3-3] If the authentication is disable, this is disable too.

```
1 => Authentication        : Enable PINCODE[BTWIN]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 0011b1a10c7c
4 => Role                  : SLAVE
5 => Connection Mode       : MODE1
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 1

============= AUTHENTICATION SUB MENU ============
1 => Authentication        : Enable
2 => Pin Code              : BTWIN
3 => Encryption            : Enable
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu                              ]
==================================================
Select Menu(1~3) >
```

[3] Local BD Address:

[3-1] This is a MAC address of Bluetooth Device. It is fixed parameter. User can't change it.

[3-2] If you choice this menu, "No change local BD address" message will be displayed and then move to Top menu automatically.

[4] Remote BD Address

[4-1] This is the latest paired bluetooth device address.

[4-2] If you want to connect new bluetooth device, delete the latest paired bluetooth device address and then enter new bluetooth address.

```
==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[TEST]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 0011b1a10c7c
4 => Role                  : MASTER
5 => Connection Mode       : MODE3
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 3
Change Remote BD address
Hexa type 12 character > 000b2435fdcc
```

1) To use this feature enter "3" and then press the enter key at menu select status.
2) Input the new bluetooth device address in a hexadecimal that you want to connect it.
3) It will be displayed "Change complete!!" and then move to Top menu automatically.
4) You can see the changed Remote BD address.

```
[ Back Spcae : Input data Cancel                  ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 3
Change Remote BD address
Hexa type 12 character > 000b2435fdcc
Change complete !!

==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[TEST]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 000b2435fdcc
4 => Role                  : MASTER
5 => Connection Mode       : MODE3
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                  ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) >
```

[4-3] When you want to delete the Remote BD address, input twelve zeros "000000000000"

If you delete the Remote BD address, it is able to connect the first bluetooth device has same PIN code in MODE1.

[4-4] BM1001 must have a Remote BD address in MODE3.

[5] Role

[5-1] Bluetooth device has to be an either master or slave.

[5-2] In order to connect between two bluetooth devices one has to be a master and another has to be a slave.

```
==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[TEST]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 000b2435fdcc
4 => Role                  : MASTER
5 => Connection Mode       : MODE3
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                  ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 4
Change Role  :
1 : MASTER      2 : SLAVE
Select(1~2) > _
```

[5-3] Select menu 4 at TOP MENU, and you can select the role.

MASTER is 1 and SLAVE is 2.

[5-4] Select the role and press the enter key.

```
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 4
Change Role  :
1 : MASTER      2 : SLAVE
Select(1~2) > 2
Change complete !!

==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[TEST]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 000b2435fdcc
4 => Role                  : SLAVE
5 => Connection Mode       : MODE3
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > _
```

*** You can see the changed Role.**

[6] Connection Mode

There are three connection modes. You may select connection mode.

1) Select menu 5 at TOP MENU.

2) Choice the mode. And press the enter key.

```
==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[TEST]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 000b2435fdcc
4 => Role                  : SLAVE
5 => Connection Mode       : MODE3
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 5
Change Connection mode  :
1 : MODE1       2 : MODE2       3 : MODE3
Select(1~3) > _
```

3) You can see the changed mode.

```
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 5
Change Connection mode  :
1 : MODE1       2 : MODE2       3 : MODE3
Select(1~3) > 2
Change complete !!

==================== TOP MENU ====================
0 => Device Name           : BTtest
1 => Authentication        : Enable PINCODE[TEST]
2 => Local BD Address      : 0011b1a10c71
3 => Remote BD Address     : 000b2435fdcc
4 => Role                  : SLAVE
5 => Connection Mode       : MODE2
6 => RS-232(Baud Rate)     : 9600bps
7 => RS-232(Stop Bit)      : 1 bit
8 => RS-232(Parity Bit)    : None
9 => RS-232(Flow Control)  : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > _
```

About the modes

MODE 1

In this mode, BM1001 always connect the latest paired bluetooth device.
If BM1001 has not the Remote BD address, try to connect the first bluetooth device is searched.
At this time, two bluetooth devices must have same PIN code.

MODE 2

1) In MASTER Case
You can search the bluetooth devices have same PIN code round it.
And the bluetooth devices list will be displayed.
You can select one among the bluetooth devices list.

2) In SLAVE case
when it received the connection request from the Master has same PIN code, it connect the master.

MODE 3

If you know the Remote BD address, you can change the Remote BD address in Mode3.
Enter the BD address of Remote device to “Remote BD Address”.

***Caution: BM1001 must have a Remote BD Address in mode3.**

[7] RS-232 (Baud Rate)

[7-1] It is UART communication speed.
[7-2] BM1001 supports Baud Rate from 1,200 until 230,400 bps.

```
Baud rate change :
1 : 1200        2 : 2400        3: 4800
4 : 9600        5 : 19200       6: 38400
7 : 57600       8 : 115200
Select(1~9) > _
```

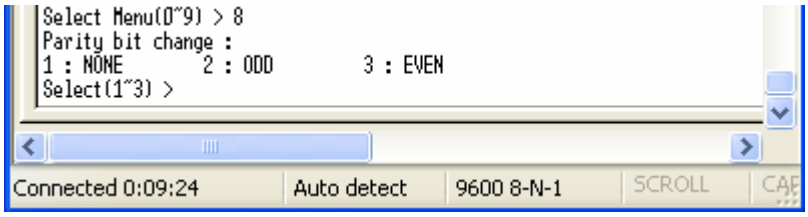
[8] RS-232 (Stop Bit)

STOP Bit is 1 Bit and 2 Bit.

```
Select Menu(0~9) > 7
Stop bit change :
1 : 1BIT        2 : 2BIT
Select(1~2) > _
Connected 0:08:39   Auto detect   9600 8-N-1   SCROLL   CAP
```

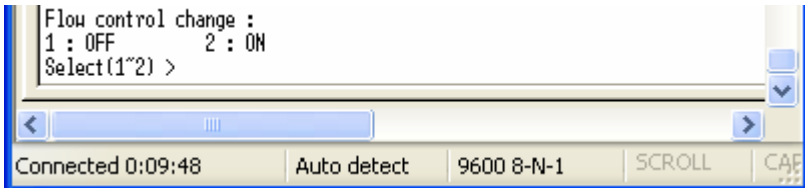
[9] RS-232 (Parity Bit)

Parity Bit is NONE, ODD and EVEN.



[10] RS-232 (Flow control)

BM1001 supports Hardware Flow control. Default setting is OFF.



15. Connection Modes

15-1. MODE 1 (Default Mode)

This is the default seeting.

Before user change the connection mode, BM1001 use this mode always.

[1] it communicates with the latest paired bluetooth device.

- The latest paired bluetooth device address is memorized to the Remote BD Address.

[2] If it has not the Remote BD Address,

Master: It tries to connect the first bluetooth device is searched.

At this time, remote device should be a SLAVE mode and must have same PIN code.

SLAVE: When it received the connection request from the Master has same PIN code, it connect the master.

15-2. MODE 2

When you want to connect the new bluetooth device, use this mode.

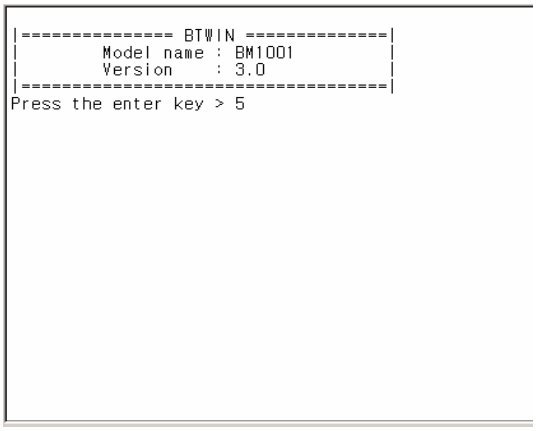
Using method

[1] Turn off BM1001 and move down the pin#4 of the function select switch. Then BM1001 will be a PC configuration Mode.

[2] Run the Hyperterminal program of the windows. Refter to **"14.PC Configuration Mode".**

[3] Turn on BM1001, you will find the below picture at your monitor.

[4] Press the Enter key within 5 seconds.



[5] It will enter the PC configuration Mode.

[6]Select No.5 Connection Mode in the menu. And then press the Enter key.

[7] Select No.2 MODE2 in the connectin mode menu. And then press the Enter key.

[8] Turn off BM1001.

[9] Move up the pin#4 of the function select switch. It will ba DIP Switch Mode.

[10] Turn on BM1001.

```
==================== TOP MENU ====================
0 => Device Name          : BTtest
1 => Authentication       : Enable PINCODE[TEST]
2 => Local BD Address     : 0011b1a10c71
3 => Remote BD Address    : 000b2435fdcc
4 => Role                 : SLAVE
5 => Connection Mode      : MODE3
6 => RS-232(Baud Rate)    : 9600bps
7 => RS-232(Stop Bit)     : 1 bit
8 => RS-232(Parity Bit)   : None
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > 5
Change Connection mode  :
1 : MODE1       2 : MODE2       3 : MODE3
Select(1~3) > _
```

In Master Case

[11] You can see the below picture.

- BM1001 will find the bluetooth devices with same PIN code.

```
9 => RS-232(Flow Control) : ON
==================================================
[ Back Spcae : Input data Cancel                 ]
[ t : Move top menu        x : EXIT(In top menu) ]
==================================================
Select Menu(0~9) > x
/************ BTWIN Setting complete! ************/


BTWIN Master mode start

Start Inquiry....    |
=========== Key Operation ===========
[ 1~7 : Choice  slave device        ]
[ s   : Stop inquiry                ]
[ r   : Restart inquiry             ]
[ Back space : Input Cancle         ]
=====================================
Num  BD ADDRESS    LOCALNAME            CoD
 1   0005c9500de2  SPP_CLIENT           000104
 2   0011b1a10c80  BTNetworks           001f00
 3   000a3a541933  CWP_DONGLE           000000
=============================================
Choice slave device >
```

- The searching will be kept on until look for 7 slaves.
- Some keys have a function while searching.
  - ■ "r" : Retry searching
  - ■ "←" Back space key : Cancel the entered data
  - ■ "s" : Stop searching

```
Choice slave device > a
Retry select slave device > _
```

연결 0:39:34 | ANSIW | 115200 8-N-1 | SCROLL | CAPS | NUM | 캡

Select one slave device of the list, and master will connect to that.

- If connection is fail, "The slave device is not connectable!!" message will be displayed.
- And retry search for bluetooth devices.

```
=====================================
Num  BD ADDRESS    LOCALNAME            CoD
 1   0005c9500de2  SPP_CLIENT           000104
 2   0011b1a10c80  BTNetworks           001f00
 3   000a3a541933  CWP_DONGLE           000000
=============================================
Choice slave device > 1
Connect Start : SLAVE BD ADDR(0005c9500de2)
The selected device is not connectable !

Start Inquiry....
=========== Key Operation ===========
[ 1~7 : Choice  slave device        ]
[ s   : Stop inquiry                ]
[ r   : Restart inquiry             ]
[ Back space : Input Cancle         ]
=====================================
Num  BD ADDRESS    LOCALNAME            CoD
 1   0011b1a10c80  BTNetworks           001f00
 2   000a3a541933  CWP_DONGLE           120104
 3   0005c9500de2  SPP_CLIENT           000104
 4   0011b1a10c6e  BTNetworks           001f00
=============================================
Choice slave device >
```

When the connection is successful, it will be displayed “CONNECTION OK”.

```
 2   0011b1a10c80  BTNetworks           001f00
 3   000a3a541933  CWP_DONGLE           000000
=============================================
Choice slave device > 1
Connect Start : SLAVE BD ADDR(0005c9500de2)
The selected device is not connectable !

Start Inquiry....
=========== Key Operation ===========
[ 1~7 : Choice  slave device        ]
[ s   : Stop inquiry                ]
[ r   : Restart inquiry             ]
[ Back space : Input Cancle         ]
=====================================
Num  BD ADDRESS    LOCALNAME            CoD
 1   0011b1a10c80  BTNetworks           001f00
 2   000a3a541933  CWP_DONGLE           120104
 3   0005c9500de2  SPP_CLIENT           000104
 4   0011b1a10c6e  BTNetworks           001f00
=============================================
Choice slave device > 4
Connect Start : SLAVE BD ADDR(0011b1a10c6e)
BTNetworksCONNECTION OK
```

In Slave case

When slave device receive the connection request from the master device has same PIN code, it will connect with master device.

After Pairing with new bluetooth device, BM1001 must retrun to MODE1.
If you don’t do it, whenever turn on BM1001 it will be find the new bluetooth devices.

Back to Mode1

[1] Turn off BM1001. And move down the pin#4 of the function switch to be PC configuration Mode.
[2] Turn on BM1001. And change the connection mode as MODE1 at the main menu.
[3] Turn on BM1001. And move up the pin#4 of the function switch to be DIP Switch Mode.

15-3. MODE 3

You can change the remote bluetooth device's address directly.

[1]Enter the PC configuration Mode with BM1001.
[2] Select No.5 Connection Mode at the main menu.
[3] Select MODE3 in the connection mode menu.
[4] Go back main menu.
[5] Select No.3 Remote BD address at the main menu.
[6] Input the Remote device's address.
[7] Input "x", and then BM1001 will try to connect with new device what you want to connect.
[8]Wait until "Connection Ok" message will be displayed.
[9] Restart BM1001.
[10] Change the connection mode as MODE1 at the main menu.
[11] Turn off BM1001, and then move up pin#4 of the function switch to be DIP Swtich mode.

Two bluetooth devices have same PIN Code to use MODE3.

Regulatory Compliance

FCC compliance Information

This device complies with part 15 of FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received.

Including interference that may cause undesired operation.

Information to User

This equipment has been tested and found to comply with the limits for a Class B digital device, Pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio Frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC WARNING

This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

User information of CE compliance

Hereby, ***BTNetworks co., Ltd*** declares that this is ***Bluetooth serial adapter (BM1001)*** in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

RF Exposure Information

The antenna used for this transmitter must be installed to provide a separation distance of at least 1.5 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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Company Logo	BTNetworks

Model : BM1001