Bluetooth USB Serial Adaptor



Model name: BM2001

User Manual ver 3.2



ABOUT BM2001 Class 1 / USB Interface DIP switch is available for a second setting 4dBi Dipole Antenna provided

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Bluetooth USB Serial Adapter, BM2001 is a product that is developed, designed and produced by Firmtech Co, Itd. (formerly BTnetworks Inc.). It is for replacement of standard RS232 cable perfectly, with USB interface, so can be easily adopted for upcoming industrial machines which do not have legacy RS232 interface.

- Security of Bluetooth wireless communication is very strong because it use 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 BM2001 will try to connect automatically whenever powered up.
- It needs an installation of the USB device driver.
 Doesn't need to install the application software.
- You can choose various configuration with DIP Switch (In DIP-Switch mode)
 - Set Baud Rate (1,200 bps ~ 115,200 bps)
 - Set the Role as Master or Slave
 - Select Mode: DIP-Switch Configuration mode or PC configuration mode
- BM2001 does not required external power supply as it gets power from USB port.



<Fig.1.1 BM2001 with default Dipole (4dBi) antenna & DIP switch>

• Configuartion by DIP switch or by PC software.

Users may do configuration either via DIP switch on the backside of BM2001, or via AT commands in Hyperterminal in PCs.

	By DIP switch	By PC software
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
Selectable Values	Set Baud rate Select Role - Master - Slave Select Mode - DIP Switch Mode - PC Configuration Mode	Set device name Set Pin Code View Local BD Address Set Remote BD Address Select Role (Master/ Slave) Search for bluetooth device and Connect new device Set Baud rate Set Stop bit Set Parity bit Set Hardware flow control

*NOTE: DIP witch mode is Default for configuration.

Package Constitution

Model no.	Pictures	Q'ty	Ramarks	
BM2001		1ea		
BM-DiANT	(4 dBi)		Default	
CD	BTWIN™ BM2001User's Guide CD	1ea		
BM-PANT	External Antenna (8 dBi)		Optional Buy	

2. Comparison with General Bluetooth USB dongle

Items	Bluetooth USB Serial Adapter (BM2001)	General Bluetooth USB Dongle	
Limitation	-	Works only with PC	
Hardware View	Included USB-to-Serial Convertion feature.		
Software View	Included SPP firmware to act as Stand-alone Bluetooth Serial Adaptor.	Bluetooth Application software works on the PC.	
Device driver	Requires	Requires	
Application Software	Does NOT require	Requires	
Bluetooth Profile	SPP	SPP, PAN, DUN, LAN, HID etc	

As Bluetooth USB serial adaptor (BM2001) has USB-to-Serial conversion feature, users may simply plug in to the USB port of the machine with USB interface. BM2001 does not require application software like WIDCOMM stack.



<Figure 2.1 Bluetooth communication by BM2001>

3. External View





<Bottom View>

DIP Switch Cover



<Left View>



<Right View>

4. Range information with External Antennas



5. Specification & Power Consumption

Part	Specification		
Bluetooth Spec.	Bluetooth Specification V1.2		
Communication distance	100 M		
Frequency Range	2.4 GHz ISM Band		
Sensitivity	-83dBm (Typical)		
Transmit Power	10dBm (Typical)		
Size	66 * 31 mm		
Support Bluetooth Profile	SPP		
Input Power	4 - 15 V		
Current Consumption	Maximum 100 mA		
Operating Temperature	-10℃ ~ 70℃		
Communication Speed	1,200bps ~ 115,200bps		
Antenna	Dipole Antenna (4 dBi)		
PC interface	USB		

Power Consumption

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

6. Description on DIP Switch



<Bottom View>

Open the DIP-switch cover, and you can see the below picture.





6.1 Function Selection Switch

Pin no.	Description			
Pin #1 and #2	N/A			
	For selection of Role (Master or Slave)			
Pin #3	- To be master: Switch should be upward			
	- To be slave: Switch should be downward.			
	For selection of Configuration Mode			
Pin #4	- To use DIP switch: s/w should be up.			
	- To use PC software: s/w should be down.			

Function selection switch is left side of the Fig. 6.1

6.1.1 Selection of Role (Master / Slave)

In order to communicate between two BM2001, one should be a Master and another should be a Slave. You may set the role with pin#3 of the function select switch.



a) Set the Role as a MASTER



Move up the pin#3 of the function selection switch, to work as MASTER.



Move down the pin #3 of the function selection switch, to work as SLAVE.

6.1.2 Selection of Configuration Method

BM2001 provides two kinds of configuration methods. One way is using DIP switch on the back side of BM2001, and the other way is via HyperTemrinal in PC. Users may choose one as prefer.

1) By DIP Switch

You may set the baud rate and Role with only DIP Switch. If you want to set them, BM2001's mode must be a DIP Switch mode.

2) By PC software

You may set the various values with Hyperterminal of the windows. You can set every configuration values in PC configuration mode.



Set the Mode with pin #4 of Function Select Switch.

i) **DIP Switch Mode**



Move Up the pin#4 of the Function Select Switch, and the Mode is DIP Switch mode.

ii) PC Configuration Mode



Move down the pin#4 of the Function Select Switch, and the mode is PC Configuration mode.

6.2 Baud Rate Switch

You may set the baud rate with this DIP Switch.

- Pin #2,3,and 4 are used to set the baud rate in boud rate switch.
- You can choose the baud rate from 1,200 bps to 115,200 bps.

* Caution: If you want to set the baud rate with DIP Switch, pin #4 of the Function select switch must be up.

6.2.1 Selection of Baud Rate

BM2001supports various communication speed from 1200 bps to 230,400 bps. You can set the baud rate with DIP-Switch from 1,200 bps to 115,200 bps.

Check on the baud rate switch.



Setting the baud rate with the Baud Rate Switch.







- ** Caution **
- Pin #1 of the Baud Rate Switch is no-working pin.
- Pin #4 of the Function Select Switch must be up (DIP Switch Mode).
- If you want higher speed than 115,200 bps, Use the PC configuration mode.

7. LED indication / Reset Switch



7.1 LED indication

- Power indication LED / Status indication LED

You can find the status of BM2001 with Red and Green LED indicator.

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

7.2 Reset Switch

Status LED	Result After Reset			
	1) Current connection will be disconnected.			
Green is On	2) Releases the latest connection informs.			
	3) Try to reconnect			
Red is flashing	 Getting back to factory setting. Reboot of BM2001 			

8.1 Installation of device driver

8.1.1 Windows 98 & Windows 2000

Found New Hardware Wizard	
Welcome to the Found New Lardware Wizard This wizard helps you install a device driver for a hardware device.	 Attach BM2001 to USB port of PC and turn on the BM2001. The pop up window will appear for new hardware device.
To continue, click Next.	3) Click Next button.
 Eack Next > Cancel Found New Hardware Wizard Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with in operating system. This wizard will complete the installation for this device: CP2101 USB to UART Bridge Controller A device the installation for the device in t	4) Select "Search for a
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next. What do you want the wizard to do?	suitable driver for my device [recommended]" and click Next button.

nd New Hardware Wizard						
Locate Driver Files Where do you want Windows to search for driver files?						
Search for driver files for the following hardware device:						
CP2101 USB to UART Bridge Controller						
— The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify. To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.						
Optional search locations:						
Floppy disk drives						
Specify a location						
Microsoft Windows Update						
< Back Next > Cancel						
nd New Hardware Wizard						
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.						
The wizard found a driver for the following device:						
CP2101 USB to UART Bridge Controller						
Windows found a driver for this device. To install the driver Windows found, click Next						
d:\btwin bm2001 usb adapter install driver\btbus.inf						
< Back Next > Lancel						
nd New Hardware Wizard						
Completing the Found New Hardware Wizard						
BTWIN BM2001 USB Adapter						
Windows has finished installing the software for this device.						
To close this wizard, click Finish.						
< Back Finish Cancel						

Select "CD-ROM vers" and click Next ton.

> 6) Windows found a driver for BM2001. Click Next button.

> 7) First driver Installing procedure has finished. Click Finish button.

> * You should do driver installing procedure one more time

Found New Hardware Wizard					
	Welcome to Hardware V This wizard helps y hardware device.	o the Four Vizard ou install a devic	nd New		
					8) You may see ne pop up window.
					Click Next button.
	l o continue, click f	< Back	Next>	Cancel	
	_				_
Found New Hardware Wizar Install Hardware Devic A device driver is a sof an operating system.	r d e Drivers tware program that er	nables a hardwa	re device to work	with	
This wizard will complet	te the installation for t	his device:			
CP2101 USB	to UART Bridge Con	troller			Select "Search for a suitable driver for
A device driver is a soft needs driver files for yo installation click Next.	tware program that ma ur new device. To loc	akes a hardware ate driver files a	device work. W nd complete the	indows	my device
What do you want the	wizard to do?				and click Next
 Search for a suit 	table driver for my dev	vice (recommend	led)		button
 Display a list of t driver 	he known drivers for l	this device so th	at I can choose a	a specific	
		< Back	Next >	Cancel	
Found New Hardware Wiza	rd				
Locate Driver Files Where do you want W	ïndows to search for o	driver files?		Ð	
Search for driver files fo	or the following hardw	are device:			
CP2101 USB	to UART Bridge Con	itroller			
The wizard searches for any of the following op	or suitable drivers in its tional search locations	s driver database s that you specif	e on your comput y.	erand in	5) Select "CD-ROM drivers" and click
insert the floppy disk or	CD before clicking N	arching on a riop lext.	ipy disk of CD-RU	JM drive,	Next button.
Optional search locatio	ons:				
CD-ROM drives	53				
Specify a location Microsoft Window	on ws.Llodate				
i marasar windu	and the post of the				
		< Back	Next >	Cancel	

) You may see new op up window.

Found New Hardware Wizard		
Driver Files Search Results The wizard has finished searching for driver files for y	our hardware device.	
The wizard found a driver for the following device:		
CP2101 USB to UART Bridge Controller		6) Windows found a
Windows found a driver for this device. To install the	driver Windows found, click Next.	driver for BM2001.
d:\btwin bm2001 usb adapter install driver\t	btw2k.inf	Click Next button.
< Ba	ick Next > Cancel	
Found New Hardware Wizard		
Completing the Hardware Wiza	Found New Ird	
)1 USB Adapter	
Windows has finished ins	talling the software for this device.	7) All driver Installing procedure has finished. Click Finish button.
To close this wizard, click	- Finish.	
< Ba	ack. Finish Cancel	

If you have any troubles installiong the driver, you may try another way. Here is another way you may follow.

Found New Hardware Wizard		
	Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.	1) Attach USB po turn on th
		2)"Found device" n displayed
	To continue, click Next.	3) Click r

1) Attached BM2001 to JSB port of PC and ourn on the BM2001.

2)"Found new hardware device" message will be displayed.

3) Click next button.

Found New Hardware Wizard
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
CP2101 USB to UART Bridge Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
 Search for a suitable driver for my device (recommended)
 Display a list of the known drivers for this device so that I can choose a specific driver

< Back

Next >

Cancel

 Select "Search for a suitable driver for my device [recommended]" and click Next button.

Found New Hardware Wizard
Locate Driver Files Where do you want Windows to search for driver files?
Search for driver files for the following hardware device: CP2101 USB to UART Bridge Controller The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify. To start the search, click, Next. If you are searching on a floppy disk or CD-ROM drive, inset the floor dick or CD-ROM drive,
Optional search locations: ☐ Floppy disk drives ☑ CD-ROM drives ☐ Specify a location ☐ Microsoft Windows Update
< Back Next > Cancel

5) Select "Specify a location" and click Next button.

Locate File						? ×
Look in:	🔁 BTWIN BM2	001 USB Adapter Install Driver	•	(† 🗈 💣 🌆	•	
History Desktop My Documents My Computer	BTbus BTw2k BTwdm slabvxd					
My Network P	File name:	BTbus.inf		•	Op	ben
	Files of type:	Setup Information (*.inf)		V	Car	ncel

6) Move to CD-ROM's BTWIN BM2001 USB Adapter install driver.

7) Select "Btbus" file and click "Open" button.

Found Nev	v Hardware Wizard	X
2	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: D:\BTWIN BM2001 USB Adapter Install Driver	Browse

8) Windows found a driver for BM2001. Click Next button

Found New Hardware Wizard		
	Completing the Found New Hardware Wizard To close this wizard, click Finish.	9) Driver installing ha finished. Click Finis button.
	< Back Finish Cancel	

8.1.2 Windows XP

Before set up the device driver, turn off the BM2001's power switch.

The device driver install procedures are separated two steps.

The first step is making the driver folder in the Windows.

[1] Move to "BTWIN BM2001 USB Adapter driver " folder on CD be provided, and you can see below window.

[My Computer]→[CD Rom Drive]→[BTWIN BM2001 USB Adapter driver]

😂 BTWIN-BM-2001 (USB Adapter)	install drive	ar					
File Edit View Favorites Tools	Help						1
🕞 Back 🔹 🕥 - 🏂 🔎 Sea	arch 🜔 Fold	lers 🛄 •					
Address 🛅 G:\BTWIN-BM-2001 (USB Ad	apter) install dri	iver					💙 🛃 Go
File and Folder Tasks 💲				P		3	3
Rename this file	BTWIN	BTWIN2k	BTWIN.u2k	BTWIN.u98	BTWINme	BUAbus	BUAW2K
Move this file Copy this file Publish this file to the Web	BUAwdm	setup	isetup	slabbus	slabcm95	slabomnt	slabcomm.vxd
 E-mail this file Delete this file 			-	1		e <u>za</u>	
Other Places 😵 🗸	slabor	slabser	slabvcd.vxd	slabvcr.vxd	slabvxd	slabwh95	slabwhnt

[2] Double click the "Setup" icon, and the pop-up window will appear.

鍚 Install Driver		×
BTWIN BM2001 USB Adapter Driver Set		
C:₩BTWIN		Browse
	Install	Cancel

[3] Click the "install" button, and installing procedure will start.



[4] Ok, first step has finished. Open the C drive of your computer, and you can find "BTWIN" folder.

[5] Now, the installing procedure will begin from here for the BM2001's device driver. Turn on the power switch of BM2001.



- [6] The windows shall find the new device and you will see the pop-up window.
- [7] Select "Install the software automatically [Recommended]" and press "Next" button.
- [8] If your OS is a Windows XP, you will see the below windows.

Har dwa	re Installation
1	The software you are installing for this hardware: BTWIN USB Composite Device has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

But you can ignore that massage, click "Continue Anyway" button.

- [9] Click "Finish" button, and window will disappear.
- [10] The first installation procedure has been finished.

[11] New windows will appear, but it is not a problem. You will do one more same procedure for the driver installing.

Completing the Found New Hardware Wizard The wizard has finished installing the software for: BTWIN USB Composite Device
Click Finish to close the wizard.

Found New Hardware Wiz	zar d
	Welcome to the Found New Hardware Wizard This wizard helps you install software for: BTWIN USB Adaptor If your hardware came with an installation CD or floppy disk, insert it now.
	What do you want the wizard to do? Install the software automatically (Recommended) Install from a list or specific location (Advanced) Click Next to continue.
	<back next=""> Cancel</back>

[11] Select "Install the software automatically [Recommended]" and press "Next" button.

Har dwa	re Installation		
	The software you are installing for this hardware:		
<u> </u>	BTWIN USB Adaptor		
	has not passed Windows Logo testing to verify its compatibility with Windows XP. (<u>Tell me why this testing is important.</u>)		
	Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.		
	Continue Anyway STOP Installation		

[12] If your OS is a Windows XP, you will see the below windows.

But you can ignore that massage, click "Continue Anyway" button.

Found New Hardware Wiz	ard
	Completing the Found New Hardware Wizard The wizard has finished installing the software for:
	LIICK FINISN TO CIOSE THE WIZARD.
	K Back Finish Cancel

[13] Click "Finish" button, and window will disappear.All installations have been finished.

8.2 Uninstallation of device driver

(Windows 98, Windows 2000 and Windows XP)

1) Move to [My computer]→[Control Panel]→[Add/Remove programs]

- 2) You may see "BTWIN USB Adapter".
- 3) Select that and click "Change/Remove"

🙀 Add/Remov	e Programs	
12	Currently installed programs:	Sort by: Name
Change or Remove Programs	🛃 BTWIN USB Adaptor	<u> </u>
	To change this program or remove it from your computer, click Change/Remove.	Change/Remove
Add New Programs	NVIDIA Windows 2000/XP Display Drivers	Size 48.6MB
		Close

4) Click "Yes" button.



5) Click "OK" button.

Notification	×
Uninstall Success	full
ОК	

8.3 Setting-up COM Port for BM2001

8.3.1 Windows 98



- [1] Move to [My computer]
- →[Control Panel]→[System]
- →[Hardware]
- →[Device Manager]

[2] Click Port, and you may see "BTWIN BM2001 USB Adapter"

[3] Double click BM2001 to see its property.

BTWIN BM2001 USB Adapter (CONS) Troperte	s ? 🗙
General Port Settings Driver Resources	
Use automatic settings	
Setting <u>b</u> ased on: Basic configuration 0006	
Resource type Setting	
Input/Output Range 03E8 - 03EF	
Interrupt Request 04	
<u>C</u> hange Setting	
Conflicting device list:	
No conflicts.	×
ОК	Cancel

[3] Select the Resources Tab.

[4] If you want to change COM port for BM2001, you should change the Setting based on.

[5] Please refer to below table.

СОМ	port	Number	is	assigned	by
Input	/ Out	out Rang	e.		

COM Port No	Input / Output Range
COM 1	03F8 – 03FF
COM 2	02F8 – 02FF
COM 3	03E8 – 03EF
COM 4	02E8 – 02EF

8.3.2 Windows 2000 & Windows XP



- [1] Move to [My computer]
- →[Control Panel]
- →[System]
- →[Hardware]
- →[Device Manager]

[2] Click Port, and you may see "BTWIN BM2001 USB Adapter"

[3] Double click BM2001 to see its property.

[4] Select "Port Setting" Tab.

[5] Click "Advanced" button.

BTWIN RM2001 LISB Adapter (COM3) Properties
General Port Settings Driver
Bits per second: 115200
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
Advanced Restore Defaults
OK Cancel

Advanced Settings for COM3							? x
Use FIFD bulfers (requestions)	ires 16550 co correct conn	mpatible UAF ection probler	1T)				OK Cancel
Select higher settings f	or faster perfo	mance.					Defaults
Receive Buffer: Low (1)	1			—Ţ	High (14)	(14)	
Transmit Buffer: Low (1)	1			— ļ	High (16)	(16)	
CO 1 Port Number: COM3	•						-

[6] Set COM port No.

Configuration By DIP Switch 9.1

NOTE: Check on default setting before testing BM2001

- 1) If there are two BM2001s. One should be a Master and opposite side should be a Slave. * BM2001 is set either master or slave at factory.
- 2) Mode selection should be DIP-Switch Configuration mode.
- 3) Baud rate is 9600 bps



Let's set the DIP Switch

i) Set as a MASTER **Function Select Switch**



ii) Set as a SLAVE **Function Select Switch**



Baud Rate Switch



Baud Rate Switch



Setting

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

Setting

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

Baud Rate Switch

9.1.1 Communication Test at 9600bps (default setting)



Ex.)

,							
Part	Description						
Equipment	PC: 2 ea BM2001: 2 ea						
Test	PC is power on and OS is the Windows.						
Environment	Use USB port of each PC.	Use USB port of each PC.					
	Port	Default	User Select				
	Fait	(Before change)	(After Change)				
	External Power Select	Don't Use	Don't Use				
	Select RI Signal Line Don't Use		Don't Use				
Setting	Master/Slave Select	Master or Slave	Master or Slave				
	Mada Salaat	Dip switch	Dip switch				
Values	Mode Select	Configuration mode	Configuration mode				
	Baud rate	9600 bps	9600 bps				
	Parity	None	None				
	Stop bit	1 bit	1 bit				
	Hardware flow control	None	None				
* If use Defaul	t setting, You don't have to cha	ange the setting.					

Follow these procedures.

[1] Attach BM2001 to USB port of each PC.

[2] Turn on the power switch.

• Whenever turn on the power switch, BM2001will start working.

[3] Check on the power LED color is red.

• It means B2001 is supplied power stable.

[4] Check on status LED color is green.

♦ When Status LED is green, it means is established connection between two BM2001s.

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

File Edit View Call Transfer Help Image: Comparison of the second	
test_1 Propertie Connect To S S Country/r Enter the Area cod Phone nu	es ettings ett
Connect	Stop bits: 1
Disconnected Auto detect	OK Cancel Apply

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



[7] If users may see the characters on both windows, it means data communication both way through BM2001s and setup is successful.

9.1.2 Communication Test at 115,200bps (buad rate change)

Change the baud rate switch as 115200 bps. Pin 2,3 and 4 are up before test. After change, please try with HyperTerminal to confirm the successful data communication with changed buad rate.

• BM2001 should be either master or slave. If one is a master, another should be a slave.



Setting

Role: Master Bps: 115200 bps Mode: DIP Switch Configuration Mode

I) Set as a MASTER

ii) Set as a SLAVE



After the change of DIP switch to use 115.2Kbps, please test with Hyperteminal with Port settings with new baud rate as in below.

est_1 - HyperTerminal	
test_1 Properti	es ?X Settings M1 Properties ?X
Country/r Enter the Area cod Phone nu Connect	Port Settings Bits per second: 115200 Data bits: 8 Parity: None
☑ Use c □ Redia	Stop bits: 1
	Restore Defaults OK Cancel Apply
Disconnected Auto detect	t 57600 8-N-1 SCROLL CAPS NUM Capture Pri

9.2 Configuration By PC Software

9.2.1 Pre-setting

You should below procedures in order to use the PC Configuration mode before turn on the BM2001.

[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.

COM1 Properties	5		1000	? ×
Port Settings				
				1
Bits per second:	57600		-	
Data bits:	8		-	
Parity:	None		-	
Stop bits:	1		-	
Flow control:	None		•	
		Besto	re Defaults	
			AC D'OIGUIG	
		C 1	1 4-	· 1
	IK	Cancel	Ap	P19

Port	Settina
1 011	ocuing

Communication Speed: Should be matched to DIP switch setting if setted. Default: 9600bps.

Data Bit: 8

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

test_1 Properties	? ×
Connect To Settings	
Function, arrow, and ctrl keys act as Terminal keys C Windows keys	ASCIT Secop
Backspace key sends	Echo typed characters locally
	Line delay: 0 milliseconds.
Emulation:	Character delay: 0 milliseconds.
Auto detect Terminal Setup	
Telnet terminal ID: ANSI	ASCII Receiving
	Append line feeds to incoming line ends
Backscroll buffer lines: 500	Force incoming data to 7-bit ASCII
Play sound when connecting or disconnecting	✓ Wrap lines that exceed terminal width
Input Translation ASCII Setup	OK Cancel
OK Ca	ncel

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.

======	Model (Versio)	= BTWII name : n :	N ===== BM1001 3.0	
Press t	he enter	key >	5	 I

[4] Afterward above set up, turn on the BM2001 and then click the connect button.

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

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

[6] If you do not press the enter key within 5 seconds, BM2001 will try to communicate at default setting.

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

9.2.2 How to do PC configuration

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 maximum12 characters.

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

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

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) >

* Explanation on menu of the PC configuration interface

[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 NameBTtest1 => AuthenticationEnable PINCODE[BTWIN]2 => Local BD Address0011b1a10c713 => Remote BD Address0011b1a10c7c4 => RoleSLAVE5 => Connection ModeMODE16 => RS-232(Baud Rate)9600bps7 => RS-232(Stop Bit)1 bit8 => RS-232(Flow Control)0N
                                              _____
[ 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 2 => Pin Code 3 => Encryption	: Enable : BTWIN : Enable	_
[Back Spcae : Input data [t : Move top menu	Cancel	-] _
Select Menu(1~3) > t TOP M O => Device Name 1 => Authentication 2 => Local BD Address 3 => Remote BD Address 4 => Role 5 => Connection Mode 6 => RS-232(Baud Rate) 7 => RS-232(Cop Bit) 8 => RS-232(Parity Bit) 9 => RS-232(Flow Control)	IENU BItest Enable PINCODE[BTWIN] 0011b1a10c7c SLAVE MODE1 9600bps 1 bit None 0N	= authentication is set as enable Pin Code is set as BTWIN
[Back Spcae : Input data [t : Move top menu Select Menu(0~9) > _	Cancel x : EXIT(In top menu)	=]]

[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)	: 0N
[Back Spcae : Input data	Cancel]
[t : Move top menu	x : EXIT(In top menu)]
Select Menu(0~9) > 1	
1 => Authentication	ION SUB MENU ====================================
2 => PIN Lode	BIWIN
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.

======================================	
[Back Spcae : Input data Cancel] [t : Move top menu]	
Select Menu(1~3) > 2	
Change Pin Code Within 12 character > TEST Change complete !!	
	jed.
[Back Spcae : Input data Cancel] [t : Move top menu]	
Select Menu(1~3) >	

[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)	: 0N
[Back Spcae : Input data [t : Move top menu Select Menu(Ω~9) > 1	Cancel] x : EXIT(In top menu)]
arrest AUTHENTICATI	ION SUB MENU =========
1 => Authentication	: Enable
2 => Pin Code	: Enable
3 => Encryption	: Enable
[Back Spcae : Input data [t : Move top menu Select Menu(1~3) >	Cancel]]

[3] Local BD Address:

[3-1] This is a MAC address of Bluetooth Device. It is fixed parameter. You 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	1ENU ========
0 => Device Name 1 => Authentication 2 => Local BD Address 3 => Remote BD Address 4 => Role 5 => Connection Mode	BITEND ====================================
6 => RS-232(Baud Rate) 7 => RS-232(Stop Bit) 8 => RS-232(Parity Bit) 9 => RS-232(Flow Control)	: 9600bps : 1 bit : None : ON
[Back Spcae : Input data [t : Move top menu	Cancel] x : EXIT(In top menu)]
Select Menu(0~9) > 3 Change Remote BD address Hexa type 12 character > 0	DODb2435fdcc

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
 : BItest

 1 => Authentication
 : Enable PINCODE[TEST]

 2 => Local BD Address
 : 0011b1a10c71

 3 => Remote BD Address
 : 0000b2435fdcc

 4 => Role
 : MASIER

 5 => Connection Mode
 : MODE3

 6 => RS-232(Baud Rate) : 9600bps 7 => RS-232(Stop Bit) : 1 bit 7 => RS-232(Stop Bit) : 1 bit 8 => RS-232(Parity Bit) : None 9 => RS-232(Flow Control) : ON [Back Spcae : Input data Cancel ft : 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

D => Device Name

1 => Authentication

2 => Local BD Address

3 => Remote BD Address

4 => Role

5 => Connection Mode

5 => Connection Mode

5 => Connection Mode

5 => RS-232(Baud Rate)

6 => RS-232(Stop Bit)

7 => RS-232(Stop Bit)

8 => RS-232(Flow Control)

9 => RS-232(Flow Control)

1 bit

8 => RS-232(Flow Control)

1 bit

9 => RS-232(Flow Control)

1 bit

1 bit

8 => RS-232(Flow Control)

1 control

1 t: Move top menu

2 x: EXIT(In top menu)

1 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 M 0 => Device Name 1 => Authentication 2 => Local BD Address 3 => Remote BD Address 4 => Role 5 => Connection Mode 6 => RS-232(Baud Rate) 7 => RS-232(Stop Bit) 8 => RS-232(Parity Bit) 9 => RS-232(Piow Control)	ENU ====================================
[Back Spcae : Input data) [t : Move top menu Select Menu(0~9) >	Cancel] x : EXIT(In top menu)]

* 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.



3) You can see the changed mode.

x : EXIT(In top menu)] [t : Move top menu Select Menu(0~9) > 5 Change Connection mode - 53 2 : MODE2 3 : MODE3 : MODE1 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 MODE2 5 => Connection Mode 6 => RS-232(Baud Rate) : 96 7 => RS-232(Stop Bit) : 1 t 8 => RS-232(Parity Bit) : Nor 9 => RS-232(Flow Control) : ON : 96UUbps : 1 bit : None -----------[Back Spcae : Input data Cancel [t : Move top menu x : E x : EXIT(In top menu)] Select Menu(0~9) > _

About the modes

MODE 1

In this mode, BM2001 always connect the latest paired bluetooth device. If BM2001 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

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: BM2001 must have a Remote BD Address in mode3.

[7] RS-232 (Baud Rate)

[7-1] It is UART communication speed.[7-2] BM2001 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 : 18IT 2 : 20 Select(1 ^{°2}) > _	BIT			~
<				>
Connected 0:08:39	Auto detect	9600 8-N-1	SCROLL	CAP

[9] RS-232 (Parity Bit)

Parity Bit is NONE, ODD and EVEN.

Select Menu(D"9) > 8 Parity bit change : 1 : NONE 2 : Select(1"3) >	tt Henu(0~9) > 8 ty bit change : 40NE 2 : 0DD 3 : tt(1~3) >			
<				>
Connected 0:09:24	Auto dete	ct 9600 8-N-1	SCROLL	CAE

[10] RS-232 (Flow control)

BM2001 supports Hardware Flow control. Default setting is OFF.

Flow control change : 1 : OFF 2 : ON Select(1~2) >						
<		j.			>	
Connected	0:09:48	Auto detect	9600 8-N-1	SCROLL	CAF	

Appendix: Bluetooth Operation Mode of BM series

MODE 1 (Default Mode)

This is the default seeting.

Before user change the connection mode, BM2001 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.

MODE 2

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

Using method

[1] Turn off BM2001 and move down the pin#4 of the function select switch. Then BM2001 will be a PC configuration Mode.

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

[3] Turn on BM2001, 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 BM2001.

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

[10] Turn on BM2001.

TOP MENU								
O => Device Name	: BItest							
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							
L Back Spcae : Input data Cancel								
L t : Move top menu	X : EXII(IN TOP MENU)]							
Soloot Mopu $(0,0) > E$								
Serect Menu(0~3) > 0								
1 MADE1 2 MADE2 3 MADE3								
Select(1~3) >	J · NODEJ							

In Master Case

[11] You can see the below picture.

- BM2001 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....
                  I
[ 1~7 : Choice slave device ]
[s : Stop inquiry
[r : Restart inquiry
                               i
[ Back space : Input Cancle
         -----
                       _____
Num BD ADDRESS LOCALNAME
1 0005c9500de2 SPP_CLIENT
2 0011b1a10c80 BTNetworks
Num BD ADDRESS
                                    CoD
                                   000104
                                   001 f 00
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 ANSI₩	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 1 0005c9500de2 SPP_CLIENT 2 0011b1a10c80 BTNetworks CoD 000104 001 f 00 000a3a541933 CWP_DONGLE 3 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 0011b1a10c80 BTNetworks 001 f 00 000a3a541933 CWP_DONGLE 0005c9500de2 SPP_CLIENT 0011b1a10c6e BTNetworks 2 120104 3 000104 001 f 00 4 Choice slave device >

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

0011b1a10c80 BTNetworks 001 f 00 2 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 0011b1a10c80 BTNetworks 001 f 00 1 000a3a541933 CWP_DONGLE 0005c9500de2 SPP_CLIENT 0011b1a10c6e BTNetworks 120104 2 3 000104 4 001 f 00 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, BM2001 must retrun to MODE1.

If you don't do it, whenever turn on BM2001 it will be find the new bluetooth devices.

Back to Mode1

[1] Turn off BM2001. And move down the pin#4 of the function switch to be PC configuration Mode.

- [2] Turn on BM2001. And change the connection mode as MODE1 at the main menu.
- [3] Turn on BM2001. And move up the pin#4 of the function switch to be DIP Switch Mode.

MODE 3

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

[1]Enter the PC configuration Mode with BM2001.

[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 BM2001 will try to connect with new device what you want to connect.

[8]Wait until "Connection Ok" message will be displayed.

[9] Restart BM2001.

[8]Change the connection mode as MODE1 at the main menu.

[9] Turn off BM2001, and then move up pin#4 of the function switch to be DIP Swtich mode.





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