

Bluetooth UART Module

[Standard SPP]

User's Manual

FCC ID: A2QHLMD08RC2



HL-MD08R-C2



Bluetooth V2.1+EDR

Ver 3.2.22B 2011-12

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Welcome

Thanks for your purchase of the Bluetooth UART Module. Featuring Bluetooth wireless technology, the serial adapter provides cable-free Serial connections between your PC or Server & serial devices. Bluetooth Serial Adapter is compliance to Bluetooth V2.1+EDR and you can connect your computer or server and Module devices up to 10 meters away without cables in your working environments

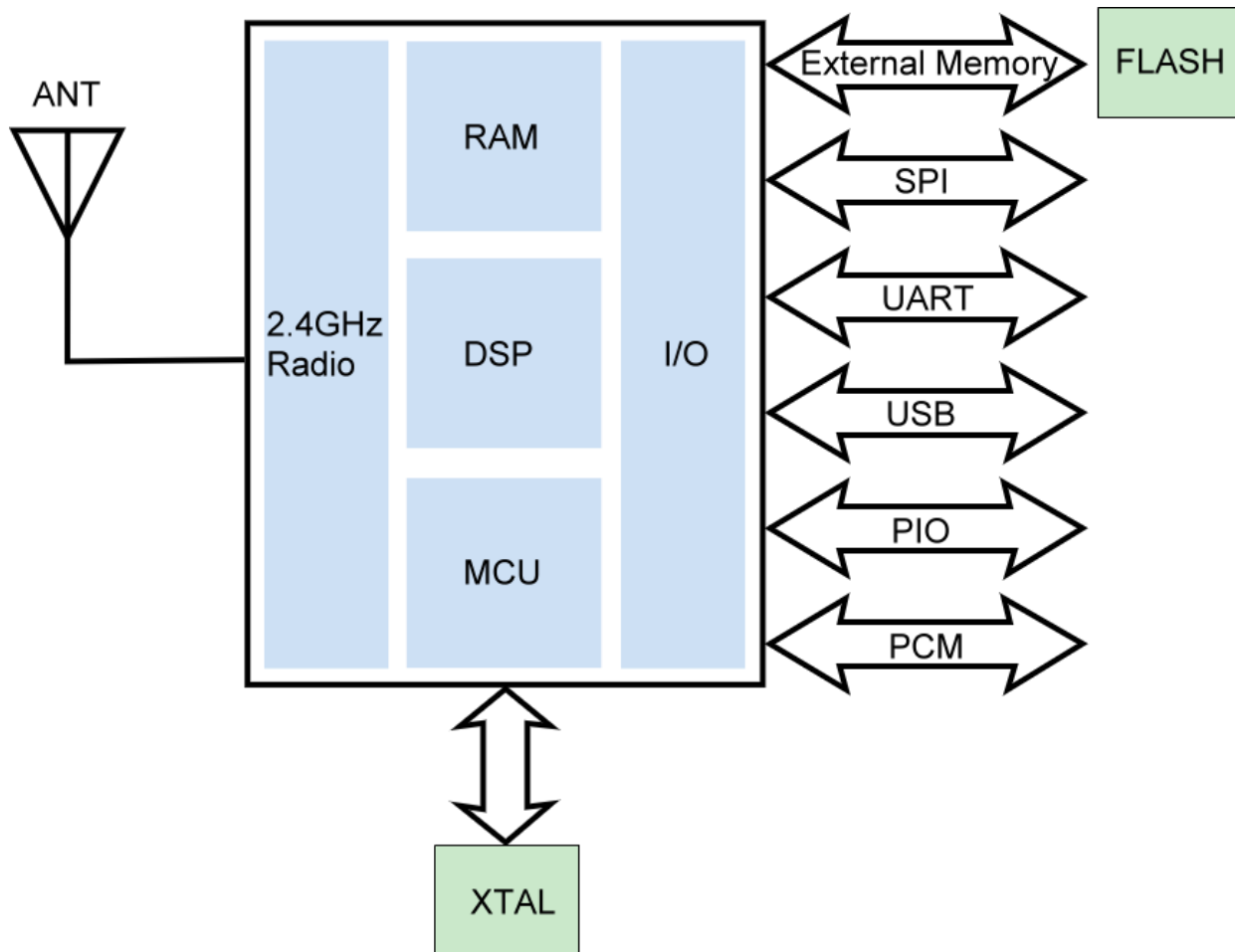
■ Feature

- Bluetooth Specification V2.1+EDR
- CSR BC04 Chipset
- Complete 2.4GHz radio transceiver and baseband
- PCB printed smart antenna and RF interface options available
- Bluetooth Class 2 operation (up to 10 meter range)
- Supports Bluetooth Serial Port Profile (SPP)
- Provides transparent serial cable replacement.
- Supports Baud Rate 1.2k to 921.6k bps.
- Easy to use Windows configuration tool available.
- Supports CTS/RTS hardware flow control.
- Customized features support for pairing mode, device name, PIN code.
- Supports Bluetooth SPP as a slave or a master.
- Supports Bluetooth Auto Reconnect.
- Support for 802.11g/b Co-Existence

■ Application

- Print, Serial Device
- GPS, POS, Barcode Reader
- Domestic and Industrial applications

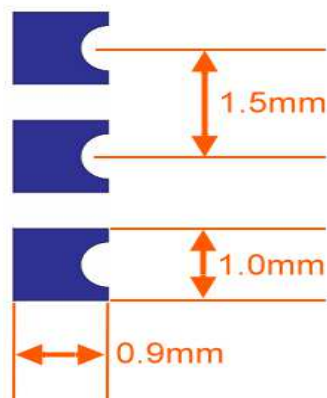
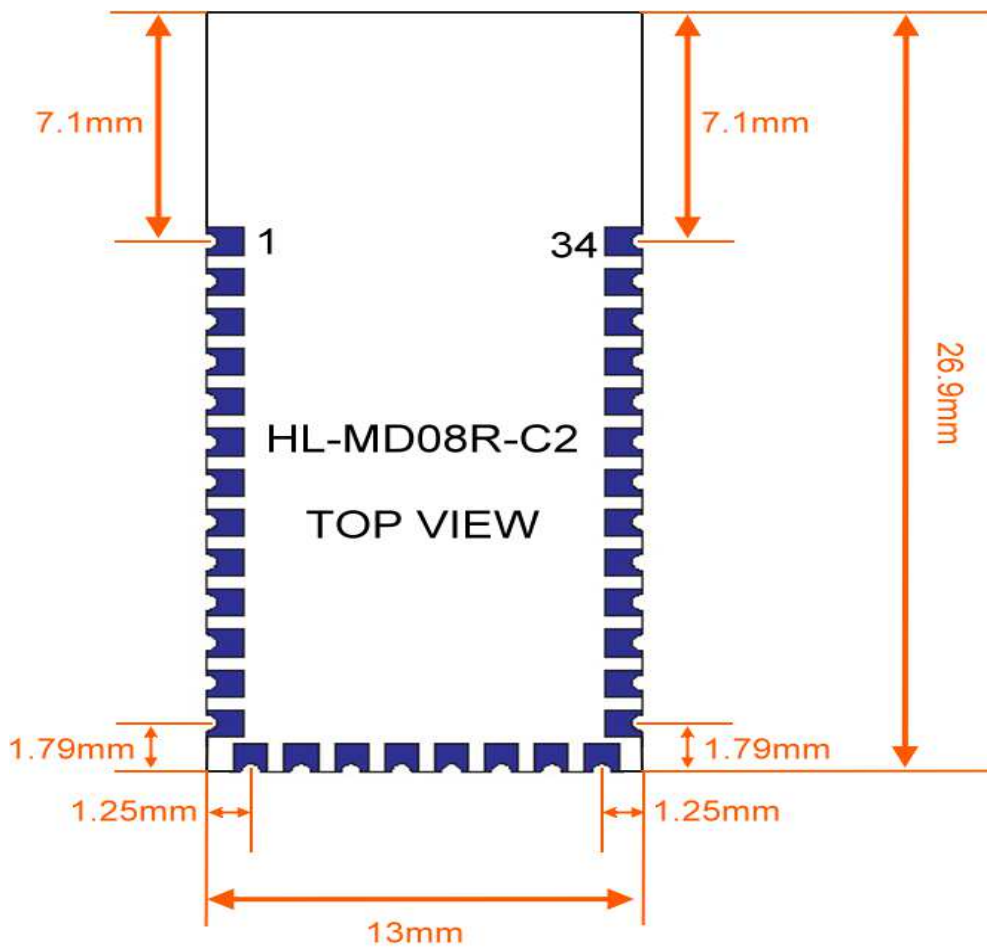
■ Block Diagram



■ Specification

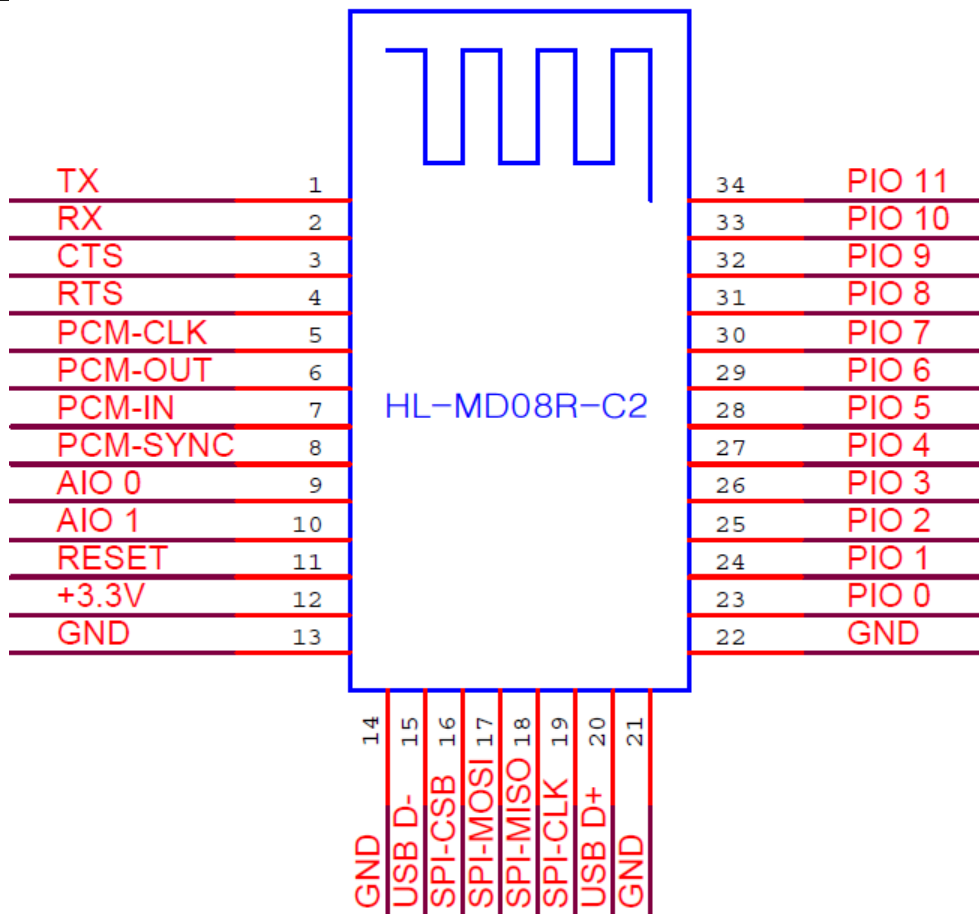
Model Name	HL-MD08R-C2
Bluetooth Profile	Series Port Profile (Bluetooth SPP)
Standard	Bluetooth specification version 2.1+EDR
Frequency	2.402GHz ~ 2.480GHz unlicensed ISM band
Hopping	1,600/sec, 1 MHz channel space
Modulation Method	GFSK for 1Mbps; $\pi/4$-DQPSK for 2Mbps; 8-DPSK for 3Mbps
Transfer rates (Max)	Max UART baud rates of 3Mbps
Spread Spectrum	Frequency Hopping Spread Spectrum (FHSS)
Signal	TxD, RxD, GND, CTS, and RTS
Transfer Baud Rate	Supports 1.2/2.4/4.8/9.6/19.2/38.4/57.6/115.2/230.4/460.8/921.6kbps
Flow Control	CTS / RTS
Data Bit	8
Stop Bit	1 , 2
Parity	None , Odd , Even
RF Output Power	Class 2
Tx Power	Max.4 +/-1 dBm
Rx Sensitivity	-80 dBm typical
Antenna	PCB Printed Antenna
Coverage	Up to 10 meter
Current Consumption	Max. 60 mA
Input Power	3.3V DC
Operating Temperature	0 ~ +60°C
Storage Temperature	-10 ~ +70°C
Dimensions	27 x 13 x 2(H)mm

■ Mechanical Dimension (Unit : mm)



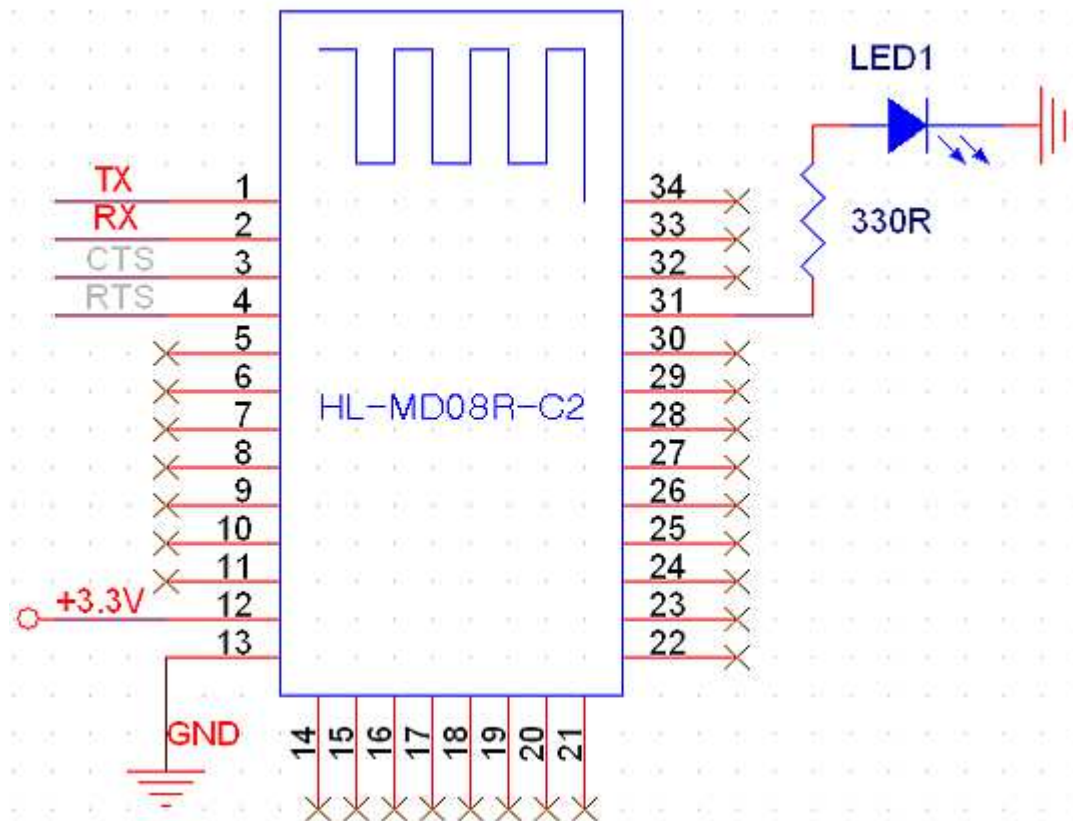
■ Pin Assignment

PIN NO.	NAME	TYPE	FUNCTION
1	UART-TX	CMOS Output	UART Data Output
2	UART-RX	CMOS Input	UART Data Input
3	UART-CTS	CMOS Input	UART Clear to Send
4	UART-RTS	CMOS Output	UART Ready to Send
5	PCM-CLK	Bi-directional	Synchronous Data Clock
6	PCM-OUT	CMOS Output	Synchronous Data Output
7	PCM-IN	CMOS Input	Synchronous Data Input
8	PCM-SYNC	Bi-directional	Synchronous Data Sync
9	AIO(0)	Bi-directional	Programmable I/O line
10	AIO(1)	Bi-directional	Programmable I/O line
11	RESETB	CMOS Input	Reset active low
12	3.3V	POWER	+3.3V Supply
13	GND	GND	Ground
14	GND	GND	Ground
15	USB D-	Bi-directional	USB_DN
16	SPI-CSB	CMOS Input	Chip Select For Synchronous Serial Interface
17	SPI-MOSI	CMOS Input	Serial Peripheral Interface Data Input
18	SPI-MISO	CMOS Output	Serial Peripheral Interface Data Output
19	SPI-CLK	CMOS Input	Serial Peripheral Interface Clock
20	USB D+	Bi-directional	USB_DP
21	GND	GND	Ground
22	GND	GND	Ground
23	PIO(0)	Bi-directional	Programmable I/O line
24	PIO(1)	Bi-directional	Programmable I/O line
25	PIO(2)	Bi-directional	Programmable I/O line
26	PIO(3)	Bi-directional	Programmable I/O line
27	PIO(4)	Bi-directional	Programmable I/O line
28	PIO(5)	Bi-directional	Programmable I/O line
29	PIO(6)	Bi-directional	Programmable I/O line
30	PIO(7)	Bi-directional	Programmable I/O line
31	PIO(8)	Bi-directional	Programmable I/O line
32	PIO(9)	Bi-directional	Programmable I/O line
33	PIO(10)	Bi-directional	Programmable I/O line
34	PIO(11)	Bi-directional	Programmable I/O line

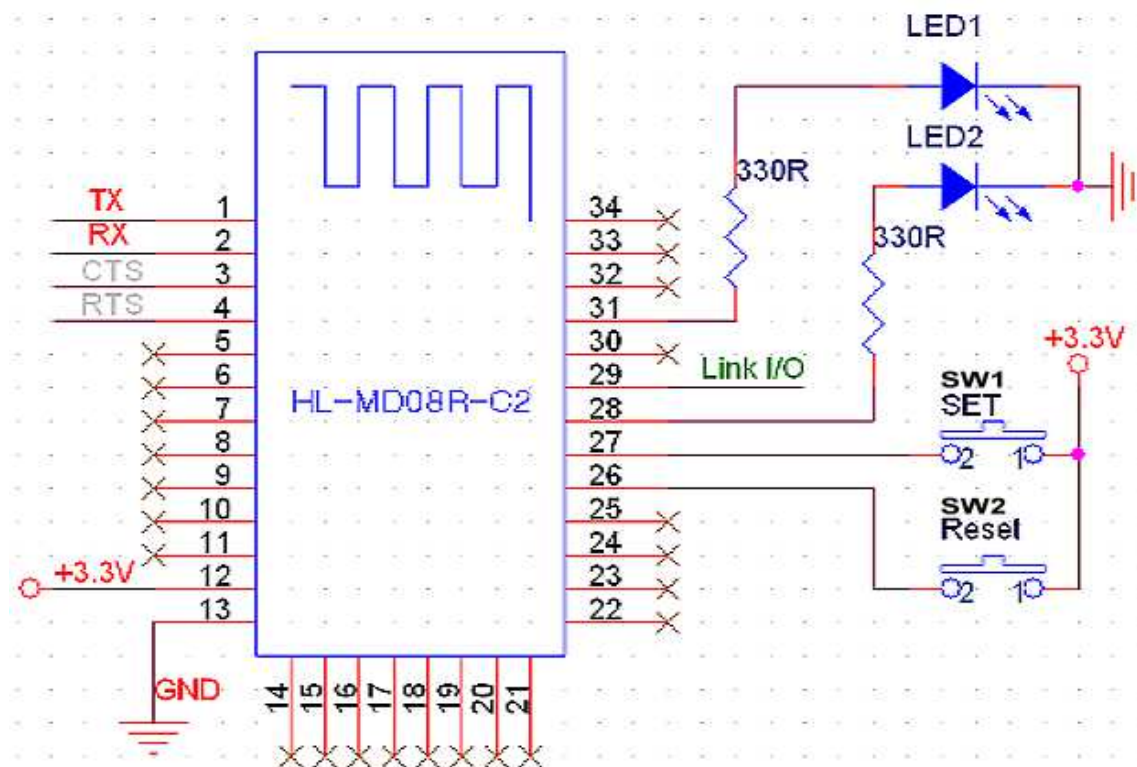


■ Hardware Guide

➤ Basic Circuit Design and Schematic



➤ Advanced Circuit Design and Schematic



➤ **LED Indicators**

LED Name	LED Color	Situation	Function
Link	Blue	Fast Flashing	Master Mode: Device is searching other available devices to pair.
		Slow Flashing	Slave Mode: Device is waiting to be connected.
		Everlasting Bright	Connected Mode: Device has paired and connected successful.
Setting	Red & Blue	Flashing alternatively	Config Mode: Device is in the Setting Mode.

➤ **Button Function**

Button Name	Function
SET	Turn off power then persist to press "SET" button until power is applied to device when Red and Blue LED begin flash alternatively , please take off your hand from SET button then device is into Setting Mode .
RESET	When power on, persist to press "RESET" button for 3 seconds then LED Red and Blue will be fast flashing simultaneously for 3 times, then device is recovered to factory default .

■ Factory Default Value

- Default Device name : **Hotlife**
- Default Password : **0000**
- Default Role : **Slave Mode**
- Default RS-232 Parameters : **115200, 8, n, 1**

■ Configuration

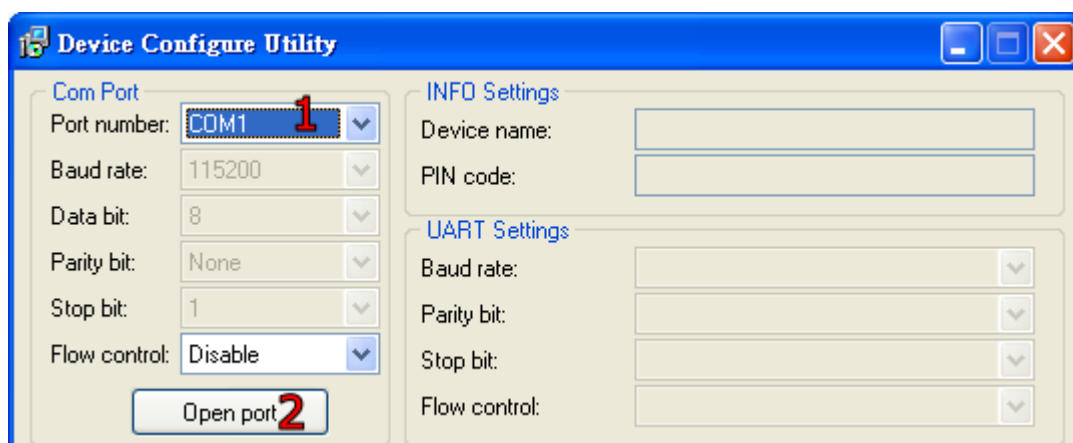
➤ Launch HL-MD08R-C2 Utility

1. Insert Modem to a TTL COM Port of PC
2. Persist to Press “**SET**” button until power is applied to device when **Red** and **Blue** LED begin **flash alternatively**, please take off your hand from SET button then device is into **Setting Mode**.
3. Launch Serial Adapter Utility – **Device_Configure_v4.0B** on PC



Device-Configure_v4.0B

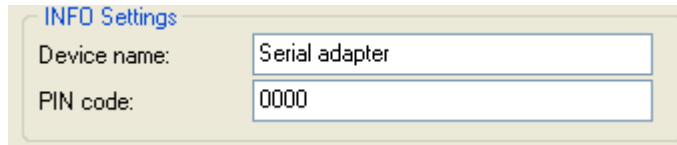
4. Open COM Port - (1) Select COM **Port Number** to be same as **Virtual COM port** number.
※ Please refer the picture in page 7.
(2) Press “**Open port**” Button



➤ **Serial Parameters Setting**

1. INFO Setting

Configure **Device name** & **PIN Code** setting.

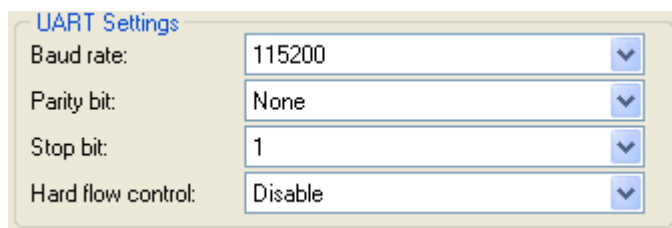


** Default Device name: **Serial Adapter** **

** Default PIN Code: **0000** **

2. UART Setting

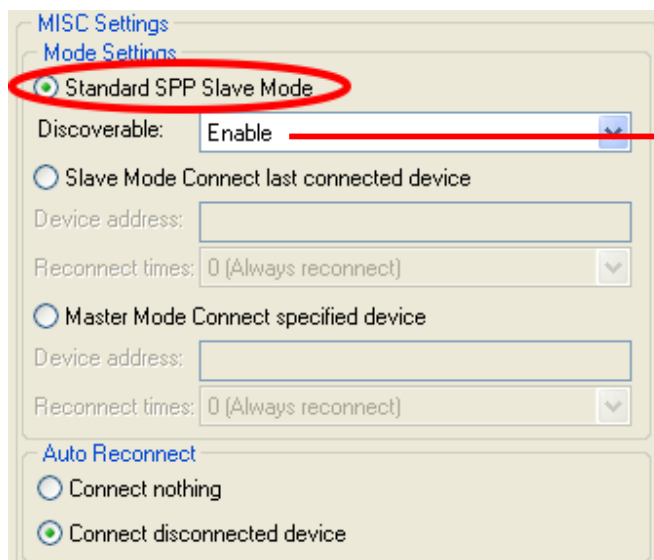
Configure **Baud rate**, **Parity bit**, **Stop bit** and **Hard flow control** setting.



3. Mode Setting

3-1. Standard SPP Slave Mode: It's applied to passive connecting mode.

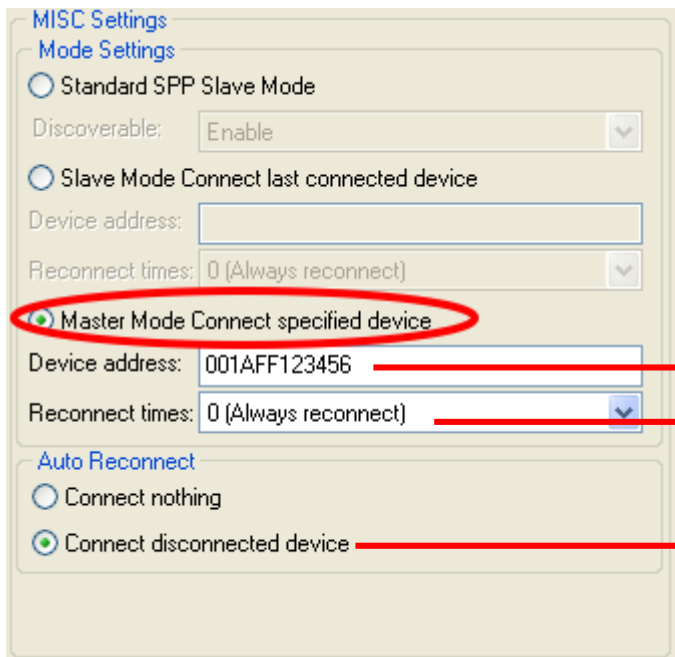
Bluetooth Serial Adapter is waiting to be connected with other devices such as PC, PDA or.....



**** Discoverable:**
(1) Select **Enable** to show device name.
(2) Select **Disable** to hid device name

3-2. Master Mode Connect Specified Device: It's applied to active connecting mode.

You must enter Bluetooth MAC address of the remote Bluetooth device and you can setup **auto reconnect** times.



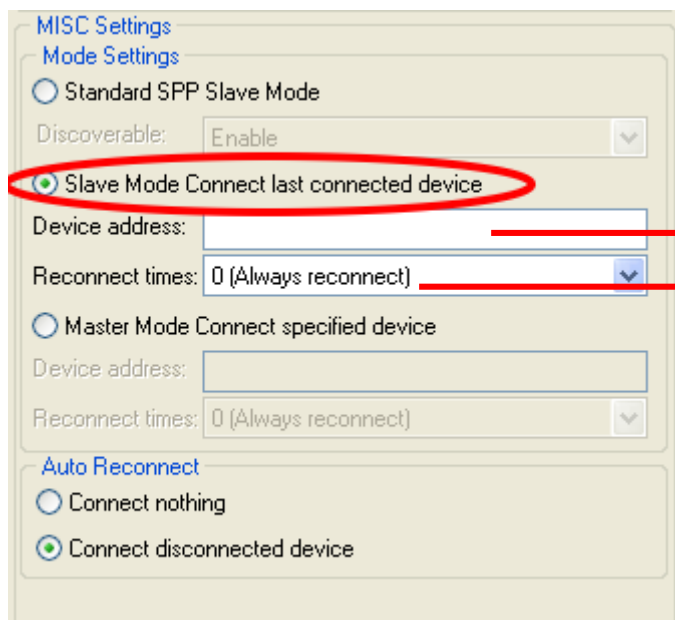
Enter **MAC Address** of Remote Bluetooth Device.

Setup **Auto Reconnect** times.

** Suggest you to setup **Auto Reconnect** to **“Connect disconnected device.”**

3-3. Slave Mode Connect Last Connected Device

It's applied to active auto reconnect last connected device and setup the auto reconnect times.

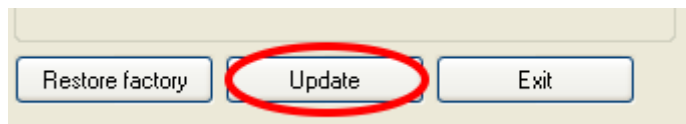


At this mode, Bluetooth Serial Adapter will auto memorize the **MAC Address** of last connected device.

Setup **Auto Reconnect** times.

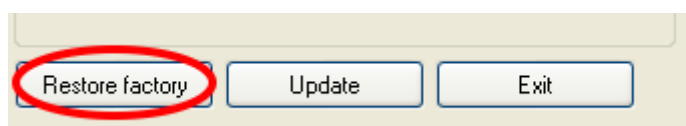
➤ Save Setting

Press **Update** button to save your new configuration then **turn off** the power of Bluetooth Serial Adapter then turn it on, after then the Bluetooth Serial Adapter will work with your new configure Serial parameter.



➤ Restore Factory Default

Press **Restore factory** button to recover parameter to factory default then **turn off** the power of Bluetooth Serial Adapter then turn it on, after then Bluetooth Serial Adapter default will recover to factory default.



** Default Device Name: **Serial Adapter**
 ** Default PIN Code: **0000**
 ** Default RS-232 Parameters: **115200, 8, n, 1**

➤ Quick Connect Setting Mode

This function is only able to apply with our Bluetooth Serial Adapter products connecting.

◆ HL-MD08R-C2 connect to : HL-MD09P-C1(P) or HL-MD08P-C1(P) or HL-MD04P-C1(P)

1. Connect power into two Bluetooth to Serial Adapters then Blue LED will be Slow Flashing.
 ※ You can configure Serial parameters as your need before connect power
2. Select one of two Bluetooth to Serial Adapter to **double click** "SET" button then LED Red and Blue will be **slow flashing simultaneously** for **2 seconds** after then become LED Blue **fast flashing**, when LED Blue is fast flashing the Bluetooth Serial Adapter is in **search mode**.
3. When LED Blue is **everlasting bright**, the two Bluetooth to Serial Adapters had paired and connected successful. The Bluetooth to Serial Adapter you selected to double click SET button that is Master mode and another is Slave mode, the two Bluetooth to Serial Adapters that had paired and connected will Auto-Reconnect when you reboot devices.
4. If setting fail, please press "RESET" button to recover factory default then re-setting.

■ Warranty Policy

1. This device is guaranteed against manufacturing defects for one full year from the original date of purchase.
2. This warranty is valid at the time of purchase and is non-transferable.
3. This warranty must be presented to the service facility before any repair can be made.
4. Sales slip or other authentic evidence is required to validate warranty.
5. Damage caused by accident, misuse, abuse, improper storage, and/or uncertified repairs is not covered by this warranty.
6. All mail or transportation costs including insurance are at the expense of the owner.
7. Do not send any product to service center for warranty without a RMA (Return Merchandise Authorization) and proof of purchase. Ensure a trackable method of delivery is used (keep tracking number).
8. Warranty is valid only in the country of purchase.
9. We assume no liability that may result directly or indirectly from the use or misuse of these products.
10. **This warranty will be voided if the device is tampered with, improperly serviced, or the security seals are broken or removed".**

FCC Statement

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. 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.

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.

End Product Labeling

The final end product must be labeled in a visible area with the following sentence:

" Contains FCC ID: A2QHLMD08RC2 "

 **Warning:**

Changes or modifications made to this equipment not expressly approved by National Chiao Tung University may void the FCC authorization to operate this equipment.