
**Bluetooth Serial Adapter
MTI8038
User Manual**

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1. Technical Specifications

Model	MTI8038
Bluetooth version	Compatible Bluetooth 3.0 Specification
RF output power(Conducted)	4.02dBm
Operating Frequency	2402~2480 MHz
Spectrum extensions	FHSS
Antenna Type	Chip
Sensitivity	<-92dBm at < 0.1% BER
Protocol	LM、LC、L2cap、SDP、RFCOMM
Support services	Bluetooth Serial Port Profile (SPP)
Power supply	DC 7~17V (Typical:12VDC) 100mA Rated current
Security	Security certification, data encryption
Baud rate	1200~921600bps
LED indicator	Power status、working mode
Communication	PC、PDA、Smartphone etc.
Application	Vehicular、Industrial Products etc.
Maximum connection distance	30 meters in open field
Working temperature	-40℃~+85℃
Size	82 (L) ×42 (W) ×21 (H)

2. Power Consumption

Mode	Test Condition (Slave Device)	Maximum mA	Typical Value mA	Minimum mA
Connected	Data transmission	14.7	12.6	12.1
No connection	Connect (inquiry) interval=2048 Connect (inquiry) continue=18	17.2	8.9	7.8

Notes:

Under regular mode, all parameter is default.

The connection distance between this adapter and smart device is 10 meters. It continuously sends data at the same time with 38400 baud rate.

3. Description of LED indicator and inner button

There are two LED indicators on the serial adapter, one indicates connection status and one indicates master/slave mode.

Master/slave mode indicator (red)

In the parameter setting mode, this indicator is off.

In the data working mode, this indicator will be in the following status:

Working role	Status
Slave role	once every 2 seconds
Master role	once every 5 seconds

Connection status indicator (green)

In the parameter setting mode, this indicator is off.

In the data working mode, this indicator will be in the following status:

Connection status	Status
Not connected	once every second
Connected	off

Inner button: There is a button on PCB inside the black case. If need to restore factory settings, please press this button for 2 seconds.

4. Instructions

Power on this product.

The default factory setting of the adapter is 38400bps baud rate, 8-N-1 communication mode, no flow control. The match code is 1234.

In the data working mode, the Bluetooth smart device of the user terminal will search for the adapter, and after the authentication is passed, it will remember (save) the address of the adapter and establish a connection. The stored address and default connection password can be cleared by AT commands and parameter setting tools. If you need to modify the parameters, send "+++" within 30 seconds after power-on to enter the

parameter setting mode, and use the relevant AT commands to set parameters, such as baud rate, authentication, and binding address.

The adapter is connected successfully, the connection indicator (green light) is off, and the status indicator (red light) keeps flashing. At this point, data can communicate with each other. For user equipment, this adapter can replace serial cable and receive data directly. Once the connection is established, unless the user device has a weak signal or actively disconnects Bluetooth, the adapter will not actively disconnect, and the connection will remain.

Note: This parameter is stored in the Bluetooth chip. Therefore, even if the power is turned off, the parameters will remain the same as last time and will not be lost. After the parameter modification is completed, please send "AT+exit" or power on again to make the adapter enter the data mode.

If it is used for in-vehicle communication, it needs to cooperate with smart devices (Android V7.0 or above, IOS 8 or above) to conduct data communication through the MTI APP to collect vehicle information data.

5. AT Command

Note:

- The parameter setting command can be executed only when the serial adapter is in the Parameter Setting mode(that is, power on and send “+++”). After the parameters are modified, please return to data mode and then the parameter settings take effect.
- Each command must make the two bytes (\r\n)carriage return and line feed ((ASCII codes are 0x0D, 0x0A) as the end sign, or command can not be identified.
- The brackets "<>"outside of the parameter is added for convenient reading and the actual command is without the "<>".

1. Test Command

Command	Response	Parameter
AT\r\n	\r\nOK\r\n	None

2. Set / Inquire the baud rate

Command	Response	Parameter
AT+BAUD=<rate>\r\n	\r\nOK\r\n	rate: baud rate (1200、2400、4800、9600、19200、38000、38400、57600、115200、230400、460800、921600) Default: 38400
AT+BAUD?\r\n	\r\n+BAUD: <rate>\r\n\r\nOK\r\n	

3. Set / Inquire flow control mode

Command	Response	Parameter
AT+FLOWCONTROL=<type>\r\n	\r\n OK\r\n	<type>: 0: No flow control 1: adapt hardware flow control Default: 0
AT+FLOWCONTROL?\r\n	\r\n+FLOWCONTROL: <type>\r\n\r\n OK\r\n	

4. Set/Inquire device name

Command	Response	Parameter
AT+NAME=<name>\r\n	\r\n OK\r\n	name: device name Default: definition according to the specification of products (when modifying, no more than 29 bytes.)
AT+NAME?\r\n	\r\n+NAME: <name>\r\n\r\n OK\r\n	

5. Set / Inquire whether authenticate

Command	Response	Parameter
AT+AUTH=<enable>\r\n	\r\n OK\r\n	enable : 0: Disable simple pairing 1: enable simple pairing Default: 1
AT+AUTH?\r\n	\r\n+AUTH: <enable>\r\n\r\n OK\r\n	

Authentication: the security authentication is provided by this serial adapter. Only the authenticated users can communicate with it. If it is a pair of serial adapters, these processes are done automatically. When AT+AUTH=1, the serial adapter will automatically use the simple pairing mode to authenticate the device that supports simple matching. For the device that does not support simple matching, the serial adapter will authenticate the password (default password: 1234).

6. Set / Inquire authentication password

Command	Response	Parameter
AT+PASSWORD=<password>\r\n	\r\n OK\r\n	password: Default: 1234 (No more than 4 or 6 Bytes)
AT+PASSWORD?\r\n	\r\n+PASSWORD:<password>\r\n\r\n OK\r\n	

7. Set / Inquire device type

Command	Response	Parameter
AT+CLASS=<cod>\r\n	\r\n OK\r\n	cod: device type(The length must be 6 bytes.) Default: 000000
AT+CLASS?\r\n	\r\n+CLASS: <cod>\r\n\r\n OK\r\n	

Device type: When the device type is keyboard, simple pairing must be enabled (AT+AUTH=1). Otherwise, the module may fail to pair the remote device.

8. Set / Inquire device role

Command	Response	Parameter
AT+ROLE=<role>\r\n	\r\n OK\r\n	role: 0: slave role 1: master role Default: 0
AT+ROLE?\r\n	\r\n+ROLE: <role>\r\n\r\n OK\r\n	

9. Exit the parameter setting mode

Command	Response	Parameter
AT+EXIT\r\n	\r\n OK\r\n	None

10. Set / Inquire whether it is bind

Command	Response	Parameter
AT+BIND=<enable>\r\n	\r\n OK\r\n	enable: 0: not bind address 1: bind address Default: 0
AT+BIND?\r\n	\r\n+BIND: <enable>\r\n\r\n OK\r\n	

When binding the address: If the address has been memorized, the query matching is not allowed, and it can only be connected through its storage device; once the adapter has memorized the address, it can only establish a connection with the device it has memorized, and cannot establish a connection with other devices. . Therefore, when binding the address, if you want to establish a connection with another device, you must clear the stored address.

11. Set/Inquire the memorized remote Bluetooth device

Command	Response	Parameter
AT+RADDR=<addr>\r\n	\r\n OK\r\n	addr : remote Bluetooth address
AT+RADDR?\r\n	\r\n+RADDR:<addr>\r\n\r\n OK\r\n	

If the adapter is not bound to the address, it can still be connected by other Bluetooth devices. If an address is bound, the binding address can be set by this command.

12. Clear the memorized address

Command	Response	Parameter
AT+CLEARADDR\r\n	\r\n OK\r\n	None

13. Inquire remote Bluetooth devices

Command	Response	Parameter
AT+INQ\r\n	\r\n OK\r\n \r\n+INQRESU : <addr>,<class>,<name>\r\n Inquire Results \r\n+INQCOMP\r\n Inquire complete	<addr> : Bluetooth address <class>: <name> : device name

14. Set / Inquire the data processing mode when not connected

Command	Response	Parameter
AT+DATAMODE=<mode>\r\n	\r\n OK\r\n	<mode>: 0: The data is stored in flash until the connection is established and sent to the other Bluetooth device 1: When not connected, the data received will lost directly Default: 0
AT+DATAMODE?\r\n	\r\n +DATAMODE: <mode>\r\n \r\n OK\r\n	

15. Inquire local Bluetooth address

Command	Response	Parameter
AT+LADDR?\r\n	\r\n +LADDR: <addr>\r\n \r\n OK\r\n	addr: local Bluetooth address

Note: When using the address setting command, it must be in the same format as the local or remote Bluetooth address queried.

16. Inquire software version

Command	Response	Parameter
AT+VERSION?\r\n	\r\n+VERSION: <Para1>\r\n\r\nOK\r\n	Para1: software version

17. Software reset

Command	Response	Parameter
AT+RESTART\r\n	\r\nOK\r\n	

After sending this command, the serial adapter's program will reset and no need to re-power.

18. Restore default settings

Command	Response	Parameter
AT+RESET\r\n	\r\nOK\r\n	None

19. Inquire all commands

Command	Response	Parameter
ATZ?\r\n	List all commands\r\n\r\nOK\r\n	List all the commands

20. Device firmware upgrade

Command	Response	Parameter
AT+DFU\r\n	\r\nOK\r\n	None

Manufacture:

Company Name: Chongqing JINOUE Science & Technology Development Co., Ltd.
Address: D1-802, Overseas Students Pioneer Park, No.71 Kecheng Rd, Jiulongpo District, 400039, Chongqing

6. FCC STATEMENT

§ 15.19 Labeling requirements.

This device complies with part 15 of the 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.

§ 15.21 Information to user.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.105 Information to the user.

Note: 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.

RF exposure statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.