XM-05 Multi – Function Bluetooth Module

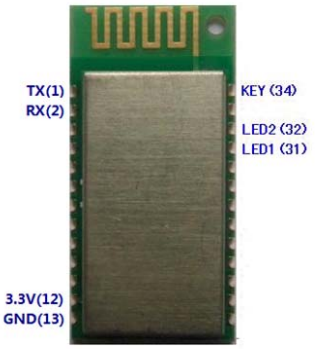
Introduction

XM-05 Bluetooth Multi-Function Bluetooth module with the capability to operate contains in two interchangeable function types. The two functions are a)Command control, and b)SPP Data type.

When operating in the Command control function mode, User can send AT command to config the module var uart port.

When operating in the SPP Data function type, XM-05 Bluetooth module can be switched between Master, or Slave, or Loopback modes.

The XM-05 Bluetooth module can switch between types by either UART commands.



XM-05

Specification

1、 Bluetooth V2.1+EDR,
2、 SPP Profile
3、 13 PIO
4、 Hardware watchdog
5、 Compatible with Windows、IVT、Widcomm (Broadcom) 、android system。
6、 Build in Reset circuit
7、 12 bits AD, SPI, I2C, 2-PWM 。
8、 Supply power 3.0V ~3.6V。
9、 Compact Size：27mm x 13 mm x 2.4mm 。
10、Current consumption：Paring mode：4～12mA Communication mode 12mA

11、Output power: +10db

12、Communication distance 30M (Bluetooth class 2)

AT SETUP commands

1、 TESTING the UART connection

Command	Response	Parameter
AT	OK	None

2、 Reset and Restart

Command	Response	Parameter
AT+RESET	OK	None

3、 Software version

Command	Response	Parameter
AT+VERSION?	+VERSION:<ver> OK	ver:

4、 Reset to Factory Default

Command	Response	Parameter
AT+ORGL	OK	None

Default Value

Class: = 000000

Inquiry access code =9E8B33

Mode = Slave Mode

UART Baudrate = 38400bits No parity, 8 bits, 1 stop

Password “1234”

Device Name “XM-05”

5、 Local BT address

Command	Response	Parameter
AT+ADDR?	+ADDR:<bda> OK	bda: = Local BT address

Bluetooth BT address in Hex Format

AT+ADDR?

+ADDR: 001B35880001

OK

6、 Set and Inquire Device Name

Command	Response	Parameter
AT+NAME=<deviceName>	OK	deviceName
AT+NAME?	+NAME:<deviceName> OK	

7、 Inquire Remote Bluetooth Device Name

Command	Response	Parameter
AT+RNAME?<peerBDA>	1. +RNAME:<deviceName> OK 2. FAIL	peerBDA: Remote Device BT Address deviceName: Remote Device Name

8、 Set/Inq Modules mode

Command	Response	Parameter
AT+ROLE=<nRole>	OK	nRole: 0———Slave (Default) 1———Master 2———Slave-Loop
AT+ROLE?	+ROLE:<nRole> OK	

Mode:

Slave: Connected by BT master

Master: Inquiry and connect to other SPP Slave device

Slave-Loop: Connected by BT master and Send Back the same data received from remote device

9、 Set/Inq device Class

Command	Response	Parameter
AT+CLASS=<nCod>	OK	nCod: class of device Default: 000000
AT+CLASS?	+ CLASS:<nCod> OK	

10、SET Inquiry Code

Command	Response	Parameter
AT+IAC=<iacLap>	1、OK———Success 2、FAIL———Fail	iacLap: Inquire code Default: 9e8b33 See note under AT+INQ
AT+IAC?	+IAC: <iacLap> OK	

GIAC (General Inquire Access Code:0x9e8b33) is default general inquiry code , when it set, it will find all Bluetooth devices. When the IAC code has been set then the AT+INQ command will filter out the Bluetooth devices that do not match the entered code.

11、SET / Inquire mode

Command	Response	Parameter
AT+INQM=<inqMode>,<numRsp>,<inqLength>	1、 OK———Success 2、 FAIL———Fail	inqMode: Inquire Mode 0———standard inquiry_mode_

AT+INQM?	+INQM: <Param1>,<Param2>,<Param3> OK	1———inquiry_mode with rssi numRsp: Max Inquire device 0: unlimited inqLength: Max inquire time (1`48) 1 = 1.28 Seconds 48 = 61.44 Seconds Default: 1, 0, 8

Example:

AT+INQM=1,9,48 —— Inquire mode set with RSSI signal level, Max 9 BT Devices Max time 48x1.28=61.44 Seconds。

OK

AT+INQM?

+INQM:1, 9, 48

OK

12、Set /Inquire Password

Command	Response	Parameter
AT+PSWD=<pinCode>	OK	pinCode: Password Default: “1234”
AT+PSWD?	+PSWD:<pinCode> OK	

13、Set/Inquire UART Parameter

Command	Response	Parameter
AT+UART=<nBaudRate>,<nStopBits>,<nParityBits>	OK	nBaudRate: Baudrate (bits/s) 1200 2400 4800 9600 19200 38400 57600 115200 23400 460800 921600 1382400 nStopBits: Stop bit 0———1 bit 1———2 bits nParityBits: Parity 0———None 1———Odd
AT+UART?	+ UART=<nBaudRate>,<nStopBits>,<nParityBits> OK	

		2——Even Default：38400，0，0

14、SET/INQ Connection mode：

Command	Response	Parameter
AT+CMODE=<nMode>	OK	nMode： 0——Fixed BT address Connection 1——Free BT address connection Default 0
AT+CMODE?	+CMODE:<nMode> OK	

15、SET/INQ Bind Device BT address

Command	Response	Parameter
AT+BIND=<bda>	OK	bda——BIND Remote BT address bda = 000000000000 No Binding. Can be used to clear Binding
AT+BIND?	+BIND:<bda> OK	

16、SET/InQ—Indication LED

Command	Response	Parameter
AT+POLAR=<StateLedPolar>, <LinkLedPolar>	OK	StateLedPolar: 0——Set Status indicator (PIO8) Low = LED on LED 1——Status (PIO8) Set High = LED on LinkLedPolar: 0—— set Link Status indicator (PIO9) to Low = linked 1——set Link Status indicator (PIO9) to High = linked Default：1，1
AT+ POLAR?	+POLAR=<StateLedPolar>, <LinkLedPolar> OK	

17、SET/Inq Scan mode parameter

Command	Response	Parameter
AT+IPSCAN=<Param1>, <Param2>, <Param3>, <Param4>	OK	Para1= Inquiry Scan Interval Para2=Inquiry Scan Window Para3= Page Scan Interval Para4= Page Scan Window Default 1024,36,1024,36
AT+IPSCAN?	+IPSCAN: <Param1>, <Param2>, <Param3>, <Param4> OK	

18、Set / Inquire—SHIFF

Command	Response	Parameter
AT+SNIFF=<max>, <min>, <attempt>, <timeout>	OK	max -- Maximum Interval min -- Minimum Interval attempt -- Attempt timeout -- timeout Default: 200,32,1,8 Set 0,0,0,0 = not enter Sniff
AT+SNIFF?	+SNIFF: <max>, <min>, <attempt>, <timeout>	

19、Set /Inquire —Security 、encryption mode

Command	Response	Parameter
AT+SENM=<Param1>,<Param2>,	1、OK 2、FAIL	Param1: Security mode: 0—— not security 1 --- security Param2 encryption mode: 0——not encryption 1——encryption Default: 1,1 Set 0,0 = not require authentication
AT+ SENM?	+ SENM: <Param1>,<Param2>, OK	

20、Clear Remote BT address from memory

Command	Response	Parameter
AT+RMSAD=<bda>	OK/Fail	bda: BT address

FAIL = BT address is not in memory

21、Clear All BT address from memory

Command	Response	Parameter
AT+RMAAD	OK	None

22、Find BT address From Memory

Command	Response	Parameter
AT+FSAD=<bda>	1、 OK—— 2、 FAIL——	bda: BT address

23、GET Connected number of BT device

Command	Response	Parameter
AT+ADCN?	+ADCN：<Param> OK	Param： number of Connected BT device Param = 0 No device connected

24、Get Last Connected BT address

Command	Response	Parameter
AT+MRAD?	+MRAD:<bda> OK	bda：Last Connected BT address bda= 000000000000, no device connected

25、Inquire BT device

Command	Response	Parameter
AT+INQ	OK +INQ: <bda>, <cod>, <rssi>, +INQ:COMPLETE	bda：BT address cod：Device type rssi：RSSI signal level

Example：

at+iac=9e8b33 ——Search all BT device code

OK

at+class=000000 ——Search all BT device class

OK

at+inqm=1,9,48 —— response with RSSI status，Max 9 Device, Max Time 48x1.28=61.44。

at+inq —— Start Search

OK

+INQ:001b35880001,001f00,-20

+INQ:001b35880001,001f00,-22

+INQ:001b35880001,001f00,-23

+INQ:001b35880001,001f00,-20

+INQ:001b35880001,001f00,-55

+INQ:001b35880001,001f00,-27

+INQ:001b35880001,001f00,-20

+INQ:001b35880001,001f00,-24

+INQ:001b35880001,001f00,-22

+INQ:COMPLETE

Example 2：

at+iac=9e8b33 ——Set Search all BT device code

OK

at+class=1f1f ——Set Search BT class = 0x1f1f device

OK

at+inqm=1,9,48 ——response with RSSI status，Max 9 Device, Max Time 48x1.28=61.44。

At+inq ———Start Inquire with Filter、OK
+INQ:001b35880001,001f1f,-20
+INQ:001b35880001,001f1f,-22
+INQ:001b35880001,001f1f,-33
+INQ:001b35880001,001f1f,-20
+INQ:001b35880001,001f1f,-25
+INQ:001b35880001,001f1f,-27
+INQ:001b35880001,001f1f,-20
+INQ:001b35880001,001f1f,-24
+INQ:001b35880001,001f1f,-22
+INQ:COMPLETE

Example 3:

at+iac=9e8b3f ———Set Inq Device code = 0x9e8b3f
OK
at+class=1f1f ———Set Search Class = 0x1f1f device
OK
at+inqm=1,1,20 ———response with RSSI status, Max 9 Device, Max Time 48x1.28=61.44。

At+inq ———start search with filter
OK
+INQ: 001b35880001,001f1f,-12
+INQ:COMPLETE

26、Cancel Inquire

Command	Response	Parameter
AT+INQC	OK	None

27、Pair:

Command	Response	Parameter
AT+PAIR=<bda>,<timeoutSec>	1、OK———Success 2、FAIL———Fail	bda: Remote BT address timeoutSec: Max Time out (Second)

28、Link

Command	Response	Parameter
AT+LINK=<bda>	OK +LINK:SUCCESS ———Success +LINK:FAIL ———Fail	bda: Remote BT address

29、Disconnect

Command	Response	Parameter
AT+DISC	1、+DISC:SUCCESS———Disconnect Success OK 2、+DISC:LINK_LOSS———Lost connection	

	OK 3、+DISC:NO_SLC———No connection OK 4、+DISC:TIMEOUT———Timeout OK 5、+DISC:ERROR———Fail OK	None

30、Exit Command Mode

Command	Response	Parameter
AT+EXIT	OK	None

All commands only work when the XM-05 Module is in command mode.
All Control Commands follow CR/LF (\r\n, 0x0D 0x0A)