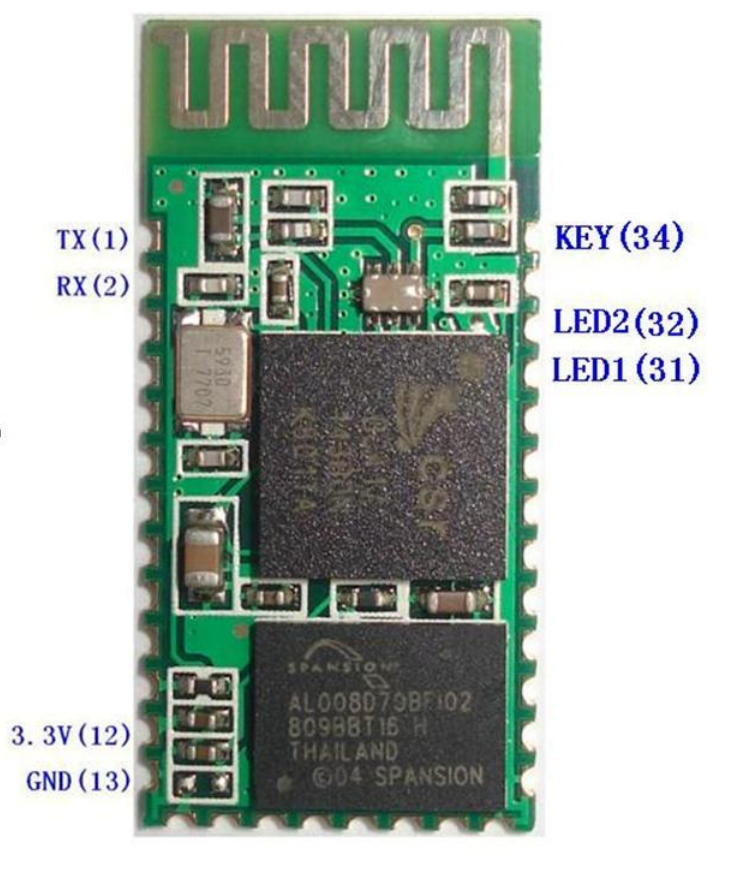


Embedded Bluetooth Serial Communication Module

AT Command Set Manual

Last revised: April, 2011

ZT-05 Embedded Bluetooth serial communication module (can be short for module) has two work modes: order-response work mode and automatic connection work mode. And there are three work roles (Master, Slave and Loopback) at the automatic connection work mode.



When the Module is at the automatic connection work mode, it will follow the default way set lastly to transmit the data automatically. When the module is at the order-response work mode, user can send the AT command to the module to set the control parameters and sent control order. The work mode of module can be switched by controlling the module PIN (PIO11) input level.

Serial module PINs:

1. PIO8 connects with LED. When the module is power on, LED will flicker. And the flicker style will indicate which work mode is in using since different mode has different flicker time interval.
2. PIO9 connects with LED. It indicates whether the connection is built or not. When the Bluetooth serial is paired, the LED will be turned on. It means the connection is built successfully.
3. PIO11 is the work mode switch. When this PIN port is input high level, the work mode will become order-response work mode. While this PIN port is input low level or suspended in air, the work mode will become automatic connection work mode.
4. The module can be reset if it is re-powered since there is a reset circuit at the module.

Imple Sistemas Eletrônicos Embarcados
Rua Diva Garcia, 1663 - Bairro Linhares - Juiz de Fora - Minas Gerais - Brasil
CEP 36.060-300 - TEL/FAX 55 32 3218 6367, 55 32 3218 6292
www.imple.com.br
www.zuchishop.com.br

1. How to get to the AT mode.

Way 1:

Step 1: Input low level to PIN34.

Step 2: Supply power to the module.

Step 3: Input high level to the PIN34. Then the module will enter to AT mode. The baud rate is as same as the communication time, such as 9600 etc.

Way 2:

Step 1: Connect PIN34 to the power supply PIN.

Step 2: Supply power to module (the PIN34 is also supplied with high level since the PIN34 is connected with power supply PIN). Then the module will enter to AT module. But at this time, the baud rate is 38400. In this way, user should change the baud rate at the AT mode, if they forget the communication baud rate.

How to get to the communication mode:

Step 1: Input low level to PIN34.

Step 2: Supply power to the module. Then the module will enter to communication mode. It can be used for pairing.

2. How to set this module be the master role.

Step 1: Input high level to PIO11.

Step 2: Supply power to the module. And the module will enter to the order-response work mode.

Step 3: Set the parameters of the super terminal or the other serial tools (baud rate: 38400, data bit:8, stop bit:1, no parity bit, no Flow Control)

Step 4: Sent the characters "AT+ROLE=1\r\n" through serial, then receive the characters "OK\r\n". Here, "\r\n" is the CRLF.

Step 5: Input low level to PIO, and supply power to the module again. Then this module will become master role and search the other module (slave role) automatically to build the connection.

3. Notes.

(1) ZT-03 and ZT-05's command should end up with "\r\n". It means when you finish programming, you should add terminator ("ENTER" or "0x0d 0x0a") to the program. It's different from ZT-04 and ZT-06 (They don't need terminator).

(2) The most common commands for ZT-03 and ZT-05 are: AT+ROLE (set master -slave), AT+CMODE(set address pairing) , AT+PSWD (set password).

If you want the master module has the function of remembering slave module, the most simply way is: First, set AT+CMODE=1. Make the master module pair with the slave module. Second, set AT+CMODE=0. Then the master module just can make pair with that specified slave module.

(3) When PIN34 keeps high level, all commands can be used. Otherwise, only some of them can be used.

Detailed description of Command

(AT command is case-sensitive, should end up with terminator ("enter" or "\r\n"))

1. Test

Command	Response	Parameter
AT	OK	None

2. Reset

Command	Response	Parameter
AT+RESET	OK	None

3. Get the soft version

Command	Response	Parameter
AT+VERSION?	+VERSION: <Param> OK	Param: Version number

Example :

AT+VERSION?\r\n
+VERSION:2.0-20100601
OK

4. Restore default status

Command	Response	Parameter
AT+ORGL	OK	None

The parameter of default status:

Device type: 0

Inquire code: 0x009e8b33

Module work mode: Slave Mode

Connection mode: Connect to the Bluetooth device specified

Serial parameter: Baud rate: 38400 bits/s; Stop bit: 1 bit; Parity bit: None.

Passkey: "1234"

Device name: "H-C-2010-06-01"

5. Get module Bluetooth address

Command	Response	Parameter
AT+ADDR?	+ADDR: <Param> OK	Param: Bluetooth address

Bluetooth address will show as this way: NAP: UAP: LAP(Hexadecimal)

Example:

Module Bluetooth address: 12: 34: 56: ab: cd: ef AT+ADDR?\r\n

+ADDR:1234:56:abcdef

OK

6. Set/ inquire device's name

Command	Response	Parameter
AT+NAME=<Param>	OK	Param: Bluetooth device name Default: "ZUCHI_XXXXX"
AT+NAME?	1. +NAME:<Param> OK - success 2. FAIL - failure	

Example:

AT+NAME=ZUCHI_00001\r\n - set the module device name: "ZUCHI_00001"

OK

AT+NAME=Beijin\r\n - set the module device name: "Beijin"

OK

AT+NAME?\r\n

+NAME: Bei jin

OK

7. Get the remote Bluetooth device's name

Command	Response	Parameter
AT+RNAME?<Param1>	1. +NAME:<Param2> OK - success 2. FAIL - failure	Param1: Remote Bluetooth device address Param2: Remote Bluetooth device address

Bluetooth address will show as this way: NAP:UAP:LAP (Hexadecimal)

Example:

Bluetooth device address: 00:02:72: od: 22 : 24; device name: Bluetooth AT+RNAME? 0002,72,od2224\r\n
+RNAME:Bluetooth
OK

8. Set/ inquire module role

Command	Response	Parameter
AT+ROLE=<Param>	OK	Param: 0 - Slave role 1 - Master role 2 - Slave-Loop role Default: 0
AT+ ROLE?	+ ROLE:<Param> OK	

Role introduction:

Slave (slave role) - Passive connection;

Slave-Loop - Passive connection, receive the remote Bluetooth master device data and send it back to the master device;

Master (master role) - Inquire the near SPP Bluetooth slave device, build connection with it positively, and build up the transparent data transmission between master and slave device.

9. Set/inquire device type

Command	Response	Parameter
AT+CLASS=<Param>	OK	Param: device type Bluetooth device type is a 32-bit parameter indicates the device type and what type can be supported. Default: 0 More information is provided at the appendix 1(device type introduction).
AT+ CLASS?	1. + CLASS:<Param> OK - success 2. FAIL - failure	

For inquiring the custom Bluetooth device from around Bluetooth devices quickly and effectively, user can set the module to be non-standard Bluetooth device type, such as 0x1f1f (Hexadecimal).

10. Set/ inquire-Inquire access code

Command	Response	Parameter
AT+IAC=<Param>	1. OK - success 2. FAIL - failure	Param: Inquire access code Default: 9e8b33
AT+ IAC?	+IAC: <Param> OK	The more information is provided at the appendix 2(Inquire access code introduction).

Access code is set to be GIAC type (General Inquire Access Code:0x9e8b33), and used for seeking (or being sought by) all the Bluetooth devices around.

For inquiring (or being inquiring by) the custom Bluetooth device from around Bluetooth devices quickly and effectively, user can set the inquire access code to be the other type number (not GIAC nor LIAC), such as 9e8b3f.

Example:

AT+IAC=9e8b3f\r\n OK
AT+IAC?\r\n
+IAC: 9e8b3f
OK

11. Set/ inquire - Inquire access mode

Command	Response	Parameter
AT+INQM=<Param>, <Param2>,<Param3>	1. OK----success 2. FAIL----failure	Param: Inquire access mode 0 - inquiry_mode_standard 1 - inquiry_mode_rssi Param2: the maximum of Bluetooth devices response Param3: The maximum of limited inquiring time The range of limited time: 1-48 (Corresponding time:1.28s-61.44s) Default: 1, 1, 48
AT+ INQM?	+INQM:<Param>,<Param2>,<Param3> OK	

Example:

AT+INQM=1,9,48\r\n - Set Inquire access mode: 1) has RSSI signal intensity indicator, 2) stop inquiring once more than 9 devices response, 3) limited time is 48s. 28=61.44s.

OK

AT+INQM\r\n

+INQM:1, 9, 48

OK

12. Set/Inquire- passkey

Command	Response	Parameter
AT+PSWD=<Param>	OK	Param: passkey Default: "1234"
AT+ PSWD?	+PSWD : <Param> OK	

13. Set/ Inquire- serial parameter

Command	Response	Parameter
AT+UART=<Param>,<Param2>,<Param3>	OK	Param1: baud rate(bits/s) The value (Decimal) should be one of the following: 4800 9600 19200 38400 57600 115200 23400 460800 921600 1382400 Param2:stop bit: 0 - 1 bit 1 - 2 bits Param3: parity bit 0 - None 1 - Odd parity 2 - Even parity Default: 9600, 0, 0
AT+ UART?	+UART=<Param>,<Param2>,<Param3> OK	

Example:

Set baud rate to be 115200, stop bit to be 2 bits, parity bit to be even parity. AT+UART=115200,1,2,\r\n
OK AT+UART?

+UART:115200,1,2
OK

14. Set/ Inquire - connection mode

Command	Response	Parameter
AT+CMODE=<Param>	OK	Param: 0 - connect the module to the specified Bluetooth address. (Bluetooth address can be specified by the binding command) 1 - connect the module to any address (The specifying address has no effect for this mode.) 2 - Slave-Loop Default connection mode: 0
AT+ CMODE?	+ CMODE:<Param> OK	

15. Set/Inquire - bind Bluetooth address

Bluetooth address will show as this way: NAP: UAP:LAP(Hexadecimal)

Command	Response	Parameter
AT+BIND=<Param>	OK	Param - Bluetooth address needed to be bind Default address: 00:00:00:00:00:00
AT+ BIND?	+ BIND:<Param> OK	

Bluetooth address will show as this way: NAP:UAP:LAP(Hexadecimal)

This command is effective only when the module wants to connect to the specified Bluetooth address.

Example:

The module is at connection mode which connects to specified Bluetooth address, and the specified address is 12:34:56:ab:cd:ef.

Command and the response show as follow: AT+BIND=1234, 56, abcdef\r\n

OK AT+BIND?\r\n

+BIND:1234:56:abcdef

OK

16. Set/Inquire - drive indication of LED and connection status indicate successful connection

Command	Response	Parameter
AT+POLAR=<Param1>, <Param1>	OK	Param1: The value is 0 - PI08 outputs low level and turn on LED 1 - PI08 outputs high level and turn on LED Param2: The value is 0 - PI09 output low level, indicate successful connection 1 - PI09 output high level, and indicate successful connection Default: 1,1
AT+ BIND?	+POLAR=<Param1>, <Param1> OK	

ZT-05 Bluetooth module definition: The output of PI08 drives indication of LED work mode; the output of PI09 indicates the connection status.

Example:

PI08 outputs low level and turn on LED, PI09 outputs high level and indicates successful connection.

Command and response show as follow: AT+POLAR=0, 1\r\n

OK AT+POLAR?\r\n

+POLAR=0, 1

OK

17. Set PIO single port output

Command	Response	Parameter
AT+PIO=<Param1>,<Param2>	OK	Param1: PIO port number(Decimal) Param2: PIO port status 0 - low level 1 - high level

ZT-05 Bluetooth module provides the user with the ports (PI00-PI07 and PI010) which can extern another input and output ports.

Example:

1. PI010 port outputs high level

AT+PIO=10, 1\r\n

OK

2. PI010 port outputs low level

AT+PIO=10, 0\r\n

OK

18. Set PIO multiple port output

Command	Response	Parameter
AT+MPIO=<Param>	OK	Param: Mask combination of PIO ports number (Decimal)

ZT-05 Bluetooth module provides the ports (PI00-PI07 and PI010) which can extern another input and output ports to the user.

(1) Mask of PIO port number = $(1 \ll \text{port number})$

(2) Mask combination of PIO ports number = $(\text{PIO port number mask 1} | \text{PIO port number mask 2} | \dots)$

Example:

PI02 port number mask = $(1 \ll 2) = 0x004$

PI010 port number mask = $(1 \ll 10) = 0x400$

Mask combination of PI02 and PI010 port number = $(0x004 | 0x400) = 0x404$

Example:

1. PI010 and PI02 ports output high level

AT+MPIO=404\r\n

OK

2. PI04 port output high level

AT+PIO=004\r\n

OK

3. PI010 port output high level

AT+PIO=400\r\n

OK

4. All ports output low level

AT+MPIO=0\r\n

OK

19. Inquire PIO port input

Command	Response	Parameter
AT+MPIO?	+MPIO: <Param> OK	Param - PIO port value (16bits) Param[0]=PI00 Param[1]=PI01 Param[2]=PI02 ... Param[10]=PI010 Param[11]=PI011

ZT-05 Bluetooth module provides the user with the ports (PI00-PI07 and PI010) which can extern another input and output ports.

20. Set/ Inquire page scan and inquire scan parameter

Command	Response	Parameter
AT+IPSCAN=<Param1>, <Param2>, <Param3>,<Param4>AT+I PSCAN?	OK +IPSCAN: <Param1>,<Param2>, <Param3>,<Param4> OK	Param1: time interval of inquiring Param2: duration in inquiring Param3: time interval of paging Param4: duration in paging The above parameters are decimal. Default:1024,512,1024,512

Example:

AT+IPSCAN=1234,500,1200,250\r\n OK

AT+IPSCAN?

+IPSCAN:1234,500,1200,250

21. Set/ Inquire—SHIFF energy parameter

Command	Response	Parameter
AT+SNIFF=<Param1> ,<Param2>, <Param3>,<Param4>	OK	Param1: maximum time Param2: minimum time Param3: test time Param4: limited time The above parameters are decimal. Default : 0,0,0,0
AT+IPSCAN?	+SNIFF: <Param1>,<Param2>,<Par am3>,<Param4>	

22. Set/ Inquire safe and encryption mode

Command	Response	Parameter
AT+SENM=<Param >,<Param2>,	1. OK----success 2. FAIL----failure	Param: the value of safe mode: 0 - sec_mode0+off 1 - sec_mode1+non_secure 2 - sec_mode2_service 3 - sec_mode3_link 4 - sec_mode_unknown Param2: the value of encryption mode: 0 - hci_enc_mode_off 1 - hci_enc_mode_pt_to_pt 2 - hci_enc_mode_pt_to_pt_and_bcast Default: 0,0
AT+ SENM?	+SENM:<Param>,<Param2>, OK	

23. Delete authenticated device in the Bluetooth pair list

Command	Response	Parameter
AT+PMSAD=<Param>	OK	Param: Bluetooth device address

Example:

Delete the device (address: 12:34:56:ab:cd:ef) in the blue pair list

AT+PMSAD=1234,56,abcdef\r\n

OK - successful deletion

Or

AT+PMSAD=1234,56,abcdef\r\n

FAIL - There is no the Bluetooth device whose address is 12:34:56:ab:cd:ef in the pair list.

24. Delete all authenticated devices in the pair list

Command	Response	Parameter
AT+RMAAD	OK	None

Example:

Move all devices away from the pair list.

AT+RMAAD\r\n

OK

25. Seek the authenticated device in the Bluetooth pair list

Command	Response	Parameter
AT+FSAD=<Param>	1. OK - success 2. FAIL - failure	Param: Bluetooth device address

Example:

Seek the authenticated device (address: 12:34:56:ab:cd:ef) in the pair list AT+FSAD=1234,56,abcdef\r\n

OK - the Bluetooth device whose address is 12:34:56:ab:cd:ef is found. AT+FSAD=1234,56,abcde0\r\n

FAIL - There is no the Bluetooth device whose address is 12:34:56:ab:cd:e0 in the pair list.

26. Get the authenticated device count from the pair list

Command	Response	Parameter
AT+ADCN?	+ADCN:<Param> OK	Param: Authenticated Device

Example:

AT+ADCN?

+ADCN:0---There is no authenticated device in the pair list. OK

27. Get the Bluetooth address of Most Recently Used Authenticated Device

Command	Response	Parameter
AT+MRAD?	+ MRAD : <Param> OK	Param: the Bluetooth address of Most Recently Used Authenticated Device

Example:

AT+MRAD?

+MRAD:0:0:0 - There is no device that has been used recently.

OK

28. Get the work status of Bluetooth module

Command	Response	Parameter
AT+STATE?	+ STATE: <Param> OK	Param: work status of module Return value "INITIALIZED" - initialized status "READY" - ready status "PAIRABLE" - pairable status "PAIRED" - paired status "INQUIRING" - inquiring status "CONNECTING" - connecting status "CONNECTED" - connected status "DISCONNECTED" - disconnected status "NUKNOV" ----unknown status

Example:

AT+STATE?
 +STATE: INITIALIZED - initialized status
 OK

29. Initialize the SPP profile lib

Command	Response	Parameter
AT+INIT	1. OK----success 2. FAIL----failure	None

30. Inquire Bluetooth device

Command	Response	Parameter
AT+INQ	+INQ: <Param1>,<Param2>,<Param3>, OK	Param1: Bluetooth address Param2: device type Param3: RSSI signal intensity

Example 1:

AT+INIT\r\n - Initialize the SPP profile lib(can't repeat initialization) OK
 AT+IAC=9e8b33\r\n - Inquire Bluetooth device has an access code
 OK
 AT+CLASS=0\r\n - Inquire the Bluetooth device type
 AT+INQM=1,9,48\r\n - Inquire mode: 1) has the RSSI signal intensity indication, 2) stop inquiring if more than 9 Bluetooth devices response, 3) limited time in inquiring is 48*1.28=61.44s.
 AT+INQ\r\n - inquire the Bluetooth device around
 +INQ:2:72:D2224,3E0104,FFBC
 +INQ:1234:56:0,1F1F,FFC1
 +INQ:1234:56:0,1F1F,FFC0
 +INQ:1234:56:0,1F1F,FFC1
 +INQ:2:72:D2224,3F0104,FFAD
 +INQ:1234:56:0,1F1F,FFBE
 +INQ:1234:56:0,1F1F,FFC2
 +INQ:1234:56:0,1F1F,FFBE
 +INQ:2:72:D2224,3F0104,FFBC OK

Example 2:

AT+IAC=9e8b33\r\n - inquire the Bluetooth device has an access code

OK

AT+CLASS=1f1f\r\n - inquire the Bluetooth device whose device type is 0x1f1f

OK

AT+INQM=1,9,48\r\n - inquire mode: 1) has the RSSI signal intensity indication, 2) stop inquiring if more than 9 Bluetooth devices response, 3) limited time in inquiring is 48*1.28=61.44s

At+inq\r\n - filter and inquire the Bluetooth device around

+INQ:1234:56:0,1F1F,FFC2

+INQ:1234:56:0,1F1F,FFC1

+INQ:1234:56:0,1F1F,FFC1

+INQ:1234:56:0,1F1F,FFC1

+INQ:1234:56:0,1F1F,FFC2

+INQ:1234:56:0,1F1F,FFC1

+INQ:1234:56:0,1F1F,FFC1

+INQ:1234:56:0,1F1F,FFC0

+INQ:1234:56:0,1F1F,FFC2

OK

Example 3:

AT+IAC=9e8b3f\r\n - inquire the Bluetooth device whose access code is 0x9e8b3f

OK

AT+CLASS=1f1f\r\n - inquire the Bluetooth device whose device type is 0x1f1f

OK

AT+INQM=1,1,20\r\n - inquire mode: 1) Has the RSSI signal intensity indication,

2) stop inquiring if more than 1 Bluetooth device response,

3) limited time in inquiring is 20*1.28=25.6s

At+inq\r\n - filter and inquire the Bluetooth device around

+INQ:1234:56:ABCDEF,1F1F,FFC2

OK

31. Cancel Bluetooth device

Command	Response	Parameter
AT+INQC	OK	None

32. Set pair

Command	Response	Parameter
AT+PAIR=<Param1>,<Param2>	1. OK----success 2. FAIL----failure	Param1: Bluetooth address of remote device Param2: limited time of connection (second)

Example:

Make pair with the remote Bluetooth device(address:12:34:56:ab:cd:ef), the limited time is 20s.

At+pai=1234,56,abcdef,20\r\n

OK

33. Connect device

Command	Response	Parameter
AT+LINK=<Param>	1. OK----success 2. FAIL----failure	Param: Bluetooth address of remote device

Example:

Connect with the remote Bluetooth device (address: 12:34:56:ab:cd:ef)

AT+FSAD=1234,56,abcdef\r\n - To check whether the Bluetooth device (address: 12:34:56:ab:cd:ef) is in the pair list or not.
OK

AT+LINK=1234,56,abcdef\r\n - The Bluetooth device (address: 12:34:56:ab:cd:ef) is in the pair list. The connection can be built directly without inquiring.
OK

34. Disconnection

Command	Response	Parameter
AT+DISC	1.+DISC:SUCCESS - successful Disconnection OK 2.+DISC:LINK_LOSS - lose the connection OK 3.+DISC:NO_SLC - No SLC connection OK 4 +DISC:TIMEOUT - disconnection timeout OK 5 +DISC:ERROR - disconnection error OK	None

35. Enter to energy mode

Command	Response	Parameter
AT+ENSNIFF=<Param>	OK	Param: Bluetooth address of device

36. Exit energy mode

Command	Response	Parameter
AT+EXSNIFF=<Param>	OK	Param: Bluetooth address of device

Appendix 1: Introduction of AT command error code

The form of error - ERROR: (error_code)

Error code (Hexadecimal)	Note
0	AT command error
1	Default result
2	PSKEY write error
3	Too long length of device name (more than 32 bytes).
4	No device name
5	Bluetooth address: NAP is too long.
6	Bluetooth address: UAP is too long.
7	Bluetooth address: LAP is too long.
8	No PIO number's mask
9	No PIO number
A	No Bluetooth devices.
B	Too length of devices
C	No inquire access code
D	Too long length of inquire access code
E	Invalid inquire access code
F	The length of passkey is 0.
10	Too long length of passkey (more than 16 bytes)

11	Invalid module role
12	Invalid baud rate
13	Invalid stop bit
14	Invalid parity bit
15	Authentication device is not at the pair list.
16	SPP lib hasn't been initialized.
17	SPP lib has been repeated initialization.
18	Invalid inquire mode
19	Too long inquire time
1A	No Bluetooth address
1B	Invalid safe mode
1C	Invalid encryption mode

Feature

- Wireless transceiver
 - Sensitivity (Bit error rate) can reach -80dBm.
 - The change range of output's power: -4 - +6dBm.
- Function description (perfect Bluetooth solution)
 - Has an EDR module; and the change range of modulation depth: 2Mbps - 3Mbps.
 - Has a build-in 2.4GHz antenna; user needn't test antenna.
 - Has the external 8Mbit FLASH
 - Can work at the low voltage (3.1V~4.2V). The current in pairing is in the range of 30 E 40mA.
 - The current in communication is 8mA.
 - PIO control can be switched.
 - Has the standard HCI Port (UART or USB)
 - The USB protocol is Full Speed USB1.1, and compliant with 2.0.
 - This module can be used in the SMD.
 - It's made through RoHS process.
 - The board PIN is half hole size.
 - Has a 2.4GHz digital wireless transceiver.
 - Bases at CSR BC04 Bluetooth technology.
 - Has the function of adaptive frequency hopping.
 - Small (27mm×13mm×2mm).
 - Peripheral circuit is simple.
 - It's at the Bluetooth class 2 power level.
 - Storage temperature range: -40 @ - 85@, operating temperature range: -25 II - +75@
 - Any wave inter Interference: 2.4MHz \$ the power of emitting: 3 dBm.
 - Bit error rate: 0. Only the signal decays at the transmission link, bit error may be produced. For example, when RS232 or TTL is being processed, some signals may decay.
- Low power consumption
 - Has high-performance wireless transceiver system
- Low Cost
- Application fields:
 - Bluetooth Car Handsfree Device
 - Bluetooth GPS
 - Bluetooth PCMCIA , USB Dongle
 - Bluetooth Data Transfer
- Software
 - CSR

PINs description

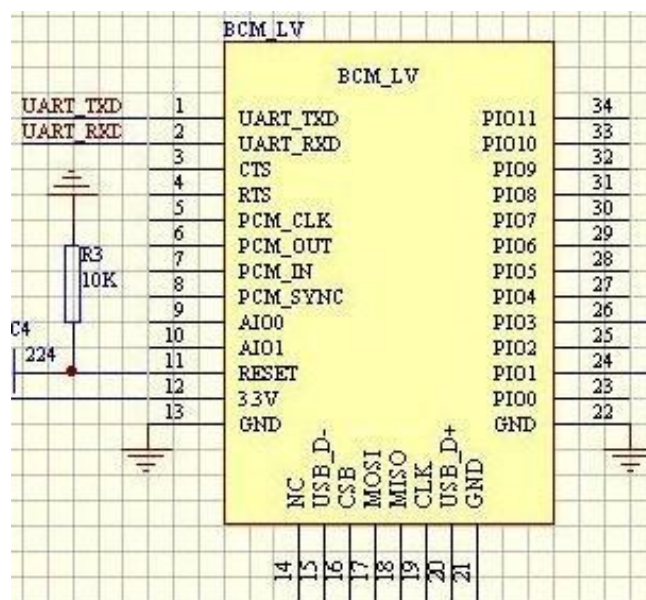


Figure 3

PIN configuration

The PINs at this block diagram is same as the physical one.

PIN Name	PIN #	Pad type	Description	Note
GND	13 21 22	VSS	Ground pot	
1V8	14	VDD	Integrated 1.8V (+) supply with On-chip linear regulator output within 1.7-1.9V	
VCC	12	3.3V		
AIO0	9	Bi-Directional	Programmable input/output line	
AIO1	10	i-Directional	Programmable input/output line	
PIO0	23	Bi-Directional RX EN	Programmable input/output line, control output for LNA(if fitted)	
PIO1	24	Bi-Directional TX EN	Programmable input/output line, control output for PA(if fitted)	
PIO2	25	Bi-Directional	Programmable input/output line	
PIO3	26	Bi-Directional	Programmable input/output line	
PIO4	27	Bi-Directional	Programmable input/output line	
PIO5	28	Bi-Directional	Programmable input/output line	
PIO6	29	Bi-Directional	Programmable input/output line	CLK_REQ
PIO7	30	Bi-Directional	Programmable input/output line	CLK_OUT
PIO8	31	Bi-Directional	Programmable	

Imple Sistemas Eletrônicos Embarcados

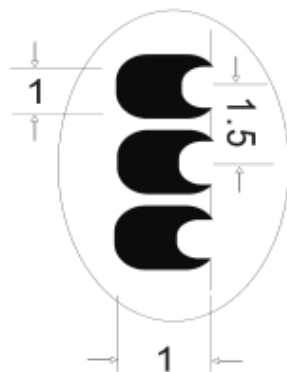
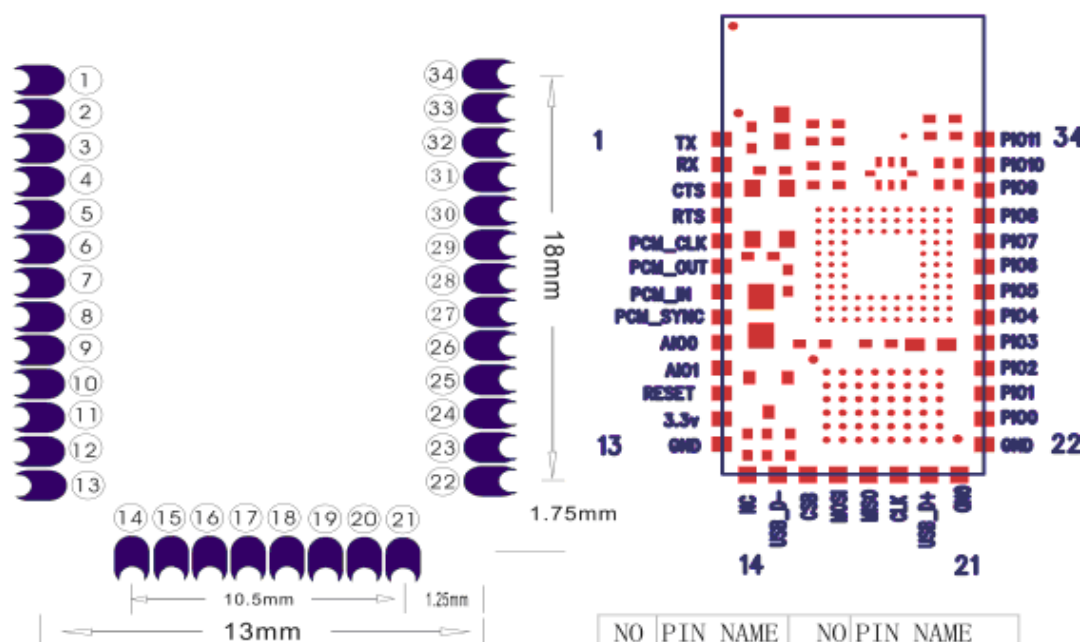
Rua Diva Garcia, 1663 - Bairro Linhares - Juiz de Fora - Minas Gerais - Brasil

CEP 36.060-300 - TEL/FAX 55 32 3218 6367, 55 32 3218 6292

www.imple.com.br

www.zuchishop.com.br

			input/output line	
PIO9	32	Bi-Directional	Programmable input/output line	
PIO10	33	Bi-Directional	Programmable input/output line	
PIO11	34	Bi-Directional	Programmable input/output line	
RESETB	11	CMOS Input with weak internal pull-down		
UART_RTS	4	CMOS output, tri-stable with weak internal pull-up	UART request to send, active low	
UART_CTS	3	CMOS input with weak internal pull-down	UART clear to send, active low	
UART_RX	2	CMOS input with weak internal pull-down	UART Data input	
UART_TX	1	CMOS output, Tri-stable with weak internal pull-up	UART Data output	
SPI_MOSI	17	CMOS input with weak internal pull-down	Serial peripheral interface data input	
SPI_CSB	16	CMOS input with weak internal pull-up	Chip select for serial peripheral interface, active low	
SPI_CLK	19	CMOS input with weak	Serial peripheral interface	



PCB Layout 请参考实物

NO	PIN	NAME	NO	PIN	NAME
1	TX		20	USB D+	
2	RX		21	GND	
3	CTS		22	GND	
4	RTS		23	PI00	
5	PCM CLK		24	PI01	
6	PCM OUT		25	PI02	
7	PCM IN		26	PI03	
8	PCM SYNC		27	PI04	
9	AI00		28	PI05	
10	AI01		29	PI06	
11	RESET		30	PI07	
12	3.3V		31	PI08	
13	GND		32	PI09	
14	NC		33	PI010	
15	USB D-		34	PI011	
16	CSB				
17	MOSI				
18	MISO				
19	CLK				

