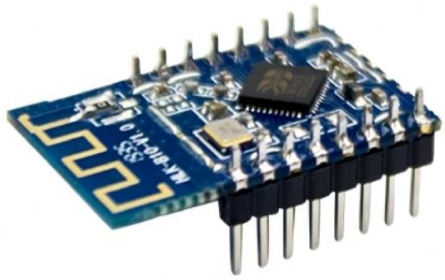
HLK B10 Bluetooth Wireless Module



HLK-B10 is a single-mode BLE5.0 Bluetooth transparent transmission module developed by Hi-Link Electronics, which integrates Bluetooth wireless RF chip and a small number of peripheral devices, embedded with low-power 32-bit MCUs, 500KB flash memory, 64KB SRAM and a wealth of peripheral resources.

Compliant with Bluetooth 5.0 specification, it can be connected as a Bluetooth slave device by various Bluetooth host devices.

The serial to bluetooth, two-way transparent transmission function of this module, is very convenient to use, users do not need to understand the complex Bluetooth protocol stack, just need to connect the serial port of the user's device or MCU with this module, then the module will automatically complete the bidirectional data transmission between the serial port and Bluetooth.

It can be regarded as the bridge between the MCU serial port and the Bluetooth device, allows the user to quickly and easily implement Bluetooth wireless transmission on the serial device.

It supports AT command mode, you can query or set basic parameters of the module through serial AT command, such as device name, serial port baud rate, etc.

FEATURES:

- Bluetooth protocol: Bluetooth Specification V5.0 BLE
- MCU: 32 Bit
- Flash memory: 500kb
- SRAM: 64kb
- Low power consumption
- Two way transmission function
- Simple to use

PIN FUNCTION:

Pin No	Symbol	IO Type	Function
1	RST	AO	Module reset input pinpin, low level efficiency
2	PO7	IO	GPIO7
3	P31	IO	ADC/CH1
4	P10	IO	PWM(0)(20mA)
5	P11	IO	Keystroke input pin, low level efficiency
6	P12	IO	PWM(2)
7	P13	IO	PWM(3)
8	3.3V	P	Module power supply 3.3V
9	P32	ADC	Ch2
10	P34	ADC	Ch4
11	P30	ADC	Ch0
12	P33	ADC	Ch3
13	P14	IO	PWM (4)
14	P15	IO	PWM (5)
15	GND	P	Power reference place
16	PO2	IO	State indicate LED output, low level efficiency
17	PO3	IO	GPIO3
18	PO4	IO	GPIO4
19	PO5	IO	GPIO5
20	PO6	IO	GPIO6
21	RXD	IO	UART input
22	TXD	IO	UART output

FUNCTIONAL DESCRIPTION:

- **Two working states of the module:**

  Hlk-B10 module has two working states:

  1.Transmission mode

  2.AT command mode

  1. Transmission mode: In transmission mode, the module will transmit the serial port data and bluetooth connection data in two way .

  Starting module , the default is the transmission mode, there is no affect to the bluetooth connection state when exit transmission mode into AT command mode . The serial port bluetooth data transmission is paused, and the data received by the serial port is processed by the current AT instructions. After the transmission is restored, the data transmission will continue.

- **Function keys and status indicators:**

  Status output pin: The 16th foot of the module PO2 is output pin for state LEDcathode , the current working status of the module can be displayed through the light and off status of the LED . The LED display status is defined as follows.

AT command	Intermittent flash (every 2 fast flash)	
Transmission mode	No connect Bluetooth, slow flash (bright 1s turn off 1s)	
	Connect Bluetooth, Long bright and short off (bright 5s turn off 100ms)	
	Restore default settings, Continuous flash	

Function key input pin: Module 5 pin p11 for function key input pin. That is

ES/DEL pin, a key can be connected between this pin and ground, the function

corresponding to different operation of the key are as follows:

-Short press: (50ms~1s) The module will exit transmission mode , switch to AT command mode

-Long press:(more than 6s) Release the button when the status LED starts flashing, the module will restore the default setting and automatically restart.

- **Switching between Transmission and AT Command mode:**

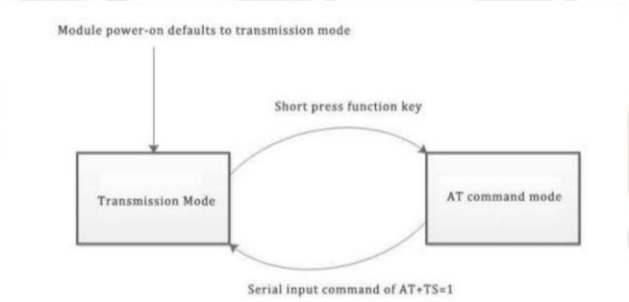
  From transmission mode to AT command mode: There are two ways to switch the transmission enters the command mode.

  1.Key mode: Pull down the fifth pin 50ms~1s, the module immediately enters the AT command mode.

  2. In transmission mode, the serial port receives special format data to automatically exit the transmission: When to exit transmission mode , the serial port pauses the input 200ms to ensure that the data in the serial port is sent empty, and then enter '+++', after receiving reply "a" , enter "a" and pause 200ms to ensure that there is no subsequent data input to exit transmission mode. Do not have any input before and after "+++" and "a" including "\r\n" to avoid fault operation.

- **From AT instructions mode to transmission mode:**

  The conversion logic for transmission mode and AT command mode is as following:



AT COMMAND MODE:

- **AT command format:**

  Format the class command : AT+<x>=<...>

x represents the name of the parameter to set

... represents parameter value

Set a successful return value	Set return value for failure or format error
AT+<x>=<... > Ok	AT+<x>=<... > ERROR

Command name	Function	Example
AT+VER	Query module software version	Send out: AT+VER=? Received: V1. 01(190806)
AT+MAC	Query module MAC address	Send out: AT+MAC=? Received: 11.22.33.44.55.66
AT+TS	Restored to transmission mode	Send out: AT+TS=1 Received: OK
AT+BAUDRATE	Set or query module serial port baud rate Default baud rate: 115200	Send out: AT+BAUDRATE =115200 Received: OK Send out: AT+BAUDRATE=? Received: 115200
AT+DEVNAME	Set or query the (Bluetooth) name of the module Default: HLK-B10_****	Send out: AT+DEVNAME=test123 Received= OK Send out: AT+DEVNAME=? Received: test123
AT+LINKS	Query module Bluetooth connection status	Send out:AT+LINKS=? //connectin, mac with Bluetooth host after comma

		received: 1,88:09:3C:B0:74 //not connected on received: 0
AT+RECONN	Set to disconnect the module from the current Bluetooth connection	Send out: AT+RECONN=1 Received:OK
AT+REBOOT	Restart module	Send out:AT+REBOOT=1 Received:OK
AT+DEFAULT	Restore default setting	Send out: AT+DEFAULT=1 Received:OK

TYPICAL APPLICATION CIRCUIT: