

1. How to debug UART by using AT instruction

- 1.1 Every single Bluetooth module have to be wrote in some debugging-code via URAT before leaving factory, which means the UART have checked already to ensure leaving factory without any problem. However, if any problem does occur, please never doubt the functional problem of the UART. We absolutely assure the products are 100% high qualified.
- 1.2 TTL is used as the Bluetooth module UART level. If you connect it with a computer, please use the level converter chip RS232 as the or use any corresponding circuit.
- 1.3 It is not necessary to input any line feed, after you sending order 'AT'. Some UART assistant sometimes provide the 'sending line feed' option, you can delete or ignore this order option directly.
- 1.4 The reason why it is not necessary to input the 'line feed', because the receiving and sending data is normally fixed length, which means the line feed is redundant.
- 1.5 When the Bluetooth module under the non-resting state, the 'AT' command only can be used.
- 1.6 All the commands above, please set according to the Bluetooth module manual which apply to HM-15. Additionally, HM-15 module should be plugged and unplugged while you are setting some commands.

2. How to set the communication between two Bluetooth modules.

The communication between two Bluetooth modules is based on the good matching of main device and slave device, which means the devices should be set up into one main device and one slave device. Before you set up these two Bluetooth modules, please check the two modules are both power-on, and also please make sure nothing else devices are working at the same time. Meanwhile, all setting parameters can be saved automagically after you set up just once.

2.1 Slave module side:

- 2.1.1 *AT+RENEW* → Reset to factory defaults to avoid the incorrect settings.
(this is an optional step)

2.2 Main module side

- 2.2.1 *AT+RENEW* → Reset to factory defaults to avoid the incorrect settings.
(this is an optional step)
- 2.2.2 *AT+ROLE1* → Set as main module. After completing this command, HM-15 should be plugged in and unplugged out.
- 2.2.3 Wait for 10 seconds, keep observing until the LED indicator is normal. Two modules have been connected successfully.

3. How to replace slave module

3.1 Please under the main module side to execute command:

3.1.1 *AT+CLEAR* → Clear all memory address information. The main module can automatically search and try to connect new slave modules again.

4. How to replace main module

4.1 Please under the new main module side to execute command:

4.1.1 *AT+RENEW*

4.1.2 *AT+ROLE1* → After completing this command, HM-15 should be plugged in and unplugged out.

5. How to make sure whether two modules successfully establish a remote connection or not without observing the indicator state

5.1.1 *AT+NOTI*

6. How to make MCU determine that whether the modules connected or not

6.1.1 *AT+PIO*

7. How to make main module working under the manual working mode

7.1 All the working mode above are automatic working mode. The manual working mode process shown as following

7.1.1 *AT+RENEW*

7.1.2 *AT+IMME1*

7.1.3 *AT+ROLE1* → After completing this command, HM-15 should be plugged in and unplugged out.

7.1.4 *AT+DISC?* → If any device has been found, it would return to the device list automatically.

7.1.5 *AT+CON[mac]* → Connect device by using mac address.

8. How to set up the transparent transmission, remote control and acquisition modes

8.1.1 *AT+TYPE* → This command only can be used for HM-10/11. The HM-16/17 does not have the acquisition function.

9. How to realize battery capacity collecting

9.1.1 *AT+BATC* → Turn on the battery power switch

9.1.2 *AT+RESET*

9.1.3 *AT+BATT* → Collect the battery power

This command only can be used for HM-10/11

10. How to output square wave

10.1 Only PIO2 can output square wave

10.1.1 AT+PIO2[0~9]

This command only can be used for HM-10/11

11. How to collect ADC

11.1 HM-10 provided 8 PIOs which from PIO3 to PIOB

11.1.1 AT+ADC[PIO]?

The reference voltage is power supply voltage.

This command only can be used for HM-10/11

12. How to collect the temperature and humidity data

12.1.1 AT+TEMP? → If HMSensor has already set up the relevant sensor, the data can be output automatically. If not, the data will return to the value of chip sensor.

12.1.2 AT+TEHU? → When HMSensor was using the DHT11 sensor, please using this step, otherwise please do not.

This command only can be used for HM-10/11

13. How to realize sending commands by using smartphone

13.1.1 AT+MODE → Set up the module working mode through UART