# Bluetooth Model L6

--Transparent RS232 communication

Industrial serial port Bluetooth, Drop-in replacement for wired serial connections, transparent usage. You can use it simply for a serial port replacement to establish connection between MCU and GPS, PC to your embedded project, and etc.

Product Specifications

- Bluetooth protocol: Bluetooth Specification v2.0 + EDR
- USB protocol: USB v1.1/2.0
- Frequency: 2.4GHz ISM band
- Modulation: GFSK (Gaussian Frequency Shift Keying)
- Transmit power: ≤ 4dBm, Class 2
- Sensitivity: ≤-84dBm at 0.1% BER
- Rate: 2.1Mbps(Max)/160 kbps(Asynchronous);
  1Mbps/1Mbps(Synchronous)
- security features: Authentication and encryption
- Support profiles: Bluetooth serial port (master & slave)
- Power Supply: +3.3 VDC 50mA
- Operating temperature: -20 ~ +55 Centigrade
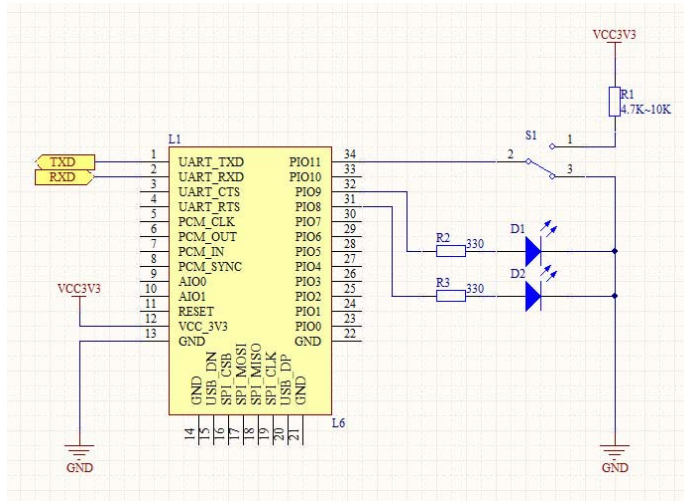- Dimensions: 26.9mm x 13mm x 2.2 mm

Footprint
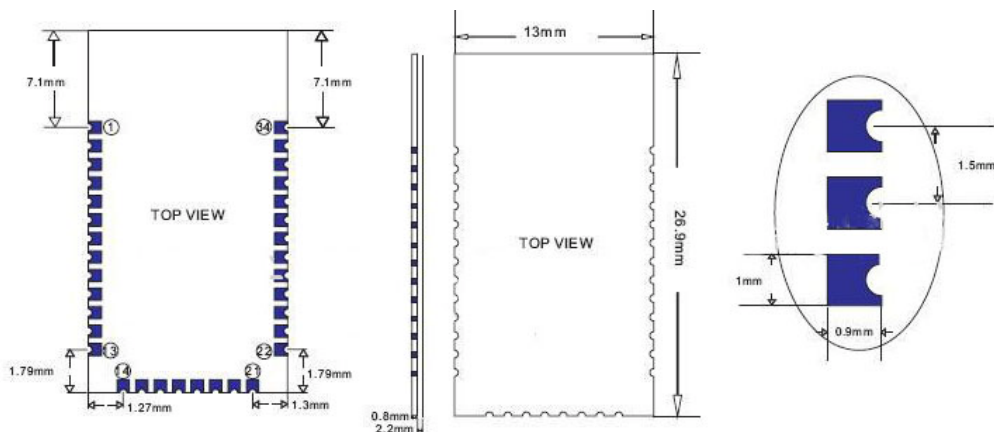
How to Use

Very few components are needed to use the model. Even Some components in the schematic can be removed for simplicity, such as two LEDs and resistors.
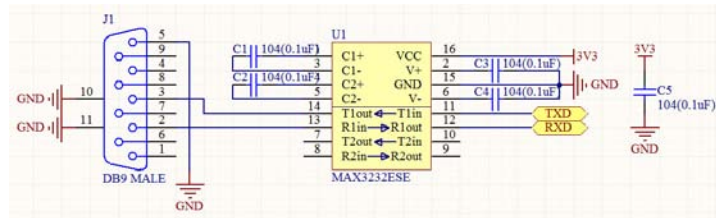
NOTE:

- The power supply is 3.3V. **Higher power supply will destroy the model**.

- The UART ports are of 3.3V TTL level, 5V signal input on RXD will bring about heat problem and even damage.

- Other GND ports can be floated since they are all connected together in the model.

- S1 is required for model configuration by AT command. More information about AT command, please read the following sections.

- D1 and D2 are used to indicate the working and configuring status of model L6.

1. D2 flashes to indicate the working status, different flash means different status;

2. D1 light on continuously means the successful matching and the RS232 connection is established.

Configure the Model

L6 can be configured by **AT command** in **AT mode** via a **3.3V** UART port. The configuration is necessary because all models are configured as slave models by default. Only a master model can match with a slave model to establish the communication.

To enter into the AT mode, please follow these steps:

1. Power off the L6 model.

2. Tie PIO11 to VCC (switch S1 on).

3. Connect L6 to a standard RS232 ports, respectively. The recommended schematic

is shown right, thus you can configure your model by a computer, like our demo.

4. Power on the L6 model.

5. Open a serial monitor. As a demo, Arduino Serial Monitor is used for configuration. Do some setting of the serial monitor.
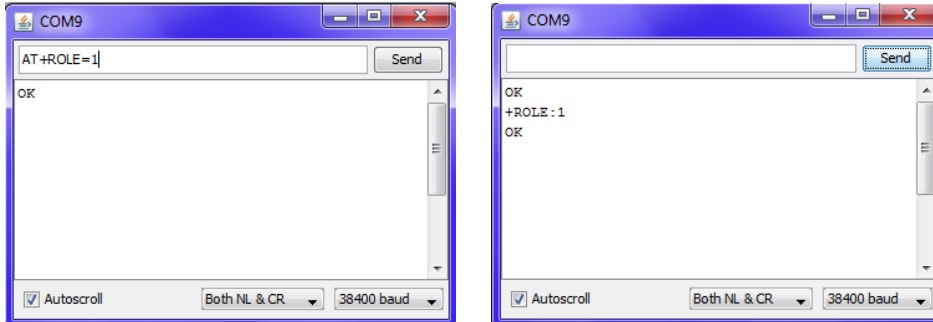
Set the baud rate 38400 bits/s; **choose "Both NL & CR" in the check box (NL: newline; CR: Carriage return)**. Others default setting by Arduino: 8 data bits, 1 stop bit, no parity bit, no Flow Control (you don't need to set them yourself).
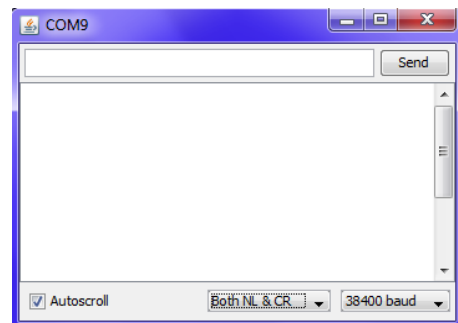
Basic AT commands

- Master or Slave set and query

	Command	Parameters	Response
set	AT+ROLE=(num)	num: "0" for slave, "1" for master	OK
query	AT+ROLE?	NULL	+ROLE=num

Press the button "send", you will see the corresponding response. If not, please check your schematic.

- UART set and query

	Command	Parameters	Response
set	AT+UART=(rate),(num1),(num2)	rate: 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600, 1382400 (any one of these would be OK). num1: Stop bits. "0" for 1 stop bit; and "1" for 2 stop bits. num2: Parity. "0" for none; "1" for odd parity; "2" for even parity.	OK
query	AT+ROLE?	NULL	+UART=(rate),(num1),(num2)
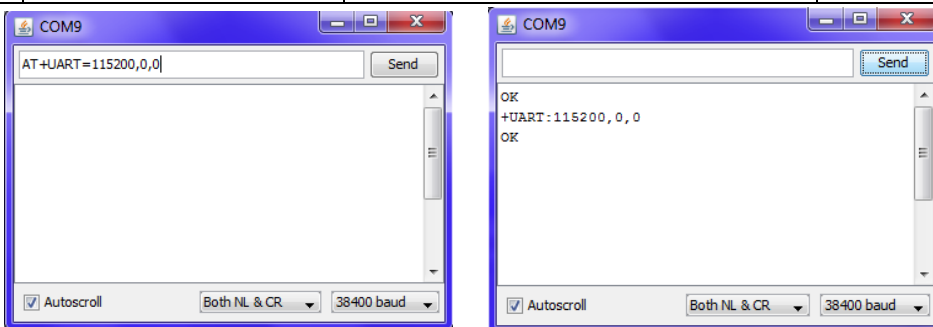
Press the button "send", you will see the corresponding response. If not, please check your schematic.

- Name set and query

AT+NAME=(name)	AT+NAME?

Name set and query have the same method with above two AT commands.

- Matching password set and query

AT+PSWD=(password)	AT+PSWD?

Matching password set and query have the same method with above two AT commands. Two L6 models must be set the same password if they are intended to communicate with each other.

- Other AT commands, please refer to related document.

- Tips

Of course, other serial monitor could be used for configuration. But please **NOTE**: add a newline character and a carriage return character at the end of the AT command. **Don't** send them in Hex format. Since these two characters always cannot been seen, this is a common mistake when using AT command.

Match and communicate

Configure one L6 model as master, and another as slave. Make sure the UART format and the matching passwords are the same. Follow these steps to realize the amazing transparent RS232 communication!

1. Power off the two L6 models.
2. Tie PIO11 of the two models to GND (switch S1 off).
3. Power on the two models and they will match with each other automatically.
4. Have fun with the amazing transparent RS232 communication!

Disclaimer and Revisions

The information in this document may change without notice.

Revision History

Rev.	Date	Author	Description
A	Mar. 15th, 2011	Leon John	Initial version