SYD8801 BLE module manual

1. **General description**: SYD8801 BLE module is a Bluetooth low energy single mode module, which is dedicated for low power wireless data transmission (not for traditional BT audio applications). Besides, the module can be customized for any other BLE applications.

2. **Applications**: Sports, Fitness, Smart home, Beacon etc.
   Such as find me, heart rate monitors, wristband, Blood pressure meter, Weight scales.
   a.

3. Key Features:

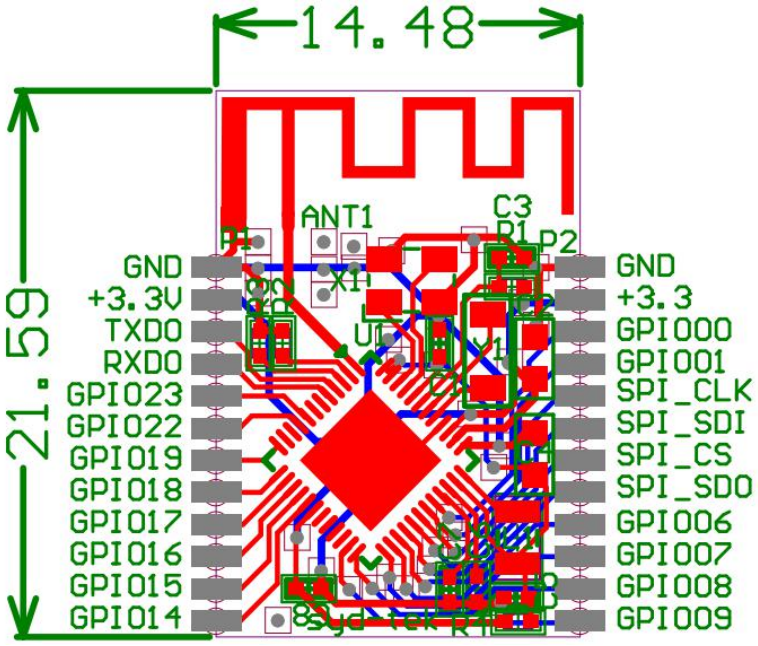
- Fully compliant with Bluetooth 4.0;
- User friendly environment, very easy to use;
- UART interface, full duplex, baud rate 9600bps;
- Default 20ms connection interval, fast connection;

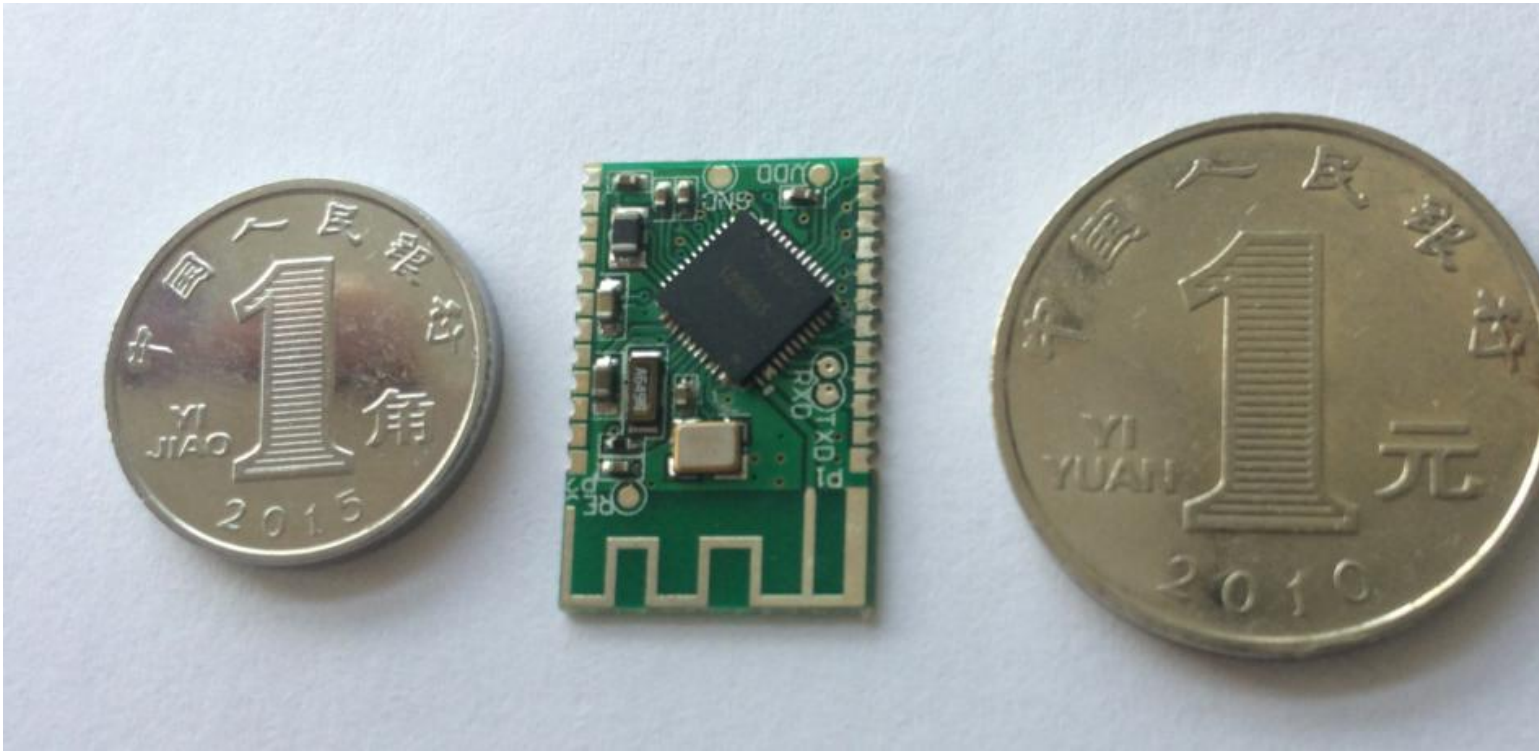
4. Key Parameters:

Part number	SYD8801 BLE module
BT spec	Bluetooth V4.0
Supply voltage	1.9~3.6V
BLE Stack	ATT,SMP,L2CAP,GAP,GATT
Max. output power	+4dBm
Sensitivity	-94dBm
TX radio current@0dBm *	7.1mA
RX radio current *	8.2mA
Sleep current	<7.5uA
Deep sleep current	<2.5uA
Operating Temperature	-20 ~+85℃
Interface	UART、SPI、I2C、GPIO
Module size	21.59 x 14.48

*Measured @V_{BAT}=3V with DCDC enable;

5. Pin definition:


14.48
21.59
ANT1
C3
P1
P2
X1
GND
+3.3V
TXD0
RXD0
GPIO23
GPIO22
GPIO19
GPIO18
GPIO17
GPIO16
GPIO15
GPIO14
GND
+3.3
GPIO00
GPIO01
SPI_CLK
SPI_SDI
SPI_CS
SPI_SDO
GPIO06
GPIO07
GPIO08
GPIO09

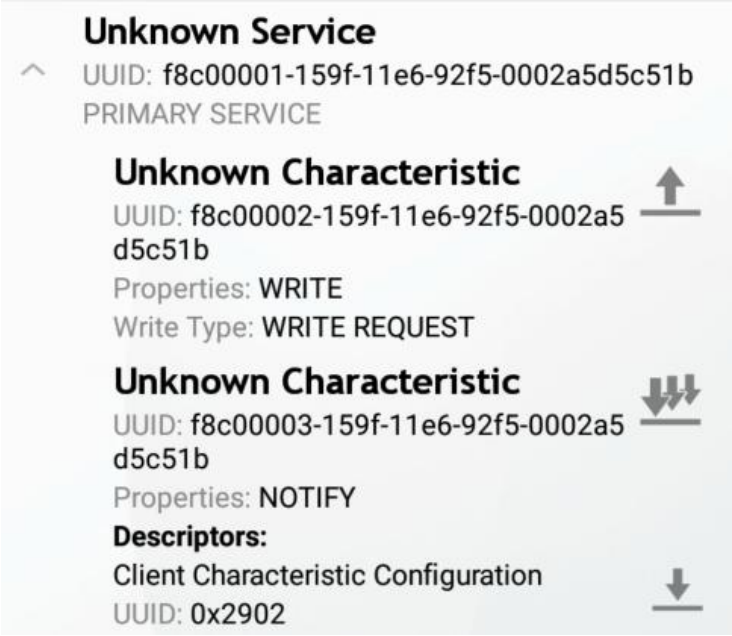


Pins Description：

Pin No.	Signal Name	Description	
1	GND	GND	
2	+3.3	POWER	
3	GPIO00	Analog Input 0	
4	GPIO01	Analog Input 1	
5	SPI_CLK	SPI interface	
6	SPI_SDI		
7	SPI_CS		
8	SPI_SDO		
9	GPIO06	I2C_SCL0	
10	GPIO07	I2C_SDA0	
		Connection status	
11	GPIO08	Module enable	
12	GPIO09		
13	GPIO14		
14	GPIO15		
15	GPIO16	I2C_SCL1	
16	GPIO17	I2C_SDA1	
17	GPIO18		
18	GPIO19		
19	GPIO22	UART1 RX – not for burning	
20	GPIO23	UART1 TX – not for burning	
21	RXD0	UART0 RX	Burning interface
22	TXD0	UART0 TX	
23	+3.3	POWER	
24	GND	GND	

5. Serial communication protocol:

a. SYD8801 sends the package with 20Byte length to mobile once UART data received;
b. SYD8801 sends out the data from mobile APP to SYD8801 by UART TX;
The following UUIDs are used for BLE communication:



Lightbule(IOS) or nRF Master Control Panel（Android）can be used for test;

6. Default module name: SYD8801-M, which can be modified as below:

```
uint8_t ADV_DATA[] = {  0x02, // length
                        0x01, // AD Type: Flags
                        0x05, // LE Limited Discoverable Mode & BR/EDR Not Supported
                        0x03, // length
                        0x03, //AD Type: Complete list of 16-bit UUIDs
                        0x12, // UUID: Human Interface Device (0x1812)
                        0x18, // UUID: Human Interface Device (0x1812)
                        0x0A, // length
                        0x09, // AD Type: Complete local name
                        'S',
                        'Y',
                        'D',
                        '8',
                        '8',
                        '0',
                        '1',
                        '-',
                        'M',
                        };

static void ble_gatt_read(struct gap_att_read_evt evt)
{
    if(evt.uuid == BLE_SERVICE_UUID_DEVICE_NAME)
    {
        uint8_t gatt_buf[]={'S', 'Y', 'D', '8', '8', '0', '1', '-', 'M'};
```

7. The default advertising interval is 1s, which can be modified as below: (Tips: this parameter will impact the power consumption);

```
#define BLE_ADV_INTERVAL     16384*2          //1s
```

8. GPIO8 is BLE module enable. The module begins advertising when enable=1, and gets into deep sleep mode when enable=0;
9. GPIO07 is connection status indication, output “0” when connection success, otherwise output “1”;
10. GPIO00 is an optional connection status LED indication, pull high by external LED & Res. LED light ON when connection is success, LED light flash when the module is advertising;

The following minimum PINs are needed for UART data transmission:

Pin function	Module Pin name	Description
VCC	VCC(+3.3V)	
GND	GND	
UART RXD *	GPIO27	RXD0
UART TXD *	GPIO26	TXD0
Module Enable	GPIO08	1 -enable, 0 -deep sleep
Connection Status Indication	GPIO07	0 –connection sucess
Connection Status LED Indication	*GPIO00 (optional)*	*Pull high by external LED & R*

* UART0(TXD0,RXD0) is used for transmission, meanwhile UART0 is used as burning interface;

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