

## OEM/integrators installation Manual

### YX-BM0X 蓝牙 4.0 模块说明书

Name: Bluetooth 4.0 Module

名称: 蓝牙4.0模块

Model No.: YX-BM0X

型号: YX-BM0X

Revision: V1.0

版本: V1.0

Version	Remark	Approve	Date
V1.0	First release	Li Mingxing	01-12-2014

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## 1 Overview

YX-BM0X is a kind of SMD/PIN type Bluetooth 4.0 module, using nRF51822 micro controller of Nordic company. This module has higher performance-price ratio, lower-power consumption system on chip(Soc), especially suitable for BLE application. It lowers the cost to build up net nodes, Its shardware resources include a ARM Core(cortex-m0), high sensitivity 2.4GHz transceiver, 128K/256K embedded FLASH memory, 16KB/32KB RAM, and other powerful subsidiary resources, can be flexibly used in ultra-low power consumption, ultra-low sleep circuit system.

### Key Features:

- Support Bluetooth low energy mode
- Remarkable Link budge(up to -93 dBm)
- Accurate transceiver signal strength test(RSSI)
- Meeting standard of CE (EUR) and FCC(US)
- High-performance ARM Cortex M0 controller
- Inner Temperature sensor and low power comparator
- AES HW encryption
- Operation Temperature: -20°C to +60°C

### Module picture:



## 2 Applications

- Low-power consumption systems

- Cellular phone accessories
- Sports and fitness equipments
- Consumer electronics
- Human inter face devices
- Health and Medical devices
- Bluetooth LED lights, sockets

### 3 Electrical Specification

NAME	RANGE	REMARK
RF frequency	2400MHz-2483MHz	
Power supply	1.8-3.6V	
Max transmit Power	+4dBm	
Data Rate	250K/1M/2Mbps	
transmit current	10mA@0dBm output	
receive current	13mA@2Mbps	
MCU working current	4.4mA@16MHz@3V	Start from Flash
MCU working current	2.4mA@16MHz@3V	Start from RAM
MCU IDLE mode	2.3uA@3V ON mode, all block idle	
MCU OFF mode	420uA@3V OFF mode	
Typcal sensitivity	-96dBm@250kbps	0.1%BER

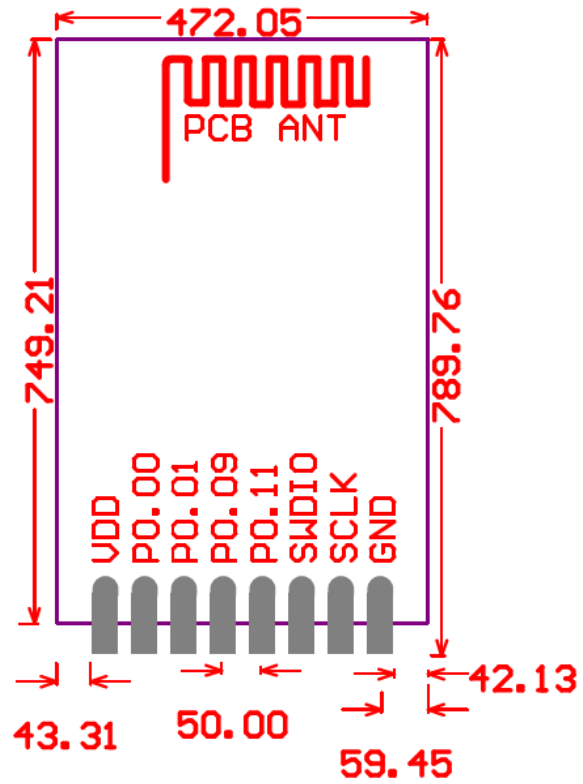
### 4 Pin Definition

NO.	NAME	TYPE	REMARK
1	VDD	POWER PIN	DC1.8-3.6V working voltage
2	P0.00	GPIO	GPIO, PWM output (RED)
3	P0.01	GPIO	GPIO, PWM output (GREEN)
4	P0.09	GPIO	GPIO, PWM output (BLUE)
5	P0.11	GPIO	GPIO, PWM output (WHITE)
6	SWDIO	SIGNAL	
7	SCLK	SIGNAL	

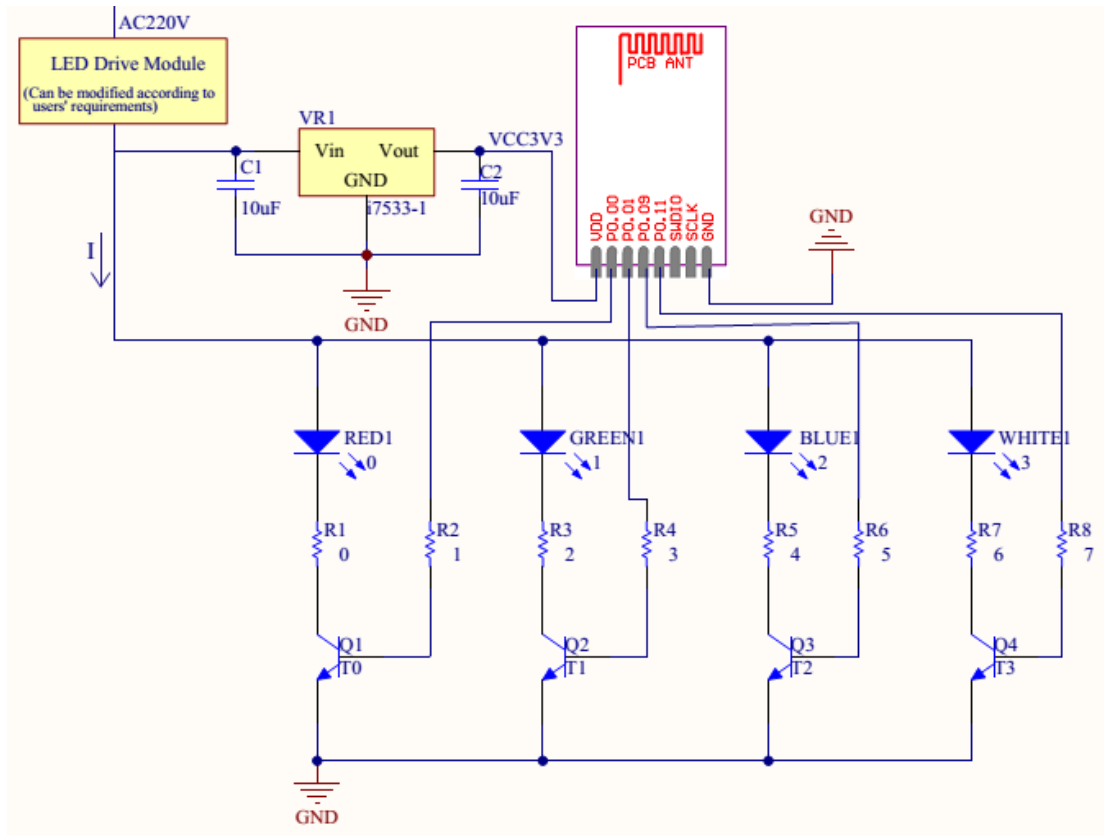
8	GND	POWER	GROUND
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## 5 Physical Dimensions

PCB onboard antenna (uint: mil), PCB thickness:1.0mm; PCB+MCU thickness:1.9mm。



## 6 Reference Circuit



Remark:

1. The power of the LED Drive Module in above figure, should be chose according to actual customer requirement of the product' s power. Recommended use is the Constant current module with output range from 16V~20V
2. The LED count of series and paralle connections is decided by customer' s designed power of the product. The values and power of R1, R3, R5, R7 are calculated according to the product' s LED parameters.
3. To R2、 R4、 R6、 R8 , the recommended resitance value and package are 100ohm and 0603.

## 7 Product Model

### 7.1 Model naming rule

YX	BM	x	x
Macrothings Company	Bluetooth Module	0-9, A-Z, Hardware version	0-9, A-Z, Software version

### 7.2 Ordering product model

Product model	Remark
YX-BM0X	bluetooth(4.0BLE) true color LED module()

## 8 Declaration

The content of this product specification is for reference only. If there are some modifications, please forgive no further notice. Shenzhen Macrothings Co.,LTD has the final explanation right of the product's specification.

## 9 Host Information

Host Brand name: Winplus

Host model number: LM55369

Host manufacturer: Winplus Company Ltd

## 10 Installation

This product is mounted inside of the end product by professional installers OEM. They use this module with changing the power and control signal setting by software of end product within the scope of this application. End user can not change this setting.

## 11 Antenna Characteristics

That separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

## 12 FCC Information

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS OR CHANGE TO THIS EQUIPMENT. SUCH MODIFICATIONS OR CHANGE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The equipment complies with RF exposure limits. This module is limited to installation in mobile or fixed applications. The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.



The final end product must be labeled in a visible area with the following: “Contains Transmitter module FCC ID: WUIYX-BM0X”.