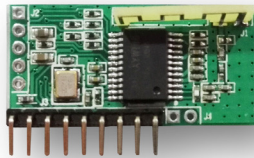
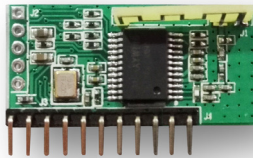
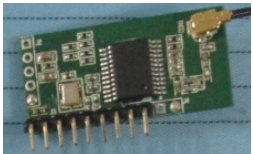


Product Profile

MacBee Series M104 Module is a kind of smart lamp control module based on internet application area. With features of low power consumption, small size, strong signal, quick response, high reliability and low cost. M104 Module connect with Wulink series smart gateway developed by GALAXYWIND to construct interactive networks. The smart gateway centralized manage and use Macbee protocol to communicate. User can remote manage, and adjust the cold & warm and color of the different lamp groups by APP. It provides low cost home automation system.

Macbee is developed by GALAXYWIND, which is based on 2.4GHz ISM open FDM protocol for the wireless network of smart home devices. It is at low cost and low power consumption. Macbee networks include gateway nodes and device nodes, they communicated in Macbee protocol. Macbee uses Pre-slot and TDMA to transmit information. With coordination of the periodical broadcast of gateway in synchronous frame, the device may transmit messages in setting slot according to the requirements. It reduces frequency of avoidance and retransmission caused by competition, maximize the use of limited resources. It has done many protocol optimization for family use and then be able to reduce the power consumption.

Product Specification

Model Specifications	iWulink M104-2.0	iWulink M104-2.1	iWulink M104-3.0
Product Appearance			
Hardware Specification			
Physical Size	29mm × 14mm , Thickness :8mm	29mm × 14mm , Thickness :8mm	29mm × 14mm , Thickness :8mm
Interface	7 GPIO interface	7 GPIO interface	7 GPIO interface
Antenna	Integrate high gain PCB antenna	Integrate high gain PCB antenna	Integrate high gain PCB antenna
Packaging	Pin 1×9P ,interval 2.0mm	Pin 1×11P ,interval 2.0mm	Pin 1×9P , interval 2.0mm
Working Voltage	2.4V~3.6V	2.4V~3.6V	2.4V~3.6V



MacBee Series Module

Power		Maximum 100mW	Maximum 100mW	Maximum 100mW
Support Power type		Support isolated and non-isolated powersupply	Support isolated and non-isolated powersupply	Support isolated and non-isolated powersupply
RF Specification				
BASE BAND	Rate	250Kbps , 1Mbps , 2Mbps		
	Modulation	GFSK		
	Modulation Frequency offset	160KHz , 320KHz		
	RSSI	Support		
	RF Power	≤6dBm		
	Receive Sensitivity	≥-92dBm		
	Frequency	±30ppm		
	Software Specification			
Communication Protocol		MacBee Bi-directional networking communication protocols, support 128 nodes networking		
Framing		Frame Size ≤32B		
Frame Verification		CRC16		
Self-organized network		Support		
One-key configuration		Support		
Environment Specification				
Working Temperature		-20~85℃		
Storage Temperature		-40~125℃		



Interface Definition

Picture 1-1 M104-2.0 Module Frontage

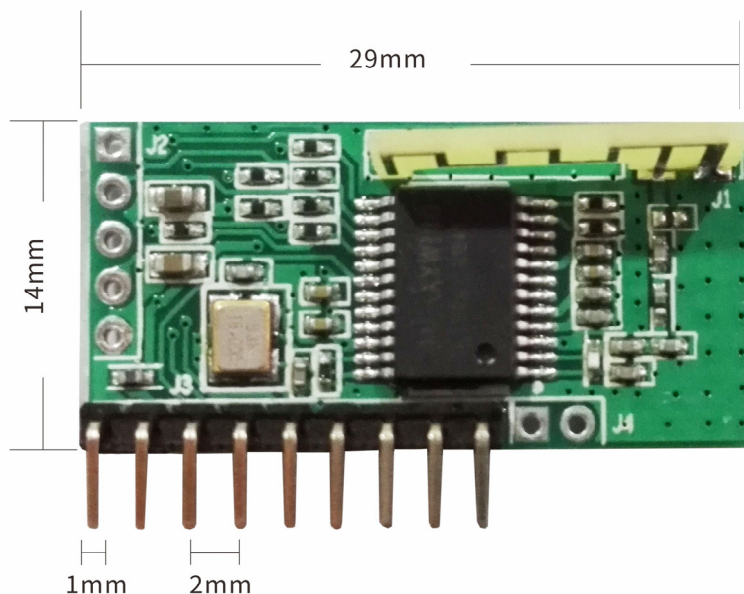


Table 1-1 M104-2.0 Module Pin Definition

Pin SN	Name	Description
1	GND	
2	VCC	2.4V~3.6V
3	DATA	Retained
4	C	GPIO function , Cold light control , high light
5	W	GPIO function , Warm light control , high light
6	TEST	GPIO function, Detect if there is electricity in the Urban Power Grid. High means electricity available.
7	R	GPIO function, Red light control, high light
8	B	GPIO function, Blue light control, high light
9	G	GPIO function , Green light control, high light

Note: M104-3.0 Module Pin Definition is the same as M104-2.0.



MacBee Series Module

Picture 1-2 M104-2.1 Module Frontages

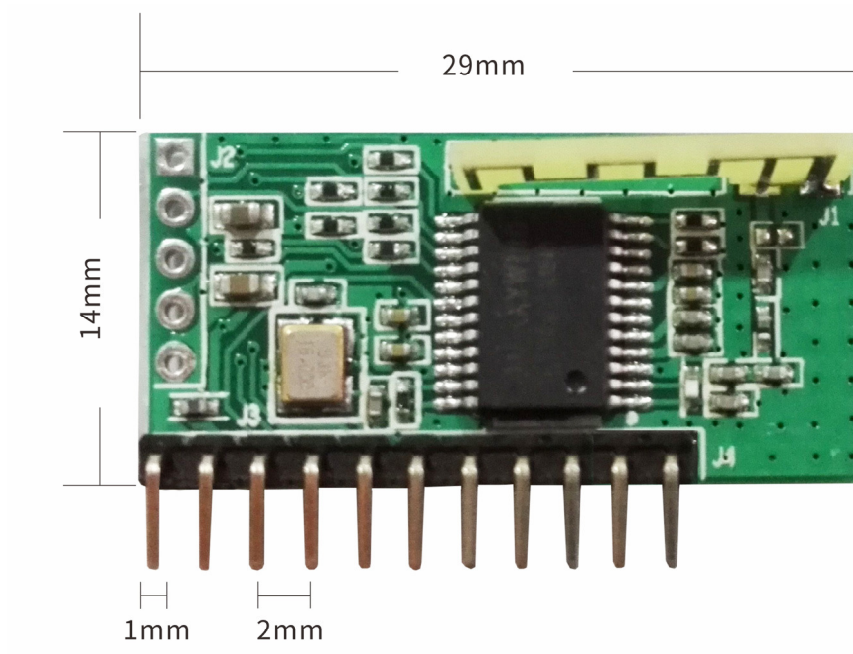


Table 1-2 M104-2.1 Module Pin Definition

Pin SN	Name	Description
1	GND	Power Ground
2	VCC	2.4V~3.6V
3	DATA	GPIO function , Logic level output ; LED mode selection : table 1-2
4	C	WM output , Cold light control, high light
5	W	PWM output , warm light control, high light
6	TEST	GPIO function , Urban Power Detection , Input50/60Hz signal or high level(0Hz)
7	R	PWM output , Red light control, high light
8	B	PWM output , Blue light control, high light ; LED mode selection : table 1-3
9	G	PWM output , Green light control, high light ; LED mode selection : table 1-3
10	RX	PWM frequency selection : table 1-4
11	TX	frequency selection : table 1-4



Table 1-3 Lamp mode selection

Status	DA	G	B	功能
Status 1	0 (5.1K pull down)	0 (floating)	0 (floating)	WC/RGB mode
Status 2	0 (5.1K pull up)	1 (1K pull down)	0 (floating)	WC mode
Status 3	1 (floating)	0 (floating)	0 (floating)	WC+RGB mode
Status 4	1 (floating)	1 (1K pull up)	0 (floating)	Layered model
Status 5	1 (floating)	1 (1K pull up)	1 (1K pull up)	Smart switch mode
Status 6	0 (5.1K pull down)	0 (floating)	1 (1K pull up)	Single way PWMmode (C output)
Status 7	0 (5.1K pull down)	1 (1K pull up)	1 (1K pull up)	RGB mode (only outputRGB)
Status 8	1 (floating)	0 (floating)	1 (1K pull up)	Undefined mode

Table 1-4 Frequency Selection

Status	TX	RX	Frequency
1	0 (5.1K pull up)	0 (5.1K pull up)	Retained
2	0 (5.1K pull up)	1 (floating)	1.35KHz
3	1 (floating)	0 (5.1K pull down)	500Hz
4	1 (floating)	1 (floating)	16KHz

FCC Warning

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.



MacBee Series Module

Note: 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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

NOTICE

Manual information to the end user

The OEM integrator has to aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. This device has been limited modularly approved and it will retain control over the final installation of the device, such that compliance in the end-user equipment is assured. The end-user equipment will be tested to ensure the end device complies with FCC Part 15.

Labeling of end-user equipment

If using a permanently affixed label, the modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AES6IWULINKM104" or "Contains FCC ID: 2AES6IWULINKM104

." Any similar wording that expresses the same meaning may be used. The Grantee may either provide such a label, an example of which must be included in the application for equipment authorization, or, must provide adequate instructions along with the module which explain this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.

