REXENSE

瑞瀛产品规格书

Data Sheet of Zigbee Module

REX3LF26

V2.0

Copyright

Version Updates

V1.0.0	20220401	First Draft
V1.1.0	2022622	Modify pin definition
V2.0.0	20221011	Adjust RF Performance Parameters
V2.0.1	20230320	Errata Current Characteristics
V2.0.2	20230706	Correction Pin Definition

Contents

1. Product Introduction

1.1 Introduction

REX3LF26 is a small, high-sensitivity and low-power Zigbee module. Based on the PHY6226 chip, it provides a complete, high-performance, low-power and low-cost Zigbee wireless communication system, which complies with the IEEE802.15.4 specification and Zigbee 3.0 standard.

The module integrates 32-bit ARM Cortex-M0 MCU, Zigbee3.0 wireless communication, 64KB SRAM, 1024KB built-in Flash, and 3-channel PWM.

The REX3LF26 module complies with FCC, IC and CE regulations. It can be applied to equipment in many different environments, and complies with RoHS regulations. At the same time, the company also provides a complete set of development and evaluation kits. Users can choose different versions of kits for testing and development according to their own needs.

1.2 Application

Rexense REX3LF26 module complies with IEEE802.15.4 specification and Zigbee 3.0 standard.

■ Transparent transmission: Users can develop programs according to our UART protocols program.

■ Customization: our company can provide customers with reliable and safe applications according to their specific application programs.

■ Standard Zigbee 3.0 function

   Modules are mainly used in the lighting fields.

1.3 Main Features

■ Dimensions: 12.37mm (L)╳8.5mm (W)╳1.8mm (H) (with shield)

■ High receiving sensitivity: up to -102.5dBm

■ Reliable and wide communication range: 300m (outdoor open, visual distance)

■ Multiple antenna options

■ Very low power consumption

   ● Sleep mode: 13uA

   ● Receive mode: 11.6mA

   ● Transmission mode: 17.2mA@8dBm

■ Frequency deviation range: ±10ppm @25℃

■ Abundant storage resources: 1024K bytes Flash; 64K bytes RAM

1.4 Product Advantage

■ Compact package design, even for small devices.

■ Industry-leading link budget

■ Excellent battery life

■ Abundant storage resources for customer software applications

■ Mesh networking capability

■ Easy-to-use low-cost development kit

■　ISM license-free frequency band

1.5 Abbreviations

ADC	Analog-to -Digital Converter
GPIO	General Purpose Input/Output
HVAC	Heating, Ventilating and Air Conditioning
TWI	Inter-Integrated Circuit
IEEE	Institute of Electrical and Electronics Engineers
ISM	Industrial, Scientific and Medical radio band
JTAG	Digital interface for debugging of embedded device, also known as IEEE 1149.1 standard interface
MAC	Medium Access Control layer
PCB	Printed Circuit Board
RAM	Random Access Memory
RF	Radio Frequency
RTS/CTS	Request to Send/ Clear to Send
RX	Receiver
SMA	Surface Mount Assembly
SPI	Serial Peripheral Interface
TX	Transmitter
UART	Universal Asynchronous Receiver/Transmitter
BLE	Bluetooth Low Energy
SigMesh	Specific Interesting Group Mesh Network Standard

2. Module Interface

2.1 Packaging Information

Dimensions: 12.7mm (L)╳8.5mm (W)╳1.8mm (H) (with shield)

(Dimensional tolerance: length and width ±0.25mm, height ±0.15mm)
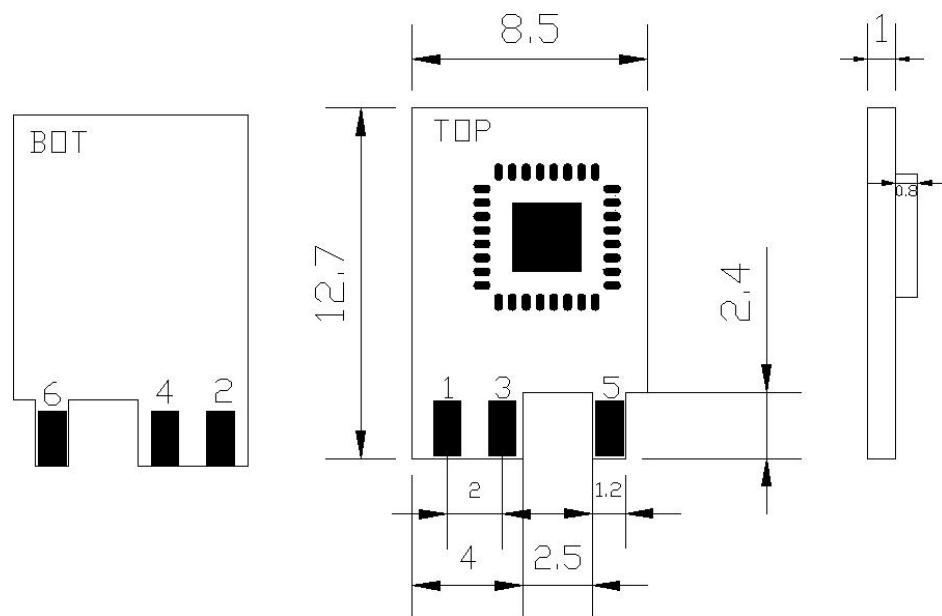
Figure 2-1 Dimensions
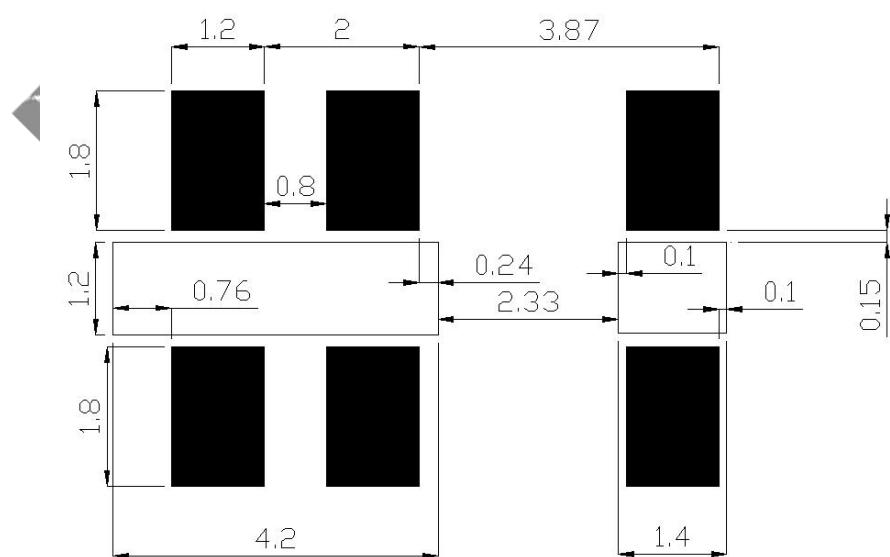
Figure 2-2 Product package diagram

2.2. Pin Definition
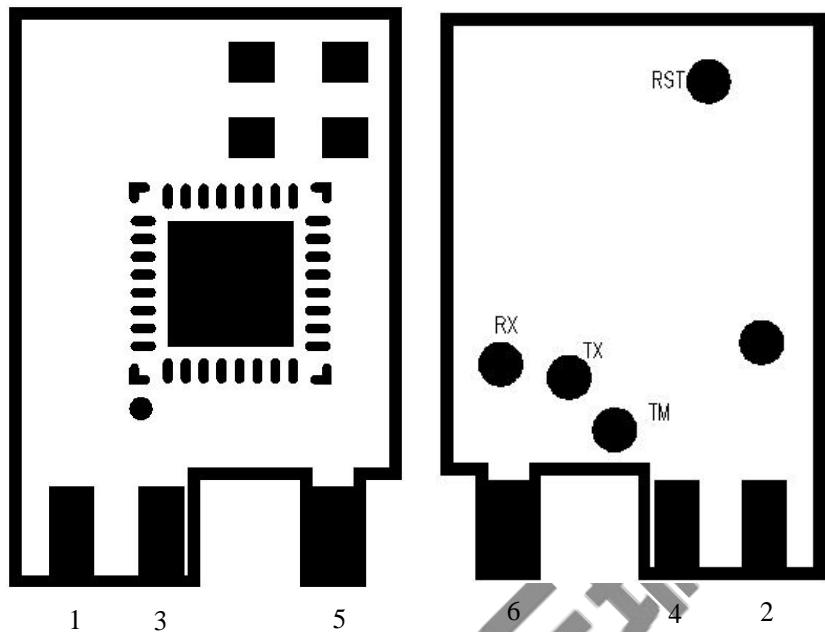
Figure 2-3 Pin configuration diagram

Pin NO.	Pin Signal	Direction
1	ANT	RF
2	GND	Gound
3	P32	IO, support hardware PWM
4	P33	IO, support hardware PWM
5	P34	IO, support hardware PWM
6	VDD	3.3V
Dorsal View		
Measuring Point	P9	TX
Measuring Point	P10	RX
Measuring Point	RST	RESET
Measuring Point	TM	Measuring Point

3. Technical Specification

3.1. Electrical Specification

Parameter	Min	Max
Module Input Voltage（VCC）	1.8V	3.6V
Pin Voltage (except ADC pin)	−0.3V	VDD_PADS+0.3
ADC Pin Voltage	0V	0.8V
Chip I/O Drive Current Data	2mA	10 mA

Note: Chip IO pins can output 10mA

3.2. Current Specification

Parameter	Average	Max	Unit
Receiving Current	11.6	12	mA
Transmitting Current (@8dBm)	17.2	21	mA
Sleeping Current	13	–	uA

3.3. Processors Specification

Parameter	Value	Unit
On-chip Flash Storage Space	1024K	bytes
On-chip RAM Storage Space	64K 32K(SRAM Retention) + 32K(Without SRAM Retention)	bytes
Working Frequency	48	MHz

3.4. Module Interface Specification

Parameter	Test Condition	Range	Unit
UART Max Baud Rate		1M	bps
Resolution of Analog Channels		12	Bits
Analog Input Impedance		>1	MΩ
Analog Reference Voltage（Bypass）		0.8	V
Analog Input Voltage（1/4 divider, attenuation mode）		0-3.2	V
I2C Bus Maximum Clock Frequency		400	KHz
GPIO Output Voltage（Logic 0）	10mA	≤0.5	V
GPIO Output Voltage（Logic 1）	10mA	≥2.5	V
Real Time Clock Frequency		32.768	KHz

3.5. Physical/Ambient Specification

Parameter	Value	Note
Physical Size	12.7mm（W）X8.5mm（L）X1.8mm（H）mm	
Weight	<1g	
Working Temperature*	-40°C to +105°C（Default）	
Working Relative Humidity	<95%	

4. RF Specification

4.1. Basic RF Specification

Parameter	Range	Unit
Working Frequency	2400~2483.5	MHz
Number of Frequency Bands	16	
Channel Number	0B~1A	Hex
Channel Spacing	5	MHz
Rated Input/Output Impedance	50	Ω

4.2. Receiving Specification（RX）

Parameter	Min	Typical	Max	Unit
Receiving Sensitivity（PER＜8%）	−101.5	−102	−102.5	dBm

5. Antenna Specification

5.1. Monopole Antenna

This module can be used with a monopole antenna, the following points should be noted:

Solder on the ANT pad of the module by welding.

The recommended antenna length is 30mm.

To ensure optimal radio frequency performance, it is recommended that the distance between the antenna part and other metal parts be at least 15 mm.

6. FCC Regulations

Important Notice to OEM integrators

1. This module is limited to OEM installation ONLY.

2. This module is limited to installation in mobile or fixed applications, according to Part 2.1091(b).

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

4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part

15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s).

The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed.

Important Note

notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify to Rexense that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the US, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

End Product Labeling

When the module is installed in the host device, the FCC label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: "Contains FCC ID: 2AOE2REX3LF26" The FCC ID can be used only when all FCC compliance requirements are met.

Antenna Installation

(1) The antenna must be installed such that 20 cm is maintained between the antenna and users,

(2) The transmitter module may not be co-located with any other transmitter or antenna.

(3) Only antennas of the same type and with equal or less gains as shown below may be used with this module.

Other types of antennas and/or higher gain antennas may require additional authorization for operation.

Antenna type	2.4GHz band
	Peak Gain (dBi)
monopole antenna	1

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Manual Information to the End User

The OEM integrator has to be 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. The end user manual shall include all required regulatory information/warning as show in this manual.

Federal Communication Commission Interference Statement

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.

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 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

List of applicable FCC rules

This module has been tested and found to comply with 15.247 requirements for Modular Approval.

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered

by the modular transmitter grant of certification. The final host product requires Part 15 Subpart B compliance testing with the modular transmitter installed.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

7. Label

8. Additional Testing and Grantee Evaluation for Host Product.

The module is a limited module and complies with the requirement of FCC Part 15.247.

According to FCC Part 15 Subpart C section 15.212, the radio elements must have the radio frequency circuitry shielded.

However, due to there is no shield for this module, this module is granted as a Limited Modular Approval. A C2PC is required for new host application. Only Grantees are permitted to make permissive changes. Please contact us for further process with Rexense, contact: Zhishun Wu, E-mail:marketing@rexense.com

The OEM integrators should follow the following C2PC test plan, Base on Module RF report "FR330312" under FCC ID: 2AOE2REX3LF26.

1. For the host product installed this module exactly according to this guide, and did not make any hardware or software modifications to the module or modified the software but does not affect the radio characteristics, the host product will need to evaluate according to FCC Part 15 Subpart C §15.247:

a.   Maximum conducted power of channel 11/19/26.

b.   Conducted band edge on channel 11.

c.   Radiated spurious emissions and band edge on channel 11/19/26.

2. For the host product installed this module exactly according to this guide, and did not make any hardware or software modifications to the module, but it was co-located with other transmitters, the host product will need to evaluate according to FCC Part 15 Subpart C §15.247:

a.   Maximum conducted power of channel 11/19/26.

b.   Conducted Emission band edge on channel 11.

c.   Radiated spurious emissions and band edge on channel 11/19/26 with the other co-located transmitters.

d.   RF Exposure evaluation for the simultaneous transmission of the co-located transmitters.

The host product shall be evaluated for ensuring the continuous compliance for the FCC rules that apply to the host product. Additional guidance for testing host products is provided in KDB Publication 996369 D02 and D04.

This module was tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The host will still need to be reassessed for compliance to this portion of rule requirements.

For the host product is not installed according to this guide, the module certification will be invalid and a new grant certification will be required for the host product.