



BlueX Microelectronics Co., Ltd.

Bluetooth 5.0 **LE** | **MESH** SoC

Module Selection Guide

Version 1.7

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<http://www.bluemicro.com>

Contents

1. Device Naming Convention		3
2. Module Description		
2.1 BX24xx Series Module (Daughter Board)	.....	4
3. Standard Module		
3.1 BX2400-mRF08d-G1a	.....	5
3.2 BX2400-mRF04c-G1a	.....	5
3.3 BX2400-mRF04c-S1a	.....	6
3.4 BX2400-mRF04c-S2a	.....	6
3.5 BX2400-mRF03b-G1a	.....	7
3.6 BX2400-mRF03b-S1a	.....	7
3.7 BX2400-mRF03b-S2a	.....	8
3.8 BX2400-mRF03b-S6a	.....	8
3.9 BX2416-m2416s-S2a	.....	9
3.10 BX2416-m2416s-S60	.....	9
4. Evaluation Board		
4.1 BX2400_eRF01e_G1a	.....	10
5. Revision History	.....	11

1. Device Naming Convention

Items	Description	BX24xx-tCSNAp-LVu
BX24xx	Serial number	E.g., BX24 <u>16</u> -m2416s-S2c
t	Types (Small letter)	a: Adapter board d: Development board (DVB) e: Evaluation board (EVB) f: Fixture m: Module p: Production verification module (PVM) E.g., BX2416- <u>m</u> 2416s-S2c
CSNA	Chipset Name	RF01, RF03, RF04, RF08, 2416 E.g., BX2416-m <u>2416</u> s-S2c
p	Package (Small letter)	a: QFN24 b: QFN32 c: QFN40 d: QFN48 e: QFN52 f: QFN56 g: QFN68 s: SOP16 n: undefined E.g., BX2416-m2416 <u>s</u> -S2c
L	Layout (Capital)	G: General, 4 Layers S: Simple, 2 Layers E.g., BX2416-m2416s- <u>S</u> 2c
V	Version Numbers	E.g., BX2416-m2416s-S2 <u>c</u>
u	Update Sequence (Small letter)	Serial number: a/ b/ c... E.g., BX2416-m2416s-S2 <u>c</u>

2. Module Description

2.1 BX24xx Series Module (Daughter Board)

No.	Part Number	EVb	Power Consumption	Applications
1	BX2400-mRF08d-G1a	BX2400-dRF0xp-S1a	29 uA @ -2dbm	Parking barrier, OLED remotes
2	BX2400-mRF04c-G1a		27 uA @ -2dbm	Industrial control, ESL, OLED remotes
3	BX2400-mRF04c-S1a			
4	BX2400-mRF04c-S2a		27 uA @ -2dbm	ESL, LCM remotes, Pass-through, Smart tracker
5	BX2400-mRF03b-G1a			
6	BX2400-mRF03b-S1a	BX2400-dRF0xp-S1c (w/ adapter board)	27 uA @ -2dbm	Lighting, LCM remotes, Pass-through
7	BX2400-mRF03b-S2a		2.85 mA @ +3dbm	
8	BX2400-mRF03b-S6a		2.75 mA @ +3dbm	Lighting, Switch
9	BX2416-m2416s-S2a			
10	BX2416-m2416s-S60			

*Remark:

1. Power consumption is average current measured under 1.28ms of ADV period.
2. General Layout: 4 layers, higher performance in anti-static and noise-cancelling, improving devices distance and stability.
3. Simple Layout: 2 layers, recommended for battery-supplied products in environment with low ambient noise.
4. S1u: recommended for common request in average market.
5. S2u: recommended for price-oriented devices with unconcern of power consumption.
6. S6u: major type of module in respond to market demand.

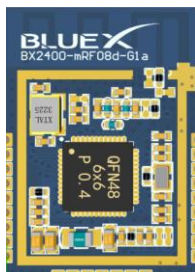
3. Standard Module

3.1 BX2400-mRF08d-G1a (23.5*16.75 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
25pins	18 GPIO	1. Std.: 33pcs 2. Opt. (*):	Default: -2 dBm Max.: +8 dBm	1Mbps: -93 dBm 2Mbps: -90 dBm	1. SWD 2. UART 3. I ² C 4. SPI	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	3 External ADC	(1) Add 2pcs (2) Reduce 9pcs				

*Remark:

1. Add C3, C26.
2. Reduce 0R(R6, R7); SWD simulation C23; 32.768K(X2, C18, C19, R4); RST(C20, R5).

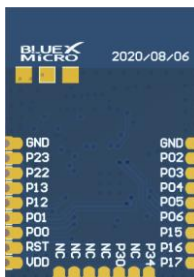
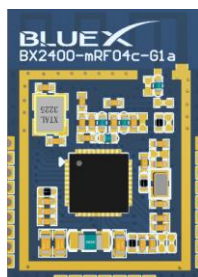


3.2 BX2400-mRF04c-G1a (23.5*16.75 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
25pins	14 GPIO	1. Std.: 33pcs 2. Opt. (*):	Default: -2 dBm Max.: +8 dBm	1Mbps: -93 dBm 2Mbps: -90 dBm	1. SWD 2. UART 3. I ² C 4. SPI	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	2 External ADC	(1) Add 2pcs (2) Reduce 9pcs				

*Remark:

1. Add C4, C24.
2. Reduce 0R(R5, R7); SWD simulation C27; 32.768K(X2, C17, C18, R2); RST(C2, R1).

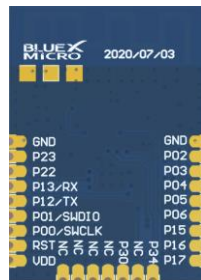
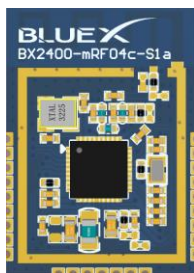


3.3 BX2400-mRF04c-S1a (23.5*16.75 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
25pins	14 GPIO	1. Std.: 33pcs 2. Opt. (*):	Default: -2 dBm Max.: +8 dBm	1Mbps: -93 dBm 2Mbps: -90 dBm	1. SWD 2. UART 3. I ² C 4. SPI	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	2 External ADC	(1) Add 1pcs (2) Reduce 9pcs				

*Remark:

1. Add C24.
2. Reduce 0R(R5, R7); SWD simulation C27; 32.768K(X2, C17, C18, R2); RST(C2, R1).

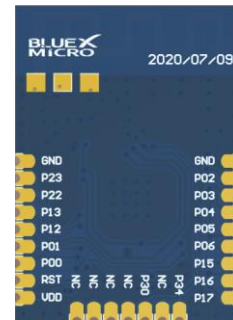
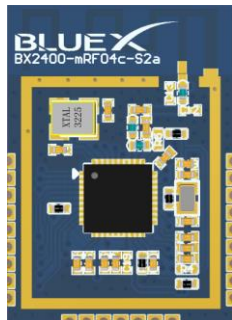


3.4 BX2400-mRF04c-S2a (23.5*16.75 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
25pins	14 GPIO	1. Std.: 26pcs 2. Opt. (*):	Default: -5 dBm Max.: +3 dBm	1Mbps: -90 dBm 2Mbps: -86 dBm	1. SWD 2. UART 3. I ² C 4. SPI	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	2 External ADC	(1) Add 1pcs (2) Reduce 9pcs				

*Remark:

1. Add C4.
2. Reduce 0R(R2, R6); SWD simulation C11; 32.768K(X2, C6, C7, R1); RST(C10, R3).

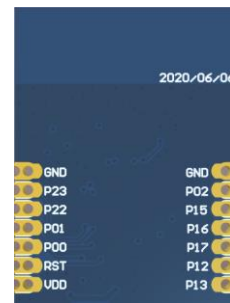
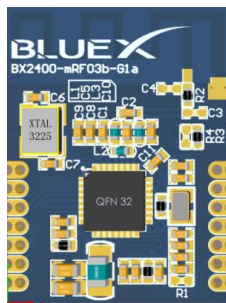


3.5 BX2400-mRF03b-G1a (21*15 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
14pins	10 GPIO	1. Std.: 33pcs 2. Opt. (*):	Default: -2 dBm Max.: +8 dBm	1Mbps: -93 dBm 2Mbps: -90 dBm	1. SWD 2. UART 3. I ² C	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	No External ADC	(1) Add 1pcs (2) Reduce 9pcs				

*Remark:

1. Add C23.
2. Reduce 0R(R2, R3); SWD simulation C21; 32.768K(X2, C16, C17, R6); RST(C24, R7).

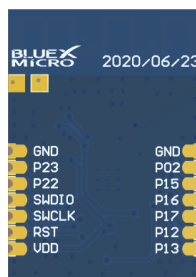
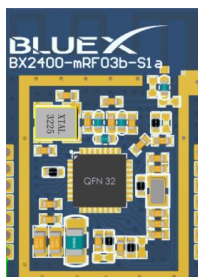


3.6 BX2400-mRF03b-S1a (21*15 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
14pins	10 GPIO	1. Std.: 30pcs 2. Opt. (*):	Default: -2 dBm Max.: +8 dBm	1Mbps: -93 dBm 2Mbps: -90 dBm	1. SWD 2. UART 3. I ² C	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	No External ADC	(1) Add 1pcs (2) Reduce 9pcs				

*Remark:

1. Add C23.
2. Reduce 0R(R5, L3); SWD simulation C24; 32.768K(X2, C14, C15, R2); RST(C22, R4).

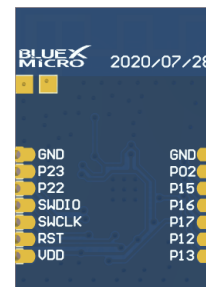
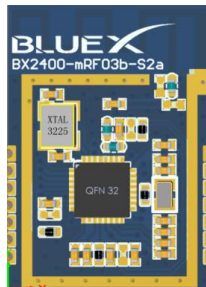


3.7 BX2400-mRF03b-S2a (21*15 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
14pins	10 GPIO	1. Std.: 24pcs 2. Opt. (*):	Default: -5 dBm Max.: +3 dBm	1Mbps: -90 dBm 2Mbps: -86 dBm	1. SWD 2. UART 3. I ² C	1. 5V / 3.3V 2. RTC 3. RST 4. DC buckler
	No External ADC	(1) Add 1pcs (2) Reduce 9pcs				

*Remark:

1. Add C23.
2. Reduce 0R(R6, L3); SWD simulation C5; 32.768K(X2, C14, C15, R2); RST(C22, R4).

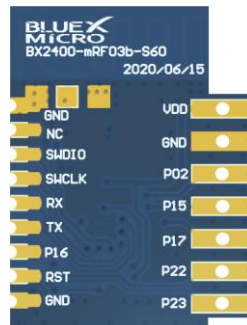
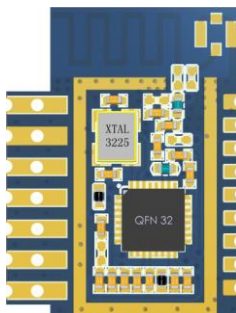


3.8 BX2400-mRF03b-S6a (20*15 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
16pins	10 GPIO	1. Std.: 20pcs 2. Opt. (*):	Default: -5 dBm Max.: +3 dBm	1Mbps: -90 dBm 2Mbps: -86 dBm	1. SWD 2. UART 3. I ² C	1. 5V / 3.3V 2. RST 3. DC buckler
	No External ADC	(1) Add 1pcs (2) Reduce 6pcs				

*Remark:

1. Add C23.
2. Reduce 0R(L3, R2); electronic filters(C20, C11); RST(C22, R4).

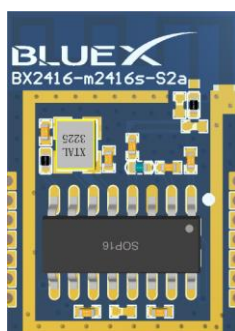


3.9 BX2416-m2416s-S2a (18.5*15 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
14pins	8 GPIO	1. Std.: 10pcs 2. Opt. (*):	+3 dBm	1Mbps: -90 dBm 2Mbps: -86 dBm	1. SWD 2. UART 3. I ² C	3.3V only
	No External ADC	(1) Add 0pcs (2) Reduce 1pcs				

*Remark:

1. None can be added.
2. Reduce 0R-R1.

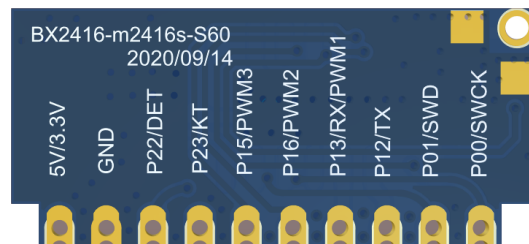
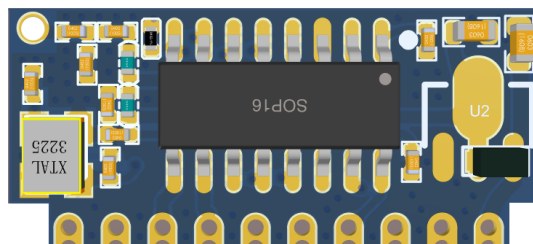


3.10 BX2416-m2416s-S60 (22.51*10.16 mm²)

Pinout	IO	Component	TX PWR.	RX Sen.	Interface	Functions
10pins	8 GPIO	1. Std.: 11pcs 2. Opt. (*):	+3 dBm	1Mbps: -90 dBm 2Mbps: -86 dBm	1. SWD 2. UART 3. I ² C	1. 2.3V to 3.3V 2. 2.3V to 5.0V (with LDO)
	No External ADC	(1) Add 0pcs (2) Reduce 0pcs				

*Remark:

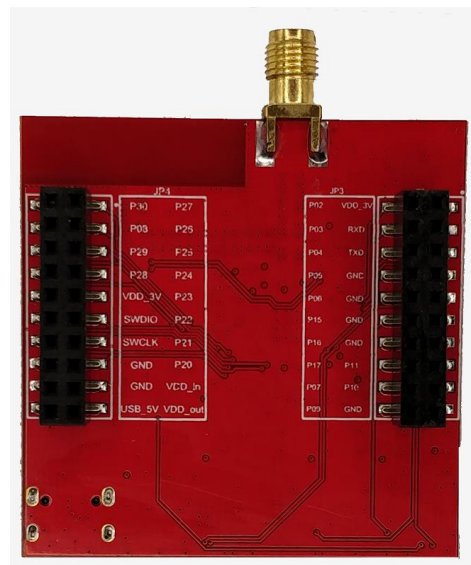
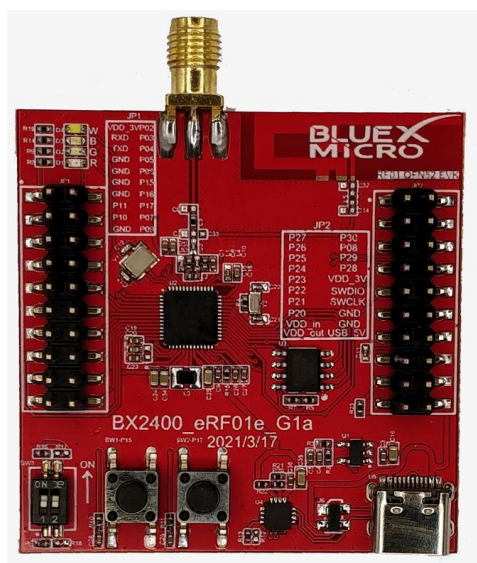
1. None can be added.
2. None can be reduced.



4. Evaluation Board

4.1 BX2400_eRF01e_G1a (50*50 mm²)

Availability	UI	Peripheral	Description
1. Function development 2. Mass production programmer	1. USB-C 2. UART 3. SWD 4. I ² C 5. SPI	1. Key*2 2. IOs Slot*4 3. LED*4	1. Software development and adjustment 2. RF data testing 3. Mass production programmer



5. Revision History

Version	Description	Date (YYYY/MM/DD)	Author
1.0	Initial version	2020/03/03	Edward
1.1	Updated Module Description	2020/05/23	Edward
1.2	Updated Standard Module	2020/07/15	Yangmang
1.3	Updated Standard Module	2020/08/13	Yangmang
1.4	Updated Standard Module	2020/11/03	Chenyueyao
1.5	Updated reference pictures in Standard Module	2021/04/09	Chenyueyao
1.6	Added Development Module	2021/05/14	Chenyueyao
1.7	Format and content adjustment	2021/05/21	Edward