

# User Manual

**CRM-24BL**

**BLE module**



## 1. Overview

CRM-24BL is a general purpose BLE module

It is compact size and uses A8107(2.4GHz FSK/GFSK SiP wireless transceiver) of AMICOMM.

## 2. Operation

The product using this module(CRM-24BL provides the door open operation to the authenticated user through the application of the smartphone.

## 3. Features

Items	Specification	Remark
Operation Voltage	DC 5V( $\pm 10\%$ )	
Power consumption (MCU only, RF in sleep mode)	0.8uA @Deep Sleep mode 3.0uA @Sleep(WOR/TWOR off) 5.0uA @Sleep (WOR /TWOR wake) 2.5mA @Normal	
Power consumption (RF with MCU in normal mode)	3mA @Stand-by mode 12.5mA @PLL mode 19.5mA @Rx mode 23mA @Tx mode (Pout = 3dBm)	
Frequency	2402 – 2480 MHz	ISM band
Transmit Power [dBm]	3 dBm @ room temperature	
Receiver Sensitivity [dBm]	-92 dBm (typical) @ 1Mbps mode	BER $\leq 1E-3$
Modulation Techniques	GFSK	
Connection	8 pin 2.00mm header 3/5 pin 1.27mm header	
Dimensions	19.5mm(L) x 30mm(W) with Antenna (PCB thickness is 1.6mm)	
Operating Temperature	-40 ~ 85 °C	

## 4. Pin Description

### - CN51 (Debug)

Pin number	Description	Remark
1	RXD	
2	TXD	
3	GND	

### - CN52 (Program)

Pin number	Description	Remark
1	GND	
2	SWCLKTCK	
3	SWDIOTMS	
4	ICE_MODE	
5	RESETN	

### - CN53

Pin number	Description	Remark
1	TXD	
2	GND	
3	RXD	
4	VCC	DC 5V
5	RST	NC

**FCC 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.

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

This device should be installed and operated with minimum 20 cm between the radiator and your body.

**IC Statement**

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et.

(2) l'utilisateur de l'appareil doit accepter tout brouillage radio electrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet appareil doit etre installe et utilise avec un minimum de 20 cm entre le radiateur et votre corps.

**- INTEGRATION INSTRUCTIONS****List of applicable FCC rules**

Complies with part 15.247/RSS-247

Summarize the specific operational use conditions

This device should be installed and operated with minimum 20 cm between the radiator and your body.

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

**Limited module procedures**

Not applicable

**Trace antenna designs**

Not applicable

**RF exposure considerations**

This module complies with FCC/IC RF radiation exposure limits set forth for an uncontrolled environment. The module is limited to installation in mobile or fixed applications. At least 20 Cm of separation distance between the transmitting antenna and the user's body must be maintained at all times.

The host manual shall include the RF exposure statements.

If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

**Antennas**

The antenna is permanently attached to the module.

Antenna type: PCB pattern

**Label and compliance information**

The module is labeled with its own FCC/IC. If the FCC ID/IC 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. In that case, the final end product must be labeled in a visible area with the following:

“Contains FCC ID: CCECRM-24BL”, “Contains IC: 22254-CRM24BL”

The host manual shall include the following regulatory 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.

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

The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.

**Information on test modes and additional testing requirements**

This module is tested in a standalone. Co-location of this module with other transmitters that operate simultaneously are required to be evaluated using the FCC multi-transmitter procedures.

**Additional testing, Part 15 Subpart B disclaimer**

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 host product may need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.