

# RF MODULE Users Manual

## trademark: amroad      model: RF-221

The RFID part is an ISO 14443A RFID reader/writer, It's operating in the 13.56MHz ISM (Industrial Scientific Medicine) band for ISO 14443A RFID system.

The circuit is comprised of a Micro Controller unit(MCU), 13.56MHz RF Transceiver circuit and a **LOOP Antenna**.

Micro Controller Unit(MCU)

The Control circuit controls all of RFID ASIC signals.

Control circuit outputs the command data which is needed to work the Transceiver circuit. When the response data from the RFID ASIC circuit, it will proceed recognition and other procedure.

RF Transceiver circuit (RFID ASIC).

The signal of 13.56MHz is supplied from crystal oscillator.

The Magnetic field signal is generated by the Transceiver circuit.

This ASK modulation signal is supplied through the Impedance transformer and the Antenna matching circuit to the external **LOOP Antenna**.

The feedback signal sent from the tag is received at the **LOOP Antenna** and is input to The H.P.F. The signal is demodulated by the RF ASIC .

**LOOP Antenna**

The external **LOOP Antenna** is formed with the coil, and supplies the electric power and the transmission signal to the tag by generating the flux of magnetic field

The product can only be installed in the device which the model name conforms to the following wildcard characters : AABBBXR-YY-ZZ , and it must be installed by professionals. The host end product must also pass the FCC Part 15 unintentional emission testing requirement and be properly authorized per FCC Part 15.

The instruction for series models of DB3101R-FM-BA as below :

AABBBXR-YY-ZZ

A - Application

B - Number

X - Version

R - RFID

Y - Installation

Z - Color

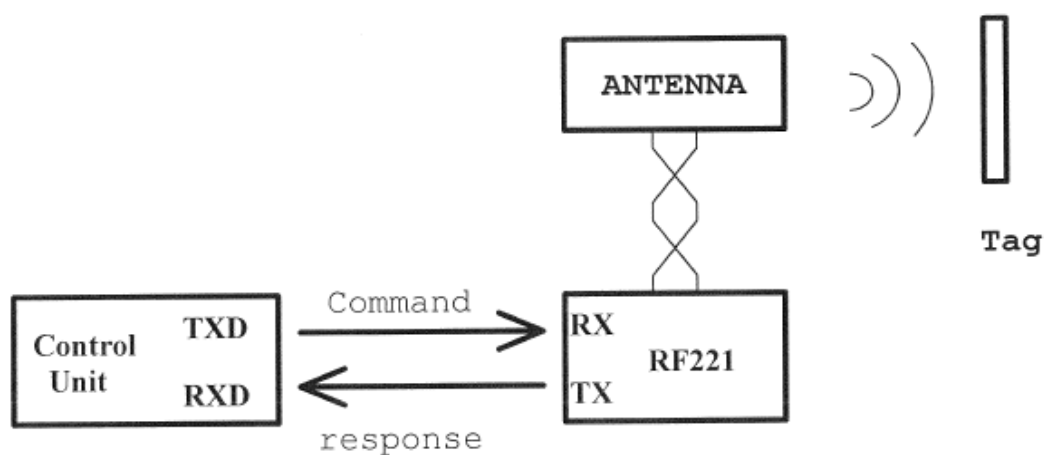
For example : DB3101R-FM-BA

## 1-1 Specification

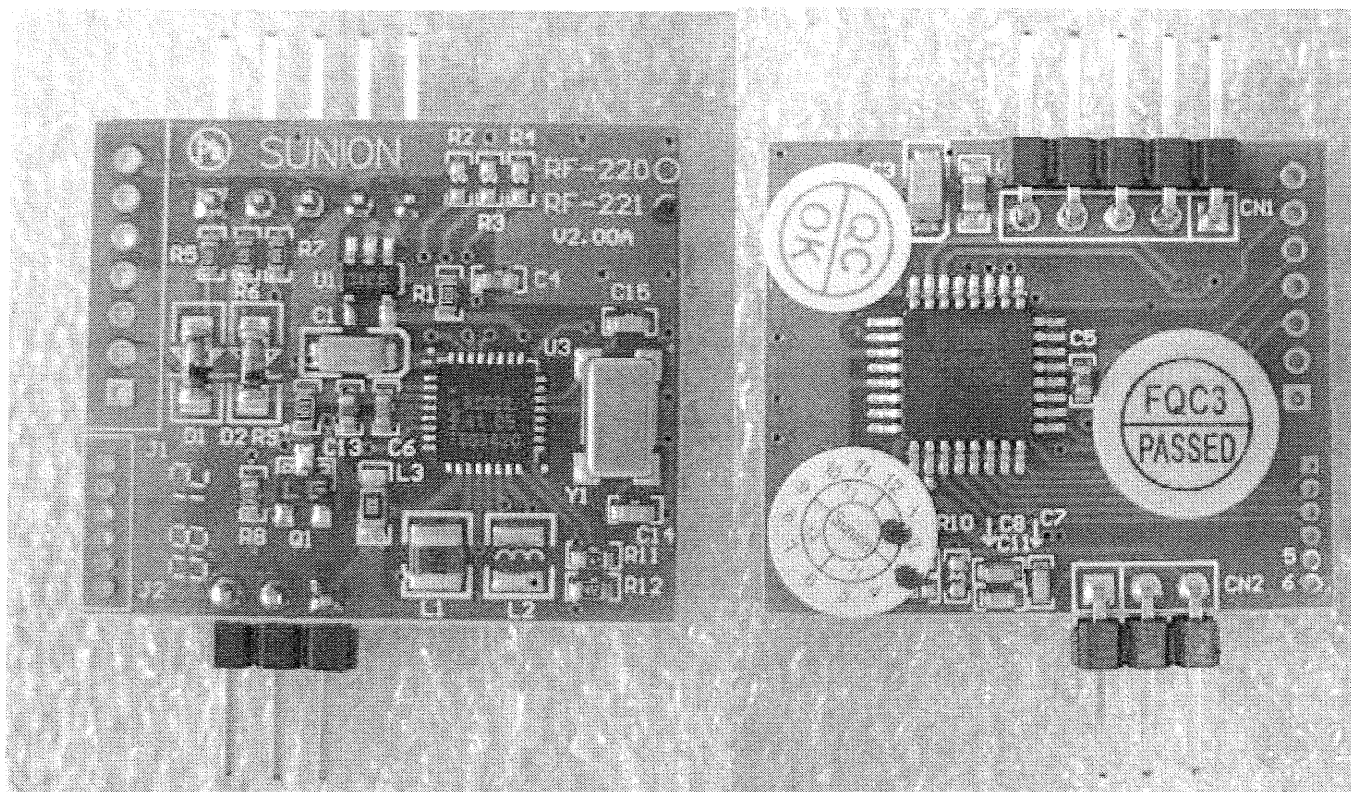
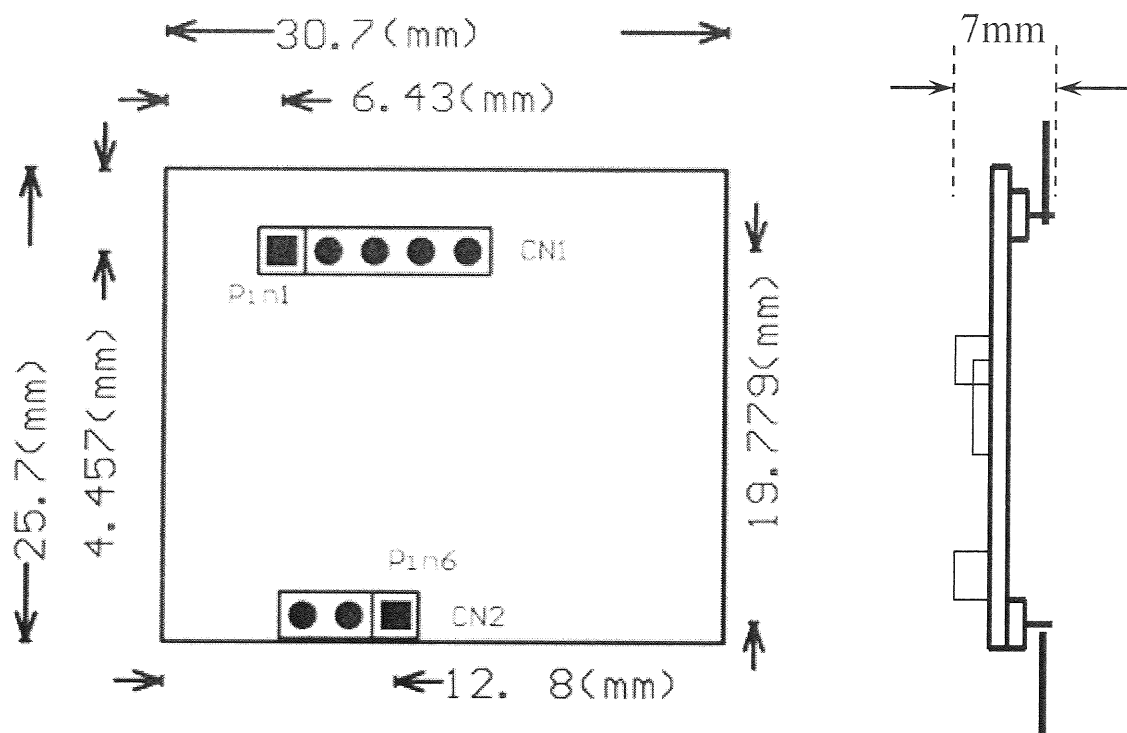
Parts	RF-221AR
Transmit Frequency	13.56MHz
Support ISO Standard	ISO14443A
Power Supply	DC 5V
Power Consumption(Max)	Operating: 65mA(MAX) for ANT-051 Stand By: 2.6mA
Operating Temperature	-20℃ to + 85 ℃
Storage Temperature	-20℃ to + 85 ℃
Storage Humidity	5 ~ 97% non-condensing
Dimensions (Unit : mm)	L: 30.7 x W: 25.7 x H: 6.5
Weight	5g±1%
Communication Interface	The Nation standard UART format

\*Antenna specifications according to the Antenna Accessories.

\*Reading distance according to different antennas, Tag depending on different frequencies.



## 1-2 Dimension Shown



#### § P15.21

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

#### § P15.19

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.

#### § P15.105

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.

#### § Restrictive module warning

Declaration the Restriction of this Limited Module Approval:

According to FCC Part 15 Subpart C Section 15.212, the radio elements of the modular transmitter must have their own shielding. However, due to there is no shielding for this module, this module is granted as a Limited Modular Approval. When this Wireless Module is installed into the end product, a Class II Permissive Change or a New FCC ID submission is required to ensure the full compliance of FCC relevant requirements.