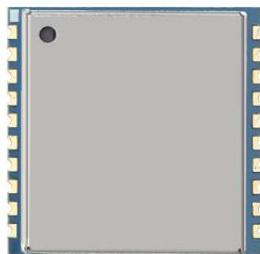


## Ex10 UHF RFID Module(1-Port)



**Model: RRU71717M**

**RRU51717M**

**RRU31717M**

**Size: 17 x 17 x 2.5mm**

## GENERAL DESCRIPTION

Based on the E310 chip design, Gen2 Extension Ready, ultimate small size, low power consumption, low cost, SMD form factor, maximum RF output of 27dBm,making it the best choice for various small desktop and mobile devices.Additionally, sub-versions based on the E710 and E510 are available.

## FEATURES

- Self-intellectual property;
- Designed with IMPINJ E710/E510/E310 and support ISO18000-6C(EPC C1G2) protocol tag, featuring excellent multi-tag anti-collision functionality;
- 865~868MHz/902~928MHz frequency band(frequency customization optional);
- FHSS or Fix Frequency transmission;
- RF output power up to 27dbm(adjustable);
- Positioning holes used to facilitate connection to external antenna;
- Effective distance up to 6m\*(with external 3.81dBi antenna and tag E41);
- Maximum inventory speed up to 1000pcs/s (using E710) or 600pcs/s (using E510) or 350 pcs/s (using E310);
- Tag buffer size up to 1000PCS@96bits EPC;
- Low power dissipation with single +3.6~5.5VDC power supply;
- Support RSSI;
- Capable of continuous operation for 24 hours×365 days;
- Support on-the-site firmware upgrading.
- *Effective reading distance and tag interrogation speed are directly related to the antenna, tags, and the working environment.*

## CHARACTERISTICS

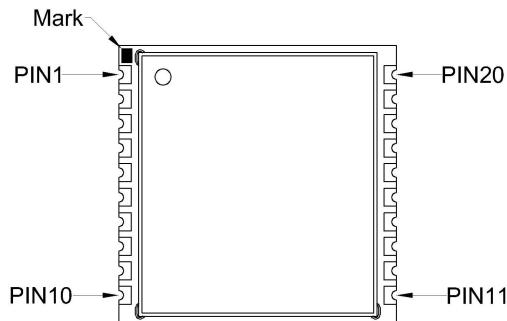
### ● Absolute Maximum Ratings

| ITEM           | SYMBOL           | VALUE     | UNIT |
|----------------|------------------|-----------|------|
| Power Supply   | VCC              | 6         | V    |
| Operating Temp | T <sub>OPR</sub> | -20 ~ +65 | °C   |
| Storage Temp   | T <sub>STR</sub> | -40 ~ +85 | °C   |

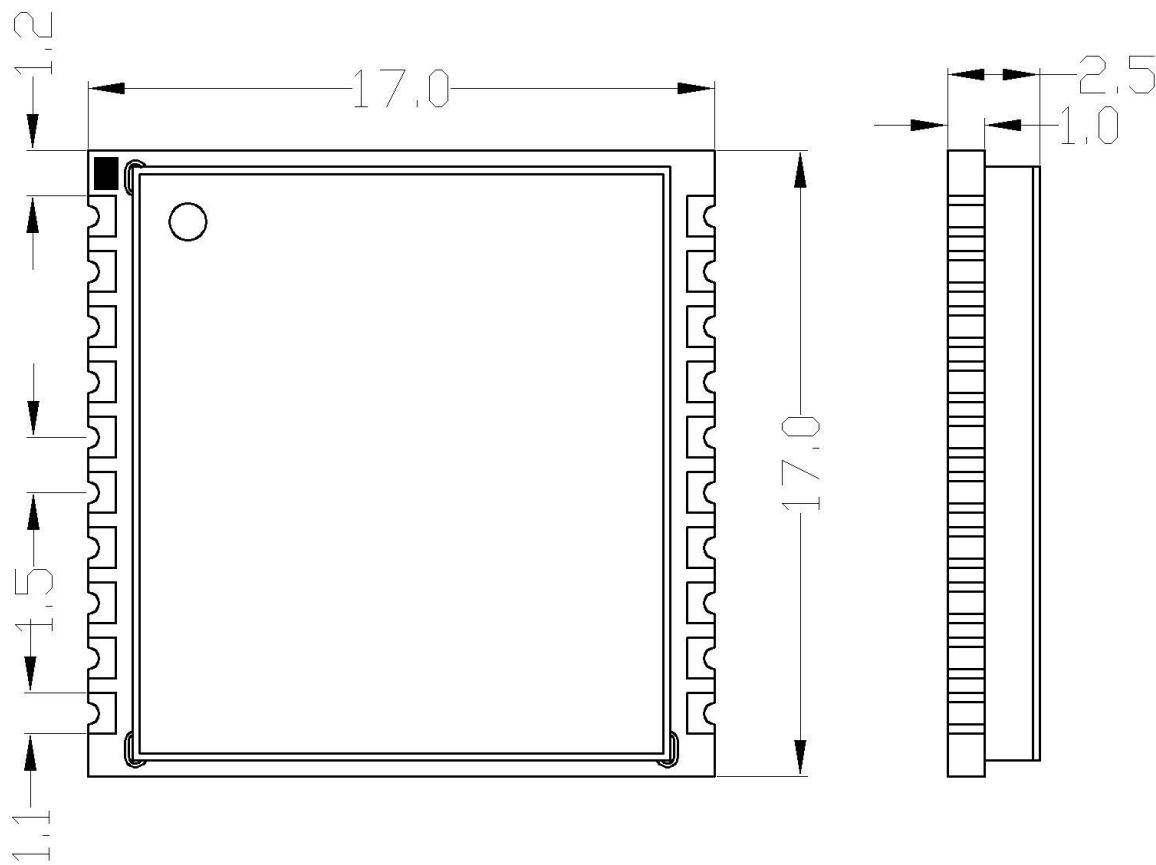
**● Electrical and Mechanical Specification**

Under  $T_A=25^\circ\text{C}$ ,  $VCC=+5\text{V}$  unless specified

| ITEM                | SYMBOL                            | MIN | TYP   | MAX        | UNIT |
|---------------------|-----------------------------------|-----|---|------------|------|
| Power Supply        | VCC                               | 3.6 | 5   | 5.5        | V    |
| Current Dissipation | $I_C$ (active)<br>$I_C$ (standby) | 360 | 67(standby)   | 600(27dBm) | mA   |
| Frequency           | $F_{REQ}$                         | -   | 865~868(ETSI)<br>902~928(FCC)                         | -          | MHz  |
| RF Output Power     | $P_{RF}$                          | 5   |   | 27         | dBm  |
| Receive Sensitivity | SR                                |     | -74(using E310)<br>-81(using E510)<br>-87(using E710) |            | dBm  |

**INTERFACE**


| NO. | SYMBOL    | COMMENT  |
|-----|-----------|--|
| 1   | VCC       | Power Supply                                   |
| 2   | GND       | Ground   |
| 3   | EN        | Enable, active high                            |
| 4   | GPO2      | General Output 2 (3.0V TTL level)              |
| 5   | GPI1      | General Output 1 (3.3V TTL level compatible)   |
| 6   | GPI2      | General Output 2 (3.3V TTL level compatible)   |
| 7   | RXD       | Serial data Input (3.3V TTL level compatible)  |
| 8   | TXD       | Serial data Output (3.3V TTL level compatible) |
| 9   | RST       | Module reset, active low                       |
| 10  | GPO1      | General Output 1 (3.0V TTL level)              |
| 11  | GND       | Ground   |
| 12  | ANT       | Antenna  |
| 13  | GND       | Ground   |
| 14  | GND       | Ground   |
| 15  | NC        | Reserved                                       |
| 16  | NC        | Reserved                                       |
| 17  | NC        | Reserved                                       |
| 18  | NC        | Reserved                                       |
| 19  | $V_{OUT}$ | 3.0V output (max. 20mA)                        |
| 20  | GND       | Ground   |

**MECHANICAL DATA (UNIT: mm)****Application Information**

1. When designing fixed reader, please take care of heat sinking and remember to make sure the heat sinker of the module is closely and stably attached to the reader's bottom plate;
2. Please refer to User's Manual for detailed protocol description.

*Remark:*

1. Specifications are subject to change, please pay attention to our latest version.
2. Shenzhen RoyalRay Science and Technology Co., Ltd. reserves the right to the final interpretation of the above terms.

## FCC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

This modular complies with FCC RF 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. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

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: 2BA5U-RRU31717M or Contains FCC ID: 2BA5U-RRU31717M"

When the module is installed inside another device, the user manual of this device must contain below warning statements:

1. 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.

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

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

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 still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

The end user manual shall include all required regulatory information/warning as shown in this manual, include:

This product must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

## **FCC Statement**

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.

To assure continued compliance, any changes or modifications not expressly approved by the party.

Responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

This equipment 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.

### **FCC Radiation Exposure Statement:**

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