LA66 LoRaWAN Module User Manual

Table of Contents

Table of Contents:

1. LA66 LoRaWAN Module

1.1 What is LA66 LoRaWAN Module

Dragino LA66 is a small wireless LoRaWAN module that offers a very compelling mix of long-range, low power consumption, and secure data transmission. It is designed to facilitate developers to quickly deploy industrial-level LoRaWAN and IoT solutions. It helps users to turn the idea into a practical application and make the Internet of Things a reality. It is easy to create and connect your things everywhere.

LA66 is a ready-to-use module that includes the **LoRaWAN v1.0.3 protocol**. The LoRaWAN stack used in LA66 is used in more than 1 million LoRaWAN End Devices deployed world widely. This mature LoRaWAN stack greatly reduces the risk to make stable LoRaWAN Sensors to support different LoRaWAN servers and different countries' standards. External MCU can use AT command to call LA66 and start to transmit data via the LoRaWAN protocol.

Each LA66 module includes a **world-unique OTAA key** for LoRaWAN registration.

Besides the support of the LoRaWAN protocol, LA66 also supports **open-source peer-to-peer LoRa Protocol** for the none-LoRaWAN application.

LA66 is equipped with **TCXO crystal** which ensures the module can achieve stable performance in extreme temperatures.

1.2 Features

- Support LoRaWAN v1.0.3 protocol
- Support peer-to-peer protocol

- TCXO crystal to ensure RF performance on low temperature
- SMD Antenna pad and i-pex antenna connector
- Available in different frequency LoRaWAN frequency bands.
- World-wide unique OTAA keys.
- AT Command via UART-TTL interface
- Firmware upgradable via UART interface
- Ultra-long RF range

1.3 Specification

- CPU: 32-bit 48 MHz
- Flash: 256KB
- RAM: 64KB
- Input Power Range: 1.8v ~ 3.7v
- Power Consumption: < 4uA.
- Frequency Range: 902.3-914.9MHz(Hybrid System),903-914.2MHz(DTS)
- Maximum Conducted Peak Output Power:7.32dBm(Hybrid System),16.62dBm(DTS)
- High sensitivity: -148 dBm
- Temperature:
    - Storage: -55 ~ +125℃
    - Operating: -40 ~ +85℃
- Humidity:
    - Storage: 5 ~ 95% (Non-Condensing)
    - Operating: 10 ~ 95% (Non-Condensing)

- LoRa Rx current: <9 mA
- I/O Voltage: 3.3v

1.4 AT Command
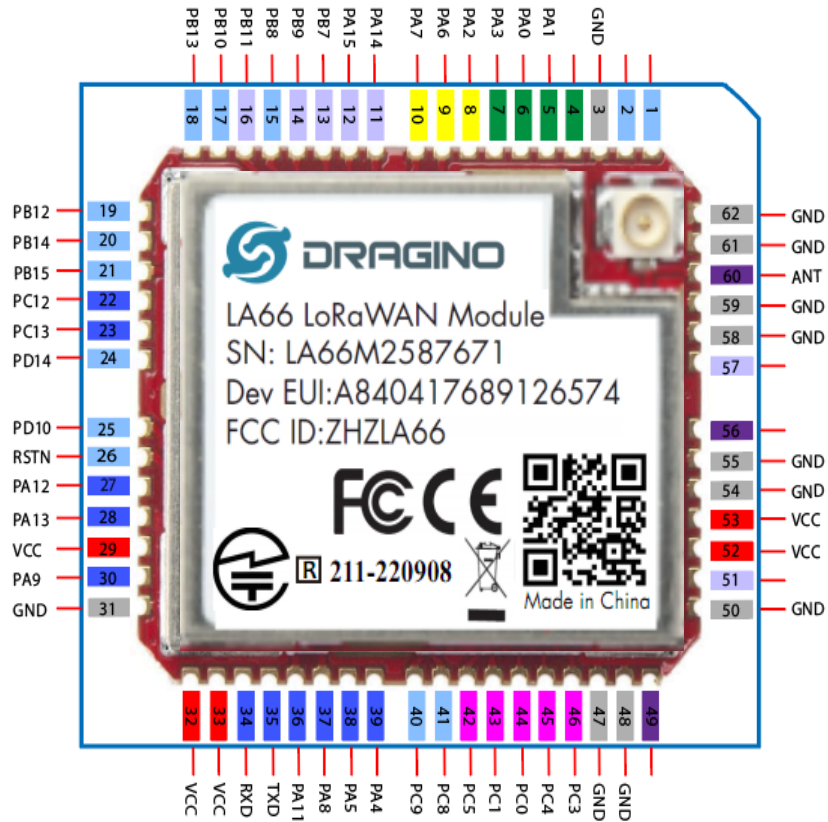
AT Command is valid over Main TXD and Main RXD. Serial Baud Rate is 9600. AT commands can be found in AT Command documents.

1.5 Dimension

Length: 23.6 mm (± 0.15 mm)
Width: 19.9 mm (± 0.15 mm)
Height: 2.2 mm (± 0.2 mm)
Weight: Approx. 2.15 g
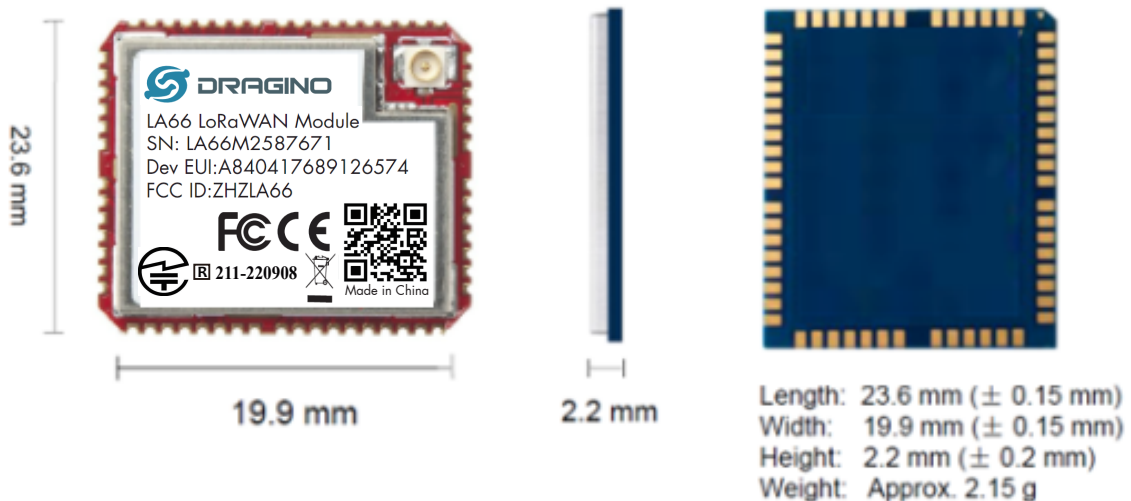
1.6 Pin Mapping

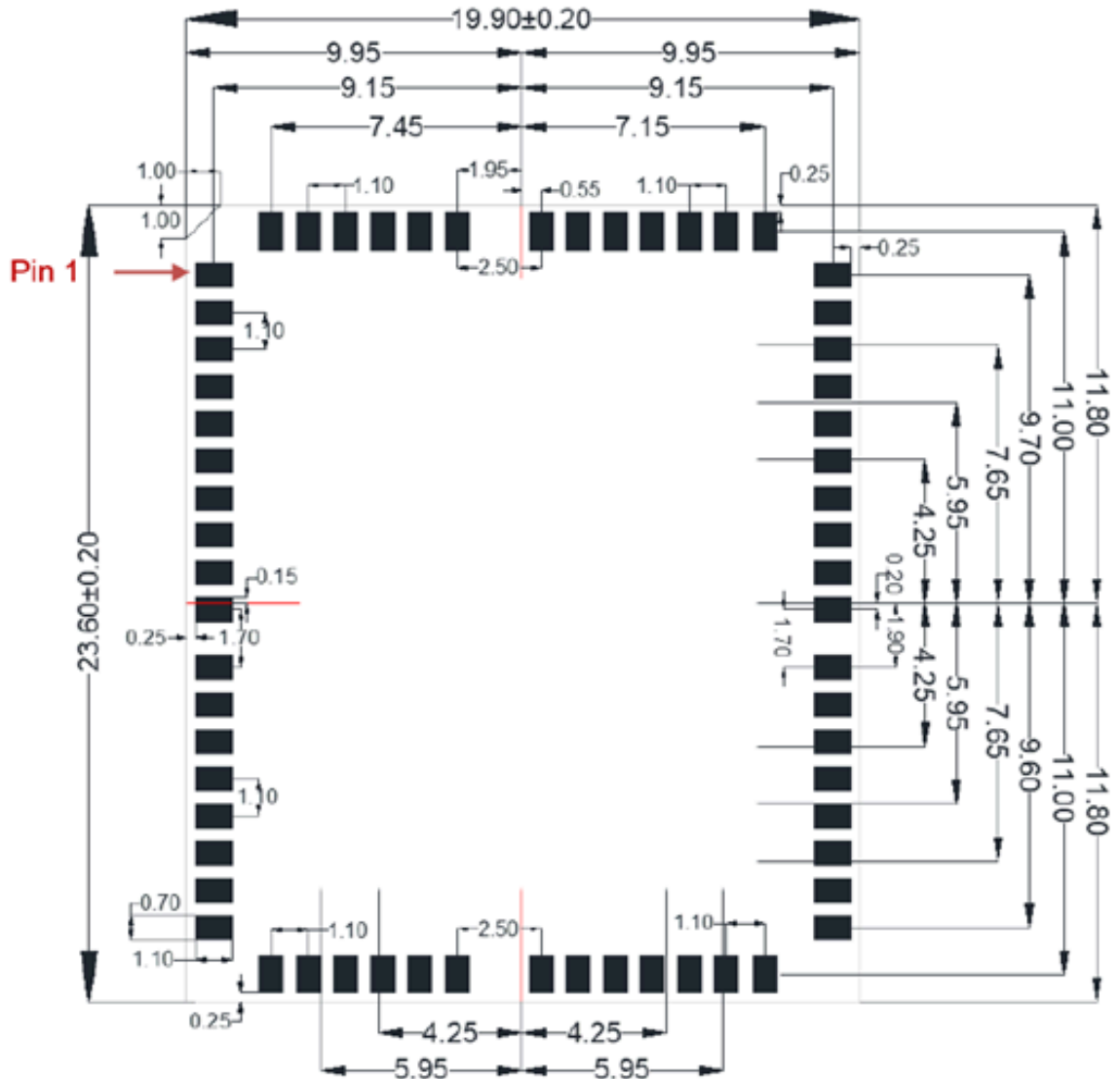## 1.7 Land Pattern

2. FAQ

2.1 How to Compile Source Code for LA66?

Compile and Upload Code to ASR6601 Platform: [Instruction](#)

2.2 Can i use LA66 module's internal I/O without external MCU, So to save product cost?

Yes, this is possible, user can refer [the source code from ASR](#) to get examples for how to its I/O Interfaces.

2.3 Where to find Peer-to-Peer firmware of LA66?

Instruction for LA66 Peer to Peer firmware : Instruction

3. Order Info

Part Number: LA66-XXX

XXX: The default frequency band

- **AS923**: LoRaWAN AS923 band
- **AU915**: LoRaWAN AU915 band
- **EU433**: LoRaWAN EU433 band
- **EU868**: LoRaWAN EU868 band
- **KR920**: LoRaWAN KR920 band
- **US915**: LoRaWAN US915 band
- **IN865**: LoRaWAN IN865 band
- **CN470**: LoRaWAN CN470 band
- **PP**:   Peer to Peer LoRa Protocol

4. FCC Statement

FCC Caution:

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

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.

IMPORTANT NOTE:

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.

FCC 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 20cm between the radiator& your body.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART A and C has been investigated. It is applicable to the modular.

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host , host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm from your body.

2.7 Antennas

This radio transmitter FCC ID: ZHZLA66 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated.

Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna Description	Antenna Type	Frequency Range (MHz)	Maximum antenna gain(dBi)
Lora Antenna	Stick antenna	902.3-914.9MHz (Hybrid System) 903-914.2MHz(DTS)	2dBi

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID: ZHZLA66

2.9 Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B