



# RAK10706 Signal Meter for LoRa Pro Datasheet

## Overview

### Description

The **RAK10706 Signal Meter for LoRa** is a ready-to-use WisNode for evaluating deployed LoRaWAN network, which comes in an enclosure button and an antenna. It has a GNSS and an OLED display for the user interface, which displays the number of gateways the device can reach and other parameters like approximate distance, RSSI, and SNR. It is powered by a rechargeable battery and can be charged via USB Type-C interface. It has as well an user button and an On/Off switch



#### NOTE

The RAK10706 Signal Meter firmware works with any LoRaWAN Network Servers that supports LinkCheckReq.



#### NOTE

The [source code of RAK10706](#)  is open-sourced.

The device has to be charged first if it comes fresh from shipping. There is a possibility that the battery was drained during its transport.

## Features

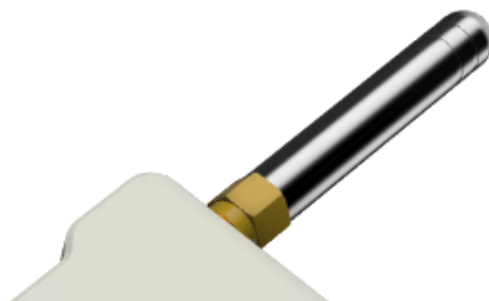
- Supports LoRaWAN regions: RU864, IN865, EU868, US915, AU915, KR920, & AS923-1/2/3/4
- Supports LoRa P2P for 830 to 960 MHz frequencies
- Compatible with LoRaWAN 1.0.3

- Offers different test modes
  - LoRaWAN LinkCheck
    - Works with any LoRaWAN server that supports LinkCheckRequest
    - Does not require any backend installation
    - Shows Number of gateways in range
    - Shows signal quality at gateways as Demodulation Margin
    - Shows RX SNR and RSSI of downlink from LNS
    - Shows sent and lost packet count
  - LoRa P2P
    - Works in any LoRa P2P setup
    - Shows received packet count
    - Can send out test packets to other LoRa P2P nodes
- Compatible with WisToolBox and allows wireless configuration via BLE
- Powered by 3,200 mAh battery
- Rechargeable over a USB Type-C connector
- 1.3" OLED display
- Single button UI and device control
- 2.3 dBi external antenna via RP-SMA connector
- Operating Temperature: -10° C ~ 60° C
- Storage Temperature: -40° C ~ 80° C

## Specifications

### Overview

RAK10706 Signal Meter for LoRa with external antenna.





**Figure 1:** RAK10706 Signal Meter for LoRa

## Hardware

The hardware specification is categorized into five (5) parts. It shows the interfacing of the tracker. It also covers the rf, antennas, electrical, environmental, and mechanical parameters that include the tabular data of the functionalities and standard values of the RAK10706 Signal Meter for LoRa.

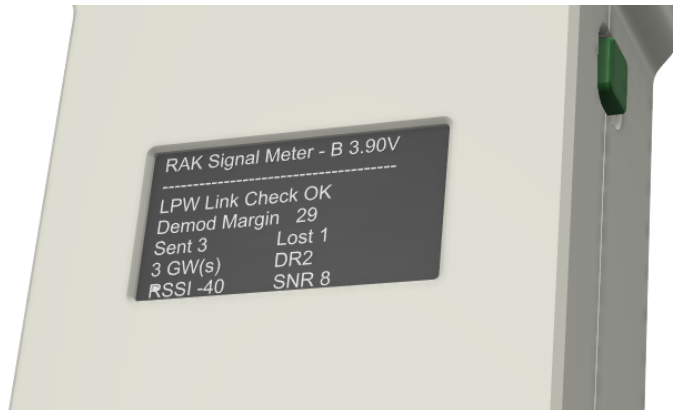
## Interfaces

The RAK10706 Signal Meter for LoRa has four interfaces which are

- OLED display
- external button
- antenna port
- SD card slot
- USB connector
- RESET button
- Device and charging status indicators


### **OLED display**

The OLED display is the visual interface of the device. Most of the test results are displayed on the OLED display.



**Figure 2:** RAK10706 front view with the OLED screen

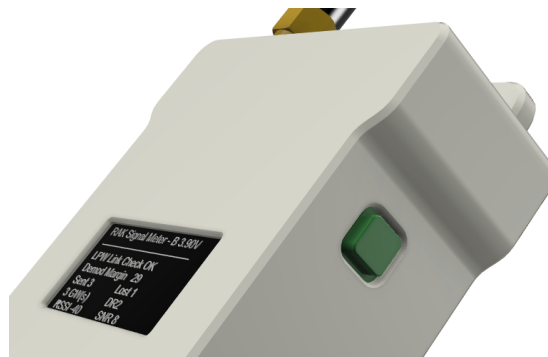
#### NOTE

The complete details on different pages of the screen are discussed in the [RAK10706 Quick Start Guide](#) .

### External Button

There is one external button on RAK10706 which can be used in various scenarios.

1. Turning display on and off (holding for five seconds)
2. Forced uplink (double-click)
3. Forced uplink with DR sweep
4. Open the device settings UI



**Figure 3:** RAK10706 button

### Antenna RP-SMA Connector

On top of the RAK10706 Signal Meter for LoRa is an RP-SMA port for the external antenna.



**Figure 4:** RAK10706 RP-SMA antenna port

There is one antenna included in the RAK10706, one with 2.3 dBi gain:





**Figure 5:** 2.3 dBi antenna



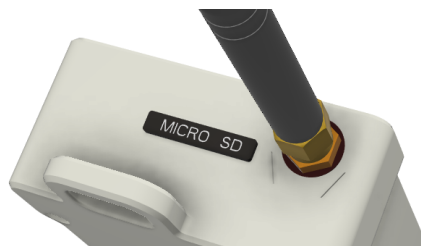
**NOTE**

Detailed information about the LoRa antenna can be found on the datasheet:

- [9xx MHz Antenna](#) 
- [8xx MHz Antenna](#) 

**SD card slot**

On top of the RAK10706 Signal Meter for LoRa is the SD card slot.







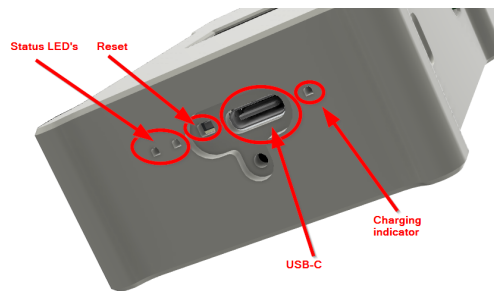
**Figure 6:** RAK10706 SD card port

**⚠ IMPORTANT**

The SD card slot is closed with a flexible rubber lid to protect the device from the environment. The rubber lid does not protect against water intrusion.

**USB Type-C for Charging and WisToolBox Configuration, status indicators and reset button**

There is also a USB interface on RAK10706. You can use [WisToolBox](#)  software to configure the devices via USB connection. You also have the option to configure the device wirelessly via BLE connection using the [WisToolBox Mobile App](#)  compatible with iOS and Android. Next to the USB connector is a RESET button located (requires a pin to use) and status indicators for charging and activities.



**Figure 7:** RAK10706 USB-C port

**⚠ IMPORTANT**

The USB connector slot is closed with a flexible rubber lid to protect the device from the environment. The rubber lid does not protect against water intrusion.





**Figure 8:** RAK10706 USB-C port closed

**WisBlock modules**

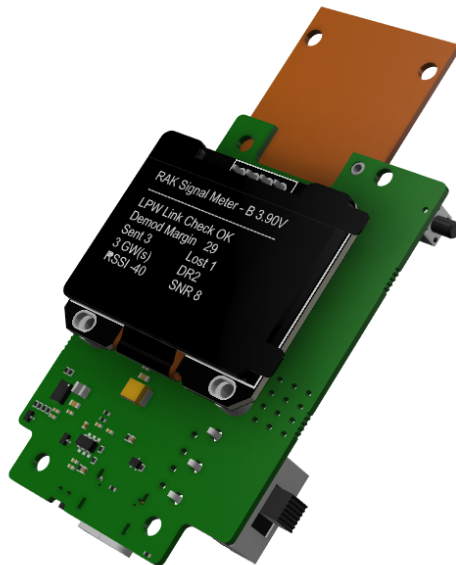
The RAK10706 is built with WisBlock BaseBoard and WisBlock modules.

The main part is the [RAK19026 BaseBoard](#)  which includes

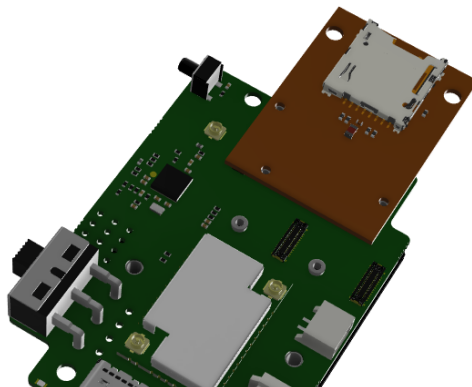
- [RAK4630 LoRa module](#) 
- u-blox ZOE-M8Q GNSS module (as used in the [RAK12500 WisBlock Sensor module](#) )
- Voltage regulator and battery charger
- 1.3" OLED display
- Battery connector
- 5V supply connector for solar panel or external power supply
- On/Off switch
- User button

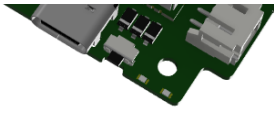
On the Base Board a RAK15002 SD-Card module is plugged into the IO slot. The SD card is used for data logging.

Optional an RAK12002 RTC module is available to provide precise time stamps to the logs.



**Figure 9:** RAK10706 USB-C port closed





**Figure 10:** RAK10706 USB-C port closed

## RF Characteristics

### LoRaWAN Operating Frequencies

The RAK10706 Signal Meter for LoRa supports the regional bands shown in the table below. When purchasing a RAK10706, pay attention to specifying the correct variant for your region.

Region	Frequency (MHz)	RAK10706 Signal Meter for LoRa
Russia	RU864	8xx MHz version
India	IN865	8xx MHz version
Europe	EU868	8xx MHz version
North America	US915	9xx MHz version
Canada	US915	9xx MHz version
Australia	AU915	9xx MHz version
Korea	KR920	9xx MHz version
Asia	AS923-1/2/3/4	9xx MHz version

### GPS Antenna

Items	Parameter
Frequency	1575.42 MHz

## Electrical Characteristics



## Battery Supply

The RAK10706 Signal Meter for LoRa is equipped with a built-in rechargeable 3.7 V Li-ion battery with 3200 mAh capacity. This can be charged via a USB Type-C connector interface.

## Environmental Characteristics

The table below lists the operation and storage temperature requirements.

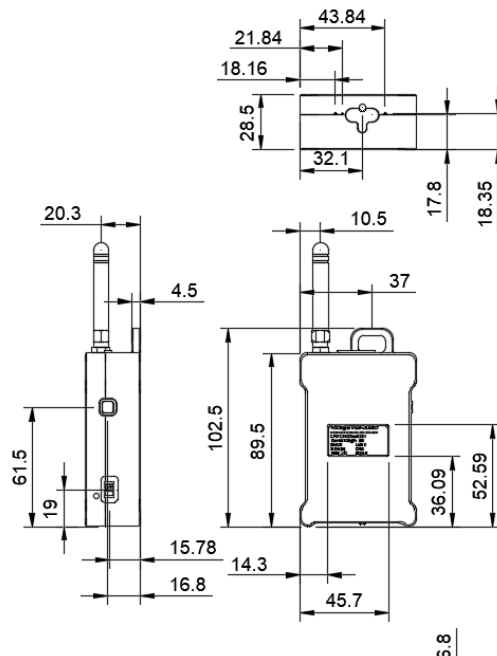
Parameter	Min.	Typical	Max.
Storage Temp. Range	-40° C	+25° C	+80° C
Operation Temp. Range	-10° C	+25° C	+60° C

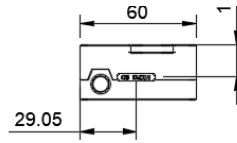
### IMPORTANT

The enclosure is made of ABS material. It should be protected from direct sun light and extreme temperatures to avoid damage to the enclosure.

## Mechanical Characteristics

- Dimensions (without antenna): 102.5 mm x 60 mm x 28.5 mm
- Weight: approximately ??? oz (??? g) without battery






**Figure 11:** RAK10706 Dimensions

## Firmware

Download the latest firmware version of RAK10706 from our [Download Center](#) and flash it with the [WisToolBox](#).


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