RN2483 (433/868 MHz) LoRa™ Modem

Long-Range, Low-Power Wireless Solution

Summary

The RN2483 is a LoRa™-integrated modem with a range of more than 15 km (suburban), low power enabling a battery life greater than 10 years and the ability to connect millions of wireless sensor nodes to LoRa gateways and IoT-connected Cloud Servers. This robust system is due to LoRa's unique spread-spectrum based modulation that is capable of demodulation 20 dB below noise level. This enables high sensitivity for ultra-long range, improved network efficiency and eliminates interference. The RN2483 modem operates over the 433 and 868 MHz license-free Industry Scientific and Medical (ISM) frequency bands and serves as the end-device in the LoRa network infrastructure (see Figure 1).

The RN2483 has the complete LoRaWAN™ protocol stack on the modem and is easy to configure via simple ASCII commands through the UART, greatly reducing development time. The RN2483 is European R&TTE-certified, saving significant certification costs. Additionally, it combines a small form factor 17.8 × 26.7 × 3 mm with 14 GPIOs, providing the flexibility to connect and control a large number of sensors and actuators while taking up very little space.

The RN2483 modem resolves the age-old wireless developer's dilemma to choose between longer range and lower power consumption. By employing the RN2483, you can now maximize both, while eliminating the cost of additional repeaters and increasing battery life. With its scalability, robust communication, mobility and the ability to operate in harsh outdoor environments, the RN2483 is well suited for a broad range of low-data-rate wireless monitoring and control designs.

Features

- Long range: greater than 15 km
- Low power consumption for 10+ year battery life
- Operates in 433 MHz and 868 MHz bands
- Embedded LoRaWAN Class A protocol
- Easy to use ASCII command interface over UART
- Supply voltage: 2.1–3.6V
- Temperature range: −40°C to 85°C
- Adjustable output power up to +14 dBm
- High receiver sensitivity down to −148 dBm
- Device Firmware Upgrade (DFU) over UART
- 14 GPIO for control, status and ADC
- Excellent interference immunity
- Secure AES-128 encryption
- European R&TTE directive assessed radio modem
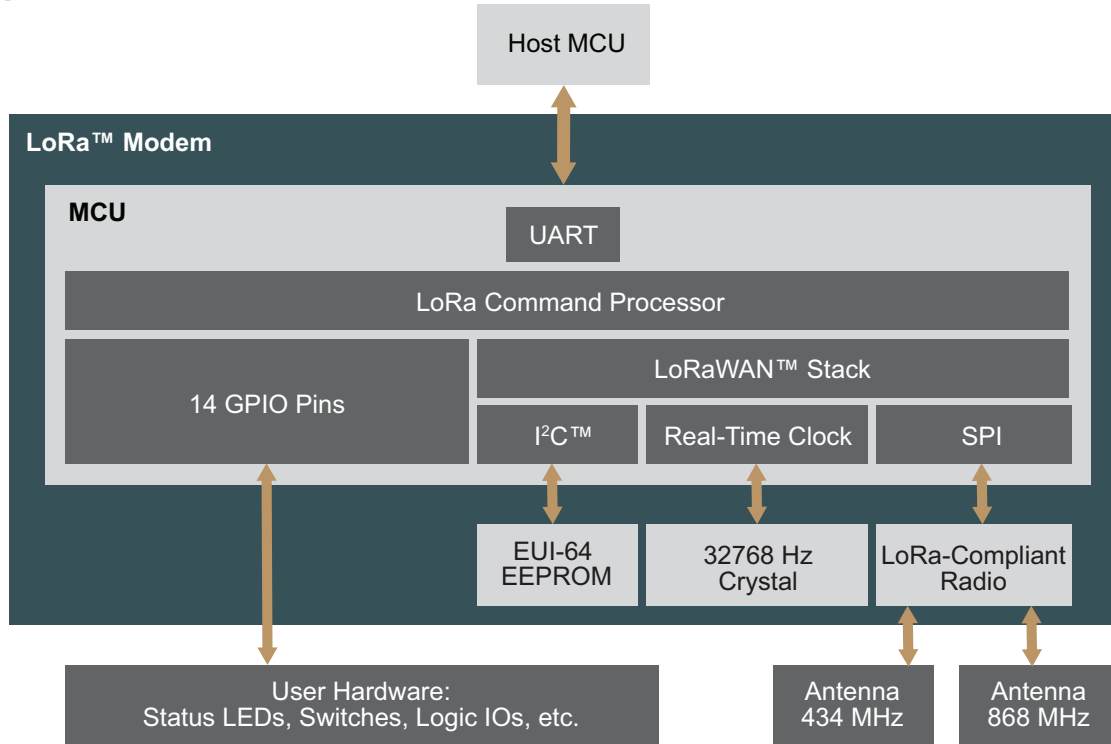- Environmentally friendly, ROHS-compliant
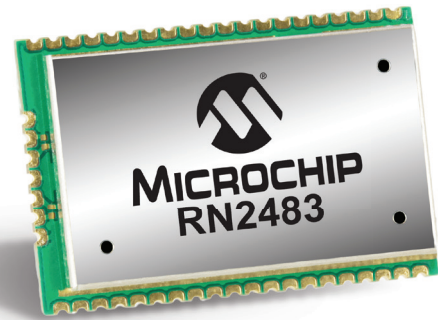
Applications

- Internet of Things (IoT)
- Metering
- Machine to Machine (M2M)
- Smart city
- Sensor networks
- Industrial automation
- Smart home

Figure 1: *LoRa Network*

Network Server

LoRa™ Gateway

End Nodes
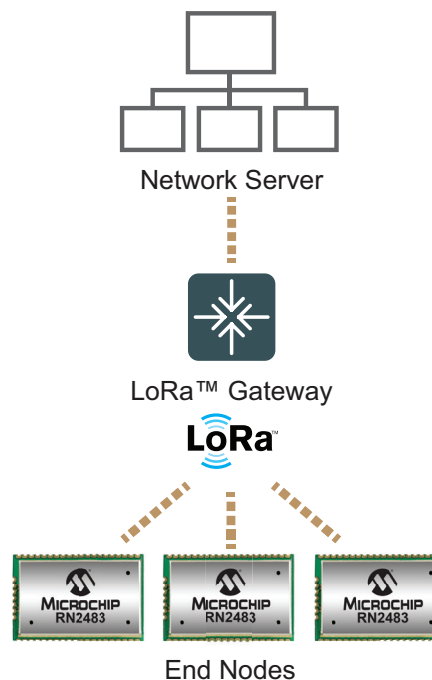
Block Diagram

Ordering Information

Part Number	Output Power (dBm)
RN2483-I/RMXXX	Low-power, long-range LoRa™ transceiver modem - EU version (433/868 MHz)
RN-2483-PICTAIL	RN2483 PICtail™/PICtail Plus Daughter Board - EU version (433/868 MHz)

Specification	Details
Output Power	+10 dBm @ 433 MHz +14 dBm @ 868 MHz
Power Consumption (typ.)	Deep sleep: 9.9 µA Tx: 40 mA (14 dBm @ 868 MHz) Rx: 14.2 mA
Frequency	433 MHz, 868 MHz
Sensitivity	−148 dBm
Range	>15 km (suburban)
Certification	European R&TTE
Size	17.8 × 26.7 × 3 mm
Package	Surface-mount modem

Development Tools

RN2483 PICtail™/PICtail Plus Daughter Board (RN-2483-PICTAIL)

The RN2483 PICtail/PICtail Plus Daughter Board is a development tool for prototyping new designs using Microchip's RN2483 LoRa modem. It includes a USB interface for convenient demo and experimentation and the PICtail and PICtail Plus interfaces for connecting to Microchip development boards.

MICROCHIP

www.microchip.com/LoRa

Visit our web site for additional product information and to locate your local sales office.

Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

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