

# RN487x Bluetooth® Low Energy Module

*The Easy-to-Use, Complete yet Compact Bluetooth Solution*

## Summary

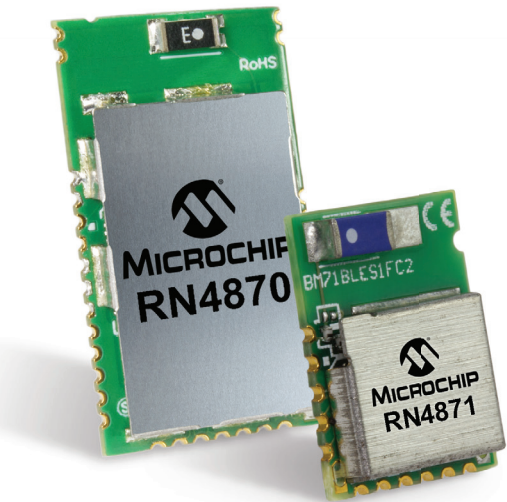
The RN487x modules, based on Microchip's IS187x Bluetooth® Low Energy (BLE) ICs, provide a complete solution to implement Bluetooth 4.2 Low Energy connectivity. These modules are interfaced via a two- or four-wire UART interface with Microchip's simple ASCII command set for easy integration into most applications. All products in the RN series can be dynamically configured by the host microcontroller with a few simple ASCII commands. The RN487x series also supports on-board scripting to automate basic operations without a host microcontroller. The RN4870 (12 × 22 mm) and RN4871 (9 × 11.5 mm) modules combine Microchip's BLE silicon with all necessary peripheral components and an on-board chip antenna to create an easy-to-use drop-in solution.

All modules in this series are Bluetooth SIG qualified. The RN4870 and RN4871 include FCC modular certification, as well as most other worldwide government regulatory approvals.

The RN4870U (12 × 15 mm) and RN4871U (6 × 8 mm) offer compact, flexible, unshielded options for designs that are extremely space constrained or need to remotely locate the antenna.

## Applications

- Health/medical devices
  - Glucose meters
  - Heart rate
  - Scale
- Sports activity and fitness
  - Pedometer
  - Cycling computer
  - Heart rate
- Retail
  - Point of Sale (POS)
  - Asset tagging and tracking
  - Proximity advertising
- Beacon applications
- Internet of Things (IoT) sensor tag
- Remote control
  - Embedded device control
  - AV consoles and game controllers
- Wearable smart devices and accessories
- Industrial control
- Smart energy/smart home



## Features

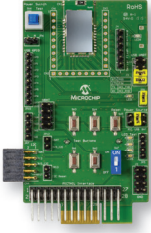
- Fully-certified BLE module
- On-board Bluetooth 4.2 Low Energy stack
- ASCII command interface API over UART
- Scripting engine for hostless operation
- Compact form factor – The RN4870/71 family comes in four different sizes from 6 × 8 mm to 12 × 22 mm:
  - RN4870: 12 × 22 mm
  - RN4871: 9 × 11.5 mm
  - RN4870U: 12 × 15 mm
  - RN4871U: 6 × 8 mm
- Definable beacon feature to make various beacons, such as iBeacon™/Eddystone™
- UART transparent service for serial data streaming
- Remote configuration over the air
- Operating voltage: 1.9V to 3.6V (3.3V typical)
- Temperature range: –20°C to +70°C
- Embedded enhanced security
  - White list and resolvable private address
  - Federal Information Processing Standards (FIPS)-based connection security
  - Secure AES128 encryption
- GAP, GATT, SM, L2CAP and integrated public profiles
- Ceramic chip antenna (RN4870/RN4871)
- External antenna connection via RF pad (RN4870U/RN4871U)



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## Development Tools

### RN4870 Bluetooth Low Energy PICTail™/PiCtail Plus Daughter Board (RN-4870-SNSR)



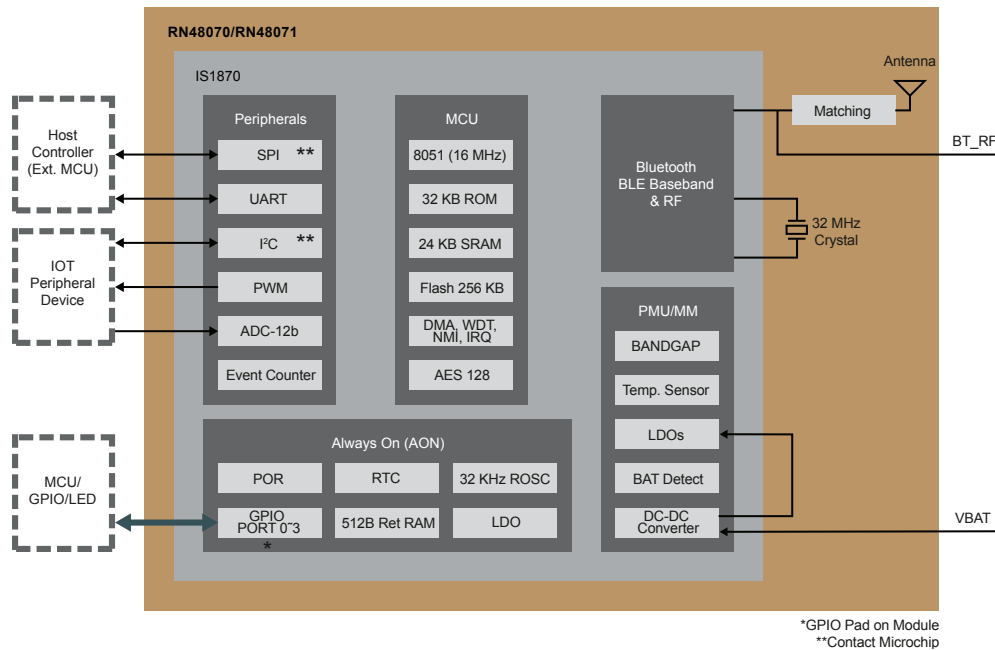
This board enables development with the RN4870 BLE module. The board includes a sensor daughter board for experimentation with on-board light and temperature sensing, a potentiometer, a pushbutton switch and LEDs. The board can be interfaced via USB and any PC terminal program, or over the PICTail interface connected to one of Microchip's microcontroller development boards such as the Explorer 16 Development Board.

### RN4871 Bluetooth Low Energy PICTail/PiCtail Plus Daughter Board (RN-4871-PICTAIL)



This board enables development with the small form factor RN4871 BLE module. The board can be interfaced via USB and any PC terminal program, or over the PICTail interface connected to one of Microchip's microcontroller development boards such as the Explorer 16 Development Board.

## Block Diagram



## Product Information

Part Number	Description
RN4870-V/RM118	Bluetooth® 4.2 Low Energy module with easy-to-use ASCII interface
RN4870U-V/RM118	Bluetooth 4.2 Low Energy module with easy-to-use ASCII interface, no shield
RN4871-V/RM118	Bluetooth 4.2 Low Energy module with easy-to-use ASCII interface, small form factor
RN4871U-V/RM118	Bluetooth 4.2 Low Energy module with easy-to-use ASCII interface, small form factor and no shield



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