

RENO

BT 5.0 + ZB/Thread + NFC-A Embedded Module

Description

RENO is a highly integrated **ultra-low-power** certified multi-protocol wireless radio module supporting full featured Bluetooth 5 (Bluetooth Low Energy), Zigbee, Thread, NFC-A and ANT. RENO module is based on Nordic nRF52840 SoC. By integrating complete wireless hardware and software in a small form factor, this module enables users to add wireless with minimal host load and reduces the total system cost.

These fine-tuned RF and certified modules deliver **high performance** for user devices. This globally certified module reduces user’s time to market with integrated wireless stacks, network stack, and all the **advanced security features** (ARM Trust Zone Cryptocell-310). This module supports SPI and UART host interfaces for easy integration of the wireless connectivity in various Internet of Things verticals like Wearables, Home automation, Industrial IoT and Smart medical.

Features

- ❖ Full featured Bluetooth Low Energy 5.0 (BLE)
- ❖ Support for UART and SPI to interface with host MCU.
- ❖ Easy to use AT commands set and Binary APIs to develop applications on host MCU with zero or negligible porting effort
- ❖ Supports advanced mesh networking protocols – Certified software stacks for Bluetooth Mesh, Thread and Zigbee
- ❖ Support for AT commands for easy evaluation and Binary APIs for production
- ❖ Highlights of iVativ APIs and AT commands
 - Ready to use on all popular MCUs with zero or negligible porting effort
 - Seamless integration for RTOS or bare-metal based user application
 - Agnostic to underlying SoC / Chipset and it’s respective SDKs / firmware
 - Secure boot enabled
 - OTA FW update support
- ❖ Highly optimized hardware for ultra-low power consumption with excellent performance
- ❖ BLE secure connections and privacy
- ❖ ARM® CryptoCell 310 cryptographic accelerator and AES 128 bit encryption
- ❖ Over the air device firmware upgrade (OTA DFU)
- ❖ NFC Tag A support

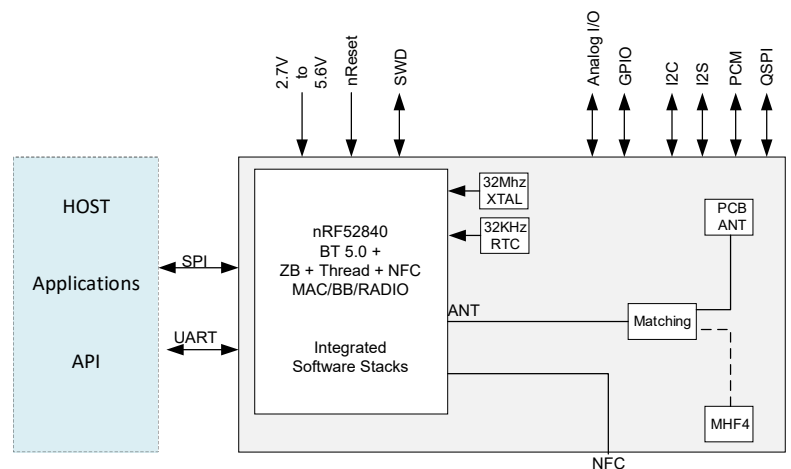


Footprint: 10 mm x 15 mm x 1.5 mm

Applications

- ❖ Personal fitness devices
- ❖ Wearables for wireless payment
- ❖ Connected health
- ❖ Virtual/Augmented reality applications
- ❖ Smart home sensors and controllers
- ❖ Industrial IoT sensors and controllers
- ❖ Gaming controllers
- ❖ Asset trackers and Locationing devices

Block Diagram



Specifications

Wireless Protocols	Bluetooth 5, Thread, Zigbee, NFC, ANT+
Frequency	2.402 – 2.480 GHz
On-air Data rates	Bluetooth 5 - 2Mbps, 1Mbps, 500kbps, 125kbps 802.15.4 - 250kbps NFC - 106kbps
Security Features	ARM CryptoCell 310, 128-bit AES HW accelerator, Secure boot and all security features of BLE spec
Antenna options	PCB Trace Antenna or MHF4 connector
Operating modes	BLE, BLE Mesh, Zigbee, Thread, BLE + Zigbee, BLE + Thread and ANT
Programmable output power	-20dBm to +8dBm
Receive Sensitivity	Bluetooth 5: -103dBm at 125kbps -99dBm at 500kbps -96dBm at 1Mbps -92dBm at 2Mbps 802.15.4: -100dBm at 250kbps
Current consumption	450nA – Deep sleep mode 1.3µA – System standby mode 4.8mA – TX at 0dBm output power
NFC	NFC-A (Type 2) Tag with wake-on field - “Touch to pair” support
GPIO	48 configurable
Range	> 1000 meters
Power supply and operating voltage range	Integrated DC-DC, 1.7v to 5.5v
Temperature	-40°C to 85°C
Humidity	5-90% non-condensing
Package	10 mm x 15 mm x 1.5 mm (including shield), 0.5mm pitch

Interfaces and peripherals

- ❖ 2 x UART
- ❖ Up-to 4 x SPI master/ 3x SPI slave
- ❖ 2 x I2C master, 1 x I2C slave
- ❖ 1 x I2S
- ❖ 1 x PWM
- ❖ 1 x Quadrature decoder
- ❖ 1 x PDM
- ❖ 12bit, 8 x ADC channels
- ❖ 32-bit timers x 5, RTC x 3
- ❖ 20 channel programmable peripheral interface
- ❖ 1x USB

Certifications and approvals

- ❖ Module certifications - FCC, IC, CE
- ❖ Bluetooth qualification - v5.0 (Low Energy)
- ❖ Zigbee and Thread certified

Part Ordering

RENO module	I540E0L8-I2LT (PCB Antenna, Tray packing) I540E0L8-I2LR (PCB Antenna, Tape/Reel packing) I540E0L8-I3LT (MHF4 connector, Tray packing) I540E0L8-I3LR (MHF4 connector, Tape/Reel packing)
RENO DVK	I540E0L8-2DVK (PCB Antenna) I540E0L8-3DVK (MHF4 connector)

Development Kit

DVK comes with the following major features:

- ❖ On board Segger Jlink interface
- ❖ Arduino Uno Revision 3 shield compatible connector
- ❖ Access to all I/O and interfaces via edge connectors and user programmable Buttons and LEDs

Additional Information

For the latest collaterals, please visit <http://www.ivativ.com>