

RENO TH

Thread + NFC-A Embedded Module

Description

RENO TH is a highly integrated **ultra-low-power** certified Thread radio module. RENO TH 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 stack, 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

- ❖ Thread SDK with certified Open Thread stack released by Nest
- ❖ Low power wireless mesh networking protocol
- ❖ 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
- ❖ Support for UART and SPI to interface with host MCU. AT commands support over UART and Binary APIs support over UART and SPI interfaces
- ❖ Highly optimized hardware for ultra-low power consumption with excellent performance
- ❖ ARM® Crypto Cell 310 cryptographic accelerator and AES 128 bit encryption
- ❖ Over the air device firmware upgrade (OTA DFU)
- ❖ Support device-to-device and device-to-cloud communications

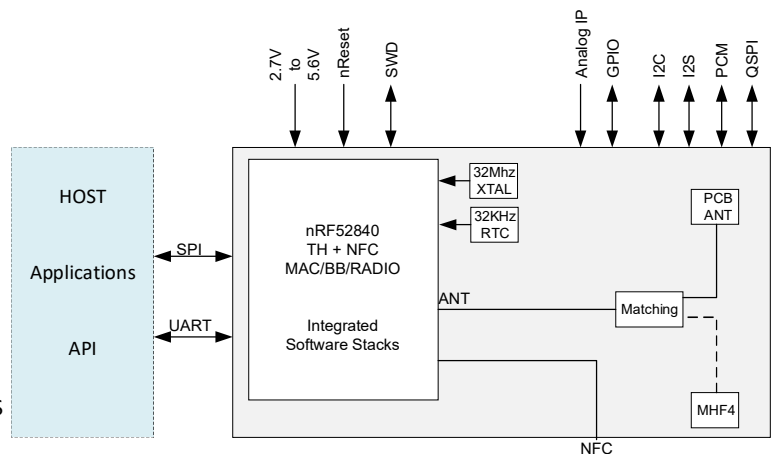


Footprint: 10 mm x 15 mm x 1.5 mm

Applications

- ❖ Personal fitness devices
- ❖ Wearables
- ❖ Connected health
- ❖ Climate controls(HVAC)
- ❖ Smart home sensors and controllers
- ❖ Industrial IoT sensors and controllers

Block Diagram



Specifications

Wireless Protocols	Thread, NFC-A
Frequency	2.402 – 2.480 GHz
On-air Data rates	802.15.4 - 250kbps
Thread throughput	80kbps
Security Features	ARM Crypto Cell 310, 128-bit AES HW accelerator, Secure boot
Antenna options	PCB Trace Antenna or MHF4 connector
Programmable output power	-20dBm to +8dBm
Receive Sensitivity	100dBm at 250kbps
Current consumption	450nA – Deep sleep mode 1.3µA – System standby mode
GPIO	48 configurable
Range	TBD
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
Thread Stack	Open thread 1.1.1

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
- ❖ Thread certified

Part Ordering

RENO TH 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>