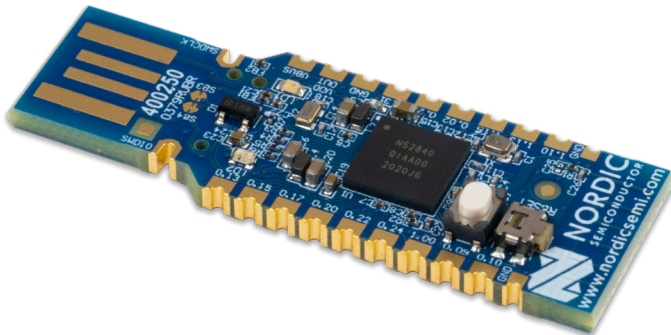# nRF52840 Dongle

Development dongle for Bluetooth LE/Bluetooth mesh/
Thread/Zigbee/802.15.4/ANT/2.4GHz

Product Overview

The nRF52840 Dongle is a small, low-cost USB dongle for Bluetooth® Low Energy (LE), Bluetooth mesh, Thread, Zigbee, 802.15.4, ANT and 2.4 GHz proprietary applications using the nRF52840 SoC. The dongle is the perfect target hardware for use with nRF Connect for Desktop as it is low-cost but still support all the short range wireless standards used with Nordic devices. The dongle has been designed to be used as a wireless HW device together with nRF Connect for Desktop.

It can also be used to develop code for the nRF52840 SoC mounted on the dongle. Programming is supported through a USB enabled bootloader. Connectors for external debuggers are available.

The dongle is supported by most of the nRF Connect for Desktop apps and will automatically be programmed if needed. It is the number one target for coming nRF Connect apps. In addition, custom applications can be made and downloaded to the dongle. It has a user programable RGB LED, a green LED, a user programmable button as well as 15 GPIO accessible from castellated solder points along the edge.

Free software development tools, including the nRF Connect SDK, are available to download from www.nordicsemi.com

Bluetooth 5 - Longer range, and higher throughput

The nRF52840 SoC is ready to take advantage of the considerable performance improvements for Bluetooth LE with the arrival of the Bluetooth 5 specification. Of greatest importance is the support for longer range (up to x4 compared to Bluetooth 4.x) and doubling of on-air data rate, up to 2 Mbs from 1 Mbs in Bluetooth 4.x

Key features

- Bluetooth 5.2 ready multiprotocol radio
  - 2 Mbps
  - Long Range
  - Advertising Extensions
  - Channel Selection Algorithm #2 (CSA #2)
- IEEE 802.15.4 radio support
  - Thread
  - Zigbee
- Arm® Cortex™-M4 with floating point support
- DSP instruction set
- Arm CryptoCell CC310 cryptographic accelerator
- 15 GPIO available via edge castellation
- USB interface direct to nRF52840 SoC
- Integrated 2.4 GHz PCB antenna
- 1 user-programmable button
- 1 user-programmable RGB LED
- 1 user-programmable LED
- 1.7-5.5 V operation from USB or external

Applications

- Advanced wearables
  - Advanced personal fitness devices
  - Connected health
- IoT
  - Connected home sensors and controllers
  - Industrial IoT sensors and controllers
- Interactive entertainment devices
  - Advanced remote controls
  - Gaming controllers
  - Virtual/Augmented Reality applications

High link budget for in-home applications

The nRF52840 SoC is the ideal solution for smart connected home applications. It supports both Bluetooth 5's long range feature and also 802.15.4 which is already a popular technology for home networking protocols. With a maximum output power of 8 dBm a total link budget of >111 dBm is achievable for achieving robust communications through objects within the home.

	2 Mbs (New)	High throughput
Bluetooth 5 data rates	1 Mbs	Existing Bluetooth LE data rate
	500 kbs (New)	Longer range
	125 kbs (New)	Longest range

Arm CryptoCell 310

The nRF52840 features an on-chip Arm CryptoCell 310 cryptographic hardware accelerator. CryptoCell offers a wide range of ciphers and security features for building solid security into applications from the ground up. Use of CryptoCell also makes associated security operations run faster and uses less processing time and power than equivalent operation carried out in software by the CPU.

OTA-DFU

The nRF52840 SoC is supported by Over-the-Air Device Firmware Upgrade (OTA-DFU). This allows for in the field updates of application and/or protocol stack.

nRF Connect SDK

The nRF Connect SDK is the software development kit for the nRF52 Series development kits. It supports development of Bluetooth Low Energy, Thread and Zigbee applications. It integrates the Zephyr RTOS, protocol stacks, samples, hardware drivers and much more.

The nRF52840 Dongle is available through Nordic Semiconductors distribution network.

nRF52840 Dongle compatible SDKs

nRF Connect SDK	Scalable and unified SDK with protocol stacks, libraries, hardware drivers and the Zehpyr RTOS
nRF5 SDK	Not recommended for new designs, supported in maintenance mode for existing users

Related products

nRF52840 DK	Development kit for the nRF52811 and nRF52840 SoCs
nRF52 DK	Development kit for the nRF52810 and nRF52832 SoCs
nRF52840	SoC for Bluetooth LE/Bluetooth mesh/802.15.4/Thread/Zigbee/ANT/2.4 GHz
nRF52832	SoC for Bluetooth LE/Bluetooth mesh/ANT/2.4 GHz
nRF52811	SoC for Bluetooth LE/802.15.4/Thread/Zigbee/ANT/2.4 GHz
nRF52810	SoC for Bluetooth LE/ANT/2.4 GHz
nRF Connect SDK	Primary SDK for the nRF52840 Dongle and nRF52 Series development kits
Power Profiler Kit II	Hardware tool for current measurement and power profiling your applications

Ordering information

nRF52840-Dongle	Development dongle for the nRF52840 SoC

Nordic global presence

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For more information please visit: nordicsemi.com/nRF52840-dongle