nRF51 DK

Development Kit for Bluetooth Smart, ANT and 2.4GHz applications.

Product Overview
The nRF51 DK is a single-board development kit for Bluetooth® Smart, ANT and 2.4GHz proprietary applications using the nRF51 Series SoC. This kit supports both development for both nRF51822 and nRF51422 SoCs.

The kit is compatible with the Arduino Uno Revision 3 standard, making it possible to use 3rd-party shield that are compatible to this standard with the kit.

The kit supports the standard Nordic tool-chain software using Keil, IAR and GCC. The kit also supports ARM® mbed tool-chain for rapid prototyping and development using mbed’s cloud-based IDE and tool-chain with an extensive range of open-source software libraries. Program/Debug options on the kit are Segger J-Link OB for standard tool-chain and CMSIS-DAP for mbed. The kit gives access to all I/O and interfaces via connectors and has 4 LEDs and 4 buttons which are user-programmable.

A range of software examples are available from the nRF51 Software Development Kit (SDK) to support Bluetooth Smart, ANT and 2.4GHz applications.

KEY FEATURES
• Affordable, Rapid prototyping and development solution for nRF51 Series SoCs
• Kit supports both nRF51822 and nRF51422 development
• Supports Bluetooth Smart, ANT and 2.4GHz proprietary development
• Arduino Uno Rev. 3 compatible connector for use with 3rd party shields
• ARM mbed enabled
• All I/O and interfaces available via connectors
• Segger J-Link OB and ARM CMSIS-DAP Program/Debug supported
• Support for Program/Debug of external target boards
• Integrated PCB antenna
• Connector for RF measurements
• Pins for power consumption measurements
• Coin-cell battery holder
• 3.6v - 1.6v, battery and USB, external

APPLICATIONS
• Internet of Things (IoT) - Sensors and Hubs
• Wearables – Sensors and Hubs
• Accessories – Sensors and Hubs
• Desktop peripherals
• Remote controls
• Sports & Medical
• Smartwatch
• Smart home sensors
• Toys
• Industrial sensors
• A4WP wireless charging control

KIT CONTENT
• nRF51 DK board
• 2032 battery
• 5 nRF51 Series SoC samples
nRF51 Series software architecture
The nRF51 Series software architecture offers a clean separation between application code and Nordic’s embedded protocol stacks (called Soft Devices). This means compile, link and run-time dependencies with the protocol stack and associated de-bugging challenges are removed. Application code can be developed and compiled independently of the protocol stack. This simplifies overall development efforts and reduces the possibility, and complexity of bugs during development.

SoftDevices
The nRF51 DK is supported by a range of protocol stacks. These Nordic protocol stacks are known as SoftDevices and complement the nRF51 Series SoCs. SoftDevices can support Bluetooth Smart, ANT and Bluetooth Smart/ANT combinations. SoftDevices are pre-compiled binary files for nRF51 Series SoCs and are available from Nordic Semiconductor as downloads. This brings maximum flexibility to application development and allows the latest stack version and associated features to be programmed into the nRF51 Series SoC.

nRF51 DK compatible SoftDevices
<table>
<thead>
<tr>
<th>SoftDevice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S110</td>
<td>Bluetooth Smart peripheral stack</td>
</tr>
<tr>
<td>S120</td>
<td>Bluetooth Smart 8-link central stack</td>
</tr>
<tr>
<td>S130</td>
<td>Bluetooth Smart concurrent central/peripheral/broadcaster/observer stack</td>
</tr>
<tr>
<td>S210</td>
<td>ANT/ANT+ 8 link stack</td>
</tr>
<tr>
<td>S310</td>
<td>Bluetooth Smart peripheral/ANT 8-link stack</td>
</tr>
</tbody>
</table>

OTA-DFU
nRF51 Series SoCs support an Over-The-Air Device Firmware Update (OTA-DFU) feature. This allows for wireless updates of application code and/or software stacks.

nRF51 Series Software Development Kit
The nRF51 Software Development Kit [SDK] is available from Nordic Semiconductor to support the nRF51 Series SoCs. The nRF51 SDK contains a wide range of software modules, complete examples and useful utilities. The nRF51 SDK is a great starting point for beginning building your applications.

SoftDevices and the nRF51 SDK are available to download at www.nordicsemi.com

The nRF51 DK is supported by a number of tool-chains. Nordic offers support for the following:
- Keil MDK
- IAR Workbench
- GCC
- ARM mbed

About mbed
Mbed is a platform for developing smart devices that are based on 32-bit ARM Cortex™-M microcontrollers. It is designed to provide a highly productive solution for rapid prototyping and product development, with a focus on connected Internet of Things devices. Mbed offers browser-based software development tools in the cloud allowing a high degree of flexibility in how you approach your software development.

About Arduino Uno Rev 3 connector standard
The Arduino Uno Rev. 3 is a popular HW format for simple, rapid prototyping using Arduino Uno compatible shields. Shields conforming to the Arduino Uno Rev. 3 standard can be used with the nRF51 DK.

OTA-DFU
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RELATED PRODUCTS
- nRF51822 Bluetooth Smart and 2.4GHz proprietary multi-protocol SoC
- nRF51422 ANT/Bluetooth Smart multi-protocol SoC
- nRF51 Dongle USB Dongle for development and test of nRF51 Series SoC

ORDER INFORMATION
- nRF51-DK Development Kit for Bluetooth Smart, ANT and 2.4GHz applications

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OTA-DFU UPDATES DEVICE APPLICATION AND/OR PROTOCOL STACK
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