



Software
development kit for
Kinetis® and LPC
MCUs and i.MX RT
crossover processors

MCUXpresso Software Development Kit

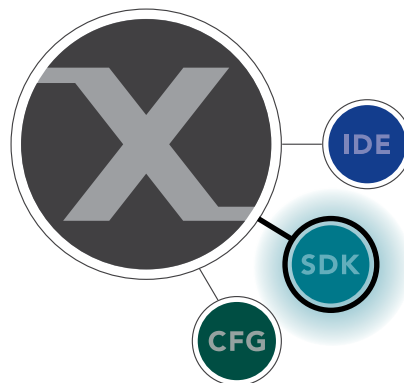
The MCUXpresso software development kit (SDK) is a pre-integrated and thoroughly tested collection of open-source software components for Kinetis and LPC MCUs and i.MX RT crossover processors based on Arm® Cortex®-M cores.

MCUXpresso SOFTWARE DEVELOPMENT KIT

Created as a software framework and reference for application development with NXP's microcontrollers and crossover processors based on Cortex-M cores, including Kinetis and LPC MCUs and i.MX RT crossover processors, the MCUXpresso SDK includes production-grade software with pre-integrated real-time operating system (RTOS), peripheral drivers, stacks and middleware, reference software, and more. The MCUXpresso SDK is available in custom downloads based on user selections of MCU, evaluation board, and optional software components.

The MCUXpresso SDK is designed with high-quality processes, is robustly validated across multiple toolchains, and is production-ready. All peripheral drivers are developed in compliance with MISRA-C guidelines and analyzed using Coverity® static analysis tools.

- ▶ Pre-integrated, production-grade software including peripheral drivers, connectivity stacks, middleware and RTOS
- ▶ Usage examples for all drivers, stacks and middleware plus sample applications make getting started easy
- ▶ Customizable downloads based on MCU, evaluation board, and component selections



MCUXpresso SDK is part of the cohesive suite of MCUXpresso Software and Tools, and is inherently compatible with the MCUXpresso Integrated Development Environment (IDE) and MCUXpresso Config Tools.

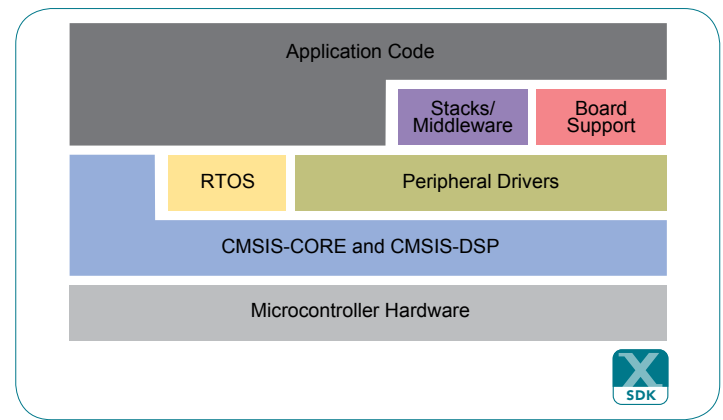
Designed to ease and accelerate embedded system development and optimization, the MCUXpresso Software and Tools bring high-quality comprehensive enablement to NXP's powerhouse portfolio of microcontrollers built on Cortex-M cores. A shared software environment enables easy migration and scalability between Kinetis, LPC and i.MX RT product portfolios.



FEATURES

- ▶ Architecture
 - Arm CMSIS-CORE startup and device header files
 - CMSIS-DSP standard libraries
 - Open-source peripheral drivers that provide stateless, high performance, easy-to-use APIs
 - Optional DMA support for communication peripherals
 - Optional delivery as CMSIS Device Family Pack
- ▶ Quality
 - Production-grade software
 - All drivers and startup code are MISRA-C:2004 compliant
 - Checked with Coverity static analysis tools
- ▶ Integrated RTOS kernel
 - Amazon FreeRTOS™ v1.4.0
 - RTOS-native driver wrappers
- ▶ Integrated stacks and middleware:
 - USB device, host, and OTG stack with comprehensive USB class support
 - USB Type-C Power Delivery Stack
 - Amazon Web Service (IoT device SDK)
 - QCA Wi-Fi Stacks
 - IoT sensing SDK (ISSDK)
 - FatFS, a FAT file system for embedded systems
 - LittleFS, a high-integrity embedded file system for IoT devices
 - lwIP, a lightweight TCP/IP stack
 - Connectivity middleware including: Thread, BLE, 802.15.4 MAC
 - Encryption software utilizing the hardware acceleration
 - mbed™ TLS a lightweight SSL/TLS library
 - WolfSSL, a lightweight SSL/TLS library
 - SDMMC, a software component supporting SD cards and eMMC
 - EMV L1 that complies to EMV-v4.3_Book_1 specification
 - DMA Manager, a software component for managing on-chip DMA resources
 - MCU-boot, a software component for building flash-resident bootloaders and flashloaders
 - And more

MCUXpresso SDK BLOCK DIAGRAM



- ▶ Supported toolchains:
 - MCUXpresso IDE
 - IAR Embedded Workbench®
 - Arm Keil® Microcontroller Development Kit
 - GNU Arm Embedded Toolchain compiler
 - Arm Mbed IoT Device Platform
- ▶ Software examples demonstrating the usage of peripheral drivers, RTOS wrapper drivers, middleware and RTOSes

BUILD YOUR OWN SDK

The MCUXpresso SDK is conveniently packaged and delivered as a custom download based on user selections of MCU, evaluation board, and optional software components. These custom packages are inherently smaller in size and make the MCUXpresso SDK much more manageable than other “one size fits all” SDKs.



To download the MCUXpresso SDK based on platform or device, simply visit <https://MCUXpresso.nxp.com>, and click on “Select Development Board” to get started.

GET STARTED

www.nxp.com/MCUXpresso/sdk

Join the MCUXpresso community:

<https://community.nxp.com/community/MCUXpresso/MCUXpresso-sdk>

Professional support and services: www.nxp.com/services

www.nxp.com/MCUXpresso/SDK

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