Freescale Semiconductor, Inc.
Release Notes

Document Number: KDS200RN
Rev. 0 11/2014

Kinetis Design Studio V2.0.0 Release Notes

1 Overview

The Kinetis Design Studio IDE is a complimentary integrated development environment for Kinetis MCUs that enables robust editing, compiling and debugging of your designs. Based on free, open-source software including Eclipse, GNU Compiler Collection (GCC), GNU Debugger (GDB), and others, the Kinetis Design Studio IDE offers designers a simple development tool with no code-size limitations. Furthermore, Processor Expert software enables your design with its knowledge base and helps create powerful applications with a few mouse clicks.

Contents

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2 Release Contents

- Eclipse Kepler 4.3
- Host operating systems:
  - Windows® 7/8 (32bit binaries running on 32 and 64-bit OS)
  - Linux® (Ubuntu) (64bit binaries)
- GDB debugger with support for the following debug interface hardware:
  - SEGGER J-Link (w/SEGGER GDB Server)
  - P&E Multilink (w/P&E GDB Server)
  - CMSIS-DAP (w/OpenOCD GDB and OpenSDA embedded circuit)
  - Command Line (CL) debugging with GDB and OpenOCD TCL
- Additional device support is added through Kinetis SDK Eclipse updates.
- Support for additional downloadable Eclipse plug-ins including RTOS-awareness (including MQX™ and FreeRTOS)
- Project wizard to create bare metal, Kinetis SDK and Processor Expert software projects
- Processor Expert software with support for Kinetis SDK
- Languages supported: Assembly, C and C++ (all with no code size restrictions)
- Libraries included: newlib 1.19 and newlib-nano 1.0
- Industry standard Eclipse Framework with CDT for C/C++
- Kinetis SDK peripheral drivers and CMSIS compliant startup code
- GNU ARM® Eclipse plugins for managed make projects
- Make file projects
- ARM GNU gcc build tools (4.8)
- Support for MQX project creation and MQX kernel awareness (available as MQX download)
- Open for any Eclipse plugins either from the Eclipse ecosystem or from partners

3 What's New in this Release

The V2.0.0 release comes with the following major changes:

- **SDK V1.1.0 Support**: Support for the upcoming Kinetis SDK V1.1.0 release has been added.
- **Processor Expert V10.4.2**: This release comes with an updated Processor Expert V10.4.2 release which supports both the V1.0.0 and V1.1.0 of the Kinetis SDK. Adding new drivers to an SDK project will automatically add the necessary include folders to the project. The Processor Expert components for the SDK are part of the SDK and need to be installed from the SDK installation folder, see next section.
- **New Project Wizard**: The wizard features an auto-filter feature for device selection and now generates automatically default run/debug configurations for OpenOCD/CMSIS-DAP, P&E and Segger run control devices.

- **Bug Fixes**: This release contains numerous bug fixes, enhancements and performance. A detailed list of Processor Expert fixes can be found after installation in <installation_path>\eclipse\ProcessorExpert folder.

Changes from V1.1.1 to V2.0.0:

General Changes

- This release includes Ubuntu/Centos/RHE 64bit Linux binaries. 32bit binaries are not included any more.

Documentation Changes

- KDS User guide has been updated with correct names for GNU/Linux packages.

Debugging Changes

- Updated P&E and Segger GDB Server files and plugins.
- Debugger run control drivers support now 64bit Linux.
- P&E added support for TWR-K24F120M and corresponding firmware.
- Added Power-Down functionality for P&E GDB server connection.

Bug Fixes

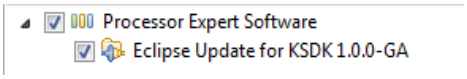
- Various bug fixes.

4 Using Kinetis Design Studio with the Kinetis SDK

The Kinetis SDK comes with support for the Kinetis Design Studio which needs to be installed first. Without the Kinetis SDK Eclipse Update Files into the Kinetis Design Studio, the Kinetis SDK projects are not supported.

To install the necessary files:

1. Have the Kinetis SDK installed (e.g. in C:\Freescale\KSDK_1.0.0)
2. In Kinetis Design Studio, use the menu *Help > Install New Software*
3. Press the Add button
4. In the 'Add Repository' dialog, use the 'Archive' button to browse for the .zip file inside **tools\eclipse_update** of the SDK
5. Press OK
6. Select all packages (screenshot shown for Kinetis SDK V1.0.0):



7. Press 'Next >' to install the software and to complete the installation.
8. A restart of Eclipse is needed at the end of the installation.

5 Updates

NOTE: Before running the Eclipse updater, make sure that you have the needed privileges (read/write permissions) for your Eclipse installation folder when running Eclipse.

After the release of the product, additional updates can be installed through the Kinetis Design Studio Update Site (http://freescale.com/lgfiles/updates/Eclipse/KDS):

1. In Kinetis Design Studio, use the menu *Help > Install New Software*
2. Select from the Freescale KDS Update Site (http://freescale.com/lgfiles/updates/Eclipse/KDS)
3. Choose and install the updates

To update the P&E debugging support, use the following Eclipse Update site:
http://www.pemicro.com/eclipse/updates

To update the Segger debugging support, download the latest Segger software from http://www.segger.com/jlink-software.html and install it. It will detect the installation folder of KDS and updates the drivers.

To update the GNU ARM Eclipse (http://gnuarmeclipse.livius.net/) build tools, use the following Eclipse Update site:
http://gnuarmeclipse.sourceforge.net/updates

6 Devices Supported

Kinetis Design Studio supports a broad range of Freescale Kinetis devices, and more can be added with the Eclipse updater mechanism and serviced packs.

The following devices are supported with the Kinetis SDK (requires Kinetis SDK installed and Kinetis SDK Eclipse Update Files installed in KDS):

Devices supported with **Kinetis SDK V1.0.0 installed**:

- Kinetis K Series
  - K2x Family
    - K22F (100 MHz) Family
      - MK22FN128
    - K22F (120 MHz) Family
      - MK22FN256
      - MK22FN512
      - MK22FN1M0
      - MK22FX512
    - K24F (120 MHz) Family
      - MK24FN1M0
  - K6x Family
    - K63F (120 MHz) Family
      - MK63FN1M0

- K64F (120 MHz) Family
  - MK64FN1M0
  - MK64FX512
- Kinetis V Series
  - KV3x Family
    - KV30 (100 MHz) Family
      - MKV30F128
    - KV31 (100 MHz) Family
      - MKV31F128
    - KV31 (120 MHz) Family
      - MKV31F128
      - MKV31F256

Processors Supported (installed with KDS V2.0.0):

- MKE0x / KEA
  - KE02Z / KEAZN (20MHz,40MHz)
    - MKE02Z16xxx2
    - MKE02Z16xxx4
    - MKE02Z32xxx2
    - MKE02Z32xxx4
    - MKE02Z64xxx2
    - MKE02Z64xxx4
    - SKEAZN16xxx2
    - SKEAZN32xxx2
    - SKEAZN64xxx2
  - KE04Z / KEAZN (48MHz)
    - MKE04Z128xxx4
    - MKE04Z64xxx4
    - MKE04Z8xxx4
    - SKEAZN8xxx4
  - KE06Z / KEAZ (48MHz)
    - MKE06Z128xxx4
    - MKE06Z64xxx4
    - SKEAZ128xxx4
    - SKEAZ64xxx4

- MK10
  - MK10D (50MHz)
    - MK10DN128xxx5
    - MK10DN32xxx5
    - MK10DN64xxx5
    - MK10DX128xxx5
    - MK10DX32xxx5
    - MK10DX64xxx5
  - MK10D (72MHz)
    - MK10DX128xxx7
    - MK10DX256xxx7
    - MK10DX64xxx7
  - MK10D (100MHz)
    - MK10DN512Zxxx10
    - MK10DN512xxx10
    - MK10DX128Zxxx10
    - MK10DX128xxx10
    - MK10DX256Zxxx10
    - MK10DX256xxx10
  - MK10F (120MHz, 150MHz)
    - MK10FN1M0xxx12
    - MK10FX512xxx12
  - MK11D (50MHz)
    - MK11DN512xxx5
    - MK11DX128xxx5
    - MK11DX256xxx5
  - MK12D (50MHz)
    - MK12DN512xxx5
    - MK12DX128xxx5
    - MK12DX256xxx5

- MK20
  - MK20D (50MHz)
    - MK20DN128xxx5
    - MK20DN32xxx5
    - MK20DN64xxx5
    - MK20DX128xxx5
    - MK20DX32xxx5
    - MK20DX64xxx5
  - MK20D (72MHz)
    - MK20DX128xxx7
    - MK20DX256xxx7
    - MK20DX64xxx7
  - MK20D (100MHz)
    - MK20DN512Zxxx10
    - MK20DN512xxx10
    - MK20DX128Zxxx10
    - MK20DX128xxx10
    - MK20DX256Zxxx10
    - MK20DX256xxx10
  - MK20F (120MHz, 150MHz)
    - MK20FN1M0xxx12
    - MK20FX512xxx12
  - MK21D (50MHz)
    - MK21DN512xxx5
    - MK21DX128xxx5
    - MK21DX256xxx5
  - MK21F (120MHz)
    - MK21FN1M0xxx12
    - MK21FX512xxx12
  - MK22D (50MHz)
    - MK22DN512xxx5
    - MK22DX128xxx5
    - MK22DX256xxx5
  - MK22F (120MHz)
    - MK22FN1M0xxx12
    - MK22FX512xxx12
  - MK24F (120MHz)
    - MK24FN1M0xxx12

◢ MK30 ◢ MK30D (72MHz) MK30DX128xxx7 MK30DX256xxx7 MK30DX64xxx7 ◢ MK30D (100MHz) MK30DN512Zxxx10 MK30DN512xxx10 MK30DX128Zxxx10 MK30DX128xxx10 MK30DX256Zxxx10 MK30DX256xxx10	◢ MK40 ◢ MK40D (72MHz) MK40DX128xxx7 MK40DX256xxx7 MK40DX64xxx7 ◢ MK40D (100MHz) MK40DN512Zxxx10 MK40DN512xxx10 MK40DX128Zxxx10 MK40DX128xxx10 MK40DX256Zxxx10 MK40DX256xxx10	◢ MK50 ◢ MK50D (72MHz) MK50DX128xxx7 MK50DX256xxx7 MK51DX128xxx7 MK51DX256xxx7 ◢ MK50D (100MHz) MK50DN512Zxxx10 MK50DN512xxx10 MK50DX256Zxxx10 MK50DX256xxx10 MK51DN256Zxxx10 MK51DN256xxx10 MK51DN512Zxxx10 MK51DN512xxx10 MK51DX256Zxxx10 MK51DX256xxx10 MK52DN512Zxxx10 MK52DN512xxx10 MK53DN512Zxxx10 MK53DN512xxx10 MK53DX256Zxxx10 MK53DX256xxx10

◢ MK60 ◢ MK60D (100MHz) MK60DN256Zxxx10 MK60DN256xxx10 MK60DN512Zxxx10 MK60DN512xxx10 MK60DX256Zxxx10 MK60DX256xxx10 ◢ MK60F (120MHz, 150MHz) MK60FN1M0xxx12 MK60FN1M0xxx15 MK60FX512xxx12 MK60FX512xxx15 ◢ MK61F (120MHz, 150MHz) MK61FN1M0xxx12 MK61FN1M0xxx15 MK61FX512xxx12 MK61FX512xxx15 ◢ MK63F (120MHz) MK63FN1M0xxx12 ◢ MK64F (120MHz) MK64FN1M0xxx12 MK64FX512xxx12	◢ MK70 ◢ MK70F (120MHz, 150MHz) MK70FN1M0xxx12 MK70FN1M0xxx15 MK70FX512xxx12 MK70FX512xxx15	◢ MKL0x ◢ KL02Z (48 MHz) MKL02Z16xxx4 MKL02Z32xxx4 MKL02Z8xxx4 ◢ KL04Z (48 MHz) MKL04Z16xxx4 MKL04Z32xxx4 MKL04Z8xxx4 ◢ KL05Z (48 MHz) MKL05Z16xxx4 MKL05Z32xxx4 MKL05Z8xxx4
◢ MKL1x ◢ KL14Z (48 MHz) MKL14Z32xxx4 MKL14Z64xxx4 ◢ KL15Z (48 MHz) MKL15Z128xxx4 MKL15Z32xxx4 MKL15Z64xxx4 ◢ KL16Z (48 MHz) MKL16Z128xxx4 MKL16Z256xxx4 MKL16Z32xxx4 MKL16Z64xxx4	◢ MKL2x ◢ KL24Z (48 MHz) MKL24Z32xxx4 MKL24Z64xxx4 ◢ KL25Z (48 MHz) MKL25Z128xxx4 MKL25Z32xxx4 MKL25Z64xxx4 ◢ KL26Z (48 MHz) MKL26Z128xxx4 MKL26Z256xxx4 MKL26Z32xxx4 MKL26Z64xxx4	◢ MKL3x ◢ KL34Z (48 MHz) MKL34Z64xxx4 ◢ KL36Z (48 MHz) MKL36Z128xxx4 MKL36Z256xxx4 MKL36Z64xxx4
◢ MKL3x ◢ KL34Z (48 MHz) MKL34Z64xxx4 ◢ KL36Z (48 MHz) MKL36Z128xxx4 MKL36Z256xxx4 MKL36Z64xxx4	◢ MKV1x ◢ KV10Z (75 MHz) MKV10Z16xxx7 MKV10Z32xxx7	

7 Known Issues and Workarounds

For latest information, training material and Frequently Asked Questions, visit the Kinetis Design Studio Community at https://community.freescale.com/community/kinetis-design-studio

- **Windows Command Line Limit**: Under Windows there is a command line length limitation of 8192 characters. If the command line length to compiler or linker exceed that limit, the command line gets truncated and the build will fail.
  Workaround: Shorten the path to files and folders as much as possible. Instead of absolute paths, use project relative paths or use the Windows 'subst' drive letters to create shorter paths to the sources. Alternatively, build libraries and link large projects with libraries instead of individual object files.
- **Administrative rights to Eclipse installation folder for updates**: Users must have write access to the KDS installation directory to install new Eclipse plugins. This means that by default on Linux users need to launch KDS with root privileges when installing new plugins.
- **Conditional watchpoints and breakpoints:** Conditional breakpoints and watchpoints, including those using ignore counts, do not work always.
  Workaround: do not use conditions for breakpoints and watchpoints, instead check for condition in the code and set a normal breakpoint.
- **Symbolic Link to libudev for Linux**: Like many other Linux packages, users of Ubuntu 14.04 must create a symbolic link to libudev.
  Workaround:
  ln -s /lib/x86_64-linux-gnu/libudev.so.1.3.5 /usr/lib/libudev.so.0
- **Installation time on Ubuntu**: Users attempting to install KDS using the Ubuntu Software Center may find that the Software Center claims to be installing for a long period of time, then returns to the start screen without emitting an error or installing the product. This is because the Software Center runs a quality checking tool, lintian, on the package before installing it. This tool is not implemented in a scalable manner, and doesn't handle the large KDS packages well. Users of high-end machines may find they are able to install successfully.
  Workdaround: install using the command-line tool: dpkg
- **Timout on Linux for P&E connection**: Under Linux connection with P&E connection fails.
  Workaround: Increase the connect-timeout setting in PEMicro debug configurations, in which case the firmware on the PEMicro multilink device requires updating.
- **Eclipse Welcome Screen**: Sometimes the gray Eclipse welcome screen banner doesn't correctly fill the full width of the screen, as a result the Workbench button doesn't render correctly, as it employs white text and appears on a white background.
  Workaround: close the welcome screen.
- **Build binary not found**: Occasionally after a successful build Eclipse does not find the built binary. This can manifest in a number of ways: The project does not show the Binaries meta-folder in the Project Explorer view, when the debug button on the debug toolbar is pressed the Debug configuration fails to launch a debug session because it reports binary file not found.
  Workaround: refresh the project folder (F5 under Windows).
- **Wrong device in Debug Configuration for some SDK Projects**: The new project wizard created debug/launch configuration for Segger might not be created correctly for the following standalone Kinetis SDK releases: KSDK_1.0.0-KL03Z, KSDK_1.0.0-KL43Z and KSDK_1.0.0-KV30F-K02FN. While launching the Segger connection, an error "The selected device "${DEBUGGERSEGGERID}" is unknown to this version of the J-Link software" is shown.

Workaround: in the debugger/launch configuration, change the device to the device used for Segger and P&E.

8 Revision history

Table 12. summarizes revisions to this document.

Table 12. Revision History KDS200RN - V2.0.0 Release Notes.docx

Revision	Change description
Rev. 0	Initial Version

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