

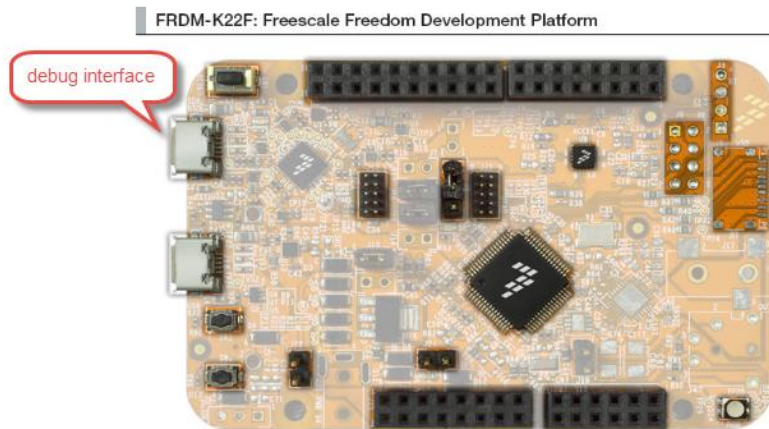
Summary of FRDM-K22F debug interface

By Jennie Zhang

NXP Freedom K22F is an ultra-low-cost development platform for Kinetis K22 MCUs. This board is already widely used among NXP customers.

http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=FRDM-K22F

The FRDM-K22F platform features OpenSDAv2.1, which is a bit different as OpenSDAv2 on FRDM-K64F board. The NXP open source hardware embedded serial and debug adapter running an open source bootloader. This circuit offers several options for serial communication, flash programming, and run-control debugging. User who works with KDS3.0 can choose Segger J-Link OpenSDA, P&E OpenSDA interface, or Mbed interface. For each of the option, user need update debugger firmware first. I will introduce each of them one by one.



1. Segger J-link OpenSDA interface

- Download JLink OpenSDA V2.1(Note: OpenSDA V2 doesn't work for FRDM-K22F board)

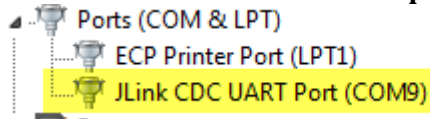
<https://www.segger.com/opensda.html>

- Download latest J-Link software package (Optional, in the case windows can't recognize the interface)

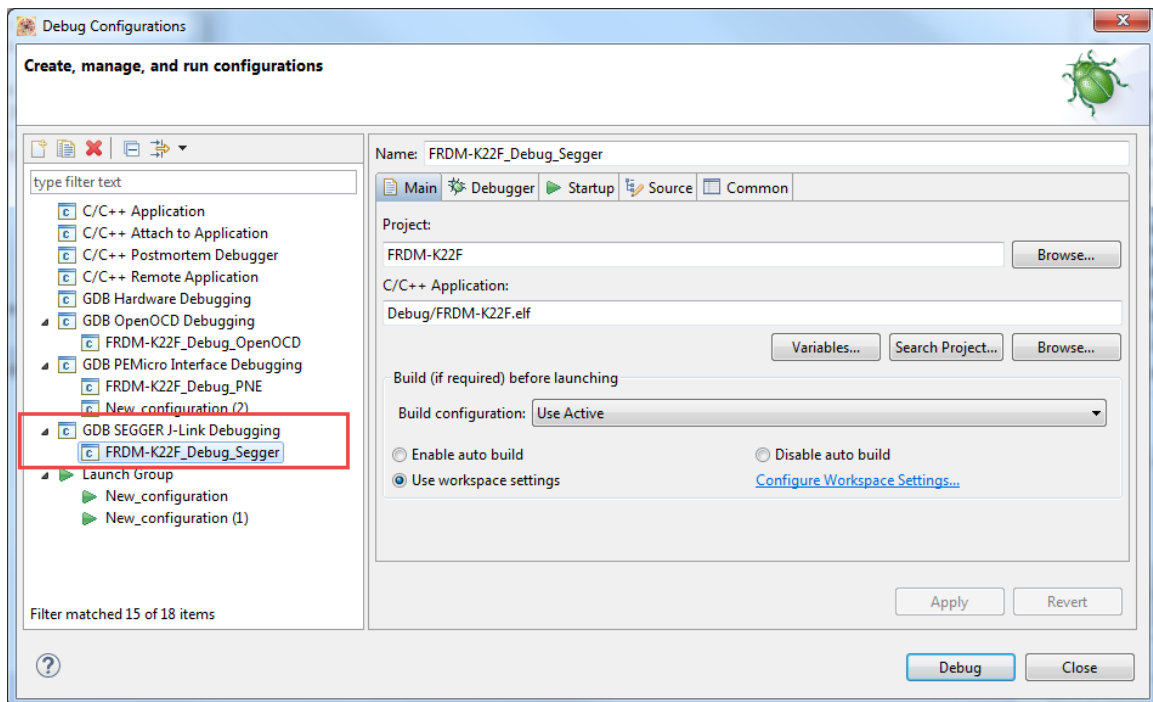
<https://www.segger.com/jlink-software.html>

Segger J-Link OpenSDA Firmware update procedure:

- a. Disconnect all power, external circuits and USB cables.
- b. Press and hold the button marked RESET (circled in picture)
- c. Connect a USB cable with debug interface as shown in above picture
- d. The drive should mount named **BOOTLOADER** in windows explore.
- e. The reset button can now be released
- f. Drag and drop the file JLink_OpenSDA_V2_1_2015-10-13.bin to the USB drive named **BOOTLOADER**
- g. **Remove power**
- h. Install J-Link software package (Optional)
- i. Repower on board normally
- j. **Jlink CDC UART Port will show up in windows device manager.**



- k. Then user can download and debug code via KDS3.0 debugger Segger J-Link OpenSDA interface.



2. P&E OpenSDA interface

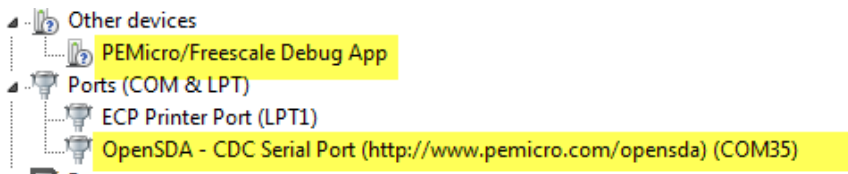
- download Firmware Apps (.zip file)

<http://www.pemicro.com/opensda/>

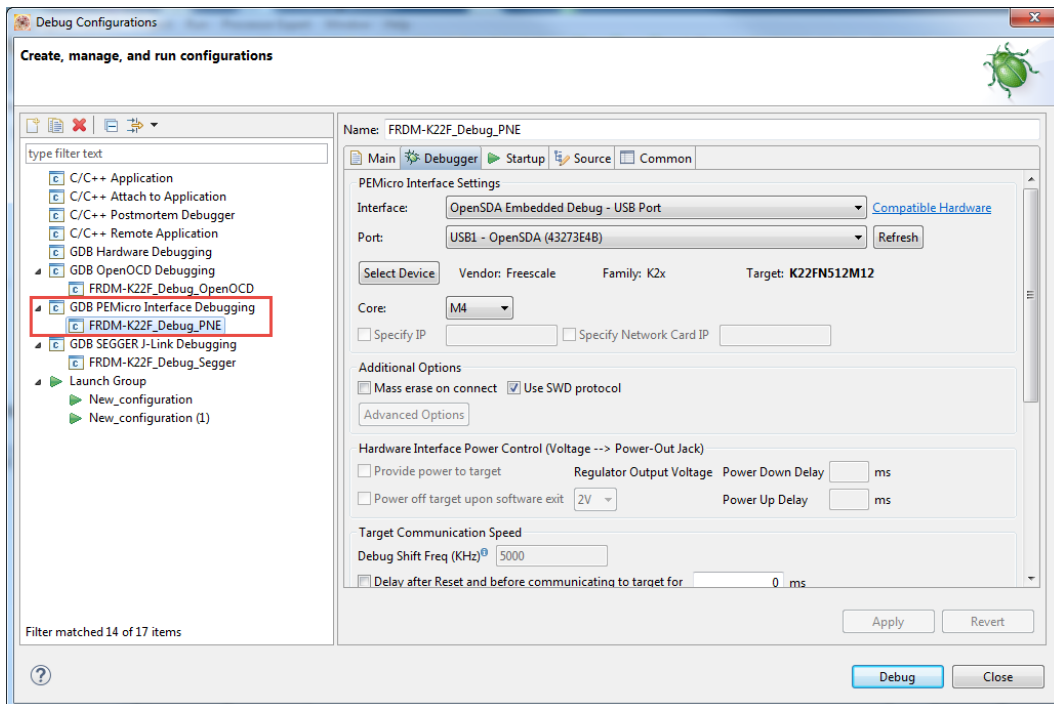
- **Download PEDrivers_install.exe for manual install from above link.** (Optional, in the case windows can't recognize the interface)
<http://www.pemicro.com/Opensda/>

P&E OpenSDA Firmware update procedure:

- Disconnect all power, external circuits and USB cables.
- Press and hold the button marked RESET (circled in picture)
- Connect a USB cable with debug interface as shown in above picture
- The drive should mount named **BOOTLOADER** in windows explore.
- The reset button can now be released
- Drag and drop the file **DEBUG-FRDM-K22F_Pemicro_v108b_for_OpenSDA_v2.1.bin** (enclosed in Firmware Apps) to the USB drive named **BOOTLOADER**
- Remove power**
- Run driver [PEDrivers_install.exe](#). (Optional)
- Repower board normally.
- OpenSDA – CDC Serial Port and PEMicro/Freescale Debug App will show up in windows device manager.**



- Then user can download and debug code via KDS3.0 debugger P&E OpenSDA interface

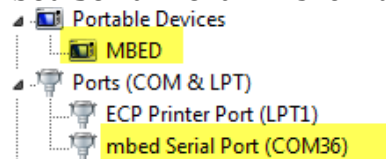


3. Mbed interface.

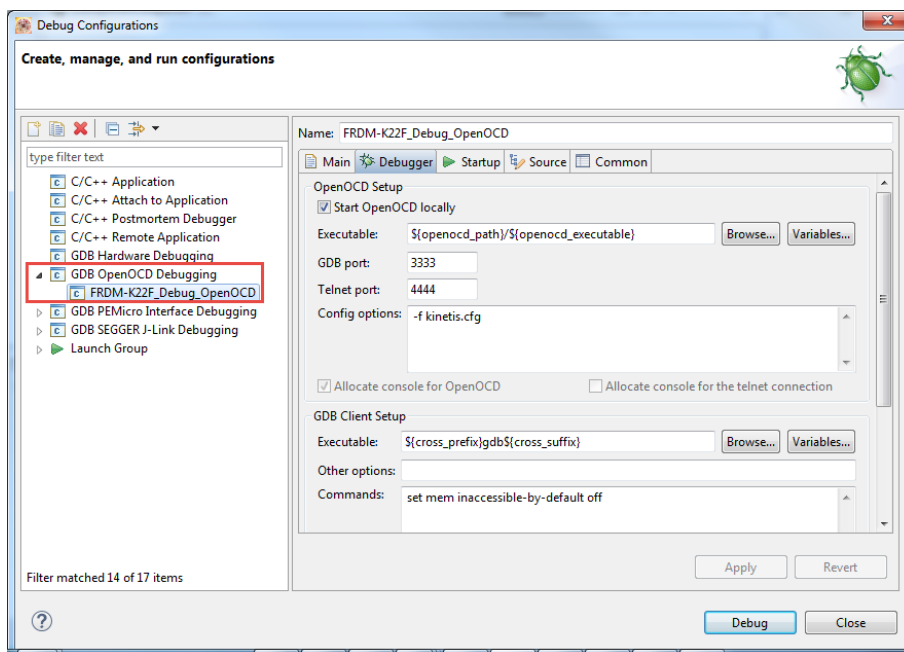
- Download the latest mbed interface upgrade file for the FRDM-K22F
0221_k20dx128_k22f_0x8000.bin
<https://developer.mbed.org/handbook/Firmware-FRDM-K22F>
- Download the mbed Windows serial port driver mbedWinSerial_16466.exe
<https://developer.mbed.org/handbook/Windows-serial-configuration>

Mbed Firmware update procedure:

- Disconnect all power, external circuits and USB cables.
- Press and hold the button marked RESET (circled in picture)
- Connect a USB cable with debug interface as shown in above picture
- The drive should mount named **BOOTLOADER** in windows explore.
- The reset button can now be released
- Drag and drop the file [0221_k20dx128_k64f_0x5000.bin](#) onto the USB drive named **BOOTLOADER**
- Remove power
- Run driver mbedWinSerial_16466.exe.
- Repower board normally.
- Mbed Serial Port** will show up in windows device manager.



- User can download and debug code via KDS3.0 debugger interface OpenOCD



All the related driver and firmware will be enclosed in this article as attachment.

Enjoy KDS + FRDM-K22F debugging ☺