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## KITPF5300SKTEVM Evaluation board

Rev. 1.0 — January 31, 2023 User guide

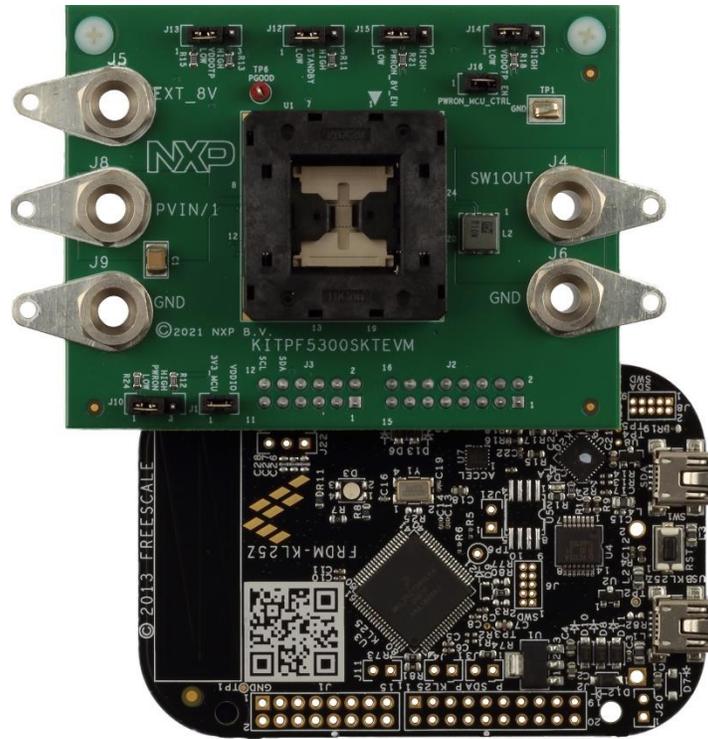


Figure 1 KITPF5300SKTEVM

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## 1 Introduction

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This document is the user guide for the KITPF5300SKTEVM evaluation board. This document is intended for the engineers involved in the evaluation, design, implementation, and validation of the PF5300.

This document covers connecting the hardware, installing the software and tools, configuring the environment and using the kit.

## 2 Getting ready

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Working with the KITPF5300SKTEVM requires the kit contents, additional hardware and a Windows PC workstation with installed software.

### 2.1 Kit contents

- Assembled and tested evaluation board and preprogrammed FRDM-KL25Z microcontroller
- 3.0 ft USB-STD A to USB-B-mini cable
- Jumpers mounted on board

### 2.2 Additional hardware

In addition to the kit contents, the following hardware is necessary or beneficial when working with this kit.

- Power supply with a range of 3.3V to 5.0V

### 2.3 Windows PC workstation

This evaluation board requires a Windows PC workstation. Meeting these minimum specifications should produce great results when working with this evaluation board.

- USB-enabled computer with Windows 7 or Windows 10

### 2.4 Software

Installing software is necessary to work with this evaluation board.

- NXP GUI installation package

## 3 Getting to know the hardware

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The KITPF5300SKTEVM provides a way to OTP programming the PF5300 and conduct basic power up testing of a programmed part. Loading of the DC-DC converter is not allowed.

4.1 KIT featured components

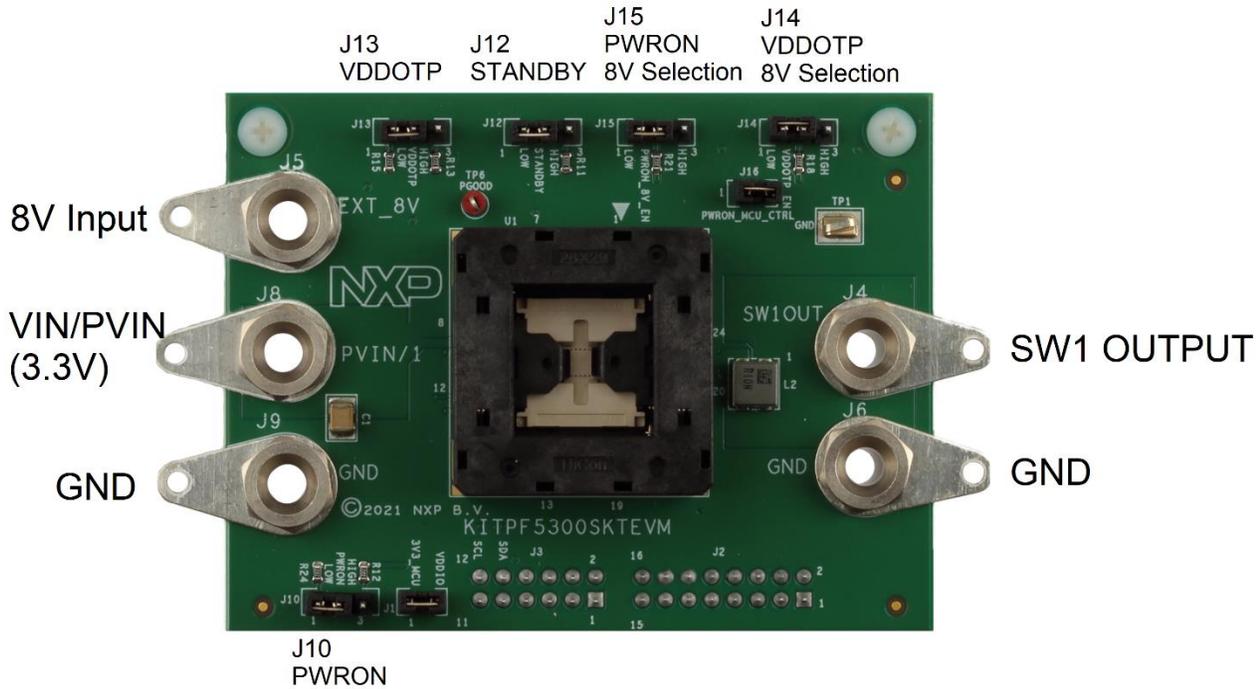


Figure 2. Evaluation board featured component locations on top

Table 1. Connector and Jumper Description

Position	Function	Description
J5	EXT_8V	8V supply input needed for OTP programming
J8	VIN/PVIN	Input power supply (3.3V)
J9, J6	GND	Ground
J4	Output Voltage	Output Voltage
J12	STANDBY	1-2: <b>Default.</b> STANDBY = GND 2-3: STANDBY = VDDIO
J10	PWRON Functional Control	Open: <b>Default.</b> PWRON controlled through J16. 1-2: PWRON = GND 2-3: PWRON = VDDIO Use only if J16 is open.
J13	VDDOTP Configuration	Open: <b>Default.</b> Use for OTP programming. 1-2: Connect to ground. 2-3: Pull up to VDDIO. Use if trying XFAILB functionality
J14	VDDOTP 8V Selection	1-2: Do not apply EXT_8V to VDDOTP/XFAILB pin 2-3: <b>Default.</b> Apply 8V_EXT to VDDOTP/XFAILB pin Open: If evaluating XFAILB functionality
J15	PWRON Configuration	<b>Apply EXT_8V to PWRON pin via MCU control</b> 1-2: Apply EXT_8V/2 to PWRON pin 2-3: <b>Default.</b> Apply EXT_8V to PWRON pin
J16	PWRON Connectivity	Open: PWRON controlled by J10 Closed: <b>Default.</b> PWRON controlled by J15/MCU.
J1	VDDIO supply	Closed: <b>Default</b>

## 5. Installing and configuring software and tools

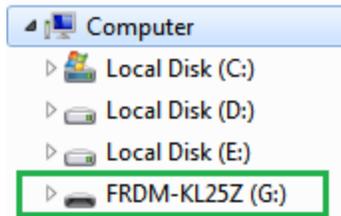
### 5.1. Flashing or updating the GUI firmware

The KITPF5300FRDMEVM is always delivered with the GUI firmware already flashed. If MCU firmware already flashed, you can ignore this section. If it is specified that you need to update the firmware or it is malfunctioning, you can follow these instructions:

#### a. FLASHING Freedom Board FIRMWARE for WINDOWS 7

Steps 1,2 is not required if BOOTLOADER is already loaded in the FRDM Board and its required to start from Step 3.

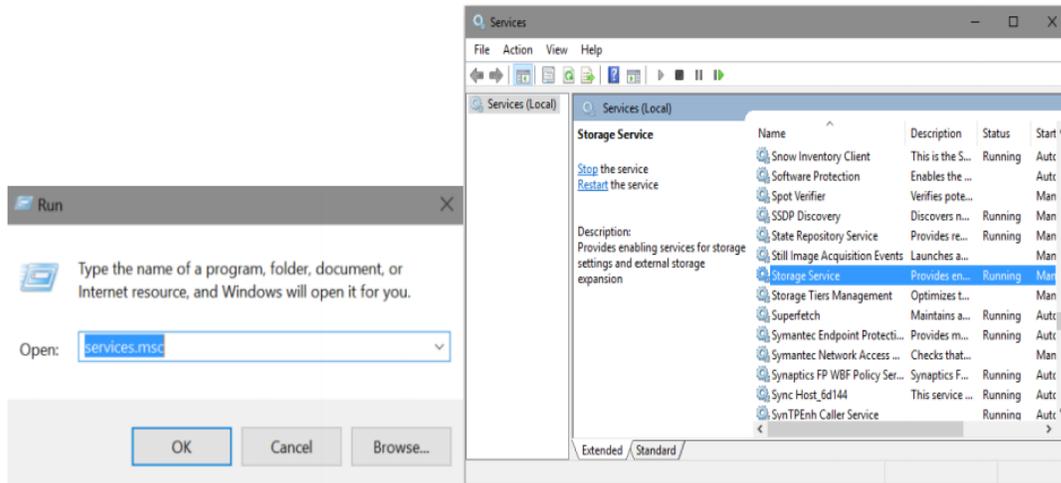
1. Press the RST push button and Connect the USB cable into the SDA port on the Freedom Board.
  - A new “BOOTLOADER” device should appear on the left pane of the File explorer
2. Drag and drop the file “MSD-DEBUG-FRDM-KL25Z\_Pemicro\_v118.SDA” into the BOOTLOADER drive
  - Note: Make sure to allow enough time for the firmware to be saved in the Boot loader
3. Disconnect and reconnect the USB cable into the SDA port
  - This time WITHOUT pressing the RST push button, FRDM\_KL25Z device should appear on the left pane of the File explorer as pictured below.



4. Locate the file “**nxp-gui-fw-frdmkl25z-usb\_hid-pf5300\_v0.3.bin**” or later from the package and drag and drop the file into the FRDM\_KL25Z device.
  - Note: Make sure to allow enough time for the firmware to be saved.
5. Freedom board Firmware is successfully loaded. Disconnect and reconnect the USB cable into the KL25Z USB port.

**b. FLASHING Freedom Board FIRMWARE from WINDOWS 10**

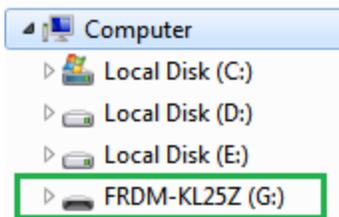
1. Disable the storage services: Run the services, double click on the storage service from the list and press the stop button



Steps 2 and 3 is not required if BOOTLOADER is already loaded in the FRDM Board and its required to start from Step 4.

2. Press the RST push button and Connect the USB cable into the SDA port on the Freedom Board.
  - a. A new “BOOTLOADER” device should appear on the left pane of the File explorer
3. Drag and drop the file “MSD-DEBUG-FRDM-KL25Z\_Pemicro\_v118.SDA” into the BOOTLOADER drive
  - a. Note: Make sure to allow enough time for the firmware to be saved in the Boot loader
4. Disconnect and reconnect the USB cable into the SDA port

- This time WITHOUT pressing the RST push button, FRDM\_KL25Z device should appear on the left pane of the File explorer as pictured below.



5. Locate the file “nxp-gui-fw-frdmkl25z-usb\_hid-pf5300\_v0.2” from the package and drag and drop the file into the FRDM\_KL25Z device.
  - Note: Make sure to allow enough time for the firmware to be saved
6. Freedom board Firmware is successfully loaded. Disconnect and reconnect the USB cable into the KL25Z USB port.

## 5.2. Installing GUI software package

To install the PF5300 NXP GUI Download or obtain the NXPGUI package, unzip an open 1-NXP\_GUI\_Setup folder:

Name	Status	Date modified	Type	Size
0 - Documentation	✓	6/8/2020 10:57 AM	File folder	
1 - NXP_GUI_Setup	↻	6/8/2020 5:26 PM	File folder	
2 - KL25Z_FW	✓	6/4/2020 1:42 PM	File folder	
LICENSE.txt	✓	6/4/2020 11:14 AM	Text Document	3 KB

Then double click on the NXP\_GUI\_version-Setup.exe and follow the instructions.

When installation is finish you can search the application on the windows search bar as “NXPGUI\_Dev” .

## 6. PF5300 NXP GUI

Once your KIT is ready and the NXPGUI\_Dev is installed Launch the KIT from your windows search bar and click to launch.

Once the NXP GUI is opened the below **Kit Selection** window is displayed, check for the following settings and select **OK**.

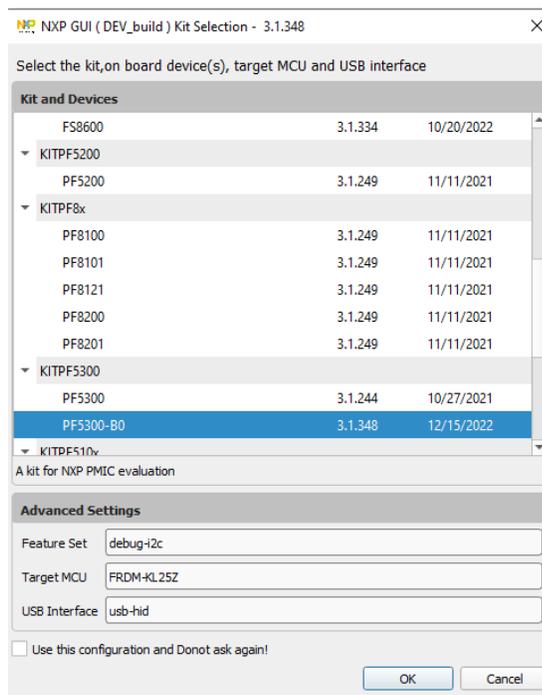
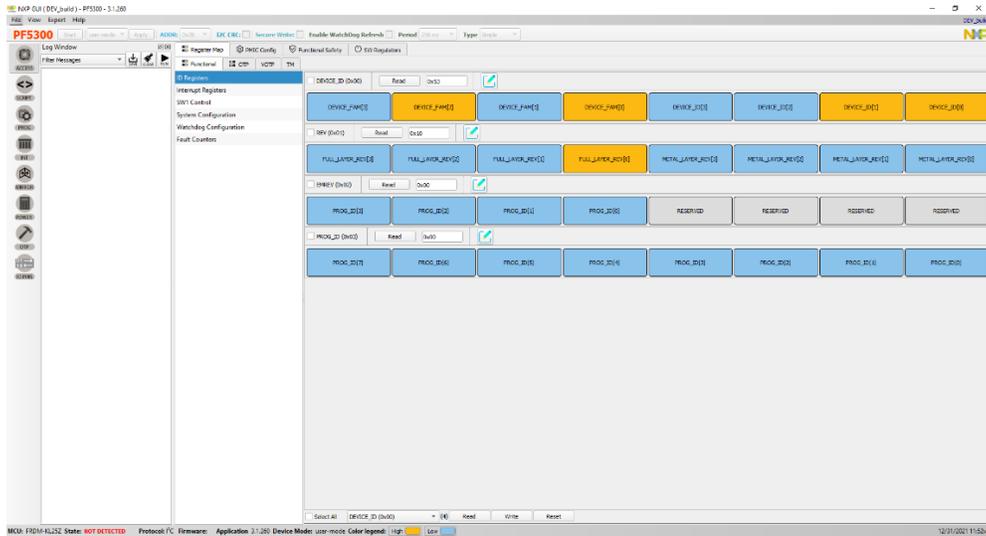


Figure 3. Kit Selection

To avoid the Kit Selection Window on every launch, you can check the box “Use this configuration and do not ask again”. The below window will Open.

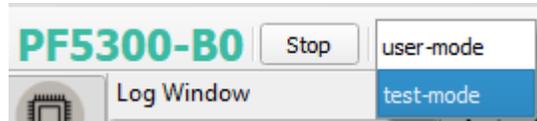


### 7. OTP Programming Instructions

1. Ensure that jumpers in the board are configured per Table 1
2. Connect the FRDMKL25Z board to the socketed board.
3. Connect the mini-USB cable from the USB port of the KL25Z to the PC that will run the GUI
4. Apply 8V to the EXT\_8V connector J5.
5. Apply 3.3V to the VIN/PVIN connector J8
6. Open the GUI and click 'Start' in the top-left



7. Select 'Test Mode' from the menu selection as shown below and click Apply.



8. Go to the PROG tab in the left side selection
9. Select the programming source – either from a script file, or to use the existing GUI configuration
10. Click on the Program button to program the OTP fuses with the selected configuration.

To verify functionality of the programmed part:

1. Turn off EXT\_8V.
2. Move J15 to 1-2.
3. Apply EXT\_8V and check the output voltage.

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