SSE-310 MPS3
BSP Pack User Guide

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Contents

Introduction

This document is a general guide to use the SSE-310 MPS3 BSP pack. The CMSIS pack is to be used with the Corstone SSE-310 AVH FVP and Corstone SSE-310 FPGA for MPS3 v 2.0 (AN555) . The pack contains necessary source files, a linker script file, and a specification document to kick start development for the Corstone-SSE-310, a reference secure-side Blinky example to enable a user to understand uVision project configuration, and a reference Vio example to demonstrate the AVH capabilities for I/O simulation with Python scripts.

This document specifies system prerequisites and explains how to build and run the reference Vio example on the Corstone-SSE-310 AVH FVP. Blinky example can be built and run similarly on both FVP and FPGA.

Terms and Abbreviations

This document uses the following terms and abbreviations.

Terms and abbreviations

Term	Meaning
BSP	Board Support Pack
AWS	Amazon Web Services
AVH	Arm Virtual Hardware
FVP	Fixed Virtual Platform
FPGA	Field Programmable Gate Array
VIO	Virtual I/O

Prerequisites

- Minimum Keil MDK v5.38a

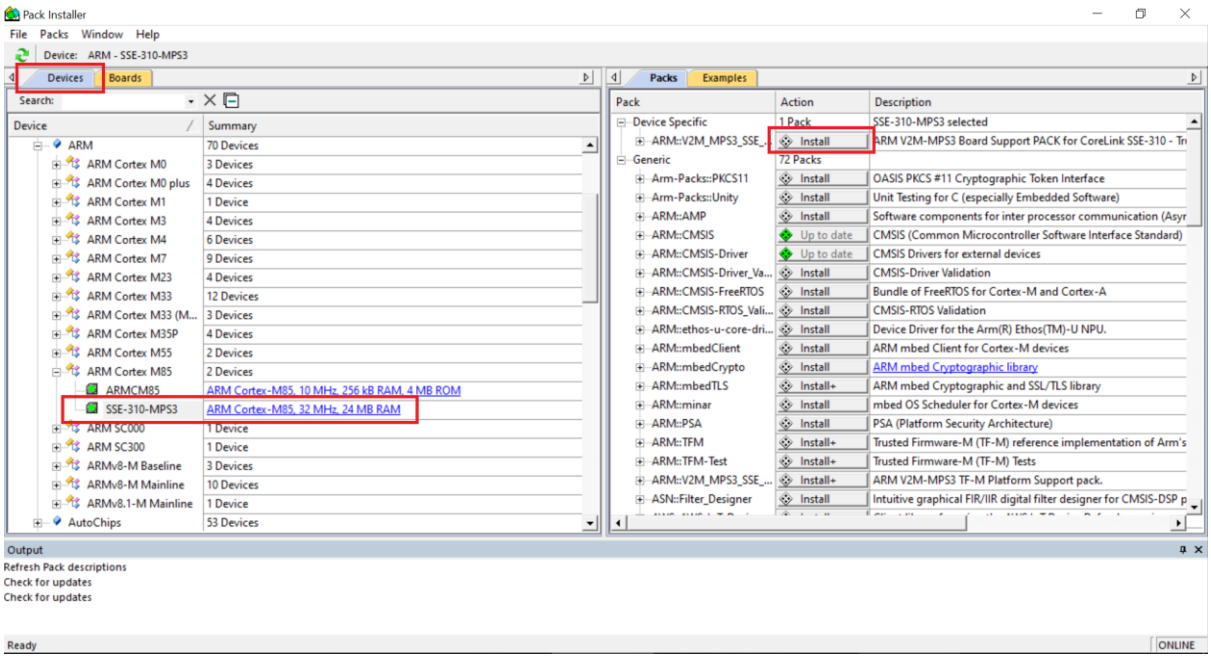
Documents

1. Corstone-310 FVP Technical Overview: contains overview of the FVP and its features.
2. Arm® Corstone™ SSE-310 with Cortex®-M85 and Ethos™-U55 : Example Subsystem for MPS3: contains overview of the FPGA and its features.
3. Arm Corstone SSE-310 Subsystem Technical Reference Manual: contains the specification of the architecture of the subsystem, description of several interfaces (address, data width, clock/power/reset domain), functional description of the components.

SSE-310 MPS3 BSP Pack contains additional documentation in the “Documents” folder.

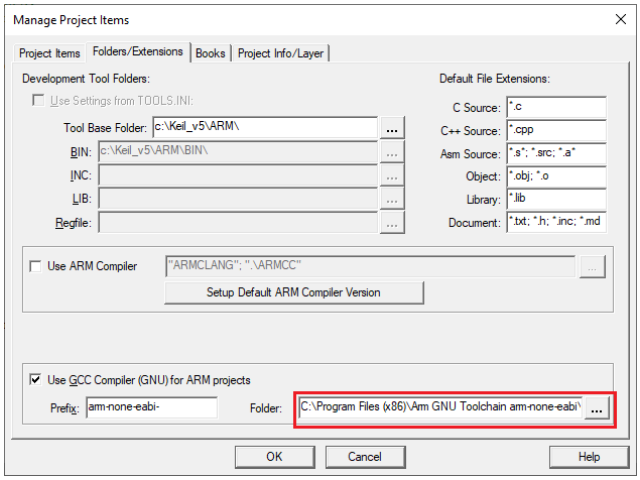
Pack Installation – Keil MDK

Install ARM::V2M_MPS3_SSE_310_BSP using the Pack Installer. The pack can be browsed by selecting a SSE-310-MPS3 device (SSE-310-MPS3_FVP or SSE-310-MPS3_AN555) under ARM Cortex M85 Devices.



Building with GCC

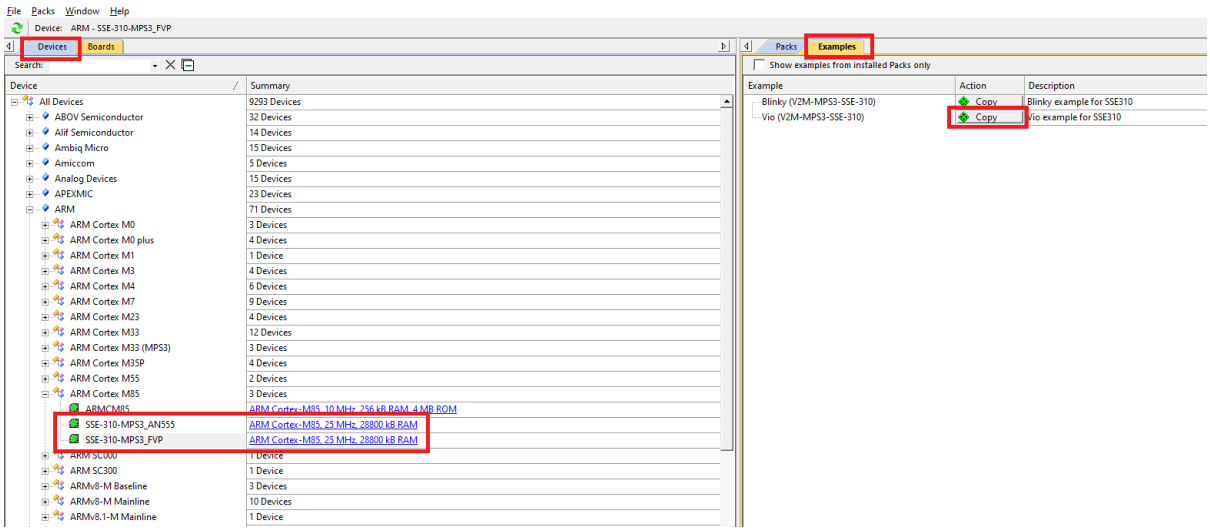
In case of GCC, please select GCC target, and define GCC toolchain path in Manage project Items -> Folders/Extensions tab:



Supported toolchain versions are *GNU Arm Embedded Toolchain Arm GCC version 11.3.* or newer.

Import and build the example Vio project – Keil MDK

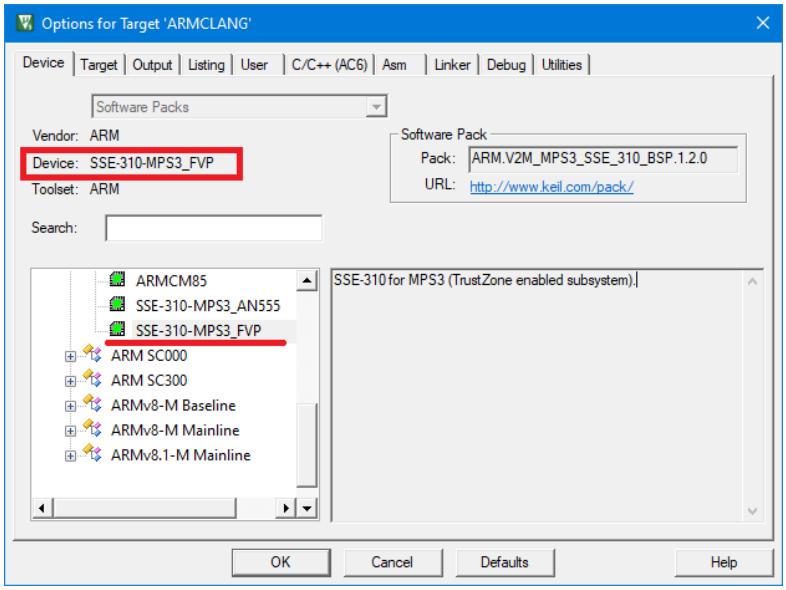
Copy the Vio project using the Pack Installer. The example project can be found by searching and selecting a SSE-310-MPS3 device under ARM Cortex-M85 Devices, than selecting Examples tab on the right.



Once copied, open the Vio project using the uVision and simply build the target ARMCLANG or GCC listed inside Project Explorer.

Note: compile with C99 option (-std=c99)

Note: Although SSE-310-MPS3_FVP and SSE-310-MPS3_AN555 are compatible devices, the Vio example is only suitable for SSE-310-MPS3_FVP. Please make sure it is selected under *Options for Target -> Device* before building the example.



Running example on AWS with AVH image

To utilize the Arm Virtual Hardware (AVH), you will need to create an AWS Account if you don't already have one.

Launching the instance in EC2 (AWS on getting started)

1. Go to EC2 in the AWS Web Console.
2. Select **Launch Instances** which will take you to a wizard for launching the instance.
3. Choose **an Amazon Machine Image** (AMI) In the Search box, type *Arm Virtual Hardware* then find the item called "Arm Virtual Hardware" that is by Arm, and press Select for that item. This will raise a subscription page/pop-up titled, **Arm Virtual Hardware**. You will note that the subscription is free from Arm, but AWS does charge for the costs of the instances themselves according to the pricing chart provided. You must select Continue if you want to move forward.
4. **Choose an Instance Type** - Select one of the instance types from the list. Keep in mind that there are charges that accrue while the instance is running. From here you may select **Review and Launch** to move directly to the launch page or select **Next: Configure Instance Details** if you need to set any custom settings for this instance.

Once you complete the wizard by initiating the instance launch you will see a page that allows you to navigate directly to the new instance. You may click this link or go back to your list of instances and find the instance through that method.

Whichever way you choose find your new instance and select its instance ID to open the page to manage the instance.

Connecting to the instance:

1. Select Connect to open an SSH terminal session to the instance in your browser.
2. Ensure the User name field is set to *ubuntu*.
3. Select the Connect button to open the session. This will put you in a browser window where you will have an SSH terminal window ready for your input.

The Objects\Vio.axf can be copied to the instance with scp to "/home/ubuntu". To run the example:

```
VHT_Corstone_SSE-310 -C mps3_board.visualisation.disable-
visualisation=1 -C mps3_board.telnetterminal0.start_telnet=0 -C
mps3_board.uart0.out_file="-"  -C
mps3_board.uart0.unbuffered_output=1 --stat  -C
mps3_board.DISABLE_GATING=1 Vio.axf
```

To run python I/O simulation, download vio python example:

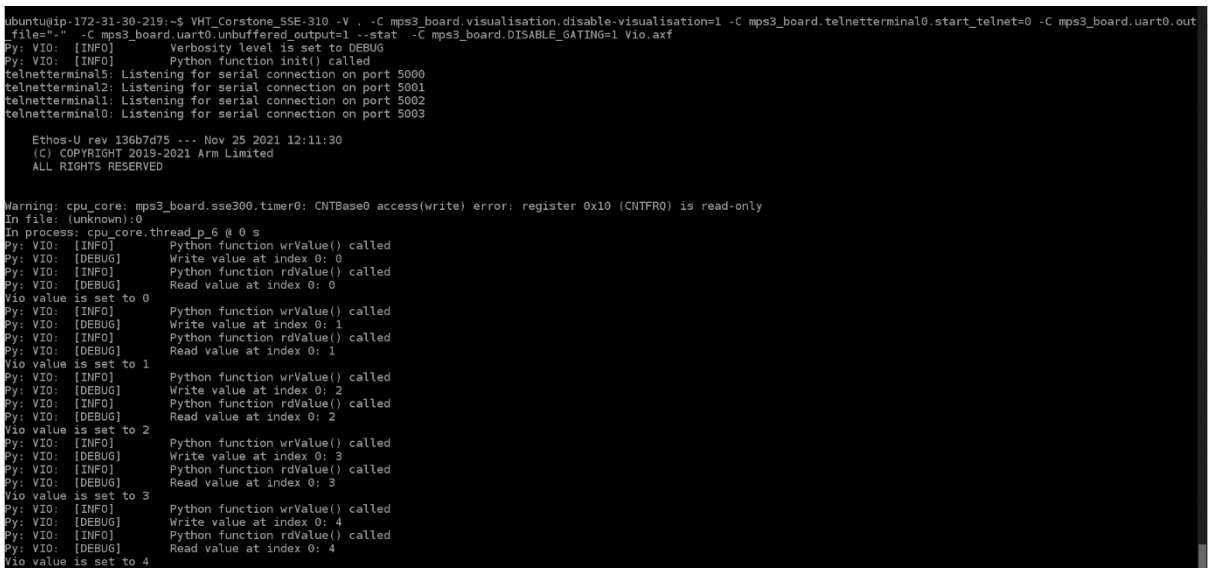
```
ubuntu@ip-172-31-30-219:~$ wget https://github.com/ARM-
software/AVH/raw/main/interface/python/arm_vio.py
```

Edit the file and set verbosity level to debug in line 17-18.

To run the example with python code available, "-V ." option added to the command above:

```
VHT_Corstone_SSE-310 -V . -C mps3_board.visualisation.disable-
visualisation=1 -C mps3_board.telnetterminal0.start_telnet=0 -C
mps3_board.uart0.out_file="-"  -C
mps3_board.uart0.unbuffered_output=1 --stat  -C
mps3_board.DISABLE_GATING=1 Vio.axf
```

The output of the last command should be:



Additional resources

- Arm MPS3 FPGA Prototyping Board
- Arm Corstone SSE-310 FPGA for MPS3 v 2.0 (AN555)
- Arm® Cortex®-M85 Processor Technical Reference Manual
- Arm® Cortex®-M85 Processor Devices Generic User Guide
- Arm GNU Toolchain