AT06466: Getting started with SAM D21

ASF PROJECT DOCUMENTATION

Features

- Getting started with Atmel® SAM D21 microcontrollers and tools.

- Atmel SAM D21 Xplained PRO and Atmel Studio 6.2 getting started.

This application note aims at helping the reader to get started with the Atmel SAM D21 ARM® Cortex®-M0+ based microcontroller. It contains a list of all necessary components and tools required to start the work and points where to look for additional information.

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1. Get the Device Datasheet

Web page: http://www.atmel.com/products/microcontrollers/arm/sam-d.aspx?tab=documents

Document: Atmel SAM D21 Datasheet (summary, complete) (.pdf)

- Select the required device (e.g. ATSAMD21J18A) and get the latest datasheet (.pdf file).

    - Complete version (includes extensive description for all peripherals and electrical characteristics).

    - Summary version (includes a summary of the information in the datasheet, including configuration summary, ordering information etc.).

2. Get the SAM D21 Xplained Pro Evaluation Kit

Figure 2-1. SAM D21 Xplained Pro kit

Web page: http://www.atmel.com/tools/ATSAMD21-XPRO.aspx

Get kit: http://store.atmel.com

Document:

- SAM D21 Xplained Pro User Guide application note (.pdf) Key features:

- SAMD21J18A microcontroller

- One mechanical reset button

- One mechanical programmable button

- One yellow user LED

- USB debug interface, host and device function (shared physical interface)

- USB target interface, used to support the USB feature of the SAM D21

- 32.768 kHz crystal oscillator

- Three Xplained Pro extension headers

- Powered by USB or an external power supply

- Supported with application examples in Atmel Software Framework (ASF)

- Embedded Debugger (EDBG)

  - Auto ID for board identifiction in Atmel Studio 6.2

  - One yellow status LED

  - One green board power LED

  - Symbolic debug for complex data types including scope information

- Programming

- Data Gateway Interface. USART, I2C, 4 GPIOs

- Virtual COM port (CDC)

- Select jumper between ADC and USB feature

The SAM D21 Xplained Pro User Guide application note covers how to power the kit, the detailed information of the on board components, extension interface and the hardware guide.

3. Get the Tools

Atmel Studio 6.2 is the preferred IDE to get started with the SAM D21 device, which uses GCC compiler. IAR™ compiler is also supported by the Atmel Software Framework (ASF), hence it autmatically supports SAM D21.

3.1 Get Atmel Studio 6.2

Web page: http://www.atmel.com/tools/ATMELSTUDIO.aspx
Document:

● Atmel Studio 6-2 Installer - Full (.exe)

Atmel Studio 6.2 is the preferred IDE for developing and debugging firmware for the SAM D21 microcontroller.

3.2 Get IAR Embedded Workbench for ARM

Web page: http://www.iar.com/en/Products/IAR-Embedded-Workbench/ARM/
Document: IAR installer for ARM

3.3 Get SAM D21 Xplained

Pro Embedded Debugger Software (Segger J-Link)

Web page: http://www.segger.com/jlink-software.html

Document: J-Link Software

This software is required to program or debug the SAM D21 Xplained Pro if using Segger J-Link.

3.4 Get Atmel Software Framework (ASF)

Web page www.atmel.com/asf
Document:

● ASF update for Atmel Studio (.vsix)

● ASF standalone package for GCC makefile and IAR users

● ASF: Getting started (.pdf)

● ASF: Reference Manual (.pdf)

● TODO: add mode applictaion notes when available

ASF online documentation for available API and examples can be found at http://asf.atmel.com.

# 4. Atmel Studio 6.2 Users Getting Started

Requirements:

- Atmel Studio 6.2 or above installed.

- ASF version 3.14.0 or above installed (included with Atmel Studio 6.2).

- SAM D21 Xplained Pro board connected to Atmel Studio 6.2 through the embedded debugger USB connector. The kit will be powered by the USB port.

Getting started with Atmel Studio 6.2, ASF and SAM D21 Xplained Pro:

- Launch Atmel Studio 6.2.

- Connect the SAM D21 Xplained Pro to the PC using a USB cable. The following page will appear.
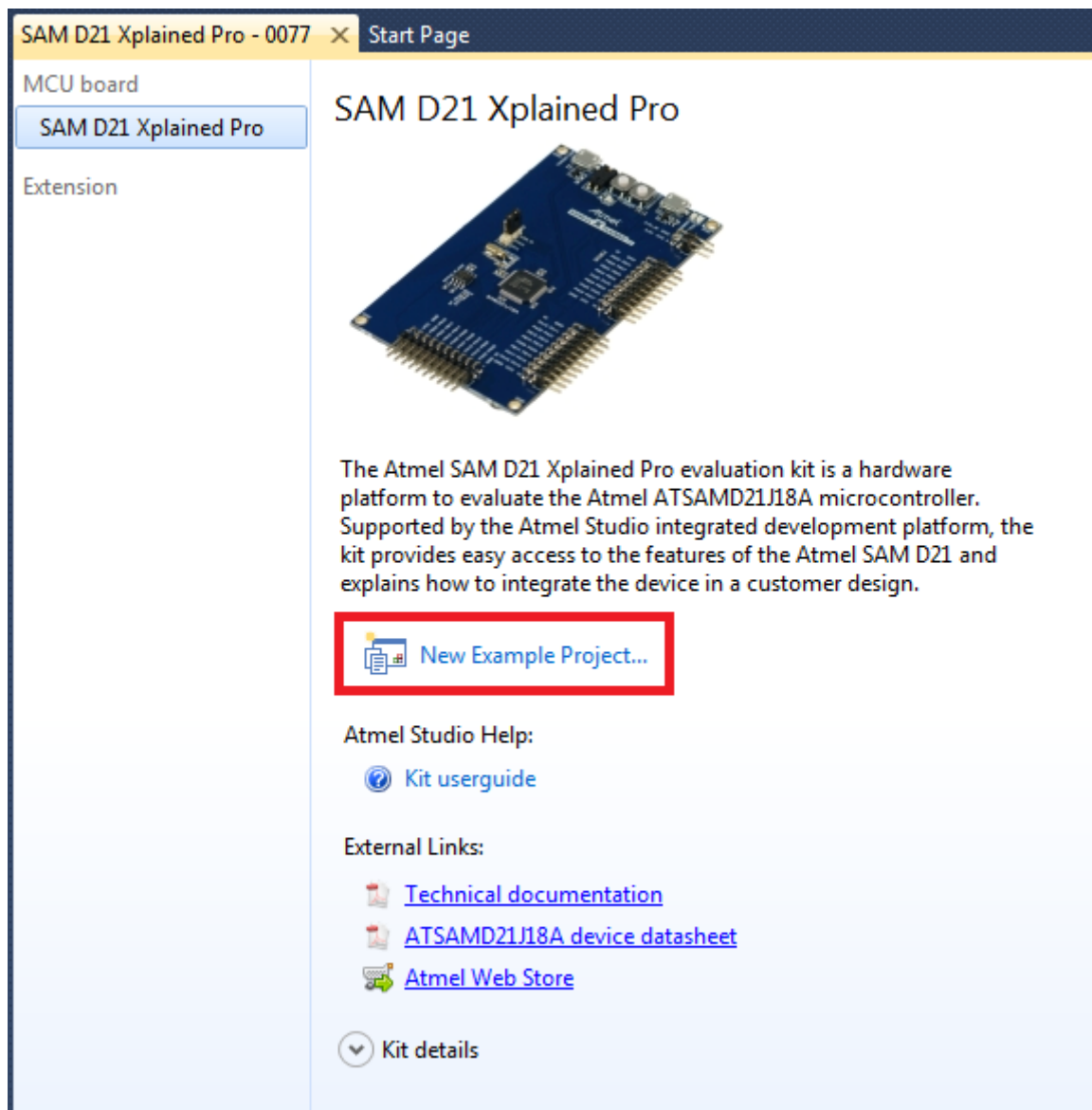
- To open the ASF examples, click "New Example Project...".

- Select one of the examples (e.g. "Delay Service Example"), press OK and accept the license agreement. The project will be created and opened.
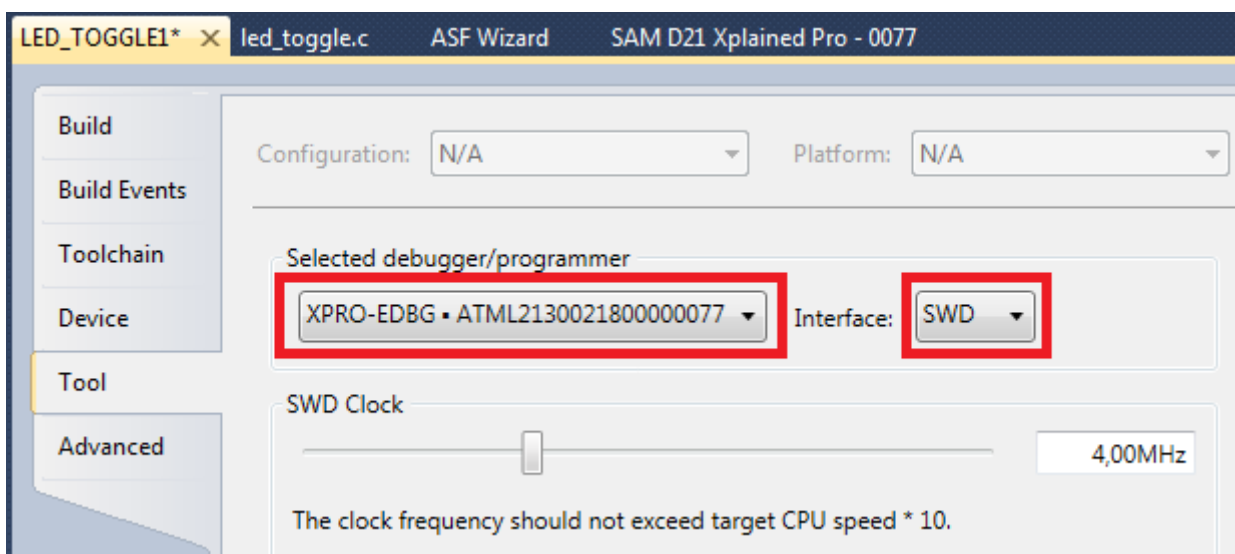
- Open project properties (Project -> Properties or shortcut Alt+F7).

- In the Tool view, set selected debugger/programmer to XPRO-EDBG and interface to SWD.

- Build the project: Build -> Build solution or shortcut F7.

- To load the code in the SAM D21 Xplained Pro and debug, select Debug -> Start debugging and break (shortcut Alt + F5).

- The application is programmed and the debugger breaks in main.

- To run the code, select Debug -> Continue (shortcut F5).

5. What's next?

If you are interested in finding more documentation related to Atmel products and IDE, please check the links below:

- Atmel Studio videos: www.atmel.com/atmelstudio.

- Atmel Studio help: Help -> View Help (Ctrl+F1).

- ASF Getting Started: www.atmel.com/asf.

- ASF online documentation asf.atmel.com.

- ASF Reference Manual: asf.atmel.com.

- More technical documentation concerning various products: www.atmel.no/webdoc/.

6. Revision History

Doc. Rev.	Date	Comments
A	02/2014	Initial release

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