

Preface

The Atmel® SAM G53 Xplained Pro evaluation kit is hardware platform to evaluate the ATSAMG53N19 microcontroller.

Supported by the Atmel Studio integrated development platform, the kit provides easy access to the features of the Atmel ATSAMG53N19 and explains how to integrate the device in a customer design.

The Xplained Pro MCU series evaluation kits include an on-board Embedded Debugger, and no external tools are necessary to program or debug the ATSAMG53N19.

The Xplained Pro extension series evaluation kits offers additional peripherals to extend the features of the board and ease the development of customer designs.

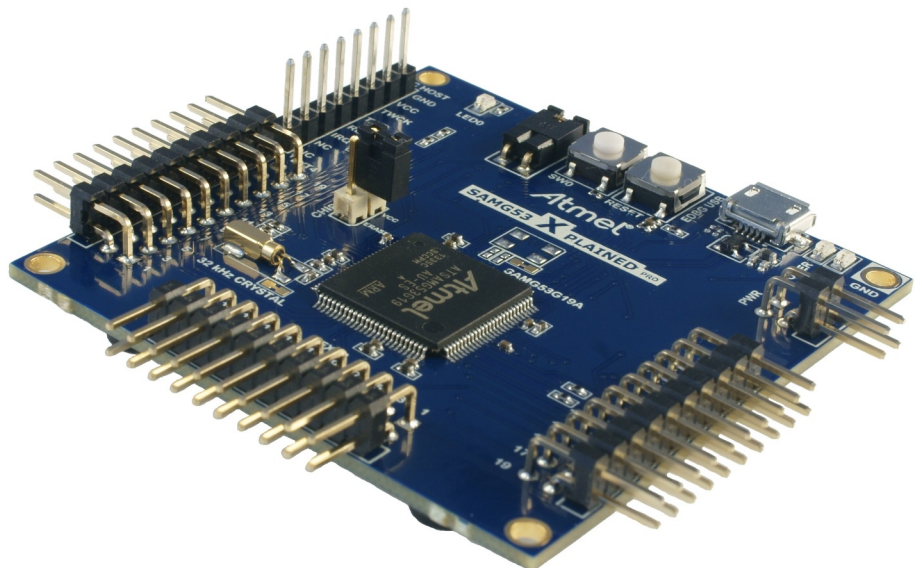


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1. Introduction

1.1. Features

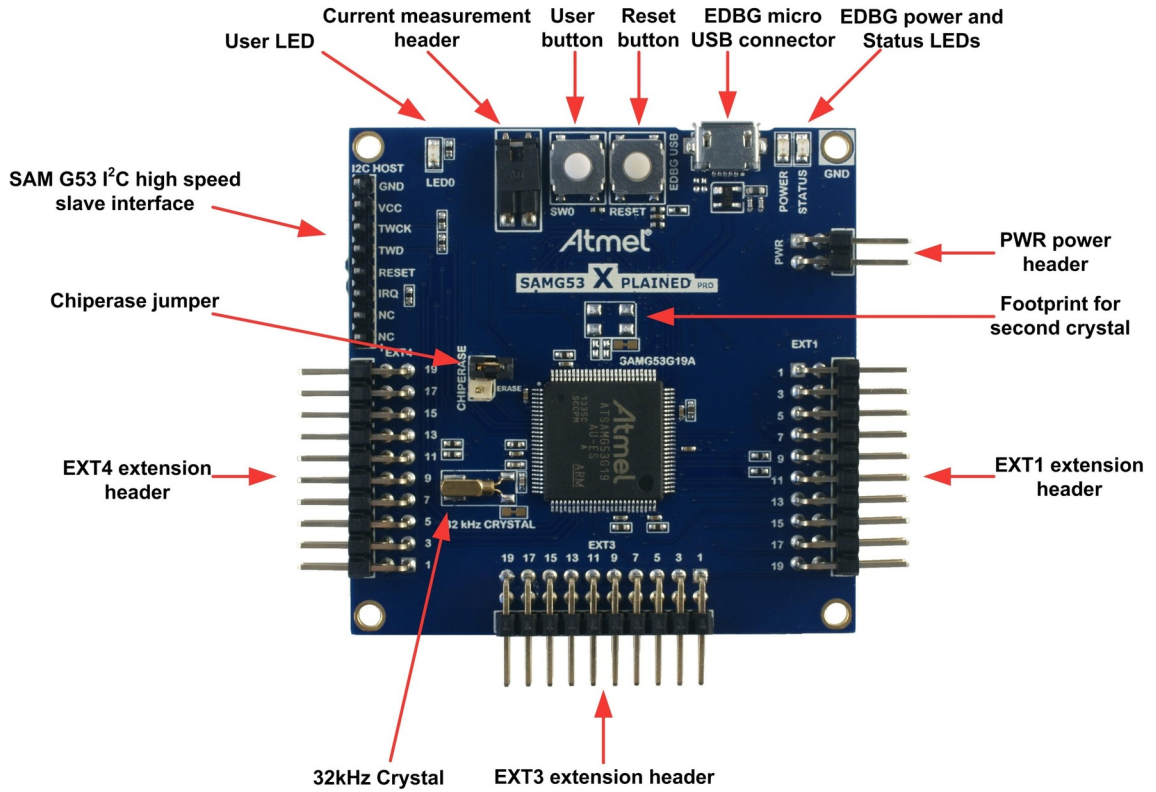
- Atmel ATSAMG53N19 microcontroller
- Embedded debugger (EDBG)
 - USB interface
 - Programming and debugging (target) through Serial Wire Debug (SWD)
 - Virtual COM-port interface to target via UART
 - Atmel Data Gateway interface (DGI) to target via UART or TWI
 - Four GPIOs connected to target for code instrumentation
- Digital I/O
 - Two mechanical buttons (including one reset button)
 - One user LED
 - Three extension headers
 - I²C interface for SAM G53 high speed I²C slave
- Two possible power sources
 - External power
 - Embedded debugger USB
- 32kHz crystal

1.2. Kit Overview

The Atmel SAM G53 Xplained Pro evaluation kit is a hardware platform to evaluate the Atmel ATSAMG53N19.

The kit offers a set of features that enables the SAM G53 user to get started using the SAM G53's peripherals right away and to get an understanding of how to integrate the SAM G53 in their own design.

Figure 1-1 SAM G53 Xplained Pro Evaluation Kit Overview



2. Getting Started

2.1. Xplained Pro Quick Start

Three steps to start exploring the Atmel Xplained Pro platform:

1. Download [Atmel Studio](#).
2. Launch Atmel Studio.
3. Connect a USB cable (Standard-A to Micro-B or Micro-AB) between the PC and the DEBUG USB port on the kit.

When the Xplained Pro MCU kit is connected to your computer for the first time, the operating system will perform a driver software installation. The driver file supports both 32- and 64-bit versions of Microsoft® Windows® XP, Windows Vista®, Windows 7, and Windows 8.

Once the Xplained Pro MCU board is powered the green power LED will be lit and Atmel Studio will auto detect which Xplained Pro MCU- and extension board(s) are connected. Atmel Studio will present relevant information like datasheets and kit documentation. The kit landing page in Atmel Studio also has the option to launch Atmel Software Framework (ASF) example applications for the kit. The SAM G53 device is programmed and debugged by the on-board Embedded Debugger and therefore no external programmer or debugger tool is needed.

2.2. Design Documentation and Relevant Links

The following list contains links to the most relevant documents and software for the SAM G53 Xplained Pro.

- [Xplained Pro products](#) - Atmel Xplained Pro is a series of small-sized and easy-to-use evaluation kits for Atmel microcontrollers and other Atmel products. It consists of a series of low-cost MCU boards for evaluation and demonstration of features and capabilities of different MCU families.
- [Atmel Studio](#) - Free Atmel IDE for development of C/C++ and assembler code for Atmel microcontrollers.
- [Atmel sample store](#) - Atmel sample store where you can order samples of devices.
- [EDBG User Guide](#) - User guide containing more information about the on-board Embedded Debugger.
- [IAR Embedded Workbench® for ARM®](#) - This is a commercial C/C++ compiler that is available for ARM. There is a 30 day evaluation version as well as a code size limited kick-start version available from their website. The code size limit is 16KB for devices with M0, M0+, and M1 cores and 32KB for devices with other cores.
- [Atmel Data Visualizer](#) - Atmel Data Visualizer is a program used for processing and visualizing data. Data Visualizer can receive data from various sources such as the Embedded Debugger Data Gateway Interface found on Xplained Pro boards and COM ports.
- [Hardware Users Guide in PDF format](#) - PDF version of this User Guide.
- [Design Documentation](#) - Package containing CAD source, schematics, BOM, assembly drawings, 3D plots, layer plots etc.
- [SAM G53 Xplained Pro on the Atmel website](#) - Atmel website link.

3. Xplained Pro

Xplained Pro is an evaluation platform that provides the full Atmel microcontroller experience. The platform consists of a series of Microcontroller (MCU) boards and extension boards, which are integrated with Atmel Studio, have Atmel Software Framework (ASF) drivers and demo code, support data streaming, and more. Xplained Pro MCU boards support a wide range of Xplained Pro extension boards, which are connected through a set of standardized headers and connectors. Each extension board has an identification (ID) chip to uniquely identify which boards are connected to an Xplained Pro MCU board. This information is used to present relevant user guides, application notes, datasheets, and example code through Atmel Studio.

3.1. Embedded Debugger

The SAM G53 Xplained Pro contains the Atmel Embedded Debugger (EDBG) for on-board debugging. The EDBG is a composite USB device of three interfaces; a debugger, Virtual COM Port, and a Data Gateway Interface (DGI).

Together with Atmel Studio, the EDBG debugger interface can program and debug the ATSAMG53N19. On SAM G53 Xplained Pro, the SWD interface is connected between the EDBG and the ATSAMG53N19.

The Virtual COM Port is connected to a UART on the ATSAMG53N19 and provides an easy way to communicate with the target application through terminal software. It offers variable baud rate, parity, and stop bit settings. Note that the settings on the ATSAMG53N19 must match the settings given in the terminal software.



Info: If not set automatically, data terminal ready (DTR) must be set in the terminal software.

The DGI consists of several physical interfaces for communication with the host computer. Communication over the interfaces is bidirectional. It can be used to send events and values from the ATSAMG53N19 or as a generic printf-style data channel. Traffic over the interfaces can be timestamped on the EDBG for more accurate tracing of events. Note that timestamping imposes an overhead that reduces maximal throughput. [Atmel Data Visualizer](#) is used to send and receive data through DGI.

The EDBG controls two LEDs on SAM G53 Xplained Pro; a power LED and a status LED. [Table 3-1 EDBG LED Control](#) on page 6 shows how the LEDs are controlled in different operation modes.

Table 3-1 EDBG LED Control

| Operation mode | Power LED | Status LED |
|------------------------------------|--|---|
| Normal operation | Power LED is lit when power is applied to the board. | Activity indicator, LED flashes when any communication happens to the EDBG. |
| Bootloader mode (idle) | The power LED and the status LED blinks simultaneously. | |
| Bootloader mode (firmware upgrade) | The power LED and the status LED blinks in an alternating pattern. | |

For further documentation on the EDBG, see the [EDBG User Guide](#).

3.2. Hardware Identification System

All Xplained Pro compatible extension boards have an Atmel ATSHA204 CryptoAuthentication™ chip mounted. This chip contains information that identifies the extension with its name and some extra data. When an Xplained Pro extension is connected to an Xplained Pro MCU board the information is read and sent to Atmel Studio. The Atmel Kits extension, installed with Atmel Studio, will give relevant information, code examples, and links to relevant documents. [Table 3-2 Xplained Pro ID Chip Content](#) on page 7 shows the data fields stored in the ID chip with example content.

Table 3-2 Xplained Pro ID Chip Content

| Data field | Data type | Example content |
|-----------------------|--------------|------------------------------|
| Manufacturer | ASCII string | Atmel\0' |
| Product Name | ASCII string | Segment LCD1 Xplained Pro\0' |
| Product Revision | ASCII string | 02\0' |
| Product Serial Number | ASCII string | 1774020200000010\0' |
| Minimum Voltage [mV] | uint16_t | 3000 |
| Maximum Voltage [mV] | uint16_t | 3600 |
| Maximum Current [mA] | uint16_t | 30 |

3.3. Power Sources

The SAM G53 Xplained Pro kit can be powered by several power sources listed in [Table 3-3 Power Sources for SAM G53 Xplained Pro](#) on page 7.

Table 3-3 Power Sources for SAM G53 Xplained Pro

| Power input | Voltage requirements | Current requirements | Connector marking |
|-----------------------|---|--|-------------------|
| External power | 5V \pm 2% (\pm 100mV) for USB host operation. 4.3V to 5.5V if USB host operation is not required. | Recommended minimum is 1A to be able to provide enough current for connected USB devices and the board itself. Recommended maximum is 2A due to the input protection maximum current specification. | PWR |
| Embedded debugger USB | 4.4V to 5.25V (according to USB spec.) | 500mA (according to USB spec.) | DEBUG USB |

The kit will automatically detect which power sources are available and choose which one to use according to the following priority:

1. External power.
2. Embedded Debugger USB.



Info: External power is required when 500mA from a USB connector is not enough to power the board with possible extension boards.

3.4. Xplained Pro Headers and Connectors

3.4.1. Xplained Pro Standard Extension Header

All Xplained Pro kits have one or more dual row, 20-pin, 100mil extension header. Xplained Pro MCU boards have male headers, while Xplained Pro extensions have their female counterparts. Note that all pins are not always connected. All connected pins follow the defined pin-out description in [Table 3-4 Xplained Pro Standard Extension Header](#) on page 8.

The extension headers can be used to connect a variety of Xplained Pro extensions to Xplained Pro MCU boards or to access the pins of the target MCU on Xplained Pro MCU boards directly.

Table 3-4 Xplained Pro Standard Extension Header

| Pin number | Name | Description |
|------------|----------------------|--|
| 1 | ID | Communication line to the ID chip on an extension board |
| 2 | GND | Ground |
| 3 | ADC(+) | Analog to digital converter, alternatively positive part of differential ADC |
| 4 | ADC(-) | Analog to digital converter, alternatively negative part of differential ADC |
| 5 | GPIO1 | General purpose I/O |
| 6 | GPIO2 | General purpose I/O |
| 7 | PWM(+) | Pulse width modulation, alternatively positive part of differential PWM |
| 8 | PWM(-) | Pulse width modulation, alternatively negative part of differential PWM |
| 9 | IRQ/GPIO | Interrupt request line and/or general purpose I/O |
| 10 | SPI_SS_B/ GPIO | Slave select for SPI and/or general purpose I/O |
| 11 | I ² C_SDA | Data line for I ² C interface. Always implemented, bus type. |
| 12 | I ² C_SCL | Clock line for I ² C interface. Always implemented, bus type. |
| 13 | UART_RX | Receiver line of target device UART |
| 14 | UART_TX | Transmitter line of target device UART |
| 15 | SPI_SS_A | Slave select for SPI. Should preferably be unique. |
| 16 | SPI_MOSI | Master out slave in line of serial peripheral interface. Always implemented, bus type. |

| Pin number | Name | Description |
|------------|----------|--|
| 17 | SPI_MISO | Master in slave out line of serial peripheral interface. Always implemented, bus type. |
| 18 | SPI_SCK | Clock for serial peripheral interface. Always implemented, bus type. |
| 19 | GND | Ground |
| 20 | VCC | Power for extension board |

3.4.2. Xplained Pro Power Header

The power header can be used to connect external power to the SAM G53 Xplained Pro kit. The kit will automatically detect and switch to any external power if supplied. The power header can also be used as supply for external peripherals or extension boards. Care must be taken not to exceed the total current limitation of the on-board regulator when using the 3.3V pin.

Table 3-5 Xplained Pro Power Header

| Pin number | Pin name | Description |
|------------|-----------|--|
| 1 | VEXT_P5V0 | External 5V input |
| 2 | GND | Ground |
| 3 | VCC_P5V0 | Unregulated 5V (output, derived from one of the input sources) |
| 4 | VCC_P3V3 | Regulated 3.3V (output, used as main power supply for the kit) |

4. Hardware User Guide

4.1. Connectors

This chapter describes the implementation of the relevant connectors and headers on SAM G53 Xplained Pro and their connection to the ATSAMG53N19. The tables of connections in this chapter also describes which signals are shared between the headers and on-board functionality.

4.1.1. Xplained Pro Standard Extension Headers

The SAM G53 Xplained Pro headers EXT1, EXT3, and EXT4 offer access to the I/O of the microcontroller in order to expand the board e.g. by connecting extensions to the board. These headers all comply with the Xplained Pro standard extension header specification. All headers have a pitch of 2.54mm.

Table 4-1 Extension Header EXT1

| Pin on EXT1 | SAM G53 pin | SAM G53 peripheral function | Shared functionality |
|--------------------|-------------|-----------------------------|---|
| 1 [ID] | - | - | Communication line to ID chip on extension board. |
| 2 [GND] | - | - | GND |
| 3 [ADC(+)] | PA17 | AD0 | |
| 4 [ADC(-)] | PA18 | AD1 | |
| 5 [GPIO1] | PB03 | GPIO | EDBG GPIO1 |
| 6 [GPIO2] | PB09 | GPIO | EDBG GPIO3 |
| 7 [PWM(+)] | PA00 | TIOA0 | |
| 8 [PWM(-)] | PA01 | TIOB0 | |
| 9 [IRQ/GPIO] | PA24 | WKUP11 | |
| 10 [SPI_SS_B/GPIO] | PA20 | GPIO | EXT3 connector (ADC) |
| 11 [TWI_SDA] | PB00 | TWD2 | |
| 12 [TWI_SCL] | PB01 | TWCK2 | |
| 13 [USART_RX] | PA05 | USART RXD (URXD0) | EDBG Data Gateway Interface (UART) |
| 14 [USART_TX] | PA06 | USART TXD (UTXD0) | EDBG Data Gateway Interface (UART) |
| 15 [SPI_SS_A] | PA11 | SPI NPCS0 | |
| 16 [SPI_MOSI] | PA13 | SPI MOSI | EXT3 connector |
| 17 [SPI_MISO] | PA12 | SPI MISO | EXT3 connector |
| 18 [SPI_SCK] | PA14 | SPI SCK | EXT3 connector |
| 19 [GND] | - | - | GND |
| 20 [VCC] | - | - | VCC |

Table 4-2 Extension Header EXT3

| Pin on EXT3 | SAM G53 pin | SAM G53 peripheral function | Shared functionality |
|--------------------|-------------|-----------------------------|---|
| 1 [ID] | - | - | Communication line to ID chip on extension board. |
| 2 [GND] | - | - | GND |
| 3 [ADC(+)] | PA19 | AD2 | |
| 4 [ADC(-)] | PA20 | AD3 | EXT1 connector (GPIO) |
| 5 [GPIO1] | PB04 | GPIO | EDBG GPIO2 |
| 6 [GPIO2] | - | - | |
| 7 [PWM(+)] | PA21 | TIOA2 | |
| 8 [PWM(-)] | - | - | |
| 9 [IRQ/GPIO] | PA22 | WKUP10 | |
| 10 [SPI_SS_B/GPIO] | PA15 | GPIO | EDBG GPIO0 and EXT4 (GPIO) |
| 11 [TWI_SDA] | PB10 | TWD1 | EDBG and EXT4 connector (TWI) |
| 12 [TWI_SCL] | PB11 | TWCK1 | EDBG and EXT4 connector (TWI) |
| 13 [USART_RX] | PA09 | USART0 RXD | EDBG (CDC UART) |
| 14 [USART_TX] | PA10 | USART0 TXD | EDBG (CDC UART) |
| 15 [SPI_SS_A] | PB02 | SPI NPCS1 | |
| 16 [SPI_MOSI] | PA13 | SPI MOSI | EXT1 connector (SPI MOSI) |
| 17 [SPI_MISO] | PA12 | SPI MISO | EXT1 connector (SPI MISO) |
| 18 [SPI_SCK] | PA14 | SPI SCK | EXT1 connector (SPI SCK) |
| 19 [GND] | - | - | GND |
| 20 [VCC] | - | - | VCC |

Table 4-3 Extension Header EXT4

| Pin on EXT4 | SAM G53 pin | SAM G53 peripheral function | Shared functionality |
|-------------|-------------|-----------------------------|---|
| 1 [ID] | - | - | Communication line to ID chip on extension board. |
| 2 [GND] | - | - | GND |
| 3 [ADC(+)] | - | - | |
| 4 [ADC(-)] | - | - | |
| 5 [GPIO1] | PA15 | GPIO | EDBG GPIO0 and EXT3 (GPIO) |

| Pin on EXT4 | SAM G53 pin | SAM G53 peripheral function | Shared functionality |
|--------------------|-------------|-----------------------------|-------------------------------|
| 6 [GPIO2] | - | - | |
| 7 [PWM(+)] | - | - | |
| 8 [PWM(-)] | - | - | |
| 9 [IRQ/GPIO] | PB08 | WKUP14 | |
| 10 [SPI_SS_B/GPIO] | - | - | |
| 11 [TWI_SDA] | PB10 | TWD1 | EDBG and EXT3 connector (TWI) |
| 12 [TWI_SCL] | PB11 | TWCK1 | EDBG and EXT3 connector (TWI) |
| 13 [USART_RX] | - | - | |
| 14 [USART_TX] | - | - | |
| 15 [SPI_SS_A] | - | - | |
| 16 [SPI_MOSI] | - | - | |
| 17 [SPI_MISO] | - | - | |
| 18 [SPI_SCK] | - | - | |
| 19 [GND] | - | - | GND |
| 20 [VCC] | - | - | VCC |

Related Links

[Xplained Pro Standard Extension Header](#) on page 8

4.1.2. High Speed TWI Interface

The extension connector marked with "Host I²C" targets I²C hosts that want to connect to the SAM G53 high speed I²C slave interface. Besides I²C communication a GPIO and the SAM G53 reset is available. The GPIO can serve as an IRQ to the host and the reset can be used by the host to reset the SAM G53.

Table 4-4 SAM G53 High Speed I²C Slave Interface

| Pin on I ² C header | SAM G53 pin | SAM G53 peripheral function | Shared functionality |
|--------------------------------|-------------|-----------------------------|----------------------|
| 1 | - | - | |
| 2 | - | - | |
| 3 | PA23 | GPIO | |
| 4 | RESET | Reset | |
| 5 | PA03 | TWD0 | |
| 6 | PA04 | TWCK0 | |

| Pin on I ² C header | SAM G53 pin | SAM G53 peripheral function | Shared functionality |
|--------------------------------|-------------|-----------------------------|----------------------|
| 7 | - | - | VCC |
| 8 | - | - | GND |

4.1.3. Current Measurement Header

An angled 1x2, 100mil pin-header marked with MCU current measurement is located at the upper edge of the SAM G53 Xplained Pro. All power to the ATSAMG53N19 is routed through this header. To measure the power consumption of the device remove the jumper and replace it with an ammeter.



Caution: Removing the jumper from the pin-header while the kit is powered may cause the ATSAMG53N19 to be powered through its I/O pins. This may cause permanent damage to the device.

4.2. Peripherals

4.2.1. Crystals

The SAM G53 Xplained Pro kit contains one mounted 32kHz crystal and a footprint for a second crystal. The crystal circuit has a cut-strap next to it that can be used to measure the oscillator safety factor. This is done by cutting the strap and adding a resistor across the strap. More information about oscillator allowance and safety factor can be found in application note [AVR4100](#).

Table 4-5 External 32.768kHz Crystal

| Pin on SAM G53 | Function |
|----------------|----------|
| PA07 | XIN32 |
| PA08 | XOUT32 |

Table 4-6 Footprint for Additional Crystal

| Pin on SAM G53 | Function |
|----------------|----------|
| PB09 | XIN |
| PB08 | XOUT |

4.2.2. Mechanical Buttons

The SAM G53 Xplained Pro contains two mechanical buttons. One button is the RESET button connected to the SAM G53 reset line and the other is a generic user configurable button. When a button is pressed it will drive the I/O line to GND.

Table 4-7 Mechanical Buttons

| Pin on SAM G53 | Silkscreen text |
|----------------|-----------------|
| NRST | RESET |
| PA02 | SW0 |

4.2.3. LED

There is one yellow LED available on the SAM G53 Xplained Pro board that can be turned ON and OFF. The LED can be activated by driving the connected I/O line to GND.

Table 4-8 LED Connections

| Pin on SAM G53 | LED |
|----------------|-------------|
| PA16 | Yellow LED0 |

4.3. Embedded Debugger Implementation

The SAM G53 Xplained Pro contains an Embedded Debugger (EDBG) that can be used to program and debug the ATSAMG53N19 using Serial Wire Debug (SWD). The Embedded debugger also provides a Virtual Com port interface over UART, an Atmel Data Gateway Interface over UART and TWI, and it monitors four of the SAM G53 GPIOs. Atmel Studio can be used as a front end for the Embedded Debugger.

4.3.1. Serial Wire Debug

The Serial Wire Debug (SWD) uses two pins to communicate with the target. For further information on how to use the programming and debugging capabilities of the EDBG, see the EDBG user guide.

Table 4-9 SWD Connections

| Pin on SAM G53 | Function |
|----------------|----------------|
| PB07 | SWD clock |
| PB06 | SWD data |
| PB05 | SWD trace data |

4.3.2. Virtual COM Port

The Embedded Debugger act as a Virtual Com Port gateway by using one of the ATSAMG53N19 UARTs. For further information on how to use the Virtual COM port, see the EDBG user guide.

Table 4-10 Virtual COM Port Connections

| Pin on SAM G53 | Function |
|----------------|----------------------------|
| PA10 | UART TXD (SAM G53 TX line) |
| PA09 | UART RXD (SAM G53 RX line) |

4.3.3. Atmel Data Gateway Interface

The Embedded Debugger features an Atmel Data Gateway Interface (DGI) by using either UART or TWI. The DGI can be used to send a variety of data from the SAM G53 to the host PC. For further information on how to use the DGI interface, see the EDBG user guide.

Table 4-11 DGI Interface Connections When Using UART

| Pin on SAM G53 | Function |
|----------------|----------------------------|
| PA06 | UART TXD (SAM G53 TX line) |
| PA05 | UART RXD (SAM G53 RX line) |

Table 4-12 DGI Interface Connections When Using TWI

| Pin on SAM G53 | Function |
|----------------|------------------|
| PB10 | SDA (Data line) |
| PB11 | SCL (Clock line) |

Four GPIO lines are connected to the Embedded Debugger. The EDBG can monitor these lines and time stamp pin value changes. This makes it possible to accurately time stamp events in the SAM G53 application code. For further information on how to configure and use the GPIO monitoring features, see the EDBG user guide.

Table 4-13 GPIO Lines Connected To the EDBG

| Pin on SAM G53 | Function |
|----------------|----------|
| PA15 | GPIO0 |
| PB03 | GPIO1 |
| PB04 | GPIO2 |
| PB09 | GPIO3 |

4.4. Jumper Description

The SAM G53 Xplained Pro contains jumpers that can be used to adjust the functionality of the board. You can locate the jumpers in the kit overview figure at the start of the user guide.

Related Links

[Kit Overview](#) on page 3

4.4.1. Chiperase Jumper

When this jumper is placed on the CHIPERASE header the SAM G53 performs a chiperase after the next power toggle of the board. For normal operation this jumper should be placed e.g. only on one of the pins of the CHIPERASE header so that no contact is made between the two pins.

5. Appendix

5.1. Getting Started with IAR

IAR Embedded Workbench® for ARM® is a proprietary high efficiency compiler not based on GCC. Programming and debugging of Xplained Pro kits are supported in IAR™ Embedded Workbench for ARM using the common CMSIS-DAP interface. Some initial settings have to be set up in the project to get the programming and debugging to work.

The following steps will explain how to get your project ready for programming and debugging:

1. Make sure you have opened the project you want to configure. Open the **OPTIONS** dialog for the project.
2. In the category **General Options**, select the **Target** tab. [Select the device for the project or, if not listed, the core of the device.](#)
3. In the category **Debugger**, select the **Setup** tab. [Select **CMSIS DAP** as the driver.](#)
4. In the category **Debugger**, select the **Download** tab. [Check the check box for **Use flash loader\(s\)** option.](#)
5. In the category **Debugger > CMSIS DAP**, select the **Setup** tab. [Select **System \(default\)** as the reset method.](#)
6. In the category **Debugger > CMSIS DAP**, select the **JTAG/SWD** tab. [Select **SWD** as the interface and optionally select the **SWD speed**.](#)

Figure 5-1 Select Target Device

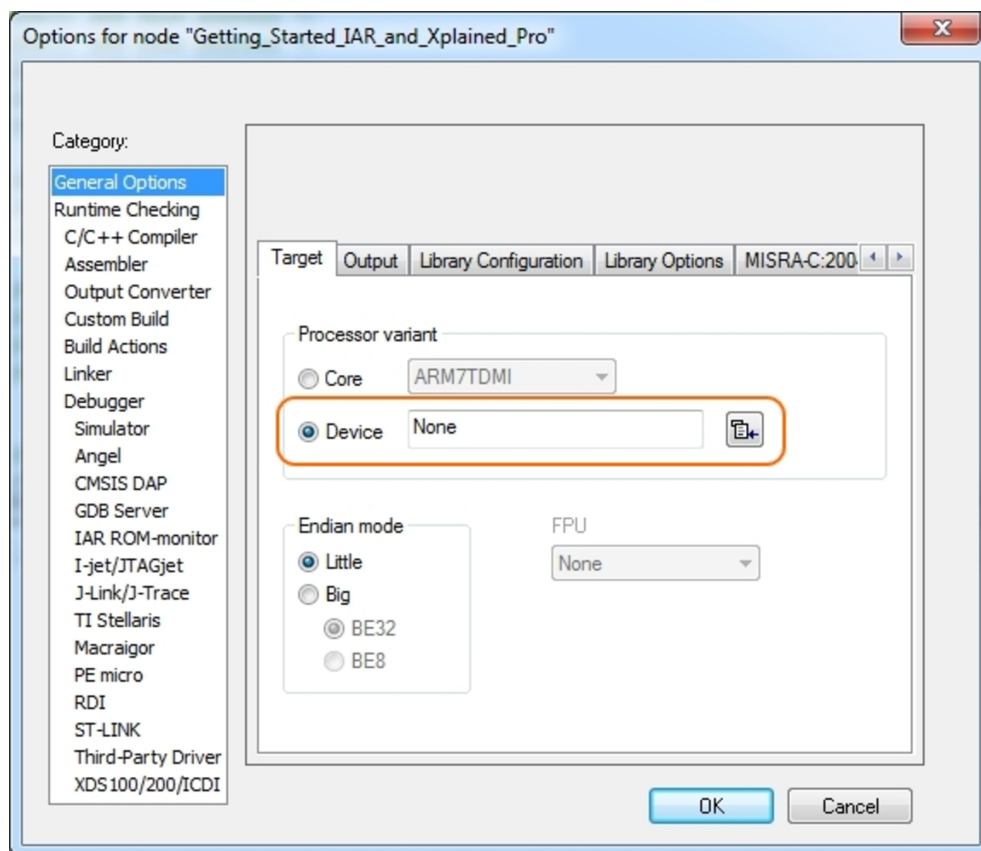


Figure 5-2 Select Debugger

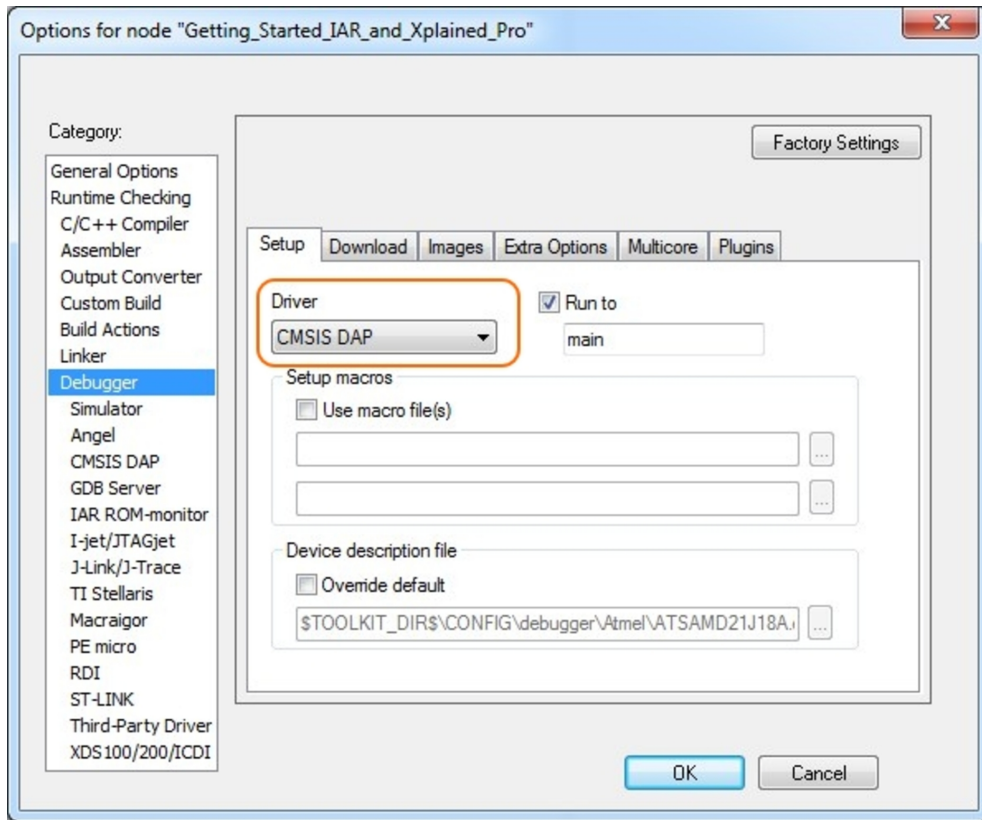


Figure 5-3 Configure Flash Loader

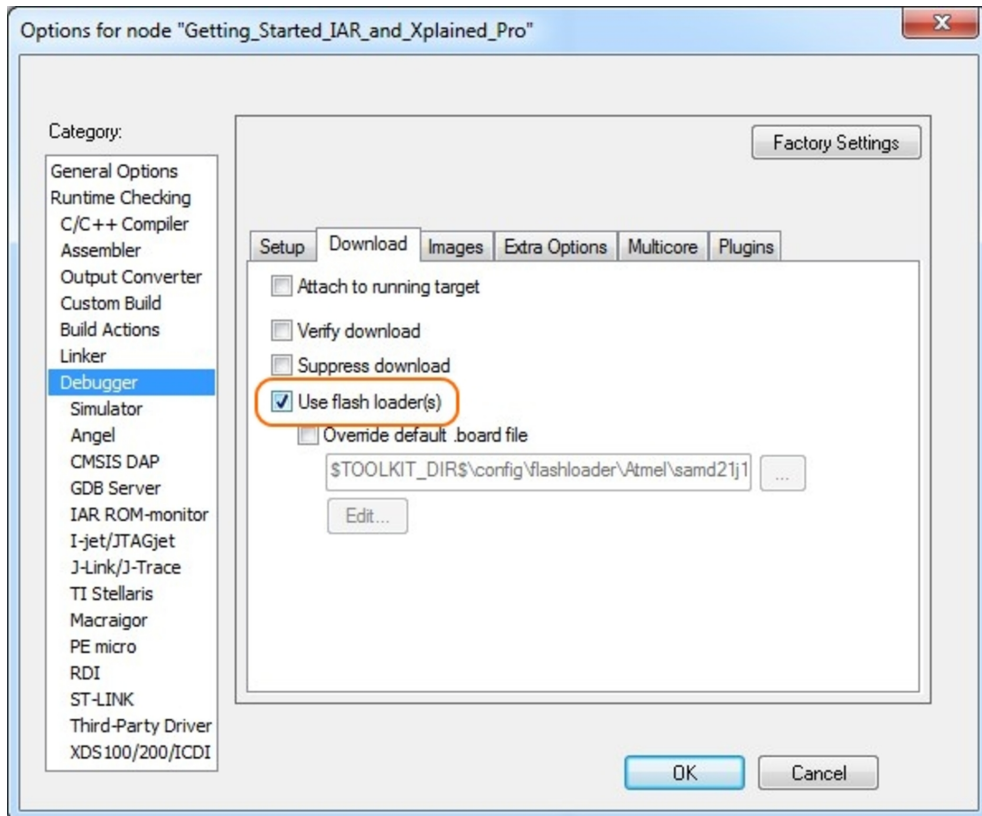


Figure 5-4 Configure Reset

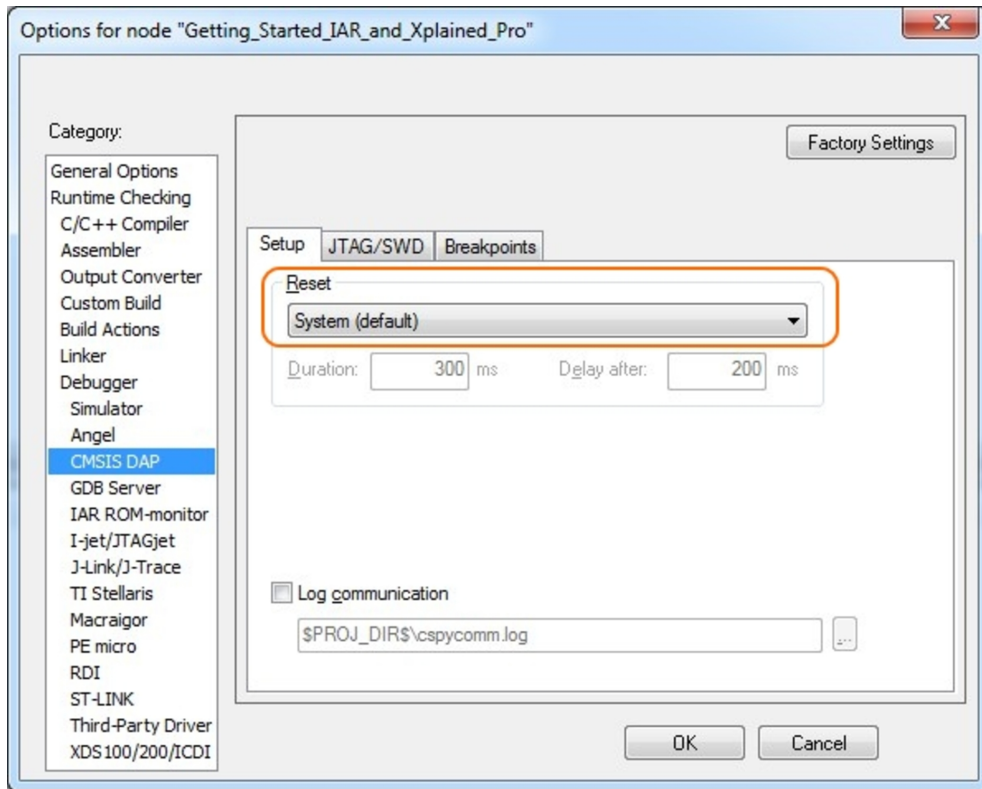
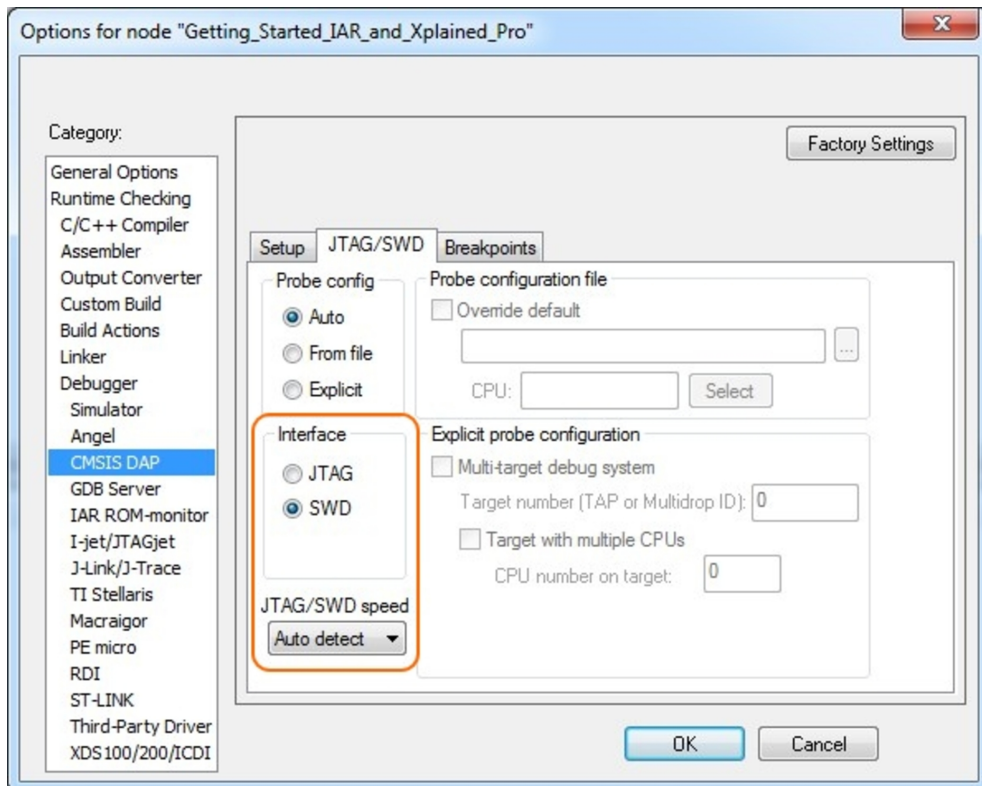


Figure 5-5 Configure Interface



6. Hardware Revision History and Known Issues

6.1. Identifying Product ID and Revision

The revision and product identifier of Xplained Pro boards can be found in two ways; either through Atmel Studio or by looking at the sticker on the bottom side of the PCB.

By connecting an Xplained Pro MCU board to a computer with Atmel Studio running, an information window will pop up. The first six digits of the serial number, which is listed under kit details, contain the product identifier and revision. Information about connected Xplained Pro extension boards will also appear in the Atmel Kit's window.

The same information can be found on the sticker on the bottom side of the PCB. Most kits will print the identifier and revision in plain text as A09-nnnn\rr, where nnnn is the identifier and rr is the revision. Boards with limited space have a sticker with only a QR-code, which contains a serial number string.

The serial number string has the following format:

```
"nnnnrrssssssss"  
n = product identifier  
r = revision  
s = serial number
```

The product identifier for SAM G53 Xplained Pro is A09-2137.

6.2. Revision 1

Revision 1 of SAM G53 Xplained Pro is the initial released version, there are no known issues.

7. Document Revision History

| Doc. rev. | Date | Comment |
|-----------|---------|-------------------------|
| 42217B | 11/2015 | Added appendix |
| 42217A | 12/2013 | Intial document release |

8. Evaluation Board/kit Important Notice

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