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KitProg2 User Guide

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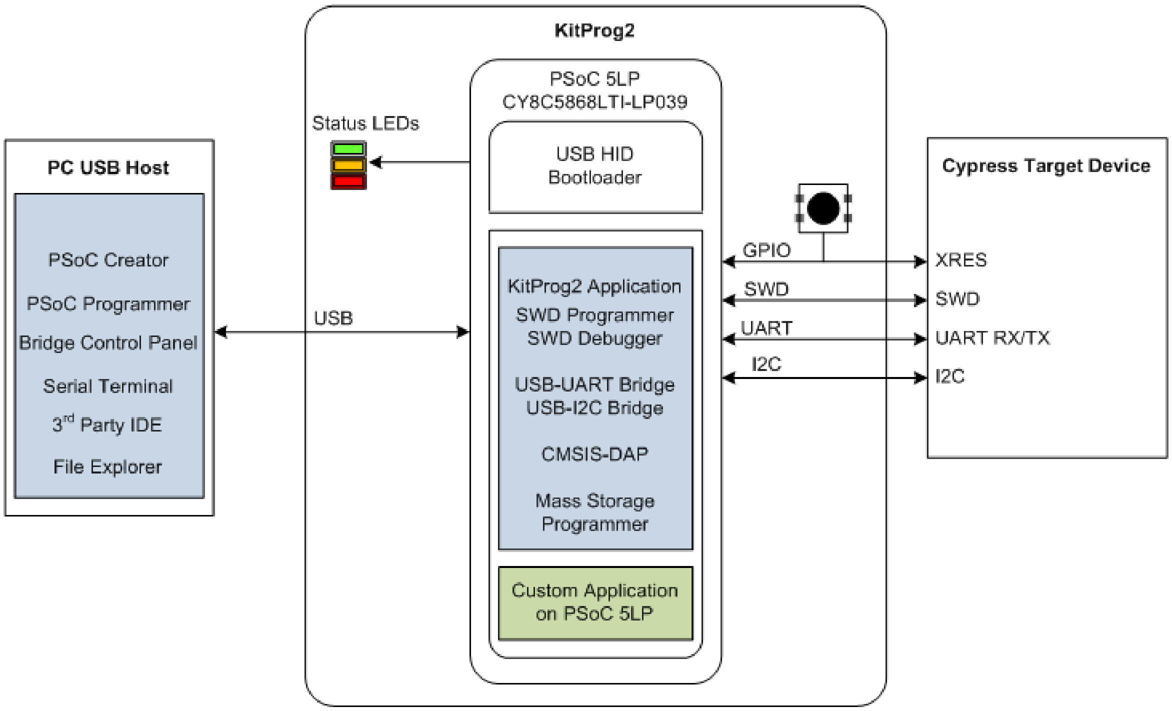
Contents

1. Introduction

The KitProg2 is an onboard programmer/debugger with USB-UART, USB-I2C and USB-SPI Bridge functionality. It is an update to the existing KitProg used for programming and debugging the target device. The KitProg2 is integrated onto most PSoC® development kits. This user guide provides comprehensive information on how to use the KitProg2 with PSoC development kits. Figure 1-1 shows the KitProg2 ecosystem. The Cypress PSoC 5LP device is used to implement the KitProg2 functionality.

Figure 1-1. KitProg2 Ecosystem



KitProg2 is an enhancement over KitProg. It follows the dual-image bootloading approach; the KitProg2 firmware is the first image and a custom application can be loaded as a second image. To learn more about the concept of dual-image bootloading, refer to application note AN73854 – PSoC 3, PSoC 4, and PSoC 5LP Introduction to Bootloaders.

Figure 1-2. KitProg2 Dual-Image Bootloader Architecture

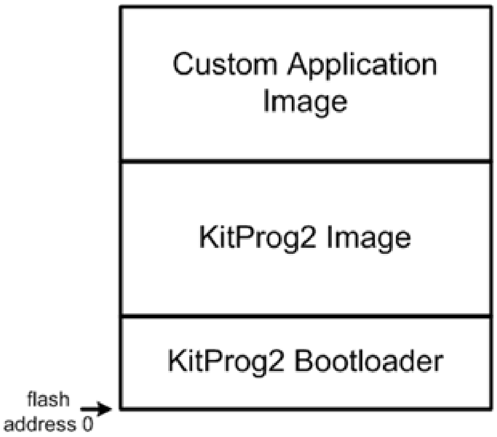


Figure 1-2 shows the KitProg2 flash architecture based on the concept of dual-image bootloading. If you are building custom applications for PSoC 5LP in KitProg2, only the ‘Custom Application Image’ flash area can be bootloaded with the corresponding *cyacd* file. The KitProg2 image cannot be bootloaded. It can only be restored to factory settings as described in Restore PSoC 5LP Factory Program Using PSoC Programmer on page 74.

The KitProg2 image contains SWD, CMSIS-DAP, and Mass Storage Programmer functionality to program a target PSoC, and USB-UART/USB-I2C/USB-SPI Bridge functionality. The custom application image can be any application that PSoC 5LP can execute. To create custom applications, refer to the Developing Applications for PSoC 5LP chapter on page 58.

1.1 Switching between KitProg2 Modes

There are three types of kits that use KitProg2 programmers. These are: (1) prototyping kits (also known as stamp boards) which have a single mode switch and a single amber status LED; (2) development kits (also known as pioneer kits) which have a single mode switch and 3 status LEDs; and (3) development kits which have two mode switches and three status LEDs.

Figure 1-3 shows how to switch between modes in KitProg2. Part (a) of Figure 1-3 is valid for all kits with a single mode switch. This figure illustrates the switching workflow using the CY8CKIT-041-40XX kit as an example, which has SW3 as the mode switch. Part (b) of Figure 1-3 is valid for all kits with dual mode switches. This figure illustrates the switching workflow using the CY8CKIT-062 BLE Pioneer Kit. In either case the input on the mode switch or switches is evaluated; depending on the current mode of operation, the next mode of operation is ascertained.

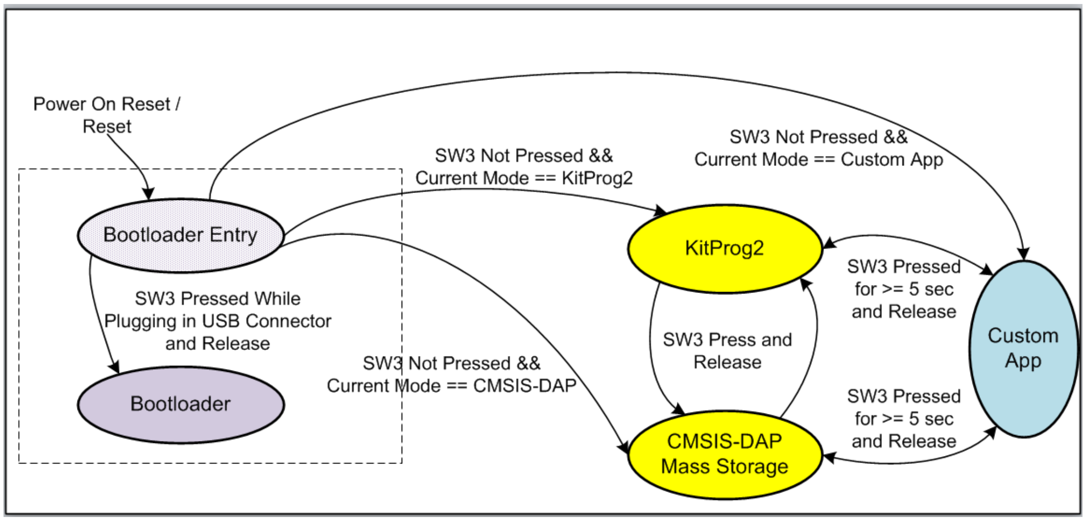
On power-on reset or reset, PSoC 5LP enters bootloader entry mode. If the mode switch SW3 was pressed while the USB connector was plugged in and then released, KitProg2 enters bootloader mode. If the mode switch SW3 was not pressed, then depending on the current mode of operation, PSoC 5LP will enter PPCOM mode, Mass Storage Programming/CMSIS-DAP mode, or the custom application.

As illustrated in Figure 1-3 part (a) switching between KitProg2 and Mass Storage Programming/ CMSIS-DAP mode can be achieved by pressing and releasing the mode switch within five seconds. Similarly, switching to the custom application from the PPCOM or Mass Storage Programming/ CMSIS-DAP mode can be achieved by pressing and holding the mode switch for more than five seconds and then releasing. Switching from the custom mode back to PPCOM or Mass Storage Programming/CMSIS-DAP modes is dependent on the custom application implementation.

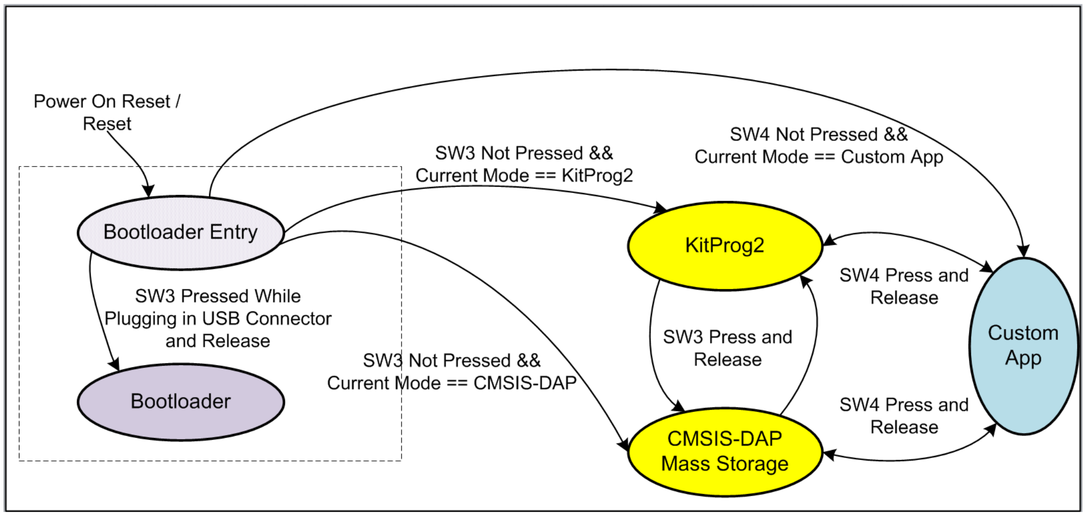
In order to recognize the various state changes the Amber LED shows different effects. When in KitProg2 Mode the Amber LED lights up, when in Mass Storage/CMSIS-DAP mode the Amber LED turns off and when in bootloader mode the Amber LED shows a blinking effect.

Figure 1-3. Switching between KitProg2 Modes

a) For Single Mode Switch Development Kits



b) For Two Mode Switch Development Kits



Note: In order to switch back from custom mode application to CMSIS-DAP/Mass Storage or KitProg2 within the firmware, refer Developing Applications for PSoC 5LP on page 58.

Note: After pressing and releasing the mode switch, it may take a few seconds for the kit to re-enumerate in the new mode. While enumeration is taking place, none of the status LEDs will be ON.

1.2 Acronyms

Acronym	Definition
BCP	Bridge Control Panel
BLE	Bluetooth Low Energy
CMSIS-DAP	Cortex Microcontroller Software Interface Standard Debug Access Protocol
GPIO	General-Purpose Input/Output
HID	Human Interface Device
I2C	Inter-Integrated Circuit
IDE	Integrated Development Environment
JTAG	Joint Test Action Group
LED	Light-Emitting Diode
MISO	Master-In-Serial-Out
MOSI	Master-Out-Serial-In
NVL	Non Volatile Latch
PC	Personal Computer
PPCOM	PSoC Programmer Component Object Module
PSoC	Programmable System-on-Chip
RAM	Random Access Memory
ROM	Read-Only Memory
SCB	Serial Communication Block
SCL	Serial Clock Line
SDA	Serial Data Line
SPI	Serial Peripheral Interface
SWD	Serial Wire Debug
UART	Universal Asynchronous Receiver Transmitter
UDB	Universal Digital Block
USB	Universal Serial Bus
XRES	External Reset

2. Ecosystem

Table 2-1 lists the development kits that use the KitProg2. Table 2-2 lists the prerequisite Cypress software needed to use the KitProg2.

Table 2-1. Development Kits Supported by KitProg2

Development Kits	Target Device	KitProg2 onboard mode switches
CY8CKIT-041-40XX PSoC 4 S-Series Pioneer Kit	PSoC 4000S	Single Switch
CY8CKIT-041-41XX PSoC 4100S Pioneer Kit	PSoC 4100S	Single Switch
CY8CKIT-048 PSoC Analog Coprocessor Pioneer Kit	PSoC Analog Coprocessor	Single Switch
CY8CKIT-145-40XX PSoC 4 S-Series Prototyping Kit	PSoC 4000S	Single Switch
CY8CKIT-146 PSoC 4200DS Prototyping Kit	PSoC 4200DS	Single Switch
CY8CKIT-147 PSoC 4100PS Prototyping Kit	PSoC 4100PS	Single Switch
CY8CKIT-149 PSoC 4100S Plus Prototyping Kit	PSoC 4100S Plus	Single Switch
CY8CKIT-062 BLE Pioneer Kit	PSoC 6	Dual Switch
CY8CKIT-062-WiFi-BT PSoC 6 WiFi-BT Pioneer Kit	PSoC 6 WiFi-BT	Dual Switch

Table 2-2. Prerequisite Software for KitProg2 Operation

Functionality	Pre-requisite Software	Download Link/Remarks
Programmer	PSoC Programmer	www.cypress.com/psocprogrammer
Debugger	PSoC Creator	www.cypress.com/psoccreator
USB-I2C Bridge	Bridge Control Panel (BCP)	Installed along with PSoC Programmer
USB-SPI Bridge	Bridge Control Panel (BCP)	Installed along with PSoC Programmer
USB-UART Bridge	Terminal Emulator Program	Any terminal emulator program can be used such as HyperTerminal (available as part of Microsoft Windows XP installation) or PuTTY (available on www.putty.org)

KitProg2 supports different speeds for communication interfaces. Table 2-3 summarizes the KitProg2 operating modes.

Table 2-3. KitProg2 Operating Modes

Functionality	Supported Speed	Units
Programmer	1.6	MHz
USB-UART Bridge	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200	Baud
USB-I2C Bridge	50, 100, 400, 1000	kHz
USB-SPI Brdige	50–6000	kHz

This document assumes that you know the basics of using PSoC Creator™. If you are new to PSoC Creator, refer to the documentation in the PSoC Creator home page. You can also refer to the following application notes to get started with PSoC devices:

- Getting Started with PSoC® 4
- Getting Started with PSoC® 4 BLE
- Getting Started with PSoC® 5LP
- Getting Started with CapSense®

3. KitProg2 Mode Programmer and Debugger

This section explains how the KitProg2 programmer/debugger is integrated onto the PSoC development kits. The KitProg2 supports the development kits listed in Table 2-1 on page 10. This section uses the PSoC 4 S-Series Pioneer Kit as an example.

KitProg2 uses two types of programming/debugging interfaces – PPCOM and CMSIS-DAP. The PPCOM interface supports Cypress tool chains such as PSoC Creator and PSoC Programmer. The PPCOM interface provides additional options such as programming NVLs, which are not available via a standard CMSIS-DAP interface.

CMSIS-DAP is an alternative programming/debugging interface in which the KitProg2 can be used with third-party tool chains to program/debug the target. This mode is selected when you press and release the mode switch for less than two seconds.

The amber status LED stays ON if the KitProg2 is in PPCOM interface mode and it turns off at a rate of 1 Hz if the KitProg2 is in CMSIS-DAP/Mass Storage Programming mode.

Refer to Switching between KitProg2 Modes on page 7 to understand the behavior of the status LED.

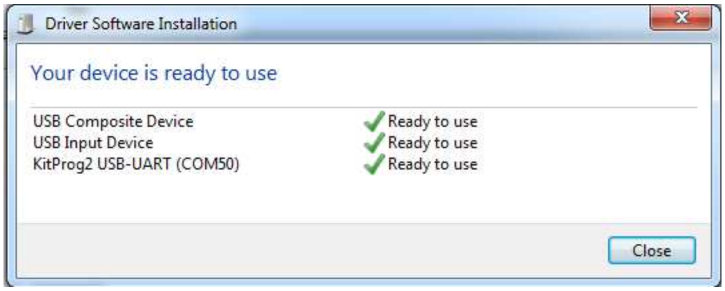
Note: PPCOM is the abbreviation for PSoC Programmer Component Object Module. It is the programming/debugging interface provided in Cypress' PSoC Creator and PSoC Programmer.

3.1 KitProg2 Driver Installation

The kit is powered from a computer over the USB interface. It enumerates as a composite device. The USB drivers required for enumeration are part of the kit installer and should be appropriately installed for correct operation.

Figure 3-1 shows the driver installation in PPCOM programming mode and Figure 3-2 shows the driver installation in CMSIS-DAP programming mode.

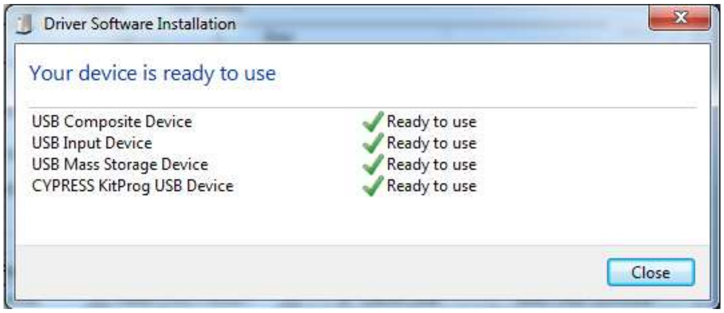
Figure 3-1. KitProg2 Driver Installation in PPCOM Programming Mode



Your device is ready to use

USB Composite Device ✓ Ready to use
USB Input Device ✓ Ready to use
KitProg2 USB-UART (COM50) ✓ Ready to use

Figure 3-2. KitProg2 Driver Installation in CMSIS-DAP Programming Mode



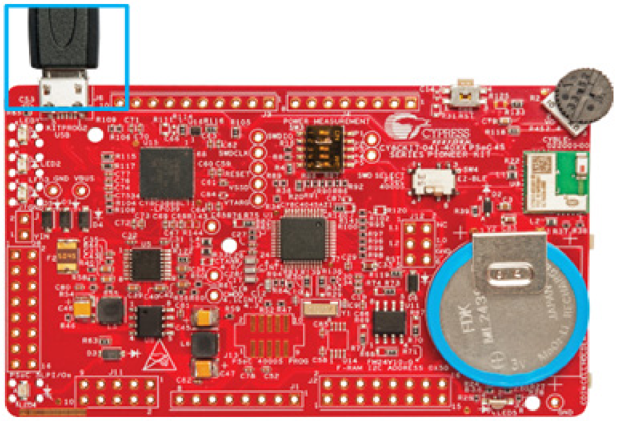
Your device is ready to use

USB Composite Device	✓ Ready to use
USB Input Device	✓ Ready to use
USB Mass Storage Device	✓ Ready to use
CYPRESS KitProg USB Device	✓ Ready to use

3.2 Programming Using PSoC Creator

1. Connect a USB cable to the USB connector, J6, as shown in Figure 3-3. If you are connecting the kit to your PC for the first time, it enumerates as a USB composite device and installs the required driver software.
2. Verify the KitProg2 is in PPCOM mode (Amber LED is ON). See Switching between KitProg2 Modes on page 7 for details.

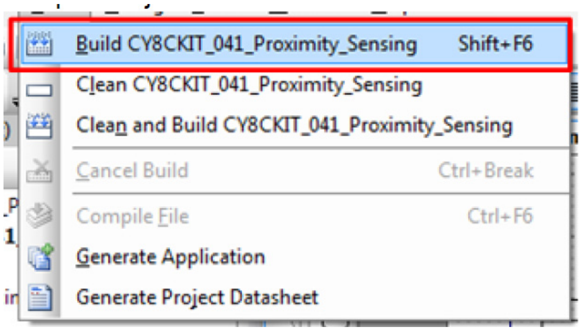
Figure 3-3. Connect USB Cable to J6 (Pioneer Kits)



3. Launch PSoC Creator from **Start** > **All Programs** > **Cypress** > **PSoC Creator <version>** > **PSoC Creator <version>**.
4. Select **File** > **Open** > **Project/Workspace** in PSoC Creator and browse to the desired project. You may also select **File** > **Code Example** to browse through a library of existing example projects. See PSoC Creator User Guide for details.

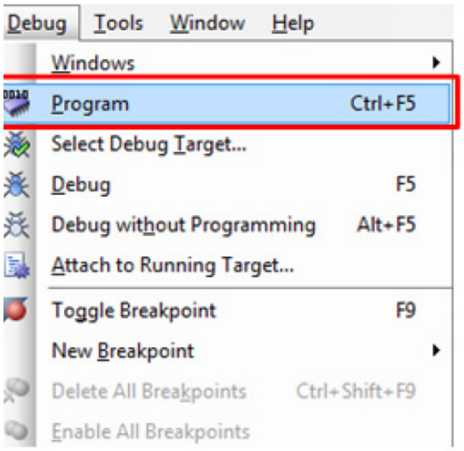
5. Select **Build** > **Build Project** or press **[Shift] [F6]** to build the project, as shown in Figure 3-4.

Figure 3-4. Build an Example Project


Build CY8CKIT_041_Proximity_Sensing Shift+F6
Clean CY8CKIT_041_Proximity_Sensing
Clean and Build CY8CKIT_041_Proximity_Sensing
Cancel Build Ctrl+Break
Compile File Ctrl+F6
Generate Application
Generate Project Datasheet

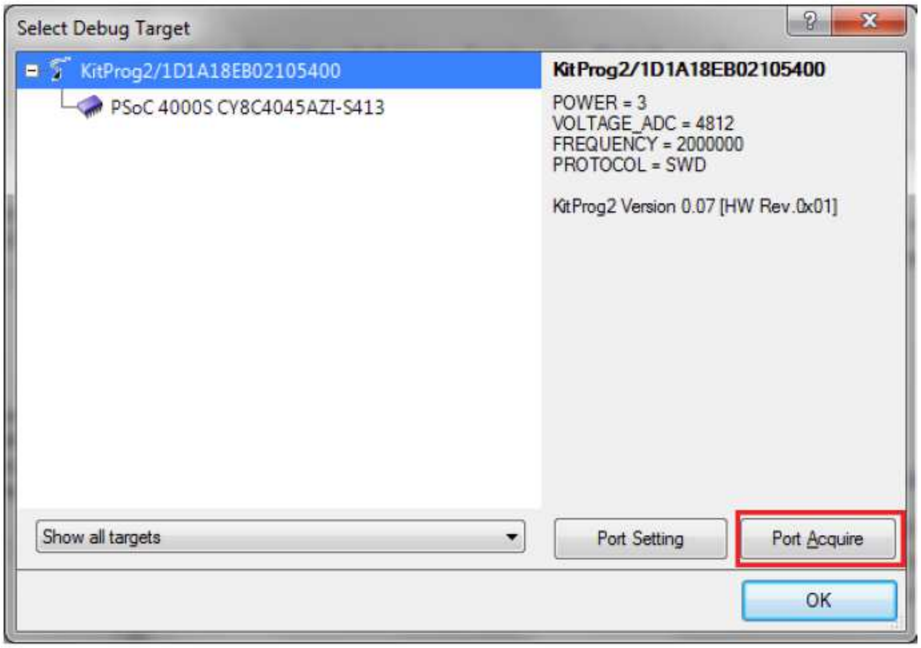
6. If there are no errors during build, program the PSoC 4000S device on the kit by choosing **Debug** > **Program** or pressing **[Ctrl] [F5]**, as shown in Figure 3-5.

Figure 3-5. Programming Device from PSoC Creator



7. If the device is already acquired, programming will complete automatically – the result will appear in the PSoC Creator status bar at the bottom left of the screen. If the device is yet to be acquired, the Select Debug Target window will appear. Select **KitProg2/<serial number>** and click the **Port Acquire** button, as shown in Figure 3-6.

Figure 3-6. Port Acquire



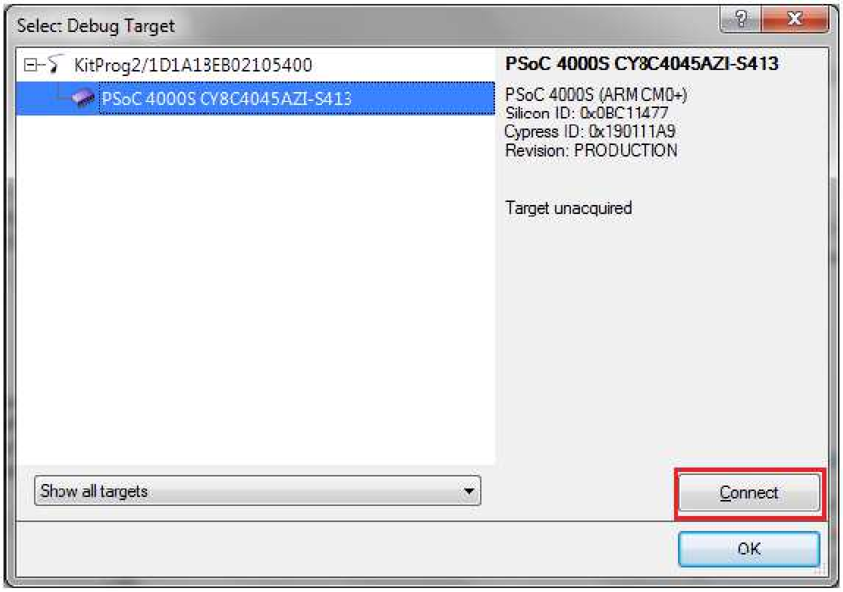
KitProg2/1D1A18EB02105400
PSoC 4000S CY8C4045AZI-S413

KitProg2/1D1A18EB02105400
POWER = 3
VOLTAGE_ADC = 4812
FREQUENCY = 2000000
PROTOCOL = SWD

KitProg2 Version 0.07 [HW Rev.0x01]

8. After the device is acquired, it is shown in a tree structure below the **KitProg2/<serial number>**. Click the **Connect** button and then **OK** to exit the window and start programming, as shown in Figure 3-7.

Figure 3-7. Connect Device from PSoC Creator and Program



KitProg2/1D1A18EB02105400
PSoC 4000S CY8C4045AZI-S413

PSoC 4000S CY8C4045AZI-S413
PSoC 4000S (ARM CM0+)
Silicon ID: 0x0BC11477
Cypress ID: 0x190111A9
Revision: PRODUCTION

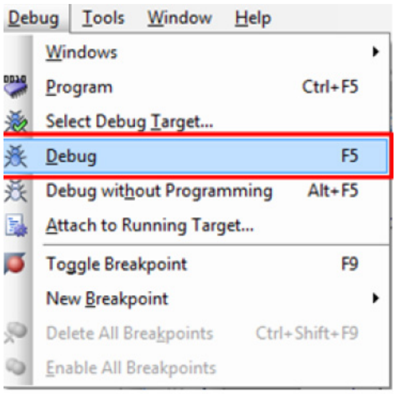
Target unacquired

3.3 Debugging Using PSoC Creator

To debug the project using PSoC Creator, follow steps 1 to 5 from section Programming Using PSoC Creator on page 13. Then, follow these steps:

1. Click the **Debug** icon or press **[F5]**, as shown in Figure 3-8. Alternatively, you can select **Debug** > **Debug**. This programs the device and starts the debugger.

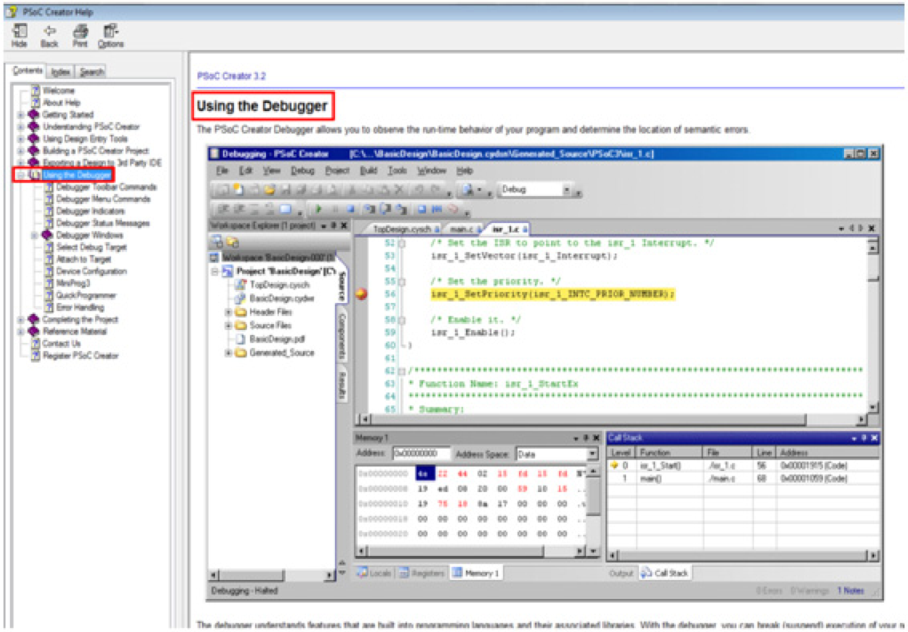
Figure 3-8. Debug Option in PSoC Creator



2. When PSoC Creator enters the Debug mode, use the buttons on the toolbar or keyboard shortcuts to debug your project.

   For more details on using the debug features, refer to the PSoC Creator Help. Select **Help** > **PSoC Creator Help Topics** in the PSoC Creator menu. In the PSoC Creator Help window, locate **Using the Debugger** section in the **Contents** tab, as shown in Figure 3-9.

Figure 3-9. Using the PSoC Creator Debugger



Using the Debugger

The PSoC Creator Debugger allows you to observe the run-time behavior of your program and determine the location of semantic errors.

```
    /* Set the ISR to point to the isr_1 Interrupt. */
    isr_1_SetVector(isr_1_Interrupt);

    /* Set the priority. */
    isr_1_SetPriority(isr_1_INTC_PRIOR_NUMBER);

    /* Enable it. */
    isr_1_Enable();
}

/*******************************************************************************
* Function Name: isr_1_StartEx
********************************************************************************
* Summary:
```

Address: 0x00000000 Address Space: Data

Level	Function	File	Line	Address
0	isr_1_Start()	./isr_1.c	56	0x00001915 [Code]
1	main()	./main.c	68	0x00001059 [Code]

The debugger understands features that are built into programming languages and their associated libraries. With the debugger, you can break (suspend) execution of your p

3.4 Programming Using PSoC Programmer

PSoC Programmer (3.24.2 or later) can be used to program existing *.hex* files into the kit. To do this, follow these steps.

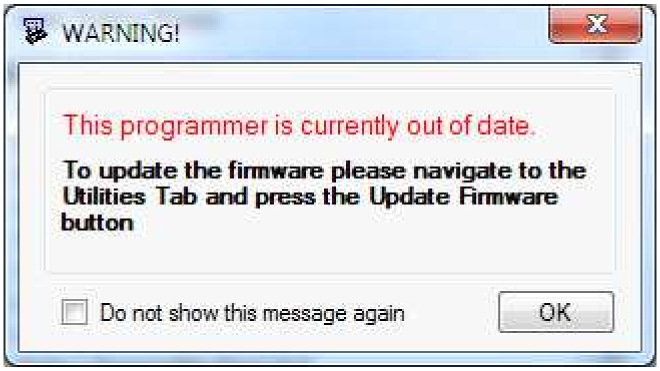
1. Connect the kit to your PC and open PSoC Programmer from **Start** > **All Programs** > **Cypress** > **PSoC Programmer <version>** > **PSoC Programmer <version>**.
2. Click the **File Load** button at the top left corner of the window. Browse to the desired *.hex* file and click **Open**. For PSoC 4000S devices, the *.hex* file is located at: `<Project Directory>\<Project Name.cydsn>\CortexM0p\<Compiler Name and Version>\<Debug> or <Release>\<Project Name.hex>`.
3. Click the **KitProg2/<serial number>** in the **Port Selection** list to connect the kit to your computer.
4. Click the **Program** button to start programming the kit with the selected file.

   Note: If the *.hex* file does not match the selected device, PSoC Programmer will display a device mismatch error and terminate programming. Ensure that you have selected the correct *.hex* file.
5. When programming is completed successfully, indicated by a PASS message on the status bar, the kit is ready for use. Close PSoC Programmer.

3.5 Updating the KitProg2 Firmware

The KitProg2 firmware generally does not require any update. If an update is required, then PSoC Programmer will display a warning message when the kit is connected to it, as shown in Figure 3-10.

Figure 3-10. KitProg2 Firmware Update Warning



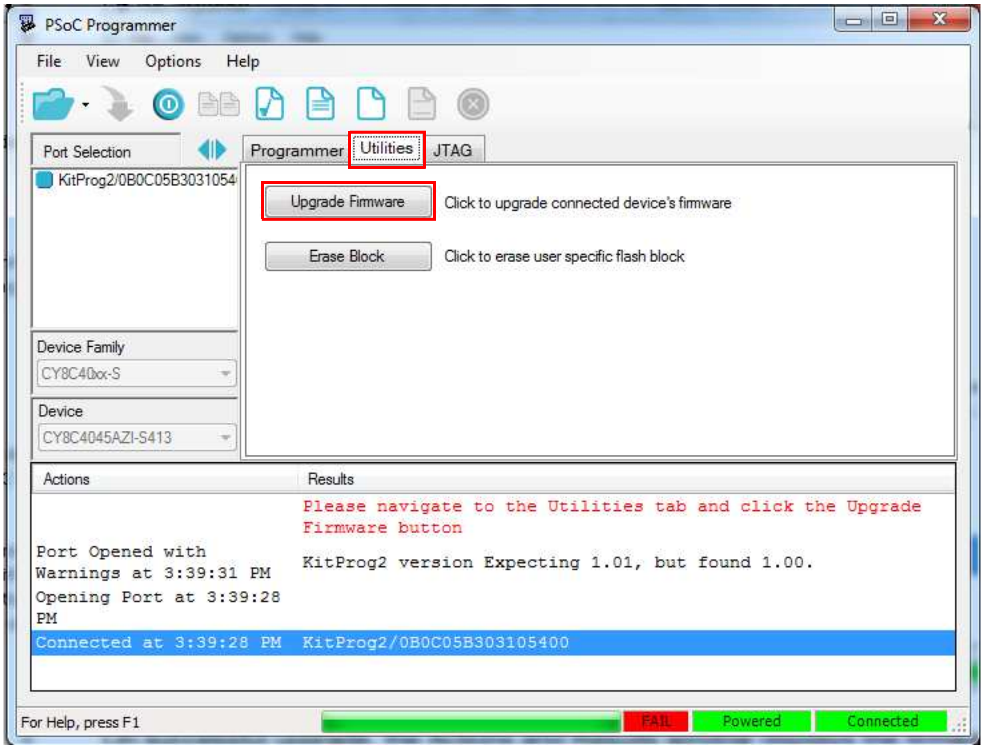
This programmer is currently out of date.

To update the firmware please navigate to the Utilities Tab and press the Update Firmware button

Click **OK** to close the window. On closing the warning window, the Actions and Results window displays: “Please navigate to the Utilities tab and click the Upgrade Firmware button”, as shown in Figure 3-11.

To update the KitProg2, go to the **Utilities** tab on PSoC Programmer and click **Upgrade Firmware**, as shown in Figure 3-11.

Figure 3-11. Upgrade Firmware in PSoC Programmer



KitProg2/0B0C05B3031054

Click to upgrade connected device's firmware

Click to erase user specific flash block

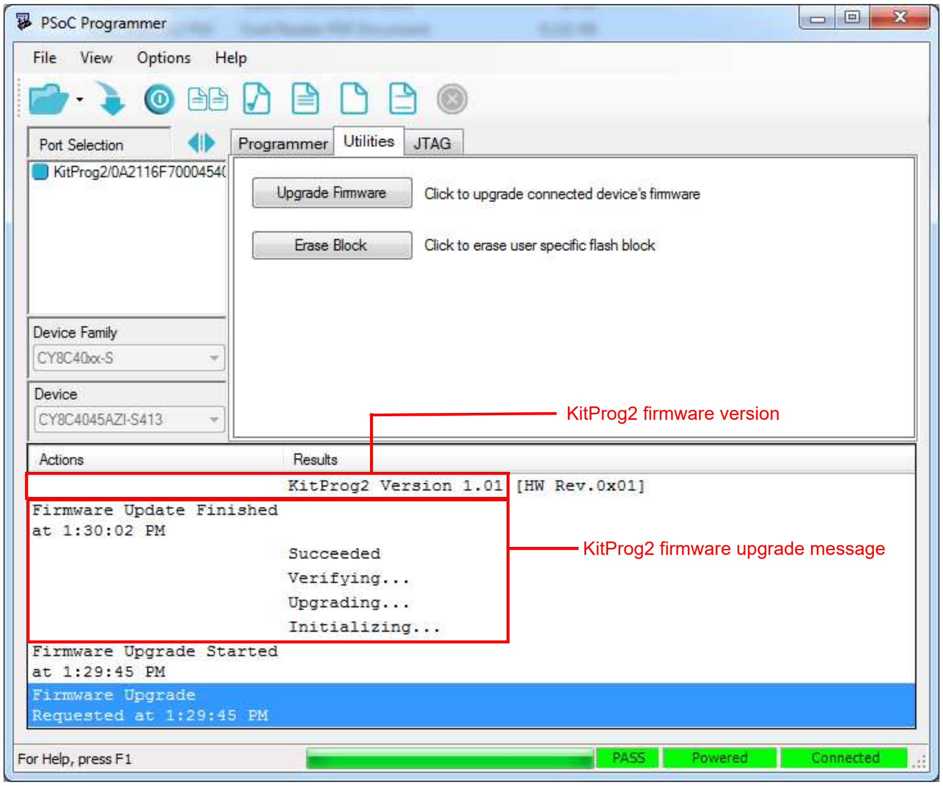
Device Family: CY8C40xx-S

Device: CY8C4045AZI-S413

```
                               Please navigate to the Utilities tab and click the Upgrade
                               Firmware button
Port Opened with
Warnings at 3:39:31 PM         KitProg2 version Expecting 1.01, but found 1.00.
Opening Port at 3:39:28
PM
Connected at 3:39:28 PM        KitProg2/0B0C05B303105400
```

On successful upgrade, the Actions and Results window displays the firmware update message with the KitProg2 version, as shown in Figure 3-12.

Figure 3-12. Firmware Updated in PSoC Programmer



Port Selection: KitProg2/0A2116F7000454(

Upgrade Firmware: Click to upgrade connected device's firmware

Erase Block: Click to erase user specific flash block

Device Family: CY8C40xx-S

Device: CY8C4045AZI-S413

```
Actions                          Results
                                 KitProg2 Version 1.01 [HW Rev.0x01]
Firmware Update Finished
at 1:30:02 PM
                                 Succeeded
                                 Verifying...
                                 Upgrading...
                                 Initializing...
Firmware Upgrade Started
at 1:29:45 PM
Firmware Upgrade
Requested at 1:29:45 PM
```

For Help, press F1

KitProg2 firmware version

KitProg2 firmware upgrade message

4. CMSIS-DAP Mode Programming and Debugging

This section explains how the CMSIS-DAP programmer/debugger is integrated onto the PSoC development kits. The KitProg2 supports the development kits listed in Table 2-1. This section uses the PSoC 4 S-Series Pioneer Kit as an example.

The KitProg2 programmer and debugger (PPCOM), KitProg2 USB-I2C Bridge, and KitProg2 USB-UART Bridge functionalities are not available in this configuration.

CMSIS-DAP is an alternative programming/debugging interface in which the KitProg2 can be used with third-party tool chains to program/debug the target. This mode is selected when you press and release the mode switch for less than two seconds.

The amber status LED stays ON if the KitProg2 is in PPCOM interface mode and it turns off at a rate of 1 Hz if the KitProg2 is in CMSIS-DAP/Mass Storage Programming mode.

Refer to Switching between KitProg2 Modes on page 7 to understand the behavior of status LED.

4.1 Programming and Debugging using µVision

CMSIS-DAP mode can be used for programming from many third party IDEs. As an example, the steps to program using µVision are shown below.

To use KitProg2 in CMSIS-DAP mode to program using µVision, do the following:

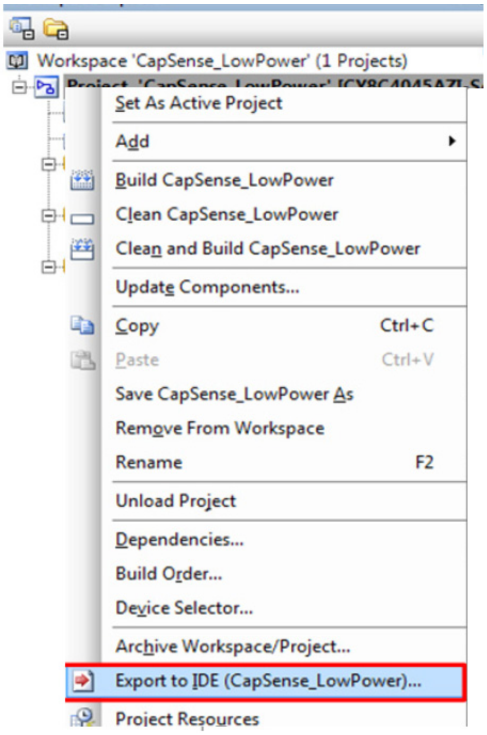
1. Connect the kit to PC and enter into CMSIS-DAP mode. To enter into CMSIS-DAP mode, refer Switching between KitProg2 Modes on page 7.

   Note: The KitProg2 should be in the CMSIS-DAP programming mode (press mode switch SW3 on CY8CKIT-041-40XX for less than two seconds to change modes). In this mode, the amber LED switches OFF.

   Note: in KitProg2 1.04 version, this LED will show breathing effect in Mass Storage or CMSIS-DAP mode.

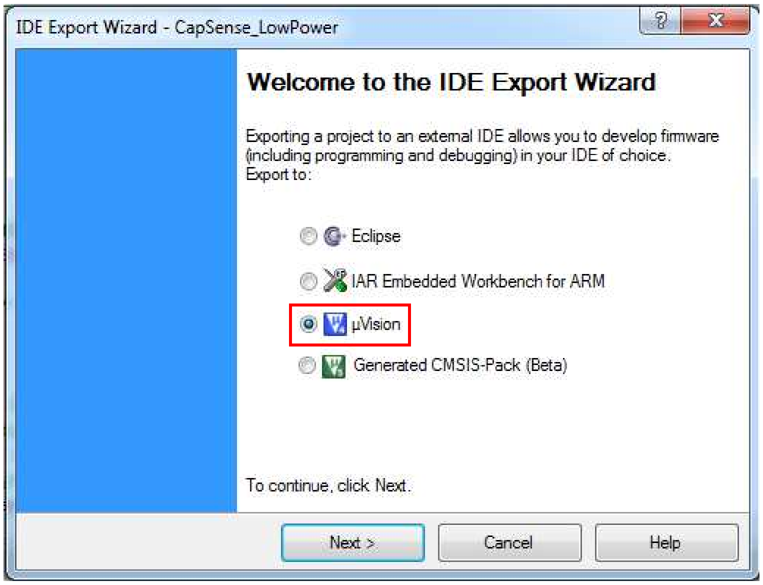
2. Open the project in PSoC Creator and build the project. Right-click the project in the Workspace Explorer and select **Export to IDE**, as shown in Figure 4-1.

Figure 4-1. Export to IDE



3. Select the IDE as shown in Figure 4-2.

Figure 4-2. Select IDE



IDE Export Wizard - CapSense_LowPower

Welcome to the IDE Export Wizard

Exporting a project to an external IDE allows you to develop firmware (including programming and debugging) in your IDE of choice.
Export to:

○ Eclipse

○ IAR Embedded Workbench for ARM

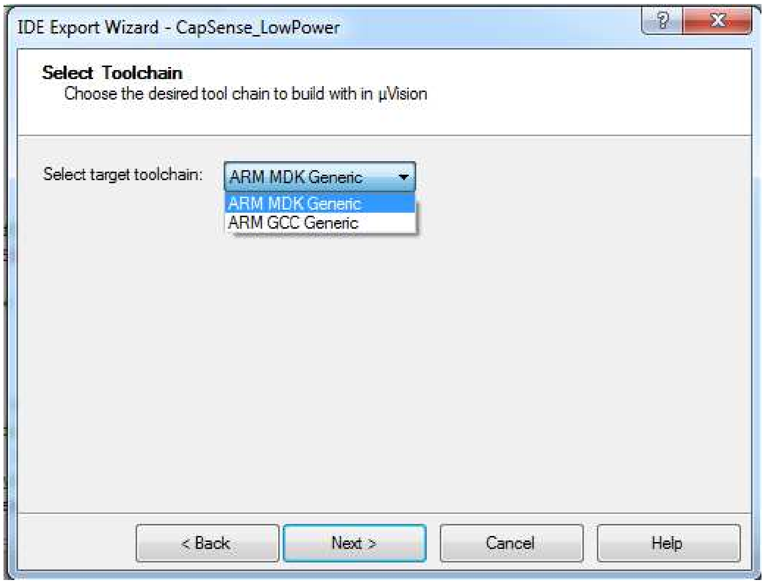
● µVision

○ Generated CMSIS-Pack (Beta)

To continue, click Next.

4. Select the tool chain as shown in Figure 4-3.

Figure 4-3. Select Tool Chain



IDE Export Wizard - CapSense_LowPower

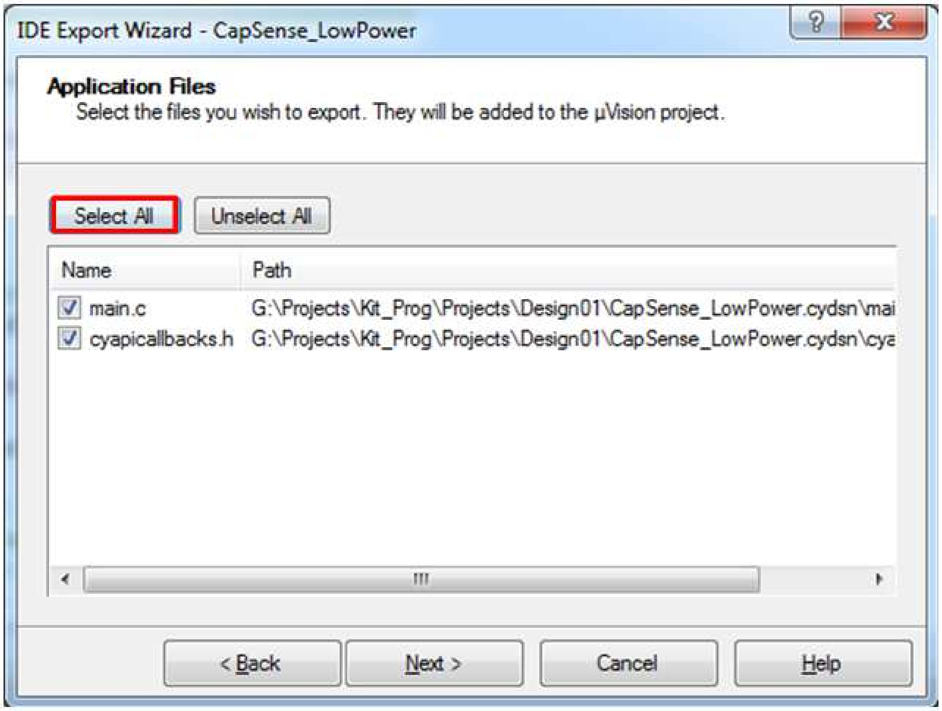
Select Toolchain

Choose the desired tool chain to build with in µVision

Select target toolchain: ARM MDK Generic

5. Select the project files as shown in Figure 4-4. The next window that appears is **Review export details**. Click **Export**.

Figure 4-4. Select Project Files



IDE Export Wizard - CapSense_LowPower

Application Files

Select the files you wish to export. They will be added to the µVision project.

Name	Path
☑ main.c	G:\Projects\Kit_Prog\Projects\Design01\CapSense_LowPower.cydsn\mai
☑ cyapicallbacks.h	G:\Projects\Kit_Prog\Projects\Design01\CapSense_LowPower.cydsn\cya

6. Open the µVision project in the µVision IDE tool. Keil µVision version 4.74.0.22 is used in this illustration. Build the project in µVision.

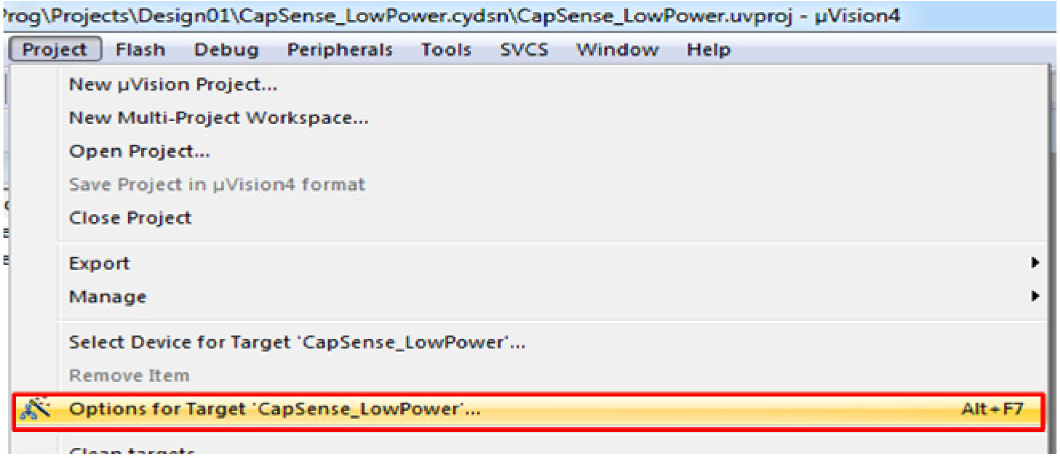
7. Open the PSoC Programmer installation folder and look for the path `Programmer\3rd_Party _Configuration_Files\CY8C40xx\Prog_Algorithm`.

   Note: The default path location of PSoC programmer installation folder is `C:\Program Files (x86)\Cypress\Programmer`.

8. Copy the *CY8C40xx.FLM* file to the `\ARM\Flash` folder inside the installation directory of Keil µVision. This will typically look similar to: `C:\Keil\ARM\Flash\`

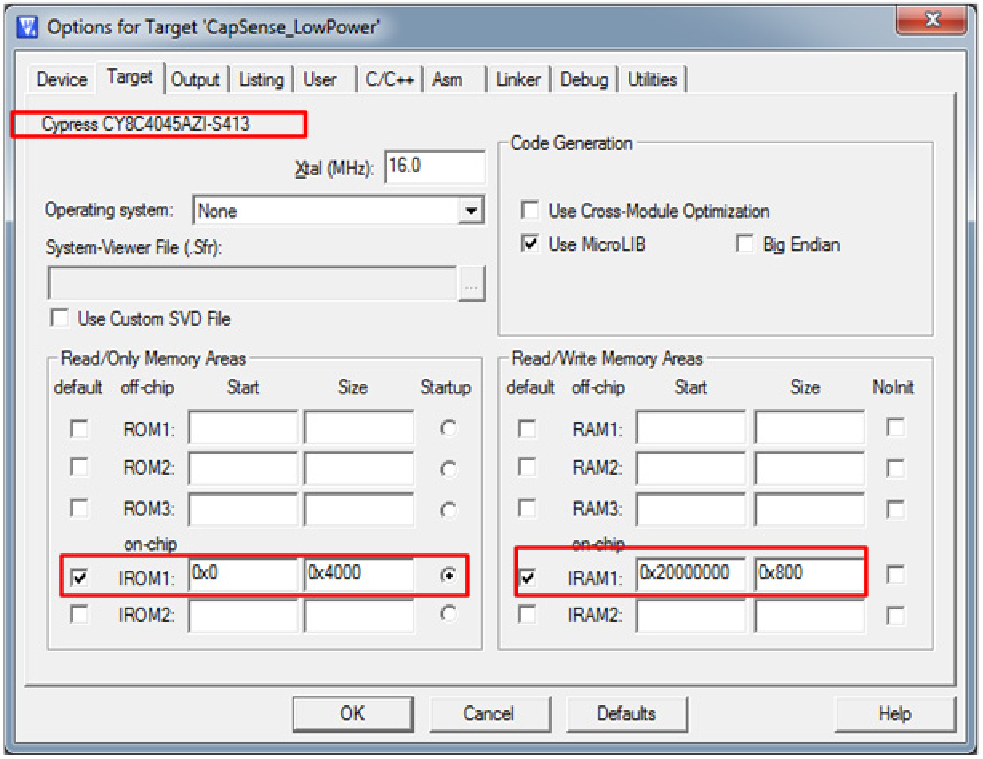
9. Select **Project > Options for Target "project_name"**.

Figure 4-5. Option for Target in µVision


'rog\Projects\Design01\CapSense_LowPower.cydsn\CapSense_LowPower.uvproj - µVision4
Project
Flash
Debug
Peripherals
Tools
SVCS
Window
Help
New µVision Project...
New Multi-Project Workspace...
Open Project...
Save Project in µVision4 format
Close Project
Export
Manage
Select Device for Target 'CapSense_LowPower'...
Remove Item
Options for Target 'CapSense_LowPower'...
Alt+F7
Clean targets

10. Make sure to set appropriate values for ROM and RAM areas of the target device as shown in Figure 4-6.

Figure 4-6. Target Tab



Cypress CY8C4045AZI-S413

Xtal (MHz): 16.0

Operating system: None

System-Viewer File (.Sfr):

□ Use Custom SVD File

Code Generation

□ Use Cross-Module Optimization

☑ Use MicroLIB □ Big Endian

Read/Only Memory Areas

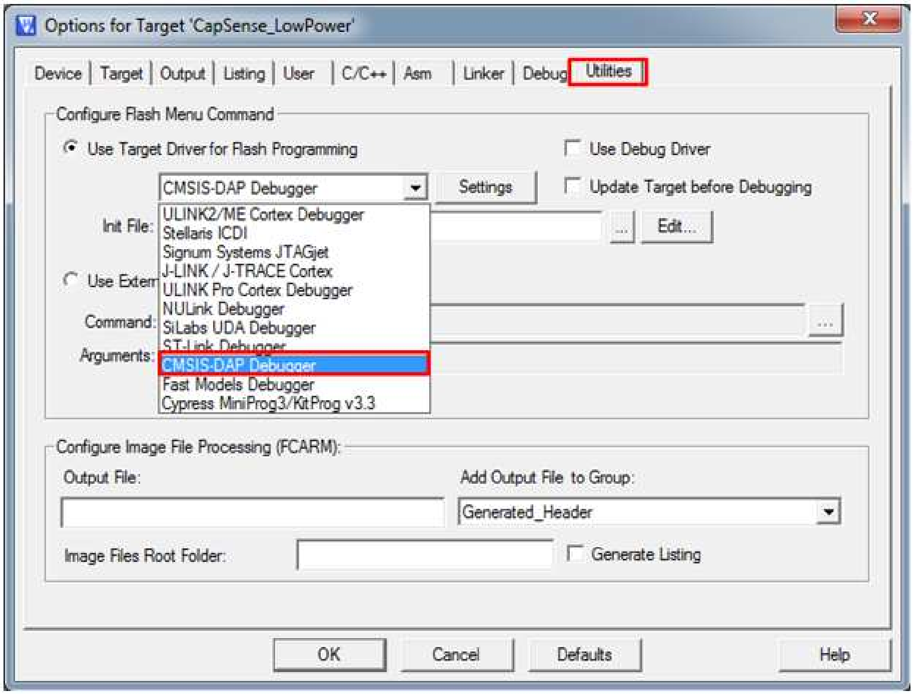
default	off-chip	Start	Size	Startup
□	ROM1:			○
□	ROM2:			○
□	ROM3:			○
	on-chip			
☑	IROM1:	0x0	0x4000	●
□	IROM2:			○

Read/Write Memory Areas

default	off-chip	Start	Size	NoInit
□	RAM1:			□
□	RAM2:			□
□	RAM3:			□
	on-chip			
☑	IRAM1:	0x20000000	0x800	□
□	IRAM2:			□

11. Select the **Utilities** tab and select **CMSIS-DAP Debugger**, as shown in Figure 4-7.

Figure 4-7. Utilities Tab in µVision.



Options for Target 'CapSense_LowPower'

Configure Flash Menu Command

● Use Target Driver for Flash Programming

CMSIS-DAP Debugger

□ Use Debug Driver

□ Update Target before Debugging

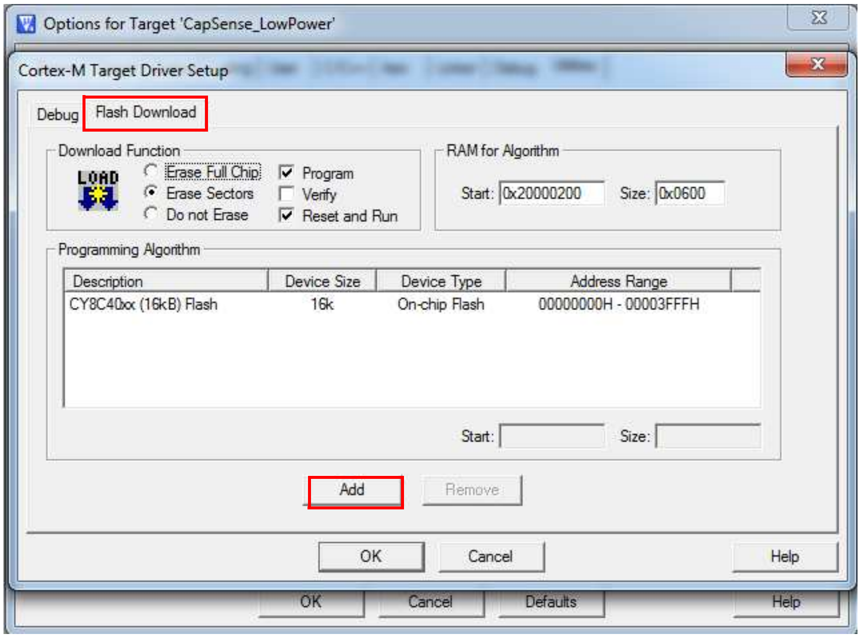
Configure Image File Processing (FCARM):

Add Output File to Group: Generated_Header

□ Generate Listing

12. A programming algorithm must be added in the IDE to program PSoC 4. Click the **Settings** option. The **Cortex-M Target Driver Setup** window will open as shown in Figure 4-8. Go to the **Flash Download** tab and click the **Add** button as shown in Figure 4-9. Select the option corresponding to PSoC 4 in the programming algorithm.

Figure 4-8. Cortex-M Target Driver Setup



Options for Target 'CapSense_LowPower'

Cortex-M Target Driver Setup

Download Function

○ Erase Full Chip

● Erase Sectors

○ Do not Erase

☑ Program

□ Verify

☑ Reset and Run

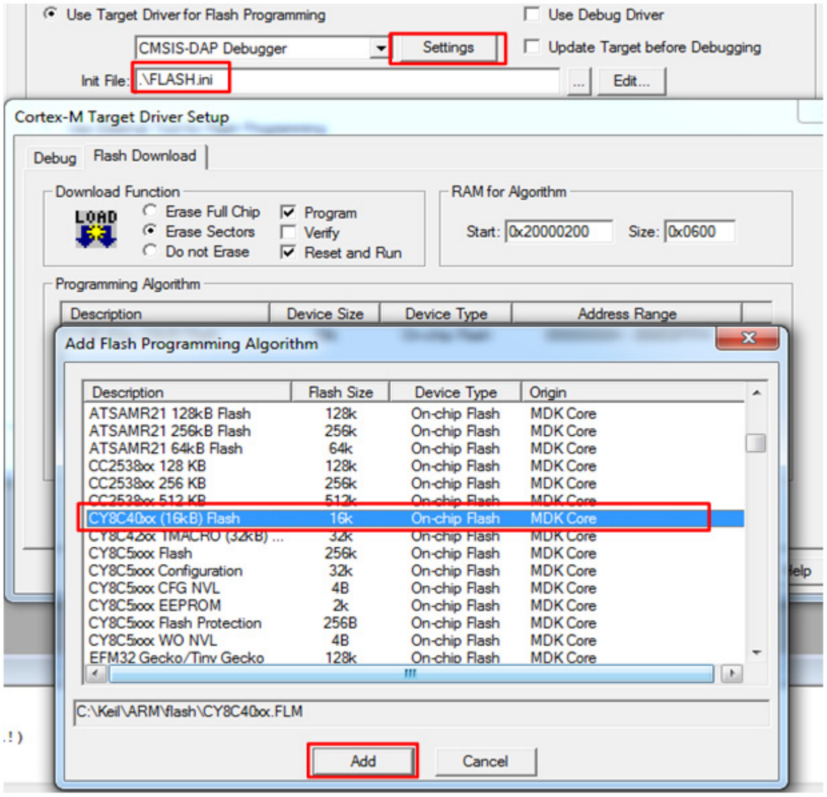
RAM for Algorithm

Start: 0x20000200 Size: 0x0600

Programming Algorithm

Description	Device Size	Device Type	Address Range
CY8C40xx (16kB) Flash	16k	On-chip Flash	00000000H - 00003FFFH

Figure 4-9. Flash Download Tab in Target Driver Setup



● Use Target Driver for Flash Programming □ Use Debug Driver

CMSIS-DAP Debugger

□ Update Target before Debugging

Init File: .\FLASH.ini

Cortex-M Target Driver Setup

Download Function: ○ Erase Full Chip ● Erase Sectors ○ Do not Erase ☑ Program □ Verify ☑ Reset and Run

RAM for Algorithm: Start: 0x20000200 Size: 0x0600

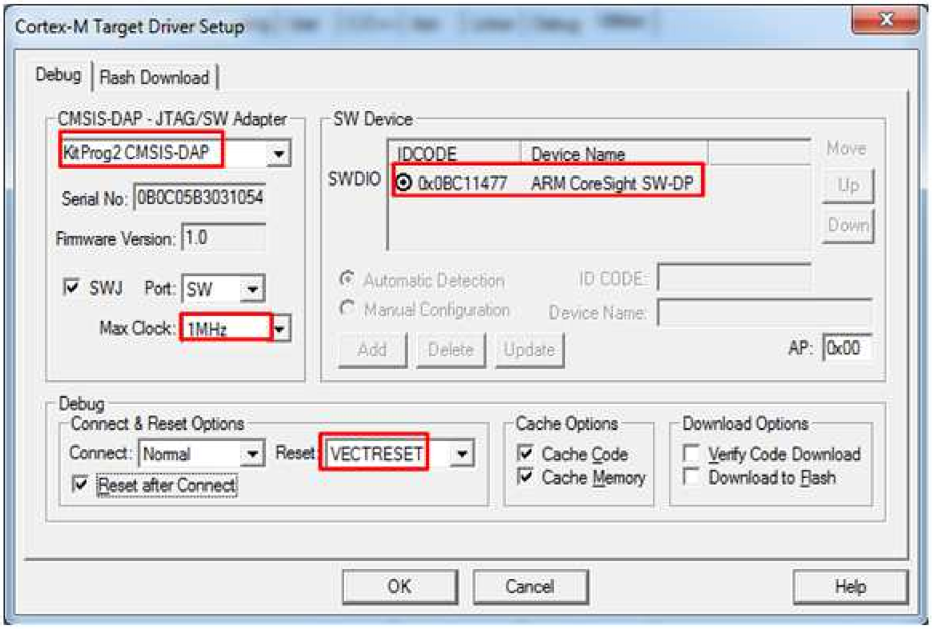
Add Flash Programming Algorithm

Description	Flash Size	Device Type	Origin
ATSAMR21 128kB Flash	128k	On-chip Flash	MDK Core
ATSAMR21 256kB Flash	256k	On-chip Flash	MDK Core
ATSAMR21 64kB Flash	64k	On-chip Flash	MDK Core
CC2538xx 128 KB	128k	On-chip Flash	MDK Core
CC2538xx 256 KB	256k	On-chip Flash	MDK Core
CC2538xx 512 KB	512k	On-chip Flash	MDK Core
CY8C40xx (16kB) Flash	16k	On-chip Flash	MDK Core
CY8C42xx TMACRO (32kB) ...	32k	On-chip Flash	MDK Core
CY8C5xxx Flash	256k	On-chip Flash	MDK Core
CY8C5xxx Configuration	32k	On-chip Flash	MDK Core
CY8C5xxx CFG NVL	4B	On-chip Flash	MDK Core
CY8C5xxx EEPROM	2k	On-chip Flash	MDK Core
CY8C5xxx Flash Protection	256B	On-chip Flash	MDK Core
CY8C5xxx WO NVL	4B	On-chip Flash	MDK Core
EFM32 Gecko/Tiny Gecko	128k	On-chip Flash	MDK Core

C:\Keil\ARM\flash\CY8C40xx.FLM

13. Select the **Debug** tab. Make sure that KitProg2 is listed in the CMSIS-DAP – JTAG/SW adapter. Select the port as **SW**; the SW Device field will show **IDcode** as **0x0BB11477**. Set the clock frequency to **1MHz** and the Reset option to **VECTRESET** as shown in Figure 4-10. Click **OK** and program the device using the option **Flash > Download**.

Figure 4-10. Debug Tab in Target Driver Setup



Cortex-M Target Driver Setup

CMSIS-DAP - JTAG/SW Adapter: KitProg2 CMSIS-DAP

Serial No: 0B0C05B3031054

Firmware Version: 1.0

☑ SWJ Port: SW

Max Clock: 1MHz

SW Device

	IDCODE	Device Name
SWDIO	● 0x0BC11477	ARM CoreSight SW-DP

● Automatic Detection ID CODE:
○ Manual Configuration Device Name:

AP: 0x00

Debug — Connect & Reset Options: Connect: Normal Reset: VECTRESET ☑ Reset after Connect

Cache Options: ☑ Cache Code ☑ Cache Memory

Download Options: □ Verify Code Download □ Download to Flash