



PSoC® Creator™ Release Notes

Version 4.0

Overview

PSoC Creator 4.0 is a major upgrade from PSoC Creator 3.3 (including any service packs and component packs). This release adds the following features:

- Support for FM0+ Devices
- Text Versions of Schematic Files and XML Design-Wide Resource Files
- BLE Module Support in New Project Wizard
- My Templates (user-provided project templates)
- Export to Makefile

This release does not replace existing installed versions of PSoC Creator (e.g., 3.2 or 3.3); it installs alongside them. This enables you to move designs to the new version at your own pace. We guarantee that your existing designs can be opened in the new software, but please upgrade your components to the latest version. To ensure that you can always return to your previous setup, a backup of your project is automatically created when opening a project in a new version of the tool. It is stored in a folder named "backup" in the project's folder.

If you have technical questions, visit www.cypress.com/go/support or call 1-800-541-4736 and select 2.

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PSoC Creator 4.0 New Features

Support for FM0+ Devices

This release supports **FM0+** devices in PSoC Creator, including the following series:

- S6E1B3 and S6E1B8
- S6E1C1 and S6E1C3
- S6E1A1

You can create new projects targeting FM0+ devices, configure them using schematic and resource files, write firmware for them, and build and debug, all within PSoC Creator.

Components for FM0+ devices

The following new set of **Peripheral Driver Library (PDL)** components has been added to support the FM0+ devices this release. PDL is a library of C functions that control the peripheral blocks in FM0+ devices.

System Components	
■ DMA Channel (PDL_DMA_v1_0)	
■ Unique Id (PDL_UID_v1_0)	
■ Reset (PDL_RESET_v1_0)	
■ Low Voltage Detect (PDL_LVD_v1_0)	
■ Low Power Modes (PDL_LPM_v1_0)	
■ Hardware Watchdog (PDL_HWWDG_v1_0)	
■ Software Watchdog (PDL_SWWDG_v1_0)	
■ Clock Functions (PDL_CLK_v1_0)	
■ CR-Trimming (PDL_CR_v1_0)	
■ Clock Supervisor Functions (PDL_CSV_v1_0)	
■ RTC (PDL_RTC_v1_0)	
	■ Descriptor System Data Transfer (PDL_DSTC_v1_0)
	■ Segment LCD (PDL_LCD_v1_0)
	■ VBAT Domain (PDL_VBAT_v1_0)
	System / Memory Components
	■ Main Flash (PDL_MFlash_v1_0)
	Ports and Pins
	■ GPIO (PDL_GPIO_v1_0)
	■ FGPIO (PDL_FGPIO_v1_0)
	■ External Interrupt (PDL_EXINT_v1_0)

Communication
<ul style="list-style-type: none"> ▪ MFS (PDL_MFS_v1_0) ▪ Remote Control (PDL_RC_v1_0)
Digital
<ul style="list-style-type: none"> ▪ Base Timer Channel (PDL_BT_v1_0) ▪ Cyclic Redundancy Check (PDL_CRC_v1_0) ▪ Programmable CRC (PDL_PCRC_v1_0)

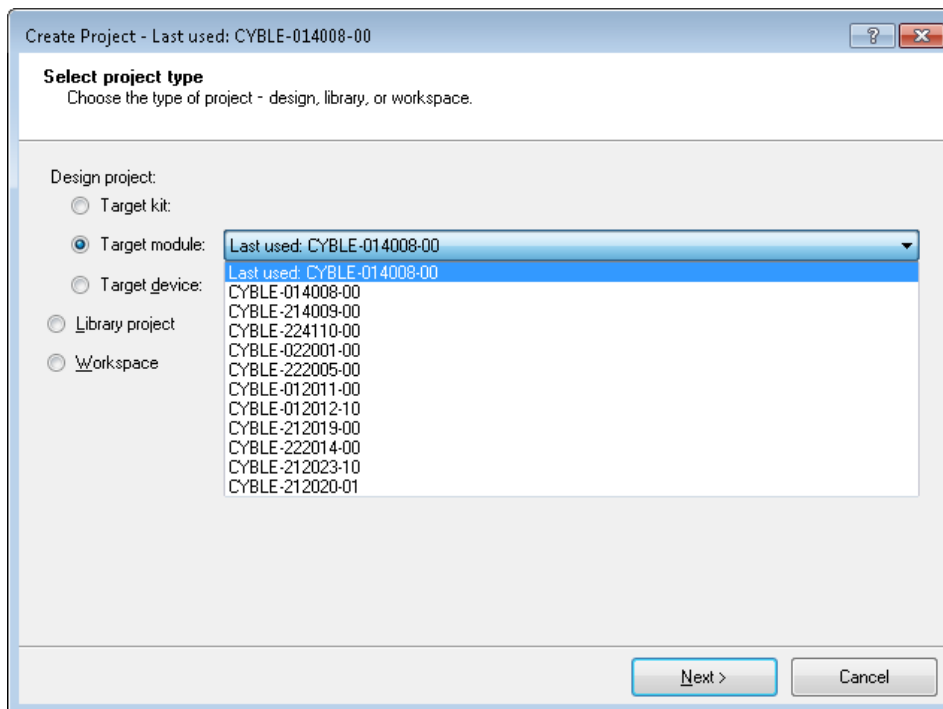
<ul style="list-style-type: none"> ▪ Quadrature Position Revolution Counter (PDL_QPRC_v1_0)
<ul style="list-style-type: none"> ▪ Watch Counter (PDL_WC_v1_0)
<ul style="list-style-type: none"> ▪ Dual Timer Channel (PDL_DT_v1_0)
Analog
<ul style="list-style-type: none"> ▪ ADC (PDL_ADC_v1_0)
<ul style="list-style-type: none"> ▪ DAC (PDL_DAC_v1_0)

Schematic Text Files and XML Resource Files

This feature enables text-based design comparison between two (or more) projects. When the feature is enabled in the Options dialog, PSoC Creator saves a pair of extra files alongside the schematic (cysch) file. These two files represent a human-readable semantic (cysem) and visual (cyvis) representation of the schematic. These can be used to track and record changes made to the design. Cypress recommends that these files are included in revision control systems for your project.

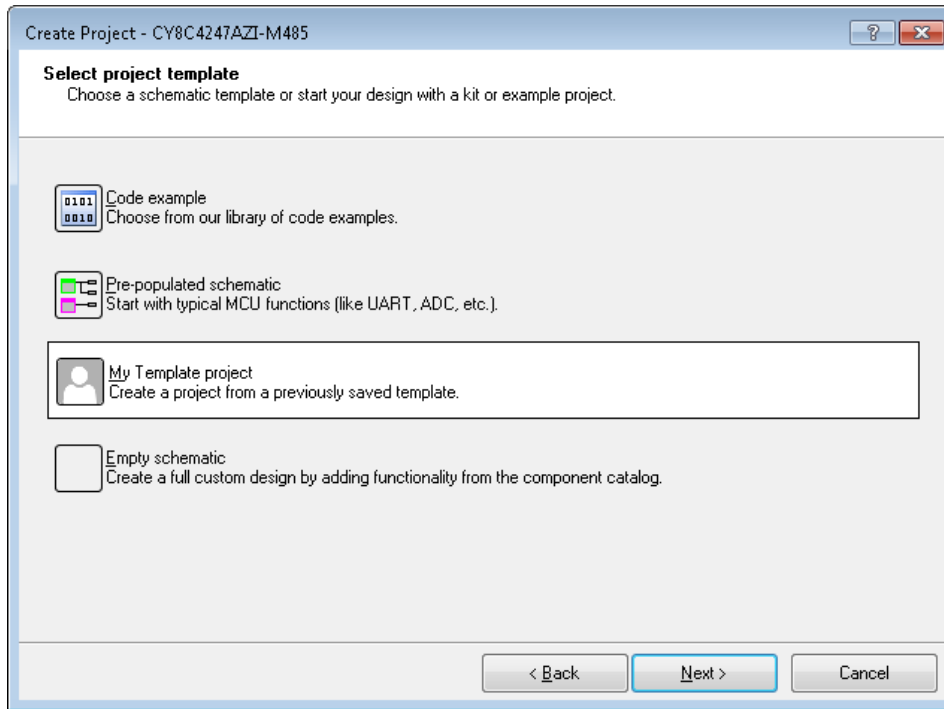
Module Support in New Project Wizard

This feature makes hardware modules (for example, BLE modules) easier to find and use in new projects. There are now three separate options under Design project.



My Templates (user-provided project templates)

This feature allows you to add your own designs as templates in the New Project dialog.



To create your own templates, select the **Copy to My Templates** item in the **Project** menu.

Export to Makefile

This feature provides a new export feature to a makefile, which allows you to build PSoC designs in many IDEs, as well as from the command-line.



New PSoC Components

This release of PSoC Creator provides the following new component. For more information, refer to the component datasheet.

- PSoC 4 Power Monitor

Updated PSoC Components

The following components have been updated to new versions as part of this release to address various component defects and feature updates. Refer to the component datasheet for specific details.

- BLE 3.20
- Capsense_CSD_P4 2.50
- CapSense_P4 3.10
- cy_boot 5.50
- Scan_ADC 1.20
- UAB_VDAC 1.10
- USBFS 3.10

Design Impact

SCB0 is not Selectable for CYBL10161

PSoC Creator 3.3 SP1 incorrectly allowed designs to use the non-existent SCB0 in the CYBL10161 device. PSoC Creator 4.0 now correctly displays an error condition when this usage is detected.

Discontinued Support for Windows XP and Vista in PSoC Creator 4.1 and Beyond

PSoC Creator 4.0 (and updates) is the final release to support Windows XP and Windows Vista. Microsoft has discontinued support for these Windows platforms, and features being developed for PSoC Creator 4.1 require versions of .NET that are not compatible with those platforms.

Defects in PDL 2.1.0 Modules

The components supporting FM0+ devices, listed in [Components for FM0+ devices](#), use firmware drivers from the Cypress Peripheral Driver Library (PDL) 2.1.0 (the PDL is automatically installed with PSoC Creator). The following combinations of driver and device are not supported due to defects in the PDL. Contact Cypress Technical Support for advice on availability of a newer PDL with the defects fixed.

- Real-Time Clock (RTC) is not supported on S6E1C1 and S6E1C3 devices
- External Interrupt (EXINT) is not supported on S6E1A devices
- Only channel 0 of the Dual Timer (DT) is supported

Updated Default Setting: Unused Bonded IO

This System Editor setting determines whether the analog router is allowed to consume the routing wire associated with a bonded IO in order to achieve the analog connectivity in the design. The default was changed because routes that consume bonded IO wires can be exposed to additional parasitics. This may cause undesired behavior.

There is no impact to existing designs. New designs that require analog connectivity for which preferred routes do not exist may fail the analog routing step. If this occurs, change the option to "allow but warn" or "allow with info."

When this option is enabled and the build process states that a bonded IO has been consumed, check the connectivity of the associated IO on your board to ensure that it will not inject unacceptable levels of noise or parasitic capacitance and resistance.

Export to ARM uVision fails for some versions of the IDE

If you attempt to export a project to uVision and get the following error message check the version of ARM uVision. If it is between v5.16 and v5.20 please update your installation to a newer version.

"The export has failed. Keil uVision was unable to write to the uVision project target projectName.uvproj. This file may be open in another instance of uVision or marked readonly. Close uVision or make the project file writable, then try to export again."

Folders/Files Not Deleted When Uninstalling PSoC Creator

The following folders and files are not deleted when uninstalling a version PSoC Creator:

- c:\Program Files (x86)\Cypress\PSoC Creator\- c:\Program Files (x86)\Cypress\PSoC Creator\- c:\Program Files (x86)\Cypress\PSoC Creator\

It is safe to delete these folders/files manually if you no longer wish to use a version of PSoC Creator.

BLE Code Examples Fail Digital Placement

Code examples CYBLE-224110-00 and CYBLE-224116-01 fail digital placement because analog is consuming resources required for digital. To work around this issue, do any of the following:

- Start with a blank schematic, or
- Manually assign all of the analog pins (make sure to leave enough UART/I2C pins), or
- Manually assign the SCB pins (UART/I2C), avoiding P0[4]/P0[5], or
- Enable the DAC schematic page.

PDL Code Examples Build with Warnings

Code Examples CE216259_Software_Watchdog_Reset and CE216264_Hardware_Watchdog_Reset generate the following warning due to a problem in PDL. The warning is only generated by GCC. IAR and MDK builds are clean. The code examples are functional and the warning can be safely ignored.

"warning: dereferencing type-punned pointer will break strict-aliasing rules [-Wstrict-aliasing]"

Removing Older Component Versions

A number of old versions of components were re-classified as obsolete for all devices in this release. These components are not shipped with this release. In all cases there are newer versions of the component that are of a higher quality. You should update your designs to use these newer components.

Using the obsolete components in this release will cause a design-rule error to be output to the Notice List window. This message requests that you update the component version or take alternative actions to get onto supported implementations. The following are the affected components:

Component	Current Version	Removed Version(s)
ADC_SAR	3.0	1.90, 2.0
ADC_SAR_SEQ	2.0	1.0
ADC_SAR_SEQ_P4	2.40	1.0, 1.10
Amux	1.80	1.70
BoostConv	5.0	3.0, 4.0
Bootloadable	1.50	1.10
Bootloader	1.50	1.10
CAN	3.0	2.30
CapSense_CSD	3.50	3.30
CapSense_CSD_P4	2.50	1.0, 1.10
CharLCD	2.20	1.70, 1.80, 1.90
Comp	2.0	1.90
Counter	3.0	2.30, 2.40
CRC	2.40	2.30
cy_boot	5.50	3.20, 3.30, 3.40
cy_dma	1.70	1.60
cy_pins	2.20	1.80
DFB	1.40	1.20
DieTemp	2.0	1.90
EEPROM	3.0	2.10
Em_EEPROM	1.10	1.0
EMIF	1.30	1.20
EZI2C	2.0	1.80
FanController	4.0	2.20, 2.30
Filter	2.30	2.20
I2C	3.50	3.20
I2C_LCD	1.20	1.0
I2S	2.70	2.40
IDAC_P4	1.10	1.0

Component	Current Version	Removed Version(s)
ILO_Trim	2.0	1.0
LED_Driver	1.10	1.0
LIN	3.40	1.20
LPComp_P4	2.20	1.0
OpAmp_P4	1.20	1.0
PGA	2.0	1.90
PowerMonitor	1.60	1.20, 1.30, 1.40, 1.50
PRS	2.40	2.20, 2.30
PWM	3.30	2.30, 2.40
QuadDec	3.0	2.20, 2.30
ResistiveTouch	2.0	1.20
RTC	2.0	1.80
RTDCalc	1.20	1.0, 1.10
SCB_P4	3.20	1.0, 1.10
SegLCD	3.40	3.20, 3.30
SegLCD_P4	1.30	1.0
ShiftReg	2.30	2.20
SleepTimer	3.20	3.10
SMBusSlave	5.20	1.0, 1.10, 2.0, 2.10
SPI_Master	2.50	2.40
SPI_Slave	2.70	2.40, 2.41, 2.50
StaticSegLCD	2.30	2.20
SW_Tx_UART	1.50	1.0
ThermistorCalc	1.20	1.0, 1.10
ThermocoupleCalc	1.20	1.0, 1.10
Timer	2.70	2.40, 2.50
TMP05Intf	1.10	1.0
TrimMargin	3.0	1.0, 1.10, 1.20

Component	Current Version	Removed Version(s)
UART	2.50	2.20
USBFS	3.10	2.40, 2.50
VDAC8	1.90	1.80

Component	Current Version	Removed Version(s)
VoltageFaultDetector	3.0	2.0, 2.10, 2.20
VoltageSequencer	3.40	3.0, 3.10, 3.20

Supported Devices

The design flow and tools available in this release of PSoC Creator support the following:

Family/Series	Part Numbers			
FM0+	S6E1A*	S6E1B3*	S6E1B8*	S6E1C1*
	S6E1C3*			
System Hardware Manager (SHM)	CYSHM*			
CCG4	CYPD4*			
PSoC 5LP	CY8C52*LP	CY8C54*LP	CY8C56*LP	CY8C58*LP
PRoC BLE	CYBL1*			
EZ-BLE modules	CYBLE*			
PSoC 4200, PSoC 4200L, PSoC 4200M, PSoC 4200 BLE	CY8C42*	CY8C42*L	CY8C42*M	CY8C42*BL
PSoC 4100, PSoC 4100M, PSoC 4100S, PSoC 4100 BLE	CY8C41*	CY8C41*M	CY8C41*S	CY8C41*BL
PSoC 4000, PSoC 4000S	CY8C40*	CY8C40*S		
PSoC Analog Coprocessor	CY8C4A*			
PSoC 3	CY8C32*	CY8C34*	CY8C36*	CY8C38*

Supported Tool Chains

Toolchains for PSoC 4 and PSoC 5LP (ARM)

- **ARM GCC** – The GCC ARM Embedded toolchain GCC 4.9-2015-q1-update is installed with PSoC Creator. This toolchain has no use restrictions and does not require license activation (it is distributed under the terms of the GNU Public License).
- **ARM GCC Generic** – This option can be used to select a separately-installed version of the ARM GCC toolchain.
- **ARM MDK Generic** – This option can be used to select a separately-installed version of the ARM Microcontroller Development Kit. The officially supported version is 4.72a.

Toolchains for PSoC 3 (8051)

DP8051 Keil™ 9.51

The Keil PK51 Professional Developers Kit for PSoC is installed with PSoC Creator. It supports optimization levels 0 through 5. If you would like to use the compiler optimization levels above level 5, you should purchase the standard PK51 product by contacting Keil.

- In North, Central, or South America... sales.us@keil.com
- In Europe, Asia, Africa, or Australia... sales.intl@keil.com

The free Keil toolchain comes with a 30-day evaluation license. You can extend the license, without cost, by registering the product from within PSoC Creator (**Help > Register > Keil...**). Note that the extended license is for one year and that you will need to re-register it each year.

DP8051 Keil Generic

This option can be used to select a separately-installed version of the Keil toolchain. While any version can be selected, the only officially supported versions are 8.16, 9.03, 9.51.

Installation

Minimum and Recommended System Requirements

The following are system requirements to install and use PSoC Creator. Each requirement specifies a minimum that your system must meet or exceed.

PSoC Creator will execute correctly in highly resource-constrained systems. However, performance (startup time, project creation and opening, build times, and so on) may be impacted when resources are scarce. The most directly impacted performance metric is build time. The following sections provide examples of the resource scarcity impact.

Note During initial startup, PSoC Creator builds and caches component DLL files used to display the component parameter editors. As a result, the tool will launch less quickly the first time after a new installation or a Windows® reboot.

Summary

Hardware/Operation System Requirements	Minimum
▪ Processor	1 GHz 32-bit (x86) or Intel 64/ AMD64 64-bit
▪ RAM	1 GB
▪ Free Hard Drive Space	5 GB
▪ Screen Resolution	1024x768
▪ USB	2.0
Software Prerequisites *	Minimum Version
▪ Microsoft Internet Explorer (not IE8 beta)	7
▪ .NET Framework	4.0
▪ Adobe Reader (for viewing PDF Documentation)	9.2 **
▪ Windows Installer	3.1
▪ PSoC Programmer	The required version is installed with PSoC Creator.
▪ Keil Compiler (Required for PSoC 3 Only)	8.16 (9.51 provided)

* To install and run PSoC Creator, you may also need to install additional software. The Cypress Installer will guide you through the process if the additional programs are not already installed.

** For Windows 7, the minimum required version of Adobe Reader is version 9.2. You can download the latest version here: <http://get.adobe.com/reader/>. You can also use a non-Adobe PDF reader if you prefer; however, Cypress has no recommendations for any particular non-Adobe reader or version.

Processor

1 GHz or faster 32-bit (x86) or Intel 64/AMD64 64-bit processor is required.

PSoC Creator exhibits a predictable relationship between CPU speed and build time above 1 GHz. Doubling the CPU speed, e.g., from 1 GHz to 2 GHz or 1.5 GHz to 3 GHz, almost halves the build time.

On a fast (3 GHz) PC, simple designs can build in about one minute. At low speeds even designs that fill the device and generate complex routing solutions will build in under 5 minutes.

Operating System

One of the following Windows platforms is required:

- Windows XP SP3 (32-bit supported)
- Windows Vista SP2 (32- and 64-bit supported)
- Windows 7 and Windows 7 SP1 (32- and 64-bit supported)
- Windows 8 and Windows 8.1 (32- and 64-bit supported)
- Windows 10 (32- and 64-bit supported)
- Mac OS X Yosemite on VMware Fusion 7 running Windows 7 SP1
- Mac OS X Yosemite on Parallels Desktop 10 running Windows 10

Memory

A minimum of 1 GB of RAM is required.

Free Disk Space

PSoC Creator requires 5 GB of free disk space. PSoC Creator will install and run with just 1 GB of free disk space. However, in order to allow Windows to do memory paging, we recommend a minimum free disk space requirement of 5 GB.

If your disk is highly fragmented, it will severely impact memory paging time and can result in very long build times. Disks that are nearly full are particularly prone to fragmentation. We recommend defragmenting your disk if you experience excessively long build times (10 minutes or more).

USB

PSoC Creator requires a USB 2.0-compliant host to program and debug.

Screen

A resolution of 1024x768 pixels or higher is required.

Note The build time examples given above were obtained with new product installations on minimally fragmented disks with no other applications running. If your build times exceed these expectations we recommend closing unnecessary applications, adding RAM to the system (to reduce paging) and ensuring that there is sufficient free and unfragmented disk space.

Software Update Instructions

As part of the installation process, the Cypress Update Manager utility will also be installed and located on the Start menu. You can use this utility to update all Cypress programs you have installed when updates for them become available.

Open Source

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Installation Notes

The installation process is a set of wizards that walk you through installing various components. You can install PSoC Creator and various prerequisites from the web or from a DVD. There are slight differences in the process based on the medium used to install the software.

The DVDs provide the necessary prerequisites and the wizards to guide you through installing the appropriate software. The following sections contain more specific installation details.

Note Do NOT plug in your Minipro3 until all software installation is complete AND the PSoC Creator application has been opened.

PSoC Creator DVD Installation

The PSoC Creator DVD contains PSoC Creator and PSoC Programmer, as well as various prerequisites.

1. Load the DVD. The main installer program should run automatically. If not, double-click the cyautorun.exe file to launch it.
2. On the main installer, click the **Install PSoC Creator <version>** button to launch the PSoC Creator InstallShield Wizard.
3. Follow the prompts on the wizard. The CyInstaller for PSoC Creator opens and displays steps to install PSoC Creator.
4. Click the hyperlink for any software that is not installed as indicated (such as, Acrobat Reader, etc.). Run the installer for that program as needed.
5. Continue following the prompts to install PSoC Creator.

Cypress PSoC Kit DVD Installation

A kit DVD contains PSoC Creator and PSoC Programmer, as well as projects, documentation, and prerequisites needed for the associated kit. Refer to kit instructions.

Web Installation

If you are downloading the software from the web (www.cypress.com/creator), run the PSoC Creator single package executable.

1. Double-click the PSoC Creator executable file to launch the installer.
2. Follow the prompts to install PSoC Creator. The CyInstaller for PSoC Creator opens and displays a series of steps to install PSoC Creator, and it will perform pre-requisite checks and install the prerequisites.
3. When complete, close the installer.

Further Reading

The primary documentation for PSoC Creator is provided in the Help, which you can open from the **Help** menu or by pressing [F1]. Other documents included with this release are also available from the **Help** menu, under **Documentation**. These documents include (but are not limited to):

- Quick Start Guide
- System Reference Guide
- Component Author Guide

Cypress provides a web page specifically for PSoC Creator at www.cypress.com/creator. Other documentation includes (but is not limited to):

- Device Datasheets
- Device Architecture Technical Reference Manual (TRM)
- Device Registers TRM
- Application Notes
- Training

Contact your Cypress representative, as needed.



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