

PSoC Designer Release Notes

Version 5.1

Release Date: September 15, 2010

Thank you for your interest in PSoC® Designer™ 5.1. PSoC Designer is a complete Integrated Development Environment (IDE) for designing with PSoC 1 devices. This release is the production release of version 5.1. It is also a complete release for new users.

This document describes new features and changes since the previous release.

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New Features, User Modules, and Device Support

This release fixes defects found in PSoC Designer 5.1 Beta 1 and Beta 2 (PD5.1) releases and additional new devices and user modules. This release also provides a new feature and fixes some defects.

User Module Versioning

This release gives you the capability to support multiple versions of a user module so that you have the choice of continuing to use an older version or updating to the latest version. Additional information about the differences between user module versions is also provided.

Project Update

A new user interface simplifies updates such as the release of new user modules or boot.tpl files.

More Status Indication for Long Operations

In PSoC Designer 5.1, new status messages have been added during project open/save/generate, and user module placement/next shape/delete.

User Feedback Mechanism

Have a quick comment about PSoC Designer? Go to the Help menu in PSoC Designer and send us a comment.

Support for ImageCraft Pro Compiler

PD5.1 introduces native support for the ImageCraft Pro compiler, available for purchase at <http://imagecraft.com> (click on Cypress PSoC1 Compiler Tools).

USB Bootloader (BootLdrUSBFS) User Module (production)

A new version of the USB bootloader (BootLdrUSBFS) user module is available. The BootLdrUSBFS User Module is an enhanced version of the original USB bootloader.

- Support for interchangeable compilers. The original USB bootloader required a single compiler to be used for the life of the bootloader. A jump table has been implemented to allow multiple compilers to be used in the lifespan of a single bootloader.
- Allows updates to be applied seamlessly to the bootloader without impacting performance.
- Ability to use the USBUART User Module as the communication interface. The original bootloader predated the USBUART User Module.
- Ability to implement custom code into bootloader.
- Multiple flash programming options with either fixed or dynamic temperature parameters.
- Ability to disable the startup checksum for rapid entry into application code.
- A simplified interface that reduced the number of parameters from 12 to 7.

See the BootLdrUSBFS User Module datasheet for more information.

Segment LCD Driver User Module (production)

The SLCD Driver User Module drives the LCD glass directly without using any external components. The module supports two techniques of LCD drive that are selectable from the wizard. It is supported in a number of PSoC devices. See the user module datasheet for further information.

LIN Slave User Module (beta)

The LINS User Module implements a LIN 2.1 slave node on a PSoC device. In addition, options for LIN 2.0 or SAE J2602-1 compliance are available. This user module consists of the hardware blocks necessary to communicate on the LIN bus and an API to allow the application code to easily interact with the LIN bus communication. The user module provides an API that conforms to the API specified by the

LIN 2.1 specification. This is supported for the automotive versions of CY8C21x45 and CY8C22x45 devices.

TS2000 User Module (beta)

This user module allows you to create haptics effects with the Immersion TS2000 technology. Haptics is a tactile sensation effect that makes it possible for someone using the equipment to know that a touch event was detected. This improves the input accuracy and user satisfaction with the equipment. The user module is only visible in the catalog for the special part numbers, specifically:

CY8C20336H-24LQXI, CY8C20446H-24LQXI, CY8C22345H-24PVXA, and CY8C20346H-24LQXI

See the user module datasheet for more information.

New Automotive CY8C21x12 PSoC Family (beta)

These new parts are supported in PSoC Designer 5.1: CY8C21312-24PVXA and CY8C21512-24PVXA. These new automotive devices are well-suited for simple CapSense applications.

Features	CY8C21312-24PVXA	CY8C21512-24PVXA
Flash Size	8 KB	8 KB
RAM Size	512 B	512 B
CapSense	Yes	Yes
Package	20 SSOP	28 SSOP

Update to the Flash Temp User Module

With PSoC Designer 5.1, there is a new version of the Flash Temp User Module. This update now supports accuracy on all voltage ranges. The update applies to these devices: CY8C29x66, CY8C27x43, CY8C24x23, CY8C24x23A, CY8C24x94, CY8C23x33, CY8CLED04/08/16, CY8CLEDxxD/Gxx, CY8C28x45, CY8CPLC20, CY8CLED16PO1, CY8C28x43, and CY8C28xxx.

SmartSense User Module to Replace CSDAUTO

The CSDAUTO User Module has been formally replaced with the new user module SmartSense. Please see CSDAUTO migration section for users who have generated CSDAUTO projects with the PSoC Designer 5.0 SP6, 5.1 Beta 1 and 5.1 Beta 2 releases.

CSA_EMG User Module to Replace CSAMFS

The CSAMFS User Module was renamed to CSA_EMG. This name change better indicates that the user module is more successful in environments where electromagnetic energy may be an issue. EMC is short for Electromagnetic Compatibility, which refers to correct (compatible) operation in environments where EMI (electromagnetic interference) may be an issue.

CSAMFS will be moved to the Legacy folder in order to not break old designs.

Support for Command Line Builds

It is important that PSoC Designer responds to our customer's enhancement requests. For the PSoC Designer 5.1 release we added the capability to build projects from the command line interface. This update was a direct request from customers.

Please feel free to use the feedback mechanism available in PSoC Designer to request feature enhancements and improvements to the tool.

CSDAUTO to SmartSense Migration

PSoC Designer 5.1 supports an update from the older CSDAUTO User Module to the new SmartSense User Module. PSoC Designer 5.1 Beta 1 and Beta 2 included updates to the CSDAUTO User Module. With the PSoC Designer 5.1 production release the CSDAUTO user modules versions released in the Beta 1 and Beta 2 have been formally removed and not added to the legacy folders, while the CSDAUTO user module, included in the PSoC Designer 5.0 SP6 release has been added to the legacy folder.

We recommend that, if you created designs using the Beta 1 and Beta 2 CSDAUTO user modules, you migrate to the SmartSense user module. Significant testing was conducted between PSoC Designer Beta 2 and PSoC Designer 5.1 production releases. The SmartSense user module represents the algorithm, auto tuning and sensing updates from the testing. These updates to the SmartSense User Module replace the capabilities and functionality of the CSDAUTO user modules released in Beta 1 and Beta 2.

This table details the status of the CSDAUTO User Module in PSoC Designer 5.1.

PSoC Designer Releases	User Module Version	Status
5.0 SP6	CSDAUTO 1.0	Legacy Folder
5.1 Beta 1	CSDAUTO 1.0	Removed
5.1 Beta 2	CSDAUTO 1.1	Removed
5.1 Production	SmartSense	Recommended for new designs

SLCD User Module Users

PSoC Designer 5.1 updates the SLCD user module. The Beta 1 version of the SLCD user module was removed for designs. Customers who created a project using the Beta 1 version of the SLCD user module need to upgrade their designs to the Beta 2 or latest revision of the user module. Customers who designed their projects using the Beta 1 user module need to update their code because the API *SLCD_SetContrastLevel()* was removed and replaced with the API *SLCD_ChangeContrast* in the Beta 2 and Production releases of PSoC Designer 5.1. The API parameters have changed as well. Complete descriptions of this API change are in the user module datasheet.

PSoC Designer Releases	User Module Version	Status
5.1 Beta 1	SCLD 0.0	Removed
5.1 Beta 2	SCLD 1.0	Legacy Folder
5.1 Production	SCLD 1.1	Recommended for new designs

PSoC Designer Releases	User Module Version	Status
		new designs

I2C Glitch Fixed

The following issue was listed in the PSoC Designer 5.1 Beta 1 release notes. The following update was made for the Beta 1 release and is still included in the PSoC Designer 5.1 production release.

Problem: On some PSoC1 devices, a glitch can occur during device boot up or reset that disrupts the I2C bus. PSoC Designer projects for PSoC1 devices that have 8 GPIO drive modes do not have this problem. The glitch occurs because previous versions of PSoC Designer do not set the port data registers (PRTxDR) before setting the drive mode registers for the I2C pins. This causes the I2C pins to go from High Z Analog 0 (Hi-Z) to Open Drain Low 0 (strong 0) to Open Drain Low 1 (Hi-Z) at boot up. The Open Drain Low 0 (strong 0) pin state causes both I2C bus signals to go low while the pins are in that state.

Solution: PSoC Designer 5.1 Beta 1 release correctly configures the port data registers before setting the drive modes. The new code is in PsoCConfigTBL.asm. Rebuilding your existing projects in PSoC Designer 5.1 fixes the I2C glitch.

In our testing, this fix to PSoC Designer immediately fixes the I2C glitch in existing projects. However, as a precaution, you may want to review the InitialValue settings on the pins in your projects to make sure they are set correctly for your application.

Problem Using External Crystal Oscillator Fixed

Problem: In previous releases, using the External Crystal Oscillator (ECO) of CY8C20xx6, CY7C643xx, and CY7C604xx devices was not directly supported by PSoC Designer.

Solution: This problem was fixed with the Beta 1 release of PSoC Designer 5.1 and is included in this PSoC Designer 5.1 production release. The option to use the ECO can be enabled in the Global Resources table for these devices. However, a new boot.tpl file is required in order for this solution to take effect. Therefore, you may be prompted to update your boot.tpl file when opening projects that already exist for these devices.

User Module Versioning

This section details the user modules that were versioned in this release. For detailed listing and descriptions of the user module changes, see the version history tables in individual user module datasheets. Here is a complete list of all user modules that were updated:

User Module Name (Device Family)
ADCINC (CY8C20xx6)
BootLdrI2C (CY8C20xx6)
CSD (CY8C20xx6)
CSD2X (CY8C22x45)
USB (enCoRe)

User Module Name (Device Family)
CSA (PSoC 0100)
BootLdrI2C (standard)
BootLdrUSBFS (standard)
BootLdrUSBFSse (standard)
Counter8 (standard)
CSD (standard)
CSD2X (standard)
CSDADC (standard)
FlashTemp (standard)
I2CHW (standard)
LCD (standard)
LED (standard)
LED7SEG (standard)
LINS (standard)
PWM8 (standard)
RX8 (standard)
SCLD (standard)
SPIS (standard)
Timer8 (standard)
TS2000 (standard)
TX8 (standard)
USBFS (standard)
USBUART (standard)

Design Impact

This section contains important notes from this release that could affect your designs:

Several updates were made in PSoC Designer 5.1 to improve the updateability of projects both in the field and with subsequent releases of PSoC Designer. These include:

- The ability to optionally stay with older versions of user modules or upgrade based on the improvements made to the UM and the phase of your design cycle.
- A new Project Update interface, featuring extensive help on moving the boot.tpl file.
- A new user module, BootLdrUSBFS, mentioned earlier, which addresses previous difficulties customers may have encountered when changing compilers or deploying a bootloader update.

Some PSoC 1 customers have observed that with certain firmware running, some parts may reset and become unresponsive. This happens when a watchdog timer reset is followed by failure to clear the watchdog timer before another reset is asserted.

This problem is heavily influenced by the trimmed and untrimmed IMO and ILO frequencies. It is also influenced by the firmware used by the customer; specifically by how quickly the watchdog timer is cleared in boot.asm.

Resolving the problem involves changing firmware and screening parts for low IMO frequencies and high ILO frequencies. An instruction has been added in the boot.tpl/boot.asm files to clear the Watch Dog Timer (WDT) immediately before enabling the WDT. This occurs near the beginning of the boot files. This is to prevent a subsequent Watch Dog Reset (WDR) from occurring within this boot firmware if a Watch Dog Reset has occurred.

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Supported Tool Chains

ImageCraft Compiler (Standard and Pro versions)

ICCV7 for M8C STD version 7.04.

ICCV8 for M8C PRO

Installation

Minimum and Recommended Requirements

Hardware/Operation System Requirements	Minimum	Recommended
• Processor Speed	2 GHz	2 GHz Dual Core
• MB of RAM	2 GB	3 GB
• MB of Free Hard Drive Space	1 GB	1 GB
• Screen Resolution	1024x768	1280x1024
• CD/DVD Drive	Not Req.	✓
• USB	Full Speed	2.0 Hi-Speed

- Windows® XP (SP2 or higher), Vista, or Windows 7 ✓ ✓

Software Prerequisites **

Minimum/Recommended Version

- | | | |
|------------------------------------------------|---------|----|
| • Microsoft Internet Explorer | 7 | |
| • .NET Framework | 2.0 SP1 | |
| • Adobe Reader (for viewing PDF Documentation) | 6 | 9+ |
| • Windows Installer | 3.1 | |
| • PSoC Programmer | 3.12 | |

* CD/DVD drive is only required for installation with no web access.

** Software Prerequisites – In order to install and run the PSoC Designer, you may also need to install additional software. The Cypress Installer guides you through the process if the additional programs are not already installed.

Update Instructions

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

Follow the instructions provided with the tool, as needed.

Installation Notes

The Installation process has changed from PSoC Designer 5.0. This was done to accommodate a Live Update capability and decrease download size. The installation process is a set of wizards that walk you through the installation process. You can install PSoC Designer and various prerequisites from the web. If you have issues with installing behind a firewall or on a machine with no internet connection, an ISO file is provided on the web for creation of your own CD. There are slight differences in the process, based on the medium used to install the software.

In order to install PSoC Designer, you need to first install PSoC Programmer. The CDs provide the necessary prerequisites and the wizards to guide you through installing the appropriate software. The Web installation requires you to download and install the executables separately. The following sections contain more specific installation details.

Note Do NOT connect your Cypress Programmers (Miniprogram1, Miniprogram3, etc) until all software installation is complete AND the PSoC Designer application is open.

How to Install PD5.1 from the Web:

1. Download PSoCDesignerSetup.exe from the Cypress website.
2. PSoCDesignerSetup.exe will install CyInstaller for PSoC Designer.
3. CyInstaller will do a pre-requisite test, leading the user through the install process for missing prerequisites such as PSoC Programmer.
4. When the pre-requisite tests are passed, CyInstaller will provide the user with the option to do a "Typical", "Complete" or "Custom" install.
 - a. Typical or Complete Install: Will install the latest available PSoC Designer 5.1 release.
 - b. Custom Install: Will show the user all releases of PSoC Designer 5.1 and install the selected release (for now there is just one).
5. Once the PD5.1 release is downloaded, CyInstaller displays the EULA and other applicable licenses.
6. Once the install is complete, CyInstaller displays the finish screen with options to view the "Release Notes" and "Add Desktop Shortcut".

How to Install Using an ISO Image (Two Methods):

1. Create a CDROM using the ISO image:
 - a. Drag the ISO image onto the CD/DVD drive containing the CD/DVD. Right click on the CD/DVD drive and select "Burn" to create a CD/DVD for PD5.1 installation.
 - b. Download MagicISO (<http://www.magiciso.com/download.htm>) and follow the tutorial to create a CD/DVD from ISO <http://www.magiciso.com/tutorials/miso-burnwin.htm> .
Note – To burn a CD with MagicISO, you need to pay \$30 for the full version.
 There are also Freeware versions and tools that allow you to mount the ISO file without burning a CD. This is described in step 2.
 - c. The installer, cyautorun.exe, launches once the CD/DVD is inserted in the CD/DVD drive. if not., double click cyautorun.
2. Install directly from an ISO image:
 - a. Download MagicISO (<http://www.magiciso.com/download.htm>) or other Virtual Drive creators (these are typically freeware) and create a virtual drive. Mount the ISO image on the drive from the "Mount" option in MagicISO.
 - For help on mounting and unmounting ISO images see <http://www.magiciso.com/tutorials/tutorials.htm> .
 - b. When you have mounted the ISO file, the installer should start.
 - if it does not start, double click on cyautorun.
 - c. An alternative to using Virtual Drive creators is to download winrar (<http://www.rarlab.com/download.htm>) and open the ISO file in it. Then, extract and run "cyautorun.exe".
3. cyautorun.exe prompts you to install PSoC Designer 5.1. Then follow steps 3-6 from the Web Installation instructions.

Customers with TrueTouch SDK R2 Installed:

Customers who have PSoC Designer Beta 2 and TrueTouch SDK R2 installed will be able to update to PSoC Designer 5.1 production without any backward compatibility issues. Users will receive a notice via the CyInstaller update manager that a new version of PSoC Designer is available. Users will be able to update from the Beta 2 installation without impacting their TrueTouch SDK R2 installation. Customers will proceed with the Installation of PSoC Designer using CyInstaller.

System Level Design Users:

Customers who wish to continue developing system level projects will need to install PSoC Designer 5.0 SP6. System level development has been removed from PSoC Designer 5.1. PSoC Designer 5.0 SP6 will be provided on the PSoC Designer web page or PSoC Designer archives page for any users interested in developing System Level projects. PSoC Designer 5.0 SP6 and PSoC Designer 5.1 will coexist on the same machine allowing customers to continue developing System Level designs and continue designing new chip level designs with PSoC Designer.

Note to HI-TECH Compiler Users

You must manually update the *psoc.ini* file to add device support before you can compile projects that use the new devices. The HI-TECH *psoc.ini* file is found in the HI-Tech installation folder. The default location of the *psoc.ini* is here:

C:\Program Files\HI-TECH Software\HCPSOC\PRO\9.61\dat\psoc.ini

The default location of the replacement *psoc.ini* file that adds support for the new devices is here:

C:\Program Files\Cypress\PSoC Designer\5.1\Common\CypressSemiBuildMgr\tools\psoc.ini

Known Problems and Limitations for PSoC Designer 5.1

In PSoC Designer 5.1, the Known Problems and Solutions (KPS) are included in a separate file. Please download it from the appropriate PSoC Designer directory, <http://www.cypress.com/?rID=41083>.

Further Reading

Documentation for PSoC Designer is provided with on-line Help, which you can open from the **Help** menu or by pressing [F1]. There are numerous other documents under the Help->Documentation menu, including:

- IDE User Guide
- PSoC Designer Release Notes
- PSoC Device Selector
- Updating the boot.tpl file (*update of BOOT.pdf*)
- Project Update help (*Version Update.pdf*)
- ICE User Guide
- C Language Compiler User Guide
- Math Libraries User Guide
- ImageCraft Release Notes
- Assembly Language Users Guide
- Hi-Tech to ImageCraft Migration guide
- User Module and device datasheets

and many more

Defects Fixed

The following table lists the defects were fixed between the PSoC Designer 5.1 Beta 2 and PSoC Designer 5.1 production release:

CY CDT #	Category	Title	Fix and Impact
45559	User Module	Designs using USBFS have problems with compiler optimization.	Modification have been made to the User Module code which are detailed in the User Module revision history table
66437	User Module	DS:Bootloader template code is programmed between user code banners	The Bootloader datasheet has been updated to document the process for renewing code.
68971	User Module	The range from encoreV ADCINC is halved when using Start_Sample(), flsDataAvailable(), and wGetData()	Additional poll_int instructions were added into GetSample() and StartSample() API functions of the ADCINC UM.

CY CDT #	Category	Title	Fix and Impact
70113	User Module	When changing compilers from ImageCraft STD to ImageCraft_Pro, some critical settings are not inherited.	Added compiler properties inheritance capabilities.
70315	User Module	IE7 is minimum required for PD5.1, should be enforced prerequisite	The prerequisite handling has been updated to enforce the installation of IE7 for PD 5.1
71314	User Module	Remove the reloc_vecs area from the boot.tpl of BootLdrI2C/BootLdrUSBFS	Updates have been made to reloc_vecs area and re-organize memory map. These updates fix compiler optimization errors seen with this User Module.
74542	User Module	WDT reset issue in FW	Updates have been made to the Boot.tpl file, please see the earlier section in these release notes
76202	User Module	Assigning many TX slots overflows gidac flash block	The wizard will now generate a warning message if out of range.
76264	User Module	CSD UM for CY8C20xx6 does not have Radial Slider APIs.	Radial Slider APIs added
76478	User Module	Chip Editor GUI is not synchronized with the CSD2X Wizard for CY8C2xx45	Updates have been made to synchronize the chip editor GUI.
76480	User Module	TS2000 SharpClick effect is incorrect on CY8C20xx6 devices	The SharpClick effect has been updated to it's correct functionality.
76698	User Module	CY8C24x94 defect in CSDADC.inc when masking set up for feedback register pin	CSDADC.inc file has been updated with the correct masking code.
76733	User Module	I2CHW v1.7 Datasheet APIs mismatch	The datasheet has been updated to match.
76779	User Module	Pinout for new Configuration (overlay) is blank	Update has been made to ensure that new configuration is not blank and that the pinout is available.

CY CDT #	Category	Title	Fix and Impact
76788	User Module	When a project (Containing an old version of the UM) is reopened, updated from the workspace explorer (Not from the project update dialog box). It fails the first time, but it will succeed the second time.	An update has been made cleans the update events.
76847	User Module	CSD2X generated header file has version as 1.0	Version tag updated.
79685	User Module	CY8C2xx45 CSD2X UM fails to build if the Feedback Resistor pins are set	Version 2.1 of the user module now fixes this issue.
64290	Compiler	Both STD and PRO compiler crashes with #pragma data	Update was made in version 7.0.4 to support this issue.
34844	Customer Issue	Output tab causes wrong user modules to display	Improvements have been made when displaying the user module catalog both when no workspace is open and when a workspace is open.
38780	Customer Issue	Exceptions to Break on Event functionality are not documented	Documentation has been updated.
39035	Customer Issue	PSoC Designer should check pin names so they don't start with numbers	Added a validation to check to test if the first character is number or not
68707	Customer Issue	Error in documentation of Incremental ADC of CY8C20666-24LTXI	The datasheet has been updated.
68754	Customer Issue	DS:inconsistent ADCINC clock selection guidance in CY8C20xx6	The datasheet has been updated.
77135	Customer Issue	If CSAMFS_ScanSensor() API in CSAMFS UM is used for scanning, rawcount is zero.	Scanning was moved to CSAMFS_ScanSingleSensor() and processing was moved to CSAMFS_ScanSensor(). CSAMFS user module will be located in the legacy folder and has been functionally replaced by the CSA_EMC user module.

CY CDT #	Category	Title	Fix and Impact
77429	Customer Issue	Erroneous rollover condition in CY8C20x34 CSA.	Added overflow condition check on iDAC code subtraction. If overflow happens the iDAC code is set to 0.
77457	Customer Issue	CSAMFS UM issue: baseline don't reset when NegativeNoiseThreshold is set to 0	An invalid array indexing in CSAMFS_baLowBaselineReset[] was found and fixed. CSAMFS user module will be located in the legacy folder and has been functionally replaced by the CSA_EMC user module.
77766	Customer Issue	BootldrI2C performance is negatively affected by corrupted checksum block	Update bootload.asm to limit the number of blocks (application size) to 255.
77977	Customer Issue/Compiler	A Power PSoC (CY8CLED0xD/G) project compile fails on some PCs/OS's	Issue solved with ICC STD 7.0.4 which will be included in this PSoC Designer 5.1 production release.
78341	Customer Issue	PSoC Designer: Wrong packing of the UM datasheet	Datasheets have been updated.
82330	Customer Issue	UM DS: incorrect formula for capacitance in ADC10 datasheet	Updated datasheet with correct information
83204	Customer Issue	AnalogOutBuf select option is not available in CY8C28xxx part	AnalogOutBuf_x are added to the appropriate PIN_RESOURCE_VALUE_LISTs for all CY8C28xxx parts. Also AnalogOutBuf_x PIN_FANOUTs are added for correct displaying of pin select field after connection it to AnalogOutBuf_x.
83220	Customer Issue	LED7SEG UM not available for CY8C20xx6A device family	The Datasheet has been updated

For More Information Regarding PSoC Development Tools

For more information regarding PSoC Designer functionality and releases please review the user guide and release notes on the PSoC Designer web page:

www.cypress.com/go/psocdesigner

For more information regarding PSoC Programmer, supported hardware and COM layer please go to the PSoC Programmer web page:

www.cypress.com/go/psocprogrammer

For more information regarding Cypress's new and exciting PSoC3 and PSoC5 products and the new PSoC Creator development environment please go to the PSoC Creator web page:

www.cypress.com/go/psoccreator

For a list of PSoC Designer-related trainings, please see

<http://www.cypress.com/?rID=40543>

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