



Release Notes srn020

PSoC Express Version 2.2

Release Date: December 18, 2006

Thank you for your interest in PSoC Express™. The information in this document lists installation requirements and describes software updates and changes as they relate to PSoC Express Version 2.2.

Getting More Information

Everything about PSoC Express can be found at <http://www.cypress.com/psocexpress>.

There is also a Beta version site where updates that are in Beta Release may be found. This site's URL is <http://www.cypress.com/psocexpressbeta>.

All Cypress Semiconductor Corp. software (including PSoC Express software) is maintained in a company repository. Check <http://www.cypress.com/> under Design Resources >> Software and Drivers to see a list of all Cypress software and drivers.

New Features

PSoC Express version 2.2 includes the functionality of version 2.1 plus the drivers included in Express Pak 1 for version 2.1 and Express Pak 2 beta. This release also adds new drivers, support for new PSoC Devices, and fixes some defects.

New Device Support

1. CY8C20234
2. CY8C20334
3. CY8C20434

New Driver Support

1. WUSB Slave – Monitor
2. WUSB Slave – Control
3. WUSB Interface – CY3630 1:1 Slave 15-Byte (Simple)
4. WUSB RF Master – CY3630 1:1 15-Byte (Simple)
5. WUSB Interface – Artaflex 1:1 Slave 15-Byte (Simple)
6. WUSB RF Master – Artaflex 1:1 15-Byte (Simple)
7. WUSB Interface – Unigen 1:1 Slave 15-Byte (Simple)
8. WUSB RF Master – Unigen 1:1 15-Byte (Simple)
9. WUSB Interface – CY3630 1:1 Slave 15-Byte (Fully Configurable)
10. WUSB RF Master – CY3630 1:1 15-Byte (Fully Configurable)
11. WUSB RF Master – Artaflex 1:1 15-Byte (Fully Configurable)
12. WUSB Interface – Artaflex 1:1 Slave 15-Byte (Fully Configurable)
13. WUSB Interface – Unigen 1:1 Slave 15-Byte (Fully Configurable)
14. WUSB RF Master – Unigen 1:1 15-Byte (Fully Configurable)
15. CapSense Properties – CSA
16. CapSense Properties – CSD
17. CapSense Button – CSA



18. CapSense Button – CSD
19. CapSense Slider – CSA
20. CapSense Slider – CSD
21. CapSense Slider – CSR
22. LCD Threshold – One Line
23. LCD Threshold – Two Line
24. LCD Selectable Label – Full Line
25. LCD Selectable Label – Half Line
26. Decaying LED – Software
27. TMP 121 – Temperature Sensor
28. TMP 123 – Temperature Sensor
29. TMP 122 – Temperature Sensor
30. TMP 124 – Temperature Sensor
31. TMP125 – Temperature Sensor
32. TSL2550T – LTD Sensor, human eye response
33. LIS2L02AL Dual Axis Accelerometer ($\pm 2g$)
34. LIS3L02AL Tri Axis Accelerometer ($\pm 2g$)
35. ADXL204 Dual Axis Accelerometer ($\pm 1.7g$)
36. ADXL320 Dual Axis Accelerometer ($\pm 5g$)

Defects fixed in version 2.2 (since Express Pak 1 for version 2.1)

1. CSR finger present at power-up used to cause the button to fail. This case is now handled by recalibrating the IDAC current automatically.
2. CSR Properties causing a problem when named “CSR” has been fixed.
3. A defect that allowed certain data in the shadow registers to cause a reset of the I2C master has been fixed.
4. USBUART has been changed to allow LF, CR or CR + LF as command terminators, supporting Unix and PC serial standards.
5. The defect that prevented an interface that has been renamed from being updated or deleted has been fixed.
6. The defect that caused a simulation slider to be displayed with “NaN” for CapSense properties has been fixed.

System Requirements and Recommendations

<u>System Requirement</u>	<u>Minimum</u>	<u>Recommended</u>
▪ PSoC Express Version	2.2	2.2
▪ Processor Speed	500 MHz	1 GHz
▪ MB of RAM	256 MB	512 MB
▪ MB of Free Hard Drive Space	150 MB	200 MB
▪ Screen Resolution	1024x768	1280x1024
▪ CD-ROM Drive	✓	✓
▪ USB Port, preferably Open Host Controller or Universal	✓	✓
▪ Windows® 2000, XP (SP1)	✓	✓
▪ Microsoft Internet Explorer 6.0 (SP1)	✓	✓
▪ Adobe Reader (For viewing .PDF documentation)	✓	✓



Installation

DO NOT CHOOSE THE “REPAIR” OPTION WHEN INSTALLING ANY ITEMS

To Install:

On a computer with a previous version of PSoC Express, you must first uninstall (the first execution of the installer for version 2.2 will automatically uninstall it). To ensure a complete and clean uninstall, you may want to check the “PSoC Express” and “Common” directories where you have chosen to install the application and delete any leftover files AFTER the uninstall process.

After uninstall, execute the version 2.2 installer again to install PSoC Express version 2.2.

To Uninstall PSoC Express:

If you uninstall PSoC Express, the Express Pak will also be uninstalled. To uninstall PSoC Express and the Express Pak, Execute “Add/Remove Programs” in the Windows Control Panel, find “PSoC Express” and choose “Change/Remove.”

Uninstalling PSoC Express v2.1 will also uninstall its Express Pak.

All PSoC tools must be installed parallel to each other (same disk, same directory). If the tools are installed individually, you must ensure that they are all in one directory, parallel to each other. (The default created by the installers is .../Program Files/Cypress MicroSystems/...).

Limitations with PSoC Express v2.2

NOTE: Designs built with version 1.1 are not compatible with version 2.2.

It is possible that projects created with version 2.0 are not completely compatible.

1. When working with projects created in previous versions of PSoC Express, it is recommended that you work with copies of the projects.
2. PSoC Express has a single compile engine, which prevents multiple simultaneous “Build” operations. Do not attempt to “Build” more than one PSoC Express project at a time (although more than one project/instance may be open at a time).
3. When “Build” is selected, PSoC Express automatically detects the needed hardware resources and matches an appropriate PSoC device. However, the resource manager cannot detect when RAM or ROM is exceeded. If a build error occurs, try to build the project on the largest PSoC device (in RAM and ROM) in order to isolate this possibility. The resource manager also cannot determine whether the PSoC device has adequate internal bus lines between hardware resources. If the initial automatic pin assignment fails, try to build the project on the next larger PSoC device (in number of pins) within the same family in order isolate this possibility.



4. User pin assignment requires the PSoC Express code generation engine to auto-place and route functional blocks within the PSoC device. The order of pins assigned manually and combination of functions may sometimes make pin assignment fail. The workaround is:
 - a. See which drivers not getting assigned (what type).
 - b. Drag all drivers off the pins.
 - c. Place the drivers that did not initially get assigned.
 - d. Auto-place the remaining drivers.
5. If you experience difficulty assigning pins, it may be that the part shown does not have enough pins or enough internal bus lines for the functions. (External Watchdog drivers when used in large number in conjunction with Tachometer drivers show this tendency in particular). As a workaround, choose either another device with more pins from the same family or a device from a family with more pins and more resources (higher part number).
6. If PSoC Programmer is installed but does not appear when "Program" is selected or appears and disappears, remove any connected PSoC programming devices from the computer and then re-connect them. If PSoC Programmer is still not operating, shutdown the computer and restart.
7. A valid project must consist of at least one input, and one output or interface driver. A project consisting of valuator only will not correctly build. Add a driver and then choose "Build."
8. When a transfer function references discrete states owned by other objects (LED with ON and OFF, for example), the transfer function should always use the named states when setting a new state or comparing a current state. This ensures portability of a design regardless of a particular device's property setting. Additionally, simulation of the following "If (Input_1) Then 0" does not work properly due to JavaScript characteristics. The generated PSoC firmware performs as expected, according to 'C' language rules, but the simulation does not reflect this behavior. To ensure simulation results consistent with generated code performance, use explicit comparisons with an object's named states (select Expression Assistant" on any dialog that supports expressions to see a complete list of names).
9. Some devices must be selected and instantiated (select in catalog and click OK) for all property settings to be available (Tachometer inputs are one example). If you do not see expected choices when selecting a device, complete the catalog selection (click OK) and then right-mouse-click on it and choose "Properties" to see the complete property list.
10. When defining custom states for a Valuator or Output Driver, you may have to first define the states, save the transfer function and then choose to edit it in order for the states to be visible in the Expression Assistant.
11. Stimulus file inputs are not range checked and are shown numerically as entered on the simulation widget, but the graphical widget position is bound by the driver's range. It is your responsibility to ensure proper input range within a stimulus file.
12. Simulation in PSoC Express is implemented with JavaScript. Boolean expressions, such as (Input_1 > 33), cannot themselves be assigned to an output in JavaScript. It is poor design practice to do this, even in the C firmware, and it can lead to avoidable bugs.



13. Expressions perform range checking of signed integer values, limiting them from -32767 to 32767 . Octal values (0777, for instance) and hexadecimal values (0x4343, for instance) are not range checked for valid 16 bits. They are truncated in the PSoC firmware (but the simulation does not truncate them). Expressions may not contain the valid 16-bit signed integer -32768 , because the application prevents it. As an alternative you can enter "0x8000," which is equal to -32768 for a 16 bit.
14. Byte values are not promoted to integer type for math operations in which all of the types in the expression are byte. At least one Continuous type Valuator (16-bit signed integer) must be used to prevent overflow in arithmetic operations.
15. Designs with complex combinatorial expressions may experience Build failures due to long line lengths not handled correctly by the compiler parser. The solution is to split complex and involved combinatorial logic lines into multiple lines (Status Encoder Transfer Function is well suited to this).
16. The PDF conversion utility for the Schematic report requires installation of a Java Runtime engine. Follow the prompts during the first-time execution of "Print to PDF" to install the JRE.
17. A PDF conversion operation may trigger a warning from the computer's antivirus software agent. Enable the script during this operation or PDF conversion will not succeed.
18. The schematic and BOM entries associated with an I2C master (LM75, Ext I2C Slave are two instances) will have the required pull-up resistors missing from the BOM (a note appears in the schematic indicating the need for pull-up resistors and the value required).
19. Interface Valuator allow input from outside the system and are not explicitly range checked/limited. If you include these in your system and use them as an input to a Table Lookup Transfer Function, you can cause random behavior. Instead, define another Valuator and define its Transfer Function to perform range checking and limiting.
20. Simulation and Firmware do not match exactly with respect to integer math results. The JavaScript performs floating point math and the PSoC firmware performs strict integer math. Use the simulation as a guideline for integer math results.
21. On computers containing Microsoft Office 2003 SP1, some driver data sheets display dotted lines in areas that should show text.
22. Auto-assigned pins can be re-assigned by PSoC Express unless you move them at least once. If you want to lock an auto-generated pin assignment, drag each pin off and back on the desired pin to lock it.
23. Currently, the CapSense drivers will not co-exist with other analog drivers. This will be addressed in a future version.



Known PSoC Express v2.2 Bugs

1. Opening a PSoC Express 2.2 project in PSoC Designer 4.3 redirects PSoC Designer to the PSoC Express user module database. This may cause the user modules normally seen in PSoC Designer to look and behave differently (including missing data sheets). The redirection ensures that a project generated by PSoC Express provides consistent firmware/hex file results whether it is built by PSoC Express or by PSoC Designer.
2. Making changes to a PSoC Express v2.2 project in PSoC Designer v4.3, and then saving the project, will make PSoC Designer v4.3 use the PSoC Designer User Module database instead of the PSoC Express User Module database. This may cause user modules look or behave differently. Once this occurs for a project, PSoC Designer v4.3 will always treat it as a PSoC Designer project.
3. PSoC Express currently allows explicit expression assignments to appear in transfer function definitions. Writing explicit assignments within transfer function definitions is deprecated because these assignments create bugs that are difficult to find, and they violate the spirit and intent of the transfer function programming model. This “loophole” may be closed in future revisions of PSoC Express. If explicit expression assignment is desired, program this operation in custom.c.
4. If a project contains custom.c customizations, a build may fail with the following error message if the last line of custom.c is not a blank line:
 - a. RefreshBOMTab sPinsDOM is empty. No project reports will be generated.The workaround is to add a carriage return to the end of custom.c.
5. The transfer function report portion of a project data sheet cannot tell the difference between 1-line status encoder transfer functions and 1-line priority encoder transfer functions. Both types of transfer functions are listed as a status encoder transfer function in the report.
6. A table lookup transfer function that has a large number of output states is sized so that it fits the window. This makes the table text very small. Please use the zoom in and out functions to view the small text.
7. The 4-digit, 7-Segment LED and Temperature 7-Segment LED drivers display an incomplete set of leading zeroes when the Position of Decimal Point property is set to NONE. With other settings, no leading zeroes are displayed.
8. The Temperature 7-Segment LED driver displays the value 0.00 as .00.
9. The CSA CapSense Slider will sometimes report 0 for slider position around the center. Playing with the property settings can tune this problem away.
10. Do not set the WUSB Master driver to the initial state of BIND because it will stall for approximately 20-25 seconds each time the PSoC powers-up or resets.
11. During BIND, both the slave and the master block the foreground for up to 25 seconds waiting/looking to bind. Future revision will remove this limitation.



12. When a slave does not have a master it will operate/respond more slowly to input changes, because it will look for a master every update loop. Future revision will remove this limitation.
13. The current version 2.2 WUSB 1:1 drivers will not allow a PSoC device to be both a slave and a master. If you try to add the second radio, PSoC Express will display a warning and prevent the second radio from being added.
14. WUSB radio pins will all assign when the IRQ or SS pins are assigned. Once assigned, the SHARED pins can be individually moved.
15. Replacing a remote monitor/slave driver will cause the transfer function to tear down. To prevent this, you can add a pass-through (if(1) then(itself)) priority encoder before adding the main system logic. The pass-through transfer function will be torn-down only.
16. For CapSense designs, it is possible to exceed RAM requirements before running out of pins (approximately 15 sensors if ESD is enabled). The build will fail and the message will not point to CapSense.
17. The drivers that allow a string label to be entered have specific length restrictions, as described in the property comments and the datasheet, but these are not programmatically enforced in the GUI.
18. Pin names can be too long and the displays or diagrams in the reports may truncate the names. If this occurs, you can rename the drivers to shorter names.
19. If you use character constants like 'a' or 'X' in the IF clause of a status or priority encoder, a javascript error occurs. You may only use character constants in the THEN clause.
20. Screens that have a 16:9 aspect ratio may display some dialog boxes with the action buttons at the bottom blocked. There is no known workaround for this.
21. Certain drivers (CapSense and WUSB) require two parts for a complete implementation (the "properties" driver for instance). Currently PSoC Express will not alert you if you forget to add the needed second part.
22. Builds will fail with very unclear error messages if you use the Windows option to disable 8.3 format names.
23. When a multi-value input driver (like a dual axis accelerometer) is fed into a Set Point Region valuator, there is no indication which of the multiple values is the input. The project datasheet also does not call out the specific input. The only workaround is to first assign the multi-value input to a valuator (IF(1) THEN(multi-value input)) and then feed the valuator into the Set Point Region.
24. The name length limit of 18 characters is not enforced when using the multi-object rename tool. The names will be indicated as too long if a property is changed or an individual rename is attempted. The project will build and operate successfully in either case.



25. Initial value property for an output driver is the value that driver will be set to during the first update loop, not the value assigned immediately on power-up. For some digital inputs this may cause an initial glitch on power-up.
26. Replacing a continuous driver that is an input to a Set Point Region will cause the existing setpoints to be scaled to match the range of the new input.
27. Using a seven-segment single digit display as an input to itself will cause a run-time script error.
28. The data flow/association lines cannot be hidden; they are always displayed.

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