



## CY3209-ExpressEVK Quick Start Guide

Spec. # 001-22859 Rev. \*\*

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**Flash Code Protection**

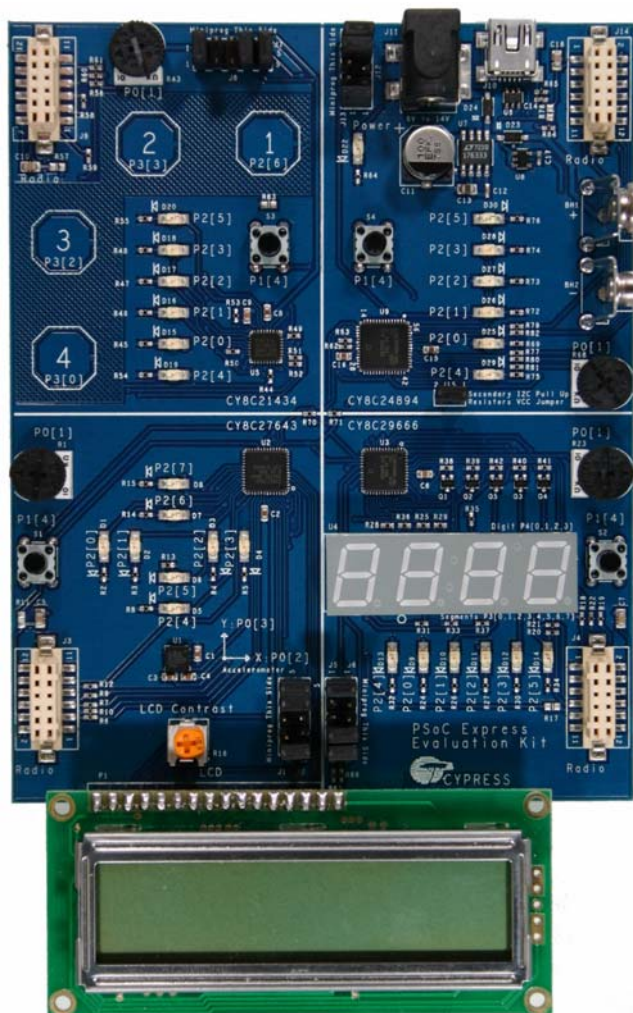
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# 1. Getting Started



## Getting Started



### Kit Contents

- Express Evaluation Board
- 5V LCD Module

### Not Pictured

- MiniProg Programming Unit
- USB Cable
- 2 Artaflex AWP24S 2.4 GHz Radios
- 9V Battery
- CY3209-ExpressEVK Kit CD

## Install PSoC Development Software

1. Insert the PSoC Development Software Suite CD into your CD-ROM drive and install PSoC Express.
2. For all the latest service packs and information, visit [www.cypress.com/psoc](http://www.cypress.com/psoc).



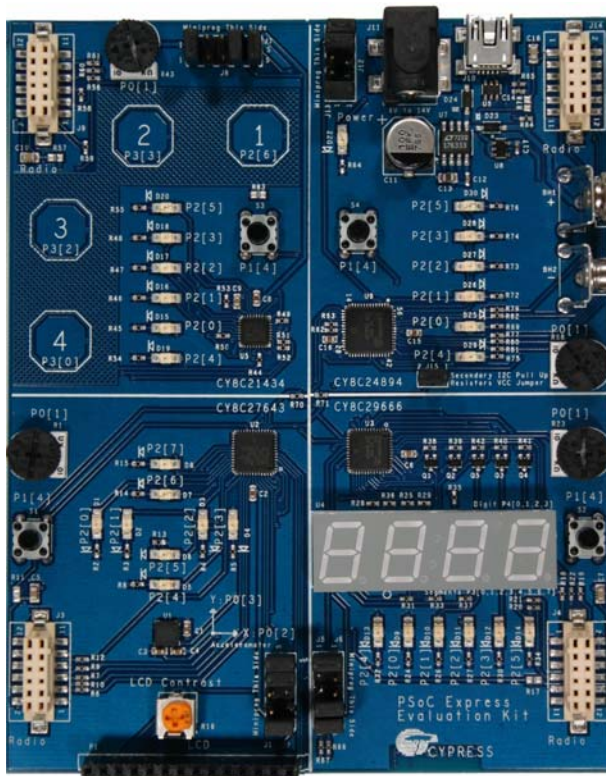
## 2. Explore Your Express Evaluation Board



### CY3209-ExpressEVK Board

TL = Top Left

TR = Top Right



BL = Bottom Left

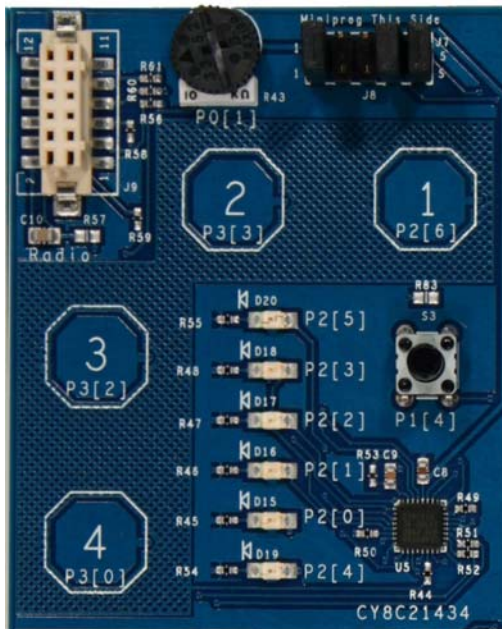
BR = Bottom Right

- Jumpers connect P1[0] and P1[1] of individual PSoC devices (P1[1] on pin 4 and P1[0] on pin 5 of J1, J6, J7, and J13) to a common I2C bus (clock on pin 4 and data on pin 5 of J2, J5, J8, and J12).
- Jumpers connect the PSoC devices (pin 1 of J1, J6, J7, and J13) to a common power bus (pin 1 of J2, J5, J8, and J12).
- Remove jumpers before programming PSoC devices with the MiniProg.

Schematics can be found on the Express Evaluation Kit CD in the folder /Documentation.

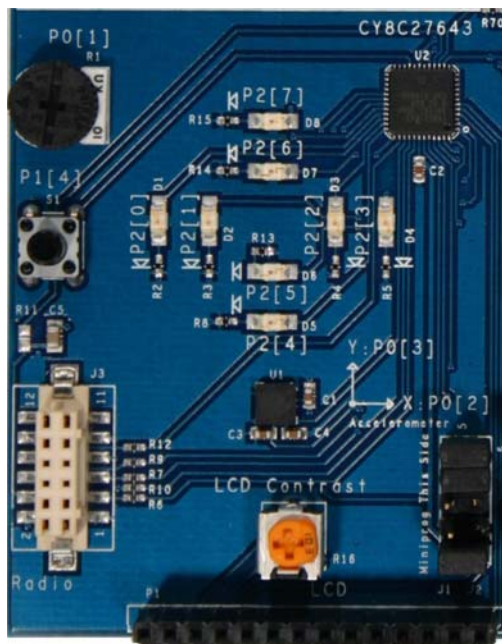


## Top Left (TL) Quadrant



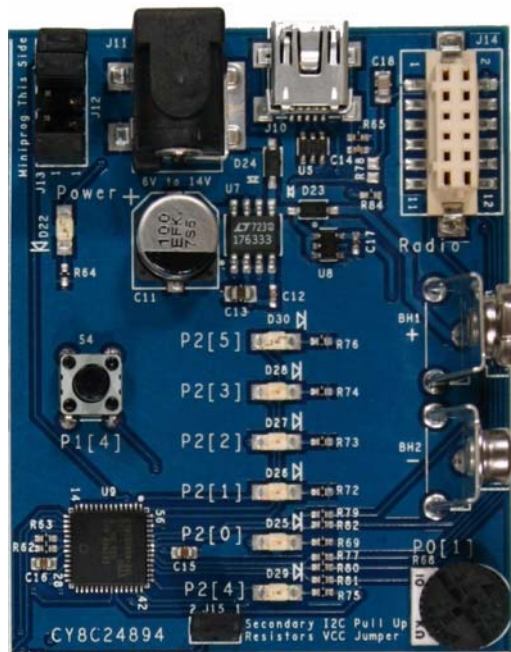
- CY8C21434-24LFX PSoC Device (U5)
- Four CapSense Buttons (octagons labeled 1 through 4)
- Potentiometer (R43)
- Four Green LEDs (D15 through D18)
- Two Red LEDs (D19 and D20)
- Pushbutton (Normally Open, Int. Pull Down, S3)
- Socket for Radio (J9)
- Programming Header (J7)

## Bottom Left (BL) Quadrant



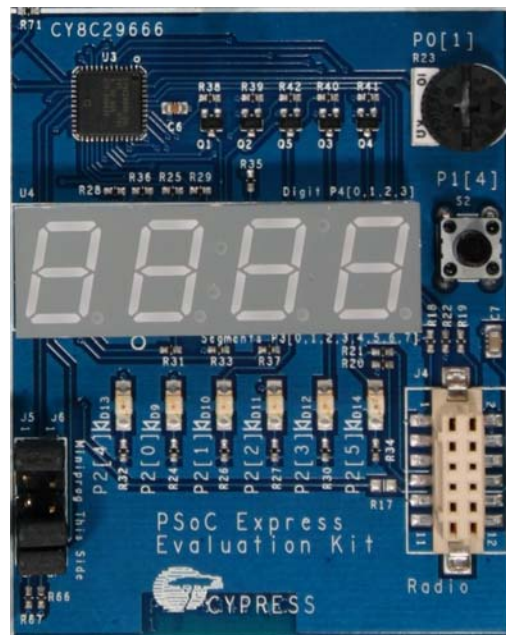
- CY8C27643-24LFXI PSoC Device (U2)
- ADI ADXL322 Dual-Axis Accelerometer (U1)
- Potentiometer (R1)
- Four Green LEDs (D1 through D4)
- Four Red LEDs (D5 through D8)
- Pushbutton (Normally Open, Int. Pull Down, S1)
- Socket for LP Radio (J3)
- Programming Header (J1)
- Receptacle for LCD (P1)

### Top Right (TR) Quadrant



- CY8C24894-24LFXI PSoC Device (U9)
- USB Mini B Connector (J10)
- Potentiometer (R68)
- Four Green LEDs (D25 through D28)
- Two Red LEDs (D29 and D30)
- Pushbutton (Normally Open, Int. Pull Down, S4)
- Socket for Radio (J14)
- 6-14V Power Input Jack (J11)
- 9V Battery Clip (BH1 and BH2)
- Programming Header (J13)

### Bottom Right (BR) Quadrant



- CY8C29666-24LFXI PSoC Device (U3)
- 4-Digit 7-Segment LED Display (Common Cathode, U4)
- Potentiometer (R23)
- Four Green LEDs (D9 through D12)
- Two Red LEDs (D13 and D14)
- Pushbutton (Normally Open, Int. Pull Down, S2)
- Socket for Radio (J4)
- Programming Header (J6)





# 3. CY3209-ExpressEVK Example Projects



## PSoC Express

### Chapter 1: Introduction

1. Open the CY3209-ExpressEVK Kit Guide on the CD's /Documentation folder.
2. Read Chapter 1 of the Kit Guide to learn the following subjects:
  - a. How to add drivers and valuator to a PSoC Express Design.
  - b. How to install your MiniProg programmer.
  - c. How to program the demonstration board.
  - d. Conventions used in the CY3209-ExpressEVK Kit Guide.

## Explore the Hands-on Example Projects

Select other projects to build from the following chapters in the Kit Guide

### Chapter 2: First Example

This example implements a pushbutton used to control a decaying LED.

### Chapter 3: I2C Master/Slave Lab

This lab creates two projects: an I2C slave and an I2C master. The I2C master device reads a voltage value from the slave and displays the value on a four digit LED display. The master also writes a control value to the slave device to set an LED to Off, On, or Blinking, depending on the voltage level read from the slave.

### Chapter 4: USB-UART Lab

This project uses the USB-UART driver to demonstrate the ability to monitor and control a PSoC device with a PC using a virtual COM port on a USB hardware connection. The project has a voltage input and an LED that supports three states: Off, On, and Blinking. The LED state is controlled by an Interface Valuator.

### Chapter 5: CapSense Lab

This project creates four capacitance sensing buttons that individually control four LEDs.

### Chapter 6: LCD Lab

This project displays a voltage input as a numeric value and as a bar graph on an LCD display.

### Chapter 7: Cypress WirelessUSB™ Master/Slave Lab 1

This lab creates two projects: a WirelessUSB slave and a WirelessUSB master. The WirelessUSB master device reads a voltage value from the slave and displays the value on a four digit LED display. The master also writes a control value to the slave device to set an LED to Off, On, or Blinking depending on the voltage level read from the slave.

## Chapter 8: Cypress WirelessUSB™ Master/Slave Lab 2

This lab implements a wireless tilt sensor. The lab creates two projects: a WirelessUSB slave and a WirelessUSB master. The slave device transmits information from a dual axis accelerometer to the master device. The master device uses this information to display the XY tilt on the 8 LEDs in the bottom left quadrant of the master demonstration board. The LED pattern is also transmitted back to the slave device for display on the slave demonstration board.

**Note:** This lab requires two CY3209-ExpressEVK kits.

## 4. Design Support and Resources



### PSoC Development Software Online

All PSoC development software tools are available for download online. For PSoC Express, visit [www.cypress.com/psocexpress](http://www.cypress.com/psocexpress). For PSoC Designer visit [www.cypress.com/psocdesigner](http://www.cypress.com/psocdesigner). For PSoC Programmer visit [www.cypress.com/psocprogrammer](http://www.cypress.com/psocprogrammer).

### PSoC Data Sheets and Application Notes

For all PSoC device data sheets and detailed application notes, many with complete starter projects, visit [www.cypress.com/designresources](http://www.cypress.com/designresources). In the Products column, select “PSoC Mixed-Signal Controllers” and in the Resource Type column, select either “Application Notes” or “Datasheets.”

### PSoC Device Selector Guide

In the PSoC Application Notes section, search for [AN2209](#), The Device Selection Guide for PSoC. It is a useful tool for determining exactly which PSoC device you should use for a specific design project.

### PSoC Development Tools Selector Guide

In the PSoC Application Notes section, search for [AN2402](#), The PSoC Development Tools Selector Guide. This is a complete catalog and description of all the development tools that support PSoC devices and when to use them in your design cycle—from concept to production.

### PSoC On-Demand Training

Visit [www.cypress.com/psoctraining](http://www.cypress.com/psoctraining) to engage in on-demand self-paced PSoC product and development software training. Learn to design PSoC like the pros, at the introductory, intermediate, and advanced knowledge levels!

### PSoC On-Site Training

Email [training@cypress.com](mailto:training@cypress.com) to enquire about PSoC in-person training seminars at a location near you. Learn design basics, tips, and tricks from the pros to become a PSoC design expert!

### Online Technical Support

For knowledge base articles, customer forums, and online application support, visit [www.cypress.com/support](http://www.cypress.com/support).

## Additional CapSense Resources

A wealth of information about PSoC Express and CapSense is available on the [Cypress.com](http://Cypress.com) web site, and more is frequently added. The following list is just a sample of what is available.

### CapSense DataSheets

- [CY8C20434 Mixed Signal Array](#)
- [CY8C20334 Mixed Signal Array](#)
- [CY8C20234 Mixed Signal Array](#)

### CapSense Application Notes

- [AN2292, Layout Guidelines for PSoC™ CapSense](#)
- [AN2318, EMC Design Considerations for PSoC CapSense Applications](#)
- [AN2355, Calibrating CapSense with the CSR User Module](#)
- [AN2360, Power and Sleep Considerations](#)
- [AN2393, Migrating from CSR to CSA](#)
- [AN2394, CapSense Best Practices](#)
- [AN2397, CapSense Data Viewing Tool](#)
- [AN2398, Waterproof Capacitive Sensing](#)
- [AN2403, Signal-to-Noise Ratio Requirement for CapSense Applications](#)
- [AN2408, Migrating from CSR to CSD](#)
- [AN14459, CapSense Device and Method Selection Guide](#)

### CapSense Technical Articles

- [TA1186, Designer's Guide to Rapid Prototyping of Capacitive Sensors on any Surface](#)
- [TA1179, Controls & Sensors Touch Sensors Spread Out](#)
- [TA1193, The Art of Capacitive Touch Sensing](#)
- [WP0004, White Paper: Cypress's CapSense Successive Approximation Algorithm](#)

### CapSense Developer Kits

- [DK10068, CapSense Successive Approximation \(CSA\)](#)
- [DK10069, CapSense Sigma-Delta \(CSD\)](#)
- [DK10064, CapSense Proximity Detection Demonstration](#)
- [DK10059, CapSense Demo Board](#)