

# EE101 Insight-Maker Instructions

Thank you for purchasing our guide to building your very own EE101 Insight-Maker. Operation and feature set can be found at [www.EE101.com](http://www.EE101.com).

Below are the instructions for building your EE101 Insight-Maker. Once the various parts are acquired and the software is downloaded and installed, it should only take about 15 minutes before you can begin using the device to debug your electronic systems.

We have enjoyed inventing these tools over the many, many years and are glad that so many people find them useful.

**If you find the tool useful, Blog, Forum Post and Spread the news with active links to [www.EE101.com](http://www.EE101.com) as much as possible! Then send us a link to [support@ee101.com](mailto:support@ee101.com) and we will send you a special gift!**

## Step 1 – Buy the Required Parts

### Parts Required

CY8CKIT-059 board (about \$10 USD)

- PSoC5LP Prototype Board from Cypress Semiconductor
- Purchase from <http://www.cypress.com/cypress-store> after searching for CY8CKIT-059
- Purchase from <https://www.digikey.com/products/en?keywords=cy8ckit-059>

USB A male to USB Micro-B male cable (about \$2.50 USD)

- <https://www.digikey.com/product-detail/en/qualtek/3025030-03/Q966-ND/6188812>
- Or any other A-Male to Micro B-Male cable

The screenshot shows a web browser window displaying the Cypress website. The page title is "CY8CKIT-059 PSoC® 5LP Prototyping Kit With Onboard Programmer and Debugger". The page features the Cypress logo, a search bar, and navigation links for SOLUTIONS, PRODUCTS, DESIGN SUPPORT, BUY & SAMPLE, and ABOUT CYPRESS. The main content area includes a product image of the CY8CKIT-059 PSoC 5LP Prototyping Kit, a price tag of \$10.00, and a "Buy from Cypress" button. Below the product image, there is a description of the kit as a low-cost platform for prototyping products with the ARM® Cortex®-M3-based PSoC® 5LP, and a note that it now supports KitProg - an Onboard Programmer and Debugger. The page also includes a "RELATED PAGES" section with a link to "PSoC® 5LP".

## Parts Optional

Test leads or clips to connect the board to your circuit

- Test Leads can be any wire, or jumpers from [www.sparkfun.com](http://www.sparkfun.com) or top quality ones from <https://www.digikey.com/products/en?keywords=9110-6S>
- Mating Test Clips are also useful, though can be expensive. <https://www.digikey.com/product-detail/en/e-z-hook/XKMBLK/461-1009-ND/528230> are the best quality clips we can find.

Headers (0.1" Spaced)

- For mounting to the CY8CKIT-059 board for easy connection to the jumpers above.
- Suitable ones among the hundreds available are
  - o <https://www.digikey.com/product-detail/en/sullins-connector-solutions/PRPC020SFAN-RC/S1211EC-20-ND/2775354>
  - o <https://www.digikey.com/product-detail/en/3m/929647-09-20-EU/3M156536-20-ND/3833181>

## Step 2 – Download the EE101 Insight-Maker Firmware

Download the file [www.EE101.com/EE101Bootloader\\_Maker.hex](http://www.EE101.com/EE101Bootloader_Maker.hex) from our web site. Save it to a known location. It is available in a zip file as well in case that downloads easier at [www.EE101.com/EE101Bootloader\\_Maker.zip](http://www.EE101.com/EE101Bootloader_Maker.zip). You will need to unzip it after download.

### Step 3 – Download the EE101 Insight-Pro Software

Download the EE101 Insight-Pro computer software from [www.EE101.com](http://www.EE101.com) by clicking on the top Download link and selecting Windows or Mac. Install the software. Newer Windows versions and Mac install the drivers automatically (it's a USB COM port). There are USB drivers for it in the Program Files (x86)/EE101 Embedded Firmware Debugger/Drivers directory in case you need them in Step 6.

### Step 4 – Download and Install the PSoC Programmer Software

Head to the Cypress web site ([www.cypress.com](http://www.cypress.com)) and download and install the PSoC Programmer.

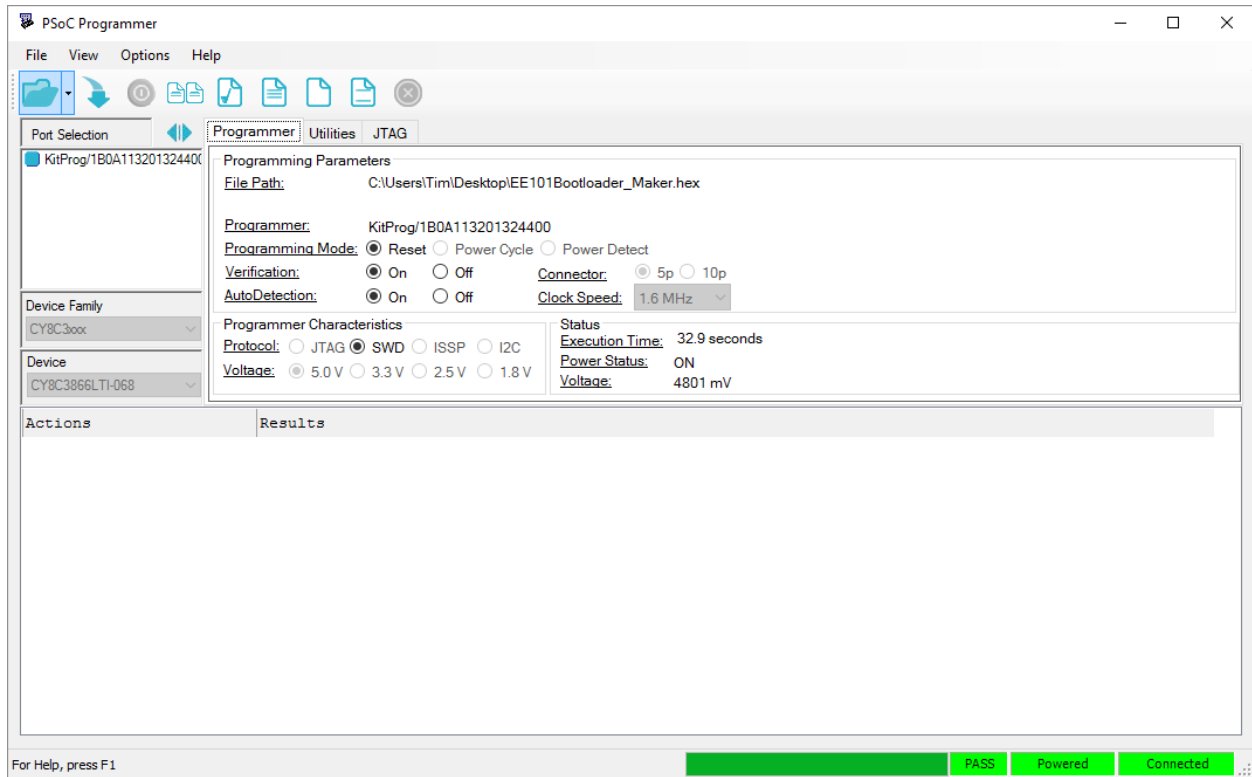
You will need to register to download the software. Don't worry, it's free. Click here to get it:

<http://www.cypress.com/products/psoc-programming-solutions>

Install it on your Windows PC.

## Step 5 – Program the CY8CKIT-059

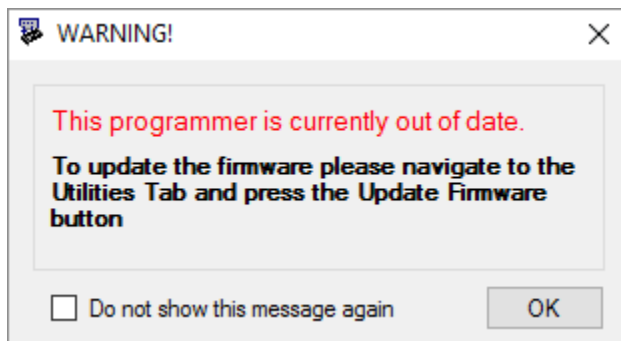
Plug in the board to a USB port on your PC. Run the PSoC Programmer Software.



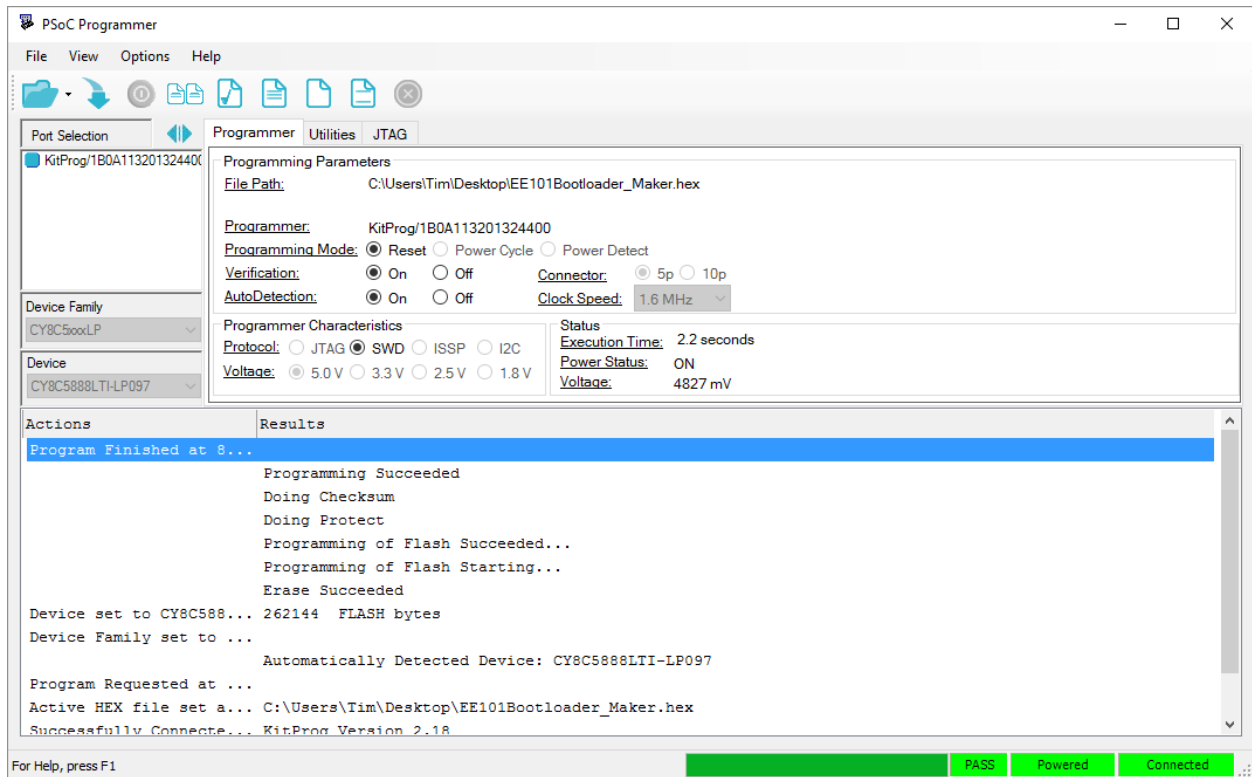
Select File/Load and select the file EE101Bootloader\_Maker.hex that you downloaded in the previous steps.

Click on the KitProg/... line on the left of the screen (in Port Selection).

You may get the following notice to update the firmware on the board (the firmware of the onboard programmer). Do it by clicking the Utilities Tab and selecting Update Firmware.



Make sure the settings are as shown in the screenshot below. Then press File/Program. It will program the PSoC5LP on the target board. You will see the following screen:



You can now unplug the board.

Finally, break off the programmer from the rest of the board. This disconnects a few lines from the target board that are used by the EE101 Insight-Maker.

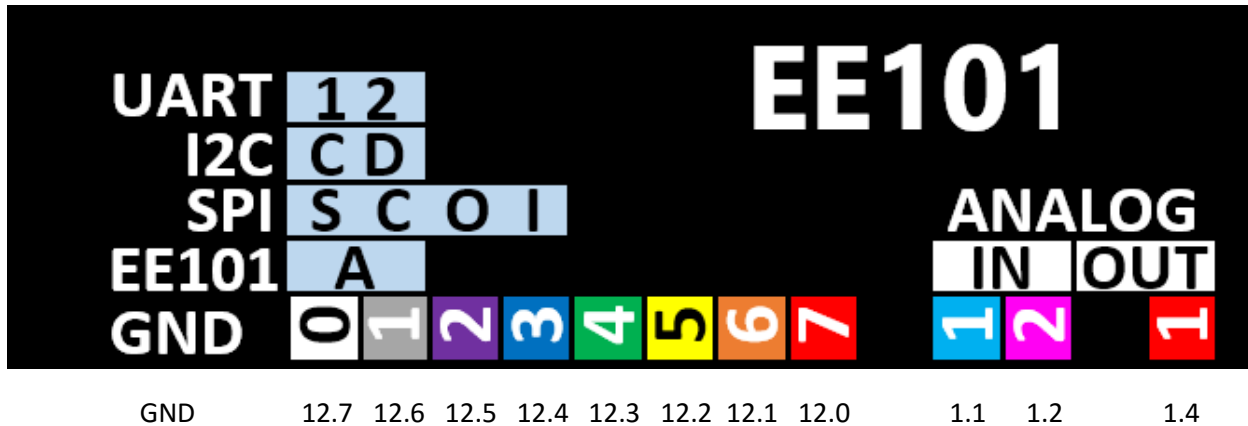
## Step 6 – Plug in the USB Cable and Run the Software

The board is now fully functional as an EE101 Insight-Maker. Plug the USB cable into it and plug the cable into your computer.

Finally Run the EE101 Insight-Pro software that you installed previously. Refer to our User's Manual on the EE101.com web site for operational details.

## Step 7 – Connect Your Hardware

The following diagram shows the connections to the various pins on the EE101 Insight-Maker pinout.



- GND - You MUST connect this signal to the ground of your circuit. This provides the reference 0 level for the entire device.
- Device A inputs are shown in Blue.
- EE101 device inputs – Device A uses 1 (UART) or 2 (GPIO) signals for communication. In 1-wire mode connect to channel 0 for device A. In 2-wire mode, the two signals for each device are automatically determined and swapped so you do not need to determine which is which.
- I2C inputs - Clock (SCL) and Data (SDA)
- SPI inputs - **S**elect (SS#), **C**lock (SCK), **O**utput (MOSI) and **I**nput (MISO). Both data lines are actually inputs to the EE101 device.
- UART - 1 and 2 channel. You can use one or both at a time for each device.
- Channels not used by Device A (set to Logic) become General Purpose Logic Analyzer Inputs
- Analog In 1 and 2 - Analog Input channels
- Analog Out 1 - Analog Output Channel (AWG)

## Step 8 – Consider Upgrading

The EE101 Insight-Pro adds the following features:

- 2 sets of device debug channels (EE101 or Bus decode). Debug two busses or processors at the same time.
- High Speed Logic Analyzer and Oscilloscope mode. Get up to 72 Msp/s Logic Analyzer and 1 Msp/s Analog captures.

Happy Debugging!