

TCS230EVM

Quick Start Guide



An Evaluation System Interfacing the TCS230 RGB Color Sensor to a BASIC Stamp™ Microcontroller

Thank you for purchasing the TCS230 evaluation module (TCS230EVM). The TCS230EVM is a versatile evaluation system that allows you to quickly and easily evaluate the TCS230 RGB Color Sensor in color measurement applications using the provided hardware, host application and BASIC Stamp software. Additionally, the Parallax BASIC Stamp editor software has been provided to allow you to develop your own custom software. The Parallax Board of Education provides a solder-less breadboard area and additional connections for prototype circuitry, allowing a complete prototype color measurement device to be developed using the TCS230EVM platform.

To get up and running as quickly and easily as possible, please check the contents of your box with the following list to make sure you have all the items you need to get started:

- TCS230EVM Quick Start Guide (this document)
- Parallax Board of Education with BASIC Stamp (BS2) installed
- TCS230AMLM - TCS230LM (referred to as Lens Module) with TCS230AM (referred to as AppMod Adapter) with instruction sheet.
- ***Important Note: Please read the section titled “Connecting the Hardware” before unpacking the TCS230AMLM.***
- Serial cable
- Power Adapter
- TCS230EVM CD-ROM
- Four 1” aluminum standoffs and four 4-40x1/4” machine screws

The CDROM contains the following:

- ReadMe.txt – (similar to this document)
- TAOS folder
 - Setup.exe - installation for TAOS TCS230EVM software
 - TCS230-Exx – latest datasheet for TCS230
- Parallax folder
 - Setup_Stamp_Editor_6MB.exe - installation for Parallax BASIC Stamp Editor
 - BASIC_Stamp_Manual_v2-0.pdf – BASIC Stamp Manual
 - Board_of_Education_Manual.pdf – Board of Education Manual

If any of the above items are missing, please contact customer support at 972-673-0759 for replacement.

Installation

On most PCs, the installation will begin automatically when the CD-ROM is inserted into the drive. If the installation does not begin:

- Click **Start**, then click **Run**
- Type **D:\setup** and press Enter. **IMPORTANT:** Use the appropriate drive letter in the above command to install the software. CD-ROMs are commonly “D:”.

The installation program will guide you through the product installation. The TAOS TCS230EVM software and the Parallax BASIC Stamp Editor should both be installed.

Getting Started

Connecting the Hardware

- Connect the supplied serial cable to an available serial port of your PC.
- Connect the other end of the serial cable to the Parallax Board of Education 9-pin D connector.
- Unpack the TCS230AMLML and separate the Lens Module from the AppMod adapter board.
- Connect the AppMod board to the X1 connector on the Parallax Board of Education. Match the pin name text on both boards to ensure proper orientation of the AppMod board.
- Attach four 1" standoffs (included) to the lens side of the Lens Module using the supplied screws.
- Connect the ribbon cable from the Lens Module to the AppMod adapter header J5.
- Connect the power adapter to the Board of Education and plug the other end into an AC outlet.
- Please see the document enclosed in the TCS230AMLML box for detailed information about the color sensor module. *Note: The TCS230AMLML color sensor module document contains some information regarding use of the module independent of the TCS230EVM and may not be applicable when using the module with the TCS230EVM and application software.*

Calibrating the Sensor Module

- Hold the Lens Module on a flat, white surface making sure the four standoffs are squarely contacting the surface.
- Press the RESET button on the Parallax Board of Education.
- The white LEDs of the Sensor Module will turn on for approximately 3 seconds during white calibration, then blink on and off continuously (about every 0.5 seconds).
Note: White calibration must be performed each time the TCS230EVM is powered up.

Running the TCS230EVM Software

- Start the TCS230EVM application software (Start menu, Programs). The software will automatically search the COM ports and should automatically detect the TCS230EVM.
- Hold the Lens Module on a color sample, making sure the standoffs are squarely contacting the surface.

The color box on the left portion of the display shows whatever color the TCS230EVM "sees". The rainbow on the right portion of the display shows where the color is located in Hue/Saturation/Luminance (HSL) color space. The HSL color space more closely approximates how the human eye distinguishes color as compared to the common Red/Green/Blue (RGB) color space. Please consult the TCS230EVM Help file available from the Windows™ Start menu or from the Help menu in the application for more information about the TCS230EVM software.

Additional Resources

For information about the use of the Parallax BASIC Stamp Editor and BASIC Stamp, please consult the Stamp Editor Help file or the BASIC Stamp Manual. The Help file is available from the Start menu. The Manual is located on the installation CD-ROM at D:\Parallax\BASIC_Stamp_Manual_v2-0.pdf.

For a schematic diagram and other information about the Parallax Board of Education, please consult the manual located on the installation CD-ROM at D:\Parallax\Board_of_Education_Manual.pdf.

Other Parallax BASIC Stamp documentation, applications information, and sample code for the TCS230 Color Sensor can be found at www.parallax.com.

Please check our web site at www.taosinc.com periodically for the latest application notes and TCS230EVM software.

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