# Pmod OLEDrgb: 96 x 64 RGB OLED Display with 16-bit color resolution

The Pmod OLEDrgb features a 96 x 64 pixel RGB OLED display that is capable of 16-bit color resolution. As a graphical display, users may show off graphs, full-color pictures, text, and anything else they want to see by communicating with it through a standard SPI interface. This module uses the ug-9664hddag01 display from Univision Technology Inc. and Solomon Systech SSD1331 display controller.

#Part Number: 410-323
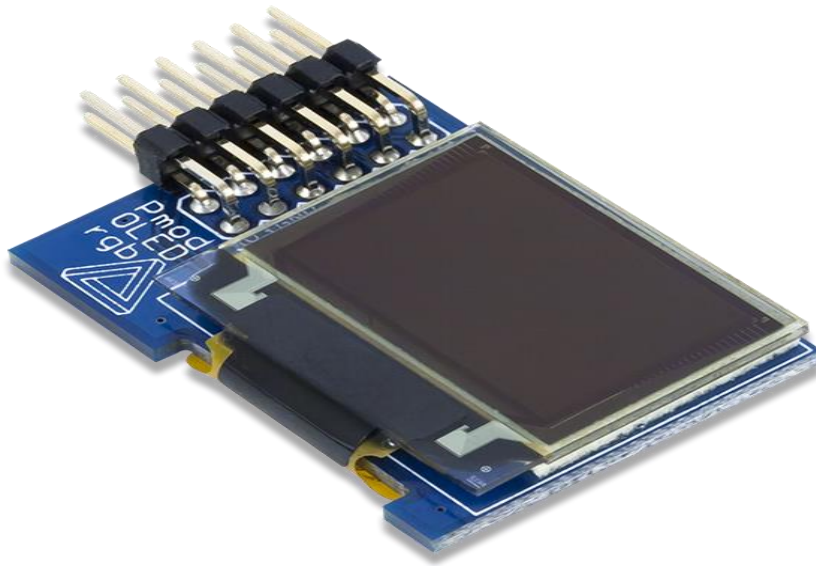
Features:

- 96×64 pixel RGB OLED screen
- 0.8" x 0.5" graphical display
- 16-bit color resolution
- Two low-power display shutdown modes
- Small PCB size for flexible designs (1.4" x 1.0")
- 12-pin Pmod connector with SPI interface

Interfacing with the Pmod

The Pmod OLEDrgb communicates with the host board via the SPI protocol. By driving and keeping the Chip Select (CS) line at a logic level low, users may send both commands and data streams to the display controller based on the state of the Data/Command (D/C) pin. The display controller operates in SPI Mode 3 (clock idles on logic high, data is captured on the clock rising edge, and data is transferred on the clock falling edge) and with a minimum clock cycle time of 150 ns (as per table 21 of the SSD1331 datasheet). The embedded display

only supports SPI write, so users will not be able to receive any information back from the display over SPI.

As a graphical display interface, users may light up any individual pixel on the OLED, display predefined characters, or even load bitmaps onto the screen. Each pixel can be set to one of the 65,535 colors that are available in a 5-6-5 bit RGB format. The OLED display has a specific power-up and power-down sequence to ensure the longevity of the device.

There are two field-effect transistors (FETs) that control the display's two power supplies. The VCCEN control (**pin 9**) toggles the positive voltage supply to the screen itself and the PMODEN control (**pin 10**) toggles the power supply ground to the display. Users may turn off either one of these controls to reduce the power consumption of the Pmod OLEDrgb to approximately 200 nA.