High brightness RGB LED array driver with local dimming and diagnostics based on the LED1642GW

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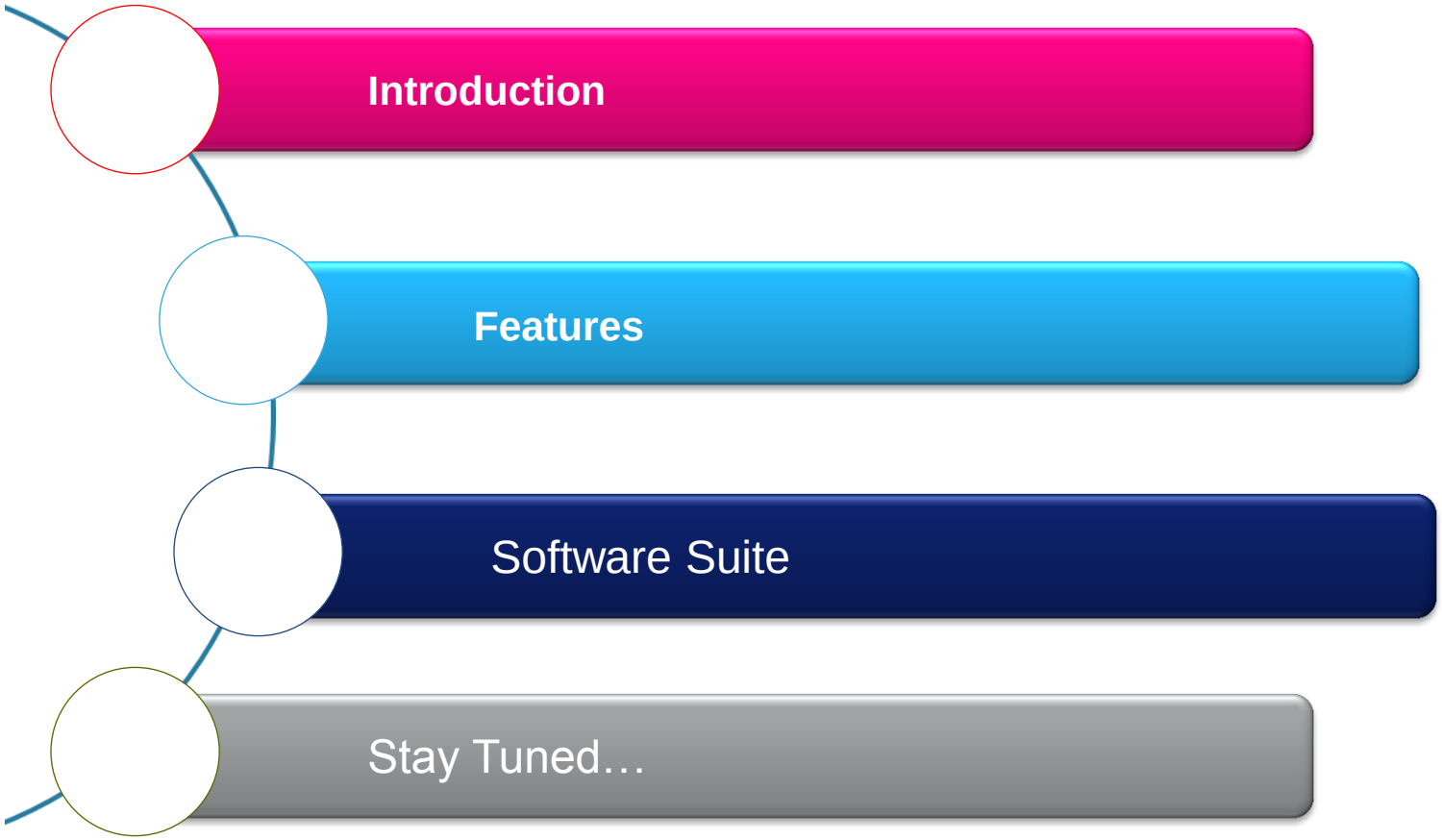
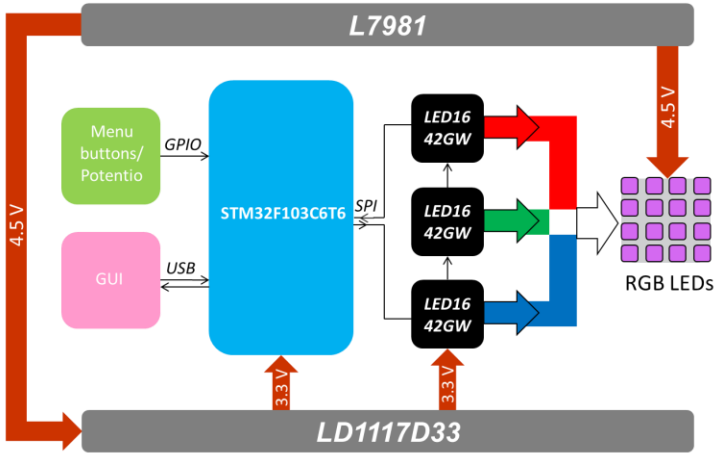
Content



Why use the STEVAL-ILL061V1 ?



To demonstrate all features of LED1642GW using the hardware and GUI.

This board is based on LED1642GW independent PWM LED driver controlled through STM32 microcontroller SPI interface.

L7981 DC-DC converter provides the voltages/power for the overall functioning of the board.

Typical Applications:

- Monochrome displays
- Full color displays
- LED signage
- Dashboard/interior lighting

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STEVAL-ILL061V1 Overview

The STEVAL-ILL061V1 evaluation board has two modes of operation:

- **Stand-alone mode:** In this mode, board is controlled via on-board push buttons and potentiometer
- **GUI mode:** If connected to PC, board is in GUI mode and GUI has the control of board

Other key devices on evaluation board

- L7981: is a high efficiency step down 250 kHz switching regulator with up to 3A current to the load. Input voltage varies from 4.5 to 28 V and also depends on the required output. It supports low dropout operation along with zero load current operation. Overcurrent and thermal protection are provided for safe operation of the device. On the board L7981 powers LD1117 and RGB LEDs
- LD1117D33: is a fixed 3.3 V output, low drop voltage regulator able to provide up to 800 mA. It powers microcontroller and LED drivers.
- STM32F103x: is 32-bit RISC microcontroller based on ARM Cortex M3 core. It has advance APB bus, ADC, Timer, I2C, SPI, USART and USB peripherals.

STEVAL-ILL061V1 Features

Features of evaluation board in stand-alone mode

- Demonstrates pre-configured patterns (with adjustable brightness/speed) like random color, wave effect with smooth gradual transition and solid color demo with abrupt transition between the frames
- On-board buttons to switch between the demos
- Potentiometer as a slider to control speed or brightness of the pattern
- Open circuit, short circuit and combined Error detection simulation using open-circuit/short-circuit jumpers

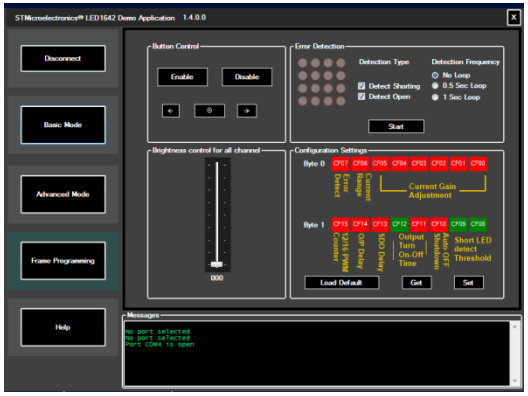
Features of evaluation board in GUI mode

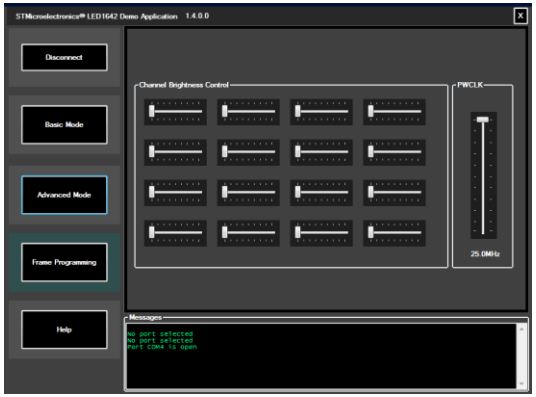
- All the features present in stand-alone mode can be controlled using GUI
- Global brightness control to change the brightness of all the channels
- 4 Individual channel brightness control to control individual brightness of each LED
- Reference PWCLK control from 500 KHz to 24 MHz
- Frame programming mode and 4 predefined presets with variable transition time between frames
- Open, short and combined error detection selection and representation on GUI
- Error detection in “no loop” and in loop of 0.5 s and 1 s
- Reading/Writing configuration register

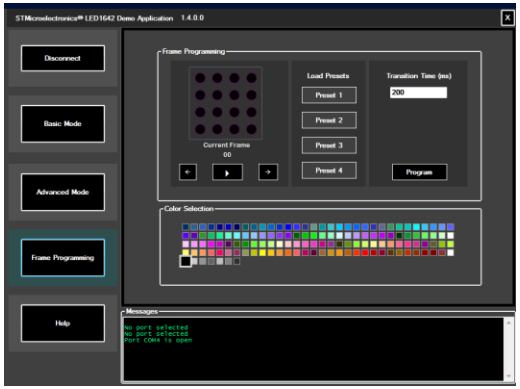
STEVAL-ILL061V1 Application Software

Salient features of the GUI mode are:

- Replication of onboard control buttons to select mode itself from the GUI
- Option to select type of error detection (open, short, combined), frequency of performing error detection and error detection representation on 4x4 LED (mapped to 4x4 LEDs on evaluation board) map
- Adjustable global brightness for all the channels
- Adjustable brightness for individual 16 LEDs
- Bitwise access, both read and write, of configuration register with one preconfigured default setting
- PWCLK reference clock control from 500 KHz to 24 MHz in 50 steps (frequency intervals are not equally spaced, see section 5.3)
- Frame programming to display any arbitrary pattern consists of up to 10 frames with variable transition speed
- 4 preconfigured patterns for quick visualization of frame programming mode on the evaluation board







Stay Tuned for more on STEVAL-ILL061V1

STEVAL-ILL061V1: High brightness RGB LED array driver with local dimming and diagnostics based on LED1642GW and STM32

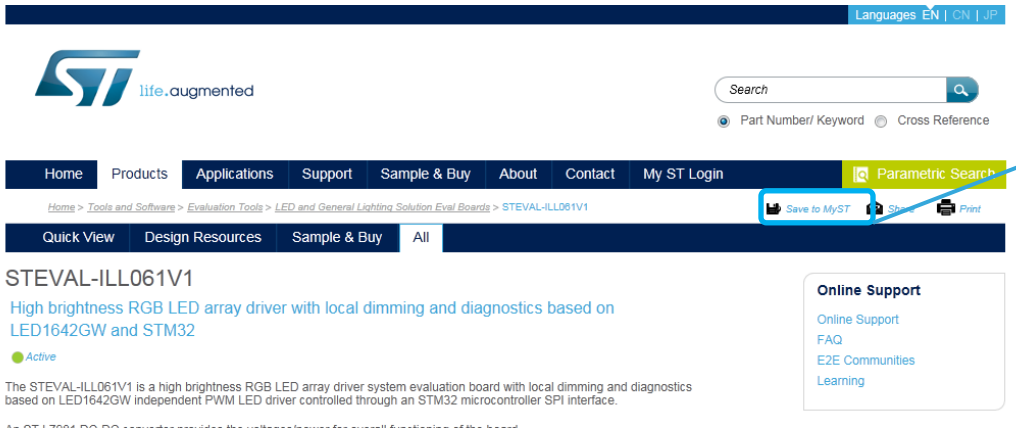
- More info at: http://www.st.com/web/catalog/tools/FM116/SC1081/PF259630

STSW-ILL061FW: STEVAL-ILL061V1 firmware

- More info at: http://www.st.com/web/catalog/tools/FM147/SC1870/PF260203

STSW-ILL061V1: application software setup

- More info at: http://www.st.com/web/catalog/tools/FM147/SC1870/PF259986



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