Cypress Powerline Communication RGB Control GUI User Guide

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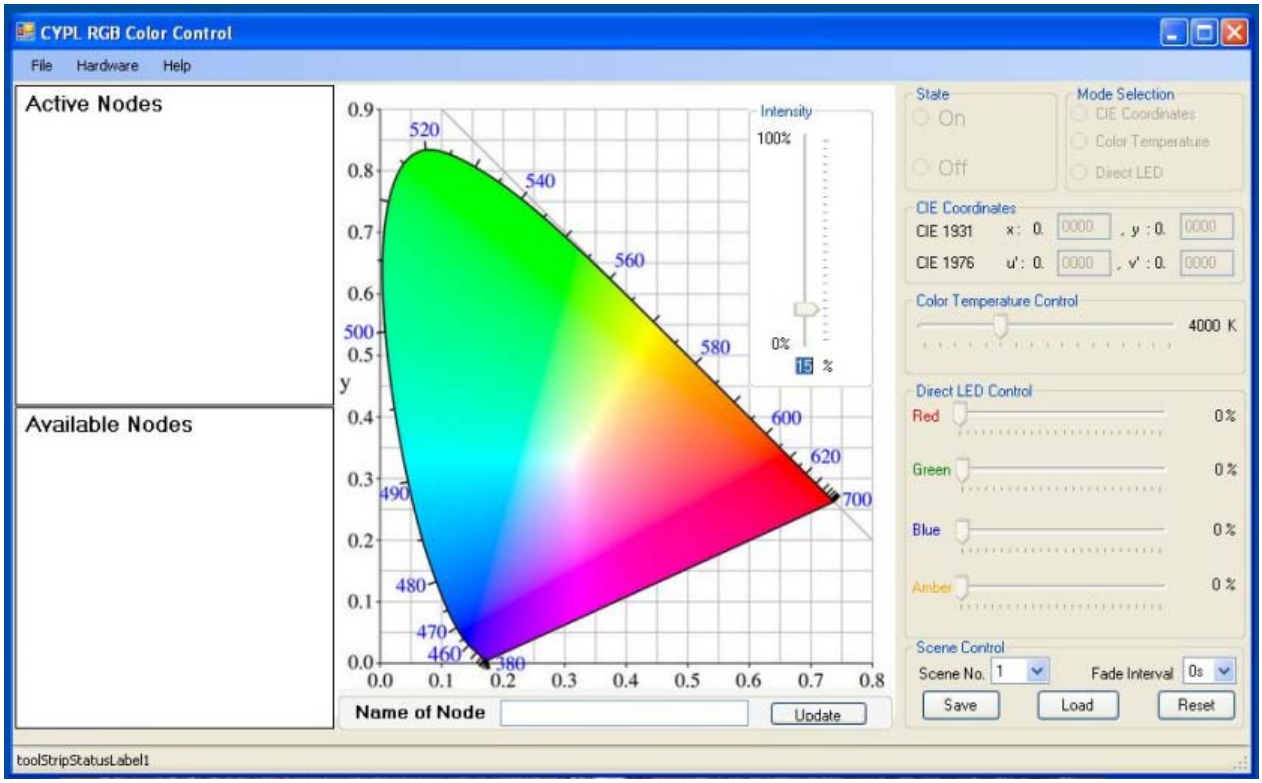
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1. Introduction

This document provides instructions to install and uninstall Cypress's Powerline Communication solution. It also includes a quick start guide to set up the boards and detailed descriptions of all the features in the PLC RGB Control GUI.

Figure 1-1. PLC RGB Control GUI



1.1 Installation and Uninstallation Support

The following software's are the prerequisites for the PLC RGB Control:

- Microsoft .NET Framework 3.5 SP1

To check if this software is present, click **Start** > **Control Panel** > **Add/Remove Programs**. In case this software is not present, it can be downloaded from: http://www.microsoft.com/downloads/details.aspx?FamilyID=AB99342F-5D1A-413D-8319-81DA479AB0D7&displaylang=en

- Windows Installer 3.1

To check if this software is present, click **Start** > **Control Panel** > **Add/Remove Programs**. In case this software is not present, it can be downloaded from: http://www.microsoft.com/downloads/details.aspx?FamilyID=889482FC-5F56-4A38-B838-DE776FD4138C&displaylang=en

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The PLC RGB Control GUI can be installed through a setup file. Installation creates a shortcut in **Start** > **Cypress** > **PLC RGB Control** to launch the application. A desktop shortcut is created during installation.

The PLC RGB Control GUI supports uninstallation through either the **Add/Remove Programs** tool in the Control Panel for MS Windows or the shortcut provided in the **Start** > **Cypress** > **PLC RGB Control**.

1.2 Quick Start Guide

Follow these steps to setup the boards.

1. Connect one of the PLC10 [CY3272/CY3273] nodes to the Powerline. A blue Power LED should glow on the board after it is connected.
2. Connect the other LED16P [CY3276/CY3277] node to the same Powerline. The blue power LED of that board should also glow when connected. Refer to the development kit user guide for details on connecting the PLC devices to the Powerline.
3. Attach one end of the CY3240 USB-I2C Bridge to the PLC10 node. Make sure the DIP switches are set to OFF position and there are no jumpers placed on the PLC board.

   Also make sure that a jumper is present across J1 on the Bridge. Attach the other end of the Bridge to the USB port of a PC. On connecting the bridge, the green LED should switch ON.
4. Open an instance of the RGB Control from **Start > Cypress > PLC RGB Control**.

Figure 1-2. Connected Bridge

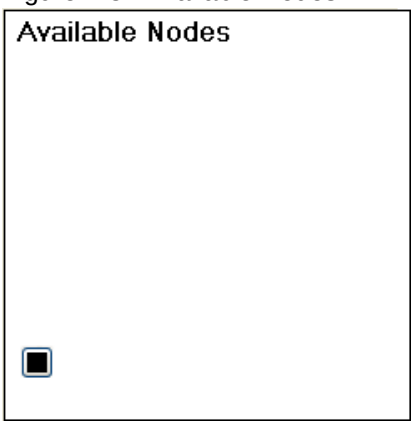


5. The connected bridge appears in the **BridgeSelection** window that is available under **Hardware > Bridge Selection**. Select the bridge from the list and connect to it by clicking on Connect. Make sure that the +5V PWR option is selected and the slave address is 0x01.

   The red LED should light up on the Bridge if the connection is established. The GUI indicates successful connection by displaying "PLC #0 Connected" at the bottom left of the screen in the status bar.
6. If there is an error in connection, remove the bridge from the computer, close the GUI window and repeat steps 1 to 4.
7. Click on **Exit** to close the **BridgeSelection** window.
8. Using PSoC Programmer, download the RGB GUI Slave firmware onto the LED16P01 Board. The firmware is located in the Kit CD at the location `RGB GUI Firmware/ LED16_RGB_Slave_V5.hex`. After programming, Programmer should display Programming Successful.
9. Attach the LED daughter card to header J23 of the board. Supply 12V DC to the LEDs through jumper J22. Press the reset switch on the LED16P RGB Slave.
10. The LED16P node should now show up in the Available Nodes section of the GUI.

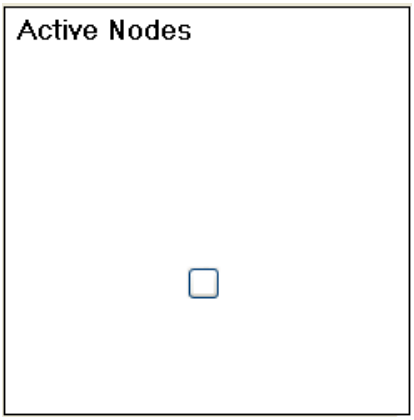
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Figure 1-3. Available Nodes



11. Check the connection between the RGB Board and the LED daughter card by clicking on the node. This should show a white color flash for half a second.
12. Click and drag the node to the Active Nodes section.

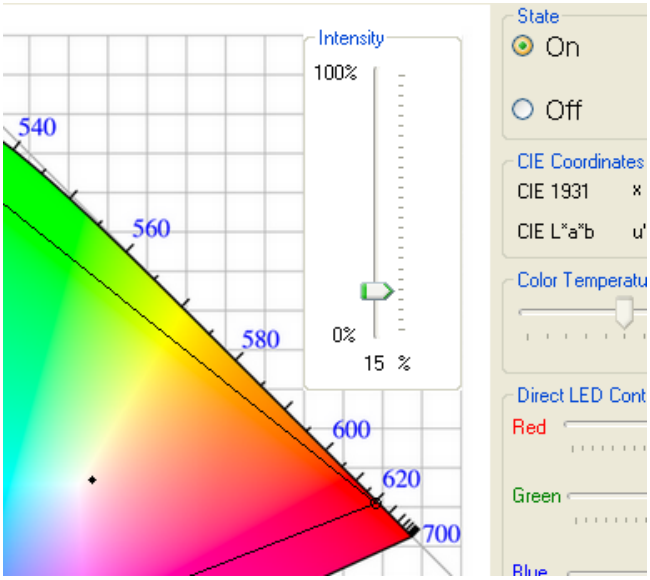
Figure 1-4. Active Nodes



13. Turn on the node by changing the state of the node to **On**. A black dot (marker) and a color gamut should form on the CIE chart. The marker indicates the present color of the LED card.

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Figure 1-5. Change State to On



1.3 Document Revision History

Table 1-1. Revision History

Revision	PDF Creation Date	Origin of Change	Description of Change
**	07/31/09	GHH	New user guide
*A	09/02/09	ROSG	Updated Figure 1-1; minor content edits

1.4 Documentation Conventions

Table 1-2. Document Conventions for Guides

Convention	Usage
`Courier New`	Displays file locations, user entered text, and source code: `C:\ ...cd\icc\`
Italics	Displays file names and reference documentation: Read about the *sourcefile.hex* file in the *PSoC Designer User Guide*.
[**Bracketed, Bold**]	Displays keyboard commands in procedures: [**Enter**] or [**Ctrl**] [**C**]
File > Open	Represents menu paths: File > Open > New Project
Bold	Displays commands, menu paths, and icon names in procedures: Click the **File** icon and then click **Open**.
Times New Roman	Displays an equation: 2 + 2 = 4
Text in gray boxes	Describes Cautions or unique functionality of the product.

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2. PLC RGB Control GUI

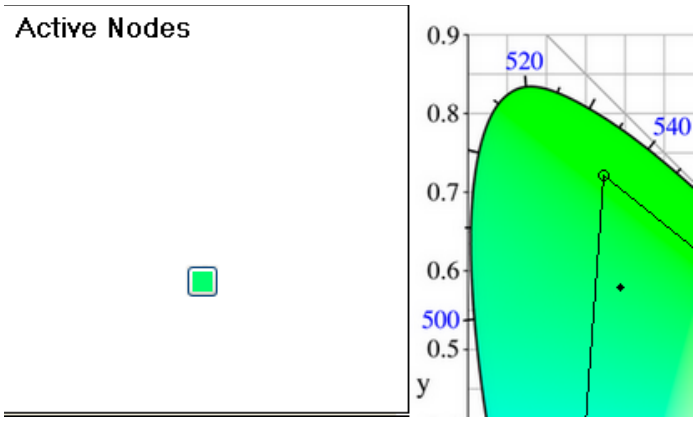
2.1 Color Modes

There are three different color modes that can be selected. The LED16P node's color in the active node section continuously updates with the present color of the slave node.

2.1.1 CIE Coordinates

Using this option, you may control the colors from the 1931 Color palette. The color chart updates with a triangular gamut that is an indication of the range of the LEDs. Clicking on an allowable point (a point inside the gamut) on the chart changes the color of the node to the color of the point clicked and a marker appears at that point. This also updates the CIE 1931 spectrum (x, y) and CIE 1976 spectrum (u', v') coordinates. You can also enter the color point using x and y coordinates of the CIE 1931 spectrum. The marker updates automatically to the changed coordinates. You can also change the intensity of the color on the LED16P node by adjusting its value in the slider.

Figure 2-1. CIE Coordinates

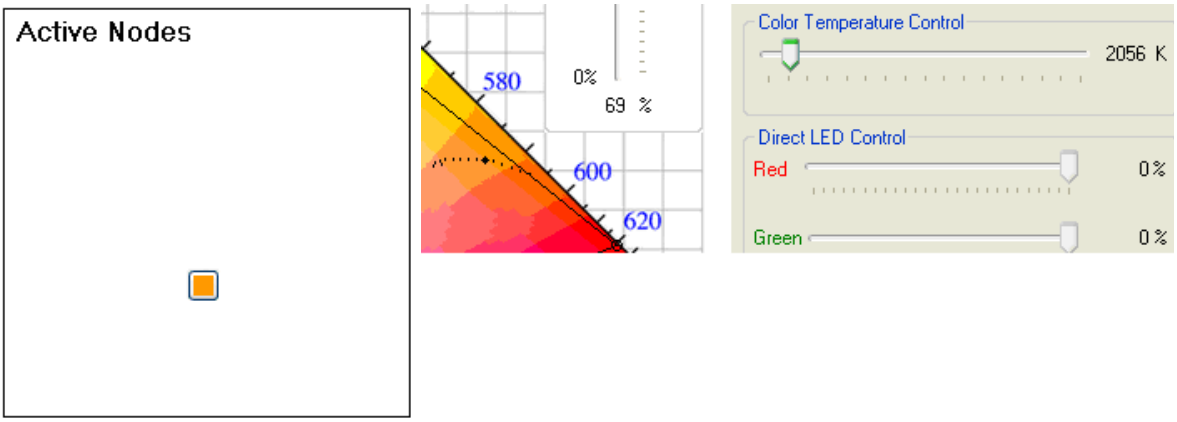


2.1.2 Color Temperature

When this option is enabled, the color chart displays the CCT locus. You can select a CCT value from 1500K to 9500K.

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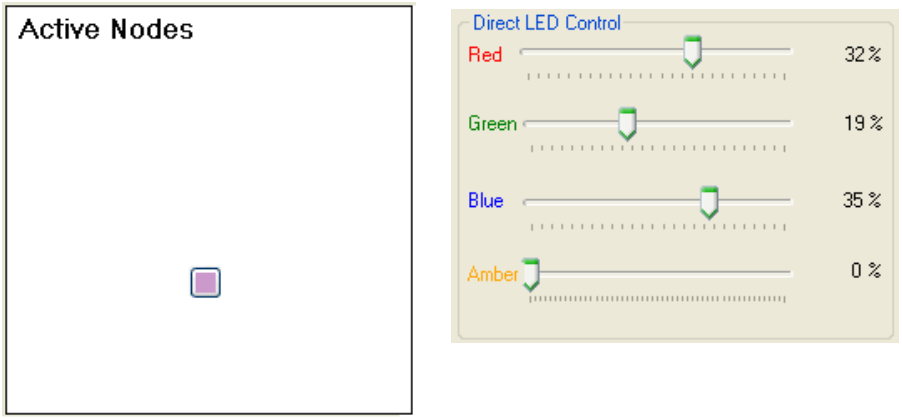
Figure 2-2. Color Temperature



2.1.3 Direct LED

When this option is enabled, the Red, Green, and Blue sliders are activated. You can select intensities from 0% to 100% of each LED independently.

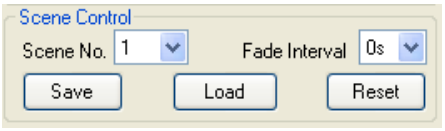
Figure 2-3. Direct LED



2.2 Scenes

This feature allows you to quickly save and load various color configurations of the nodes.

Figure 2-4. Scenes



2.2.1 Save

When the Save button is clicked, the fixtures present in the Active Nodes section save their current colors to the current scene number selected.

2.2.2 Load

When a scene number is selected, and the Load button is clicked, the fixtures in the Active Nodes section shall be loaded with the colors saved in that scene.

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2.2.3 Reset

When clicked, the R, G, B values resets for the selected scene(s) for all nodes.

2.2.4 Fade Interval

You may choose a fading interval from the drop down and load a scene by fading the previous one. The time duration it takes to fade is selected from the drop down menu.

2.3 Menu Bar

The GUI menu bar has the following menu items.

2.3.1 File

2.3.1.1 Save Configuration

Clicking this saves the configuration of the local node (in a *.txt* file) so that the same configuration may be loaded later.

2.3.1.2 Save Configuration As

Clicking this saves the current configurations in a new text file.

2.3.1.3 Load Configuration

A previously saved configuration may be loaded.

2.3.1.4 Exit

This is to exit the application.

2.3.2 Hardware

2.3.2.1 Bridge Selection (Ctrl + B)

This window displays the USB-I2C bridges connect to the PC. It allows you to select the options of the Bridge and to connect to the PLC10 board.

Blink GRN LED

This button blinks the green LED on the Bridge to help identify which bridge is currently being selected.

Connect

Clicking on the Connect button connects the PLC device to the PC. An error message appears if an attempt is made to connect to a Bridge which is not connected to a PLC device. The power mode, slave address and clock rate are set as per the selections made in the radio buttons.

Note: If the USB-I2C Bridge is being powered by external power (i.e. a jumper is connected across the "PWR" pin on the PLC board), do NOT select +5V power as the power mode in the GUI.

2.3.3 Help

2.3.3.1 Users Guide (F1)

This opens the help file for the RGB Control GUI.

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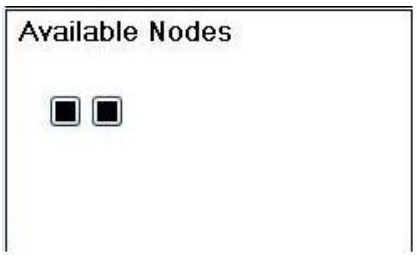
2.3.3.2 *About PLC RGB Control*

This box shows the software version number.

2.4 Multiple Nodes

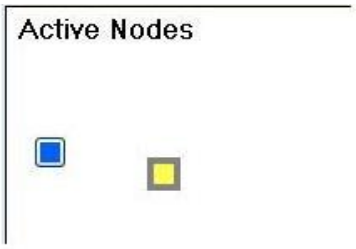
The GUI can also control multiple slave nodes. When multiple LED16P slave nodes are connected on the same Powerline, they all appear in the "Available Nodes" section as shown in the Figure 2-5 for a case of two slave nodes.

Figure 2-5. Available Nodes



When the nodes are dragged into the "Active Nodes" section, the GUI can control all the nodes alternately by clicking on the particular target node and then changing the color/intensity parameters. A grey outline appears around the node in the "Active Nodes" section to show which node is under control at that instance.

Figure 2-6. Active Nodes



Note: Repeat all the steps mentioned in the Quick Start Guide for establishing connection and RGB control for all the Available Nodes.

2.5 Troubleshooting

If the RGB slave does not respond to the GUI, both the master and the slave need to be reset before retrying. The GUI needs to reconnect to the master from the **BridgeSelection** window after it is reset.

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