DRV8800-01 Evaluation Module

User's Guide

Literature Number: SLVU335A
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This document is provided as a supplement to the DRV8800/01 datasheet, and DRV8800/01 Design In Guide. It details the hardware implementation of the CPG002 (DRV8800-01EVM) Customer Evaluation Module (EVM).

1 1. Introduction to EVM

The CPG002 Customer EVM is a board containing all of the necessary components to evaluate the many features found on the DRV8800 and DRV8801 devices. The EVM makes the evaluation process easier by housing a microcontroller and an USB to Serial interface chip that allows for the user to control the different DRV8800 and DRV8801 signals by means of a graphical user interface (GUI).

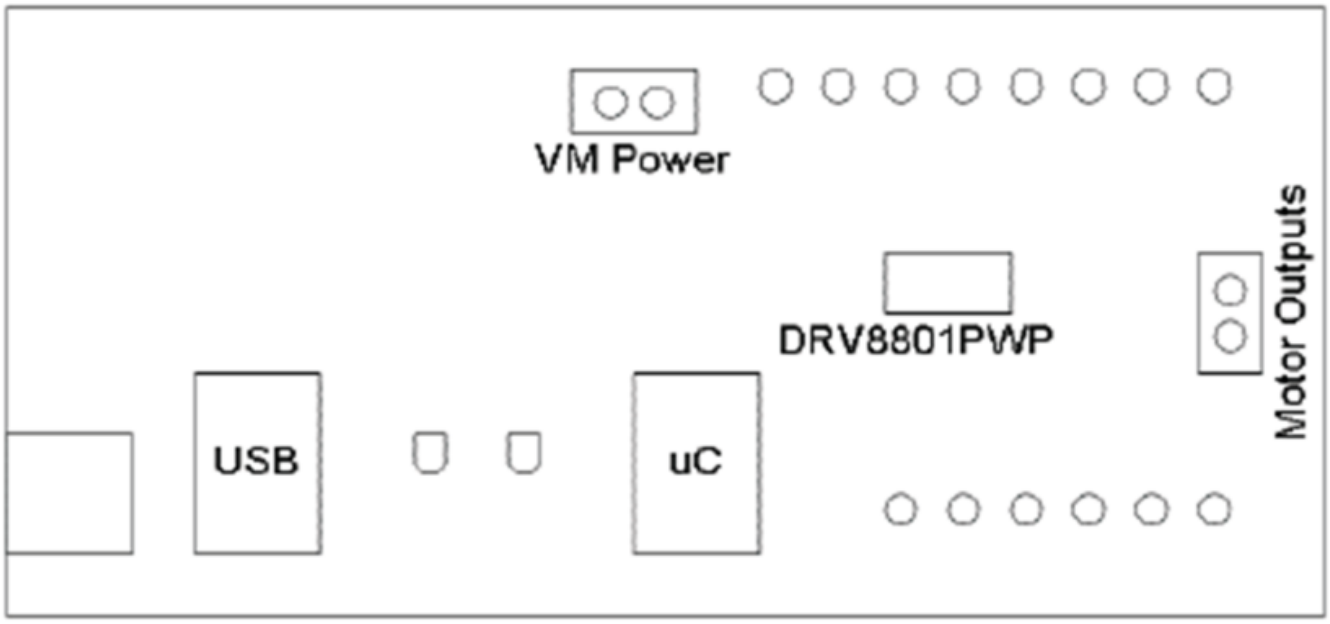

Figure 1. Block Diagram

1.1 Power Connectors

The CPG002 Customer EVM offers terminal blocks for the application of VM power and for motor power outputs. VM power rail must be externally supplied. VDD for logic is internally supplied as it is derived from the USB connection.

The user must apply VM according to datasheet recommended parameters. An USB Connection to a computer is needed for proper control of the device.

1.2 LEDs

Three LEDs offer status information about power rails and microcontroller operating status.

1.3 Jumpers

This EVM has no jumpers that need to be configured by the user.

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1.4 Motor Outputs

There are two ways for connecting the motor load into the CPG002 Evaluation Module: A terminal block and a two pin header. Each connection style offers identical connectivity to the H-Bridge output terminals.

1.5 System Requirements

· Supported OS – Windows 7 (32 Bit, 64 Bit). The window text size should be Smaller-100% (Default)

· Recommended RAM memory - 4 GB or higher

· Recommended CPU Operating Speed – 3.3 GHz or higher

2 GUI Software Installation

The following section explains the location and the procedure for installing the software properly.

2.1 GUI Software Installation

The following section explains the location of files and the procedure for installing the software correctly.

NOTE: Ensure that no USB connections are made to the EVM until the installation is completed. The installer will also install LabVIEW RTE 2014 and FTDI Driver, along with the GUI.

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2.1.1 Installation Procedure

The following procedure helps you install the DRV8800-01EVM GUI

1. Double click on the **Setup_DRV8800-01EVM.exe** as shown in Figure 2.

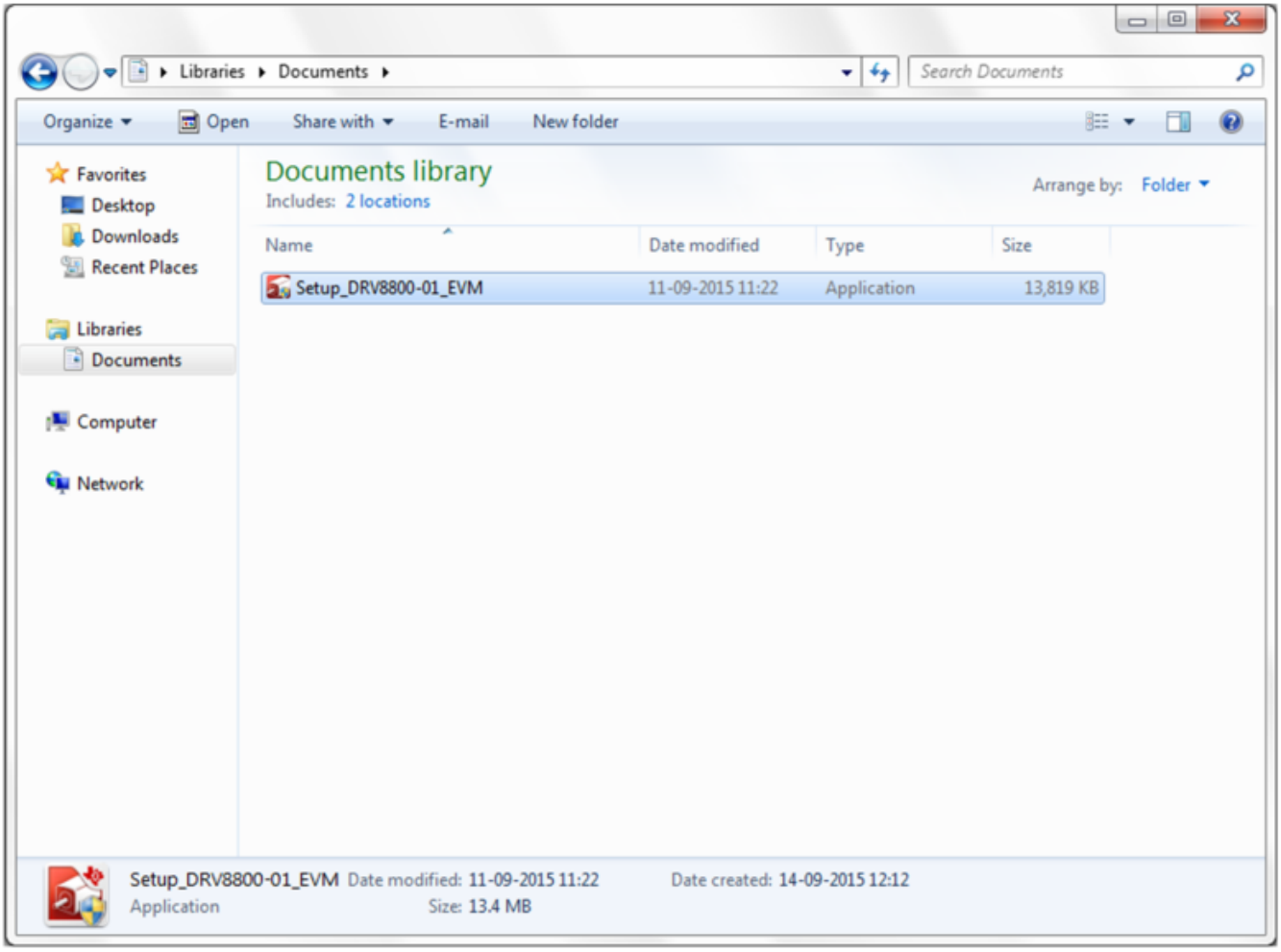

Figure 2. Setup_DRV8800-01EVM.exe

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2. The screen shown below in Figure 3 appears, indicating installer initialization. Click the **Next** button.

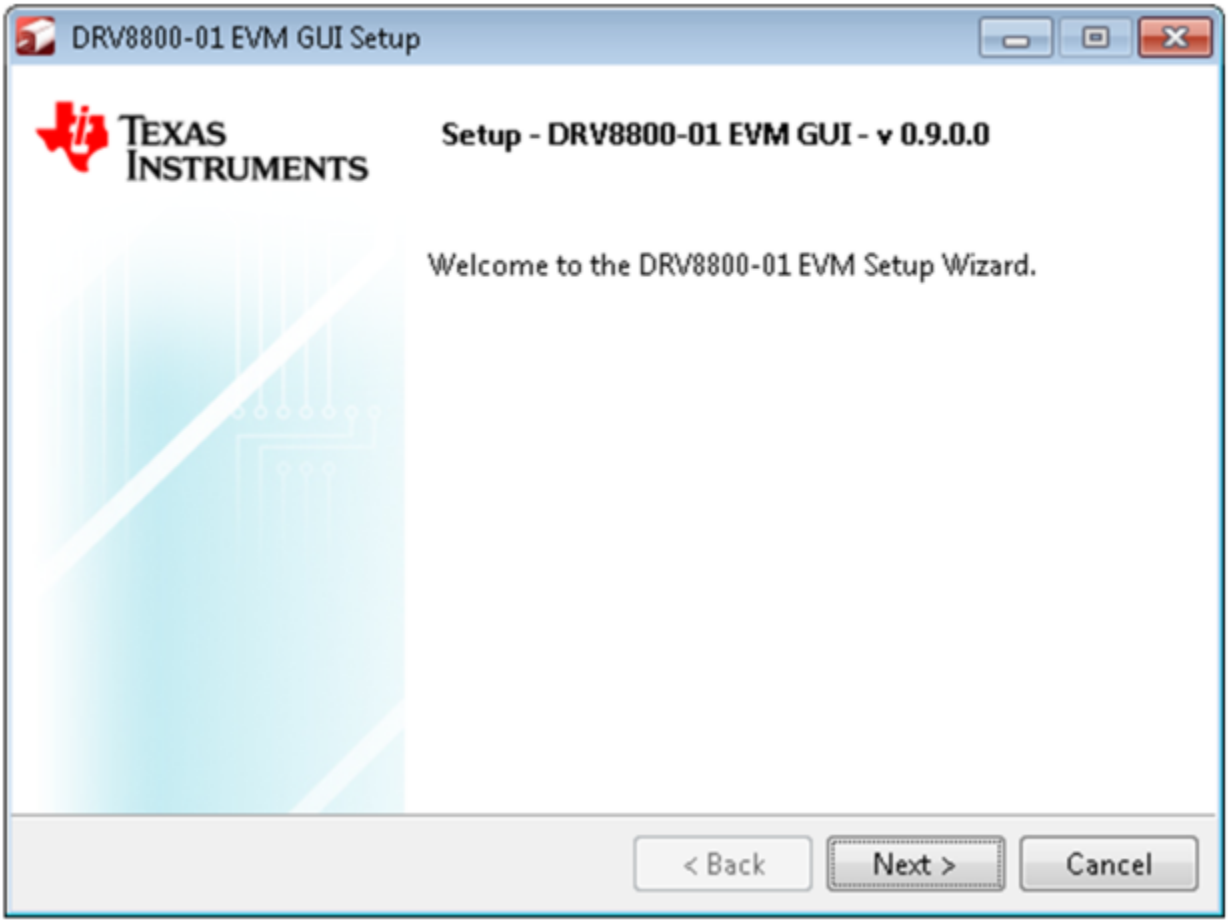

Figure 3. Installation Initialization

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3. In the newly open installation pop-up window, click **Next**. The license agreement will be displayed. Please, read through it carefully and enable the "I Accept the Agreement" radio button and press **Next**.

Figure 4. License Agreement

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4. A screen as shown below in Figure 5 appears, displaying the license agreement of National Instruments. Please read through the agreement carefully and enable the “I Accept the License Agreement” radio button and press the **Next** button.

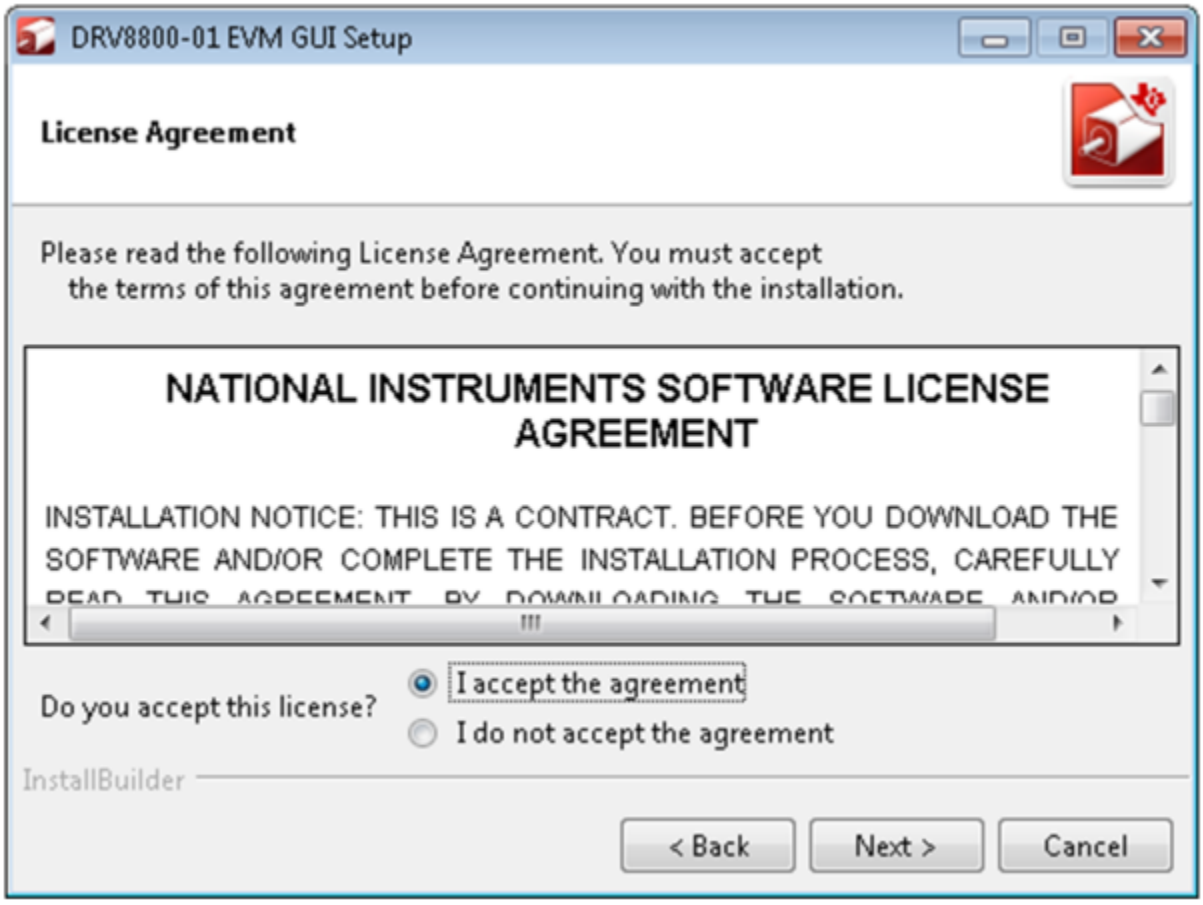

Figure 5. NI License Agreement

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5. Set the default directory for the GUI Installation and click **Next**.

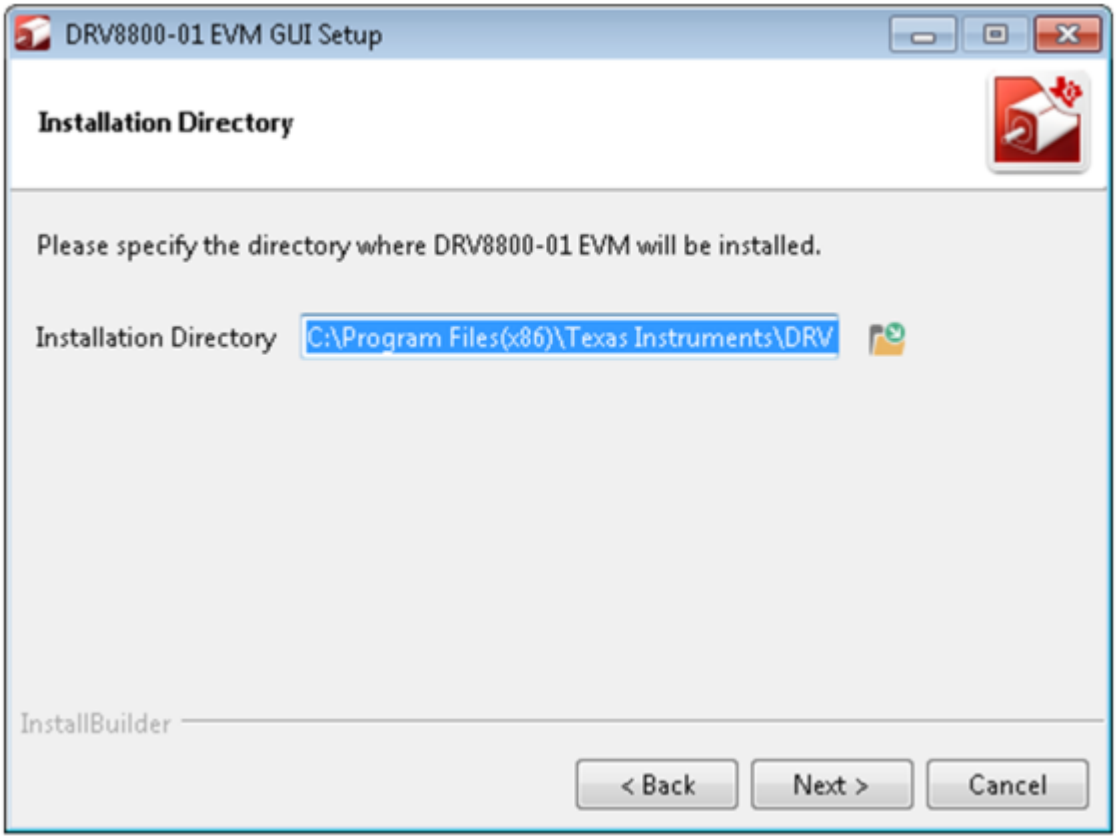

Figure 6. Installation Directory Screen

NOTE: It is highly recommended to keep the default values as provided in the installer.

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6. A screen as shown in Figure 7 appears. This screen is to select the components to install. Select the Components to Install and Click **Next** to continue installation. The LabVIEW RTE component checks out if the LabVIEW RTE 2014 is already installed on the PC.

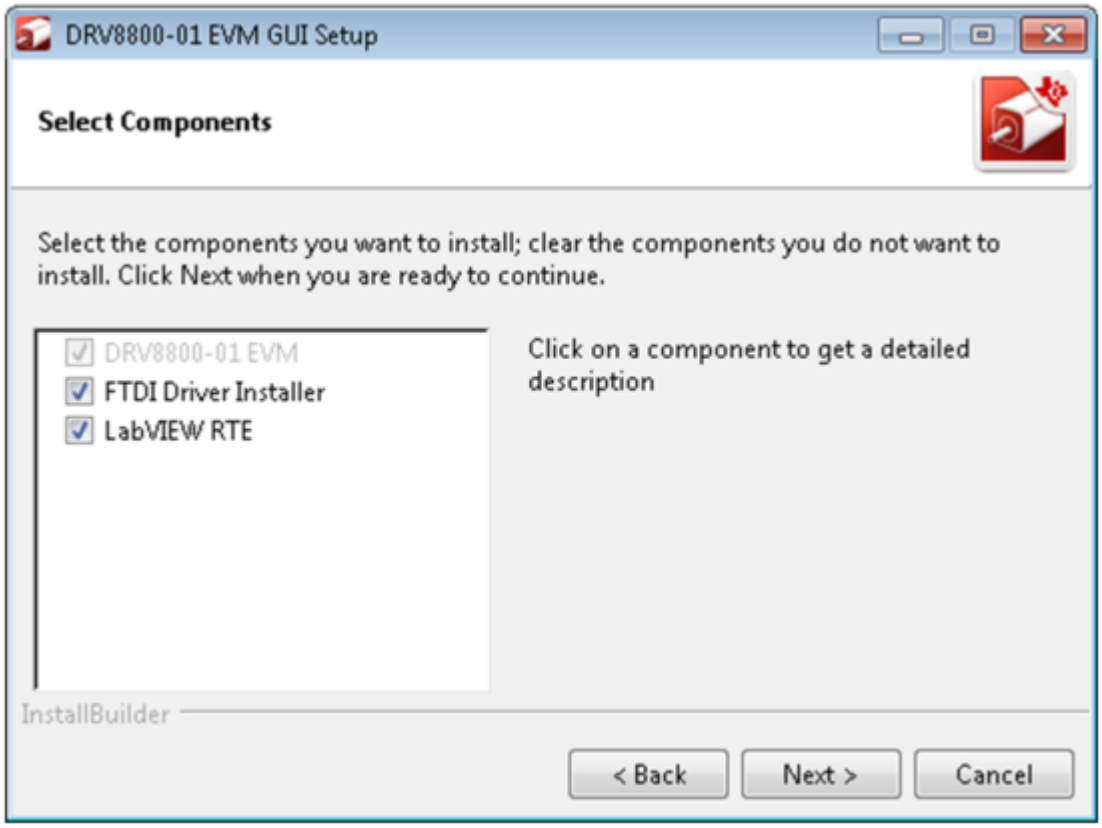

Figure 7. Component Selection

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7. If LabVIEW RTE is selected as a component to install, a screen appears as shown in Figure 8. Configure the proxy settings as required. This screen is to download the LabVIEW RTE 2014 from ni.com, Click **Next** to continue the installation.

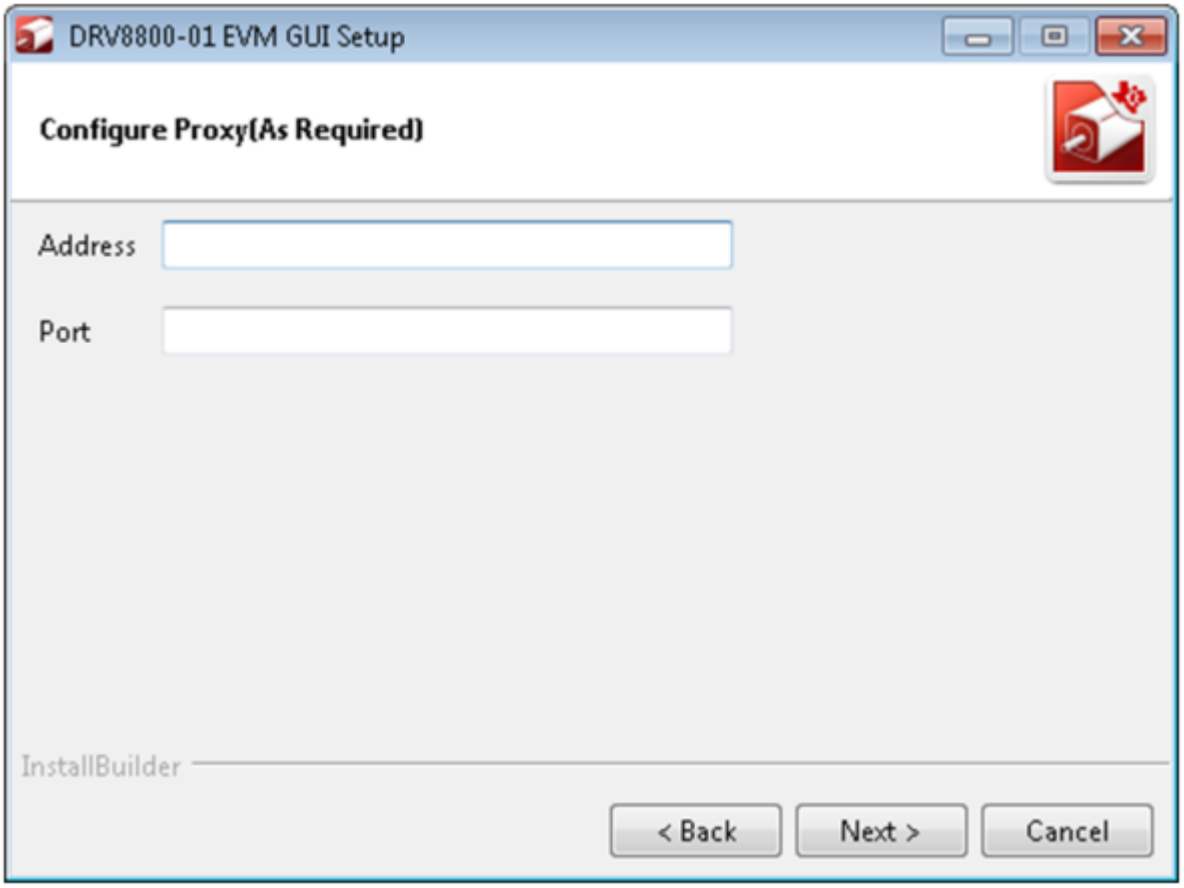

Figure 8. Configure Proxy

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8. A screen as shown in Figure 9 appears. Click **Next** to begin the installation.

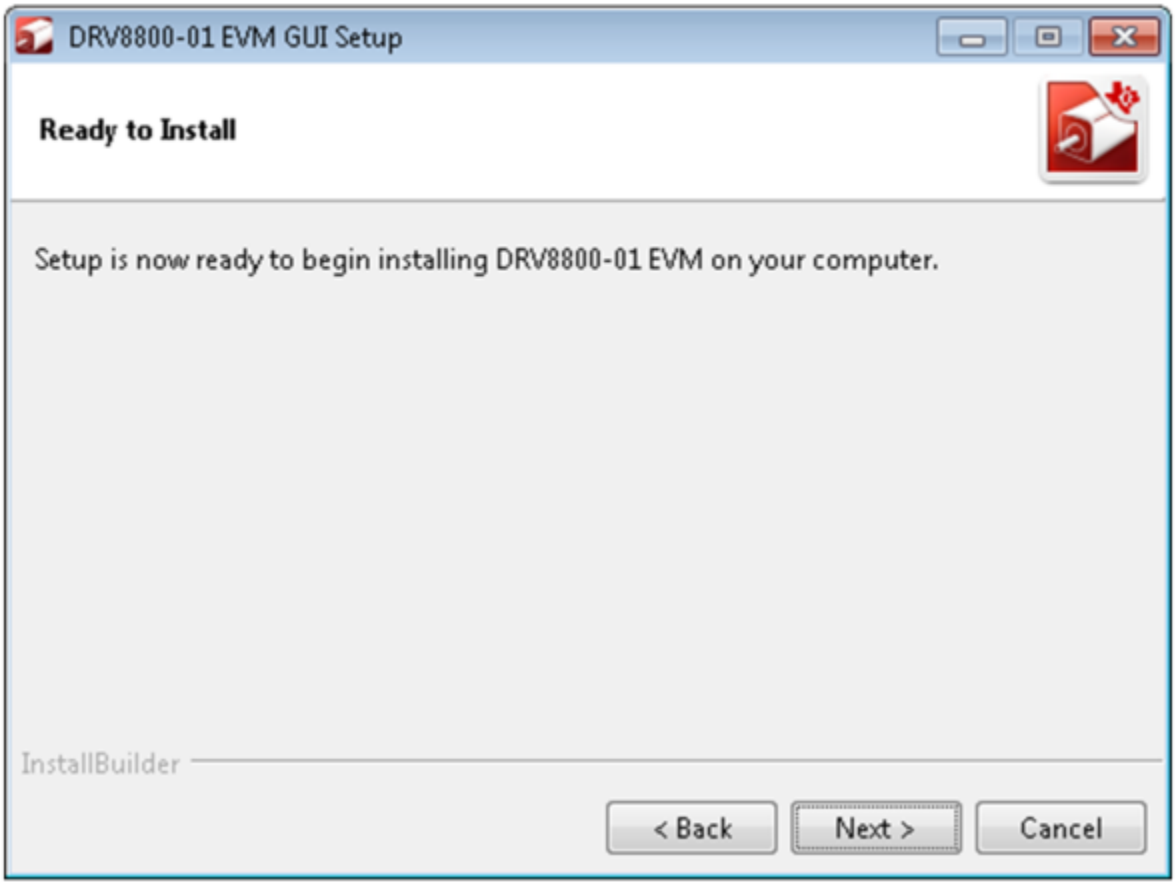

Figure 9. Ready to Install

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9. If the LabVIEW RTE 2014 is selected as a component to install, LabVIEW RTE downloads and performs a silent mode installation.

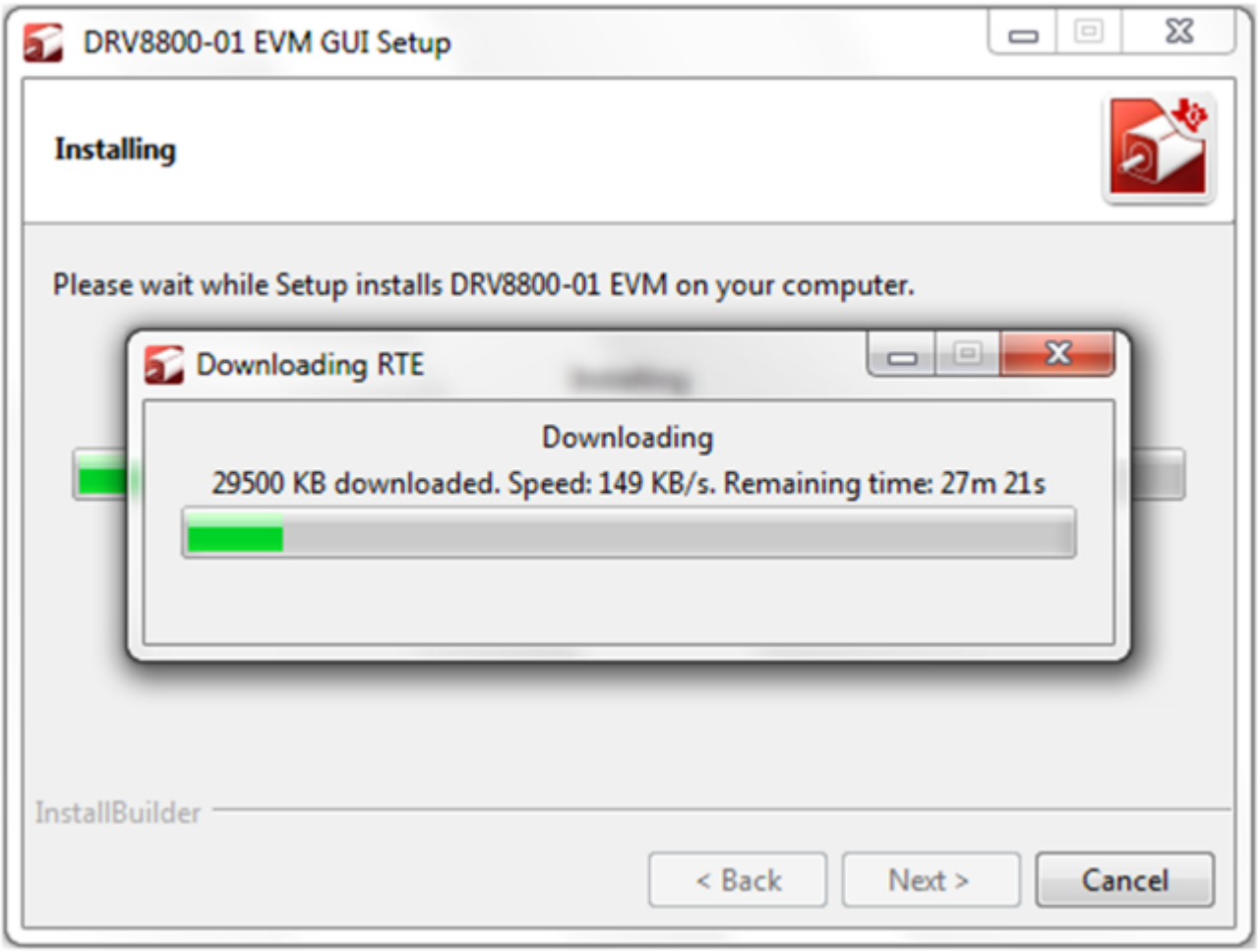

Figure 10. Downloading RTE

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10. Once the Download completes, LabVIEW begins with the self-extraction as shown in Figure 11.

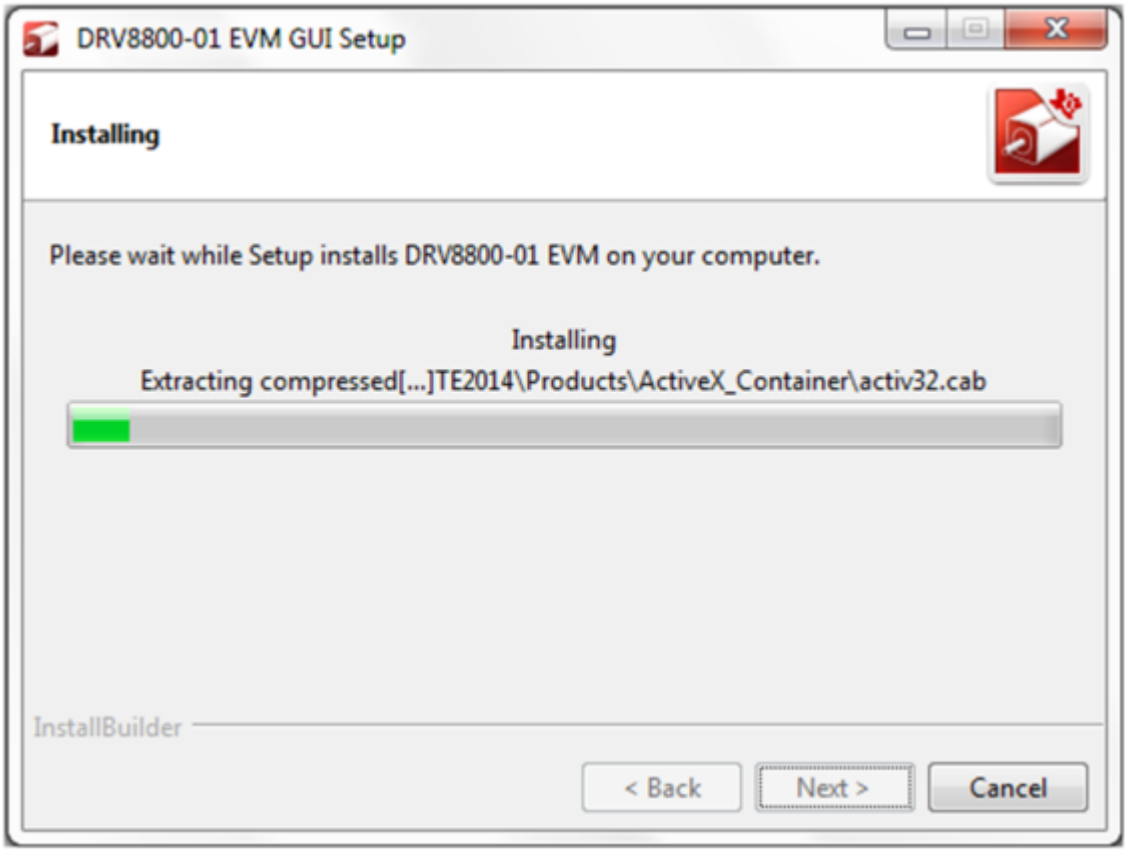

Figure 11. LabVIEW RTE Self Extraction

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11. A screen appears as shown in Figure 12. It initializes the LabVIEW RTE Installation.

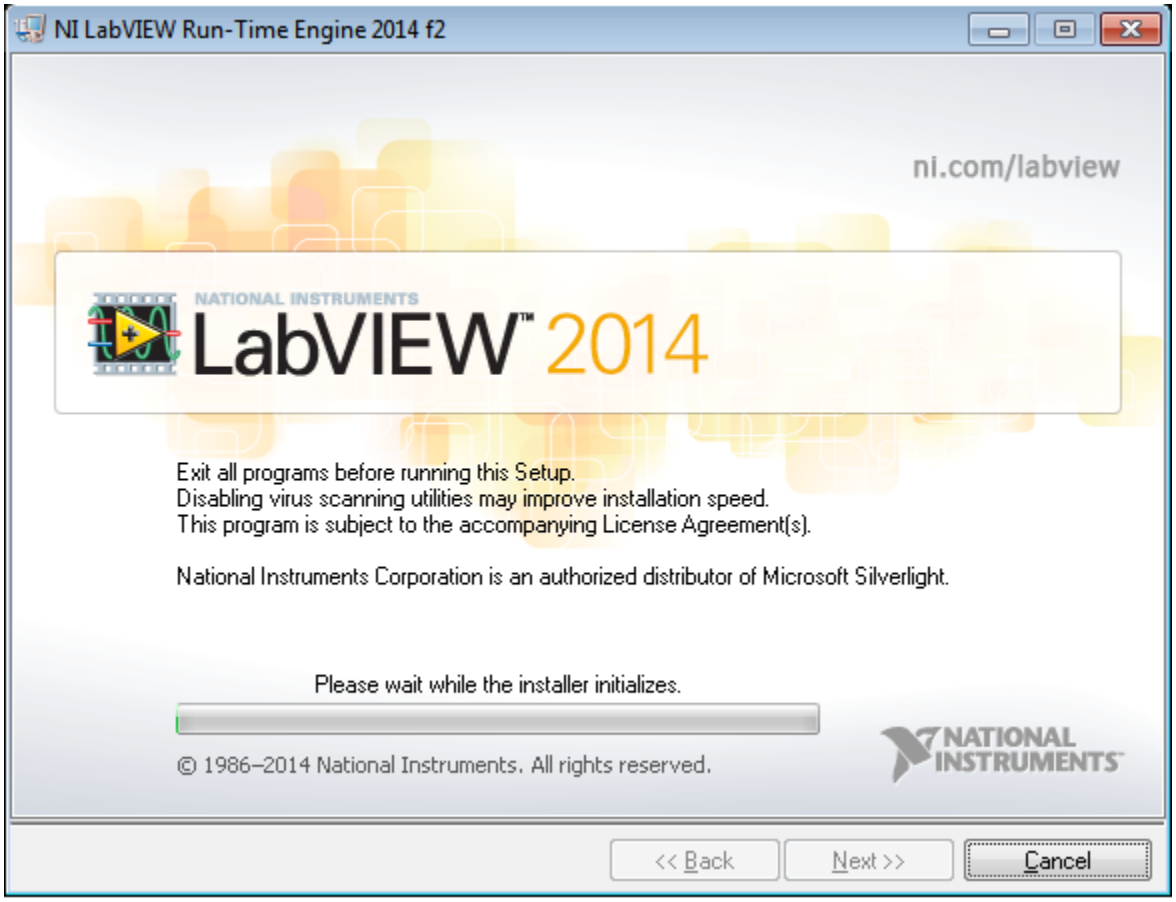

Figure 12. LabVIEW RTE Installation Initialization

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12. A display as shown below appears which indicates the progress of LabVIEW RTE installation.

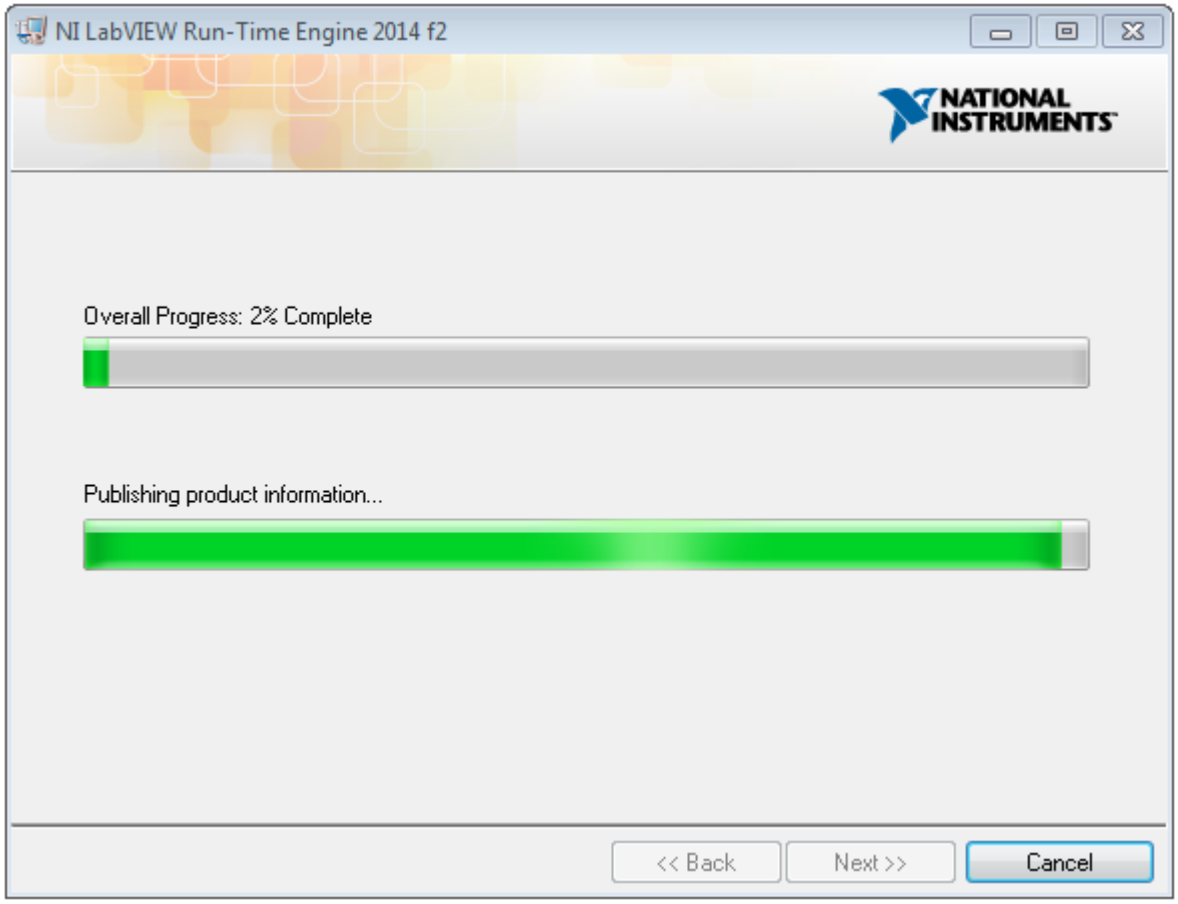

Figure 13. Installation of LabVIEW RTE in Progress

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13. Once the LabVIEW RTE 2014 is installed, DRV 8313 EVM GUI component installs.
14. After DRV8800-01EVM Installation, FTDI Installation begins. A screen as shown in Figure 14 appears, click **Extract** to proceed.

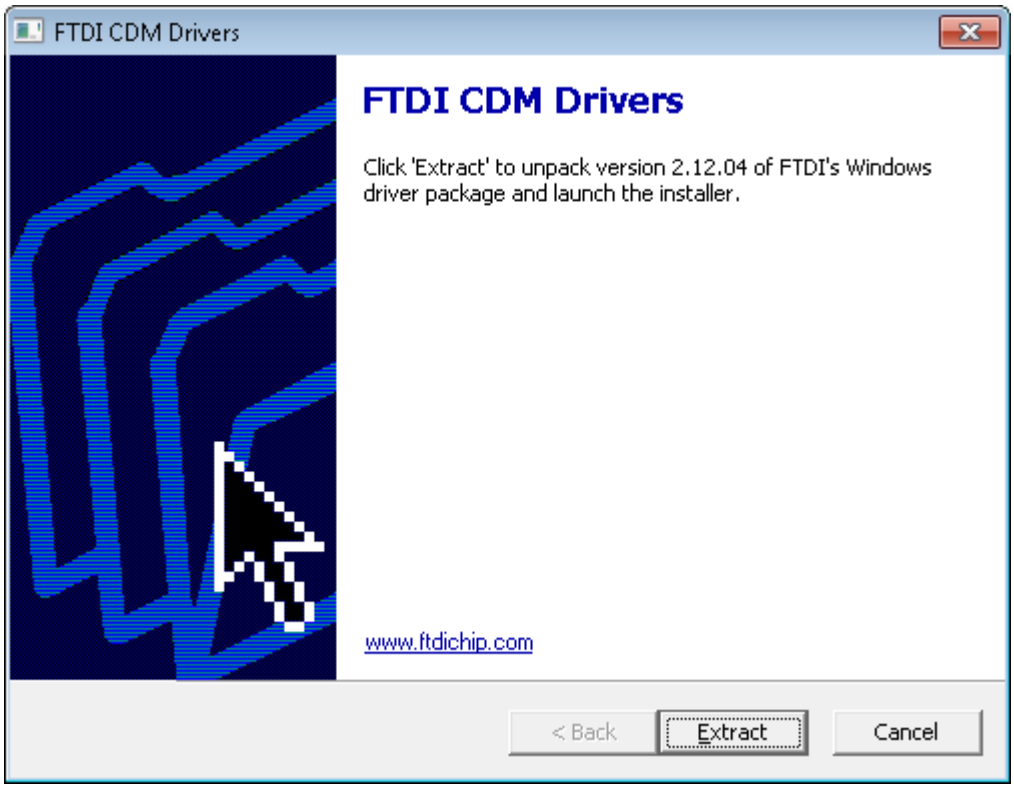

Figure 14. FTDI Installation Initialization

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15. A screen as shown in Figure 15 appears, click **Next** to proceed.

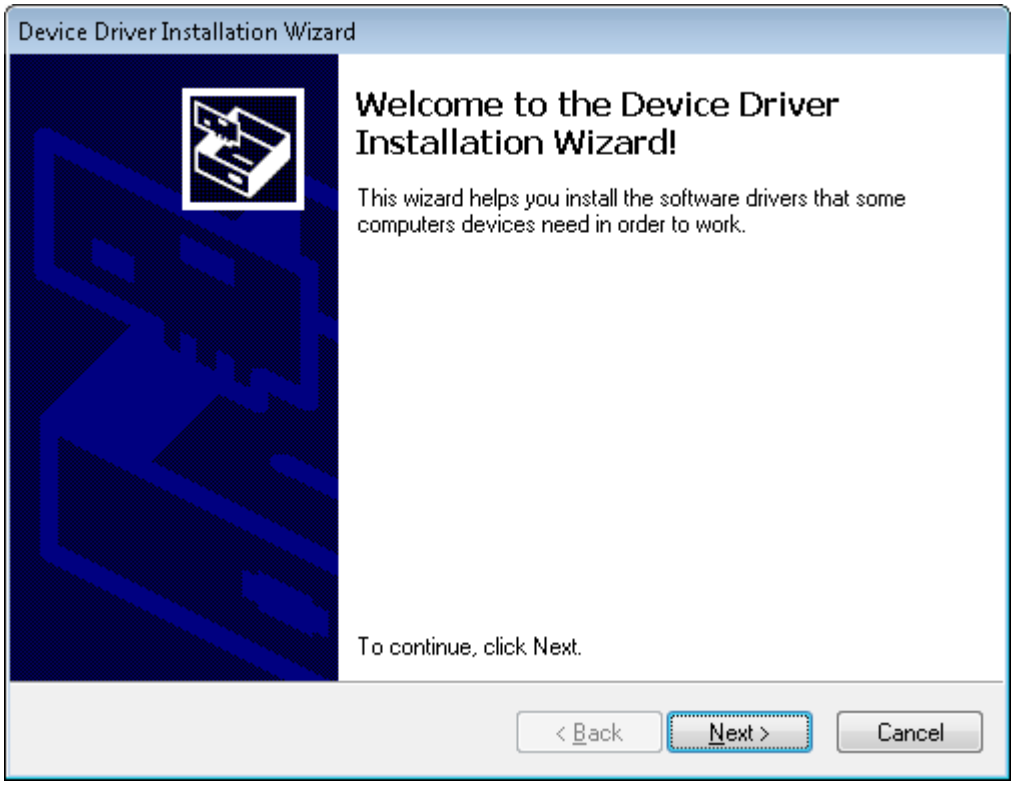

Figure 15. Driver Installation Wizard

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16. The License Agreement appears on screen as shown below.
17. Read through the License Agreement carefully and enable the “I Accept this Agreement” radio button and Click on **Next.**

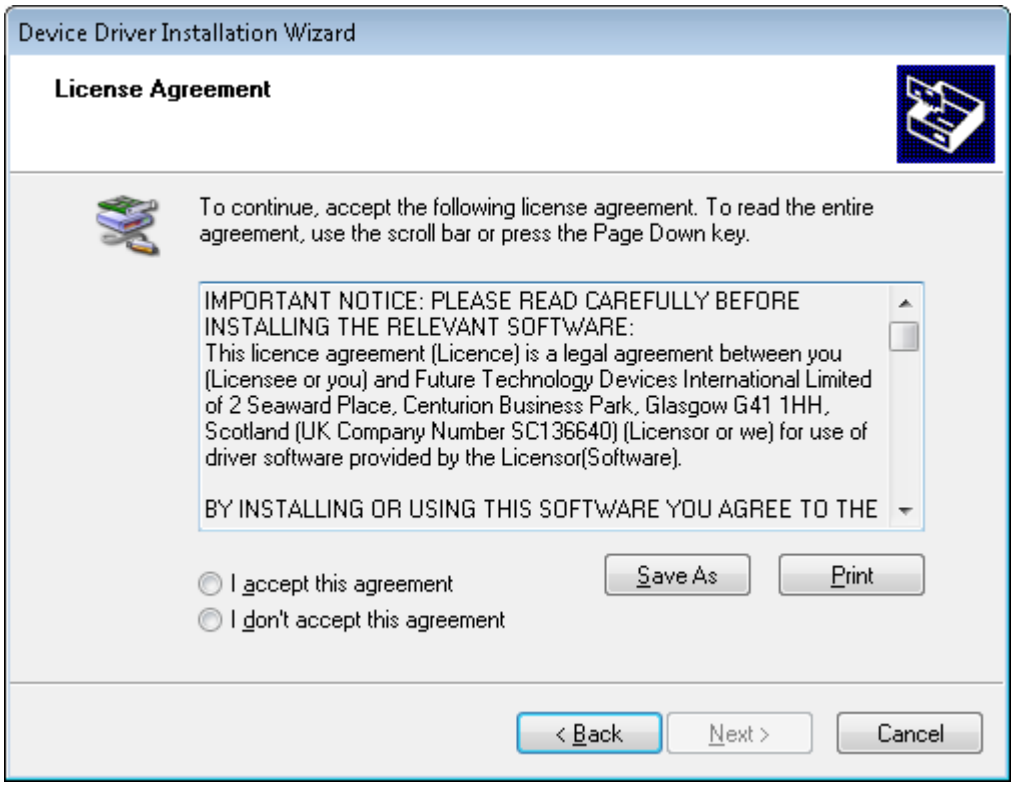

Figure 16. License Agreement for FTDI Driver

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18. Click **Finish** to complete the Driver Installation.

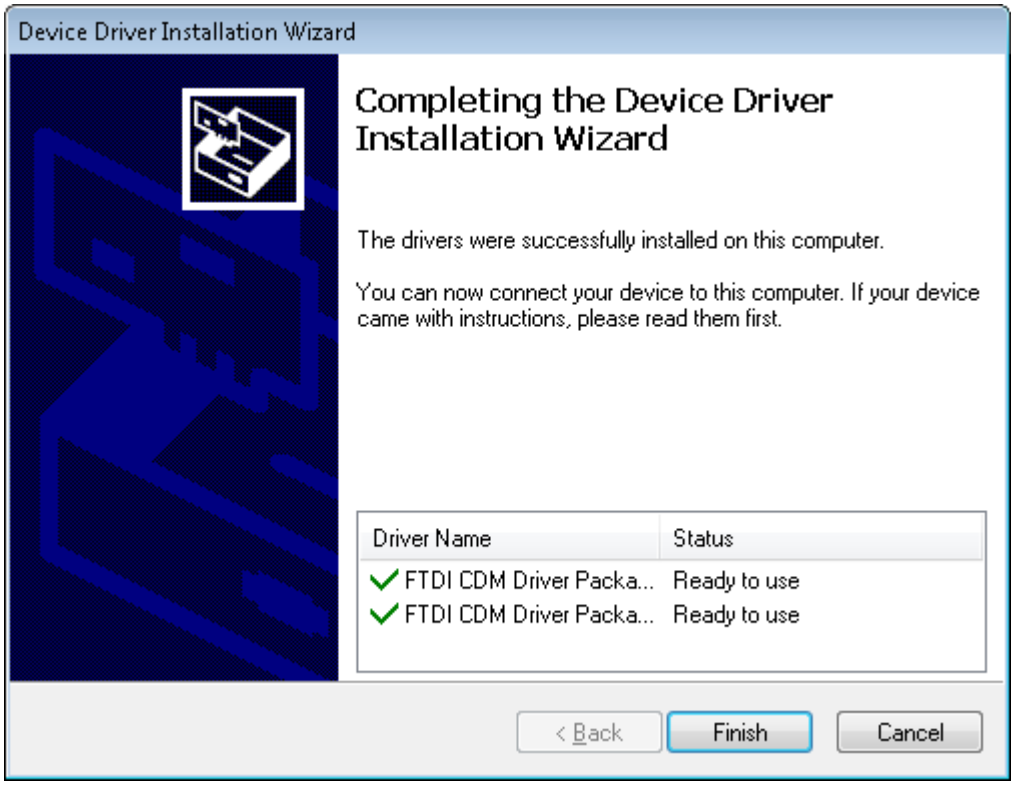

Figure 17. Driver Installation Completion

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19. The Figure 18 screen appears denoting the completion of DRV8800-01EVM GUI Installation. Click **Finish**.

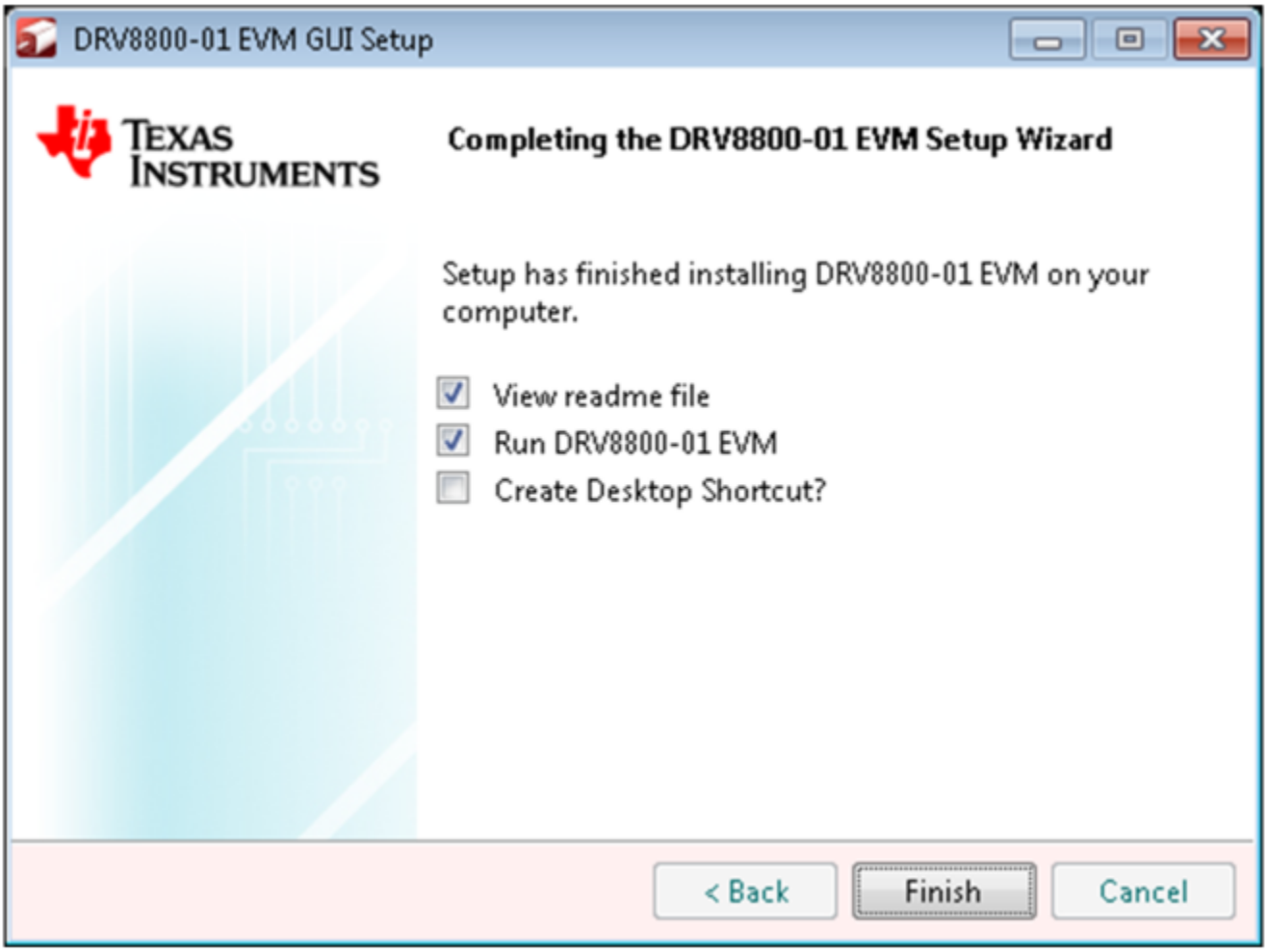

Figure 18. Installation Complete

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20. A Readme window as shown below appears displaying the link for LV 2014 RTE.

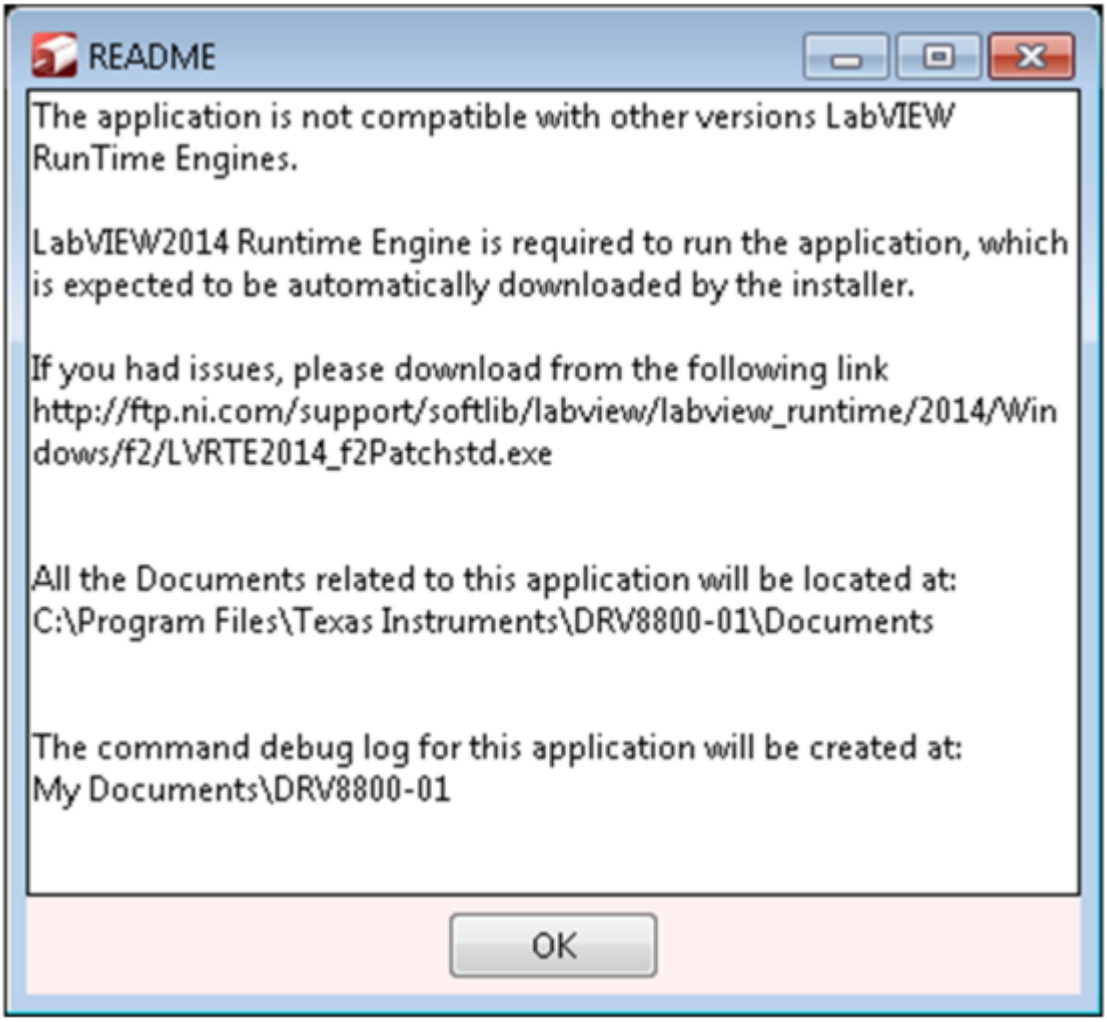

Figure 19. Readme Window

WARNING

The DRV8800-01EVM GUI requires the LabVIEW Run-Time Engine 2014 to be installed before the GUI executes. Please note the application is not compatible with other versions of LabVIEW Runtime Engine.

You can download National Instruments LabVIEW Run-Time Engine 2014 from the below link:

LabVIEW Run-Time Engine 2014

NOTE: DRV8800-01EVM GGUI executable has been built in LabVIEW 2014 (32-bit) version, and it expects the LabVIEW Run-Time Engine version to be LabVIEW Run-Time Engine (32-bit version).

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3 DRV8800-01 EVM GUI Overview

The DRV8800-01EVM Windows application is the software counterpart for the CPG002 EVM. It is in charge of connecting to the EVM via an USB connection which in turn selects the proper logic state for the DRV8800-01EVM control signals.

The Graphical User Interface (GUI) has been designed to allow for all of the DRV8800-01EVM device's functionality to be tested without having to intervene with the hardware. Figure 20 shows the DRV8800-01 EVM High-Level Page. It contains menu items to configure and enable/disable the serial port and frames with GPIO control for the DRV8800-01EVM Control Signals as well as the ability to PWM the ENABLE and the PHASE inputs.

Figure 20. GUI Overview

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3.1 Pages in the GUI

The GUI has one Page (High-Level Page). It contains frames with GPIO control for the DRV8800-01 control signals, motor control Frame, and PWM Frame.

3.1.1 High-Level Page

3.1.1.1 DRV8800-01 GPIO Control Signals

Once the application is communicating with the interface board, the control signals can be actuated by checking or unchecking check boxes on the Signals frame. Green in the Pin control translates to the High level on the respective control signal and Red in the Pin control translates to the Low level on the respective control signal.

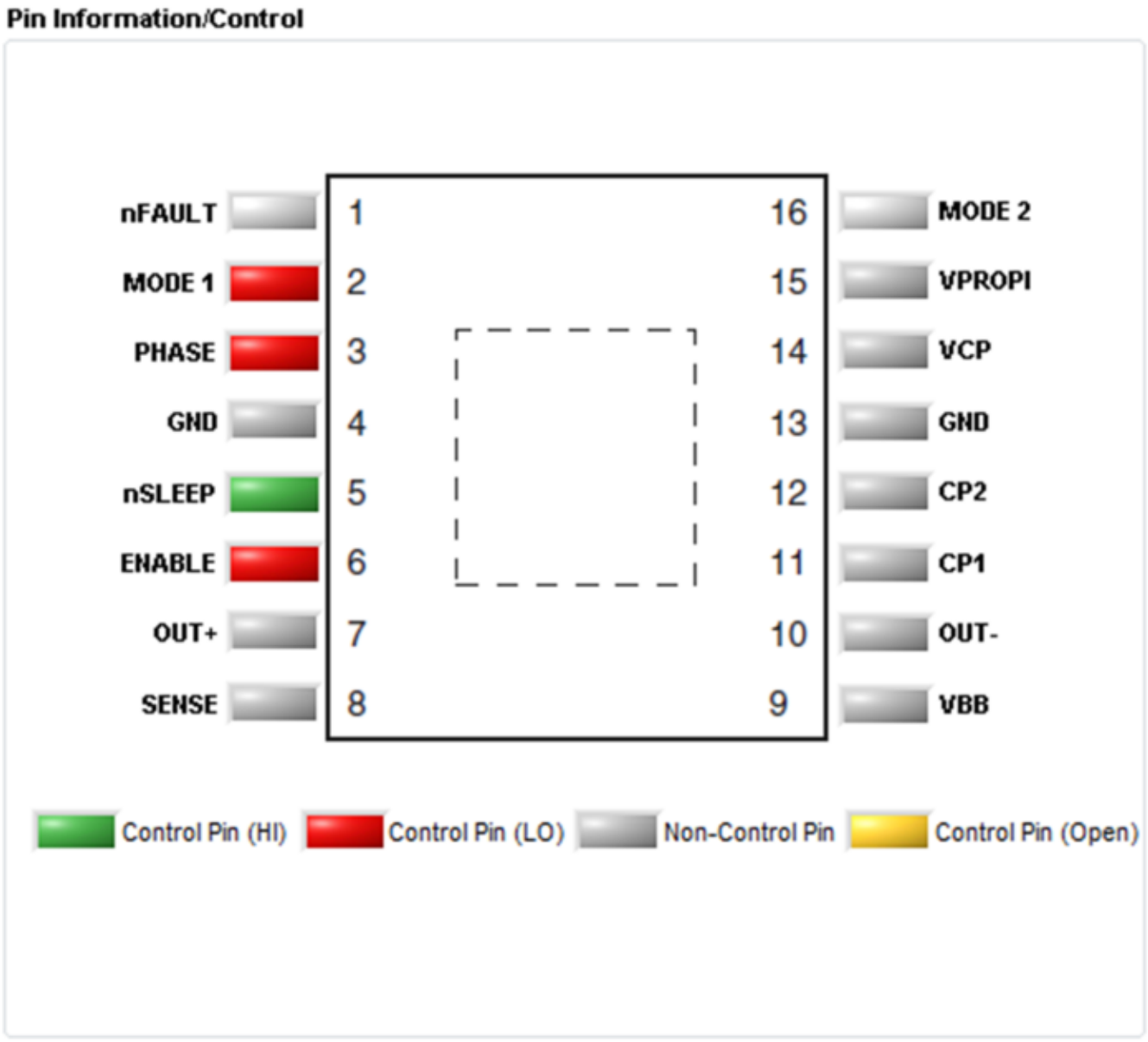

Figure 21. Pin Information/Control Widget

Clicking on the ENABLE and PHASE Boolean set the PWM duty cycle to 0x00 (when Low) or 0xFF (when High). Moving the slider bar configures the PWM duty cycle to a value in between.

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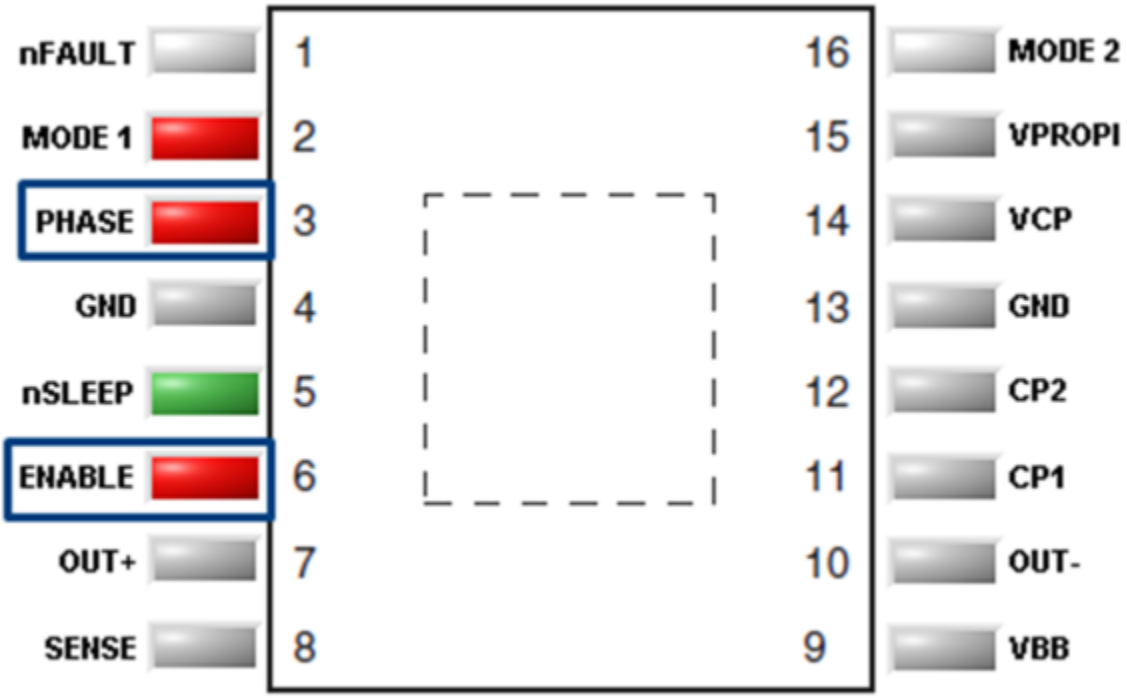

Figure 22. PHASE and ENABLE Pin Widgets

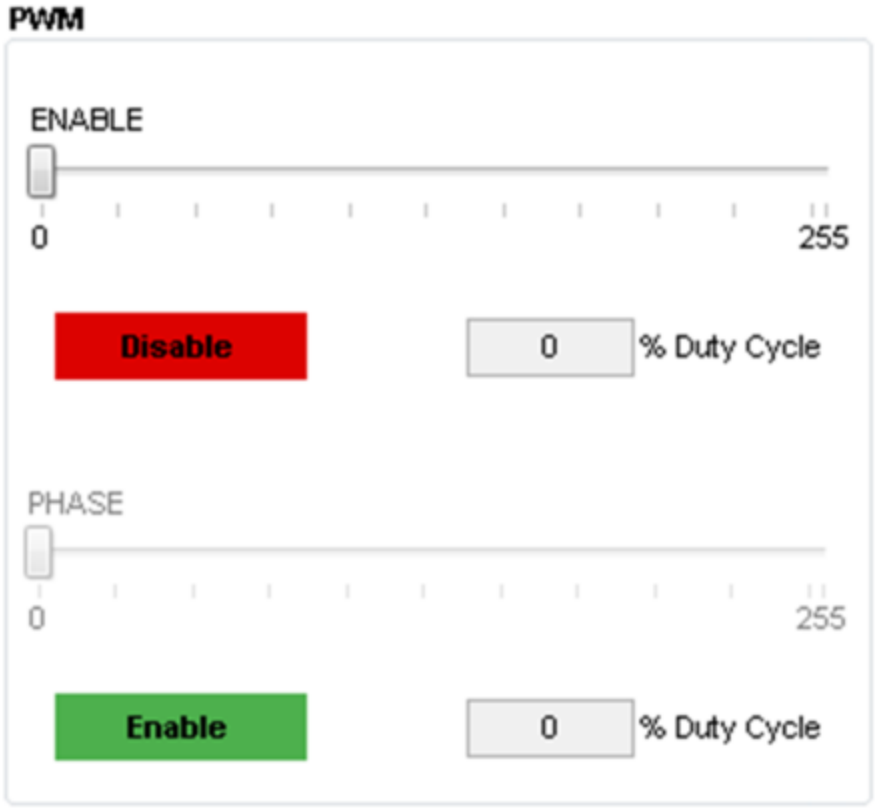

Figure 23. PHASE and ENABLE Sliders

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3.2 Menu Options

3.2.1 File

The File menu contains the options as shown in Figure 24. Each of the options is explained below.

This is to Exit the application

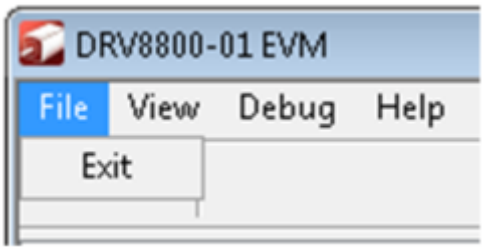

Figure 24. File Menu

3.2.2 View

Under view, there is an option “Schematic” which takes the user to a menu of different device Schematics that are available for viewing.

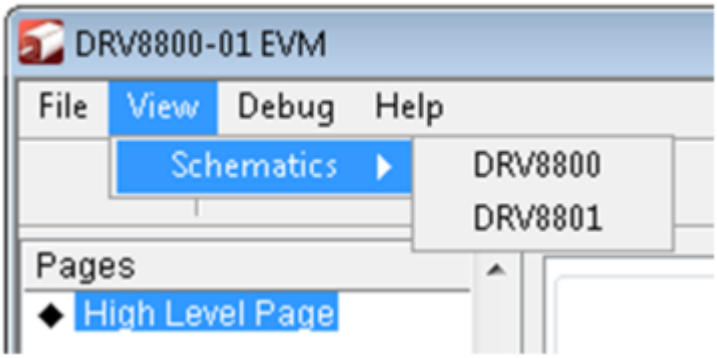

Figure 25. View Menu

3.2.3 Debug

The Debug option can be used for the following operations

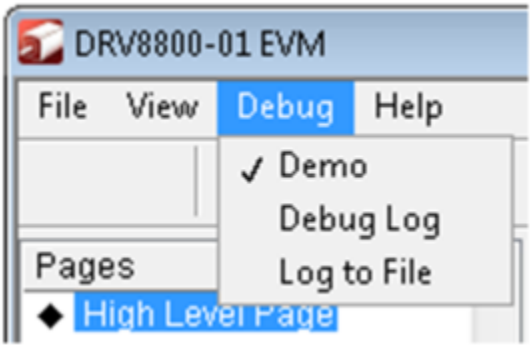

Figure 26. Debug Menu

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3.2.3.1 Demo

By selecting the Demo in the submenu, the GUI will run in simulation mode, and by unselecting it, the GUI will run in connected mode.

3.2.3.2 Debug Log

The Debug log option will enable to log all the activities of the user. If that is not selected, only the high-level operations will be logged.

3.2.3.3 Log to File

The log to file submenu is used to log the GUI activities to a log file that is specified.

3.2.4 Help

Clicking the About in the Help Menu.

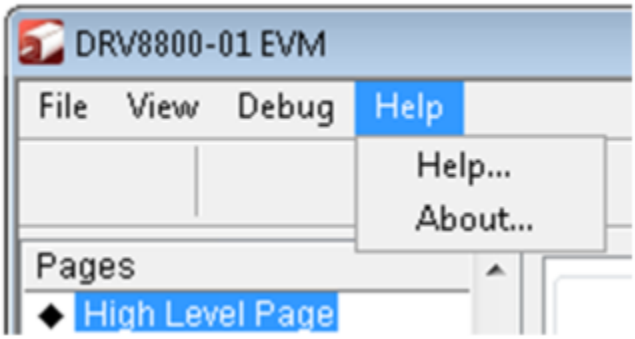

Figure 27. Help Menu

3.2.4.1 About

The About Page provides the details like the Name of the GUI, GUI version, Supported OS and Copyright Information.

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Figure 28. About Page

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