DRV8801 Evaluation Module

User's Guide

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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 (DRV8801EVM-001) Customer Evaluation Module (EVM).

1 Block Diagram

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

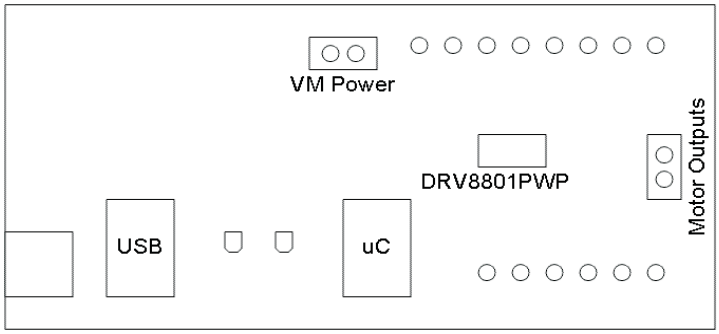

Figure 1. CPG002 Customer EVM

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.

User must apply VM according to datasheet recommended parameters. An USB Connection to a PC 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.

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.

2 Installing Drivers and Software

2.1 Installing the FTDI USB Driver

Instructions on how to install the FTDI USB driver on a Windows based computer are detailed in the "USB_Drivers_Install_Readme.pdf" file supplied with the CD inside the USB_Driver folder.

2.2 Installing the DRV8801EVM-001 Evaluation Board Windows Application Software

Copy the contents of the Windows Application folder into any desired folder in the user's computer.

2.3 Running the Windows Application Software

To run the application, double click the "DRV8801EVM-001_R1p0.exe" application icon found on the same folder the application was copied into.

3 The Windows Application

The DRV8801EVM-001 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 DRV8801 control signals.

The Graphical User Interface (GUI) has been designed to allow for all of the DRV8801 device's functionality to be tested without having to intervene with the hardware.

Figure 2 shows the DRV8801EVM-001_R1p0.exe main screen. It contains menu items to configure and enable/disable the serial port and frames with GPIO control for the DRV8801 Control Signals as well as the ability to PWM the ENABLE and the PHASE inputs.

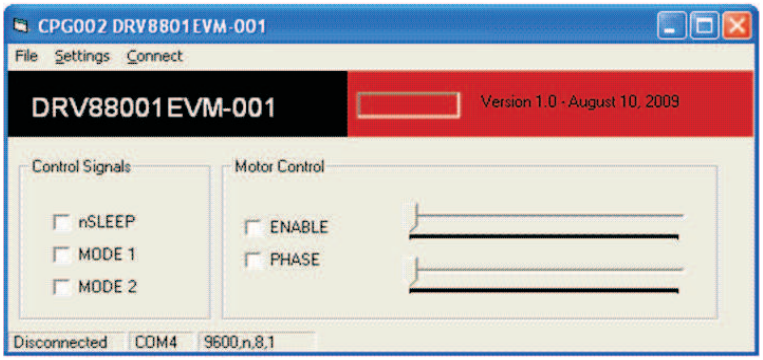

Figure 2. DRV8801EVM-001_R1p0.exe Main Screen

3.1 The Menu

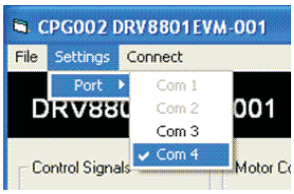

Figure 3. Menu

The menu at the top of the application offers a series of quick options for how the COM port is to behave.

File:

Exit - Terminates the application.

Settings:

Port - Selects from COM1 to COM4. Default is COM4.

The Serial Port actual port number defaults to what we have specified on the "USB_Drivers_Install_Readme.pdf". However, any port between COM 1 and COM 4 are equally usable.

Connect: Opens the Serial Port. When this menu item is pressed, its caption changes to "Disconnect".

Disconnect: Closes the Serial Port. When this menu item is pressed, its caption changes to "Connect".

After opening the application, the order of events should be:

Go to Settings → Port and choose the COM Port where the FTDI device has been configured to work. If the COM port is 4, then this step can be skipped, as application defaults to COM4.

Press Connect. If the port is available, the menu changes the "Connect" caption to "Disconnect". Press Disconnect if wanting to disable the serial communications.

The application is ready for use.

3.2 DRV8801 GPIO Control Signals

Once the application is communicating with the interface board, the control signals can be actuated by checking or un-checking check boxes on the Signals frame.

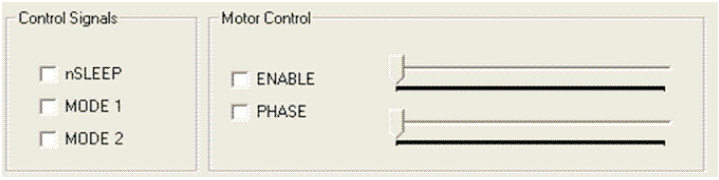

Figure 4. Signals Frame

A checked checkbox translates to a HI level on the respective control signal. A un-checked checkbox translates to a LO level on the respective control signal.

On the right side of the application, clicking on the ENABLE and PHASE checkboxes set the PWM duty cycle to 0x00 (when unchecked) or 0xFF (when checked). Moving the slider bar, configures the PWM duty cycle to a value in between.

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