

Installing the **ADP5080** Evaluation Board Hardware and Software

FEATURES

- Wide input voltage range: 4.0 V to 15 V
- High efficiency architecture
- Up to 2 MHz switching frequency
- 5 synchronous buck regulators
- 1 synchronous buck boost regulator
- 2 keep alive low dropout (LDO) regulators
- 1 high voltage LDO regulator
- 72-ball, 4.5 mm × 4.0 mm WLCSP package
- Available changing registers/settings by software

EVALUATION KIT CONTENTS

- ADP5080CB-1-EVALZ** board
- USB-SDP-CABLEZ** I²C dongle
- USB-SDP-CABLEZ** I²C connection cable
- USB-SDP-CABLEZ** I²C dongle hardware

REQUIRED SOFTWARE

- ADP5080 DEMO GUI
- ADI SDP Drivers 1.4.10.0

INTRODUCTION

The ADP5080 DEMO GUI software allows the user to control all registers of the **ADP5080**. When used with the **ADP5080CB-1-EVALZ**, this software allows complete programmability of all channels of the **ADP5080**, including output voltage, switching frequency, start-up sequence, fault protection, and turning individual channels on and off.

Complete specifications on the **ADP5080** are available in the product data sheet. Consult the data sheet in conjunction with this user guide when using the evaluation board.

For more information about operating the **ADP5080** evaluation board, see the **ADP5080CB-1-EVALZ** user guide.

EVALUATION BOARD PHOTOGRAPH



Figure 1.

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REVISION HISTORY

4/15—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

HARDWARE INSTALLATION

The evaluation kit contains the [ADP5080CB-1-EVALZ](#) board (see Figure 1), a [USB-SDP-CABLEZ](#) I²C dongle (see Figure 2), a [USB-SDP-CABLEZ](#) I²C connection cable, and [USB-SDP-CABLEZ](#) I²C dongle hardware.



Figure 2. [USB-SDP-CABLEZ](#) I²C Dongle

Use the [USB-SDP-CABLEZ](#) I²C dongle hardware provided for this graphical user interface (GUI) application, and follow these steps to install the dongle hardware:

1. Attach the [USB-SDP-CABLEZ](#) I²C dongle to the PC USB port. The operating system automatically finds the new device ([USB-SDP-CABLEZ](#) I²C dongle), and a desktop alert in the notification area confirms that the driver software installed successfully (see Figure 3).

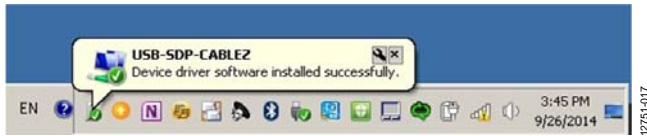


Figure 3. **Device driver software installed successfully** Notification

2. To verify that the [USB-SDP-CABLEZ](#) installed properly, go to the **Start** menu, click **Control Panel**, then click **Device Manager** (see Figure 4). Note that Figure 4 is from Windows® 7.

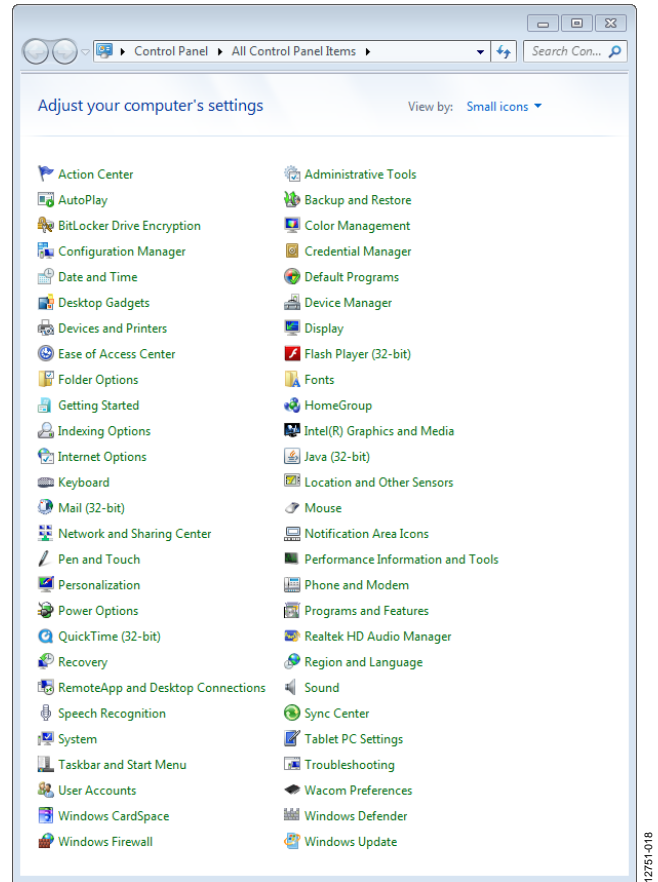


Figure 4. **Control Panel\All Control Panel Items** Window to Select **Device Manager**

3. Within **Device Manager**, expand **ADI Development Tools** to verify that **USB-SDP-CABLEZ** is shown (see Figure 5). If **USB-SDP-CABLEZ** appears under **Device Manager**, this verifies that the **USB-SDP-CABLEZ** I²C dongle is properly connected to the USB port and that the hardware installation is complete. The user can begin operation of the evaluation system.

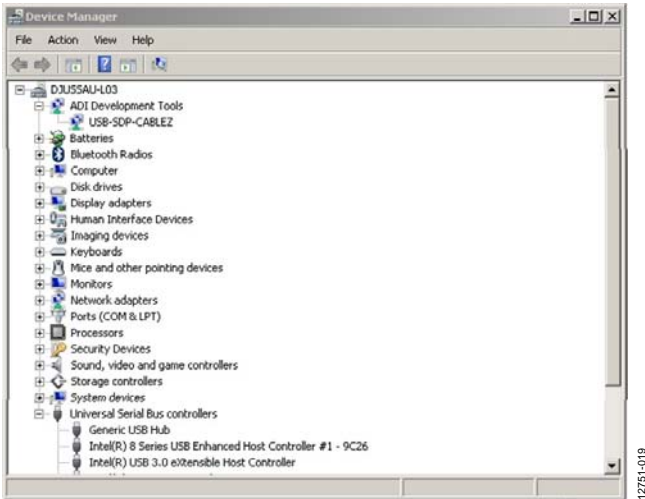


Figure 5. **Device Manager** Window

Attach the **USB-SDP-CABLEZ** I²C connection cable from the **USB-SDP-CABLEZ** to the corresponding evaluation board pin connector, P4, then click the **ADP5080 DEMO GUI** program icon located on the desktop (see Figure 6) to launch the GUI program. If the icon is not on the desktop, go to the **Start** menu, then click **Programs**, and then click **Analog Devices ADP5080** (see Figure 7).



Figure 6. **ADP5080 DEMO GUI** Icon

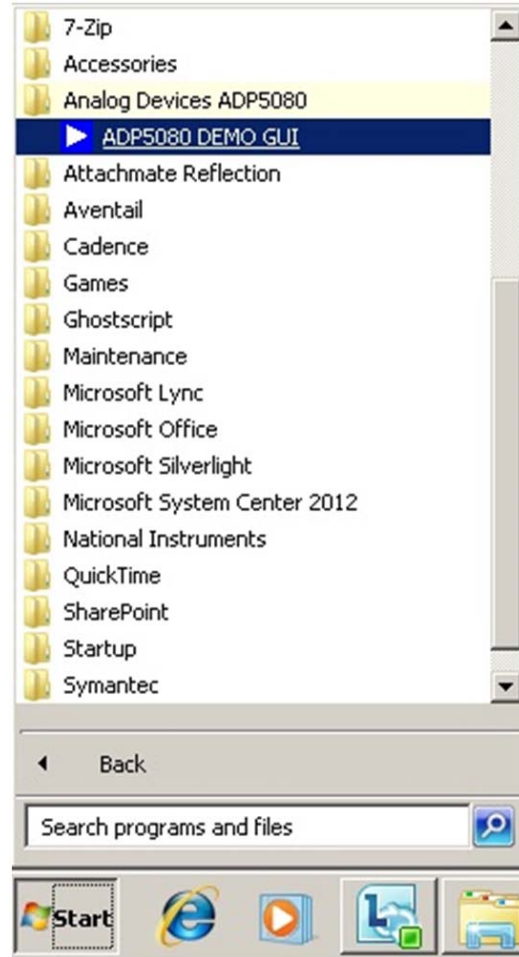


Figure 7. **Start\All Programs** Menu

See the Software Operation section for additional information on the **ADP5080 DEMO GUI** program.

EVALUATION BOARD SOFTWARE

SOFTWARE INSTALLATION

To install the necessary software, complete the steps listed in the ADP5080 Evaluation Board GUI Software (ADP5080 DEMO GUI) Installation section and the Analog Devices, Inc., SDP Drivers Installation section, respectively.

ADP5080 Evaluation Board GUI Software (ADP5080 DEMO GUI) Installation

1. Download the **ADP5080 Evaluation Board GUI Software Installation** file from the **Software and Tools** section at www.analog.com/EVAL-ADP5080 (see Figure 8).

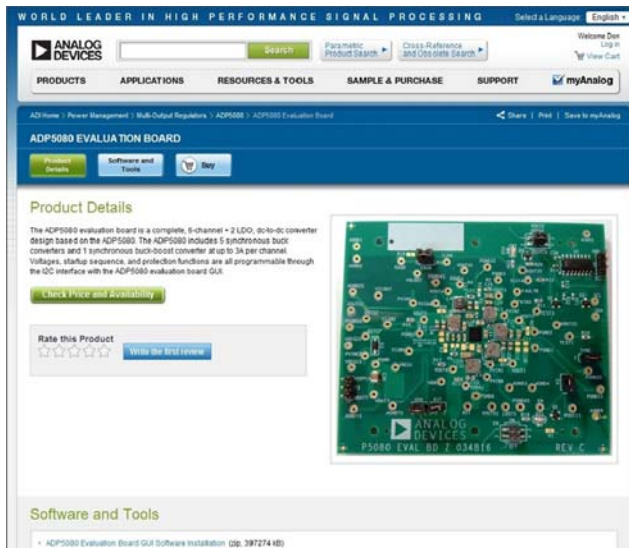


Figure 8. ADP5080 Evaluation Board Product Page

2. Click **Save**, to save the **ADP5080_DemoGUI.zip** file to the desktop (see Figure 9).

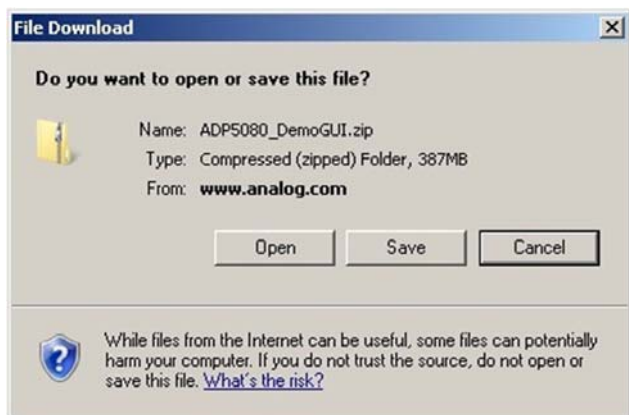


Figure 9. File Download Window

3. Allow several minutes for the download to complete (see Figure 10). The download includes the **ADP5080 Evaluation Board GUI Software Installation** file and the **ADI SDP Drivers 1.4.10.0** file in one bundle (see the Analog Devices, Inc., SDP Drivers Installation section).

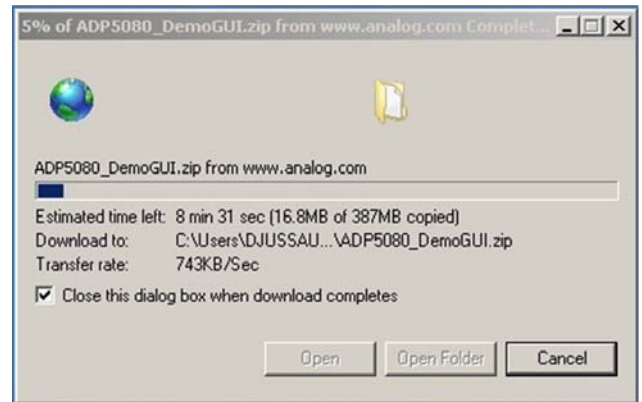


Figure 10. Percent Completed Window

4. When the download completes, click **Open Folder** to open the **ADP5080_DemoGUI.zip** folder (see Figure 11).

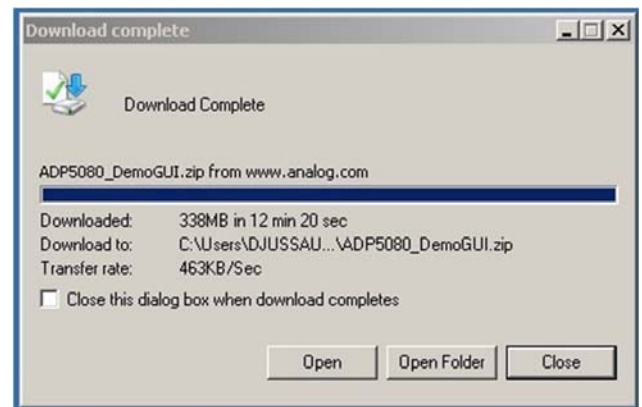


Figure 11. Download complete Window

5. Run the **setup.exe** executable (see Figure 12).

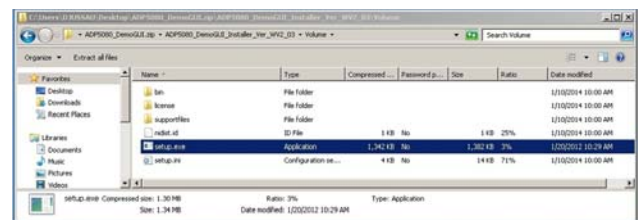


Figure 12. ADP5080_DemoGUI.zip Folder Window

- When prompted, select the primary installation directory, use the default values, and click **Next** (see Figure 13).

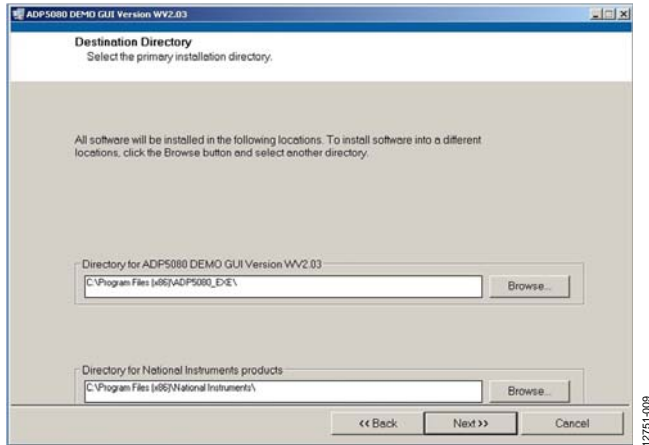


Figure 13. **Destination Directory** Window

- Click **Next** and then **Finish** to complete the GUI software installation (see Figure 16).

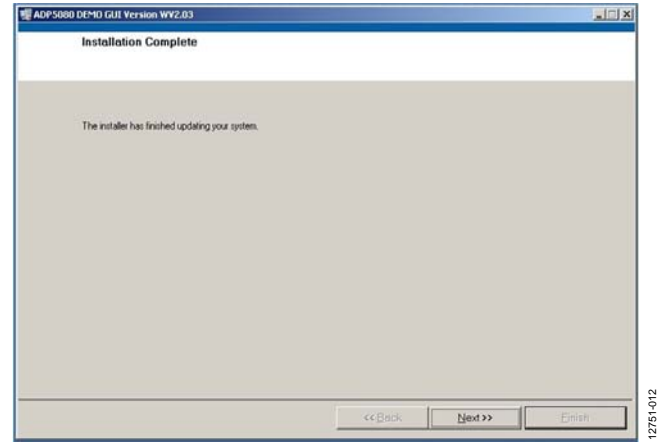


Figure 16. **Installation Complete** Window

- Use the default values to start the installation of the ADP5080 DEMO GUI (see Figure 14). Click **Next** to begin the installation.

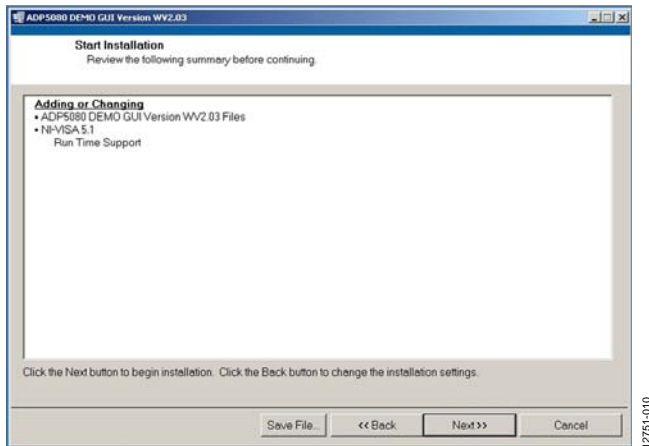


Figure 14. **Start Installation** Window

- Allow the ADP5080 DEMO GUI installation to run (see Figure 15).

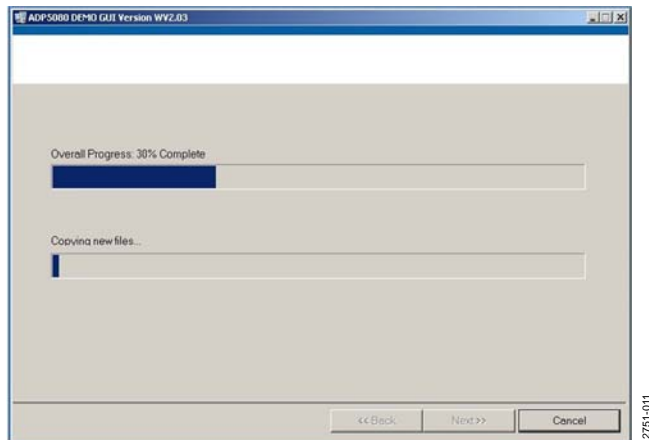


Figure 15. **Overall Progress** Window

Analog Devices, Inc., SDP Drivers Installation

After the ADP5080 DEMO GUI software installs, the **ADI SDP Drivers 1.4.10.0 Setup Wizard** runs automatically (see Figure 17). The Analog Devices SDP platform drivers support the **USB-SDP-CABLEZ** I²C dongle hardware. Use the default settings throughout the installation process. To install the Analog Devices SDP drivers, follow these steps:



Figure 17. ADI SDP Drivers 1.4.10.0 Setup Window

1. Use the default install location found under **Destination Folder** and then click **Install** (see Figure 18).

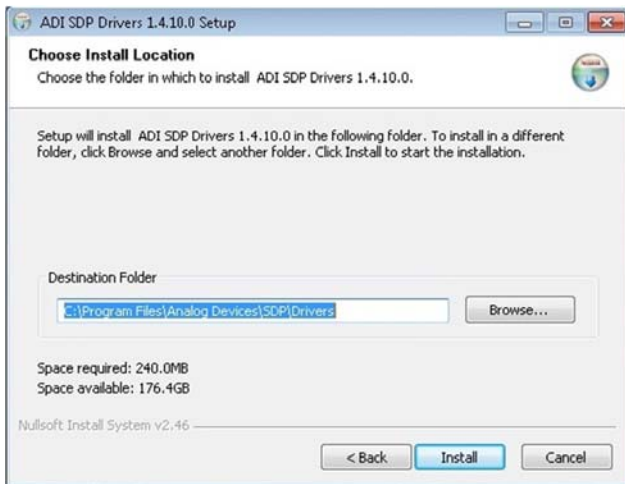


Figure 18. Choose Install Location Window

2. Allow the Analog Devices SDP drivers file to install (see Figure 19).

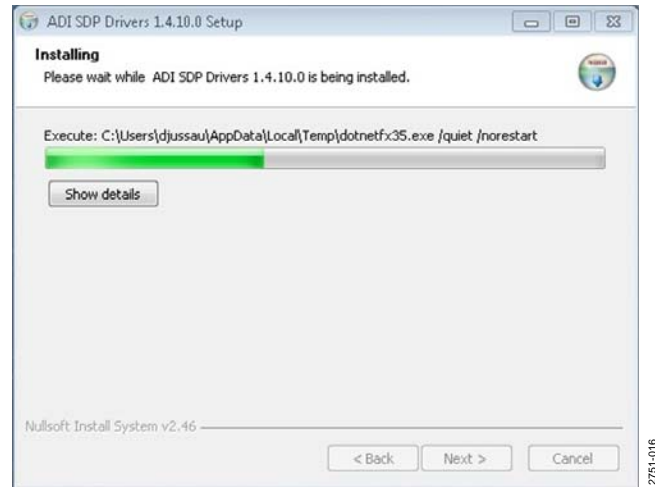


Figure 19. Installing Window

3. When the installation completes, click **Finish** to close the setup wizard (see Figure 20).



Figure 20. Completing the ADI SDP Drivers 1.4.10.0 Setup Wizard Window

SOFTWARE OPERATION

The main window of the **ADP5080 DEMO GUI** program has a tabbed page structure that changes control of the device between the channels tab, the configuration tab, and the history tab (see Figure 21 to Figure 23). Use these tabulators shown in the main window of the **ADP5080 DEMO GUI** program to select the corresponding register sections.

Use the following options to operate the **ADP5080 DEMO GUI** program:

- Control the EN signal of the device with the **EN** and **EN34** buttons (see Figure 21 to Figure 23).
- Select the **RDST** option to enable the RDST readback mode, which affects only those registers that use the RDST read protocol (see Figure 21 to Figure 23).
- To write data to a register address, enter the hexadecimal (hex) value in the **Reg Addr** box and the **Data** box and then click **WRITE**.
- To read data from a selected register, enter the register or hexadecimal address and click **READ**. The data value readback from the device displays in the **Data** box (see Figure 21 to Figure 23).

- Click **Continuous Read** to poll and read all registers continuously when updating data values of the corresponding display beside every register line (see Figure 21 to Figure 23).
- To stop the program from running, click **STOP** (see Figure 21 to Figure 23).
- Write setup to device under test (DUT) by selecting the desired setup from the slide boxes (the pull-down menus indicated with a triangle), or by selecting bits. Click the **Program 0x01** to **Program 0x23** buttons to make changes to each register, which then writes the appropriate data to the device (see Figure 21).
- To update the corresponding readback memory on the device register display, click the appropriate **Read 0x01** to **Read 0x23** buttons (see Figure 21).

Channels Tab

This tab controls the fundamental operation of each channel, including the soft start time, the enable delay time, the disable delay time, the output voltage, turning the discharge switch on and off, and turning each channel on and off.



Figure 21. Channels Tab



Figure 22. Configuration (Config) Tab

Configuration (Config) Tab

The **Config** Tab shows the additional functions of each channel. This tab allows the user to select the switching phase and the bit status of UVx, OVx, and PWRGx.

To control the configuration settings, follow these steps:

1. Set values and click the corresponding **Program 0x14** to **Program 0x22** buttons to write data to the specific device register.
2. Click the corresponding **Read 0x14** to **Read 0x22** buttons to read back data from the specific device register.

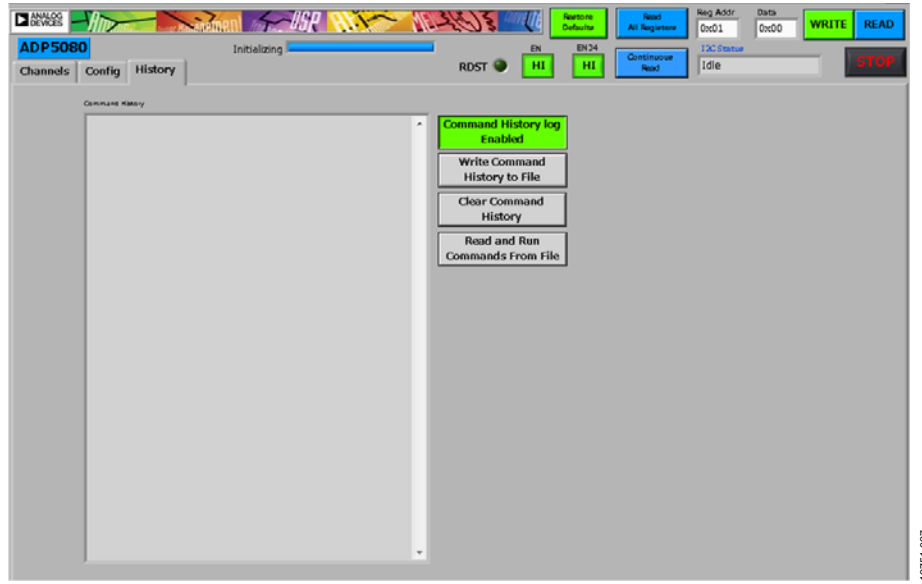


Figure 23. History Tab

History Tab

Use the **History** tab to log all I²C register setups given to the device. To log all the I²C register setups given, follow these steps:

1. Click **Command History log Enabled** so that the command history appears on the left side of the screen.
2. Click **Write Command History to File** to save the command history as a .txt file to the desired disk location.
3. Click **Read and Run Commands From File** to start saved command retrieval from the selected file. All commands on the file are rewritten to the device in the same order in which they were originally saved.
4. Click **Clear Command History** to clear the screen. This command does not affect the saved files.

SOFTWARE UNINSTALLATION

To uninstall the ADP5080 DEMO GUI software, complete the following steps:

1. Go to the **Start** menu, click **Control Panel**, and then click **Programs and Features**.

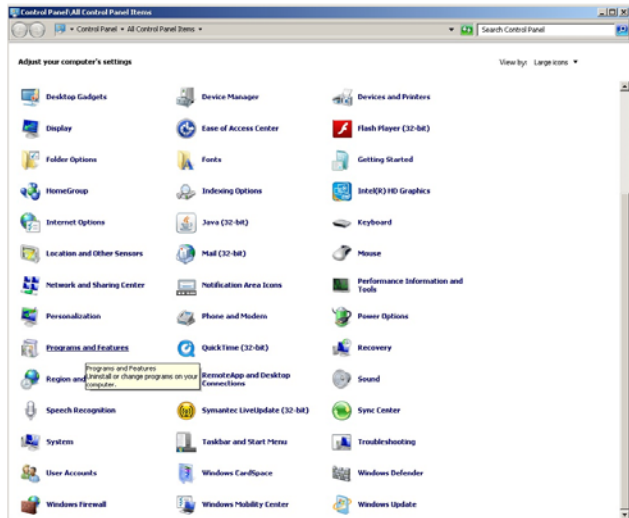


Figure 24. Control Panel\All Control Panel Items Window to Select Programs and Features

2. Select ADP5080 Demo GUI Version WV2.03 and click **Uninstall**.

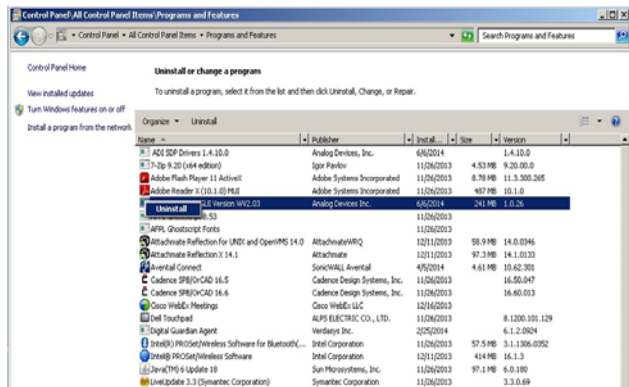


Figure 25. Control Panel\All Control Panel Items\Programs and Features Window

3. Click **Yes** to complete the uninstallation.

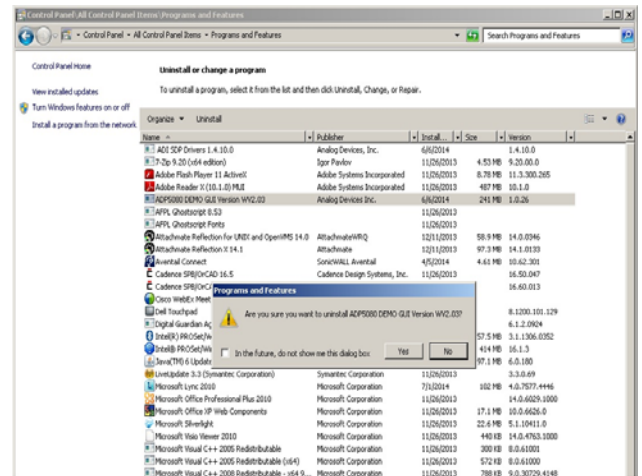


Figure 26. Uninstall or change a program Window

NOTES

I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

**ESD Caution**

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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