

TVP7002EVM

1 Introduction

TVP7002EVM refers to the TVP7002 board and the THS8200 board when they are connected together. Throughout this document, this combination of boards is referred to as the TVP7002EVM. This Quick Start Guide describes the necessary hardware and software setup required to use the TVP7002EVM.

2 Overview

The TVP7002EVM is designed for evaluating the TVP7002 triple 8/10-bit video and graphics digitizer with analog PLL. The EVM is powered by a 5-V 3-A universal supply. I²C communication is emulated using a PC parallel port configured for Enhanced Parallel Port (EPP), Extended Capability Port (ECP), or bidirectional mode. The parallel port mode can be changed using the PC BIOS setup, available during the reboot process.

3 Required Hardware and Equipment

The following hardware and equipment are required to use the TVP7002EVM:

- TVP7002EVM (provided)
- Universal 5-V 3-A power supply (provided)
- Parallel cable (provided)
- Windows-based PC
- Two VGA cables
- Two component cables
- Video source (pattern generator, DVD player, etc.)
- TV or display monitor that supports VGA and component inputs

4 Hardware Setup

The following steps describe how to set up the hardware for the TVP7002EVM.

1. Connect the TVP7002EVM boards together using the 120-pin board connector on each board.
2. Connect a video or graphics source to the BNC input connectors or the VGA input connector of the TVP7002EVM.
3. To display PC graphics, connect the monitor through a VGA cable to the VGA output of the THS8200 board. The THS8200 BNC connectors must be disconnected from the monitor, when the VGA output connector is used.
4. To display component video, connect the monitor to the R/Pr, G/Y, and B/Pb connectors of the THS8200 board. The THS8200 VGA connector must be disconnected from the monitor, when the BNC outputs are used.
5. Connect the parallel port cable from the TVP7002EVM to the PC.

Note: There is a dc jack on the THS8200 board, but the default power is provided by the TVP7002 board via the 120-pin connector, P2.

6. Connect the 5-V power supply to the dc jack on the TVP7002 board. A green LED on each board should light.

5 Software Installation

WinVCC4 is a Windows application that uses the PC parallel port to emulate I²C, providing access to each device on the I²C bus. WinVCC4 uses CMD files, which are text editable files that allow preset video setups to be programmed easily.

This feature allows the user to easily set multiple I²C registers with the press of a button. WinVCC4 also has property sheets for the TVP7002, which allows the user to control the I²C registers with a graphical user interface (GUI).

All necessary software for the TVP7002EVM is provided on the enclosed CD. Perform the following steps to install WinVCC4:

1. Explore the provided TVP7002EVM software CD.
2. Run Port95NT.exe to install the parallel port driver used by WinVCC4.
This driver must be installed, and the PC must be rebooted before WinVCC4 can operate correctly.
3. Run Setup.exe to install WinVCC4.
4. Click Next at all prompts and click Finish to complete the installation process. No reboot is required.
5. Run WinVCC4.exe

6 Using WinVCC4

The following steps describe how to use WinVCC4 to view PC graphics or video from the TVP7002EVM.

1. Run WinVCC4. When the WinVCC4 Configuration screen appears, use it to configure the I²C bus.
2. Next to TVP7000 device family, select the TVP7002 and ensure the I²C address is set to 0xB8. The address selected here must match the address selected by the I2C ADDR jumper on the TVP7002 board.
3. Next to THS8200, select the THS8200 and ensure the I²C address is set to 0x40. The address selected here must match the address selected by the I2C ADDR jumper on the THS8200 board.

Note: If WinVCC4 is running and the TVP7002 or THS8200 board I²C address is changed, power must be cycled on the EVM to enable the EVM to use the new address.

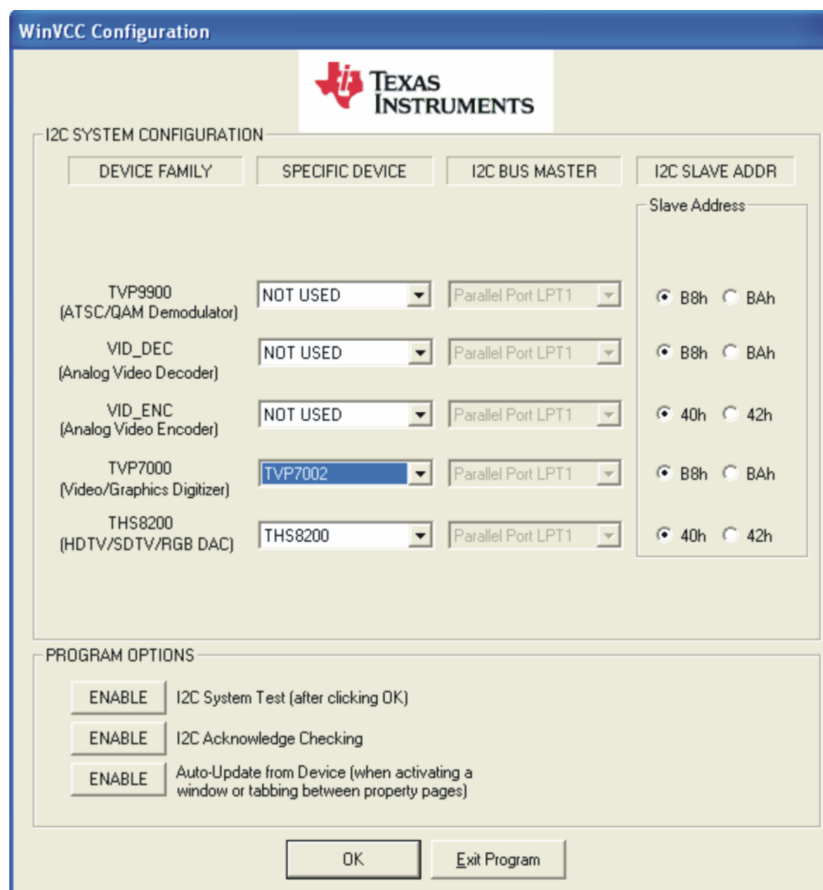


Figure 1. WinVCC4 – I²C Configuration Screen

4. Ensure that all other boxes are selected as "Not Used" and that all program options buttons are set to ENABLE. Click OK.
5. If there are no I²C communication problems, the Main Screen window displays. If there are I²C problems, an I²C Test Report box displays.
If the I²C Test Report window displays, completely exit out of WinVCC4, double-check the parallel port cable connections, cycle power on the TVP7002EVM, and run WinVCC4 again.
6. Click on the Tools>System Initialization menu item. A window will open with the default command file for the TVP7002EVM pre-loaded, as shown in Figure 3.



Figure 2. WinVCC4 – Main Screen

7. Click the desired "TVP7002 + THS8200_..." dataset in the window, and then click the Program Dataset button to initialize the TVP7002EVM.

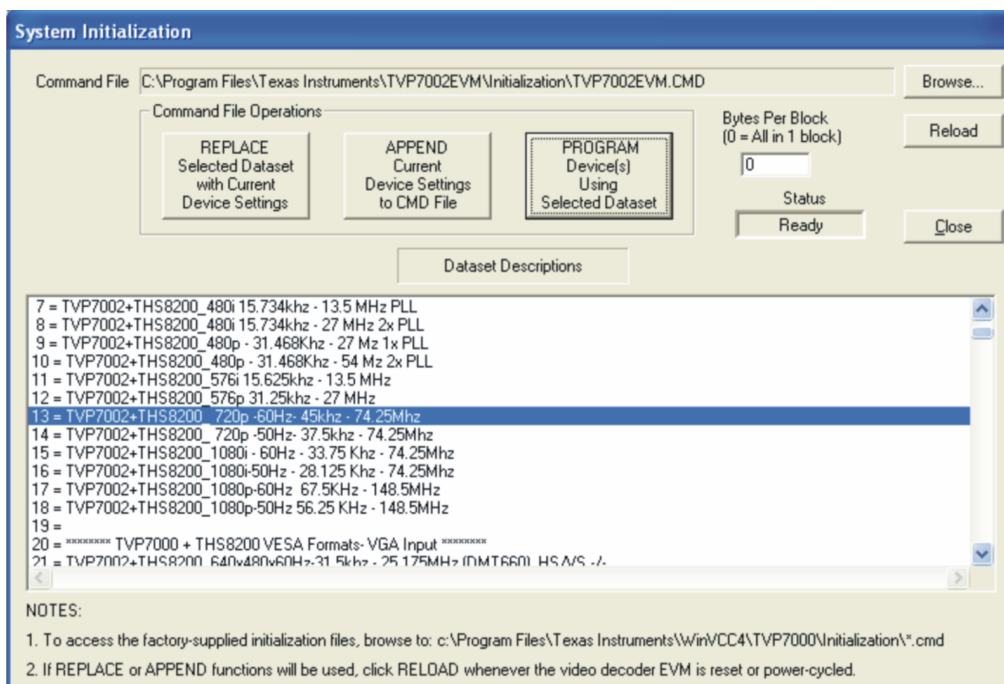
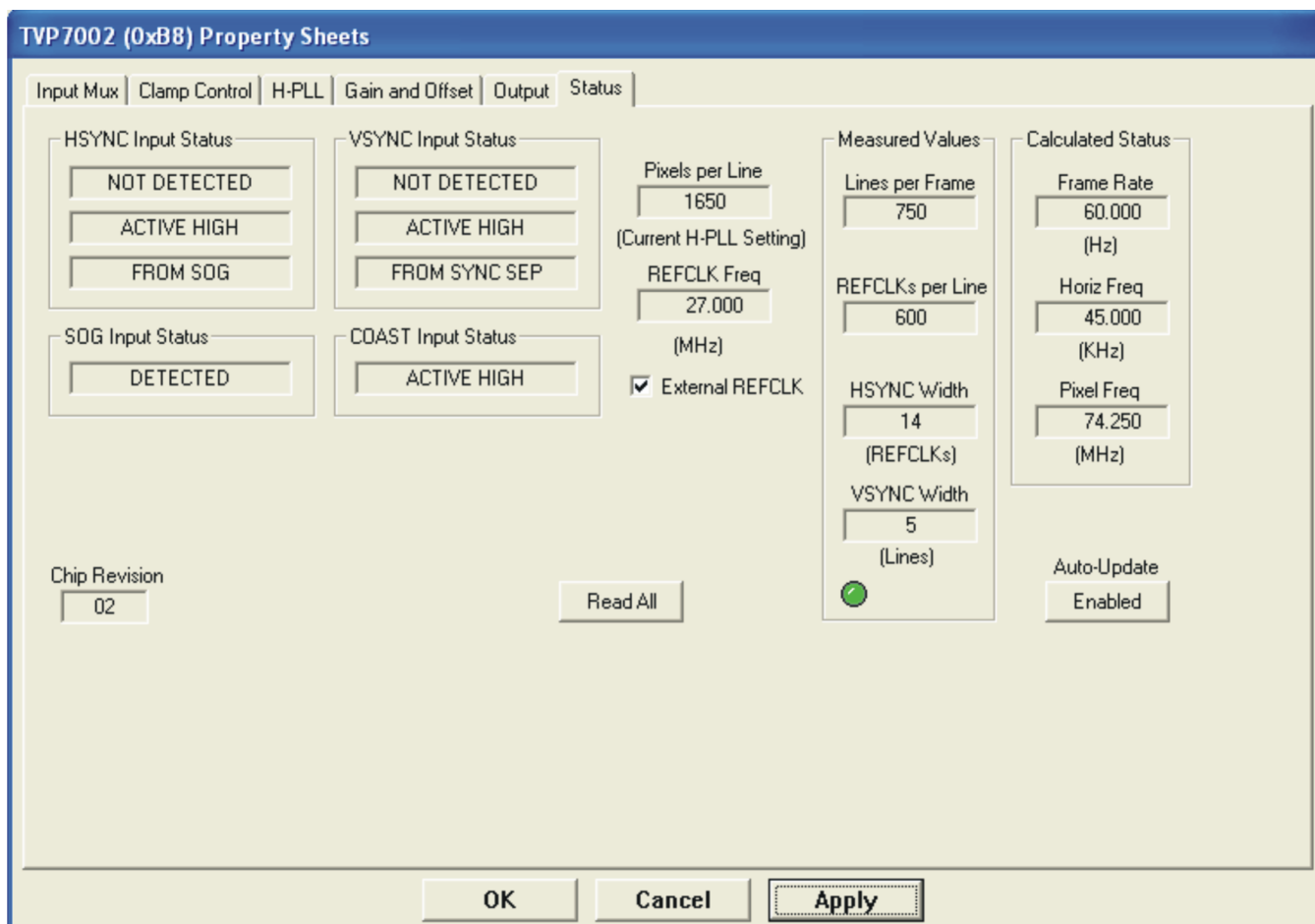


Figure 3. WinVCC4 – System Initialization

8. With a graphics/video source provided at the BNC or DB15 connectors and with the proper resolution configured, video or graphics should be viewable on the display monitor.

Note: To ensure that the TVP7002 is working properly, go to the Status page of the TVP7002 Property Sheets (see [Figure 4](#)), and check the HSYNC and VSYNC detection status. This is a check on the TVP7002 board only and not the THS8200 board or the TV/display monitor. The Chip Revision should show 02.



The screenshot shows the 'TVP7002 (0xB8) Property Sheets' dialog box with the 'Status' tab selected. The dialog is divided into several sections for monitoring the device's status.

Input Mux	Clamp Control	H-PLL	Gain and Offset	Output	Status
<div> <div> HSYNC Input Status <input type="button" value="NOT DETECTED"/> <input type="button" value="ACTIVE HIGH"/> <input type="button" value="FROM SOG"/> </div> <div> VSYNC Input Status <input type="button" value="NOT DETECTED"/> <input type="button" value="ACTIVE HIGH"/> <input type="button" value="FROM SYNC SEP"/> </div> <div> SOG Input Status <input type="button" value="DETECTED"/> </div> <div> COAST Input Status <input type="button" value="ACTIVE HIGH"/> </div> </div>					
<div> <div> Measured Values <div> <div>Pixels per Line</div> <div>1650</div> </div> <div>(Current H-PLL Setting)</div> <div> <div>REFCLK Freq</div> <div>27.000</div> </div> <div>(MHz)</div> <div> <input checked="" type="checkbox"/> External REFCLK </div> <div> <div>Lines per Frame</div> <div>750</div> </div> <div> <div>REFCLKs per Line</div> <div>600</div> </div> <div> <div>HSYNC Width</div> <div>14</div> </div> <div>(REFCLKs)</div> <div> <div>VSYNC Width</div> <div>5</div> </div> <div>(Lines)</div> </div> <div> <div>Calculated Status</div> <div> <div>Frame Rate</div> <div>60.000</div> </div> <div>(Hz)</div> <div> <div>Horiz Freq</div> <div>45.000</div> </div> <div>(KHz)</div> <div> <div>Pixel Freq</div> <div>74.250</div> </div> <div>(MHz)</div> </div> </div>					
<div> <div> Chip Revision <div>02</div> </div> <div> <input type="button" value="Read All"/> </div> <div> <input checked="" type="checkbox"/> Auto-Update <input type="button" value="Enabled"/> </div> </div>					
<div> <input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Apply"/> </div>					

Figure 4. Status Property Sheet

- To switch between inputs, go to the Input Mux tab of the TVP7002 Property Sheets (see [Figure 5](#)), and click Input Selection. Select VGA input or BNC1-5 input. The VGA input connector can be used for graphics formats having discrete HSYNC and VSYNC input, while the BNC1-5 connectors can be used for video or graphics sources having sync-on-green or sync-on-y.

Figure 5. Input Mux Property Sheet

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