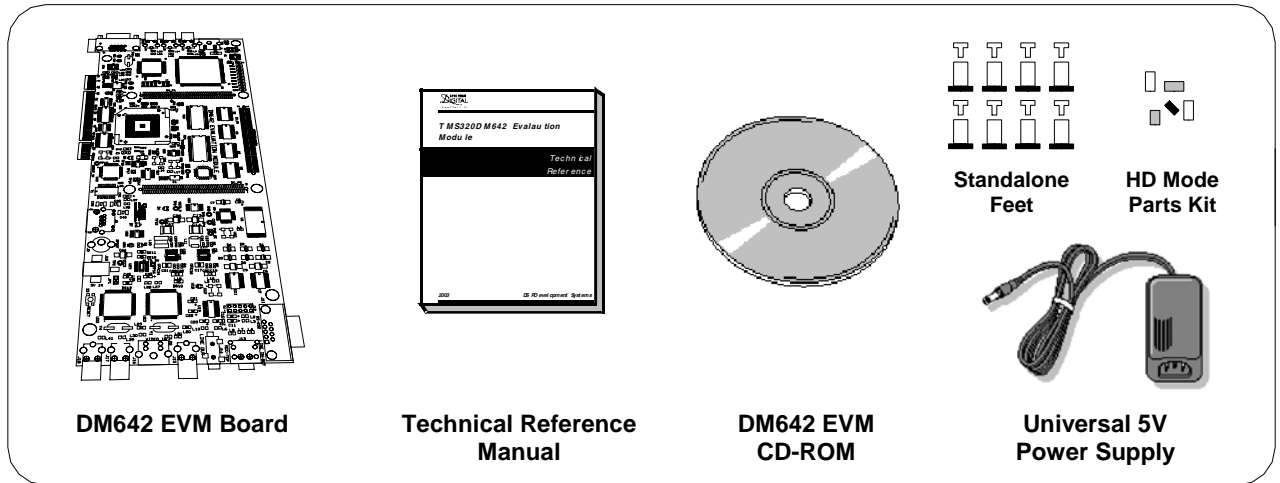


# Evaluation Module (EVM) for the TMS320DM642

## Quick Start Installation Guide



DM642 EVM Package Contents

### Description

The DM642 EVM is a development board that enables evaluation of and design with the DM642 Digital Media Processor. It is designed to work with Texas Instruments' Code Composer Studio software tools connected through a JTAG emulator. Before proceeding, please be sure your system meets the Code Composer Studio minimum requirements.

### Code Composer Minimum Requirements

- 233 MHz or faster Pentium or compatible
- 600 Mb free hard disk space
- 64 Mb free RAM
- SVGA (800x600) color display
- CD-ROM drive

### Supported Operating Systems

- Microsoft Windows 98™ (SP1 and SE)
- Microsoft Windows NT™ (SP6)
- Microsoft Windows 2000™ (SP1 and SP2)
- Microsoft Windows XP™ (Home and Professional)

- 1 Install Code Composer
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## Introduction to the DM642 EVM

The heart of the DM642 EVM is a 600MHz DM642 Digital Media Process which is based on TI's successful line of C64xx DSPs. The DM642 features a highly integrated on-chip peripheral set which includes 3 video port interfaces, an I<sup>2</sup>C bus controller, a multi-channel serial audio port, 64-bit EMIF, 10/100 Ethernet MAC controller and PCI interface in addition to the high performance DSP core.

The DM642 EVM is a working reference that adds all the external components needed to turn a DM642 into a working system. Board features include:

- 32 Mb of SDRAM
- 4 Mb of linear Flash memory
- 2 video decoders
- 1 video encoder
- On-Screen Display FPGA implementation
- Dual RS-232 UARTs and line drivers
- AIC23 stereo codec
- 10/100 Ethernet PHY
- 32 Kb I<sup>2</sup>C EEPROM
- 8 programmable LEDs
- Numerous video inputs and outputs
- Support for HDTV data rates (reconstruction filter must be modified using parts kit for optimal VGA and HD performance, see DM642 EVM Technical Reference).

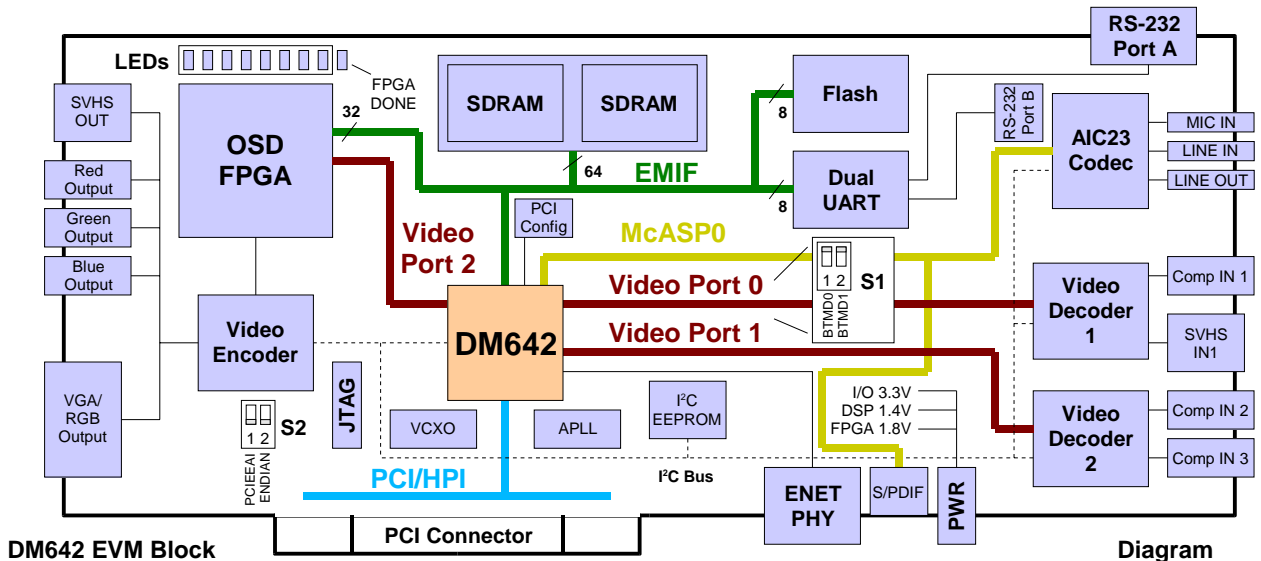
## Configuration Switch Settings

Most peripheral settings are completely software programmable, however a few settings are configured through two DIP switch blocks labeled S1 and S2. S1 sets boot mode options while S2 controls the PCI register selection and processor endianness.

The default configuration switch settings are shown in the block diagram below, with both switches in S1 on (up when looking at the board with the same orientation as the block diagram) and both switches in S2 off.

**Configuration Switch Summary**  
(see Technical Reference for details)

S2-2	S2-1	S1-2	S1-1	Description
Off				Little endian
On				Big endian
	Off			On-chip default PCI regs
	On			PCI regs from EEPROM
		Off	Off	No boot
		Off	On	HPI/PCI boot
		On	Off	Reserved
		On	On	EMIF boot

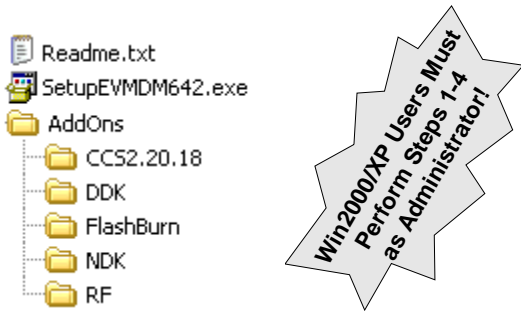


## Step 1: Install Code Composer

The DM642 EVM is designed to work with Code Composer Studio (CCS) version 2.20.18 which is minor upgrade to CCS 2.20 that adds support for newer C6000 family DSPs such as the DM642.

CCS 2.20.18 is not available as a full standalone install. You must install CCS 2.20 for the C6000 first, then run the **CCS 2.20.18 patch** found in the AddOns\CCS2.20.18 directory on the Spectrum Digital DM642 EVM CD-ROM.

While you can apply the patch to an existing installation of CCS, we recommend doing a fresh install of CCS 2.20 in a new directory and applying the patch to that instance rather than modifying your existing development environment. CCS 2.20.18 uses new versions of the CSL and BIOS. Once the patch is applied to an existing CCS installation you will not be able to produce code with the original version of BIOS and CSL.



**DM642 EVM CD-ROM Contents**

**Note:**

The default installation directory for CCS is `c:\ti`. If you install in a different directory you must make sure all of the patches and drivers get installed into the same directory as the CCS install. This document uses the keyword **TI\_DIR** to denote the CCS install directory.

## Step 2: Install DM642 EVM CD-ROM

After the proper version of Code Composer is installed, the next step is to add the board specific examples and documentation. To do this, run **SetupEVM642.exe** on the DM642 EVM CD-ROM. The installer will ask for a target directory, use the directory that you installed CCS 2.20.18 into (`TI_DIR`) so the examples will be placed correctly.

## Step 3: Apply Code Composer Patches

The examples installed in Step 2 allow for easy evaluation and basic code development with the DM642 EVM. However, many of the examples rely on TI software components outside of the basic development environment.

We recommend that you install the patches associated with these components now to get a full development environment. These patches are normally available through Code Composer's on-line Update Advisor or on the web at <http://dspvillage.ti.com> but have been included in the **AddOns directory** of the DM642 EVM CD-ROM for your convenience.

### DDK

The DDK is TI's Device Driver Development Kit. Version 1.1 of the DDK device drivers for the DM642 EVM peripherals which are used by many of the examples and demos. The DDK is needed to rebuild or develop code but not to run pre-compiled code. The DDK should be installed in `TI_DIR`.

### FlashBurn

FlashBurn is a Code Composer plug-in that allows you to program the contents of the on-board Flash memory. It is typically used to store bootable programs (the EVM can boot out of Flash) and data used to configure the on-board OSD FPGA. The installer will show a list of Code Composer installations you can add the FlashBurn component to. Please select the version installed in `TI_DIR`.

### NDK

The NDK is TI's TCP/IP Network Developer's Kit. It is included in library form for easy TCP/IP based network communication using the on-chip Ethernet interface. The NDK should be installed as `TI_DIR\C6000\NDK`.

### Reference Frameworks

The Reference Frameworks are a set of TI developed code that act as software reference designs for common applications such as audio transfer through a codec. The Reference Frameworks should be installed in `TI_DIR`.

## Step 4: Configure JTAG Emulator

The DM642 is based on a C64xx 1.1 DSP core. The core revision number is significant, each version of the driver only works with its intended silicon core version.

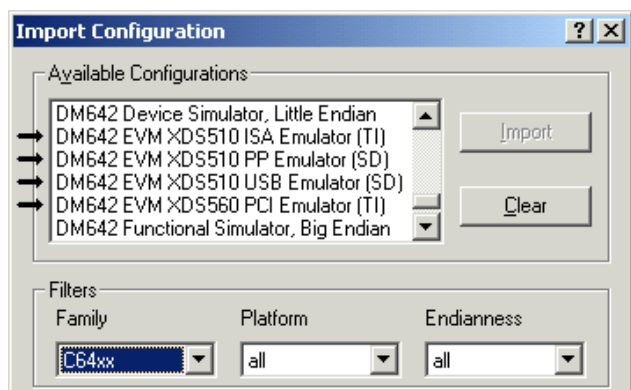
### Install Emulation Drivers

Users with Spectrum Digital XDS510 parallel port and USB emulators should install new drivers that support the 1.1 core by running the install in Drivers\SpectrumDigital XDS5510-PP-USB directory of the DM642 EVM CD-ROM. Driver updates can always be found on the Spectrum Digital web site.

Users with TI XDS510 ISA or TI XDS560 PCI emulators receive emulation driver updates when the CCS 2.20.18 patch is applied.

### Import Configuration

After the correct emulation drivers are installed, start Code Composer Setup from its icon on your desktop. The Import Configuration screen should come up. If it does not, open it manually using File → Import.



Code Composer Setup configures Code Composer for a specific chip/emulator configuration. The installer in Step 2 creates some pre-built configurations for the most common emulators. Select the C64xx family under the filter options and import the configuration that matches your emulator. Exit Code Composer Setup making sure to save your configuration.

### Advanced Users

If you choose to manually set up your board, use a single C64xx device for the processor configuration and the board specific GEL file TI\_DIR\boards\evmdm642\gel\EVMDM642.gel as your GEL file.

## Step 5: Start with Code Composer

Now that your tools are set up, you can start running and debugging with Code Composer. Make sure your emulator is connected (the TI standard JTAG header is J7 between the video outputs and the DM642) and your board is powered by the included 5V power supply.

Launch Code Composer by double-clicking on its icon:



After a short delay, the CCS Integrated Development Environment (IDE) will appear. If you are new to Code Composer, you should launch the Code Composer help (using the Help menu option) to become familiar with its basic usage.

**For more information about the DM642, please see one of the following documents:**

**DM642 EVM Technical Reference Manual**  
(for hardware details)

**DM642 Software Readme File**  
(examples, demos and included code)  
TI\_DIR\boards\evmdm642\Readme.html