

## 1. Kit Components

Item	Qty.	Description
LMP92001 Eval Board	1	Device evaluation board
SPUSI2	1	USB interface board purchased separately at: <a href="http://www.national.com/store/view_item/index.html?nsid=SPUSI2">http://www.national.com/store/view_item/index.html?nsid=SPUSI2</a>

## 2. Software Installation

**TinyI2CSPI software**, and LMP92001 specific Personality Files, can be obtained from the National Semiconductor Corp. website. Use the link below to download the self extracting archive and the installation manual.

<http://www.national.com/analog/webench/sensors/spusi2>

Follow the instructions and install the software in the Windows XP environment.

When connecting SPUSI2 for the first time to your PC the operating system will attempt to install the appropriate drivers. Follow the instructions on the screen and allow the wizard to automatically search for required driver files.

## 3. Kit Assembly

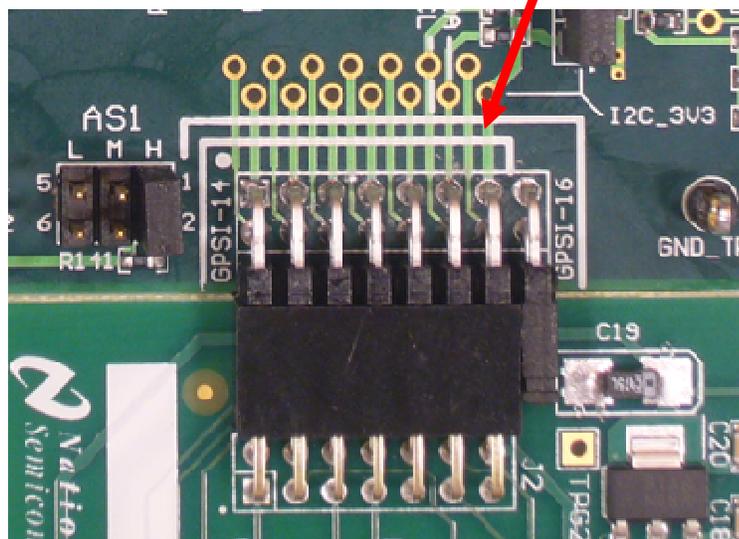
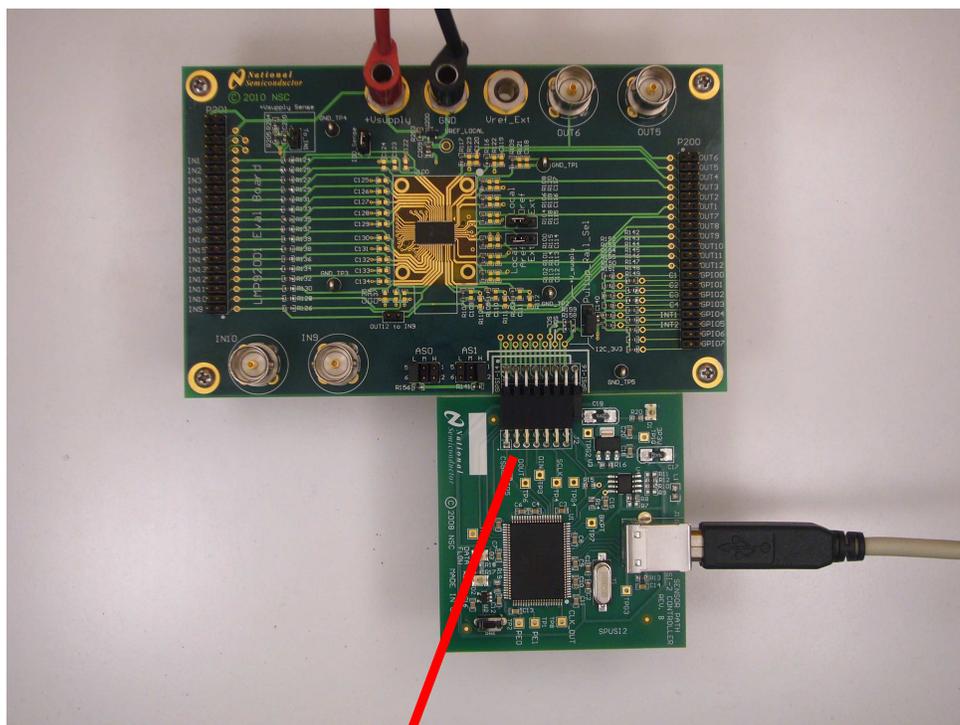
Equipment needed to conduct basic functionality tests:

- 5V power supply
- DC Voltmeter

Assemble the kit as follows:

- Connect 5V power supply (power off) to +Vsupply and GND banana sockets
- Connect the SPUSI2 dongle to the LMP92001 Eval Board 14-pin header marked GPSI-14 (watch the alignment, the Eval Board connector is actually 16-pin, see picture below for correct alignment)
- Connect USB cable between host PC and the SPUSI2 dongle

Figure below shows the complete assembly:



#### 4. Default Set-Up and Power-Up

Verify the following default jumper settings on the Eval Board (these should already be factory set):

Jumper block	Shunt position	Function
<b>IDD_sense</b>	in	This header allows for measurement of supply to the DUT (only to the DUT). This header should have a shunt installed
<b>DREF</b>	Local,DREF	Selects a locally generated 4.1V voltage as the reference input to the DUT's DACs (DUT by default uses off-ship reference source)
<b>AREF</b>	Local, AREF	Selects a locally generated 4.1V voltage as the reference input to the DUT's ADC (DUT by default uses off-ship reference source)
<b>Pullup_Rail_Sel</b>	I2C_3.3	Selects the 3.3V potential generated by the I2C interface dongle as the GPIO, INT[2:1] pull-up rail.
<b>AS1</b>	H	Sets the upper address bit of the DUT's I2C bus address
<b>AS0</b>	L	Sets the lower address bit of the DUT's I2C bus address. <b>NOTE: The factory set address is AS1,AS0=H,L which corresponds to I2C address 0x4C</b>

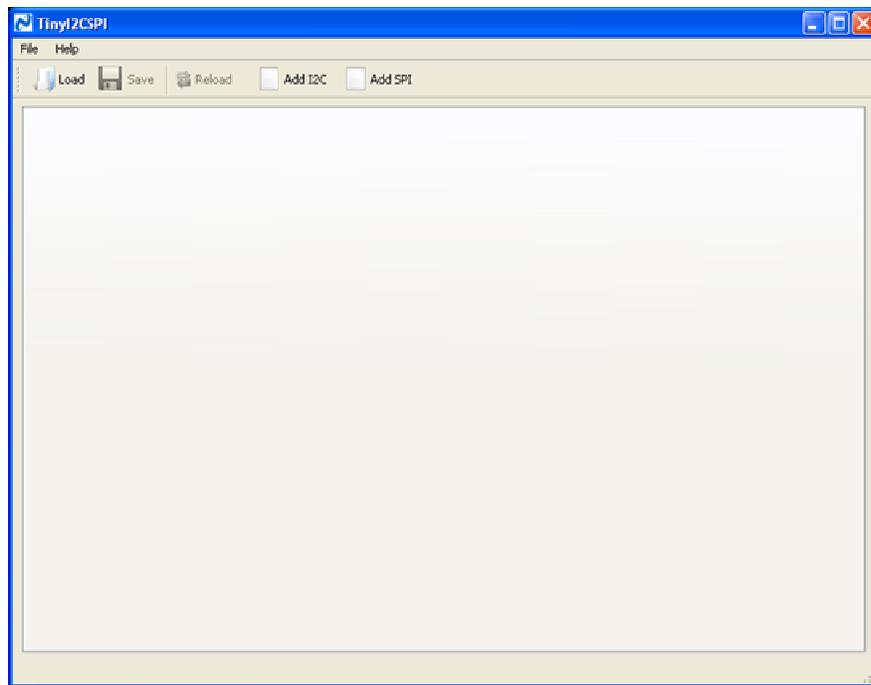
Once the above jumpers are in place, turn on the 5V power supply

## 5. TinyI2CSPI User Interface Software

Start TinyI2CSPI User Interface software (START->TinyI2CSPI->RunTinyI2CSPI)

**NOTE:** Currently on some systems the software does not start properly using method described above: a command window flashes on the screen momentarily, but GUI never starts. If this occurs in your system start the software by START->TinyI2CSPI-> TinyI2CSPI Environment. This will open a command window.  
At the prompt:  
C:\...\TinyI2CSPI> **cd dist**  
C:\...\TinyI2CSPI \dist> **tinyi2cspi.exe**  
This will launch the GUI

The initial screen will look as below:

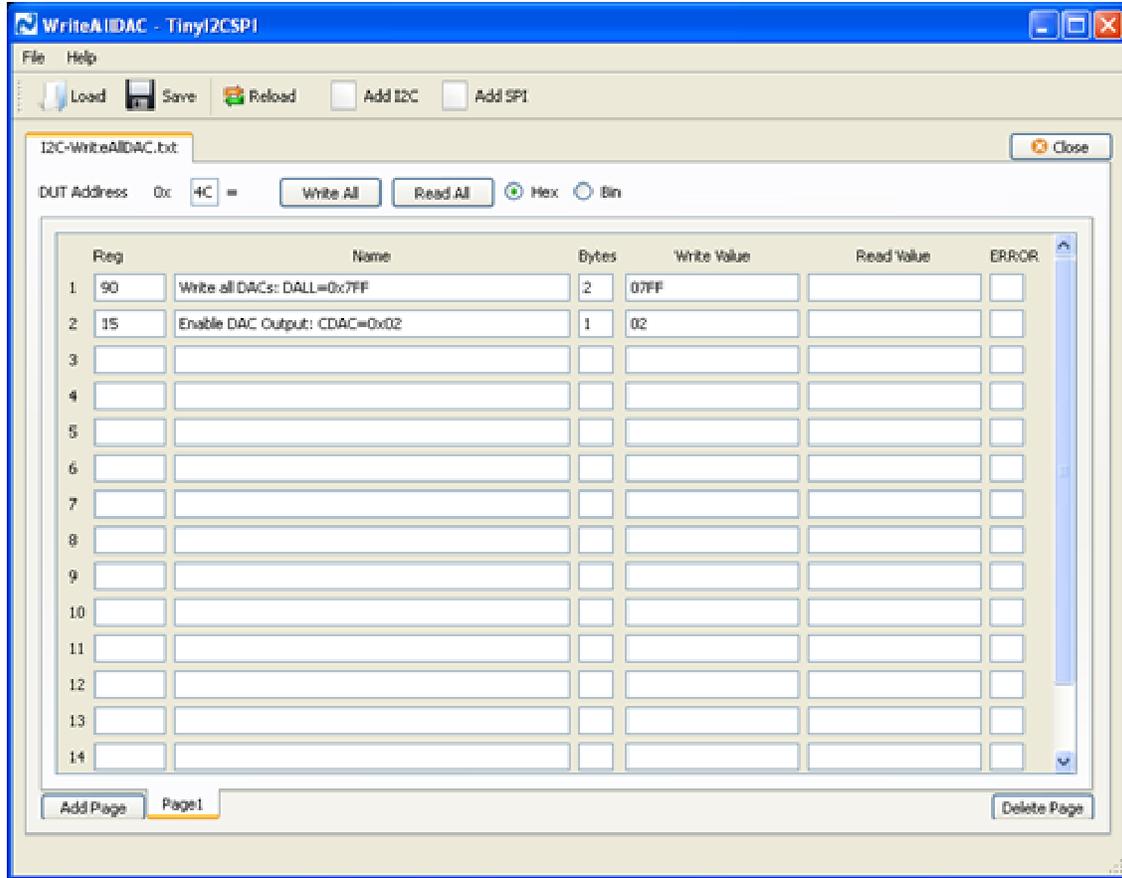


Use the **Load** button to select and load personality files. Or use **Add I2C** to open new I2C interface command window and enter your own sequences.

**NOTE: Personality files are text files containing I2C bus sequences. The files are either available for download from the TinyI2CSPI Software web page, or are provided in the archive containing this document.**

## 6. Quick example

Load in the WriteAllDAC.txt personality file. The screen will look as follows:



Note the DUT address 0x4C (as set on the Eval Board, see sec. 4 of this manual). Executing this script will send data to DUT register address 0x90 (updates all on-board DAC registers to ½ scale), and will disable the OFF bit in CDAC register i.e. all DAC outputs will be activated.

Press **Write All**. Successful transaction will cause items in the ERROR column to turn **GREEN** or display 'OK' string

Use the voltmeter to check the output voltages at all OUT1 through OUT12 pins: 2.05V (approx)

**NOTE: Personality files provided with this product may have extensions tpf or txt**

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
OMAP Mobile Processors	<a href="http://www.ti.com/omap">www.ti.com/omap</a>
Wireless Connectivity	<a href="http://www.ti.com/wirelessconnectivity">www.ti.com/wirelessconnectivity</a>

### Applications

Automotive and Transportation	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
Consumer Electronics	<a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>
Energy and Lighting	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Space, Avionics and Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
Video and Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>

TI E2E Community Home Page

[e2e.ti.com](http://e2e.ti.com)

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2012, Texas Instruments Incorporated