

National Semiconductor TINYI2CSPI

Quick Start Guide

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1. Getting Started

This document explains how to use the National Semiconductor *TinyI2CSPI application*. This document gives an in-depth understanding of the GUI and the usage of the application. The user requires *TinyI2CSPI* software installer (TinyI2CSPI.exe) and the **SPUSI-2 Sensor Signal Path** board.

1. Getting Started	1
1.1 System Requirements.....	1
1.2 TinyI2CSPI Installation	1
1.3 SPUSI2 Setup Procedure	1
2. Personality File	4
3. GUI usage	5
3.1 I2C:	5
3.2 SPI:.....	6
4. Results.....	7
5. Limitations of the software GUI.....	7

1.1 System Requirements

The *TinyI2CSPI* requires a system having the following resources:

- a. Operating system: Windows XP Professional Version 2002 SP3.
- b. Processor: Intel Pentium 4 and above.
- c. USB Port: USB 1.0 or 2.0.

1.2 TinyI2CSPI Installation

The user can install the application using the *TinyI2CSPI* software installer (**TinyI2CSPI.exe**). Installing a new version of the application automatically replaces an existing older version. The *TinyI2CSPI* installation includes a Program Menu selection to uninstall the application. After the installation you can run the application from the program menu.

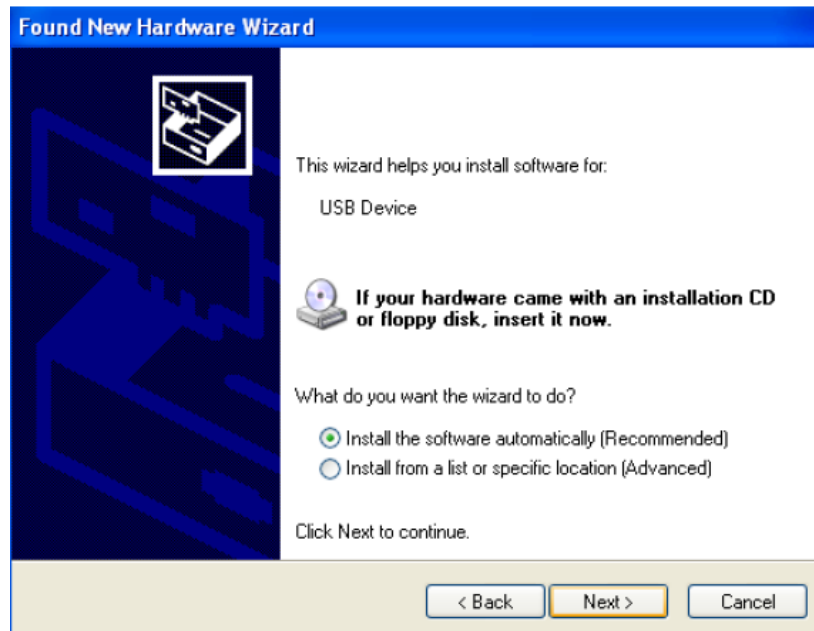
1.3 SPUSI2 Setup Procedure

This section explains the steps followed in installing the drivers required for using the **SPUSI2 Sensor Signal Path** board.

1. Connect **SPUSI2** board to computer. The *Found New Hardware Wizard* will popup. Select **Yes, this time only** and click **Next**.



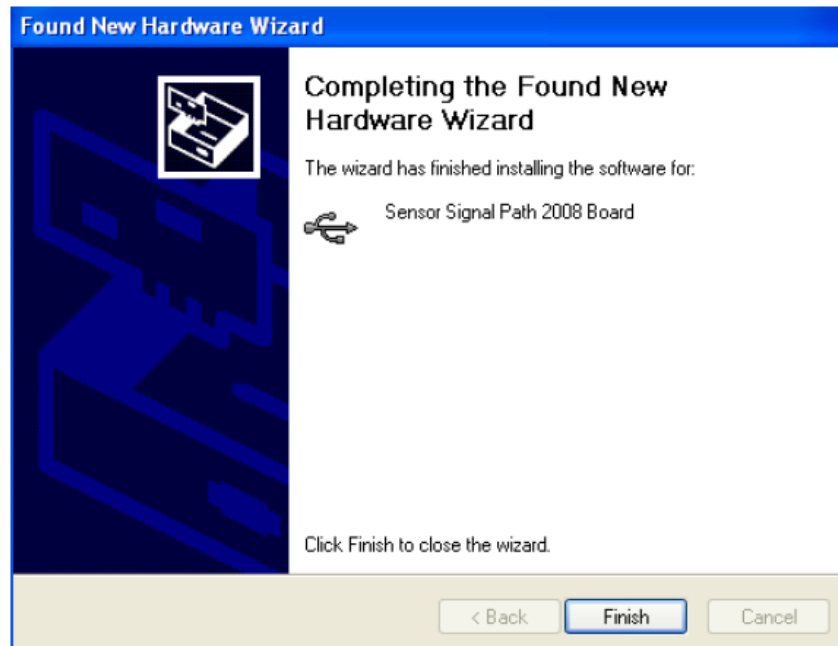
2. Select **Install the software automatically (Recommended)** and click **Next**.



3. Wizard begins to install software for Sensor Signal Path 2008 Board. Click *Continue Anyway* on the *Hardware Installation* pop-up.



4. Click *Finish*.



2. Personality File

A Personality File fills in the GUI blanks to create an overlay for specific device or task. The personality file consists of comma separated ASCII values. It allows the factory staff and power users to easily create new ones from existing files. The order of the lines matches the order of the fields in GUI.

A sample personality file for I2C looks like the following:

```
Mode,I2C,
DUTAddr,50,
#Register Address,Name,Bits,Write Value,Read Value,
72,ADCN0: ADC Control Register 0,2,1234,1234,
74,blah2,4,AABBCCDD,
76,Middle byte of above field,1,CC,CC,
```

A sample personality file for SPI looks like the following:

```
Mode,SPI,
SCLK,1,
#Function,CS,CKPOL,CKPHA,Bits,MOSI,MISO,Execute,
Test11 pat1,1,1,1,16,ACED,3,
Test11 pat2,1,1,1,16,1133,59db,
Test10 pat1,1,0,1,16,ACED,2267,
Test10 pat2,1,0,1,16,1133,59db,
Test01 pat1,1,1,0,16,ACED,1133,
Test01 pat2,1,1,0,16,1133,aced,
Test00 pat1,1,0,0,16,ACED,1133,
Test00 pat2,1,0,0,16,1132,aced,
```

3. GUI usage

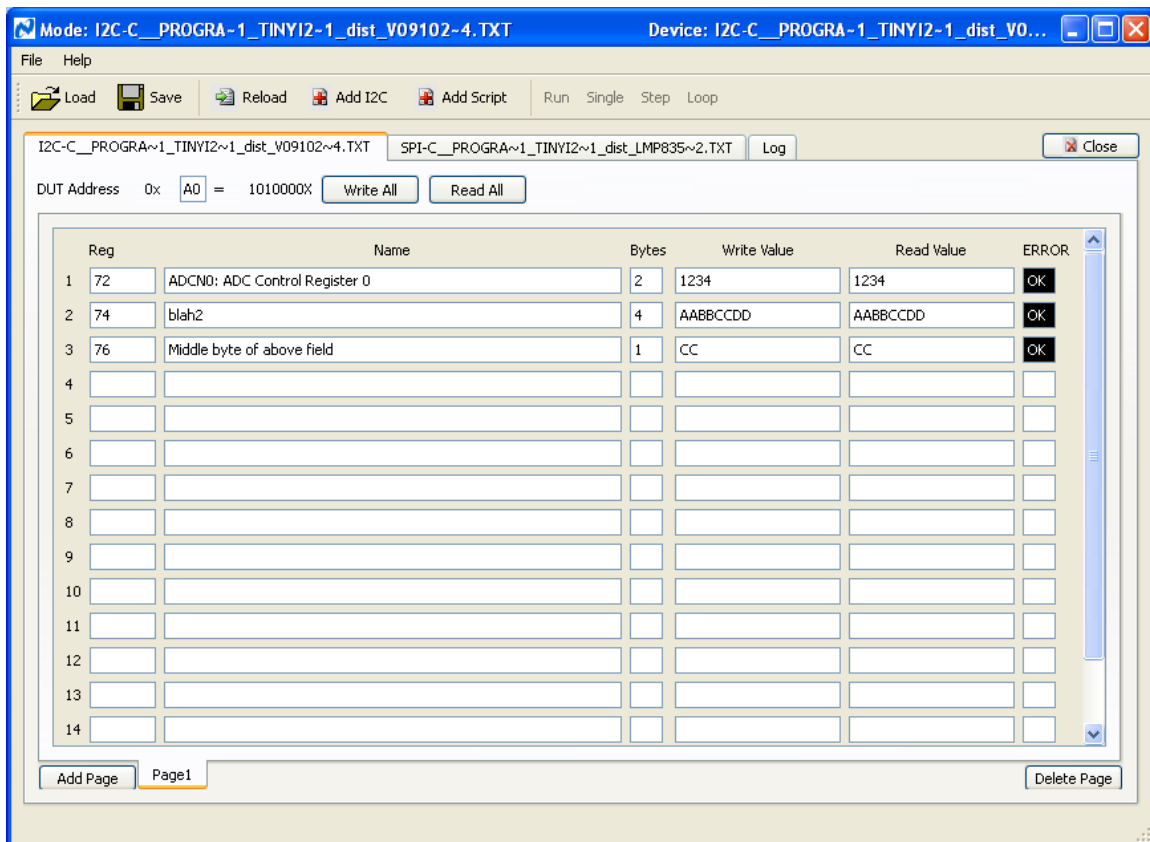
This section explains the procedure for using the *TinyI2CSPI* application GUI. Section 3.1 explains the I2C transactions and section 3.2 explains the SPI transactions.

Before carrying out the I2C/SPI transactions, do the following preliminary things:

1. Load an I2C/SPI personality file by selecting File → Load from the menu (OR) by clicking on “Load” button from the toolbar. If the personality file is for the I2C transaction, follow the steps in section 3.1 or if the personality file is for the SPI transaction, follow steps in section 3.2.
2. If the personality file is not present, then click on “Add I2C” button for I2C or click on “Add SPI” button for SPI from the toolbar.

3.1 I2C:

This section explains the procedure followed to carry out I2C transactions using the *TinyI2CSPI* application GUI.



1. Click on “Write All” button to perform writes to all the registers specified in the personality file.
2. Click on “Read All” button to perform reads from all the registers specified in the personality file.

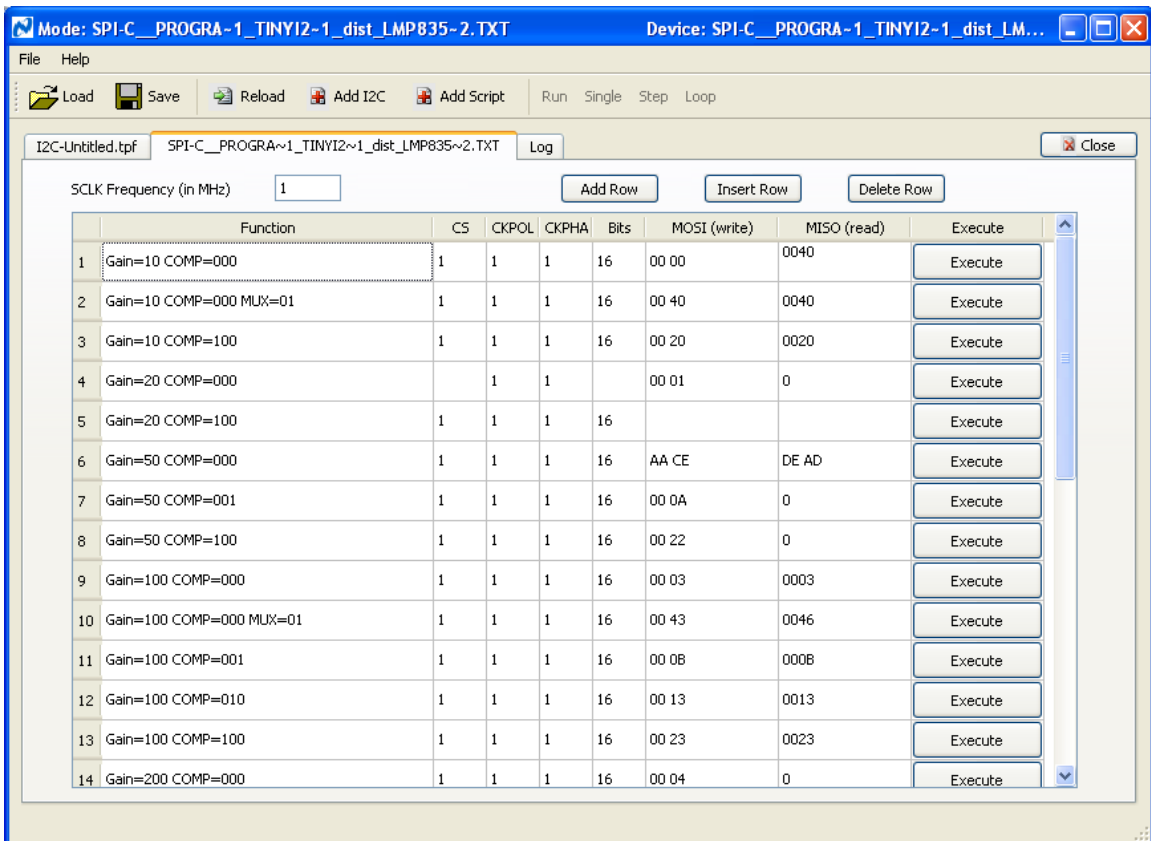
- To perform writes to individual registers, go to the field under the Write Value column for a particular register and press “Enter” key.
- Similarly, to perform read operation from the individual registers, go to the field under the Read Value column for a particular register and press “Enter” key.
- If the device address is different from what is specified, then change the address in the DUT Address field.

DUT Address 0x = 1010000X

- Save the values entered in the GUI into a personality file by selecting File → Save As... from the menu (OR) by clicking on “Save” button in the toolbar.

3.2 SPI:

This section explains the procedure followed to carry out SPI transactions using the *TinyI2CSPI* application GUI.



- Click on the “Execute” button to write the MOSI contents into the device specified and read back the contents from the device into the MISO field.
- Save the modified contents in the GUI into a personality file by selecting File → Save As... from the menu (OR) by clicking on “Save” button in the toolbar.

4. Results

The results obtained using the *TinyI2CSPI* application for I2C and SPI transactions are interpreted as hexadecimal numbers. However, the **Bytes** field in I2C and the SPI configuration settings (**CKPOL**, **CKPHA**, **Bits**) are decimal numbers.

5. Limitations of the software GUI

The following are the known limitations of *TinyI2CSPI* version 1.4.0 application which the user needs to take care of:

1. The ACK/NACK error indicator in the I2C GUI is not completely functional. It returns OK irrespective of the validity of the data.
2. The number of bytes for I2C transactions must not exceed 4 bytes, or else the data written and read will not be as expected.