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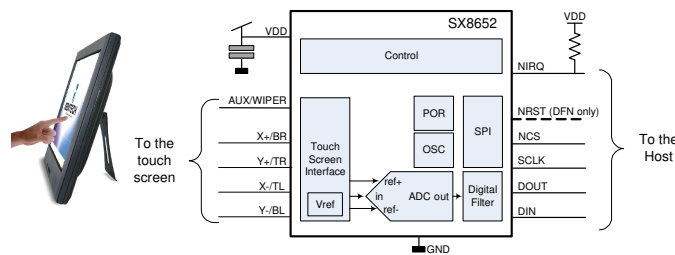
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# SX8652 Evaluation Kit

## User's Guide



**Resistive Touch Solutions**  
**SX8652 4/5 wire controller with SPI interface**



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**SX8652EVKA**





Lead-free

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## 1. General Description

The SX8652 is a 4/5-wire touch screen controller. The SX8652EVK allows you to evaluate most of the features of the SX8652. The Graphic User Interface (GUI) is used to change the settings on the SX8652.

## 2. Evaluation Board

### 2.1. Setting Up the Evaluation Board

Follow these steps to set up the SX8652EVK:

- i) Install the evaluation software CD before connecting the board. The name of the setup file is :  
SX8652EvaluationKitOfflineSetup.exe
- ii) Ensure that all jumpers are set correctly (check Table 1)
- iii) Plug the USB connector from the USB port on your PC into the mini-USB socket on the evaluation board. The power indicator LED D1 on the board should turn on.
- iv) Start the SX8652Evaluation software

### 2.2. Overview

The SX8652EVK is the board for evaluation of the 4/5 wire resistive touch screen controller SX8652. It is provided with a 4-wire touch screen to ease the evaluation.

No external supply is needed to power the board. A USB cable is provided to connect the EVK to a Windows based PC for operation of the software.

### 2.3. Content

The evaluation kit is composed of the following parts:

- i) The board with the SX8652 and the touch screen on the top
- ii) A USB cable to connect the board to the PC
- iii) A CDROM with the installation files and the user guide
- iv) A stylus to write on the touch screen

### 2.4. Board

This evaluation board contains the following main components that can be identified from the schematics in section .

- ◆ SX8652 in DFN package
- ◆ FT2232D with the quartz : USB to SPI controller
- ◆ M93C46 EEPROM : USB initialization information
- ◆ SN74LVC8T245 : Level shifter
- ◆ SC1563 : Regulator for 3.3V and 1.85V
- ◆ 4-wire touchscreen connected in J5

#### 2.4.1. Connectors

Number	Description
J1	The USB cable should be plugged directly from the PC into this connector. It is a type USB mini-B socket.
J2	This connector makes the connection between the host and the SX8652. Make sure that all the jumpers are set before running the software.
J3	The jumpers make the link between the SX8652 X+,X-,Y+,Y- ports and the 4-wire touchscreen connector (J5-J6) or the 5-wire touchscreen connector (J4) <ul style="list-style-type: none"> <li>· Link to the 4-wire touchscreen configuration (default): Jumpers on (1-3), (5-7), (9-11), (13-15)</li> <li>· Link to the 5-wire touchscreen configuration : Jumpers on (1-2), (5-6), (9-10), (13-14),(17-18)</li> </ul>
J4	5-wire touchscreen connector ref. FCI SFW5R-1STE1LF Can be connected to Bergquist touchscreen P/N : 400333
J5	4-wire touchscreen connector ref. Omron XF2U-0415-3A
J6	4-wire touchscreen connector ref. Tyco 84952-4
P6	This connector can be used to measure SX8652 current consumption. The jumper must be set for the EVK to work

Table 1 : Connector descriptions

### 2.4.2. Indicators and switch

Number	Description
D1	When illuminated, this red LED indicates that the evaluation board is powered
S1	This switch set the SX8652 supply voltage to 3.3V or 1.85V

Table 2: Indicator and switch descriptions

## 3. Software Description

### 3.1. Overview

The software is constructed with graphical aids such as radio buttons and check boxes so each setting on the device can easily be seen in a human readable display.

### 3.2. Installation

This software requires a Windows 2000/XP/Vista operating system. If an internet connection is available, the installation program "SX8652EvaluationKitOnlineSetup\_vX.X.exe" will download the latest package .NET Framework.

The software can also be installed via the executable installation program called "SX8652EvaluationKitOfflineSetup\_vX.X.exe".

After the software is installed, FTDI drivers will automatically be (re)installed. By default, the setup program will install a shortcut to the software in your start menu.

Plug the USB connection from the EVK to the PC to complete the installation. The PC should recognize the SX8652EVK.

### 3.3. Running the software

Before running the software, ensure that the evaluation board is plugged into the USB port of the host computer. If the software is launched without an EVK connected and switched on, the program will show in the status that it is not connected.

After starting the GUI, the device is in Pen Trigger Mode waiting for the user to touch the touchscreen. Please do not disconnect the device while running the GUI. If it is desired to disconnect the EVK, close the GUI first. Figure 1 shows a described view of the GUI while running.

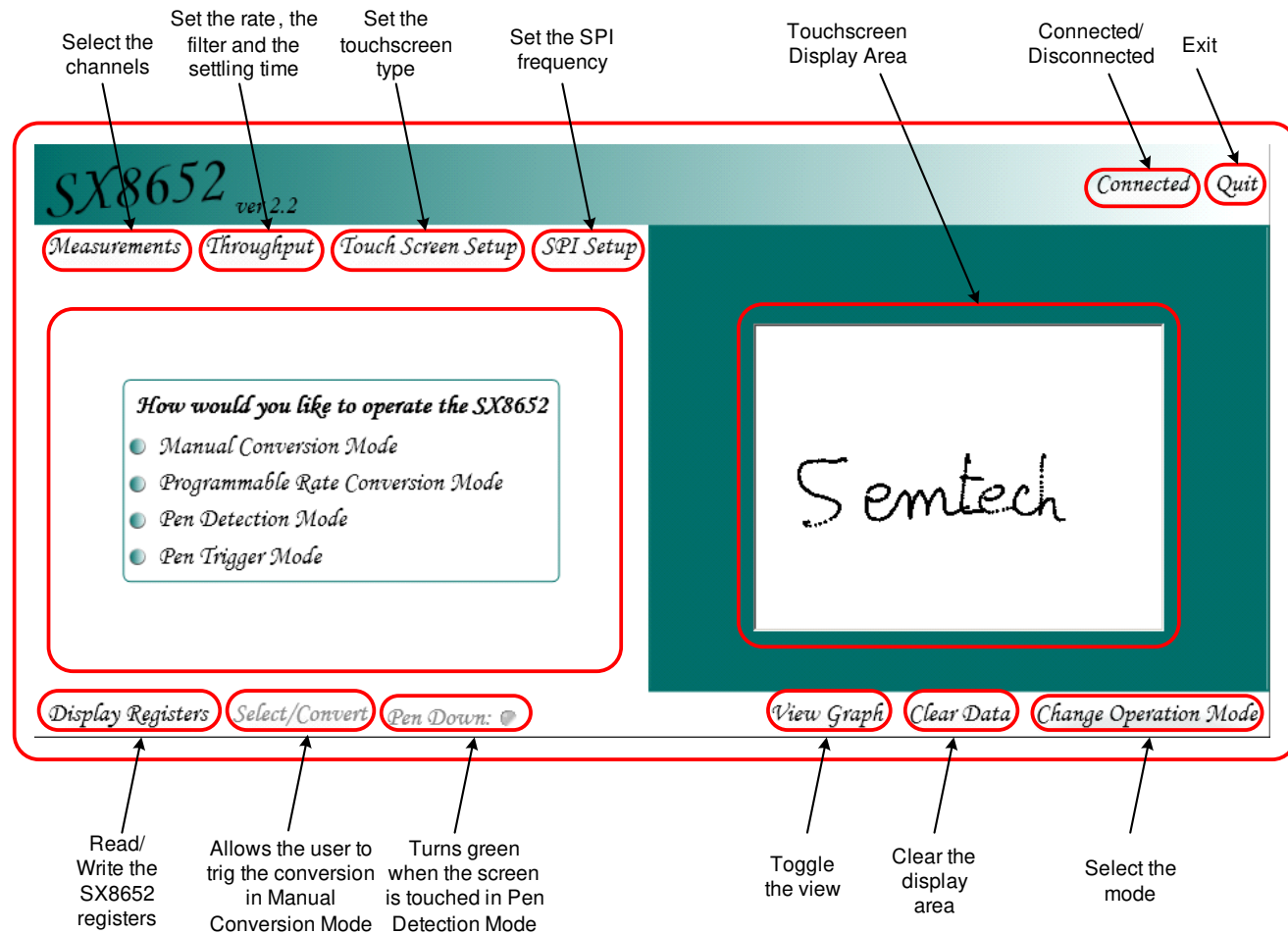


Figure 1. : First launch of the SX8652 GUI

The following sections describe the GUI menu.

### 3.4. View Graph / View Touch Screen

The user may view a graph display of the data. To go back to a touch screen view, just click *View Touch Screen*.

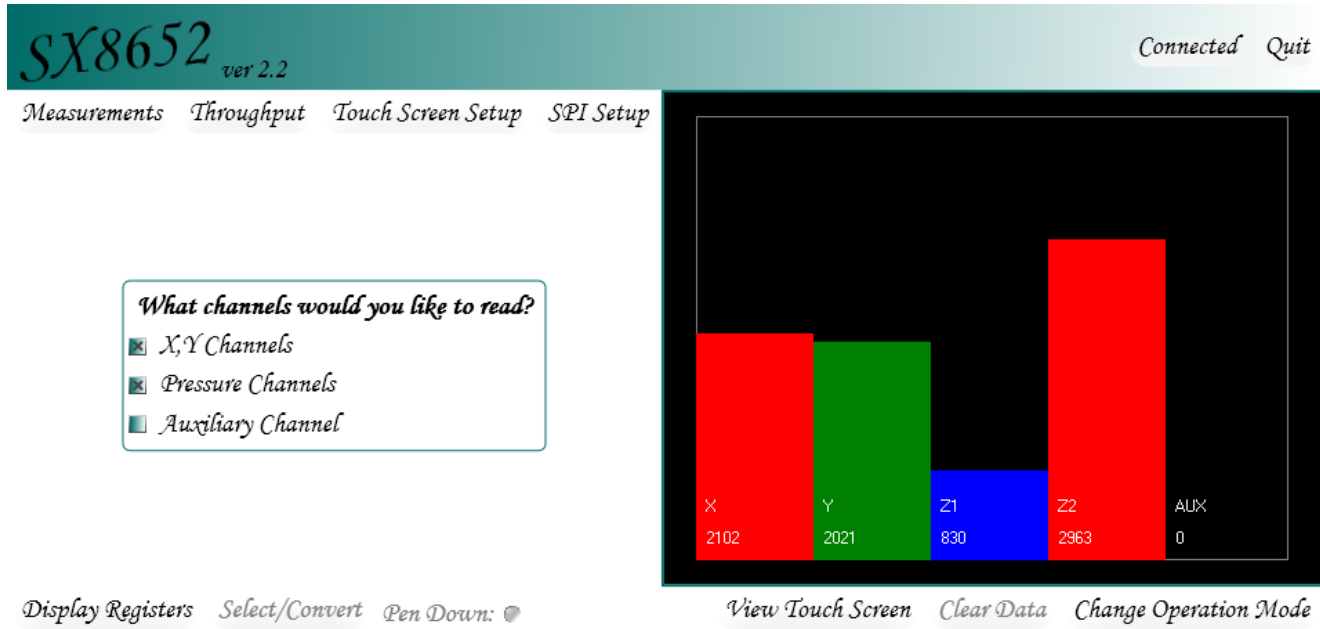


Figure 2. : After user clicks View Graph and has touched the screen

### 3.5. Clear Data

This button is only available when viewing the touch screen. The only function of it is to clear the screen.

### 3.6. Change Operation Mode

Clicking Change Operation Mode will allow the user to change the operation mode. The GUI will start up with this same page.

### 3.7. Connected/Disconnected

When the EVK is connected to the USB port of a computer, the GUI displays the connected status on the top right area of the GUI.

Clicking the *Connected* button will disconnect the EVK.

When the EVK is not connected, the GUI displays the disconnected status. Clicking the *Disconnected* button will enable the connection with the EVK.

### 3.8. Quit

Clicking the *Quit* button will close out the GUI.

**3.9. Measurements**

The measurements menu let the user select the channel to be read.

With a 4-wire touchscreen, the SX8652 can provide the coordinates, the pressure and also the result of the conversion of an auxiliary channel.

The SX8652 can be used as a 12-bit ADC to convert the analog voltage from the auxiliary channel. This channel can also be set as a trigger to synchronize the measurements in manual mode.

With a 5-wire touchscreen, the measurements are limited to the X and Y coordinates.

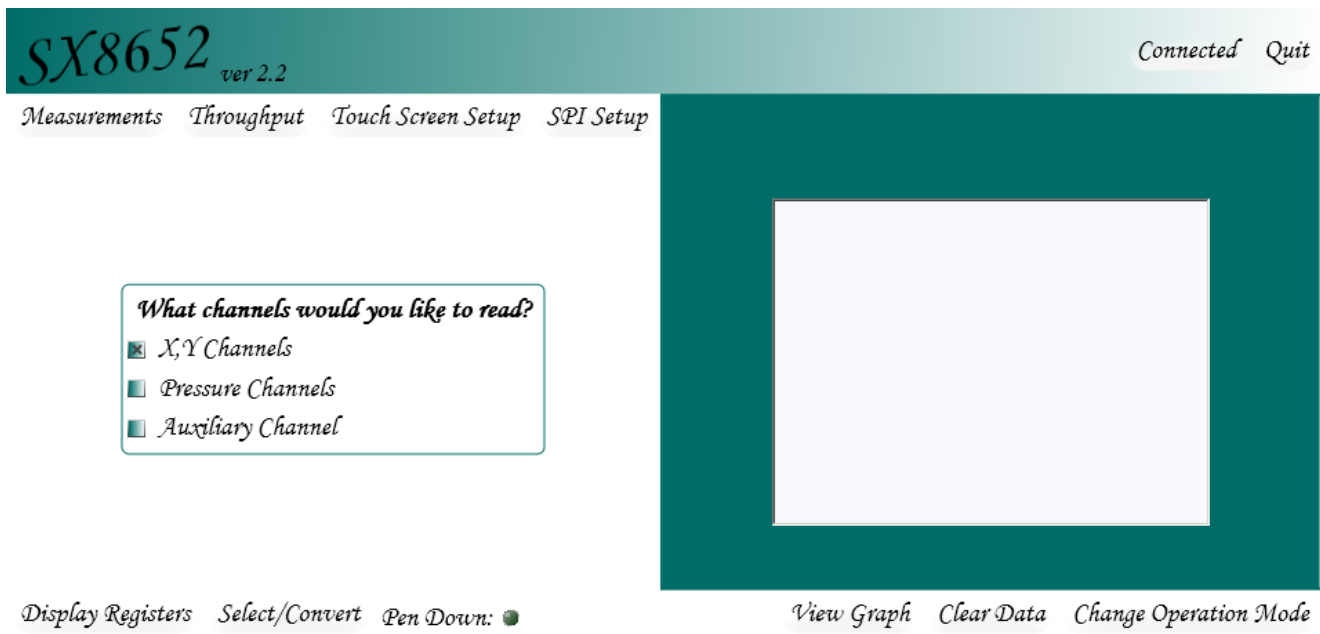


Figure 3. : Measurements, channel selection

**3.9.1. Auxiliary Channel**

If the user is in Manual Conversion Mode and select Auxiliary Channel, a popup will appear to allow determining how to use the Auxiliary Channel.



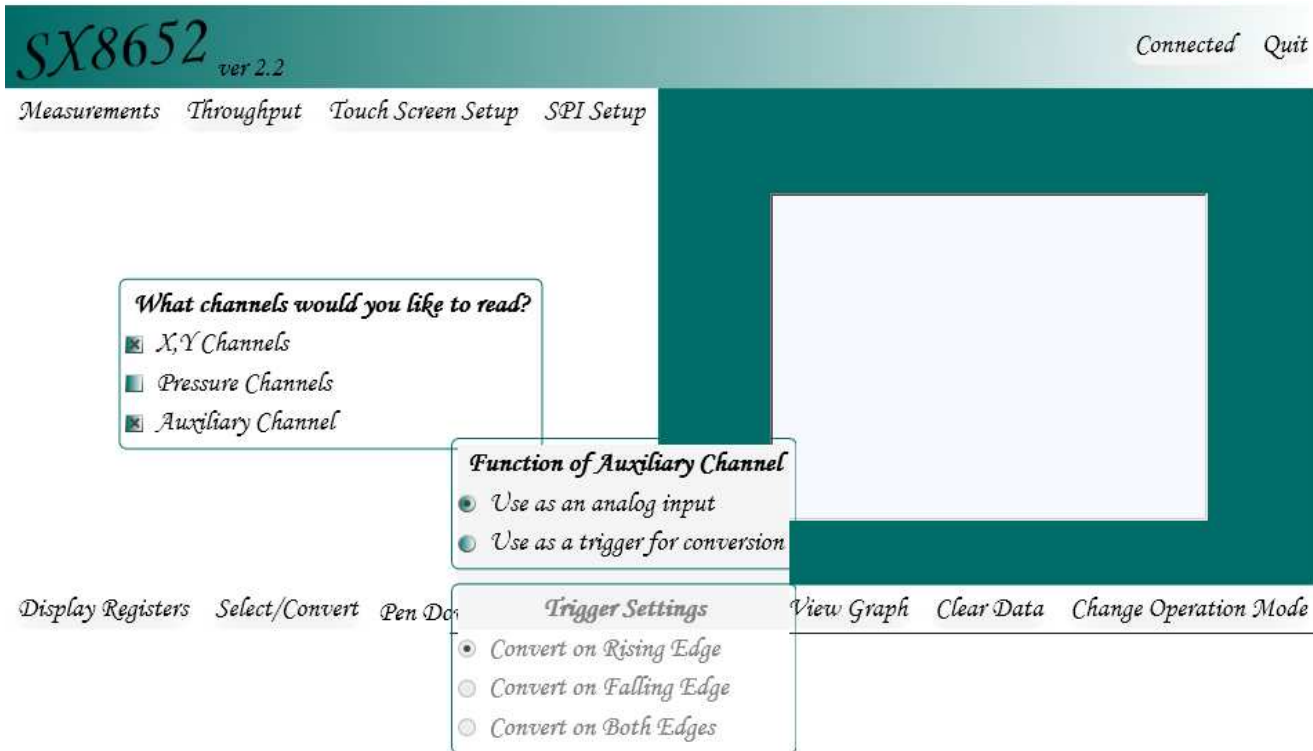


Figure 4. : Auxiliary Channel

### 3.10. Throughput

The programmable rate, the filter and the settling times are set in the throughput menu.

The programmable rate can be selected from 10 cps to 500 cps when the SX8652 is in programmable rate conversion mode.

The SX8652 offers 4 types of data processing which allows the user to make trade-offs between data throughput, power consumption and noise rejection.

The power delay and set delay set the biasing time needed by the touchscreen to reach the 12 bit accuracy.

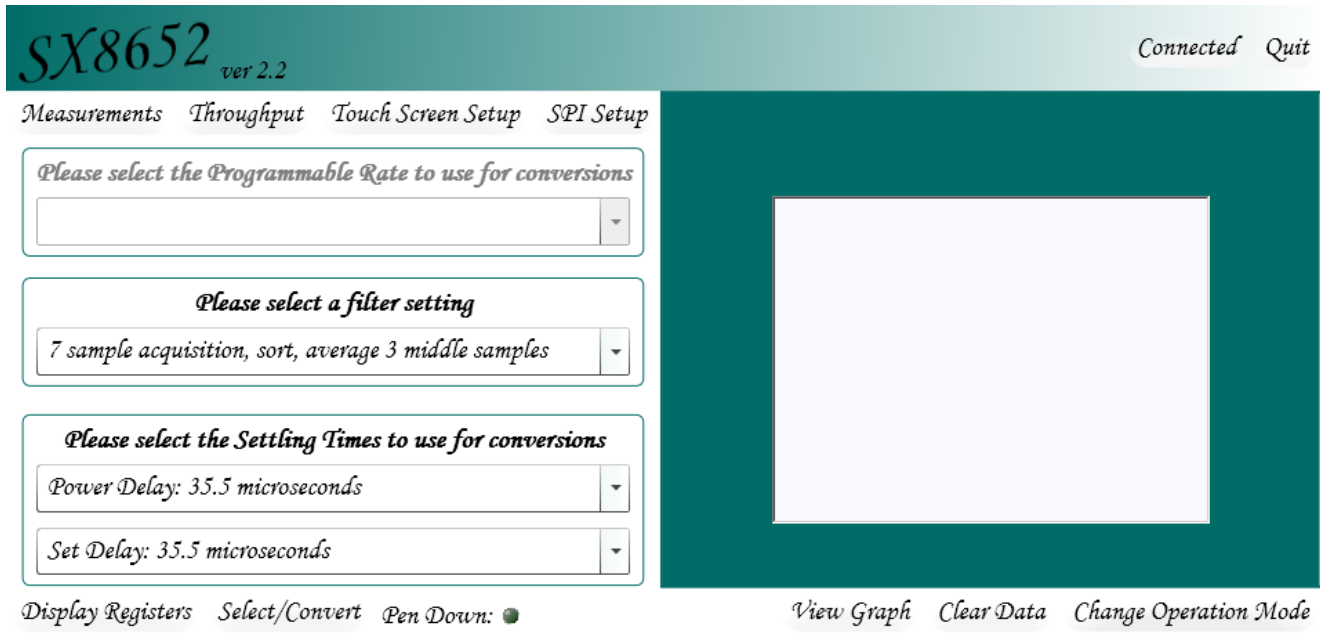


Figure 5. : Throughput

### 3.11. Touch Screen Setup

This menu allows the user to select the resistive screen type and fill in the panel resistances.

The X and Y plane resistance determines the correct aspect ratio for the screen size.

When using a 4-wire panel, the  $R_t$  resistance between the two layers of the touchscreen can be calculated using the datasheet formula. Its value depends of the pressure exercised on the touchscreen and the X and Y total sheet resistance.

The pressure sensitivity selects the width of the trace. Increasing the pressure sensitivity will make the pen size larger.

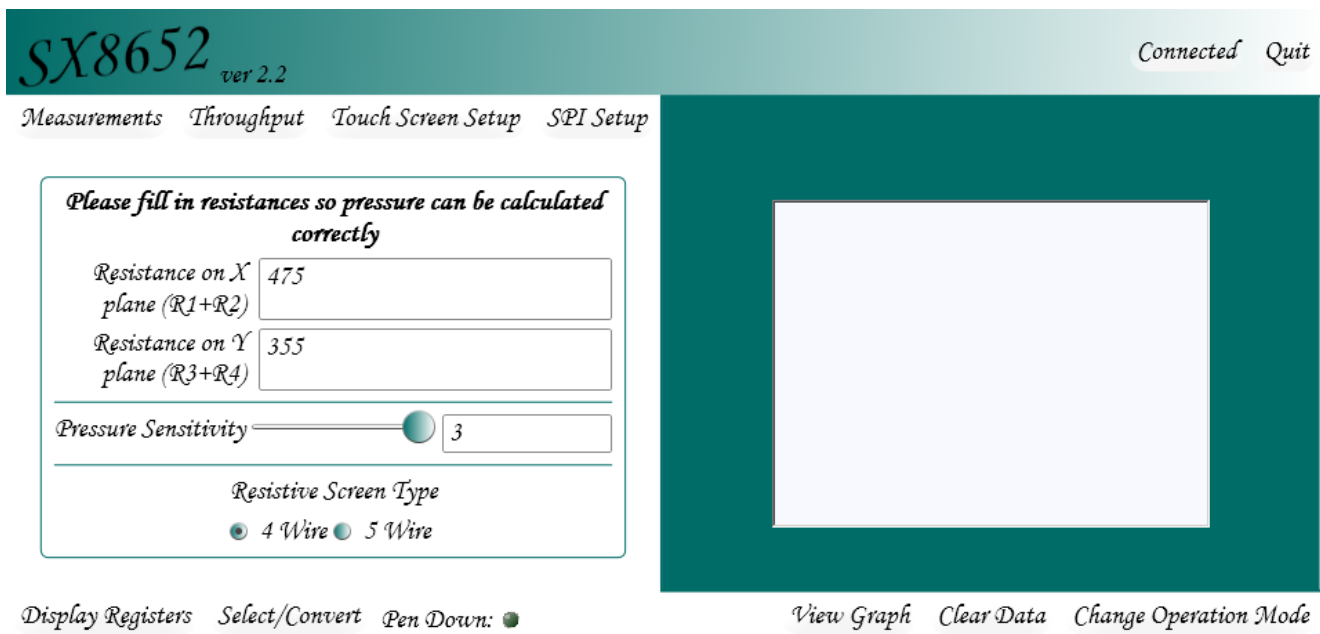


Figure 6. : Touch Screen Setup

### 3.12. SPI Setup

This page is normally not needed but is available in case the user wants to try different SPI frequency settings.

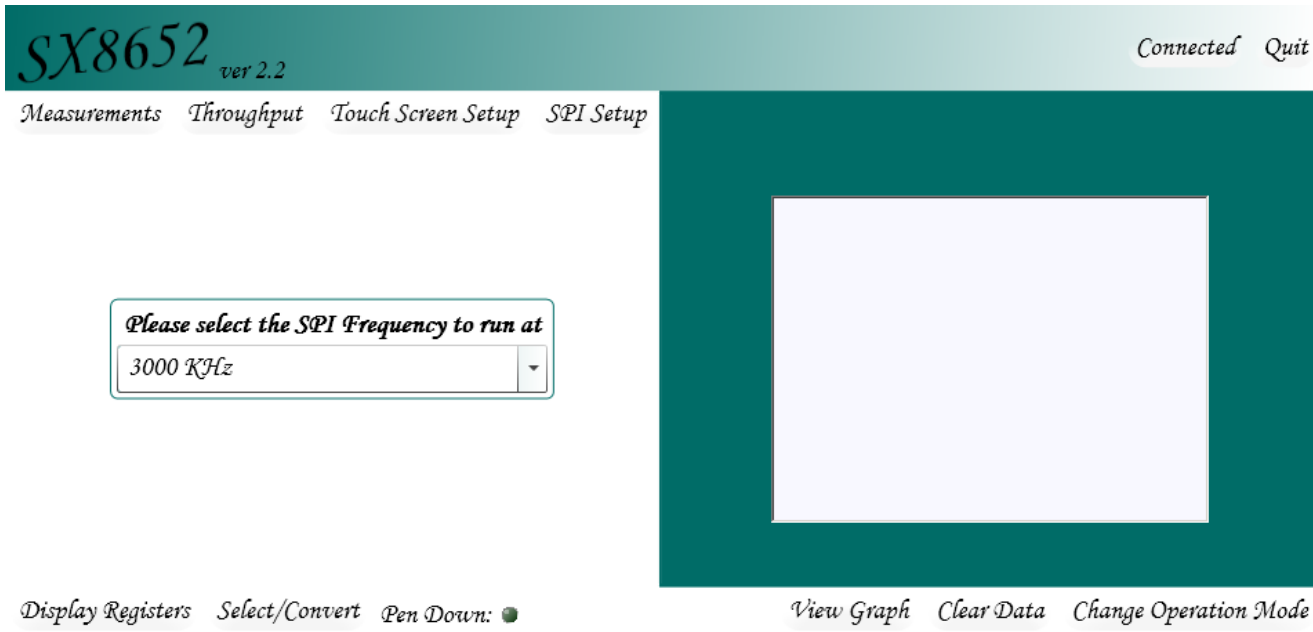


Figure 7. : SPI Setup

### 3.13. Display Registers

The user can view or modify the registers on the Display Registers page.

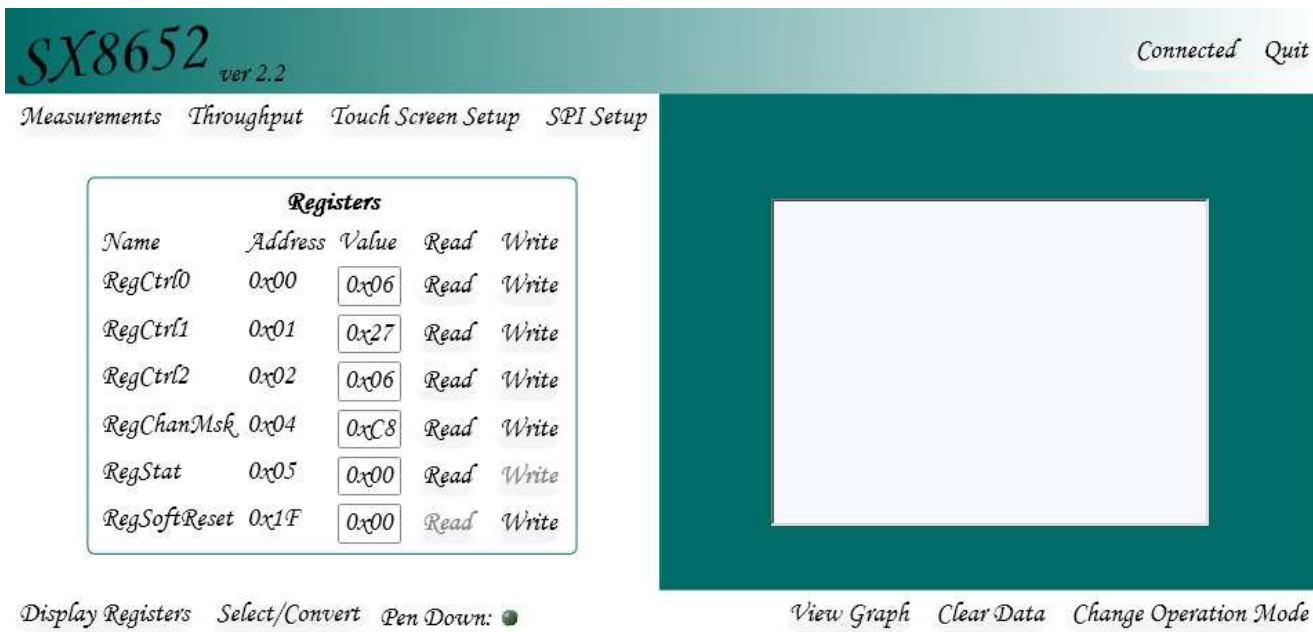


Figure 8. : Display Registers

### 3.14. Convert

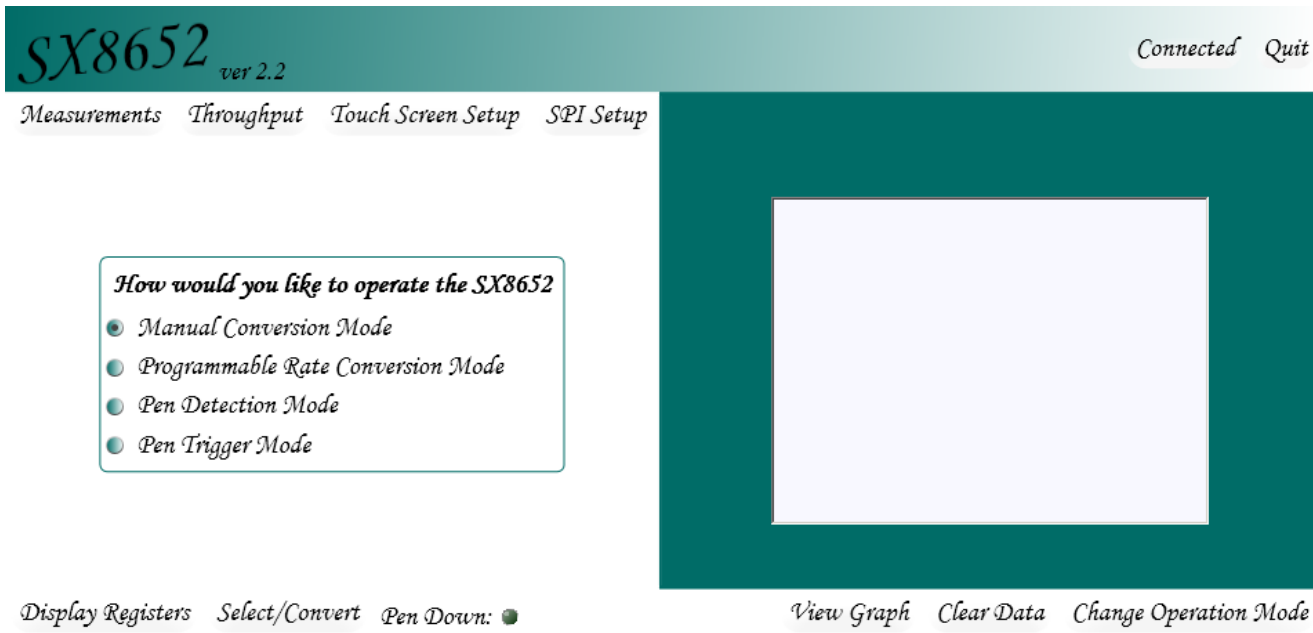
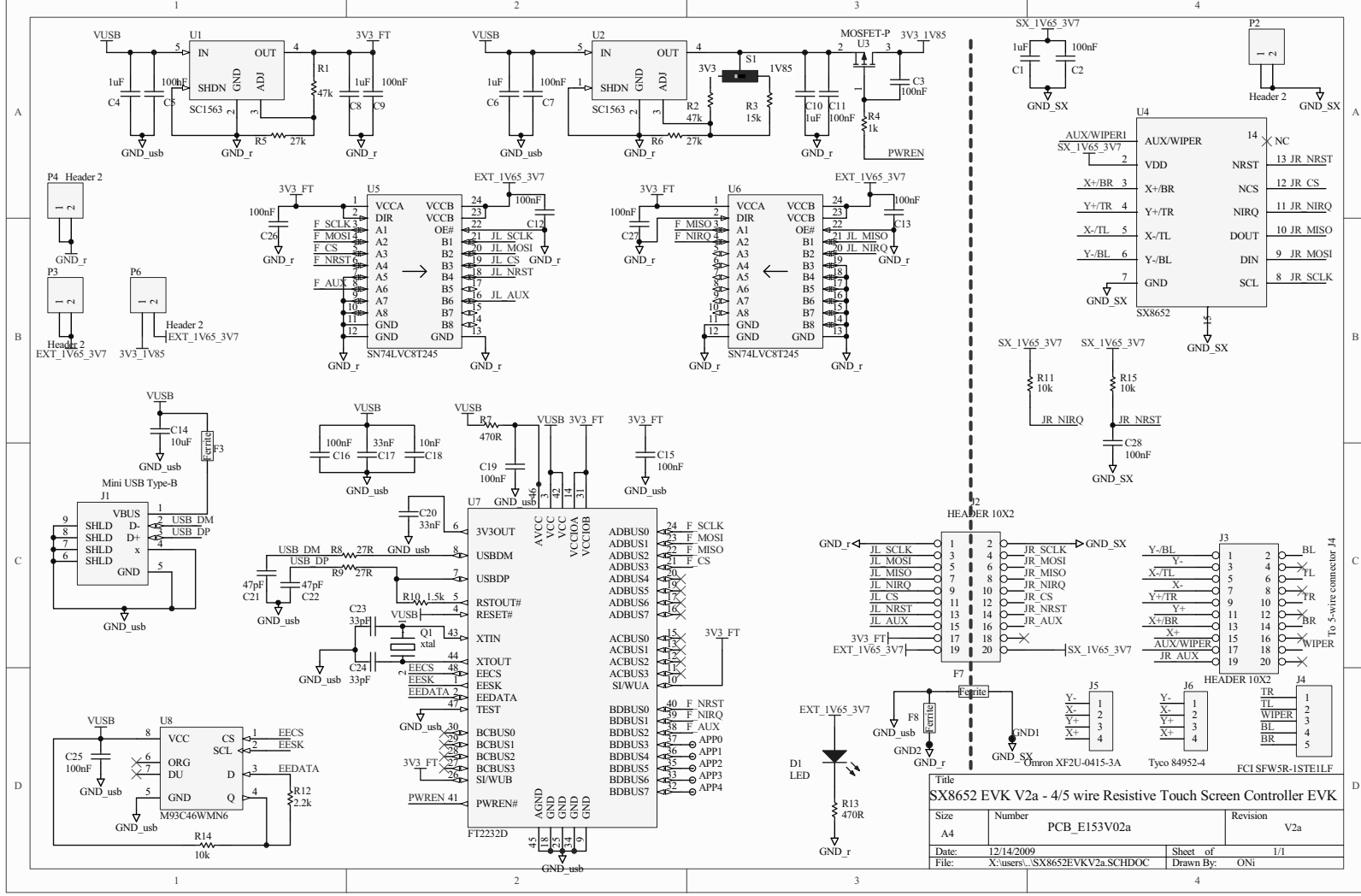


Figure 9. Pen Detection Mode with the Pen Down

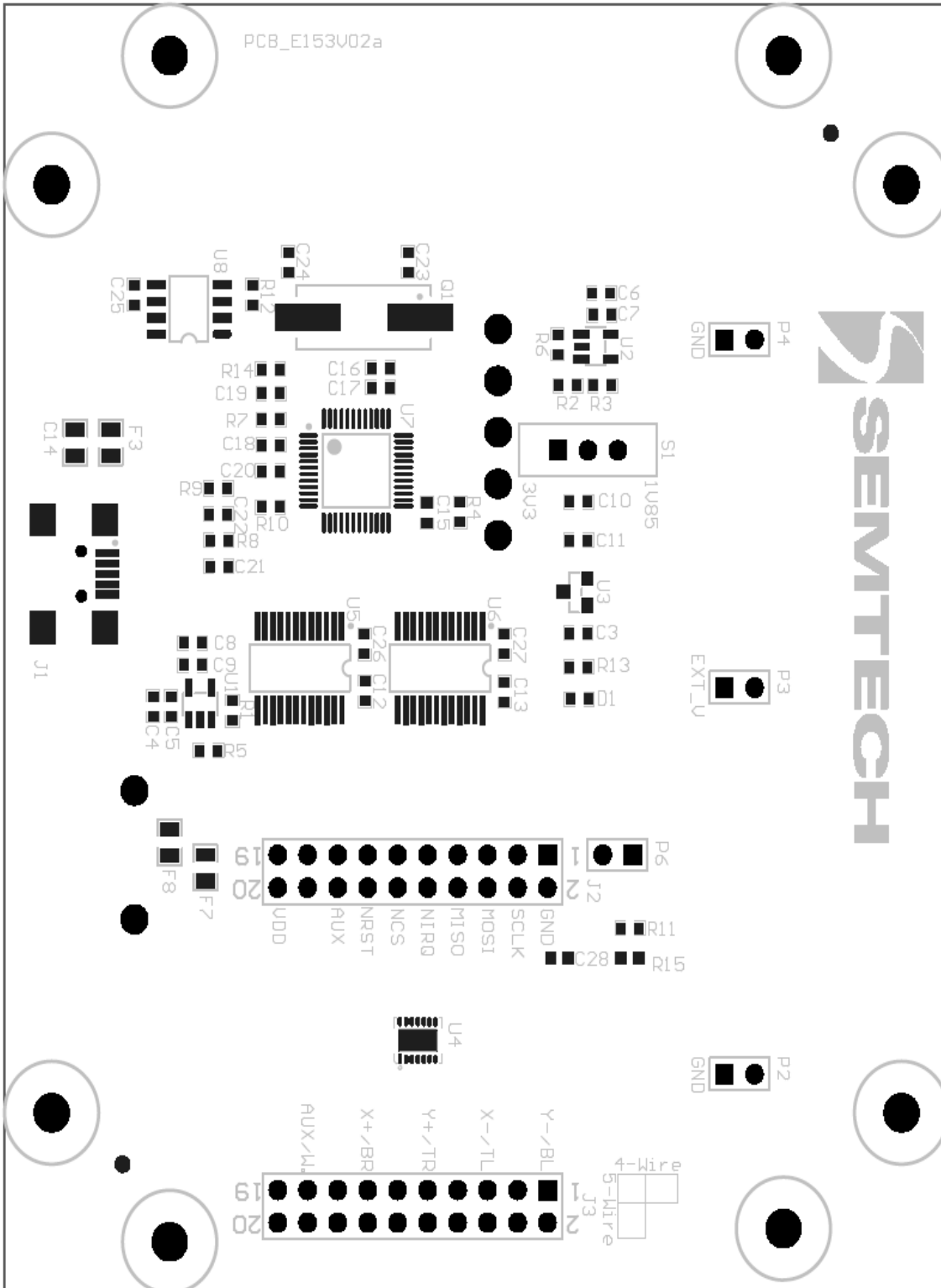
The *Select/Convert* button is only available when in Manual Conversion Mod. This will perform a conversion with the channels selected on the Measurements page.



### 4. Schematics



5. Board Outline



## 6 References

[1] SX8652 Datasheet

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