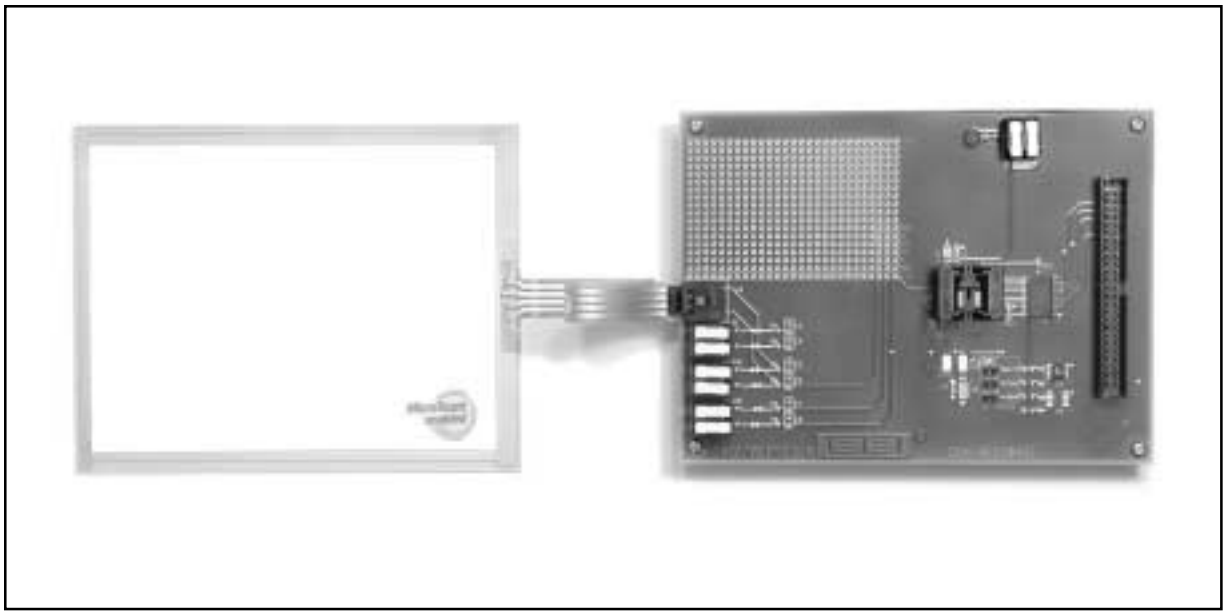
BURR - BROWN®

DEM-ADS7846
TOUCHSCREEN CONTROLLER EVALUATION FIXTURE



FEATURES

- **DEMONSTRATES ADS7846E CAPABILITIES**
- **COMPATIBLE WITH ADS7843 AND ADS7845**
- **INCLUDES 4-WIRE TOUCHSCREEN**
- **WINDOWS® 95/98 COMPATIBLE SOFTWARE**

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DESCRIPTION

The DEM-ADS7846E is an evaluation tool for Burr-Brown's ADS7846E, a 4-wire touch-screen controller which features direct battery measurement, temperature measurement, and touch-pressure measurement.

For a block diagram of the DEM-ADS7846E setup, see Figure 1. The DEM-ADS7846E is designed to be used with the DEM-CIB Computer Interface Board.

Included with the DEM-ADS7846E is Windows 95/98 compatible software which displays the touch data, and exercises all other measurement capabilities of the ADS7846E.

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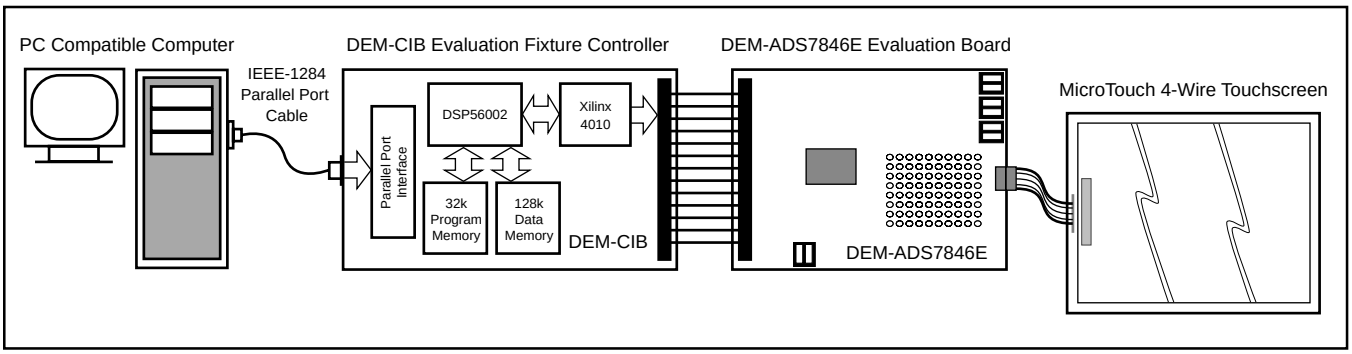

FIGURE 1. DEM-ADS7846E Setup and Block Diagram.

DEM-ADS7846E KIT CONTENTS

The DEM-ADS7846E contains the following:

- DEM-ADS7846E Evaluation Board
- MicroTouch 4-Wire Touchscreen
- 5 ADS7846E Samples
- DEM-ADS7846E Software Disks
- This Datasheet
- MicroTouch Datasheets

The software install disks include all the software needed to setup and use the DEM-ADS7846E.

EQUIPMENT NEEDED

To use the DEM-ADS7846E and the included software, the following equipment is required:

- A PC-Compatible Computer Running Windows 95/98
- A +5V DC Power Supply
- Evaluation Board for Device to Test
- A DEM-CIB Computer Interface Board from Burr-Brown

SETUP AND INSTALLATION

HARDWARE SETUP

Unpack the kit contents and verify that you have received everything listed in the section titled "DEM-ADS7846E Kit Contents".

Connect a +5V DC power supply to the DEM-CIB. The DEM-CIB utilizes a removable terminal block connector. Place the ends of the wires from the power supply into the connector and tighten down the set screws, making sure you have connected the power-supply wires with the correct polarity, as marked on the DEM-CIB board.

Place one of the ADS7846E sample devices in the socket on the DEM-ADS7846E board, making sure that pin 1 positioning is observed.

Connect the DEM-ADS7846E to the DEM-CIB board using the 50-pin ribbon cable supplied with the DEM-CIB. Connect the +5V power supply to the DEM-ADS7846E.

When you are sure that the power supply is connected correctly, turn on the +5V power supply. A small LED should light on the DEM-CIB indicating that it has power. A small LED on the DEM-ADS7846E should also light, indicating that it has power.

Connect the DEM-CIB to your computer with the included IEEE-1284 cable. NOTE: due to the high speeds of data communicated across this link, do not use any parallel cable other than an IEEE-1284 cable.

SOFTWARE INSTALLATION

Insert the floppy disk marked "Disk 1" in your floppy drive. From this disk, run "Setup.exe". Follow the instructions and prompts in the installer to install the DEM-ADS7846E software on your computer.

USING THE DEM-ADS7846E SOFTWARE

To begin using the DEM-ADS7846E, launch the program by going to the Start menu, select Programs, then Burr-Brown, and click on DEM-ADS7846E.

STARTING UP

When the programs starts up, it will display a splash screen while it attempts to communicate with the DEM-CIB interface board. If you don't have the DEM-CIB connected or powered on, or if the parallel port that it is connected to is not the default LPT1, you will see an error message, and the preferences window will open, as shown in Figure 2.

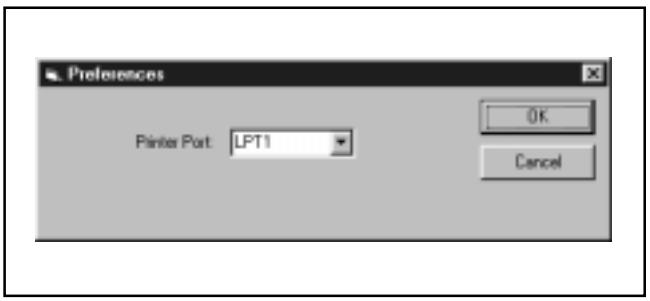

FIGURE 2. Preferences Window.

You will then have an opportunity to change the default parallel-port selection. This would also be a good time to make sure your cables are connected and the power to the evaluation-board setup is turned on.

Once everything is connected properly, select the appropriate parallel port and press the “OK” button in the preferences window. You will return to the splash screen and the program will again attempt to communicate with the DEM-CIB.

When communication is established, the program will see if it is the first time it has ever run. If so, you will be presented with the Configuration window as shown in Figure 3.

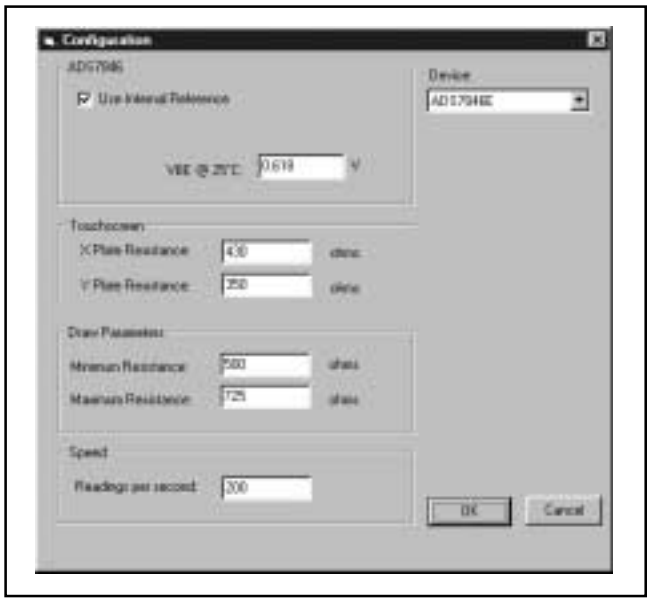

FIGURE 3. Waveform Selections.

This window allows you to set up your evaluation kit as needed for your tests. The defaults are as shown above, and generally work well with the touchscreen that comes with the DEM-ADS7846E. If everything looks OK here, select “OK”, and the window will clear while the main program window opens, as shown in Figure 4. (After the program has been run once, the Configuration window will not open automatically at program launch. However, it can still be accessed from the menu).

FIGURE 4. Main Window.

TOUCH SCREEN WINDOW

At this point, the program will display the main window, which has two tabs, as shown in Figure 4.

The first tab is the Touchscreen tab, where what you draw on the touchscreen will be drawn in the picture space. The X, Y, and Z coordinates of each touch acquired are displayed to the right,along with a “Pressure Meter” which rises as you push harder on the touchscreen.

Light touches on the screen will draw a thin line, while a harder press will drawer a thicker line.

DATA ACQUISITION WINDOW

The second tab of the main window is the Data Acquisition tab, as shown in Figure 5.

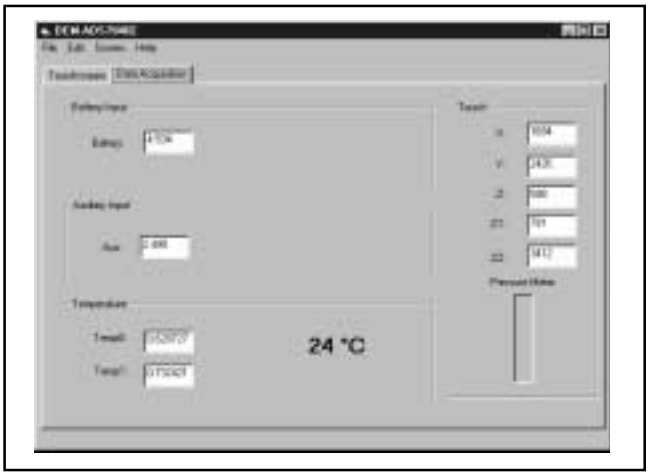

FIGURE 5. Data Aquisition Tab.

In this area, the readings from the battery and auxilary inputs are displayed, along with the temperature reading from the ADS7846's on-board temperature-measurement circuitry. In addition, the touch parameters are also displayed, along with the Z1 and Z2 raw values (refer to the ADS7846 datasheet for more details on these parameters).

USING AN EXTERNAL REFERENCE

The default setting for the ADS7846 is to use the its own internal 2.5V reference. However, you can use an external reference voltage with the ADS7846. To do this, you need to change the configuration of the software by selecting the Edit menu, then Configuration. Uncheck the "Use Internal Reference" box; when you do this, the Configuration window will appear as in Figure 6.

FIGURE 6. Selecting an External Reference.

The DEM-ADS7846E board has provision for three diffferent reference voltages: 1.25V, 2.5V, and the power supply. These are selected by setting the reference jumper as shown in Table I.

REFERENCE VOLTAGE	JUMPER
1.25V	JMP1B
2.5V	JMP1A
Power Supply (shown as +5V on the board silkscreen)	JMP1

TABLE I. Reference Jumper Settings.

Make sure that you enter the same reference voltage into the Reference Voltage box on the configuration screen as the reference voltage you select with the jumper; otherwise, battery and auxiliary input readings will be in error.

USING THE DEM-ADS7846E TO EVALUATE ADS7843 AND ADS7845

The DEM-ADS7846E can be used with the ADS7843 4-wire controller and the ADS7845 5-wire touchscreen controller, since they are pin-compatible devices.

Using an ADS7843 is straightforward; it can be placed in the same socket as the ADS7846 and the connections to the touchscreen are the same.

Using an ADS7845 is similar, as it fits in the same socket. The touchscreen wiper connection must be made to the DEM-ADS7846's IN3/BAT terminal.

In both cases, you need to select the appropriate part in the Configuration window. Select the Edit menu, then Configuration. When you select either the ADS7843 or ADS7845 in the Device combo box, those sections associated with the ADS7846 will gray out, indicating that those functions are disabled, or not needed to use these two parts, as shown in Figure 7.

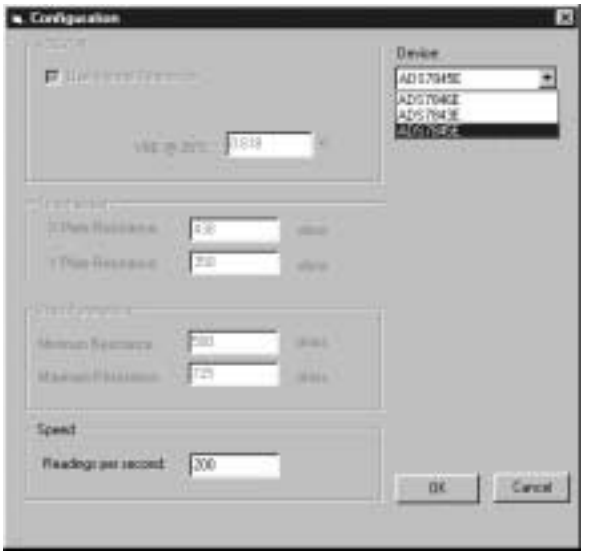

FIGURE 7. Choosing a Part Other Than ADS7846.

SCHEMATIC DIAGRAM

The schematic diagram for the DEM-ADS7846E is shown in Figure 8.

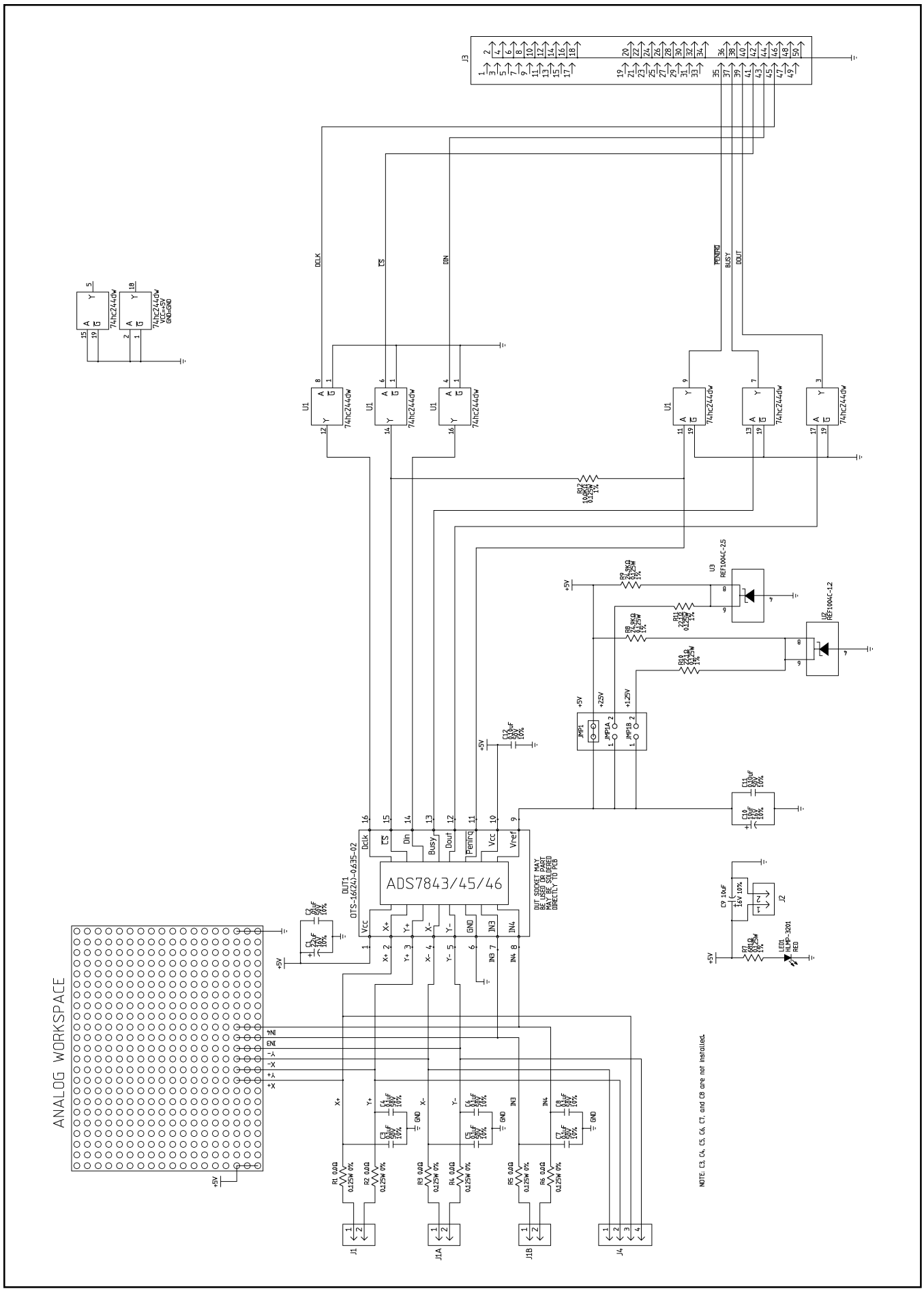

FIGURE 8. DEM-ADS7846E Schematic Diagram.

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