**TMP10xEVM (EVAluation Module)**

**INSTALLATION**
To install the TMP10xEVM, simply unpack it and plug it into a 9-pin RS-232 port. You can connect it to an RS-232 cable, as long as the cable carries the proper conductors. Note that this EVM requires the serial port of the to PC supply signals at the +/-12V level. Some PCs have 3.2V serial ports. The EVM will not work with these PCs.

**WINDOWS SOFTWARE INSTALLATION**
To install the program in the Windows environment locate the file “setup.exe” on the CD. Double click on the executable file and follow the on screen instructions.

**SOFTWARE OPERATION**
The TMP10x evaluation software functions as a simple digital thermometer. Each feature of the TMP10x can be exercised using the program. When the program is run, it scans the system to see what serial ports are available. If it finds at least one, it searches each serial port for a TMP10xEVM, and uses the first one it finds. If the program does not find any TMP10xEVMs, it displays a warning message. At any time, you can perform the scan again by clicking the “Rescan” button. After the board search is complete, the program’s window, shown in Figure 1, will appear.

This screen has several areas of interest:

- Near the top left corner of the window is the area that shows the address of the device and also allows a user to reset the settings to its default state.
- Below that is the area that displays measured temperature. User can toggle between Celsius or Fahrenheit by simply clicking on (Deg C) or (Deg F) above the actual display.
- On the top right half of the window is the window that shows the content of the configuration register. User can change those values by simply typing the appropriate bit values in the appropriate bits and pressing ENTER. If user positions cursor over the label for a certain bit an explanation of that bit function will appear on the bottom of the window.
- User can also (in addition to changing directly configuration register) change the resolution of TMP10x by simply clicking on the appropriate place holder on the right side of the screen.
- On the bottom part of the screen is the display of the Temp Register that holds the results of the temperature measurements. IN the same part of the window user has the ability to choose between
single shot and continuous mode of operation, when the single shot is chosen then Trigger button is highlighted and has to be pressed in order to execute the measurement. Single shot mode is very useful in power constrained applications.

On the bottom of the screen there is a “Show Limit Registers” bar that when pressed will reveal the additional part of the TMP10xEVM window.

User can set the Limit values by typing the values in either register directly or in the boxes that are located right of the registers. It is always desirable that value of T(Low) Register to be lower than T(High) Register.
CIRCUIT DESCRIPTION

The TMP10xEVM is designed to be as simple as possible. It derives power from the RS-232 port to which it is connected, and interfaces the TMP10x’s I2C connection to the RS-232 port using a FET pair and an op-amp.

Only three inputs from the computer are available, but this is enough to control the TMP10x. One pin, DTR, is used to supply power for the board. When at positive voltage, most systems will generate 10V to 12V, which is enough to drive low-dropout regulator U3 through reverse-voltage protection diode D1B. A regulator with extremely low quiescent current was chosen for this.

To control SCL and SDA, the DSR and transmit-data lines are used. Dual MOSFET Q1 is used to translate the high voltage RS-232 levels into the TMP10x’s logic levels. The pull-up resistors R1 and R2 are made relatively large so as to consume minimal current in the logic LOW state; since we communicate with the device slowly, the slow rise times caused by these values are of no concern.

SCHEMATICS
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 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.

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.

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

<table>
<thead>
<tr>
<th>Products</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amplifiers</td>
<td>Audio</td>
</tr>
<tr>
<td>Data Converters</td>
<td>Automotive</td>
</tr>
<tr>
<td>DSP</td>
<td>Broadband</td>
</tr>
<tr>
<td>Interface</td>
<td>Digital Control</td>
</tr>
<tr>
<td>Logic</td>
<td>Military</td>
</tr>
<tr>
<td>Power Mgmt</td>
<td>Optical Networking</td>
</tr>
<tr>
<td>Microcontrollers</td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Telephony</td>
</tr>
<tr>
<td></td>
<td>Video &amp; Imaging</td>
</tr>
<tr>
<td></td>
<td>Wireless</td>
</tr>
</tbody>
</table>

Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265

Copyright © 2003, Texas Instruments Incorporated