

This document provides a brief introduction and instructions to install and run the MachXO Mini Development Kit on Windows 7/Vista/XP and select Linux versions. Please refer to related documentation at [www.latticesemi.com/machxo-mini](http://www.latticesemi.com/machxo-mini).

### 1 Check Kit Contents

The MachXO Mini Development Kit should contain the following items:

- MachXO Mini Evaluation Board pre-loaded with Mini SoC demo
- Two USB connector cables
- QuickSTART Guide

*Note: Detailed information about the evaluation board is provided in the MachXO Mini Development Kit User's Guide at: [www.latticesemi.com/machxo-mini](http://www.latticesemi.com/machxo-mini).*

#### *Storage and Handling Tips:*

Static electricity can shorten the life of electronic components. Please observe these tips to prevent damage that could occur from electro-static discharge:

- Use anti-static precautions such as operating on an anti-static mat and wearing an anti-static wrist-band.
- Store the evaluation board in the pink anti-static packaging foam provided.
- Touch a metal USB housing to equalize voltage potential between you and the board.



### 2 Download Windows Hardware Drivers (Optional)

Before you begin, you will need to obtain the necessary hardware drivers for Windows from the Lattice web site.

*Note: You may skip this step if you have installed ispVM™ System v.18 or later.*

1. Browse to [www.latticesemi.com/machxo-mini](http://www.latticesemi.com/machxo-mini) and locate the hardware device drivers for the RS-232/USB debug interface.
2. Download the ZIP file to your system and unzip it to a location on your PC.

#### *Linux Support:*

The debug interface drivers for the evaluation board are included in Linux kernel 2.4.20 or greater including distributions compatible with the Lattice Diamond® design software (Red Hat Enterprise v.5, v.4, or Novell SUSE Enterprise v.10).

## 3 Connect to the MachXO Mini Evaluation Board

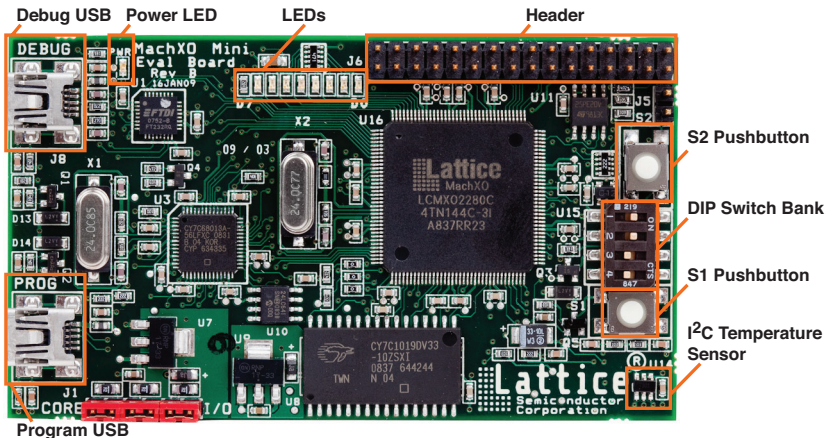
In this step, connect the evaluation board to your PC using the USB cable provided.

1. Connect one USB cable from a USB port on your PC to the board's RS-232/USB Debug socket (DEBUG-J8) on the top-left side of the board as shown in the diagram below. After connection is made, a blue Power LED (PWR) will light up indicating the board is powered on.

*Note: You may skip to QuickSTART Step 4 if you have already installed ispVM System v.18 or later.*

2. If you are prompted "Windows may connect to Windows Update" select **No**, **not this time** from available options and click **Next** to proceed with the installation. Choose the **Install from specific location (Advanced)** option and click **Next**.

MachXO Mini Evaluation Board Layout Diagram



3. Select **Search for the best driver in these locations** and click the **Browse** button to browse to the folder created in Step 2. Select the **CDM 2.04.06 WHQL Certified** folder and click **OK**.
4. Click **Next**. A screen will display as Windows copies the required driver files. Windows will display a message indicating that the installation was successful.
5. Click **Finish** to install the USB driver. A second Found New Hardware screen will appear.
6. Repeat instructions 2-4 to install the USB-to-Serial Port driver.

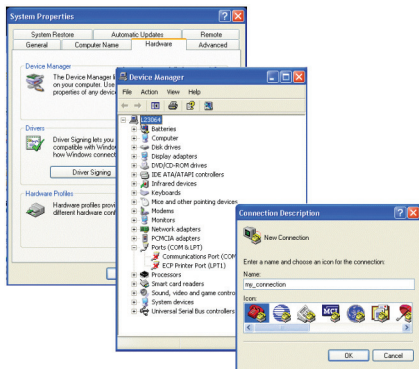
## 4 Set Up a Terminal Program

You will use a terminal program to communicate with the evaluation board. The following instructions describe the Windows HyperTerminal program which is found on most Windows PCs. You may use another terminal program if you wish, although setup will be somewhat different. For Linux, minicom is a good alternative.

*Note: This step uses the procedure for Windows XP users. Steps may vary slightly if using another Windows version.*

1. From the **Start** menu, select **Control Panel > System**. The System Properties dialog appears.
2. Select the **Hardware** tab and click **Device Manager**. The Device Manager dialog appears.
3. Expand the **Ports (COM & LPT)** entry and note the COM port number for the USB Serial Port.
4. From the **Start** menu, select **Programs > Accessories > Communications > HyperTerminal**. The HyperTerminal application and a Connection Description dialog appear.
5. Specify a **Name** and **Icon** for the new connection. Click **OK**. The Connect To dialog appears.
6. Select the COM port identified in Step 3 from the **Connect using: list**. Click **OK**.
7. The COMn Properties dialog appears where n is the COM port selected from the list.
8. Select the following Port Settings and click **OK**.  
 Bits per second: **115200**  
 Data bits: **8**  
 Parity: **None**  
 Stop bits: **1**  
 Flow control: **None**

The HyperTerminal window appears.



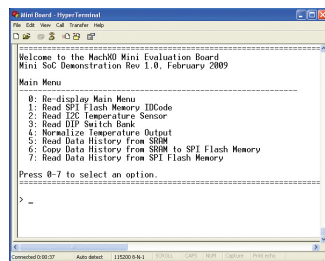
## 5 Run the Mini SoC Demo

These instructions highlight the PC and UART modules of the Mini SoC demo and firmware running on the Lattice-Mico8™ microcontroller. Every transaction is logged to the on-board SRAM through the SRAM controller module.

1. On the Mini board, press the **S1** pushbutton (Reset). The Mini SoC demo main menu appears in HyperTerminal.

*Note: Press 0 to redisplay the main menu if it scrolls off screen. Refer to the MachXO Mini Development Kit User's Guide for all main menu command usage.*

2. In the terminal window, press **4**. The Mini SoC normalizes the meter output for the ambient temperature and lights 4 (D0-D3) of the LED banks (D0-D7).
3. Place your finger on the on-board PC Temperature Sensor (**U14**) for 2-5 seconds. Notice how your skin temperature influences the temperature monitor (1 LED = 0.25°C).
4. From the terminal window, press **2**. The current temperature in degrees Celsius appears and the transaction is logged to the on-board SRAM at the address indicated.
5. Try other demo options by pressing their corresponding numbers in the main menu.



## 6 Done!

Congratulations! You have successfully connected and demonstrated the MachXO Mini Development Kit. Please refer to the MachXO Mini Development Kit User's Guide available on the Lattice web site at [www.latticesemi.com/machxo-mini](http://www.latticesemi.com/machxo-mini) for the following:

- Running advanced demos
- Details on additional evaluation board features and operation
- Modifying and generating the demo bitstreams from the Lattice Diamond project source files
- Schematics
- Gerber PCB layout artwork

## Technical Support

1-800-LATTICE (528-8423)

+1-503-268-8001

[techsupport@latticesemi.com](mailto:techsupport@latticesemi.com)

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