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TESTING THE UML305DEV BOARD

The following sequence of steps will determine that the board is working properly.

Power

Put 4 AA cells into the battery holder, and turn the board on (move the power switch to the left). The red power indicator LED (LED12) should light.

Logic Probe

Cut a length of wire about 6 inches long, and strip about 1/3 inch of insulations from both ends. Insert one end of the wire into the strip socket labeled "PROBE".

Touch the other end of the wire to any of the strip sockets labeled "+5V". The red "HI" probe indicator should light.

Touch the other end of the wire to any of the strip sockets labeled "GND". The green "LO" probe indicator should light.

Status LEDs

Remove the wire from the PROBE position (make sure to pull it straight up, so it doesn't snap off in the socket). Insert one end into one of the +5V positions. Now touch the other ends to each of the LED1 through LED8 positions. The corresponding green LEDs should light up.

LED1

LED5

LED2

LED6

LED3

LED7

LED4

LED8

Output Switches

Insert your test wire back into the PROBE position. Put the other end in the SW1 position. The green "LO" probe LED should light. Press SW1. Now the red "HI" probe LED should light.

Do this test for all eight switches.

SW1—released:green; pressed:red

SW5—off:green, on:red

SW2—released:green; pressed:red

SW6—off:green, on:red

SW3—released:green; pressed:red

SW7—off:green, on:red

SW4—released:green; pressed:red

SW8—off:green, on:red

Serial Line Converter Circuit

You will need to connect the dev board to a PC to do this test.

Connect the dev board to the PC using the DB9-male-to-DB9-female cable. The following instructions assume you are connected to the COM1 serial port. If you are connected to a different port, change accordingly.

Now, load and run the software “HyperTerminal”. This software is included with Microsoft Windows 95, 98, and NT. If running a different version of Windows, you may download a copy for free personal use from <http://www.hilgraeve.com/htpe/>.

(If you are using a Macintosh computer, you may need a USB-to-serial converter and/or adapter cables. Use the software ZTerm instead, available at <http://homepage.mac.com/dalverson/zterm/>.)

(If running Linux, use minicom, available at <http://packages.debian.org/stable/comm/minicom.html>.)

Whichever software package you are using, the procedure is the same:

- Start a connection to the serial port; e.g., “Direct to COM1”.
- Make the port settings 300 baud, 8 data bits, no parity, and no flow control.
- If there is a setting for “local echo,” make sure it is OFF.
- Open the connection.

At this point (when the connection is open) the green LED11 labeled SER-IN on the dev board should turn on. (It may have already turned on once you had plugged the dev board into the PC—that’s OK).

Now, start typing on the PC keyboard. You should see:

- With each keystroke you type, the green SER-IN LED should flash.

Next, on the dev board, *use a wire jumper to connect the socket pins labeled RCV and XMIT.* This will loop the PC’s serial output back to its input, so the PC should receive an echo of whatever it sends out the serial port. *Turn on your dev board.*

Now type on the PC keyboard, and:

- Each key you type should appear on the screen! The characters are actually being sent out the serial port, converted by the MAX232 chip, and then run back into the MAX232, converted back, and routed back to the PC.

serial loopback test—chars echo when jumper attached and board turned on; do not echo when jumper removed.

Piezo Beeper

This test is easy. Connect a jumper wire from the PIEZO pin to one of the pushbutton switches (e.g., SW1). When you press the switch, you should hear a little “click” from the piezo. When you release the switch, it should click again. Note: it’s just a little click, not a strong tone!

piezo beeper—clicks gently when switch is pressed and released.