

Lab #8b
I/O Card Part #4
Output
Rev c 3/27/08

Purpose:

To perform tests of the Output Circuit from lab #8.

Procedure:

- 1) Verify that the address of your card is 170H (as set by the dip switches).
- 2) Insert your board into the test jig and power up the circuit. Observe the current being supplied. If this value is high (above 500mA) or the Current Limited Light is lit **POWER DOWN IMMEDIATELY** and check your wiring paying special attention to power and ground connections. Also verify that your IC's are plugged in correctly (pin one on side A is pin 1 on Side B).
- 3) Set the dip switches on the test jig as follows IOW=HIGH, IOR=HIGH, AEN=LOW, Switch 4 (same dip as IOW/IOR/AEN) = HIGH (Turns on the test jig IO circuit) and the proper FULL address is on the test jig address switches (170H).
- 4) Place a bit pattern on the Output dip switch on the test jig. Toggle IOW LOW then HIGH again (Remember that the 74LS 374 is a RISING EDGE TRIGGER device). Using a logic probe, verify that the pattern on the Output dip switches match the output pins of the 74LS374 on your card using a logic probe. Try at least two patterns (make sure the two patterns test a 0 and 1 for EACH BIT)!
- 5) After the second pattern is tested, toggle the IOW bit again and THEN change the bit pattern on the output dip switches. Verify that the output of your 74LS374 matches the previous pattern of the Dip Switches on the test jig. This verifies that the D latch is not being clocked when the IOW is non-active.
- 6) Record the values used for testing and the results (include them in the report)
- 7) Have the instructor check your work.
- 8) Remove your card from the test jig.
- 9) Write a program that will do the following:
 - a) Output the value of 00h to FFh (loop incrementing by one each time) to port 170H
 - b) Loop back to a)

10) Transfer the compiled program to a floppy disk.

11) Connect the digital analyzer to your circuit as follows:

Channel	Signal
CH00	Not Used
CH01	688 Output
CH02	138 pin Y4
CH03	Not used
CH04	374 D0
CH05	Not used
CH06	374 D1
CH07	Not used
CH08	374 Q1
CH09	374 Q2
CH10	374 Q3
CH11	374 Q4
CH12	374 Q5
CH13	374 Q6
CH14	Not used
CH15	374 Q7

12) Install your card in the 486 computer (make sure the computer is OFF before installing the card).

13) Power up the computer (if the computer does not give you a DOS prompt in an appropriate time period, power down and ask the instructor for help).

14) Execute your program.

15) Adjust the digital analyzer to trigger LOWS on CH08 -> CH15 (not including CH14).

16) Show the digital analyzer output to the instructor and obtain a photo of the digital analyzer output for your report.