

Lab 5-Using a Multimeter

A multimeter is a voltmeter or an ammeter that can also measure resistance in ohms or as continuity (presence of a complete circuit), depending on a switch setting

- Note: always measure voltage and amps with electricity ON
- Measure resistance and continuity with electricity OFF

Autorange meter •Senses quantity of input and sets the range accordingly

Otherwise you must change ranges on the meter to increase the accuracy, and to keep from damaging it. Too much current can blow it up!

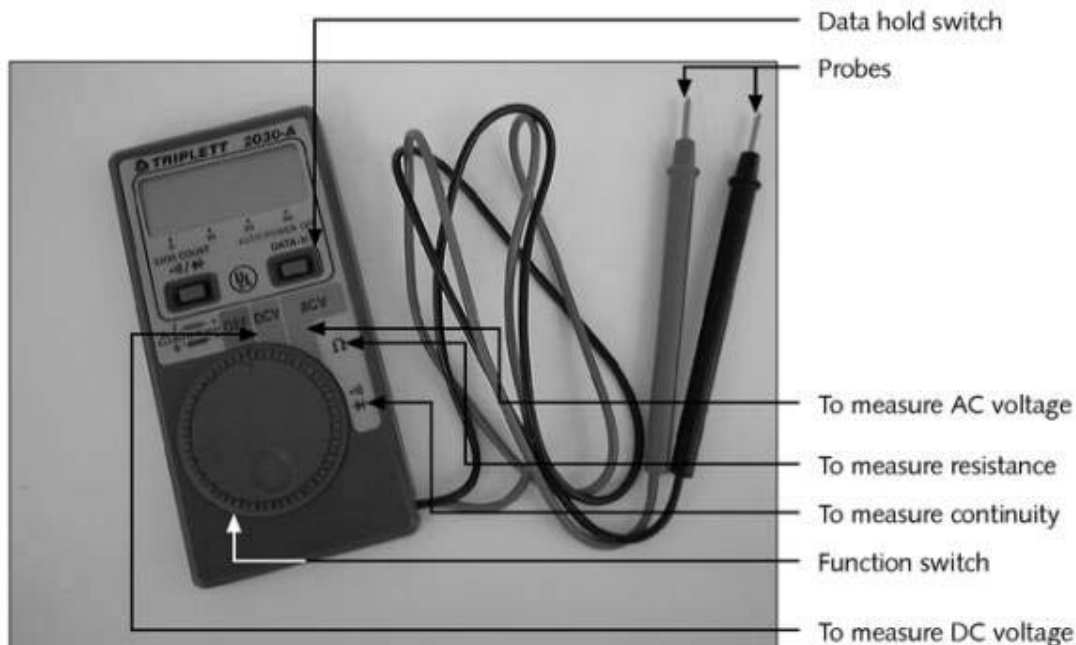


Figure 11-9 A digital multimeter

1. Attach Leads (sometimes attach to different places depending on usage)
2. Turn Meter On
3. Set to right usage: Volts, Ohms (Resistance or Continuity), or Current (amps or milliamps) If you do not have autorange on your meter you must set it manually to the largest value and then work down.!
4. Attach probes to hot leads: plus to plus and minus to minus for DC! Or +Volts to + and – to ground, - Volts to – and + to ground!
5. Take reading.
6. When done turn meter off!

Measuring Voltage Output to an AT System Board

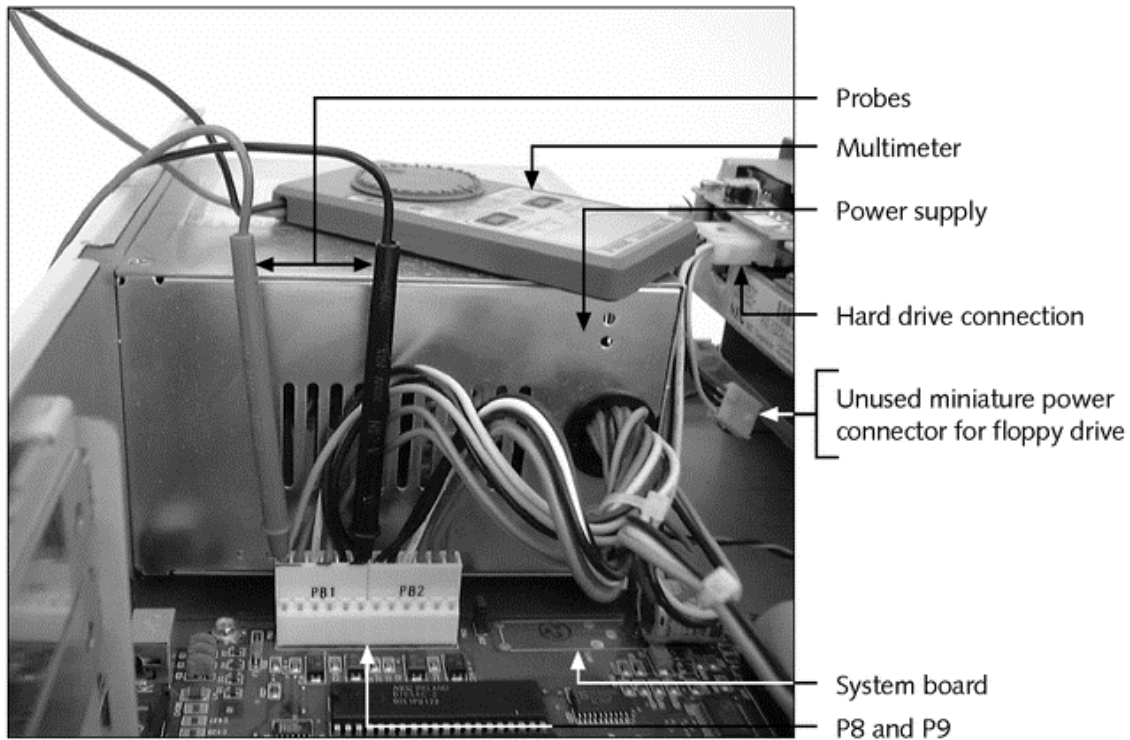


Figure 11-10 Multimeter measuring voltage on an AT system board

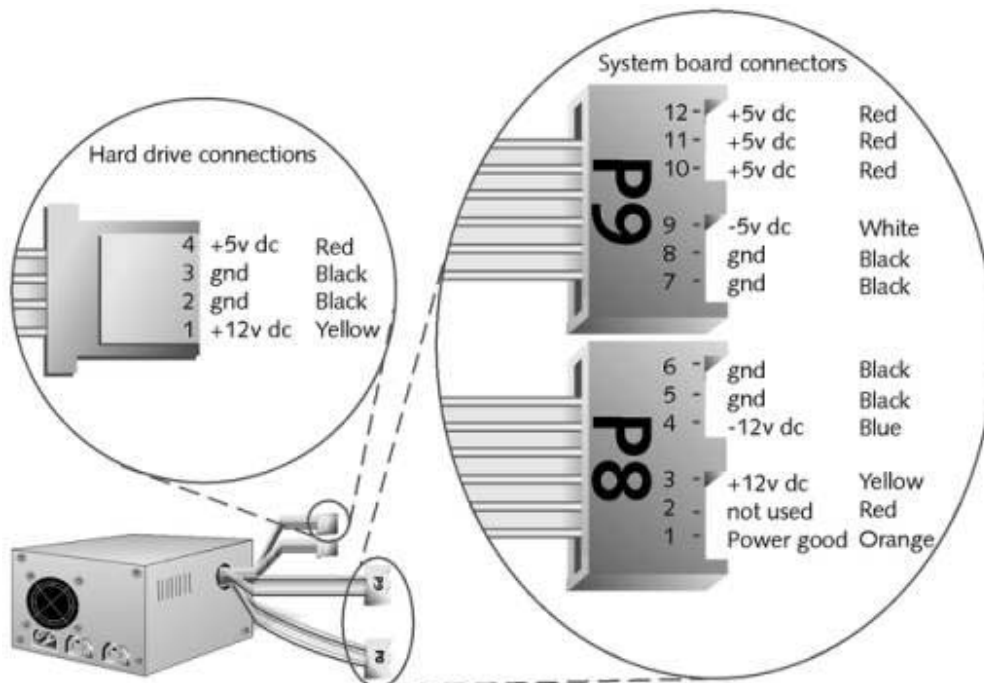


Figure 11-11 AT power supply connections

Measuring Voltage Output to an ATX System Board

Table 11-3 Twenty leads to the ATX system board from the ATX power supply

Unnotched Side			Notched Side		
Lead	Description	Acceptable Range	Lead	Description	Acceptable Range (volts)
1	+12 volts	+10.8 to +13.2	1	+5 volts	+4.5 to +5.5
2	+5 volts standby	+4.5 to +5.5	2	+5 volts	+4.5 to +5.5
3	"Power good"		3	- 5 volts	- 4.5 to - 5.5
4	Black ground		4	Black ground	
5	+5 volts	+4.5 to +5.5	5	Black ground	
6	Black ground		6	Black ground	
7	+5 volts	+4.5 to +5.5	7	Pwr supply on	
8	Black ground		8	Black ground	
9	+3.3 volts	+3.1 to +3.5	9	- 12 volts	- 10.8 to - 13.2
10	+3.3 volts	+3.1 to +3.5	10	+3.3 volts	+3.1 to +3.5

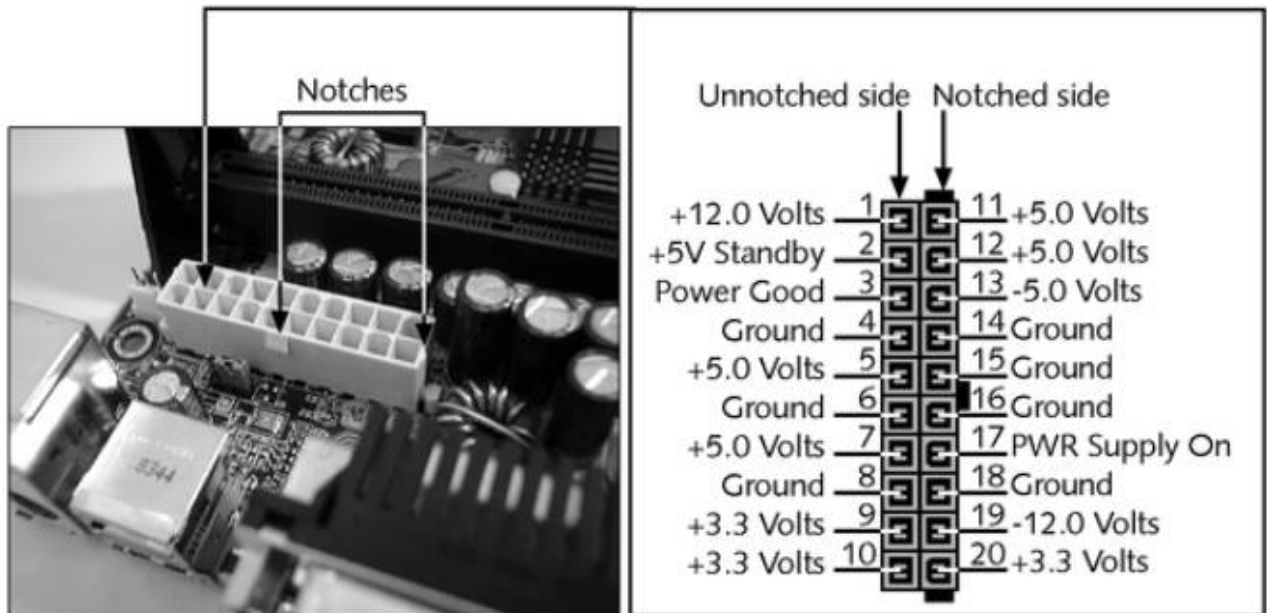


Figure 11-12 Power connection on an ATX system board

1. Try to determine what type of board and power supply connector you have from the above graphics.
2. Set up a table and measure the voltage of each pin in the motherboard connector.
3. Record it in the appropriate table below:
4. Does it match what should be there?

5. Does this indicate a problem with the power supply?
6. Measure the voltage applied to a small (3.5 inch) drive connector
What is it _____
7. Repeat for a 5 inch drive connector.
What is it _____
8. Turn off the meter when you are done and return it to the cabinet.
9. Replace the case on your PC,
10. Test the PC to see if it still works
11. Shut down the PC, turn off the monitor.

ATX Style Motherboard Power Connector

Connector	1	2	3	4	5	6	7	8	9	10
Voltage										
Connector	11	12	13	14	15	16	17	18	19	20
Voltage										

What conclusions can you draw as a result of this lab?
