The Electrical Roadmap

A schematic is an electrical roadmap. It can be a simple diagram, drawing, or sketch that details the elements of an electronic system. It can consist of elements of an electrical or electronic circuit or the elements of a logic diagram for a computer or communications system.

The electronics industry is changing, but...
Schematics were used exclusively until the early 1980s. The rapid advance of electronic design automation and the progress of computer technology brought about new ways of describing electronic circuits. With the explosive growth of the complexity of electronic circuits, traditional schematics are becoming less practical but it is still important that you know how to read them. This handout is designed to give you a fundamental understanding of the rules involving reading and interpreting schematics. You will need to be able to interpret electrical diagrams if you plan a career in engineering or robotics.

1. All wires and components should be arranged vertically or horizontally.
2. All components should have a type or value identified. (see the schematic below).

3. Connected wires are shown by a black dot located at the wires intersection, crossing wires do not have a black dot.

4. No more than two wires connect at a point.

5. Never use a different symbol for the same device. The schematic below show two 50 ohm resistors represented with two different symbols.

6. If two wires cross in a schematic, the proper way to represent that is with a jump. This is shown in the schematic below.
Common Electronic Symbols

- Resistor
- Earth Ground
- Battery
- Diode
- Push Switch (Normally Closed)
- Potentiometer
- Push Switch (Normally Open)
- Capacitor
- Voltmeter
- Motor
- Open Switch
- Lamp
- Fuse
- Ammeter
- Ohmmeter
- Variable Capacitor
- Potentiometer
- PNP Transistor