

Electronic Current Ratings

As an electrical current flows through a conductor, heat is generated. Since heat must be dispersed, many factors must be considered before a safe current rating can be used in a wire and cable construction. Some of these considerations include: the maximum temperature rating of the insulation and jacket, the ambient temperature, the electrical duty cycle, the number of conductors in the cable, the conductor AWG size and the heat transfer characteristics of the system.

The following chart offers data that may be used as a guide for determining the proper conductor size or maximum current to be carried by various conductor configurations. Please note that this information is for copper conductors with an ambient temperature of 25C and a frequency of 60hz. These values are to be used for low power electronic and control applications. Please refer to published information in the National Electric Code, Industry

Standards or UL/CSA publications for guidelines relating to power applications. Also, the user should consider that all insulation temperature ratings are time dependent. Running an insulation at a higher service temperature will result in a shorter life expectancy due to aging conditions. Thus, system design life must also be considered when applying maximum current ratings.

To use the chart shown below, please select any two of the three variables plotted (maximum current, insulation temperature rating or AWG size), and the third is determined. Please note that multiplying factors are listed for different numbers of conductors. For example, a 5 conductor 18 AWG cable, insulated with 105C PVC, can carry 7.2 amps (9 amps x 0.8 factor) per conductor.

