



FIG. 5.14 Schematic diagram of a four-lead thermometer measurement used to reduce error from instrumentation lead resistance. Resistance thermometers usually require a current supply that can be varied over a range of values (typically from 0.1 mA to 1 mA) to minimize self-heating effects and optimize the sensor output as its resistance changes with temperature. For diode thermometers, on the other hand, the current supply is usually a fixed source (typically 10 mA to match the diode calibration current). By using a low-frequency ac-current source, thermoelectric voltage interference can be eliminated.