a. Temperature measurement

There are three basic devices which can be utilized for measuring temperature and sensing changes; the thermistor, the resistor, and the thermocouple. For measuring low temperatures (i.e., temperatures below 700°F) the thermistor should be used, in that it provides a very large resistance change for a relatively small change in temperature. The TSCU signal can therefore be provided directly, with a small power drain, by connecting the thermistor in a voltage divider circuit such as the one shown in Fig. V-9.(a).

The thermistor cannot be reliably used for measuring temperatures in excess of 700°F, which precludes their use for measurement of high RTG temperatures such as the thermoelectric hot junction. High temperatures may be sensed by a platinum resistance sensor. This type of sensor is accurate, repeatable, and reliable if mounted properly and electrically isolated from its environment. The change in the resistance of a platinum resistor due to a temperature change is very small in comparison to a thermistor and, therefore, additional circuitry may be required in order to obtain a desired TSCU output voltage while maintaining power drain at a minimum. The resistance change, for example, could be converted to a proportional voltage change by a lower power bridge circuit which would then be amplified by an operational amplifier if a high TSCU voltage output is desired. Such a circuit is sketched in Fig. V-9 (b).

The bias voltages for the previously mentioned voltage dividers, amplifiers, etc. will be supplied by the rectified outputs of a low