TERMS USED - THEIR EXPLANATION

Type • Internal HTR reference for a certain component, to be used along with series for ordering.

Series • Collection of types with identical constructional features and technical data.

Physical configuration • Physical style / appearance and dimensions of the component.

Power rating • Electrical power, defined by current and voltage, a resistor can bear continuously at a given ambient temperature - Normally at 25°C or 70°C.

Resistance tolerance • The allowable deviation from nominal resistance value at the moment the component is received. Possible resistance changes due to electrical, climatic or mechanical stress are not included in this.

Temperature characteristic of resistance (temperature co-efficient) • Indicates the change in resistance value, which is largely determined by materials and styles, for every degree change in ambient temperature. This change is usually expressed in parts per million per degree Celsius. [ppm/ °C]
Note : This change in resistance value is reversible.

Voltage rating (maximum continuous working voltage) • Limit for the voltage that may be continuously applied to a resistor. It may not be exceeded, even if other limitations such as rated power are not reached. In case a specific voltage value is not given then the general equation $E = \sqrt{P \times R}$ will apply

where E= Rated DC or rms continuous working voltage.
P= Power rating in watts.
R= Nominal resistance in ohms.

Note : When the nominal resistance value exceeds the critical resistance value, the voltage rating is limited to the voltage given in the catalog.

Critical value of resistance • For a given voltage rating / limiting element voltage and a given power rating in watts, there is only one value of resistance that will dissipate full rated power at rated voltage. This value of resistance is commonly referred to as the "Critical value of resistance". For values of resistance below the critical value, the maximum (element) voltage is never reached and for values of resistance above critical value, the power dissipated becomes lower than rated. Figure I as given below illustrates this relationship.

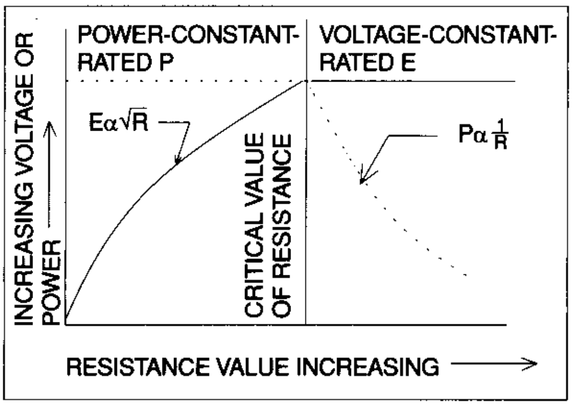

Figure I : Maximum working voltage and critical value of resistance

Voltage proof or dielectric withstanding voltage This test demonstrates the ability of the dielectric or the insulation of the resistor to withstand a prescribed voltage when it is applied between the body and both terminals tied together.

Insulation resistance • The DC resistance measured between both terminals tied together and the body of the resistor on being given a prescribed voltage, normally 100V or 500V depending on type.

Short time overload • This test checks the deviation/change in resistance, usually irreversible, which occurs when a resistor is subjected to a prescribed overload voltage for 5 seconds.

Climatic category • It establishes the lowest and highest temperature as well as the duration of humidity testing. This category temperature and duration varies from standard to standard and from one type of resistor to another.

Moisture resistance or damp heat, steady state • This test specifies the permissible irreversible resistance change after defined climatic stress. The test procedures for administering the defined climatic stress are given in different standards such as MIL, IEC and JSS.

Load life or life (electrical) • The relative irreversible resistance change after a specific testing time. Normally it is related to administering rated power, 70°C ambient temperature and 1000 hour test duration.

Ambient operating temperature range • The minimum and maximum ambient temperatures between which the component may be used.

Hot spot temperature • The maximum temperature measured on the body of a resistor due to both internal heating and the ambient operating temperature. This hot spot temperature is determined by the thermal limits of the materials used and the design.
Hot spot temperature is also defined as the temperature on the derating curve at which the resistor is derated to zero power.

Derating curve /rated ambient temperature • The power rating of a resistor is based on a certain temperature rise from an ambient temperature of a certain value. If the ambient temperature is greater than this value the amount of heat that the resistor can dissipate is correspondingly reduced and therefore it must be derated because of temperature. The extent to which the resistor should be derated in relation to ambient temperature is illustrated in the respective "Derating Curve" charts.

Non inductive resistors • All resistors have capacitance and Inductance as well as pure resistance and these factors can become significant at high frequencies.

For wire wound resistors inductive effects are predominant in low value resistors [below 1K0] and capacitive effects become predominant in higher resistance values.

At HTR specialized winding techniques are used in the manufacture of our low inductance resistors, so that these effects are reduced considerably. Also with the introduction of ceramic encased resistors with alloy ribbon elements, the problem of inductance due to winding has been nearly eliminated.

Standards • These are written documents of norms, standard specifications and test methods which are nationally or internationally known for a given series of components. For fixed wire wound resistors the following standards normally apply, depending on type and construction.

India - JSS 50402
USA - MIL - R26
EEC - IEC - Pub 266
Japan - JIS - C6401

HTA Series of HTR resistors is approved as per JSS50402, certificate no. 2886 dated 1.2.96.