

TECHNICAL STATEMENT

CLEARANCE AROUND THE RFK/S Rev.03

RFK/S is a power resistor made of wire wound mica inside a hermetic aluminum case filled with quartzite sand and insulated with mica sheets.

The rated power dissipation of the RFK/S written in the technical documentation (i.e., datasheet, drawing) is due to natural convection.

Inside a cabinet the natural convection may work properly under certain conditions:

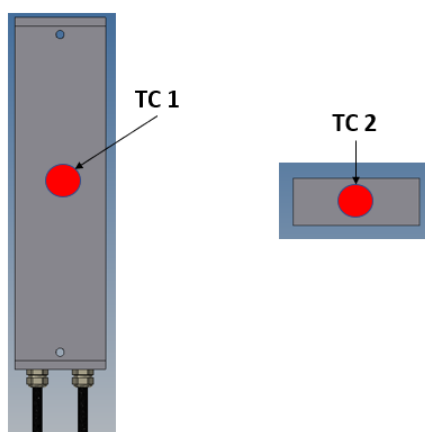
1. Sufficient free space around the resistor in all directions: the unit must have enough space underneath to take fresh air from the bottom, and enough space above to let the hot air flow away. On the sides too it is important to have enough clearance to assure that the resistor dissipation is not influenced by other generating-heat devices.
2. Continuous exchange of exhausted air: the heat produced by Joule effect on the resistor must be compensated with fresh air.

As a general rule we suggest the designers to keep **at least 150 mm** clearance on all directions. This distance may be reduced depending on the installation condition.

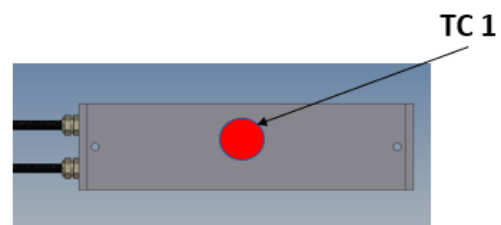
In case the customer needs to reduce this distance, it is mandatory to carry out a test in the real installation condition to check the temperature on the case.

The recommended surface temperature measurement points are:

Vertical Mounting



Horizontal Mounting



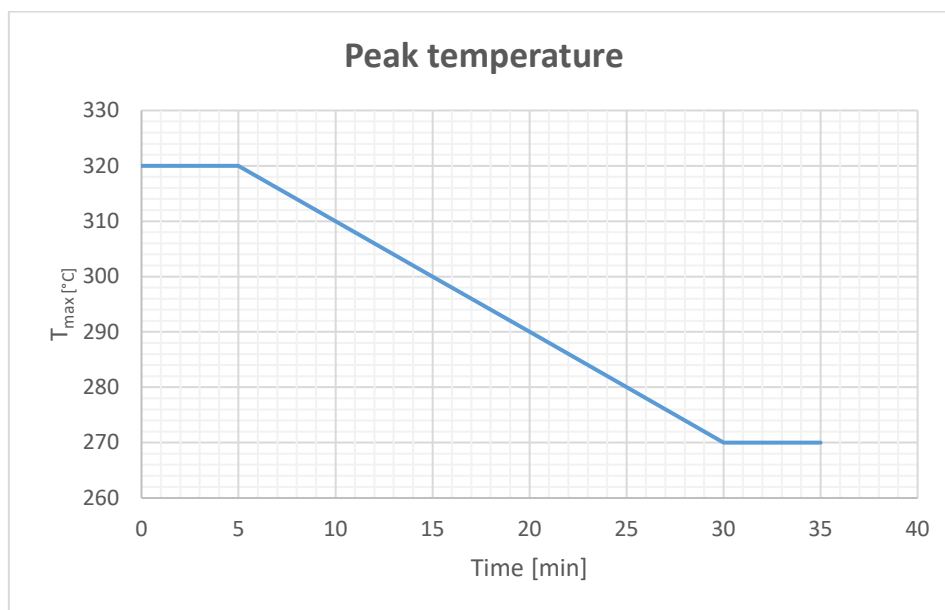
For the vertical mounting it is recommended to weld two thermocouples: one in the centre of the housing and the other in the centre of the plug. A thermocouple in the centre of the housing is sufficient for horizontal mounting.

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The installation condition may be deemed compliant for the use of RFK/S when the surface absolute temperature is lower than 270 °C. (*Surface temperature means the temperature of the aluminum case in the hot spot point, that is normally the center of the case - TC1 in the picture*).

The resistor can withstand a temperature beyond 270 °C for short time, see graph 1 for the relation between time and temperature.



Grap. 1-Peak Temperature in function of the time

T_{max}= Maximum temperature of the housing.

This graph must be read in this way: the resistor can withstand a maximum temperature of 320 °C for 5 minutes; 310 °C for 10 min; 300 for 15 min and 270 °C is the maximum temperature of the housing in case of thermal steady state (24 x7).

These data refer to the room temperature of 20 °C.

After a period of temperature beyond 270 °C (i.e. 5 minutes at 320 °C), it is mandatory to cool down the resistor to 270 °C for minimum 60 minutes.

Rev.	Date	Revision cause
00	16/09/2022	First issue
01	21/10/2022	Added information for customer
02	16/12/2022	Added illustration for the thermocouple position
03	09/02/2023	Added graph peak temperature