

公司名稱 Company Name	TOP -QUALITY ELECTRIC CO; LTD.
品名 Product Name	電力型可變電阻規格書 Variable Power Wire Wound Resistors

1 Applicable Scope :

This standard specification is for use on heavy electric machines and production machines,

2 Part Number

It is composed by Type, Rated Wattage, Nominal Resistance and Tolerance. e.g.

VR 25W 2Ω K
Type RatedWattage Nominal Resistance Tolerance

2.1 Type:

VR Rheostats Power Wire Wound Resustirs are called "VR".

2.2 Rated Wattage:

Shown by "W", such as 25W, 50W, 100W,200W,300W,500W

2.3 Nominal Resistance:

Ω,KΩ are its unit, which be in accordance with IEC publication 63 E24 (series).

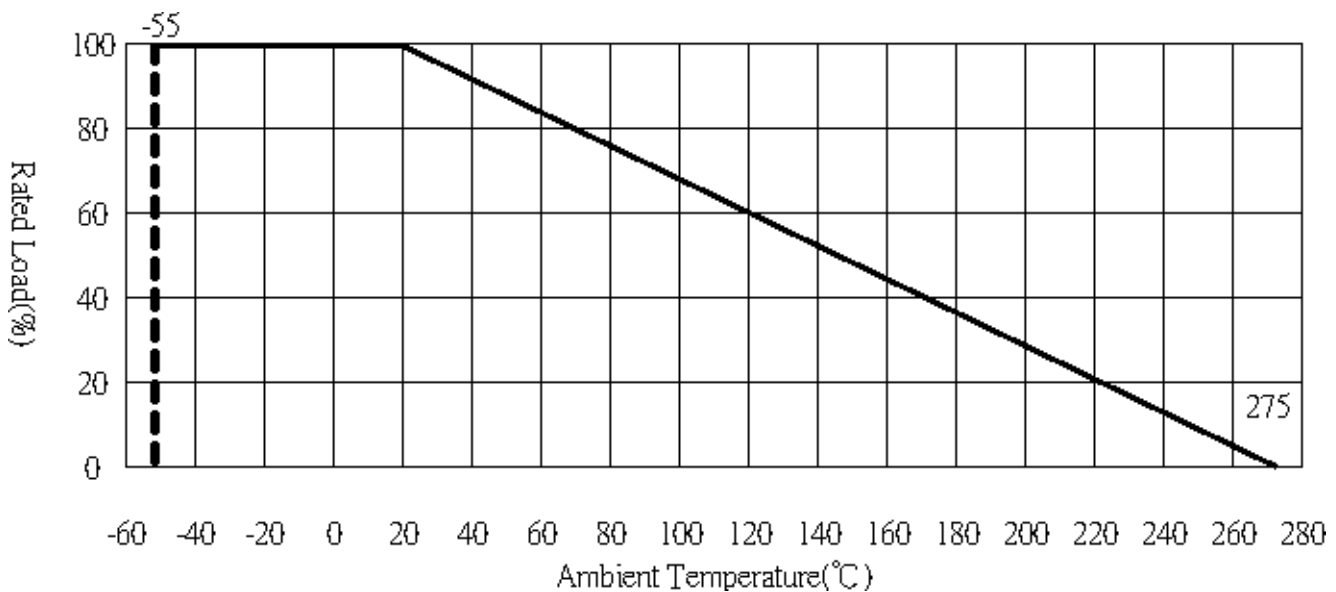
2.4 Tolerance:

It is measured by Bridge-method at room temperature and expressed by a capital letter.

K= ±10%

3 Rated Power:

Rated power is the value of Max load voltage specified at the ambient temperature of 20°C, and shall meet the functions of electrical and mechanical performance. When the ambient temperature surpasses above mentioned temperature, the value declines as per following DERATING CURVE.



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3.1 Rated Voltage:

It is calculated through the following formula:

$$E = \sqrt{P \times R}$$

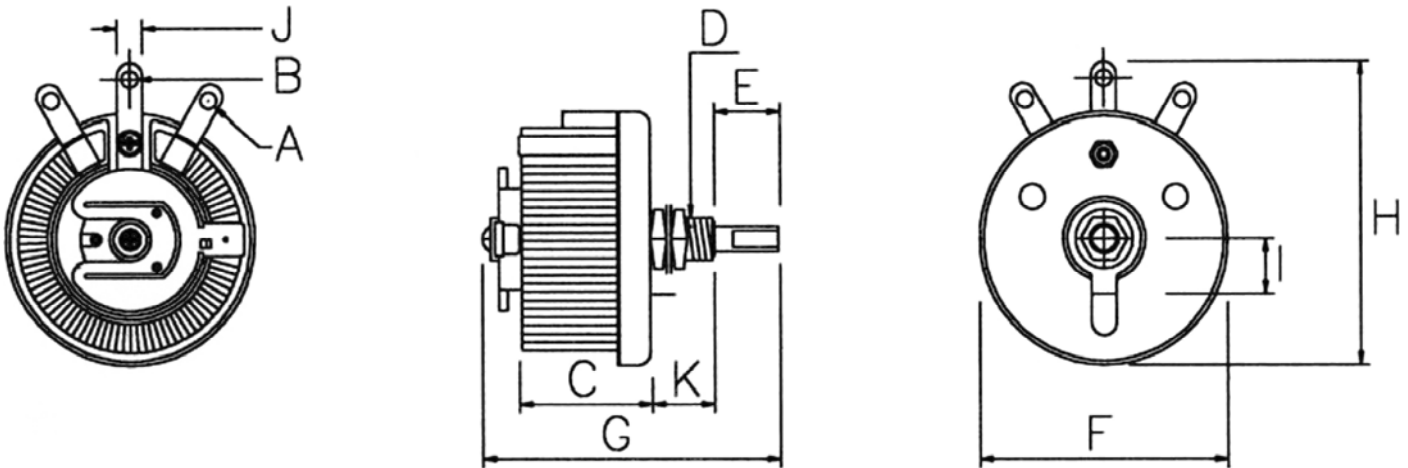
Where E: rated voltage (V)
P: rated power(W)
R:total nominal resistance (Ω)

However, in case the voltage calculated exceeds the maximum load voltage, such the maximum load voltage shall be regarded as its rated voltage, means whichever less.

4 Dimension and structure:

4.1 Dimension

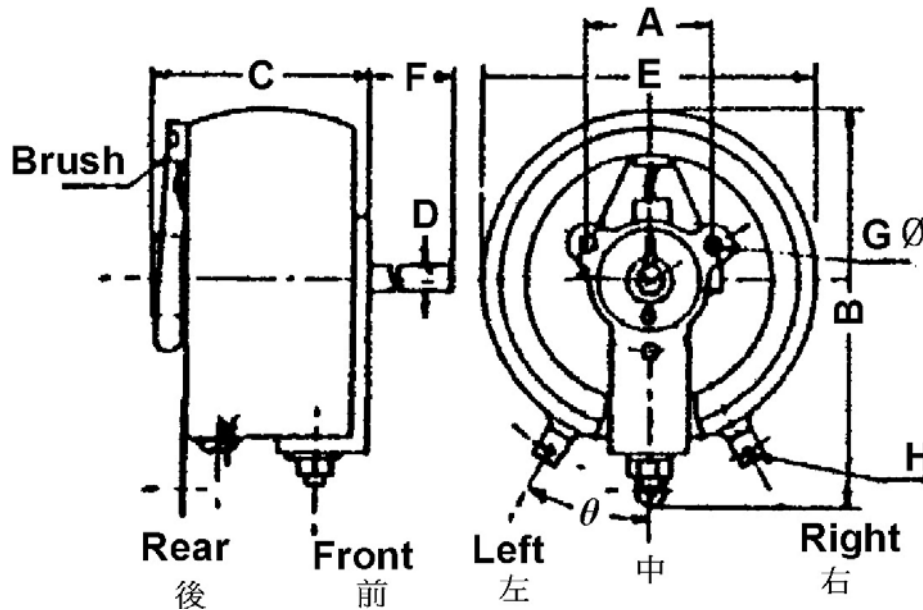
4.1.1 F Type (25W, 50W,100W) Silicastats:



POWER	DIMENSIONS (m/m)												RESISTANCE
RATING	A	B	C	D	E	F	G	H	I	J	K	Weight	RANGE (Ω)
25W	2.5	3.2	22	3/8"	6x12	42	50	50	11	5	10	74/g	5 Ω -2.5K Ω
50W	4.2	4.2	28	3/8"	6x12	64	60	70	11	8	14	160/g	5 Ω -2.5K Ω
100W	4.2	4.2	42	3/8"	6x12	85	75	90	11	8	14	372/g	5 Ω -2.5K Ω

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4.1.2 H Type (100W, 200W,300W) Silicastats:



POWER	DIMENSIONS (m/m)									RESISTANCE
RATING	A±1	B±1	C±1	D±0.3	E±1	F±1	G±0.1	H±0.1	θ	RANGE (Ω)
100w	31	98	53	6	84	51	4	4	30°	25 Ω -7.5K Ω
200w	31	119	68	8	105	60	4	4	30°	30 Ω -10K Ω
300W	31	119	93	8	105	60	4	4	30°	25 Ω -500 Ω
500W	52	173	105	12	155	55	6	6	30°	25 Ω -1K Ω

⊗ High resistance values are supplied flameproof coating while lower values you can select coating types.

4.2 STRUCTURE

4.2.1 Coating:

Coating is done by green flameproof enamel powder (resistant to 800°C) or Silicon Resin which is solid enough to be free from looseness, crack and easy breakage.

4.2.2 Marking:

Marking is made on resistors surface with Type of Resistors, Rated Wattage, Nominal Resistance, Tolerance and Maker's trade mark (MQEC).

5 Operating Temperature Range: Below 280°C

6 Mechanical Performance

6.1 Temperature tensile:

To fix the resistor body, a static load of 4kgs is to be gradually applied into the terminal for 10 seconds without causing any looseness and fall.

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7 Electrical Performance

7.1 Resistance Temperature Coefficient:

It shall be within : $\pm 350\text{ppm}/^\circ\text{C}$

$$T.C(\text{ppm}/^\circ\text{C}) = \left[\frac{R2 - R1}{R1} \right] \times \left[\frac{1}{T2 - T1} \right] \times 10^6$$

Where

R1 : resistance value at reference temperature

R2 : resistance value at test temp.

T1 : reference temp.(usu.25°C)

T2 : test temp.(about 75°C)

7.2 Short Time Over Load:

When the resistors are applied 10 times as much as rated wattage for 5 seconds continuously, it shows no evidence of arc, flame...etc. Removing the voltage and place the resistors to the normal condition for 30 minutes, the resistance value change rate between pre-and-post test shall be within $\pm 2\%$

7.3 Insulation Character:

Resistors are located in a V-shaped metal trough. Using the DC 500V megger instrument 2 poles to clutch either side of terminals and metal trough, measuring the Insulation Resistance which shall be over 1000M Ω .

7.4 Voltage Withstanding:

Resistors are located in a V-shaped metal trough. Applying AC1500V for one minute (F type applying AC1000V for one minute) and should find no physical damage to the resistors, such as arc, char...etc.

7.5 Moisture-proof Load Life:

The resistors arrayed are placed into a constant temp. /humidity oven at the temp, of $40\pm 2^\circ\text{C}$ and the humidity of 90~95%, then DC rated power is applied for 1.5 hours and cut off for 0.5 hour. The similar cycle will be repeated for 1000_{-0}^{+48} hours in total (including cut-off time). Then remove the voltage, taking the resistors out of the oven and leaving them at room temp, for one hour. The resistance value change rate between pre-and-post test shall be within $\pm 3\%$. There also shall be no evidence of remarkable change on appearance, and the marking shall not be illegible.

7.6 Load Life:

The resistors arrayed are sent into the 70°C oven, applying rated voltage at the cycle of 1.5 hours ON, 0.5 hour OFF for 1000_{-0}^{+48} hours in total. Then, after removing the voltage, take the resistors out of the oven and left under normal temp, for one hour cooling. The resistance value change rate between pre-and-post test shall be within $\pm 3\%$.

7.7 Solder-ability:

Immerse the resistors in the solder pot at $235\pm 5^\circ\text{C}$ for 2 seconds. At least 95% solder coverage on the termination.