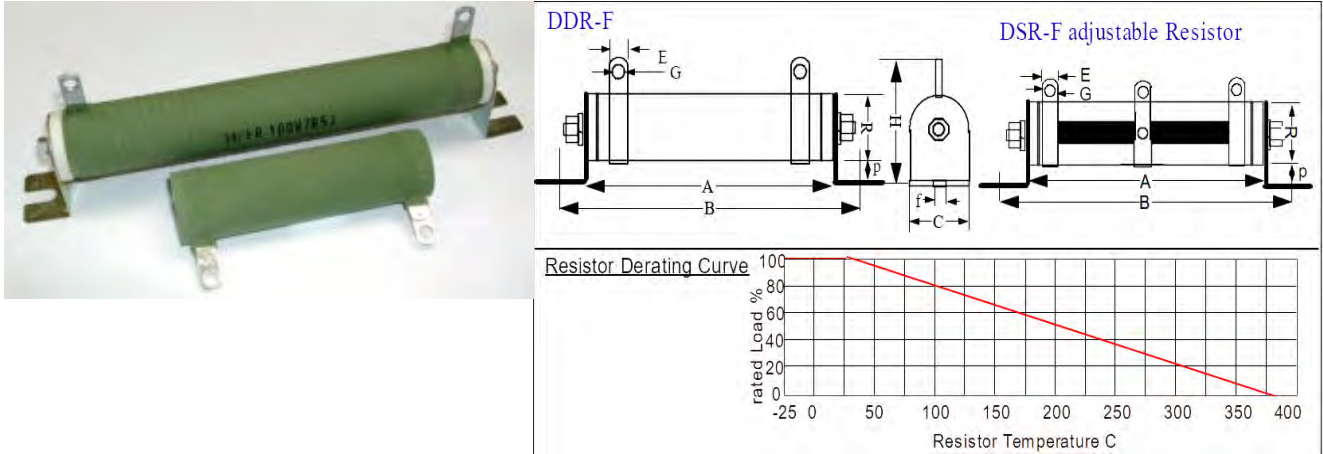


Silicon Coated Wire Wound Power Resistors with mounting fixture – DDR DNR DSR DDVR series

- These resistors are suitable as loading resistor, braking resistor, capacitor discharge, resistive load simulation, machinery and equipment higher power application.
- Suitable for Continuous Load and Short Time Over Load application
- Mounting fixture is available
- **DSR-F** series resistance adjustable with a movable ring terminal
- **DNR-F** series for Low Inductance WireWound Resistors.
- Support high current requirement
- Support precision resistance Tolerance requirement
- Support Vitreous Enamel coating for harsh environment applications.



DDR-F / DNR-F / DSR-F type – High Power Wire Wound Resistors

| Dimension in mm : | R | A | B | C | H | p | E | G | f |
|--------------------|-----------|------------|------------|-----|-----|----|----|-----|-----|
| Tolerance : +/- mm | 1 | 5 | 5 | 1 | 3 | 3 | 1 | 1 | 1 |
| 15W | 15 | 45 | 66 | 15 | 40 | 13 | 6 | 3.5 | 4.5 |
| 20W | 15 | 50 | 71 | 15 | 40 | 13 | 6 | 3.5 | 4.5 |
| 25W | 20 | 50 | 80 | 20 | 50 | 15 | 6 | 3.5 | 5 |
| 30W | 20 | 70 | 100 | 20 | 50 | 15 | 6 | 3.5 | 5 |
| 40W | 20 | 87 | 115 | 20 | 50 | 15 | 6 | 3.5 | 5 |
| 50W | 28 | 90 | 122 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 80W | 28 | 90 | 122 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 100W | 28 | 170 | 202 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 150W | 28 | 215 | 247 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 200W | 28 | 267 | 299 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 250W | 28 | 267 | 299 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 300W | 40 | 267 | 305 | 40 | 90 | 20 | 10 | 4.5 | 6 |
| 400W | 40 | 330 | 367 | 40 | 90 | 20 | 10 | 4.5 | 6 |
| 500W | 50 | 330 | 370 | 50 | 98 | 20 | 10 | 6 | 8 |
| 600W | 50 / 60 | 330 | 370 | 50 | 98 | 20 | 10 | 6 | 8 |
| 700W | 50 | 400 | 440 | 50 | 95 | 20 | 10 | 6 | 8 |
| 800W | 70 | 300 | 331 | 70 | 135 | 30 | 15 | 8 | 8 |
| 1000W | 70 | 300 | 331 | 70 | 135 | 30 | 15 | 8 | 8 |
| 1500W | 70 | 415 | 446 | 70 | 135 | 30 | 15 | 8 | 8 |
| 2000W | 70 | 510 | 541 | 70 | 135 | 30 | 15 | 8 | 8 |
| 2500W | 70 | 600 | 631 | 70 | 135 | 30 | 15 | 8 | 8 |
| 3000W | 70 | 600 | 631 | 70 | 135 | 30 | 15 | 8 | 8 |
| 4000W | 100 | 430 | 468 | 100 | 185 | 35 | 15 | 8 | 8 |
| 5000W | 100 | 500 | 538 | 100 | 185 | 35 | 15 | 8 | 8 |
| 6000W | 100 | 600 | 638 | 100 | 185 | 35 | 15 | 8 | 8 |
| 10,000W | 100 / 150 | 1000 / 600 | 1040 / 640 | 152 | 260 | 43 | 30 | 8 | 10 |
| 12,000W | 150 | 660 | 700 | 152 | 260 | 43 | 30 | 8 | 10 |
| 15,000W | 150 | 660 / 750 | 700 / 850 | 152 | 260 | 43 | 30 | 8 | 10 |
| 20,000W | 150 | 1000 | 1040 | 152 | 260 | 43 | 30 | 8 | 10 |

Electrical Characteristics :

| Testings | Testing Conditions | Testing Results |
|------------------------------|--|---|
| Resistance Tolerance | JIS-C-5202 5-1 testing voltage<3V 25C | Standard +/-5% |
| Temperature Coefficient | JIS-C-5202 5-2 | +/- 200 - 400ppm/C max. |
| Rated Load | JIS-C-5202 5-4 40C at rated voltage 1hour | $\Delta R \leq \pm(1\% + 0.1\text{ohm})$ surface temperature $\leq 400\text{C}$ |
| Insulation Resistance | JIS-C-5202 5-6 500Vdc | 100M ohm min. |
| Dielectric Withstand voltage | JIS-C-5202 5-7 1000Vdc 1min. between Terminal and body | $\Delta R \leq \pm(0.1\% + 0.05\text{ohm})$ |
| Short Time Overload | JIS-C-5202 5-5 DDR/DSR/DNR : 5*rated power in 5 sec DDVR : 5*rated power in 10 sec | $\Delta R \leq \pm(2\%R_o + 0.1\text{ohm})$ |
| Flammability | 1 - 6 times rated power 5min. | without combustion |
| Load Life | JIS-C-5202 7-10 90min.-ON 30min.-OFF 500hours | Free of appearance or structural irregularity, Surface coating crack $\Delta R/R \leq \pm(5\% + 0.1\text{ohm})$ |

Part Number :

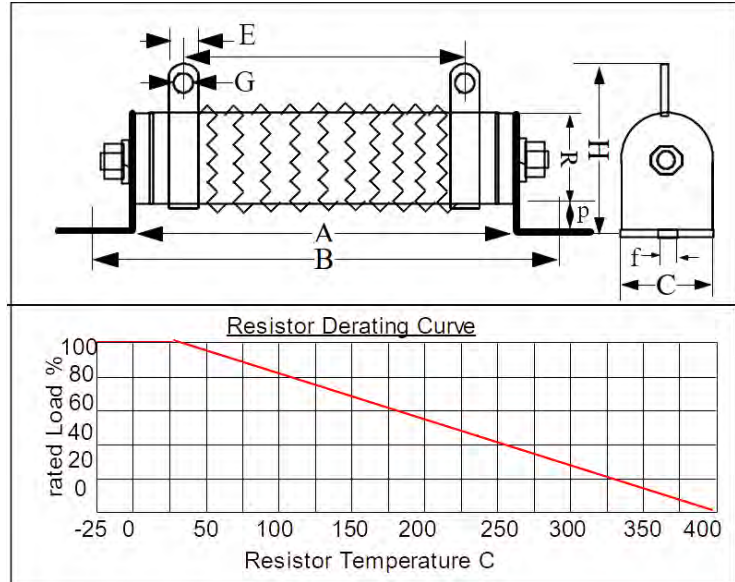
Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number + Multi-Terminals (DDR & DNR)

| | | | | | |
|-----|--------------|----------------|------------|----------------------|-------------------|
| DDR | 15 – 20,000W | 0.1 ohm = R1 | B= +/-0.1% | F : mounting fixture | 2 Terminals : NA |
| DSR | 15 – 20,000W | 1 ohm = 1R | D= +/-0.5% | W : with handwheel | 3 Terminals : 3MT |
| DNR | | 15 ohm = 15R | F = +/-1% | | 4 Terminals : 4MT |
| | | 150 ohm = 150R | G = +/-2% | | |
| | | 1k ohm = 1kR | H= +/-3% | | |
| | | | J = +/-5% | | |
| | | | K= +/-10% | | |
| | | | M= +/-20% | | |
| | | | R= -0/+5% | | |
| | | | T= -0/+10% | | |

Silicon Coated Waved Ribbon Wire-Wound Power Resistors - DQR series

Also known as Corrugated Ribbon Power Resistors

- These resistors are suitable as resistive load simulation, electric power distribution, power / industrial machinery, instrument and equipment higher power application; automation control, particularly useful where high energy is to be dissipated in the lower ohmic ranges.
- Good for Continuous load and Short Time Over Load application
- Higher current and better heat convection
- **DQS-F** series resistance adjustable with a movable ring terminal
- **DQN-F** series for Low Inductance Waved Ribbon WireWound Resistors.
- Support high current requirement
- Support Precision Resistance Tolerance requirement
- Support Vitreous Enamel coating for harsh environment applications.



DQR-F type - Waved Ribbon Wire Wound Resistors

| Dimension in mm : | R | A | B | C | H | p | E | G | f |
|--------------------|-----------|------------|------------|-----|-----|----|----|-----|----|
| Tolerance : +/- mm | 1 | 5 | 5 | 1 | 3 | 3 | 1 | 1 | 1 |
| 30W | 20 | 70 | 100 | 20 | 50 | 15 | 6 | 3.5 | 5 |
| 40W | 20 | 87 | 115 | 20 | 50 | 15 | 6 | 3.5 | 5 |
| 50W | 28 | 90 | 122 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 80W | 28 | 90 | 122 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 100W | 28 | 170 | 202 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 150W | 28 | 215 | 247 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 200W | 28 | 267 | 300 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 250W | 28 | 267 | 300 | 28 | 68 | 20 | 9 | 4.5 | 6 |
| 300W | 40 | 267 | 305 | 40 | 90 | 20 | 10 | 4.5 | 6 |
| 400W | 40 | 330 | 367 | 40 | 90 | 20 | 10 | 4.5 | 6 |
| 500W | 50 | 330 | 370 | 50 | 98 | 20 | 10 | 6 | 8 |
| 600W | 50 / 60 | 330 | 370 | 50 | 98 | 20 | 10 | 6 | 8 |
| 700W | 50 | 400 | 440 | 50 | 95 | 20 | 10 | 6 | 8 |
| 800W | 70 | 300 | 331 | 70 | 135 | 30 | 15 | 8 | 8 |
| 1000W | 70 | 300 | 331 | 70 | 135 | 30 | 15 | 8 | 8 |
| 1500W | 70 | 415 | 446 | 70 | 135 | 30 | 15 | 8 | 8 |
| 2000W | 70 | 510 | 541 | 70 | 135 | 30 | 15 | 8 | 8 |
| 2500W | 70 | 600 | 631 | 70 | 135 | 30 | 15 | 8 | 8 |
| 3000W | 70 | 600 | 631 | 70 | 135 | 30 | 15 | 8 | 8 |
| 4000W | 100 | 430 | 468 | 100 | 185 | 35 | 15 | 8 | 8 |
| 5000W | 100 | 500 | 538 | 100 | 185 | 35 | 15 | 8 | 8 |
| 6000W | 100 | 600 | 638 | 100 | 185 | 35 | 15 | 8 | 8 |
| 10,000W | 100 / 150 | 1000 / 600 | 1040 / 640 | 152 | 260 | 43 | 30 | 8 | 10 |
| 12,000W | 150 | 660 | 700 | 152 | 260 | 43 | 30 | 8 | 10 |
| 15,000W | 150 | 660 / 750 | 700 / 850 | 152 | 260 | 43 | 30 | 8 | 10 |
| 20,000W | 150 | 1000 | 1040 | 152 | 260 | 43 | 30 | 8 | 10 |

Electrical Characteristics :

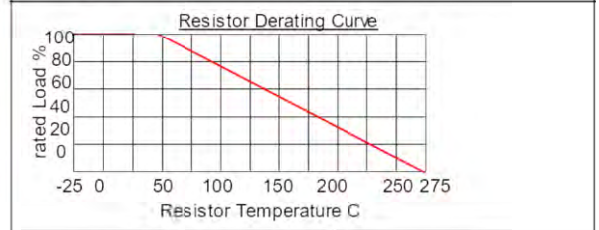
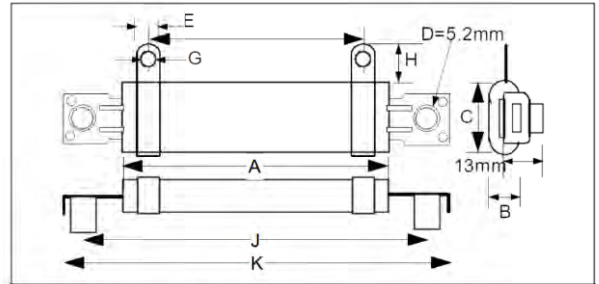
| Testing | Testing Conditions | Testing Results |
|------------------------------|--|---|
| Resistance Tolerance | JIS-C-5202 5-1 testing voltage<3V 25C | +/-5% |
| Temperature Coefficient | JIS-C-5202 5-2 | +/- 200 - 350ppm/C max. |
| Rated Load | JIS-C-5202 5-4 40C at rated voltage 1hour | $\Delta R \leq \pm(1\% + 0.1\text{ohm})$ surface temperature < 400C |
| Insulation Resistance | JIS-C-5202 5-6 500Vdc | 100M ohm min. |
| Dielectric Withstand voltage | JIS-C-5202 5-7 1000Vdc 1min. | $\Delta R \leq \pm(0.1\% + 0.05\text{ohm})$ |
| Short Time Overload | JIS-C-5202 5-5 DQR/DQN : 5*rated power in 5 sec DDVR : 5*rated power in 10 sec | $\Delta R \leq \pm(2\%R_o + 0.1\text{ohm})$ |
| Flammability | 1 - 6 times rated power 5min. | without combustion |

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number
DQR 30 - 20000W 0.1 ohm = R1 F = +/-1% / G = +/-2% F : mounting fixture
DQN 30 - 20000W 1 ohm = 1R H= +/-3%
DQS 15 ohm = 15R J = +/-5%
150 ohm = 150R K= +/-10%
1000 ohm = 1kR R= -0/+5%
T= -0/+10%

Silicon Coated Oval / Flat Type Wire-Wound Power Resistors – ZZR series

- These resistors are suitable as Loading Resistor, Braking Resistor, Capacitor Discharge, Resistive Load Simulation, machinery and equipment higher power application.
- Compact sizes
- Low Inductance and Waved Ribbon type available
- Support pulse current applications
- Support Precision Resistance Tolerance
- Mounting fixture is available, allow stacking into compact unit
- Support customized tab terminal
- With power up to 500W



ZZR-F : Oval / Flat Wire Wound Resistors

| Power Rating | Dimensions in mm +/-1mm | | | | | | | | Resistance Range ohm |
|--------------|-------------------------|----|---------|-----|-----|----|-----|-----|----------------------|
| | A | B | C | E | G | H | J | K | |
| 40W | 50 | 9 | 27 | 6.5 | 4.1 | 12 | 70 | 103 | 0.1 – 4k |
| 50W | 90 | 9 | 27 | 6.5 | 4.1 | 12 | 110 | 123 | 0.1 – 4k |
| 60W | 90 | 9 | 27 | 6.5 | 4.1 | 12 | 110 | 123 | 0.1 – 4k |
| 80W | 120 | 9 | 27 | 6.5 | 4.1 | 12 | 140 | 153 | 0.1 – 4k |
| 100W | 150 | 9 | 27 | 6.5 | 4.1 | 12 | 170 | 183 | 0.1 – 4k |
| 120W | 160 | 9 | 27 | 6.5 | 4.1 | 12 | 180 | 193 | 0.1 – 4k |
| 150W | 185 | 11 | 27 | 6.5 | 4.1 | 12 | 205 | 218 | 0.1 – 4k |
| 200W | 210 | 11 | 27 / 35 | 9 | 5.2 | 13 | 230 | 243 | 0.1 – 4k |
| 250W | 254 | 11 | 35 | 9 | 5.2 | 13 | 274 | 287 | 0.1 – 4k |
| 300W | 300 | 11 | 35 | 9 | 5.2 | 13 | 320 | 333 | 0.1 – 4k |

Electrical Characteristics :

| Testings | Testing Conditions | Testing Results |
|------------------------------|---|--|
| Resistance Tolerance | JIS-C-5202 5-1 testing voltage<3V 25C | +/-5% |
| Temperature Coefficient | +/- 400ppm/C max. | |
| Rated Load | JIS-C-5202 5-4 40C at rated voltage 1hour | $\Delta R \leq \pm(-1\% + 0.1\text{ohm})$ surface temperature < 275C |
| Insulation Resistance | JIS-C-5202 5-6 500Vdc | 100M ohm min. |
| Dielectric Withstand voltage | JIS-C-5202 5-7 1000Vdc 1min. | $\Delta R \leq \pm(-0.1\% + 0.05\text{ohm})$ |
| Short Time Overload | JIS-C-5202 5-5 5*rated power in 5 seconds | $\Delta R \leq \pm(-2\%R_o + 0.1\text{ohm})$ |
| Flammability | 1 - 6 times rated power 5min. | without combustion |

Part Number :

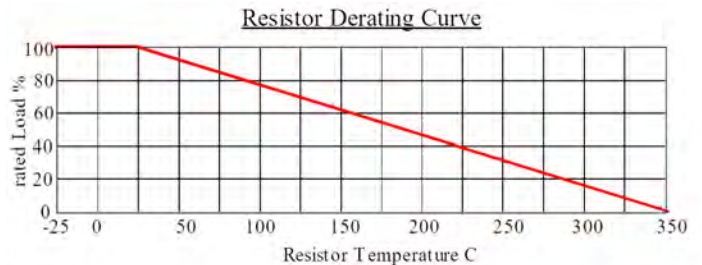
Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number
 ZZR 40 - 300W 0.1 ohm = R1 F = +/--1% F : mounting fixture
 ZNR 40 - 300W 1 ohm = 1R G = +/--2%
 15 ohm = 15R J = +/--5%
 150 ohm = 150R K= +/--10%
 1k ohm = 1kR R= -0/+5%
 T= -0/+10%

Vitreous Enamel Power Resistors – DVR series

This series of resistors is suitable as loading application, more stable, withstand humidity and higher temperature

- Support pulse current requirement
- Low Inductance version is available
- Compact sizes
- Withstand harsh working conditions
- Mounting fixture is available like DDR-F series
- Adjustable version is available DVSR
- Support pulse current applications
- Support multi tab terminals

We support other resistance value that not listed above.



DVR - Vitreous Enamel Power Resistors

| Rated Power | Dimensions in mm | | Resistance Range ohm | |
|-------------|------------------|------------|----------------------|----------------------------|
| | Length | Diameter | DVR | Resistance adjustable DVSR |
| 8W | 35 +/- 1.5 | 14 +/- 2 | 5.1 - 3.3k | - |
| 10W | 41 +/- 1.5 | | 5.1 - 3.3k | 5.1 - 200 |
| 16W | 51 +/- 2 | 17 +/- 2 | 5.1 - 3.3k | 5.1 - 220 |
| 20W | 51 +/- 2 | | 5.1 - 4k | 10 - 430 |
| 25W | 51 +/- 2 | 21 +/- 2.5 | 10 - 4k | 10 - 510 |
| 30W | 71 +/- 2.5 | | 10 - 5k | 10 - 1k |
| 40W | 87 +/- 2.5 | | 20 - 7.5k | 20 - 1.2k |
| 50W | 91 +/- 2.5 | | 20 - 10k | 20 - 1.5k |
| 80W | 140 +/- 3.5 | | 24 - 12k | 24 - 2k |
| 100W | 170 +/- 3.5 | 29 +/- 3 | 24 - 15k | 24 - 2.7k |
| 150W | 215 +/- 4 | | 20 - 30k | 20 - 4.3k |
| 200W | 215 +/- 4 | | 4.7 - 12k | 5.1 - 3k |
| 300W | 266 +/- 4 | 36 +/- 2 | 4.7 - 12k | 5.1 - 3k |
| 400W | 250 +/- 4 | 54 +/- 2 | 5.1 - 10k | 6.2 - 3k |
| 500W | 300 +/- 4 | | 5.1 - 10k | 6.2 - 3k |

Electrical Characteristics :

| Testing | Testing Conditions | Testing Results |
|-------------------------|---------------------------------------|---|
| Resistance Tolerance | JIS-C-5202 5-1 testing voltage<3V 25C | +/-5%, +/-10% |
| Temperature Coefficient | +/- 250ppm/C max. | |
| Short Time Overload | 10*rated power in 5 seconds | $\Delta R \leq +/- (2\%R_o + 0.05 \text{ ohm})$ |
| Surface temperature | $\leq 350C$ | At maximum rated power |

Part Number :

Series

DVR : normal

DVR-F : with mounting fixture

DVSR : resistance adjustable

DVSR-F : resistance adjustable with mounting fixture

DQVR : Waved Ribbon Power Resistor : up to 1000W : resistor size refer to DQR-F series

DDVR : Wire Wound Power Resistor : up to 1000W : resistor size refer to DDR-F series

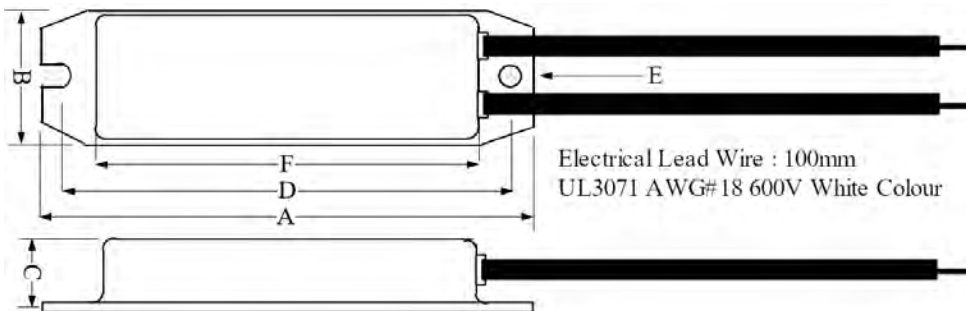
DVRN : low inductance

DVRN-F : low inductance with mounting fixture

Aluminum Housing Wire Wound Power Resistors / Braking Resistors - ASQ ASQM ASZ series

- Internal wire wound resistive element is protected by external aluminum case from external mechanical force, humidity and dusty.
- Suitable for industrial machinery and equipment, variable frequency drives, snubber circuits, heating resistors and braking resistors
- Excellent Short Time Over Load capacity.
- Durable and can withstand stronger vibration.
- Low temperature coefficient and better heat conduction.
- Options : water resistance up to IP65
- With built-in thermocouple or thermal switch
- Low inductance requirement
- Braking resistor with protective enclosure, cooling system and thermal switch
- Precision Resistance Tolerance +/-0.1% +/-0.5% +/-1% +/-5% +/-10% -0/+5% -0/+10%
- support low ohmic resistance and high resistance value
- support resistor size other than listed below

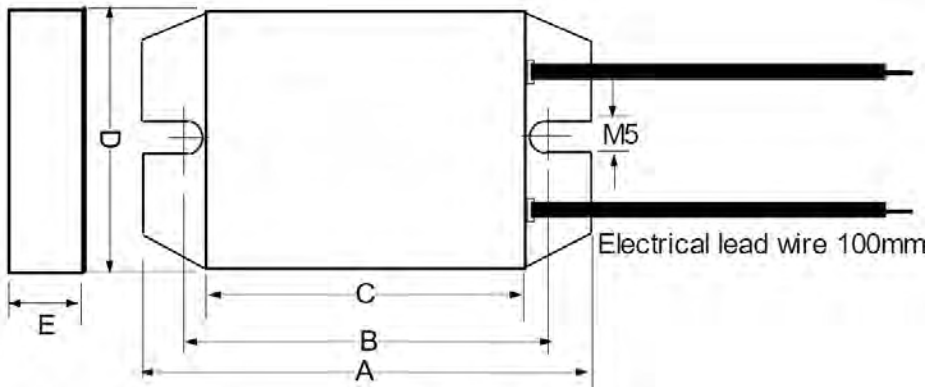
ASQ type :



| Power Rating | Dimensions in mm +/-1mm | | | | | | Resistance Range ohm |
|--------------|-------------------------|----|----|-----|-----|-----|----------------------|
| | A | B | C | D | E | F | |
| 60W | 100 | 30 | 13 | 90 | 4.5 | 75 | 0.01 – 100k |
| 80W | 130 | 42 | 19 | 116 | 5 | 103 | 0.01 – 100k |
| 100W | 130 | 42 | 19 | 116 | 5 | 103 | 0.01 – 100k |
| 120W | 182 | 42 | 19 | 172 | 6 | 152 | 0.01 – 100k |

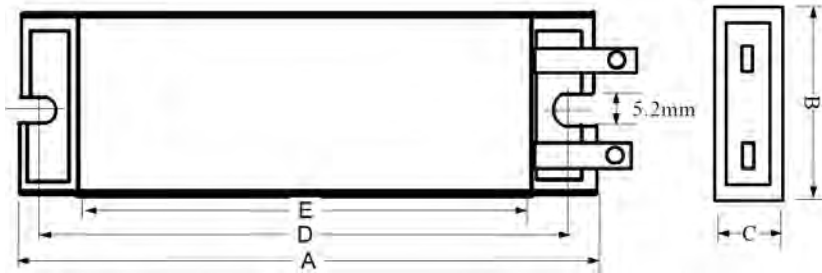
ASQM type : Low Profile Metal Clad Resistors

Support 5mm and 7mm resistor thickness. For more details, e-mail us.



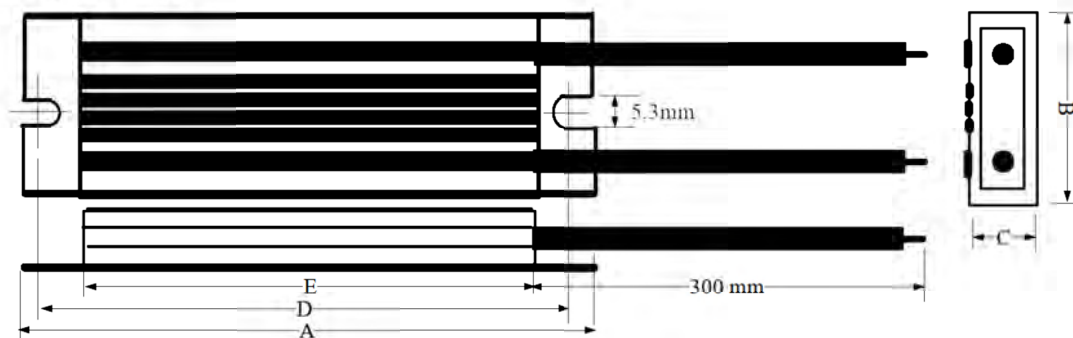
| Power Rating | Dimensions in mm and Resistance Range in ohm | | | | | |
|--------------|--|-----|-----|----|--------------|----------------------|
| | A | B | C | D | E | Resistance range ohm |
| 60W | 100 | 86 | 70 | 45 | 8 | 0.1 – 10k |
| 80W | 120 | 106 | 95 | 45 | 8 | 0.1 – 10k |
| 100W | 120 | 106 | 95 | 45 | 8 | 0.1 – 10k |
| 120W | 150 | 135 | 125 | 45 | 8 | 0.1 – 10k |
| 150W | 216 | 200 | 190 | 45 | 8 | 0.1 – 10k |
| 200W | 265 | 250 | 240 | 45 | 12 / 15 / 20 | 0.1 – 10k |

ASZ type : 1kW – 15kW. Support customization up to 20kW



| Power Rating | Dimensions in mm +/-1mm | | | | | Resistance Range ohm |
|--------------|-------------------------|-----------------|--------------|-----------|-----------|----------------------|
| | A +/-2 | B +/-1 | C +/-1 | D +/-2 | E +/-2 | |
| 1000 W | 335 / 380 | 70 / 60 | 45 / 30 | 320 | 300 | 0.01 – 20k |
| 1200 W | 350 / 400 | 107 / 70 | 50 / 45 | 385 | 365 | 0.01 – 20k |
| 1500 W | 350 / 450 | 107 / 70 | 50 / 45 | 335 / 435 | 315 / 415 | 0.01 – 20k |
| 2k W | 400 / 500 | 107 / 70 | 50 / 45 | 385 / 485 | 365 / 465 | 0.01 – 20k |
| 2500 W | 450 / 550 | 107 / 70 | 50 / 45 | 435 / 535 | 415 / 515 | 0.01 – 20k |
| 3k W | 450 / 600 | 107 / 70 | 50 / 45 | 435 / 585 | 415 / 565 | 0.01 – 20k |
| 4k W | 500 / 525 / 550 | 128 / 129 / 107 | 41 / 41 / 50 | - | - | Customize |
| 5k W | 550 | 175 / 107 | 65 / 50 | - | - | Customize |
| 8k W | 850 | 107 | 50 | - | - | Customize |
| 15k W | 650 | 175 | 65 | - | - | Customize |

ASZ type : 40W – 1kW

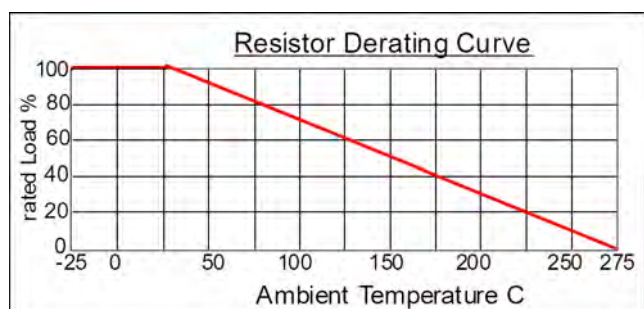


| Power Rating | Dimensions in mm +/-1mm | | | | | Resistance Range ohm |
|--------------|-------------------------|---------|---------|--------|--------|----------------------|
| | A +/-2 | B +/-1 | C +/-1 | D +/-2 | E +/-2 | |
| 40W | 90 | 40 | 20 | 75 | 60 | 0.01 – 100k |
| 60W | 100 / 115 | 40 | 20 | 100 | 85 | 0.01 – 100k |
| 80W | 130 / 140 | 40 | 20 | 125 | 115 | 0.01 – 100k |
| 100W | 140 | 40 | 20 | 125 | 115 | 0.01 – 100k |
| 120W | 165 / 185 | 40 | 20 | 170 | 155 | 0.01 – 100k |
| 150W | 185 | 40 | 20 | 170 | 155 | 0.01 – 100k |
| 200W | 165 | 60 | 30 | 150 | 130 | 0.01 – 100k |
| 250W | 165 | 60 | 30 | 150 | 130 | 0.01 – 100k |
| 300W | 215 | 60 | 30 | 200 | 180 | 0.01 – 100k |
| 400W | 245 / 265 | 60 | 30 | 250 | 230 | 0.01 – 100k |
| 500W | 285 / 335 | 60 | 30 | 320 | 300 | 0.01 – 100k |
| 600W | 300 / 335 | 60 | 30 | 320 | 300 | 0.01 – 100k |
| 800W | 335 / 365 | 60 | 30 | 350 | 330 | 0.01 – 100k |
| 1kW | 335 / 380 | 70 / 60 | 45 / 30 | 320 | 300 | 0.01 – 20k |

We support other resistance value that not listed above.

Electrical Characteristics :

| Testing | Testing Conditions | Testing Results |
|------------------------------|--|---|
| Resistance Tolerance | JIS-C-5202 5-1 testing voltage<3V 25C | +/-5% |
| Temperature Coefficient | +/- 400ppm/C max. | |
| Rated Load | JIS-C-5202 5-4 40C at rated voltage 1hour | $\Delta R \leq \pm(1\% + 0.1\text{ohm})$ surface temperature $\leq 400\text{C}$ |
| Insulation Resistance | JIS-C-5202 5-6 1000Vdc | 100M ohm min. |
| Dielectric Withstand voltage | JIS-C-5202 5-7 2000Vdc 1min. | $\Delta R \leq \pm(0.1\% + 0.05\text{ohm})$ |
| Short Time Overload | JIS-C-5202 5-5 5*rated power in 5 seconds (can be customized according to customer's application need) | $\Delta R \leq \pm(2\% + 0.1\text{ohm})$ |
| Operating Temperature range | - 55C - +275C | |
| Power Derate to Zero | At 275C | |



Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

| | | | |
|------|------------|----------------|-----------------------|
| ASQ | 60 - 120W | 0.01 ohm = R01 | B= +/-0.1% D= +/-0.5% |
| ASQM | 60 - 200W | 0.1 ohm = R1 | F = +/-1% J = +/-5% |
| ASZ | 40 - 8000W | 1 ohm = 1R | K= +/-10% |
| | | 15 ohm = 15R | R= -0/+5% |
| | | 150 ohm = 150R | T = -0/+10% |

Aluminium Housed Resistor - AHR series

Also known as Aluminium Chassis Mounted Wire Wound Resistors

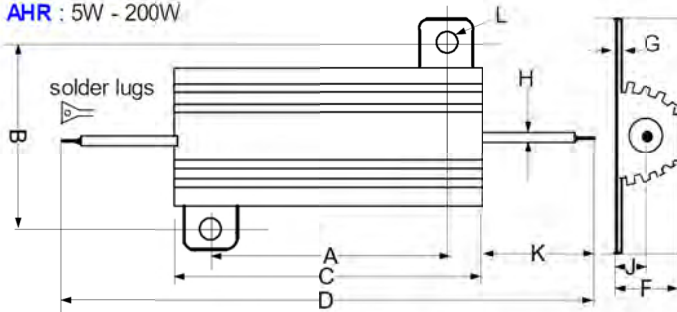
- **Application** : Braking Resistor, Dumping Resistor for motor control, Rush Current Protection, Gate Resistor, Snubber Resistors
- Aluminium housed resistors are wound with nickel copper or nickel chromium wire on ceramic core fitted with end caps. The wound assembly is then encapsulated in an anodized Heat sink using high temperature moulding compound.
- Low Inductance type is available – **AHRN**
- Support pulse current applications
- Resistance range : 0.01 ohm - 100k ohm
- It is low cost, light weight and compact



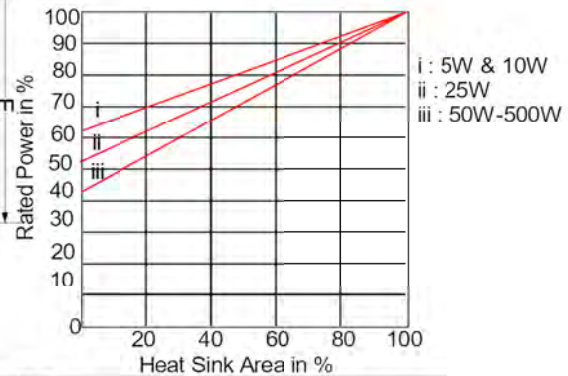
Electrical Specifications :

| | |
|-------------------------|---|
| Rated Power | 5Watts to 500Watts |
| Terminals | Soldering Lugs : 5 – 50W; Screw Threads : 75 – 500W |
| Temperature Coefficient | +/-20ppm/C, +/-50ppm/C, +/-100ppm/C, +/-200ppm/C, +/-250ppm/C, |
| Tolerance | +/-0.1%, +/-0.5%, +/-1%, +/-5%, +/-10%, -0/+5%, -0/+10% |
| Dielectric Voltage | 1000Vac : 5 – 25W, 1500Vac : 50 – 500W |
| Operating Temperature | -55 to 250C |
| Overload – short time | 5 time of rated power in 5 seconds |
| Derating | Derating is needed to reduce chassis mounted area and for high ambient temperatures. Derate to zero Power Linearly at 250C ambient. Derating necessary for unmounted resistors at ambient temperatures of 25C, 5W & 10W - 40%, 25W-50% 50W & above 60%. |

AHR : 5W - 200W

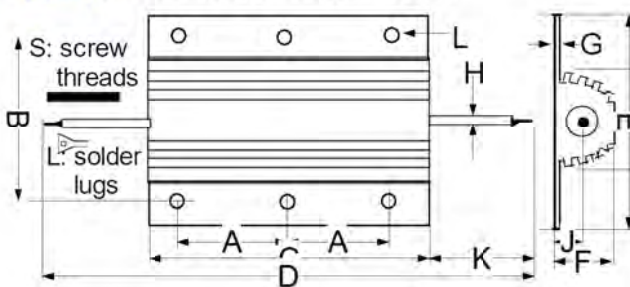


rated Power with heat sink

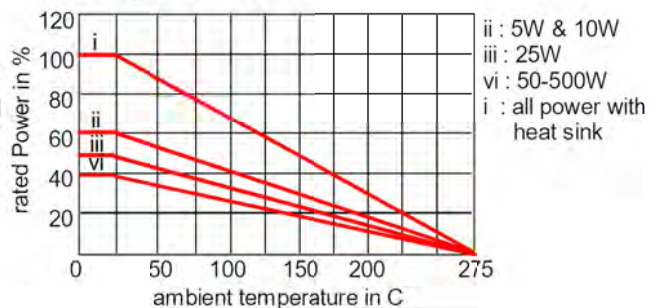


| Rated Power | Dimensions in mm | | | | | | | | | | | | Weight gram |
|-------------|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----|-------------|
| | A +/-0.2 | B +/-0.2 | C +/-0.2 | D +/-0.4 | E +/-0.5 | F +/-0.4 | G +/-0.2 | H +/-0.1 | J +/-0.5 | K +/-0.2 | L +/-0.2 | | |
| 5W | 11.2 | 12.5 | 15.2 | 28.5 | 16.5 | 8.0 | 1.7 | 1.2 | 3.8 | 7.0 | 2.2 | 3 | |
| 10W | 14.3 | 15.8 | 19.5 | 35.0 | 20.3 | 10.0 | 1.9 | 2.0 | 4.2 | 8.0 | 2.2 | 11 | |
| 25W | 18.3 | 19.8 | 27.5 | 49.0 | 27.4 | 14.0 | 2.2 | 2.0 | 6.0 | 11.0 | 3.2 | 18 | |
| 50W | 40.0 | 21.5 | 50.0 | 72.0 | 29.2 | 15.5 | 2.2 | 2.0 | 6.6 | 13.0 | 3.2 | 30 | |

AHR : 100W 250W 300W 500W



derating vs ambient temperature



| Rated Power | Dimensions in mm | | | | | | | | | | | | Weight gram |
|-------------|------------------|----------|--------|----------|--------|-----------|----------|----------|----------|----------|----------|----------|-------------|
| | A +/-0.5 | B +/-0.5 | C +/-1 | D +/-0.4 | E +/-1 | E1 +/-0.5 | F +/-0.5 | G +/-0.2 | H +/-0.2 | J +/-0.3 | K +/-0.2 | L +/-0.3 | |
| 75W | 23.5 | 38.0 | 65.5 | 105 | 48 | 27 | 26 | 3.3 | 2.8 | 11.5 | 20 | 4.2 | 90 |
| 100W | 35.5 | 38.0 | 98.0 | 138 | 48 | 27 | 26 | 3.3 | 2.8 | 11.5 | 20 | 4.2 | 160 |
| 150W | 52.0 | 38.0 | 135.0 | 175 | 48 | 27 | 26 | 3.3 | 2.8 | 11.5 | 20 | 4.2 | 240 |
| 200W | 70.0 | 38.0 | 165.0 | 205 | 48 | 27 | 26 | 3.3 | 2.8 | 11.5 | 20 | 4.2 | 420 |
| 250W | 45.5 | 58.0 | 112.0 | 152 | 73 | 46.5 | 45 | 5.0 | 6.0 | 21.0 | 20 | 5.3 | 480 |
| 300W | 51.5 | 58.0 | 130.0 | 170 | 73 | 46.5 | 45 | 5.0 | 6.0 | 21.0 | 20 | 5.3 | 580 |
| 500W | 87.0 | 58.0 | 204.0 | 244 | 73 | 46.5 | 45 | 5.0 | 6.0 | 21.0 | 20 | 5.3 | 970 |

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Terminals + Drawing Number

AHR 5 - 50W 0.1 ohm = R1 F = +/-1% G = +/-2% S : screw threads
 75 - 500W 1 ohm = 1R J = +/-5% K = +/-10% L : solder lugs
 15 ohm = 15R R = -0/+5% T = -0/+10% W : electrical wires

Manufacturing- MF Power Resistor Ltd

Worldwide Sole Agent- HKFC Industrial Pty Ltd.

<http://www.mf-powerresistor.com> sales@mf-powerresistor.com

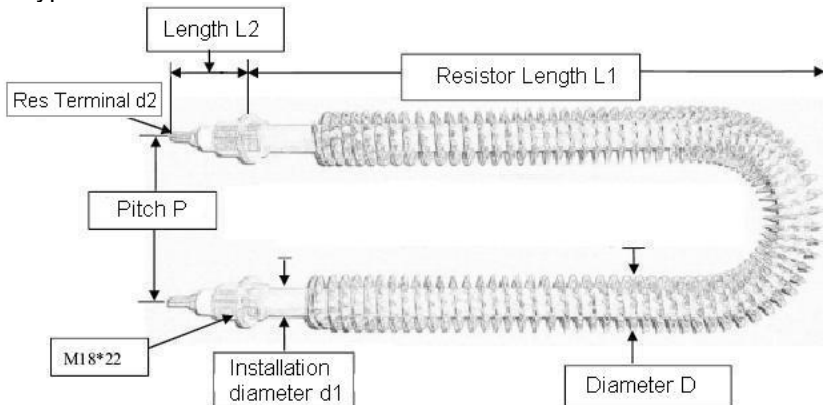
<https://www.hkfc-industrial.com> enquiry@hkfc-industrial.com

Thermal Power Resistors – HER series

- Applications : Load Banks, Variable Frequency Drives, Dynamic Braking, Heating Resistors, Snubber circuits
- Excellent for Continuous Energy and Pulse Energy dissipations
- The resistive element is protected by an external finned stainless steel tube.
- The fins design increase the resistor surface area and is good for thermal energy and current dissipation, and heat convection
- Robust stainless steel resistor body provides good resistance to mechanical vibration, humidity and increases the resistor reliability.
- Resistor body is water resistance. However, the resistor connection terminals cannot contact with water
- Power range : 200W to 6000W
- Low temperature coefficient and better heat conduction.
- Precision Resistance Tolerance +/-1% +/-5% +/-10% -0/+5% -0/+10%
- Resistance is made according to customer's requirement.
- Max. current up to 30A per resistor
- The resistor size might vary depending on the resistance and load current requirement.
- Support enclosure, cooling fan and thermal switch requirement

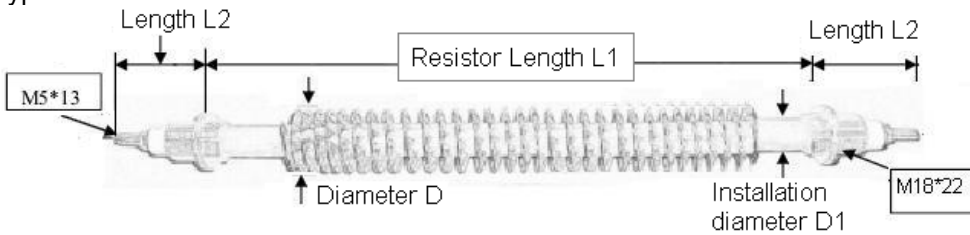


HER-U type :

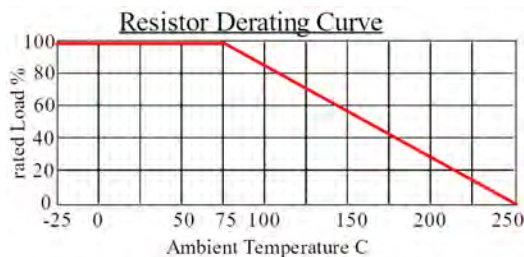


| Power Rating | D +/-1mm | d1 +/-1mm | d2 +/-1mm | L1 +/-3mm # | L2 +/-2mm | P +/-3mm | Resistance range |
|--------------|----------|-----------|-----------|-------------|-----------|----------|------------------|
| 500W | 29 | 14 | M5*13 | 380 | 40 / 50 | 70 | 0.1 – 1k |
| 1000W | 29 | 14 | M5*13 | 600 | 40 | 85 | 0.1 – 1k |
| 1500W | 29 | 14 | M6*13 | 800 | 40 | 85 | 0.1 – 1k |
| 2000W | 29 | 14 | M6*13 | 1200 | 40 | 85 | 0.1 – 1k |

HER type :



| Power Rating | D +/-1mm | d1 +/-1mm | L1 +/-3mm # | L2 +/-2mm | Resistance range |
|--------------|----------|-----------|-------------|-----------|------------------|
| 500W | 29 | 14 | 700 | 40 | 0.1 – 1k |
| 1000W | 29 | 14 | 1200 | 40 | 0.1 – 1k |



Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

| | | | |
|-------|-------------|----------------|---------------------|
| HER-U | 200 - 6000W | 0.1 ohm = R1 | F = +/-1% J = +/-5% |
| HER | 200 - 500W | 1 ohm = 1R | K = +/-10% |
| | | 15 ohm = 15R | R = -0/+5% |
| | | 150 ohm = 150R | T = -0/+10% |

Actual Resistor length might vary due to the resistance value and load current.

Edge Wound Power Resistors – EWR series

Applications :

Variable Frequency Drive, Frequency Converter Drives, Server, Motion Control
High Pulse Energy Absorption
Overhead Crane, Hoist Forklifts, Electric Lift Trucks
Mine Locomotive
Neutral Grounding of Transformers and Generators
Elevator Control
Continuous High Current Duty applications
Pulse Current / Energy Dissipation
Dynamic Braking
Discharge Resistors



Characteristics :

This series Edge Wound Resistor has a high quality alloy finned resistive element and winds around the ceramic substrate.

The design increases the overall surface area, which is good for thermal energy dissipation and increase resistor reliability.

- Power range : 500W to 3000W
- Suitable for both high current Continuous Duty and Short Pulse Energy dissipation applications
- Withstand severe short-time overload : 10 x rated Wattage 5 seconds
- Support low resistance and high current requirement
- Support multi-resistances per resistor
- Support adjustable resistance requirement with an adjustable ring terminal
- Support screw bolt terminals and quick fit tab terminal
- Support mounting fixture, enclosure, cooling fan and thermal switch requirement

The resistor size might vary depending on the resistance and load current requirement..

We manufacture Edge Wound Resistors for a wide variety of industrial applications.

Different applications can have very different resistor electrical and mechanical profile requirements.

Please feel free to send your application details; we might have a solution for your need.

Production Lead Time will be about 7 - 15 days, depending on order quantity, material and production status.

Part Number :

| <u>Series</u> | <u>Rated Power</u> | <u>Resistance (ohm)</u> | <u>Resistance Tolerance</u> | <u>Terminals</u> |
|---------------|--------------------|--|-----------------------------|------------------------------------|
| EWR | 500 – 3kW | 0.1 ohm = R1 1 ohm = 1R 10 ohm = 10R | J = +/5% K = +/-10% | S : Screw Bolt T : Tab Terminal |

Open Helical Coil Wound Resistors / Spring Coil Wound Resistors – FDL series

Also known as Open Coil Wound Resistors

Applications :

Variable Frequency Drive, Frequency Converter Drives,
Server, Motion Control
High Pulse Energy Absorption
Load Banks
Overhead Crane, Hoist Forklifts Control Systems
Electric Lift Trucks
Mine Locomotive
Neutral Grounding of Transformers and Generators
Elevator Control
High Current and Current Limiting
Dynamic Braking
Crowbar Circuits
Discharge Resistors
Heaters



Characteristics :

This series Open Helical Coil Wound Resistors has coiled resistance material and winds around the ceramic substrate. The design increases the airflow across the coiled resistance material, stabilize resistive coil temperature and increase the rate of energy dissipation.

- Power range : 500W to 4000W
- Suitable for both Continuous Duty and Short Pulse Energy dissipation applications
- Withstand severe short-time overload : 5 x rated Wattage 5 seconds
- Support multi-resistances per resistor
- Support adjustable resistance requirement with an adjustable ring terminal
- Support mounting fixture, enclosure, cooling system and thermal switch requirement

The resistor size might vary depending on the resistance and load current requirement.

We manufacture Open Helical Coil Wound Resistors for a wide variety of industrial applications.

Different applications can have very different resistor electrical and mechanical profile requirements.

Please feel free to send your application details; we might have a solution for your need.

Production Lead Time will be about 10 - 20 days, depending on order quantity, material and production status.

Part Number :

Series + Rated Power + Resistance (ohm) + Resistance Tolerance + Terminals

| | | | |
|-----|-----------|--------------|------------|
| FDL | 500 – 4kW | 1 ohm = 1R | J = +/5% |
| | | 10 ohm = 10R | K = +/-10% |

High Voltage Resistors – Non-Inductive - DHVR series

- It is vitreous enamel coating for better resistor protection
- Can withstand 3-5 times the rated power for short time
- Standard resistor rated power : 0.5W - 500W
- Standard resistance range : 10k ohm - 100G ohm
- Tolerance : +/-1%, +/-2%, +/-5% and +/-10%
- Surge voltage up to 200kV
- Support high pulse current requirement
- Rated temperature range : -55C - 70C
- If resistor will be immersed in high voltage insulation oil or SF6, please let us know. We support this requirement.

Applications :

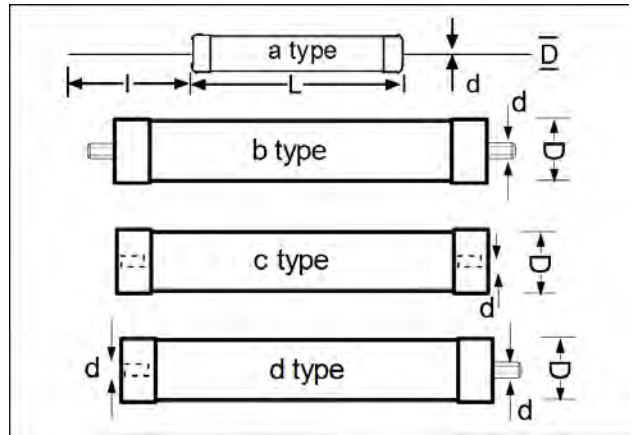
High Voltage Divider / Measuring resistor / Electrostatics / Over voltage Protection / High Voltage Capacitor Discharge

Please provide following working conditions :

- Resistance value and Resistor Power
- AC or DC voltage; if there is surge voltage, please state the peak-to-peak voltage range, duty cycle and repetition rate.
- Resistor Voltage = $\sqrt{P \times R}$ (Watt * Ohm)

The above conditions can help us to offer suitable High Voltage Resistor for your applications.

DHVR type : For resistor power that not listed below, please contact us for details.



| Rated Power Wattage 70C | Resistor package type | Dimensions in mm * | | | | Resistance range ohm | Temperature Coefficient ppm/C | Resistance Tolerance | Max. Pulse Voltage KV ### |
|-------------------------------|-----------------------------|-----------------------|-----------------|----------------|------------------|-------------------------|-------------------------------------|-------------------------|---------------------------------|
| | | Length L | Diameter D | Lead length | Lead diameter | | | | |
| 0.5W | a | 7 | 2.5 | 30+/-1 | 0.6 | 10k~50M | +/-250 | 0.35 | |
| 1W | a | 13+/-1 | 4.5 | | 0.8 | 10k~100M | | 2.5 | |
| 2W | a | 17+/-1 | 6.5 | | 0.8 | 10k~100M | | 4.0 | |
| 3W | a | 25+/-1 | 8 | | 0.8 | 10k~500M | | 4.8 | |
| 4W | a | 35 | 8 | | 0.8 | 10k~500M | | 10 | |
| 5W | a | 37 / 42 +/-1 | 11 | | 1 | 100k~3G | | 8 / 10 | |
| 10W | a | 71 / 84 +/-2 | 11 / 12 | | 1 | 5k~10G | 25 / 32 | | |
| 20W | a | 103 / 114 +/-2 | 11 / 12 | | 1 | 5k~20G | 40 / 45 | | |
| 25W | a | 126 / 138 +/-2 | 11 / 12 | | 1 | 5k~40G | 50 / 55 | | |
| 30W | b c d | 90+/-2 | 16 | | - | M5 | 5k~5G | +/-250 | 25 |
| 40W | | 100+/-2 | 27 | - | M5 / 6 | 5k~10G | 30 | | |
| 50W | | 133+/-2 | 27 | - | | 10k~40G | 45 | | |
| 60W | | 160+/-2 | 27 | - | | 20k~60G | 58 | | |
| 70W | | 180+/-2 | 27 | - | | 20k~60G | 62 | | |
| 80W | | 200+/-2 | 27 | - | | 50k~60G | 68 | | |
| 90W | | 210+/-2 | 27 | - | | 50k~75G | 82 | | |
| 100W | | 260 / 150 +/-2 | 27 / 35 | - | 50k~85G | +/-250 | 100 | | |
| 150W | | 310/ 210 / 154+/-2 | 30 / 28 / 60 | - | M5 / 6 / 8 | 50k~100G | +/-250 | | 130 / 55 |
| 200W | | 260 / 210 +/-2 | 28 / 42 | - | M8 | | | | 82 |
| 250W | 270 / 180 +/-2 | 42 / 60 | - | M8 | 110 / 62 | | | | |
| 300W | 310+/-2 | 37 | - | M8 | 130 | | | | |
| 400W | 420 +/-2 | 42 | - | M8 | 180 | | | | |
| 500W | 540 / 360 +/-2 | 42 / 62 | - | M8 / 10 | 50k~100G | | | 240 | |

* Resistor sizes might vary depending on pulse voltage, load current, pulse rate and ambient temperature etc.

** Support lower Temperature Coefficient 50ppm, 150ppm and 200ppm requirement

For a given rated power resistor, the max. pulse voltage will depend on the rated resistance value, pulse width, duty cycle, number of pulses per second/minute, ambient temperature, humidity and resistor surface cleanness.

Part Number :

Series + type + Rated Power + Resistance Value (ohm) + Resistance Tolerance

| | | | | |
|------|---|----------|------------------|-----------|
| DHVR | a | 1 - 500W | 10k ohm= 10KR | F = +/-1% |
| | b | | 100k ohm= 100kR | G = +/-2% |
| | c | | 1M ohm = 1MR | J = +/-5% |
| | d | | 100G ohm = 100GR | K= +/-10% |

High Voltage Pulse Power Resistors – Non-Inductive - DHVRC series

This series is for High Voltage, High Frequency, Pulse Energy and Pulse Current applications.

Resistance range : 1 ohm to 5k ohm

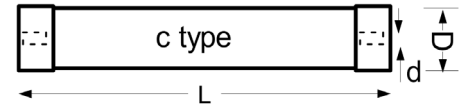
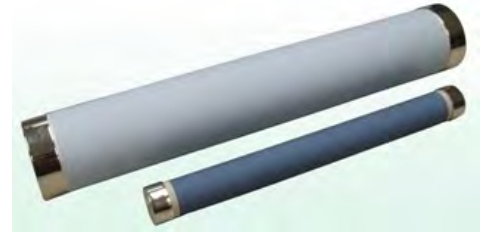
Tolerance : +/-1%, +/-2%, +/-5% and +/-10%

Temperature coefficient : +/-50ppm/C, +/-200ppm/C

Support lower Temperature Coefficient requirement.

Resistor package type : c

The max. voltage depends on the rated resistance $SQR(\text{Watt} * \text{Ohm})$



DHVRC type :

| Rated Power Wattage 70C | Maximum Pulse Voltage kV # | Dimensions D x L in mm * |
|-------------------------|----------------------------|----------------------------|
| 20W | 0.5 | 25 x 50 |
| 30W | 25 | 25 x 70 |
| 50W | 40 | 25 x 125 |
| 60W | 52 | 25 x 150 |
| 70W | 60 | 25 x 172 |
| 80W | 78 | 25 x 200 |
| 100W | 100 | 25 x 250 |
| 150W | 125 | 25 x 300 / 30 x 310 |
| 170W | 55 | 60 x 154 |
| 200W | 82 | 60 x 180 |
| 250W | 180 | 42 x 270 |
| 300W | 125 | form by two 150W resistors |
| 500W | 200 | form by two 250W resistors |

* Resistor sizes might vary depending on pulse voltage, load current, pulse rate and ambient temperature etc.

For a given rated power resistor, the actual max. pulse voltage will depend on the rated resistance value, pulse width, duty cycle, number of pulses per second/minute and ambient temperature, humidity and resistor surface cleanliness.

For Resistor power that not listed above, please contact us for details.

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance

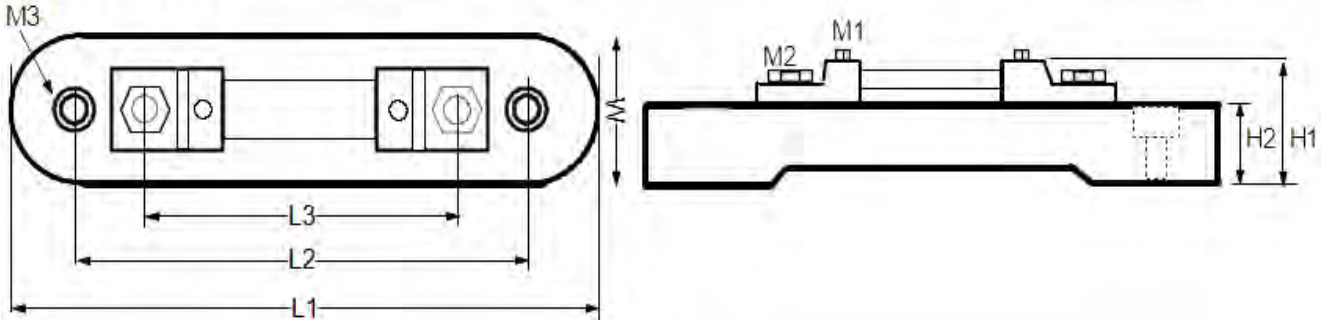
DHVRC 1 - 500W 5 ohm = 5R J = +/-5%
 10 ohm = 10R K= +/-10%
 100 ohm = 100R
 1k ohm = 1kR

Shunt Resistors - SR series

By measuring the voltage drop across the resistor with the known resistance, one can calculate the circuit current. We do our best to support customised resistance values to meet customer's application needs.
 Current range : 1A to 6000A
 Support high current requirement
 Voltage : 50mV, 60mV, 75mV, 100mV and 150mV
 We suggest to add about 40% load current capacity on top of the actual load current for continuous application. This can increase the resistor long run stability.

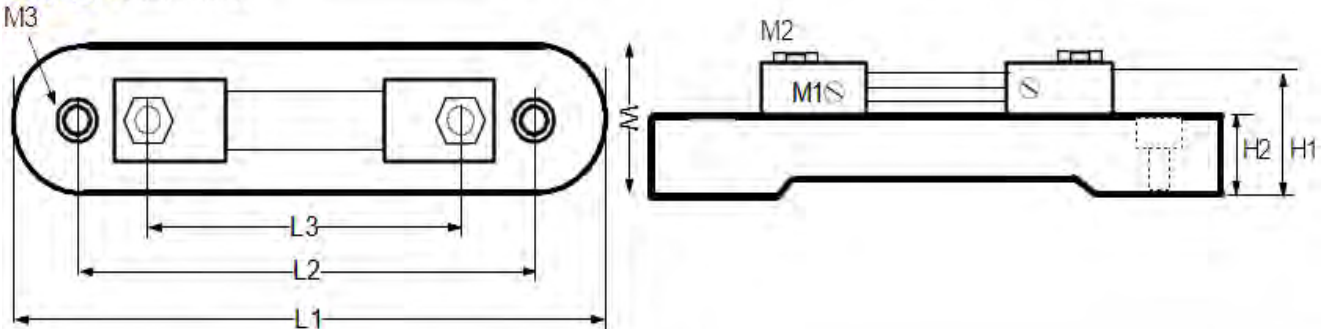


SR-1 1A - 125A



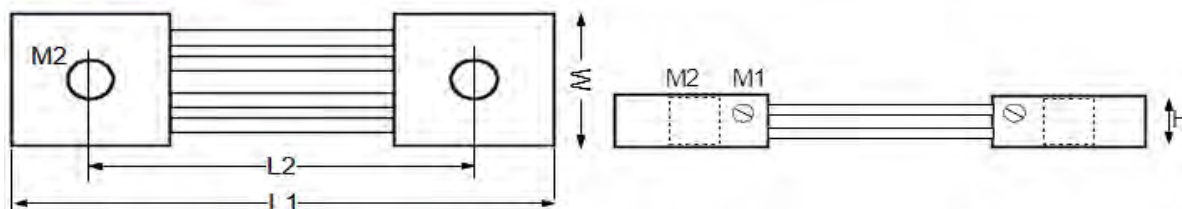
| Voltage / Current | Dimensions in mm | | | | | | Screw size in mm | | | Weight in g |
|-------------------|------------------|-----------|-----------|----------|-----------|-----------|------------------|----|----|-------------|
| | L1 +/-1.0 | L2 +/-1.0 | L3 +/-1.0 | W +/-1.0 | H1 +/-0.5 | H2 +/-0.5 | M1 | M2 | M3 | |
| 50mV : 1A to 125A | 135 | 110 | 72 | 30 | 24 | 10 | 3 | 6 | 6 | 140 |
| 60mV : 1A to 125A | 150 | 125 | 84 | 30 | 30 | 16 | 3 | 6 | 6 | 140 |
| 75mV : 1A to 125A | 150 | 125 | 88 | 30 | 30 | 16 | 3 | 6 | 6 | 140 |

SR-2 150A - 200A



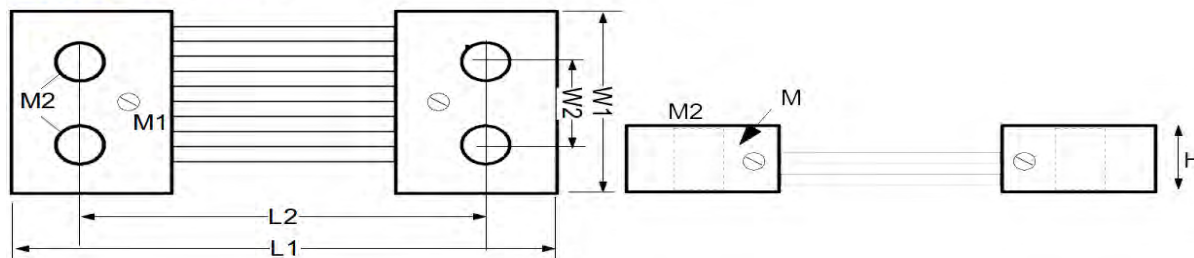
| Voltage/ Current | Dimensions in mm | | | | | | Screw size in mm | | | Weight in g |
|-------------------------|------------------|-----------|-----------|----------|-----------|-----------|------------------|----|----|-------------|
| | L1 +/-1.0 | L2 +/-1.0 | L3 +/-1.0 | W +/-1.0 | H1 +/-0.5 | H2 +/-0.5 | M1 | M2 | M3 | |
| 50mV : 150A to 200A | 135 | 110 | 68 | 30 | 25 | 10 | 3 | 8 | 6 | 245 |
| 60mV : 150A to 200A | 150 | 125 | 80 | 30 | 31 | 16 | 3 | 8 | 6 | 260 |
| 75mV : 150A to 200A | 150 | 125 | 84 | 30 | 31 | 16 | 3 | 8 | 6 | 265 |
| 100mV : 150A to 200A | 170 | 150 | 105 | 30 | 31 | 16 | 3 | 8 | 6 | 270 |

SR-3 250A - 600A



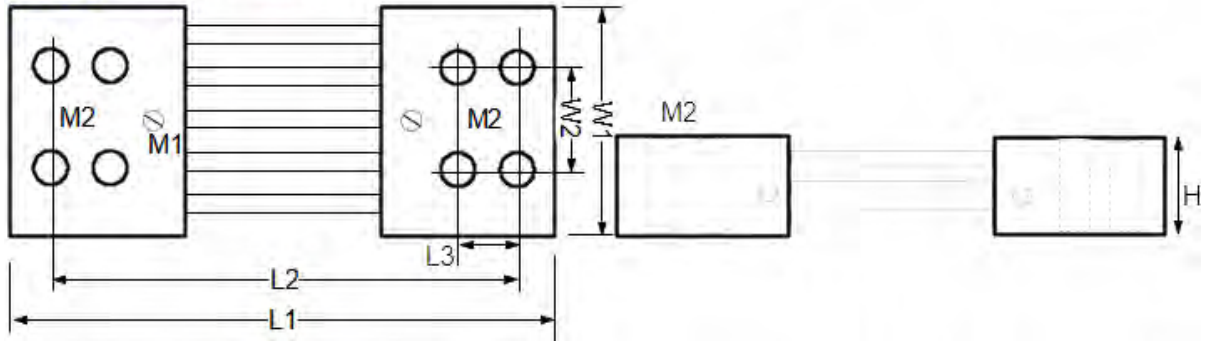
| Voltage | Current | Dimensions in mm | | | | Screw size in mm | | Weight in g |
|-----------|------------|------------------|-----------|----------|----------|------------------|----|-------------|
| | | L1 +/-1.0 | L2 +/-1.0 | W +/-1.0 | H +/-0.5 | M1 | M2 | |
| 50mV | 250 - 300A | 117 | 86 | 35 | 18.5 | 4 | 13 | 430 |
| | 400A | 117 | 86 | 44 | 18.5 | 4 | 13 | 530 |
| | 500A | 117 | 86 | 55 | 18.5 | 4 | 13 | 640 |
| | 600A | 123 | 90 | 55 | 21 | 4 | 13 | 830 |
| 60mV | 250 - 300A | 126 | 96 | 35 | 18.5 | 4 | 13 | 430 |
| | 400A | 126 | 96 | 44 | 18.5 | 4 | 13 | 530 |
| | 500A | 126 | 96 | 55 | 18.5 | 4 | 13 | 650 |
| | 600A | 132 | 98 | 55 | 21 | 4 | 13 | 830 |
| 75mV : | 250 - 300A | 138 | 107 | 35 | 18.5 | 4 | 13 | 430 |
| | 400A | 138 | 107 | 44 | 18.5 | 4 | 13 | 530 |
| | 500A | 138 | 107 | 55 | 18.5 | 4 | 13 | 650 |
| | 600A | 144 | 111 | 55 | 21 | 4 | 13 | 840 |

SR-4 750A - 1500A



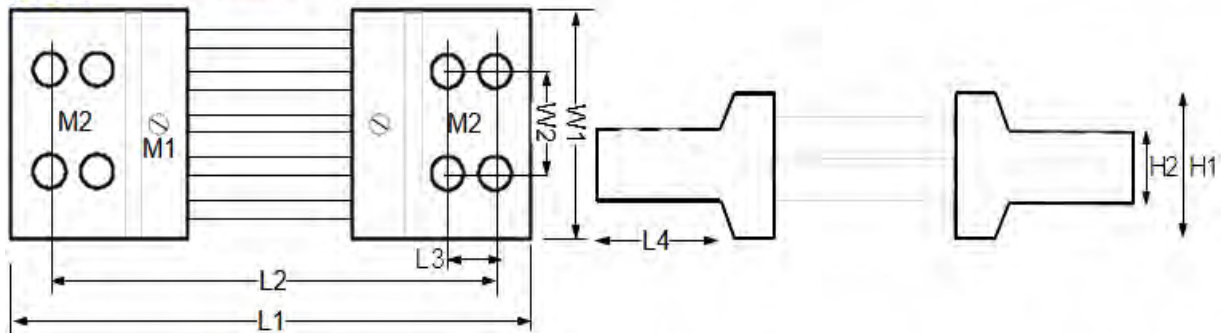
| Voltage | Current | Dimensions in mm | | | | Screw size in mm | | | Weight in kg |
|---------|-------------|------------------|-----------|-----------|-----------|------------------|---|----|--------------|
| | | L1 +/-1.0 | L2 +/-1.0 | W1 +/-1.0 | W2 +/-1.0 | H | M | M2 | |
| 50mV | 750A - 800A | 123 | 90 | 70 | 35 | 21 | 4 | 13 | 1.0 |
| | 1000A | 163 | 122 | 70 | 35 | 21 | 4 | 13 | 1.5 |
| | 1200A | 165 | 124 | 85 | 45 | 21 | 4 | 13 | 1.8 |
| | 1500A | 163 | 122 | 100 | 49 | 21 | 4 | 13 | 2.2 |
| 60mV | 750A - 800A | 132 | 98 | 70 | 35 | 21 | 4 | 13 | 1.1 |
| | 1000A | 172 | 131 | 70 | 35 | 21 | 4 | 13 | 1.6 |
| | 1200A | 174 | 133 | 85 | 45 | 21 | 4 | 13 | 1.9 |
| | 1500A | 172 | 131 | 100 | 49 | 21 | 4 | 13 | 2.3 |
| 75mV: | 750A - 800A | 144 | 111 | 70 | 35 | 21 | 4 | 13 | 1.1 |
| | 1000A | 185 | 145 | 70 | 35 | 21 | 4 | 13 | 1.7 |
| | 1200A | 187 | 148 | 85 | 45 | 21 | 4 | 13 | 1.9 |
| | 1500A | 185 | 145 | 100 | 49 | 21 | 4 | 13 | 2.4 |

SR-5 2000A - 2500A



| Voltage | Current | Dimensions in mm | | | | | | Screw size in mm | | Weight in kg |
|---------|---------|------------------|-----------|-----------|-----------|-----------|----------|------------------|----|--------------|
| | | L1 +/-1.0 | L2 +/-1.0 | L3 +/-1.0 | W1 +/-1.0 | W2 +/-1.0 | H +/-0.5 | M1 | M2 | |
| 50mV | 2000A | 190 | 162 | 37 | 100 | 50 | 39 | 4 | 13 | 4.7 |
| | 2500A | 190 | 162 | 37 | 110 | 55 | 39 | 4 | 13 | 5.1 |
| 60mV | 2000A | 199 | 170 | 37 | 100 | 50 | 39 | 4 | 13 | 4.7 |
| | 2500A | 199 | 170 | 37 | 110 | 55 | 39 | 4 | 13 | 5.2 |
| 75mV | 2000A | 212 | 184 | 37 | 100 | 50 | 39 | 4 | 13 | 4.8 |
| | 2500A | 212 | 184 | 37 | 110 | 55 | 39 | 4 | 13 | 5.3 |

SR-6 3000A - 6000A



| Voltage | Current | Dimensions in mm | | | | | | | | Screw size in mm | | Weight in kg |
|---------|---------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------|------|--------------|
| | | L1 +/-1.0 | L2 +/-1.0 | L3 +/-1.0 | L4 +/-1.0 | W1 +/-1.0 | W2 +/-1.0 | H1 +/-0.5 | H2 +/-0.5 | M1 | M2 | |
| 50mV | 3000A | 273 | 232 | 45 | 90 | 105 | 55 | 63 | 26 | 4 | 13 | 7.6 |
| | 4000A | 273 | 232 | 45 | 90 | 125 | 76 | 63 | 26 | 4 | 13 | 9.0 |
| | 5000A | 289 | 294 | 50 | 98 | 126 | 70 | 100 | 37 | 4 | 16.5 | 12.5 |
| | 6000A | 289 | 294 | 50 | 98 | 135 | 80 | 100 | 37 | 4 | 16.5 | 14.5 |
| 60mV | 3000A | 281 | 241 | 45 | 90 | 105 | 55 | 63 | 26 | 4 | 13 | 7.7 |
| | 4000A | 281 | 241 | 45 | 90 | 125 | 76 | 63 | 26 | 4 | 13 | 9.1 |
| | 5000A | 298 | 258 | 50 | 98 | 126 | 70 | 100 | 37 | 4 | 16.5 | 12.5 |
| | 6000A | 298 | 258 | 50 | 98 | 135 | 80 | 100 | 37 | 4 | 16.5 | 14.5 |
| 75mV | 3000A | 298 | 255 | 45 | 90 | 105 | 55 | 63 | 26 | 4 | 13 | 7.8 |
| | 4000A | 298 | 255 | 45 | 90 | 125 | 76 | 63 | 26 | 4 | 13 | 9.2 |
| | 5000A | 313 | 273 | 50 | 98 | 126 | 70 | 100 | 37 | 4 | 16.5 | 12.5 |
| | 6000A | 313 | 273 | 50 | 98 | 135 | 80 | 100 | 37 | 4 | 16.5 | 14.5 |

Electrical Specifications :

| Testing | Specifications |
|---|--|
| Rated Voltage Drop | 50mV, 60mV, 75mV, 100mV and 150mV |
| Accuracy Class | 0.5% : for 1A to 4000A; 1% : for 5000 to 6000A |
| Continuous Loading Current | 2/3 x rated current |
| Short Time Overload Capacity | 120% rated Current for 2 hours |
| Ambient Conditions | Temperature : -40C to +60C Relative Humidity : <= 95% at 35C |
| Resistor Surface Temperature increase | Load Current <= 50A : 80C Load Current > 50A : 120C |
| Temperature Coefficient | +/-25ppm/C, +/-50ppm/C and +/-100ppm/C |
| Capacity to Withstand External Mechanical Force | Shock frequency 80 to 120Hz 5 hours with acceleration less than 70m/s ² |

Force Cooling can be very useful, especially for high current, cannot vertical mount in an closed enclosure.

Part Number :

Series + Rated Current + Rated Voltage Drop + Tolerance

| | | | |
|------|-------------|-------|-------------|
| SR-1 | 1A to 6000A | 50mV | D = +/-0.5% |
| SR-2 | | 75mV | F = +/-1% |
| SR-3 | | 100mV | |
| SR-4 | | 150mV | |
| SR-5 | | | |
| SR-6 | | | |

Load Boxes / Load Banks

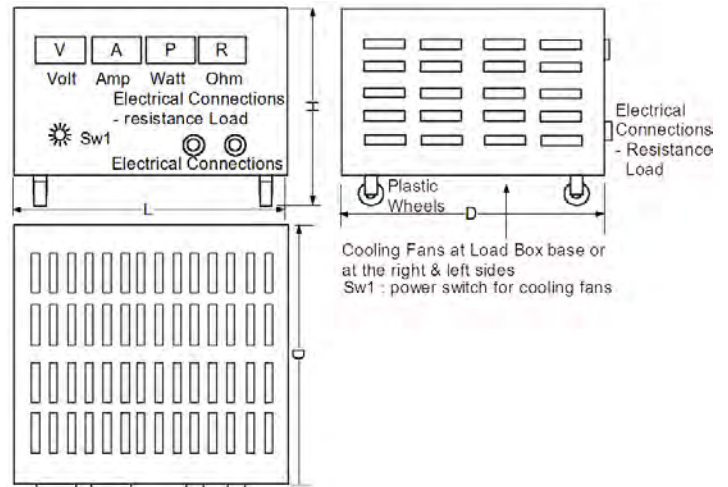
- Support both AC Load Banks and DC Load Banks
- Resistive Load Boxes / Portable Resistance Load Banks : **RB** series up to 300KW
- 3 phase Adjustable Power Resistor Load Banks **RB3A** : up to 600KW
- 3 phase Resistive-Inductive Load Bank **RLB3A** series up to 100KVA
- High Load Current Load Banks : support up to thousands Amperes
- Adjustable Power Load Banks RBA : up to 300kW
- Cost Saving design
- Protection Design options :
 - Over-heating Warning
 - Over-heating Warning with Load Power Cut automatically
 - Over Current and/or Over Voltage protection
 - Cooling System Air Flow monitor with Load Power Cut automatically
- Support both indoor and outdoor application
- Load Bank sizes might vary depending on the load bank functions and load current



Resistor Boxes - RB

Dimensions :

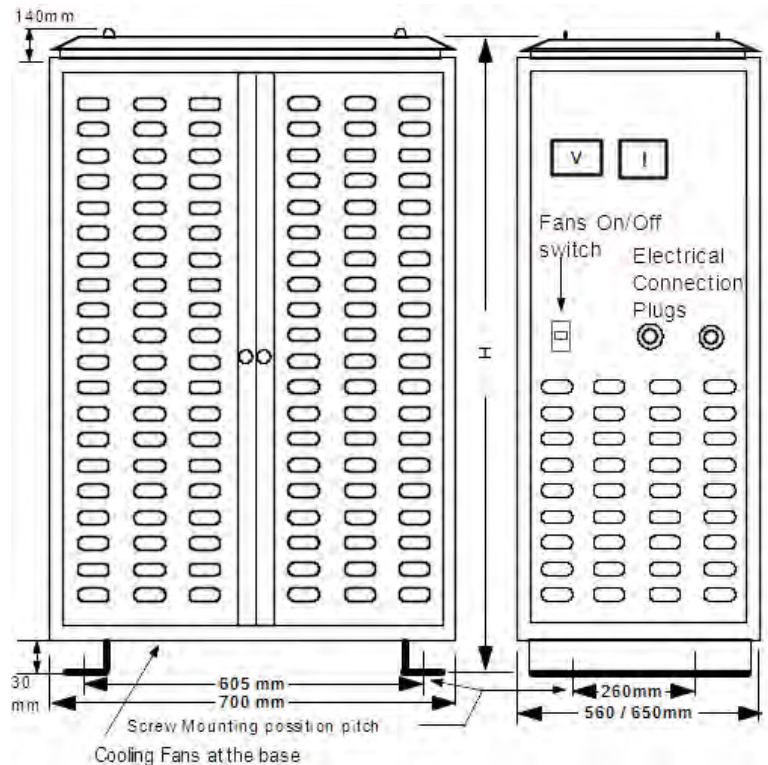
| Rated Power | L +/-5mm | D +/-5mm | H +/-15mm |
|-------------|----------|----------|-----------|
| 2KW | 380 | 200 | 210 |
| 5KW | 500 | 290 | 210 |
| 6KW | 590 | 290 | 210 |
| 8KW | 590 | 400 | 210 |
| 10KW | 680 | 400 | 210 |
| 12KW | 680 | 400 | 210 |
| 15KW | 680 | 500 | 210 |



Resistor Load Banks - RC

Dimensions :

| Rated Power | High H mm | Weight |
|-------------|-----------|--------|
| 25KW | 850 | 60kg |
| 37KW | 1100 | 70kg |
| 50KW | 1350 | 80kg |
| 60KW | 1600 | 90kg |
| 70KW | 1600 | 100kg |
| 100KW | 1820 | 110kg |



High Power Sliding Rheostat Load Banks – DSR-WB series

High Power Sliding Rheostat with external metal enclosure.

With load power up to 50kW and load current up to 50A

Resistance value is adjustable by hand wheel

With build in Voltmeter, Ammeter, Wattmeter and Cooling system

Options : Thermal protection, Over Current protection, Ohmmeter and Main Control Switch

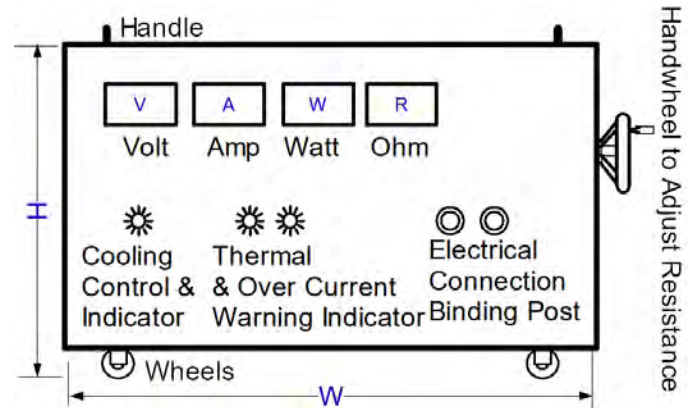
Please state the following parameters :

- i) maximum Resistance when at the minimum Current
- ii) minimum Resistance when at the maximum Current
- iii) Voltage at minimum and maximum resistance

Please tell the best suitable resistance ranges that suitable for your application. There is no standard resistance value suitable for all applications. All rheostats are made according to customer's application need.



| Rated Power | Max. Width in mm | Max. Depth in mm | Max. Height in mm |
|-------------|------------------|------------------|-------------------|
| 1kW | 430 | 210 | 320 |
| 2kW | 610 | 210 | 320 |
| 3kW | 710 | 210 | 320 |
| 4kW | 530 | 260 | 370 |
| 5kW | 610 | 310 | 370 |
| 6kW | 710 | 310 | 370 |
| 10kW | 780 | 410 | 370 |



* Load Bank sizes might vary depending on the resistance and load current setting.

3-Phase Power Sliding Rheostats Load Banks – DSR3-WB



Three Phase asynchronous design

For some cases, can support Power up to 54kW and load Current up to 50A (case by case)

Please tell following parameters.

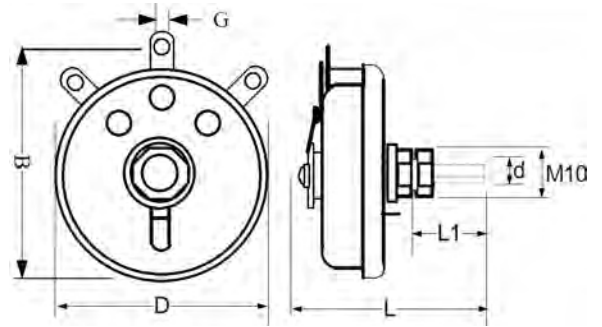
- i) maximum Resistance at minimum Phase Current
- ii) minimum Resistance at maximum Phase Current
- iii) Voltage (L-N or L-L) at minimum and maximum phase resistance

Resistance and load current will be made according to customer's application need.

Options : Main Control Switch, Over Voltage and/or Current protection, Thermal protection, Voltmeter, Ammeter, Power Meter and Ohmmeter.

Rheostat / Rotary Variable Power Wire Wound Resistors

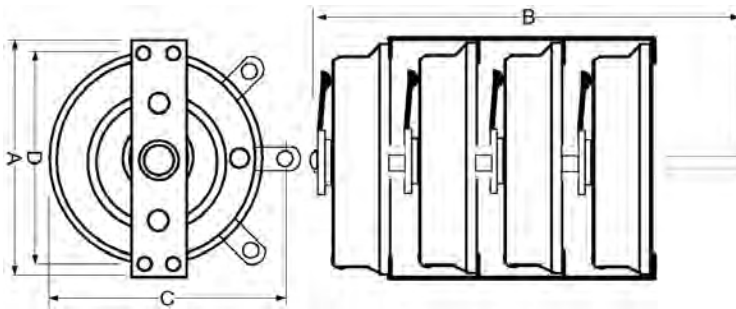
- Application : Resistive Load simulation, Heavy Duty application Machinery, Voltage and Current adjustment for Machinery & Equipment.
- Resistance range is made according to customer application need.
- When the resistance is adjusted towards its minimum value, the workable rheostat power is also decreased. The workable power at the adjusted resistance value is about the ratio of (adjusted resistance value) to (the rheostat rated resistance value) x (the rheostat rated power).
- rated Power = (max. load Current)² x rated resistance
- for more details, before refer to the application note on next page.



FVR : Rheostats / Rotary Power Wire Wound Resistors

| Rated Power W | D mm | B mm | L mm | L1 mm | d mm | G mm |
|---------------|------|------|------|-------|------|------|
| 25 | <44 | <50 | <60 | <25 | 6 | 2 |
| 50 | <64 | <70 | <64 | <25 | 6 | 2 |
| 100 | <84 | <93 | <66 | <35 | 6 | 4 |
| 150 | <104 | <120 | <73 | <33 | 6 | 4 |
| 300 | <156 | <170 | <115 | <55 | 10 | 4 |
| 500 | <206 | <215 | <122 | <65 | 10 | 4 |

FVR : Tandem Mounted Rheostats



| Part Number | Rated Power W | Max. Temperature | Dimensions in mm | | | |
|-------------|---------------|------------------|------------------|------|------|------|
| | | | A | D | C | B |
| FVR-500W/2 | 1000 | 350C | <215 | <195 | <218 | <200 |
| FVR-500W/3 | 1500 | 350C | <215 | <195 | <218 | <300 |
| FVR-500W/4 | 2000 | 350C | <215 | <195 | <218 | <400 |
| FVR-500W/5 | 2500 | 350C | <215 | <195 | <218 | <500 |
| FVR-500W/6 | 3000 | 350C | <215 | <195 | <218 | <600 |

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + No of Rheostat + Parallel/Serial connection

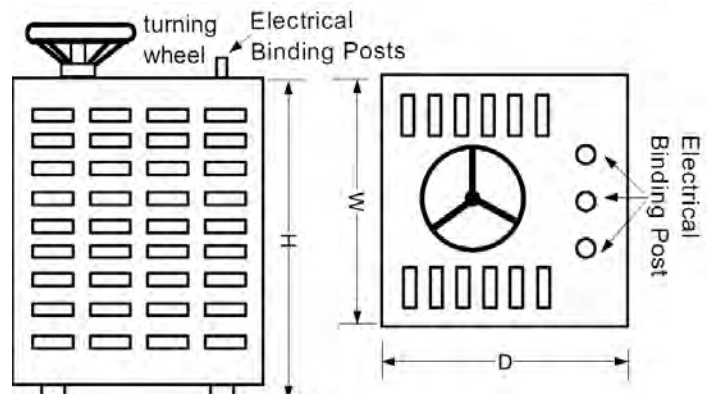
| | | | | | |
|-----|------------|--------------|------------|--------------|-------------------|
| FVR | 25W - 500W | 0.1 ohm = R1 | J= +/-5% | Tandem mount | P = parallel |
| | | 1 ohm = 1R | K= +/-10% | 1 - 5 | S = Serial |
| | | 15 ohm = 15R | R= -0/+5% | | N = no connection |
| | | 1k ohm = 1kR | T= -0/+10% | | |

For example : Tandem Mounted Rheostat 2500W 100R : FVR-500W500RJ/5P

FVRB : Rheostat Load Boxes : up to 4000W

for some applications, power range can be up to 20kW

| Power | W / mm | D / mm | H / mm |
|-------|--------|--------|--------|
| 300W | 220 | 240 | 150 |
| 500W | 260 | 280 | 150 |
| 1000W | 260 | 280 | 280 |
| 1500W | 260 | 280 | 320 |
| 2000W | 260 | 280 | 450 |
| 2500W | 260 | 280 | 530 |
| 3000W | 260 | 280 | 610 |
| 3500W | 260 | 280 | 690 |
| 4000W | 260 | 360 | 800 |



* Load Bank sizes might vary depending on the resistance and load current setting.

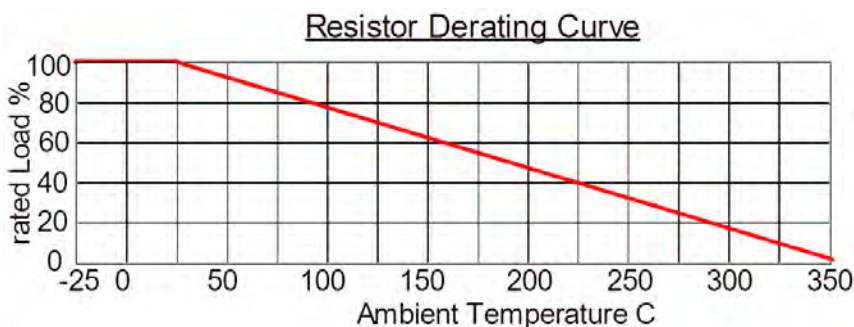
High Power Wire Wound Resistors application notes:

A. Choosing Power Wire Wound Resistors and parameter determination:

1. Resistor power is calculated by $W=I^2R$ where :
W = Resistor Power I = maximum loading current
R = rated resistance value or maximum rheostat resistance value
2. Never overload a power resistor beyond the specified voltage, rated power and current.
3. We recommend choosing a resistor with a rated power of at least 1.3 to 4 times higher than the actual loading power if any application requires the resistor to run continuously at full power. Extra safe margin power/current can extend the resistor's service life and lower its surface temperature.
4. If the maximum or surge power is larger than the rated resistor power, please tell the actual working condition like peak/surge voltage, resistance value, duty cycle, loading time, repetition rate and any cooling system around.
5. If the surge/peak voltage is larger than the rated resistor Voltage = $SQR(P*R)$, please tell us the peak-to-peak voltage range, duty cycle, repetition rate per unit time or frequency, loading duration and any cooling system around.
6. Most of our resistors can withstand 5-10 times the rated power for 5 seconds, depending on the current pulse width, resistor series, installation and cooling system.
7. There is no standard resistance values for power resistors. It is better to tell your application's working voltage, loading duration and duty cycle of your applications for the Low Ohmic Power Resistors. As different voltage can induce a very different resistor current. Different raw materials and production processes might need to withstand the higher current and temperature.
For example, load current for 1 ohm and 5 ohm 10kW Power resistors are 100A and 44A, respectively.
8. The resistor's maximum working voltage must obey Ohm's Law $SQR(P*R)$.
9. We recommend choosing Low-Inductive Resistors for frequency sensitive applications.
10. Most of our power resistors can manufacture according to customers' applications like resistance, rated power, resistor size, mounting fixture and inductive / low inductive, pulse voltage condition etc...
11. Do not touch the resistor after connecting to a power source due to high surface temperature and the chance of getting **ELECTRIC SHOCK**.
12. The salty, dusty and corrosive environment can affect the performance of power resistors.

B. Other application notes :

1. The resistor surface temperature can reach as high as 100°C to 500°C while at full load, depending on the resistor series, power rating, resistance value, working conditions, ambient temperature and cooling system design, etc. In general, keeping the resistor surface temperature below 150°C to 250°C, depending on the above factors, can stabilize the resistance value and extend the resistor service life.
2. Adding a cooling system such as external forced cooling fans can lower resistor surface temperature. Do not cover the resistors!
3. Use guards and warning labels where necessary for the hot resistors.
4. We recommend keeping all temperature-sensitive components away from the resistor.
5. Below is one of the Derating Curves for power resistors in general. Please contact us for an individual resistor's derating curve.



This curve vary with resistor series, rated power and resistance value.

6. Always clean the resistor tab terminals before connection. Do not clean Resistor surface with organic solvents.
7. Do not scratch the resistor surface with any hard or pointed object.
8. DDR-F and DQR-F series power resistors coat with UL 94V-0 silicone coating. The resistors should be installed away from any flammable materials.
9. Silicon coated resistors might emit smoke during initial power loading. It is a normal phenomenon. After loading at 100% for 1-2 hours, the smoke emission will stop.
10. The ASZ, AHR and HER resistor external metal enclosure can be a source of interference for most sensitive circuits. Grounding the resistor metal housing can solve the concern.
11. All our Load banks RB3A, RLB3A, RB, DB, RBA, DSR-WB, DSR3-WB, FVRB and RBC series should be Ground connected below connecting to the load source.

C. Adjustable Wire Wound Resistors DSR-F / Rheostats FVR / Rheostat Boxes FVRB and DSR-WB series application notes :

1. Rheostat and Adjustable Wire Wound Resistor are a type of wire wound resistors.
2. From a material perspective, the allowable current depends on Ohm's Law and the resistance wire's current carrying capacity, whenever the lower one. Loading beyond this current range can damage the rheostat.
3. The function of a rheostat is to adjust the circuit current between the maximum current at the minimum resistance and the minimum current at the rated resistance.

Ci. Rheostat parameters determination :

1. Rheostat rated Power = (rheostat maximum load Current)² x the rated Resistance
2. The current of an existing application determines the maximum load current before the adjustable power resistor or rheostat is inserted. This consideration is for circuit current adjustment – a rheostat in series with a fixed resistor (the equivalent circuit).
3. The maximum current for two rheostats with the same rated power can be very different.
For example, load Current for 1 ohm and 5 ohms 10kW power rheostats are 100A and 44A, respectively.
There are no standard resistance values for power rheostats.
4. The rheostat minimum resistance value can be calculated with the maximum current and voltage.
5. The rheostat maximum resistance value can be calculated with the minimum acceptable current and the voltage.
6. The rheostat working power needs to decrease as the resistance is adjusted towards its minimum value.
The working power at the adjusted resistance is about the ratio of (adjusted resistance) to (the rheostat rated resistance) x (rated power) or
i.e. from the material viewpoint: *power per unit resistance*

Cii. Other rheostat application notes :

1. Load current at any adjusted resistance value =< rheostat rated current
2. Load power at any adjusted resistance value =< rheostat rated power
3. The rated resistance value is not the same as an adjusted resistance value.
4. The voltage across a rheostat might need to decrease to avoid overcurrent when adjusting the resistance value towards its minimum value.
5. A fixed power resistor can be connected in series with the rheostat to protect it from overcurrent damage.
The rheostat rated resistance = rheostat power / (maximum load current)² .
The rheostat power = (maximum load Current)² x rated resistance.
6. The main role of Adjustable Power Wire Wound Resistor DSR-F, Rheostat FVR, Rheostat Box FVRB and DSR-WB is to decrease, not increase, the electrical current in the circuit.
7. Rheostat is for **continuous load current** adjustment – nearly **continuous resistance range** design.
8. For some situations, we may suggest RBA series Adjustable Load Bank.
The load power / current adjustment by presetting steps / switches / circuit breakers - **discrete resistance values**.
The Load Current is achieved via circuit breakers or power switches at the control panel.
With different ON/OFF combinations, a different load current can be achieved.

Ciii. Other rheostat Application Notes :

1. The resistance adjustment is achieved by sliding the metal brusher across the metal resistance material.
There is a chance of flashover between two metal parts when the resistance is being adjusted, especially at high voltage, current and/or power conditions.
It is better to power OFF the load source across the Rheostat before adjusting the resistance values.
2. Do not touch the adjustable resistor / rheostat after connecting to a power source due to **high surface temperature** and avoid **ELECTRIC SHOCK**.
3. We recommend choosing a rheostat with a rated current of at least 1.3 times higher than the circuit maximum current if any application requires the rheostat to run continuously at the full power. An extra safe margin power/current can extend the rheostat's service life and lower its surface temperature.
4. Due to high power application and rheostat consisting of metal movable parts within the Rheostat, we suggest installing the rheostat on a fixed and level bench to avoid vibration.
5. The salty, dusty, humid, high temperature, vibration and corrosive environment can affect the rheostat's performance.
6. Both sections A and B are valid for the rheostats.

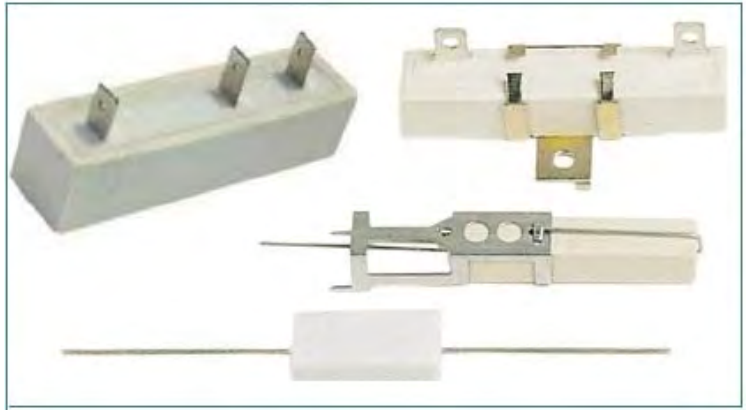
Cvi. Rheostat Bank FVRB / Adjustable Load Bank DSR-WB options :

1. Ammeter, Voltmeter, Wattmeter, Ohm meter; OverCurrent and/or Over Voltage protection; Thermal protection; Cooling Fans system and Main Switch.

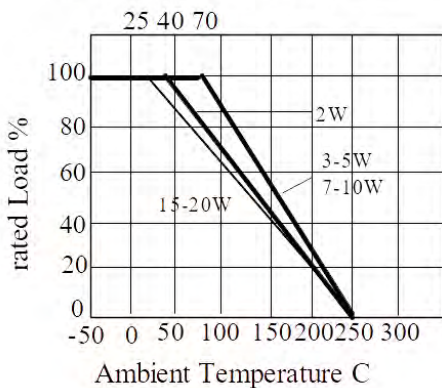
Ceramic Encased Resistors – SQ series

Also known as Cement Resistors

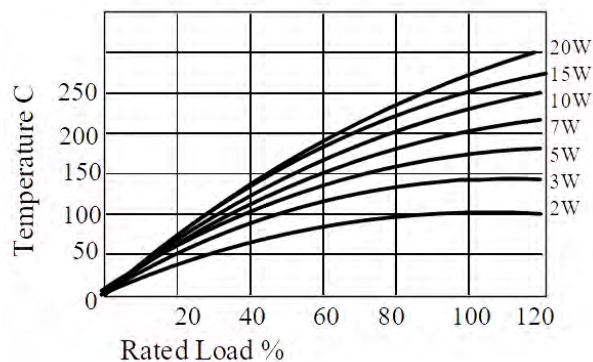
- Excellent stability in high temperature, resistant to humidity and shock with economic price
- Best suitable for heat dissipation; small linear temperature coefficient
- Instant overload capability; low noise figure
- Non flammable construction
- Low Inductance type available
- High Surge Current type available
- High Insulation resistance
- Can be PCB mounted



Derating Curve



Temperature Rise

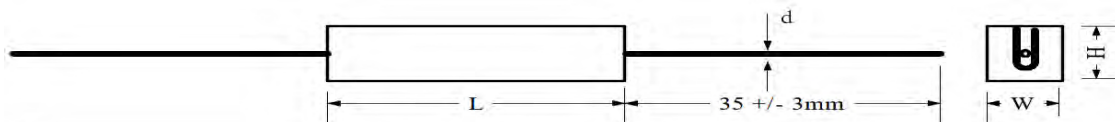


| Test | Characteristics | |
|-------------------------------------|--------------------------------------|----------------|
| Resistance Temperature Coefficients | -55C - 155C | +/- 300ppm / C |
| Short Time Over Load | 10 time of rated power 5seconds | +/-2% |
| Voltage withstanding | 1000Vac 1min. | No change |
| Insulation Resistance | 500V | 1000M ohm |
| Temperature Cycle | -30 - 85C for 5 cycle | +/- 1% |
| Load Life | 70C on / off cycle 1000 hours | +/- 5% |
| Moisture – proof Load Life | 40C 95% RH on / off cycle 1000 hours | +/- 5% |
| Incombustibility | 16 times of rated Power 5 minutes | No flamed |
| Rated Power | Rated Power 30 minutes | +/- 1% |

Part Number :

| Series | Rated Power | Resistance Value (ohm) + Resistance Tolerance + Drawing Number |
|-----------|-------------|--|
| SQP | 2 - 50W | 0.1 ohm = R1 B=+/-0.1% D= +/-0.5% |
| SQT | 5 - 10W | 1 ohm = 1R F=+/-1% J=+/-5% |
| SQM | 5 - 10W | 10 ohm = 10R K=+/-10% |
| SQH/SQH-G | 10 - 40W | 150 ohm = 150R |
| SQZ | 5 - 50W | 1k ohm = 1kR |
| | | 10k ohm = 10kR |

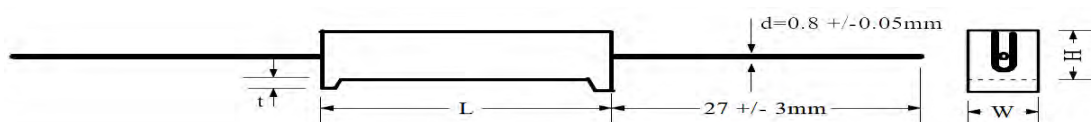
SQP type



| Rated Power | Dimensions in mm | | | | Resistance ohm | |
|-------------|------------------|----------|----------|-------------|----------------|-------------|
| | L +/-1.5mm | W +/-1mm | H +/-3mm | D +/-0.05mm | SQP | MO+SQP |
| 2W | 18.0 | 7.0 | 7.0 | 0.65 | 0.1 - 50 | 50 - 20k |
| 3W | 22.0 | 8.0 | 8.0 | 0.80 | 0.1 - 50 | 50 - 33k |
| 5W | 22.0 | 10.0 | 9.0 | 0.80 | 0.1 - 50 | 50 - 50k |
| 7W | 35.0 | 10.0 | 9.0 | 0.80 | 0.1 - 500 | 500 - 50k |
| 10W | 48.0 | 10.0 | 9.0 | 0.80 | 0.1 - 500 | 500 - 50k |
| 15W | 48.0 | 12.0 | 12.0 | 0.90 | 0.5 - 500 | 500 - 150k |
| 20W / 25W | 60.0 | 13.0 | 13.0 | 0.90 | 0.5 - 1k | 1.1k - 150k |
| 30W | 75.0 | 19.0 | 19.0 | 0.90 | | |
| 40W | 90.0 | 19.0 | 19.0 | 0.90 | | |
| 50W | 90.0 | 19.0 | 19.0 | 0.90 | | |

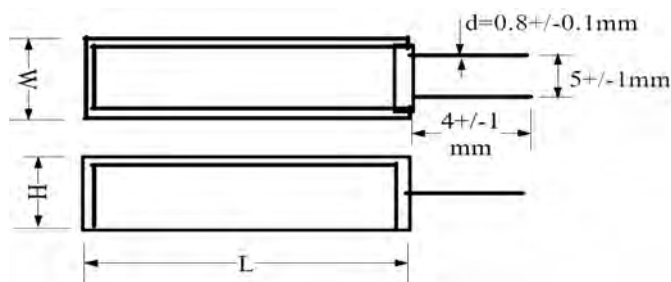
Support up to 100W, contact us for more details.

SQT type



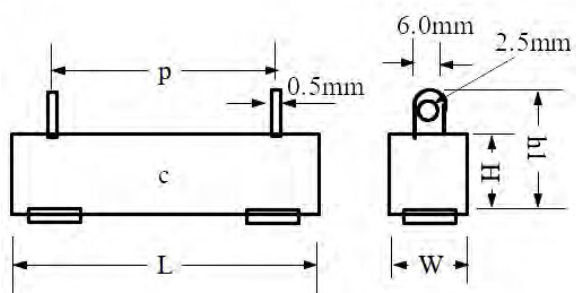
| Rated Power | Dimensions in mm | | | | Resistance ohm | |
|-------------|------------------|----------|----------|----------|----------------|-----------|
| | L +/-1.5mm | W +/-1mm | H +/-3mm | t +/-1mm | SQT | MO+SQT |
| 5W | 22.0 | 10.0 | 9.0 | 1.5 | 0.1 - 50 | 50 - 50k |
| 7W | 35.0 | 10.0 | 9.0 | 3.0 | 0.1 - 500 | 500 - 50k |
| 10W | 48.0 | 10.0 | 9.0 | 3.0 | 0.1 - 500 | 500 - 50k |
| 20W / 25W | 59.0 | 17.0 | 14.5 | 3.5 | 0.1 - 500 | 500 - 50k |

SQM type

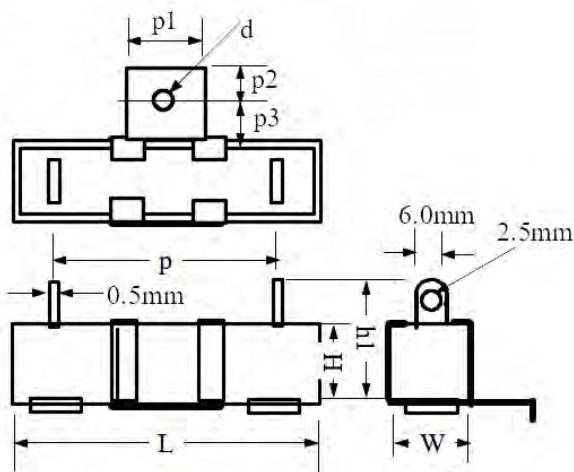


| Rated Power | Dimensions in mm | | | | Resistance ohm | |
|-------------|------------------|----------|----------|------------|----------------|-----------|
| | L +/-1.5mm | W +/-1mm | H +/-3mm | d +/-0.1mm | SQM | MO+SQM |
| 5W | 25.0 | 13.0 | 9.0 | 0.8 | 0.1 - 50 | 50 - 50k |
| 7W | 39.0 | 13.0 | 9.0 | 0.8 | 0.1 - 500 | 500 - 47k |
| 10W | 51.0 | 13.0 | 9.0 | 0.8 | 0.1 - 500 | 500 - 47k |

SQH type



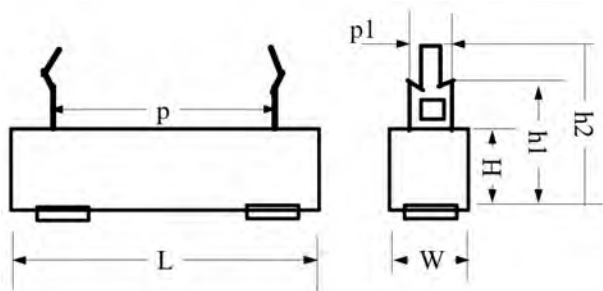
SQH-G type



| Rated Power | Resistance Range ohm | | Dimensions in mm | | | | | | | | |
|-------------|----------------------|------------|------------------|--------|--------|--------|---------|----|----|------|---|
| | SQH | MO+SQH | L +/-2 | H +/-2 | W +/-2 | P +/-2 | h1 +/-2 | p1 | p2 | P3 | D |
| 10W | 0.5 - 500 | 500 - 50K | 48.0 | 10.0 | 10.0 | 32 | 21 | 12 | 6 | 8.0 | 4 |
| 15W | 1 - 500 | 500 - 150K | 48.0 | 12.0 | 12.0 | 32 | 21 | 12 | 6 | 8.0 | 4 |
| 20W | 1 - 500 | 500 - 150K | 63.5 | 12.0 | 12.0 | 42 | 24 | 12 | 6 | 8.0 | 4 |
| 30W | 1 - 500 | | 75.0 | 19.0 | 18.0 | 55 | 30 | 17 | 8 | 10.0 | 4 |
| 40W | 1 - 50 | | 90.0 | 19.0 | 18.0 | 68 | 30 | 17 | 8 | 10.0 | 4 |

Support up to 100W, contact us for more details.

SQZ type



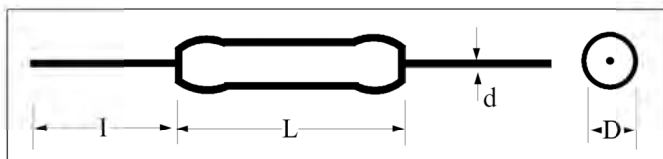
| Rated Power | Resistance Range ohm | | Dimensions in mm | | | | | | |
|-------------|----------------------|------------|------------------|--------|--------|-----------|---------|---------|---------|
| | SQZ | MO+SQZ | L +/-1 | H +/-1 | W +/-1 | P +/-1 | h1 +/-1 | h2 +/-1 | p1 +/-1 |
| 5W | 0.1 - 100 | 100 - 50k | 27.0 | 9.5 | 9.5 | 15.0 | 21 | 24.0 | 5.0 |
| 7W | 0.1 - 500 | 500 - 50k | 35.0 | 9.5 | 9.5 | 22.5 | 21 | 24.0 | 5.0 |
| 10W | 0.2 - 500 | 500 - 50k | 48.0 | 9.5 | 9.5 | 35.0 | 21 | 24.0 | 5.0 |
| 15W | 0.5 - 500 | 500 - 150k | 48.0 | 12.5 | 12.5 | 32.5 | 23 | 36.5 | 5.0 |
| 20W / 25W | 1 - 1k | 1.1 - 150k | 63.50 | 15 | 15 | 42 / 45.0 | 30 | 36.5 | 7.0 |
| 30W / 40W | 1 - 1k | | 75 | 19 | 19 | 57 | 34 | 38 | 7.0 |
| 50W | 1 - 1k | | 90 | 19 | 19 | 67 | 34 | 60 | 7.0 |

Support up to 100W, contact us for more details.

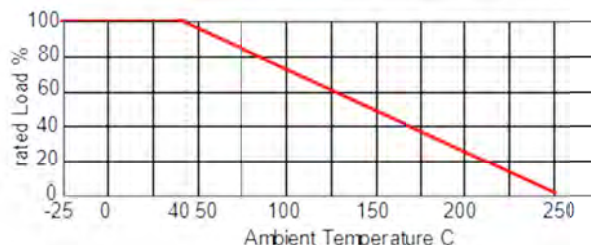
Wire Wound Resistors – KNP series

- Excellent stability in high temperature, resistant to humidity and shock with economic price
- Instant overload capability; low noise figure
- Non Flammable Construction
- Non Inductance type – **NKNP** and **NKNT**
- High Surge Current type available
- With Power up to 30W
- Resistance range : 0.01 ohm – 100k ohm
- Precision tolerance : +/-0.1%, +/-0.5%, +/-1%, +/-5%, +/-10%
- Resistor Colour support : Green, Gray and Black
- Marking for 1/2W to 5W : standard colour code ring
- Marking for 5W to 30W : resistance value and power marking
- Support pulse current requirement
- Support non-standard resistance value

KNP series



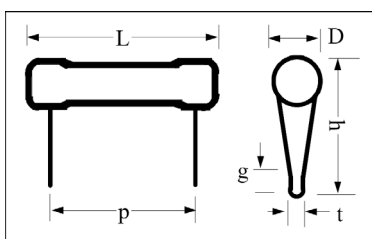
KNP & NKNP Derating Curve



KNP and NKNP type

| Power range | KNP & NKNP dimension | | | | Resistance range in ohm | | Dielectric Voltage |
|-------------|----------------------|----------|------------------------------|---------------------------|-------------------------|-------------|--------------------|
| | D +/-0.5mm | L +/-1mm | lead length (l) in mm +/-3mm | Lead wire diameter d / mm | KNP | NKNP | |
| 1/2W | 3.5 | 9 | 25 | 0.65 | 0.1 – 82 | 0.05 - 41 | 300V |
| 1W | 4.5 | 10.5 | 25 | 0.65 | 0.1 - 100 | 0.05 - 50 | 300V |
| 1Ws | 3.5 | 9 | 25 | 0.65 | 0.1 – 82 | 0.05 - 41 | 300V |
| 2W | 5 | 15 | 25 | 0.78 | 0.1 - 220 | 0.05 - 110 | 350V |
| 2Ws | 4.5 | 10.5 | 25 | 0.78 | 0.1 - 100 | 0.05 - 50 | 300V |
| 3W | 6 | 17 | 25 | 0.78 | 0.1 - 510 | 0.05 - 255 | 400V |
| 3Ws | 5 | 15 | 25 | 0.78 | 0.1 - 220 | 0.05 - 110 | 350V |
| 5W | 8 | 24 | 25 | 0.78 | 0.1 - 1.5K | 0.05 - 750 | 500V |
| 5Ws | 6 | 17 | 25 | 0.78 | 0.1 - 510 | 0.05 - 255 | 400V |
| 7W | 8 | 31 | 25 | 0.78 | 0.1 - 3K | 0.05 - 1.5K | 500V |
| 7Ws | 8 | 24 | 25 | 0.78 | 0.1 - 1.5K | 0.05 - 750 | 500V |
| 8W | 8 | 31 | 25 | 0.78 | 0.1 - 3K | 0.05 - 1.5K | 500V |
| 8Ws | 8 | 24 | 25 | 0.78 | 0.1 - 1.5k | 0.05 - 750 | 500V |
| 10W | 8 | 41 | 25 | 0.78 | 0.1 - 8k | 0.05 - 4K | 500V |
| 10Ws | 8 | 31 | 25 | 0.78 | 0.1 - 3k | 0.05 - 1.5K | 500V |
| 15W | 8 | 52 | 25 | 0.78 | 0.1 - 10k | 0.05 - 5K | 500V |
| 20W | 8 | 61 | 25 | 0.78 | 0.1 - 12k | 0.05 - 6K | 500V |
| 25W | 8 | 61 | 25 | 0.78 | 0.1 - 12k | 0.05 - 6K | 500V |
| 30W | 8 | 70 | 25 | 0.78 | 0.1 - 15k | 0.05 - 7.5K | 500V |

KNT series



KNT and NKNT type

| Power range | KNT & NKNT dimension | | | | | | Resistance range in ohm | | Dielectric Voltage |
|-------------|----------------------|----------|----------------|---------------|---------|---------|-------------------------|-------------|--------------------|
| | D +/- 0.5mm | L +/-1mm | Height h in mm | Pitch p in mm | g in mm | t in mm | KNT | NKNT | |
| 2.5W | 5 | 19 | 10 | 10 | 4 | 1 | 0.1 - 220 | 0.05 - 110 | 300V |
| 4W | 5 | 24 | 10 | 15 | 4 | 1 | 0.1 - 220 | 0.05 - 110 | 400V |
| 5W | 8 | 24 | 23 | 14 | 4.5 | 3 | 0.1 - 1.5K | 0.05 - 750 | 500V |
| 6W | 8 | 24 | 23 | 14 | 4.5 | 3 | 0.1 - 1.5K | 0.05 - 750 | 500V |
| 7W | 8 | 31 | 23 | 22 | 4.5 | 3 | 0.1 - 3K | 0.05 - 1.5K | 500V |
| 8W | 8 | 31 | 23 | 22 | 4.5 | 3 | 0.1 - 3K | 0.05 - 1.5K | 500V |
| 10W | 8 | 41 | 23 | 32 | 4.5 | 3 | 0.1 - 8K | 0.05 - 4K | 500V |
| 15W | 8 | 52 | 23 | 42 | 4.5 | 3 | 0.1 - 10K | 0.05 - 5K | 500V |
| 20W | 8 | 61 | 23 | 52 | 4.5 | 3 | 0.1 - 12K | 0.05 - 6K | 500V |
| 25W | 8 | 61 | 23 | 52 | 4.5 | 3 | 0.1 - 12K | 0.05 - 6K | 500V |
| 30W | 8 | 70 | 23 | 62 | 4.5 | 3 | 0.1 - 15K | 0.05 - 7.5K | 500V |

Electrical Characteristics :

| Testing | Test conditions | Specifications |
|--------------------------|--|--|
| Resistance tolerance | JIS-C-5202 5-1 | Resistance Nominal Tolerance 1 R 1>R +/-5% (J), +/-10% (10) |
| Temperature coefficient | JIS-C-5202 5-2, -55C - 155C | +/-350 PPM/C Max |
| Short Time over load | JIS-C-5202 5-5 1000% rated power 5s for KN, 250% rate voltage 5s for MO | ΔR +/- (2% + 0.05 Ω) |
| Rated Load | Rated wattage 30 min | ΔR +/- (2% + 0.05 Ω) |
| Soldering | JIS-C-5202 6-4 235C 3s | ΔR +/- (0.2% + 0.05 Ω) |
| Insulation Resistance | JIS-C-5202 5-6 | Over 1000M Ω |
| Moisture Resistance | JIS-C-5202 7-9 1000hr | ΔR +/- (2%Ro + 0.05 Ω) |
| Moisture-Proof Load Life | JIS-C-5202 7-10 40C 95% RH on - off cycle 1000hrs. | ΔR +/- (5%Ro + 0.01 Ω) |
| Flammability | 500%, 1000%, 1600% power rating 5min | Not flamed |

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Packaging + Drawing Number

| | | | | |
|------|------------|----------------|---------------------|----------|
| KNP | 60 - 120W | 0.01 ohm = R01 | B=+/-0.1% D=+/-0.5% | T = tape |
| NKNP | 60 - 200W | 0.1 ohm = R1 | F = +/-1% J = +/-5% | B = bulk |
| KNT | 60 - 3000W | 15 ohm = 15R | K= +/-10% | |
| NKNT | | 10k ohm = 10kR | | |

Our company reserve the right to make any changes without further notice to any products herein to improve reliability, function, or design.