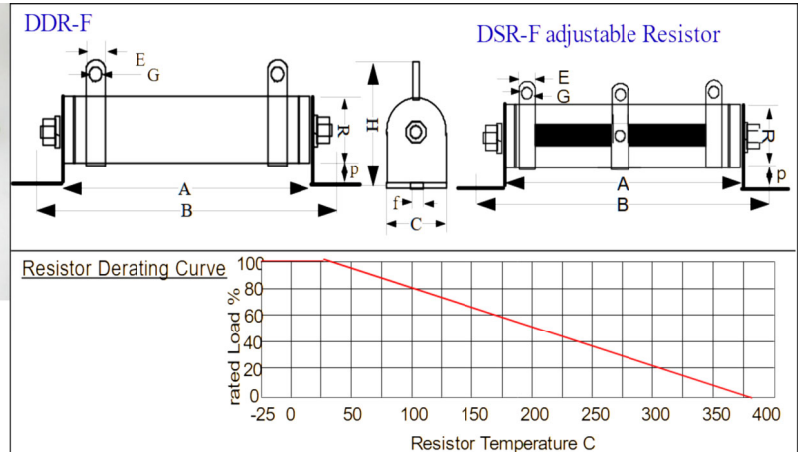
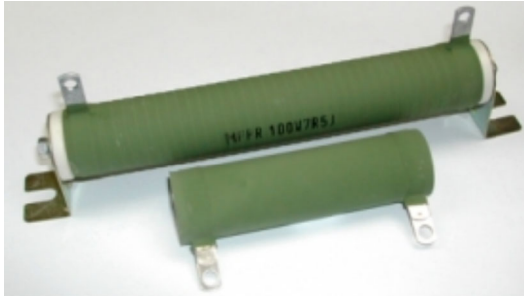


Silicone Coated Wire Wound Power Resistors with mounting fixture – DDR DNR DSR DDVR series

- 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 :

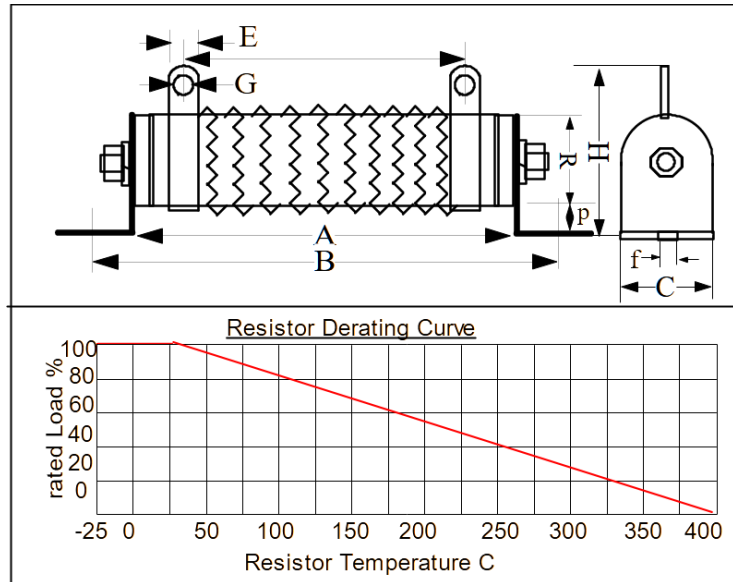
Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number + Multi-Terminals (DDR & DNR)

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%		

Silicone 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 :

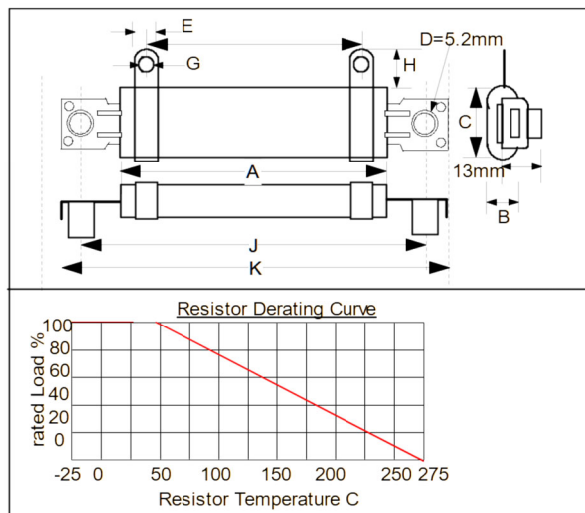
Testing	Testing Conditions	Testing Results
Resistance Tolerance	JIS-C-5202 5-1 testing voltage<3V 25C	+/-5%
Temperature Coefficient	JIS-C-5202 5-2	+/- 200 - 350ppm/C max.
Rated Load	JIS-C-5202 5-4 40C at rated voltage 1hour	$\Delta R \leq \pm (1\% + 0.1\text{ohm})$ surface temperature < 400C
Insulation 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%

Silicone 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

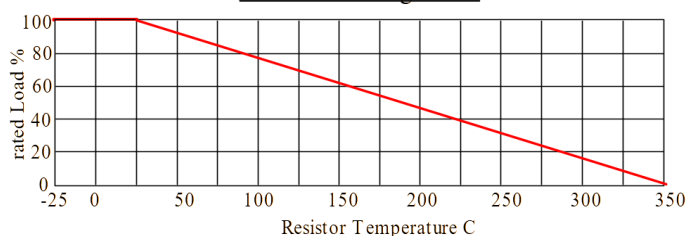
This series of resistors is suitable as loading application, more stable, withstand humidity and higher temperature

- 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.



Resistor Derating Curve



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	29 +/- 3	24 - 12k	24 - 2k
100W	170 +/- 3.5		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	$\Delta R \leq \pm(2\%R_o + 0.05 \text{ ohm})$
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

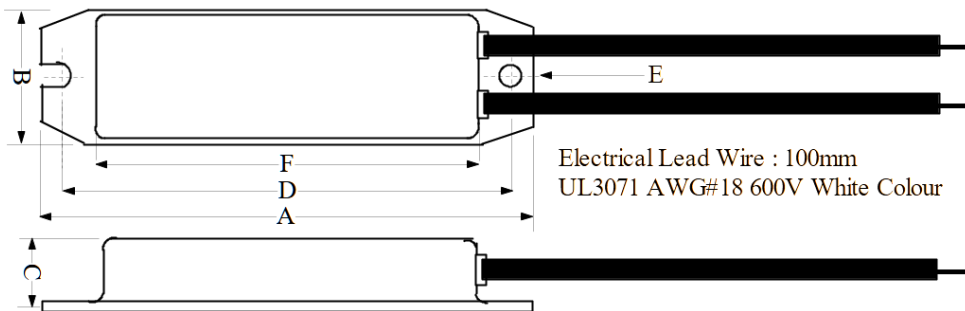
DVRN : low inductance

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 $\pm 0.1\%$ $\pm 0.5\%$ $\pm 1\%$ $\pm 5\%$ $\pm 10\%$ $-0/+5\%$ $-0/+10\%$
- support low ohmic resistance and high resistance value
- support resistor size other than listed below

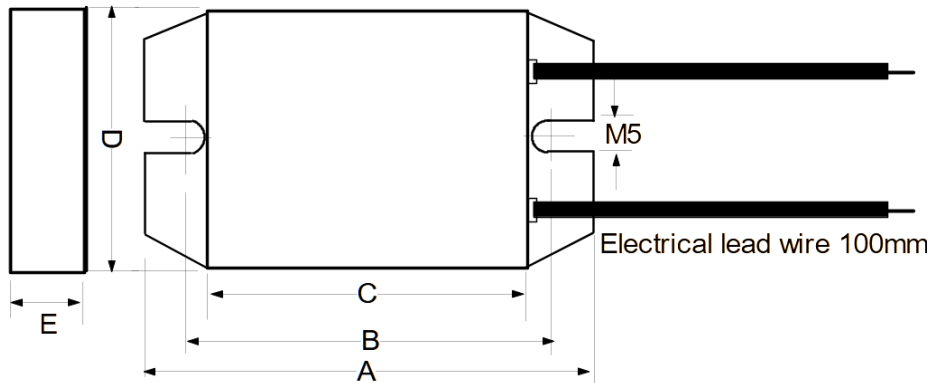
ASQ type :



Power Rating	Dimensions in mm $\pm 1\text{mm}$						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

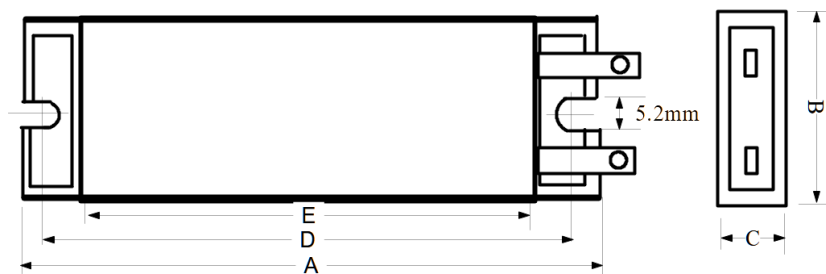
ASQM type : Low Profile Metal Clad Resistors

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



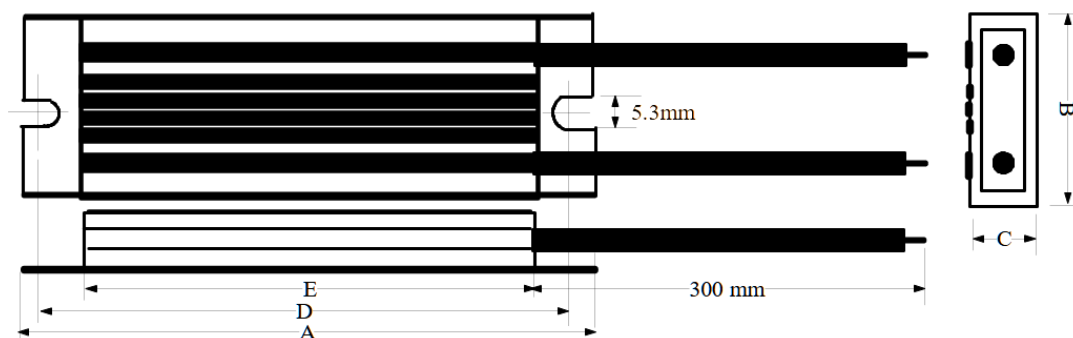
Power Rating	Dimensions in mm and Resistance Range in ohm					
	A	B	C	D	E	Resistance range ohm
60W	100	86	70	45	8	0.1 – 10k
80W	120	106	95	45	8	0.1 – 10k
100W	120	106	95	45	8	0.1 – 10k
120W	150	135	125	45	8	0.1 – 10k
150W	216	200	190	45	8	0.1 – 10k
200W	265	250	240	45	12 / 15 / 20	0.1 – 10k

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

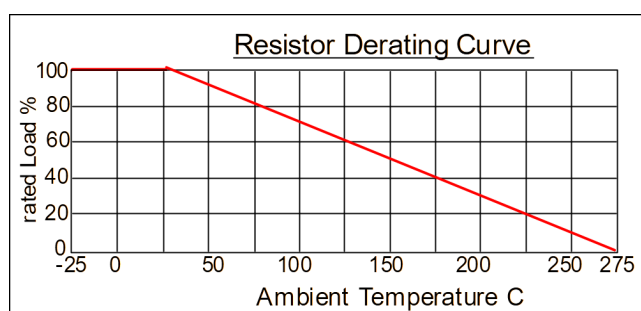


Power Rating	Dimensions in mm +/-1mm					Resistance Range ohm
	A +/-2	B +/-1	C +/-1	D +/-2	E +/-2	
40W	90	40	20	75	60	0.01 – 100k
60W	100 / 115	40	20	100	85	0.01 – 100k
80W	130 / 140	40	20	125	115	0.01 – 100k
100W	140	40	20	125	115	0.01 – 100k
120W	165 / 185	40	20	170	155	0.01 – 100k
150W	185	40	20	170	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 :

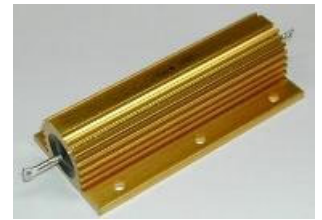
Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

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

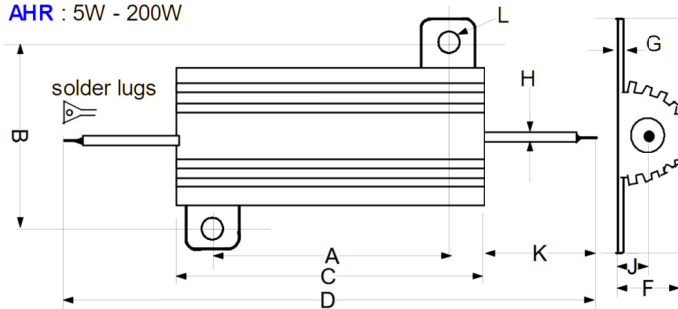
- **Application** : Braking Resistor, Dumping Resistor for motor control, Rush Current Protection, Gate Resistor, Snubber Resistors
- Aluminium housed resistors are wound with nickel copper or nickel chromium wire on ceramic core fitted with end caps. The wound assembly is then encapsulated in an anodized 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



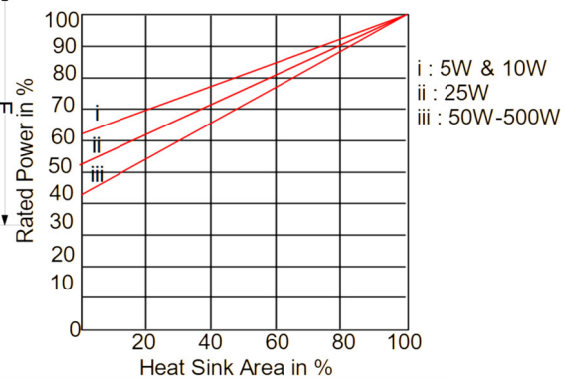
Electrical Specifications :

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

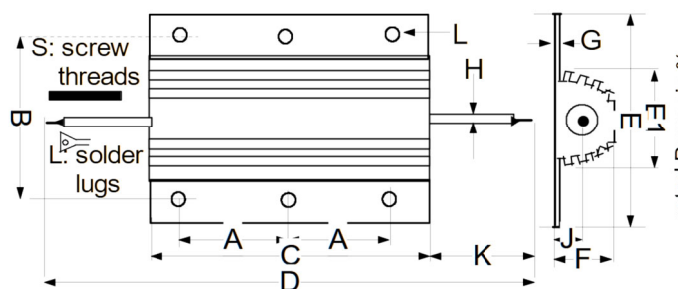


rated Power with heat sink

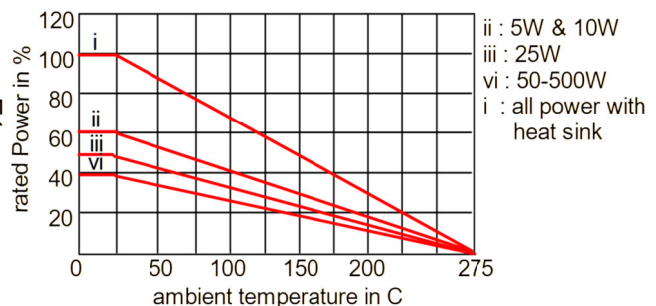


Rated Power	Dimensions in mm											Weight gram
	A +/- 0.2	B +/-0.2	C +/-0.2	D+/-4	E +/-0.5	F +/-0.4	G +/-0.2	H +/-0.1	J +/-0.5	K +/-2	L +/-0.2	
5W	11.2	12.5	15.2	28.5	16.5	8.0	1.7	1.2	3.8	7.0	2.2	3
10W	14.3	15.8	19.5	35.0	20.3	10.0	1.9	2.0	4.2	8.0	2.2	11
25W	18.3	19.8	27.5	49.0	27.4	14.0	2.2	2.0	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

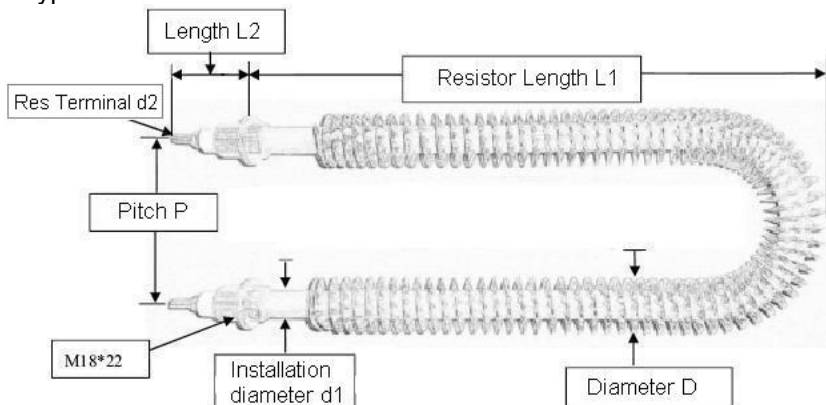
AHR 5 - 50W 0.1 ohm = R1 F = +/-1% G = +/-2% S : screw threads
 75 - 500W 1 ohm = 1R J = +/-5% K = +/-10% L : solder lugs
 15 ohm = 15R R = -0/+5% T = -0/+10% W : electrical wires

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 $\pm 1\%$ $\pm 5\%$ $\pm 10\%$ $-0/+5\%$ $-0/+10\%$
- 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

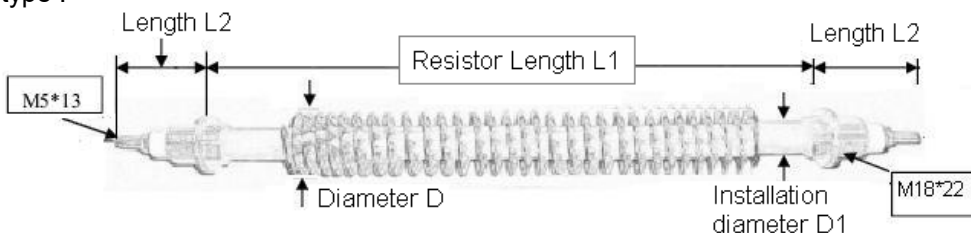


HER-U type :

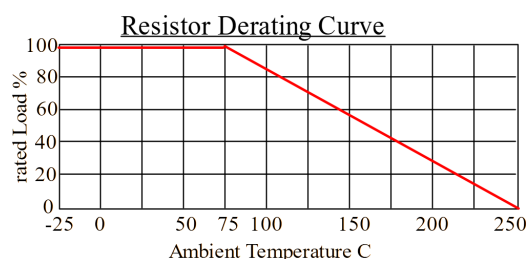


Power Rating	D ± 1 mm	d1 ± 1 mm	d2 ± 1 mm	L1 ± 3 mm #	L2 ± 2 mm	P ± 3 mm	Resistance range
500W	29	14	M5*13	380	40 / 50	70	0.1 – 1k
1000W	29	14	M5*13	600	40	85	0.1 – 1k
1500W	29	14	M6*13	800	40	85	0.1 – 1k
2000W	29	14	M6*13	1200	40	85	0.1 – 1k

HER type :



Power Rating	D ± 1 mm	d1 ± 1 mm	L1 ± 3 mm #	L2 ± 2 mm	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 = $\pm 1\%$ J = $\pm 5\%$
HER	200 - 500W	1 ohm = 1R	K = $\pm 10\%$
		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 :

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

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 = $\sqrt{SQR(\text{Watt} \times \text{Ohm})}$

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	+/-1% +/-2% +/-5% +/-10%	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		360	60	-	M8 / M10			180	
400W by 200W x 2		420 +/-2	42	-	M8			82 / 180	
500W		360 +/-2	62	-	M10			240	
500W by 250W x 2		540 +/-2	42	-	M8	110 / 240			

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

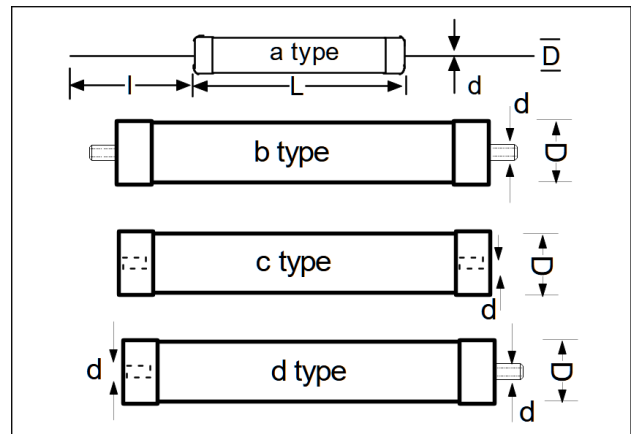
** Support lower Temperature Coefficient 50ppm, 150ppm and 200ppm requirement

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 cleanliness.

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

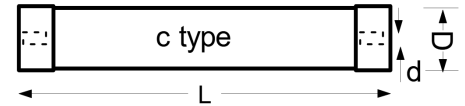
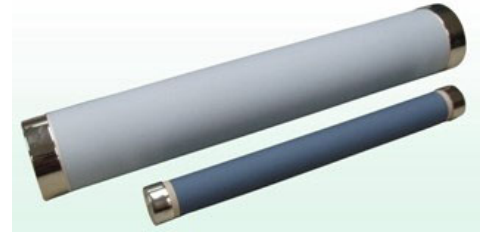
Tolerance : +/-1%, +/-2%, +/-5% and +/-10%

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

Support lower Temperature Coefficient requirement.

Resistor package type : c

The max. voltage depends on the rated resistance SQR(Watt * 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	37 x 310 form by two 150W resistors
500W	200	62 x 360 / 27 x 510 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 cleanness.

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

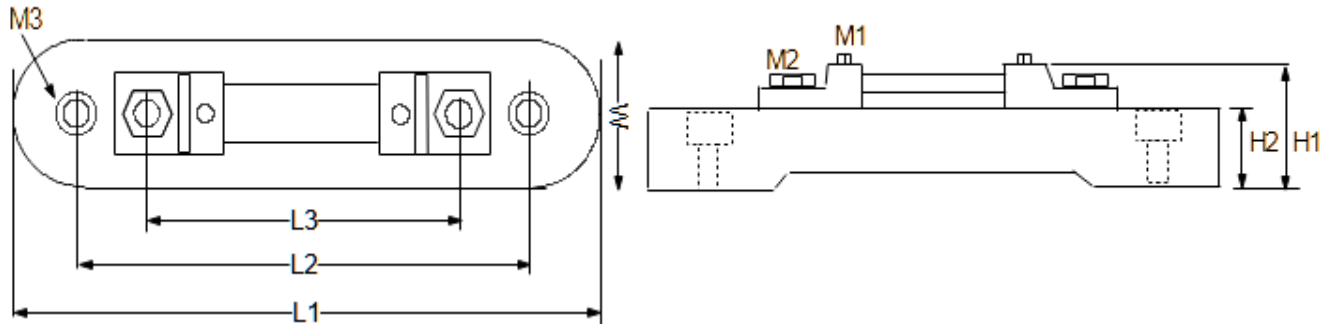
Support high current requirement

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.

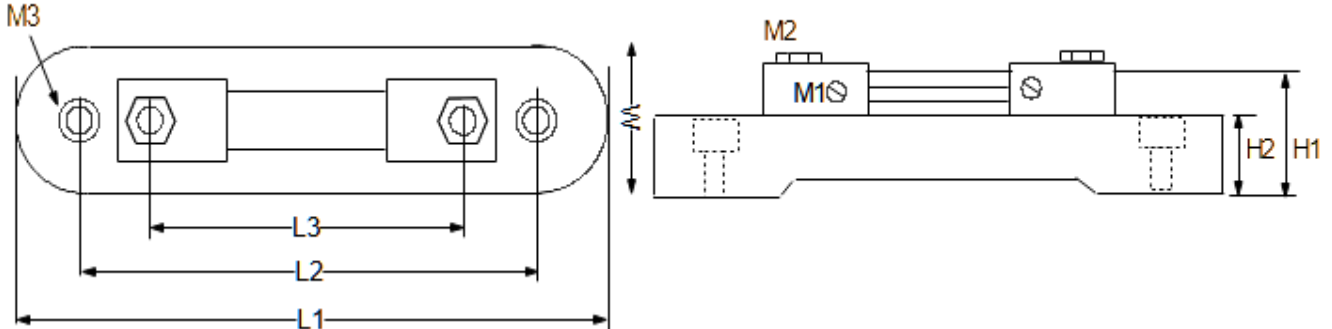


SR-1 1A - 125A



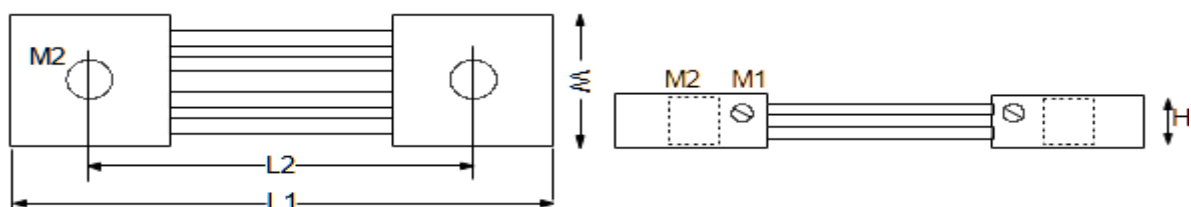
Voltage / Current	Dimensions in mm						Screw size in mm			Weight in g
	L1 +/-1.0	L2 +/-1.0	L3 +/-1.0	W +/-1.0	H1 +/-0.5	H2 +/-0.5	M1	M2	M3	
50mV : 1A to 125A	135	110	72	30	24	10	3	6	6	140
60mV : 1A to 125A	150	125	84	30	30	16	3	6	6	140
75mV : 1A to 125A	150	125	88	30	30	16	3	6	6	140

SR-2 150A - 200A



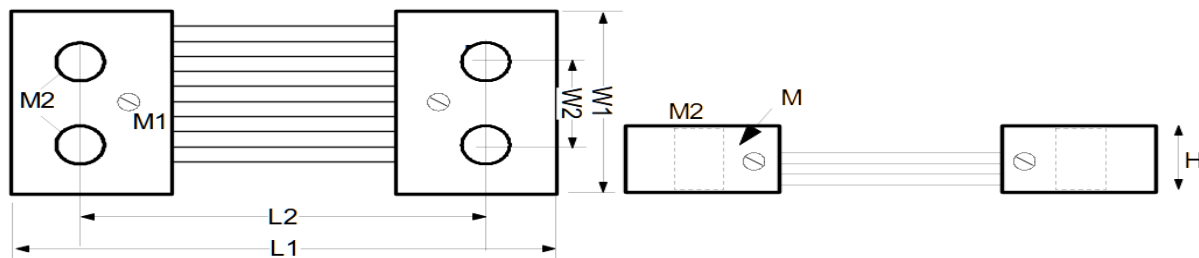
Voltage/ Current	Dimensions in mm						Screw size in mm			Weight in g
	L1 +/-1.0	L2 +/-1.0	L3 +/-1.0	W +/-1.0	H1 +/-0.5	H2 +/-0.5	M1	M2	M3	
50mV : 150A to 200A	135	110	68	30	25	10	3	8	6	245
60mV : 150A to 200A	150	125	80	30	31	16	3	8	6	260
75mV : 150A to 200A	150	125	84	30	31	16	3	8	6	265
100mV : 150A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

SR-3 250A - 600A



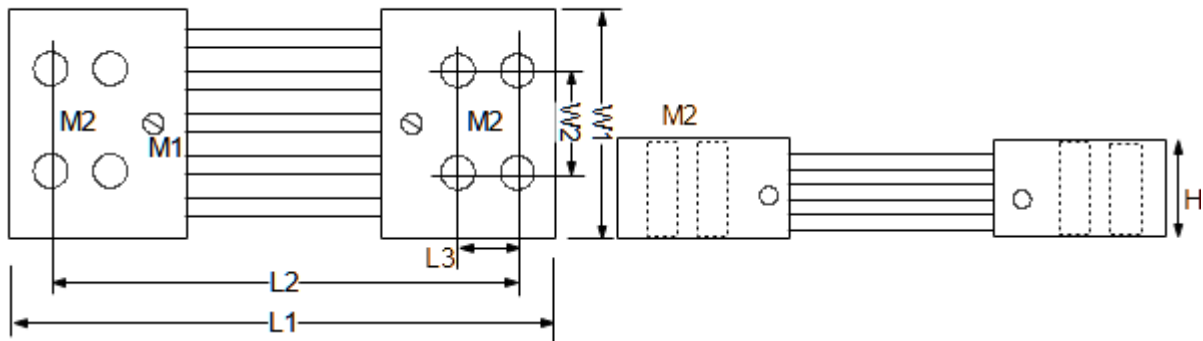
Voltage	Current	Dimensions in mm				Screw size in mm		Weight in g
		L1 +/-1.0	L2 +/-1.0	W +/-1.0	H +/-0.5	M1	M2	
50mV	250 - 300A	117	86	35	18.5	4	13	430
	400A	117	86	44	18.5	4	13	530
	500A	117	86	55	18.5	4	13	640
	600A	123	90	55	21	4	13	830
60mV	250 - 300A	126	96	35	18.5	4	13	430
	400A	126	96	44	18.5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



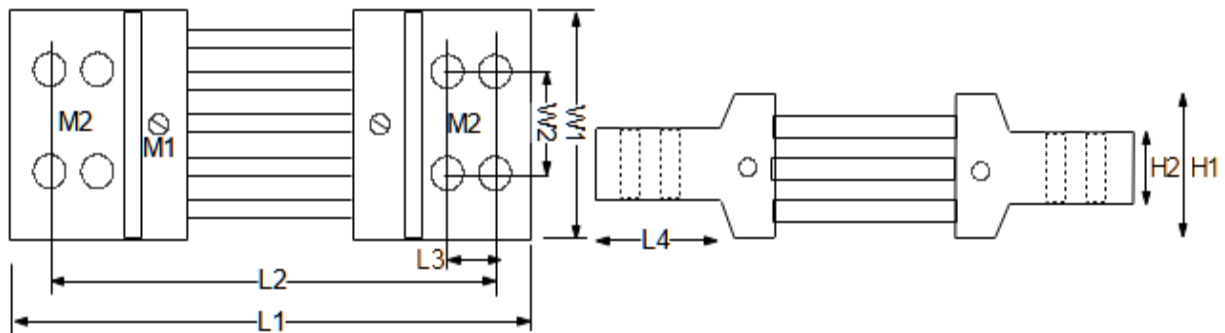
Voltage	Current	Dimensions in mm				Screw size in mm			Weight in kg
		L1 +/-1.0	L2 +/-1.0	W1 +/-1.0	W2 +/-1.0	H	M	M2	
50mV	750A - 800A	123	90	70	35	21	4	13	1.0
	1000A	163	122	70	35	21	4	13	1.5
	1200A	165	124	85	45	21	4	13	1.8
	1500A	163	122	100	49	21	4	13	2.2
60mV	750A - 800A	132	98	70	35	21	4	13	1.1
	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

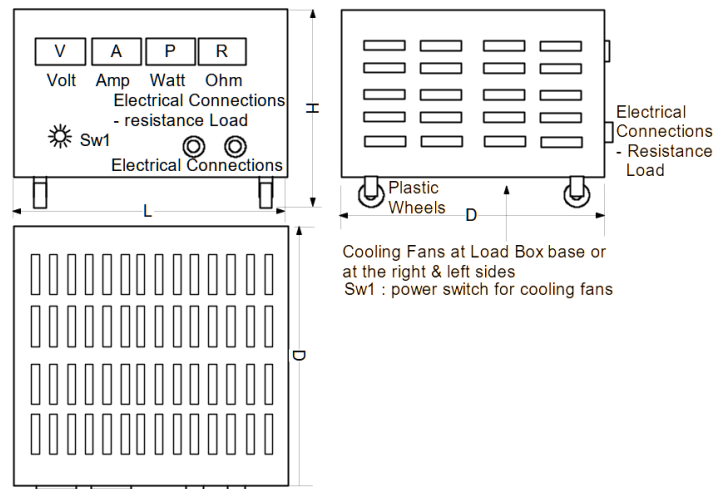
- Support both AC Load Banks and DC Load Banks
- Resistive Load Boxes / Portable Resistance Load Banks : **RB** series up to 300KW
- 3 phase Adjustable Power Resistor Load Banks **RB3A** : up to 600KW
- 3 phase Resistive-Inductive Load Bank **RLB3A** series up to 100KVA
- High Load Current Load Banks : 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 :

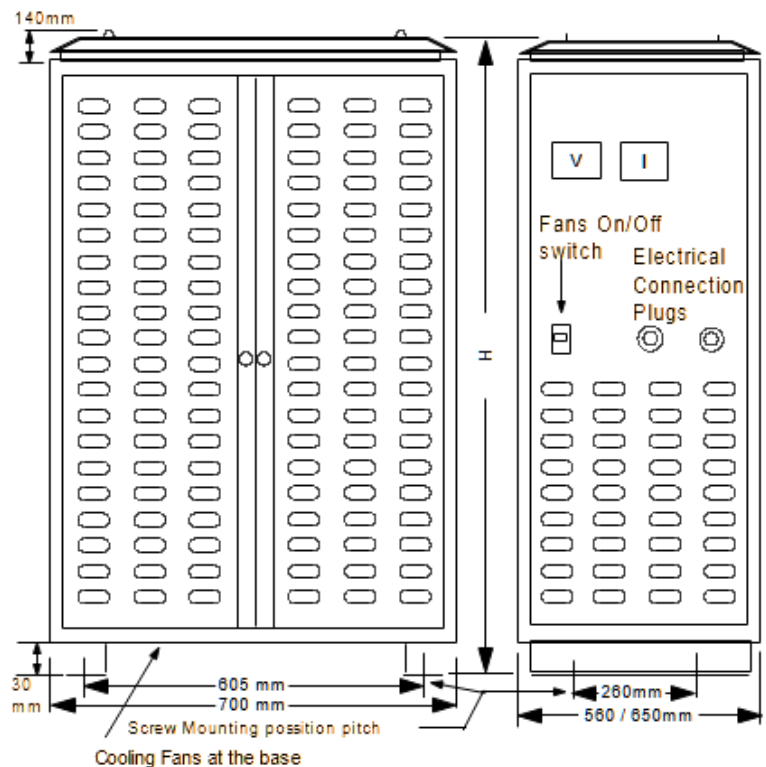
Rated Power	L +/-5mm	D +/-5mm	H +/-15mm
2KW	380	200	210
5KW	500	290	210
6KW	590	290	210
8KW	590	400	210
10KW	680	400	210
12KW	680	400	210
15KW	680	500	210



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

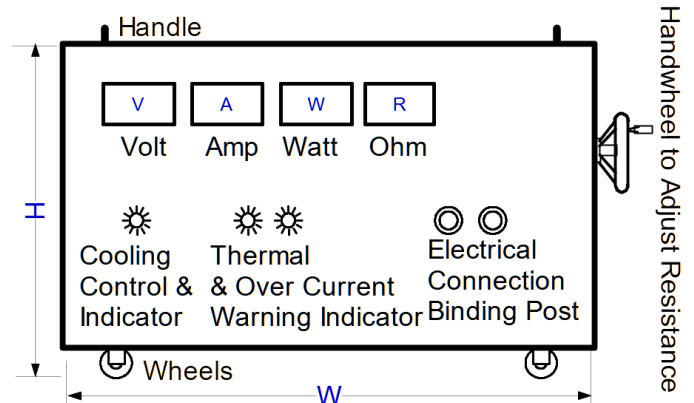
Please state the following parameters :

- maximum Resistance when at the minimum Current
- minimum Resistance when at the maximum Current
- 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.

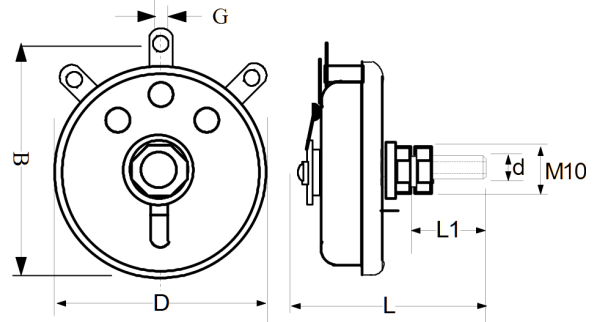
- maximum Resistance at minimum Phase Current
- minimum Resistance at maximum Phase Current
- Voltage (L-N or L-L) at minimum and maximum phase resistance

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

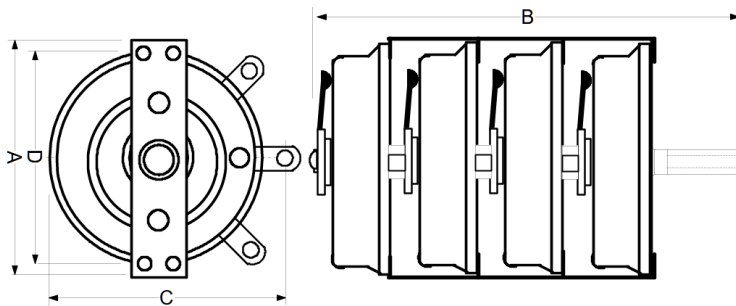
- Application : Resistive Load simulation, Heavy Duty application Machinery, Voltage and Current adjustment for Machinery & Equipment.
- Resistance range is made according to customer application need.
- When the resistance is adjusted towards its minimum value, the workable rheostat power is also decreased. 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

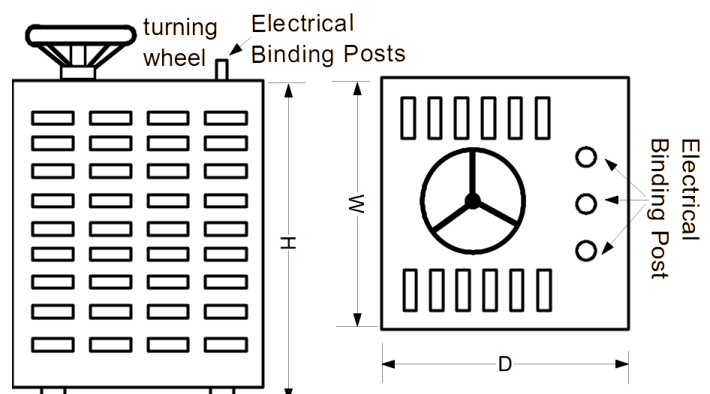
FVR 25W - 500W 0.1 ohm = R1 J= +/-5% Tandem mount P = parallel
 1 ohm = 1R K= +/-10% 1 - 5 S = Serial
 15 ohm = 15R R= -0/+5% N = no connection
 1k ohm = 1kR T= -0/+10%

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

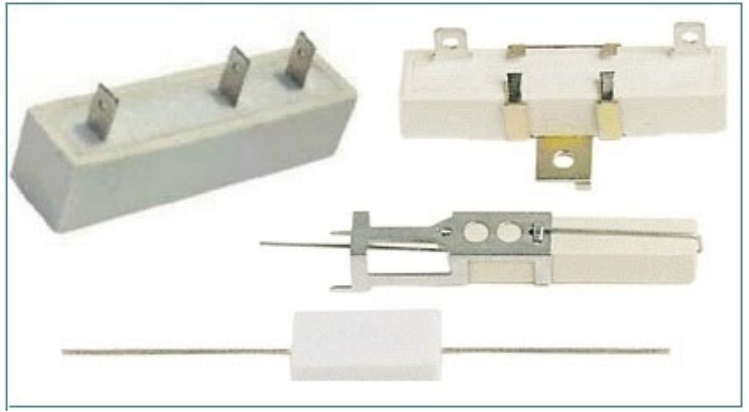


* Load Bank sizes might vary depending on the resistance and load current setting.

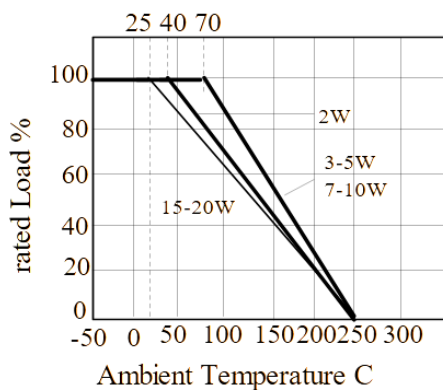
Ceramic Encased Resistors – SQ series

Also known as Cement Resistors

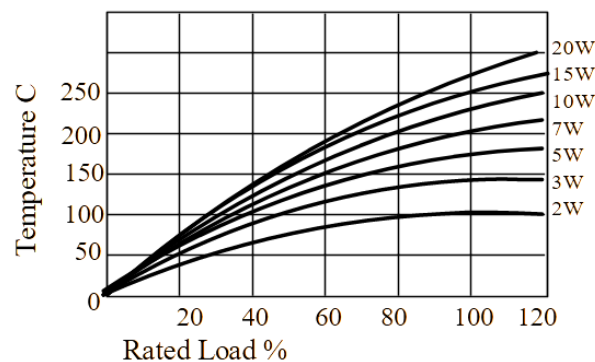
- Excellent stability in high temperature, resistant to humidity and shock with economic price
- Best suitable for heat dissipation; small linear temperature coefficient
- Instant overload capability; low noise figure
- Non flammable construction
- Low Inductance type available
- High Surge Current type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



Derating Curve



Temperature Rise

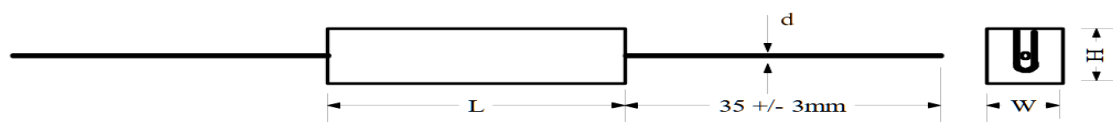


Test	Characteristics	
Resistance Temperature Coefficients	-55C - 155C	+/- 300ppm / C
Short Time Over Load	10 time of rated power 5seconds	+/-2%
Voltage withstanding	1000Vac 1min.	No change
Insulation Resistance	500V	1000M ohm
Temperature Cycle	-30 - 85C for 5 cycle	+/- 1%
Load Life	70C on / off cycle 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		

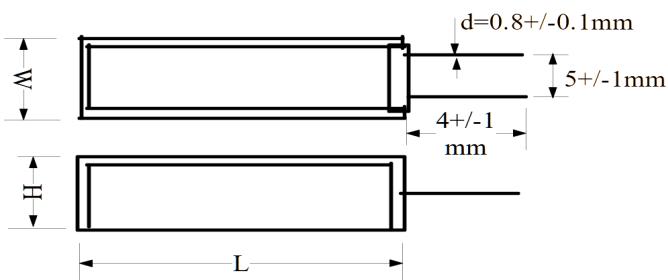
Support up to 100W, contact us for more details.

SQT type



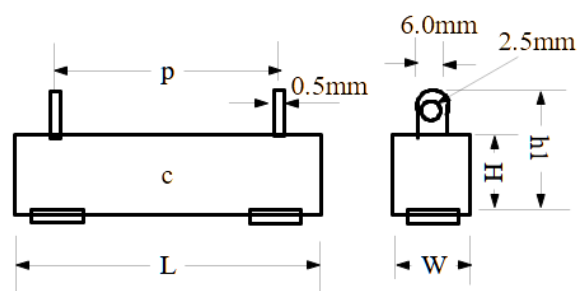
Rated Power	Dimensions in mm				Resistance ohm	
	L +/-1.5mm	W +/-1mm	H +/-3mm	t +/-1mm	SQT	MO+SQT
5W	22.0	10.0	9.0	1.5	0.1 - 50	50 - 50k
7W	35.0	10.0	9.0	3.0	0.1 - 500	500 - 50k
10W	48.0	10.0	9.0	3.0	0.1 - 500	500 - 50k
20W / 25W	59.0	17.0	14.5	3.5	0.1 - 500	500 - 50k

SQM type

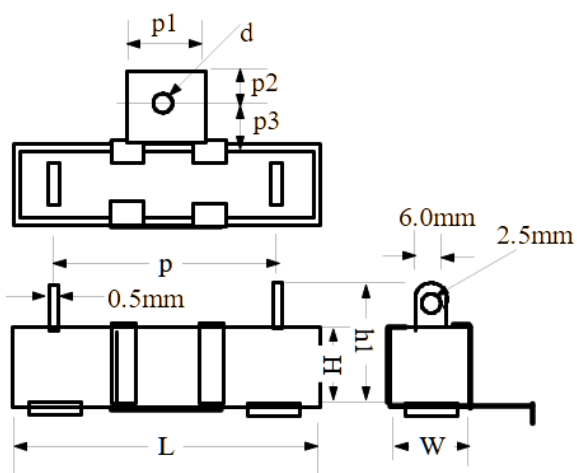


Rated Power	Dimensions in mm				Resistance ohm	
	L +/-1.5mm	W +/-1mm	H +/-3mm	d +/-0.1mm	SQM	MO+SQM
5W	25.0	13.0	9.0	0.8	0.1 - 50	50 - 50k
7W	39.0	13.0	9.0	0.8	0.1 - 500	500 - 47k
10W	51.0	13.0	9.0	0.8	0.1 - 500	500 - 47k

SQH type



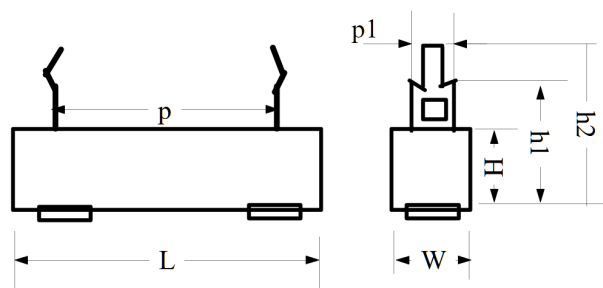
SQH-G type



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.

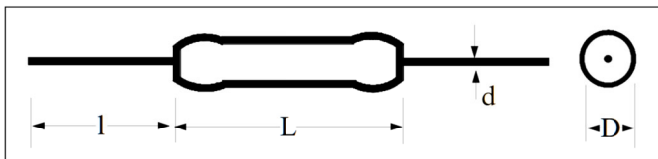
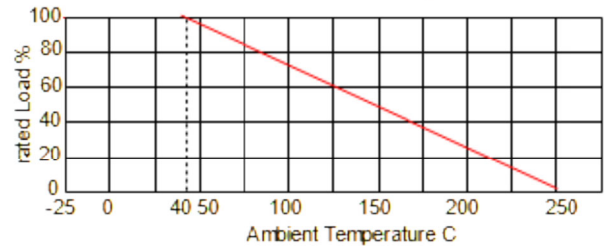
Wire Wound Resistors – KNP series

- 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



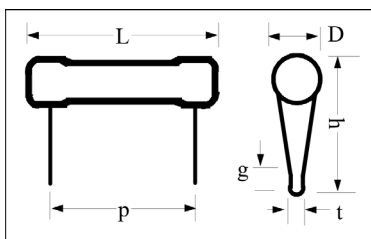
KNP & NKNP Derating Curve



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.