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(DRS)
Smooth Wound Adjustable Resistor

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Product Introduction

Choose Token's smooth-wound adjustable power resistor (DRS) for applications requiring settings at different resistance values.

These high energy wire wounds are equipped with an adjustable lug, making them ideal for adjusting circuits, obtaining unique resistance values and setting equipment to meet various line voltages.

DRS resistors feature a hollow core to permit secure fastening with thru bolts with washers or spring-type clips. They also offer the durability of lead free vitreous enamel, or silicone coating and all-welded construction.

The Power (DRS) Adjustable Resistor is RoHS compliant and lead free. For non-standard technical requirements and custom special applications, please contact us. Or link to Token official website "High Power Resistors" to get more information.

To Calculate Max. Amperes:

- Voltage = (Watts × Ohms) $^{1/2}$

Power Rating:

- Based on 25℃ free air rating. The stated wattage rating applies only when the entire resistance is in the circuit.
- Setting the lug at an intermediate point reduces the wattage rating by approximately the same proportion.
- Example: If the lug is set at half resistance, the wattage is reduced by approximately one-half.
- Wattage is proportional to this adjusted resistance value.
- Adjustability is 10% to 90% of full resistance value.

Features:

- Adjustable lug supplied.
- High wattage applications.
- Flame resistant and rugged lead coating.
- Terminals suitable for soldering or bolt connection.
- Resistance Tolerance: J(±5%), K(±10%).

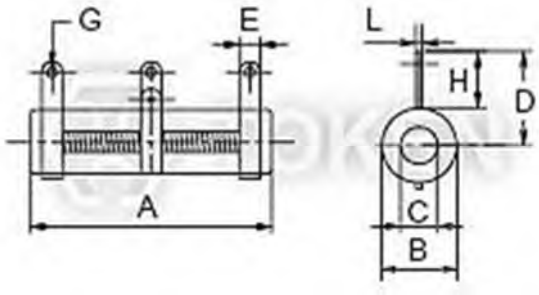
Options:

- Adjustable, fixed, or tapped styles are available.
- Special terminals available for non-standard applications.
- Single and double quick connect terminals can be specified.
- Standard lug terminals available with or without terminal hardware.
- Non-inductive Ayrton Perry windings can be specified.
- Special temperature coefficients, tolerances

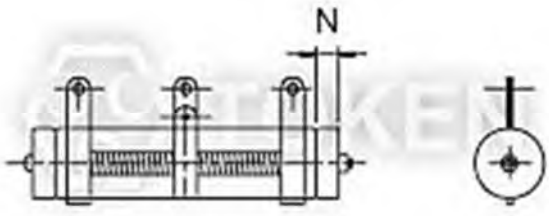
DRSA Dimensions

Dimensions (DRS-A 20W ~ 1300W)

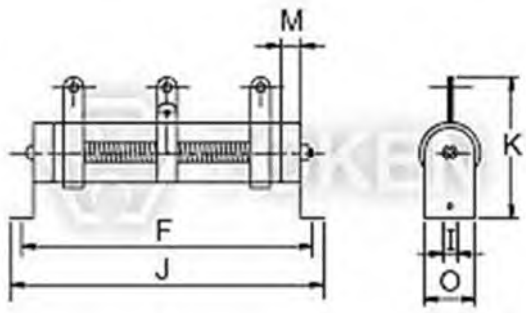
Wattage Rating	Dimensions (Unit: mm)															Max. Pickable Resistance Value (Ω)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
20W	60	17	8	22	5	78	2	12	4	90	36	1.0	-	6	16	1~150Ω
30W	80	17	8	22	5	100	2	12	4	112	36	1.0	-	6	16	1~250Ω
40W	110	17	8	22	5	128	2	12	4	140	36	1.0	-	6	16	1~400Ω
50W	110	25	16	30	8	150	5	18	6	166	58	1.2	6	-	27	1.5~500Ω
60W	90	28	18	32	8	130	5	19	6	146	60	1.2	6	-	27	1.5~550Ω
80W	110	28	18	32	8	150	5	19	6	166	60	1.2	6	-	27	2~650Ω
100W	140	28	18	32	8	180	5	19	6	196	60	1.2	6	-	27	2~750Ω
120W	160	28	18	32	8	200	5	19	6	216	60	1.2	6	-	27	3~850Ω
150W	195	28	18	32	8	235	5	19	6	251	60	1.2	6	-	27	3~1.2KΩ
160W	185	35	24	36	10	225	5	19	8	245	76	1.6	6	-	34	5~1.3KΩ
200W	210	35	24	36	10	250	5	19	8	274	76	1.6	6	-	34	6~1.5KΩ
250W	210	40	25	38	12	250	5	20	8	274	78	1.6	6	-	34	6~2KΩ
300W	260	40	25	38	12	300	5	20	8	320	78	1.6	6	-	34	7~2.5KΩ
400W	330	40	25	38	12	370	5	20	8	395	78	1.6	6	-	34	8~3.5KΩ
500W	330	50	35	50	12	380	6	25	9	400	100	1.6	8	-	40	8~4.5KΩ
600W	400	50	35	50	12	450	6	25	9	470	100	1.6	8	-	40	8~5.5KΩ
700W	460	50	35	50	12	510	6	25	9	530	100	1.6	8	-	40	12~7KΩ
800W	460	60	40	55	15	515	6	30	10	535	110	1.6	10	-	50	12~8KΩ
1000W	540	60	40	55	15	595	6	30	10	615	110	1.6	10	-	50	15~9KΩ
1300W	650	65	42	62	15	702	6	30	10	722	115	1.6	10	-	50	15~11KΩ



(DRSA) N - No Mount



(DRSA) Z - Vertical Mount

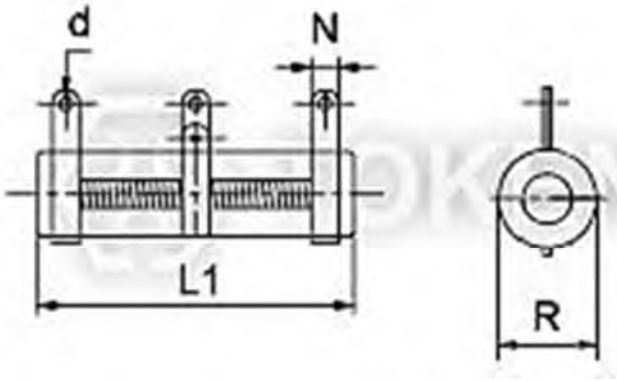


(DRSA) G - Horizontal Mount

DRSB Dimensions

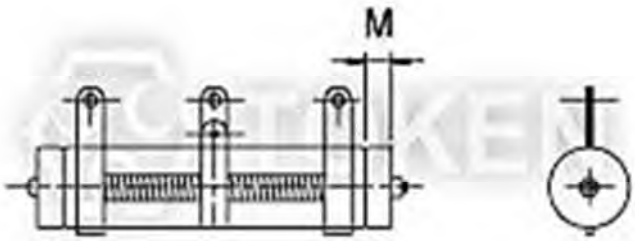
Dimensions (DRSB 15W ~ 20000W)

Wattage Rating	Dimensions (Unit: mm)										Max. Pickable Resistance Value (Ω)
	R	L1	L2	L3	H	N	d	M	q	Q	
15W	15	45	65	85	40	6	3.5	3.5	4.5	15	1~1KΩ
20W	15	50	70	90	40	6	3.5	3.5	4.5	15	1~1KΩ
25W	20	50	80	100	50	6	3.5	5	5	20	2~1KΩ
30W	20	70	100	120	50	6	3.5	5	5	20	2~1KΩ
40W	20	87	115	137	50	6	3.5	5	5	20	2~1KΩ
50W	28	90	115	143	68	9	4.5	5.5	6	27	5~1KΩ
80W	28	90	115	143	68	9	4.5	5.5	6	27	5~2KΩ
100W	28	170	195	223	68	9	4.5	5.5	6	27	10~3KΩ
150W	28	215	240	268	68	9	4.5	5.5	6	27	10~3KΩ
200W	28	267	292	320	68	9	4.5	5.5	6	27	10~5KΩ
250W	28	267	292	320	68	9	4.5	5.5	6	27	10~5KΩ
300W	40	267	300	343	90	10	4.5	6	6	39	20~5KΩ
400W	40	330	365	406	90	10	4.5	6	6	39	20~5KΩ
500W	50	330	365	415	98	10	6	8.5	8	49	20~5KΩ
600W	50	330	365	415	98	10	6	8.5	8	49	20~5KΩ
700W	50	400	435	485	95	10	6	8.5	8	49	20~5KΩ
800W	70	300	320	362	138	15	8	-	8	69	40~500Ω
1000W	70	300	320	362	138	15	8	-	8	69	40~500Ω
1500W	70	415	435	477	138	15	8	-	8	69	40~500Ω
2000W	70	510	530	572	138	15	8	-	8	69	40~500Ω
2500W	70	600	620	662	138	15	8	-	8	69	40~500Ω
3000W	70	600	620	662	138	15	8	-	8	69	40~500Ω
4000W	100	430	450	521	155	15	8	-	8	99	40~500Ω
5000W	100	500	620	691	155	15	8	-	8	99	40~500Ω
6000W	100	600	720	791	155	15	8	-	8	99	40~500Ω
10000W	150	600	625	720	350	30	8	-	10	150	40~500Ω
12000W	150	660	685	780	350	30	8	-	10	150	40~500Ω
15000W	150	660	685	780	350	30	8	-	10	150	40~500Ω
20000W	150	1000	1030	1120	350	30	8	-	10	150	40~500Ω

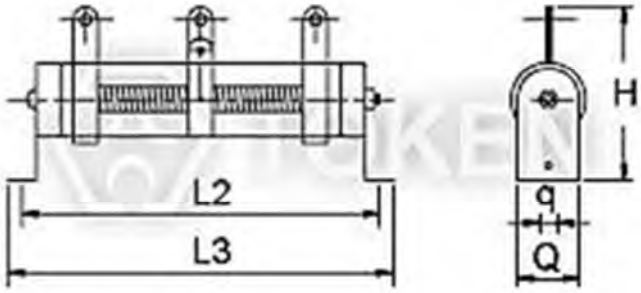


(DRSB) N - No Mount

Wattage Rating	Dimensions (Unit: mm)										Max. Pickable Resistance Value (Ω)
	R	L1	L2	L3	H	N	d	M	q	Q	



(DRSB) Z - Vertical Mount



(DRSB) G - Horizontal Mount

Specification

Specification (DRS)

Test Item	Test Methods	Characteristics
Load life	JIS-C-5202 7-10 90 minutes ON - 30 minutes OFF500 hours	Free of appearance or structural irregularity Surface coating crack ΔR/R≤ ±(1%+0.05Ω)
Load rating	JIS-C-5202 5-4	ΔR/R≤±(0.5%+0.1Ω) Surface temperature up 350℃ MAX
Humidity	JIS-C-5202 7-5 40℃ 90%RH 240 hours	Free of appearance or structural irregularity Surface coating crack ΔR/R≤ ±(3%+0.1Ω)
Vibration	JIS-C-5202 6-3 1.5m/m 10 ~ 50 ~ 10 Hz/Min. X-Y-Z 2 hours each	Free of appearance or structural irregularity Surface coating crack ΔR/R≤ ±(1%+0.05Ω)
Thermal shock	JIS-C-5202 7-3 Room temp 30 minutes ON-55℃ 15 minutes OFF	Free of structural irregularity ΔR/R≤ ±(2%+0.1Ω)
Terminal strength	JIS-C-5202 6-1 8kg 30 seconds	Free of appearance or structural irregularity
Flame retardation	JIS-C-5202 7-13-3-2 100% - 600% rated wattage load	US UL-94 flame retardation test V-0 grade noncombustible
Resistance tolerance	JIS-C-5202 5-1	Resistance Nominal Tolerance 1≤R 1>R ±5%(J) ±10%(K)
Short-term overload	JIS-C-5202 5-5 1000% rated wattage 5 seconds	Free of appearance or structural irregularity ΔR/R≤ ±(2%+0.1Ω)
Insulation resistance	JIS-C-5202 5-6 500VDC	100MΩ Min.
Temperature coefficient	JIS-C-5202 5-2	±200PPM/℃ MAX
Dielectric withstanding voltage	JIS-C-5202 5-7 1000VDC 1 minute Between terminal and anchor stand	Free of appearance or structural irregularity ΔR/R≤ ±(0.1%+0.05Ω)
REMARKS:	1. Resistance and resistance tolerance were tested in-house with micro resistance meter. 2. Coating refers to UL-certified data provided by supplier.	

Application Notes

Application Notes of Adjustable Wire wound (DQS)

Determination of End Resistance Value of FVR, DQS, DSRA, DSRB, BSR, BSQ:

- Resistance Range means you can choose one maximum resistance value (Max. Pickable Resistance / End resistance value) at one of FVR, DQS, DSRA, DSRB, BSR, BSQ VR (Variable Resistor) type.
- After End Resistance Value confirmed, the minimum resistance (start resistance value) will be determined by depending on resistance of wire and wirewound type.

Power Rating of Variable Resistor:

The part Number formation of FVR, DQS, DSRA, DSRB, BSR and BSQ:

Product type	-	Rated Wattage	-	Max. Pickable Resistance (Ω)	-	Resistance Tolerance

Product type means one of FVR, DQS, DSRA, DSRB, BSR, BSQ.
Rated Wattage means power rating at End Resistance Value.
Resistance Value (Ω) means maximum resistance value (End Resistance Value).
Resistance Tolerance means precision range of End Resistance Value.

1. Power Rating of VR (Variable Resistor) is determined by the maximum resistance value (End Resistance Value).
2. Resistance and Power Rating should be decreased while you are adjusting the screw.

Power Rating:

- Based on 25℃ free air rating. The stated wattage rating applies only when the entire resistance is in the circuit.
- Setting the lug at an intermediate point reduces the wattage rating by approximately the same proportion.
- Example: If the lug is set at half resistance, the wattage is reduced by approximately one-half.
- Adjustability is 10% to 90% of full resistance value.
- Wattage is proportional to this adjusted resistance value.

If you need current constant type or special specifications, please feel free to contact us.

Order Codes

Order Codes (DRS)

DRSA	600W	250R	J	G

Part Number	Rated Power (W)
DRSA	20W~1300W
DRSB	15W~20000W

Resistance Value	
0R1	0.1Ω
1R	1Ω
10R	10Ω
100R	100Ω
1K	1KΩ
10K	10KΩ
100K	100KΩ

Resistance Tolerance (%)	
J	±5%
K	±10%

Assembly Method	
N	No mount.
C	Clip mount.
G	Horizontal mount.
Z	Vertical mount.

General Information

Benefits & Features

Providing design engineers with an economical resistor with high quality performance, Token Electronics offers industry grade power wire wound devices.

Token provide terminal blocks, thermal switches, fusing, fans, junction boxes, screened or solid bottom plates, conduit knockouts, and customer specified requirements. For large applications a welded frame construction is utilized to provide a robust design for power resistor mounting in both indoor and outdoor environments.

Products range from large capacity metal clad, nonflammable fixed and adjustable, wave ribbon wire-wound, slide, starter, box type, to nonflammable flat type. Token extends a complete line for both military and commercial applications.

Utilization Notes

1. Smoke emitted from non-flammable resistors on initial use in powered circuits is a normal phenomenon and the component can be safely utilized.
2. All resistors manufactured by Token Electronics Industry Corporation comply with the U.S. UL-94 non- flammability test, Class V-0, a continuous combustion period of zero seconds.
3. Never use organic solvents to clean non-flammable resistors.
4. Non-flammable resistors cannot be utilized in oil.
5. Non-flammable resistors cannot be used in high frequency machinery because of the inductance produced by the windings. A suitable type of resistor must be selected. Contact us for details.
6. In applications where resistors are subject to intermittent current surges and spikes, be sure in advance that the components selected are capable of withstanding brief durations of increased load.
7. Do not exceed the recommended usable load. Resistors must use within the rated voltage range to prevent the shortening of service life and/or failure of the wound resistance elements.
8. Minimum load. Resistors must be utilized at 1/10 or more of the rated voltage to prevent poor conductance due to oxidation build-up.
9. Although the hardness exceeds that of a 3H pencil lead, do not nick the resistor coating with screw drivers or other pointed objects.
10. Avoid touching non-flammable resistors in operation; the surface temperature ranges from approximately 350℃ ~ 400℃ when utilized at the full rated value. Maintaining a surface temperature of 200℃ or less will extend resistor service life.
11. Keep temperature from rising by choosing a resistor with a higher rated capacity; do not use a component having the exact load value required. For considerations of safety in extended period applications, the resistor rating should be more than four times higher than the actual wattage involved, but never use a resistor at less than 25% of its rated power.
12. Application and Placement: Wire-wound resistors use different gauges of wire as resistance elements. Sometimes the gauge is extremely thin (finer than a strand of human hair) and very susceptible to breakage in environments containing salts, ash, dust and corrosives. Avoid utilization in such environments. Do not install in dusty areas because the accumulation will cause shorts and poor conductance.