

Version:  
March 1, 2017

# **DIRECT**

## **Electronics Tech.**

### **(ZR)**

# **Wire Wound Flat Thin Resistors**

Web: [www.direct-token.com](http://www.direct-token.com)

Email: [rfq@direct-token.com](mailto:rfq@direct-token.com)

**Direct Electronics Industry Co., Ltd.**

**China:** 12F, Zhong Xing Industry Bld., Chuang Ye Road,  
Nan Shan District, Shen Zhen City,  
Guang Dong, China 518054  
Tel: +86 755 26055363; Fax: +86 755 26055365

**Taiwan:** No.137, Sec. 1, Zhongxing Rd., Wugu District,  
New Taipei City, Taiwan, R.O.C. 24872  
Tel: +886 2981 0109 Fax: +886 2988 7487

**▶ Product Introduction**

**When limited space is required, choose Direct's "Thin" flat wire-wound stackable power resistors.**

Direct oval-shaped ceramic-core resistors feature a low profile to permit installation in spaces with height restrictions.

They are also equipped with integral mounting brackets so they can be fastened to a chassis and stacked in locations with limited surface area. When properly fastened, the mounting brackets add a heat sinking benefit resulting in a smaller size per watt. Durable ZR flat resistors are fully welded and coated with lead free non-flammable resin.

ZR resistors are suitable for educational modeling applications, load testing, industrial machinery, electric power distribution, instruments, automation control installations, etc.

The ZR Series is RoHS compliant and lead free. For non-standard technical requirements and custom special applications, please contact us, or link to Direct official website "[High Power Resistors](#)" to get more information.

**Non-Inductive:**

- Ayrton Perry type non-inductive winding is available. When required add "N" to the part number.

**Construction:**

- (ZR) resistor is a flat tubular ceramic rod has two terminals and is wirewound with either copper wire or chromium alloy wire as a resistance element.
- Mainly utilized for industrial installations where height is limited. Features excellent windings, taps adding, low impedance, and PC board insertable.

**Notes:**

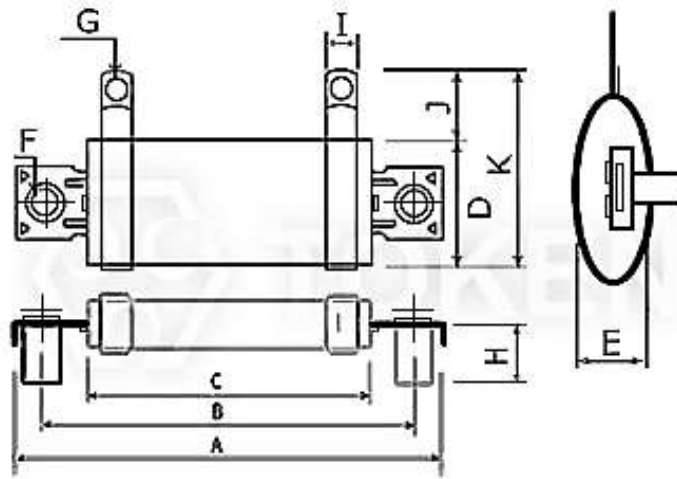
- When resistors are stacked, use washers or spacers as required to insure clearance and improve power dissipation.



► **ZDR Dimensions**

**Dimensions Set-Type (ZDR 40W ~ 300W)**

Wattage Rating	Dimensions(Unit: mm)											Resistance Range(Ω)
	A	B	C	D	E	F	G	H	I	J	K	
<b>40W</b>	83	70	50	28	11	5.2	4.1	13	6.5	12	42	1~1KΩ
<b>55W</b>	123	110	90	28	11	5.2	4.1	13	6.5	12	42	1.5~2KΩ
<b>70W</b>	153	140	120	28	11	5.2	4.1	13	6.5	12	42	2~3KΩ
<b>95W</b>	183	170	150	28	11	5.2	4.1	13	6.5	12	42	2.5~4KΩ
<b>100W</b>	193	180	160	28	11	5.2	4.1	13	6.5	12	42	3~5KΩ
<b>120W</b>	218	205	185	28	11	5.2	4.1	13	9	12	42	3.5~6KΩ
<b>150W</b>	218	205	185	35	11	5.2	5.2	13	9	13	48	4~7KΩ
<b>200W</b>	243	230	210	35	11	5.2	5.2	13	9	13	48	4.5~8KΩ
<b>250W</b>	287	274	254	35	11	5.2	5.2	13	9	13	48	5~9KΩ
<b>300W</b>	333	320	300	35	11	5.2	5.2	13	9	13	48	5.5~10KΩ

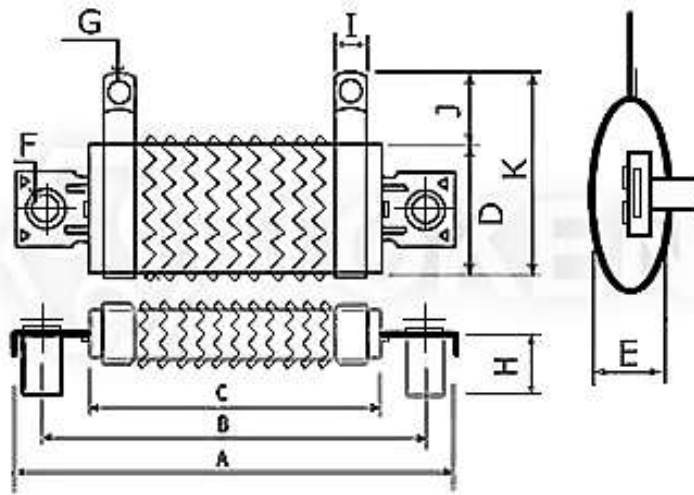


Set-Type (ZDR 40W ~ 300W) Dimensions

**ZQR Dimensions**

**Dimensions Wave Type (ZQR 60W ~ 450W)**

Wattage Rating	Dimensions(Unit: mm)											Resistance Range(Ω)
	A	B	C	D	E	F	G	H	I	J	K	
60W	83	70	50	28	11	5.2	4.1	13	6.5	12	42	1~4Ω
80W	123	110	90	28	11	5.2	4.1	13	6.5	12	42	1.5~5Ω
100W	153	140	120	28	11	5.2	4.1	13	6.5	12	42	2~7Ω
140W	183	170	150	28	11	5.2	4.1	13	6.5	12	42	2.5~9Ω
150W	193	180	160	28	11	5.2	4.1	13	6.5	12	42	3~10Ω
180W	218	205	185	28	11	5.2	4.1	13	9	12	42	3.5~12Ω
225W	218	205	185	35	11	5.2	5.2	13	9	13	48	4~15Ω
300W	243	230	210	35	11	5.2	5.2	13	9	13	48	4.5~20Ω
375W	287	274	254	35	11	5.2	5.2	13	9	13	48	5~25Ω
450W	333	320	300	35	11	5.2	5.2	13	9	13	48	5.5~30Ω



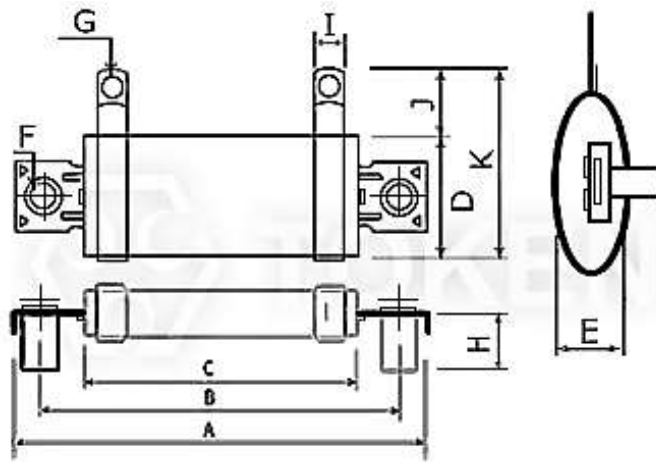
Wave Type (ZQR 60W ~ 450W) Dimensions



► **ZDN Dimensions**

**Dimensions Set-Type Non-Inductive (ZDN 40W ~ 300W)**

Wattage Rating	Dimensions(Unit: mm)											Resistance Range(Ω)
	A	B	C	D	E	F	G	H	I	J	K	
<b>40W</b>	83	70	50	28	11	5.2	4.1	13	6.5	12	42	1~1KΩ
<b>55W</b>	123	110	90	28	11	5.2	4.1	13	6.5	12	42	1.5~2KΩ
<b>70W</b>	153	140	120	28	11	5.2	4.1	13	6.5	12	42	2~3KΩ
<b>95W</b>	183	170	150	28	11	5.2	4.1	13	6.5	12	42	2.5~4KΩ
<b>100W</b>	193	180	160	28	11	5.2	4.1	13	6.5	12	42	3~5KΩ
<b>120W</b>	218	205	185	28	11	5.2	4.1	13	9	12	42	3.5~6KΩ
<b>150W</b>	218	205	185	35	11	5.2	5.2	13	9	13	48	4~7KΩ
<b>200W</b>	243	230	210	35	11	5.2	5.2	13	9	13	48	4.5~8KΩ
<b>250W</b>	287	274	254	35	11	5.2	5.2	13	9	13	48	5~9KΩ
<b>300W</b>	333	320	300	35	11	5.2	5.2	13	9	13	48	5.5~10KΩ

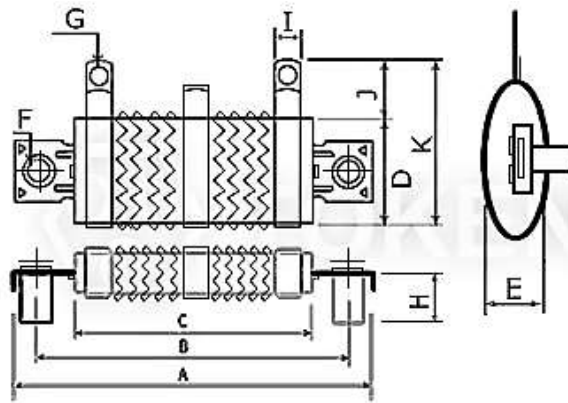


Set-Type Non-Inductive (ZDN 40W ~ 300W) Dimensions

► **ZQN Dimensions**

**Dimensions Wave Type Non-Inductive (ZQN 60W ~ 450W)**

Wattage Rating	Dimensions(Unit: mm)											Resistance Range(Ω)
	A	B	C	D	E	F	G	H	I	J	K	
<b>60W</b>	83	70	50	28	11	5.2	4.1	13	6.5	12	42	1~4Ω
<b>80W</b>	123	110	90	28	11	5.2	4.1	13	6.5	12	42	1.5~5Ω
<b>100W</b>	153	140	120	28	11	5.2	4.1	13	6.5	12	42	2~7Ω
<b>140W</b>	183	170	150	28	11	5.2	4.1	13	6.5	12	42	2.5~9Ω
<b>150W</b>	193	180	160	28	11	5.2	4.1	13	6.5	12	42	3~10Ω
<b>180W</b>	218	205	185	28	11	5.2	4.1	13	9	12	42	3.5~12Ω
<b>225W</b>	218	205	185	35	11	5.2	5.2	13	9	13	48	4~15Ω
<b>300W</b>	243	230	210	35	11	5.2	5.2	13	9	13	48	4.5~20Ω
<b>375W</b>	287	274	254	35	11	5.2	5.2	13	9	13	48	5~25Ω
<b>450W</b>	333	320	300	35	11	5.2	5.2	13	9	13	48	5.5~30Ω



Wave Type Non-Inductive (ZQN 60W ~ 450W) Dimensions

► **Order Codes**

**Order Codes (ZR)**

ZDR	250W	250R		J	
Part Number	Rated Power (W)	Resistance Value (Ω)		Resistance Tolerance (%)	
ZDR	40W~300W	0R1	0.1Ω	H	±3%
ZQR	60W~450W	1R	1Ω	J	±5%
ZDN	40W~300W	10R	10Ω	K	±10%
ZQN	60W~450W	12R	12Ω		
		12K	12KΩ		





## ► General Information

### Benefits & Features

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

Direct 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. Direct 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 Direct 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°C ~ 400°C when utilized at the full rated value. Maintaining a surface temperature of 200°C 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.

