

Uni-Royal

DATASHEET

Product Name **High Power Wire-wound Iron Shell Fixed Resistors**

Part Name **HDWR Series**

File No. **DIP-SP-094**

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1. Scope:

- 1.1 This data sheet is the characteristics of High Power Wire-wound Iron Shell Fixed Resistors manufactured by UNI-ROYAL
- 1.2 Anti-vibration, high stability
- 1.3 Non-Inductive type is available
- 1.4 Application: Frequency Conversion Equipment, such as Elevator, Freezer, Crane, Lift etc.
- 1.5 Compliant with RoHS directive.
- 1.6 Halogen free requirement.

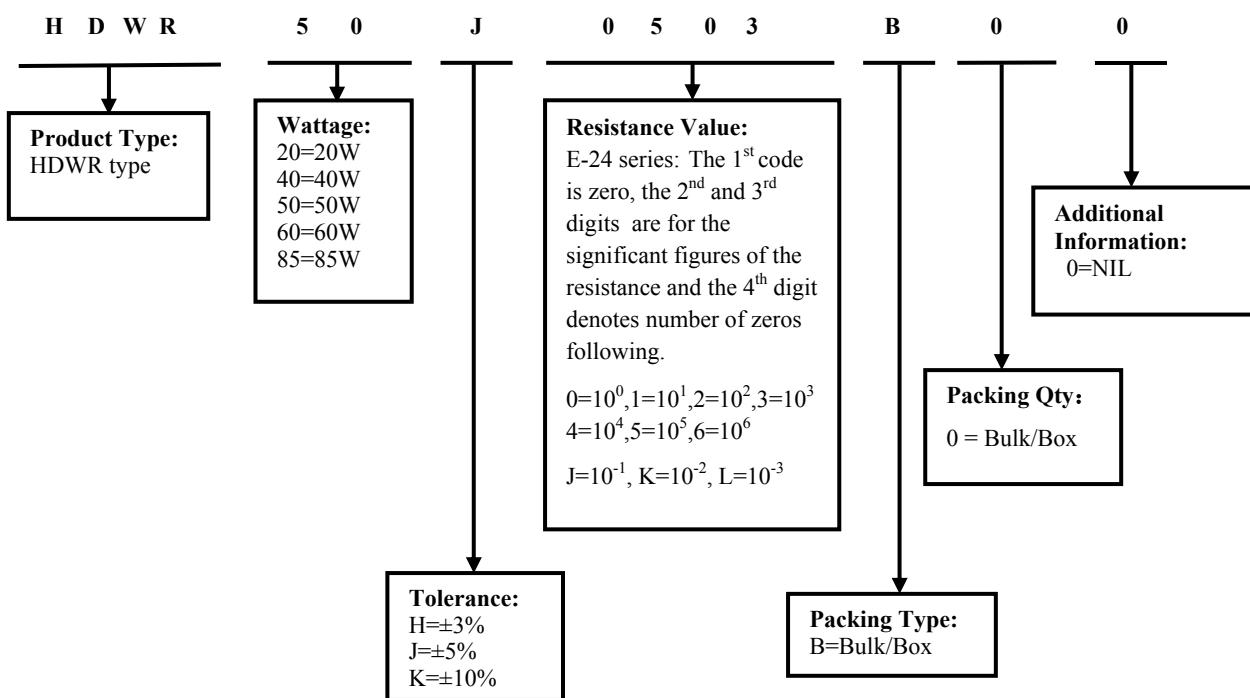
2. Part No. System:

The standard Part No. includes 14 digits with the following explanation:

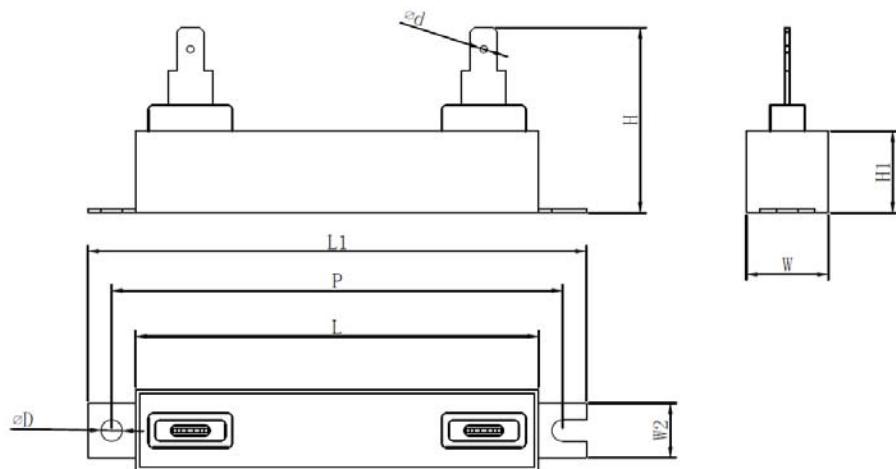
- 2.1 For Cement Fixed Resistors, these 4 digits are to indicate the product type but if the product type has only 3 digits, the 4th digit will be "0" Example: HDWR = HDWR type
- 2.2 5th~6th digits: Power
Example: 50=50W
- 2.3 The 7th digit is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.
 $J=\pm 5\%$
- 2.4 The 8th to 11th digits is to denote the Resistance Value.
- 2.5 The 12th, 13th & 14th digits.
- 2.5.1 The 12th digit is to denote the Packaging Type with the following codes: B=Bulk/Box
- 2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0" for the Cement products with "Bulk/Box" packing requirements.
- 2.5.3 For some items, the 14th digit alone can use to denote special features of additional information with the following codes or standard product.
Example: 0= standard product

3. Ordering Procedure

(Example: HDWR 50W $\pm 5\%$ 50K Ω B/B)



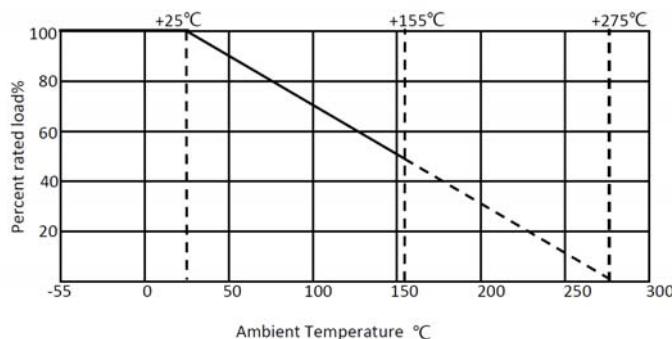
4. Dimension (Unit: mm)



Type	Rating Power	Dimension (mm)									Tolerance	Resistance Range
		L±1.5	L1±1.5	W±1	W2±1	H±1	H1±1	P±1.5	φD±0.5	φd±0.1		
HDWR	20W/45W	25.4	47.6	19	12.7	38.1	19	36.5	5	1.8	±3% ±5% ±10%	0.05 Ω~6K Ω
HDWR	40W/70W	65	87.3	19	12.7	38.1	19	76.2	5	1.8		1 Ω~25K Ω
HDWR	50W/100W	94	116	19	12.7	38.1	19	105	5	1.8		1.5 Ω~47.5K Ω
HDWR	60W/115W	141.3	163.5	19	12.7	38.1	19	152.4	5	1.8		2.5 Ω~81K Ω
HDWR	85W/150W	190.5	215.9	19	12.7	38.1	29	203.2	5	1.8		4.5 Ω~100K Ω

* Low power without radiator, high power with radiator

5. Derating Curve



6.1 Voltage rating:

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

Where: RCWV = rated dc or RMS ac continuous working voltage at

commercial-line frequency and waveform (VOLT.)

P = power rating (WATT.)

R = nominal resistance (OHM)



6. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature coefficient	$\pm 200 \text{PPM/}^{\circ}\text{C}$	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/}^{\circ}\text{C)}$ R ₁ : Resistance Value at room temperature (t ₁) ; R ₂ : Resistance at test temperature (t ₂) t ₁ : +25°C or specified room temperature t ₂ : Test temperature (125°C)
Short-time overload	$\Delta R \leq \pm(5\% + 0.05\Omega)$	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV or Max. Overload Voltage whichever less for 5 seconds.
Dielectric withstanding voltage	No evidence of flashover mechanical damage.	4.7 Apply 2500VAC for 60 seconds.
Insulation resistance	$\geq 100 \text{M } \Omega$	4.6 Test voltage will be 500 $\pm 50 \text{VDC}$; test the resistance value after 1 minute.
Rapid change of temperature	$\Delta R \leq \pm(5\%R + 0.05 \Omega)$	4.19 30 min at -55 °C and 30 min at 155°C 5 cycles.
Humidity	$\Delta R \leq \pm(5\%R + 0.05 \Omega)$	4.24 Temporary resistance change after 96 hours exposure in a humidity test chamber controlled at 40 $\pm 2^{\circ}\text{C}$ and 90-95% relative humidity,
Load life	$\Delta R \leq (\pm 5\% + 0.05\Omega)$ No evidence of flashover mechanical damage.	4.25.1 Permanent Resistance change after 1000 hours operating at RCWV or Max. Working Voltage whichever less with duty cycle of 1.5 hours “ON” , 0.5 hour “OFF” at 25 $\pm 2^{\circ}\text{C}$ ambient.

7. Note

8.1. UNI-ROYAL recommend products store in warehouse with temperature between 15 to 35°C under humidity between 25 to 75%RH.
Even under storage conditions recommended above, solder ability of products will be degraded stored over 1 year old.

7.2. Cartons must be placed in correct direction which indicated on carton, otherwise the reel or wire will be deformed.

7.3. Storage conditions as below are inappropriate:

- Stored in high electrostatic environment
- Stored in direct sunshine, rain, snow or condensation.
- Exposed to sea wind or corrosive gases, such as Cl₂, H₂S, NH₃, SO₂, NO₂, Br, etc.

8. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~4	Jul.27, 2024	Haiyan Chen	Yuhua Xu