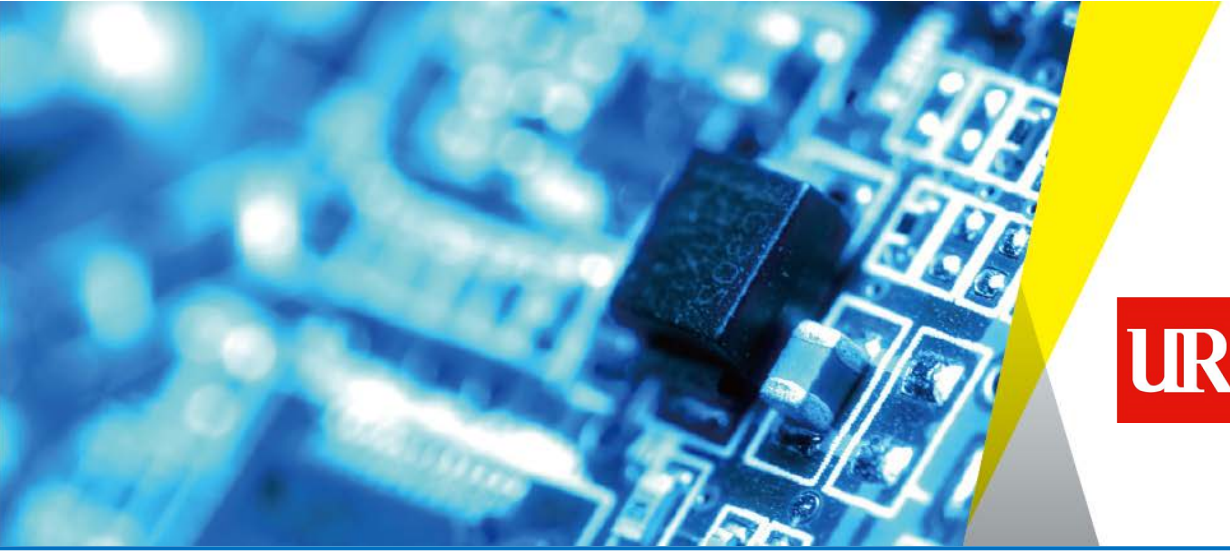

DATA SHEET

Product Name	**High Power Wire-Wound Aluminum Case Resistors**
Part Name	**HEWR、HBWR Series**
File No.	**DIP-SP-049**

Uniroyal Electronics Global Co., Ltd.

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Manufacture Plant	Uniroyal Electronics Industry Co., Ltd.
	Aeon Technology Corporation
	Royal Electronic Factory (Thailand) Co., Ltd.
	Royal Technology (Thailand) Co., Ltd.

1. Scope

1.1 This datasheet is the characteristics of High Power Wire-Wound Aluminum Case Resistors manufactured by UNI-ROYAL..
1.2 Anti-vibration ,high stability.
1.3 Excellent transient current impact capability, suitable for the start of the inverter under harsh conditions.
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 1^{th} ~4^{th} digits

This is to indicate the Chip Resistor. Example: HEWR= HEWR ； HBWR= HBWR

2.2 5^{th} ~6^{th} digits:

2.2.1 The 5_{th} & 6_{th} digits will show the connector style.

Example: A0=Terminal Type; B0=Cable Type.

2.3 The 7^{th} digit is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.

J=±5% K= ±10%

2.4 The 8^{th} to 11^{th} digits is to denote the Resistance Value.

2.4.1 For the standard resistance values of 5%&10% series, the8^{th} digit is “0”,the 9^{th} & 10^{th} digits are to denote the significant figures of the resistance and the 11^{th} digit is the number of zeros following;

2.4.2 The following number s and the letter codes are to be used to indicate the number of zeros in the 11th digit:

$0=10^0$ $1=10^1$ $2=10^2$ $3=10^3$ $4=10^4$ $5=10^5$ $6=10^6$ $J=10^{-1}$ $K=10^{-2}$ $L=10^{-3}$ $M=10^{-4}$

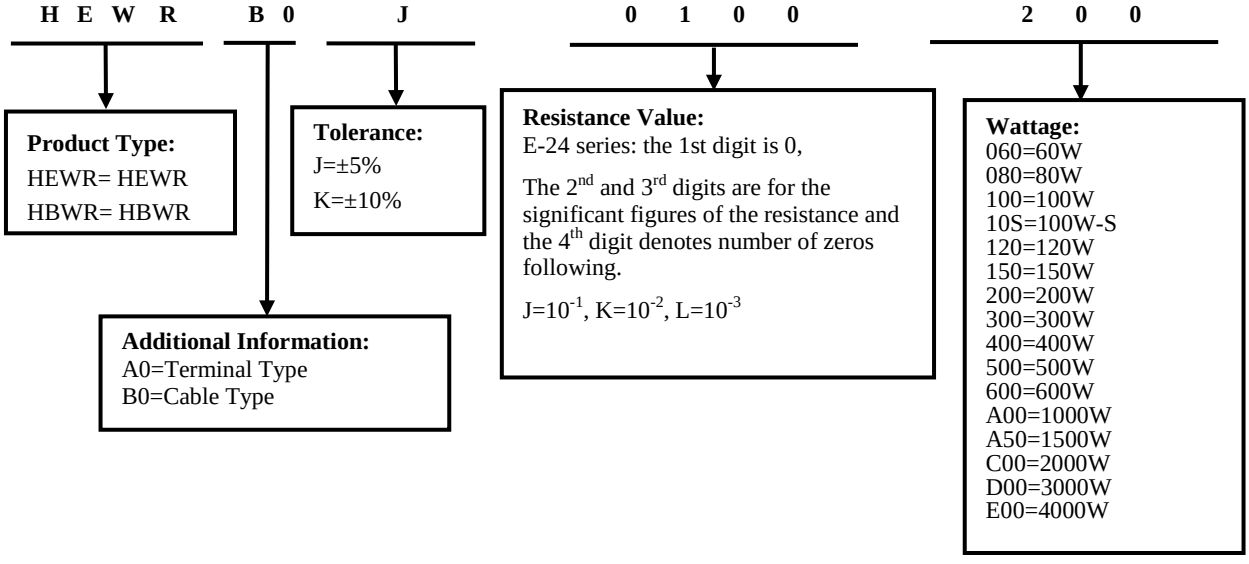
2.5 The 12^{th} ~14^{th} digits.

2.5.1 The 12^{th} to the 14^{th} digits are to denote the actual wattage of the products.

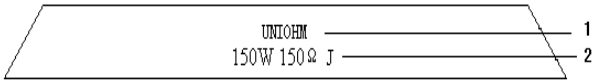
Example: 100 = 100W 150 = 150W A00 = 1000W

3. Ordering Procedure

(Example: HEWR 200W ±5% 10Ω B/B)



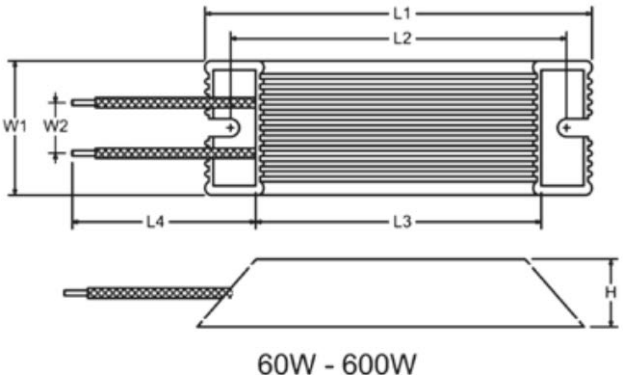
4. Marking



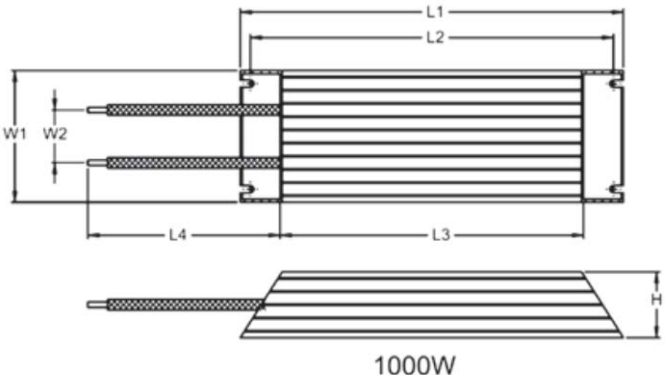
Code description and regulation:
1. Mark: UNI OHM
2.Power rating 150W, resistance 15Ω,
resistance tolerance J=±5%
Note：The marking code shall be prevailed in kind!

5. Dimension(Unit： mm)

HERW:

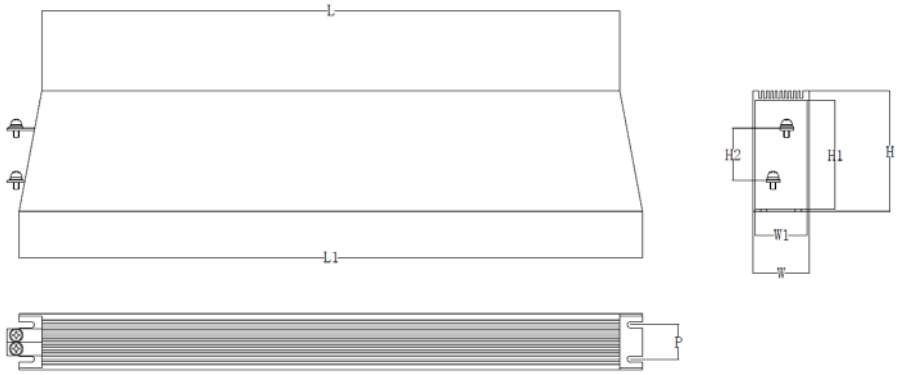


60W - 600W

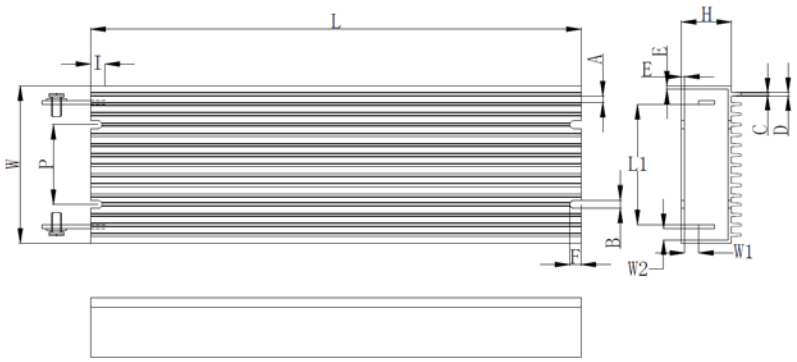


1000W

TYPE	L1±2	L2±2	L3±2	L4±10	W1±2	W2±5	H±2	Resistance Range
HEWR 60W	115	100	80	190	40	15	20	2Ω~2.5KΩ
HEWR 80W	140	125	105	200	40	15	20	1Ω~3KΩ
HEWR 100W	140	125	100	240	60	25	30	1Ω~4KΩ
HEWR 100W-S	165	150	125	240	40	15	20	1Ω~4KΩ
HEWR 120W	190	175	150	240	40	15	20	1Ω~5KΩ
HEWR 150W	215	200	175	240	40	15	20	1Ω~6KΩ
HEWR 200W	165	150	125	255	60	25	30	1Ω~7KΩ
HEWR 300W	215	200	175	255	60	25	30	1Ω~8KΩ
HEWR 400W	265	250	225	255	60	25	30	0.5Ω~10KΩ
HEWR 500W	335	320	295	255	60	25	30	0.5Ω~12KΩ
HEWR 600W	335	320	295	255	60	25	30	0.5Ω~12KΩ
HEWR 1000W	400	385	340	255	100	25	50	1Ω~15KΩ

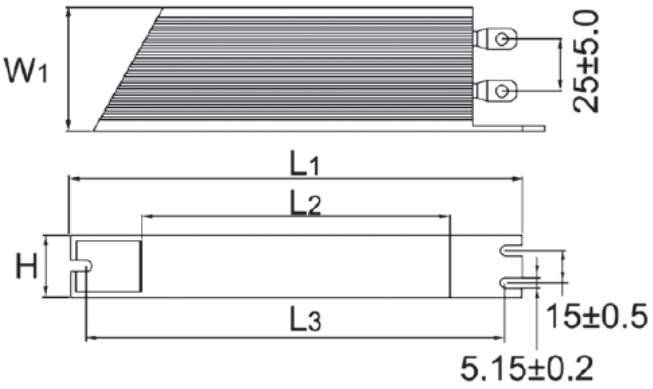


Type	L±1	L1±1	H±1	H1±1	H2±1	W±5	W1±2	P±0.5	Resistance Range
HEWR 1500W	447	485	106	96	44	50	46	30.5	1Ω~15KΩ
HEWR 2000W	510	550	106	96	44	50	46	30.5	1Ω~15KΩ



Type	L±1	W±1	A±0.1	B±0.1	C±0.1	D±0.1	E±0.1	H±1	P±1	F±0.5	L1±1	W1±0.5	W2±0.5	I±0.5	Resistance Range
HEWR 3000W	400	150	6.7	8	2.5	3.5	3.3	50	70	10.5	91	20	23.5	13	1Ω~15KΩ
HEWR 4000W	500	150	6.7	8	2.5	3.5	3.3	50	70	10.5	91	20	23.5	13	1Ω~15KΩ

HBWR:

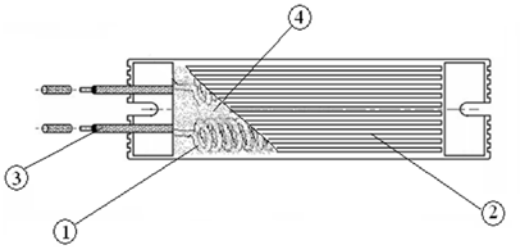


Unit：mm

Type	L1±2	L2±2	L3±2	W1±2	H±2	Resistance Range
HBWR 200W	190	160	165	60	30	1Ω~7KΩ
HBWR 300W	240	210	215	60	30	1Ω~8KΩ
HBWR 400W	290	260	265	60	30	0.5Ω~10KΩ
HBWR 500W	360	330	335	60	30	0.5Ω~12KΩ
HBWR 600W	360	330	335	60	30	0.5Ω~12KΩ

6. Construction

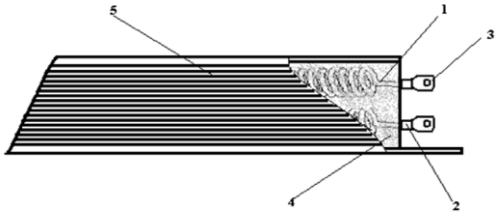
6.1 HEWR



NO.	Main Material
1	Alloy
2	Aluminum shell
3	Withstanding High-temperature line
4	Filling materials

*** The graphics shall be prevailed in kind!

6.2 HBWR

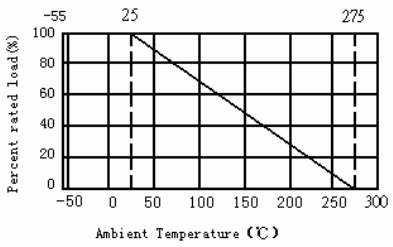


NO.	Main Material
1	Alloy
2	Fiberglass tube
3	Seamless copper cable lug
4	Quartz mixed sand
5	Aluminum shell

7. Derating Curve

Resistors shall have a power rating based on continuous load operation at an ambient temperature from -55℃ to 25℃. For temperature in excess of 25℃, the load shall be derated as shown in figure 1

Figure 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 commercial-line frequency and waveform (Volt.)

P = power rating (WATT.) R = nominal resistance (OHM)

In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.

The overload voltage is 2.5 times RCWV or Max. Overload voltage whichever is less

8. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	＜20Ω: ±400PPM/℃ ≥20Ω: ±350PPM/℃	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature(t_1); R_2: Resistance at test temperature (t_2) t_1: +25℃ or specified room temperature t_2: Test temperature(-55℃or 125℃)
Short-time overload	Resistance change rate must be in ±(5%+0.05Ω) ,and no mechanical damage.	4.13 Permanent resistance change after the application of a potential of (HEWR 6.25times of rated power ; HBWR 5 times of rated power) or Max.Overload Votage whichever less for 5 seconds.
Dielectric Withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down.	4.7In resistors between the shell and alloy applied voltage AC3000V for 60 seconds
Humidity (Steady state)	Resistance change rate must be in ±(5%+0.05Ω) ,and no mechanical damage.	7.9 Resistance change after 240 hours without load in a humidity test chamber controlled at 40℃±2℃ and 90 to 95% relative humidity.
Load life	Resistance change rate must be in ±(5%+0.05Ω) ,and no 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±2℃ ambient.
Low Temperature Storage	Resistance change rate must be in ±(5%+0.05Ω) ,and no mechanical damage.	IEC 60068-2-1 (Aa) Lower limit temperature，for 2H.
High Temperature Exposure	Resistance change rate must be in ±(5%+0.05Ω) ,and no mechanical damage.	MIL-STD-202 108A Upper limit temperature ，for 16H.

9. Precaution for storage/Transportation

9.1. UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product).Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

9.2. Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.
Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.

9.3. Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic.
b. Storage in direct sunshine、rain and snow or condensation.
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S, NH_3, SO_2, NO_2, Br etc.

10. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Mar.20, 2018	Haiyan Chen	Nana Chen
2	Modify the Performance Specification	4~5	Feb.26, 2019	Haiyan Chen	Yuhua Xu
3	Modify characteristic	5	Nov.20,2020	Song Nie	Yuhua Xu
4	Modify the temperature coefficient test conditions	4	Nov.07, 2022	Haiyan Chen	Yuhua Xu
5	Add HEWR1500W~4000W Modify Construction	3~4 5	Apr.25, 2024	Haiyan Chen	Yuhua Xu
6	Modify Part No. System and Ordering Procedure	2	May.06, 2024	Junying Ye	Haiyan Chen
7	Cancel load life in humidity test	6	Sep.28, 2024	Haiyan Chen	Yuhua Xu
8	Modify “W1” and “H” dimension	4	Oct.17, 2024	Haiyan Chen	Yuhua Xu