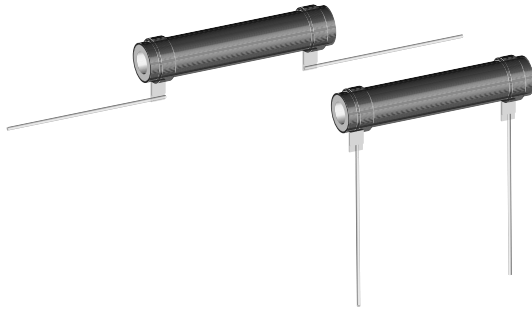


## Wirewound Resistors, Industrial Power, Tubular



### FEATURES

- High temperature silicon coating
- Complete welded construction
- Excellent for intermittent power and pulsing applications
- Available in non-inductive styles (model NHLW) with Ayrton-Perry winding
- Axial or radial terminals for through hole or lead weld applications
- Excellent stability in operation (< 3 % change in resistance)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

### STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{25^{\circ}\text{C}}$ W	RESISTANCE RANGE $\Omega$ $\pm 5\%$	RESISTANCE RANGE $\Omega$ $\pm 10\%$	WEIGHT (typical) g
HLW03 NHLW03	HLW-3 NHLW-3	3	1.0 to 6K 1.0 to 700	0.10 to 6K 1.0 to 700	1.16
HLW05 NHLW05	HLW-5 NHLW-5	5.25	1.0 to 15K 1.0 to 1.9K	0.10 to 15K 1.0 to 1.9K	2.12
HLW06 NHLW06	HLW-6 NHLW-6	8	1.0 to 20.5K 1.0 to 2.7K	0.10 to 20.5K 1.0 to 2.7K	4.60
HLW10 NHLW10	HLW-10 NHLW-10	10	1.0 to 29K 1.0 to 3.7K	0.10 to 29K 1.0 to 3.7K	6.24
HLW12 NHLW12	HLW-12 NHLW-12	12	1.0 to 58K 1.0 to 3.9K	0.10 to 58K 1.0 to 3.9K	6.60
HLW15 NHLW15	HLW-15 NHLW-15	15	1.0 to 60K 1.0 to 4.3K	0.10 to 60K 1.0 to 4.3K	8.82
HLW20 NHLW20	HLW-20 NHLW-20	20	1.0 to 95K 1.0 to 6.8K	0.10 to 95K 1.0 to 6.8K	11.36

### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	HLW RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/ $^{\circ}\text{C}$	$\pm 30$ for 10 $\Omega$ and above; $\pm 50$ for 1 $\Omega$ to 9.9 $\Omega$ ; $\pm 90$ for 0.1 $\Omega$ to 0.99 $\Omega$
Short Time Overload	-	10 x rated power for 5 s
Dielectric Withstanding Voltage	$V_{AC}$	1000, from terminal to mounting hardware
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Insulation Resistance	$\Omega$	1000 M $\Omega$ minimum dry, 100 M $\Omega$ minimum after moisture test
Operating Temperature Range	$^{\circ}\text{C}$	- 55 to + 350

### GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: NHLW12A1Z10R00JF

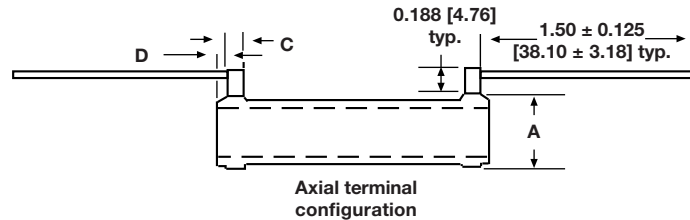
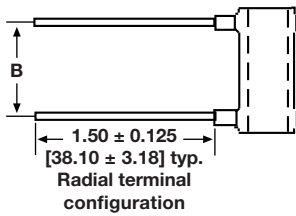
N H L W 1 2 A 1 Z 1 0 R 0 0 J F

GLOBAL MODEL	TERMINAL DESIGNATION	TERMINAL FINISH	RESISTANCE VALUE	TOLERANCE	PACKAGING CODE	SPECIAL
<b>NHLW12</b> (See "Standard Electrical Specifications" table above for additional P/N's)	<b>A1</b> <b>A2</b> <b>R1</b> <b>R2</b>	<b>E</b> = Lead (Pb)-free <b>Z</b> = Tin/lead	<b>R</b> = Decimal <b>K</b> = Thousand <b>10R00</b> = 10.0 $\Omega$ <b>1K000</b> = 1 k $\Omega$	<b>J</b> = $\pm 5.0\%$ <b>K</b> = $\pm 10.0\%$	<b>E</b> = Lead (Pb)-free foam pack <b>F</b> = Tin/lead foam pack (F01)	(Dash Number) (Up to 2 digits) From <b>1</b> to <b>99</b> as applicable

Historical Part Numbering example: NHLW-12-A1Z 10  $\Omega$  5 % F01

NHLW-12	A1Z	10 $\Omega$	5 %	F01
HISTORICAL MODEL	TERMINAL/FINISH	RESISTANCE VALUE	TOLERANCE	PACKAGING

**DIMENSIONS** in inches [millimeters]



GLOBAL MODEL	A (MAX.)	B TYP.	C ± 0.031 [0.79]	D TYP.	CORE DIMENSIONS			AXIAL TERMINAL DESIGNATION	RADIAL TERMINAL DESIGNATION	BRACKET TYPE <sup>(1)</sup>
					LENGTH ± 0.063 [1.59]	O.D.	I.D. ± 0.031 [0.79]			
HLW03 NHLW03	0.297 [7.54]	0.282 [7.16]	0.063 [1.59]	0.047 [1.19]	0.438 [11.11]	0.203 [5.16]	0.125 [3.18]	A2Z	R2Z	-
HLW05 NHLW05	0.344 [8.73]	0.469 [11.91]	0.063 [1.59]	0.047 [1.19]	0.625 [15.88]	0.250 [6.35]	0.125 [3.18]	A2Z	R2Z	-
HLW06 NHLW06	0.406 [10.32]	0.688 [17.48]	0.125 [3.18]	0.094 [2.38]	1.000 [25.40]	0.313 [7.94]	0.188 [4.76]	A1Z	R1Z	101, 204, 301
HLW10 NHLW10	0.563 [14.28]	0.688 [17.48]	0.125 [3.18]	0.094 [2.38]	1.000 [25.40]	0.438 [11.11]	0.313 [7.94]	A1Z	R1Z	101, 203, 301
HLW12 NHLW12	0.406 [10.32]	1.438 [36.53]	0.125 [3.18]	0.094 [2.38]	1.750 [44.45]	0.313 [7.94]	0.188 [4.76]	A1Z	R1Z	101, 204, 301
HLW15 NHLW15	0.563 [14.29]	1.188 [30.18]	0.125 [3.18]	0.094 [2.38]	1.500 [38.10]	0.438 [11.11]	0.313 [7.94]	A1Z	R1Z	101, 203, 301
HLW20 NHLW20	0.563 [14.29]	1.688 [42.88]	0.125 [3.18]	0.094 [2.38]	2.000 [50.80]	0.438 [11.11]	0.313 [7.94]	A1Z	R1Z	101, 203, 301

**Note**

<sup>(1)</sup> Brackets are available for mounting HLW series resistors - see "Mounting Hardware" section.

**TERMINAL FINISH**

Terminals are 20 AWG for HLW03 and HLW05 size and 18 AWG for all other sizes. "E" Finish - 100 % Sn, coated Copperweld®. "Z" Finish - 60/40 Sn/Pb coated Copperweld®.

**MOUNTING HARDWARE**

Mounting hardware is available for HLW resistors, see "HL Brackets and Sliders" datasheet for more information: [www.vishay.com/doc?30279](http://www.vishay.com/doc?30279).

**MATERIAL SPECIFICATIONS**

**Element:** Copper-nickel alloy of nickel-chrome alloy, depending on resistance value

**Core:** Ceramic, steatite

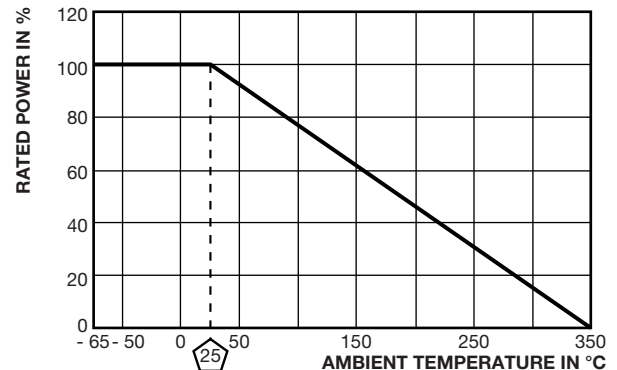
**Coating:** Special high temperature silicone

**Standard Terminals:** Model "E" terminals are tinned Copperweld®

**Terminal Bands:** Steel

**Part Marking:** Dale, model, wattage, value, tolerance, date code

**DERATING**





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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**