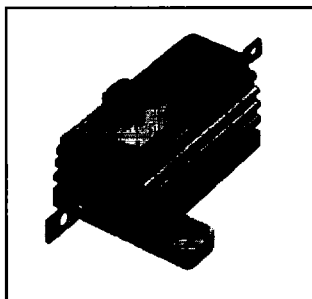


MODELS RH and NH Wirewound Resistors

Military, MIL-R-18546 Qualified, Type RE Aluminum Housed, Chassis Mount



FEATURES

- Standard winding (Model RH)
- Non-inductive winding (Model NH)
- Molded construction for total environmental protection
- Complete welded construction
- Mounts on chassis to utilize heat-sink effect
- High stability at conventional power ratings
- Flat marking surface for easy identification

SPECIAL MODIFICATIONS

Available upon request

• Special:

- Threaded mounting holes
- Housing configurations
- Resistance-temperature characteristic
- Terminal configurations and materials
- Resistances and tolerances
- Pre-conditioning

STANDARD ELECTRICAL SPECIFICATIONS												
DALE MODEL	MIL-R-18546 TYPE	POWER RATING (Watts)		RESISTANCE RANGE (Ohms) MIL. RANGE SHOWN IN BOLD FACE				MAX. WORKING VOLTAGE	MAX. WEIGHT (Grams)	STANDARD TEMP. COEFFICIENT VALUE RANGES (Ohms)*		
		DALE	MILITARY	±.05%, ±.1%	±.25%	+ .5%	±1%, ±3%, ±5%			±50PPM/°C	±30PPM/°C	±20PPM/°C
RH-5	— RE60G	7.5 (5)	5	.5 - 6.75k —	.1 - 8.6k —	.05 - 8.6k —	.02 - 24.5k .10 - 3.32k	160	3	1 - 9.9	10 - 49	50 - 24.5k
NH-5	— RE60N	7.5 (5)	5	.5 - 2.32k —	.1 - 3.27k —	.05 - 3.27k —	.05 - 12.75k 1.0 - 1.65k	110	3.3	1 - 9.9	10 - 25	26 - 12.25k
RH-10	— RE65G	12.5 (10)	10	.5 - 12.7k —	.1 - 16.69k —	.05 - 16.69k —	.01 - 47.1k .10 - 5.62k	265	6	1 - 9.9	10 - 79	80 - 47.1k
NH-10	— RE65N	12.5 (10)	10	.5 - 4.45k —	.1 - 5.54k —	.05 - 5.54k —	.05 - 23.5k 1.0 - 2.8k	190	8.8	1 - 9.9	10 - 40	41 - 23.5k
RH-25	— RE70G	25	20	.5 - 25.7k —	.1 - 32.99k —	.05 - 32.99k —	.01 - 95.2k .10 - 12.1k	550	13	1 - 9.9	10 - 169	170 - 95.2k
NH-25	— RE70N	25	20	.5 - 9.09k —	.1 - 12.8k —	.05 - 12.8k —	.05 - 47.6k 1.0 - 6.04k	390	16.5	1 - 9.9	10 - 85	86 - 47.6k
RH-50	— RE75G	50	30	.5 - 73.4k —	.1 - 96k —	.05 - 96k —	.01 - 273k .10 - 39.2k	1250	28	1 - 9.9	10 - 469	470 - 273k
NH-50	— RE75N	50	30	.5 - 26k —	.1 - 36.7k —	.05 - 36.7k —	.05 - 136k 1.0 - 19.6k	890	35	1 - 9.9	10 - 235	236 - 136k
RH-100	— RE77G	100	75	.5 - 90k —	.1 - 90k —	.05 - 90k —	.05 - 90k .05 - 29.4k	1900	400	1 - 99	100 - 949	950 - 90k
NH-100	— RE77N	100	75	.5 - 37.5k —	.1 - 37.5k —	.05 - 37.5k —	.05 - 37.5k 1.0 - 14.7k	1350	440	1 - 49	50 - 475	476 - 375k
RH-250	— RE80G	250	120	.5 - 116k —	.1 - 116k —	.05 - 116k —	.05 - 116k .10 - 35.7k	2300	800	1 - 99	100 - 999	1k - 116k
NH-250	— RE80N	250	120	.5 - 48.5k —	.1 - 48.5k —	.05 - 48.5k —	.05 - 48.5k 1.0 - 17.4k	1625	880	1 - 49	50 - 499	500 - 48.5k

* .1 ohm to .99 ohm = ± 100PPM/°C. **Note:** All resistance ranges shown conform to military specifications unless otherwise indicated. Figures in parentheses on RH-5 and RH-10 indicate wattage printed. New construction allows these resistors to be rated at 7.5 and 12.5 watts, but they will be printed with these higher ratings **only** upon customer request.

ELECTRICAL SPECIFICATIONS

Resistance Tolerance: ± .05%, ± .10%, ± .25%, ± .5%, ± 1%, ± 3%, ± 5%.

Operating Temperature: - 55°C to + 250°C.

Derating is required for reduced chassis mounting area and for high ambient temperatures. (See Derating Curve.)

Power Rating: Ratings are based on these requirements:

1. + 250°C maximum internal hotspot temperature.
2. 1% max. ΔR in 1000 hour load life for RH-5 thru RH-50.
3% max. ΔR in 1000 hour load life for RH-100 and RH-250.
3. Proper heat sink:
4 x 6 x 2 x .040 aluminum chassis = 5 and 10 watt units.
5 x 7 x 2 x .040 aluminum chassis = 25 watt units.
12 x 12 x .059 aluminum panel = 50 watt units.
12 x 12 x .125 aluminum panel = 100 and 250 watt units.

Dielectric Strength:

- 1000 VAC = 5, 10, 25 watt units.
- 2000 VAC = 50 watt units.
- 4500 VAC = 100, 250 watt units.

Insulation Resistance: 10,000 Megohm minimum dry,
1,000 Megohm minimum after moisture test.

MECHANICAL SPECIFICATIONS

Terminal Strength:

- 5 pound pull test = RH-5, NH-5, RH-10, NH-10.
- 10 pound pull test = RH-25 thru RH-250,
NH-25 thru NH-250.

Solderability: Satisfactory when tested in accordance with MIL-STD-202, Method 208.

MATERIAL SPECIFICATIONS

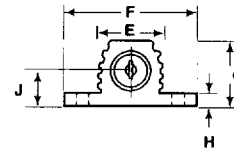
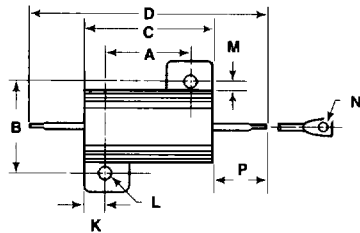
Element: Copper-nickel alloy, nickel-chrome alloy or manganese copper, depending on resistance value.

Housing: Aluminum with hard anodic coating.

APPLICABLE MIL-SPECIFICATIONS

MIL-R-18546: The military specification covering housed chassis-mounted power resistors. Dale® RH and NH resistors meet or exceed the electrical, environmental and dimensional requirements of this specification.

RH-5, -10, -25, -50
NH-5, -10, -25, -50



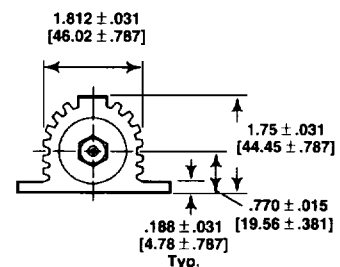
TYPE	A	B	C	D	E	F	G	H	J	K	L	M	N	P
RH-5 NH-5	.444 ± .005 [11.28 ± .127]	.490 ± .005 [12.45 ± .127]	.600 ± .031 [15.24 ± .787]	1.125 ± .062 [28.58 ± 1.57]	.334 ± .015 [8.48 ± .381]	.646 ± .015 [16.41 ± .381]	.320 ± .015 [8.13 ± .381]	.065 ± .010 [1.65 ± .254]	.133 ± .010 [3.38 ± .254]	.078 ± .010 [1.98 ± .254]	.093 ± .005 [2.36 ± .127]	.078 ± .015 [1.98 ± .381]	.050 ± .005 [1.27 ± .127]	.266 ± .062 [6.76 ± 1.57]
RH-10 NH-10	.562 ± .005 [14.27 ± .127]	.625 ± .005 [15.88 ± .127]	.750 ± .031 [19.05 ± .787]	1.375 ± .062 [34.93 ± 1.57]	.420 ± .015 [10.67 ± .381]	.800 ± .015 [20.32 ± .381]	.390 ± .015 [9.91 ± .381]	.075 ± .010 [1.90 ± .254]	.165 ± .010 [4.19 ± .254]	.093 ± .010 [2.36 ± .254]	.094 ± .005 [2.39 ± .127]	.102 ± .015 [2.59 ± .381]	.085 ± .005 [2.16 ± .127]	.312 ± .062 [7.92 ± 1.57]
RH-25 NH-25	.719 ± .005 [18.26 ± .127]	.781 ± .005 [19.84 ± .127]	1.062 ± .031 [26.97 ± .787]	1.938 ± .062 [49.23 ± 1.57]	.550 ± .015 [13.97 ± .381]	1.080 ± .015 [27.43 ± .381]	.546 ± .015 [13.87 ± .381]	.075 ± .010 [1.90 ± .254]	.231 ± .010 [5.87 ± .254]	.172 ± .010 [4.37 ± .254]	.125 ± .005 [3.18 ± .127]	.115 ± .015 [2.92 ± .381]	.085 ± .005 [2.16 ± .127]	.438 ± .062 [11.13 ± 1.57]
RH-50 NH-50	1.562 ± .005 [39.67 ± .127]	.844 ± .005 [21.44 ± .127]	1.968 ± .031 [49.99 ± .787]	2.781 ± .062 [70.64 ± 1.57]	.630 ± .015 [16.00 ± .381]	1.140 ± .015 [28.96 ± .381]	.610 ± .015 [15.49 ± .381]	.088 ± .010 [2.24 ± .254]	.260 ± .010 [6.60 ± .254]	.196 ± .010 [4.98 ± .254]	.125 ± .005 [3.18 ± .127]	.107 ± .015 [2.72 ± .381]	.085 ± .005 [2.16 ± .127]	.438 ± .062 [11.13 ± 1.57]

Nickel Plated Brass Nut
Stainless Steel Stud

12 - 24 UNC-2A Thd. Typ.

Dimensions (inches and millimeters):

- Top flange thickness: $0.188 \pm .010$ [4.78 ± .254]
- Top flange diameter: **Dia. .254**
- Top flange hole diameter: $1.125 \pm .031$ [28.58 ± .787]
- Top flange hole position: $2.25 \pm .010$ [57.15 ± .254]
- Top flange hole diameter: $0.375 \pm .031$ [9.52 ± .787]
- Top flange hole position: $2.75 \pm .010$ [69.85 ± .254]
- Top flange hole diameter: $0.989 \pm .031$ [25.12 ± .787]
- Top flange hole position: $5.478 \pm .093$ [139.14 ± 2.36]
- Top flange hole diameter: $2.812 \pm .031$ [71.42 ± .787]
- Top flange hole position: $3.50 \pm .031$ [88.90 ± .787]



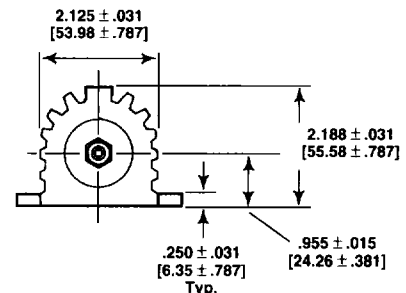
1-250, NH-250

Nickel Plated Brass Nut
Stainless Steel Stud

1/4 - 20
UNC-2A Thd.Typ.

Dimensions:

- .188 ± .010 [4.78 ± .254] Dia. Typ.
- 4.50 ± .031 [114.30 ± .787]
- 1.25 ± .031 [31.75 ± .787]
- 2.50 ± .010 [63.50 ± .254]
- 1.25 ± .031 [31.75 ± .787]
- 3.875 ± .010 [98.42 ± .254]
- 3.0 ± .010 [76.20 ± .254]
- .875 ± .010 [22.23 ± .254]
- .312 ± .031 [7.92 ± .787]
- 3.0 ± .031 [76.20 ± .787]
- 7.0 ± .093 [177.80 ± 2.36]



MODELS RH and NH

ENVIRONMENTAL PERFORMANCE

General: Testing is done according to the procedures and test methods described in MIL-R-18546. The table below shows the military requirements and the Dale® performance. All specifications are based on testing of $\pm 1\%$ tolerance units.

TEST	MIL-R-18546 REQUIREMENT	TYPICAL CHANGE
Temperature Coefficient	$\pm 50\text{PPM}/^{\circ}\text{C}$ 2000 Ω $\pm 30\text{PPM}/^{\circ}\text{C}$ over 2000 Ω	See Table
Thermal Shock	$\pm (.5\% + 0.01\Omega) \Delta R$	$\pm (.25\% + 0.01\Omega) \Delta R$
Short Time Overload	$\pm (.5\% + 0.01\Omega) \Delta R$	$\pm (.25\% + 0.01\Omega) \Delta R$
Dielectric	$\pm (.2\% + 0.01\Omega) \Delta R$	$\pm (.1\% + 0.01\Omega) \Delta R$
High Temperature Storage	$\pm (.5\% + 0.01\Omega) \Delta R$	$\pm (.25\% + 0.01\Omega) \Delta R$
Moisture Resistance	$\pm (1\% + 0.01\Omega) \Delta R$	$\pm (.5\% + 0.01\Omega) \Delta R$
Shock	$\pm (.2\% + 0.01\Omega) \Delta R$	$\pm (.1\% + 0.01\Omega) \Delta R$
Load Life	$\pm (1\% + 0.01\Omega) \Delta R$	$\pm (.5\% + 0.01\Omega) \Delta R$
Vibration	$\pm (.2\% + 0.01\Omega) \Delta R$	$\pm (.1\% + 0.01\Omega) \Delta R$
Terminal Strength	$\pm (.2\% + 0.01\Omega) \Delta R$	$\pm (.1\% + 0.01\Omega) \Delta R$

DERATING

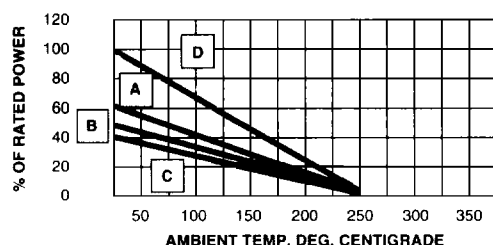
The following curves apply to operation of unmounted resistors:

A = 5 & 10 watt units, unmounted.

B = 25 watt units, unmounted.

C = 50, 100 & 250 watt units, unmounted.

D = All types mounted to aluminum chassis.



PART MARKING

DALE:

- Dale
- Model
- Value and tolerance
- Wattage
- Date code

MILITARY:

- Dale
- Model
- Value and tolerance
- Wattage
- MIL mark
- Date code

HOW TO ORDER

See Packaging Methods,
Wirewound Resistors at
the back of the catalog.

HOW TO ORDER

RH-50
MODEL

10 Ω
VALUE

$\pm 1\%$
TOLERANCE