Type MG Precision High Voltage Resistors

Now with Extended Resistance Range to 10,000 Megohms and Additional Models

Temperature Coefficient as tight as 80 ppm/°C, Combined with Excellent Long-Term Stability and Precision Tolerances.

Caddock's Micronox® resistance films are the source of the Type MG Precision High Voltage Resistors' outstanding combination of performance features:

- Single-resistor values as high as 10,000 Megohms.
- Maximum continuous operating voltages as high as 48,000 volts ("-15" ratings).
- Overvoltage capabilities of 150% of standard working voltages for all models and values, (except "-15" ratings).
- Resistance Tolerances from ±1.0% to ±0.1%.
- Temperature Coefficient, for standard resistance range, of 80 ppm/°C in combination with resistance tolerances as tight as ±0.1%.
- Type MG resistors have demonstrated stability of 0.01% per 1,000 hours in extended load life testing of standard resistance range values.

This exceptional performance has been proven through many years of use in equipment that demands the highest reliability and stability, including TWT amplifiers, X-ray systems, geophysical instruments, and medical electronics.

Preconditioning for Power and Voltage Ratings

All power ratings and maximum operating voltage ratings are for continuous duty. These ratings are based on pre-stress voltage levels applied during the manufacturing process to provide for stable resistor performance even under momentary overload conditions.

Maximum operating voltages 60% higher than the values listed in the table may be specified by adding "-15" to the model number (Example: MG750-15). Note that overload and overvoltage ratings do not apply to the "-15" resistors. Resistance ranges for "-15" resistors shown in the table are from "-15 Min." to "Standard Max."

Non-Inductive Performance

Most models are manufactured with Caddock's Non-Inductive Design which uses a serpentine resistive pattern that provides for neighboring lines to carry current in opposite directions, thereby achieving maximum cancellation of flux fields over the entire length of the resistor. This efficient non-inductive construction is accomplished without derating of any performance advantages.

Model No.	Watt-age	Max. Continuous Oper. Volt.	Overload Rating	Dielect. Strength	Resistance				Dimensions in inches and (millimeters)		
					Min.	-15 Min.	Standard Max.	Extended Max.	A	B	C
MG650	0.5	600	Type 1	750	200 Ω	N/A	5 Meg	N/A	.313 ±.020 (7.95 ±.51)	.094 ±.015 (2.39 ±.38)	.025 ±.002 (.64 ±.05)
MG655	0.5	600	Type 1	750	200 Ω	N/A	8 Meg	N/A	.313 ±.030 (7.95 ±.76)	.109 ±.025 (2.77 ±.64)	.025 ±.002 (.64 ±.05)
MG660	0.6	1,000	Type 1	750	400 Ω	N/A	10 Meg	N/A	.500 ±.030 (12.70 ±.76)	.094 ±.015 (2.39 ±.38)	.025 ±.002 (.64 ±.05)
MG680	0.8	2,000	Type 1	750	600 Ω	N/A	20 Meg	N/A	.750 ±.030 (19.05 ±.76)	.094 ±.015 (2.39 ±.38)	.025 ±.002 (.64 ±.05)
MG710	1.0	4,000	Type 1	750	800 Ω	N/A	50 Meg	N/A	1.000 ±.040 (25.40 ±1.02)	.094 ±.015 (2.39 ±.38)	.025 ±.002 (.64 ±.05)
MG712	0.6	1,000	Type 2	750	800 Ω	N/A	20 Meg	N/A	.400 ±.060 (10.16 ±.152)	.140 ±.030 (3.56 ±.76)	.025 ±.002 (.64 ±.05)
MG714	1.0	1,000	Type 2	750	200 Ω	6.5 Meg	20 Meg	N/A	.562 ±.060 (14.27 ±1.52)	.150 ±.030 (3.81 ±.76)	.032 ±.002 (.81 ±.05)
MG715	1.0	2,000	Type 2	750	400 Ω	26 Meg	50 Meg	N/A	.750 ±.060 (19.05 ±1.52)	.140 ±.030 (3.56 ±.76)	.025 ±.002 (.64 ±.05)
MG716	1.5	4,000	Type 2	750	600 Ω	70 Meg	75 Meg	N/A	1.000 ±.060 (25.40 ±1.52)	.140 ±.030 (3.56 ±.76)	.025 ±.002 (.64 ±.05)
MG717	1.5	2,000	Type 2	750	600 Ω	17 Meg	75 Meg	225 M	.710 ±.050 (18.03 ±1.27)	.240 ±.030 (6.10 ±.76)	.040 ±.002 (1.02 ±.05)
MG720	2.0	6,000	Type 2	750	1 K	N/A	150 Meg	N/A	1.500 ±.080 (38.10 ±2.03)	.140 ±.030 (3.56 ±.76)	.025 ±.002 (.64 ±.05)
MG721	2.0	4,000	Type 2	750	200 Ω	51 Meg	100 Meg	300 M	1.000 ±.050 (25.40 ±1.27)	.240 ±.030 (6.10 ±.76)	.040 ±.002 (1.02 ±.05)
MG725	2.5	10,000	Type 2	750	1.5 K	N/A	200 Meg	N/A	2.000 ±.080 (50.80 ±2.03)	.140 ±.030 (3.56 ±.76)	.025 ±.002 (.64 ±.05)
MG730	3.0	6,000	Type 2	1,000	500 Ω	77 Meg	250 Meg	750 M	1.500 ±.080 (38.10 ±2.03)	.240 ±.030 (6.10 ±.76)	.040 ±.002 (1.02 ±.05)
MG731	2.6	4,000	Type 2	1,000	200 Ω	40 Meg	150 Meg	750 M	1.000 ±.060 (25.40 ±1.52)	.315 ±.030 (8.00 ±.76)	.040 ±.002 (1.02 ±.05)
MG735	3.6	10,000	Type 2	1,000	750 Ω	178 Meg	300 Meg	1,000 M	2.000 ±.080 (50.80 ±2.03)	.240 ±.030 (6.10 ±.76)	.040 ±.002 (1.02 ±.05)
MG740	3.6	6,000	Type 2	1,000	300 Ω	64 Meg	300 Meg	1,500 M	1.500 ±.060 (38.10 ±1.52)	.315 ±.030 (8.00 ±.76)	.040 ±.002 (1.02 ±.05)
MG745	5.0	15,000	Type 2	1,000	1 K	288 Meg	500 Meg	1,500 M	3.000 ±.100 (76.20 ±2.54)	.240 ±.030 (6.10 ±.76)	.040 ±.002 (1.02 ±.05)
MG750	5.0	10,000	Type 2	1,000	400 Ω	128 Meg	500 Meg	2,500 M	2.125 ±.060 (53.98 ±1.52)	.315 ±.030 (8.00 ±.76)	.040 ±.002 (1.02 ±.05)
MG780	7.5	15,000	Type 2	1,000	600 Ω	192 Meg	750 Meg	3,750 M	3.125 ±.060 (79.38 ±1.52)	.315 ±.030 (8.00 ±.76)	.040 ±.002 (1.02 ±.05)
MG785	8.0	20,000	Type 2	1,000	800 Ω	320 Meg	1,000 Meg	5,000 M	4.000 ±.120 (101.60 ±3.05)	.315 ±.030 (8.00 ±.76)	.040 ±.002 (1.02 ±.05)
MG810	10.0	25,000	Type 2	1,000	1 K	400 Meg	1,250 Meg	6,250 M	5.000 ±.120 (127.00 ±3.05)	.315 ±.030 (8.00 ±.76)	.040 ±.002 (1.02 ±.05)
MG815	15.0	30,000	Type 2	1,000	1 K	384 Meg	2,000 Meg	10,000 M	6.000 ±.120 (152.40 ±3.05)	.350 ±.040 (8.89 ±1.02)	.040 ±.002 (1.02 ±.05)

Models with low inductance construction are in shaded areas.

Models with Caddock's Non-Inductive Resistance Pattern are in non-shaded areas.

Specifications:

Resistance Tolerance:

Resistance Range	Tolerance
Standard	±1%, ±0.5%, ±0.25%, ±0.1%
St'd with "-15" rating	±1%
Extended Range	±1%

Temperature Coefficient:

Resistance Range	TC Specifications
Standard and St'd with "-15" rating	±80 ppm/°C from -15°C to +105°C, referenced to +25°C.
Extended Range	±80 ppm/°C from +25°C to +105°C, -200 ppm/°C to +50 ppm/°C from -15°C to +25°C.

Insulation Resistance: 10,000 Megohms, min.

Overload/Overvoltage: 5 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds.
Type 1: DC Voltage
Type 2: DC Voltage or V_{rms} AC

Resistance Range	Overload/Overvoltage, ΔR
Standard	0.5% max.
St'd with "-15" rating	N/A
Extended Range	0.8% max.

Thermal Shock: Mil-Std-202, Method 107, Cond. C, ΔR 0.25% max.

Moisture Resistance: Mil-Std-202, Method 106, ΔR 0.4% max.

Load Life: 1,000 hours at +125°C at rated voltage, not to exceed rated power.

Resistance Range	Load Life, ΔR
Standard	0.5% max.
St'd with "-15" rating	0.8% max.
Extended Range	0.8% max.

Solderable Leads

Encapsulation: High Temperature Silicone Conformal.

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17271 North Umpqua Hwy.
Roseburg, Oregon 97470-9422
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Fax: (541) 496-0408

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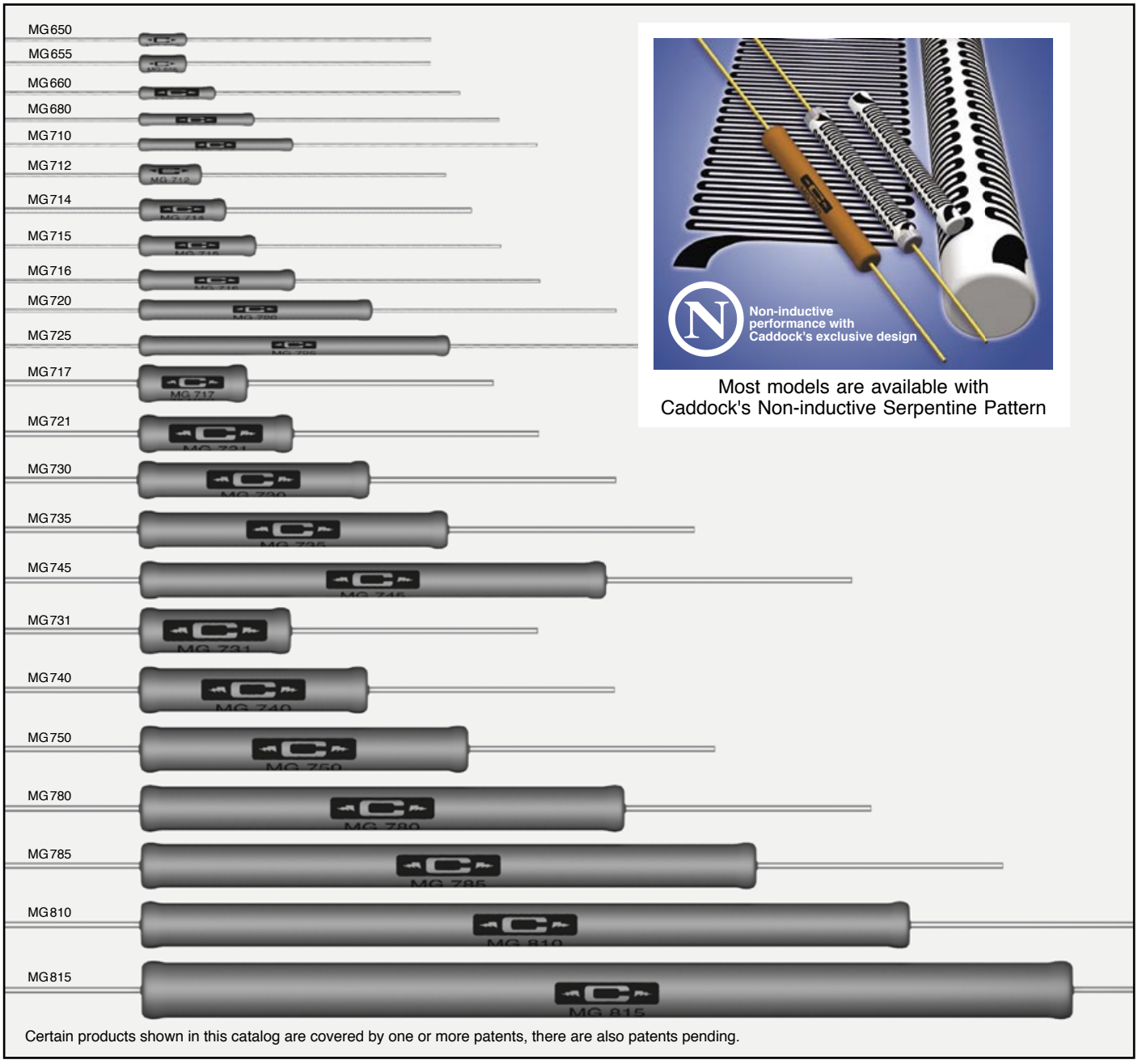
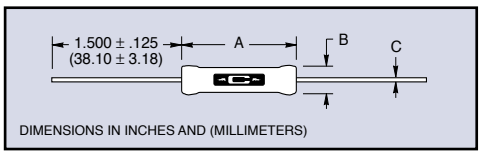
Type MG Precision High Voltage Resistors

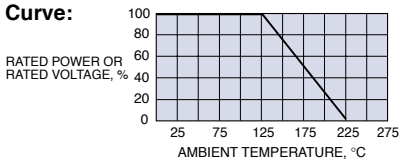


Most models are available with
Caddock's Non-inductive Serpentine Pattern

Certain products shown in this catalog are covered by one or more patents, there are also patents pending.



Derating Curve:



Design Assistance in Developing High Voltage Resistor Sets with Low TC Tracking.

For immediate engineering assistance in developing Low Ratio TC matched high voltage resistor sets, contact our Applications Engineering and we will be pleased to offer the best solution from our high voltage resistor product capabilities.

Ordering Information:

MG750 -100M - 1%

Model Number: MG750

Resistor Value: 100M

Tolerance: 1%

Applications Engineering
17271 North Umpqua Hwy.
Roseburg, Oregon 97470-9422
Phone: (541) 496-0700
Fax: (541) 496-0408

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