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 prestress 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	Watt-	Max.	Overload	Dielect.	Resistance				Dimensions in inches and (millimeters)			
No.	age	Continuous Oper. Volt.	Rating	Strength	Min.	-15 Min.	Standard Max.	Extended Max.	Α	В	С	
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)	
MG 655	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)	
MG 660	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)	
MG 680	0.8	2,000	Type 1	750	600 Ω	N/A	20 Meg	N/A	.750 ±.030 (19.05 ±.76)	$\begin{array}{c} .094 \pm .015 \\ (2.39 \pm .38) \end{array}$.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)	$\substack{.094 \pm .015 \\ (2.39 \pm .38)}$.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)	$\substack{.140 \pm .030 \\ (3.56 \pm .76)}$.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)	$\substack{.040 \pm .002 \\ (1.02 \pm .05)}$	
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)	$\substack{.140 \pm .030 \\ (3.56 \pm .76)}$.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)	$\substack{.240 \pm .030 \\ (6.10 \pm .76)}$.040 ±.002 (1.02 ±.05)	
MG 731	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)	$\substack{.040 \pm .002 \\ (1.02 \pm .05)}$	
MG 735	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)	$\substack{.040 \pm .002 \\ (1.02 \pm .05)}$	
MG 740	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)	$\substack{.040 \pm .002 \\ (1.02 \pm .05)}$	
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)	$\substack{.315 \pm .030 \\ (8.00 \pm .76)}$.040 ±.002 (1.02 ±.05)	
MG 780	7.5	15,000	Type 2	1,000	600 Ω	192 Meg	750 Meg	3,750 M	3.125 ±.060 (79.38 ±1.52)	$\begin{array}{c}.315 \pm .030 \\ (8.00 \pm .76)\end{array}$	$\substack{.040 \pm .002 \\ (1.02 \pm .05)}$	
MG 785	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)	

Specifications:

Resistance Tolerance:

Resistance Range	Tolerance		
Standard	±1%, ±0.5%, ±0.25%, ±0.1%		
St'd with "-15" rating	±1%		
Extended Bange	+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, ∆R
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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Models with low inductance construction are in shaded areas

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

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