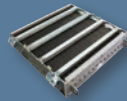


Industrial Power Wirewound Resistors

Dedicated Solutions for **High Power** and **High Energy** Metal Resistors

FOLDED METAL AND GRID



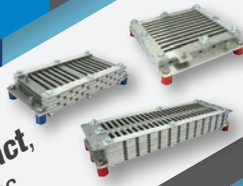
Indirect **Water Cooled** Resistors, **Power** Up to 2500 W

WCR



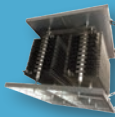
Customized, Compact, Low Ohmic, Stainless Crowbar Resistors

ULDCR



High Current Capability With All-Welded Construction for **Customizable** Package Up to 100 kW

GRE SERIES



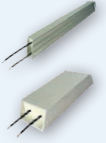
High Active Mass With **Good Thermal Dissipation**

EDGU SERIES



Panel-Mountable, Aluminum-Housed Wirewound Resistors

VACR



Neutral Grounding and **High Current** Grid Resistor Up to 1000 A and 13.8 kV System Voltage

NGR



Direct Water Cooled Resistors, **Power** Up to 9000 W

DCRF







INDUSTRIAL POWER WIREWOUND RESISTORS

Focus Products









Wirewound							
Series	Resistance Range	Power Rating	Tolerance (\pm %)	Operating Temp. Range	TCR	Sizes	Limiting Element Voltage
 RWM	0.1 Ω to 100 k Ω	3 W to 30 W	1, 2, 5	-55 $^{\circ}$ C to +350 $^{\circ}$ C	+75 ppm/K	0410, 0422, 0526, 0622, 0826, 0634, 0834, 0845, 1045, 1064, 1065	120 V to 800 V
	Conformal vitreous enamel and high power rating up to 30 W						
 RWST	2.7 Ω to 430 k Ω	95 W to 700 W	5, 10	-55 $^{\circ}$ C to +450 $^{\circ}$ C	+75 ppm/K	25138, 25168, 30250, 40370, 50373	Up to 5000 V
	Rugged construction for use in severe environmental conditions and power from 95 W to 800 W						
 RSO	0.068 Ω to 68 Ω	160 W to 1000 W	10	-55 $^{\circ}$ C to +450 $^{\circ}$ C	+100 ppm/K	25138, 25168, 30250, 40370, 50373	Up to 4500 V
	High power rating from 160 W to 1 kW						
 RSSD	0.12 Ω to 560 Ω	16 W to 600 W	5, 10, 20	-55 $^{\circ}$ C to +450 $^{\circ}$ C	+100 ppm/K	0834, 1050, 1370, 1694, 20117, 25138, 25168, 30250, 40370, 50373	Up to 3500 V
	High power rating from 16 W to 600 W						
 RT	1 Ω to 33 k Ω	-	10	-55 $^{\circ}$ C to +320 $^{\circ}$ C	+100 ppm/K	Dia. 22.5 to 143	300 V to 1500 V
	Vitreous-style wirewound rheostats from 25 W to 500 W						
 CT	0.33 Ω to 270 k Ω	270 W to 1100 W	5, 10	-55 $^{\circ}$ C to +450 $^{\circ}$ C	+75 ppm/K	40168, 44250, 54362, 64362	1900 V to 4200 V
	High energy pulse capability up to 25 kJ						
 VN	1 Ω to 470 k Ω	22 W to 600 W	5	-55 $^{\circ}$ C to +450 $^{\circ}$ C	+75 ppm/K	1052, 1370, 1694, 20117, 2584, 25110, 25138, 25168, 30153, 30250, 42362	450 V to 4500 V
	Complete vitreous range for use in most severe applications; non-inductive available						
 VC	0.068 Ω to 68 Ω	90 W to 1000 W	5, 10	-55 $^{\circ}$ C to +450 $^{\circ}$ C	+180 ppm/K	2584, 25110, 25138, 25168, 30153, 30250, 42362, 50370	Up to 4500 V
	Vitreous corrugated power rating from 90 W to 1000 W						
 G200	0.1 Ω to 120 k Ω	4 W to 17 W	2, 5, 10	-55 $^{\circ}$ C to +350 $^{\circ}$ C	+100 ppm/K to +180 ppm/K	0414, 0719, 0933, 0947	200 V to 650 V
	Axial vitreous wirewound resistor						
 VACR	2.7 Ω to 1.8 k Ω	50 W to 500 W	10	-25 $^{\circ}$ C to +200 $^{\circ}$ C	+50 ppm/K to +150 ppm/K	Refer to VACR datasheet	600 V to 1000 V
	Panel-mountable; aluminum-housed wirewound resistors						
 GWK	1.8 Ω to 330 k Ω	10 W to 260 W	2, 5, 10	-55 $^{\circ}$ C to +350 $^{\circ}$ C	+100 ppm/K to +180 ppm/K	Refer to GWK datasheet	280 V to 4000 V
	Easy to change when mounted with spring clips; non-inductive version available						
 GBS	0.1 Ω to 75 Ω	50 W to 1000 W	5, 10	-55 $^{\circ}$ C to +350 $^{\circ}$ C	-10 ppm/K to +750 ppm/K	Refer to GBS datasheet	250 V to 3000 V
	Complete vitreous coating for perfect humidity protection						
 GWS	3.3 Ω to 300 k Ω	10 W to 500 W	2, 3, 5, 10	-55 $^{\circ}$ C to +350 $^{\circ}$ C	+100 ppm/K to +180 ppm/K	Refer to GWS datasheet	250 V to 2300 V
	Vitreous wirewound resistor with lugs						
 RW	0.39 Ω to 390 k Ω	11 W to 480 W	5, 10	-55 $^{\circ}$ C to +350 $^{\circ}$ C	-10 ppm/K to +180 ppm/K	13114 to 36305	120 V to 6000 V
	Vitreous wirewound resistor up to 480 W and up to 6000 V according to MIL-PRF-26; non-inductive type available						


Wirewound Water Cooled							
Series	Resistance Range	Power Rating	Tolerance (\pm %)	Operating Temp. Range	TCR	Sizes	Limiting Element Voltage
 WCR	4.7 Ω to 56 k Ω	1500 W to 2500 W	5	-55 $^{\circ}$ C to +120 $^{\circ}$ C	+100 ppm/ $^{\circ}$ C	30250, 38250, 38300	Up to 3500 V
	High power; indirect water-cooled; with power ratings from 1500 W to 2500 W						
 DCRF	0.756 Ω to 27 k Ω	1500 W to 9000 W	5, 10	-55 $^{\circ}$ C to +120 $^{\circ}$ C	+100 ppm/ $^{\circ}$ C	382178, 38224, 38270, 38316, 38362, 38410	Up to 3600 V
	High power; direct water-cooled; with power ratings from 1500 W to 2500 W						






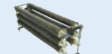





INDUSTRIAL POWER WIREWOUND RESISTORS

Focus Products

High Power Grid and Wirewound Resistors							
Series	Power Min. (W)	Power Max. (W)	Resistance Min. (Ω)	Resistance Max. (Ω)	Tolerance (\pm %)	Operating Temp. Range	Temperature Rise
EDGU 	400	1600	0.053	5.44	10	-55 °C to +350 °C	375 K above an ambient of 40 °C
Open coil construction allows efficient heat dissipation and easily accommodates reasonable overloads and surges							
GRE 	1300	24000	0.02	110	10	-55 °C to +415 °C	375 K above an ambient of 40 °C
Robust all-welded grid resistors allow for high current capability in a customizable package up to 100 kW and within IP00-IP20 or IP23-rated enclosures							
GREM 	8000	8000	0.067	24.273	10	-55 °C to +415 °C	375 K above an ambient of 40 °C
Improved watt density EDG type resistors in GRE1 type package							
MCR 	20	125	0.2	76 k	5, 10	-40 °C to +300 °C	300 K above an ambient of 25 °C
Metal case, heat sinkable resistor; high power to size ratio							
RBEF, RBSF 	40	2000	0.01	391	10	-55 °C to +415 °C	375 K above an ambient of 40 °C
High temperature, enamel-coated resistor designed with maximum active mass for excellent pulse handling abilities in a wide range of sizes							
RDEF, RDSF 	8	1150	0.12	227 K	5	-55 °C to +350 °C	325 K above an ambient of 25 °C
High temperature, enamel-coated resistor available with non-inductive windings and a wide resistance range							
ULDCR 	Up to 3.5 MW for 0.25		0.075 to 0.5		10	-55 °C to +375 °C	Below 350 K for single pulse
Customized compact; low ohmic stainless steel crowbar resistors for inverters; energy absorption capability up to 3.5 MJ							
VSGR 	5 K to 20 K		0.1 to 75		10	-25 °C to +250 °C	210 K above ambient of 40 °C
High power capability up to 20 kW at 40 °C							

Neutral Grounding and High-Current Grid Resistors					
Series	System Voltage (kV)	Line-Neutral-Voltage (kV)	Current (A)	Resistance Range (Ω)	Tolerance (\pm %)
NGR 	2.4 to 13.8	1.39 to 8.0	100 to 1000	1.39 to 80	10
Stainless steel resistive element; high thermal capacity to absorb high current; custom design on demand					

Custom Load Banks and Resistors					
Series	Resistance Range	Power Rating	Tolerance (\pm %)	Operating Temp. Range	TCR
GBS Array 	On demand	On demand	5, 10	-55 °C to +350 °C	100 ppm/K to 180 ppm/K
Custom resistor bank based on GBS series					
Folded Metal and Grid Resistors 	< 10 Ω	5 kW up to 5 MW	5, 10	-55 °C to +450 °C	On request
Custom braking and crowbar resistors with power capability up to 5 MW for railway, mining, and inverters applications					

Series	Description
	Resistors with Mounting Hardware Many standard hardware options allow resistors to be purchased fully assembled allowing easy integration into the final assembly
	Resistor Assemblies Assemblies with one or more different types of resistors on frames are available for use as specialty load banks
	Resistors with Leads Value-added wiring and connectors allow for a "plug-and-play" solution that easily integrates into the final assembly
	Special Resistors Custom resistors are designed-to-order by our engineers and can be customized to fit unique electrical and mechanical constraints
	Resistors in Enclosures Available in indoor or outdoor enclosures (IP00, IP20, or IP23); resistors can be pre-wired and assembled for power ratings between 300 W and 100 kW
	Pre-Wired Resistor Assemblies Assemblies are wired in parallel or series to meet the needs of the application; terminal blocks and thermal switches are also available
	C52TF Assembly Custom resistors assembly with insulating mechanical supports

For further information, please contact us at:

ww1resistors@vishay.com, mcbfixedresistors@vishay.com, powresistor@vishay.com, vishaymilwaukeeeresistor@vishay.com

High Power Wirewound Resistors for a Broad Range of Industrial Applications

Advantages of Vishay Industrial Power Wirewound Resistors

- High power resistors up to 5 MW
- Energy absorption without forced cooling up to 6.7 MJ
- Broad range of high power resistor types - wirewound, corrugated ribbon, steel grid
- Custom tailored resistors and resistor banks for high power projects

For the Following Applications

- HVDC snubbers, harmonic filters, snubber discharge filters
- High power inverters and drives
- High power dynamic braking resistors
- Renewable energy - chopper, braking, and crowbar resistor for DFIG



Vishay resistors provide overvoltage protection in a variety of applications



Vishay resistors remove harmful electrical signals



Vishay resistors offers high pulse energy capabilities for stable power grids

Useful Links

- Metal Plate / Grid Technology Overview
www.vishay.com/resistors-linear/metal-plate-grid/
- Pulse Energy Calculator
www.vishay.com/resistors/pulse-energy-calculator/
- Industrial Power Wirewound Resistors Selector Guide
www.vishay.com/doc?49438
- Vishay Draloric / Beyschlag Resistor Solutions
www.vishay.com/doc?48367
- Customized Stainless Steel Braking Resistors
www.vishay.com/doc?32529



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