Vishay Intertechnology, Inc.

VISHAY

The DNA of tech.™

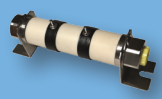
Industrial Power Wirewound Resistors

High Active Mass With **Good Thermal Dissipation**

EDGU SERIES

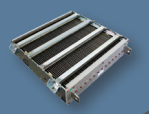
Neutral Grounding and **High Current** Grid Resistor Up to 1000 A and 13.8 kV System Voltage

NGR



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

DCRF

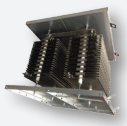


Dedicated Solutions for **High Power** and **High Energy** Metal Resistors

FOLDED METAL AND GRID

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

WCR



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

GRE SERIES

www.vishay.com

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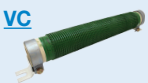
INDUSTRIAL POWER WIREWOUND RESISTORS

Focus Products

Wirewound

Series	Resistance Range	Power Rating	Tolerance (± %)	Operating Temp. Range	TCR	Sizes	Limiting Element Voltage
RWM 	0.1 Ω to 100 kΩ	3 W to 30 W	1, 2, 5	-55 °C to +350 °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 kΩ	95 W to 700 W	5, 10	-55 °C to +450 °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 °C to +450 °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 °C to +450 °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 kΩ	-	10	-55 °C to +320 °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 kΩ	270 W to 1100 W	5, 10	-55 °C to +450 °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 kΩ	22 W to 600 W	5	-55 °C to +450 °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 °C to +450 °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 kΩ	4 W to 17 W	2, 5, 10	-55 °C to +350 °C	+100 ppm/K to +180 ppm/K	0414, 0719, 0933, 0947	200 V to 650 V
Axial vitreous wirewound resistor							
GWK 	1.8 Ω to 330 kΩ	10 W to 260 W	2, 5, 10	-55 °C to +350 °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 °C to +350 °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 kΩ	10 W to 500 W	2, 3, 5, 10	-55 °C to +350 °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 kΩ	11 W to 480 W	5, 10	-55 °C to +350 °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 (± %)	Operating Temp. Range	TCR	Sizes	Limiting Element Voltage
WCR 	4.7 Ω to 56 kΩ	1500 W to 2500 W	5	-55 °C to +120 °C	+100 ppm/°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 kΩ	1500 W to 9000 W	5, 10	-55 °C to +120 °C	+100 ppm/°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							

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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 (± %)	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						

Neutral Grounding and High-Current Grid Resistors					
Series	System Voltage (kV)	Line-Neutral-Voltage (kV)	Current (A)	Resistance Range (Ω)	Tolerance (± %)
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 (± %)	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, vishaymilwaukeeresistor@vishay.com

High Power Wirewound Resistors for a **Broad Range** of **Industrial Applications**

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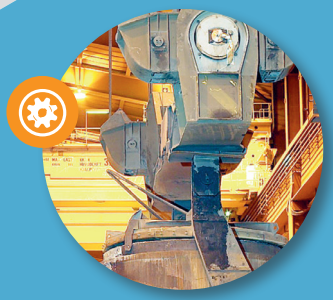
Advantages of Vishay Industrial Power Wirewound Resistors

- 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

IRIS Certification

Pb-free RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)