AutomationDirect – GS Series Brake Resistors for AC Drives

GS Series: 80W–9.6 kW Brake Resistors Overview

Automation Direct GS series brake resistors are designed for use with any AC drive up to 600V. See the specifications section of your Automation Direct AC drive manual for the drive-to-resistor cross reference..

Open:
Encapsulated offerings from 80W to 5.0 kW.

Panel mount coil offerings from 750W to 1.5 kW.

Enclosed NEMA1:
Offerings from 1.0 kW to 9.6 kW.

GS-2020-BR-ENC

GS-2020-BR-ENC
(cover removed for display)

Drive Usage Cross References
Refer to the online technical specifications below for a list of compatiblity between brake resistors and VFDs sold by AutomationDirect.

- For GS4 series drives, see GS4 Drive Braking Components.
- For GS10 series drives, see GS10 Drive Braking Components.
- For GS20(X) series drives, see GS20(X) Drive Braking Components.
- For GS30 series drives, see GS30 Drive Braking Components.
- For Ironhorse ACG series drives, see ACG Drive Braking Components.
- For Ironhorse ACN series drives, see ACN Drive Braking Components.
- For WEG CFW500 series drives, see CFW500 Drive Braking Components.

GS-BR-400W150
(Open Encapsulated)

GS-BR-1K0W020
(Open Panel Coil)

AutomationDirect – GS Series Brake Resistors for AC Drives

GS Series Specifications

Open Type Braking Resistor Specifications						
Type	*Part Number*	*Price*	*Power*	*Resistance (Ω)*	*Drawing Link*	*Connection Terminal Type*
Open- Encapuslated Flat Mount 	GS-BR-080W200	$17.50	80W	200	PDF	Wire Leads (150mm length)
	GS-BR-080W750	$20.50		750	PDF	
	GS-BR-200W091	$39.00	200W	91	PDF	Wire Leads (200mm length)
	GS-BR-200W360	$39.00		360	PDF	
	GS-BR-300W070	$47.00	300W	70	PDF	Wire Leads (150mm length)
	GS-BR-300W250	$44.00		250	PDF	
	GS-BR-300W400	$37.00		400	PDF	
	GS-BR-400W040	$56.00	400W	40	PDF	
	GS-BR-400W150	$53.00		150	PDF	
	GS-BR-500W100	$45.00	500W	100	PDF	Blade conector
Open- Panel Mount Coil 	GS-BR-750W140	$79.00	750W	140	PDF	Blade conector
	GS-BR-1K0W4P3	$124.00	1kW	4.3	PDF	
	GS-BR-1K0W5P1	$124.00		5.1	PDF	
	GS-BR-1K0W016	$124.00		16	PDF	
	GS-BR-1K0W020	$124.00		20	PDF	
	GS-BR-1K0W075	$124.00		75	PDF	
	GS-BR-1K2W3P9	$137.00	1.2 kW	3.9	PDF	
	GS-BR-1K2W015	$137.00		15	PDF	
	GS-BR-1K5W3P3	$162.00	1.5 kW	3.3	PDF	
	GS-BR-1K5W012	$162.00		12	PDF	
	GS-BR-1K5W013	$162.00		13	PDF	
	GS-BR-1K5W040	$144.00		40	PDF	
	GS-BR-1K5W043	$162.00		43	PDF	

Open Type Brake Resistor General Specifications		
	Test Condition	*Specification*
Operating Temperature	–	• Open Encapsulated Flat Mount: -55 to 250 °C (when temp > 200°C use forced cooling with airspeed 3–10m/s) • Open Panel Mount Coil: -55 to 600°C (when temp > 350°C, use forced cooling with airspeed 3–10m/s)
Tolerance	@25°C	±5%
Temperature Coefficient	–	±260ppm/°C
Housing Material	–	• Open Encapsulated Flat Mount: Oxidized aluminum • Open Panel Mount Coil: Ceramic coating
Isolation Resistance	Between terminals (terminal wire) and housing or mounting bracket	100MΩ @ 500VDC for 1 minute
Dielectric Strength	Between terminals (terminal wire) and housing or mounting bracket	1500VAC for 1 minute
Overload	Cycle 10s on ~90s off	10 x rated power
Lead Pull Strength	–	2.5 kg for 10 seconds (not applicable when resistor has no leads)
Vibration	10–55–10 Hz sweep in 1 minute, amplitude 0.75 mm	2 hours per direction

AutomationDirect – GS Series Brake Resistors for AC Drives

GS Series Specifications, *continued*

Enclosed Type Braking Resistor Specifications						
Type	***Part Number***	***Price***	***Power (kW)***	***Resistance (Ω)***	***Drawing Link***	***Connection Terminal Type***
Enclosed NEMA1 with Temperature switch 	***GS-2010-BR-ENC***	$358.00	1.0	20	PDF	Terminal block
	GS-2015-BR-ENC	$621.00	2.4	13.6	PDF	
	GS-2020-BR-ENC	$689.00	3.0	10	PDF	
	GS-2025-BR-ENC	$842.00	4.8	8	PDF	
	GS-2030-BR-ENC	$827.00		6.8	PDF	
	GS-2040-BR-ENC	$689.00	3.0	10	PDF	
	GS-2050-BR-ENC	$842.00	4.8	8	PDF	
	GS-4015-BR-ENC	$358.00	1.0	50	PDF	
	GS-4020-BR-ENC	$445.00	1.5	40	PDF	
	GS-4025-BR-ENC	$1,058.00	4.8	32	PDF	
	GS-4030-BR-ENC	$1,058.00		27.2	PDF	
	GS-4040-BR-ENC	$1,058.00	6.0	20	PDF	
	GS-4050-BR-ENC	$1,246.00	9.6	16	PDF	
	GS-4060-BR-ENC	$1,246.00		13.6	PDF	
	GS-4075-BR-ENC	$1,058.00	6.0	20	PDF	
	GS-4100-BR-ENC	$1,246.00	9.6	13.6	PDF	

Legacy Braking Resistor Specifications						
Type	***Legacy Part Number***	***Price***	***Power (W)***	***Resistance (Ω)***	***Drawing Link***	***Replacement Part Number***
Open 	***GS-20P5-BR***	Retired	80	200	PDF	***GS-BR-080W200***
	GS-21P0-BR	Retired	80	200	PDF	***GS-BR-080W200***
	GS-22P0-BR	Retired	300	100	PDF	n/a
	GS-23P0-BR	Retired	300	70	PDF	***GS-BR-300W070***
	GS-25P0-BR	Retired	400	40	PDF	***GS-BR-400W040***
	GS-27P5-BR	Retired	500	30	PDF	n/a
	GS-41P0-BR	Retired	80	750	PDF	***GS-BR-080W750***
	GS-42P0-BR	$58.00	300	400	PDF	***GS-BR-300W400***
	GS-43P0-BR	Retired	300	250	PDF	***GS-BR-300W250***
	GS-45P0-BR	Retired	400	150	PDF	***GS-BR-400W150***
	GS-47P5-BR	Retired	500	100	PDF	***GS-BR-500W100***
	GS-4010-BR	Retired	1.0 kW	75	PDF	***GS-BR-1K0W075***

Brake Resistors for AC Drives

CROHM Brake Resistors Overview

CROHM brake resistors are specifically designed for use with Automation Direct AC Drives, and can also be used with any AC Drive up to 600V class. CROHM resistors are designed and manufactured in the USA with ISO 9001 certification, by experts with over 75 years of experience in the industry. This resistor lineup includes NEMA 1 offerings from 240W to 18kW, with built in thermal overload protection and zinc plated hardware. Certifications include CSA compliance to CSA 22.2 and UL 508 standard, in addition to CE compliance.

The resistors are pre-wired to terminal blocks for easy wiring to any AC drive. A normally closed thermostat is included and should be wired into the AC drive control circuit using the male spade terminals. NEMA1 brake resistor enclosures are designed to easily mount outside of the control panel, saving valuable panel space and reducing panel thermal load.

See the cross-reference pages for the recommended resistor for each VFD offered at Automation Direct.

Features:

- 240W to 18.0 kW power ratings
- NEMA1 enclosure
- Normally closed thermal switch
- Zinc plated hardware
- Pre-wired to terminal blocks
- 1-year warranty, Made in USA

Agency Approvals

- CSA listed to UL508 standard
- CE marked

Part Number Key

BR-N1-240 W 150

- **Resistance**
  150=150Ω
  5P8=5.8Ω
- **Watt**
- **Power**
  400=0.4kW
  2K8=2.8kW
- **Type**
  N1=Type 1, Indoor
- **Braking Resistor**

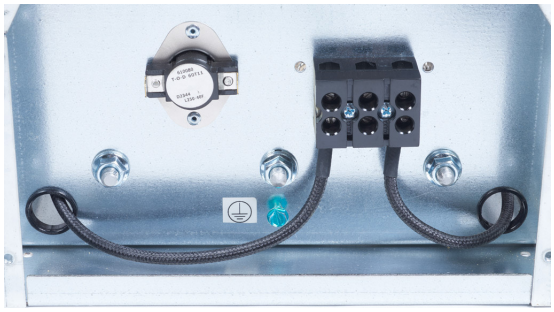
Drive Usage Cross References

Refer to the online technical specifications below for a list of compatiblity between brake resistors and VFDs sold by AutomationDirect.

- For GS4 series drives, see GS4 Drive Braking Components.
- For GS10 series drives, see GS10 Drive Braking Components.
- For GS20(X) series drives, see GS20(X) Drive Braking Components.
- For GS30 series drives, see GS30 Drive Braking Components.
- For Toshiba AS3 drives, see AS3 Drive Braking Components.
- For Ironhorse ACG series drives, see ACG Drive Braking Components.
- For Ironhorse ACN series drives, see ACN Drive Braking Components.
- For WEG CFW500 series drives, see CFW500 Drive Braking Components.

BR-N1-240W150

BR-N1-6K5W06P4



BR-N1 Brake Resistor with Endcap Removed

Brake Resistors for AC Drives

CROHM Series Specifications

CROHM Braking Resistor Specifications							
Type	*Part Number*	*Price*	*Power*	*Resistance (Ω)*	*Enclosure Frame*	*Weight (lbs)*	*Drawing Link*
Enclosed NEMA1	BR-N1-240W150	$156.00	240W	150	EC1	7	PDF
	BR-N1-240W200	$156.00		200		7	PDF
	BR-N1-240W250	$156.00		250		7	PDF
	BR-N1-250W400	$156.00	250W	400		7	PDF
	BR-N1-280W50	$156.00	280W	50		7	PDF
	BR-N1-500W130	$234.00	500W	130	EC2	10	PDF
	BR-N1-500W200	$234.00		200		10	PDF
	BR-N1-720W50	$234.00	720W	50		10	PDF
	BR-N1-720W85	$234.00		85		10	PDF
	BR-N1-800W18P0	$234.00	800W	18.0		10	PDF
	BR-N1-800W25	$234.00		25		10	PDF
	BR-N1-1K1W15P0	$300.00	1.1 kW	15.0	EC3	12	PDF
	BR-N1-1K2W50	$300.00	1.2 kW	50		12	PDF
	BR-N1-1K2W75	$300.00		75		12	PDF
	BR-N1-1K5W14P0	$366.00	1.5 kW	14.0	EC4	15	PDF
	BR-N1-1K5W40	$366.00		40		15	PDF
	BR-N1-1K6W10P0	$430.00	1.6 kW	10.0	EC5	18	PDF
	BR-N1-1K7W30	$430.00	1.7 kW	30		18	PDF
	BR-N1-2K2W06P8	$456.00	2.2 kW	6.8	EC6	14	PDF
	BR-N1-2K2W08P6	$456.00		8.6		14	PDF
	BR-N1-2K3W26	$496.00	2.3 kW	26		19	PDF
	BR-N1-2K8W25	$602.00	2.8 kW	25	EC8	23	PDF
	BR-N1-3K0W05P8	$526.00	3.0 kW	5.8	EC6	15	PDF
	BR-N1-3K6W06P8	$556.00	3.6 kW	6.8		16	PDF
	BR-N1-3K6W20	$638.00		20	EC9	21	PDF
	BR-N1-4K0W16P0	$638.00	4.0 kW	16.0		22	PDF
	BR-N1-4K7W14P7	$668.00	4.7 kW	14.7		21	PDF
	BR-N1-6K5W06P4	$789.00	6.5 kW	6.4	EC12	30	PDF
	BR-N1-6K9W13P6	$789.00	6.9 kW	13.6		27	PDF
	BR-N1-10K8W04P3	$1,270.00	10.8 kW	4.3	EC18	50	PDF
	BR-N1-13K0W06P4	$1,450.00	13.0 kW	6.4	EC24	54	PDF
	BR-N1-18K0W03P7	$1,595.00	18.0 kW	3.7		69	PDF

CROHM Resistor General Specifications		
	Test Condition	*Specification*
Operating Temperature	–	375°C
Resistance Tolerance	at 25°C	±10%
Housing Material	–	Galvanized sheet steel
Dielectric Strength	Between terminals and housing	3000VAC for 1 minute
Thermal Switch	–	Normally closed with 1/4" blade terminals
Terminal Block	80W–13kW models	Terminal block accepts 18–4 AWG wire
	18kW models	Terminal block accepts 14–2 AWG wire

Brake Resistors for AC Drives

CROHM Brake Resistors Installation Instructions

IMPORTANT: READ THESE INSTRUCTIONS THOROUGHLY BEFORE INSTALLATION. ALL WARNINGS AND PRECAUTIONS SHOULD BE FOLLOWED FOR PERSONNEL SAFETY AND PROPER EQUIPMENT PERFORMANCE. INSPECTION

Upon receipt of your CROHM Braking Resistor, be sure to inspect the unit carefully for any shipping damage. After unpacking, check the unit for loose, broken, bent or otherwise damaged parts due to shipping. Report any shipping damage immediately to the freight carrier. Be sure to verify that the part number and ratings listed on the nameplate conform to the order specification. The ohm rating listed on the nameplate is critical (too low of a resistrance value may cause damage to the drive).

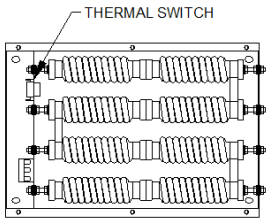
IMPORTANT: The National Electric Code (NEC) and local regulations govern the installation and wiring of electrical equipment such as braking resistors. DC power wiring, AC power wiring, control wiring and conduit must be installed in accordance with these codes.

CROHM braking assemblies cool by natural convection causing hot air to rise vertically from the enclosure. Braking resistors should be mounted in a well-ventilated location free of any combustible materials or equipment affected by heat. Units should be installed with at least 24 inches of free space above the enclosure top and 10 inches of free space surrounding the enclosure sides. If necessary, units can be mounted on spacers or channels to limit heat from conducting from the resistor enclosure to its mounting surface. Indoor type enclosures can be mounted on a flat surface or wall mounted. If the unit is wall mounted, it is important that the resistor coils remain in a horizontal position. See below for correct installation orientation.

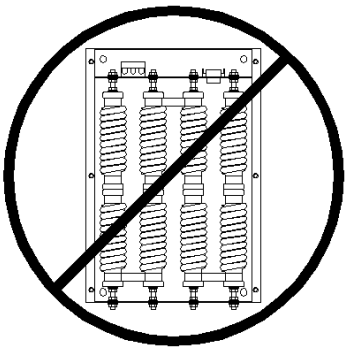
Installation

Units should not be installed on combustible surfaces. Mounting holes are located on the inside of the braking resistor enclosure. To install the unit:

1. For enclosures, EC1, EC2, EC3, EC4, EC5, EC6, EC8, EC10 you must remove the front and top covers to gain access to the mounting holes. For enclosures EC9, EC12, EC15, EC18, EC24 remove only the front and rear covers to gain access to the mounting holes. Cover hardware can be removed with a 5/16" wrench. Mounting dimensions are listed in the model's drawing PDF. Units have 7/16" diameter mounting slots designed for 3/8" hardware.
2. Fasten the unit securely in place.
3. There are convenient conduit knockouts for provided for easy connection. Remove the proper knockout after determining a suitable entry point.
4. After attaching conduit, pull wiring into the enclosure for connection to the terminal block and thermal switch. Your braking resistor contains a factory wired terminal block, you may connect to the terminal block and thermal switch with standard 90ºC rated wire. See technical specification for terminal block wire sizes and thermal switch details.
5. Be sure to properly ground the resistor enclosure to prevent electrical shock.
6. After installing and wiring to your CROHM braking resistor, reinstall the covers. Securely tighten cover hardware to 20 inch-pounds of torque max.



CORRECT WALL INSTALLATION



INCORRECT WALL INSTALLATION

Maintenance

Periodically check the unit for loose connections and an accumulation of dust or dirt on the inside and outside of the resistor enclosure. Be sure to allow the unit to cool before servicing (contact may result in burn injury). Remove all power before servicing unit to avoid electrical shock. Allow at least five minutes after input power has been disconnected from the AC drive for the bus voltage to discharge. Electric shock can cause injury or death. Resistor elements should not glow red under normal operating conditions. If the resistor elements glow red you may need a higher rated braking resistor.