

GS4 DURAPULSE Drives Accessories – Dynamic Braking Component Selection

Dynamic Braking Components

Use the table below to find the appropriate braking resistor and braking unit (if applicable) for your GS4 series AC drive. For more information and installation instructions, please see the GS4 User Manual. All listed resistors are available for purchase at www.automationdirect.com.

GS4 AC Drive Braking Component Selection																		
Drive Voltage	Motor Power (hp)	Drive Model	Drive Brake Capacity - Max Torque		Braking Unit		125% Braking Torque @ 10% Duty Cycle*											
			Min Resistor Value (Ω)	Max Total Brake Current (A)	Quantity	Part # GS-	Open Type Braking Resistor					NEMA1 Resistors with Thermal Switch						
							Part #	Quantity	Wiring Diagram	Brake Torque (kg-m)	Total Brake Current (A)	Part #	Qty.	Wiring Diagram	Total Brake Current (A)			
230V	1	GS4-21P0	63.3	6	-	n/a	GS-BR-080W200	1	A	0.5	1.9	BR-N1-240W150	1	A	2.6			
	2	GS4-22P0	47.5	8			GS-BR-200W091	1		1.0	4.2	BR-N1-280W50	1		7.8			
	3	GS4-23P0	38.0	10			GS-BR-300W070	1		1.5	5.4		1					
	5	GS4-25P0	19.0	20			GS-BR-400W040	1		2.5	9.5	BR-N1-800W25	1		15.6			
	7.5	GS4-27P5	14.6	26			GS-BR-1K0W020	1		3.7	19	BR-N1-800W18P0	1		21.7			
	10	GS4-2010	14.6	26				1		5.1		BR-N1-1K1W15P0	1		26.0			
	15	GS4-2015	12.6	28			GS-BR-1K5W013	1	7.5	29	BR-N1-1K5W14P0	1	27.9					
	20	GS4-2020	8.3	46			GS-BR-1K0W4P3	2S	10.2	44	BR-N1-2K2W08P6	1	45.3					
	25	GS4-2025	8.3	46				2S	12.2			1						
	30	GS4-2030	5.8	66			GS-BR-1K5W3P3	2S	14.9	58	BR-N1-3K0W05P8	1	67.2					
	40	GS4-2040	4.8*	80*			2	1DBU	Not offered						BR-N1-1K6W10P0	2 (1/DBU)	F	79*
	50	GS4-2050	3.2*	120*			2	2DBU							BR-N1-2K2W06P8	2 (1/DBU)		116*
	60	GS4-2060	3.2*	120*			2	2DBU							BR-N1-3K6W06P8	2 (1/DBU)		
	75	GS4-2075	2.1*	180*			3	2DBU							BR-N1-2K2W06P8	3 (1/DBU)		
	100	GS4-2100	1.6*	240*			4	2DBU								4 (1/DBU)		
460V	1	GS4-41P0	190	4	-	n/a	GS-BR-080W750	1	A	0.5	1	BR-N1-240W200	1	A	4.0			
	2	GS4-42P0	126.7	6			GS-BR-200W360	1		1	2.1	BR-N1-240W150	1		5.3			
	3	GS4-43P0	108.6	7			GS-BR-300W250	1		1.5	3	BR-N1-500W200	1		4.0			
	5	GS4-45P0	84.4	9			GS-BR-400W150	1		2.5	5.1	BR-N1-500W130	1		6.1			
	7.5	GS4-47P5	54.3	14			GS-BR-1K0W075	1		3.7	10.2	BR-N1-720W85	1		9.3			
	10	GS4-4010	47.5	16				1		5.1		BR-N1-1K2W50	1		15.8			
	15	GS4-4015	42.2	18			GS-BR-1K5W043	1	7.5	17.6	BR-N1-1K5W40	1	19.8					
	20	GS4-4020	26.2	29			GS-BR-1K0W016	2S	10.2	24	BR-N1-1K7W30	1	26.3					
	25	GS4-4025	23.0	33				2S	12.2		BR-N1-2K3W26	1	30.4					
	30	GS4-4030	23.0	33			GS-BR-1K5W013	2S	14.9	29	BR-N1-2K8W25	1	31.6					
	40	GS4-4040	14.1	54			GS-BR-1K0W016	4 (2S/2P)	D	20.3	47.5	BR-N1-4K0W16P0	1		49.4			
	50	GS4-4050	12.7*	60*			1	4DBU	Not offered						BR-N1-4K7W14P7	1	F	53.7
	60	GS4-4060	12.7*	60*			1	4DBU							BR-N1-6K9W13P6	1		58.1
	75	GS4-4075	9.5*	80*			2	3DBU							BR-N1-3K6W20	2 (1/DBU)		39.5*
	100	GS4-4100	6.3*	120*			2	4DBU							BR-N1-4K7W14P7	2 (1/DBU)		53.7*
	125	GS4-4125	6.3*	120*	2	4DBU	BR-N1-6K9W13P6	2 (1/DBU)						58.1*				
	150	GS4-4150	6.0*	126*	1	5DBU	BR-N1-13K0W06P4	1						123.4				
	175	GS4-4175	4.0*	190*	1	6DBU	BR-N1-18K0W03P7	1						213.5				
	200	GS4-4200	4.0*	190*	1	6DBU		1										
	250	GS4-4250	3.4*	225*	1	7DBU		1						210.8				
	300	GS4-4300	3.0*	252*	2	5DBU	BR-N1-13K0W06P4	2 (1/DBU)						123.4*				

* These values are per individual DBU, as seen between DBU terminals B1 and B2.

** 10% Duty Cycle with maximum ON (braking) time of 10 seconds.

GSxx DURAPULSE Drives Accessories – Dynamic Braking Component Selection

Brake Wiring

Use your drive's Braking Component Selection table to determine the appropriate brake resistor model and configuration for your drive. Refer to the diagrams below for examples on how to wire each possible configuration

Diagram A (Drive + 1 Resistor or NEMA1 Resistor):

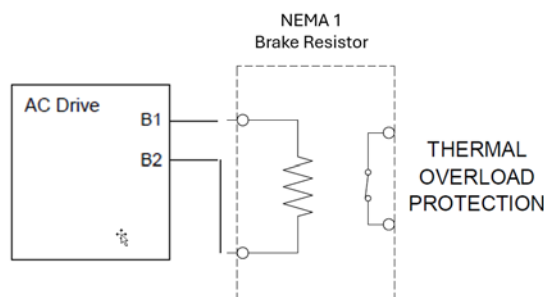
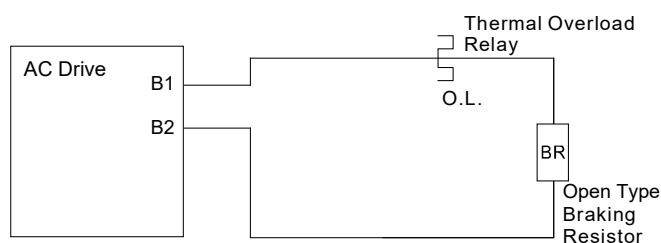


Diagram B (Drive + 2 Series Resistors):

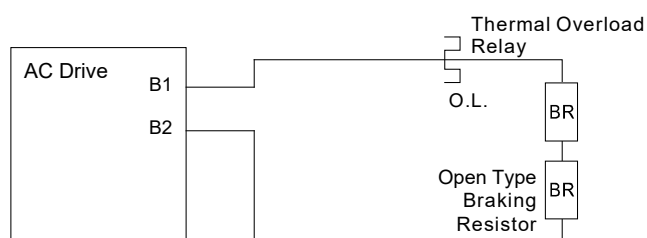


Diagram C (Drive + 2 Parallel Resistors):

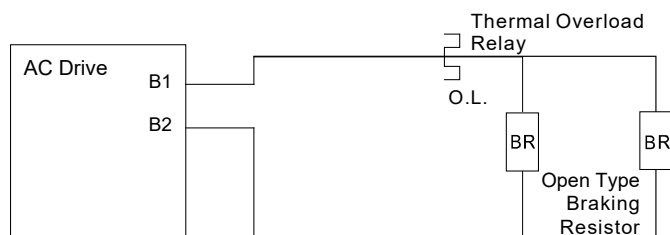
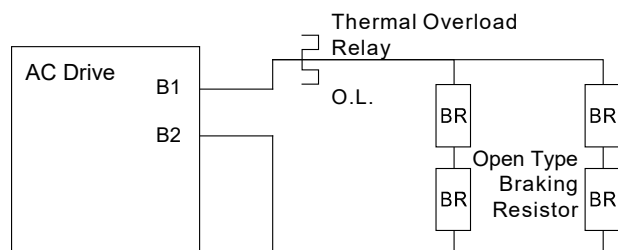


Diagram D (drive + 2 Series and 2 Parallel Resistors):



GSxx DURAPULSE Drives Accessories – Dynamic Braking Component Selection

Brake Wiring, *continued*

Diagram E (Drive + 1 DBU with 1 NEMA1 Resistor):

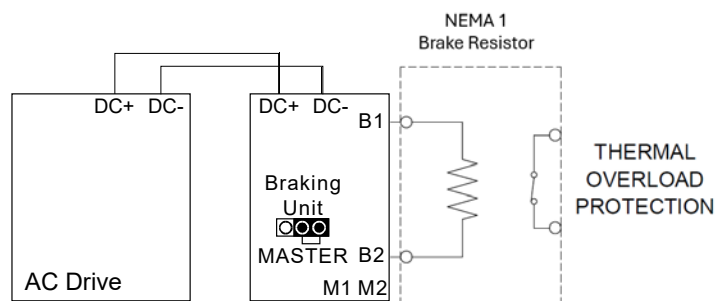
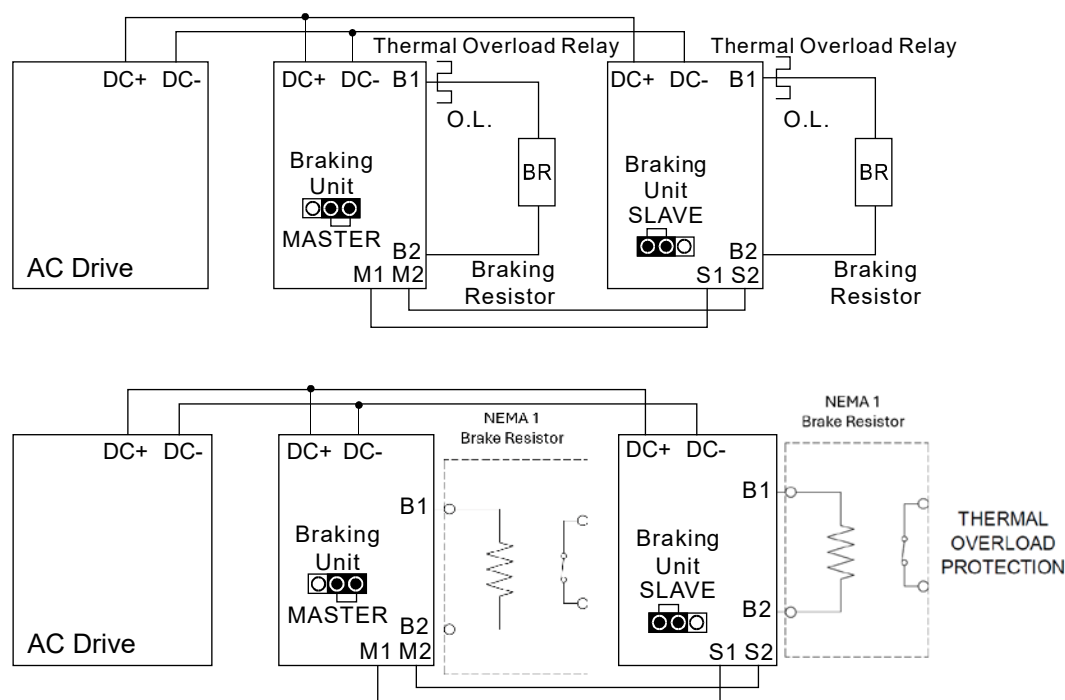


Diagram F (Drive + DBUs with 1 Resistor or NEMA1 Resistor per DBU):



GS/DURAPULSE Drives Accessories – Braking Unit Specifications for GS4 & GS30 DURAPULSE AC Drives

Braking Units for DURApulse AC Drives

Overview

Braking units are applied to absorb the motor regeneration energy when the three-phase induction motor stops by deceleration.

GS-xDBU braking units, used with GS series braking resistors, provide optimum braking performance.



Note: Braking units are available ONLY for DURApulse drives.



WARNING: TO AVOID INJURY OR MECHANICAL DAMAGE, PLEASE REFER TO USER MANUAL GS-DB_UMP BEFORE WIRING.



Dynamic Braking Unit Specifications – for GS4 & GS30 <i>DURAPULSE</i> AC Drives								
Braking Unit Part Number		GS-1DBU	GS-2DBU	GS-3DBU	GS-4DBU	GS-5DBU	GS-6DBU	GS-7DBU
Price		\$292.00	\$292.00	\$395.00	\$395.00	\$1,644.00	\$1,710.00	\$1,877.00
Nominal Voltage (VAC)		230			460			
Max Motor Capacity (hp/[kW])		20 [15]	30 [22]	40 [30]	60 [45]	150 [110]	200 [160]	250 [185]
Output Rating	Max Discharge Current (A) @ 10% Duty Cycle*	40	60	40	60	126	190	225
	Continuous Discharge Current (A)	15	20	15	18	45	50	100
	Braking Startup Voltage (VDC)	330/345/360/ 380/400/415 ±3V			600/690/720/ 760/800/830 ±6V		618/642/667/690/ 725/750 ±6V	
	Maximum On-Time (s)	10						
Input DC Voltage (VDC)		200–400		400–800		400–750		
Min Equivalent Resistor for Each Braking Unit (Ω)		10	6.8	20	13.6	6	4	3.4
Protection	Power CHARGE Lamp/LED	Comes ON until DC bus voltage (+P – -N) drops below 50VDC				Comes ON when DC bus voltage (DC+ – DC-) rises above 300VDC. Goes OFF when DC bus voltage (DC+ – DC-) drops below 100VDC.		
	Braking ACT Lamp/LED	ON during braking						
	Fault ERR Lamp	ON if a fault has occurred				n/a		
	Overcurrent Level LED (A)	n/a				190	290	340
	Overheat LED	n/a				Comes ON > 176°F [80°C]; Goes OFF < 149°F [65°C]		
	Heat Sink Overheat Temperture	203°F [95°C]				n/a		
	Alarm Output Relay Contact	5A @ 120VAC/28VDC (RA,RB,RC)				3A @ 250VAC/28VDC (RA,RC)		
Environment	Installation Location	indoor (no corrosive gases; no metallic dust)						
	Operating Temperature	14°F to 122 °F [-10 to +50 °C]						
	Storage Temperature	-4 to +140 °F [-20 to +60 °C]						
	Humidity	less than 90% RH, non-condensing						
	Vibration	9.8 m/s ² [1G] under 20Hz ; 2m/s ² [0.2G] at 20–50 Hz						
Mechanical Configuration		IP50 wall-mount enclosed				IP10 wall-mount enclosed		
* 10% Duty Cycle with maximum ON (braking) time of 10 seconds								

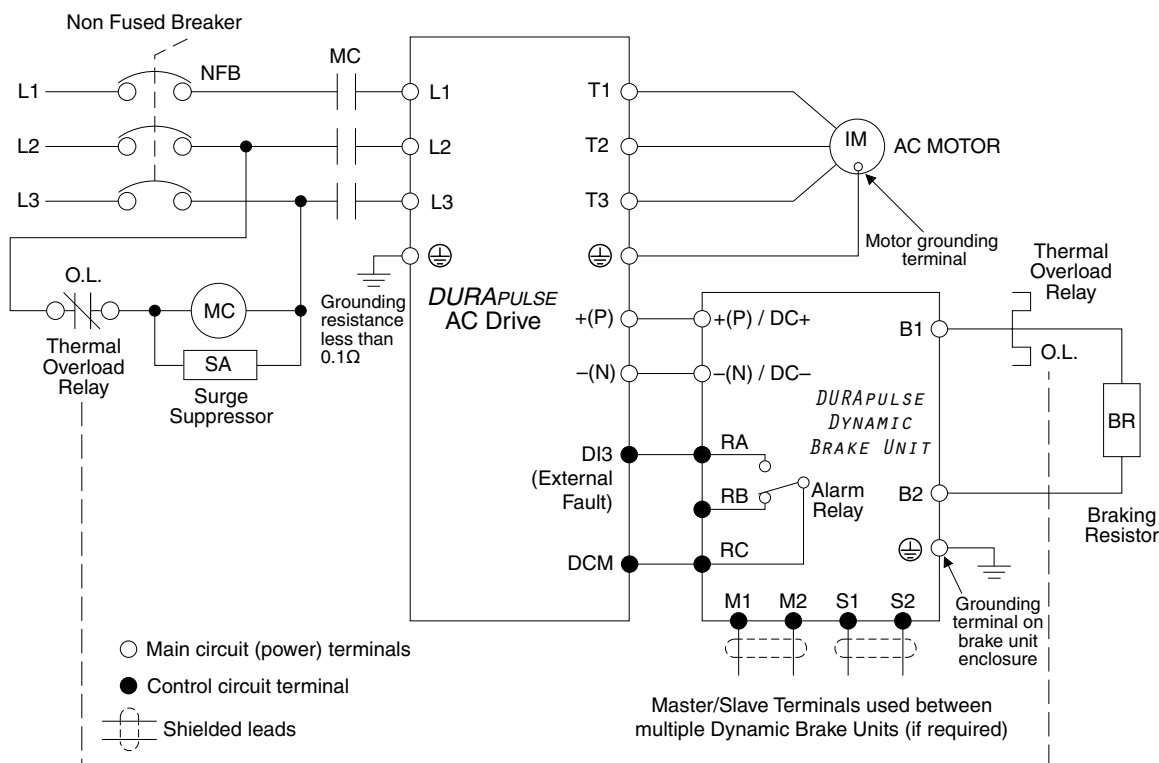
* 10% Duty Cycle with maximum ON (braking) time of 10 seconds

GS/DURAPULSE Drives Accessories – Braking Unit Basic Wiring for GS4 & GS30 DURAPULSE AC Drives

Basic Dynamic Braking Wiring Diagram for GS4 & GS30 DURAPULSE AC Drives

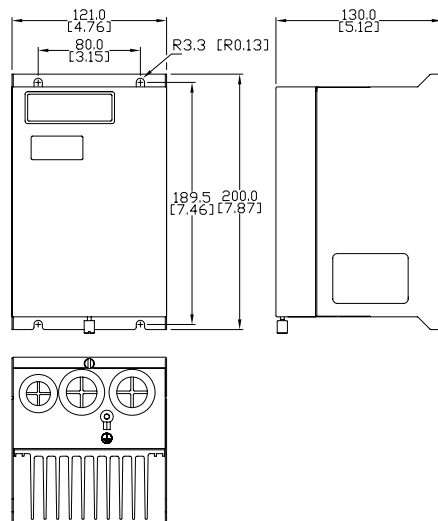


Note: Smaller-capacity DURApulse AC Drives can connect directly to braking resistors, and do not require Dynamic Braking Units for braking. Other applications require multiple Resistors and/or multiple Dynamic Braking Units. Refer to "Dynamic Braking Component Selection" to determine which braking components are required for your application(s), and to the DURApulse Drives Dynamic Braking User Manual for complete wiring diagrams.



Braking Unit Dimensions (Dimensions = mm [in])

A) $DBU \leq 100hp$ (GS-1DBU, GS-2DBU, GS-3DBU, GS-4DBU)



Technical drawing of the E3000 power supply unit, showing front, side, and rear views with dimensions in mm and inches.

Front View Dimensions:

- Top width: 233.5 [9.19]
- Top width (inner): 202.5 [7.97]
- Top width (inner, offset): 23.5 [0.93]
- Top width (inner, offset): 9.5 [0.37]
- Top width (inner, offset): 7.0 [0.28]
- Top width (inner, offset): 5.0 [0.20]
- Top width (inner, offset): $\phi 10.0 [\phi 0.39]$
- Top width (inner, offset): 8.0 [0.31]
- Top width (inner, offset): 5.0 [0.20]
- Top width (inner, offset): 202.5 [7.97]
- Top width (inner, offset): 322.0 [12.68]
- Top width (inner, offset): 343.0 [13.50]
- Top width (inner, offset): 190.0 [7.48]

Side View Dimensions:

- Top width: 233.5 [9.19]
- Top width (inner): 202.5 [7.97]
- Top width (inner, offset): 23.5 [0.93]
- Top width (inner, offset): 9.5 [0.37]
- Top width (inner, offset): 7.0 [0.28]
- Top width (inner, offset): 5.0 [0.20]
- Top width (inner, offset): $\phi 10.0 [\phi 0.39]$
- Top width (inner, offset): 8.0 [0.31]
- Top width (inner, offset): 5.0 [0.20]
- Top width (inner, offset): 202.5 [7.97]
- Top width (inner, offset): 322.0 [12.68]
- Top width (inner, offset): 343.0 [13.50]
- Top width (inner, offset): 190.0 [7.48]

Rear View Dimensions:

- Top width: 233.5 [9.19]
- Top width (inner): 202.5 [7.97]
- Top width (inner, offset): 23.5 [0.93]
- Top width (inner, offset): 9.5 [0.37]
- Top width (inner, offset): 7.0 [0.28]
- Top width (inner, offset): 5.0 [0.20]
- Top width (inner, offset): $\phi 10.0 [\phi 0.39]$
- Top width (inner, offset): 8.0 [0.31]
- Top width (inner, offset): 5.0 [0.20]
- Top width (inner, offset): 202.5 [7.97]
- Top width (inner, offset): 322.0 [12.68]
- Top width (inner, offset): 343.0 [13.50]
- Top width (inner, offset): 190.0 [7.48]