

GS4 DURAPULSE Drives Accessories – Dynamic Braking Component Selection – GS4

Braking Component Selection for GS4 DURApulse AC Drives

GS4 AC Drive Braking Component Selection														
Drive Voltage	Motor Power		125% Braking Torque @ 10% Duty Cycle**							Max Braking Torque				
			AC Drive Model # GS4-	Braking Unit		Braking Resistor		Brake Torque (kg·m)	Total Brake Current (A)	Min Resistor Value (Ω)	Max Total Brake Current (A)	Peak Power (kW)		
	Quantity	Part # GS-		Quantity	Part # GS-BR-									
	(hp)	(kW)												
230V	1	0.7	21P0	0	n/a	1	080W200	0.5	1.9	63.3	6	2.3		
	2	1.5	22P0			1	200W091	1.0	4.2	47.5	8	3.0		
	3	2.2	23P0			1	300W070	1.5	5.4	38.0	10	3.8		
	5	3.7	25P0			1	400W040	2.5	9.5	19.0	20	7.6		
	7.5	5.5	27P5			1	1K0W020	3.7	19	14.6	26	9.9		
	10	7.5	2010			1	1K0W020	5.1	19	14.6	26	9.9		
	15	11	2015			1	1K5W013	7.5	29	12.6	28	10.6		
	20	15	2020			2	1K0W4P3	10.2	44	8.3	46	17.5		
	25	18	2025			2	1K0W4P3	12.2	44	8.3	46	17.5		
	30	22	2030			2	1K5W3P3	14.9	58	5.8	66	25.1		
	40	30	2040			2	1DBU	4	1K0W5P1	20.3	75*	4.8*	80*	30.4*
	50	37	2050			2	2DBU	4	1K2W3P9	25.1	97*	3.2*	120*	45.6*
	60	45	2060			2	2DBU	4	1K5W3P3	30.5	118*	3.2*	120*	45.6*
	75	55	2075	3	2DBU	6	1K2W3P9	37.2	145*	2.1*	180*	68.4*		
100	75	2100	4	2DBU	8	1K2W3P9	50.8	190*	1.6*	240*	91.2*			
460V	1	0.7	41P0	0	n/a	1	080W750	0.5	1	190	4	3.0		
	2	1.5	42P0			1	200W360	1	2.1	126.7	6	4.6		
	3	2.2	43P0			1	300W250	1.5	3	108.6	7	5.3		
	5	3.7	45P0			1	400W150	2.5	5.1	84.4	9	6.8		
	7.5	5.5	47P5			1	1K0W075	3.7	10.2	54.3	14	10.6		
	10	7.5	4010			1	1K0W075	5.1	10.2	47.5	16	12.2		
	15	11	4015			1	1K5W043	7.5	17.6	42.2	18	13.7		
	20	15	4020			2	1K0W016	10.2	24	26.2	29	22.0		
	25	18	4025			2	1K0W016	12.2	24	23.0	33	25.1		
	30	22	4030			2	1K5W013	14.9	29	23.0	33	25.1		
	40	30	4040			4	1K0W016	20.3	47.5	14.1	54	41.0		
	50	40	4050			1	4DBU	4	1K2W015	25.1	50*	12.7*	60*	45.6*
	60	45	4060			1	4DBU	4	1K5W013	30.5	59*	12.7*	60*	45.6*
	75	55	4075	2	3DBU	8	1K0W5P1	37.2	76*	9.5*	80*	60.8*		
	100	75	4100	2	4DBU	8	1K2W015	50.8	100*	6.3*	120*	91.2*		
	125	90	4125	2	4DBU	8	1K5W013	60.9	117*	6.3*	120*	91.2*		
	150	110	4150	1	5DBU	10	1K2W015	74.5	126*	6.0*	126*	95.8*		
	175	132	4175	1	6DBU	12	1K5W012	89.4	190*	4.0*	190*	144.4*		
	200	160	4200	1	6DBU	12	1K5W012	108.3	190*	4.0*	190*	144.4*		
	250	185	4250	1	7DBU	14	1K5W012	125.3	225*	3.4*	225*	172.1*		
300	220	4300	2	5DBU	20	1K2W015	148.9	252*	3.0*	252*	190.5*			

* 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.

GS/DURAPULSE Drives Accessories – Braking Unit Specifications for GS3 & GS4 DURAPULSE AC Drives

Braking Units for GS3 & GS4 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 GS3 & GS4 DURAPULSE AC Drives								
Braking Unit Part Number	GS-1DBU	GS-2DBU	GS-3DBU	GS-4DBU	GS-5DBU	GS-6DBU	GS-7DBU	
Price					4.00	6.00	3.00	
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	225	
	Continuous Discharge Current (A)	15	20	15	18	45	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 Temperature	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

GS/DURAPULSE Drives Accessories – Braking Unit Basic Wiring for GS3 & GS4 DURAPULSE AC Drives

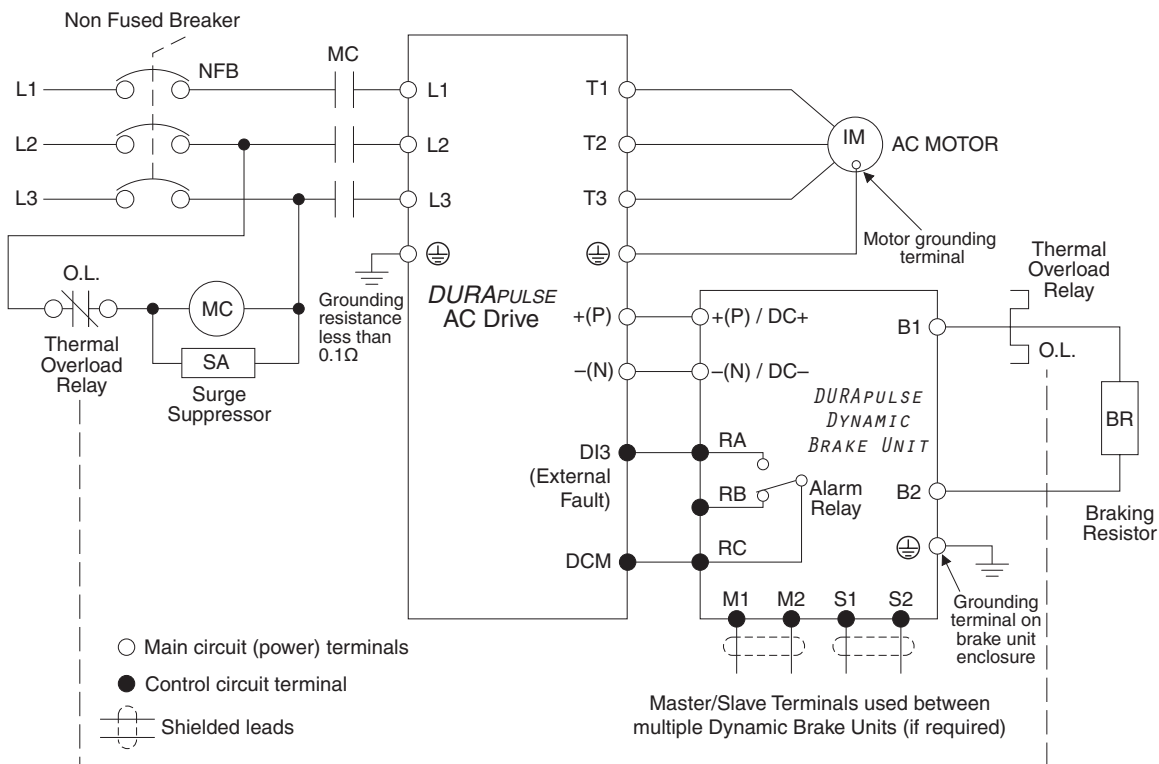
Basic Dynamic Braking Wiring Diagram for GS3 & GS4 DURAPULSE AC Drives



Note: GS2 series AC Drives can connect directly to braking resistors, and do not require Dynamic Braking Units for braking.



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.

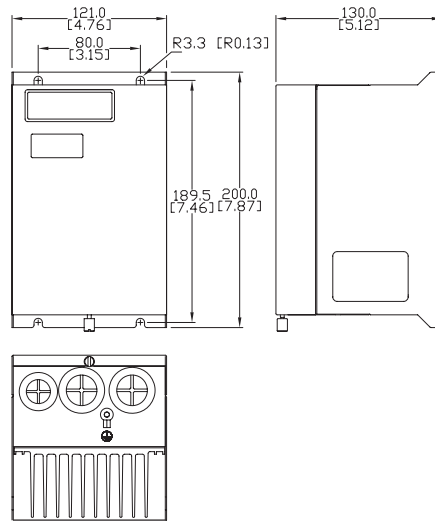


GS/DURAPULSE Drives Accessories – Braking Unit Dimensions for GS3 & GS4 DURAPULSE AC Drives

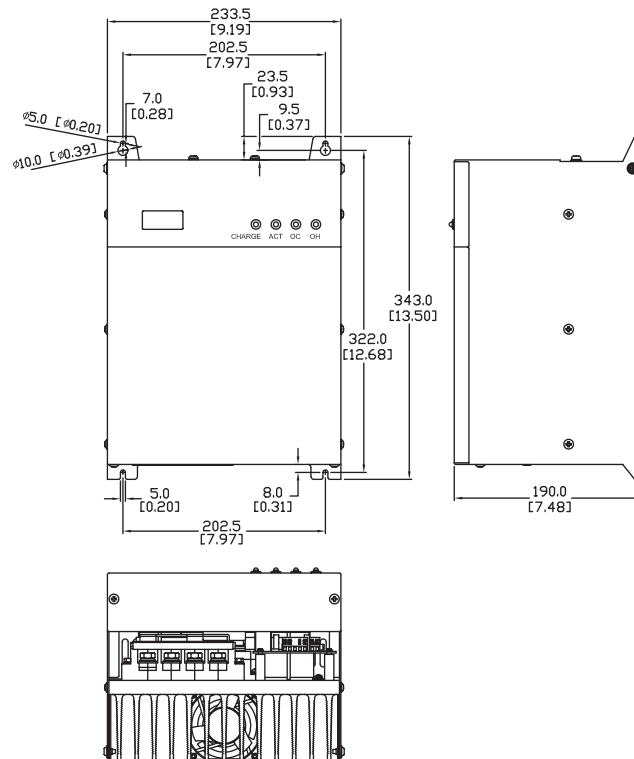
Braking Unit Dimensions (Dimensions = mm [in])

See our website: _____ for complete engineering drawings.

A) DBU ≤ 100hp (GS-1DBU, GS-2DBU, GS-3DBU, GS-4DBU)



B) DBU > 100hp (GS-5DBU, GS-6DBU, GS-7DBU)



GS/DURAPULSE Accessories – Braking Resistors for GS2/GS3/GS4/GS20(X) AC Drives

Overview

Braking resistors are used to increase the control torque of the AC drive, for frequently repeated ON-OFF cycles of the AC drive, or for decelerating a load with large inertia.



FOR GS3 DURAPULSE DRIVE MODELS 20 HP AND ABOVE, A DYNAMIC BRAKING UNIT MUST BE USED IN CONJUNCTION WITH THE BRAKING RESISTOR, AS SHOWN IN THE DURAPULSE AC DRIVE BRAKING UNITS TABLE.

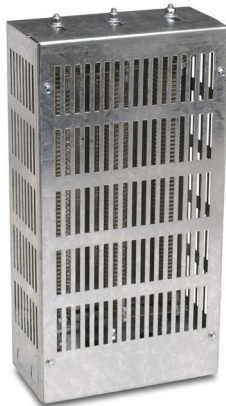
For additional information, please refer to the dynamic braking manual, GS-DB_UMP.



GS-25P0-BR



GS-27P5-BR



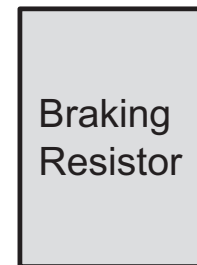
GS-2020-BR-ENC



GS-2020-BR-ENC without Cover



GS2 braking resistor connection;
Refer to user Dynamic Braking user manual GS-DB_UMP for DURAPULSE resistor connection information.



GS/DURAPULSE Drives Accessories –

Braking Resistor Specs for GS2/GS3/GS4/GS20(X) AC Drives

Braking Resistor Specifications				
Part Number	Price	Power (W)	Resistance (Ω)	Type
GS-20P5-BR		80	200	open
GS-21P0-BR		80	200	
GS-22P0-BR		300	100	
GS-23P0-BR		300	70	
GS-25P0-BR		400	40	
GS-27P5-BR		500	30	
GS-2010-BR-ENC		1000	20	enclosed
GS-2015-BR-ENC		2400	13.6	
GS-2020-BR-ENC		3000	10	
GS-2025-BR-ENC		4800	8	
GS-2030-BR-ENC		4800	6.8	
GS-2040-BR-ENC		3000	10	
GS-2050-BR-ENC		4800	8	
GS-41P0-BR		80	750	open
GS-42P0-BR		300	400	
GS-43P0-BR		300	250	
GS-45P0-BR		400	150	
GS-47P5-BR		500	100	
GS-4010-BR		1000	75	
GS-4015-BR-ENC		1000	50	enclosed
GS-4020-BR-ENC		1500	40	
GS-4025-BR-ENC		4800	32	
GS-4030-BR-ENC		4800	27.2	
GS-4040-BR-ENC		6000	20	
GS-4050-BR-ENC		9600	16	
GS-4060-BR-ENC		9600	13.6	
GS-4075-BR-ENC		6000	20	
GS-4100-BR-ENC		9600	13.6	
GS-BR-080W200		80	200	
GS-BR-080W750		80	750	
GS-BR-200W091		200	91	
GS-BR-200W360		200	360	
GS-BR-300W070		300	70	
GS-BR-300W250		300	250	
GS-BR-400W040		400	40	
GS-BR-400W150		400	150	
GS-BR-1K0W4P3		1000	4.3	
GS-BR-1K0W5P1		1000	5.1	
GS-BR-1K0W016		1000	16	
GS-BR-1K0W020		1000	20	
GS-BR-1K0W075		1000	75	
GS-BR-1K2W3P9		1200	3.9	
GS-BR-1K2W015		1200	15	
GS-BR-1K5W3P3		1500	3.3	
GS-BR-1K5W012		1500	12	
GS-BR-1K5W013		1500	13	
GS-BR-1K5W043		1500	43	

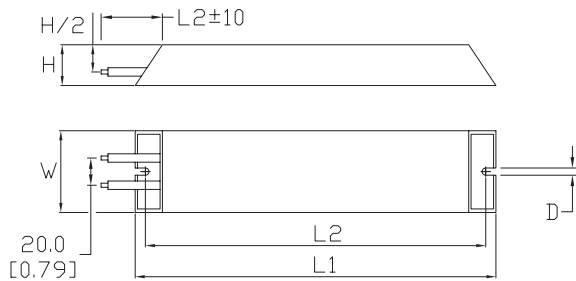
GS/DURAPULSE Drives Accessories – Braking Resistor Dimensions for GS3 & GS4 DURAPULSE AC Drives

Braking Resistor Dimensions (Dimensions = mm [in])

See our website: _____ for complete engineering drawings.

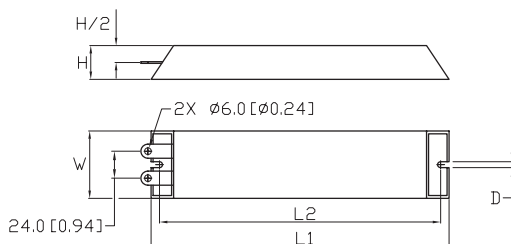
Braking Resistor Dimension Drawing Index							
Resistor	Drawing #	Resistor	Drawing #	Resistor	Drawing #	Resistor	Drawing #
GS-20P5-BR	1	GS-41P0-BR	1	GS-BR-080W200	10	GS-BR-1K0W4P3	11
GS-21P0-BR	1	GS-42P0-BR	1	GS-BR-080W750	10	GS-BR-1K0W5P1	11
GS-22P0-BR	1	GS-43P0-BR	1	GS-BR-200W091	10	GS-BR-1K0W016	11
GS-23P0-BR	1	GS-45P0-BR	1	GS-BR-200W360	10	GS-BR-1K0W020	11
GS-25P0-BR	1	GS-47P5-BR	2	GS-BR-300W070	10	GS-BR-1K0W075	11
GS-27P5-BR	2	GS-4010-BR	3	GS-BR-300W250	10	GS-BR-1K2W3P9	11
GS-2010-BR-ENC	4	GS-4015-BR-ENC	4	GS-BR-400W040	10	GS-BR-1K2W015	11
GS-2015-BR-ENC	5	GS-4020-BR-ENC	7	GS-BR-400W150	10	GS-BR-1K5W3P3	11
GS-2020-BR-ENC	5	GS-4025-BR-ENC	8			GS-BR-1K5W012	11
GS-2025-BR-ENC	6	GS-4030-BR-ENC	8			GS-BR-1K5W013	11
GS-2030-BR-ENC	6	GS-4040-BR-ENC	8			GS-BR-1K5W043	11
GS-2040-BR-ENC	5	GS-4050-BR-ENC	9				
GS-2050-BR-ENC	6	GS-4060-BR-ENC	9				
		GS-4075-BR-ENC	8				
		GS-4100-BR-ENC	9				

#1) GS-20P5-BR, GS-21P0-BR, GS-22P0-BR, GS-23P0-BR, GS-25P0-BR, GS-41P0-BR, GS-42P0-BR, GS-43P0-BR, GS-45P0-BR



Resistor #	L1	L2	H	D	W
GS-20P5-BR	140 [5.51]	125 [4.92]	20 [0.79]	5.3 [0.21]	40 [1.57]
GS-21P0-BR					
GS-22P0-BR	215 [8.46]	200 [7.87]	30 [1.18]		60 [2.36]
GS-23P0-BR					
GS-25P0-BR	265 [10.43]	250 [9.84]	20 [0.79]		40 [1.57]
GS-41P0-BR	140 [5.51]	125 [4.92]	20 [0.79]		
GS-42P0-BR	215 [8.46]	200 [7.87]	30 [1.18]		60 [2.36]
GS-43P0-BR					
GS-45P0-BR	265 [10.43]	250 [9.84]			

#2) GS-27P5-BR, GS-47P5-BR



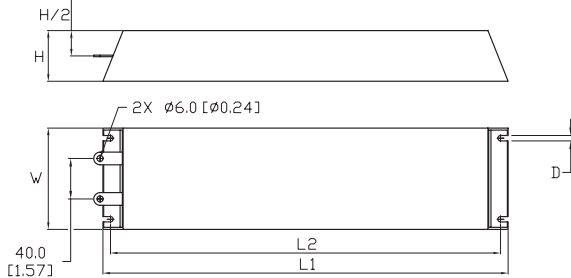
Resistor #	L1	L2	H	D	W
GS-27P5-BR	335 [13.19]	320 [12.60]	30 [1.18]	5.3 [0.21]	60 [2.36]
GS-47P5-BR					

GS/DURAPULSE Drives Accessories – Braking Resistor Dimensions for GS3 & GS4 DURAPULSE AC Drives

Braking Resistor Dimensions (Dimensions = mm [in])

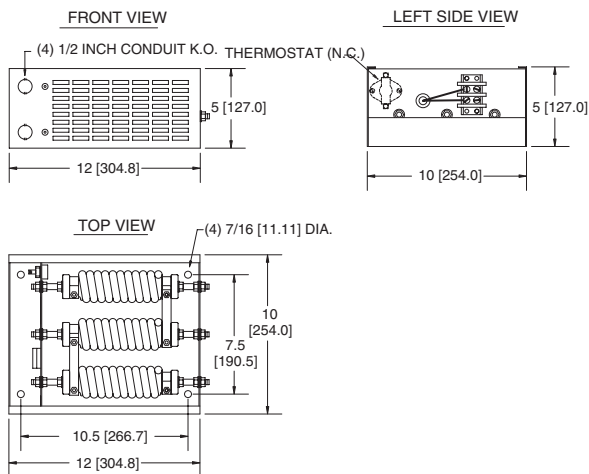
See our website: [www.toshiba-automation.com](#) for complete engineering drawings.

#3) GS-4010-BR

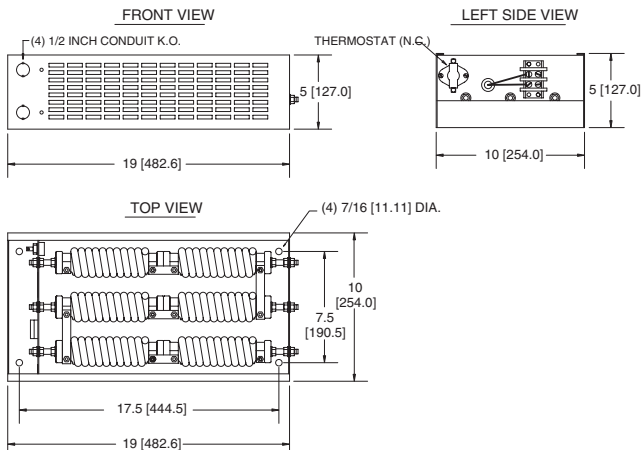


Resistor #	L1	L2	H	D	W
GS-4010-BR	400 [15.75]	385 [15.16]	50 [1.97]	5.3 [0.21]	100 [3.94]

#4) GS-2010-BR-ENC, GS-4015-BR-ENC



#5) GS-2015-BR-ENC, GS-2020-BR-ENC, GS-2040-BR-ENC

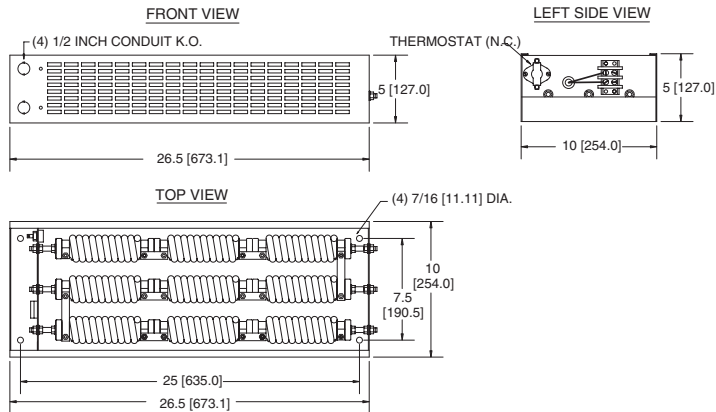


GS/DURAPULSE Drives Accessories – Braking Resistor Dimensions for GS3 & GS4 DURAPULSE AC Drives

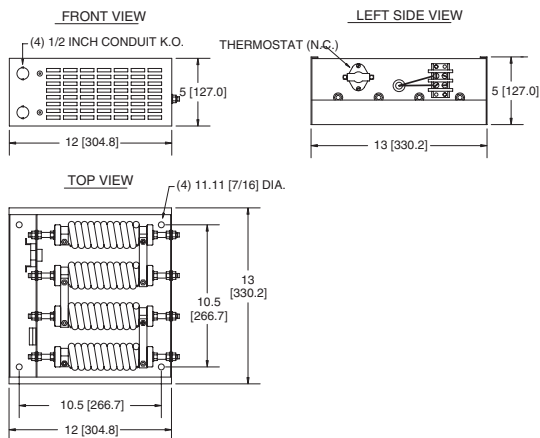
Braking Resistor Dimensions (Dimensions = mm [in])

See our website: [www.toshiba-automation.com](#) for complete engineering drawings.

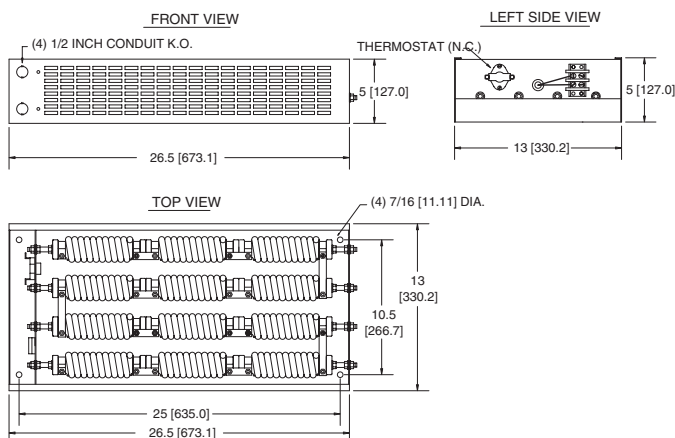
#6) GS-2025-BR-ENC, GS-2030-BR-ENC, GS-2050-BR-ENC



#7) GS-4020-BR-ENC



#8) GS-4025-BR-ENC, GS-4030-BR-ENC, GS-4040-BR-ENC, GS-4075-BR-ENC

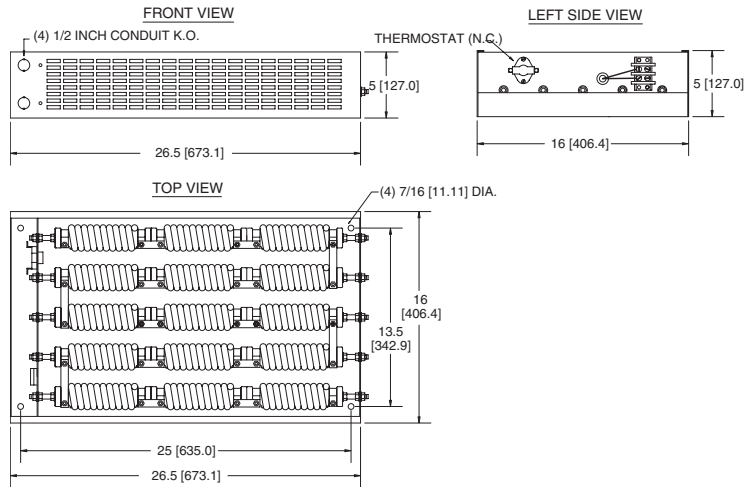


GS/DURAPULSE Drives Accessories – Braking Resistor Dimensions for GS3 & GS4 DURAPULSE AC Drives

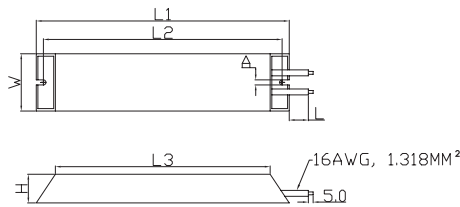
Braking Resistor Dimensions (Dimensions = mm [in])

See our website: [www.tgsx.com](#) for complete engineering drawings.

#9) GS-4050-BR-ENC, GS-4060-BR-ENC, GS-4100-BR-ENC



#10) GS-BR-080W200, GS-BR-080W750, GS-BR-200W091, GS-BR-200W360, GS-BR-300W070, GS-BR-300W250, GS-BR-400W040, GS-BR-400W150



Resistor #	L1	L2	L3	W	H	A	L
GS-BR-080W200	140 [5.46]	125 [4.92]	100 [3.94]	40.0 [1.57]	20.0 [0.79]	5.3 [0.21]	200 [7.87]
GS-BR-080W750							
GS-BR-200W091	165 [6.50]	150 [5.91]	125 [4.92]	60.0 [2.36]	30.0 [1.18]		
GS-BR-200W360							
GS-BR-300W070	215 [8.46]	200 [7.87]	175 [6.89]				
GS-BR-300W250							
GS-BR-400W040	265.34 [10.43]	250 [9.84]	225 [8.86]				
GS-BR-400W150							

#11) GS-BR-1K0W4P3, GS-BR-1K0W5P1, GS-BR-1K0W016, GS-BR-1K0W020, GS-BR-1K0W075, GS-BR-1K2W3P9, GS-BR-1K2W015, GS-BR-1K5W3P3, GS-BR-1K5W012, GS-BR-1K5W013, GS-BR-1K5W043

