

**Title:** Dynamic Braking Connection Diagrams**Product(s):** GA800, GA500**Doc. No.** PN.RESISTORS.02

The following is a list of dynamic braking connection diagrams that can be used with Yaskawa Drives. Contact Yaskawa with any questions on selecting, connecting, or installing these packages.

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## Title: Dynamic Braking Connection Diagrams

Product(s): GA800, GA500

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### GA800 10% Dynamic Braking Resistor Options

Dynamic Braking Resistor, 10% Duty Cycle - are rated for 10% duty cycle over a 100 second interval. The resistors will achieve a minimum 150% peak braking torque for heavy duty horsepower ratings and a minimum of 100% peak braking power for normal duty horsepower ratings. These resistors are designed for separate panel mounting.

#### Three-Phase, 240 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U...	10% Dynamic Braking Option (Max 10 Second on-time)					Connection Diagram
			Transistor Module		Resistor			
			Part Number	Quantity	Part Number	Quantity	Enclosure	
0.75	0.75	2004...	Built-in	1	URS000275	1	GCE1	INT-1
1.5	1	2006...			URS000276	1	GCE1	INT-1
2	1.5	2008...			URS000277	1	GCE1	INT-1
3	2	2010...			URS000278	1	GCE1	INT-1
4	3	2012...			URS000279	1	GCE1	INT-1
5	4	2018...			URS000368	1	GCE1	INT-1
7.5	5	2021...			URS000280	1	GCE2	INT-1
10	7.5	2030...			URS000269	1	GCE2	INT-1
15	10	2042...			URS000282	1	GCE3	INT-1
20	15	2056...			URS000369	1	GCE4	INT-1
25	20	2070...			URS000370	1	GCE6	INT-1
30	25	2082...			URS000371	1	GCE6	INT-1
40	30	2110...			URS000372	1	GCE6	INT-1
50	40	2138...			URS000373	1	GCE9	INT-1
60	50	2169...			CDBR-21100D	1	URS000100	1
75	60	2211...	CDBR-21100D	1	URS000100	1	GCE9	M1
100	75	2257...	CDBR-21100D	1	URS000096	1	GCE12	M1
125	100	2313...	CDBR-21100D	1	URS000096	1	GCE12	M2
			CDBR-20220D	1	URS000128	1	GCE6	
150	125	2360...	CDBR-21100D	1	URS000096	1	GCE12	M1M2
			CDBR-20220D	2	URS000129	1	GCE2	
150	150	2415...	CDBR-21100D	1	URS000096	1	GCE12	M1M2
			CDBR-20220D	2	URS000129	1	GCE2	

## Title: Dynamic Braking Connection Diagrams

Product(s): GA800, GA500

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### GA800 10% Dynamic Braking Resistor Options (cont.)

Dynamic Braking Resistor, 10% Duty Cycle - are rated for 10% duty cycle over a 100 second interval. The resistors will achieve a minimum 150% peak braking torque for heavy duty horsepower ratings and a minimum of 100% peak braking power for normal duty horsepower ratings. These resistors are designed for separate panel mounting.

#### Three-Phase, 480 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U...	10% Dynamic Braking Option (Max 10 Second on-time)					Connection Diagram	
			Transistor Module		Resistor				
			Part Number	Quantity	Part Number	Quantity	Enclosure		
1	0.75	4002...	Built-in			URS000374	1	GCE1	INT-1
2	1.5	4004...				URS000241	1	GCE1	INT-1
3	2	4005...				URS000253	1	GCE1	INT-1
4	3	4007...				URS000254	1	GCE1	INT-1
5	4	4009...				URS000375	1	GCE1	INT-1
7.5	5	4012...				URS000255	1	GCE2	INT-1
10	7.5	4018...				URS000256	1	GCE3	INT-1
15	10	4023...				URS000257	1	GCE3	INT-1
20	15	4031...				URS000258	1	GCE4	INT-1
25	20	4038...				URS000259	1	GCE6	INT-1
30	25	4044...				URS000376	1	GCE6	INT-1
40	30	4060...				URS000377	1	GCE8	INT-1
50	40	4075...				URS000378	1	GCE6	INT-1
60	50	4089...				URS000379	1	GCE9	INT-1
75	60	4103...				URS000380	1	GCE12	INT-1
100	75	4140...				URS000381	1	GCE15	INT-1
125	100	4168...				URS000382	1	GCE18	INT-1
150	125	4208...		CDBR-42200D	1		URS000119	1	GCE18
200	150	4250...	CDBR-42200D	1		URS000165	1	GCE24	M1
250	200	4302...	CDBR-42200D	1		URS000165	1	GCE24	M2
			CDBR-40450D	1		URS000142	1	GCE6	
300	250	4371...	CDBR-42200D	1		URS000165	1	GCE24	M1M2
			CDBR-40450D	2		URS000143	1	GCE18	
350	300	4414...	CDBR-42200D	2		URS000166	1	ED3	M2
400	350	4477...	CDBR-42200D	2		URS000166	1	ED3	M2
450	400	4568...	CDBR-42200D	2		URS000120	1	ED2	M1M2
			CDBR-42200D	1		URS000165	1	GCE24	
500	450	4605...	CDBR-42200D	3		URS000167	1	ED4	M3
600	500	4720...	CDBR-42200D	3		URS000167	1	ED4	M3

## Title: Dynamic Braking Connection Diagrams

Product(s): GA800, GA500

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### GA500 10% Dynamic Braking Resistor Options

Dynamic Braking Resistor, 10% Duty Cycle - are rated for 10% duty cycle over a 100 second interval. These resistors are designed for separate panel mounting. Braking transistors are built-in on all GA500 models.

#### Single-Phase, 240 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA50U...	10% Dynamic Braking Option (Max 10 Second on-time)			Connection Diagram
			Resistor			
			Part Number	Quantity	Enclosure	
1/6	1/6	B001...	USR000032	1	GCE2	INT-1
1/4	1/4	B002...	USR000033	1	GCE1	INT-1
3/4	1/2	B004...	USR000022	1	GCE1	INT-1
1.5	1	B006...	USR000035	1	GCE1	INT-1
3	2	B010...	USR000024	1	GCE1	INT-1
3	3	B012...	USR000024	1	GCE1	INT-1
N/A	5	B018...	USR000025	1	GCE2	INT-1

#### Three-Phase, 240 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA50U...	10% Dynamic Braking Option (Max 10 Second on-time)			Connection Diagram
			Resistor			
			Part Number	Quantity	Enclosure	
1/6	1/6	2001...	USR000032	1	GCE2	INT-1
1/4	1/4	2002...	USR000033	1	GCE1	INT-1
3/4	1/2	2004...	USR000022	1	GCE1	INT-1
1.5	1	2006...	USR000035	1	GCE1	INT-1
3	2	2010...	USR000024	1	GCE1	INT-1
4	3	2012...	USR000024	1	GCE1	INT-1
7.5	5	2021...	USR000025	1	GCE2	INT-1
10	7.5	2030...	URS000148	1	GCE3	INT-1
15	10	2042...	URS000140	1	GCE4	INT-1
20	15	2056...	URS000136	1	GCE9	INT-1
25	20	2070...	URS000136	1	GCE9	INT-1
30	25	2082...	URS000136	1	GCE9	INT-1

**Title:** Dynamic Braking Connection Diagrams

**Product(s):** GA800, GA500

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## GA500 10% Dynamic Braking Resistor Options (cont.)

Dynamic Braking Resistor, 10% Duty Cycle - are rated for 10% duty cycle over a 100 second interval. These resistors are designed for separate panel mounting. Braking transistors are built-in on all GA500 models.

### Three-Phase, 480 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U...	10% Dynamic Braking Option (Max 10 Second on-time)			Connection Diagram
			Resistor			
			Part Number	Quantity	Enclosure	
1/2	1/2	4001...	USR000032	1	GCE2	INT-1
1	3/4	4002...	USR000032	1	GCE2	INT-1
2	2	4004...	USR000032	1	GCE2	INT-1
3	3	4005...	USR000034	1	GCE1	INT-1
4	3	4007...	USR000034	1	GCE1	INT-1
5	4	4009...	USR000035	1	GCE1	INT-1
7.5	5	4012...	USR000036	1	GCE2	INT-1
10	10	4018...	USR000038	1	GCE4	INT-1
15	10	4023...	USR000038	1	GCE4	INT-1
20	15	4031...	USR000039	1	GCE6	INT-1
25	20	4038...	URS000154	1	GCE8	INT-1
30	25	4044...	URS000154	1	GCE8	INT-1
40	30	4060...	USR000066	1	GCE9	INT-1

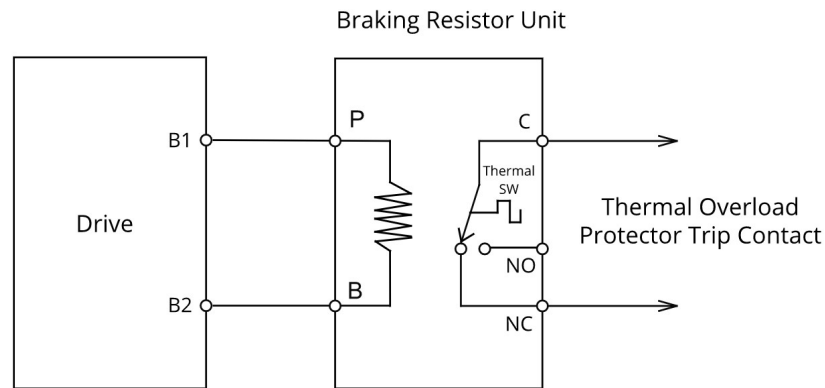
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## INT-1 Connection

The drive's internal braking transistor driving one resistor.

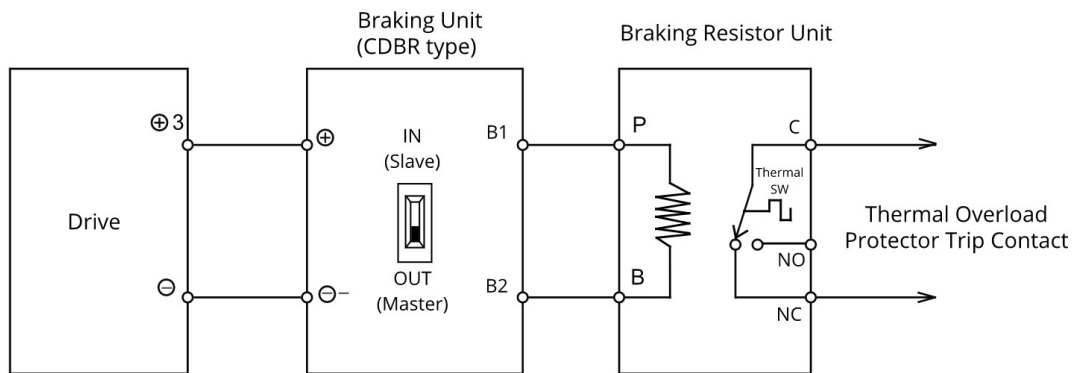


**Note:**

Power terminal [+3] does not exist on drives with internal dynamic braking transistor. When using a CDBR module on drives with internal dynamic braking, use terminal [B1] for the positive bus lead and [-] for the negative bus lead to the CDBR unit. Leave drive terminal [B2] unconnected.

## M1 Connection

One braking unit (CDBR) driving one single resistor.



**Note:**

Power terminal [+3] does not exist on drives with internal dynamic braking transistor. When using a CDBR module on drives with internal dynamic braking, use terminal [B1] for the positive bus lead and [-] for the negative bus lead to the CDBR unit. Leave drive terminal [B2] unconnected. See M1-I connection below for detailed drawing description.

For more details on connecting dynamic braking see the dynamic brake module manual ([TOBPC72060001](#)), the GA800 installation manual ([TOEPC71061737](#)), or the GA500 Installation manual ([TOEPC71061752](#)).

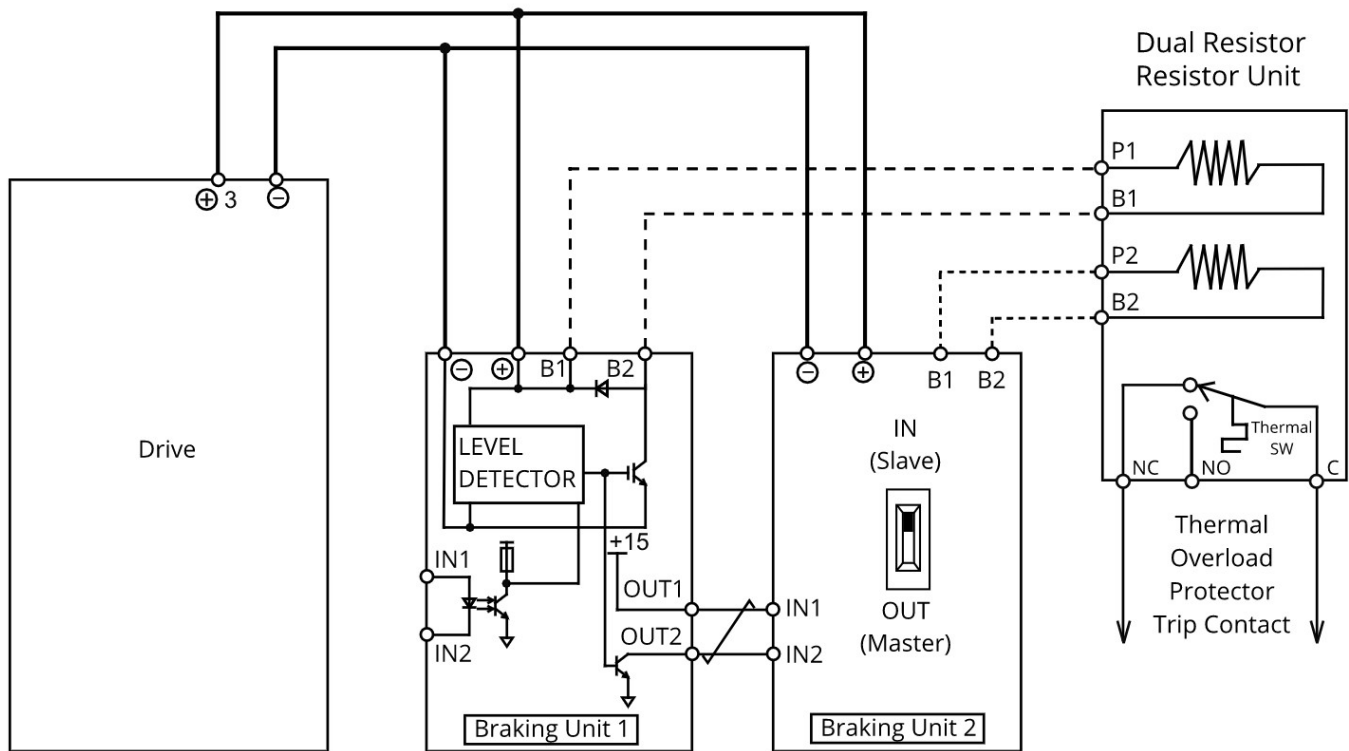
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# M2 Connection

Two braking units (CDBRs)  
driving one dual resistor



**Note:**

Braking unit 1 is in default master configuration. Power terminal [+3] does not exist on drives with internal dynamic braking transistor. When using a CDBR module on drives with internal dynamic braking, use terminal [B1] for the positive bus lead and [-] for the negative bus lead to the CDBR unit. Leave drive terminal [B2] unconnected.

For more details on connecting dynamic braking see the dynamic brake module manual ([TOBPC72060001](#)), the GA800 installation manual ([TOEPC71061737](#)), or the GA500 Installation manual ([TOEPC71061752](#)).

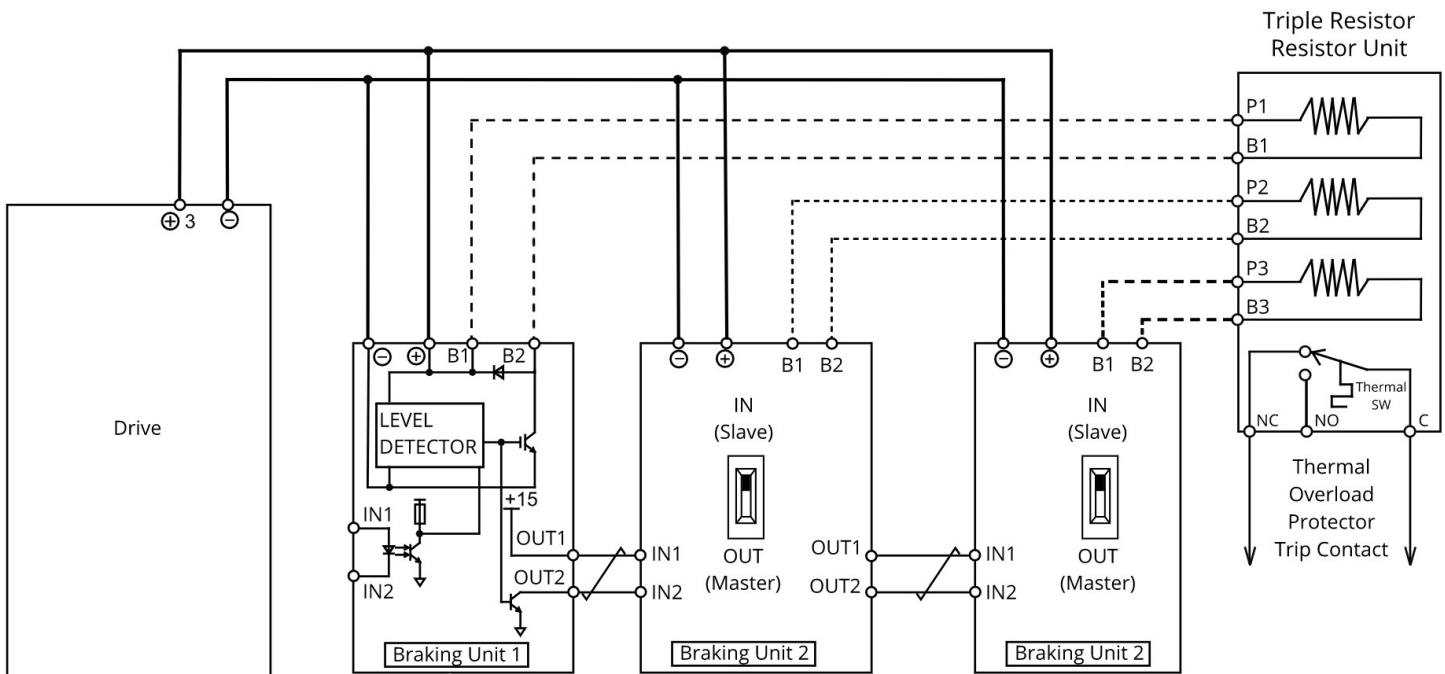
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Product(s): GA800, GA500

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## M3 Connection

Three braking units (CDBRs) driving one triple resistor package.



**Note:**

Braking unit 1 is in default master configuration. Power terminal [+3] does not exist on drives with internal dynamic braking transistor. When using a CDBR module on drives with internal dynamic braking, use terminal [B1] for the positive bus lead and [-] for the negative bus lead to the CDBR unit. Leave drive terminal [B2] unconnected.

For more details on connecting dynamic braking see the dynamic brake module manual ([TOBPC72060001](#)), the GA800 installation manual ([TOEPC71061737](#)), or the GA500 Installation manual ([TOEPC71061752](#)).



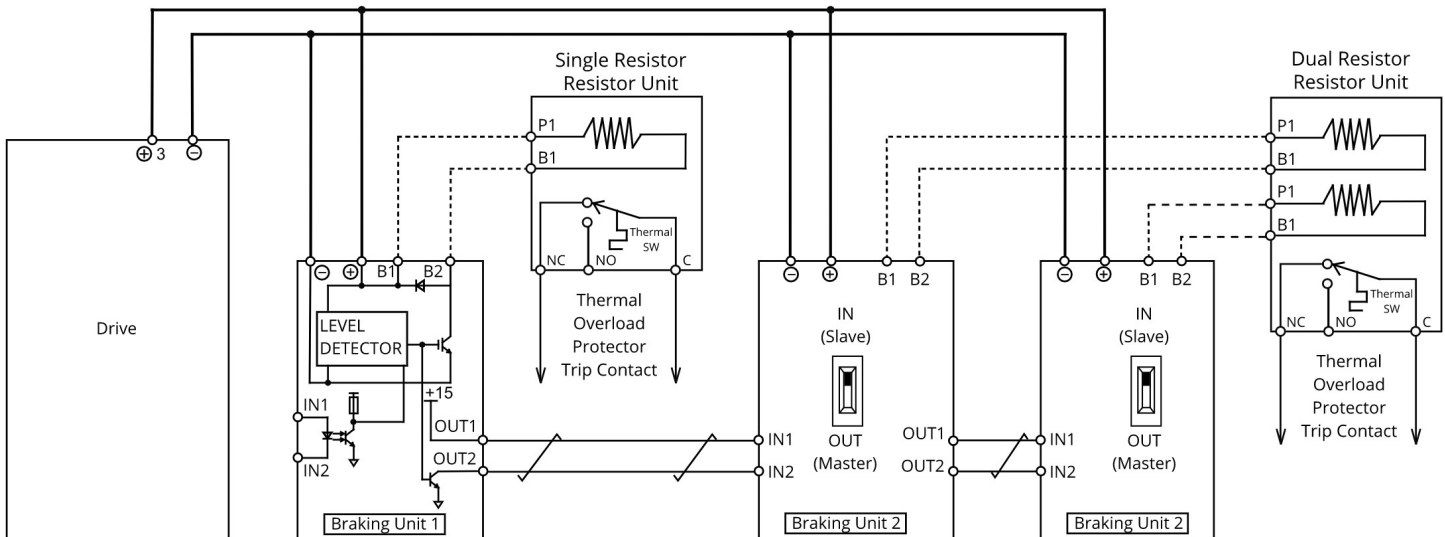
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## M1M2 Connection

One braking unit (CDBR) driving one resistor at the same two braking units are driving a dual resistor.



**Note:**

Braking unit 1 is in default master configuration. Power terminal [+3] does not exist on drives with internal dynamic braking transistor. When using a CDBR module on drives with internal dynamic braking, use terminal [B1] for the positive bus lead and [-] for the negative bus lead to the CDBR unit. Leave drive terminal [B2] unconnected.

For more details on connecting dynamic braking see the dynamic brake module manual ([TOBPC72060001](#)), the GA800 installation manual ([TOEPC71061737](#)), or the GA500 Installation manual ([TOEPC71061752](#)).