



7-1 Brake Resistors and Brake Units Used in AC Motor Drives

115V one-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED					Max. Braking Torque			
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for Each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A6MS11XNSXX	0.25	0.2	0.1	80W 750 Ω	BR080W750	1	-	0.5	190.0	2	0.8
VFD2A5MS11XNSXX	0.5	0.4	0.3	80W 200 Ω	BR080W200	1	-	1.9	95.0	4	1.5
VFD4A8MS11XNSXX	1	0.75	0.5	80W 200 Ω	BR080W200	1	-	1.9	63.3	6	2.3

Table 7-1-1

230V one-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED					Max. Braking Torque			
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A6MS21XNSXX VFD1A6MS21AFSAA	0.25	0.2	0.1	80 W 750 Ω	BR080W750	1	-	0.5	190.0	2	0.8
VFD2A8MS21XNSXX VFD2A8MS21AFSAA	0.5	0.4	0.3	80 W 200 Ω	BR080W200	1	-	1.9	95.0	4	1.5
VFD4A8MS21XNSXX VFD4A8MS21AFSAA	1	0.75	0.5	80 W 200 Ω	BR080W200	1	-	1.9	63.3	6	2.3
VFD7A5MS21XNSXX VFD7A5MS21AFSAA	2	1.5	1	200 W 91 Ω	BR200W091	1	-	4.2	47.5	8	3.0
VFD11AMS21XNSXX VFD11AMS21AFSAA	3	2.2	1.5	300 W 70 Ω	BR300W070	1	-	5.4	38.0	10	3.8

Table 7-1-2

230V three-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED					Max. Braking Torque			
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A6MS23XNSXX	0.25	0.2	0.1	80 W 750 Ω	BR080W750	1	-	0.5	190.0	2	0.8
VFD2A8MS23XNSXX	0.5	0.4	0.3	80 W 200 Ω	BR080W200	1	-	1.9	95.0	4	1.5
VFD4A8MS23XNSXX	1	0.75	0.5	80 W 200 Ω	BR080W200	1	-	1.9	63.3	6	2.3
VFD7A5MS23XNSXX	2	1.5	1	200 W 91 Ω	BR200W091	1	-	4.2	47.5	8	3.0
VFD11AMS23XNSXX	3	2.2	1.5	300 W 70 Ω	BR300W070	1	-	5.4	38.0	10	3.8
VFD17AMS23XNSXX	5	3.7	2.5	400 W 40 Ω	BR400W040	1	-	9.5	19.0	20	7.6
VFD25AMS23XNSXX	7.5	5.5	3.7	1000 W 20 Ω	BR1K0W020	1	-	19	16.5	23	8.7
VFD33AMS23XNSXX	10	7.5	5.1	1000 W 20 Ω	BR1K0W020	1	-	19	14.6	26	9.9
VFD49AMS23XNSXX	15	11	7.4	1500 W 13 Ω	BR1K5W013	1	-	29	12.6	29	11.0
VFD65AMS23XNSXX	20	15	10.2	2000 W 8.6 Ω	BR1K0W4P3	2	2 in series	44	8.3	46	17.5

Table 7-1-3

460V three-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED					Max. Braking Torque			
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A5MS43XNSXX VFD1A5MS43AFSAA	0.5	0.4	0.3	80 W 750 Ω	BR080W750	1		1	380.0	2	1.5
VFD2A7MS43XNSXX VFD2A7MS43AFSAA	1	0.75	0.5	80 W 750 Ω	BR080W750	1		1	190.0	4	3.0
VFD4A2MS43XNSXX VFD4A2MS43AFSAA	2	1.5	1	200 W 360 Ω	BR200W360	1		2.1	126.7	6	4.6
VFD5A5MS43XNSXX VFD5A5MS43AFSAA	3	2.2	1.5	300 W 250 Ω	BR300W250	1		3	108.6	7	5.3
VFD9A0MS43XNSXX VFD9A0MS43AFSAA	5	3.7	2.5	400 W 150 Ω	BR400W150	1		5.1	84.4	9	6.8
VFD13AMS43XNSXX VFD13AMS43AFSAA	7.5	5.5	3.7	1000 W 75 Ω	BR1K0W075	1		10.2	50.7	15	11.4
VFD17AMS43XNSXX VFD17AMS43AFSAA	10	7.5	5.1	1000 W 75 Ω	BR1K0W075	1		10.2	40.0	19	14.4
VFD25AMS43XNSXX VFD25AMS43AFSAA	15	11	7.4	1500 W 43 Ω	BR1K5W043	1		17.6	33.0	23	17.5
VFD32AMS43XNSXX VFD32AMS43AFSAA	20	15	10.2	2000 W 32 Ω	BR1K0W016	2	2 in series	24	26.2	29	22.0
VFD38AMS43XNSXX VFD38AMS43AFSAA	25	18	12.2	2000 W 32 Ω	BR1K0W016	2	2 in series	24	26.2	29	22.0
VFD45AMS43XNSXX VFD45AMS43AFSAA	30	22	14.9	3000 W 26 Ω	BR1K5W013	2	2 in series	29	23.0	33	25.1

Table 7-1-4

575V three-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED					Max. Braking Torque			
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A7MS53ANSAA	1	0.75	0.5	80W 750Ω	BR080W750	1	-	1.2	280.0	4	4.5
VFD3A0MS53ANSAA	2	1.5	1	200W 360Ω	BR200W360	1	-	2.6	186.7	6	6.7
VFD4A2MS53ANSAA	3	2.2	1.5	300W 400Ω	BR300W400	1	-	2.3	160.0	7	7.8
VFD6A6MS53ANSAA	5	3.7	2.5	500W 100Ω	BR500W100	1	-	9.2	93.3	12	13.4
VFD9A9MS53ANSAA	7.5	5.5	3.7	750W 140Ω	BR750W140	1	-	6.6	80.0	14	15.7
VFD12AMS53ANSAA	10	7.5	5.1	1000W 75Ω	BR1K0W075	1	-	12.3	70.0	16	17.9

Table 7-1-5

*1 Calculation for 125% brake torque: (kW)*125%*0.8; where 0.8 is motor efficiency.

Because of the limited resistor power, the longest operation time for 10% ED is 10 seconds (ON: 10 sec. / OFF: 90 sec.).

*2 The calculation of the brake resistor is based on a four-pole motor (1800 rpm).

*3 For heat dissipation, a resistors of 400 W or lower should be fixed to the frame and maintain the surface temperature below 250°C; a resistor of 1000 W and above should maintain the surface temperature below 350°C.

(If the surface temperature is higher than the temperature limit, install extra cooling or increase the size of the resistor.)