YASKAWA

YASKAWA AC Drives

Current Derating for 1000-Series Drives

Application Note

Applicable Products:
CIMR-A□2A0004 to 2A0415 and 4A0002 to 4A1200
CIMR-V□BA0001 to BA0018, 2A0001 to 2A0069, and 4A0001 to 4A0038
CIMR-J□BA0001 to BA0010, 2A0001 to 2A0020, and 4A0001 to 4A0011
CIMR-Z□2A0011 to 2A0396 and 4A0005 to 4A0590

DOCUMENT NO. AN.AFD.29

1 Current Derating of 1000-Series AC Drives

Variable frequency drives require derating of the rated current to avoid potential overheating and operation interruption by drive protection circuits. The derating is determined by transistor carrier frequency (C6-02), ambient temperature, installation method, and altitude conditions. This document describes the derating of A1000, V1000, J1000, and Z1000 Yaskawa drives.

◆ Current Derating of A1000 Series Drives

Derated current I_{derat} is determined by the following equation:

$$I_{derat} = Ia \times Da1 \times Da2$$

Where:

- *Ia* is drive derated current (***Table 1***)
- *Da1* is installation method derating factor (***Table 2***)
- *Da2* is derating altitude factor (***Table 3***)

Table 1 A1000 Series Derated Drive Current (Ia) According to PWM Carrier Frequency (C6-02)

A1000		Rated Current [A] (Ia)											
		Normal Duty Rating (ND)						Heavy Duty Rating (HD)					
Class	Model CIMR-A☐	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
200 V Three-Phase	2A0004	3.5	3.4	3.2	3.0	2.8	2.6	3.2	3.2	3.2	3.0	2.8	2.6
	2A0006	6.0	5.5	5.0	4.7	4.4	4.0	5.0	5.0	5.0	4.7	4.4	4.0
	2A0008	8.0	7.5	6.9	6.5	6.0	5.5	6.9	6.9	6.9	6.5	6.0	5.5
	2A0010	9.6	8.8	8.0	7.5	7.0	6.4	8.0	8.0	8.0	7.5	7.0	6.4
	2A0012	12.0	11.5	11.0	10.4	9.6	8.8	11.0	11.0	11.0	10.4	9.6	8.8
	2A0018	17.5	15.8	14.0	13.2	12.2	11.2	14.0	14.0	14.0	13.2	12.2	11.2
	2A0021	21.0	19.3	17.5	16.5	15.3	14.0	17.5	17.5	17.5	16.5	15.3	14.0
	2A0030	30.0	27.5	25.0	23.6	21.8	20.0	25.0	25.0	25.0	23.6	21.8	20.0
	2A0040	40.0	36.5	33.0	31.1	28.8	26.4	33.0	33.0	33.0	31.1	28.8	26.4
	2A0056	56.0	51.5	47.0	44.3	41.0	37.6	47.0	47.0	47.0	44.3	41.0	37.6
	2A0069	69.0	64.5	60.0	56.6	52.3	48.0	60.0	60.0	60.0	56.6	52.3	48.0
	2A0081	81.0	78.0	75.0	68.7	60.9	53.0	75.0	75.0	75.0	68.7	60.9	53.0
	2A0110	110.0	97.5	85.0	77.9	68.9	60.0	85.0	85.0	85.0	77.9	68.9	60.0
	2A0138	138.0	126.5	115.0	105.3	93.1	81.0	115.0	115.0	115.0	105.3	93.1	81.0
	2A0169	169	145	127.6	116	-	-	145	145	127.6	116	-	-
	2A0211	211	180	158.4	144	-	-	180	180	158.4	144	-	-
	2A0250	250	215	189.2	172	-	-	215	215	189.2	172	-	-
	2A0312	312	283	248.8	226	-	-	283	283	248.8	226	-	-
	2A0360	360	346	304.6	277	-	-	346	346	304.6	277	-	-
	2A0415	415	415	365.2	332	-	-	415	415	365.2	332	-	-
400 V Three-Phase	4A0002	2.1	2.0	1.8	1.6	1.4	1.1	1.8	1.8	1.8	1.6	1.4	1.1
	4A0004	4.1	3.8	3.4	3.0	2.5	2.0	3.4	3.4	3.4	3.0	2.5	2.0
	4A0005	5.4	5.1	4.8	4.3	3.6	2.9	4.8	4.8	4.8	4.3	3.6	2.9
	4A0007	6.9	6.2	5.5	4.9	4.1	3.3	5.5	5.5	5.5	4.9	4.1	3.3
	4A0009	8.8	8.0	7.2	6.4	5.3	4.3	7.2	7.2	7.2	6.4	5.3	4.3
	4A0011	11.1	10.2	9.2	8.1	6.8	5.5	9.2	9.2	9.2	8.1	6.8	5.5
	4A0018	17.5	16.2	14.8	13.1	11.0	8.9	14.8	14.8	14.8	13.1	11.0	8.9
	4A0023	23.0	20.5	18.0	15.9	13.4	10.8	18.0	18.0	18.0	15.9	13.4	10.8
	4A0031	31.0	27.5	24.0	21.3	17.8	14.4	24.0	24.0	24.0	21.3	17.8	14.4
	4A0038	38.0	34.5	31.0	27.5	23.0	18.6	31.0	31.0	31.0	27.5	23.0	18.6
	4A0044	44.0	41.5	39.0	34.5	29.0	23.4	39.0	39.0	39.0	34.5	29.0	23.4

A1000		Rated Current [A] (Ia)											
		Normal Duty Rating (ND)						Heavy Duty Rating (HD)					
Class	Model CIMR-A□	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
400 V Three-Phase	4A0058	58.0	51.5	45.0	39.9	33.4	27.0	45.0	45.0	45.0	39.9	33.4	27.0
	4A0072	72.0	66.0	60.0	53.1	44.6	36.0	60.0	60.0	60.0	53.1	44.6	36.0
	4A0088	88.0	81.5	75.0	66.4	55.7	45.0	75.0	75.0	75.0	66.4	55.7	45.0
	4A0103	103.0	97.0	91.0	80.7	67.9	55.0	91.0	91.0	91.0	80.7	67.9	55.0
	4A0139	139	112	91.6	78	-	-	112	112	91.6	78	-	-
	4A0165	165	150	123.0	105	-	-	150	150	123.0	105	-	-
	4A0208	208	180	147.6	126	-	-	180	180	147.6	126	-	-
	4A0250	250	216	177.0	151	-	-	216	216	177.0	151	-	-
	4A0296	296	260	213.2	182	-	-	260	260	213.2	182	-	-
	4A0362	362	304	249.4	213	-	-	304	304	249.4	213	-	-
	4A0414	414	370	303	259	-	-	370	370	303	259	-	-
	4A0515	515	397	-	-	-	-	450	375	-	-	-	-
	4A0675	675	528	-	-	-	-	605	504	-	-	-	-
	4A0930	930	449	-	-	-	-	810	506	-	-	-	-
	4A1200	1200	610	-	-	-	-	1090	681	-	-	-	-

Note: *Refer to A1000 Series Derating Curves According to Carrier Frequency on page 5* for other carrier frequency settings.

■ A1000 Series Derating Factor According to Installation Method and Ambient Temperature

Table 2 A1000 Series Derating Factor According to Installation Method and Ambient Temperature (Da1)

Installation Method Selection Derating Factor, A1000 Parameter Setting L8-35	Ambient Temperature (°C)			
	-10	30	40	50
0: IP00/Open-Type Enclosure	100%	100%	100%	100%
1: Side-by-Side Mounting	100%	100%	85%	70%
2: IP20/NEMA Type 1 Enclosure	100%	100%	100%	85%
3: Finless Drive or External Heatsink Installation	100%	100%	100%	85%

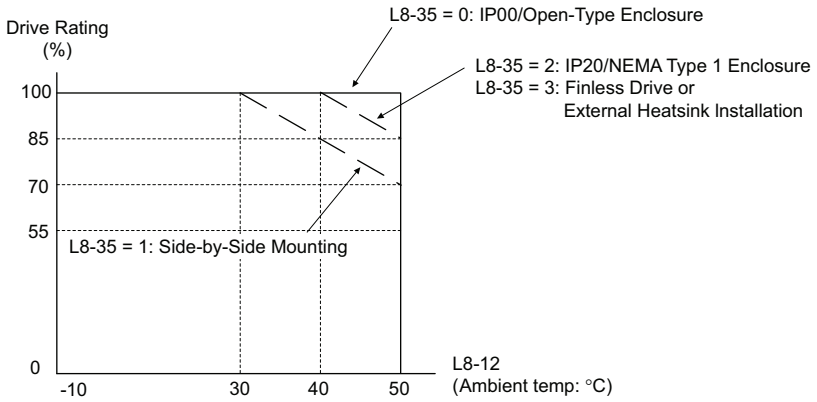

Figure 1 A1000 Ambient Temperature and Installation Method Derating

■ A1000 Series Derating Factor According to Altitude

Table 3 A1000 Series Derating Factor According to Altitude (Da2)

-	Altitude (m)			
	0	1000 <1>	2000	3000
Altitude Derating Factor	100%	100%	90%	80%

<1> The drive standard ratings are valid for installations up to 1000 m. Derate 1% for every 100 m higher than 1000 m.

■ A1000 Series Derating Curves According to Carrier Frequency

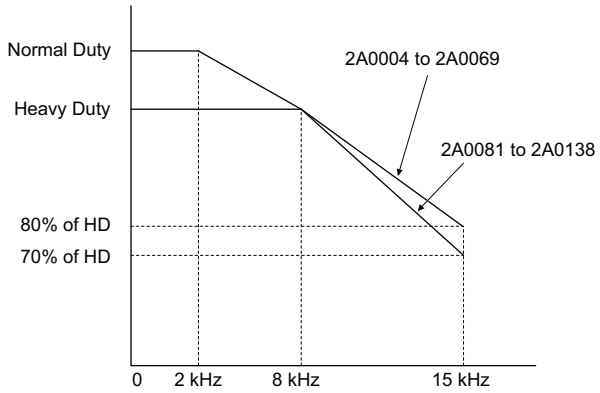

Figure 2 Carrier Frequency Derating Models CIMR-A□2A0004 to 2A0138

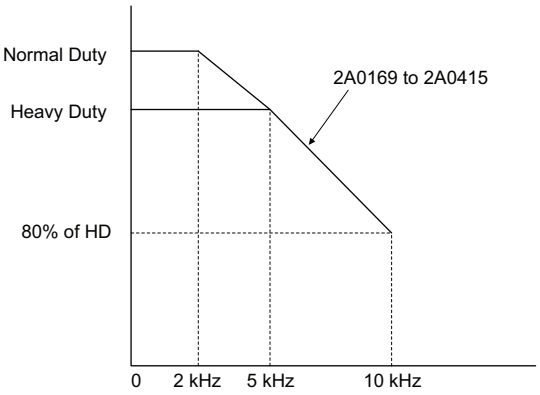

Figure 3 Carrier Frequency Derating Models CIMR-A□2A0169 to 2A0415

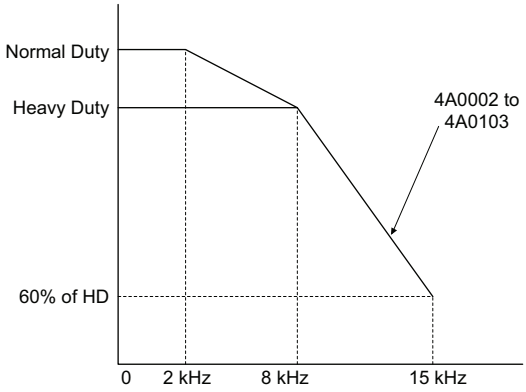

Figure 4 Carrier Frequency Derating Models CIMR-A□4A0002 to 4A0103

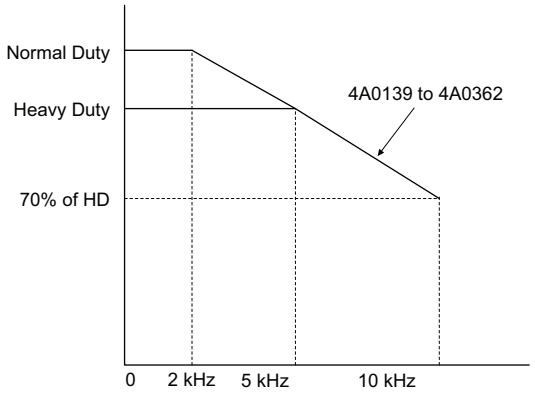

Figure 5 Carrier Frequency Derating Models CIMR-A□4A0139 to 4A0362

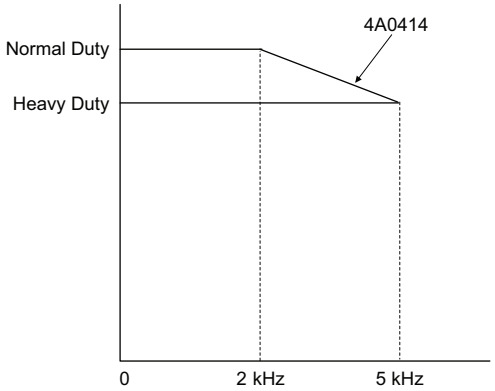

Figure 6 Carrier Frequency Derating Model CIMR-A□4A0414

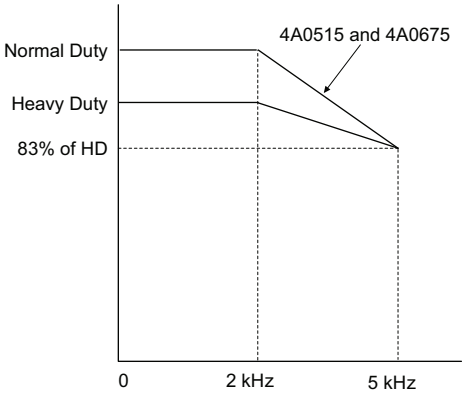

Figure 7 Carrier Frequency Derating Models CIMR-A□4A0515 and 4A0675

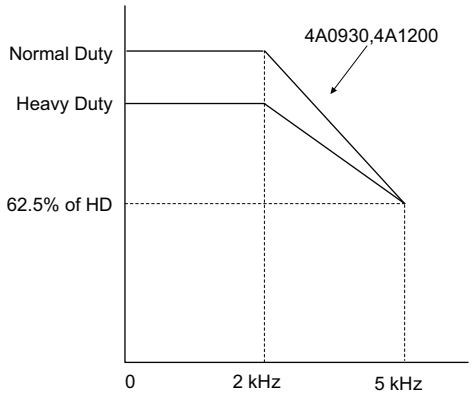

Figure 8 Carrier Frequency Derating Models CIMR-A□4A0930 and 4A1200

◆ Current Derating of V1000 Series Drives

Derated current I_{derat} is determined by the following equation:

$$I_{derat} = Iv \times Dv1 \times Dv2$$

Where:

- *Iv* is drive derated current (***Table 4***)
- *Dv1* is installation method derating factor (***Table 5***)
- *Dv2* is derating altitude factor (***Table 6***)

Table 4 V1000 Series Derated Drive Current (Iv) According to PWM Carrier Frequency (C6-02)

V1000		Rated Current [A] (Iv)											
		Normal Duty Rating (ND)						Heavy Duty Rating (HD)					
Class	Model CIMR-V☐	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
200 V Single-Phase	BA0001	1.2	1.1	0.9	0.8	0.7	0.6	0.8	0.8	0.8	0.8	0.7	0.6
	BA0002	1.9	1.8	1.7	1.6	1.5	1.3	1.6	1.6	1.6	1.6	1.5	1.3
	BA0003	3.3	3.2	3.1	3.0	2.7	2.4	3.0	3.0	3.0	3.0	2.7	2.4
	BA0006	6.0	5.6	5.3	5.0	4.5	4.0	5.0	5.0	5.0	5.0	4.5	4.0
	BA0010	9.6	8.8	8.0	7.5	7.0	6.4	8.0	8.0	8.0	7.5	7.0	6.4
	BA0012	12.0	11.5	11.0	10.4	9.6	8.8	11.0	11.0	11.0	10.4	9.6	8.8
	BA0018	17.5	17.5	17.5	16.5	15.3	14.0	17.5	17.5	17.5	16.5	15.3	14.0
200 V Three-Phase	2A0001	1.2	1.1	0.9	0.8	0.7	0.6	0.8	0.8	0.8	0.8	0.7	0.6
	2A0002	1.9	1.8	1.7	1.6	1.5	1.3	1.6	1.6	1.6	1.6	1.5	1.3
	2A0004	3.5	3.3	3.1	3.0	2.7	2.4	3.0	3.0	3.0	3.0	2.7	2.4
	2A0006	6.0	5.6	5.3	5.0	4.5	4.0	5.0	5.0	5.0	5.0	4.5	4.0
	2A0008	8.0	7.5	6.9	6.5	6.0	5.5	6.9	6.9	6.9	6.5	6.0	5.5
	2A0010	9.6	8.8	8.0	7.5	7.0	6.4	8.0	8.0	8.0	7.5	7.0	6.4
	2A0012	12.0	11.5	11.0	10.4	9.6	8.8	11.0	11.0	11.0	10.4	9.6	8.8
	2A0018	17.5	15.8	14.0	13.2	12.2	11.2	14.0	14.0	14.0	13.2	12.2	11.2
	2A0020	19.6	18.6	17.5	16.5	15.3	14.0	17.5	17.5	17.5	16.5	15.3	14.0
	2A0030	30.0	27.5	25.0	23.6	21.8	20.0	25.0	25.0	25.0	23.6	21.8	20.0
	2A0040	40.0	36.5	33.0	31.1	28.8	26.4	33.0	33.0	33.0	31.1	28.8	26.4
	2A0056	56.0	51.5	47.0	44.3	41.0	37.6	47.0	47.0	47.0	44.3	41.0	37.6
	2A0069	69.0	64.5	60.0	56.6	52.3	48.0	60.0	60.0	60.0	56.6	52.3	48.0
400 V Three-Phase	4A0001	1.2	1.2	1.2	1.1	0.9	0.7	1.2	1.2	1.2	1.1	0.9	0.7
	4A0002	2.1	2.0	1.8	1.6	1.4	1.1	1.8	1.8	1.8	1.6	1.4	1.1
	4A0004	4.1	3.8	3.4	3.0	2.5	2.0	3.4	3.4	3.4	3.0	2.5	2.0
	4A0005	5.4	5.1	4.8	4.3	3.6	2.9	4.8	4.8	4.8	4.3	3.6	2.9
	4A0007	6.9	6.2	5.5	4.9	4.1	3.3	5.5	5.5	5.5	4.9	4.1	3.3
	4A0009	8.8	8.0	7.2	6.4	5.3	4.3	7.2	7.2	7.2	6.4	5.3	4.3
	4A0011	11.1	10.2	9.2	8.1	6.8	5.5	9.2	9.2	9.2	8.1	6.8	5.5
	4A0018	17.5	16.2	14.8	13.1	11.0	8.9	14.8	14.8	14.8	13.1	11.0	8.9
	4A0023	23.0	20.5	18.0	15.9	13.4	10.8	18.0	18.0	18.0	15.9	13.4	10.8
	4A0031	31.0	27.5	24.0	21.3	17.8	14.4	24.0	24.0	24.0	21.3	17.8	14.4
	4A0038	38.0	34.5	31.0	27.5	23.0	18.6	31.0	31.0	31.0	27.5	23.0	18.6

Note: ***Refer to V1000 Series Derating Curve According to Carrier Frequency on page 9*** for other carrier frequency settings.

■ V1000 Series Derating Factor According to Installation Method and Ambient Temperature

Table 5 V1000 Series Derating Factor According to Installation Method and Ambient Temperature (Dv1)

Installation Method Selection Derating Factor, V1000 Parameter L8-35	Ambient Temperature (°C)				
	-10	30	35	40	50
0: IP20/IP00 Drive	100%	100%	100%	100%	100%
1: Side-by-Side Mounting	100%	100%	92.5%	85%	70%
2: NEMA Type 1 Drive	100%	100%	100%	100%	85%
3: Finless Drive or External Heatsink Installation	100%	100%	100%	93%	80%

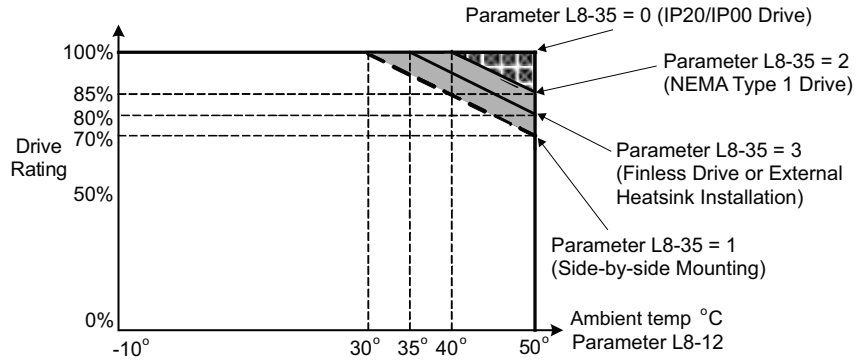

Figure 9 V1000 Series Ambient Temperature and Installation Method Derating

■ V1000 Series Derating Factor According to Altitude

Table 6 V1000 Series Derating Factor According to Altitude (Dv2)

-	Altitude (m)			
	0	1000 <1>	2000	3000
Altitude Derating Factor	100%	100%	90%	80%

<1> The drive standard ratings are valid for installations up to 1000 m. Derate 1% for every 100 m higher than 1000 m.

■ V1000 Series Derating Curve According to Carrier Frequency

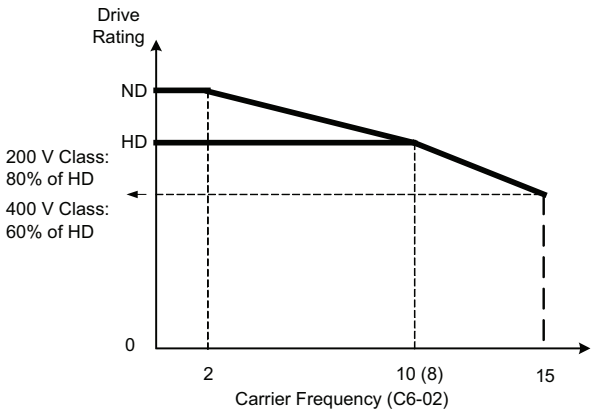

Figure 10 V1000 Series Carrier Frequency Derating

◆ Current Derating of J1000 Series Drives

Derated current I_{derat} is determined by the following equation:

$$I_{derat} = Ij \times Dj1 \times Dj2$$

Where:

- *Ij* is drive derated current (***Table 7***)
- *Dj1* is installation method derating factor (***Table 8***)
- *Dj2* is derating altitude factor (***Table 9***)

Table 7 J1000 Series Derated Drive Current (Ij) According to PWM Carrier Frequency (C6-02)

J1000		Rated Current [A] (Ij)											
		Normal Duty Rating (ND)						Heavy Duty Rating (HD)					
Class	Model CIMR-J☐	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
200 V Single-Phase	BA0001	1.2	1.1	0.9	0.8	0.7	0.6	0.8	0.8	0.8	0.8	0.7	0.6
	BA0002	1.9	1.8	1.7	1.6	1.5	1.3	1.6	1.6	1.6	1.6	1.5	1.3
	BA0003	3.3	3.2	3.1	3.0	2.7	2.4	3.0	3.0	3.0	3.0	2.7	2.4
	BA0006	6.0	5.6	5.3	5.0	4.5	4.0	5.0	5.0	5.0	5.0	4.5	4.0
	BA0010	9.6	8.8	8.0	7.5	7.0	6.4	8.0	8.0	8.0	7.5	7.0	6.4
200 V Three-Phase	2A0001	1.2	1.1	0.9	0.8	0.7	0.6	0.8	0.8	0.8	0.8	0.7	0.6
	2A0002	1.9	1.8	1.7	1.6	1.5	1.3	1.6	1.6	1.6	1.6	1.5	1.3
	2A0004	3.5	3.3	3.1	3.0	2.7	2.4	3.0	3.0	3.0	3.0	2.7	2.4
	2A0006	6.0	5.6	5.3	5.0	4.5	4.0	5.0	5.0	5.0	5.0	4.5	4.0
	2A0008	8.0	7.5	6.9	6.5	6.0	5.5	6.9	6.9	6.9	6.5	6.0	5.5
	2A0010	9.6	8.8	8.0	7.5	7.0	6.4	8.0	8.0	8.0	7.5	7.0	6.4
	2A0012	12.0	11.5	11.0	10.4	9.6	8.8	11.0	11.0	11.0	10.4	9.6	8.8
	2A0018	17.5	15.8	14.0	13.2	12.2	11.2	14.0	14.0	14.0	13.2	12.2	11.2
	2A0020	19.6	18.6	17.5	16.5	15.3	14.0	17.5	17.5	17.5	16.5	15.3	14.0
400 V Three-Phase	4A0001	1.2	1.2	1.2	1.1	0.9	0.7	1.2	1.2	1.2	1.1	0.9	0.7
	4A0002	2.1	2.0	1.8	1.6	1.4	1.1	1.8	1.8	1.8	1.6	1.4	1.1
	4A0004	4.1	3.8	3.4	3.0	2.5	2.0	3.4	3.4	3.4	3.0	2.5	2.0
	4A0005	5.4	5.1	4.8	4.3	3.6	2.9	4.8	4.8	4.8	4.3	3.6	2.9
	4A0007	6.9	6.2	5.5	4.9	4.1	3.3	5.5	5.5	5.5	4.9	4.1	3.3
	4A0009	8.8	8.0	7.2	6.4	5.3	4.3	7.2	7.2	7.2	6.4	5.3	4.3
	4A0011	11.1	10.2	9.2	8.1	6.8	5.5	9.2	9.2	9.2	8.1	6.8	5.5

Note: ***Refer to J1000 Series Derating Curve According to Carrier Frequency on page 11*** for other carrier frequency settings.

■ J1000 Series Derating Factor According to Installation Method and Ambient Temperature

Table 8 J1000 Series Derating Factor According to Installation Method and Ambient Temperature (Dj1)

Installation Method Selection Derating Factor, J1000 Parameter L8-35	Ambient Temperature (°C)				
	-10	30	35	40	50
0: IP20/IP00 Drive	100%	100%	100%	100%	100%
1: Side-by-Side Mounting	100%	100%	92.5%	85%	70%
2: NEMA Type 1 Drive	100%	100%	100%	100%	85%
3: Finless Drive or External Heatsink Installation	100%	100%	100%	93%	80%

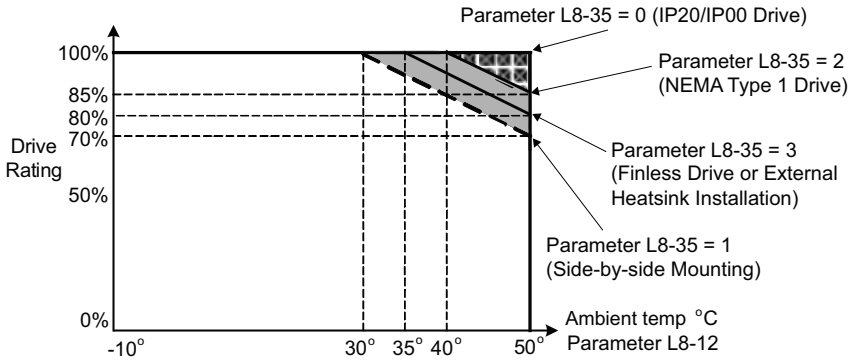

Figure 11 J1000 Series Ambient Temperature and Installation Method Derating

■ J1000 Series Derating Factor According to Altitude

Table 9 J1000 Series Derating Factor According to Altitude (Dj2)

-	Altitude (m)			
	0	1000 <1>	2000	3000
Altitude Derating Factor	100%	100%	90%	80%

<1> The drive standard ratings are valid for installations up to 1000 m. Derate 1% for every 100 m higher than 1000 m.

■ J1000 Series Derating Curve According to Carrier Frequency

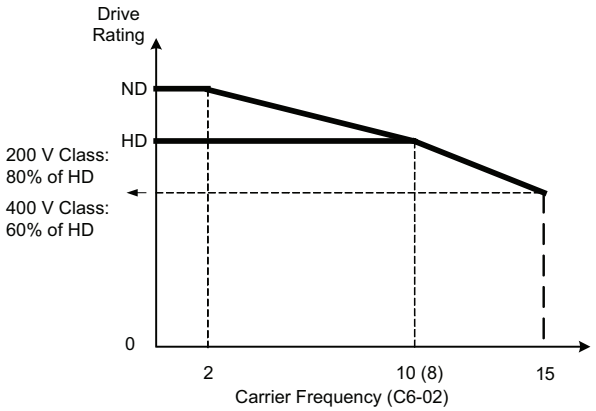

Figure 12 J1000 Series Carrier Frequency Derating

◆ Current Derating of Z1000 Series Drives

Derated current I_{derat} is determined by the following equation:

$$I_{derat} = Iz \times Dz1 \times Dz2$$

Where:

- *Iz* is drive derated current (***Table 10***)
- *Dz1* is installation method derating factor (***Table 11***)
- *Dz2* is derating altitude factor (***Table 12***)

Table 10 Z1000 Series Derated Drive Current (Iz) According to PWM Carrier Frequency (C6-02)

Z1000		Rated Current [A] (Iz)					
Class	Model CIMR-Z□	2 kHz	4 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz
200 V Three-Phase	2A0011	10.6	10.6	10.6	8.9	7.8	6.4
	2A0017	16.7	16.7	16.7	14	12.2	10
	2A0024	24.2	24.2	24.2	20	17.7	14.5
	2A0031	30.8	30.8	30.8	26	23	18.5
	2A0046	46.2	46.2	46.2	39	34	28
	2A0059	59.4	59.4	59.4	50	44	36
	2A0075	74.8	74.8	74.8	63	55	45
	2A0088	88	88	88	74	65	53
	2A0114	114	114	114	96	84	68
	2A0143	143	143	143	114	95	-
	2A0169	169	169	169	135	113	-
	2A0211	211	211	211	169	141	-
	2A0273	273	273	273	218	182	-
	2A0343	343	297	274	-	-	-
	2A0396	396	343	317	-	-	-
400 V Three-Phase	4A0005	4.8	4.8	4.8	4	3.5	2.9
	4A0008	7.6	7.6	7.6	6.4	5.6	4.6
	4A0011	11	11	11	9.2	8.1	6.6
	4A0014	14	14	14	11.8	10.3	8.4
	4A0021	21	21	21	17.6	15.4	12.6
	4A0027	27	27	27	23	20	16.2
	4A0034	34	34	34	29	25	20
	4A0040	40	40	40	34	29	24
	4A0052	52	52	52	44	38	31
	4A0065	65	65	65	55	48	39
	4A0077	77	77	77	65	57	46
	4A0096	96	96	96	81	70	58
	4A0124	124	124	124	99	83	-
	4A0156	156	156	156	125	104	-
	4A0180	180	180	180	144	120	-
	4A0240	240	240	224	176	144	-
	4A0302	302	302	282	221	181	-
	4A0361	361	313	289	-	-	-
	4A0414	414	358	331	-	-	-
	4A0480	480	416	384	-	-	-
	4A0515	515	446	412	-	-	-
	4A0590	590	511	472	-	-	-

Note: ***Refer to Z1000 Series Derating Curves According to Carrier Frequency on page 13*** for other carrier frequency settings.

■ Z1000 Series Derating Factor According to Installation Method and Ambient Temperature

Table 11 Z1000 Series Derating Factor According to Installation Method and Ambient Temperature (Dz1)

Installation Method Selection Derating Factor, Z1000 Parameter L8-35	Ambient Temperature (°C)				
	-10	30	35	40	50
0: IP00/Open-Type Enclosure	100%	100%	100%	100%	100%
2: IP20/NEMA Type 1 Enclosure	100%	100%	100%	100%	80%
3: Finless Drive or External Heatsink Installation	100%	100%	100%	100%	60%

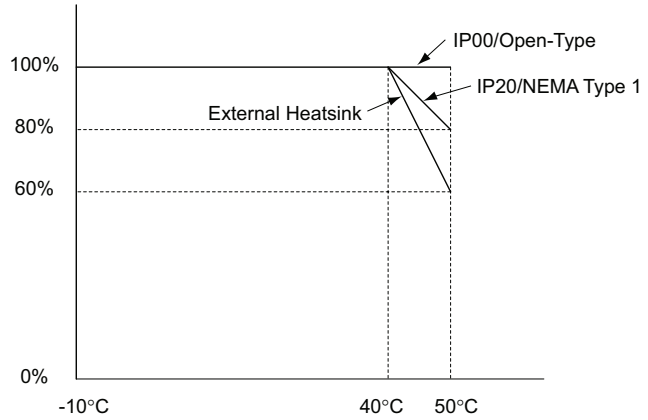

Figure 13 Z1000 Series Ambient Temperature and Installation Method Derating

■ Z1000 Series Derating Factor According to Altitude

Table 12 Z1000 Series Derating Factor According to Altitude (Dz2)

-	Altitude (m)			
	0	1000 <1>	2000	3000
Altitude Derating Factor	100%	100%	90%	80%

<1> The drive standard ratings are valid for installations up to 1000 m. Derate 1% for every 100 m higher than 1000 m.

■ Z1000 Series Derating Curves According to Carrier Frequency

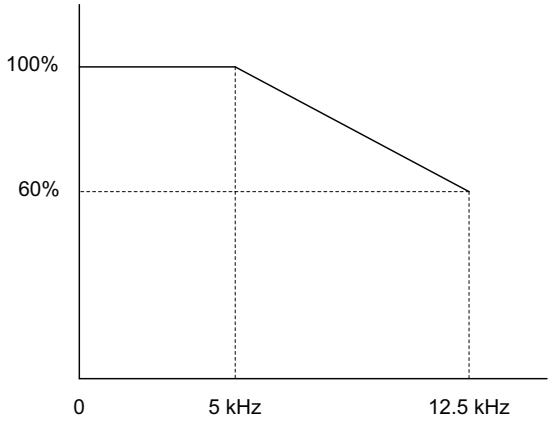

Figure 14 Carrier Frequency Derating Models CIMR-Z□2A0011 to 2A0114 and 4A0005 to 4A0096

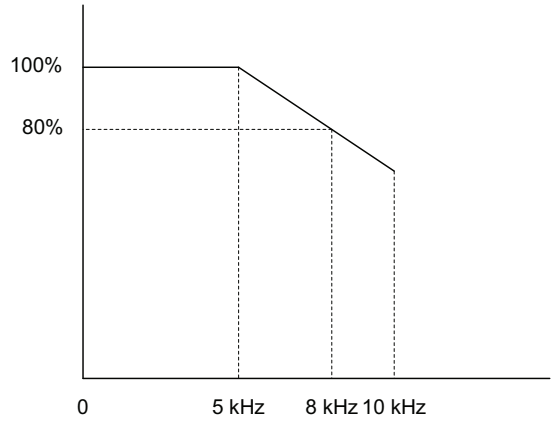

Figure 15 Carrier Frequency Derating Models CIMR-Z□2A0143 to 2A0273 and 4A0124 to 4A0180

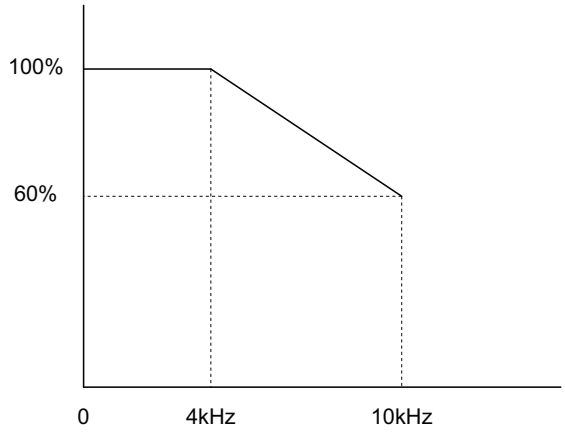

Figure 16 Carrier Frequency Derating Models CIMR-Z□4A0240 and 4A0302

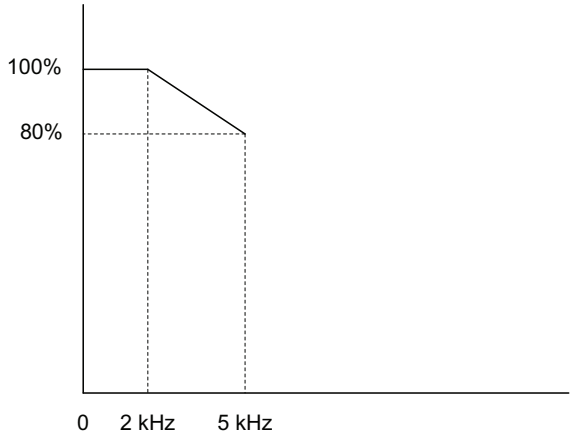

Figure 17 Carrier Frequency Derating Models CIMR-Z□2A0343 to 2A0396 and 4A0361 to 4A0590

YASKAWA AC Drives
Current Derating for 1000-Series Drives
Application Note

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