CIMR-F7Z

Varispeed F7

The industrial workhorse

- Flux vector control with or without PG
- Silent operation. No current de-rating in silent mode.
- Torque control
- PID control
- Powerful application oriented functionality
- Stand still autotuning
- High slip braking
- Energy saving function.
- Standard LCD operator
- Standard RS485 communications - Modbus
- Fieldbus options: DeviceNet, PROFIBUS, CANOpen
- Embedded OMRON PLC functionality with PLC option card.
- PC configuration tool: CX-Drive.
- CE, UL, and cUL marking

Customized software *

- The inverter software can be customized to meet specific application. Examples:
- Electronic line shaft (S-8169)
- Crane software (S-7071)

* For detailed information please see CASE software section.

Ratings

- 200 V Class three-phase 0.4 to 110 kW
- 400 V Class three-phase 0.4 to 300 kW

System configuration

3G3IV-PCN329-E
Inverter to PC cable

CX-Drive

JVOP-160 OY
Digital operator
(LCD display)

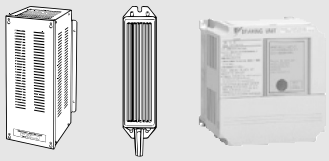
JVOP-161-OY
Digital operator
(LCD display)

3G3IV-PCN126/326
Digital operator
extension cable

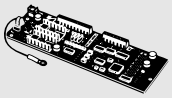
Line filter

Varispeed
F7

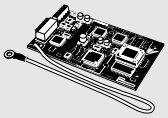
Braking accessories



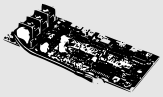
Feedback speed option card



Communication option cards



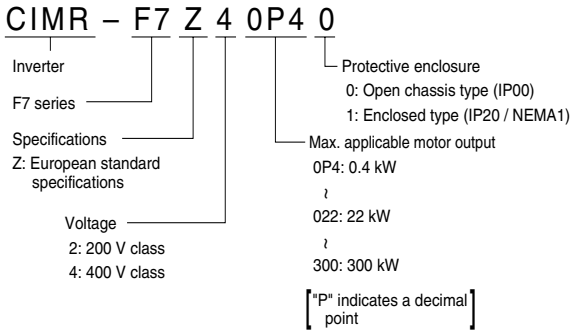
Reference option card



PLC option card

Specifications

Type designation



200 V class

Model CIMR-F7Zo		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
Max. applicable motor output[1] kW		0.55	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110
Output characteristics	Inverter capacity kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
	Rated current A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415[2]
	Max. voltage	3-phase, 200/208/220/230/240 V (proportional to input voltage)																	
	Max. output frequency	Heavy duty (low carrier, constant torque applications): 150 Hz max Normal duty 1 or 2 (high/reduced carrier, variable torque applications): 400 Hz max																	
Power supply	Rated input voltage and frequency	3-phase 200/208/220/230/240 V, 50/60 Hz[3]																	
	Allowable voltage fluctuation	+10%, -15%																	
	Allowable frequency fluctuation	±5%																	
Harmonic wave prevention	DC reactor	Option										Provided							
	12-pulse input	Not available										Available[4]							

1. Our standard 4-pole motors are used for max. applicable motor output. Choose the inverter model whose rated current is allowable within the motor rated current range.
2. 322 A in case of heavy duty mode
3. When using the inverter of 200 V class 37 kW or more with a cooling fan of three-phase 230 V 50 Hz or 240 V 50/60 Hz power supply, a transformer for the cooling fan is required.
4. A 3-wired transformer is required at 12-pulse input.

400 V class

Model CIMR-F7Zo		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300
Max. applicable motor output[1] kW		0.55	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	220	300
Output characteristics	Inverter capacity kVA	1.4	1.6	2.8	4.0	5.8	6.6	9.5	13	18	24	30	34	46	57	69	85	110	140	160	200	230	280	390	510
	Rated current A	1.8	2.1	3.7	5.3	7.6	8.7	12.5	17	24	31	39	45	60	75	91	112	150	180	216	260	304	370	506[2]	675[3]
	Max. voltage	3-phase, 380/400/415/440/460/480 V (proportional to input voltage)																							
	Max. output frequency	Heavy duty (low carrier, constant torque applications): 150 Hz max Normal duty 1 or 2 (high/reduced carrier, variable torque applications): 400 Hz max																							
Power supply	Rated input voltage and frequency	3-phase 380/400/415/440/460/480 V, 50/60 Hz																							
	Allowable voltage fluctuation	+10%, -15%																							
	Allowable frequency fluctuation	±5%																							
Harmonic wave prevention	DC reactor	Option												Provided											
	12-Pulse input	Not available												Available[4]											

1. Our standard 4-pole motors are used for max. applicable motor output. Choose the inverter model whose rated current is allowable within the motor rated current range.
2. 405 A in case of heavy duty mode
3. 540 A in case of heavy duty mode
4. A 3-wired transformer is required at 12-pulse input.

Common specifications

Enclosures

200 V class	**Model CIMR-F7Z□**	**20P4**	**20P7**	**21P5**	**22P2**	**23P7**	**25P5**	**27P5**	**2011**	**2015**	**2018**	**2022**	**2030**	**2037**	**2045**	**2055**	**2075**	**2090**	**2110**							
	Enclosed type - IP20)	Available as standard										Available for option						N/A								
	Open chassis type -IP00	Available by removing the upper and lower cover of enclosed type										Available as standard														
400 V class	**Model CIMR-F7Z□**	**40P4**	**40P7**	**41P5**	**42P2**	**43P7**	**45P5**	**47P5**	**4011**	**4015**	**4018**	**4022**	**4030**	**4037**	**4045**	**4055**	**4075**	**4090**	**4110**	**4132**	**4160**	**4185**	**4220**	**4300**		
	Enclosed type - IP20	Available as standard										Available for option										N/A				
	Open chassis type - IP00	Available by removing the upper and lower cover of enclosed type										Available as standard														

Common specifications

	Model number CIMR-F7Z□	Specification
Control characteristics	Control method	Sine wave PWM Closed loop vector control, open loop vector control, V/f control, V/f with PG control
	Torque characteristics	Heavy duty (low carrier, constant torque applications): 2 kHz carrier frequency, 150% overload for 1 minute, higher carrier frequency possible with current derating. Normal duty 1 (high carrier, variable torque applications): maximum carrier frequency, depending on inverter capacity, 120% overload for 1 minute. Normal duty 2 (variable torque applications): carrier frequency reduced, continuous overload capability increased
	Speed control range	1:40 (V/f control) 1:100 (open loop vector control) 1:1000 (closed loop vector control)
	Speed control accuracy	± 3% (V/f control) ± 0.03% (V/f control with PG) ± 0.2% (open loop vector control) ± 0.02% (closed loop vector control) (25 °C ± 10 °C)
	Speed control response	5 Hz (control without PG) 30 Hz (control with PG)
	Torque limits	Provided (4 quadrant steps can be changed by constant settings.) (Vector control)
	Torque accuracy	± 5%
	Frequency range	0.01 to 150 Hz (Heavy Duty), 0.01 to 400 Hz (Normal Duty 1 or 2)
	Frequency accuracy (temperature characteristics)	Digital references: ± 0.01% (-10 °C to +40 °C)
		Analog references: ± 0.1% (25°C ±10°C)
	Frequency setting resolution	Digital references: 0.01 Hz
		Analog references: 0.025/50 Hz (11 bits plus sign)
	Output frequency resolution	0.01 Hz
	Overload capacity and maximum current	Heavy duty (low carrier, constant torque applications): 150% of rated output current for 1 minute Normal duty 1 or 2 (high/reduced carrier, variable torque applications): 120% of rated output current for 1 minute
	Frequency setting signal	0 to +10V, -10 to +10 V, 4 to 20 mA, pulse train
	Accel/decel time	0.01 to 6000.0 s (4 selectable combinations of independent acceleration and deceleration time settings)
	Braking torque	Approximately 20% (approximately 125% with braking resistor option, braking transistor built into inverters of 18.5 kW or less)
	Main control functions	Restarting after momentary power loss, speed search, overtorque/undertorque detection, torque limits, 17-speed control (maximum), 4 acceleration and deceleration times, S-curve acceleration/deceleration, 3-wire control, auto-tuning (rotational or stationary), dwell function, cooling fan ON/OFF control, slip compensation, torque compensation, auto-restart after fault, jump frequencies, upper and lower limits for frequency references, DC braking for starting and stopping, high-slip braking, advanced PID control, energy-saving control, MEMOBUS communications (RS-485/422, 19.2 kbps maximum), 2 motor parameter sets, fault reset and parameter copy function.
Protective functions	Motor protection	Protection by electronic thermal overload relay.
	Instantaneous overcurrent protection	Stops at approx. 200% of rated output current.
	Fuse blown protection	Stops for fuse blown.
	Overload protection	Heavy duty (low carrier, constant torque applications): 150% of rated output current for 1 minute Normal duty 1 (high carrier, variable torque applications): 120% of rated output current for 1 minute Normal duty 2 (high carrier, variable torque applications): 120% of rated output current for 1 minute, increased continuous output current.
	Overvoltage protection	200 class inverter: stops when main-circuit DC voltage is above 410 V. 400 class inverter: stops when main-circuit DC voltage is above 820 V.
	Undervoltage protection	200 class inverter: stops when main-circuit DC voltage is below 190 V. 400 class inverter: stops when main-circuit DC voltage is below 380 V.
	Momentary power loss ride through	By selecting the momentary power loss method, operation can be continued if power is restored within 2 s.
	Cooling fin overheating	Protection by thermistor.
	Stall prevention	Stall prevention during acceleration, deceleration and running independently.
	Grounding protection	Protection by electronic circuits.
	Charge indicator	Illuminates when the main circuit DC voltage is approx. 10 VDC or more.
Environment	Ambient operating temperature	-10 °C to 40 °C (enclosed wall-mounted type) -10 °C to 45 °C (open chassis type)
	Ambient operating humidity	95% max. (with no condensation)
	Storage temperature	- 20 °C to + 60 °C (short-term temperature during transportation)
	Application site	Indoor (no corrosive gas, dust, etc.)
	Altitude	1000 m max.
	Vibration	10 to 20 Hz, 9.8 m/s^2 max.; 20 to 50 Hz, 2 m/s^2 max

Dimensions

Open chassis type (IEC IP00)

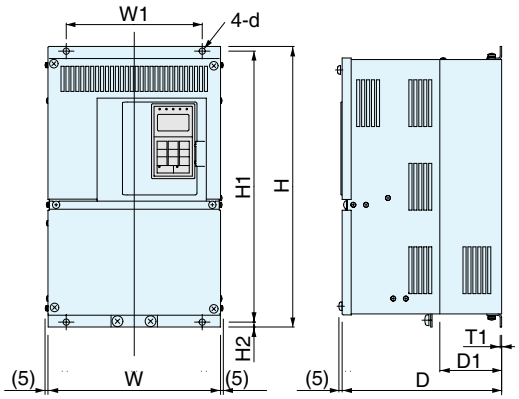


Fig 1

Voltage	Max. applicable motor output kW	Inverter CIMR-F7Z□	Fig	Dimensions in mm									Approx. weight kg	Cooling method
				W	H	D	W1	H1	H2	D1	T1	d		
200 V class (3-phase)	0.4	------	Not available, please use the IP20 type removing the upper and lower cover											
	0.75	------												
	1.5	------												
	2.2	------												
	3.7	------												
	5.5	------												
	7.5	------												
	11	------												
	15	------												
	18.5	------												
	22	2022 0	1	250	400	258	195	385	7.5	100	2.3	M6	21	Fan cooled
	30	2030 0		275	450		220	435					24	
	37	2037 0		375	600	298	250	575	12.5	100	3.2	M10	57	
	45	2045 0				328				130			63	
	55	2055 0		450	725	348	325	700					86	
	75	2075 0											87	
	90	2090 0		500	850	358	370	820	15		4.5	M12	108	
	110	2110 0		575	885	378	445	855		140			150	
400 V class (3-phase)	0.4	------	Not available, please use the IP20 type removing the upper and lower cover											
	0.75	------												
	1.5	------												
	2.2	------												
	4.0	------												
	5.5	------												
	7.5	------												
	11	------												
	15	------												
	18.5	------												
	22	4022 0	1	275	450	258	220	435	7.5	100	2.3	M6	21	Fan cooled
	30	4030 0												
	37	4037 0		325	550	283	260	535		105			36	
	45	4045 0												
	55	4055 0												
	75	4075 0		450	725	348	325	700	12.5	130	3.2	M10	88	
	90	4090 0											89	
	110	4110 0		500	850	358	370	820	15		4.5	M12	102	
	132	4132 0											120	
	160	4160 0		575	916	378	445	855	45.8	140			160	
	185	4185 0		710	1305	413	540	1270	15	125.5			260	
	220	4220 0											280	
	300	4300 0		916	1475	413	730	1440					405	

Enclosed type (IEC IP20)

F7Z 20P41 to F7Z25P51
F7Z40P41 to F7Z45P51

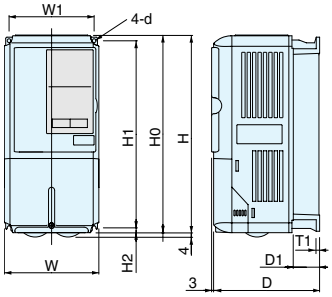


Fig 1

F7Z 27P51 to F7Z20181
F7Z47P51 to F7Z40181

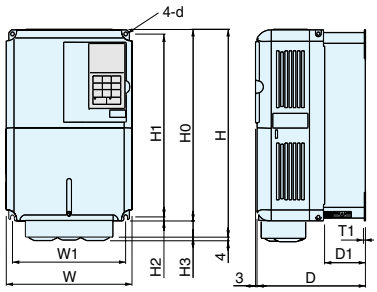


Fig 2

F7Z 20221 to F7Z20751
F7Z40221 to F7Z41601

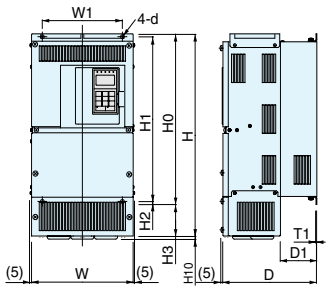
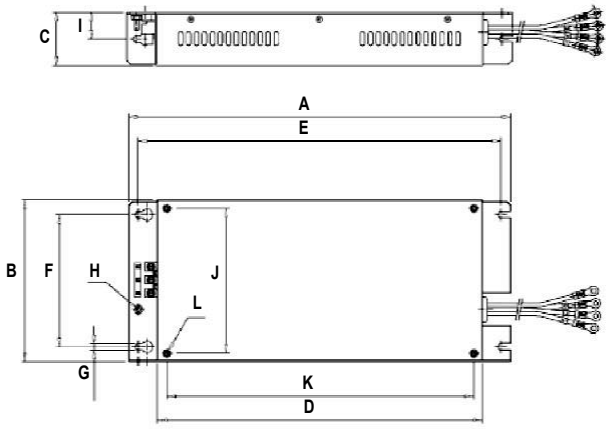


Fig 3

Voltage	Max. applicable motor output kW	Inverter CIMR-F7Z□	Fig	Dimensions in mm											Approx. weight kg	Cooling method
				W	H	D	W1	H0	H1	H2	H3	D1	T1	d		
200 V class (3-phase)	0.4	20P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	3	Self cooled
	0.75	20P7 1														
	1.5	21P5 1														
	2.2	22P2 1														
	3.7	23P7 1				177						59			4	Fan cooled
	5.5	25P5 1														
	7.5	27P5 1	2	200	300	197	186	300	285	8	0	65.5	2.3	M6	6	
	11	2011 1			310						10				7	
	15	2015 1		240	350	207	216	350	335	7.5	0	78			11	
	18.5	2018 1			380						30					
	22	2022 1	3	254	535	258	195	400	385		135	100			24	
	30	2030 1		279	615		220	450	435		165				27	
	37	2037 1		380	809	298	250	600	575	12.5	209	130	3.2	M10	62	
	45	2045 1				328									68	
	55	2055 1		453	1027	348	325	725	700		302				94	
	75	2075 1													95	
400 V class (3-phase)	0.4	40P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	3	Self Cooled
	0.75	40P7 1														
	1.5	41P5 1														
	2.2	42P2 1				177						59			4	Fan cooled
	3.7	43P7 1														
	4.0	44P0 1														
	5.5	45P5 1														
	7.5	47P5 1	2	200	300	197	186	300	285	8	---	65.5	2.3	M6	6	
	11	4011 1														
	15	4015 1		240	350	207	216	350	335	7.5		78			10	
	18.5	4018 1														
	22	4022 1	3	275	535	258	220	450	435		85	100			24	
	30	4030 1														
	37	4037 1		325	715	283	260	550	535		105	105			40	
	45	4045 1														
	55	4055 1														
	75	4075 1		453	1027	348	325	725	700	12.5	302	130	3.2	M10	96	
	90	4090 1													97	
	110	4110 1		504	1243	358	370	850	820	15	393		4.5	M12	122	
	132	4132 1													130	
	160	4160 1		579	1324	378	445	918	855	45.8	408	140			170	

Filters

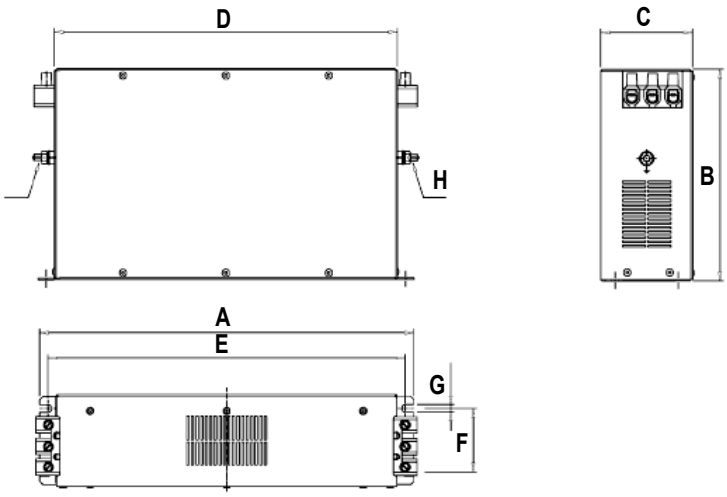
Footprint / Flat filters



Model		Dimensions											
		A	B	C	D	E	F	G	H	I	J	K	L
200 V	3G3RV-PFI2035-SE	330	141	46	281	313	115	5.5	M5	23	126	266	M5
	3G3RV-PFI2060-SE	355	206	60	302	336	175	6.5	M6	30	186	285	M6
	3G3RV-PFI2100-SE	408	236	80	355	390	205	6.5	M6	40	216	335	M6
400 V	3G3RV-PFI3010-SE	330	141	46	281	313	115	5.5	M5	23	126	266	M5
	3G3RV-PFI3018-SE	330	141	46	281	313	115	5.5	M5	23	126	266	M5
	3G3RV-PFI3021-SE	355	206	50	302	336	175	6.5	M4	25	186	285	M5
	3G3RV-PFI3035-SE	355	206	50	302	336	175	6.5	M5	25	186	285	M6
	3G3RV-PFI3060-SE	408	236	65	355	390	205	6.5	M6	32.5	216	335	M6
	3G3RV-PFI3410-SE [1]	386	115	260	306	240	235	12.0	M12	-	-	-	-
	3G3RV-PFI3600-SE [1]	386	135	260	306	240	235	12.0	M12	-	-	-	-
	3G3RV-PFI3800-SE [1]	564	160	300	516	420	275	9.0	M12	-	-	-	-

1. Flat filters are not possible to be mounted as footprint filters.

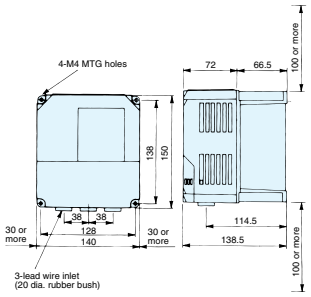
Bookform filters



Model		Dimensions							
		A	B	C	D	E	F	G	H
200 V	3G3RV-PFI2130-SE	366	180	90	280	310	65	6.5	M10
	3G3RV-PFI2160-SE	451	170	120	350	380	102	6.5	M10
	3G3RV-PFI2200-SE	610	240	130	480	518	90	8.2	M10
400 V	3G3RV-PFI3070-SE	331	185	80	300	329	55	6.5	M6
	3G3RV-PFI3100-SE	326	150	90	240	270	65	6.5	M10
	3G3RV-PFI3130-SE	370	180	90	280	310	65	6.5	M10
	3G3RV-PFI3170-SE	451	170	120	350	380	102	6.5	M10
	3G3RV-PFI3200-SE	610	240	130	480	518	90	8.3	M10

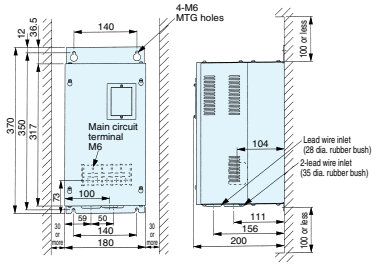
Braking unit

Model CDBR-2015 B, -2022 B, -4030B, -4045 B



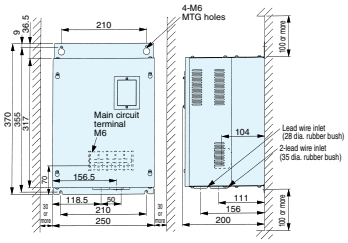
Weight 1.8 K

Model CDBR-2110 B



Weight 8.5 Kg

Model CDBR-4220 B

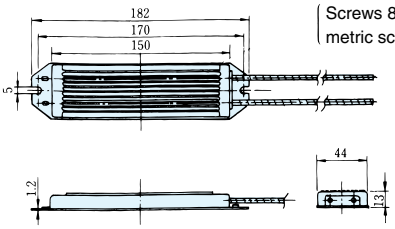


Weight 12 Kg

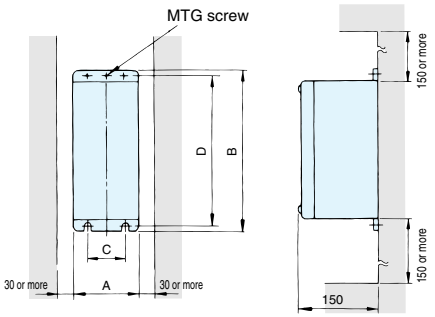
Braking resistor unit (inverter-mounted type)

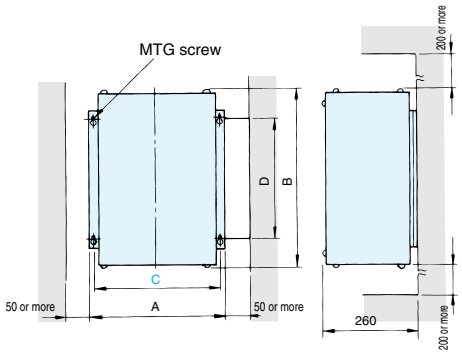
Weight: 0.2 kg
Model ERF-150WJ_

Note: Prepare mounting screws
(2-M4x8 tapped screws).
Screws 8mm or more and general metric screws cannot be used.



Braking resistor unit (separately-installed type)





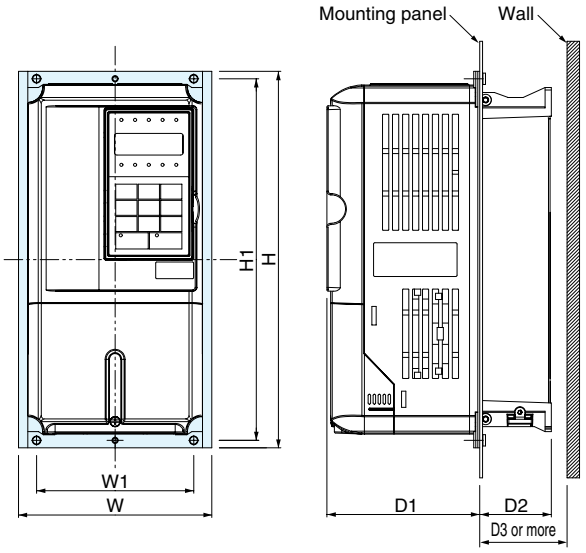
Voltage	Model LKEB-_	Dimensions in mm					Weight kg
		A	B	C	D	MTG screw	
220 V class	20P7	105	275	50	260	M5 x 3	3.0
	21P5	130	350	75	335	M5 x 4	4.5
	22P2	130	350	75	335	M5 x 4	4.5
	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	25P5	250	350	200	335	M6 x 4	8.5
400 V class	40P7	105	275	50	260	M5 x 3	3.0
	41P5	130	350	75	335	M5 x 4	4.5
	42P2	130	350	75	335	M5 x 4	4.5
	43P7	130	350	75	335	M5 x 4	5.0
	45P5	250	350	200	332	M6 x 4	7.5
	47P5	250	350	200	332	M6 x 4	8.5

Voltage	Model LKEB-_	Dimensions in mm					Weight kg
		A	B	C	D	MTG screw	
220 V class	2011	266	543	246	340	M8 x 4	10
	2015	356	543	336	340	M8 x 4	15
	2018	446	543	426	340	M8 x 4	19
	2022	446	543	426	340	M8 x 4	19
400 V class	4011	350	412	330	325	M6 x 4	16
	4015	350	412	330	325	M6 x 4	18
	4018	446	543	426	340	M8 x 4	19
	4022	446	543	426	340	M8 x 4	19
	4030	356	956	336	740	M8 x 4	25
	4037	446	956	426	740	M8 x 4	33
	4045	446	956	426	740	M8 x 4	33

Attachments

Heatsink external mounting attachment

The Varispeed G7 inverters under the 200/400 V class 15 kW or less need this attachment for mounting the heatsink externally. This attachment expands the outer dimensions of the width and height of the inverter. (Attachment is not required for inverters of 18.5 kW or more.)



CIMR-G7C□	Attachment order code	Dimensions in mm						
		W	H	W1	H1	D1	D2	D3
20P4	EZZ08676A	155	302	126	290	122.6	37.4	40
20P7								
21P5								
22P2							57.4	60
23P7								
25P5	EZZ08676B	210	330	180	316	136.1	63.4	70
27P5								
2011	EZZ08676C	250	392	216	372	133.6	76.4	85
2015								
40P4	EZZ08676A	155	302	126	290	122.6	37.4	40
40P7								
41P5							57.4	60
42P2								
43P7								
45P5	EZZ08676B	210	330	180	316	136.1	63.4	70
47P5								
4011	EZZ08676C	250	392	216	372	133.6	76.4	85
4015								

Panel cut for external mounting of cooling fin (heatsink)

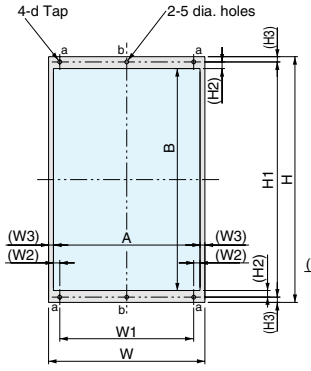


Fig 1

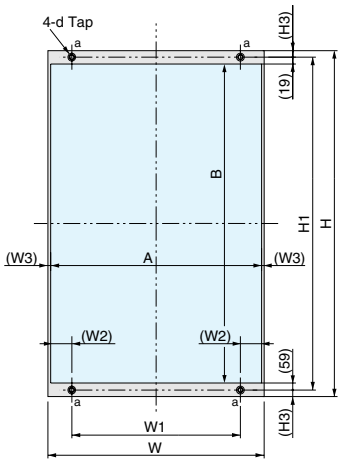


Fig 3

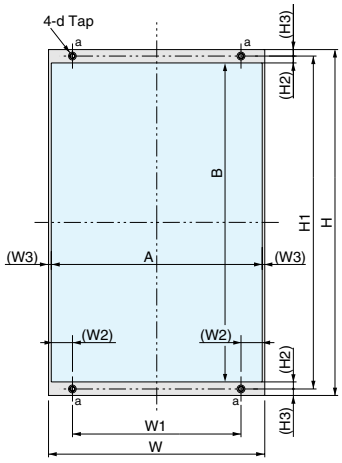


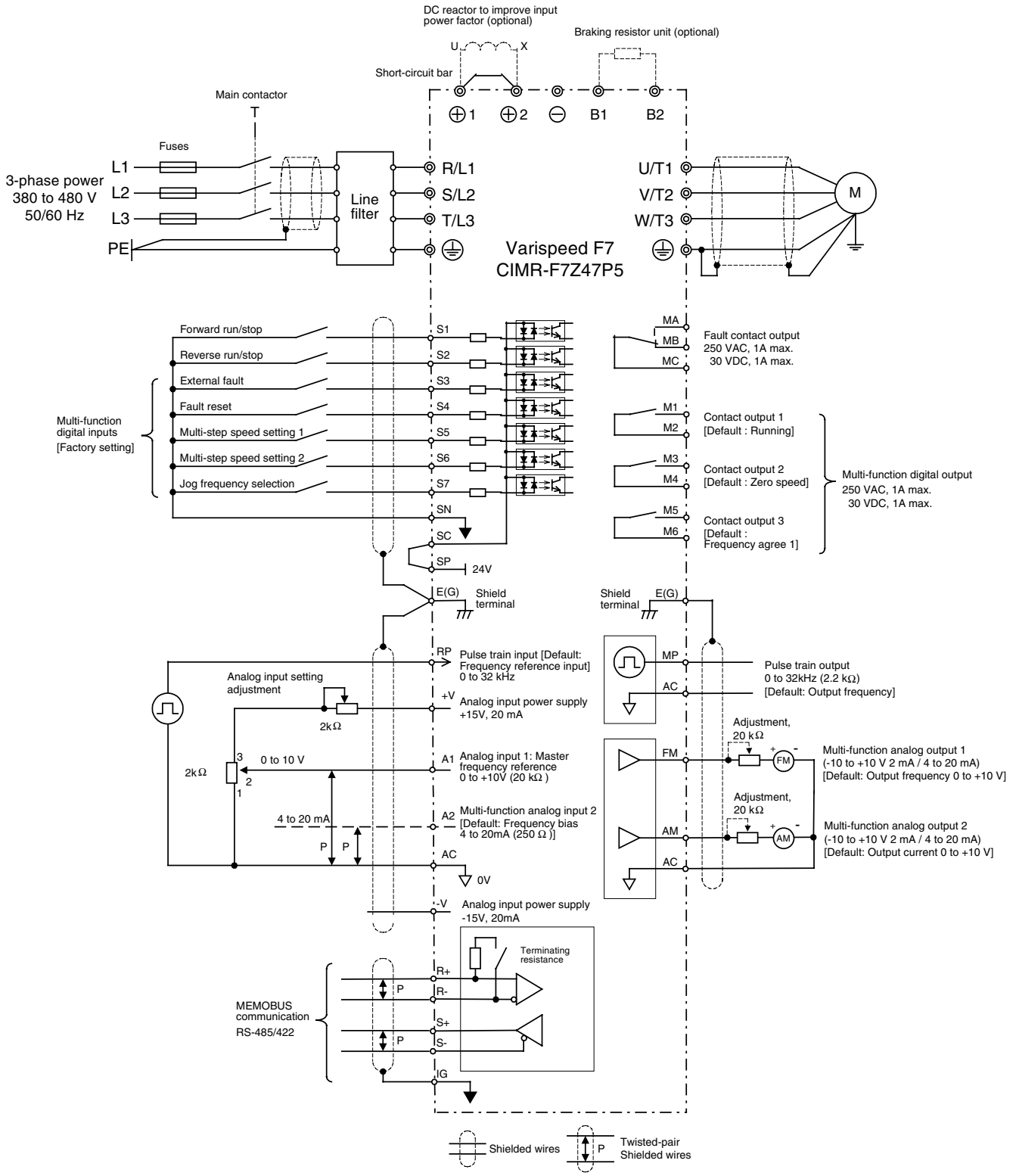
Fig 2

CIMR-F7Z□	Fig	Dimensions in mm									
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d
20P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5
20P7												
21P5												
22P2												
23P7												
25P5												
27P5		210	330	180	8.5	6.5	316	9	7	197	298	M6
2011												
2015		250	392	216		8.5	372	9.5	10	233	353	
2018												
2022	2	250	400	195	24.5	3	385	8	7.5	244	369	
2030		275	450	220			435			269	419	
2037		375	600	250	54.5	8	575	15	12.5	359	545	M10
2045												
2055		450	725	325			700	13.5		434	673	
2075												
2090		500	850	370	57	8	820	19	15	484	782	M12
2110		575	885	445	55	10	855			555	817	
40P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5
40P7												
41P5												
42P2												
43P7												
44P0												
45P5												
47P5		210	330	180	8.5	6.5	316	9	7	197	298	M6
4011												
4015		250	392	216		8.5	372	9.5	10	233	353	
4018												
4022	2	275	450	220	24.5	3	435	8	7.5	269	419	
4030												
4037		325	550	260		8	535			309	519	
4045												
4055												
4075		450	725	325	54.5	8	700	13.5	12.5	434	673	M10
4090												
4110		500	850	370	57	8	820	19	15	484	782	M12
4132												
4160	3	575	925	445	55	10	895	1	15	555	817	

1.The sizes are different between the top and the bottom. Refer Fig 3

Installation

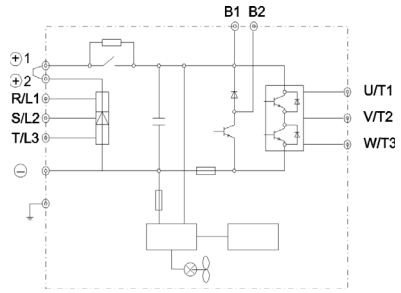
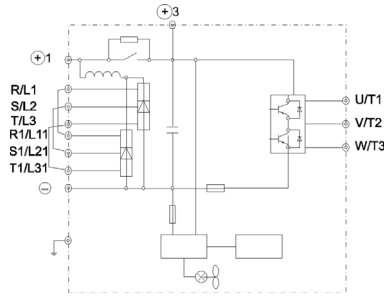
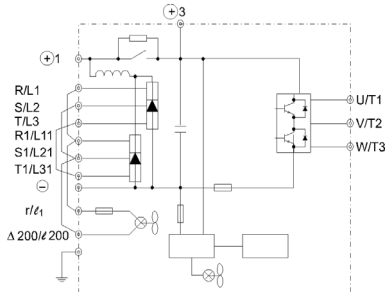
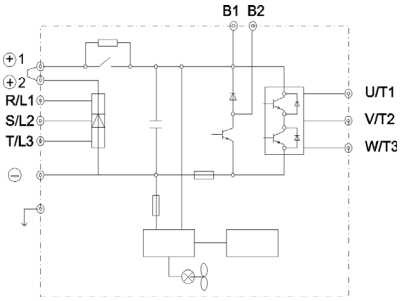
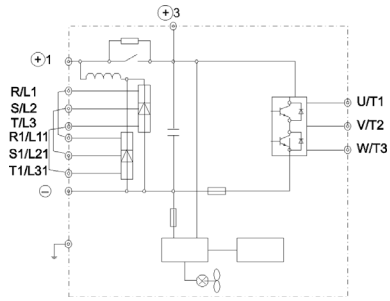
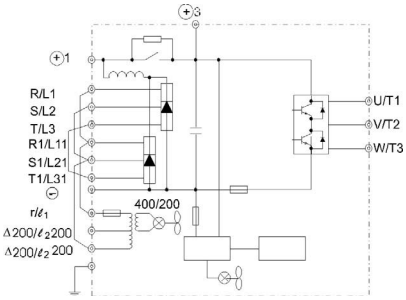
Standard connections



Main circuit

Voltage	200 V			400 V		
Model CIMR-F7Z□	**20P4 to 2018**	**2022, 2030**	**2037 to 2110**	**40P4 to 4018**	**4022 to 4055**	**4075 to 4300**
Max. applicable motor output	**0.4 to 18.5 kW**	**22 to 30 kW**	**37 to 110 kW**	**0.4 to 18.5 kW**	**22 to 55 kW**	**75 to 300 kW**
R/L1	Main circuit input power supply	Main circuit input power supply		Main circuit input power supply	Main circuit input power supply	
S/L2						
T/L3						
R1/L11	---	R-R1, S-S1 and T-T1 have been wired before shipment (See P59).		---	R-R1, S-S1 and T-T1 have been wired before shipment	
S1/L21						
T1/L31						
U/T1	Inverter output			Inverter output		
V/T2						
W/T3						
B1	Braking resistor unit	------		Braking resistor unit	------	
B2						
⊖	•DC reactor (⊕1- ⊕2) •DC power supply[1] (⊕1 - ⊖)	•DC power supply (⊕1- ⊕2)[1] •Braking unit (⊕3 - ⊖)		•DC reactor (⊕1- ⊕2) •DC power supply[1] (⊕1 - ⊖)	•DC power supply (⊕1- ⊕2)[1] •Braking unit (⊕3 - ⊖)	
⊕1						
⊕2						
⊕3	---			---		
$\mathfrak{z}$ /l_2	------		Cooling fan power supply[2]	---		
r/l_1				---		Cooling fan power supply[3]
$\mathfrak{z}$ **200 /** l_2 **200**	------					
$\mathfrak{z}$ **400 /** l_2 **400**						
⏚	Ground terminal (100 Ω or less)			Ground terminal (10 Ω or less)		

1. ⊕1 - ⊖ DC power input does not conform to UL/c-UL listed standard.
2. Cooling fan power supply r/l_1 - $\mathfrak{z}$ /l_2: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz
   (A transformer is required for 230 V 50 Hz or 240 V 50/60 Hz power supply.)
3. Cooling fan power supply r/l_1 - $\mathfrak{z}$ 200 / l_2 200: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz, r/l_1 - $\mathfrak{z}$ 400 / l_2 400: 380 to 480 VAC 50/60 Hz

	Main circuit configuration		
200 V class	CIMR-F7Z20P4 to 2018 	CIMR-F7Z2022, 2030 	CIMR-F7Z2037 to 2110 
400 V class	CIMR-F7Z40P4 to 4018 	CIMR-F7Z4022 to 4055 	CIMR-F7Z4075 to 4300 

Control circuite

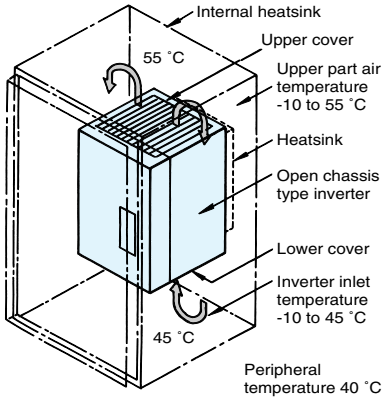
Type	No.	Signal name	Function		Signal level
Digital input signals	S1	Forward run/stop command	Forward run when ON; stopped when OFF.		24 VDC, 8 mA photocoupler
	S2	Reverse run/stop command	Reverse run when ON; stopped when OFF.		
	S3	External fault input [1]	Fault when ON.	Functions are selected by setting H1-01 to H1-05.	
	S4	Fault reset [1]	Reset when ON		
	S5	Multi-step speed reference 1 [1] (master/auxiliary switch)	Auxiliary frequency reference when ON.		
	S6	Multi-step speed reference 2 [1]	Multi-step setting 2 when ON.		
	S7	Jog frequency reference [1]	Jog frequency when ON.		
	SC	Digital input common	–		–
	SN	Digital input neutral	–		–
	SP	Digital input power supply	+24 VDC power supply for digital inputs		24 VDC, 250 mA max. [2]
Analog input signals	+V	15 V power output	15 V power supply for analog references		15 V (max. current: 20 mA)
	-V	-15 V power output	-15 V power supply for analog references		-15 V (max. current: 20 mA)
	A1	Frequency reference	-10 to +10 V/100%		-10 to +10 V(20 kΩ)
	A2	Multi-function analog input	4 to 20 mA/100% -10 V to +10 V/100%	Function is selected by setting H3-09.	4 to 20 mA(250 Ω) -10 V to +10 V(20 kΩ)
	AC	Analog reference common	–		–
	E(G)	Shield wire, optional ground line connection point	–		–
Sequence output signals	M1	Running signal (1NO contact)	Operating when ON.	Multi-function contact outputs	Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC [3]
	M2				
	M3	Zero speed	Zero level (b2-01) or below when ON		
	M4				
	M5	Speed agreement detection	Within ±2 Hz of set frequency when ON.		
	M6				
	MA	Fault output signal	Fault when CLOSED across MA and MC Fault when OPEN across MB and MC		Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC [3]
	MB				
	MC				
Analog output signals	FM	Multi-function analog output (frequency output)	0 to 10 V, 10V=100% output frequency	Multi-function analog output 1	-10 to +10 V max. ±5% 2 mA max. 4 to 20 mA current output
	AC	Analog common	–		
	AM	Multi-function analog output (current monitor)	0 to 10 V, 10V=200% inverter's rated current	Multi-function analog output 2	
Pulse I/O	RP	Pulse input [4]	H6-01 (frequency reference input)		0 to 32 kHz (3 kΩ) High level voltage 3.5 to 13.2 V
	MP	Pulse monitor	H6-06 (output frequency)		0 to 32 kHz +15 V output (2.2 kΩ)
RS-485/422	R+	MEMOBUS communications input	For 2-wire RS-485, short R+ and S+ as well as R- and S-.		Differential input, photocoupler isolation
	R-				
	S+	MEMOBUS communications output			Differential input, photocoupler isolation
	S-				
	IG	Signal common	–		–

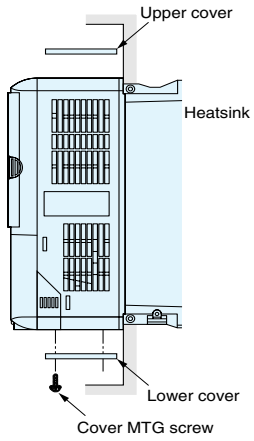
1. The default settings are given for terminals S3 to S7. For a 3-wire sequence, the default settings are a 3-wire sequence for S5, multi-step speed setting 1 for S6 and multi-step speed setting 2 for S7.
2. Do not use this power supply for supplying any external equipment.
3. When driving a reactive load, such as a relay coil with DC power supply, always insert a flywheel diode.
4. Pulse input specifications are given in the following table.

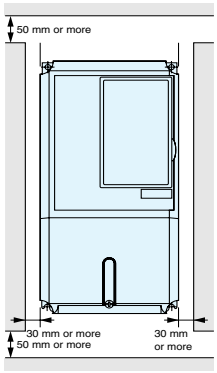
Low level voltage	0.0 to 0.8 V
High level voltage	3.5 to 13.2 V
H duty	30% to 70%

Remove the upper and lower covers for the models of 15 kW or less in 200 V and 400 V classes.

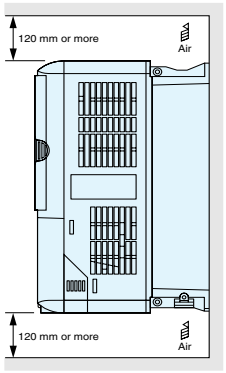
When using open chassis type inverters of 200 V/400 V 22 kW or more, secure spaces for eyebolts and wiring of the main circuit.







Side spaces



Top and bottom spaces

Inverter heat loss

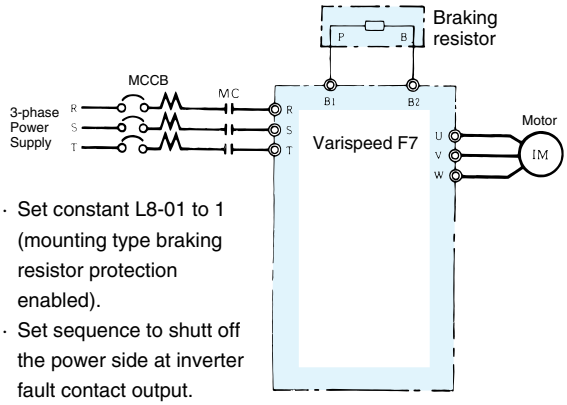
200 V class

Model CIMR-F7Z□			20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
Inverter capacity		kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
Rated current		A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415
Heat loss W	Fin	W	20	27	50	70	112	164	219	374	429	501	586	865	1015	1266	1588	2019	2437	2733
	Inside unit	W	39	42	50	59	74	84	113	170	183	211	274	352	411	505	619	838	997	1242
	Total heat loss	W	59	69	100	129	186	248	332	544	612	712	860	1217	1426	1771	2207	2857	3434	3975
Fin coding			Self cooled				Fan cooled													

400 V class

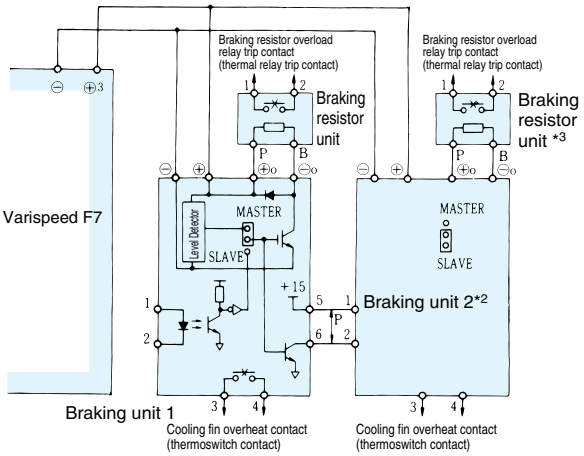
Model CIMR-F7Z□			40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300
Inverter capacity		kVA	1.4	1.6	2.8	4.0	5.8	6.0	9.5	13	18	24	30	34	46	57	69	85	110	140	160	200	230	280	390	510
Rated current		A	1.8	2.1	3.7	5.3	7.6	8.0	12.5	17	24	31	39	45	60	75	91	112	150	180	216	260	304	370	506	675
Heat loss W	Fin	W	14	17	36	59	80	91	127	193	252	326	426	466	678	784	901	1203	1399	1614	2097	2388	2791	3237	3740	5838
	Inside unit	W	39	41	48	56	68	70	82	114	158	172	208	259	317	360	415	495	575	671	853	1002	1147	1372	1537	2320
	Total heat loss	W	53	58	84	115	148	161	209	307	410	498	634	725	995	1144	1316	1698	1974	2285	2950	3390	3938	4609	5277	8158
Fin coding			Self cooled				Fan cooled																			

Connections for braking units



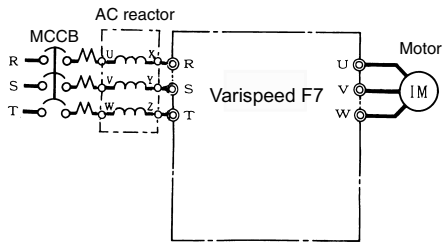
- Set constant L8-01 to 1 (mounting type braking resistor protection enabled).
- Set sequence to shutt off the power side at inverter fault contact output.

Connections for braking resistors

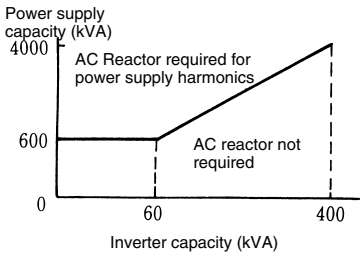


AC reactor

Connection example

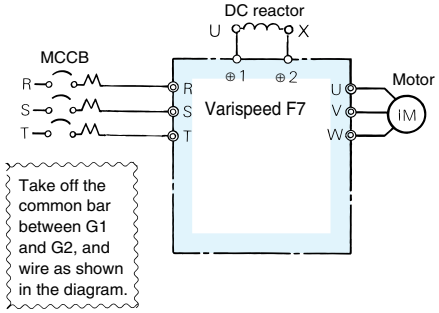


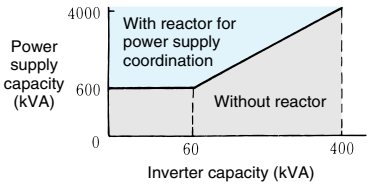
Application example



200 V class			400 V class		
Max. applicable motor output kW	Current value A	Inductance mH	Max. applicable motor output kW	Current value A	Inductance mH
0.4	2.5	4.2	0.4	1.3	18.0
0.75	5	2.1	0.75	2.5	8.4
1.5	10	1.1	1.5	5	4.2
2.2	15	0.71	2.2	7.5	3.6
3.7	20	0.53	3.7	10	2.2
5.5	30	0.35	5.5	15	1.42
7.5	40	0.265	7.5	20	1.06
11	60	0.18	11	30	0.7
15	80	0.13	15	40	0.53
18.5	90	0.12	18.5	50	0.42
22	120	0.09	22	60	0.36
30	160	0.07	30	80	0.26
37	200	0.05	37	90	0.24
45	240	0.044	45	120	0.18
55	280	0.038	55	150	0.15
75	360	0.026	75	200	0.11
90	500	0.02	90/110	250	0.09
110	500	0.02	132/160	330	0.06
			185	490	0.04
			220		
			300	660	0.03

DC reactor





200 V class			400 V class		
Max. applicable motor output kW	Current value A	Inductance mH	Max. applicable motor output kW	Current value A	Inductance mH
0.4	5.4	8	0.4	3.2	28
0.75			0.75		
1.5	18	3	1.5	5.7	11
2.2			2.2		
3.7			3.7	12	6.3
5.5	36	1	5.5	23	3.6
7.5			7.5		
11	72	0.5	11	33	1.9
15			15		
18.5	90	0.4	18.5	47	1.3
22 to 110	Built-in		22 to 300	Built-in	

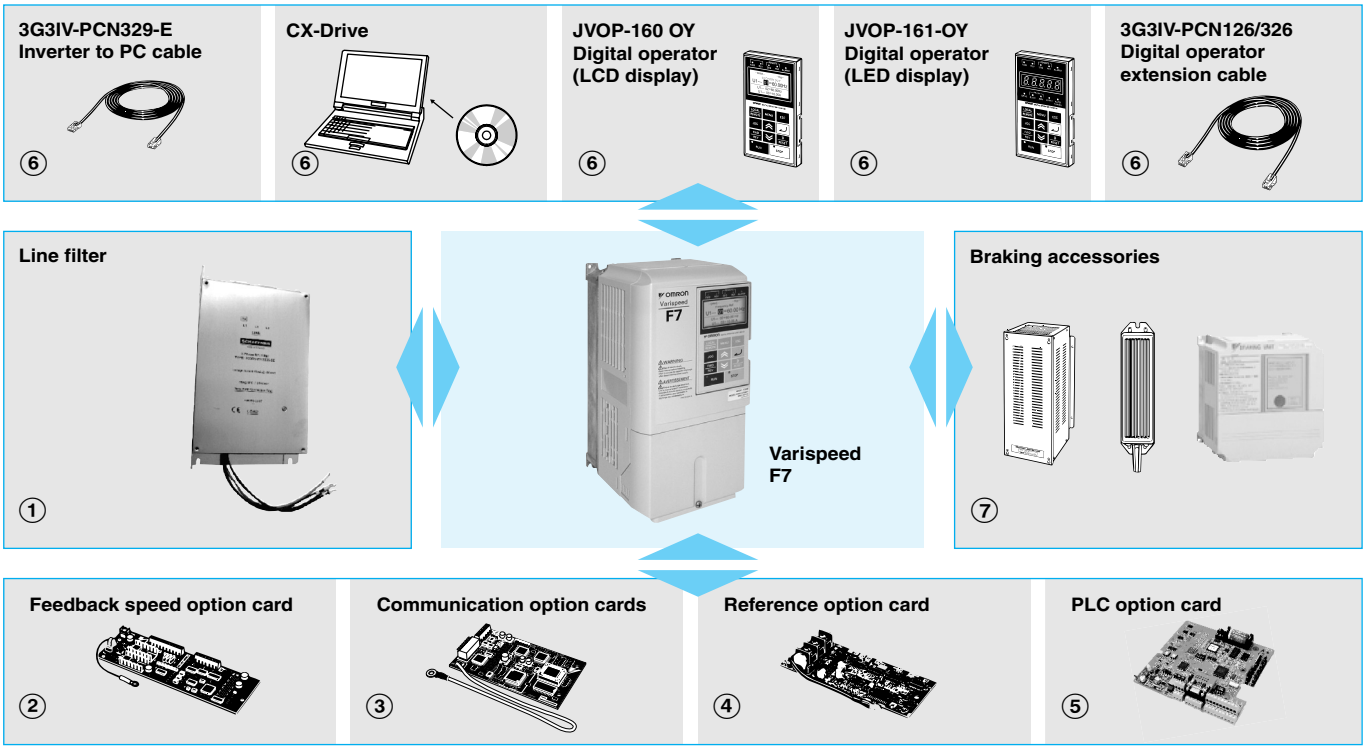
Fuse installation

To protect the inverter, it is recommended to use semiconductor fuses as shown in the table below

Inverter type	FUSE		
	Voltage (V)	Current (A)	I^2t (A^2s)
20P4	240	10	12~25
20P7	240	10	12~25
21P5	240	15	23~55
22P2	240	20	34~98
23P7	240	30	82~220
25P5	240	40	220~610
27P5	240	60	290~1300
2011	240	80	450~5000
2015	240	100	1200~7200
2018	240	130	1800~7200
2022	240	150	870~16200
2030	240	180	1500~23000
2037	240	240	2100~19000
2045	240	300	2700~55000
2055	240	350	4000~55000
2075	240	450	7100~64000
2090	240	550	11000~64000
2110	240	600	13000~83000

Inverter type	FUSE		
	Voltage (V)	Current (A)	I^2t (A^2s)
40P4	480	5	6~55
40P7	480	5	6~55
41P5	480	10	10~55
42P2	480	10	18~55
43P7	480	15	34~72
44P0	480	20	50~570
45P5	480	25	100~570
47P5	480	30	100~640
4011	480	50	150~1300
4015	480	60	400~1800
4018	480	70	700~4100
4022	480	80	240~5800
4030	480	100	500~5800
4037	480	125	750~5800
4045	480	150	920~13000
4055	480	150	1500~13000
4075	480	250	3000~55000
4090	480	300	3800~55000
4110	480	350	5400~23000
4132	480	400	7900~64000
4160	480	450	14000~250000
4185	480	600	20000~250000
4220	480	700	34000~400000
4300	480	900	52000~920000

Ordering information



Varispeed F7

200 V

Specifications			Model
IP20	0.55 Kw	3.2 A	CIMR-F7Z20P41
	0.75 Kw	4.1 A	CIMR-F7Z20P71
	1.5 Kw	7.0 A	CIMR-F7Z21P51
	2.2 Kw	9.6 A	CIMR-F7Z22P21
	3.7 Kw	15 A	CIMR-F7Z23P71
	5.5 Kw	23 A	CIMR-F7Z25P51
	7.5 Kw	31 A	CIMR-F7Z27P51
	11 Kw	45 A	CIMR-F7Z20111
	15 Kw	58 A	CIMR-F7Z20151
	18.5 Kw	71 A	CIMR-F7Z20181
IP00	22 Kw	85 A	CIMR-F7Z20220
	30 Kw	115 A	CIMR-F7Z20300
	37 Kw	145 A	CIMR-F7Z20370
	45 Kw	180 A	CIMR-F7Z20450
	55 Kw	215 A	CIMR-F7Z20550
	75 Kw	283 A	CIMR-F7Z20750
	90 Kw	346 A	CIMR-F7Z20900
	110 Kw	415 A	CIMR-F7Z21100

400 V

Specifications			Model
IP20	0.55 Kw	1.8 A	CIMR-F7Z40P41
	0.75 Kw	2.1 A	CIMR-F7Z40P71
	1.5 Kw	3.7 A	CIMR-F7Z41P51
	2.2 Kw	5.3 A	CIMR-F7Z42P21
	3.7 Kw	7.6 A	CIMR-F7Z43P71
	4.0 Kw	8.7 A	CIMR-F7Z44P01
	5.5 Kw	12.5 A	CIMR-F7Z45P51
	7.5 Kw	17 A	CIMR-F7Z47P51
	11 Kw	24 A	CIMR-F7Z40111
	15 Kw	31 A	CIMR-F7Z40151
	18.5 Kw	39 A	CIMR-F7Z40181
IP00	22 Kw	45 A	CIMR-F7Z40220
	30 Kw	60 A	CIMR-F7Z40300
	37 Kw	75 A	CIMR-F7Z40370
	45 Kw	91 A	CIMR-F7Z40450
	55 Kw	112 A	CIMR-F7Z40550
	75 Kw	150 A	CIMR-F7Z40750
	90 Kw	180 A	CIMR-F7Z40900
	110 Kw	216 A	CIMR-F7Z41100
	132 Kw	260 A	CIMR-F7Z41320
	160 Kw	304 A	CIMR-F7Z41600
	185 Kw	370 A	CIMR-F7Z41850
	220 Kw	506 A	CIMR-F7Z42200
	300 Kw	675 A	CIMR-F7Z43000

① Line filters

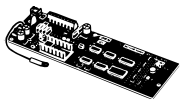
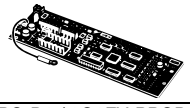
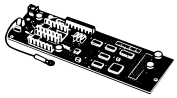
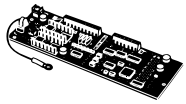
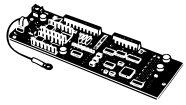
200 V

Inverter model	Line filters			
Varispeed F7	Type	EN55011 class	Current (A)	Weight (kg)
CIMR-F7Z20P4	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.2
CIMR-F7Z20P7				
CIMR-F7Z21P5				
CIMR-F7Z22P2	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-F7Z23P7	3G3RV-PFI2035-SE	B, 25 m A, 100 m	35	1.4
CIMR-F7Z25P5				
CIMR-F7Z27P5	3G3RV-PFI2060-SE	B, 25 m A, 100 m	60	3
CIMR-F7Z2011				
CIMR-F7Z2015	3G3RV-PFI2100-SE	B, 25 m A, 100 m	100	4.9
CIMR-F7Z2018				
CIMR-F7Z2022	3G3RV-PFI2130-SE	A, 100 m	130	4.3
CIMR-F7Z2030				
CIMR-F7Z2037	3G3RV-PFI2160-SE	A, 100 m	160	6.0
CIMR-F7Z2045	3G3RV-PFI2200-SE	A, 100 m	200	11.0
CIMR-F7Z2055				
CIMR-F7Z2075	3G3RV-PFI3400-SE	A, 100 m	400	8.6
CIMR-F7Z2090				
CIMR-F7Z2110	3G3RV-PFI3600-SE	A, 100 m	600	11.0

400 V

Inverter model	Line filter			
Varispeed F7	Model	EN 55011 class*	Current (A)	Weight (kg)
CIMR-F7Z40P4	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.2
CIMR-F7Z40P7				
CIMR-F7Z41P5				
CIMR-F7Z42P2				
CIMR-F7Z43P7	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-F7Z44P0				
CIMR-F7Z45P5				
CIMR-F7Z47P5	3G3RV-PFI3021-SE	B, 25 m A, 100 m	21	1.8
CIMR-F7Z4011	3G3RV-PFI3035-SE	B, 25 m A, 100 m	35	2.2
CIMR-F7Z4015	3G3RV-PFI3060-SE	B, 25 m A, 100 m	60	4.0
CIMR-F7Z4018				
CIMR-F7Z4022	3G3RV-PFI3070-SE	B, 25 m A, 100 m	70	3.4
CIMR-F7Z4030				
CIMR-F7Z4037	3G3RV-PFI3100-SE	A, 100 m	100	4.5
CIMR-F7Z4045				
CIMR-F7Z4055	3G3RV-PFI3130-SE	A, 100 m	130	4.7
CIMR-F7Z4075	3G3RV-PFI3170-SE	A, 100 m	170	6.0
CIMR-F7Z4090	3G3RV-PFI3200-SE	A, 100 m	250	11
CIMR-F7Z4110				
CIMR-F7Z4132	3G3RV-PFI3400-SE	A, 100 m	400	8.5
CIMR-F7Z4160				
CIMR-F7Z4185	3G3RV-PFI3600-SE	A, 100 m	600	11.0
CIMR-F7Z4220				
CIMR-F7Z4300	3G3RV-PFI3800-SE	A, 100 m	800	31.0

② Feedback speed control cards

Type	Model	Description	Function
Feedback speed control card	PG-A2 / 3G3FV-PPGA2 	PG speed controller card (used for V/f control with PG or flux vector)	• Phase A pulse (single pulse) inputs (voltage, complementary, open collector input) • PG frequency range: Approx. 30 kHz max. [Power supply output for PG: +12 V, max. current 200 mA] • Pulse monitor output: +12 V, 20 mA
	PG-B2 / 3G3FV-PPGB2 		• Phase A and B pulse inputs (exclusively for complementary input) • PG frequency range: Approx. 30 kHz max. [Power supply output for PG: +12 V, max. current 200 mA] • Pulse monitor output: Open collector, +24 V, Max. current 30 mA
	PG-D2 / 3G3FV-PPGD2 		• Phase A pulse (differential pulse) input for V/f control (RS-422 input) • PG frequency range: Approx. 300 kHz max. [Power supply output for PG: +5 V or +12 V, max. current 200 mA] • Pulse monitor output: RS-422
	PG-X2 / 3G3FV-PPGX2 		• Phase A, B and Z pulse (differential pulse) inputs (RS-422 input) • PG frequency range: Approx. 300 kHz max. [Power supply output for PG: +5 V or +12 V, max. current 200 mA] • Pulse monitor output: RS-422
	PG-Z2 		• Phase A, B and Z pulse (differential pulse) inputs (RS-422 input) • PG frequency range: Approx. 300 kHz max. [Power supply output for PG: +5 V or +12 V, max. current 200 mA] • Pulse monitor output: RS-422 • Dual channel encoder: 1st channel A, B, Z / 2nd channel A, B, Z or open collector.

③ Communication option cards

Type	Model	Description	Function
Communication option card	3G3RV-PDRT2	DeviceNet option card	• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through DeviceNet communication with the host controller.
	SI-P1	PROFIBUS-DP option card	• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through PROFIBUS-DP communication with the host controller.
	SI-S1	CANopen option card	• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through CANopen communication with the host controller.
	SI-J	LONWORKS option card	• Used for HVAC control, running or stopping the inverter, setting or referencing parameters, and monitoring output current, watt-hours, or similar items through LONWORKS communications with peripheral devices.
	CM090	Ethernet option card	• MODBUS TCP/IP ethernet interface unit.
	SI-T	MECHATROLINK - II option board	• High speed motion bus. • Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through MECHATROLINK-II communication with the host controller. • Host controller: TrajeXia, MCH or MP series[1]

1. Please refer to TrajeXia, MCH or MP series section for host controllers detailed information.t

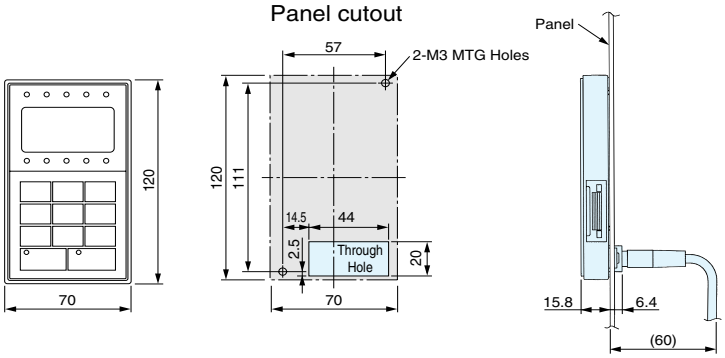
④ Reference option cards

Type	Model	Description	Function
Reference option card	AI-14U / 3G3IV-PAI14U	Analog input card	• 2 channel high resolution analog input card • Channel 1: 0 to 10 V (20 KΩ) • Channel 2: 4 to 20 mA (250 Ω) • Resolution 14 bit
	AI-14B / 3G3IV-PAI14B		• 3 Channel high resolution analog input card • Signal level: -10 to +10V (20 KΩ) s4 to 20 mA (250 Ω) •Resolution: 13 bit + sign
	DI-08 / 3G3IV-PDI08	Digital reference card	• 8 bit digital speed reference input card
	DI-16H2 / 3G3IV-PDI16H2		• 16 bit digital speed reference input card

⑤ PLC option cards

Type	Model	Description	Function
PLC option	3G3RV-P10ST8-E 	PLC option	• Full PLC features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs. • Embedded Compubus/S fieldbus • Standard OMRON tools can be used for programming
	3G3RV-P10ST8-DRT-E	PLC option with DeviceNet	• Same features as standard model with DeviceNet support.

⑥ Accessories

Type	Model	Description	Function
Digital operator	JVOP-160-OY	5 lines LCD digital operator 7 language support	 Panel cutout installation
	JVOP-161-OY	7 segment LED digital operator	
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	Extension cable to connect inverter and digital operator.
	3G3IV-PCN329-E	PC configuration cable	Cable to connect the inverter to PC.

⑥ Computer software

Type	Model	Description	Function
Software	CX-drive	Computer software	Configuration and monitoring software tool for drives.
	CX-One	Computer software	Complete OMRON automation software including CX-drive

⑦ Braking unit, braking resistor unit

Inverter			Braking unit		Braking resistor unit[1]									
					Inverter-mounted type (3 %ED, 10 sec max)[2]				Separately-installed type (10 %ED, 10 sec. max.)[3]					
Voltage	Max. applicable motor output kW	Model CIMR-F7Z_	Model CDBR_	No. of used	Model ERF-150WJ_	Resistance	No. of used	Braking torque %	Model LKEB_	Specifications of resistor		No. of used	Braking torque %	Connectable min resistance value Ω
200 V class	0.4	20P4	Built-in		201	200 Ω	1	220	20P7	70 W	200 Ω	1	220	48
	0.75	20P7			201	200 Ω	1	125	20P7	70 W	200 Ω	1	125	48
	1.5	21P5			101	100 Ω	1	125	21P5	260 W	100 Ω	1	125	48
	2.2	22P2			700	70 Ω	1	120	22P2	260 W	70 Ω	1	120	16
	3.7	23P7			620	62 Ω	1	100	23P7	390 W	40 Ω	1	125	16
	5.5	25P5			---	---			25P5	520 W	30 Ω	1	115	16
	7.5	27P5							27P5	780 W	20 Ω	1	125	9.6
	11	2011							2011	2400 W	13.6 Ω	1	125	9.6
	15	2015							2015	3000 W	10 Ω	1	125	9.6
	18.5	2018							2015	3000 W	10 Ω	1	125	9.6
	22	2022	2022B	1					2022	4800 W	6.8 Ω	1	125	6.4
	30	2030	2015B	2					2015	3000 W	10 Ω	2	125	9.6
	37	2037	2015B	2					2015	3000 W	10 Ω	2	100	9.6
	45	2045	2022B	2					2022	4800 W	6.8 Ω	2	120	6.4
	55	2055	2022B	2					2022	4800 W	6.8 Ω	2	100	6.4
	75	2075	2110B	1					2022	4800 W	6.8 Ω	3	110	1.6
	90	2090	2110B	1					2022	4800 W	6.8 Ω	4	120	1.6
	110	2110	2110B	1					2018	4800 W	8 Ω	5	100	1.6
400 V class	0.4	40P4	Built in		751	750 Ω	1	230	40P7	70 W	750 Ω	1	230	96
	0.75	40P7			751	750 Ω	1	130	40P7	70 W	750 Ω	1	130	96
	1.5	41P5			401	400 Ω	1	125	41P5	260 W	400 Ω	1	125	64
	2.2	42P2			301	300 Ω	1	115	42P2	260 W	250 Ω	1	135	64
	3.7	43P7			201	200 Ω	1	110	43P7	390 W	150 Ω	1	135	32
	4.0	44P0												
	5.5	45P5			---	---			45P5	520 W	100 Ω	1	135	32
	7.5	47P5							47P5	780 W	75 Ω	1	130	32
	11	4011							4011	1040 W	50 Ω	1	135	20
	15	4015							4015	1560 W	40 Ω	1	125	20
	18.5	4018							4018	4800 W	32 Ω	1	125	19.2
	22	4022	4030B	1					4022	4800 W	27.2 Ω	1	125	19.2
	30	4030	4030B	1					4030	6000 W	20 Ω	1	125	19.2
	37	4037	4045B	1					4037	9600 W	16 Ω	1	125	12.8
	45	4045	4045B	1					4045	9600 W	13.6 Ω	1	125	12.8
	55	4055	4030B	2					4030	6000 W	20 Ω	2	135	19.2
	75	4075	4045B	2					4045	9600 W	13.6 Ω	2	145	12.8
	90	4090	4220B	1					4030	6000 W	20 Ω	3	100	3.2
	110	4110	4220B	1					4030	6000 W	20 Ω	3	100	3.2
	132	4132	4220B	1					4045	9600 W	13.6 Ω	4	140	3.2
	160	4160	4220B	1					4045	9600 W	13.6 Ω	4	140	3.2
	185	4185	4220B	1					4045	9600 W	13.6 Ω	4	120	3.2
	220	4220	4220B	1					4037	9600 W	16 Ω	5	110	3.2
	300	4300	4220B	2					4045	9600 W	13.6 Ω	6	110	3.2

1. When connecting a mounting type resistor or braking resistor unit, set system constant L3-04 to 0 (stall prevention disabled during deceleration). If operating without changing the constant, motor does not stop at set deceleration time.
2. When connecting mounting type braking resistor, set system constant L8-01 to 1 (braking resistor protection enabled).
3. Load factor during deceleration to stop a load with constant torque. With constant output or continuous regenerative braking, the load factor is smaller than the specified value.
4. Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
5. For an application with large regenerative power such as hoisting, the braking torque or other items may exceed the capacity of a braking unit with a braking resistor in a standard combination (an result in capacity overload). Contact your OMRON representatives when the braking torque or any other item exceeds the values in the table.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. I23E-EN-02

In the interest of product improvement, specifications are subject to change without notice.