

Frequency inverters

The Secret of the Leader

OMRON-Yaskawa has built a leading position in general-purpose inverters - with a 25% share of the market according to the IMS - thanks to the highest degree of reliability in the market place. Of course, it's easy for us to say we offer the highest reliability, but what do our customers say?

"At Goodwin Electronics we believe that reliability must follow integrity and quality. Our reputation depends on reliability, which is why we have chosen OMRON for our motion control," says Steve Pritchard, Sales Director, Goodwin Electronics.

Anders Gullberg, Manager of the Electrical Department at AKAB, says that they choose OMRON-Yaskawa products because "we export 98% of our product, so machine failure is simply not allowed."

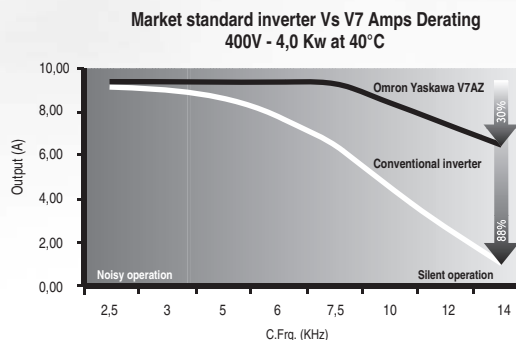
Franco Stefani, General Manager of System Ceramics, highlights the benefits of OMRON-Yaskawa reliability. "High reliability reduces cost and increases productivity," he explains. "This is the way to win!"

So what's the secret?

Yaskawa has developed a unique algorithm that perfectly balances the carrier frequency and the output current of the inverter. This not only allows but guarantees high current output at silent operation.

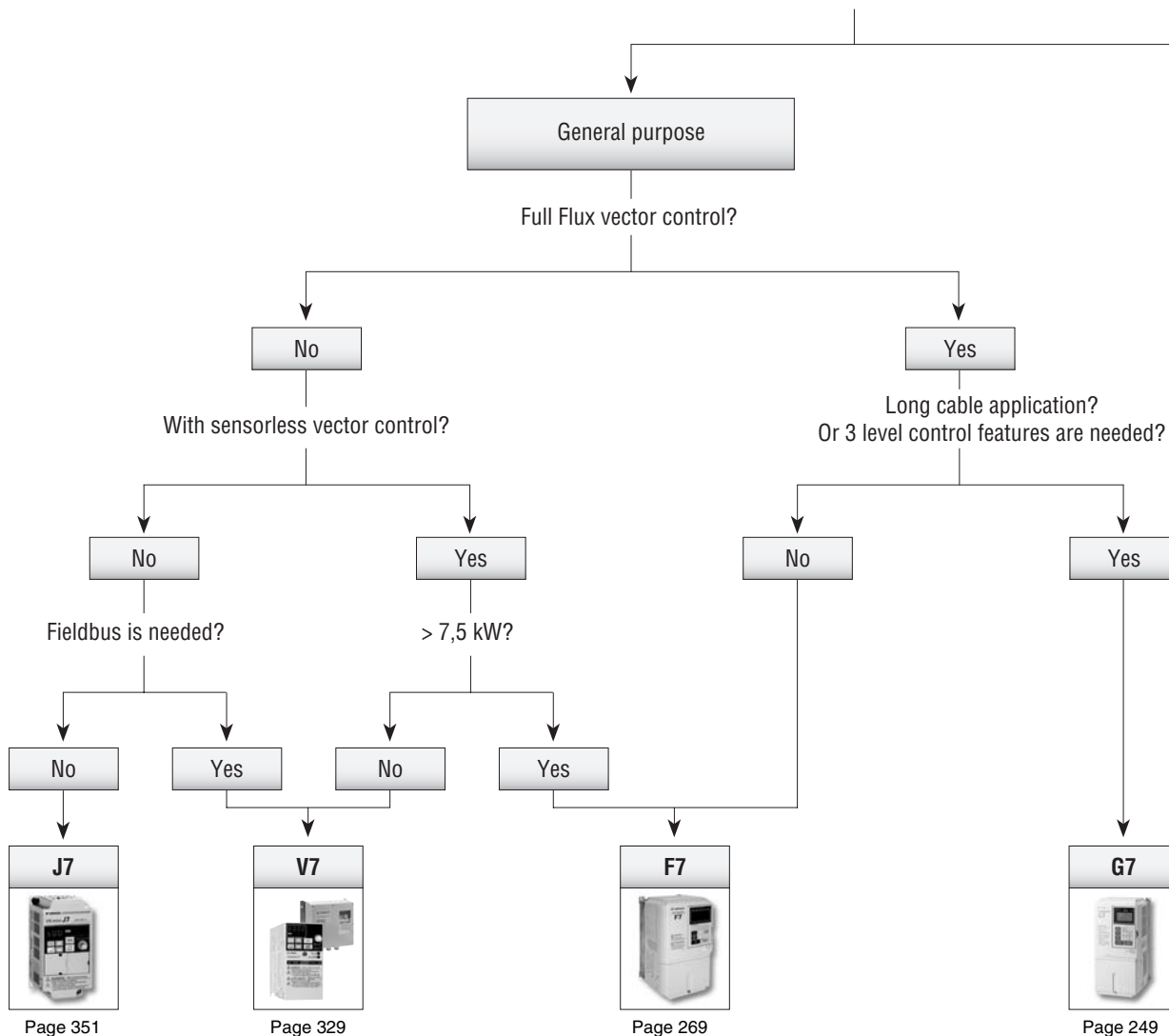
Figure 1 depicts the typical curve behaviour of a 4.0 kW V7 inverter against a conventional inverter in the market. Note that in near-silent mode operation, the V7 delivers almost twice as much current as the conventional inverter. In fully silent mode, the conventional inverter just collapses. In most cases the user has to take one or even two sizes bigger to meet his application need. The V7 is designed to drive the matched motor power in silent mode at full torque. This position of "No Compromise" is something that we take very seriously.

Figure 1



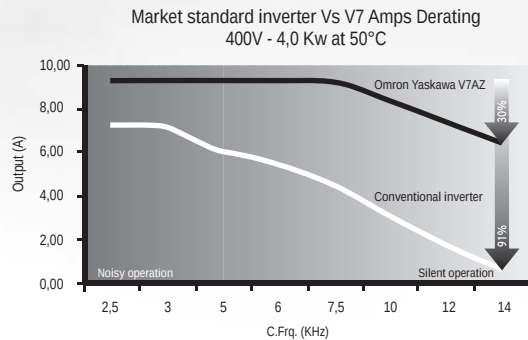
Note: Dark grey means highest acoustic noise.

What is your inverter application?



Another significant difference between the OMRON-Yaskawa drive and the rest is the uncompromising current performance within the temperature range. In Figure 2 you can clearly see that while the V7 performance is stable, the conventional type drops sharply when used at 50 °C.

Figure 2



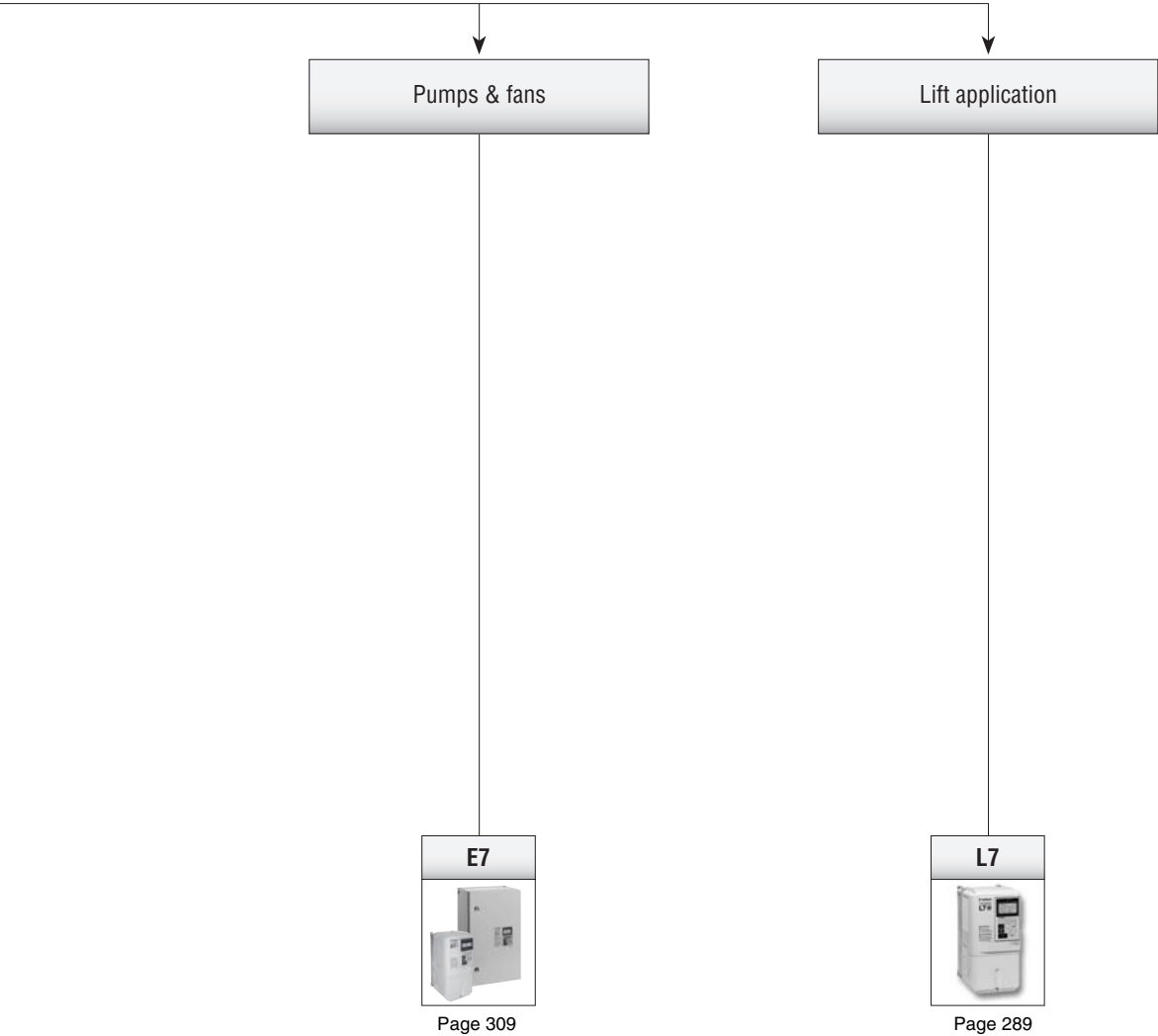
Note: Dark grey means highest acoustic noise.

What you see is what you get
In a nutshell, with the V7 inverter you get exactly what you see specified, which is significantly better output than with a standard inverter within a high temperature range - even in silent mode.

"No Surprise and No Compromise!"
One of the secrets of a true leader!

Table of contents

Selection table		246
Standard inverter	G7	249
	F7	269
	L7	289
	E7	309
	V7	329
	J7	351
Inverter PLCs	G7/F7/L7/E7 inverter PLC	365
	V7 inverter PLC	377
Inverter application software	CASE	387

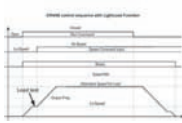
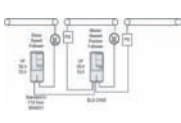
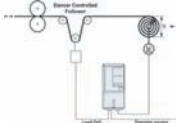
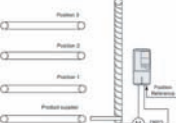
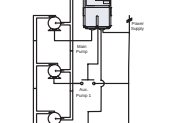
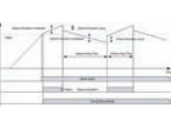


Selection table

Model	G7	F7	L7
			
Type	World's first three level inverter architecture	The industrial workhorse	Made to drive lifts
400 V three-phase 200 V three-phase 200 V single-phase	0.4 kW to 300 kW 0.4 kW to 110 kW N/A	0.4 kW to 300 kW 0.4 kW to 110 kW N/A	4.0 kW to 55 kW 3.7 kW to 55 kW N/A
Application	High performance, long cable lines	General and high-end applications	Lift control with asynchronous or synchronous motors
Control method	Open and close loop for vector and V/F control.	Open and close loop for vector and V/F control.	Open and close loop for vector and V/F control.
Torque features	150% at 0.0 Hz (CLV) 150% at 0.3 Hz (OLV)	150% at zero speed (CLV) 150% at 0.5 Hz (OLV)	150% at zero speed (CLV) 150% at 0.5 Hz (OLV)
Connectivity	Memobus DeviceNet PROFIBUS-DP CANopen LONWorks Ethernet	Memobus DeviceNet PROFIBUS-DP CANopen LONWorks Ethernet MECHATROLINK-II	Memobus DeviceNet PROFIBUS-DP CANopen LONWorks Ethernet
Customisation options	- PLC option board - Inverter application software	- PLC option board - Inverter application software	- PLC option board - Inverter application software
Page	249	269	289

Model	E7	V7	J7
			
Type	Drive your energy cost down	Sensorless vector control in a pocket sized inverter	Small, simple and smart
400 V three-Phase 200 V three-Phase 200 V single-Phase	0.4 kW to 300 kW 0.4 kW to 110 kW N/A	0.2 kW to 7.5 kW 0.1 kW to 7.5 kW 0.1 kW to 4.0 kW	0.2 kW to 4.0 kW 0.1 kW to 4.0 kW 0.1 kW to 1.5 kW
Application	Pumps and fans (variable torque)	Compact general purpose	Simple speed control
Control method	V/F control	Sensorless vector and V/F control	V/F control
Torque features	120% at 0.5 Hz.	100% at 0.5 Hz.	150% at 3 Hz.
Connectivity	Memobus Metasys N2 L&S Apogee LONWorks DeviceNet PROFIBUS-DP CANopen	Memobus DeviceNet PROFIBUS-DP CANopen MECHATROLINK-II	Memobus
Customisation options	- PLC option board - Inverter application software - IP54 enclosure	- PLC option board - Inverter application software - IP65 enclosure	N/A
Page	309	329	351

Model	G7/F7/L7/E7 inverter PLC	V7 inverter PLC
		
Type	The OMRON PLC embedded into the OMRON-Yaskawa inverter family	The OMRON PLC embedded into V7 inverter
Supported inverter	Varispeed G7 / F7 / L7 / E7	Varispeed V7
I/O's	6 DI, 4DO in PLC board. 256 I/O's by Comopbus/S distributed network.	6 DI, 4DO
Calendar / clock	Yes	Available on RS-422/485 type
Encoder interface	Yes	No
Connectivity	Peripheral port RS-232C RS-422/485 Comopbus/S master DeviceNet slave	Peripheral port RS-232C RS-422/485
Software	CX-Programmer CX-One	CX-Programmer CX-One
Page	365	377

Inverter application software						
						
	S-7071	S-8161	S-8180	S-8795	S-8801	S-9381
Type	CRANE software	ELS - electronic line shaft software	Winder software	Point-to-point software	Pump sequencer software	Traverse software
Application	Crane applications	Position and speed follower applications	Winding and unwinding applications	Point-to-point positioning applications	Pump sequencer application up to 2 auxiliary pumps	Textile wire winding application
Supported inverter	Varispeed F7	Varispeed F7	Varispeed F7	Varispeed F7	Varispeed E7	Varispeed V7
Page	387					



CIMR-G7C

Varispeed G7

World first three level inverter architecture

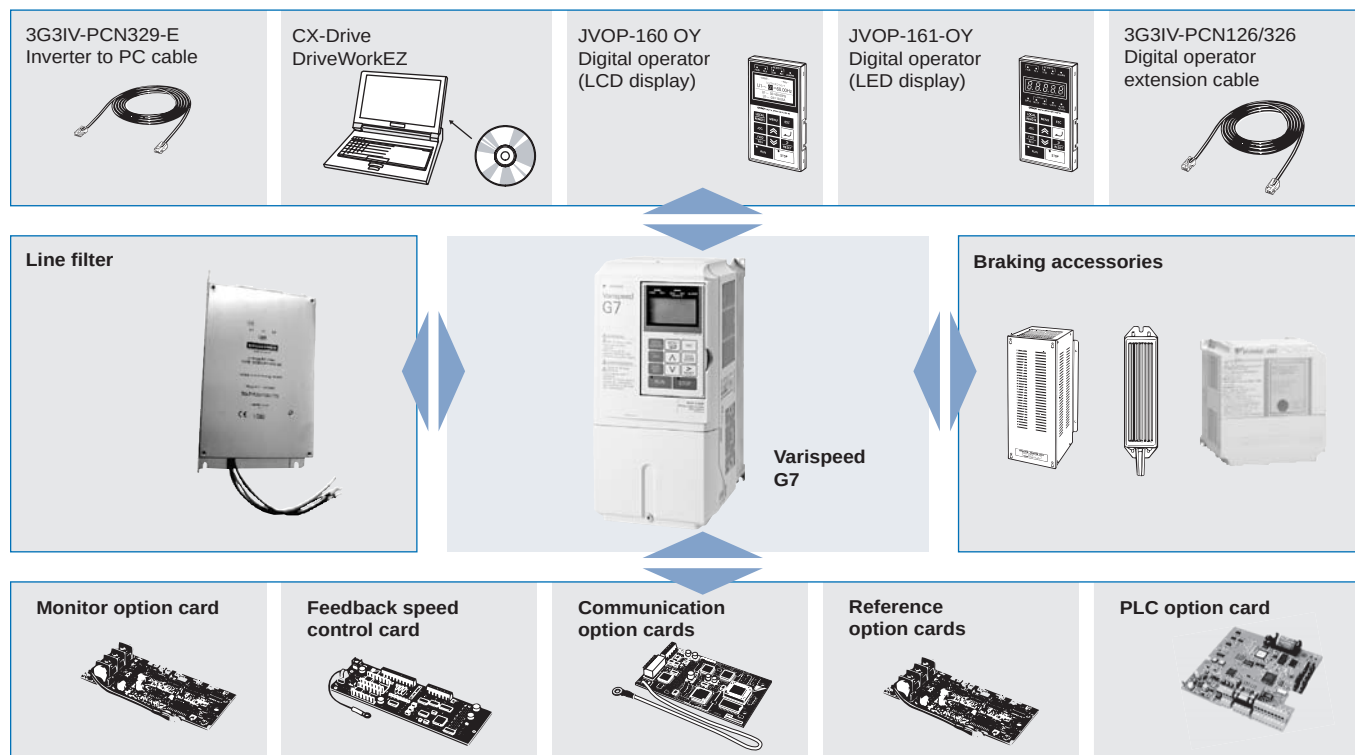
- 3 level control (400 V class)
- Current vector control and V/F with or without PG
- Torque control (closed loop and open loop)
- Silent operation
- Rotary and stationary autotuning
- High slip braking function
- Energy saving function standard
- LCD operator
- Embedded OMRON PLC functionality with PLC option card
- Standard RS-485 communications - Modbus
- Fieldbus options: DeviceNet, PROFIBUS, CANOpen, LONworks, ethernet
- PC configuration tool CX-drive and DriveWorksEZ.
- CE, UL, and cUL marking
- Customised application software

Ratings

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

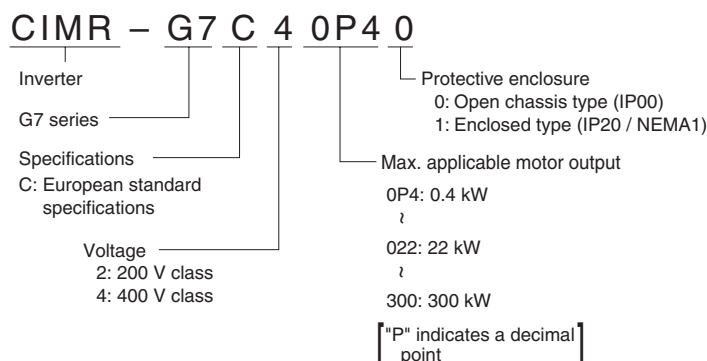


System configuration



Specifications

Type designation



200 V class¹

Model CIMR-G7C□			20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110	
Max. applicable motor output ²			kW	0.4	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	2.3	3.0	4.6	6.9	10	13	19	25	30	37	50	61	70	85	110	140	160
	Rated current		A	3.2	6	8	12	18	27	34	49	66	80	96	130	160	183	224	300	358	415
	Max. voltage			3-phase, 200/208/220/230/240 V (proportional to input voltage)																	
	Max. output frequency			400 Hz (programmable)																	
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. The main circuit of 200 V class inverters uses 2-level control method.
2. 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.
3. When using the inverter of 200 V class 30 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 class¹

Model CIMR-G7C□		40P4	40P7	41P5	42P2	43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300	
Max. applicable motor output ²		kW	0.4	0.75	1.5	2.2	3.7	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	2.6	3.7	4.7	6.9	11	16	21	26	32	40	50	61	74	98	130	150	180	210	250	280	340	460
	Rated current	A	1.8	3.4	4.8	6.2	9	15	21	27	34	42	52	65	80	97	128	165	195	240	270	325	370	450	605
	Max. voltage	3-phase, 380/400/415/440/460/480 V (proportional to input voltage)																							
	Max. output frequency	400 Hz (programmable)																							
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 ³													

1. The main circuit of 400 V class inverters uses 3-level control method.
2. 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.
3. A 3-wired transformer is required at 12-pulse input.

Enclosures

200 V class	Model CIMR-G7C□	20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110								
	Enclosed type (IEC IP20)	Available as standard										Available for option						Not available									
	Open chassis type (IEC IP00)	Available by removing the upper and lower cover of enclosed type										Available as standard															
400 V class	Model CIMR-G7C□	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 (IEC IP20)	Available as standard										Available for option										Not available					
	Open chassis type (IEC IP00)	Available by removing the upper and lower cover of enclosed type										Available as standard															

Common specifications

Model number CIMR-G7C□		Specification	
Control characteristics	Control method	Sine wave PWM Closed loop vector control, open loop vector control 1&2, V/f control, V/f with PG control	
	Torque characteristics	150% at 0.3 Hz (open loop vector control 2) 150% at 0rpm (closed vector control)	
	Speed control range	1:200 (open loop vector control 2) 1:1000 (closed loop vector control)	
	Speed control accuracy	± 0.2% (open loop vector control) ± 0.02% (closed loop vector control) (25 °C ± 10 °C)	
	Speed control response	10 Hz (open loop vector control 2) 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 400 Hz	
	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	0.001 Hz	
	Overload capacity and maximum current	150% of rated output current for 1 minute 200% of rated output current for 0.5 second	
	Frequency setting signal	0 to +10 V, -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 15 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	150% of rated current for 1 minute 200% of rated current for 0.5 second	
	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.	
Environment	Charge indicator	Illuminates when the main circuit DC voltage is approx. 10 VDC or more.	
	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)

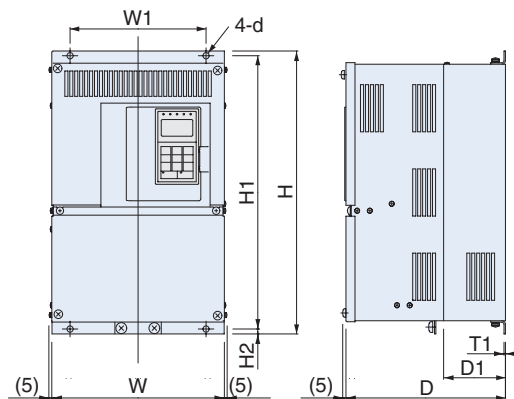


Fig 1

Voltage	Max. applicable motor output kW	Inverter CIMR-G7C□	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	2011																					
	15	2015																					
	18.5	2018	1	250	400	258	195	385	7.5	100	2.3	M6	21	Fan cooled									
	22	2022		275	450	258	220	435					24										
	30	2030		375	600	298	250	575	12.5	130	3.2	M10	57										
	37	2037				328							63										
	45	2045		450	725	348	325	700					86										
	55	2055											87										
75	2075	500		850	358	370	820	4.5			M12	108											
90	2090											150											
110	2110	575		885	378	445	855	15	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	4011																					
	15	4015																					
	18.5	4018	1	275	450	258	220	435	7.5	100	2.3	M6	26	Fan cooled									
	22	4022		325	550	283	260	535		105			37										
	30	4030							450	725	348	325	700		12.5	130	3.2	M10	90				
	37	4037		91																			
	45	4045		109																			
	55	4055		500	850	358	370	820	15	140	4.5	M12	127										
	75	4075											165										
	90	4090		575	916	378	445	855	45.8				175										
	132	4132								15			126			263							
	160	4160		415												280							
	185	4185														415							
	220	4220		710	1305		540	1270															
	300	4300																					
				916	1475		730	1440							415								

Enclosed type (IEC IP20)

G7C20P41 to G7C25P51
G7C40P41 to G7C45P51

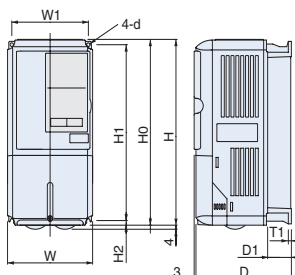


Fig 1

G7C27P51 to G7C20181
G7C47P51 to G7C40181

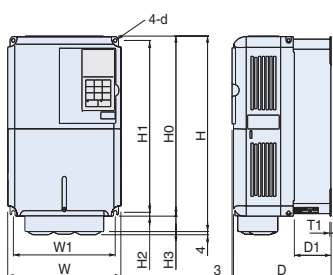


Fig 2

G7C20221 to G7C20751
G7C40221 to G7C41601

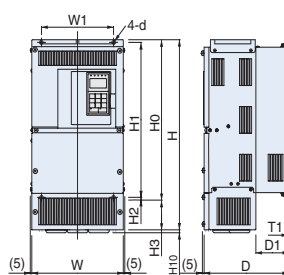


Fig 3

G7C4185 to G7C4300

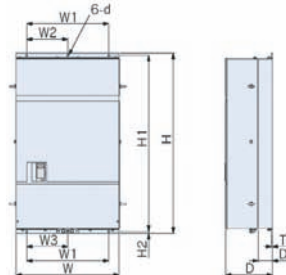
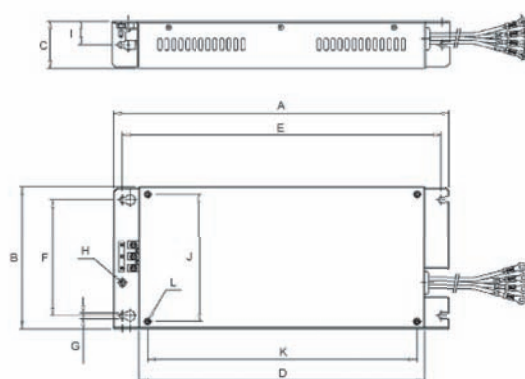


Fig 4

Voltage	Max. applicable motor output kW	Inverter CIMR-G7C□	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	20P4	1	140	280	157	126	266	7	39	5	M5	3	Self cooled							
	0.75	20P7				177				59			4								
	1.5	21P5																			
	2.2	22P2																			
	3.7	23P7	2	200	300	197	186	285	8	65.5	2.3	M6	6	Fan cooled							
	5.5	25P5											240		350	207	216	335	7.5	78	11
	7.5	27P5																			
	11	2011																			
	15	2015																			
	18.5	2018	3	250	400	258	195	385	7.5	100	3.2	M10	21								
	22	2022											275		450	220	435	130	86		
	30	2030				375	600	298	250	575	12.5	140								4.5	M12
	37	2037											450		725	348	325	700	15		
	45	2045				500	850	358	370	820	150										
	55	2055										575	885		378	445	855	140	150		
	75	2075				90	2090	2110													
	90	2090																			
	110	2110																			
	400 V class (3-phase)	0.4				40P4	1	140	280	157	126	266	7		39	5	M5	3.5	Self cooled		
0.75		40P7	177	59	4.5																
1.5		41P5																			
2.2		42P2																			
3.7		43P7	2	200	300	197	186	285	8	65.5	2.3	M6	7	Fan cooled							
5.5		45P5											240		350	207	216	335	7.5	78	10
7.5		47P5																			
11		4011																			
15		4015																			
18.5		4018	3	275	450	258	220	435	7.5	100	3.2	M10	26								
22		4022											325		550	283	260	535	105	165	
30		4030				450	725	348	325	700	12.5	130									4.5
37		4037											500		850	358	370	820	15	126	
45		4045				575	916	378	445	855	45.8	140									280
55		4055											710		1305	415	540	1270	15	415	
75		4075				916	1475	415	730	1440											
90		4090																			
110		4110																			
132		4132																			
160		4160																			
185		4185																			
220		4220																			
300		4300																			

Filters

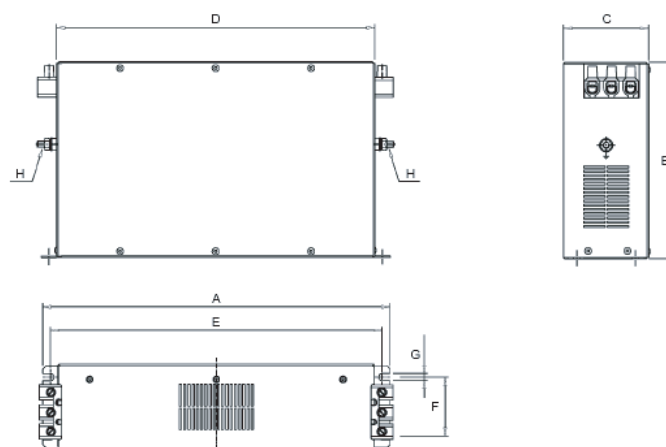
Footprint / Flat filters



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.

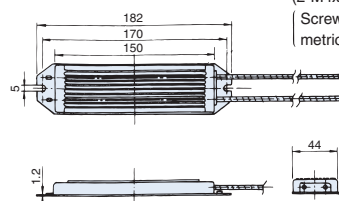
Bookform filters



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

[illegible]

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



Technical drawings of three types of mounting brackets, showing dimensions and labels:

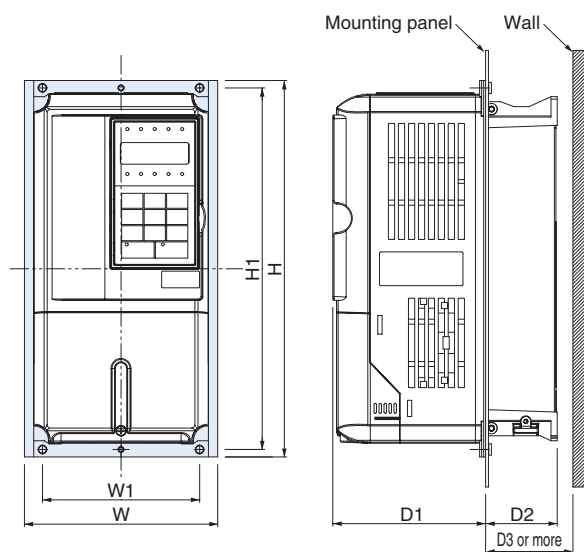
- Bracket 1 (Left):** Dimensions include A, B, C, and D. Labels include "30 or more", "MTG Screw", and "150 or more".
- Bracket 2 (Middle):** Dimensions include 150, 150 or more, and 200 or more.
- Bracket 3 (Right):** Dimensions include 50 or more, A, B, C, D, 260, and 200 or more.

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

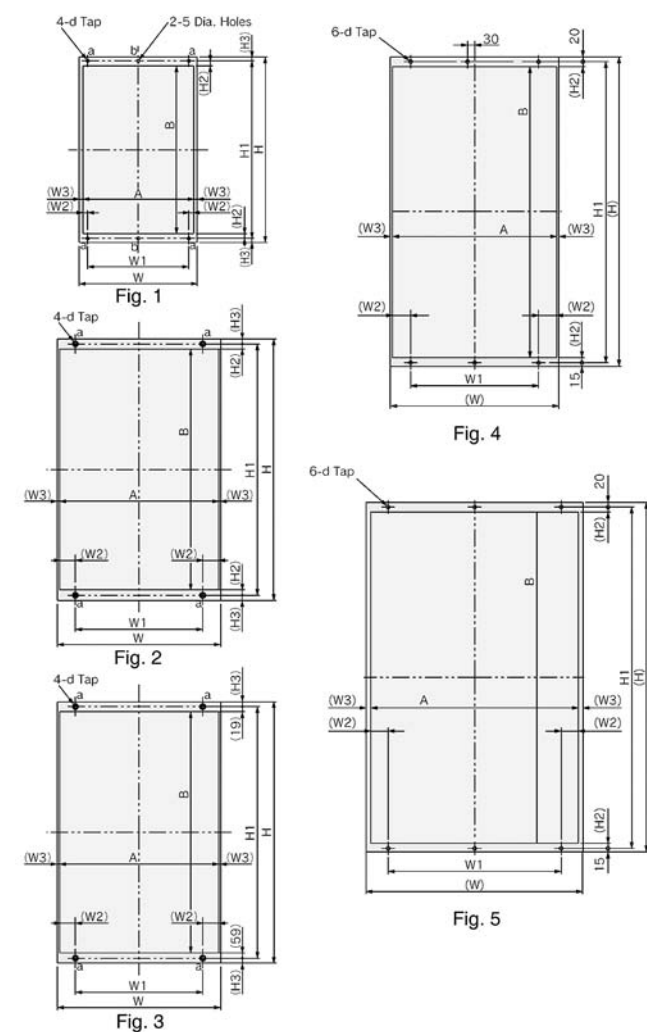
Heatsink external mounting attachment

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	72616 -EZZ08676A	155	302	126	290	122.6	37.4	40
20P7							57.4	60
21P5								
22P2								
23P7							72616-EZZ08676B	210
25P5	76.4	85						
27P5								
2011	72616-EZZ08676C	250	392	216	372	133.6	76.4	85
2015								
40P4	72616-EZZ08676A	155	302	126	290	122.6	37.4	40
40P7							57.4	60
41P5								
42P2								
43P7							72616-EZZ08676B	210
45P5	76.4	85						
47P5								
4011			72616-EZZ08676C	250	392	216	372	133.6
4015								

Panel cut for external mounting of cooling fin (heatsink)

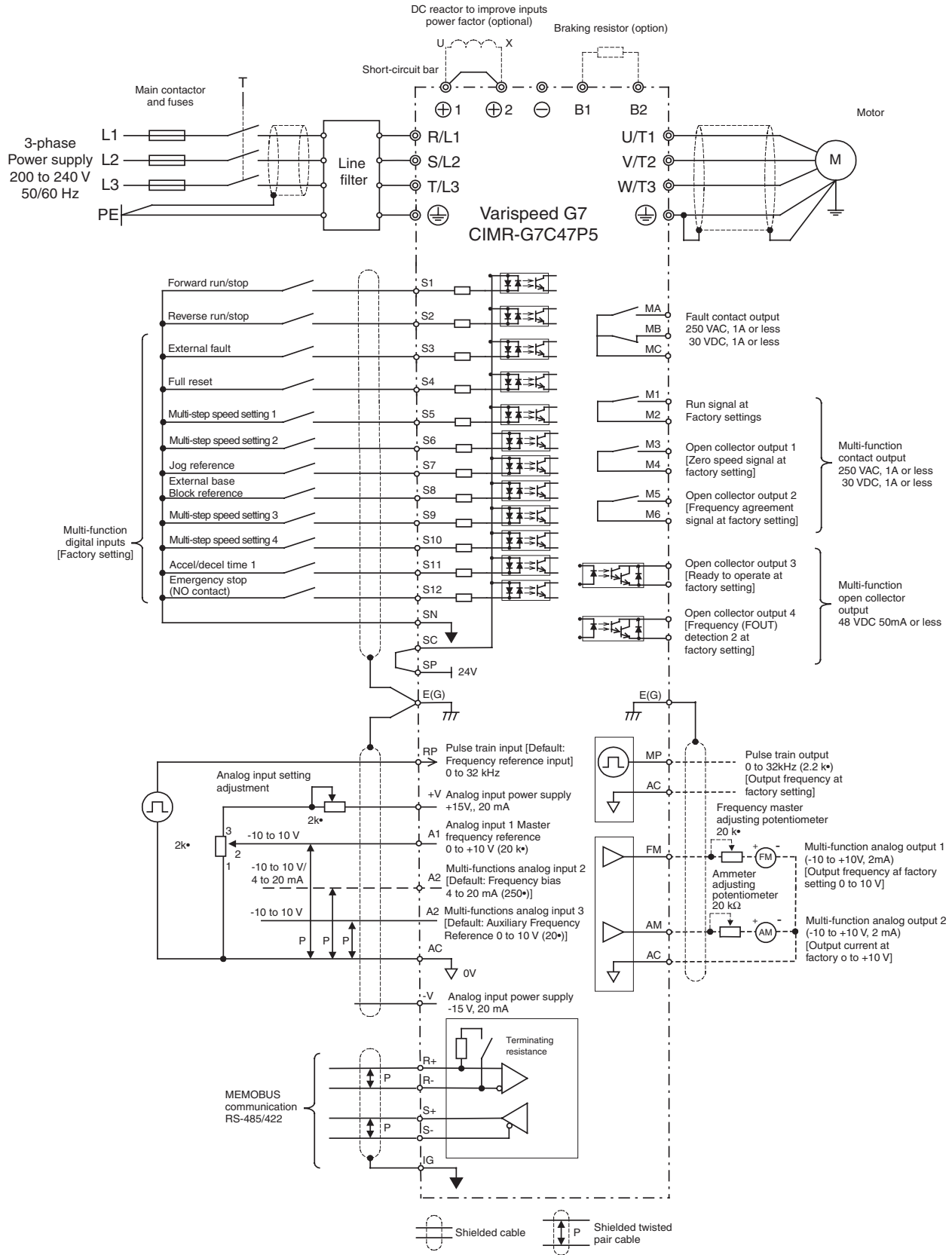


CIMR-G7C□	Fig	Dimensions in mm											
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d	
20P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5	
20P7													
21P5													
22P2													
23P7													
25P5		210	330	180	8.5	6.5	316	9	7	197	298	M6	
27P5													
2011													
2015		250	392	216	24.5	3	385	8	7.5	244	369	M10	
2018													
2022	2	275	450	220	54.5	8	435	13.5	12.5	269	419	M12	
2030		375	600	250			575			359	545		
2037		450	725	325			700			434	673		
2045		500	850	370			820			484	782		
2055		575	885	445			855			555	817		
2075		155	302	126	6	8.5	290	9.5	6	138	271	M5	
2090													
2100													
40P4													
40P7													
41P5	1	210	330	180	8.5	6.5	316	9	7	197	298	M6	
42P2													
43P7													
45P5													
47P5													
4011		250	392	216	24.5	3	435	8	7.5	269	419	M10	
4015													
4018													
4022													
4030													
4037	2	325	550	260	54.5	8	535	13.5	12.5	309	519	M12	
4045		450	725	325			700			434	673		
4055		500	850	370			820			484	782		
4075		575	885	445			855			555	817		
4090		155	302	126	6	8.5	290	9.5	6	138	271	M5	
4110													
4132													
4160													
4185													
4220	3	710	1305	540	76.5	8.5	1270	21.5	see ¹	693	1227	M12	
4300		916	1475	730									
		1475	2105	1040									

1. The sizes are different between the top and the bottom. Refer to figs. 3 to 5

Installation

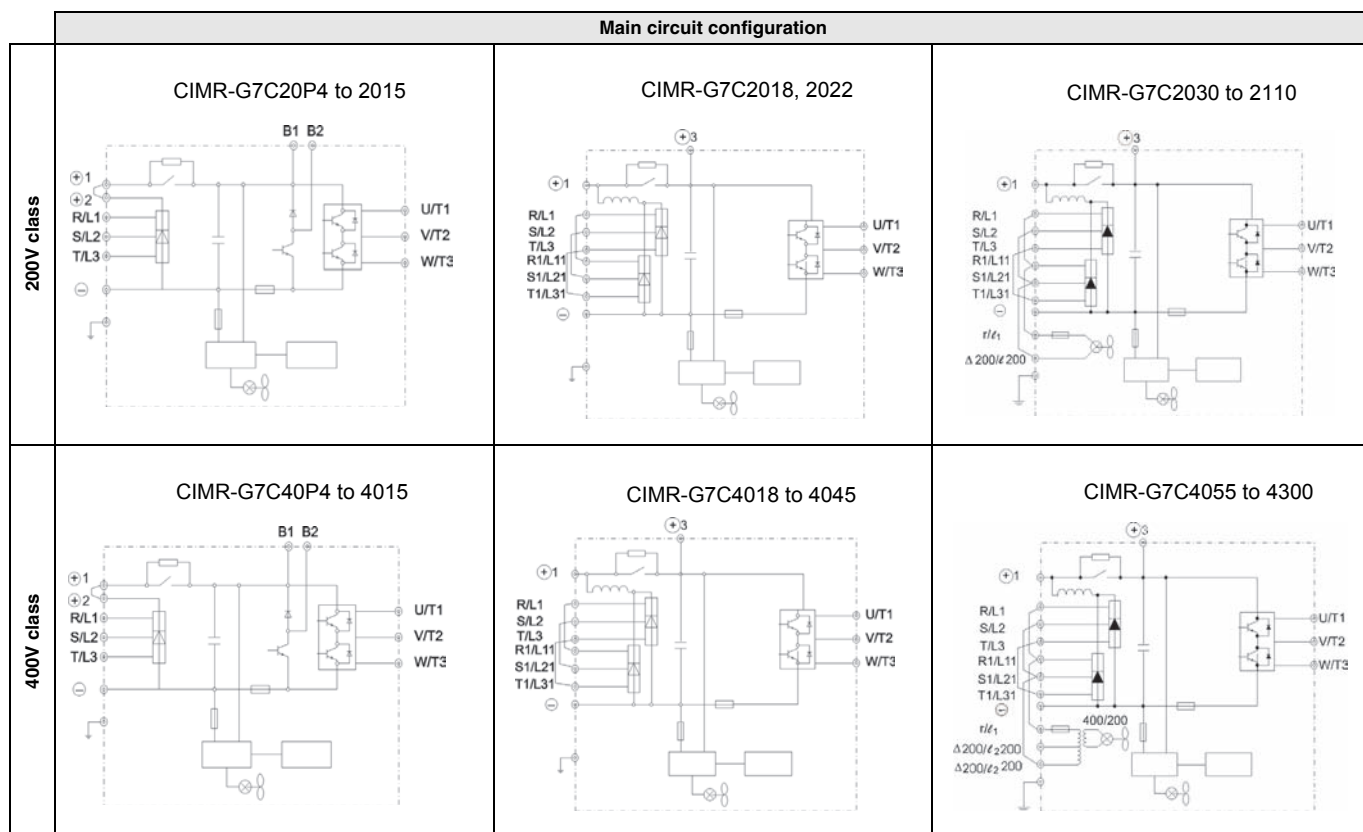
Standard connections



Main circuit

Voltage	200 V			400 V						
Model CIMR-G7C□	20P4 to 2015	2018, 2022	2030 to 2110	40P4 to 4015	4018 to 4045	4055 to 4300				
Max. applicable motor output	0.4 to 15 kW	18.5 to 22 kW	30 to 110 kW	0.4 to 15 kW	18.5 to 45 kW	55 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										
Δ / I ₂	---	Cooling fan power supply ²		---						
r/I ₁	-----			---						
Δ 200 / I ₂ 200										
Δ 400 / I 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/I₁ - Δ / I₂: 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/I₁ - Δ 200 / I₂ 200: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz, r/I₁ - Δ 400 / I₂ 400: 380 to 480 VAC 50/60 Hz



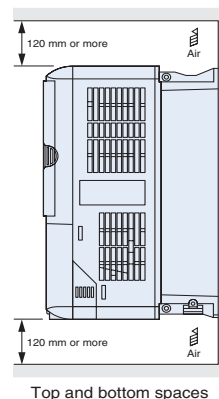
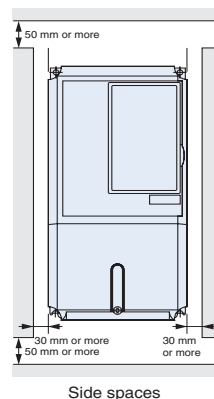
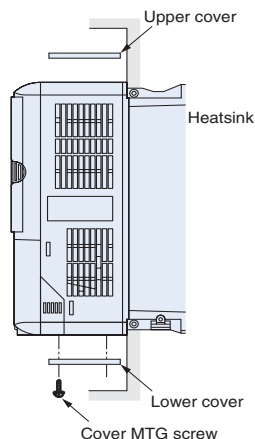
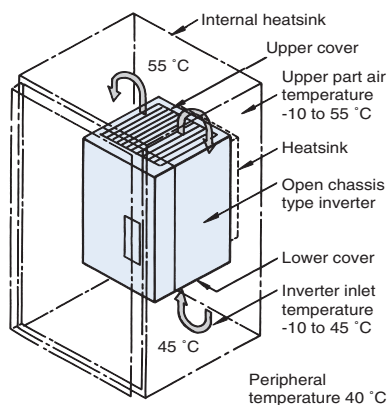
1. For 200 V class filters, consult with standard OMRON supplier.

Control circuit

Type	No.	Signal name	Function	Signal level
Sequence input	S1	Forward run/stop signal	Forward run at “closed”, stop at “open”	Photo-coupler input +24 VDC 8 mA isolation
	S2	Reverse run/stop signal	Reverse run at “closed”, stop at “open”	
	S3	Multi-function input selection 1	Factory setting: external fault at “closed”	
	S4	Multi-function input selection 2	Factory setting: fault reset at “closed”	
	S5	Multi-function input selection 3	Factory setting: multi-step speed setting 1 is valid at “closed”	
	S6	Multi-function input selection 4	Factory setting: multi-step speed setting 2 is valid at “closed”	
	S7	Multi-function input selection 5	Factory setting: JOG run at “closed”	
	S8	Multi-function input selection 6	Factory setting: external baseblock at “closed”	
	S9	Multi-function input selection 7	Factory setting: multi-step speed setting 3 is valid at “closed”	
	S10	Multi-function input selection 8	Factory setting: multi-step speed setting 4 is valid at “closed”	
	S11	Multi-function input selection 9	Factory setting: accel/decel time setting 1 is valid at “closed”	
	S12	Multi-function input selection 10	Factory setting: emergency stop (NO contact) is valid at “closed”	
	SC	Sequence control input common	—	
Analog input	+V	+15 V power supply output	For analog reference +15 V power supply	+15 V (allowable current 20 mA max.)
	–V	–15 V power supply output	For analog reference -15 V power supply	-15 V (allowable current 20 mA max.)
	A1	Master speed frequency reference	-10 to +10 V/ -100 to +100%, 0 to +10 V/ 100%	-10 to +10 V, 0 to +10V (input impedance 20 k)
	A2	Multi-function analog input	4 to 20 mA/100%, -10 to +10 V/ -100 to +100%, 0 to +10 V/ 100% Factory setting: added to the terminal A1 (H3-09=0)	4 to 20 mA (input impedance 250 Ω)
	A3	Master speed frequency reference	-10 to +10 V/ -100 to +100%, 0 to +10 V/ 100% Factory setting: preset frequency reference	0 to +10 V (input impedance 20 kΩ)
	AC	Analog common	0 V	—
	E(G)	Connection to shield wire and option ground wire	—	—
Photo-coupler output	P1	Multi-function PHC output 1	Factory setting: zero speed signal “Closed” at or below zero speed level (b2-01)	+48 VDC 50 mA or less
	P2	Multi-function PHC output 2	Factory setting: frequency agreement “Closed” within ±2Hz of setting frequency	
	PC	Photo-coupler output common	—	
	P3	Multi-function PHC output 3	Factory setting: ready to operate (READY).	
	C3			
	P4	Multi-function PHC output 4	Factory setting: frequency (FOUT) detection 2	
	C4			
Relay output	MA	Fault output (NO contact)	Fault at “closed” between terminals MA and MC	Dry contact, contact capacity 250 VAC 1 A or less 30 VDC 1 A or less
	MB	Fault output (NC contact)	Fault at “open” between terminals MB and MC	
	MC	Rely contact output common	—	
	M1	Multi-function contact output (NO contact)	Factory setting: run signal Running at “closed” between terminals M1 and M2	
	M2			
Analog monitor output	FM	Multi-function analog monitor 1	Factory setting: output frequency 0 to 10 V/100% freq.	0 to +10 VDC ±5% 2 mA or less
	AM	Multi-function analog monitor 2	Factory setting: current monitor 5 V / inverter rated current	
	AC	Analog common	—	
Pulse I/O	RP	Multi-function pulse input	Factory setting: frequency reference input (H6-01=0)	0 to 32 kHz (3 kΩ)
	MP	Multi-function pulse monitor	Factory setting: output frequency (H6-06=2)	0 to 32 kHz (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	—	—

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.



Inverter heat loss

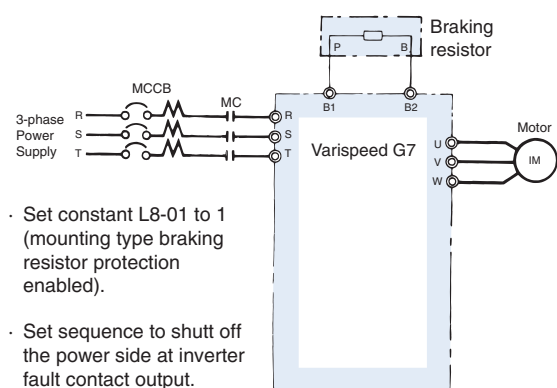
200 V class

Model CIMR-G7C□		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110	
Inverter capacity		kVA	1.2	2.3	3.0	4.6	6.9	10	13	19	25	30	37	50	61	70	85	110	140	160
Rated current		A	3.2	6	8	12	18	27	34	49	66	80	96	130	160	183	224	300	358	415
Heat loss W	Fin	W	21	43	58	83	122	187	263	357	473	599	679	878	1080	1291	1474	2009	1660	2389
	Inside unit	W	36	42	47	53	64	87	112	136	174	242	257	362	434	510	607	823	871	1194
	Total heat loss	W	57	85	105	136	186	274	375	493	647	839	936	1240	1514	1801	2081	2832	2531	3583
Fin coding		Self cooled				Fan cooled														

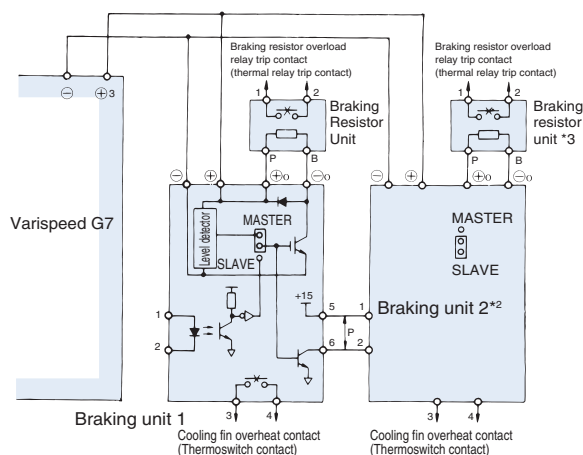
400 V class

Model CIMR-G7C□		40P4	40P7	41P5	42P2	43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300		
Inverter capacity		kVA	1.4	2.6	3.7	4.7	6.9	11	16	21	26	32	40	50	61	74	98	130	150	180	194	230	280	340	460	
Rated current		A	1.8	3.4	4.8	6.2	9	15	21	27	34	42	52	65	80	97	128	165	195	240	255	302	370	450	605	
Heat loss W	Fin		W	10	21	33	41	76	132	198	246	311	354	516	633	737	929	1239	1554	1928	2299	2612	3614	4436	5329	6749
	Inside unit		W	39	44	46	49	64	79	106	116	135	174	210	246	285	340	488	596	762	928	1105	1501	1994	2205	2941
	Total heat loss		W	49	65	79	90	140	211	304	362	446	528	726	879	1022	1269	1727	2150	2690	3227	3717	5115	6430	7534	9690
Fin coding			Self cooled				Fan cooled																			

Connections for braking units

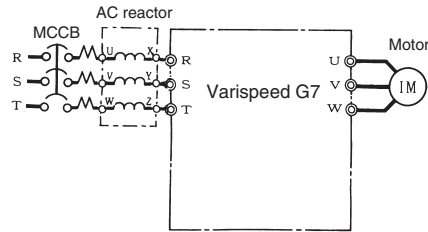


Connections for braking resistors

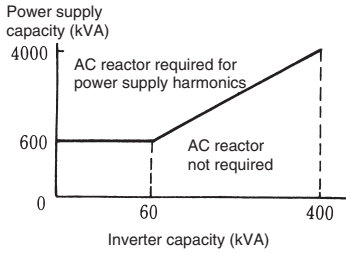


AC reactor

Connection example

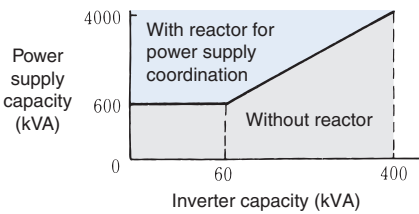
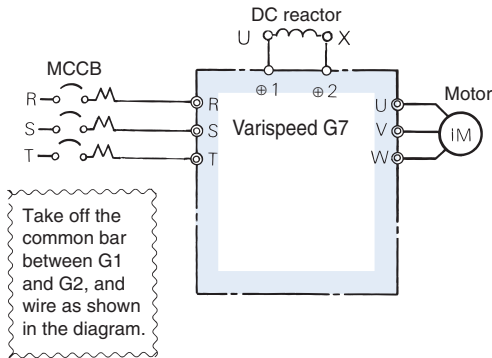


Application example



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



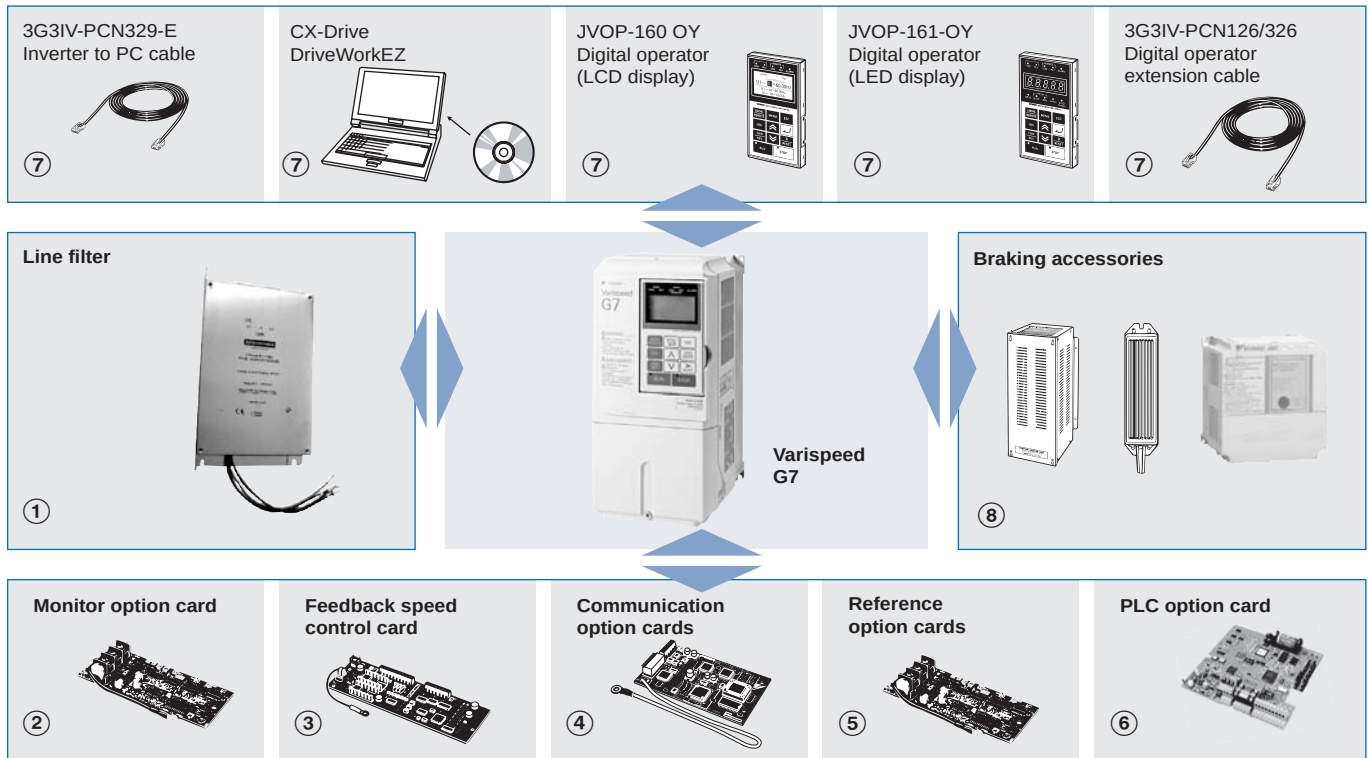
200 V class			400 V class		
Max. applicable motor output kW	Current value A	Inductance mH	Max. applicable motor output kW	Current value A	Inductance mH
0.4	5.4	8	0.4	3.2	28
0.75			0.75		
1.5			1.5	5.7	11
2.2	18	3	2.2		
3.7			3.7	12	6.3
5.5			5.5	23	3.6
7.5	36	1	7.5		
11			11	33	1.9
15			15		
18.5	90	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 ² s)
20P4	240	10	12~25
20P7	240	15	23~55
21P5	240	20	34~98
22P2	240	30	82~220
23P7	240	40	220~610
25P5	240	60	290~1300
27P5	240	80	450~5000
2011	240	100	1200~7200
2015	240	130	1800~7200
2018	240	150	870~16200
2022	240	180	1500~23000
2030	240	240	2100~19000
2037	240	300	2700~55000
2045	240	350	4000~55000
2055	240	450	7100~64000
2075	240	550	11000~64000
2090	240	600	13000~83000
2110	240	700	13000~83000
40P4	480	5	16~660
40P7	480	10	19~660
41P5	480	10	46~660
42P2	480	15	78~660
43P7	480	20	110~660
44P0	480	25	220~660
45P5	480	30	240~900
47P5	480	40	320~900
4011	480	50	1000~18000
4015	480	60	1500~4100
4018	480	70	530~5800
4022	480	90	1130~5800
4030	480	110	1700~5800
4037	480	140	2000~13000
4045	480	160	3000~13000
4055	480	220	6800~55000
4075	480	300	3800~55000
4090	480	330	12000~23000
4110	480	400	18000~64000
4132	480	450	28000~25000
4160	480	540	40000~250000
4185	480	750	63000~400000
4220	480	750	63000~400000
4300	480	1000	94000~920000

Ordering information



Varispeed G7



200 V

Inverter Model	Line Filters			
Varispeed G7	Type	EN55011 Class	Current (A)	Weight (kg)
CIMR-G7C20P4	3G3RV-PFI3010-SE	B, 25 m	10	1.2
CIMR-G7C20P7		A, 100 m		
CIMR-G7C21P5	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-G7C22P2	3G3RV-PFI2035-SE	B, 25 m	35	1.4
CIMR-G7C23P7		A, 100 m		
CIMR-G7C25P5	3G3RV-PFI2060-SE	B, 25 m	60	3
CIMR-G7C27P5		A, 100 m		
CIMR-G7C2011	3G3RV-PFI2100-SE	B, 25 m	100	4.9
CIMR-G7C2015		A, 100 m		
CIMR-G7C2018				
CIMR-G7C2022	3G3RV-PFI2130-SE	A, 100 m	130	4.3
CIMR-G7C2030	3G3RV-PFI2160-SE	A, 100 m	160	6.0
CIMR-G7C2037	3G3RV-PFI2200-SE	A, 100 m	200	11.0
CIMR-G7C2045				
CIMR-G7C2055	3G3RV-PFI3410-SE	A, 100 m	400	8.6
CIMR-G7C2075				
CIMR-G7C2090				
CIMR-G7C2110	3G3RV-PFI3600-SE	A, 100 m	600	11.0

400 V

Inverter Model	Line Filters			
Varispeed G7	Type	EN55011 Class	Current (A)	Weight (kg)
CIMR-G7C40P4	3G3RV-PFI3010-SE	B, 25 m	10	1.2
CIMR-G7C40P7		A, 100 m		
CIMR-G7C41P5	3G3RV-PFI3018-SE	B, 25 m	18	1.3
CIMR-G7C42P2		A, 100 m		
CIMR-G7C43P7				
CIMR-G7C44P0	3G3RV-PFI3021-SE	B, 25 m	21	1.8
CIMR-G7C45P5		A, 100 m		
CIMR-G7C47P5	3G3RV-PFI3035-SE	B, 25 m A, 100 m	35	2.2
CIMR-G7C4011	3G3RV-PFI3060-SE	B, 25 m	60	4.0
CIMR-G7C4015		A, 100 m		
CIMR-G7C4018	3G3RV-PFI3070-SE	B, 25 m	70	3.4
CIMR-G7C4022		A, 100 m		
CIMR-G7C4030	3G3RV-PFI3100-SE	A, 100 m	100	4.5
CIMR-G7C4037				
CIMR-G7C4045	3G3RV-PFI3130-SE	A, 100 m	130	4.7
CIMR-G7C4055	3G3RV-PFI3170-SE	A, 100 m	170	6.0
CIMR-G7C4075	3G3RV-PFI3200-SE	A, 100 m	250	11
CIMR-G7C4090	3G3RV-PFI3410-SE	A, 100 m	400	8.6
CIMR-G7C4110				
CIMR-G7C4132				
CIMR-G7C4160				
CIMR-G7C4185	3G3RV-PFI3600-SE	A, 100 m	600	11
CIMR-G7C4220	3G3RV-PFI3800-SE	A, 100 m	800	31.0
CIMR-G7C4300				

① Line filters



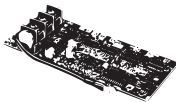
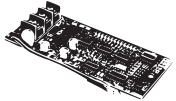
200 V

Inverter model	Line filters			
Varispeed G7	Type	EN55011 class	Current (A)	Weight (kg)
CIMR-G7C20P4 CIMR-G7C20P7	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.2
CIMR-G7C21P5	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-G7C22P2 CIMR-G7C23P7	3G3RV-PFI2035-SE	B, 25 m A, 100 m	35	1.4
CIMR-G7C25P5 CIMR-G7C27P5	3G3RV-PFI2060-SE	B, 25 m A, 100 m	60	3
CIMR-G7C2011 CIMR-G7C2015 CIMR-G7C2018	3G3RV-PFI2100-SE	B, 25 m A, 100 m	100	4.9
CIMR-G7C2022	3G3RV-PFI2130-SE	A, 100 m	130	4.3
CIMR-G7C2030	3G3RV-PFI2160-SE	A, 100 m	160	6.0
CIMR-G7C2037 CIMR-G7C2045	3G3RV-PFI2200-SE	A, 100 m	200	11.0
CIMR-G7C2055 CIMR-G7C2075 CIMR-G7C2090	3G3RV-PFI3410-SE	A, 100 m	400	8.6
CIMR-G7C2110	3G3RV-PFI3600-SE	A, 100 m	600	11.0

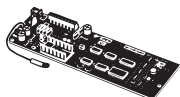
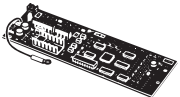
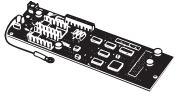
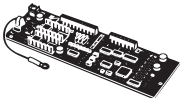
400 V

Inverter model	Line filters			
Varispeed G7	Model	EN 55011 class	Current (A)	Weight (kg)
CIMR-G7C40P4 CIMR-G7C40P7 CIMR-G7C41P5 CIMR-G7C42P2	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.2
CIMR-G7C43P7 CIMR-G7C44P0	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-G7C45P5	3G3RV-PFI3021-SE	B, 25 m A, 100 m	21	1.8
CIMR-G7C47P5	3G3RV-PFI3035-SE	B, 25 m A, 100 m	35	2.2
CIMR-G7C4011 CIMR-G7C4015	3G3RV-PFI3060-SE	B, 25 m A, 100 m	60	4.0
CIMR-G7C4018 CIMR-G7C4022	3G3RV-PFI3070-SE	B, 25 m A, 100 m	70	3.4
CIMR-G7C4030 CIMR-G7C4037	3G3RV-PFI3100-SE	A, 100 m	100	4.5
CIMR-G7C4045	3G3RV-PFI3130-SE	A, 100 m	130	4.7
CIMR-G7C4055	3G3RV-PFI3170-SE	A, 100 m	170	6.0
CIMR-G7C4075	3G3RV-PFI3200-SE	A, 100 m	250	11
CIMR-G7C4090 CIMR-G7C4110 CIMR-G7C4132 CIMR-G7C4160	3G3RV-PFI3410-SE	A, 100 m	400	8.6
CIMR-G7C4185	3G3RV-PFI3600-SE	A, 100 m	600	11.0
CIMR-G7C4220 CIMR-G7C4300	3G3RV-PFI3800-SE	A, 100 m	800	31.0

② Monitor option cards

Type	Model	Description	Function
Monitor option card	AO-08 / 3G3IV-PAO08 	Analog monitor card	- Outputs analog signal for monitoring inverter output state (output freq., output current etc.) after absolute value conversion. - Output resolution: 8 bits (1/256) - Output voltage: 0 to {10 V (non isolated) EOutput channel: 2 channels
	AO-12 / 3G3IV-PAO12 		- Outputs analog signal for monitoring inverter output state (output freq., output current etc.) - Output resolution: 11 bits (1/2048) + code - Output voltage: 110 to {10 V (non isolated) EOutput channel: 2 channels
	DO-08 / 3G3IV-PDO08	Digital output card	- Outputs isolated type digital signal for monitoring inverter run state (alarm signal, zero speed detection etc.) . - Output channel: photo coupler 6 channels (48 V, 50 mA or less) - Relay contact output 2 channels (250 VAC, 1 A or less 30 VDC, 1 A or less)
	DO-02C / 3G3IV-PDO02C	2C-relay output card	Two multi-function contact outputs (2C-relay) can be used other than those of the inverter proper unit.

③ 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

④ Communication option cards

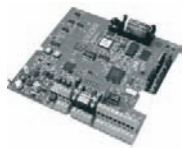
Type	Model	Description	Function
Communication option card	SI-N1	DeviceNet option card	Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through DeviceNet communication with the host controller.
	SI-P1	PROFIBUS-DP 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.
	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 and MP series ¹
	CM090	Ethernet option card	Modbus TCP/IP ethernet interface unit

1. Please refer to Trajexia, MCH or MP series for host controllers detailed information.

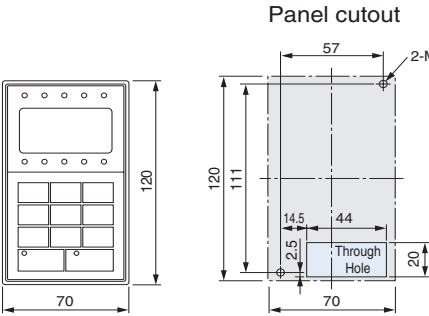
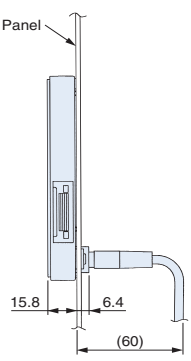
⑤ Reference option cards

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 +10 V (20 KΩ) 4 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

⑥ PLC option boards

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 models with DeviceNet support.

⑦ Accessories

Type	Model	Description	Installation
Digital operator	JVOP-160-OY 	5 lines LCD digital operator 7 language support	Panel cutout  Panel cutout installation 
	JVOP-161-OY 	7 segment LED digital operator	
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	-----
	3G3IV-PCN329-E	PC configuration cable	-----

⑦ Accessories

Type	Model	Description	Function
Software	CX-drive 1.1	Computer software	Configuration and monitoring software tool for drives (Version 1.1 or higher)
	DriveWorksEZ	Computer software	Programming special functionality software tool for drives
	CX-One	Computer software	Complete automation software including CX-drive.

⑧ 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-G7C_	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			---	---	---	---	45P5	520 W 100 Ω	1	135	32	
	5.5	45P5							47P5	780 W 75 Ω	1	130	32	
	7.5	47P5							4011	1040 W 50 Ω	1	135	20	
	11	4011							4015	1560 W 40 Ω	1	125	20	
	15	4015							4018	4800 W 32 Ω	1	125	19.2	
	18.5	4018							4022	4800 W 27.2 Ω	1	125	19.2	
	22	4022	4030B	1					4030	6000 W 20 Ω	1	125	19.2	
	30	4030	4030B	1					4037	9600 W 16 Ω	1	125	12.8	
	37	4037	4045B	1					4045	9600 W 13.6 Ω	1	125	12.8	
	45	4045	4045B	1					4030	6000 W 20 Ω	2	135	19.2	
	55	4055	4030B	2					4045	9600 W 13.6 Ω	2	145	12.8	
	75	4075	4045B	2					4030	6000 W 20 Ω	3	100	3.2	
	90	4090	4220B	1					4030	6000 W 20 Ω	3	100	3.2	
	110	4110	4220B	1					4045	9600 W 13.6 Ω	4	140	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	120	3.2	
	185	4185	4220B	1					4037	9600 W 16 Ω	5	110	3.2	
	220	4220	4220B	1					4045	9600 W 13.6 Ω	6	110	3.2	
	300	4300	4220B	2										

- 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.
- When connecting mounting type braking resistor, set system constant L8-01 to 1 (braking resistor protection enabled).
- 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.
- Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
- 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 (can 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.

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)

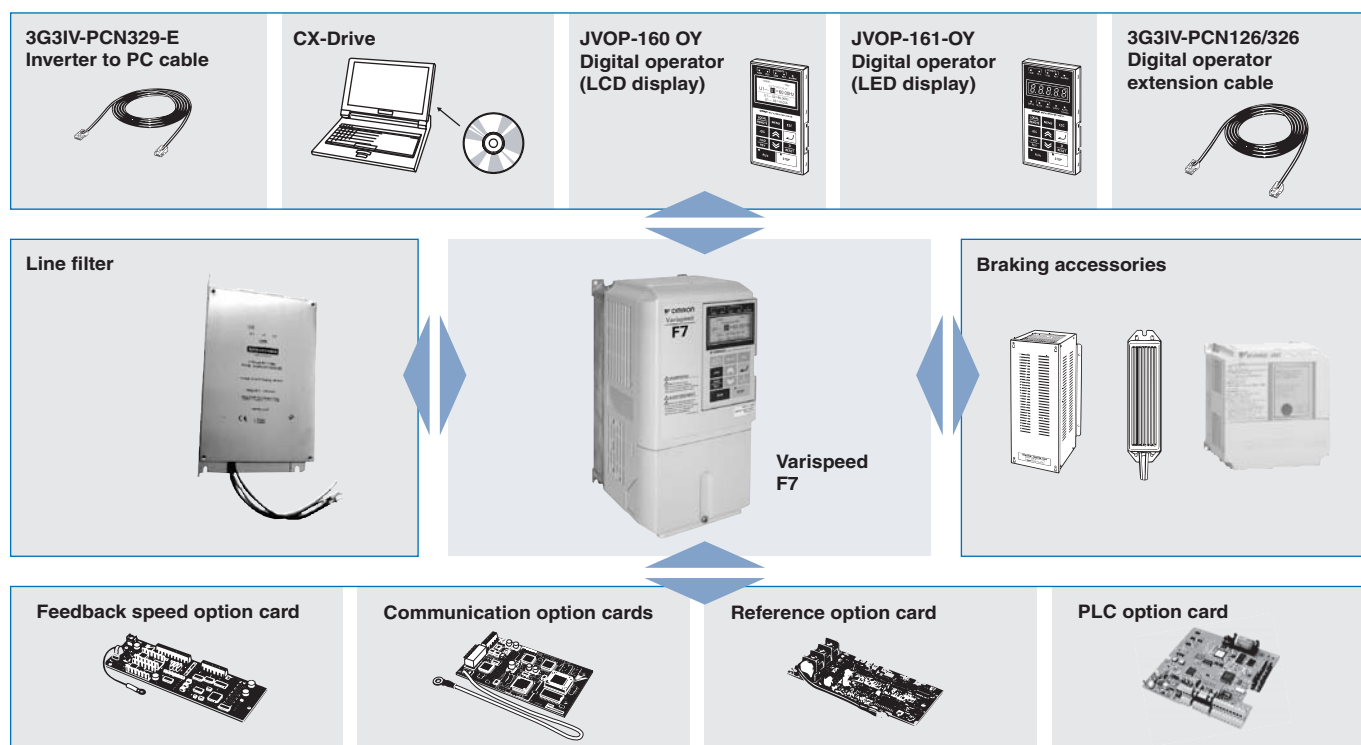
* For detailed information please see CASE software section.

Ratings

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

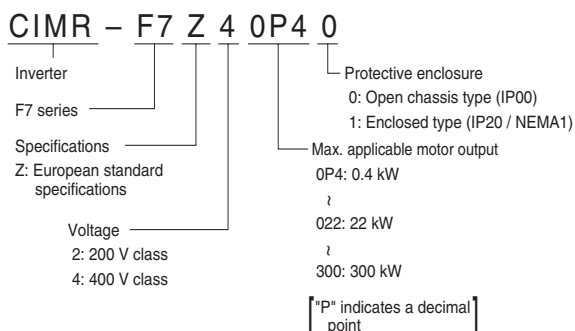


System configuration



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							

- 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.
- 322 A in case of heavy duty mode
- 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.
- 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													

- 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.
- 405 A in case of heavy duty mode
- 540 A in case of heavy duty mode
- 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.	
Environment	Charge indicator	Illuminates when the main circuit DC voltage is approx. 10 VDC or more.	
	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)

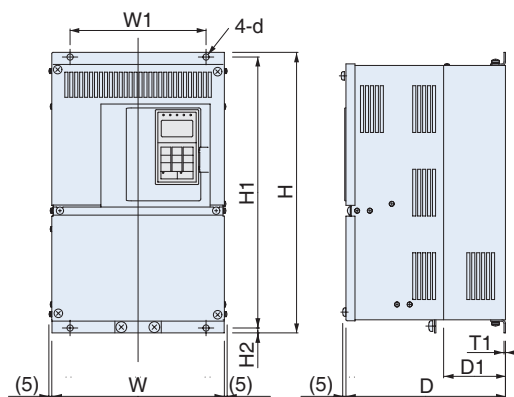


Fig 1

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		100		24		
	37	2037 0		375	600	298	250	575	12.5	130	3.2	M10	57	
	45	2045 0				328							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		325	550	283	260	535		105			36	
	37	4037 0							450	725	348	325	700	
	45	4045 0		89										
	55	4055 0		500	850	358	370	820	15	140	4.5	M12	102	
	75	4075 0											120	
	90	4090 0		160										
	110	4110 0		260										
	132	4132 0		575	916	378	445	855	45.8	140	280			
	160	4160 0									405			
	185	4185 0		710	1305	413	540	1270	15	125.5				
	220	4220 0												
	300	4300 0		916	1475	413	730	1440						

Enclosed type (IEC IP20)

F7Z 20P41 to F7Z25P51
F7Z40P41 to F7Z45P51

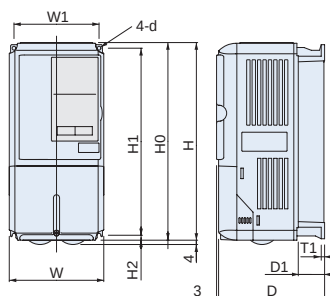


Fig 1

F7Z 27P51 to F7Z20181
F7Z47P51 to F7Z40181

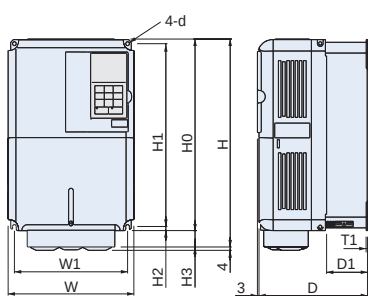


Fig 2

F7Z 20221 to F7Z20751
F7Z40221 to F7Z41601

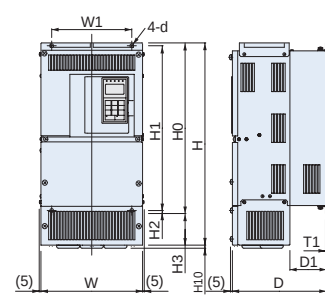
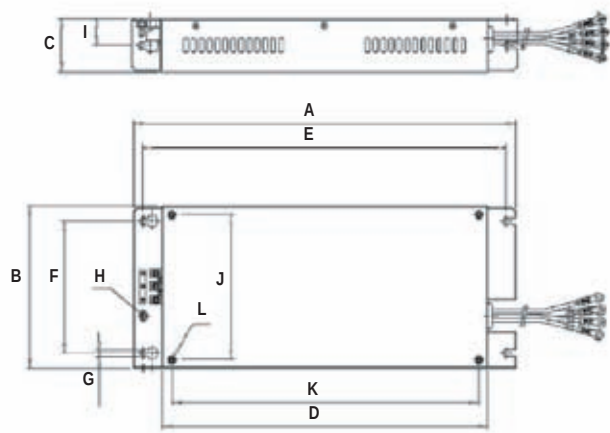


Fig 3

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				177						59			4																											
	2.2	22P2 1																																								
	3.7	23P7 1				2						200			300	197	186	300	285	8	0	65.5	2.3	M6	6																	
	5.5	25P5 1	310	7																																						
	7.5	27P5 1	350	207	216		350	335	0	78	11																															
	11	2011 1											380																													
	15	2015 1	3	254	535		258	195	400	385	7.5		135	100	24																											
	18.5	2018 1				220						450				435	165	100	27																							
	22	2022 1					380				809		298							250	600	575	209	130	3.2	M10	62															
	30	2030 1				328						453				1027	348	325	725								700	12.5	302	130	94											
	37	2037 1											279																			615	258	195	400	385	7.5	135	100	24		
	45	2045 1	254	535	258	195		400	385	7.5				135	100																										24	
	55	2055 1																																								380
	75	2075 1			254		535				258									195	400	385	7.5	135	100	24																
		380										809				298	250	600	575								209	130	3.2	M10	94											
											254		535																			258	195	400	385	7.5	135	100	24			
			380	809		298		250	600	575				209	130	3.2																								M10	94	
																																254										535
					380	809	298													250	600	575	209	130	3.2	M10																
		254										535					258	195	400								385	7.5	135	100	24											
							380				809		298																				250	600	575	209	130	3.2	M10			
			254	535				258	195	400				385	7.5	135	100																							24		
													380																			809									298	250
					254	535		258												195	400	385	7.5	135	100	24																
		380										809						298	250								600	575	209	130	3.2										M10	
							254	535			258																						195	400	385	7.5	135	100	24			
			380	809					298	250				600	575	209	130	3.2																						M10		
											254		535																			258										195
					380	809			298											250	600	575	209	130	3.2	M10																
		254										535							258								195	400	385	7.5	135	100									24	
							380	809	298																								250	600	575	209	130	3.2	M10			
			254	535						258				195	400	385	7.5	135	100																					24		
									380		809		298																													250
					254	535				258										195	400	385	7.5	135	100	24																
		380										809	298														250	600	575	209	130	3.2									M10	
							254	535		258																							195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535	258																															195
					380	809							298							250	600	575	209	130	3.2	M10																
		254									535	258															195	400	385	7.5	135	100									24	
							380	809					298																				250	600	575	209	130	3.2	M10			
			254	535								258		195	400	385	7.5	135	100																					24		
									380	809			298																													250
					254	535						258								195	400	385	7.5	135	100	24																
		380									809		298														250	600	575	209	130	3.2									M10	
							254	535				258																					195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535		258																														195
					380	809							298							250	600	575	209	130	3.2	M10																
		254									535	258															195	400	385	7.5	135	100									24	
							380	809					298																				250	600	575	209	130	3.2	M10			
			254	535								258		195	400	385	7.5	135	100																					24		
									380	809			298																													250
					254	535						258								195	400	385	7.5	135	100	24																
		380									809		298														250	600	575	209	130	3.2									M10	
							254	535				258																					195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535		258																														195
					380	809							298							250	600	575	209	130	3.2	M10																
		254									535	258															195	400	385	7.5	135	100									24	
							380	809					298																				250	600	575	209	130	3.2	M10			
			254	535								258		195	400	385	7.5	135	100																					24		
									380	809			298																													250
					254	535						258								195	400	385	7.5	135	100	24																
		380									809		298														250	600	575	209	130	3.2									M10	
							254	535				258																					195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535		258																														195
					380	809							298							250	600	575	209	130	3.2	M10																
		254									535	258															195	400	385	7.5	135	100									24	
							380	809					298																				250	600	575	209	130	3.2	M10			
			254	535								258		195	400	385	7.5	135	100																					24		
									380	809			298																													250
					254	535						258								195	400	385	7.5	135	100	24																
		380									809		298														250	600	575	209	130	3.2									M10	
							254	535				258																					195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535		258																														195
					380	809							298							250	600	575	209	130	3.2	M10																
		254									535	258															195	400	385	7.5	135	100									24	
							380	809					298																				250	600	575	209	130	3.2	M10			
			254	535								258		195	400	385	7.5	135	100																					24		
									380	809			298																													250
					254	535						258								195	400	385	7.5	135	100	24																
		380									809		298														250	600	575	209	130	3.2									M10	
							254	535				258																					195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535		258																														195
					380	809							298							250	600	575	209	130	3.2	M10																
		254									535	258															195	400	385	7.5	135	100									24	
							380	809					298																				250	600	575	209	130	3.2	M10			
			254	535								258		195	400	385	7.5	135	100																					24		
									380	809			298																													250
					254	535						258								195	400	385	7.5	135	100	24																
		380									809		298														250	600	575	209	130	3.2									M10	
							254	535				258																					195	400	385	7.5	135	100	24			
			380	809									298	250	600	575	209	130	3.2																					M10		
									254	535		258																														195

Filters

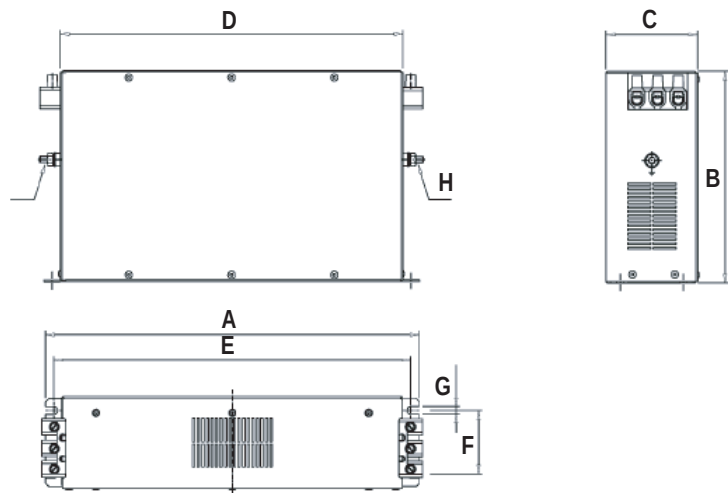
Footprint / Flat filters



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.

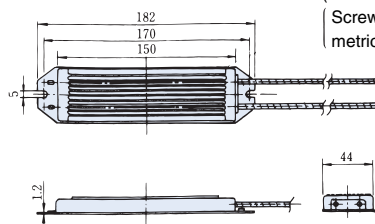
Bookform filters



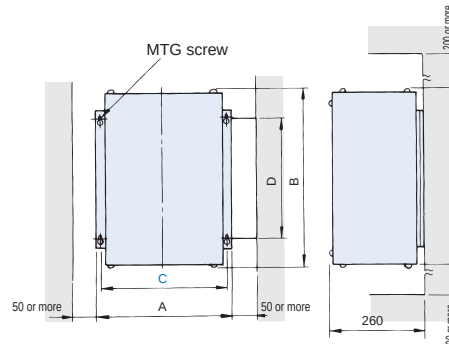
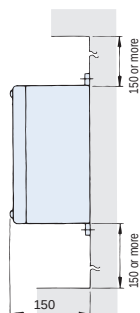
Model		Dimensions							
		A	B	C	D	E	F	G	H
200 V	3G3RV-PFI2130-SE	366	180	90	280	310	65	6.5	M10
	3G3RV-PFI2160-SE	451	170	120	350	380	102	6.5	M10
	3G3RV-PFI2200-SE	610	240	130	480	518	90	8.2	M10
400 V	3G3RV-PFI3070-SE	331	185	80	300	329	55	6.5	M6
	3G3RV-PFI3100-SE	326	150	90	240	270	65	6.5	M10
	3G3RV-PFI3130-SE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

Model CDBR-2015 B, -2022 B, -4030B, -4045 B	Model CDBR-2110 B
4-M4 MTG holes 3-lead wire inlet (20 dia. rubber bush) Main circuit terminal M6 Weight 1.8 K	4-M6 MTG holes Main circuit terminal M6 3-lead wire inlet (20 dia. rubber bush) Weight 8.5 Kg
Model CDBR-4220 B	
4-M6 MTG holes Main circuit terminal M6 3-lead wire inlet (20 dia. rubber bush) Weight 12 Kg	

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



Technical drawing of a rectangular plate with dimensions A, B, C, and D. The plate has two MTG screws at the top and two mounting holes at the bottom. The plate is flanked by vertical bars labeled "30 or more".



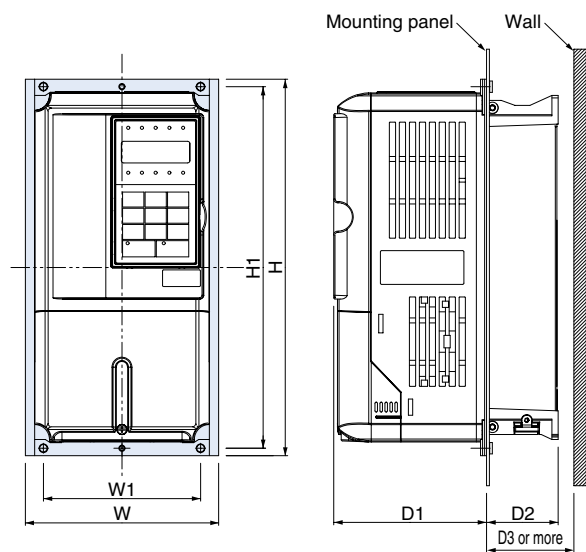
Voltage	Model LKEB_	Dimensions in mm					Weight kg
		A	B	C	D	MTG screw	
220 V class	20P7	105	275	50	260	M5 x 3	3.0
	21P5	130	350	75	335	M5 x 4	4.5
	22P2	130	350	75	335	M5 x 4	4.5
	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	25P5	250	350	200	335	M6 x 4	8.5
400 V class	40P7	105	275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

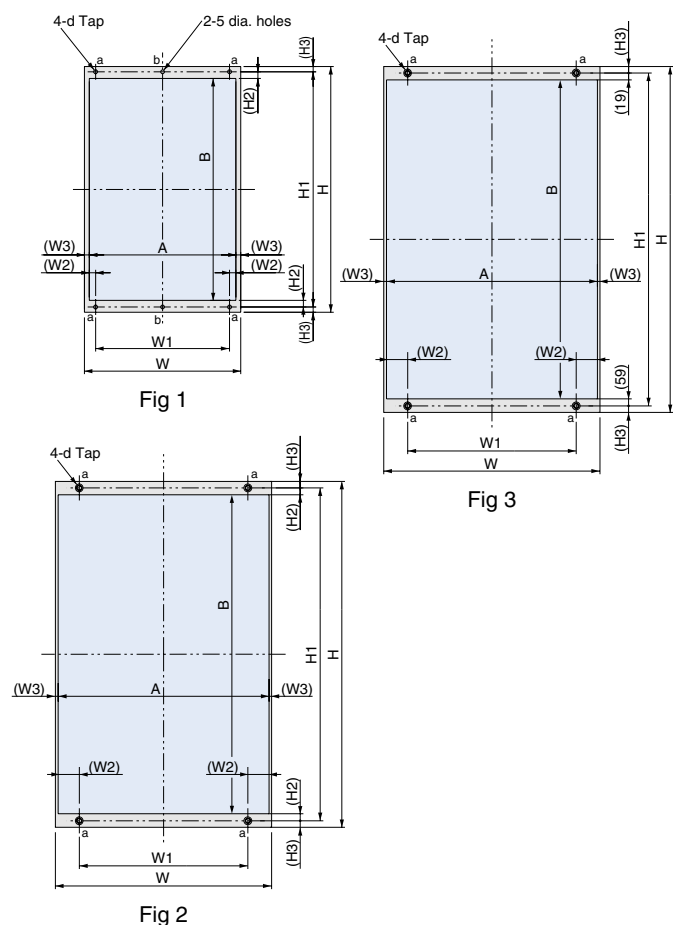
Heatsink external mounting attachment

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							57.4	60		
21P5										
22P2										
23P7							EZZ08676B	210	330	180
25P5	76.4	85								
27P5			EZZ08676C	250	392	216	372	133.6		
2011	37.4	40								
2015			EZZ08676A	155	302	126	290	122.6	57.4	60
40P4	57.4	60								
40P7										
41P5	63.4	70								
42P2									EZZ08676B	210
43P7	76.4	85								
45P5			EZZ08676C	250	392	216	372	133.6		
47P5										
4011	EZZ08676A	155	302	126	290	122.6	37.4	40		
4015										

Panel cut for external mounting of cooling fin (heatsink)

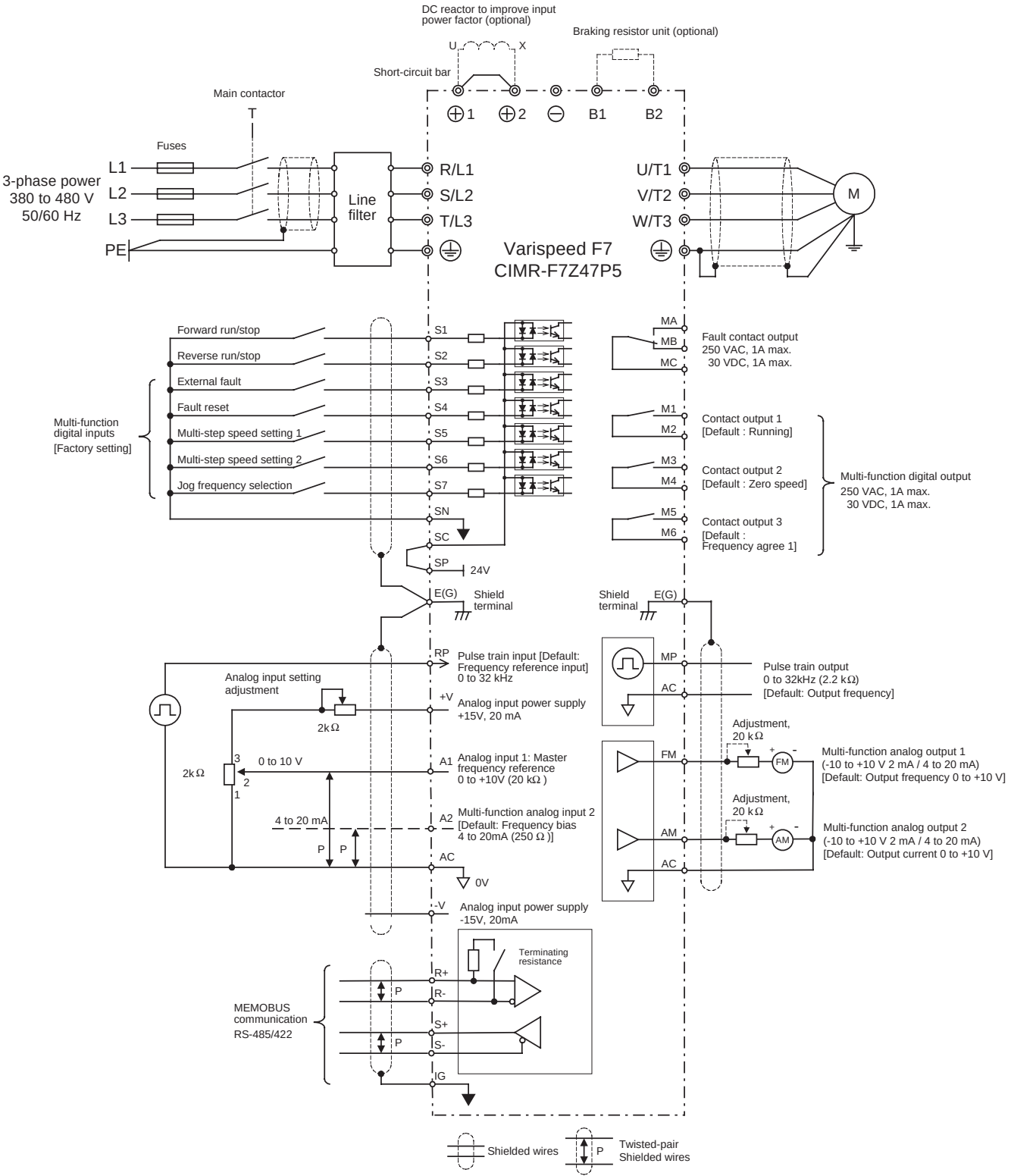


CIMR-F7Z□	Fig	Dimensions in mm											
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d	
20P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5	
20P7													
21P5													
22P2													
23P7													
25P5													
27P5		210	330	180	8.5	6.5	316	9	7	197	298	M6	
2011													
2015	250	392	216	8.5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

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

Installation

Standard connections

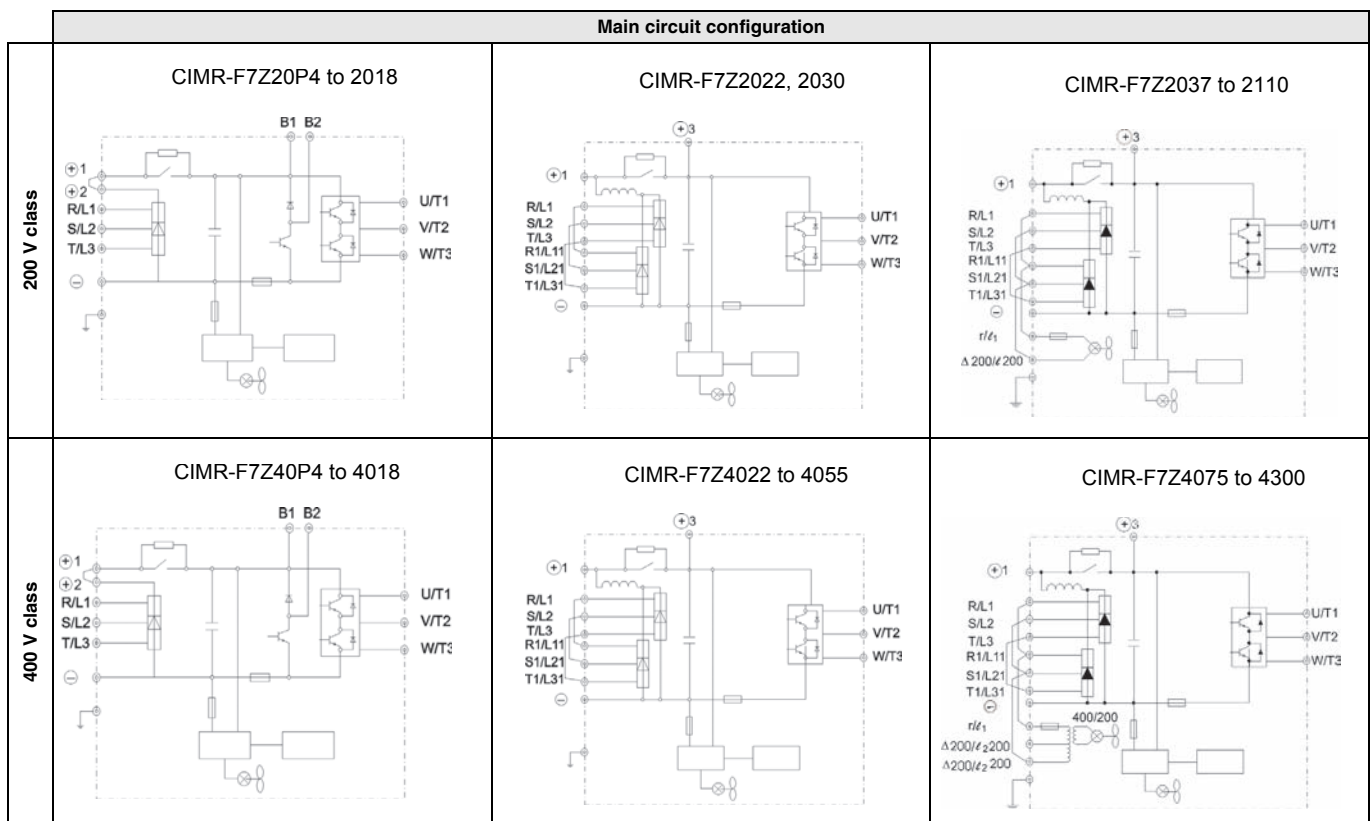


Frequency inverters

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 R-R1, S-S1 and T-T1 have been wired before shipment (See P59).		Main circuit input power supply	Main circuit input power supply R-R1, S-S1 and T-T1 have been wired before shipment					
S/L2										
T/L3										
R1/L11	---			---						
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	---			---						
↓ I ₂	-----			---						
r/I ₁	-----			---						
↓ 200 / I ₂ 200										
↓ 400 / I 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/l₁ - Δ I₂: 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/l₁ - Δ 200 / I₂ 200: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz, r/l₁ - Δ 400 / I₂ 400: 380 to 480 VAC 50/60 Hz



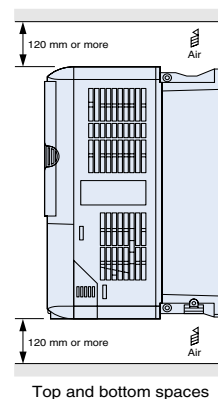
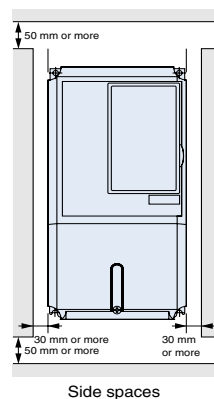
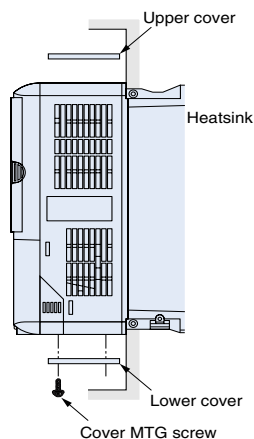
Control circuits

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.		
	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.
	AC	Analog common	—		4 to 20 mA current output
	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	—		—

- 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.
- Do not use this power supply for supplying any external equipment.
- When driving a reactive load, such as a relay coil with DC power supply, always insert a flywheel diode.
- 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%

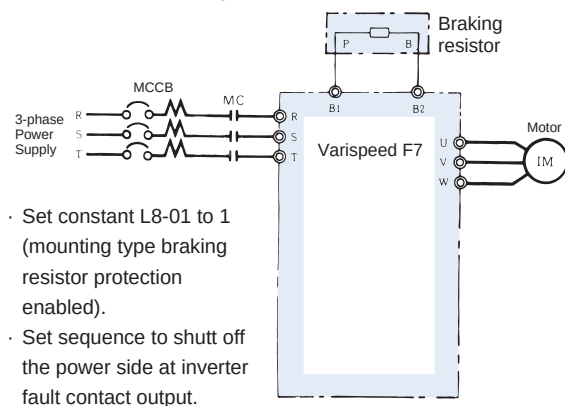
When using open chassis type inverters of 200 V/400 V 22 kW or more, secure spaces for eyebolts and wiring of the main circuit.



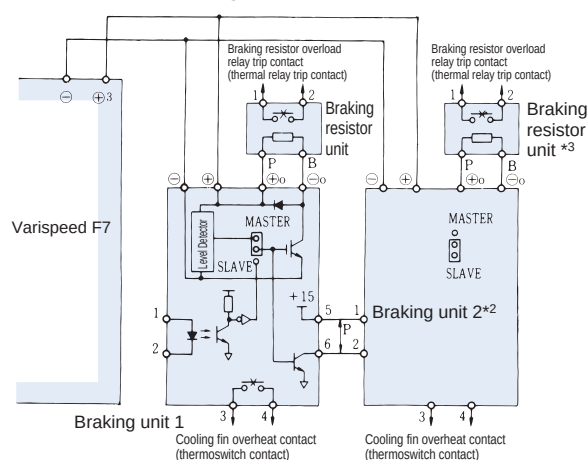
200 V class

400 V class

Connections for braking units

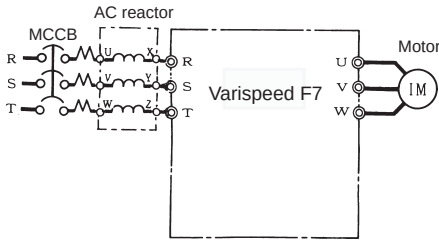


Connections for braking resistors

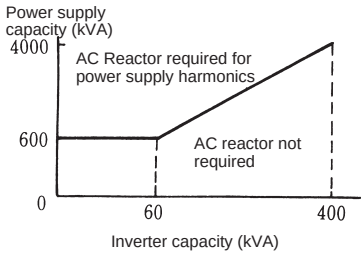


AC reactor

Connection example

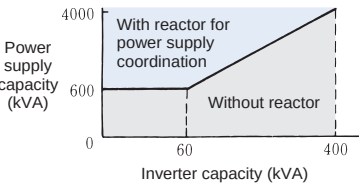
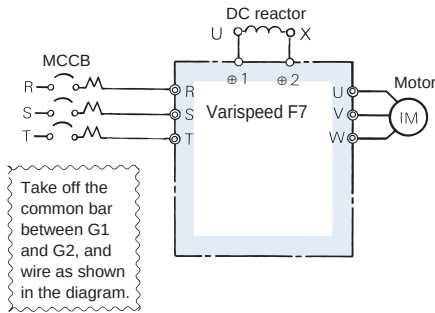


Application example



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		
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	

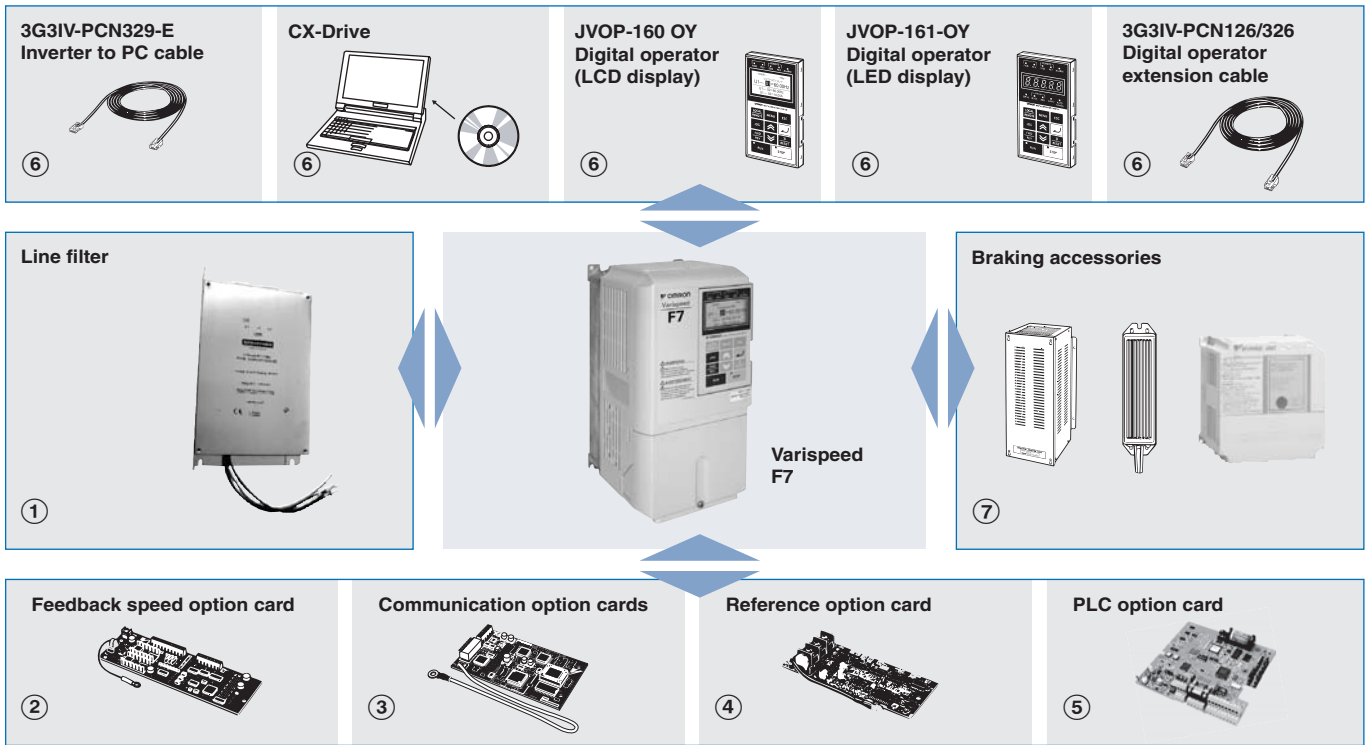
Fuse installation

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 ² s)
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 ² s)
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
IP00	18.5 Kw	71 A	CIMR-F7Z20181
	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	3G3RV-PFI2100-SE	B, 25 m A, 100 m	100	4.9
CIMR-F7Z2015				
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	3G3RV-PFI3400-SE	A, 100 m	400	8.6
CIMR-F7Z2075				
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 series¹

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

④ Reference option cards

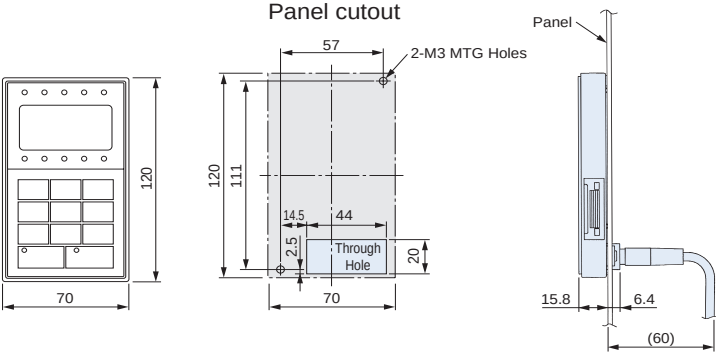
Type	Model	Description	Function
Reference option card	AI-14U / 3G3IV-PAI14U	Analog input card	2 channel high resolution analog input card - Channel 1: 0 to 10 V (20 KΩ) - Channel 2: 4 to 20 mA (250 Ω) - Resolution 14 bit
	AI-14B / 3G3IV-PAI14B		3 Channel high resolution analog input card - Signal level: -10 to +10V (20 KΩ) 4 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 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			---				45P5	520 W 100 Ω	1	135	32	
	5.5	45P5							47P5	780 W 75 Ω	1	130	32	
	7.5	47P5							4011	1040 W 50 Ω	1	135	20	
	11	4011							4015	1560 W 40 Ω	1	125	20	
	15	4015							4018	4800 W 32 Ω	1	125	19.2	
	18.5	4018							4022	4800 W 27.2 Ω	1	125	19.2	
	22	4022	4030B	1					4030	6000 W 20 Ω	1	125	19.2	
	30	4030	4030B	1					4037	9600 W 16 Ω	1	125	12.8	
	37	4037	4045B	1					4045	9600 W 13.6 Ω	1	125	12.8	
	45	4045	4045B	1					4030	6000 W 20 Ω	2	135	19.2	
	55	4055	4030B	2					4045	9600 W 13.6 Ω	2	145	12.8	
	75	4075	4045B	2					4030	6000 W 20 Ω	3	100	3.2	
	90	4090	4220B	1					4030	6000 W 20 Ω	3	100	3.2	
	110	4110	4220B	1	4045	9600 W 13.6 Ω	4	140	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	120	3.2					
	185	4185	4220B	1	4037	9600 W 16 Ω	5	110	3.2					
	220	4220	4220B	1	4045	9600 W 13.6 Ω	6	110	3.2					
	300	4300	4220B	2										

- 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.
- When connecting mounting type braking resistor, set system constant L8-01 to 1 (braking resistor protection enabled).
- 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.
- Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
- 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.

CIMR-L7Z

Varispeed L7

Made to drive lifts

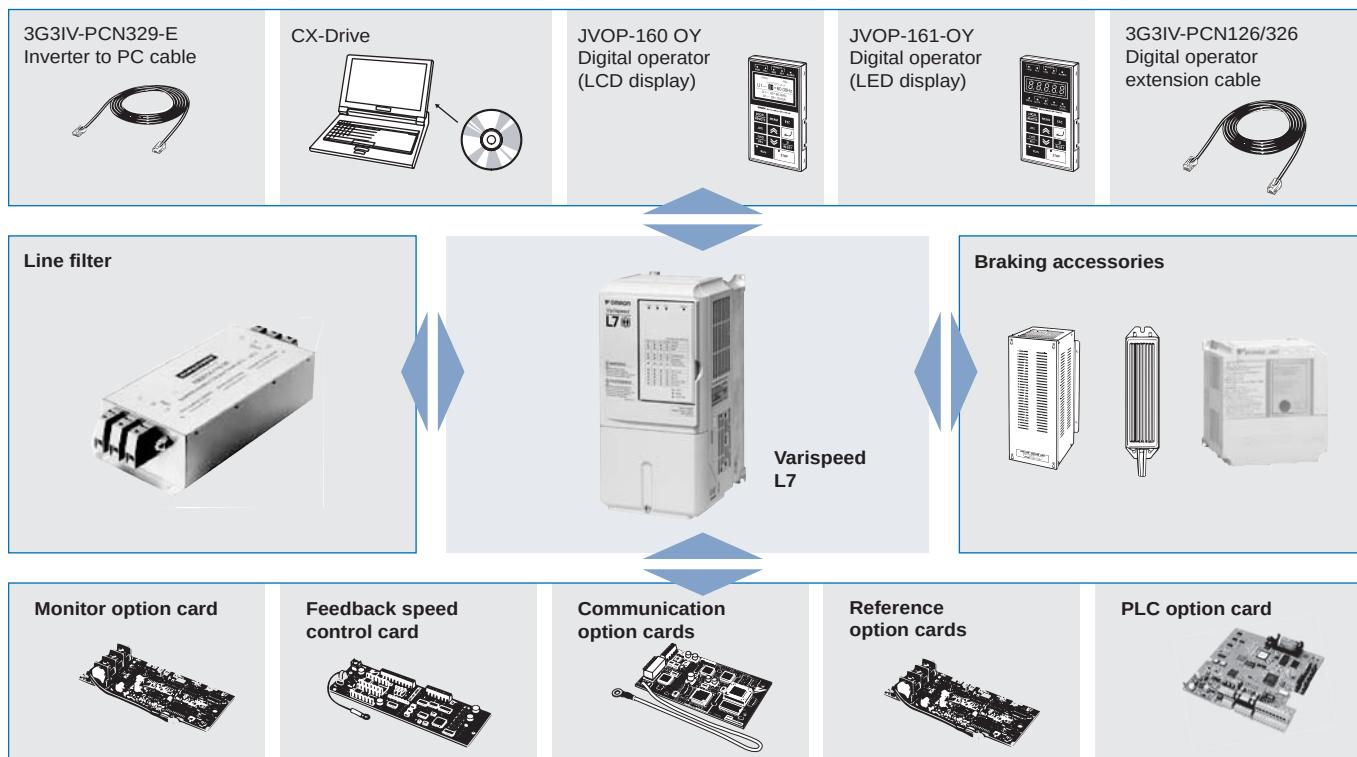
- One model to control AC and PM motors.
- Silent operation with no current de-rating.
- Safety Cat.3 Stop. Cat.0 (EN 954-1 & EN81-1)
- Motor auto-tuning at standstill and at run.
- Three control methods: close loop current vector control, sensorless current vector control, V/F control.
- Direct control of motor brake and contactors
- Dedicated lift sequence built-in
- Lift units.
- Emergency operation by UPS or battery
- 2nd motor setting
- Short floor operation
- Door opening signal
- Electrical motor information and encoder information saved on inverter and encoder
- Embedded OMRON PLC functionality with PLC option card
- Fieldbus options: DeviceNet, CANOpen, PROFIBUS
- PC configuration tool: CX-drive.
- CE, UL, and cUL marking

Ratings

- 200 V Class three-phase 3.7 to 55 kW
- 400 V Class three-phase 4.0 to 55 kW

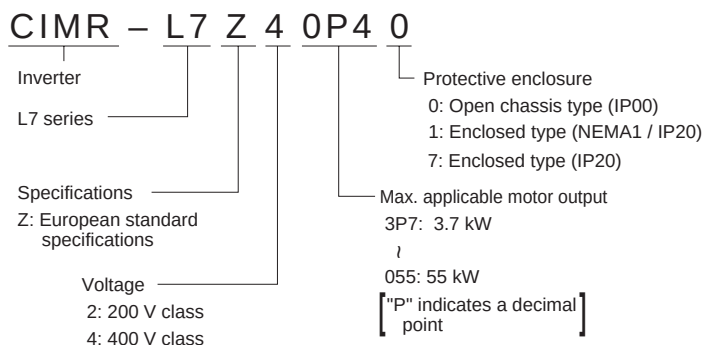


System configuration example



Specifications

Type designation



200 V class

Model CIMR-L7ZZ□		23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055
Max. applicable motor output ¹ kW		3.7	5.5	7.5	11	15	18.5	22	30	37	45	55
Output characteristics	Inverter capacity kVA	7	10	14	20	27	33	40	54	67	76	93
	Rated current A	17.5	25	33	49	64	80	96	130	160	183	224
	Max. voltage	3-phase; 200, 208, 220, 230, or 240 VAC (proportional to input voltage)										
	Max. output frequency	Up to 120 Hz available by programing										
Power supply	Rated input voltage and frequency	3-phase, 200/208/220/230/240 VAC, 50/60 Hz										
	Rated input current A	21	25	40	52	68	96	115	156	176	220	269
	Allowable voltage fluctuation	+ 10%, - 15%										
	Allowable frequency fluctuation	±5%										
Harmonic wave prevention	DC reactor	Optional						Built In				
	12-pulse input	Not possible						Possible				

1. The maximum applicable motor output is given for a standard 4-pole Yaskawa motor. When selecting the actual motor and inverter, be sure that the inverter's rated current is applicable for the motor's rated current.
2. A transformer with dual star-delta secondary is required on the power supply for 12-pulse rectification.

400 V class

Model CIMR-L7ZZ□		44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055
Max. applicable motor output ¹ kW		4.0	5.5	7.5	11	15	18.5	22	30	37	45	55
Output characteristics	Inverter capacity kVA	9	12	15	22	28	34	40	54	67	80	106
	Rated current A	11	14	18	27	34	41	48	65	80	96	128
	Max. voltage	3-phase; 380, 400, 415, 440, 460, or 480 VAC (proportional to input voltage.)										
	Max. output frequency	120 Hz max.										
Power supply	Rated input voltage and frequency	3-phase, 380, 400, 415, 440, 460 or 480 VAC, 50/60 Hz										
	Rated input current A	13.2	17	22	32	41	49	58	78	96	115	154
	Allowable voltage fluctuation	+ 10%, -15%										
	Allowable frequency fluctuation	±5%										
Harmonic wave prevention	DC reactor	Optional						Built In				
	12-pulse input	Not possible						Possible				

1. The maximum applicable motor output is given for a standard 4-pole Yaskawa motor. When selecting the actual motor and inverter, be sure that the inverter's rated current is applicable for the motor's rated current.
2. A transformer with dual star-delta secondary is required on the power supply for 12-pulse rectification.

Enclosures

200 V class	Model CIMR-L7ZZ□	20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055
	Enclosed type (IEC IP20)	Available as standard														
	Open Chassis type (IEC IP00)	Available by removing the upper and lower cover of enclosed type														
400 V class	Model CIMR-F7ZZ□	40P4	40P7	41P5	42P2	43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055
	Enclosed type (IEC IP20)	Available as standard														
	Open Chassis type (IEC IP00)	Available by removing the upper and lower cover of enclosed type														

Common specifications

Model number CIMR-L7Z□		Specification
Control characteristics	Control method asynchronous	Sine wave PWM closed loop vector control, open loop vector control, V/f control
	Control method synchronous	Sine wave PWM closed loop vector control using endat and hipurface
	Carrier frequency	8 kHz higher carrier frequency possible with current derating.
	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) ± 0.2% (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 120 Hz
	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	150% of rated output current for 30 sec.
	Frequency setting signal	0 to +10V
	Accel/decel time	0.01 to 600.00 s (4 selectable combinations of independent acceleration and deceleration time settings)
	Main control functions	Overtorque/undertorque detection, torque limits, 8-speed control (maximum), 4 acceleration and deceleration times, S-curve acceleration/deceleration, auto-tuning (rotational or stationary), dwell function, cooling fan ON/OFF control, slip compensation, torque compensation, auto-restart after fault, DC braking for starting and stopping, a fault reset and parameter copy function, special lift functions and sequences, short floor, hardware baseblock
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	OL2 fault at 150% of rated output current for 30 sec
	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.
	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	Protective structure	
	Enclosed wall-mounted type (IP20): all models Enclosed wall-mounted type (NEMA 1): 18.5 kW or less (same for 200 V and 400 V class inverters) Open chassis type (IP00): 22 kW or more (same for 200 V and 400 V class inverters)	
	Ambient operating temperature	- 10 °C to 45 °C
	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

Enclosed type (IEC IP20)

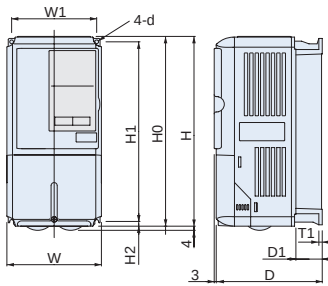


Fig 1

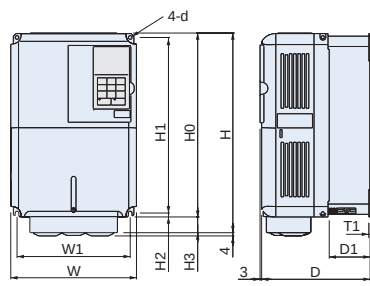


Fig 2

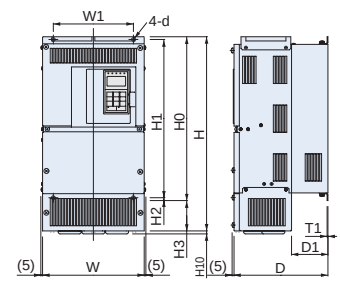


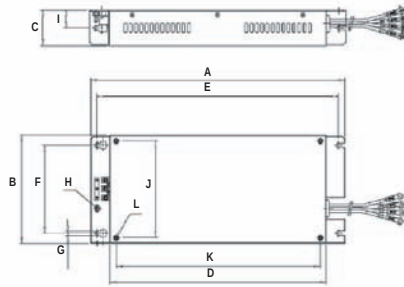
Fig 3

Voltage	Max. applicable motor output kW	Inverter CIMR-L7Z□	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)	3.7	23P7 7	1	140	280	177	126	280	266	7	---	59	5	M5	4	Fan cooled							
	5.5	25P5 7	2	200	300	197	186	300	285	8	0	65.5	2.3	M6	6								
	7.5	27P5 7			310						7												
	11	2011 7			350						216				350		335	7.5	10	78	27		
	15	2015 7			240														380			0	30
	18.5	2018 7			254						464				258		195	400	385	64	100	24	
	22	2022 7			279						615						220	450	435	165		27	
	30	2030 1 ¹	3	380	809	298	250	600	575	12.5	209	3.2	M10	62									
	45	2045 1 ¹			328						302			68									
	55	2055 1 ¹			453	1027	348	325	725		700			130	94								
	4.0	44P0 7			1	140	280	177	126		280			266	7		---	59	5	M5	4		
400 V class (3-phase)	5.5	45P5 7	2	200	300	197	186	300	285	8	---	65.5	2.3	M6	6								
	7.5	47P5 7			350						216				350		335	7.5	78	10			
	11	4011 7																			240	4018 7	258
	15	4015 7			275						535				283		260		550	535		79	
	18.5	4018 7	3	325	715	283	260	550	535	79	105	40											
	22	4022 7																					
	30	4030 7																					
	37	4037 7																					
	45	4045 7																					
	55	4055 7																					

1. F7Z2030 to 2055 meets IP20 / NEMA1

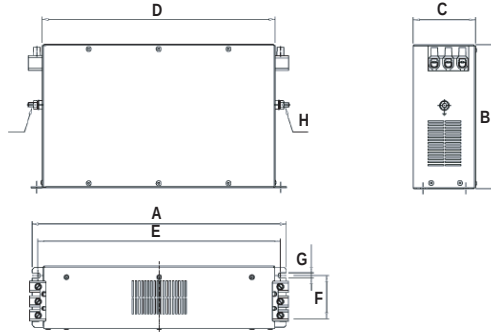
Filters

Footprint filters



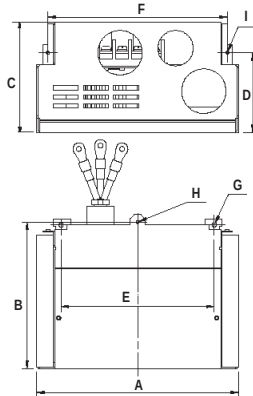
Model		Dimensions											
		A	B	C	D	E	F	G	H	I	J	K	L
200 V	3G3RV-PFI2035-SE	330	141	46	281	313	115	5.5	M5	23	126	266	M5
	3G3RV-PFI2060-SE	355	206	60	302	336	175	6.5	M6	30	186	285	M6
	3G3RV-PFI2100-SE	408	236	80	355	390	205	6.5	M6	40	216	335	M6
400 V	3G3RV-PFI3010SE	330	141	46	281	313	115	5.5	M5	23	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

Bookform filters



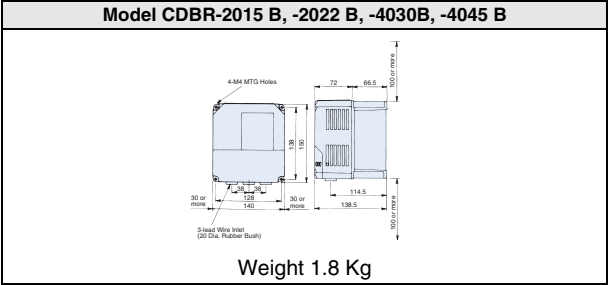
Model		Dimensions							
		A	B	C	D	E	F	G	H
200 V	3G3RV-PFI2130-SE	366	180	90	280	310	65	6.5	M10
	3G3RV-PFI2160-SE	541	170	120	350	380	102	6.5	M10
	3G3RV-PFI2200-SE	610	240	130	480	518	90	8.2	M10
400 V	3G3RV-PFI3070-SE	331	185	80	300	329	55	6.5	M6
	3G3RV-PFI3100-SE	326	150	90	240	270	65	6.5	M10
	3G3RV-PFI3130-SE	370	180	90	280	310	65	6.5	M10

Bottom filters



Model		Dimensions								
		A	B	C	D	E	F	G	H	I
400 V	3G3RV-PFI3018B-SE	116	84.4	107.4	-	86	-	4.5	M4	M4
	3G3RV-PFI3035B-SE	170	152.5	109	79	112	144	4.5	M4	M4
	3G3RV-PFI3060B-SE	200	145	109	79	152	178	4.5	M4	M4

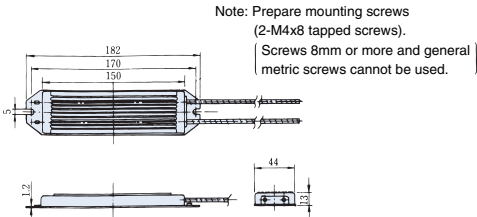
Braking resistor unit



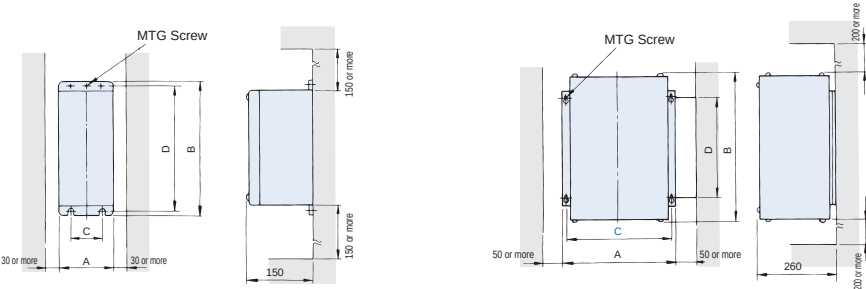
Braking resistor unit (Inveter-mounted type)



Weight: 0.2 kg
Model ERF-150WJ_



Braking resistor unit (separately-installed type)

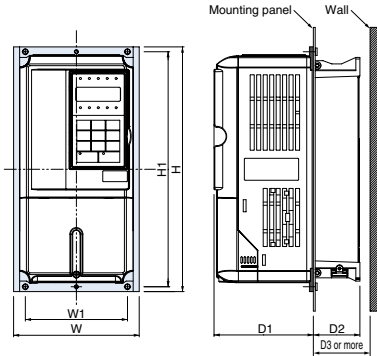


Voltage	Model LKEB-__	Dimensions in mm					Weight kg
		A	B	C	D	MTG screw	
220 V class	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	27P5	250	350	200	335	M6 x 4	8.5
400 V class	44P0	130	350	75	335	M5 x 4	5.0
	45P5	250	350	200	332	M6 x 4	7.5
	47P5	250	350	200	332	M6 x 4	8.5
220 V class	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

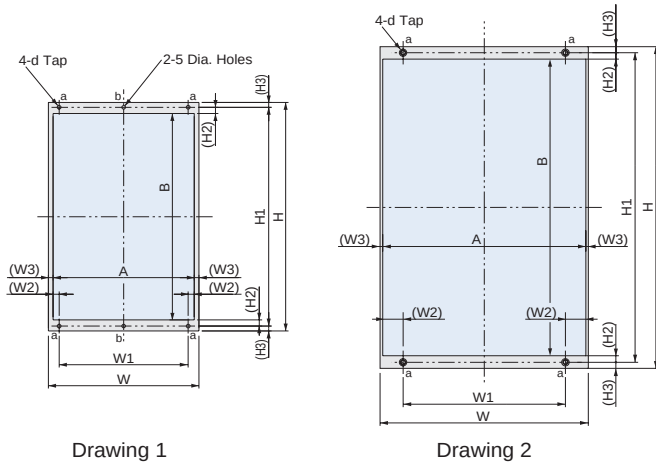
Heatsink external mounting attachment

The Varispeed L7 inverters under the 200/400 V class 18.5 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 22 kW or more.)



Model CIMR-L7Z_	Attachment order code	Dimensions in mm						
		W	H	W1	H1	D1	D2	D3
23P7	EZZ08676A	155	302	126	290	122.6	57.4	60
25P5								
27P5								
2011	EZZ08676B	210	330	180	316	136.1	63.4	70
2015								
2018								
40P4	EZZ08676C	250	392	216	372	133.6	76.4	85
45P5								
47P5								
4011	EZZ08676A	155	302	126	290	122.6	57.4	60
4015								
4018								
4015	EZZ08676B	210	330	180	316	136.1	63.4	70
4018								
4015								
4018	EZZ08676C	250	392	216	372	133.6	76.4	85

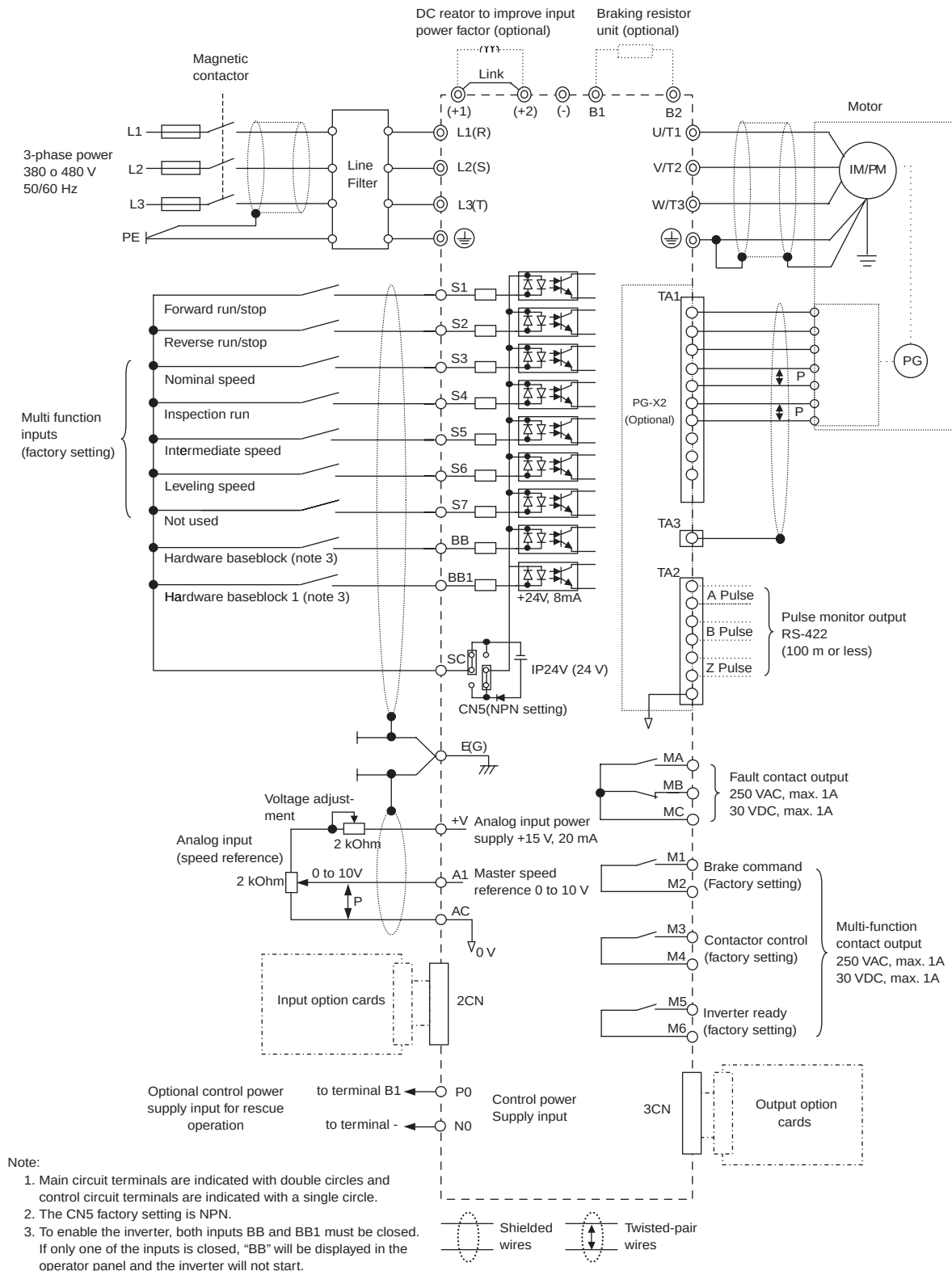
Panel cut for external mounting of cooling fin (heatsink)



Model CIMR-L7Z_	Drawing	Dimensions in mm											
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d	
23P7	1	155	302	126	6	8.5	290	9.5	6	138	271	M5	
25P5													
27P5		210	330	180	8.5	6.5	316	9	7	197	298		
2011													
2015		250	392	216	8.5	372	9.5	10	233	353	M6		
2018	2	250	400	195	24.5	3	385	8	7.5	244	369		
2022		275	450	220	5	435				269	419		
2030													
2037		375	600	250	54.5	8	575	15	12.5	359	545	M10	
2045		450	725	325	5	700	13.5	5	434	673			
2055	1	155	302	126	6	8.5	290	9.5	6	138	271	M5	
44P0													
45P5		210	330	180	8.5	6.5	316	9	7	197	298		
47P5													
4011		250	392	216	8.5	372	9.5	10	233	353	M6		
4015	2	275	450	220	24.5	3	435			269	419		
4018													
4022		325	550	260	5	8	535	8	7.5	309	519		
4030													
4037													
4045													
4055													

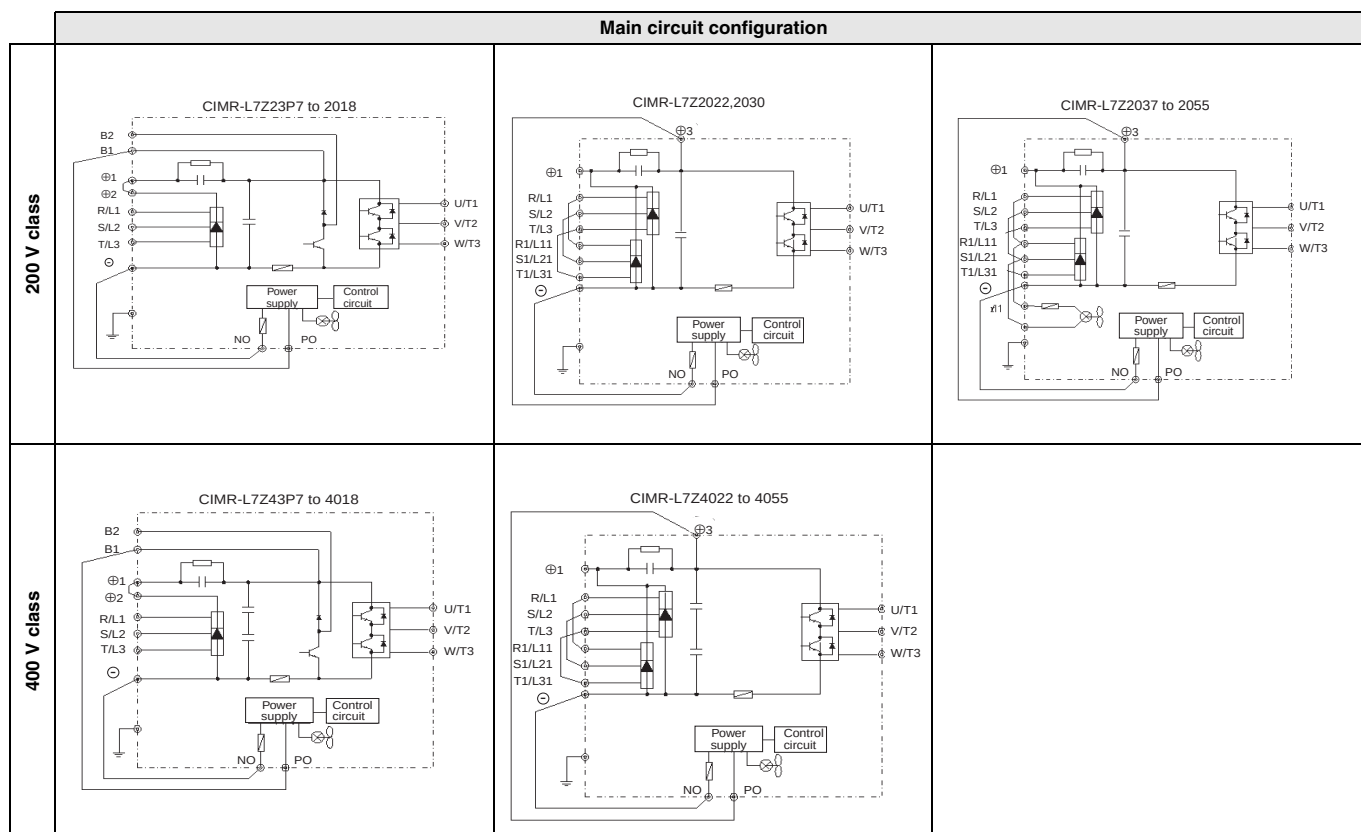
Installation

Standard connections



Main circuit

Voltage	200 V			400 V	
Model CIMR-L7Z□	20P4 to 2018	2022 and 2030	2037 to 2055	40P4 to 4018	4022 to 4055
Max. applicable motor output	0.4 to 18.5 kW	22 and 30 kW	37 to 55 kW	0.4 to 18.5 kW	22 to 55 kW
R/L1	Main circuit input power supply	Main circuit input power supply R-R1, S-S1 and T-T1 have been wired before shipment.		Main circuit input power supply	Main circuit input power supply R-R1, S-S1 and T-T1 have been wired before shipment
S/L2					
T/L3					
R1/L11	---	R-R1, S-S1 and T-T1 have been wired before shipment.		---	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)	Braking unit (⊕3 - ⊖)		DC reactor (⊕1- ⊕2)	Braking unit (⊕3 - ⊖)
⊕1					
⊕2					
⊕3	---			---	
r / I ₁	---	---	Cooling fan power supply	---	
s / I ₂					
PO	Battery power input Ground terminal (100 Ω or less)			Battery power input	
NO					
⊕				Ground terminal (10 Ω or less)	



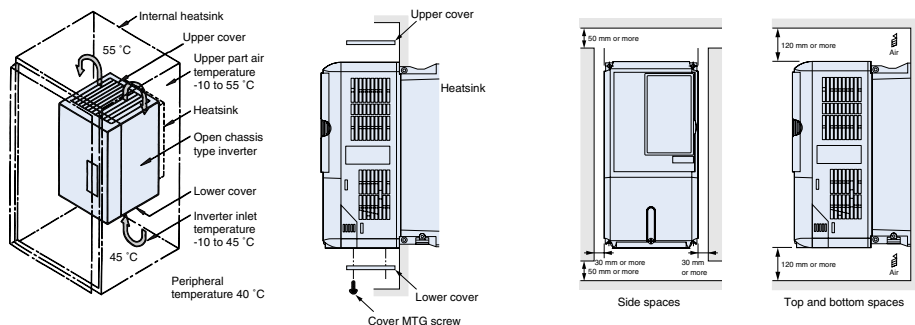
Control circuit

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 photo-coupler
	S2	Reverse run/stop command	Reverse run when ON; stopped when OFF.		
	S3	Nominal speed	Nominal speed when ON.	Functions are selected by setting H1-01 to H1-05.	
	S4	Inspection run	Inspection RUN when ON.		
	S5	Intermediate speed	Intermediate speed when ON.		
	S6	Leveling speed	Leveling speed when ON.		
	S7	Not used	—		
	BB	Hardware baseblock	Safety inputs. To enable the inverter, both inputs BB and BB1 must be closed. If only one of them is closed, “BB” will be displayed in the operator panel and the inverter will not start.		
	BB1	Hardware baseblock 1			
SC	Digital input common	—		—	
Analog input signals	+V	15 V power output	15 V power supply for analog references		15 V (max. current: 20 mA)
	A1	Frequency reference	0 to +10 V/100%		0 to +10 V(20 kΩ)
	AC	Analog reference neutral	—		—
	E(G)	Shield wire, optional ground line connection point	—		—
Sequence output signals	M1	Brake command (1NO contact)	Brake command when ON	Multi-function contact outputs	Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC
	M2				
	M3	Contactor control (1NO contact)	Contactor control when ON		
	M4				
	M5	Inverter ready (1NO contact)	Inverter ready when ON		
	M6				
	MA	Fault output signal (SPDT) (1 change over contact)	Fault when CLOSED across MA and MC		
	MB		Fault when OPEN across MB and MC		
	MC				

When driving a reactive load, such as relay coil with DC power supply, always insert a flywheel diode

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.



Inverter heat loss

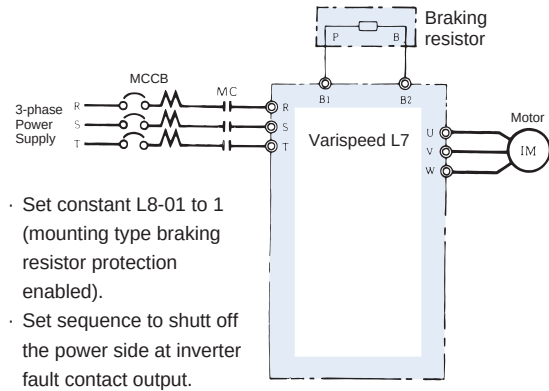
200 V class

Model CIMR-L7Z□		23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055
Inverter capacity		kVA	5.7	8.8	12	17	22	27	32	44	55	82
Rated current		A	15	23	31	45	58	71	85	115	145	215
Heat loss W	Fin	W	112	164	219	374	429	501	586	865	1015	1588
	Inside unit	W	74	84	113	170	183	211	274	352	411	619
	Total heat loss	W	186	248	332	544	612	712	860	1217	1426	2207
Fin coding		Fan cooled										

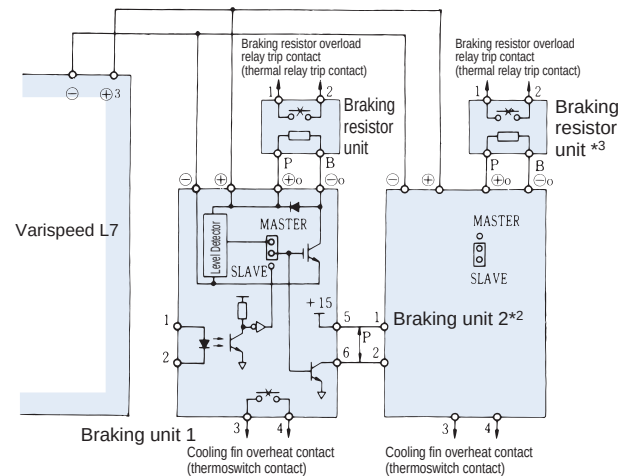
400 V class

Model CIMR-L7Z□		44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055
Inverter capacity		kVA	5.8	9.5	13	18	24	30	34	46	57	85
Rated current		A	7.6	12.5	17	24	31	39	45	60	75	112
Heat loss W	Fin	W	91	127	193	252	326	426	466	678	784	1203
	Inside unit	W	70	82	114	158	172	208	259	317	360	495
	Total heat loss	W	161	209	307	410	498	634	725	995	1144	1698
Fin coding		Fan cooled										

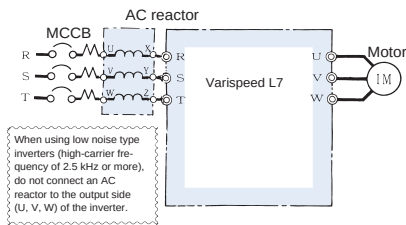
Connections for braking resistors



Connections for braking units

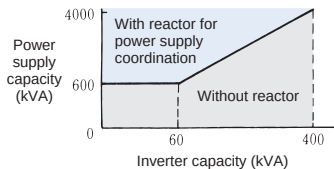
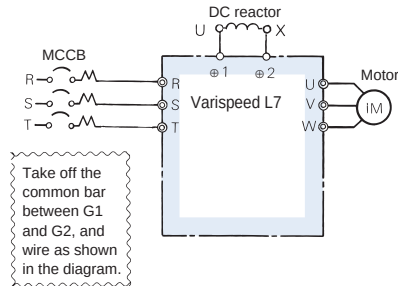


AC reactor



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
4.0	20	0.53	4.0	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

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
4.0	18	3	4.0	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 55	Built-in		22 to 55	Built-in	

Fuse installation

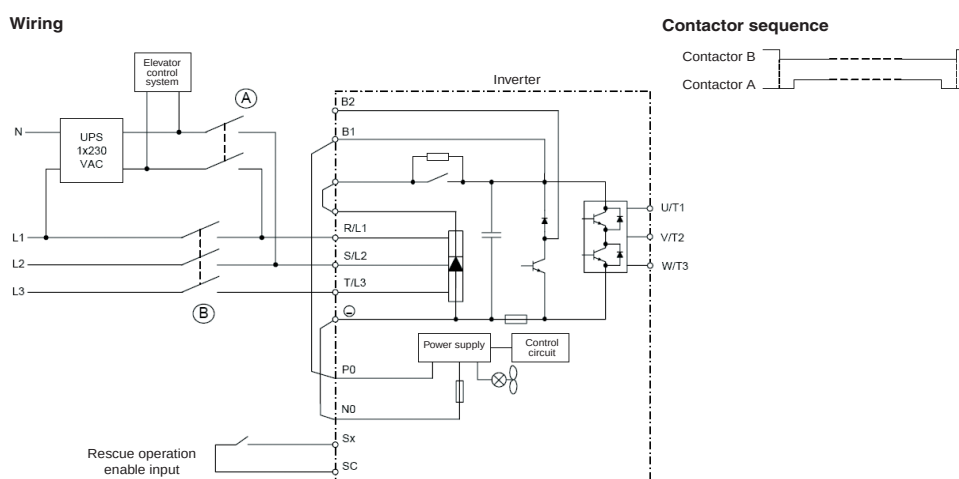
To protect the inverter, it is recommended to use semiconductor fuses as shown in the table below

Inverter type	FUSE		
	Voltage (V)	Current (A)	I^2t (A ² s)
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

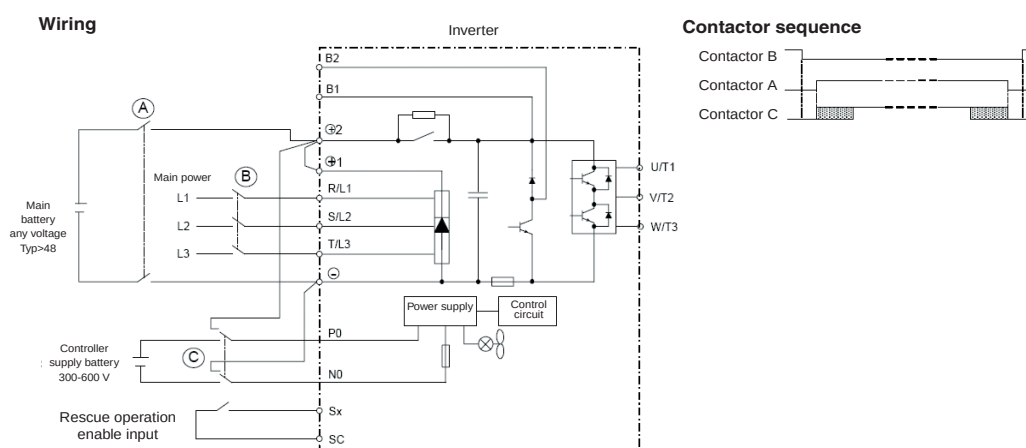
43P7	480	15	34~72
44P0	480	20	50~570
45P5	480	25	100~570
47P5	480	30	100~640
4011	480	50	150~1300
4015	480	60	400~1800
4018	480	70	700~4100
4022	480	80	240~5800
4030	480	100	500~5800
4037	480	125	750~5800
4045	480	150	920~13000
4055	480	150	1500~13000

Rescue system

Example 1: 1phase, 230V UPS power supply.

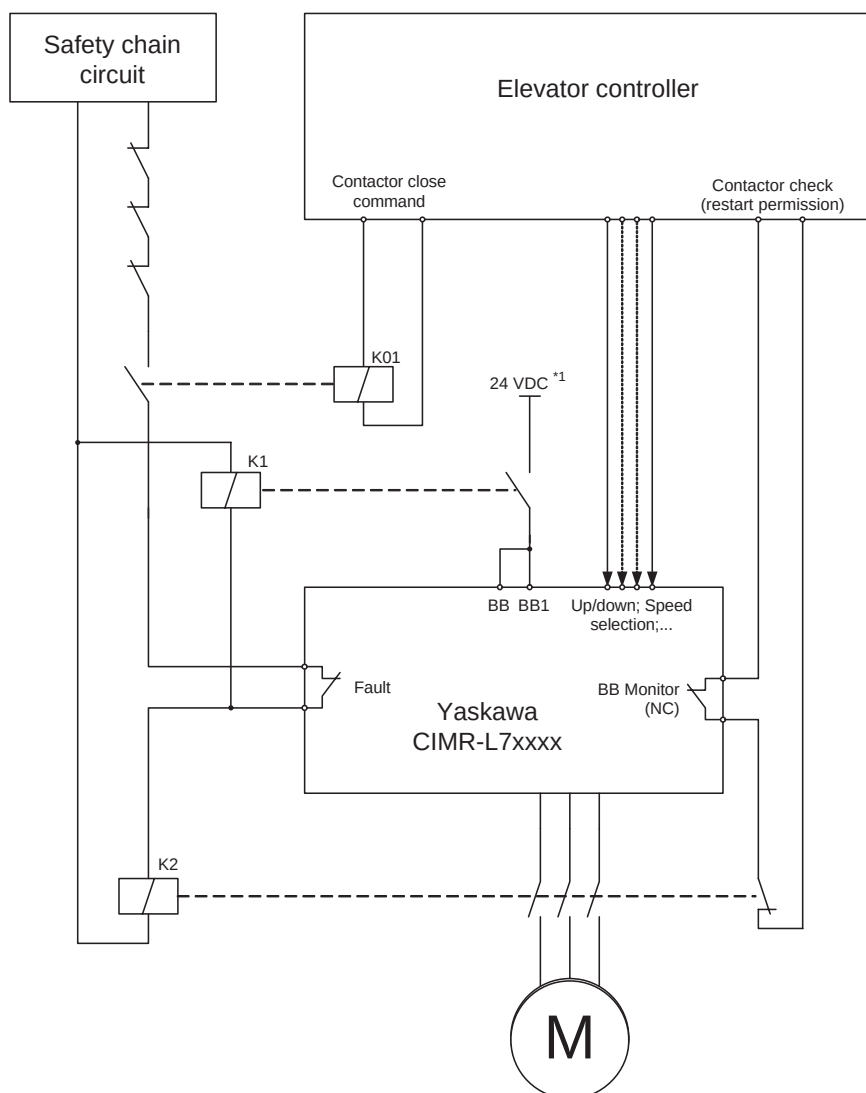


Example 2: two batteries.



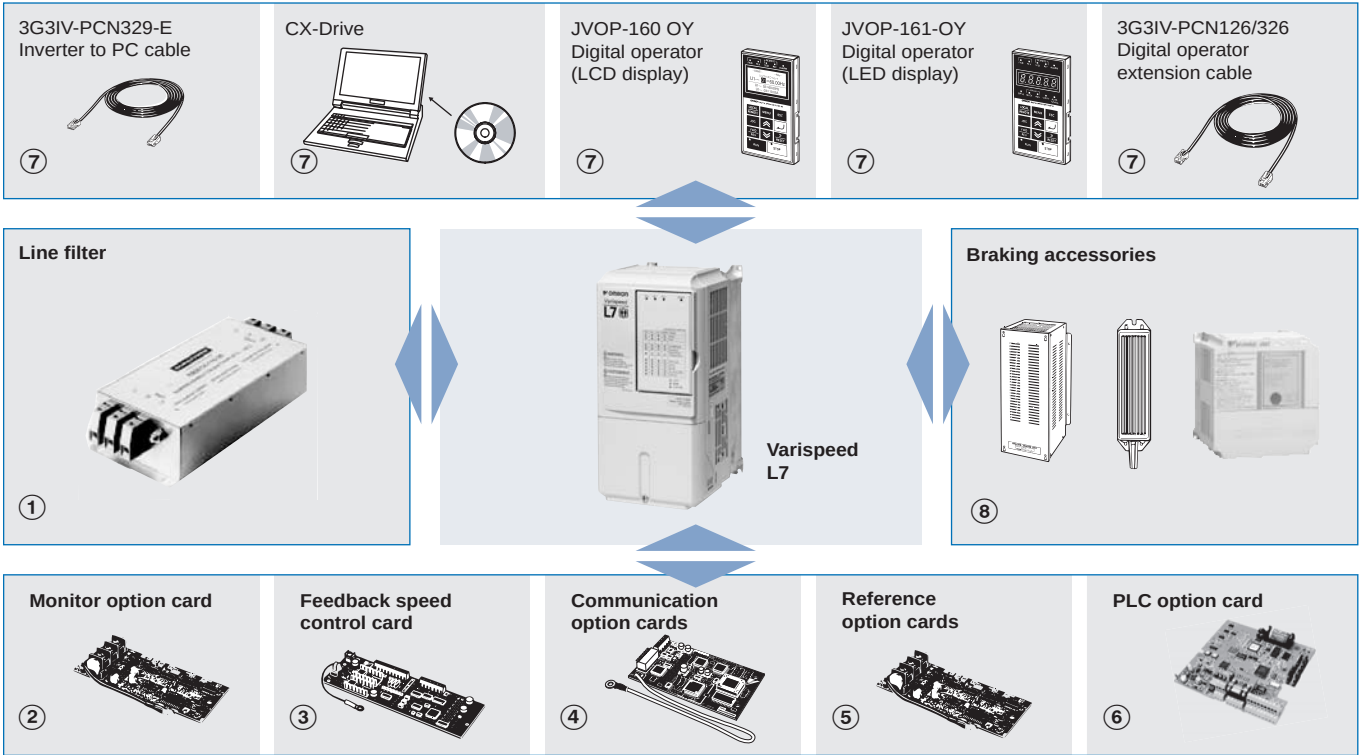
Safety system

Example: EN81-1:1998 compliant installation of L7 with one motor contactor



1. The polarity of this 24 VDC signal depends on the polarity selection for the drives digital inputs. The internal as well as any external 24 VDC power supply can be used.

Ordering information



Varispeed L7



200 V

Specifications			Model
3x200 V	3.7 Kw	17.5 A	CIMR-L7Z23P7
	5.5 Kw	25 A	CIMR-L7Z25P5
	7.5 Kw	33 A	CIMR-L7Z27P5
	11 Kw	49 A	CIMR-L7Z2011
	15 Kw	64 A	CIMR-L7Z2015
	18.5 Kw	80 A	CIMR-L7Z2018
	22 Kw	96 A	CIMR-L7Z2022
	30 Kw	130 A	CIMR-L7Z2030
	37 Kw	160 A	CIMR-L7Z2037
	45 Kw	183 A	CIMR-L7Z2045
	55 Kw	224 A	CIMR-L7Z2055

400 V

Specifications			Model
3x400 V	4.0 Kw	11 A	CIMR-L7Z44P0
	5.5 Kw	14 A	CIMR-L7Z45P5
	7.5 Kw	18 A	CIMR-L7Z47P5
	11 Kw	27 A	CIMR-L7Z4011
	15 Kw	34 A	CIMR-L7Z4015
	18.5 Kw	41 A	CIMR-L7Z4018
	22 Kw	48 A	CIMR-L7Z4022
	30 Kw	65 A	CIMR-L7Z4030
	37 Kw	80 A	CIMR-L7Z4037
	45 Kw	96 A	CIMR-L7Z4045
	55 Kw	128 A	CIMR-L7Z4055

① Input filters

Footprint / bookform filters



200 V

400 V

Inverter model	Line filters			
Varispeed L7	Type	EN55011 class	Current (A)	Weight (kg)
CIMR-L7Z23P7	3G3RV-PFI2035-SE	B, 25 m	35	1.4
CIMR-L7Z25P5		A 100 m		
CIMR-L7Z27P5	3G3RV-PFI2060-SE	B, 25 m	60	3
CIMR-L7Z2011		A 100 m		
CIMR-L7Z2015	3G3RV-PFI2100-SE	B, 25 m	100	4.9
CIMR-L7Z2018		A 100 m		
CIMR-L7Z2022	3G3RV-PFI2130-SE	B, 25 m	130	4.3
CIMR-L7Z2030		A 100 m		
CIMR-L7Z2037	3G3RV-PFI2160-SE	A, 100 m	160	6.0
CIMR-L7Z2045	3G3RV-PFI2200-SE	A, 100 m	200	11.0
CIMR-L7Z2055				

Inverter model	Line filters			
Varispeed L7	Type	EN55011 class	Current (A)	Weight (kg)
CIMR-L7Z44P0	3G3RV-PFI3018-SE	B, 25 m	18	1.3
CIMR-L7Z45P5		A 100 m		
CIMR-L7Z47P5	3G3RV-PFI3021-SE	B, 25 m	21	1.8
CIMR-L7Z4011	3G3RV-PFI3035-SE	B, 25 m	35	2.2
CIMR-L7Z4015	3G3RV-PFI3060-SE	B, 25 m	60	4.0
CIMR-L7Z4018		A 100 m		
CIMR-L7Z4022	3G3RV-PFI3070-SE	B, 25 m	70	3.4
CIMR-L7Z4030		A 100 m		
CIMR-L7Z4037	3G3RV-PFI3100-SE	A, 100 m	100	4.5
CIMR-L7Z4045				
CIMR-L7Z4055	3G3RV-PFI3130-SE	A, 100 m	130	4.7

① Input filters

Botton filters

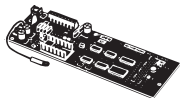
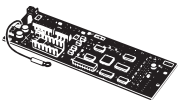
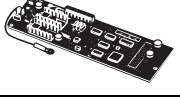
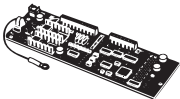
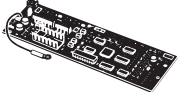


Inverter model	Line filters			
Varispeed L7	Type	EN55011 class	Current (A)	Weight (kg)
CIMR-L7Z44P0	3G3RV-PFI3018B-SE	B, 25 m	18	1,0
CIMR-L7Z45P5		A 100 m		
CIMR-L7Z47P5	3G3RV-PFI3035B-SE	B, 25 m	35	1,5
CIMR-L7Z4011		A 100 m		
CIMR-L7Z4015	3G3RV-PFI3060B-SE	B, 25 m	60	2,2
CIMR-L7Z4018		A 100 m		

② Monitor option cards

Type	Model	Description	Function
Monitor option card	DO-08 / 3G3IV-PDO08	Digital output card	Outputs isolated type digital signal for monitoring inverter run state (alarm signal, zero speed detection etc.). Output channel: Photo coupler 6 channels (48 V, 50 mA or less) Relay contact output 2 channels (250 VAC, 1 A or less) 30 VDC, 1 A or less
	DO-02C / 3G3IV-PDO02C	2C-relay output card	• Two multi-function contact outputs (2C-relay) can be used other than those of the inverter proper unit.

③ 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-F2 		Hiperface and endat encoder option.

④ Communication option cards

Type	Model	Description	Function
Communication option card	SI-N1	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. - It supports DSP402 CANopen standard protocol for drives control in speed control.
	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.

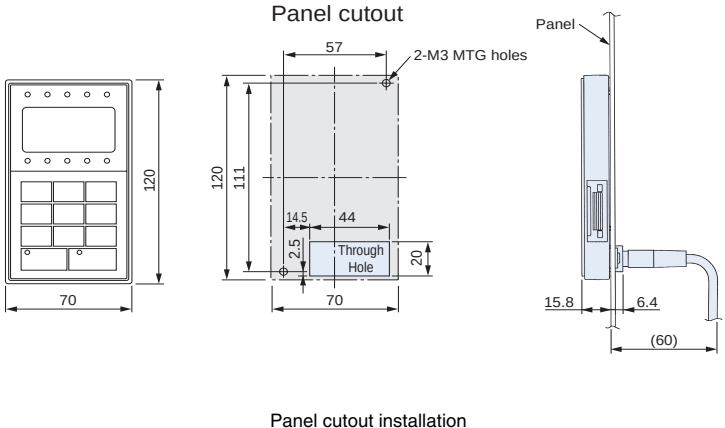
⑤ Reference option cards

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) 4 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

⑥ PLC option boards

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 models with DeviceNet support.

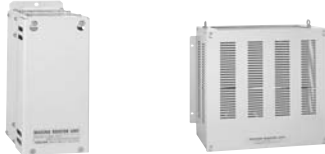
⑦ Accessories

Type	Model	Description	Installation / Function
Digital operator	JVOP-160-OY	5 lines LCD digital operator 7 language support	 Panel cutout 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 inverter to PC

⑦ Accessories

Symbol	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.

⑧ 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-L7Z_	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	3.7	23P7	Built-in		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						
400 V class	4.0	44P0	Built in		201	200 Ω	1	110	44P0	390 W 150 Ω	1	135	32	
	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			

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 (can 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.

CIMR-E7Z

Varispeed E7

Frequency inverter for pumps and fans

- Energy saving function.
- Advanced PID controller with dedicated HVAC functions.
- 12 pulse operation for harmonics reduction.
- Speed search.
- Standard RS-485 communication - MODBUS.
- Optional network cards (DeviceNet, PROFIBUS, CANOpen, LONWORKS).
- CE, UL, and cUL marked and Germanischer Lloyds approval.
- Embedded OMRON PLC functionality with PLC option card
- PC configuration tool CX-drive.
- CE, UL, and cUL marked and Lloyds approval.

E7IP54

- Robust metal chassis.
- LCD operator.
- Built in RFI filter.

Customized software

- The inverter software can be customized to meet specific application. Examples:
- Pump sequencer (S-8801).

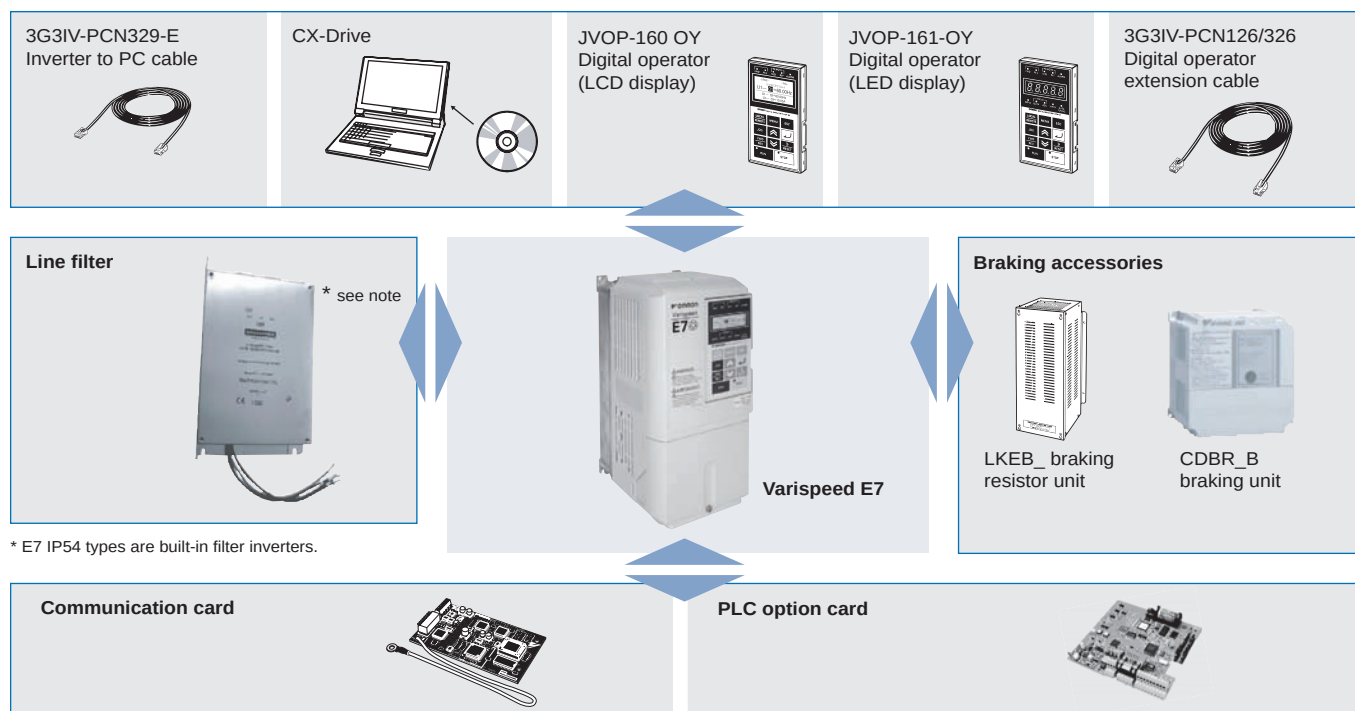
*For detailed information please refer to CASE software section.

Ratings

- 200 V Class 0.4 to 110 kW.
- 400 V Class 0.4 to 300 kW.

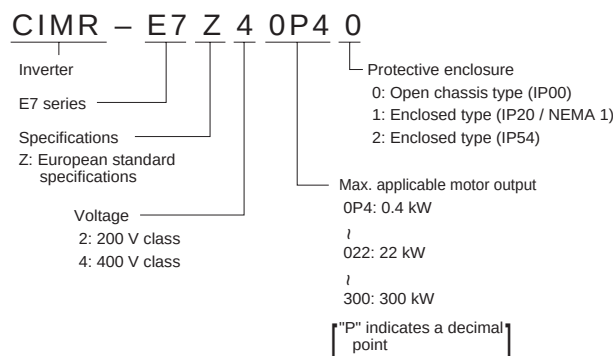


System configuration



* E7 IP54 types are built-in filter inverters.

Type designation



200 V class

Model CIMR-E7Z□		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
	Max. voltage	3-phase; 200, 220, 230, or 240 VAC (proportional to input voltage)																	
	Max. output frequency	200.0																	
Power supply	Rated input voltage and frequency	3-phase, 200/208/220/230/240 VAC, 50/60 Hz																	
	Allowable voltage fluctuation	+ 10%, - 15%																	
	Allowable frequency fluctuation	±5%																	
Harmonic wave prevention	DC reactor	Optional										Built in							
	12-pulse input	Not possible										Possible*2							

- 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.
- A 3-wire transformer is required on the power supply for 12-phase rectification.

400 V class

Model CIMR-E7ZZ□		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300
IP54 model: CIMR-E7Z		---	---	---	---	---	---	---	47P52	40112	40152	40182	40222	40302	40372	40452	40552	---	---	---	---	---	---	---	---
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	675
	Max. voltage	3-phase; 380, 400, 415, 440, 460, or 480 VAC (proportional to input voltage)																							
	Max. output frequency	200.0																							
Power supply	Rated input voltage and frequency	3-phase, 380, 400, 415, 440, 460 or 480 VAC, 50/60 Hz																							
	Allowable voltage fluctuation	+ 10%, - 15%																							
	Allowable frequency fluctuation	±5%																							
Harmonic wave prevention	DC reactor	Optional										Built in													
	12-pulse input	Not possible										Possible*2													

- 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.
 - A 3-wire transformer is required on the power supply for 12-phase rectification
- * To agg 400 V class

Enclosures

Model CIMR-E7Z□		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110										
200 V class	Enclosed type (IEC IP20)	Available as standard										Available for option					Not available												
	Open chassis type (IEC IP00)	Available by removing the upper and lower cover of enclosed type										Available as standard																	
Model CIMR-E7Z□		40P4	40P7	41P5	42P2	43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300					
400 V class	Enclosed type (IEC IP20)	Available as standard										Available for option										Not available							
	Open chassis type (IEC IP00)	Available by removing the upper and lower cover of enclosed type										Available as standard																	
	Enclosed type (IP54)	-----						Available as standard						-----															

Common specifications

Model Number CIMR-E7Z□		Specification
Control characteristics	Control method	Sine wave PWM V/f control
	Speed control range	1:40
	Speed control accuracy	±3 (25 °C ± 10 °C)
	Frequency control range	0.0 to 200.0 Hz
	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
	Frequency setting signal	0 to +10 V, 4 to 20 mA
	Accel/decel time	0.01 to 6000.0 s (2 selectable combinations of independent acceleration and deceleration settings)
Protective functions	Braking torque	Approximately 20%
	Main control functions	Restarting for momentary power loss, speed searches, overtorque detection, 5-speed control (maximum), acceleration/deceleration time changes, S-curve acceleration, 3-wire control, autotuning, cooling fan ON/OFF control, torque compensation, jump frequencies, upper and lower limits for frequency references, DC braking for starting and stopping, high-slip braking, PI control (with sleep function), energy-saving control, MEMOBUS communications (RS-485/422, 19.2 kbps maximum), fault reset, and copy function.
	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	120% of rated output current for 1 minute
	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, or running.
Environment	Grounding protection	Protection by electronic circuits.
	Charge indicator	Lights up when the main circuit DC voltage is approx. 50 V or more.
	Protective structure	Enclosed wall-mounted type (NEMA 1): 18.5 kW or less (same for 200 V and 400 V class inverters) Open chassis type (IP00): 22 kW or more (same for 200 V and 400 V class inverters) Enclosed wall-mounted type (IP54): From 7.5 Kw to 55 Kw (400 V class inverters)
	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)

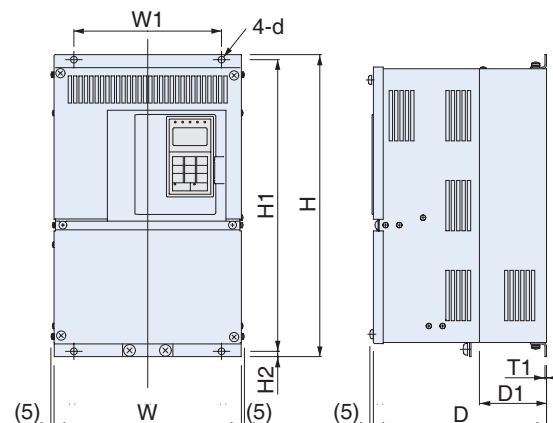


Fig 1

Voltage	Max. applicable motor output kW	Inverter CIMR-E7Z□	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	----	3	Not available, please use the IP20 type removing the upper and lower cover										Fan cooled
	0.75	----												
	1.5	----												
	2.2	----												
	3.7	----												
	5.5	----												
	7.5	----												
	11	----												
	15	----												
	18.5	----												
	22	2022 0	3	250	400	258	195	385	7.5	100	2.3	M6	21	
	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				63				
55	2055 0	450		725	348	325	700	130		86				
75	2075 0									87				
90	2090 0	500		850	358	370	820	15	140	4.5	M12	108		
110	2110 0	575		885	378	445	855					150		
400 V class (3-phase)	0.4	----	3	Not available, please use the IP20 type removing the upper and lower cover										Fan cooled
	0.75	----												
	1.5	----												
	2.2	----												
	4.0	----												
	5.5	----												
	7.5	----												
	11	----												
	15	----												
	18.5	----												
	22	4022 0	3	275	450	258	220	435	7.5	100	2.3	M6	21	
	30	4030 0		325	550	283	260	535		105			36	
	37	4037 0		450	725	348	325	700	12.5	130	3.2	M10	88	
	45	4045 0											89	
	55	4055 0		500	850	358	370	820	15	140	4.5	M12	102	
	75	4075 0											120	
	90	4090 0		575	916	378	445	855	45.8	140	4.5	M12	160	
	110	4110 0											260	
	132	4132 0		710	1305	413	540	1270	15	125.5	4.5	M12	280	
	160	4160 0											405	
	185	4185 0		916	1475	413	730	1440	15	125.5	4.5	M12	280	
	220	4220 0											405	
300	4300 0													

Enclosed type (IEC IP20)

E7Z 20P41 to E7Z25P51
E7Z40P41 to E7Z45P51

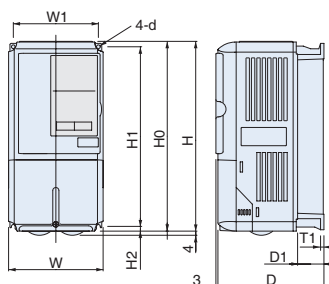


Fig 1

E7Z 27P51 to E7Z20181
E7Z47P51 to E7Z40181

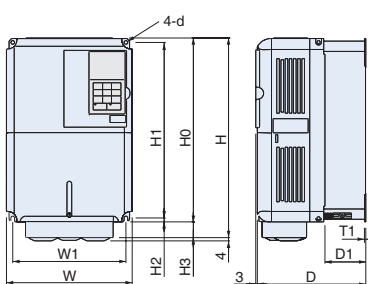


Fig 2

E7Z 20221 to E7Z20751
E7Z40221 to E7Z41601

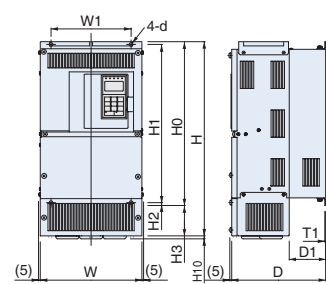
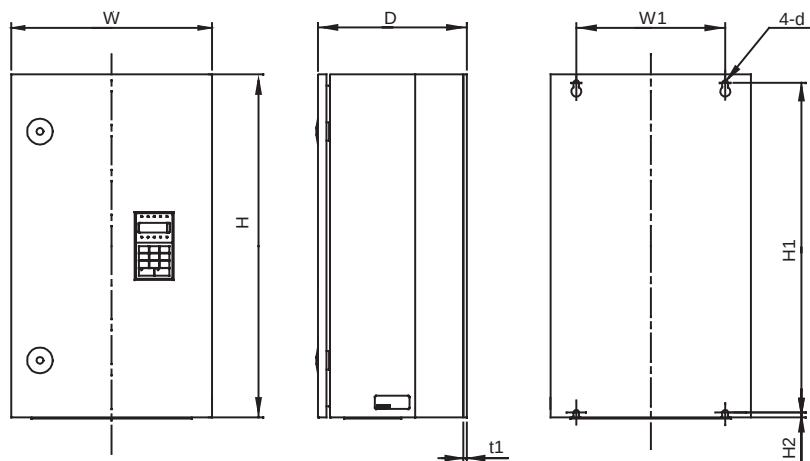


Fig 3

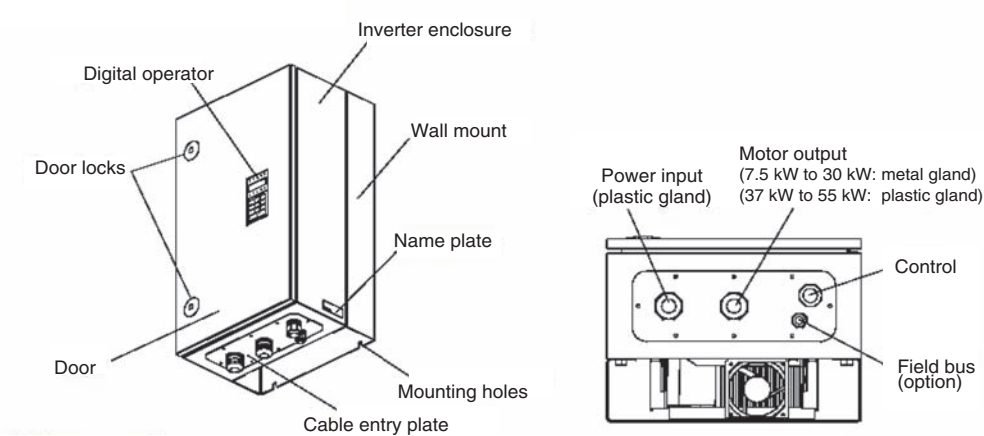
Voltage	Max. applicable motor output kW	Inverter CIMR-E7Z□	Fig	Dimensions in mm											Approx. weight kg	Cooling method			
				W	H	D	W1	H0	H1	H2	H3	D1	T1	d					
200 V class (3-phase)	0.4	20P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	3	Self cooled			
	0.75	20P7 1																	
	1.5	21P5 1				177						59			4				
	2.2	22P2 1																	
	3.7	23P7 1																	
	5.5	25P5 1																	
	7.5	27P5 1	2	200	300	197	186	300	285	8	0	65.5	2.3	M6	6	Fan cooled			
	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						24		
	22	2022 1		3	254	535	258	195	400	385	7.5	135			100		3.2	M10	27
	30	2030 1			279	615		220	450	435		165							62
	37	2037 1	380		809	298	250	600	575	12.5	209	130	68						
	45	2045 1											328	94					
	55	2055 1	453		1027	348	325	725	700	12.5	302	130	95						
	75	2075 1																	
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				177						59			4				
	2.2	42P2 1																	
	3.7	43P7 1																	
	4.0	44P0 1																	
	5.5	45P5 1	2	200	300	197	186	300	285	8	---	65.5	2.3	M6	6	Fan cooled			
	7.5	47P5 1			310										10		10		
	11	4011 1		240	350	207	216	350	335	7.5	85	100			24				
	15	4015 1			105												40		
	18.5	4018 1		3	275	535	258	220	450	435	7.5	105			105		3.2	M10	96
	22	4022 1				615													122
	30	4030 1	715		283				105	130	4.5	M12	130						
	37	4037 1											170						
	45	4045 1	1027		348				12.5	302	130	4.5	M12	170					
	55	4055 1																	
	75	4075 1																	
	90	4090 1																	
	110	4110 1	504	1243	358	370	850	820	15	393	140	4.5	M12	170					
	132	4132 1																	
160	4160 1																		

Enclosed wall-mounted inverters (IP54 type)



Voltage	Max. applicable motor output kW	Inverter CIMR-E7Z□	Dimensions in mm								Heat loss (W)	Cooling method					
			W	H	D	W1	H1	H2	T1	d			Approx. weight (kg)				
400 V class (3-phase)	7.5	47P52	350	600	240	260	576	9	2.5	M8	25	304	Fan				
	11	40112			260						576	9		2.5	M8	30	427
	15	40152															536
	18.5	40182															662
	22	40222	410	650	300	370	620	12	2.5	M10	43	754					
	30	40302			330						989						
	37	40372									1145						
	45	40452	580	750	330	410	714	11	2.5	M14	71	1317					
	55	40552										1701					

Component names



Accessories

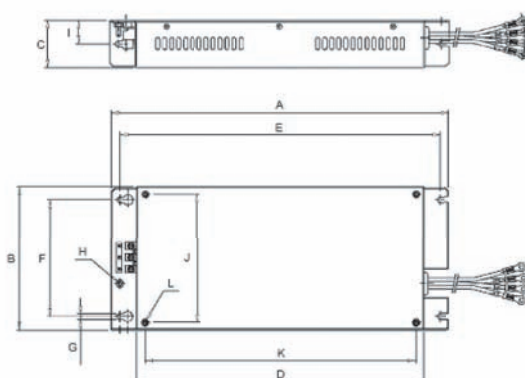
Following parts are delivered in the package with the inverter.

Part name	Qty
Cable gland (for input)*	1
Cable gland (for motor output)*	1
Cable gland (for control)*	1
Cable gland (for fieldbus)*	1
Door key	1
Blind plug (control cable entry)	1
Blind plug (fieldbus cable entry)	1

*Locknuts for each cable gland are also supplied.

Filters

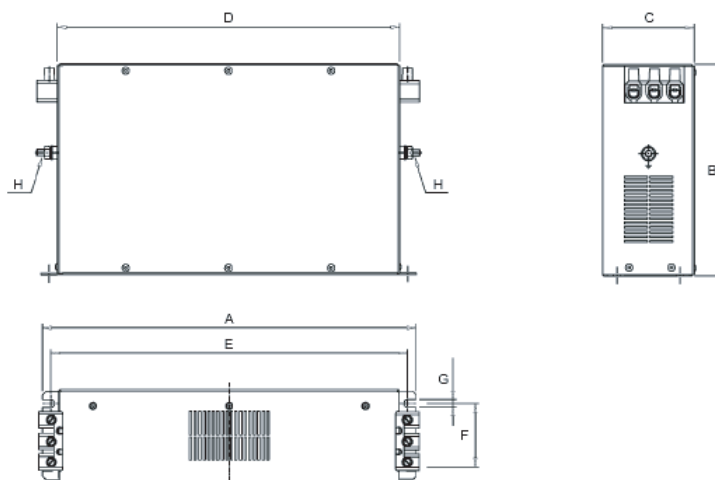
Footprint / Flat filters



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	-	-	-	-

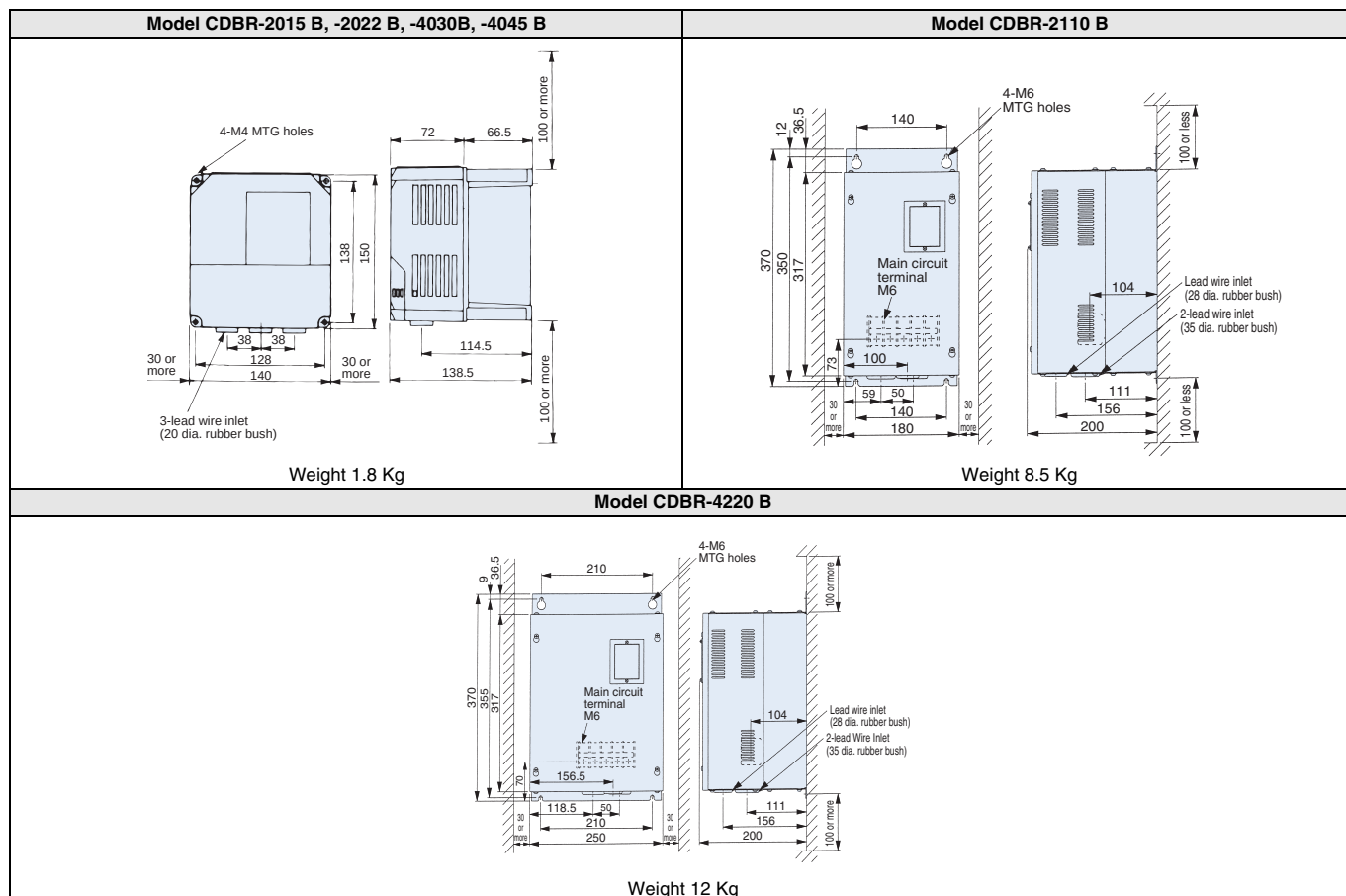
1. Flat filters are not possible to be mounted as footprint filters.

Bookform filters

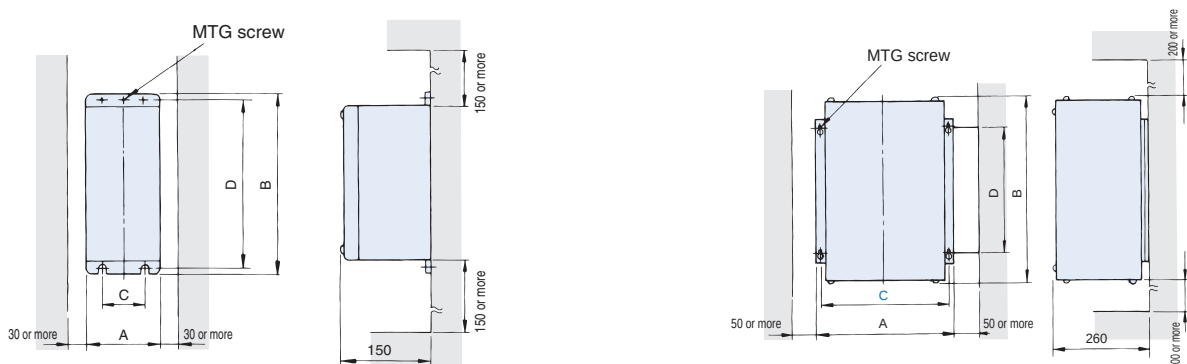


Model		Dimensions							
		A	B	C	D	E	F	G	H
200 V	3G3RV-PFI2130-SE	366	180	90	280	310	65	6.5	M10
	3G3RV-PFI2160-SE	451	170	120	350	380	102	6.5	M10
	3G3RV-PFI2200-SE	610	240	130	480	518	90	8.2	M10
400 V	3G3RV-PFI3070-SE	331	185	80	300	329	55	6.5	M6
	3G3RV-PFI3100-SE	326	150	90	240	270	65	6.5	M10
	3G3RV-PFI3130-SE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



Braking resistor unit (separately-installed type) dimensions



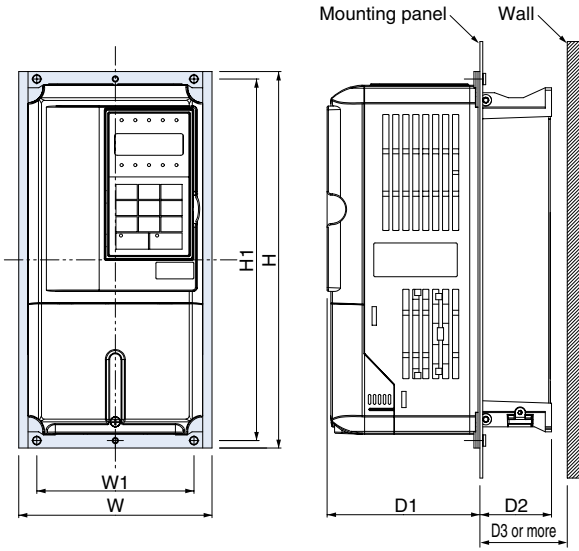
Voltage	Model LKEB-	Dimensions in mm					Weight kg
		A	B	C	D	MTG screw	
220 V class	20P7	105	275	50	260	M5 x 3	3.0
	21P5	130	350	75	335	M5 x 4	4.5
	22P2	130	350	75	335	M5 x 4	4.5
	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	25P5	250	350	200	335	M6 x 4	8.5
400 V class	40P7	105	275	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
	4011	350	412	330	325	M6 x 4	16
400 V class	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

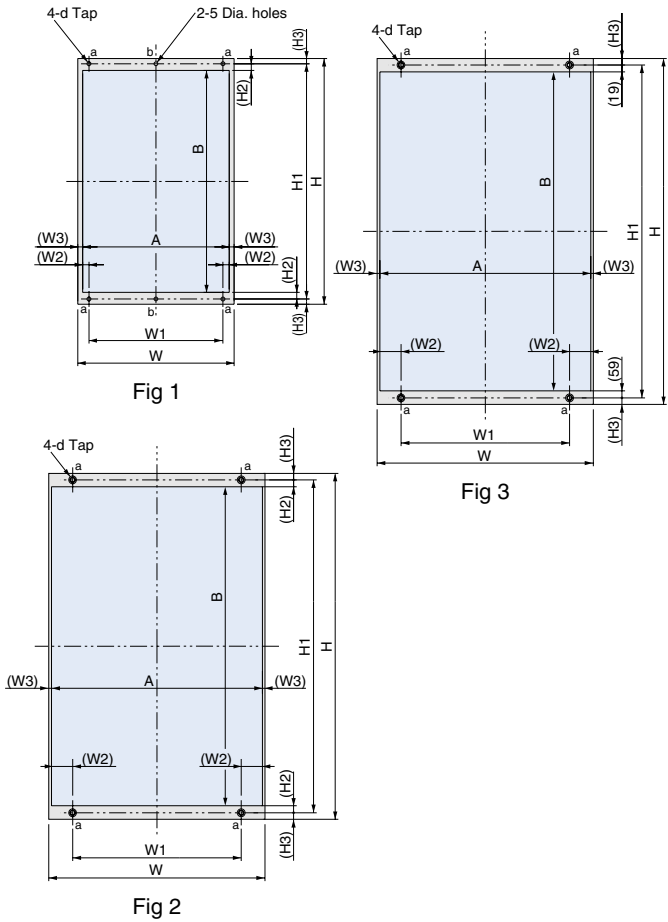
Heatsink external mounting attachment

The Varispeed E7 inverters under the 200/400 V class 18.5 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 22 kW or more.)



Model CIMR- E7Z	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							57.4	60
22P2								
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								
2018								
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								
4018								

Panel cut for external mounting of cooling fin (heatsink)

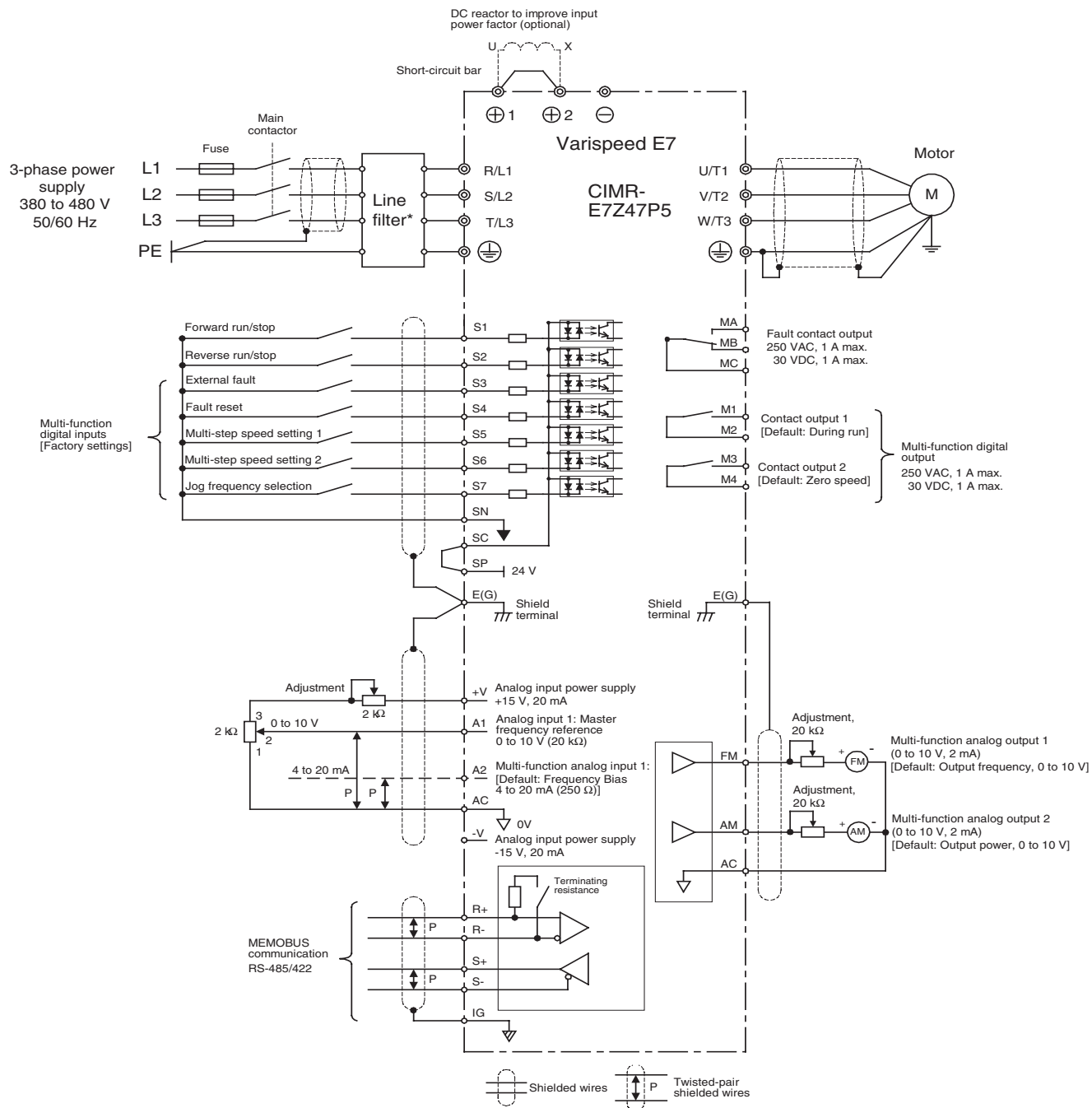


Model CIMR- E7Z□	Drawing	Dimensions in mm															
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d					
20P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5					
20P7																	
21P5																	
22P2																	
23P7																	
25P5																	
27P5		210	330	180	8.5	6.5	316	9	7	197	298	M6					
2011																	
2015																	
2018	250	392	216	8.5	372	9.5	10	233	353								
2022	275	450	220	24.5	3	385	8	7.5	244	369							
2030						435			269	419							
2037	2	375	600	250	54.5	8	575	15	12.5	359	545	M10					
2045		450	725	325			700	13.5		434	673						
2055																	
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																	
45P5																	
47P5		210	330	180	8.5	6.5	316	9	7	197	298	M6					
4011																	
4015																	
4018		250	392	216	8.5	372	9.5	10	233	353							
4022																	
4030		275	450	220	24.5	3	435	8	7.5	269	419		M10				
4037		325	550	260		8	535			309	519						
4045																	
4055																	
4075		2	450	725		325	54.5			8	700	13.5		12.5	434	673	M12
4090																	
4110																	
4132	500		850	370	57	8	820	19	15	484	782						
4160																	
3												575	925	445	55	10	

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

Installation

Standard connections

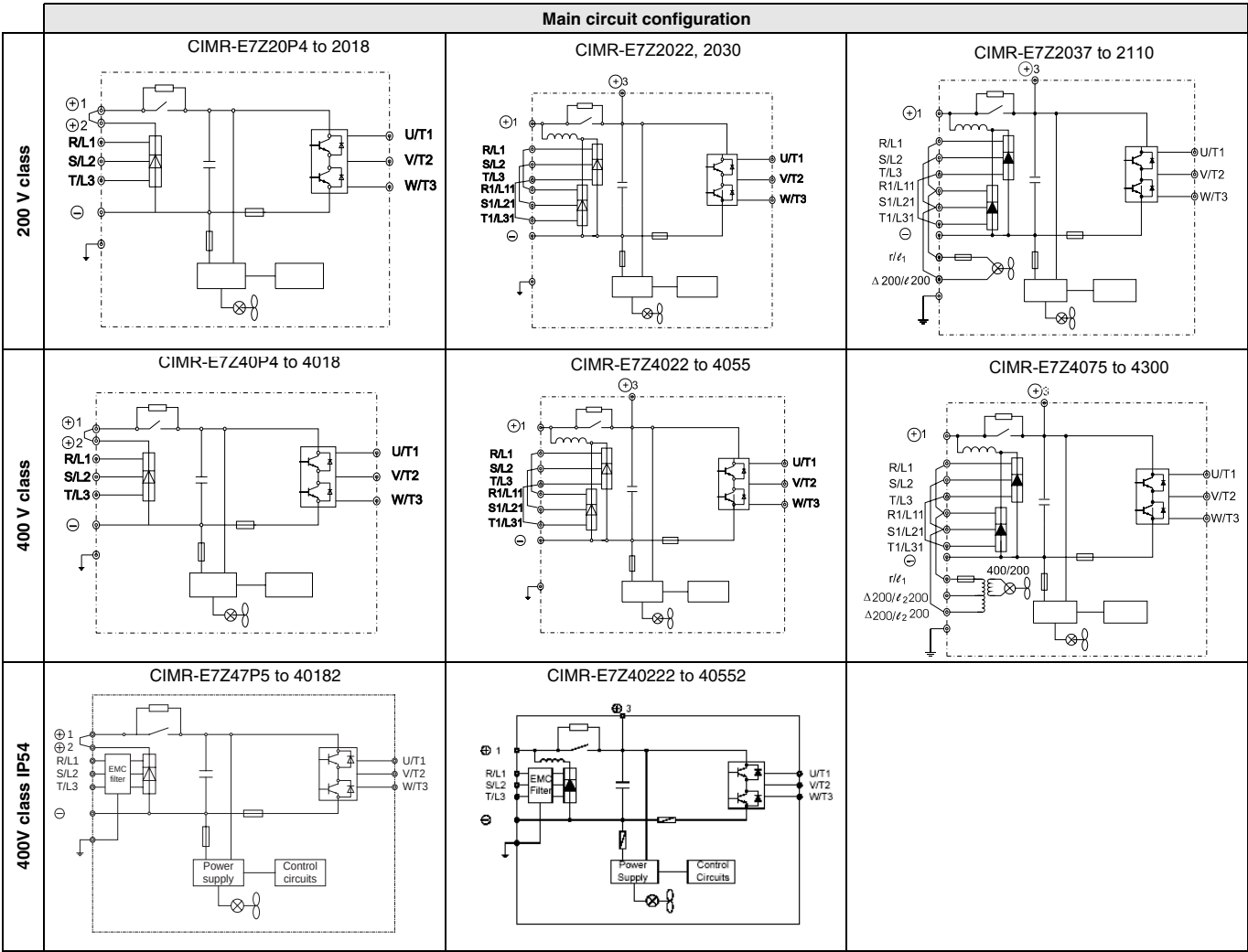


*E7 IP54 types has RFI filter included as standard

Main circuit

Voltage	200 V			400 V		
Model CIMR-E7Z□	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						
⊖	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						
Δ /I2	-----		Cooling fan power supply ²	---		Cooling fan power supply ³
r/I1	-----			---		
Δ 200 / I2 200	-----			---		
Δ 400 / I2 400						
PE (⊕)	Ground terminal (100 Ω or less)			Ground terminal (10 Ω or less)		

- ⊕1 - ⊖ DC power input does not conform to UL/c-UL listed standard.
- Cooling fan power supply r/I₁ - Δ / I₂: 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.)
- Cooling fan power supply r/I₁ - Δ / I₂ 200: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz, r/I₁ - Δ / I₂ 400: 380 to 480 VAC 50/60 Hz

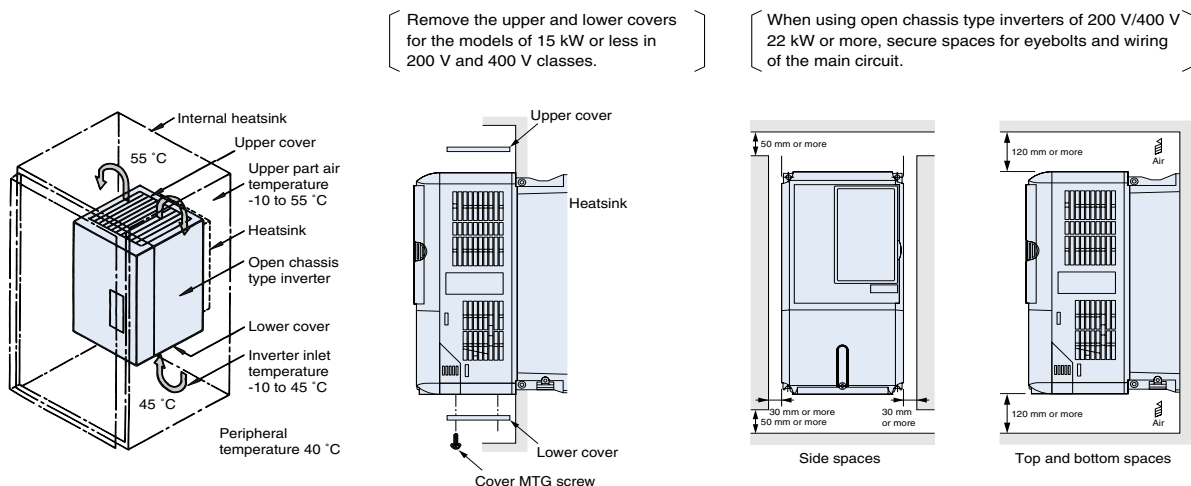


Control circuit

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 isolation
	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)
	A1	Frequency reference	0 to +10 V/100%		0 to +10 V (20 kΩ)
	A2	Multi-function analog input	4 to 20 mA/100% 0 V to +10 V/100% 0 to 20 mA/100%	Function is selected by setting H3-09.	4 to 20 mA (250 Ω) 0 V to +10 V (20 kΩ) 0 to 20 mA (250 Ω)
	AC	Analog reference common	—		—
	E(G)	Shield wire, optional ground line connection point	—		—
Digital output signals	M1	Running signal (1NO contact)	Operating when ON.		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				
	MA	Fault output signal	Fault when CLOSED across MA and MC Fault when OPEN across MB and MC		
	MB				
	MC				
Analog output signals	FM	Multi-function analog output (frequency output)	0 to 10 V, 10 V=100% output frequency	Multi-function analog output 1	0 to +10 V max. ±5% 2 mA max.
	AC	Analog common	—		
	AM	Multi-function analog output (current monitor)	0 to 10 V, 10V = 200% of the inverter rated current	Multi-function analog output 2	
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	—		—

Note:

- 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.



Inverter heat loss

200 V class

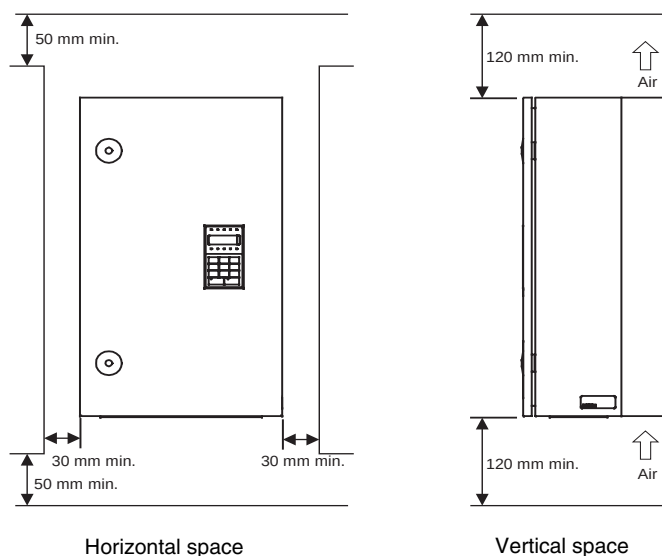
Model CIMR-E7Z□		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
Inverter capacity	kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
Rated current	A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415
Heat loss W	Fin	W	20	27	50	70	112	164	219	374	429	501	586	865	1015	1266	1588	2019	2437
	Inside unit	W	39	42	50	59	74	84	113	170	183	211	274	352	411	505	619	838	997
	Total heat loss	W	59	69	100	129	186	248	332	544	612	712	860	1217	1426	1771	2207	2857	3434
Fin cooling		Self cooled							Fan cooled										

400 V class

Model CIMR-E7Z□		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	401 1	401 5	401 8	402 2	403 0	403 7	404 5	405 5	407 5	409 0	411 0	413 2	416 0	418 5	422 0	430 0	
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	120	139	161	209	238	279	323	374	583
	Inside unit	W	39	41	48	56	68	70	82	114	158	172	208	259	317	360	415	495	575	671	853	100	114	137	153	232
	Total heat loss	W	53	58	84	115	148	161	209	307	410	498	634	725	995	114	131	169	197	228	295	339	393	460	527	815
Fin cooling		Self cooled					Fan cooled																			

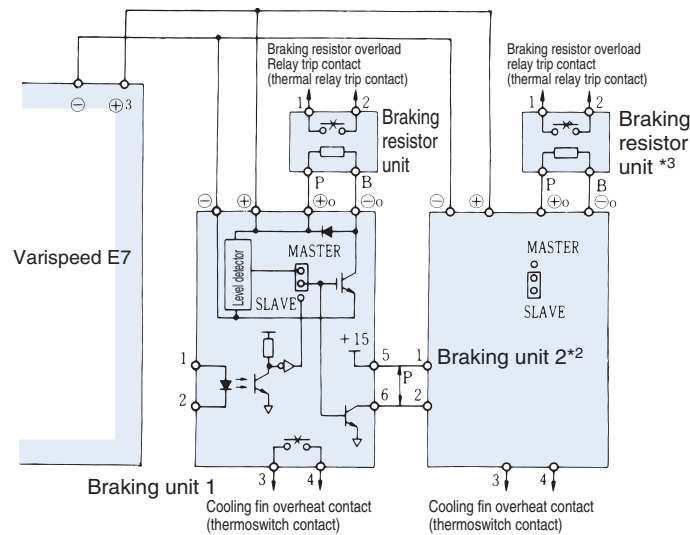
Installation conditions for IP54

Install the inverter vertically in order to ensure a proper cooling. When installing the inverter, always provide the following minimum installation space to allow normal heat dissipation.



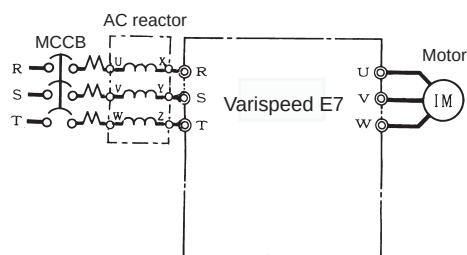
1. Always provide enough space for the main circuit or control lines including cable gland.
2. If installing inverters next to one another provide a minimum spacing of 60 mm.

Connections for braking units

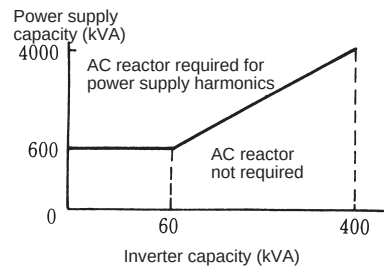


AC reactor

Connection example

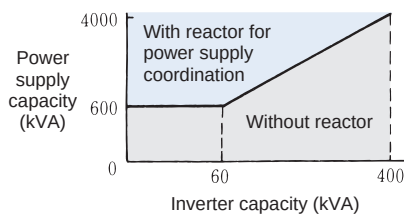
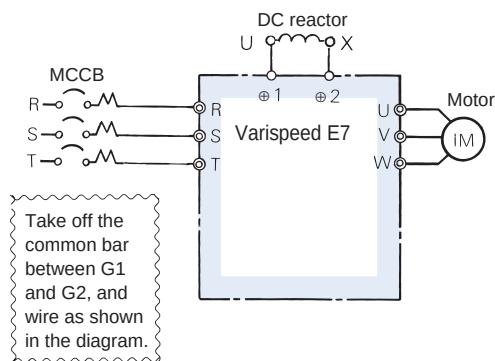


Application example



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		
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	

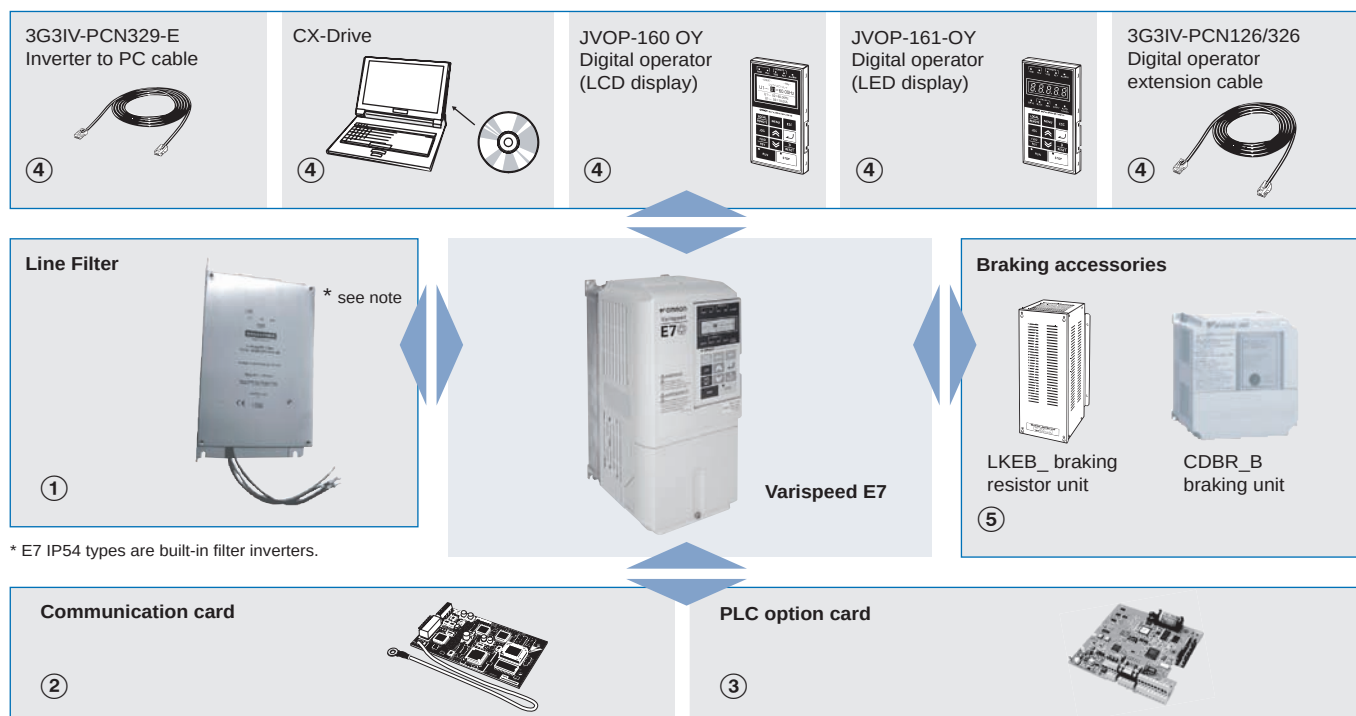
Fuse installation

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 ² s)
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 ² s)
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 E7



200 V

Specifications			Model
IP20	0.55 Kw	3.2 A	CIMR-E7Z20P41
	0.75 Kw	4.1 A	CIMR-E7Z20P71
	1.5 Kw	7.0 A	CIMR-E7Z21P51
	2.2 Kw	9.6 A	CIMR-E7Z22P21
	3.7 Kw	15 A	CIMR-E7Z23P71
	5.5 Kw	23 A	CIMR-E7Z25P51
	7.5 Kw	31 A	CIMR-E7Z27P51
	11 Kw	45 A	CIMR-E7Z20111
	15 Kw	58 A	CIMR-E7Z20151
IP00	18.5 Kw	71 A	CIMR-E7Z20181
	22 Kw	85 A	CIMR-E7Z20220
	30 Kw	115 A	CIMR-E7Z20300
	37 Kw	145 A	CIMR-E7Z20370
	45 Kw	180 A	CIMR-E7Z20450
	55 Kw	215 A	CIMR-E7Z20550
	75 Kw	283 A	CIMR-E7Z20750
	90 Kw	345 A	CIMR-E7Z20900
	110 Kw	415 A	CIMR-E7Z21100

400 V

Specifications			Model
IP20	0.55 Kw	1.8 A	CIMR-E7Z40P41
	0.75 Kw	2.1 A	CIMR-E7Z40P71
	1.5 Kw	3.7 A	CIMR-E7Z41P51
	2.2 Kw	5.3 A	CIMR-E7Z42P21
	3.7 Kw	7.6 A	CIMR-E7Z43P71
	4.0 Kw	8.7 A	CIMR-E7Z44P01
	5.5 Kw	12.5 A	CIMR-E7Z45P51
	7.5 Kw	17 A	CIMR-E7Z47P51
	11 Kw	24 A	CIMR-E7Z40111
	15 Kw	31 A	CIMR-E7Z40151
	18.5 Kw	39 A	CIMR-E7Z40181
IP00	22 Kw	45 A	CIMR-E7Z40220
	30 Kw	60 A	CIMR-E7Z40300
	37 Kw	75 A	CIMR-E7Z40370
	45 Kw	91 A	CIMR-E7Z40450
	55 Kw	112 A	CIMR-E7Z40550
	75 Kw	150 A	CIMR-E7Z40750
	90 Kw	180 A	CIMR-E7Z40900
	110 Kw	216 A	CIMR-E7Z41100
	132 Kw	260 A	CIMR-E7Z41320
	160 Kw	304 A	CIMR-E7Z41600
	185 Kw	370 A	CIMR-E7Z41850
	220 Kw	506 A	CIMR-E7Z42200
	300 Kw	675 A	CIMR-E7Z43000

Varispeed E7 IP54



400 V

Specifications			Model
IP54	7.5 Kw	17 A	CIMR-E7Z47P52
	11 Kw	24 A	CIMR-E7Z40112
	15 Kw	31 A	CIMR-E7Z40152
	18.5 Kw	39 A	CIMR-E7Z40182
	22 Kw	45 A	CIMR-E7Z40222
	30 Kw	60 A	CIMR-E7Z40302
	37 Kw	75 A	CIMR-E7Z40372
	45 Kw	91 A	CIMR-E7Z40452
	55 Kw	112 A	CIMR-E7Z40552

① Input filters



200 V

Inverter model	Line filters ¹			
Varispeed E7	Type	EN55011 class	Current (A)	Weight (kg)
CIMR-E7Z20P4	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.2
CIMR-E7Z20P7				
CIMR-E7Z21P5				
CIMR-E7Z22P2	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-E7Z23P7	3G3RV-PFI2035-SE	B, 25 m A, 100 m	35	1.4
CIMR-E7Z25P5				
CIMR-E7Z27P5	3G3RV-PFI2060-SE	B, 25 m A, 100 m	60	3
CIMR-E7Z2011				
CIMR-E7Z2015	3G3RV-PFI2100-SE	B, 25 m A, 100 m	100	4.9
CIMR-E7Z2018				
CIMR-E7Z2022	3G3RV-PFI2130-SE	A, 100 m	130	4.3
CIMR-E7Z2030				
CIMR-E7Z2037	3G3RV-PFI2160-SE	A, 100 m	160	6.0
CIMR-E7Z2045	3G3RV-PFI2200-SE	A, 100 m	200	11.0
CIMR-E7Z2055				
CIMR-E7Z2075	3G3RV-PFI3410-SE	A, 100 m	400	8.6
CIMR-E7Z2090				
CIMR-E7Z2110	3G3RV-PFI3600-SE	A, 100 m	600	11.0

1. Varispeed E7 is a built-in filter inverter.

400 V

Inverter model	Line filters			
Varispeed E7	Model	EN 55011 class*	Current (A)	Weight (kg)
CIMR-E7Z40P4	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.2
CIMR-E7Z40P7				
CIMR-E7Z41P5				
CIMR-E7Z42P2	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3
CIMR-E7Z43P7				
CIMR-E7Z44P0				
CIMR-E7Z45P5	3G3RV-PFI3021-SE	B, 25 m A, 100 m	21	1.8
CIMR-E7Z47P5				
CIMR-E7Z4011	3G3RV-PFI3035-SE	B, 25 m A, 100 m	35	2.2
CIMR-E7Z4015				
CIMR-E7Z4018	3G3RV-PFI3060-SE	B, 25 m A, 100 m	60	4.0
CIMR-E7Z4022				
CIMR-E7Z4030	3G3RV-PFI3070-SE	B, 25 m A, 100 m	70	3.4
CIMR-E7Z4037				
CIMR-E7Z4045	3G3RV-PFI3100-SE	A, 100 m	100	4.5
CIMR-E7Z4055				
CIMR-E7Z4075	3G3RV-PFI3130-SE	A, 100 m	130	4.7
CIMR-E7Z4090	3G3RV-PFI3170-SE	A, 100 m	170	6.0
CIMR-E7Z4110				
CIMR-E7Z4132	3G3RV-PFI3200-SE	A, 100 m	250	11
CIMR-E7Z4160				
CIMR-E7Z4185	3G3RV-PFI3410-SE	A, 100 m	400	8.6
CIMR-E7Z4220				
CIMR-E7Z4300	3G3RV-PFI3600-SE	A, 100 m	600	11.0
CIMR-E7Z4300	3G3RV-PFI3800-SE	A, 100 m	800	31.0

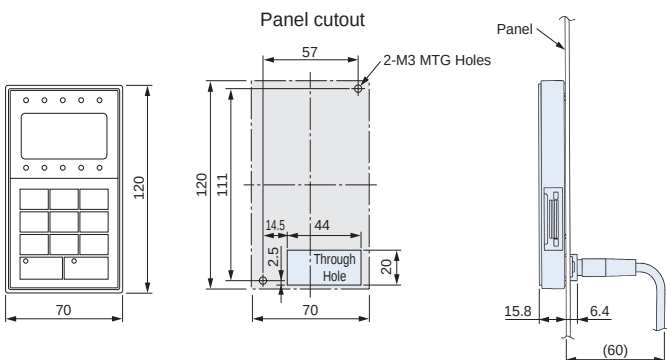
② Communication cards

Type	Model	Description	Function
Communication option cards	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.
	CM090	Ethernet option card	• MODBUS TCP/IP Ethernet interface unit.
	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.

③ PLC Option Card

Type	Model	Description	Function
PLC option cards	3G3RV-P10CDT-E	PLC option	• Full features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs • Embedded Compobus/S fieldbus • Standard OMRON tools can be used for programming
	3G3-P10CDT-E-DRT	PLC option with DeviceNet	• Same features as standard models with DeviceNet support

④ Accessories

Type	Model	Description	Installation
Digital operators	JVOP-160-OY	5 lines LCD digital operator ¹	 Panel cutout Panel cutout installation
	JVOP-161-OY	7 segment LED digital operator	
	JVOP-162	Hand-Off auto operator	
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	----
	3G3IV-PCN329-E	PC configuration cable	----

1. LCD digital operator is the Standard in IP54 types.

④ Computer software

Type	Model	Description	Function
Software	CX-drive	Computer software	Configuration and monitoring software tool
	CX-One	Computer software	Configuration and monitoring software tool

⑤ Braking unit, braking resistor unit

Inverter			Braking unit		Braking resistor unit					
					Separately-installed type (10 %ED, 10 sec. max.) ¹					
										
Voltage	Max. applicable motor output kW	Model CIMR-E7Z□	Model CDBR□	No. of used	Model LKEB□	Specifications of resistor		No. of used	Braking torque %	Connectable min resistance value Ω
200 V class	0.4	20P4	2015B	1	20P7	70 W	200 Ω	1	220	48
	0.75	20P7			20P7	70 W	200 Ω	1	125	48
	1.5	21P5			21P5	260 W	100 Ω	1	125	48
	2.2	22P2			22P2	260 W	70 Ω	1	120	16
	3.7	23P7			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	2022B	1	2015	3000 W	10 Ω	1	125	9.6
	22	2022			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
400 V class	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
	0.4	40P4	4030B	1	40P7	70 W	750 Ω	1	230	96
	0.75	40P7			40P7	70 W	750 Ω	1	130	96
	1.5	41P5			41P5	260 W	400 Ω	1	125	64
	2.2	42P2			42P2	260 W	250 Ω	1	135	64
	3.7	43P7			43P7	390 W	150 Ω	1	135	32
	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			4022	4800 W	27.2 Ω	1	125	19.2
	30	4030			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. 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.
2. Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
3. 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 (can 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.

CIMR-V7AZ

Varispeed V7

Sensorless vector in pocket size

- Nominal torque at 0.5 Hz
- Autotuning
- High carrier up to 14 khz
- Stop accuracy function.
- Integrated PID controller and bidirectional PID-out put
- Motor protection with PTC input
- Pulse input
- Standard digital operator with copy function
- Fieldbus: Modbus, DeviceNet, PROFIBUS, CANopen
- High speed motion bus: ML- II
- Plug-in PLC option unit. Total inverter access.
- CE, UL, and cUL marked

V7 IP65

- Compact size
- Easy wiring
- Built-in filter (Class B)

Customized software*

- The inverter software can be customized to meet specific application. Examples:
- Traverse software S-9381.

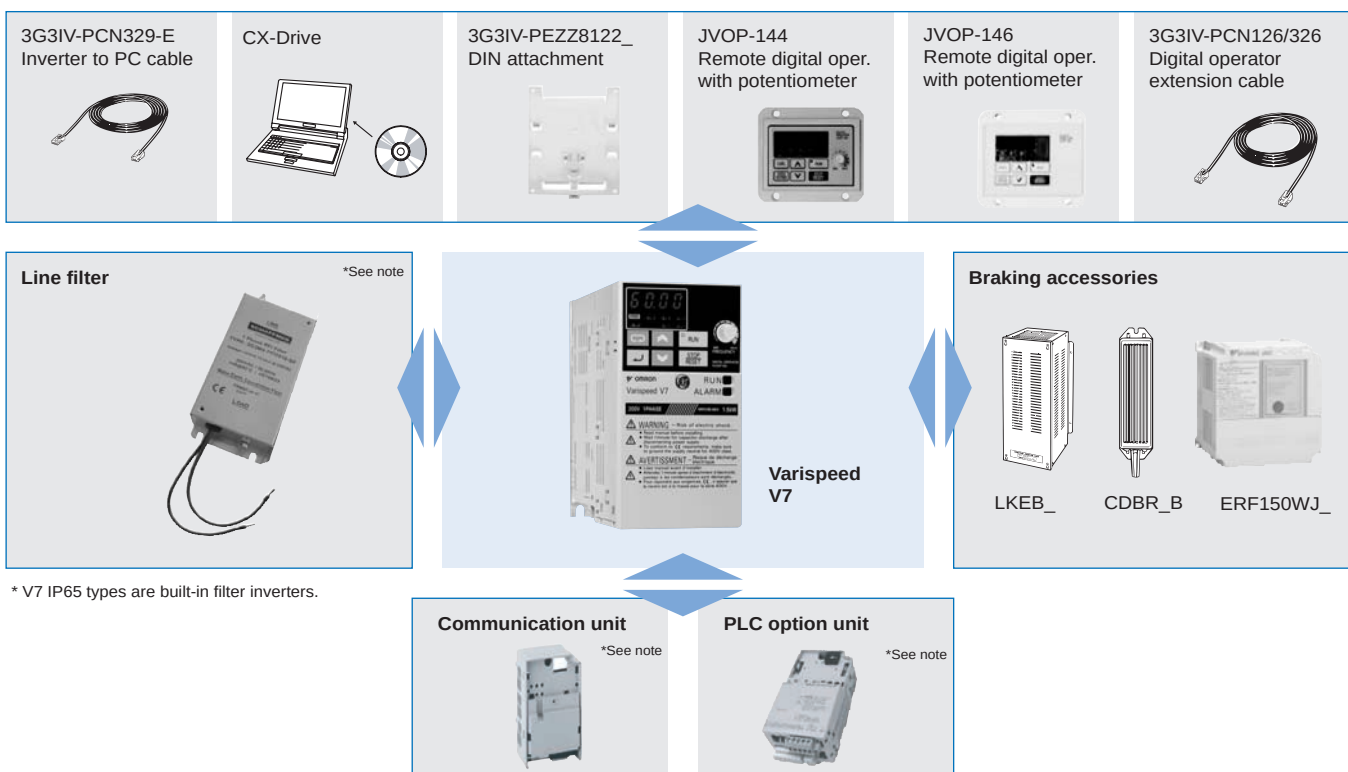
*For detailed information please refer to case software section.

Ratings

- 200 V Class single-phase 0.1 to 4 kW
- 200 V Class three-phase 0.1 to 7.5 kW
- 400 V Class three-phase 0.2 to 7.5 kW



System configuration

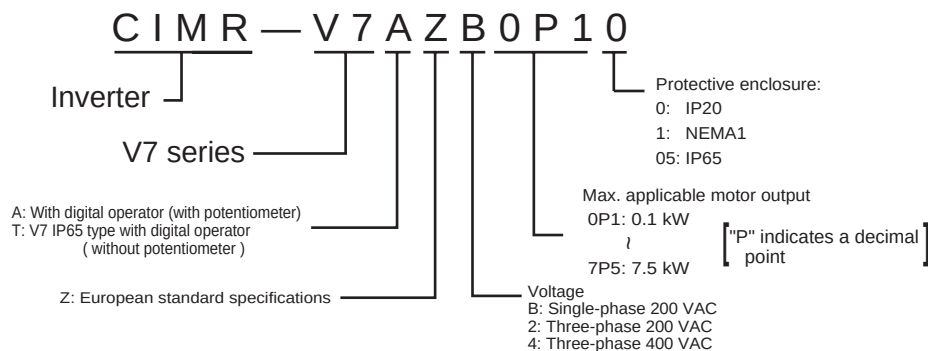


* V7 IP65 types are built-in filter inverters.

* Option frames are needed for V7 IP65 type.

Specifications

Type designation



200 V class

IP20 single-phase: CIMR-V7AZ		B0P1	B0P2	B0P4	B0P7	B1P5	B2P2	B4P0
IP65 single-phase: CIMR-V7TZ		---	---	B0P405	B0P705	B1P505	B2P205	---
IP20 three-phase: CIMR-V7AZ		20P1	20P2	20P4	20P7	21P5	22P2	24P0
Maximum permissible motor output kW ¹		0.12	0.25	0.55	1.1	1.5	2.2	4.0
Output characteristics	Inverter capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7
	Rated output current A	0.8	1.6	3.0	5.0	8.0	11.0	17.5
	Max. output voltage	Proportional to input voltage: 0..240 V						
	Max. output frequency	400 Hz						
Power supply	Rated input voltage and frequency	Single-phase 200..240 V 50/60 Hz 3-phase 200..230 V 50/60 Hz						
	Allowable voltage fluctuation	-15%..+10%						
	Allowable frequency fluctuation	+5%						

1. Based on a standard 4-pole motor for maximum applicable motor output. Select the inverter model within the allowable motor rated current

400 V class

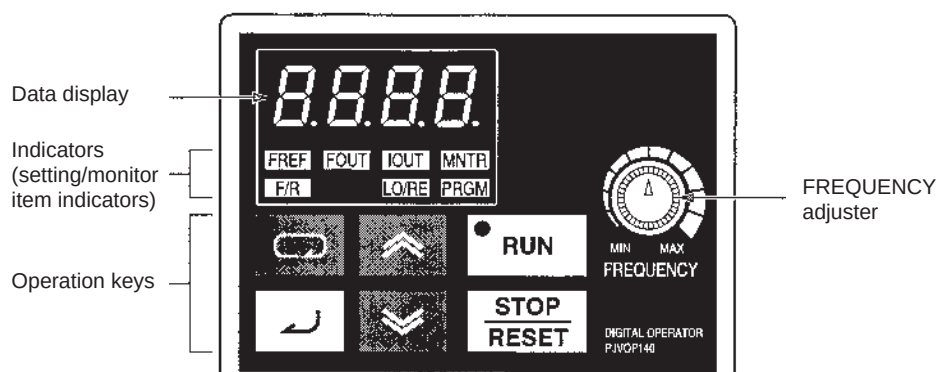
IP20 three-phase: CIMR-V7AZ		40P2	40P4	40P7	41P5	42P2	43P0	44P0	45P5	47P5
IP65 three-phase: CIMR-V7TZ		---	40P405	40P705	41P505	42P205	43P005	44P005	---	---
Maximum permissible motor output kW ¹		0.37	0.55	1.1	1.5	2.2	3.0	4.0	5.5	7.5
Output characteristics	Inverter capacity kVA	0.9	1.4	2.6	3.7	4.2	5.5	7.0	11.0	14.0
	Rated output current A	1.2	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18.0
	Max. output voltage	Proportional to input voltage: 0..400 V								
	Max. output frequency	400 Hz								
Power supply	Rated input voltage and frequency	3-phase 380..460 VAC, 50/60 Hz								
	Allowable voltage fluctuation	-15%..+10%								
	Allowable frequency fluctuation	+5%								

1. Based on a standard 4-pole motor for maximum applicable motor output. Select the inverter model within the allowable motor rated current

Common specifications

Model number CIMR-V7AZ-□ CIMR-V7TZ-□		Specifications
Control functions	Control methods	Sine wave PWM (V/f control, sensorless vector control)
	Output frequency range	0.1..400 Hz
	Frequency tolerance	Digital set value: $\pm 0.01\%$ ($-10..+50\text{ }^{\circ}\text{C}$) Analogue set value: $\pm 0.5\%$ ($25 \pm 10\text{ }^{\circ}\text{C}$)
	Resolution of frequency set value	Digital set value: 0.01 Hz (<100 Hz), 0.1 Hz (>100 Hz) Analogue set value: 1/1000 of maximum frequency
	Resolution of output frequency	0.01 Hz
	Overload capability	150%/60 s
	Frequency set value	0..10 V (20 k Ω), 4..20 mA (250 Ω), 0..20 mA (250 Ω) Pulse train input, frequency setting value (selectable)
	Braking torque (short term peak torque)	Up to 200 W 150% or more 550 W to 1.1 kW 100% or more 1.5 kW 50% or more >1.5 kW 20% or more Continuous braking torque approx. 20% without, 150% with external braking resistor
Functionality	Binary inputs	7 freely programmable inputs
	Binary outputs	1 relay output, 2 freely programmable open collector outputs
	Analogue output	1 programmable analogue output (0..10 V)/pulse output
	Analogue inputs	2 analogue inputs, 0..10 V, 4..20 mA, 0..20 mA
	Braking/acceleration times	0.01..6000 s
	Display	Optionally frequency, current or set value Error and status LED
Protection functions	Motor overload protection	Electronic thermal overload relay
	Instantaneous overcurrent	Motor coasts to a stop at approx. 250% of inverter rated current
	Overload	Motor coasts to a stop after 1 minute at 150% of inverter rated output current
	Overvoltage	Motor coasts to a stop if DC bus voltage exceed 410 V (double for 400 V class)
	Undervoltage	Stops when DC bus voltage is approx. 200 V or less (double for 400 V class) (approx. 160 V or less for single-phase series)
	Momentary power loss	Following items are selectable: not provided (stop if power loss is 15 ms or longer), continuous operation if power loss is approx. 0.5 s or shorter, continuous operation
	Cooling fin overheat	Protected by electronic circuit
	Stall prevention level	Individual levels during accel/constant speed. Decel ON/OFF available. During decel enable/disable selectable.
	Cooling fan fault	Detected by electronic circuit (fan lock detection)
	Ground fault	Protected by electronic circuit (operation level is approx. 250% of rated output current)
	Power charge indication	RUN lamp stays ON or digital operator LED stays ON until the DC bus voltage becomes 50 V or less. (Charge LED is provided for 400 V)
	Degree of protection	IP20, NEMA1, IP65
Ambient conditions	Cooling	Self cooling for 200 V 0.1..0.4 kW (3 or single phase) and for 400 V 0.2..0.75 kW Cooling fan for 200 V 0.75 to 7.5 kW and for 400 V 1.5 to 7.5 kW
	Ambient temperature	Open air mounting: $-10\text{ }^{\circ}\text{C}..50\text{ }^{\circ}\text{C}$ Wall mounting: $-10\text{ }^{\circ}\text{C}..40\text{ }^{\circ}\text{C}$
	Ambient humidity	95% (without condensation)
	Storage temperature	$-20\text{ }^{\circ}\text{C}..+60\text{ }^{\circ}\text{C}$ (short-term temperature during transportation)
	Installation	Indoor (no corrosive gas, dust, etc.)
	Installation height	Max. 1000 m
	Vibration	10 to 20 Hz, 9.8 m/s ² max; 20 to 50 Hz, 2 m/s ² max

Digital operator



Appearance	Name	Function
	Data display	Displays relevant data items, such as frequency reference, output frequency, and parameter set values.
	Frequency adjuster	Sets the frequency reference within a range between 0 Hz and the maximum frequency. ¹
	Frequency reference indicator	The frequency reference can be monitored or set while this indicator is lit.
	Output frequency indicator	The output frequency of the inverter can be monitored while this indicator is lit.
	Output current indicator	The output current of the inverter can be monitored while this indicator is lit.
	Multi-function monitor indicator	The values set in U01 through U10 are monitored while this indicator is lit.
	Forward/reverse selection indicator	The direction of rotation can be selected while this indicator is lit when operating the inverter with the RUN key.
	Local/remote selection indicator	The operation of the inverter through the digital operator or according to the set parameters is selectable while this indicator is lit. ²
	Parameter setting indicator	The parameters in n001 through n179 can be set or monitored while this indicator is lit. ³
	Mode key	Switches the simplified-LED (setting and monitor) item indicators in sequence. Parameter being set will be canceled if this key is pressed before entering the setting.
	Increment key	Increases multi-function monitor numbers, parameter numbers, and parameter set values.
	Decrement key	Decreases multi-function monitor numbers, parameter numbers, and parameter set values.
	Enter key	Enters multi-function monitor numbers, parameter numbers, and internal data values after they are set or changed.
	RUN key	Starts the inverter running when the 3G3MV is in operation with the digital operator
	STOP/RESET key	Stops the inverter unless parameter n007 is set to disable the STOP key. Used to reset the inverter when an error occurs. ⁴

1. V7 IP65 types have digital operator without frequency adjuster.
2. The status of the local/remote selection indicator can be only monitored while the inverter is in operation. Any RUN comand input is ignored while this indicator is lit.
3. While inverter is in operation, the parameters can be only monitored and only some parameters can be changed. Any RUN command is ignored while the parameter setting indicator is lit.
4. For safety reasons, the reset function cannot be used while an operation instruction (forward/reverse) is being input. Turn the operation instruction OFF before using this function.

Dimensions

IP 20 type 0.1 to 4 Kw

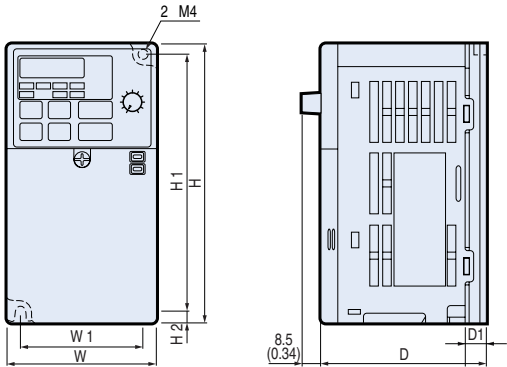


Figure 1

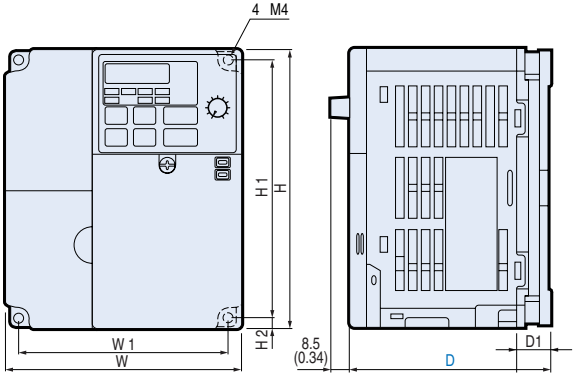


Figure 2

Voltage class	Max. applicable motor output kW	Inverter model CIMR V7AZ	Figure	Dimensions in mm							Weight kg	Cooling method	
				W	H	D	W1	H1	H2	D1			
Three-phase 200 V	0.12	20P1	1	68	128	76	56	118	5	10	0.6	Self cooled	
	0.25	20P2								42	0.6		
	0.55	20P4								62	0.9		
	1.1	20P7											
	1.5	21P5	2	108	131	96	5	64	1.4	Fan cooled			
	2.2	22P2			140			1.5					
	4.0	24P0			143			128	71		2.1		
Single-phase 200 V	0.12	B0P1	1	68	128	76	56	118	5	10	0.6	Self cooled	
	0.25	B0P2				76					42		0.7
	0.55	B0P4				131							1.0
	1.1	B0P7	2	108		140	96	118	5	64	1.5	Fan cooled	
	1.5	B1P5			156	96	1.5						
	2.2	B2P2			163	128	71			2.2			
	4.0	B4P0			170	158	71			2.9			
Three-phase 400 V	0.37	40P2	2	108	128	92	96	118	5	16	1.0	Self cooled	
	0.55	40P4				110				34	1.1		
	1.1	40P7				140				64	1.5		
	1.5	41P5				156				1.5			
	2.2	42P2				2.1							
	3.0	43P0		140		143	128			71	2.1		
	4.0	44P0											

IP20 / NEMA1 type 5.5/7.5 Kw

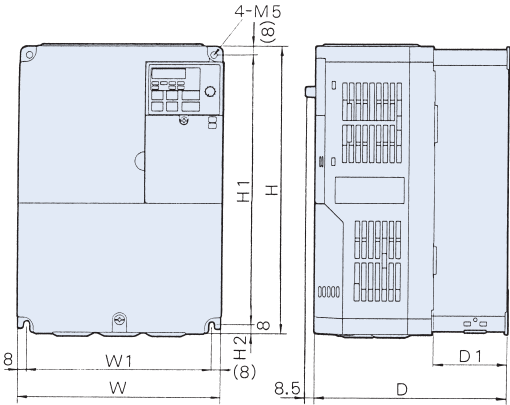


Figure 3

Voltage class	Max. applicable motor output kW	Inverter model CIMR - V7AZ	Figure	Dimensions in mm (inches)							Weight kg	Cooling method
				W	H	D	W1	H1	H2	D1		
Three-phase 200 V	5.5	25P5	3	180	260	170	164	244	8	65	4.6	Fan cooled
	7.5	27P5									4.8	
Three-phase 400 V	5.5	45P5		180	260	170	164	244	8	65	4.8	
	7.5	47P5									4.8	

IIP65 type 0.55 to 4 Kw

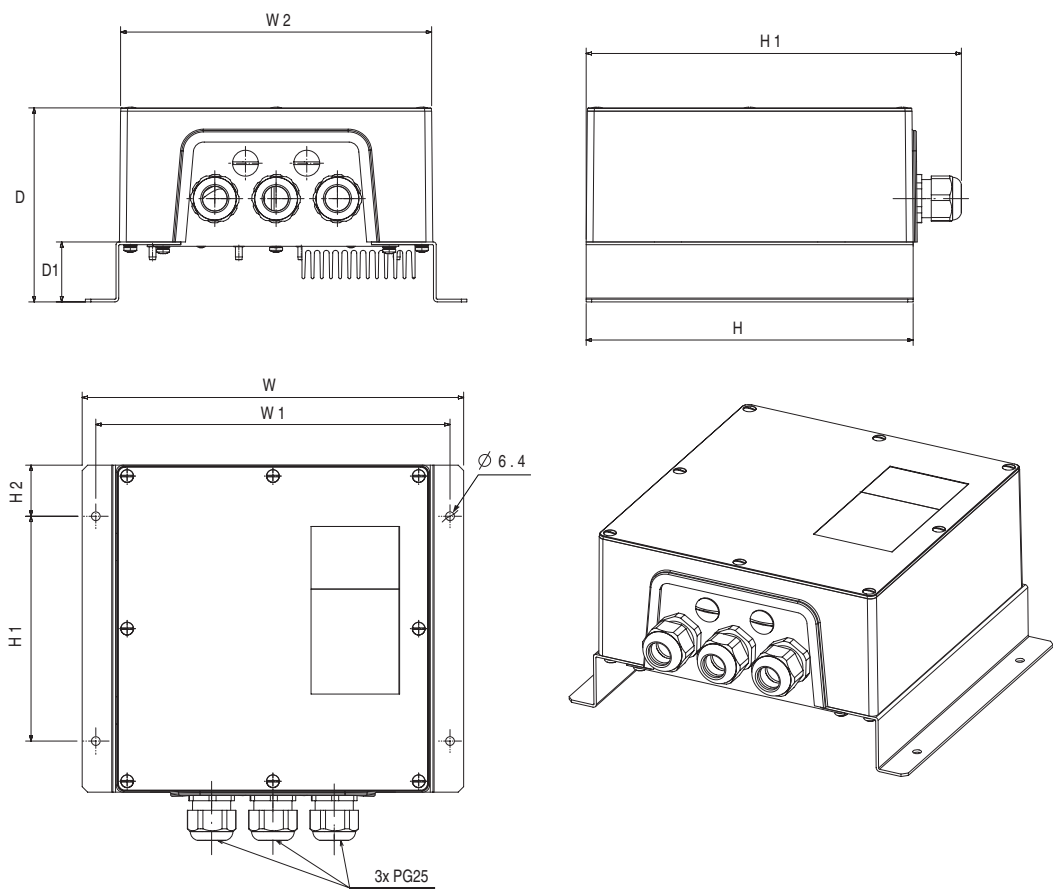


Figure 4

Voltage class	Max. applicable motor output kW	Inverter model CIMR V7TZ	Figure	Dimensions in mm								Weight kg	Cooling method	
				W	H	D	W1	W2	H1	H2	H3			D1
Single-phase 200 V	0.55	B0P405	4	280	240	142	260	228	165	38	275	44	3.4	Self cooled
	1.1	B0P705											4.3	Fan cooled
	1.5	B1P505											3.7	
	2.2	B2P205											4.2	
Three-phase 400 V	0.55	40P405		280	240	142	260	228	165	38	275	44	4.2	Self cooled
	1.1	40P705											4.3	Fan cooled
	1.5	41P505											3.7	
	2.2	42P205											3.7	
	3.0	43P005											4.1	
	4.0	44P005											4.1	

IP65 type 0.55 to 4Kw (with option frame accessory attached)

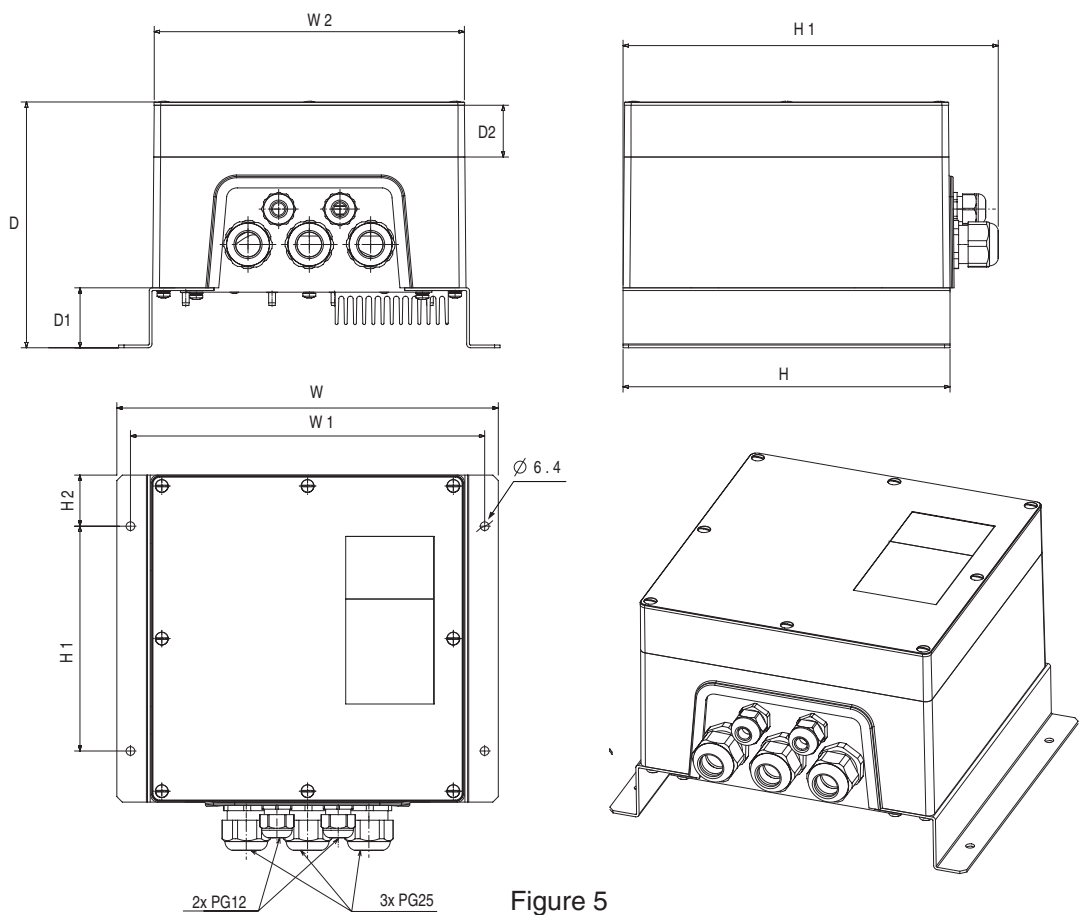
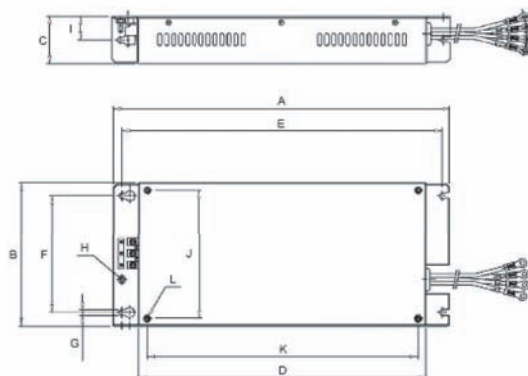


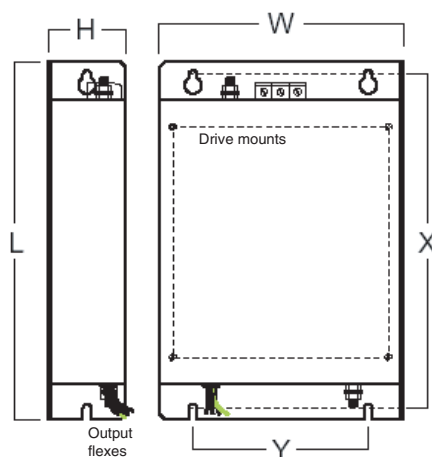
Figure 5

Voltage class	Max. applicable motor output kW	Inverter model CIMR V7TZ	Figure	Dimensions in mm										Weight kg	Cooling method
				W	H	D	W1	W2	H1	H2	H3	D1	D2		
Single-phase 200 V	0.55	B0P405	5	280	240	180	260	228	165	38	275	44	38	3.6	Self cooled
	1.1	B0P705												4.5	Fan cooled
	1.5	B1P505												3.9	
	2.2	B2P205												4.4	
Three-phase 400 V	0.55	40P405		280	240	180	260	228	165	38	275	44	38	4.4	Self cooled
	1.1	40P705												4.5	Fan cooled
	1.5	41P505												3.9	
	2.2	42P205												3.9	
	3.0	43P005												4.3	
	4.0	44P005												4.3	

Filters *



Schaffner model		Dimensions											
		A	B	C	D	E	F	G	H	I	J	K	L
3x200 V	3G3MV-PFI2010-SE	194	82	50	160	181	62	5.3	M5	25	56	118	M4
	3G3MV-PFI2020-SE	169	111	50	135	156	91	5.5	M5	25	96	118	M4
	3G3MV-PFI2030-SE	174	144	50	135	161	120	5.3	M5	25	128	118	M4
1x200 V	3G3MV-PFI1010-SE	169	71	45	135	156	51	5.3	M5	22	56	118	M4
	3G3MV-PFI1020-SE	169	111	50	135	156	91	5.3	M5	25	96	118	M4
	3G3MV-PFI1030-SE	174	144	50	135	161	120	5.3	M5	25	128	118	M4
	3G3MV-PFI1040-SE	174	144	50	135	161	150	5	M5	25	158	118	M4
3x400 V	3G3MV-PFI3005-SE	169	111	45	135	156	91	5.3	M5	22	96	118	M4
	3G3MV-PFI3010-SE	169	111	45	135	156	91	5.3	M5	22	96	118	M4
	3G3MV-PFI3020-SE	174	144	50	135	161	120	5	M5	25	128	118	M4
	3G3MV-PFI3030-SE	304	184	56	264	288	150	6	M5	28	164	244	M5

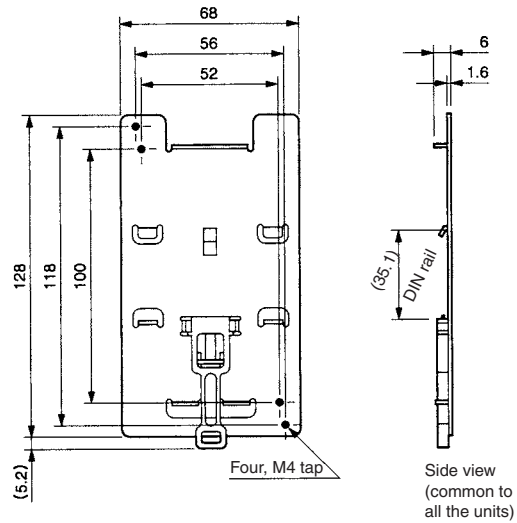


Rasmi model		Dimensions					
		W	H	L	X	Y	Inverter fixing
3x200 V	3G3MV-PFI2010-E	82	50	194	181	62	M5
	3G3MV-PF2020-E	111	50	169	156	91	M5
	3G3MV-PFI2030-E	144	50	174	161	120	M5
	3G3MV-PFI2050-E	184	56	304	288	150	M5
1x200 V	3G3MV-PFI1010-E	71	45	169	156	51	M5
	3G3MV-PFI1020-E	111	50	169	156	91	M5
	3G3MV-PFI1030-E	144	50	174	161	120	M5
	3G3MV-PFI1040-E	174	50	174	161	150	M5
3x400 V	3G3MV-PFI3005-E	111	50	169	156	91	M5
	3G3MV-PFI3010-E	111	50	169	156	91	M5
	3G3MV-PFI3020-E	144	50	174	161	120	M5
	3G3MV-PFI3030-E	184	56	304	288	150	M5

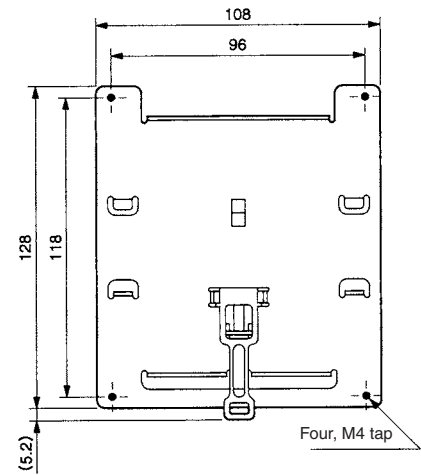
* V7 IP65 types are built-in filter inverters.

DIN rail mounting bracket

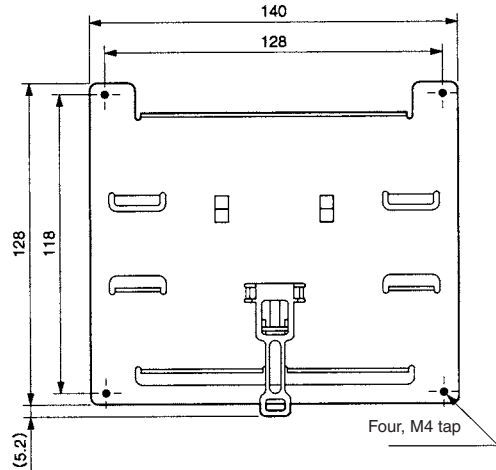
3G3IV-PZZ08122A



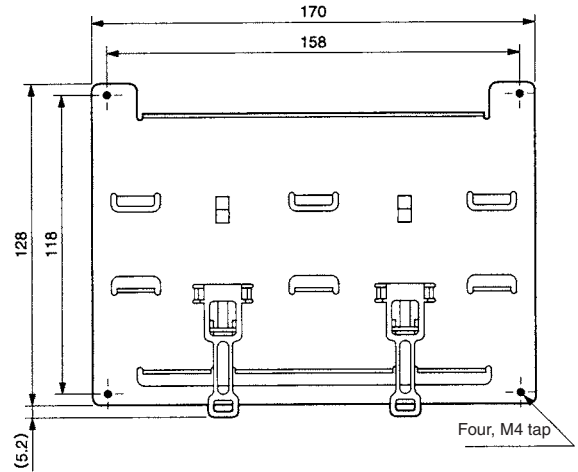
3G3IV-PZZ08122B



3G3IV-PZZ08122C



3G3IV-PZZ08122D

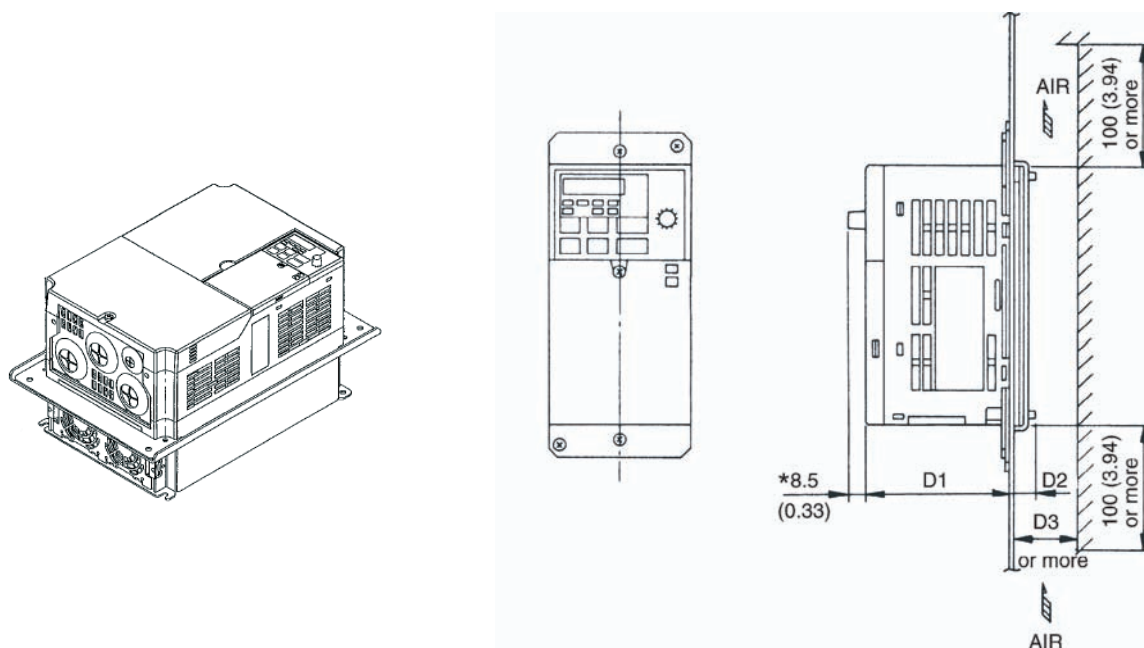


	Inverter	DIN rail mounting bracket
3-phase 200 VAC	CIMR-V7AZ - 20P1/ 20P4/ 20P7	3G3IV-PEZZ08122A
	CIMR-V7AZ - 21P5/ 22P2	3G3IV-PEZZ08122B
	CIMR-V7AZ - 24P0	3G3IV-PEZZ08122C
Single-phase 200 VAC	CIMR-V7AZ - B0P1/ B0P2/ B0P4	3G3IV-PEZZ08122A
	CIMR-V7AZ - B0P7/ B1P5	3G3IV-PEZZ08122B
	CIMR-V7AZ - B2P2	3G3IV-PEZZ08122C
	CIMR-V7AZ - B4P0	3G3IV-PEZZ08122D
3-phase 400 VAC	CIMR-V7AZ - 40P2/ 40P4/ 40P7/ 41P5/ 42P2	3G3IV-PEZZ08122B
	CIMR-V7AZ - 44P0	3G3IV-PEZZ08122C

Attachments

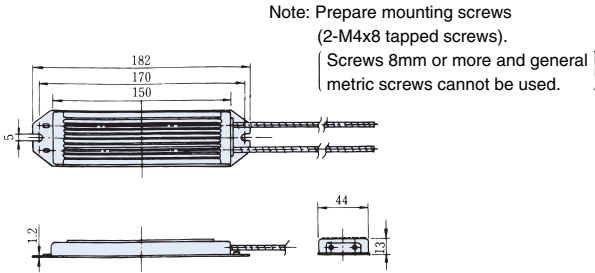
Heatsink external mounting attachment

When mounting an external cooling-fan to the V7AZ, this attachment is required.

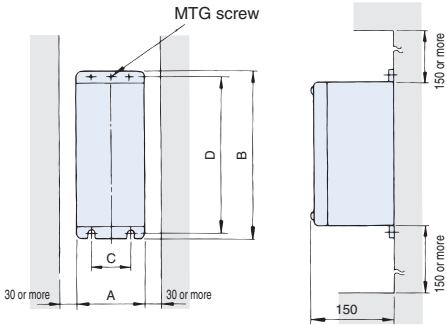


CIMR-V7AZ	Attachment order code	Dimensions in mm		
		D1	D2	D3
V7AZ-20P1	EZZ08136A	69.2	12	30
V7AZ-20P2				
V7AZ-20P4	EZZ08136B	69.2	42	50
V7AZ-20P7	EZZ08136C	69.2	62	70
V7AZ-21P5	EZZ08136D	73	58	70
V7AZ-22P2		98	58	70
V7AZ-24P0	-EZZ08136F	78.6	64.4	70
V7AZ-25P5	EZZ08136H	113.8	56.2	60
V7AZ-27P5				
V7AZ-B0P1	EZZ08136A	69.2	12	30
V7AZ-B0P2				
V7AZ-B0P4	EZZ08136B	92.2	42	50
V7AZ-B0P7	EZZ08136D	82	58	70
V7AZ-B1P5		98	58	70
V7AZ-B2P2	EZZ08136F	98.6	64.4	70
V7AZ-B4P0	EZZ08136G	115.6	64.4	70
V7AZ-40P2	EZZ08136E	82	13.2	30
V7AZ-40P4	EZZ08136D	82	28	40
V7AZ-40P7		82	58	70
V7AZ-41P5		98	58	70
V7AZ-42P2				
V7AZ-43P0	EZZ08136F	78.6	64.4	70
V7AZ-44P0				
V7AZ-45P5	EZZ08136H	113.8	56.2	60
V7AZ-47P5				

Braking resistor unit ERF-150WJ



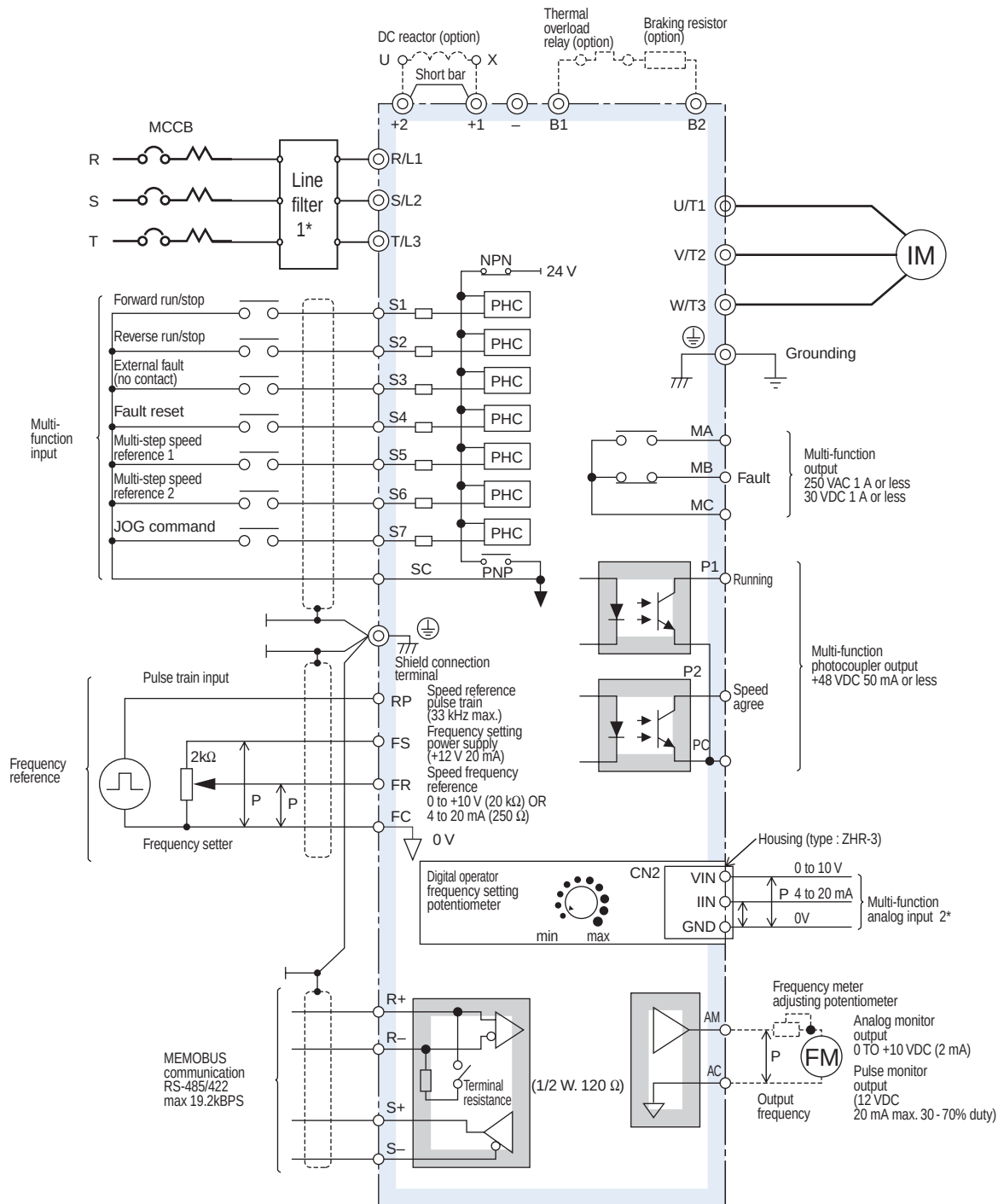
Braking resistors unit



Voltage	Model LKEB-□	Dimensions in mm					Approx. weight kg
		A	B	C	D	MTG.screw	
200 V class	20P7	105	275	50	260	M5x3	3.0
	21P5	130	350	75	335	M5x4	4.5
	22P2	130	350	75	335	M5x4	4.5
	40P7	130	350	75	350	M5x4	5.0
	25P5	250	350	200	335	M6x4	7.5
	27P5	350	350	200	335	M6x4	8.5
400 V class	40P7	105	275	50	260	M5x3	3.0)
	41P5	130	350	75)	335	M5x4	4.5
	42P2	130	350	75)	335	M5x4	4.5
	43P0	130	350	75	335	M5x4	5.0
	43P7						
	45P5	250	350	200	335	M6x4	7.5
	47P5	350	350	200	335	M6x4	8.5

Installation

Standard connections



1* V7 IP65 types are built-in filter.

2* A housing is required when using the CN2 terminal on the back side of the digital operator.
1m analog input cable (code no. 3G3MV-PCN-CN2) is available for housing on request

: shielded wire : twisted pair shielded wire

Shows the following two kinds of connections (factory setting) :

- Input signals (S1 to S7) are non-voltage contacts
- Sequence connection by NPN transistor (0V common)

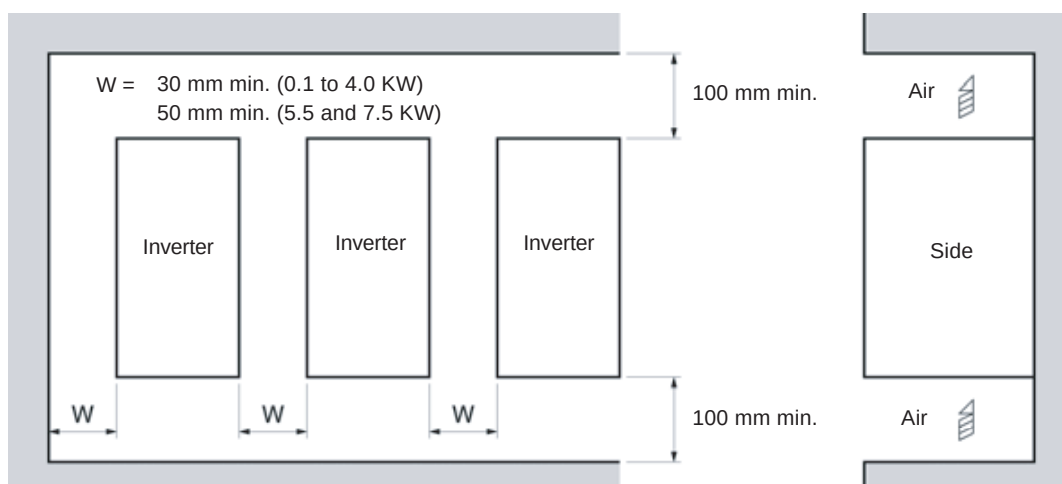
A +24 V power supply is required for sequence connection by PNP transistor (+24 V common) .

Main circuit

Terminal	Name	Function (signal level)
R/L1, S/L2, T/L3	AC power supply input	Main circuit power supply input (use R/L1 and S/L2 for single-phase power supply inverter. Do not use T/L3 of the models less than 0.75 kW for other usage, such as a junction terminal.)
U/T1, V/T2, W/T3	Inverter output	For inverter output
B1, B2	Braking resistor connection	For braking resistor connection
+2, +1	DC reactor connection	Remove the short bar between +2 and +1 when connecting DC reactor (option)
+1, –	DC power supply input	For power supply input (+1: positive electrode; – : negative electrode)*
⊕	Grounding	For grounding (grounding should conform to the local grounding code.)

Control Circuit

Type	No.	Signal name	Function	Signal level
Digital input signals	S1	Multi-function input selection 1	Factory setting: runs when CLOSED, stops when OPEN.	24VDC, 8mA photocoupler insulation
	S2	Multi-function input selection 2	Factory setting: runs when CLOSED, stops when OPEN.	
	S3	Multi-function input selection 3	Factory setting: "fault reset"	
	S4	Multi-function input selection 4	Factory setting: "external fault (NO contact)"	
	S5	Multi-function input selection 5	Factory setting: "multi-step speed reference 1"	
	S6	Multi-function input selection 6	Factory setting: "multi-step speed reference 2"	
	S7	Multi-function input selection 7	Factory setting: "JOG command"	
	SC	Multi-function input selection Common	Common for control signal	
Analog input signals	RP	Speed reference pulse train input	33 kHz max.	
	FS	Power supply terminal for frequency setting	+12V (allowable current: 20 mA max.)	
	FR	Speed frequency reference	0 to +10 VDC (20 kΩ) or 4 to 20 mA (250 Ω), 0 to 20 mA (250 Ω) (resolution 1/1000)	
	FC	Frequency reference common	0 V	
	1 (CN2)	Multi-function analog voltage input	Voltage input (between terminals 1 and 3): 0 to 10 VDC (input impedance: 20 kΩ)	
	2 (CN2)	Multi-function analog current input	Current input (between terminals 2 and 3): 4 to 20 mA (input impedance: 250 Ω)	
	3 (CN2)	Multi-function analog input common		
Digital output signals	MA	NO contact output	Factory setting: "fault"	Contact capacity 250 VAC, 1 A or less 30 VDC, 1 A or less
	NC	Contact output		
	MC	Contact output common		
	P1	Photocoupler output 1	Factory setting: "running"	Photocoupler output: +48 VDC, 50 mA or less
	P2	Photocoupler output 2	Factory setting: "at frequency"	
	PC	Photocoupler output common	0 V	
Analog output signals	AM	Analog monitor output	Factory setting: "output frequency" 0 to +10 V output (pulse monitor output available by setting constants. Duty: 30 to 70%)	0 to 10 V 2 mA or less Resolution: 8 bits
	AC	Analog monitor common	0 V	
RS-485/422	R+	Communication input (+)	For MEMOBUS communication operation by RS-485 or RS-422 communication is available.	RS-485/422 MEMOBUS protocol 19.2 kbps max.
	R–	Communication input (–)		
	S+	Communication output (+)		
	S–	Communication output (–)		



Inverter heat loss

Three-phase 200 V class

Model CIMR-V7AZ	20P1	20P2	20P4	20P7	21P5	22P2	24P0	25P5	27P5
Inverter capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.5	13
Rated current A	0.8	1.6	3	5	8	11	17.5	25	33
Heat loss W	Fin	3.7	7.7	15.8	28.4	53.7	60.4	96.7	170.4
	Inside unit	9.3	10.3	12.3	16.7	19.1	34.4	52.4	79.4
	Total heat loss	13.0	18.0	28.1	45.1	72.8	94.8	149.1	249.8

Single-phase 200 V class

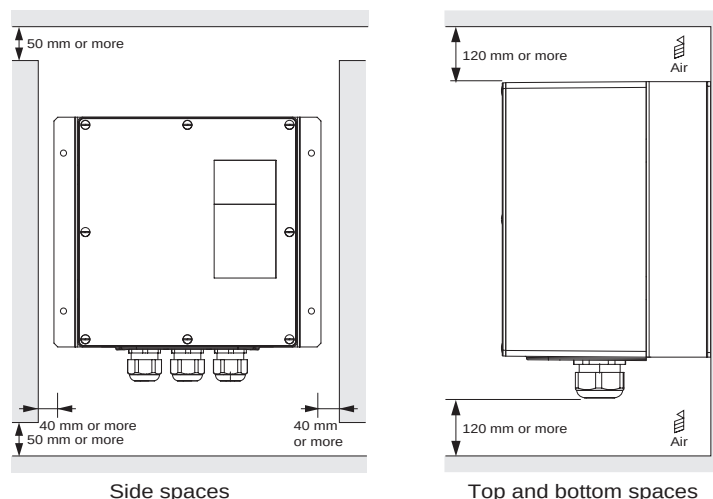
Model CIMR-V7AZ	B0P1	B0P2	B0P4	B0P7	B1P5	B2P2	B4P0
Inverter capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7
Rated current A	0.8	1.6	3	5	8	11	17.5
Heat loss W	Fin	3.7	7.7	15.8	28.4	53.7	64.5
	Inside unit	10.4	12.3	16.1	23.0	29.1	49.1
	Total heat loss	14.1	20.0	31.9	51.4	82.8	113.6

Three-phase 400 V class

Model CIMR-V7AZ	40P2	40P4	40P7	41P5	42P2	44P0	45P5	47P5
Inverter capacity kVA	1.4	2.6	3.7	4.2	5.5	7.0	11	14
Rated current A	1.8	3.4	4.8	5.5	7.2	8.6	14.8	18
Heat loss W	Fin	15.1	30.3	45.8	50.5	58.2	73.4	168.8
	Inside unit	15.0	24.6	29.9	32.5	37.6	44.5	87.7
	Total heat loss	30.1	54.9	75.7	83.0	95.8	117.9	256.5

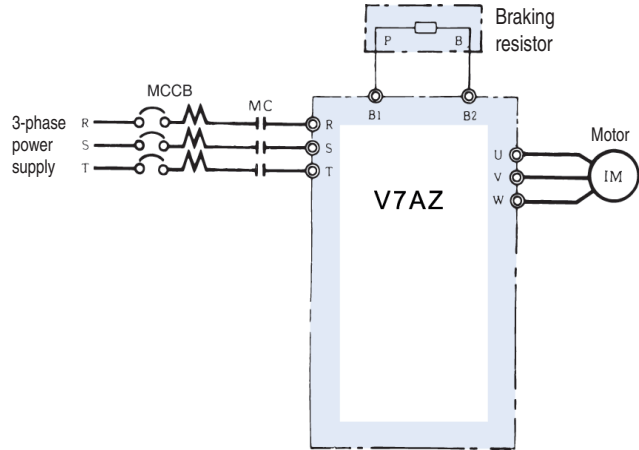
Installation conditions for IP65

Install the inverter vertically in order to ensure proper cooling. When installing the inverter, always provide the following minimum installation space to allow normal heat dissipation.

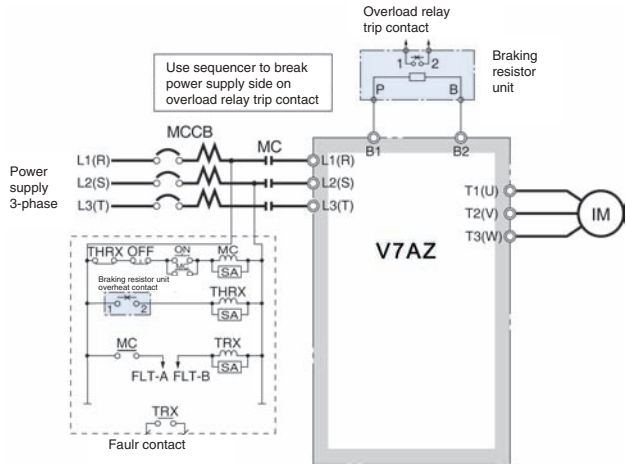


1. Always provide enough space for the main circuit or control lines including cable gland.
2. If installing inverters next to one another, provide a minimum spacing of 60mm.

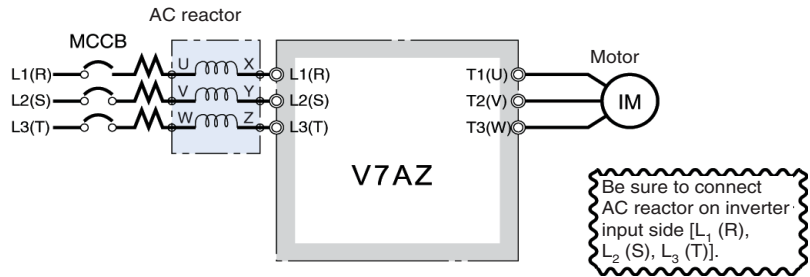
Connections for braking resistor



Connections for braking resistor unit

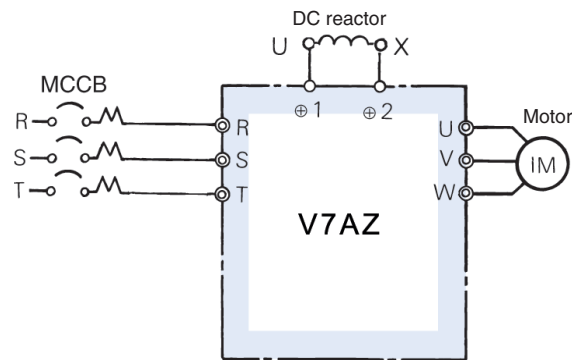


AC reactor



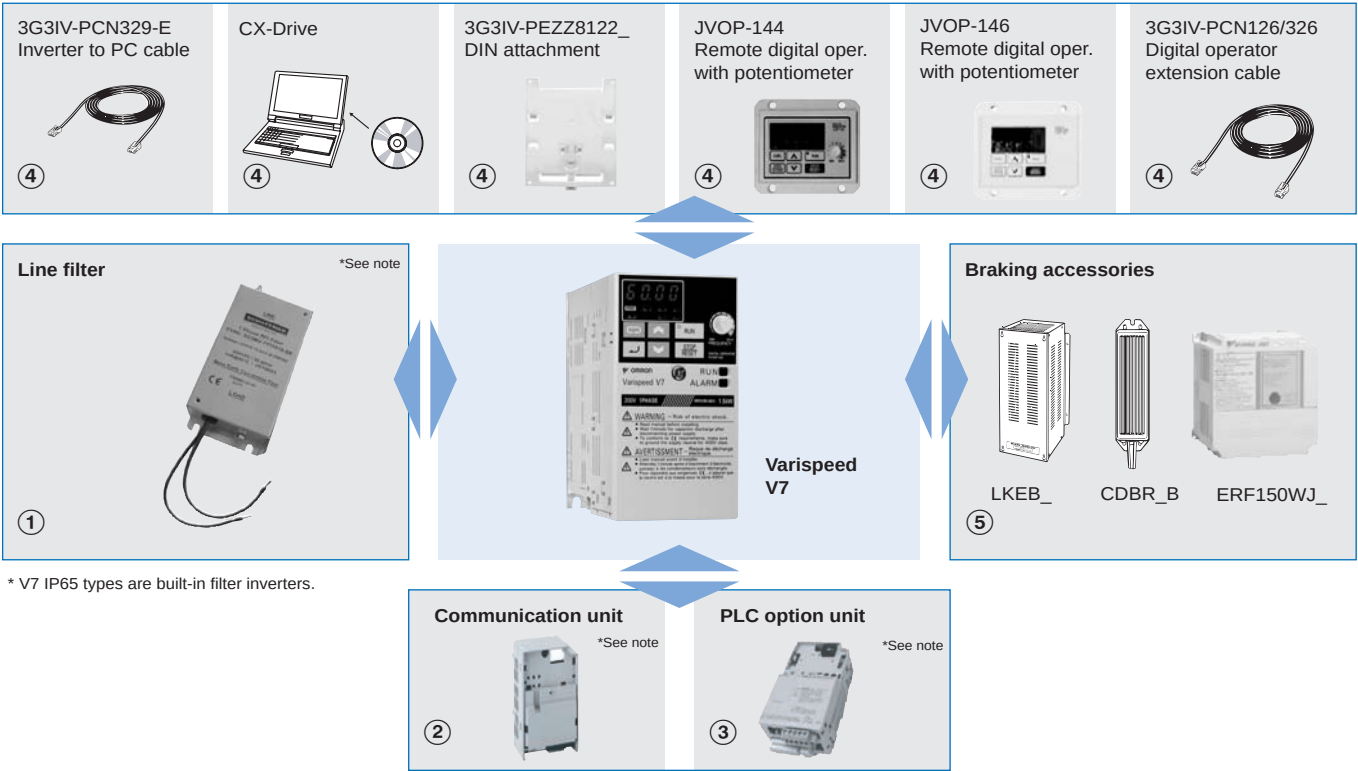
200 V class			400 V class		
Max. applicable motor output kW	Current value A	Inductance mH	Max. applicable motor output kW	Current value A	Inductance mH
0.12	2.0	2.0	0.2	1.3	18.0
0.25	2.0	2.0	0.4		
0.55	2.5	4.2	0.75	2.5	8.4
1.1	5	2.1	1.5	5	4.2
1.5	10	1.1	2.2	7.5	3.6
2.2	15	0.71	4.0	10	2.2
4.0	20	0.53	5.5	15	1.42
5.5	30	0.35	7.5	20	1.06
7.5	40	0.265			

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
0.12	5.4	8	-----		
0.25			0.2	3.2	28
0.55			0.4		
1.1			0.75		
1.5	18	3	1.5	5.7	11
2.2			2.2		
4.0			4.0		
5.5			5.5	23	3.6
7.5	36	1	7.5		

Ordering information



Varispeed V7



200 V

Specifications			Model
1x200 V	0.12 Kw	0.8 A	CIMR-V7AZB0P10
	0.25 Kw	1.6 A	CIMR-V7AZB0P20
	0.55 Kw	3.0 A	CIMR-V7AZB0P40
	1.1 Kw	5.0 A	CIMR-V7AZB0P70
	1.5 Kw	8.0 A	CIMR-V7AZB1P50
	2.2 Kw	11.0 A	CIMR-V7AZB2P20
	4.0 Kw	17.5 A	CIMR-V7AZB4P00
3x200 V	0.12 Kw	0.8 A	CIMR-V7AZ20P10
	0.25 Kw	1.6 A	CIMR-V7AZ20P20
	0.55 Kw	3.0 A	CIMR-V7AZ20P40
	1.1 Kw	5.0 A	CIMR-V7AZ20P70
	1.5 Kw	8.0 A	CIMR-V7AZ21P50
	2.2 Kw	11.0 A	CIMR-V7AZ22P20
	4.0 Kw	17.5 A	CIMR-V7AZ24P00
	5.5 Kw	25.0 A	CIMR-V7AZ25P51
	7.5 Kw	33.0 A	CIMR-V7AZ27P51

400 V

Specifications			Model
3x400 V	0.37 Kw	1.2 A	CIMR-V7AZ40P20
	0.55 Kw	1.8 A	CIMR-V7AZ40P40
	1.1 Kw	3.4 A	CIMR-V7AZ40P70
	1.5 Kw	4.8 A	CIMR-V7AZ41P50
	2.2 Kw	5.5 A	CIMR-V7AZ42P20
	3.0 Kw	7.2 A	CIMR-V7AZ43P00
	4.0 Kw	9.2 A	CIMR-V7AZ44P00
	5.5 Kw	14.8 A	CIMR-V7AZ45P51
	7.5 Kw	18.0 A	CIMR-V7AZ47P51

Varispeed V7 IP65



200 V

Specifications			Model
1x200 V	0.55 Kw	3.0 A	CIMR-V7TZB0P405
	1.1 Kw	5.0 A	CIMR-V7TZB0P705
	1.5 Kw	8.0 A	CIMR-V7TZB1P505
	2.2 Kw	11.0 A	CIMR-V7TZB2P205

400 V

Specifications			Model
3x400 V	0.55 Kw	1.8 A	CIMR-V7TZ40P405
	1.1 Kw	3.4 A	CIMR-V7TZ40P705
	1.5 Kw	4.8 A	CIMR-V7TZ41P505
	2.2 Kw	5.5 A	CIMR-V7TZ42P205
	3.0 Kw	7.2 A	CIMR-V7TZ43P005
	4.0 Kw	9.2 A	CIMR-V7TZ44P005

①Line filters *



Inverter		Line filter			
Voltage	Model CIMR-V7AZ	Schaffner	Rasmi	Rated current (A)	Weight (kg)
3-Phase 200 VAC	20P1 / 20P2 / 20P4 / 20P7	3G3MV-PFI2010-SE	3G3MV-PFI2010-E	10	0.8
	21P5 / 22P2	3G3MV-PFI2020-SE	3G3MV-PFI2020-E	20	1.0
	24P0	3G3MV-PFI2030-SE	3G3MV-PFI2030-E	30	1.1
	25P5 / 27P5	-	3G3MV-PFI2050-E	50	2.3
Single-Phase 200 VAC	B0P1 / B0P2 / B0P4	3G3MV-PFI1010-SE	3G3MV-PFI1010-E	10	0.6
	B0P7 / B1P5	3G3MV-PFI1020-SE	3G3MV-PFI1020-E	20	1.0
	B2P2	3G3MV-PFI1030-SE	3G3MV-PFI1030-E	30	1.1
	B4P0	3G3MV-PFI1040-SE	3G3MV-PFI1040-E	40	1.2
3-Phase 400 VAC	40P2 / 40P4	3G3MV-PFI3005-SE	3G3MV-PFI3005-E	5	1.0
	40P7 / 41P5 / 42P2	3G3MV-PFI3010-SE	3G3MV-PFI3010-E	10	1.0
	43P0 / 44P0	3G3MV-PFI3020-SE	3G3MV-PFI3020-E	15	1.1
	45P5 / 47P5	3G3MV-PFI3030-SE	3G3MV-PFI3030-E	30	2.3

* V7 IP65 types are built-in filter inverters.

② Communication cards

Type	Model ¹	Description	Function
Communication option board	3G3MV-PDRT2 	DeviceNet option card ²	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/V7 	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/V7 	Can open 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.
	3G3MV-PCORT21 	Can open gateway	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-T1/V7 	MECHATROLINK-II option card	- 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. - High speed motion bus. - Host controller: TrajeXia, MCH or MP series.³

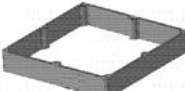
- Option frame accessory is needed for V7 IP65 types when communications option units are used.
- For V7 IP65 types with DeviceNet communication, SI-N1/V7 should be used.
- Please refer to TrajeXia, MCH or MP series section for host controller technical information.

③ PLC option card

Type	Model ¹	Description	Function
PLC option	3G3MV-P10CDT-E 	PLC option	- Full PLC features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs. - Standard OMRON tools can be used for programming - Calendar / clock
	3G3MV-P10CDT3-E	PLC option with RS 422/485	Same features as standard models with RS 422/485 support.

- Option frame accessory is needed on V7 IP65 types when PLC option unit is used.

④ Option frame accessory for V7 IP65

Type	Model	Description	Function
Option frame	V7TZ-FR1 	Option frame	Frame accessory is needed when communication option unit or PLC option unit are used with Varispeed V7 IP65.

⑤ Accessories

Types	Model	Description	Functions
Digital operator	JVOP-146	Remote digital operator without potentiometer	Technical drawing of JVOP-146 digital operator. Front view shows a square face with a display and buttons. Dimensions: 88 (3.46) width, 68 (2.68) height, 80 (3.15) depth. Mounting holes are 4-4.4 dia. MTG holes. Rear view shows 4-M4 spot facing deep 3.5 (0.14). Side view shows a depth of 50 (1.97).
	JVOP-144	Remote digital operator with potentiometer	Technical drawing of JVOP-144 digital operator. Front view shows a square face with a display, buttons, and a potentiometer. Dimensions: 88 (3.46) width, 68 (2.68) height, 80 (3.15) depth. Mounting holes are 4-4.4 dia. MTG holes. Rear view shows 4-M4 spot facing deep 3.5 (0.14). Side view shows a depth of 50 (1.97).
	72606-CVS31060	Blank cover	-----
	3G3IV-PEZZ0838BA	Digital operator case	same as JVOP-144 without operator
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	-----
	3G3IV-PCN329-E	PC configuration cable	-----

⑤ Computer software

Types	Model	Description	Installation
Software	CX-drive	Computer software	Configuration and monitoring software tool
	CX-One	Computer software	Configuration and monitoring software tool

⑥ Braking unit, braking resistor unit

Inverter				Braking resistor unit								
Voltage	Max. applicable motor output kW	Inverter model CIMR-V7AZ		Inverter-mounted type (3 %ED, 10 sec max)				Separately-installed type (10 %ED, 10 sec. max.)				
		Three-phase	Single-phase	Model ERF-150WJ	Resistance Ω	No. of used	Braking torque %	Model LKEB-□	Resistor spec. (per one unit) W Ω	No. of used	Braking torque %	Connectable min. resistance Ω
200 V (single-/three-phase)	0.12	20P1	B0P1	401	400	1	220	—	—	—	—	300
	0.25	20P2	B0P2	401	400	1	220	—	—	—	—	300
	0.55	20P4	B0P4	201	200	1	220	20P7	70 200	1	220	200
	1.1	20P7	B0P7	201	200	1	125	20P7	70 200	1	125	120
	1.5	21P5	B1P5	101	100	1	125	21P5	260 100	1	125	60
	2.2	22P2	B2P2	700	70	1	120	22P2	260 70	1	120	60
	4.0	24P0	B4P0	620	62	1	100	23P7	390 40	1	125	32
	5.5	25P5	—	—	—	—	—	25P5	520 30	1	115	9.6
400 V (three-phase)	7.5	27P5	—	—	—	—	—	27P5	780 20	1	125	9.6
	0.37	40P2	—	751	750	1	230	—	—	—	—	750
	0.55	40P4	—	751	750	1	230	40P7	70 750	1	230	750
	1.1	40P7	—	751	750	1	130	40P7	70 750	1	130	510
	1.5	41P5	—	401	400	1	125	41P5	260 400	1	125	240
	2.2	42P2	—	301	300	1	115	42P2	260 250	1	135	200
	3.0	43P0	—	401	400	2	105	43P7	390 150	1	135	100
	4.0	44P0	—									
	5.5	45P5	—	—	—	—	—	45P5	520 100	1	135	32
	7.5	47P5	—	—	—	—	—	47P5	780 75	1	130	32

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

CIMR-J7AZ

Varispeed J7

Small, simple and smart

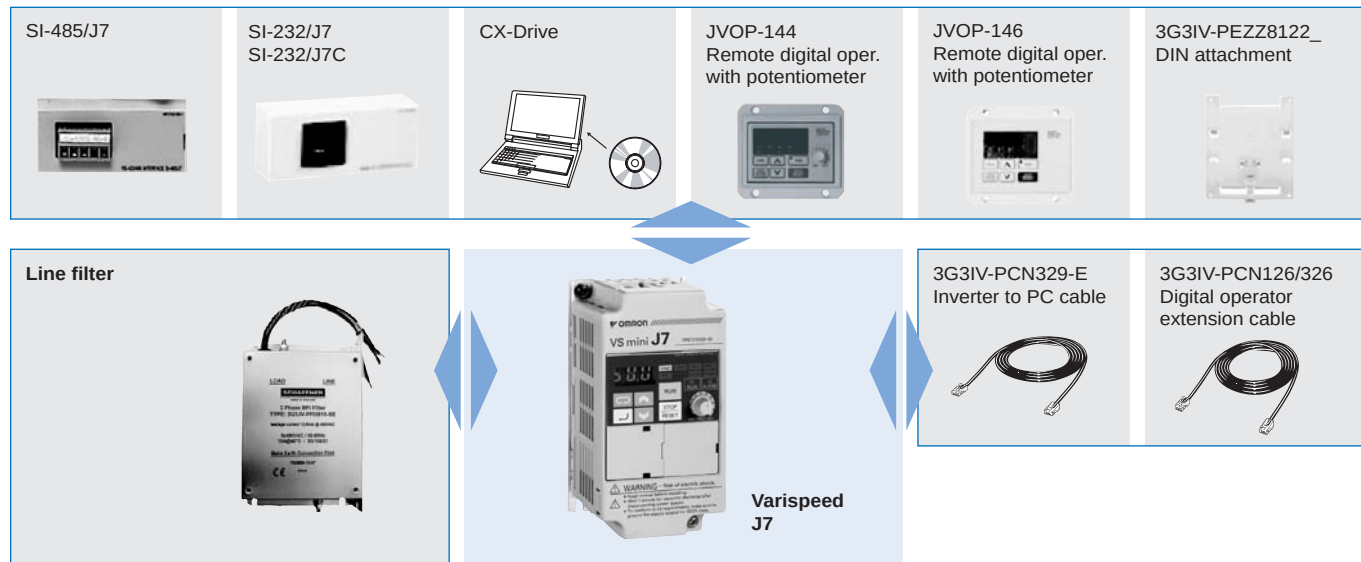
- V/f controlled inverter
- Compact size
- Good torque performance: 100% torque at 1.5 Hz, 150% at 3 Hz
- 150% overload / 60sec
- Overload detection function.
- Motor thermal function
- Freely configurable V/f curve
- 4 programmable digital input
- 1 programmable digital output
- 1 programmable analog output
- Optional RS-232C/485 communication - Modbus
- PC Configuration tool: CX-drive
- CE, UL, and cUL marking

Ratings

- 200 V class single-phase 0.1 to 1.5 kW
- 200 V class three-phase 0.1 to 4.0 kW
- 400 V class three-phase 0.2 to 4.0 kW

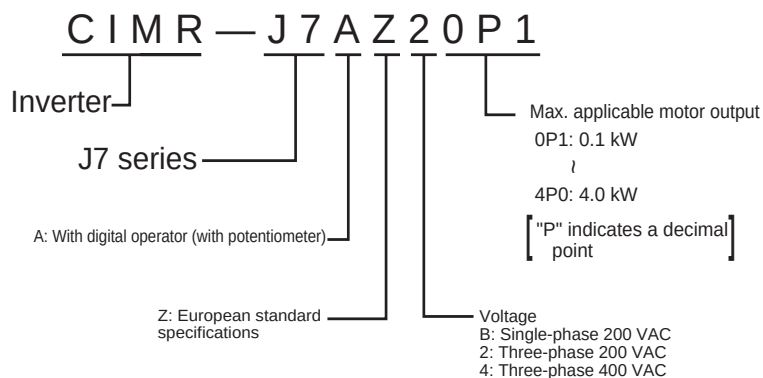


System configuration



Specifications

Type designation



Voltage class		200 V single/three-phase							400 V three-phase						
Model CIMR-J7AZ□	Three-phase	20P1	20P2	20P4	20P7	21P5	22P2	24P0	40P2	40P4	40P7	41P5	42P2	43P0	44P0
	Single-phase ¹	B0P1	B0P2	B0P4	B0P7	B1P5	—	—	—	—	—	—	—	—	—
Max. applicable motor output kW (HP) ²		0.12	0.25	0.55	1.1	1.5	2.2	4.0	0.37	0.55	1.1	1.5	2.2	3.0	4.0
Output characteristics	Inverter capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	0.9	1.4	2.6	3.7	4.2	5.5	7.0
	Rated output current A	0.8	1.6	3	5	8	11	17.5	1.2	1.8	3.4	4.8	5.5	7.2	9.2
	Max. output voltage V	3-phase, 200 to 230 V (proportional to input voltage) Single-phase, 200 to 240 V (proportional to input voltage)							3-phase, 380 to 460 V (proportional to input voltage)						
	Max. output frequency	400 Hz (programmable)													
Power supply	Rated input voltage and frequency	3-phase, 200 to 230 V, 50/60 Hz Single-phase, 200 to 240 V, 50/60 Hz							3-phase, 380 to 460 V, 50/60 Hz						
	Allowable voltage function	−15 to +10%													
	Allowable frequency function	±5%													

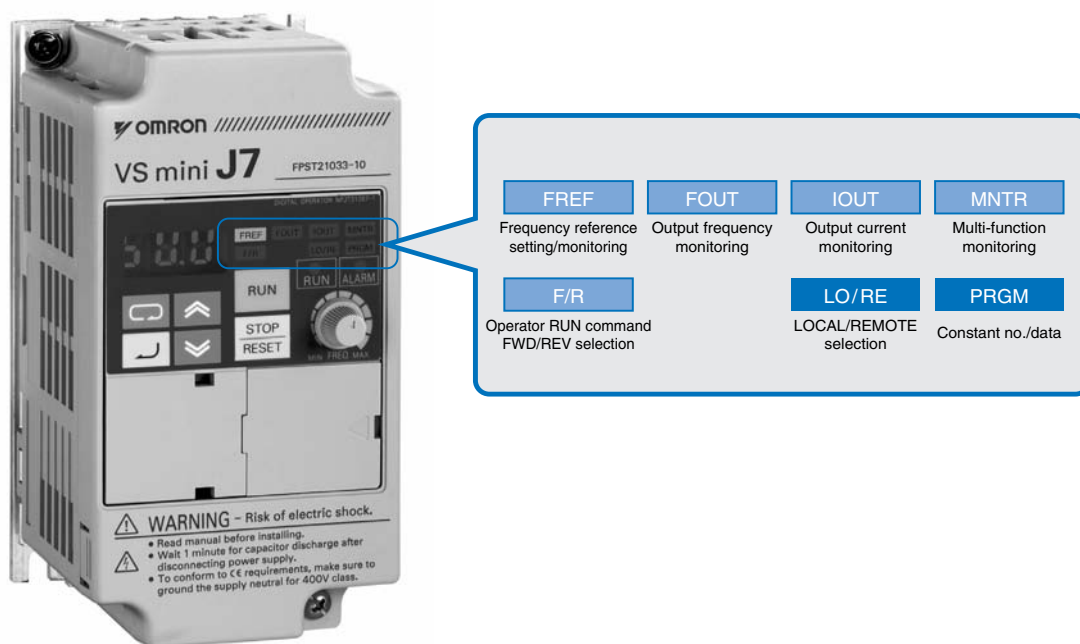
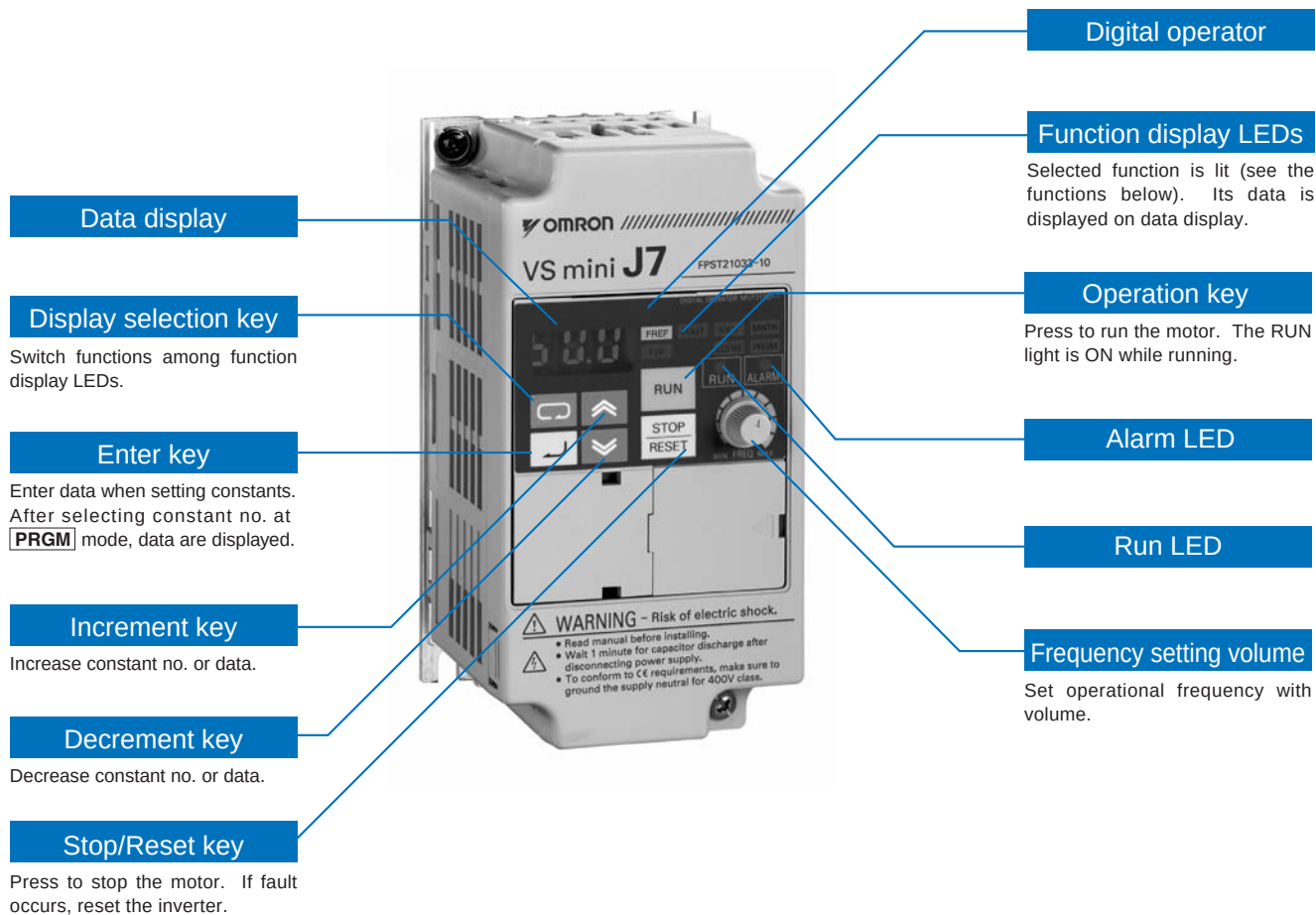
- Single-phase series inverter output is three-phase (for three-phase motors)
- Based on a standard 4-pole motor for max. applicable motor output. Select the inverter model whose rated current is larger than motor rated current.

Common specifications

Model CIMR-J7AZ□		Specifications
Control functions	Control method	Sine wave PWM (V/f control)
	Output frequency range	0.1 to 400 Hz
	Frequency tolerance	Digital reference: ±0.01% (–10 to +50 °C), Analog reference: ±0.5% (25±10 °C)
	Resolution of frequency set value	Digital reference: 0.01 Hz (less than 100 Hz), 0.1 Hz (100 Hz or more) Analog reference: 1/1000 of max. output frequency
	Resolution of output frequency	0.01 Hz
	Overload capability	150% rated output current for one minute
	Frequency set value	0 to 10 VDC (20 kΩ), 4 to 20 mA (250 Ω), 0 to 20 mA (250 Ω), frequency setting volume (selectable)
	Accel/decel time	0.1 to 999 sec. (accel/decel time are independently programmed)
	Braking torque	Short-term average deceleration torque ¹ : 0.1, 0.2 kW (0.13 HP, 0.25 HP): 150% or more; 0.4/0.75 kW (0.5 HP, 1HP): 100% or more; 1.5 kW (2 HP): 50% or more; 2.2 kW (3 HP) or more: 20% or more Continuous regenerative torque: Approx 20%
	V/f characteristics	Possible to program any V/f pattern
Functionality	Digital inputs	Four of the following input signals are selectable: forward/reverse run (3-wire sequence), fault reset, external fault (NO/NC contact input), multi-step speed operation, jog command, accel/decel time select, external baseblock (NO/NC contact input), speed search command, UP/DOWN command, accel/decel hold command, LOCAL/REMOTE selection, communication/control circuit terminal selection, emergency stop fault, emergency stop alarm, self test
	Digital outputs	Following output signals are selectable (NO/NC contact output): Fault, running, zero speed, speed agreed, frequency detection (output frequency ≤ or ≥ set value), during overtorque detection, minor error, during baseblock, operation mode, inverter run ready, during fault retry, during undervoltage detection, reverse running, during speed search, data output through communication
	Standard functions	Full-range automatic torque boost, slip compensation, 9-step speed operation (max.), restart after momentary power loss, DC injection braking current at stop/start (50% of inverter rated current, 0.5 sec, or less), frequency reference bias/gain, fault retry, speed search, frequency upper/lower limit setting, overtorque detection, frequency jump, accel/decel time switch, accel/decel prohibited, S-curve accel/decel, frequency reference with built-in volume, constants copy (option) MEMOBUS communications (option)
	Display	Status indicator LED: RUN and ALARM provided as standard LED's Digital operator: available to monitor frequency reference, output frequency, output current
Protection	Motor overload protection	Electronic thermal overload relay
	Instantaneous overcurrent	Motor coasts to a stop at approx. 250% of inverter rated current
	Overload	Motor coasts to a stop after 1 minute at 150% of inverter rated output current
	Overvoltage	Motor coasts to a stop if DC bus voltage exceed 410 V (double for 400 V class)
	Undervoltage	Stops when DC bus voltage is approx. 200 V or less (double for 400 V class) (approx. 160 V or less for single-phase series)
	Momentary power loss	Following items are selectable: Nnot provided (stop if power loss is 15ms or longer), continuous operation if power loss is approx. 0.5 s or shorter, continuous operation
	Cooling fin overheat	Protected by thermister
	Stall prevention level	Individual level stall prevention can be set during acceleration or constant running, provided/not provided setting available during deceleration.
	Cooling fan fault	Detected by electronic circuit (fan lock detection)
	Ground fault	Protected by electronic circuit (operation level is approx. 250% of rated output current)
	Power charge indication	ON until the DC bus voltage becomes 50 V or less, RUN lamp stays ON or digital operator LED stays ON. (Charge LED is provided for 400 V)
Ambient conditions	Degree of protection	IP20
	Cooling	Self cooling for 200 V 0.1..0.75 kW (single-phase) 0.1..0.4 kW (Three-phase) and for 400 V 0.2..0.75 kW Cooling fan for 200 V (single-phase), 0.75 kW..4.0 kW (3-phase) and for 400 V 1.5..4.0 kW
	Ambient temperature	–10 °C to 50 °C (non-freezing)
	Ambient humidity	90% RH or less (non-condensing)
	Storage temperature	–20 °C..+60 °C (short-term temperature during transportation)
	Installation	Indoor (no corrosive gas, dust, etc.)
	Installation height	Max. 1000 m
	Vibration	10 to 20 Hz, 9.8 m/s ² max; 20 to 50 Hz, 2m/s ² max

1. Shows deceleration torque for uncoupled motor decelerating from 60 Hz with the shortest possible deceleration time.

Digital operator



Dimensions

IP 20 type 0.1 to 4 kW

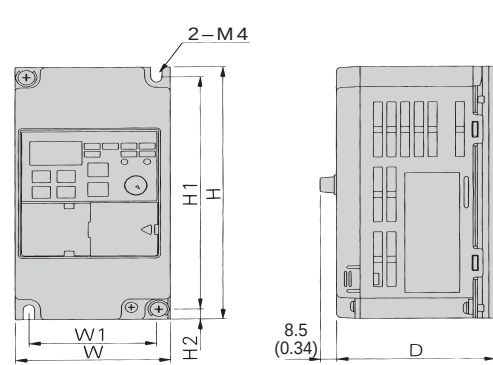


Figure 1

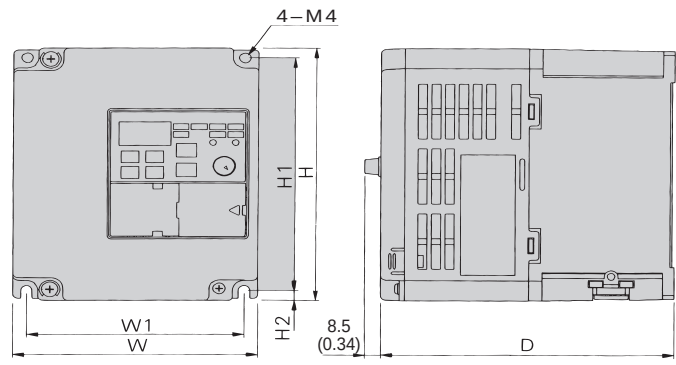
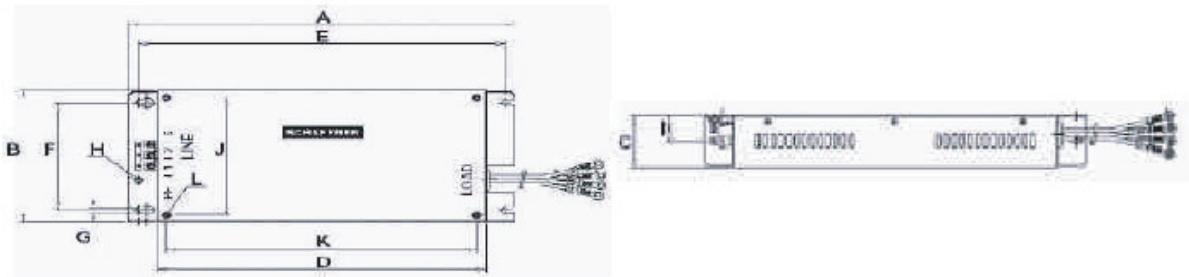


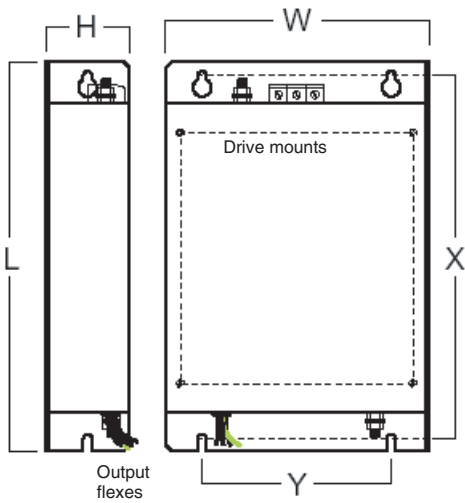
Figure 2

Voltage class	Max. applicable motor output kW	Inverter model CIMR-J7AZ	Figure	Dimensions in mm						Weight kg	Cooling method
				W	H	D	W1	H1	H2		
200 V three-phase	0.12	20P1	1	68	128	70	56	118	5	0.5	Self cooled
	0.25	20P2								7.7	
	0.55	20P4				102				0.8	
	1.1	20P7	2	108	128	122	96	118	5	0.9	Fan cooled
	1.5	21P5				129				1.3	
	2.2	22P2				154				1.5	
	4.0	24P0				161				2.1	
200 V single-phase	0.1	B0P1	1	68	128	70	56	118	5	0.5	Self cooled
	0.2	B0P2									
	0.4	B0P4				112				0.9	
	0.75	B0P7	2	108	128	129	96	118	5	1.5	Fan cooled
	1.5	B1P5				154					
400 V three-phase	0.37	40P2	2	108	128	81	96	118	5	1.0	Self cooled
	0.55	40P4				99				1.1	
	1.1	40P7				129				1.5	
	1.5	41P5				154					Fan cooled
	2.2	42P2									
	3.0	43P0									
	4.0	44P0		140		161	128			2.1	

Filters



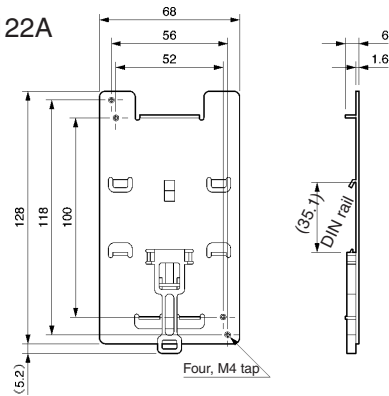
Schaffner model		Dimensions											
		A	B	C	D	E	F	G	H	I	J	K	L
3x200 V	3G3JV-PFI2010-SE	194	82	50	160	181	62	5.3	M5	25	56	118	M4
	3G3JV-PFI2020-SE	169	111	50	135	156	91	5.5	M5	25	96	118	M4
1x200 V	3G3JV-PFI1010-SE	169	71	45	135	156	51	5.3	M5	22	56	118	M4
	3G3JV-PFI1020-SE	169	111	50	135	156	91	5.3	M5	25	96	118	M4
3x400 V	3G3JV-PFI3005-SE	169	111	50	135	156	91	5.3	M5	22	96	118	M4
	3G3JV-PFI3010-SE	169	111	50	135	156	91	5.3	M5	22	96	118	M4
	3G3JV-PFI3020-SE	174	144	50	135	61	120	5	M5	28	128	118	M4



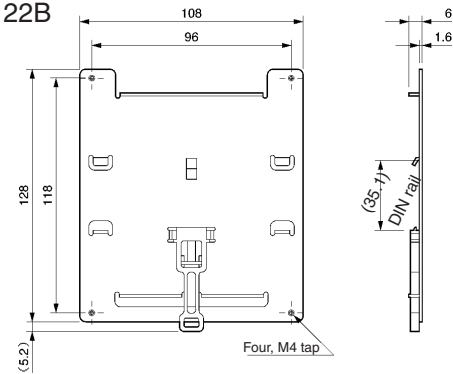
Rasmi model		Dimensions					
		W	H	L	X	Y	Inverter fixing
3x200 V	3G3JV-PFI2010-E	82	50	194	181	62	M5
	3G3JV-PF2020-E	111	50	169	156	91	M5
	3G3JV-PFI2030-E	144	50	174	161	120	M5
1x200 V	3G3JV-PFI1010-E	71	45	169	156	51	M5
	3G3JV-PFI1020-E	111	50	169	156	91	M5
3x400 V	3G3JV-PFI3005-E	111	50	169	156	91	M5
	3G3JV-PFI3010-E	111	50	169	156	91	M5
	3G3JV-PFI3020-E	144	50	174	161	120	M5

DIN rail mounting bracket

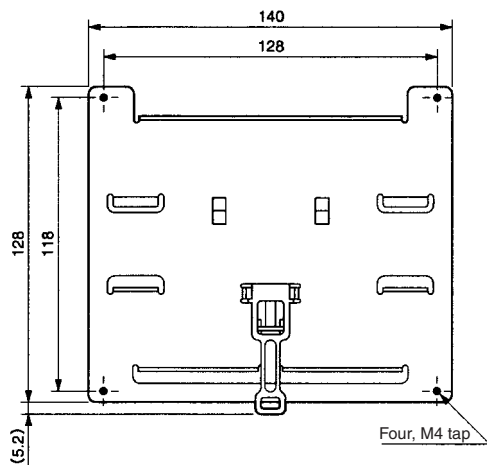
3G3IV-PEZZ08122A



3G3IV-PEZZ08122B



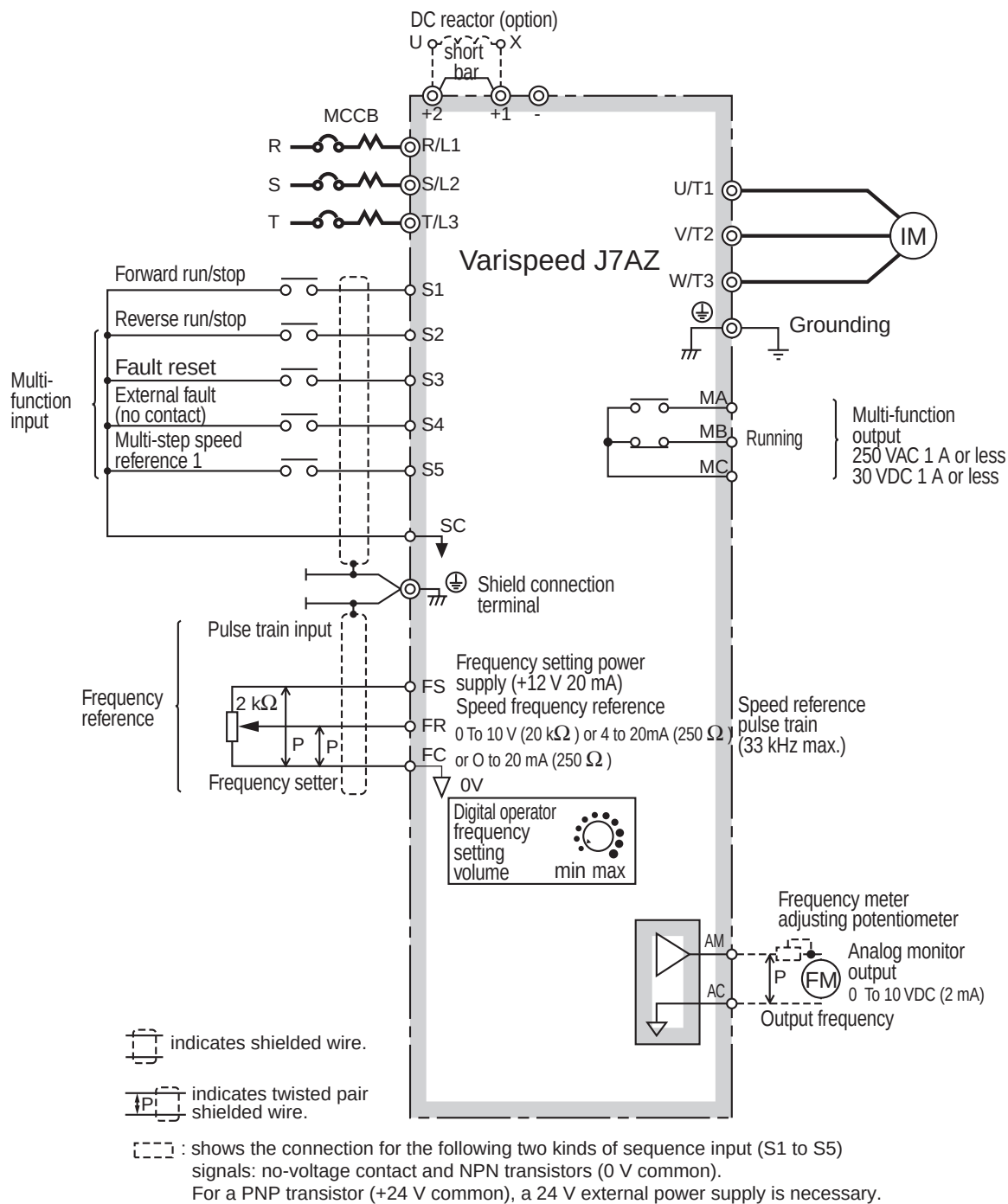
3G3IV-PEZZ08122C



	Inverter	DIN rail mounting bracket
3-phase 200 VAC	CIMR-J7AZ20P1/20P2/20P4/20P7	3G3IV-PEZZ08122A
	CIMR-J7AZ21P5/22P2	3G3IV-PEZZ08122B
	CIMR-J7AZ24P0	3G3IV-PEZZ08122C
Single-phase 200 VAC	CIMR-J7AZB0P1/B0P2/B0P4	3G3IV-PEZZ08122A
	CIMR-J7AZB0P7/B1P5	3G3IV-PEZZ08122B
3-phase 400 VAC	CIMR-J7AZ40P2/40P4/40P7/41P5/42P2	3G3IV-PEZZ08122B
	CIMR-J7AZ43P0/44P0	3G3IV-PEZZ08122C

Installation

Standard connections

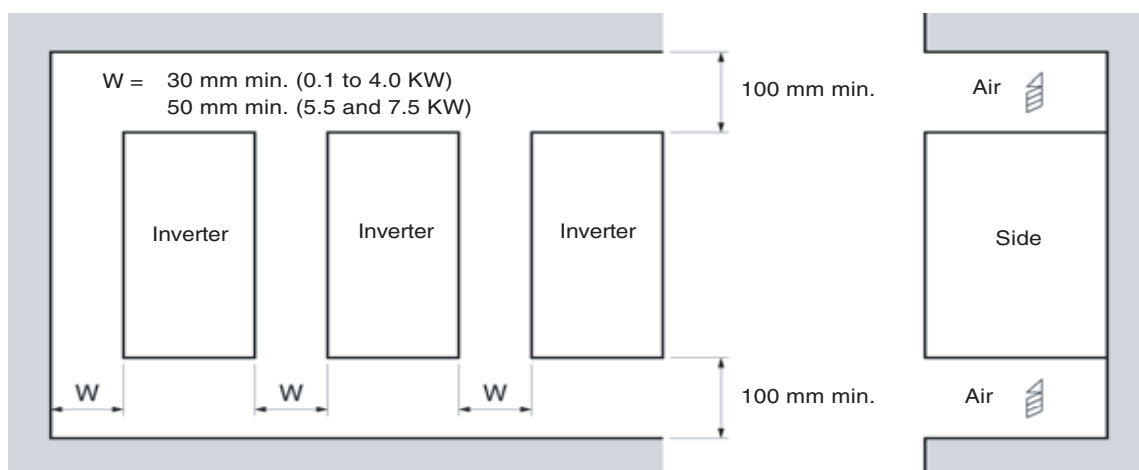


Main circuit

Terminal	Name	Function (signal level)
R/L1, S/L2, T/L3	AC power supply input	Main circuit power supply input (Use R/L1 and S/L2 for single-phase power supply inverter. Do not use T/L3 of the models less than 0.75kW for other usage, such as a junction terminal.)
U/T1, V/T2, W/T3	Inverter output	For inverter output
+2, +1	DC reactor connection	Remove the short bar between +2 and +1 when connecting DC reactor (option)
+1, –	DC power supply input	For power supply input (+1: positive electrode; – : negative electrode)*
⊕	Grounding	For grounding (grounding should conform to the local grounding code.)

Control circuit

Type	No.	Signal name	Function	Signal level
Digital input signals	S1	Multi-function input selection 1	Factory setting: runs when CLOSED, stops when OPEN.	24VDC, 8mA photocoupler isolation
	S2	Multi-function input selection 2	Factory setting: runs when CLOSED, stops when OPEN.	
	S3	Multi-function input selection 3	Factory setting: "fault reset"	
	S4	Multi-function input selection 4	Factory setting: "external fault (NO contact)"	
	S5	Multi-function input selection 5	Factory setting: "multi-step speed reference 1"	
	SC	Multi-function input selection common	Common for control signal	
Analog input signals	FS	Power supply terminal for frequency setting	+12V (allowable current: 20 mA max.)	
	FR	Speed frequency reference	0 to +10 VDC (20 kΩ) or 4 to 20 mA (250 Ω), 0 to 20 mA (250 Ω) (resolution 1/1000)	
	FC	Frequency reference common	0 V	
Digital output signals	MA	NO contact output	Factory setting: "running"	Contact capacity 250 VAC, 1A or less 30 VDC, 1A or less
	MB	NC contact output		
	MC	Contact output common		
Analog output signals	AM	Analog monitor output	Factory setting: "output frequency" 0 to +10 V output	0 to 10 V 2 mA or less Resolution: 8bits
	AC	Analog monitor common	0 V	



Inverter heat loss

Three-phase 200 V class

CIMR-J7AZ		20P1	20P2	20P4	20P7	21P5	22P2	24P0
Inverter capacity kVA		0.3	0.6	1.1	1.9	3.0	4.2	6.7
Rated current A		0.8	1.6	3.0	5.0	8.0	11.0	17.5
Heat loss W	Fin	3.7	10.3	15.8	28.4	53.7	60.4	96.7
	Inside unit	9.3	18.0	12.3	16.7	19.1	34.4	52.4
	Total heat loss	13.0	18.0	28.1	45.1	72.8	94.8	149.1

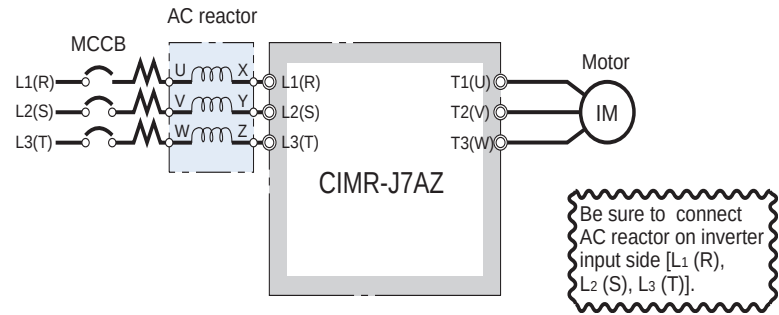
Single-phase 200 V class

CIMR-J7AZ		B0P1	B0P2	B0P4	B0P7	B1P5
Inverter capacity kVA		0.3	0.6	1.1	1.9	3.0
Rated current A		0.8	1.6	3.0	5.0	8.0
Heat loss W	Fin	3.7	7.7	15.8	28.4	53.7
	Inside unit	10.4	12.3	16.1	23.0	29.1
	Total heat loss	14.1	20.1	31.9	51.4	82.8

Three-phase 400 V class

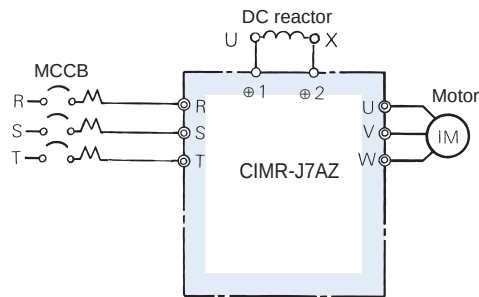
CIMR-J7AZ		40P2	40P4	40P7	41P5	42P2	43P0	44P0
Inverter capacity kVA		0.9	1.4	2.6	3.7	4.2	5.5	7.0
Rated current A		1.2	1.8	3.4	4.8	5.5	7.2	9.2
Heat loss W	Fin	9.4	15.1	30.3	45.8	50.5	58.2	73.4
	Inside unit	13.7	15.0	24.6	29.9	32.5	37.6	44.5
	Total heat loss	23.7	30.1	54.9	75.7	83.0	95.8	117.9

AC reactor



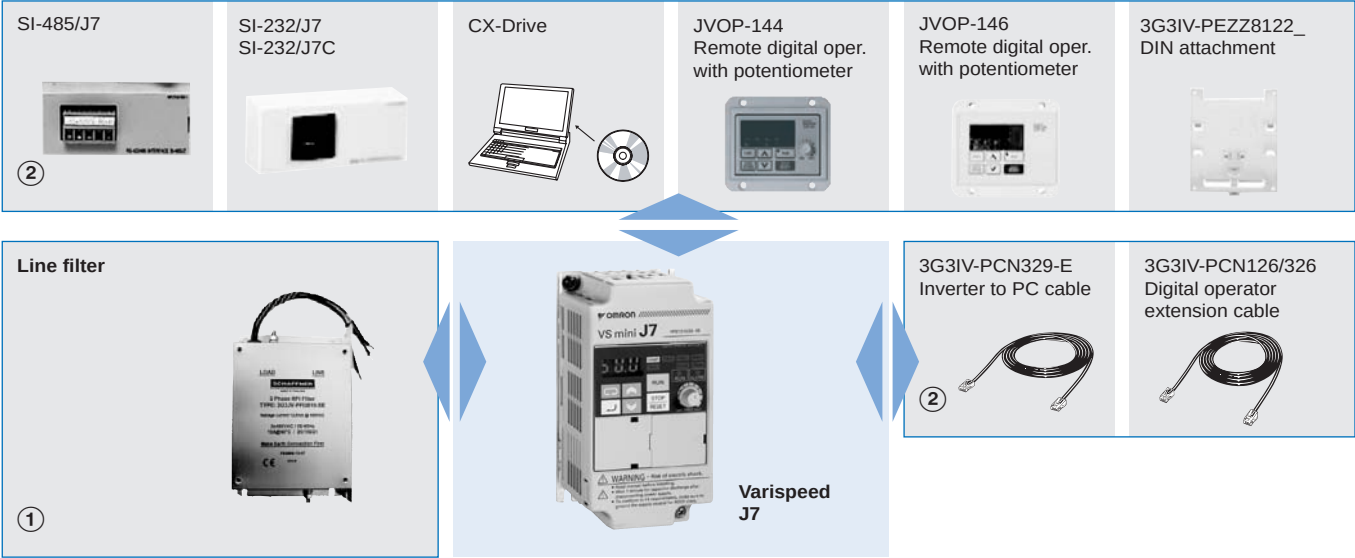
200 V class			400 V class		
Max. applicable motor output kW	Current value A	Inductance mH	Max. applicable motor output kW	Current value A	Inductance mH
0.1	2.0	2.0	-----		
0.2	2.0	2.0	0.2	1.3	18.0
0.4	2.5	4.2	0.4		
0.75	5	2.1	0.75	2.5	8.4
1.5	10	1.1	1.5	5	4.2
2.2	15	0.71	2.2	7.5	3.6
4.0	20	0.53	4.0	10	2.2

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
0.12	5.4	8	-----		
0.25			0.37	3.2	28
0.55			0.55		
1.1			1.1		
1.5	18	3	1.5	5.7	11
2.2			2.2		
4.0			4.0	12	6.3

Ordering information



Varispeed J7



200 V

Specifications			Model
1x200 V	0.12 Kw	0.8 A	CIMR-J7AZB0P10
	0.25 Kw	1.6 A	CIMR-J7AZB0P20
	0.55 Kw	3.0 A	CIMR-J7AZB0P40
	1.1 Kw	5.0 A	CIMR-J7AZB0P70
	1.5 Kw	8.0 A	CIMR-J7AZB1P50
3x200 V	0.12 Kw	0.8 A	CIMR-J7AZ20P10
	0.25 Kw	1.6 A	CIMR-J7AZ20P20
	0.55 Kw	3.0 A	CIMR-J7AZ20P40
	1.1 Kw	5.0 A	CIMR-J7AZ20P70
	1.5 Kw	8.0 A	CIMR-J7AZ21P50
	2.2 Kw	11.0 A	CIMR-J7AZ22P20
	4.0 Kw	17.5 A	CIMR-J7AZ24P00

400 V

Specifications			Model
3x400 V	0.37 Kw	1.2 A	CIMR-J7AZ40P20
	0.55 Kw	1.8 A	CIMR-J7AZ40P40
	1.1 Kw	3.4 A	CIMR-J7AZ40P70
	1.5 Kw	4.8 A	CIMR-J7AZ41P50
	2.2 Kw	5.5 A	CIMR-J7AZ42P20
	3.0 Kw	7.2 A	CIMR-J7AZ43P00
	4.0 Kw	9.2 A	CIMR-J7AZ44P00

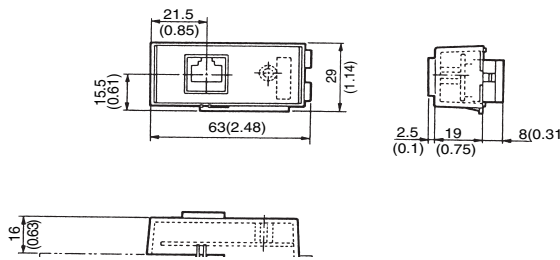
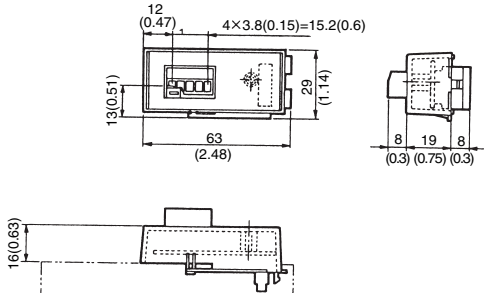
① Line filters



Inverter		Line filter			
Voltage	Model CIMR-J7AZ	Schaffner	Rasmi	Rated current (A)	Weight (kg)
3-phase 200 VAC	20P1 / 20P2 / 20P4 / 20P7	3G3JV-PFI2010-SE	3G3JV-PFI2010-E	10	0.68
	21P5 / 22P2	3G3JV-PFI2020-SE	3G3JV-PFI2020-E	16	0.84
	24P0	---	3G3JV-PFI2030-E	26	1.0
Single-phase 200 VAC	B0P1 / B0P2 / B0P4	3G3JV-PFI1010-SE	3G3JV-PFI1010-E	10	0.45
	B0P7 / B1P5	3G3JV-PFI1020-SE	3G3JV-PFI1020-E	20	0.68
3-phase 400 VAC	40P2 / 40P4	3G3JV-PFI3005-SE	3G3JV-PFI3005-E	5	0.57
	40P7 / 41P5 / 42P2	3G3JV-PFI3010-SE	3G3JV-PFI3010-E	10	0.67
	43P0 / 44P0	3G3JV-PFI3020-SE	3G3JV-PFI3020-E	20 / 15	1.0

② Accessories

Type	Model	Description	Funtions
Digital operator	JVOP-146	Remote digital operator without potentiometer	4-4.4 dia. MTG holes 11 (0.43) 58 (2.28) 80 (3.15) 50 (1.97) 68 (2.68) 78 (3.07) 88 (3.46) 5 (0.2) 1.7 (0.07) 10.5 (0.41) 18.2 (0.72) 30.4 (1.20) 56 (2.20) 4-M4 spot facing deep 3.5 (0.14) 23.1 (0.91) 12.2 (0.48) 9.3 (0.37) 5.5 (0.61)
	JVOP-144	Remote digital operator with potentiometer	4-4.4 dia. MTG holes 11 (0.43) 58 (2.28) 80 (3.15) 50 (1.97) 68 (2.68) 78 (3.07) 88 (3.46) 5 (0.2) 1.7 (0.07) 10.5 (0.41) 18.2 (0.72) 30.4 (1.20) 56 (2.20) 4-M4 spot facing deep 3.5 (0.14) 23.1 (0.91) 12.2 (0.48) 9.3 (0.37) 5.5 (0.61)

Type	Model	Description	Functions
Interface units	SI-232/J7 (3G3JV-PSI232J)	RS232 adapter	Another option SI-232/J7C (3G3JV-PSI232JC) is available, the only difference is that this one is removable. 
	SI-485/J7 (3G3JV-PSI485J)	RS485 adapter	
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	SI232/J7 must be connected
	3G3IV-PCN329-E	PC configuration cable	SI232/J7 must be connected

② Accessories

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

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

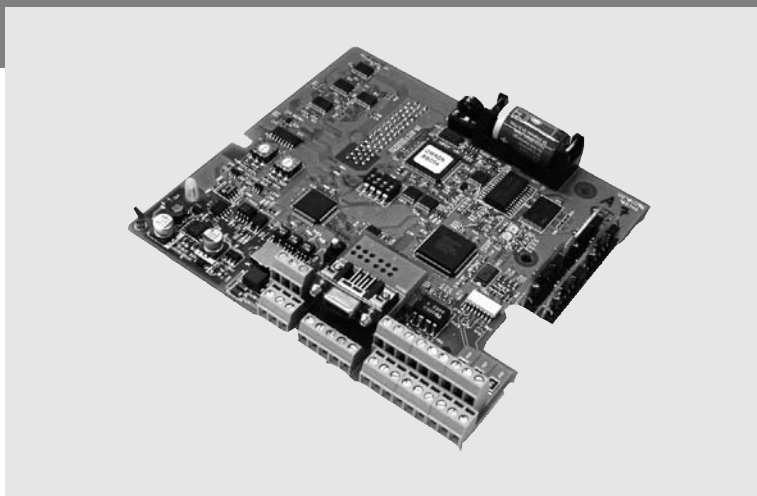
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

3G3RV-P10ST□-E

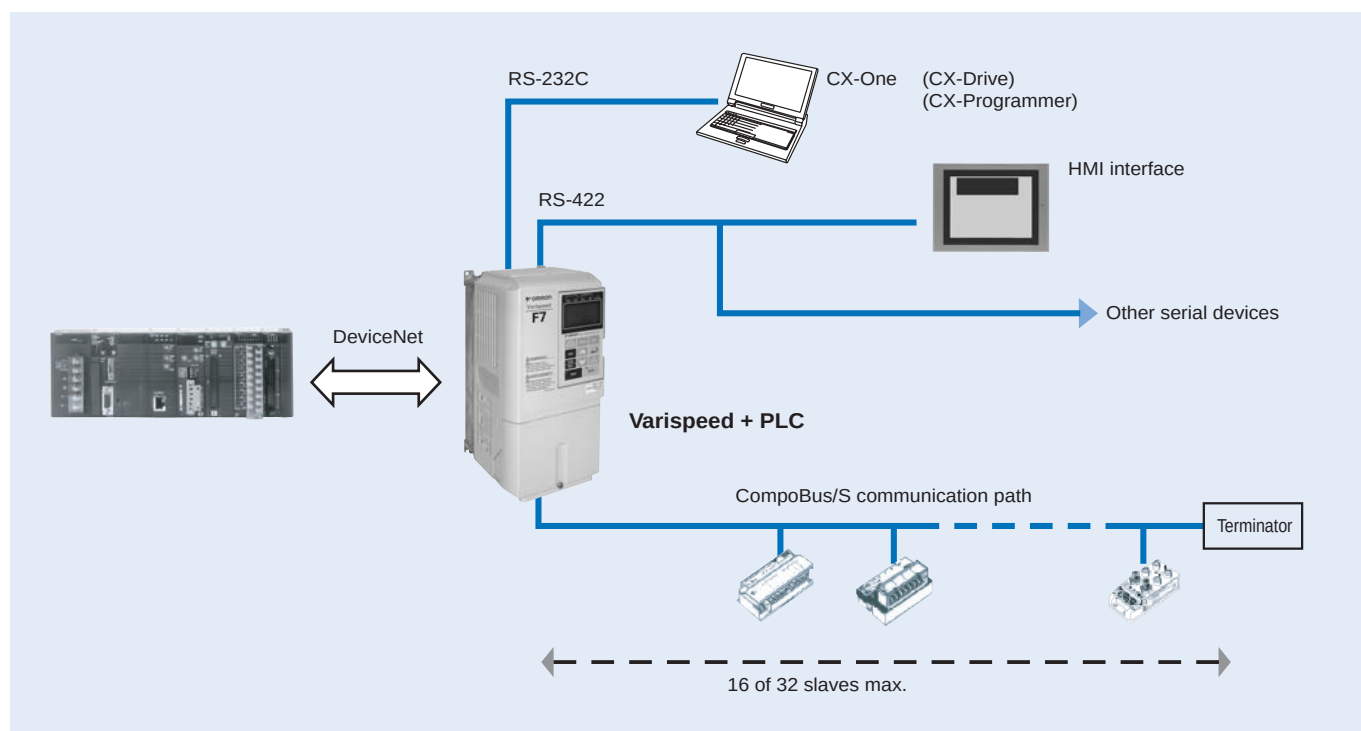
G7/F7/L7/E7 inverter PLC

The OMRON PLC technology embedded in the OMRON Yaskawa inverter family

- OMRON PLC programmability in the OMRON Yaskawa inverters.
- Flexibility and intelligence in the OMRON Yaskawa inverter family.
- Wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.
- OMRON CompoBus/S fieldbus inside. Thus, able to control up to 256I/O's.
- Easy to integrate in the automation world: DeviceNet type available.
- Standard OMRON tools can be used for programming and commissioning.
- Ideal for applications like:
 - Pump sequencing, remote control, water treatment, etc together with the HVAC inverter: E7&E7 IP54.
 - Lift as control sequence inside, using the lift inverter: L7.
 - Cranes, winding/rewinding, position control, others combined with the powerful flux vector control inverter: F7Z.
- General purpose using the high technology of G7 3-Level vector control.



System configuration



Type designation

PLC inverter

3G3RV-P10ST8-DRT-E			
Inverter series	3G3RV	Options	
Number of I/O's	P10		
	ST8		
	DRT		
	E		
		DeviceNet slave	
		-	No
		DRT	Yes

	Output	RTC	RS422	Remarks
-	NPN	NO	NO	
1	NPN	NO	YES	
2	NPN	YES	NO	
3	NPN	YES	YES	
5	PNP	NO	NO	
6	PNP	NO	YES	
7	PNP	YES	NO	
8	PNP	YES	YES	Standard

Specifications

Specifications by product

Item	3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
PLC core	CPM2C-S	CPM2C-S
Inputs	6 24 VDC inputs	6 24 VDC inputs
Outputs	4 sourcing/PNP transistor outputs	4 sourcing/PNP transistor outputs
Peripheral port	Yes	Yes
RS-232C port	Yes	Yes
RS-422 port	No	Yes
Calendar/clock	Yes	Yes
Memory backup	Flash memory and battery	Flash memory and battery
CompoBus/S master interface	Yes	Yes
Encoder interface	Yes	Yes
DeviceNet Slave interface	No	Yes

General specifications

Item		Specifications
		3G3RV-P10ST8-E
		3G3RV-P10ST8-DRT-E
Rated power supply voltage		24 VDC $+10\%$ / -15% (external power supply for I/O)
Communications power supply voltage		---
Power consumption supply	Internal power	2 W (supplied internally) (see note)
	Communications power supply	3 W (supplied internally) (see note)
Vibration resistance		10 to 20 Hz, 9.8 m/s ² max. 20 to 50 Hz, 2 m/s ² max
Ambient operating temperature		-10 to 45 °C
Ambient operating relative humidity		10% to 90% (no condensation)
Ambient storage temperature		-20 to 70 °C
Atmosphere		Must be free from corrosive gas
Control method		Store program method
I/O control method		Cyclic scan method
Programming language		Ladder chart method
Instruction length		1 step/1 instruction; 1 to 5 words/1 instruction
Instruction types	Basic	14 types (same as for programmable slaves)
	Special	105 types, 185 instructions (same as for programmable slaves)
Processing speed	Basic instructions	0.64 µs (LD)
	Special instructions	7.8 µs (MOV)
Program capacity		4,096 words
Maximum number of I/O points		10
Input bits		00000 to 00015 (6 physical inputs)
Output bits		01000 to 01003 (4 physical outputs)
CompoBus/S input bits		128 bits: IR 02000 to IR 02715 (bits not used for CompoBus/S input bits can be used for work bits.)
CompoBus/S output bits		128 bits: IR 03000 to IR 03715 (bits not used for CompoBus/S output bits can be used for work bits.)
Inverter interface		Direct interface with inverter through • IR-memory • DM-memory • Transfer command
Inverter interface bits		176 bits: IR 20000 to IR 21015
Encoder interface bits		48 bits: IR 02900 to IR 02915 and IR 04800 to IR 04915
Work bits		448 bits: IR 02800 to IR 02815, IR 03800 to IR 04715, and IR 21100 to IR 22715
Special bits (SR area)		448 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)
Temporary bits (TR area)		8 bits (TR 0 to TR 7)
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (words HR 00 to 19)
Auxiliary bits (AR area)		384 bits: AR 0000 AR 2315 (words AR 00 to AR 23)

Item		Specifications	
		3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
Link bits (LR area)		256 bits: LR 0000 to LR 1515 (words LR 00 to LR 15)	
Timers/counters		256 timers/counters (TIM/CNT 000 to TIM/CNT) 1-ms timers: TMHH(--) 10-ms timers: TIMH(15) 100-ms timers: TIM 1-s/10-s timers: TIML(--) - Decrementing counters: CNT - Reversible counters: CNTR(12)	
CompoBus/S master functions		Remote I/O devices can be allocated up to 256 I/O points (128 inputs and 128 outputs) in input area IR 020 to IR 027 and output area IR 030 to IR 037. - The node numbers can be set to 0 to 7 (128-point mode) or 0 to 15 (256-point mode). - The communications mode can be set to high-speed mode (max. length 100 m) or long-distance mode (max. length 500 m).	
DeviceNet slave functions		Up to 64 words (32 input words and 32 output words) can be allocated to the DeviceNet master's I/O. The master's I/O can be allocated to the following data areas: - IR 000 to IR 049 - IR 200 to IR 227 - DM 0000 to DM 2047 - LR 00 to LR 15 - HR 00 to HR 19 - AR 00 to AR 23 (3G3RV-P10ST ' master; read-only) - TC 000 to TC 255 - Explicit message communications are supported. Any 3G3RV-P10ST data area can be accessed from the DeviceNet master. - The communications speed can be set to 500 kbps (total network length 100 m max.), 250 kbps (total network length 250 m max.), or 125 kbps (total network length 500 m max.).	
DM area	Read/write	2,029 words (DM 0000 to DM 0999, DM 1019 to DM 2047) DM 2000 to DM 2021: error log storage area	
	Read only	456 words (DM6144 to 6599)	
	Inverter interface	19 words (DM 2022 to DM 2040)	
	Encoder interface	14 words (DM 1986 to DM 1999)	
	PLC setup	56 words (DM 6599 to DM 6655)	
Interrupts		Interrupt inputs 2 inputs Response time: 50 μ s	
		Interval timer interrupts 1 input Set value: 0.5 to 319,968 ms Precision: 0.1 ms	Scheduled interrupts
			One-shot interrupt
High-speed counters	High-speed counter 1 input, see note 5	No interrupt	
	Differential phase mode (5 kHz)	Count-check interrupt	
	Pulse plus direction input mode (20 kHz)	(An interrupt can be generated when the count equals the set value or the count lies within a preset range.)	
	Up/down input mode (20 kHz)		
	Increment mode (20 kHz)		
	Interrupt inputs (counter mode)	No interrupt	
	2 inputs	Count-up interrupt	
	Incrementing counter (2 kHz)		
	Decrementing counter (2 kHz)		
Encoder interface		3 input modes: - Differential-phase (up/down) - Pulse plus direction - Up/down pulse Maximum input frequency 50 kHz Maximum counter range 4,294,967,295 (2 ³² -1) Two capture registers, 3 selectable registration inputs One comparison value Counter reset through software or Z-phase Interrupt function	
Pulse outputs		2 outputs: - Single-phase pulse output without acceleration/deceleration (see note 6.) 10 Hz to 10 kHz 2 outputs: - Variable duty ratio pulse output (see note 6.) 0.1 to 999.9 Hz, duty ratio 0 to 100% 1 output: - Pulse output with trapezoidal acceleration/deceleration (see note 6.) - Pulse plus direction output, up/down pulse output, 10 Hz to 10 kHz	
Synchronized pulse control		1 point, see notes 5 and 6 Input frequency range: 10 to 500 Hz, 20 Hz to 1 kHz, or 300 Hz to 20 kHz Output frequency range: 10 Hz to 10 kHz	
Pulse catch inputs		2 bits Minimum pulse input: 50 μ s max. Used in common by input interrupts and input interrupt counter mode.	
Analog volume		None	
Input time constant (ON response time = OFF response time)		Determines the input time constant for all inputs. (settings: 1, 2, 3, 5, 10, 20, 40, or 80 ms)	
Clock/Calendar function		Shows the current year, month, day of the week, day of the month, hour, minute, and second.	
Communication function		Port 1 = Peripheral and RS-422: Host link, peripheral bus, no-protocol, programming console Port 2 = RS-232C port: Host link, no-protocol, 1:1 PLC link, 1:1 NT link	

Item	Specifications	
	3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
Power-interruption hold function	Holds the contents of HR, AR, CNT, and DM areas.	
Memory backup (see notes 1 and 2.)	Flash memory: Program, read-only DM area, and PC setup Memory backup: The read/write DM area, HR area, AR area, and counter values are backed up. (The battery has a 5-year lifetime at 25 °C and it is replaceable.)	
Self-diagnostic function	CPU errors, memory errors, communications errors, setting errors, battery errors	
Program check	No END instruction, program errors (regularly checked during operation)	
Connected tools	CX-programmer	After version 2.1
	Programming console	C200H-PRO27, CQM1-PRO01
	SSS	PC98 & PC/AT (SYSMAC support software, all versions)
	CX-drive	Version 1 or higher

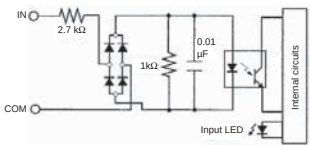
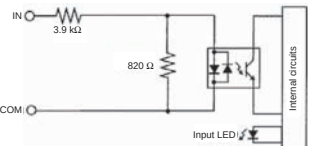
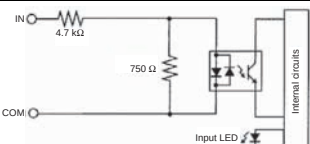
Note: 1. The DM area, HR area, AR area, and counter values are backed up. If the backup battery or capacitor is discharged, the contents of these areas will be lost and the data values will revert to the defaults.

2. The contents of the program area, read-only DM area (DM6144 to DM6599), and PLC setup (DM 6600 to DM 6655) are stored in flash memory. The contents of these areas will be read from flash memory the next time the power is turned ON, even if the backup battery or capacitor is discharged. When data has been changed in any of these areas, write the new values to flash memory by switching the 3G3RV-P10ST to MONITOR or RUN mode, or by turning the power OFF and then ON again.

- Changes made while in MONITOR mode using, for example, online editing, are written to flash memory in real-time.
- The above figure for power consumption includes the power consumption of the programming console.
- This input is shared by the high-speed counter and synchronized pulse control functions.
- This output is shared by the pulse output and synchronized pulse control functions.

I/O specifications

Input specifications

Item	Inputs	Specification
Input voltage	All	24 VDC $+10\%/-15\%$
Input impedance	IN 00000 to IN 00001	2.7 k Ω
	IN 00002 to IN 00004	3.9 k Ω
	IN 00005	4.7 k Ω
Input current	IN 00000 to IN 00001	8 mA typical
	IN 00002 to IN 00004	6 mA typical
	IN 00005	5 mA typical
ON voltage/current	IN 00000 to IN 00001	17 VDC min., 5 mA
	IN 00002 to IN 00005	14.4 VDC min., 3.5 mA
OFF voltage/current	All	5.0 VDC max., 1.1 mA
ON delay	All	1 to 80 ms max. Default: 10 ms (see note.)
OFF delay	All	1 to 80 ms max. Default: 10 ms (see note.)
Circuit configuration	IN 00000 to IN 00001	
	IN 00002 to IN 00004	
	IN 00005	

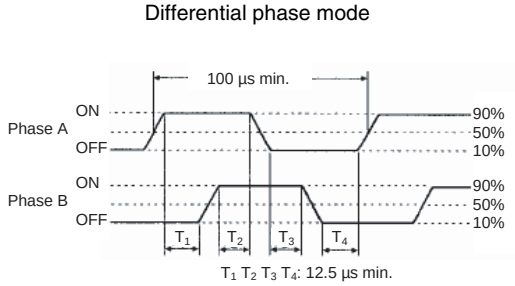
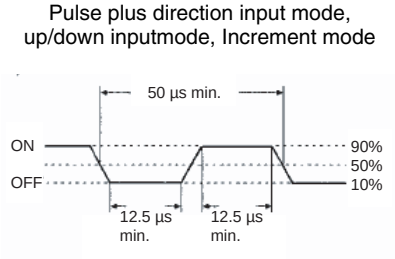
Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PLC setup.

High-speed counter inputs

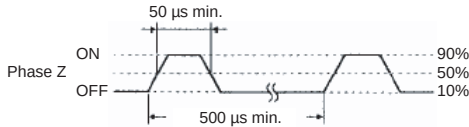
The following unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN 00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN 00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN 00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

The minimum pulse widths for inputs IN00000 (A-phase input) and IN00001 (B-phase input) are as follows:



The minimum pulse width for input IN00002 (Z-phase input) is as follows:



Interrupt inputs

3G3RV-P10ST is equipped with inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 µs.

Inputs IN 00003 and IN 00004 can be used as interrupt inputs.

Output specifications

Transistor outputs (sourcing/PNP)

Item	Specification
Maximum switching capacity	4.5 to 30 VDC, 0.2 A/output
Minimum switching capacity	0.5 mA
Maximum inrush current	0.9 A for 10 ms
Leakage current	0.1 mA
Residual voltage	1.5 V max.
ON response time	20 µs max.
OFF response time	40 µs max. for 4.5 to 26.4 VDC, 10 to 100 mA 0.1 ms max for 4.5 to 30 VDC, 10 to 200 mA
Fuse	One fuse per output (cannot be replaced by user)
Circuit configuration	

Note: When using OUT 01000 or OUT 01001 as a pulse output, connect a dummy resistor as required to bring the load current between 0.01 and 0.1 A. If the load current is below 0.1 A, the ON-to-OFF response time will be longer and high-speed pulses (source-type transistor outputs) will not be output. If the load current is above 0.1 A, the transistor will generate more heat and components may be damaged.

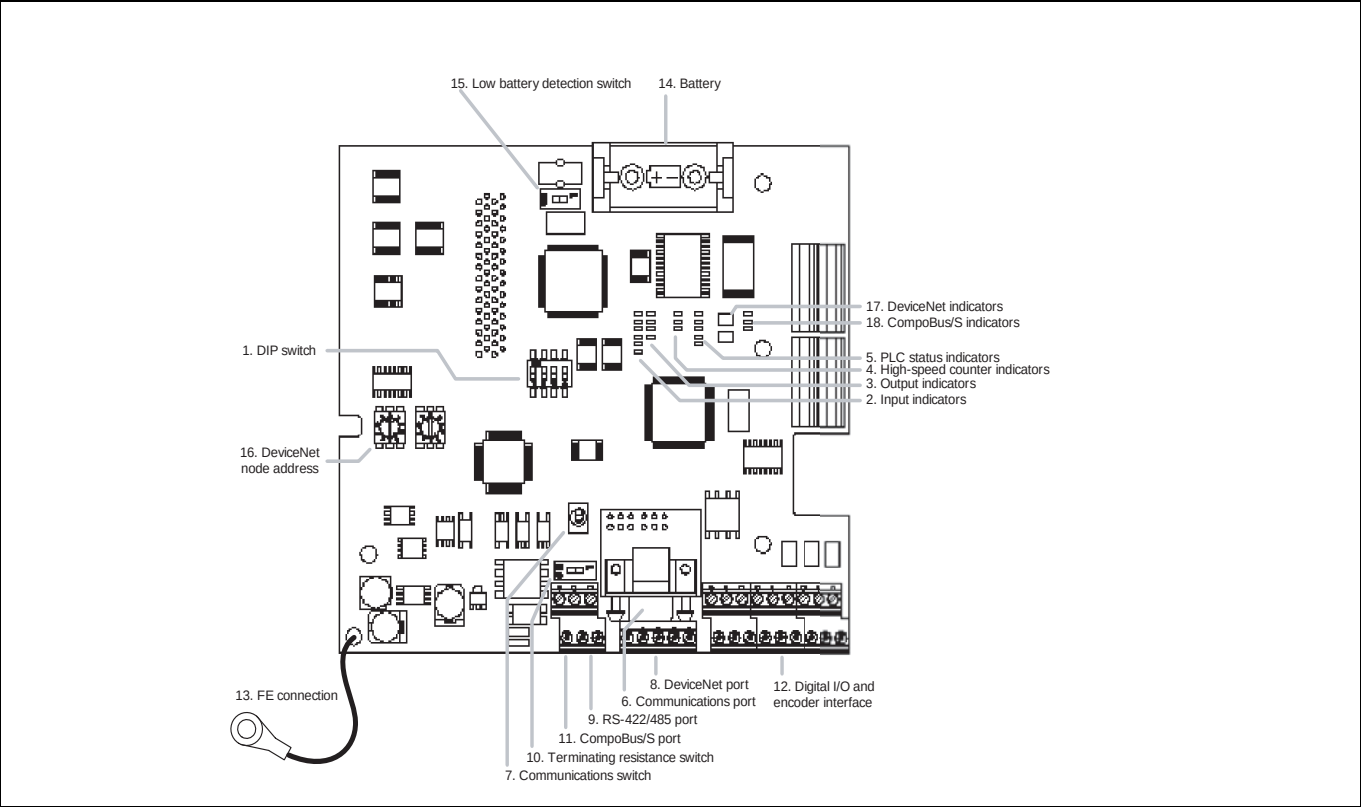
Caution
Do not apply voltage in excess of the maximum switching capacity to an output terminal. It may result in damage to the product or fire.

Encoder input specifications

Signal level	All	EIA RS-422-A standards
Input impedance	A- and B-phase	280 Ω
	Z-phase	260 Ω
Response frequency	A- and B-phase	50 kHz max.
	Z-phase	1 kHz max.
Circuit configuration	A- and B-phase	
	Z-phase	

Operation

CPU unit component descriptions



1. DIP switch

- RS-232C and peripheral port settings

	Pin 1	Effective port settings
	OFF (default)	The ports operate according to the settings in the PLC setup. RS-232C port settings: DM 6645 to DM 6649 Peripheral port settings: DM 6650 to DM 6654
	ON	The ports operate with the standard communications settings.

- Operating mode at startup

Pin 2 determines the operating mode at startup only if there isn't a programming device connected to the peripheral port.

Programming device connected	Startup mode with Pin 2 OFF (default)	Startup mode with Pin 2 ON
None	RUN mode	PROGRAM mode
Programming console	Operating mode set on the programming console's mode switch	
Other device	PROGRAM mode	

2. Input indicators (yellow)

IN0

IN1

IN2

IN3

IN4

IN5

OUT0

OUT1

OUT2

OUT3

The input indicators are lit when the corresponding input terminal is ON. The status of an input indicator will reflect the status of the input even when that input is being used for a high-speed counter.

- Note:**
- When interrupt inputs are used in interrupt input mode, the indicator may not light even when the interrupt condition is met if the input is not ON long enough.
 - Input indicators will reflect the status of the corresponding inputs even when the PLC is stopped, but the corresponding input bits will not be refreshed.

3. Output indicators (yellow)

The output indicators are lit when the corresponding output terminal is ON. The indicators are lit during I/O refreshing. The status of an output indicator will also reflect the status of the corresponding output when the output is being used as a pulse output.

4. High-speed counter indicators (yellow)

A

B

Z

The indicators are lit when the corresponding input terminal is ON.

5. PLC status indicators

The following indicators show the operating status of the PLC.

	Indicator	Status	Meaning
	PWR (green)	ON	Power is being supplied to the unit
		OFF	Power isn't being supplied to the unit
	RUN (green)	ON	The PLC is operating in RUN or MONITOR mode
		OFF	The PLC is in PROGRAM mode or a fatal error has occurred.
		Flashing	A non-fatal error has occurred. (PLC operation continues.)
	ERR/ALM (red)	ON	A fatal error has occurred. (PLC operation stops.)
		Flashing	A non-fatal error has occurred. (PLC operation continues.)
		OFF	Indicates normal operation.
	COMM1 (yellow)	Flashing	Data is being transferred via the peripheral or RS-422/485 port.
		OFF	Data isn't being transferred via communications port.
	COMM2 (yellow)	Flashing	Data is being transferred via the RS-232C port
		OFF	Data isn't being transferred via communications port.

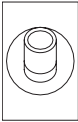
6. Communications port

Connects the PLC to a programming device (including programming consoles), host computer, or standard external device. Use a proper connecting cable (CPM2C-CN111, CS1W-CN114, CS1W-CN118, or CS1W-CN226).

- Note:** 1. A CQM1H-PRO01-E programming console can be connected directly to the PLC.
2. A C200H-PRO27-E programming console can be connected directly to the PLC with a CS1W-CN224/CN624 connecting cable.
3. Use a CPM2C-CN111 or CS1W-CN114 connecting cable to connect to the communications port as a peripheral port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 connecting cable.
4. Use a CPM2C-CN111, CS1W-CN118 or CS1W-CN226 connecting cable to connect to the communications port as a RS-232C port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 connecting cable.

Note: The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

7. Communications switch



Switch to select port 1 type of connected device

Position	Communication port 1
OFF (up) (default)	Programming console
ON (down)	RS-422/485 communication

8. DeviceNet port (-DRT versions only)

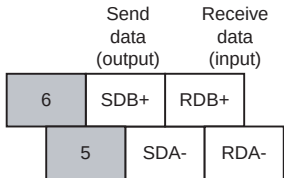
Terminal arrangement

V-	CAN-L	Shield	CAN-H	V+
----	-------	--------	-------	----

9. RS-422/485 port

Used to connect to host computers, or standard external devices.

Terminal arrangement



Note: The maximum line length is 500 m.
The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.
When using RS-485 communication, connect RDA- to SDA- and RDB+ to SDB+.

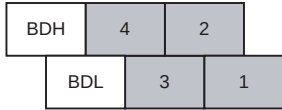
10. Terminating resistance switch

	Position	Termination
	OFF (right) (default)	Disabled
	ON (left)	Enabled

Set this switch to ON only for double-ended connection to a host link network.

11. CompoBus/S port

Terminal arrangement



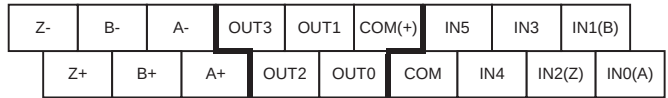
Use special flat cable or VCTF cable for the transmission lines that connect the nodes in the CompoBus/S I/O Link. (Special flat cables and VCTF cables cannot be combined in the same system.)

Name	Model number	Specifications
Flat cable	XB1T-W10	4-core flat cable, 0.75 mm ²
VCTF cable	---	2-core VCTF, 0.75 x 20

12. Digital inputs and outputs and encoder interface

Connects the CPU unit to external input and output devices.

Sourcing outputs



13. Functional earth-wire

To be connected the earth connection inside the inverter.

14. Battery

15. Low battery detection switch

This switch enables or disables the detection of a low-battery error.

	Position	Low-battery detection
	OFF (right) (default)	Error detection enabled
	ON (left)	Error detection disabled

16. DeviceNet node-number (-DRT versions only)

Please refer to the DeviceNet section

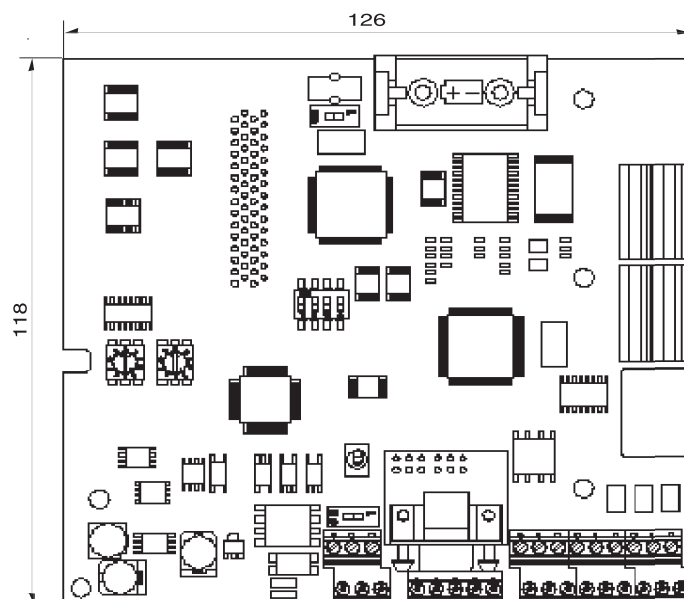
17. DeviceNet indicators (-DRT versions only)

Please refer to the DeviceNet section

18. CompoBus/S indicators

	Indicator	Status	Meaning
	SD (yellow)	Flashing	Data is being transmitted via CompoBus/S
		OFF	Data isn't being transmitted via CompoBus/S
	RD (yellow)	Flashing	Data is being received via CompoBus/S
		OFF	Data isn't being received via CompoBus/S
	ERC (red)	Flashing	A CompoBus/S communications error occurred.
		OFF	A CompoBus/S communications error hasn't occurred.

Dimensions

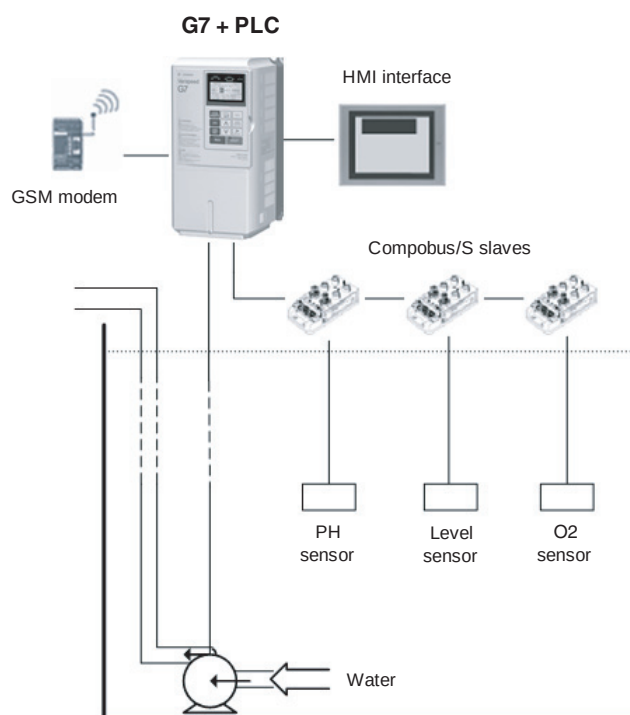


Application examples

G7 + PLC

Varispeed G7 is the OMRON Yaskawa solution using 3 level PWM control technology that provides lower surge voltage, low leakage current, low bearing current, low acoustic noise and better EMC. By combining with PLC option board, it is the ideal solution for winding/unwinding applications, handling / transfer / palletizer point-to-point positioning applications, press control applications, extruder control applications and pump applications for examples ..

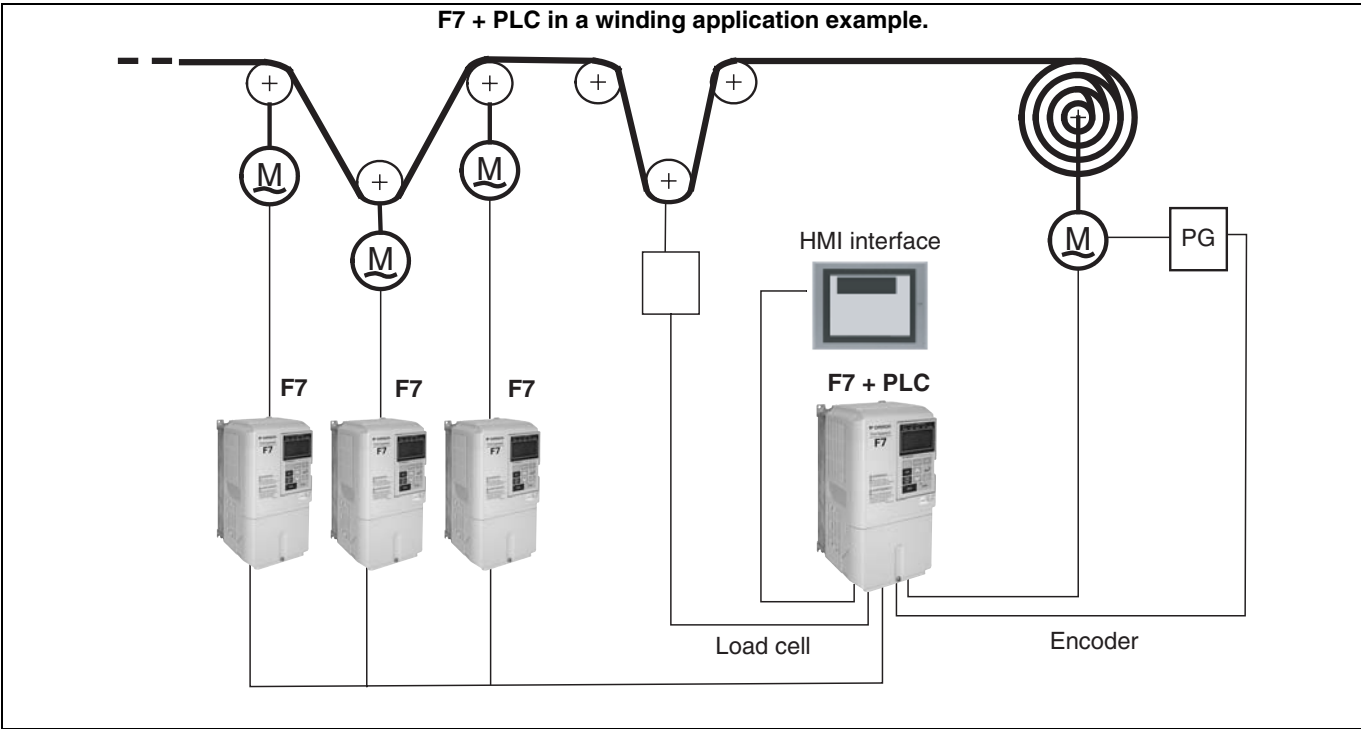
G7 + PLC in a water treatment application example



Note: For detailed information about the inverter, please see the Varispeed G7 series section.

F7 + PLC

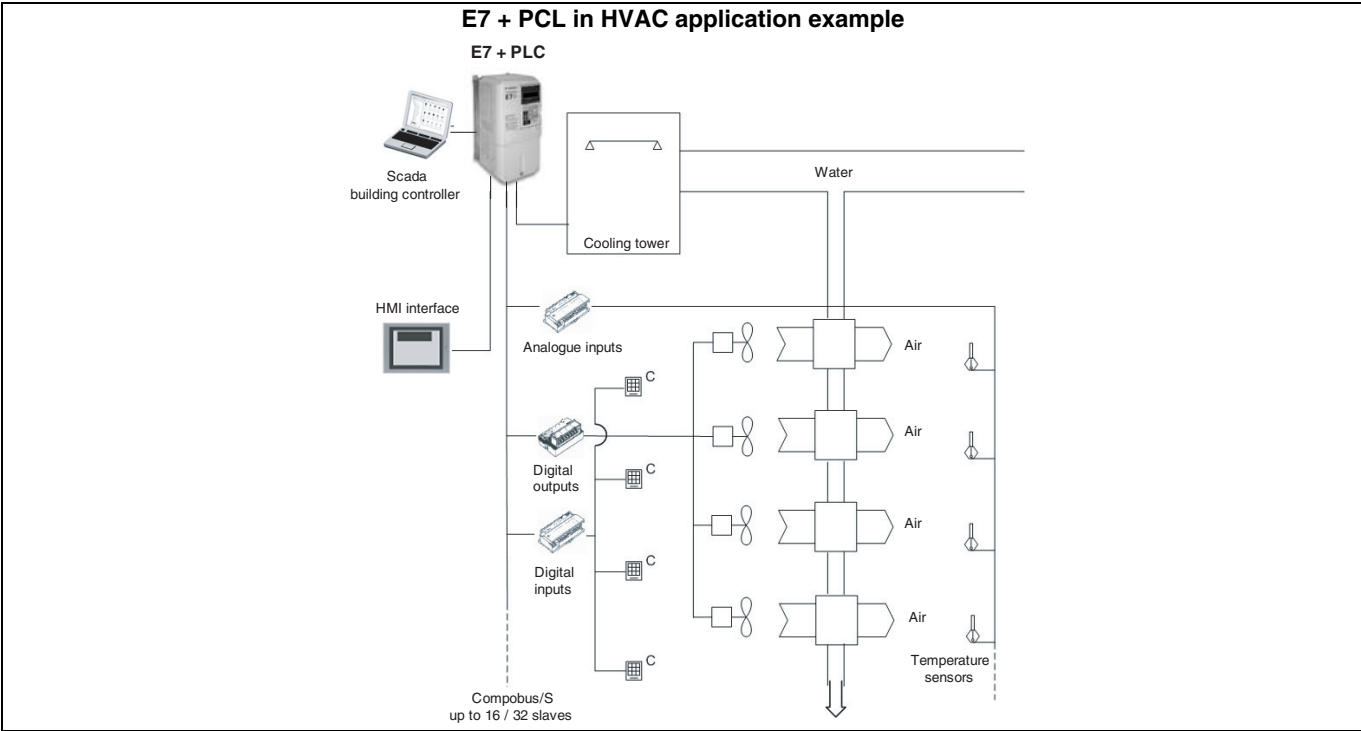
The F7 drive is a flux vector control inverter. It is intended to handle every conventional drive application found in a typical industrial manufacturing plant from simple variable torque pumping to sophisticated networked material handling. By combining with PLC option board, is ideal solution winding/unwinding applications, handling/ transfer/ palletizer point-to-point positioning applications, food processing, packaging, printing, and textile machines for example .



Note: For detailed information about the inverter, please see into the Varispeed F7 series section.

E7 + PLC

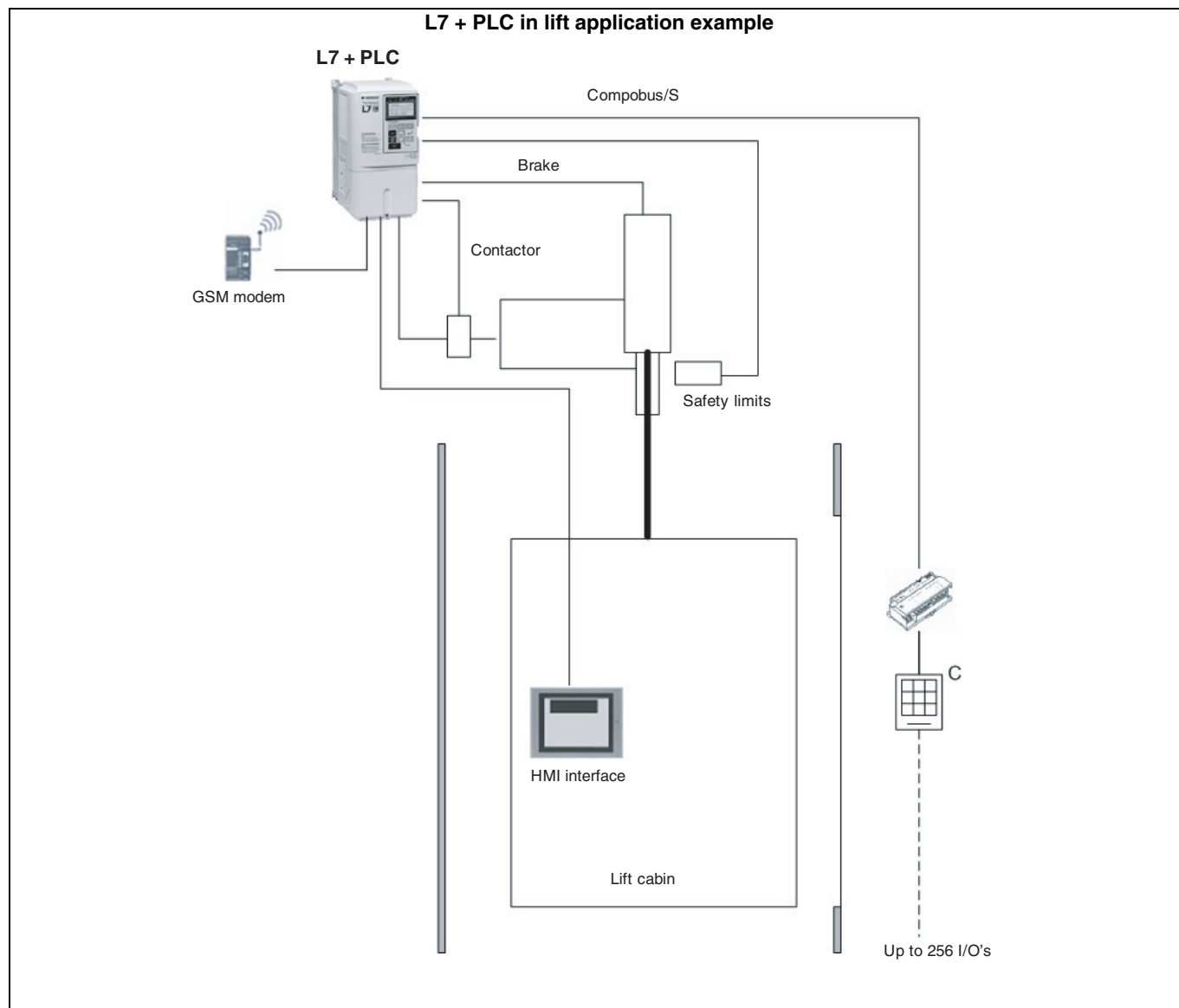
Varispeed E7 is the OMRON Yaskawa solution for energy saving applications The E7 is designed for variable torque applications such as fans and centrifugal pumps. By combining with PLC option board, it is the ideal solution for water treatment, pump sequencing, building automation and fan applications for example...



Note: For detailed information about the inverter, please see into the Varispeed E7 series section.

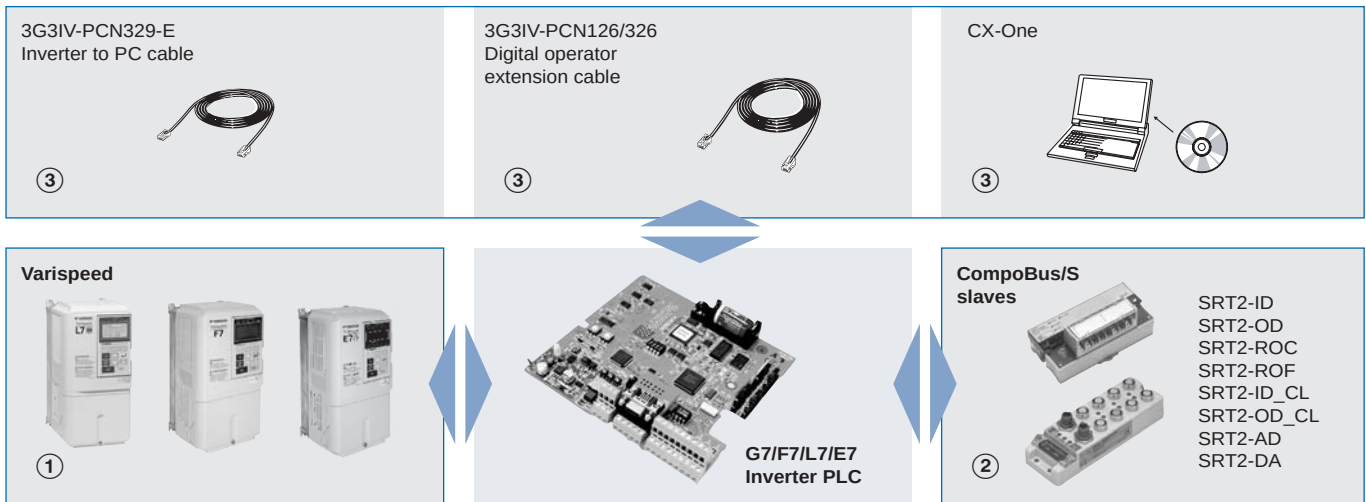
L7 + PLC

The L7 is the ultimate drive for lift applications up to 3m/s. High starting torque, silent operation, lift-specific operator interface and operation with both AC and PM motors are standard features of the L7 inverter. By combining with PLC option board, it is the ideal solution for controlling distributed I/O's, lift cabin HMI, GSM modem to send alarms for example..



Note: For detailed information about the inverter, please see into the Varispeed L7 series section.

Ordering information



G7/F7/L7/E7 inverter PLC

Specifications						Model
Inputs	Outputs	RTC	CompoBus/S master	RS422 port	DeviceNet slave	
6	4	Yes	Yes	Yes	No	3G3RV-P10ST8-E
6	4	Yes	Yes	NO	Yes	3G3RV-P10ST8-DRT-E

① Varispeed

Specifications	Model
The 3-Level control method inverter	Varispeed G7
Flux vector control inverter	Varispeed F7
The lift inverter	Varispeed L7
The pumps and fans inverter	Varispeed E7

Note: For detailed information please refer to Varispeed G7/F7/L7/E7 series section.

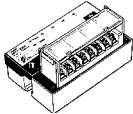
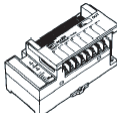
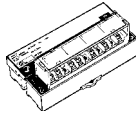
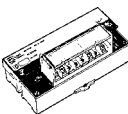
② Cables

Specifications	Model
Computer connecting cable	CS1W-CN226
Programmable console cable	CS1W-CN224

② Computer software

Specifications	Model
PLC programming software: CX-programmer	CX-One
Inverter configurator software: CX-drive	

③ Compobus/S slaves

Product	Appearance	Specifications	Model
Digital I/O terminals		4 NPN inputs (+ common) 4 PNP inputs (– common) 4 NPN outputs (– common) 4 PNP outputs (+ common)	SRT2-ID04 SRT2-ID04-1 SRT2-OD04 SRT2-OD04-1
		8 NPN inputs (+ common) 8 PNP inputs (– common) 8 NPN outputs (– common) 8 PNP outputs (+ common)	SRT2-ID08 SRT2-ID08-1 SRT2-OD08 SRT2-OD08-1
		16 NPN inputs (+ common) 16 PNP inputs (– common) 16 NPN outputs (– common) 16 PNP outputs (+ common)	SRT2-ID16 SRT2-ID16-1 SRT2-OD16 SRT2-OD16-1
Relay output terminals		8 Relay outputs 8 Power MOS FET relay outputs	SRT2-ROC08 SRT2-ROF08
		16 Relay outputs 16 Power MOS FET relay outputs	SRT2-ROC16 SRT2-ROF16
Waterproof terminals		4 NPN inputs (+ common) 4 PNP inputs (– common) 4 NPN outputs (– common) 4 PNP outputs (+ common)	SRT2-ID04CL SRT2-ID04CL-1 SRT2-OD04CL SRT2-OD04CL-1
		8 NPN inputs (+ common) 8 PNP inputs (– common) 8 NPN outputs (– common) 8 PNP outputs (+ common)	SRT2-ID08CL SRT2-ID08CL-1 SRT2-OD08CL SRT2-OD08CL-1
Analog input terminal		1 to 4 inputs (set with DIP switch)	SRT2-AD04
Analog output terminal		1 or 2 outputs (set with DIP switch)	SRT2-DA02

Note: For detailed information about Compobus/S slaves, please refer to catalogue No. Y201-EN2-02 AS.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

3G3MV-P10CDT□-E

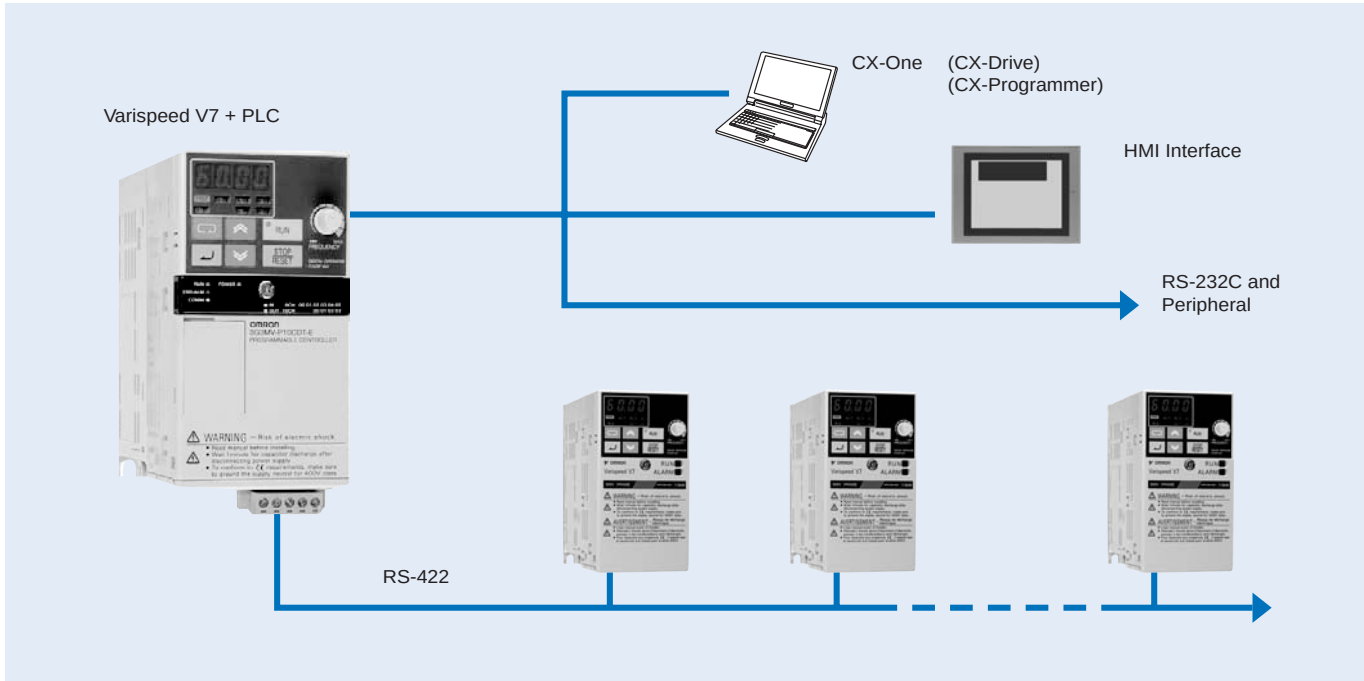
V7 inverter PLC

The OMRON PLC technology embedded in the most popular inverter: the V7

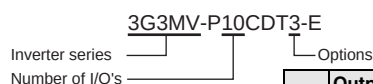
- OMRON PLC programmability for the 3G3MV inverter
- Stand-alone applications.
- Flexibility and intelligence into the 3G3MV.
- Wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.
- Standard OMRON tools can be used for programming and commissioning.
- Ideal for applications like: door control, pump sequencing, Intelligent conveyor, Vertical axis control, Industrial washing machines and general positioning.



System configuration



Type designation



	Output	RTC	RS422	Remarks
-	NPN	NO	NO	Standard
1	NPN	NO	YES	
2	NPN	YES	NO	
3	NPN	YES	YES	Standard
5	PNP	NO	NO	Standard
6	PNP	NO	YES	
7	PNP	YES	NO	
8	PNP	YES	YES	

Specifications

Specifications by product

Item	3G3MV-P10CDT-E	3G3MV-P10CDT5-E	3G3MV-P10CDT3-E
PLC core	CPM2C-S	CPM2C-S	CPM2C-S
Inputs	6 24 VDC inputs	6 24 VDC inputs	6 24 VDC inputs
Outputs	3 sinking/NPN transistor outputs	3 sinking/PNP transistor outputs	3 sinking/NPN transistor outputs
	1 relay output	1 relay output	1 relay output
Peripheral port	Yes	Yes	Yes
RS-232C port	Yes	Yes	Yes
RS-422/485 port	No	No	Yes
Calendar/clock	No	No	Yes
Memory backup	Flash memory and capacitor	Flash memory and capacitor	Flash memory and battery

General specifications

Item	Specifications
Rated power supply voltage	24 VDC $+10\%$ / -15% (external power supply for I/O)
Vibration resistance	0.15 mm (10-57 Hz) 9.8 m/s ² (57-150 Hz) 9.8 m/s ² (57-150 Hz) In all directions (X, Y, Z)
Ambient operating temperature	-10 to 45 °C
Ambient operating relative humidity	10% to 90% (no condensation)
Ambient storage temperature	-20 to 70 °C
Atmosphere	Must be free from corrosive gas
Power consumption	2 W (supplied internally)
Control method	Store program method
I/O control method	Cyclic scan method
Programming language	Ladder chart method
Instruction length	1 step/1 instruction; 1 to 5 words/1 instruction
Instruction types	Basic 14 types (same as for programmable slaves.) Special 105 types, 185 instructions (same as for programmable slaves.)
Processing speed	Basic instructions 0.64 µs (LD) Special instructions 7.8 µs (MOV)
Program capacity	4,096 words
Maximum number of I/O points	10
Input bits	00000 to 00015 (6 physical inputs)
Output bits	01000 to 01003 (4 physical outputs)
Area allocated to inverter	320 bits: 20000 to 21915
Inverter interface	Direct interface with V7 inverter through • IR-memory • DM-memory • Transfer command
IR area	880 bits: IR 00100 to IR 00915 (words IR 001 to IR 009), IR 01100 to IR 02815 (words IR 011 to IR 028), IR 03000 to IR 04915 (words IR 030 to IR 049), IR 22000 to IR 22715 (words IR 220 to IR 227)
SR area	448 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)
TR area	8 bits (TR 0 to TR 7)
HR area	320 bits: HR 0000 to HR 1915 (words HR 00 to 19)
AR area	384 bits: AR 0000 AR 2315 (words AR 00 to AR 23)
LR area	256 bits: LR 0000 to LR 1515 (words LR 00 to LR 15)
Timer/counter area	256 bits: TC 000 to TC 255
DM area	Read/write 2029 words (DM 0000 to DM 0999, DM 1019 to DM 2047) DM 2000 to DM 2021: error log storage area Read only 456 words (DM6144 to 6599) Allocated to inverter 19 words (DM 2022 to DM 2040) PLC setup 56 words (DM 6599 to DM 6655)
Quick-response input	2 inputs (minimum input signal width: 50 µs)

Item		Specifications	
Interrupt processing	External interrupts	2 bits (used in common for input interrupt counter mode and high-speed inputs.)	
	Scheduled interrupts	1 bit (scheduled interrupts or one-shot interrupts)	
Interrupts		Interrupt inputs 2 inputs Response time: 50 μs	
		Interval timer interrupts 1 input Set value: 0.5 to 319,968 ms Precision: 0.1 ms	Scheduled interrupts
			One-shot interrupt
		High-speed counters	High-speed counter 1 input, see note 5 • Differential phase mode (5 kHz) • Pulse plus direction input mode (20 kHz) • Up/down input mode (20 kHz) • Increment mode (20 kHz)
Count-check interrupt (an interrupt can be generated when the count equals the set value or the count lies within a preset range.)			
Interrupt inputs (counter mode) 2 inputs • Incrementing counter (2 kHz) • Decrementing counter (2 kHz)	No interrupt		
	Count-up interrupt		
Pulse outputs		• 2 outputs: Single-phase pulse output without acceleration/deceleration (see note 6.) 10 Hz to 10 kHz • 2 outputs: Variable duty ratio pulse output (see note 6.) 0.1 to 999.9 Hz, duty ratio 0 to 100% • 1 output: Pulse output with trapezoidal acceleration/deceleration (see note 6.) Pulse plus direction output, up/down pulse output, 10 Hz to 10 kHz	
Synchronized pulse control		1 point, see notes 5 and 6 Input frequency range: 10 to 500 Hz, 20 Hz to 1 kHz, or 300 Hz to 20 kHz Output frequency range: 10 Hz to 10 kHz	
Analog volume		None	
Input time constant (ON response time = OFF response time)		Determines the input time constant for all inputs. (Settings: 1, 2, 3, 5, 10, 20, 40, or 80 ms)	
Clock/calendar function		Yes. Shows the current year, month, day of the week, day of the month, hour, minute, and second.	
Communication function		Port 1 = Peripheral and RS-422 host link, peripheral bus, no-protocol, programming console Port 2 = RS-232C port: host link, no-protocol, 1:1 PLC link, 1:1 NT link	
Power-interruption hold function		Holds the contents of HR, AR, CNT, and DM areas.	
Memory backup		Non-volatile memory, user program, DM (read only), PLC setup Fixed internal lithium battery (5 years, not replaceable by the user) or capacitor DM (read/write), HR, SR and CNT areas	
Self-diagnostic function		CPU errors, memory errors, communications errors, setting errors, battery errors	
Program check		No END instruction, program errors (regularly checked during operation)	
Connected tools	CX-programmer	After version 2.1	
	Programming console	C200H-PRO27, CQM1-PRO01	
	SSS	PC98 & PC/AT (SYSMAC support software, all version)	
	CX-drive	-	

- Note:**
1. The DM area, HR area, AR area, and counter values are backed up. If the backup battery or capacitor is discharged, the contents of these areas will be lost and the data values will revert to the defaults.
 2. The contents of the program area, read-only DM area (DM6144 to DM6599), and PLC setup (DM 6600 to DM 6655) are stored in flash memory. The contents of these areas will be read from flash memory the next time the power is turned ON, even if the backup battery or capacitor is discharged. When data has been changed in any of these areas, write the new values to flash memory by switching the 3G3MV-P10CDT to MONITOR or RUN mode, or by turning the power OFF and then ON again.
 3. Changes made while in MONITOR mode using, for example, online editing, are written to flash memory in real-time.
 4. The above figure for power consumption includes the power consumption of the programming console.
 5. This input is shared by the high-speed counter and synchronized pulse control functions.
 6. This output is shared by the pulse output and synchronized pulse control functions

I/O specifications

Input specifications

Item	Inputs	Specification
Input voltage	All	24 VDC $+10\%$ / -15%
Input impedance	IN00000 to IN00001	2.7 kΩ
	IN00002 to IN00004	3.9 kΩ
	IN00005	4.7 kΩ
Input current	IN00000 to IN00001	8 mA typical
	IN00002 to IN00004	6 mA typical
	IN00005	5 mA typical
ON voltage/current	IN00000 to IN00001	17 VDC min., 5 mA
	IN00002 to IN00005	14.4 VDC min., 3.5 mA
OFF voltage/current	All	5.0 VDC max., 1.1 mA
ON delay	All	1 to 80 ms max. Default: 10 ms (see note)

Item	Inputs	Specification
OFF delay	All	1 to 80 ms max. default: 10 ms (see note.)
Circuit configuration	IN00000 to IN00001	
	IN00002 to IN00004	
	IN00005	

Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PLC setup.

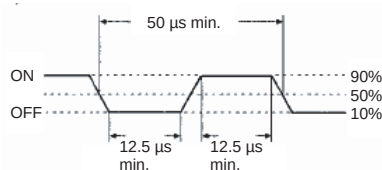
High speed counter inputs

The following unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

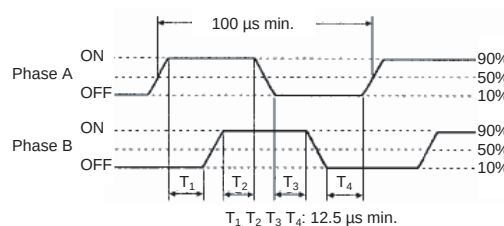
Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

The minimum pulse widths for inputs IN00000 (A-phase input) and IN00001 (B-phase input) are as follows:

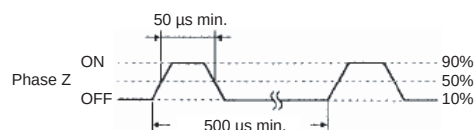
Pulse plus direction input mode,
Up/down input mode, increment mode



Differential phase mode



The minimum pulse width for input IN00002 (Z-phase input) is as follows:



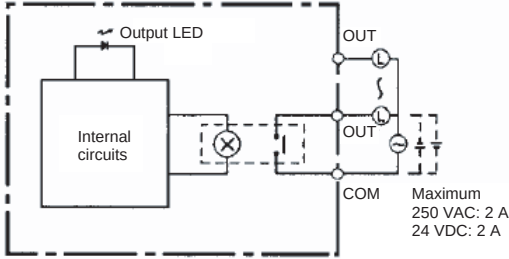
Interrupt inputs

The 3G3MV-P10CDT is equipped with inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 μs.

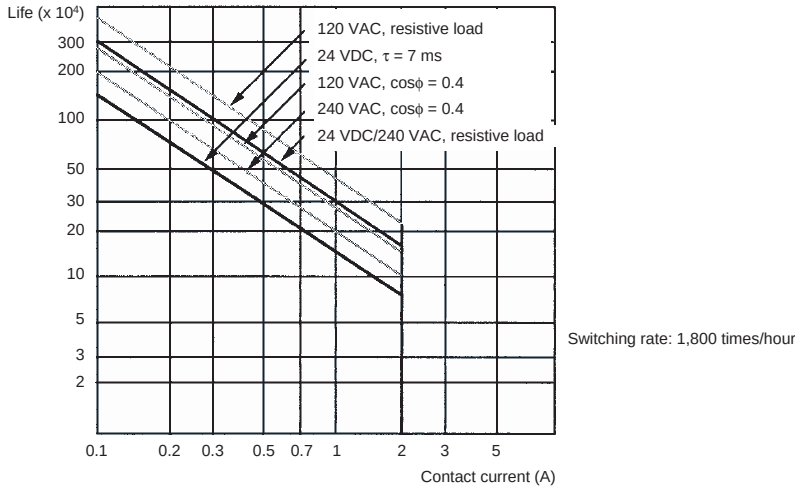
Inputs IN00003 and IN00004 can be used as interrupt inputs.

Output Specification

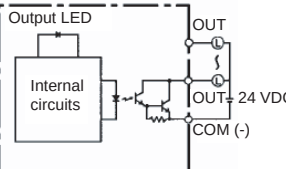
Relay output

Item	Specification
Maximum switching capacity	2 A, 250 VAC ($\cos\phi=1$) 2A, 24VDC
Minimum switching load	10 mA, 5 VDC
Service life of relay	Electrical: 150,000 operations (24 VDC resistive load) 100,000 operations (240 VAC inductive load $\cos\phi=0.4$) Mechanical: 20,000,000 operations
ON delay	15 ms max.
OFF delay	15 ms max.
Circuit configuration	

Note: The service life of relay output contacts shown in the table assumes the worst conditions. The following graph shows the results of OMRON's service life tests at a switching rate of 1,800 times/hour.



Transistor outputs (sinking/NPN)

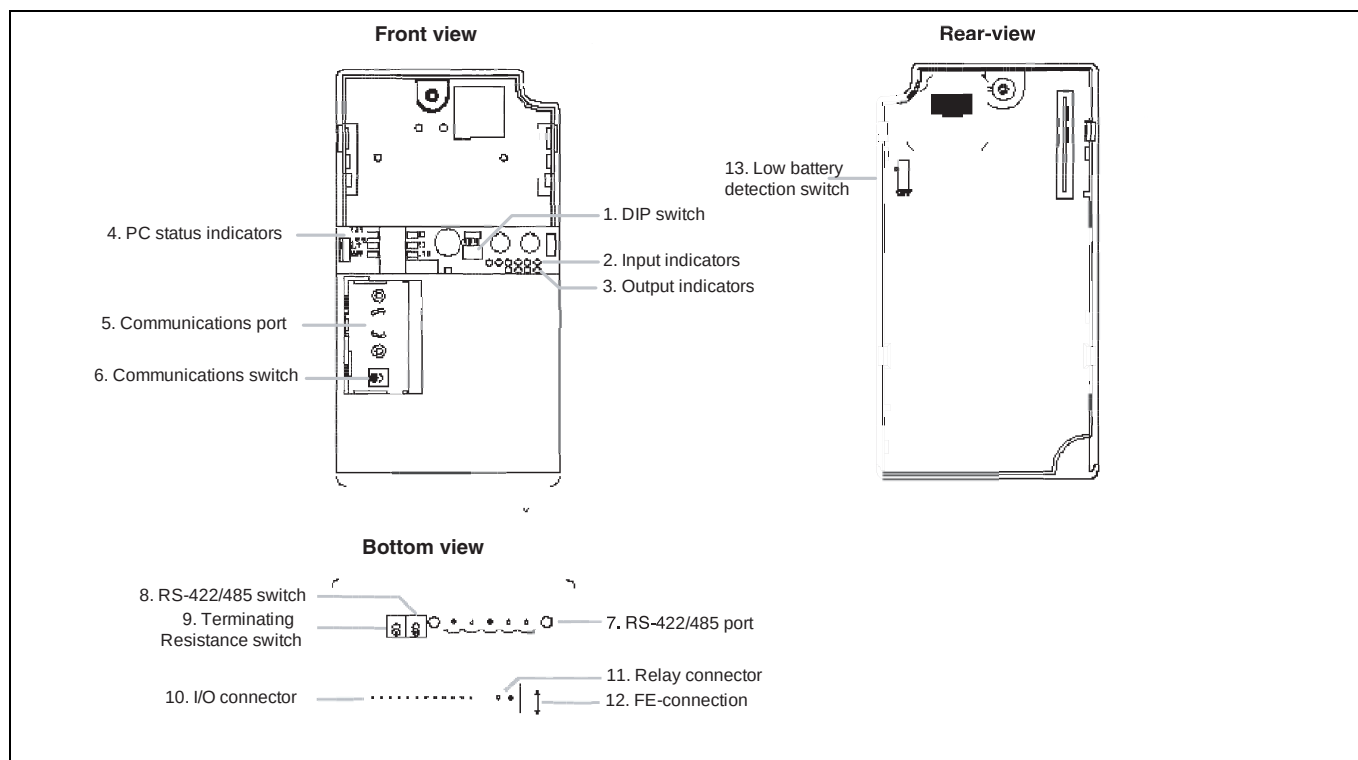
Item	Specification
Maximum switching capacity	4.5 to 30 VDC, 0.2 A/ output
Minimum switching capacity	0.5 mA
Maximum inrush current	0.9 A for 10 ms
Leakage current	0.1 mA
Residual voltage	1.5 V max.
ON response time	20 μ s max.
OFF response time	40 μ s max. for 4.5 to 26.4 VDC, 10 to 100 mA 0.1 ms max for 4.5 to 30 VDC, 10 to 200 mA
Fuse	One fuse per output (cannot be replaced by user)
Circuit configuration	

Note: When using OUT01000 or OUT01001 as a pulse output, connect a dummy resistor as required to bring the load current between 0.01 and 0.1 A. If the load current is below 0.1 A, the ON-to-OFF response time will be longer and high-speed pulses (source-type transistor outputs) will not be output. If the load current is above 0.1 A, the transistor will generate more heat and components may be damaged.

Caution
Do not apply voltage in excess of the maximum switching capacity to an output terminal. It may result in damage to the product or fire

Operation

CPU unit component descriptions



1. DIP switch

- RS-232C and peripheral port settings

	Pin 1	Effective port settings
1 ☐ NO	OFF (default)	The ports operate according to the settings in the PLC Setup. RS-232C port settings: DM 6645 to DM 6649 Peripheral port settings: DM 6650 to DM 6654
2 ☐ ON	ON	The ports operate with the standard communications settings.

- Operating mode at startup

Pin 2 determines the operating mode at startup only if there isn't a programming Device connected to the peripheral port.

Programming device connected	Startup mode with pin 2 OFF (default)	Startup mode with pin 2 ON
None	PROGRAM mode	RUN mode
Programming console	Operating mode set on the programming console's mode switch	
Other device	PROGRAM mode	

2. Input indicators (yellow)

The input indicators are lit when the corresponding input terminal is ON. The status of an input indicator will reflect the status of the input even when that input is being used for a high-speed counter.

- Note:** 1. When interrupt inputs are used in interrupt input mode, the indicator may not light even when the interrupt condition is met if the input is not ON long enough.
2. Input indicators will reflect the status of the corresponding inputs even when the PLC is stopped, but the corresponding input bits will not be refreshed.

3. Output indicators (yellow)

The output indicators are lit when the corresponding output terminal is ON. The indicators are lit during I/O refreshing. The status of an output indicator will also reflect the status of the corresponding output when the output is being used as a pulse output.

4. PLC status indicators

The following indicators show the operating status of the PLC.

Indicator	Status	Meaning
PWR (green)	ON	Power is being supplied to the unit
	OFF	Power isn't being supplied to the unit
RUN (green)	ON	The PLC is operating in RUN or MONITOR mode
	OFF	The PLC is in PROGRAM mode or a fatal error has occurred.
ERR/ALM (red)	ON	A fatal error has occurred. (PLC operation stops.)
	Flashing	A non-fatal error has occurred. (PLC operation continues.)
	OFF	Indicates normal operation.
COMM1 (yellow)	Flashing	Data is being transferred via the peripheral or RS-422/485 port.
	OFF	Data isn't being transferred via communications port.
COMM2 (yellow)	Flashing	Data is being transferred via the RS-232C port
	OFF	Data isn't being transferred via communications port.

5. Communications port

Connects the PLC to a programming device (including programming consoles), host computer, or standard external device. Use a proper connecting cable (CPM2C-CN111, CS1W-CN114, CS1W-CN118, or CS1W-CN226).

- Note:** 1. A CQM1H-PRO01-E programming console can be connected directly to the PLC.
2. A C200H-PRO27-E programming console can be connected directly to the PLC with a CS1W-CN224/CN624 connecting cable.
3. Use a CPM2C-CN111 or CS1W-CN114 connecting cable to connect to the communications port as a peripheral port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 connecting cable.
4. Use a CPM2C-CN111, CS1W-CN118 or CS1W-CN226 connecting cable to connect to the communications port as a RS-232C port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 connecting cable

Note: The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

6. Communications switch

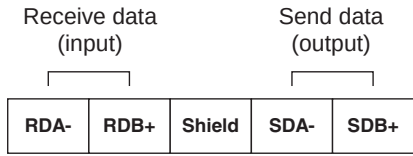
Switch to select port 1 type of connected device

Position	Communication Port 1
OFF (default)	Programming console
ON	RS-422/485 communication

7. RS-422/485 port (3G3MV-P10CDT3-E only)

Used to connect to host computers, or standard external devices.

Terminal arrangement



Connector: Phoenix MSTB 2.5/5-STF-5.08AU

Note: The maximum line length is 500 m.

Note: The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

8. RS-422/485 switch (3G3MV-P10CDT3-E only)

Switch to select 4-wire (RS-422) or 2-wire (RS-485) communication

Position	Status
OFF (down) (default)	4-wire communications
ON (up)	2-wire communications

9. Terminating resistance switch (3G3MV-P10CDT3-E only)

Position	Termination
OFF (down) (default)	Disabled
ON (up)	Enabled

Set this switch to ON only for double-ended connection to a host link network.

10. I/O connector

Connects the CPU unit to external input and output devices.

Sinking/NPN outputs

IN0 (A)	IN1 (B)	IN2 (Z)	IN3	IN4	IN5	COM	COM	OUT0	OUT1	OUT2	COM (-)	OUT3	COM
1	2	3	4	5	6	7	8	9	10	11	12	1	2

Connector: WAGO 733-112 (wire cross section 0.08 to 0.50 mm²)

11. Relay connector

Connects the CPU unit to an external output device.

Connector: WAGO 734-102 (wire cross section 0.08 to 1.50 mm²)

12. FE-connection

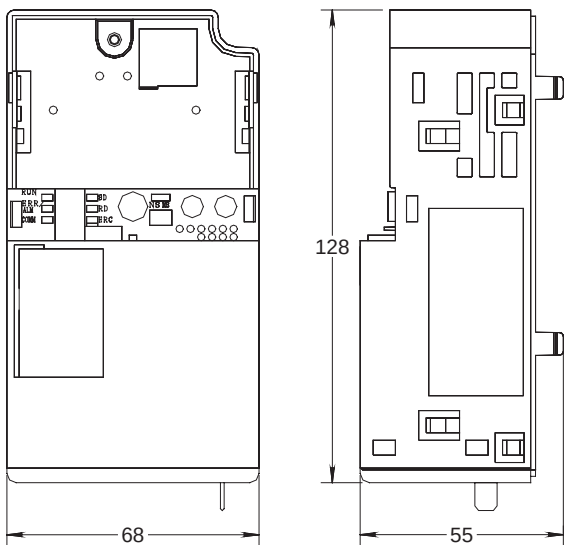
AMP tab to connect functional earth. Internally connected to pin 3 of the RS-422/485 connector and to the shell of the peripheral connector.

13. Low battery detection switch (3G3MV-P10CDT3-E only)

This switch enables or disables the detection of a low-battery error.

	Position	Low-battery detection
	ON (up) (default)	Error detection enabled
	OFF (down)	Error detection disabled

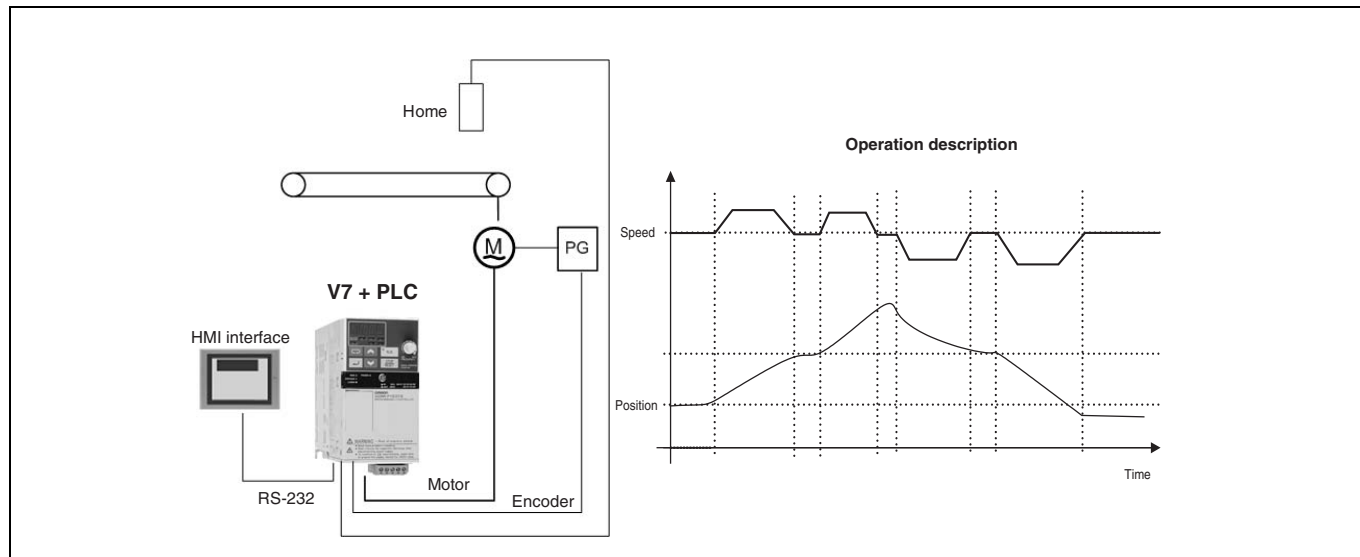
Dimensions



Applications examples

V7 + PLC in positioning application

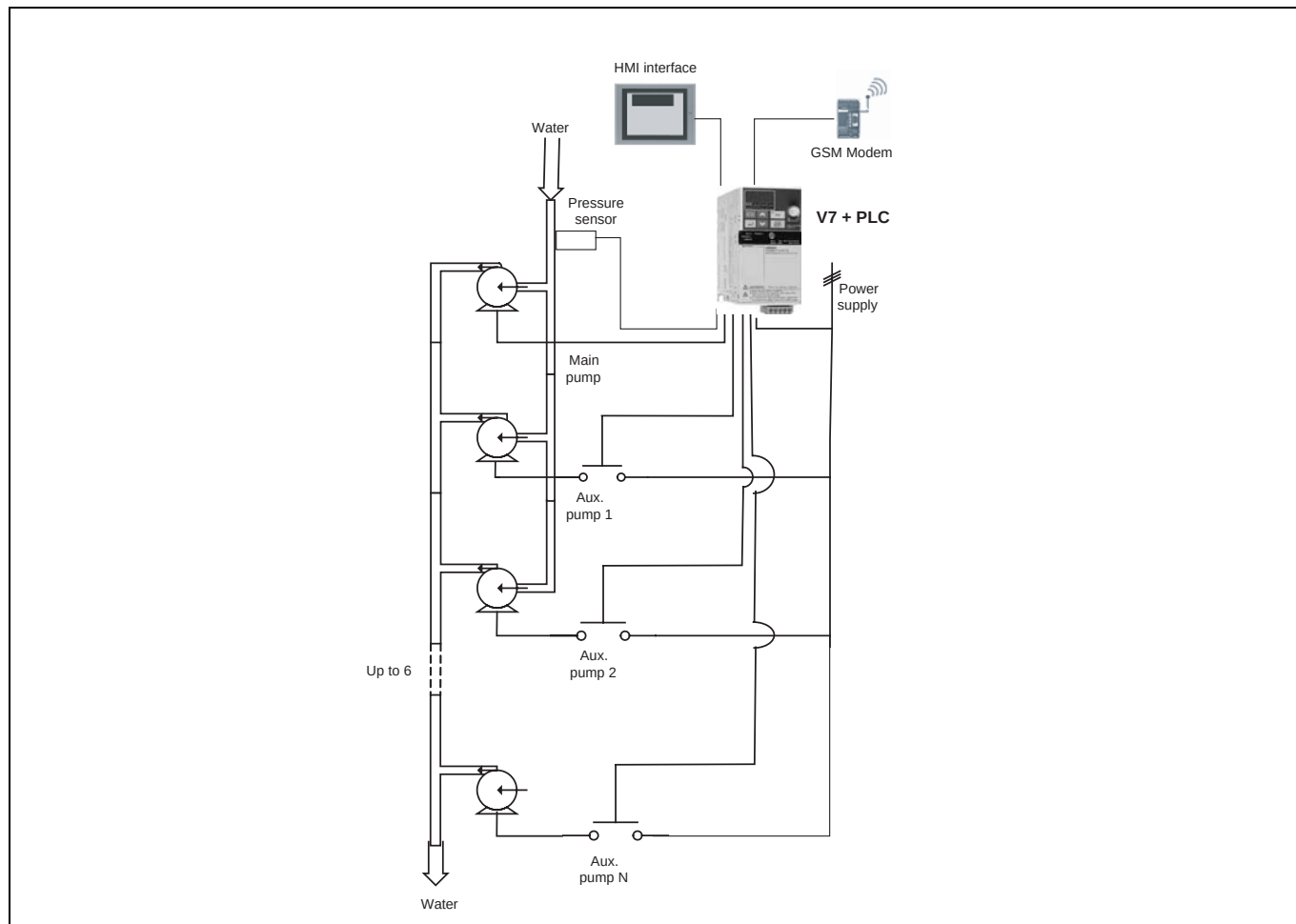
point-to-point applications are possible adding the PLC to the V7, including the possibility to add position and speed tables or even use recipes that could be select using a HMI



Note: For detailed information about the inverter, please refer to Varispeed V7 section.

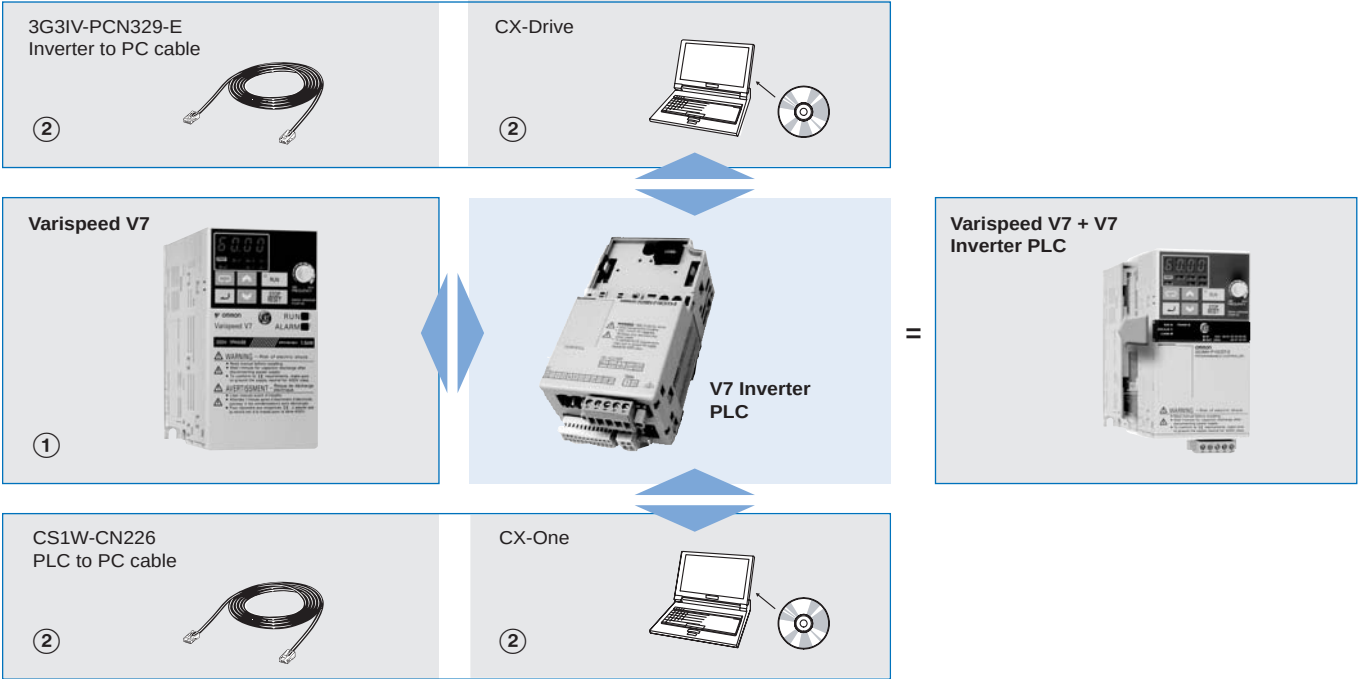
V7 + PLC with pump

Using the PLC, it is possible to control a modulated plus several auxiliar pumps according your own parameters and system demand. It is also possible to add a GSM modem to advice about any problem.



Note: For detailed information about the inverter, please see into the Varispeed V7 section.

Ordering information



Frequency inverters

V7 inverter PLC

Specifications				Model
Inputs	Outputs	RS422 port	RTC	
6	4	No	No	3G3MV-P10CDT-E
6	4	Yes	Yes	3G3MV-P10CDT3-E

① Varispeed

Specifications	Model
Sensorless vector control inverter	Varispeed V7

Note: For detailed information, please refer to Varispeed V7 series section.

② Cables

Specifications	Model
Computer connecting cable	CS1W-CN226
Programmable console cable	CS1W-CN224

② Software

Specifications	Model
PLC programming software: CX-programmer	CX-One
Inverter configurator software: CX-drive	

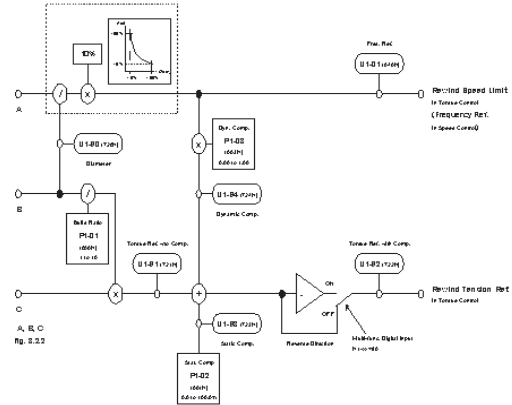
ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

The inverter made for you. Inverter application software.

CASE software

Customised software to meet your specific application requirements.

- The customised application software gives to a standard inverter the features of a dedicated solution.
- The CASE software is a special software file that can be downloaded to the standard inverter to provide additional functionality.
- Specific parameters, monitors and alarms can be added with application units.
- Logic functions can be added.
- I/O's settings can be set for special functionality.
- CASE software is uploaded in the inverter at the factory.
- More than 30 CASE software versions already available.
- For detailed information, please contact your standard OMRON supplier.



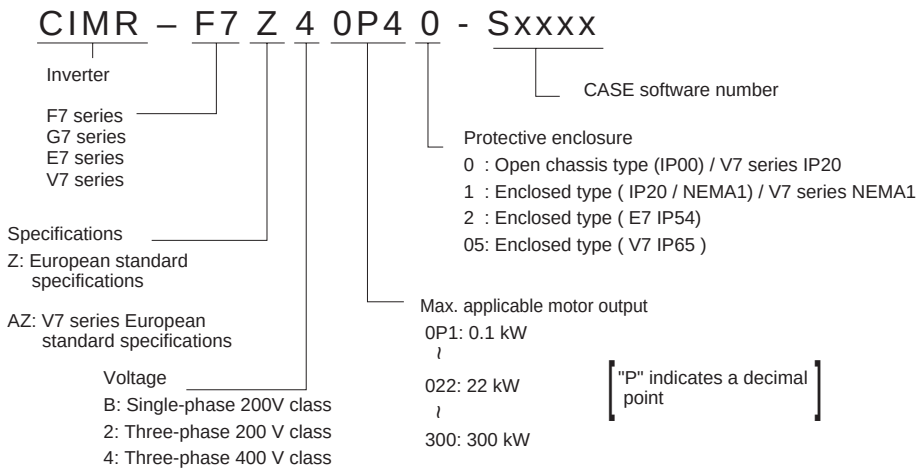
System configuration

ELS software S-8161	Pump sequencer software S-8801	Winder software S-8180
Point to point software S-8795	Crane software S-7071	Traverse software S-9381

Varispeed G7	Varispeed F7	Varispeed E7	Varispeed V7
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Specifications

Type designation

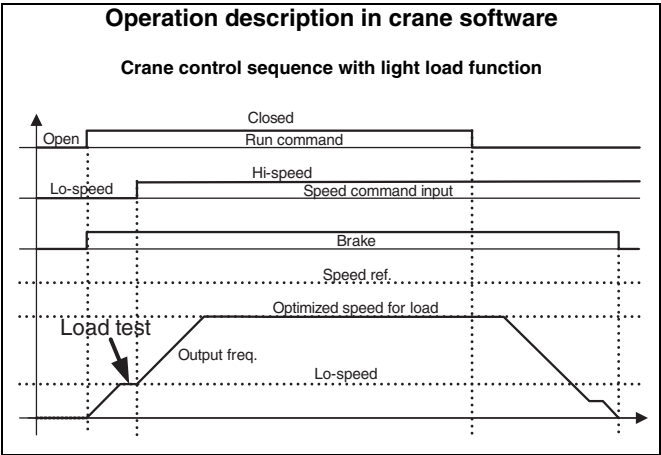


CASE software

Compatible inverter	CASE software	Description	Application
Varispeed F7Z	S7071	Dedicated software for crane applications	Cranes
	S8161	Dedicated software for position and speed follower applications	Synchronized movements
	S8180	Dedicated software for rewinding and unwinding applications	Rewinding & unwinding
	S8795	Dedicated software for point-to-point position applications	Point-to-point movements applications
Varispeed E7Z	S8801	Dedicated software for pump sequencer applications	Water supply, building HVAC.
Varispeed V7AZ	S9381	Dedicated software for textile wire winding applications.	Textile winding

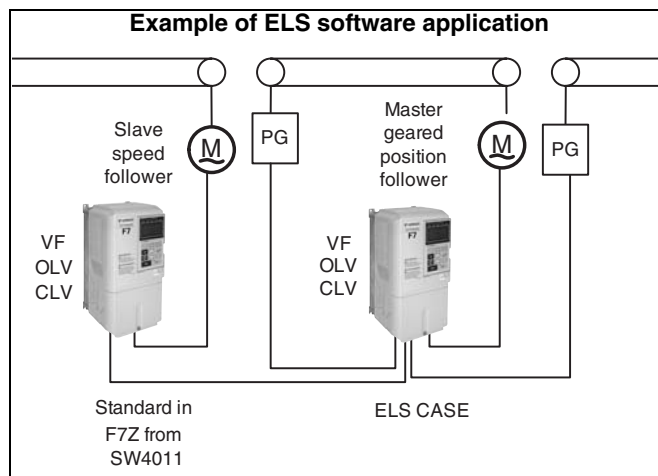
CRANE software - S7071

- Dedicated software for crane applications.
- Provides specific safety functionality.
- Dedicated brake sequence ensures no load movement.
- Smooth operation thanks to jerk control capabilities.
- Flexible over-load/over-torque detection levels.
- Load holding operation using “zero servo” function (closed loop vector)
- End of travel limit function for increased safety.
- High motor torque and speed accuracy even at low speed.
- Swift lift function optimizes vertical lifting speed to suit the load.
- Compatible inverters: F7 series



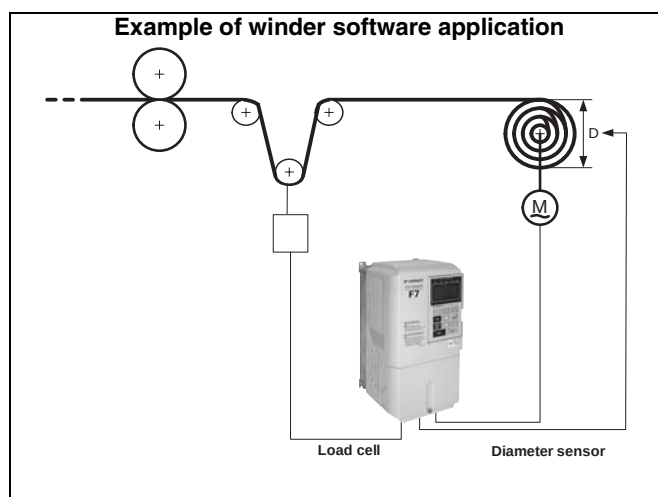
ELS - electronic line shaft software - S8161

- Dedicated software for position & speed follower applications.
- This functionality allows a slave drive to precisely follow a master encoder.
- The follower drive can match its position (phase angle) to the master.
- The speed or position ratio between the master and the follower is infinitely adjustable
- This function is used when the machine being driven requires two mechanically isolated and motor-driven mechanisms to maintain a constant position relationship.
- A gear ratio adjustment can be added to the speed reference via parameter, analogue input, or serial communication.
- Both the master and slave encoder signals are fed into the follower drive's dual encoder option card. (PG-Z2)
- Position offset advance/retard by digital/parameter or communications.
- Compatible inverters: F7 series



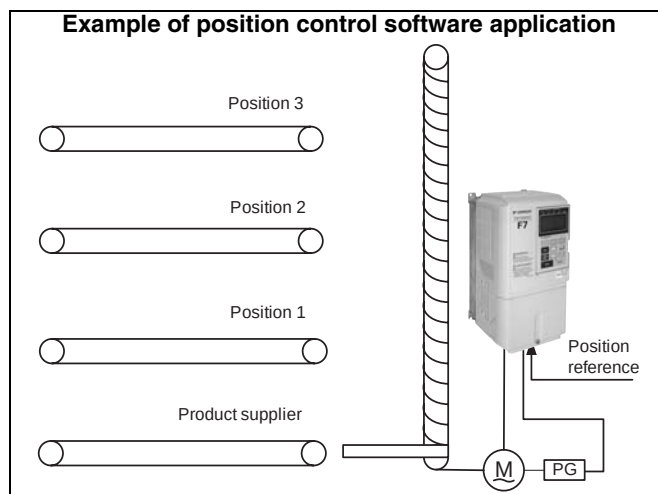
Winder software - S8180

- Dedicated software for rewinding and unwinding applications.
- The software provides a specific calculation of the torque reference and speed limit in torque control for rewriter inverter drives.
- In diameter compensation (with or without external sensor) the rewind drive speed (frequency reference) is changed in relation to incoming web speed, diameter and tension to give the same linear speed as the diameter builds.
- The rewind torque is controlled to give constant tension control, the required tension being set from a potentiometer (analogue input) or from MEMOBUS communication.
- Direct PID based tension control is also available (dancer arm, load cell, etc...)
- Rewind and rewind modes.
- Inertia compensation function as well as static and dynamic friction compensation
- Compatible inverters: F7 series



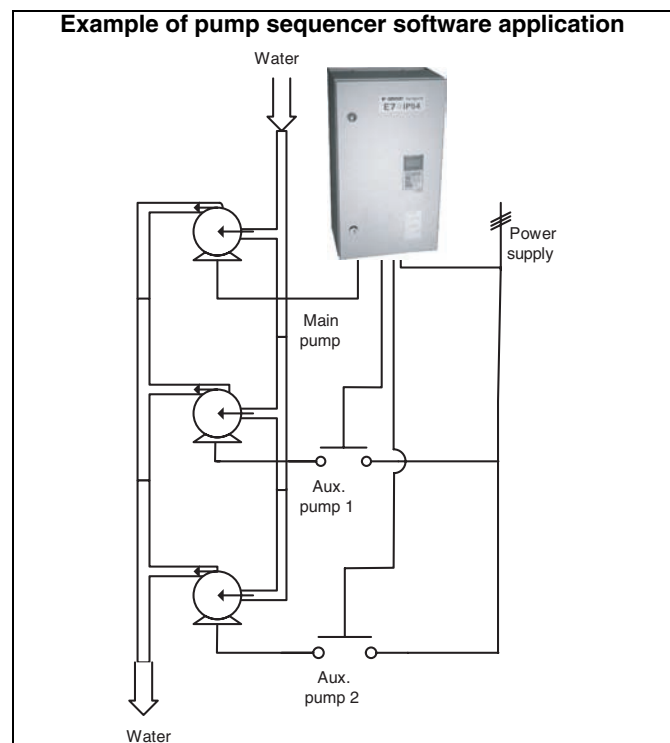
Point-to-point position control software - S8795

- Dedicated software for point-to-point position applications.
- Absolute or relative positioning.
- Homing functionality; sensor.
- On the fly position referencing
- 8 position memories with different speed, acceleration or deceleration sets.
- Selectable position reference from digital inputs, analog input or via communications.
- Brake control.
- Emergency stop sequence
- Overtravel limit switches
- Easy to use.
- Compatible inverters: F7 series



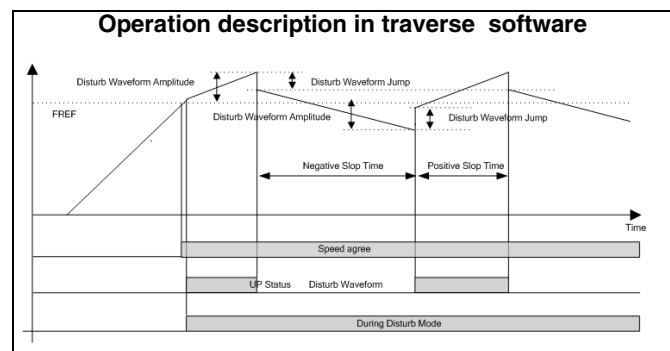
Pump sequencer software

- Dedicated software for pump sequencer applications.
- Physical units = Kg / L, bar, liter.
- Control mode selection by macro: pressure, flow, temperature,...
- Modulated pump with advanced PID.
- Auxiliary pump control for up to 2 pumps.
- Pressure feedback signal: 0-10 V, 0-20 mA, 4-20 mA or inverter sensor.
- Modulated pump automatic frequency drop & rise.
- Specific faults and alarms: dry run detection, pressure sensor broken...
- Pump working totalisers.
- Automatic / manual emergency mode operation by pump override.
- Test operation.
- Compatible inverters: E7 series



Traverse software

- Dedicated software for textile wire winding applications.
- Disturbed wave form allows perfect wire positioning during winding process, ensuring perfect and smooth unwinding.
- Amplitude and time periods are fully customizable
- Compatible inverters: V7AZ series.



Ordering information

ELS software S-8161 	Pump sequencer software S-8801 	Winder software S-8180
Point to point software S-8795 	Crane software S-7071 	Traverse software S-9381

Varispeed G7

Varispeed F7

Varispeed E7

Varispeed V7

Note: The symbols ①② show the recommended sequence to build the item name with CASE software.

① CASE software

Type	CASE software	Description	Application
CIMR-F7xxxxx-S	7071	Dedicated software for crane applications	Cranes
	8161	Dedicated software for position and speed follower applications	Synchronized movements
	8180	Dedicated software for rewinding and unwinding applications	Rewinding & unwinding
	8795	Dedicated software for point-to-point positions applications	Point-to-point movements applications
	7061	Dedicated software for 1.000 Hz output frequency	High speed
	8091	Dedicated software for position deceleration	Positioning at stopping.
CIMR-E7xxxxx-S	8600	Dedicated software for local / remote smooth changover	Local / remote control
	8801	Dedicated software for pump sequencer applications	Water supply, building HVAC.
CIMR-V7AZxxxxx-S	8810	Dedicated software for dynamic current limitation	Industrial pumping
	9381	Dedicated software for textile wire winding applications	Textile winding
	5167	Dedicated software for kinetic energy backup	Control under power loss conditions
	9640	Dedicated software for dynamic PID change	Variable load
	9646	Dedicated software for modification on main frequency from F.R.	Fine speed adjustments
	9662	Dedicated software for valve cleaner sequences for filters units	Valves
	9666	Dedicated software for ceramics customized functionality	Ceramics
	9676	Dedicated software for textile customized functionality	Textile
	9683	Dedicated software for textile customized functionality	Textile

Note:

- For other CASE software examples and ordering information, please contact your standard OMRON Yaskawa supplier.
- To request a new CASE software customized to meet application specific functionality, please contact your standard OMRON YASKAWA supplier.

② Varispeed

Specifications	Model
3-level control method inverter	Varispeed G7
Flux vector control inverter	Varispeed F7
Lift inverter	Varispeed L7
Pump and fan inverter	Varispeed E7
Sensorless vector control inverter	Varispeed V7

Note: For detailed information, please refer to Varispeed G7/F7/L7/E7/v7 series section.

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

Technical information

Mechatronics formulae

Linear movement

Symbol	Description	Units
s	Space	m
v	Velocity	m/s
a	Acceleration	m/s ²
F	Force	N
P	Power	W
W	Energy	J
t	Time	s
μ	Friction coefficient	--
g	Gravity acceleration	m/s ²
m	Mass	Kg

Speed (m/s)

$$v = \frac{\partial s}{\partial t}$$

Acceleration (m/s²)

$$a = \frac{\partial v}{\partial t}$$

Acceleration force (N)

$$F_a = m \cdot a$$

Force friction (N)

$$F_{\mu} = \mu \cdot m \cdot g \cdot \cos \beta$$

Force gravity (N)

$$F_g = m \cdot g \cdot \sin \beta$$



Force root means square (N)

$$F_{rms} = \sqrt{\frac{\sum_i t_i \cdot F_i^2}{\sum_i t_i}}$$

Power (W)

$$P = F \cdot v$$

Cynetic energy

$$W = \frac{1}{2} \cdot m \cdot v^2$$

Rotary movement

Symbol	Description	Units
Φ	Angle	rad
ω	Angular velocity	rad/s
α	Angular acceleration	rad/s ²
T	Torque	Nm
P	Power	W
W	Energy	J
t	Time	s
i	Gear reduction	--
r	Radius	m
J	Inertia	Kgm ²

Speed (rad/s)

$$\omega = \frac{\partial \phi}{\partial t}$$

Acceleration (rad/s²)

$$\alpha = \frac{\partial \omega}{\partial t}$$

Acceleration torque (Nm)

$$T_{\alpha} = J \cdot \alpha$$

Torque root means square (Nm)

$$T_{rms} = \sqrt{\frac{\sum_i t_i \cdot T_i^2}{\sum_i t_i}}$$

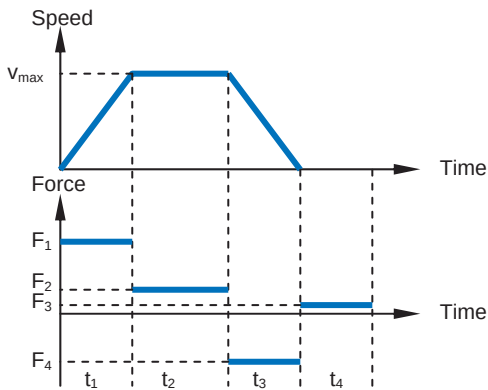
Power (W)

$$P = T \cdot \omega$$

Cynetic energy

$$W = \frac{1}{2} \cdot J \cdot \omega^2$$

Example in case of trapezoidal profile (linear):



1. Acceleration

$$a = \frac{v_{max}}{t_1}$$

$$s_1 = \frac{1}{2} \cdot v_{max} \cdot t_1$$

$$F_a = m \cdot a$$

$$F_{1_Total} = F_a + F_{\mu} + F_{ext}$$

2. Constant speed

$$a = 0$$

$$s_2 = v_{max} \cdot t_2$$

$$F_{2_Total} = F_{\mu} + F_{ext}$$

3. Deceleration

$$d = \frac{v_{max}}{t_3}$$

$$s_3 = \frac{1}{2} \cdot v_{max} \cdot t_3$$

$$F_d = m \cdot d$$

$$F_{3_Total} = F_{\mu} + F_{ext} - F_d$$

4. Dwell

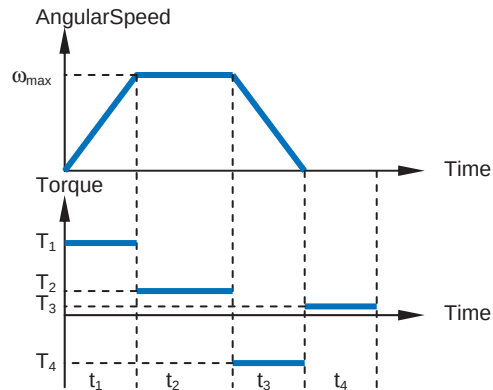
$$s_4 = 0$$

$$F_{4_Total} = F_{ext}$$

Force rms:

$$F_{rms} = \sqrt{\frac{t_1 \cdot F_1^2 + t_2 \cdot F_2^2 + t_3 \cdot F_3^2 + t_4 \cdot F_4^2}{t_1 + t_2 + t_3 + t_4}}$$

Example in case of trapezoidal profile (rotary):



1. Angular acceleration

$$\alpha = \frac{\omega_{max}}{t_1}$$

$$\phi_1 = \frac{1}{2} \cdot \omega_{max} \cdot t_1$$

$$T_{\alpha} = J \cdot \alpha$$

$$T_{1_Total} = T_{\alpha} + T_{\mu} + T_{ext}$$

2. Constant speed

$$\alpha = 0$$

$$\phi_2 = \omega_{max} \cdot t_2$$

$$T_{2_Total} = T_{\mu} + T_{ext}$$

3. Deceleration

$$\gamma = \frac{\omega_{max}}{t_3}$$

$$\phi_3 = \frac{1}{2} \cdot \omega_{max} \cdot t_3$$

$$T_{\gamma} = J \cdot \gamma$$

$$T_{3_Total} = T_{\mu} + T_{ext} - T_d$$

4. Dwell

$$\phi_4 = 0$$

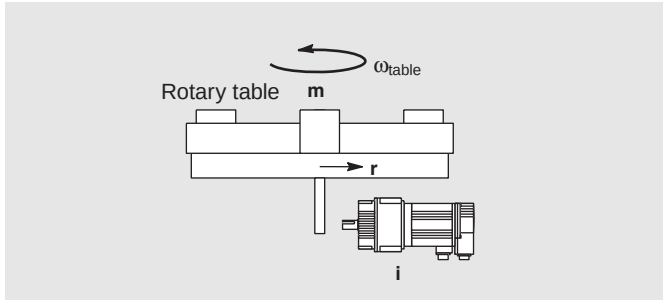
$$T_{4_Total} = T_{ext}$$

Torque rms:

$$T_{rms} = \sqrt{\frac{t_1 \cdot T_1^2 + t_2 \cdot T_2^2 + t_3 \cdot T_3^2 + t_4 \cdot T_4^2}{t_1 + t_2 + t_3 + t_4}}$$

For linear motors you have just to apply the formulae for linear motors considering the mass of the load plus the mass of the motor. For rotary motors it is necessary to apply some cinematic transformations to have the magnitudes **from the motor side**.

Case of rotary table:

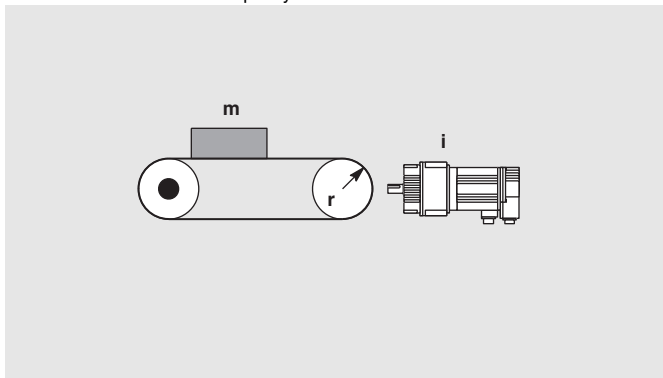


$$J_{\text{total}} = J_{\text{motor}} + \frac{\frac{1}{2} \cdot m \cdot r^2}{i^2}$$

$$\omega_{\text{motor}} = \omega_{\text{table}} \cdot i$$

$$T_{\text{motor_side}} = J_{\text{total}} \cdot \alpha_{\text{motor_side}}$$

Case of a belt drive with two pulleys:



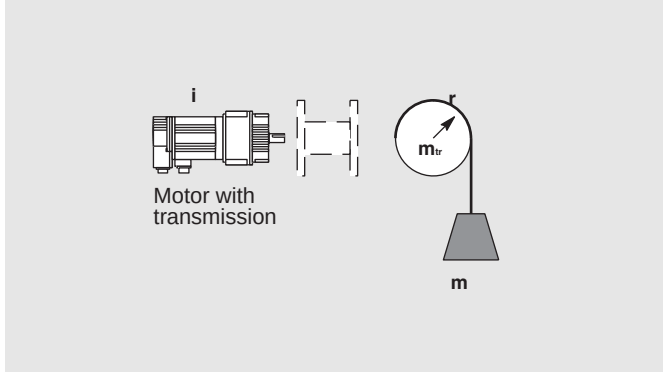
$$J_{\text{total}} = J_{\text{motor}} + \frac{2 \cdot J_{\text{pulley}} + J_{\text{load}}}{i^2}$$

$$J_{\text{total}} = J_{\text{motor}} + \frac{2 \cdot \frac{1}{2} \cdot m_{\text{pulley}} \cdot r^2 + m_{\text{load}} \cdot r^2}{i^2}$$

$$\alpha_{\text{motor_side}} = a \cdot \frac{2\pi}{r} \cdot i$$

$$T_{\text{motor_side}} = J_{\text{total}} \cdot \alpha_{\text{motor_side}} + \frac{m \cdot \mu \cdot g \cdot r}{i}$$

Case of an hanging load:



$$J_{\text{total}} = J_{\text{motor}} + \frac{2 \cdot J_{\text{reel}} + J_{\text{load}}}{i^2}$$

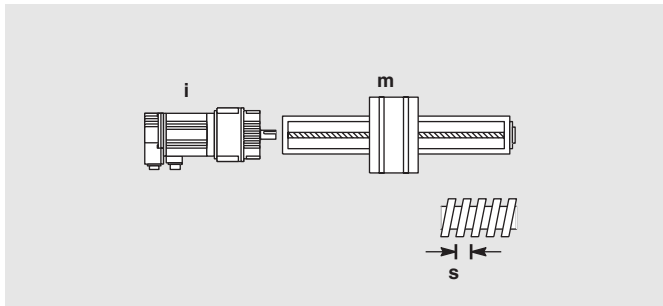
$$J_{\text{total}} = J_{\text{motor}} + \frac{\frac{1}{2} \cdot m_{\text{reel}} \cdot r^2 + m_{\text{load}} \cdot r^2}{i^2}$$

$$\alpha_{\text{motor_side}} = a \cdot \frac{2\pi}{r} \cdot i$$

$$T_{\text{motor_side}} = J_{\text{total}} \cdot \alpha_{\text{motor_side}} \pm \frac{m \cdot g \cdot r}{i}$$

Note: The sign (±) depends on the direction of the movement

Case of a ballscrew:



$$J_{\text{total}} = J_{\text{motor}} + \frac{\left(\frac{s}{2\pi}\right)^2 \cdot m + \frac{1}{2} \cdot m_{\text{screw}} \cdot r_{\text{screw}}^2}{i^2}$$

$$\alpha_{\text{motor_side}} = a \cdot \frac{2\pi}{s} \cdot i$$

$$T_{\text{motor_side}} = J_{\text{total}} \cdot \alpha_{\text{motor_side}} + \frac{m \cdot \mu \cdot g \cdot \frac{s}{2\pi}}{i}$$

Motor selection

Linear motor

The selected linear motor must match the next conditions.

$$v_{\max_motor} > v_{\max_application}$$

$$F_{\max_motor} > \frac{F_{\text{peak_application}}}{\eta}$$

$$F_{\text{rated_motor}} > \frac{F_{\text{rms}}}{\eta}$$

Where: η =Mechanical efficiency

Note 1: To calculate $F_{\text{peak_application}}$ and F_{rms} it is necessary to consider the motor mass. This may deal to do some iteration to get the right motor.

2: At high speed the motor reduces its rated and maximum force. This may be taken into consideration for high speed application.

3: For linear motors it is important to calculate the surface temperature of the motor in addition to the above calculation.

Rotary motor

The selected linear motor must match the next conditions:

$$\omega_{\max_motor} > \omega_{\max_application}$$

$$T_{\max_motor} > \frac{T_{\text{peak_application}}}{\eta}$$

$$T_{\text{rated_motor}} > \frac{T_{\text{rms}}}{\eta}$$

Where: η =Mechanical efficiency

Note 1: To calculate $T_{\text{peak_application}}$ and T_{rms} it is necessary to consider the motor inertia. This may deal to do some iteration to get the right motor.

2: Above rated speed the motor reduces its rated and maximum torque. This may be taken into consideration for high speed application. Refer to the Speed-Torque curves of the motor for details.