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

SI-485/J7

SI-232/J7
SI-232/J7C

CX-Drive

JVOP-144
Remote digital oper. with potentiometer

JVOP-146
Remote digital oper. with potentiometer

3G3IV-PEZZ8122_
DIN attachment

Line filter

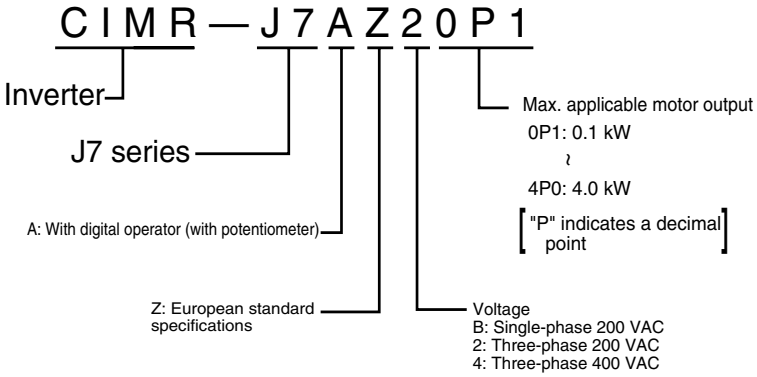
Varispeed J7

3G3IV-PCN329-E
Inverter to PC cable

3G3IV-PCN126/326
Digital operator extension cable

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%													

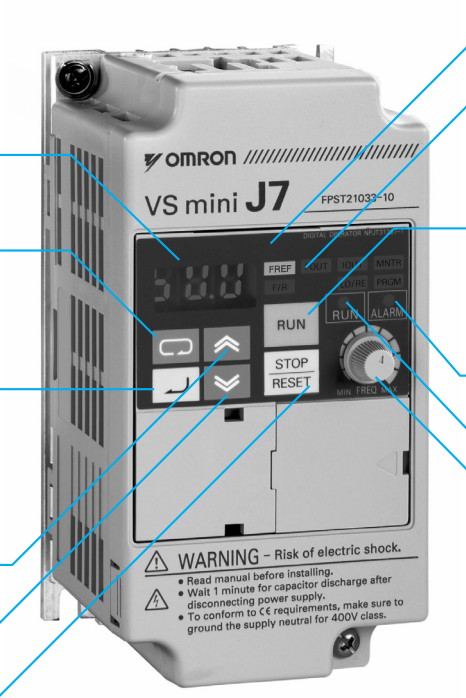
1. Single-phase series inverter output is three-phase (for three-phase motors)
2. Based on a standard 4-pole motor for max. applicable motor output. Select the inverter model whose rated current is larger than motor rated current.

Commom 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 sex. (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..0,75l 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 ºC to 50 ºC (non-freezing)
	Ambient humidity	90% RH or less (non-condensing)
	Storage temperature	-20 ºC..+60 ºC (short-term temperature during trasnportation)
	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



Digital operator

Function display LEDs
Selected function is lit (see the functions below). Its data is displayed on data display.

Data display

Operation key
Press to run the motor. The RUN light is ON while running.

Display selection key
Switch functions among function display LEDs.

Alarm LED

Enter key
Enter data when setting constants. After selecting constant no. at **PRGM** mode, data are displayed.

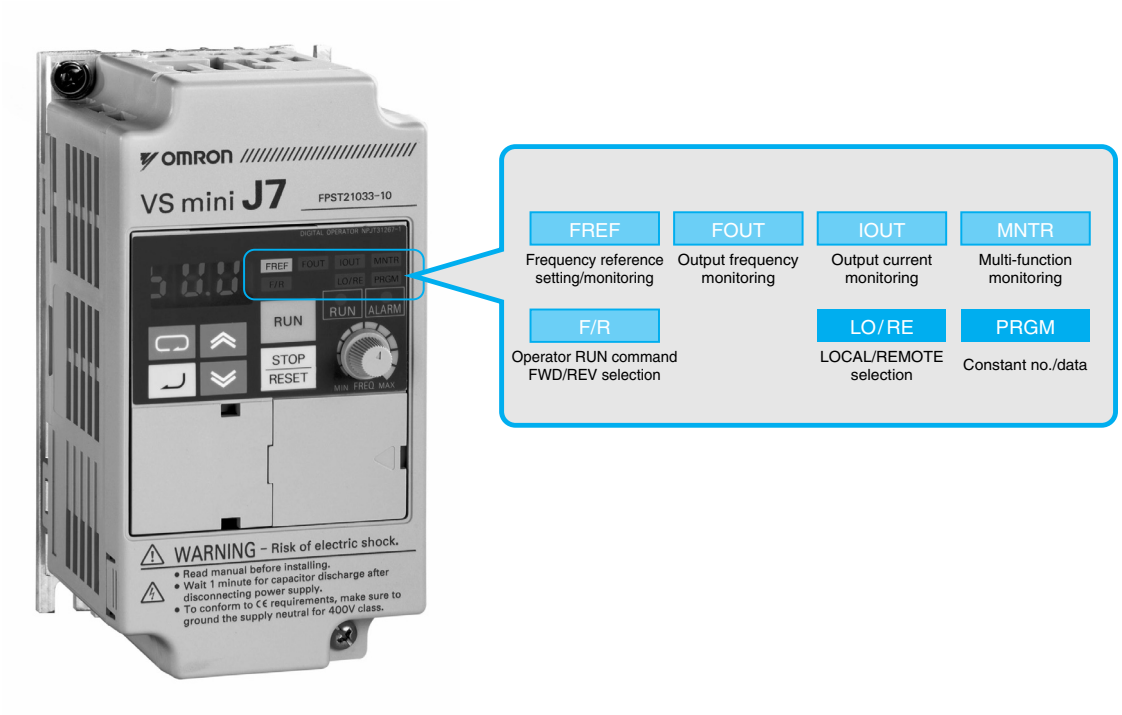
Run LED

Increment key
Increase constant no. or data.

Frequency setting volume
Set operational frequency with volume.

Decrement key
Decrease constant no. or data.

Stop/Reset key
Press to stop the motor. If fault occurs, reset the inverter.



Dimensions

IP 20 type 0.1 to 4 kW

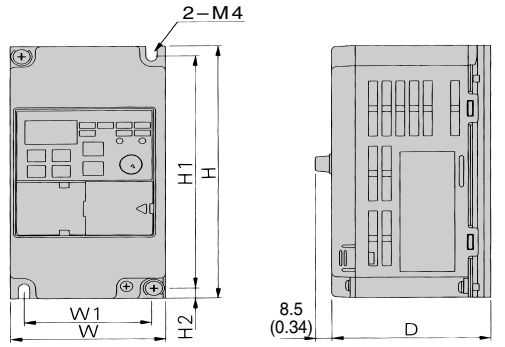


Figure 1

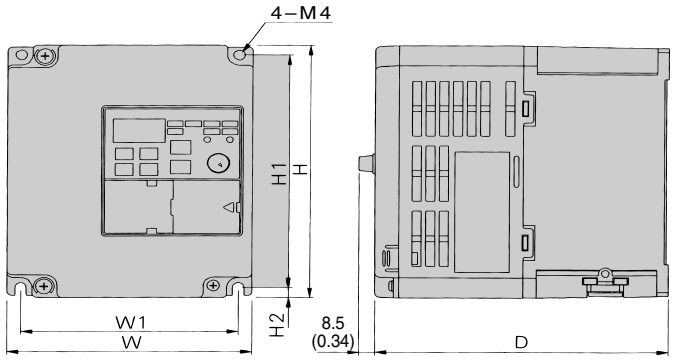
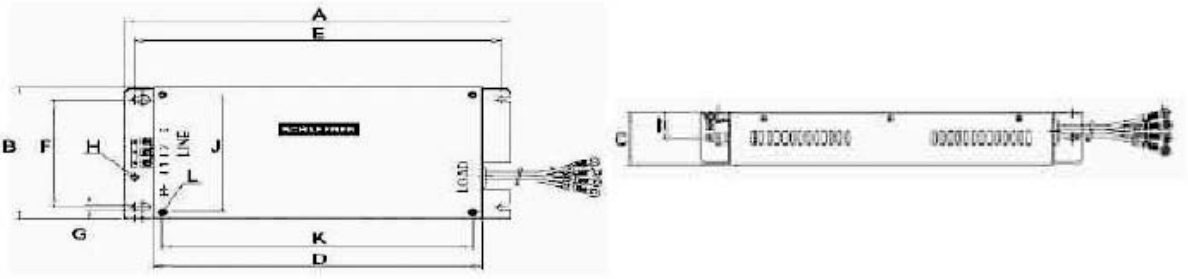


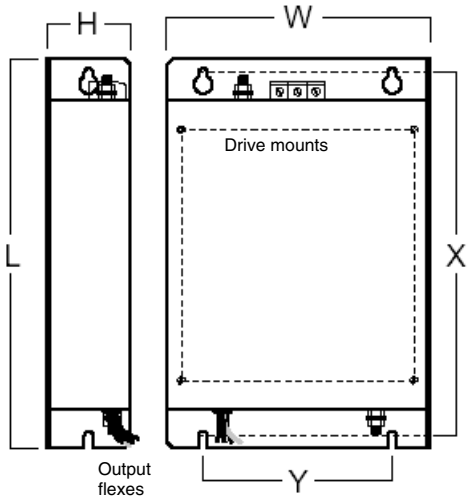
Figure 2

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				122				0.9	Fan cooled
	1.5	21P5	2	108		129	96	118		1.3	
	2.2	22P2				154				1.5	
	4.0	24P0		140		161	128			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		129	96			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					
	2.2	42P2									Fan cooled
	3.0	43P0		140		161	128			2.1	
	4.0	44P0									

Filters



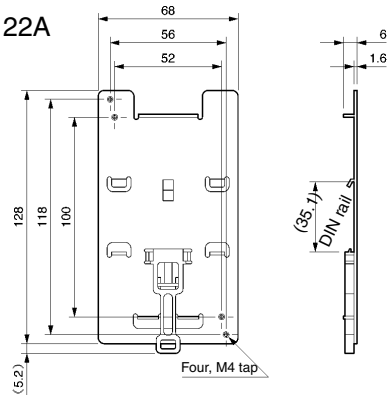
Schaffner model		Dimensions											
		A	B	C	D	E	F	G	H	I	J	K	L
3x200 V	3G3JV-PFI2010-SE	194	82	50	160	181	62	5.3	M5	25	56	118	M4
	3G3JV-PFI2020-SE	169	111	50	135	156	91	5.5	M5	25	96	118	M4
1x200 V	3G3JV-PFI1010-SE	169	71	45	135	156	51	5.3	M5	22	56	118	M4
	3G3JV-PFI1020-SE	169	111	50	135	156	91	5.3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



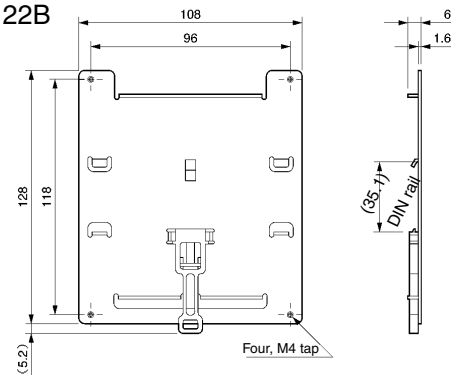
Rasmi model		Dimensions					
		W	H	L	X	Y	Inverter fixing
3x200 V	3G3JV-PFI2010-E	82	50	194	181	62	M5
	3G3JV-PF2020-E	111	50	169	156	91	M5
	3G3JV-PFI2030-E	144	50	174	161	120	M5
1x200 V	3G3JV-PFI1010-E	71	45	169	156	51	M5
	3G3JV-PFI1020-E	111	50	169	156	91	M5
3x400 V	3G3JV-PFI3005-E	111	50	169	156	91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

DIN rail mounting bracket

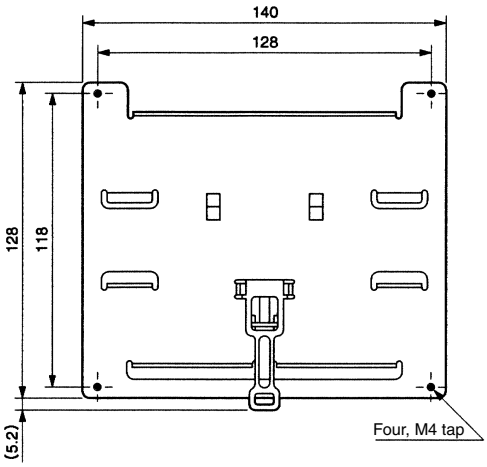
3G3IV-PEZZ08122A



3G3IV-PEZZ08122B



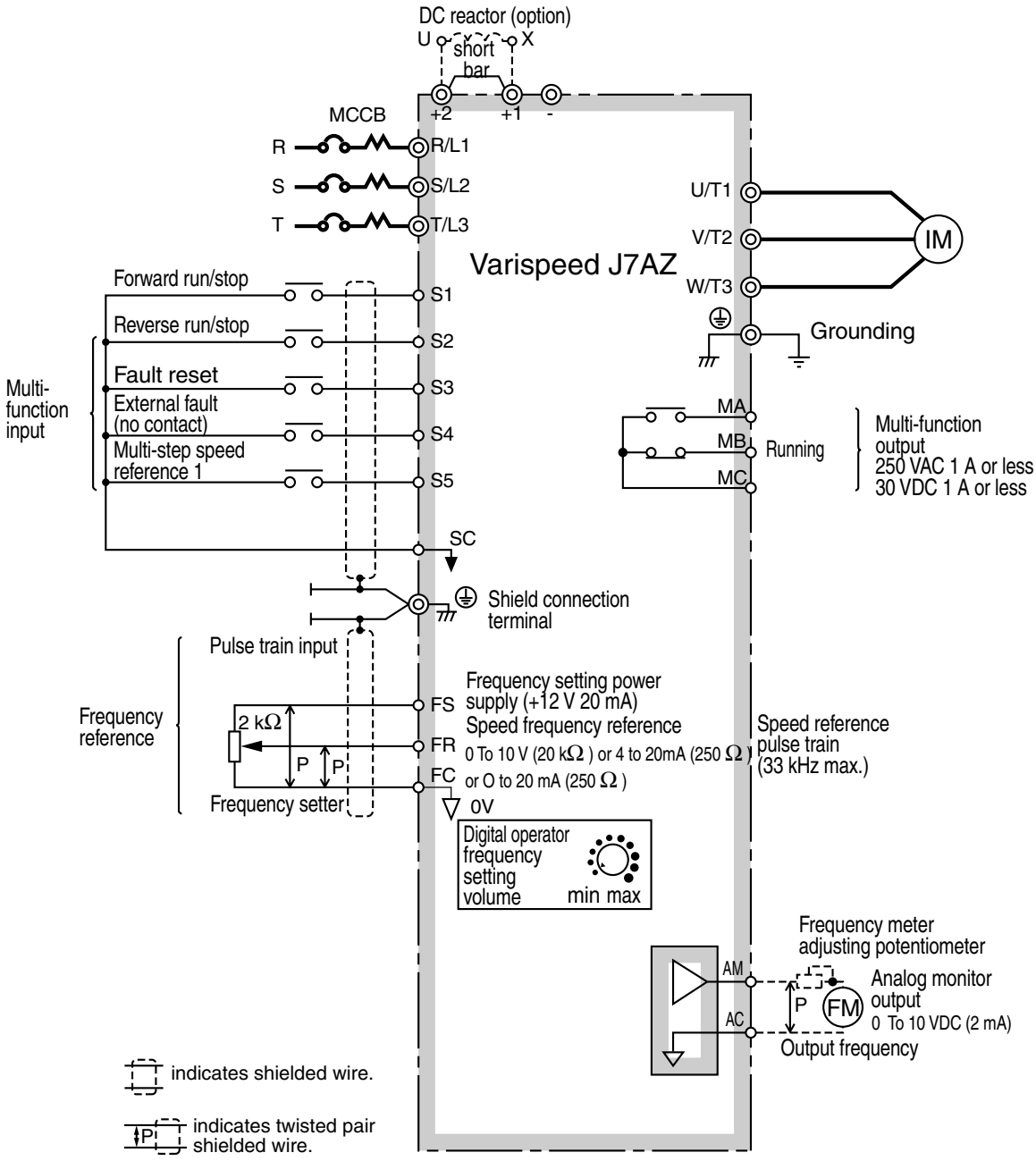
3G3IV-PEZZ08122C



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



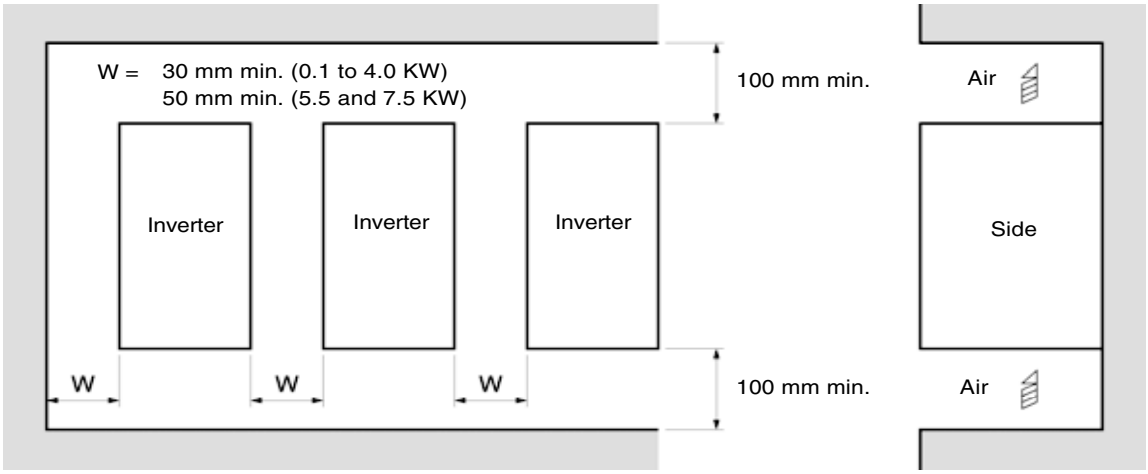
: shows the connection for the following two kinds of sequence input (S1 to S5) signals: no-voltage contact and NPN transistors (0 V common).
For a PNP transistor (+24 V common), a 24 V external power supply is necessary.

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

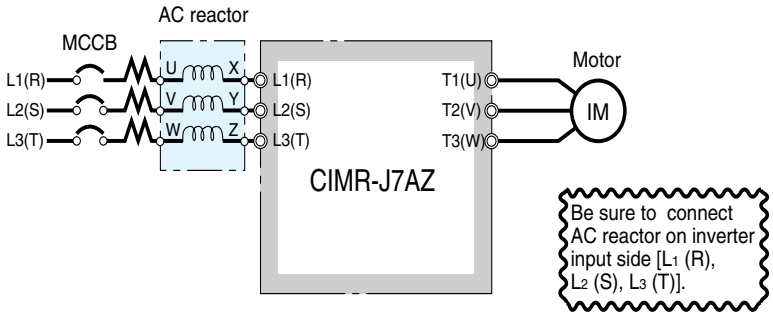
Single-phase 200 V class

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

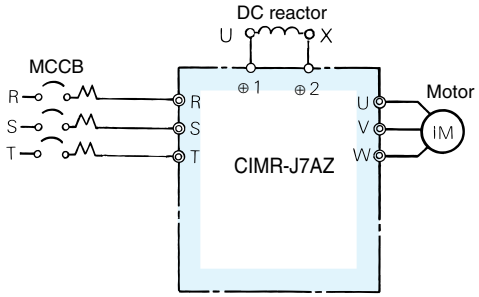
CIMR-J7AZ□		40P2	40P4	40P7	41P5	42P2	43P0	44P0
Inverter capacity kVA		0.9	1.4	2.6	3.7	4.2	5.5	7.0
Rated current A		1.2	1.8	3.4	4.8	5.5	7.2	9.2
Heat loss W	Fin	9.4	15.1	30.3	45.8	50.5	58.2	73.4
	Inside unit	13.7	15.0	24.6	29.9	32.5	37.6	44.5
	Total heat loss	23.7	30.1	54.9	75.7	83.0	95.8	117.9

AC reactor



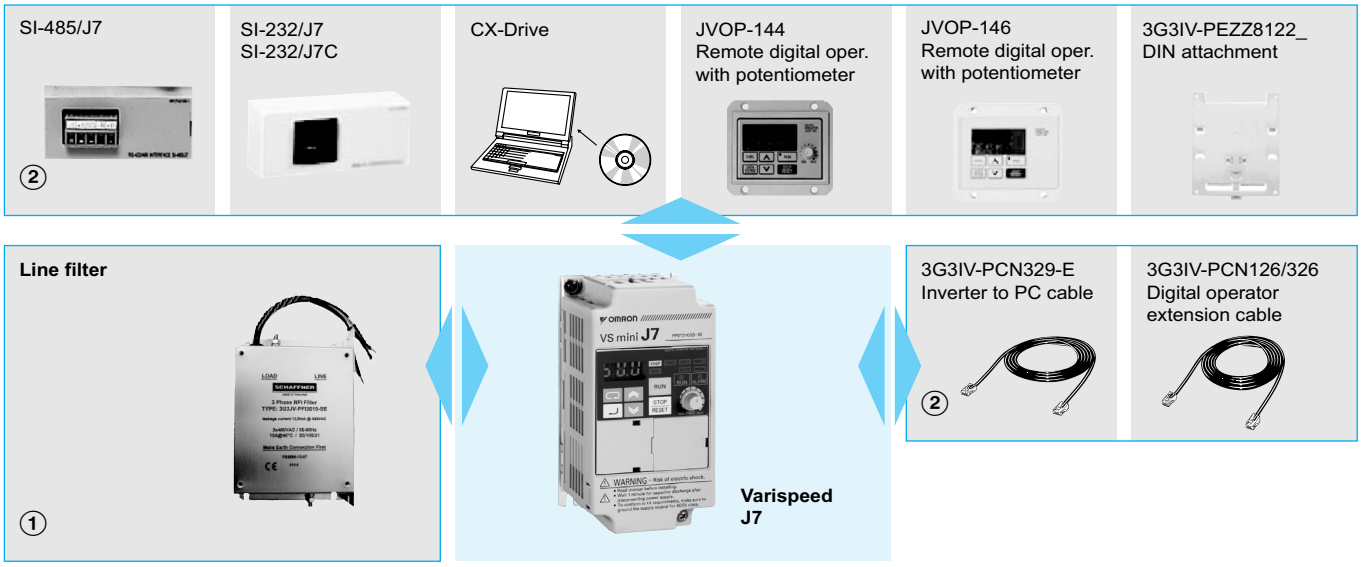
200 V class			400 V class		
Max. applicable motor output kW	Current value A	Inductance mH	Max. applicable motor output kW	Current value A	Inductance mH
0.1	2.0	2.0	------		
0.2	2.0	2.0	0.2	1.3	18.0
0.4	2.5	4.2	0.4		
0.75	5	2.1	0.75	2.5	8.4
1.5	10	1.1	1.5	5	4.2
2.2	15	0.71	2.2	7.5	3.6
4.0	20	0.53	4.0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

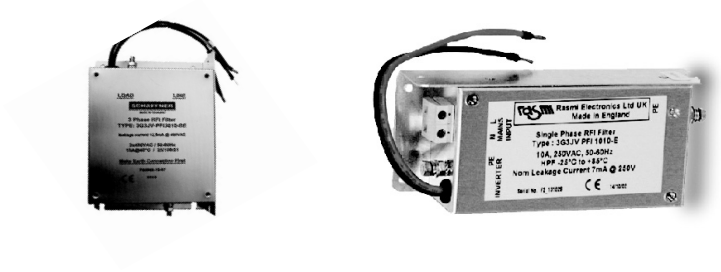
200 V

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

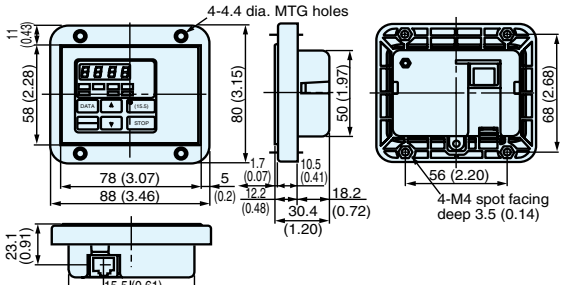
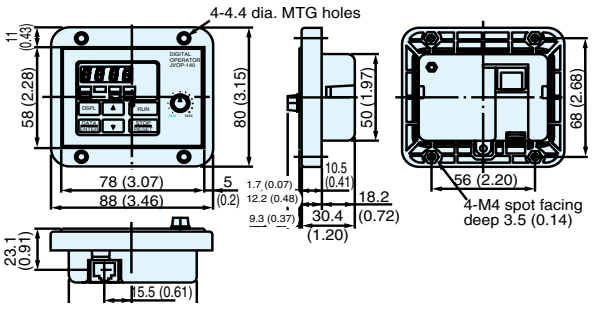
Specifications			Model
3x400 V	0.37 Kw	1.2 A	CIMR-J7AZ40P20
	0.55 Kw	1.8 A	CIMR-J7AZ40P40
	1.1 Kw	3.4 A	CIMR-J7AZ40P70
	1.5 Kw	4.8 A	CIMR-J7AZ41P50
	2.2 Kw	5.5 A	CIMR-J7AZ42P20
	3.0 Kw	7.2 A	CIMR-J7AZ43P00
	4.0 Kw	9.2 A	CIMR-J7AZ44P00

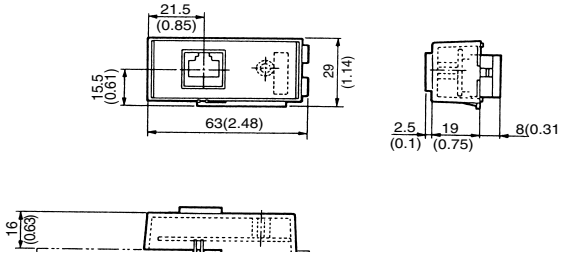
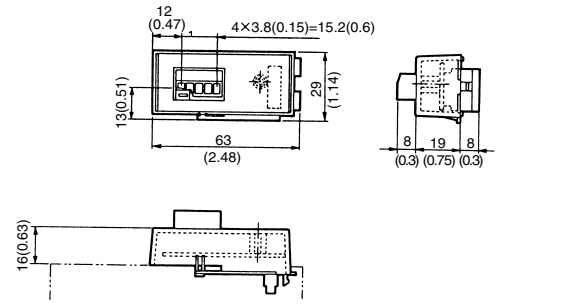
①Line filters



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	
	JVOP-144 	Remote digital operator with potentiometer	

Type	Model	Description	Funtions
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.

Cat. No. I19E-EN-02

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