OMRON
YASKAWA

THE NEW V1000 INVERTER

10 x 100 = 1

Designed for:

» 10 years lifetime

» 100% expectation match

» 1 in 10,000 field failure rate

realizing

Quality has a new formula

The V1000 Inverter is the result of years of experience as the European market leader and represents a revolution in inverter design. Compact and sensor-less, the V1000 has all of the features and performance that you have grown to expect from the world's leading inverter/drive manufacturer. But you have not met an inverter quite like the V1000.

Its new features, not only enable it to outperform previous inverters and make it even easier for users to install and set up, it is also compacter by far. But the big difference is that it takes quality and reliability to a new high level. For no matter where you want it to operate, it will deliver the same high performance for many years after you have fitted it and forgotten about it.

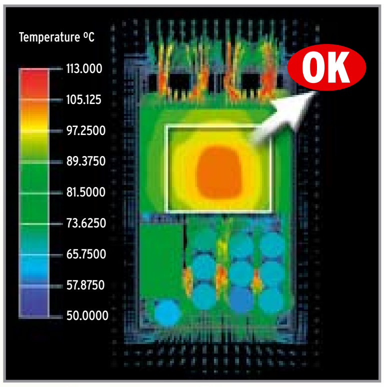
Our obsession with quality

Our obsession with quality has resulted in the most dependable products available in the industry today. And we never stop working to improve quality even further. This is fully reflected in our latest inverter, the V1000, which incorporates decades of experience in developing high quality industrial products.

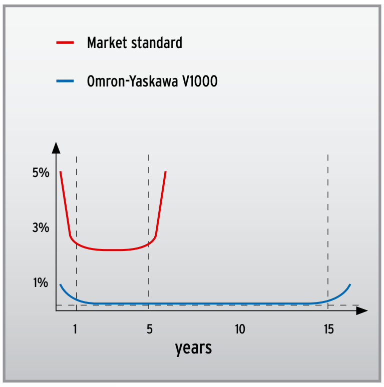
RoHS Compliant

Features of the V1000 Inverter

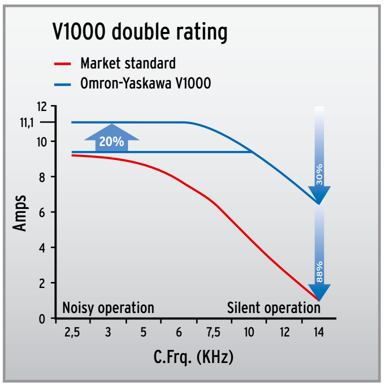
- Up to 15 kW
- World's smallest compact inverter
- Built-in filter
- 10-years service life
- Control terminal board with memory (Patent pending)
- Faster CPU's
- Current vector control
- Low-noise technology (Patent pending)
- IM & PM Motor control
- On-line tuning (Patent pending)
- Safety embedded



New Heatsink temperature evaluation



Failure rate for drives



Conventional inverter vs V1000

Mechanical advances

The V1000 design has not only reduced volume by up to 40% compared with previous inverters, tests prove that it has increased vibration resistance from 20Hz to 50Hz (0.6G) and heat dissipation has also been greatly increased, thanks to a new, hybrid heat-sink system (patent pending).

Proven reliability

To improve quality even further, a complete revision of production lines has taken place and human error has been reduced by installing the most advanced robotic technology available. The result is an expected failure rate of less than 0.01%.

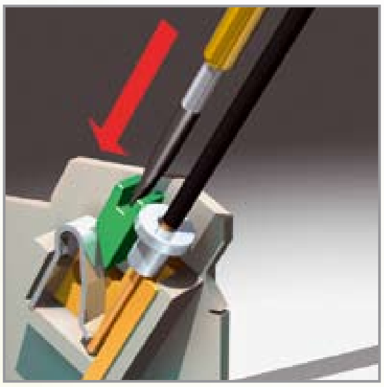
Performance guaranteed

V1000 is able to increase the output current by around 20% when moving down in frequency carrier thanks to its double rating. The standard setting is heavy duty (HD: 150% rated current/ 1min) and increasing output current when in the normal duty mode (ND: 120% rated current/1 Min).

Time and space saving 100% guaranteed

Space-saving side-by-side mounting

Remember when side-by-side mounting meant having to leave spaces for ventilation? Well, not with the V1000. A special alloy, hybrid cooling fin (patent pending) allows you to mount multiple units close together without overheating problems and saving vast amounts of panel space.



Time-saving screw-less terminals

Have you ever stopped to think how much time it takes to wire hundreds of terminals with twelve screws per inverter? With the V1000, you can reduce installation time (and therefore costs) considerably thanks to the use of screw-less terminals.

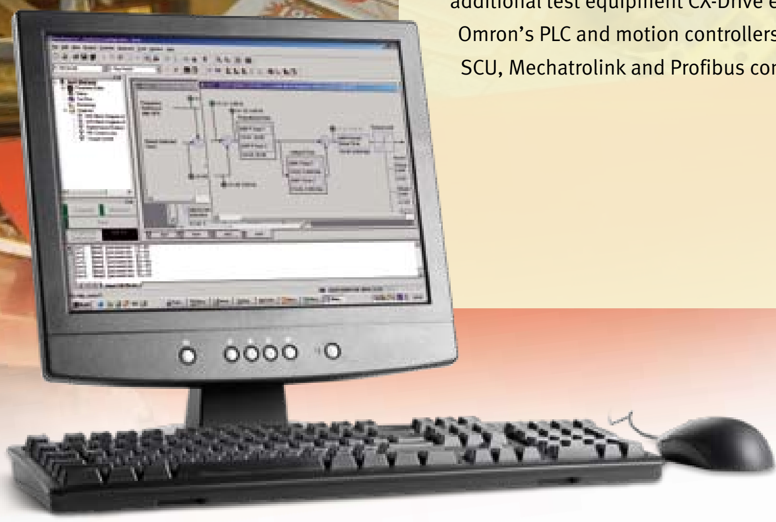

Easy Shielding

Cost-saving EMC filter

A built-in EMC filter will save you the task of having to take special precautions for EMC shielding during installation. The optional, factory-installed filter will not only save on installation costs, it also reduces the bill of materials for external parts and simplifies logistics.

Work-saving set-up

Setting up Omron inverter and servo drives is now easier than ever, following the release of a new version of the company's versatile CX-Drive drive configuration software package.
New features, all of which save time, include automatic recognition of drive series and type, an oscilloscope function, and facilities for connecting a single PC running Configurator to multiple drives. During parameter selection, all parameters are fully described, and many, including those associated with PID loops and jump frequency operation, are set with the aid of graphical control diagrams. Extensive help screens and tool tips are also provided.
In addition to aiding drive setup, Omron's CX-Drive also provides comprehensive facilities, status indications and alarms to assist with commissioning and fault-finding. Drive inputs and outputs can be monitored in real time, while the oscilloscope function allows detailed analysis of drive operation, without the need for additional test equipment CX-Drive enhances connectivity through Omron's PLC and motion controllers by supporting DeviceNet, SCU, Mechatrolink and Profibus connectivity.



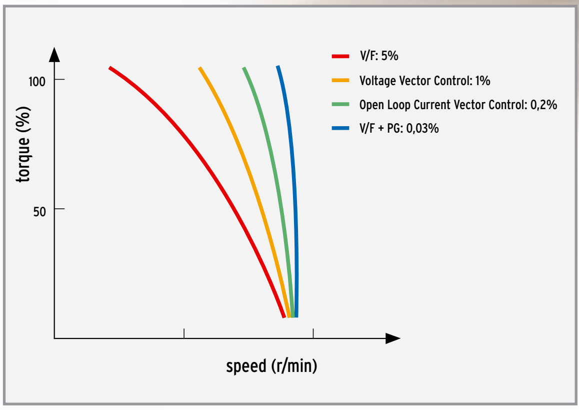
Convenient on-line tuning

Unlike previous inverters, the V1000 has a smart 'on-line tuning' feature that takes 'auto-tuning' a stage further. This continuous method of tuning ensures that any temperature deviation large enough to affect electrical parameters governing the motor speed will be adjusted before any speed variance can occur.

Time-saving safety feature

Safety is embedded in the V1000 from the inside out, making it easy for you to integrate the inverter into your machine system and avoid difficult connections to safety controllers. Dual safety inputs (acc. To EN954-1 Safety Category 3) will disconnect the motor faster at the first sign of trouble, while reducing external wiring and contactors.

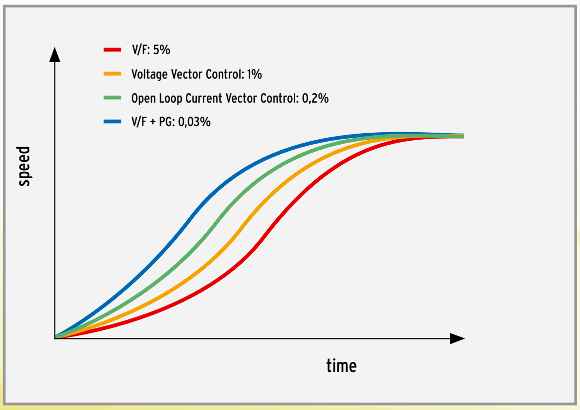
Advanced performance...



Speed Fluctuation Rates

Accurate speed control

Unlike previous inverters, the V1000 delivers optimum speed control and high starting torque thanks to the current vector control. As opposed to other techniques, such as voltage vector control, current vector control uses the flux current, which is an actual measurement rather than an estimated value.



Speed Response Accuracy

Fast scan cycle

The V1000 employs a dual CPU concept with a CPU device that is four times faster than those on board previous inverters. This means a faster-than-ever scan cycle that boosts motor control performance, especially in current vector control applications where speed is of the essence.

Silent operation

A feature of the V1000 that will delight your customers is the noise-suppression function that decreases motor noise at low carrier frequencies. This puts machine operators at less risk to safety hazards and has a positive effect on the general working ambience.

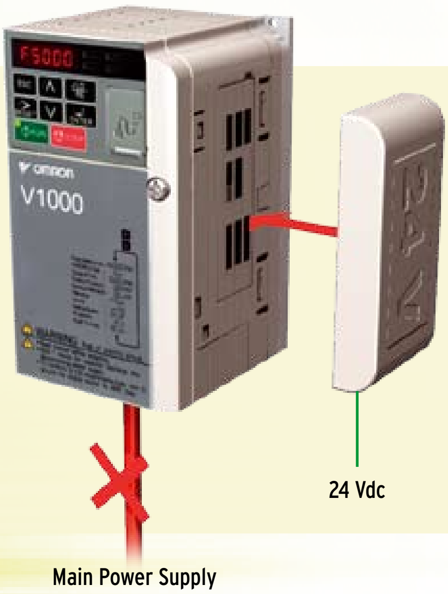
...Easy maintenance

Save repetition

Control parameters need only be set once with the V1000. They are automatically saved to a control terminal board memory that allows you to replace an inverter and simply forget it. The new inverter will be immediately updated with the current settings.

Minimize downtime

The V1000 has an ingenious pre-maintenance function that will calculate the condition of electronic components and advise about their replacement based not only on the number of hours they have been in service, but also on factors such as stress due to load, temperature, the number of times they have been powered up, output frequency and carrier frequency, etc.



Keeps running

Assuring that new data and communications keep flowing in the event of a power failure is critical in many applications. Naturally, the V1000 is available with a 24Vdc power supply that will keep the CPU working in any power-down situation.

VZ

V1000

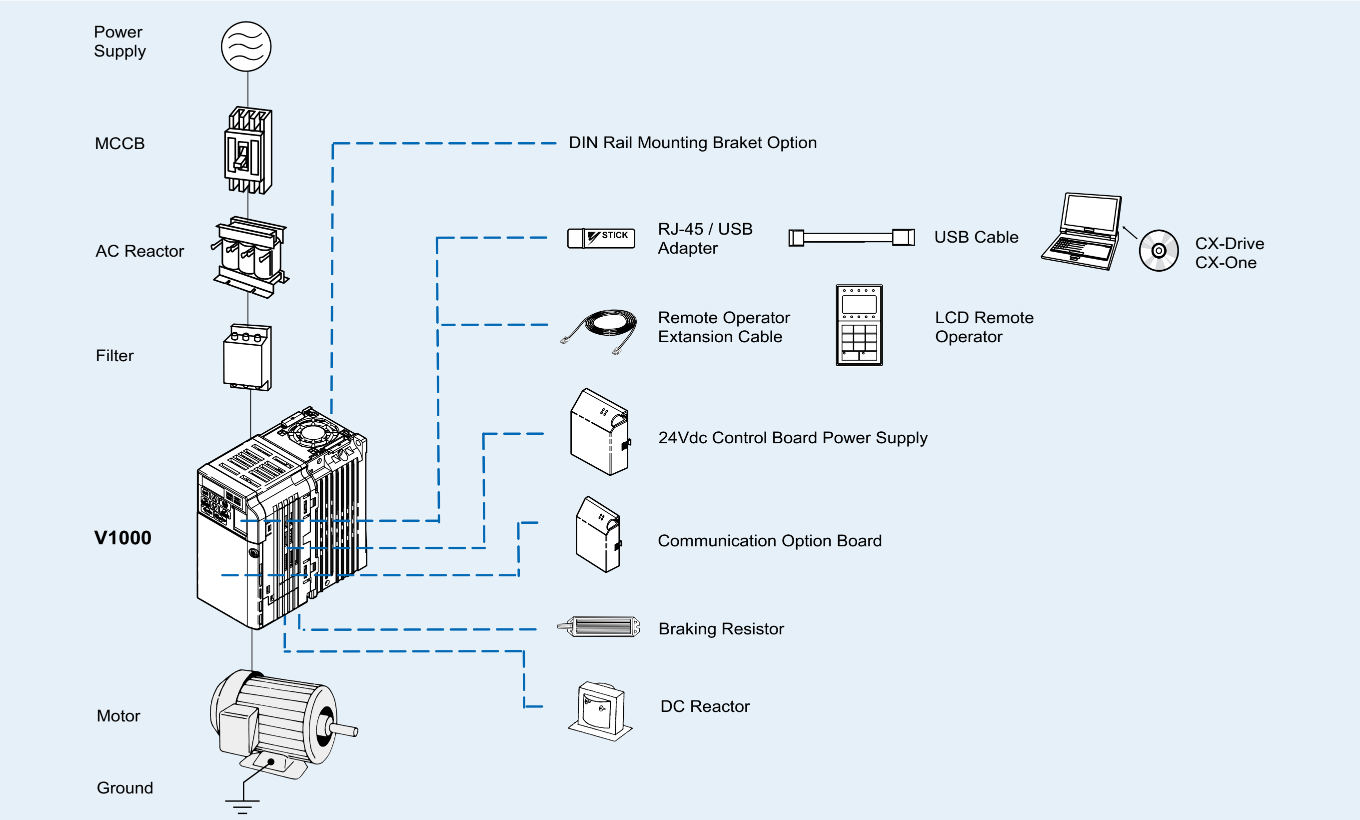
More performance & Quality in less space

- Current vector control
- High starting torque (200% / 0.5 Hz)
- 1:100 speed control range
- Double rating ND 120%/1min and HD 150%/1 min
- IM&PM motor control
- Online Tuning
- Low-noise Low carrier technology
- 10 years lifetime design
- Built-in filter
- Screw-less terminals
- Control Terminals with memory backup
- 24 VDC control board power supply option
- Fieldbus communications: Modbus, Profibus, CanOpen, DeviceNet, Lonworks, CompoNet, Ethernet
- Safety embedded (EN954-1 safety cat. 3)
- CE, UL, cUL and TUV

Ratings

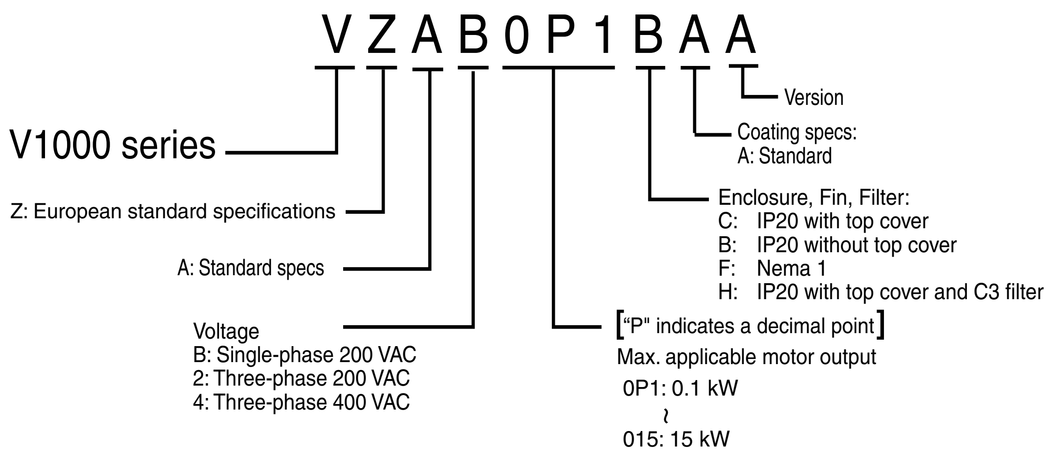
- 200 V Class single-phase 0.1 to 4 kW
- 200 V Class three-phase 0.1 to 15 kW
- 400 V Class three-phase 0.2 to 15 kW

System configuration



Specifications

Type designation



200 V class

	Single-phase: VZ-□	B0P1	B0P2	B0P4	B0P7	B1P5	B2P2	B4P0	-	-	-	-
	Three-phase: VZ-□	20P1	20P2	20P4	20P7	21P5	22P2	24P0	25P5	27P5	2011	2015
Motor kW[1]	For HD setting	0.12	0.25	0.4	0.75	1.5	2.2	4.0	5.5	7.5	11	15
	For ND setting	0.18	0.37	0.75	1.1	2.2	3.0	5.5	7.5	11	15	18.5
Output characteristics	Inverter capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.5	13	18	23
	Rated output current (A) at HD	0.8	1.6	3.0	5.0	8.0	11.0	17.5	25.0	33.0	47.0	60.0
	Rated output current (A) at ND	1.2	1.9	3.5	6.0	9.6	12.0	21.0	30.0	40.0	56.0	69.0
	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..240 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:
Heavy Duty (HD) mode with a 150% overload capacity
Normal Duty (ND) mode with a 120% overlaod capacity

400 V class

	Three-phase: VZ-□	40P2	40P4	40P7	41P5	42P2	43P0	44P0	45P5	47P5	4011	4015
Motor kW[1]	For HD setting	0.2	0.4	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15
	For ND setting	0.37	0.75	1.5	2.2	3.0	3.7	5.5	7.5	11	15	18.5
Output characteristics	Inverter capacity kVA	0.9	1.4	2.6	3.7	4.2	5.5	7.2	9.2	14.8	18	24
	Rated output current (A) at HD	1.2	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18.0	24	31
	Rated output current (A) at ND	1.2	2.1	4.1	5.4	6.9	8.8	11.1	17.5	23	31	38
	Max. output voltage	0..480V (proportional to input voltage)										
	Max. output frequency	400 Hz										
Power supply	Rated input voltage and frequency	3-phase 380..480 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:
Heavy Duty (HD) mode with a 150% overload capacity
Normal Duty (ND) mode with a 120% overlaod capacity

Specifications

Commom specifications

	Model number VZ-□	Specifications
Control functions	Control methods	Sine wave PWM (V/f control, sensorless current vector control)
	Output frequency range	0.1..400 Hz
	Frequency tolerance	Digital set value: ±0.01% (-10..+50 °C) Analogue set value: ±0.1% (25 ±10 °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	Heavy duty use: 150% rated output current for one minute Normal duty use: 120% rated output current for one minute
	Frequency set value	0..10 V (20 kΩ), 4..20 mA (250 Ω), 0..20 mA (250 Ω) Pulse train input, frequency setting value (selectable)
	Braking torque (short term peak torque)	Short-term average deceleration torque: 150% (up 1.5 kW), 100% (for 1.5 kW), 50% (for 2.2 kW), 20% (fof bigger size) Continous regenerative torque: Aprox 20% (125% with optional braking resistor, 10%ED, 10 s, braking transistor built itn)
	V/f Characteristics	Possible to program any V/f pattern
Functionality	Inputs signals	Seven 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, speed search command, UP/DOWN command, accel/decel hold command, LOCAL/REMOTE selection, communication/control circuit terminal selection, mergency stop fault, emergency stop alarm, self test
	Output signals	Following output signals are selectable (NO/NC contact output, 2 photo-coupler outputs): Fault, running, zero speed, speed agree, 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	Open-loop vector control, full-range automatic torque boost, slip compensation, 17-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, MEMOBUS communications (RS-485/422, max. 115K bps), fault retry, speed search, frequency upper/lower limit setting, overtorque detection, frequency jump, accel/decel time switch, accel/decel prohibited, S-curve accel/decel, PID control, energy-saving control, constant copy.
	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	Heavy Duty: Motor coasts to a stop after 1 minute at 150% of inverter rated output current Normal Duty: Motor coasts to a stop after 1 minute at 120% 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. 190 V or less (double for 400 V class) (approx. 150 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 thermister
	Stall prevention level	Stall prevention during acceleration/deceleration and constant speed operation
	Ground fault	Protected by electronic circuit (operation level is approx. 250% of rated output current)
	Power charge indication	Indicates until the main circuit voltage reaches 50 V.
Ambient conditions	Degree of protection	IP20, NEMA1
	Cooling	Cooling fan is provided for 200 V, 0.75 kW (1HP) (3/single-phase) 400 V, 1.5 kW (2HP) (3-phase), others are self-cooling
	Ambient humidity	95% RH or less (without condensation)
	Storage temperature	-20 °C..+60 °C (short-term temperature during transportation)
	Installation	Indoor (no corrosive gas, dust, etc.)
	Installation height	Max. 1000 m
	Vibration	Up to 1 G at 10 to less than 20 Hz, Up to 0.65 G at 20 to 50 Hz

Dimensions

IP 20 type 0.1 to 4 kW

Figure 1

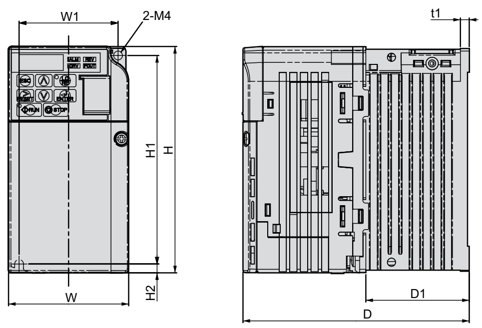
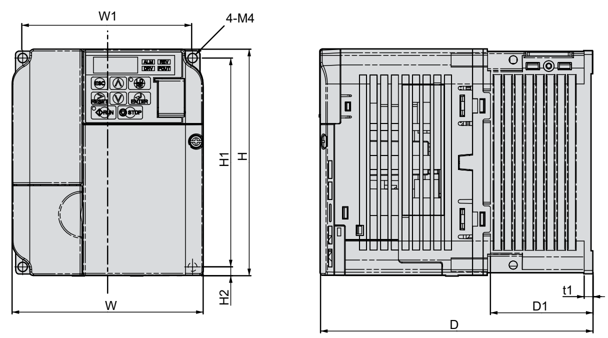


Figure 2



<table>
<tr><th rowspan="2">Voltage class</th><th rowspan="2">Max. applicable motor output kW</th><th rowspan="2">Inverter model VZA</th><th rowspan="2">Figure</th><th colspan="8">Dimensions in mm</th></tr>
<tr><th>W1</th><th>H1</th><th>W</th><th>H</th><th>D</th><th>t1</th><th>H2</th><th>D1</th></tr>
<tr><td rowspan="7">Single-phase 200 V</td><td>0.12</td><td>B0P1</td><td rowspan="3">1</td><td rowspan="3">56</td><td rowspan="6">118</td><td rowspan="3">68</td><td rowspan="6">128</td><td rowspan="2">76</td><td rowspan="2">3</td><td rowspan="6">5</td><td rowspan="2">6.5</td></tr>
<tr><td>0.25</td><td>B0P2</td></tr>
<tr><td>0.55</td><td>B0P4</td><td>108</td><td rowspan="4">5</td><td>38.5</td></tr>
<tr><td>1.1</td><td>B0P7</td><td rowspan="3">2</td><td rowspan="2">96</td><td rowspan="2">108</td><td>137.5</td><td rowspan="2">58</td></tr>
<tr><td>1.5</td><td>B1P5</td><td>154</td></tr>
<tr><td>2.2</td><td>B2P2</td><td>128</td><td>140</td><td>163</td><td>65</td></tr>
<tr><td>4.0</td><td>B4P0</td><td colspan="9">Under development</td></tr>
<tr><td rowspan="11">Three-phase 200 V</td><td>0.12</td><td>20P1</td><td rowspan="4">1</td><td rowspan="4">56</td><td rowspan="7">118</td><td rowspan="4">68</td><td rowspan="7">128</td><td rowspan="2">76</td><td rowspan="2">3</td><td rowspan="7">5</td><td rowspan="2">6.5</td></tr>
<tr><td>0.25</td><td>20P2</td></tr>
<tr><td>0.55</td><td>20P4</td><td>108</td><td rowspan="5">5</td><td rowspan="2">38.5</td></tr>
<tr><td>1.1</td><td>20P7</td><td>128</td></tr>
<tr><td>1.5</td><td>21P5</td><td rowspan="3">2</td><td rowspan="2">96</td><td rowspan="2">108</td><td>129</td><td rowspan="2">58</td></tr>
<tr><td>2.2</td><td>22P2</td><td>137.5</td></tr>
<tr><td>4.0</td><td>24P0</td><td>128</td><td>140</td><td>143</td><td>65</td></tr>
<tr><td>5.5</td><td>25P5</td><td colspan="9" rowspan="4">Under development</td></tr>
<tr><td>7.5</td><td>27P5</td></tr>
<tr><td>11</td><td>2011</td></tr>
<tr><td>15</td><td>2015</td></tr>
<tr><td rowspan="11">Three-phase 400 V</td><td>0.37</td><td>40P2</td><td rowspan="7">2</td><td rowspan="6">96</td><td rowspan="7">118</td><td rowspan="6">108</td><td rowspan="7">128</td><td>81</td><td rowspan="7">5</td><td rowspan="7">5</td><td>10</td></tr>
<tr><td>0.55</td><td>40P4</td><td>99</td><td>28</td></tr>
<tr><td>1.1</td><td>40P7</td><td>137.5</td><td rowspan="4">58</td></tr>
<tr><td>1.5</td><td>41P5</td><td rowspan="3">154</td></tr>
<tr><td>2.2</td><td>42P2</td></tr>
<tr><td>3.0</td><td>43P0</td></tr>
<tr><td>4.0</td><td>44P0</td><td>128</td><td>140</td><td>143</td><td>65</td></tr>
<tr><td>5.5</td><td>45P5</td><td colspan="9" rowspan="4">Under development</td></tr>
<tr><td>7.5</td><td>47P5</td></tr>
<tr><td>11</td><td>4011</td></tr>
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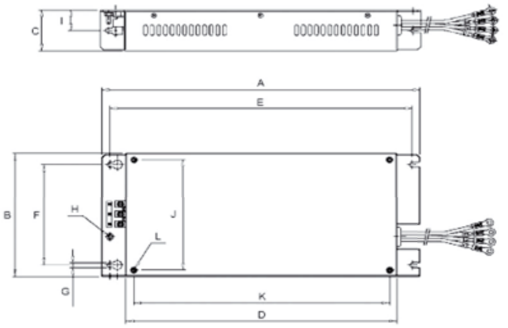
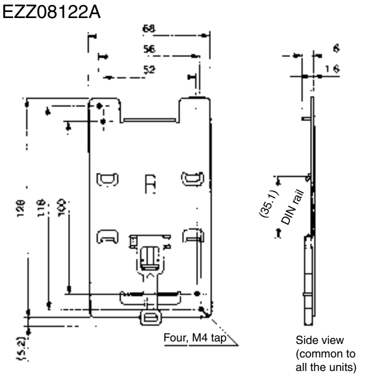
Footprint Filters



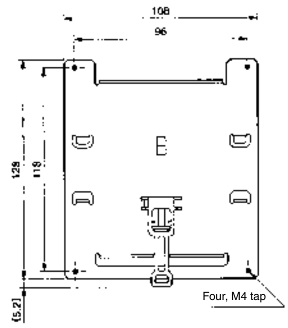
Schaffner model		Dimensions											
		A	B	C	D	E	F	G	H	I	J	K	L
3x200 V	A1000-FIV2010-SE	194	82	50	160	181	62	5.3	M5	25	56	118	M4
	A1000-FIV2020-SE	169	111	50	135	156	91	5.5	M5	25	96	118	M4
	A1000-FIV2030-SE	174	144	50	135	161	120	5.3	M5	25	128	118	M4
1x200 V	A1000-FIV1010-SE	169	71	45	135	156	51	5.3	M5	22	56	118	M4
	A1000-FIV1020-SE	169	111	50	135	156	91	5.3	M5	25	96	118	M4
	A1000-FIV1030-SE	174	144	50	135	161	120	5.3	M5	25	128	118	M4
	A1000-FIV1040-SE	174	144	50	135	161	150	5	M5	25	158	118	M4
3x400 V	A1000-FIV3005-SE	169	111	45	135	156	91	5.3	M5	22	96	118	M4
	A1000-FIV3010-SE	169	111	45	135	156	91	5.3	M5	22	96	118	M4
	A1000-FIV3020-SE	174	144	50	135	161	120	5	M5	25	128	118	M4
	A1000-FIV3030-SE	304	184	56	264	288	150	6	M5	28	164	244	M5

DIN rail mounting bracket

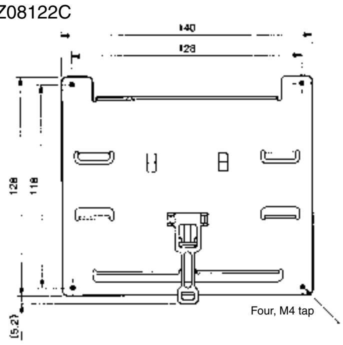
EZZ08122A



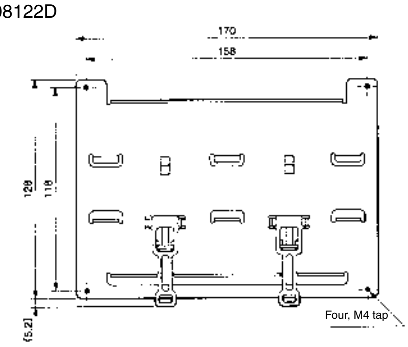
EZZ08122B



EZZ08122C



EZZ08122D



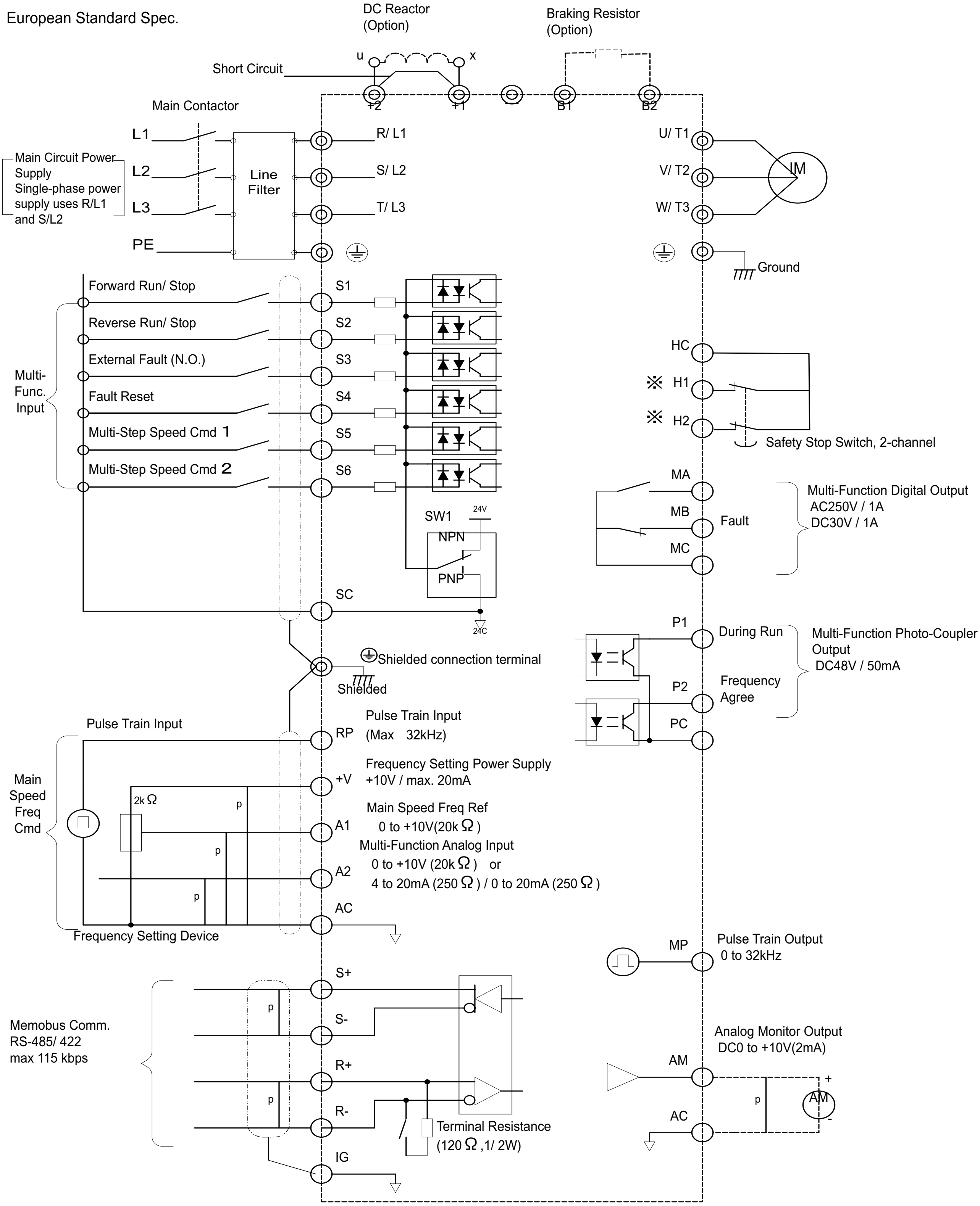
Inverter		DIN rail mounting bracket
3-phase 200 VAC	VZ - 20P1/ 20P2 / 20P4/ 20P7	EZZ08122A
	VZ - 21P5/ 22P2	EZZ08122B
	VZ - 24P0	EZZ08122C
Single-phase 200 VAC	VZ - B0P1/ B0P2/ B0P4	EZZ08122A
	VZ - B0P7/ B1P5	EZZ08122B
	VZ - B2P2	EZZ08122C
	VZ - B4P0	EZZ08122D
3-phase 400 VAC	VZ - 40P2/ 40P4/ 40P7/ 41P5/ 42P2	EZZ08122B
	VZ - 44P0	EZZ08122C

Installation

Standard connections

V1000 Connection Diagram

European Standard Spec.



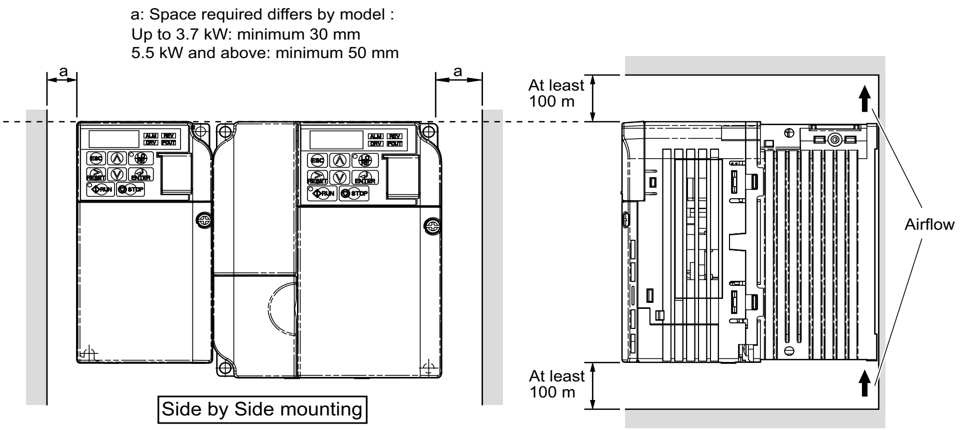
※Terminal names may be changed.

Main circuit

Terminal	Name	Function (signal level)
R/L1, S/L2, T/L3	Main circuit power supply input	Used to connect line power to the drive. Drives with single-phase 200 V input power use only terminals R/L1 and S/L2 (T/L3 is not connected to anything)
U/T1, V/T2, W/T3	Inverter output	Used to connect the motor
B1, B2	Braking resistor connection	Available for connecting a braking resistor or the braking resistor unit option.
+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.	24 VDC, 8 mA photocoupler insulation
	S2	Multi-function input selection 2	Factory setting: runs when CLOSED, stops when OPEN.	
	S3	Multi-function input selection 3	Factory setting: External Fault (N.O.)	
	S4	Multi-function input selection 4	Factory setting: Fault reset	
	S5	Multi-function input selection 5	Factory setting: Multi-step speed cmd 1	
	S6	Multi-function input selection 6	Factory setting: Multi-step speed cmd 2	
	SC	Multi-function input selection Common	Common for control signal	
Analog input signals	RP	Main Speed Cmd Pulse Train Input	32 kHz max.	
	FS	Power Supply for Frequency Setting	+10 V (allowable max current 20 mA)	
	FR1	Main Speed Freq Ref	Voltage input or current input 0 to +10 VDC (20 kΩ) (resolution 1/1000) 4 to 20 mA (250 Ω) or 0 to 20 mA (250 Ω) Resolution: 1/500	
	FR2			
	FC	Frequency reference common	0 V	
Fast Stop Cmd	HC	Power Supply Fast Stop Cmd	+24 V (max allowable current 10 mA)	
	H1	Special Digital input	Open: Fast Stop Closed: Normal Operation	
	H2	Special Digital input		
Digital output signals	MA	NO contact output	Factory setting: "fault"	Contact capacity 250 VAC, 1 A or less 30 VDC, 1 A or less
	MB	NC Output		
	MC	Relay Output common		
	P1	Photocoupler output 1	Factory setting: During run	Photocoupler output: +48 VDC, 50 mA or less
	P2	Photocoupler output 2	Factory setting: Frequency Agree	
	PC	Photocoupler output common	0 V	
Analog output signals	PM	Pulse train Output	max 33 kHz	
	AM	Analog monitor output	Factory setting: "output frequency" 0 to +10 V output Resolution: 1/1000	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
	R–	Communication input (–)		
	S+	Communication output (+)		
	S–	Communication output (–)		



Inverter heat loss

Three-phase 200 V class

Model VZ		20P1	20P2	20P4	20P7	21P5	22P2	24P0	25P5	27P5	2011	2015
Inverter capacity kVA		0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.5	13	18	23
Rated current (A) at HD		0.8	1.6	3	5	8	11	17.5	25	33	47.0	60.0
Rated current (A) at ND		1.2	1.9	3.5	6.0	9.6	12.0	21.0	30.0	40.0	56.0	69.0
Heat loss W HD	Fin	4.3	7.9	16.1	27.4	54.8	70.7	110.5	231.5	239.5	347.6	437.7
	Inside unit	7.3	8.8	11.5	15.9	23.8	30.0	43.3	72.2	81.8	117.6	151.4
	Total heat loss	11.6	16.7	27.7	43.3	78.6	100.6	153.8	303.7	321.3	465.2	5891.
Heat loss W ND	Fin	4.7	7.2	14.0	35.6	48.6	57.9	93.3	236.8	258.8	342.8	448.5
	Inside unit	7.9	9.4	13.4	16.9	25.0	29.6	45.0	87.2	11.4	149.1	182.2
	Total heat loss	12.6	16.6	28.5	43.1	73.6	87.5	138.2	324.0	370.3	491.9	630.7

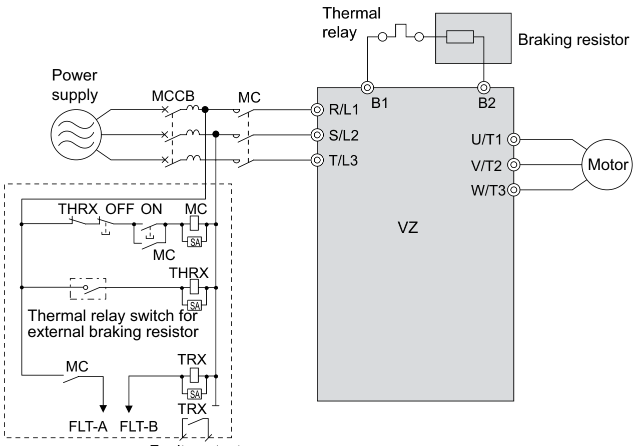
Single-phase 200 V class

Model VZ		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) at HD		0.8	1.6	3	5	8	11	17.5
Rated current (A) at ND		1.2	1.9	3.5	6.0	9.6	12.0	21.0
Heat loss W HD	Fin	4.3	7.9	16.1	42.5	54.8	70.7	110.5
	Inside unit	7.4	8.9	11.5	19.0	25.9	34.1	51.4
	Total heat loss	11.7	16.7	27.7	61.5	80.7	104.8	161.9
Heat loss W ND	Fin	4.7	7.2	15.1	26.2	48.6	57.9	93.3
	Inside unit	8.4	9.6	14.3	20.8	29.0	36.3	58.5
	Total heat loss	13.1	16.8	28.3	56.5	77.6	94.2	151.8

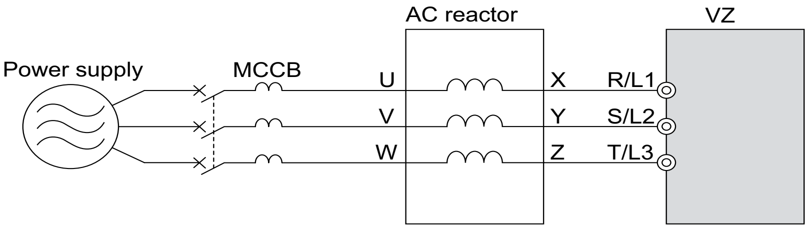
Three-phase 400 V class

Model VZ		40P2	40P4	40P7	41P5	42P2	43P0	44P0	45P5	47P5	4011	4015
Inverter capacity kVA		0.9	1.4	2.6	3.7	4.2	5.5	7.2	9.2	14.8	18	24
Rated current (A) at HD		1.2	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18.0	24	31
Rated current (A) at ND		1.2	2.1	4.1	5.4	6.9	8.8	11.1	17.5	23	31	38
Heat loss W HD	Fin	19.2	28.9	42.3	70.7	81.0	84.6	107.2	166.0	207.1	266.9	319.1
	Inside unit	11.4	14.9	17.9	26.2	30.7	32.9	41.5	62.7	78.1	105.9	126.6
	Total heat loss	30.6	43.7	60.2	96.9	111.7	117.5	148.7	228.7	285.2	372.7	445.8
Heat loss W ND	Fin	8.2	15.5	26.4	37.5	49.7	55.7	71.9	170.3	199.5	268.6	298.7
	Inside unit	9.2	13.1	15.8	20.0	26.3	29.4	43.6	78.1	105.3	142.8	152.2
	Total heat loss	17.4	28.6	42.2	57.5	76.0	85.1	115.5	248.4	304.8	411.4	450.9

Connections for braking resistor

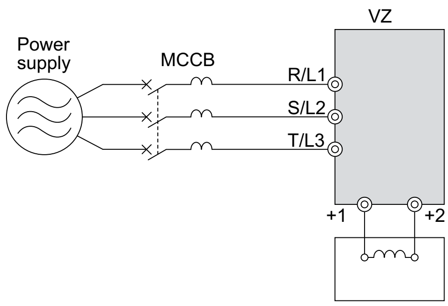


AC reactor



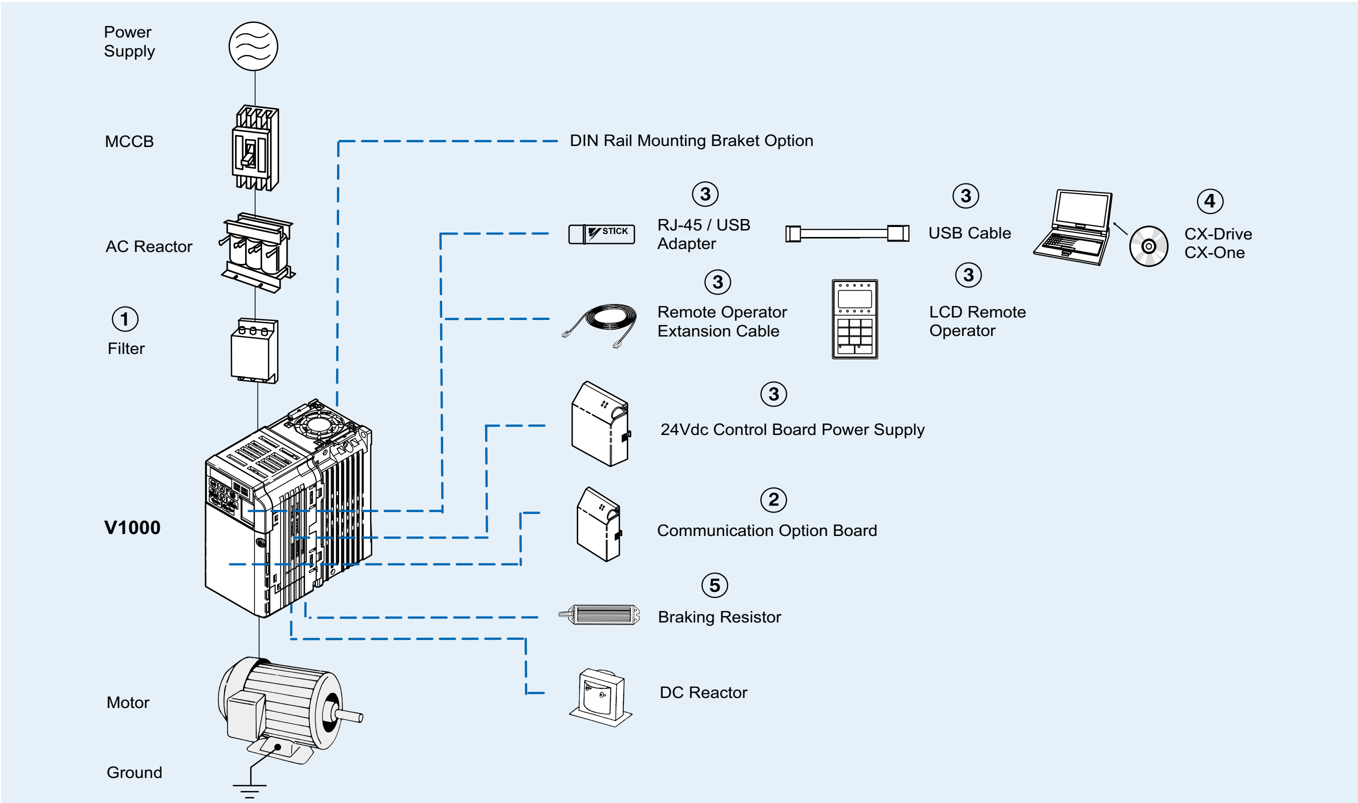
200 V class			400 V class		
Max. applicable motor output kW	**Current value A**	**Inductance mH**	**Max. applicable motor output kW**	**Current value A**	**Inductance mH**
0.12	2.0	2.0	------		
0.25	2.0	2.0	0.2	1.3	18.0
0.55	2.5	4.2	0.4		
1.1	5	2.1	0.75	2.5	8.4
1.5	10	1.1	1.5	5	4.2
2.2	15	0.71	2.2	7.5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

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	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		

Ordering information



V1000

Specifications					Model	
	Heavy Duty		Normal Duty		Standard	Built-in filter
1x200 V	0.12 kW	0.8 A	0.18 kW	0.8 A	VZAB0P1BAA	VZAB0P1HAA
	0.25 kW	1.6 A	0.37 kW	1.6 A	VZAB0P2BAA	VZAB0P2HAA
	0.55 kW	3.0 A	0.75 kW	3.5 A	VZAB0P4BAA	VZAB0P4HAA
	1.1 kW	5.0 A	1.1 kW	6.0 A	VZAB0P7BAA	VZAB0P7HAA
	1.5 kW	8.0 A	2.2 kW	9.6 A	VZAB1P5BAA	VZAB1P5HAA
	2.2 kW	11.0 A	3.0 kW	12.0 A	VZAB2P2BAA	VZAB2P2HAA
	4.0 kW	17.5 A	5.5 kW	21.0 A	VZAB4P0BAA	VZAB4P0HAA
3x200 V	0.12 kW	0.8 A	0.18 kW	0.8 A	VZA20P1BAA	VZA20P1HAA
	0.25 kW	1.6 A	0.37 kW	1.6 A	VZA20P2BAA	VZA20P2HAA
	0.55 kW	3.0 A	0.75 kW	3.5 A	VZA20P4BAA	VZA20P4HAA
	1.1 kW	5.0 A	1.1 kW	6.0 A	VZA20P7BAA	VZA20P7HAA
	1.5 kW	8.0 A	2.2 kW	9.6 A	VZA21P5BAA	VZA21P5HAA
	2.2 kW	11.0 A	3.0 kW	12.0 A	VZA22P2BAA	VZA22P2HAA
	4.0 kW	17.5 A	5.5 kW	21.0 A	VZA24P0BAA	VZA24P0HAA
	5.5 kW	25.0 A	7.5 kW	30.0 A	VZA25P5FAA	VZA25P5HAA
	7.5 kW	33.0 A	11.0 kW	40.0 A	VZA27P5FAA	VZA27P5HAA
	11 kW	47.0 A	15.0 kW	56.0 A	VZA2011FAA	VZA2011HAA
	15 kW	60.0 A	18.5 kW	69.0 A	VZA2015FAA	VZA2015HAA
3x400 V	0.37 kW	1.2 A	0.18 kW	1.2 A	VZA40P2BAA	VZA40P2HAA
	0.55 kW	1.8 A	0.37 kW	2.1 A	VZA40P4BAA	VZA40P4HAA
	1.1 kW	3.4 A	0.75 kW	4.1 A	VZA40P7BAA	VZA40P7HAA
	1.5 kW	4.8 A	1.1 kW	5.4 A	VZA41P5BAA	VZA41P5HAA
	2.2 kW	5.5 A	2.2 kW	6.9 A	VZA42P2BAA	VZA42P2HAA
	3.0 kW	7.2 A	3.0 kW	8.8 A	VZA43P0BAA	VZA43P0HAA
	4.0 kW	9.2 A	5.5 kW	11.1 A	VZA44P0BAA	VZA44P0HAA
	5.5 kW	14.8 A	7.5 kW	17.5 A	VZA45P5FAA	VZA45P5HAA
	7.5 kW	18.0 A	11.0 kW	23.0 A	VZA47P5FAA	VZA47P5HAA
	11 kW	24.0 A	15.0 kW	31.0 A	VZA4011FAA	VZA4011HAA
	15 kW	31.0 A	18.5 kW	38.0 A	VZA4015FAA	VZA4015HAA

① Line filters

Inverter		Line filter		
Voltage	Model VZ	Schaffner	Rated current (A)	Weight (kg)
3-Phase 200 VAC	20P1 / 20P2 / 20P4 / 20P7	A1000-FIV2010-SE	10	0.8
	21P5 / 22P2	A1000-FIV2020-SE	20	1.0
	24P0	A1000-FIV2030-SE	30	1.1
	25P5 / 27P5	Under development		
	2011			
	2015			
Single-Phase 200 VAC	B0P1 / B0P2 / B0P4	A1000-FIV1010-SE	10	0.6
	B0P7 / B1P5	A1000-FIV1020-SE	20	1.0
	B2P2	A1000-FIV1030-SE	30	1.1
	B4P0	A1000-FIV1040-SE	40	1.2
3-Phase 400 VAC	40P2 / 40P4	A1000-FIV3005-SE	5	1.0
	40P7 / 41P5 / 42P2	A1000-FIV3010-SE	10	1.0
	43P0 / 44P0	A1000-FIV3020-SE	15	1.1
	45P5 / 47P5	Under development		
	4011			
	4015			

② Communication cards

Type	Model	Description	Function
Communication option board	SI-N3	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-P3	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-S3	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.
	A1000 - CRT1	CompoNet option card	• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through CompoNet communication with the host controller.

③ Accessories

Types	Model	Description	Functions
Digital operator	JVOP-180	LCD remote operator	LCD Display operator with language support
Accessories	JVOP-181	USB converter	USB converter unit with copy and backup function
	72606-WV001	Remote operator cable (1 m)	Cable for connecting remote operator
	72606-WV003	Remote operator cable (3 m)	
	PS-UDC24	24 VDC option board	24V DC control board power supply

④ 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

⑤ Braking unit, braking resistor unit

Inverter					Braking resistor unit			
Voltage	Max. applicable motor output kW	Inverter model VZ		Connectable min. resistance Ω	Inverter-mounted type (3 %ED, 10 sec max)			
		Three-phase	Single-phase		ERF-150WJ_	Resistance Ω	No. of used	Braking torque %
200 V (single-/ three-phase)	0.12	20P1	B0P1	300	401	400	1	220
	0.25	20P2	B0P2	300	401	400	1	220
	0.55	20P4	B0P4	200	201	200	1	220
	1.1	20P7	B0P7	120	201	200	1	125
	1.5	21P5	B1P5	60	101	100	1	125
	2.2	22P2	B2P2	60	700	70	1	120
	4.0	24P0	B4P0	32	620	62	1	100
	5.5	25P5	–	16	---	---		
	7.5	27P5	–	9.6				
	11	2011		9.6				
	15	2015		9.6				
400 V (three-phase)	0.37	40P2	–	750	751	750	1	230
	0.55	40P4	–	750	751	750	1	230
	1.1	40P7	–	510	751	750	1	130
	1.5	41P5	–	240	401	400	1	125
	2.2	42P2	–	200	301	300	1	115
	3.0	43P0	–	100	401	400	2	105
	4.0	44P0	–					
	5.5	45P5	–	32	---	---		
	7.5	47P5	–	32				
	11	4011	-	20				
	15	4015	-	20				

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