



NEW INVERTER SERIES V1000



YASKAWA NEW INVERTER DRIVE GENERATION V1000

A combination of experience and innovation

For almost one century Yaskawa has supplied progressive motion control systems to all kinds of industries. Especially Yaskawa tailor made solutions fulfill customer expectations and gain confidence in the market.

The new inverter generation V1000 is a real advancement in the field of factory automation. Based on technical experience and market orientation, it proves again the company's claim of quality and reliability.

Easy and cost saving handling through all kinds of all applications

This powerful little helper sets standards in terms of user friendliness and process orientation. The development of the V1000 focuses on all aspects of application, installation, operation and maintenance.

Safety Integrated

Yaskawa V1000 is one of the first general purpose compact drives with built-in two channel hardware base block input. It already meets international safety standards and thereby supports machine builder to apply to international machine directives.



Yaskawa V1000 Features

- Dual Safety Input, safety category 3 (EN954-1) and stop category 0 (EN60204-1)
- In normal duty (120% overload) one frame size larger motor can be driven
- IM and PM motor control
- V/f and open loop current vector control
- One of the smallest inverter drives in the world
- Side-by-side mounting
- Icon based programming
- Designed for 10 years of maintenance free operation





“One for all” – Multiple Applications

Yaskawa V1000 is a general purpose inverter drive covering the demands of a wide field of applications. Simple duties as well as requirements of complex systems need a higher level of functionality, reliability and easy handling, which are provided by the V1000.

- For energy saving **permanent magnet motor** control is possible
- Selectable control method: Open loop current vector or V/f
- Small Design – Big Power: 150% overload in heavy duty service is possible. For applications with low overload requirements the drive can be operated with 120% overload in normal duty service. Consequently you can use a drive of smaller size to do the work of a bigger one.
- Worldwide specification CE, UL, cUL, RoHS (TÜV safety approved)
- High Flux braking reduces braking time to the half

Easy Installation

Yaskawa V1000 reduces installation time and costs. Installable in narrow spaces it requires a minimum of set up time and provides you all the comfort of a modern up-to-date inverter drive.

- One of the smallest inverter drives in the world saves mounting space and cubicle cost by side-by-side mounting
- Application parameter pre-settings shorten effort setup time
- No training necessary: Same handling and parameter structure as all Yaskawa inverters
- Customised visual programming with Drive Works EZ makes in some applications the PLC redundant and saves installation time and costs

Reliable Operation

The V1000 continues the tradition of Yaskawa by being the reliable link in your production chain.

- Designed for long lifetime (10 years 24h per day at 80%)
- Quick response of torque and speed changes improves machine performance
- New hybrid heat sink system (patent pending)
- Online tuning to optimise magnetising of the running motor
- Optional external 24 VDC-supply assures sustainable communication and data flow in any power-down situation
- Dual safety input: Safety category 3 (EN954-1), stop category 0 (EN60204-1) and IEC-61508 SIL2

Quick Maintenance

Yaskawa V1000 is an inverter drive, which adapts to user demands and provides maintenance functions that ensure quick replacement and minimize down time.

- Screw less control terminal board for easy remove without disconnecting the control wiring
- Parameter storage terminal board for quick replacement



SPECIFICATIONS

Voltage class		Single-phase 230 V						
Inverter model CIMR-VCBA* ¹		0001	0002	0003	0006	0010	0012	0018 ⁶
Inverter output	Motor output kW at normal duty ²	0.18	0.37	0.75	1.1	2.2	3.0	—
	Motor output kW at heavy duty ²	0.1	0.2	0.4	0.75	1.5	2.2	4.0
	rated output current at normal duty [A] ³	1.2	1.9	3.3	6	9.6	12	—
	rated output current at heavy duty [A]	0.8 ⁴	1.6 ⁴	3 ⁴	5 ⁴	8 ⁵	11 ⁵	17.5 ⁵
	Overload	120% for 60 sec at normal duty, 150% for 60 sec at heavy duty from inverter rated output current						
	Rated output power at normal duty* [kVA]	0.5	0.7	1.3	2.3	3.7	4.6	8.0
	Rated output power at heavy duty* [kVA]	0.3	0.6	1.1	1.9	3.0	4.2	6.7
Max. output voltage		three phase 200 to 240 V (proportional to input voltage)						
Max. output frequency		400 Hz						
Inverter input	Rated input voltage	three phase 200 to 240 V +10%/-15%						
	Rated input frequency	50/60 Hz +/-5%						

* based on input voltage 220V

Voltage class		Three-phase 200 V										
Inverter model CIMR-VC2A		0001	0002	0004	0006	0010	0012	0020	0030	0040	0056	0069
Inverter output	Motor output kW at normal duty ²	0.18	0.37	0.75	1.1	2.2	3.0	5.5	7.5	11	15	18.5
	Motor output kW at heavy duty ²	0.1	0.2	0.4	0.75	1.5	2.2	4.0	5.5	7.5	11	15
	rated output current at normal duty [A] ³	1.2	1.9	3.5	6	9.6	12	19.6	30	40	56	69
	rated output current at heavy duty [A]	0.8 ⁴	1.6 ⁴	3.0 ⁴	5 ⁴	8 ⁵	11 ⁵	17.5 ⁵	25 ⁵	33 ⁵	47 ⁵	60 ⁵
	Overload	120% for 60 sec at normal duty, 150% for 60 sec at heavy duty from inverter rated output current										
	Rated output power at normal duty* [kVA]	0.5	0.7	1.3	2.3	3.7	4.6	7.5	11.4	15.2	21.3	26.3
	Rated output power at heavy duty* [kVA]	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.5	12.6	17.9	22.9
Max. output voltage		three phase 200 to 240 V (proportional to input voltage)										
Max. output frequency		400 Hz										
Inverter input	Rated input voltage	three phase 200 to 240 V +10%/-15%										
	Rated input frequency	50/60 Hz +/-5%										

* based on input voltage 220V

Voltage class		Three-phase 400 V										
Inverter model CIMR-VC4A		0001	0002	0004	0005	0007	0009	0011	0018	0023	0031	0038
Inverter output	Motor output kW at normal duty ²	0.4	0.75	1.5	2.2	3.0	3.7	5.5	7.5	11	15	18.5
	Motor output kW at heavy duty ²	0.2	0.4	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15
	rated output current at normal duty [A] ³	1.2	2.1	4.1	5.4	6.9	8.8	11.1	17.5	23	31	38
	rated output current at heavy duty [A] ⁵	1.2	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18	24	31
	Overload	120% for 60 sec at normal duty, 150% for 60 sec at heavy duty from inverter rated output current										
	Rated output power at normal duty* [kVA]	0.9	1.6	3.1	4.1	5.3	6.7	8.5	13.3	17.5	23.6	29
	Rated output power at heavy duty* [kVA]	0.9	1.4	2.6	3.7	4.2	5.5	7.0	11.3	13.7	18.3	23.6
Max. output voltage		three phase 380 to 480 V (proportional to input voltage)										
Max. output frequency		400 Hz										
Inverter input	Rated input voltage	three phase 380 to 480 V +10%/-15%										
	Rated input frequency	50/60 Hz +/-5%										

* based on input voltage 440V

¹ Single phase input unit can only be used with three phase motor (single phase motor is not to use)

² The recommended maximum connected load is specified for a four pole motor. Choose the version of the converter that does not exceed the rated current of the motor

³ at 2 kHz carrier frequency without derating

⁴ at 10 kHz carrier frequency without derating

⁵ at 8 kHz carrier frequency without derating

⁶ only heavy duty available

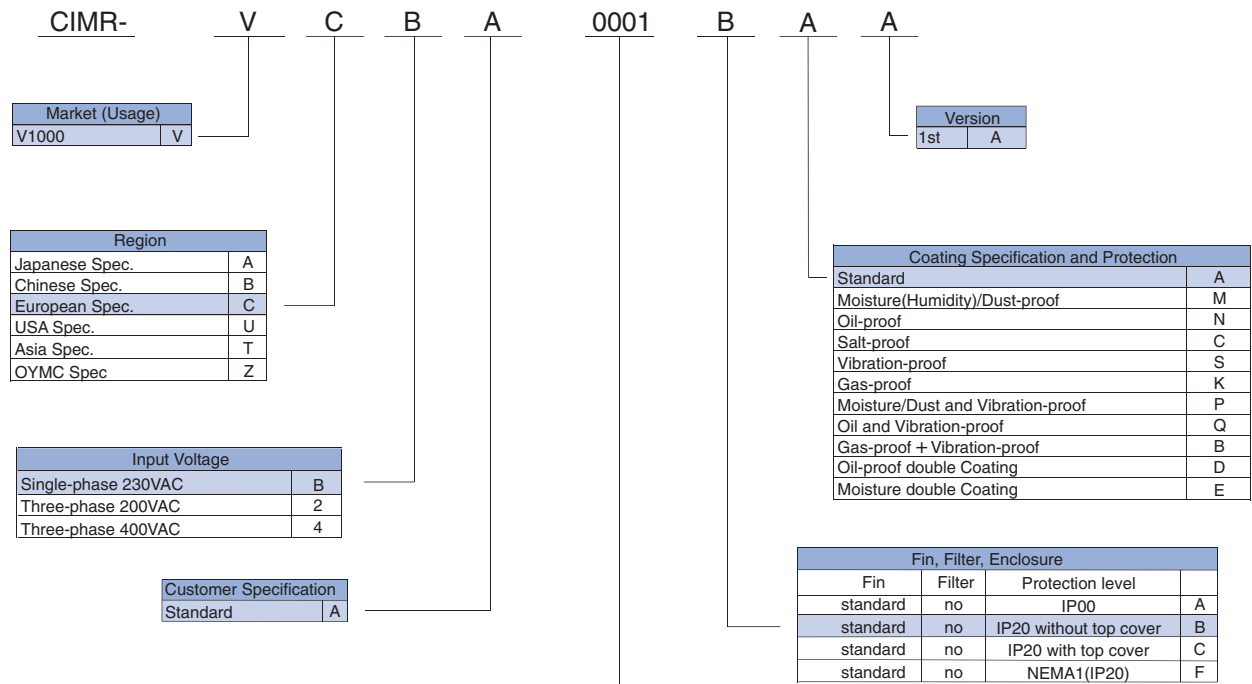




		Specifications
Control Functions	Control methods	Sine wave PWM (V/f control, sensorless current vector control, sensorless vector control for PM motors)
	Output frequency range	0.01..400 Hz
	Frequency Reference Setting Accuracy	Digital set value: $\pm 0.01\%$ (-10..+50 °C) Analogue set value: $\pm 0.1\%$ (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 (10 bit)
	Resolution of output frequency	0.001 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 k Ω) Resolution 1/1000 (10 bit), 4..20 mA (250 Ω) or 0..20 mA (250 Ω) Resolution 1/500 (9 bit) Pulse train input, frequency setting value (selectable 0 - 32kHz)
	Braking torque (short term peak torque)	Short-term average deceleration torque: 150% (up 1.5KW), 100% (for 1.5KW), 50% (for 2.2KW), 20% (for bigger size) Continuous regenerative torque: Aprox 20% (125% with optional braking resistor, 10%ED, 10s, braking transistor built in)
V/f Characteristics	Possible to program any V/f pattern	
Functionality	Input Signals	Six digital input signals are for the following inputs 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, emergency stop fault, emergency stop alarm, self test
	Safety	Two digital inputs in accordance with EN954-1, safety category 3; Stop in accordance to EN60204-1, stop category 0
	Output Signals	Three digital output signals are selectable (NO/NC contact output, 2 photo-coupler outputs): Fault, running, zero speed, speed agree, frequency detection (output frequency \leq or \geq 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: 1 x 0..10 V, 1 x 0..10 V or (0)4..20 mA
	Deceleration/acceleration times	0.01..6000 s
	Display	5 digit, 7 Segment LED Error and status LED
Protection Functions	Motor overload protection	Electronic thermal overload relay
	Instantaneous overcurrent	Motor coasts to a stop if output current exceeds 200% (HD)
	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 820V for 400 V class (410 V for 200 V class)
	Undervoltage	Stops when DC bus voltage is approx. 380 V or less for 400 V class (190 V for 200 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 thermistor
	Stall prevention level	Stall prevention during acceleration/deceleration and constant speed operation
	Ground fault	Protected by electronic circuit (operation level is approx. 50% of rated output current)
	Power charge indication	Indicates until the main circuit voltage reaches 50V.
Ambient Conditions	Degree of protection	IP20 general (20A and 11A), NEMA1 for bigger units
	Cooling	Cooling fan is provided for VCBA0010 to 0020 (230 V, single-phase) and for VC2A0006 to 0069 (200 V, three-phase) and for VC4A005 to 0038 (400V, three phase), others are self-cooling
	Ambient humidity	95% RH or less (without condensation)
	Storage temperature	-20 °C..+60 °C (short-term temperature during transportation)
	Ambient temperature	IP20 Type: -10 to 50 °C NEMA Type 1: -10 to +40 °C (max. 50 °C with derating to 85%)
	Installation	Indoor (no corrosive gas, dust, etc.)
	Installation height	Max. 1000 m (output derating of 1% per 100 m above 1000 m, max. 3000m)
	Vibration	Up to 1G at 10 to 20 Hz, Up to 0.65G at 20 to 55 Hz



RATINGS & TYPE DESCRIPTIONS



Single-phase 230VAC				
	Normal Duty		Heavy Duty	
	Rated Output Current	Max applicable Motor	Rated Output Current	Max applicable Motor
0001	1.2A	0.18kW	0.8A	0.1kW
0002	1.9A	0.37kW	1.6A	0.2kW
0003	3.3A	0.75kW	3A	0.4kW
0006	6A	1.1kW	5A	0.75kW
0010	9.6A	2.2kW	8A	1.5kW
0012	12A	3.0kW	11A	2.2kW
0018	-	-	17.5A	4.0kW

Three-phase 200VAC				
	Normal Duty		Heavy Duty	
	Rated Output Current	Max applicable Motor	Rated Output Current	Max applicable Motor
0001	1.2A	0.4kW	0.8A	0.1kW
0002	1.9A	0.37kW	1.6A	0.2kW
0004	3.5A	0.75kW	3A	0.4kW
0006	6A	1.1kW	5A	0.75kW
0010	9.6A	2.2kW	8A	1.5kW
0012	12A	3.0kW	11A	2.2kW
0020	19.6A	5.5kW	17.5A	4.0kW
0030	30A	7.5kW	25A	5.5kW
0040	40A	11kW	33A	7.5kW
0056	56A	15kW	47A	11kW
0069	69A	18.5kW	60A	15kW

Three-phase 400VAC				
	Normal Duty		Heavy Duty	
	Rated Output Current	Max applicable Motor	Rated Output Current	Max applicable Motor
0001	1.2A	0.37kW	1.2A	0.2kW
0002	2.1A	0.75kW	1.8A	0.4kW
0004	4.1A	1.5kW	3.4A	0.75kW
0005	5.4A	2.2kW	4.8A	1.5kW
0007	6.9A	3.0kW	5.5A	2.2kW
0009	8.8A	3.7kW	7.2A	3.0kW
0011	11.1A	5.5kW	9.2A	4.0kW
0018	17.5A	7.5kW	14.8A	5.5kW
0023	23A	11kW	18A	7.5kW
0031	31A	15kW	24A	11kW
0038	38A	18.5kW	31A	15kW



DIMENSIONS

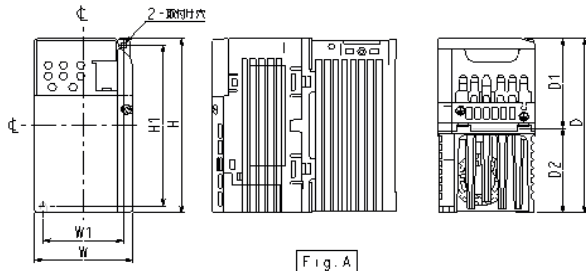


Fig. A

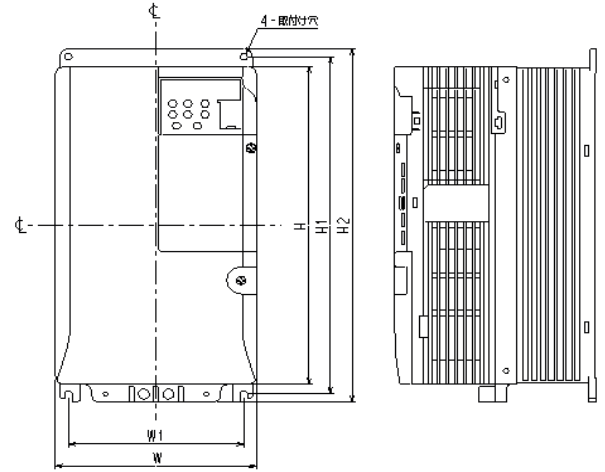


Fig. C

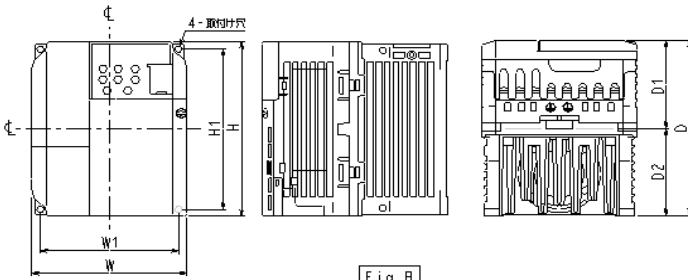


Fig. B

Voltage class	Max. applicable motor output kW at normal duty	Max applicable motor output kW at heavy duty	Inverter Model VC	Figure	Dimensions in mm										
					W	H	D	W1	H1	H2	D1	D2	Ø		
Single-phase 230V	0.18	0.1	BA0001	Fig. A	68	128	76	56	118	-	66	10	M4		
	0.37	0.2	BA0002				118						M4		
	0.75	0.4	BA0003				138						M4		
	1.1	0.75	BA0006	Fig. B	108	170	154	96	128	-	74	62	M4		
	2.2	1.5	BA0010				163						M4		
	3.0	2.2	BA0012				180						M4		
-	4.0	BA0018				109				71		M4			
Three-phase 200V	0.18	0.1	2A0001	Fig. A	68	128	76	56	118	-	66	10	M4		
	0.37	0.2	2A0002				108						M4		
	0.75	0.4	2A0004				128						M4		
	1.1	0.75	2A0006	Fig. B	108	140	129	96	128	-	72	71	M4		
	2.2	1.5	2A0010				143						M4		
	3.0	2.2	2A0012				163						M4		
	5.5	4.0	2A0020	Fig. C	140	220	140	122	248	260	85	55	M5		
	7.5	5.5	2A0030				160						M5		
	11	7.5	2A0040				187						M5		
	15	11	2A0056				192				300		78	M6	
18.5	15	2A0069				192				336		109		M6	
Three-phase 400V	0.4	0.2	4A0001	Fig. B	108	128	81	96	118	-	65	16	M4		
	0.75	0.4	4A0002				89						M4		
	1.5	0.75	4A0004				138						M4		
	2.2	1.5	4A0005	Fig. C	140	234	154	128	248	260	85	55	M4		
	3.0	2.2	4A0007				143						M4		
	3.7	3.0	4A0009				160						M4		
	5.5	4.0	4A0011				163				300		88	M5	
	7.5	5.5	4A0018				163				336		109		M5
	11	7.5	4A0023				163				336		109		M5
	15	11	4A0031				163				336		109		M5
18.5	15	4A0038				163				336		109		M5	





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Yaskawa is certified to ISO 9001 and the environmental management system standard ISO 14001. The V1000 is CE-certified, cULus-listed and RoHS-conform.

International Standards



Safety Standards

Safety Stop

RoHS Directive

RoHS Directive Stands for the EU directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.