

AV Inverters VF-0, VF-CE

Product Overview

VF-0 Series

- Ultra-compact
- Easy to use
- Cost effective

1-phase 230V AC

0.2kW
0.4kW
0.75kW
1.5kW



3-phase 400V AC

0.75kW
1.5kW
2.2kW
3.7kW



VF-CE Series

- Vector control
- Advanced technology
- Filter integrated
- Multiple interfaces
(RS232C/RS485, PROFIBUS)

1-phase 230V AC

0.25kW
0.37kW
0.75kW
1.5kW
2.2kW

3-phase 400V AC

0.75kW
1.5kW
2.2kW
4.0kW



VF-0 Series

Overview

Highlights

- Ultra-compact
- Easy to operate using the integrated operating panel
- Cost effective
- Easy and accurate frequency control using PLC puls output
- Various types without and with brake included (1-phase)
- 8-speed control function
- Retry function
- Frequency increase, decrease and memory functions using external switches
- Complete regeneration brake function

1-phase 230V AC Input types

MotorPower P _N [kW]	Part No.	
	Brake provided	not provided
0.2		BFV00022DK
0.4	BFV00042GK	BFV00042DK
0.75	BFV00072GK	BFV00072DK
1.5	BFV00152GK	BFV00152DK

3-phase 400V AC Input types

MotorPower P _N [kW]	Part No.
0.75	BFV00074
1.5	BFV00154
2.2	BFV00224
3.7	BFV00374

Easy to operate

Button to select „frequency output, current display“, „frequency setting, monitor“, „rotation direction setting“, „function setting“ and switching the display to show data or mode

Button to change the display between the parameter No. and data display, and save the data, also to change between frequency and current display

Potentiometer to set the operating frequency



Display shows output frequency, current, line speed, error details, data for function setting and parameter numbers

Button to start the inverter

Button to stop the inverter

Up/Down buttons to change the data and output frequency, and to set forward or reverse run direction

Easy and accurate frequency control with a PLC

Frequency control with a PWM signal from a PLC to the inverter is possible without analogue I/O units. Motor speed can be controlled.

PLC/FP0



VF-0



Motor



PWM signal



VF-0 Series

Specifications

Input voltage		1-phase 230V AC	3-phase 400V AC
Rated output	Applied motor output	0.2 to 1.5kW	
	Rated output voltage	3-phase 200 to 230V AC (proportional to power supply voltage)	3-phase 380 to 460V AC (proportional to power supply voltage)
	Overload current rating	150% of rated output current for 1 minute	
Input power supply	Phases, voltage, frequency	1-phase 200 to 230V AC 50/60Hz	3-phase 380 to 460V AC 50/60Hz
	Tolerable voltage variations	+10%, -15% of rated AC input voltage	
	Tolerable frequency variations	±5% of rated input frequency	
	Instantaneous voltage drop resistance capacity	Continuous operation at 165V or more. Continuous operation at less than 165V for 15ms	Continuous operation at 323V or more. Continuous operation at less than 323V for 15ms
Output frequency	Output frequency range	0.5 to 250Hz	
	Frequency display	Digital display	
	Frequency accuracy	±0.5% of selected maximum set frequency (25±10°C) for analogue setting	
	Frequency setting resolution	Digital setting: 0.1Hz (1Hz over 100Hz), Analogue setting: 0.1Hz (50/60Hz mode)	
Inverter control method		High carrier frequency sinusoidal PWM control (V/F control method)	
Carrier frequency		Select from 9 types (The output current must be reduced for 12.5 and 15.0kHz) (0.8, 1.1, 1.6, 2.5, 5.0, 7.5, 10, 12.5, 15kHz)	Select from 7 types (0.8, 1.1, 1.6, 2.5, 5.0, 7.5, and 10kHz) (The output current of 3.7kW must be reduced when set to 10kHz.)
Operation	Start/Stop	Operation panel buttons or input contact ¹⁾ signal (wait time setting possible)	
	Forward/Reverse	Operation panel buttons or input contact ¹⁾ signal (reverse rotation prohibit setting possible)	
	Jog operation	Operating frequency: Optional setting for 0.5 to 250Hz, Acceleration/deceleration time: Optional setting each for 0.04 to 999 seconds	
	Stop mode	Select from ramp-to-stop or coast-to-stop (selection changeover)	
	Reset function	Stop signal reset, external reset, panel reset (setting possible) and power supply reset	
	Stop frequency	Optional setting from 0.5 to 60Hz	
	Instantaneous power failure restart	Function OFF, and 0Hz restart, operating frequency restart (selection changeover)	
	Retry function	Retry selection: Select function OFF and details of retry fault, No. of retries: Optional setting for 1 to 10 times	
Control	Frequency setting signal	- Local setting: Potentiometer, digital setting (operation panel) - External analog setting signal: Potentiometer (10kW, 1/4Ω or more), 0 to 5V, 0 to 10V, 4 to 20mA (Connect a 200Ω, 1/4W or more external resistor) - External digital setting signal: PWM signal (signal cycle: 0.9 to 1100ms), Frequency up SW, down SW, save SW signal	
	Voltage/frequency characteristics	Base frequency: 50, 60Hz fixed and optional setting between 45 and 250Hz V/F curve: Constant torque, square torque pattern (selection changeover)	
	2nd voltage/frequency characteristics	Optional base frequency setting for 45 to 250Hz	
	1st and 2nd torque boost level	Optional setting for 0 to 40%	
	1st and 2nd accel./Decel. Time	0.04 to 999sec. (individual accel. and decel. Time setting), Accel./Decel. Characteristics: Linear	
	Multi-speed frequency setting	Up to 8 preset frequency settings (optional setting)	
	Skip frequency setting	Up to 3 place settings (skip frequency band setting from 1 to 10Hz)	
	Upper and lower frequency setting	Optional setting from 0.5 to 250Hz	
	Bias/gain frequency settings	Bias frequency: set from -99 to 250Hz, Gain frequency: set from 0 to 250Hz	
	External stop function	Select from auxiliary stop or coast-to-stop (selection setting)	
Braking	Regenerative braking torque	With brakes	0.4kW, 0.75kW, 1.5kW: 100% or more (short-time) 20% or more
		Without brakes	0.2kW: 100% or more, 0.4kW: 80% or more 0.75kW: 20% or more, 1.5kW: 20% or more 100% or more with connection of brake resistor (option) (built-in brake circuit)
	DC braking		Operates when less than stop frequency, Braking torque level: 0 to 100 (set between 20 levels), Braking time: Optional setting for 0.1 to 120 seconds
Output signal	Analogue output		Output specifications: 0 to 5V (max. 1mA), Output functions: Output frequency, output current proportional (selection changeover)
	Open collector output		Output specifications: Max. rating 50V DC, 50mA Output functions: Run signal, arrival signal, overload prealarm, frequency detection, reverse run signal, fault warning, output frequency/current proportional PWM signal (cycle 1ms)
	Relay output		Output specifications: change over (1c) contact (contact capacity 250V AC, 0.5A resistance load) Output functions: Run signal, arrival signal, overload prealarm, frequency detection, reverse run signal, fault warning
Display	Operating condition		Output frequency or line speed (selection changeover), output current, rotation direction
	Fault details		Symbol indicated when protective function activates (last 4 faults are stored)
Protection	Current limit		Current limit can be set from 1 to 200% of rated output current
	Shut-off (stop)		Instantaneous overcurrent, over temperature (SC1 to 3), overcurrent (OC1 to 3), overload/electronic thermal overload (OL), low voltage (LU), overvoltage (OU1 to 3), auxiliary stop (AU), operation error (OP)
	Stall prevention function		Overcurrent stall prevention, regenerative overvoltage stall prevention
	Working ambient temperature and humidity		-10°C to +50°C (with no freezing), 90% RH or less (with no dew condensation)
Environment	Transportation/storage temperature and humidity		-25°C to +65°C, 95% RH or less
	Altitude and vibration		1000m or less, 5.9m/s ² (0.6G) or less
	Atmosphere		Indoors, with no corrosive gases, explosive gases, oil mist or dust present
	Enclosure		IP00
Cooling method		Self-cooling: 0.2 to 0.75kW, Forced-air cooling: 1.5kW	Self-cooling: 0.75kW, Forced-air cooling: 1.5 to 3.7kW

• Protection against Electric shock: Class I • Overvoltage category: II • Pollution degree: 2

Note: The specifications for the 200V and 400V classes are not the same. Please keep in mind this partial difference.

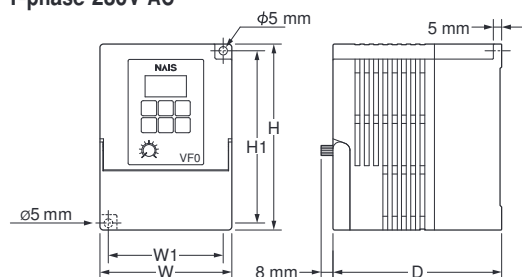
¹⁾1a = Normally open

VF-0 Series

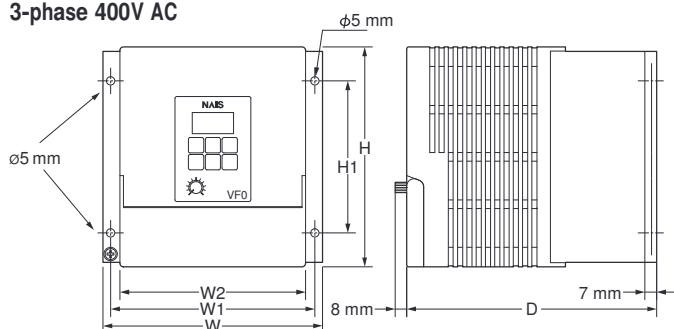
Specifications

Dimensions

1-phase 230V AC



3-phase 400V AC



Part No.	Applicable Motor Capacity [kW]	W [mm]	W1 [mm]	H [mm]	H1 [mm]	D [mm]
BFV00022DK	0.2	78	68	110	102	100
BFV00042DK	0.4					
BFV00042GK	0.4					
BFV00072DK	0.75	100	90	130	121	115
BFV00072GK	0.75					
BFV00152DK	1.5					
BFV00152GK	1.5					

Note 1: 1.5kW includes a cooling fan

Part No.	Inverters Capacity [kW]	W [mm]	W1 [mm]	W2 [mm]	H [mm]	H1 [mm]	D [mm]
BFV00074	0.75	130	121	110	130	90	148
BFV00154	1.5	130	121	110	130	90	161
BFV00224	2.2						
BFV000334	3.7	160	151	140	130	90	161

Note 1: 1.5 to 3.7kW includes a cooling fan

Brake resistor

VF-0 Part No.	Motor [kW]	Brake resistor Part No.	Dimensions [mm]
BFV00074	0.75kW 3-phase 400V	BFVC9164U	110 x 80 x 15
BFV00154	1.5kW 3-phase 400V	BFVC9164U	110 x 80 x 15
BFV00224	2.2kW 3-phase 400V	BFVC9165U	110 x 80 x 15
BFV00374	3.7kW 3-phase 400V	BFVC9166U	216 x 80 x 15

For 1-phase 230 V AC types please select the BFV00042GK, BFV00072GK or BFV00152GK.
The brake resistor is either enclosed, or built in.



Filters

EMC filters are usually employed to reduce conducted disturbances and thus ensure constant quality in the power supply network.

For use, the standards EN61800-3 (product standard) and EN55011/EN55022 (limits and methods of measurement) are important, whereby the following limits must be met: EN55011/EN55022, Class A: Limits for general industrial use. This applies to all usage sites that are normally connected to their own individual high- of medium-high voltage transformer.

Inverter	P _N	EMC Filter	Compliant to	Part No.
VF-0 1-phase	0.2kW – 1.5kW	200V type	EN55022 Class A and B	FN2071N606
VF-0 3-phase	0.75kW – 3.7kW	400V type	EN55022 Class A and B	FN3258745