

# Standard Specifications

## ● 1-/3-phase 200V class

Model NES1-		002SB	004SB	007SB	015SB	022SB
		002LB	004LB	007LB	015LB	022LB
Output Ratings	Applicable motor size, 4-pole kW(HP) *1	0.2(1/4)	0.4(1/2)	0.75(1)	1.5(2)	2.2(3)
	Rated capacity	200V	0.4	0.9	1.3	2.4
		240V	0.5	1.0	1.6	2.9
	Rated output current (A) *2	1.4	2.6	4.0	7.1	10.0
Overload capacity(output current)		150% for 60 sec.				
Rated output voltage (V)		3-phase (3-wire) 200 to 240V (corresponding to input voltage)				
Input Rating	Rated input voltage (V)	SB: 1-phase 200 to 240V+10%, -15%, 50/60Hz ±5% LB: 3-phase 200 to 240V+10%, -15%, 50/60Hz ±5%				
	Rated input current (A)	SB 1.8	5.8 3.4	9.0 5.0	16.0 9.3	22.5 13.0
Enclosure *4		IP20				
Cooling method		Self-cooling			Force ventilation	
Weight (kg)	SB	0.7	0.8	1.0	1.2	1.3
	LB	0.7	0.8	0.9	1.2	1.3

## ● 3-phase 400V class

Model NES1-		004HB	007HB	015HB	022HB	
Output Ratings	Applicable motor size, 4-pole kW(HP) *1	0.4(1/2)	0.75(1)	1.5(2)	2.2(3)	
	Rated capacity (kVA)	380V	0.9	1.6	2.6	
		480V	1.2	2.0	3.4	
	Rated output current (A) *2	1.5	2.5	4.1	5.5	
Overload capacity(output current)		150% for 60 sec.				
Rated output voltage (V)		3-phase (3-wire) 380 to 480V (corresponding to input voltage)				
Input Rating	Rated input voltage (V)	3-phase 380 to 480V +10%, -15%, 50/60Hz ±5%				
	Rated input current (A)	2	3.3	5.2	7	
Enclosure *4		IP20				
Cooling Method		Self-cooling			Force ventilation	
Weight (kg)			0.9	1.0	1.1	

## General Specifications

Item		General Specifications	
Control	Control method	Line-to-line sine wave pulse-width modulation (PWM) control	
	Output frequency range *5	0.01 to 400Hz	
	Frequency accuracy *6	Digital command ±0.01%, Analog command ±0.4% (25 ±10°C)	
	Frequency setting resolution	Digital: 0.01Hz, Analog: (max frequency)/1000	
	Voltage/Frequency Characteristic	V/f control, V/f variable (constant torque, reduced torque)	
	Acceleration/deceleration time	0.00 to 3000 sec. (linear, sigmoid), two-stage accel./decel.	
	Starting torque *7	100%/6Hz	
	Carrier frequency range	2.0 to 15kHz	
Protective functions		Over-current, Over-voltage, Under-voltage, Overload, Overheat, Ground fault at power-on, Input over-voltage, External trip, Memory error, CPU error, USP error, Driver error, Output phase loss protection	
Input terminal	Specification	10kohm input impedance, sink/source logic selectable	
	Functions	FW(Forward), RV(Reverse), CF1-CF3(Multispeed command), JG(Jogging), DB(External DC braking), SET(Second motor constants setting), 2CH(Second accel./decel.), FRS(Free-run stop), EXT(External trip), USP(Unattended start protection), SFT(Software lock), AT(Analog input selection), RS(Reset), STA(3-wire start), STP(3-wire stop), F/R(3-wire fwd./rev.), PID(PID On/Off), PIDC(PID reset), UP/DWN(Remote-controlled accel./decel.), UDC(Remote-controlled data clearing), OPE(Operator control), SF1-SF3(multispeed bit), OLR(overload restriction selection), LAC(LAD cancellation), ADD(ADD frequency enable), F-TM(force terminal mode), KHC(cumulative power clearance), AHD(analog command holding), HLD(retain output frequency), ROK(permission of run command), DISP (display limitation), NO(Not selected)	
Output signal	Intelligent output terminal	Specification	27V DC 50mA max open collector output, 1 terminals 1c output relay (AL0, AL1, AL2 terminals)
	Function	Function	RUN(run signal), FA1(Frequency arrival type 1 - constant speed), FA2(Frequency arrival type 2 - over-frequency), OL(overload advance notice signal), OD(Output deviation for PID control), AL(alarm signal), DC(Wire brake detect on analog input), FBV(PID Second Stage Output), NDC(ModBus Network Detection Signal), LOG(Logic Output Function), ODC(analog voltage input disconnection), LOC(Low load), FA3(Set frequency reached), UV(Under voltage), RNT(Operation time over), ONT(Plug-in time over), THM(Thermal alarm signal), ZS(0 Hz detection signal), IRDY(Inverter ready), FWR(Forward rotation), RVR(Reverse rotation), MJA(Major failure)
Operator	Monitor output terminal	Function	PWM output; Select analog output frequency monitor, analog output current monitor or digital output frequency monitor
	Operation key	Function	1 unified key for RUN/STOP/RESET ON : this key has function of "RUN"(regardless run command source setting (A002/A201).) OFF : this key has function of "STOP/RESET" When optional operator is connected, operation from key is disabled.
Operation	Status LED Interface	Function	Control power supply LED (Red), LED during operation (yellow-green), Operation button operation LED (yellow-green), LED during tripping (Red), 4LED in total
	Frequency setting	Operator keypad(Optional)	Up and Down keys / Value settings or analog setting via potentiometer on operator keypad
		External signal *8	0 to 10 V DC or 4 to 20 mA
	FW/RV Run	Serial port	Function
External signal		Function	Run key / Stop key (change FW/RV by function command)
Environment	Operating temperature	Function	FW Run/Stop (NO contact), RV set by terminal assignment (NC/NO), 3-wire input available
		Function	RS485 interface (Modbus RTU)
	Storage temperature	Function	-10 to 50°C(carrier derating required for ambient temperature higher than 40°C(022SB:temperature higher than 30°C)), no freezing
	Humidity	Function	When attach option FFM, in 015/022SB the derating becomes needless.
	Vibration	Function	-20 to 60°C
Location	Function	20 to 90% RH	
Other functions		Function	5.9mm/s <sup>2</sup> (0.6G) 10 to 55Hz
Options		Function	Altitude 1,000 m or less, indoors (no corrosive gasses or dust)
		Function	AVR (Automatic Voltage Regulation), V/f characteristic selection, accel./decel. curve selection, frequency upper/lower limit, 8 stage multispeed, PID control, frequency jump, external frequency input bias start/end, jogging, trip history etc.
		Function	Remote operator with copy function (WOP), Remote operator (OPE-SRmini, OPE-SR), Operator (NES1-OP), input/output reactors, DC reactors, radio noise filters, LCR filter, communication cables (ICS-1, 3)

Note 1: The applicable motor refers to Hitachi standard 3-phase motor (4-pole). When using other motors, care must be taken to prevent the rated motor current (50/60 Hz) from exceeding the rated output current of the inverter.

Note 2: The output voltage decreases as the main supply voltage decreases (except when using the AVR function). In any case, the output voltage cannot exceed the input power supply voltage.

Note 3: The braking torque via capacitive feedback is the average deceleration torque at the shortest deceleration (stopping from 50/60 Hz as indicated). It is not continuous regenerative braking torque. The average decel torque varies with motor loss. This value decreases when operating beyond 50 Hz.

Note 4: The protection method conforms to JIS C 0920(IEC60529).

Note 5: To operate the motor beyond 50/60 Hz, consult the motor manufacturer for the maximum allowable rotation speed.

Note 6: The output frequency may exceed the maximum frequency setting (A004 or A204) for automatic stabilization control.

Note 7: At the rated voltage when using a Hitachi standard 3-phase, 4pole motor.

Note 8: DC 4 to 20 mA Input, need parameter setting by Keypad etc.

Analog input voltage or current can be switched by switch as individually and not use them in the same time.