HITACHI
Inspire the Next

Economical inverter with simple operation

NE-S1 Series NEW

Hitachi Industrial

What's "NES"?

New Inverter
Small, Simple

N Next&New

NEXT generation inverter opens the door to NEW market segments

E Ecological& Economical

ECOLOGICAL - saves energy
ECONOMICAL - simple to install and easy to use

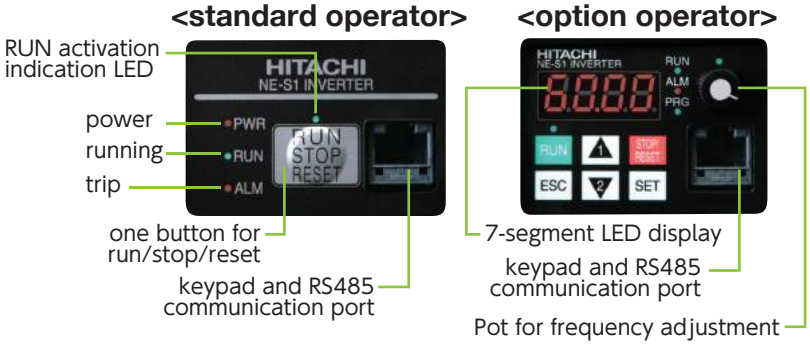
1 Space Saving

Among the smallest form-factors in their category:
-43% smaller than equivalent X200 (0.2 kW)
-Side-by-side installation to save panel space

* Side-by-side installation: derating for carrier frequency and output current required

2 Simple Operation

Run/Stop/Reset is integrated in one button for simple operation.
Full-function attachable operator available as an option. (refer to p.15)



3 Global Standards

- Conformity to global standards
  Conforms to CE/UL/c-UL/c-Tick
- Compatible to both sink and source logic as standard
  Logic input is compatible with both sink and source logic.

〈CE〉 〈UL, c-UL〉 〈c-Tick〉

4 For Network

- RS485 Modbus-RTU Communication port is standard

5 Optional Customization

Customization for specific applications is available. (contact Hitachi)

developed by Hitachi and Economical

S Small&Simple

SIMPLE functions in a SMALL package

6 Inherent Functions to achieve energy savings

Automatic energy saving function is implemented to minimize energy consumption.

●Arithmetic and delay functions
Arithmetic operation and delay functions can simplify external hardware.

●Keypad / Terminal switching
Source of frequency and run commands can be selected via intelligent terminal.

●2nd motor function
Settings for 1st and 2nd motor can be selected via intelligent input.

●Three-wire Operation function
Momentary contact for RUN and STOP can be utilized.

●Analog Input Disconnection Detect Function
When wire for analog signal to command frequency is cut, pre-assigned signal can be output.
*Parameter change and setting by keypad etc.

7 Application

Optimal performance for energy saving applications such as fans and pumps

Fan and air conditioners
·air conditioning systems
·fans and blowers
·clean rooms

Pumps
·water and wastewater pump systems
·tank-less water supply and drainage systems

Food Processing Machines
·slicers ·mixers
·confectionery machines
·Fruit Sorters

Model Configuration

Applicable motor kW (HP)		0.2 (1/4)	0.4 (1/2)	0.75 (1)	1.5 (2)	2.2 (3)
Three Phase 200V	LB	●	●	●	●	●
Single Phases 200V	SB	●	●	●	●	●
Three Phases 400V	HB	◌	◌	◌	◌	◌

◌ Coming soon.

Model Name Indication

NES1-002 S B

Series Name

Applicable Motor Capacity
002: 0.2kW (1/4HP) — 022: 2.2kW (3HP)

Power Source
S : 1-phase 200V class
L : 3-phase 200V class

B : Without keypad

Standard Specifications

1-/3-phase 200V class

Model NES1-			002SB 002LB	004SB 004LB	007SB 007LB	015SB 015LB	022SB 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	230V	0.5	1.0	1.5	2.8	3.9
		240V	0.5	1.0	1.6	2.9	4.1
	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	3.1	5.8	9.0	16.0	22.5
		LB	1.8	3.4	5.0	9.3	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

General Specifications

Item			General Specifications
Control	Control method		Line-to-line sine wave pulse-width modulation (PWM) control
	Output frequency range *5		0.5 to 400Hz
	Frequency accuracy *6		Digital command :±0.01%, Analog command±0.2% (25±10˚C)
	Frequency setting resolution		Digital: 0.1Hz, 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 250V AC/30V DC 2.5A relay (AL0, AL1, AL2 terminals)
		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)
	Moniter output terminal	Function	PWM output; Select analog output frequency monitor, analog output current monitor or digital output frequency monitor
Operator	Operation key		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.
	Status LED Interface		Control power supply LED (Red),LED during operation (yellow-green),Operation button operation LED (yellow-green),LED during tripping (Red), 4LED in total
Operation	Frequency setting	Operator keypad(Option)	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
		Serial port	RS485 interface (Modbus RTU)
	FW/RV Run	Operator Keypad(Option)	Run key / Stop key (change FW/RV by function command)
		External signal	FW Run/Stop (NO contact), RV set by terminal assignment (NC/NO), 3-wire input available
		Serial port	RS485 interface (Modbus RTU)
Environment	Operating temperature		−10 to 50˚C(carrier derating required for aambient temperature higher than 40°C), no freezing
	Storage temperature		−20 to 60˚C
	Humidity		20 to 90% RH
	Vibration		5.9mm/s^2 (0.6G) 10 to 55Hz
	Location		Altitude 1,000 m or less, indoors (no corrosive gasses or dust)
Other functions			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.
Options			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 JEM 1030.
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.