

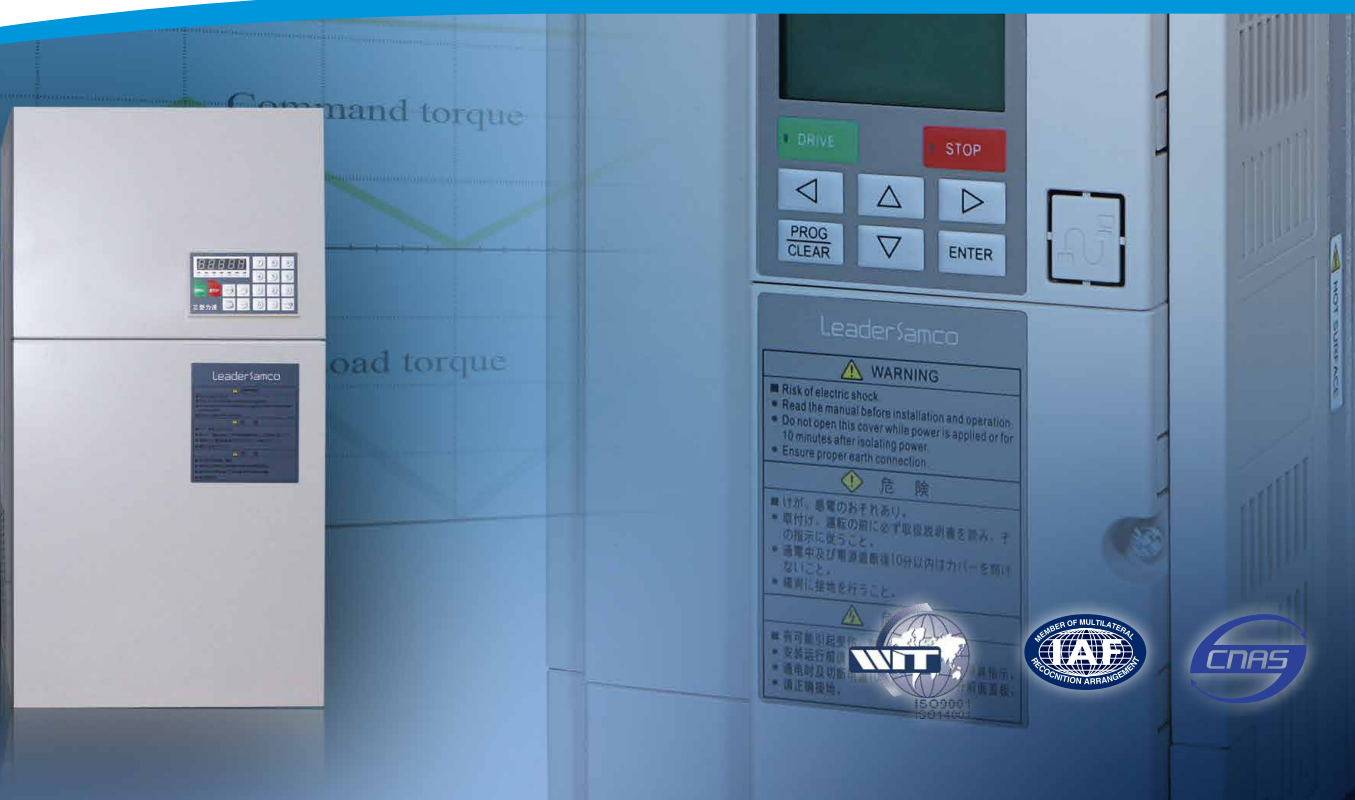


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LeaderSamco NS

Vector control VFD

Three-phase: 400V 0.75kW-315kW
Single-phase: 200V 0.4kW-0.75kW



LeaderSamco - NS

"For over three decades, we have dedicated ourselves to Japanese craftsmanship—delivering reliability in every drive."



For over 30 years, Sanken L.D. VFD have stayed true to their original mission. With decades of expertise in frequency control, we focus on meeting core customer needs, delivering a dependable inverter that embodies the precision and craftsmanship of Japanese engineering.

- Excellent low-frequency torque performance for stable starting
- High environmental adaptability and reliability
- Equipped with enhanced over-voltage stall function for shorter braking time
- Larger built-in braking unit, allowing direct connection to braking resistors
- Built-in Modbus communication protocol for easy integration with other devices
- Abundant control signal interfaces, including DI/DO, relay output, 24V user power supply, etc.

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WARNING

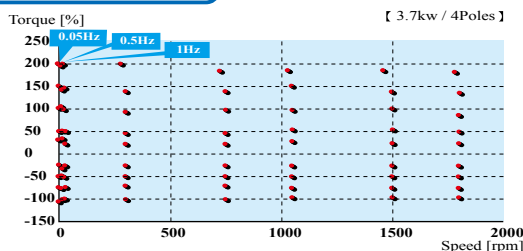
- Risk of electric shock.
- Read the manual before installation and operation.
- Do not open this cover while power is applied or for 10 minutes after isolating power.
- Ensure proper earth connection.

High reliability, ensuring smooth production.

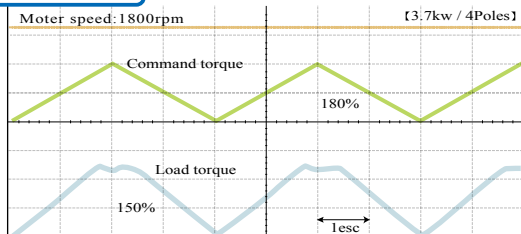
Excellent low-frequency torque performance for stable starting

The NS series VFD can deliver high torque characteristics even at low speeds, ensuring stable equipment startup.

NS-4A013-B torque characteristics



Torque limit precision



Ingenuous Structural Design:

The independent main cooling air duct ensures proper heat dissipation, while the maximized enclosed design effectively prevents internal dust accumulation, significantly enhancing the inverter's reliability.

Enhanced Environmental Adaptability:

The PCB substrate undergoes special protective treatment, endowing it with corrosion resistance, moisture resistance, and dust-proof properties. This maximizes the inverter's ability to operate efficiently in various harsh working conditions.

Maintaining Industry Benchmarks with better Cost-Efficiency

Larger Capacity Built-in Braking Unit:

The NS series inverters below 30kW come with a built-in braking unit, significantly reducing user costs.

Built-in Dual PID Regulators:

Supports combined functions of PID1 and PID2, allowing flexible switching and combination between the two PID parameter sets. The PID controller can also be independently opened as an external system.

Versatile Control Signal Interfaces:

The NS series is equipped with DI/DO, relay outputs, and a 24V user power supply. Up to 8 configurable input channels, 1 analog voltage input channel, 1 dual-purpose analog current/voltage input channel. Enabling expansion and application.

Compact and user-friendly.

Compact Product Design

The product features a small and compact form factor with an optimized internal layout. Compared to our company's previous models of the same specifications, the product volume has been reduced by an average of 33%, contributing to the miniaturization of supporting equipment and electrical cabinets.

Note: Taking the 15kW product as an example, the volume of NS-4A032-B is 74.17% of that of VM06-0150-N4.



Standard LED/LCD control panel for monitoring operation.

Equipped with a large-screen LED/LCD control panel users can observe real-time status, including operating frequency, output current, and rotation speed. For NS-4A061-B and higher specifications, the control panel has a multi-function digital keypad.



Panel for NS-4A061-B and above



Panel for NS-4A046-B and below

Convenient Wiring

Open-terminal design allows easy removal of control circuit terminals and main circuit terminal covers. Larger wiring apertures enable hassle-free cabling.

Effortless Parameter Copy function

NS series VFD support quick parameter duplication, making them ideal for batch configuration scenarios.

Note: Only models NS-4A061-B to NS-4A590-B features a standard control panel with a built-in parameter duplication function. Other models can achieve this function by purchasing an optional control panel.

Rich functionality for better performance

- Three-wire operation mode
- Terminal block stepping function with configurable step increment
- Continuous DC braking
- Automatic torque compensation function
- Graphic operation function

The product complies with the following directives and standards:

Directive	Directive name	Applicable standard
LV directive	Low Voltage Directive 2006/95/EC	EN61800-5-1 (2003)
EMC directive	Electromagnetic Compatibility Directive 2004/108/EC	EN61800-3 (2004)

Note: The EMC Directive requires the configuration of filters, and when installation conditions are met, compliance with Class C3 is achieved.

Industry Application

Mixer



Mixers are equipment used to blend various raw materials, including heterogeneous liquid mixing (immiscible liquids), solid-liquid mixing, and gas-liquid mixing. In chemical and pharmaceutical production, common types of mixers include: Propeller mixers, Turbine mixers, Impeller mixers, Anchor mixers, Paddle mixers. Different types of mixers are suitable for different industrial processes due to variations in their structure and performance.

1. **Propeller Mixers:** are typically large, low-speed mixers with a wide stirring diameter with speed range: 10–100 rpm, suitable for low-viscosity liquids (<2 Pa·s), emulsions, and suspensions with solid particle content below 10%.
2. **Turbine Mixers:** Speed range: 30–500 rpm, Ideal for gas-liquid mixing, liquid-liquid mixing, or applications requiring intense agitation, maximum liquid viscosity: ≤ 25 Pa·s.
3. **Impeller Mixers:** Speed range: 100–800 rpm, operate via forced mixing, primarily generating axial downward flow, best suited for low-viscosity liquid blending
4. **Anchor/Paddle Mixers:** Speed range: 1–100 rpm, designed for high-viscosity materials, is commonly used in coatings, paints, and cosmetics production in fine chemical industries

Control keypoints:

- The mixer load exhibits viscous effects during startup, requiring the variable frequency drive to provide high starting torque.
- Speed stability is maintained through torque and slip compensation functions according to different mixing materials and load variations during the mixing process.
- Harsh operating environments demand variable frequency drives with high corrosion resistance and stability.
- When overloaded, the anti-stall function automatically reduces motor speed to prevent overcurrent.

Key Advantages:

- Capable of delivering 150% starting torque at 0.5Hz.
- The inverter's circuit board features reinforced protective coating for enhanced adaptability to harsh environments.
- Torque auto-boost and slip compensation functions maintain stable speed and ensure continuous production.
- Anti-stall function automatically reduces motor speed to suppress over-current during excessive load conditions.
- Automatically reduces carrier frequency when temperature rises.

Ball Mill



Ball mills are primarily used in ceramic, cement, and metallurgical systems for material grinding/pulverization.

Main Components: Transmission device, Rotating cylinder, Feeding device, Discharge device, Electrical control system

Drive Mechanism: The motor drives the cylinder to rotate through the reducer and the surrounding or outer large gear transmission.

Standard Operation: The ball mill typically operates at a fixed speed. When the cylinder rotates, the materials and grinding media are lifted to a certain height under the action of centrifugal force and friction. They then fall along an approximate parabolic trajectory under gravity, impacting and grinding the materials in the cylinder. This process also generates a certain axial motion, ensuring uniform grinding of the materials.

Control keypoints:

A ball mill is a low-speed, heavy-duty equipment requiring substantial starting torque to initiate operation—even during jogging mode. The material motion inside the cylinder will vary significantly with rotational speed:

- At lower rotational speeds, the material cannot form sufficient falling height during descent, resulting in weak grinding force and low ball mill efficiency.
- At higher rotational speeds, the material no longer separates from the cylinder wall due to centrifugal force and instead rotates with the cylinder, eliminating any impact grinding effect from the grinding media. The minimum speed at which this occurs is called the critical speed.
- When the speed is between the two mentioned above, the material achieves maximum impact grinding efficiency upon descent, striking the material at the bottom of the cylinder most effectively. This speed is the optimal operating speed, typically 0.7–0.8 times the critical speed.

Key Advantages:

- Powerful starting torque ensures smooth motor operation.
- Multi-speed control - VFD enables easy setting of grinding time parameters for smarter operation.
- Auto energy-saving function monitors operations, reduces output voltage, and maximizes energy efficiency.
- Ingenious structure provides superior heat dissipation, adapting to harsh working environments.
- Automatically reduces carrier frequency when temperature rises.



Waste water treatment

Fans and pumps are the most common load equipment in the environmental protection industry. Taking waste water treatment as an example, the process is divided into several stages:

- **Pretreatment:** Screens intercept large debris to protect subsequent water pumps, pipelines, and equipment for normal operation.
- **Primary treatment:** Suspended solids in the waste water are settled and removed as much as possible.
- **Secondary treatment:** Consists of an aeration tank and a secondary sedimentation tank, where microorganisms break down most pollutants in the sewage into CO₂ and H₂O. This is the main treatment process in waste water treatment plants.
- **Advanced treatment:** Typically includes coagulation sedimentation, filtration, chemical dosing, and chlorination, with an outlet pump station.
- **Sludge treatment and disposal:** Mainly involves sludge thickening, digestion, fertilizer production, agricultural use, and landfill.

Among these processes, the blower of the aerator and submersible pumps in secondary treatment, as well as the sludge dewatering host (horizontal spiral conveyor sedimentation centrifuge) in the sludge dewatering system, are the core equipment in waste water treatment. However, variable frequency drives (VFDs) can be applied in almost every treatment stage to optimize the process and achieve significant energy savings.

Control key points:

- **Aeration Blower (Roots Blower):** The blower for aerators is typically a Roots blower, which is a positive displacement rotary blower and functions as a constant-flow source. Using a variable frequency drive (VFD) enables smooth, step-less speed regulation with high precision and a wide adjustment range.
- **Submersible Pumps & Gear Pumps (Constant Torque Loads):** Unlike centrifugal fans/pumps (which follow a square torque curve), submersible pumps and gear pumps are constant-torque loads with high starting currents.
- **Horizontal Spiral Conveyor Sedimentation Centrifuge:** This equipment separates suspensions using centrifugal sedimentation. The drive system employs a dual-VFD common DC bus control scheme. By monitoring the spiral torque and adjusting the differential speed via the auxiliary motor's frequency, the system maintains constant torque control to achieve precise separation of materials.

Key Advantages:

- **Smooth starting** effectively reduces inrush current impact on the power grid.
- **Significantly lowers energy consumption**, improves fan regulation performance, and reduces noise.
- **Common DC bus function** efficiently resolves motor regenerative energy recovery.
- **Fast dynamic response** – The variable frequency drive system offers rapid torque response and noticeably improved dynamic characteristics.
- **Auto energy-saving function** monitors operation, reducing output voltage to save energy.



Extruder

Extrusion molding is a fundamental processing technique in the chemical fiber industry. The raw material is melted into a homogeneous melt in the extruder, where pressure is built up during the melting process. Driven by the screw, the melt continuously moves forward and is then extruded through a die to form semi-finished products of various desired shapes. Subsequently, the process is completed with the assistance of specific auxiliary equipment to achieve extrusion molding or other operations.

Control key points:

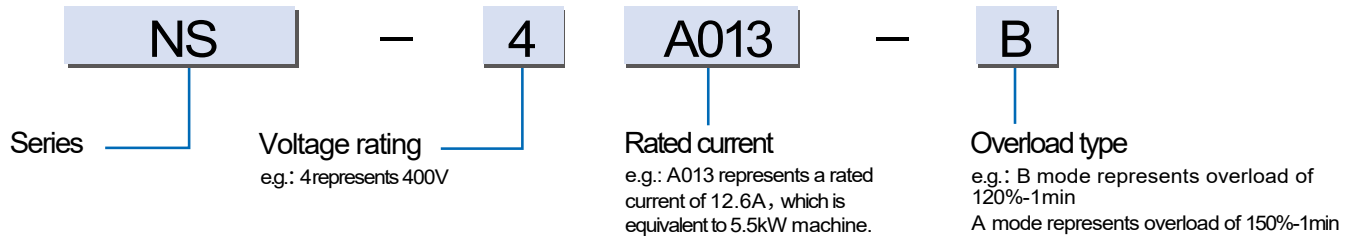
- An extruder typically consists of a main engine, auxiliary equipment, and a control system. The motor connects the main and auxiliary equipment via a shaft, requiring the variable frequency drive (VFD) to provide sufficient starting torque to ensure a smooth startup process for the extruder.
- Extruders are highly sensitive to temperature. Shortly after startup, if the internal temperature has not yet reached the required level and the material inside has not fully melted, starting the system may easily cause over-current. Generally, preheating is necessary before system startup.
- The pressure at the extruder's discharge outlet is controlled by the VFD's speed regulation. Pressure stability is managed either by the pressure gauge in the electrical cabinet or through the VFD's PID control.

Key Advantages:

- Low-frequency high-torque output, achieving 150% starting torque at 0.5Hz to ensure smooth startup.
- Sensor-less vector control mode.
- Equipped with torque compensation function and automatic slip compensation capability, which can compensate for motor slip and deliver powerful performance when starting force is insufficient, improving speed accuracy.
- Maximum sealed design effectively prevents dust accumulation inside, enhancing the inverter's reliability.
- Reinforced protective coating on the inverter circuit board enables better adaptation to harsh environments.

Technical information

Model Description



B mode parameter setting: F1320=2 overload: 120% -1min

Load application:



Fan



Pump



HVAC

A mode parameter setting: F1320=1 overload: 150% -1min



Mixers



Extruder



Conveyor



Centrifuge

Note: above model descriptions are only suitable for machines with voltage rating of 400V.

Standard Specification

Three-phase 400V Series

Item			Specifications																											
Model (NS-4A□□□-X)			003	004	006	009	013	017	024	032	038	046	061	076	092	115	152	173	211	253	304	386	426	472	540	590				
Output Specifications	B mode	Standard applicable motor[kW]	0.75	1.5	2.2	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	220	250	280	315				
		Rated capacity[kVA]※1	2.2	2.8	3.8	6.2	8.7	11.8	16.6	22.2	26.3	34	41	53	64	80	105	120	146	180	211	267	295	327	374	409				
		Rated current [A]※2	3.2	4.0	5.5	9.0	12.6	17	24	32	38	46	61	76	92	115	152	173	211	253	304	386	426	472	540	590				
		Overload current rating※3	120%-1min																											
		Output frequency range※4	0.05~240Hz (startup frequency variable from 0.05~60Hz)																											
	A mode	Standard applicable motor[kW]	0.4	0.75	1.5	2.2	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	200	220	250				
		Rated capacity[kVA]※1	1.3	2.2	3.3	3.8	6.2	9.4	13.2	17.3	22.2	26.3	34	41	53	64	80	105	120	146	175	211	249	267	295	327				
		Rated current [A]※2	2.6	3.2	4.8	5.5	9.0	13.6	19	25	32	38	46	61	76	92	115	152	173	211	253	304	360	386	426	472				
		Overload current rating※3	150%-1min																											
		Output frequency range※4	0.05~400Hz (startup frequency variable from 0.05~60Hz)																											
Input Power supply	Rated output voltage※5		3Φ 380V~4 60V																											
	Voltage-Frequency		3Φ 380V~4 60V、50/60Hz																											
	Allowable fluctuation		Voltage: -15%, +10% Frequency: ± 5% Voltage Unbalance: within 3%																											
	Source impedance		1% and above (When less than 1%, use reactor option)																											
Protection structure			Enclosure rating (IP20)																											
Cooling method			Natural cooling	Forced air cooling																										
Approximate weight※6 [kg]			2		4		6		12		15	25	35		45		65		100		125									
Carrier frequency※7			Sine wave PWM (Carrier frequency 1k~8kHz)																											
DC Reactor			Option																		Standard									

※1 Rated capacity is the capacity when output voltage is 400V

※2 When input voltage exceeds AC400V, the rated current will be derated based on output power.

※3 Allow overload (1min) for every 10 minute

※4 In vector control mode, the output frequency range will be reduced. For details, refer to the "Inverter General Specifications".

※5 Output voltage should not be larger than source voltage.

※6 Packaging weight included.

※7 The carrier frequency will vary depending on capacity and load conditions.

Standard Specifications

Single-phase 200V Series

Item		Specifications			
Model (NS-□□□□-H0)		0004	0007	-	-
Output Specs	Standard applicable motor[kW]	0.4	0.75	-	-
	Rated capacity[kVA]※1	1.0	1.6	-	-
	Rated current [A]	2.6	4.3	-	-
	Overload current rating※2	150%-1min			
	Output frequency range※3	0.05～400Hz（startup frequency variable from 0.05～60Hz）			
	Rated output voltage※4	200V 50/60Hz 220V 60Hz			
Input power supply	Voltage-Frequency	1Φ 200V～240V, 50/60Hz			
	Allowable fluctuation	Voltage: -15%, +10% Frequency: ± 5% Voltage Unbalance: within 3%			
	Source Impedance	1% and above (When less than 1%, use reactor option)			
Protection structure		Enclosure rating (IP20)			
Cooling method		Natural air cooling		-	
Approximate weight※5		2.0kg			
Carrier frequency※6		Sine wave PWM (Carrier frequency 1k～8kHz)			
DC Reactor		Option			

※1 Rated capacity is the capacity when output voltage is 200V

※2 Allow overload (1min) for every 10 minute

※3 In vector control mode, the output frequency range will be reduced. For details, refer to the "Inverter General Specifications"

※4 Output voltage should not be larger than source voltage.

※5 Packaging weight included

※6 The carrier frequency varies depending on capacity and load conditions.

Specifications for communication function

Electrical Characteristics		RS485 Communication	
Communication protocol		SANKENLD Protocol	Modbus-RTU Communication Protocol
communication type		2-wire bus-bar type (RS485 standard)	
Transmission distance		Total wire length is 500m, but have to connect to the terminal resistance	
Numbers of connected inverters		Max:32 sets	Max:247 sets※7
Connecting cable		Shielded twisted-pair is recommended	
Communication method		Semi-duplex communication	
Communication speed [bps]		57600/38400/19200/9600/4800/2400/1200 option	
Synchronous method		Start-stop synchronization	
Data format		ASCII code or BINARY	BINARY
Data length		8bit	
Stop bit length		1bit or 2bit	
Odd-even check		With (odd number, even number) without optional	
Error check		Sum check	CRC code check
End-of message code	ASCII	CR+LF/CR optional	None
	BINARY	None	

※ Note: A relay is required when the number exceeds 32

Standard Specifications

Applicable model			0.75kW~22kW	30kW~315kW
Control mode			Vector control / sensor-less vector control V/f control ^{※5}	
Drive performance ^{※1}	Control range	No PG Sensor	0.25~240Hz (1: 200/50Hz reference) ^{※2}	
	Response/Precision	No PG Sensor	Response characteristic: 100rad/sec Precision: ±0.5%	
Control specification	Frequency	Digital setting	0.01Hz	
	Setting Resolution	Analog setting	0.2% (10bit 0~10V, 4~20mA) ,0.4% (9bit 0~5V) max output frequency	0.05% (12bit 0~10V, 4~20mA) 、0.1% (11bit 0~5V) max output frequency
	Frequency Precision	Digital setting	Output frequency ±0.01% (at-10°C~40°C)	
		Analog setting	max output frequency±0.2% (at 25±10°C) ^{※3}	
	DC braking		Starting frequency (0.05~20Hz) , operation time (free setting) , braking force (1~10 grade)	Starting frequency (0.05 ~ 20Hz) , operation time (0.1 ~ 10sec) , braking force (1 ~ 10 grade)
	Additional functions		Instantaneous re-start, Speed tracking startup, Multi-Speed Operation, Frequency Avoidance, Alarm Auto-Recovery, PID Control, Simple Graphic Operation, Energy-Saving Operation, Other Advanced Functions	
Operation specification	Start/stop setting		Operation panel, serial communication (RS485, Modbus), control circuit terminals	
	Frequency	Digital setting	Operation panel, serial communication (RS485, Modbus), terminal block setting	
	Setting Resolution	Analog setting	2 channels, 0~5 V, 0~10V,4~20mA, potentiometer (5kΩ、0.3Wabove)	
	Input signal	Control signal	Frequency ref, Forward run command, Reverse run command, Accel/Decel time setting, Free-run stop/ Fault reset,Emergency stop, Jog mode selection, Step frequency setting, Run signal hold and other functions	
		Digital input	5 freely configurable channels, DI1 support pulse input	8 freely configurable channels
		Analog input	1 channel voltage, 1 channel for either current or voltage	
	Output signal	Contact output	Alarm Signals & Multi-Function Contact Output: 1channel (1C contact, AC 250V, 0.3A)	Alarm Signals & Multi-Function Contact Output: 2channel (2C contact, AC 250V, 0.3A)
		Monitor signal	Operating, frequency match, overload warning, under-voltage, frequency reached and etc.	
		Digital output	open-collector output with 1 freely configurable channel (supports pulse output)	open-collector output with 3 freely configurable channels
		Analog output	2 channels [1 channel voltage 0~10V / 1 channel current 4~20mA]	
LED/LCD Display			Frequency, Output Current, Motor Speed, Load Factor, Output Voltage, Pressure, Unit less value (DC voltage, Output power) , Run, Alarm	
Communication I/F			RS485 port, SANKENLD Protocol, Modbus-RTU	
External power supply output			DC24V, 50mA (Control Terminal)	
Protection function			Current limiting, Over-current cutoff, Motor overload, External thermistor, Under/Over voltage, Momentary power failure, Phase loss and etc.	
Warning function			Over-voltage protection, Accel/Decel Current limit, Braking resistor overheat, Overload, Heat sink overheat	
Environment	Ambient temperature		-10°C~-+50°C (frost-free) heavy:overload; -10°C~-+40°C(frost-free) light:overload	
	Storage temperature		-20°C~-+65°C ^{※4}	
	Relative humidity		95%RH or below (condensation-free)	
	Elevation		3000m or below(current decreases when above 1000m)	
	Vibration		5.9m/s²(0.6G) or less (JIS C 60068-2-6 standard; IEC60068-2-6)	
	Gas medium		Indoor (without corrosive gas, flammable gas, oil mist, dust and etc.)	

※1 Varies with environment, condition, and different motors

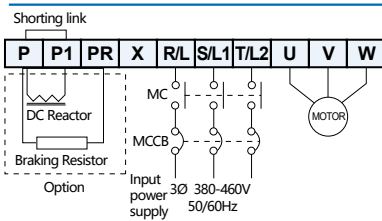
※3 The maximum output frequency is at 5V, 10V, and 20mA.

※5 Vector control only applicable for 400V series, 75kW below.

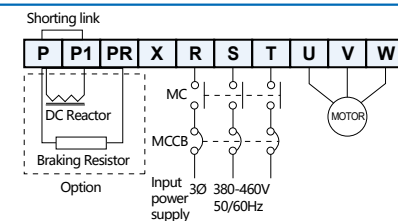
※2 When 2-pole motor is set, the maximum value of frequency setting range is 120Hz.

※4 Applicable Temperature for Short-Term Storage During Transportation.

Main Circuit Terminal Connection Diagram (400V)

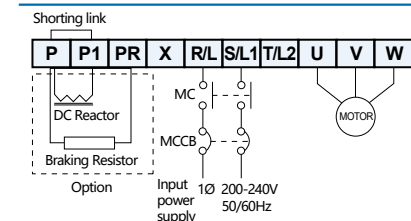


Applicable model: NS-4A003-B ~ NS-4A006-B

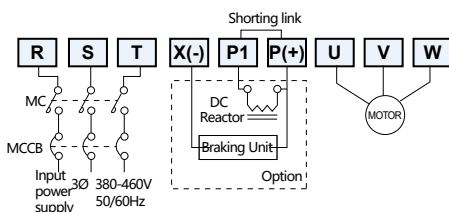


Applicable model: NS-4A009-B ~ NS-4A061-B

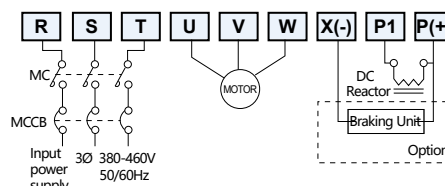
Connection Diagram (200V)



Applicable model: NS-0004-H0, NS-0007-H0



Applicable model: NS-4A076-B ~ NS-4A211-B



Applicable model: NS-4A253-B ~ NS-4A590-B

Caution: For single-phase 200V series, connect the input power lines L and N to terminals R/L1 and S/L2 respectively, while leaving terminal T/L3 open/unconnected.

Terminal wiring diagram

Fig.1

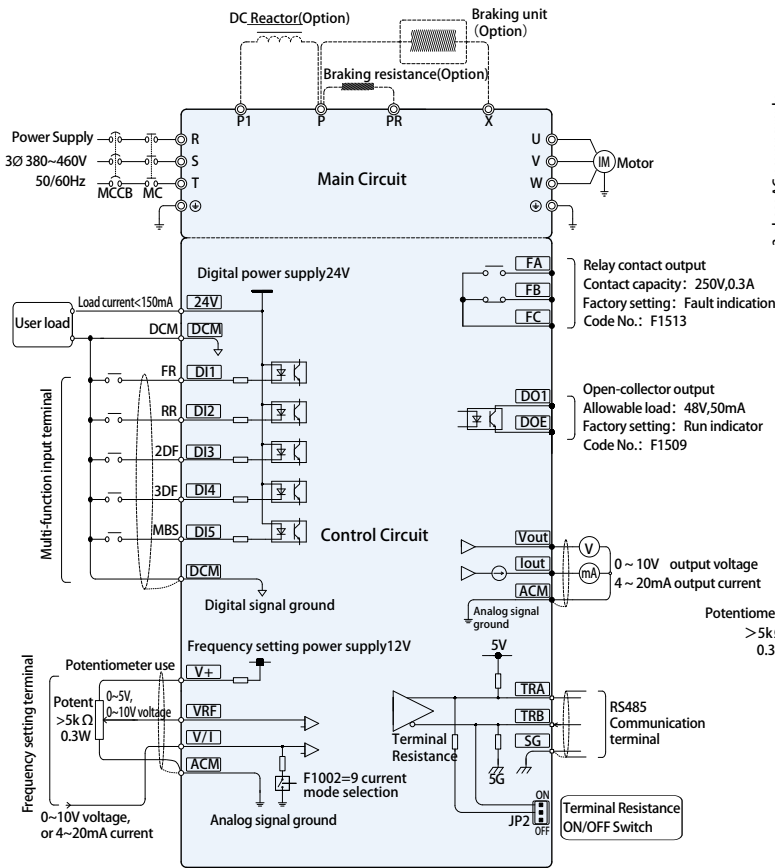
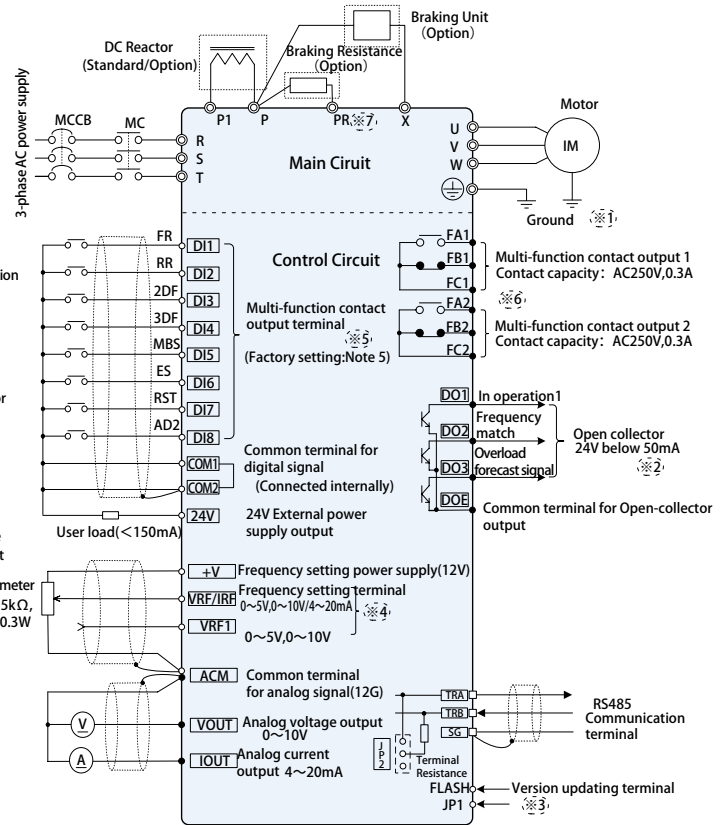


Fig.2



Applicable model: NS-4A003-B ~ NS-4A046-B, NS-0004-H0, NS-0007-H0

Applicable model: NS-4A061-B ~ NS-4A590-B

- ◎ Main circuit terminal
- Control circuit input terminal
- Control circuit output terminal
- Communication circuit terminal
- Shielded cable

Fig.2 Description:

- Note 1: The Inverter and motor must be grounded before use.
- Note 2: This output terminal is a multi-function terminal; it can set different functions through function code: F1509-F1511.
- Note 3: This is a terminal used for version updates, do not use under normal circumstances.
- Note 4: Please switch by function code F1002. It can also be used as input terminal for different feedback signals.
- Note 5: This input terminal is a multi-function terminal; it can set different functions through the function code: F1414-F1421.
- Note 6: Multi-function contact output terminal is also a multi-function terminal; it can set different functions through the functions code F1513-F1514.
- Note 7: Only NS-4A061-B can directly connect braking resistors, models above require an optional braking unit.

Wiring Notice:

- Before wiring, ensure VFD input power supply are completely isolated.
- During wiring, ensure that wire cuttings do not enter the inverter interior.
 - A circuit breaker must be installed between the power supply and input terminals (R, S, T). For enhanced system safety, an electromagnetic contactor (MC) should be connected between the circuit breaker and power supply.
 - Ensure correct wiring connections between the inverter output terminals (U, V, W) and the motor.
 - Excessive inverter-to-motor cable length increases harmonic leakage current, potentially interfering with peripheral devices. Maximum recommended distance: 200m (extendable to 350m with premium motors/cables in field applications).
 - For vector control applications: Maximum cable length<100m (*When exceeding 30m, perform Auto-Tuning 2*)
 - Important Notice on Surge Voltage: The inverter's switching elements generate surge voltages that superimpose on the motor. Particularly for 400V-class motors, excessive cable length will degrade insulation performance.

Overall Dimensions

Model	Dimensional Outline	External Dimensions (mm)						
		H	H1	W	W1	D	d	t
NS-4A003-B/NS-0004-H0 NS-4A004-B/NS-0007-H0 NS-4A006-B NS-4A009-B NS-4A013-B NS-4A017-B NS-4A024-B NS-4A032-B NS-4A038-B NS-4A046-B		130	121	115	106	166	4.5	5
NS-4A061-B NS-4A076-B NS-4A092-B NS-4A115-B NS-4A152-B NS-4A173-B NS-4A211-B		225	214	140	129	150	5.5	6
NS-4A253-B NS-4A304-B NS-4A386-B NS-4A426-B NS-4A472-B NS-4A540-B NS-4A590-B		300	285	200	185	175	6.5	6
NS-4A061-B		370	356	240	200	200	7	-
NS-4A076-B		390	376	280	240	200	7	-
NS-4A092-B		480	465	320	240	260	8	-
NS-4A115-B		600	582	320	240	270	10	-
NS-4A152-B		680	660	340	260	330	10	-
NS-4A253-B		760	742	380	300	360	10	-
NS-4A304-B		940	915	460	400	360	12	-
NS-4A386-B		960	935	540	460	390	14	-
NS-4A426-B								
NS-4A472-B								
NS-4A540-B								
NS-4A590-B								

Control method 1 applicable for model type: NS-4A061-B and above.

Program key

- In status display mode, switch from status display to function code display mode.
- In function code display mode, return to the previous menu state.

Stop key

- Stop operation
- Under alarm state, can reset alarm signal.

Drive key

- Initiate forwards or reverse operation.

Clear/Display switch key

- Under display mode: toggle 7-segment monitor display content.
- Under function code display mode: clear entered data.

Numeric key(0-9)

- set frequency in status display mode
- enter code data in function code display mode

Enter/Confirm key

- Confirm entering values from the 7-segment display.

Dot key

- Enter decimal point
- Or enter hexadecimal codes A-F using numeric key combinations.

Step key

- Adjust frequency (increase/decrease) in status display mode
- Adjust code value (increase/decrease) in function code display mode

Control method 2 applicable for model type: NS-4A003-B~NS-4A046-B

Main screen

- The main screen features a 5-digit, 7-segment LCD display, capable of showing: Real-time operating frequency, Output current, Motor speed, Load rate, Output voltage, Pressure value, Set-point value, Alarm/fault information.

Drive key

- Initiate forwards or reverse operation.

Left key

- Switch main screen display content
- Toggle editable digits in function code display mode

Clear/Display switch key

- In Status Display Mode: Switch from status display mode to function code display mode
- In Function Code Display Mode: Return to the previous menu state
- In Function Code Display Mode: Clear the entered content

Lower key

- Scroll down through function codes in display mode

Secondary screen

- The secondary screen features a 5-digit, 7-segment LCD display segment code, indicating real-time parameters including output voltage, DC voltage, active power, apparent power, and heat sink temperature.

Stop key

- Stop operation
- Under alarm state, can reset alarm signal.

Upper key

- Scroll up through function codes in display mode
- Parameter entry confirmation prompt

Left key

- Switch main screen display content
- Toggle edit digits in function code display mode

Enter/Confirm key

- Enter displayed values on the screen to the machine.



Optional

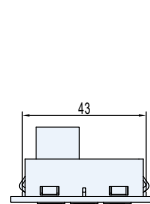
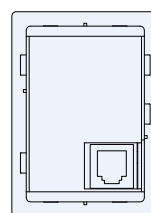
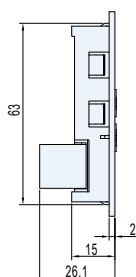


External operation panel

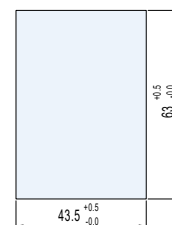
Model: SOP-N1

Function:

- Designed for control panel front-mount installation
- Features parameter copy functionality
- Package includes:
 - 1 × operator panel
 - 1 × 1.5m panel extension cable



Cutout dimensions (mm)

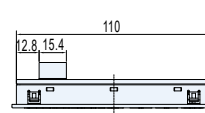
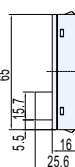
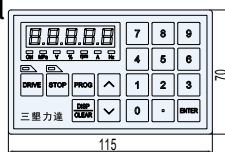


External operation panel

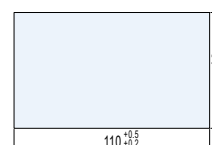
Model: SOP-N2

Function:

- Designed for control panel front-mount installation
- Features parameter copy functionality
- Package includes:
 - 1 × operator panel
 - 1 × 1.5m panel extension cable



Cutout dimensions (mm)



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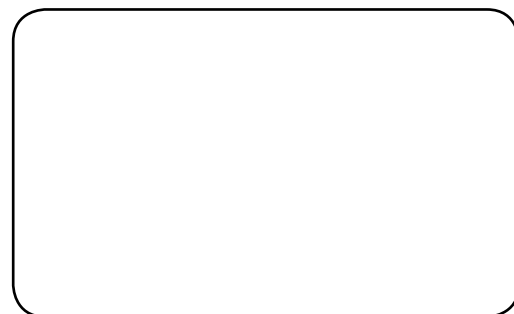
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ROOM 301.

Plant

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VERSION: KL1-V13CD4-180500MD

DATE: 2018.05

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