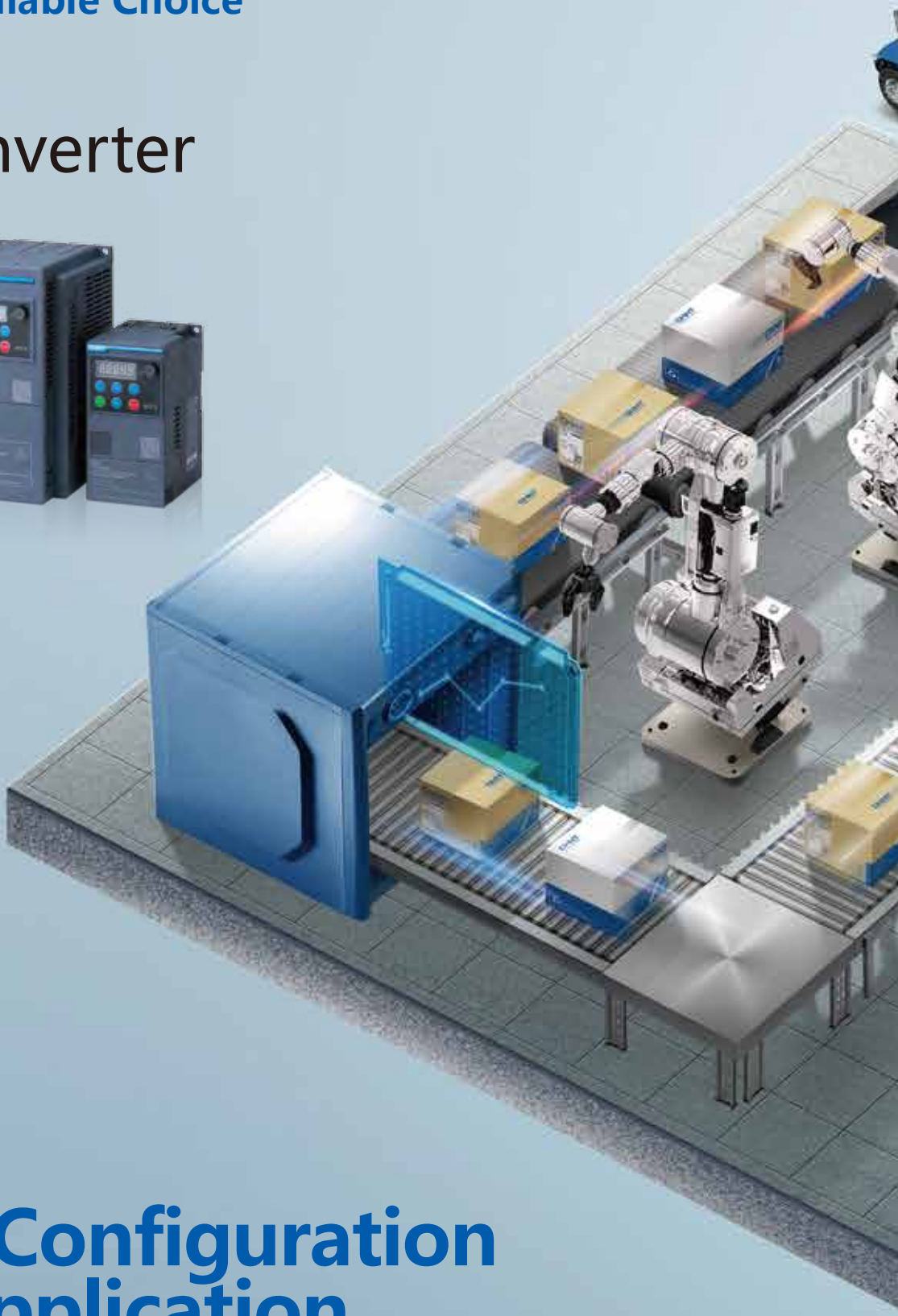
CHINT ELECTRIC | Next series

The Next Reliable Choice

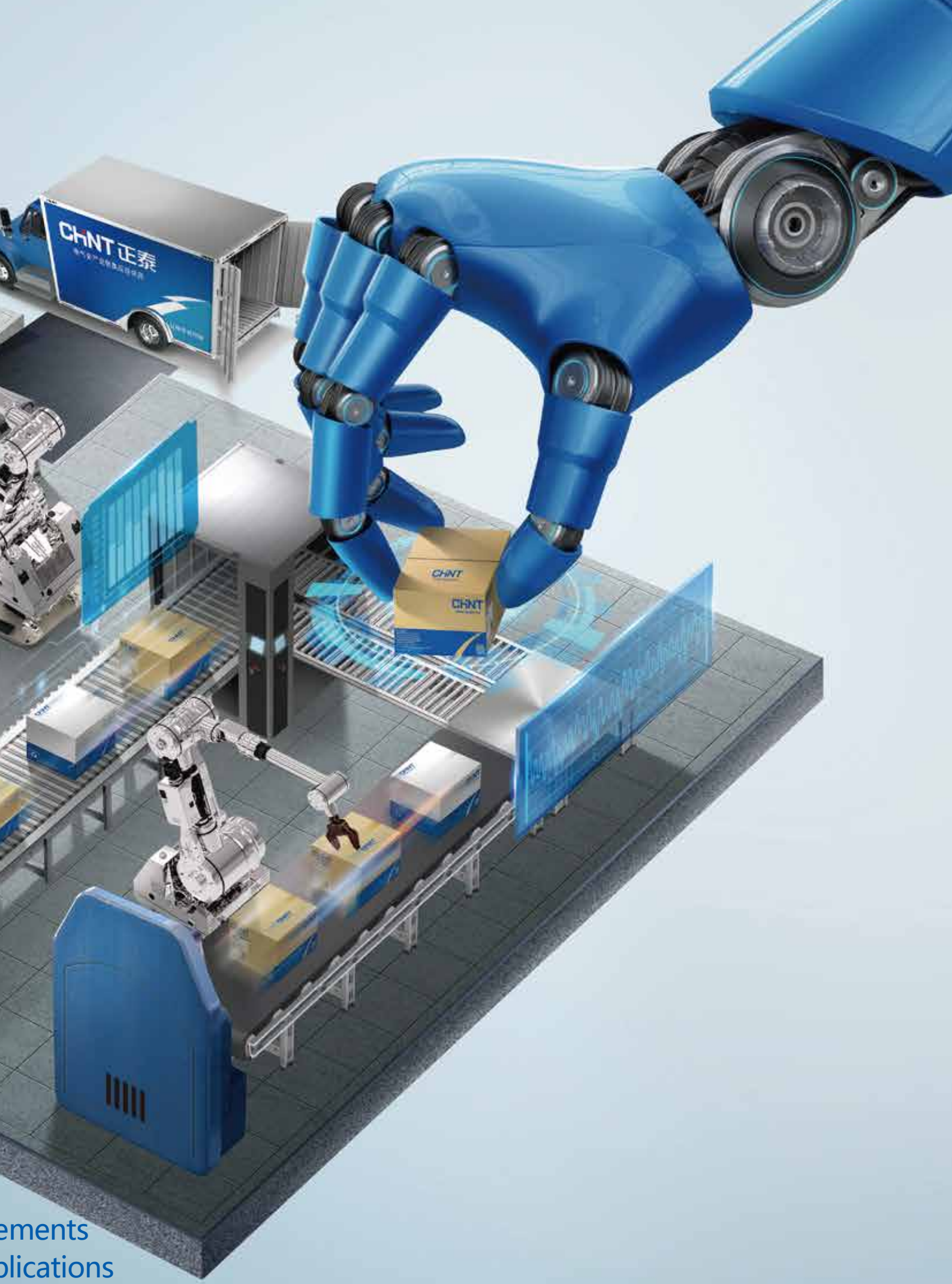
NVF5 Inverter



Smart Configuration
Easy Application

Three levels user parameter menus
Excellent motor control performance

Satisfy different user require
Ideal for many machine app



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CHINT ELECTRIC | Next series

Inverter

Overview

Application range

- NVF5 series universal inverter adopts a vector control technique without speed sensors, featuring small size, light weight, easy operation, and excellent performance. It' s widely used for various small and medium machineries, such as those for air conditioning, cooling, building water supply, logistics, and ceramics.

Main parameters

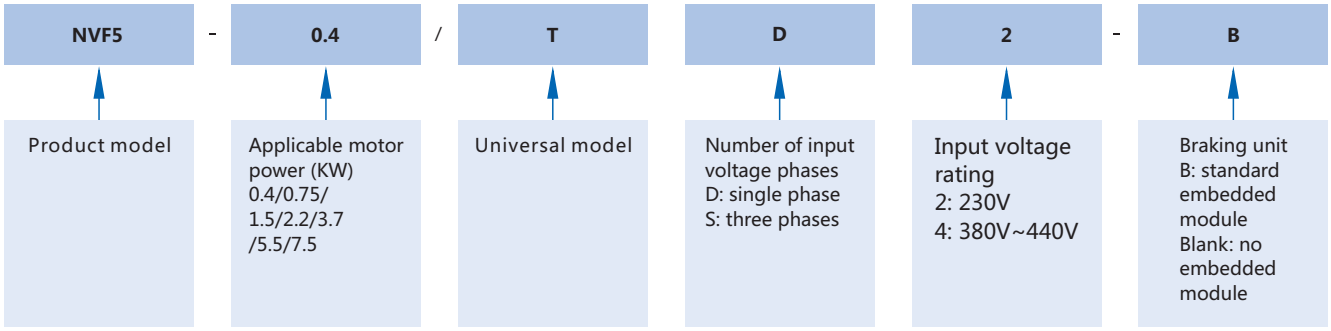
- Rated operating voltage (V): single-phase 230V (±15%), three-phase 380V (-15%) ~ 440V (+15%)
- Input frequency range (Hz): 47~63Hz
- Output frequency range (Hz): 0Hz~400Hz
- Control method: Vector control without PG, V/F control, torque control
- Start torque: 150% of rated torque at 0.5Hz
- Overload capacity: 150% of rated current for up to 1minute, and 180% of rated current for up to 2 seconds
- Speed range:Open-loop vector control 1:100; V/F 1:50
- Speed control accuracy: open-loop vector control ±0.5% of peak speed

Operating conditions and installation conditions

Type	Operating conditions and installation conditions
Temperature	Operating temperature: -10℃~+45℃, 1% derating for every degree between 45~50℃
Humidity	Air relative humidity ≤95%, non-condensing
Elevation	Rated power output of the inverter at an elevation below 1000m.Beyond this elevation, 10% derating is applied for each additional 1000m.
Shock and vibration	The inverter should not fall or be suddenly impacted. Do not install it in a site subject to frequency vibrations.
Protection against water and water vapor	Do not install it in a site that may be exposed to water spray or dew.
Electromagnetic radiation	Please keep it away from electromagnetic radiation sources.
Atmospheric pollution	Do not install it in a site with atmospheric pollution such as dust powder or corrosive gas.
Storage environment	Do not install it in a site with direct sunlight, oil mist, steam, or vibration.

Designation

Product naming rules



NVF5 series inverter selection table

Power voltage	Catalog Number	Power capacity (kVA)	Rated input current (A)	Rated output current (A)	Maximum applicable motor (KW)	Braking unit
Single phase AC 230V	NVF5-0.4/TD2	1.0	5.4	2.5	0.4	Optional embedded unit
	NVF5-0.4/TD2-B					
	NVF5-0.75/TD2	1.9	10.3	5	0.75	
	NVF5-0.75/TD2-B					
	NVF5-1.5/TD2	2.9	15.5	7.5	1.5	
	NVF5-1.5/TD2-B					
	NVF5-2.2/TD2	4.2	20	10	2.2	
	NVF5-2.2/TD2-B					
Three phase AC 380V~440V	NVF5-0.4/TS4-B	0.8	2.3	1.5	0.4	Standard embedded unit
	NVF5-0.75/TS4-B	1.5	3.4	2.7	0.75	
	NVF5-1.5/TS4-B	3.0	5.1	4.2	1.5	
	NVF5-2.2/TS4-B	4.0	6.6	5.8	2.2	
	NVF5-3.7/TS4-B	5.9	12.1	10.5	3.7	
	NVF5-5.5/TS4-B	8.6	13.1	13	5.5	
	NVF5-7.5/TS4-B	11.0	22.2	17	7.5	

Technical specification

Item		Specification
Input	Voltage range	Single-phase 230V (±15%)
		Three-phase 380V (-15%)~440V (+15%)
	Frequency range	(47~63) Hz
Output	Voltage	0~rated input voltage
	Frequency	(0~400) Hz
	Overload capacity	150% of rated current for up to1minute, and 180% of rated current for up to 2 seconds
Main control function	Control mode	SVC control, V/F control, torque control
	Start torque	SVC control: 150% of rated torque at 0.5Hz
		V/F control: 100% of rated torque at 1Hz
	Carrier frequency	1kHz~15kHz
	Speed range	SVC: 1:100; V/F: 1:50;
	Speed control accuracy:	Vector without PG: ±5% of peak speed
	Frequency resolution	Digital setting: 0.01Hz; analog setting: maximum frequency×0.5%
	V/F curve	Linear V/F curve; (2, 1.7, 1.2, multi-point) power reduced torque curve
	Acceleration / deceleration curve	4 types of linear acceleration / deceleration curve; S-curve acceleration / deceleration
Distinct features		Over-current stall protection, over-current stall protection, torque limit, speed tracking, simple PLC, process PID, preset speed control, automatic slip compensation, automatic torque boost, pre-flux function, instant power cut function
Peripheral interface	Digital input	5 multifunctional digital programmable input (including 1 circuit of high-speed pulse input terminal)
	Digital output	1 multifunctional digital programmable output (speed up to 100kHz)
	Analog input	2 analog signal input, (0~20)mA, (4~20)mA current signal input or (0~10)V, (-10~+10)V voltage signal input can be selected
	Analog output	1 analog signal output, (0~20)mA, (4~20)mA current signal output or (0~10)V, (-10~+10)V voltage signal output can be selected
	Relay output	A pair of NO contacts and a pair of NC contacts, contact capacity: 3A/250V
	Communication interface	Standard RS485 communication. Can be extended with communication protocols such as ETHERNET, PROFIBUS-DP, or CANOPEN. External operation panel can be connected;
	Braking function	Embedded braking unit is optional for single-phase models, and standard for three-phase models.
	Operation panel	Display of over 20 parameters including frequency setting, output frequency, output voltage, and output current.
Protection function		Protections against over-current, over-voltage, under-voltage, overheat, overload, input phase loss, output phase loss, load loss, and motor ground short circuit.
Structure	Protection degree	Standard IP 20, IP 22 with optional top protective cover
	Cooling method	Fan cooling
Material		Full series of molded case structure
Installation method		DIN rail type and wall type installation for models ≤2.2kW (only wall installation is available for single-phase 2.2kW models); wall type installation for models > 2.2kW

Name and functions of different parts

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Control panel

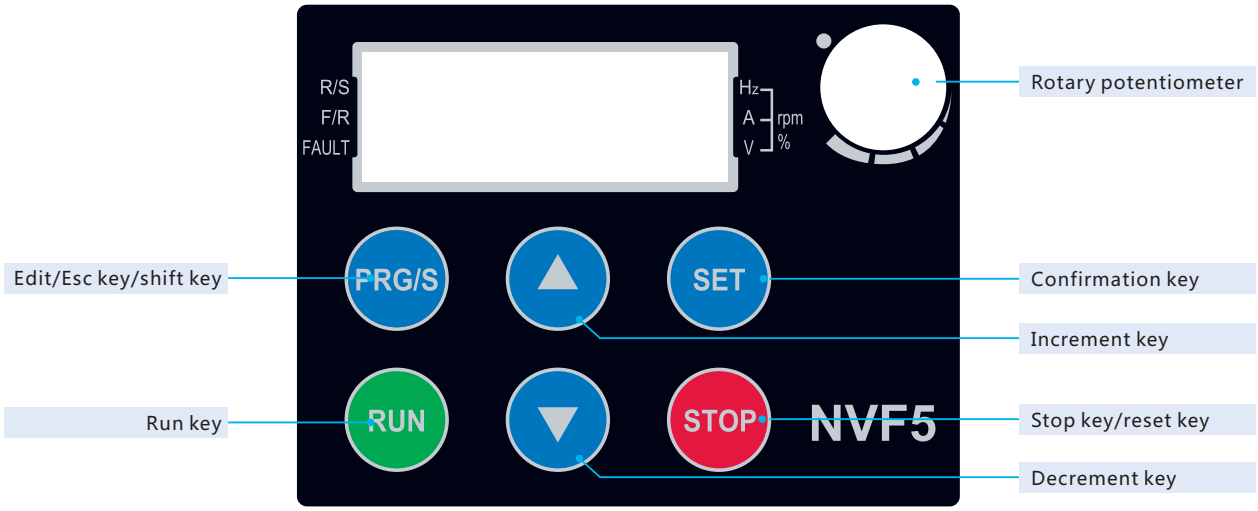


Table 4.1 Functional definition of keys

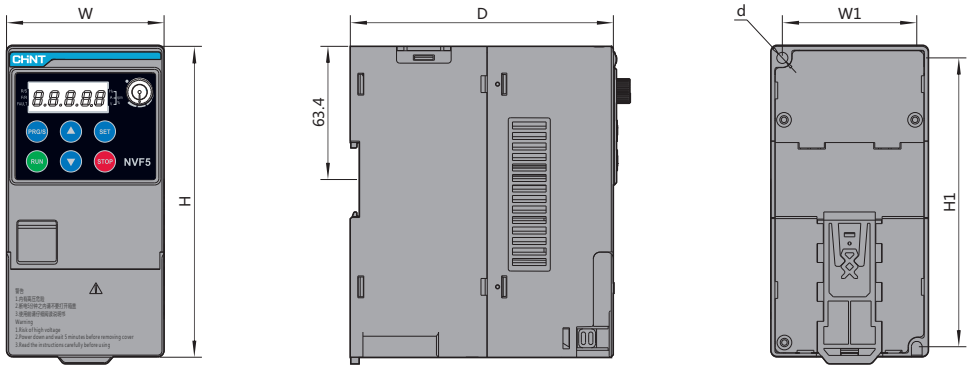
Key	Functional description
PRG/S	Press and hold the PRG/S key until the flashing status changes to switch the function.
	PRG function: Enter or exit a parameter group in parameter configuration state. Shift function: Change the position during menu editing. Cyclic left shift: Change displayed parameter in main screen.
RUN	Run key
STOP	Stop key in normal status and reset key in fault status.
▲	Increment key (can be used to change group number, index number, and parameter value). After energization of the inverter, ▲key can be used to directly increase the frequency setting. The frequency change rate while the key is held is dependent on F0.12.
▼	Decrement key (can be used to change group number, index number, and parameter value). After energization of the inverter, ▼key can be used to directly change the frequency setting. The frequency change rate while the key is held is dependent on F0.12.

Key	Functional description	
PRG/S + SET	Menu mode selection (F7.11) 1. Simple menu mode (U-1); 2. Custom menu mode (U-2); 3. Engineering menu mode (U-3).	
PRG/S + ▲	The system is at main interface	Lock key
	In Level 1 menu in custom menu mode	Add custom parameters
PRG/S + ▼	The system is at main interface	Unlock key
	In Level 1 menu in custom menu mode	Delete custom parameters

Product installation size and weight

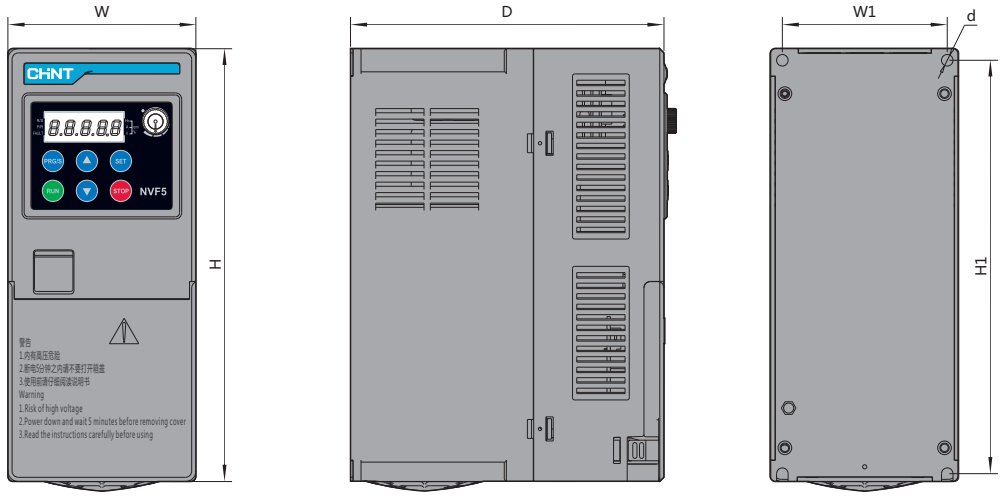
NVF5-0.4/TD2 ~ NVF5-2.2/TD2 and NVF5-0.4/TS4-B ~ NVF5-2.2/TS4-B

Appearance and installation size drawings



NVF5-3.7/TS4-B ~ NVF5-7.5/TS4-B

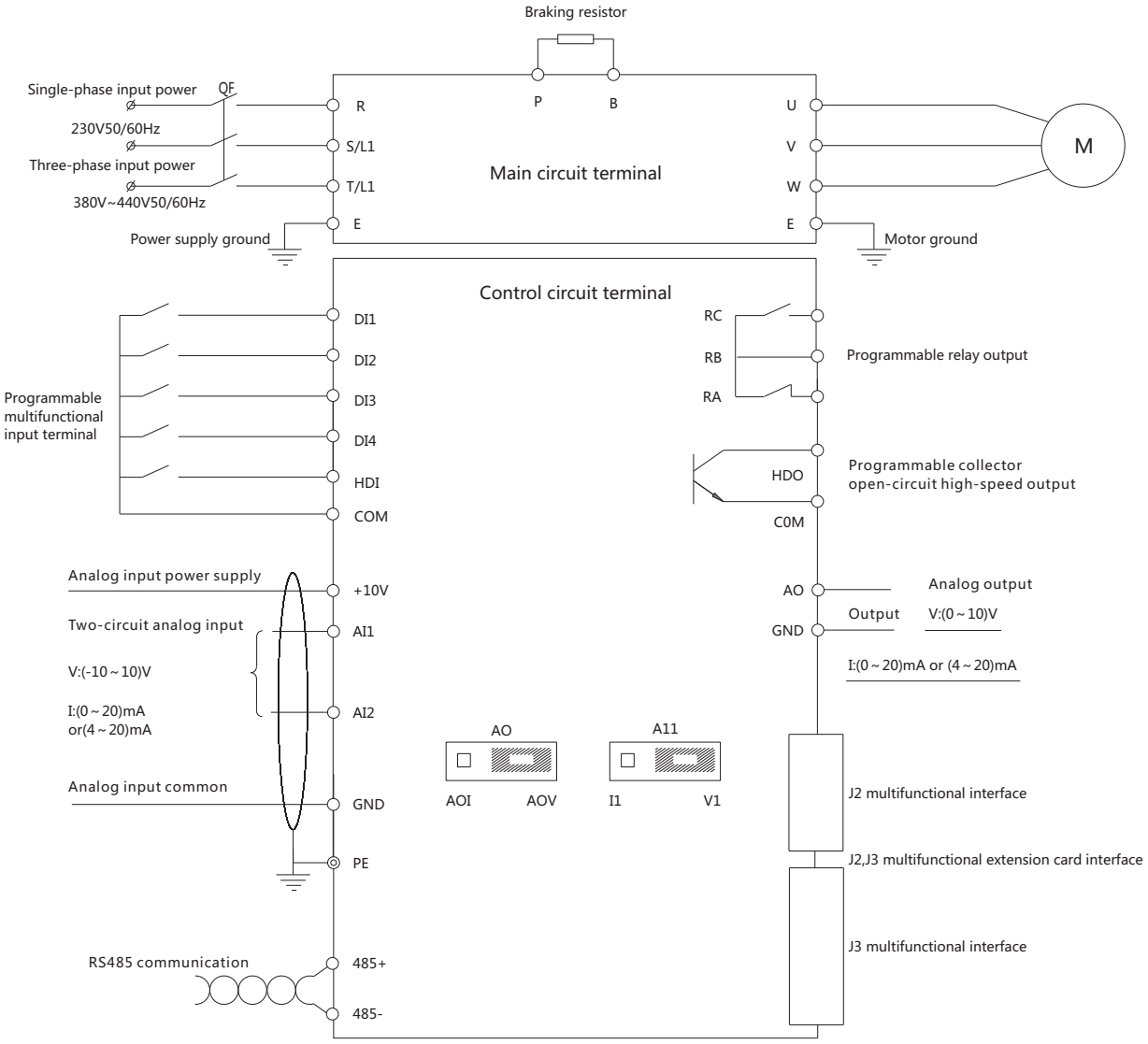
Appearance and installation size drawings



Installation size and product weight (unit: mm)

Product specification	W	H	D	W1	H1	Installation hole d	Weight kg
NVF5-0.4/TD2	75	148	125.2	64	137.5	Φ5.3	1.2
NVF5-0.4/TD2-B							
NVF5-0.75/TD2							
NVF5-0.75/TD2-B							
NVF5-1.5/TD2							
NVF5-1.5/TD2-B							
NVF5-2.2/TD2	75	148	146.7	64	137.5	Φ5.3	1.25
NVF5-2.2/TD2-B							
NVF5-0.4/TS4-B	75	148	125.2	64	137.5	Φ5.3	1.03
NVF5-0.75/TS4-B							
NVF5-1.5/TS4-B							
NVF5-2.2/TS4-B							
NVF5-3.7/TS4-B	89.5	206	149.2	78.5	196.8	Φ5.5	1.79
NVF5-5.5/TS4-B							
NVF5-7.5/TS4-B	118	216	163.4	105	205	Φ6	2.78

Standard Product Wiring Diagram



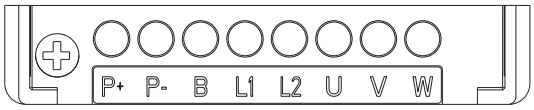
AO dip switch: Left position: (0~20) mA or (4~20) mA analog current output; Right position: (0~10) V analog voltage output.
AI1 dip switch: Left position: (0~20) mA or (4~20) mA analog current input; Right position: (0~10) V analog voltage input.
AI2: The current output needs to be customized.

Control circuit terminal description

Type	Terminal imprint	Name	Terminal function description	Specification
Power supply	+10V	+10V power supply	Drive supplied +10V power supply	Maximum output current is 5mA
	GND	+10V power ground	Analog signals and +10V power reference ground	Electrically isolated from COM、CME
Analog input	AI1	Analog single-end input Ai1	Receive single-end input of analog voltage or current. The voltage/current input is selected with the dip switch on the control panel (reference ground: GND)	Input voltage range: (-10~+10) V (Input resistance: 45kΩ) Resolution: 1/4000 Input current range: (0~20) mA or (4~20) mA Resolution: 1/2000
	AI2	Analog single-end input Ai2	Receive single-end input of analog voltage or current. Voltage input as default, can be customized depending on customer needs (reference ground: GND)	
Analog output	AO	Analog output	Provide analog voltage/current output. The output voltage and current are selected with the dip switch on the control panel. The factory default setting is voltage output. See description about functional code F6.11 (reference ground: GND)	Voltage output range: (0~10) V Current output range: (0~20) mA or (4~20) mA
Communi-cation	485+	RS485 communication interface	Positive end of 485 differential signal	Positive end of 485 differential signal Standard RS485 communication interface Please use twisted pair cables or shielded cables
	485-		Negative end of 485 differential signal	
Multifun-ctional input terminal	DI1	Multifunctional input terminal 1		
	DI2	Multifunctional input terminal 2	Can be programmed as switch input terminals with multiple functions. The switch input terminals (F5 group) provide functional description about F5.01~F5.07 input terminals.	Optical coupling isolated input impedance: R = 3.3kΩ; X1~X6 highest input frequency: 200Hz; The highest input frequency is 100kHz when HDI is used as the high-speed impulse input; The input voltage is (+20~+24)V if external power is used (common end: COM)
	DI3	Multifunctional input terminal 3		
	DI4	Multifunctional input terminal 4		
	HDI	Multifunctional input terminal HDI (pulse input)		
Multifun-ctional	HDO	Open-circuit collector pulse	Can be programmed as switch output terminals with multiple functions. The switch output terminals (F6 group) provide functional description about F6.02 output terminals (common end: COM)	Output frequency range: depending on F6.18, 100kHz at most
Power supply	+24V	+24V power supply	External +24V power supply	Maximum output current: 100 mA
	COM	+24V power common end	Reference ground of +24V power supply	COM and GND internal isolation
Relay output terminal	RA	Relay output	Can be programmed as relay output terminals with multiple functions. The switch output terminals (F6 group) provide functional description about F6.03 output terminals.	RA-RB: NC RB-RC: NO Contact capacity: NO 5A /NC 3A 250V(AC) See F6 for use method. The over-voltage level of input voltage at the relay output terminal is II.
	RB			
	RC			

Main circuit terminal wiring description

Single-phase 230V series (NVF5-0.4/TD2~2.2/TD2)



Three-phase 380V series (NVF5-0.4/TS4-B~7.5/TS4-B)

Main circuit terminal functional description

Terminal symbol	Terminal name and description
R、S、T	AC power supply input terminal, connected to three-phase power frequency supply 380V~440V
L1、L2	AC power supply input terminal, connected to single-phase power frequency supply 230V
P、B	Connected to braking resistor terminal (three-phase power frequency supply 380V~440V)
P+、B	Connected to braking resistor terminal (single-phase power frequency supply 230V)
P-	Single-phase 230V series model DC bus negative voltage reference terminal
U、V、W	AC output terminal, connected to motor
⏚	Ground terminal, for grounding of inverter

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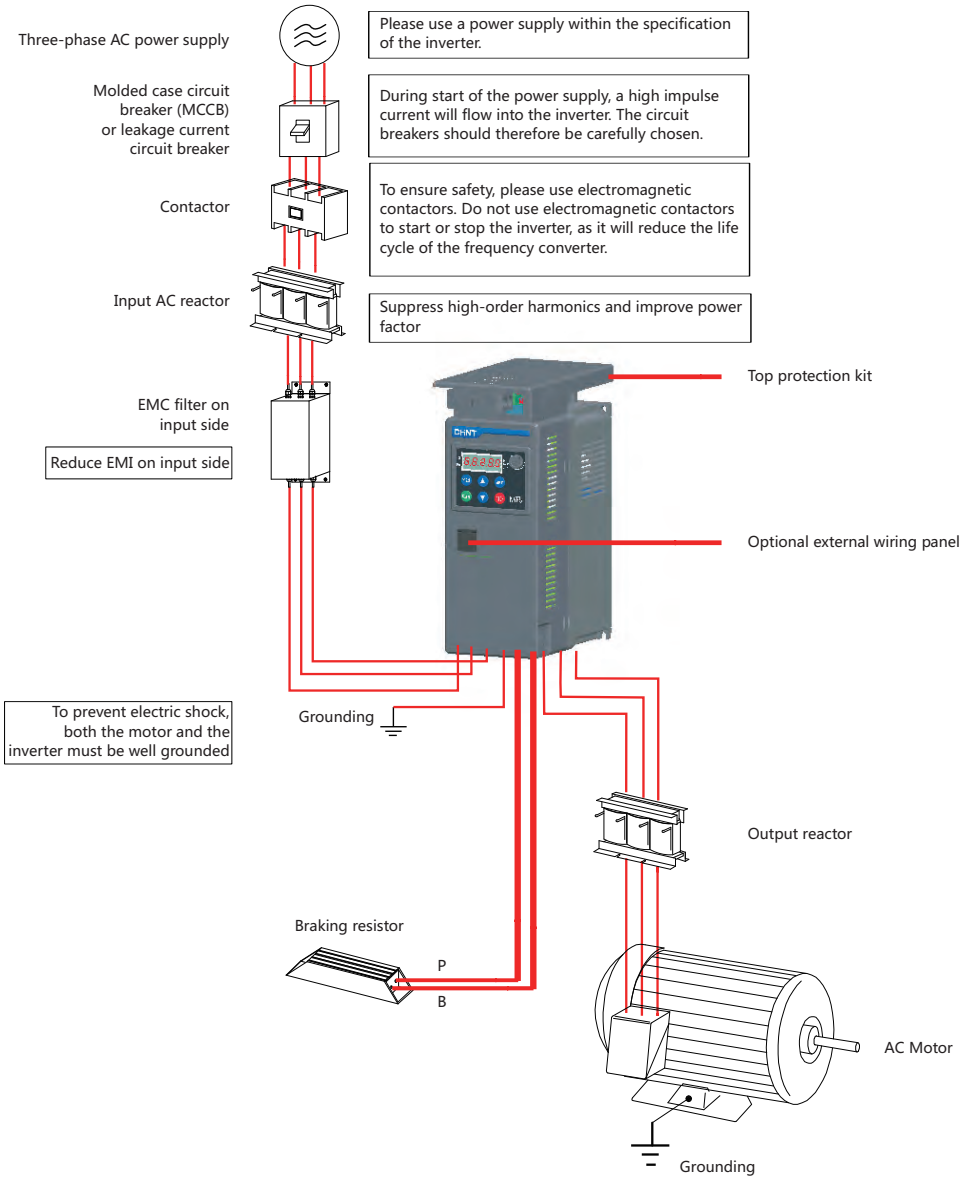
Annex 1. Peripherals



Annex 2. Input reactor selection

Power voltage	Inverter model	Rated input current A	AC input reactor model
Three-phase AC380V~440V	NVF5-0.4/TS4-B	2.3	ACL-00037-AL8M40-2L
	NVF5-0.75/TS4-B	3.3	ACL-00037-AL8M40-2L
	NVF5-1.5/TS4-B	5.1	ACL-00050-AL4M20-2L
	NVF5-2.2/TS4-B	6.6	ACL-00075-AL3M00-2L
	NVF5-3.7/TS4-B	12.1	ACL-0010-AL2M20-2L
	NVF5-5.5/TS4-B	13.1	ACL-0015-AL1M42-2L
	NVF5-7.5/TS4-B	22.2	ACL-0020-AL1M08-2L

Annex 3. Output reactor selection

Inverter model	Rated output current A	Minimum cable length of selected output reactor (m)	Model of output AC reactor
NVF5-0.4/TS4-B	1.5	50	OCL-00030-ALU2100-1L
NVF5-0.75/TS4-B	2.7	50	OCL-00030-ALU2100-1L
NVF5-1.5/TS4-B	4.2	50	OCL-00050-ALU2000-1L
NVF5-2.2/TS4-B	5.8	50	OCL-00065-ALU1500-1L
NVF5-3.7/TS4-B	10.5	50	OCL-0011-ALU1200-1L
NVF5-5.5/TS4-B	13	70	OCL-0016-ALU900-1L
NVF5-7.5/TS4-B	17	100	OCL-0020-ALU700-1L

Annex 4. Order list of other accessories

Accessory name	Description	Order number
Top protection kit	Addition of this kit will achieve IP22 protection degree. For the installation steps, see User Instructions.	NVF5-FH