NVF2L Series

1. Overview

The NVF2L Series Drive adopts vector control technology free of speed sensor, which is characterized by fast load response, large low-frequency torque and strong overload ability, and realizes accurate control of equipment. This series drive has the application functions of regulated-voltage output, torque limitation, speed tracking, simple PLC, process PID, etc., and can meet the electric drive requirements of fan, water pump, logistics, cable, packaging, and various other types of automatic production equipment.

NVF2L Series Drive has standard RS485 communication protocol, and can be expanded with various communication functions and I/O ports, to meet the complicated operation, control and system integration requirements on site.

For the NVF2L Series Drive, the power grid harmonic interference, dust and oil pollution of the industrial field are fully considered. The product has built-in anti-harmonic interference circuits, which can well suppress harmonic interference. Its modular structural design can reduce dust and oil entering the machine, thus meeting the complicated environmental requirements on site.

NVF2L Series Drive is easy to operate and rich in functions, convenient for beginners to use, and can also meet the complicated application requirements of professional drive debuggers.

2. Applications

This series drive can meet the electric drive requirements of fan, water pump, logistics, cable, packaging, and various other types of automatic production equipment.

3. Technical features

- Rated working voltage: three-phase 380~480V, three-phase 230V, single-phase 230V
- Power range: 0.4KW~5.5KW
- Output frequency range (Hz): 0Hz-500Hz
- Control method: non PG vector control(SVC), V/F control
- Frequency resolution:
- Digital setting: 0.01Hz; Analog setting: Maximum frequency x 0.5%
- Starting torque: SVC: 150% rated torque at 0.25 Hz; V/F: 150% rated torque at 0.5 Hz
- Overload capacity: 150% rated current for 1 min and 180% rated current for 2s

4. Working conditions

Ambient temperature: Constant torque drive: -10°C~+40°C, derated between +40°C and +50°C,
derated by 1% of rated power for every 1°C temperature rise.

relative humidity: The maximum relative humidity of air shall not exceed 90% (+20°C) and 50% (+40°C), and the change rate of relative humidity shall not exceed 5% per hour, and no condensation shall occur.
Dust-proof and waterproof grade IP42 (except wiring terminals)

Altitude: When used at rated output, the altitude of the installation and use place shall not exceed 1000m. This drive shall be derated in areas with an altitude of more than 1000m, and it shall be derated at a rate of 10% for every 1000m altitude increase. The highest altitude of the installation and use site shall not exceed 3000m.

Vibration resistance: 5~8.5Hz: displacement of 3.5mm; 8.5~200Hz: acceleration not greater than 5.9m/s2

5. Type designation

This series drive can meet the electric drive requirements of fan, water pump, logistics, cable, packaging,
and various other types of automatic production equipment.

NVF2L	-	2.2 /	-	TS4	-	B
Product Series		Adapting motor Power		Input voltage D: single phase S: three phase Voltage level 2: 230V 4: 380V~ 480V		Brake Module B: Standard Build-in Empty: None

6. Model selection

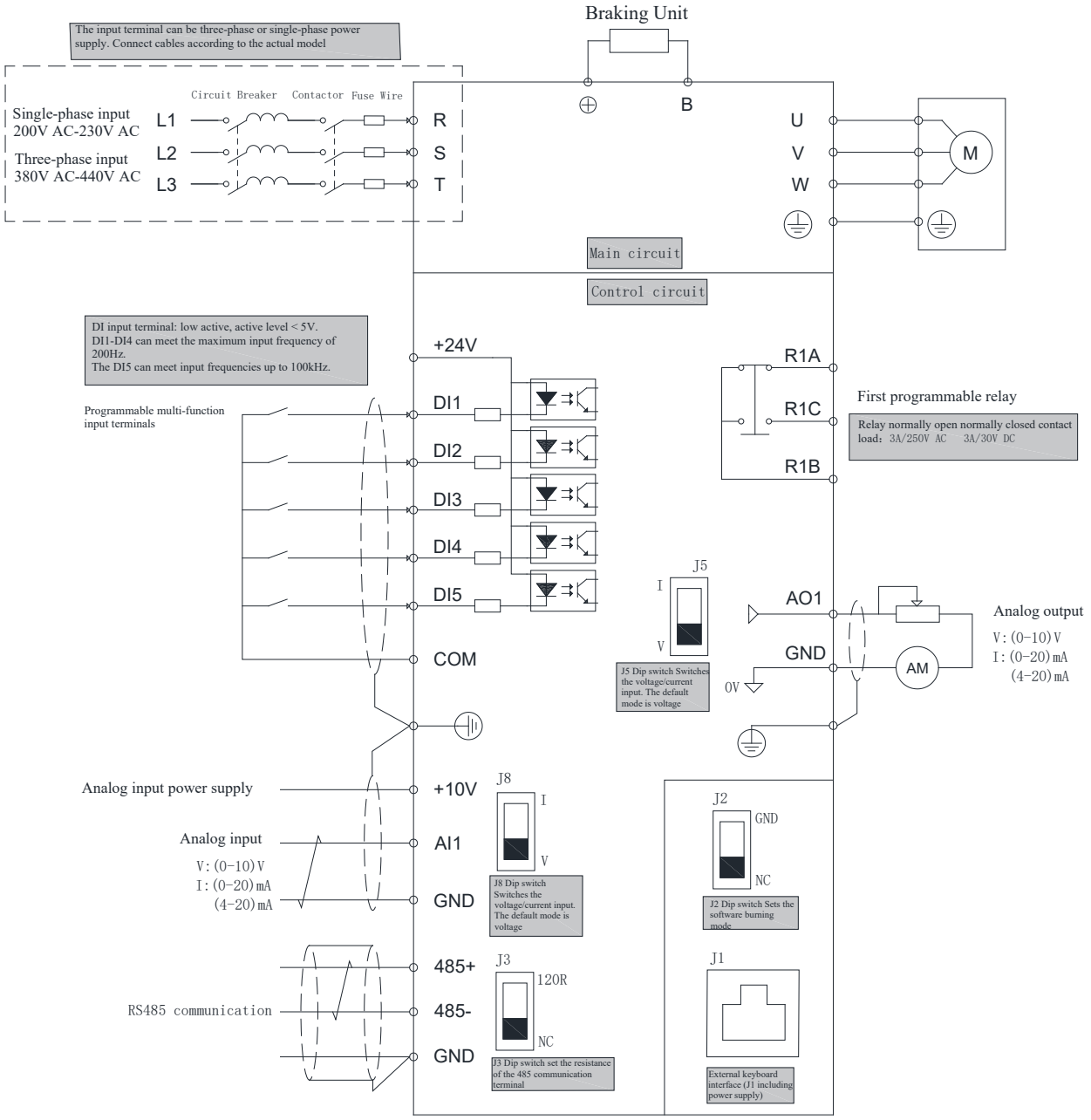
Model (standard built in LED)	power supply capacity kVA	Input current A	Heavy load rated current A	Motor power kW (Heavy load/light load)
NVF2L-0.4/TD2	1.1	5.0	2.3	0.4
NVF2L-0.75/TD2	2.1	9.5	4	0.75
NVF2L-1.5/TD2	2.9	15.5	7	1.5
NVF2L-2.2/TD2	5.3	20.0	9.6	2.2
NVF2L-0.4/TS2	1.1	2.4	2.3	0.4
NVF2L-0.75/TS2	2.1	4.6	4	0.75
NVF2L-1.5/TS2	4.2	9.0	7	1.5
NVF2L-2.2/TS2	5.3	11.4	9.6	2.2
NVF2L-0.4/TS4	2	1.8	1.5	0.4
NVF2L-0.75/TS4	2.8	2.8	2.3	0.75
NVF2L-1.5/TS4	3.0	4.6	3.7	1.5
NVF2L-2.2/TS4	3.0	6.3	5	2.2
NVF2L-3.0/TS4	5.0	9.0	7.2	3
NVF2L-4.0/TS4	5.9	10.5	9.5	4
NVF2L-5.5/TS4	8.6	14.6	12.2	5.5
NVF2L-0.4/TD2-B	1.1	5.0	2.3	0.4
NVF2L-0.75/TD2-B	2.1	9.5	4	0.75
NVF2L-1.5/TD2-B	2.9	15.5	7	1.5
NVF2L-2.2/TD2-B	5.3	20.0	9.6	2.2
NVF2L-0.4/TS2-B	1.1	2.4	2.3	0.4
NVF2L-0.75/TS2-B	2.1	4.6	4	0.75
NVF2L-1.5/TS2-B	4.2	9.0	7	1.5
NVF2L-2.2/TS2-B	5.3	11.4	9.6	2.2
NVF2L-0.4/TS4-B	2	1.8	1.5	0.4
NVF2L-0.75/TS4-B	2.8	2.8	2.3	0.75
NVF2L-1.5/TS4-B	3.0	4.6	3.7	1.5
NVF2L-2.2/TS4-B	3.0	6.3	5	2.2
NVF2L-3.0/TS4-B	5.0	9.0	7.2	3
NVF2L-4.0/TS4-B	5.9	10.5	9.5	4
NVF2L-5.5/TS4-B	8.6	14.6	12.2	5.5

7. Main technical parameters and performance

Items		Item description
Input	Rated voltage	Three-phase (380-480)V; Three-phase 230V Single-phase 230V
	Frequency	50Hz/60Hz
	Voltage range	Three-phase 380V (-15%) ~ 480V (+5%) Three-phase 230V (±15%) Single-phase 230V (±15%)
	Frequency range	(47~63)Hz
Output	Voltage	0 ~ rated input voltage
	Frequency	(0-500) Hz
	Overload capacity	150% rated current for 1 min and 180% rated current for 2s
Main control performance	Control mode	PG-free vector control (SVC); V/F control;
	Modulation mode	Space vector PWM modulation
	Starting torque	SVC: 150% rated torque at 0.25 Hz V/F: 150% rated torque at 0.5 Hz
	Frequency resolution	Digital setting: 0.01Hz; Analog setting: maximum frequency x 0.5%
	Torque boost	Automatic torque boost, manual torque lifting
	V/F curve	Linear V/F curve, VF complete separation mode, VF semi-separation mode, multi-point V/F curve mode
	Acceleration and deceleration curve	Linear acceleration and deceleration (4 types)
Customized function	Inching	Inching frequency range: (0.10~50.00) Hz Inching acceleration and deceleration time (0.1-6000.0)s
	Multi-speed running	Multi-speed running realized through control terminals
Peripheral interface characteristic	Run command channel	Operation panel setting, control terminal setting and communication control setting, which can be switched
	Digital input	5 multi-function digital programmable inputs, including one DI5 high-speed pulse input
	Analog input	1 analog signal input Optional (0~20) mA, (4~20) mA current signal input or (0~10) V voltage signal input
	Analog output	1 analog signal output You can select (0~20) mA, (4~20) mA current output or (0~10) V voltage output respectively, which can realize the output of physical quantities such as set frequency and output frequency
	Relay output	1 relay output, including one normally open and normally closed conversion output and one normally open output. Contact capacity: NO 5A, NC 3A, 250V (AC)
	RS485 communication interface	1 line, supporting Modbus protocol
Operation panel	LED display	It can display more than 20 parameters such as set frequency, output frequency, output voltage and output current
	Key lock	Lock all or some of the keys
	Function selection	Define the functional scope of some keys to prevent mis-operation
	Language	Display in Chinese and English (default is English)
	Indicator	1 status indicator
Protection functions	It has the protection functions such as overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection and open-phase protection	
Structure	Protection class	IP42 (except wiring terminals)
	Cooling mode	Natural cooling and axial DC fan cooling
Installation mode		Wall-mounted and rail type
Efficiency		≥ 93% for 5.5 kW and below

8. Wiring diagram

This series drive can meet the electric drive requirements of fan, water pump, logistics, cable, packaging, and various other types of automatic production equipment.



9.10. Notes of main circuit terminals

Type	Terminal	Name	Description of terminal functions	
Power supply	+10V	+10V power supply	+10V power supplied to outside, maximum output current: 10mA It is generally used as the working power supply of an external potentiometer. The resistance range of the potentiometer is: 1kΩ~5kΩ.	
	GND	+10V power ground		
	+24V	+24V power supply	+24V power supplied to outside, which is generally used as working power supply for	
	COM	+24V power supply common terminal		
Analog inpu	AI1	Analog single-ended input AI1	Voltage input range: 0Vdc~10Vdc, Current input range: 0mA~20mA or 4mA~20mA Decided by dip switch J8 selection Input impedance: 22kΩ for voltage input and 500Ω for current input.	
Analog output	AO1	Analog output	The voltage or current output is determined by the selection of J5 dip switch on the control panel. Output voltage range: 0V~10V Output current range: 0mA~20mA or 4mA~20mA	
Communication	485+	RS485 communication interface	Positive terminal of 485 differential signal	Standard RS485 communication interface Please use twisted pair or shielded wire
	485-		Negative terminal of 485 differential signal	
Digital input terminals	DI1	Multifunctional input terminal 1	Optical coupling isolation Input impedance: 1.39kΩ Voltage range at effective level input: 18V~30V Programmable digital input terminals with multiple functions, see function codes F5-00 ~ F5-03	
	DI2	Multifunctional input terminal 2		
	DI3	Multifunctional input terminal 3		
	DI4	Multifunctional input terminal 4		
	DI5	Multifunctional input terminal 5	Besides the characteristics of DI1~DI4, it can also be used as a high-speed pulse input channel. Maximum input frequency: 100kHz Input impedance: 1.03kΩ	
Relay output terminal	R1B-R1C	Normally open terminal contact	Output terminal of programmable multi-function relay, see function code F6-02 Contact drive capability: 5A 250V (AC) 30Vdc, 1A	
	R1B-R1A	Normally closed terminal contact		

11. Mounting dimensions (mm) & weight (kg)

Frame size	Drive model
T1	NVF2L - 0.4/TS4
	NVF2L - 0.75/TS4
	NVF2L – 1.5/TS4
	NVF2L – 2.2/TS4-B
T2	NVF2L – 3.0/TS4-B
	NVF2L – 4.0/TS4-B
	NVF2L – 5.5/TS4-B

380V drive frame size and model

Frame size	Drive model
T1	NVF2L - 0.4/TS2
	NVF2L - 0.75/TS2
	NVF2L – 1.5/TS2-B
T2	NVF2L – 2.2/TS2-B

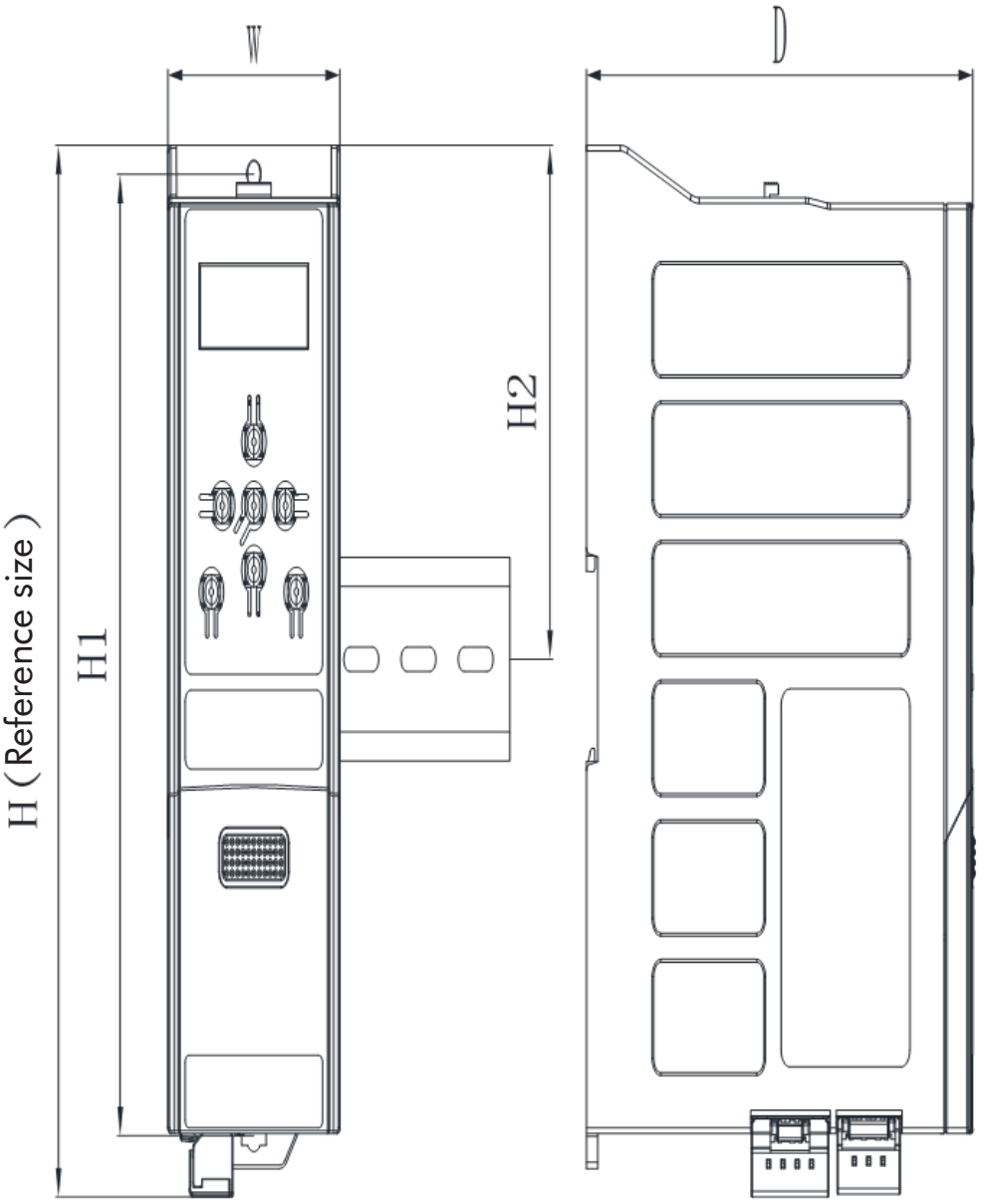
Three-phase 230V drive frame size and model

Frame size	Drive model
T1	NVF2L - 0.4/TD2
	NVF2L - 0.75/TD2
T2	NVF2L – 1.5/TD2-B
	NVF2L – 2.2/TD2-B

Single phase 230V drive frame size and model

The outline installation of product frame is as follows:

T1~T2



Installation Dimensions of T1 ~T2 Frame Size Outline

The product outline, installation size and weight are summarized as follows:

Frame size	Overall dimensions in mm			Mounting hole position mm		Weight(kg)	Mounting holes d	Remark
	H1	W	D	H1	H2			
T1	181	60	135	170	87	0.5	M4	
T2	191	70	145	180	98	0.6	M4	