



All series of general frequency inverter
VH3/VH3E/VB5N/VB5/V5 series



variable frequency system

frequency inverter

VH3 series
VH3E series
VB5N series
VB5 series
V5 series

- Stable performance easy to operate
- Suitable motor 0.75~55KW
- High performance motion control DSP chip
- Optimized structure



Excellent product performance

VH3/VH3E have enhanced performance

- Output frequency max 500Hz, can control high speed motor.
- Rich and flexible input, output terminal and control methods.
- SMT and conformal coating technology make the product more stable.
- Built-in PID auto-tune function and simple PLC function, fit for different needs.
- Protection for over voltage, under voltage, over load, over current, over heat. The protection for short circuit can avoid the inverter damage caused by external machine error.
- Standard RJ-45 Ethernet port (the connection between operate panel and main control panel).
- Good ventilation and cooling.



VH3/VH3E complete basic functions

No sense vector control mode

- Smooth drive large load at low frequency.

Fieldbus communication mode for VH3E

- Communication speed is 0~3Mbps.

Built-in two groups of PID function

- Easy to make process close loop control system, improve the precision.

Flexible I/O terminals

- I/O terminals can be defined to diverse functions.

Modify the parameter online

- Modify the inverter parameters when it is running, more convenient to operate.

Energy consumption brake unit

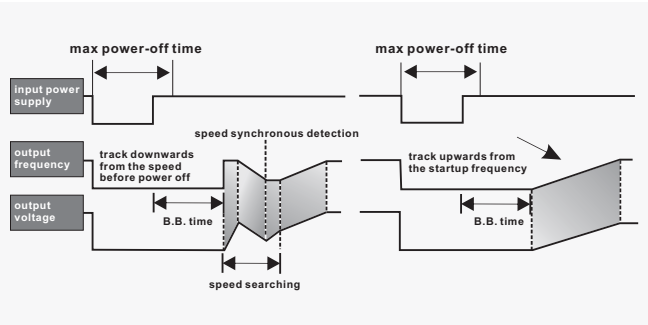
- The inverter has built-in brake unit. When internal brake unit is not enough, the external brake unit can be connected, and we provide different kinds of brake units..

High speed pulse input and output

- X6 terminal supports maximum 50KHz pulse input for pulse frequency speed tuning.
- DO terminal supports maximum 100KHz pulse output, user-defined f unction. PLC and other controller can read the internal variable of inverter via frequency measurement.

Speed tracking function under the control of VF

- If it needs to start up the motor again before it stops, the frequency inverter can catch the present speed and start up without impact.



up to 9 kinds of frequency setting mode

- Set the frequency through potentiometer, digital keyboard, UP/DOWN terminal, VI/CI terminal, pulse terminal, combination setting, remote setting from serial port.

Built-in simple PLC function

- The simple PLC function is a multi-segment speed generator. The inverter can auto-change the frequency and direction as the running time.

Communication function

RS485 port, support Modbus-RTU protocol

Master-slave multi-inverter linkage function

Compact design

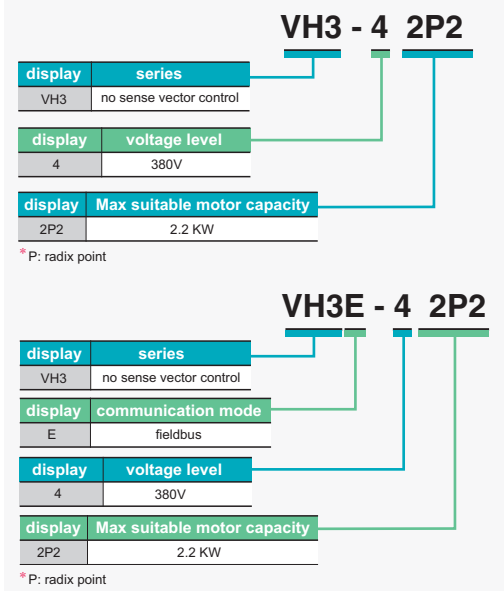
- Protection level accords to IP20.
- Good ventilation and cooling design.



Moveable cooling fan (for the frequency inverter power above 11KW)



Product naming rule



Complete protection functions

- Over current protection.
- Over voltage protection.
- Under voltage protection.
- Overheating protection, the inverter will close the output and free stop.
- Over load protection, the inverter will close the output and free stop.

Moveable numeric keyboard



Moveable rotary potentiometer

Optional accessories: installation seat of operate panel and extension cable

- User can remote operate the frequency inverter with the accessories.

Filtering unit

- The frequency inverter power above 30KW are equipped with reactor to restrain the higher harmonic and improve the power factor.

VB5N - 4 3 P 7 - S

display	series
VB5N	VVVF control
display	voltage level
2	220V
4	380V
display	Max suitable motor capacity
0P7	0.7 KW
3P7	3.7 KW

* P: radix point

VB5N series contain 220V and 380V voltage level, -S type means simple version inverter. Simple version and general model comparison table:

model	RS485 communication	X6 high speed pulse input	relay output
VB5N-20P7	✓	×	×
VB5N-20P7-S	×	×	×
VB5N-40P7	✓	✓	✓
VB5N-40P7-S	×	×	×
VB5N-41P5	✓	✓	✓
VB5N-41P5-S	×	×	×
VB5N-42P2	✓	✓	✓
VB5N-42P2-S	×	×	×
VB5N-43P7	✓	✓	✓
VB5N-43P7-S	×	×	×

* Note: × not support ✓ support

Rich models

The frequency inverter contains VB3 series, VB5 series, VD4 series, VB5N series, V5 series. The voltage level has 220V single phase and 380V three-phase. The suitable motor capacity is from 0.75KW to 55KW.

Model table

Capacity (KW)	Current (A)	Single phase 220V		3-phase 380V			
		VB5N	VB5	VH3	VB5N	VB5	V5
0.75	4.7	VB5N-20P7(-S)					
	2.5				VB5N-40P7(-S)	VB5-40P7	
	2.1			VH3-40P7			
1.5	7.5	VB5N-21P5	VB5-21P5		VB5N-41P5(-S)	VB5-41P5	
	4.0						
	3.8			VH3-41P5			
2.2	10.0		VB5-22P2				
	6.0				VB5N-42P2(-S)	VB5-42P2	
	5.1			VH3-42P2			
3.7	9.6				VB5N-43P7(-S)	VB5-43P7	
	9.0			VH3-43P7			
5.5	14.0					VB5-45P5	
	13.0			VH3-45P5			
7.5	17.0			VH3-47P5		VB5-47P5	
11.5	25.0			VH3-4011			V5-4011
15	32.0			VH3-4015			
	33.0						V5-4015
18.5	38.0						V5-4018
22	46.0						V5-4022
30	60.0						V5-4030
37	75.0						V5-4037
45	90.0						V5-4045
55	110						V5-4055

VH3 series have two 380V models. The VFD function is shown as the following table.

model	X-NET fieldbus	RS485 communication	Multi-speed running	X6 high speed pulse input	relay output	high speed pulse output	analog voltage output	analog current output	error relay output
VH3-40P7	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-41P5	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-42P2	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-43P7	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-45P5	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-47P5	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-4011	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-4015	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3-4018	×	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-40P7	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-41P5	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-42P2	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-43P7	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-45P5	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-47P5	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-4011	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-4015	✓	✓	✓	✓	✓	✓	✓	✓	✓
VH3E-4018	✓	✓	✓	✓	✓	✓	✓	✓	✓

Standard specification 220V models

Model		VB5N-20P7(-S)	VB5N-20P7	VB5-21P5	VB5-22P2
Output	Suitable motor (KW)	0.75	0.75	1.5	2.2
	Rated output current (A)	4.7	4.7	7.5	10.0
	Rated voltage (V)	AC 220			
	Frequency range (Hz)	0~500			
	Frequency resolution (Hz)	0.01			
	Over load ability	150% of rated current 1 minute, 180% of rated current 1 second			
Input	Rated voltage/frequency	Single phase 220V, 50/60 Hz			
	Allowable range of AC voltage fluctuation	Voltage: -20%~20% voltage imbalance rate: < 3%			
	Allowable range of frequency fluctuation	Frequency: ±5%			
	Power supply capacity (KVA)	1.5	1.5	2.8	4.5

Standard specification 380V models

Model VH3-4_____		0P7	1P5	2P2	3P7
Output	Suitable motor (KW)	0.75	1.5	1.5	3.7
	Rated output current (A)	2.5	4.5	4.5	9.6
	Rated voltage (V)	AC 380			
	Frequency range (Hz)	0~500			
	Frequency resolution (Hz)	0.01			
	Over load ability	150% of rated current 1 minute, 180% of rated current 1 second			
Input	Rated voltage/frequency	Three-phase 380V, 50/60 Hz			
	Allowable range of AC voltage fluctuation	Voltage: -20%~20% voltage imbalance rate: < 3%			
	Allowable range of frequency fluctuation	Frequency: ±5%			
	Power supply capacity (KVA)	1.5	3	4	5.9

Model VH3-4_____		011	015
Output	Suitable motor (KW)	11	15
	Rated output current (A)	25.0	33.0
	Rated voltage (V)	AC 380	
	Frequency range (Hz)	0~500	
	Frequency resolution (Hz)	0.01	
	Over load ability	150% of rated current 1 minute, 180% of rated current 1 second	
Input	Rated voltage/frequency	Three-phase 380V, 50/60 Hz	
	Allowable range of AC voltage fluctuation	Voltage: -20%~20% voltage imbalance rate: < 3%	
	Allowable range of frequency fluctuation	Frequency: ±5%	
	Power supply capacity (KVA)	8.9	11

Model VB5N-4_____		0P7 (-S)	1P5 (-S)	2P2 (-S)	3P7 (-S)
Output	Suitable motor (KW)	0.75	1.5	1.5	3.7
	Rated output current (A)	2.5	4.5	4.5	9.6
	Rated voltage (V)	AC 380			
	Frequency range (Hz)	0~500			
	Frequency resolution (Hz)	0.01			
	Over load ability	150% of rated current 1 minute, 180% of rated current 1 second			
Input	Rated voltage/frequency	Three-phase 380V, 50/60 Hz			
	Allowable range of AC voltage fluctuation	Voltage: -20%~20% voltage imbalance rate: < 3%			
	Allowable range of frequency fluctuation	Frequency: ±5%			
	Power supply capacity (KVA)	2.1	2.5	3.0	5.9

Model VB5-4_____		0P7	1P5	2P2	3P7	5P5	7P5
Output	Suitable motor (KW)	0.75	1.5	2.2	3.7	5.5	7.5
	Rated output current (A)	2.5	4.5	6.0	9.6	14.0	17.0
	Rated voltage (V)	AC 380					
	Frequency range (Hz)	0~500					
	Frequency resolution (Hz)	0.01					
	Over load ability	150% of rated current 1 minute, 180% of rated current 1 second					
Input	Rated voltage/frequency	Three-phase 380V, 50/60 Hz					
	Allowable range of AC voltage fluctuation	Voltage: -20%~20% voltage imbalance rate: < 3%					
	Allowable range of frequency fluctuation	Frequency: ±5%					
	Power supply capacity (KVA)	2.1	2.5	3.0	5.9	8.5	11.0

Model V5-4_____		011	015	018	022	030	037	045	055
Output	Suitable motor (KW)	11	15	18.5	22	30	37	45	55
	Rated output current (A)	25.0	33.0	38.0	46.0	60.0	75.0	90.0	110.0
	Rated voltage (V)	AC 380							
	Frequency range (Hz)	0~500							
	Frequency resolution (Hz)	0.01							
	Over load ability	150% of rated current 1 minute, 180% of rated current 1 second							
Input	Rated voltage/frequency	Three-phase 380V, 50/60 Hz							
	Allowable range of AC voltage fluctuation	Voltage: -20%~20% voltage imbalance rate: < 3%							
	Allowable range of frequency fluctuation	Frequency: ±5%							
	Power supply capacity (KVA)	15	20	25	30	40	50	60	75

Specification and performance

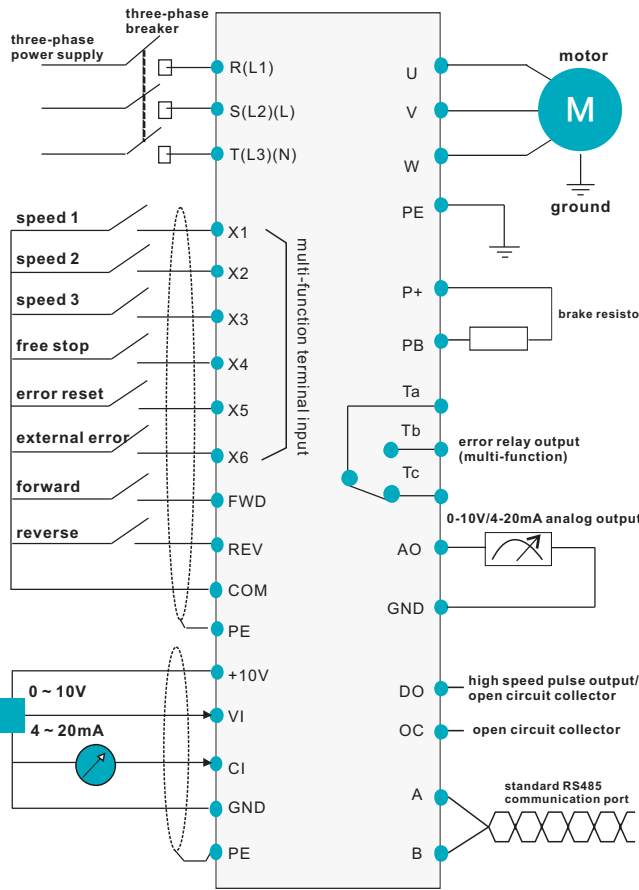
Environment and structure

Item		Type
Environment	Using place	Indoor, protect from direct sunlight, dustless, no corrosive gas, n4 o oil mist, no steam
	Altitude	Lower than 1000 meters (need derate when higher than 1000 meters)
	Ambient temperature	−10℃~ +40℃
	Humidity	< 90% RH, no condensation
	Vibration	< 5.9 m/s2 (0.6G)
	Storage temperature	-20℃~ +60℃
	Protection structure	IP20 (when use keyboard or status display unit)
Structure	Cooling code	Forced air-cooling
	Installation mode	Wall-mounted, cabinet-mounted

Performance specification

Control functions	Modulation mode	Optimal space voltage vector modulation SVPWM
	Control mode	Space voltage vector modulation SVPWM(optimal low-frequency dead zone compensation)
	Frequency accuracy	Digital setting: the highest frequency ×±0.01% Analog setting: the highest frequency ×±0.2%
	Frequency resolution	Digital setting: 0.01Hz Analog setting: the highest frequency×0.1%
	Startup frequency	0.32Hz~20.00Hz
	V/F curve	Five modes: constant torque V/F curve, 1 kind of user-defined multi-segment V/F curve, 3 kinds of torque falling curve(2nd power, 1.7th power, 1.2nd power)
	Acceleration and deceleration curve	2 modes: linear acceleration/deceleration, S curve acceleration/deceleration; 7 kinds of acceleration/deceleration time, units options: minute/second, up to 6000 minutes
	Energy consumption brake	Built-in energy consumption brake unit, enable to connect external brake resistor
	Jog	Jog frequency range: 0.1 to 50.00Hz Jog acceleration/deceleration time: 0.1 to 65.0 s
	Multi-speed running	Run in multi-speed mode via built-in PLC or control terminals
Running functions	Fixed-length control	VFD stop when reaching the settings length
	Communication function	RS-485 port, support Modbus-RTU protocol, support master-slave linkage function
	Command running channel	control panel, control terminals, serial port. 3 modes can switch to each other
	Frequency setting channel	Potentiometer, up/down buttons, function code, serial port, analog voltage, analog current, pulse, multi-speed setting, simple PLC setting. All kinds of modes can switch to each other
	Digital setting channel	Forward/backward command;6 channels programmable digital input.35 kinds of functions, X6 supports 0~20KHz pulse input
	Analog input channel	2 channels analog input; Options: 4 to 20mA/0 to 10 V
Control panel	Analog output channel	1 channel analog input: 0 to 10 V,4 to 20mA. Output the preset frequency, output frequency
	digital, pulse output channel	1 channel programmable open collector output;1 channel relay output;1 channel 0 to 20 KHz pulse output
	LED digital display	Display the preset frequency, output voltage, output current, etc
	External meter display	Display the output frequency, output current, output voltage, etc
Protection functions	Key lock	Lock all the keys
	Accessories	Over current protection, overvoltage protection, under voltage protection, overheat protection, overload protection
Accessories		Brake unit, control panel, extension cable of the control panel

VB5N/VB5/V5 standard wiring diagram



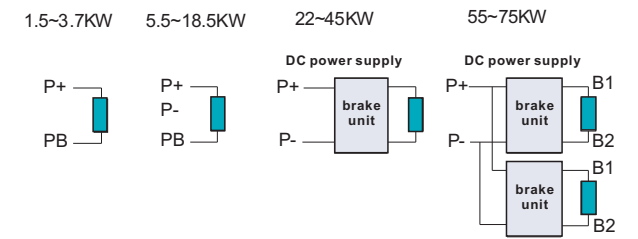
VB5N/VB5/V5 accessories

The frequency inverters 0.75~15KW have brake unit inside. Please refer to the following table to choose brake unit if there are energy-consumption brake requirements. The inverter above 18.5KW need to connect external brake unit. Please refer to wiring diagram on the previous page.

Brake unit and resistor

Type (kW)		brake unit		brake resistor	
		Type	quantity	equivalent brake resistor (Ω)	equivalent brake power
220V	0.75	built-in	1	150	200
	1.5		1	100	400
	2.2		1	70	500
380V	1.5	built-in	1	300	400
	2.2		1	200	500
	3.7		1	200	500
	5.5		1	100	500
	7.5		1	75	1000
	11	BRU-4045	1	50	1000
	15		1	40	1500
	18.5		1	32	5000
	22		1	27.2	5000
	30		1	20	6000
380V VH3	37	built-in	1	16	9600
	45		1	13.6	9600
	55		1	10	12000
	0.75		1	≥300	150
	1.5		1	≥220	150
	2.2		1	≥200	250
	3.7		1	≥130	300
	5.5		1	≥90	400
	7.5		1	≥65	500
	11		1	≥43	800
	15		1	≥32	1000

the brake resistor wiring of frequency inverter

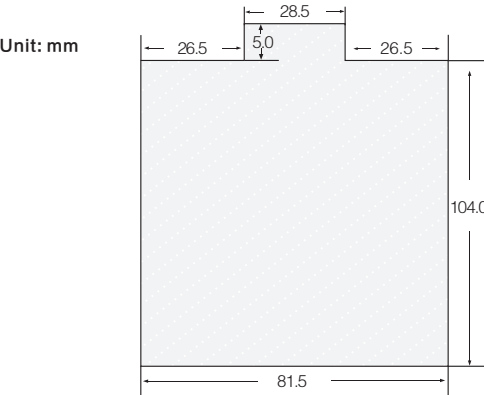


Operate panel and extension cable

Operate panel	Power range (KW)	Suitable model	Mounting dimension of control panel W×H (mm)	Extension cable type
VB5-OPU-01	0.75~2.2	VB5 series single phase	62*75	YC-ECC-05
	0.75~3.7	VB3, VB5 series three-phase		
	5.5~7.5	VB5 series three-phase		
V5-OPU-03	11~55	V5 series	71*131	YC-ECC-10

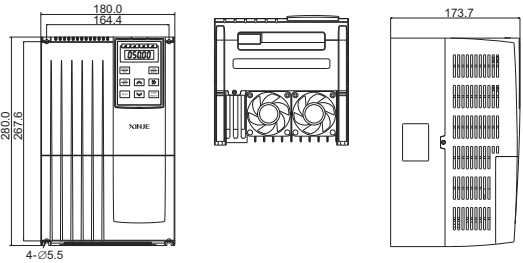
* Note: the extension cable length includes 1m, 2m, 3m, 5m.

VH3/VB5N series operate panel model is D-panel. The serial port connection cable between operate panel and CPU circuit is D-CN-1.5, the default length is 1.5m. It needs VB5N operate panel foundation for extending the operate panel. The extension operate panel will be installed on the foundation. The mounting dimension of foundation is shown in the diagram.

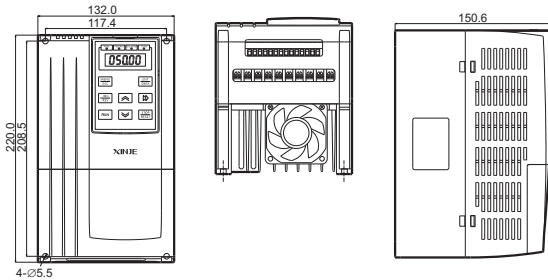


Dimension (unit: mm)

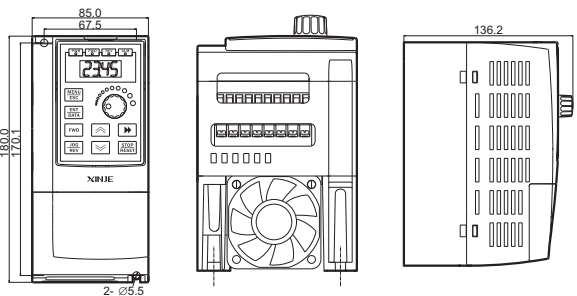
VH3 series 3 phase 7.5KW



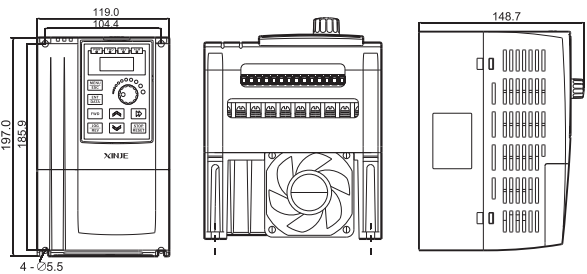
VH3 series 3 phase 1.5~3.7KW



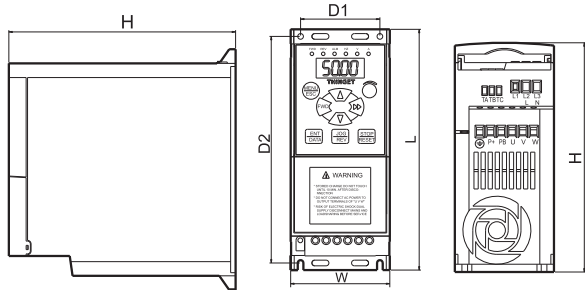
VB5N series single phase 0.75KW



VB5N series 3 phase 0.75~1.5KW

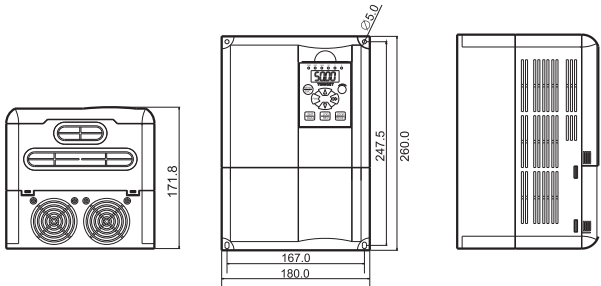


VB3, VB5 serie 0.75~3.7KW

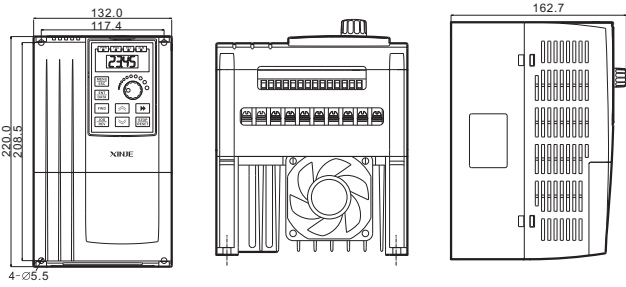


Product model	W	D1	L	D2	H
VB5-20P7	70	56	170	160	162
VB5-21P5					
VB5-22P2					
VB3/VB5-40P7	80	56	200	190	162
VB3/VB5-41P5					
VB3/VB5-42P2					
VB3/VB5-43P7					

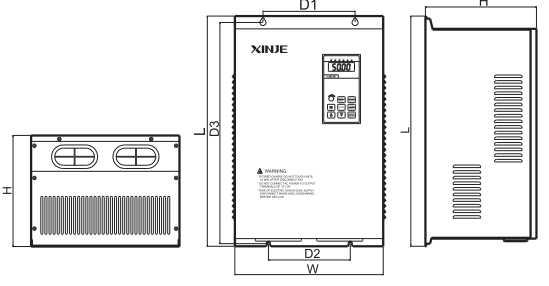
VB5 series 3 phase 5.5~7.5KW



VB5N series 3 phase 2.2~3.7KW



V5 series 3 phase 11~55KW



product model	W	D1	L	D2	H	D3
V5-4011	230	120	420	160	218	400
V5-4015						
V5-4018						
V5-4022	290	180	450	210	217	430
V5-4030						
V5-4037						
V5-4045	375	230	581	230	261	551
V5-4055						