VH6 fully functional closed-loop vector inverter

VH6 series is a fully functional closed-loop vector converter developed by Xinje company. The product adopts vector control technology, which realizes the open-loop and closed-loop vector control of asynchronous and synchronous motors, and also strengthens the reliability and environmental adaptability of the product. In addition, the product provides a wealth of expansion cards for customers to choose from to meet customers' diversified needs.
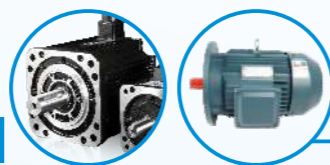
Panel

- LCD and LED keyboard are rich in information and convenient for debugging
- It has multi-functional combination keys, which can realize remote and local switching, emergency shutdown, etc
- The LCD panel contains a parameter storage chip, which is convenient for users to store, upload and download parameters. It is especially suitable for batch supporting customers, which can greatly save debugging time and improve installation efficiency
- Support up to 5m extension cable

I/O Expansion Card

- I/O terminals with different functions are designed in different colors, which greatly reduces the probability of user wiring errors
- The terminals are pluggable for easy maintenance and replacement
- Quick wiring of spring terminals, no need to worry about screw slip

Motor adaptability

- Support asynchronous motor, synchronous motor
- Support three control modes VVF / open loop vector / closed loop vector

Multifunctional Network Port

- Connect the LCD panel to realize dialogue interaction
- Connect the debugging software, observe the motion waveform and effectively analyze the problem
- The inverter software is easy to upgrade

Appearance and protection
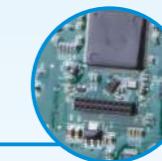
- The new narrow book body design saves installation space
- EMC and high protection design, stable operation of equipment
- The built-in circuit board has enhanced protection, which can effectively resist the harsh environment such as humidity, corrosion and dust

PG card feedback

- Support photoelectric encoder and rotary encoder, suitable for high-precision driving occasions
- PG card supports 0 to 63 arbitrary frequency division multiple output
- Support differential, collector and push-pull signal input

Networking function

- Optional communication card CANopen and EtherCAT, networking with control products
- Modbus communication is equipped with 32 groups of customer free mapping addresses to realize continuous reading of parameters
- The two-channel network ports are in from the bottom and out from the top, with switch function, and the wiring is clean and concise

Excellent Product Performance

Excellent performance


Speed fluctuation of full load unloading
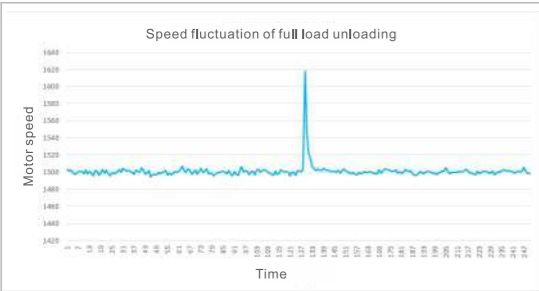
The speed fluctuation of VH6 series frequency converter driving the motor to suddenly reduce to no-load at rated torque and speed, and recovering the speed within 2 seconds.
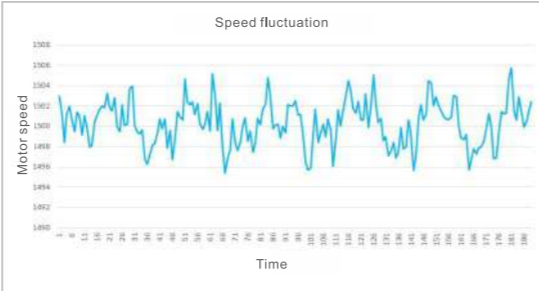
Speed fluctuation

The speed fluctuation of VH6 series frequency converter driving the motor at rated torque and speed is stable at ±0.2%.


Low speed large torque

When the VH6 series frequency converter drives the motor at 0.5Hz, the torque output is as high as 180%, reflecting the strong low-frequency torque performance.


Super overload capacity
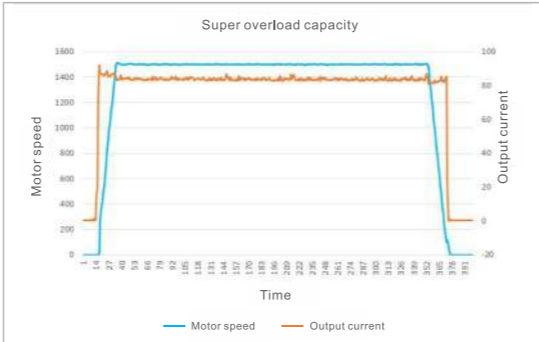
VH6 series frequency converter drives the motor to drive the load. The maximum overload can reach 180% and last for 3 seconds.

Perfect protection mechanism

Overvoltage suppression
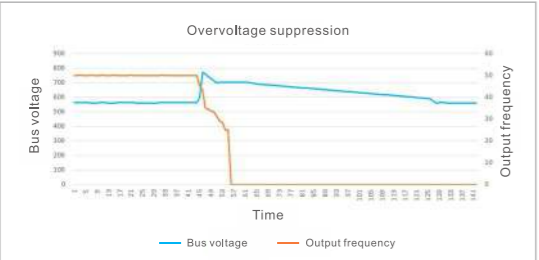
Overvoltage suppression is that when the bus voltage reaches or exceeds the bus overvoltage suppression point, the frequency converter will automatically adjust the operation frequency to suppress the rise of bus voltage, so as to ensure that the frequency converter will not cause overvoltage protection due to high bus voltage.

Undervoltage suppression
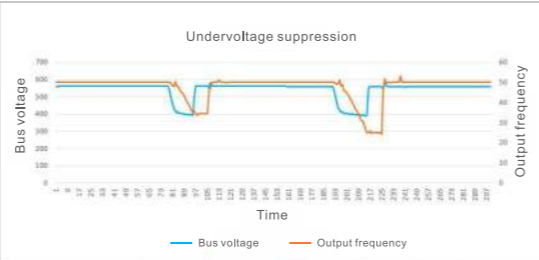
Undervoltage suppression is that when the bus voltage drops to the bus undervoltage suppression point, the frequency converter will automatically adjust the operation frequency, so as to ensure that the frequency converter will not report undervoltage fault due to low bus voltage in a short time. Once the power supply is restored within the validity period of undervoltage suppression, the frequency converter can continue to operate normally.

Naming Rule

VH6 frequency inverter naming rule

VH 6 - 4 5P5 - B
① ② ③ ④ ⑤

① Product code

Sign	Name
VH	General frequency inverter

② Product series

Sign	Name
6	Fully functional closed-loop vector converter (asynchronous motor)
6S	Fully functional closed-loop vector converter (synchronous motor)

③ Input voltage level

Sign	Power supply voltage
4	380V

⑤ Brake unit

Sign	Brake unit
B	Built-in brake unit
Vacant	No

④ Power level

Sign	Power level (kW)
0P7	0.75
1P5	1.5
…	…
5P5	5.5
…	…
011	11
018	18.5
055	55
075	75
090	90
110	110

Technical Parameters

Model	Power supply capacity (KVA)	Input current (A)	Output current (A)	Adaptive motor (kW)
Three-phase 380V 50/60Hz				
VH6-43P7-B	5.9	11.0	9.0	3.7
VH6-45P5-B	8.9	14.6	13.0	5.5
VH6-47P5-B	11.0	20.5	17.0	7.5
VH6-4011-B	17.0	26.0	25.0	11.0
VH6-4015-B	21.0	35.0	32.0	15.0
VH6-4018-B	24.0	38.5	37.0	18.5
VH6-4022-B	30.0	46.5	45.0	22.0
VH6-4030-B	40.0	62.0	60.0	30.0
VH6-4037-B	63.0	69.0	75.0	37.0
VH6-4045-B	81.0	89.0	90.0	45.0
VH6-4055-B	97.0	106.0	110.0	55.0
VH6-4075-B	127.0	139.0	152.0	75.0
VH6-4090-B	150.0	164.0	176.0	90.0
VH6-4110-B	179.0	196.0	210.0	110.0

Technical Specifications

Item name	VH6 high performance closed loop vector frequency inverter specification		
Input	Power range	3.7kW~110kW		
	Rated voltage, frequency	Three-phase 380V: three-phase 380V, 50/60Hz		
	Allowable voltage fluctuation range	Three-phase 380V: 320~440V		
Output	Voltage	0~input voltage		
	Frequency	0~600Hz		
Control performance	Control motor type	Asynchronous motor, permanent magnet synchronous motor, variable frequency motor		
	Control mode	Vector control with speed sensor (FVC)	Vector control without speed sensor (SVC)	V/F control (VVF)
	Speed precision	±0.2%	±0.5%	±1%
	Speed fluctuation	±0.2%	±0.3%	±0.5%
	Speed regulation range	1:2000	1:100	1:50
	Startup torque	0Hz:180%	0.5Hz:150%	1.0Hz:150%
	Torque accuracy	±5% rated torque	±10% rated torque	/
	Torque response	≤10ms	≤20ms	/
	Overload ability	150% rated current 60s		
	Frequency precision	Low frequency operation mode: 0.01Hz, high frequency operation mode: 0.1Hz		
	Frequency resolution	Low frequency operation mode: digital setting-- 0.01Hz, analog setting - - max frequency ×0.1% High frequency operation mode: digital setting - - 0.1Hz, analog setting - - max frequency ×0.1%		
Control terminal input	Digital input channel	Up to 7-channel digital input X, card A has 4-channel (X1~X4), resolution is less than 2ms, card B has 3-channel (X5~X7), X4 can support max 50kHz high speed pulse input		
	Analog input channel	Up to 3-channel analog input AI, card A has 2-channel (AI1, AI2), resolution is less than 20mV, card B has 1 channel (AI3). AI1, AI2 support 0~10V or 0~20mA input , AI3 support -10~10V input, can support PT100 input		
Control terminal output	Digital output channel	Up to 4-channel digital output Y, card A has 1 channel (Y1) + 1 channel (TA1TB1TC1), card B has 1 channel (Y2) + 1 channel (TA2TB2TC2).Y2 can support max 50kHz high speed pulse output		
	Analog analog channel	Up to 2-channel analog output AO, card A has 1 channel (AO1), card B has 1 channel (AO2) AO1, AO2 support the output 0~10V or 0~20mA		
Product performance	Start command given mode	Communication given (Modbus, CANopen, EtherCAT), operate panel given, terminal given		
	Frequency given mode	Communication given (Modbus, CANopen, EtherCAT), operate panel given, terminal given, analog AI given, multi-speed given, simple PLC given, PID main and auxiliary given		
	Typical function	Frequency main and auxiliary operation, no reverse rotation, torque increase, nine VF curve settings, five section AI curve settings, acceleration and deceleration curve settings, terminal delay and filtering, terminal multi-functional input and output, DC braking, dynamic braking, jog operation, 16-section speed, built-in two-channel PID, speed tracking restart, carrier modulation, fault recording, fault self reset, pre-excitation start, 30 groups of user-defined parameters		
	Important function	Carrier modulation, torque control, motor self-tuning, current limiting control, overvoltage control, undervoltage control, speed tracking, droop control, oscillation suppression, overvoltage overcurrent stall control, automatic voltage regulation (AVR), automatic energy-saving operation, etc		
	Protection function	Power on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, underload protection, overcurrent overvoltage stall protection, relay pull in protection, terminal protection, instantaneous power failure nonstop, etc		
	Dynamic braking	380V level driver: brake unit braking voltage: 650~750V. 3.7kW~110kW models have built-in brake unit, please connect brake resistor between P+ and PB		
	DC reactor	18.5kw and above models are built-in DC reactors		
	Common DC bus	Share the regenerative energy when the frequency converter decelerates, improve the braking capacity, achieve the purpose of energy saving and save the additional space and cost required by the resistance		
Features function	Multiple bus support	Standard Modbus, can expand EtherCAT, CANopen		
	Multiple encoder support	Differential input encoder, OC input encoder, rotary encoder		
	LCD panel	LCD display, parameter setting, status monitoring, parameter copy, fault analysis and location, program download, mass storage of parameters		
	Instant stop nonstop	In case of instantaneous power failure, the load feedback energy compensates for the reduction of voltage to maintain the continuous operation of the frequency converter in a short time		
	Timing control	Timing control function: time range 0.1min~6500min		
	Multi-motor switching	Two groups of motor parameters can realize the switching control of two motors		
	Motor overheating protection	AI3 supports PT100 sensor signal input		
	Flexible and diversified terminal functions	There are 51 kinds of multifunctional terminals X, 41 kinds of terminals Y, and 19 kinds of logic function options AO, which meet the requirements of general frequency converter control functions		
	Communication customization parameters	It is convenient for users to read and write the parameters of the frequency converter continuously		
	Software	Rich background monitoring functions to facilitate on-site data acquisition and debugging		
Display and keyboard	Keyboard display	It can display the set frequency, output frequency, output voltage, output current, input and output status and other parameters		
	Key lock	Realize partial or full locking of keys to prevent false triggering		
	Parameter copy	Standard LED display digital potentiometer keyboard, optional LCD English display keyboard (parameter upload/download)		
	Optional accessories	LCD keyboard, communication card (EtherCAT, CANopen), encoder PG card (incremental pulse, resolver)		
Environment	Place of use	Indoor, free from direct sunlight, no dust, corrosive gas, combustible gas, oil mist, water vapor, drip or salt		
	Altitude	Less than 1000m (When it is higher than 1000m, the output current needs to be reduced by about 10% of the rated current for each increase of 1000m)		
	Ambient temperature	-10ºC~+40ºC (please derate to use or enhance the heat dissipation when ambient temperature is 40ºC~50ºC)		
	Ambient humidity	Less than 95%RH, no condensation of water droplets		
	Vibration	Less than 5.9m/s2 (0.6g)		
	Storage temperature	-40ºC~+70ºC		
	Protection level	IP20		
	Cooling mode	Forced air cooling		
	Installation mode	Wall mounted and embedded		

Terminal Wiring Diagram

VH6 frequency inverter
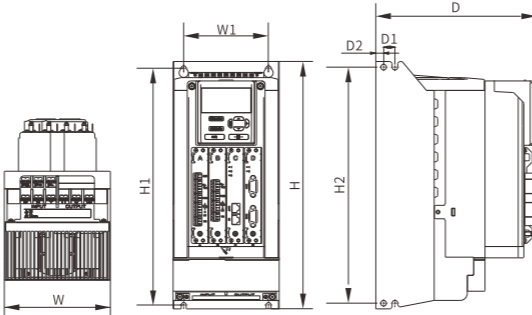
VH6 frequency inverter

Installation Dimension (Unit:mm)

X1 model: 3.7~7.5kW

X2 model: 11-15kW

X3 model: 18-30kW
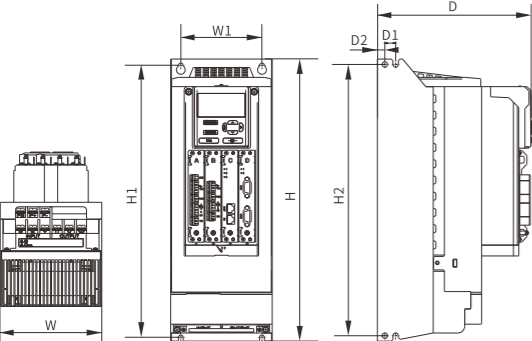
X4 model: 37~55kW
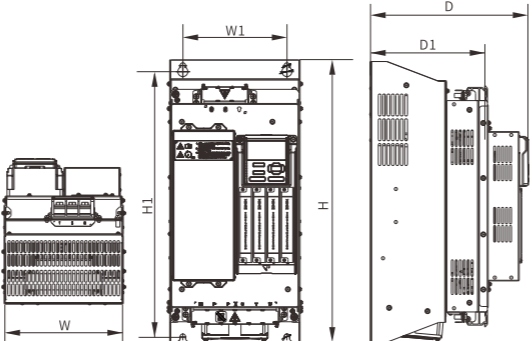
X5 model: 75-110kW
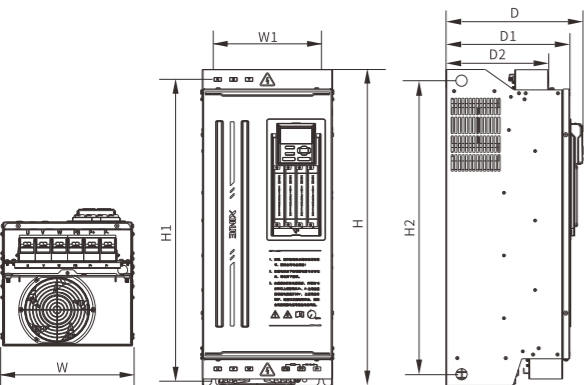
Voltage level	Driver model	Overall installation dimension (width×height×depth)								Mounting screw specification	Weight (Kg)
		Body code	W	H	D	W1	H1	H2	D1	D2		
380V	VH6-43P7-B	X1	110	305	202	55	290	290	14	/	M5	4
	VH6-45P5-B											
	VH6-47P5-B											
	VH6-4011-B	X2	150	350	228	120	335	334	27	11	M6	5.7
	VH6-4015-B											
	VH6-4018-B	X3	150	417	228	120	402	402	27	11	M6	10
	VH6-4022-B											
	VH6-4030-B											
	VH6-4037-B	X4	235.6	510	287.9	188	490	/	213.9	/	M8	/
	VH6-4045-B											
	VH6-4055-B											
	VH6-4075-B	X5	290	705	306	240	683	635	276.5	229	M8	45
	VH6-4090-B											
	VH6-4110-B											

Panel dimension
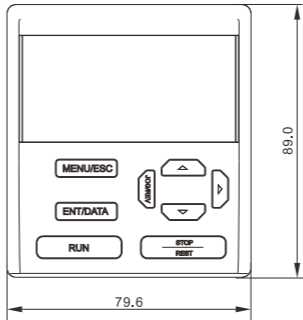
Panel mounting bracket drawing

89.0

117.2

79.6

114.0

Panel mounting bracket

84.6

97.5

78.8

101.5

Φ4.3

Φ4.3

Φ4.3

Φ4.3

M4

M4

M4

M4
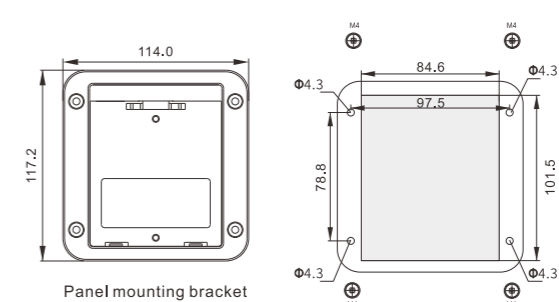
Panel mounting bracket description

The gray area is the hollowed out part, the hollowed out area in the middle is 84.6×101.5, and the hollowed out area at the four corners is a circle with a diameter of 4.34. Put M4 screws to fix the bracket on the door panel.

PLC

HMI

Integrated controller

Industrial informatization

Servo system

Frequency inverter

Stepping system

Vision system

251

252

Accessory Description

Standard I/O card
VH6-A100

1 channel RS485 communication + 2 channels AI +1 channel AO + 4 channels bipolar input + 1 channel YT + 1 channel YR

Expansion I/O card
VH6-B100

1 channel AI + 1 channel AO + 3 channels bipolar input + 1 channel YT + 1 channel YR

CANopen communication card
VH6-CN100

The expansion interface card specially designed for CANopen protocol is suitable for Xinje frequency converter. Xinje frequency converter can be connected to CANopen network and exist as a slave station through this card.

EtherCAT communication card
VH6-CC100

The expansion interface card specially designed for EtherCAT protocol is suitable for Xinje frequency converter. Xinje frequency converter can be connected to EtherCAT network and exist as a slave station through this card.

Simple incremental encoder PG card
VH6-DM200

It is used for receiving and detecting motor encoder signal by frequency converter. The frequency converter can control the motor speed and torque more accurately. The types of encoder signals that this PG card can receive are: differential type, NPN collector open circuit, push-pull type. However, this PG card does not support frequency division output function.

LCD panel
VH6-PE100

The panel is LED display, which can set parameters, monitor the operation status of the frequency converter and operate the frequency converter.

Upper computer connection cable
JC-EV-15

To connect the frequency inverter and PC, to connect the frequency inverter software and update the firmware.

Panel expansion cable
JC-RD-20

The extension cable of the operation panel is a standard network cable, which only provides 2 or 3 meters. Users can also make other lengths of network cables by themselves.

Mounting base
VH6-DPANEL

Base of VH6 frequency converter operation panel during extension installation. Model: VH6-DPANEL

LCD panel
VH-PC100

The panel adopts LCD display, which can set parameters, upload and download parameters, monitor the operation status of the frequency converter, and facilitate the debugging of the frequency converter.

Knob panel
VH6-PE200

The panel uses a knob to adjust the speed, which can set parameters, monitor the operation status and facilitate the speed control of the frequency converter.

Expansion card protection cover
VH6-A100-PC

It can be used for protection of VH6 converter A/B expansion card. Model: VH6-A100-PC

Typical Application Industry

It is applicable to machine tools, air compressors, papermaking, oil fields, municipal engineering, plastic machinery industry, metal processing, textile industry, printing and packaging, ceramic machinery, wood processing, cable processing, sewage treatment and other fields.

VH1 economical open-loop vector converter

VH1 series is an economical open-loop vector converter of single-phase 220VAC and three-phase 380VAC, which is launched by Xinje company based on the market demand of small power, small volume and simple speed regulation. As an economical converter with small volume and large capacity, VH1 series has significant advantages such as high EMC specification design and high protection, and can be widely used in small automatic application machinery represented by woodworking carving, food canning, automatic production line, packaging equipment, logistics transmission line, edge banding machine, etc.
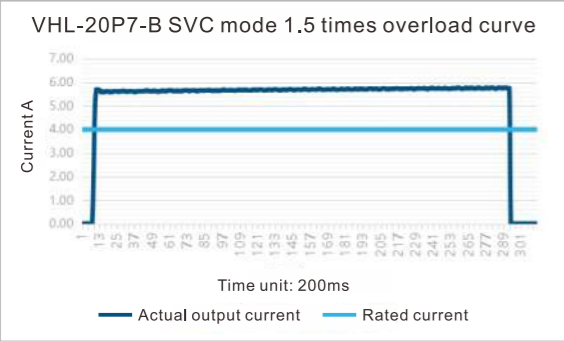
Operation Panel

- Adjustable knob design makes speed regulation simpler
- Multi-function indicator light, rich in information and full of appearance

- Support 150% overload for 1 minute and 180% overload for 3s every 300s
- Standard RS485 communication is equipped to build multi-axis control system
- The new AMR platform system can also support asynchronous and synchronous motors

Appearance and Protection

- Small body, compact and refined design
- Guide rails are installed side by side, saving time and effort
- The coating is strengthened to improve the product protection, and it can easily face the harsh environment of oil mist and moisture corrosion

- A full range of built-in RFI filters can effectively reduce EMC external interference and ensure stable operation of the equipment
- Full series of modular machines to enhance product stability
- Support the external LCD panel, and realize the one-button upload and download of parameters

VHL general open-loop vector converter

VHL series is a general open-loop vector converter developed by Xinje Company. With the book structure design, the volume is greatly reduced compared with the previous generation of products, and at the same time, the appearance value and protection level are significantly improved. The internal coating is strengthened, which conforms to the 3C3 standard. The whole system is equipped with IGBT integrated module, which can achieve 150% heavy load output. It can be widely used in wire drawing machines, air compressors, livestock farms, grinders, wire cutting, edge banding machines and other application machinery.

Operation Panel

- Shuttle keyboard design, easy for customers to adjust speed
- Silicone key design, greatly improved touch feeling
- White LED and blue indicator light, full of sense of technology

Appearance and protection

- Book structure design, saving installation space
- Independent air duct design can prevent dust from entering the inverter to cause short circuit and other faults, and improve reliability
- Close the body to prevent foreign matters and ensure the long-term stable operation of electronic components
- The coating is strengthened to prevent oil mist and moisture corrosion, meeting 3C3 standard

Motor terminal UVW

- Support 150% 60s interval 300s overload
- Support asynchronous synchronous motor control

Control terminals

- Quick wiring of spring terminals, no need to worry about screw slipping

Excellent Product Performance

Overload capacity

VHL-20P7-B SVC mode 1.5 times overload curve

Time unit: 200ms

— Actual output current   — Rated current

VHL inverter 1.5 times overload time 60s

Speed fluctuation

VHL-20P7-B SVC mode speed fluctuation curve

Time unit: 200ms
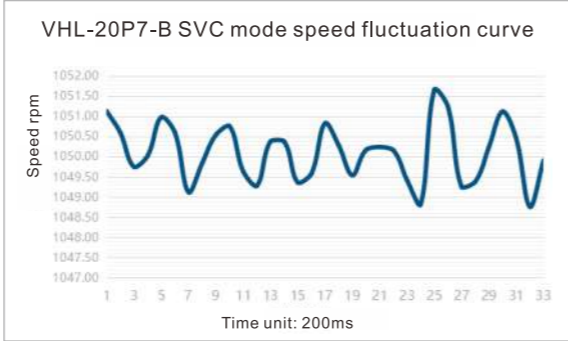
VHL inverter speed fluctuation ±0.3%

Naming Rule

VHL inverter naming rule

VH L - 2 0P4 - B
① ② ③ ④ ⑤

① Product code		② Product series		③ Input voltage level		④ Power level		⑤ Brake unit	
Symbol	Name	Symbol	Name	Symbol	Power supply voltage	Symbol	Power level (kW)	Symbol	Brake unit
VH	General VFD	L	Book-type open-loop vector converter	0P4	—	0.4	B	Built-in brake unit	
				4	380V	0P7	0.75	Vacant	None
				2	220V				

Technical Parameters

VFD model	Power supply capacity (KVA)	Input current (A)	Output current (A)	Adaptive motor
Single phase 220V 50/60Hz				
VHL-20P4-B	1	5.4	2.3	0.4
VHL-20P7-B	1.5	5.6	4	0.7
Three phase 380V 50/60Hz				
VHL-40P4-B	1	1.9	1.5	0.4
VHL-40P7-B	1.5	3.4	2.1	0.7

Technical Specification

Item name		VHL general open-loop vector converter	
Input	Power range	0.4kW~5.5kW	
	Rated voltage, frequency	3AC 380V;50/60Hz 1AC 220V;50/60Hz	
	Allowable voltage fluctuation range	±15%	
Output	Voltage	0~input voltage	
	Frequency	0~600Hz	
Control performance	Control motor type	Asynchronous motor, synchronous motor	
	Control mode	Vector control without speed sensor (SVC)	V/F control (VVF)
	Speed precision	±0.5%	±1%
	Speed fluctuation	±0.3%	±0.5%
	Speed regulation range	1:100	1:50
	Startup torque	0.5Hz:150%	1.0Hz:150%
	Torque accuracy	±10% rated torque	/
	Torque response	≤20ms	/
	Overload ability	150% rated current 60s	
	Frequency precision	0.01Hz	
	Frequency resolution	Digital setting-- 0.01Hz, analog setting - - max frequency ×0.1%	
Control terminal input	Digital input channel	Standard: 5 digital bipolar input X terminal	
	Analog input channel	Standard: 2 analog input AI1/AI2, support 0~10V voltage input or 0~20mA current input	
Control terminal output	Digital output channel	Standard: 1 multi-functional Y1 output terminal, 1 group of TA TB TC relay output terminal	
	Analog analog channel	Standard: 1 analog output terminal AO1, support 0~10V voltage output or 0~20mA current output	
Product performance	Start command given mode	Communication given (Modbus), operate panel given, terminal given	
	Frequency given mode	Communication given (Modbus), operate panel given, terminal given, analog AI given, multi-speed given, simple PLC given, PID main and auxiliary given	
	Typical function	Frequency main and auxiliary operation, no reverse rotation, torque increase, nine VF curve settings, five section AI curve settings, acceleration and deceleration curve settings, terminal delay and filtering, terminal multi-functional input and output, DC braking, energy consumption braking, jog operation, 16-section speed, built-in two-channel PID, speed tracking restart, carrier modulation, fault recording, fault self reset, pre-excitation start, 30 groups of user-defined parameters	
	Important function	Carrier modulation, torque control, motor self-tuning, current limiting control, overvoltage control, undervoltage control, speed tracking, droop control, oscillation suppression, overvoltage overcurrent stall control, automatic voltage regulation (AVR), automatic energy-saving operation, etc	
	Protection function	Power on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, underload protection, overcurrent overvoltage stall protection, relay pull in protection, terminal protection, instantaneous power failure nonstop, etc	
	Dynamic braking	Built-in brake unit, please select suitable brake resistor	
Features function	Multiple bus support	Standard Modbus	
	Multiple encoder support	LCD display, parameter setting, status monitoring, parameter copy, fault analysis and location, program download, mass storage of parameters	
	Instant stop nonstop	In case of instantaneous power failure, the load feedback energy compensates for the reduction of voltage to maintain the continuous operation of the frequency converter in a short time	
	Timing control	Timing control function: time range 0.1min~6500min	
	Multi-motor switching	Two groups of motor parameters can realize the switching control of two motors	
	Flexible and diversified terminal functions	There are 15 kinds of multifunctional terminals X, 41 kinds of terminals Y, and 19 kinds of logic function options AO, which meet the requirements of general frequency converter control functions	
	Communication customization parameters	It is convenient for users to read and write the parameters of the frequency converter continuously	
	Software	Rich background monitoring functions to facilitate on-site data acquisition and debugging	
Display and keyboard	Keyboard display	It can display the set frequency, output frequency, output voltage, output current, input and output status and other parameters	
	Key lock	Realize partial or full locking of keys to prevent false triggering	
	Parameter copy	Standard LED display digital potentiometer keyboard, optional LCD English display keyboard (parameter upload/download)	
	Optional accessories	LCD keyboard	
Environment	Place of use	Indoor, free from direct sunlight, no dust, corrosive gas, combustible gas, oil mist, water vapor, drip or salt	
	Altitude	Less than 1000m (When it is higher than 1000m, the output current needs to be reduced by about 10% of the rated current for each increase of 1000m)	
	Ambient temperature	-10ºC~+40ºC (please derate to use or enhance the heat dissipation when ambient temperature is 40ºC~50ºC)	
	Ambient humidity	Less than 95%RH, no condensation of water droplets	
	Vibration	Less than 5.9m/s2 (0.6g)	
	Storage temperature	-40ºC~+70ºC	
	Protection level	IP20	
	Cooling mode	Forced air cooling	
	Installation mode	Wall mounted and embedded	

Terminal Wiring Diagram

Brake resistor

PB   P+   P-

RUN   REV   REMOT   TUNE

V   A   Hz   R/MIN

MENU   +   »

RUN   STOP

Circuit breaker   Contactor   Fuse

L1   R
L2   S
L3   T

Three-phase AC
Output reactor

U   U
V   V   (M)
W   W

Grounding
resistance
below 10Ω

Control circuit

Fieldbus communication
Modbus communication
Max speed 115200bps

485+
485−
24V
COM
0V

Digital input signal

Forward run/stop   P2-00= 1   X1
Reverse run/stop   P2-01= 2   X2
Fault reset   P2-02= 10   X3
Multi-speed command 1   P2-03= 12   X4
Multi-speed command 2   P2-04= 13   X5

Analog input

2 channels
analog input
0~10V/0~20mA
0-10V/0-20MA

1k Ω
5k Ω

10V
AI1
AI2   V   S1   I
GND   V   S2   I

Y1
COM

Open collector output
Max DC24V/50mA

TA
TB
TC

1 channel relay output
AC250V 3A DC30V 1A

Dial switch
S3
V   I

AO1
GND   (AM)

1 channel analog output
0~10V/0~20mA

Dial switch   Shield cable   Stranded shielded wire

RJ45 port   ⊙ Main circuit terminals   ○ Control circuit terminals

Installation Dimension Drawing （unit: mm）

VHL-20P4/20P7/40P4/40P7-B

Ø4.5   22.5

161.0

152.0

55.6

164.6

PLC

HMI

Integrated controller

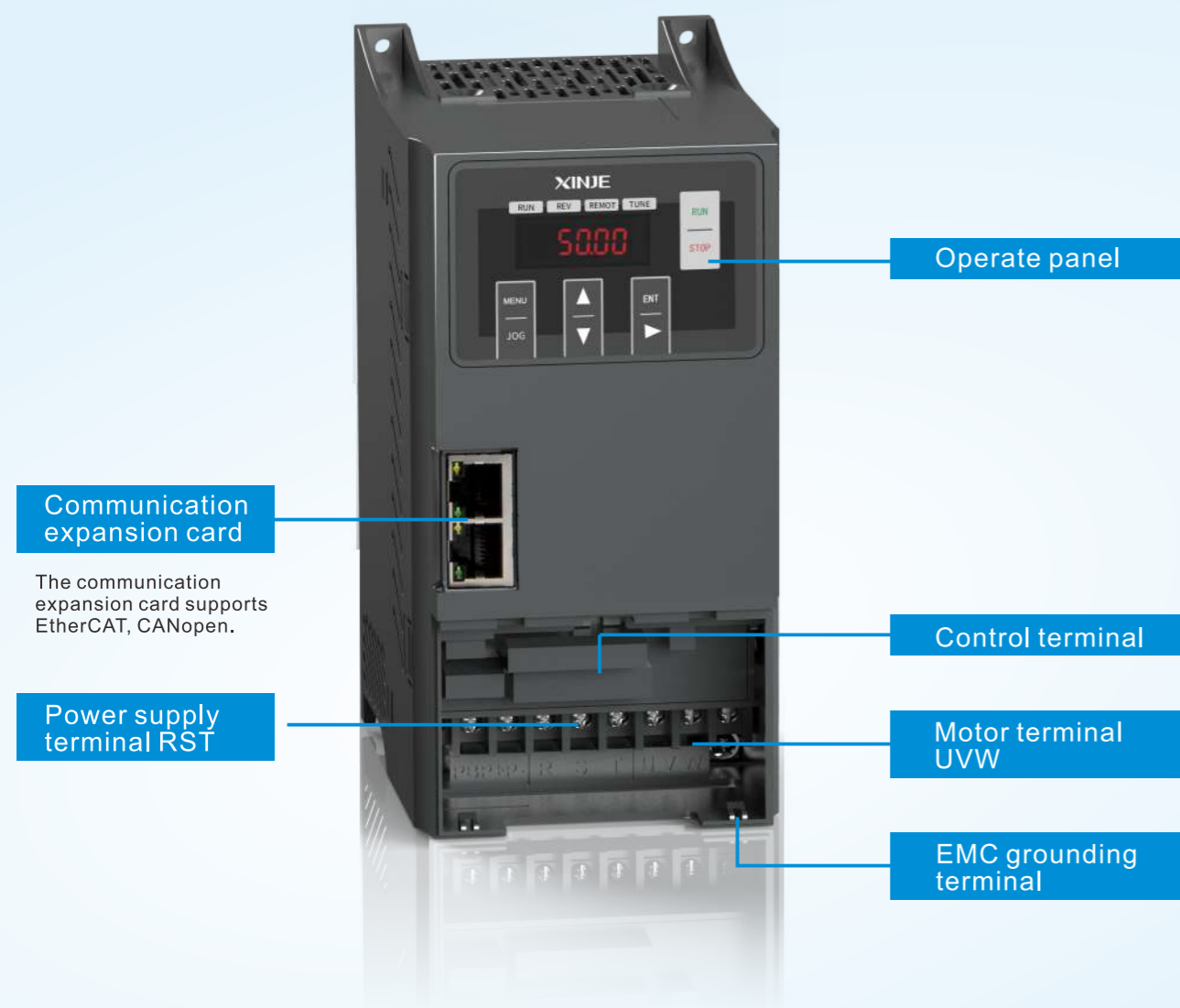Industrial information

Servo system

Frequency inverter

Stepping system

Vision system
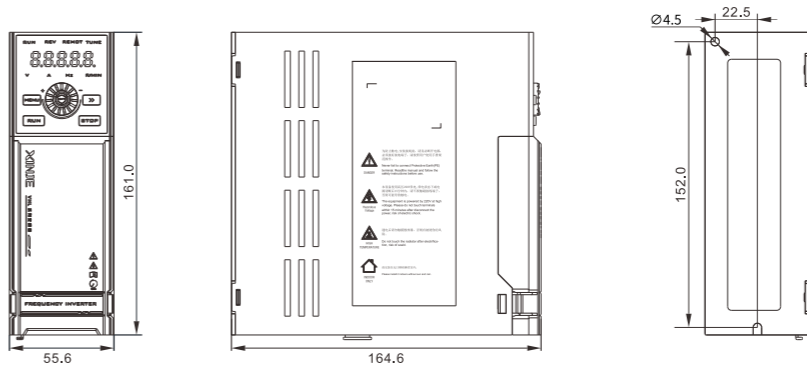
VH5 general type open loop vector frequency inverter

VH5 series is a general-purpose open-loop vector frequency converter developed by Xinje company. It has the remarkable characteristics of small volume, better cost performance and high reliability. At the same time, VH5 series can be combined with communication expansion card to realize EtherCAT, CANopen and other high-speed bus networking.

VH5 can be widely used in automatic production lines, textile, woodworking, engraving machines, logistics equipment, food filling, food packaging and other miniaturized mechanical equipment.
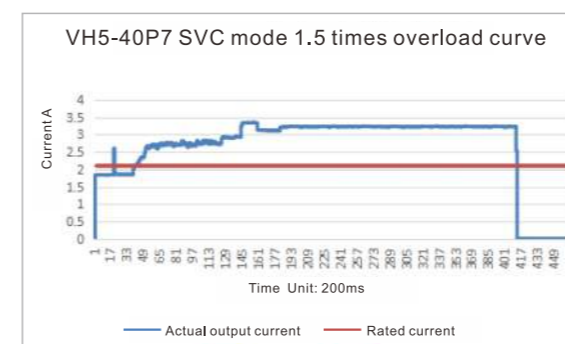
Operate panel

Communication expansion card

The communication expansion card supports EtherCAT, CANopen.

Control terminal

Power supply terminal RST

Motor terminal UVW

EMC grounding terminal

VH5 frequency converter is equipped with one RS485 communication port as standard. In addition,it can be added to EtherCAT and CANopen networks through the special communication expansion card and exist as a slave station.
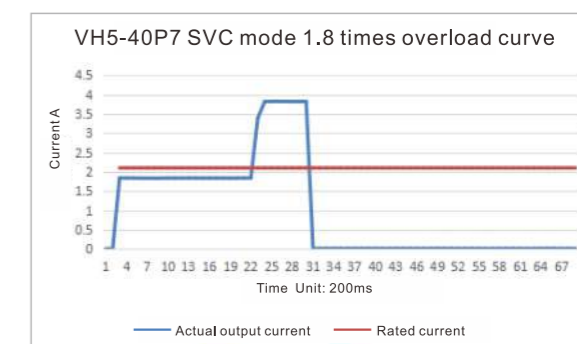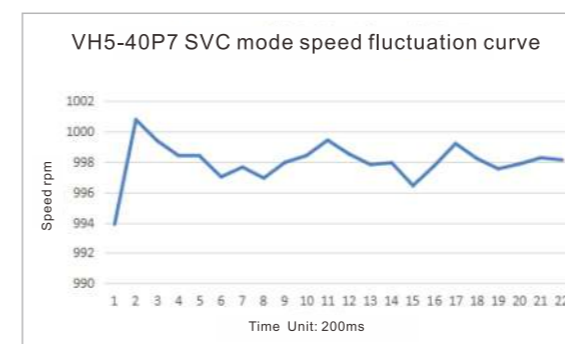
Excellent Product Performance

Overload ability

VH5-40P7 SVC mode 1.5 times overload curve

Current A

Time Unit: 200ms

— Actual output current   — Rated current

VH5 frequency converter 1.5 times overload time 60 seconds

VH5-40P7 SVC mode 1.8 times overload curve

Current A

Time Unit: 200ms

— Actual output current   — Rated current

VH5 frequency converter 1.8 times overload time 1 second

Speed fluctuation

VH5-40P7 SVC mode speed fluctuation curve

Speed rpm

Time Unit: 200ms

VH5 frequency inverter speed fluctuation ±0.3%

PLC

HMI

Integrated controller

Industrial information

Servo system

Frequency inverter

Stepping system

Vision system

Naming Rule

| VH5 frequency inverter naming rule

VH 5 - 4 0P7 - B
①   ②   ③   ④   ⑤

① Product code

Sign	Name
VH	Frequency inverter

② Product series

Sign	Name
5	General type open loop vector frequency inverter

③ Input voltage level

Sign	Power supply voltage
4	380V
2	220V

④ Power level

Sign	Power level (kW)
0P7	0.75
1P5	1.5
…	…
5P5	5.5

⑤ Brake unit

Sign	Brake unit
B	Built-in brake unit
Vacant	No

Technical Parameter

Model	Power supply capacity (KVA)	Input current (A)	Output current (A)	Adaptive motor (kW)
Single phase 220V 50/60Hz				
VH5-20P7-B	1.5	5.6	4.7	0.75
VH5-21P5-B	3.0	9.3	7.5	1.5
VH5-22P2-B	4.5	12.7	10.0	2.2
Three-phase 380V 50/60Hz				
VH5-40P7-B	1.5	3.4	2.1	0.75
VH5-41P5-B	3.0	5.0	3.8	1.5
VH5-42P2-B	4.0	5.8	5.1	2.2
VH5-43P7-B	5.9	10.5	9.0	3.7
VH5-45P5-B	8.9	14.6	13.0	5.5

Technical Specifications

Item name		VH5 general type open loop vector frequency inverter	
	Power range	0.75kW~5.5kW	
Input	Rated voltage, frequency	3AC 380V;50/60Hz 3AC 220V;50/60Hz 1AC 220V;50/60Hz	
	Allowable voltage fluctuation range	±15%	
Output	Voltage	0~input voltage	
	Frequency	0~600Hz	
Control performance	Control motor type	Asynchronous motor	
	Control mode	Vector control without speed sensor (SVC)	V/F control (VVF)
	Speed precision	±0.5%	±1%
	Speed fluctuation	±0.3%	±0.5%
	Speed regulation range	1:100	1:50
	Startup torque	0.5Hz:150%	1.0Hz:150%
	Torque accuracy	±10% rated torque	/
	Torque response	≤20ms	/
	Overload ability	150% rated current 60s, 180% rated current 10s, 200% rated current 2s	
	Frequency precision	0.01Hz	
	Frequency resolution	Digital setting - - 0.01Hz, analog setting - - max frequency ×0.1%	
Control terminal input	Digital input channel	Standard: 4 digital X bipolar input terminals	
	Analog input channel	Standard: 1 analog input terminal AI1, support 0~10V or 0~20mA	
Control terminal output	Digital output channel	Standard: 1 multi-functional Y1 output terminal, 1 group TA TB TC relay output terminal	
	Analog output channel	Standard: 1 analog output terminal AO1, support 0~10V or 0~20mA	
Product function	Start command given mode	Communication given (Modbus, CANopen, EtherCAT), operate panel given, terminal given	
	Frequency given mode	Communication given (Modbus, CANopen, EtherCAT), operate panel given, terminal given, analog AI given, multi-speed given, simple PLC given, PID main and auxiliary given	
	Typical function	Frequency main and auxiliary operation, no reverse rotation, torque increase, nine VF curve settings, five section AI curve settings, acceleration and deceleration curve settings , terminal delay and filtering, terminal multi-functional input and output, DC braking, dynamic braking , jog operation, 16-section speed, built-in two-channel PID, speed tracking restart, carrier modulation, fault recording, fault self reset, pre-excitation start, 30 groups of user-defined parameters	
	Important function	Carrier modulation, torque control, motor self-tuning, current limiting control, overvoltage control, undervoltage control, speed tracking, droop control, oscillation suppression, overvoltage overcurrent stall control, automatic voltage regulation (AVR), automatic energy-saving operation, etc	
	Protection function	Power on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, underload protection, overcurrent overvoltage stall protection, relay pull in protection, terminal protection, instantaneous power failure nonstop, etc	
	Dynamic braking	Built-in brake unit, please select suitable brake resistor	
Features function	Multiple bus support	Standard Modbus, can expand EtherCAT, CANopen	
	Multiple encoder support	LCD display, parameter setting, status monitoring, parameter copy, fault analysis and location, program download, mass storage of parameters	
	Instant stop nonstop	In case of instantaneous power failure, the load feedback energy compensates for the reduction of voltage to maintain the continuous operation of the frequency converter in a short time	
	Timing control	Timing control function: time range 0.1min~6500min	
	Multi-motor switching	Two groups of motor parameters can realize the switching control of two motors	
	Flexible and diversified terminal functions	There are 51 kinds of multifunctional terminals X, 41 kinds of terminals Y, and 19 kinds of logic function options AO, which meet the requirements of general frequency converter control functions	
	Communication customization parameters	It is convenient for users to read and write the parameters of the frequency converter continuously	
	Software	Rich background monitoring functions to facilitate on-site data acquisition and debugging	
Display and keyboard	Keyboard display	It can display the set frequency, output frequency, output voltage, output current, input and output status and other parameters	
	Key lock	Realize partial or full locking of keys to prevent false triggering	
	Parameter copy	Standard LED display digital potentiometer keyboard, optional LCD English display keyboard (parameter upload/download)	
	Optional accessories	LCD keyboard, communication card (EtherCAT, CANopen)	
Environment	Place of use	Indoor, free from direct sunlight, no dust, corrosive gas, combustible gas, oil mist, water vapor, drip or salt	
	Altitude	Less than 1000m (When it is higher than 1000m, the output current needs to be reduced by about 10% of the rated current for each increase of 1000m)	
	Ambient temperature	-10ºC~+40ºC (please derate to use or enhance the heat dissipation when ambient temperature is 40ºC~50ºC)	
	Ambient humidity	Less than 95%RH, no condensation of water droplets	
	Vibration	Less than 5.9m/s2 (0.6g)	
	Storage temperature	-40ºC~+70ºC	
	Protection level	IP20	
	Cooling mode	Forced air cooling	
Installation mode		Wall mounted and embedded	

PLC | HMI | Integrated controller | Industrial information | Servo system | Frequency inverter | Stepping system | Vision system

Terminal Wiring Diagram

Installation Dimension (Unit:mm)

VH5-20P7/21P5/22P2/40P7/41P5/42P2/43P7-B   VH5-45P5-B

Panel extension

- Not use the panel mounting base, the opening size of the extended panel
- Use the panel mounting base, the opening size of the extended panel
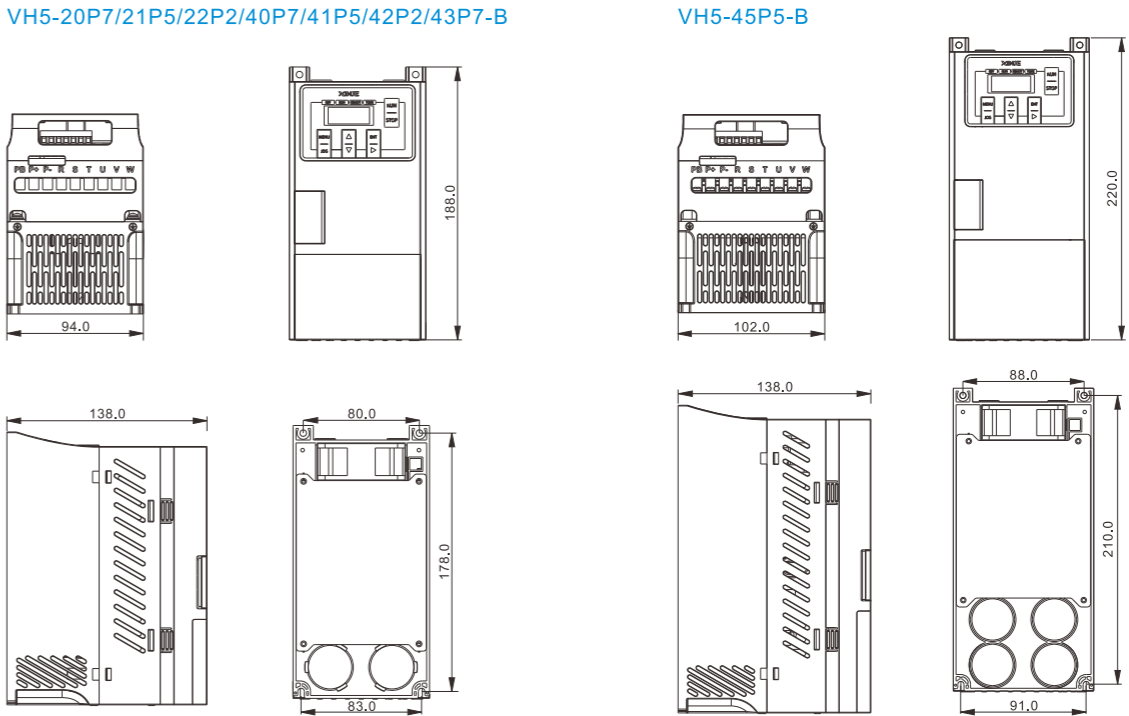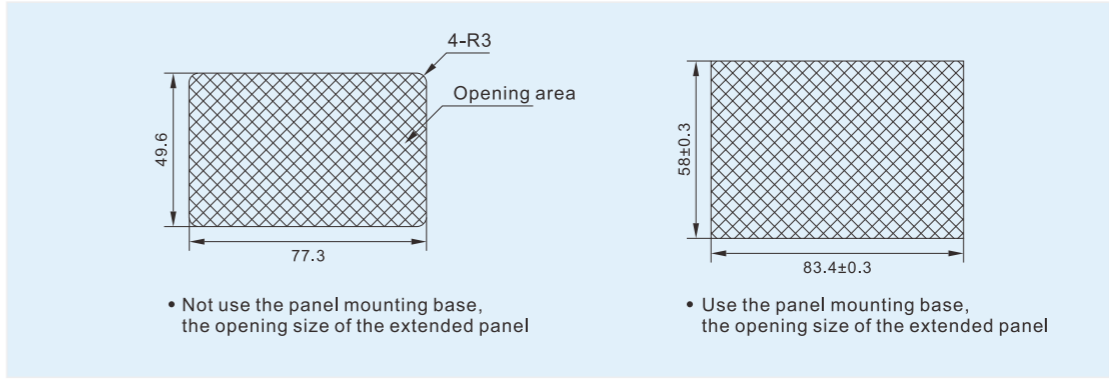
VH5 series VFD operate panel can be extended, users can install the VFD panel in the hole slot according to the two opening sizes provided above.

Accessory Description

CANopen communication card
VH5-CN100

The expansion interface card specially designed for CANopen protocol is suitable for Xinje frequency converter. Xinje frequency converter can be connected to CANopen network and exist as a slave station through this card.

EtherCAT communication card
VH5-CC100

The expansion interface card specially designed for EtherCAT protocol is suitable for Xinje frequency converter. Xinje frequency converter can be connected to EtherCAT network and exist as a slave station through this card.

LED operate panel
VH5-PE100

The panel is a single-row LED display, which can set parameters, monitor the operation status and operate the converter.

Mounting base
VH5-DPANEL

VH5 series VFD extension panel installation base.
Model: VH5-DPANEL

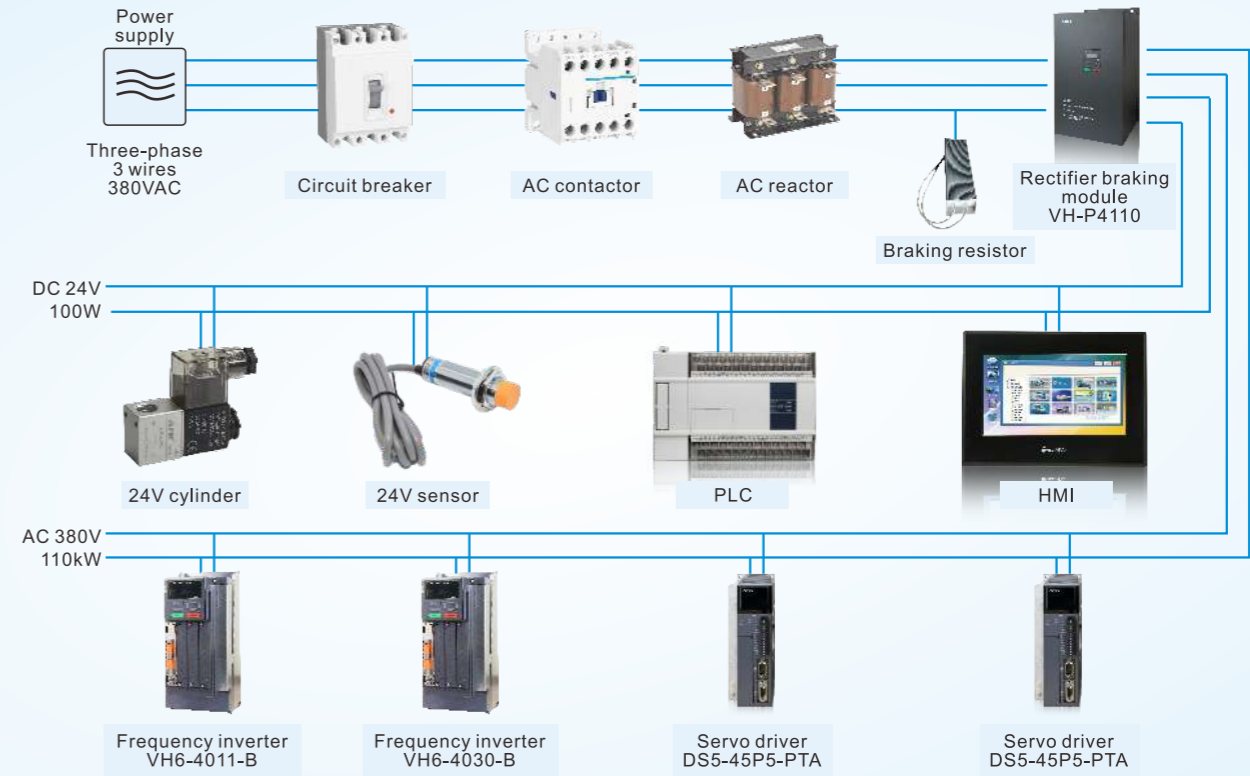# VH rectifier braking module

VH series rectifier braking module is mainly used in occasions where DC common bus is required for drive products such as frequency converter or servo.

Two functions of rectifier braking unit composing the common bus:

Energy conservation and environmental protection, power recovery

Stable and reliable operation to avoid losses caused by accidental power failure and shutdown

DC common bus system topology

Power supply

Three-phase 3 wires 380VAC

Circuit breaker

AC contactor

AC reactor

Rectifier braking module VH-P4110

Braking resistor

DC 24V 100W

24V cylinder

24V sensor

PLC

HMI

AC 380V 110kW

Frequency inverter VH6-4011-B

Frequency inverter VH6-4030-B

Servo driver DS5-45P5-PTA

Servo driver DS5-45P5-PTA

*Note: The VH rectifier module inputs AC380V voltage, which can provide electric energy for the following products after rectification:
1.380V frequency converter, servo driver, and the total load power shall not exceed the rated power of the module.
2.DC 24V PLC, HMI, cylinder, sensor, stepping driver, the maximum power shall not exceed 100W.

Application device type:

Double twister, slitter, drawing machine, non-woven production line and other types of equipment.

PLC

HMI

Integrated controller

Industrial informatization

Servo system

Frequency inverter

Stepping system

Vision system

Naming Rule

Naming rules of rectifier braking module

VH - P 4 110
① ② ③ ④

① Product code

Sign	Name
VH	VH series

② Rectifier braking module

Sign	Name
P	Rectifier braking module

③ Input voltage level

Sign	Power supply voltage
4	380V

④ Power level of rectifier module

Sign	Power level (kW)
030	30
055	55
110	110

Model and Technical Parameters of Rectifier Braking Module

Model of rectifier braking module		VH-P4110	VH-P4055	VH-P4030
Input	Rated power (kW)	110	55	30
	Input current (A)	220	112	68
	Input voltage (ACV)	380V;50Hz/60Hz		
	Power supply capacity (KVA)	180	85	55
Output	Output current (DCA)	240	100	44
	Output voltage (DCV)	537	530	531
Braking	Rated continuous braking current (A)	50	40	40
	Max peak braking current (A)	110	100	50
	Recommended rated braking resistor (Ω)	11kW / 10Ω	9kW / 13Ω	5kW / 20Ω
	Min braking resistor	7Ω	10Ω	16Ω

Installation Dimension Drawing (Unit: mm)

VH-P4030
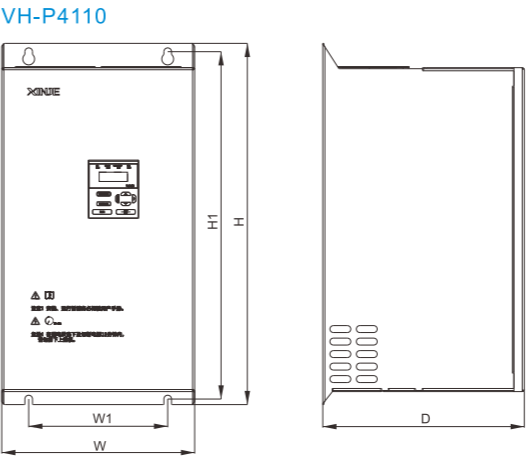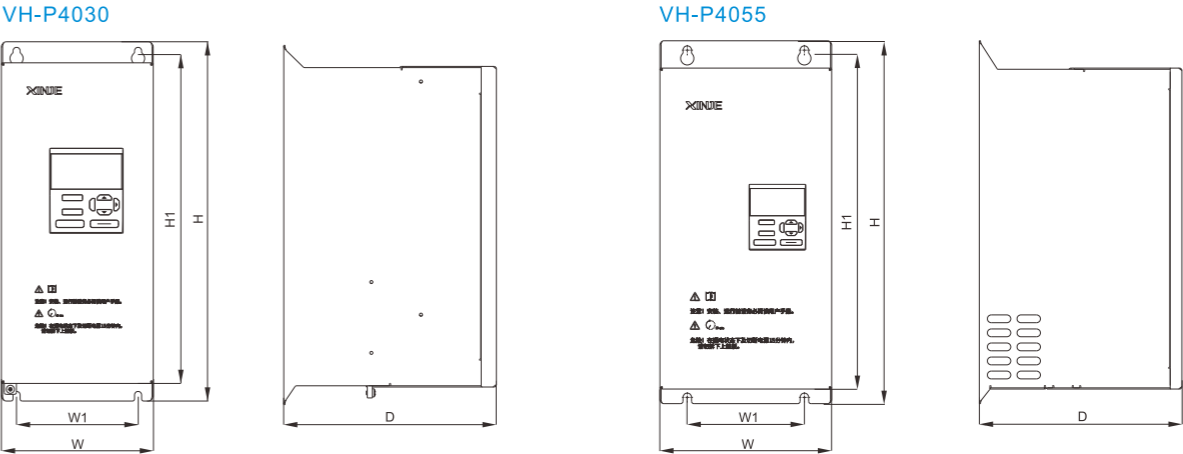
VH-P4055

VH-P4110

Model of rectifier braking module	Overall installation dimension (width×height×depth)				
	W	W1	D	H	H1
VH-P4030	150	120	210	355	340
VH-P4055	220	150	260	465	445
VH-P4110	277.6	200	290	520	500