# XINJE VH1 series general frequency converter

Software fast manual

Thank you for using this product. This fast manual provides relevant information about VH1 series variable frequency drives. Please read this manual carefully before use to ensure the correctness of installation and use. More detailed information about VH1 series frequency converter (parameters, alarms, etc.) can be found in the VH1 frequency inverter manual.

The use of the operation panel

■ Keyboard layout

The operation panel and control terminal of the frequency converter can control the starting, speed regulating, stopping, braking, operation parameter setting and peripheral equipment of the motor.

The appearance of the operation panel is shown in the figure below.
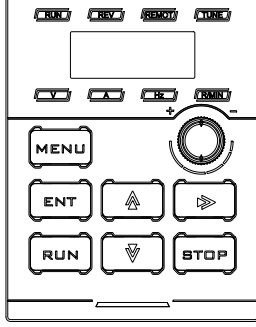
■ Keyboard function description

There are 8 keys on the frequency converter operation panel, and the functions are defined as follows:

Button	Name	Function
MENU	Programming/ exit	Enter or exit the programming status
ENT	Save/switch	Save the parameter or enter next menu in programming status
RUN	Forward run	Press this button to run forward in operation panel running command mode
STOP	Stop/reset	Stop/reset the fault
▲	Increase	Increase the value or pause frequency in operation
▼	Decrease	Decrease the value or pause frequency in operation
▷	Shift/monitor	In the editing state, you can choose to set the modification bit of the data; in other states, you can switch the display state and monitor parameters
◎	Frequency setting	The operating frequency is timed by the panel potentiometer to adjust the frequency.

■ LED and indicator description

There are 5-digit 7-segment LED digital tubes, 4 status indicators and 4 unit indicators on the inverter operation panel.

The four status indicators are located above the LED tube, from left to right: RUN, REV, REMOT, TUNE. The following table describes the indicator lights.

| Indicator lights	Meaning	Function
RUN	Operation indicator	ON: running OFF: stop
REV	Forward/reverse operation indicator	ON: reverse operation OFF: forward operation Flashing: status switching
REMOT	Command source indicator	OFF: panel start/stop ON: terminal start/stop Flashing: communication start/stop
TUNE	Tuning indicator	Flash slowly: tuning status Flash quickly: fault status ON: torque status

The four unit indicators are located below the LED digital tube, from left to right: V, A, Hz, R/MIN. The following table is a description of unit indicators.

Indicator lights	Meaning	Function
V	Voltage	ON: Display voltage
A	Current	ON: Display current
Hz	Frequency	OFF: Display frequency
R/MIN	Speed/%	ON: Display speed Flash: Display %

■ Parameter setting example

For example, the parameter PC-00 (jog frequency) is changed from 5.00Hz to 8.05Hz.
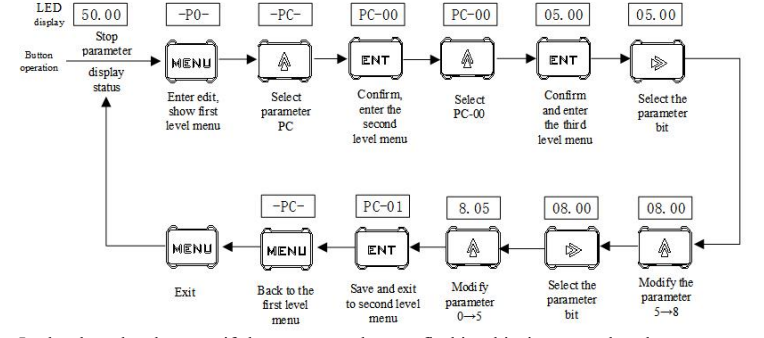
In the three-level menu, if the parameter has no flashing bit, it means that the parameter cannot be modified. The possible reasons are as follows:
1) The parameters are not modifiable, such as the actual detection state parameters, operation record parameters, etc;
2) This parameter can not be modified in the running state, and can be modified only after shutdown.

Common parameter

■ Group P0: Basic operation parameters

Parameter	Name	Setting range	Default value
P0-01	First motor control mode	0: VF control mode 1: No speed sensor vector control (SVC)	0
P0-02	Operation command channel selection	0: Operate panel 1: Terminal 2: Communication port	0
P0-03	Main frequency source A selection	0: Digital set (Power-off no memory) 1: Digital set (Power-off memory) 2: AI1 3: AI2 4: Body panel knob set 5: Terminal pulse X4 set 6: Communication set 7: Multi-segment instruction set 8: PID set 9: Simple PLC operation 10: Special mode for drawing and winding 11:External pilot panel knob set	0
P0-04	Auxiliary frequency source B selection	0: Digital set (Power-off no memory) 1: Digital set (Power-off memory) 2: AI1	0
P0-05	Frequency source superposition selection	3: AI2 4: Body panel knob set 5: Terminal pulse X4 set 6: Communication set 7: Multi-segment instruction set 8: PID set 9: Simple PLC operation 10: Special mode for drawing and winding 11:External pilot panel knob set Ones bit: frequency source selection 0: Main frequency source A 1: Calculation results of main and auxiliary frequency sources 2: Switching between main frequency source A and auxiliary frequency source B Tens bit: the operation relationship of main and auxiliary frequency sources 0: A+B 1: A-B 2: max (A, B) 3: min (A, B)	00
P0-06	Auxiliary frequency source B range selection	0: Relative to the maximum frequency 1: Relative to the main frequency source A	0
P0-07	Auxiliary frequency source B range	0%~150%	100%
P0-09	Digital set of auxiliary frequency source offset	0.00Hz~max frequency P0-13	0.00Hz
P0-10	Preset frequency	0.00Hz~max frequency P0-13	50.00Hz
P0-12	Frequency shutdown memory selection for digital set	0: No memory 1: Memory	1
P0-13	Max output frequency	50.00Hz~600.00Hz	50.00Hz
P0-14	Upper limit frequency source	0: Set by P0-15 1: AI1 set 2: AI2 set 3: Body panel knob set 4: Pulse set 5: Communication set	0
P0-15	Upper limit frequency	Lower frequency P0-17~Max output frequency P0-13	50.00Hz
P0-16	Upper limit frequency offset	0.00Hz~ Max output frequency (P0-13)	0.00Hz
P0-17	Lower frequency	0.00Hz~ Upper limit frequency P0-15	0.00Hz
P0-18	Acceleration time 1	0~65000s (PC-09=0) 0.0~6500.0s (PC-09=1) 0.00~650.00s (PC-09=2)	Model setting
P0-19	Deceleration time 1	0~65000s (PC-09=0)	Model

Parameter	Name	Setting range	Default value
		0.0~6500.0s (PC-09=1) 0.00~650.00s (PC-09=2)	setting
P0-20	Operation direction	Ones bit: running direction 0: Run in the default direction 1: Run in the opposite direction to the default direction Tens bit: Disable Inversion 0: Invalid 1: Valid	00
P0-21	Reverse frequency disable	0: Valid 1: Invalid	0
P0-22	Dead time of forward and reverse rotation	0.0s~3600.0s	0.0s
P0-23	Run-time frequency instruction UP/DOWN benchmark	0: Operating frequency 1: Set frequency	0
P0-25	Motor parameter group selection	0: Motor parameter group 1 1: Motor parameter group 2	0

■ Group P2: Input terminal function parameters

Parameter	Name	Setting range	Default value
P2-00	Input terminal X1 function selection	0: No function	01
P2-03	Input terminal X4 function selection	1: FWD or Run command 2: REV or FWD/REV direction (Note: when it is set to 1 or 2, it should be used with P2-10. See the parameter for details) 3: Three wire mode operation 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: UP/DOWN setting clear 9: Free stop 10: Fault reset 11: Frequency source switching 12: Multi-segment command terminal 1 13: Multi-segment command terminal 2 14: Multi-segment command terminal 3 15: Multi-segment command terminal 4 16: Acc/Dec time terminal 1 17: Acc/Dec time terminal 2 18: Acc/Dec prohibited 19: Pulse input 20: Counter input 21: Counter reset 22: Length counter input 23: Length counter reset 24: Swing frequency pause 25: Operation pause 26: PLC status reset 27: Run command switch to keyboard 28: Run command switch to communication	00

Parameter	Name	Setting range	Default value
		29: Torque control prohibited	
		30: Switch between speed control and torque control	
		32: PID pause	
		33: PID reverse direction of action	
		34: PID integral pause	
		35: PID parameter switching	
		36: External fault normally open input	
		37: External fault normally close input	
		38: User-defined fault 1	
		39: User-defined fault 2	
		40: Motor parameter selection	
		41: Switch between main frequency X and preset frequency	
		42: Switch between auxiliary frequency Y and preset frequency	
		43: Frequency setting effective terminal	
		44: DC braking	
		45: Deceleration DC braking	
		46: Emergency stop	
		47: External stop terminal (only valid for panel control)	
		48: External terminal stop (according to Dec time 4)	
		49: Reverse run prohibited	
		50: The running time is cleared	
		51: Two wire / three wire switching	
P2-10	XI terminal command mode	0: Two wire mode 1 1: Two wire mode 2 2: Three wire mode 1 3: Three wire mode 2	0
P2-11	XI terminal UP/DOWN changing rate	0.001Hz/s~50.000Hz/s	1.000Hz/s
P2-12	XI terminal filtering time	0.000s~1.000s	0.010s
P2-13	X1 delay time	0.0s~3600.0s	0.0s
P2-16	XI terminal effective state selection 1	0: Low level valid 1: High level valid Ones bit: X1 Tens bit: X2 Hundreds bit: X3 Thousands bit: X4 Ten thousands bit: X5	00000
P2-18	AI curve 1 min setting	0.00V~P2-20	0.00V
P2-19	AI curve 1 min setting corresponding frequency percentage	-100.0%~+100.0%	0.0%
P2-20	AI curve 1 max setting	P2-18~+10.00V	10.00V
P2-21	AI curve 1 max setting corresponding frequency percentage	-100.0%~+100.0%	100.0%
P2-22	AI curve 2 min setting	0.00V~P2-24	0.00V
P2-23	AI curve 2 min setting corresponding frequency percentage	-100.0%~+100.0%	0.0%
P2-24	AI curve 2 max setting	P2-22~+10.00V	10.00V

Parameter	Name	Setting range	Default value
P2-25	AI curve 2 max setting corresponding frequency percentage	-100.0%~+100.0%	100.0%
P2-26	AI curve 3 min setting	0.00V~P2-28	0V
P2-27	AI curve 3 min setting corresponding frequency percentage	-100.0%~+100.0%	0.0%
P2-28	AI curve 3 max setting	P2-26~+10.00V	10.00V
P2-29	AI curve 3 max setting corresponding frequency percentage	-100.0%~+100.0%	100.0%
P2-54	AI curve selection	Ones bit: AI1 curve selection 1: Curve 1 (2 points, see P2-18 ~ P2-21) 2: Curve 2 (2 points, see P2-22 ~ P2-25) 3: Curve 3 (2 points, see P2-26 ~ P2-29) 4: Curve 4 (4 points, see P2-30 ~ P2-37) 5: Curve 5 (4 points, see P2-38 ~ P2-45) Tens bit: AI2 curve selection, ditto	321
P2-55	AI below minimum input setting selection	Ones bit: AI1 below minimum input setting selection 0: Corresponding minimum input setting 1: 0.0% Tens bit: AI2 below minimum input setting selection	000
P2-56	AI1 filter time constant	0.00s~10.00s	0.10s
P2-57	AI2 filter time constant	0.00s~10.00s	0.10s
P2-60	AI1 jump point	-100.0%~+100.0%	0.0%
P2-61	AI1 jump range	0.0%~100.0%	0.5%
P2-62	AI2 jump point	-100.0%~+100.0%	0.0%
P2-63	AI2 jump range	0.0%~100.0%	0.5%
P2-66	PULSE min setting	0.00kHz~P2-68	0.00kHz
P2-67	PULSE min setting corresponding frequency percentage	-100.0%~+100.0%	0.0%
P2-68	PULSE max setting	P2-66~50.0kHz	50.00kHz
P2-69	PULSE max setting corresponding frequency percentage	-100.0%~+100.0%	100.0%
P2-70	PULSE filter time constant	0.00s~10.00s	0.10s

Note: Specific parameter setting, please refer to 'VH1 Series Frequency User Manual'.

■ **Group P9: Communication parameters**

Parameter	Name	Setting range	Default value
P9-00	Serial communication protocol selection	0: Modbus-RTU protocol	0
P9-01	Local address	0: Broadcast address 1 ~ 247 (Modbus valid)	1
P9-02	Communication baud rate	Ones bit: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS	06
		3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS	
P9-03	MODBUS data format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1)(Modbus valid)	1
P9-04	Communication timeout	0.0: Invalid 0.1~60.0s	0.0
P9-05	MODBUS response delay	0~20ms (Modbus valid)	2

■ **Common monitoring parameters**

Monitoring parameter	Content	Unit
U0-00	Operation frequency	Hz
U0-01	Setting frequency	Hz
U0-02	Bus voltage	V
U0-03	Output current	A
U0-04	Output voltage	V
U0-06	Output power	KW

■ **Common auxiliary parameter**

Function code	Instructions	Set value
P8-02	Parameter initialization	0: No operation 1: Restore factory parameters, motor parameters and values of P0-13 and P0-15 are not included 2: Clear record information 3: Restore factory parameters (including motor parameters)

■ **Motor parameter self learning**

When the inverter operates in vector control (P0-01 = 1) mode, it is required to set correct motor parameters, which is different from VF (P0-01 = 0) mode.

Parameter	Name	Set value
P1-00	Motor type selection	0: Common asynchronous motor
P1-01	Motor rated power	Model setting
P1-02	Motor rated voltage	Model setting
P1-03	Motor rated current	Model setting
P1-04	Motor rated frequency	Model setting
P1-05	Motor rated speed	Model setting

1. Set motor parameters, P0-02=0.

2. P1-35, choose the right self-learning method.

3. Press the RUN key on the panel to start parameter self-learning.

Parameters	Name	Set value
P1-35	Motor parameter self learning	0: No operation 1: Static self learning 1(part of parameters) 2: Motor rotation self-learning 3: Static self learning 2

Note: Specific parameter setting, please refer to 'VH1 Series Frequency User Manual'.

Alarm analysis

■ **Fault alarm processing**

When the inverter is abnormal, the LED digital tube will display the function code and its content of the corresponding fault, the fault relay will act, and the inverter will stop output. In case of fault, if the motor is rotating, it will stop freely until it stops rotating. The possible fault types of frequency converter are shown in the table.

Code	Name	Reason	Solution
Err01	Acceleration over current	1. There is grounding or short circuit in the output circuit of frequency converter 2. The control mode is vector control without parameter tuning 3. The acceleration time is too short 4. Improper manual torque lifting or VF curve 5. The voltage is low 6. Start the rotating motor 7. Sudden loading during acceleration 8. The selection of frequency converter is too small	1. Remove peripheral faults 2. Tuning of motor parameters 3. Increase acceleration time 4. Adjust the manual lifting torque or VF curve 5. Adjust the voltage to the normal range 6. Select speed tracking start or wait until the motor stops 7. Cancel sudden loading 8. Choose the frequency converter with higher power level
Err02	Deceleration over current	1. There is grounding or short circuit in the output circuit of frequency converter 2. The control mode is vector control without parameter tuning 3. The deceleration time is too short 4. The voltage is low 5. Sudden loading during deceleration 6. There is no additional brake unit and brake resistor	1. Remove peripheral faults 2. Tuning of motor parameters 3. Increase deceleration time 4. Adjust the voltage to the normal range 5. Cancel sudden loading 6. Add brake unit and resistor
Err03	Constant speed over current	1. There is grounding or short circuit in the output circuit of frequency converter 2. The control mode is vector control without self learning 3. The voltage is low 4. Is there sudden load in operation 5. The selection of frequency converter is too small	1. Remove peripheral faults 2. Tuning of motor parameters 3. Adjust the voltage to the normal range 4. Cancel sudden loading 5. Choose the frequency converter with higher power level
Err04	Acceleration overvoltage	1. High input voltage 2. There is external force to drive the motor during acceleration 3. Acceleration time too short 4. There is no additional brake unit and brake resistor	1. Adjust the voltage to the normal range 2. Cancel additional force or add brake resistor 3. Increase acceleration time 4. Add brake unit and resistor
Err05	Deceleration overvoltage	1. High input voltage 2. There is external force to drive the motor during deceleration 3. Deceleration time too short 4. There is no additional brake unit and brake resistor	1. Adjust the voltage to the normal range 2. Cancel additional force or add brake resistor 3. Increase deceleration time 4. Add brake unit and resistor
Err06	Constant speed over voltage	1. High input voltage 2. In the process of operation, there is external force to drive the motor	1. Adjust the voltage to the normal range 2. Cancel additional force or add brake resistor
Err07	Buffer resistance overload fault	1. Unstable supply voltage 2. The main control board is abnormal	1. Adjust the voltage to the normal range 2. Contact us

Code	Name	Reason	Solution
Err08	Under voltage	1. Instantaneous power failure 2. The input voltage of frequency converter is not in the range of specification requirements 3. Abnormal bus voltage 4.Abnormal rectifier bridge and buffer resistance 5. Abnormal drive board 6. Abnormal control board	1. Reset fault 2. Adjust the voltage to the normal range 3. Contact us
Err09	VFD overload	1. Whether the load is too large or the motor stalls 2. The selection of frequency converter is too small	1. Reduce the load and check the motor and mechanical condition 2. Choose the frequency converter with higher power level
Err10	Motor overload	1. Is the setting of motor protection parameters appropriate 2. Whether the load is too large or the motor stalls 3. The selection of frequency converter is too small	1. Set this parameter correctly 2. Reduce the load and check the motor and mechanical condition 3. Choose the frequency converter with higher power level
Err11	Input lack phase	1. Abnormal three-phase input power supply 2. Abnormal drive board 3. Abnormal lightning protection board 4. The main control board is abnormal	1. Check and eliminate problems in peripheral circuit 2. Contact us
Err12	Output lack phase	1. The lead from inverter to motor is abnormal 2. The three-phase output of inverter is unbalanced when the motor is running 3. Abnormal drive board 4. Module is abnormal	1. Remove peripheral faults 2. Check whether the three-phase winding of the motor is normal and remove the fault 3. Contact us
Err13	Overheated radiator / module	1. The ambient temperature is too high 2. Air duct blocked 3. The fan is damaged 4. Module thermistor damaged 5. Inverter module damaged	1. Reduce the ambient temperature 2. Clean the air duct 3. Replace the fan 4. Replace the thermistor 5. Replace inverter module
Err14	Contactor fault	1. Abnormal drive board and power supply 2. The contactor is abnormal	1. Replace the drive board or power board 2. Replace the contactor
Err15	Current detection fault	1. Check the Hall device 2. Abnormal drive board	1. Replace Hall element 2. Replace the drive plate
Err16	Motor tuning fault	1. The motor parameters are not set according to the nameplate 2. Parameter tuning process timeout	1. Set the motor parameters correctly according to the name plate 2. Check the lead from inverter to motor
Err18	Short circuit fault of motor to ground	Motor short circuit to ground	Replace motor or cable
Err19	Load drop	VFD operation current is lower than P7-61	Confirm whether the load is separated or whether the P7-61 and P7-62 parameter settings conform to the actual operating conditions
Err20	Wave by wave current limiting fault	1. Whether the load is too large or the motor stalls 2. The selection of frequency converter is too small	1. Reduce the load and check the motor and mechanical condition 2. Choose the frequency converter with higher power level
Err21	Pole position detection failed	The deviation between the motor parameters and the actual value is too large	Re-determine the motor parameters, focusing on whether the motor rated current is too small
Err23	Brake resistance short circuit	Output current too high	1. Increase acceleration and deceleration time 2. Reduce the load
Err26	SVC stall fault	1. Excessive load 2. Torque limit too small (P6-11)	1. Reduce the load 2. Increase torque limit
Err43	External fault	1. Input the signal of external fault through multi-function terminal X 2. Input external fault signal through virtual Y function	Reset and run again
Err44	Communication (timeout) fault	1. The upper computer is not working properly 2. The communication cable is abnormal 3. Incorrect setting of communication parameter group PC	1. Check the upper computer wiring 2. Check the communication cable 3. Setting communication parameters correctly
Err45	EEPROM read write error	EEPROM chip damaged	Replace the main circuit board
Err46	Operation time arrival	The accumulated running time reaches the set value	Use the parameter initialization function to clear the record information
Err47	Power on time arrival	The accumulated power on time reaches the set value	Use the parameter initialization function to clear the record information
Err48	User defined fault 1	1. Input user-defined fault 1 signal through multi-function terminal X 2. Input user defined fault 1 signal through virtual IO function	Reset and run again
Err49	User defined fault 2	1. Input user-defined fault 2 signal through multi-function terminal X 2. Input user defined fault 2 signal through virtual IO function	Reset and run again
Err50	PID feedback lost in operation	PID feedback is less than P7-27 setting value	Check PID feedback signal or set P7-27 to an appropriate value
Err51	Switch motor in operation	In the process of inverter operation, change the current motor selection through the terminal	Switch the motor after the frequency converter stops
Err52	Speed offset too large	1. Encoder parameter setting incorrect 2. Motor blocked 3. Incorrect UVW wiring	1. Setting encoder parameters correctly 2. Check whether the machine is abnormal 3. Check whether the wiring between frequency converter and motor is abnormal
Err53	Motor overspeed fault	1. Incorrect setting of encoding parameters 2. The motor is not tuned 3. Unreasonable setting of motor over speed detection parameters P7-63 and P7-64	1. Setting encoder parameters correctly 2. Tuning correctly 3. Set reasonable parameters according to the actual situation
Err54	Motor overheat fault	1. Loose wiring of temperature sensor 2. Motor temperature too high	1. Check the wiring of temperature sensor 2. Reduce the carrier wave or take other measures to dissipate the motor heat.
Err56	Power on lock time reached	Power on time arrival	When the usage time arrives, please enter the password in A4-00.

Note: Specific alarm information, please refer to 'VH1 Series Frequency User Manual'.

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