

# Catalogue

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\* The manual is subject to change without notice.

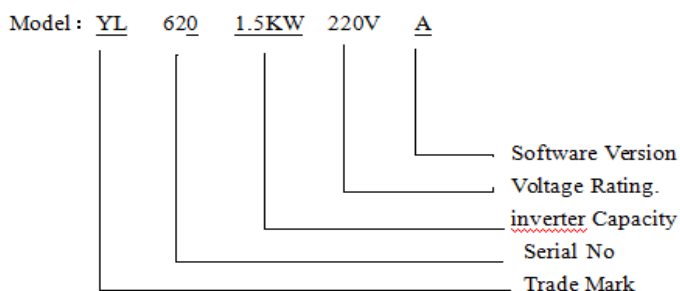
# I、 introduction

## 1、 Checks upon Delivery ;

The inverter has been strictly and well packed before ex.work. In consideration of various factors during the transportation special attention should be paid to the following points before the assembly and installation. If there is anything abnormal please notify the dealer or the relevant people of our company.

- Check if the inverter has got any damage or deformation during the transportation and handling.
- Check if there is one piece of YL series inverter and one copy of the instruction manual. available when unpacking it.
- Check the information on the nameplate to see if the specifications meet your order( Operating Voltage and KVA value)。
- Check if there is something wrong with the inner parts, wiring and circuit board.。
- Check if each terminal is tightly locked and if there is any foreign article inside the inverter.
- Check if the operator buttons are all right.
- Check if the optional components you ordered are contained.


## 2、 Nameplate Description of YL Series inverter



# II、 Safety Precautions

## 2、 Before the Power-up



- Check to be sure that the voltage of the main circuit AC power supply matches the input voltage of the inverter.
- The symbol, , represents ground terminals. Be sure to make correct ground connection of the earth terminals of the motor and the inverter for safety.。
- No contactor should be installed between the power supply and the inverter to be used for starting or stopping of the inverter. Otherwise it will affect the service life of the inverter. 。

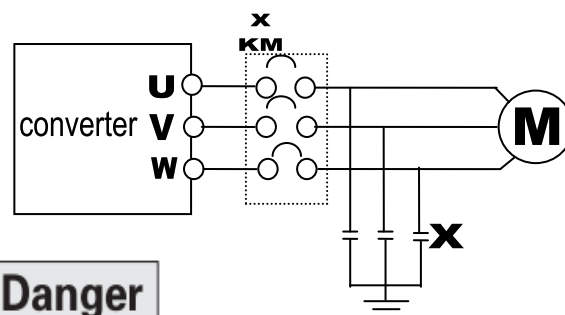


● R.S.T(N.L) terminals are power input terminals never mixed with U.V.W terminals Be sure that the wiring of the main circuit is correct Otherwise it will cause damages of the inverter when the power is applied To it.。



●Do not carry the front cover of the inverter directly when handling. It should be handled with the Basetopreventthefall-offofthefrontcoverandavoidthedroppingoftheinverter,whichmaypossiblycausetheinjuriestopeopleandthedamagestotheinverter.。

- Mount the inverter on a metal or other noncombustible material to avoid the risk of fire.。
- Insta11 the inverter in a safe1ocation, avoiding high temperature, direct sunlight, humid air or water.。
- Keep the inverter from the reach o 「children or persons not concerned.。
- The inverter can only be used at tho places accredited by our company. Any unauthorized working environment may have the risks of fire, gas explosion, electric shock and other incidents.。
- Insta11 a heat sink or other cooling device when insta11ing more than one inverter in the same enclosure so that the temperature insidthcnc1osurc be keptbc1ow40°C to avoid overheat or the risk of fire.。
- Be sure to turn off the power supply before dissembling or assembling the operation key panel and fixing the front Cover to avoid bad contact causing faults or non.display of the operator.。
- Do not insta11 the inverter in a space with cxp1osive gas to avoid the risk of explosion.。
- If the inverter is used at or above 1000m above seal level, the cooling efficiency wi11 be worse, so please run it by de -rating.。
- Do not insta11 any contactor and other components of capacitor or varistor on the output side of the inverter Otherwise it wi11 cause malfunctions and damages of components of the inverter Do not insta11 any switch Component like air circuit breaker or contactor at the output of the inverter If any of such components must be insta11ed because of the requirements of process and others, it must be ensured that the inverter has no output when the switch acts In addition, it is forbidden to insta11 any capacitor for improvement of power factor or any varistor against thunder at the output Otherwise it wi11 cause malfunctions, tripping protection and damages of components of the inverter Please remove them as shown in the below diagram.。
- It wi11 affect the service life of the inverter if a contact is connected to the front end of input of the inverter to contro1 its starts and stops Genera1ly it is required to contro1 it through FOR or RIIV terminals Special attention should be paid to its use in the case of frequent starts and stops
- Please use an independent power supply for the inverter Do avoid using the common power supply with an electrical welder and other equipment with strong disturbance. Otherwise it wi11 cause the protection or even damage of the inverter .



## 2. During the Power-up



- Do not plug the connectors of the inverter during the power up to avoid any surge into the main contro1 board due to plugging, which might cause the damage of the inverter.。
- Always have the protective cover in place before the power up to avoid electrical shock injury.。



### 3. During the Operation

● Never connect or disconnect the motor set while the inverter is in running Otherwise it will cause over-current trip and even burn up the main circuit of the inverter.



● Never remove the front cover of the inverter while the inverter is powered up to avoid any injury of electric shock.

● Do not come close to the machine when the fault restart function is used to avoid anything unexpected The motor may automatically restart after its stop.

● The function of STOP Switch is only valid after setting which is different with the use of emergent stop switch please pay attention to it when using it.



● Do not touch the heat sink, braking resistor, or other heat elements to avoid being scald.

● Be sure that the motor and machine is within the applicable speed ranges before starting operation because the inverter is quite easy to run from lower speed to higher speed.

● Do not check the signals on circuit boards while the inverter is running to avoid danger.

● Be careful when changing the inverter settings. The inverter has been adjusted and set before ex work. Do not adjust it wantonly. Please make proper adjustments according to the required functions.

● Do consider the vibration, noise and the speed limit of the motor bearings and the mechanical devices when the inverter is running at or above the frequency of 50Hz.

## III、Standards and Specifications

### Particular Specifications

Type	Input Voltage	Power (KW)	Lnverter Capacity (KVA)	Output Current (A)	Suitable Motor (KW)
YL600-1.5KW-110V	AC110V60Hz	1.5	2.8	14	1.5
YL600-2.2KW-110V	AC110V60Hz	2.2	4.0	20	2.2
YL600-1.5KW-110V	AC220V50Hz	1.5	2.8	7.0	1.5
YL600-2.2KW-110V	AC220V50Hz	2.2	4.0	10	2.2
YL620-A-1.5KW-110V	AC110V60Hz	1.5	2.8	14	1.5
YL620-A-2.2KW-110V	AC110V60Hz	2.2	4.0	20	2.2
YL620-A-1.5KW-220V	AC220V50Hz	1.5	2.8	7.0	1.5
YL620-A-2.2KW-220V	AC220V50Hz	2.2	4.0	10	2.2
YL620-A-3.0KW-220V	AC220V50Hz	3.0	5.5	13	3.0

## IV. Storage and Installation

### 1、Storage

The inverter must be kept in its original package box before installation. Pay attention to the

followings when keeping it in storage if the inverter is not used for the time being:

- It must be stored in a dry place without rubbish or dust.
- The suitable temperature for storage is between  $-20^{\circ}\text{C}$  and  $+65^{\circ}\text{C}$ .
- The relative humidity required is 0-95% without condensation.
- There is no corrosive gas or liquid in the storage ambience.
- It's better to lay the inverter on a rack and keep it in a proper package.
- It is better not to store the inverter for long time. Long time storage of the inverter will lead to the deterioration of electrolytic capacity. If it needs to be stored for a long time make sure to power it up one time within a year and the power-up time should be at least above five hours. When powered up the voltage must be increased slowly with a voltage regulator to the rated voltage value.

## 2、 Installation Site and Environment

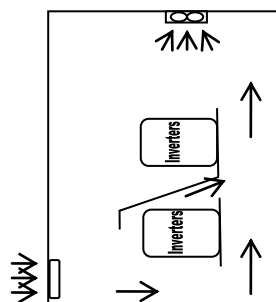
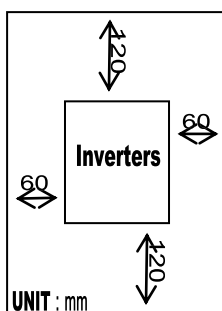
The inverter should be installed at the following location:

- Ambient temperature  $-5^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  with good ventilation.
- No water drop and low moisture.
- Free from direct sunshine, high temperature and heavy dust fall.
- Free from corrosive gas or liquid.
- Less dust, oil gas and metallic particles
- Free from vibration and easy for service and inspection.
- Free from the interference of electromagnetic noise.

Attention: The ambient conditions of the inverter will affect its service life.

## 3、 Installation and Direction


- There must be enough space left around the inverter for easy maintenance and cooling. See Diagram.
- The inverter must be installed vertically with the smooth ventilation for effective cooling.
- If there is any instability when installing the inverter, please put a flat board under the inverter bottom base and install it again. If the inverter is installed on a loose surface, stress may cause damage of parts in the main circuit so as to damage the inverter.
- The inverter should be installed on non-combustible materials, such as iron plate.
- If several inverters are installed, upper and lower, together in one cabinet, please add heat dissipation plates and leave enough space between the inverters. See Diagram.



## V、 Wiring

- Be sure to make correct connections of the main circuit wires and control signal Wires of the inverter.
- Be sure to make correct setting of parameters for the inverter.

### 1、 Function Description of Main circuit Terminals

Symbol	Function Description
N L	Input terminal of AC line power (220V class, for both single/three phase, single phase connected to any two phases)
U.V.W	Output terminal of the inverter
+DB-	Connector for braking resistor (optional)
FG	Grounding terminal 

## 2、Function Description of Control Circuit Terminals

### YL600series

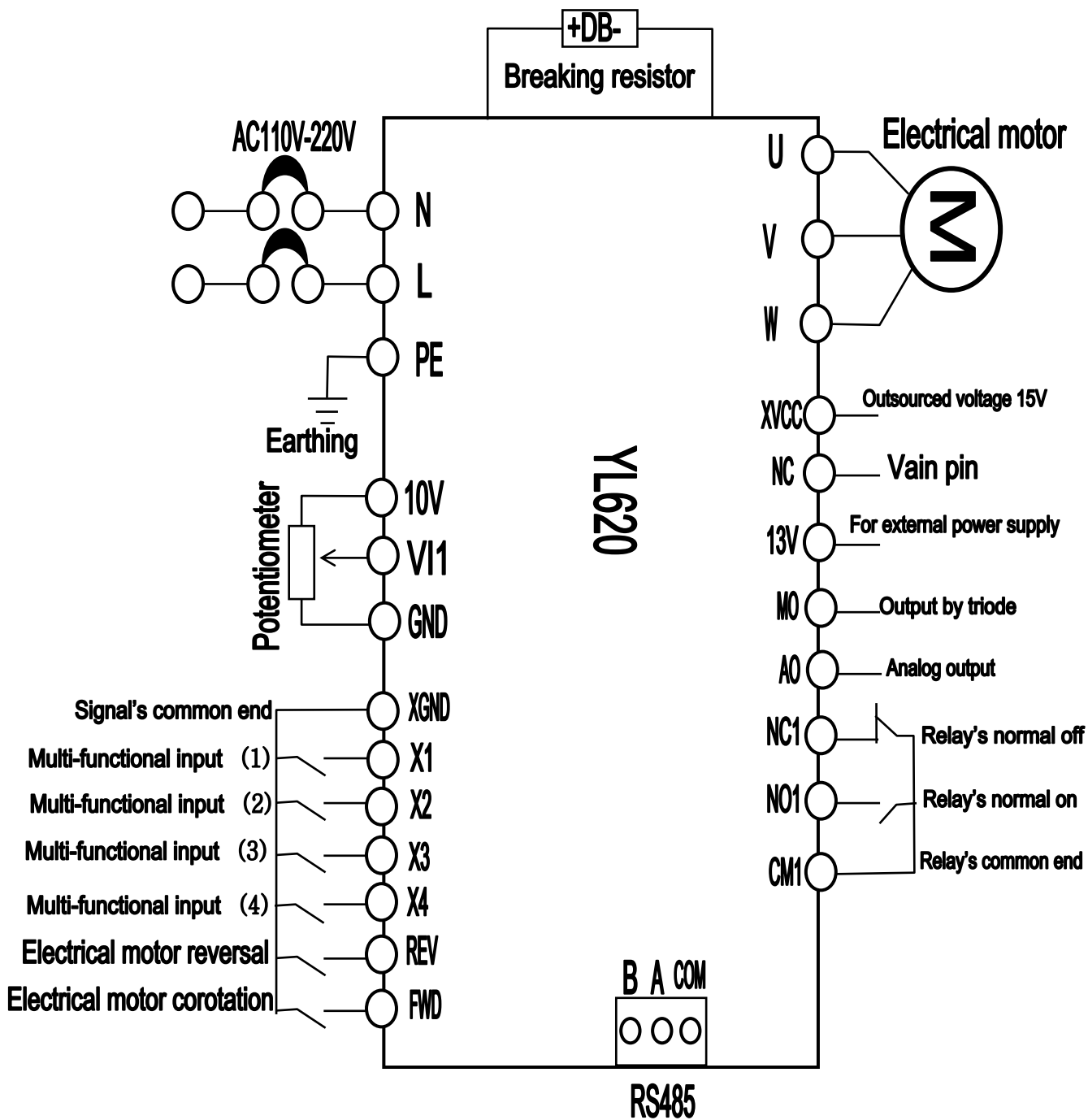
Symbol	Function Description	Factory setting
X1	Multi-Input 1	
X2	Multi-Input 2	
X3	Multi-Input 3	
X4	Multi-Input 4	Forward run
X5	Multi-Input 5	Reverse run
COM	Common Terminal of Digital and Control signals	
AI1	Analog Voltage Frequency Reference Input	
5V	Power Supply for Speed Setting	

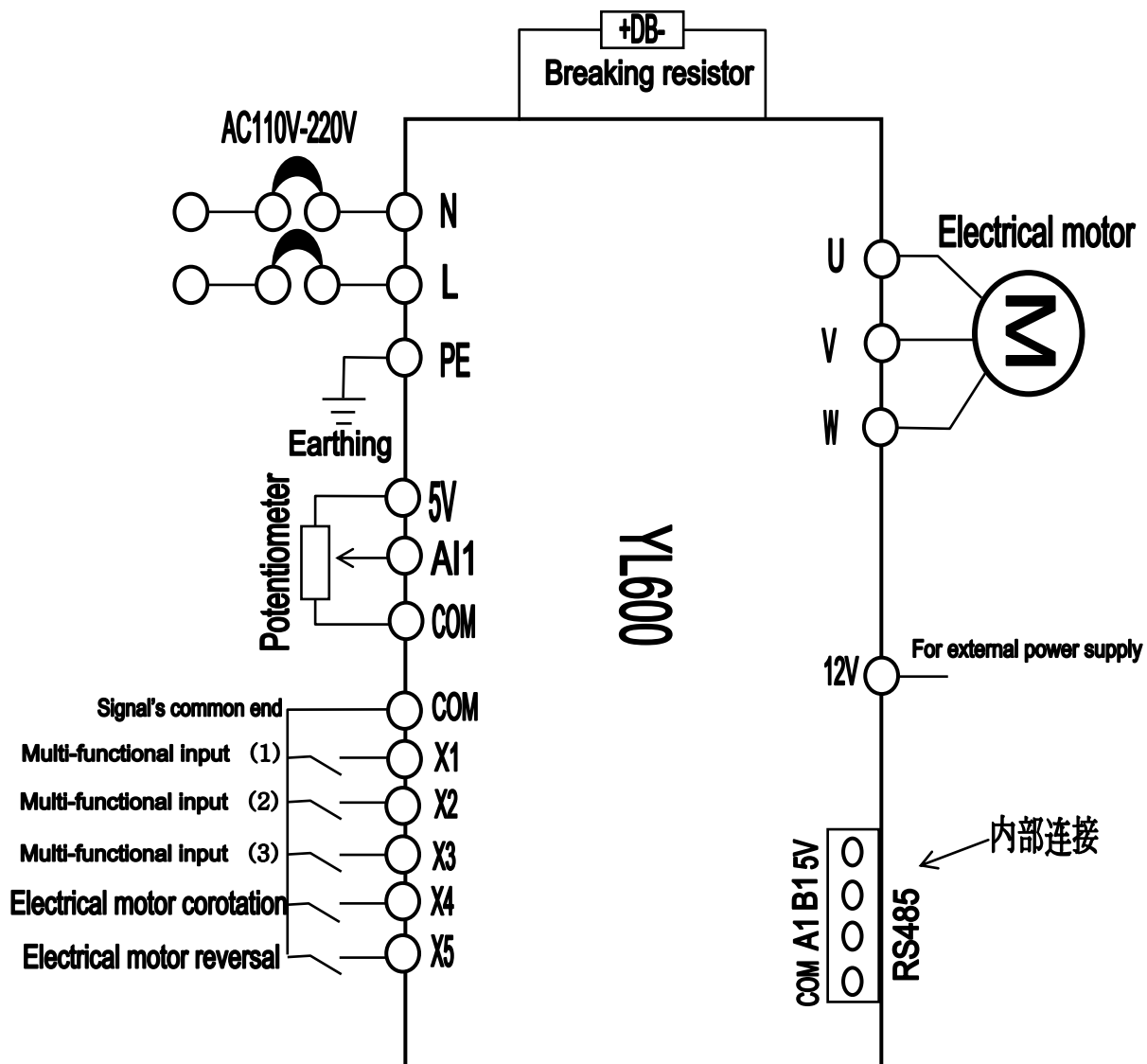
### YL620series

Symbol	Function Description	Factory setting
NC	empty	
MO	Triode output	
FWD	For rotation	
REV	Rev rotation	
X4	Multi-Input 4	
X3	Multi-Input 3	
X2	Multi-Input 2	
X1	Multi-Input 1	
XGND	Common Terminal of Digital and Control signals	
XVCC	15Vexternal input	
GND	Common Terminal of Digital and Control signals	
VI1	Analog Voltage Frequency Reference Input	
10V	Power Supply for Speed Setting	
13V	External Power Supply for	
A0	simulation output	
NC1	Relay Normally open contact	
N01	Relay Normally closed contact	
CM1	Relay Common end	

## 3、Basic Connection Diagram

The wiring of the inverter is divided into two parts, main circuit terminal connections and control circuit terminal connections. The user can see the main circuit terminals, and the control circuit terminals After removing the cover of enclosure. The terminals must be connected correctly as the following wiring circuit diagrams.





Note: The above wiring diagram explained that only supplies the reference, take the actual product as the standard. The diagram is subject to change without notice.

## VI、Precautions on Wiring

① For the main circuit wiring:

● While wiring the sizes and specifications of wires should be selected and the wiring should be



executed according to the electrical engineering regulations to ensure the safety. .

- It is better to use shielded wire or wire and conduit for power cord and ground the shielded layer or two ends of wire conduit.

- Be sure to install a Non Fuse Breaker (NFB) between the power supply and the input terminals (R, S, T). (If using ground fault circuit interrupter please choose one corresponding to high frequency)

- Never connect AC power to the output terminal (U, V, W) of the inverter.

- Output wires mustn't be in touch of the metal part of the inverter enclosure, or it will result in earth short-circuit.

- Phase-shifting capacitors, LC, RC noise filters, etc, can never be connected to the output terminals of the inverter.

- The main circuit wire must be enough far away from other control equipments.

When the wiring between the inverter and the motor exceeds 15 meters for 220V class or 30 meters for 380V class, much higher  $dV/dT$  will be produced inside the coil of the motor, which will cause the destruction to the interlay or insulation of the motor. Please use a dedicated AC motor for the inverter or add a reactor at the inverter.

- Please lower the carrier frequency when there is a longer distance between the inverter and the motor. Because the higher the carrier frequency is the bigger the leakage current of high-order harmonics in the cables will be. The leakage current will have unfavorable effect on the inverter and other equipment.

## ② For control circuit wiring (signal line)

- The signal line should be separately laid in a different conduit with the main circuit wire to avoid any possible interference.

- Please use the shielded cable with the size of 0.52mm for signal lines.

- Use the control terminals on the control panel correctly according to your needs.

## ③ Grounding

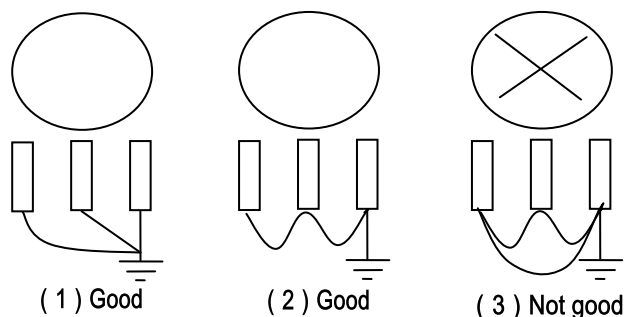
- Grounding terminal E. Be sure to make correct grounding. 220V class: The third grounding method (Grounding resistance should be 100  $\Omega$  or lower) 380V class: The special third grounding method (Grounding resistance should be 10  $\Omega$  or lower)

- Choose grounding wires according to the basic length and size of the technical requirements of the electric equipment

- Do avoid sharing grounding wire with other large power equipment such as electric welder, power machine, etc. The grounding wire should be kept away from the power supply wires for large power equipment.

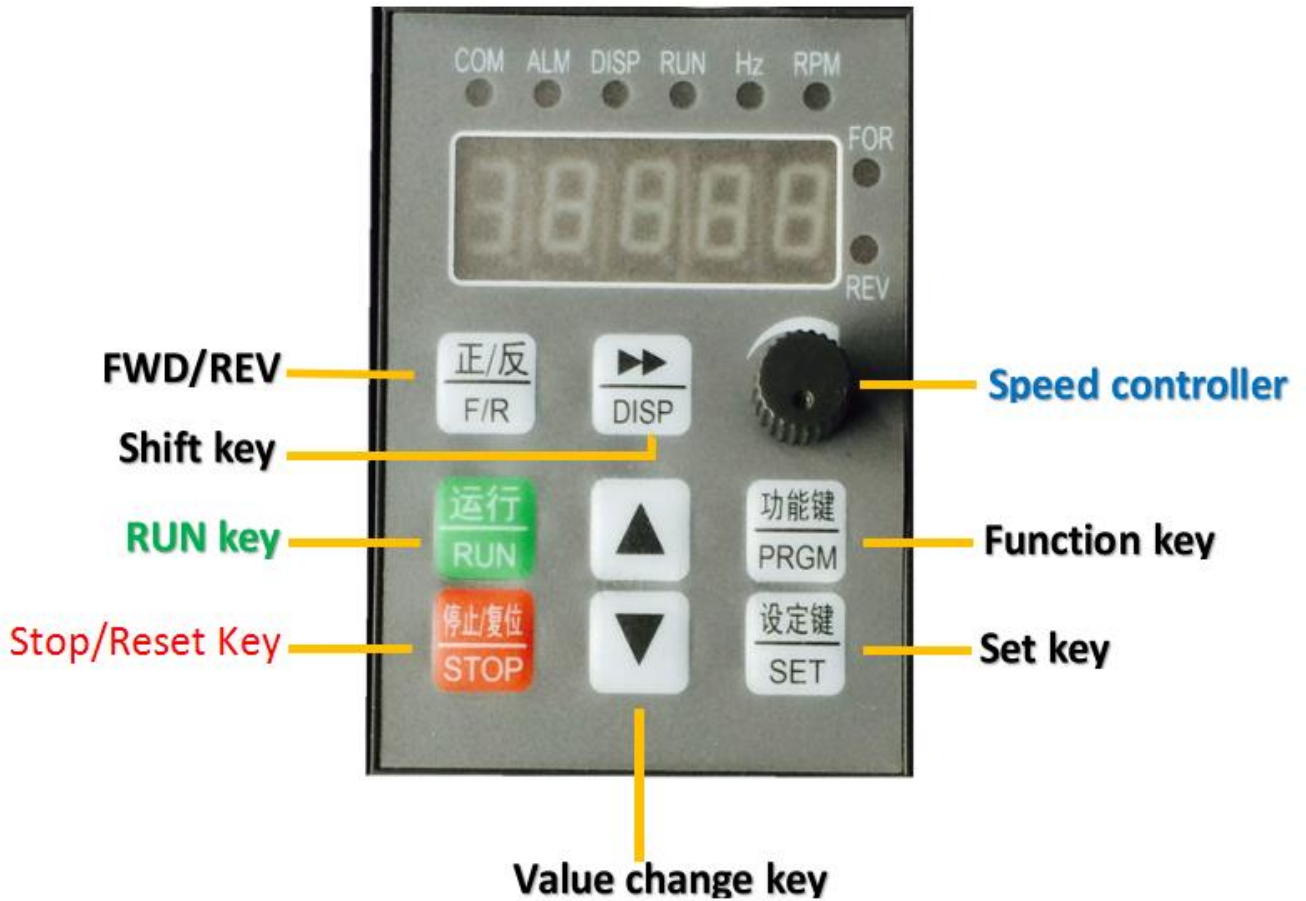
- The grounding method for several inverters together should be done as the first and second diagrams below. Avoid the third loop.

- The grounding wire must be as shorter as possible.





## VII、Instruction of the Digital Operator

### 1、Description of the Digital Operator




### 2、Description of Indicator Lamp Status

#### (1) Description of the Digital Operator


icon	function	explain
RUN	Power on, running key	Power on self-test, display frequency
PRGM	Programming key	Enter programming-exit programming
DISP	Dot key	Click key, when setting parameters, can be used to move display focus.
	Upper key	Up arrow key for parameter modification, page turning, upload. Modify numeric value
	Down key	Down arrow key, used for parameter modification, page turning, down pass.
SET	Data function key	Enter parameter value setting state, save modified parameter value
F/R	Forward and reverse switch key	Can switch forward and reverse in operation
	Speed control knob	Regulating running speed
STOP	Stop reset key	Stopping motor

## (2) Description of Operation Examples

### Upload converter host parameters to digital operator:

First keep press the **STOP** button , then press the  button. Digital operator will automatically read all the parameters of the converter host and stored in a digital operator. The original parameters are covered. The digital operator can only save one last upload parameter. After uploading, please press **PRGM** button to exit. In the upload process, if there is an error, the error number will be displayed, please press PRGM key to clean up mistakes then retry the upload operation above.

### Download the parameters from the digital operator to the converter host:

First keep press the **STOP** button , then press the  button. Digital operator will automatically download all the parameters of the converter host and stored in a digital operator. The original parameters are covered. The converter host can only save the last download of the parameter. After the digital operator downloads the parameters, the parameters of the digital operator are unchanged. After the download is complete, press (program) PRGM key to exit. In the upload process, if there is an error, the error number will be displayed, please press PRGM key to clean up mistakes then retry the upload operation above.

### Frequency converter (inching) operation:

Please press (direction) forward and reverse switching key to specify the direction of operation of the motor (indicated by the indicator). First keep press the **STOP** button then press (inch) DISP key. The motor will operate in a jog mode. Note that if the user parameter prohibits the motor reversal, it will not be able to achieve the reverse point movement

### Frequency conversion cooling fan test run:

Pressing (stop) STOP key every time will force the cooling fan to run for about 30 seconds to facilitate the user to observe the working conditions of the fan.

**Parameter setting method:**

1、 Press (program) PRGM key until the converter is shown as "Pyy.xx" that means entering the parameter settings status. Among that, the YY means parameter group number, XX means parameter number. For example, P01.12 is shown as a No. twelfth parameter number in group 01 (For the specific meaning of each parameter, see the parameter specification table.)

2、 Press ▲▼ keys to select the group and No. of parameters. Press the data function (SET) key to enter the parameter value setting, showing 60.0. Press ▲▼ keys to modify parameter values; At this point, press (data function) SET key to save the current modified parameter values. You can also press (programming) PRGM key, you can exit the parameter settings, to give up the modification of the parameters.

In the choice of parameter group number and number of parameters. You can press (shift) DISP key to select the parameter group number, parameter number. (Flashing display) to quickly select the parameters the user interested in. Similarly, when the parameter values are modified, the (shift) DISP key is used to select the bit to modify the parameter (Flicker display) to quickly modify the parameter values.

After modifying the parameters, press (programming) PRGM key, you can exit the parameter settings. Note that if the parameter table is locked (P00.13=1), all parameters can only be viewed and can not be modified.

Please set the parameters while the converter is shut down. When the converter is running, if you set the parameters, it can be effective. but only when the converter shut down, the date can be preserved.

## VIII、 Commissioning

### 1、 Important Checks before the Commissioning

If there is any wrong connected wires? Pay special attention to the terminal of U.V.W; Make sure the power supply wires are connected to R.S.T, not U.VW. If there is any metal powder or wires left on the base plate of the inverter or the terminal block, which may cause short circuit If screws are tightly locked and if the connecting parts are loose. If there is any short circuit or earth fault at outputs

### 2. Commissioning Methods

The procedure of the operator is factory set up for the control mode of YL series The commissioning can be carried out through the digital operator Generally, the commissioning can be conducted at 5.00Hz.

## IX、 Function List

### 1、 Parameters Function List1

Code	Function	Set Range & Function Explanation	Factory Setting	User Set Value
P00.00	Main Frequency	0.0-600.0HZ	50.0HZ	
P00.01	Start / stop command source	0: Operator board	1	
		1: From external end control Electric machinery, operation panel STOP key effective		
		2: From external end son control Electric		

		machinery, operation panel STOP key invalid		
		3: from (Modbus Rs485) control Electric machinery		
P00.02	Reserved		0	
P00.03	Stopping Mode	0: Decelerating stop	0	
		1: Coasting stop		
		2: DC brake stop		
P00.04	VF:Highest output frequency	1.0-600.0HZ	60.0HZ	
P00.05	VF:Maximum Voltage Output Frequency	5.0.0-600.0HZ	50.0HZ	
P00.06	VF:Highest output Voltage	10.0%-150.0%	100.0%	
P00.07	VF:Middle Frequency	1.0-600.0HZ	3.5HZ	
P00.08	VF:Middle Voltage	10.0%-100.0%	20%	
P00.09	VF:Min Frequency	0.0-600.0HZ	0.8HZ	
P00.10	VF:Min Voltage	0%-100.0%	10%	
P00.11	Analog Input quantity 1 Regulation Multistage velocity	0%-100%	100	
P00.12	VF :Curve Setting	0-4	0	
P00.13	Parameter Lock	0: Invalid	0	
		1: Valid		
		10: Restore the factory setting No other function		
		Other values: not available		
P00.14	Reserved		0	
P00.15	Power on Time prohibit External end son Start-up	0: Power on time, allow External end son input effective level, start-up Electric machinery .	1	
		1: Power on time, Not allow External end son input effective level, start-up Electric machinery .		
P00.16	Selection of starting / stopping Control Mode of external Terminal	0: FWD (X5) yes, Positive run the command , REV (X4) yes, reverse run the command 1: REV (X4) Determine direction: Open Yes FWD, Shut Yes REV; FWD (X5) Start command: FWD Stop, REV Boot 2: EF (X3), REV (X4), FWD (X5) RUN). Three wire control motor operation 3: Stop, FWD (X5) turn off Instantaneous , positive start motor; run, REV (X4) shut down immediately Stop Stop, REV (X4) Turn off the reverse start motor; run, FWD (X5) Closing action, Stop	0	

		<p>4: FWD(X5) turn off Instantaneous , positive start motor;; REV(X4) Closing action, Stop</p> <p>5: FWD(X5) turn off Instantaneous , positive start motor;; REV(X4) shut down immediately Stop</p> <p>6: Stop, FWD(X5) turn off Instantaneous , positive start motor;; run, FWD(X5) shut down immediately Stop.run REV(X4)turn off the motor immediately, Reversing</p> <p>7: REV(X4)When open, FWD(X5)Start-up instant, Positive direction start motor; REV(X4)When closed, the motor is not allowed to start; Runtime REV(X4) Closing action Instantaneous stop</p> <p>8: the function of the wire cutting left and right limit commutator mode X3 should be set to "retain" that is, P00.190. When the "wire cutting left and right limit commutative mode wiring diagram" is disconnected, when shutdown. Start is closed, the direction is determined according to the current state of the limit switch. And start motor. Start closed, if two limit open</p> <p>When the state of turn off is disconnected, the motor starts to the left by default. While running to the left, the left limit switch XLSL (X3) changes to the right when it is closed (limit). While running to the right, the right limit switch XLSR-X4 is closed (limit). Change to left running. If left and right simultaneously limit position, shut down; Note: multifunction relay 1 function P04.03) choose to 17 (constant speed, otherwise power loss, and set P04.05 P04.06, can achieve wire-cutting "switch high frequency" function.</p>		
P00.17	Many function input X1 function Choice	<p>0: retain</p> <p>1: Multi-segment Speed instruction</p> <p>5: as forward turn point input</p> <p>6: as reverse point input</p>	1	

P00.18	Many function input X2 function Choice	7: as point action input / rev X4 to determine direction) 8: closing action instant stop 9: disconnect action instant stop 10: disconnect, Immediate DC brake stop (regardless of PV_StopMode setting)	1	
P00.19	Many function input X3 function Choice	11: external terminal speed increase instruction (only for main frequency P00.00, deceleration step specified by parameter P00.20) 12: external terminal deceleration instruction (valid for main frequency P00-00 only, step-down specified by parameter P00-20)	0	
P00.20	Many function input X4 function Choice	13: External fault often opens, closing action produces "external fault" 14: external fault usually closes input, disconnect action instantaneous produces "external fault" 15: external fault, closure produces "external fault" 16: external fault, Disconnect generated "external failure" 17: used as external fault reset input	0	
P00.21	External Terminal rise/Slow down increment	0.0-600.0HZ	1.0HZ	
P00.22	External Terminal rise/Slow down time interval		2	
P00.23	Physics amount display Proportion constant	0-999.9%	100.0%	
P00.24	After power supply, display project Choice	0: Display current target frequency 1: Display Electric machinery run frequency. 2: Display Electric machinery run current. 3: Display input AC voltage 4: Display mother Line voltage 5: Display output voltage 6: Display speed paragraph Number SP x 7: Display inverter temperature t xx 8: Display input signal X1-X3/output signal 9: Display user variable 10: Display user Count value 11: Display temporary debugging variable	0	

P00.25	Display project automatic Return delayed time(10/S)	0: No, Automatic return; 1-6delayed 10-60S Back Return.	1	
P01.00	REV Rotation Select	0:Rev Run Enable 1:Rev Run forbidden	0	
P01.01	Electric machinery Reversing wait for time		0	
P01.02	Deceleration Prevention overvoltage setting(%)		140%	
P01.03	Accelerated Prevention overcurrent setting(%)		140%	
P01.04	Overcurrent Set up(%)			
P01.05	Overload protection Set up(%)			
P01.06	Overload protection time Set up(s)			
P01.07	Undervoltage protection Set up(%)			
P01.08	Overvoltage protection Set up(%)		160%	
P01.09	After shutdown, start DC Brake voltage Set up (%)		15%	
P01.10	After shutdown, End DC Brake voltage Set up (%)		0%	
P01.11	After shutdown, DC Braking Time Set up		2.0	
P01.12	After shutdown, DC Braking Initial Frequency Set up			
P01.13	Before start, input DC brake voltage set up (%)			
P01.14	Before start, End DC Brake voltage Set up (%)			
P01.15	Before start, DC Braking Time Set up			
P01.16	Direct start Initial frequency(Improve starting torque)			
P01.17	Direct start Initial frequency Hold time			
P01.18	power failure frequency decline			
P01.19	The power down frequency decline rate			
P01.20	Restart No load time			



P01.21	Restart voltage rise time			
P02.00	When speed up torque will increased			
P02.01	Deceleration time - Torque Boost			
P02.02	Accelerate curve Choice			
P02.03	Deceleration curve Choice			
P02.04	Avoid the frequency 1			
P02.05	Avoid the frequency 2			
P02.06	Avoid the frequency 3			
P02.07	Avoid the frequency Width			
P02.08	Window frequency 1			
P02.09	Window frequency 2			
P03.00	RS485 Communication Baud Rate	0: 1200Bps 1: 2400Bps 2: 4800Bps 3: 9600Bps 4: 19200Bps 5: 38400Bps (For higher baud rates, please contact the manufacturer)	4	
P03.01	RS485 Communication Addresses	1-254	10	
P03.02	RS485 Data Transfer Format Options	0: 8 bit data, 1 stop bits, odd parity 1: 8 bit data, 1 stop bits, parity check 2: 8 bit data, 1 stop bit, no parity 3: 8 bit data, 2 stop bits, odd parity 4: 8 bit data, 2 stop bits, parity check 5: 8 bit data, 2 stop bit, no parity	2	
P03.03	RS485 Communication error handling	0: Decelerating stop 1: Coasting stop 2: DC brake stop 3: No downtime	0	
P03.04	RS485 Communication error tolerance time mS		500	
P03.05	4-20mA Break detection time			
P03.06	Panel potentiometer, Lower limit of AD norm	0-1023	3	
P03.07	Panel potentiometer, Upper limit of AD specification	0-1023	1020	
P03.08	Panel potentiometer, frequency given of lower limit.	0.0-600.0HZ	0.0HZ	

P03.09	Panel potentiometer, frequency given of Upper limit	0.0-600.0HZ	60.0HZ	
P03.10	Analog Input 1 AD lower limit	0-1023, See "JP1 short circuit block configuration table"	3	
P03.11	Analog Input 1 AD Upper limit	0-1023, See "JP1 short circuit block configuration table"	1020	
P03.12	Analog Input 1 frequency given lower limit	0.0-600.0HZ, See "JP1 short circuit block configuration table"	0.0HZ	
P03.13	Analog Input 1 frequency given Upper limit	0.0-600.0HZ, See "JP1 short circuit block configuration table"	60.0HZ	
P03.14	Reserved			
P03.15	Reserved			
P03.16	Reserved			
P03.17	Reserved			
P03.18	Analog output correlation	See "JP1 short circuit block configuration table"		
P03.19	Analog output gain setting	See "JP1 short circuit block configuration table"		
P04.00	Mo analog multiplier output frequency multiplier			
P04.01	Mo1 Function Options			
P04.02	Mo2 Function Options			
P04.03	Multi-function Relay 1 Function selection	0: Get electricity in case of failure or lose it		
P04.04	Multi-function Relay 2 Function selection	1: Get electricity when running, or lose it		
		2: Reserved		
		3: Arbitrary frequency arrival Time, have Electric, Related to P02-10 settings		
		4: , The power down Time, have Electric		
		5: , low voltage Time, have Electric		
		6: , Overvoltage Time, have Electric		
		7: Overcurrent Time, have Electric		
		8: Nonzero velocity Time, have Electric		
		9: , DC brake Time, have Electric		
		10: Over torque Time, have Electric		
		11: External interrupt fault Time, have Electric		
		12: Forward Time, have Electric		
		13: Reversal Time, have Electric		
		14: Move Time, have Electric		

		15: Accelerate Time, have Electric		
		16: Deceleration Time, have Electric		
		17: Constant speed Time, have Electric		
		18: X1 close Time, have Electric		
		19: X2 close Time, have Electric		
		20: X3 close Time, have Electric		
		21: X4 close Time, have Electric		
		22: X5 close Time, have Electric		
		23: X6 close Time, have Electric		
		24: Forward and bus voltage greater than 400V Time, have Electric		
		25: Reverse and bus voltage greater than 400V Time, have Electric		
P04.05	Multi-function Relay 1 Action close Delayed	0-65.5 秒	0	
P04.06	Multi-function Relay 1 disconnect delay action	0-65.5 秒	0	
P04.07	Multi-function Relay 1 Action close Delayed	0-65.5 秒	0	
P04.08	Multi-function Relay 1 disconnect delay action	0-65.5 秒	0	
P04.09	Stall rotor detection time	0-65.5 秒	1.0	
P04.10	Switch amount (Di) sampling time	0-200mS	24	
P04.11	Stopping Mode	0: Decelerating stop 1: Coasting stop 2: Immediate DC brake shutdown (deceleration time is invalid) 3: Do not shut down when power is down	0	
P05.00	PID Output Upper limit frequency			
P05.01	PID Output lower limit frequency			
P05.02	PID Given Source			
P05.03	PID Values Given			
P05.04	PID Output characteristic (FOR/REV)			
P05.05	PID Output characteristic (FOR/REV)			
P05.06	PID Proportional Gain Kp			
P05.07	PID Integration Time Ti			

P05.08	PID Derivative Time Td			
P05.09	PID Deviation Limit			
P05.10	PID Integral upper limit			
P05.11	PID Given Change Time			
P05.12	PID Feedback Filter Time			
P06.00	Acceleration Time			
P06.01	Accel. Time 1	0.1-6553.5		2.0
P06.02	Decel. Time 1	0.1-6553.5		2.0
P06.03	Accel. Time 2	0.1-6553.5		2.0
P06.04	Decel. Time 2	0.1-6553.5		2.0
P06.05	Accel. Time 3	0.1-6553.5		2.0
P06.06	Decel. Time 3	0.1-6553.5		2.0
P06.07	Accel. Time 4	0.1-6553.5		2.0
P06.08	Decel. Time 4	0.1-6553.5		2.0
P06.09	Accel. Time 5	0.1-6553.5		2.0
P06.10	Decel. Time 5	0.1-6553.5		2.0
P06.11	Accel. Time 6	0.1-6553.5		2.0
P06.12	Decel. Time 6	0.1-6553.5		2.0
P06.13	Accel. Time 7	0.1-6553.5		2.0
P06.14	Decel. Time 7	0.1-6553.5		2.0
P06.15	Accel. Time 8	0.1-6553.5		2.0
P06.16	Decel. Time 8	0.1-6553.5		2.0
P06.17	Jog Acceleration Time	0.1-6553.5		2.0
P06.18	Jog Deceleration Time	0.1-6553.5		2.0
P07.00	Frequency 1	0.0-600.0HZ		50.0HZ
P07.01	Frequency 2			45.0HZ
P07.02	Frequency 3			40.0HZ
P07.03	Frequency 4			35.0HZ
P07.04	Frequency 5			30.0HZ
P07.05	Frequency 6			25.0HZ
P07.06	Frequency 7			20.0HZ
P07.07	Frequency 8			15.0HZ
P07.08	Frequency source selection 1	0: Operator board(parameter: P03.06~P03.09) 1: Pre~set Frequency, P00.00 Set frequency value, Operation panel keyboard, Can be set directly 2: No. X paragraph frequency P07.00~P07.07 3: Analog Input. : P03.10~P03.13)		0
P07.09	Frequency source selection 2			2
P07.10	Frequency source selection 3			2
P07.11	Frequency source selection 4			2
P07.12	Frequency source selection 5			2
P07.13	Frequency source selection 6			2
P07.14	Frequency source selection 7			2

P07.15	Frequency source selection 8	4: external simulation amount 2 (V12) (parameter: P03.14~P03.17) 5: (Modbus Rs485) Given frequency 6: User application program, given frequency Other: Reserved	2		
P07.16	Jogging Frequency FOR	0.0-600.0HZ	15.0HZ		
P07.17	Jogging Frequency REV		15.0HZ		
P08.00	Automatic many paragraph Running:Running direction				
P08.01	Automatic many paragraph Running:mode Choice				
P08.02	Automatic many paragraph Running time Units:S/M				
P08.03	Automatic many paragraph Running No.1 paragraph Running time				
P08.04	Automatic many paragraph Running No.2 paragraph Running time				
P08.05	Automatic many paragraph Running No.3 paragraph Running time				
P08.06	Automatic many paragraph Running No.4 paragraph Running time				
P08.07	Automatic many paragraph Running No.5 paragraph Running time				
P08.08	Automatic many paragraph Running No.6 paragraph Running time				
P08.09	Automatic many paragraph Running No.7 paragraph Running time				
P08.10	Automatic many paragraph Running No.8 paragraph Running time				
P09.00	frequency Range (%)		0-200%	0	
P09.01	frequency wave Range (%)	0-400%	200		
P09.02	frequency Rise time (S)	0.1-999.9 秒	6.0 秒		
P09.03	frequency decline time (S)	0.1-999.9 秒	5.0 秒		

P10.00	Counter reload, value			
P10.01	Counter current value			
P10.02	Timer reload, value			
P10.03	Timer current value			
P11.00	Output Status			
P11.01	Output Voltage (V)			
P11.02	Output Current (A)			
P11.03	Output Frequency (Hz)			
P11.04	Current Heatsink Temperature		70	
P12.00	Rated Motor Current		5.0	
P12.01	Rated Motor Voltage		220	
P12.02	Motor Pole number	2-100	2	
P12.03	Motor no-load current		20%	
P12.04	Motor no-load current detection time(S)		10 秒	
P12.05	Converter rated current (A)		5.0	
P12.06	Converter rated Voltage(V)		220	
P12.07	DC bus output voltage%		140	
P12.08	Heat sink over temperature protection point		70	
P12.09	Radiating fin temperature sensor configuration		1	
P12.10	Abnormal reset implement wait time			
P12.11	Fan Function Pattern	<p>0: when the motor is running, start the fan; after the motor stops running, the delay is about 1 minute to close the fan;</p> <p>1: when the fan action temperature point is more than P12.12), the fan starts immediately, and when the temperature is lower than the fan action temperature point, the time delay is about 1 minute and the fan is closed;</p> <p>2: unconditional forced start fan;</p> <p>3: the fan does not operate;</p>	1	
P12.12	Cooling fan operating temperature		45	
P12.13	Fan Testing			
P12.14	Bypass relay closed detection			

P12.15	Bypass Relay delay time			
P12.16	Power on delay timer initial value (S)			
P12.17	Electric current sensor To configure			
P12.18	Automatic stable pressure function Choice			
P12.19	PWM Frequency	2.0-15.0KHZ	8.0KHZ	
P12.20	SVPWM model	0: three phase induction motor 1: two phase asynchronous motor (single phase motor 90 degrees phase difference, no starting capacitance)	0	
P13.00	Software version number			
P13.01	Hardware version number			
P13.02	producer			
P13.03	Factory year & week			
P13.04	Product ID (combined with factory year & week becomes UIDs)			
P13.05	Cumulative operating time (hours)			

<p>Press and hold down the STOP key on the display first, then press the "up arrow" key to read all the parameters of the converter and save them to the display box, that is, the so-called "parameter upload" operation.</p>		
<p>Hold down the STOP key on the display, then press the down arrow key, can be displayed in the box, downloaded to the converter, the so-called "parameter download operation. Note that the effectiveness of the parameters in the display box, by the operator to grasp, procedures for identification. The operator should avoid the" Download "invalid parameter to the inverter.</p>		
<p>There are up to 2 MODBUS communication interfaces based on RS485, and MODBUS RTU protocol is supported, but ASCII protocol is not supported.</p>	<p>The CN7 CN12 CN13 socket corresponds to the first MODBUS communication interface, which is generally used to connect the LK series dedicated digital display to achieve the setting and monitoring of the frequency converter. Of course, users can also use this interface to achieve their own communication. The communication parameters of the communication interface are fixed as: 19200 Bps 8 bits, 1 stop bit, and no check bit. Frequency converter is used as MODBUS slave (server), slave address is fixed at 10.</p>	<p>Display special purpose</p>

	<p>The CN4 CN8 socket corresponds to the second MODBUS communication interface, which is generally used to connect with other user equipments such as PC, and its communication parameters can be configured by P03.00–P03.04. The frequency converter is used as the MODBUS slave (server), the slave address is also configurable.</p>	<p>User communication</p>
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## X. Care & Maintenance, Fault Information and Troubleshooting

Periodical maintenances and inspections will keep your inverter in its normal state for long time.

### 1. Precautions about Inspection and Maintenance

- Be sure to turn off the power supply to the inverter (L, N) first before the inspection and maintenance.
- After confirming the main circuit power supply has been turned off and the display has disappeared, wait until the internal indicator lamp for high voltage goes out before performing the inspection and maintenance.
- During the inspection, do not pull out or wrongly distribute the internal power supply, wires and cables. Otherwise it will cause malfunction or damage to the inverter.
- Do not leave any screw or other part inside the inverter during the installation, or it will result in the short circuit of circuit board.
- Keep the inverter clean, free from dust, oil mist and moisture after the installation.

### 2. Periodical Inspection and Maintenance Items

- Check whether the power supply voltage conforms to the rated voltage of the inverter. (Pay special attention to that whether there is any damage on the power supply wires and the motor.)
- Check whether the wiring terminals and the connectors are tight (Check whether the power supply wires and terminal connection wires have any broken strand).
- Check whether there is dust, iron filings or corrosive fluid in the inverter. Measuring the insulation impedance of the inverter is forbidden.
- Examine the output voltage, output current and output frequency of the inverter. (The measuring results should not have too big difference.)
- Check whether the ambient temperature of the inverter is between  $-5^{\circ}\text{C}$  and  $40^{\circ}\text{C}$  and whether the installation environment has good ventilation.
- Check whether the humidity is kept below 90% (without condensation).
- Check whether the motor makes unusual noises or abnormal vibration in running. (The inverter should not be installed in a place with high vibration.)
- Please make periodical cleaning of vent holes.

### 3. Fault Indication and Troubleshooting

fault phenomenon, failure code, the analysis of fault reasons and the solutions

Failure code/fault phenomenon	The analysis of fault reasons and the solutions
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Er.00 Power failure, supply voltage is above 140VAC	Low-voltage	1. Check input supply voltage, ensure input voltage is between 150v and 250v. Too high input voltage will damage converter. 2. High inertia loads, the setting value of the deceleration time is too small.
Er.01 supply voltage is above 290VAC, internal bus voltage is too high	Over-voltage	3. The converter is not accurate in detecting the supply voltage, the displayed converter voltage does not match with the actual supply voltage, which need repairing. 4. This kind of error occurs when the motor is decelerated due to the high inertia loads, please consider installing a suitable external braking resistance.
Er.02	Great current	When the motor is running, great current occurs (the actual output current is too great), please check whether the motor is short circuited, the connection is correct and the mechanical loads is too large, otherwise it needs repairing.
Er.03	Fault in external pwm circuit	When the motor is running, fault in external pwm circuit occurs, turn off the power for about 1 minute, send the power to retry. If this phenomenon occurs again, maintenance is required.
Er.04	IPM alarm(short-circuit)	When the motor is running, fault in the internal power component module of the converter occurs: 1. The acceleration and deceleration time is set too short; 2. the over current and overheating of the converter, please check whether the motor is short circuited, and the machine load is too large; 3. The input voltage is too high/low, or the input voltage fluctuates substantially; 4. The converter does not match the motor power, or fault in Wye-Delta; 5. Improper setting of DC injection brake parameters (P01.09-P01.17 ; 6. Improper setting of VF parameters (P00.04-P00.12) ; 7. The cooling fan is damaged or in locked rotor, the converter cooling is not good; 1、8. Gate driving voltage of power components is too high or too low, which needs repairing.
Er.05	External input fault signal	When the external input fault signal input is valid, the motor stops and this code is displayed, which can be eliminated after reset, having no need to repair
Er.06	Fault in internal data storage	Fault in internal data storage occurs, turn off the power for about 1 minute, send the power to retry. If this phenomenon occurs again, maintenance is

		required.
Er.07	Over temperature	The internal temperature of converter is too high( above 65° C) , please check: 1. When the motor is running, whether the cooling fan stops (Note: if motor has been switched off for 1 minute, some versions of the converter cooling fan will automatically stop to prolong the service life); 2. please check whether the motor is short circuited, and the machine load is too large 3. Whether the thermal between the internal module of converter and heat sink is good?
Er.08	Fault in temperature measurement NTC	Fault in internal temperature measuring circuit of converter or the temperature sensor is not good, which need repairing.
Er.09		
Er.10	Power-off prompt	1、 Please check the input power supply voltage to ensure that the input voltage is within range;
Er.11	RS485Communication dropped line error, stop.	<b>Correlation with parameter P03.03n P03.04</b>
Er.12	Parameter error	
Er.13		
Er.14		
Er.15	Motor overheating	

## XI. Modbus Register address-inverter parameter correspondence table

Modbus Register address-inverter parameter correspondence table				
	Keep the register address (16)		Corresponding frequency converter parameters	Macro definition / description
Power-down storage area (EEPROM)	0x0000		P00.00	
	0x0001		P00.01	
	...		...	
	0x0100		P01.00	
	0x0101		P01.01	
	...		...	
	0x0200		P02.00	
	0x0201		P02.01	
	...		...	
	0x0D00		P13.00	
	0x0D01		P13.01	
	...		...	

**Note:**

1. Modbus protocol. Only supports RTU mode, not ASCII mode.

2. Modbus keeps register address, corresponding rule with frequency converter parameter: hold high 8 bit address of register and hexadecimal, correspond to group index of frequency converter parameter; The low 8-bit address corresponds to the number within the parameter group. For example, the address of the holding register in hexadecimal 0 x 0c14 corresponds to the converter parameter P12.20 (the 12th group, the 20th parameter / PWM mode).

Modbus keep register address - inverter application function corresponding table			
usRegHoldin gBuf[]	Modbus Hold register address	Modbus485 operating command	function
0	0x2000 (8192)	bit 1:0	b00:No function
			b01:Stop order
			b10:Start order
			b11:Inching (crawling) order
		bit 3:2	Reserved
		bit 5:4	b00:No function
			b01:Forward order
			b10:Backward order
			b11:Change direction
		bit 7:6	b00:No function
			b01:Reset one error
			b10:Reset all errors
b11:Reserved			
1	0x2001 (8193)	Modbus485Frequency command	x0.1HZ
2	0x2002 (8194)	Modbus485Accel. Time	x0.1Second
3	0x2003 (8195)	Modbus485Decel. Time	x0.1Second
4	0x2004 (8196)		
5	0x2005 (8197)		
6	8198		
7	8199		
8	8200	ErrorFlag	Error code
9	8201	Ms	Frequency transformer' s internal status
10	8202	AimFreq	Target frequency
11	8203	RunFreq	Output frequency
12	8204	OutCurrent	Output current
13	8205	RunVolt	Output voltage
14	8206	MainLineVolt	Bus voltage
15	8207	SpSeg	Number of fields in multi-rate

struct  
sAPP\_CMD  
living  
example:  
ModbusAppCmd

Only read

16	8208	AccDecFlag		
17	8209	AccTime	Current acceleration time	
18	8210	DecTime	Current deceleration time	
19	8211	AdvAin1	AD of external analog quantity 1 (10bit)	
20	8212	AdvAin2	AD of external analog quantity 2 (10bit)	
21	8213		X1-X8 status	
22	8214	Flash_reg		LED_OBJ_MAP_ADDR
23	8215	Dot_reg		
24	8216	DecodeReg		
25	8217	LedBuf[ 0]		
26	8218	LedBuf[ 1]		
27	8219	LedBuf[ 2]		
28	8220	LedBuf[ 3]		
29	8221	LedBuf[ 4]		
30	8222	LedBuf[ 5]		
31	8223	LedBuf[ 6]		
32	8224	LedBuf[ 7]		
33	8225	Unique_IDSum	CPU Unique ID attributecode	
34	8226	MakeKey/BreakKey		KEY_OBJ_MAP_ADDR
35	8227	KeyMap		
36	8228	Adv1	AD of panel potentiometer 1(10bit)	
37	8229	Adv2	AD of panel potentiometer 2(10bit)	
38	8230	Reversed		
39	8231	Islegal	Version mark	
40	8232			
41	8233			
42	8234			SprtterRunCmd
43	8235			eSpatterStatus
44	8236			SpatterPosition
45	8237			
46	8238			
47	8239			
48	8240			struct
49	8241			sAPP_CMD
50	8242			living

51	8243			example: SpIcAppCmd
52	8244			
53	8245			
54	8246			
55	8247			
56	8248			struct sAPP_CMD living example: SysAppCmd
57	8249			
58	8250			
59	8251			
60	8252			
61	8253			
62	8254			
63	8255			struct sAPP_CMD living example: ExAppCmd
64	8256			
65	8257			
66	8258			
67	8259			
68	8260			
69	8261			
70	8262			
71	8263			
72	8264			
73	8265			
74	8266			
75	8267			

## XII、 Table of correspondence between Multi-Segment Speed instruction, Frequency Segment and Parameter item

Table of correspondence between Multi-Segment Speed instruction, Frequency Segment and Parameter item						
Multistage input X3	speed	Multistage input X2	speed	Multistage input X1	Running frequency segment / corresponding parameter	
open a way		open a way		open a way	Paragraph 1 frequency/P07.00	
open a way		open a way		close	Paragraph 2 frequency/P07.01	low
open a way		close		open a way	Paragraph 3 frequency/P07.02	centre
open a way		close		close	Paragraph 4 frequency/P07.03	
close		open a way		open a way	Paragraph 5 frequency/P07.04	tall
close		open a way		close	Paragraph 6 frequency/P07.05	
close		close		open a way	Paragraph 7 frequency/P07.06	
close		close		close	Paragraph 8 frequency/P07.07	

Wiring: COM is common end, FWD is start and stop, X1 is low speed, X2 is medium speed, X3 is high speed.

Settings: P00.01 is 1, P07.01 is low speed, P07.02 is medium speed, P07.04 is high speed, Give an alarm ;

CM1 is the common end of the relay, NO1 is normally open and NC1 is normally closed. P04.04 can set function.

### XIII、JP1 short circuit block configuration

External analog input type	JP1 Short-circuit block configuration
0-5V	No need for short Circuit JP1
0-10V	2-3 feet of JP1 requiring short Circuit
0-20mA	2-3 feet of JP1 requiring short Circuit

## XIV、Selection of Peripheral Devices and Disposition

### 1、Options

Description	Functions
NFB or Ground fault interrupter for wire connection	Protect the wiring of the inverter. Be sure to install a breaker at the power. Please select a ground fault circuit interrupter against high-order harmonics.
Electromagnetic contactor	In order to prevent the braking resistor from burning out, please add an electromagnetic contactor and connect a surge absorber to the coil when using it.
Surge absorber	Absorb the switching surge current from the electromagnetic contactor and control relays.
Isolating transformer	Its function of isolating the input and output of the inverter is effective to reduce the interference to other electric devices.
DC reactor	Improve the input power factor of the inverter.
AC reactor	Improve the input power factor of the inverter and prevent the shock of surge voltage.
Braking resistor, braking unit	Consume the regenerating energy of the motor and shorten the ramp-down time.

#### (1) Leakage switch

There is earth static capacity inside of the inverter and the motor as well as the input and output leads. Due to higher carrier frequency of the inverter, the inverter has higher earth leakage current, especially for the inverters of large capacity series. When using a leakage switch it may sometimes result in the error action of the protective circuit. So when using a leakage switch attention should be paid to its selection and the proper reduction of carrier frequency and shortening the leads, etc.

#### (2) AC reactors

An AC reactor can constrict the high-order harmonic of input current of the inverter to improve its input power factor and prevent the shock of surge. It is recommended to use an input AC reactor under

the following circumstances:

a: Three-phase power supply is in unbalance.

b: Any equipment with thyristor or power factor compensation unit with switching control is connected to the same power supply.

### (3) DC reactors

It is necessary to install a DC reactor when the capacity of power supply is more than 1000 KVA or the mains power capacity is higher than the rated capacity of the inverter. A DC reactor is also needed for the case with higher demand on the improvement of power factor of power supply. This DC reactor can be used together with an AC reactor to achieve the obvious effect of decreasing high order harmonic at input. If it is necessary to install a DC reactor please contact the local distributor.

## 2、Disposition of Braking Resistor

Inverter Model	Braking resistor Specification		Special Motor KW
	W	Ω	
YL620-1.5KW-220V	100W	100 Ω	1.5KW
YL620-2.2KW-220V	100W	70 Ω	2.2KW
YL620-3.0KW-220V	300W	65 Ω	3.0KW
YL620-4.0KW-220V	400W	45 Ω	4.0KW
YL620-5.5KW-220V	800W	22 Ω	5.5KW
YL620-1.5KW-380V	150W	220 Ω	1.5KW
YL620-2.2KW-380V	250W	200 Ω	2.2KW
YL620-3.0KW-380V	250W	180 Ω	3.0KW
YL620-4.0KW-380V	300W	130 Ω	4.0KW
YL620-5.5KW-380V	400W	90 Ω	5.5KW

For the inverter of above 11KW to realize quick brake a braking unit must be added .

### Note:

- 1: Please select the resistor value and operating frequency given by our company.
- 2: If it causes any damage to the inverter and other devices due to the use of any braking Resistor and braking model group not supplied by our company, we will take no responsibility.
- 3: Be sure to consider the safety and ignitability of the environment when installing a braking resistor. The distance to the inverter should be at least 100 mm.
- 4: If it is necessary to change the resistor value and power value, please contact the local distributor.
- 5: In need of a braking resistor a separate order must be placed. Please contact the local distributor for details.

## XV、Customer feedback proposal