



# A2 Series VFD User's Guide

## Preface

Version: 1.8

Thank you very much for choosing high quality, multifunction, low level noise and energy cost product by Isacon Power Control Tech. Co., Ltd --A2 series inverters.

This manual contains the user setup, parameter setting, fault diagnosis, daily maintenance and safety precautions. Please read this manual carefully before installing and operating the products. This manual is contained in the accessories of the productions. Please keep it safe for further referencing.

If there is any problem which isn't listed in this manual, please contact the local dealer or Isacon's custom service center.

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## Chapter 1 Safety Precautions

### 1.1 Safety precautions

- Environment cannot contain any explosive gas.
- It must be wired by professional wiring staff. Otherwise, it may cause electronic shock.
- Cut off the power supply before wiring. Otherwise, it may cause electronic shock.
- Do not touch any control port, internal boards and their electronic components while the electricity is turned on. Otherwise, it may cause electronic shock.
- Please make sure that the product's ground wiring port is correctly connected according to national electricity safety standards or other related standards.
- Do not touch any internal board or component until 10 minutes after power shutdown. Please do electricity check before internal board maintenance. Otherwise, it may cause electronic shock.
- It is forbidden to connect AC power to product's output port (U,V,W) or other control ports except Lk,Lb,Lz. Otherwise, it may cause damage to the inverter.
- Since internal IC can be destroyed by electrostatic, please do not touch any PCB, IC or IGBT components without any protection. Otherwise, it may cause unknown fault.
- Make sure that any unexpected conductor such as screws, gasket, etc., is not left inside the inverter during maintenance. Otherwise, it may cause damage to the inverter or even fire.
- If overcurrent happens during starting up, please check the wiring and start up again.
- Do not stop machine by cut off power. Power can be cut off after the motor stops.
- Do not leave inverter in the sunshine. Otherwise, it may cause damage to the inverter.

## A2 Inverter (0.75-30KW)

### **1.2 Package inspection**

A2 series inverter production undergoes strictly qualification test. Please check the damage caused by delivery and the type specification during package inspection.

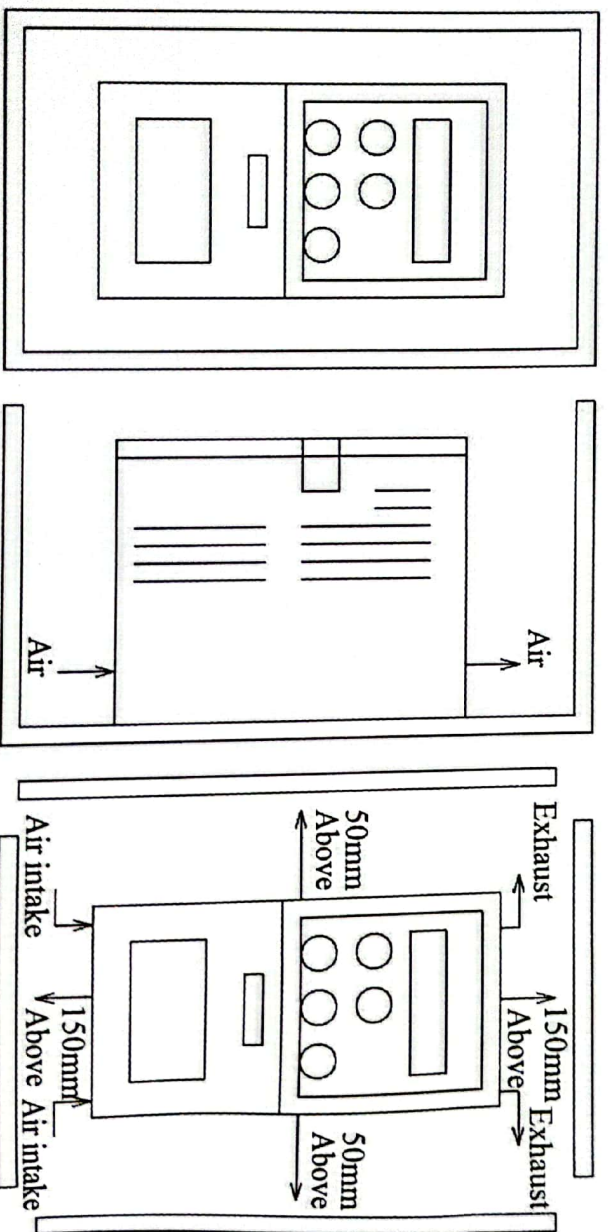
- Accessories: 1 Inverter, 1 user manual.
- If anything is missing, please contact local dealer or Isacon's custom service center.

## Chapter 2 User Setup

### 2.1 Environment requirement

- No corrosive gas, vapour and oily dust. Without direct sunshine.
- No floating dust or mental particle.
- Air moisture 20%~90%.
- Vibration < 5.8m/s<sup>2</sup>(0.6g).
- No electromagnetic interference.
- Temperature:-10 °C ~50 °C , make sure proper ventilation if the temperature is greater than 40°C.
- Without any inflammable or explosive gas, liquid and solid.
- Please use electric cabinet or remote operation in non-standard environment. Make sure proper ventilation.

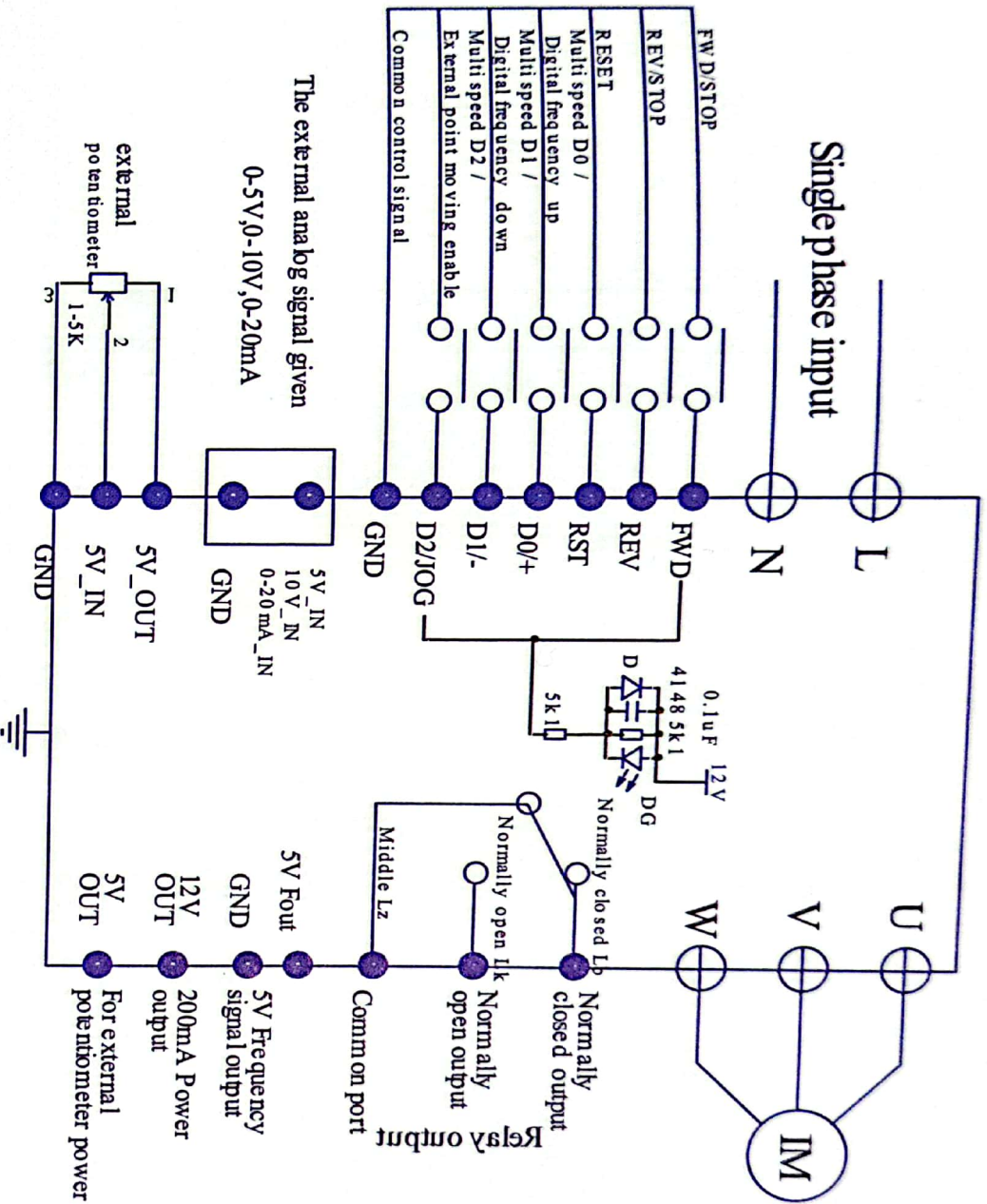
### 2.2 Install space





### 2.3 Basic wiring

There are two wiring part: main-loop and control-loop. Please do wiring correctly according to the following two figures.

Wiring figure (single phase)

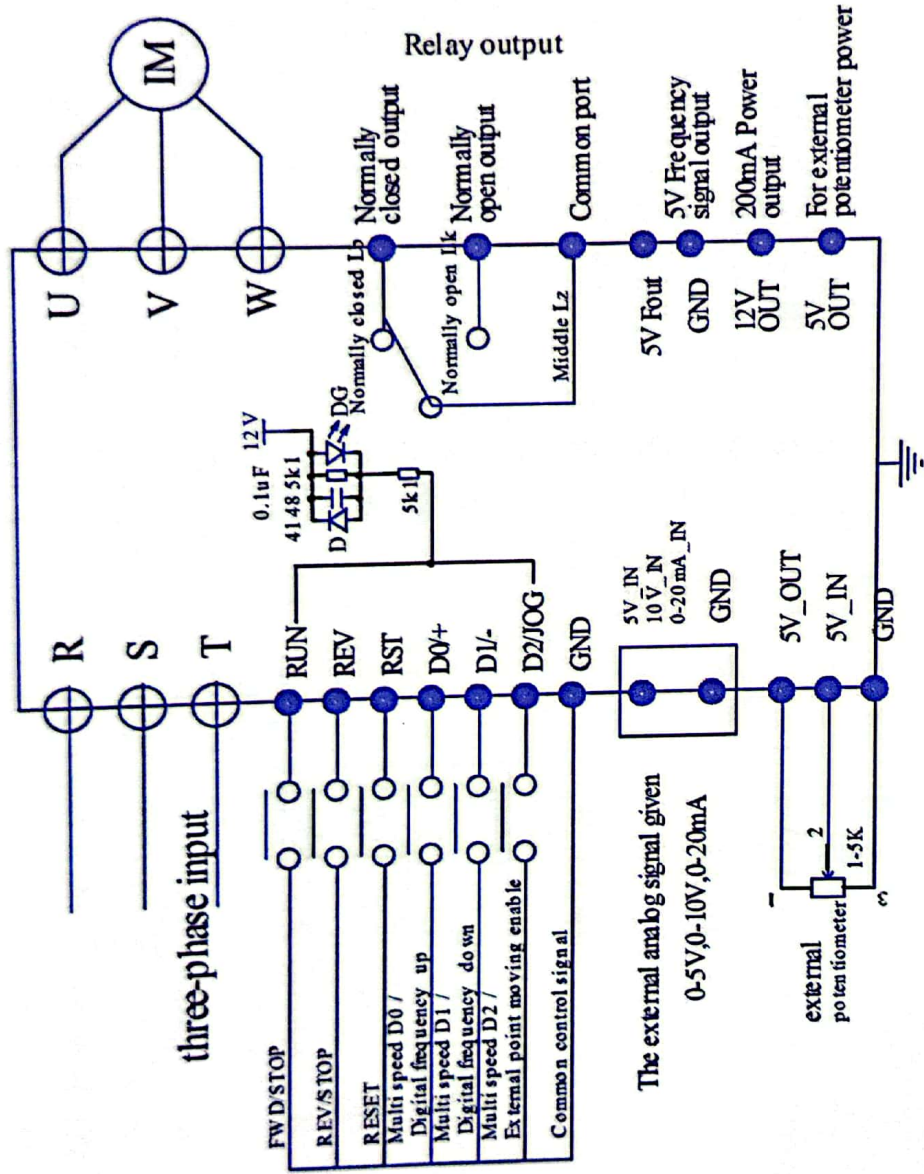


-  main-loop port
-  control-loop port

Port name	Description
L N	Single phase power input.
U V W	Three phase AC output ports can only connect to pure resistance or inductance load such as motors or electric heater.

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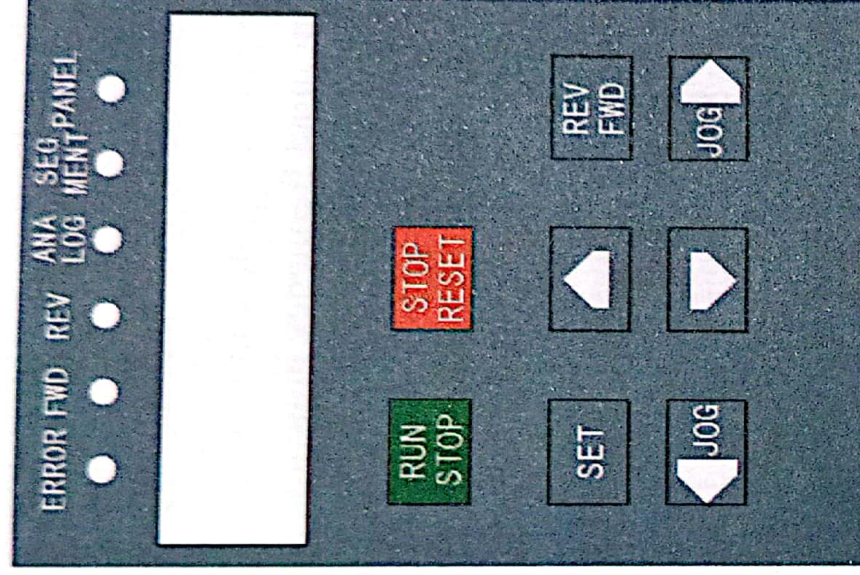
## Wiring figure (three phase)



⊕ main-loop port  
● control-loop port

Port name	Description
R S T	Single phase 220V power connect R and T. Three phase 220V power connect R, S, T. Voltage specifications: 8xxx, single phase 220 input connection R and T
U V W	Three phase AC output ports can only connect to pure resistance or inductance load such as motors or electric heater.

### Chapter 3 Control Panel



Button	Description
RUN STOP	Switch between run and stop state by single press.
STOP RESET	It has different meanings to push this button during different modes: 1. if the inverter is running, it would stop; 2. If a fault happens, the inverter would be reset; 3. If it is operated on menus, it returns to parent menu.
REV	Change the inverter's direction. It also works during the runtime.
SET	Enter menu mode. If it is on item, the data would be saved and lower level menu would be displayed.
▲▼	Change items in the menu or modify the parameter data.
◀▶	Modify the menu content and point move in panel.
Potentiometer	Change runtime frequency.

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Content	Description
ERROR	Fault indicator.
FWD	Clockwise rotation indicator.
REV	Anticlockwise rotation indicator.
ANALOG	Analog input frequency indicator.
SEGMENT	Segment input frequency indicator.
PANEL	Panel input frequency indicator.
Digital tube	Inverter runtime frequency. If inverter stops, it flashes. The display data is given by "Pn01" data.

## Chapter 4 Parameter Set Method

### 4.1 Parameter set and modification

Set parameter when inverter is stopped and the parameter is not locked (Pn32=1). First, enter parameter set menu by push button "SET". Second, push button ▲/▼ to choose the certain item. Third, push button "SET" again to enter the item. Fourth, push button ◀/▶ to choose certain bit and push ▲/▼ to modify the value. Finally, push button "SET" to save the new parameter or push button "STOP" to parent menu without any saving.

Push button "SET" to save the new parameter or push button "STOP" to parent menu without any saving.

### 4.2 Button notice

When modify parameters, long push ▲/▼ to rolling number of current bit between 0-9.

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### Chapter 5 Table of Configure Parameters

Item	Description ▲ or ▼ Modify by button	Range Modify by button ▲ or ▼	Default Value	
			Default (3)	Default (6)
Pn 01	Default display content	1—30000	1	1
Pn 02	Initial start up frequency by panel or other method	0.01—400.0000	400Hz	50
Pn 03	Source of runtime frequency	1—7	2	1
Pn 04	Source of runtime command	1—2	1	1
Pn 05	clockwise / anticlockwise disable	1—3	3	3
Pn 06	Method to stop inverter	1—2	2	2
Pn 07	Start again by external signal	1—2	1	1
Pn 08	Acceleration time	000.01S—650.00S	50S	10S
Pn 09	Deceleration time	000.01S—650.00S	50S	10S
Pn 10	Maximum runtime frequency	000.10Hz—400.00Hz	400Hz	50Hz
Pn 11	Minimum runtime frequency	000.10Hz—400.00Hz	1.5Hz	1.5Hz
Pn 12	Motor rating frequency	010.00Hz—400.00Hz	400Hz	50Hz
Pn 13	Torque compensation	0.0—4.0	0.0	0.0
Pn 14	Torque compensation frequency	0.01Hz—600.00Hz	500Hz	80Hz
Pn 15	Startup DC braking voltage	1V—100V	30V	30V
Pn 16	Startup DC braking time	000.00S—650.00S	0S	0S
Pn 17	Stop DC braking voltage	1V—100V	30V	30V
Pn 18	Stop DC braking time	000.00S—650.00S	0S	0S
Pn 19	Source of multi-segment speed 0	1—5	1	1
Pn 20	Multi-segment speed 1 frequency	000.10 Hz—400.00Hz	10	10
Pn 21	Multi-segment speed 2 frequency	000.10 Hz—400.00Hz	20	20
Pn 22	Multi-segment speed 3 frequency	000.10 Hz—400.00Hz	30	30
Pn 23	Multi-segment speed 4 frequency	000.10 Hz—400.00Hz	40	40

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Item	Description ▲ or ▼ Modify by button	Range Modify by button ▲ or ▼	Default Value	
			Default (3)	Default (6)
Pn 24	Multi-segment speed 5 frequency	000.10 Hz— 400.00Hz	50	50
Pn 25	Multi-segment speed 6 frequency	000.10 Hz— 400.00Hz	60	60
Pn 26	Multi-segment speed 7 frequency	000.10 Hz— 400.00Hz	70	70
Pn 27	Point move frequency	000.10 Hz— 400.00Hz	10Hz	10Hz
Pn 28	Choice of relay output	1—6	3	3
Pn 29	2rd acceleration time	000.01S—650.00S	2S	2S
Pn 30	2rd deceleration time	000.01S—650.00S	2S	2S
Pn 31	2rd deceleration stop frequency	000.01Hz—400.00Hz	1Hz	1Hz
Pn 32	Parameter management	1—6	1	1
Pn 33	Software version	32029	*****	*****
Pn 34	Auto recover while lost power suddenly	0—99Hz	0	0
Pn 35	Production date	*	*****	*****

Please refer Chapter 7 for detail description of each item

**Remark:** If over-voltage happens during deceleration, it will stop.

**Note:**

If over-voltage happens during deceleration, inverter will stop deceleration until the voltage goes back to normal level. If better deceleration is needed, please switch to inverter with braking.

## Chapter 6 Description of Control Ports

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12V OUT	5V OUT	5V IN	10V IN	20mA IN	5V Fout	GND	FWD	REV	RST	DO +	D1 -	D2 JOG	Lk	Lb	Lz

Port name	Port Description
12V OUT	12V output, with maximum current 200mA.
5V OUT	5V output, with maximum current 50mA.
5V IN	5V input, analog input, with maximum effective voltage 5V, no more than 6V
10V IN	10V input, analog input, with maximum effective voltage 10V, no more than 12V
20mA IN	20mA input, analog input, with maximum effective current 20mA, no more than 25mA
5V Fout	Frequency signal output, maximum output voltage 5V
GND	Power source ground 0V.
FWD	External clockwise rotation input
REV	External anticlockwise rotation input
RST	External reset signal
D0 +	Multi-segment speed D0 input, external “+” signal means clockwise point move input
D1 -	Multi-segment speed D1 input, external “-” signal means anticlockwise point move input
D2 JOG	Multi-segment speed D2 input, external enable signal input
Lk	Relay ON
Lb	Relay OFF
Lz	Relay ON/OFF

## Chapter 7 Description of Configure Parameters

**Pn 01** Default display content: 1——30000

**RUN:** 1 means it will display runtime frequency  
Otherwise, it displays motor's synchronization speed.  
2——30000 is motor synchronization speed

**STOP:** it will display frequency given by external signal.

**Pn 02** Initial startup frequency by panel or other method

**Range:** 000.01Hz—400.00Hz, the initial panel data and external signal frequency during startup.

**Pn 03** Source of runtime frequency with range: 1—7

- 1 Potentiometer
- 2 Panel button
- 3 External 0-5V signal
- 4 External 0-10V signal
- 5 External 0-20mA signal
- 6 External digital signal
- 7 Multi-segment signal

**Pn 04** Source of runtime command with range: 1—2

- 1 Panel button control
- 2 External signal control

**Pn 05** clockwise / anticlockwise disable with range: 1—3

- 1 clockwise enable only
- 2 anticlockwise enable only
- 3 clockwise / anticlockwise enable

**Pn 06** Method to stop inverter with range: 1—2

- 1 stop by itself
- 2 stop by deceleration

**Pn 07** Start again by external signal with range: 1—2

- 1 disable
- 2 enable

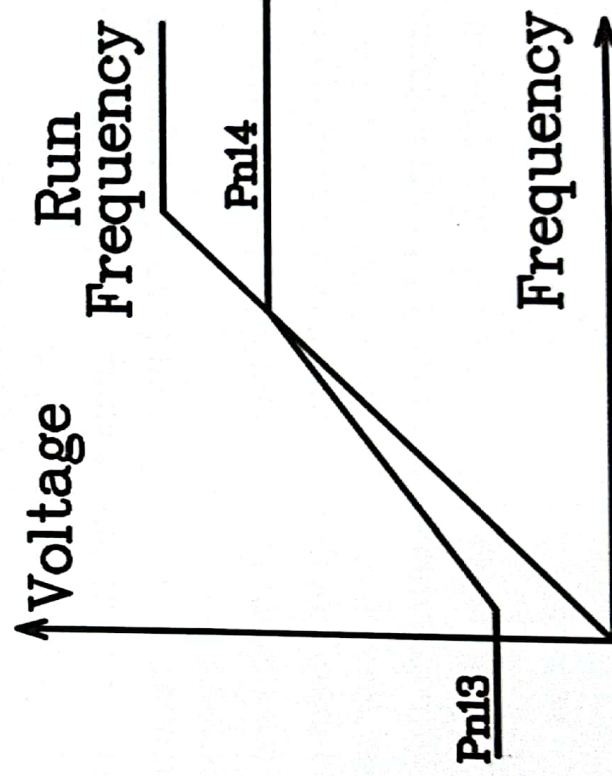
**Description:** when the power on the external operation of the signal is allowed to start effectively.

**Pn 08** Acceleration time with range: 000.01S—650.00S

Accelerate time (from 0Hz to Pn10).

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- Pn 09** Deceleration time with range: 000.01S—650.00S  
Decelerate time (from Pn10 to 0Hz).
- Pn 10** Maximum runtime frequency with range: 000.10Hz—400.00Hz  
Maximum output frequency by inverter.
- Pn 11** Minimum runtime frequency with range: 000.10Hz—400.00Hz  
If the frequency from command below this value, inverter will stop. It wouldn't recover until command frequency up this value.
- Pn 12** Motor rating frequency with range: 010.00Hz—400.00Hz  
It is used for modify the V/Fcurve.
- Pn 13** Torque compensation with range: 0.0—4.0  
Large parameter may cause damage to the motor.
- Pn14** Torque compensation frequency: 0.01Hz—400.00.00Hz  
Inverter doesn't provide torque compensation if runtime frequency is larger than this value.



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**Pn 15** Startup DC braking voltage: 1V—100V

By proper tuning of this parameter, motor can start normally from fully stop state without any difficult caused by motor's free motion and rotate direction.

**Pn 16** Startup DC braking time: 000.00S—650.00S

DC braking time before motor startup to ensure that motor is started from fully stop state.

**Pn 17** Stop DC braking voltage: 1V—100V

Braking voltage during DC braking period to ensure that motor is fully stopped in brake time.

**Pn 18** Stop DC braking time: 000.00S—650.00S

DC braking time to prevent the slide move after stopping.

**Pn 19** Source of multi-segment speed 0: 1—5

Multi-segment speed mode 0-segment frequency source:

- 1 Potentiometer
- 2 Panel button
- 3 External 0-5V signal
- 4 External 0-10V signal
- 5 External 0-20mA signal

**Pn 20** Multi-segment speed 1 frequency: 000.10 Hz—400.00Hz

Multi-segment speed mode 1-segment frequency

**Pn 21** Multi-segment speed 2 frequency: 000.10 Hz—400.00Hz

Multi-segment speed mode 2-segment frequency

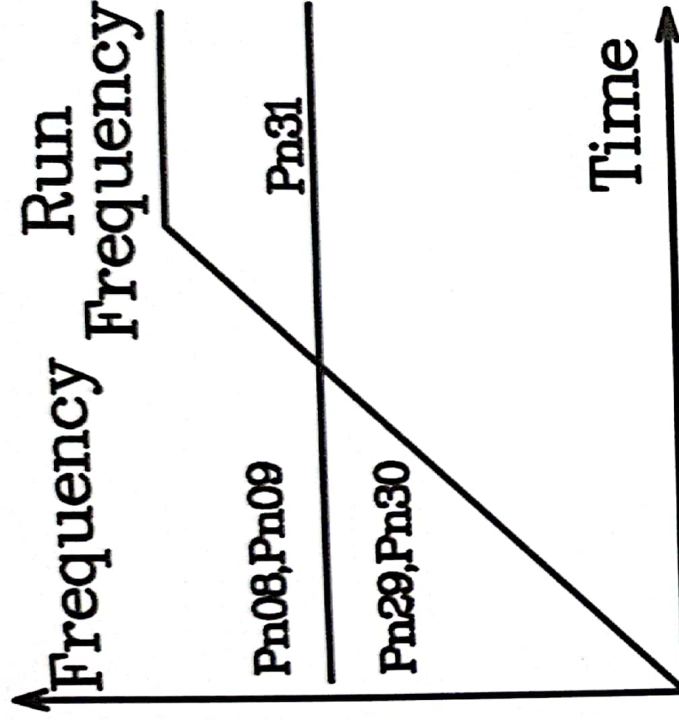
**Pn 22** Multi-segment speed 3 frequency: 000.10 Hz—400.00Hz

Multi-segment speed mode 3-segment frequency

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- Pn 23** Multi-segment speed 4 frequency: 000.10 Hz—400.00Hz  
Multi-segment speed mode 4-segment frequency
- Pn 24** Multi-segment speed 5 frequency: 000.10 Hz—400.00Hz  
Multi-segment speed mode 5-segment frequency
- Pn 25** Multi-segment speed 6 frequency: 000.10 Hz—400.00Hz  
Multi-segment speed mode 6-segment frequency
- Pn 26** Multi-segment speed 7 frequency: 000.10 Hz—400.00Hz  
Multi-segment speed mode 7-segment frequency
- Pn 27** Point move frequency: 000.10 Hz—400.00Hz  
Point move frequency
- Pn 28** Choice of relay output: 1—6  
1 Stop inverter                    2 Run inverter  
3 Inverter fault                4 Frequency increasing  
5 Frequency decreasing       6 Frequency reached  
If output condition is satisfied, ON/OFF states reverse.
- Pn 29** 2rd acceleration time: 000.01S—650.00S  
2rd acceleration time
- Pn 30** 2rd deceleration time: 000.01S—650.00S  
2rd deceleration time
- Pn 31** 2rd deceleration stop frequency: 000.10 Hz—400.00Hz  
When runtime frequency is larger than this value,  
acceleration/deceleration time is defined by Pn08,Pn09  
When runtime frequency is smaller than this value,  
acceleration/deceleration time is defined by Pn29,Pn30  
As shown in Figure:

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- Pn 32** Parameter management: 1—3      2 modification disable  
1 modification enable  
3 initialization for 400Hz parameters  
4 read OEM initialization parameter  
5 write OEM initialization parameter  
6 initialization for 50Hz parameters  
Note: the password for the OEM parameter is: 61633
- Pn 33** Software version
- Pn 34** Auto recover while lost power suddenly  
0 disable this function  
99 means do auto recover in infinite time, starting from low frequency  
Other value:  
If indicator displays LU-X(any code) during runtime and power source recovers in 2 seconds, inverter would start up again and reduce runtime frequency with magnitude of under voltage time(s) multiply frequency of this component(Hz).  
The maximum power lost time is 2.5s. Beyond this time, it would be seen as over voltage without any auto recover.
- Pn 35** Production date

## **Chapter 8 Operation Examples**

### **8.1 Operation by panel**

Pn 04 = 1 (Command from panel), Pn 03 = 1 (Frequency from potentiometer).  
Push button "RUN" on the panel, inverter starts up and running indicator is on.  
Push the button again, inverter would stop.

### **8.2 Operation by external signal**

Pn 04=2 (command from port "FWD/REV")  
Pn 03=3 (frequency from port "5V")

### **8.3 Multi-segment speed**

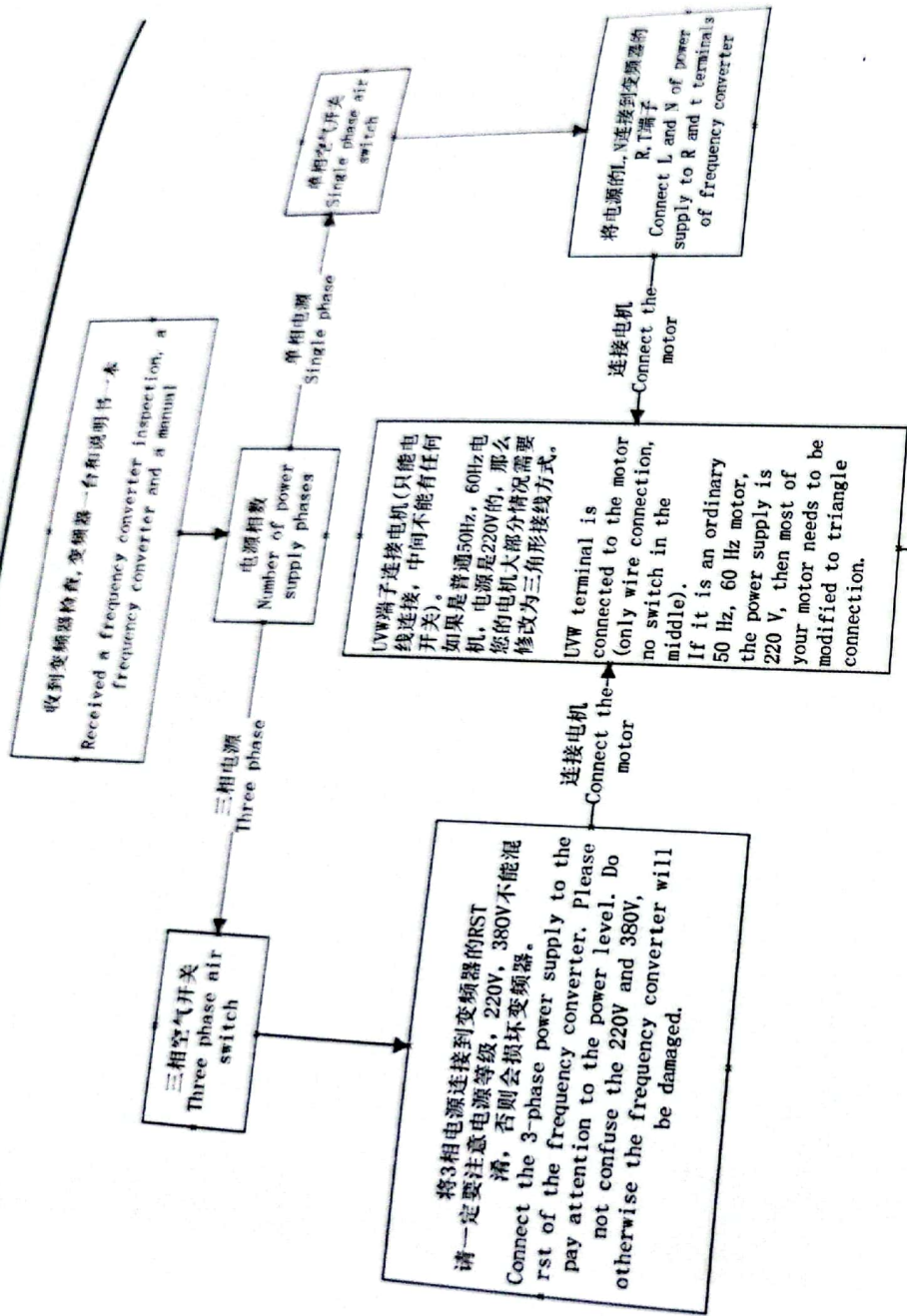
Pn 04=2 (command from port "FWD/REV")  
Pn 03=7 (frequency from multi-segment 0-7)

### **8.4 Point move by panel**

Command (Pn 04) must come from panel (=1) . Frequency (Pn 03) must be specified by button (=2) .After inverter stops, push button "←" to clockwise point move and "→" to anticlockwise point move.

### **8.5 Point move by external signal**

Command (Pn 04) must come from port "FWD/REV" (=2) . Frequency (Pn 03) must come from external digital port (=6) . After inverter stops, connect "D0" and "JOG" to "GND" to point move clockwise, connect "D1" and "JOG" to "GND" to point move anticlockwise.



以下是变频器调试测试方法。

- pn32=6
  - pn02=电机额定频率
  - pn03=2
  - pn04=1
  - pn10=电机额定频率
  - pn12=电机额定频率
- 如上设定后, 面板RUN启动, 面板STOP停止。按面板fwd/rev 可以正反切换面板上下按键调速。

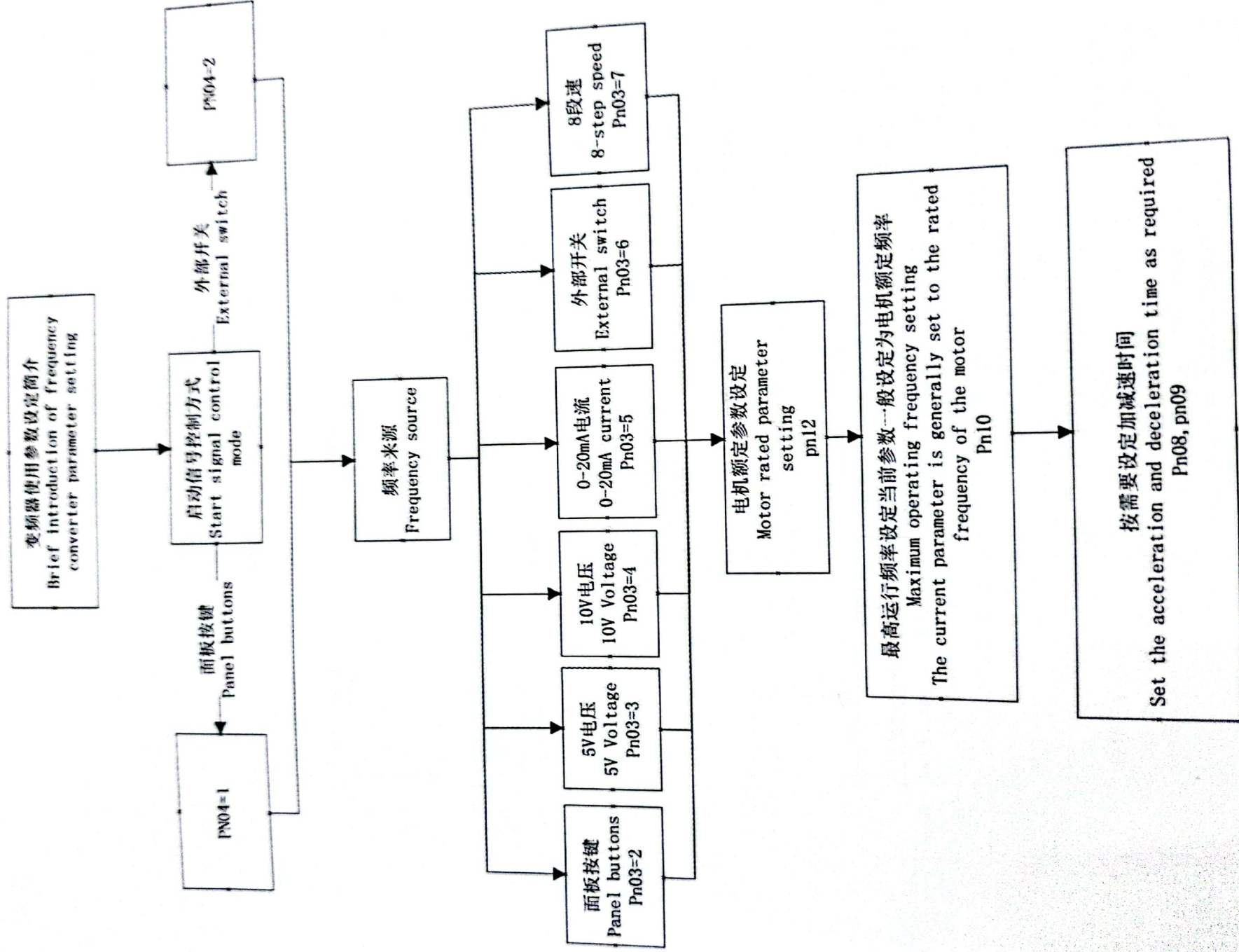
说明书第8页有详细的菜单操作说明  
有其他需求请详细描述您的应用需求, 我们可以为您配置详细的参数和硬件连接。

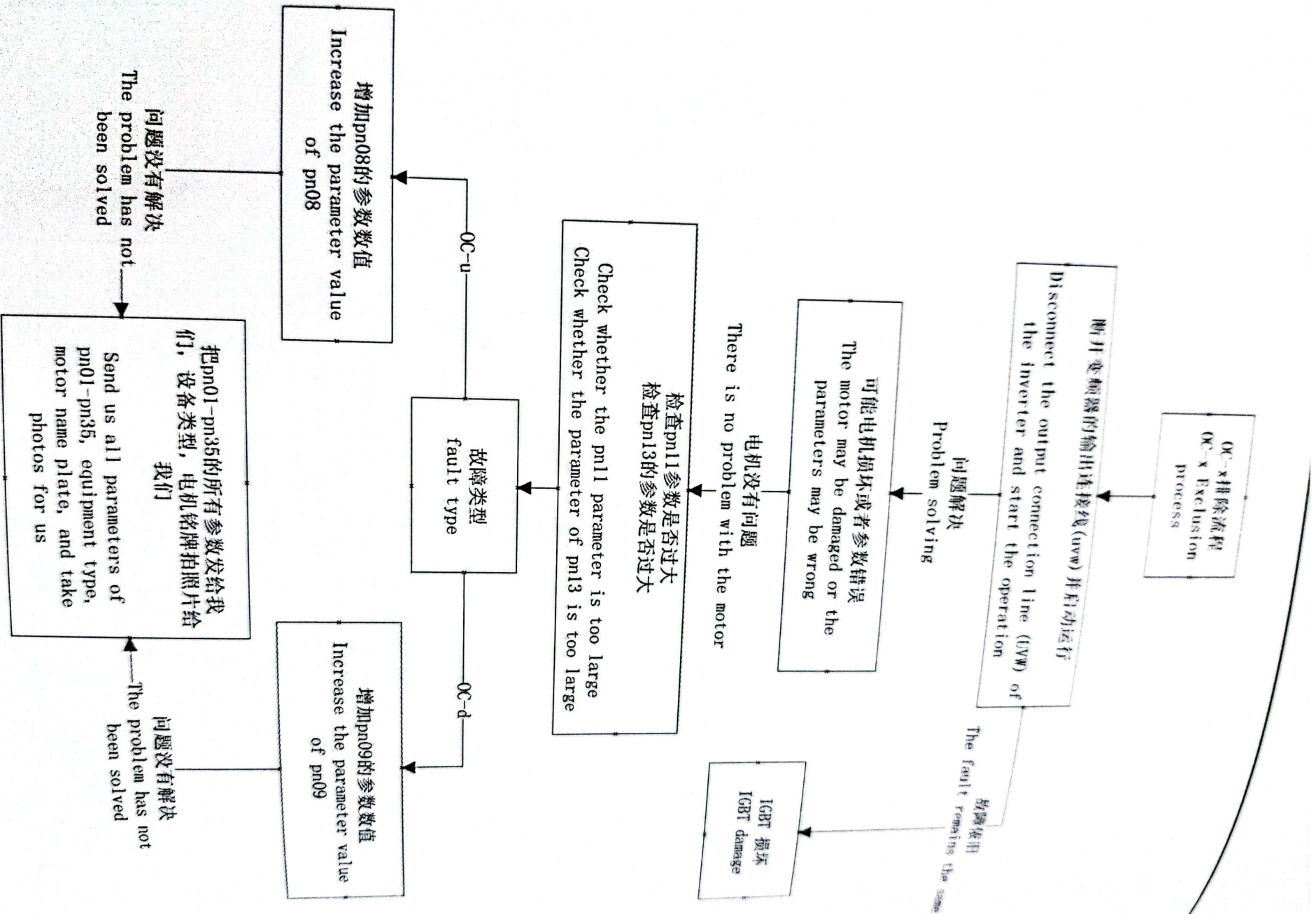
The following is the frequency converter debugging test method.

- pn32=6
- Pn02 = rated frequency of motor
- pn03=2
- pn04=1
- Pn10 = rated frequency of motor
- Pn12 = rated frequency of motor

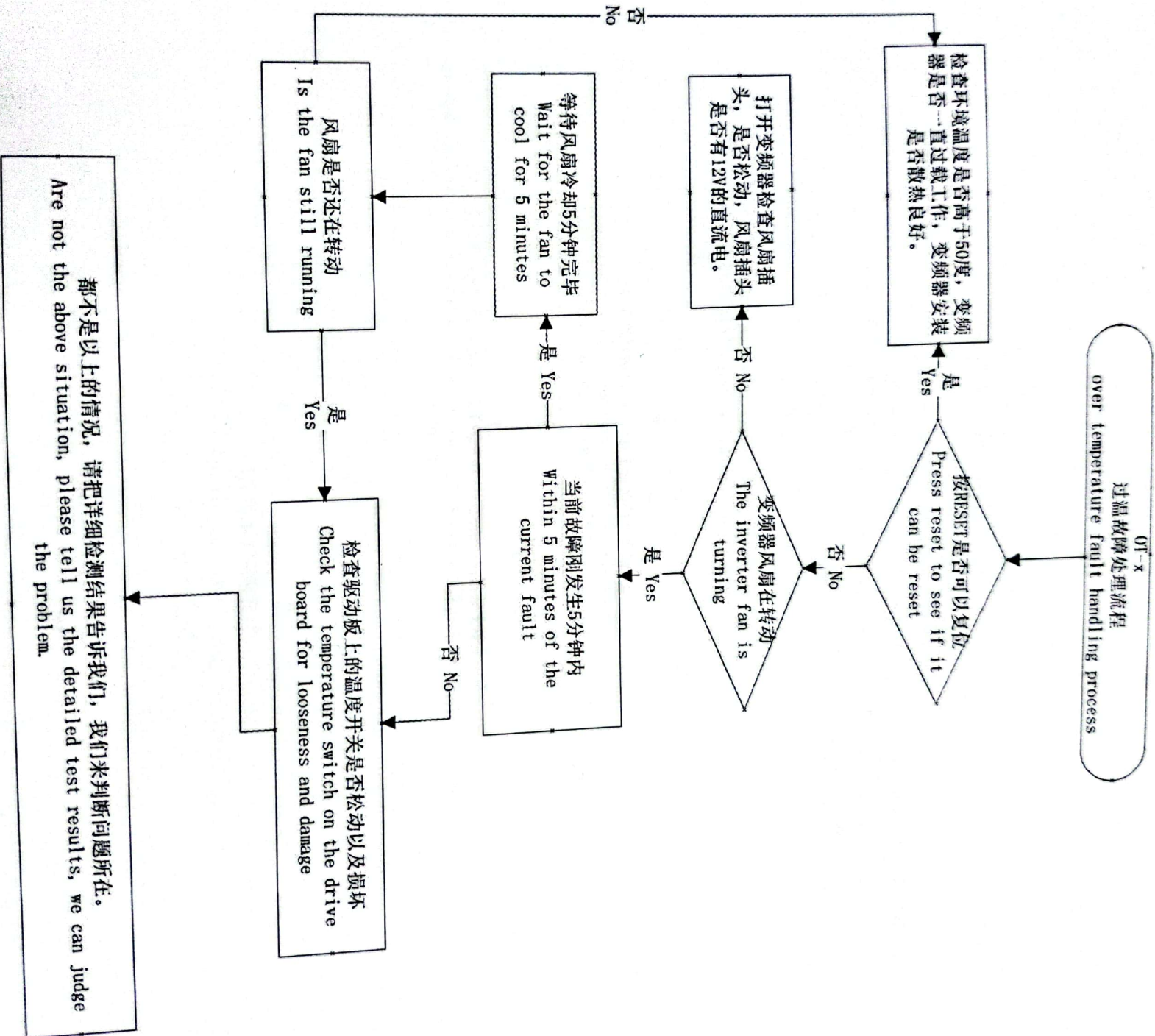
After setting as above,  
Panel run starts and panel stop stops.  
Press FWD / rev to switch between positive and negative  
Press the up and down buttons on the panel to adjust the speed.  
Detailed menu instructions are available on page 8 of the manual  
If you have other requirements, please describe your application requirements in detail,  
We can configure detailed parameters and hardware connection for you.

# A2 Inverter (0.75-30kW)

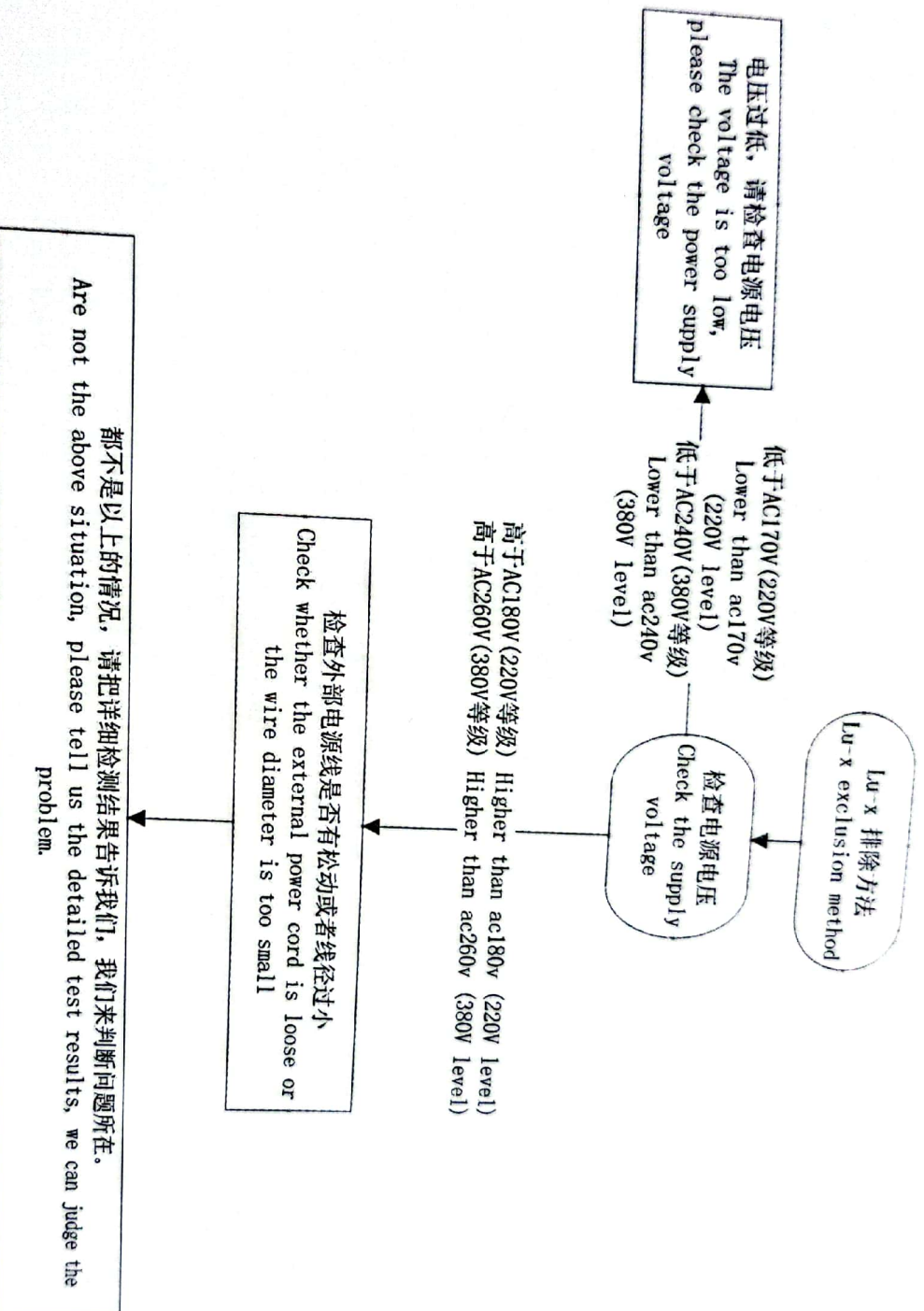




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