

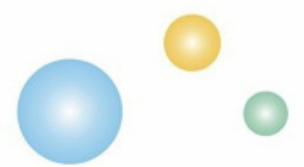


OmniMech

SK320/SK321 Selection Manual



Linyi OmniMech Co., Ltd.



Company Profile

Linyi OmniMech Co., Ltd., located in Linyi City, Shandong Province, China, is a high-tech enterprise specializing in the research, development, production, and sales of industrial automation control equipment. Our product range includes variable frequency drives, soft starters, soft start cabinets, variable frequency control cabinets, as well as high and low voltage electrical components and complete sets of equipment. These are widely used in industries such as machinery manufacturing, power, mining, construction, and petrochemicals.

OmniMech is committed to technological innovation, boasting a team of experienced engineers and technical professionals dedicated to providing customers with efficient, energy-saving, and reliable industrial automation solutions. Our manufacturing base employs advanced manufacturing processes and a strict quality management system to ensure that each unit meets the highest standards.



SK320 simple frequency converter

SK321 standard frequency converter

Product Introduction:

SK320/321 series frequency converter is a universal frequency converter developed for traditional agriculture, industry, and manufacturing industries. It is widely used in industries such as fans and pumps, printing and packaging, power building materials, metallurgy and chemical industry, municipal fire protection, etc. This series of frequency converters has the characteristics of excellent performance, rich functions, exquisite structure, simple operation, safety and reliability, and good environmental adaptability



Product features:

- 1.The heat dissipation duct is completely sealed, with strong environmental resistance and excellent heat dissipation performance;
- 2.V/F control, high torque output, strong load starting ability;
- 3.It can achieve over 80% control performance without the need for self-learning; Suitable for multi scenario mode applications (such as smart water pumps, engraving machines, etc.);
- 4.The protection function is complete, with output phase loss, overcurrent, overvoltage, overload, overheating and other functions, to maximize the safety of the motor and frequency converter;
- 5.The HS321 series has added braking RS485 Modbus communication function, temperature protection and other functions.

Novel appearance, compact structure, suitable for more space and narrow environmental conditions.



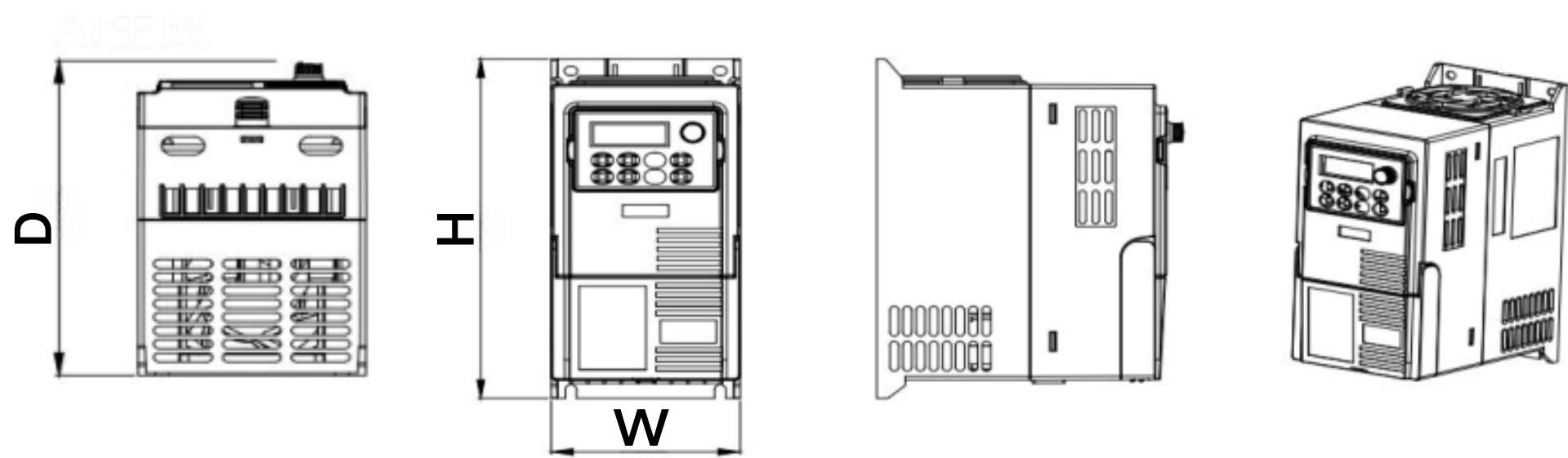
The back of the product has installation holes, openings, and standard track buckles, which greatly facilitate customer installation.



Functional parameters:

Project		SK320	SK321
basic function	frequency	Low frequency mode: 0.00-400.0Hz High frequency mode: 0.00-3200Hz	
	carrier frequency	2.0-16.0KHz	
	Frequency setting resolution	Simulation setting: 0.1% of the highest frequency Digital setting: 0.01Hz	
	control mode	V/F control, open-loop vector control	
	Steady speed accuracy	±0.5%	
	Overload capacity	G-type machine: using inverse time overload protection 115% 60 minutes/150% 1 minute	
	V/F curve	Three methods: linear curve, square curve, 1.5 power, 1.2 power, user set V/F curve, V/F separation	
	Acceleration curve	Linear mode	
	DC braking	Shutdown DC braking starting frequency: 0.00% - upper limit frequency% Braking time: 0.0-60.0 seconds; Braking current: 0.0-100% of motor rated current	
	Jog control	Jogging frequency range: 0.0Hz - maximum frequency Jogging acceleration and deceleration time: 0.1-999.9s	
	Simple PLC, multi-stage operation	Up to 7-speed operation	
	Built in PID	Realize process control closed-loop control system	
	Motor parameter identification	Static identification	
	Overvoltage, overcurrent, stall, and overexcitation control	Automatic limitation of current and voltage during operation to prevent frequent overcurrent, overvoltage, and tripping	
	Torque enhancement and slip compensation	Torque boost can be selected as automatic torque boost or manual torque boost. Slip compensation can enhance low-speed load capacity and slip speed compensation	
Personalized features	Communication function	none	RS485 communication
	Braking function	none	have
	Oscillation suppression	Enabling oscillation suppression can eliminate oscillations and avoid overcurrent in the frequency converter	
	PID control	Built in PID controller	
	Swing frequency function	Output frequency, swinging up and down around the set frequency, suitable for industries such as textiles and synthetic fibers	
	Operation function	Upper and lower frequency settings, frequency jump operation, reverse operation restrictions, frequency increment and decrement control, fault self recovery	
	Constant pressure water supply function	Maintain constant water pressure, automatically sleep and wake up according to pressure	

Rated data of frequency converter



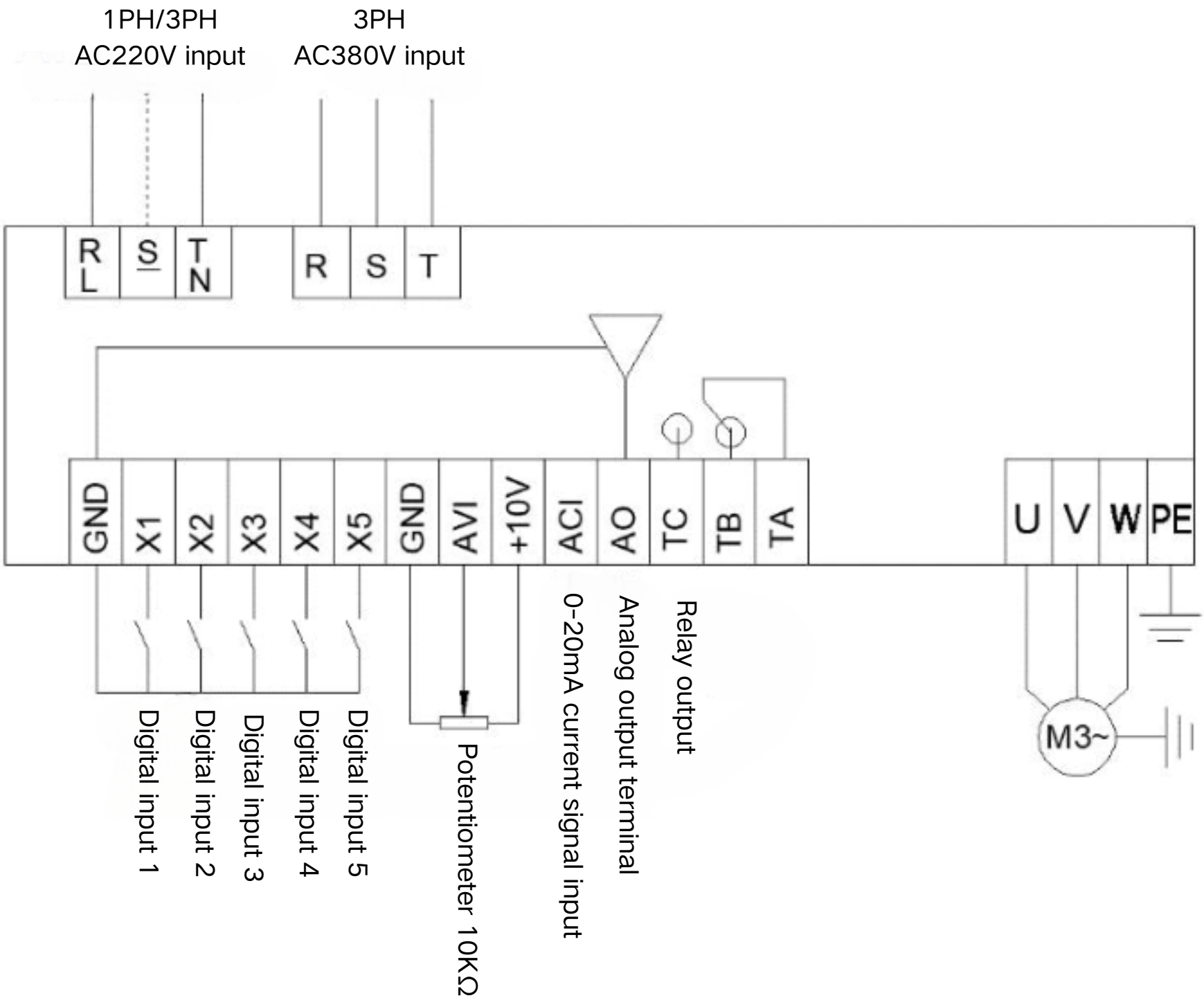
model	power	Input power supply	Output current (A)	External dimensions H*W*D (mm)	Installation size H*W (mm) Install screws
0.4S1-220V	0.4KW	Single-phase AC 200V- 240V	2.1	170*79*127	160*60.5-M5
0.75S1-220V	0.75KW		3.8		
1.5S1-220V	1.5KW		7		
2.2S1-220V	2.2KW		9	187*86*144	173*68-M4
3.0S1-220V	3.0KW		13	216*101*151	204*83.5-M4
4.0S1-220V	4.0KW		15	237*111*168	221*93.5-M5
5.5S1-220V	5.5KW		20		
0.4S3-220V	0.4KW	Three phase AC 200V- 240V 50Hz/60Hz	2.1	170*79*127	160*60.5-M5
0.75S3-220V	0.75KW		3.8		
1.5S3-220V	1.5KW		7		
2.2S3-220V	2.2KW		9	187*86*144	173*68-M4
3.0S3-220V	3.0KW		13	216*101*151	204*83.5-M4
4.0S3-220V	4.0KW		15	237*111*168	221*93.5-M5
5.5S3-220V	5.5KW		20		
0.4G3-380V	0.4KW	Three phase AC 340V- 440V 50Hz/60Hz	1.5	170*79*127	160*60.5-M5
0.75G3-380V	0.75KW		2.1		
1.5G3-380V	1.5KW		3.8		
2.2G3-380V	2.2KW		5.1	187*86*144	173*68-M4
3.0G3-380V	3.0KW		7.1		
4.0G3-380V	4.0KW		9	216*101*151	204*83.5-M4
5.5G3-380V	5.5KW		12.6		
7.5G3-380V	7.5KW		16.1	237*111*168	221*93.5-M5
11.0G3-380V	11.0KW		25	249*143*172	237*130-M5

Selection of braking resistor

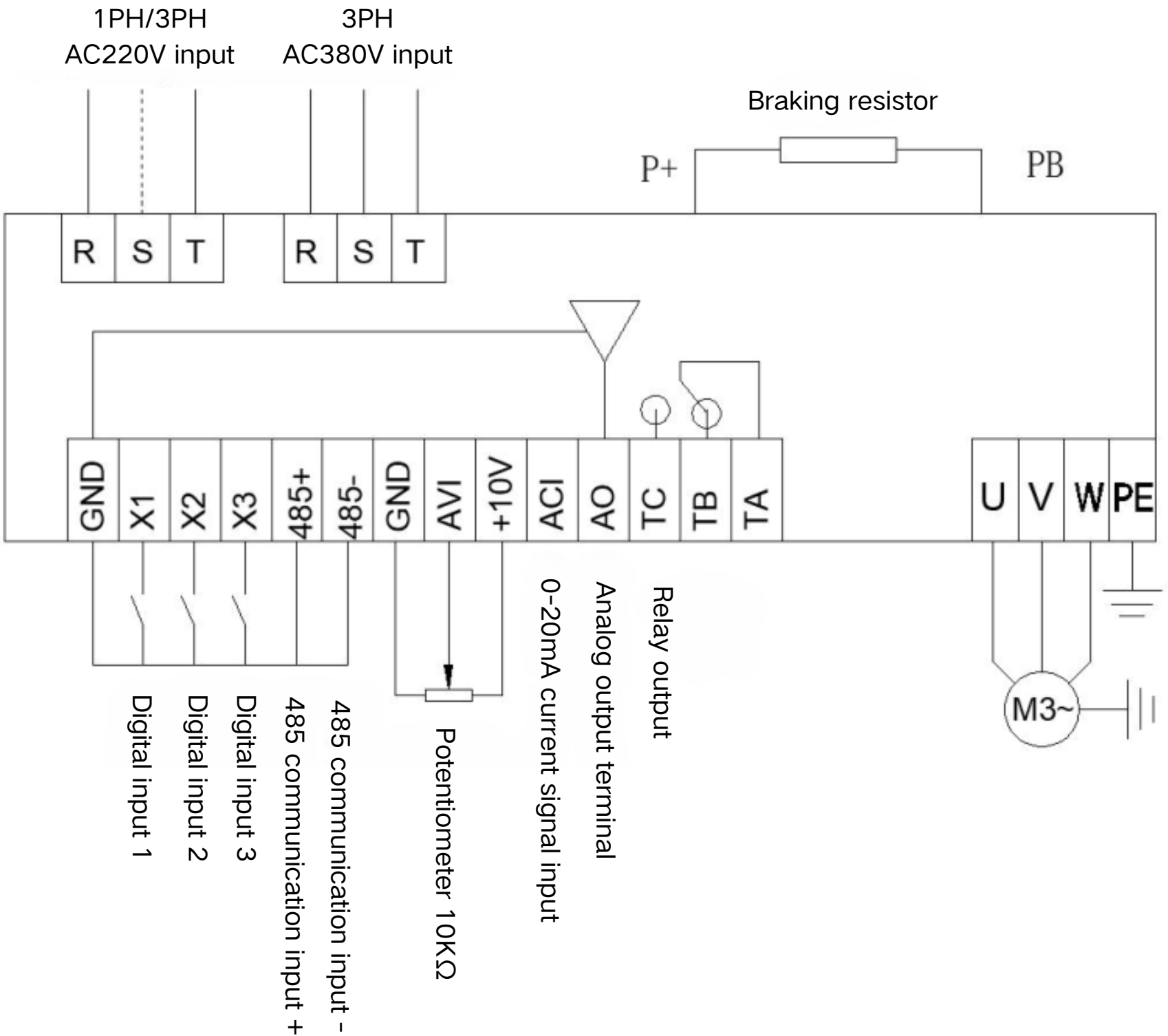


model	power	Input power supply	Braking resistor power	Braking resistor resistance value
0.4S1-220V	0.4KW	Single-phase AC 200V-240V 50Hz/60Hz	100 W	250 Ω
0.75S1-220V	0.75KW		100 W	200 Ω
1.5S1-220V	1.5KW		300 W	100 Ω
2.2S1-220V	2.2KW		300 W	100 Ω
4.0S1-220V	4.0KW		1000 W	75 Ω
5.5S1-220V	5.5KW		1000 W	75 Ω
0.4S3-220V	0.4KW	Three phase AC 200V-240V 50Hz/60Hz	100 W	250 Ω
0.75S3-220V	0.75KW		100 W	200 Ω
1.5S3-220V	1.5KW		300 W	100 Ω
2.2S3-220V	2.2KW		300 W	100 Ω
4.0S3-220V	4.0KW		500 W	75 Ω
5.5S3-220V	5.5KW		1000 W	75 Ω
0.4G3-380V	0.4KW	Three phase AC 340V-440V 50Hz/60Hz	100 W	750 Ω
0.75G3-380V	0.75KW		100 W	750 Ω
1.5G3-380V	1.5KW		300 W	400 Ω
2.2G3-380V	2.2KW		300 W	250 Ω
4.0G3-380V	4.0KW		500 W	150 Ω
5.5G3-380V	5.5KW		800 W	100 Ω
7.5G3-380V	7.5KW		1000 W	75 Ω
11.0G3-380V	11.0KW		1200 W	50 Ω

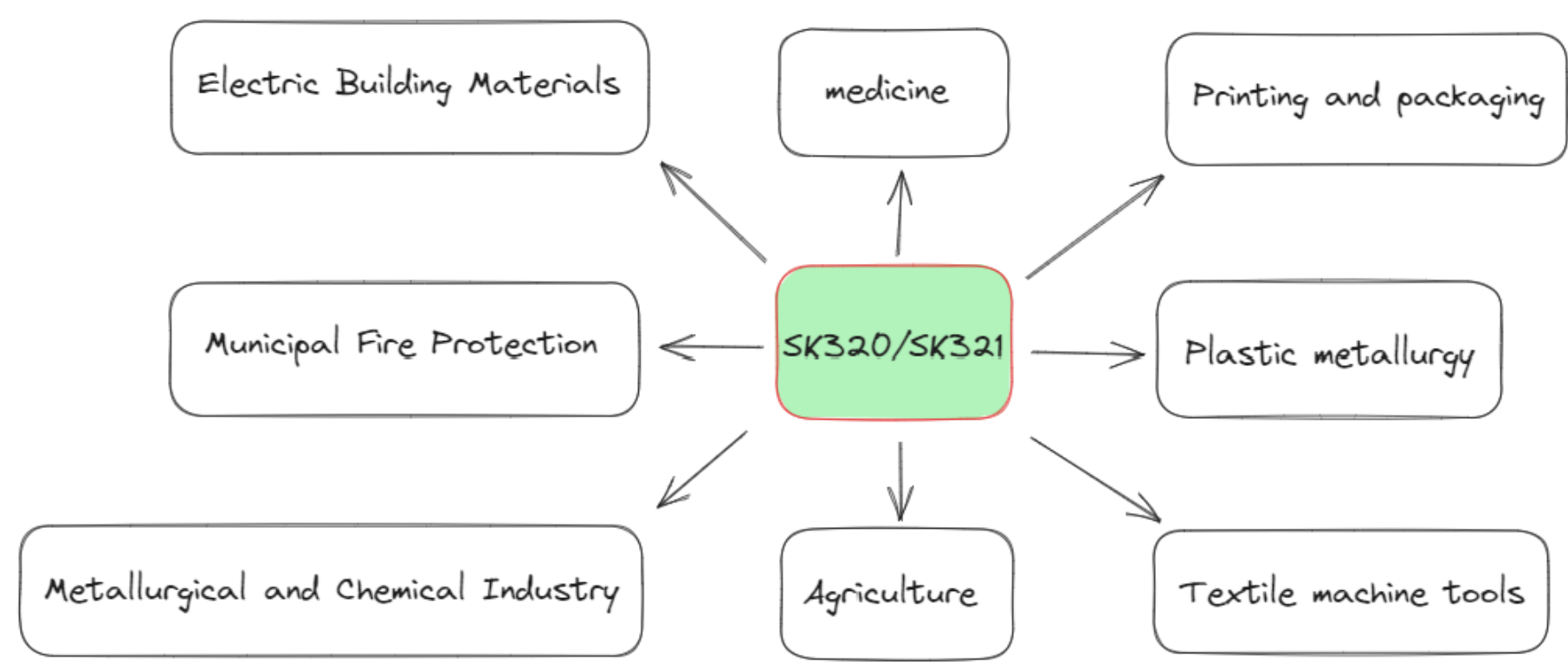
SK320 wiring diagram



SK320 wiring diagram



application area



Application example:

1.Power on automatic start

In some situations, the frequency converter needs to work when powered on and shut down when the power is turned off. This usage is actually a type of external terminal control, where the start signal does not pass through the switch but remains in a continuously conductive state.

1.1 Adjust parameters

F0.02=1 Terminal operation command
F5.01=1 When powered on, the terminal operation command is valid and displays a number after power on. Press the PRG/SET setting to display - d0-, press the up arrow to display - F0-, press the PRG/SET setting to display F0.00, and press the up arrow to find the parameter F 0 02. Press PRG/SET to display 0, press the up arrow to adjust to 1, press PRG/SET to display F0 03. Press JOG/ESC to return to the display of - F0- on the panel, press the up arrow to switch to - F5-, press PRG/SET once to display F5.00, press the up arrow to find parameter F5 01. Press PRG/SET to display 0, press the up arrow to adjust to 1, press PRG/SET to display F5 02. Press JOG/ESC to return to the panel displaying - F5-, then press JOG/ESC to return, and a number will be displayed on the panel. Debugging completed

1.2 Connection

Find a wire, connect one end to GND and the other end to X1. After connecting it, turn off the power and wait for the panel to completely stop displaying before powering it back on. The frequency converter will then run.

2. Restore factory settings

Some machines have previously adjusted parameters and now need to be used in other occasions. Or if you cannot remember the adjusted parameters clearly, you can restore the factory values and restore the machine parameters to the state of the new machine.
F0.17=3 Factory reset

3.Multi speed

Multi speed is a way to give frequency to a frequency converter, similar to using the frequency converter panel knob to give frequency. The two conditions for variable frequency operation are a start signal and a frequency signal. When GND and X1 are conductive, there is a start signal, and when GND and X3 are conductive, there is a multi-stage frequency signal. If only GND and X3 are conductive, there is a frequency signal but no start signal, and the variable frequency converter is in a normal standby state.
Below, we will introduce the use of multi-stage speed using 15HZ, 25HZ, and 35HZ as examples.

3.1Connection

GND is the common terminal, X1 is for forward rotation, X2 is for reverse rotation, X3 is defined as the multi segment speed enable terminal one, X4 is defined as the multi segment speed enable terminal two, X1-X5 is valid when conducting with GND, and invalid when disconnected.

3.2 Adjust parameters

F0.02=1 Terminal Operation Command
F0.03=5 Frequency Source Selection, Multi Segment Speed
F0.07=15.00 First Segment Speed 15HZ
F5.04=12 Terminal X3 Multi Segment Speed Enable Terminal 1
F5.05=13 Terminal X4 Multi Segment Speed Enable Terminal 2
F7.00=25.00 Second Segment Speed 25HZ
F7.01=35.00 Third Segment Speed 35HZ
GND and X1 are conductive, which means the first segment speed runs at 15.0HZ.
GND, X1, and X3 are conductive at the same time, which means the second segment speed runs at 25.0HZ
GND. X1 and X4 are conductive at the same time, which means the third segment speed runs at 35.0HZ

4. 485 communication

This frequency converter supports the standard MODBUS RTU protocol
FC.00 communication baud rate
FC.01 data format
FC.02 local address, and these three parameters need to be matched with the upper computer.
The commonly used addresses for reading and writing are shown in the table below. For detailed information, please refer to the "Appendix Communication"
FC.05 Communication Error Handling on page 29 of the manual. The default setting at the factory is an alarm, and if there is no need for an alarm during debugging, it can be set to 0 with no operation

4. 1 Read only parameters

Parameter address	Parameter description
7000H	Operating frequency
7002H	Bus voltage
7003H	output voltage
7004H	Output current

example :
Read operating frequency : 01 03 70 00 00 01 9E CA
Read output current : 01 03 70 04 00 01 DF 0B

4. 2 Only write parameters

Control command address	command	parameter
2000H	Forward running	0001
	Reverse operation	0002
	Slow down and stop the machine	0006
	Free shutdown	0005
	Fault reset	0007
	Forward turning jog	0003
	Reverse jog	0004

example :
Write forward to run : 01 06 20 00 00 01 43 CA
Write Reverse Run : 01 06 20 00 00 02 03 CB
Write shutdown command : 01 06 20 00 00 06 02 08

Write frequency address	data
1000H	The value obtained by multiplying

example :
F0.08=50 Maximum frequency 50
Write 50 Hz : 01 06 10 00 27 10 97 36
Write 20 Hz : 01 06 10 00 0F A0 88 82

5. Constant pressure water supply (remote pressure gauge)

5.1 connection

Open the wiring terminal box of the remote pressure gauge. There are three wires on the left: red, green, and yellow. The red common wire is connected to the GND terminal of the frequency converter, the green power wire is connected to the 10V frequency converter, and the yellow output wire is connected to the AVI frequency converter

5.2 Parameter settings

F0.02 0 or 1 panel green button start or external terminal start
F0.03 7 PID control
F0.12 15.0 Acceleration time

- F0.13 15.0 deceleration time
- F8.03 3.5 Target pressure is 3.5 kg. If 5 kg is required, set it to 5.0 and adjust it directly by pressing the up and down arrows on the panel without entering this parameter.
- F8.13: The percentage of the lower limit frequency to the maximum frequency for PID operation, with 60% representing 30HZ
- F8.20 1 Sleep mode enabled
- F8.22 35.00 Sleep frequency of 35HZ, this value needs to be set 2-3HZ higher than the frequency under stable pressure to trigger sleep.
- F8.24 20.0 Sleep Delay Time
- F8.25 70.0 Wake up pressure, set the percentage of pressure.
- F8.28 10.0 pressure gauge with a range of 1.0MPa represents 10 kilograms, and a gauge with a range of 1.6MPa is adjusted to 16.0, representing 16 kilograms.



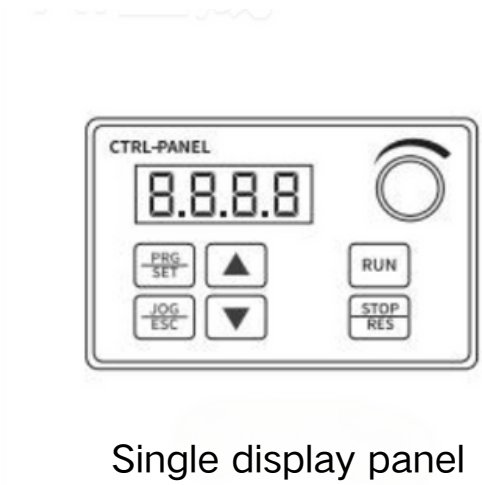
GND

+10V

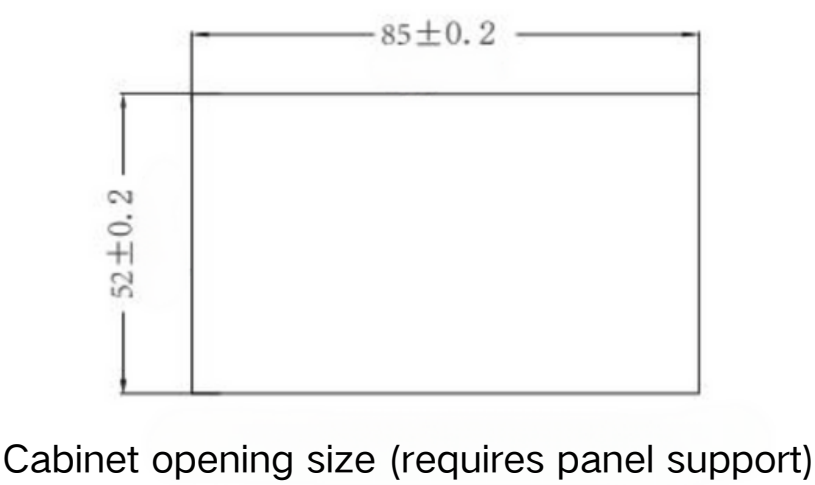
AVI

Attention: Different manufacturers of remote pressure gauges may have different positions for the red, green, and yellow wires, mainly based on the color of the wire on the left side of the pressure gauge junction box and the corresponding terminal of the frequency converter

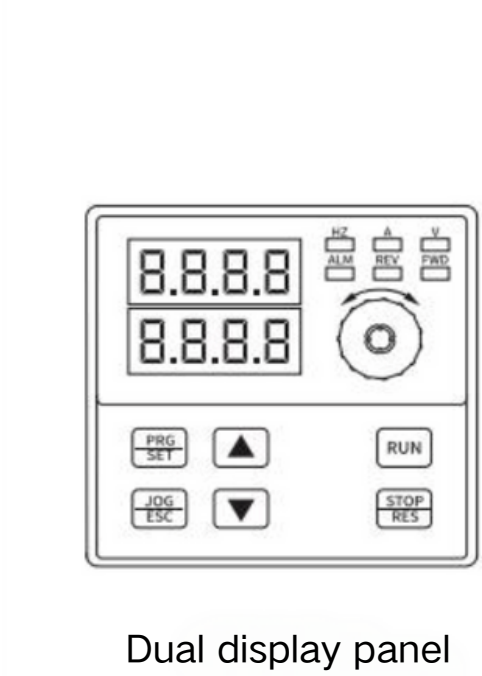
Dimensions of panels and panel supports



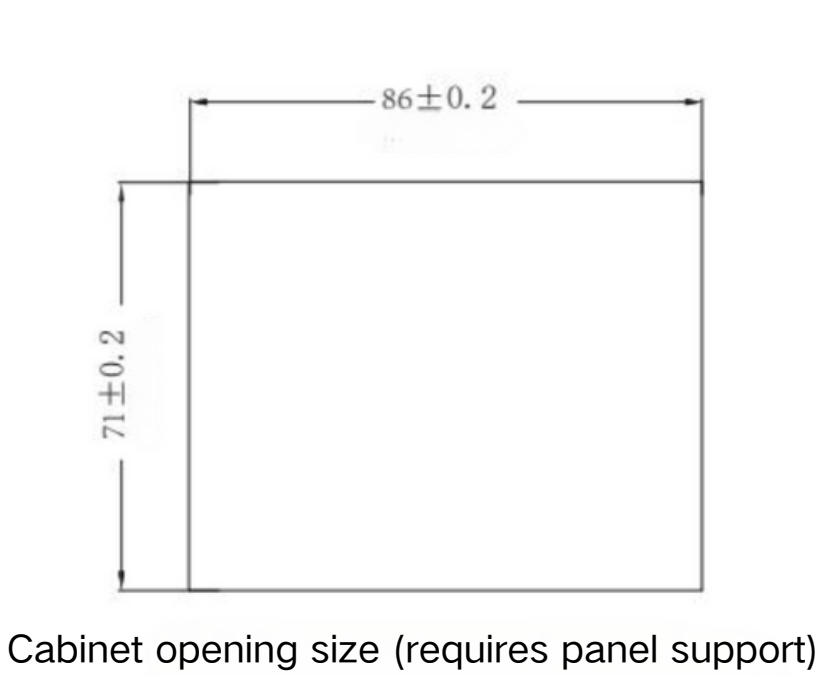
Single display panel



Cabinet opening size (requires panel support)



Dual display panel



Cabinet opening size (requires panel support)