

SE3-021-0.4K ~ 2.2K SE3-023-0.4K ~ 15K  
SE3-043-0.4K ~ 22K

Thank you for choosing Shihlin inverters of SE3 series.  
The instruction will describe on the use and points for attention of products. Before installing, please be sure to carefully read the installation instructions, so that the inverter can be used in right and safe way.

1) Safety Instructions

**Safety Instructions**

- Installation, operation, maintenance and inspection must be performed by qualified personnel.
- In this instruction, the safety instruction levels are classified into "Warning" and "Caution".
- Warning:** Incorrect handling may cause hazardous conditions, resulting in death or severe injury.
- Caution:** Incorrect handling may cause hazardous conditions, resulting in medium or slight injury, or may cause only material damage.

**Warning**

- While the inverter power is ON, do not open the front cover or the wiring cover. Do not run the inverter with the front cover or the wiring cover removed. Otherwise you may access the exposed high voltage terminals or the charging part of the circuitry and get an electric shock.
- It is crucial to turn off the motor drive power before any wiring installation or inspection is made. Before the inverter CHARGE light is OFF, which indicates that there is still high voltage in it, please do not touch the internal circuit and components. Operation must be made after measuring the voltage which is less than 24 VDC between +/P and -/N and with avometer.
- The inverter must be connected to the ground properly.
- Do not operate or touch the radiator or handle the cables with wet hands. Otherwise you may get an electric shock.
- Do not change the cooling fan while power is ON. It is dangerous to change the cooling fan while power is ON.

**Caution**

- The voltage applied to each terminal must be the ones specified in the Instruction Manual. Otherwise burst, damage, etc. may occur.
- Do not conduct a pressure test on the components inside the inverter, for semiconductor of the inverter is easily to be broke down and damaged by high voltage.
- While power is ON or for some time after power-OFF, do not touch the inverter as it will be extremely hot. Touching these devices may cause a burn.
- The cables must be connected to the correct terminals. Otherwise burst, damage, etc. may occur.
- The polarity (+ and -) must be correct. Otherwise burst, damage, etc. may occur.
- Inverter must be installed on a nonflammable wall without holes (so that nobody touches the inverter heat sink on the rear side, etc.). Mounting it to or near flammable material may cause a fire.
- If the inverter has become faulty, the inverter power must be switched OFF. A continuous flow of large current may cause a fire.
- Do not connect a resistor directly to the DC terminals +/P and -/N. Doing so could cause a fire.

2) Product Model

SE3-043-0.75K-PY

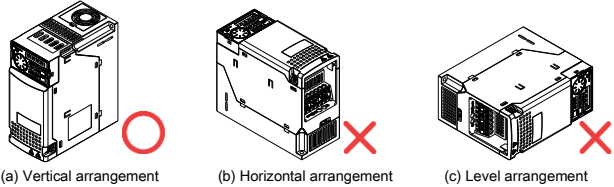
Series category	Voltage level	Capacity	Others
SE3 series	-043 : 400V three-phase -023 : 200V three-phase -021 : 200V one-phase	0.75kW ...	None : General model -** : Customer motor or dedicated motor or region difference

3) Installation Environment

Ambient temperature	Heavy load : -10 ~ +50°C (non-freezing) , Light load : -10 ~ +40°C (non-freezing), please refer to 3.4.5 Class of protection and operation temperature for details.
Ambient humidity	90%Rh 以下 (non-condensing)
Storage temperature	-20 ~ +65°C.
Surrounding environment	Indoor, no corrosive gas, no flammable gas, no flammable powder.
Altitude	Altitude below 2000 meters, when over 1000 meters, for each increase of 100 meters, it is required derating 2% use.
Vibration	5.9m/s <sup>2</sup> (0.6G)以下
Grade of protection	IP20
The degree of pollution	2

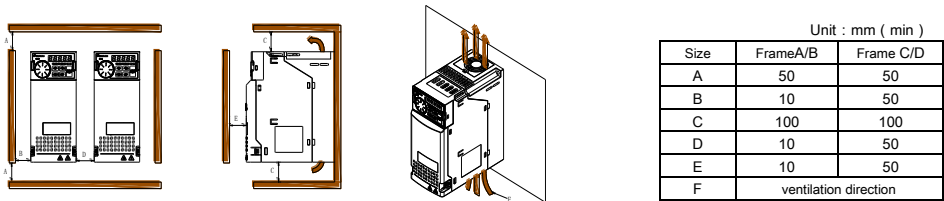
4) Installation and Wiring

➢ Please ensure vertical arrangement to keep the cooling effect:

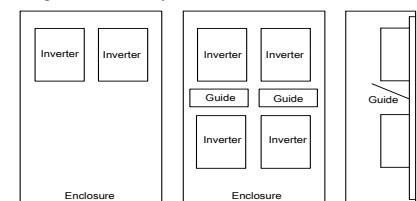


➢ Please comply with installation conditions shown below to ensure enough ventilation space and wiring space for inverter cooling

Arrangement of single or paralleling inverter:

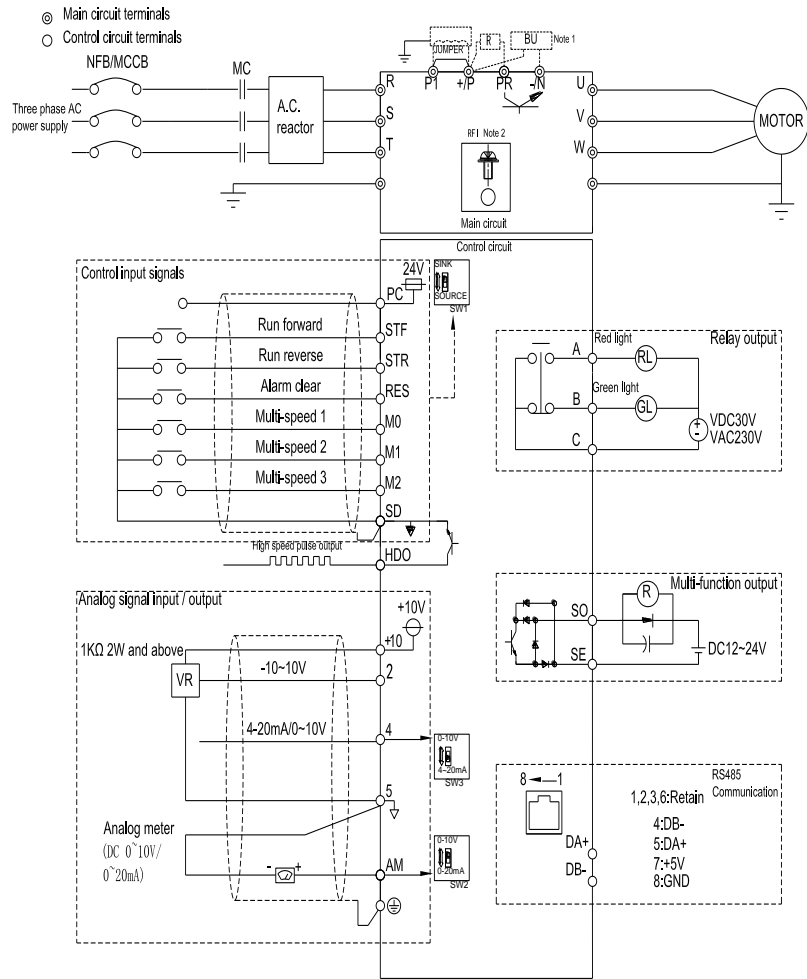


Arrangement of multiple inverters:



- Note1: When mounting inverters of different sizes in parallel, please align the clearance above each inverter to install, which is easy to change the cooling fan
- Note2: When it is inevitable to arrange inverters vertically to minimize space, please take such measures as to provide guides since heat from the bottom inverters can increase the temperatures in the top inverters, causing inverter failures.

5) Terminal Connection Diagrams



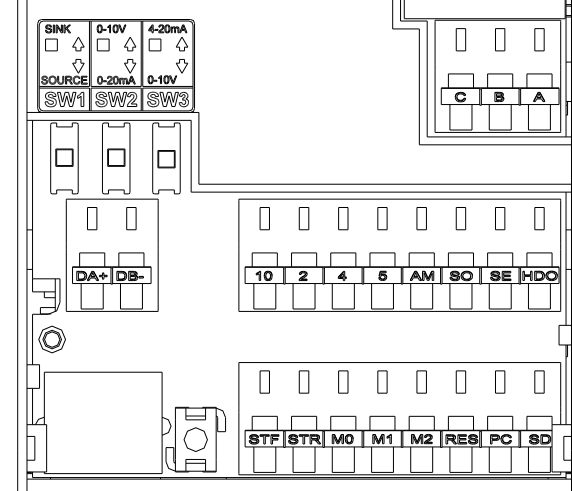
- Note1 : When use all series built-in brake unit, please must connect the brake resistor to +/P and PR.
- Note 2 : All series built-in RFI filter for restraining electromagnetic interference, if in line with CE standard, please refer to the relative instructions in Instruction Manual for installing.
- Note 3 : For connecting the brake unit of Frame C and D to between +/P and -/N.
- Note 4 : When frame C and D adding DC reactors, please remove the short circuit piece between P1 and +/P.

6) Main Circuit Wiring and Terminal Specification

Inverter model	Terminal screw specifications	Tightening torque(Kgf.cm)	Recommended wiring specification(mm <sup>2</sup> )				Recommended wiring specification (AWG)			
			R, S, T	U, V, W	+/P, P1	Grounding Cable	R, S, T	U, V, W	+/P, P1	Grounding Cable
SE3-021-0.4k	M3	6-8	2.5	2.5	2.5	2.5	14	14	14	14
SE3-021-0.75k			2.5	2.5	2.5	2.5	14	14	14	14
SE3-023-0.4k			2.5	2.5	2.5	2.5	14	14	14	14
SE3-023-0.75k			2.5	2.5	2.5	2.5	14	14	14	14
SE3-023-1.5k			2.5	2.5	2.5	2.5	14	14	14	14
SE3-043-0.4K			2.5	2.5	2.5	2.5	14	14	14	14
SE3-043-0.75K			2.5	2.5	2.5	2.5	14	14	14	14
SE3-043-1.5K			2.5	2.5	2.5	2.5	14	14	14	14
SE3-021-1.5k			6	6	6	6	10	10	10	10
SE3-021-2.2k			6	6	6	6	10	10	10	10
SE3-023-2.2k			4	4	4	4	12	12	12	12
SE3-023-3.7K			6	6	6	6	10	10	10	10
SE3-043-2.2K			2.5	2.5	2.5	2.5	14	14	14	14
SE3-043-3.7K			2.5	2.5	2.5	2.5	14	14	14	14
SE3-023-5.5k			10	10	10	10	8	8	8	8
SE3-023-7.5k	10	10	10	10	8	8	8	8		
SE3-043-5.5K	6	6	6	6	10	10	10	10		
SE3-043-7.5K	6	6	6	6	10	10	10	10		
SE3-043-11K	10	10	10	10	8	8	8	8		
SE3-023-11k	25	25	25	25	4	4	4	4		
SE3-023-15k	25	25	25	25	4	4	4	4		
SE3-043-15K	10	10	10	10	8	8	8	8		
SE3-043-18.5K	16	16	16	16	6	6	6	6		
SE3-043-22K	25	25	25	25	4	4	4	4		

7) Control Terminal

➢ Arrangement of control terminal



➢ Control terminal description

Terminal type	Terminal name	Function instructions	Terminal specifications
Switch signal input	STF	There are totally multi-function control terminals, which can switch mode of SINK/SOURCE.	Input impedance:4.7 kΩ Action current:5mA(24VDC #1) Voltage range:10~28VDC Maximum frequency:1kHz
	STR		
	M0		
	M1		
	M2		
Analog signal input	RES	10 +10.5±0.5V 2 -10~+10V, 0~5V 4 0~20mA/0~10V 5 0~10V Voltage input terminals PT100 access can be realized	Maximum current:10mA Input impedance:10kΩ When current is input into, the input impedance is 235Ω. When voltage is input into, the input impedance is 24kΩ.
	10		
	2		
	4		
Relay output	A	Multi-function relay output terminals. A-C is the normally open contact, B-C is the normally closed contact, C is common terminal.	Maximum voltage: 30VDC or 250VAC Maximum current: Resistor load 5A NO/3A NC Inductance load 2A NO/1.2A NC (cosΦ=0.4)
	B		
	C		
Open collector output	SO	Multi-function open collector output terminal	Maximum voltage: 48VDC Maximum current:50mA
	SE		
Analog signal output	AM	0~10V/0~20mA/4~20mA	Output voltage: 0~10VDC Maximum current: 3mA; Output current: 0~20mA Maximum load: 500Ω
Pulse output	HDO	Multi-function pulse output terminal, FM and 10X are compatible.	Minimum load:4.7kΩ Maximum current: 50mA Maximum voltage: 48VDC Maximum frequency: 100kHz
Communication terminal	DA+, DB-, RJ45	RS-485, optical isolation	Highest rate: 115200bps Longest distance: 500m
Common terminal	SD	SINK	Output voltage: 24VDC±20% Maximum current: 200mA
	PC	SOURCE	

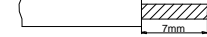
- Note1 : When connecting control terminal with external devices, please pay attention to the voltage and current specifications of terminals, avoiding damaging the inverter.
- Note2 : The function of the control terminal is decided by inverter parameters, please refer to Instruction Manual for setting.
- Note3 : Please pay attention to polarity when connecting external power and devices.
- Note4 : When the relay is controlled by the open collector output terminal, surge absorbers should be in parallel on the both ends of windings.

➢ Wiring method

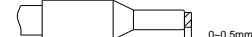
- Power supply connection

For the control circuit wiring, strip off the sheath of a cable, and use it with a blade terminal. For a single wire, strip off the sheath of the wire and apply directly

- (1) Strip off the sheath for the below length. If the length of the sheath peeled is too long, a short circuit may occur with neighboring wires. If the length is too short, wires might come off. Wire the stripped cable after twisting it to prevent it from becoming loose. In addition, do not solder it.

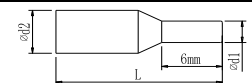


- (2) Crimp the blade terminal. Insert wires to a blade terminal, and check that the wires come out for about 0 to 0.5 mm from a sleeve. Check the condition of the blade terminal after crimping. Do not use a blade terminal of which the crimping is inappropriate, or the face is damaged.

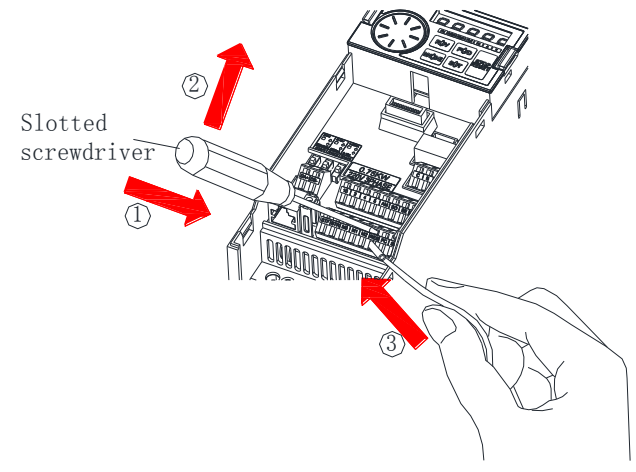


- Please do use blade terminals with insulation sleeve. Blade terminals commercially available:

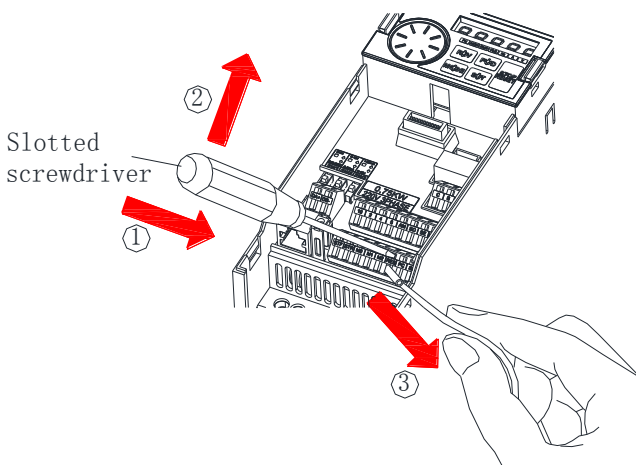
Cable gauge (mm <sup>2</sup> )	Blade terminals model	L (mm)	d1 (mm)	d2 (mm)	Manufacturer	Tool type
0.3	AI 0,25-6 WH	10.5	0.8	2	Phoenix Contact Co., Ltd.	CRIMPFOX 6
0.5	AI 0,5-6 WH	12	1.1	2.5		
0.75	AI 0,75-6 GY	12	1.3	2.8		
0.75 (for two wires)	AI-TWIN 2x0,75-6 GY	12	1.3	2.8		



(3) Wiring installation



(4) Wiring demounting



First insert slotted screwdriver with terminal blocks, and pressing terminal blocks down, and then pull out the wire.

Note: 1. Screwdriver, use small slotted screwdriver (the tip thickness: 0.4mm/tip width: 2.5mm).

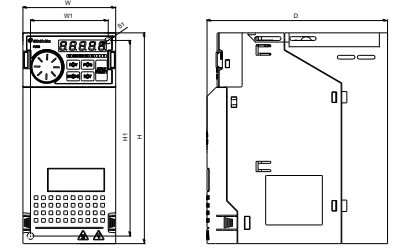
- 2. If you use the screwdriver tip width too narrow, and may cause Terminal damage.
- 3. Please alignment terminals pressing down with the slotted screwdriver, head of the sliding may cause damage or injury accident inverter.
- 4. Only qualified electrical professional personnel can carry out the installation, wire arrangement, dismantling and maintenance.
- 5. Please follow the wire arrangement notice. In case the installation has not been fully complied with, and damage of the inverter or dangerous accident thus be resulted in, our company will not undertake any legal responsibility. In case there is any question on the wire arrangement, please feel free to contact us.

Wiring Precautions

- After wiring, wire offcuts must not be left in the inverter.
- Wire offcuts can cause an alarm, failure or malfunction. Always keep the inverter clean. When drilling mounting holes in an enclosure etc., please take caution not to allow chips to enter the inverter.
- To prevent a malfunction due to noise, keep the signal cables 10 cm (3.94 inches) or more away from the power cables. Also, separate the main circuit cables at the input side from the main circuit cables at the output side.
- Set the voltage/current input switch correctly. Incorrect setting may cause a fault, failure or malfunction.

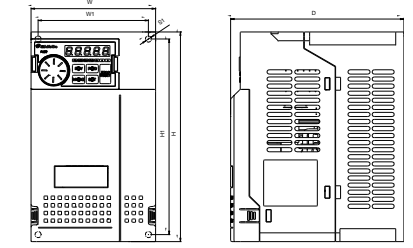
8) Appearance and Dimensions

Frame A



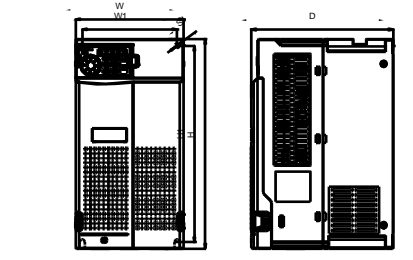
Model	W	W1	H	H1	D	S1
SE3-043-0.4~1.5K	74.0	62.0	167.0	155.0	144.0	5.2
SE3-023-0.4~1.5K						
SE3-021-0.4~0.75K						

Frame B



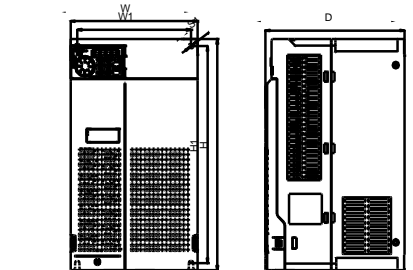
Model	W	W1	H	H1	D	S1
SE3-043-2.2~3.7K	105.0	93.0	178.0	166.0	146.0	5.2
SE3-023-2.2~3.7K						
SE3-021-1.5~2.2K						

Frame C



Model	W	W1	H	H1	D	S1
SE3-043-5.5~11K	141.0	123.6	270.0	252.6	185.0	6.5
SE3-023-5.5~7.5K						

Frame D



Model	W	W1	H	H1	D	S1
SE3-043-15~22K	175.0	156.4	300.0	281.4	191.8	6.2
SE3-023-11~15K						

9) Optional Equipment

Category	Name	Description	Order code	
Expansion card	Parameter unit	LED parameter unit	SNKPU301	
	Communication card	PD302	Profibus-DP communication card	SNKPD302
		DN301	DeviceNet communication card	SNKDN301
		CP301	Canopen communication card	SNKCP301
		EP301	Ethernet communication card	SNKEP301
		EC301	EtherCAT communication card	-
	IO	EB362R	6 digital input, 2 relay output	SNKEB362R
		EB308R	8 relay output	SNKEB308R
		PG301C	Optical encoder, dividing frequency output with	SNKPG301C
		PG301L	Optical encoder, dividing frequency output with line	SNKPG301L
PG	PG302L	Rotary transformer, dividing frequency output with	SNKPG302L	
	ACL****	AC reactor (External optional equipment for all	Refer Instruction Manual	
Other optional equipment	DCL****	DC reactor(External optional equipment for all	Refer Instruction Manual	

CBL1R5GTN2	The data transmission line (1.5 m)	SNKCBL1R5GTN2
CBL03GTN2	The data transmission line (3 m)	SNKCBL03GTN2
CBL05GTN2	The data transmission line (5 m)	SNKCBL05GTN2
CBL10GTN2	The data transmission line (10 m)	SNKCBL10GTN2
CMK301	Expansion card mounting base	SNKCMK301

10) Others

- For convenient display, there is slight difference between the figures in this instruction and actual products, which will not affect the rights and interests of the customers.
- To improve our products, the parameters and contents may be modified, please contact the agent or refer to Shihlin websites (<http://automation.seec.com.tw/>) to download the latest version.

