Shihlin

Inverter Family

www.seec.com.tw

SS2 Series

Product Range: *0.4*KW-*5.5*KW

- General flux vector control
- Support *2* analog input
- Proportion linkage function
- PWM control function
- Din rail designed for side-by-side mounted

SE2 Series

Product Range: *0.4*KW-*11*KW

- Sensorless vector control
- Output frequency up to *1000*Hz
- Built-in EMI filter
- Support variety expansion cards

SF-G Series

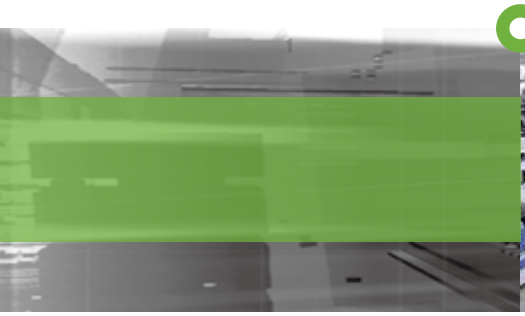
Product Range: *5.5*KW - *355*KW

- Sensorless vector control
- Dual-load specifications :
  Light load *120% 60s* / heavy load (-G) *150% 60s*.
- Support FOC+PG closed loop vector control (Optional)
- Strengthened PID, Multiple machine(fan/pump) control function and pump control function

Contents

SS2 Series

Compact Design
Vector Control Inverter



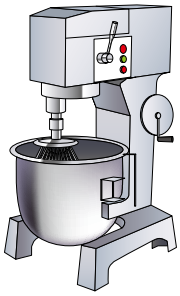
Product Range

Model		KW (HP)	0.4 (0.5)	0.75 (1)	1.5 (2)	2.2 (3)	3.7 (5)	5.5 (7.5)
SS2	SS2021	1-phase 220V						
	SS2023	3-phase 220V						
	SS2043	3-phase 440V						

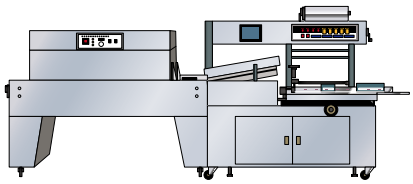
Main Features

* Built-in shuttle knop to adjust output frequency and set parameters easily
* Built-in RS-485 communication interface
* Support MODBUS and Shihlin communication protocol
* Built-in proportion linkage control function to support multi inverters connection
* Maximum 650Hz frequency output
* Support DIN rail mount
* The resolution of frequency setting: digital 0.01Hz ; analog 1/1000
* The accuracy of output frequency: 0.01%
* Multi-function input/output terminals
* Support 2 analog setting types: 0-10V and 4-20mA

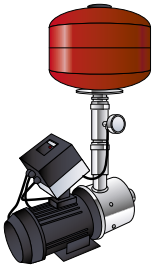
Application



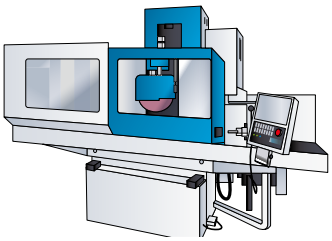
Mixer Machine



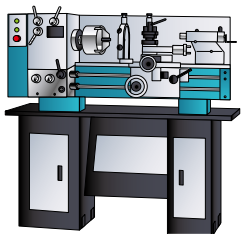
Packing Machine



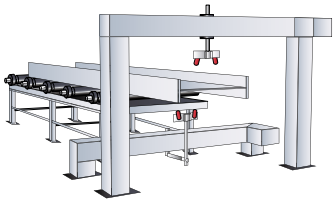
Constant pressure Water supply



Grinding Machine



Desktop type lathe

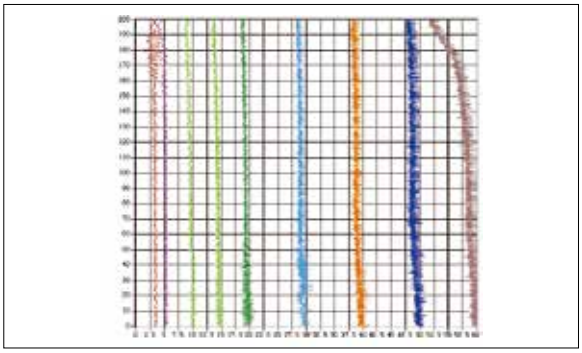


Painting Machine

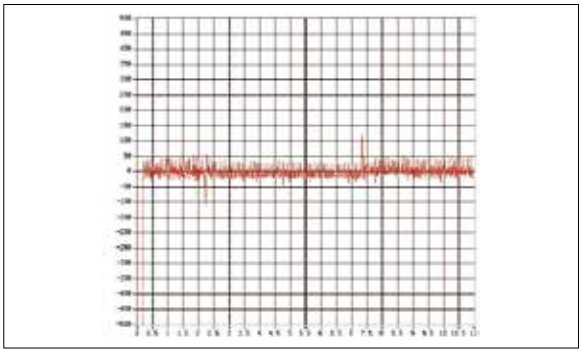
Product Features

General flux vector control technique

- General flux vector control technique
- A 32-bit RISC CPU for high-speed computation.
- Starting torque, 150%3Hz



- Speed accuracy is within 1% (0%~100% loading changes)

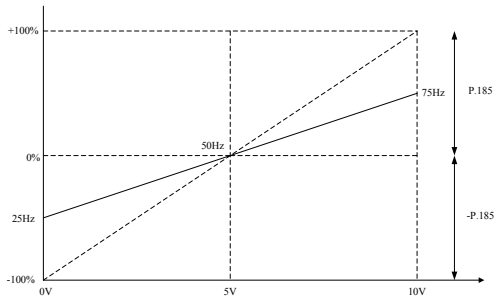


- Motor parameter auto-tuning function
- Stalling protection level reaches to 250%.

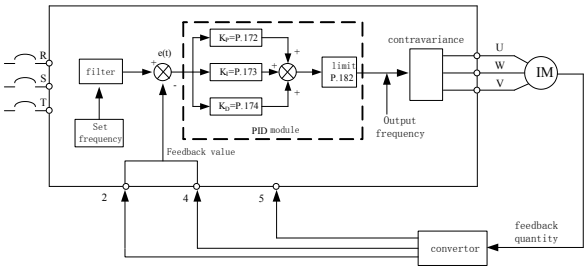
High performance and function

- The maximum output frequency up to 650Hz
- Soft-PWM functions for eliminating motor noises and preventing the temperature of inverter module too high.
- Built-in energy-saving control function, the inverter will control the output voltage automatically in order to reduce the output power losses when the inverter is running.
- Cooling fan operation method is selectable.

Built-in proportion linkage function

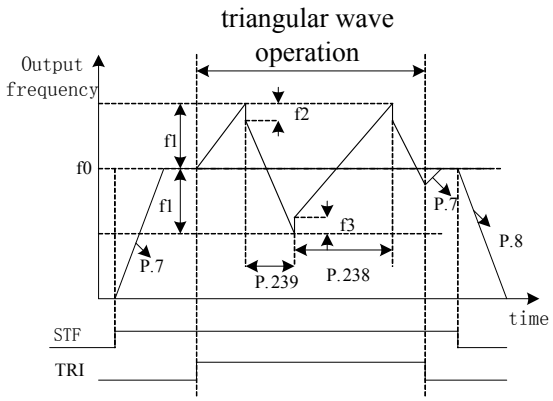


PID feedback control function



Triangular wave function (traverse)

- This is suitable for operations that need traversing and winding movements such as textile operations.

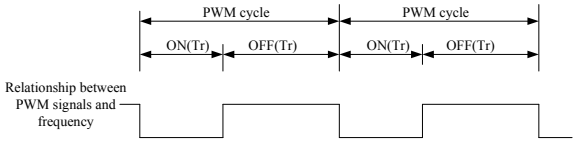


f0 : Setting value of frequency
f1 : Generated amplitude for setting frequency (f0 × P. 235)
f2 : Compensation from acceleration to deceleration (f1 × P. 236)
f3 : Compensation from deceleration to acceleration (f1 × P. 237)

Built-in frequency and parameter setting knob

PWM control function

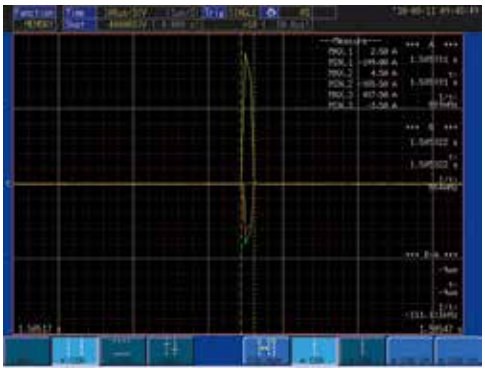
- The operating frequency can be controlled with the PWM signals output from PLC.
- The terminal M2 can be set as PWM signal input.



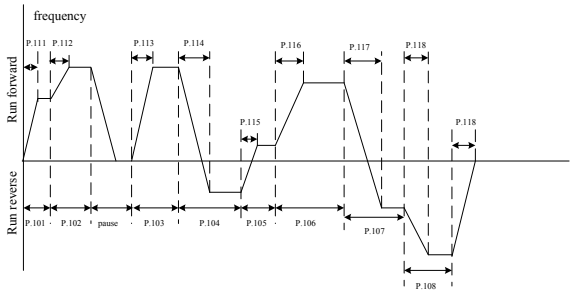
$$\text{Frequency (Hz)} = \frac{\text{ON times}}{\text{PWM cycle}} \times \text{Maximum frequency (Hz)}$$

Hardware protection design

- Output short circuit protection.
- Under circumstances of damaged motor insulation or erroneous wiring, to protect the output



Programmed operation mode with manually operated



Easy to install design

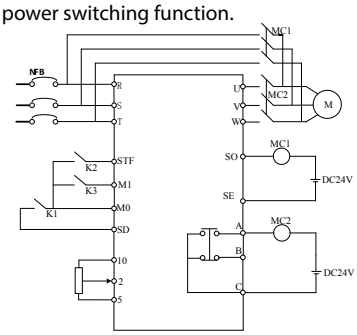
- Din rail design-Multiple inverters can be mounted side-by-side in the panel.

- Built-in standard RJ45 port for RS485 communication.
- Screwless terminal blocks designed

- The cooling fan is removable and easy to clean.

Equipped with grid power frequency switching mechanism

- It provides automatic switch between the grid power and frequency conversion.
- If the motor is running at rated frequency, using grid power frequency has a much better efficiency.
- In order to prevent the motor from stopping for a long time during the maintenance of inverter, it is recommended inverter to have grid power switching function.



Electric Specifications

220V Series Single-Phase

Model SS2-021-□□□K		0.4K	0.75K	1.5K	2.2K
Applicable Motor Capacity	HP	0.5	1	2	3
	kW	0.4	0.75	1.5	2.2
Output	Rated output capacity kVA (Note)	0.95	1.5	2.5	4.2
	Rated output current A (Note)	2.7	4.5	8	11
	Overload current rating	150% 60 seconds; 200% 1 second (inverse time characteristics)			
	Maximum output voltage	3 Phase 200~240V AC			
Power Supply	Rated power voltage	Single phase 200~240V 50Hz / 60Hz			
	Power voltage permissible fluctuation	Single phase 170~264V 50Hz / 60Hz			
	Power frequency permissible fluctuation	±5%			
	Power source capacity kVA	1.5	2.5	3.5	6.4
Cooling Method		Self-cooling	Forced air cooling		
Weight (kg)		1.1	1.2	1.6	1.7

220V Series Three-Phase

Model SS2-023-□□□K		0.4	0.75	1.5	2.2	3.7
Applicable Motor Capacity	HP	0.5	1	2	3	5
	kW	0.4	0.75	1.5	2.2	3.7
Output	Rated output capacity kVA (Note)	1.2	2	3.2	4.2	6.7
	Rated output current A (Note)	3	5	8	11	17.5
	Overload current rating	150% 60 seconds; 200% 1 second (reverse time characteristics)				
	Maximum output voltage	3 Phase 200~240V AC				
Power Supply	Rated power voltage	3 Phase 200~240V 50Hz / 60Hz				
	Power voltage permissible fluctuation	3 Phase 170~264V 50Hz / 60Hz				
	Power frequency permissible fluctuation	±5%				
	Power source capacity kVA	1.5	2.5	4.5	6.4	10
Cooling Method		Self-cooling	Forced air cooling			
Weight (kg)		1.1	1.2	1.2	1.6	1.7

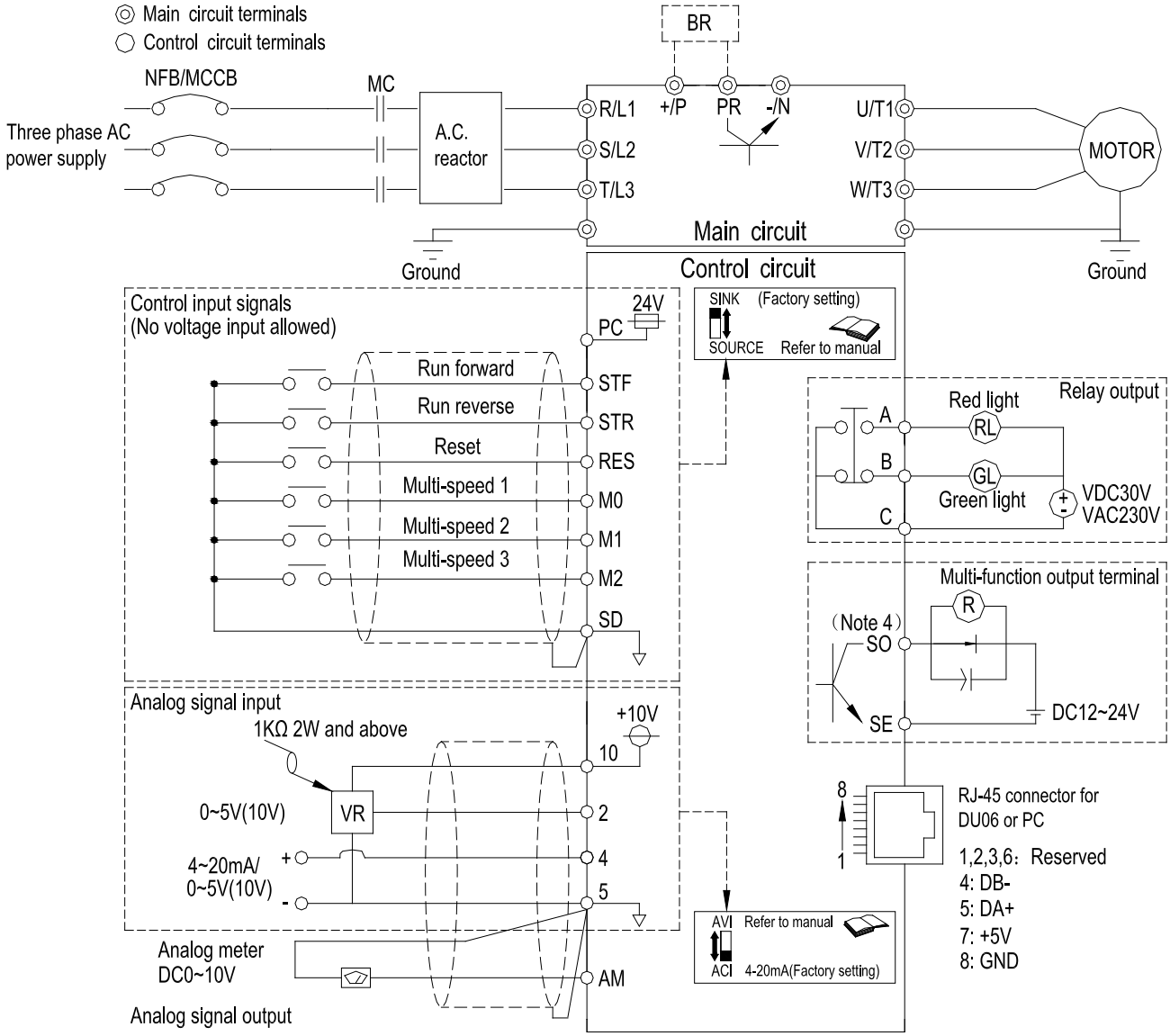
440V Series Three-Phase

Model SS2-043-□□□K		0.4	0.75	1.5	2.2	3.7	5.5
Applicable Motor Capacity	HP	0.5	1	2	3	5	7.5
	kW	0.4	0.75	1.5	2.2	3.7	5.5
Output	Rated output capacity kVA (Note)	1	2	3	4.6	6.9	9.2
	Rated output current A (Note)	1.5	2.6	4.2	6	9	12
	Overload current rating	150% 60 Seconds; 200% 1 Second					
	(reverse time characteristics)	Three-phase 380~480V					
Power Suppl	Rated power voltage	3 Phase 380~480V 50Hz / 60Hz					
	Power voltage permissible fluctuation	323~528V 50Hz / 60Hz					
	Power frequency permissible fluctuation	±5%					
	Power source capacity kVA	1.5	2.5	4.5	6.9	10.4	13.8
Cooling Method		Self-cooling	Forced air cooling				
Weight (kg)		1.1	1.1	1.2	1.6	1.7	1.7

Common Specifications

Control Method			SVPWM control, V/F control, general flux vector control.	
Output Frequency Range			0. 1~650Hz (The starting frequency setting range betwee 0 and 60Hz).	
Frequency Resolution		Digital setting	If the frequency value is set below 100Hz, the resolution will be 0.01Hz. If the frequency value is set above 100Hz, the resolution will be 0.1Hz.	
		Analog setting	When setting the signal DC 0~5V, the resolution will be 1/500; When setting the signal DC 0~10V or 4~20mA, the resolution will be 1/1000.	
Output Frequency Accuracy		Digital setting	Maximum target frequency ±0.01%.	
		Analog setting	Maximum target frequency ±0.5%.	
Voltage / Frequency output Characteristics			Base voltage (P.19), base frequency (P.3) can be arbitrarily set. Constant torque model and applicable load model can be selected (P.14).	
Start Torque			150% 3Hz, 200% 5Hz: when using the general flux vector control.	
Torque Boost			The torque boost setting range between 0 and 30% (P.0), auto boost, slip compensation.	
Acceleration / Deceleration Curve Characteristics			The resolution (0.01s/0.1s) of acceleration/deceleration time (P.7, P.8) is switched by P.21. The setting range has 0~360s or 0~3600s for selection. And different acceleration/deceleration curve model can be selected by P.29.	
DC Braking			The DC braking action frequency range between 0 and 120Hz (P.10); the DC braking time is 0~60 Seconds (P.11); and the DC braking voltage is 0~30% (P.12). Linear braking and idling braking selection (P.71).	
Stalling Protection			The stalling protection level can be set between 0 and 250% (P.22).	
Target Frequency Setting			Operation panel setting, DC 0~5V signal setting, DC 0~10V signal setting, DC 4~20mA signal setting, two voltage input or one voltage and one current input can be selected; Multi-speed stage levels setting, communication setting.	
PID Control			Please refer to P.170~P.183 in Chapter 5.	
Multifunction Control Terminals			Motor starting (STF, STR), the second function (RT), '16-speed operation' (RL, RM, RH, REX), external thermal relay (OH), reset (RES), etc. (can be set by the user (P.80~P.84, P.86))	
Multiple Output Terminals	Multi-function output terminals	SO，SE	P.40	Inverter running (RUN), output frequency detection (FU), Up to frequency (SU), overload detection (OL), zero current detection (OMD), alarm (ALARM), Section detection (PO1), Periodical detection (PO2), and Pause detection (PO3), Inverter output (BP), Commercial power-supply output (GP).
	Multi-function output relay	A，B，C	P.85	
	Analog output	AM，5	Multi-function DC (0~10V) Output: output frequency, output current (P.54).	
Operation Panel	Running status monitoring		Output frequency monitoring, output current monitoring, and output voltage monitoring.	
	HELP mode		Alarm history monitoring.	
	LED indication lamp(6)		Run indication lamp, frequency monitoring indication lamp, voltage monitoring indication lamp, current monitoring indication lamp, mode switching indication lamp, and PU control indication lamp.	
Communication Function		RS485	Internal RS485 communication, RJ-45 connector.	
Protection Mechanism / Alarm function			Output short circuit protection,Over-current protection, (+/P)-(-/N)over-voltage protection, under-voltage protection, motor over heat protection (P.9), IGBT module over-heat protection, braking transistor abnormality protection, communication abnormality protection, etc.	
Environmental Condition	Ambient temperature		-10 ~ +50℃ (non-freezing), installation side by side -10~ +40℃.	
	Ambient humidity		Below 90%Rh (non-condensing)	
	Storage temperature		-20 ~ +65℃	
	Operating environment		Indoor, no corrosive gas, no flammable gas, no flammable dust	
	Altitude and vibration		Altitude below 1000 meters, Vibration below 5.9m/s2 (0.6G).	
	Grade of protection		IP20	
	The degree of environmental pollution		2	
	Class of protection		Class I	
Certification			CE	

Wiring Diagram

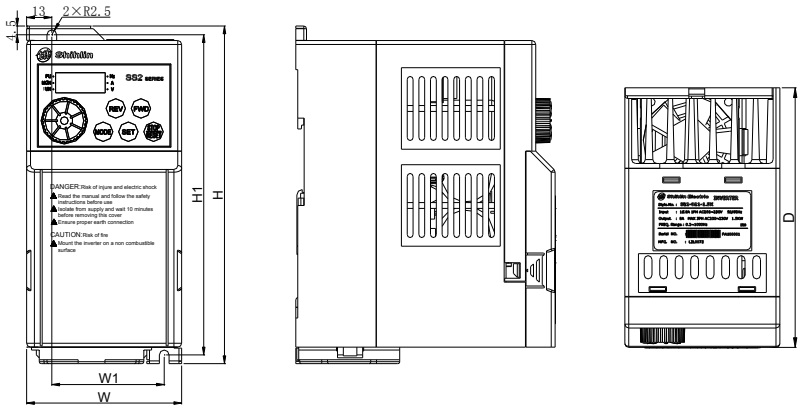


NOTE

1. In the above figure, the thickness of wire of the main circuit and the control circuit wiring or the ground wiring should be noted.
2. For the usage of the external thermal relay, please refer to P.80~P.84, P.86.
3. Make sure not to short circuit the PC and SD.
4. The SO terminal can select to FM or 10X function, please refer to P.64, P.74.

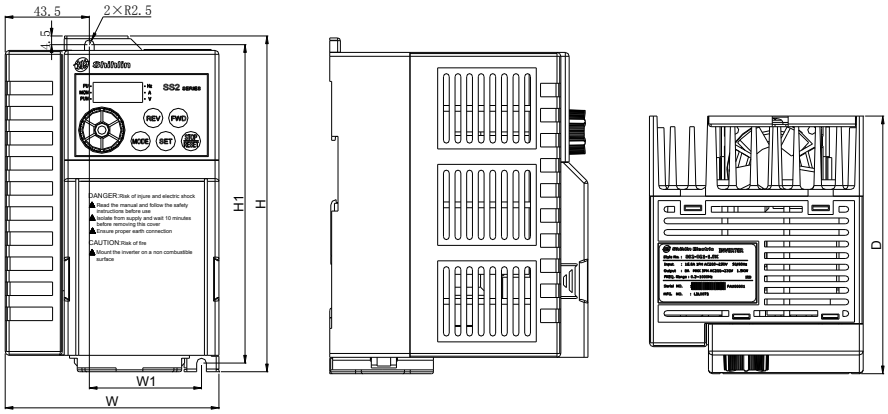
Dimensions

Frame A



Model	H(mm)	H1(mm)	W(mm)	W1(mm)	D(mm)
SS2-021-0.4K	174	165	80	58	134
SS2-021-0.75K					
SS2-023-0.4K					
SS2-023-0.75K					
SS2-023-1.5K					
SS2-043-0.4K					
SS2-043-0.75K					
SS2-043-1.5K					

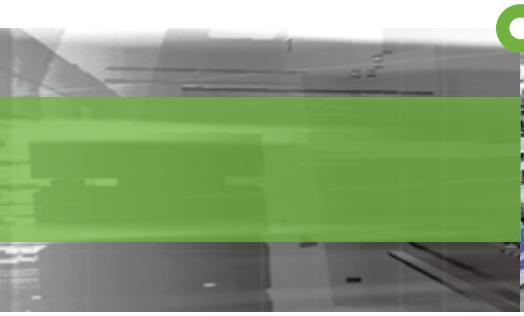
Frame B



Model	H(mm)	H1(mm)	W(mm)	W1(mm)	D(mm)
SS2-021-1.5K	174	165	110.5	58	134
SS2-021-2.2K					
SS2-023-2.2K					
SS2-023-3.7K					
SS2-043-2.2K					
SS2-043-3.7K					
SS2-043-5.5K					

SE2 Series

High Performance
Vector Control Inverter



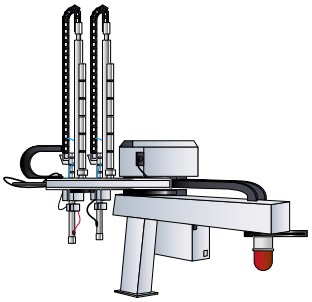

Product Range

Model		KW (HP)	0.4 (0.5)	0.75 (1)	1.5 (2)	2.2 (3)	3.7 (5)	5.5 (7.5)	7.5 (10)	11 (15)
SE2	SE2021	1-phase 220V	■	■	■	■				
	SE2023	3-phase 220V	■	■	■	■	■	■	■	
	SE2043	3-phase 440V	■	■	■	■	■	■	■	■

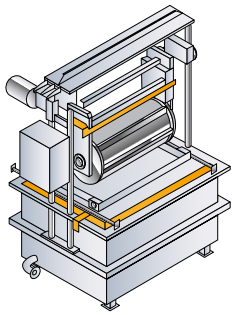
Main Features

* High starting torque, 150%/1Hz and 200% /3Hz
* With auto-tuning function
* Output frequency from 0.2Hz to 1000Hz
* Speed accuracy:less than 1% with 0~100% load variation
* High-precision static motor parameter auto-tuning function
* Excellent performance with load capacity of 200%/1s
* Hardware protection design including ground short circuit protection, output short circuit protection, analog in error
* Built-in RS-485 communication interface
*Support MODBUS and Shihlin communication protocol
* Built-in brake resistor
* A build in EMC input filter is available
* Energy saving function realizes power-saving control
* Constant pressure setting for water pump
* Support various expansion card: I/O card, RS-485/422 card, 4-20mA power card

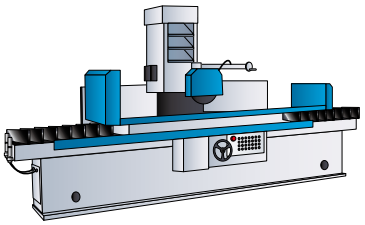
Application



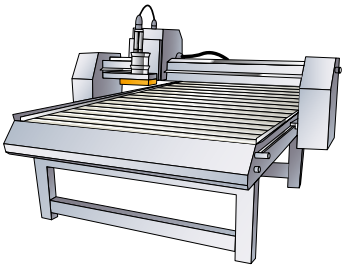
Robot Arm



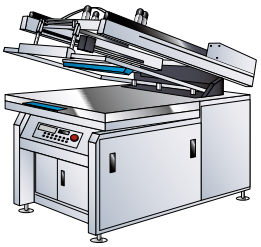
Plating Machine



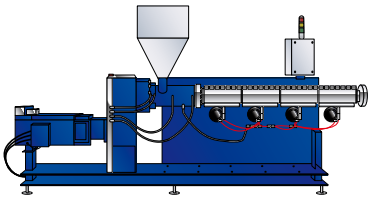
Grinding Machine



Wood processing Machine



Printing Machine

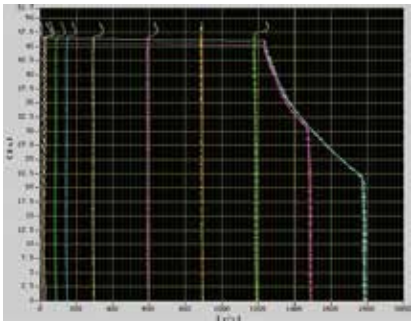


Extruder

Product Features

High-performance sensorless vector control technique

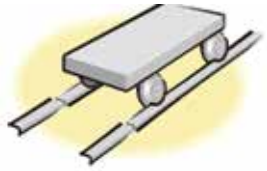
- A 32-bit RISC CPU for high-speed computation.
- Starting torque, 150% / 1Hz
- High-precision motor parameter auto-tuning function.
- Speed accuracy is within 1% (0%~100% loading change)
- Speed control ratio up to 1:100



Torque-Speed Curve

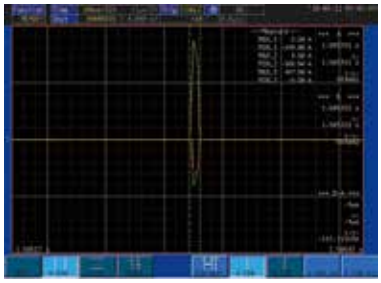
Excellent performance with load capacity of *200% 1s*

- For impact load, safe to use (punch/trolley/injector/screw machinery/machine tool, and so on).



Hardware protection design

- Support ground short circuit protection and output short circuit protection
- The hardware design significantly improves the protection efficiency.
- This design can protect the output module and reduce the failure rate related to motor insulator damages or wiring errors.



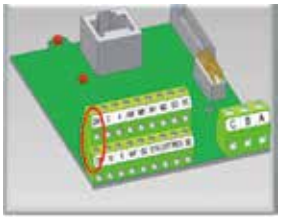
- The above picture shows the automatic waveform of SCP abnormality alert from the short circuit of the three-phase output

Built-in brake transistor

- The entire series have a built-in brake transistor (0.4KW~11KW).
- The brake resistor connection enhances the brake torque capacity.

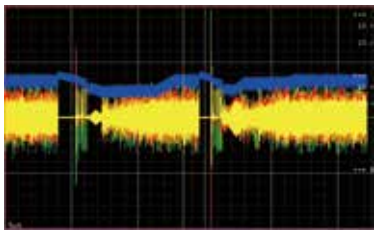
Built-in RS-*485* interface

- Support for MODBUS and Shihlin protocol.
- Capable of simultaneous connections to HMI, PLC and other devices.



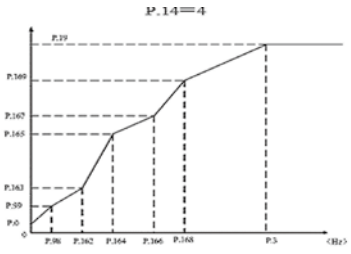
Tracking compensation mechanism

- The enhanced tracking mechanism can detect the rotation speed and direction of motor in idle state, to smooth machine start without jittering.



5-point V/F free setting

- It is more adaptable to various complicated load environment, such as multiple working frequencies.



Equipped with Soft-PWM mechanism

- Soft-PWM controls the motor noises, transforming the metal sound into a delightful complex tone.
- It provides low noise operation and reduces interference to external RF, ensuring stable operations of nearby PLC and encoder devices.

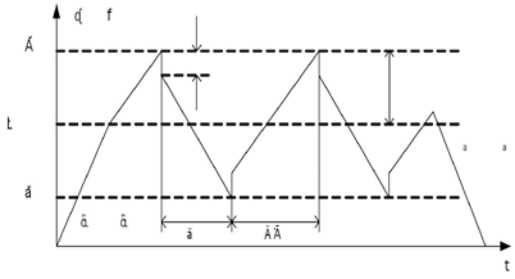
The range of the output frequency is expanded to *0 – 1,000* Hz

- It is good choice for high-speed motor applications, such as engraving machines, grinders, centrifuges, etc.

Parameter No.	Parameter Name	Setting Range
P.4-P.6	Multiple frequencies	0-1000Hz
P.24-P.27		
P.142-P.149		
P.3/P.47	Base frequency	0-1000Hz
P.18	High-speed upper limit frequency	120-1000Hz
P.38-P.39	The highest frequency of the module	1-1000Hz

Triangular wave mechanism (traverse)

- This is suitable for traversing and windingmovements such as textile operations.



Operating time accumulation and parameters protection

- Time accumulation: the accumulated operating time of the frequency inverter can be displayed.
- Password protection: It provide 4-digital password to restrict theread and write of parameters, and prevent operative mistakes.

PC client communication software

- This provides remote control of multiple frequency inverters for parameters setup, copy and monitoring.

A variety of built-in substrates is available.

- SE2-PD01: Profibus communication module
- SE2-DN01: Device-NET communication module
- SE-IB01: 4-20 mA current output expansion board.
- SE-CB01: terminal-type communication expansion board
- SE-EB01: I/O expansion board (Relay output)

Built-in EMC input filter (optional)

- There is a built-in EMI input filter design. It qualifies the EN61800-3 specifications and it can reduce electromagnetic interruption effectively.

Electric Specifications

220V Single-phase Series

Model SE2-021-□□□K		0.4K	0.75K	1.5K	2.2K
Applicable Motor Capacity	HP	0.5	1	2	3
	kW	0.4	0.75	1.5	2.2
Output	Rated Output Capacity kVA	1.2	1.9	3.0	4.2
	Rated Output Current A	3.0	5.0	8.0	11.0
	Overload current rating	150% 60 seconds; 200% 1 second (inverse time characteristics)			
	Maximum Output Voltage	Three-phase 200~240V			
Power	Rated Power Voltage	Single-phase 200~240V			
	Permitted Power and Voltage Range	Single-phase 200~240V			
	Adjustable Power and Frequency Range	±5%			
	Power supply capacity kVA	1.8	3	4.5	6.4
Cooling Method		Self-cooling	Forced Air cooling		
Inverter Weight (Kg)		1.2	1.2	1.9	1.9

220V Three-phase Series

Model SE2-023-□□□K		0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K
Applicable Motor Capacity	HP	0.5	1	2	3	5	7.5	10
	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5
Output	Rated Output Capacity kVA	1.2	1.9	3.0	4.2	6.7	9.2	12.6
	Rated Output Current A	3.0	5.0	8.0	11.0	17.5	24	33
	Overload current rating	150% 60 seconds; 200% 1 second (inverse time characteristics)						
	Maximum Output Voltage	Three-phase 200~240V						
Power	Rated Power Voltage	Three-phase 50Hz / 60Hz						
	Permitted Power and Voltage Range	Three-phase 50Hz / 60Hz						
	Adjustable Power and Frequency Range	±5%						
	Power supply capacity kVA	1.8	3	4.5	6.4	10	13.8	19
Cooling Method		Self-cooling	Forced Air cooling					
Inverter Weight (Kg)		1.2	1.2	1.2	1.9	1.9	3.8	3.8

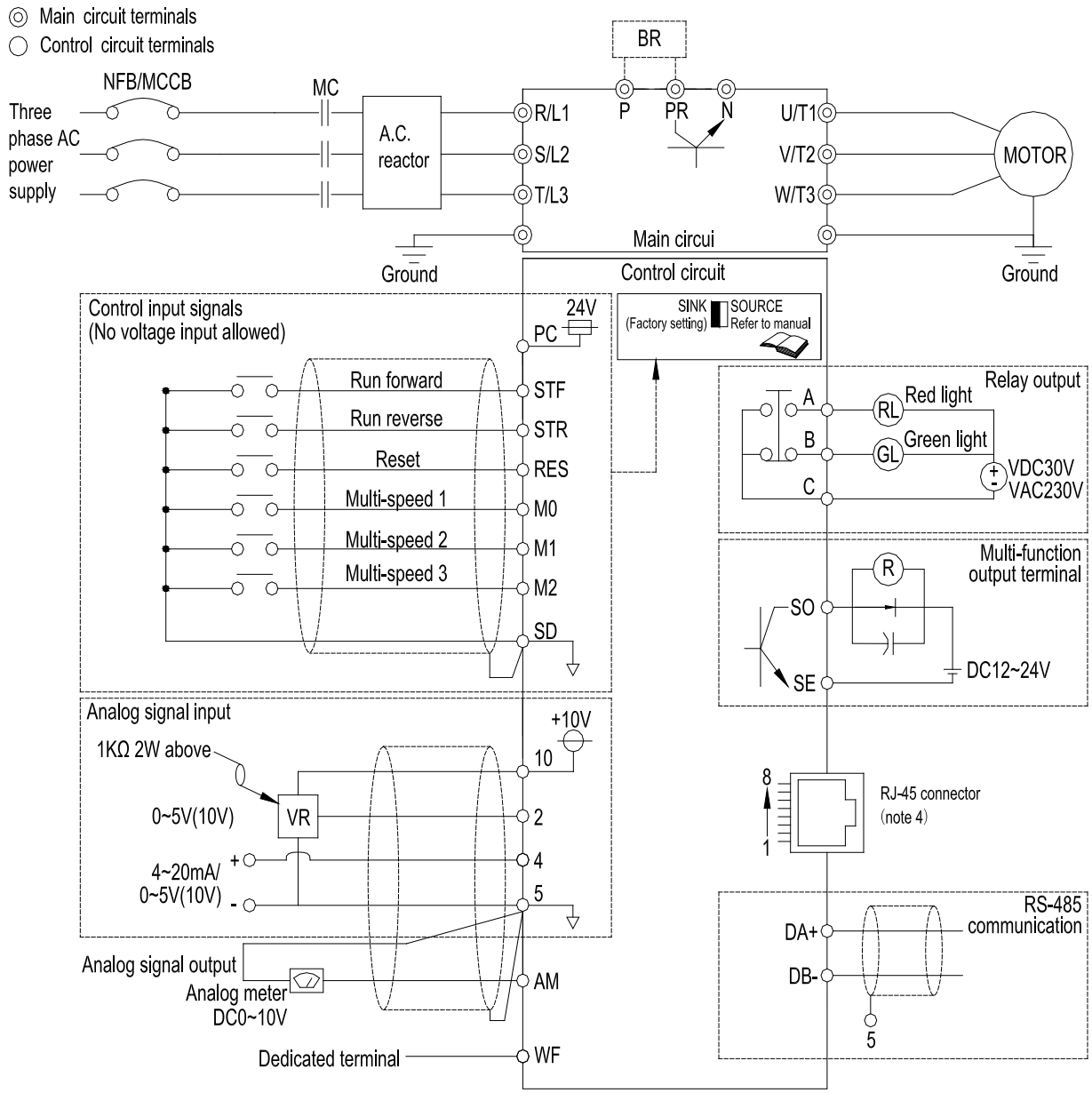
440V Three-phase Series

Model SE2-043-□□□K		0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K	11K
Applicable Motor Capacity	HP	0.5	1	2	3	5	7.5	10	15
	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11
Output	Rated Output Capacity kVA	1.2	2.0	3.2	4.6	6.9	9.2	13	18
	Rated Output Current A	1.5	2.6	4.2	6.0	9.0	12	17	23
	Overload current rating	150% 60 Seconds; 200% 1 Second (inverse time characteristics)							
	Maximum Output Voltage	Three-phase 380~480V							
Power	Rated Power Voltage	Three-phase 380~480V 50Hz / 60Hz							
	Permitted Power and Voltage Range	323~506V 50Hz / 60Hz							
	Adjustable Power and Frequency Range	±5%							
	Power supply capacity kVA	1.8	3	4.8	6.9	10.4	13.8	19.5	27
Cooling Method		Self-cooling	Forced Air cooling						
Inverter Weight (Kg)		1.2	1.2	1.2	1.9	1.9	3.8	3.8	3.8

Common Specifications

Control method				SVPWM control, V/F control, facility vector control, Sensorless vector control.
Output frequency range				0.2~1000Hz (The starting frequency setting range is 0~600Hz). Please refer to P.187 in Chapter 4.
Resolution for setting frequency	Digital setting			When P.187=0, if the frequency set value is below 100Hz, the resolution will be 0.01Hz. If the frequency set value is above 100Hz, the resolution will be 0.1Hz. When P.187=1, the resolution of frequency will be 0.1Hz.
	Analog setting			When setting DC 0~5V signals, the resolution will be 1/500; When setting DC 0~10V or 4~20mA signals, the resolution will be 1/1000.
Output frequency accuracy				0.01Hz
Voltage / frequency output characteristics				Base frequency voltage (P.19), base frequency (P.3) can be arbitrarily set in available range. Constant torque model, applicable load model can be selected (P.14).
Start torque				150% (1Hz): When the sensorless vector control is started.
Torque boost				The torque boost setting range is 0~30% (P.0), auto boost, slip compensation.
Acceleration/deceleration curve characteristics				The resolution (0.01s/0.1s) of acceleration/deceleration time (P.7, P.8) is switched by P.21. The setting range has 0~360s or 0~3600s for selection. And different acceleration/deceleration curve model can be selected by P.29.
DC braking				The DC braking action frequency is 0~120Hz (P.10); the DC braking time is 0~60 Seconds (P.11); and the DC braking voltage is 0~30% (P.12). Linear braking and Idling braking selection (P.71).
Stalling protection				The stalling protection level can be set to 0~400% (P.22).
Target frequency setting				Operation panel setting; DC 0~5V signal setting, DC 0~10V signal setting and DC 4~20mA signal setting, 2 voltage input or one voltage and one current input can be selected; Multi-speed stage levels setting; Communication setting.
PID control				Please refer to P.170~P.183 in Chapter 4.
Multi-function control terminals				Motor starting (STF, STR), the second function (RT), the 16-speed operation (RL, RM, RH, REX), external thermal relay (OH), reset (RES) , etc. (they can be set by the user with P.80~P.84, P.86)
Multi-function output terminals	Multi-function output terminals (SO, SE)		P.40	Inverter running (RUN), output frequency detection (FU), Up to frequency (SU), overload alarm (OL), zero current detection (OMD), alarm (ALARM), Section detection (PO1), Periodical detection (PO2), and Pause detection (PO3), Inverter output (BP), Commercial power-supply output (GP).
	Multi-function output relay		P.85	
	Multi function analogy meter			Multi-function DC (0~10V)(AM) Output: output frequency, output current (P.54).
Operation panel	Running status monitoring			Output frequency monitoring, output current monitoring, and output voltage monitoring.
	HELP mode			Alarm history monitoring, alarm history clear, all parameters clear, and firmware version read.
	LED indication lamp(6)			Run indication lamp, frequency monitoring indication lamp, voltage monitoring indication lamp, current monitoring indication lamp, mode switching indication lamp, and PU/external terminals control indication lamp.
Communication function		RS485		Internal RS485 communication.
		Communication expansion board		Optional accesssories: Terminal type, RJ11, RJ-45, Profibus or Device Net communication expansion board.
Protection mechanism / Alarm function				Output short circuit protection, Over-current protection, P-N over-voltage protection, under-voltage protection, motor over heat protection (P.9), IGBT module over heat protection, braking transistor abnormality protection, communication abnormality protection, etc.
Environmental condition	Ambient temperature			-10 ~ +50℃ (non-freezing)
	Ambient humidity			Below 90%Rh (non-condensing)
	Storage temperature			-20 ~ +65℃
	Environment around			In room, no corrosive gas, no flammable gas, no flammable dust
	Altitude and vibration			Altitude below 1000 meters, Vibration below 5.9m/s2 (0.6G).
Certification				Meet the requirements of CE certification standards (the –DL type).

Wiring Diagram

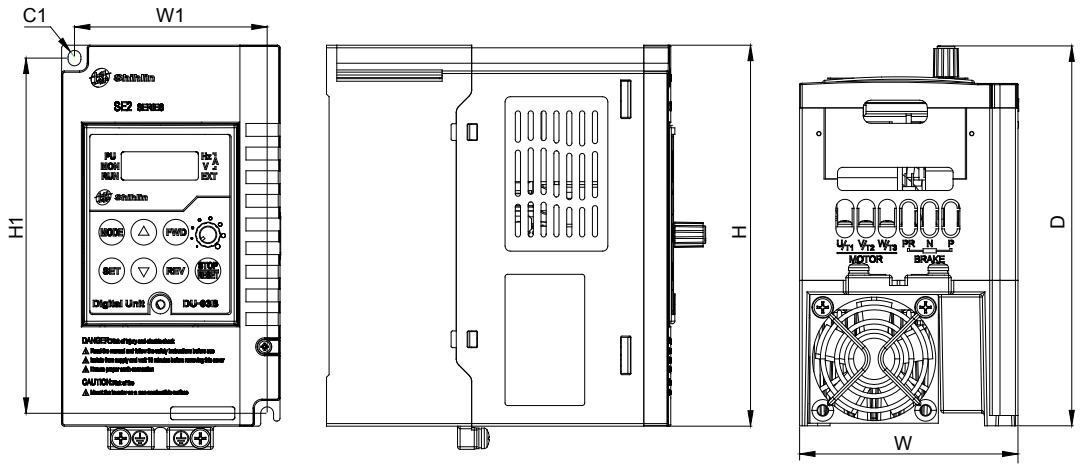


NOTE

1. In the above figure, Main circuit and control circuit wiring or ground wiring should be noted thatthe thickness of wire.
2. For the usage of external thermal relay, please refer to P.80~P.84, P.86 in Chapter 4.
3. Make sure do not to short PC and SD.
4. In the above figure, Dotted line metal, please refer 2.5.7
5. The SE2-TYPE inverter have internal RS485 communication, and also can uses pluggablecommunications expansion boards CB01, CB02, CB03, PD01, DN01; For detailed instructions,please refer to appendix 5.

Dimensions

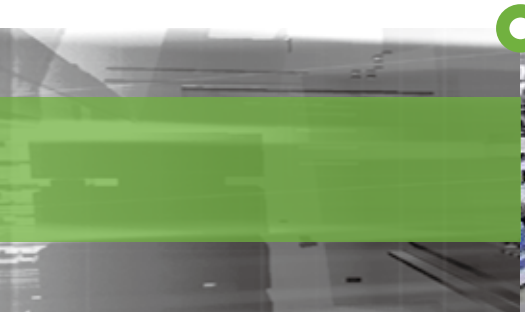
Frame



Model	H(mm)	W(mm)	D(mm)	W1(mm)	H1(mm)	C1(mm)
SE2-021-0.4K	148	85	148	75	138	Φ 5
SE2-021-0.75K	148	85	148	75	138	Φ 5
SE2-021-1.5K	186	100	157	90	176	Φ 5
SE2-021-2.2K	186	100	157	90	176	Φ 5
SE2-023-0.4K	148	85	148	75	138	Φ 5
SE2-023-0.75K	148	85	148	75	138	Φ 5
SE2-023-1.5K	148	85	148	75	138	Φ 5
SE2-023-2.2K	186	100	157	90	176	Φ 5
SE2-023-3.7K	186	100	157	90	176	Φ 5
SE2-023-5.5K	266	141	201.5	126	244	Φ 6
SE2-023-7.5K	266	141	201.5	126	244	Φ 6
SE2-043-0.4K	148	85	148	75	138	Φ 5
SE2-043-0.75K	148	85	148	75	138	Φ 5
SE2-043-1.5K	148	85	148	75	138	Φ 5
SE2-043-2.2K	186	100	157	90	176	Φ 5
SE2-043-3.7K	186	100	157	90	176	Φ 5
SE2-043-5.5K	266	141	201.5	126	244	Φ 6
SE2-043-7.5K	266	141	201.5	126	244	Φ 6
SE2-043-11K	266	141	201.5	126	244	Φ 6

SF-G Series

Dual-load, High Performance Vector Control Inverter



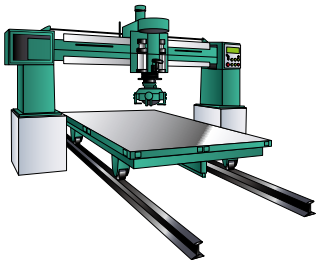
Product Range

Model		KW (HP)	2.2 (3)	3.7 (5)	5.5 (7.5)	7.5 (10)	11 (15)	15 (20)	18.5 (25)	22 (30)	30 (40)	37 (50)	45 (60)	55 (75)	75 (100)	90 (120)	100 (150)	132 (175)	160 (215)	185 (250)	220 (300)	250 (335)	280 (375)	315 (420)	355 (475)
SF-G	SF020-G	3-phase 220V	120%, 60s →		●	●	●	●	●	●	●	●	●	●											
			150%, 60s →		●	●	●	●	●	●	●	●	●												
	SF040-G	3-phase 440V	120%, 60s →		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			150%, 60s →		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

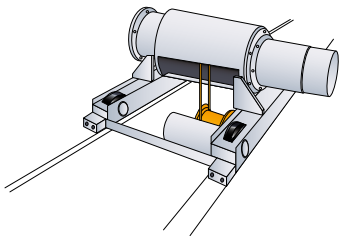
Main Features

* Dual specification with HD: 150% 60s / LD: 120% 60s
* V/F control, general purpose magnetic flux vector control, SVC sensor-less vector control, FOC+PG closed loop vector control, high torque output at low speed, and the best power saving control mode.
* Increased load capacity to 200% / S
* Hardware type circuit protection design
* Embedded regeneration brake crystal(22kW or below)
* Strengthened PID function, multiple machine(fan/pump) control function
* RS-485 interface, selection between Shihlin protocol/standard Modbus protocol
* Strengthened speed tracking compensation capability
* Soft PWM function
* Multiple function pulse output
* Operation panel convenient to move around
* 0-1A/0-10A feedback input board (optional), appropriate for equipment modification of injection molding machine for power saving

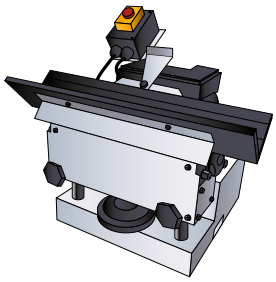
Application



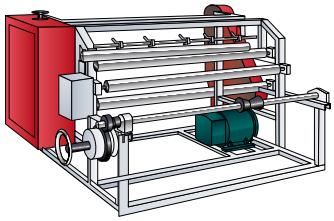
Polishing Machine



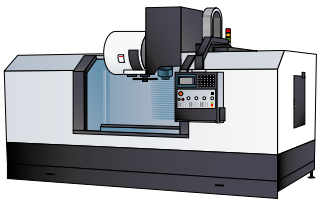
Crane



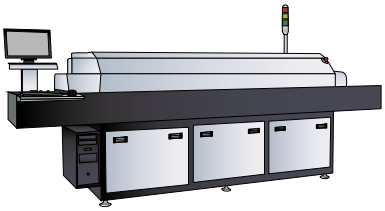
Chamfer Machine



Slitting Machine



CNC tooling Machine



Solder Equipment

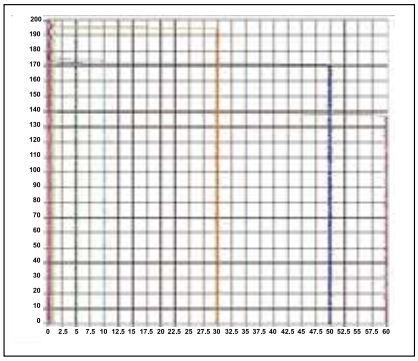
Product Features

Dual-load specifications

- Light load 120% 60s / heavy load (-G) 150% 60s.
- The default capacity is light load for air conditioners, pumps, air compreessors, conveyors and other machines using light loads.
- The parameters can be adjusted to heavy load by inner parameter setting for punches, cranes, trolleys,screw machinery, machine tools, and injection devices (for PM01 injector expansion card).

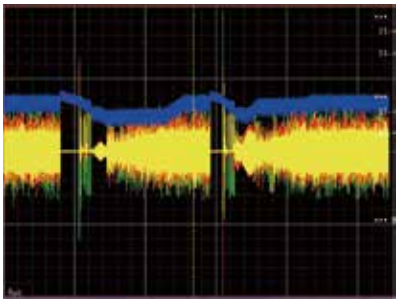
High-performance vector control technology

- A 32-bit RISC CPU for high-speed computation.
- SVC sensor1ess vector control with high starting torque of 1Hz150%, and FOC+PG closed loop vector control of OHz 150%.
- Speed accuracy: less than 1% with 0-100% load variation.
- An exclusive pioneer of high-precision motor parameter auto-tuning function.



Tracking compensation mechanism

- The enhanced tracking mechanism can detect the rotation speed and direction of motor in idle state, to smooth machine start without jittering.

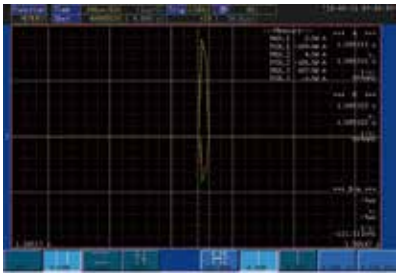


Built-in brake transistor (under 22kw)

- Built-in brake transistor (under 22kw).
- Its connection with the brake resistor to improve the braking torque capability .

Hardware protection design

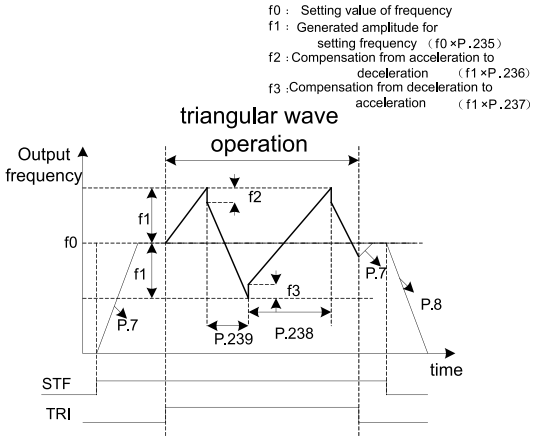
- With input power phase failure protection, ground short circuit protection and output short circuit protection
- Hardware design to substantially increase the protection effectiveness .
- Under circumstances of damaged motor insulation or erroneous wiring, to protect the output modules and reduce the failure rate.



The above picture shows the automatic waveform of SCP abnormality alert from the short circuit of the three-phase output

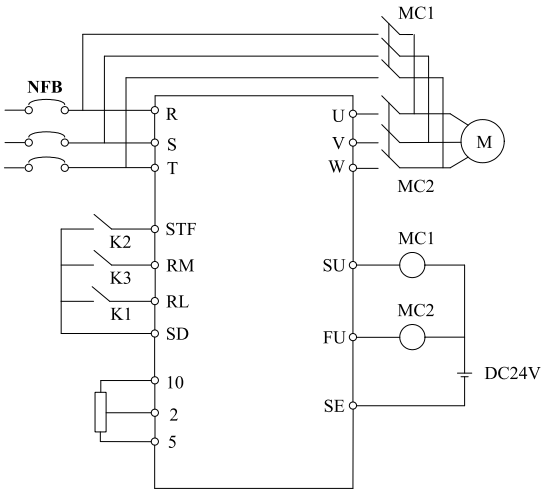
Equipped with Soft-PWM mechanism

- Soft-PWM controls the motor noises, transforming the metal sound into a delightful complex tone.
- It provides low noise operation and reduces interference to external RF, ensuring stable operations of nearby PLC and encoder devices.



Equipped with grid power frequency switching mechanism

- It provides automatic switch between the grid power and frequency conversion.
- If the motor is running at rated frequency, using grid power frequency has a much better efficiency.
- In order to prevent the motor from stopping for a long time during the maintenance of inverter, it is recommended inverter to have grid power switching function.



Operating time accumulation and parameters protection

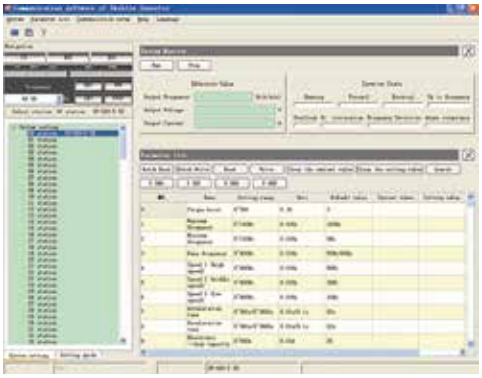
- Time accumulation: the accumulated operating time of the frequency inverter can be displayed.
- Password protection: It provide 4-digital password to restrict the read and write of parameters, and prevent operative mistakes.

Built-in RS-*485* interface

- Support for MODBUS and Shihlin protocol.
- Capable of simultaneous connections to HMI, PLC and other devices.

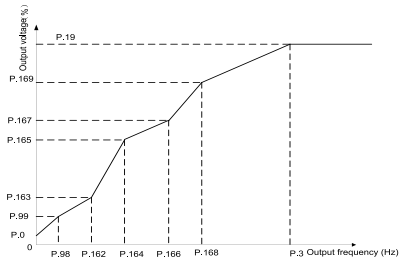
PC client communication software

- This provides remote control of multiple frequency inverters for parameters setup, copy and monitoring.



5-point V/F free setting

- It is more adaptable to various complicated load environment, such as multiple working frequencies.

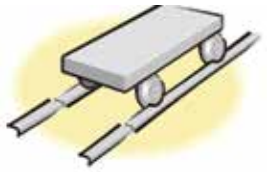


Containing with *12* sets of abnormality alert records

- The 12 sets of alert records can be easily accessed .
- The system can record abnormal side power input(phase failure), short circuit of side output, over current,over voltage, module overheating, motor overheating, fan abnormalities, communication abnormalities, and so on.

Excellent performance with load capacity of *200% 1* s (-G)

- For impact load, safe to use (punch/trolley/injector/ screw machinery/machine tool, and so on) .



Electric Specications

220V Series Three-phase

Model SF-020- □□□ / □□□ K-G		5.5	7.5/5.5	11/7.5	15/11	18.5/15
Applicable motor capacity	HP	7.5	10/7.5	15/10	20/15	25/20
	kw	5.5	7.5/5.5	11/7.5	15/11	18.5/15
Output	Rated output capacity kVA	9.5	12.5/9.5	18.3/12.5	24.7/18.3	28.6/24.7
	Rated output current A	25	33/25	49/33	65/49	75/65
	Overload current rating	120% 60 seconds /150% 60 seconds (inverse time characteristics)				
	Maximum output voltage	Three-phase 200 - 240V				
Power supply	Rated power voltage	Three-phase 200 - 240V 50Hz 160Hz				
	Power voltage permissible fluctuation	Three-phase 180- 264V 50Hz 160Hz				
	Power frequency permissible fluctuation	±5%				
	Power source capacity kVA	12	17/12	20/17	28/20	34/28
Cooling method		Forced air cooling				
Inverter weight kg		5.6	5.6	7.0	8.3	9.0

Model SF-020- □□□ / □□□ K-G		22/18.5	30/22	37/30	45/37	55/45
Applicable motor capacity	HP	30/25	40/30	50/40	60/50	75/60
	kw	22/18.5	30/22	37/30	45/37	55/45
Output	Rated output capacity kVA	34.3/28.6	45.7/34.3	55/45.7	65/55	81/65
	Rated output current A	90/75	120/90	145/120	170/145	212/170
	Overload current rating	120% 60 seconds 150% 60 seconds (inverse time characteristics)				
	Maximum output voltage	Three-phase 200 - 240V				
Power supply	Rated power voltage	Three-phase 200 - 240V 50Hz 160Hz				
	Power voltage permissible fluctuation	Three-phase 180- 264V 50Hz 160Hz				
	Power frequency permissible fluctuation	±5%				
	Power source capacity kVA	41/34	52/41	65/52	79/65	99/79
Cooling method		Forced air cooling				
Inverter weight kg		20	21	37	37	67

440V Series Three-phase

Model SF-040- □□□ / □□□ K-G		5.5	7.5/5.5	11/7.5	15/11	18.5/15	22/18.5	30/22	37/30
Applicable motor capacity	HP	7.5	10/7.5	15/10	20/15	25/20	30/25	40/30	50/40
	kw	5.5	7.5/5.5	11/7.5	15/11	18.5/15	22/18.5	30/22	37/30
Output	Rated output capacity kVA	10	14/10	18/14	25/18	29/25	34/29	46/34	56/46
	Rated output current A	13	18/13	24/18	32/24	38/32	45/38	60/45	73/60
	Overload current rating	120% 60 seconds 150% 60 seconds (inverse time characteristics)							
	Maximum output voltage	Three-phase 380 - 480V							
Power supply	Rated power voltage	Three-phase380 - 480V 50Hz / 60Hz							
	Power voltage permissible fluctuation	Three-phase 342- 528V 50Hz / 60Hz							
	Power frequency permissible fluctuation	±5%							
	Power source capacity kVA	11.5	16/11.5	20/16	27/20	32/27	41/32	52/41	65/52
Cooling method		Forced air cooling							
Inverter weight kg		5.6	5.6	5.6	5.6	8.3	8.3	25	25

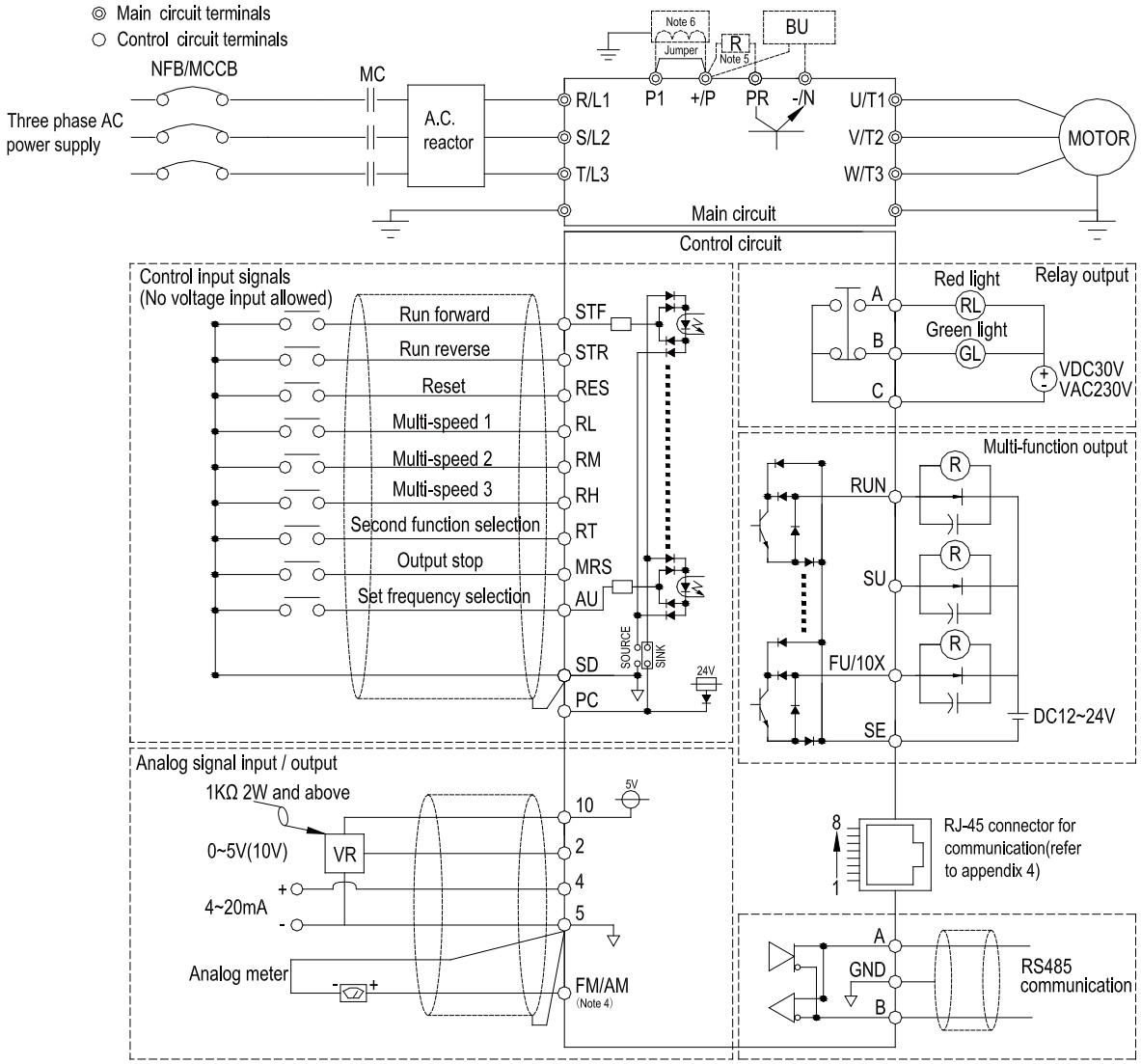
Model SF-040- □□□ / □□□ K-G		45/37	55/45	75/55	90/75	110/90	132/110	160/132
Applicable motor capacity	HP	60/50	75/60	100/75	120/100	150/120	175/150	215/175
	kw	45/37	55/45	75/55	90/75	110/90	132/110	160/132
Output	Rated output capacity kVA	69/56	84/69	114/84	137/114	168/137	198/168	236/198
	Rated output current A	91/73	110/91	150/110	180/150	220/180	260/220	310/260
	Overload current rating	120% 60 seconds 150% 60 seconds (inverse time characteristics)						
	Maximum output voltage	Three-phase 380 - 480V						
Power supply	Rated power voltage	Three-phase380 - 480V 50Hz / 60Hz						
	Power voltage permissible fluctuation	Three-phase 342- 528V 50Hz / 60Hz						
	Power frequency permissible fluctuation	±5%						
	Power source capacity kVA	79/65	100/79	110/100	137/110	165/137	198/165	247/198
Cooling method		Forced air cooling						
Inverter weight kg		25	37	37	37	67	67	67

Model SF-040- □□□ / □□□ K-G		185/160	220/185	250/220	280/250	315/280	355/315
Applicable motor capacity	HP	250/215	300/250	335/300	375/335	420/375	475/420
	kw	185/160	220/185	250/220	280/250	315/280	355/315
Output	Rated output capacity kVA	295/236	367/295	402/367	438/402	491/438	544/491
	Rated output current A	340/310	425/340	480/425	530/480	620/530	683/620
	Overload current rating	120% 60 seconds / 150% 60 seconds (inverse time characteristics)					
	Maximum output voltage	Three-phase 380 ~ 480 V					
Power supply	Rated power voltage	Three-phase 380 ~ 480V 50Hz / 60Hz					
	Power voltage permissible fluctuation	Three-phase 342 ~ 528V 50Hz / 60Hz					
	Power frequency permissible fluctuation	±5%					
	Power source capacity kVA	295/247	367/295	402/367	438/402	491/438	544/491
Cooling method		Forced air cooling					
Inverter weight kg		84	90	94	94	123	123

Common Specifications

Control method				SVPWM control , V/F control, close-loop V/F control (VF+PG), general flux vector control, sensorless vector control (SVC), close-loop vector control (FOC+PG)
Output frequency range				0.2-400Hz (The starting frequency setting range is 0-60Hz)
Voltage 1 frequency output characteristics		Digital setting		If the frequency set value is below 100Hz, the resolution will be 0.01 Hz; If the frequency set value is above 100Hz, the resolution will be 0.1 Hz
		Analog setting		When setting DC 0-5V signals, the resolution will be 1/500 ; When setting DC 0-10V or 4-20mA signals, the resolution will be 1/1000
Output frequency accuracy		Digital setting		Maximum target frequency :±0.01 %
		Analog setting		Maximum target frequency :±0.5%
Voltage I frequency output characteristics				Base frequency voltage (P.19), base frequency (P.3) can be arbitrarily set ; Constant torque model and applicable load model can be selected (P.14)
Start torque				150% 1H z : When the sensorless vector control is started
Torque boost				The torque boost setting range is 0-30% (P.O), auto boost, slip compensation
Acceleration / deceleration curve characteristics				The resolution (0.01s/0.1s) of acceleration/deceleration time (P.7, P.8) is switched by P.21. The setting range has 0~360s or 0~3600s for selection. And different acceleration/deceleration curve model can be selected by P.29.
DC braking				The DC braking action frequency is 0-120Hz (P.10); the DC braking time is 0- 60s (P.11) The DC braking voltage is 0-30% (P.12).Linear braking and idling braking selection (P.71)
Stalling protection				The stalling protection level can be set to 0-400% (P.22)
Target frequency setting				Operation panel setting; DC 0-5V signal, DC 0-10V signal, DC 4-20 mA signal, multiple speed stage level setting, communication setting
PID control				Please refer to P.170-P.183 in Chapter 5
Multi-function control terminals				Motor starting (STF, STR), the second function (RT), 16-speed operation (RH, RM, RL, REX), external thermal relay (OH), reset (RES),etc.(they can be set by the user with HYPERLINK \l "P.80~P.84, P.86 and P.126~P.128).
Output terminsl	Multi-function output terminals	SU, SE	P.40	Inverter running (RUN), output frequency detection (FU), Up to frequency (SU), overload alarm (OL), zero current detection (OMD), alarm (ALARM), section detection (P01), periodical detection (P02), and pause detection (P03), inverter output (BP), work frequency output (GP)
		RUN, SE	P.129	
		FU/10X , SE	P.130	
	Multi-function output relay	A ,B ,C	P.85	
	Analog output	AM,5		Multi-function DC (0-10V) output: output frequency, current (P.54)
	Pulse output	FM,SD		Output the pulse of 0-2300Hz
Operation Panel	Operation monitoring			Output frequency monitoring, output current monitoring, and output voltage monitoring, abnormality record (Maximum 12 sets)
	LED indication lamp(8)			Forward rotation indication lamp, reverse rotation indication lamp, frequency monitoring indication lamp, voltage monitoring indication lamp, current monitoring indication lamp, mode switching indication lamp, PU terminals control indi cation lamp, and external terminals control indication lamp
Communication function				RS-485 communication, can select Shihlin/Modbus protocol communication protocol
Protection mechanism / alarm function				Output short circuit protection, Over-current protection, (+/P)-(-/N) over-voltage protection under-voltage protection, motor over-heat protection (P.9), IGBT module over-heat protection, communication abnormality protection, etc
Environmental Condition	Ambient temperature			-10~+40℃ (non-freezing)
	Ambient humidity			Below 90%Rh (non-condensing)
	Storage temperature			-20 ~ +65℃
	Surrounding environmen			Indoor, no corrosive gas, no flammable gas, no flammable powder
	Altitude and vibration			Altitude below 1000 meters, Vibration below 5.9m/s2 (0.6G)
	Grade of protection			IP20
	The degree of environmental pollution			2
	Class 01 protection			Class I
International certification				CE

Wiring Diagram

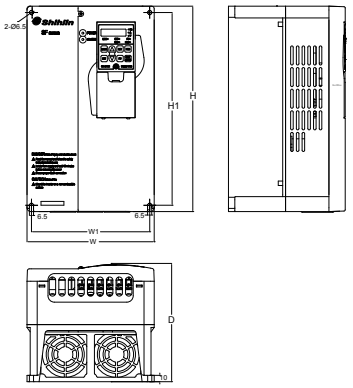


NOTE

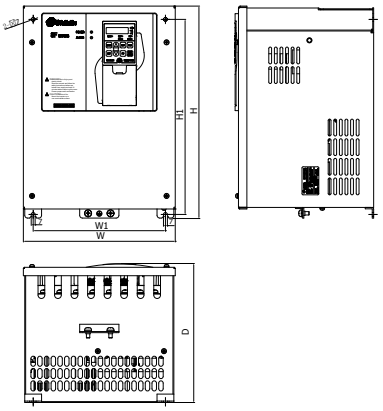
1. Please refer to P.80~P.84, P.86 and P.126~P.128 (OH) of Chapter 5 for the applications of externalthermal overload relay.
2. Make sure not to short PC and SD.
3. The AC resistor between +/P and P1 is optional. Please short +/P and P1 when AC resistor is not used.
4. When selecting FM function for the FM/AM output terminal, the reference ground is SD. For moredetails, please refer to P.64.
5. The brake resistor connection approach between +/P and PR is for frames A and B only. For connectingthe brake unit of frame C, D, E, F to between +/P and -/N, please refer to terminal arrangement in 3.4.5
6. Inverters corresponding to frame C、E、F have built-in DC reactors, you can also refer to DC reactorspecification on page 34 before adding DC reactors in addition.(When adding DC reactors, please remove the short circuit piece between P1 and +/P.)

Dimensions

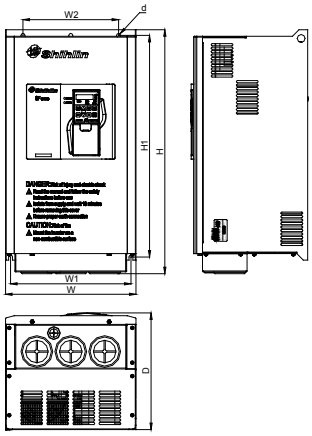
Frame A/B



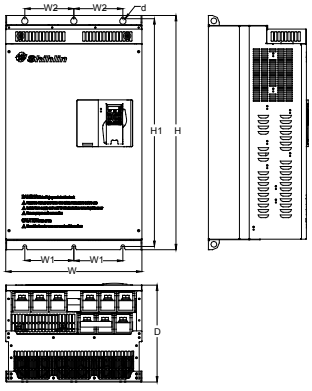
Frame C



Frame D/E/F



Frame G/H



Frame A/B

Model	Frame	H (mm)	H1 (mm)	W (mm)	W1 (mm)	D (mm)
SF020-5.5K	A	323	303	200	186	186
SF020-7.5K/ 5.5K-G						
SF040-5.5K						
SF040-7.5K/ 5.5K-G						
SF040-11 K/ 7 .5K-G						
SF040-15K/ 11 K-G						
SF020-11 K/7 .5K-G	B	350	330	230	214	195
SF020-15K/ 11 K-G						
SF020-18.5K/ 15K-G						
SF040-18.5K/ 15K-G						
SF040-22K/ 18.5K-G						

Frame C

Model	Frame	H (mm)	H1 (mm)	W (mm)	W1 (mm)	D (mm)
SF020-22K/ 18.5K-G	C	379	348	271	236	248
SF020-30K/ 22K-G						

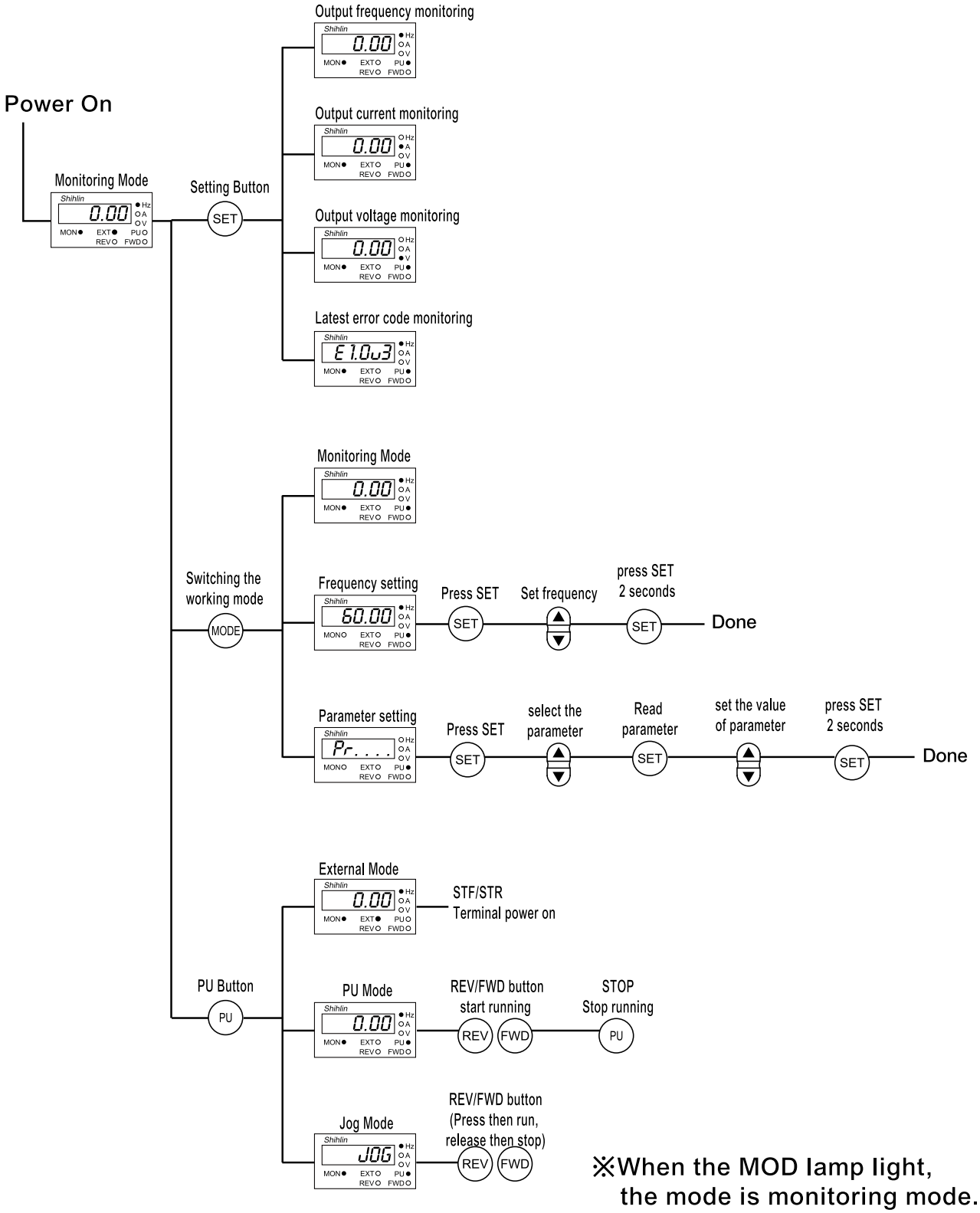
Frame D/E/F

Model	Frame	H (mm)	H1 (mm)	W (mm)	W1 (mm)	W2 (mm)	D (mm)	d (mm)
SF040-30K/22K-G	D	561	510	300	277	220	270	9
SF040-37K/30KG								
SF040-45K/37KG								
SF020-37K/30KG	E	595	566	370	336	336	286	13
SF020-45K / 37K-G								
SF040-55K / 45K-G								
SF040-75K/ 55K-G								
SF040-90K/75K-G								
SF020-55K /45K-G	F	850	821	425	381	381	286	13
SF040-110K/ 90K-G								
SF040-132K/ 110K-G								
SF040-160K/ 132K-G								

Frame G/H

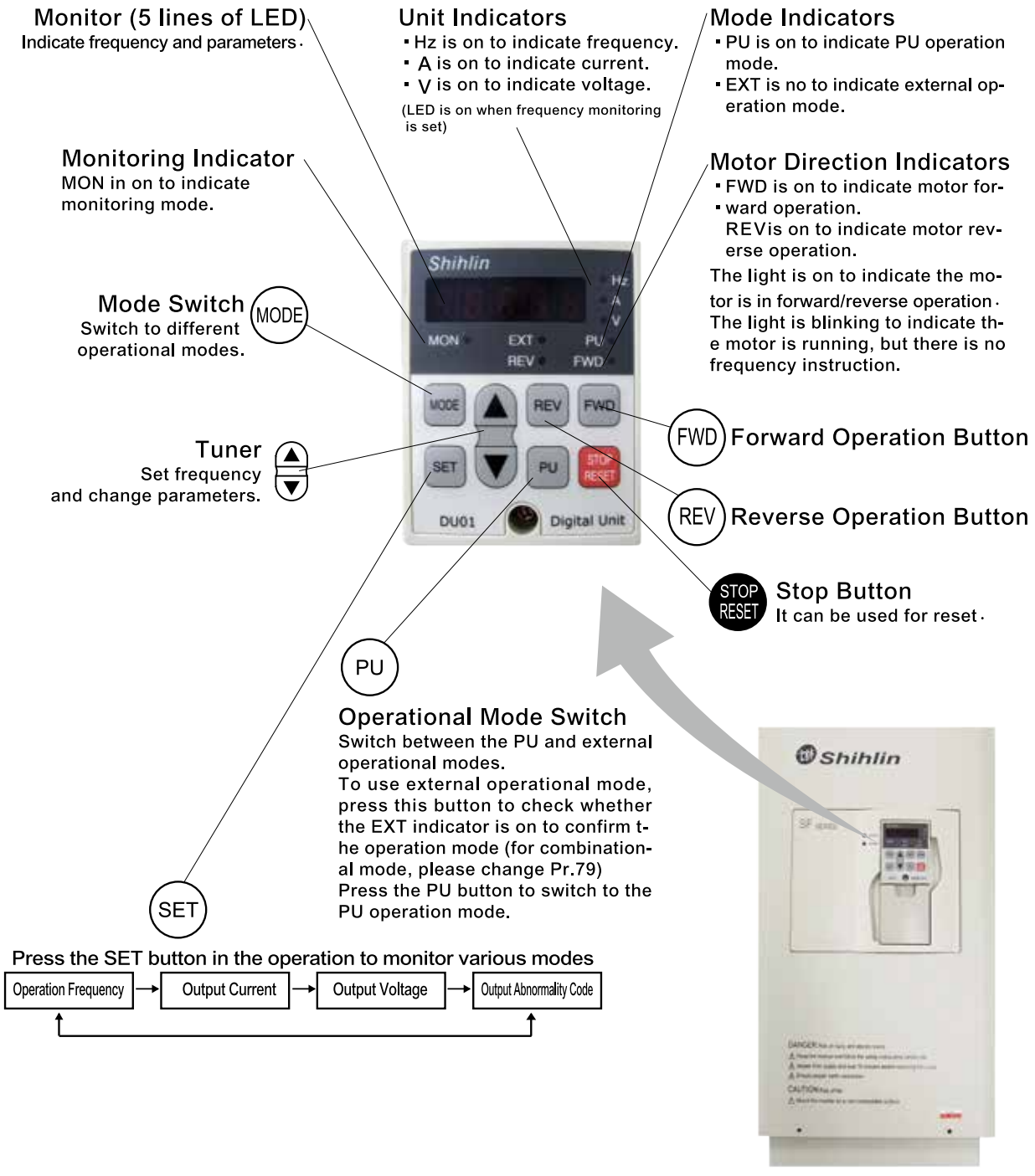
Model	Frame	H (mm)	H1 (mm)	W (mm)	W1 (mm)	W2 (mm)	D (mm)	d (mm)
SF-040-185K/160KG	G	870	850	500	180	180	360	13
SF-040-220K/185KG								
SF-040-250K/220KG								
SF-040-280K/250KG								
SF-040-315K/280KG	H	1000	980	600	230	230	400	13
SF-040-355K/315KG								

Operation Flow Chart



Operation Panel

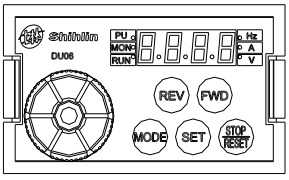
Buttons of the operation panel (DU*01*)

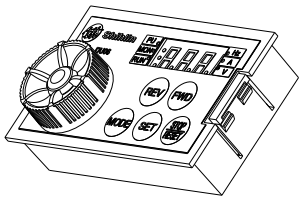


Optional Equipment

SS2 Series

DU*06* operation panel

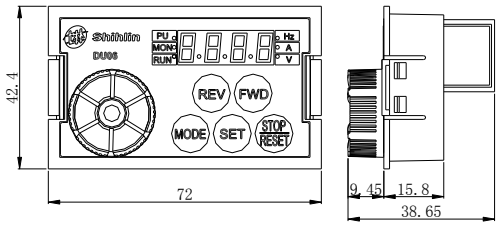


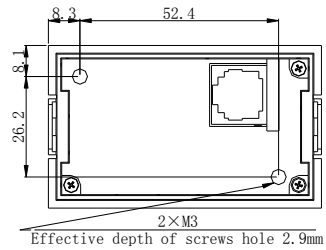


Description on the ordering code:

NO.	Model	Name
1	LNKDU06	DU06 operation panel

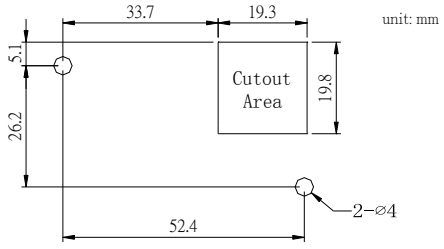
Outline drawing of DU*06*





Screw installation of DU*06*

<Screw installation:panel cutting dimension drawing>



SE2 Series

SE*2*-PD*01*

Profibus communication board

SE-IB*01*

4-20mA current expansion board

SE-EB*01*

I/O expansion board

Common

Transmission Cable SS-CBL*01/03/05*T

Brake Resistor

SF-G Series

SE2-DN01

Device-Net communication board

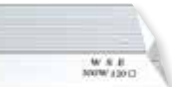
SE-CB01

Terminal-block communication expansion board

DU03B

external operation panel

AC/DC Reactor



PG01

PG01 expansion card

PM01

Injection modeling machine specific expansion card

WS01

Fan and water pump multichannel control card

DU01

PU01

Parameter Table

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.0	Torque boost			0~30%			0.10%			3% (7.5kW or below) 2%(11kW~55kW) 1%(75kW or above)	6%(0.2Kw~0.75Kw) 4%(1.5Kw~3.7Kw) 3%(5.5Kw~7.5Kw) 2%(11Kw)	50Hz/60Hz
P.1	Maximum frequency			0~120Hz			0.01Hz			120Hz (55kW or below) 60Hz (75kW or above)	120Hz	
P.2	Minimum frequency			0~120Hz			0.01Hz			0Hz		
P.3	Base frequency			0~400Hz		0~650Hz	0.01Hz			50Hz/60Hz (Note 2)		
P.4	Speed 1 (high speed)			0~400Hz		0~650Hz	0.01Hz			60Hz		
P.5	Speed 2 (medium speed)			0~400Hz		0~650Hz	0.01Hz			30Hz		
P.6	Speed 3 (low speed)			0~400Hz		0~650Hz	0.01Hz			10Hz		
P.7	Acceleration time			0~360s/ 0~3600s			0.01s/0.1s			20s	5s	5s(3.7KW and below) 10s(5.5KW)
P.8	Deceleration time			0~360s/ 0~3600s			0.01s/0.1s			10s(7.5kW or below) 30s(11kW or above)	5s	5s(3.7KW and below) 10s(5.5KW)
P.9	Electronic thermal relay capacity			0~500A			0.01A			Motor rated current	Motor rated current	0A
P.10	DC injection brake operation frequency			0~120Hz			0.01Hz			3Hz		
P.11	DC injection brake operation time			0~60s			0.1s			0.5s		
P.12	DC injection brake operation voltage			0~30%			0.10%			4% (7.5kW or below) 2%(11kW~55kW) 1% (75kW or above)	4%	
P.13	Starting frequency			0~60Hz			0.01Hz			0.5Hz		
P.14	Load pattern selection			0~13			1			0		
P.15	JOG frequency			0~400Hz		0~650Hz	0.01Hz			5Hz		
P.16	JOG acceleration/deceleration time			0~360s/ 0~3600s			0.01s/0.1s			0.5s		
P.17	Input signal across terminal 4-5 selection			Reserved	0, 1	0,1,2	Reserved	1		Reserved	0	
P.18	High speed maximum frequency			120~400Hz		120~650Hz	0.01Hz			120Hz		
P.19	Base frequency voltage			0~1000V, 99999	0~1000V, 9999		0.1V			99999	220V/440V	9999
P.20	Acceleration / deceleration reference frequency			1~400Hz		1~650Hz	0.01Hz			50Hz/60Hz(Note 2)		
P.21	Acceleration/deceleration time increments			0,1			1			0		
P.22	Stall prevention operation level			0~400%		0~250%	0.10%			120%/150% (Note 3)	200%	
P.23	Compensation factor at level reduction			0~150%, 99999	0~200%, 9999		0.10%			99999	9999	
P.24	Speed 4			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.25	Speed 5			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.26	Speed 6			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.27	Speed 7			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.28	Output frequency filter constant			0~31			1			0		
P.29	Acceleration/deceleration curve selection			0, 1, 2			1			0		
P.30	Regenerative brake function selection			0, 1			1			0		
P.31	Soft-PWM selection			0, 1		0, 1, 2	1			0		
P.32	Serial communication Baud rate selection			0, 1, 2,3	0, 1, 2	0, 1, 2,3	1			1		
P.33	Communication protocol selection			0, 1			1			1	0	
P.34	Reserved			Reserved			Reserved			Reserved		
P.35	Reserved			Reserved			Reserved			Reserved		
P.36	Inverter station number			0~254			1			0		
P.37	Speed display			0~5000r/min			0.1 r/min			0		
P.38	The maximum operation frequency (the target frequency is set by the input signal of terminal 2-5)			1~400Hz		1~650Hz	0.01Hz			50Hz/60Hz		
P.39	The maximum operation frequency (the target frequency is set by the input signal of terminal 4-5)			1~400Hz		1~650Hz	0.01Hz			50Hz/60Hz		
P.40	Multi-function output terminal SU function selection	Multi-function output terminal pattern		0~15	0~10		1			1	0	
P.41	Up-to-frequency sensitivity			0~100%			0.10%			10%		

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.42	Output frequency detection for forward rotation			0~400Hz		0~650Hz	0.01Hz			6Hz		
P.43	Output frequency detection for reverse rotation			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.44	The second acceleration time			0~360s, 0~3600s, 99999	0~360s/ 0~3600s, 9999		0.01s/0.1s			99999	9999	
P.45	The second deceleration time			0~360s, 0~3600s, 99999	0~360s/ 0~3600s, 9999		0.01s/0.1s			99999	9999	
P.46	The second torque boost			0~30%, 99999	0~30%, 9999		0.10%			99999	9999	
P.47	The second base frequency			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.48	Data length			0, 1			1			0		
P.49	Stop bit length			0, 1			1			0		
P.50	Parity check selection			0, 1, 2			1			0		
P.51	CR & LF selection			1, 2			1			1		
P.52	Number of communication retries			0~10			1			1		
P.53	Communication check time interval			0~999.8s, 99999	0~999.8s, 9999		1s			99999	9999	
P.54	FM/AM terminal function selection	AM terminal function selection		0~4	0~1	0~4	1			0		
P.55	Frequency display reference			0~400Hz		0~650Hz	0.01Hz			50Hz/60Hz(Note 2)		
P.56	Current monitoring reference			0~500A			0.01A			Rated output current		
P.57	Restart coasting time			0~30s, 99999	0~30s, 9999		0.1s			99999	9999	
P.58	Restart cushion time			0~60s			0.1s			5s(7.5kW or below) 10s(11kW~55kW) 20s(75kW or above)	10s	
P.59	Selection of frequency sources		The choice of locking operation keyboard knob setting	Reserved	0,1	0, 10, 100, 110	Reserved	1		Reserved	1	0
P.60	Input signal filter constant			0~31			1			31		
P.61	Remote setting function selection			0, 1, 2, 3			1			0		
P.62	Zero current detection level			0~200%, 99999	0~200%, 9999		0.10%			5%		
P.63	Zero current detection time			0.05~1s, 99999	0.05~1s, 9999	0.05~60s, 9999	0.01s			0.5s		
P.64	FM/AM output terminal selection	Reserved	Pulse output selection	0, 1	Reserved	0, 1	1	Reserved	1	0	Reserved	0
P.65	Retry selection			0~4			1			0		
P.66	Stall prevention operation reduction starting frequency			0~400Hz	0~400Hz	0~650Hz	0.01Hz			50Hz/60Hz(Note2)		
P.67	Number of retries at alarm occurrence			0~10			1			0		
P.68	Retry waiting time			0~360s			0.1s			1s	6s	
P.69	Retry accumulation time at alarm			0			0			0		
P.70	Special regenerative brake duty			0~30%			0.10%			0		
P.71	Idling braking and linear braking selection			0, 1			1			1		
P.72	Carrier frequency			7.5kW or below :0.7~10 kHz 11~22kW:0.7~9 kHz 30~90kW:0.7~6 kHz 110~160kW:0.7~6 kHz	0.7~14.5kHz	1~15	0.1kHz		1	7.5kW or below:5 kHz 11~22kW:5 kHz 30~90kW:4 kHz 110~160kW:2 kHz	5.0 kHz	5
P.73	Voltage signal selection			0, 1			1			0		
P.74	FU/10X output terminal selection	Reversed	10X output selection	0~10	Reversed	0~10	1	Reversed	1	0	Reversed	0
P.75	Stop or reset function selection			0, 1			1			1		
P.76	Panel knob signal input frequency bias		Reserved	Reserved	0~400Hz	Reserved	Reserved	0.01Hz	Reserved	Reserved	0Hz	Reserved
P.77	Parameters write protection			0, 1, 2			1			0		
P.78	Forward/reverse rotation prevention selection			0, 1, 2			1			0		

Parameter Table

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.79	Operation mode selection			0~8			1			0		
P.80	Multi-function terminal RL function selection	Multi-function terminal M0 function selection		0~39		0~40, 43	1			2		
P.81	Multi-function terminal RM function selection	Multi-function terminal M1 function selection		0~39		0~40, 43	1			3		
P.82	Multi-function terminal RH function selection	Multi-function terminal M2 function selection		0~39		0~41, 43	1			4		
P.83	Multi-function terminal STF function selection			0~39		0~40, 43	1			0		
P.84	Multi-function terminal STR function selection			0~39		0~40, 43	1			1		
P.85	Function selection for multi-function relay			0~15	0~10		1			5		
P.86	Multi-function terminal RES function selection			0~39		0~40, 43	1	30	1	30		
P.87	Reserved			Reserved			Reserved			Reserved		
P.88	Reserved			Reserved			Reserved			Reserved		
P.89	Slip compensation coefficient			0~10			1			0		
P.90	Reserved			Reserved			Reserved			Reserved		
P.91	Frequency jump 1A			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.92	Frequency jump 1B			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.93	Frequency jump 2A			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.94	Frequency jump 2B			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.95	Frequency jump 3A			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.96	Frequency jump 3B			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.97	Reserved			Reserved			Reserved			Reserved	Reserved	
P.98	Middle frequency 1			0~400Hz		0~650Hz	0.01Hz			3Hz		
P.99	Output voltage 1 of middle frequency			0~100%		0~100%	0.1			10%		
P.100	Minute/second selection			0, 1			1			1		
P.101	Runtime of Section 1 in programmed operation mode			0~6000s			0.1s			0s		
P.102	Runtime of Section 2 in programmed operation mode			0~6000s			0.1s			0s		
P.103	Runtime of Section 3 in programmed operation mode			0~6000s			0.1s			0s		
P.104	Runtime of Section 4 in programmed operation mode			0~6000s			0.1s			0s		
P.105	Runtime of Section 5 in programmed operation mode			0~6000s			0.1s			0s		
P.106	Runtime of Section 6 in programmed operation mode			0~6000s			0.1s			0s		
P.107	Runtime of Section 7 in programmed operation mode			0~6000s			0.1s			0s		
P.108	Runtime of Section 8 in programmed operation mode			0~6000s			0.1s			0s		
P.110	Operation panel monitoring selection			0, 1, 2		0~4	1			1	0	
P.111	Acceleration/deceleration time of Section 1			0~600s /0~6000s			0.01s/0.1s			0s		
P.112	Acceleration/deceleration time of Section 2			0~600s /0~6000s			0.01s/0.1s			0s		
P.113	Acceleration/deceleration time of Section 3			0~600s /0~6000s			0.01s/0.1s			0s		
P.114	Acceleration/deceleration time of Section 4			0~600s /0~6000s			0.01s/0.1s			0s		
P.115	Acceleration/deceleration time of Section 5			0~600s /0~6000s			0.01s/0.1s			0s		
P.116	Acceleration/deceleration time of Section 6			0~600s /0~6000s			0.01s/0.1s			0s		
P.117	Acceleration/deceleration time of Section 7			0~600s /0~6000s			0.01s/0.1s			0s		

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.118	Acceleration/deceleration time of Section 8			0~600s /0~6000s			0.01s/0.1s			0s		
P.119	Reserved			Reserved			Reserved			Reserved		
P.120	Output signal delay time			0~3600s			0.1s			0s		
P.121	Run direction in each section			0~255			1			0		
P.122	Cycle selection			0~8			1			0		
P.123	Acceleration/deceleration time setting selection			0, 1			1			0		
P.125	Reserved	Expansion board type	none	Reserved	-	none	Reserved	---	none	Reserved	0	none
P.126	Multi-function terminal AU function selection	I/O expansion board input terminal M3 function selection	none	0~39	0~39, 9999	none	1		none	5	9999	none
P.127	Multi-function terminal RT function selection	I/O expansion board input terminal M4 function selection	none	0~39	0~39, 9999	none	1		none	8	9999	none
P.128	Multi-function terminal MRS function selection	I/O expansion board input terminal M5 function selection	none	0~39	0~39, 9999	none	1		none	7	9999	none
P.129	Multi-function terminal RUN function selection	I/O expansion board output relay1 function selection	none	0~15	0~10, 9999	none	1		none	0	9999	none
P.130	Multi-function terminal FU/10X function selection	I/O expansion board output relay2 function selection	none	0~15	0~10, 9999	none	1		none	2	9999	none
P.131	Frequency of section 1			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.132	Frequency of section2			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.133	Frequency of section 3			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.134	Frequency of section4			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.135	Frequency of section5			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.136	Frequency of section6			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.137	Frequency of section7			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.138	Frequency of section 8			0~400Hz		0~650Hz	0.01Hz			0Hz		
P.139	Voltage signal bias			0~100%			0.10%			0%		
P.140	Voltage signal gain			0.1~200%			0.10%			100%		
P.141	Voltage signal bias direction and rotational direction setup			0~11			1			0		
P.142	Speed 8			0~400Hz,99999	0~400Hz	0~650Hz	0.01Hz			0Hz		
P.143	Speed 9			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.144	Speed 10			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.145	Speed 11			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.146	Speed 12			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.147	Speed 13			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.148	Speed 14			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.149	Speed 15			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.150	Restart mode selection			0~221	0~221	0~22	1			0		
P.151	Zero-speed control function selection			0, 1			1			0		
P.152	Voltage instruction at zero-speed control			0~30%			0.10%			4% (7.5kW or below) 2%(11kW~55kW) 1% (75kW or above)	5%	
P.153	Communication error handling			0, 1			1			0		
P.154	Modbus communication data format			0~5			1			4		
P.155	Over-torque detection level			0~200%			0.10%			0%		
P.156	Over-torque detection time			0~60s			0.1s			1s		
P.157	External terminals filter adjusting function			0~200ms			1			4ms		

Parameter Table

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.158	External terminal power enable			0, 1			1			0		
P.159	Energy-saving control function			0, 1			1			0		
P.160	Stall prevention operation level when restart		Reserved	0~150%	0~200%	---	0.10%		---	100%	120%	---
P.161	Multi-function display selection			0~11	0~5	0~13	1			0		
P.162	Middle frequency 2			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.163	Output voltage 2 of middle frequency			0~100%			0.1			0		
P.164	Middle frequency 3			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.165	Output voltage 3 of middle frequency			0~100%			0.1			0		
P.166	Middle frequency 4			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz			99999	9999	
P.167	Output voltage 4 of middle frequency			0~100%			0.1	0.01Hz	0.10%	0		
P.168	Middle frequency 5			0~400Hz, 99999	0~400Hz, 9999	0~650Hz, 9999	0.01Hz	0.10%	0.01Hz	99999	9999	
P.169	Output voltage 5 of middle frequency			0~100%			0.1	0.01Hz	0.10%	0		
P.170	PID function selection			0, 1, 2			1			0		
P.171	PID feedback control method selection			0, 1	0~1000%	0, 1	1			0	100%	0
P.172	PID proportion Gain			1~100			1			20		
P.173	PID integration Gain			0~100s			0.1s			1s		
P.174	PID differential Gain			0~1000ms			1ms			0ms		
P.175	Abnormal deviation level			0~100%			0.10%			0	70%	0
P.176	Exception duration time			0~600s			0.1s			30s	0s	
P.177	Exception handling mode			0, 1, 2	0, 1	0, 1, 2	1			0		
P.178	Sleep detects deviation			0~100%			0.10%			0		
P.179	Sleep detects duration time			0~255s			0.1s			1s	10s	0s
P.180	Revival level			0~100%			0.10%			90%		
P.181	Outage level			0~120Hz			0.01Hz			40Hz		
P.182	Integral upper limit frequency			0~120Hz			0.01Hz			50Hz/60Hz (Note 2)		
P.183	Deceleration step length with stable pressure			0~10Hz			0.01Hz			0.5Hz		
P.184	4-5 terminal disconnection handling			0~3			1	0		0		
P.185	none	none	Proportion linkage gain	none		0~100%	none		1	none		0
P.186	SF-G model selection function	none	none	0, 1	none		1	none		0	none	
P.187	FM calibration parameter	Ultra-high-speed operation function selection	FM calibration parameter	0~9998	0~1	0~9998	1			166	0	220
P.188	Software edition			---			---			---		
P.189	Factory setting function			0, 1			1			60Hz System/0 50Hz System/1	1	60Hz/0 50Hz/1
P.190	AM output bias			0~1400	0~1024	0~8192	1			0(Note 4)	80	0
P.191	AM output gain			0~1400	0~1024	0~8192	1			600(Note 4)	900	600
P.192	2-5 terminal minimum input voltage			0~10			0.01			0		
P.193	2-5 terminal maximum input voltage			0~10			0.01			0		
P.194	Frequency corresponds to the minimum input voltage of terminal 2-5			0~60Hz			0.01Hz			0Hz		
P.195	Frequency corresponds to the maximum input voltage of terminal 2-5			0~400Hz		0~650Hz	0.01Hz			50Hz/60Hz (Note 2)		
P.196	4-5 terminal minimum input current corresponded frequency	Frequency corresponds to the minimum input current/ voltage across terminal 4-5		0~60Hz			0.01Hz			0Hz		
P.197	4-5 terminal maximum input current corresponded frequency	Frequency corresponds to the maximum input currentvoltage across terminal 4-5		0~400Hz		0~650Hz	0.01Hz			50Hz/60Hz (Note 2)		
P.198	4-5 terminal minimum input current	Minimum input current/ voltage across terminal 4-5		0~20			0.01			0		
P.199	4-5 terminal maximum input current	Maximum input current/ voltage across terminal 4-5		0~20			0.01			0		

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.200	Constant pressure system function selection	none	none	0~14	none		1	none		0		
P.209	Maximum frequency duration	none	none	0.1~10min	none		0.1min	none		5min	none	
P.210	Minimum frequency duration	none	none	0.1~10min	none		0.1min	none		5min	none	
P.213	Acceleration time for starting the commercial power supply frequency	none	none	0.01~20s /0.1~200s	none		0.01s /0.1 s	none		5s	none	
P.214	Deceleration time for starting the commercial power supply frequency	none	none	0.01~20s /0.1~200s	none		0.01s /0.1 s	none		5s	none	
P.215	Maximum frequency	none	none	20~60Hz	none		0.01Hz	none		50Hz	none	
P.216	Minimum frequency	none	none	0~20Hz	none		0.01Hz	none		20Hz	none	
P.217	Motor switchover permitted deviation	none	none	0~20%	none		0.10%	none		0	none	
P.223	Analog feedback bias pressure	none	Analog feedback bias pressure	0~100%	none	0~100%	0.1	none	0.1	0%	none	0%
P.224	Analog feedback gain pressure	none	Analog feedback gain pressure	0~100%	none	0~100%	0.1	none	0.1	100%	none	100%
P.225	Panel command	none	Panel command	0~100%,99999	none	0~100%,9999	0.1	none	0.1	20%	none	20%
P.229	Backlash compensation function selection			0~1			1			0		
P.230	The backlash compensation acceleration interrupt frequency			0~400Hz		0~650Hz	0.01Hz			1Hz		
P.231	The backlash compensation acceleration interrupt time			0~360 s			0.1s			0.5s		
P.232	The backlash compensation deceleration interrupt frequency			0~400Hz		0~650Hz	0.01Hz			1Hz		
P.233	The backlash compensation deceleration interrupt time			0~360 s			0.1s			0.5s		
P.234	Triangular wave function selection			0~2			1			0		
P.235	Maximum amplitude			0~25%			0.10%			10%		
P.236	Amplitude compensation for deceleration			0~50%			0.10%			10%		
P.237	Amplitude compensation for acceleration			0~50%			0.10%			10%		
P.238	Amplitude acceleration time			0~360s /0~3600 s			0.01s/0.1s			10s		
P.239	Amplitude deceleration time			0~360s /0~3600 s			0.01s/0.1s			10s		
P.240	Auxiliary frequency function selection			0~4		0~6	1			0		
P.242	DC injection brake function before starting selection			0~1			1			0		
P.243	DC injection brake time before starting			0~60s			0.1s			0.5s		
P.244	DC injection brake voltage before starting			0~30%			0.10%			4% (7.5kW or below) 2%(11kW~55kW) 1% (75kW or above)	4%	4%
P.245	Cooling fan operation selection	None	Cooling fan operation selection	0~3	None	0~3	0	None	0	0	None	0
P.246	Modulation coefficient	None	none	0.90~1.20	None		0.01	None		1	None	
P.247	MC switchover interlock time			0.1~100s			0.1s			1s		
P.248	Start waiting time			0.1~100s			0.1s			0.5s		
P.249	Automatic switchover frequency from inverter to commercial power supply frequency			0~60Hz, 99999	0~60Hz, 9999		0.01Hz			99999	9999	

Parameter Table

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.250	Automatic switchover frequency range from commercial power supply to inverter			0~10Hz, 99999	0~10Hz, 9999		0.01			99999	9999	
P.251	Injection molding machine mode selection	None		0~4	None		1	None		0	None	
P.252	Flow channel weighted coefficient	None		0~100%	None		0.10%	None		100%	None	
P.253	Pressure channel weighted coefficient	None		0~100%	None		0.10%	None		100%	None	
P.254	Corner frequency	None		0~100Hz	None		0.01Hz	None		0Hz	None	
P.285	Low frequency vibration inhibition factor	None		0~3	None		1	None		1	None	
P.286	High frequency vibration inhibition factor	None		0~15	None		1	None		0	None	
P.287	Short circuit protection (SCP) function selection	None	Short circuit protection (SCP) function selection	0~1	None	0~1	1	None	1	1	None	1
P.288	Alarm code display option			0~12			1			0		
P.289	Alarm code			---			---			0		
P.290	The latest alarm status selection			0~7	0~5		1			0		
P.291	The latest alarm message			---			---			0		
P.292	Accumulative motor operation time (minutes)			0~1439min			1min			0min		
P.293	Accumulative motor operation time (days)			0~9999day		0~9998day	1day			0		
P.294	Decryption parameter			0~65535		0~9998	1			0		
P.295	Password setup			2~65535	2~9998	2~9998	1			0		
P.300	Motor control mode selection			0~4	0~3	0~2	1			0		
P.301	Motor parameter auto-tuning function selection			0~3			1			0		
P.302	Motor rated power			0~160			0.01			0		
P.303	Motor poles			0~8			1			4		
P.304	Motor rated voltage			0~440V			1 V			220/440V		
P.305	Motor rated frequency			0~400Hz		0~650Hz	0.01Hz			50Hz/60Hz (Note 2)		
P.306	Motor rated current			0~500A			0.01 A			Horsepower-based		
P.307	Motor rated rotation speed			0~65535 r/min		0~9998 r/min	1 r/min			1410/1710 r/min(Note 2)		
P.308	Motor excitation current			0~500A			0.01 A			Horsepower-based		
P.309	Stator resistance			0~65535mΩ	0~99.8Ω		1	0.01	1Ω	Horsepower-based		
P.310	Rotor resistance		none	0~65535mΩ	0~65535	none	1	0.01	none	Horsepower-based		none
P.311	Leakage inductance		none	0~6553.5mH	0~65535	none	0.1		none	Horsepower-based		none
P.312	Mutual inductance		none	0~6553.5mH	0~65535	none	0.1		none	Horsepower-based		none
P.320	Speed control proportion coefficient		Sliding compensation gain	0~2000%		0~200%	1%			100%		80%
P.321	Speed control integral coefficient		Torque compensation filter coefficient	0~20s		0~32	0.01s		1	0.3s		16
P.350	Number of pulses per revolution of the encoder	None		1~20000	None		1	None		1024	None	
P.351	Encoder input mode setup	None		0~4	None		1	None		0	None	
P.352	PG signal abnormality (zero speed) detection time	None		0~100s	None		0.1s	None		1s	None	
P.353	Motor over-speed detection frequency	None		0~30Hz	None		0.01Hz	None		4Hz	None	

Parameter Number	Name			Setting Range			Minimum Setting Unit			Default Value		
	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2	SF-G	SE2	SS2
P.354	PG over-speed detection time	None		0~100s	None		0.1s	None		1s	None	
P.994	Parameter copy readout			Refer to Chapter 5	Refer to Chapter 4	Refer to Chapter 5	---	---	---	---	---	---
P.995	Parameter copy write-in			Refer to Chapter 5	Refer to Chapter 4	Refer to Chapter 5	---	---	---	---	---	---
P.996	Alarm history clear			Refer to Chapter 5	Refer to Chapter 4	Refer to Chapter 5	---	---	---	---	---	---
P.997	Inverter reset			Refer to Chapter 5	Refer to Chapter 4	Refer to Chapter 5	---	---	---	---	---	---
P.998	Restoring all parameters to default values			Refer to Chapter 5	Refer to Chapter 4	Refer to Chapter 5	---	---	---	---	---	---
P.999	Restoring some parameters to default values			Refer to Chapter 5	Refer to Chapter 4	Refer to Chapter 5	---	---	---	---	---	---

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