



SF3

Series



Fan/Pump Vector Control Type

SF3 Series AC Drive



Fan/Pump Vector Control AC Motor Drive

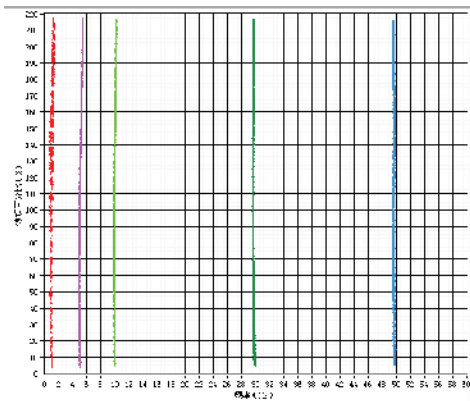
Product Range

Model	KW (HP)	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)	110 (150)	132 (175)	160 (215)	185 (250)	220 (300)	250 (335)	280 (375)	315 (420)	355 (475)
SF3-043	3-Phase 440V	[Wiring Diagram]																					

Product Features

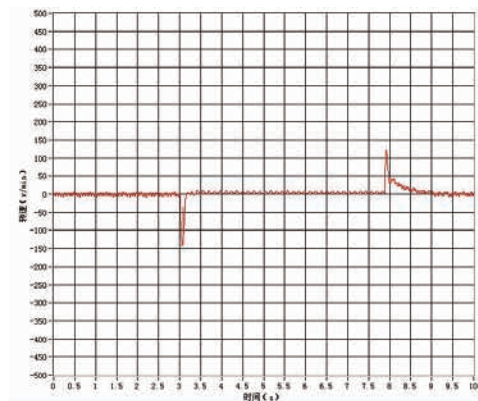
High Performance Vector Control Technology

- SF3 series can output 150% starting torque at 0.5Hz (SVC) for stable and precise control.



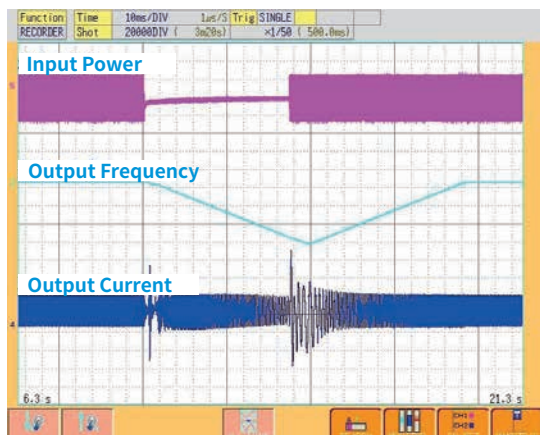
High Response Performance

- Speed accuracy: less than 1% with 0 to 100% load variation
- For applications with sudden load changes.



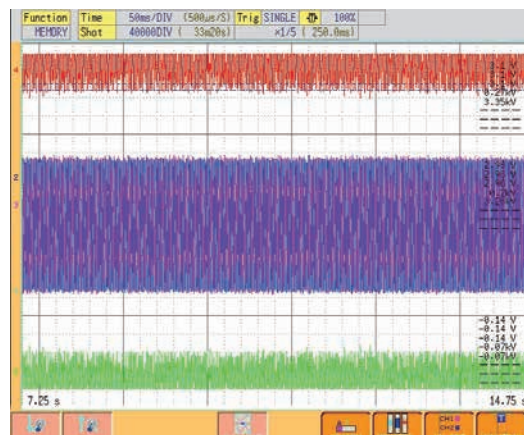
Safe Motor Stop

- Control output frequency to maintain DC bus voltage and decelerate the motor until stop when an unexpected power failure occurs to protect mechanism.
- The drive will accelerate the motor to its previous speed when power resumes.
- Suitable for idle running prohibited equipment.



Low-noise Carrier Wave Control (Soft-PWM)

- Motor noise is controlled so that the metallic sound is transformed into a more pleasing buzz.
- Low noise operations to reduce the interference exerted upon external radio frequencies.



SF3

Product Features

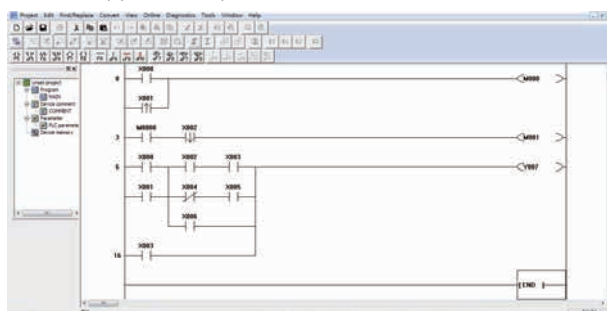
High Performance synchronous Motor Control Technology

- Supports induction motor (IM) and permanent magnet synchronous motor (IPM and SPM) control.
- Supports open loop synchronous motor control.



Built-in PLC Functions

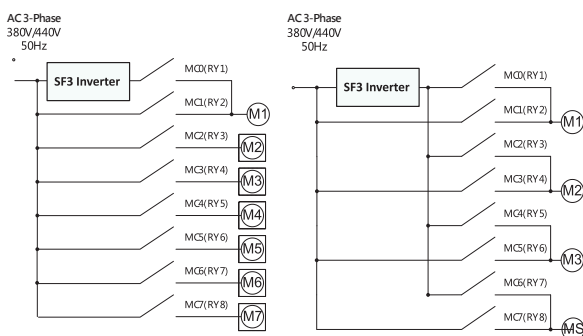
- Provides PLC programming software, easy for editing.
- Applicable for programming small number of points, and support multiple functions.



Item	SF3 PLC functions	
Programming Language	Ladder diagram + Command	
Basic commands	21	
Accicable comments	14	
Processing speed	Basic commands	1μs
	Applicable commands	10μs
Hoden program capacity	400 stes (0-399 stes)	
I/Oconfiguration	Input (X)	22 pointsXO-X25
	Output(Y)	20 points (YO-Y23. octal)
Supporting electric relay (M)	General	160 points, MO-M159
	Battery backed	80 points, M160-1239
	Special	64 points, M8000-M8063
Timer(T)	100ms	8 points, TO-C7, counting range: 0-65535
Counter(C)	8 points, TO-T7 timer range: 0-6553.5 seconds	
Data register	General	General 32 points, DO-D31
	Battery backed	16 points, D32-047
	Special	64 points, D8000-D8063

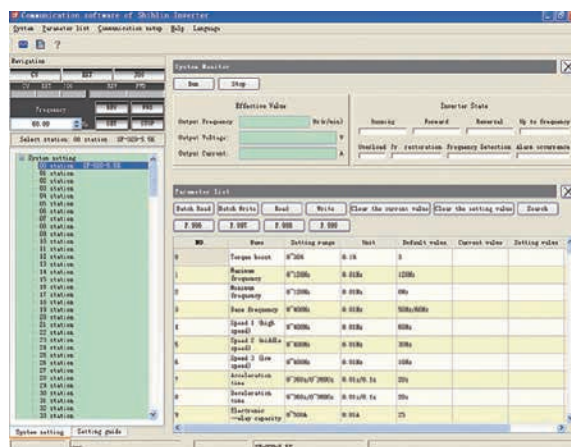
Multi-Pump Control

- Multi-Pump Control (with EB308R), with multiple timed patrol to support pump control. Controlling maximum of 7 pumps at the same time for 1 inverter.



PC Communication Software

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



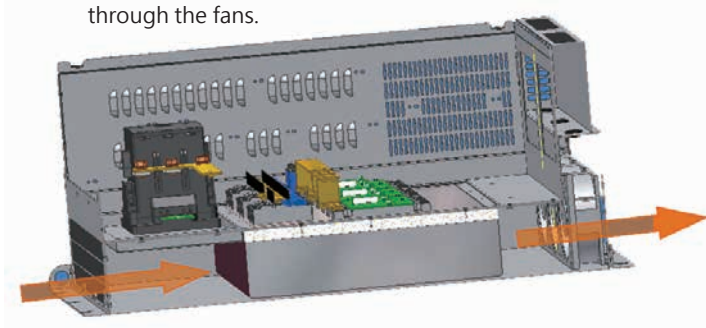
SF3 Series

Fan/Pump Vector Control AC Motor Drive

Product

1. Isolated Air Channel

- Ventilation (air flow path) is isolated from the surface of thermal dissipation units and electrical parts. Dust will not be able to infiltrate the interior of the inverter through the fans.



Note: Even though the cooling duct is complete isolated, but if the inverter is installed at the environment where lots of dust or oil gas with out protection, the duct will still pass into inverter.

2. Enhanced PCB Coating

- Protect drive and ensure its operation safety and stability.
- Compliance with international standards IEC 60721-3-3 class 3C2.



Moisture proof

Corrosion proof

Dust proof

3. Terminal Block for Quick Wiring

- Standard RJ45 internet connection with DA+, DB- Euroblock, easy connection for multi-machine communication.
- Support maximum 100kHz pulse input(HDI) and output(HDI) signal.



Quick switch for application needs

0-10V 4-20mA	4-20mA 0-10V	0-10V 0-20mA	0-10V 0-20mA	SINK SOURCE
SW1	SW2	SW3	SW4	SW5
			DEFAULT	

SF3

Features



4. LCD Operation Interface

- Supports 2 display styles.
- Able to simultaneously display 6 sets of operational data.
- Calendar support.
- Offers both English and Chinese language interfaces.
- Capable of storing 3 sets of parameters.
- Supports shuttle settings.



English display interface

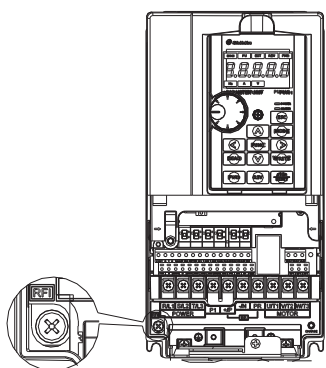
OUTPUT FRE
60.00Hz
PU 17:11:25 FWD

Chinese display interface

- 0 監視設定
- 1 操作模式
- 2 參數設定
- 3 異警記錄

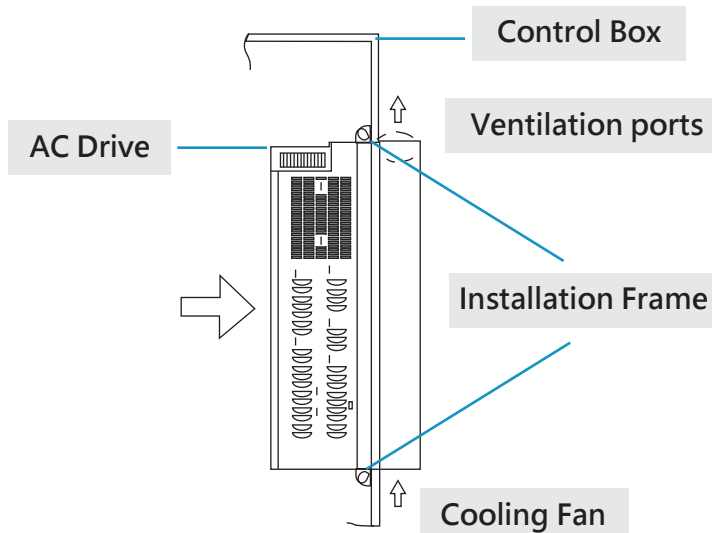
6. Built-in RFI Filter

- Reduces electromagnetic interference.



5. Through-the-Wall Installation Support Provided for the Entire Series

- Improve heat dissipation, reduce heat generation within the cabinet, and improve protection for the cabinet contents.



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Electrical Specifications

440V three-phase

Frame		A		B			C			D				
Model SF3-043-□K□KG		5.5/3.7	7.5/5.5	11/7.5	15/11	18.5/15	22/18.5	30/22	37/30	45/37	55/45	75/55	90/75	
Output	ND	Rated output capacity(KVA)	10	14	18	25	29	34	46	56	69	84	114	137
		Rated output current(A)	13	18	24	32	38	45	60	73	91	110	150	180
		Applicable motor capacity (HP)	7.5	10	15	20	25	30	40	50	60	75	100	120
		Applicable motor capacity (kW)	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
		Overload current rating	120% 60seconds (inverse time characteristics)											
	Carrier frequency (kHz)	1~15kHz						1~10kHz						
	HD	Rated output capacity (kVA)	6.9	10	14	18	25	29	34	46	56	69	84	114
		Rated output current (A)	9	13	18	24	32	38	45	60	73	91	110	150
		Applicable motor capacity (HP)	5	7.5	10	15	20	25	30	40	50	60	75	100
		Applicable motor capacity (kW)	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Overload current rating		150% 60seconds (inverse time characteristics)												
Carrier frequency (kHz)	1~15kHz													
Maximum output voltage		Three-phase 380-480V												
Power supply	Rated power voltage		Three-phase 380-480V 50Hz/60Hz											
	Allowable fluctuating range of power voltage		Three-phase 342-528V 50Hz/60Hz											
	Allowable fluctuating range of power frequency		± 5%											
	Power capacity (kVA)		10.4	11.5	16	20	27	32	41	52	65	79	100	110
Cooling method		Forced air cooling												
Weight (kg)		3	3	6	6	6	10	10	10	11	25	26	30	

Frame		E		F		G		H			
Model SF3-043-□K□KG		110/90	132/110	160/132	185/160	220/185	250/220	280/250	315/280	355/315	
Output	ND	Rated output capacity(KVA)	168	198	236	295	367	402	438	491	544
		Rated output current(A)	220	260	310	340	425	480	530	620	683
		Applicable motor capacity (HP)	150	175	215	250	300	335	375	420	475
		Applicable motor capacity (kW)	110	132	160	185	220	250	280	315	355
		Overload current rating	120% 60seconds (inverse time characteristics)								
	Carrier frequency (kHz)	1~9kHz									
	HD	Rated output capacity (kVA)	137	168	198	236	295	367	402	438	491
		Rated output current (A)	180	220	260	310	340	425	480	530	620
		Applicable motor capacity (HP)	120	150	175	215	250	300	335	375	420
		Applicable motor capacity (kW)	90	110	132	160	185	220	250	280	315
Overload current rating		150% 60seconds (inverse time characteristics)									
Carrier frequency (kHz)	1~10kHz										
Maximum output voltage		Three-phase 380-480V									
Power supply	Rated power voltage		Three-phase 380-480V 50Hz/60Hz								
	Allowable fluctuating range of power voltage		Three-phase 342-528V 50Hz/60Hz								
	Allowable fluctuating range of power frequency		± 5%								
	Power capacity (kVA)		137	165	198	247	295	367	402	438	491
Cooling method		Forced air cooling									
Weight (kg)		38	39	56	56	93	93	93	120	120	

Note: The test conditions of rated output current, rated output capacity and inverter power consumption are: carrier frequency (P.72) is default setting; inverter output voltage is at 440V; output frequency is at 60Hz, and surrounding temperature is 40°C.

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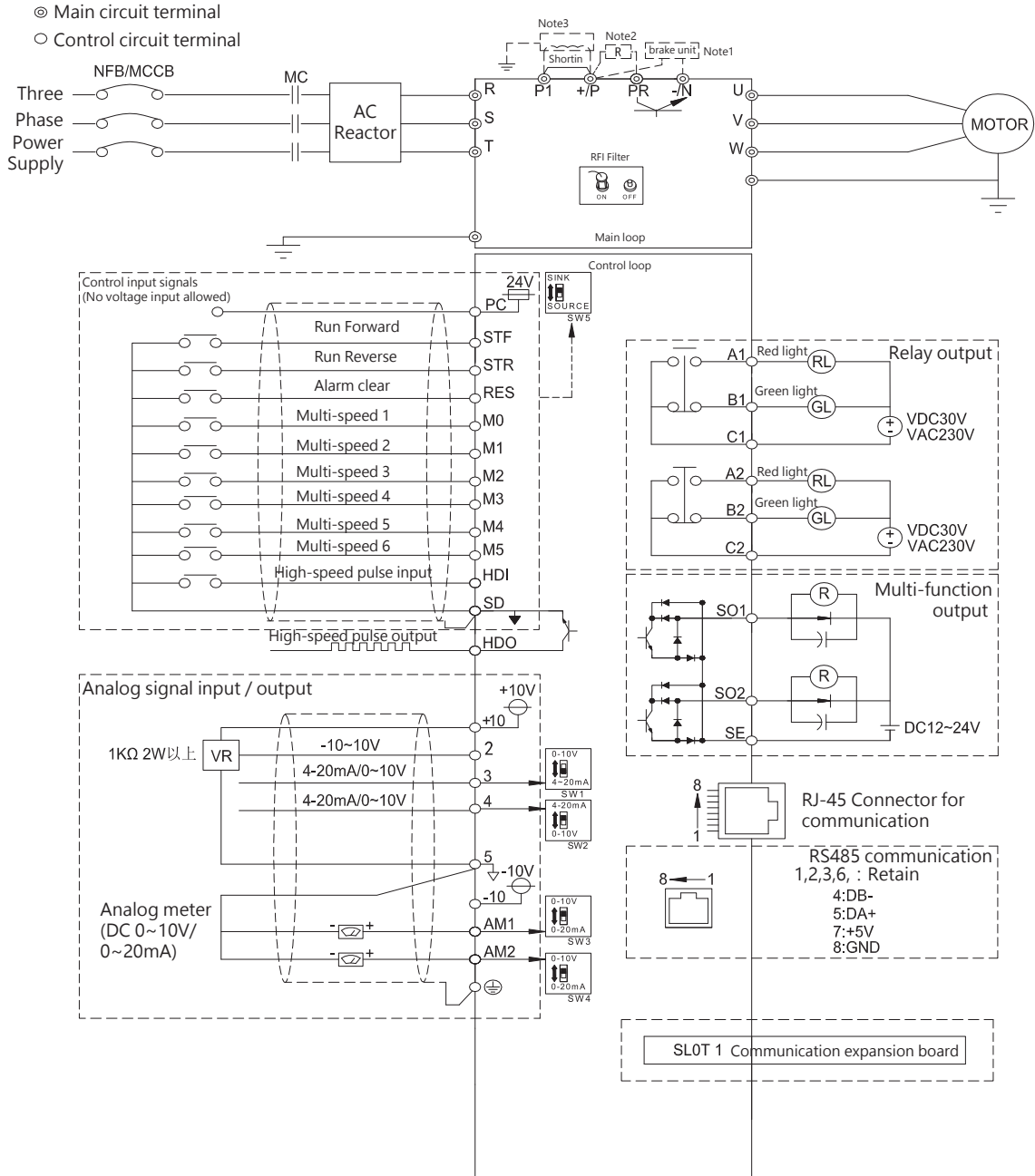
Common Specifications

Control method		SVPWM, V/F, general flux vector control, sensorless vector control (SVC).
Output frequency range		0~650Hz
Frequency setting resolution	Digital setting	The resolution is 0.01 Hz when the frequency is set within 100 Hz; The resolution is 0.1 Hz when the frequency is set at above 100 Hz.
	Analog setting	11bit, DC 0~±5V or 4~20mA signal setting; 12bit, DC 0~±10V signal setting
Output frequency accuracy	Digital setting	Maximum target frequency+0.01%.
	Analog setting	Maximum target frequency+0.1%.
Speed control range		IM: When SVC, 1:200 , PM: When SVC,1:20.
Start torque		150% 0.5Hz (SVC).
V/F characteristics		Constant torque curve, variable torque curve, five-point curve, VF separation.
Acceleration / deceleration curve characteristics		Linear acceleration /deceleration curve, S pattern acceleration /deceleration curve1 & 2 & 3.
Drive motor		Induction motor(IM), permanent magnet synchronous motor(SPM, IPM).
Current stall protection		The stall protection level can be set to 0~200%(06-01(P.22)). The default value is 120%(HD)/150%(ND).
Target frequency setting		Keypad setting, DC 0~5V/10V signal, DC -10~+10V signal, DC 4~20 mA signal, multi- speed stage level setting, communication setting, HDI setting.
PID control		Please refer to SF3 user manual.
Built-in simple PLC		Supports 21 basic instructions and 14 application instructions, including PC editing software please refer to manual at build-in PLC chapter.
Operation panel	Operation monitoring	Output frequency, output current, output voltage, PN voltage, output torque, electronic thermal accumulation rate, temperature rising accumulation rate, output power, analog value input signal, external terminal status...; at most 12 groups of alarm records, the last group of alarm message is recorded.
	LED indication lamp (8)	Forward rotation indicator, reverse rotation indicator, frequency monitoring indicator, voltage monitoring indicator, current monitoring indicator, mode switch indicator, PU control indicator and external terminal control indicator.
Communication		RS-485 communication, can select Shihlin/Modbus communication protocol, communication speed up to 115200bps, CanOpen protocol (with optional CP301 expanded board).
Protection mechanism / alarm function		Output short circuit protection, over-current protection, over-voltage protection, under-voltage protection, motor over-heat protection (06-00(P.9)), IGBT module over-heat protection, communication abnormality protection, PTC temperature protection etc. Capacitor overheat, input and output phase loss, to-earth(ground) current leakage protection, circuit error detection...
Environment	Ambient temperature	-10 ~ +40°C (non-freezing) Set "fixed rated current, reduce carrier frequency with increasing temperature" or "fixed carrier frequency, reduce rated current with increasing carrier frequency".
	Ambient humidity	Below 90%Rh (non-condensing).
	Storage temperature	-20 ~ +65°C.
	Surrounding environment	Indoor, no corrosive gas, no flammable gas, no flammable powder.
	Altitude	Altitude below 2000 meters, but when altitude is above 1,000 m, 2% of the rated current needs to be decreased per 1000 rising
	Vibration	Vibration below 5.9m/s ² (0.6G).
	Grade of protection	IP20 for frames A, B and C, IP00 for frame D and above (IP20 accessories shall be optional)
	The degree of environmental pollution	2
Class of protection		Class I
International certification		CE

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Wiring Diagram



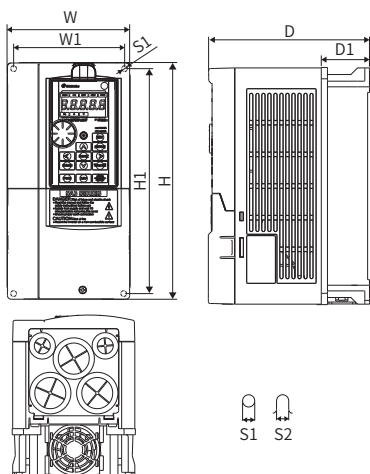
NOTE

1. Braking resistor wiring method between +/P and PR is only for frame A, B and C. For frame D, E, G and H, the braking resistor is connect between (+/P)-(-N).
2. DC reactor can be added between +/P and P1. When DC reactor is not in used, shorted those terminal.
3. When adding DC reactor, the jumper between +/P and P1 must be removed.

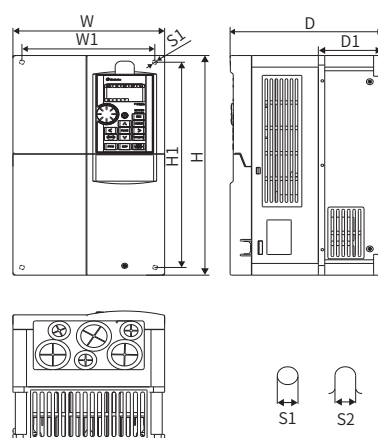
SF3

Dimensions

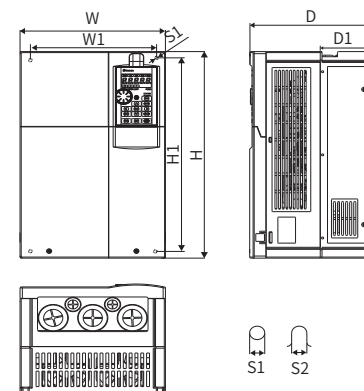
Frame A



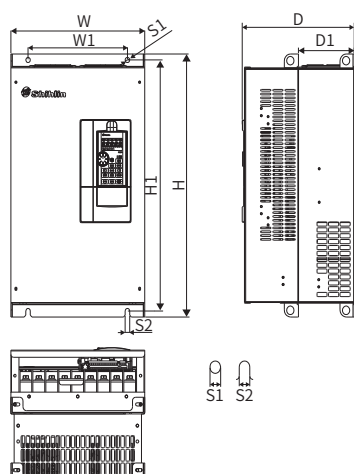
Frame B



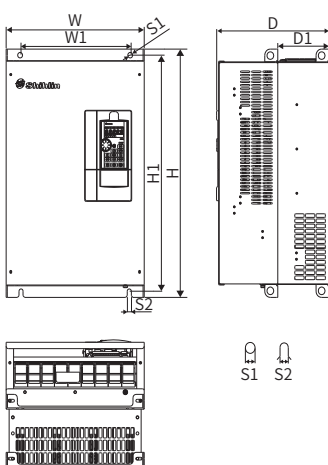
Frame C



Frame D



Frame E



Unit : mm

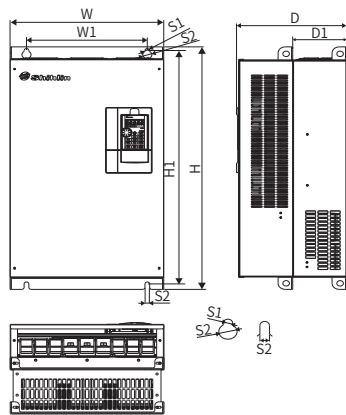
	Model type	W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	D1 (mm)	S1 (mm)	S2 (mm)
FrameA	SF3-043-5.5K/3.7KG	130.0	116.0	250.0	236.0	170.0	51.3	6.2	6.2
	SF3-043-7.5K/5.5KG								
FrameB	SF3-043-11K/7.5KG	190.0	173.0	320.0	303.0	190.0	80.5	8.5	8.5
	SF3-043-15K/11KG								
	SF3-043-18.5K/15KG								
FrameC	SF3-043-22K/18.5KG	250.0	231.0	400.0	381.0	210.0	89.5	8.5	8.5
	SF3-043-30K/22KG								
	SF3-043-37K/30KG								
	SF3-043-45K/37KG								
FrameD	SF3-043-55K/45KG	330.0	245.0	550.0	525.0	275.0	137.5	11.0	11.0
	SF3-043-75K/55KG								
FrameE	SF3-043-90K/75KG	370.0	295.0	589.0	560.0	300.0	137.5	11.0	11.0
	SF3-043-110K/90KG								
	SF3-043-132K/110KG								

SF3 Series

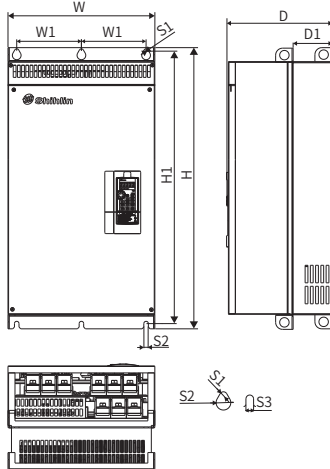
Fan/Pump Vector Control AC Motor Drive

Dimensions

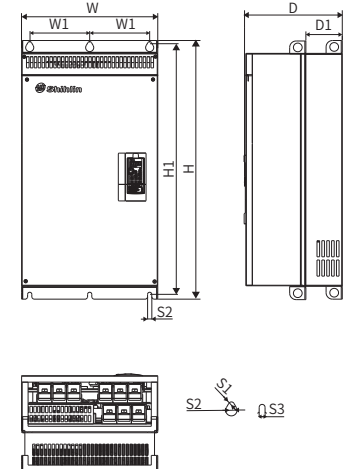
Frame F



Frame G



Frame H

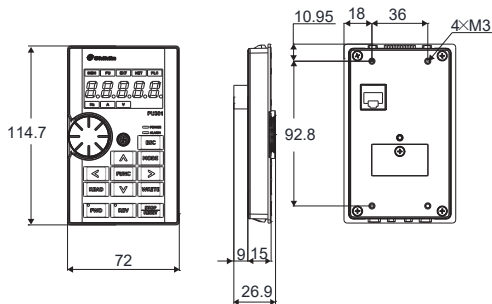


Unit : mm

	Model type	W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	D1 (mm)	S1 (mm)	S2 (mm)	S3 (mm)
Frame F	SF3-043-160K/132KG	420.0	330.0	800.0	770.0	300.0	145.5	13.0	25.0	13.0
	SF3-043-185K/160KG									
Frame G	SF3-043-220K/185KG	500.0	180.0	870.0	850.0	360.0	150.0	13.0	25.0	13.0
	SF3-043-250K/220KG									
	SF3-043-280K/250KG									
Frame H	SF3-043-315K/280KG	600.0	230.0	1000.0	980.0	400.0	181.5	13.0	25.0	13.0
	SF3-043-355K/315KG									

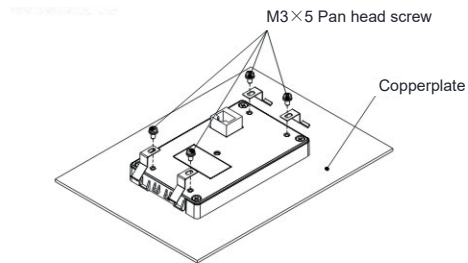
Keypad Dimensions

PU301 · PU301C



Flat Spring Installation

SMK301 (PU301, PU301C Mounting kit)



Optional Equipment

Expansion Board

PD302

Profibus communication expansion board



DN301

DeviceNet communication expansion board



CP301

CANopen communication expansion board



EP301

Ethernet communication expansion board



EC301

EtherCAT communication expansion board



EB362R

I/O expansion board



EB308R

I/O expansion board



Keypad

PU301



PU301C

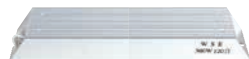


Others Equipment

Transmission Cable
SS-CBL01/03/05T



Braking Resistor



AC/DC Reactor



Braking Unit (BKU series)





Headquarters:

16F, No. 88, Sec. 6, ChungShan N. Rd., Taipei, Taiwan, 111
 TEL:+886-2-2834-2662 FAX:+886-2-2836-6187

HsinFun Factory (Taiwan):

No.234, ChungLun, HsinFun, HsinChu, Taiwan, 304
 TEL:+886-3-599-5111 FAX:+886-3-5902167

SuZhou Factory(China):

88, Guangdong St, New District, Suzhou, Jiangsu, China 215129
 TEL: +86-512-6843-2662 FAX: +86-512-6843-2599

Official website www.seec.com.tw

Division website automation.seec.com.tw

Email address automation@seec.com.tw