



# SF3

Series



## Fan/Pump Vector Control Type

# SF3 Series AC Drive



# Fan/Pump Vector Control AC Motor Drive

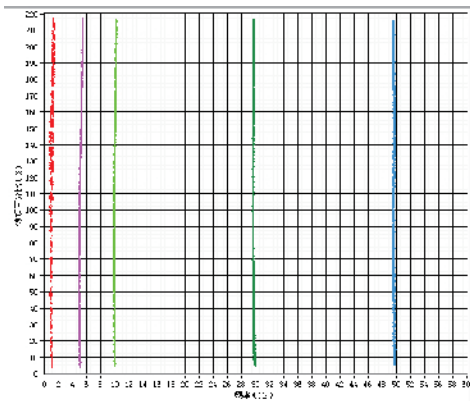
## Product Range

Mode	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																						

## Product Features

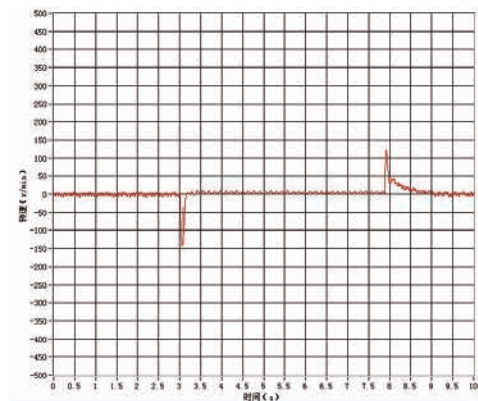
### High Performance Vector Control Technology

- Sensorless vector control.



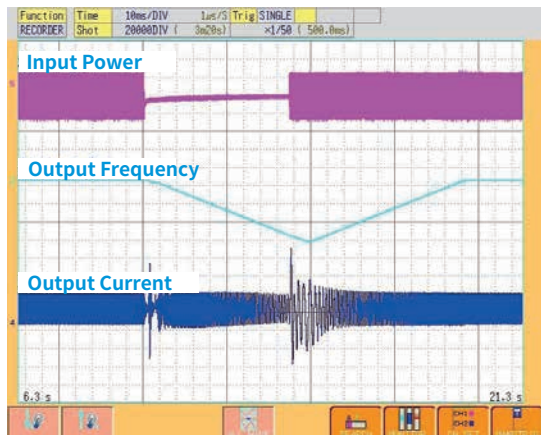
### High Response Performance

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



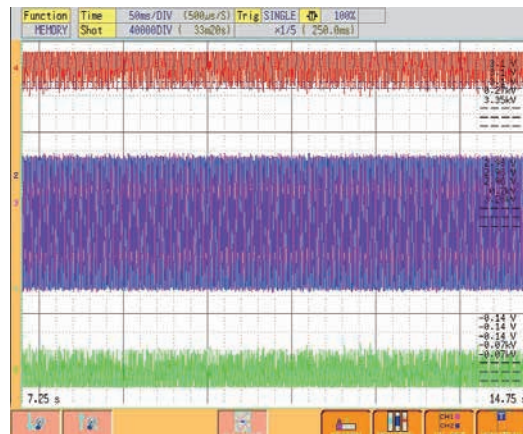
### Safe Motor Stop

- 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.



# Product Features

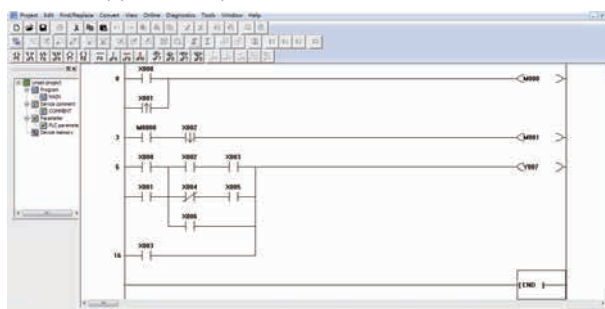
## High Performance synchronous Motor Control Technology

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



## Built-in PLC Functions

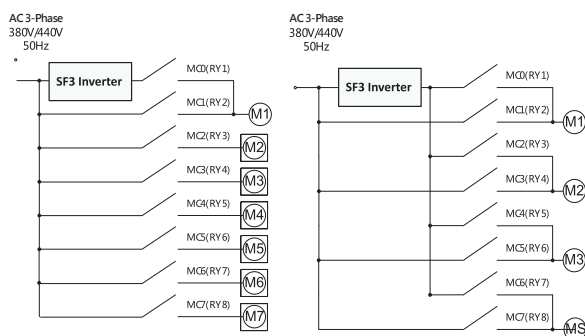
- Provides PLC programming software, easy for editing.
- Applicable for programming small number of points, and support multiple functions.



Item	SF3 PLC functions	
Programming Language	Ladder diagram + Command	
Basic commands	21	
Acclicable comments	14	
Processing speed	Basic commands	1μs
	Applicable commands	10μs
Hoden program capacity	400 stes (0-399 stes)	
I/Oconfiguration	Input (X)	22 points(X0-X25)
	Output(Y)	20 points (Y0-Y23. octal)
Supporting electric relay (M)	General	160 points, M0-M159
	Battery backed	80 points, M160-1239
	Special	64 points, M8000-M8063
Timer(T)	100ms	8 points, T0-C7, counting range: 0-65535
Counter(C)	8 points, TO-T7 timer range: 0-6553.5 seconds	
Data register	General	General 32 points, D0-D31
	Battery backed	16 points, D32-047
	Special	64 points, D8000-D8063

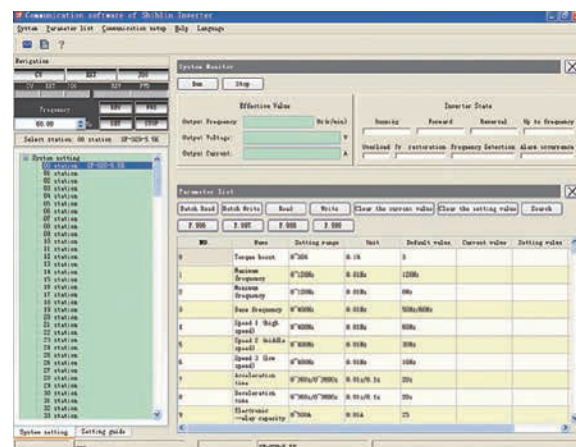
## Multi-Pump Control

- 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.



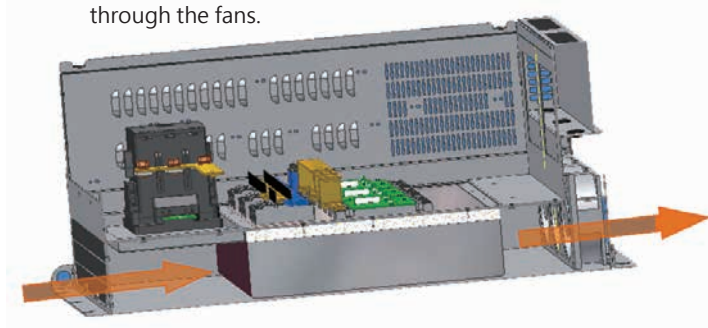
# SF3 Series

## 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 DEFAULT SOURCE
SW1	SW2	SW3	SW4	SW5

SF3

# Features



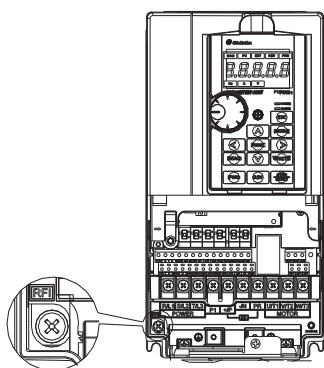
## 4. LCD Operation Interface

- 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.



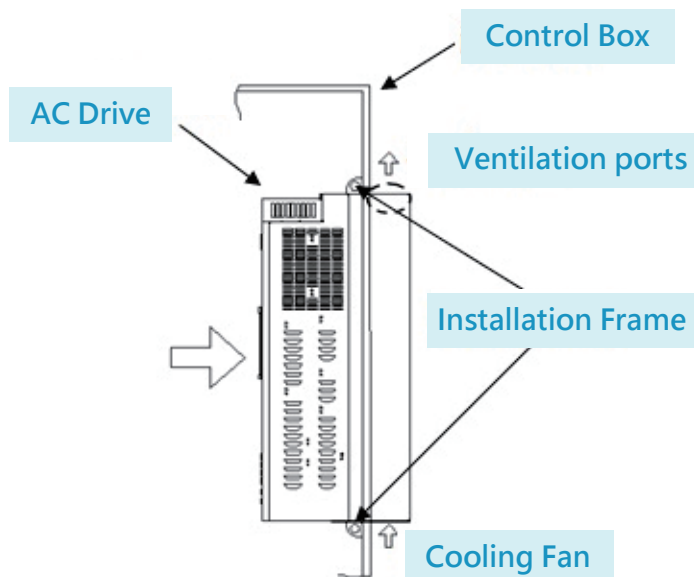
## 6. SF3 All-Series Built-in RFI Filter

- RFI is capable of suppressing 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.



# SF3 Series

## Fan/Pump Vector Control AC Motor Drive

### Electrical Specifications

#### 440V Three - phase Series

Frame		A		B			C				D			
Model SF3-043-oKoKG		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	HD	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
	ND	Applicable motor capacity (kW)	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
		Overload current rating	120% 60seconds 200% (inverse time characteristics)											
		Carrier frequency (kHz)	1~15kHz						1~10kHz					
Output	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
	ND	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											
	Power voltage permissible fluctuation		Three-phase 342-528V 50Hz/60Hz											
	Power frequency permissible fluctuation		±5%											
	Power source 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-oKoKG-xy		110/90	132/110	160/132	185/160	220/185	250/220	280/250	315/280	355/315		
Output	HD	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	
	ND	Applicable motor capacity (kW)	110	132	160	185	220	250	280	315	355	
		Overload current rating	120% 60seconds 200% (inverse time characteristics)									
		Carrier frequency (kHz)	1~9kHz									
Output	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	
	ND	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									
	Power voltage permissible fluctuation		Three-phase 342-528V 50Hz/60Hz									
	Power frequency permissible fluctuation		±5%									
	Power source capacity (KVA)		137	165	198	247	295	367	402	438	491	
Cooling method		Forced air cooling										
Weight (kg)		38	39	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	

Note: The test conditions of rated output current, rated output capacity and frequency converter inverter power consumption are: the carrier frequency (P.72) is at the set value; the frequency converter/inverter output voltage is at 440V; the output frequency is at 60Hz, and the ambient temperature is 40°C.

## SF3

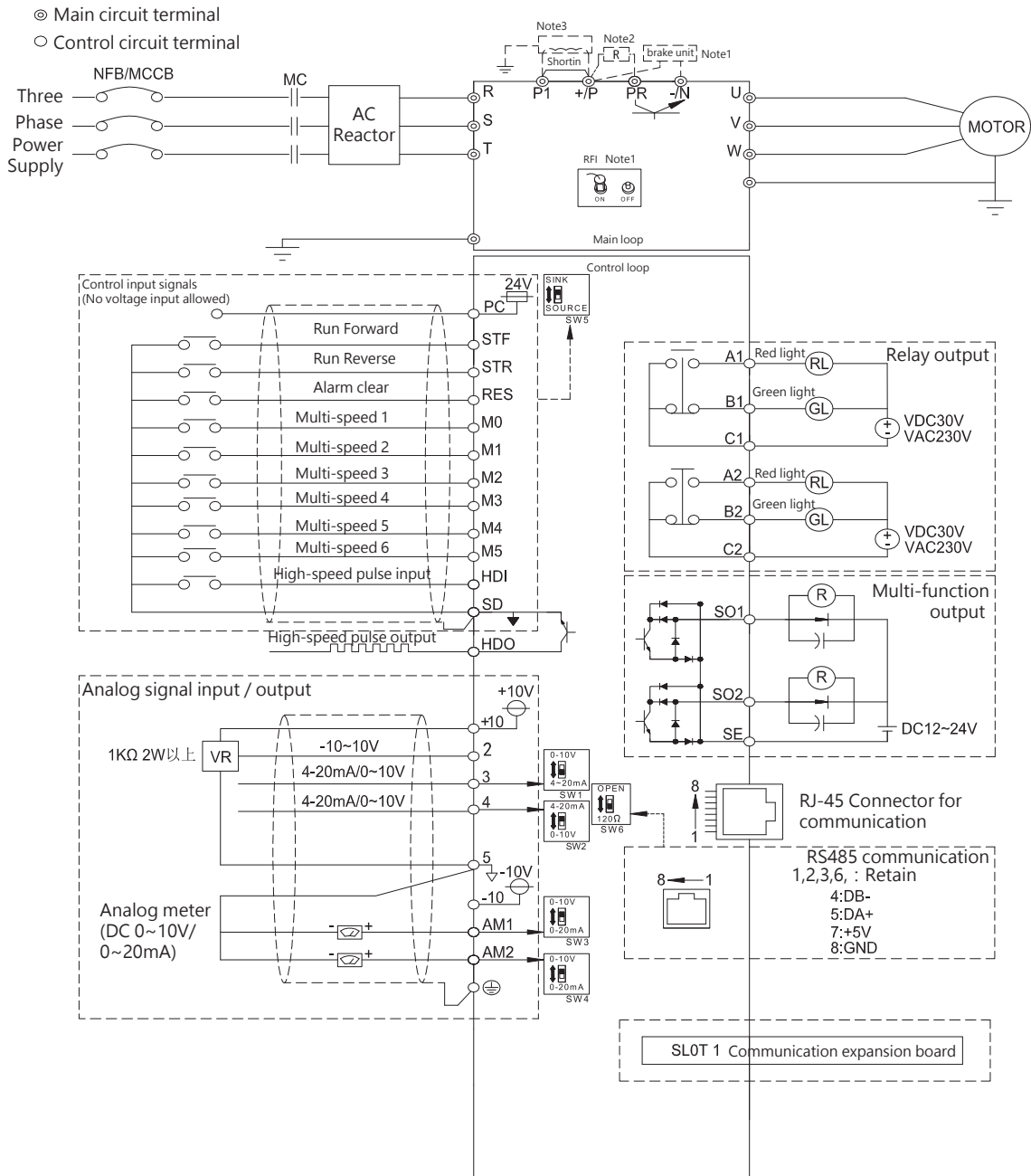
## Common Specifications

Control method		SVPWM control, V/F control, close-loop V/F control (VF+PG), general flux vector control, sensorless vector control (SVC).
Output frequency range		0~650Hz
Frequency setting resolution	Digital setting	The frequency is set within 100Hz, the resolution is 0.01Hz. The frequency is set more than 100Hz, the resolution is 0.1Hz.
	Analog setting	DC 0-5V or 4~20mA signal, 11 bit ; DC 0-10V signal, 12 bit.
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.
Starting 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 curve 1 & 2 & 3.
Drive motor		Induction motor(IM), permanent magnet motor(SPM, IPM).
Applicant motors		0~200%(P.22), The default value is 120%( Light load ) /150% ( Over load)
Stall prevention		Parameter unit setting, DC 0-5V/10V signal, DC -10~ +10V signal, DC 4~20 mA signal, multiple speed stage level setting, communication setting, HDI setting
PID control		Reference to manual chapter 5 parameter 08
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.
Parameter unit	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, digital input and output terminal status...; alarm history 12 groups at most, the last group of alarm message is recorded.
	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 switch indication lamp.
Communication		RS-485 communication, can select Shihlin/Modbus communication protocol , communication speed 115200bps , CANopen communication support(with CP301 expansion card).
Protection mechanism / alarm function		Output short circuit protection, Over-current protection, over-voltage protection, under-voltage protection, motor over-heat protection (P.9), IGBT module over-heat protection, communication abnormality protection, PTC temperature protection etc, input and output phase failure, to-earth (ground) leakage currents protection, circuit error detection...
Environment	Ambient temperature	"Fixed rated current and decrease carrier wave as temperature raised" or " Fixed carrier wave and decrease rated current as temperature raised" can be choose from setting.
	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	when altitude is above 1,000 m, derate the rated current 2% per 100 m
	Vibration	Vibration below 5.9m/s <sup>2</sup> (0.6G).
	Grade of protection	Frame A, B, C, IP20 / NEMA TYPE 1, Frame D and above IPOO / UL OPEN TYPE(IP20 option can be selected).
	The degree of environmental pollution	2
Class of protection		Class I
International certification		CE

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### Wiring Diagram



#### NOTE

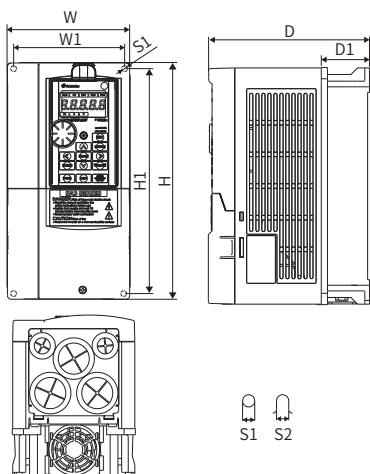
1. Please refer to chapter 3.7.4 in SF3 manual for the RFI settings.
2. Braking resistor wiring method between +/P and PR is only for frame A, B and C. For frame D, E, G and H, the braking resistor is connect between (+/P)-(-N). Refer to chapter 3.7.1 for more detail.
3. DC reactor can be added between +/P and P1. When DC reactor is not in used, shorted those terminal.
4. When adding DC reactor, the jumper between +/P and P1 must be removed. Please refer to chapter 3.6.4 for selection of DC reactor.
5. Please refer chapter 5.3.9 for HDO wiring.



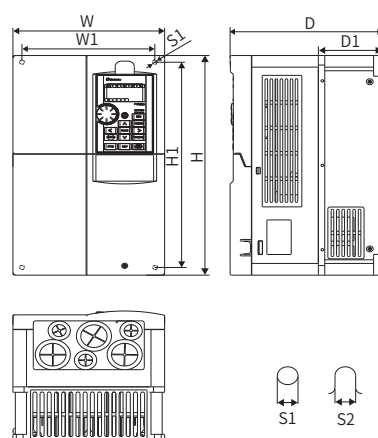
# SF3

## Dimensions

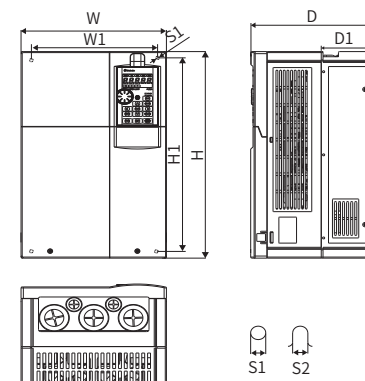
Frame A



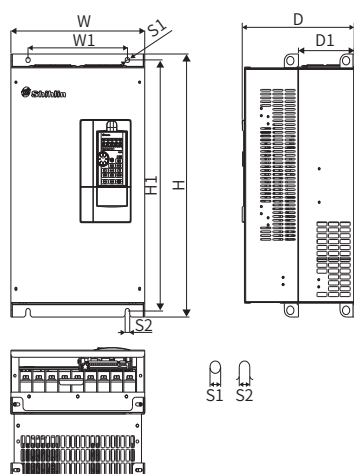
Frame B



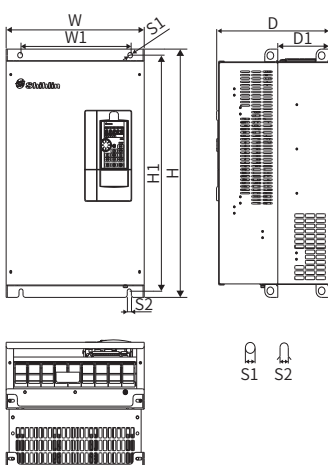
Frame C



Frame D



Frame E



Unit : mm

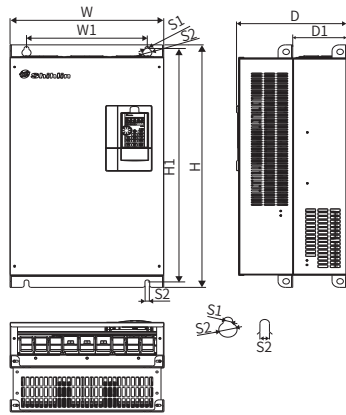
	Model type	W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	D1 (mm)	S1 (mm)	S2 (mm)
Frame A	SF3-043-5.5K/3.7KG	130.0	116.0	250.0	236.0	170.0	51.3	6.2	6.2
	SF3-043-7.5K/5.5KG								
Frame B	SF3-043-11K/7.5KG	190.0	173.0	320.0	303.0	190.0	80.5	8.5	8.5
	SF3-043-15K/11KG								
Frame C	SF3-043-18.5K/15KG	250.0	231.0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

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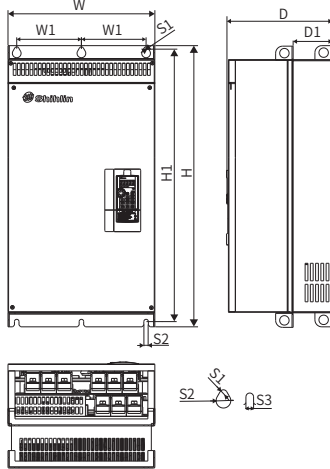
## Fan/Pump Vector Control AC Motor Drive

### Dimensions

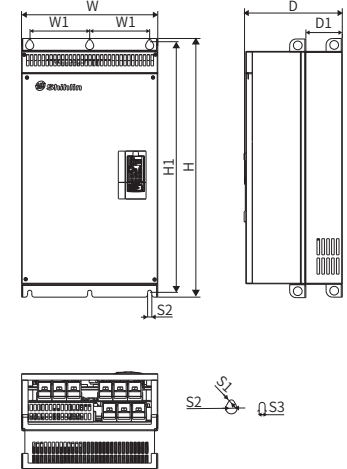
Frame F



Frame G



Frame H

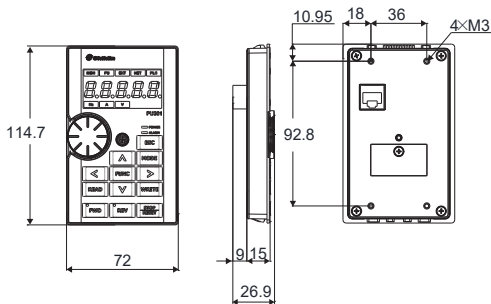


Unit : mm

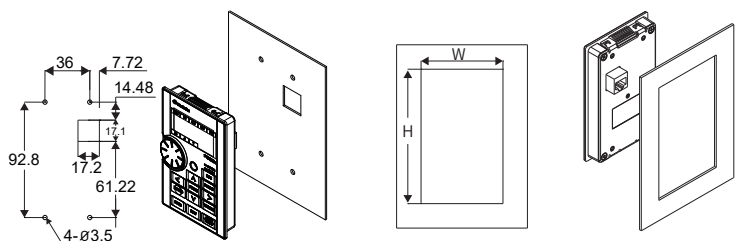
	Model type	W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	D1 (mm)	S1 (mm)	S2 (mm)	S3 (mm)
Frame F	SF3-043-160K/132KG	420.0	330.0	800.0	770.0	300.0	145.5	13.0	25.0	13.0
	SF3-043-185K/160KG									
Frame G	SF3-043-220K/185KG	500.0	180.0	870.0	850.0	360.0	150.0	13.0	25.0	13.0
	SF3-043-250K/220KG									
	SF3-043-280K/250KG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



### Panel Installation



# 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



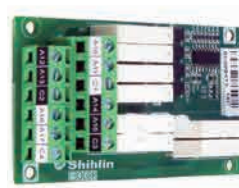
### EB362R

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)





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