



**Shihlin**



**⚠ DANGER** Risk of injury and electric shock.  
⚠ Read the manual and following safety instructions before use.  
⚠ Make sure supply and load (if any) are below maximum rating.  
⚠ Do not open with electricity.  
**CAUTION** Hot surface.  
⚠ Avoid the contact of a non-insulation surface.

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# SF-G Series Inverters

## Product Characteristics

- Dual specification with HD (-G) : 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, and the best power saving control mode.
- SVC sensor-less vector control and FOC+PG closed loop vector control has high torque output at low speed.
- HD (-G) : 150%@1Hz (SVC) / 150%@0Hz (FOC+PG)
- Speed Precision: Under 1%
- Self Learning Function
- Increased Load Capacity to 200%/1S (-G)
- Hardware type circuit protection design
- Prompt execution of ground short circuit/output short circuit protection
- Embedded regenerative brake crystal (22kW or below)
- Strengthened PID function, multiple machine (pump/fan) control function
- Satisfies complex quantitative inputs and loop timer control
- Increased commercial power switch time succession
- RS-485 interface, Selection between Shihlin protocol/standard Modbus protocol
- 0~1A/0~10V feedback input board (optional) , appropriate for equipment modification of injection molding machine for power saving
- Strengthened speed tracking compensation capability
- Automatic motor RPM & direction detection
- Automatic power frequency to variable frequency switching according to succession
- Soft PWM function
- Low noise level/low disturbance operation
- Multiple function pulse output
- Power deficiency protection
- Operation panel convenient to move around

## Electrical Specification

### □ 220V 3 Phase Series



Model SF-020-□□□K/K-G		5.5	7.5/5.5	11/7.5	15/11	18.5/15	22/18.5	30/22	37/30	45/37	55/45
Applicable Motor Capacity	HP	7.5	10/7.5	15/10	20/15	25/20	30/25	40/30	50/40	60/50	70/60
	kW	5.5	7.5/5.5	11/7.5	15/11	18.5/15	22/18.5	30/22	37/30	45/37	55/45
Output	Rated Capacity (kVA)	9.5	12.5/9.5	18.3/12.5	24.7/18.3	28.6/24.7	34.3/28.6	45.7/34.3	55/45.7	65/55	81/65
	Rated Current (A)	25	33/25	49/33	65/49	75/65	90/75	120/90	145/120	170/145	212/170
	Over Load Capability	120% 60 seconds/150% 60 seconds Inverse time limitation characteristic									
	Maximum voltage output	3 phase 200~240V									
Power Source	Rated input AC voltage/frequency	3 phase 200~240V 50Hz / 60Hz									
	Permissible AC voltage fluctuation	3 phase 180~264V 50Hz / 60Hz									
	Permissible frequency fluctuation	±5%									
	Power Capacity kVA	12	17/12	20/17	28/20	34/28	41/34	52/41	65/52	79/65	99/79
Cooling Method		Forced air cool									
Inverter weight kg		5.6	5.6	7.0	8.3	9.0	20	21	37	37	67

### □ 440V 3 Phase Series

Model SF-040-□□□K/K-G		5.5	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	110/90	132/110	160/132
Applicable Motor Capacity	HP	7.5	10/7.5	15/10	20/15	25/20	30/25	40/30	50/40	60/50	75/60	100/75	120/100	150/120	175/150	215/175
	kW	5.5	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	110/90	132/110	160/132
Output	Rated Capacity (kVA)	10	14/10	18/14	25/18	29/25	34/29	46/34	56/46	69/56	84/69	114/84	137/114	168/137	198/168	236/198
	Rated Current (A)	13	18/13	24/18	32/24	38/32	45/38	60/45	73/60	91/73	110/91	150/110	180/150	220/180	260/220	310/260
	Over Load Capability	120% 60 seconds/150% 60 seconds Inverse time limitation characteristic														
	Maximum voltage output	3 phase 380~480V														
Power Source	Rated input AC voltage/frequency	3 phase 380~480V 50Hz / 60Hz														
	Permissible AC voltage fluctuation	3 phase 342~528V 50Hz / 60Hz														
	Permissible frequency fluctuation	±5%														
	Power Capacity kVA	11.5	16/11.5	20/16	27/20	32/27	41/32	52/41	65/52	79/65	100/79	110/100	137/110	165/137	198/165	247/198
Cooling Method		Forced air cool														
Inverter weight kg		5.6	5.6	5.6	5.6	8.3	8.3	25	25	25	37	37	37	67	67	67

Note: The test requirements of rated current output, rated output capacity and inverter power consumption: Carrier frequency (P.72) is the out of factory tacit value, the output voltage of the inverter is 220V/440V, output frequency is 60Hz with surrounding temperature of 40℃.

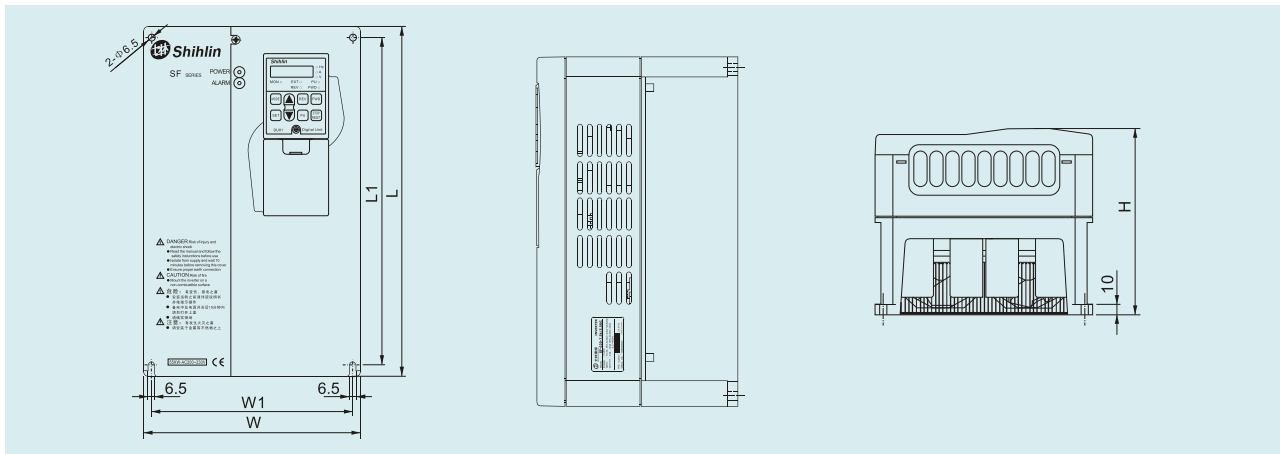
## General Specifications (Inverter Characteristics)

Control Method		SVPWM, V/F control, V/F closed loop control (VF+PG), general-purpose magnetic flux vector control, SVC sensor-less vector control, FOC+PG closed loop vector control		
Output Frequency Range		0.2~400Hz (Set up range of activated frequency is between 0~60Hz)		
Frequency Resolution Setup	Numerical Setup	Frequency setup within 100Hz, resolution is 0.01Hz; Frequency setup above 100Hz, resolution is 0.1Hz.		
	Simulation Setup	When setting DC 0~5V signal, resolution is 1/500; When setting DC 0~10V or 4~20mA signal, resolution is 1/1000.		
Output Frequency Precision	Numerical Setup	+/- 0.01% of maximum target frequency		
	Simulation Setup	+/-0.5% of maximum target frequency		
Voltage/Output Frequency Characteristics		Base electrical voltage (P.19), base frequency (P.3) can be set as required. Constant torque/variable torque mode can be selected		
Activated Torque		150% 1Hz: When sensorless vector control is activated		
Torque Compensation		Torque compensation range 0~30% (P.0), automatic torque and slip frequency compensation		
Acc./Dec. Speed Curve Characteristics		Acceleration and deceleration speed time (P.7, P.8), resolution 0.1/0.01s, switch from P.21 Set up range selection between 0~3600s/0~360s. Able to choose between "acc./dec. speed curve" mode (P.29)		
Brake Function		Direct current braking frequency 0~120Hz (P.10), direct current braking time 0~10s (P.11). Direct current braking voltage 0~30% (P.12). Straight line braking, spin braking function selection (P.71)		
Electrical Current Speed Loss Prevention		Able to set speed loss prevention standard position 0~150% (P.22)		
Target Frequency Setup		Controller setup: DC 0~5V signal, DC 0~10V signal, DC 4~20mA signal, multiple speed position set up, communication set up		
PID Control		Refer to variable instructions in Chapter 4, P.170~P.182		
Multi-functional Control Terminal		Machine activation (STF, STR), Secondary function (RT), 16 speed control (RH, RM, RL, REX), External over heat current relay (OH), Reset (RES) (can be set by the customer (P.80~P.84, P.86, P.126, P.126~P.128))		
Output Terminal	Multi-functional open collector output	SU, SE	P.40	Inverter running (RUN), output Frequency detection (FU), Frequency output achieved (SU), Load Exceeding alarm (OL), Zero current output inspection (OMD), Alarm inspection (ALARM), Sectional inspection output signal (PO1), Periodic inspection output signal (PO2), Temporary stop output signal (PO3)
		RUN, SE	P.129	
		FU/10X, SE	P.130	
	Multi-functional relay output	A, B, C	P.85	
	Analog signal output	AM, 5	Multi-functional DC (0~10V) output: output frequency, current (P.54)	
Pulse output	FM, SD	Output impulse of 0~2300Hz		
Controller	Operating Condition Monitoring		Output frequency monitoring, output current monitoring, output voltage monitoring, alarm record (12 sets maximum)	
	LED Indication (8)		Frequency monitoring indication, voltage monitoring indication, current monitoring indication, motor clockwise turn indication, motor counter-clock wise turn indication, mode switching, PU control indication, external terminal control indication	
Communication Function		RS-485 communication, able to choose between Shihlin/Modbus communication protocol		
Protective Function/ Alarm Function		Output short circuit protection, through current protection, P-N through voltage protection, low voltage protection, over heat protection (P.9), IGBT over heat protection, communication irregularity protection.		
Environment	Surrounding Temperature		-10℃~+40℃ (non-freezing)	
	Surrounding Moisture		90% Rh and under (non-condensing)	
	Storage Temperature		-20℃~+65℃	
	Surrounding Environment		Indoor, no corrosive vapor, no flammable vapor or powder	
	Altitude, Vibration		Altitude under 1000 meter, vibration under 5.9m/s <sup>2</sup> (0.6G)	
	Prevention Level		IP20	
	Environment Pollution Level		2	
	Protection Level		Class I	
International Certification		 		

# SF-G Series Inverters

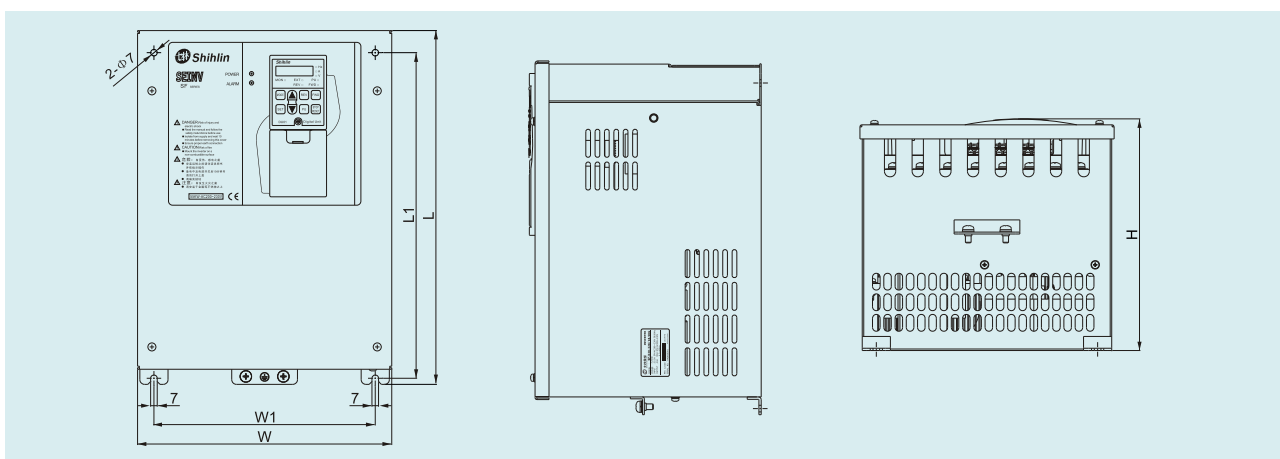
## External Size

### ■ Frame A/B



Inverter Type	Frame	L (mm)	L1 (mm)	W (mm)	W1 (mm)	H (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						
SF040-11K/7.5K-G						
SF040-15K/11K-G						
SF020-11K/7.5K-G	B	350	330	230	214	195
SF020-15K/11K-G						
SF020-18.5K/15K-G						
SF040-18.5K/15K-G						
SF040-22K/18.5K-G						

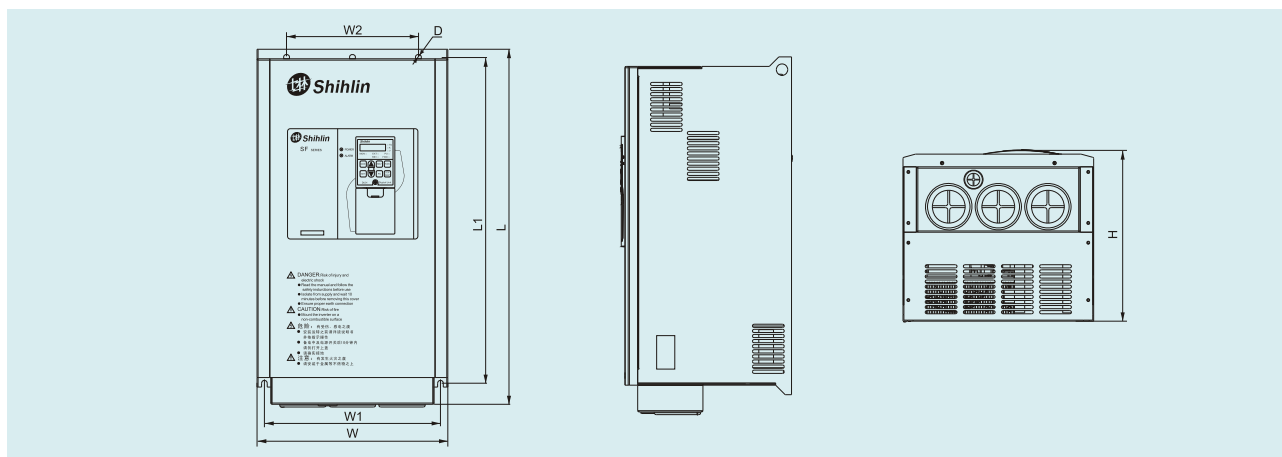
### ■ Frame C



Inverter Type	Frame	L (mm)	L1 (mm)	W (mm)	W1 (mm)	H (mm)
SF020-22K/18.5K-G	C	379	348	271	236	248
SF020-30K/22K-G						

# SF-G Series Inverters

■ Frame D/E/F

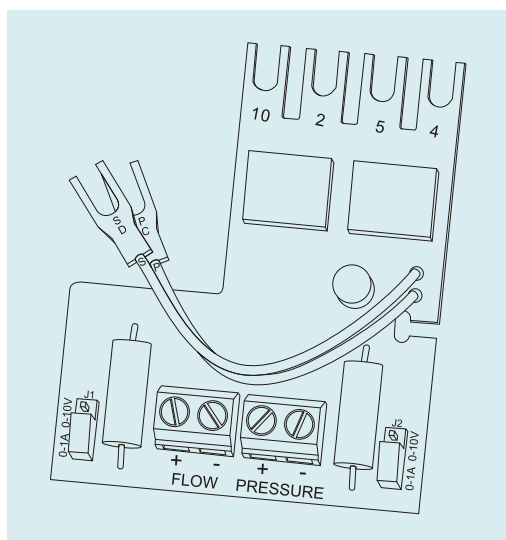


Inverter Type	Frame	L (mm)	L1 (mm)	W (mm)	W1 (mm)	W2 (mm)	H (mm)	D (mm)
SF040-30K/22K-G	D	561	510	300	277	220	270	9
SF040-37K/30K-G								
SF040-45K/37K-G								
SF020-37K/30K-G	E	595	566	370	336	336	286	13
SF020-45K/37K-G								
SF040-55K/45K-G								
SF040-75K/55K-G								
SF040-90K/75K-G	F	850	821	425	381	381	286	13
SF020-55K/45K-G								
SF040-110K/90K-G								
SF040-132K/110K-G								
SF040-160K/132K-G								

## Available Accessories

**ONE.** Expansion Board (Please set the parameters according to the expansion board to be connected and corresponding functions)

### 1. PM01 Expansion Card for Injection Molding Machine



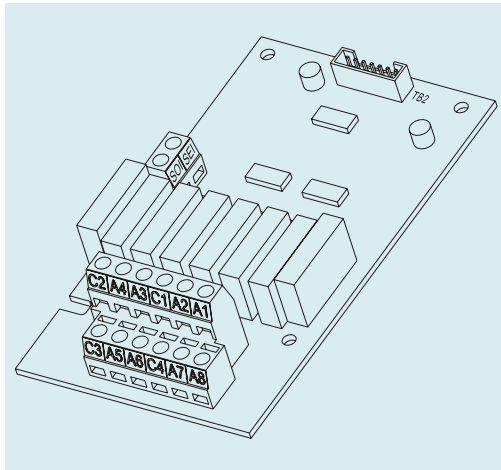
Terminal Type	Terminal Label	Terminal Function
Analog Signal Input	FLOW+	Flow signal +
	FLOW-	Flow signal -
	J1	Selection of flow signal input, when the short circuit board is plugged in on the top 0~10 side, the flow signals are 0~10V volt input signal. When the short circuit board is plugged in on the bottom 0~1A side, flow signals are 0~1A current signal input terminal.
	PRESSURE+	Pressure signal +
	PRESSURE-	Pressure signal -
	J2	Selection of pressure signal input, when the short circuit board is plugged in on the top 0~10 side, the pressure signals are 0~10V volt input signal. When the short circuit board is plugged in on the bottom 0~1A side, flow signals are 0~1A current signal input terminal.

Remark: Please refer to the instruction manual of PM01 Expansion card for injection molding machine for specific user instruction.

### Ordering Code Instruction:

NO.	Model Number	Product Name	Ordering Code
1	PM01	PM01 Expansion Card for Injection Molding Machine	SNKSFPM01

## 2. Fan Water Pump Multiple Control Card



Terminal Label	Terminal Name	Descriptions
A1~A8	Relay output terminal	Used to activate external magnetic switch or relay, A1~A8 corresponds to RY1~RY8 respectively
C1~C4	Common output terminal from relay	Common output terminal from relay, C1 is the common terminal for A1, A2, C2 is for A3, A4, C3 is for A5, A6, C4 is for A7, A8.
SOI, SEI	Expansion terminal	This terminal connects to the SU, SE on the inverter (Set up P.40 = 12), which controls the RY8 signal

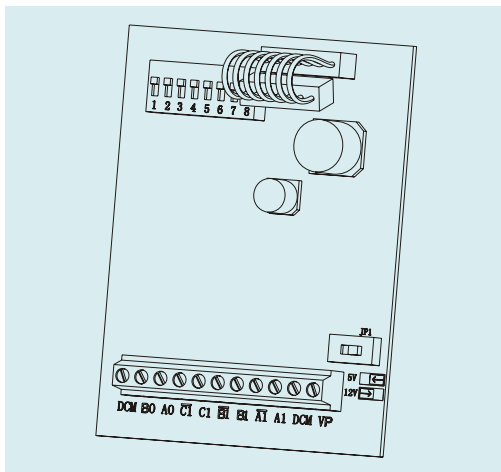
Remark:

- 1.Remark: Please refer to the instruction manual of Fan Water Pump Control Card for specific user instruction
- 2.When connecting to more than 2 machines, ensure to short circuit the corresponding common terminal

### Ordering Code Instruction:

NO.	Model Number	Product Name	Ordering Code
1	WS01	Fan Water Pump Multiple Expansion Card	SNKSFWS01

## 3. PG01 Expansion Card



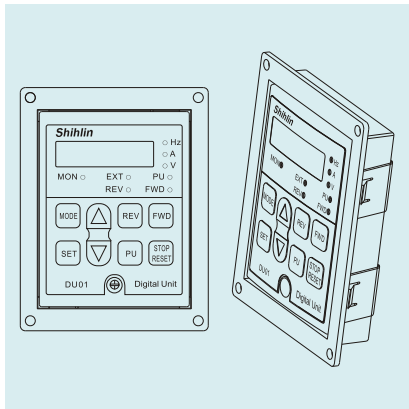
Terminal Name	Instructions
VP	Encoder power source (Capable of switching from 12 V or 5 V via JP1) Output voltage: +12 +/- 5% 200mA +5V +/-2% 200mA
DCM	Power source and signal common location (the DCM on the left side is the frequency division signal output location, please be aware when making connection)
A1, A1̄ B1, B1̄ C1, C1̄	Encoder signal input terminal
A0, B0	Frequency division signal output terminal

### Ordering Code Instruction:

NO.	Model Number	Product Name	Ordering Code
1	PG01	PG01 expansion card	SNKPG01

## SECOND. Operation panel, Fixture, Digital Cable

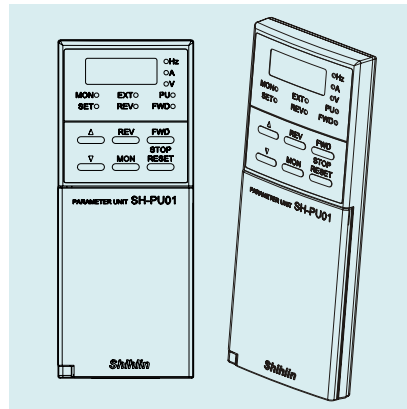
1. DU01S: DU01 Operation panel Set (Operation panel (DU01) and Fixture (GMB01))



### Ordering Code Instruction:

Model Number	Product Name	Ordering Code
DU01S	DU01 Operation panel Set	SNKDU01S

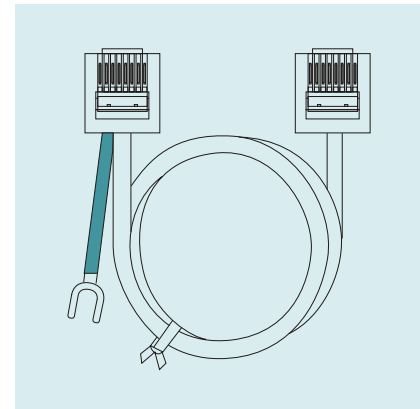
2. PU01 Parameter Unit



### Ordering Code Instruction:

Model Number	Product Name	Ordering Code
SH-PU01	PU01 Parameter Unit	SNKSHPU01

3. CBL: Digital Cable (Used with above controllers)



### Ordering Code Instruction:

Model Number	Product Name	Ordering Code
CBL1R5GT	Digital cable (length:1.5M)	SNKCBL1R5GT
CBL03GT	Digital cable (length:3M)	SNKCBL03GT
CBL05GT	Digital cable (length:5M)	SNKCBL05GT