
SVG Reactive Compensation Device

User Manual

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Our company provides customers with a full range of technical support, users can contact the nearest company office or customer service center, or directly contact the company headquarters.

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Special Statement

● Personal Safety

1. The installation of this product must be carried out by the professional engineer of the manufacturer or the manufacturer's authorized agent, and the debugging must be carried out by the engineer designated by the manufacturer, otherwise it may lead to product failure or endanger personal safety.
2. Before installing and debugging this product, be sure to read this product manual and safety matters in detail, otherwise it may lead to product failure or endanger personal safety.
3. This product should not be used as a power supply for any life support equipment.

● Equipment Safety

1. If stored or left unused for a long time, this product must be placed in a dry, clean and specified temperature range.
2. When the distortion rate of grid voltage is higher than 15%, the user needs to put forward special instructions in order to propose different solutions.
3. This product should be used in an appropriate working environment (see the environmental requirements section of this product manual for details).

It is forbidden to use this product in the following work environments:

- High temperature, low temperature or humid places that exceed the technical specifications of this product'.
 - Places where there is vibration and are susceptible to collision.
 - Close to heat sources or places with strong electromagnetic field interference.
- Places with corrosive gases and dusts.

● Statement of Responsibility

Our company is not responsible for defects or malfunctions caused by the following reasons:

- Exceed the scope of use and working environment specified in the product
- Unauthorized modification or maintenance, wrong installation, improper operation
- Force majeure
- Other matters that violate the provisions of this product manual

This manual covers the following products

	product	
SVG Standard static var generator - rail mount type	SVG 35KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 35KVar(400Vac) modular SVG-Rail mount-standard type
	SVG 50KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 50KVar(400Vac) modular SVG-Rail mount-standard type
	SVG 70KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 70KVar(400Vac) modular SVG-Rail mount-standard type
	SVG 100KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 100KVar(400Vac) modular SVG-Rail mount-standard type
	SVG 133KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 133KVar(400Vac) modular SVG-Rail mount-standard type
	SVG 150KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 150KVar(400Vac) modular SVG-Rail mount-standard type
	SVG 480V 80KVar	480Vac Three-phase four-wire 80KVar modular SVG-Rail mount-standard type
	SVG 690V 120KVar	690Vac Three-phase three-wire 120KVar modular SVG-Rail mount-standard type
	SVG 800V 120KVar	800Vac Three-phase three-wire 120KVar modular SVG-Rail mount-standard type
SVG Standard static var generator - wall mount type	SVG 35KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 35KVar(400Vac) modular SVG-Wall mount-standard type
	SVG 50KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 50KVar(400Vac) modular SVG-Wall mount-standard type
	SVG 70KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 70KVar(400Vac) modular SVG-Wall mount-standard type
	SVG 100KVar	208/400/480Vac Three-phase four-wire/three-phase three-wire 100KVar(400Vac) modular SVG-Wall mount-standard type

	SVG 133KVar	208/400/480Vac Three-phase four-wire/there-phase three-wire 133KVar(400Vac) modular SVG-Wall mount-standard type
	SVG 150KVar	208/400/480Vac Three-phase four-wire/there-phase three-wire 150KVar(400Vac) modular SVG-Wall mount-standard type
	SVG 690V 120KVar	690Vac Three-phase three-wire 120KVar modular SVG-Wall mount-standard type
	SVG 800V 120KVar	800Vac Three-phase three-wire 120KVar modular SVG-Wall mount-standard type

Table of Contents

I	Overview	1
	1.1 Security	1
	1.2 Precautions for Use	2
	1.3 Scrapping Precautions	2
II	Mechanical Installation	3
	2.1 Precautions	3
	2.2 Environmental Characteristics	3
	2.3 Mechanical Characteristics	5
	2.4 Electrical Characteristics	6
	2.5 Installation Drawing	7
	2.5.1 Operating Space	7
	2.5.2 Structural Dimensions	7
	2.5.3 Mechanical Installation	11
III	Electrical Installation	12
	3.1 Power Cable Routing	12
	3.1.1 Input Current and Cable Recommendation	12
	3.1.2 Power Cable Connection	13
	3.2 Signal Cables	14
	3.3 Parallel Dial Instructions	15
	3.4 Stand-alone Power Distribution	16
	3.5 Parallel Power Distribution	17
IV	Power-on Operation Instructions	20
	4.1 Turning On and Off SVG Devices	20
	4.1.1 Boot Steps	20
	4.1.2 Shutdown Steps	20
	4.1.3 Manual/Automatic Start	20
	4.2 Curtain Display and Settings	21
	4.2.1 The 4.3 inch LCD display and setting	21
	4.2.2 The 7 inch LCD Display and Setting	23
V	Daily Maintenance	25
	5.1 Safety Precautions	25
	5.2 Routine Inspections	25
	5.3 Alarm List	26
	Appendix ONE SVG Equipment Warranty Certificate	28
	Appendix TWO Notice to Users	29

I Overview

1.1 Security

This manual uses the following safety signs, so be sure to follow them!



Improper use can cause dangerous situations and is highly likely to lead to personal injury or death!



1. It is strictly forbidden to place combustibles near SVG equipment, otherwise there is a risk of fire;
2. It is strictly forbidden to install SVG equipment in an atmosphere containing explosive gases, otherwise there is a risk of explosion;
3. The wiring operation must be carried out by a professionally qualified person, otherwise there is a risk of electric shock;
4. Confirm that the input power supply is completely disconnected before the wiring operation can be carried out, otherwise there is a risk of electric shock; After powering on, it is forbidden to touch other parts of the SVG equipment except for the operation panel;
5. The grounding terminal of SVG equipment must be reliably grounded, and poor grounding can easily lead to abnormal operation and the risk of electric shock;
6. Maintenance operations should be carried out 15 minutes after disconnecting the power supply, otherwise there is a risk of electric shock;
7. The exposed part of the cable nose in the main circuit wiring must be wrapped with insulating tape to avoid potential safety hazards;
8. When handling, do not pull the SVG equipment through the front panel to avoid personal injury or object damage;
9. Do not drop screws, gaskets and metal foreign objects into SVG equipment, otherwise there is a risk of fire and damage to the device;
10. If the SVG equipment is damaged or the parts are incomplete, please do not install and operate, otherwise there is a risk of fire and personal injury;
11. The main circuit terminals must be securely connected to the conductor nose.

1.2 Precautions for Use

Incorrect Installation

When the SVG module is incorrectly installed and applied, if the output transformer is reversed, it will increase the harmonic current and reactive current on the power system, which may endanger the power system and other connected modules.

Input Voltage Value Beyond the Limit

Use the SVG device within the rated voltage range of the SVG device. In special cases, please use a booster or step-down device.

Lightning Impulse Protection

SVG equipment is equipped with lightning overcurrent protection device, which has a certain self-protection ability for inductive lightning after being correctly wired according to the manual.

1.3 Scrapping Precautions

When releasing SVG equipment, please note that:

- (1) The electrolytic capacitor on the printed board may explode during incineration;
- (2) Toxic gases will be produced when plastic parts are incinerated;
- (3) Dispose of it as industrial waste

II Mechanical Installation

2.1 Precautions

  Warning: Professional installation required
1.The SVG can be powered on only after the approval of the commissioning engineer. 2.The installation of the SVG shall be carried out by a qualified engineer in accordance with the instructions in this chapter.
 Note: Three-phase five-wire input power supply required (three-phase three-wire SVG is not connected to N wire)
The SVG must be connected to a three-phase five-wire (A, B, C, N, PE) TN AC power distribution system (IEC60364-3).
  Warning
1. In order to ensure personal safety, the installation tools operated with electricity must be insulated with insulating gloves. 

2.2 Environmental Characteristics

The SVG module is a kind of power electronics module with complex control device. **The installation environment may affect its reliability and service life.** A cooling fan inside the SVG module is installed to remove the heat generated by the operation of the work. Therefore, please do not block air vents during installation. Please do not install SVG modules in dusty, hot, wet, corrosive or vibrating environments.

Table 2-1 Environmental characteristics

Environmental Characteristics	unit	Rated Capacity(KVar)					
	208Vac Power Level/KVar	18KVar	27KVar	36KVar	54KVar	72KVar	78KVar
	400Vac Power Level/KVar	35KVar	50KVar	70KVar	100KVar	133KVar	150KVar
	480Vac Power Level/KVar	40KVar	60KVar	80KVar	120KVar	160KVar	180Kvar
Noise within 1m (front)	dB	<60dB					65
altitude	m	≤1500, 1% derating per 100m in the range of 1500m~3000m					
relative	%RH	0~95, No condensation					

humidity		
Operating temperature	℃	-10~55℃ When the ambient temperature is -10~40℃, and the system has no output power derating; When the ambient temperature is 40~45℃, the system output power is derated to 90%; When the ambient temperature is 45~50℃, the system output is derated to 80%;When the ambient temperature is over 55℃,the system reports the Ambient Temperature Overtemperature fault,the fault is rectified when the ambient temperature drops to 50℃.
SVG storage and transport temperature	℃	-20~+70
Overvoltage rating		Overvoltage Level II.

Environmental Characteristics	unit	480Vac/690Vac/800Vac Rated Capacity(KVar)		
		480V 80KVar	690V 120KVar	800V 120KVar
Noise within 1m (front)	dB	<60dB		
altitude	m	≤1500, 1% derating per 100m in the range of 1500m~3000m		
relative humidity	%RH	0~95, No condensation		
Operating temperature	℃	-10~55℃ When the ambient temperature is -10~40℃, and the system has no output power derating; When the ambient temperature is 40~45℃, the system output power is derated to 90%; When the ambient temperature is 45~50℃, the system output is derated to 80%;When the ambient temperature is over 55℃,the system reports the Ambient Temperature Overtemperature fault,the fault is rectified when the ambient temperature drops to 50℃.		
SVG storage and transport temperature	℃	-20~+70		
Overvoltage rating		Overvoltage Level II.		

2.3 Mechanical Characteristics

Table 2-2 Mechanical characteristics

Mechanical Characteristic	unit	Rated Capacity(KVar)					
	208Vac Power Level/KVar	18KVar	27KVar	36KVar	54KVar	72KVar	78KVar
	400Vac Power Level/KVar	35KVar	50KVar	70KVar	100KVar	133KVar	150KVar
	480Vac Power Level/KVar	40KVar	60KVar	80KVar	120KVar	160KVar	180Kvar
Mechanical dimensions(W×D×H)	mm	480×570×175 (No packaging material); 612×712×270 (With packaging materials)					
Weight (maximum)	kg	22.5	24.5	26.5	34	38	40
color	N/A	Black fine grain (customizable)					
Degree of protection,IEC (60529)	N/A	IP20(Front door opens or closes, back door closes)					

project	unit	480Vac/690Vac/800Vac Rated Capacity(KVar)		
		480V 80KVar	690V 120KVar	800V 120KVar
Mechanical dimensions(W×D×H)	mm	480×600×175 (No packaging material); 612×712×270 (With packaging materials)		
Weight (maximum)	kg	40		
color	N/A	Black fine grain (customizable)		
Degree of protection,IEC (60529)	N/A	IP20(Front door opens or closes, back door closes)		

2.4 Electrical Characteristics

Table 2-3 Electrical characteristics

Electrical Characteristic	unit	Rated Capacity(KVar)					
	208Vac Power Level/KVar	18KVar	27KVar	36KVar	54KVar	72KVar	78 KVar
	400Vac Power Level/KVar	35KVar	50KVar	70KVar	100KVar	133KVar	150KVar
	480Vac Power Level/KVar	40KVar	60KVar	80KVar	120KVar	160KVar	180Kvar
Rated AC voltage	Vac	208/380/400, Three-phase four-wire/three-phase three-wire; 480, three-phase three-wire					
Current rating	A	50	75	100	150	200	215
Rated neutral current	A	50	75	100	150	200	215
frequency	Hz	50/60					
Voltage range	%Vac	Upper limit: +15 Lower limit: -20					
Frequency range	%	±10					
loss	%	<2					
CT ratio range		50:5~10000:5					

project	unit	480Vac/690Vac/800Vac Rated Capacity(KVar)		
		480V 80KVar	690V 120KVar	800V 120KVar
Rated AC voltage	Vac	480, three-phase four-wire; 690/800, three-phase three-wire		
Current rating	A	100A		85A
frequency	A	50/60		
Voltage range	Hz	±10		
Frequency range	%Vac	Upper limit: +10 Lower limit: -20		
loss	%	<2.6		
CT ratio range	%	50:5~10000:5		

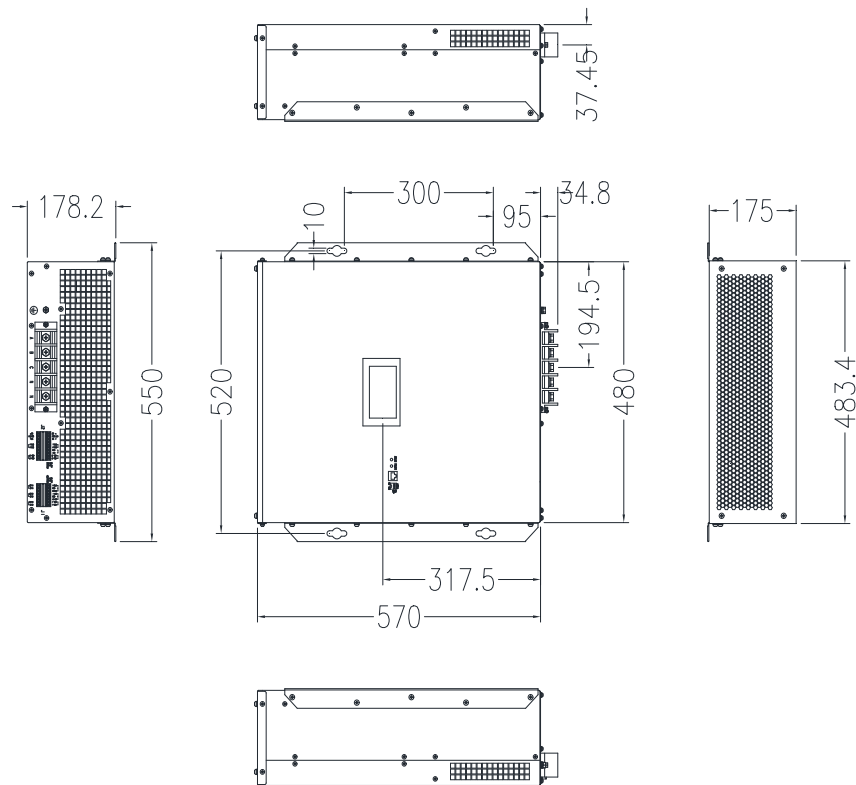


Figure 2-2 35KVar-133KVar SVG Standard type - Wall type

Figures 2-3 to 2-4 respectively show the schematic diagrams of various structural dimensions of 150KVar SVG modules.

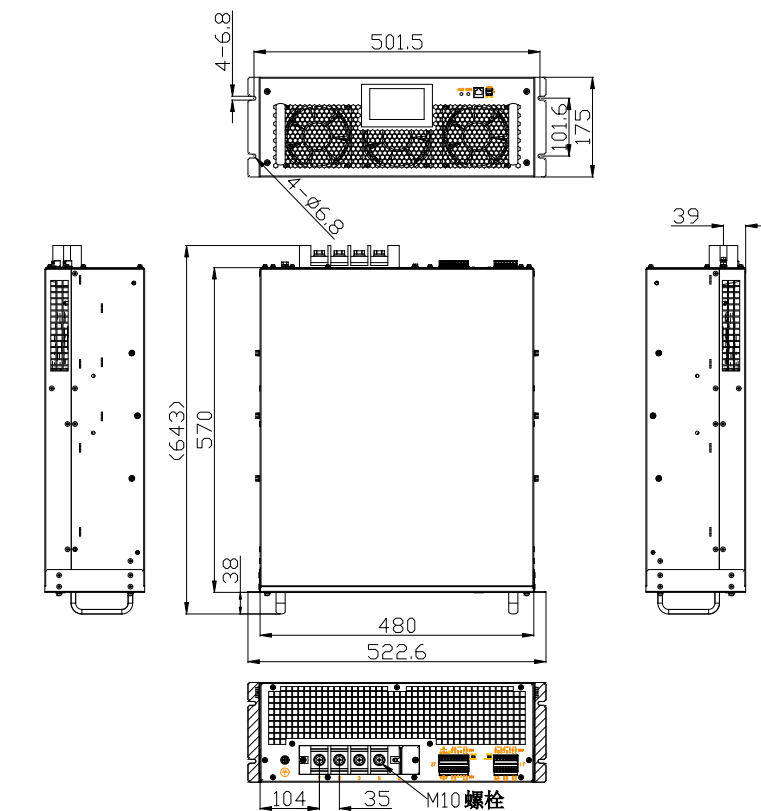


Figure 2-3 150KVar SVG standard type - Rail type

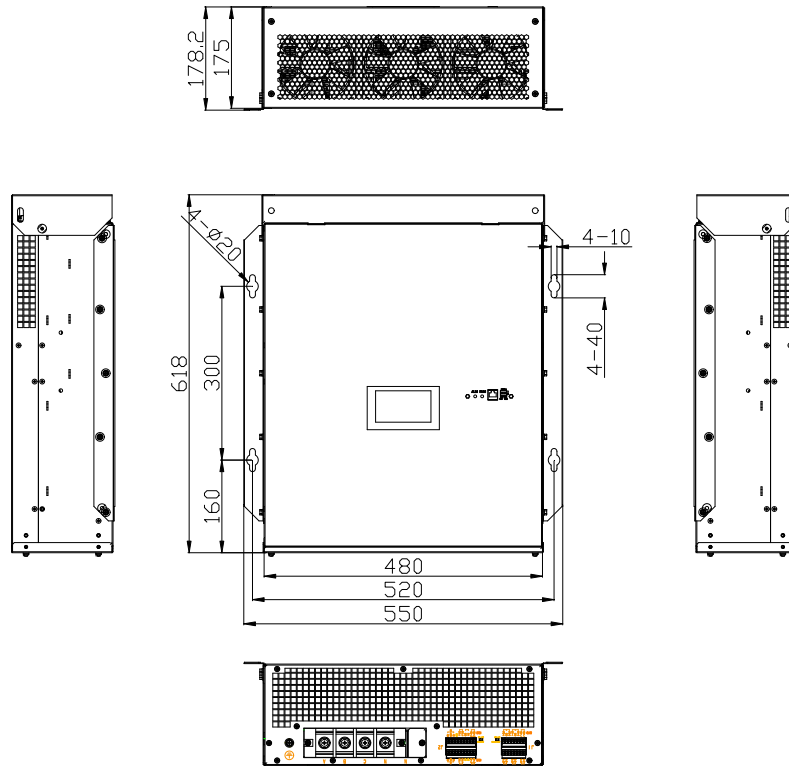


Figure 2-4 150KVar SVG Standard type - Wall type

Figures 2-5 to 2-7 respectively show the schematic diagrams of various structural dimensions of 480Vac 80Kar、690Vac/800Vac 120KVar SVG modules.

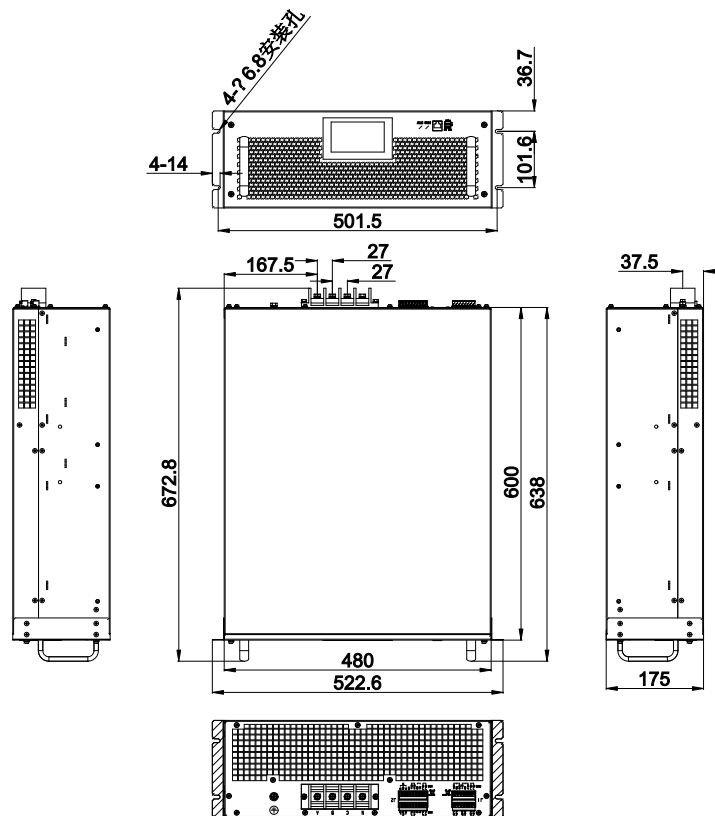


Figure 2-5 480Vac 80Kar SVG standard type - Rail type

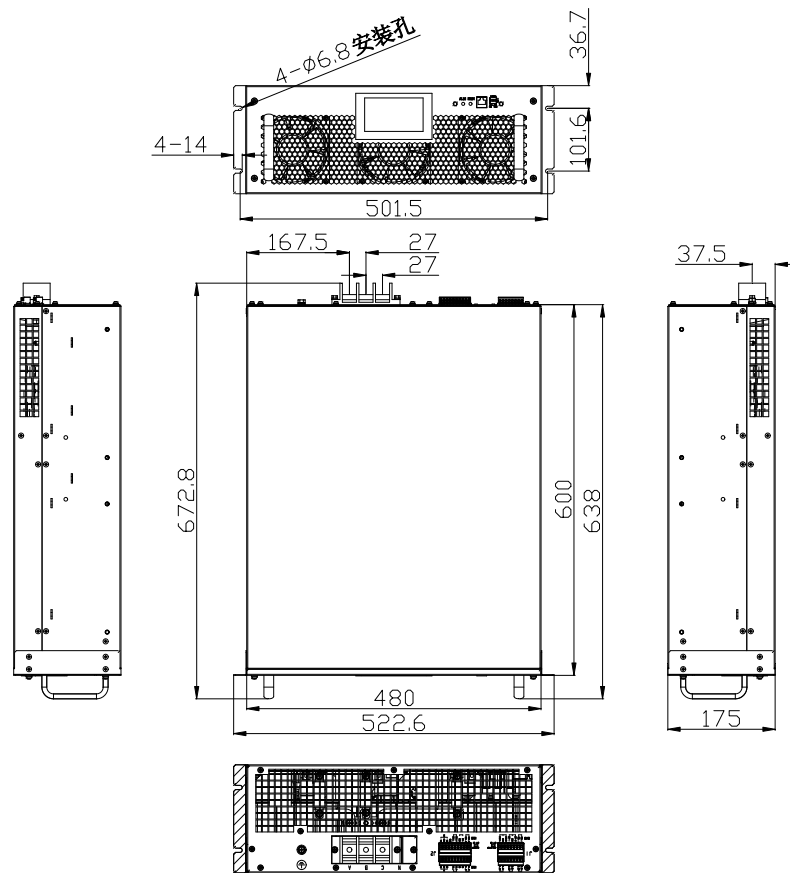


Figure 2-6 690Vac/800Vac 120Kar SVG standard type - Rail type

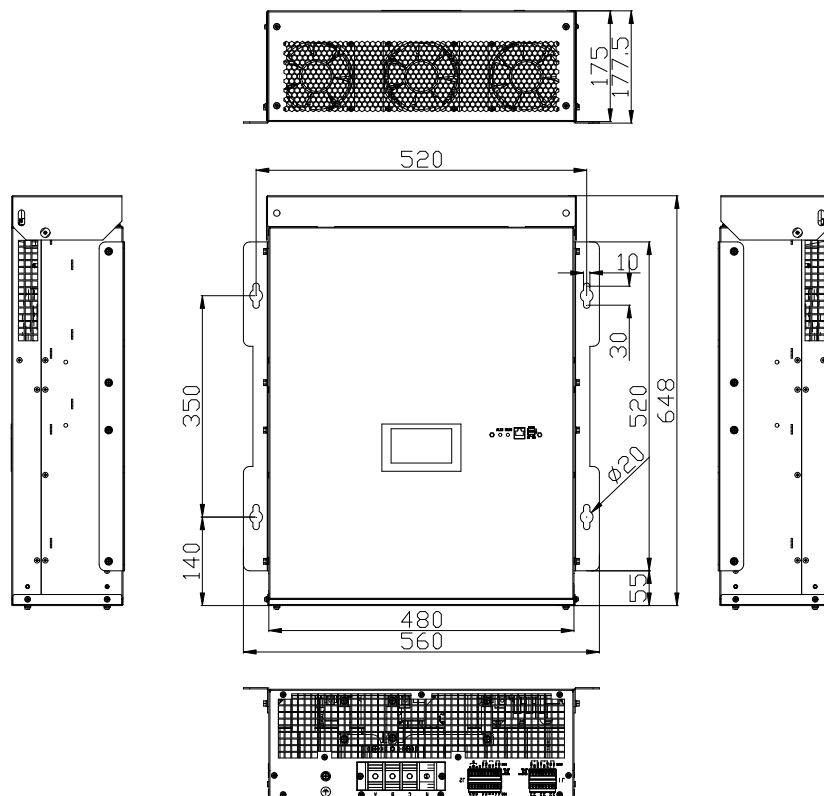


Figure 2-7 690Vac/800Vac 120Kar SVG Standard type - Wall type

2.5.3 Mechanical Installation

When installing a universal Rail type SVG, it is fixed to the cabinet mounting column through the front and two side mounting ears, as shown in Figure 2-7. Wall-mounted models need to be fixed to a hard wall or hung in a cabinet by means of upper and lower edges.

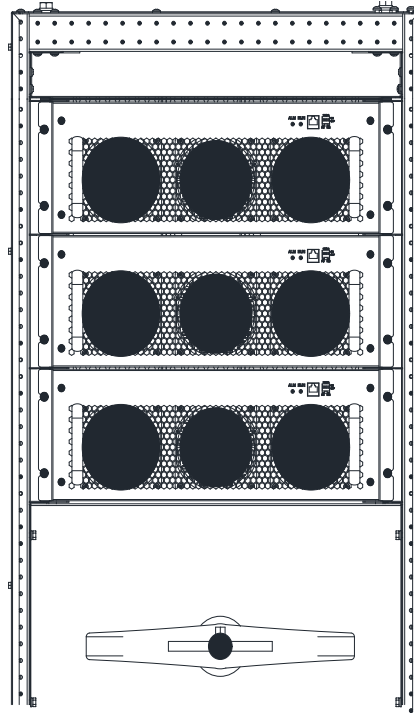


Figure 2-7 Schematic diagram of the rail-mounted mode

III Electrical Installation

3.1 Power Cable Routing

3.1.1 Input Current and Cable Recommendation

The power cable selected by the user must meet the current and voltage values given in Table 3-1.

Table 3-1 400Vac SVG cable recommendations

Project	unit	Rated Capacity(KVar)					
	208Vac Power Level/KVar	18KVar	27KVar	36KVar	54KVar	72KVar	78KVar
	400Vac Power Level/KVar	35KVar	50KVar	70KVar	100KVar	133KVar	150KVar
	480Vac Power Level/KVar	40KVar	60KVar	80KVar	120KVar	160KVar	180Kvar
Recommen-ded phase cable (mm ²)		16	25	35	50	70	95
Recommen-ded neutral cable (mm ²)		16	25	35	50	70	95
Recommen-ded PE wire and cable (mm ²)		16	16	16	25	35	50
Power terminal screw		M6	M6	M6	M8	M8	M10
Suggested tightening torque (N•m)		6	6	6	15	15	20

Project	Rated Capacity(KVar)		
	480V 80KVar	690V 120KVar	800V 120KVar
Recommen-ded phase cable (mm ²)	35		
Recommen-ded PE wire and cable (mm ²)	16		
Power terminal screw	M6		
Suggested tightening torque (N•m)	6		

NOTE

The connection of the ground wire must be in the shortest wiring path.

3.1.2 Power Cable Connection

Three-phase three-wire and three-phase four-wire primary cable wiring A, B, C terminal wiring method is the same, four-wire system is connected to one more N terminal.

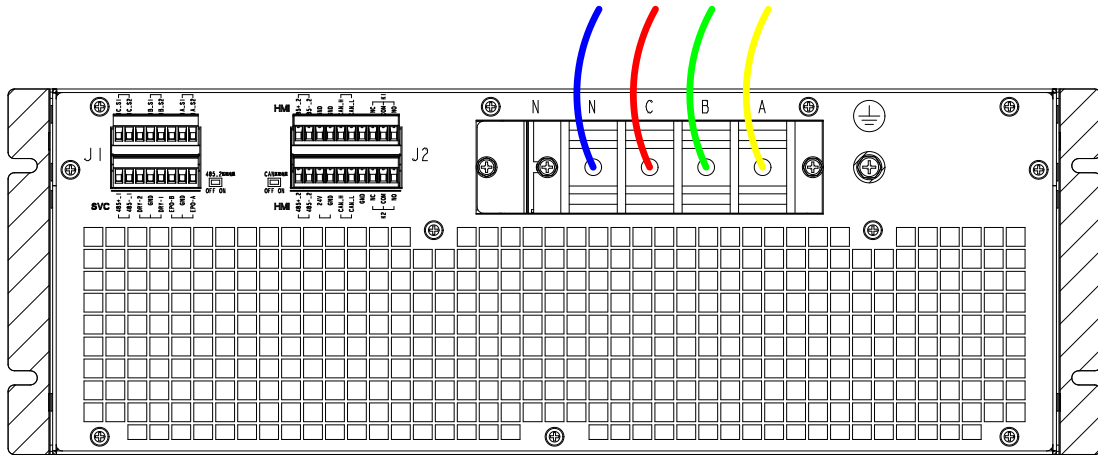


Figure 3-1 Terminal block (rear view)

1. Connect the input ground wire to the input ground terminal. Note: The ground connection must comply with local and national regulations.
2. When routing the AC input cable, try to avoid the air outlet of the module, and ensure that there is no obstruction within 20cm of the air outlet of the module.
3. The power cable of the three-phase three wire system model should not be connected to the N wire during installation.

Table 3-2 SVG power terminal definitions

Terminal symbol	Description of the terminal function
A	A phase input
B	B-phase input
C	C-phase input
N	Three-phase four-wire center line input
PE	Safety Ground Terminal (Enclosure)

3.2 Signal Cables

The definition of signal ports is shown in the following figure, and the description of each signal is shown in the following table.

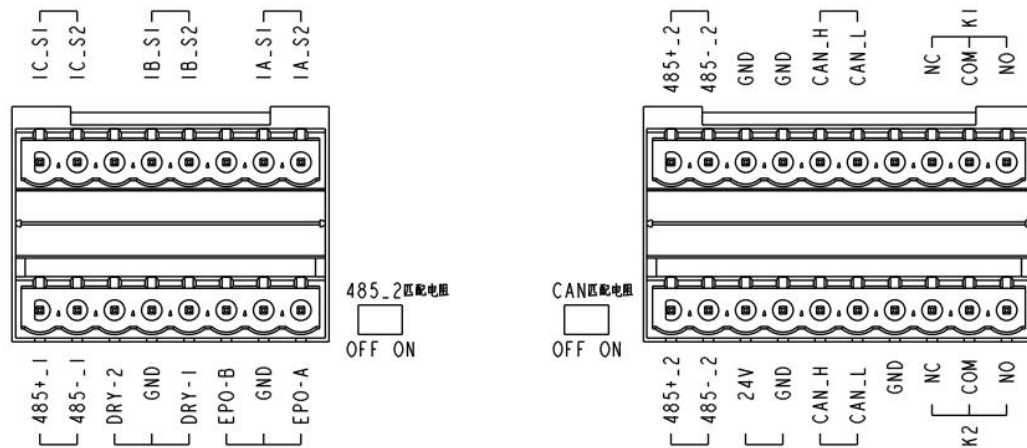


Figure 3-2 contact interfaces J1 and J2 are described

Table 3-3 contact interfaces J1 and J2 are described

Pin	J1	meaning	Pin	J2	meaning
	IA_S1	External input A-phase CT	K1	NO	K1- Operation indicator light, K2- Fault indicator light NO(normal open) NC(normal close) (COM,relay common terminal), Output dry contact
	IA_S2			COM	
	IB_S1	External input B-phase CT		NC	
	IB_S2		NO		
	IC_S1	External input C-phase CT	K2	COM	
	IC_S2			NC	
	EPO-A	EPO input signal,effective upon any short circuit (EPO, emergency stop), Input Wet Contact		CAN_H	CAN communication
	GND			CAN_L	
	EPO-B			24V	24V power supply
	DRY-1	Input signal for dry nodes,(DRY-1, power on)(DRY-2, shutdown), Input Wet Contact		GND	
	GND			485+_2	communication 485_2 signal
	DRY-2			485-_2	
	485-_1	485_1 Capacitive communication interface		485_2 Matching resistance	The communication matching resistor is dialed to ON when in use
	485+_1			CAN Matching resistors	

Remarks: Explanation of instructions

Input Wet Contact: A self-powered signal source that requires an external input signal.

Output Wet contact: Comes with a power supply, and directly outputs the preset voltage when closed. No external power supply is required.

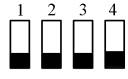
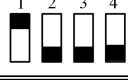
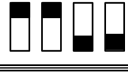
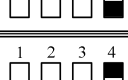
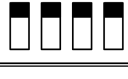
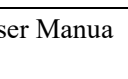
Output dry contact: It is a passive switch contact, which only provides physical on-off function, and does not have a power supply. If the operation indicator is lit and the fault indicator is lit, it needs to be driven by an external power supply.

3.3 Parallel Dial Instructions

The maximum number of allowed parallel SVG modules is 16, and the 4-bit DIP follows the binary 8421 rule, assigning an ID number to each SVG module. Among them, the first DIP is the lowest bit, and the fourth DIP is the highest bit.

Warning: When distributing power in parallel, please do not set the same ID number for multiple modules, otherwise communication may be abnormal.

Table 3-4 Mapping between module ID number and DIP code combination

Module ID	DIP combinations	instance
1	0000	 ON OFF
2	0001	 ON OFF
3	0010	 ON OFF
4	0011	 ON OFF
5	0100	 ON OFF
6	0101	 ON OFF
7	0110	 ON OFF
8	0111	 ON OFF
9	1000	 ON OFF
10	1001	 ON OFF
11	1010	 ON OFF
12	1011	 ON OFF
13	1100	 ON OFF
14	1101	 ON OFF
15	1110	 ON OFF
16	1111	 ON OFF

3.4 Stand-alone Power Distribution

When distributing power individually, the connection methods of three-phase power lines, N lines, PE lines, and external CT lines are shown in Figures 3-3 and 3-4.

When wiring CT, the CT output terminals S1 and S2 are respectively connected to the corresponding phase S1 and S2 of the SVG external CT terminal. For example, when wiring A-phase CT, the CT output terminals S1 and S2 are respectively connected to the S1 and S2 of the SVG external CT terminal; And the P2 end of the CT faces the load side, while the P1 end faces the power supply side.

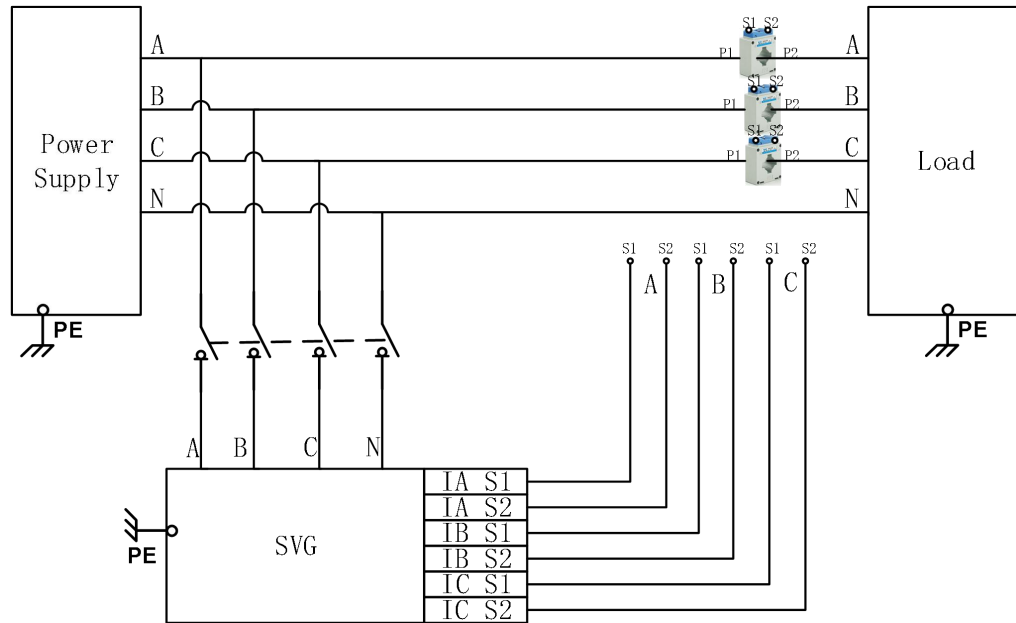


Figure 3-3 Schematic diagram of power distribution wiring of a single machine (load side)

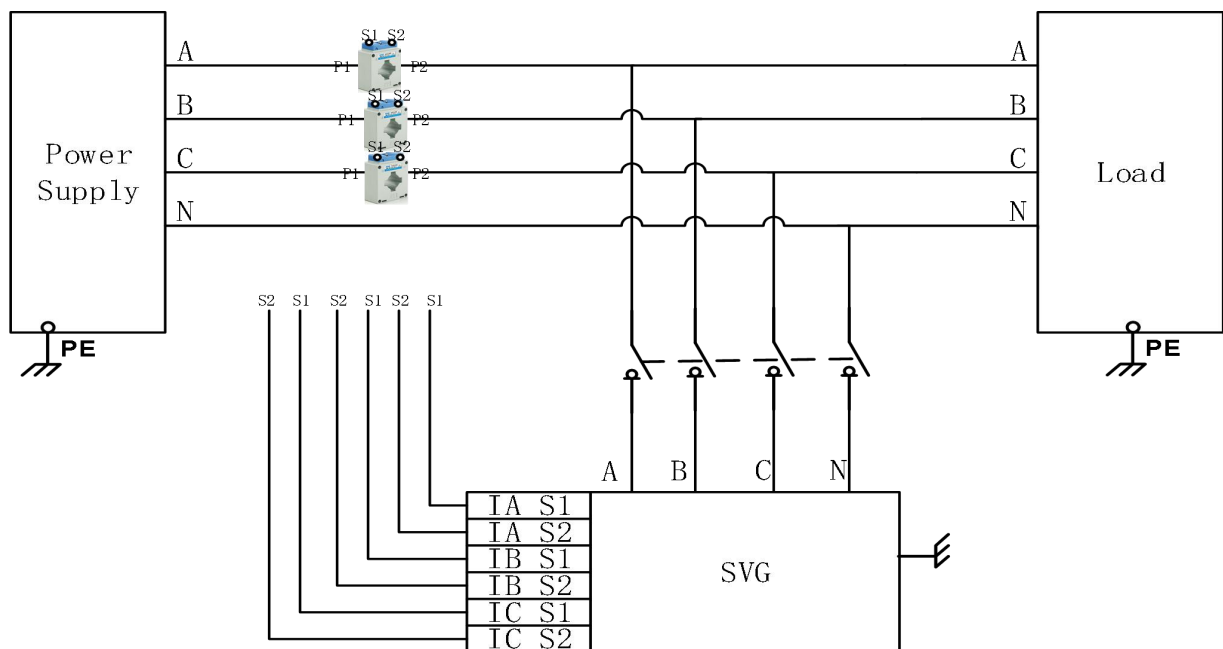


Figure 3-4 Schematic diagram of single-unit power distribution wiring (power grid side)

3.5 Parallel Power Distribution

The maximum number of parallel machines allowed by SVG is 16. When wiring in parallel, the power line connection is the same as when wiring in a single machine; Please connect the CT secondary cable in series, as shown in Figure 3-5; When the entire cabinet is equipped with a centralized monitoring screen, communication between the module and the centralized monitoring screen can be achieved through 485 $\pm$ 2 parallel connection of the parallel module. The 485_2 matching resistors of the first and last SVG modules can be turned to "ON" to improve communication quality, as detailed in section 3.2(If the message "485_2 system Communication is Abnormal" is displayed in some scenarios, switch one/two of the matching resistors to OFF).

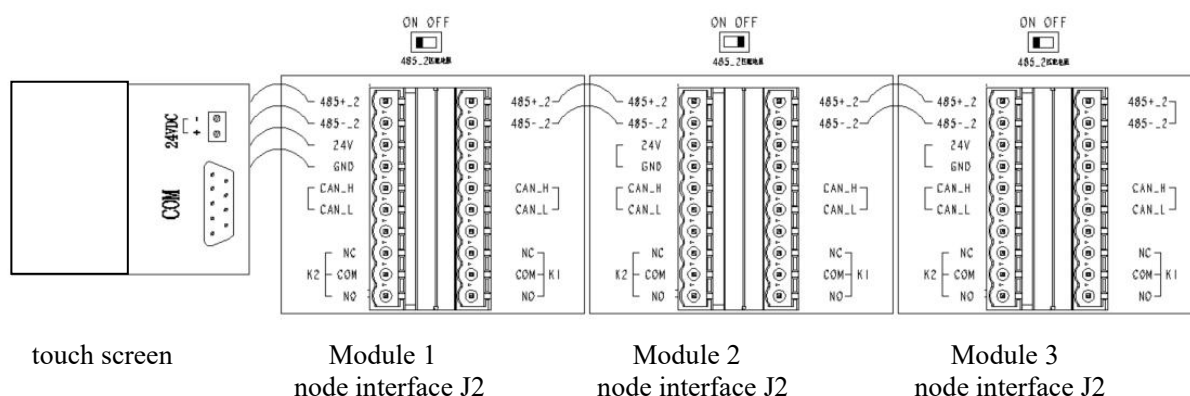


Figure 3-5 Schematic diagram of the parallel 485-2 communication wiring of the module

Note:

1. When modules are connected in parallel, it is recommended to place the sampling CT on the load side. If CT cannot be placed separately on the load side in on-site applications, there are two options.

(1) Place the CT on the source side as shown in Figure 3-8. It should be noted that for this wiring method, CAN wires are required between modules to connect the parallel modules in parallel, and the CAN matching resistors of the first and last SVG modules should be turned to "ON" as shown in Figure 3-6.

(2) If CT cannot be placed separately on the load side, as shown in Figure 3-9, place CT on the source side and compensation side respectively to detect the current, and finally synthesize the load CT current (source side S1 and compensation measurement s1 in parallel, S2 and s2 in parallel).

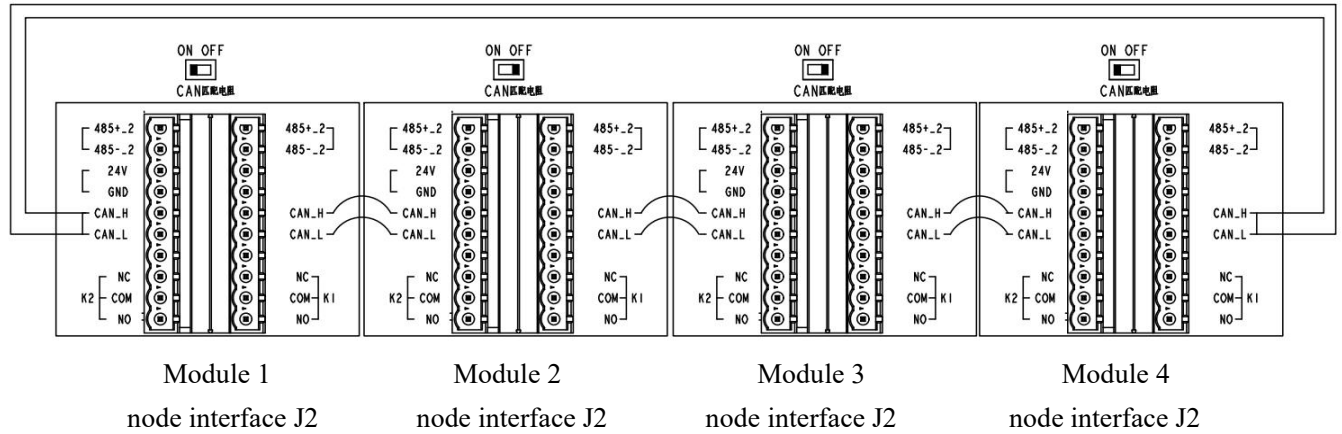


Figure 3-6 Schematic diagram of module parallel CAN communication wiring (CT on the source side)

2. When modules are connected in parallel, it is necessary to confirm that the ID numbers of different modules cannot be the same, otherwise communication abnormalities may occur. The module ID number can be set by changing the dip switch on the front panel of the module.

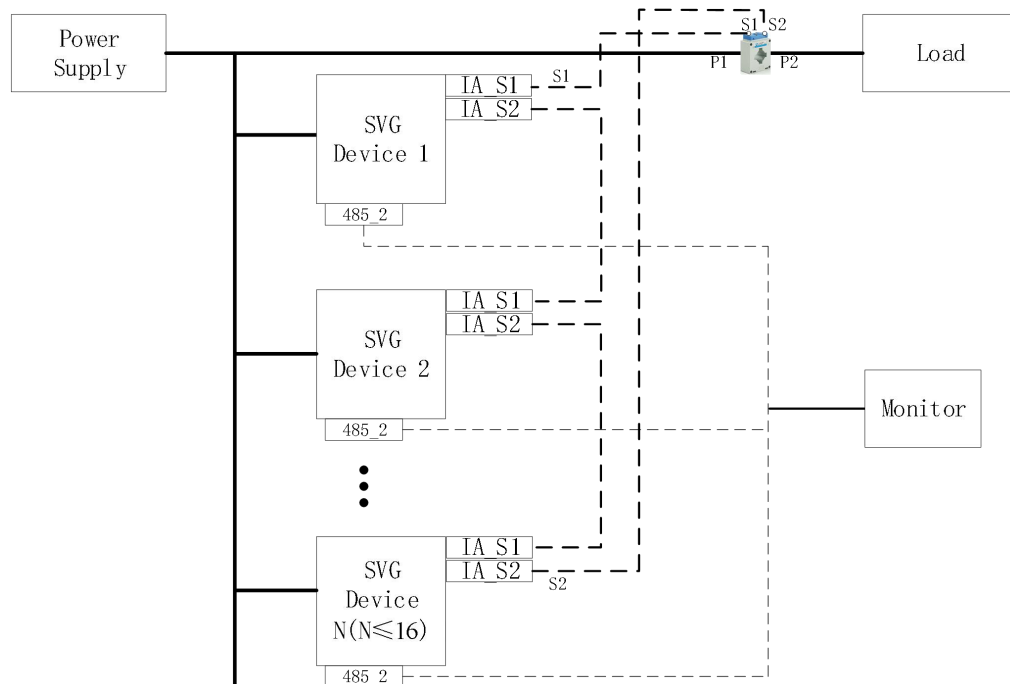


Figure 3-7 Wiring diagram of power distribution and monitoring during parallel operation (CT on the load side)

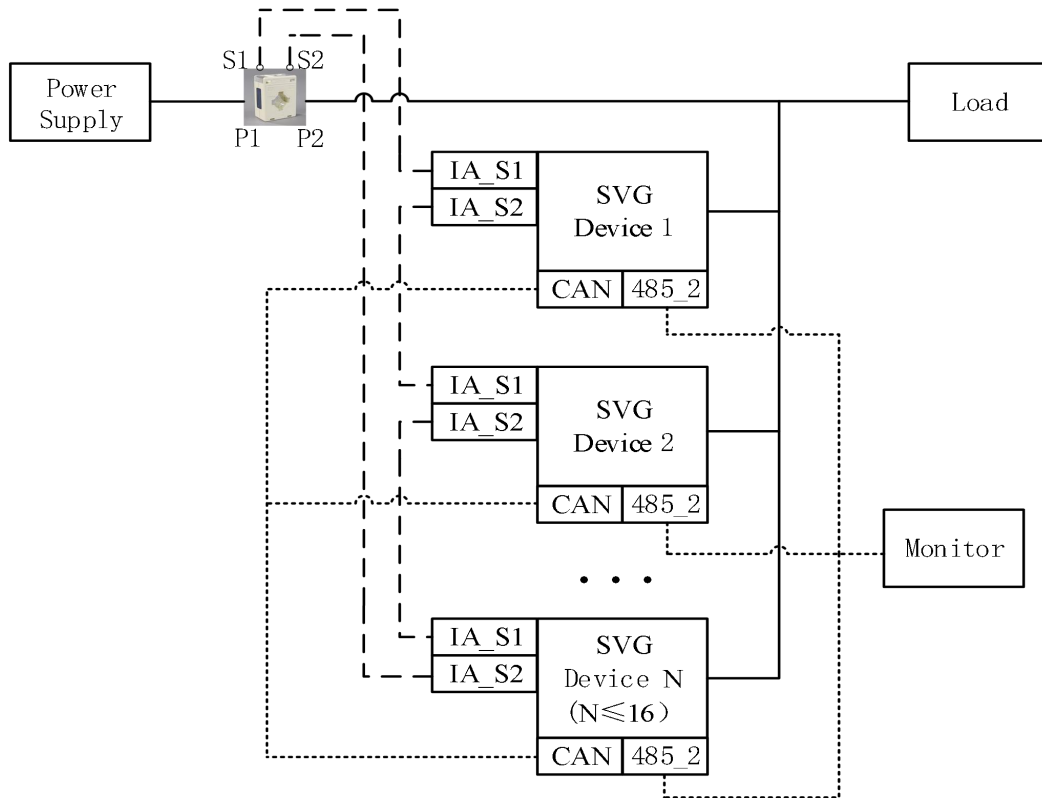


Figure 3-8 Schematic diagram of power distribution and monitoring wiring during parallel operation (CT on the source side)

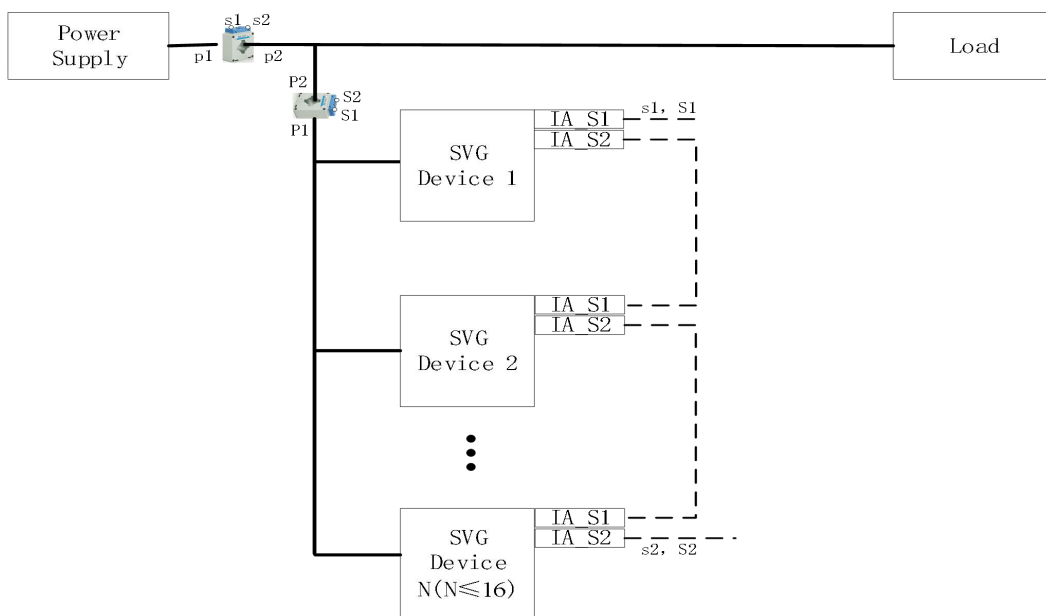


Figure 3-9 Schematic diagram of power distribution and monitoring wiring during parallel operation (CT on the source side and compensation side, synthesis: load side)

IV Power-on Operation Instructions

4.1 Turning On and Off SVG Devices

4.1.1 Boot Steps

This power-on step is applicable to powering on the SVG when it is completely powered off. The procedure is as follows:

1. Tighten the SVG shell and connect the power and signal cables.

Warning: The SVG output terminal may be energized when the SVG power-on step is performed. If the load is connected to the SVG output terminal, confirm with the user whether it is safe to supply power to the load. If the load is not ready to receive power, it is important to safely isolate the load from the SVG output terminals.

2. Close the isolation switch between the mains and the SVG.

At this point, the LCD displays the boot screen. The front panel is a fault (red) and run (green) indicator. If the SVG is in stand by state, the green indicator flicker slowly ; If the SVG is in the startup process, the green indicator flicker quickly; If the SVG is powered on normally, the green indicator lights up; If the SVG is faulty, the fault indicator will display red, and the SVG cannot be turned on normally.

4.1.2 Shutdown Steps

There are two ways to shut down,

one is to directly disconnect the isolation switch between SVG and the mains, this way is a complete shutdown mode, that is, after shutdown, the system is not charged, and the relevant maintenance work of the system can be carried out.

Another way is to use the LCD control panel settings to shut down, this shutdown mode only turns off the operation of the power device in the system, and the machine is in standby mode.

4.1.3 Manual/Automatic Start

After the SVG is powered on, you need to click the power on button on the screen to achieve power compensation. After powering on, the running indicator lights up.

4.2 Curtain Display and Settings

4.2.1 The 4.3 inch LCD display and setting

After powering on, the LCD screen lights up, enter the Parameter Settings page, and enter the password 123456, as shown in Figure 4-1.

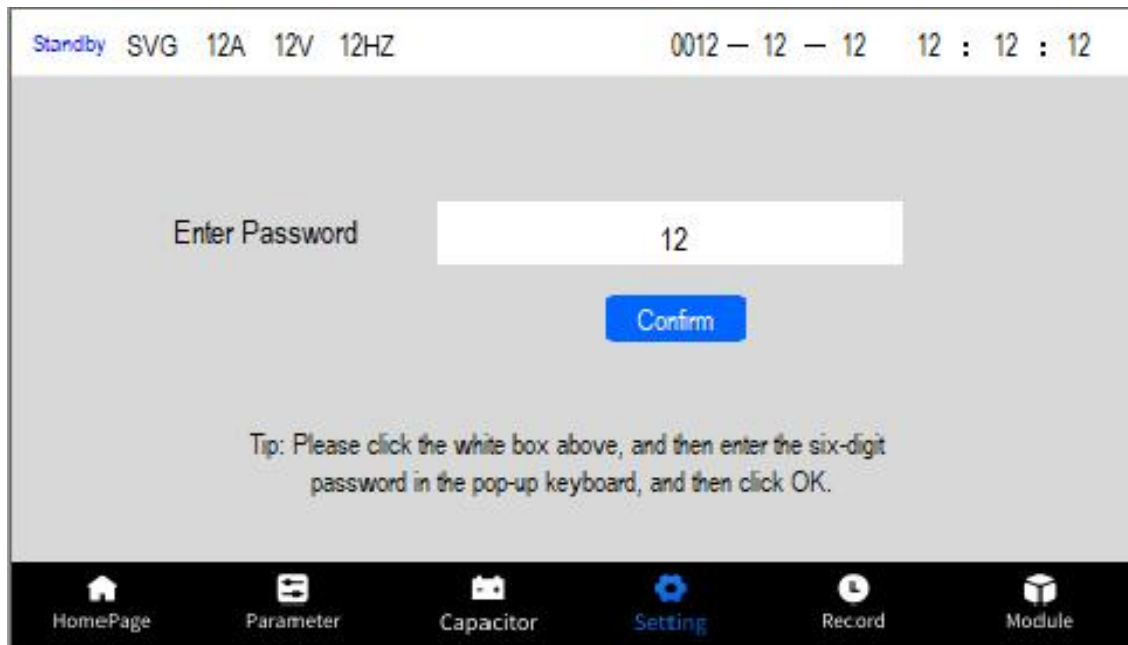


Figure 4-1 Setting parameters - Enter a password

1. The parameter setting interface is divided into two pages, the first page of the setting amount mainly includes: start mode, target COS ϕ , CT position, CT transformation ratio, CT direction, phase sequence adaptation, PV mode (photovoltaic mode) and line system selection, after the button is selected, you need to click the "Confirm Setting" button on the right, and the setting will take effect after clicking Confirm.

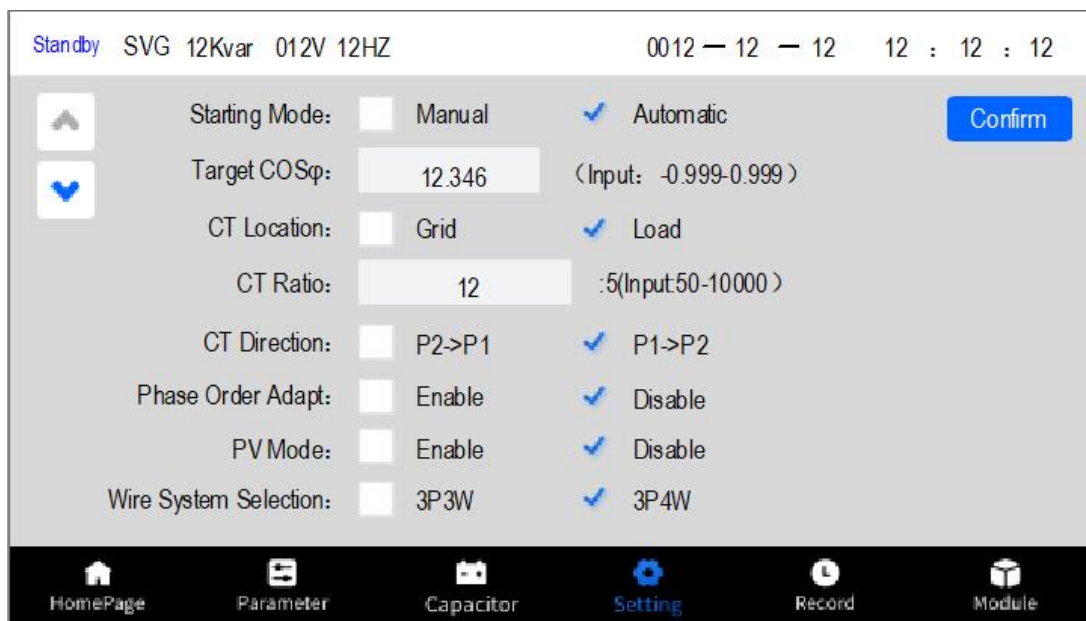


Figure 4-2 Parameter Setting Interface 1

2. The setting amount on the second page of the parameter setting interface mainly includes: reactive power compensation, current loop proportional coefficient, reactive power setting value, after the button is selected, you need to click the "Confirm Setting" button on the right, and the setting takes effect after clicking Confirm. (Note: Usually no settings are required on this interface)

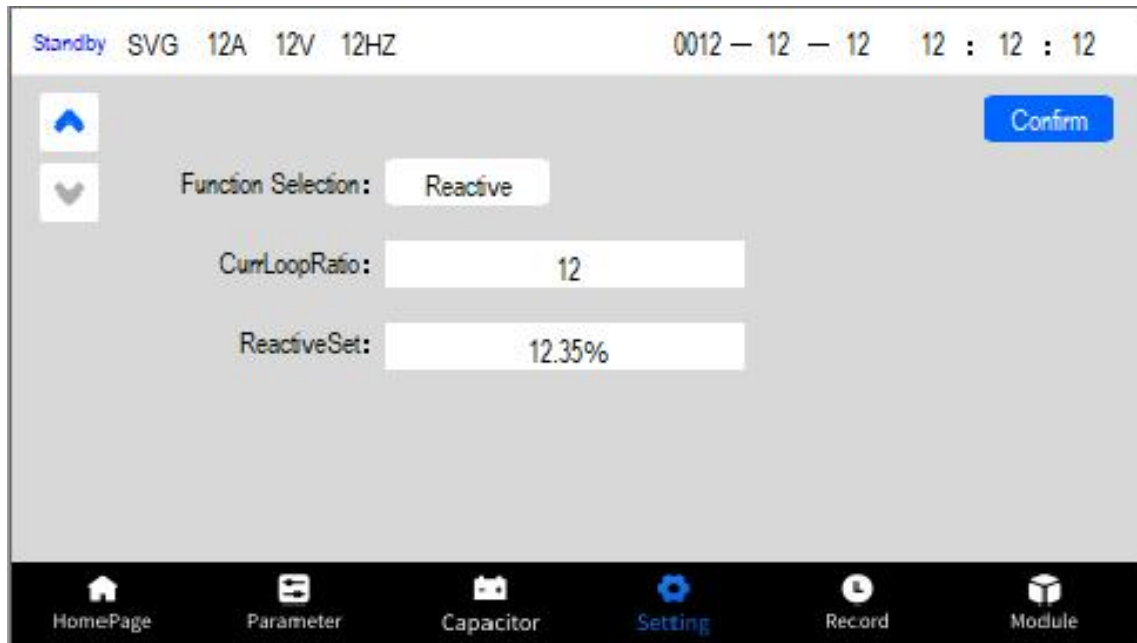


Figure 4-3 Parameter Setting Interface 2

4.2.2 The 7 inch LCD Display and Setting

After powering on, the LCD screen lights up, enter the "Parameter Setting" interface, enter the password "123456", when multiple modules are connected in parallel, you need to set the parameters of each module separately, and ensure that the parameter settings of each module are consistent. As shown in Figures 4-4 to 4-6.

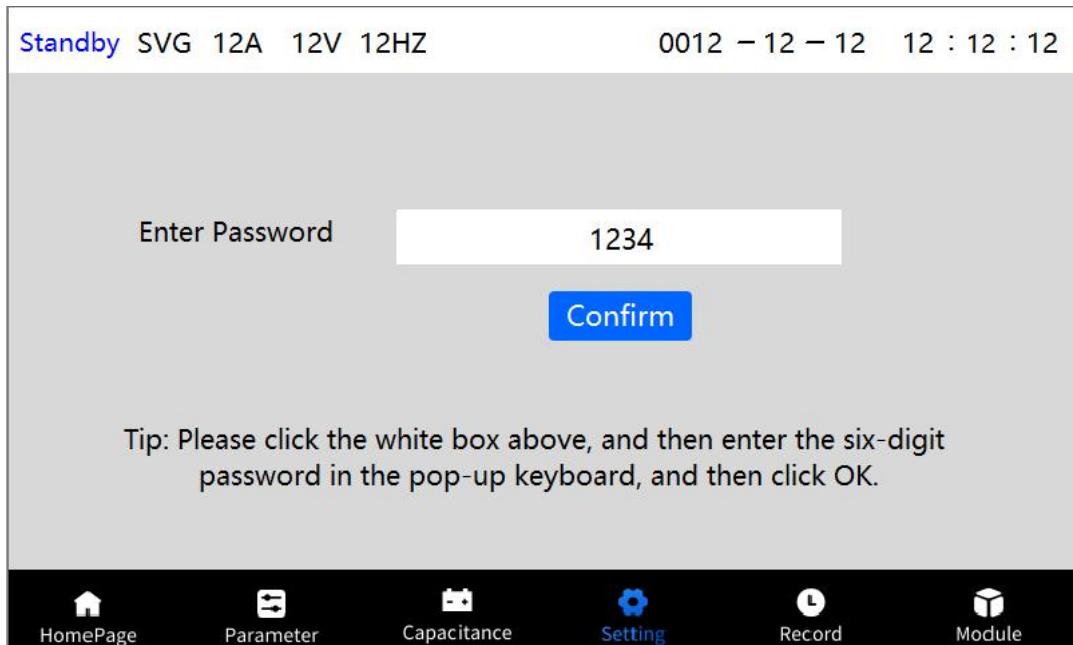


Figure 4-4 Parameter Settings page 3

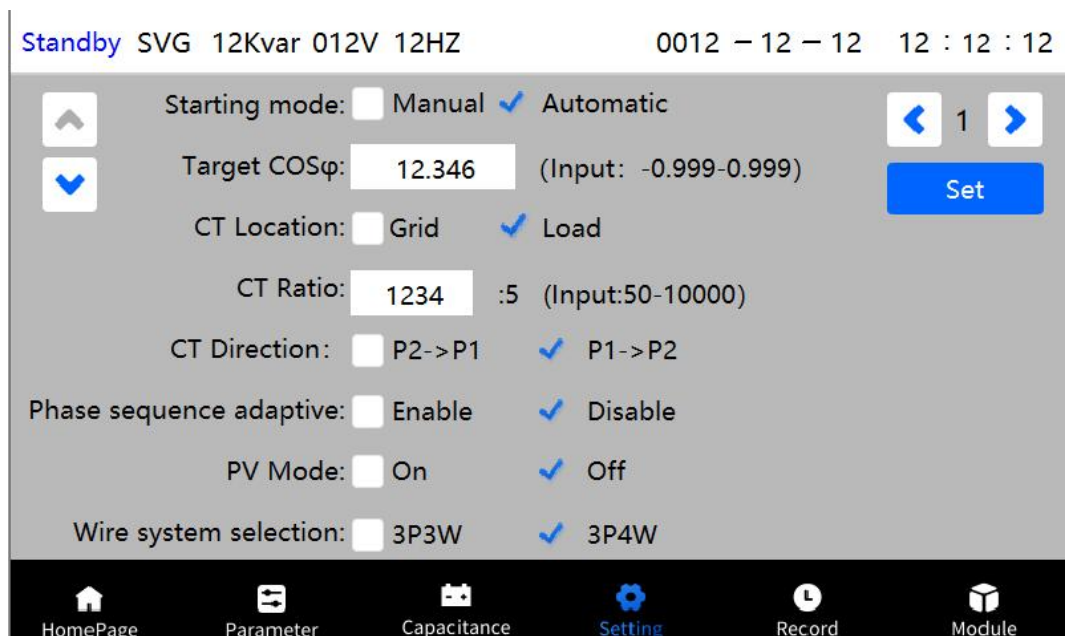


Figure 4-5 Parameter Setting Interface 4

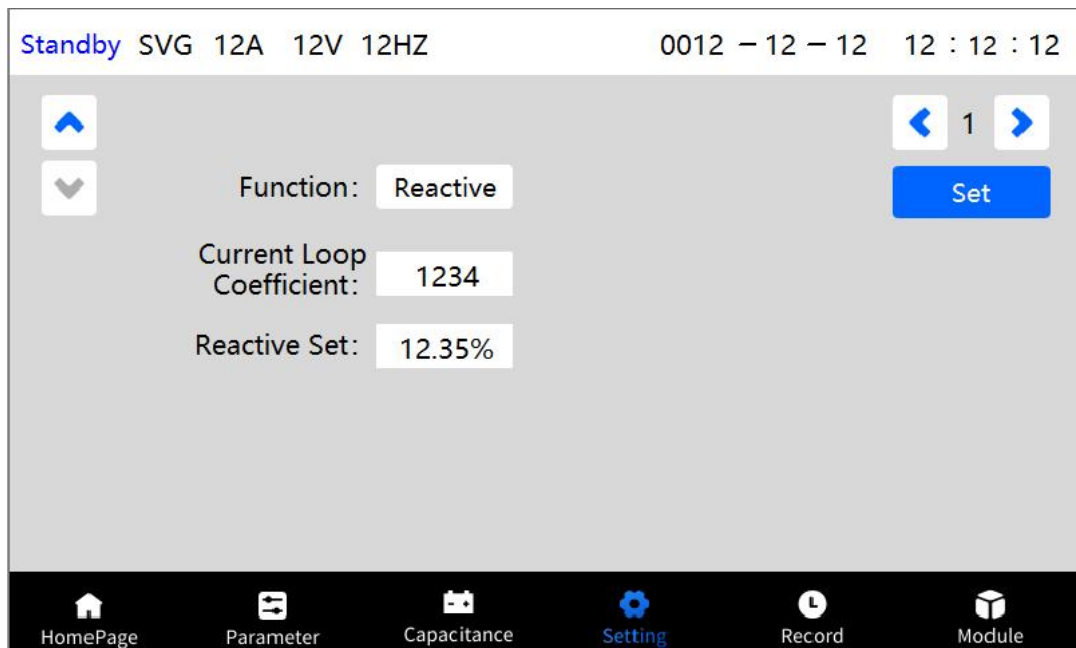


Figure 4-6 Parameter setting page 5

The 7-inch screen supports up to 16 modules in parallel, among which the "Home" and "System Parameters" interfaces display the system parameters, the "Capacitance Information" displays the information of the controlled capacitors, and the "Module Information" interface displays the specific information of each module separately, as shown in Figure 4-7.

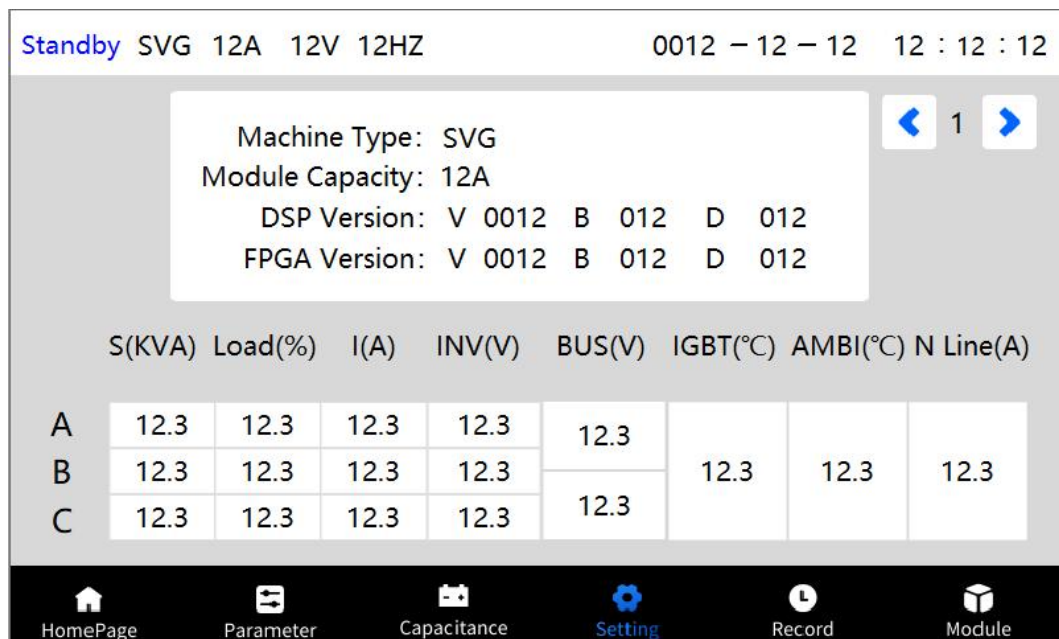


Figure 4-7 Module parameters

V Daily Maintenance

5.1 Safety Precautions

SVG equipment is operated with strong electricity, for safety reasons, maintenance personnel should not touch any live terminals of the equipment during equipment operation, and ensure that the grounding terminals of the equipment are reliably grounded.

Due to the large amount of capacitance on the bus of SVG equipment, the maintenance work must be carried out 15 minutes after the power is off.

5.2 Routine Inspections

Do not turn on the equipment during operation and when it is powered on, visually check whether there is any abnormality in the operating status from the outside, and usually check the following items:

1. Whether the display data meets the requirements;
2. Whether the display screen shows a fault;
3. Whether there is abnormal sound, abnormal vibration, abnormal smell;
4. Whether there are signs of overheating and abnormal phenomena such as discoloration.
5. Under the premise of following the safety precautions, the equipment will be inspected regularly after it is disconnected from the power grid, and the regular inspection items are shown in the table below.

Table 5-1 Periodic inspection items

category	Check the items	remark
circumstances	Temperature, humidity, presence of metal dust, corrosive gases	
Electrical connections	Whether the cables and terminals are damaged	
	Whether the main circuit wiring, grounding wire, CT wiring, communication wiring, etc. are reliably connected	
Heat dissipation of the device	Whether there is a blockage in the air duct	

5.3 Alarm List

Table 5-2 provides a complete list of all SVG alarms that can be displayed in the Current Records and History menus.

Table 5-2 Alarm list

Alarm	interpretation
reposition	The fault is reset
Manual power on	Manually turn on SVG on the touchscreen
Manual shutdown	SVG Turn off SVG manually on the touchscreen
Soft start failed	The bus voltage soft start cannot be raised to the predetermined voltage
The main circuit voltage is abnormal	The main input voltage exceeds the upper and lower limits, causing the rectifier to shut down
The frequency of the main circuit is abnormal	The main frequency exceeds the limit and the rectifier shuts down
The main road is in reverse order	The input voltages are reversed in phase order
Input is missing zero	No main input mains N line was detected
DC bus overvoltage	If the DC bus voltage is too high, the relay will be disconnected, and the IGBT will be sealed
Fault of open relay or fuse	At least one output fuse or fuse is open
Relay short-circuit fault	When the relay is not enabled to drive the signal, at least one relay is closed
Output overload timeout	This alarm occurs when the load exceeds the rated value by 105%. When the overload status is cleared, the alarm is automatically restored
The auxiliary power supply is powered down	Auxiliary power failure or power loss
Emergency shutdown	Press the touch control panel EPO switch or receive an external EPO command
The fan is abnormal	At least one of the fans is failing
The output current is abnormal	The difference between the actual output current and the output current detected by the IGBT bridge arm is greater than 20% of the rated current

Alarm	interpretation
The environment is too warm	Ambient temperature over-temperature detection
IGBT overtemperature	The power tube is overheated
The CT is in the wrong position	When the system has multiple modules connected in parallel, the CT position can only be set to the load side, otherwise a fault will be reported
The models do not match	When modules are connected in parallel, if the models are different, this fault is reported
The voltage levels do not match	When multiple modules are connected in parallel, this fault is reported if the voltage level of different modules is different
Frequency level mismatch	When multiple modules are connected in parallel, this fault is reported if the frequency levels of different modules are different
The boot methods do not match	If multiple modules are connected in parallel, this message is alerted if different modules are started in different ways
The target COS values do not match	If multiple modules are connected in parallel, if the destination COS values of different modules are different, this message is alarmed
CT position mismatch	When multiple modules are connected in parallel, this fault is reported if the CT positions of different modules are different
CT ratio mismatch	When multiple modules are connected in parallel, this fault is reported if the CT transformation ratio of different modules is different
Mismatch of compensation	When multiple modules are connected in parallel, if the compensation functions of different modules are different, this message is alarmed

Appendix ONE SVG Equipment Warranty Certificate

User Units:	
Address:	
Zip:	Fax:
Contact:	Phone:
Machine No.:	
Contract No.:	Date of purchase:
Service Units:	
Contact:	Phone:
Users' evaluation of service quality: ☐ Good ☐ Better ☐ ordinary ☐ Bad Other comments: User signatures: _____ Date: _____	
Customer service center return visit record: ☐ Telephone return visits ☐ Letter return visit Other: Signature of Technical Support Engineer: _____ Date: _____	

Note: This order will be invalid if the user cannot be returned.

Appendix TWO Notice to Users

1. The scope of warranty refers to the SVG device itself.
2. During the warranty period, if the product fails or is damaged, our company will repair it free of charge.
3. The starting time of the warranty period is the date of manufacture of our company, and the machine code is the only basis for judging the warranty period.
4. Even during the warranty period, a certain repair fee will be charged if the following occurs:
 - Machine failure caused by not operating according to the user manual;
 - Machine damage caused by fire, flood, abnormal voltage, etc.;
 - Damage caused when the device is used for non-normal functions.
5. The service fee is calculated according to the actual cost, if there is another contract, the principle of contract priority shall be used.
6. Please be sure to keep this card and present it to the repair unit during the warranty.