7 Trouble shooting and maintenance

Outlines of this chapter

This topic describes how to perform daily maintenance and troubleshooting to ensure long term proper operation of theSunny Dog series inverter.

7.1 Trouble shooting

This section contains information and procedures for solving possible problems with Sunny Dog series inverter.

In case of problem with inverter, check the following tips.

- Check the warning fault messages or Fault codes on the inverter information panel. Record it before doing anything further.
- If inverter does not display any Fault, please check the following lists.
  - Is the inverter located in a clean, dry, adequately ventilated place?
  - Is the DC switch turned ON?
  - Are the cables adequately sized and short enough?
  - Are the input and output connections and wiring in good condition?
  - Are the configuration settings correct for the particular installation?
  - Are the display panel and the communications cable properly connected and undamaged?

Follow the steps below to view recorded problems:

Press “ESC” to enter the main menu in the normal interface. In the interface screen select “Event List”, then press “OK” to enter events.

EventList information

Table 7-1 Eventlist

EventList NO.	EventList Name	EventList description	solution
ID01	GridOVP	The power grid voltage is too high	• If the alarm occurs occasionally, the possible cause is that the electric grid is abnormal occasionally. SOFAR inverter automatically returns to normal operating status when the electric grid’s back to normal. • If the alarm occurs frequently, check whether the grid voltage/frequency is within the acceptable range. If no, contact SOFAR technical support. If yes, check the AC circuit breaker and AC wiring of the SOFAR inverter. • If the grid voltage/frequency is within the acceptable range and AC wiring is correct, while the alarm occurs repeatedly, contact SOFAR technical support to change the grid over-voltage, under-voltage, over-frequency, under-frequency protection points after obtaining approval from the local electrical grid operator.
ID02	GridUVP	The power grid voltage is too low	
ID03	GridOFP	The power grid frequency is too high	
ID04	GridUFP	The power grid frequency is too low	

ID09	PvOVP	The input voltage is too high	Check whether too many PV modules are series connected in a PV string, thus the voltage(Voc) of the PV string is higher than the maximum input voltage of SOFAR inverter. If yes, adjust the number of series connected PV modules to decrease the voltage of the PV string to fit the input voltage range of SOFAR inverter. SOFAR inverter automatically returns to normal operating status after correct adjustments.
ID12	GFCIFault	GFCI Fault	• Please turn off AC and DC break, • Check the surrounding equipment on the AC side.
ID14	HwBoostOCP	Ihe input current is too high,and has happen hardware protection	Check whether the input current is higher than the maximum input current of SOFAR inverters, then check the input wiring, if both are correct, please contact SOFAR technical support.
ID15	HwAcOCP	The grid current is too high,and has happen hardware protection	ID15-ID22 are internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID16	AcRmsOCP	The grid current is too high	
ID20	GFCIDeviceFault	The GFCI sampling error	
ID22	HwAuxPowerFault	The auxiliary voltage error	
ID26	BusOVP	The bus voltage Is too high	Id26 are internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID28	DciOCP	The Dci is too high	Turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID29	SwOCPInstant	The grid current is too high	Internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID30	SwBOCPInstant	Ihe input current is too high	Check whether the input current is higher than the maximum input current of SOFAR inverters, then check the input wiring, if both are correct, please contact SOFAR technical support.
ID49	ConsistentFault_VGrid	The grid voltage sampling value is not consistent	ID49-ID55 are internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID50	ConsistentFault_FGrid	The grid frequency sampling value is not consistent	
ID51	ConsistentFault_DCI	The DCI sampling value is not consistent	
ID52	ConsistentFault_GFCI	The GFCI sampling value is not consistent	
ID53	SpiCommLose	The spi communication is fault	
ID54	SciCommLose	The Sci communicationis fault	
ID55	RelayTestFail	The relays fault	
ID56	PvIsoFault	The insulation resistance is too low	Check the insulation resistance between the PV array and earth(ground), if a short circuit occurs, rectify the fault.

ID58	OverTempFault_Boost	The Boost temp is too high	• Ensure the installation position and installation method meet the requirements of Section 3.4 of this user manual. • Check whether the ambient temperature of the installation position exceeds the upper limit. If yes, improve ventilation to decrease the temperature.
ID59	OverTempFault_Env	The environment temp is too high	
ID65	UnrecoverHwAcOCP	The grid current is too high,and has cause unrecoverable hardware fault	ID65-ID70 are internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID66	UnrecoverBusOVP	The bus voltage is too high	
ID70	UnrecoverOCPInstant	The grid current is too high	
ID74	UnrecoverIPVInstant	The input current is too high	ID74-ID77 are internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID75	UnrecoverWRITEEEPROM	The EEPROM is unrecoverable	
ID76	UnrecoverREADEEPROM	The EEPROM is unrecoverable	
ID77	UnrecoverRelayFail	Relay has happen permanent fault	
ID81	OverTempDerating	the inverter has derated because of the temperature is too high	• Ensure the installation position and installation method meet the requirements of Section 3.4 of this user manual. • Check whether the ambient temperature of the installation position exceeds the upper limit. If yes, improve ventilation to decrease the temperature.
ID82	OverFreqDerating	the inverter has derated because of the grid frequency too hig	SOFAR inverter automatically reduce the output power when the frequency of electrical grid is too high.
ID95	Communication board EEPROM fault	Communication board EEPROM fault	ID95~ID96 are internal faults of SOFAR inverter, turn OFF the “DC switch”, wait for 5 minutes, and then turn ON the “DC switch”. Check whether the fault is rectified. If no, please contact SOFAR technical support.
ID96	RTC clock chip anomaly	RTC clock chip anomaly	
ID98	SD fault	The SD card is fault	Please replace the SD card.

7.2 Maintenance

Inverters generally do not need any daily or routine maintenance. Cooling fan should not be blocked by dust or any other items.

◎ Inverter cleaning

Please use hand blower, soft dry cloth or brush to clean inverters. Water, corrosive chemical substances or intense cleaning agent should not be used for cleaning the cooling fan or inverter. Switch off AC and DC power supply to inverter before undertaking any cleaning activity.

◎ Cooling fin cleaning

For the long-term proper operation of SOFAR inverters, ensure there is enough space around the heat sink for ventilation, check the heat sink for blockage (dust, snow, etc.) and clean them if they exist. Please clean the heat sink with an air blower, a dry & soft cloth or a soft bristle brush. Do NOT clean the heat sink with water, corrosive chemicals, detergent, etc.

8 Technical data

Outlines of this chapter

This topic lists the technical specifications for all Sunny Dog series inverters.

8.1 Input parameter (DC)

Parameter	SOFAR 1100TL	SOFAR 1600TL	SOFAR 2200TL	SOFAR 2700TL	SOFAR 3000TL
Max. input power[W]	1100	1600	2200	2700	3000
Max. input DC voltage [V]	450	450	500	500	500
Start-up input voltage [V]	80				
Stop working voltage [V]	40				
Operating input voltage Range [V]	90-400		100-480		
MPPT voltage [V]	110-380	165-380	170-450	210-450	230-450
Max. input MPPT current[A]	10	10	13	13	13
Input short circuit current for each MPPT[A]	12	12	15	15	15
Number of DC input	1/1				

8.2 Output parameter (AC)

Parameter	SOFAR 1100TL	SOFAR 1600TL	SOFAR 2200TL	SOFAR 2700TL	SOFAR 3000TL
Rated power[VA]	1000	1500	2000	2500	2800
Max. AC power[VA]	1000	1500	2000	2500	2800
Active power adjustable range	0%~100%				
MPPT voltage [V]	4.5	7	9.5	11.5	13
Rated Grid voltage [V]	230/one-phase				
Grid voltage range[V]	180~270 (adjustable, must meet local grid requirements)				
Rated Grid frequency [Hz]	50/60				
Grid frequency range[Hz]	44~55 /54~66 (adjustable, must meet local grid requirements)				
THD	<3%(full load at nominal voltage)				
Power factor	1				