Inverter

Alarm Reference

Issue	09
Date	2024-11-01

HUAWEI TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.
All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: https://e.huawei.com

About This Document

Purpose

This document provides common alarm reference for inverters, helping users query and handle alarms.

Intended Audience

This document is intended for:

- Technical support engineers
- Commissioning engineers
- Maintenance engineers

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 09 (2024-11-01)

Updated **44 2080 Abnormal PV Module Configuration**.

Updated **46 2082 Backup Box abnormal**.

Issue 08 (2024-07-25)

Updated **1 Description of Alarm Reference Items**.

Updated **5 2004 DC Overvoltage**.

Updated **10 2009 String Short-Circuited to Ground**.

Updated **11 2010 Abnormal DC Input**.

Updated **12 2011 String Reverse Connection**.

Updated **13 2012 String Current Backfeed**.

Updated **17 2021 AFCI Check Failure**.

Updated **19 2032 Grid Failure**.

Updated **34 2064 Device Fault**.

Updated **37 2067 Faulty power collector**.

Updated **50 2088 Abnormal DC protection unit**.

Updated **55 2093 Abnormal DC switch**.

Issue 07 (2024-07-15)

Updated **44 2080 Abnormal PV Module Configuration**.

Added **29 2042 L/N Reverse Phase Sequence**.

Added **67 2110 Power Control Abnormal at Grid Connection Point**.

Issue 06 (2024-06-30)

Updated **38 2068 Battery abnormal**.

Issue 05 (2024-06-11)

Updated **44 2080 Abnormal PV Module Configuration**.

Updated **68 2113 Invalid Region**.

Issue 04 (2024-05-20)

Updated **2 2001 String Voltage High**.

Updated **30 2051 Abnormal Residual Current**.

Updated **61 2099 App Communication Certificate Invalid**.

Updated **62 2100 App Communication Certificate Will Expire**.

Updated **63 2101 App Communication Certificate Expired**.

Issue 03 (2024-03-20)

Updated **16 2015 PV String Loss**.

Updated **30 2051 Abnormal Residual Current**.

Updated **44 2080 Abnormal PV Module Configuration**.

Issue 02 (2024-01-08)

Updated **35 2065 Update Failure or Version Mismatch**.

Updated **44 2080 Abnormal PV Module Configuration**.

Updated **45 2081 Optimizer Fault**.

Issue 01 (2023-12-13)

This issue is the first official release.

Contents

About This Document ii
1 Description of Alarm Reference Items 1
2 2001 String Voltage High 2
3 2002 DC arc Fault 6
4 2003 DC Arc Fault 7
5 2004 DC Overvoltage 8
6 2005 DC in Reverse Polarity 9
7 2006 DC Short-Circuited or in Reverse Polarity 10
8 2007 DC Connected in Series 11
9 2008 DC Bus Not Securely Connected 12
10 2009 String Short-Circuited to Ground 13
11 2010 Abnormal DC Input 14
12 2011 String Reverse Connection 16
13 2012 String Current Backfeed 17
14 2013 Abnormal string power 18
15 2014 High String Voltage to Ground 19
16 2015 PV String Loss 20
17 2021 AFCI Check Failure 21
18 2031 Phase wire short-circuited to PE 22
19 2032 Grid Failure 23
20 2033 Grid Undervoltage 24
21 2034 Grid Overvoltage 25
22 2035 Grid Voltage Imbalance 26
23 2036 Grid overfrequency 27

24 2037 Grid underfrequency..... 28
25 2038 Grid Frequency Unstable..... 29
26 2039 AC Overcurrent..... 30
27 2040 DC Component Overhigh..... 31
28 2041 Reverse Phase Sequence on AC Side..... 32
29 2042 L/N Reverse Phase Sequence..... 33
30 2051 Abnormal Residual Current..... 34
31 2061 Abnormal Grounding..... 35
32 2062 Low Insulation Resistance..... 36
33 2063 Overtemperature..... 38
34 2064 Device Fault..... 39
35 2065 Update Failure or Version Mismatch..... 41
36 2066 License Expired..... 43
37 2067 Faulty power collector..... 44
38 2068 Battery abnormal..... 45
39 2070 Active islanding..... 47
40 2071 Passive islanding..... 48
41 2072 Transient AC overvoltage..... 49
42 2075 Peripheral Port Short Circuit..... 50
43 2077 Off-Grid Output Overload..... 51
44 2080 Abnormal PV Module Configuration..... 52
45 2081 Optimizer Fault..... 57
46 2082 Backup Box abnormal..... 58
47 2085 Built-in PID operation abnormal..... 60
48 2086 External Fan Abnormality..... 61
49 2087 Internal fan abnormal..... 62
50 2088 Abnormal DC protection unit..... 63
51 2089 EL unit abnormal..... 64
52 2090 Abnormal active power scheduling instruction..... 65
53 2091 Abnormal reactive power scheduling instruction..... 66

54 2092 CT connection abnormal..... 67
55 2093 Abnormal DC switch..... 68
56 2094 The remaining dischargeable capacity of the battery is low..... 69
57 2095 Management System Certificate Invalid..... 70
58 2096 Management System Certificate About to Expire..... 71
59 2097 Management System Certificate Expired..... 72
60 2098 The parallel system communication is abnormal..... 73
61 2099 App Communication Certificate Invalid..... 74
62 2100 App Communication Certificate Will Expire..... 75
63 2101 App Communication Certificate Expired..... 76
64 2102 Protection upon Communication Failure..... 77
65 2103 AC Terminal Temperature Abnormal..... 78
66 2104 DC Terminal Temperature Abnormal..... 80
67 2110 Power Control Abnormal at Grid Connection Point..... 84
68 2113 Invalid Region..... 85
69 61440 Faulty monitoring unit..... 86

1 Description of Alarm Reference Items

Item	Description
Alarm ID	Indicates the ID of an alarm. Unique identifier of an alarm in one product.
Alarm Name	Indicates the name of an alarm. In the same product, alarm names and alarm IDs correspond to each other, which clearly and accurately reflect the meaning of alarms.
Alarm Severity	Alarm severities are defined as follows: • Major: The inverter shuts down or some functions are abnormal due to a fault. • Minor: Some components of the inverter are faulty but the system can still connect to the grid and generate power. • Warning: The inverter functions normally, but its output power decreases due to external factors.
Possible Cause	Indicates the possible cause of the alarm, including the cause ID and cause description.
Suggestion	Indicates the procedure for handling the alarm.

Remarks

For a product equipped with an automatic DC disconnect switch, if the AC and DC switches are OFF but no alarm is reported, perform the following operations:

1. If no short circuit occurs between phases or between a phase and the ground on the AC side of the inverter, turn on the AC switch, and read the alarm information on the user interface. If an alarm is generated, handle it by referring to the alarm handling suggestions. If no alarm is generated, contact your vendor or technical support.
2. If there is any short circuit between phases or between a phase and the ground on the inverter, do not turn on the AC switch. Contact your vendor or technical support.

2 2001 String Voltage High

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2001	String Voltage High	Major

Possible Cause

Cause ID	Possible Cause
1–10	The PV array is not properly configured. Excessive PV modules are connected in series in the PV string, and therefore the PV string open-circuit voltage exceeds the maximum operating voltage of the device.
13	Too many PV modules are connected in series in MPPT1 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
14	Too many PV modules are connected in series in MPPT2 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
15	Too many PV modules are connected in series in MPPT3 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
16	Too many PV modules are connected in series in MPPT4 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
17	Too many PV modules are connected in series in MPPT5 PV string, and the open-circuit voltage exceeds the limit at the current altitude.

Cause ID	Possible Cause
18	Too many PV modules are connected in series in MPPT6 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
19	Too many PV modules are connected in series in MPPT7 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
20	Too many PV modules are connected in series in MPPT8 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
21	Too many PV modules are connected in series in MPPT9 PV string, and the open-circuit voltage exceeds the limit at the current altitude.
22	Too many PV modules are connected in series in MPPT10 PV string, and the open-circuit voltage exceeds the limit at the current altitude.

Suggestion

Cause ID	Suggestion
1–10	1. If the DC switch is on, check the series connection configurations of the PV string. a. If the maximum open-circuit voltage of the PV string is higher than the maximum input voltage, contact your vendor or technical support. b. If the maximum open-circuit voltage of the PV string is lower than the maximum input voltage, ensure that the maximum open-circuit voltage of the PV string is lower than or equal to the maximum operating voltage of the device. After the PV array is correctly configured, the device alarm is automatically cleared. 2. If the DC switch is off, contact your vendor or technical support. The following is the mapping between PV strings and alarm cause IDs: String 2
13	1. Check the number of PV modules connected in series in MPPT1 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.

Cause ID	Suggestion
14	1. Check the number of PV modules connected in series in MPPT2 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
15	1. Check the number of PV modules connected in series in MPPT3 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
16	1. Check the number of PV modules connected in series in MPPT4 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
17	1. Check the number of PV modules connected in series in MPPT5 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
18	1. Check the number of PV modules connected in series in MPPT6 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
19	1. Check the number of PV modules connected in series in MPPT7 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.

Cause ID	Suggestion
20	1. Check the number of PV modules connected in series in MPPT8 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
21	1. Check the number of PV modules connected in series in MPPT9 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.
22	1. Check the number of PV modules connected in series in MPPT10 PV string by referring to the user manual. Ensure that the open-circuit voltage of the PV string is less than or equal to the maximum operating voltage allowed for the equipment at the current altitude. After the PV array configuration is corrected, the alarm will be automatically cleared. 2. Check whether the altitude is correctly configured.

3 2002 DC arc Fault

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2002	DC arc Fault	Major

Possible Cause

Cause ID	Possible Cause
1–10	The PV string power cable arcs or is in poor contact.

Suggestion

Recommended: Check that the PV string power cable does not arc and is in good contact.

4 2003 DC Arc Fault

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2003	DC Arc Fault	Major

Possible Cause

Cause ID	Possible Cause
1–28	The PV string power cables arc or are in poor contact.

Suggestion

1. Check whether the string cables arc or are in poor contact.
2. The following is the mapping between PV strings and alarm cause IDs: [IDs 1–n correspond to PV strings 1–n respectively.]

5 2004 DC Overvoltage

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2004	DC Overvoltage	Major

Possible Cause

Cause ID	Possible Cause
1	The DC bus voltage of the device exceeds the upper threshold.

Suggestion

Turn off the AC and DC switches, and check the input voltage. If the input voltage exceeds the upper limit, contact your vendor or technical support. If the voltage is within the normal range, turn on the AC and DC switches. If the fault persists, contact your vendor or technical support.

6 2005 DC in Reverse Polarity

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2005	DC in Reverse Polarity	Major

Possible Cause

Cause ID	Possible Cause
1	The DC bus of the device is connected in reverse polarity.

Suggestion

Power off the device (turn off the AC switch and DC switch, and wait for a period specified on the device safety warning label), and then perform the following operations: Check whether the DC terminals are connected in reverse polarity. If yes, adjust the DC polarities.

7 2006 DC Short-Circuited or in Reverse Polarity

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2006	DC Short-Circuited or in Reverse Polarity	Major

Possible Cause

Cause ID	Possible Cause
1	The DC bus of the device is short-circuited or connected in reverse polarity.

Suggestion

Power off the device (turn off the AC switch and DC switch, and wait for a period specified on the device safety warning label), and then perform the following operations: Check whether the DC terminals are short-circuited or connected in reverse polarity. If yes, adjust the DC bus cable connection.

8 2007 DC Connected in Series

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2007	DC Connected in Series	Major

Possible Cause

Cause ID	Possible Cause
1	The DC buses of the device are connected in series.

Suggestion

Power off the device (turn off the AC switch and DC switch, and wait for a period specified on the device safety warning label), and then perform the following operations: Check whether the DC terminals are connected in series. If yes, adjust the DC bus cable connection.

9 2008 DC Bus Not Securely Connected

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2008	DC Bus Not Securely Connected	Major

Possible Cause

Cause ID	Possible Cause
1	The DC bus of the device is not securely connected.

Suggestion

Power off the device (turn off the AC switch and DC switch, and wait for a period specified on the device safety warning label), and then perform the following operations: Check whether the DC terminals are connected securely. If not, adjust the DC bus cable connection.

10 2009 String Short-Circuited to Ground

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2009	String Short-Circuited to Ground	Major

Possible Cause

Cause ID	Possible Cause
1	1. A short circuit has occurred between the PV array and the ground. 2. The ambient air of the PV array is damp and the insulation between the PV array and the ground is poor.

Suggestion

1. Check the output-to-ground impedance of the PV array. If a short circuit or inadequate insulation is detected, rectify it.
2. If auto recovery from string-to-ground short-circuit protection is disabled, check and rectify the preceding faults, and manually clear the alarm.
3. If auto recovery from string-to-ground short-circuit protection is enabled, the alarm will be automatically cleared after fault recovery.

11 2010 Abnormal DC Input

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2010	Abnormal DC Input	Major

Possible Cause

Cause ID	Possible Cause
1	1. DC switch 1 is OFF. 2. PV strings 1 to 9 are not connected.
2	The DC switch has tripped unexpectedly.

Suggestion

1. If any DC SWITCH is OFF when the device is running, do not turn on the switch directly. (If the device appearance is abnormal, remove the DC terminals after the PV string current decreases to below 0.01 A.) Contact your vendor or technical support.
2. If the DC SWITCH is OFF during the first power-on, do not turn it on directly. (If the device appearance is abnormal, remove the DC terminals after the PV string current decreases to below 0.01 A.) Check the cable connection as required. If an exception is found, rectify it and then turn on the DC switch as required. If no exception is found, contact your vendor or technical support.
3. If any DC SWITCH is ON, turn off the AC and DC switches. Check the cable connection as required. If an exception is found, rectify it and then turn on the DC switch as required. If no exception is found, contact your vendor or technical support.

Cable connection check requirements:

(1) Check whether at least one PV string corresponding to the switch that is OFF is connected.

(2) Check whether a PV string is reversely connected.

Switch turn-on sequence:

(1) Turn on the AUX SWITCH manually.

(2) Wait for about 1 minute. After the PV indicator is on, turn on all DC SWITCH manually.

(3) Turn off the AUX SWITCH manually.

12 2011 String Reverse Connection

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2011	String Reverse Connection	Major

Possible Cause

Cause ID	Possible Cause
1–28	The PV string is connected in reverse polarity.

Suggestion

1. Check whether the PV string is connected to the device in reverse polarity. If yes, wait until the PV string current decreases to below 0.01 A, set DC SWITCH to OFF, and adjust the PV string polarity.
2. If the fault persists, reset the device on the local maintenance app or WebUI of the upper-layer controller. Alternatively, you can turn off the AC and DC switches, wait for 5 minutes, and then turn on the AC and DC switches.
3. The following is the mapping between PV strings and alarm cause IDs: [IDs 1–n correspond to PV strings 1–n respectively.]

13 2012 String Current Backfeed

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2012	String Current Backfeed	Warning

Possible Cause

Cause ID	Possible Cause
1–28	1. Only a few PV modules are connected in series in the PV string. Therefore, the terminal voltage is lower than that of other PV strings. 2. Reverse polarity occurs in the string.

Suggestion

1. Check whether the number of PV modules connected in series to this PV string is less than the number of PV modules connected in series to the other PV strings connected in parallel with this PV string. If yes, wait until the PV string current drops to below 0.01 A, set DC SWITCH to OFF, and adjust the number of PV modules in the PV string.
2. Check whether the PV string is shaded.
3. Check whether the open-circuit voltage of the PV string is normal.
4. Check whether PV modules in the PV string are connected in reverse polarity.
5. The following is the mapping between PV strings and alarm cause IDs: [IDs 1–n correspond to PV strings 1–n respectively.]

14 2013 Abnormal string power

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2013	Abnormal string power	Warning

Possible Cause

Cause ID	Possible Cause
1–28	1. The PV string has been shaded for a long time. 2. The PV string deteriorates abnormally.

Suggestion

1. Check whether the PV string current is obviously lower than the currents of other PV strings.
2. If yes, check whether the PV string is shaded.
3. If the PV string is clean and not shaded, check whether any PV module is faulty.
4. The following is the mapping between PV strings and alarm cause IDs: IDs 1–*n* correspond to PV strings 1–*n* respectively.

15 2014 High String Voltage to Ground

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2014	High String Voltage to Ground	Major

Possible Cause

Cause ID	Possible Cause
1	The string-to-ground voltage is abnormal, which may cause power degradation risks.

Suggestion

1. If no PID compensation device is deployed in the system, disable the PID protection function. Note: If the PID protection function is disabled but the nighttime reactive power compensation is enabled, PV module degradation may occur.
2. If there is a PID compensation device in the system, check whether it is faulty. If yes, rectify the fault.
3. Check whether the device and PID compensation device have consistent compensation direction settings. If not, adjust the settings based on the PV module model. (Note: If the PV– is set to positive offset, the voltage between the PV– of the device and the ground should be greater than 0 V to clear the alarm; if the PV+ is set to negative offset, the voltage between the PV+ of the device and the ground should be less than 0 V to clear the alarm.)
4. If the alarm occurs repeatedly, contact your dealer or technical support.

16 2015 PV String Loss

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2015	PV String Loss	Warning/Major[1]
Note [1]: The alarm severity is Major in SUN2000HA V500R023C00SPC110, V300R001C00SPC145, and later versions.		

Possible Cause

Cause ID	Possible Cause
1–28	1. A single string is lost. 2. Both 2-in-1 PV strings are lost. 3. Either of the 2-in-1 PV strings is lost.

Suggestion

1. Check whether cables are properly connected to the inverter terminals.
2. Check whether cables are properly connected to the PV string terminals.
3. If a 2-in-1 terminal is used, check whether it is normal.
4. If the string connection status is manually configured, check whether the configured status is consistent with the actual connection status. The following is the mapping between PV strings and alarm cause IDs: [IDs 1–n correspond to PV strings 1–n respectively.]

17 2021 AFCI Check Failure

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2021	AFCI Check Failure	Major

Possible Cause

Cause ID	Possible Cause
1, 2	AFCI check failed.

Suggestion

Clear the AFCI check alarm and restart the device. If the fault persists, contact your vendor or technical support.

18 2031 Phase wire short-circuited to PE

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2031	Phase wire short-circuited to PE	Major

Possible Cause

Cause ID	Possible Cause
1	The phase wire is short-circuited to PE or its impedance to PE is low.

Suggestion

Check the impedance of the phase wire to PE, locate the position with low impedance, and rectify the fault.

19 2032 Grid Failure

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2032	Grid Failure	Major

Possible Cause

Cause ID	Possible Cause
1	1. The power grid experiences an outage. 2. The AC power cable is disconnected or the AC circuit breaker is OFF.

Suggestion

1. Check that the AC voltage is normal.
2. Check that the AC power cable is connected and that the AC switch is ON. If the AC switch is OFF, do not turn it on directly. Check whether the impedance of the inverter or external cables is normal. If the impedance is normal, turn on the AC switch. If the impedance is abnormal, contact your vendor or technical support.

20 2033 Grid Undervoltage

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2033	Grid Undervoltage	Major

Possible Cause

Cause ID	Possible Cause
1	The grid voltage is below the lower threshold or the low voltage duration has lasted for more than the value specified by LVRT.

Suggestion

1. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.
2. If the alarm occurs frequently, check whether the power grid voltage is within the allowed range. If not, contact the local power operator. If yes, modify the power grid undervoltage protection threshold after obtaining the consent of the local power operator.
3. If the fault persists for a long time, check the connection between the AC switch and power cables.

21 2034 Grid Overvoltage

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2034	Grid Overvoltage	Major

Possible Cause

Cause ID	Possible Cause
1	The power grid line voltage exceeds the upper threshold.

Suggestion

1. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.
2. If the alarm occurs frequently, check whether the power grid voltage is within the allowed range. If not, contact the local power operator. If yes, modify the power grid overvoltage protection threshold after obtaining the consent of the local power operator.
3. Check whether the peak voltage of the power grid is too high. If the fault occurs frequently and persists for a long time, contact the local power operator.

22 2035 Grid Voltage Imbalance

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2035	Grid Voltage Imbalance	Major

Possible Cause

Cause ID	Possible Cause
1	The three phases of the power grid differ greatly in voltage.

Suggestion

1. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.
2. If the alarm occurs frequently, check whether the power grid voltage is within the normal range. If not, contact the local power operator.
3. If the fault persists for a long time, check the connection of the AC cable.
4. If the AC cable is correctly connected and the alarm persists and affects the operation of the plant, contact the local power operator.

23 2036 Grid overfrequency

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2036	Grid overfrequency	Major

Possible Cause

Cause ID	Possible Cause
1	Power grid exception: The power grid frequency is higher than the frequency required in the local standard.

Suggestion

1. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.
2. If the alarm occurs frequently, check whether the power grid frequency is within the allowed range. If not, contact the local power operator. If yes, modify the power grid overfrequency protection threshold after obtaining the consent of the local power operator.

24 2037 Grid underfrequency

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2037	Grid underfrequency	Major

Possible Cause

Cause ID	Possible Cause
1	Power grid exception: The power grid frequency is lower than the frequency required in the local standard.

Suggestion

1. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.
2. If the alarm occurs frequently, check whether the power grid frequency is within the allowed range. If not, contact the local power operator. If yes, modify the power grid underfrequency protection threshold after obtaining the consent of the local power operator.

25 2038 Grid Frequency Unstable

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2038	Grid Frequency Unstable	Major

Possible Cause

Cause ID	Possible Cause
1	Power grid exception: The actual grid frequency change rate does not comply with the local power grid standard.

Suggestion

1. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.
2. If the alarm occurs frequently, check whether the power grid frequency is within the allowed range. If not, contact the local power operator.

26 2039 AC Overcurrent

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2039	AC Overcurrent	Major

Possible Cause

Cause ID	Possible Cause
1	The grid experiences a dramatic voltage drop or is short-circuited. As a result, the transient AC current of the device exceeds the upper threshold and triggers protection.

Suggestion

1. The device detects its external working conditions in real time. After the fault is rectified, the device automatically recovers.
2. If the alarm occurs frequently and affects the operation of the power plant, check whether AC short circuit exists. If the fault persists, contact your vendor or technical support.

27 2040 DC Component Overhigh

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2040	DC Component Overhigh	Major

Possible Cause

Cause ID	Possible Cause
1	The DC component in the AC current exceeds the upper threshold.

Suggestion

1. The device detects its external working conditions in real time. After the fault is rectified, the device automatically recovers.
2. If the alarm occurs frequently, contact your dealer or technical support.

28 2041 Reverse Phase Sequence on AC Side

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2041	Reverse Phase Sequence on AC Side	Major

Possible Cause

Cause ID	Possible Cause
1	The phase sequence on the AC side is reversed.

Suggestion

Check whether the AC cable connection is normal.

29 2042 L/N Reverse Phase Sequence

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2042	L/N Reverse Phase Sequence	Major

Possible Cause

Cause ID	Possible Cause
1	The L/N phase sequence on the AC side is reversed.

Suggestion

Check whether the AC cable connection is normal.

30 2051 Abnormal Residual Current

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2051	Abnormal Residual Current	Major

Possible Cause

Cause ID	Possible Cause
1	The input-to-ground insulation resistance decreases during device operation.

Suggestion

1. If the alarm occurs occasionally, the external circuit may be abnormal temporarily. The device will automatically recover after the fault is rectified.
2. If the alarm occurs frequently or persists, check whether the DC-to-ground resistance is too low.

31 2061 Abnormal Grounding

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2061	Abnormal Grounding	Major

Possible Cause

Cause ID	Possible Cause
1	1. The neutral wire or PE cable of the device is not connected. 2. The output mode of the device does not match the actual cable connection.

Suggestion

Power off the device (turn off the AC switch and DC switch, and wait for a period specified on the device safety warning label), and then perform the following operations:

1. Check that the PE cable of the device is connected properly.
2. If the device is connected to a TN power grid, check whether the neutral wire is properly connected and whether the voltage to ground is normal.
3. After powering on the device, check whether the output mode set on the device matches the actual cable connection.

32 2062 Low Insulation Resistance

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2062	Low Insulation Resistance	Major

Possible Cause

Cause ID	Possible Cause
1	1. A short circuit has occurred between the PV array and the ground. 2. The ambient air of the PV array is damp and the insulation between the PV array and the ground is poor.
2	1. The battery rack is short-circuited to the ground. 2. The battery rack is in a humid environment and the insulation between the circuit and ground is poor.

Suggestion

Cause ID	Suggestion
1	1. Set **Insulation resistance protection** to the minimum value and restart the inverter. 2. Check that the PE cable of the device is correctly connected. 3. Check the output-to-ground impedance of the PV array. If a short circuit or inadequate insulation is detected, rectify it.

Cause ID	Suggestion
2	Send a shutdown command to devices connected to the same DC bus. Start insulation impedance detection for the battery rack to locate the fault. After the fault is located, perform the following operations: 1. Check the battery rack-to-ground impedance. If a short circuit or inadequate insulation is found, rectify it. 2. Check that the PE cable of the device is correctly connected. 3. If the impedance is lower than the specified protection threshold in rainy and cloudy days, change the **Insulation resistance protection threshold** setting.

33 2063 Overtemperature

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2063	Overtemperature	Minor

Possible Cause

Cause ID	Possible Cause
1–2	1. The device is installed in a place with poor ventilation. 2. The ambient temperature is high. 3. The device is faulty.

Suggestion

1. Check the ventilation and ambient temperature of the device installation position.
2. If the ventilation is poor or the ambient temperature exceeds the upper threshold, improve the ventilation and heat dissipation.
3. If the fault persists, contact your vendor or technical support.

34 2064 Device Fault

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2064	Device Fault	Major

Possible Cause

Cause ID	Possible Cause
1/10/11/12/20	A major fault has occurred on the internal circuit of the device.
2-9, 13-19	1. A major fault has occurred on the internal circuit of the device. 2. The device is faulty or protected due to external factors such as the power grid.

Suggestion

Cause ID	Suggestion
1/10/11/12/20	1. If any DC SWITCH is OFF, do not turn on the AC or DC switch. (If the device appearance is abnormal, remove the DC terminals after the PV string current decreases to below 0.01 A.) Contact your vendor or technical support. 2. If any DC SWITCH is ON, turn off the AC and DC switches. (If the device appearance is abnormal, remove the DC terminals after the PV string current decreases to below 0.01 A.) Contact your vendor or technical support.

Cause ID	Suggestion
2-9, 13-19	1. Turn off the AC and DC switches, and check whether the harmonics from the power grid and the insulation of input and output power cables are normal. 2. If the power grid and cable insulation are normal, turn on the AC and DC switches 5 minutes later. If the fault persists, contact your vendor or technical support. 3. If the device appearance is abnormal, turn off the AC and DC switches, wait until the PV string current decreases to below 0.01 A, and remove the DC terminals.

35 2065 Update Failure or Version Mismatch

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2065	Update Failure or Version Mismatch	Minor[a]
Note a: The severity of an alarm whose cause ID ranges from 1 to 9 is Minor, and the severity of an alarm whose cause ID is 10 is Warning.		

Possible Cause

Cause ID	Possible Cause
1–7	The update failed.
8	The communication protocol version is incorrect.
9	1. The temperature in the device is too high. 2. The DC side of the device is not powered on.
10	The optimizer needs to be updated. Otherwise, system performance may be deteriorated.

Suggestion

Cause ID	Suggestion
1–8	1. Perform the update again. 2. If the update fails for multiple times, contact your vendor or technical support.

Cause ID	Suggestion
9	1. Wait until the device temperature drops or the DC power is turned on, and then perform the update again. 2. If the update fails multiple times, contact your vendor or technical support.
10	1. Update the optimizer. 2. If the update fails multiple times, contact your vendor or technical support.

36 2066 License Expired

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2066	License Expired	Warning

Possible Cause

Cause ID	Possible Cause
1	1. The authorization certificate has entered the grace period. 2. The authorization feature is about to expire.

Suggestion

1. Apply for a new certificate.
2. Load the new certificate.

37 2067 Faulty power collector

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2067	Faulty power collector	Major

Possible Cause

Cause ID	Possible Cause
1	The power meter communication is interrupted.
2	The CT is disconnected from the meter.
3	The PT is disconnected from the meter.

Suggestion

Cause ID	Suggestion
1	1. Check whether the configured power meter model is the same as the actual model. 2. Check whether the communications parameters for the power meter are the same as the RS485 configurations of the device. 3. Check whether the power meter is powered on and whether the RS485 communications cable is connected correctly. 4. Check whether the power supply to the power meter is abnormal due to a power grid failure.
2	Check whether the CT is correctly connected to the meter.
3	Check whether the PT is correctly connected to the meter.

38 2068 Battery abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2068	Battery abnormal	Minor

Possible Cause

Cause ID	Possible Cause
1–5	1. The battery is faulty. 2. Communication with the battery is interrupted. 3. The battery circuit breaker is disconnected during the running of the inverter. 4. A battery port is connected to more than two batteries.
6	Incompatible energy storage devices are connected.
7	Communication congestion occurred due to low baud rate of the meter.
8	The number of battery racks connected to the inverter exceeds the upper limit.
9	1. The PV terminals are incorrectly connected to the BAT terminals. 2. The BAT terminals are loosely connected or not connected.
10	The ESS software version is outdated. This item applies only to the SUN2000-(6K-15K)-MBL0 series.

Suggestion

Cause ID	Suggestion
1–5	1. If the battery fault indicator is steady on or blinking, contact the battery supplier. 2. Check that the battery is enabled, the communications cable and power cable are connected correctly, and the communication parameters are consistent with the RS485 configuration on the device. 3. Check that the auxiliary power switch on the battery is set to ON. 4. Send a shutdown command, turn off the AC switch, DC switch, and battery switch. Wait for 5 minutes and turn on the battery switch, AC switch, and DC switch in sequence. 5. If batteries have been removed, set **Battery type** to **None**. 6. If the alarm persists, contact your vendor or technical support.
6	1. Remove incompatible energy storage devices by referring to the product documentation. 2. If the alarm persists, contact your vendor or technical support.
7	1. Manually negotiate the baud rate. For details, see the user manual. 2. If the negotiated baud rate of the RS485-2 bus is lower than 115200 bps, replace the meter with one that supports a higher baud rate. 3. If the fault persists, contact the vendor or technical support.
8	1. Ensure that the number of connected battery racks does not exceed the upper limit. For details, see the user manual of the device. 2. If the fault persists, contact the vendor or technical support.
9	1. Check whether the BAT terminals are correctly and securely connected. 2. If the fault persists, contact the vendor or technical support.
10	Update the ESS software to the latest version.

39 2070 Active islanding

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2070	Active islanding	Major

Possible Cause

Cause ID	Possible Cause
1	When the power grid experiences an AC power outage, the device detects islanding proactively.

Suggestion

Check that the voltage at the grid connection point of the device is normal.

40 2071 Passive islanding

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2071	Passive islanding	Major

Possible Cause

Cause ID	Possible Cause
1	When the power grid experiences an AC power outage, the device detects islanding passively.

Suggestion

Check that the voltage at the grid connection point of the device is normal.

41 2072 Transient AC overvoltage

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2072	Transient AC overvoltage	Major

Possible Cause

Cause ID	Possible Cause
1	The device detects that the phase voltage exceeds the transient AC overvoltage protection threshold.

Suggestion

1. Check whether the voltage at the grid connection point exceeds the upper threshold. If yes, contact the local power operator.
2. If you have confirmed that the voltage at the grid connection point exceeds the upper threshold, modify the overvoltage protection threshold after obtaining the consent of the local power operator.
3. Check whether the peak grid voltage exceeds the upper threshold.

42 2075 Peripheral Port Short Circuit

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2075	Peripheral Port Short Circuit	Warning

Possible Cause

Cause ID	Possible Cause
1	The device alarm port is short-circuited when supplying 12 V power to peripherals.

Suggestion

1. Turn off the AC switch, DC switch, disconnect the external device connected to the alarm port, and power on the device again.
2. Manually clear the alarm by referring to the user manual. If the alarm persists, contact your dealer or technical support to rectify the fault. If the alarm is cleared, it indicates that the port is normal. Then check that the pins in the power port on the external device are not short-circuited.
3. After replacing the external device, start a self test according to the user manual and ensure that the port functions properly.

43 2077 Off-Grid Output Overload

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2077	Off-Grid Output Overload	Major

Possible Cause

Cause ID	Possible Cause
1–2	1. The output is overloaded or short-circuited. 2. The irradiance or battery is low.

Suggestion

1. Check whether the device output is short-circuited.
2. Check whether the device load exceeds the rated power.
3. If the irradiance or battery is low, remove some loads.
4. After the preceding problems are resolved, manually clear the alarm.

44 2080 Abnormal PV Module Configuration

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2080	Abnormal PV Module Configuration	Major

Possible Cause

Cause ID	Possible Cause
1	The total number of optimizers exceeds the upper limit allowed by the device.
2	The string power or the number of optimizers connected in series exceeds the upper limit.
3	1. The number of optimizers connected in series in the PV string is below the lower threshold. 2. The string output terminals are in reverse polarity. 3. Disconnection has occurred on the string. 4. The output terminals of some optimizers in the PV string are connected in reverse polarity.
4	The number of PV strings exceeds the upper limit allowed by the device.
5	The PV string output is in reverse polarity or short-circuited.
6	In the same MPPT circuit, the number of optimizers connected in series to the PV strings in parallel is different, or the output of some optimizers is in reverse polarity.

Cause ID	Possible Cause
7	The optimizer installation position is changed, or PV strings are combined or exchanged.
8	The irradiance is low or abnormal.
9	The string voltage exceeds the allowed input voltage of the device in the partial configuration scenario (not every module has an optimizer).
10	Failed to meet the optimizer-optimizer compatibility matrix.
11	Failed to meet the Optimizer-Inverter Compatibility Matrix.
12	1. The number of optimizers connected in series in the PV string is below the lower threshold. 2. The string output terminals are in reverse polarity. 3. Disconnection has occurred on the string. 4. The output terminals of some optimizers in the PV string are connected in reverse polarity. 5. Parallel string connection under the same MPPT is not allowed.
13	1. Partial optimizer configuration is not supported. 2. The number of optimizers connected in series exceeds the upper threshold.
14	1. No optimizer is connected or only partial PV modules are connected to an optimizer. 2. The number of optimizers connected in series exceeds the upper threshold.
15	1. The solar irradiance is weak or completely absent. 2. The string cable is connected incorrectly.

Suggestion

Cause ID	Suggestion
1	< Only SUN2000L V100R001C10 supports this function. > Check whether the total number of PV modules, number of PV modules in a string, and number of PV strings meet requirements and whether the PV module output is reversely connected: Check whether the total number of optimizers exceeds the upper limit.

Cause ID	Suggestion
2	Check whether the total number of PV modules, number of PV modules in a string, and number of PV strings meet requirements and whether the PV module output is reversely connected: Check whether the string power or the number of strings connected in series exceeds the upper limit.
3	Check the string cable connection. For details, see the optimizer installation quick guide. 1. Check whether the number of optimizers connected in series in the PV string is below the lower threshold. 2. Check whether the PV string output terminals are connected in reverse polarity. 3. Check whether the PV string output is disconnected. 4. Use an extension cable for the optimizer output, prepare new terminals, and connect the extension cable to the positive connector at one end and to the negative connector at the other end.
4	< Only SUN2000L V100R001C10 supports this function. > Check whether the total number of PV modules, number of PV modules in a string, and number of PV strings meet requirements and whether the PV module output is reversely connected: Check whether the number of PV strings exceeds the upper limit.
5	< Only SUN2000L V100R001C10 supports this function. > Check whether the total number of PV modules, number of PV modules in a string, and number of PV strings meet requirements and whether the PV module output is reversely connected: Check whether the PV string output is in reverse polarity or short-circuited.
6	Check whether the total number of PV modules, number of PV modules in a string, and number of PV strings meet requirements and whether the PV module output is reversely connected: 1. Check whether the parallel PV strings in the same MPPT circuit have the same number of optimizers connected in series. 2. Check whether the optimizer output extension cable is correctly prepared (positive connector at one end and negative connector at the other).
7, 8	Check whether the total number of PV modules, number of PV modules in each string, and number of PV strings meet requirements and whether the PV module output is in reverse polarity: Perform optimizer search again when the irradiance is normal.

Cause ID	Suggestion
9	Check whether the total number of PV modules, number of PV modules in each string, and number of PV strings meet requirements and whether the PV module output is in reverse polarity: Calculate the PV string voltage based on the number of PV modules in the PV string, and check whether the PV string voltage exceeds the upper limit of the inverter input voltage.
10	Correctly use optimizers based on the inverter-optimizer compatibility matrix in the optimizer user manual.
11	Correctly use optimizers based on the Optimizer-Inverter Compatibility Matrix in the optimizer user manual.
12	Check the string cable connection. For details, see the optimizer installation quick guide. 1. Check whether the number of optimizers connected in series in the PV string is below the lower threshold. 2. Check whether the PV string output terminals are connected in reverse polarity. 3. Check whether the PV string output is disconnected. 4. Use an extension cable for the optimizer output, prepare new terminals, and connect the extension cable to the positive connector at one end and to the negative connector at the other end. 5. If the inverter does not support parallel PV module connection, ensure that each MPPT connects to only one PV string.
13	1. Rectify the optimizer configuration. 2. Check that the number of optimizers connected in series is within the upper threshold.
14	1. Ensure that each module is connected to an optimizer. 2. Check that the number of optimizers connected in series is within the upper threshold.

Cause ID	Suggestion
15	1. Perform optimizer search again when the irradiance is normal. 2. When the irradiance is normal, measure the voltage of PV strings and troubleshoot the fault based on the "Troubleshoot abnormal string voltage" table in the optimizer user manual. (1) The PV string voltage is approximately 0: a) An open circuit may occur in the string. Check whether the PV string is open-circuited. b) The positive and negative cables may not belong to the same string. Check that the cables are correctly labeled. (2) The PV string voltage is a negative value: Check whether the string polarity is incorrect. If yes, correctly prepare positive and negative terminals. (3) Value of string voltage < optimizer quantity: a) Some optimizer input terminals may not be connected to PV modules, some optimizer output terminals may not be connected to the string, or some optimizer output terminals may be connected in reverse polarity. Check whether cables are missing between optimizers and modules or between optimizers. If not, check all extension cables and ensure that one end is the positive connector and the other end is the negative connector. b) The actual quantity of optimizers in the string may be smaller than the designed quantity. Check whether the optimizer quantity is correct. (4) Value of string voltage > optimizer quantity: a) Some modules may not be connected to optimizers. Check whether cables between optimizers and modules and between optimizers are connected correctly and ensure that all modules are connected to optimizers. b) The actual quantity of optimizers in the string may be greater than the designed quantity. Check whether the optimizer quantity is correct. (5) Value of string voltage = optimizer quantity: The quantity of optimizers connected in series in the string may be beyond the supported range, the parallel strings under the same MPPT may have different quantities of optimizers connected in series, or it may be not allowed to connect parallel strings to the same MPPT. Use optimizers correctly by referring to "Optimizer and inverter configuration rules" in the optimizer user manual.

45 2081 Optimizer Fault

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2081	Optimizer Fault	Major[a]
Note a: The severity of an alarm whose cause ID is 1 is Warning, and the severity of an alarm whose cause ID is 2 is Major.		

Possible Cause

Cause ID	Possible Cause
1	Some optimizers are faulty.
2	Some optimizers are damaged.

Suggestion

Cause ID	Suggestion
1	Tap or click the faulty optimizer on the optimizer layout to view fault details. On the local maintenance app: Choose "Maintenance > Optimizer layout > Malfunction optimizer". On the management system/remote maintenance app: Choose "Layout > Optimizer layout > Malfunction optimizer".
2	Contact your vendor or technical support to replace the faulty optimizers.

46 2082 Backup Box abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2082	Backup Box abnormal	Major

Possible Cause

Cause ID	Possible Cause
1	The device cannot communicate with the Backup Box.
2	An unrecoverable fault occurred on an internal circuit of the Backup Box, or the external cable connection of the device is incorrect.

Suggestion

Cause ID	Suggestion
1	1. Send a shutdown command, and turn off the AC switch, DC switch, and battery switch. 2. Check whether the power cable and communications (RS485) cable between the Backup Box and the device are properly connected. 3. Wait for 5 minutes and turn on the battery switch, AC switch, and DC switch. 4. If the alarm persists, contact your dealer or technical support.

Cause ID	Suggestion
2	1. Send a shutdown command, and turn off the AC switch, DC switch, and battery switch. 2. Check whether the power and signal cables of the Backup Box are normal. 3. Wait for 5 minutes and turn on the battery switch, AC switch, and DC switch. 4. If the alarm persists, contact your vendor or technical support.

47 2085 Built-in PID operation abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2085	Built-in PID operation abnormal	Minor

Possible Cause

Cause ID	Possible Cause
1	1. The DC-to-ground impedance is low. 2. An unrecoverable fault has occurred in the internal circuit.
2	1. The DC-to-ground impedance is low. 2. An unrecoverable fault has occurred in the internal circuit.

Suggestion

Cause ID	Suggestion
1	1. Turn off the AC switch and DC switch, wait for the period of time specified on the device safety warning label, and turn on the DC switch and AC switch. 2. If the fault persists, contact your vendor or technical support.
2	1. Check the DC-to-ground impedance. If a short circuit or inadequate insulation is found, rectify it. 2. If the fault persists, contact your vendor or technical support.

48 2086 External Fan Abnormality

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2086	External Fan Abnormality	Major

Possible Cause

Cause ID	Possible Cause
1–6	The external fan is short-circuited, the power supply is insufficient, or the air channel is blocked.

Suggestion

Cause ID	Suggestion
1–6	1. Turn off the AC switch and DC switch, check that the fan blades are normal, and clear the foreign objects around the fan if there are any. 2. Reinstall the fan and turn on the AC switch and DC switch. If the fault persists after the device runs for 15 minutes, replace the external fan. Cause IDs 1 to 6 correspond to fans 1 to 6, respectively.

49 2087 Internal fan abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2087	Internal fan abnormal	Major

Possible Cause

Cause ID	Possible Cause
1–4	The internal fan is short-circuited, the power supply is insufficient, or the fan is damaged.

Suggestion

Turn off the AC switch and DC switch, wait for 5 minutes, and then turn on the AC switch and DC switch. If the fault persists after the device runs for 5 minutes, contact your dealer or technical support to replace the device.

50 2088 Abnormal DC protection unit

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2088	Abnormal DC protection unit	Major

Possible Cause

Cause ID	Possible Cause
1	The fuse is not in position or is blown.
2	The two relays on the breaking board are open-circuited.
3	The contact points of the DC switches are stuck.

Suggestion

Cause ID	Suggestion
1, 2	Turn off the AC and DC switches, and contact your vendor or technical support to replace the faulty unit.
3	1. If the DC indicator on the panel is off, contact your vendor or technical support to replace the device. 2. If the DC indicator on the panel is on, turn off the AC and DC switches, and contact your vendor or technical support. 3. If the device appearance is abnormal, turn off the AC and DC switches, wait until the PV string current decreases to below 0.01 A, and remove the DC terminals.

51 2089 EL unit abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2089	EL unit abnormal	Minor

Possible Cause

Cause ID	Possible Cause
1, 2, 4	An unrecoverable fault has occurred in the internal EL circuit.
3	The temperature of the EL device is high.
5	The EL controller cannot communicate properly.

Suggestion

Turn off the AC switch and DC switch, wait for 5 minutes, turn on the AC switch and DC switch, and enable EL inspection. If the fault persists after the device runs for 5 minutes, contact your dealer or technical support to replace the EL unit.

52 2090 Abnormal active power scheduling instruction

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2090	Abnormal active power scheduling instruction	Major

Possible Cause

Cause ID	Possible Cause
1	1. The DI input is abnormal. 2. The DI input is inconsistent with the configuration.

Suggestion

1. Check that the cables are connected correctly to the DI ports.
2. Check that the configuration combinations in the DI signal configuration table for active power scheduling are complete and meet the requirements of the local power operator.

53 2091 Abnormal reactive power scheduling instruction

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2091	Abnormal reactive power scheduling instruction	Major

Possible Cause

Cause ID	Possible Cause
1	1. The DI input is abnormal. 2. The DI input is inconsistent with the configuration.

Suggestion

1. Check that the cables are connected correctly to the DI ports.
2. Check that the configuration combinations in the DI signal configuration table for reactive power scheduling are complete and meet the requirements of the local power operator.

54 2092 CT connection abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2092	CT connection abnormal	Major

Possible Cause

Cause ID	Possible Cause
1	1. The CT installation phase or direction is incorrect. 2. The CT cable is disconnected.

Suggestion

1. Check whether the CT is installed in the correct direction.
2. Check whether the CT is installed on the correct phase.
3. Check whether the cable between the CT and the device is disconnected.

55 2093 Abnormal DC switch

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2093	Abnormal DC switch	Minor

Possible Cause

Cause ID	Possible Cause
1	The DC switch is not in the ON position, or the DC switch reset button is not pressed down to the bottom.

Suggestion

1. If any DC switch is OFF when the device is running, do not turn on the switch directly. Contact your vendor or technical support.
2. If any DC switch is OFF during the first power-on, do not turn it on directly. Check the cable connection as required. If an exception is found, rectify it and turn the switch to ON (if the switch cannot be turned to the ON position, press the reset buttons of all DC switches inwards until they cannot go further). If no exception is found, contact your vendor or technical support.
3. If the device appearance is abnormal, turn off the AC and DC switches, wait until the PV string current decreases to below 0.01 A, and remove the DC terminals.

Cable connection check requirements:

(1) Check whether at least one PV string corresponding to the switch that is OFF is connected.

(2) Check whether a PV string is reversely connected.

56 2094 The remaining dischargeable capacity of the battery is low

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2094	The remaining dischargeable capacity of the battery is low	Warning

Possible Cause

Cause ID	Possible Cause
1	The remaining dischargeable capacity of the battery is lower than 10% of the total capacity in off-grid scenario.

Suggestion

The remaining power of the battery is low. Please remove unnecessary loads to increase power backup duration.

57 2095 Management System Certificate Invalid

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2095	Management System Certificate Invalid	Warning

Possible Cause

Cause ID	Possible Cause
1	The digital signature certificate is invalid.

Suggestion

Check the time or replace the digital signature certificate.

58 2096 Management System Certificate About to Expire

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2096	Management System Certificate About to Expire	Warning

Possible Cause

Cause ID	Possible Cause
1	The digital signature certificate is about to expire.

Suggestion

Replace the digital signature certificate in time.

59 2097 Management System Certificate Expired

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2097	Management System Certificate Expired	Major

Possible Cause

Cause ID	Possible Cause
1	The digital signature certificate has expired.

Suggestion

Replace the digital signature certificate immediately.

60 2098 The parallel system communication is abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2098	The parallel system communication is abnormal	Major

Possible Cause

Cause ID	Possible Cause
1	The parallel communication line is abnormal.

Suggestion

Power off the devices connected to the same DC bus (turn off the AC switches and DC switches, and wait for a period specified on the device safety warning label), and then perform the following operations:

Check that the communications cable is securely connected and turn on the AC switches and DC switches. If the fault persists, contact your dealer or technical support.

61 2099 App Communication Certificate Invalid

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2099	App Communication Certificate Invalid	Warning

Possible Cause

Cause ID	Possible Cause
1	The digital signature certificate is invalid.

Suggestion

Check the time or replace the digital signature certificate.

62 2100 App Communication Certificate Will Expire

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2100	App Communication Certificate Will Expire	Warning

Possible Cause

Cause ID	Possible Cause
1	The digital signature certificate is about to expire.

Suggestion

Replace the digital signature certificate in time.

63 2101 App Communication Certificate Expired

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2101	App Communication Certificate Expired	Major

Possible Cause

Cause ID	Possible Cause
1	The digital signature certificate has expired.

Suggestion

Replace the digital signature certificate immediately.

64 2102 Protection upon Communication Failure

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2102	Protection upon Communication Failure	Minor

Possible Cause

Cause ID	Possible Cause
1	When the disconnection of communication exceeds the specified time threshold, the device starts the protection function.

Suggestion

1. Check whether the communications cable is connected properly.
2. After communication is restored, the device will recover upon receiving a scheduling command.
3. If the Protection upon Communication Failure function is not required, disable it.

65 2103 AC Terminal Temperature Abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2103	AC Terminal Temperature Abnormal	Major

Possible Cause

Cause ID	Possible Cause
1	1. The AC power cable is not of the recommended specifications or is oxidized. 2. The OT/OD terminal of the AC power cable is not crimped as required. 3. The fastening torque of the AC terminal does not meet the requirement.

Suggestion

Power off the device and other devices connected to the same DC bus (issue a shutdown command, turn off the switches on the AC side and DC side, and wait for the period specified on the device safety warning label), and then perform the following steps:

1. Check whether the cables meet the requirements.
2. Check whether the OT/OD terminals are crimped as required.
3. Check that the fastening torque of wiring terminals meets the requirement.
4. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device.

5. If the fault persists, contact your vendor or technical support.

66 2104 DC Terminal Temperature Abnormal

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2104	DC Terminal Temperature Abnormal	Major

Possible Cause

Cause ID	Possible Cause
1	1. The DC power cable is not of the recommended specifications or is oxidized. 2. The DC connector is not properly inserted. 3. The OT/OD terminals of the DC cable are not crimped as required, or the tightening torque of the wiring terminals on the DC side does not meet the requirement.
2	The temperature of the DC terminal on MPPT1 is abnormal.
3	The temperature of the DC terminal on MPPT2 is abnormal.
4	The temperature of the DC terminal on MPPT3 is abnormal.
5	The temperature of the DC terminal on MPPT4 is abnormal.
6	The temperature of the DC terminal on MPPT5 is abnormal.
7	The temperature of the DC terminal on MPPT6 is abnormal.
8	The temperature of the DC terminal on MPPT7 is abnormal.
9	The temperature of the DC terminal on MPPT8 is abnormal.
10	The temperature of the DC terminal on MPPT9 is abnormal.

Cause ID	Possible Cause
11	The temperature of the DC terminal on MPPT10 is abnormal.

Suggestion

Cause ID	Suggestion
1	Power off the device and other devices connected to the same DC bus (issue a shutdown command, turn off the switches on the AC side and DC side, and wait for the period specified on the device safety warning label), and then perform the following steps: 1. Check whether the cables meet the requirements. 2. Check whether the DC connector is properly inserted. 3. Check whether the OT/OD terminals are crimped as required and whether the tightening torque of wiring terminals meets the requirement. 4. Turn on the AC switch and DC switch, and restart the inverter. 5. If the fault persists, contact the vendor or technical support.
2	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT1 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
3	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT2 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.

Cause ID	Suggestion
4	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT3 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
5	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT4 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
6	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT5 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
7	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT6 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.

Cause ID	Suggestion
8	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT7 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
9	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT8 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
10	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT9 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.
11	Power off the device (turn off the AC and DC switches, and wait for a period specified on the device safety warning label), and check the cable connection to the DC terminal of MPPT10 as follows: 1. Check whether the cables meet the requirements. 2. Check whether the PV terminal cores are crimped properly. 3. Check whether the PV terminal models are correct. 4. Check whether PV terminals are loosely connected. 5. If the preceding items are normal, turn on the AC switch and DC switch, and restart the device. If the fault persists, contact the vendor or technical support.

67 2110 Power Control Abnormal at Grid Connection Point

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2110	Power Control Abnormal at Grid Connection Point	Major

Possible Cause

Cause ID	Possible Cause
1	1. The meter communication is abnormal. 2. The current at the grid connection point exceeds the specified threshold.

Suggestion

1. Check whether the meter cable is properly connected.
2. Manually send a startup command. Be noted that a maximum of 3 manual startup commands can be sent within 30 days.
3. If the fault persists, contact your vendor or technical support.

68 2113 Invalid Region

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
2113	Invalid Region	Major

Possible Cause

Cause ID	Possible Cause
1	The inverter cannot work properly because its installation region is different from the sales region.

Suggestion

Contact the vendor if the installation region is different from the sales region.

69 61440 Faulty monitoring unit

Alarm Attribute

Alarm ID	Alarm Name	Alarm Severity
61440	Faulty monitoring unit	Minor

Possible Cause

Cause ID	Possible Cause
1	1. The flash memory is insufficient. 2. The flash memory has bad sectors.

Suggestion

Turn off the AC switch and DC switch, wait for 5 minutes, and then turn on the AC switch and DC switch. If the fault persists, replace the monitoring board or contact your vendor or technical support.

