Galaxy PWi

10–200 kVA 3:3
10–120 kVA 3:1

Operation

05/2014

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Table of Contents

Important Safety Information .......................................................... 1
Safety Precautions ........................................................................ 2

System Overview ........................................................................... 3
Galaxy PWi User Interface ......................................................... 3
Buzzer ....................................................................................... 4
Mimic Diagram Overview ........................................................ 4
Display Menu Tree ........................................................................ 5

Operation Modes ........................................................................... 6

Operation Procedures .................................................................... 8
Start-up of the UPS System .................................................... 12
Transfer from Normal Operation to Maintenance Bypass Operation ...... 13
Transfer from Maintenance Bypass Operation to Normal Operation ...... 14
Restart UPS after Emergency Shutdown via the EPO Button ................. 15
Perform Shutdown of the Inverter ................................................ 16
Perform Inverter Power ON (after Inverter Shutdown) ....................... 16
Perform Total Power OFF ............................................................ 17
Start-up of Parallel UPS System ............................................. 18
Transfer from Maintenance Bypass Operation to Normal Operation for Parallel Installations .................................................. 20
Transfer from Normal Operation to Maintenance Bypass Operation for Parallel Installations ................................................. 22
Turn Only One UPS in a Parallel System into Maintenance Bypass Operation ................................................................. 23

Configuration ................................................................................ 25
Manage the Event Log ................................................................ 25
Change Password for User Settings or Basic Settings ....................... 27
Change the Output Voltage ....................................................... 28
Change the Charge Current ....................................................... 30
Change the ECO Mode Setting (Only for 3:1 Single UPS) ................. 32
Change the System Capacity Settings ..................................... 33
Start/Stop or Set Up a Battery Test ............................................ 34
Change Relay 1 Settings ......................................................... 36
Change Relay 2 Settings ........................................................... 38
Change the Buzzer Setting ........................................................ 40
Change the Display Language ................................................................. 41
Change the Communication Settings .................................................. 43
Change the Time/Date Settings ............................................................. 44

Parts Replacement .................................................................................. 45
Replace a Battery .................................................................................. 45

Troubleshooting .................................................................................. 47
Important Safety Information

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Failure to follow these instructions will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.
A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

### Safety Precautions

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH</strong></td>
</tr>
<tr>
<td>All safety instructions in this document must be read, understood and followed.</td>
</tr>
<tr>
<td>Failure to follow these instructions will result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH</strong></td>
</tr>
<tr>
<td>After the UPS system has been electrically wired, do not start up the system. Startup must only be performed by Schneider Electric.</td>
</tr>
<tr>
<td>Failure to follow these instructions will result in death or serious injury.</td>
</tr>
</tbody>
</table>
System Overview

Galaxy PWi User Interface

A. Display screen
B. Left button
C. Right button
D. Inverter OFF button
E. Inverter ON button
F. Up button
G. Down button
H. Esc/mute button
I. Enter button
J. Mimic diagram
K. Emergency Power OFF (EPO) button
Buzzer

The buzzer is on the back of the user interface panel. When pushing any of the buttons on the user interface, the buzzer will give out a short beep to confirm the action.

The buzzer will also sound in the following instances:

- **UPS is on battery power**: The buzzer will beep every 3.8 seconds and the beep lasts 0.3 seconds.
- **Battery low voltage**: The buzzer will beep in intervals of 1 second and the beep will last 1 second.
- **Critical event**: The buzzer will beep continuously until the critical event has been acknowledged and resolved.
- **Event**: The buzzer will beep in intervals of 2 seconds and the beep will last 2 seconds.

Mimic Diagram Overview

The mimic diagram shows the power flow through the UPS system, and the status of the main functions:

<table>
<thead>
<tr>
<th></th>
<th>Rectifier/Charger LED</th>
<th>Battery LED</th>
<th>Inverter LED</th>
<th>Bypass LED</th>
<th>Output LED</th>
<th>Alarm LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Green: Rectifier/charger is on</td>
<td>Yellow: Battery is discharging</td>
<td>Green: Inverter starts and the inverter static switch is on</td>
<td>Yellow: Bypass static switch is on and provides power to the output</td>
<td>Green: Inverter or bypass static switch is on and UOB is on and power output is supplied to the load</td>
<td>Red: Events have been detected</td>
</tr>
<tr>
<td></td>
<td>Off: Rectifier/charger is off</td>
<td>Off: When the rectifier/charger LED is on, the battery is charging</td>
<td>Off: Inverter is off</td>
<td>Off: Bypass static switch is off</td>
<td>Off: Inverter or bypass static switch is off and UOB is off and power output is not supplied to the load</td>
<td>Off: No events have been detected</td>
</tr>
</tbody>
</table>
System Overview 10–200 kVA 3:3 10–120 kVA 3:1

Display Menu Tree
Operation Modes

Normal Operation

During normal operation the UPS supports the load with clean power from the utility/mains source.

Static Bypass Operation

During bypass operation, the load is supplied from the bypass source. The batteries are available in bypass, and if there is an interruption to the utility/mains power supply during bypass operation, the system will transfer to battery operation. This can cause an interruption to the power supplying the load.


Battery Operation

If the utility/mains supply is out of tolerance, the UPS transfers to battery operation. During battery operation, the UPS supports the load with conditioned power from the DC source.

The battery backup time depends on the number of batteries available and the load.

Maintenance Bypass Operation

The load is supplied with unconditioned power from the bypass utility/mains source through the maintenance bypass breaker (MBB). Battery power is not available. This operation mode is designed for maintenance of the UPS.
Operation Procedures

Overview of Breakers

<table>
<thead>
<tr>
<th>Breaker</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UIB</td>
<td>Unit Input Breaker</td>
</tr>
<tr>
<td>UOB</td>
<td>Unit Output Breaker</td>
</tr>
<tr>
<td>MBB</td>
<td>Maintenance Bypass Breaker</td>
</tr>
<tr>
<td>SSIB</td>
<td>Static Switch Input Breaker</td>
</tr>
<tr>
<td>BB</td>
<td>Battery Breaker (only on 3:1 220 VDC UPS Cabinet with Input Transformer)</td>
</tr>
<tr>
<td>S1</td>
<td>Battery Soft Start Switch</td>
</tr>
</tbody>
</table>

3:1 384 VDC UPS Cabinets

10–40 kVA 384 VDC UPS Cabinets 3:1
60–80 kVA 384 VDC UPS Cabinets 3:1

100–120 kVA 384 VDC UPS Cabinets 3:1
3:1 220 VDC UPS Cabinets with Input Transformer

10–40 kVA 3:1 220 VDC UPS Cabinet with Input Transformer

60–80 kVA 3:1 220 VDC UPS Cabinet with Input Transformer
100–120 kVA 3:1 220 VDC UPS Cabinet with Input Transformer

3:3 384 VDC UPS Cabinets

10–80 kVA 3:3 384 VDC UPS Cabinet
Start-up of the UPS System

1. **For the first startup**: On the back of the display, remove the plastic insulating gasket from the lithium battery seat on the LCD circuit board.
2. Connect the power supplies.
3. Turn ON battery soft start S1.
4. Turn ON static switch input breaker SSIB.
5. Turn ON unit input breaker UIB.
6. Wait for 10 seconds.
7. Turn OFF battery soft start S1.
8. Turn ON battery breaker BB (if applicable).
9. Turn ON unit output breaker UOB.
10. On the user interface, press the ON button.

11. On the following screen, press the Enter button to confirm. The Inverter LED will light up after a minute and the UPS will detect the battery for 30 seconds. Then the UPS is transferred automatically from Bypass operation to Normal operation and the UPS system will be ON.

Transfer from Normal Operation to Maintenance Bypass Operation

1. On the user interface, press the OFF button and press the Enter button to confirm. The Inverter LED will turn off and the Bypass LED will light up.
2. Remove the two screws on the protection plate for maintenance bypass breaker MBB and remove the plate. Save the plate and screws.
3. Turn ON maintenance bypass breaker MBB.
4. Turn OFF unit output breaker UOB.
5. Turn OFF battery breaker BB (if applicable).
6. Turn OFF unit input breaker UIB.
7. Turn OFF static switch input breaker SSIB.

Transfer from Maintenance Bypass Operation to Normal Operation

1. Turn ON battery soft start S1.
2. Turn ON static switch input breaker SSIB. The Bypass LED will light up.
3. Turn ON unit input breaker UIB.
4. Turn ON unit output breaker UOB.
5. Turn OFF maintenance bypass breaker MBB.
6. Wait for 10 seconds for the system to prepare.
7. Turn OFF battery soft start S1.
8. Turn ON battery breaker BB (if applicable).
9. On the user interface, press the **ON** button.

10. On the following screen, press the Enter button to confirm. The Inverter LED will light up after a minute.

11. Use a power meter to measure if the DC voltage on terminals DC+, DC-, and the output voltage and frequency is correct.

12. Reinstall the protection plate on the maintenance bypass breaker MBB with the two screws.
Restart UPS after Emergency Shutdown via the EPO Button

NOTE: When EPO has been activated, all UPS systems and statuses are locked and there is no support of the load.

1. On the UPS user interface, press the OFF button.

2. On the next screen, press the Enter button to confirm restart of the UPS. Now the UPS should supply the load via the bypass.

3. On the UPS user interface, press the ON button.
Perform Inverter Power ON (after Inverter Shutdown)

1. Turn ON static switch input breaker SSIB.
2. Turn ON unit input breaker UIB.

Perform Shutdown of the Inverter

1. On the user interface, press the OFF button and press the Enter button to confirm. The Inverter LED will turn off and the Bypass LED will light up. The UPS is now powered by Bypass.

Perform Inverter Power ON (after Inverter Shutdown)

4. On the next screen, press the Enter button to confirm restart of the inverter. The inverter will start and 1 minute later, the UPS will automatically transfer from Bypass operation to normal operation.
3. On the user interface, press the ON button.

![Main Menu](main_menu.png)

4. On the following screen, press the Enter button to confirm. The Bypass LED will turn off and the Inverter LED will light up after a minute, and the UPS will be powered by the inverter.

![Inverter ON](inverter_on.png)

**Perform Total Power OFF**

**NOTE:** For parallel installations, always perform the total power off procedure on the standby UPS first, and then on the master UPS.
1. On the user interface, press the **OFF** button and press the Enter button to confirm. The Inverter LED will turn off and the Bypass LED will light up.

![Image of the user interface with buttons and LED indicators]

**Start-up of Parallel UPS System**

**NOTE:** First complete the start-up procedure for the master UPS, and then repeat the same start-up procedure for the standby UPS.

1. **For the first startup:** On the back of the display on both UPSs, remove the plastic insulating gasket from the lithium battery seat on the LCD circuit board.
2. Begin with the master UPS.
3. Connect the power supplies.
4. Turn ON battery soft start S1.
5. Turn ON static switch input breaker SSIB.
6. Turn ON unit input breaker UIB.
7. Wait for 10 seconds.
8. Turn OFF battery soft start S1.
9. Turn ON battery breaker BB (if applicable).
10. Turn ON unit output breaker UOB.
11. On the display, select **Data display** and press the Enter button to confirm.

   ![MAIN MENU](image)

   - A Data display
   - B Event log
   - C System set
   - D Time set

   2013/03/20/12:34:56

12. Use the down arrow until you reach the **System information** screen. Check that the following parameters are correctly set up:
   
   a. **Model** has the correct capacity for the UPS.
   
   b. **Type** is set to PARALLEL.
   
   c. **System ID** is NO.1 for the master UPS and NO.2 for the standby UPS.
   
   d. **System PLL** is SELF for the master UPS and OTHER for the standby UPS.
   
   e. **DC BUS** has the correct value for the UPSs.
   
   f. **VB+VP voltage** is correct for the two UPSs.

   ![SYSTEM INFORMATION](image)

   - MODEL: 015 K33
   - TYPE: PARALLEL
   - SYS ID: NO.1
   - SYS PLL: SELF
   - DC BUS: 384 V
   - VER: M03 D02 E02 S03
   - VB: 232 V VP: 220 V

13. On the user interface, press the **ON** button.

   ![MAIN MENU](image)

   - 2013/03/20/12:34:56
14. On the following screen, press the Enter button to confirm. The Inverter LED will light up after a minute and the UPS will detect the battery for 30 seconds. Then the UPS is transferred automatically from Bypass operation to Normal operation and the UPS system will be ON.

15. Repeat the whole procedure on the standby UPS.

Transfer from Maintenance Bypass Operation to Normal Operation for Parallel Installations

1. Turn ON battery soft start S1 on both standby and master UPS.
2. Turn ON static switch input breaker SSIB on both standby and master UPS.
3. Turn ON unit input breaker UIB on both standby and master UPS.
4. Turn ON unit output breaker UOB on both standby and master UPS.
5. Turn OFF maintenance bypass breaker MBB on both standby and master UPS. The Bypass LEDs will light up.
6. Wait for 10 seconds for the systems to prepare.
7. Turn OFF battery soft start S1 on both standby and master UPS.
8. Turn ON battery breaker BB (if applicable) on both standby and master UPS.
9. On the user interface on the master UPS, press the ON button.
10. On the following screen, press the Enter button to confirm. The Inverter LED on the master UPS will light up after a minute.

```
INVERTER ON
ENTER YES
ESC NO
```

11. On the user interface on the standby UPS, press the ON button.

```
MAIN MENU
A Data display
B Event log
C System set
D Time set

2013/03/20/12:34:56
```

12. On the following screen, press the Enter button to confirm. The Inverter LED on the standby UPS will light up after a minute.

```
INVERTER ON
ENTER YES
ESC NO
```

13. Use a power meter to measure if the DC voltage on terminals DC+, DC-, and the output voltage and frequency is correct.

14. Reinstall the protection plate on the maintenance bypass breaker MBB with the two screws.
Transfer from Normal Operation to Maintenance Bypass
Operation for Parallel Installations

1. **On the user interface on the standby UPS, press the OFF button.**

![Main Menu](image)

2. On the following screen, press the Enter button to confirm. The Inverter LED on the standby UPS will turn off.

![Inverter OFF](image)

3. **On the user interface on the master UPS, press the OFF button.**

![Main Menu](image)
4. On the following screen, press the Enter button to confirm. The Inverter LED on the master UPS will turn off.

   ![Inverter OFF screen]

5. The Bypass LEDs on the master UPs and the standby UPS will light up.

6. Remove the protection plate on the maintenance bypass breaker MBB by first removing the two screws on both UPSs.

7. Turn ON maintenance bypass breaker MBB on both standby and master UPS.

8. Turn OFF battery breaker BB (if applicable) on both standby and master UPS.

9. Turn OFF unit output breaker UOB on both standby and master UPS.

10. Turn OFF unit input breaker UIB on both standby and master UPS.

11. Turn OFF static switch input breaker SSIB on both standby and master UPS.

12. Now both UPSs are in maintenance bypass operation.

Turn Only One UPS in a Parallel System into Maintenance Bypass Operation

1. Check that the total output load is less or equal to the rated power of the single UPS2 which will not be isolated.

2. **On the user interface on the UPS1 to be isolated**, press the OFF button.

   ![Main Menu]

   - A Data display
   - B Event log
   - C System set
   - D Time set

   **2013/03/20 12:34:56**
3. On the following screen, press the Enter button to confirm. The Inverter LED on UPS1 will turn off.

![Inverter Off Screen]

4. Turn OFF battery breaker BB (if present) on UPS1.
5. Turn OFF unit output breaker UOB on UPS1.
6. Turn OFF unit input breaker UIB on UPS1.
7. Turn OFF static switch input breaker SSIB on UPS1.
8. Now UPS2 is in normal operation and supports the load independently and UPS1 is isolated in maintenance bypass operation. To return the isolated UPS to normal operation, follow the procedure in *Transfer from Maintenance Bypass Operation to Normal Operation*, page 14.
Configuration

Manage the Event Log

1. On the main menu on the display, select Event log.

   MAIN MENU

   A Data display
   B Event log
   C System set
   D Time set

   2013/03/20/12:34:56
2. On the Event log screen:

   Event Log
   ■ 1 Event
   □ 2 Status
   □ 3 Delete Event

   a. Select Event to see the event log, and press the Enter button to confirm.

   000 0: SYSTEM ON
   *2013/03/20/00:06:04
   0001: NORMAL MODE
   *2013/03/20/00:06:04
   0002: BAT. ABNORMAL
   *2013/03/20/00:36:18
   0003: BAT. NORMAL
   *2013/03/20/00:36:18

   b. Select Status to see the current status, and press the Enter button to confirm.

   SM:
   11000000000000000
   SS:
   0010000000000000
   SF:
   0000010100000000

   c. Select Delete Event to delete the current event log, and press the Enter button to confirm deletion.

   Delete Event
   ■ 1 YES
   □ 2 NO
Change Password for User Settings or Basic Settings

1. On the main menu on the display, select **System Set>User Set** or **System Set>Basic Set** and enter the password.
2. Depending on which menu you entered:
   a. On the User set screen, select **Change password** with the arrow buttons and type in the old and the new password.

   ![User Set Screen] - Change Password, Battery Test, Relay, Buzzer, Language, Communication

   ![Basic Set Screen] - Change Password, System O/P Freq., System O/P Volt., Charge Current, ECO Mode SET, System Capacity

   b. On the Basic set screen, select **Change password** with the arrow buttons and type in the old and the new password.

3. Press the Enter button to confirm.

---

**Change the Output Voltage**

⚠️ **CAUTION**

**HAZARD OF EQUIPMENT DAMAGE**

This operation must only be carried out by trained professionals and not by common users.

Failure to follow these instructions can result in injury or equipment damage.
1. On the main menu on the display, select **System Set>Basic Set** and enter the current password.

   **MAIN MENU**
   - [ ] A Data display
   - [ ] B Event log
   - [ ] C System set
   - [ ] D Time set

   

   2013/03/20/12:34:56

   **SYSTEM SET**
   - [ ] 1 Basic set
   - [ ] 2 User set

2. On the Basic set screen, select **System O/P Volt.**

   - [ ] 1 Change Password
   - [ ] 2 System O/P Freq.
   - [ ] 3 System O/P Volt.
   - [ ] 4 Charge Current
   - [ ] 5 ECO Mode SET
   - [ ] 6 System Capacity
3. On the Output voltage settings screen
   - For 3:3 UPS: choose 380 V or 400 V with the arrow buttons and press the Enter button to confirm.

   ![Output Voltage for 3:3 UPS]

   - For 3:1 UPS: choose 220 V or 230 V with the arrow buttons and press the Enter button to confirm.

   ![Output Voltage for 3:1 UPS]

---

**Change the Charge Current**

⚠️ **CAUTION**

**HAZARD OF EQUIPMENT DAMAGE**

This operation must only be carried out by trained professionals and not by common users.

Failure to follow these instructions can result in injury or equipment damage.
1. On the main menu on the display, select **System Set>Basic Set** and enter the current password.

   **MAIN MENU**
   - □ A Data display
   - □ B Event log
   - □ C System set
   - □ D Time set

   2013/03/20 12:34:56

   **SYSTEM SET**
   - □ 1 Basic set
   - □ 2 User set

2. On the Basic set screen, select **Charge Current**

   - □ 1 Change Password
   - □ 2 System O/P Freq.
   - □ 3 System O/P Volt.
   - □ 4 Charge Current
   - □ 5 ECO Mode SET
   - □ 6 System Capacity

3. On the Charge current settings screen, choose 3, 5, 10, 15, 20, 30, 40, or 50 A with the arrow buttons and press the Enter button to confirm.

   **Charge Current**
   - □ 3A
   - □ 5A
   - □ 10A
   - □ 15A
   - □ 20A
   - □ 30A
   - □ 40A
   - □ 50A

---

990–4903A–001 31
Change the ECO Mode Setting (Only for 3:1 Single UPS)

1. On the main menu on the display, select **System Set>Basic Set** and enter the current password.

   ![MAIN MENU](image)

   - A Data display
   - B Event log
   - C System set
   - D Time set

   **2013/03/20/12:34:56**

2. On the Basic set screen, Select **ECO Mode Set**.

   ![SYSTEM SET](image)

   - 1 Basic set
   - 2 User set

   ![ECO Mode Set](image)

   - 1 Change Password
   - 2 System O/P Freq.
   - 3 System O/P Volt.
   - 4 Charge Current
   - 5 ECO Mode SET
   - 6 System Capacity
3. On the ECO Mode settings screen, choose **ECO Mode ON** or **ECO Mode OFF** with the arrow buttons and press the Enter button to confirm.

```
ECO Mode SET
☐ 1 ECO Mode ON
☐ 2 ECO Mode OFF
```

## Change the System Capacity Settings

**CAUTION**

**HAZARD OF EQUIPMENT DAMAGE**

This operation must only be carried out by trained professionals and not by common users.

Failure to follow these instructions can result in injury or equipment damage.

1. On the main menu on the display, select **System Set>Basic Set** and enter the current password.

```
MAIN MENU
☐ A Data display
☐ B Event log
☐ C System set
☐ D Time set

2013/03/20/12:34:56
```

```
SYSTEM SET
☐ 1 Basic set
☐ 2 User set
```
2. On the Basic set screen, select **System Capacity**

- □ 1 Change Password
- □ 2 System O/P Freq.
- □ 3 System O/P Volt.
- □ 4 Charge Current
- □ 5 ECO Mode SET
- □ 6 System Capacity

3. On the System capacity settings screen, select 10, 15, 20, 30, 40, 50, 60, 80, 100, 120, 160, or 200 K with the arrow buttons and press the Enter button to confirm.

**System Capacity**

- □ 10K  □ 60K
- □ 15K  □ 80K
- □ 20K  □ 100K
- □ 30K  □ 120K
- □ 40K  □ 160K
- □ 50K  □ 200K

---

**Start/Stop or Set Up a Battery Test**

**NOTE:** The battery test function only detects if batteries are connected to the UPS, not the condition of the batteries.
1. On the main menu on the display, select System Set>User Set and enter the current password.

   MAIN MENU
   □ A Data display
   □ B Event log
   □ C System set
   □ D Time set

   2013/03/20/12:34:56

   SYSTEM SET
   □ 1 Basic set
   □ 2 User set

2. On the User set screen, select Battery Test

   □ 1 Change Password
   □ 2 Battery Test
   □ 3 Relay
   □ 4 Buzzer
   □ 5 Language
   □ 6 Communication

3. On the Battery test screen, choose START, 15 days, 1 month, 3 months, or Test OFF with the arrow buttons and press the Enter button to confirm.
Change Relay 1 Settings

1. On the main menu on the display, select **System Set>User Set** and enter the current password.

   ![MAIN_MENU](image)

   **MAIN MENU**
   - □ A Data display
   - □ B Event log
   - □ C System set
   - □ D Time set
   - 2013/03/20/12:34:56

   ![SYSTEM_SET](image)

   **SYSTEM SET**
   - □ 1 Basic set
   - □ 2 User set

2. On the User set screen, select **Relay** with the arrow buttons and press the Enter button to confirm.

   ![RELAY_MENU](image)

   **RELAY MENU**
   - □ 1 Change Password
   - □ 2 Battery Test
   - □ 3 Relay
   - □ 4 Buzzer
   - □ 5 Language
   - □ 6 Communication
3. On the Relay Set screen, select **Relay 1** with the arrow buttons, and press the Enter button to confirm.

```
Relay Set

- Relay1
- Relay2
```

4. On the Relay 1 Setting screen, select with the arrow buttons which event relay 1 should be activated by: **SPS Err**, **INV STS ON**, **RCM OTP**, **BYP Freq Err**, **BAT Boost Charge**, **PLL Err**, **Machine HD Over**, **OL/INV SD/BYP Mode** and press the Enter button to confirm.

```
- SPS Err
- INV STS ON
- RCM OTP
- BYP Freq Err
- BAT Boost Charge
- PLL Err
- Machine HD Over
- OL/INV SD/BYP Mode
```
Change Relay 2 Settings

1. On the main menu on the display, select **System Set>User Set** and enter the current password.

   ![Main Menu](image)

   - A Data display
   - B Event log
   - C System set
   - D Time set

   **2013/03/20/12:34:56**

2. On the User set screen, select **Relay** with the arrow buttons and press the Enter button to confirm.

   ![System Set](image)

   - 1 Basic set
   - 2 User set

   ![Relay Options](image)

   - 1 Change Password
   - 2 Battery Test
   - 3 Relay
   - 4 Buzzer
   - 5 Language
   - 6 Communication
3. On the Relay Set screen, select **Relay 2** with the arrow buttons, and press the Enter button to confirm.

![Relay Set Screen](image)

4. On the Relay 2 Setting screen, select with the arrow buttons which event relay 2 should be activated by: **BAT Opposite**, **INV OTP**, **EPO Action**, **BAT Low Voltage**, **DC HV/INV SD**, **O/P Switch ON**, **INV Vce Sat**, **INV STS Fail**, and press the Enter button to confirm.

![Relay Setting Screen](image)
Change the Buzzer Setting

1. On the main menu on the display, select **System Set>User Set** and enter the current password.

   MAIN MENU
   □ A Data display
   □ B Event log
   □ C System set
   □ D Time set
   2013/03/20/12:34:56

   SYSTEM SET
   □ 1 Basic set
   □ 2 User set

2. On the User set screen, select **Buzzer**

   □ 1 Change Password
   □ 2 Battery Test
   □ 3 Relay
   □ 4 Buzzer
   □ 5 Language
   □ 6 Communication
3. On the Buzzer settings screen, select **Silence** or **Alarm** with the arrow buttons and press the Enter button to confirm.

![Buzzer Set]

**Change the Display Language**

1. On the main menu on the display, select **System Set>User Set** and enter the current password.

![MAIN MENU]

![SYSTEM SET]
2. On the User set screen, select **Language**

   - 1 Change Password
   - 2 Battery Test
   - 3 Relay
   - 4 Buzzer
   - 5 Language
   - 6 Communication

3. On the Language settings screen select **English**, **Chinese Simplified**, or **Chinese Traditional** with the arrow buttons and press the Enter button to confirm.
Change the Communication Settings

1. On the main menu on the display, select **System Set>User Set** and enter the current password.

   **MAIN MENU**
   - A Data display
   - B Event log
   - C System set
   - D Time set
   
   2013/03/20/12:34:56

2. On the User set screen, select **Communication**.

   **SYSTEM SET**
   - 1 Basic set
   - 2 User set

   **Communication**
   - 1 Change Password
   - 2 Battery Test
   - 3 Relay
   - 4 Buzzer
   - 5 Language
   - 6 Communication
3. On the Communication settings screen, select the MODBUS address from 1 to 9 using the arrow buttons and press the Enter button to confirm.

![Communication settings screen](image)

**Change the Time/Date Settings**

**NOTE:** The date and time is managed by a real time counter (RTC) which is powered by a lithium battery on the LCD circuit board on the back of the display. This ensures that the date and time will be correct even if the UPS has been shut down for a period of time. The date and time stamp on the Event log is also generated by the RTC. If the date and time shown on the main menu during startup is not correct, check if the lithium battery needs to be replaced.

1. On the main menu on the display, select **Time Set**.

![Main menu](image)

2. On the Time set screen, use the arrow buttons to set the time and date correctly, and press the Enter button to confirm.

![Date/Time set screen](image)
Parts Replacement

Replace a Battery

1. On the user interface, press the **OFF** button and press the Enter button to confirm. The Inverter LED will turn off and the Bypass LED will light up.
2. Remove the two screws on the protection plate for maintenance bypass breaker MBB and remove the plate. Save the plate and screws.

![MBB Image]

3. Turn ON maintenance bypass breaker MBB.
4. Turn OFF unit output breaker UOB.
5. Turn OFF battery breaker BB (if applicable).
6. Turn OFF unit input breaker UIB.
7. Turn OFF static switch input breaker SSIB.
8. Wait for 1 minute, and then remove the battery cables from the battery.
9. Remove the old battery and replace with a new battery.
10. Connect the battery cables to the battery in the same way as the original cabling order. Verify battery voltage and polarity before continuing.
11. Turn ON battery soft start S1.
12. Turn ON static switch input breaker SSIB. The Bypass LED will light up.
13. Turn ON unit input breaker UIB.
14. Wait for 10 seconds for the system to prepare.
15. Turn OFF battery soft start S1.
16. Turn ON battery breaker BB (if applicable).
17. Turn ON unit output breaker UOB.
18. Turn OFF maintenance bypass breaker MBB.
19. On the user interface, press the **ON** button.
20. On the following screen, press the Enter button to confirm. The Inverter LED will light up after a minute.

![Inverter ON screen]

21. Use a power meter to measure if the DC voltage on terminals DC+, DC-, and the output voltage and frequency is correct.

22. Reinstall the protection plate on the maintenance bypass breaker MBB with the two screws.
## Troubleshooting

### Relay Function Abbreviations

#### Relay 1

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS Err</td>
<td>Working power supply is damaged</td>
</tr>
<tr>
<td>INV STS ON</td>
<td>Inverter static switch is turned on</td>
</tr>
<tr>
<td>RCM OTP</td>
<td>Rectifier overheat protection</td>
</tr>
<tr>
<td>BYP Freq Err</td>
<td>Bypass power frequency is out of tolerance</td>
</tr>
<tr>
<td>BAT boost Charge</td>
<td>Battery is boost-charging</td>
</tr>
<tr>
<td>PLL Err</td>
<td>Lock phase unsuccessful</td>
</tr>
<tr>
<td>Machine HD Over</td>
<td>The humidity inside the UPS is too high</td>
</tr>
<tr>
<td>OL / INV SD / BYP Mode</td>
<td>overload, inverter shutdown, UPS is in bypass mode</td>
</tr>
</tbody>
</table>

#### Relay 2

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT Opposite</td>
<td>Battery is connected to opposite polarities</td>
</tr>
<tr>
<td>INV OTP</td>
<td>Inverter is overheated</td>
</tr>
<tr>
<td>EPO Action</td>
<td>Emergency Power Off has been activated</td>
</tr>
<tr>
<td>BAT LOW Voltage</td>
<td>Battery low voltage</td>
</tr>
<tr>
<td>DC HV / INV SD</td>
<td>Voltage of direct current chain is too high and inverter has shut down</td>
</tr>
<tr>
<td>O/P Switch ON</td>
<td>The output switch is ON</td>
</tr>
<tr>
<td>INV Vce Sat</td>
<td>Inverter IGBT protection is activated</td>
</tr>
<tr>
<td>INV STS Fail</td>
<td>Inverter static switch is damaged</td>
</tr>
</tbody>
</table>

### Event Log Abbreviations

<table>
<thead>
<tr>
<th>Event Log Abbreviations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTP</td>
<td>‘Over Temperature Protection’.</td>
</tr>
<tr>
<td>UV</td>
<td>‘Under Voltage’.</td>
</tr>
<tr>
<td>OV</td>
<td>‘Over Voltage’.</td>
</tr>
<tr>
<td>OC</td>
<td>‘Over Current’.</td>
</tr>
<tr>
<td>PSE</td>
<td>‘Phase Sequence not correct’.</td>
</tr>
<tr>
<td>Mc</td>
<td>‘Electromagnetic Switch’.</td>
</tr>
<tr>
<td>Display message</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>I/P VOLT ERR</td>
<td>Input voltage out of tolerance</td>
</tr>
<tr>
<td>I/P OVER CUR</td>
<td>Input over-current</td>
</tr>
<tr>
<td>I/P FREQ ERR</td>
<td>Input frequency out of tolerance</td>
</tr>
<tr>
<td>I/P PHASE SEQ ERR</td>
<td>Input phase is disordered</td>
</tr>
<tr>
<td>vdc VOLT ERR</td>
<td>DC voltage out of tolerance</td>
</tr>
<tr>
<td>RCM OVER TEMP</td>
<td>The temperature of the rectifier is too high</td>
</tr>
<tr>
<td>Ibat OVER CUR</td>
<td>Battery over charging current</td>
</tr>
<tr>
<td>B/P VOLT ERR</td>
<td>Bypass voltage out of tolerance</td>
</tr>
<tr>
<td>B/P OVER CUR</td>
<td>Bypass over-current</td>
</tr>
<tr>
<td>Condition</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>B/P FREQ ERR</td>
<td>Bypass frequency out of tolerance</td>
</tr>
<tr>
<td>B/P PHASE SEQ ERR</td>
<td>Bypass phase is disordered</td>
</tr>
<tr>
<td>BATTERY ERR</td>
<td>Battery is abnormal</td>
</tr>
<tr>
<td>O/P VOLT ERR</td>
<td>Output voltage out of tolerance</td>
</tr>
<tr>
<td>O/P OVER CUR</td>
<td>Output over-current</td>
</tr>
<tr>
<td>Idc OVER CUR</td>
<td>Idc over-current</td>
</tr>
<tr>
<td>INV OVER TEMP</td>
<td>The temperature on the inverter is too high</td>
</tr>
<tr>
<td>IGBT VCE SAT</td>
<td>IGBT protection signal is activated</td>
</tr>
<tr>
<td>B/P STS ERR</td>
<td>Bypass STS damaged</td>
</tr>
<tr>
<td>INV STS ERR</td>
<td>Inverter STS damaged</td>
</tr>
<tr>
<td>O/P OVER LOAD 100%</td>
<td>Output overload is 100%</td>
</tr>
<tr>
<td>O/P OVER LOAD 125%</td>
<td>Output overload is 125%</td>
</tr>
<tr>
<td>O/P SHORT ERR</td>
<td>Output shorted</td>
</tr>
<tr>
<td>EEPROM ERR</td>
<td>EEPROM abnormal</td>
</tr>
<tr>
<td>AC MC ERR</td>
<td>AC electromagnetic contactor abnormal</td>
</tr>
<tr>
<td>DC MC ERR</td>
<td>DC electromagnetic contactor abnormal</td>
</tr>
</tbody>
</table>
### SPS ERR
- **Description**: Working power supply is damaged
- **Corrective action**: Check if the fuse on the power supply board is open. If it is open, replace the fuse.

### BAT Opposite
- **Description**: Battery is connected to opposite polarities
- **Corrective action**: Check and correct the battery cable connections.

### FAN ERR
- **Description**: Fan is damaged
- **Corrective action**: Check the fan and replace it if needed.

---

## Charger Troubleshooting

<table>
<thead>
<tr>
<th>Display message</th>
<th>Description</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input exceeds rating voltage</td>
<td>Utility voltage is too high</td>
<td>Let utility restore below +/-20%</td>
</tr>
<tr>
<td>Input lacks voltage</td>
<td>Utility voltage is too low</td>
<td>Let utility restore below +/- 20%</td>
</tr>
<tr>
<td>Input current exceeds rating value</td>
<td>Overload is above 125%</td>
<td>Reduce load to 100%</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>PCBA-3316 feedback circuit is damaged</td>
<td>Replace PCBA-3316</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>SCR component damaged</td>
<td>Replace SCR component</td>
<td></td>
</tr>
<tr>
<td>PCBA-3302 trigger signal to SCR is abnormal</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
<tr>
<td>PCBA-3302 control abnormal</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
<tr>
<td>Input frequency is too high</td>
<td>Utility frequency is too high</td>
<td>Restore frequency to standard +/- 3Hz</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 zero point detecting circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>Issue Description</td>
<td>Solution</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>---------------------------</td>
<td></td>
</tr>
<tr>
<td>Input frequency is too low</td>
<td>Utility frequency is too low</td>
<td>Renew program</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 zero point detecting circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>DC bus voltage is too high</td>
<td>PCBA-3302 DC voltage feedback point is open</td>
<td>Renew program</td>
</tr>
<tr>
<td>DC bus voltage is too low</td>
<td>PCBA-3302 feedback circuit is damaged</td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td>PCBA-3100 program parameter too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>SCR component has shorted</td>
<td>Replace SCR component</td>
<td></td>
</tr>
<tr>
<td>PCBA-3302 control abnormal</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
<tr>
<td>DC bus voltage is too low</td>
<td>PCBA-3302 DC voltage feedback point is open</td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td>Battery power is insufficient and utility voltage is too low</td>
<td>Restore utility to standard +/- 20%</td>
<td></td>
</tr>
<tr>
<td>IGBT component has shorted</td>
<td>Replace IGBT component</td>
<td></td>
</tr>
<tr>
<td>PCBA-3302 control abnormal</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
<tr>
<td>Charge current is too high</td>
<td>PCBA-3302 charge current exceeds limit current point</td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td>PCBA-3302 feedback circuit is damaged</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>Battery abnormal</td>
<td>Replace battery</td>
<td></td>
</tr>
<tr>
<td>Charger is overheated</td>
<td>The temperature of the charger side heat sink board is too high</td>
<td>Reduce the load to 100%</td>
</tr>
<tr>
<td>Battery abnormal</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
<tr>
<td>Charger is overheated</td>
<td>The temperature switch cable is open</td>
<td>Restore the temperature switch cable</td>
</tr>
<tr>
<td>PCBA-3302 signal abnormal</td>
<td>Replace PCBA-3302</td>
<td></td>
</tr>
</tbody>
</table>
Inverter Troubleshooting

<table>
<thead>
<tr>
<th>Display message</th>
<th>Description</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage exceeds rating value</td>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>Output lacks voltage</td>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 program parameter is too low</td>
<td>Correct program parameter</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>Output current exceeds rating value</td>
<td>Overload above 100%</td>
<td>Reduce the load to 100%</td>
</tr>
<tr>
<td></td>
<td>PCBA-3316 detecting circuit is damaged</td>
<td>Replace PCBA-3316</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
</tr>
<tr>
<td>Inverter input current exceeds rating value</td>
<td>This function is not available now</td>
<td></td>
</tr>
<tr>
<td>Inverter is overheated</td>
<td>Temperature of inverter side heat sink board is too high</td>
<td>Reduce load to 100%</td>
</tr>
<tr>
<td></td>
<td>Temperature switch cable is open</td>
<td>Restore temperature switch cable</td>
</tr>
<tr>
<td></td>
<td>PCBA-3312 signal abnormal</td>
<td>Replace PCBA-3312</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 signal abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>VCE Fault</td>
<td>IGBT component short circuited</td>
<td>Replace IGBT component</td>
</tr>
</tbody>
</table>
System Troubleshooting

<table>
<thead>
<tr>
<th>Display message</th>
<th>Description</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery can't supply power</td>
<td>There is no battery present</td>
<td>Install a battery</td>
</tr>
<tr>
<td>Battery power is insufficient</td>
<td></td>
<td>Charge battery</td>
</tr>
<tr>
<td>PCBA-3302 detecting circuit is damaged</td>
<td></td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td>PCBA-3100 program parameter abnormal</td>
<td></td>
<td>Correct program parameter</td>
</tr>
<tr>
<td>Input voltage is lower than 25%</td>
<td>Utility voltage is too low</td>
<td>Restore utility to standard +/-20%</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td></td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td></td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>PCBA-3100 program parameter abnormal</td>
<td></td>
<td>Correct program parameter</td>
</tr>
<tr>
<td>It is overheated in UPS</td>
<td>System abnormal</td>
<td>Call service</td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td></td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too high</td>
<td></td>
<td>Correct program parameter</td>
</tr>
<tr>
<td>Humidity of UPS is too high</td>
<td>This function is not available now</td>
<td>Add reserve power</td>
</tr>
<tr>
<td>There is no reserve power</td>
<td>No reserve power present</td>
<td>Add reserve power</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td></td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td></td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>PCBA-3100 program parameter abnormal</td>
<td></td>
<td>Correct program parameter</td>
</tr>
<tr>
<td>There is no any power</td>
<td>No power source is present</td>
<td>Add/install a power source</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td></td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td>PCBA-3302 detecting circuit is damaged</td>
<td></td>
<td>Replace PCBA-3302</td>
</tr>
</tbody>
</table>
### Static Switch Troubleshooting

<table>
<thead>
<tr>
<th>Display message</th>
<th>Description</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static switch abnormal</td>
<td>SCR signal cable is not connected correctly</td>
<td>Restore SCR signal cable connection method</td>
</tr>
<tr>
<td>Battery test is abnormal</td>
<td>No battery present</td>
<td>Install a battery</td>
</tr>
<tr>
<td></td>
<td>Battery power is insufficient</td>
<td>Charge battery</td>
</tr>
<tr>
<td></td>
<td>PCBA-3302 detecting circuit is damaged</td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 program parameter abnormal</td>
<td>Correct program parameter</td>
</tr>
<tr>
<td>Emergency switch action</td>
<td>Emergency switch has been activated</td>
<td>Reset the emergency switch</td>
</tr>
<tr>
<td></td>
<td>Output has shorted</td>
<td>Eliminate short circuit</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 detecting circuit is damaged</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 detecting circuit is damaged</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>Issue Description</td>
<td>Solution</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>-----------------------------------</td>
<td></td>
</tr>
<tr>
<td>SCR component damaged</td>
<td>Replace SCR component</td>
<td></td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter abnormal</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 control signal abnormal</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3311 control abnormal</td>
<td>Replace PCBA-3311</td>
<td></td>
</tr>
<tr>
<td>Output overload 100%</td>
<td>Overload is above 100%</td>
<td>Reduce the load to 100%</td>
</tr>
<tr>
<td>PCBA-3316 detecting circuit is damaged</td>
<td>Replace PCBA-3316</td>
<td></td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>Output overload 125%</td>
<td>Overload is above 125%</td>
<td>Reduce the load to below 125%</td>
</tr>
<tr>
<td>PCBA-3316 detecting circuit is damaged</td>
<td>Replace PCBA-3316</td>
<td></td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>Output short-cut</td>
<td>Output has shorted</td>
<td>Eliminate the short circuit</td>
</tr>
<tr>
<td>EEPROM access error</td>
<td>EEPROM replace IC</td>
<td>PCBA-3100 program loads initial value (system need to be reset again)</td>
</tr>
<tr>
<td>EEPROM access procedure abnormal</td>
<td>EEPROM access procedure abnormal</td>
<td>PCBA-3100 program loads initial value (system need to be reset again)</td>
</tr>
<tr>
<td>Renew PCBA-3100 program</td>
<td>Renew PCBA-3100 program</td>
<td>PCBA-3100 program loads initial value (system need to be reset again)</td>
</tr>
<tr>
<td>EEPROM is damaged</td>
<td>EEPROM is damaged</td>
<td>Replace with new EEPROM</td>
</tr>
</tbody>
</table>
## Operation Control Panel LEDs Troubleshooting

<table>
<thead>
<tr>
<th>Display message</th>
<th>Description</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input relay indicator abnormal</td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3307 drive circuit is damaged</td>
<td>Replace PCBA-3307</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 signal display abnormal</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td>Manual bypass switch indicator abnormal</td>
<td>Maintenance switch signal cable is open</td>
<td>Restore maintenance switch signal cable</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 signal display abnormal</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td>Output switch indicator abnormal</td>
<td>Output switch signal cable is open</td>
<td>Restore the output switch signal cable</td>
</tr>
<tr>
<td></td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 signal display abnormal</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td>Charger indicator abnormal</td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3302 drive circuit is damaged</td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td></td>
<td>SCR component damaged</td>
<td>Replace SCR component</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 signal display abnormal</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td>Battery charge indicator abnormal</td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 signal display abnormal</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td>Battery discharge indicator abnormal</td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3302 drive circuit is damaged</td>
<td>Replace PCBA-3302</td>
</tr>
<tr>
<td></td>
<td>Hall Sensor component damaged</td>
<td>Replace Hall Sensor component</td>
</tr>
<tr>
<td></td>
<td>PCBA-3104 signal display abnormal</td>
<td>Replace PCBA-3104</td>
</tr>
<tr>
<td>Bypass static switch indicator abnormal</td>
<td>PCBA-3100 control abnormal</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td></td>
<td>PCBA-3311 drive circuit is damaged</td>
<td>Replace PCBA-3311</td>
</tr>
<tr>
<td></td>
<td>SCR component damaged</td>
<td>Replace SCR component</td>
</tr>
<tr>
<td></td>
<td>PCBA-3320 feedback circuit is damaged</td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td>Display message</td>
<td>Description</td>
<td>Corrective action</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Bypass exceeds rating voltage</td>
<td>Bypass voltage is too high</td>
<td>Restore the bypass voltage to standard +/- 20%</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>Bypass lacks voltage</td>
<td>Bypass voltage is too low</td>
<td>Restore the bypass voltage to standard +/- 20%</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 feedback circuit is damaged</td>
<td>Replace PCBA-3100</td>
<td></td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too low</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>Bypass current exceeds rating value</td>
<td>Overload is above 125%</td>
<td>Reduce the load to 100%</td>
</tr>
<tr>
<td>PCBA-3100 program parameter is too high</td>
<td>Correct program parameter</td>
<td></td>
</tr>
<tr>
<td>SCR component damaged</td>
<td>Replace SCR component</td>
<td></td>
</tr>
<tr>
<td>Bypass frequency is too high</td>
<td>Bypass frequency is over high</td>
<td>Restore frequency to standard +/-3Hz</td>
</tr>
</tbody>
</table>

**Bypass Mode Troubleshooting**
<table>
<thead>
<tr>
<th>Issue</th>
<th>Action</th>
</tr>
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<tbody>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
<td>Replace PCBA-3320</td>
</tr>
<tr>
<td>PCBA-3100 zero point detecting circuit is damaged</td>
<td>Replace PCBA-3100</td>
</tr>
<tr>
<td>PCBA-3100 program miscalculation</td>
<td>Renew program</td>
</tr>
<tr>
<td>Bypass frequency is too low</td>
<td>Restore frequency to standard +/-3Hz</td>
</tr>
<tr>
<td>PCBA-3320 detecting circuit is damaged</td>
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</tr>
<tr>
<td>PCBA-3100 zero point detecting circuit is damaged</td>
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<td>PCBA-3100 program miscalculation</td>
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