



LivaNova
Advanced Circulatory Support

LifeSPARC Alarm Guide

24/7 Clinical Support 800 373 1607

Customer Service 800 373 7421

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CP-PIT-7000-0209 Rev. 1

LifeSPARC | Alarm Guide

High Priority Alarms

| High Priority Alarms | Trigger | Possible Causes | Action |
|----------------------------|-------------------------------|--|---|
| !!! Low Flow | Flow < 1.5 LPM | Thrombus blockage, kinked tubing, shifted cannula, collapsed atrium, hypovolemia | <ol style="list-style-type: none"> 1. Inspect the outflow (to patient) and inflow (to Pump) tubing and cannulae for kinks or restrictions. 2. Notify the physician in charge. 3. Assess the patient for possible hypovolemia or right heart failure. If present, user may need to reduce Pump RPM. 4. With normal fluid balances, increase RPM until desired liter flow is achieved. 5. Call LivaNova ACS for Technical Support. |
| !!! Pump Stopped | Pump RPM = 0 | Pump Cable disconnected, Thrombus formation, Pump failure | <ol style="list-style-type: none"> 1. If alarm is not associated with the operator stopping the Pump, notify physician in charge. NOTE: This alarm clears automatically when Pump starts. 2. Call LivaNova ACS for Technical Support. |
| !!! Battery Critically Low | Battery capacity < 10 minutes | Battery has less than 10 minutes of run time capacity | <ol style="list-style-type: none"> 1. Reconnect to AC Power as soon as possible. 2. If alarm persists after reconnection to AC Power, notify physician in charge. 3. Call LivaNova ACS for Technical Support. |

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High Priority Alarms

| High Priority Alarms | Trigger | Possible Causes | Action |
|----------------------------------|--|--|---|
| !!! Battery Depleted | Battery capacity = 0 minutes | Battery has no run time capacity | <ol style="list-style-type: none"> 1. Reconnect to AC Power as soon as possible. 2. If alarm persists after reconnection to AC Power, notify physician in charge. 3. Call LivaNova ACS for Technical Support. |
| !!! Controller Temp High | Controller temp > 66°C | Controller Cooling vents blocked, Controller failure | <ol style="list-style-type: none"> 1. Remove any source of heat/insulation and verify that nothing is blocking the cooling air inlets/outlets (see Figure 3). 2. Verify cooling fans are on. 3. Notify the physician in charge. 4. Call LivaNova ACS for Technical Support. |
| !!! Battery 1 and 2 Disconnected | Both batteries disconnected or internal power supply failure | Battery missing, improperly seated, failed or Controller failure | <ol style="list-style-type: none"> 1. Verify that batteries are installed and fully seated in the Controller. 2. Verify cooling fans are on. 3. Notify the physician in charge. 4. Call LivaNova ACS for Technical Support. |

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Medium Priority Alarms

| Medium Priority Alarms | Trigger | Possible Causes | Action |
|----------------------------|--|---|--|
| !! Primary Alarm Failure | Main alarm failure, Controller failure | Main Alarm Failure | <ol style="list-style-type: none"> 1. Replace Controller. 2. Notify physician in charge. 3. Call LivaNova ACS for Technical Support |
| !! Pump Current High | Pump Current >2.60 amps | Thrombus formation, Pump failure, or excessive flow | <ol style="list-style-type: none"> 1. Replace Pump 2. Notify physician in charge 3. Call LivaNova ACS for Technical Support. |
| !! Battery Low | Battery Capacity < 30 minutes | Battery capacity reduced to 30 minutes | <ol style="list-style-type: none"> 1. Reconnect to AC Power as soon as possible. 2. If alarm persists after reconnection to AC Power, notify the physician in charge. 3. Call LivaNova ACS for Technical Support. |
| !! Secondary Alarm Failure | Backup Alarm Failure | Secondary alarm failure, Controller failure | <ol style="list-style-type: none"> 1. Replace Controller 2. Notify physician in charge. 3. Call LivaNova ACS for Technical Support. |

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Low Priority Alarms

| Low Priority Alarms | Trigger | Possible Causes | Action |
|---------------------------------|---|---|---|
| ! Flow Sensor Error | Poor Flow Sensor acoustic coupling. | Flow sensor not secured to tubing, ultrasonic gel required, meter failure | <ol style="list-style-type: none"> 1. Check that Flow Sensor is properly clamped on tubing and that adequate amount of ultrasonic gel is applied between sensor and tubing. 2. Check Flow Sensor connection. 3. Replace Flow Sensor or revert to flow estimate. 4. Call LivaNova ACS for Technical Support. |
| ! Pump Speed Error | Pump Speed differs from setting by more than 100RPM | Pump or Controller failure | <ol style="list-style-type: none"> 1. Replace Controller. If problem persists, replace Pump. 2. Call LivaNova ACS for Technical Support. |
| ! Now On Battery Power | AC Power has been removed | Controller disconnected from dock, Power Cord unplugged, main power loss | Silence alarm. Check AC Power indicator for appropriate status. |
| ! Battery [1 or 2] Disconnected | Battery Removed from Controller | 1 battery missing from Controller, a battery not seated, battery failure | <ol style="list-style-type: none"> 1. If battery is charged, reseal the battery. 2. If battery may not be charged or is low, replace with charged battery. 3. If the alarm cannot be resolved after these actions, call LivaNova for Technical Support. |
| ! Battery End of Life | Battery <30 minutes when fully charged | Battery charge capacity compromised due to age, faulty battery | <ol style="list-style-type: none"> 1. Replace End of Life battery with a functional battery. 2. Call LivaNova ACS for Technical Support |
| ! Audible Alarm | Controller Start-up Failure | Software malfunction at start-up | <ol style="list-style-type: none"> 1. Press and hold Power button until alarm ceases and Controller powers off. 2. Initiate start-up sequence by pressing the Power button again. 3. If Controller fails to start-up after multiple attempts, switch to a back-up Controller. |

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System or Critical Failure During Operation

PUMP CONTINUES TO RUN, DO NOT TURN OFF CONTROLLER.

- **DO NOT DISCONNECT OR STOP THE PUMP** unless determination has been made to discontinue support
- Confirm that the pump is running and that the Pump Speed is being maintained as displayed on the secondary display LED lights
- Controller replacement will be necessary to re-establish full functionality



Pump Speed



WARNING:

CRITICAL SOFTWARE FAILURE

1. **DO NOT** turn off this Controller
2. **DO NOT** disconnect Pump
3. **CONFIRM** Pump is running via secondary display (blue lights)
4. **TURN ON** backup Controller
5. **ADJUST** backup Controller to desired RPM speed
6. **DISCONNECT** Pump from this Controller, **CONNECT** Pump to backup Controller, **START** the Pump
7. **SWITCH** flow sensor to backup Controller
8. **CONTACT**
LivaNova 24/7 CLINICAL SUPPORT
(800) 373-1607 or (412) 579-6182

- **NOTE:** 1 LED is approximately 2000 RPM and 10 LEDs is approximately 7500 RPM.
- The MENU and SILENCE Button will be non-functional, and a continuous tone alarm will sound.
- Pump speed can be adjusted on the Controller in the failure condition up until it is replaced.
- An external flow measurement system may be utilized until replacement is complete
- Contact LivaNova for additional guidance and support: Local representative or **24/7 CLINICAL SUPPORT:** 800-373-1607

Refer to Section 5.2 of the LifeSPARC Operations Manual for detailed instructions.

Self-Test Failure Messages During Power-up

| | |
|--|---|
| | Critical Failure |
| | Non-Critical Failure Batteries missing or failed |

Refer to Section 7.2 of the LifeSPARC Operations Manual for detailed instructions.

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LifeSPARC Controller Exchange

DO NOT TURN OFF THE CONTROLLER OR DISCONNECT

While steps 1-3 are being completed, continue to use the Controller currently in use.

Preparing the replacement Controller:

1. Ensure batteries are charged, properly installed, and verify power source as A/C or battery for the replacement Controller.
2. Turn on the replacement Controller and verify successful power up (Controller will automatically proceed to the LOCK screen). Note that the default speed will be 3500 RPM.
3. Select the Pump Settings Screen to adjust speed.

The replacement Controller is now ready to connect to the Pump.

Exchanging the Controller:

4. Disconnect the pump drive line from existing Controller and plug the pump drive line into the pump drive line receptacle on the replacement Controller.
5. Start Pump on the replacement Controller.
6. Attach the flow sensor to the replacement Controller.
7. If System Failure or Critical Failure, report to LivaNova.

Contact LivaNova for additional guidance and support: Local representative or **24/7 CLINICAL SUPPORT: 800-373-1607**



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