LivaNova
Advanced Circulatory Support

LifeSPARC Alarm Guide

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IM-7100118-ACS-D

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	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	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	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.

LifeSPARC | **Alarm Guide**
High Priority Alarms

High Priority Alarms	Trigger	Possible Causes	Action
!!! Battery Depleted	Battery capacity = 0 minutes	Battery has no run time capacity	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	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	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.

LifeSPARC | Alarm Guide
Medium Priority Alarms

Medium Priority Alarms	Trigger	Possible Causes	Action
!! Primary Alarm Failure	Main alarm failure, Controller failure	Main Alarm Failure	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	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	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	1. Replace Controller 2. Notify physician in charge. 3. Call LivaNova ACS for Technical Support.

LifeSPARC | **Alarm Guide**

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	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	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	1. If battery is charged, reseat 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	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	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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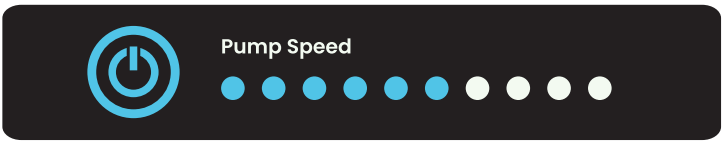
System or Critical Failure During Operation

PUMP CONTINUES TO RUN, DO NOT TURN OFF CONTROLLER.

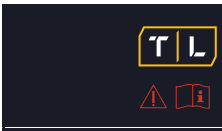
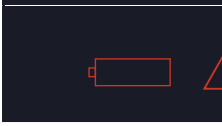
- **DO NOT DISCONNECT OR STOP THE PUMP** unless determination has been made to discontinue support
- Confirm that the pump is running and that the Pump Speed is being maintained as displayed on the secondary display LED lights
- Controller replacement will be necessary to re-establish full functionality



- **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.

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

LivaNova
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