



User Information  
Update

English

# Lumify Diagnostic Ultrasound System Hardware for iOS Devices

**PHILIPS**



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# 1 Read This First

This *User Information Update* contains information about the Lumify Power Module (LPM), the Lumify mobile device cases, and the accessories that enable you to use your iOS device as part of the Lumify Diagnostic Ultrasound System. Please keep this update with your ultrasound system.

This document extends and enhances the information contained in the user information provided with your ultrasound system. It describes the most extensive configuration of the product, with the maximum number of options and accessories. Some functions described may be unavailable on your product's configuration. For the other safety information and procedures, see your system user information set.

Read This First

4535 620 24932\_A/795 \* JAN 2020

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## 2 Safety

This safety information supplements information in the *Lumify User Manual*. For complete safety information, see that manual.

### Approved Cables for Electromagnetic Compliance

Cables connected to the device may affect its emissions. Use only the cable types and lengths listed here.



#### WARNING

Using cables, transducers, or accessories other than those specified for use with the system may result in increased emissions or decreased immunity of the system.

#### Approved Cables

Cable	Length	Philips Part Number
Rigid Connector (Lightning to USB Type-C)	1.8 cm (0.7 in)	453561978091
Flexible Cable (Lightning to USB Type-C)	6.5 cm (2.6 in)	453562003951
Charging Cable (USB Type-C to Type-A)	1.7 m (5.6 ft)	453562016471

### Approved Accessories for Electromagnetic Compliance

Accessories used with the system may affect its emissions. The accessories listed here, when used with the system, have been tested to comply with the Group 1, Class B emissions as required by international standard CISPR 11. Use only the accessories listed here.

When connecting other accessories to the system, such as a printer or computer, it is the user's responsibility to ensure the electromagnetic compatibility of the system. Use only CISPR 11 or CISPR-22, Class B-compliant devices, unless otherwise noted.

**WARNING**

**Using cables, transducers, or accessories other than those specified for use with the system may result in increased emissions or decreased immunity of the system.**

**Approved Accessories**

Accessory	Manufacturer	Philips Model Number or Part Number
Lumify Power Module	Philips	453561998451

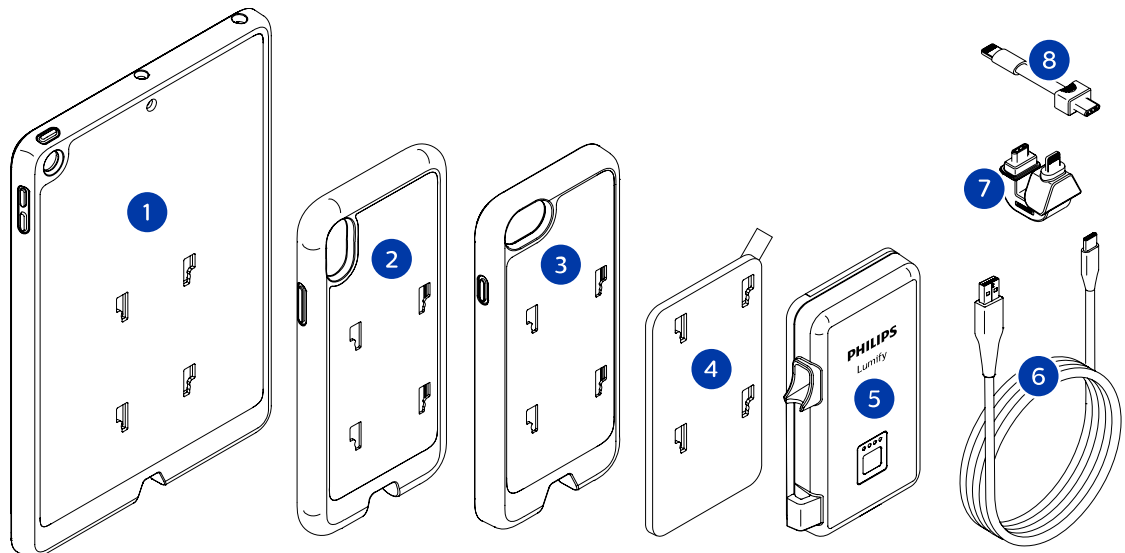


## 3 System Overview

Use this section to acquaint yourself with the Lumify system components.

### System Components

In addition to the Lumify system components listed in the *Lumify User Manual*, the following hardware components are available for iOS devices.



System Components (iOS Devices)

- |   |  |
|---|--|
| 1 | Case with LPM mounts for iPad (9.7-inch) 5th and 6th generation mobile devices |
| 2 | Case with LPM mounts for iPhone X and iPhone XS mobile devices                 |
| 3 | Case with LPM mounts for iPhone 7 and iPhone 8 mobile devices                  |
| 4 | Adhesive mounting plate  |
| 5 | Lumify Power Module (LPM)  |

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6 Charging cable

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7 Rigid connector

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8 Flexible cable

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## 4 Using the System

The topics that follow will help you understand and use the features of the system.

### Attaching the Lumify Power Module

The Lumify mobile device case is the most secure method of attaching the Lumify Power Module (LPM) to your mobile device. The Lumify mobile device case is only compatible with certain iOS devices; it is not compatible with other holders or accessories. Philips provides Lumify mobile device cases that are designed to work with the following iOS devices:

- iPad (9.7-inch) 5th and 6th generation mobile devices
- iPhone 7 and iPhone 8 mobile devices
- iPhone X and iPhone XS mobile devices

For iOS devices that cannot use one of the Lumify mobile device cases, an adhesive mounting plate is included for attaching the LPM to a case.

#### Attaching the LPM to a Lumify Mobile Device Case



#### CAUTION

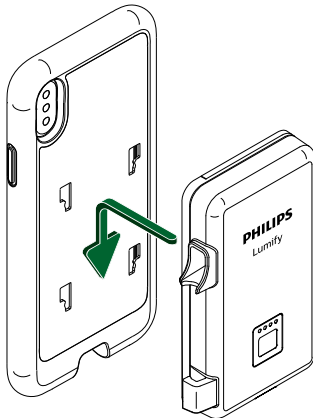
**Always insert the mobile device into the Lumify mobile device case in a clean, dust-free, and low-humidity environment. Make sure the mobile device is clean and dry before inserting it into the case.**

1. Gently insert the mobile device into the Lumify mobile device case. Make sure the mobile device seats fully in the case. Only gentle pressure is required to seat the mobile device. Do not force the mobile device into the case.



Inserting the Mobile Device into the Lumify Mobile Device Case

2. Insert the tabs of the LPM into the slots on the case and slide the LPM down to lock it in place.



Inserting the LPM Tabs into the Slots of the Lumify Mobile Device Case and Locking the LPM in Place

3. Use the rigid connector to connect the LPM to the mobile device.



Using the Rigid Connector to Connect the LPM to the Mobile Device

### Attaching the LPM to a Lumify Adhesive Mounting Plate

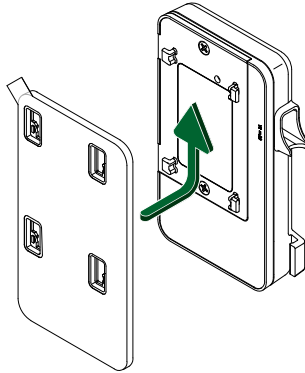
For iOS devices that cannot use one of the Lumify mobile device cases, an adhesive mounting plate is included for attaching the LPM to a case.

#### NOTE

The mounting plate adhesive is not compatible with certain slick or non-stick surfaces. For best results, attach the mounting plate to a phone case or tablet case made of metal or hard plastic.

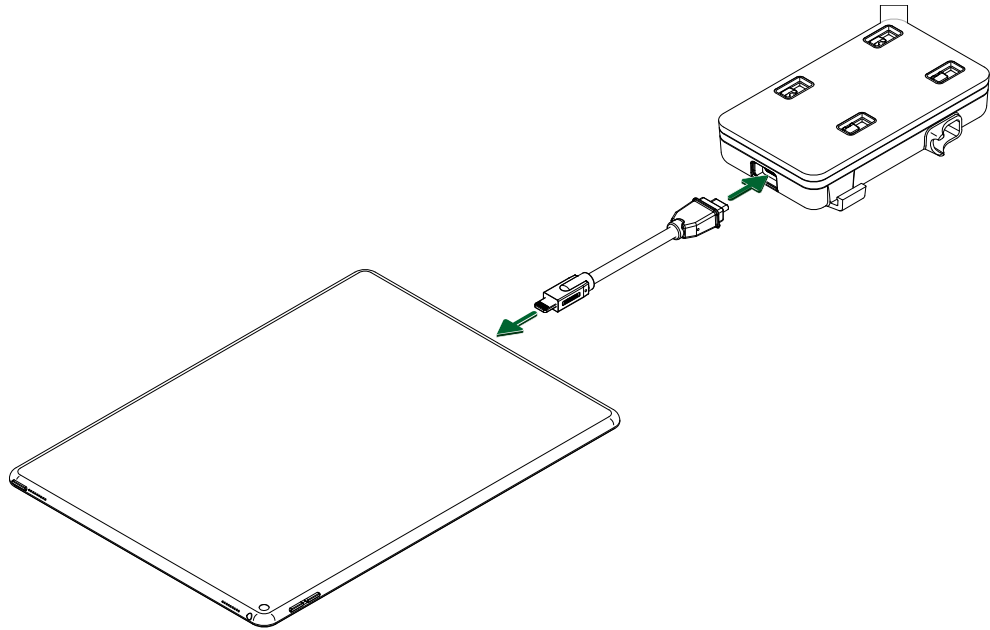
1. Make sure that the surface of the device or the case to which you are attaching the mounting plate is clean and dry.
2. Attach the mounting plate to the LPM.

- a. Insert the tabs on the LPM into the slots on the mounting plate.
- b. Slide the mounting plate toward the top of the LPM until it locks in place.



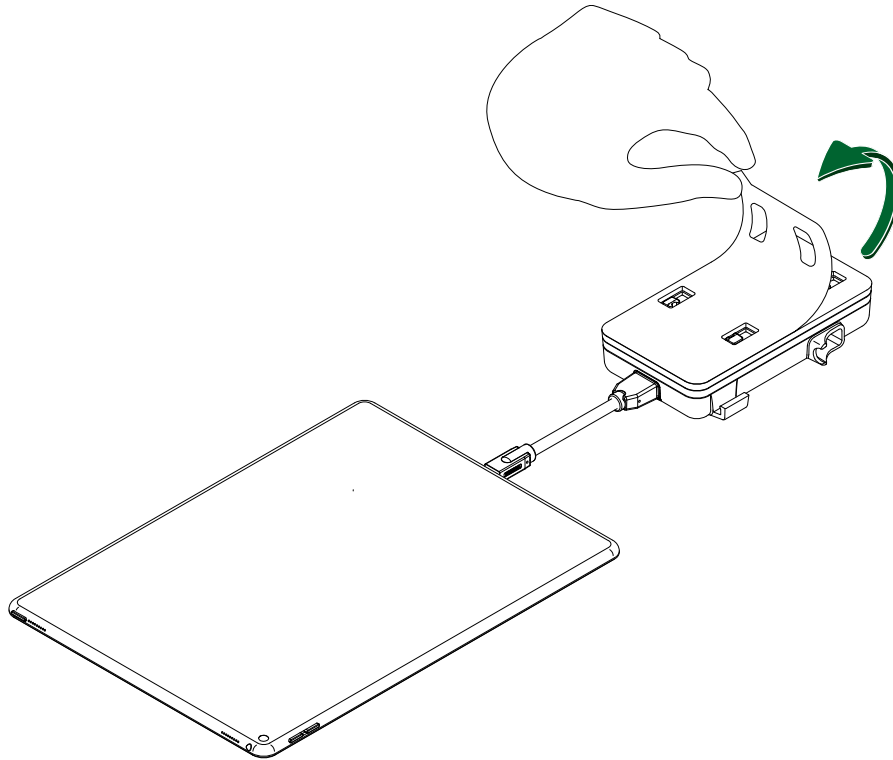
Inserting the Tabs on the LPM into the Mounting Plate Slots and Sliding the LPM into Place

3. Use the flexible cable to connect the LPM to the mobile device.



Using the Flexible Cable to Connect the LPM to the Mobile Device

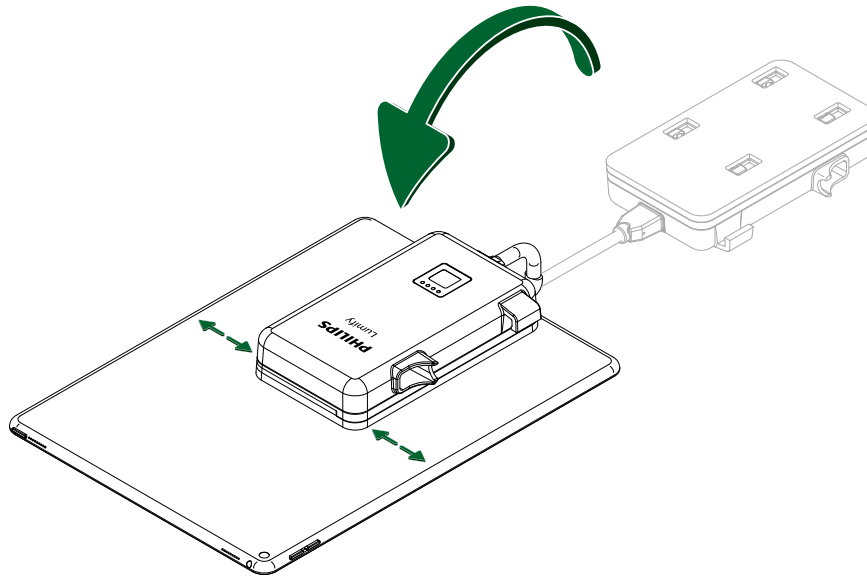
4. Remove the adhesive backing from the mounting plate.



#### Removing the Adhesive Backing from the Lumify Mounting Plate

5. Press the mounting plate with the LPM onto the back of the mobile device or the case.
  - Make sure that the LPM is aligned with the bottom of the mobile device and is centered along the width of the device.
  - Make sure that the mounting plate is securely adhered to the surface.





Pressing the Lumify Mounting Plate with the LPM onto the Back of the Mobile Device or the Case

### Removing the LPM

1. Disconnect the LPM from the mobile device by removing the rigid connector or the flexible cable.
2. Slide the LPM toward the top of the mobile device to unlock it from the case.
3. Pull the LPM straight back and away from the mobile device.

## Charging the Lumify Power Module Battery



### WARNING

To avoid the risk of electrical shock, do not charge your Lumify system while scanning a patient.

**WARNING**

**To avoid patient contact with the device while it is charging, do not charge the system while inside the patient environment.**

**NOTE**

Philips recommends using the charging cable supplied with your Lumify system to charge the LPM. Use a charger with a USB Type-A connector port to charge the LPM. Do not use a charger with USB Type-C connector port.

Charge the Lumify Power Module (LPM) fully before you use the system for the first time or when the LPM has been unused for extended periods.

You can charge the LPM separately. However, if your charger has an output of at least 2 A, you can charge the LPM while it is connected to your iPhone (both devices charge simultaneously).

Do not attempt to charge the LPM while it is connected to an iPad. The iPad draws too much current to enable simultaneous charging.



1. If a transducer is connected to the LPM, disconnect it.
2. Insert the USB Type-C connector of the charging cable into the power/transducer port on the LPM.
3. Insert the USB Type-A connector of the charging cable into a USB Type-A charger.
4. After the LPM battery is fully charged, disconnect the LPM from the charger:
  - a. Unplug the charging cable from the LPM.
  - b. Unplug the charging cable from the power source.

## Checking the Lumify Power Module Battery Charge

Before starting an exam, check that the Lumify Power Module (LPM) has sufficient charge. You can check for the charge by using the Lumify app or by using the charge indicator button.

### Using the Lumify App to Check the LPM Battery Charge

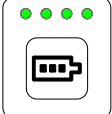
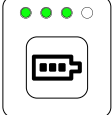
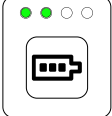
When you are scanning, an icon in the upper right of the imaging screen shows the approximate charge level of the LPM battery. For more detailed information about the state of the LPM battery, use the following procedure.

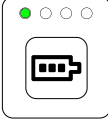
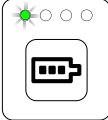
1. In the Lumify app, touch , and then touch **Settings** .
2. Under **Settings**, touch **Lumify Power Module**.
3. On the **Lumify Power Module** page, check that the battery **Status** is **Normal** and that the **Charge Level** is above 20%.
4. If the LPM does not have sufficient charge for your exam, charge the LPM battery or exchange it for a freshly charged LPM. See [“Charging the Lumify Power Module Battery” on page 17](#).

### Using the Charge Indicator Button to Check the LPM Battery Charge

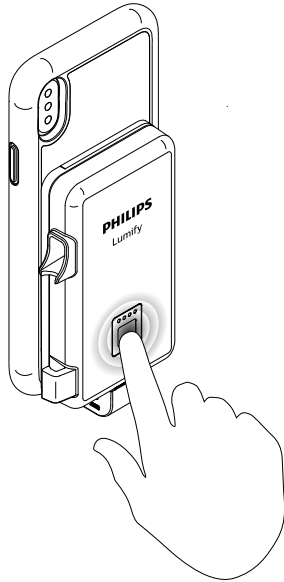
The charge indicator on the LPM has four LEDs to show the charge level.

#### Charge Level Indicator

Indicator	Description
	75% to 100% charge
	50% to 75% charge
	25% to 50% charge

Indicator	Description
	10% to 25% charge
	When blinking, less than 10% charge. Requires charging before use.

1. Press the button on the LPM and check that at least one charge indicator LED is lit.



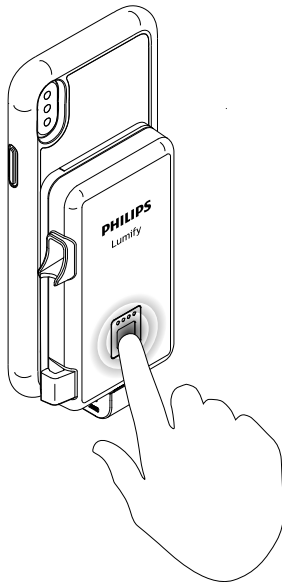
#### Checking the LPM Battery Level

2. If the currently installed LPM does not have sufficient charge for your exam, charge the LPM battery or exchange it for a freshly charged LPM. See [“Charging the Lumify Power Module Battery”](#) on page 17.

## Turning On the Lumify Power Module

Before you can begin scanning, you must turn on the Lumify Power Module (LPM). There are two ways to turn on the LPM:

- Connect a transducer. For information on connecting a transducer, see the *Lumify User Manual*.
- Press the button on the back of the LPM. The lights on the LPM will show the level of charge in the LPM battery. For information on battery charge levels, see [“Checking the Lumify Power Module Battery Charge” on page 18](#). Allow several seconds for the LPM to turn on before starting a scan.



Turning on the LPM



## 5 System Maintenance

This section extends and enhances the information contained in the user information provided with your ultrasound system. No planned maintenance by Philips is required. The system owner is responsible for maintenance and cleaning.

### Replacing the Lumify Power Module Battery

Batteries for the Lumify Power Module (LPM) have a 1-year warranty, and can be replaced.

You can order replacement batteries for the LPM from the following international suppliers:

Company Name	Company Location
Element14	New Zealand
Mouser Electronics	USA
Farnell	United Kingdom



#### CAUTION

**Use only RRC model 1120 batteries.**

You need a Phillips-head screwdriver to perform this procedure.

1. Disconnect and remove the LPM from the back of the mobile device.
2. Place the LPM on a clean, flat surface with the battery cover facing up.
3. Use the Phillips-head screwdriver to remove the battery cover screws and open the battery compartment.
4. Invert the LPM and gently tap it against a hard surface to dislodge and remove the battery.

5. Place the new RRC model 1120 battery into the battery compartment, and carefully align the contacts on the battery with those on the LPM.
6. Replace the battery cover:
  - a. Make sure that the battery cover orientation is correct.
  - b. Secure the battery cover with the screws.
7. Reattach and connect the LPM to the mobile device. For more information, see [“Attaching the Lumify Power Module” on page 11.](#)

### Discarding Batteries



#### WARNING

**Do not disassemble, puncture, or incinerate batteries. Be careful not to short the battery terminals, because that could result in a fire hazard.**

Batteries should be discarded in an environmentally safe manner. Properly dispose of batteries according to local regulations.

## Cleaning and Disinfecting the Lumify System Components



#### WARNING

**Always use protective eyewear and gloves when cleaning, disinfecting, or sterilizing any equipment.**



**CAUTION**

**Follow all instructions provided to avoid damage during cleaning, disinfection, and sterilization. Failure to do so could void your warranty.**

It is important to clean the ultrasound system. If exposed to constant and excessive environmental dust and humidity, these devices will suffer in both performance and reliability.

The Lumify Diagnostic Ultrasound System is composed of several components that may have different cleaning and disinfection requirements:

- For your mobile device, it is your responsibility to appropriately clean and disinfect your mobile device in accordance with the device manufacturer's instructions and with your institution's policies for cleaning and disinfecting of medical devices.
- For the Lumify system transducer and transducer cable, see *Care and Cleaning of Ultrasound Systems and Transducers* and *Disinfectants and Cleaning Solutions for Ultrasound Systems and Transducers*. Information on compatible disinfectants is also available at:  
[www.philips.com/transducercare](http://www.philips.com/transducercare)
- For the Lumify Power Module (LPM) and the Lumify mobile device cases supplied for use with certain iOS devices, see [“Cleaning the Lumify Component Surfaces” on page 27](#) and [“Disinfecting Lumify Component Surfaces” on page 28](#).

## Disinfectants and Cleaners for Lumify System Components

The compatibility of disinfection and cleaning solutions varies depending on the item on which they are used.

The products in the following table are compatible with the system surfaces for the following components:

- Lumify Power Module (LPM)
- Lumify case for certain iPhone and iPad mobile devices

Cleaning Solutions	Disinfectants
Mild soap solution (for example, 1% Liquinox) <sup>1</sup>	<ul style="list-style-type: none"> <li>• 70% isopropyl alcohol (IPA)</li> <li>• Opti-Cide 3 (QUAT/IPA based)</li> <li>• Oxivir Tb (accelerated hydrogen peroxide based)</li> <li>• PI-Spray II (QUAT based)</li> <li>• Protex</li> <li>• Sani-Cloth HB (QUAT based)</li> <li>• Sani-Cloth Plus (QUAT/IPA based)</li> </ul>

1. Mild soap solutions do not contain any harsh ingredients and are not irritating to the skin. They must not contain fragrance, oils, or alcohols. Hand sanitizers are not approved for use.

**CAUTION**

**Do not use abrasive cleaners, or acetone, MEK, paint thinner, or other strong solvents on the system, peripherals, or transducers.**

**CAUTION**

**Do not use Sani-Cloth AF3 or Super Sani-Cloth to disinfect the system.**

**CAUTION**

**Do not spill or spray liquid into any system seams, ports, or transducer receptacles.**

## Cleaning the Lumify Component Surfaces

Before cleaning the Lumify Power Module (LPM) and the Lumify mobile device case, read [“Disinfectants and Cleaners for Lumify System Components” on page 25.](#)

### NOTE

The mobile device and any accessories not supplied with the Lumify system should be cleaned and disinfected separately according to the manufacturer's instructions and your institution's policies. The Lumify mounting plate, if used, should be cleaned and disinfected in the same manner as the device or accessory to which it is attached.

1. To ensure a thorough cleaning and disinfection for the Lumify Power Module (LPM) and the Lumify case:
  - a. Disconnect the transducer. For detailed instructions on how to clean, disinfect, and maintain each type of transducer used with the Lumify system, including disinfectant compatibility, see *Care and Cleaning of Ultrasound Systems and Transducers* and *Disinfectants and Cleaning Solutions for Ultrasound Systems and Transducers*.
  - b. Disconnect the rigid connector or the flexible cable.
  - c. Remove the LPM from the Lumify mobile device case or the mounting plate.
  - d. If a Lumify mobile device case is used, remove the mobile device from the case. The mobile device should be cleaned separately according to the manufacturer's instructions and your institution's policies.
2. Wipe the external surfaces of the following system components with a soft cloth lightly moistened (damp; not dripping) with a mild soap solution and potable water.
  - Lumify Power Module
  - Lumify mobile device case
3. Gently remove any soap residue with a cloth lightly moistened with potable water.
4. Allow the system components to air dry.

If the equipment has come in contact with blood or infectious material, see [“Disinfecting Lumify Component Surfaces” on page 28](#).

## Disinfecting Lumify Component Surfaces

Before disinfecting the Lumify Power Module (LPM) and the Lumify mobile device case, read [“Disinfectants and Cleaners for Lumify System Components” on page 25](#) and [“Cleaning the Lumify Component Surfaces” on page 27](#).

1. Choose a compatible disinfectant and follow the label instructions for preparation, temperature, and solution strength. If a pre-mixed solution is used, be sure to observe the solution expiration date.
2. Wipe the surface of the Lumify Power Module (LPM) and the Lumify mobile device case with the disinfectant, following disinfectant label instructions for wipe durations, solution strengths, and disinfectant contact duration.
3. Allow the system components to air dry.

## Troubleshooting

The troubleshooting table contains a list of symptoms and the actions to take to correct the problems.

## Troubleshooting

Symptoms	Corrective Action
<p>The Lumify Power Module (LPM) does not display a charge.</p>	<p>If no lights appear after pressing the button on the back of the LPM:</p> <ul style="list-style-type: none"> <li>• Charge the LPM.</li> <li>• Remove the LPM battery for 30 seconds, and then reinstall the LPM battery.</li> <li>• Change the LPM battery. For more information, see .</li> </ul>
<p>The Lumify app displays "Connect Lumify Power Module."</p>	<ul style="list-style-type: none"> <li>• Press the button on the back of the LPM to make sure the LPM is turned on.</li> <li>• After pressing the button on the LPM, make sure the LPM battery has sufficient charge by verifying that at least one LED is lit.</li> <li>• Disconnect and reconnect the connector or cable between the LPM and the mobile device.</li> <li>• Remove the LPM battery for 30 seconds, and then reinstall the LPM battery.</li> <li>• Change the LPM battery. For more information, see .</li> <li>• If possible, connect a different LPM.</li> </ul>



## 6 Specifications

These specifications apply to the Lumify Power Module (LPM). For specifications for the system transducers, see the *Lumify User Manual*.

### Dimensions

- Height: 107 mm (4.2 in)
- Width: 60 mm (2.4 in)
- Depth: 17 mm (0.7 in)
- Weight (with battery): 150 g (5.3 oz)

### Environmental Limits

These limits apply only to the Lumify Power Module, and not to the mobile device on which you run the Lumify app. For information about your device's environmental specifications, consult the documentation that accompanies your device.

#### Pressure, Humidity, and Temperature Limits for the Lumify Power Module

Parameter	Operating Limits	Storage Limits
<b>Pressure</b>	700 hPa (525 mmHg) to 1,060 hPa (795 mmHg)	500 hPa (375 mmHg) to 1,060 hPa (795 mmHg)
<b>Humidity</b>	0% to 95% non-condensing	15% to 95% relative humidity
<b>Temperature</b>	0°C (32°F) to 40°C (104°F)	-34°C (-29.2°F) to 70°C (158°F)

### Connections

The LPM has the following ports:

- Power/Transducer port: USB-C
- Mobile device connection port: USB-C

## Safety and Regulatory Requirements

### Electromechanical Safety Standards Met

The Lumify Power Module (LPM) complies with the requirements of IEC 60601-1 General Requirements for Basic Safety and Essential Performance, including all applicable collateral and particular standards, as well as all applicable deviations. System users are responsible for ensuring that the chosen device is compliant with the law in the jurisdiction in which the product is used.

### Service Life

Service life is defined by IEC 60601-1 as the amount of time a system is expected to remain safe for use. The service life for system components may be defined by hours of use or numbers of times used.

#### NOTE

Regular maintenance is necessary to ensure a system or component performs for its expected service life.

The Lumify Power Module (not including the battery) has a service life of 3 years.



4535 620 24932\_A/795 \* JAN 2020

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Published in USA  
4535 620 24932\_A/795 \* JAN 2020 - en-US