

LiquidBiopsy™ Instrument

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This guide contains the information needed to prepare your site for installation of the LiquidBiopsy™ Instrument (Catalog no. A28188).

Site preparation workflow

A Cynvenio Biosystems representative will contact you to schedule the installation. When the installation is scheduled:

1. Complete the site preparation checklist (page 2).
2. Receive and inspect the system (page 9).
3. Move the crated instrument to the installation site (page 10).
4. Ensure:
 - The site preparation checklist is complete.
 - The purchase order is complete.

Installation timeline and training

After the LiquidBiopsy™ Instrument is uncrated, installation and testing of the instrument takes 1 business day.

IMPORTANT! The LiquidBiopsy™ Instrument *must* be installed in a BioSafety Level 2 (BSL-2) designated laboratory.

During and/or after installation, the Cynvenio Biosystems service representative reviews data and provides some basic operator training. For additional training and reference information, see the user documents provided with the LiquidBiopsy™ Instrument.

Site preparation checklist

IMPORTANT! Complete, date, and initial all items in the following checklist before the scheduled installation date. If the site preparation checklist is not complete when the service representative arrives, the scheduled installation may be postponed.

✓	Date	Initials	Site preparation requirement	See page
<input type="checkbox"/>			Customer responsibilities have been reviewed and personnel have been assigned.	3
			The installation site is identified and meets requirements:	
			<input type="checkbox"/> Space and clearance	4
			<input type="checkbox"/> Environmental	5
			<input type="checkbox"/> Electrical	6
			<input type="checkbox"/> Safety	8
<input type="checkbox"/>			All materials needed for installation and operation are available.	9
<input type="checkbox"/>			The instrument was received and inspected:	9
			<input type="checkbox"/> All items on the shipping list are the same items ordered at the time of purchase.	
			<input type="checkbox"/> Any damage to shipping containers was reported to the shipping company that delivered the instrument.	
			<input type="checkbox"/> Any damage or mishandling was recorded on the shipping documents.	
<input type="checkbox"/>			The installation site is cleared and ready for instrument installation	10
<input type="checkbox"/>			The crated instrument and other shipping containers are moved to the installation site.	

Customer responsibilities

Personnel	Responsibilities
Site preparation/ installation coordinator	<ul style="list-style-type: none"> • Reviews the site preparation guide for safety information and instrument requirements. • Coordinates personnel and tasks. • Chooses the site. • Reviews checklists with applicable personnel, then with the service representative to verify that the site is properly prepared. • Receives and inspects the LiquidBiopsy™ Instrument. • Schedules the installation and informs personnel of the installation day. • Ensures that the site is clear of unnecessary material on the installation day. • Is available to assist the service representative throughout installation.
Laboratory safety representative	<ul style="list-style-type: none"> • Reviews the site preparation guide for safety information. • Ensures that the required safety practices and equipment are in place. • Is in the vicinity and available to the service representative at all times while the service representative is at the customer's facility.
Laboratory personnel/ primary users	<ul style="list-style-type: none"> • Review safety information. • Ensures that all customer-provided materials for installation are present at the site. • Ensures that primary users (responsible for training other users) are available during the installation, so that they can be trained on the instrument.
Facilities personnel	<ul style="list-style-type: none"> • Ensures that the installation requirements are met for: <ul style="list-style-type: none"> - Space at the installation site - Building clearances - Temperature and humidity - Waste collection - Electrical supply - Safety and installation materials • If possible, moves the crated LiquidBiopsy™ Instrument to the site before the installation date. • Is available to assist service representative and laboratory personnel throughout installation. • If applicable, ensures that at least two people are available to help the service representative move and position the instrument.

Site requirements

Dimensions and weights

To prepare for installation, provide space for receipt and configuration of the following components. This section provides dimensions and weights for the crates and packages you will receive, and it describes the dimensions of the instrument after it has been installed and configured.

IMPORTANT! We do not install, service, or repair instruments in areas designated BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4).

Crates and packages

⚠ WARNING! PHYSICAL INJURY HAZARD. Do not attempt to lift or move the instrument without professional assistance. The instrument is heavy. Any incorrect lifting or moving of the instrument can cause serious injury.

Note: We recommend the use of a small forklift to place the crate on a lifting cart or directly onto the laboratory bench location itself.

Ensure the building clearances allow for the passage of the instrument crates and packages.

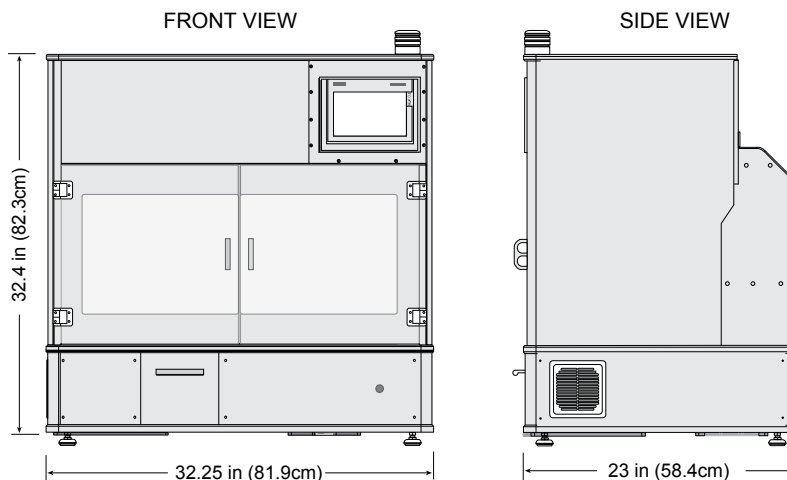
Crate or package	Height	Length (depth)	Width	Weight
LiquidBiopsy™ Instrument	94.0 cm (37 in.)	71.1 cm (28 in.)	96.5 cm (38 in.)	159 kg (350 lb)

Components

Ensure that the installation site bench space is level, and can accommodate the dimensions and support the weight.

Component	Height	Length (depth)	Width	Weight
LiquidBiopsy™ Instrument	82.3 cm (32.4 in.)	58.4 cm (23 in.)	81.9 cm (32.25 in.)	127 kg (280 lbs)

Configured platform dimensions



Platform clearances

During instrument setup and maintenance, it is necessary to access the back and sides of the instrument. If the back of the instrument faces a wall, it will be necessary to have enough space to rotate the instrument on the bench for access.

IMPORTANT! For safety, the emergency-stop button and power outlet used for powering the instrument must be accessible at all times.

Component	Top	Front	Left/Right	Back
LiquidBiopsy™ Instrument	15.25 cm (6 in.)	15.25 cm (6 in.)	15.25 cm (6 in.)	15.25 cm (6 in.)

Bench space	Minimum clearance
Depth	<ul style="list-style-type: none"> • ≥88.9 cm (35 in.) for a bench against a solid vertical surface • ≥15.25 cm (6 in.) of clearance at the back of the instrument for air flow, service access, power chord routing, and access to the emergency-stop button. • If the bench is at least 15.25 cm (6 in.) from a wall, the bench can be 76.2 cm (30 in.) deep. • We recommend a minimum 15.25 cm (6 in.) clearance from the front edge of the bench to the platform, and 90.0 cm (36.0 in.) aisle in front of bench for operator access.
Width	≥114.3 cm (45 in.) for the instrument.

Environmental requirements

Ensure that the installation room is maintained under correct environmental conditions.

Condition	Acceptable range
Installation site	Indoor use only. IMPORTANT! The LiquidBiopsy™ Instrument <i>must</i> be installed in a BioSafety Level 2 (BSL-2) designated laboratory.
Electromagnetic interference	Do not use this device in close proximity to sources of strong electromagnetic radiation (for example, unshielded intentional RF sources). Strong electromagnetic radiation may interfere with the proper operation of the device. This equipment has been designed and tested to CISPR 11 Class A. In a domestic environment it may cause radio interference. You may need to take measures to mitigate the interference.
Altitude	Located between sea level and 2000 m (6500 ft.) above sea level.
Humidity	Operation: 20%–90% (noncondensing)
Temperature	15°C to 40°C (59°F to 104°F) Note: For optimal performance maintain room temperature from 20°C to 24°C (68°F to 75°F). Room temperature must not fluctuate more than 2°C over a 2-hour period. Avoid placing the instrument adjacent to heaters, cooling ducts, or in direct sunlight.

Condition	Acceptable range
Transient category	Installation categories II
Oversvoltage category	Installation categories II
Vibration	The instrument is not adjacent to strong vibration sources, such as a centrifuge, pump, or compressor. Excessive vibration will affect instrument performance.
Pollution degree	II Install the instrument in an environment that has nonconductive pollutants such as dust particles or wood chips. Typical environments with a Pollution Degree II rating are laboratories and sales and commercial areas.
Liquid waste collection	Dispose of any liquid waste as hazardous waste in compliance with local and national regulations.
Other conditions	Ensure the room is away from any vents that could expel particulate material on the system components.

Electrical requirements



CAUTION! Do not unpack or plug in any components until the Field Service Engineers (FSEs) have configured the system for the proper operating voltage.



WARNING! For safety, the power outlet used for powering the instrument must be accessible at all times. See “Platform clearances” on page 5 for information about the space needed between the wall and the instrument. In case of emergency, you must be able to immediately disconnect the main power supply to all the equipment. Allow adequate space between the wall and the equipment so that the power cords can be disconnected in case of emergency.

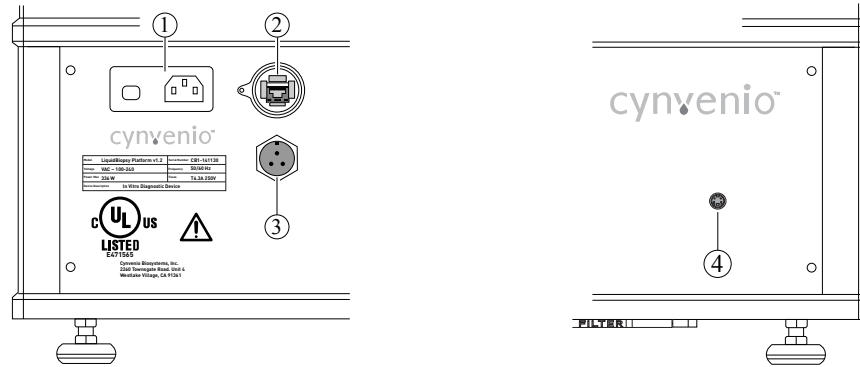
- Electric receptacle required: 2-prong with ground pin
- Fuse: Time-Lag 250VAC 6.3A
- Maximum power dissipation: ~336 W
- Mains AC line voltage tolerances must be up to ±10 percent of nominal voltage

Device	Rated voltage	Circuit required	Rated frequency	Rated current	Rated power
LiquidBiopsy™ Instrument	100–240 ±10% VAC ^[1]	15 A	50/60 Hz	6.3 A	110 VA

^[1] If the supplied power fluctuates beyond the rated voltage, a power line regulator may be required. High or low voltages can adversely affect the electronic components of the instrument.

Instrument connections


The LiquidBiopsy™ Instrument connections for the power supply and emergency stop button are located on the lower left of the rear panel.



- ① Power port – 100–240 VAC power cable port that connects the instrument to the power supply.
- ② Ethernet Port – For service personnel use only.
- ③ Mini-DIN 3-pin serial communication port – connects the emergency stop button cable to the instrument.
- ④ Mini-DIN 8-pin serial communication port (*front panel*)– For service personnel use only.

Electrical protective devices

We recommend several protective devices to protect the system in environments with large voltage and power fluctuations.

Device	Description
Uninterruptible power supply (UPS)	<p>We recommend the use of a 1.5-kVA uninterruptible power supply (UPS), especially in areas prone to power failure. Power failures and other events that abruptly terminate the function of the instrument can possibly damage the system.</p> <p> WARNING! PHYSICAL INJURY HAZARD. Do not attempt to lift the UPS unit without assistance of at least two people. Improper lifting can cause painful and permanent back injury. Refer to the UPS manufacturer user guide for more information.</p> <p>IMPORTANT! UPSs provide power for a limited time. They are meant to delay the effects of a power outage, not to serve as replacement power sources. In the event of a power loss, power off the instrument unless you expect to regain power within the battery life of the UPS.</p>

Device	Description
Power line regulator	<p>We recommend the use of a 1.5-kVA power line regulator in areas where the supplied power fluctuates in excess of $\pm 10\%$ of the normal voltage. Power fluctuations can adversely affect the function of the instrument.</p> <p>Note: A power line regulator monitors the input current and adjusts the power supplied to the instrument. It does not protect against a power surge or failure.</p>
Surge protector	<p>We recommend the use of a 10-kVA surge protector (line conditioner) in areas with frequent electrical storms or near devices that are electrically noisy, such as refrigerators, air conditioners, or centrifuges. Short-duration, high-voltage power fluctuations can abruptly terminate the function of, and thereby damage the components of the instrument.</p> <p>Note: A dedicated line and ground between the instrument and the building's main electrical service can also prevent problems caused by power fluctuations.</p>

Safety requirements

Safety practices

A safety representative from your facility must ensure that:

- Personnel establish and follow all applicable safety practices and policies to protect laboratory personnel from potential hazards.
- All applicable safety devices and equipment are available at all times.

Required safety equipment

Your laboratory has specific safety practices and policies designed to protect laboratory personnel from potential hazards that are present. Follow all applicable safety-related procedures at all times.

The following safety equipment and protection from hazards must be available at the installation site:

- Protection from any sources of hazardous chemicals, radiation (for example, lasers, radioisotopes, radioactive wastes, and contaminated equipment), and potentially infectious biological material that may be present in the area where the service representative will work.
- Appropriate fire extinguisher:
 - You are responsible for providing an appropriate fire extinguisher for use on or near the equipment.
 - The types and sizes of fire extinguishers shall be suitable for use on electrical and chemical fires as specified in current codes, regulations, and/or standards, and with approval of the Fire Marshall or other authority having jurisdiction.
 - The installation of appropriate fire extinguishers shall be in addition to other fire-protection systems and not as a substitute or alternative to them.
- Eyewash
- Safety shower
- Eye and hand protection
- Adequate ventilation, including vent line/fume hood, if applicable
- Biohazard waste container, if applicable

- First-aid equipment
- Spill cleanup equipment
- Applicable Safety Data Sheets (SDSs)

Materials for installation and operation

Installation materials

Have the following materials on hand before installation and operation of the instrument.

- Safety glasses, lab coats, and chemical-resistant, disposable gloves (powder-free)
- Tweezers (fine and flat tips)
- Cotton swabs
- Lint-free tissues
- Easily accessible specified power outlet
- Mini vortexer, centrifuge, and sample tubes
- Freezer (-20°C)
- Refrigerator or cold-room (4°C)
- Optional electrical protective devices (universal power supply unit, surge protector, and/or power line regulator)
- Bleach
- Water
- 1X Phosphate Buffered Saline (PBS)
- Three sizes of micropipettors and tips:
 - 1- to 10- μL
 - 10- to 100- μL
 - 100- to 1000- μL

Operation

Additional supplies and consumables are necessary for routine operation of the instrument. Contact a sales representative to order these additional supplies. Use only supplies as specified by Thermo Fisher Scientific.

Receive and inspect the shipment

1. Verify that the items shown on the shipping list are the same items that you ordered at the time of purchase.
2. Carefully inspect the shipping containers and report any damage to the service representative. Record any damage or mishandling on the shipping documents.

IMPORTANT! Do not unpack LiquidBiopsy™ Instrument shipping containers, to protect yourself from liability if any damage occurred during shipping.

Move the crated instrument to the installation site

IMPORTANT! The LiquidBiopsy™ Instrument *must* be installed in a Biosafety Level Two (BSL-2) designated laboratory.

Installation will require a small forklift to place the crate on a lifting cart or directly on to the laboratory bench location itself.

1. Clear the installation site of all unnecessary materials.
2. If possible, move the crated instrument and other shipping containers to the installation site. Do not uncrate.



CAUTION! PHYSICAL INJURY HAZARD. Do not attempt to lift or move the instrument without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques. Improper lifting can cause painful and permanent back injury. Depending on the weight, moving or lifting an instrument may require two or more people.



CAUTION! Do not tip the crated instrument on end. Tipping may damage the instrument hardware and electronics.

Note: After installation, retain the crate and instrument packaging in case you need to relocate the instrument.

Documentation and support

Customer and technical support

Visit www.lifetechnologies.com/support for the latest in services and support, including:

- Worldwide contact telephone numbers
- Product support, including:
 - Product FAQs
 - Software, patches, and updates
- Order and web support
- Product documentation, including:
 - User guides, manuals, and protocols
 - Certificates of Analysis
 - Safety Data Sheets (SDSs; also known as MSDSs)

Note: For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

Limited product warranty

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