

Biomark HD System

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Introduction

Fluidigm technical support will schedule a time to install the Biomark™ HD system at your site and train your staff to use the system. Before a Fluidigm service representative arrives to install the system, you need to choose and prepare your site according to the instructions in this document.

Notify your Fluidigm representative if special shipping arrangements are necessary at your site, or if you need assistance in placing the Biomark HD system.

Installation Time Estimate

Installation of the Biomark HD system is estimated to take one day. Site issues and other factors may delay or extend the installation time.

Site Preparation Workflow

To choose your site and prepare for the installation of the Biomark HD system:

- 1 Review this guide.
- 2 Select a site for the Biomark HD system.
- 3 Stock the site.
- 4 Receive the system.
- 5 Place the crated and boxed components at the site.

Step 1: Review This Guide

Read and understand this guide for information on all Biomark HD system site requirements, including safety, environmental, electrical, and space requirements.

For a complete list of reagents and consumables used with the Biomark HD system, see the appropriate protocol or user guide. For a list of protocols and user guides, see [Appendix A: Related Documentation on page 10](#).

Step 2: Select a Site for the Biomark HD System

To operate the Biomark HD system, your site must meet the following requirements:

- Harmonized standards
- Environmental conditions
- System dimensions and laboratory bench requirements
- Electrical requirements



WARNING The installation location cannot be done at a site designated BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4). Fluidigm does not install, service, or repair the Biomark HD system in areas designated BSL-3 or BSL-4.

Harmonized Standards

The following harmonized standards were used to evaluate the safety and performance of the Biomark HD system:

- IEC/EN 61326-1
- IEC/EN 61010-1
- IEC/EN 61010-2-010
- IEC/EN 61010-2-081
- UL Standard Number 61010-1 2nd Edition
- CAN/CSA-C22.2 No. 61010-1-04
- CAN/CSA-C22.2 No. 61010-2-010-04

Environmental Conditions

Biomark HD is for indoor use only and should be used in an environment that meets these conditions:

Conditions	Requirements
Temperature	Ambient between 15–30 °C (59–86 °F), stable IMPORTANT Do not locate the system next to heat sources or cooling ducts, or in direct sunlight or extreme ambient lighting. Temperature extremes can cause system instability.
Humidity (relative)	20–80%, non-condensing
Pollution	Degree 2 rating, whereby only nonconductive pollution occurs for electrical and laboratory equipment. Biomark HD conforms to standard laboratory environments. Do not install the system where conductive pollutants are present.
Electrical Installation	Category II

Conditions	Requirements
Altitude	Biomark HD is for use in altitudes not exceeding 2,000 m (6,562 ft) above sea level. If your facility is located above this elevation, call technical support.
Ventilation	<p>Ensure your lab space is ventilated using non-recirculating air exchanges.</p> <p>Maintain at least 15 cm (6 in) of clearance at the exhaust grill exit. Biomark HD produces only hot air exhaust (no fumes or vapors). It has an exhaust grill exit at the back of the instrument, and the air intake is on the bottom of the instrument.</p> <p>IMPORTANT Do not place paper or any object underneath the instrument.</p>

System Dimensions and Laboratory Bench Requirements

The Biomark HD system is a desktop instrument. Provide a work surface that can accommodate the Biomark HD. There must be provisions to address seismic concerns, such as straps or other devices to secure the system to a bench or wall and a glass bottle restraint.

IMPORTANT

- Your laboratory bench must support at least ~249 kg (550 lb).
- During a run, be certain that the instrument is on a sturdy, immobilized lab bench that is away from vibration-generating lab equipment (such as shakers, vortexers, centrifuges, or instruments with heavy fans) and from doors that might generate vibrations when opening or closing.
- Do not place the system on a heated surface or near a source of heat.
- Position the system so the power cord can be easily disconnected.

Depending on your configuration, you will need to consider the following dimensions:

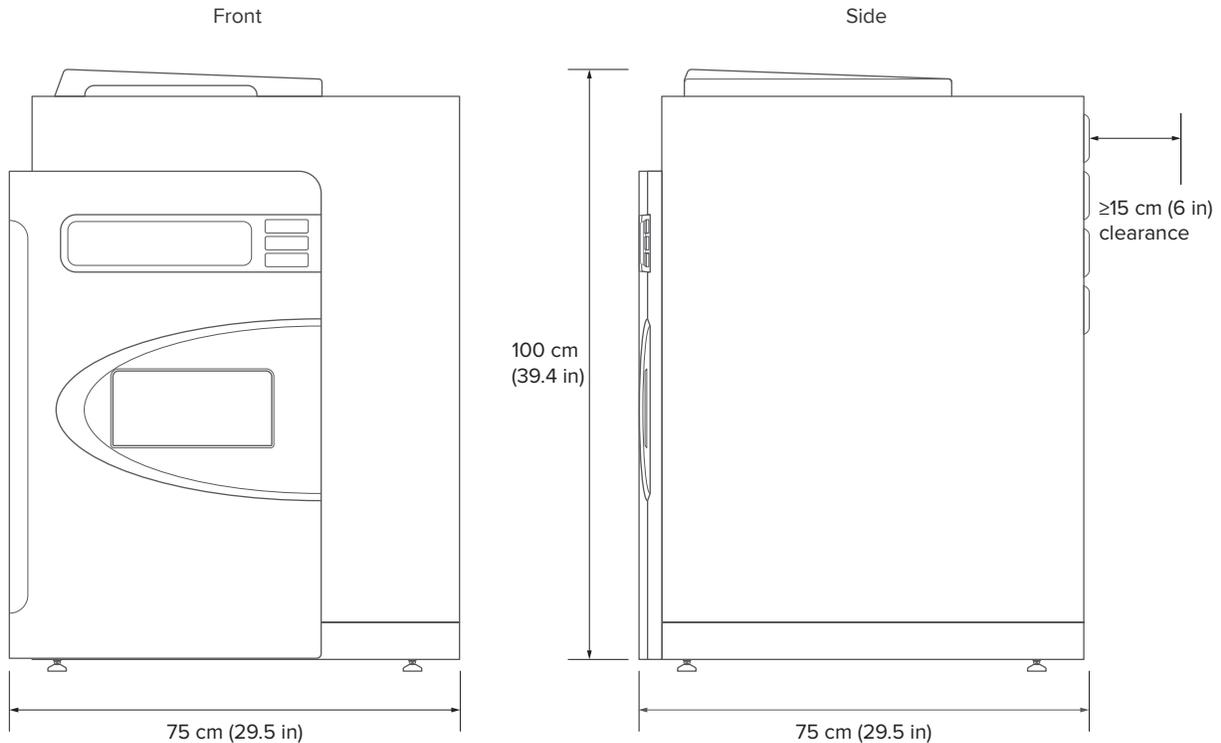
	Height	Width	Length or Depth
Biomark HD instrument	100 cm (39.4 in)	75 cm (29.5 in)	75 cm (29.5 in)
IFC controller	33 cm (13 in)	24.1 cm (9.5 in)	48.3 cm (19 in)
Monitor dimensions*	49 cm (20 in)	36 cm (15 in)	21 cm (8 in)
Keyboard dimensions	4 cm (1.5 in)	43 cm (17 in)	16.5 cm (6.5 in)

* Size may vary.

IMPORTANT At least three feet of total “service area” clearance should be available on either side of Biomark HD so that it can be rotated 360 degrees if required. The clearance need not be retained at all times. However, any ancillary equipment occupying that space should be easily movable.

To allow for adequate air circulation and maintenance, the recommended instrument clearance is as follows:

	Front	Top	Sides	Back
Minimum clearance	250 mm (10 in)	460 mm (18 in)	178 mm (7 in)	100 mm (4 in)



Electrical Requirements

This section applies to the Biomark HD instrument and monitor. For the electrical requirements of the IFC controller and FC1™ cyclers, see the appropriate user guide.

Instrument Electrical Requirements

The Biomark HD system requires one electrical power outlet. The system operates through 100–240 V AC power at 50–60 Hz, (8.0 amps). Power consumption is variable due to ambient conditions, such as temperature and humidity extreme, operating frequency, and mode of operation.

Customer Location	Voltage (VAC)	Frequency (Hz)	Maximum Current (A)	Typical Average Power Consumption (W)
US, Canada	115 ±10%	50-60 ±1%	7.2	300
Japan	100 ±10%	50-60 ±1%	9	300
Europe, Australia	230 ±10%	50-60 ±1%	3.7	300

IMPORTANT Fluidigm recommends a UPS with voltage regulating capability to prevent damage to the equipment due to power fluctuations. See the [Uninterruptible Power Supply Recommendation on page 6](#).

Power Cord Requirements

Fluidigm provides a country-specific power cord.

Customer Location	Minimum Wire Gauge (AWG)	Maximum Length (m)	Instrument End Plug	Receptacle End Plug
US, Canada, Japan, Europe, Australia	16	2	IEC C13	Country-specific

IMPORTANT

- The instrument has a connection to protective earth through the power cord provided by Fluidigm. Ensure that the electrical receptacle provides an earth ground before connecting the power cord.
- Use only power cords provided by Fluidigm or power cords that meet the minimum ratings of 250V/10A, 16AWG and a length not exceed 2 m (6 feet).
- Do not use extension cords.



Receptacle Requirements

When connecting this instrument to a receptacle, check with your site's Facilities department to make sure the circuit will not be overloaded. If you are connecting multiple instruments to the same electrical receptacle or circuit, be sure the sum of all the instruments' maximum current draw is within the circuit's current limit. Receptacles must be grounded. Biomark HD requires only one grounded electrical connection.

Disconnecting Power

In case of emergency, you must be able to immediately disconnect the main power supply to the instrument.

Uninterruptible Power Supply Recommendation

Fluidigm strongly recommends that you protect your Biomark HD system with an uninterruptible power supply (UPS) with voltage regulating capability, such as an APC Smart-UPS™ (APC, PN SRT3000XLW-IEC or equivalent) with battery power (APC, PN SRT96BP or equivalent), to prevent any damage to the equipment due because of power fluctuations. For customers who will connect the instrument to backup power in the event of power loss, Fluidigm recommends purchasing sufficient UPS battery power to support the transition from UPS to backup power at your site. We recommend checking with your site's Facilities department for their guidelines on how much time they recommend.

The minimum requirements for the UPS to maintain power for one system are:

Conditions	Requirements
UPS type	Double conversion online (AC to DC to AC)
Output power capacity	2.7 KWatts/3.0 kVA
Power factor	0.9
Backup time (run time)	7 minutes (for a longer backup time, install additional battery packs)
Power draw (load)	300 W

Step 3: Stock the Site

IMPORTANT Safety personnel at your company must ensure that:

- Safety policies to protect laboratory personnel from potential harm are established and are followed by personnel.
- All necessary safety devices and equipment are in the laboratory or in close proximity.

Required Safety Equipment

Fluidigm expects your laboratory to have safety policies in place to protect laboratory personnel from potential harm. We expect that appropriate safety practices are followed at all times.

Safety equipment that must be at the installation location includes:

- Adequate ventilation, including vent line/fume hood if available
- Safety shower
- Eyewash station
- Biohazard waste container
- Applicable SDSs
- Protection from potentially infectious biological material, hazardous chemicals, and radiation that may be present in the area where the Fluidigm Service Representative will be working
- Spill cleanup equipment
- First-aid equipment
- Eye and hand protection
- Fire extinguisher
 - You are responsible for providing an appropriate fire extinguisher for use on or near Biomark HD.
 - The fire extinguishers must be appropriate for use on chemical and electrical fires and be approved by your local fire marshal or other authority having jurisdiction in your area.

Step 4: Receive the System

For new Biomark HD system installations, you can anticipate receiving:

- Biomark HD system, crated
- IFC controller, crated, if ordered
- FC1 cyclor, crated, if ordered
- Reagent kit, if ordered

Because the crated Biomark HD system weighs approximately 208 kg (459 lb), consider where it is going to be delivered and how to get it to and into your laboratory.

Biomark HD Crated System Size and Weight Specifications



WARNING PHYSICAL INJURY HAZARD. Do not attempt to lift or move any boxed or crated items unless you use proper lifting techniques. The crated Biomark HD weighs approximately 208 kg (459 lb).

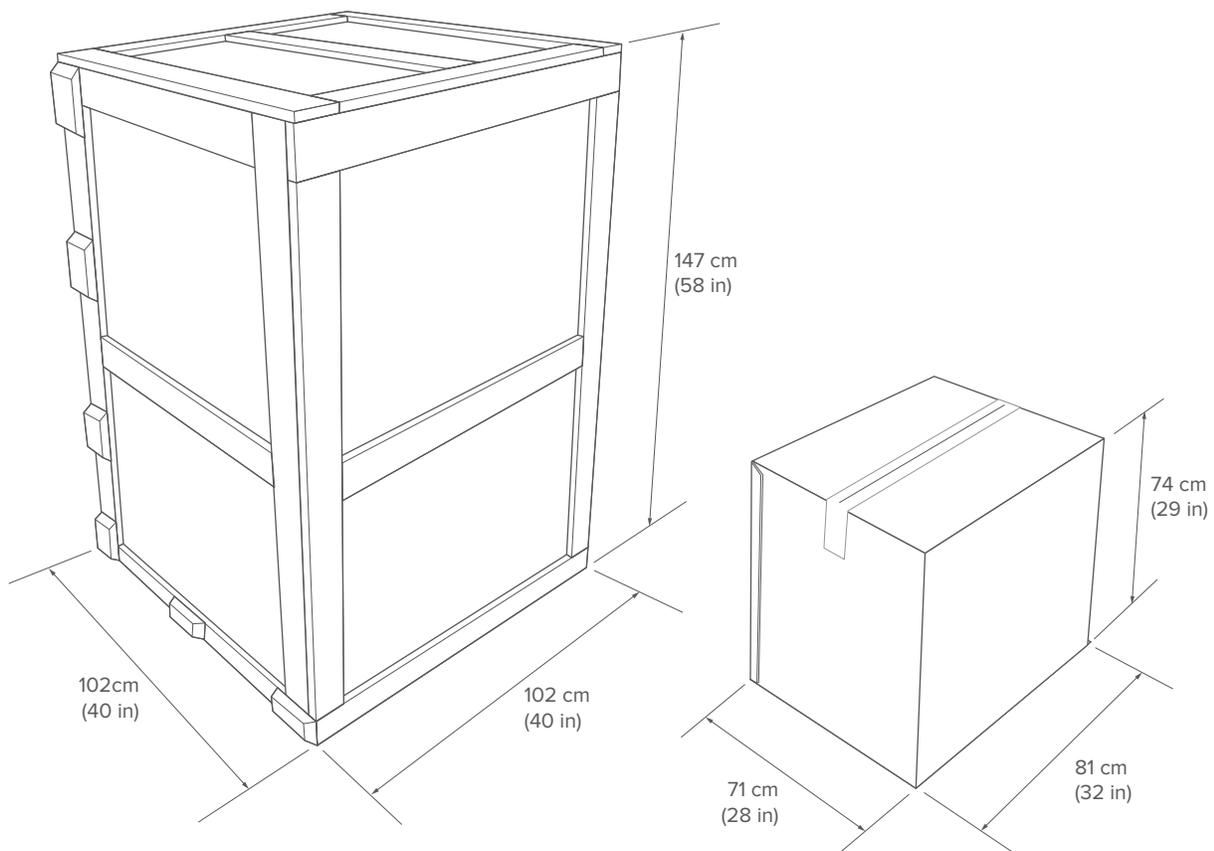


Figure 1. Dimensions of crated Biomark HD and box of system accessories

The measurements for the Biomark HD system as shipped are:

	Length	Width	Height	Weight
Crated Biomark HD	102 cm (40 in)	102 cm (40 in)	147 cm (58 in)	~208 kg (~459 lb)
Box of system accessories	71 cm (28 in)	81 cm (32 in)	74 cm (29 in)	25 kg (55 lb)

The uncrated measurements for the Biomark HD system are:

	Length	Width	Height	Weight
Uncrated Biomark HD	100 cm (39.4 in)	75 cm (29.5 in)	75 cm (29.5 in)	~140 kg (~308 lb)
Unpacked box of system accessories	Various items are in the box.			

Delivery and System Inspection

Use this checklist to perform a check of all delivered components:

- Check the packing list against the original order.
- Check all boxes and crates for damage.
- Note any damage and report it to the Fluidigm Service Representative.
- Locate the reagent kit (if ordered) and unpack it immediately.
- Store each component of the reagent kit at the appropriate temperature according to the instructions.

Step 5: Place the System at the Site

NOTE Notify your Fluidigm representative if you need assistance in placing the Biomark HD system.

Remove all unnecessary materials from the proposed installation site prior to the arrival of the Fluidigm field service engineer.

Have the crated Biomark HD system at its permanent location prior to the arrival of a field service engineer. Wait for the engineer to arrive before unpacking the crate.



WARNING PHYSICAL INJURY HAZARD. The instrument is to be moved and positioned only by the Fluidigm service representative. The crated Biomark HD System weighs approximately 208 kg (459 lb).



WARNING PHYSICAL INJURY HAZARD. Do not attempt to lift or move any boxed or crated items unless you use proper lifting techniques. The crated Biomark HD weighs approximately 208 kg (459 lb).

If you choose to lift or move the Biomark HD after it has been installed, do not attempt to do so without the assistance of others. Use appropriate moving equipment and proper lifting techniques to minimize the chance of physical injury.



WARNING Do not tip the Biomark HD on end. Tipping damages the instrument hardware and electronics.

Path Clearances

IMPORTANT A clear path from the loading dock to the laboratory bench must be established. The path must accommodate the dimensions of the crate.

Ensure the path to the installation site has the following minimum clearances:

	Width	Height
Minimum path clearance	127 cm (50 in)	77 cm (30 in)

Installation

Before the installation date, be certain that you have done the following:

- Removed all unnecessary materials from the proposed final installation site
- Received the Biomark HD system and performed a visual check of the crate and containers
- Moved the crated and boxed equipment from the receiving location to the installation area. Crates that needed to be transported via forklift or other means to the installation area should be moved prior to arrival of the Fluidigm field service engineer.
- Placed the crated and boxed components at their final and permanent location.

Contact your Fluidigm representative if you require assistance with any of these steps.

Appendix A: Related Documentation

Document Title	Part Number
Biomark HD System Data Collection User Guide	68000127
IFC Controller MX and IFC Controller HX User Guide	68000112
IFC Controller RX User Guide	100-3385
IFC Controller WX User Guide	100-2297
FC1 Cyclor User Guide	68000157

Document Title	Part Number
Real-Time PCR Analysis User Guide	68000088
SNP Genotyping Analysis User Guide	68000098
Digital PCR Analysis User Guide	68000100
Melting Curve Analysis User Guide	68000118

Appendix B: Safety



WARNING Do not modify this device. Unauthorized modifications may create a safety hazard.



WARNING BIOHAZARD. If you are putting biohazardous material on the instrument, use appropriate personal protective equipment and adhere to Biosafety in Microbiological and Biomedical Laboratories (BMBL) from the Centers for Disease Control and Prevention and to your lab's safety protocol to limit biohazard risks. If biohazardous materials are used, properly label the equipment as a biohazard. For more information, see the BMBL guidelines online at: cdc.gov/biosafety/publications/index.htm.



WARNING ELECTRICAL HAZARD. DO NOT REMOVE THE COVERS. Electrical shock can result if the instrument is operated without its protective covers. No internal components are serviceable by the user.



WARNING ELECTRICAL HAZARD. Plug the instrument into a properly grounded receptacle with adequate current capacity.

For technical support visit techsupport.fluidigm.com. For general support visit fluidigm.com/support.

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