

 **BD Rhapsody™ HT**
Single-Cell Analysis System
Site Preparation Guide

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Regulatory information

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

FCC information

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: "Harmful interference" is defined in 47 CFR § 2.1 by the FCC as follows: Interference which endangers the functioning of a radio-navigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radio communication service operating in accordance with the International Telecommunication Union (ITU) Radio Regulations.

History

Revision	Date	Change made
23-24254(01)	2023-02	Initial release.

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Introduction

This chapter covers the following topics:

- [About this guide \(page 6\)](#)
- [Physical characteristics \(page 6\)](#)
- [Equipment moving policy \(page 7\)](#)

About this guide

Purpose

This guide is intended for BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner users. Collectively, the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner comprise the BD Rhapsody™ HT Single-Cell Analysis System. Read this guide prior to installation of the system to ensure that all site requirements are met.

For intended use of the BD Rhapsody™ HT Xpress System, see the *BD Rhapsody™ HT Xpress System Instrument User Guide*.

Use this guide to obtain information about:

- Dimensions of the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner
- Preparation of the site

Physical characteristics

Introduction

This topic describes the physical dimensions and weight of the BD Rhapsody™ HT Xpress System and the BD Rhapsody™ Scanner and its accessories.

Dimensions and weight of the BD Rhapsody™ HT Xpress System

Item	Dimensions (W x D x H cm)	Weight (kg)
Boxed BD Rhapsody™ HT Xpress System	40.0 × 45.6 × 32.4 cm (15.7 × 18.0 × 12.8 in.)	9.5 (20.9 lb)
Unboxed BD Rhapsody™ HT Xpress System	26.0 × 37.0 × 20.9 cm (10.2 × 14.6 × 8.2 in.)	5.7 (12.7 lb)

Dimensions and weight of the BD Rhapsody™ Scanner

Item	Dimensions (W x D x H cm)	Weight (kg)
Boxed BD Rhapsody™ Scanner	87.5 × 70.5 × 93.0 cm (34.4 × 27.8 × 36.6 in.)	115 (254 lb)
Unboxed BD Rhapsody™ Scanner	45.0 × 59.9 × 69.4 cm (17.7 × 23.4 × 27.3 in.)	58.0 (128 lb)

Item	Dimensions (W x D x H cm)	Weight (kg)
Peripherals: Width on bench ^a	30.5 cm (12.0 in.)	5 (11 lb)

a. Peripherals include the BD Rhapsody™ P8x1200M pipette, Hemocytometer Adapter, DC power supply brick, and power cord.

BD Rhapsody™ Scanner technical specifications

General imaging characteristics

Item	Specification
Light source	LEDs
Imaging modes	Brightfield: 530 nm Two fluorescence channels

Fluorescence characteristics

Item	Specification
Fluorescence excitation wavelengths	Blue: 482 nm Red: 635 nm
Fluorescence emission wavelength ranges	Green: 513–563 nm Red: 662.5–707.5 nm

Control PC

Item	Specification
Operating System	Microsoft® Windows® 10 or later
Network interface	Gigabit Ethernet

Equipment moving policy

Introduction

This topic describes the BD Biosciences policy for moving the BD Rhapsody™ HT Xpress System and the BD Rhapsody™ Scanner.

General policy

Contact BD Biosciences to arrange installation, relocation, and removal of the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner.

Contact information

scomix@bdscomix.bd.com

Safety

Restrictions

Any use of the BD Rhapsody™ HT Xpress System or BD Rhapsody™ Scanner other than the procedures described in the user guide might result in damage to the instrument, loss of reagents or samples, or personal injury.

BD denies any responsibility for damage caused by the following:

- Any use of the BD Rhapsody™ HT Xpress System or BD Rhapsody™ Scanner that does not comply with the procedures described in its user guide.
- Unauthorized alterations or adjustments to the BD Rhapsody™ HT Xpress System or BD Rhapsody™ Scanner hardware.
- Any use of the BD Rhapsody™ HT Xpress System or BD Rhapsody™ Scanner that violates locally applicable laws, rules, or regulations.
- Evidence of any deviation from intended use that voids the BD Rhapsody™ HT Xpress System or BD Rhapsody™ Scanner warranty.

Disclaimer

The instruments, external components, software, and consumables in the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner are provided for research purposes only. BD disclaims all BD Rhapsody™ HT Xpress and implied warranties including, but not limited to, merchantability and fitness for use for a particular purpose.

Customer safety requirements

Prior to installation or service of the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner, the customer should contact their security or safety department to advise the department of the service visit by a BD field application specialist (FAS) or field service engineer (FSE). Before the service visit, the customer should inform the FAS or FSE of the need to complete any induction or security vetting.

For more information on safety, see the *BD Rhapsody™ HT Xpress Instrument Safety and Limitations Guide*.

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Site requirements

This chapter covers the following topics:

- [Space and clearance requirements \(page 10\)](#)
- [Structural requirements \(page 12\)](#)
- [Environmental requirements \(page 13\)](#)
- [Power requirements \(page 14\)](#)

Space and clearance requirements

Introduction

This topic describes the laboratory space needed for the BD Rhapsody™ HT Xpress System and the BD Rhapsody™ Scanner.

Required workspaces in the laboratory

Dedicate two isolated workspaces in the laboratory to run high-sensitivity, single-cell sequencing experiments:

- Pre-amplification workspace
- Post-amplification workspace

For detailed information about laboratory workspace use, see the *BD Rhapsody™ HT Xpress System Instrument User Guide*.

Required workspaces for the BD Rhapsody™ HT Xpress System and the BD Rhapsody™ Scanner

The following table provides information on the minimum workspace dimensions for the BD Rhapsody™ HT Xpress System and the BD Rhapsody™ Scanner.

Components	Width (cm)	Depth (cm)	Height (cm)
BD Rhapsody™ HT Xpress System	31.1 (12.25 in.)	37.0 (14.75 in.)	25.4 (10.0 in.)
BD Rhapsody™ Scanner	50.8 (20.0 in.)	61.0 (24.0 in.)	69.1 (27.0 in.)

The following drawing shows workspace clearances for the BD Rhapsody™ HT Xpress System and the BD Rhapsody™ Scanner.



1. Access sample loading from the sample loading door side of the scanner.
2. Place the scanner close to the BD Rhapsody™ HT Xpress System to view the scanner display while accessing the BD Rhapsody™ HT Xpress System tray.
3. Place the BD Rhapsody™ HT Xpress System on the sample loading door side of the scanner to easily access the BD Rhapsody™ HT Xpress System cartridge tray and front and left slider controls.

Structural requirements

Introduction

This topic describes the structural features that must be present at the site.

Structure for the BD Rhapsody™ HT Xpress System and accessories

- Laboratory bench space on the sample loading door side of the BD Rhapsody™ Scanner.
- Stable surface free of vibrations
- No external air, water, or vacuum lines required

Structure for the BD Rhapsody™ Scanner

- Laboratory bench space so that the BD Rhapsody™ HT Xpress System is on the sample loading door side of the scanner.
- Laboratory bench space with front access to the scanner display and access to the BD Rhapsody™ HT Xpress System on the sample loading door side of the scanner.
- Stable surface free of vibrations, including vibrations from vortexers and centrifuges. We strongly recommend placing the scanner on a laboratory bench that has no known sources of vibration.
- Doorways and hallways that are at least 88.9 cm (35 in.) wide.
- No external air, water, or vacuum lines required.
- Bench can support ≥ 70 kg.

Lighting for the BD Rhapsody™ HT Xpress System

None.

Lighting for the BD Rhapsody™ Scanner

The scanner optics and detectors are shielded from room lighting and have no specific requirements.

Waste disposal for the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner

Set up appropriate waste disposal facilities according to good laboratory practices.

Communications for the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner

We recommend the following communication tools:

- A telephone in proximity to the scanner to communicate with BD Biosciences technical support regarding system operation and function.
- A network connection of at least 100 Mbps to use BD Rhapsody™ Scanner software.
- The BD Rhapsody™ Scanner should not be connected to the customer facility local area network (LAN) without prior discussion with BD Biosciences technical support. Connection to your LAN might require special considerations and software exceptions. Any attempt to connect a LAN without specific direction from BD Biosciences technical support has the potential to degrade instrument performance and cause loss of reagents not covered under service or warranty agreements.

Environmental requirements

Introduction

This topic describes the environmental conditions necessary for the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner to operate optimally.

Requirements for the BD Rhapsody™ HT Xpress System

Condition	Requirement
Temperature	The BD Rhapsody™ HT Xpress System has an operating range between 20 °C (68 °F) and 25 °C (77 °F).
Humidity	The operating humidity tolerance is between 30% and 50% relative humidity (non-condensing).
Heat dissipation	No special requirements. Follow good laboratory practices.
Ventilation	No special requirements. Follow good laboratory practices.
Noise	No special requirements. Follow good laboratory practices.

Requirements for the BD Rhapsody™ Scanner

Condition	Requirement
Temperature	The scanner has an operating range between 20 °C (68 °F) and 25 °C (77 °F). We recommend that the lab temperature fluctuates less than 5 °C within a day for best operation.
Humidity	The operating humidity tolerance is between 30% and 50% relative humidity (non-condensing).

Condition	Requirement
Heat dissipation	The heat dissipation is less than 240 W
Ventilation	No special requirements. Follow good laboratory practices.
Noise	The audible noise generated by the system has an 8-hour time-weighted average sound pressure level of ≤ 65 dBA under normal operating conditions.

Power requirements

Introduction

This topic describes the power requirements necessary for the BD Rhapsody™ Scanner to operate uninterrupted in any location worldwide.

The BD Rhapsody™ HT Xpress System does not require power.

The pipette shall be charged using a standard wall connector or a carousel charger capable of 50/60hz, 120 volts, and 1.0 amps.

Power requirements

Voltage	Frequency	Current	Power
100–240 $\pm 10\%$ VAC	50–60 $\pm 10\%$ Hz	3 A ^a	220 W

- a. We recommend that you plug the scanner into an outlet with a minimum fused 10 A current supply.

(Optional) Backup power requirements

In areas where the power is unstable or intermittent, both the base scanner and the accessory instruments require a universal power supply (UPS) with auto-switching capability.

The following table outlines the UPS requirements to support the BD Rhapsody™ Scanner.

Condition	Requirement
General	Suggested: USB 2.0 interface, compatible with Microsoft Windows 10 or later that can be installed without a driver
Minimum run time on battery	15 minutes at nominal load of 240 W
Battery recharge time	4 hours maximum (recommended)
Outputs	120–240 VAC 50/60 Hz

Rating of insulation of external circuits

All USB/serial and other data connectors shall only be connected to a device providing double or reinforced insulation between main circuits and these data connections.

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Checklist

Use this checklist to confirm that the site meets the necessary requirements.

Checklist items	Acceptable (Y, N, N/A)
Required	
Customer must ensure that the delivery vehicle has a lift gate (tail lift) when a fork truck is not available	
Customer has sufficient space and equipment to unload and move crates, as described, at their facility. Doorways and hallways are ≥ 88.9 cm (35 in.) wide	
Temperature is between 20 °C (68 °F) and 25 °C (77 °F)	
Humidity is between 30% and 50% (non-condensing)	
Appropriate waste disposal solutions are in place	
Power (BD Rhapsody™ Scanner only) 100–240 $\pm 10\%$ VAC, 50–60 $\pm 10\%$ Hz, 3 A, 220 W	
Power socket outlet rated for a minimum of fused 10 A current supply	
Power sources located ≤ 2 m of designated bench space for the BD Rhapsody™ Scanner	
No vibration sources close to or in contact with the designated work bench for the BD Rhapsody™ HT Xpress System and BD Rhapsody™ Scanner	
Dedicated pre-amplification and post-amplification workspaces in the laboratory	
Bench space for BD Rhapsody™ HT Xpress System with clearance: (W × D × H) 31.1 × 37.0 × 25.4 cm (12.25 × 14.75 × 10 in.)	
Bench space for BD Rhapsody™ Scanner with clearance: (W × D × H) 50.8 × 61.0 × 69.1 cm (20 × 24 × 27 in.)	
Customer requires that all visiting BD personnel complete site training	
Customer provides a contact for installation inquiries to BD personnel	
Optional	
Recommended bench height of 75 cm (29.5 in.)	
A LAN line or mobile telephone is available at the instrument installation site	

Checklist items	Acceptable (Y, N, N/A)
Internet connection of ≥ 100 Mbps (BD Rhapsody™ Scanner only)	
Storage space available for BD Rhapsody™ Scanner crate after installation in case of future instrument relocation	
Backup power (UPS) (BD Rhapsody™ Scanner only) <ul style="list-style-type: none">• USB 2.0 interface, compatible with Microsoft Windows 10 or later, and able to be installed without a driver• Minimum run time on battery of 15 minutes at nominal load of 240 W• Outputs of 120–240 VAC 50/60 Hz	

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