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Applied Biosystems ViiA™ 7 Real-Time PCR System

Site Preparation Guide

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TRADEMARKS

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About This Guide

About this document

Purpose of this guide

The *Applied Biosystems ViiA™ 7 Real-Time PCR System Site Preparation Guide* provides the information you need to fully prepare your site for the arrival and installation of the system. Complete preparation helps ensure a smooth installation process, as well as correct and safe instrument operation.

Audience

This guide is intended for the personnel who will schedule, manage, and perform the tasks required to prepare your site for installation of the *Applied Biosystems ViiA™ 7 Real-Time PCR System*.

User attention words

Two user attention words appear in Applied Biosystems user documentation. Each word implies a particular level of observation or action as described below:

Note: – Provides information that may be of interest or help but is not critical to the use of the product.

IMPORTANT! – Provides information that is necessary for proper instrument operation, accurate chemistry kit use, or safe use of a chemical.

Examples of the user attention words appear below:

Note: For additional documentation, see "How to obtain support" on page 11.

IMPORTANT! To verify your client connection to the database, you need a valid user ID and password.

Safety conventions used in this document

Safety alert words

Four safety alert words appear in Applied Biosystems user documentation at points in the document where you need to be aware of relevant hazards. Each alert word—**IMPORTANT, CAUTION, WARNING, DANGER**—implies a particular level of observation or action, as defined below.

Definitions

IMPORTANT! – Indicates information that is necessary for proper instrument operation, accurate chemistry kit use, or safe use of a chemical.

CAUTION! – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

WARNING! – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

DANGER! – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

Except for IMPORTANTs, each safety alert word in an Applied Biosystems document appears with an open triangle figure that contains a hazard symbol. *These hazard symbols are identical to the hazard symbols that are affixed to Applied Biosystems instruments* (see "Safety symbols" on page 38).

Examples

The following examples show the use of safety alert words:

IMPORTANT! You must create a separate sample entry spreadsheet for each 384-well plate.

CAUTION! Do not install on the computer additional software other than antivirus software. Changes to the configured software could void the instrument warranty and cause the system to be nonoperational.

WARNING! Physical Injury Hazard. Using the instrument in a manner not specified by Applied Biosystems may result in personal injury or damage to the instrument

DANGER! ELECTRICAL HAZARD. Failure to ground the instrument properly can lead to an electrical shock. Ground the instrument according to the provided instructions.

Safety information

Safety labels on instruments

The following CAUTION, WARNING, and DANGER statements may be displayed on Applied Biosystems instruments in combination with the safety symbols described in the preceding section.

Hazard symbol	English	Français
	**CAUTION!** Hazardous chemicals. Read the Safety Data Sheets (SDSs) before handling.	**ATTENTION!** Produits chimiques dangereux. Lire les fiches techniques de sûreté de matériels avant toute manipulation de produits.
	CAUTION! Hazardous waste. Refer to SDS(s) and local regulations for handling and disposal.	**ATTENTION!** Déchets dangereux. Lire les fiches techniques de sûreté de matériels et la régulation locale associées à la manipulation et l'élimination des déchets.
	**WARNING!** Hot lamp.	**AVERTISSEMENT!** Lampe brûlante.
	WARNING! Hot. Do not remove lamp until **15** min after disconnecting supply.	**AVERTISSEMENT!** Lampe brûlante, après avoir déconnecté le câble d'alimentation de l'appareil, attendre environ **15** minutes avant d'effectuer un remplacement de la lampe.
	WARNING! Hot. Replace lamp with an Applied Biosystems lamp.	**AVERTISSEMENT!** Composants brûlants. Remplacer la lampe par une lampe Applied Biosystems.
	CAUTION! Hot surface.	**ATTENTION!** Surface brûlante.
	**DANGER!** High voltage.	**DANGER!** Haute tension.
	WARNING! To reduce the chance of electrical shock, do not remove covers that require tool access. No user-serviceable parts are inside. Refer servicing to Applied Biosystems qualified service personnel.	**AVERTISSEMENT!** Pour éviter les risques d'électrocution, ne pas retirer les capots dont l'ouverture nécessite l'utilisation d'outils. L'instrument ne contient aucune pièce réparable par l'utilisateur. Toute intervention doit être effectuée par le personnel de service qualifié venant de chez Applied Biosystems.
	**CAUTION!** Moving parts. Crush/ pinch hazard.	**ATTENTION!** Pièces en mouvement, risque de pincement et/ou d'écrasement.

How to obtain support

For the latest services and support information for all locations, go to **www.appliedbiosystems.com**, then click the link for **Support**.

At the Support page, you can:

- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support
- Order Applied Biosystems user documents, certificates of analysis, and other related documents
- Order Safety Data Sheets (SDSs) for any chemicals supplied by Applied Biosystems or Ambion (available to you free 24 hours a day).
- Download PDF documents
- Obtain information about customer training
- Download software updates and patches

In addition, the Support page provides access to worldwide telephone and fax numbers to contact Applied Biosystems Technical Support and Sales facilities.

How to obtain more information

Related documentation

The following related documents are part of your shipment:

- **Applied Biosystems ViiA™ 7 Real-Time PCR System User Guide** – The user guide provides step-by-step instructions for preparing and analyzing a sample. It is designed to help you learn how to use the system.
- **Applied Biosystems ViiA™ 7 Real-Time PCR System Quick Reference Card** – The Quick Reference Card contains a flowchart on how to run the samples and system, a table of maintenance tasks, and a software reference guide.
- **Applied Biosystems ViiA™ 7 Real-Time PCR System Getting Started Guide** – The Getting Started Guide is a tutorial for performing your experiments.

Portable document format (PDF) versions of the User Guide and Quick Reference Card are also available on the Software CD.

Note: To view the user documentation, you can use the Adobe® Acrobat® Reader® software available from **www.adobe.com**.

Note: For additional documentation, see "How to obtain support" on page 11.

Send us your comments

Applied Biosystems welcomes your comments and suggestions for improving its user documents. You can e-mail your comments to:

techpubs@appliedbiosystems.com

IMPORTANT! The e-mail address above is only for submitting comments and suggestions relating to documentation. To order documents, download PDF files, or for help with a technical question, go to **www.appliedbiosystems.com**, then click the link for **Support**. (See "How to obtain support").

1 Site Preparation Tasks

Instrument overview

The instrument uses fluorescent-based polymerase chain reaction (PCR) reagents to provide:

- Quantitative detection of target nucleic acid sequences (targets) using real-time analysis.
- Qualitative detection of targets using post-PCR (endpoint) analysis.
- Qualitative analysis of the PCR product (achieved by melt-curve analysis that occurs post-PCR).

The instrument is to be used only by technologists trained in laboratory techniques and procedures and in the use of the instrument. The customer is responsible for validation of any assays, and compliance with any regulatory requirements that pertain to their procedures and uses of the instrument.

Installation overview

Before an Applied Biosystems service representative arrives to install the instrument and associated devices, prepare your site for the installation according to the instructions in this chapter. For checklists, see"Checklists" on page 31.

IMPORTANT! If site preparation tasks are not complete when the Applied Biosystems service representative arrives, the scheduled installation may be postponed.

Site preparation schedule

To minimize the time between the shipment arrival and installation:

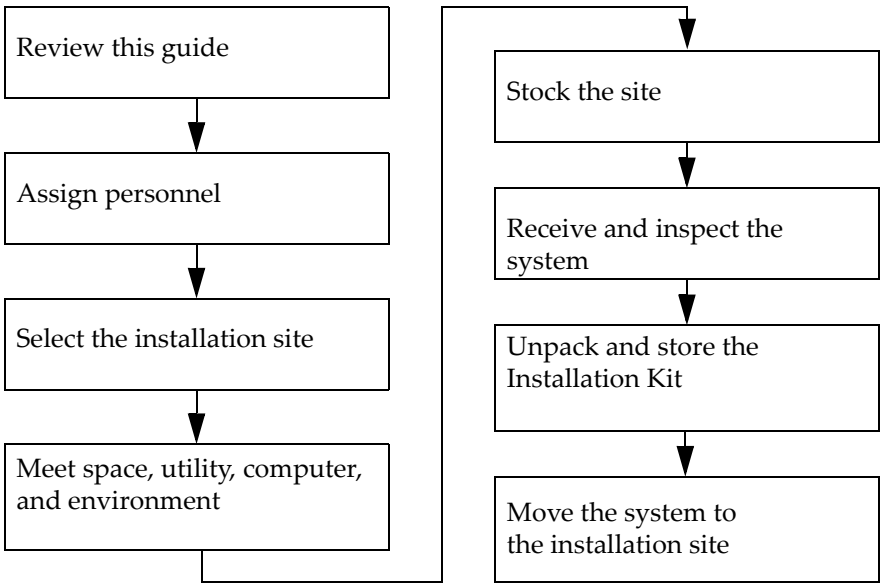
1. Complete the site preparation tasks in this chapter.
2. Fill out the corresponding checklists. See "Checklists" on page 31.
3. Schedule installation before the shipment arrives.
4. Verify with an Applied Biosystems service representative who will contact you by telephone that:
   - All checklists are complete
   - The purchase order is complete
   - You have considered all components and options in preparing the site

Site preparation process

The general site preparation tasks and a suggested sequence for completing the tasks are summarized in Figure 1,"Site preparation tasks and their suggested sequence", below. The sequence can vary, but always:

- Review this guide first
- Unpack and store the Installation Kit as soon as you receive it

Figure 1 Site preparation tasks and their suggested sequence



Assign personnel

Laboratory safety representative

Applied Biosystems requests that a representative from your laboratory be in the vicinity and available to the Applied Biosystems service representative at all times while the service representative is at your facility. The laboratory safety representative should be familiar with laboratory safety procedures and know the location of all the safety equipment.

Tasks and personnel

Table 1, Suggested personnel tasks, summarizes specific site-preparation tasks and suggests the personnel to accomplish the tasks. Use the table to help schedule and manage the site-preparation process.

Table 1 Suggested personnel tasks

Personnel	Tasks
Site preparation-installation coordinator	• Orders required materials. • Chooses the site. • Reviews checklists with applicable personnel, then verifies with the Applied Biosystems service representative that the site is properly prepared. • Schedules the installation and informs personnel of the installation date. • 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	• Ensures that the required safety practices and equipment are in place. • Is available to assist with unpacking and setup.
Laboratory personnel-primary users	• Ensures that all customer-provided materials for installation are present at the site. • Primary users (responsible for training other users) are available during the installation, so that they can be trained on the instrument. • Primary users have access to an active email account and networked computer in order to acquire software license during installation.
Facilities personnel-primary users	• Ensures that installation requirements are met for: – Space at the installation site – Building clearances – Temperature and humidity – Waste collection – Electrical supply – Computer – Safety and installation materials • At least two people are available to help the Applied Biosystems service representative move and position the system.

Personnel	Tasks
Network or IT specialist (if the system will be connected to a network)	• Ensures that two active, tested local area network (LAN) connections are in place before the scheduled installation date. • Ensures that network hardware is compatible with an RJ45-type connector. • Is available during installation to connect the system to the network. **CAUTION!** Do not attempt to connect the system components to the network before the Applied Biosystems service representative arrives.

Select the site

When deciding where to install the instrument, refer to the following sections for site requirements:

- "Space requirements" on page 19
- "Environmental requirements" on page 22
- "Waste collection requirements" on page 23
- "Electrical requirements" on page 23
- "Computer requirements" on page 25
- "Safety and materials" on page 26

IMPORTANT! The site cannot be designated BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4). Applied Biosystems does not install, service, or repair Applied Biosystems instruments in areas designated BSL-3 or BSL-4.

Space requirements

System components

The shipment shown in Figure 2 includes the:

- Instrument
- Dell® computer, keyboard and mouse
- Dell® flat screen monitor

Setup requirements

A typical setup is shown in Figure 2 and Figure 3. For details on the space requirements, see "Required clearances" on page 21.

Figure 2 Setup requirements (not to scale)

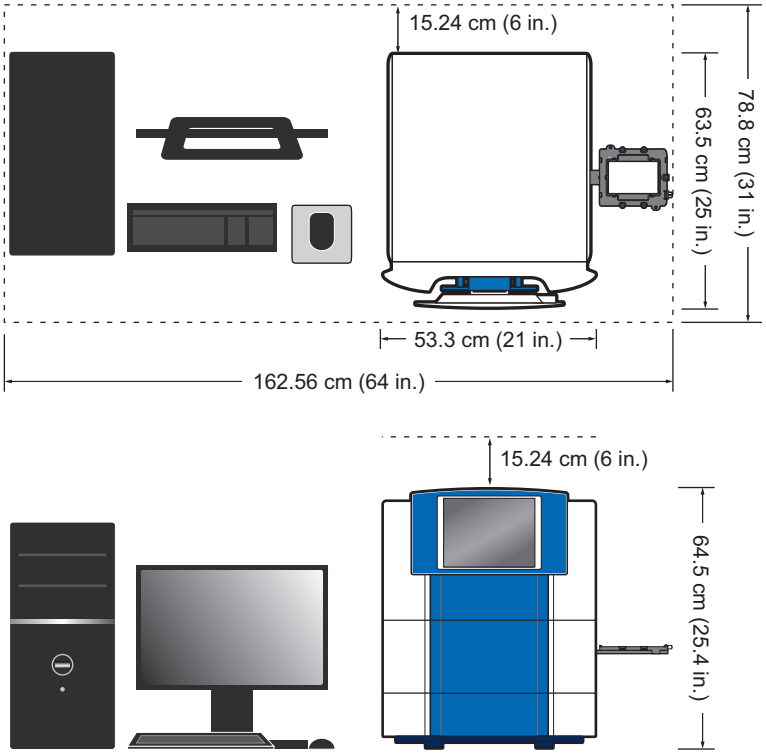
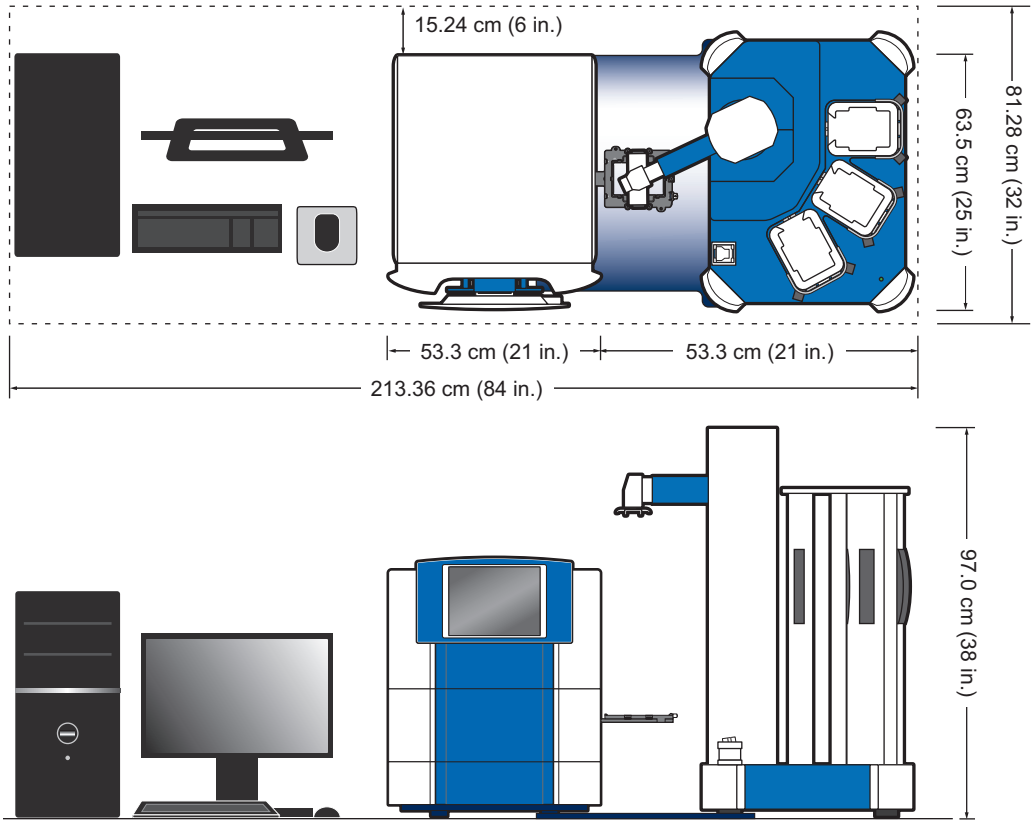


Figure 3 Setup requirements - showing optional robot (not to scale)



Layout requirements

Verify that the installation location:

- Is not adjacent to vibration sources, such as a centrifuge, pump, or compressor. Excessive vibration will affect instrument performance.
- Is not adjacent to electrically noisy devices, such as a refrigeration unit.
- Allows the computer to be within 2 meters (6 feet) of the instrument.
- Allows positioning of the monitor, keyboard, and accessories for proper ergonomics during use.
- Is a stable and level surface. The instrument and robot must be level to function properly.

Dimensions and weights

The table below indicates dimensions and weights of the instrument and associated devices. Ensure that the installation site (floor space and/or bench space) can accommodate the dimensions and support the weights.

Table 2 Dimensions and weights of instrument and associated devices

Component	Width	Depth	Height	Weight
Instrument	53.3 cm (21.0 in)	63.5 cm (_25.0 in)	64.5 cm (25.4 in)	60.7 kg (134 lbs)
Computer (desktop)	18.7 cm (7.36 in)	44.5 cm (17.52 in)	41 cm (16.1 in)	10.9 kg (24 lbs)
Computer (laptop) (optional)	35.8 cm (14.1 in)	25.7 cm (10.1 in)	35.8 cm (14.1 in)	2.6 kg (5.7 lbs)
Computer accessories • Monitor	44.7 cm (17.5 in)	19.3 cm (7.6 in)	36.6 cm (14.4 in)	6.9 kg (15.2 lbs)
• Keyboard	44.7 cm (17.5 in)	15.25 cm (6 in)	5 cm (2 in)	.09 kg (0.2 lbs)
Twister II Robot (optional)	53.3 cm [21 in]	77 cm [28 in]	97 cm [38 in]	49.9 kg [110 lbs]

Required clearances

During instrument setup and maintenance, it is necessary to access the back 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.

Required clearances are:

- Clearance – At least 15.2 cm (6 in) of clearance for ventilation, service access, and cable routing at the back of the instrument. The total width of the required space with the instrument and a desktop computer will be 162.5 cm (64 in) and the total depth will be 81.3 cm (32 in). If a robot is included, the total width will be 213 cm (84 in).
- Vertical clearance – Including instrument height, total vertical space required will be 80 cm (31.4 in). If a robot is included, the total vertical space required will be 112 cm (44 in).

Environmental requirements

Altitude

This instrument is for indoor use only and for altitudes not exceeding 2000 meters (6500 feet) above sea level.

Temperature and humidity requirements

Ensure that the installation site is maintained under the following conditions:

Table 3 Temperature and Humidity requirements

Condition	Acceptable range
Temperature	15 to 30 °C (59 to 86 °F)
Humidity	20 to 80% relative humidity, noncondensing

Avoid placing the system adjacent to heaters, cooling ducts, or in direct sunlight. Fluctuations between day and night temperatures can cause degradation of performance.

Pollution

The instrument has a Pollution Degree rating of 2. It may be installed in an environment that has nonconductive pollutants only, such as dust particles or wood chips. Typical environments with a Pollution Degree 2 rating are laboratories and sales and commercial areas.

Environmental conditions for storage and transportation

The instrument requires these storage and transport conditions:

- An ambient temperature range of -30°C to +60°C
- A relative humidity range of 20% to 80%

Instrument hot-air exhaust venting

Verify that one of the following conditions exists:

- Facilities personnel have certified that the normal room ventilation system can maintain room temperature if the maximum thermal output of the instrument (2731 Btu/h [800 W]) is vented directly into the room air from the hot-air waste port on the rear panel.
- A suitable venting device such as a fume hood or fume duct is available to vent the hot air exhaust from the instrument space.

Waste collection requirements

Collecting liquid

Dispose of buffer, reagents, and any liquid waste as hazardous waste in compliance with local and national regulations.

For more information, see "Chemical waste safety" on page 44.

Electrical requirements

System electrical requirements

The instrument can accept operating voltages between 100 VAC and 240 VAC with a fluctuation of +/- 10% of the nominal voltage at 50/60 Hz.

Verify that your power supply meets system electrical requirements and perform any required power supply upgrades or changes before the Applied Biosytems service representative arrives to install the instrument.

CAUTION! Do not unpack or plug in any components until the Applied Biosystems service representative has configured the system for the proper operating voltage.

Note: Applied Biosystems recommends that the instrument and computer power receptacle be on an electrical circuit that is not shared with electrically noisy devices or devices that can cause power surges, such as refrigeration units.

Table 4 provides electrical specifications for the instrument and associated devices. For all indicated input voltages, a 15 A circuit is required.

Table 4 Electrical specifications

Device	Rated voltage (VAC)	Rated Frequency (Hz)	Rated Current (A)	Rated Power (VA)
Instrument	100-240 +/-10%	50/60	12.5	950
Computer (desktop)			2.1	125
Computer (laptop) (optional)			4.6	90
Monitor			1.5	65
Twister II Robot (optional)			2.5	150

Note: The instrument, monitor, desktop computer, robot, and laptop computer will self-adjust for 100v-240v input voltages of 50/60 Hz.

Electrical protective devices

Applied Biosystems recommends several protective devices to protect the system in environments with large voltage and power fluctuations.

Power line regulator

Applied Biosystems recommends the use of a 1.5-kVA power line regulator in areas where the supplied power fluctuates in excess of +/- 10% of the normal voltage. Power fluctuations can adversely affect the function of the instrument and computer.

Note: A power line regulator monitors the input current and adjusts the power supplied to the instrument or computer. It does not protect against a power surge or failure.

Uninterruptible power supply (UPS)

Applied Biosystems recommends 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 and computer can corrupt data and possibly damage the system.

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 and computer unless you expect to regain power within the battery life of the UPS.

Surge protector

Applied Biosystems recommends 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 computer and the instrument.

Note: A dedicated line and ground between the instrument, computer, and the building's main electrical service can also prevent problems caused by power fluctuations.

Computer requirements

Antivirus software requirements

No antivirus software is provided because customer preferences and network requirements vary. Therefore, you need to install antivirus software of your choice to protect the computer against viruses.

CAUTION! Do not install on the computer additional software other than antivirus software. Changes to the configured software could void the instrument warranty and cause the system to be non-operational.

Network requirements

LAN connection

The instrument and computer will be connected to a LAN. Two active, tested LAN connections must be in place before the scheduled installation date. Due to differences in network connections, the Applied Biosystems service representative cannot configure the system to access a specific network.

Network cables

The instrument and computer are factory configured for the TCP/IP protocol. The product includes a fast Ethernet adapter (10/100baseT) with an RJ45-type connector and two Ethernet cables that connect the computer and the instrument to the LAN.

IMPORTANT! Do not use a wireless network. A wireless network may interfere with data collection, resulting in data loss.

Printer requirements

The instrument and computer can use a network or dedicated printer. The printer and any necessary print drivers must be available before the scheduled installation.

Safety and materials

Safety practices

IMPORTANT! The site must not be designated BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4). Applied Biosystems does not install, service, or repair Applied Biosystems instruments in areas designated BSL-3 or BSL-4.

IMPORTANT! 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. Applied Biosystems expects that you will follow all applicable safety-related procedures at all times.

The following safety protection and equipment 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 Applied Biosystems service representative will work.
- Appropriate fire extinguisher:
  - You are responsible for providing an appropriate fire extinguisher for use on or near Applied Biosystems 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 SDSs

Materials for installation

Provide the following materials for the installation:

- Safety glasses, lab coats, chemical-resistant, disposable gloves (powder-free)
- Glassware washing solution
- Lint-free tissues
- Methanol or isopropanol, HPLC-grade or better
- Water, Milli-Q® grade
- Three sizes of micropipettors and tips
  - 1 to 10-µL
  - 10 to 100-µL
  - 100 to 1,000-µL
- Mini vortexer, plate adapter, centrifuge, and sample tubes

Materials for routine operation

Additional supplies and consumables are necessary for routine operation of the instrument. Contact the Applied Biosystems sales representative to order these additional supplies.

Use only supplies as specified by Applied Biosystems.

Receiving and inspecting the system

Shipped contents

All shipments include the:

- Instrument
- Sample block
- Heated cover
- Plate adaptor
- Desktop computer (laptop model optional), keyboard, mouse, mouse pad, and monitor
- Calibration reagents
- Instrument verification reagents
- Starter kit
- Software kit
- Power cord
- Array card block (optional)
  - Centrifuge bucket/Clip set (2 types, user selectable)
  - Array card staker
- (Optional) Twister® II Robot with instrument adapter and fixed barcode reader
  - Tall stacks OR short stacks (user selectable)
  - Handheld barcode reader

Shipping list

Verify that the items shown on the shipping list are the same items that you ordered at the time of purchase.

Inspect shipping containers for damage

Carefully inspect the shipping containers and report andy damage to the Applied Biosytems service representative. Record any damage or mishandling on the shipping documents.

Unpack and store the Installation Kit

The Installation Kit is boxed separately from the instrument components. When you receive the shipment, unpack the Installation Kit immediately. Store the components as specified in the instructions included with the kit.

IMPORTANT! The installation kit contains reagents that require refrigeration. Upon receiving the shipment, immediately store them as listed in the reagents inserts. Except for the installation kit, do not unpack shipping containers to protect you from liability if any damage occurred during shipping.

CAUTION! Some chemicals used with Applied Biosystems instruments are potentially hazardous and can cause injury, illness, or death. Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, work with, or dispose of any chemicals or hazardous materials.

Inspecting shipping containers for damage

Carefully inspect the shipping containers and report any damage to the Applied Biosystems service representative. Record any damage or mishandling on the shipping documents.

Moving the crated instrument to the laboratory

Moving schedule

Before the date of installation:

- Clear the installation site of all unnecessary materials.
- If possible, move the crated instrument from the receiving area to the installation site. Do not uncrate. If possible, move the other shipping containers from the shipping area to the installation site.

Required building clearances

The largest container (crate) included with the shipment contains the instrument. To move the crate to the installation site, verify that the building clearances allow passage of the following crate dimensions:

Crate dimension	Minimum building clearance
Height	95 cm (37.4 in)
Length	68.6 cm (27.0 in)
Depth	81.5 cm (32.0 in)

Instrument weight

The instrument weighs approximately 60.7 kg (134 lbs).

Moving and lifting the instrument

CAUTION! PHYSICAL INJURY HAZARD. The instrument is to be moved and positioned only by the Applied Biosystems service representative. If you decide to lift or move the instrument after it has been installed, 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 persons.

CAUTION! Do not tip the instrument on end. Tipping damages the instrument hardware and electronics.

During installation

After the system is uncrated by your Applied Biosystems Service representative, installation and testing of the instrument and computer takes approximately 4 hours.

CAUTION! While the instrument and computer are being installed, avoid exposure to hazards that may be associated with the installation process.

Operator training

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

2 Checklists

Overview

Before using the checklists, read all previous sections in this guide.

Use the checklists in this chapter to ensure that you have made all preparations for installing the system. An Applied Biosystems service representative will contact you to verify that all checklists are complete before setting up the installation date.

Personnel checklist

For more information, see "Assign personnel" on page 16.

Date verified	Designated personnel
	Site preparation/installation coordinator
	Laboratory safety representative
	Laboratory personnel: • To ensure that customer-supplied materials are on hand • Primary users to be trained during installation and to subsequently train other users
	Facilities personnel: • To provide environmental, electrical, and computer site-preparation requirements • Two people to help the service representative move and position the instrument, if applicable
	Network or IT specialist (only if the system will be connected to a network)

Space and layout checklist

For more information, see "Space requirements" on page 19.

Date verified	Requirements
	Location is away from: • Heating or cooling ducts • Direct sunlight • Vibration from other instruments or devices Computer workspace allows for proper ergonomics during use.
	Location accommodates the dimensions and weights specified in "Dimensions and weights" on page 21.
	Location meets the requirements specified in "Space requirements" on page 19.

Environmental checklist

For more information, see "Environmental requirements" on page 22.

Date verified	Requirement
	The altitude does not exceed 2000 m (6500 ft) above sea level.
	The conditions specified in "Environmental requirements" on page 22 have been met.
	Pollution Degree II – Only nonconductive pollutants, if any, are present.
	Instrument location is not subject to strong mechanical vibrations.

Electrical checklist

For more information, see "Electrical requirements" on page 23.

Date Verified	Requirement
	The main power supply to the instrument can be immediately disconnected.
	Appropriate grounded power receptacles are available (see "Electrical requirements" on page 23). IMPORTANT! Notify your Applied Biosytems Field Service Engineer of any unusual power receptacles or power supply conditions before he/she arrives to do the installation.

Computer checklist

For more information, see "Computer requirements" on page 25.

Date verified	Requirement
Antivirus Software	
	Appropriate antivirus software supplied by the customer is available for loading on the computer.
Networking	
	Two active, tested LAN connections are available.
	Network hardware is compatible with an RJ45-type connector. See "Network requirements" on page 25.
Printer	
	If applicable, a network printer or a dedicated printer and necessary print drivers are available.

Safety checklist

For more information, see "Safety and materials" on page 26.

Date verified	Requirement
	The site is not designated BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4).
	Safety practices and policies to protect laboratory personnel from potential hazards are in place and are followed.
	Protection from any sources of hazardous chemicals, radiation (for example, lasers, radioisotopes, radioactive wastes, and contaminated equipment), and potentially infectious biological material is in place.
	Appropriate fire extinguisher
	Eye and hand protection
	Eyewash
	Safety shower
	Vent lines/fume hood, if applicable
	Biohazard waste container, if applicable
	First-aid equipment
	Spill cleanup equipment
	SDSs readily available

Materials checklist

For more information, see "Safety and materials" on page 26.

Date Verified	Requirement
Materials for General Installation	
	Safety glasses and lab coats
	Chemical-resistant disposable gloves (powder free)
	Glassware washing solution
	Lint-free tissues
	Methanol or isopropanol, HPLC-grade or better
	Water, Milli-Q® grade
	Three sizes of micropipettors and tips: • 1- to 10-µL • 10- to 100-µL • 100- to 1000-µL
	A mini vortexer, plate adapter, centrifuge, and sample tubes

Date Verified	Requirement
Materials for Routine Operation	
	Materials for routine operation after the installation are available or have been ordered (see "Materials for routine operation" on page 27).

System receipt and inspection checklist

For more information, see "Receiving and inspecting the system" on page 28.

Date verified	Action
	Verified that items on the packing list are those that were ordered. Otherwise, reported to the Applied Biosystems service representative discrepancies in the packing list.
	Opened and stored the Installation Kit components as specified in the kit operating instructions.
	Received the system and inspected the shipping containers for mishandling or damage. IMPORTANT! Do not open any shipping containers except for the Installation Kit.
	Reported to the Applied Biosystems service representative any signs of mishandling or damage to the shipping container.

Moving the crated instrument checklist

For more information, see
"Moving the crated instrument to the laboratory" on page 29.

Date Verified	Item
	The measured building clearances can accommodate the instrument crate dimensions (see "Required building clearances" on page 29). If the crate dimensions exceed building clearances, contact the Applied Biosystems service representative. Do not unpack the crate without authorization.
	If possible, move all the crated equipment, excluding the crated instrument, to the laboratory before the date of the scheduled installation. ⚠ **WARNING! PHYSICAL INJURY HAZARD**. Do not attempt to lift or move any boxed or crated items unless you have received related training. Incorrect lifting can cause painful and sometimes permanent back injury. Use proper lifting techniques when lifting or moving items.
	Cleared the installation site of all unnecessary materials.

A

Safety and EMC Compliance Information

Symbols on instruments

Electrical symbols on instruments

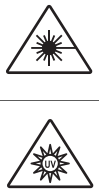
The following table describes the electrical symbols that may be displayed on Applied Biosystems instruments.

Symbol	Description
	Indicates the **On** position of the main power switch.
	Indicates the **Off** position of the main power switch.
	Indicates a terminal that may be connected to the signal ground reference of another instrument. This is not a protected ground terminal.
	Indicates a protective grounding terminal that must be connected to earth ground before any other electrical connections are made to the instrument.
	Indicates a terminal that can receive or supply alternating current or voltage.
	Indicates that the device receives or supplies direct current or voltage.

Safety symbols

The following table describes the safety symbols that may be displayed on Applied Biosystems instruments. Each symbol may appear by itself or with text that explains the relevant hazard. These safety symbols may also appear next to DANGERS, WARNINGS, and CAUTIONS that occur in the text of this and other product-support documents.

Symbol	Description	Français
	Caution, risk of danger. Consult the user documentation for additional information and instructions, and proceed with appropriate caution.	**ATTENTION!** Lire les fiches techniques de sûreté et d'utilisation de matériels avant toute manipulation de produits. Procéder délicatement.
	Caution, risk of electric shock.	**ATTENTION!** Risque de choc électrique.
	Caution, hot surface.	**ATTENTION!** Surface brûlante.

Symbol	Description	Français
	Caution, moving parts.	**ATTENTION!** Pièces en mouvement, risque de pincement et/ou d'écrasement.
	Caution, laser radiation.	**ATTENTION!** Radiation Laser.
	Caution, ultraviolet light.	**ATTENTION!** Emission ultra violet.

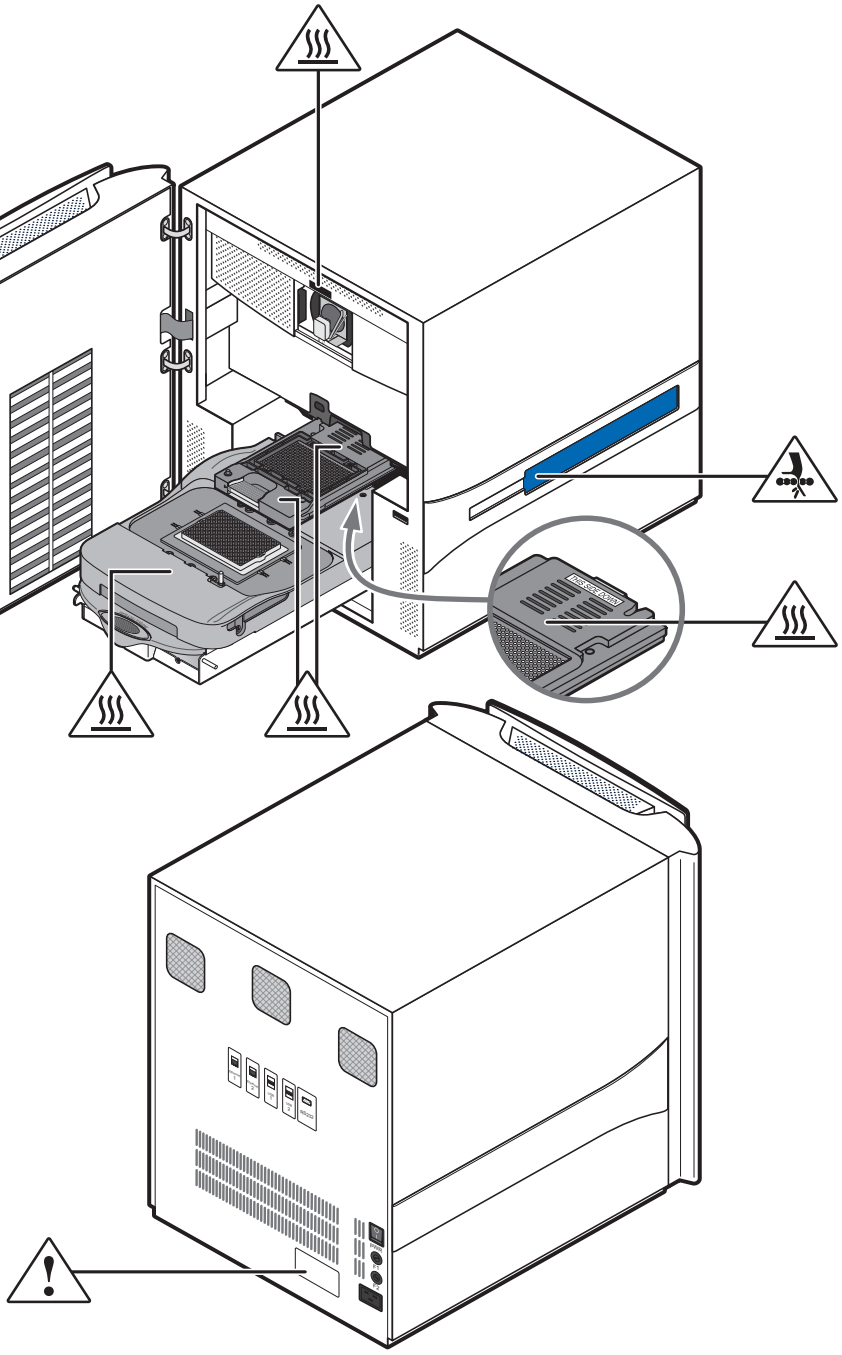
Environmental symbols on instruments

The following symbol applies to all Applied Biosystems electrical and electronic products placed on the European market after August 13, 2005.

Symbol	Description
	**Do not dispose of this product as unsorted municipal waste.** Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE). **European Union customers:** Call your local Applied Biosystems Customer Service office for equipment pick-up and recycling. See **www.appliedbiosystems.com** for a list of customer service offices in the European Union.

Location of safety symbols

The instrument contains safety symbol warnings at the locations shown below:



General instrument safety

WARNING! Physical Injury Hazard. Using the instrument in a manner not specified by Applied Biosystems may result in personal injury or damage to the instrument.

Moving and lifting the instrument

CAUTION! Physical Injury Hazard. The instrument is to be moved and positioned only by the personnel or vendor specified in the applicable site preparation guide. If you decide to lift or move the instrument after it has been installed, 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 persons.

Moving and lifting stand-alone computers and monitors

CAUTION! Do not attempt to lift or move the computer or the monitor without the assistance of others. Depending on the weight of the computer and/or the monitor, moving them may require two or more people.

Things to consider before lifting the computer and/or the monitor:

- Make sure that you have a secure, comfortable grip on the computer or the monitor when lifting.
- Make sure that the path from where the object is to where it is being moved is clear of obstructions.
- Do not lift an object and twist your torso at the same time.
- Keep your spine in a good neutral position while lifting with your legs.
- Participants should coordinate lift and move intentions with each other before lifting and carrying.
- Instead of lifting the object from the packing box, carefully tilt the box on its side and hold it stationary while someone slides the contents out of the box.

Operating the instrument

Ensure that anyone who operates the instrument has:

- Received instructions in both general safety practices for laboratories and specific safety practices for the instrument.
- Read and understood all applicable Safety Data Sheets (SDSs). See "Obtain an SDS" on page 42.

Cleaning or decontaminating the instrument

CAUTION! Before using a cleaning or decontamination method other than those recommended by the manufacturer, verify with the manufacturer that the proposed method will not damage the equipment.

Chemical safety

Chemical hazard warning

WARNING! CHEMICAL HAZARD. Before handling any chemicals, refer to the Safety Data Sheet (SDS) provided by the manufacturer, and observe all relevant precautions.

WARNING! CHEMICAL HAZARD. All chemicals in the instrument, including liquid in the lines, are potentially hazardous. Always determine what chemicals have been used in the instrument before changing reagents or instrument components. Wear appropriate eyewear, protective clothing, and gloves when working on the instrument.

About SDSs

Chemical manufacturers supply current Safety Data Sheets (SDSs) with shipments of hazardous chemicals to new customers. They also provide SDSs with the first shipment of a hazardous chemical to a customer after an SDS has been updated. SDSs provide the safety information you need to store, handle, transport, and dispose of the chemicals safely.

Each time you receive a new SDS packaged with a hazardous chemical, be sure to replace the appropriate SDS in your files.

Obtain an SDS

The Safety Data Sheet (SDS) for any chemical supplied by Applied Biosystems is available to you free 24 hours a day. To obtain an SDS:

1. Go to **www.appliedbiosystems.com**, click **Support**, then select **SDS**.
2. In the Keyword Search field of the SDS Search page:
   a. Type in the chemical name, part number, or other information that you expect to appear in the SDS of interest.
   b. Select the language of your choice.
   c. Click **Search**.

   A list of relevant SDS documents appears.

3. Find the document of interest, right-click the document title, then select any of the following:
   - **Open** – To view the document
   - **Save Target As** – To download a PDF version of the document to a destination that you choose
   - **Print Target** – To print the document

   Note: For the SDSs of chemicals not distributed by Applied Biosystems, contact the chemical manufacturer.

4. To have a copy of an SDS sent by email, send your request to: **SDS_Inquiry_CCRM@appliedbiosystems.com**

5. To have a copy of an SDS sent by fax to the US or Canada, send your fax request to 650-442-2252.

6. To have a copy of an SDS sent by fax to a region outside of the US or Canada, scroll to the bottom of your SDS Search results web page and click **regional office**.

From the Country/Region drop-down menu, select your location.

The contact phone number and the fax request number for your region appear.

Chemical safety guidelines

To minimize the hazards of chemicals:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. (See "Obtain an SDS" on page 42.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Chemical waste safety

Chemical waste hazard

CAUTION! HAZARDOUS WASTE. Refer to Safety Data Sheets and local regulations for handling and disposal.

WARNING! CHEMICAL WASTE HAZARD. Wastes produced by Applied Biosystems instruments are potentially hazardous and can cause injury, illness, or death.

WARNING! CHEMICAL STORAGE HAZARD. Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

Chemical waste safety guidelines

To minimize the hazards of chemical waste:

- Read and understand the Safety Data Sheets (SDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Provide primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Handle chemical wastes in a fume hood.
- After emptying a waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Waste disposal

If potentially hazardous waste is generated when you operate the instrument, you must:

- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.

IMPORTANT! Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Electrical safety

DANGER! ELECTRICAL SHOCK HAZARD. Severe electrical shock can result from operating the instrument without its instrument panels in place. Do not remove instrument panels. High-voltage contacts are exposed when instrument panels are removed from the instrument.

Power

DANGER! ELECTRICAL HAZARD. Grounding circuit continuity is vital for the safe operation of equipment. Never operate equipment with the grounding conductor disconnected.

DANGER! ELECTRICAL HAZARD. Use properly configured and approved line cords for the voltage supply in your facility.

DANGER! ELECTRICAL HAZARD. Plug the system into a properly grounded receptacle with adequate current capacity.

Overvoltage rating

The instrument and associated devices have an installation (overvoltage) category of II, and are classified as portable equipment.

Fuses

WARNING! FIRE HAZARD. Improper fuses or high-voltage supply can damage the instrument wiring system and cause a fire. Before turning on the instrument, verify that the fuses are properly installed and that the instrument voltage matches the power supply in your laboratory.

WARNING! FIRE HAZARD. For continued protection against the risk of fire, replace fuses only with fuses of the type and rating specified for the instrument.

Bar code scanner laser safety

Laser classification

The bar code scanners included with the instrument are categorized as Class 2 (II) lasers.

Laser safety requirements

Class 2 (II) lasers are low-power, visible-light lasers that can damage the eyes. Never look directly into the laser beam. The scanner is designed to prevent human access to harmful levels of laser light during normal operation, user maintenance, or during prescribed service operations.

WARNING! LASER HAZARD. Class 2 (II) lasers can cause damage to eyes. Avoid looking into a Class 2 (II) laser beam or pointing a Class 2 (II) laser beam into another person's eyes.

Physical hazard safety

Ultraviolet light

WARNING! ULTRAVIOLET LIGHT HAZARD. Looking directly at a UV light source can cause serious eye damage. Never look directly at a UV light source and always prevent others from UV exposure. Follow the manufacturer's recommendations for appropriate protective eyewear and clothing.

Moving parts

WARNING! PHYSICAL INJURY HAZARD. Moving parts can crush and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing the instrument.

Biological hazard safety

General biohazard

WARNING! BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective equipment, which includes but is not limited to: protective eyewear, face shield, clothing/lab coat, and gloves. All work should be conducted in properly equipped facilities using the appropriate safety equipment (for example, physical containment devices). Individuals should be trained according to applicable regulatory and company/institution requirements before working with potentially infectious materials. Read and follow the applicable guidelines and/or regulatory requirements in the following:

- U.S. Department of Health and Human Services guidelines published in *Biosafety in Microbiological and Biomedical Laboratories* (stock no. 017-040-00547-4;)

  http://www.cdc.gov/biosafety/publications/index.htm
- Occupational Safety and Health Standards, Bloodborne Pathogens (29 CFR§1910.1030; **www.access.gpo.gov/ nara/cfr/waisidx_01/ 29cfr1910a_01.html**).
- Your company's/institution's Biosafety Program protocols for working with/handling potentially infectious materials.

Additional information about biohazard guidelines is available at:

www.cdc.gov

Workstation safety

Correct ergonomic configuration of your workstation can reduce or prevent effects such as fatigue, pain, and strain. Minimize or eliminate these effects by configuring your workstation to promote neutral or relaxed working positions.

WARNING! MUSCULOSKELETAL AND REPETITIVE MOTION HAZARD. These hazards are caused by potential risk factors that include but are not limited to repetitive motion, awkward posture, forceful exertion, holding static unhealthy positions, contact pressure, and other workstation environmental factors.

To minimize musculoskeletal and repetitive motion risks:

- Use equipment that comfortably supports you in neutral working positions and allows adequate accessibility to the keyboard, monitor, and mouse.
- Position the keyboard, mouse, and monitor to promote relaxed body and head postures.

Safety and electromagnetic compatibility (EMC) standards

This section provides information on:

U.S. and Canadian safety standards

The instrument has been tested to and complies with standard:

UL 61010-1:2nd Edition/CSA C22.2 No. 61010-1, "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements."

UL 61010-2-010, "Particular Requirements for Laboratory Equipment for the Heating of Materials."

Canadian EMC standard

This instrument has been tested to and complies with standard:

ICES-001, Issue 3: "Industrial, Scientific, and Medical Radio Frequency Generators."
Cet appareil numerique de la classe B est conforme a la norme NMB-001 du Canada.

European safety and EMC standards

Safety

This instrument meets European requirements for safety (Low Voltage Directive 2006/95/EC). This instrument has been tested to and complies with standards:

EN 61010-1:2001, "Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements."

EN 61010-2-010:2003, "Particular Requirements for Laboratory Equipment for the Heating of Materials."

EN 61010-2-081:2002+A1:2003, "Particular Requirements for Automatic and Semi-Automatic Laboratory Equipment for Analysis and Other Purposes."

EMC

The ViiA™ 7 Real-Time PCR System meets European requirements for emission and immunity (EMC Directive 2004/108/EC).

EN 61326-1:2006 "Electrical equipment for measurement, control and laboratory use-Part 1 General EMC requirements." (Group 1, Class B)

Australia and New Zealand EMC standards

This instrument has been tested to and complies with standard AS/NZS 2064, "Limits and Methods Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radio-frequency Equipment."

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