iScan System

Site Prep Guide

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Introduction

This guide provides specifications and guidelines for preparing your site for installation and operation of the Illumina® iScan® system.

▶ Laboratory space requirements

▶ Electrical requirements

▶ Environmental constraints

▶ Computing requirements

▶ User-supplied consumables

Supported Configurations

The iScan System can be installed with or without the AutoLoader 2.x to automate BeadChip loading. The following configurations are supported.

Configuration	Description
Without AutoLoader 2.x	The iScan System faces forward on the lab bench.
With AutoLoader 2.x—Single Scanner	1 iScan System faces sideways on the lab bench so that the iScan tray faces the AutoLoader 2.x on the left.
With AutoLoader 2.x—Dual Scanner	2 iScan System face sideways on the lab bench so that the iScan trays face the AutoLoader 2.x between the 2 systems.

Additional Resources

The following documentation is available for download from the Illumina website.

Resource	Description
iScan System User Guide (document # 11313539)	Provides an overview of instrument components and software, instructions for scanning BeadChips, and procedures for proper instrument maintenance and troubleshooting.
Site Prep Guide	Provides specifications for laboratory space, electrical requirements, and environmental considerations.
iScan System Quick Reference Card (part # 11313555)	Provides instructions for starting up and shutting down the iScan system.
iScan System Quick Reference Guide (part # 15020712)	Provides an overview of instrument components and software, instructions for imaging data on BeadChips, and instructions for starting up and shutting down the iScan system.
iScan System Safety and Compliance Guide (part # 15022905)	Provides safety information and product compliance statements for the iScan system.
AutoLoader 2.x User Guide (document # 15015394)	Provides instructions for setting up and using the AutoLoader 2.x to load and scan BeadChips on the iScan System or HiScan Reader.

Visit the iScan System support page on the Illumina website for access to documentation, software downloads, and online training.

Delivery and Installation

An authorized service provider delivers the system, uncrates components, and places the instrument on the lab bench. Make sure that the lab space and bench are ready before delivery.

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⚠ **CAUTION**

Only authorized personnel can uncrate, install, or move the instrument. Mishandling of the instrument can affect the alignment or damage instrument components.

An Illumina representative installs and prepares the instrument. When connecting the instrument to a data management system or remote network location, make sure that the path for data storage is selected before the date of installation. The Illumina representative can test the data transfer process during installation.

⚠ **CAUTION**

After your Illumina representative has installed and prepared the instrument, *do not* relocate the instrument. Moving the instrument from the original facility voids the warranty and service contract. If you have to relocate the instrument, contact your Illumina representative.

Crate Dimensions and Contents

The iScan instrument and components are shipped in 4 crates. Use the following dimensions to determine the minimum door width required to accommodate the shipping crates.

▶ Crate #1 contains the instrument.

▶ Crate #2 contains the instrument control computer, keyboard, and accessories.

▶ Crate #3 contains the instrument control computer monitor.

▶ Crate #4 contains the isolation table.

Table 1   Crated Dimensions

Measurement	Crate #1: Instrument	Crate #2: PC, Keyboard, and Accessories	Crate #3: Monitor	Crate #4: Isolation Table
Width	122 cm (48 in)	56 cm (22 in)	41 cm (16 in)	75 cm (30 in)
Height	74 cm (29 in)	36 cm (14 in)	23 cm (9 in)	19 cm (8 in)
Depth	71 cm (28 in)	56 cm (22 in)	48 cm (19 in)	66 cm (26 in)
Shipping Weight*	90 kg (198 lbs) Instrument Alone: 71 kg (157 lbs)	31 kg (67 lbs)		18 kg (40 lbs)

*Shipping weight does not include pallets. Add 14 kg (30 lbs) for each pallet.

Laboratory Requirements

Use the following specifications and guidelines to determine required lab space.

Instrument Dimensions

The iScan, isolation table, and instrument control computer have the following dimensions after installation.

Measurement	iScan	Isolation Table	Instrument Control Computer	AutoLoader 2.x
Width	52 cm (21 in)	69 cm (27 in)	21.6 cm (8.5 in)	85 cm (33.4 in)
Height	46 cm (18 in) Minimum height*	6 cm (2 in)	57 cm (22.3 in)	76 cm (29.9 in)
Depth	66 cm (26 in)**	61 cm (24 in)	55.4 cm (21.8 in)	65 cm (25.5 in)
Weight	65 kg (143 lbs)	12 kg (26.5 lbs)	34 kg (75 lbs)	See AutoLoader weight table below.

*The instrument height is adjustable to an additional 1.27 cm (0.5 in).

**The keyboard tray extends an additional 19 cm (7.5 in) from the front panel.

The AutoLoader 2.x has the following weight values, based on its configuration:

Configuration	AutoLoader 2.x Weight without iScan	AutoLoader 2.x Weight with iScan
Single AutoLoader 2.x (10 Carriers)	187.4 lb (85 kg)	343.4 lb (155.8 kg)
Dual AutoLoader 2.x (20 Carriers)	275.6 lb (125 kg)	587.8 lb (266.6 kg)
BeadChip Carrier	0.55 lb (0.25 kg)	0.55 lb (0.25 kg)

A dual-scanner configuration, consisting of 2 iScan systems and an AutoLoader 2.x, fits on a typical lab bench. For more information, see *Lab Bench Guidelines* on page 6.

Figure 1 Dual-Scanner Configuration Dimensions with AutoLoader 2.x
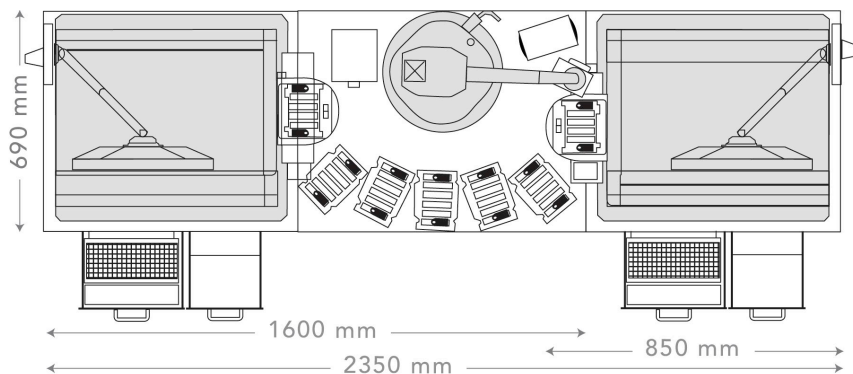
Placement Requirements

The following requirements ensure access to the instrument power switch and power outlet, allow proper ventilation, and provide sufficient access for servicing the instrument.

▶ Allow for an additional 15.5 cm (6 in) behind the instrument.

▶ Position the iScan so that personnel can quickly disconnect the power cord from the outlet.

▶ Allow at least 42 cm (17 in) above the iScan loaded on the isolation table so that the exterior panels can be removed during installation and maintenance. The height dimension listed in the following laboratory space planning table includes this required overhead space.

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Measurement	Instrument	PC, Keyboard, and Monitor	Isolation Table
Width	112 cm (44 in)	46 cm (18 in)	67 cm (27 in)
Height	94 cm (37 in)	Lab Defined	6 cm (2 in)
Depth	101 cm (40 in)	40 cm (16 in)	76 cm (30 in)

Vibration Guidelines

Use the following guidelines to minimize vibrations during sequencing runs and ensure optimal performance:

▶ Do not place other equipment on the bench that can produce vibrations, such as a shaker, vortexer, centrifuge, or instruments with heavy fans.

▶ Do not place objects on top of the instrument.

Lab Bench Guidelines

Place the instrument on a mobile lab bench with locking casters. The lab bench surface must be level (within ± 2 degrees) and nonvibrational. The bench must support the weight of the instrument and instrument control computer.

Width	Height	Depth	Locking Casters
152.4 cm (60 in)	76.2–91.4 cm (30–36 in)	76.2 cm (30 in)	Yes

For North American customers, Illumina recommends the following mobile lab bench:

Bench-Craft (www.bench-craft.com), part # HS-30-60-30 P2 with casters.

▶ **HS** indicates standard bench

▶ **30-60-30** indicates 30 inches wide x 60 inches long x 30 inches high

▶ **P2** indicates outlets on rear of bench

Air Table Specifications

The iScan Reader instrument is sensitive to vibrations. Therefore, an air table is required to help isolate the reader from vibrations produced by the surrounding environment. The air table is placed between the reader and the laboratory benchtop and is hooked up to a regulator connected to the house air line.

Set the air table pressure to a nominal value of 25 psi. Do not allow the air table pressure exceed 40 psi. The maximum pressure from the house line to the air regulator is 80 psi.

If house air is unavailable, a regulated tank of CO_2 or nitrogen can be used with an output of approximately 35 psi.

Electrical Requirements

The line voltage of the iScan is 100–120 Volts AC or 200–240 Volts AC operating at either 50 Hz or 60 Hz. The system consumes a maximum of 600 Watts.

The voltage of the AutoLoader 2.x is 100–240 Volts AC, 110 VA operating at 47-63 Hz.

Power Specifications

Specification	Instrument	AutoLoader 2.x
Line Voltage	100–120 Volts AC, 200—240 Volts AC, at 50 or 60 Hz	100–240 Volts AC at 47–63 Hz
Power	Maximum 600 Watts	110 VA (Maximum 110 Watts)

Receptacles

Your facility must be wired with the following equipment.

▶ **For 100–120 Volts AC**—A 20-amp grounded dedicated line with proper voltage and electrical ground is required.
North America and Japan—Receptacle: NEMA 5-20
Interpower Corp. Receptacle, part # 88030080 (or equivalent)

▶ **For 200–240 Volts AC**—At minimum, 10-amp grounded line with proper voltage and electrical ground is required. Use a higher rating as needed according to requirements for your region.

▶ If the voltage fluctuates more than 10%, a power line regulator is required.

Protective Earth

The instrument has a connection to protective earth through the enclosure. The safety ground on the power cord returns protective earth to a safe reference. The protective earth connection on the power cord must be in good working condition when using this device.

Power Cords

The instrument is equipped with an international standard IEC 60320 C13 receptacle and is shipped with a region-specific power cord.

Hazardous voltages are removed from the instrument only when the power cord is disconnected from the AC power source.

To obtain equivalent receptacles or power cords that comply with local standards, consult a third-party supplier such as Interpower Corporation (www.interpower.com).

> **CAUTION**
> Never use an extension cord to connect the instrument to a power supply.

Fuses

Only Illumina field personnel are qualified to replace internal fuses. The power entry module includes 2 input fuses on the high-voltage input lines.

iScan fuses: The fuses are size 5x20 and rated for 10 Amps, 250 VAC, Slo-Blo.

AutoLoader 2.x fuses: The fuses are size 2 x 5mm and rated for 2 Amps, 250 VAC, T Class.

Uninterruptible Power Supply

The iScan is shipped with a region-specific uninterruptible power supply (UPS).

Specification	North America	International	Japan
Model Number	ABCE800-11B	ABCE800-22B	ABCE800-11B
Manufacturer Part Number	54080-04R	55080-04R	54080-95R
Max Watts	560 Watts	560 Watts	560 Watts
VA Rating	800 VA	800 VA	660 VA
Input Voltage (Nominal)	120 VAC (96–151 VAC without using batteries)	230 VAC (181–290 VAC without using batteries)	100 VAC 60 Hz
Input Connection	NEMA 5-15P	IEC 320 Inlet Module with input line cord provided	NEMA 5-15P
Typical Run Time* (50% load)	9–13 minutes	9–13 minutes	9–13 minutes
Typical Run Time* (100% load)	4–6 minutes	4–6 minutes	4–6 minutes

* Backup run time information is based on estimates. Actual run time can vary, depending on the loads and power factors of the protected equipment and the condition of the UPS batteries.

Environmental Considerations

Element	Specification
Temperature	Transportation and storage: 5°C to 50°C (41–122°F) Operating: 15°C to 30°C (59°C to 86°F). During a run, do not allow the ambient temperature to vary by more than ±2°C.
Humidity	Maintain a noncondensing relative humidity between 20–80% (operating) or 15–90% (transportation and storage).
Altitude	Locate the instrument at an altitude no higher than 2000 meters (6500 feet).
Air Quality	Operate the instrument in a Pollution Degree II environment or better. A Pollution Degree II environment normally includes only nonconductive pollutants.
Ventilation	Consult your facilities department for ventilation requirements sufficient for the level of heat output expected from the instrument.

Noise Output

Noise output is 65 dB when standing 1 meter (3.3 feet) from the front of the instrument.

Heat Output

The following table shows the heat output for 1 instrument with a personal computer (PC).

Component	Measured Power (Watts)	Thermal Output (Btu/h)
Instrument	750	2600
T5500 PC and Monitor	400	1400
Total Estimated Heat Output	1150	4000

Instrument Control Computer

The instrument is shipped with an instrument control computer that is customized to the latest system requirements. Contact Illumina Technical Support for more information about the computer specifications.

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The instrument control computer is a dedicated subsystem of the instrument and is not intended for use or supported as a general-purpose computer. Loading and using third-party software can result in slow processing, loss of data, or invalid data.

NOTE

Only install third party software if recommended by Illumina personnel.

Data Connections

The instrument includes the following connections to the instrument control computer.

Quantity	Description
1	USB connection for communication between the instrument and the computer. A standard USB type A to type B style connector is used.
2	Low voltage differential signaling (LVDS) CameraLink connections for the 2 main cameras. Standard CameraLink cables are used. The cameras transfer raw data from the instrument to the computer.
1	Ethernet connection to the Smart Camera used for focusing. A standard 100 Mbit ethernet cable is used.

Antivirus Software

An antivirus software of your choice is highly recommended to protect the instrument control computer against viruses.

To avoid data loss or interruptions, configure the antivirus software as follows:

▶ Set for manual scans. Do not enable automatic scans.

▶ Perform manual scans only when the instrument is not in use.

▶ Set updates to download without user authorization, but not install.

▶ Do not update during instrument operation. Update only when the instrument is not running and when it is safe to reboot the instrument computer.

▶ Do not reboot the computer automatically upon update.

Network Considerations

Illumina does not provide installation or technical support for networking the instrument control computer. However, you can configure and maintain a network connection on the instrument control computer after installation of the instrument.

▶ Use a 1 gigabit connection between the instrument control computer and your data management system. This connection can be made directly or through a network switch.

▶ Review network maintenance activities for potential compatibility risks with the Illumina system.

Multiple Instruments

▶ Make sure that the server drive is sufficient for the high volume of data being transferred from multiple instruments. Consider setting up the instruments to copy to different servers.

▶ Make sure that the connection to analysis servers is sufficient for the high volume of data being transferred from multiple instruments. Consider setting up the instruments to use different connections or use a higher bandwidth link for the shared connection, such as 10 gigabit.

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User-Supplied Consumables

Consumable	Source
Alcohol wipes, 70% Isopropyl, Medium	VWR, catalog # 15648-981
Ethanol, 99.5%, ACS, absolute (optional)	Fisher Scientific, catalog # AC61509-5000
Gloves, powder-free, disposable, latex or nitrile	General lab supplier
Lab tissue, low-lint	VWR, catalog #21905-026

Revision History

Document	Date	Description of Change
Document # 1000000000661 v01	January 2019	Added dimension, weight, electrical requirement, and fuse information for AutoLoader 2.x.
Document # 1000000000661 v00	September 2015	Initial release.

Technical Assistance

For technical assistance, contact Illumina Technical Support.

Website:	www.illumina.com
Email:	techsupport@illumina.com

Illumina Customer Support Telephone Numbers

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North America	+1.800.809.4566	
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China	400.066.5835	
Denmark	+45 80820183	+45 89871156
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Sweden	+46 850619671	+46 200883979
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Safety data sheets (SDSs)—Available on the Illumina website at support.illumina.com/sds.html.

Product documentation—Available for download in PDF from the Illumina website. Go to support.illumina.com, select a product, then select **Documentation & Literature**.

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