ImageXpress™ Pico

Automated Cell Imaging System

with CellReporterXpress™ Software Version 2.1

Installation Guide

MOLECULAR DEVICES

Contents

Safety Information

This section describes the safe use of the instrument. Safety includes an understanding of the information in this guide, the safety labels on the instrument, and the precautions that you must follow before and during operation of the instrument.

It is important to confirm that everyone involved with the operation of the instrument has:

- Received instruction in general safety practices for laboratories.
- Received instruction in specific safety practices for the instrument.
- Read and understood all Safety Data Sheets (SDS) for all materials being used.
- Read and understood all instrument documentation, including all warnings and cautions.

Always remember that the key to safety is operating the instrument with care.

⚠ **WARNING! If the instrument is used in a manner not specified by Molecular Devices, the protection provided by the equipment might be impaired.**

Warnings, Cautions, Notes, and Tips

All warning symbols in the user guide are framed within a yellow triangle. An exclamation mark is used for most warnings. Other symbols can warn of other types of hazards such as biohazard, electrical, or laser safety warnings as are described in the text of the warning.

When warnings and cautions are displayed in this guide, be careful to follow the specific safety information related to them.

The following user-attention statements can be displayed in the text of Molecular Devices user documentation. Each statement implies a particular amount of observation or recommended procedure as described:

⚠ **WARNING! A warning indicates a situation or operation that could cause personal injury if precautions are not followed. The warning symbol can vary depending on the warning. The definition of the symbol is included in the text of the warning.**

⚠ **CAUTION!** A caution indicates a situation or operation that could cause damage to the instrument or loss of data if correct procedures are not followed.

📝 **Note:** A note calls attention to significant information.

✳ **Tip:** A tip provides useful information or a shortcut, but is not essential to the completion of a procedure.

Symbols on Instrument Labels

Each safety label found on the instrument contains an alert symbol that indicates the type of potential safety hazard related to the label. The following table lists the alert symbols that can be found on Molecular Devices instruments.

Symbol	Indication
	Indicates that the product documentation must be consulted.
	Indicates a potential lifting hazard. For information about the weight of the instrument,
	Indicates a potential heat hazard.
	Indicates a rotating parts hazard.
	Indicates the location of a fuse.
	Indicates the instrument serial number.
	Indicates the instrument manufacture date.
	Indicates that you should consult the instructions for use.
	Indicates CSA certification.
	Indicates European technology conformity.

Symbol	Indication
	Indicates compliance with Australian radio communication requirements.
	Indicates compliance with the Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union.You must not discard this electrical or electronic product or its components in domestic household waste or in the municipal waste collection system. For products under the requirement of the WEEE directive, contact your dealer or local Molecular Devices office for the procedures to facilitate the proper collection, treatment, recovery, recycling, and safe disposal of the device.
	Indicates the environmental friendly use period for China RoHS. The symbol may indicate the number of years in the use period.
EC REP	Indicates that there is an authorized representative in the European community.
	Indicates the instrument manufacturer.
REF	Indicates the manufacturer catalog number.

Protective Housing

The instrument features a protective outer housing, which is designed to protect you from exposure to LED light, hot surfaces, and moving parts.

WARNING! Do not manually open the plate door, open the protective housing, or attempt to gain access to the interior of the instrument. These actions can damage the instrument components and result in hazardous exposure to LED light, hot surfaces, moving parts, or high voltage.

Electrical Safety

To prevent electrically related injuries and property damage, inspect all electrical equipment before use and immediately report all electrical deficiencies. Contact Molecular Devices Technical Support to service equipment that requires the removal of covers or panels.

⚠ **WARNING! HIGH VOLTAGE. Within the instrument is the potential of an electrical shock hazard existing from a high-voltage source. Read and understand all safety instructions before you install, maintain, or service the instrument.**

Do not remove the instrument covers. To prevent electrical shock, use the supplied power cords only and connect to a properly grounded wall outlet.

To ensure sufficient ventilation and provide access for disconnecting power from the instrument, maintain a clearance of 20 cm to 30 cm (7.9 in. to 11.8 in.) at the rear of the instrument.

Power off the instrument when not in use.

If the instrument does not power on, you may need to replace the instrument fuses. See Replacing Fuses on page 9 for details.

Replacing Fuses

If the instrument does not seem to get power after you press the Power button, confirm that the power cord is securely connected to a functioning power outlet and to the power port on the rear of the instrument.

If the power failed while the instrument was running, verify that the power cord is not loose or disconnected and that power to the power outlet is functioning properly.

If these checks fail to remedy the loss of power, replace the fuses. See Instrument Specifications on page 57 for fuse details.

> ⚠️ **CAUTION!** Do not touch or loosen screws or parts other than those specifically designated in the instructions. Doing so could cause misalignment and possibly void the warranty.

The fuses are located in the fuse carrier, which is below the power port at the rear of the instrument.

> ⚠️ **WARNING! HIGH VOLTAGE Always power off the instrument and disconnect the power cord from the main power source before you perform a maintenance procedure that requires removal of a panel or cover or disassembly of an interior instrument component.**

To replace fuses:

1. Press and hold the **Power** button to power off the instrument.

2. Disconnect the power cord from the power port.

3. Gently press on the carrier-release tab (below the power port) with a small flat-head screwdriver, and pull the fuse carrier to remove it from the instrument.

4. Gently pull the old fuses from the carrier by hand.

5. Gently place the new fuses into the carrier.

6. Press the fuse carrier into the instrument until the carrier snaps into place.

7. Connect the power cord into the power port.

8. Press the **Power** button to power on the instrument.

> 📝 **Note:** If the instrument still does not power on after you change the fuses, contact Molecular Devices Technical Support. See Obtaining Support on page 20 for details.

Moving Parts Safety

The instrument contains moving parts that can cause injury. Under normal conditions, the instrument is designed to protect you from these moving parts.

To prevent injury:

- Never try to exchange labware, reagents, or tools while the instrument is operating.

- Never try to physically restrict the moving components of the instrument.

WARNING! Do not attempt to access the interior of the instrument unless specifically instructed to do so. The moving parts inside the instrument can cause injury. Do not operate the instrument with any covers or panels removed.

Note: Observe all warnings and cautions listed for all external devices attached to or in use during the operation of the instrument. See the applicable user guide for the operating and safety procedures of that device.

Lifting Hazard

WARNING! LIFTING HAZARD. The ImageXpress Pico System weighs approximately 38 kg (84 lb). Use great care when lifting or moving the instrument. To prevent injury, use a minimum of two people to lift the instrument.

CAUTION!
- Always lift the instrument to move it. Do not slide or push the instrument. Sliding or pushing can damage the feet on the bottom of the instrument.

- Moving the instrument can damage sensitive parts and disrupt optical alignments. When transporting the instrument, use the original packaging and shipping box to properly secure the instrument. Your warranty does not cover problems caused during or as a result of shipment or relocation.
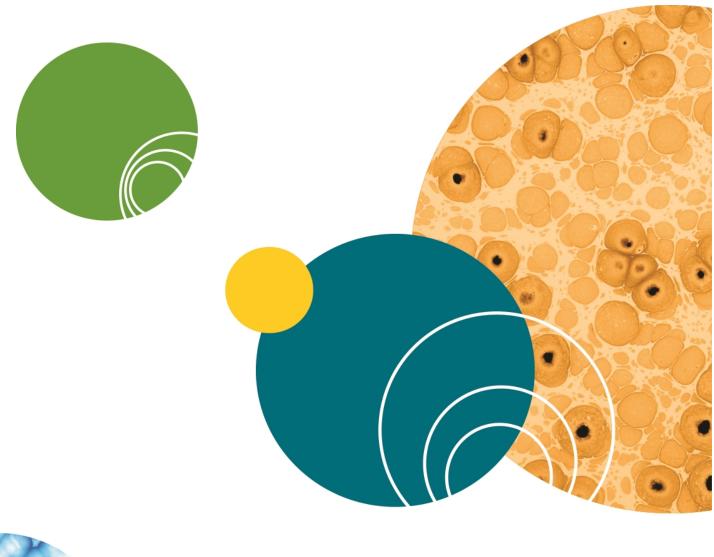
Chemical and Biological Safety
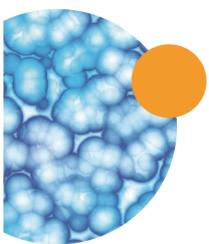
Normal operation of the instrument can involve the use of materials that are toxic, flammable, or otherwise biologically harmful. When using such materials, observe the following precautions:

- Handle infectious samples based on good laboratory procedures and methods to prevent the spread of disease.

- Observe all cautionary information printed on the original containers of solutions before their use.

- Dispose of all waste solutions based on the waste disposal procedures of your facility.

- Operate the instrument in accordance with the instructions outlined in this guide, and take all the required precautions when using pathological, toxic, or radioactive materials.

- Splashing of liquids can occur. When working with potentially hazardous liquids, take applicable safety precautions, such as wearing safety glasses and protective clothing.

- Observe the applicable cautionary procedures as defined by your safety officer when using hazardous materials.

- Use a compressed gas supply in a well-ventilated area. The instrument is not air-tight. Gas can escape into the atmosphere surrounding the instrument. When you use potentially toxic gas, observe the cautionary procedures your safety officer defines to maintain a safe work environment, such as the use of an automatic warning system.

- Observe the applicable cautionary procedures as defined by your safety officer when using flammable solvents in or near a powered-up instrument.

- Observe the applicable cautionary procedures as defined by your safety officer when using toxic, pathological, or radioactive materials.

⚠️ **WARNING! Never use the instrument in an environment where potentially damaging liquids or gases are present.**

Chapter 1: ImageXpress Pico Automated Cell Imaging System

The Molecular Devices® ImageXpress™ Pico Automated Cell Imaging System is an affordable all-in-one platform for automatically acquiring and analyzing images from fluorescently labeled biological samples in plates and slides. It enables you to increase the throughput of your image acquisition and analysis, allowing you to gain insights in minutes. With the addition of a modular option, the system provides environmental control for live cell imaging.

The core hardware component of the imaging system is a custom-designed, fully automated, epi-illumination fluorescence microscope. The rapid autofocus and precision sample movement features of the microscope allow large numbers of high-resolution images to be acquired in the shortest possible time. All key optical and mechanical elements are motorized, which allows complete control of the instrument configuration.

When used in combination with the CellReporterXpress™ Image Acquisition and Analysis Software, which features powerful image analysis capabilities and more than 25 available predefined experimental protocols, the ImageXpress Pico System becomes an extremely flexible device, ideally suited for user-defined, automated assays.

Key components of the instrument include the following:

- Built-in, internal light source comprised of four high-powered LEDs enables very high sensitivity fluorescent imaging. Additional LED-based light sources allow transmitted light and planetary view imaging.

- High-sensitivity, 5-megapixel CMOS camera.

- Hardware-based autofocus system with precision motorized Z-stage focus.

- High-transmission fluorescence imaging optics with world-class chromatic aberration correction, resolution, and image flatness.

- Planetary view camera provides overview imaging for slides.

- Precision motorized sample (X-Y) stage.

- High-quality Leica objectives in a six-position turret.

- Filter cubes in a six-position turret.

- Motorized selection of stage position, filter cubes, and objectives.

- Temperature control up to 40°C (104° F) for live cell imaging.

- Optional environmental control system, which enables you to regulate humidity, CO_2, and O_2 inside the environmental control cassette for multi-day, live-cell, time-lapse imaging.

- Operation and configuration control by the integrated CellReporterXpress Software.

ImageXpress Pico System Features

Illumination System

Light Source

The ImageXpress Pico System light source is comprised of six high-powered LEDs with a rated lifetime of more than 20,000 hours. It has an excitation spectrum ranging from ultraviolet to red. There are no user-replaceable parts in the light source.

Filter Cube Turret

The six-position filter cube turret uses Leica filter cubes, which contain filters that are adapted and matched to the ImageXpress Pico System. Additional filter cubes are available exclusively from Molecular Devices.

See for details.

Objective (Z) Stage

The Z stage position features a resolution of better than 0.25 μm.

The ImageXpress Pico System uses Fluotar objectives manufactured by Leica Microsystems. The selected objective lens focuses excitation light onto the sample and collects fluorescent light emitted by the sample.

One or more objectives is included with your initial purchase of the ImageXpress Pico System. After that, you can order additional compatible objectives exclusively from Molecular Devices. The following objectives are compatible with the ImageXpress Pico System:

Magnification	Numerical Aperture	Color Band
4x	0.13	Red
10x	0.32	Yellow
20x	0.40	Light Green
40x	0.60	Light Blue
63x	0.70	Dark Blue

⚠️ **CAUTION!** To prevent damaging both the instrument and your samples, do not use any other objectives with the ImageXpress Pico System.

See for details.

Motorized Objective Turret

The ImageXpress Pico System includes a six-position objective turret.

Sample (X-Y) Stage

Plate Holder

The plate holder is designed for scanning multi-well microplates in standard ANSI (SBS) formats with plastic or glass bottoms. It can accommodate other plate formats that have standard footprint dimensions. For example, glass slides can be imaged using a slide adapter included in the accessory kit. Optimal image quality depends on plate flatness, well bottom thickness, and optical clarity.

A spring-loaded, mechanical clamp holds the sample plate securely in the plate holder. The clamp automatically opens when the sample (X-Y) stage moves to the load/eject position; it automatically closes when the sample (X-Y) stage moves the plate into position for imaging.

Slide Holder

The slide holder holds four standard microscope slides of 25 mm x 75 mm (1 in. x 3 in.).

LED Autofocus

The ImageXpress Pico System uses a high-powered LED to autofocus the sample. For higher magnifications, you can select an additional image-based autofocus.

CellReporterXpress Software Features

The CellReporterXpress Image Acquisition and Analysis Software by Molecular Devices is the user interface for the ImageXpress Pico System. You will use the CellReporterXpress Software to work with the ImageXpress Pico System and control all its functions.

The CellReporterXpress Software integrates image acquisition and analysis into a unified workflow. Along with the ImageXpress Pico System, the CellReporterXpress Software streamlines automated imaging to offer a simplified solution for scaling up microscopy. Its features include:
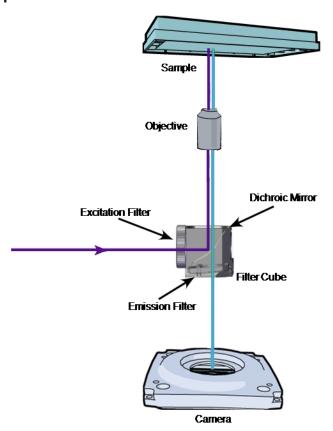
- A web-based interface that runs on many browsers, including those found on iPads and Android tablets.

- Over 25 available predefined experimental protocols.

- High-powered analysis tools equivalent to those found in desktop applications.

- Easy-to-manage data with no requirement to configure a database.

- A simplified user interface that is easy to learn and easy to use.

As part of installing and setting up the ImageXpress Pico System, you will install the CellReporterXpress Software on a host computer.

Note: See the *CellReporterXpress Help* or the *CellReporterXpress User Guide* for details on using the CellReporterXpress Software.

Theory of Operation

The ImageXpress Pico System uses the following components and functions:

- Fluorescence Imaging, see page 18
- Excitation and Emission Filters, see page 18
- Dichroic Mirror, see page 19
- Objective Lenses, see page 20

Fluorescence Imaging

Fluorescence is a property of certain classes of molecules (fluorochromes, fluorescent proteins, or dyes) in which photons of a specific wavelength are absorbed (excitation), and, as a result, photons are emitted at a longer wavelength (emission) a very short time later. The utility of fluorescence imaging in biological applications stems from the ability to conjugate fluorescent molecules with biologically active probe molecules, so that application of the combined dye/probe molecule (fluorophore) to the specimen highlights the specific substances or regions to which the probe is targeted.

By attaching different probes to a set of dye molecules with non-overlapping excitation and emission spectra, one can stain a specimen with multiple fluorophores, and either simultaneously or sequentially image different structures or substances within the same specimen. The excitation and emission peaks for each dye or fluorescent protein in a given environment are physical characteristics of that molecule, and their specific properties determine the initial selection of the optical components to be used, such as the emission and excitation filters, and the dichroic mirror.

Excitation and Emission Filters

In the ImageXpress Pico System, the excitation and emission filters are located in a filter cube.

To selectively excite one fluorophore more intensely than another, or to minimize excitation channel crosstalk, it is necessary to provide illumination containing only photons with a wavelength range matched to the excitation spectrum of the target fluorophore. A bandpass filter in the illumination optical path (called the excitation filter, since it filters the excitation light) is used to restrict the illumination spectrum to a narrow range of wavelengths.

Similarly, when imaging the illuminated sample, it is desirable to collect only the emission photons from the target fluorophore, rejecting as much as possible any reflected or scattered excitation light, any light from other dyes, and autofluorescence from the sample and substrate. This is done by placing a filter in the collection light path, called the emission filter. Emission filters can either be a bandpass filter (for maximum specificity) or a longpass filter (to maximize the amount of emission light collected).

Dichroic Mirror

In the ImageXpress Pico System, the dichroic mirror is in a filter cube.

A dichroic mirror is a specially designed beam splitter that transmits light above a certain cutoff wavelength and reflects light at shorter wavelengths. This is the essential component that allows the construction of an epi-illumination fluorescence imaging system in which the illumination and imaging optical paths overlap at the objective lens. The same objective lens is used to focus the illumination light on the sample as well as collect the emitted fluorescent light to form the image.
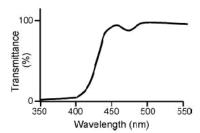
In the illumination path, the dichroic mirror reflects shorter wavelengths from the light source up through the objective onto the specimen.

In the imaging optical path, longer wavelength fluorescence light emitted by the excited fluorophores in the specimen is collected by the objective lens and transmitted through the dichroic mirror to the camera. Incident light from the sample that is shorter wavelength than the cutoff (mostly reflected illumination light from the sample) is reflected by the dichroic mirror (and further blocked by the emission filter), preventing it from entering the imaging system of tube lens and camera.

The optics in a filter cube are interference filters made by depositing thin film coatings on a glass support. These components are delicate and can be easily damaged. Always use care when handling a filter cube.

Dichroic Transmission Spectrum

An ideal dichroic mirror would have an infinitely sharp cut-off. That is, it would have unity transmittance coefficient at wavelengths longer than the cut-off, and zero transmittance (and therefore unity reflectance in a non-absorbing dichroic mirror) at shorter wavelengths. In practice, the characteristic transmission spectrum for a dichroic mirror looks similar to the following graph.

In principle, the cutoff wavelength (or midpoint of the cutoff region) of the dichroic mirror should be chosen to lie halfway between the absorption and emission peaks of the chosen fluorochrome, as this simultaneously maximizes the amount of excitation light available at the sample and also the amount of collected fluorescence emission that is transmitted to the camera. In practice, however, additional considerations such as fluorochrome efficiency can dictate that the cutoff region is biased toward one peak or the other. This allows, for example, greater transmission of longer wavelength image photons at the expense of less reflection of shorter wavelength excitation light.

Objective Lenses

The ImageXpress Pico System can be configured with high-quality Leica Fluotar objectives. Five objectives are currently available.

You can identify the magnification of an objective by the color band:

Objective Magnification	Color
4x	Red
10x	Yellow
20x	Green
40x	Light Blue
63x	Dark Blue

The 40x objective and 63x objective have application-optimized correction collars (CORR) to compensate for well bottom thickness or coverslip thickness. The collars have a range of 0 mm to 2 mm correction. Changing this setting adjusts the distances between components inside the objective barrel. Image quality and resolution are very dependent on properly setting these collars.

The settings to be used depend on the well bottom thickness of the plate or the coverslip thickness on the slide on which the specimen is mounted. In general, set the correction collar for the physical thickness of the plate or slide that you are imaging. The physical thickness can be determined by the plate specifications from the plate manufacturer.

See Objectives on page 65 for details.

Obtaining Support

Molecular Devices is a leading worldwide manufacturer and distributor of analytical instrumentation, software, and reagents. We are committed to the quality of our products and to fully supporting our customers with the highest level of technical service.

Our Support website, www.moleculardevices.com/service-support, has a link to the Knowledge Base, which contains technical notes, software upgrades, safety data sheets, and other resources. If you still need assistance after consulting the Knowledge Base, you can submit a request to Molecular Devices Technical Support.

Technical Support

You can contact Molecular Devices Technical Support by submitting a support request through the Knowledge Base or by phone. To find regional support contact information, visit www.moleculardevices.com/contact.

You will need the instrument serial number and the software system ID.

The serial number is located on the back panel of the instrument.

Documentation

Review the product documentation on the Knowledge Base, including installation guides and user guides. In addition, online Help is available within the CellReporterXpress Software. Press **F1** to access Help for the active page.

Additional Resources

Web-based microscopy courses:

- www.leica-microsystems.com/science-lab
- www.ibiology.org/ibioeducation/taking-courses/ibiology-microscopy-short-course.html

The Molecular Probes Handbook offers advice on fluorescent probes and can help you determine if there are better stains available for your analysis:

- www.lifetechnologies.com/us/en/home/references/molecular-probes-the-handbook.html

Product Documentation

The following guides are available on the Molecular Devices Knowledge Base at mdc.custhelp.com:

- *CellReporterXpress Installation Guide*
- *CellReporterXpress Release Notes*
- *CellReporterXpress User Guide*
- *ImageXpress Pico Pre-Installation Guide*
- *ImageXpress Pico Installation Guide*
- *ImageXpress Pico User Guide*
- *ImageXpress Pico Calibration Kit Guide*

In addition, the CellReporterXpress Software includes context-sensitive Help that you can access from within the software. Just press the **F1** key from within the software to view Help for the current page.

✳ **Tip:** Molecular Devices recommends that you review the documentation before installing or using the ImageXpress Pico System or the CellReporterXpress Software.

About This Guide

This guide is intended for the scientist or IT professional installing the ImageXpress Pico System. It describes the day-one activities and helps you set up the instrument, including the CellReporterXpress Software.

Use this guide along with the *CellReporterXpress Installation Guide*, which contains critical information that helps you configure a system to best meets your needs.

The information in this guide is subject to change without notice. Molecular Devices recommends that you review the guide on the Knowledge Base for the most up-to-date information.

Chapter 2: Setting Up the ImageXpress Pico System

Package Contents

The ImageXpress Pico System will arrive in one or more boxes; the largest box contains the instrument. The package also includes a SafeNet Sentinel CellReporterXpress USB hardware key (called a "dongle"), which is required to run the software, along with the following:

Item	Part No.	Description
	5063666	Installation Guide
	5052189	Two (2) CAT6 Ethernet cables, 2 m (6.6 ft)
	4400-0002 or 4400-0036	Power cord, 115 V, 1 m (3.3 ft) or Power cord, 230 V, 1 m (3.3 ft)
	5068503 and 5068504	Stage Insert Accessory Pack (includes plate holder and slide holder)
	5064351	Filter Cube, FITC (other optional filter cubes may also be included)
	5064345 and 5064346	Objectives, 4x and 10x (other optional objectives may also be included)

With the optional environmental control system, the package also includes the following:

Item	Part number	Description
	5070110	Humidifying Column
	5070108	Humidifying Column Tubing/Wiring
	5070103	Gas Supply Tubing, 10 m (32.8 ft)
	5070105	Environmental Control Cassette
	n/a	Environmental Control Tray
	5070106	Two (2) Blind Plugs

See the enclosed packing list for a complete list of system contents.

Environmental Requirements

The ImageXpress Pico System is designed to operate indoors under laboratory conditions at 18°C to 30°C (64°F to 86°F) with 20% to 75% non-condensing humidity. As with any precision optical instrument, take care to maintain a low-dust, low-vibration environment. Temperature and humidity extremes can compromise performance.

Avoid the following lab conditions or situations:

- Avoid installation in or near a room with high-motion equipment, including vacuum pumps, centrifuges, elevators, air conditioners, or heaters.

- Avoid installation directly in the path of air vents. Sudden temperature changes and air-flow vibrations can degrade performance.

- Avoid installation near external vibration caused by trains or excessive vehicle traffic.

- Avoid installation in any room with noticeable vibration on floors or walls.

- Avoid installation in direct sunlight.

- Avoid installation within 5 m (16.4 ft) from a refrigerator.

- Avoid installation within 2 m (6.5 ft) from a door.

- Avoid installation on a table that is mechanically attached to a wall.

- Avoid installation on a table with shakers, stirrers, mixers, or centrifuges.

Space and Table Requirements

The ImageXpress Pico System requires a sturdy table or lab bench that meets the following requirements:

Dimension	Minimum Requirement
Width	94 cm (37.0 in.)
Depth	61 cm (24.0 in.)
Vertical Clearance	25 cm (9.8 in.)
Weight Rating	50 kg (110.2 lb)

With no options, the instrument weighs 38 kg (83.8 lb).

With the optional environmental control system, the instrument weighs 40 kg (88.2 lb).

Additional space or a separate table is required for the host computer, keyboard, mouse, and monitor.

Most low-magnification applications will tolerate non-optical tables that can be purchased from companies specializing in industrial furniture, including:

- Anthro (www.anthro.com)
- RDM (www.rdm-ind.com)
- SteelSentry (www.steelsentry.com)

The front and the top of the instrument must be accessible to allow access to the objectives, filter cubes, and stage holder. Adequate clearance around the instrument is necessary for user and service access.

See Instrument Specifications on page 57 for details on instrument dimensions.

Power Requirements

Consider the following power requirements:

- Direct connections to all international supply voltages are available.

- The instrument requires an input voltage range from 100 VAC to 240 VAC, 50/60 Hz, 4 amps maximum at 115 VAC.

- Fluctuations must be within 10% of the nominal voltage.

- When using a power strip, connect the computer and monitor to a different power strip than the instrument.

To limit the risk of interruption during power loss, use an uninterruptible power supply (UPS) to provide backup power and power line conditioning for the instrument and computer.

The power requirements for individual components are listed below. To determine the power consumption (in watts) for the ImageXpress Pico System, add the power requirements of all applicable components. For example, the power consumption of a typical system and with a large monitor is 360 watts (that is, 200 + 120 + 40).

Power Requirement	Watts	Power Cables
Instrument	200	1
Host Computer	120	1
Monitor, 27" (each)	40	1
Monitor, 22" (each)	20	1

Unpacking the Instrument

The packaging is designed to protect the instrument during transportation. Carefully unpack the instrument.

A foam transport lock is placed in the sample (X-Y) stage to protect the instrument from damage during shipment. You must remove the transport lock before you power on the instrument. See Removing the Transport Lock on page 30 for details.

> ⚠️ **WARNING! LIFTING HAZARD. To prevent injury, use a minimum of two people to lift the instrument.**

> ⚠️ **CAUTION!**
> - Retain the shipping box and all packaging materials for future transport needs.
> - When transporting the instrument, warranty claims are void if improper packing results in damage to the instrument.

To unpack the instrument:

1. Check the box for damage that occurred during transportation. Inform the supplier immediately and keep the damaged packaging.
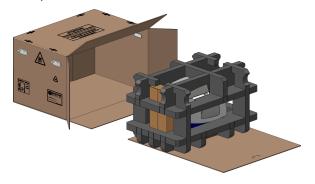
   > ⚠️ **CAUTION!** Keep the box upright. Do not tip or tilt the box or place it on its side.
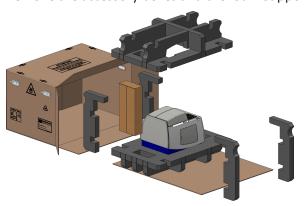
2. With the box facing up as shown, cut open the side of the box labeled **Open Here**.

3. Grasp the handle on the cardboard and slide the instrument out of the box.
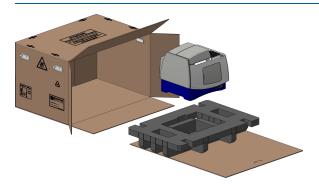
4. Remove the accessory boxes and the foam supports.

5. Remove the foam packing from both ends and then remove the plastic bag from the instrument.

6. With one person on each end, lift the instrument to a dry, flat surface.

> ⚠️ **CAUTION!** Lift the instrument from the bottom; avoid lifting from the top cover. Keep the instrument upright and level when lifting. Do not tip or shake the instrument.

> ⚠️ **CAUTION!** Retain the shipping box and all packaging materials for future transport needs.

Placing the Instrument

Consider the following when setting up the instrument:

- Set the instrument on a stable, dry, flat surface.

- Avoid setting up the instrument near any sources of vibration, such as a centrifuge.

- During installation, you will need to access the back of the instrument to connect the cables.

- Do not position the instrument so that it is difficult to operate the power switch on the front.

- After installation, allow at least 20 cm (7.9 in.) clearance on all sides of the instrument.

- Do not slide or push the instrument to move it. Sliding or pushing can damage the feet on the bottom of the instrument. Always lift the instrument to move it. See Lifting Hazard on page 10 for details.

Removing the Transport Lock

Remove any tape and the foam transport lock that secures the sample (X-Y) stage the top of the instrument.

⚠ **CAUTION!** Retain the shipping box and all packaging materials for future transport needs.

Connecting Cables

The power cord and Ethernet cable connect to the ports on the rear of the instrument.

The Ethernet port enables you to connect the instrument to the host computer running the CellReporterXpress Software (in a standalone configuration) or to your network (in a network configuration or server configuration). When the instrument is connected to your network, other computers on the network can connect to the host computer as remote clients. You can also distribute functionality across several computers on the network, using more powerful computers to perform analysis operations and storage operations.

See the *CellReporterXpress Installation Guide* for details on these configurations and guidelines for setting a system that meets the needs of your users.

The package includes the following cables:

Cable	Description
	Two (2) CAT6 Ethernet cable, 2 m (6.6 ft)
	Power cord, 1 meter (3.3 ft)

The following shows the rear of the instrument:

Standalone Configuration

To connect cables for a standalone configuration:

1. Do the following to connect the supplied Ethernet cable:

    a. Connect one end of the Ethernet cable to the **LAN1** port on the instrument.

    b. Connect the other end of the Ethernet cable to an Ethernet port on the host computer.

2. Do the following to connect the supplied power cord:

    a. Connect the power cord to the power port on the instrument.

    b. Connect the other end of the power cord to a grounded electrical wall outlet.

Network Configuration or Server Configuration

To connect cables for a network configuration or server configuration:

1. Do the following to connect the supplied Ethernet cable:

    a. Connect one end of the Ethernet cable to the **LAN2** port on the instrument.

    b. Connect the other end of the Ethernet cable to a network port.

2. Do the following to connect the supplied power cord:

    a. Connect the power cord to the power port on the instrument.

    b. Connect the other end of the power cord to a grounded electrical wall outlet.

> ⚠ **CAUTION!** Do not simultaneously connect Ethernet cables to both the **LAN1** port and **LAN2** port of the instrument. Doing so can degrade performance of the instrument or cause unexpected behavior.

Powering On the Instrument

To power on the instrument:

1. Ensure the Ethernet cable is connected properly:

   - For a standalone configuration, where the instrument is connected directly to the host computer, connect the Ethernet cable to the **LAN1** port on the back of the instrument.

   - For a network configuration or server configuration, where the instrument is connected to a network, connect the Ethernet to the **LAN2** port on the back of the instrument.

   ⚠️ **CAUTION!** The network connections between the host computer, instrument, remote clients, and external computers require that all firewalls and routers be configured to allow data transfer between all applicable ports. Without communication across these ports, the instrument cannot connect to the software. See the *CellReporterXpress Installation Guide* for details.

2. Press the **Power** button on the front of the instrument.

When the status light on the power button is green, the instrument is fully powered on.

Chapter 3: Installing the CellReporterXpress Software **3**
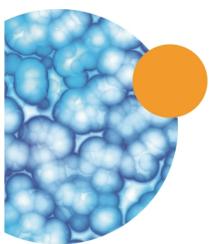
At this point, you are ready to install the CellReporterXpress Software. The CellReporterXpress Software is the user interface for the ImageXpress Pico System. You will use the CellReporterXpress Software to work with the ImageXpress Pico System and control its functions.

See the *CellReporterXpress Installation Guide* for details on installing the CellReporterXpress Software.

After you install of the CellReporterXpress Software, return to this guide to finish setting up the ImageXpress Pico System.

Chapter 4: Finishing Setup of the ImageXpress Pico System

4

Logging In to the Software

To log in to the CellReporterXpress Software:

1. On the host computer, do one of the following to display the CellReporterXpress Log In screen:

   - On the desktop, double-click **MD.CellReporterXpress**.

   - Click **Start > Molecular Devices > MD.CellReporterXpress**.

2. In the ⌂ **Login** field, enter the Windows system user name for the host computer.

3. In the 🔒 **Password** field, enter the Windows system password for the host computer.

   > **Note:** A password is required to log in to the CellReporterXpress Software on the host computer. If the host computer has no Windows system password, you cannot log in to the CellReporterXpress Software.

4. Click **LOG IN**.

See the *CellReporterXpress Installation Guide* for details on logging in to the CellReporterXpress Software from a remote client.

Installing an Objective

Before installing an objective, review the following:

- Access only the user-serviceable components inside the enclosure as described in the procedure. Avoid contact with other components as they can be damaged or knocked out of alignment.

- To prevent dust from collecting inside the instrument, keep all access doors closed unless you are performing maintenance tasks.

- Ensure that all components and access doors are closed before starting the instrument.

In addition, observe the following when handling an objective:

CAUTION!

- To prevent skin oils from damaging the optical coatings, Molecular Devices recommends that you wear powder-free disposable gloves when handling objectives and filter cubes.

- With the instrument power on, do not manually rotate the objective turret. Manually rotating the objective turret can damage the instrument.

Molecular Devices precalibrates the objectives to specific slots in the turret. You must install the objectives as follows:

Slot	Objective Magnification	Color Band
1	4x	Red
2	10x	Yellow
3	20x	Green
4	empty	n/a
5	40x or 63x	Light Blue or Dark Blue
6	empty	n/a

Note:

- Depending on how your ImageXpress Pico System is configured, you may not have all the objectives.

- The 40x objective and the 63x objective cannot be installed in the instrument simultaneously.

- The 63x objective cannot be installed when the environmental control cassette is loaded.

Installing an Objective

You must install objectives in specific slots in the turret. See Installing an Objective on page 38 for details.

To install an objective:

1. In the CellReporterXpress Software, on the **Home** page, click **Devices**.

2. In the **Available Acquisition Devices** list, click **Show Device Options** to expand the details for the device where you want to install an objective.

3. Click the **Objectives** tab.

4. In the tile for the objective slot where you want to install, click **Component Exchange**.

5. Click the **Choose Objective** dropdown, and select the objective you want to install.

6. Click **Open Maintenance Door**.

7. Install the objective in the slot by gently turning it clockwise.

> ⚠️ **CAUTION!** Retain the objective case for future storage needs. When not installed in the instrument, an objective should always be stored in its case.

8. Do both of the following:

   a. Manually close the maintenance door.

   b. In the CellReporterXpress Software, click **Close Maintenance Door**.

9. Click **Apply**.

Installing a Filter Cube

Before installing a filter cube, review the following:

- Access only the user-serviceable components inside the enclosure as described in the procedure. Avoid contact with other components as they can be damaged or knocked out of alignment.

- To prevent dust from collecting inside the instrument, keep all access doors closed unless you are performing maintenance tasks.

- Ensure that all components and access doors are closed before starting the instrument.

In addition, observe the following when handling a filter cube:

⚠️ **CAUTION!** To prevent skin oils from damaging the optical coatings, Molecular Devices recommends that you wear powder-free disposable gloves when handling objectives and filter cubes.

The following filter cubes are available:

- DAPI

- FITC

- TRITC

- Cy5

- Texas Red

- CFP
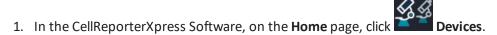
Note:
- Depending on how you have configured your ImageXpress Pico System, you may not have received all the filter cubes.

- Do not install a filter cube in slot 6 of the turret. Slot 6 must be empty.

Installing a Filter Cube

To install a filter cube:

1. In the CellReporterXpress Software, on the **Home** page, click ![icon] **Devices**.

2. In the **Available Acquisition Devices** list, click ![icon] **Show Device Options** to expand the details for the device where you want to install a filter cube.

3. Click the **Filters** tab.

4. In the tile for the filter cube slot where you want to install, click ![icon] **Component Exchange**.

   > ![note icon] **Note:** Do not install a filter cube in slot 6 of the turret. Slot 6 must be empty.

5. Click the **Choose Filter** dropdown, and select the filter cube you want to install.

6. Click **Open Maintenance Door**.

7. If needed, slightly rotate the filter cube turret by hand to get direct access to the filter cube slot.

8. Install the filter cube in the slot by gently pushing it into the slot until it "snaps" into place.

   > ![caution icon] **CAUTION!** Retain the filter cube packaging for future storage needs. When not installed in the instrument, a filter cube should always be stored in its original packaging.

9. Do both of the following:

   a. Manually close the maintenance door.

   b. In the CellReporterXpress Software, click **Close Maintenance Door**.

10. Click **Apply**.

Inserting the Plate Holder or Slide Holder

Open the sample door on the top of the instrument to insert the plate holder or slide holder in the sample (X-Y) stage. The sample (X-Y) stage has an **A1** label to indicate its top left corner.

Inserting a Plate Holder

Like the sample (X-Y) stage, the plate holder also has an **A1** label to indicate its top left corner.

To insert the plate holder:

1. Press the button at the top right of the instrument to open the sample door.

2. Confirm that the spring-loaded clamp in the open position (as shown).

> **Note:** Use the locking pin on the plate holder to ensure the spring-loaded clamp is in the open position.

3. With the **A1** label at the top left, insert the plate holder in the sample (X-Y) stage.

> **Note:** The pin at the bottom right of the plate holder should fit into the small recess in the sample (X-Y) stage.

4. Confirm that the plate holder is seated flat in the sample (X-Y) stage.

5. Press the button at the top right of the instrument to close the sample door.

Inserting a Slide Holder

Like the sample (X-Y) stage, the slide holder also has an **A1** label to indicate its top left corner.

To insert the slide holder:

1. Press the button at the top right of the instrument to open the sample door.

2. With the **A1** label at the top left (as shown), insert the slide holder in the sample (X-Y) stage.

   > **Note:** The pin at the bottom right of the slide holder should fit into the small recess in the sample (X-Y) stage.

3. Confirm that the slide holder is seated flat in the sample (X-Y) stage.

4. Press the button at the top right of the instrument to close the sample door.

Chapter 5: Environmental Control System

5

The optional environmental control system enables you to maintain an environment for multi-day, live-cell, time-lapse imaging using a plate. You can regulate humidity, CO_2, and O_2 inside the environmental control cassette so that cells in the plate can be kept alive for many days, growing at a rate comparable to that expected in a standard cell culture incubator.

Note: Environmental control is fully supported for plate acquisitions only. For slide acquisitions, only temperature control is available; humidity, CO_2, and O_2 control is not available.

The environmental control system offers the following controls:

Component	Set Range	Notes
CO_2	1% to 15%	
Humidity	85%	Humidity level is fixed.
O_2	1% to 15% and ambient	
Temperature	25°C to 40°C (77°F to 104°F)	Environmental control cassette is not required. Minimum achievable temperature setting is: 6°C (11°F) above ambient without cassette. 8°C (14°F) above ambient with cassette.

Note:

- To achieve the minimum temperature setting of 25°C (77°F) without the environmental control cassette, the room temperature must be no higher than 19°C (66°F).

- To achieve the minimum temperature setting of 25°C (77°F) with the environmental control cassette, the room temperature must be no higher than 17°C (62.5°F).

If your instrument does not include the environmental control system, contact your Molecular Devices representative to discuss adding this optional feature to your instrument.

Environmental Control System Warnings and Cautions

Take note of the following when using the environmental control system:

WARNING! Do not operate the environmental control system with substances, or under conditions, which can cause a risk of explosion, implosion, or the release of gases.

WARNING! BIOHAZARD. It is your responsibility to decontaminate components of the instrument before you return parts to Molecular Devices for repair. Molecular Devices does not accept items that have not been decontaminated where it is applicable to do so. If parts are returned, they must be enclosed in a sealed plastic bag stating that the contents are safe to handle and are not contaminated.

CAUTION!

- Use a compressed gas supply in a well-ventilated area. The instrument is not air-tight. Gas can escape into the atmosphere surrounding the instrument. When you use potentially toxic gas, observe the cautionary procedures your safety officer defines to maintain a safe work environment, such as the use of an automatic warning system.

- The environmental control system includes heated tubing that controls the temperature of the gas flow. Some accessible parts of the tubing and the humidifying column can reach temperatures of up to 50°C (122°F). Avoid touching the temperature-controlled parts of the system.

- Do not use the instrument with hazardous substances.

- If you use the instrument with any substances or materials that pose a risk of infections, it is your responsibility to apply best practices when handling these materials.

- If the CO_2 port or the N_2 port is not connected to a tank, use a blind plug (included) to close it off.

Environmental Control System Hardware

The environmental control system uses a magnetically sealed cassette that contains the sample plate. Humidified gas (CO_2, N_2, and compressed air) is supplied into the cassette to form the specified environment. Temperature is controlled within the cassette.

The environmental control system consists of the following hardware subsystems:

- **Temperature control**: Regulates the temperature at 8°C (14°F) above ambient within a range of 25°C to 40°C (77°F to 104°F).

  > **Note:** Without the optional environmental control system, it is still possible to regulate temperature inside the instrument at 6°C (11°F) above ambient within a range of 25°C to 40°C (77°F to 104°F).

- **Gas control**: Provides CO_2, N_2, and compressed air to regulate the gas concentration inside the environmental control cassette. CO_2 and N_2 are provided from tanks that you supply. Compressed air can be provided from a tank that you supply, a lab gas line, or an oil-free air pump or compressor. Tank pressure must be regulated within the range of 0.8 bar to 1.2 bar (11.6 psi to 17.4 psi). The ideal setting is 1.0 bar (14.5 psi).

- **Humidity control**: Provides 85% humidity by bubbling gases through the humidifying column to minimize evaporation from the sample plate over the duration of a time-lapse experiment.

This section contains information on the following:

-
-

Items Provided by Molecular Devices

The following hardware components are included with the environmental control system:

- **Environmental control cassette**: Holds the plate during acquisition. The cassette is magnetically sealed to maintain the environment and is compatible with most plate formats from 6-well to 384-well with a maximum height (including the lid) of 23 mm (0.9 in.). Note that the standard height for plates is 14.35 mm ± 0.25 mm (0.5650 in. ± 0.0098 in.).

- **Environmental sensors**: Provide accurate readings of temperature, humidity, CO_2, and O_2.

- **Environmental control tray**: Attaches to the back of the instrument to hold the humidifying column and tubing.

- **Humidifying column**: Humidifies the mixed gas. Part of the gas mixture is guided through the column, which contains a water reservoir. The water inside the column is warmed for higher humidity uptake.

- **Humidifying column tubing/wiring**: Connects the humidfying column to the instrument.

- **Gas supply tubing**: Connects the gas tanks to the instrument.

- **Blind plugs**: Closes off the CO_2 port or the N_2 port when not in use.

Items Provided by You

You must provide the following items for the environmental control system:

- **Pressurized CO_2 and N_2**: Supplies pressurized gases from a tank. Gases must be at least 99% pure.

- **Compressed air**: Supplies pressurized air from a tank, lab gas line, or oil-free air pump or compressor.

- **Tank regulators and fittings**: Delivers gases from the tanks. Tank pressure must be regulated within the range of 0.8 bar to 1.2 bar (11.6 psi to 17.4 psi). The ideal setting is 1.0 bar (14.5 psi).

- **Ultrapure water (18 Mohm•cm)**: Maintains humidity inside the environmental control cassette. The humidifying column can hold up to 130 ml (4.4 oz) of ultrapure water and must be refilled before the level drops to 50 ml (1.7 oz).

- **Gas Supply Tubing**: If the length of tubing provided by Molecular Devices is not sufficient for your needs, you must provide an appropriate length of 4 mm ID / 6 mm OD polyurethane tubing.

Using the Environmental Control System

This section provides details on setting up and using the environmental control system, including the following:

- Setting Up the Environmental Control System, see below
- Connecting and Disconnecting Tubing, see page 52
- Filling the Humidifying Column, see page 53
- Loading the Environmental Control Cassette, see page 54
- Setting Environmental Control Parameters, see page 56
- Maintaining the Environmental Control System, see page 56

Setting Up the Environmental Control System

To install the environmental control system:

1. Confirm that the valves on the tanks are completely shut off and that no gas is flowing.

2. If the instrument is powered on, press the **Power** button on the front of the instrument to turn off the power.

When the status light on the power button is off, the instrument is fully powered off.

3. On the environmental control tray, loosen the large screw to remove the top piece from the tray.

4. On the bottom piece of the environmental control tray, slide the tab under the instrument so it engages the two screws.

5. Insert the humidifying column in the environmental control tray.

6. Do the following to connect the humidifying column:

> **Note:** See Connecting and Disconnecting Tubing on page 52 for details on connecting tubing.

a. Connect the tubing with the blue band to blue port on the humidifying column.

b. Connect the tubing with the red band to red port on the humidifying column.

c. Connect the electronics cable to the lower port on the humidifying column.

7. Do the following to connect the humidifying column to the instrument:

   a. Connect the tubing with the white 1 band to the **OUT WHITE 1** port.

   b. Connect the tubing with the yellow 2 band to the **OUT YELLOW 2** port.

   c. Connect the tubing with the red 3 band to the **HUMIDITY IN 3** port.

   d. Connect the electronics cable to the **COM HEATING HUM COLUMN** port.

8. Do the following to connect the external gas tanks to the instrument:

   a. Connect the tubing from the CO_2 tank to the **CO_2 IN** port.

   b. Connect the tubing from the compressed air source to the **COMPRESSED AIR (CLEAN) IN** port.

   c. Connect the tubing from the N_2 tank to the **N_2 IN** port.

⚠ **CAUTION!** For any port not connected to a tank, close off the port with one of the included blind plugs.

---

9. Replace the top piece of the environmental control tray and tighten the screw.

Connecting and Disconnecting Tubing

As part of working with the environmental control system, you must connect and disconnect tubing.
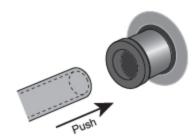
> ⚠️ **WARNING! Do not connect or disconnect tubing when there is pressure from the tank.**

Connecting Tubing

To connect tubing:

1. Confirm that the pressure from the gas tank is turned off.

2. Push the tubing in to the port to connect it.
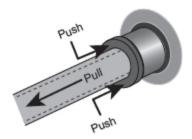
3. After inserting the tubing, gently pull the tubing to confirm it is seated.

Disonnecting Tubing

To disconnect tubing:
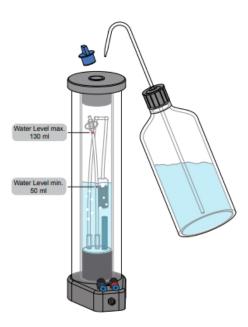
1. Confirm that the pressure from the gas tank is turned off.

2. Push in the outer ring as you pull the tubing.

Filling the Humidifying Column

The humidifying column uses ultrapure water to add humidity to the air flow supplied to the environmental control cassette.

The humidifying column holds 130 ml (4.4 oz), which is enough to continuously provide humidity for up to three or four days. When the water level approaches the minimum indicator (approximately one-third full), add 18 Mohm•cm ultrapure water to reach the maximum level.

CAUTION!

- Do not operate humidity level control if the water level is below the minimum indicator. Operating without enough water can damage the instrument and the humidifying column.

- Before and during an experiment with humidity level control, check the water level in the humidifying column and refill as needed. (Be aware that refilling the humidifying column during an experiment can reduce the humidity level for several minutes.)

- Only use 18 Mohm•cm ultrapure water to fill the humidifying column.

- Confirm that the stopper is firmly seated in the humidifying column. A loose stopper can allow gas leakage and other environmental control system issues.

Note: If the humidifying column does run dry, restart the instrument after refilling the column.

To fill the humidifying column:

1. Remove the rubber stopper from the top of the humidifying column.

2. Fill the humidifying column with 18 Mohm•cm ultrapure water to the maximum indicator (approximately two-thirds full). At the maximum indicator, the humidifying column holds 130 ml (4.4 oz).

> ⚠ **CAUTION!** It can be easy to overfill the humidifying column. When filling the humidifying column, use care not to fill beyond the maximum indicator.
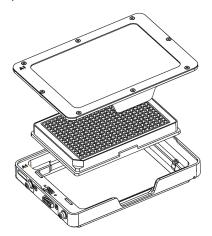
3. Replace the rubber stopper at the top of the humidifying column.

> ⚠ **CAUTION!** Confirm that the stopper is firmly seated in the humidifying column.

Loading the Environmental Control Cassette

The environmental control cassette is a magnetically sealed, glass enclosure that holds the plate in the instrument.
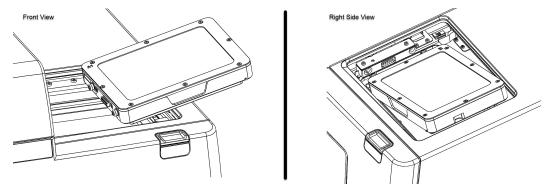
Like the sample (X-Y) stage, the environmental control cassette also has an **A1** label to indicate its top left corner.

To load the environmental control cassette:

1. Press the button at the top right of the instrument to open the sample door.

2. Remove the plate holder or slide holder, as needed.

3. Insert the environmental control cassette (with no plate inside) in the instrument from the left end so that the contacts on the cassette meet the contacts on the sample (X-Y) stage.

4. Confirm that the environmental control cassette is firmly seated.

    Note: The sample door may not close if the cassette is not seated properly.

5. Lift the top of the environmental control cassette and insert the plate containing your samples.

    Note: The 4-slide holder is not compatible with the environmental control cassette.

6. Replace the top of the environmental control cassette.

7. Press the button at the top right of the instrument to close the sample door.

Setting Environmental Control Parameters

You can set environmental control parameters (including target values and notifications) on the Sensors tab in Devices mode in the CellReporterXpress Software. You can also specify environmental sensors to be monitored during an experiment on the Device Sensors page in Acquisition mode.

See the *CellReporterXpress Help* or the *CellReporterXpress User Guide* for details on setting environmental control parameters.

Maintaining the Environmental Control System

User maintenance tasks for the environmental control system include running air dry and cleaning the inside and the outside of the humidifying column. See the *ImageXpress Pico User Guide* for details.

Appendix A: Instrument Specifications

A

The instrument must be installed on a level and stable surface.

⚠️ **WARNING!**
- **If the instrument is used in a manner not specified by Molecular Devices, the protection provided by the equipment might be impaired.**

- **The ImageXpress Pico System is an Equipment Class 1 product that relies on protective earth grounding for safe operation. Any interruption of the protective earth ground conductor, inside or outside the instrument, or disconnection of the protective earth ground terminal can result in personal injury.**
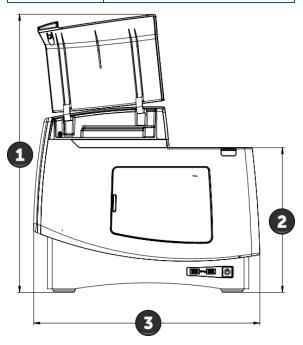
Item	Description
Operating Environment	Indoor use only
System Power	100 VAC to 240 VAC, 50/60 Hz, 1.6 A nominal at 115 V, 200 W maximum
Fuses	Glass Tube 5x20 mm T6A250V
Dimensions	*without environmental control* Width: 55.1 cm (21.7 in.) Height: 45.3 cm (17.8 in.) Depth: 42.5 cm (16.7 in.) *with environmental control* Width: 62.9 cm (24.7 in.) Height: 45.3 cm (17.8 in.) Depth: 51.6 cm (20.3 in.)
Front Clearance (for maintenance door)	19.5 cm (7.68 in.)
Rear Clearance (for ventilation and cable connections)	20 cm to 30 cm (7.9 in. to 11.8 in.)
Top Clearance	23.1 cm (9.1 in.)
Weight	*without environmental control* 38 kg (83.8 lb) *with environmental control* 40 kg (88.2 lb)
Sample Formats (microplates)	ANSI/SLAS compliant Number of Wells: 6, 12, 24, 48, 96, 384 Maximum Height, including lid: 23 mm (0.9 in.)

Item	Description
Sample Formats (slides)	Standard microscope slides 25 mm x 75 mm (1 in. x 3 in.)
Reading Modes	Fluorescence Transmitted Light (Brightfield) Colorimetric
Objectives	4x 10x 20x (optional) 40x (optional) 63x (optional)
Fluorescence Color Channels	FITC DAPI (optional) TRITC (optional) CY5 (optional) Texas Red (optional) CFP (optional)
Environmental Control	CO_2: 1% to 15% (optional) O_2: 1% to 15% (optional) Humidity: 85% (optional)
Temperature Control (with environmental control cassette)	*without environmental control cassette* 6°C (11°F) above ambient up to 40°C (104°F) *with environmental control cassette* 8°C (14°F) above ambient up to 40°C (104°F)
Ambient Operating Conditions	Temperature (general use without environmental control): 18°C to 30°C (64°F to 86°F) Temperature (when using temperature control): 18°C to 28°C (64°F to 82°F); ambient temperature must be at least 8°C (14°F) below the target temperature Relative Humidity: 20% to 75% (non-condensing)
Ambient Storage Conditions	Temperature: -20°C to +60°C (-4°F to 140°F) Relative Humidity: 15% to 75% relative humidity (non-condensing)
Altitude Restrictions	Up to 2000 m (6,562 ft)
IEC Installation Category	II
Pollution Degree	2
Data Connection	Two (2) Ethernet ports
IEC Ingress Protection	IP20

Instrument Dimensions without Environmental Control

Front View
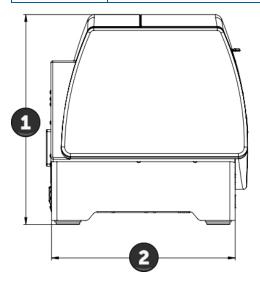
Item	Description
1	67.8 cm (26.7 in.)
2	35.3 cm (13.9 in.)
3	55.1 cm (21.7 in.)

Side View
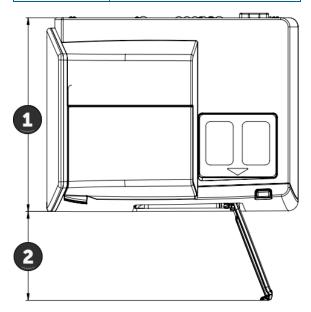
Item	Description
1	45.3 cm (17.8 in.)
2	39.7 cm (15.6 in.)

Top View
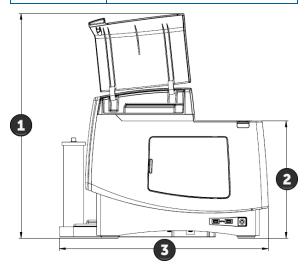
Item	Description
1	42.5 cm (16.7 in.)
2	19.5 cm (7.7 in.)

Instrument Dimensions with Environmental Control

Front View
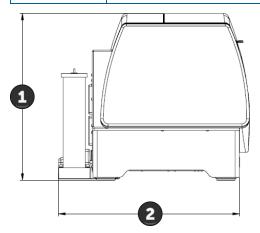
Item	Description
1	67.8 cm (26.7 in.)
2	35.3 cm (13.9 in.)
3	62.9 cm (24.8 in.)

Side View
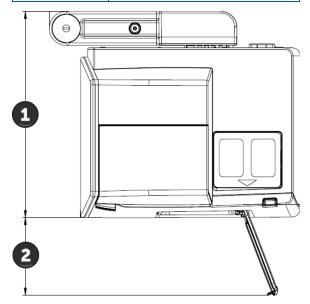
Item	Description
1	45.3 cm (17.8 in.)
2	49.0 cm (19.3 in.)

Top View

Item	Description
1	51.6 cm (20.3 in.)
2	19.5 cm (7.7 in.)

Appendix B: Optional Parts and Accessories

B

This section describes the parts and accessories available from Molecular Devices for the ImageXpress Pico System, including the following:

- Objectives, see below

- Filter Cubes, see page 66

- Accessories, see page 66

See Obtaining Support on page 20 for details on contacting Molecular Devices.

Objectives

The following Leica objectives, which are available from Molecular Devices, are compatible with the ImageXpress Pico System:

Objective	Part Number	Mag.	Numerical Aperture (NA)	Working Distance	Corr. Collar
PL FLUOTAR 4x/0.13	5064345	4x	0.13	17.0 mm	No
HC PL FLUOTAR 10x/0.32	5064346	10x	0.32	11.1 mm	No
HC PL FLUOTAR 20x/0.40	5064347	20x	0.4	7.4 mm	No
HC PL FLUOTAR L 40x/0.60 CORR	5064348	40x	0.6	3.0 mm	Yes
HC PL FLUOTAR L 63x/0.70 CORR	5064349	63x	0.7	2.0 mm	Yes

⚠️ **CAUTION!** To prevent damaging both the instrument and your samples, do not use any other objectives with the ImageXpress Pico System.

Filter Cubes

The following filter cubes, which are available from Molecular Devices, are compatible with the ImageXpress Pico System:

Filter	Part Number	Excitation	Emission	Dichroic
DAPI	5064350	370/40 nm	450/60 nm	410 nm
FITC	5064351	465/40 nm	525/30 nm	500 nm
TRITC	5064352	530/45 nm	594/40 nm	560 nm
Cy5	5064353	630/40 nm	695/45 nm	655 nm
Texas Red	5069939	560/50 nm	645/70 nm	654 nm
CFP	5069940	400/30 nm	480/40 nm	475 nm

Accessories

The following accessories, which are available from Molecular Devices, are compatible with the ImageXpress Pico System.

Base System Accessories

Description	Part No.
4-Slide Holder	5068503
Plate Holder	5068504
Calibration Kit	5068505
Ethernet Cable	5052189
Power cord, 115 V, 1 m (3.3 ft)	4400-0002
Power cord, 230 V, 1 m (3.3 ft)	4400-0036

Environmental Control System Accessories

Description	Part No.
Environmental Control Cassette	5070105
Humidifying Column	5070110
Humidifying Column Tubing/Wiring	5070108
Two (2) Humidifying Column Stoppers	5070107
Gas Supply Tubing, 10 m (32.8 ft)	5070103
Two (2) Blind Plugs	5070106

Appendix C: Packing the Instrument for Transport

C

The packaging is designed to protect the instrument during transportation. Before transporting the instrument, carefully pack it in its original shipping box with all packing materials. If needed, contact Molecular Devices for a replacement shipping box.

⚠ **WARNING! LIFTING HAZARD. To prevent injury, use a minimum of two people to lift the instrument.**

⚠ **CAUTION!** When transporting the instrument, warranty claims are void if improper packing results in damage to the instrument.

To pack the instrument:

1. If needed, do the following to disassemble the environmental control system:

   a. Confirm that the valves on the tanks are completely shut off and that no gas is flowing.

   b. On the environmental control tray, loosen the large screw to remove the top piece from the tray.

   c. Disconnect all tubing/wiring from the instrument and the humidifying column.

      📋 **Note:** See Connecting and Disconnecting Tubing on page 52 for details on connecting tubing.

   d. Remove the humidifying column from the environmental control tray.

   e. Pull the environmental control tray away from the instrument to remove it.

   f. Pack the components of the environmental control system in their original packaging.

2. If needed, remove the plate holder, slide holder, or the environmental control cassette from the sample (X-Y) stage.

3. Remove any installed filter cubes and pack them in their original packaging. See Installing a Filter Cube on page 40 for details on removing a filter cube.

4. Remove any installed objectives and pack them in their original packaging, including the objective case. See Installing an Objective on page 38 for details on removing an objective.

5. Open the plate door at the top of the instrument.

6. With the instrument off and all cables disconnected, manually move the sample (X-Y) stage to the center of the opening.

7. To secure the sample (X-Y) stage, insert the foam transport lock in the opening until it is flush with the top surface of the instrument.
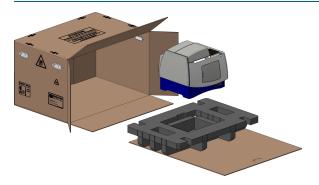

8. Replace the instrument in the plastic bag from the original packaging.

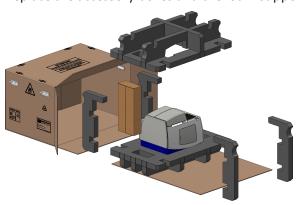9. With one person on each end, place the instrument in the bottom foam packing as shown below.

⚠ **WARNING! LIFTING HAZARD.** **To prevent injury, use a minimum of two people to lift the instrument.**
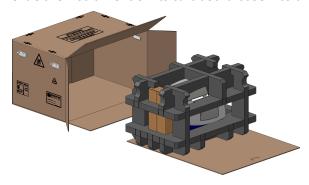
⚠ **CAUTION!** Keep the instrument upright and level when lifting. Do not tip or shake the instrument.

10. Replace the accessory boxes and the foam supports.

11. Slide the instrument on its cardboard base into the box.
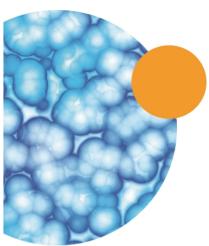

12. Seal the box for transportation.

> ⚠️ **CAUTION!** Keep the box upright during transport. Do not tip or tilt the box or place it on its side.

See Unpacking the Instrument on page 28 for details on unpacking the instrument after transport.

Appendix D: Electromagnetic Compatibility

D

Regulatory for Canada (ICES/NMB-001:2006)

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est confomre à la norme NMB-001 du Canada.

ISM Equipment Classification (Group 1, Class A)

This equipment is designated as scientific equipment for laboratory use that intentionally generate and/or use conductively coupled radio-frequency energy for internal functioning, and are suitable for use in all establishments, other than domestic and those directly connected to a low voltage power supply network which supply buildings used for domestic purposes.

Information to the User (FCC Notice)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 18 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense. Changes or modifications made to this equipment not expressly approved by the party responsible for compliance may void the FCC authorization to operate this equipment.

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